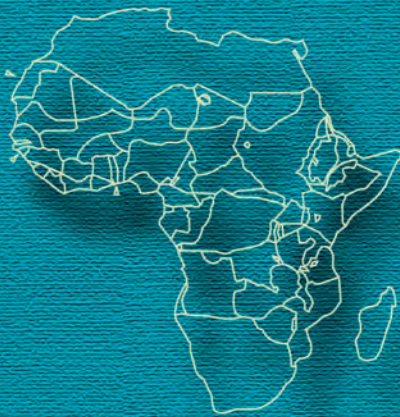


# TROPICAL AFRICAN FLOWERING PLANTS

## Ecology and Distribution

Vol. 6 – Burseraceae – Apiaceae

Addendum to volumes 1-5 (Families A-C)



- J.-P. LEBRUN
- A. L. STORK

Conservatoire  
et Jardin botaniques  
de la Ville de Genève  
2011





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# TROPICAL AFRICAN FLOWERING PLANTS

## Ecology and Distribution

VOL. 6: BURSERACEAE – APIACEAE and ADDENDUM VOLUMES 1-5 (FAMILIES A-C)

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*We dedicate this volume to our Swedish colleague Mats Thulin (Uppsala) in recognition of his work on Flora of Somalia published by Kew in four volumes (in 1993, 1995, 2000, and 2006, respectively).*

*There he made important contributions to some families figuring in this part of our compilation.*

*Photograph in the field by Björn-Axel Beier, comm. Mats Thulin.*

*In 2007 he was awarded the Large Linnéan Medal in Gold (“Stora Linnémedaljen”) by the Royal Swedish Academy of Sciences.*

*An interesting interview with him was published (in Swedish) by Tomas Carlberg in Fauna & Flora (Stockholm) 101/3:36-43, 2006.*

Cover page illustration: *Commiphora unilobata* J. B. Gillett & Vollesen (*Burseraceae*) in Somalia: leaves, flowers and fruits. This plant is said to be strongly poisonous (but nobody seems to have checked this seriously). Photograph courtesy Mats Thulin.

Back cover illustration: *Boswellia sacra* Flueck. (*Burseraceae*), Incense Tree, framing a Somalian landscape. Mats Thulin writes:

“I love this silhouette of *Boswellia sacra*, not so much as a botanical image but for its beauty. Anders Persson created it and was a dear friend and colleague who died far too early. He would have greatly appreciated the choice of this picture here” (in litt. 26 October, 2010).



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JEAN-PIERRE LEBRUN – ADÉLAÏDE L. STORK

# TROPICAL AFRICAN FLOWERING PLANTS

## Ecology and Distribution

VOL. 6: BURSERACEAE – APIACEAE and ADDENDUM VOLUMES 1-5 (FAMILIES A-C)



VILLE DE GENÈVE  
ÉDITIONS DES CONSERVATOIRE ET JARDIN BOTANIKUES  
Genève, juin 2011

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Editions des Conservatoire  
et Jardin botaniques



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Vol. 6: Burseraceae – Apiaceae and Addendum Volumes 1-5 (Families A-C)

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Last but not least, we wish to thank Dr. R. Polhill, Mrs. Diana Polhill, Dr. H. Beentje and Dr. M. Cheek (Kew Gardens) for their support. Professor Mats Thulin (Uppsala, Sweden) offered us the cover illustrations. For his outstanding work on Flora of Somalia we dedicate this volume to him.

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A nomenclatural correction in Theaceae: *Melchiora* vs *Balthasaria*

In Volume 1 of the present series we listed (p. 626, Family *Theaceae*, 2003) ***Melchiora schliebenii*** (Melchior) Kobuski as the accepted name. ***Melchiora mannii*** (Oliv.) Kobuski was listed as an endemic of S. Tomé.

Unfortunately we missed Verdcourt's correction in *Kew Bulletin* 23/3: 469-470 (1969).

As a matter of fact, *Melchiora* Kobuski 1956 is a later homonym of *Melchioria* Penzig & Saccardo 1897 (*Fungi, Sphaeriales*) "although differing in spelling".

Thus the correct citation for these plants should read as follows.

### BALTHASARIA

*Balthasaria* Verdc., nom. nov.; syn.: *Melchiora* Kobuski 1956; *Adinandra* Jack sect. *Eleutherandra* Szysz. 1893.

***Balthasaria schliebenii*** (Melchior) Verdc. 1969

bas.: *Adinandra schliebenii* Melchior

syn.: *Melchiora schliebenii* (Melchior) Kobuski

With 4 vars.: – var. **schliebenii**; – var. **glabra** (Verdc.) Verdc. 1969 [bas.: *Adinandra schliebenii* Melchior var. *glabra* Verdc. 1956; syn.: *Melchiora schliebenii* (Melchior) Kobuski var. *glabra* (Verdc.) Kobuski 1957]; – var. **greenwayi** (Verdc.) Verdc. 1969 [bas.: *Adinandra greenwayi* Verdc. 1953; syn.: *A. schliebenii* var. *greenwayi* (Verdc.) Verdc. 1956]; – var. **intermedia** (Boutique & Troupin) Verdc. 1969 [bas.: *Adinandra intermedia* Boutique & Troupin 1950; syn.: *A. schliebenii* var. *intermedia* (Boutique & Troupin) Verdc. 1956].

\* \* \*

Endemic to S. Tomé:

***Balthasaria mannii***(Oliv.) Verdc. 1969

bas.: *Adinandra mannii* Oliv.

syn.: *Melchiora mannii* (Oliv.) Kobuski 1956.

We thank Dr. H. Beentje for having brought this error to our attention.



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## I. INTRODUCTION

“In the midst of a biodiversity crisis... we should make species exploration, discovery and description an extremely high priority. We should make the growth and development of natural history collections to serve as comprehensive evidence of species and clade diversity a high priority. And we should make the practice of taxonomy according to its very best theories and methods a mandate, since we have only one chance to chart the biosphere.”

Q. D. Wheeler & A. G. Valdecasas in *Anal. Jard. Bot. Madrid* 64: 240 (2007).

This volume corresponds to the last part of our “Enumération”, Volume 2 (1992), thus concluding the classical *Dialypetalae*. An Addendum to Volumes 1, 2, 3, 4 and 5 is placed at the end (p. 297-392).

In general it follows the rules outlined for the first volume. However, the families figuring in the Addendum are listed in alphabetical order. We draw attention to the fact that the basic map was slightly modified as from Volume 2.

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## II. BIBLIOGRAPHY

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- BEKELE-TESEMMA, A. (2007) *Useful trees and shrubs for Ethiopia: Identification, propagation and management for 17 agroclimatic zones*. (Technical Manual 6) World Agroforestry Centre, Nairobi. VI + 550 pp.
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- BOULOS, L. (2009). *Flora of Egypt checklist: Revised annotated edition*. Al Hadara Publishing, Cairo. 410 pp.
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- FIGUEIREDO, E. & G. F. SMITH (2009). The succulent flora of Angola. *Haseltonia* 15: 69-78.
- HARRIS, D. J. & A. H. WORTLEY (2008). *Sangha trees. An illustrated identification manual / Les arbres de la Sangha. Manuel d’identification illustré*. Royal Botanic Garden, Edinburgh. VI + 300 pp.
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- SETTESOLDI, L. & al. (2005). *Esploratori italiani nell’Africa Orientale fra il 1870 ed il 1930. Missioni scientifiche con raccolte botaniche rilievi geografici ed etnografici*. Centro Studi Erbario Tropicale, Pubblicazione 104. 142 pp.
- VAN WYK, B. & al. (2008). *Photo guide to trees of southern Africa*, ed. 2. Briza Publications, Pretoria. 360 pp.

Additional useful literature:

- BEENTJE, H. (2010). *The Kew plant glossary: an illustrated dictionary of plant terms*. Kew Publishing, Royal Botanic Gardens, Kew. X + 160 pp.
- FIGUEIREDO, E. & al. (2009). The botany of the Cunene-Zambezi Expedition with notes on Hugo Baum (1867-1950). *Bothalia* 39: 185-211.
- FRIIS, I. & al. (2010). Atlas of the potential vegetation of Ethiopia. *Biol. Skrifter* 58. 307 pp.
- PROVENÇAL, P. (2010). The Arabic plant names of Peter Forsskål’s Flora Aegyptiaco-Arabica. *Biol. Skrifter* 57. 155 pp.
- STEINMETZ, E. F. & al. (1994). *Dictionary of botanical terms from Latin and old Greek origins and their meanings in Arabic, English, and French*. Qatar University, Doha. 223 pp.
- VAN WYK, B.-E. & al. (2009). *Medicinal plants of South Africa*, ed. 2. Briza Publication, Pretoria. 336 pp.

### III. STATISTICAL SUMMARY

The present volume (Addendum excluded) covers 11 families, including 133 genera and 837 (+2?) species. They are listed below (Table 1) in alphabetical order. To avoid confusion we use 6-letter acronyms (cf. Vol. 1: 15, 2003).

Table 1 summarizes our lack of information relating to plant habit, flowers, fruit, ecology, and herbarium material.

With a total of 837 (+2?) species, Table 1 shows the following results (figures within brackets indicate uncertain data):

- 12 (+4) species (= c. 1,5%) for which flowers are unknown;
- 21 (+3) species (= c. 2,5%) for which male flowers are not known;

- 38 (+3) species (= > 4,5%) without female flowers recorded;
- 53 (+18) species (= > 6,3%) for which fruits have not been seen;
- 21 species (= c. 2,5%) without records on their ecology;
- 47 species (= c. 6%) which are only known from the type.

We are aware of the fact that our figures do not reflect the absolute truth. They are certainly too high and should be considered as an indication only.

Table 1. – Families included in Volume 6 (alphabetical order, 6-letter acronyms). Statistical summary: number of genera (Nr. gen.) and species (Nr. spp.); number of species for which habit (hab.), reproductive organs (flowers, male flowers, female flowers, fruits) or ecology (eco.) are not recorded; and number of species only known from the type collection. Figures within brackets indicate uncertain data.

Family	Nr. gen.	Nr. spp.	No hab.	No fl.	No ♂ fl.	No ♀ fl.	No fr.	No eco.	Only type
Alangi	1	2							
Anacar	12	162		1	7	14+2?	12+2?	2	7
Apiace	45	151		1 (+2)			1 (+11)	5	9 (+3?)
Aralia	3	37		1			4		1
Burser	6	132		7 (+1)	12 (+3)	2 (+3+2?)	3 (+3)		4 (+1?)
Connar	10	50		(1)			1 (+1)		1
Cornac	2	2							
Meliac	16	89				5	4 (+3+2?)	3 (+2?)	3
Melian	1	c. 3							
Ptaero	2	2							
Sapind	35	207 (+2?)		2 (+1?)	2 (+1?)	17 (+5?)	28 (+10?)	11 (+2?)	22
Total									
11	133	837 (+2?)		12 (+4 +1?) = c.1,5%	21 (+3+1?) = c. 2,5%	38 (+3+9?) => 4,5%	53 (+18 +14?) => 6,3%	21 (+4?) = c. 2,5%	47 (+4?) = 6%

In addition for Apiaceae:

1 species without basal leaves, 2 species without petals, 11 (+1?) with only unripe fruit, 2 species without carpophore seen.

### IV. LIST OF FAMILIES INCLUDED IN VOLUME 6

Sequence of families:

Burseraceae.....	p. 14
Meliaceae .....	p. 54
Sapindaceae.....	p. 88
Ptaeroxylaceae.....	p. 150
Meliantaceae.....	p. 151
Anacardiaceae.....	p. 157

Connaraceae.....	p. 211
Alangiaceae.....	p. 232
Cornaceae, incl. Curtisia (Curtisiaceae).....	p. 232
Araliaceae.....	p. 233
Apiaceae.....	p. 244



## V. HOW TO USE THIS BOOK

For each species there is a description and a simplified map of distribution. In a few cases two species figure on the same map but with different symbols.

The **text** is conceived in the following manner, based upon our “*Enumération*”, Vol. 1 (J.-P. Lebrun & A. L. Stork 1991).

- Bibliographical references are sometimes given at the beginning of families and genera, as appropriate. They mostly refer to monographs or articles published after the issuing in 1997 of Volume 4 of our “*Enumération*” (an updating of the bibliographies is found at the end of each volume in the chapter “*Additions et corrections...*”).
- Basionym and synonym(s) are only cited if they do not figure in the “*Enumération*”.
- A short description, mainly with regard to life form, is given, e.g. tree, shrub, subshrub, liane, (annual, perennial) herb, and to the height of the plant; for trees sometimes also other characters, such as diameter and/or girth of the bole or presence of buttresses, are mentioned. Presence of rhizomes, tubers or bulbs and of spectacular features, such as showy flowers, exceptionally small or large leaves, flattened or rounded shoots, etc., or particular uses, are often specified.
- Ecological data are recorded, sometimes in rather detailed form if known; range of altitude is generally given.
- If a species comprises two or more intraspecific taxa, this is mentioned, but their names are not always quoted, as most of them appear in our “*Enumération*”. However, there may have been changes since the publication in 1991, and in this case the names figure in the text.
- Extraterritorial geographical distribution is given (i.e. not marked on the accompanying map of distribution which includes only the tropical part of Africa as defined in our “*Enumération*”).

\* \* \*

On the **maps** of distribution (Fig. 1) we indicate the northern and southern limits of our area, as well as the political frontiers of the countries within these borders. Arrows (at the margin of the continent, W Africa) indicate the situation of four particular countries, viz. Western Sahara, Guinea Bissau, Togo, and Benin.

The main phytochoria, based upon Frank White’s classification and indicated on the maps that figure in Volume 1 of this Series (p. 19), have been slightly modified. In the following list Section B has been split into two areas. From North to South, and East to West the phytochoria are (Figs. 1 and 2):

- A. Southern Sahara-Sindian zone [corresponding to the southern part of White’s phytochorion XVII (Sahara regional transition zone)].

- B. Sahelian-Sudano-Zambezi zone :

Ba. Sahel regional transition zone [corresponding to White’s zone XVI];

Bb. Sudano-Zambezi zone [corresponding to the following phytochoria of White: III (Sudanian regional centre of endemism), XI (Guinea-Congolia/Sudania regional transition zone); X (Guinea-Congolia/Zambezi regional transition zone); II (Zambezi regional centre of endemism); XIII (Zanzibar-Inhambane regional mosaic); and the north-eastern tip of XV, i.e. the southernmost part of Mozambique]; the enclosed parts of the “*Afromontane archipelago-like regional centre of endemism*” (VIII) and of the “*Afroalpine archipelago-like region of extreme floristic impoverishment*” (IX) have not been taken into account here (precluded by the small scale of our map).

- C. Guineo-Congolian rain-forest zone [corresponding to phytochorion I of White (Guineo-Congolian regional centre of endemism)].

- D. Ethiopian Afromontane zone [the northern part of White’s phytochorion VIII (see above under Bb)].

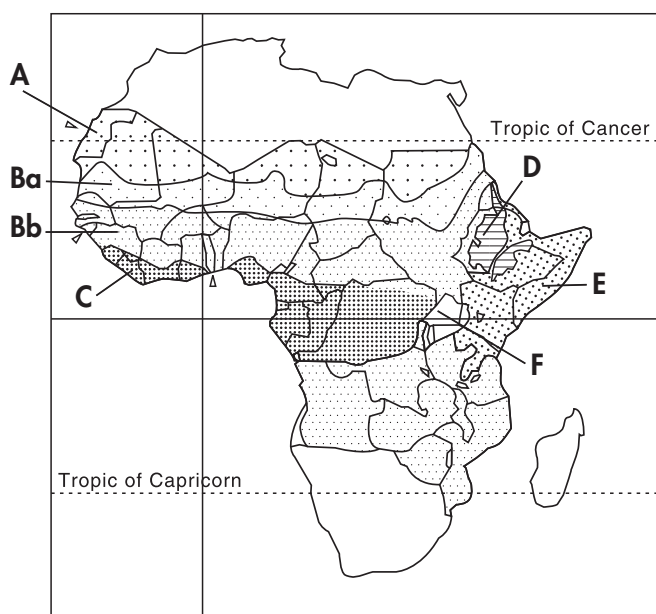


Fig. 1. – Main phytogeographical zones of tropical Africa used in the present work. For zones A through F, see explanations in the text.

- E. Somalia-Masai/Afromontane zone [phytochorion IV of White (Somalia-Masai regional centre of endemism) and the northernmost part of XIII (see above under Bb)]. The “*Afromontane*” (VIII) and “*Afroalpine*” (IX) archipelago-like regional centres are included (see above under Bb).

- F. Lake Victoria mosaic [White's phytochorion XII (Lake Victoria regional mosaic)]. As is the case in our zones Bb and E, the "Afromontane" (VIII) and "Afroalpine" (IX) archipelago-like regional centres are included here (see above under Bb).

Madagascar is not included in our compilation although present on the map (Fig. 1). The maps are based on literature records at our disposal; thus they are indicative, but not exhaustive. In certain cases it has even been impossible to find the exact locality. Although it will always be possible to add dots on the maps, we believe that in most cases such additions will not change fundamentally the general pattern of distribution for a particular species.

The distribution of the species is shown on the maps in the following way:

- For small countries only one dot is used. For larger countries, and in particular if the distribution falls into different phytochoria, two (or more) dots are present.
- Dots are also placed in particular "subdivisions" of large countries, according to those given in the following floras: *Adumbratio Florae Aethiopicae*, *Flora of Ethiopia and Eritrea*, *Flora of Somalia*, *Flora of Tropical East Africa*, *Flora Zambesiaca*, *Flore du Congo Belge et du Ruanda-Urundi* (succeeded by *Flore du Congo Belge, du Rwanda et du Burundu*, and ultimately by *Flore d'Afrique centrale*), and *Conspectus Florae Angolensis*.

Readers will notice that plants seem to be more common (as dots are more numerous) in the eastern part of tropical Africa. This is often an illusion due to the subdivision of large countries mentioned above.

At more or less regular intervals, and at the end of a family, one or two maps are left blank, in order to allow for mapping of newly described species (or species overlooked by the compilers).

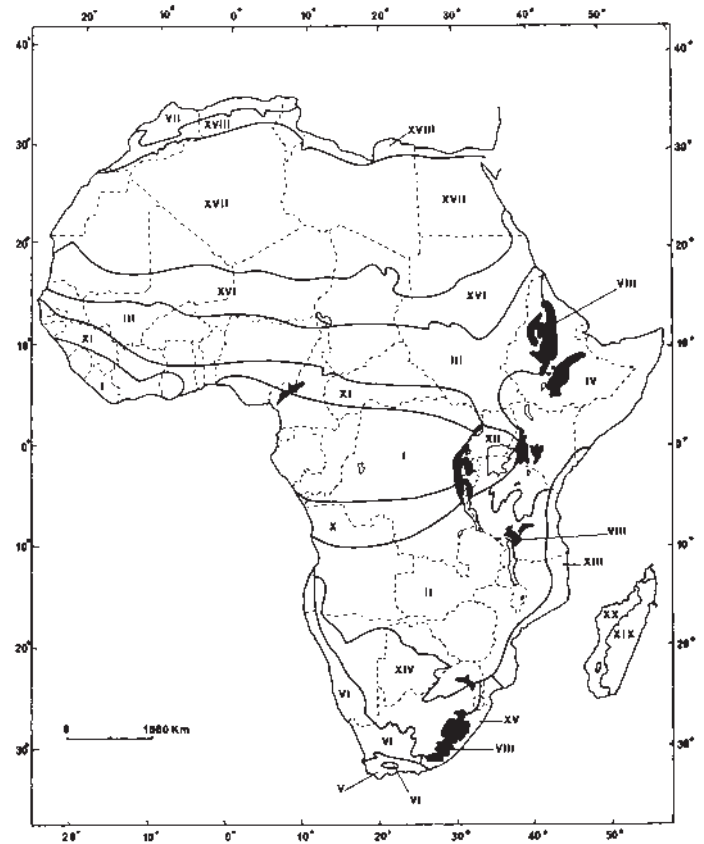


Fig. 2. – Main phytochoria of F. White (1983): p. 38 (cf. quotations in the text). See also "Énumération", vol. 1: pp. 24-25 (1991).

#### BASIC REFERENCE

WHITE, F. (1983). The vegetation of Africa: A descriptive memoir to accompany the Unesco/AETFAT/UNSO vegetation map of Africa. Unesco, Paris.



## VI. THE CHECKLIST: Burseraceae – Apiaceae

**BURSERACEAE / 6 g. / 132 spp.**

A family of some 18 genera and a total of about 700 species in tropical and subtropical Africa and America.

BACHELIER, J. B. & P. K. ENDRESS (2009). Comparative floral morphology and anatomy of Anacardiaceae and Burseraceae (Sapindales), with a special focus on gynoeceum structure and evolution. *Bot. J. Linn. Soc.* 159: 499-571.

CLARKSON, J. J. & al. (2002). Phylogenetic relationships in Burseraceae based on plastid rps 16 intron sequences. *Kew Bull.* 57: 183-193.

HARLEY, M. M. & al. (2005). Pollen morphology and systematics of Burseraceae. *Grana* 44: 282-299.

THULIN, M. & al. (2008). *Ambilobeia*, a new genus from Madagascar, the position of *Aucoumea*, and comments on the tribal classification of the frankincense and myrrh family (Burseraceae). *Nord. J. Bot.* 26: 218-229.

WATERMAN, P. G. (1996). The Burseraceae and their resins: ethnobotany and serendipity. In: HOSTETTSMANN, K. & al., eds., *Chemistry, Biological and Pharmacological Properties of African Medicinal Plants. Proceedings of the First International IOCD-Symposium Victoria Falls, Zimbabwe, February 25-28, 1996*: 187-198. University of Zimbabwe Publications, Harare.

A difficult family with some species, in particular of *Commiphora*, incompletely known. Flowers are unknown (or only immature) in 7 (+1) species (= 5-6%); no male flowers known (or only immature) in 12 (+3) species (= ± 9%); no female flowers (or only in bud or seen in fruit) in 2 (+3+2 ?) species (= ± 1,5%); fruit unknown (or only very young) in 3 (+3) species (= ± 3%); and 4 (+1?) species (= ± 3%); known only from the type.

**(AMYRIS)**

*Amyris agallocha* Roxb. = **Commiphora madagascariensis**  
*commiphora* Roxb. = **C. madagascariensis**  
*gileadensis* L. = **C. gileadensis**  
*kataf* Forssk. = **C. kataf**  
*opobalsamum* L. = **C. gileadensis**

**AUCOUMEA / 1**

Monotypic.

BORN, C. & al. (2007). Impact of past fragmentation of the Central African rainforest: phylogeographic studies of *Aucoumea klaineana* Pierre (Burseraceae). In: ACHOUNDONG, G., ed., *XVIIIth Aetfat Congress 26 February-2 March 2007 Yaoundé, Cameroon. Abstracts*: 71. Yaoundé.

BRUNCK, F. & al. (1990). *L'Okoumé (Aucoumea klaineana Pierre). Monographie*. Centre Technique Forestier Tropical (CIRAD-Forêt), Montpellier. 102 pp.

FUHR, M. (1999). *Structure et dynamique de la forêt côtière du Gabon. Implications pour une succession secondaire dérivant de la forêt monodominante à okoumé (Aucoumea klaineana Pierre)*. Thèse de doctorat, Université Montpellier 2, Biologie de l'Evolution et Ecologie. CIRAD-Forêt, Montpellier. 183 pp.

FURH, M. & al. (1998). Les peuplements d'okoumés éclaircis au Gabon. *Bois Forêts Trop.* 256/2: 5-20.

KIMPOUNI, V. & al. (2008). Diversité floristique du faciès forestier à *Aucoumea klaineana* (okoumé) du littoral congolais. *Acta Bot. Gall.* 155: 323-334.

MEDZEGUE, M. J. & al. (2007). Radial growth and characterization of juvenile and adult wood in plantation grown okoumé (*Aucoumea klaineana* Pierre) from Gabon. *Ann. Forest. Sci.* 64: 815-824.

THULIN, M. & al. (2008). See above under **Burseraceae**.

VALKENBURG, J. L. C. H. van (2002). *Aucoumea klaineana* Pierre. In: OYEN, L. P. A. & R. H. M. J. LEMMENS, eds., *Ressources végétales de l'Afrique tropicale. Précurseur*. [Traduction de: Plant Resources of Tropical Africa. Precursor. 2002]. Programme PROTA, Wageningen: 51-56.

## AUCOUMEA

**Aucoumea klaineana** Pierre – Oukoumé – Enum. 2: 204, 1992; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 300, 1985; Sosef & al., Check-list pl. vascul. Gabon: 95, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 716, 2006. – Icon.: Engler, Pflanzenwelt Afr. 3/1 B: 784, 1915; Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 417, 1931; A. Chevalier, Vég. utiles Afr. trop. franç. 9: 111, 1917; Walker & Sillans, Pl. utiles Gabon: pl. 12 opposite p. 108, 1961.

Tree, dioecious, 35-50 (-60) m; bole cylindrical, to 2 m Ø, sometimes twisted, ± buttressed to 2-3 m height; bark smelling of turpentine; crown pyramidal, with erect, sinuous very ramose branches pubescent when young; foliage spreading, giving light shade; leaves imparipinnate, petiole channelled, rhachis to 40 cm long; leaflets in 3-6 pairs, ovate-oblong, 14-30 × 4-7 cm, apex acuminate, base rounded, glabrous, coriaceous; petiolules 3-4 cm long; panicle 10-20 cm long, axillary or terminal; capsule 3,5-5 cm long, dehiscing from the base by 5 valves. Relatively fast growing.

Closed forest with *Aucoumea*, *Lophira alata*, *Sacoglottis gabonensis*; cultivations; clearings; open ground; road sides; edges of savannas; gregarious; 1-550 m alt.

The most important timber tree in Gabon. The first wood samples were collected there by Savorgnan de Brazza in 1883. The type specimen was collected by Klaine (N° 34) in 1894; described by Pierre in 1896. The first exportations date from 1896-1897. The tree was introduced into Zaire in 1940. Cultivated in plantations near Kribi, Cameroon. Also introduced into Ivory Coast.

Maps published: Fl. Gabon 3: 63, 1962; Bois Forêts trop. 276: 47, 2003; 89: 38, 1963; 151: 58-59, 1973; 155: 49, 51, 1974; 178: 6, 1978; Medzegue, o.c.: 816; Fuhr, o.c.: Fig. 3.

SYNONYM:

*Aucoumea* ? *velutina* Pierre ex Guillaumin, nom. nud. = **Canarium schweinfurthii**

**(BALSAMEA)**

*Balsamea edulis* (Klotzsch) Baill. = **Commiphora edulis**

*fraxinoides* Hiern [= *Commiphora fraxinoides* (Hiern) K. Schum.] = **Zanha golungensis** (*Sapindaceae*)

*harveyi* Engl. = **Commiphora harveyi**

*hildebrandtii* Engl. = **C. hildebrandtii**

*kotschyi* (O. Berg) Engl. = **C. africana** var. **africana**

*longebracteata* (Engl.) Hiern = **C. angolensis**

*mollis* (Oliv.) Engl. = **C. mollis**

*mulelame* Hiern = **C. mulelame**

*multijuga* Hiern = **C. multijuga**

*pilosa* Engl. (specim. Hildebrandt 1184) = **C. africana** var. **africana**

*schimperii* (O. Berg) Engl. = **C. schimperii**

*zanzibarica* Baill. = **C. zanzibarica**

**(BALSAMODENDRON)**

*Balsamodendron africanum* (A. Rich.) Arn. = **Commiphora africana**

var. *africanum* Oliv. = **C. africana** var. **africana**

*ehrenbergianum* O. Berg = **C. gileadensis**

*kotschyi* O. Berg = **C. africana** var. **africana**

## BALSAMODENDRON

- kua* R. Br. ex Royle = **C. kua**  
*molle* Oliv. = **C. mollis**  
*myrrha* T. Nees = **C. myrrha**  
*pedunculatum* Kotschy & Peyr. = **C. pedunculata**  
*playfairii* Hook. f. ex Oliv. = **C. playfairii**  
*pubescens* Stocks – See note under **C. gileadensis**  
*roxburghii* Arn. 1839, non Stocks 1847 =  
**C. madagascarensis**  
*schimperi* O. Berg = **C. schimperi**

## BOSWELLIA / 9

17 species from Africa to India, most numerous in NE tropical Africa. The fruits are dry pseudocapsules releasing 1-seeded nutlets (occasionally winged). – True frankincense (resinous gums) is obtained from 2-3 species in N Somalia – Dhofar – Hadhramaut. – Not in Madagascar (= *Ambilobea* Thulin, Beier & Razafim, 2008).

\* \* \*

ANONYMOUS (2005). *Boswellia sacra* Flueck. (Weihrauch), *Boswellia serrata* Roxb. ex Colebr. (Indischer W.), *Boswellia carteri* Birdw. (Somalia = Olibanum) u.a. – Olibanum. *Gärtner-Bot. Brief* 159: 26-27.

DUPÉRON, J. (1993). L'encens et les *Boswellia*: Historique. Apport de l'anatomie à la systématique de trois *Boswellia* de Somalie et du Yémen. *Rev. Cytol. Biol. Végét., Botanique* 16: 185-209.

KATZ, E. (1997). Regional conference for Africa on the conservation, management and utilization of plant gums, resins and essential oils Nairobi (Kenya), 6-10 October 1997. *Journ. Agric. Trad. Bot. Appl.* (Jatba) 39: 179-181.

LOMBARD, M.-A. (1990). Oman: la légende de la route de l'encens. *Le Figaro* mercredi 24 janvier, 1990.

MIES, B. A. & al. (2000). Frankincense on Soqatra Island (*Boswellia*, Burseraceae; Yemen). *Cactus & Succ. J. (U.S.)* 72: 265-278.

MOORE, P. D. (2006). Unkind cuts for incense. *Nature* 444: 829.

TADESSE, W. & al. (2007). Natural gum and resin bearing species of Ethiopia and their potential applications. *Invest. Agrar.: Sist. & Recursos Forest.* 16: 211-221.

THULIN, M. & al. (2008). See above under **Burseraceae**.

\* \* \*

One species (*B. ogadensis*) is known only from the type having no ripe fruit.

**Boswellia dalzielii** Hutch.; Irvine, Woody pl. Ghana: 508, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 300, 1985. – Icon.: Berhaut, Fl. ill. Sénégal 2: 126, 1974; Keay, Trees Nigeria: 336, 1989; Ouédraogo & al. in Sécheresse 17: 485-491, 2006, and Bois & For. Trop. 289/3: 41-48, 2006; Akoegninou & al., Fl. analyt. Bénin: 441, 2006.

syn.: *B. odorata* Hutch. p.p. (leaves).

Tree 4-15 m; bole with pale papery bark, peeling and ragged, containing a whitish fragrant resin; branches slender, ascending; branchlets stout, knobbly, with the new leaves in a tuft at apex; leaves imparipinnate, 24-45 cm long, with 7-9 pairs of opposite leaflets, obliquely lanceolate, sessile, toothed, 6-12,5 × 1,5-3 cm, apex sharply acuminate; flowers small white fragrant in racemes 15-25 cm long arranged in clusters at tips of branchlets, appearing before the leaves; capsule leathery, 2 cm long; stone winged.

Wooded savanna, sometimes in large (± pure) stands with *Anogeissus leiocarpus*; also scattered; granitic hills, dry ± shallow soils.

## BOSWELLIA DALZIELII

Sometimes planted (ornamental, live-fence).

OUENDRAOGO, A. & A. THIOMBIANO (2010). Diagnostic de l'état des peuplements et évaluation des potentialités de la multiplication sexuée de *Boswellia dalzielii*, un arbre hautement médicinal au Burkina Faso. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 343.

When leafless can be confused with a *Lannea*.

**B. frereana** Birdw. – Icon.: El. Azzouni & Orlando, Surud Mtn forests Somaliland, in Plant Talk 36: 24, 2004; Lavranos in L. Russo, ed., Succul. pl. east. Afr.: 136, 2004; both photographs.

Tree 3-8 m, usually with a distinct trunk which is swollen and often ± disc-shaped, to 0,7-1 m Ø at base; bark pale yellowish brown with some outer flaking papery layers; leaves densely crowded at shoot-apices or alternate on young long-shoots, imparipinnate, 9-15-foliolate, 10-30 cm long, oblanceolate in outline; petiole 1-5 cm long; petiole and rachis glabrous or pubescent with short glandular hairs and somewhat longer eglandular hairs; leaflets opposite or subopposite, subsessile, 15-70 × 10-35 mm, broadly elliptic or the proximal ones often suborbicular, apex obtuse, margin undulate-sinuate, both surfaces glandular and with some eglandular hairs or glabrous; flowers produced with the leaves, in glabrous to densely pubescent racemoid thyrses, 10-30 cm long and clustered at ends of shoots; capsule ± 6-celled, pear-shaped, glabrous.

Rocky slopes and gullies; often on limestone boulders and cliffs, or in holes, even clinging to vertical rock-faces; in sparse vegetation with *Acacia* spp., *Commiphora* spp., *Moringa peregrina*, *Lannea obovata*, *Boswellia neglecta*, *Dobera glabra*, *Cadaba longifolia*, *Adenium obesum*; sometimes with *Boswellia sacra*; from near sea-level to 1000 m (not 1500) alt.

Yemen; Ethiopia ?

Probably close to *B. dioscoridis* Thulin from Socotra, with glabrous leaves.

**B. globosa** Thulin – Icon.: Nord. J. Bot. 24: 374, 375, 2006; Kew Bull. 40: 42 fig. 2 A-B, 1985; Fl. Somal. 3: 578, 2006.

syn.: *B. bricchettii* sensu Vollesen, Kew Bull. 40: 40, 1985, quoad specim. Thulin 4309, non (Chiov.) Chiov. (= *Lannea obovata*, *Anacardiaceae*).

Tree ± 2,5-4 m; bark purplish black, smooth; young shoots greyish to purplish brown, longitudinally ridged, pubescent with spreading straight to ± crisped ± 0,1-0,4 mm long hairs; leaves imparipinnate, 5-21-foliolate, 2,5-6 cm long; petiole 2-12 mm long, rachis densely pubescent with spreading hairs; leaflets subsessile, (sub)opposite, 3-6,5 × 1,5-4 cm, elliptic to obovate, the proximal ones often suborbicular, apex obtuse, base cuneate to rounded and ± asymmetric, entire, densely pubescent with spreading hairs on both surfaces; racemes few-flowered, to ± 4 cm long; capsule 3-4-locular, round, 0,8-1,2 cm Ø, winged, glabrous; stone surrounded by a persistent wing.

Limestone boulders in gully in semidesert bushland with *Acacia* spp., *Commiphora* spp., *Boswellia frereana*, *Moringa peregrina*; with *Commiphora gileadensis*; known in two localities; 150-250 m alt. – Another endemic in these arid foothills is *Acacia somalensis*.

Close to *B. neglecta* (and cited as an extreme form of this in Thulin, Fl. Somal. 2: 187, 1999).

## BOSWELLIA

**B. neglecta** S. Moore; Nigist Asfaw & Sebsebe Demissew, Aromat. pl. Ethiopia: 86, 87, 2009 (sub nom. *B. microphylla* i.a.). – Icon.: J. Bot. 15: pl. 185 opposite p. 72, 1877; Kew Bull. 40: 42 fig. 2 C, D (!), 1985; Beentje, Kenya trees, shrubs & lianas: 380 (sub nom. *B. hildebrandtii*); Thulin, Fl. Somal. 2: 186, 1999; Engler, Pflanzenwelt Afr. 3/1 B: 787, 1915, and Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 422, 1931 (sub nom. *B. elegans*). syn.: *B. microphylla* Chiov.; Enum. 2: 204, 1992.

Shrub or tree to 4–8 m tall, branching near the base from a short bole; bark dark grey, hardly peeling; young branches very straight, horizontal, set at nearly 90° to the parent stem, pubescent or with short rather appressed evanescent indumentum and with longitudinal ridges and fissures; leaves 1–11 cm long, sparsely tomentose, minutely puberulous or glabrescent; petiole 2–16 mm long; leaflets 3–47, opposite or subalternate, entire, elliptic-oblong to elliptic-obovate; flowers in pedunculate cymes, sometimes precocious, 1–4 cm long or in racemes or panicles; fruit 3-celled, ± pear-shaped, glabrous, 0,8–2,5 cm long; stone cross-like, horned, sometimes winged.

*Acacia*, *Commiphora* bushland on basement complex of lava and red sandy soil usually over limestone; stony ridges and slopes; also on gypseous or silty soils; gravelly soil; *Acacia*, *Boswellia*, *Terminalia* woodland and wooded grassland; 130–1750 m alt.

We have followed Thulin's wider sense of the species for Fl. Somalia where the variation is continuous. In other areas one can distinguish forms with many leaflets (= *B. neglecta* s. str.) and with few leaflets (= *B. microphylla*).

**B. ogadensis** Vollesen

Unarmed tree; older branches yellowish brown, slightly longitudinally ridged, glabrous; spurs with densely crowded persistent leaf bases; leaves imparipinnate with 7 leaflets, sparsely puberulous; petiole 10–22 mm long; rachis 25–50 mm; leaflets elliptic to subcircular, entire, subsessile or with petiolules to 2–13 mm long, terminal one 2,5–3,8 × 1,5–4 cm, laterals 1,7–3,8 × 1,5–2,8 cm; apex rounded to retuse; base cuneate (terminal) or rounded to subcordate; flowers precocious in racemoid panicles, 4–14 cm long; ripe fruit unknown.

*Acacia*, *Commiphora* bushland on rocky limestone slopes; 300–400 m alt.

Only known from the imperfect type.

**B. papyrifera** (Del.) Hochst; Nigist Asfaw & Sebsebe Demissew, Aromat. pl. Ethiopia: 89, 2009. – Icon.: Hook. Ic. Pl. 30: pl. 2997, 1913; Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 421, 1931 (photo. wood).

bas.: *Amyris papyrifera* Del.

syn.: Enum. 2: 204, 1992; *Boswellia occidentalis* Engl., non A. Chev. ex Guillaumin, nom. nud. (= *Canarium schweinfurthii*).

Tree 4–12 m; bole clear for 2–3 m, 0,5 m Ø at breast height; crown spreading, open; bark smooth, pale, peeling in wide strips; young branches pubescent; leaves imparipinnate, 20–40 cm long, grey pubescent-tomentose; petiole 3–30 mm long; leaflets 13–25, oblong-lanceolate, subfalcate, sessile, attenuate apically, margins crenate or bicrenate; racemes compound, pubescent, semi-precocious, to 30 cm long; capsule glabrous, pear-shaped, c. 2,2 cm long, widest (c. 9 mm) at apex.

Stony hillsides, often dominant forming pure stands; sandy valleys; dry, rocky or ± shallow soils; on granite; bare rocky slope with *Terminalia brownii*, *Lannea fulva*, *Euphorbia magnicapsula*, *Xerophyta simulans*; among boulders; dry *Acacia*, *Commiphora* woodland and wooded grassland; *Pterocarpus* woodland; lava flows; 400–1830 m alt.

## BOSWELLIA PAPYRIFERA

Also planted; propagation from seeds and cuttings.

KINDEYA GEBREHIWOT & al. (2003). The importance of closed areas on the natural regeneration of *Boswellia papyrifera* (Del.) Hochst. in Ethiopia. In: SEBSEBE DEMISSEW & al., eds., XVIIIth AETFAT Congress 21–26 September 2003, Abstracts: 45. Addis Ababa University Press.

KINDEYA GEBREHIWOT & al. (2006). The importance of closed areas for the natural regeneration of *Boswellia papyrifera* (Del.) Hochst. in Ethiopia. In: GHAZANFAR, S. A. & H. J. BEENTJE, eds., Taxonomy and ecology of African plants, their conservation and sustainable use: 147–156. Royal Botanic Gardens, Kew.

MOORE, P. D. (2006). Unkind cuts for incense. *Nature* 444/7121: 829.

TADESSE, W. & al. (2007). Natural gum and resin bearing species of Ethiopia and their potential applications. *Invest. Agrar.: Sist. & Recursos Forest.* 16/3: 211–221.

WOLDESELASSIE OGBAZGHI & al. (2006). Distribution of the frankincense tree *Boswellia papyrifera* in Eritrea: the role of environment and land use. *J. Biogeogr.* 33: 524–535.

The chief gum resin producing tree in Ethiopia, where little effort has been done to domesticate it. It seems to be in critical condition and needs priority in nature conservation. It has been shown that annually tapped trees have a very low seed germination success. Moreover, the species is sensitive for natural or human interferences: windfall, insect attacks, termites, fire, clearing by local farmers, trampling/browsing by cattle, etc. (Tadesse & al., o.c.).

The type of *B. chariensis* is not from Centr. Afr. Rep. but from Chad.

**B. pirottiae** Chiov.

Tree to 10 m; bark grey to black, rugose to reticulately fissured, not peeling; branchlets crisped pubescent, glaucous; leaves imparipinnate, 15–35 cm long, glabrous apart from petiole and midrib; petiole 1,5–4 cm; leaflets 7–27, narrowly ovate, serrate, glaucous, median and upper ones 3–7 × 0,8–1,8 cm, apex acute to acuminate; flowers clustered in few-flowered cymules along axes of narrow, contracted pubescent panicles 2,5–10 cm long; capsule 1,8–2,7 cm long; stones with apical horns.

*Commiphora*, *Boswellia*, *Combretum* and *Acacia*, *Lannea* woodland, on steep rocky slopes; 1200–1800 m alt. – Rare.

Near *B. papyrifera*.

**B. rivae** Engl. – Icon.: Engler, Pflanzenwelt Afr. 3/1 B: 787, 1915, and Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 422, 1931 (sub nom. *B. boranensis*); Thulin, Fl. Somal. 2: 185, 1999; Kakteen & Sukk. 52: 332 (photo.), 2001.

syn.: Enum. 2: 204, 1992.

Shrub or tree with a short bole, to 7 m tall; bark mottled yellowish grey, peeling in small papery flakes, leaves imparipinnate, to 18 cm long, pilose-pubescent with stiff erect hairs ± 0,4 mm long; petiole 4–16 mm long; leaflets 13–25, opposite or alternate, almost sessile, oblong, base and apex rounded, crenate, to 18 × 10 mm near the middle of the leaf, smaller above, much smaller below; panicle few-flowered, 2–5 cm long; capsule angular, pear-shaped, pubescent, 1,7–2,7 cm long; stones with apical and basal horns and 2 lateral horns.

Open *Acacia*, *Commiphora* bushland on limestone hills, red sandy to stony soil overlying limestone; rocky ridges; 200–920 m alt.

**B. sacra** Flück. – Icon.: Bull. Soc. Hist. Nat. Savoie 325: 19, 21–24, 2001; Kakteen & Sukk. 52: 327, 330–331, 2001; Lavranos in L. Russo, ed., The succulent plants of Eastern Africa: 137, 2004 (photo.); Settesoldi & al., Esploratori italiani nell'Africa Orientale 1870–1930: 13, 53, 2005.

syn.: *B. carteri* Birdw., incl. var. *subintegra* Engl. and var. *undulato-crenata* Engl.; Enum. 2: 204, 1992.



## BOSWELLIA SACRA

Tree 1,5-8 m tall, or shrub branched almost from ground level; bark pale brown with a flaking papery outer layer over a thick reddish-brown resiniferous layer; base of trunk sometimes ± swollen; twigs stout; leaves oblanceolate in outline, imparipinnate, 10-25 cm long, including a <1 cm long petiole, 11-19-lobulate; leaflets lanceolate, oblong, elliptic or broadly ovate, to 5-7,5 × 2-3,5 cm, apex obtuse to subacute, base broadly cuneate or truncate and often asymmetric, margins often somewhat undulate, usually crenate, above ± densely hirsute to subglabrous, below much paler, hirsute to densely tomentose with a prominent network of veins; racemes glabrous or sparsely pubescent, or little-branched panicles 6-26 cm long (0,5-4 cm long peduncle included); capsule 3-4-celled, pear-shaped, c. 1 cm long, glabrous; stones 4-pointed, horned.

Rocky slopes and gullies on limestone; often on cliffs or large boulders; 5-1230 m alt.

Probably in Ethiopia (occurs just east of the border in N Harerge); Yemen (Hadramaut), Oman (Dhofar).

The gum resin constitutes the most valued frankincense and is a major export commodity from Somalia. Different types and qualities of gum exist.

FRITSCH, R. (2001). L'arbre à encens, *Boswellia sacra* Flückiger (= *B. carteri* Birdw.), et la diffusion de l'encens dans l'Antiquité. *Bull. Soc. Hist. Nat. Savoie* 325: 17-29.

MIES, B. A. & J. J. LAVRANOS (2001). Verbreitung des Echten Weihrauchbaumes *Boswellia sacra* in Südarabien. *Kakteen & Sukk.* 52: 327-335.

RAFFAELLI, M. & al. (2006). *Boswellia sacra* Flueck. (Bursaceae) in the Hasik area (Eastern Dhofar, Oman) and a list of the surrounding flora. *Webbia* 61: 245-251.

Sometimes cultivated at home by bonsai-lovers (S. Maciejewski in Brooklyn Bot. Gard. Handbook 184: 40, 2006).

Resembling *B. bullata* Thulin in Socotra.

## NOMEN NUDUM:

*Boswellia sahariensis* A. Chev.

## SYNONYMS:

*Boswellia bhau-dajiana* Birdw., incl. var. *serrulata* Engl.

= ***Boswellia sacra***

*boranensis* Engl. = ***B. rivae***

*bricchettii* (Chiov.) Chiov. = ***Lanea obovata***  
(Anacardiaceae)

*bricchettii* sensu Vollesen 1985 = ***Boswellia globosa***

*campestris* Engl., nom. nud. = ***B. neglecta***

*carteri* Birdw., incl. var. *subintegra* Engl. and *undulato-crenata* Engl. = ***B. sacra***

*chariensis* Guillaumin = ***B. papyrifera***

*elegans* Engl. = ***B. neglecta***

*hildebrandtii* Engl., non Bak. = ***B. neglecta***

*holstii* Engl., nom. nud. = ***B. neglecta***

*microphylla* Chiov. = ***B. neglecta***

*multifoliolata* Engl. = ***B. neglecta***

*occidentalis* Engl. = ***B. papyrifera***

*occidentalis* A. Chev. ex Guillaumin, nom. nud.

= ***Canarium schweinfurthii***

*odorata* Hutch., p.p. (inflor.) = ***Boswellia papyrifera***

*odorata* Hutch. p.p. (leaves) = ***B. dalzielii***

*ruspoliana* Engl., 1912, 1915, nom. nud., 1931 nom.

semi-nud. = ***B. rivae***

*undulato-crenata* (Engl.) Engl. = ***B. sacra***

## CANARIUM / 2

Some 80 species from Africa to Malesia. Flowers 3-merous, dioecious; fruit a drupe borne on the persistent cupule-like calyx.

***Canarium madagascariense*** Engl. subsp. ***madagascariense***. – Icon.: Fl. Madag. 106: 47, 1946; Lovett & al., Field guide moist for trees Tanzania: 46, 2006.

syn.: *C. multiflorum* Engl.; *C. liebertianum* Engl.; *C. pulchrebracteatum* Guillaumin; *C. obtusifolium* Scott-Elliott; ? *C. harami* Boj., nom. nud.

Spreading tree ± 12-35 m; bole straight, cylindrical, 0,3-2 m Ø, often buttressed; branchlets 4-12 mm Ø, glabrous or short fulvous-tomentose, glabrescent; leaves imparipinnate, 50 cm long, with 9-19 opposite leaflets, petiolules ± 11 mm long; flowers very small, in spreading panicles as broad as long.

Rare in forest remnants on sandy soil in shallow river valleys; 5-300 m alt.

Extremely variable.

Madagascar [subsp. ***madagascariense***, ***bullatum*** Leenhouts, ***obtusifolium*** (Scott-Elliott) Leenhouts].

Seems to have been well known in coastal Tanzania, but now approaching extinction before its economic value has been assessed. Collected at least 4 times in the 20 years before 1914 but only twice since then (fide Gillett in Fl. Trop. E. Afr., Burseraceae: 2, 1991).

***C. schweinfurthii*** Engl. – African Elemi, Incense Tree. – Lovett & al., o.c.: 47; Chapman & Chapman, Forests Taraba & Adamawa States, Nigeria: c9, 2001; Jaeger & Adam, Vég. vascul. Mts Loma, Boissiera 32: 284, 1980. – Icon: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 139, 1959; Fl. Zambes. 2/1: 284, 1963; Berhaut, Fl. ill. Sénégal 2: 130, 1974; Voorhoeve, Liber. high for. trees: 77, and pl. 3 opposite p. 80, 1979; Keay, Trees Nigeria: 338, 1989; Akoegninou & al., Fl. analyt. Bénin: 442, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 716, 717, 2006; Latham & Konda, Pl. utiles Bas Congo, ed. 2: 71, 2007; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 124, 2009; Harris & Wortley, Sangha trees: 160, 2008.

syn.: *C. chevalieri* Guillaumin; *C. tholonicum* Guillaumin; *C. velutinum* Guillaumin; *C. occidentale* A. Chev.; *C. khiala* A. Chev., nom.; *Aucoumea* ? *velutina* Pierre ex Guillaumin, nom. nud.; *Boswellia occidentalis* A. Chev. ex Guillaumin, nom. nud., non Engl. (= *Boswellia papyrifera*); *Bersama zenkeri* Gürke ex A. Chev., nom. nud. (*Melanthaceae*); *Chytranthus setosus* sensu A. Chev., Explor. Bot. 1: 152, 1920, p.p. quoad specim. Chevalier 22884, non Radlk. (*Sapindaceae*).

Deciduous tree 8-50 m, swollen at base or with blunt buttresses; trunk straight, massive, cylindrical, 1,3-2 m Ø, 4 m in girth, clear to 2-25 m height, with widely spreading branches; crown to 20 m Ø; leaves at the end of the branchlets, these and the young foliage with dense short rusty hairs; differs from *C. madagascariense* by: more numerous leaflets (17-45) with short petiolules (1-6 mm long), longer calyx (± 10 mm, not 2-3 mm).

Cleared forest, secondary forest; rare except by lakes, in drier areas chiefly near rivers; often an isolated tree on cleared ground; rain-forest with *Heritiera utilis*; sometimes in periodically inundated places; forest gallery; humid forests with *Terminalia*, *Ceiba*, *Musanga*, *Annonaceae*; sometimes amongst other trees; rare in savannas; near 0-1600 m alt.

Perhaps also in SW Ethiopia (not in the North !). Perhaps spontaneous in gallery in S Chad.

## CANARIUM SCHWEINFURTHII

Drupe (with hard 6-angled stone used for necklaces) edible; probably distributed by primates and hornbills – distribution area probably also extended by man. Sometimes planted; propagation from seeds or collected seedlings.

At a distance similar to *Entandrophragma utile* (lacking buttresses and fragrant gum). A young tree can be confused with *Dacryodes klaineana* (lacking clustered leaves).

IMPERFECTLY KNOWN:

*Canarium mansfeldianum* Engl. (type: Mansfeld 27, a sterile specimen from Cameroon, probably destroyed); the native name “edjum” suggests this may be *Dacryodes edulis*.

SYNONYMS (see also above under the species):

*Canarium edule* (G. Don) Hook. f. = **Dacryodes**

*macrophyllum* Oliv. = **D. macrophylla**

*mansfeldianum* Engl. = ? **D. edulis**

*mubafo* Ficalho = **D. edulis**

*saphu* Engl. = **D. edulis**

**COMMIPHORA / 101**

syn.: *Balsamea* Gled., nom. rejic.; *Balsamodendrum* Kunth; *Hemprichia* Ehrenb.; *Heudelotia* A. Rich.; *Hitzeria* Klotzsch; *Spondiopsis* Engl.

Some 190 species in Africa and Madagascar, Arabia, Iran to India, and in S. America (Mexico, Brazil); mainly in arid and sub-arid zones, predominantly in Africa. Closely related to the South American genus *Bursera*.

Flowers 4-merous, (imperfectly) dioecious. Fruit a pseudocapsule/drupe splitting into 2(-4) valves, then revealing stones ± covered by a fleshy red-orange pseudaril (outgrowth of the endocarp).

“In attempting to revise any part of *Commiphora* many difficulties arise” (Gillett, Kew Bull. 28: 25, 1973).

A very difficult genus; many species are leafless for most of the year; flowers and fruits appearing when the plant is leafless or with young leaves; it is difficult to collect complete material; many species have been described from incomplete or mixed collections [*Commiphora voensis* Engl. is in fact the Fabaceae *Platycelyphium voense* (Engl.) Wild; *Commiphora holstii* Engl. = *Combretum aculeatum* (Combretaceae); *Commiphora reghinii* is *Euphorbia jatrophoides* (Euphorbiaceae); *C. tomentosa* is *Lannea rivae* (Anacardiaceae); etc...]; on the whole 14 species!

On the other hand, *Spondiopsis trifoliata* Engl. described as an Anacardiaceae, is in fact *Commiphora eminii*, and *Euphorbia guerichiana* may be mistaken for a *Commiphora*; there are also *Dalbergia commiphoroides* and *Rhus commiphoroides* (= *R. tenuinervis*), *Indigofera commiphoroides* (= *I. lupatana*), *Stegano- taenia commiphoroides*; don't lose heart!

For determination the presence or absence of true spines is a very important character, which should be kept in mind when collecting material. “Like so many African tree genera, it is surprising that they are so poorly collected over much of their range ...” (Coe & al., o.c.: 75).

Sterile plants may be confused with *Lannea* (Anacardiaceae) but bark different (in *Lannea* tough, string-like, sometimes with stellate hairs; in *Commiphora* translucent, peeling, with green under-bark; exudate a gummy resin, often aromatic). The true myrrh is produced by *C. myrrha*.

Many species take root easily, and fresh stakes are used to make hedges.

## COMMIPHORA

In our area, many species are incompletely known. No flowers are recorded for 6 (or 7) species (= 6-7%); male flowers are unknown in 11 (+2) species (= ± 11%), and female flowers are lacking for 2 (+2?) species and known only in bud or in fruit for further 3 species (= ± 5% in all); the fruit is unknown in 1 (+1?) species and known only in immature state in further 2 species (= 1-3-4 % in all); four species are known only from the type (= 4%).

ABDI, A. A. & al. (2003). Morphometric analysis of *Commiphora* section *Hemprichia* (Burseraceae) in the flora of Tropical East Africa. In: SEBSEBE DEMISSEW & al., eds., *XVIIth AETFAT Congress 21-26 September 2003, Abstracts*: 23. Addis Ababa University Press.

CLARKSON, J. J. & al. (2002). Phylogenetic relationships in Burseraceae based on plastid rps 16 intron sequences. *Kew Bull.* 57: 183-193.

COE, M. & al. (1999). The flora of Mkomazi and its regional context. In: COE, M. & al., eds., *Mkomazi: the ecology, biodiversity and conservation of a Tanzanian savanna*: 68-79. The Royal Geographical Society, London [*Commiphora* p. 75-76].

HEDBERG, I. & al., eds. (2009). Flora of Ethiopia and Eritrea 1: 229-230 [name changes for *Burseraceae*, 2. *Commiphora* by M. Thulin in accordance with Fl. Somalia 2: 446-447, 1999].

KATZ, E. (1997). – See under *Boswellia*.

STEYN, M. (2003). *A field guide Southern Africa Commiphora/Suider-Afrika 'n Veldgids*. Self published, Polokwane S.A. III + 92 pp. [Review by D. Mahr, *Cactus Succ. J. (U.S.)* 76: 294, 2004.]

**Commiphora acuminata** Mattick

Unarmed apparently glabrous tree 4-7 m tall; outer bark peeling in several conspicuous, glistening, copper-coloured, translucent, fragile, layered sheets from the green under-bark; leaves coriaceous, olive-green when dry, apparently always 3-foliolate, apparently glabrous but with minute hairs on petioles and petiolules; petiole channelled, 20-55 mm long; all leaflets with an *acumen to 2 cm long*; panicles glandular; male flowers unknown; drupe flattened, asymmetric, 2-valved, c. 1 cm long.

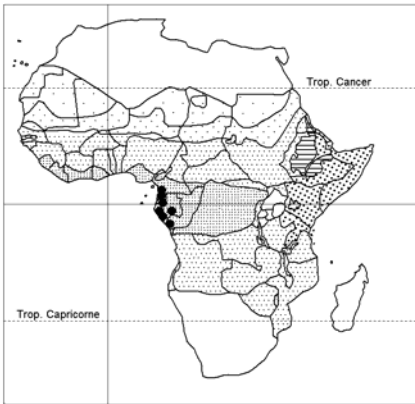
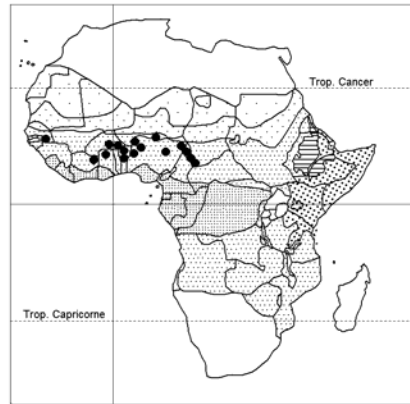
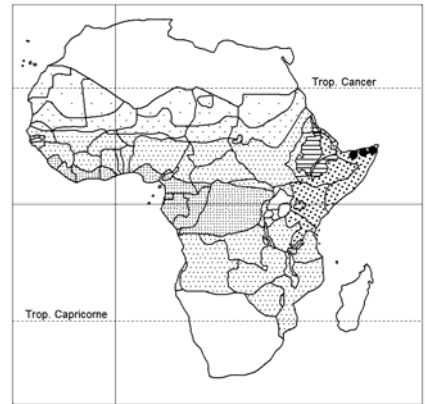
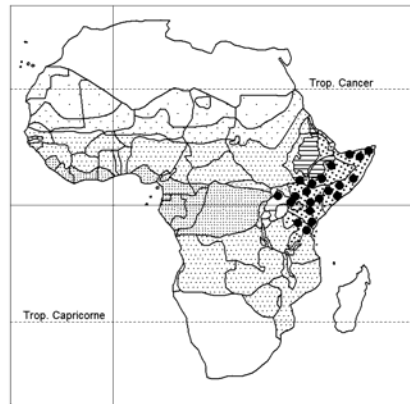
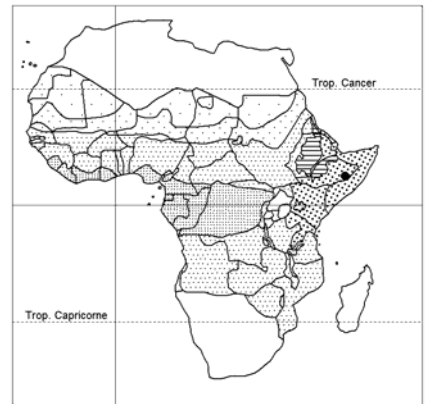
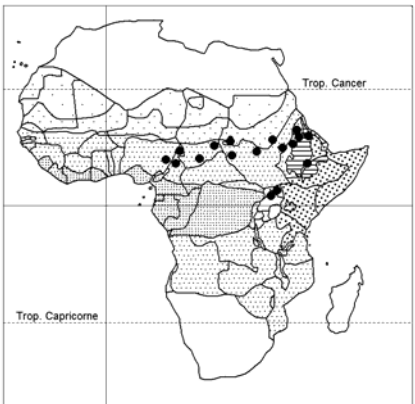
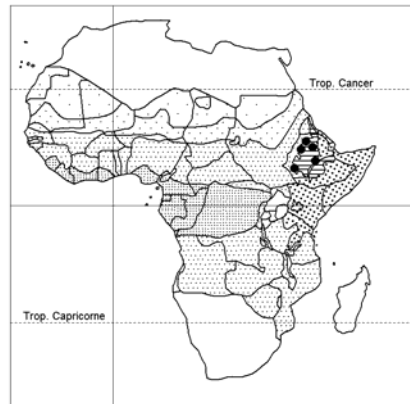
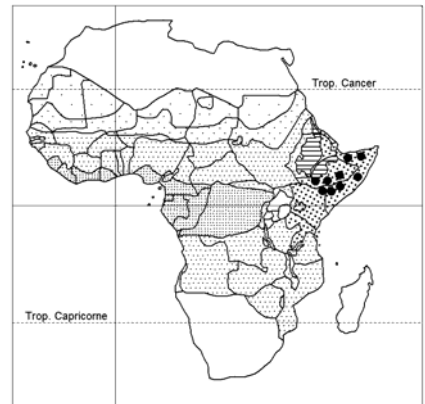
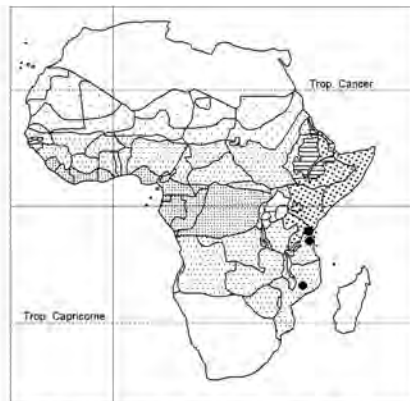
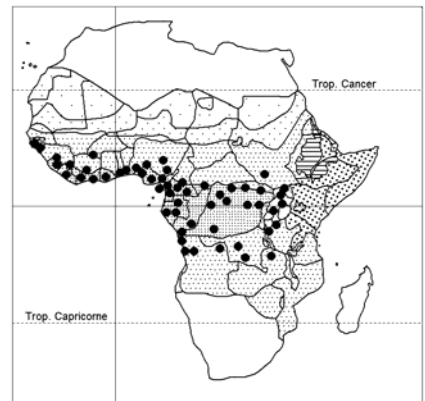
Dense *Accacia*, *Commiphora* bushland on rocky slopes; 750-900 m alt.

Collected very few times in a restricted area; but the plant, very characteristic, has been seen in a leafless state in central Tanzania (fide Fl. Trop. E. Afr., Burser.: 60, 1991).

**C. africana** (A. Rich.) Engl.; Irvine, Woody pl. Ghana: 510, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 304-306, 1985; Keay, Trees Nigeria: 334, 1989; Beentje, Kenya trees, shrubs & lianas: 394-395, 1994; Akoegninou & al., Fl. analyt. Bénin: 442, 2006; Curtis & Mannheimer, Tree atlas Namibia: 264-265, 2005. – Icon.: Gillett in Fl. Trop. E. Afr., Burser.: 45, 1991, has pointed out that Fig. 17a in Dale & Greenway, Kenya trees & shrubs, p. 84, 1961, does not represent *C. africana* but *C. kataf* (*C. holtziana*); the same picture reproduced by, i.a., Troupin, Flore des plantes ligneuses du Rwanda: p. 175 fig. 60/1A, 1982. On the other hand, Fig. 17 b-d in Dale & Greenway, o.c., represent *C. africana* var. *rubriflora*. – *C. africana* is illustrated in, e.g., Andrews, Flow. pl. Anglo-Egyptian Sudan 2: 324, 1952; Schmidt & al., Trees & shrubs Mpumalanga...: 243-244, 2002; Coates Palgrave, Trees south. Afr., ed. 3: 428, illustr. 118, 2002; Steyn, Field guide south. Afr. Commiphora: 21-22, 2003; Guillemain, Perrotet & Richard, Fl. Senegamb. tent. 1: pl. 39, 1832; Bothalia 11: 69, 70, 1973; Schlögl in Cactaceae etc. 2007/2: 66-68, 2007 (Mauretania); Maundu & al., Traditional food pl. Kenya: 98, 1999; Bloesch & al., Les plantes ligneuses du Rwanda: 149, 2009.

bas.: *Heudelotia africana* A. Rich.

syn.: *Balsamodendrum africanum* (A. Rich.) Arn.

*Aucoumea klaineana**Boswellia dalzielii**Boswellia frereana**Boswellia globosa**Boswellia neglecta**Boswellia ogadensis**Boswellia papyrifera**Boswellia pirottae**Boswellia rivae**Boswellia sacra**Canarium madagascariense*  
subsp. *madagascariense**Canarium schweinfurthii*



## COMMIPHORA AFRICANA

Dioecious shrub or tree <1-15 m tall; trunk straight, cylindrical, often beset, from near the base, with short stiff horizontal spiny branches; outer bark peeling in glossy reddish brown or grey scrolls; crown rounded and open; leaves aromatic, all 3-foliolate, ± pubescent; petiole 3-22 mm long; flowers red, crowded in short cymes (flowering when leafless); drupe asymmetric, red, thick, 6-14 mm long, ± stalkless.

*Acacia*, *Commiphora* bushland or woodland; coastal dunes; clayey soil or rocks; sand on sandstone or limestone; wooded savannas; wooded grassland; recent lava flows; among rocks; on Kalahari sand; loamy soils; 2-2100 m alt. – In Ethiopia the *Chrysopogon aucheri-Commiphora africana* community is very diverse (Dalle & al. in *Community Ecology* 6: 167-176, 2005).

Namibia (N of 23° S), S. Africa, Botswana, Swaziland.

This very variable species was subdivided into 5 vars. by Gillett in *Fl. Trop. E. Afr.*, *Burser*: 45, 1991 (cf. our *Enum.* 2: 205, 1992): – var. **africana** [syn.: *Enum.* 1.c.; *C. africana* var. *togoensis* Engl., and var. *ramosissima* (Oliv.) Engl.; *Balsamodendron africanum* (A. Rich.) Arn. var. *ramosissimum* Oliv.; *Balsamea pilosa* Engl.; *B. kotschyi* (O. Berg) Engl.; *Balsamodendrum kotschyi* O. Berg; *Commiphora nkolola* Engl. (not “nkolala”); ? *C. palmatifoliolata* Chiov. (the fruit of the type is of uncertain identity)]; very variable in leaf and fruit characters; widespread from Senegal – Somalia – Zambia – Angola – Namibia – S. Africa; – var. **glaucidula** (Engl.) J. B. Gillett, shrub with crisped hairs, in E Kenya and NE Tanzania; – var. **oblongifoliolata** (Engl.) J. B. Gillett (“oblongifolia” sphalm.), robust shrub or small tree with large leaflets and drupes, bark cracking into oblong segments, leaf veins very prominent, in E Kenya and E Tanzania, often occurring with var. *africana* and then very distinct; – var. **rubriflora** (Engl.) Wild (syn.: *Enum.* 2: 205, 1992), with leaves and stems more densely hairy and hairy flowers (and thus often confused with *C. confusa*), in E part of Africa from Sudan – Uganda – Ethiopia to S. Africa; – var. **tubuk** (Sprague) J. B. Gillett, smaller shrub with tender branchlets; however, in Somalia (Thulin, *Fl. Somal.* 2: 202, 1999) “it does not seem meaningful to make any distinction [from var. *africana*] as variation is continuous”.

Also planted (as a hedge, by truncheons). The plant resists cutting. Browsed by cattle, sheep and goats. The raw resin and young roots edible.

Leaves similar to those of *C. schimperi* (hairless except for a few glands).

**C. alata** Chiov. – Icon.: Chioyenda, *Fl. Somala* 2: 121, 117, 1932. syn.: *C. agar* Chiov.

Shrub or tree to 5 m tall, unarmed; bark dark grey, becoming reticulately fissured; branchlets somewhat longitudinally ridged, pubescent when young; leaves pinnately 5-9-foliolate, ± densely pubescent; petiole 5-12 mm long; *rhachis* ± distinctly winged; only male flowers known: sessile, clustered; fruit unknown.

*Acacia*, *Commiphora* bushland on red sand over limestone or on limestone rocks; 250-400 m alt.

**C. alaticaulis** J. B. Gillett & Vollesen; Beentje, Kenya trees, shrubs & lianas: 400, 1994. – Icon.: Thulin, *Fl. Somalia* 2: 209, 1999.

Shrub, unarmed, to 5 m tall, usually intertwined in other bushes, often subscaudent; stems usually with corky wings; bark smooth, grey, hardly peeling, bluish green when young; leaves 3-foliolate, crisped puberulous to tomentose beneath, more sparsely so above; petiole 1-6,5 cm long; flowers yellowish in sessile clusters, appearing with young leaves; fruit flattened, glabrous, c. 1 cm long.

## COMMIPHORA ALATICAULIS

Open *Acacia*, *Commiphora* woodland and bushland with *Delonix*, *Sterculia*, *Terminalia*; often on rocky limestone slopes; also on red sandy level soil overlying limestone; 70-1300 m alt.

Often heavily browsed (free-standing shrubs).

**C. anacardiifolia** Dinter & Engl. ex Engl.; Coates Palgrave, *Trees south. Afr.*, ed. 3: 428-429, 2002. – Icon.: Curtis & Mannheimer, *Tree atlas Namibia*: 266-267, 2005; Craven & Marais, *Damara-land flora*: 53-54, 2003.

Single-stemmed deciduous erect tree 5-10 m; branches subfleshy; bark yellow-brown, flaking off in large, papery strips; leaves simple to 23 × 10 cm, spirally arranged or clustered, narrowly to broadly elliptic to obovate; both surfaces olive-green, slightly paler below, leathery and rough; flowers very small, yellow, in to 15 cm long panicles; drupe round, 1 cm Ø, apex pointed.

Rocks in inselberg zone in desert.

NW Namibia (800-1500 m alt.).

Leaves resembling those of an *Anacardiaceae* (*Ozoroa*).

**C. angolensis** Engl.; Coates Palgrave, *Trees south. Afr.*, ed. 3: 429, 2002. – Icon.: Bothalia 11: 91, 1973; Curtis & Mannheimer, *Tree atlas Namibia*: 268-269, 2005; Steyn, *Field guide south. Afr. Commiphora*: 31-32, 2003.

syn.: *C. rehmannii* Engl.; *C. oliveri* Engl.; *C. nigrescens* Engl.; *C. longibracteata* Engl.; *Balsamea longibracteata* (Engl.) Hiern

Deciduous (many-stemmed) shrub, or tree 5-8 m tall; trunk to 25 cm d.b.h.; bark on older specimens chestnut-brown, polygonal-reticulate on bole, flaking in scales 2 cm across, greenish on branches and peeling in papery buff strips; young branches densely pubescent; leaves pinnate with the leaflets 2-4-jugate or occasionally 3-foliolate; petiole to 5 cm long; axillary dichasial cymes to 8 cm long or the female inflorescences reduced to 1-2-flowered abbreviated cymes; drupe ± round, c. 1 cm Ø, velvety, pink.

Kalahari sands with *Baikiaea plurijuga*; *Colophospermum mopane* woodland; stony, dry ground in zone with *Adansonia digitata*; often forming thickets; 20-1100 m alt.

Namibia, Caprivi Strip, S. Africa, Botswana (155-1280 m alt.).

**C. angustefoliolata** Mendes; Figueiredo & Smith, *Pl. Angola*: 53, 2008.

Unarmed low subprostrate shrublet, loosely ramose; bark dark ash-grey; branchlets curved like a bow, slender, 3-20 cm long; brachyblasts 0,5-2 mm long on young branchlets, to 10 mm on old ones, transversely wrinkled; leaves congested at brachyblast apex by 5-8, imparipinnate, 3-4-paired, glabrous; petiole to ± 3 mm long; cymes of 1-2-flower(s) at brachyblast apex; fruit c. 7 mm Ø, purplish, 2-valved.

Coastal desert. hilly country.

Only known from the type collected in 1956.

**C. antunesii** Engl.; Figueiredo & Smith, *Pl. Angola*: 53, 2008.

Shrub or tree 2,5-6 m tall; trunk spiny, branches fleshy; bark flaking in papery strips, spiny or not; leaves 3-foliolate, rarely imparipinnate-2-paired, to 15-25 cm long, glabrous; petiole to 7-10 cm long; inflorescence dichasio-cymose, to 8-11 cm long; drupe c. 1,4 cm long, glabrous, 2-valved, pointed at apex.

Stony hillocks; 1700-1750 m alt.



## COMMIPHORA

**C. arenaria** Thulin – Icon.: Thulin, Fl. Somal. 2: 204, 1999; Nord. J. Bot. 20: 396, 2000.

Shrub or tree to 4 m tall, unarmed; bark greyish white or grey, sometimes black and scaly at base of trunk; leaves 3-foliolate; petiole 6-20 mm long, densely pubescent with spreading  $\pm$  0,5 mm long hairs; leaflets densely pubescent with spreading  $\pm$  curved hairs on both surfaces; male flowers sessile, clustered; female ones unknown; fruit ellipsoid, 8-11 mm long, glabrous.

*Acacia*, *Commiphora* bushland on sand with *Loewia glandulosa*, *Grewia* spp., *Tephrosia obbiadensis*, *Coffea rhamnifolia*; 135-430 m alt.

Probably close to *C. truncata*, also close to *C. hildebrandtii*.

**C. baluensis** Engl.; Beentje, Kenya trees, shrubs & lianas: 401, 1994. – Icon.: ibid. p. 383; Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 437, 1931 (*C. gallaensis*).

syn.: *C. mbaluensis* Engl., nom. nud. (orthographic variant); Enum. 2: 205, 1992.

Tree 6-20 m; trunk often to 5 m tall below the lowest branch, 35 cm  $\emptyset$  at breast height; outer bark peeling in large white or yellowish flakes from the blue-green under-bark; young twigs straight, or very slightly zigzag, fluted, glabrous or sparsely pubescent, green at first, later grey,  $\pm$  2 mm  $\emptyset$ ; leaves 3-5-foliolate, almost glabrous or pubescent, with  $\pm$  erect 0,1-0,5 mm long hairs; petiole to 7 cm long, rachis to 3 cm; cymes pedunculate, appearing with the leaves; male ones 5-25-flowered on peduncles 25-50 mm long; female ones 1-5-flowered on peduncles 5-30 mm long; drupe stalked, flattened, 1,3 cm long,  $\pm$  pubescent.

Deciduous woodland; dry forest; often on rocky ground; 600-1600 m alt.

Intermediates between *C. baluensis* and *C. kataf* (*C. holtziana*) occur. Specimens Burger 3313, Friis & al. 2727 from Ethiopia (Fl. Eth. 3: 450, 1989, sub *C. erythraea*) are assigned to *C. baluensis* by Gillett in Fl. Trop. E. Afr., Burseraceae: 80, 1991.

Leaves of *C. baluensis* could be mistaken for those of large-leaved forms of *C. caerulea*.

*C. baluensis* seems to be the tallest *Commiphora* in East Africa.

**C. boranensis** Vollesen; Beentje, Kenya trees, shrubs & lianas: 403, 1994. – Icon.: Thulin, Fl. Somal. 2: 224, 1999.

syn.: *C. gileadensis* sensu Dale & Greenway, Kenya trees & shrubs: 88, 1961, non (L.) C. Chr.

Unarmed shrub or tree to 4-7 m tall; trunk cylindrical, gnarled, not straight; outer bark peeling in strong blackish scrolls from the copper-coloured very tough under-bark; young twigs slender, 0,5-1 mm  $\emptyset$ , almost glabrous or puberulous, yellowish or reddish brown, becoming grey; leaves 3-5-foliolate, glabrous or crisped-puberulous beneath, subglabrous above but the midrib nearly always crisped-puberulous; petiole 5-35 cm long; flowers yellow, usually precocious, the males clustered 6-8 together in glabrous brownish cymes  $\pm$  3 mm long, the females single or in pairs on stalks  $\pm$  1 mm long; drupe ovoid, c. 7 mm long, reddish.

*Acacia*, *Commiphora* woodland and bushland with *Combretum*, *Delonix*, *Kirkia*, *Sterculia*, *Terminalia*, usually on rocky limestone slopes and ridges; red sandy soil overlying limestone; grey granitic sand; black cotton soil; gypsum hills; 190-1500 m alt.

Variable in size of leaflets and fruits.

Very close to *C. enneaphylla* (but with more distinctly winged leaf-rachis).

## COMMIPHORA

**C. caerulea** B. D. Burtt – Icon.: Fl. Zambes. 2/1: 278, 1963 (partial); Coates Palgrave, Trees south. Afr., ed. 3: 429 and ill. 119, 2002; Steyn, Field guide south. Afr. Commiphora: 73-74, 2003.

Deciduous tree 3-15 m, clean-stemmed; crown spreading, regular; trunk to 80 cm  $\emptyset$  at breast height; bark peeling each year in cream-coloured papery flakes; before peeling the trunks are a distinctive pale milky blue, afterwards a rich blue-green; young twigs  $\pm$  1,2 mm  $\emptyset$ , fluted, pubescent, later grey and glabrescent; leaves and inflorescences clustered at the ends of short- and long-shoots; leaves 3-11-foliolate, pubescent all over or the hairs restricted to rachis, margins and veins; petiole to 6 cm long; flowers appearing with, or just before the young leaves, in densely pubescent subumbellate cymes on peduncles to 20 mm long; male inflorescences 3-6-flowered, females 1-3; drupe  $\pm$  round, 1 cm  $\emptyset$ , velvety, glabrescent, pinkish.

Open woodland and bushland; thicketed ravines and rocky slopes; 500-1500 m alt.

Botswana.

**C. campestris** Engl.; Thulin, Fl. Somal. 2: 213, 1999. – Icon.: Beentje, Kenya trees, shrubs & lianas: 382, 1994.

syn.: Enum. 2: 205, 1992 (also of subspp.); *C. paolii* Chiov., Fl. Somalia 2: 62, 63, 1932, pro maj. parte, excl. specim. Paoli 313 (= *C. paolii*), of subspp. **glabrata**.

Spiny shrub or tree, 2-9 m tall with stout, short, fluted irregular trunks, massive branches and stout stiff straight spine-tipped twigs; outer bark peeling in brownish yellow flakes from the greenish yellow under-bark; leaves yellowish green or glaucous, always 3-foliolate on short-shoots, sometimes 5-7-foliolate on long-shoots; petiole  $\pm$  1,5-6 cm long; male flowers in 4-6-flowered pedunculate  $\pm$  pubescent dichasial cymes; females in short 1-3-flowered inflorescences; drupe ellipsoid, 7-12 mm long,  $\pm$  sessile or stalked, single.

*Acacia*, *Commiphora* bushland; coastal bushed grassland (often on silty alluvial soil); rocky lava hills; red or fawn-coloured sandy soil; level sandy clay soils, sometimes seasonally flooded; 10-1200 m alt.

This very variable species was subdivided into 5 subspecies by Gillett in Fl. Trop. E. Afr., Burser.: 33, 1991: – subspp. **campestris** with 2 vars., var. **campestris** with rounded crown, bluish green foliage and hanging (to ground) branchlets; and var. **heterophylla** (Engl.) J. B. Gillett with umbrella-shaped crown, yellowish green foliage and horizontal branchlets; the type of *C. scheffleri* Engl. seems to be intermediate between the vars.; – subspp. **glabrata** (Engl.) J. B. Gillett with dense velvety hairs on young shoots, inflorescences, calyx, in coastal areas, incl. Somalia; – subspp. **magadiensis** J. B. Gillett with very short trunk, glaucous leaves and glabrous in all parts except for male inflorescences, in S Kenya/N Tanzania; often growing and confused with *C. samharensis*; – subspp. **shinyangensis** J. B. Gillett, small shrub or tree with glabrous, glaucous foliage, twigs  $\pm$  glabrous, drupe pubescent, fruit-stalk and calyx densely pubescent, in N – WC Tanzania, in sometimes flooded open bushland, 1050-1150 m alt.; – subspp. **wajirensis** J. B. Gillett, small tree with yellowish green foliage, leaflets narrow, fruit pubescent, in NE Kenya, low alt.

**C. chaetocarpa** J. B. Gillett, excl. specim. Brenan, Gillett, Kanuri 14698 (= *C. kua* fa.).

Spiny shrub or tree, pubescent, hispidulous or hispid throughout; main stems cylindrical; outer bark peeling in grey horizontal strips, under-bark dark green; hairs on young twigs dense, erect, 0,1-0,2 mm long; leaves on short-shoots 1-foliolate, those on

## COMMIPHORA CHAETOCARPA

long-shoots mostly hetero-3-foliolate, rather densely pubescent with erect hairs 0,2-0,3 mm long; petiole 0-5 mm long; corolla of male flower only known immature; ? female flower unknown; *fruit densely covered with erect bristly hairs* 1,5-3 mm long, mistaken for galls !

*Acacia, Commiphora* open bushland on gypseous soil;  $\pm$  350 m alt. Not in Kenya (= *C. kua* fa. on sandy soil) as stated by Fl. Trop. E. Afr., Burser.: 18, 1991, and Beentje, Kenya trees, shrubs...: 386, 1994.

**C. chiovendana** J. B. Gillett ex Thulin; Fl. Eth. & Eritrea 1: 229, 2009. – Icon.: Nord. J. Bot. 20: 406, 2000; Chiovenda, Fl. Somala 2: 102, 1932; Thulin, Fl. Somal. 2: 225, 1999.

syn.: *C. parvifolia* sensu Chiovenda, Fl. Somala 1: 124, 1929; 2: 102, 103, 1932, non (Balf. f.) Engl. from Socotra; *C. sp.* sensu Vollesen, Fl. Ethiopia 3: 477, 1989.

Shrub or tree 2,5-6 m tall, often wider than tall, unarmed; bark grey with the outer layers often peeling in papery pieces; branchlets pubescent with short crisped hairs interspersed with subsessile glands; leaves 5-19-foliolate, usually rather sparsely pubescent with both very short erect gland-tipped hairs and longer curved or hooked hairs; petiole 3-6 mm long, narrowly winged like the rachis; flowers produced before the leaves; male ones in glandular and pubescent to pilose 2-10-flowered cymes; female single or occasionally in 2-3-flowered glandular and pubescent cymes; drupe  $\pm$  ovoid, flattened, pointed at apex, 6-9 mm long, 4-valved, stalked.

Widespread and  $\pm$  common over large areas (N and C Somalia). *Acacia, Commiphora* bushland on shallow red or grey sandy or silty soil over limestone; sand; sometimes on gypseous ground; 20-880 m alt.

**C. ciliata** Vollesen; Beentje, Kenya trees, shrubs & lianas: 402, 1994.

Unarmed tree to 6 m; trunk short, cylindrical,  $\pm$  14 cm  $\varnothing$ ; bark dark grey, often with thin transverse folds, the outer layer sometimes peeling in thin brownish flakes; young twigs fluted, reddish brown at first, sparsely bristly-pilose with hairs 0,5-3 mm long and with numerous dark stalked glands  $\pm$  0,05 mm long, later glabrescent and almost black; leaves 3-foliolate, turning a conspicuous wine-red before being shed, pilose with erect hairs often over 1 mm long on petiole 5-40 mm long; flowers dark red, appearing with the leaves; inflorescences red with numerous short stalked glands and sometimes sparse stiff long hairs and red ciliate triangular bracteoles to 3 mm long; male flowers 1-5 on peduncle usually 2,5-35 mm long; female 1 on peduncle  $\pm$  1 mm long; drupe  $\pm$  obovoid, 1,1-1,3 cm long, glabrous, 4-valved.

*Acacia, Commiphora* woodland and bushland with *Delonix, Moringa*, on rocky limestone slopes and ridges on reddish sandy to loamy soil overlying limestone; 110-1250 m alt.

**C. confusa** Vollesen – Icon.: Beentje, Kenya trees, shrubs & lianas: 382, 1994.

Spiny, or rarely non-spiny shrub or tree 5-7 m tall, the spines not very distinct from non-spiny shoots; trunk cylindrical, bark yellowish or brown, peeling tardily in small irregular papery flakes, greenish beneath; old twigs dark grey or almost black, glabrous; young twigs brown, pubescent; leaves all 3-foliolate, pale yellowish green, becoming yellow when old, hispidulous; petiole 2-20 mm long; *flowers yellow, appearing with the leaves* in dense clusters, males to 12 together in each cluster; females 1-6 together; drupe round-ellipsoid, 8-10 mm long, glabrous or pilose or with tufts of hairs, 2-valved.

## COMMIPHORA CONFUSA

Open to dense *Acacia-Commiphora* bushland on rocky granitic slopes and ridges on red to grey or whitish sandy to gravelly level soils derived from basement complex; rarely on volcanic rocks; 100-1300 m alt.

Extensively confused (in herbaria) with *C. africana*, especially its var. *rubriflora* (whence its epithet *confusa*). One of the very few species which, while usually spinose, seems to be occasionally unarmed.

**C. corrugata** J. B. Gillett & Vollesen; Beentje, Kenya trees, shrubs & lianas: 400, 1994. – Icon.: Thulin, Fl. Somalia 2: 203, 1999.

Unarmed shrub or tree to 5 m tall; branches stout, diverging at wide angles; bark grey, smooth or rough, often transversely folded, becoming reticulately fissured on old trunks; young twigs densely tomentose, yellowish brown, becoming blackish, slightly ridged, 2-5 mm  $\varnothing$ ; leaves 1-7-foliolate, *bullate, undulate, tomentose or lanate*, very densely so beneath; petiole 2-27 mm long; flowers yellow, appearing with young leaves, males to 20 in fascicles, female(s) 1-2; drupe ovoid-flattened, 9-11 mm long, sparsely pilose, 2-valved.

*Acacia, Commiphora*-woodland and -bushland with *Barbeya, Boswellia, Combretum, Sterculia, Terminalia*, on rocky limestone slopes and ridges or on shallow soil overlying limestone; locally common; 175-1800 m alt.

Conspicuous plant probably close to *C. hildebrandtii*.

**C. cyclophylla** Chiov.; Beentje, Kenya trees, shrubs & lianas: 397, 1994. – Icon.: Chiovenda, Fl. Somala 2: 90, 1932 (partial).

syn.: Enum. 2: 206, 1992.

Unarmed tree to 5-7 m; bark smooth, grey; young branches dark grey, somewhat zigzag, not fluted; leaves all 3-foliolate, glabrous or puberulent; petiole 1-3 cm long; flowers unknown (type without flowers); drupe flattened, ellipsoid, glabrous, 12-14 mm long, 2-valved, stalked.

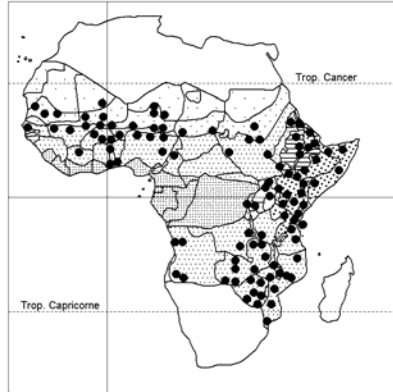
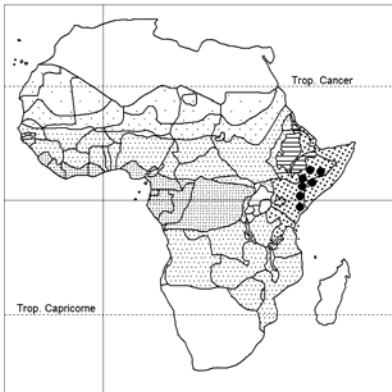
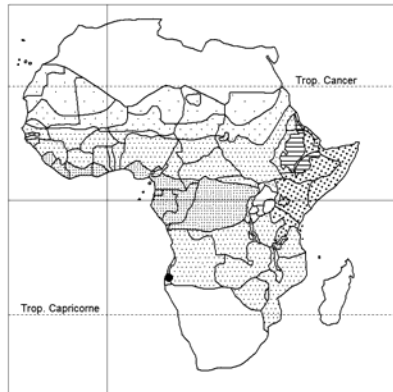
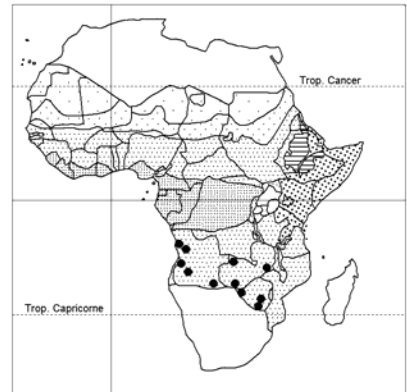
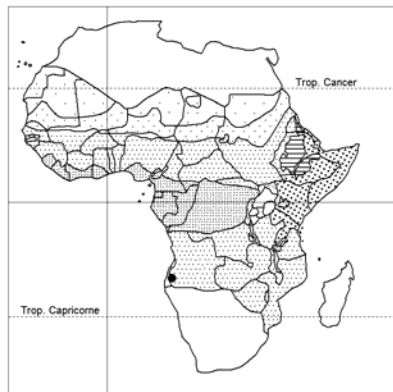
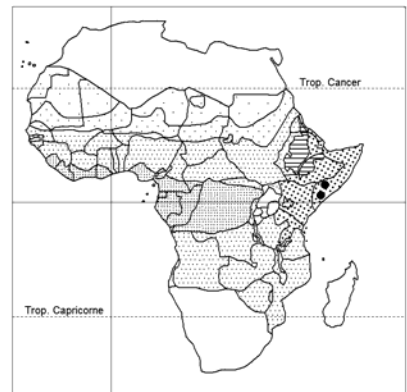
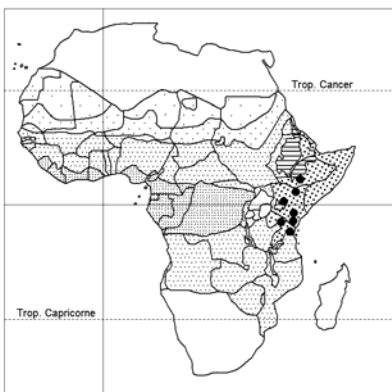
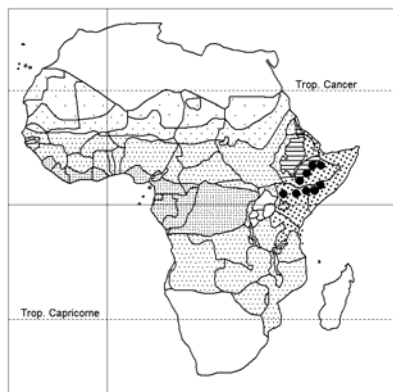
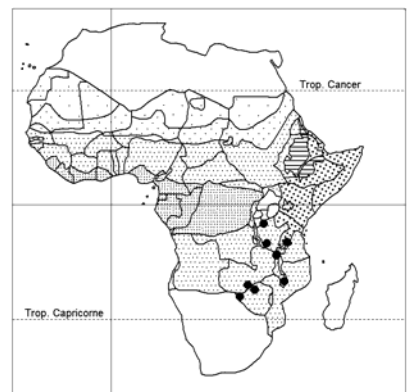
*Acacia, Commiphora* bushland on limestone slopes and ridges or gypseous ground; 160-1350 m alt.

The syntypes of *C. lughensis* Paoli 927, 950 = *C. kataf*.

The illustration of *C. cornii*, Fl. Somala 2: 94, 1932, is incorrect (no inflorescence with a large foliaceous bract in the type Guidotti 5); ? see also Rivista ital. essenze e profumi 13(8): 232, fig. 2, 3, 1931 [n.v.].

**C. dalzielii** Hutch., non *Boswellia dalzielii* Hutch.; Irvine, Woody pl. Ghana: 510, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 306, 1985. – Icon.: Kew Bull. 11: 542, 1957; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 717, 2006.

Deciduous, entirely glabrous, much-branched shrub or tree 3-7,5-10 m tall; branches mostly at right angles to the axes of the stems; young branches smooth with numerous small rounded lenticels, reddish and shiny near the growing tip, becoming green; lateral branches arising from the stem of the previous season's growth, spinescent, 1,5-4 cm long, bearing at first 2 to 4 leaves; spines occasionally again branched; bole greenish, silvery and reddish, peeling off in large papery flakes or scrolls; leaves 3-foliolate, numerous, alternate, petiole slender 1,5-5,5 cm long; inflorescences produced at the ends of terminal or short axillary branches; flowers red, 4-merous, in simple clusters; drupe  $\pm$  round, c. 1 cm long, 4-valved. – Plants *strictly unisexual* without vegetative distinction.

***Commiphora acuminata******Commiphora africana******Commiphora alata******Commiphora alaticaulis******Commiphora anacardiifolia******Commiphora angolensis******Commiphora angustefoliolata******Commiphora antunesii******Commiphora arenaria******Commiphora baluensis******Commiphora boranensis******Commiphora caerulea***



## COMMIPHORA DALZIELII

Amongst clumps of shrubs; coastal plains on margin of thicket with *Uvaria ovata*, *Baphia pubescens*, *Carissa edulis*, *Jasminum dichotomum*, *J. pauciflorum*, *Gardenia ternifolia*, *Sorindeia warneckei*, etc.

Forming dense impenetrable thickets little affected by burning (leaves usually dropped before fires); allows no ground flora beneath it.

Grows well from cuttings and makes a good hedge.

Closely related to *C. pteleifolia* from E Africa.

(**C. dinteri** Engl.); Swanepoel, *Bothalia* 35: 50-52, 2005; Coates Palgrave, *Trees south. Afr.*, ed. 3: 431, 2002. – Icon.: Steyn, *Field guide south. Afr. Commiphora*: 67-68, 2003; Curtis & Mannheimer, *Tree atlas Namibia*: 274, 2005.

Shrub or multi-stemmed tree, unarmed, dioecious, to 3 m tall, sometimes ± prostrate; stem swollen; bark grey(-brown) with dark spots, smooth to wrinkled, not peeling; leaves usually 3-foliolate, shiny, 8-30 mm long, petiole 2-26 mm long; leaflets obovate, crenate-dentate, glabrous, occasionally also with simple leaves on the same plant, petiolate; flowers reddish, solitary in short clusters; drupe ovoid, green to reddish brown, c. 1 cm long, apiculate.

Rocky hillslopes, and on gravel and along water courses in W Namibia N-wards to the Kunene River, and perhaps also present in nearby (SW) Angola.

The NW Namibian populations have simple leaves and resemble *C. namaensis* Schinz. According to Swanepoel (l.c.) these have been misidentified as being *C. namaensis*. Curtis & Mannheimer (l.c.) suggest confusion with *C. oblanceolata* Schinz.

Not mapped.

**C. discolor** Mendes; Coates Palgrave, *Trees south. Afr.*, ed. 3: 431, 2002. – Icon.: Curtis & Mannheimer, *Tree atlas Namibia*: 276, 2005.

Deciduous tree to 9 m tall or climber; bark papery, yellow-white to golden yellow, peeling off horizontally around the trunk in characteristic long stringy strips; branches to 40 cm long, brachyblasts 2,5 cm long, spiny; leaves simple, clustered on older branches, both surfaces shiny dark green (discolourous when dry), margins scalloped to toothed, sometimes 3-foliolate with small lateral leaflets when on long shoots, petiole very short; flowers dark purple, glabrous, inconspicuous in very short cymes; drupe ± round, c. 1 cm Ø, purplish.

Ecology unknown in Angola (rocky hill slopes, rocky outcrops in neighbouring NW Namibia, uncommon to rare; 1000-1300 m alt.).

**C. drakebrockmanii** Sprague

Shrub to ± 1,2 m tall, unarmed; young branchlets longitudinally furrowed, densely pubescent; leaves 1-3-foliolate, densely pubescent with often curved hairs; petiole 4-10 mm long; male flowers unknown; females in short few-flowered, densely pubescent inflorescences; drupe flattened, ellipsoid, c. 1 cm long, purplish, pubescent, shortly stalked.

Low, open, semidesert scrub; maritime hills; 450-1000 m alt.

**C. edulis** (Klotzsch) Engl.; Coates Palgrave, *Trees south. Afr.*, ed. 3: 432: 2002. – Icon.: *Bothalia* 11: 81, 82, 1973; Beentje, *Kenya trees, shrubs & lianas*: 383, 1994 (subsp. **boiviniana**); E. Schmidt & al., *Trees & shrubs Mpumalanga...*: 244-245,

## COMMIPHORA EDULIS

2002 (subsp. **edulis**); Curtis & Mannheimer, *Tree atlas Namibia*: 277, 2005; Steyn, *Field guide south. Afr. Commiphora*: 13-14, 2003.

bas.: *Hitzeria edulis* Klotzsch (*Anacardiaceae*) (female plant = *Blighia unijugata* Bak., *Sapindaceae*).

syn.: *Balsamea edulis* (Klotzsch) Baill.; *Enum.* 2: 206, 1992 (also for subsp.).

Dioecious shrub, usually branching from the base though sometimes described as a small tree, 2-10 m tall; bark pale grey, smooth, flaking in small yellowish pieces; young stems densely pubescent, fluted, 3-4 mm Ø; leaves densely pubescent beneath, to 22 cm long including a petiole to 6 cm, 3-11-foliolate; flowers appearing just before or with the young leaves; inflorescences densely pubescent; male ones a narrow spiciforme interrupted panicle consisting of clusters of cymes on an axis to 15 cm long including a peduncle to 35 mm long; female ones < 25 mm long; drupe pubescent, elliptic-ovoid, c. 2 cm long (large for a *Commiphora*!), 2-valved, stalked.

*Acacia*, *Commiphora* bushland; deciduous woodland; *Combretum*, *Terminalia* wooded grassland; dry riverine forest; rocky slopes; sandy soil derived from basement rocks (not in limestone areas); thickets; common in valleys of the Zambezi, Shire, Sabi, Limpopo; 2-1500 m alt.

Namibia, Botswana, S. Africa (subsp. **edulis**).

Comprises 3 subsp.: – subsp. **edulis**, with entire leaflets, 5-9 in number, widespread from Tanzania S-wards; – subsp. **boiviniana** (Engl.) J. B. Gillett, with 5-9-11 leaflets, crenate-serrate towards apex, terminal one the widest, in N part of range S-wards to N Tanzania; – subsp. **holosericea** (Engl.) J. B. Gillett, with 3-7 leaflets, ± serrate, the terminal one the largest and broadest, in E Kenya-NE Tanzania; extreme forms growing in drier country are very different from normal ones. – Intermediates subsp. **boiviniana**/subsp. **holosericea** are frequent in Kenya.

Easily grown from seed and cuttings.

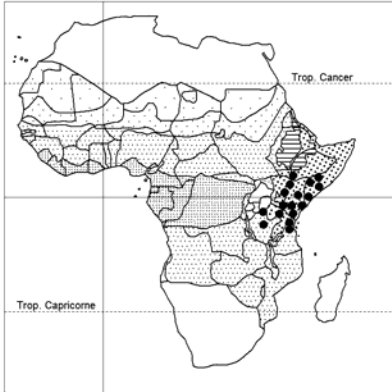
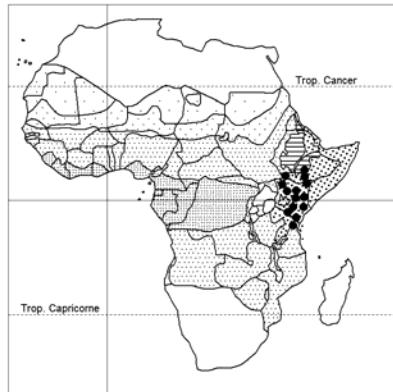
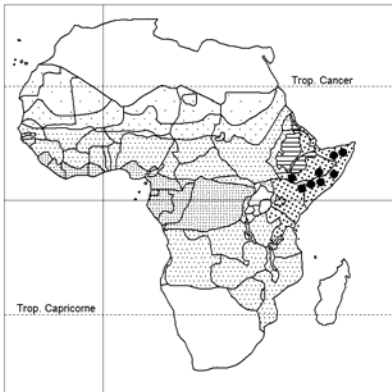
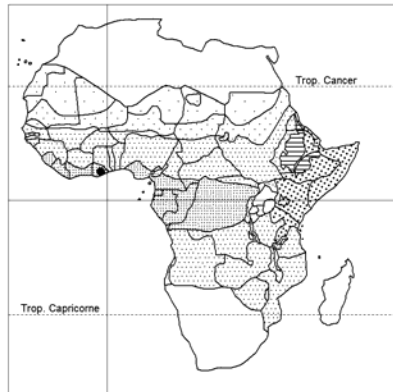
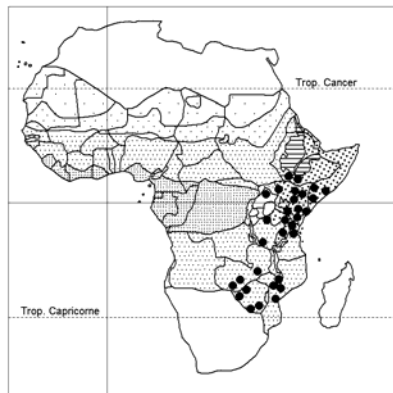
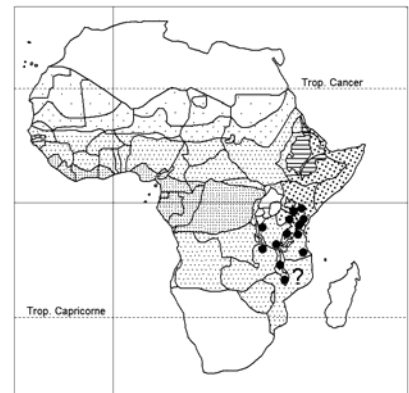
**C. eminii** Engl.; White & al., *Evergreen for. fl. Malawi*: 176, 2001 (subsp. **zimmermannii**); Lovett & al., *Field guide moist for. trees Tanzania*: 47, 2006 (subsp. **trifoliolata** and **zimmermannii**). – Icon.: Engler, *Pflanzenwelt Afr.* 3/2: 187, 1921 [subsp. **trifoliolata**, sub nom. *Spondiopsis trifoliata* (sic!), *Anacardiaceae*]; Beentje, *Kenya trees, shrubs & lianas*: 383, 1994 (subsp. **zimmermannii**).

syn.: *Enum.* 2: 206, (1992), incl. subsp.

Unarmed tree 5-18(-22) m; bark smooth, grey, often fluted; young stems with a waxy bloom, strigose-pilose or glabrous, very brittle; leaves 3-13-foliolate, sparsely strigose-pilose or glabrous; petiole slender, to 7 cm long; flowers appearing with the leaves in axillary sparsely pubescent or glabrescent paniculate cymes to 11 cm long, including peduncles to 9 cm; drupe ± round or flattened spheroid, 1,2-1,4 cm long, glabrous, 2-valved.

Rocky hill in deciduous woodland or thickets; dry evergreen and semi-evergreen forest and forest margins; limestone rocks; lake-shore thicket; riparian forest; rocky hills with *Brachystegia* spp.; 100-1800 m alt.

Comprises 3 subsp.: – subsp. **eminii** with mostly 9-11 leaflets, less than 3 cm wide and fruiting pedicels 5-10 mm long, fruit longer than wide, in Tanzania-NE Zambia, at higher alt.; – subsp. **trifoliolata** (Engl.) J. B. Gillett, with usually 3 large serrate leaflets, in SE Kenya-NE Tanzania; – subsp. **zimmermannii** (Engl.) J. B. Gillett, with 3-7 leaflets over 3 cm wide and fruiting pedicels 2-5 mm, fruit as wide as long, widespread from SE Kenya S to Zambia-Malawi-Mozambique.

***Commiphora campestris******Commiphora chaetocarpa******Commiphora chiovendana******Commiphora ciliata******Commiphora confusa******Commiphora corrugata******Commiphora cyclophylla******Commiphora dalzielii******Commiphora discolor******Commiphora drakebrockmanii******Commiphora edulis******Commiphora eminii***



## COMMIPHORA EMINII

The extreme forms of subsp. **emini** and subsp. **zimmermannii** are quite distinct, but intermediates occur where they meet, but their ecology seems different: subsp. **emini** on rocky hills, subsp. **zimmermannii** in riverine forest.

*C. karibensis* is very close to subsp. **zimmermannii**.

Frequently planted to form live fences and as a support for yams. Also grown as a shade for coffee (Kenya), and round sacred shrines.

**C. engleri** Guillaumin – Icon.: Burt, Bull. Misc. Inf. Kew 1935/1: pl. 4 facing p. 113, 1935 (photo., sub nom. *C. laxiflora* Engl.).

syn.: Enum. 2: 206, 1992.

Loosely branched spreading unarmed shrub or tree 3-12 m tall; bark green, the outer layers peeling off in small yellowish flakes; leaves 11-19-foliolate, to 24 cm long, including a petiole  $\pm$  3 cm long, pubescent or glabrescent; male inflorescence paniculate, to 19 cm long, sparsely pubescent with 0,2-0,3 mm long non-glandular hairs and, especially on the pedicels, shorter (to 0,1 mm long) glandular hairs; female inflorescence to 6 cm long; fruit single, stalked, minutely puberulous or glabrescent,  $\pm$  2 cm long, beaked, 2-valved.

Dry woodland, especially on rocky hills and scarps; 870-1650 m alt.

Often used to form live fences.

**C. enneaphylla** Chiov. – Icon.: Chiovenda, Fl. Somalia 2: 79, 1932.

Shrub or tree, unarmed; branchlets dark purplish brown, longitudinally ridged also when fairly thick, glabrous or shortly pubescent; bark grey, flaking with papery peel; leaves 5-11-foliolate, glabrous or shortly pubescent; petiole 4-8 mm long, narrowly winged as is the rachis; flowers solitary or in few-flowered clusters; fruit ovoid, pointed at tip, c. 5 mm long.

*Acacia, Commiphora* bushland on limestone or gypsum; 185-500 m alt.

Poorly known (type has leaves and fruits on different branches and it is not certain that they are conspecific).

Fruit very similar to that of *C. kucharii* (with entire leaves!).

**C. erlangeriana** Engl.

Shrub or tree to 4-6 m tall, little branched, unarmed; bark yellowish to greyish brown, reticulately ribbed, not peeling; young branchlets longitudinally furrowed, 4-8 mm  $\emptyset$ , glabrous to puberulous or densely pubescent; leaves pinnately 3-11-foliolate, glabrous to puberulous or pubescent, to 22 cm long; petiole 2-8,5 cm long, often persistent; male flowers in 20-60 cm long extraordinary, drooping glabrous racemes which may be branched; females in 3-13 cm long, erect or spreading inflorescences; fruit  $\pm$  ellipsoid, 1,4-1,8 cm long, glabrous, very fleshy, 2-valved.

Open *Acacia, Commiphora* bushland, usually on gypseous ground; also on rocky limestone slopes; 150-960 m alt.

Perhaps in Kenya (nearest record: 24 km SW of Dolo, 4°04'N  $\times$  41°53'E).

The resin is reported poisonous for animals and humans.

DEKEBO, A. & al. (2002). Four lignans from *Commiphora erlangeriana*. *J. Nat. Prod.* 65: 1252-1257.

Closely related to *C. zanzibarica*.

*C. retifolia* Chiov. from E Ethiopia, considered a synonym, is a poor sterile specimen of uncertain identity.

## COMMIPHORA

**C. erosa** Vollesen, *excl.* specim. Gilbert & Thulin 1588, Beckett 491, Gillett & al. 23344 (in fruit = *C. sphaerocarpa*); Beentje, Kenya trees, shrubs & lianas: 396, 1994. – Icon.: Thulin, Fl. Somalia 2: 212, 1999.

Unarmed glabrous shrub or slender tree 2-6 m tall; leafy shoots  $\pm$  2 mm  $\emptyset$ , slightly ridged longitudinally; bark smooth, grey; leaves always 3-foliolate, thin and delicate, blistered when mature, rather translucent, drying yellowish green, usually borne singly on long-shoots; petiole 5-23 to 10-46 mm long; male inflorescences pedunculate, 7-9-flowered cymes; female flowers in shorter 1-2-flowered cymes; flowers dark red, appearing with the leaves; fruit asymmetrically oblong, c. 1 cm long, with a pointed persistent style base, 2-valved.

Open *Acacia, Commiphora* woodland; usually on silty alluvium near perennial rivers; also on gypsum hills; 30-400 m alt.

The fruit stone is black and *smooth*; the epithet “*erosa*” was based on specimens with a pitted stone surface belonging, in fact, to *C. sphaerocarpa*.

**C. foliacea** Sprague – Icon.: Hook. Ic. Pl. 32: tab. 3105, 1927.

Dioecious shrub to 1,5 m tall or slender tree to 5 m, unarmed; bark white to yellowish-brown, peeling in papery flakes; branchlets glabrous, brown, brittle, slender, longitudinally ridged; leaves 3-foliolate, glaucous, glabrous; petiole 2-20 mm long; flowers in 1-3-flowered glabrous cymes; fruit red-purple,  $\pm$  ovoid, apiculate, 8-12 mm long, glabrous, 2-valved.

*Acacia, Commiphora* bushland; semi-desert open scrub; also on gypsum; 10-1340 m alt.

SE Yemen (coastal, common and locally dominant; Thulin in Friis & Ryding, Biodiversity Research in the Horn of Africa Region, Biol. Skr. 54: 143, 2001), S Oman, Dhofar (Ghazanfar, Fl. Sult. Oman 2: 112-113, 2007).

**C. fulvotomentosa** Engl.; Lovett & al., Field guide moist for. trees Tanzania: 48, 2006.

Tree 4-12 m, unarmed on the branches but perhaps rarely with spines 4-7 cm long on the main stem; trunk to 25 cm  $\emptyset$ ; bark coppery grey, smooth, sometimes papery, sometimes horizontally folded; young branches rather stout ( $\pm$  4 mm  $\emptyset$ ), brownish pubescent, later glabrescent; leaves clustered at the end of branches, to 22 cm long, including a petiole of 4-5 cm long, 5-15-foliolate, tomentose, indumentum sparse and short above, dense and long beneath; flowers appearing with the leaves along with brownish tomentose ovate-oblong or spatulate prophylls to 13  $\times$  4 mm; male inflorescence of 1-3 dense subglobose tomentose clusters 11-15 mm  $\emptyset$  on peduncles to 5 cm long; female very similar; drupe flattened, ellipsoid, puberulous or glabrescent, 2-valved.

Woodland; dry forest; especially on rocky outcrops; 200-1200 m alt.

Used to make live fences.

**C. gardoensis** J. B. Gillett ex Thulin – Icon.: Nord. J. Bot. 20: 400, 2000; Thulin, Fl. Somalia 2: 207, 1999.

Shrub or tree to 5 m tall, unarmed; bark yellowish or grey-brown, peeling, with greenish under-bark; branchlets finely longitudinally ridged, brownish becoming greyish, glabrous or with minute scattered yellowish sessile glands; leaves 3-foliolate; petiole 4-12 mm long, slender, with minute scattered yellowish sessile glands; leaflets crinkly, glabrous above,

## COMMIPHORA GARDOENSIS

minutely glandular and sometimes with scattered hairs on main nerves beneath; male flowers unknown; females sessile, 1 or 2 together; fruit ovoid, ± flattened, glabrous, 5-7 mm long, 2-valved.

Locally frequent on rocky limestone slopes in open *Acacia*, *Commiphora* bushland; 620-880 m alt.

**C. gileadensis** (L.) C. Chr., incl. var. “pubescens (Stocks) J. B. Gillett, comb. nov. ined. in Kuchar, Plants of Somalia: 154” (see note below) – Icon.: Chiovenda, Fl. Somalia 2/1: 100, 101, 111, 123 (but leaflets not dentate!), 128, 1932; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 461, 2001; Thulin, Fl. Somalia 2: 222, 1999; Boulos, Fl. Egypt 2: 70, 2000; Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 432, 1931 (sub nom. *C. opobalsamum*), and Andrews, Flow. pl. Anglo-Eg. Sudan 2: 325, 1952.

bas.: *Amyris gileadensis* L.

syn.: *A. opobalsamum* L.; *Commiphora opobalsamum* (L.) Engl., incl. var. *gileadensis* (L.) Engl., var. *ehrenbergiana* (O. Berg) Engl., and var. *induta* Sprague ex Hutch. & Bruce, nom. nud.; *Balsamodendron ehrenbergianum* O. Berg; *Commiphora albiflora* Engl.; *C. velutina* Chiov.; *C. anfractuosa* Chiov.; *C. cassan* Chiov.; *C. coronillifolia* Chiov.; *C. microcarpa* Chiov.; *C. ancistrophora* Chiov.; *C. suckertiana* Chiov.; *C. gillettii* Chiov. – There are many intermediates between these “different species”.

Note: In Kuchar, l.c., Gillett based his var. ‘pubescens’ on *Balsamodendron pubescens* Stocks, giving as synonyms *Commiphora stocksiana* (Engl.) Engl. and *C. opobalsamum* (L.) Engl. var. *induta* Sprague. The combination *Balsamea stocksiana* (Engl.) Engl. was published in Bot. Jahrb. Syst. 1: 41, 1881. This name is based on specim. Stocks 439 from Baluchistan (cf. Rechinger, Fl. Iran. 107, Burseraceae: 1-2, 1974), endemic in the latter area. – *Balsamodendron pubescens* Stocks is not *Balsamea pubescens* (Wight & Arn.) Engl. (Bot. Jahrb. Syst. 1: 42, 1881) based on *Protium pubescens* Wight & Arn. (Prodr. Fl. Ind. orient. 1: 176, 1837) that Gillett probably meant for his combination. This plant is not *Protium pubescens* (Benth.) Engl. (in Martius, Fl. Brasil. 12/2: 265, 1874) based on *Icica pubescens* Benth.

Shrub or tree 1.5-5 m tall, unarmed, sometimes with long slender drooping branches; bark yellowish to dull orange or grey or black, smooth, sometimes peeling in small papery flakes; branchlets longitudinally ridged, glabrous to pubescent; leaves 3-9-11-foliolate, glabrous to pubescent, sometimes with hooked hairs; rachis sometimes narrowly winged; flowers white-cream, in 1-several-flowered glabrous to pubescent cymes or clusters; fruits single or paired, glabrous or ± puberulous, purplish, ± ovoid, 5-10 mm long, 4-valved.

*Acacia*, *Commiphora* woodland or bushland; semidesert scrub; limestone hills; sand dunes; red to grey sandy soil overlying limestone and basement complex or rocky limestone ridges; old lava flows; dry hilly savanna; 0-1300 m alt.

SE Egypt (possibly originally introduced); Saudi Arabia, Yemen, S Oman.

According to Thulin (Fl. Somal., l.c.) the original material of *C. microcarpa* (in synonymy) is very poor, fruiting twigs without leaves.

**C. glandulosa** Schinz; Coates Palgrave, Trees south. Afr., ed. 3: 432, 2002. – Icon.: Bothalia 11: 58, 59, 1973; Fl. south. Afr. 18: 12, 13, 14, 1986; Fl. Trop. E. Afr., Burseraceae: 10, 1991; E. Schmidt & al., Trees & shrubs Mpumalanga...: 244-245, 2002; Steyn, Field guide south Afr. Commiphora: 23-24, 2003; Curtis & Mannheimer, Tree atlas Namibia: 280-281, 2005.

## COMMIPHORA GLANDULOSA

syn.: *C. lugardae* N. E. Br.; *C. seineri* Engl.; *C. berberidifolia* Engl.; Enum. 2: 206, 1992.

Shrub or tree 2-10 m tall; crown rounded, densely twiggy; outer bark peeling in grey papery strips from the dark green underbark; both long- and short-shoots spine-tipped, grey with well-marked circular lenticels; leaves a vivid green, becoming olive-yellowish when old, those on short-shoots simple, those on long-shoots sometimes 3-foliolate; petiole 1-15 mm long; petiole and basal part of the lower surface of the lamina, covered with minute glandular hairs, sometimes with some rather longer non-glandular hairs; male flowers dull red, 3-7 together in shortly glandular-pubescent cymes, appearing before the leaves; polygamous or dioecious; fruit ± round, pointed, c. 1 cm long, glabrous, 2-valved.

Open woodland on rocky slopes; coastal evergreen bushland; dry deciduous woodland; occasionally on termite mounds in *Brachystegia* woodland; large termite mounds with *Byrsocarpus orientalis*, *Ziziphus abyssinica*, *Acalypha chirindica*, *Fagara chalybea*, etc... in open forest, rocky, small hillock; 5-1420 m alt.

Botswana, Namibia, S. Africa, Swaziland.

Closely related to *C. pyracanthoides*, very common in S. Africa.

(**C. glaucescens** Engl.); Coates Palgrave, Trees south. Afr., ed. 3: 433, 2002. – Icon.: Craven & Marais, Damaraland flora: 21, 1992; Mahr in Aloe 35/3-4: 74, 1998; Curtis & Mannheimer, Tree atlas Namibia: 282, 283, 2005.

syn.: *C. hereroensis* Schinz; *C. pruinosa* Engl.

Deciduous tree with a single trunk, 2-8 m tall, or shrub-like, thickset and branching near ground level; bark smooth, golden-brown to red-brown or copper-coloured, peeling off in papery strips or in round flakes; spur-branchlets hard and rigid but not spine-tipped; leaves simple, blue-green, crowded on dwarf spur-branchlets; petiole very short or absent; flowers in small sparse axillary clusters to 8 cm long, often with large, leaf-like bracts; fruit ellipsoid, 12 mm long, velvety.

Indicated in Consp. Fl. Angol. But without specimen. Also quoted from S Angola by the above-mentioned authors. But not figuring in Figueiredo & Smith, Pl. Angola (2008).

Occurs in Namibia N-wards to the SW Angolan border: Rocky hillsides, 550-1350 m alt.

Confused with *C. anacardiifolia*.

**C. gorinii** Chiov. – Icon.: Chiovenda, Fl. Somalia 2: 109, 1932.

syn.: *C. erythraea* (Ehrenb.) Engl. var. *glabrescens* Engl. (vide Econ. Bot. 45: 487, 1991).

Shrub or tree, unarmed; branches with smooth greyish bark; young long-shoots finely longitudinally ridged, puberulous with minute crisped hairs; leaves 3-foliolate, puberulous with short crisped hairs when young, glabrescent; petiole 10-20 mm long, densely puberulous; male inflorescence pubescent with spreading hairs, ± 2-6-flowered; fruit ± ovoid, glabrous, c. 1 cm long, on stalk 1-2 cm long, crisped puberulous, 2-valved.

Probably *Acacia*, *Commiphora* bushland.

Close to *C. kataf* (? only a form of this); little-known species.

## COMMIPHORA

**C. guidottii** Chiov.; Beentje, Kenya trees, shrubs & lianas: 399, 1994. – Icon.: Chioyenda, Fl. Somala 2: 92, 93, 1932; Thulin, Fl. Somalia 2: 192, 1999.

Shrub or tree to  $\pm 5$  m tall; trunk and main branches thick; bark smooth, pale silvery greyish brown, usually peeling off in yellowish or whitish papery flakes; branchlets thick, subterete or somewhat furrowed, tending to bend down, glabrous to puberulous; leaves pinnately 1-7-foliolate, glabrous to pubescent; petiole 0,5-10 cm long; flowers in puberulous to pubescent 1,5-16 cm long narrow panicles; fruit round, puberulous, c. 1 cm long.

Open *Acacia*, *Commiphora* bushland, often with *Boswellia rivae*, *Cyphostemma betiforme*; sometimes a thicket-forming dominant, always associated with gypsaceous soils, on stony slopes and ridges or level red to grey shallow soils; 150-800 m alt.

Expected in N Kenya in gypseous areas of Mandera distr., where it grows on the Ethiopian side of the border.

Near *C. ornifolia* (Balf. f.) J. B. Gillett from Socotra. They are perhaps conspecific.

**C. gurreh** Engl. – Icon.: Thulin, Fl. Somalia 2: 215, 1999; Fl. Ethiop. 3: 470, 1989 (sub nom. *C. tenuis*); idem 1: 229, 2009; Kew Bull. 40: 49, 1985; Fl. Trop. E. Afr., Burseraceae: 34, 1991; Chioyenda, Fl. Somala 2: 85, 86, 1932.

syn.: *C. tenuis* Vollesen; *C. trothae* sensu Chioyenda, o.c.: 81 p. maj. parte, non Engl.

Shrub or tree 1,5-6 m tall, spiny, glabrous; bark greyish, smooth, not peeling or sometimes flaking in small pieces; leaves 3-foliolate, glossy; petiole 3-17 mm long, very slender; flowers solitary, precocious; fruit obovoid, 6-9 mm long, 2-valved.

*Acacia*, *Commiphora* bushland or woodland; rocky limestone slopes and ridges, reddish sandy to loamy level soils overlying limestone; black cotton soil; rarely on granitic rocks; 145-1800 m alt.

**C. harveyi** (Engl.) Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 433-434, 2002. – Icon.: Bothalia 11: 77-78, 1973; Steyn, Field guide south Afr. Commiphora: 9-10, 2003.

bas.: *Balsamea harveyi* Engl.

syn.: *Protium africanum* Harv., non *Heudelotia africana* A. Rich. (= *Commiphora africana*).

Deciduous dioecious tree 4-18 m, not spiny; bark of trunk and branches peeling in large coppery papery pieces or thick discs; leaves 3-5(-7)-foliolate, with a few short hairs, margins of leaflets crenate-serrate, terminal leaflet typically dorsiventral; young leaves with reddish stalks; flowers whitish, in axillary long-stalked heads, bracts large; drupe  $\pm$  round, c. 1 cm  $\emptyset$ , glabrous.

Ecology not recorded in Mozambique.

E S. Africa, Swaziland (5-1280 m alt.); stony hill slopes, in hot rocky river valleys in bushveld and coastal forest.

Easily grown from pole cuttings.

**C. hildebrandtii** (Engl.) Engl., excl. var. *gallaensis* Engl. (= *C. kataf*); Beentje, Kenya trees, shrubs & lianas: 400-401, 1994 (sub nom. *C. ogadensis*). – Icon.: Chioyenda, Fl. Somala 2: 103, 1932.

bas.: *Balsamea hildebrandtii* Engl.

syn.: *Commiphora ogadensis* Chiov.; *C. tephrodes* Chiov.

Unarmed tree 4-10 m; trunk well-defined, pale, not very straight, usually somewhat angled, often 12-14 cm  $\emptyset$  at breast height; outer bark peeling in small yellowish scrolls; twigs rather zigzag,

## COMMIPHORA HILDEBRANDTII

fluted, puberulous and  $\pm 1,5$  mm  $\emptyset$  when young; leaves usually 3-9-foliolate, but sometimes all 3-foliolate, puberulous or pubescent; petiole 1-3 cm long; flowers appearing just before or with the young leaves, among pubescent oblong bracts  $\pm 1$  mm long, the male flowers to 25 together; females 2-6 together; fruit  $\pm$  ellipsoid, c. 1 cm long, flattened, glabrous, 2-valved.

*Acacia*, *Commiphora* deciduous bushland on eluvial soil; *Acacia*, *Commiphora* woodland, wooded grassland on rocky limestone slopes and ridges; also on red sandy soil overlying limestone; black cotton soil; granitic soil; 170-1600 m alt.

**C. hodai** Sprague

Shrub or tree 2 –  $\pm 6$  m tall; trunk to 20 cm  $\emptyset$  or more; spiny but spines often absent on young branches; bark peeling in small flakes; branchlets reddish-brown, glabrous; leaves 1-3-foliolate, glabrous or almost so; petiole 1-3 mm; flowers dark red, solitary; fruit  $\pm$  ovoid, beaked, 12-17 mm long, 4-valved.

*Acacia*, *Commiphora* bushland on red sandy soil overlying limestone; maritime hills; 135-980 m alt.

**C. hornbyi** B. D. Burt

Tree 3,5-11,5 m, with a regular spreading crown; trunk  $\pm 60$  cm  $\emptyset$  at breast height; outer bark of trunk and larger branches peeling annually in large papery creamy flakes, the tree appearing pale yellowish green before and bright blue-green after peeling; young twigs silvery grey, fluted, sparsely puberulous at first, soon glabrescent,  $\pm 1,6$  mm  $\emptyset$ ; lateral twigs may be short and tapering and almost at right-angles to the main branches (not truly spinose); leaves 3-7-foliolate, glabrous or very sparsely puberulous; petiole to 4 cm long; cymes umbelliform, glabrous or subglabrous, appearing with or before the young leaves; male ones 5-7-flowered; females 1-3; fruits single or paired, pedunculate, c. 1,5 cm long, ellipsoid.

Deciduous thickets and woodland; locally common; 380-1220 m alt.

**C. horrida** Chiov. – Icon.: Chioyenda, Fl. Somala 2: 87, 1932.

Shrub to 1,5 m tall, spreading and often wider than tall, flat-topped, spiny; bark greyish to yellowish or dark brown, often peeling in small papery flakes; branchlets densely pubescent; leaves 1-3-foliolate, tomentose above, densely lanate and greyish white beneath; petiole 0,5-13 mm long, tomentose with spreading hairs; flowers solitary or in few-flowered clusters; fruit ellipsoid, compressed, apiculate, glabrous, 5-7 mm long, 4-valved.

*Acacia*, *Commiphora* bushland on sand, sand over limestone, or on gypsum; 40-500 m alt.

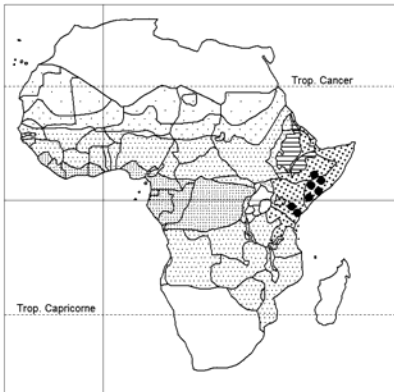
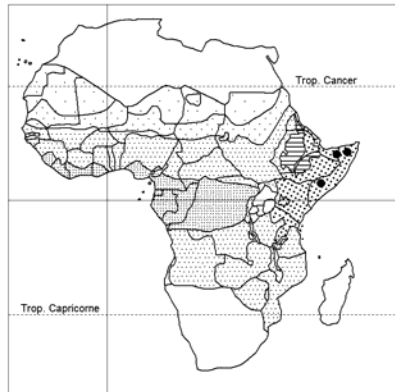
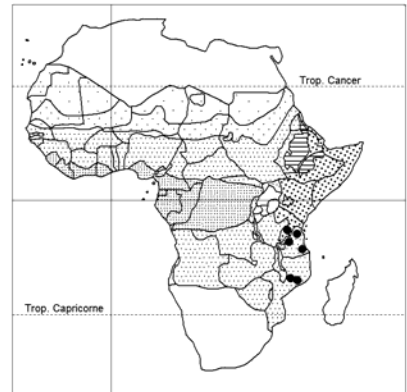
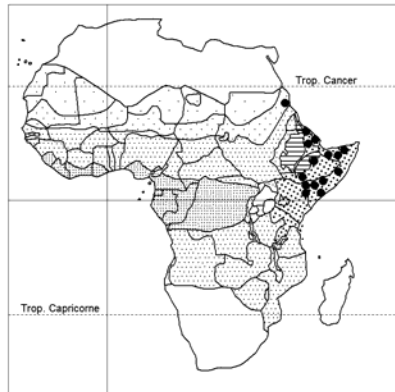
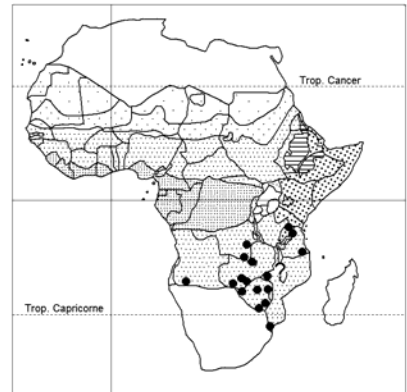
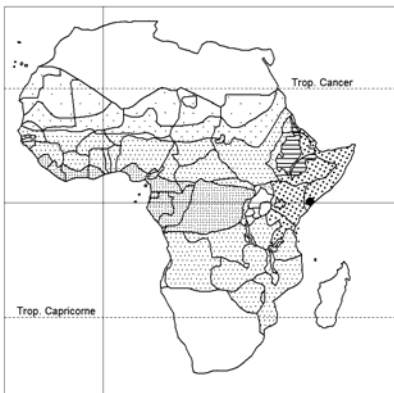
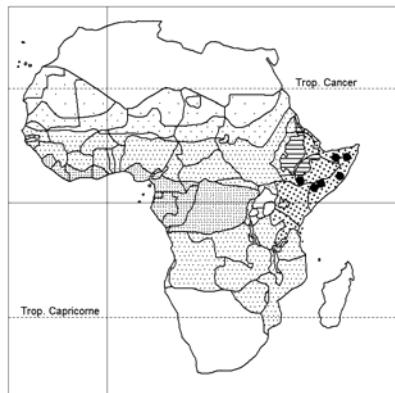
**C. karibensis** Wild; Coates Palgrave, Trees south. Afr., ed. 3: 434, 2002. – Icon.: Steyn, Field guide south. Afr. Commiphora: 71-72, 2003.

Shrub 1-3 m tall or tree 3-14 m; trunk longitudinally fluted; bark smooth, grey; branches striate with reddish-grey bark, pilose near the apex; lenticels orange; leaves pinnate, 7-13-foliolate; petiole to 4,5 cm long, densely hairy; rhachis densely pilose; flowers yellowish, appearing with the leaves in axillary paniculate cymes to 8 cm long; fruit round, c. 1 cm  $\emptyset$ , glabrous, tinged red.

Dense woodland or thickets.

N Botswana (c. 990 m alt.).

Extremely close to *C. eminii* subsp. *zimmermannii*.

***Commiphora engleri******Commiphora enneaphylla******Commiphora erlangeriana******Commiphora erosa******Commiphora foliacea******Commiphora fulvotomentosa******Commiphora gardoensis******Commiphora gileadensis******Commiphora glandulosa******Commiphora gorinii******Commiphora guidottii******Commiphora gurreh***



## COMMIPHORA

**C. kataf** (Forssk.) Engl., incl. subsp. *turkanensis* J. B. Gillett; Fl. Eth. & Eritrea 1: 229, 2009. – Icon.: Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 434, 1931; Dale & Greenway, Kenya trees & shrubs: p. 84 fig. 17a (sub nom. *C. africana*); Troupin, Fl. pl. ligneuses Rwanda: p. 175 fig. 60/1, 1982 (idem); Beentje, Kenya trees, shrubs & lianas: 383, 1994 (sub nom. *C. holtziana*); Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 456-457, 2001 (sub nom. *C. erythraea*); Gillett in Fl. Trop. E. Afr., Burseraceae: 82, 1991 (sub nom. *C. holtziana* et *C. kataf*).

bas.: *Amyris kataf* Forssk.

syn.: *Commiphora erythraea* (Ehrenb.) Engl.; *Hemprichia erythraea* Ehrenb.; *Commiphora somalensis* Engl.; *C. holtziana* Engl., incl. var. *microphylla* J. G. Gillett; *C. allophylla* Sprague (leaves of type represent *C. kataf*, but the fruits do not); *C. gallaensis* (Engl.) Engl.; *C. hildebrandtii* Engl. var. *gallaensis* Engl.; *C. lughensis* Chiov. 1932, p.p., quoad syntypi Paoli 927, 950; *C. pseudopaulii* J. B. Gillett, p.p., quoad specim. ex S Somalia.

Unarmed tree 3-10 m; trunk well defined, though sometimes very short, 12-20 cm Ø; outer bark white, peeling in large flakes or small sheets from the blue-green under-bark; leaves greyish green, paler beneath than above, pubescent with ± erect hairs, usually ± 0,1 mm long, but on the veins beneath 0,2-0,5 mm long; leaves on short-shoots or in clusters at the ends of twigs, always 3-foliolate, those scattered singly on long-shoots, sometimes 5-foliolate, petiole to 4 cm long; inflorescences pubescent, appearing with the leaves; male flowers 6-15 together in groups of subumbellate cymes; females usually single, less often 2-3 together; fruit ± ovoid, glabrous to pubescent, 2-valved, 8-16 mm long, stalk 3-15-20 mm long.

*Acacia*, *Commiphora* bushland or woodland on well-drained soils; level sandy soil; deciduous woodland; dry coastal bushland; *Combretum*, *Terminalia* wooded grassland; dominant in the “*C. erythraea*-*Sansevieria ehrenbergii* community” sensu Dalle & al., Community Ecol. 6: 171, 2005; often on rocky slopes (limestone as well as basement); red sandy soil; black cotton soil; 15-1900 m alt.

Very variable in indumentum characters, in shape and size and dentation of leaflets.

Saudi Arabia, Dhalak Isl., Yemen (species here under threat, fide Hall & al., Edinb. J. Bot. 65: 131, 2008).

Certain collections from S Somalia (C2, i.e. Kuchar 17290, 17681, 17682) may belong to a distinct species close to *C. kataf*, but also come near *C. gorinii* (fide Thulin, Fl. Somal. 2: 197, 1999). Some large-leaved forms from S Ethiopia have been named *C. baluensis*.

**C. kerstingii** Engl.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 306, 1985; Keay, Trees Nigeria: 334, 1989. – Icon.: Aubréville, Fl. forest. Soud.-guin.: 374, 1950.

syn.: *C. ararobba* Engl.

Shrub or tree 6-10 m tall; crown rounded, open; bole pale green, much branched, with ascending branches; bark smooth, eventually peeling in brownish papery strips; leaves imparipinnate, glabrous, 15-30 cm long, with 10-12 opposite leaflets; panicles to 50 cm long, crowded at the ends of the branchlets that are brownish tomentellous and marked by leaf-scars; flowers appearing with the leaves; fruit ± round, 1-2,5 cm Ø.

In the savanna from Togo to Central African Rep., but often planted in towns and villages (ornamental, shade tree, live fences) and perhaps not known spontaneous. Also listed by Boulvert (Documents phytogeogr. guin.: 101, 1999) from Guinea (Fouta Djalon).

Not mapped.

## COMMIPHORA

**C. kua** (R. Br. ex Royle) Vollesen, incl. var. *gowllo* (Sprague) J. B. Gillett; Ghazanfar, Fl. Oman 2: 114, 2007. – Icon.: Fl. Trop. E. Afr., Burseraceae: 16, 1991 (sub nom. synonym., cf. list below); Beentje, Kenya trees, shrubs & lianas: 379, 1994 (sub syn. *C. bruceae*, *habessinica*, *incisa*, *lindensis* + *C. kua*); Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 460, 2001 (*C. habessinica*); Thulin, Fl. Somalia 2: 216, 1999; Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 436, 1931 (*C. abyssinica*); J. Lodé, Succulent plants of Socotra: 24, 2010; Bloesch & al., Plantes ligneuses du Rwanda: 149, 2009.

syn.: *C. habessinica* (O. Berg) Engl. (“*abyssinica*”), incl. subsp. *tanganyikensis* J. B. Gillett, var. *crenulata* A. Terracc., var. *simplicifolia* Schweinf. in Engl. Bot. Jahrb. Syst. 48: 479, 1912, p.p. quoad plantas africanas; *C. crenulata* (A. Terracc.) Chiov.; *C. ellenbeckii* Engl.; *C. flaviflora* Engl.; *C. lindensis* Engl.; *C. incisa* Chiov.; *C. candidula* Sprague; *C. bruceae* Chiov.; *C. dancaliensis* Chiov.; *C. assaortensis* Chiov.; *C. rivae* sensu Chiov. quoad specim. Ruspoli & Riva 384 (226), non Engl.; *C. subsessilifolia* Engl.; *C. salubris* Engl.; “*C. madagascariensis*” sensu Wild, Fl. Zambesiaca type solo excepto, non Jacq.; *C. “madagascariensis”* sensu White, For. Fl. North Rhod., 1962; Lisowski & al., Bol. Soc. Brot., Sér. 2, 46: 82, 1972; Troupin, Fl. Rwanda 2: 260, 1983, etc.; *C. playfairii* sensu Chiov., 1932 quoad specim. Ruspoli & Riva 1073 (970), non (Hook. f.) Engl.; *C. gowllo* (Sprague) J. B. Gillett; *C. atramentaria* Chiov.

Shrub or tree 1-6 m tall, sometimes subscaudent; outer bark peeling off in broad dull yellow or grey transverse strips; long-shoots spine-tipped, straight, tapering, rather stout (± 2 mm across 4 cm below the tip); short spines, sometimes only 10 mm long, also present; leaves simple on short-shoots, often hetero-3-foliolate on long-shoots, subsessile, 10-35 × 5-25 mm; flowers precocious or appearing with the leaves; males in clusters of 4-6; females single or 2 together; fruit obovoid, ± asymmetrical, beaked, 5-13 mm long, 2-valved.

Open *Acacia*, *Commiphora* bushland on rocky slopes; lake-shore; bushed grassland; often abundant; ravine and riverine thickets; valley forest; red sandy soil; semi-evergreen thickets in the coastal belt; on alluvium and on dunes; *Acacia*, *Balanites* woodland; *Anogeissus* woodland; sandy to loamy soil overlying limestone and basement; black cotton soil; lava hills; *Acacia*, *Commiphora* bushland with *Terminalia orbicularis*, on yellowish to grey alluvial sandy loam in areas of poor drainage; 2-1900 m alt. – Fairly widespread.

Variable. The taxa described (see synonyms) “were separated on the basis of subtle differences” in ... presence or absence of lateral leaflets on short-shoots, size and shape of leaves, etc... “I am unable to make any satisfactory subdivision of the material” (Thulin, Fl. Somal. 2: 217, 1999).

Also in Malawi. Not in Sudan (= *C. quadricincta*), except in the Imatong Mts.

Saudi Arabia, Oman, Yemen, Socotra.

**C. kucharii** Thulin – Icon.: Nord. J. Bot. 20: 410, 2000 (not sensu J. B. Gillett nom. in sched.); Thulin, Fl. Somal. 2: 228, 1999.

Shrub or tree to 4 m tall, unarmed; bark grey, often banded, sometimes black and scaly towards base of trunk; leaves 3-9-foliolate; petiole to ± 5 mm long, sparsely pubescent with ± curved hairs; rachis distinctly winged, pubescent like the petiole; leaflets entire, sparsely and very shortly pubescent above, with ± curved hairs particularly along midvein beneath; male flowers solitary or in to 3-flowered cymes; females unknown; fruit ovoid, c. 4-5 cm long, subsessile, 4-valved.





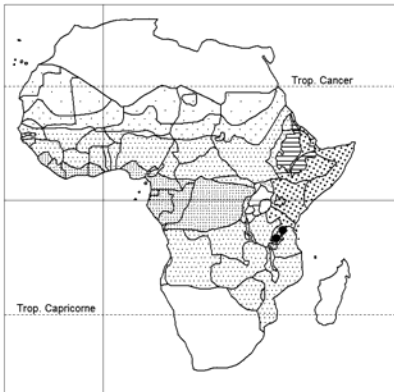
*Commiphora harveyi*



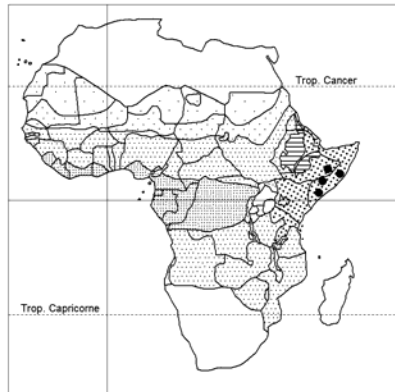
*Commiphora hildebrandtii*



*Commiphora hodai*



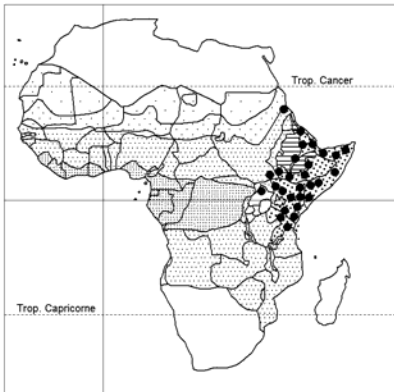
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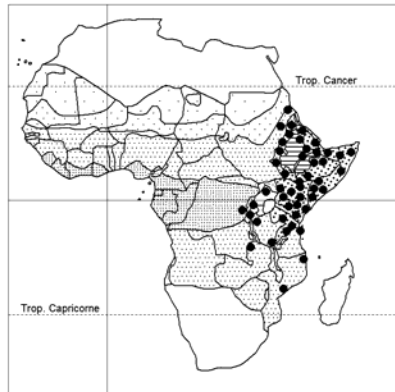
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*Commiphora karibensis*



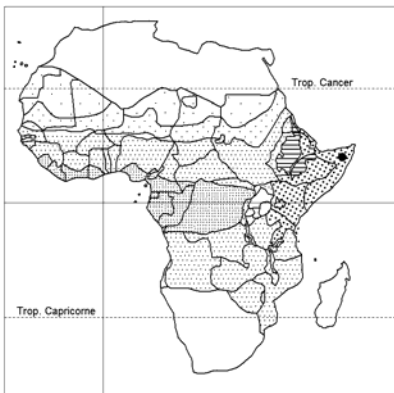
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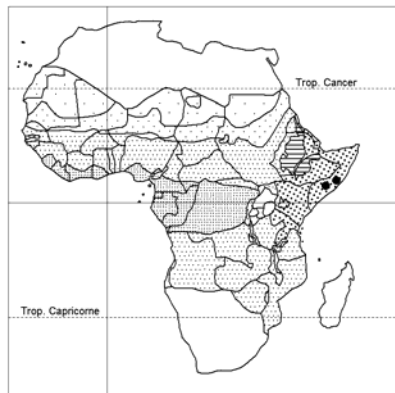
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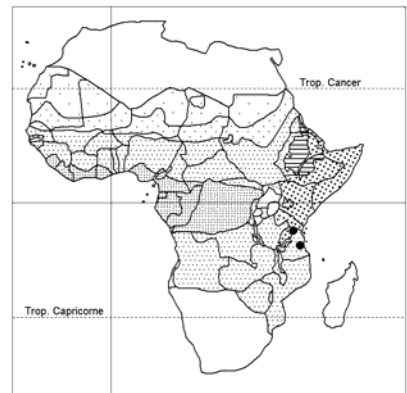
*Commiphora kuneneana* •  
*Commiphora kucharii* ■



*Commiphora lacerata*



*Commiphora lobatospathulata*



*Commiphora madagascariensis*

## COMMIPHORA KUCHARII

Open *Acacia*, *Commiphora* bushland on shallow, silty, stony or sandy soils over limestone; 175-470 m alt.

Close to *C. chiovendana*. Also resembling *C. enneaphylla*, poorly known; with crenate leaflets.

(**C. kuneneana** Swanepoel) – Icon.: *Bothalia* 37: 41, 42, 43, 44, 2007; Steyn, Field guide south. Afr. Commiphora: 69 top left, 70 bottom left (sub nom. *C. saxicola*), and 53 top left & right, 54 centre and right (sub nom. *C. crenato-serrata*), 2003.

Dioecious tree, unarmed, to 8 m tall, usually infundibular in shape, crown rounded or  $\pm$  flat-topped; trunk single, occasionally multi-stemmed, cylindrical,  $\pm$  straight, erect, 0,8-3,5 m long, to 40 cm  $\varnothing$ , rarely a shrub-like tree branching from just above ground level; bark pale grey, reddish grey, cream-coloured or pale yellowish, smooth, not peeling, with minute, shallow, longitudinal fissures; branches and branchlets with scattered small lenticels, obtuse, glabrous, youngest ones with glandular hairs and with long flexuous branched hairs at apex, yellowish, dark or reddish brown or grey to reddish grey; branchlets short, scarred; leaves imparipinnate, rarely paripinnate or intermediate, 2-9-jugate, rarely trifoliate, to 28 cm long, grouped closely together at ends of branches and branchlets, spirally on shoots, green; leaflets with scattered, short glandular hairs on both sides, long glandular and long flexuous hairs, some branched, also usually present; lamina flat or subconduplicate, shape varies considerably; inflorescence thyrsoid or paniculose-thyrsoid with short glandular hairs, often with long, simple or branched hairs near apex; peduncle to 40 cm long, at apex of branches or branchlets; flowers precocious or flowering with the leaves; drupe  $\pm$  ellipsoid, 10-17 mm long, glabrous or with scattered glandular hairs, 2-valved.

Certainly occurs in S Angola in Kunene River Valley. In Namibia often growing amongst other species of *Commiphora* (not very habitat specific).

NW Namibia (partly sympatric with *C. crenato-serrata* Engl.).

Near *C. saxicola*, *C. crenato-serrata*.

**C. lacerata** Thulin – Icon.: *Nord. J. Bot.* 24: 375, 2006; Thulin, *Fl. Somal.* 3, Appendix: 579, 2006.

Shrub  $\pm$  0,3 m high and 1 m wide with subprostrate stems, unarmed; young branchlets dark brown or black, longitudinally ridged, glabrous; older stems greyish; leaves pinnately  $\pm$  10-16-foliolate, to  $\pm$  1,6 cm long, glabrous except for tufts of hairs at point of insertion of petiole (to  $\pm$  2 mm long); female flowers 1, sessile, staminodes 8; male flowers unknown; young fruit ovoid, 7-8 mm long, glabrous, 2-valved.

Rocky limestone slope near the coast; with other narrow endemics: *Ipomoea nephrosepala*, *Spermacoce brachyantha*; 270 m alt.

Near *C. murraywatsonii*, and *C. planifrons* (Balf. f.) Engl. on Socotra.

Only known from the type collected in 2001.

**C. lobatospathulata** J. B. Gillett ex Thulin – Icon.: *Nord. J. Bot.* 20: 404, 2000; Thulin, *Fl. Somalia* 2: 220, 1999.

Shrub or tree to 4 m tall, with spine-tipped branchlets or unarmed; bark smooth, grey to brownish, sometimes peeling; branchlets slender, subterete, greyish brown, subglabrous or pubescent with short spreading straight or curved hairs when young; leaves 3-foliolate; petiole 5-28 mm long, sparsely to densely pubescent with short glandular hairs and sometimes also

## COMMIPHORA LOBATOSPATHULATA

longer spreading eglandular hairs; leaflets *subglabrous* to *pubescent* with  $\pm$  curved hairs and dark green above, densely lanate with white or greyish hairs and with brownish venation beneath; male flowers unknown; females in 1-5-flowered subglabrous to finely puberulous clusters; drupe  $\pm$  ellipsoid, compressed, apiculate, 6-8 mm long, glabrous, glaucous, 4-valved.

*Acacia*, *Commiphora* bushland on sand with *Acacia edgeworthii*, *Commiphora horrida*, *Cordeauxia edulis*; 80-300 m alt.

Near *C. horrida*.

**C. madagascarensis** Jacq. (“madagascariensis” apud Engl.).

syn.: *Amyris agallocha* Roxb., nom.; *A. commiphora* Roxb., nom. superfl.; *Balsamodendrum roxburghii* Arn. 1839, non Stocks 1847, nec *Commiphora roxburghii* (Stocks) Engl. 1896; *Enum.* 2: 207, 1992.

Slender glabrous sometimes scandent shrub or tree 1-15 m tall; outer bark of young stems peeling in pale scrolls or flakes from the green under-bark; older stems and trunks grey-brown; mature leaves glossy, brownish, paler beneath; petiole 5-70 mm long; leaves 3-foliolate; spines few, sparse and short, the longer branches not spine-tipped; male flowers 1-3 together at the tips of short shoots, appearing with the young leaves; ? females; drupe sessile, obovoid, 10-13 mm long, beaked, bright red. Thickets by streams; termite mounds; semi-evergreen dry forest on rocky slopes; 5-660 m alt.

Cultivated in Mauritius and India. Not in Madagascar, nor in Zambia (= *C. habessinica* subsp. *tanganyikensis* = *C. kua*). The true home of *C. madagascarensis* was long unknown, and according to Jacquinet it originally came from Madagascar, and was known to French settlers in Mauritius (Gillett in *Fl. Trop. E. Afr.*, *Burseraeae*: 29, 1991).

**C. marlothii** Engl. – Icon.: *Bothalia* 11: 79, 80, 1973; Coates Palgrave, *Trees south. Afr.*, ed. 3: p. 435 and ill. 120, 2002; E. Schmidt & al., *Trees & shrubs Mpumalanga...*: 246, 247, 2002; Steyn, *Field guide south. Afr. Commiphora*: 15-16, 2003; C. Pollet, *Ecorces*: 180-181, 2008.

Tree 5-13 m, with heavy bole and branches; bark peeling, yellowish (green in the under-layer); young branches tomentose or densely pubescent; petiole to 10 cm long, tomentose; leaves pinnate, 3-4-jugate, densely pilose or tomentose on both surfaces; flowers appearing with the leaves, in axillary paniculate cymes  $\pm$  1,8 cm broad, to 15 cm long; branches of inflorescence tomentose; drupe ellipsoid, pointed, red, c. 12 mm long, hairy.

Open woodland, particularly on rocky hills; 935-1130 m alt.

Botswana, S. Africa.

**C. merkeri** Engl., excl. syn. *C. viminea* Burt Davy (Fl. Zambes. area, S. Africa); Beentje, *Kenya trees, shrubs & lianas*: 388, 1994.

Spiny glabrous shrub or tree to 5 m tall; trunk cylindrical; outer bark peeling from the dark green shiny under-bark in large pale yellow papery sheets which are fragile, not tough; young branches dark purplish, ultimate branchlets pendulous; leaves *simple*, sessile, rather hard, leathery and glossy; male flowers dull red, solitary or 2-3 together; ? females; drupe flattened, c. 1 cm long, 2-valved.

*Acacia*, *Commiphora* bushed grassland, on stony slopes; 710-1600 m alt.

Without male flowers and undissected fruits easily confused with *C. spathulata* and *C. kua* (table with distinctions between *C. merkeri*-*C. spathulata*-*C. viminea* in *Fl. Trop. E. Afr.*, *Burseraeae*: 22, 1991).

## COMMIPHORA

**C. mildbraedii** Engl. – Icon.: Beentje, Kenya trees, shrubs & lianas: 383, 1994.

Unarmed tree 5-12 m, forking at  $\pm$  2 m from the base; crown rounded; trunk angled, never very straight; bark reddish brown, flaking off in rather large, thick, stiff, opaque pieces; leaves 3-9-foliolate; petiole 15-30 mm long; leaflets discolorous, paler beneath and rather olivaceous above, usually softly appressed pilose, at first with hairs on the lower surface, later glabrescent; male flowers 8-10 in subumbellate cymes; inflorescence  $\pm$  densely covered with soft erect hairs 0,2-0,4 mm long; female flowers 4-7 in pedunculate cymes; drupe stalked, glabrous or sparsely pubescent, asymmetrical, ellipsoid, c. 13 mm long, 2-valved.

*Acacia*, *Commiphora* bushland, especially in rocky places; mixed dry scrub on sandy soil with several species of *Commiphora*, *Acacia*, *Grewia*, *Dichrostachys*, *Euphorbia*, *Sapium*; black cotton soil; rocky limestone slopes; 450-1400 m alt.

Comprises 2 subspp.: – subsp. **mildbraedii** with entire leaflets; – subsp. **dodomaensis** J. B. Gillett with dentate leaflets, flowers unknown, fruit glabrous, only known from near Dodoma (Tanzania, T5).

Superficially resembling *C. cyclophylla*.

Very close to *C. mollis* and perhaps only a subspp. of the latter.

**C. mollis** (Oliv.) Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 435, 2002; Beentje, Kenya trees, shrubs & lianas: 397, 1994. – Icon.: Bothalia 11: 75, 1973; E. Schmidt & al., Trees & shrubs Mpumalanga...: 246-247, 2002; Steyn, Field guide south. Afr. Commiphora: 29-30, 2003; Curtis & Mannheimer, Tree atlas Namibia: 288-289, 2005.

bas.: *Balsamodendron molle* Oliv.

syn.: *Balsamea mollis* (Oliv.) Engl.; Enum. 2: 207, 1992.

Unarmed deciduous tree with a spreading crown and an ill-defined, often fluted trunk, 1-8-12 m tall; bark grey; leaves 5-13-foliolate, to 13 cm long; petiole > 10-50 mm long; leaflets pubescent beneath and more sparsely so above, usually rather coriaceous when mature; inflorescence as in *C. mildbraedii*; drupe  $\pm$  round, c. 1 cm wide, densely pubescent, sometimes subglabrous, dull red.

Bushy places; thickets; woodland; clump of trees near ravines in grassy savanna; open forests; hotter and drier types of woodland; common in the valleys of lower altitude rivers; with *Euphorbia* and *Sterculia tomentosa*; stony ground; 50-1820 m alt.

Very variable.

Namibia, Caprivi Strip, Botswana, S. Africa.

Easily growing from truncheons.

Bark very similar to that of *C. mossambicensis*, and when both species are leafless they are difficult to distinguish from each other.

The locality "Masailand" (Hollis 25) is perhaps not in nowadays Kenya, as it was collected before the frontier was delimited, i.e. possibly situated in Tanzania.

**C. mombassensis** Engl. (the original label of the type indicates "Mossambik", later this was crossed out and changed to "Mombas").

Unarmed shrub or tree 2-8 m tall; branches 4-5 mm  $\emptyset$ , fluted, grey with small punctiform lenticels; leaves 5-7-foliolate, 12-19 cm long, including a petiole to 7 cm; leaflets densely to sparsely hispidulous; flowers borne just before the leaves; male inflorescence a pubescent, branching cyme with a peduncle

## COMMIPHORA MOMBASSENSIS

$\pm$  7 cm long; female one similar but peduncle 2-3 cm long; drupes asymmetrical,  $\pm$  oblong, 4-winged, 2,5-3 cm long, long-beaked, 2-valved, on a common peduncle 2-3,5 cm long. Riverine thickets;  $\pm$  125 m alt.

Probably close to *C. schlechteri*. Strikingly similar to *C. leandriana* H. Perrier from W coast of Madagascar.

**C. monoica** Vollesen

Tree to 5-7 m,  $\pm$  scandent when young with long slender drooping branches; bark smooth, peeling in large transverse pale yellowish papery strips or sheets, dark green underneath; all parts glabrous; young branches 1-3 mm  $\emptyset$ , longitudinally ribbed, yellowish brown, older ones purplish brown becoming dark greyish with small dotlike white lenticels; leaves 3-foliolate, glossy; petiole red, 1,5-4,5 cm long; flowers appearing with the leaves (but probably also precocious), monoecious, solitary or in 1-3-flowered cymes; drupe  $\pm$  round, 7-9 mm  $\emptyset$ .

Dense *Acacia*, *Commiphora* woodland and bushland on rocky limestone slopes and on black cotton soil; 1250-1400 m alt.

Very local species which has only been collected within a small area around the Sof Omar Caves (locally common); regarding these Caves see Lebrun & Stork, Trop. Afr. flow. pl. 2: 126, 2006 (under *Euphorbia omariana*).

This is the first truly monoecious *Commiphora* reported.

**C. mossambicensis** (Oliv.) Engl. – Icon.: Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 433, 1931 (sub nom. *C. stolzii*); Coates Palgrave, Trees south. Afr., ed. 3: p. 436 & ill. 121, 2002; Steyn, Field guide south. Afr. Commiphora: 75-76, 2003.

bas.: *Protium ? mossambicense* Oliv.

Deciduous tree, 3-10 m, not spiny; bark rather smooth, grey or reddish brown, peeling in small flakes; leaves coriaceous, 3(-9)-foliolate, hispidulous, pubescent or glabrescent; petiole to 11 cm long; leaflets suborbicular, densely hairy or subglabrous; flowers appearing with the leaves; male inflorescence hispid, loosely spicate with to 12 compact clusters distributed along an axis to 9 cm long above a peduncle to 5 cm long, the lowest clusters occasionally on stalks 11-14 mm long; female one compact, 1-3 cm long including a peduncle < 11 mm long; drupe round, c. 1 cm  $\emptyset$ , red to blackish,  $\pm$  hairy on margins.

Wooded grassland; open woodland and thickets; common in *Brachystegia* woodland; often on stony hills; 390-1600 m alt.

Botswana, Caprivi Strip.

Often used in fences.

Bark similar to that of *C. mollis*.

**C. mossamedensis** Mendes; Figueiredo & Smith, Pl. Angola: 53, 2008.

Shrub 1-2 m tall, unarmed, ramose, branches intricate, spreading; bark papery, minutely scaly; long-shoots straight, 4-30 cm long, longitudinally striate-wrinkled, grey-brownish; short-shoots 2-6 mm long; leaves 6-10 congested on short-shoots, 4-6-jugate, sparsely and minutely pubescent; petiole 8-12 mm long, slender; flowers unknown; fruit 2-valved, 9  $\times$  8  $\times$  6 mm.

Subcoastal dry desert;  $\pm$  500 m alt.



## COMMIPHORA

**C. mulelame** (Hiern) K. Schum. (*excl. syn. C. antunesii* = specim. Antunes 302); Figueiredo & Smith, Pl. Angola: 53, 2008.  
bas.: *Balsamea mulelame* Hiern, *excl. specim.* Welwitsch 4490, 4499.

Deciduous tree 3,5-7,5 m, glabrous in most parts, leafless at flowering time; trunk straight; crown spreading; branches divaricately spreading, spinous by some of the branchlets becoming abortive and terminating in hard acute points; bark greenish-white, quite smooth, peeling in very thin layers like the skin of *Betula alba*; inflorescence at or near the apex of short branchlets or lateral, 2,5-3 cm long, glabrous or very nearly so; drupe ?

Wooded hills, at the skirts of little woods of *Dichrostachys*, along rivulet bank; little woods of *Acacia*; sometimes rather rare; 600 m alt.

**C. multifoliolata** J. B. Gillett ex Thulin; Fl. Ethiop. & Eritr. 1: 230, 2009.

Shrub or tree to ± 2 m tall, unarmed; bark grey, smooth; branchlets longitudinally ridged, brown becoming greyish, pubescent, with ± spreading hairs when young; leaves 11-23-foliolate; petiole to ± 4 mm long; rachis narrowly winged, pubescent with often hooked hairs; male flowers (known in buds only) in ± 3-flowered hairy cymes; females solitary or few together; drupe ovate-triangular, flattened, 7-9 mm long, 4-valved, apiculate.

*Acacia*, *Commiphora* bushland on gravelly or stony limestone hills and ridges or gypsum; 150-320 m alt.

Only known from a small area (SW Somalia and S Ethiopia, HA).

**C. multijuga** (Hiern) K. Schum.; Coates Palgrave, Trees south. Afr., ed. 3: 436, 2002. – Icon.: Curtis & Mannheimer, Tree atlas Namibia: 292, 2005; Steyn, Field guide south. Afr. Commiphora: 55-56, 2003; B. van Wyk & P. van Wyk, How to identify trees south. Afr.: 156, 2007.

bas.: *Balsamea ? multijuga* Hiern

Unarmed, dioecious shrub or tree, 1,8-8 m tall, branched from the base; crown rounded, graceful, with drooping foliage; branches spreading, elongated; branchlets patent, short, hairy, tapering; bark brown-grey to purplish grey, smooth, not peeling, sometimes cracked on old specimens; leaves alternate, ± crowded at the extremities of the branchlets, imparipinnate, with 4-10 pairs of leaflets + the terminal one; petiole 1,5-4 cm long, slender; leaflets hairless to sparsely hairy; (male) inflorescences lateral, spreading, in few-flowered clusters; fruit ovoid, c. 1,2 cm long, red.

Rocky situations; abundant in only one spot (fide Hiern).

NW Namibia (100-550 m alt. and higher; photo. Aloe 45: 61, 2008).

Latex may squirt from broken twigs – caution advised for the eyes.

**C. murraywatsonii** J. B. Gillett ex Thulin – Icon.: Nord. J. Bot. 20: 409, 2000; Thulin, Fl. Somal. 2: 226, 1999.

Shrub to ± 20 cm tall with prostrate or semiprostrate stems to 1 m or more long, unarmed; young branchlets brownish, longitudinally ridged, densely villous with ± 0,5 mm long spreading white hairs; older stems greyish; leaves pinnately ± 17-31-foliolate, to 3 cm long, densely villous with white spreading hairs; petiole to ± 2 mm long; rachis winged but wings normally convolute; flowers unknown; fruit solitary, sessile, c. 5 mm long, apiculate, 4-valved.

Limestone outcrops with much bare rocks; shallow sand over limestone; 15 m alt.

Closely related to *C. planifrons* (Balf. f.) Engl. from Socotra.

## COMMIPHORA

**C. myrrha** (Nees) Engl., incl. var. *molmol* Engl.; Beentje, Kenya trees, shrubs & lianas: 389, 1994; Nigist Asfaw & Sebsebe Demissew, Aromat. pl. Ethiopia: 91, 2009. – Icon.: Thulin, Fl. Somal. 2: 198, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 458, 2001.

bas.: *Balsamodendron myrrha* T. Nees

syn.: Enum. 2: 207, 1992.

Spiny almost glabrous, gnarled shrub or tree, usually with a distinct, though short trunk, to 5 m tall; outer bark silvery, whitish or bluish grey, peeling in large or small papery flakes from the greener under-bark; all branches spine-tipped; leaves chartaceous, greyish green or glaucous, very variable; petiole 1-10 mm long; a few lateral leaflets, sometimes very minute present; male flowers usually precocious, 2-4 together in dichasial cymes 3-4 mm long which are often sparsely glandular; females 1 or 2 together; fruit ± ovoid, distinctly beaked, 10-16 mm long, 2-valved.

Open *Acacia*, *Commiphora* bushland on shallow soil, chiefly over limestone; sandy to loamy soil on granite or limestone; rocky lava hills; 95-1300 m alt.

Very variable in general facies and habit, in its leaves and fruit pseudaril. Forms with rather large lateral leaflets seem to occur in the N part of range.

SW Arabia.

The tree produces a colourless, weakly scented gum, (medicinal) myrrh; of great economic importance in Somalia.

Has been much confused with *C. playfairii* with similar leaves.

**C. neglecta** I. Verdoorn; Coates Palgrave, Trees south. Afr., ed. 3: 437, 2002. – Icon.: Bothalia 11: 71, 72, 1973; E. Schmidt & al., Trees & shrubs Mpumalanga. ...: 246-247, 2002; Steyn, Field guide south. Afr. Commiphora: 17-18, 2003.

Polygamous or dioecious many-stemmed shrub or tree with a single main stem to 8-9 m tall; bark grey to green, smooth or flaking in small yellowish papery pieces; branchlets spine-tipped and with a few short hairs; leaves trifoliolate, with a few short hairs; petiole to 4,5 cm long; flowers bisexual or unisexual (but male flowers rare), hypogynous, appearing before or with the leaves in axillary dichasial cymes to 1,2 cm long or in clusters, usually on spines; drupe round, bright red, c. 1 cm Ø.

Mixed bush or woodland.

S. Africa, Swaziland (15-1310 m alt.).

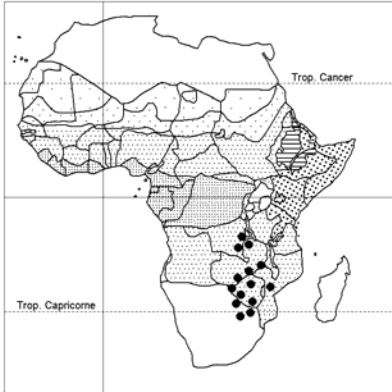
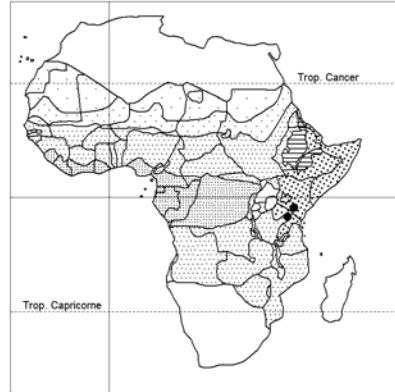
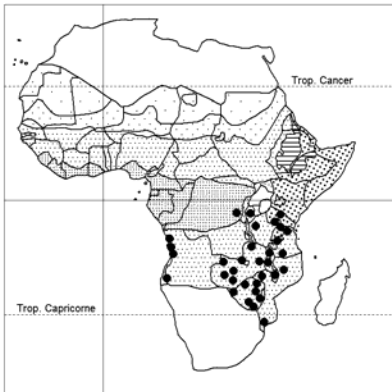
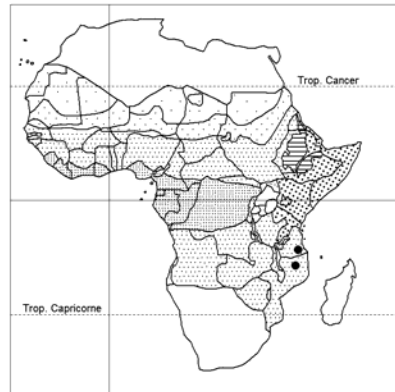
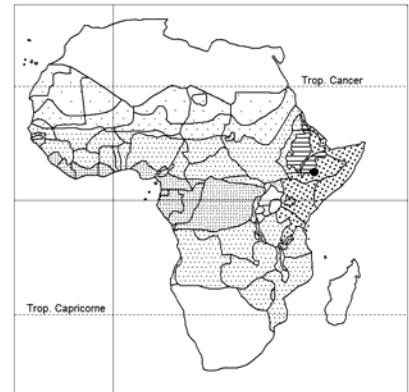
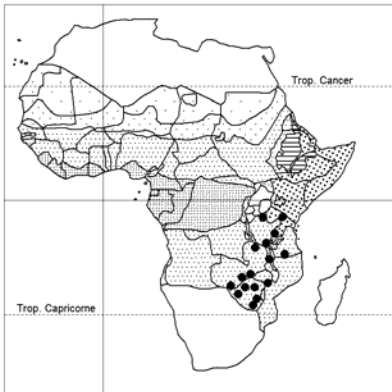
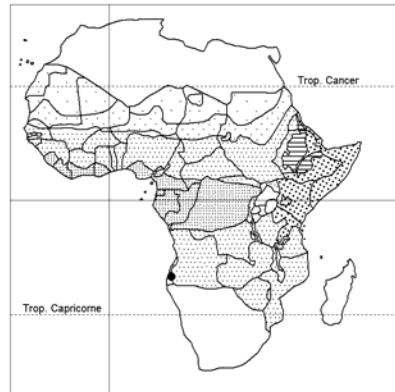
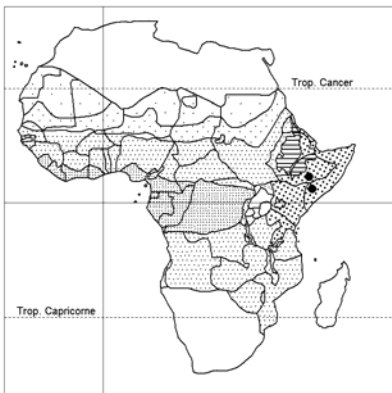
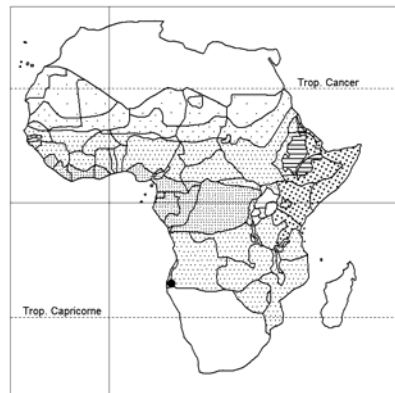
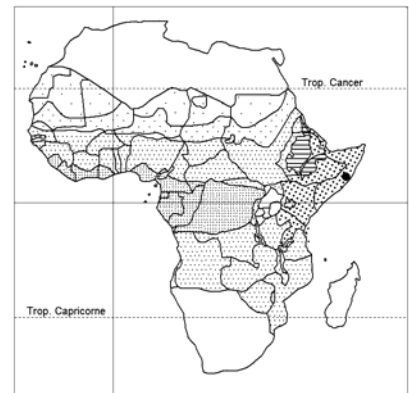
Easily grown from seed and cuttings.

Can be confused with *C. africana* and *C. schimperi* but differs from these in a particular combination of characters; described in 1951.

**C. oblongifolia** J. B. Gillett – Icon.: Beentje, Kenya trees, shrubs & lianas: 379, 1994.

Slender glabrous shrub or tree to 5 m tall, with sparse, 5-15 mm long lateral spines; the longer shoots longitudinally ridged when young, not spine-tipped; trunk cylindrical; bark smooth, dark green, the outer layer thin, peeling in large translucent flakes; twigs with sparse circular lenticels ± 0,5 mm Ø; leaves mainly scattered singly but some rather bunched together around the inflorescences, almost all hetero-3-foliolate; petiole 3-10 mm long; very immature male flowers known, clustered densely 5-20 together at the tips of leafy or leafless branches; females 2-4 together in dense clusters at the tips of leafy branches; fruit ± round, 8 mm Ø, 2-valved.



***Commiphora marlothii******Commiphora merkeri******Commiphora mildbraedii******Commiphora mollis******Commiphora mombassensis******Commiphora monoica******Commiphora mossambicensis******Commiphora mossamedensis******Commiphora mulelame******Commiphora multifoliolata******Commiphora multijuga******Commiphora murraywatsonii***

## COMMIPHORA OBLONGIFOLIA

Among rocks in *Acacia*, *Commiphora* bushland, usually entangled in the branches of larger bushy trees so that it is *inconspicuous*; 600-1050 m alt.

First collection in 1931, the second in 1957. Certainly overlooked.

**C. obovata** Chiov.; Beentje, Kenya trees, shrubs & lianas: 393, 1994.

Spiny glabrous shrub or tree 0,5-5 m tall with intricate grey branches, the ultimate ones rather slender; leaves coriaceous, hetero-3-foliolate; petiole 2-5 mm long; flowers unknown; fruit asymmetrical,  $\pm$  round, 9-12 mm long,  $\pm$  sessile, 2-valved.

Broken scattered semi-evergreen coastal bushland; *Acacia*, *Commiphora* bushland on rocky limestone slopes; 50-1050 m alt.

Resembling *C. africana*, but glabrous; differs from *C. schimperi* in its round unbeaked fruit and from *C. kua* in its pseudaril and broader lateral leaflets.

**C. oddurensis** Chiov.; Beentje, Kenya trees, shrubs & lianas: 387, 1994; Fl. Ethiop. & Eritr. 1: 230, 2009. – Icon.: Chioyenda, Fl. Somala 2: 72, 1932.

syn.: *C. sp. sensu* Fl. Ethiop. 3: 474, 1989.

Spiny glabrous shrub or tree to 3-4 m tall; bark of main stem brownish grey, the outer layer peeling in tiny scrolls; spines dark grey; leaves simple, leathery, stiff, dark green, strongly crinkled at the margin, subsessile; male flower unknown; female only known in bud, precocious apparently, in small clusters; fruit sessile,  $\pm$  round, wrinkled, 4-valved, c. 5 mm  $\varnothing$ .

Open *Acacia*, *Commiphora* bushland on limestone slopes, or gypsum; also on sand; 150-1620 m alt.

Very close to *C. pyracanthoides*.

(**C. otjhipana** Swanepoel) – Icon.: S. Afric. J. Bot. 74: 624-625, 2008.

Polygamous or dioecious tree to 3,5 m; trunk single, cylindrical, straight, to 0,25 m  $\varnothing$ ; bark pale grey, reddish-grey or -brown with sparse black spots, smooth, not peeling; branches and branchlets glabrous, occasionally spine-tipped; exudate not aromatic; leaves 3-foliolate, clustered all over, discolorous,  $\pm$  glabrous except for few short glandular hairs; flowers unisexual or bisexual, in small clusters, precocious or appearing with the leaves, peduncle and calyx  $\pm$  glandular; drupe  $\pm$  round, asymmetrical, 10-14 mm long, 2-valved, glabrous, greenish red.

Known from only one locality in Kaokoveld, NW Namibia (Otjhipa Mts), c. 80 km from the coast; locally common on the highest peaks; 1836 and 1915 m alt. respectively. – Not mapped.

May also occur in the adjacent parts of SW Angola. Probably close to *C. africana* (comparative table in Swanepoel, o.c.: 627).

**C. ovalifolia** J. B. Gillett; Beentje, Kenya trees, shrubs & lianas: 389, 1994.

Glabrous shrub or tree with widely spreading low branches, 2-8 m tall; outer bark peeling in pale papery scrolls from the green under-bark; branchlets grey with sparse round lenticels  $\pm$  0,5 mm  $\varnothing$ ; the larger branchlets do not end in spines though sparse 10-25 mm long lateral spines are usually present; leaves with a petiole 4-20 mm long even when clustered loosely together on short-shoots; lateral leaflets usually present; *immature* flowers single in the axis of clustered short-shoot leaves; fruits 2-3 together at tips of short-shoots,  $\pm$  round, c. 11 mm long, 2-valved.

Semi-deciduous dense bushland; dry forest on rocky slopes; 800-1440 m alt.

## COMMIPHORA

**C. paolii** Chiov.; Beentje, Kenya trees, shrubs & lianas: 398, 1994 (sub nom. *C. longipedicellata*); Fl. Eth. & Eritrea 1: 229, 2009. – Icon.: Thulin, Fl. Somalia 2: 191, 1999; Kew Bull. 40: 70, 1985; Fl. Trop. East Afr., Burseraceae: 69, 1991.

syn.: *C. longipedicellata* Vollesen

Unarmed shrub or widely spreading tree to 5-8 m tall with very short trunk and branches often sagging almost to ground-level; bark yellowish or greyish, peeling in small flakes from the green under-bark; lenticels on older stems well marked, white, circular; young stems pubescent, fluted,  $\pm$  3 mm  $\varnothing$ ; apices of short-shoots often covered by the 2-3 mm long bases of fallen leaves which may persist for several years; on long-shoots the whole rachis of old leaves may persist; leaves nearly glabrous or pubescent, to 13 cm long including a 5-40 mm petiole, 3-9-foliolate on short-shoots, 9-13-foliolate on long-shoots; flowers appearing with or just before the leaves; inflorescences glandular-pubescent or less often almost glabrous, non-glandular hairs erect, 0,2-0,3 mm long, glandular hairs 0,1 mm long; male inflorescences subumbelliform dichasial 4-9-flowered cymes, usually grouped several together at the tips of branches; females borne singly or in 2-7 mm long pedunculate clusters; drupe glabrous, shiny, 1,3-2 cm long, stalked, 2-valved.

*Acacia*, *Commiphora* bushland on rocky limestone; coastal thicket on sand-dunes; 5-900 m alt.

Close to *C. engleri*.

The name *C. paolii* was misapplied by Chioyenda, Fl. Somalia 2, 1932, largely for *C. campestris* subsp. *glabrata* (fide Thulin in Fl. Somal. 2: 193, 1999).

**C. pedunculata** (Kotschy & Peyr.) Engl.; Akoegninou & al., Fl. analyt. Bénin: 443, 2006; Kew Bull. 28: 26, 1973.

bas.: *Balsamodendron pedunculatum* Kotschy & Peyr.

syn.: Enum. 2: 207, 1992.

Shrub or tree (1-)3-6 m tall, sometimes spiny; trunk stout, 0,3 m  $\varnothing$ , 1 m in girth; bark papery, rough; young branches densely pubescent; leaves olive-green when dry, pubescent or hispidulous, to 26 cm long, including a petiole to 7 cm,  $\pm$  fasciated at extremities; leaflets 5-13, margins dentate; flowers in dense, sub-globose, hispid clusters; drupe ellipsoid, pubescent, c. 1 cm long, 2-valved.

*Brachystegia* and mixed deciduous woodland; forest on clayey and clayey-siliceous soil; ferruginous plateau; savanna, rocky places; also on light, well drained soil; tall grass savanna; sand; sand with pebble; thickly wooded savanna; rare and scattered; 125-735 m alt.

Perhaps in W Ethiopia (collected just W of the border in Sudan).

Leaves resembling those of *Lannea humilis* (leaflets not toothed).

Not in W Tanzania (= *C. ugogensis*).

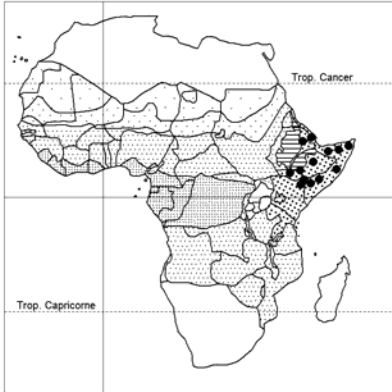
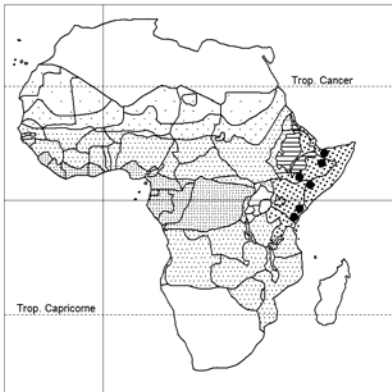
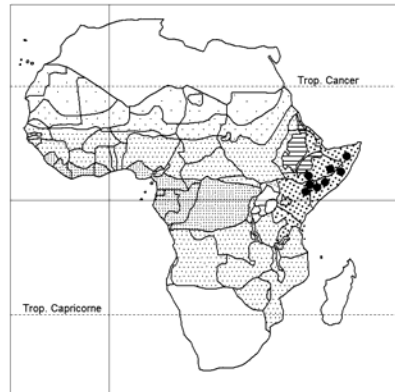
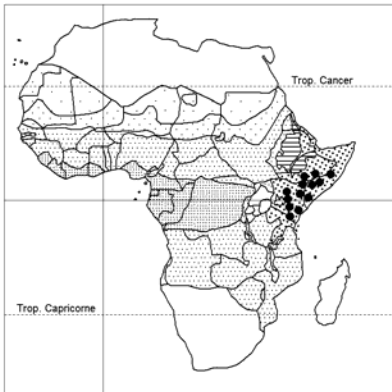
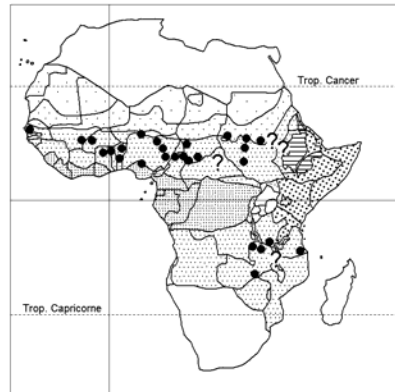
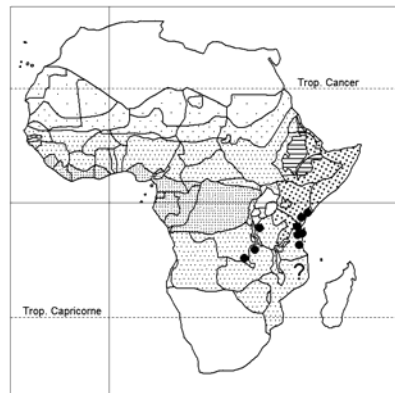
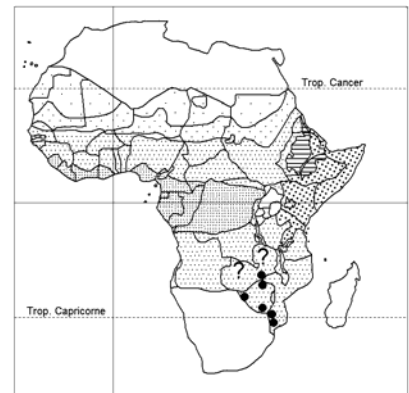
**C. playfairii** (Hook. f. ex Oliv.) Engl., excl. var. *benadirensis* Chiov. (= *C. myrrha*). – Icon.: Hook. Ic. Pl. 26: pl. 2524, 1897.

bas.: *Balsamodendron playfairii* Hook. f. ex Oliv.

Shrub or tree to  $\pm$  4 m tall, spiny but spines often few and short, glabrous throughout; bark whitish, peeling in small papery flakes; branchlets slender, often drooping, somewhat longitudinally ridged; leaves stiff, 1-3-foliolate; petiole 0-1 mm long; flowers unknown; fruit ovoid, asymmetrical, 6-10 mm long, 4-valved.

*Acacia*, *Commiphora* bushland; semidesert scrub; 10-700 m alt.

A few collections reported from Yemen, Hadramaut, along small wadis at 200-220 m alt. (Thulin & al., Biol. Skr. 54: 143, 2001).

***Commiphora myrrha******Commiphora neglecta******Commiphora oblongifolia******Commiphora obovata******Commiphora oddurensis******Commiphora ovalifolia******Commiphora paolii******Commiphora pedunculata******Commiphora playfairii******Commiphora pseudopaolii******Commiphora pteleifolia******Commiphora pyracanthoides***

## COMMIPHORA

**C. pseudopaulii** J. B. Gillett, excl. specim. S Somalia (= *C. kataf*); Beentje, Kenya trees, shrubs & lianas: 402, 1994.

Spreading tree 2-6 m, glabrous, often broader than tall, with a well-defined but short trunk to 1,5 m tall, 12-15 cm Ø; lower branches sagging and often lying on the ground; bark white, peeling in large sheets from the blue-green under-bark; leaves 3-foliolate on short-shoots, 3-7-foliolate on long-shoots; petiole to 35 mm long, usually longer; inflorescences and flowers appearing with the leaves; male ones often in pairs on a common peduncle (only galled flowers reported); female single; drupe flattened, ellipsoid, 7-8 mm long, glabrous, apiculate.

*Acacia, Commiphora* open bushland; often on alluvium; 60-600 m alt.

Not in Somalia (= *C. kataf*).

**C. pteleifolia** Engl.; Beentje, Kenya trees, shrubs & lianas: 392, 1994.

Slender straggling or sometimes subscaudent glabrous shrub or tree, 3-9 m tall; bark smooth, dark green or grey, the outer layer papery; longer twigs rarely spine-tipped but short lateral spines 10-20 mm long are always present and sometimes numerous; leaves 3-foliolate, petiole to 6 cm long, slender; male flowers 4-5 together in short clusters; females 2-3 together, appearing before the leaves; drupe beaked, ovoid, 11-18 mm long, 2-valved.

Coastal and riverine semi-evergreen thickets; rocky escarpments; sometimes on termitaria; dry dense forest (muhulu); 1-1100 m alt.

Angola ?

A wide gap between W and E populations.

Close to *C. dalzielii* from Ghana.

**C. pyracanthoides** Engl., excl. subsp. *glandulosa* (Schinz) Wild (= *C. glandulosa*); Coates Palgrave, Trees south. Afr., ed. 3: 438, 2002. – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga...: 248-249, 2002; Steyn, Field guide south. Afr. Commiphora: 25-26, 2003; Curtis & Mannheimer, Tree atlas Namibia: 296, 2005; Bothalia 11: 61, 62, 1973.

Dioecious or polygamous many-stemmed shrub 0,5-3 m tall, occasionally a tree with single trunk to 3 m; bark greyish or yellowish-green, flaking in small yellowish papery pieces; young branchlets glabrous, spine-tipped; leaves usually simple, but on long-shoots often 3-foliolate with tiny lateral leaflets, with long glandular hairs at base but otherwise glabrous, green, subsessile; flowers reddish, (uni- or bisexual) borne in clusters, in reduced cymes; drupe ovoid, glabrous, c. 1 cm long.

Dry sandy flats in valley, dry woodland; low alt.

Namibia, Botswana, S. Africa, Swaziland (155-1800 m alt.).

Very difficult to distinguish from *C. glandulosa* (with glandular hairs on the *calyx*); but *C. pyracanthoides* is generally a shrub, often many-stemmed.

Very close to *C. oddurensis*.

**C. quadricincta** Schweinf. ex Engl. – Icon.: Boulos, Flora Egypt 2: 70, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 459, 2001.

Shrub or tree 3-5 m tall, multistemmed; trunk and main branches covered by greyish-brown flaking bark; branchlets spine-tipped; leaves simple or ? trifoliolate, broadly ovate to orbicular, entire, glabrous, 1-5,5 × 1-2,5 cm, petiole 0,5-1,5 cm long; flowers red, in clusters; drupe ovoid, c. 1 cm long, apiculate, glabrous, with longitudinal wings, 4-valved.

## COMMIPHORA QUADRICINCTA

Dry rocky and hilly ground in tall grass savanna; wadi sides; clayey hollow; dune-sand; eroded gully at the base of a cliff; light soils; *Acacia, Commiphora* bushland, *Acacia, Adansonia* wooded grassland; lava; 500-1000 m alt.

SE Egypt; Yemen, SW Saudi Arabia.

**C. quercifoliola** J. B. Gillett ex Thulin – Icon.: Thulin, Fl. Somalia 2: 219, 1999; Nord. J. Bot. 20: 402, 2000.

Shrub to 0,6 m tall, 1-2 m Ø, unarmed, with spreading branches or branching horizontally from the base; bark dark grey; branchlets finely longitudinally ridged, grey, densely pubescent with short curved appressed hairs when young; leaves pinnately 5-7-foliolate, densely pubescent with short curved hairs throughout; petiole 0,5-3 mm long, rachis narrowly winged; male flowers unknown; females known only in fruit, solitary or few together; drupe ovoid, compressed, red, 4-angular, 4-valved, pointed.

Low, open *Acacia, Commiphora* bushland on shallow, rocky soil over limestone; ± 100-300 m alt.

Known only from a small area.

Leaves resembling those of *C. alata*, but probably superficial similarity. However it may be related to *C. boranensis*. Also similar to *C. horrida*.

**C. rostrata** Engl., incl. var. *reflexa* (Chiov.) J. B. Gillett – Icon.: Chiovenda, Fl. Somalia 2: 59-61, 1932; Beentje, Kenya trees, shrubs & lianas: 379, 1994; Thulin, Fl. Somalia 2: 210, 1999; Maundu & al., Traditional food pl. Kenya: 99, 1999.

syn.: Enum. 2: 207, 208, 1992.

Many-stemmed, spiny shrub or single-stemmed tree to 4 m tall, sometimes prostrate and scandent, glabrous; stems cylindrical; bark grey or dark purple, smooth, not peeling or in very small flakes; twigs rigid, tapering, spine-tipped; leaves simple, entire, glaucous; petiole 1-8 mm long; inflorescences precocious; male ones 8-20-flowered, divaricately branched cymes; females 1-2-flowered; drupe reddish, narrowly ovoid, beaked, 1,3-1,8 cm long, ridged, 2- or 4-valved.

*Acacia, Commiphora* open bushland on eluvial soil; *Acacia, Commiphora* woodland, wooded grassland; often on red sandy soil overlying limestone; black cotton soil; rocky slopes; 80-1400 m alt.

**C. samharensis** Schweinf., incl. subsp. *terebinthina* (Vollesen) J. B. Gillett – Icon.: Hook. Ic. Pl. 32: tab. 3107, 1927; Fl. Trop. E. Afr., Burseraceae: 52, 1991; Beentje, Kenya trees, shrubs & lianas: 382, 1994.

syn.: Enum. 2: 208, 1992; *C. danduensis* J. B. Gillett; *C. sp. B* sensu Fl. Trop. E. Afr., Burseraceae: 39, 1991.

Spiny (spines to 8 cm long, sometimes very dark) tree ± 3-9 m, glabrous (or leaves slightly pubescent); trunk yellowish, pale brown or grey, ± 1 m long; outer bark peeling in very small curved flakes; twigs dark purplish, usually rather zigzag, sometimes drooping from ground-level at their tips; leaves 3-foliolate; petiole 1-10 cm long; flowers usually precocious, solitary or clustered at the tips of spurs; males in 2-9-flowered cymes to 12 mm long; females in 1-2-flowered cymes; drupe ± obovoid, 6-12 mm long, 2-valved.

*Acacia, Commiphora* woodland and bushland with *Combretum, Sterculia, Terminalia*; usually on rocky slopes or level sandy soil derived from basement complex or on volcanic soils; very rarely on limestone soils and black cotton soil; wooded grassland; coastal bushland; 20-1800 m alt.



## COMMIPHORA SAMHARENSIS

The S populations with, i.a. larger leaflets, less numerous spines, flowers more numerous, were described as *C. terebinthina* by Vollesen. In Somalia there is a complete intergradation between the two taxa, and thus united by Thulin (Fl. Somal. 2: 200, 1999).

Confused with *C. campestris* subsp. *magadiensis*.

**C. sarandensis** B. D. Burt; Beentje, Kenya trees, shrubs & lianas: 400, 1994.

Loosely branched straggling shrub to 3 m tall, usually branching at ground-level, the main stems to 13 cm Ø at base; bark grey, hardly peeling; young twigs ± pubescent, pale brownish yellow, longitudinally ridged, slender, 0,6-1,1 mm Ø; leaves 3-foliolate, ± pubescent, the hairs longer and rather fulvous at the base of the petiole and leaflets, to 6 cm long; flowers appearing with the young leaves, both sexes sessile, crowded among linear pilose bracts at the leaf-bases; drupe glabrous, ovoid, pointed, c. 1 cm long.

Dense *Lannea*, *Acacia*, *Commiphora*, *Combretum*, *Terminalia* deciduous thickets on hard-pan soils; often common in parts of central Tanzania but rarely collected (not easily detected among other species); *Acacia*, *Commiphora* bushland on stony basement complex ridge; also on black cotton soil; 750-1300 m alt.

Comprises 2 subsp.: – subsp. **sarandensis** with stem bark longitudinally furrowed and indumentum of young twigs sparse, in Tanzania; – subsp. **moyaleensis** J. B. Gillett with stems not ridged and with young twigs densely hairy, in N Kenya/Ethiopian border.

**C. schimperi** (O. Berg) Engl.; Beentje, Kenya trees, shrubs & lianas: 393, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 439, 2002. – Icon.: Bothalia 11: 66, 67, 1973; Thulin, Fl. Somalia 2: 201, 1999; E. Schmidt & al., Trees & shrubs Mpumalanga...: 248-249, 2002; Steyn, Field guide south. Afr. Commiphora: 19-20, 2003; Maundu & al., Traditional food pl. Kenya: 100, 1999.

bas.: *Balsamodendron schimperi* O. Berg

syn.: *Commiphora flabellulifera* (“flahellulifera”) Chiov.; [*C. trothae* sensu Chiovenda, Fl. Somala 2: 81, 1932 pro maj. parte = *C. gurreh*]; *C. trothae* (“trothai”) Engl.; *C. arussensis* Engl.; *Balsamea schimperi* (O. Berg) Engl.; Enum. 2: 208, 1992.

Almost glabrous shrub or tree 2-6-8 m tall; trunk cylindrical, dbh to 0,5 m; outer bark peeling in dull yellow or grey flakes from a green under-bark; leaves 3-foliolate, often glabrous but sometimes with rather long flexuous golden hairs at the base of the leaflets and the petiole ± 7-35 mm long; flowers greenish yellow, precocious; male ones 20-40 together in dense clusters of very short cymes; females 2-6 together; drupe flattened, ovoid, 9-12 mm long, red, ± pointed.

Bushed grassland; *Acacia*, *Commiphora* bushland; *Acacia*, *Combretum*, *Terminalia* woodland and bushland; red sandy to stony soil overlying limestone or basement; rocky slopes; black cotton soil; termite mounds; *Brachystegia* woodland; near sea-level to 2100 m alt.

Variable in size of leaves, flowers and fruits, and in shape of leaflets.

Botswana, S. Africa, Swaziland; Yemen (Edinb. J. Bot. 65: 131, 2008).

Leaves very similar to those of *C. africana* but hairless; in the latter hairy like the young shoots. The 2 syntypes (Schimper 624, 1139) are a mixture of both taxa.

## COMMIPHORA

**C. schlechteri** Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 439, 2002. – Icon.: Steyn, Field guide south. Afr. Commiphora: 79-80, 2003.

Glabrous tree to 6 m; bark smooth, grey-green, papery; leaves 3-foliolate or with 2-3 pairs of leaflets plus the terminal one; petiole to 5 cm long; flowers whitish, appearing with the leaves in axillary paniculate cymes to 11 cm long; drupe narrowly ovoid, to 2,3 cm long, narrowly pointed, red.

Coastal sand dunes.

Related to *C. mombassensis*.

**C. sennii** Chiov. – Icon.: Chiovenda, Fl. Somala 2: 74, 1932 (but leaves not unifoliolate); Beentje, Kenya trees, shrubs & lianas: 382, 1994.

Glabrous spiny shrub with thick principal branches, ascending to 3 m or ± prostrate, or tree to 4 m; stems cylindrical; outer bark peeling in yellowish papery flakes from the green under-bark; main branches not spine-tipped, but with short lateral spines 10-20 mm long but sometimes extremely sparse; leaves yellowish green becoming pale yellow as they die, 3-foliolate; petiole to ± 5 cm; male inflorescence 2-4-flowered; drupe ovoid, beaked, 1,2-1,5 cm long, 4-valved.

*Acacia*, *Commiphora* open bushland on level ground where water may collect; alluvium or soil derived from lava; sand or red soil over limestone; often in dense clusters all of the same sex; the only woody plant over large areas in the lava subdesert N of Marsabit; 20-900 m alt.

**C. serrata** Engl., incl. ? var. *multipinnata* Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 440, 2002. – Icon.: Lovett & al., Field guide moist forest trees Tanzania: 48, 2006; Steyn, Field guide south. Afr. Commiphora: 81-82, 2003.

Spiny tree 5-20 m; bark smooth, green; young branches ± 2 mm Ø, glabrous or sparsely hispid with hairs ± 1 mm long; leaves pinnate, hispidulous or almost glabrous, leaflets 9-17; petiole to 3-5,5 cm long; flowers appearing with or before the young leaves in almost glabrous or hispid, pedunculate dichasial cymes grouped together at the tips of branchlets; male ones 10-20-flowered; females 1-5-flowered; drupe glabrous, round-ellipsoid, 2-2,3 cm long, 2-valved.

Thickets, also coastal; scrub; dry forest; especially among rocks; coastal woodland; 2-700 m alt.

**C. serrulata** Engl., incl. var. *tenuipes* Engl.

Shrub or tree to 6-8 m tall, often with very few spines; bark greyish to yellowish or brownish, peeling (often tardily) in small to large papery flakes, with conspicuous warty lenticels; branchlets glabrous to puberulous; leaves 3-foliolate, glabrous to puberulous, rarely pubescent; petiole 0,5-5,5 cm long; male flowers clustered 3-5 together; female flowers unknown?; drupe ovoid to ± round, 7-11 mm long, partially 4-valved.

*Acacia*, *Commiphora* woodland and bushland on limestone and basaltic slopes, on level sandy soil and on black cotton soil; 1250-1850 m alt.

**C. setulifera** Chiov., excl. syntype Senni 818 bis. – Icon.: Chiovenda, Fl. Somala 2: 113, 1932 only fig. 71 (1), (7), (8), (9), (10).

Shrub or tree to 3 m tall, unarmed; bark grey to purple, smooth; branchlets glabrous, longitudinally ridged; leaves 3-foliolate; petiole ± 10-23 mm long, sparsely to densely setose with ± 0,4-

## COMMIPHORA SETULIFERA

0,6 mm long hairs; male flowers in 2-7-flowered cymes; females solitary or clustered; drupe ovoid, apiculate, c. 6 mm long, 4-valved.

*Acacia*, *Commiphora* bushland; 225-500 m alt.

**C. spathulata** Mattick

Spiny tree 4-8 m, with a well-defined cylindrical trunk to 5 m long, glabrous except for some weak yellowish brown hairs at the leaf-base; outer bark peeling in long tough brownish yellow horizontal strips; twigs dark grey or purple when very young,  $\pm$  2 mm  $\varnothing$  4 cm below the tips; leaves sessile, a vivid glaucous blue when fresh, 1-foliolate on short-shoots, sometimes hetero-3-foliolate on long-shoots; male flowers borne among the leaves; drupe sessile, pointed, ellipsoid, c. 1 cm long, 2-valved.

*Acacia*, *Commiphora* woodland; *Commiphora*, *Cordyla densiflora* thickets on red soils and rocky slopes; 550-1100 m alt.

Confused with *C. merkeri*.

Known from a very restricted area, but often very abundant, even subdominant (like its fellow *Cordyla densiflora*).

**C. sphaerocarpa** Chiov.; Beentje, Kenya trees, shrubs & lianas: 397, 1994. – Icon.: Chiovenda, Fl. Somalia 2: 55, 1932; Thulin, Fl. Somalia 2: 212, 1999.

Shrub or tree to 4-10 m tall, unarmed; bark whitish to grey, sometimes flaking off in thick irregular scales and peeling in papery flakes; branchlets longitudinally ridged, puberulous or pubescent, occasionally glabrous; leaves 3-foliolate, blistered when mature, drying yellowish green, pubescent to glabrous; petiole 15-80 mm long; flowers appearing with the leaves, male ones in 3-9-flowered cymes; females few in short cymes; drupe  $\pm$  round, c. 1 cm  $\varnothing$ , long-stalked, 2-valved.

*Acacia*, *Commiphora* bushland on limestone or gypsum, often in silty depressions, rarely in sand; *Acacia*, *Commiphora*, *Boswellia rivae* bushland; 150-840 m alt.

Very near *C. erosa* (Gilbert & Thulin 1588, Gillett 16422, 21120A, Kenya).

Not yet reported from Kenya but occurs just N of the Dana River border, poorly investigated botanically.

**C. sphaerophylla** Chiov. – Icon.: Thulin, Fl. Somalia 2: 196, 1999.

Unarmed shrub or tree 5-7 m tall, with a large spreading crown and branched close to the ground; bark smooth, peeling in large irregular white to yellowish parchmenty flakes, bluish to greenish underneath; young branches 1-2 mm  $\varnothing$ , crisped puberulous, brown to purplish, becoming dark grey to brownish or purplish grey, slightly ridged longitudinally; leaves pinnate with 5-9 leaflets, often with a few 3-foliolate intermixed, pubescent to densely pubescent; petiole 3-25 mm long; flowers precocious or with young leaves in 1-3-flowered pubescent cymes; drupe  $\pm$  ovoid,  $\pm$  long-stalked, c. 1 cm long, glabrous to pubescent, 2-valved.

Open to dense *Acacia*, *Commiphora* bushland with *Boswellia rivae* on flat reddish to brown sandy to loamy soil overlying limestone and on rocky limestone slopes; 95-1100 m alt.

**C. spinulosa** J. B. Gillett ex Thulin – Icon.: Thulin, Fl. Somalia 2: 218, 1999; Nord. J. Bot. 20: 400, 2000.

Spreading shrub,  $\pm$  0,3 m tall, much-branched and richly but weakly spiny; bark grey; branchlets finely longitudinally ridged,

## COMMIPHORA SPINULOSA

glabrous; leaves simple, glabrous; petiole 1,5-4 mm long, slender; male flowers unknown; females seen only in fruit, solitary; drupe ovoid, apiculate, c. 5 mm long, 4-valved.

Limestone rocks on escarpment with *Acacia tortilis*, *A. bussei*, *Boswellia frereana*, *B. sacra*, *Moringa peregrina*, *Lannea ovata*; 200-300 m alt.

Near *C. quadricincta*.

Only known from the type collected in 1986.

**C. staphyleifolia** Chiov.; Thulin, Fl. Somalia 2: 195, 1999. – Icon.: Chiovenda, Flora Somala 2: 97, 1932.

Shrub or tree to 1,5-3 m tall, unarmed; branchlets thick, longitudinally ridged, densely pubescent, with long spreading hairs when young; bark pale grey,  $\pm$  smooth; leaves 5-9-foliolate, pubescent to tomentose; petiole 1-8,5 cm long; male flowers unknown; females solitary or few together on 1-60 mm long puberulous to tomentose peduncle; drupe purplish brown, glaucous,  $\pm$  ovoid, 1-1,5 cm  $\varnothing$ , 2-valved.

Open *Acacia-Commiphora* bushland on silt plains and limestone hills; on yellowish loamy alluvium overlying limestone; 160-400 m alt.

Not in Kenya (Dale & Greenway, Kenya trees & shrubs: 92, 1961, quoad specim. Dale 3895, Bally 1962 = *C. mildbraedii* subsp. *mildbraedii*).

**C. stellatopubesces** J. B. Gillett ex Thulin – Icon.: Thulin, Flora Somalia 2: 206, 1999; Nord. J. Bot. 20: 398, 2000.

Shrub or tree to  $\pm$  6 m tall, unarmed; bark grey, smooth, or rough towards base of trunk; branchlets slightly longitudinally ridged, brownish becoming  $\pm$  dark greyish, fairly densely pubescent with appressed *stellate* hairs when young; leaves 3-foliolate; petiole 4-16 mm long, densely *stellate*-pubescent on both surfaces; male flowers sessile in few-flowered clusters; females solitary or few, clustered together; drupe ellipsoid, compressed, glabrous, 2-valved, c. 7 mm long.

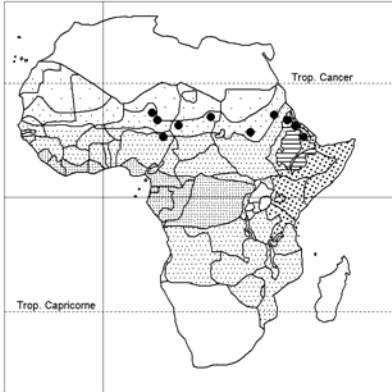
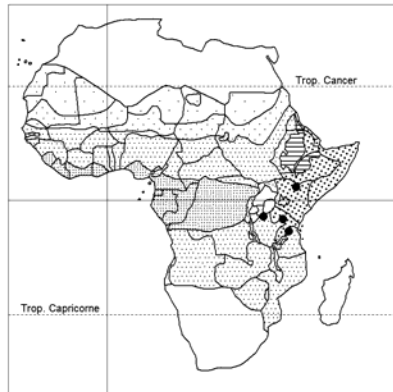
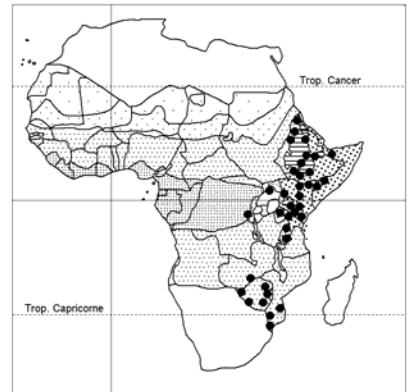
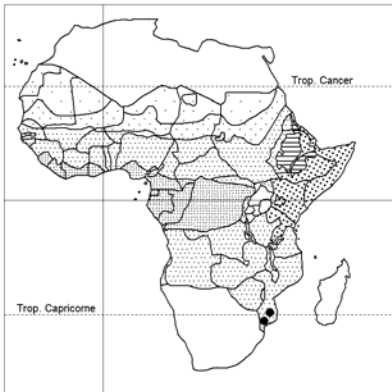
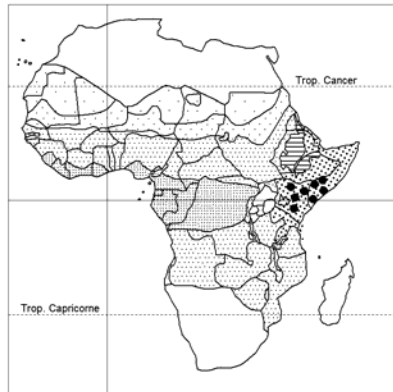
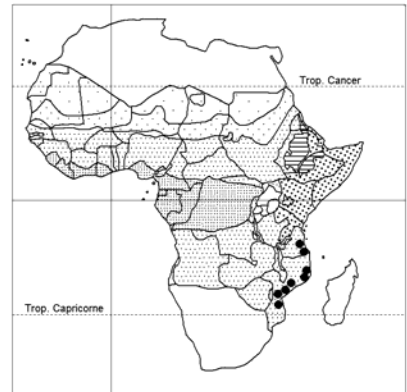
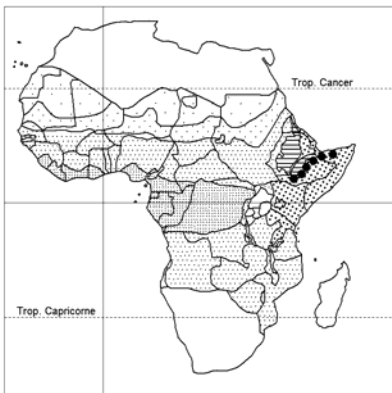
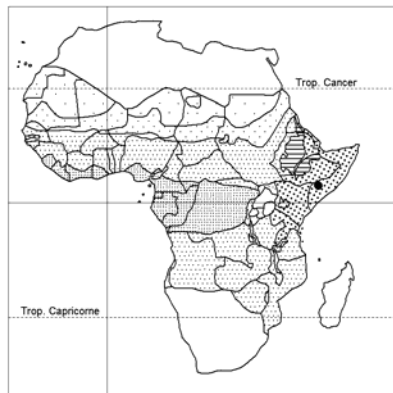
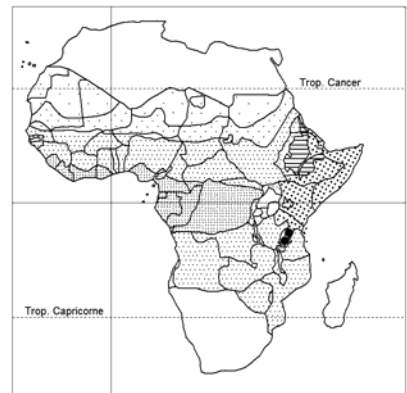
*Acacia*, *Commiphora* bushland on limestone outcrops; open bushland on stony level ground; locally dominant; 170-275 m alt.

The only African species of *Commiphora* with stellate hairs; two other species with such hairs occur in Madagascar.

(**C. steynii** Swanepoel) – Icon.: Bothalia 36: 48, 50, 52, 2006.

Dioecious tree to 3,5 m, with or without spines; single or multi-stemmed from ground level; trunk and stems cylindrical, to 20 cm  $\varnothing$ ; bark on trunk and older stems pale ashy grey, yellowish grey, greyish brown or khaki, smooth, peeling insignificant, in some specimens peeling in places in small, tough flake-like pieces or in short, narrow, transverse strips, not papery; lenticels transversely elongated, often almost completely encircling trunk and stems; branches and branchlets glabrous, smooth, with small lenticels, shiny brown to dark brown, often spine-tipped, spines slender; leaves simple or trifoliolate, with few glandular and long, shaggy, flexuous hairs; petiole < 1-5 mm long; flowers in clusters, solitary or male rarely in much-reduced, simple or dichasial cymes; drupe  $\pm$  ovoid, asymmetrical, flattened, 8,2-9,3 mm long, 2-valved.

Known from Kaokoveld, NW Namibia, in *Colophospermum-Commiphora* woodland preferring rocky areas and mixed soil and gravel substrates, on hill slopes and plains; at 800-1200 m alt.

***Commiphora quadricincta******Commiphora quercifoliola******Commiphora rostrata******Commiphora samharenensis******Commiphora sarandensis******Commiphora schimperi******Commiphora schlechteri******Commiphora sennii******Commiphora serrata******Commiphora serrulata******Commiphora setulifera******Commiphora spathulata***



## COMMIPHORA STEYNII

Collected within 1 km from the Angolan border near Ruacana in the Kunene R. valley.

Most probably present in S Angola.

Closely related to *C. viminea* Burtt Davy from S. Africa (confused with *C. merkeri*); resemblance with *C. kua*, *C. spathulata*.

**C. stolonifera** B. D. Burtt (May 1935) – Icon.: Kew Bull. 1935: tab. I facing p. 104 (habit).

Spreading rambling thicket-forming spiny shrub 1-3,5(?4-6) m tall; the stems bend over and *may root where they touch the ground*, thus behaving as stolons; stems silvery grey, the outer bark peeling in yellowish brown flakes from the dark green shining under-bark; branches borne at right angles to the main axis, arising from “buttressed elbows”; twigs green and glossy; leaves 3-foliolate, usually pubescent or hispidulous with very short glandular hairs and longer non-glandular hairs (sometimes almost glabrous); petiole 15-22 mm long; male inflorescence a 2-4-branched crimson, glandular-pubescent cyme; female one similar but shorter; drupe pink, obovoid, asymmetrical, c. 8 mm long, 2-valved.

Common on hard-pan soils among *Acacia mellifera*, *Commiphora kua*; thicket with *C. merkeri*, *C. hornbyi*, *Cordyla africana*; 690-1260 m alt.

Close to *C. samharensis*. Has been confused with *C. pteleifolia* but pseudoaril different.

The stoloniferous habit, although unique on the African mainland, is also known in species from Madagascar.

**C. sulcata** Chiov.

Shrub or tree to  $\pm$  3 m tall, unarmed; branchlets strongly longitudinally furrowed, glabrous to pubescent; leaves pinnately 3-5-foliolate, glabrous to shortly pubescent; petiole 15-35 mm long; male flowers unknown; females in short, few-flowered inflorescences; drupe ellipsoid, glabrous or shortly pubescent, 15-18 mm long, 2-valved, stalked.

Low, open, semidesert scrub; 150-450 m alt.

**C. swynnertonii** B. D. Burtt; Beentje, Kenya, trees, shrubs & lianas: 387, 1994. – Icon.: Utafiti 1(3): 79, 1988.

Spiny shrub or tree 2-6 m tall; outer bark brownish yellow peeling in large, strong horizontal strips; young twigs dark grey, spine-tipped with a floccose rufescent caducous indumentum when very young; leaves simple, sessile or with a petiole to 3 mm long, densely pubescent when young, often with floccose rufescent hairs, glabrescent when old; male flowers precocious or with the leaves, in dense clusters; drupe ovoid, sessile, 8-10 mm long, 2-valved.

*Acacia*, *Commiphora* bushland on sandy soil at base of granitic or basement complex mountains; 750-1100 m alt.

Gap remarkable between the known localities in Kenya and Tanzania.

**C. tenuipetiolata** Engl. – Icon.: Fl. Zambes. 2/1: 278, 1963 (flower, fruit); Bothalia 11: 88-89, 1973; Coates Palgrave, Trees south. Afr., ed. 3: 440, 2002 (leaf); E. Schmidt & al., Trees & shrubs Mpumalanga...: 248-249, 2002; Steyn, Field guide south. Afr. Commiphora: 33-34, 2003; Curtis & Mannheimer, Tree atlas Namibia: 300-301, 2005.

## COMMIPHORA TENUIPETIOLATA

Diocious tree 2-7(-12) m with a single trunk, occasionally shrub; bark grey to white, peeling in large whitish papery pieces, under-bark blue-green; branchlets glabrous, but young stems with a few glandular hairs; leaves glabrous, blue-green, 3-foliolate or imparipinnate, leaflets 5(-9), entire or crenate-serrate in upper half; lamina to 8 cm long, petiole slender 5 cm long; flowers yellowish-green appearing with or after the leaves, in axillary few-flowered loose cymes, male flowers 1,2-4 cm, larger than the females; drupe round, c. 1,2 cm Ø, glabrous, smooth.

Dry woodland often with *Colophospermum* and bushveld; often on sandy soil or among rocks; low alt.

Namibia, Botswana, S. Africa (305-1350 m alt.).

Two varieties have been distinguished, based on size and shape of terminal leaflet, viz. var. *tenuipetiolata* and var. *rogersii* Burtt Davy. However, such variations occur on the same plant (fide van der Walt in Bothalia l.c.).

Confused with *C. angolensis* (with hairy young branches).

**C. truncata** Engl.; Thulin, Fl. Somalia 2: 204, 1999; and in Nord. J. Bot. 20: 396-397, 2000.

Unarmed shrub or tree to 4-6 m tall; bark dark grey, smooth or slightly rough; branchlets pubescent to pilose; leaves hetero-trifoliolate, pubescent to pilose; petiole 2-8-? 15 mm long; flowers in 1-3-flowered fascicles, sessile; drupe ovoid, 7-9 mm long, glabrous, 2-valved.

*Acacia*, *Commiphora* bushland on red sandy to stony soil overlying limestone; semi-desert scrub near sea-level-1050 m alt.

“If it can be proved that the type [lost] of *C. truncata* is a different species, the species for which this name is used today would have to be known as *C. crenatolobata* Chiov., the only available synonym” (Thulin, l.c., 2000). – It is stated in the protologue (Engler, 1904), of *C. truncata* that the type specimen (sterile) had 1,5 cm long petioles, which is twice as long as those found in collections now named *C. truncata*. – *C. arenaria* agrees in several characters with *C. truncata* (but size of leaflets and length of petiolules are different, and bark colour slightly different).

**C. ugogensis** Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 440-441, 2002. – Icon.: Steyn, Field guide south. Afr. Commiphora: 77-78, 2003.

Stoutly spiny deciduous tree to 8-15 m; trunk fairly straight, to 40 cm Ø at breast height, irregular, knobbly; outer bark at first papery, peeling from the green under-bark, later rusty red and flaking giving the trunk a shaggy appearance; young branches markedly zigzag, at first pubescent; leaves olive-green when dry, pubescent, 11-21-foliolate; petiole 5-25 mm long; flowers in sessile axillary clusters on dwarf spur-branchlets; drupe round,  $\pm$  sessile, red, pubescent, 2-2,8 cm Ø, 2-valved.

*Combretum*, etc., open woodland and thickets; riverine alluvium; sometimes thicket-forming; 800-1400 m alt.

Not in NE Mozambique (specim. Pedro & Pedrógão 3151 is *C. serrata*, fide Gillett, Fl. Trop. E. Afr., Burseraceae: 73, 1991).

**C. ulugurensis** Engl.

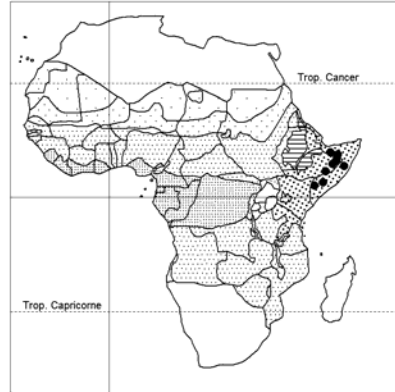
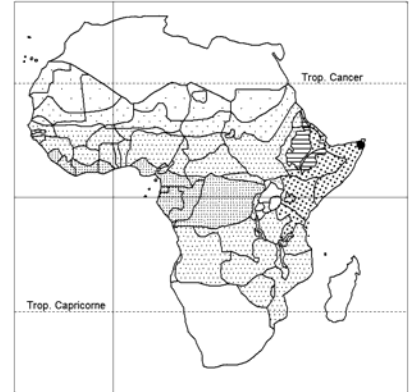
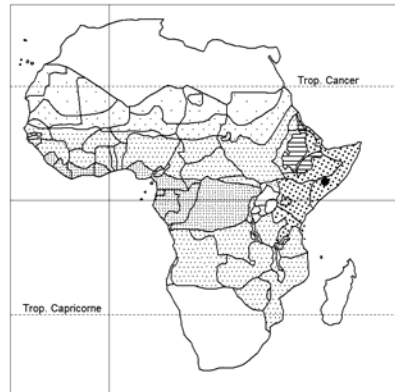
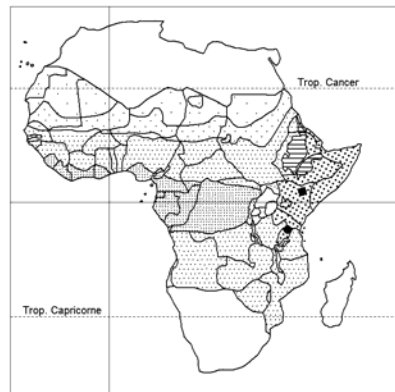
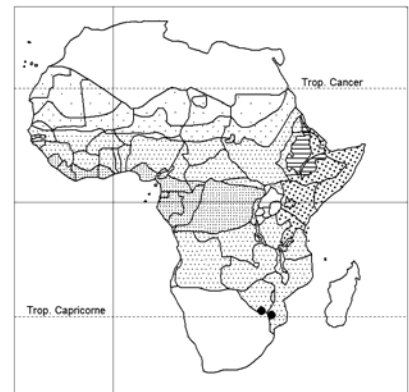
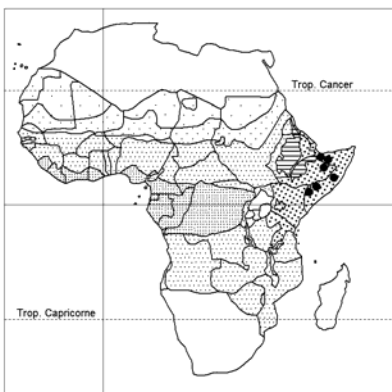
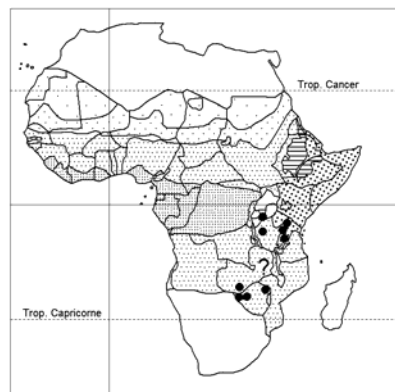
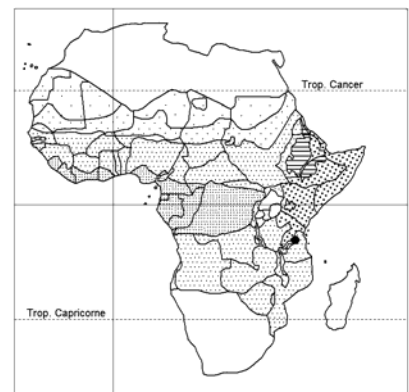
Slender glabrous sparsely spinose shrub; bark grey; leaves 3-foliolate; petiole  $\pm$  20 mm long; flowers unknown; fruit known only immature; sessile, ovoid, c. 8 mm long, beaked, 2-valved.

Forest remnants; 170 m alt.

Only a form of *C. pteleifolia* ?

Known only from the type collected in 1894.



***Commiphora sphaerocarpa******Commiphora sphaerophylla******Commiphora spinulosa******Commiphora staphyleifolia******Commiphora stellatopubescens******Commiphora stolonifera* •**  
***Commiphora steynii* ■*****Commiphora sulcata******Commiphora swynnertonii******Commiphora tenuipetiolata******Commiphora truncata******Commiphora ugogensis******Commiphora ulugurensis***

## COMMIPHORA

**C. unilobata** J. B. Gillett & Vollesen; Beentje, Kenya trees, shrubs & lianas: 399, 1994. – Icon.: Fl. Ethiopia 3: 449, 1989; Chiovenda, Fl. Somalia 1: fig. 18 p. 53, 1932; Thulin, Fl. Somalia 2: 194, 1999.

syn.: Enum. 2: 208, 1992

Unarmed little-branched shrub or tree 1-3 m tall; main stems with a dark green under-bark, the outer layers peeling in yellowish or dull orange sheets; young branches 5-15 mm Ø, strongly fluted, glabrous or sparsely puberulous, yellowish green or brownish at first, later grey, often beset with old persistent petioles; leaves glabrous or very sparsely puberulous, 5-11-foliolate; petiole 8 cm long; flowers red, appearing with the young leaves; male flowers in slender erect pale purplish puberulous panicles, 10-30 cm long (peduncle 4-8 cm included); female racemes puberulous, 2-12 cm long (peduncle 1-6 cm long included); drupe glabrous, glossy, ± ovoid, red, 16-26 mm long, 2-valved.

*Acacia*, *Commiphora* open bushland, chiefly on alluvium; yellowish loamy alluvium; silt plains: 70-1000 m alt.

Superficially resembling *C. erlangeriana* but fruit different.

**C. viminea** Burt Davy; Coates Palgrave, Trees south. Afr., ed. 3: 441, 2002. – Icon.: Fl. Zambes. 2/1: 267, 1963 (flower, fruit; sub nom. *C. merkeri*); Bothalia 11: 63-64, 1973 (idem); E. Schmidt & al., Trees & shrubs Mpumalanga...: 250-251, 2002; Steyn, Field guide south. Afr. Commiphora: 27-28, 2003; B. van Wyk & P. van Wyk, How to identify trees in south. Afr.: 78, 2007; B. van Wyk & al., Photo guide trees south. Afr., ed. 2: 101, 2008.

syn.: *C. merkeri* sensu auctt., e.g. Fl. Zambes. 2/1: 269, 1963 quoad syn. *C. viminea*, and van der Walt in Bothalia l.c., non Engl. p.p.

Erect single-stemmed tree 1-6 m, dioecious; bark grey or greenish yellow, zebra-striped with typical dark warty lenticel outgrowths forming horizontal bands, peeling in yellowish papery pieces; branchlets dark brown, with *purplish* sheen, spine-tipped; leaves clustered in rosettes on dwarf spine-tipped spur-branchlets, simple, ± obovate, 4,5 × 2,5 cm, glabrous, bluish-green with a greyish bloom, occasionally 3-foliolate with tiny leaflets on long-shoots, petiole slender c. 5 mm long; flowers yellowish in small clusters appearing just before or with the new leaves; drupe ellipsoid, glabrous, red, 7-13 mm long, asymmetrical, 2-valved.

In hot dry areas, often on granitic sand soils in mixed or *Colophospermum mopane* woodland and bushland; low alt.

NW Namibia, NE S. Africa (275-855 m alt.), border of Botswana to Mozambique.

Easily cultivated from seed. Fast-growing.

Has been confused with the more northerly *C. merkeri*. Also confused with *C. pyracanthoides*.

**C. virgata** Engl. 1894, non Chiov. 1916 (= *C. sennii*); Coates Palgrave, Trees south. Afr., ed. 3: 441, 2002; van Jaarsveld in Egli, Ill. handbook succ. pl.: Dicot.: 60, 2002; Figueiredo & Smith, Pl. Angola: 53, 2008. – Icon.: Mahr in Aloe 35/3-4: 74, 1998 (photo. habit); Steyn, Field guide south. Afr. Commiphora: 57-58, 2003; Curtis & Mannheimer, Tree atlas Namibia: 302, 2005; Craven & Marais, Damaraland flora: 54, 1992.

Much-branched shrub 0,5-3 m tall or shrubby tree > 3 m branching near the ground, dioecious; plants often as wide as high; trunk and main stems thickened; bark yellowish-white to silvery on main branches and peeling in white to silvery horizontal papery strips; young branchlets hairless, slender, often drooping, older branchlets red-brown; leaves trifoliolate, closely clustered along

## COMMIPHORA VIRGATA

the branchlets, hairless; petiole 2-15 mm long; both surfaces dark green to green-yellow; flowers closely clustered along the branches, appearing before the leaves; drupe ovoid, red, c. 1 cm long, glabrous.

Only known from Angola from two incomplete specimens (Welwitsch 4504, 1253). Occasional to locally common or abundant in NW Namibia very near the Namibian-Angolan border NW Opuwo (Namibia); mainly on hill slopes and rocky outcrops on stony, rocky or gravel substrates, on river banks (Namibia).

NW Namibia (Kaokoveld; fig. in Aloe 45: 64, 2008).

Closely related to *C. giessii* J. J. A. van der Walt from Kaokoland, NW Namibia, a richly branched shrub with reddish-brown bark, usually not peeling.

Twigs used as toothbrushes. The plant is the host of a large edible caterpillar.

**C. wildii** Merxm.; Mahr in Aloe 35/3-4: 75, 1998 (+ back cover); Coates Palgrave, Trees south. Afr., ed. 3: 442, 2002; van Jaarsveld in Egli, Ill. handbook succ. pl.: Dicot.: 60, and fig. X.g. 2002; Figueiredo & Smith, Pl. Angola: 53, 2008. – Icon.: cited references and Curtis & Mannheimer, Tree atlas Namibia: 304-305, 2005; Steyn, Field guide south. Afr. Commiphora: 65-66, 2003.

Deciduous shrub-like dioecious spreading tree to 2,5 m tall; stem thick, swollen, branching near the ground, generally growing nearly prostrate, occasionally erect; crown to 5 m Ø; bark grey-brown, shiny, may or may not peel in papery strips; young branchlets hairy, short and stubby; leaves lobed, *resembling oak leaves* with leaf base continuing down rachis and petiole; flowers yellowish, solitary or in pairs on slender stalks to 2 cm long, in the leaf axils; drupe ovoid, orange to pale red, puberulous, c. 1 cm long on slender stalk to 4 cm long.

Desert-steppe.

NW Namibia (± 450 m alt.).

**C. woodii** Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 442, 2002. – Icon.: Bothalia 11: 83-85, 1973; E. Schmidt & al., Trees & shrubs Mpumalanga...: 250-251, 2002; Steyn, Field guide south. Afr. Commiphora: 7-8, 2003.

syn.: *C. caryaefolia* Oliv.

Tree, dioecious, deciduous, to 15(-20) m, unarmed; branchlets slightly fluted; young stems and leaves with a few glandular hairs, otherwise glabrous; bark greenish to grey, white-mottled, not peeling; leaves clustered at ends of branches, 7-11-foliolate, lamina to 32 cm long, petiole 9 cm long; leaflets *large* to 13 × 5 cm, petiolules 5 mm long; flowers creamy green, in axillary panicle cymes to 10 cm long, appearing before or with the new reddish leaves; drupe ± round, 2-2,5 cm long, red, glabrous, 2-valved.

Slopes of mountains in coastal and mist-belt forests and bushveld. Swaziland, E S. Africa (15-1370 m alt.).

Easily growing from pole cuttings (fences).

Closely related to *C. zanzibarica* but inflorescences, flowers and fruits different.

**C. zanzibarica** (Baill.) Engl. (“sansibarica”), incl. var. *elongata* Engl.; Beentje, Kenya trees, shrubs & lianas: 399, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 443, 2002. – Icon.: Bothalia 11: 86-87, 1973; Steyn, Field guide south. Afr. Commiphora: 11-12, 2003.

bas.: *Balsamea zanzibarica* Baill.

## COMMIPHORA ZANZIBARICA

Tree, dioecious, often many-stemmed, unarmed, to 7-12 m tall; bark smooth, grey, outer layer peeling in large straw-coloured pieces; young shoots glabrous or minutely puberulous, fluted, 3-4 mm Ø; leaves with petiole to 11 cm long, 7-11-foliolate, glabrous, aromatic when crushed; flowers appearing with the young leaves in narrow glabrous or subglabrous panicles which may be up to 48 cm long, often hanging down when in fruit; drupe round, red, c. 1.7 cm long, glabrous.

Evergreen thickets and forest margins on coral near the sea, and near streams further inland; 2-1050 m alt.

S. Africa. Malawi?

Close to *C. erlangeriana*.

Can be confused with *Lannea schweinfurthii* (but with bark cracking into large chunks).

\* \* \*

## INSUFFICIENTLY KNOWN TAXA:

*Commiphora berardellii* Chiov.; Fl. Ethiopia 3: 477, 1989.

Shrub?, unarmed, 4-5 m tall; bark yellowish, peeling in small flakes; leaves 3-foliolate, sparsely pubescent, leaflets ovate-orbicular, crenate; flowers and fruit unknown.

Ecology unknown.

Known only from the type (= 2 loose leaves; Reghini 5).

Impossible to suggest any affinity (fide Fl. Eth., l.c.).

*C. chevalieri* Engl. 1907; Chevalier, Etudes Fl. Afr. Centr. franç., Mission Chari – Lac Tchad 1: 51, 1913.

Shrub?, unarmed?; young branchlets and petioles glabrous, reddish; leaves glabrous, 3-foliolate, c. 10 cm long, petiole slightly winged, leaflets dentate; flowers and fruits unknown.

Type: Chevalier 7823 from Centr. Afr. Rep., Chari, Dar Goula, 1903.

Engler in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 435, 1931, placed this plant in his species group (19) *Rhoifoliae* together with *C. eminii* and species from SE Africa.

This plant is probably *Sclerocarya birrea* (*Anardiaceae*).

*C. ruspolii* Chiov.; Fl. Ethiopia 3: 477, 1989. – Icon.: Chiovenda, Fl. Somala 2: 118, 1932.

Small tree; branchlets with dark grey bark longitudinally furrowed, the young growth densely appressed grey pubescent; flowers in terminal panicles; drupe immature, elliptic-ovate, 6 mm long, pubescent, 2-valved.

Type (Ruspoli & Riva 1064) a galled specimen.

Vollesen (Fl. Eth., l.c.) prefers to leave it a doubtful species.

\* \* \*

Several unnamed taxa and unpublished names are listed in our Enum. 2: 208-209, 1992.

## SYNONYMS:

*Commiphora* “*abyssinica*” (O. Berg) Engl. = **Commiphora kua**

*abysinnica* sensu auctt. mult. = **C. kua**

*acutifoliolata* Mattick = **C. engleri**

*africana* (A. Rich.) Engl. var. *ramosissima* (Oliv.) Engl.

and var. *togoensis* Engl. = **C. africana** var. **africana**

*agallocha* Engl. = **C. madagascarensis**

## COMMIPHORA

*agar* Chiov. = **C. alata**

*albiflora* Engl. = **C. gileadensis**

*allophylla* Sprague (leaves) = **C. kataf**

*ancistrophora* Chiov. = **C. gileadensis**

*anfractuosa* Chiov. = **C. gileadensis**

*anglosomaliae* Chiov. = **C. serrulata**

*ararobba* Engl. = **C. kerstingii**

*arussensis* Engl. = **C. schimperi**

*assaortensis* Chiov. = **C. kua**

*atramentaria* Chiov. = **C. kua**

*benadirensis* Mattei = **C. africana** var. **africana**

*berberidifolia* Engl. = **C. glandulosa**

*betschuanica* Engl. = **C. schimperi**

*boehmii* Engl. = **C. mollis**

*boiviniana* Engl., incl. var. *crenata* Engl. = **C. edulis** subsp.

*bricchettii* Chiov., Fl. Somala 2: 58, 1932 (sterile type) = **Lannea obovata** (*Anacardiaceae*)

*bruceae* Chiov. = **Commiphora kua**

*buraensis* Engl. = **C. schimperi**

*calciicola* Engl. = **C. africana** var. **africana**

*campestris* sensu Chiov. p.p. quoad specim. Paoli 856, 905, 918, non Engl. = ? **C. cyclophylla**

*campestris* Engl. subsp. *heterophylla* sensu Ament & J. B. Gillett = **C. campestris** subsp. **campestris** var. **heterophylla**

*candidula* Sprague = **C. kua**

*caryaefolia* Oliv. = **C. woodii**

*cassan* Chiov. = **C. gileadensis**

*cerasiformis* Chiov. = **C. sphaerocarpa**

*chaetocarpa* J. B. Gillett specim. Brenan & al. 14698 = **C. kua** fa.

*chevalieri* Engl. = ? **Sclerocarya birrea** (*Anacardiaceae*), cf. above under “Insufficiently known taxa”

*chlorocarpa* Engl. = **Commiphora edulis** subsp. **edulis**

*cinerea* Engl. = **C. mollis**

*coriacea* Engl. = **C. myrrha**

*cornii* Chiov. = **C. cyclophylla**

*coronillifolia* Chiov. = **C. gileadensis**

*crassispina* Sprague = **C. samharensis**

*crenato-lobata* Chiov. = **C. truncata**

*crenato-serrata* sensu Steyn, non Engl. = **C. kuneneana**

*crenulata* (A. Terracc.) Chiov. = **C. kua**

*cuspidata* Chiov. = **C. myrrha**

*dancaliensis* Chiov. = **C. kua**

*danduensis* J. B. Gillett = **C. samharensis**

*dekindtiana* Engl. = **C. mollis**

*ellenbeckii* Engl. = **C. kua**

*ellisiae* Vollesen = **C. sphaerophylla**

*erlangeriana* sensu Chiov. p.p. quoad specim. ex Somal., and sensu Dale & Greenway 1961, non Engl.

= **C. unilobata**

*erosa* Vollesen, specimens in fruit = **C. sphaerocarpa**

*erythraea* (Ehrenb.) Engl. = **C. kataf**

var. *glabrescens* Engl. = **C. gorinii**

## COMMIPHORA

- erythraea* sensu Vollesen 1990 p.p. quoad specim. Burger 3313 et Friis & al. 2727, et sensu Kenya trees & shrubs, pro maj. parte = **C. baluensis**
- fischeri* Engl. = **C. mossambicensis**
- flabellulifera* Chiov. (“flahellulifera”) = **C. schimperi**
- flaviflora* Engl. = **C. kua**
- foliolosa* (Hiern) K. Schum. = **Haplocoelum** (*Sapindaceae*)
- fragariifolia* Mattick = **Commiphora stolonifera**
- fraxinoides* (Hiern) K. Schum. = **Zanha golungensis** (*Sapindaceae*)
- gallaensis* (Engl.) Engl. = **Commiphora kataf**
- gileadensis* sensu Dale & Greenway 1961, non (L.) C. Chr. = **C. boranensis**
- gillettii* Chiov. = **C. gileadensis**
- glabrata* Engl. = **C. campestris** subsp. **glabrata**
- gowllo* (Sprague) J. B. Gillett = **C. kua**
- gracilispina* J. B. Gillett = **C. kua**
- habessinica* (O. Berg) Engl., incl. subsp. *tanganyikensis* J. B. Gillett, var. *crenulata* A. Terracc., var. *simplicifolia* Schweinf. quoad pl. afric. = **C. kua**  
var. *grossedentata* Chiov. = **C. myrrha**
- hereroensis* Schinz = **C. glaucescens**
- heterophylla* Engl. = **C. campestris** subsp. **campestris** var. **heterophylla**
- hildebrandtii* (Engl.) Engl. var. *gallaensis* Engl. = **C. kataf**
- hirtella* Chiov. = **C. sphaerocarpa**
- hollisii* Burttt Davy = **C. schimperi**
- holosericea* Engl. = **C. edulis** subsp.
- holtzii* Engl. = **Combretum aculeatum** (*Combretaceae*)
- holtziana* Engl., incl. var. *microphylla* J. B. Gillett = **Commiphora kataf**
- incisa* Chiov. = **C. kua**
- iringensis* Engl. = **C. mollis**
- julifera* Chiov. = **Kirkia tenuifolia** (*Simaroubaceae*)
- kilimandscharica* Engl. = **Lepidotrichilia volkensii** (*Meliaceae*)
- kotschyi* (O. Berg) Engl. = **Commiphora africana** var. **africana**
- krausei* Engl. = **C. mollis**
- kwebensis* N. E. Br. = **C. angolensis**
- kyimbilensis* Engl. = **C. eminii** subsp. **zimmermannii**
- laxiflora* Engl. 1895, non Bak. 1887 = **C. engleri**
- ledermannii* Engl. = **C. pedunculata**
- lindensis* Engl. = **C. kua**
- loandensis* Engl. = **C. africana** var. **africana**
- longebracteata* Engl. = **C. angolensis**
- longipedicellata* Vollesen = **C. paolii**
- lugardae* N. E. Br. = **C. glandulosa**
- lughensis* Chiov. p.p., excl. specim. Paoli 927, 950 = **C. cyclophylla**
- lughensis* Chiov., p.p. quoad syntyp. Paoli 927, 950 = **C. kataf**
- madagascariensis* sensu White etc., non Jacq. = **C. kua**
- madagascariensis* sensu Wild in Fl. Zambes. = **C. kua**
- mbaluensis* Engl. = **C. baluensis**

## COMMIPHORA

- merkeri* sensu auctt. p.p., non Engl. = **C. viminea**
- microcarpa* Chiov. = **C. gileadensis**
- missionis* Chiov. = **C. eminii** subsp. **zimmermannii**
- mollis* (Oliv.) Engl. fa. sensu Ament & J. B. Gillett = **C. mildbraedii** subsp. **mildbraedii**
- mollissima* Engl. = **C. pedunculata**
- molmol* (Engl.) Engl. = **C. myrrha**
- montana* Engl. = **C. mollis**
- morogorensis* Engl. = **C. edulis** subsp. **edulis**
- mulelame* sensu Exell & Mendonça, p.p. quoad specim. Antunes 302 = **C. antunesii**
- ndemfi* Engl. = **C. mollis**
- neumannii* Engl. = **C. schimperi**
- nigrescens* Engl. = **C. angolensis**
- nkolola* Engl. = **C. africana** var. **africana**
- ogadensis* Chiov. = **C. hildebrandtii**
- oliveri* Engl. = **C. angolensis**
- opobalsamum* (L.) Engl., incl. var. *ehrenbergiana* (O. Berg) Engl., var. *gileadensis* (L.) Engl., var. *induta* Sprague ex Hutch. & Bruce, and var. “pubescens” (Stocks) J. B. Gillett, comb. nov. ined. = **C. gileadensis**
- palmatifoliolata* Chiov. = ? **C. africana** var. **africana**
- paolii* Chiov. p. maj. p. = **C. campestris** subsp. **glabrata**
- parvifolia* sensu Chiov., non (Balf. f.) Engl. = **C. chioventana**
- pilosa* (Engl.) Engl., incl. var. *meyeri-johannis* Engl. = **C. africana** var. **africana** var. *glaucidula* Engl. = **C. africana** var. *glaucidula* var. *oblongifoliolata* Engl. = **C. africana** var. *oblongifoliolata*  
var. *venosa* Mattick = **C. africana** var. **rubriflora**
- pilosissima* Engl. = **C. edulis** subsp. **holosericea**
- playfairii* (Hook. f. ex Oliv.) Engl. var. *benadirensis* Chiov. = **C. myrrha**
- playfairii* sensu Chiov., p.p. = **C. kua**
- porensis* Engl. = **Lannea schweinfurthii** var. **schweinfurthii** and var. **stuhmannii** (*Anacardiaceae*)
- pruinosa* Engl. = **Commiphora glaucescens**
- pseudopaolii* J. B. Gillett, p.p., quoad specim. Somal. = **C. kataf**
- puguensis* sensu Wild, p.p. quoad B. D. Burttt, non Engl. = **C. eminii** subsp. **eminii**
- puguensis* l.c., quoad specim. Chapman 1154 = **C. eminii** subsp. **zimmermannii**
- pyracanthoides* Engl. subsp. *glandulosa* (Schinz) Wild = **C. glandulosa**
- reflexa* Chiov. = **C. rostrata**
- reghinii* Chiov. = **Euphorbia jatrophioides** Pax (*Euphorbiaceae*)
- rehmannii* Engl. = **Commiphora angolensis**
- resiniflua* Martelli = **C. schimperi**
- retifolia* Chiov. = ? **C. erlangeriana**
- riparia* Engl. = **C. mildbraedii** subsp. **mildbraedii**
- rivae* sensu Chiov., p.p., non Engl. = **C. kua**, **C. sennii**
- rivae* Engl. = **C. myrrha**
- robecchii* Engl. = **C. rostrata**



## COMMIPHORA

- rosifolia* Engl. = **C. pedunculata**  
*roxburghii* (Arn.) Engl. var. *serratifolia* Haines  
 = **C. madagascarensis**  
*ruahensis* Mattick = **C. glandulosa**  
*rubriflora* Engl. = **C. africana** var.  
*rugosa* Engl. = **C. africana** var. **africana**  
*salubris* Engl. = **C. kua**  
*sambesiaca* Engl. = **C. africana** var. **africana**  
 “*sansibarica*” Engl. = **C. zanzibarica**  
*savoiae* Chiov. = **C. edulis** subsp. **boiviniana**  
*saxicola* sensu Steyn, non Engl. = **C. kuneneana**  
*scaberula* Engl. = **C. edulis** subsp. **boiviniana**  
*scheffleri* Engl. = **C. campestris** susp. and var. **campestris**  
*seineri* Engl. = **C. glandulosa**  
*serrata* Engl. var. *multipinnata* Engl. = ? **C. serrata**  
*sessiliflora* Vollesen = **C. guidottii**  
*setulifera* Chiov., excl. syntype Senni 818 bis = ?  
*somalensis* Engl. = **C. kataf**  
 sp. ? nov. sensu Vollesen, Op. Bot. 59: 57, 1980  
 = **C. madagascarensis**  
 sp. sensu Vollesen Fl. Ethiop. 3: 474, 1989  
 = **C. oddurensis**  
 sp. sensu Vollesen, o.c.: 477 = **C. chiovendana**  
 sp. B sensu F.T.E.A., Burser.: 9, 1991 = **C. samharensis**  
*spondioides* Engl. = **C. zanzibarica**  
*staphyleifolia* Chiov. p.p. specim. ex Kenya  
 = **C. mildbraedii** subsp. **mildbraedii**  
*stocksiana* (Engl.) Engl. – See note under **C. gileadensis**  
*stolzii* Engl. = **C. mossambicensis**  
*stuhlmannii* Engl. = **C. mollis**  
*subglauca* Engl. = **Sclerocarya birrea** subsp. **caffra**  
 (Anacardiaceae)  
*subsessilifolia* Engl. = **Commiphora kua**  
*suckertiana* Chiov. = **C. gileadensis**  
*taborensis* Engl. = **Lanea humilis** (Anacardiaceae)  
*tenuis* Vollesen = **Commiphora gurreh**  
*tephrodes* Chiov. = **C. hildebrandtii**  
*terebinthina* Vollesen = **C. samharensis**  
*thermitaria* Lisowski & al. = **C. glandulosa**  
*tomentosa* Engl. = **Lanea rivae** (Anacardiaceae)  
*torrei* Mendes = **Commiphora fulvotomentosa**  
*trollii* Mattick = **C. edulis** subsp. **edulis**  
*trothae* (“trothai”) Engl. = **C. schimperi**  
*trothae* sensu Chiov., p. maj. p. = **C. gurreh**  
*tubuk* Sprague = **C. africana** var. **tubuk** (= var. **africana** ?)  
*velutina* Chiov. = **C. gileadensis**  
*virgata* sensu Chiov. 1916, non Engl. 1894 = **C. sennii**  
*voensis* Engl. = **Platycelyphium voense** (Engl.) Wild  
 (Fabaceae)  
*welwitschii* Engl. = **Commiphora mollis**  
*zimmermannii* Engl. = **C. eminii** subsp.

## DACRYODES / 18

syn.: *Santiridium* Pierre, 1896, nom. illegit.; *Pachylobus* G. Don 1832.

Some 70 species in the tropics (22 and additional 14 undescribed in America, 16 in Asia/Malaysia). Very difficult in our area, except for *D. buettneri* and *D. osika*. The indumentum of the lower leaflet surface is useful to distinguish taxa. – The generic name refers to the drops of gum exuding from the bark when cut (“tear-like”, Greek). Dioecious trees with 3-merous flowers. Fruit a large drupe with sugary or resinous flesh eaten and dispersed by many forest animals.

Some species are poorly known (see also at the end of the list): no flowers known in 1 species (= c. 5%); male flower known only in bud for 1 species; fruit unknown in 3 species (= c. 16%). Several species known from few and/or old collections.

ONANA, J. M. (2008). A synoptic revision of *Dacryodes* (Burseraceae) in Africa, with a new species from Central Africa. *Kew Bull.* 63: 385-400.

**Dacryodes bampsiana** Pierlot

Tree to 25 m tall; bole to 80 cm Ø; bark thin, brittle, smooth or fibrous, not peeling; leaves imparipinnate, usually 2-jugate; petioles and petiolules marked with rings.

Evergreen forest with *Drypetes* sp., *Dichapetalum michelsonii*, *Lovoa swynnertonii*, *Beilschmiedia oblongifolia*, *Symphonia globulifera*; 650-1950 m alt.

Very few collections known; endangered (Onana 2008: 388).

Near *D. leonardiana*.

**D. buettneri** (Engl.) H. J. Lam – Neotype: van Nek 141 (collected near the original type locality, Büttner 451, B, destroyed). – Icon.: Bois Forêts Trop. 3: 44, 1947; Flow. Pl. Africa 56: pl. 2152, 1999; Wilks & Issembé, Arbres Guinée Equat.: 155, 2000; Walker & Sillans, Pl. utiles Gabon: pl. 13 facing p. 112, 1961 (sub gen. *Pachylobus*).

bas.: *Canarium buettneri* Engl.

syn.: *Pachylobus buettneri* (Engl.) Engl., incl. var. *cinerea* A. Chev.; *P. fraxinifolius* Engl.; *Dacryodes fraxinifolius* (Engl.) H. J. Lam; *Pachylobus ezigo* Pierre, in sched.

Tree 15-25(-50) m; bole cylindrical, rarely quite straight, 0,8-1,5 m Ø, base with small buttresses; crown hemispherical; bark yellow-orange, peeling in long thin scales; branches stout, brick-red; leaves imparipinnate, 6-8-jugate; leaflets asymmetrical, 12 × 3 cm, with long narrow tips, dark green and shiny above, very characteristic.

Old secondary forests; old clearings (heliophilous); on well-drained soils; in some areas the commonest large tree, striking and easily recognized; ecology similar to that of *Aucoumea*; 10-670 m alt.

Not cultivated. A substitute for *Aucoumea*; produces a soft pink plywood.

Confused with *Sacoglottis* (Humiriaceae).

**D. camerunensis** Onana – Icon.: Kew Bull. 61: 581, 2006.

syn.: *D. klaineana* sensu Aubrév., Fl. Gabon 3: 81, 1962, p.p. quoad specim. Le Testu 7537, 7592, 9406, 9387, non (Pierre) H. J. Lam

Dioecious tree ± 45 m tall; bole ± cylindrical, to 65 cm Ø; crown densely branched; bark 4-5 mm thick, pale brown; leaves alternate, imparipinnate, 3-5-jugate.

## DACRYODES CAMERUNENSIS

Primary and secondary equatorial forests; usually on inundated river-banks; 400-550 m alt.

Resembling *D. klaineana*, but leaflets smaller (3,5-11 × 4,5 cm, not 15 × 8 cm) and lateral petiolules shorter (5-10 mm long, not 10-25 mm), with circular twisted rings (like in *D. bampsiana*, *D. leonardiana*).

Seems to be close to *D. osika*.

The only African species of *Dacryodes* with a stellate-pubescent mature fruit epicarp.

**D. ebatom** Aubrév. & Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 95, 2006; Onana 2008: 389.

Tree; trunk 30 cm Ø; leaves of 11-13 leaflets, oblong-elliptic, 12 × 5,5 cm, glabrous except presence of some small scaly hairs, shining beneath, petiolules c. 5 mm long; flowers unknown; fruit small, round.

Streamside (Ogooué Riv.; Akoré, Gabon, Ogooué Prov.).

Known only from the type.

Mapped with *D. bampsiana*.

**D. edulis** (G. Don) H. J. Lam, incl. var. *hirsuta* A. Chev. and var. *parvicarpa* Okafor (cf. Onana 2008: 389-390). – Butterfruit, African Pear or Plum. – Keay, Trees Nigeria: 337, 1989; Harris, Vascul. pl. Dzanga-Sangha Res., C.A.R.: 60, 2002; Sosef & al., Check-list pl. vascul. Gabon: 95, 2006; Onana, Kew Bull. 61: 582, 2007; Figueiredo & Smith, Pl. Angola: 53, 2008; L. Hédin, Etude sur la forêt et les bois du Cameroun...: 80, 82, 1930. – Icon.: Hook. Icon. Pl. 26: pl. 2566-2567, 1898; Wilks & Issembé, Arbres Guinée Equat.: 151, 2000; Verheij in Oyen & Lemmens, Ressources végét. Afr. trop. Précurseur: 69, 2002; Mbile & al., Biodiversity 4/2: 19, 2003 [production zone, etc. mapped, Cameroon]; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 118, 2007; Vietmeyer, ed., Lost crops of Africa 3, fruits: 60, 62, 64, 2008; Harris & Wortley, Sangha trees: 160, 2008.

bas.: *Pachylobus edulis* G. Don

syn.: *Canarium edule* (G. Don) Hook. f.; *C. saphu* Engl.; *Pachylobus saphu* (Engl.) Engl.; *P. edulis* G. Don var. *mubafo* (Ficalho) Engl., var. *preussii* Engl., and var. *sylvestris* A. Chev.; *Canarium mubafo* Ficalho; *C. mansfeldianum* Engl.; *Pachylobus albiflorus* Guillaumin, nom. illegit. (based on Jolly 161, a heterotypic synonym of *Dacryodes klaineana*).

Tree 15-20 m, usually without buttresses; bole to 10 m high, 50-70 cm Ø, 1,5 m in girth; bark ash-grey or grey-brown, flaking off in thin irregular scales; slash brown-red to pink, fragrant, exuding a whitish resinous gum; branchlets scurfy, with leaves in tufts at the ends; crown wide spreading; leaves imparipinnate, dark green, glossy, 30-60 cm long, of 6-8 pairs of leaflets, the lowest pair close to the base of stalk, small and roundish; branchlets, petioles, inflorescence rachis, petal outside stellate brown-hairy; flowers cream, c. 5 mm Ø, with a conspicuous bract soon falling off, clustered at ends of branches; fruit ellipsoid, c. 6 cm long, 3,5 cm Ø, hanging in clusters on stout stalks, glabrous, glossy pinkish-bright blue – ± black, pulp thin and smelling of turpentine.

In evergreen primary and secondary forests on firm ground, forest gallery, swamps, from S Nigeria, Gulf of Guinea area to Zaire and Angola; S. Tomé, Principe; 100-550 m alt.

Planted in and around homesteads and villages for shade and its fruit; leaves eaten raw with kola nut. – Grown from seeds and cuttings. Range: from Sierre Leone to Zaire/Uganda, Angola, Zimbabwe. Maps in Verheij, o.c.: 68; Ayuk & al. (1999): 294 for Cameroon.

## DACRYODES EDULIS

AYUK, E. T. & al. (1999). Uses, management, and economic potential of *Dacryodes edulis* (Burseraceae) in the humid lowlands of Cameroon. *Econ. Bot.* 53: 292-301.

TODOU, G. & al. (2010). Premières données sur la structure génétique de *Dacryodes edulis* (Burseraceae) au Cameroun. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 484.

Closely related to *D. buettneri*. May be confused with *D. trapnellii* in Zambia.

It is impossible or nearly so to know in forest whether or not a tree is spontaneous or anciently planted. – Not mapped.

**D. heterotricha** (Pellegr.) H. J. Lam; Sosef & al., Check-list pl. vascul. Gabon: 95, 2006; Onana in Kew Bull. 61: 582, 2007.

bas.: *Pachylobus heterotricha* Pellegr.

syn.: *P. ferrugineus* A. Chev. ex Pellegr.; *Dacryodes ferruginea* (A. Chev. ex Pellegr.) Engl.

Tree to > 25 m tall; crown wide spreading; bole to 1 m Ø, with buttresses to 1 m in height; bark scaly; leaves imparipinnate, 7-8-jugate; lamina with pedicellate multifid hairs, densely hairy when young; flower panicles reddish tomentose; petals pubescent with glandular and pedicellate multifid hairs on inside; fruit olive-like, greyish white with bluish shine, c. 2,8 cm long.

Evergreen forest; 100-300 m alt.

**D. igaganga** Aubrév. & Pellegr.; Sosef & al., l.c.; Onana, Kew Bull. 61: 582, 2007, and Kew Bull. 63: 391, 2008. – Icon.: Wilks & Issembé, Arbres Guinée Equat.: 149, 2000.

syn.: *Pachylobus edulis* G. Don var. *glabra* A. Chev.

Tree with bole ± 15 m tall, 60-90 cm Ø, slightly buttressed at base, sometimes cylindrical; leaves imparipinnate, 5-7-jugate; leaflets green on both surfaces, with simple hairs beneath, petiole subwinged; ovary stellate-hairy; fruit green to red, pulp yellow, 3-4,5 cm long, edible (boiled).

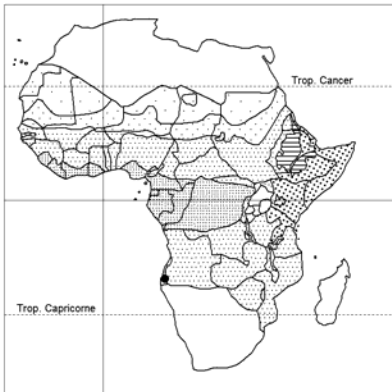
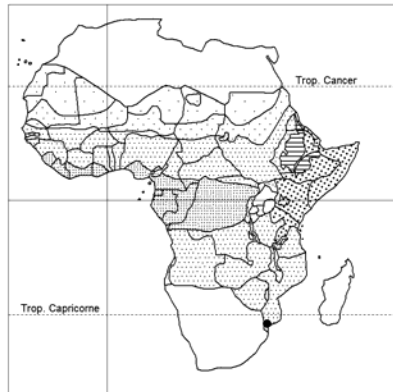
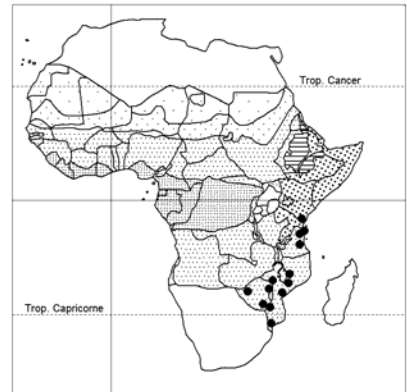
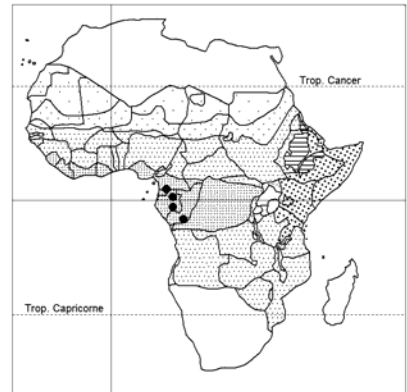
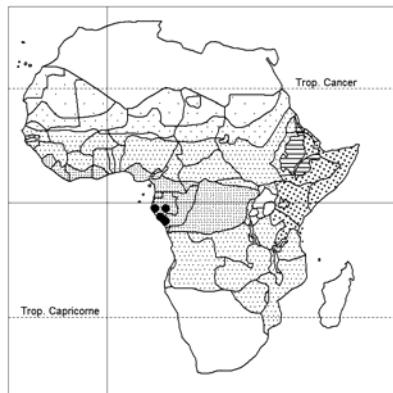
(Old) evergreen forest. Abundant in the Lakes region of Gabon and in the Gabon estuary, and between Mouila and Lambaréné; 30-550 m alt.

Was long considered as a wild variety of *D. edulis*.

**D. klaineana** (Pierre) H. J. Lam, incl. var. *lepidota* Aubrév.; Irvine, Woody pl. Ghana: 511, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2: 308, 1985; Keay, Trees Nigeria, ed. 2: 339, 1989; Cable & Cheek, Pl. Mt Cameroon: 25, 1998; Onana, Kew Bull. 61: 582, 2007. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 141, 1959; Adam, Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 22: 813, 1971; Voorhoeve, Liberian high for. trees: 83, 1979; Wilks & Issembé, Arbres Guinée Equat.: 145, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 716-717, 2006.

bas.: *Santiriopsis klaineana* Pierre

syn.: *Pachylobus klaineanus* (Pierre) Engl.; *P. barteri* Engl.; *P. zenkeri* Engl.; *Dacryodes zenkeri* (Engl.) Engl.; *Sorindeia deliciosa* A. Chev. ex Hutch. & Dalziel; *Pachylobus paniculatus* Hoyle; *Dacryodes barteri* (Engl.) H. J. Lam; *Haematostaphis deliciosa* (A. Chev. ex Hutch. & Dalziel) Pellegr.; *Pachylobus deliciosus* (A. Chev. ex Hutch. & Dalziel) Pellegr.; *Dacryodes klaineana* sensu Aubréville, Fl. Gabon 3: 78, 1962, excl. specim. Le Testu 7537, 7592, 9387, 9406 (= *D. camerunensis*), and excl. specim. Le Testu 5958, 5959, 7717, 8925, 9114 (= *D. villiersiana*); *Pachylobus albiflorus* Guillaumin, nom., p.p. (cf. under *D. edulis* above); *Dacryodes afzelii* (Engl.) H. J. Lam; *Pachylobus afzelii* Engl.; *P. dahomensis* Engl. p.p., quoad specim. Chevalier 277 (non Chevalier 4441 = *Sorindeia juglandifolia*, Anacardiaceae); *Dacryodes dahomensis* (Engl.) H. J. Lam, p.p. (idem).

***Commiphora unilobata******Commiphora viminea******Commiphora virgata******Commiphora wildii******Commiphora woodii******Commiphora zanzibarica******Dacryodes bampsiana******Dacryodes buettneri******Dacryodes camerunensis******Dacryodes ebatom******Dacryodes heterotricha******Dacryodes igaganga***



## DACRYODES KLAINEANA

Tree to 20 m; bole irregular, to 10-15 m high, 0,1-0,6-1 m Ø, sometimes branched from near the base; crown low, spreading; bark grey-white, smooth, peeling (small scales); slash with gummy exudate, sweet scented; leaves imparipinnate, 2-4-jugate, hairy only when young, with *stellate* hairs (pedicellate and multifid hairs absent!), then with few rusty hairs; petiolules long, swollen at both ends; flowers fragrant, yellowish, stellate-hairy, in raceme-like or paniculate inflorescences; fruit orange-red, plum-like ("monkey plum"), smelling of turpentine, 2-3 cm long, edible.

Coastal forest, in understorey, sometimes abundant to very abundant; dry deciduous and fringing forests; forest-swampy savanna edge on a brook; evergreen forest; half-deciduous forests along rivers; near sea-level-700 m alt.

Resembling *D. edulis*, but leaflets fewer and inflorescence and fruit smaller.

A collection (Barter 1775, K), cited from *Niger* (without locality) seems wrong (Onana 2008: 391-392). From Nigeria ?

**D. ledermannii** (Engl.) H. J. Lam; Onana, Kew Bull. 61: 582, 2007, and Kew Bull. 63: 392, 2008.

bas.: *Pachylobus ledermannii* Engl.

Tall erect tree; branches and twigs to 1 cm Ø, subcylindrical, densely reddish pubescent; bark brown, longitudinally grooved; leaves imparipinnate, 4-6-jugate; leaflets with median nerve densely pubescent below, only *sessile stellate hairs* present, apex acuminate; petals glabrous inside; inflorescence to 18 cm long.

Alluvial forest with many shrubs and high trees; littoral forest; 100-300 m alt.

Type (Ledermann 436) lost; neotype: Bos 3857 (N Kribi, Cameroon).

Very few localities known; habitats threatened.

**D. leonardiana** Pierlot, non *Pseudodacryodes leonardiana* Pierlot – Icon.: Bull. Jard. Bot. Natl. Belgique 65: 365, 1996.

Tree to 35 m; bole 1 m Ø, sinuous, 12-13 m high, not buttressed; crown hemispherical, flattened, with tortuous branches; bark grey, peeling in small round flakes; leaves imparipinnate, 3-4-jugate, petiole and petiolules with transversal rings; leaflet lamina shining above, olive-brown beneath with dense *stellate* hairs; inflorescence (female) a dense panicle, 15 cm long, 15 cm wide, reddish stellate-hairy; male inflorescence known only in bud; fruit oblong, 1,5-2 cm long.

Old evergreen forest with *Julbernardia seretii*, *Pentadesma*, *Uapaca guineensis*, *Staudtia gabonensis*; evergreen rain-forest with *Drypetes* sp., *Lebrunia bushaie*, *Pentadesma lebrunii*, *Beilschmiedia oblongifolia*, *Newtonia buchananii*, *Carapa grandiflora*, *Lovoa swynnertonii*, *Musanga leo-errerae*; 850-1750 m alt.

Endangered; known from only 4 localities.

**D. letestui** (Pellegr.) H. J. Lam; Sosef & al., Check-list pl. vascul. Gabon: 96, 2006; Onana, Kew Bull. 61: 582, 2007, and Kew Bull. 63: 392, 2008.

bas.: *Pachylobus letestui* Pellegr.

syn.: ? *P. fuscus* Engl.; *Dacryodes fusca* (Engl.) H. J. Lam

Tree 10-12 m; young branchlets 6-7 mm Ø, dark- to reddish-brown hairy; leaves imparipinnate, 3-4-6-jugate, 40 cm long, incl. petiole 10-12 cm long; rhachis densely ferruginous pubescent; leaflet lamina glabrous above, ferruginous pilose with *long*,

## DACRYODES LETESTUI

*simple persistent* hairs beneath, sometimes with stellate hairs; inflorescences and flowers densely red-brown hairy; fruit unknown.

Evergreen forest; 150-730 m alt.

Not in Zaire (= *D. pubescens*).

**D. macrophylla** (Oliv.) H. J. Lam; Sosef & al., Check-list pl. vascul. Gabon: 96, 2006; Onana, Kew Bull. 61: 582, 2007, and Kew Bull. 63: 393, 2008. – Icon.: Wilks & Issembé, Arbres Guinée Equat.: 145, 2000.

bas.: *Canarium macrophyllum* Oliv.

syn.: *Pachylobus macrophyllus* (Oliv.) Engl., incl. var. *brevipetiolatus* Engl.

Tree to 25 m; bole 80 cm Ø, cylindrical at base; bark light brown to yellowish grey, smooth or slightly scaly; leaves imparipinnate, 2-4-jugate, large for the genus; leaflet lamina almost glabrous, with sparse *stellate* scales, acumen absent or very short, petiolules swollen at both ends (simple hairs absent!); panicles finely tomentose, 10-15 cm long; ovary glabrous; fruit blackish, pulpe purple, 2-4 cm long, edible (sold on markets).

(Old) evergreen and semi-deciduous forest; 300-700 m alt.

Kobi Isl. (Gulf of Guinea).

**D. normandii** Aubrév. & Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 96, 2006; Onana, Kew Bull. 61: 582, 2007, and Kew Bull. 63: 393-394, 2008. – Icon.: Wilks & Issembé, o.c.: 149.

Tree with straight, cylindrical bole to 90 cm Ø, very slightly buttressed at base; bark yellowish, peeling; leaves tufted at apex of stout branches with hairy, reddish, soon caducous stellate hairs; leaves imparipinnate, 6-9-jugate, rhachis and leaflets beneath with *pedicellate and multifid hairs*; leaflets glabrous above, shining, apex acute; panicles reddish; ovary tomentose with *stellate* hairs; fruit obovoid, c. 3,5 cm long.

Evergreen forest; 50-450 m alt.

Recorded from less than 10 localities; vulnerable.

Resembling *D. igaganga*, but petiole not subwinged and *no simple hairs* on leaflet lamina below.

**D. osika** (Guillaumin) H. J. Lam; Lejoly & al., Fl. Tshopo (RD Congo), Taxonomania 25: 8, 2008.

bas.: *Pachylobus osika* Guillaumin

syn.: *Dacryodes yangambiensis* Louis ex Troupin (fide Pierlot, Bull. Jard. Bot. Natl. Belgique 66: 186, 1997).

Tree to 40 m; bole 18-25 m high, 20-40 cm Ø, sinuous; branches slightly tomentose to glabrescent; leaves imparipinnate, 8-12-jugate, rhachis to 40 cm long; leaflet lamina with sparse caducous stellate hairs, especially on nerves when young; panicles to 25 cm long, 5 cm wide; calyx and corolla with stellate hairs; drupe ± ovoid, 2-3,5 cm long.

Evergreen rain-forest; forest gallery; low alt.

Endangered; small area of occupation, fragmented population. No collections known which are made in the last 50 years.

**D. pubescens** (Vermoesen) H. J. Lam; Sosef & al., Check-list pl. vascul. Gabon: 96, 2006; Figueiredo & Smith, Pl. Angola: 53, 2008; Pierlot, Bull. Jard. Bot. Natl. Belg. 66: 186, 1997; Onana, Kew Bull. 63: 394, 2008.

bas.: *Pachylobus pubescens* Vermoesen

syn.: *Dacryodes letestui* sensu Fl. Congo Belge 7: 143, 1958, non (Pellegr.) H. J. Lam; *Pachylobus gossweileri* Exell



## DACRYODES PUBESCENS

Tree 5-10 m; branches subcylindrical, longitudinally striate, densely reddish pubescent; leaves imparipinnate, 5-6-jugate, glabrous above, reddish pubescent beneath, with stellate non stipitate hairs; panicles 10-15 cm long, dark brown hairy like the petals outside; fruit olive-like, bluish-purple, c. 2,5 cm long. River banks, humid places; rain-forest; disturbed forest, forest edges; low alt.

Sometimes placed in synonymy under *D. buettneri*.

**D. tessmannii** (Engl.) H. J. Lam; Onana, Kew Bull. 61: 582, 2007, and Kew Bull. 63: 394-395, 2008.

bas.: *Pachylobus tessmannii* Engl.

Woody plant; branchlets at base 1 cm Ø, densely ferruginous pubescent, later glabrescent; bark brown, longitudinally striate; leaves glabrous on both surfaces, 2-3-jugate, c. 20 cm long, petiole 5-6 cm long; leaflets acuminate; calyx and corolla densely ferruginous hairy outside, inside glabrous, inflorescences 12-20 cm long; fruit unknown.

Forest; 100-600 m alt.

Only 3 collections known, each in one locality from 3 different countries (Cameroon, Centr. Afr. Rep., Equat. Guinea) "despite intensive botanical inventories". The most recent collection was made in a densely populated area where the flora is disturbed by intense human activity. No collections made in the last 20 years.

**D. trapnellii** Onana, Kew Bull. 58: 219, 2003, and Kew Bull. 63: 395, 2008. – Icon.: Onana, 2003: 221.

syn.: *D. edulis* sensu Wild in Fl. Zambes. 2/1: 282, 1963, quoad specim. Greenway 5578 (N Zambia), non (G. Don) H. J. Lam. This specimen is the type of the name *D. trapnellii*.

Tree, dioecious, to 24 m; crown dense, much branched; bole to 50 cm Ø, shallowly fluted; bark reddish-brown; young branches densely ferruginous hairy with stellate hairs; leaves imparipinnate, 4-5-jugate, densely pubescent when young; leaflets glossy above, glabrescent beneath with sparse stellate ferruginous hairs; inflorescences 8-11 cm long, spiciform; calyx and corolla stellate pubescent outside and inside, glandular hairs also present; drupe globose, 1,3-1,4 cm Ø, epicarp ferruginous stellate-pubescent.

Swamp forest; wet and well drained mushitu (mist forest patches) with *Xylopia*, *Syzygium cordatum*, *Voacanga thouarsii*, *Antidesma*, etc.; c. 1500 m alt.

Closely resembling *D. igaganga* (but with 5-7-jugate leaves). Differs from *D. edulis* by its fruit (not oblong, glabrous) and by the presence of glandular hairs on the flowers. In habitat preference *D. trapnellii* is close to *D. klaineana*. – In Zambia confused with *D. edulis*.

The most recent collection known was made ± 40 years ago.

**D. villiersiana** Onana, Kew Bull. 63: 395, 2008. – Icon.: *ibid.*: 396.

syn.: *D. sp.* insufficiently known, sensu Onana, Kew Bull. 61: 582, 2007; *D. klaineana* sensu Aubréville, Fl. Gabon 3: 81, 1962, p.p., quoad specim. Le Testu 5859, 5958, 7717, 8925, 9114, non (Pierre) H. J. Lam; and sensu Sosef & al., Check-list pl. vascul. Gabon, p.p. (*idem*), 2006.

Tree, dioecious; bole to 75 cm Ø; leaves imparipinnate, 5-6(-9)-jugate, 20-23 cm long, incl. petiole 7-9 cm long, slightly swollen at base; petiole and rhachis with sparse stellate hairs; leaflets glossy above (dried), glabrescent, with sparse stellate hairs, pubescent beneath (stellate hairs); panicles large, to 40 cm long (male) or 25 cm (female); fruit unknown.

## DACRYODES VILLIERSIANA

Evergreen forest; 0-700 m alt.

Differs from *D. klaineana* by its paniculate (not spicate) inflorescences; and from the other *Dacryodes* species in having the outermost inflorescence axes alternate (not opposite).

The fruit is unknown; "when the fruit ... is discovered it may place the species" in *Pseudodacryodes* (fruit with 2 seeds, and cotyledons entire). "But this seems unlikely" (Onana, 2008: 397).

\* \* \*

Species keys based on inflorescence pilosity and leaf characters figure in: Engler, Bot. Jahr. Syst. 44: 138, 1910; Pierlot, Bull. Jard. Bot. Natl. Belg. 66: 186, 1997; Onana, Kew Bull. 63: 386-388, 2008.

\* \* \*

## SYNONYMS:

*Dacryodes afzelii* (Engl.) H. J. Lam = **Dacryodes klaineana**

*barteri* (Engl.) H. J. Lam = **D. klaineana**

*dahomensis* (Engl.) H. J. Lam, p.p. = **D. klaineana**,  
**Sorindeia juglandifolia** (*Anacardiaceae*)

*edulis* (G. Don) H. J. Lam var. *parvicarpa* Okafor  
= **Dacryodes edulis**

*edulis* sensu Wild, Fl. Zambes. 2/1, 1963 = **D. trapnellii**

*edulis* sensu Troupin 1950 p.p. quoad specim. Toussaint  
369 = **Santiria trimera**

*ferruginea* (A. Chev. ex Pellegr.) Engl. = **Dacryodes heterotricha**

*fraxinifolia* (Engl.) H. J. Lam = **D. buettneri**

*fusca* (Engl.) H. J. Lam = **D.? letestui**

*klaineana* sensu Aubrév. 1962, p.p., non (Pierre) H. J. Lam,  
and sensu Sosef & al. 2006, p.p. = **D. camerunensis**,  
**D. klaineana**, **D. villiersiana**

*letestui* sensu Fl. Congo Belge, 1958, non (Pellegr.)  
H. J. Lam = **D. pubescens**

sp. sensu Onana 2007 = **D. villiersiana**

*trimera* (Oliv.) H. J. Lam = **Santiria trimera**

*viridiflora* (Engl.) H. J. Lam = **S. trimera**

*yangambiensis* Louis ex Troupin = **Dacryodes osika**

*zenkeri* (Engl.) Engl. = **D. klaineana**

*(HAEMATOSTAPHIS)*

*Haematostaphis deliciosa* (A. Chev. ex Hutch. & Dalziel)  
Pellegr. = **Dacryodes klaineana**

*(HEMPRICHIA)*

*Hemprichia erythraea* Ehrenb. = **Commiphora kataf**

*(HEUDELLOTIA)*

*Heudelotia africana* A. Rich. = **Commiphora**

*(HITZERIA)*

*Hitzeria edulis* Klotzsch, female plant = **Blighia unijugata**  
Bak. (*Sapindaceae*)

male plant = **Commiphora edulis**

## (PACHYLOBUS)

- Pachylobus afzelii* Engl. = **Dacryodes klaineana**  
*albiflorus* Guillaumin, nom., p.p. = **D. edulis**,  
**D. klaineana**  
*balsamifera* (Oliv.) Guillaumin = **Santiria trimera**  
*barteri* Engl. = **Dacryodes klaineana**  
*buettneri* (Engl.) Engl., incl. var. *cinerea* A. Chev.  
= **D. buettneri**  
*dahomensis* Engl., p.p. = **D. klaineana**, **Sorindeia juglandifolia** (*Anacardiaceae*)  
*deliciosus* (A. Chev. ex Hutch. & Dalziel) Pellegr.  
= **Dacryodes edulis**  
*edulis* G. Don var. *glabra* A. Chev. = **D. igaganga**  
*edulis* G. Don, incl. vars. *mubafo* (Ficalho) Engl., *preussii*  
Engl., *sylvestris* A. Chev. = **D. edulis**  
*ezigo* Pierre in sched. = **D. buettneri**  
*ferrugineus* A. Chev. ex Pellegr. = **D. heterotricha**  
*fraxinifolius* Engl. = **D. buettneri**  
*fuscus* Engl. = **D. ? letestui**  
*gossweileri* Exell = **D. pubescens**  
*heterotricha* Pellegr. = **D. heterotricha**  
*klaineanus* (Pierre) Engl. = **D. klaineana**  
*ledermannii* Engl. = **D. ledermannii**  
*letestui* Pelleg. = **D. letestui**  
*macrophyllus* (Oliv.) Engl., incl. var. *brevipetiolulatus*  
Engl. = **D. macrophylla**  
*mayumbensis* Exell = **Santiria trimera**  
*osika* Guillaumin = **Dacryodes osika**  
*paniculatus* Hoyle = **D. klaineana**  
*pubescens* Vermeesen = **D. pubescens**  
*saphu* (Engl.) Engl. = **D. edulis**  
*tessmannii* Engl. = **D. tessmannii**  
*trimerus* (Oliv.) Guillaumin = **Santiria trimera**  
*viridiflorus* Engl. = **S. trimera**  
*zenkeri* Engl. = **Dacryodes klaineana**

## (PAIVAEUSA)

- Paivaeusa* Welw. ex Benth., *Burseraceae*, “genus valde anomalum” (Benth & Hooker, Gen. Plant. 1: 993, 1867) = **Oldfieldia** (*Euphorbiaceae*).  
*Paivaeusa dactylophylla* Welw. ex Oliv. (Fl. Trop. Afr. 1: 328, 1868), Huila (Angola) = **Oldfieldia dactylophylla** (Welw. ex Oliv.) J. Léonard (*Euphorbiaceae*).  
*gabonensis* A. Chev. (Végét. utiles Afr. trop. franç. 9: 298, 1917), placed in *Euphorbiaceae*, tree 25-30 m tall, bole 0,6 m Ø, with green bark peeling off in small flakes; from Gabon, Lambaréné region, on the Ogooué R., Chevalier 26598, without flowers and fruits [vernacular name: mboll (pahouin)] = ? ?  
*orientalis* Mildbr. = **Oldfieldia somalensis** (Chiov.) Milne-Redh. (*Euphorbiaceae*).

## (PROTIUM)

- Protium africanum* Harv. = **Commiphora harveyi**  
*mossambicense* Oliv. = **C. mossambicensis**

## PSEUDODACRYODES / I

Monotypic.

**Pseudodacryodes leonardiana** Pierlot (non *Dacryodes leonardiana* Pierlot). – Icon.: Bull. Jard. Bot. Natl. Belg. 66: 181, 1997.

Tree 18-20 m; bole 6 m tall, 30-50 cm Ø (at 1,5 m from ground); bark grey, very finely cracked in vertical pustulate strips 1-2 cm × 2-4 mm; stellate, reddish, stipitate, flexuous hairs are intermixed with rare simple hairs on many parts of the plant; leaves imparipinnate, 8-12-jugate, with pseudostipules (the 3-4 lowermost pairs of leaflets), glabrous above, subglabrous beneath; male inflorescence unknown; female panicles 10-40 cm long, 10-15 cm wide; drupe ellipsoid, glabrous, 2,4-4 cm long, perianth not persistent.

Evergreen forest with *Drypetes* sp., *Beilschmiedia oblongifolia*, *Carapa grandiflora*, *Lovoa swynnertonii*, *Parinari holstii*, *Grewia mildbraedii*; 1400-1850 m alt.

## SANTIRIA / I

syn.: *Santiriopsis* Engl.

ONANA, J. M. (2009). Le genre *Santiria* (Burseraceae) en Afrique: redéfinition de *Santiria trimera*. *Syst. Geogr. Pl.* 79: 215-224.

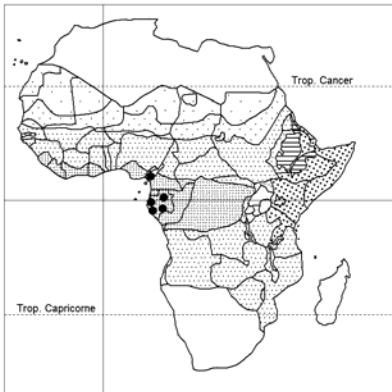
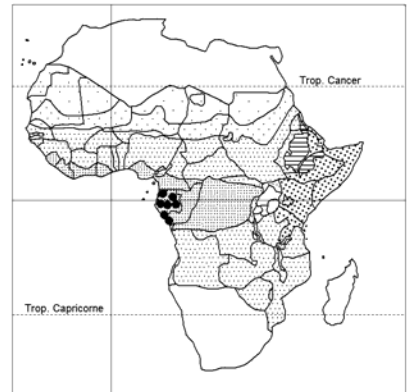
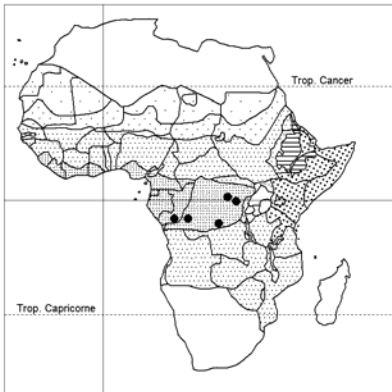
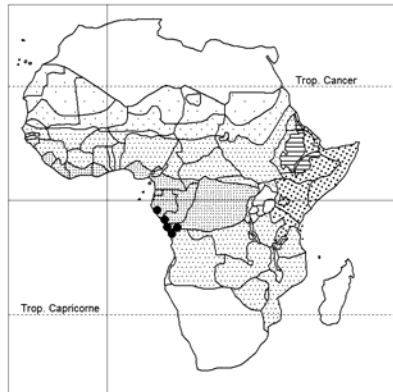
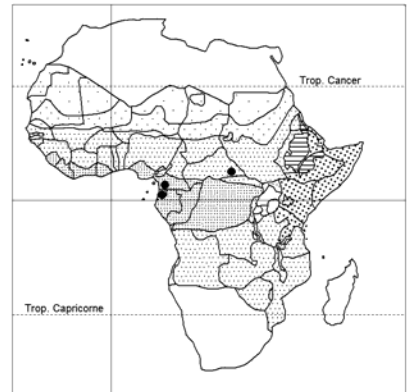
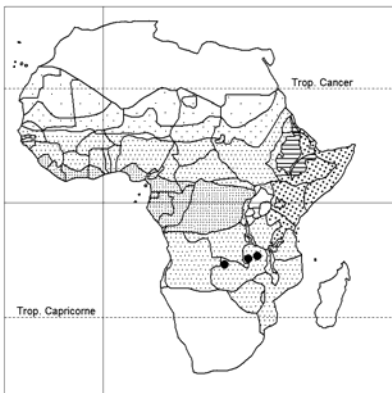
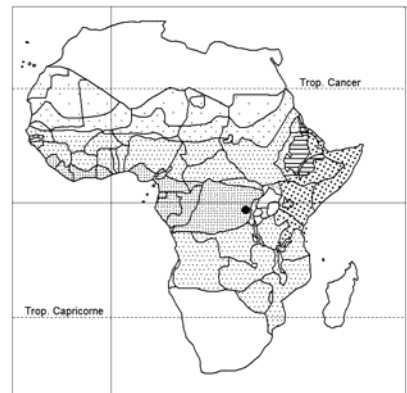
**Santiria trimera** (Oliv.) Aubrév., incl. var. *pubescens* Onana, nom. inval.; Burkill, Useful pl. W. trop. Africa, ed. 2, 1: 309, 1985; Sosef & al., Check-list pl. vascul. Gabon: 96, 2006; Figueiredo & Smith, Pl. Angola: 54, 2008. – Icon.: Hook. Ic. Pl. 16: pl. 1573, 1887; Aubréville, Fl. forest. Côte d’Iv., ed. 2: 143, 1959; Adam, Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 22: 814, 1971; Willis & Issembé, Arbres Guinée Equat.: 147, 2000; Hawthorne & Jongkind, Woody pl. west Afr. for.: 717, 2006; Mildbraed, Wiss. Ergebn. 2. Deutsch. Zentral-Afr. Exped. Bot.: pl. 23B, 1922 (photo. stilt-roots); Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 124, 2009; Harris & Wortley, Sangha trees: 161, 2008.

bas.: *Sorindeia trimera* Oliv. (*Anacardiaceae*).

syn.: *Pachylobus trimerus* (Oliv.) Guillaumin; *Santiriopsis trimera* (Oliv.) Guillaumin ex Engl.; *S. obovata* Pierre (“ovata” sphalm. Engler, Engler & Prantl, Natürl. Pflanzenfam., ed.2, 19a: 455, 1931); *Dacryodes trimera* (Oliv.) H. J. Lam; *Santiria balsamifera* Oliv.; *Santiriopsis balsamifera* (Oliv.) Engl.; *Pachylobus balsamifera* (Oliv.) Guillaumin; *P. mayumbensis* Exell; *Santiriopsis mayumbensis* (Exell) Exell & Mendonça; *Pachylobus viridiflora* Engl.; *Dacryodes viridiflora* (Engl.) H. J. Lam; *Santiriopsis tessmannii* K. Krause; *Santiria tessmannii* (K. Krause) H. J. Lam; *S. glaberrima* (Engl.) H. J. Lam; *Santiriopsis glaberrima* (Engl.); *Santiria ebo* (Pierre) H. J. Lam; *Santiriopsis ebo* (Pierre); *Santiria kamerunensis* (Engl.) H. J. Lam; *Santiriopsis kamerunensis* Engl.; *Dacryodes edulis* sensu Troupin 1950 p.p. quoad specim. Toussaint 369, non (G. Don) H. J. Lam ex Aubrév.

Tree 10-15-20-26 m, *glabrous* in all parts; bole to 30-50 cm Ø, 65 cm in girth, straight, cylindrical, with tall narrow buttresses and laterally *flattened stilt-roots*; bark peeling greyish(-yellow), peeling in large irregular thin sheets, strongly smelling of turpentine; twigs often ± orange, with white lenticels; leaves imparipinnate, 2-4-jugate, shiny, aromatic, petiolules 1 cm long, slightly winged, wings rolled inwards; flowers pale yellow, in slender panicles to 9 cm long; drupe flattened, asymmetrical, black, ellipsoid, plum-like, smelling of turpentine, 2-3,5 cm long, style persistent.

Along rivers, in swampy places; forest on firm ground; gallery; rain-forest with *Piptadeniastrum africanum*, *Ficus scott-elliottii*, *Cola maclaudii*; open forest with *Gaertnera paniculata*;

**Dacryodes klaineana****Dacryodes ledermannii****Dacryodes leonardiana****Dacryodes letestui****Dacryodes macrophylla****Dacryodes normandii****Dacryodes osika****Dacryodes pubescens****Dacryodes tessmannii****Dacryodes trapnellii****Dacryodes villiersiana****Pseudodacryodes leonardiana**

## SANTIRIA TRIMERA

secondary rain-forest with *Aulacocalyx jasminiflora*, *Whitfieldia lateritia*, *Combretum velutinum*, *Blighia sapida*, *Macaranga* sp.; 5-1515 m alt. – “a common and beautiful tree in the primeval woods on the banks of the River Lufo..., Mayumbe” (Consp. fl. angol. 1: 61, 1951).

São Tomé, Principe.

Cultivated in Sierra Leone (market fruit).

KOFFI, G. K. & al. (2010). Structure de la diversité de l'ADN chloroplastique d'un arbre des forêts humides d'Afrique, *Santiria trimera* (Burseraeae). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 245.

KOFFI, K. G. (sic!) & al. (2010). A combined analysis of morphological traits, chloroplast and nuclear DNA sequences within *Santiria trimera* (Burseraeae) suggests several species following the Biological Species Concept. *Pl. Ecol. Evol.* 143: 160-169.

## SYNONYMS:

*Santiria balsamifera* Oliv. = **Santiria trimera**

*ebo* Pierre = ? ? **S. trimera**

*glaberrima* (Engl.) H. J. Lam = **S. trimera**

*kamerunensis* (Engl.) H. J. Lam = **S. trimera**

*tessmannii* (K. Krause) H. J. Lam = **S. trimera**

## (SANTIRIOPSIS)

*Santiriopsis balsamifera* (Oliv.) Engl. = **Santiria trimera**

*ebo* Pierre = **S. trimera**

*glaberrima* Engl. = **S. trimera**

*kamerunensis* Engl. = **S. trimera**

*klaineana* Pierre = **Dacryodes**

*mayumbensis* (Exell) Exell & Mendonça = **Santiria trimera**

*obovata* Pierre (“ovata” sphalm. Engler) = **S. trimera**

*tessmannii* K. Krause = **S. trimera**

*trimera* (Oliv.) Guillaumin = **S. trimera**

## MELIACEAE / 16 g. / 89 spp.

A family of 49-51 genera, with c. 565 species (fide Muellner & al., 2008: 98) in the tropics and subtropics of both hemispheres. It is economically important for, e.g., high quality timber (mahogany). A few exotic species are widely planted in tropical Africa and “are sometimes conspicuous in the landscape; they are all naturalized” (White & al., Evergreen for. fl. Malawi: 359, 2001).

Certain species in our area are poorly known: female flowers are unknown in 5 species (= > 5%), the fruit is unknown in 4 (+ 2?) species (= > 4%) and for 3 further species only the immature fruit is known; no ecology is recorded for 3 (+2?) species (= c. 4%); 3 species (= > 3%) are known only from the type.

AUBRÉVILLE, A. (1930). Essai d'identification des Méliacées de la Côte d'Ivoire. *Actes & Compt. Rend. Assoc. Colonies-Sciences* 57-58: 1-15 [extrait].

CHASE, M. (2006). Mahogany ‘Out-of-Africa’. *Kew Sci.* 30:7.

MINFRAY, E. (1963). Contribution à l'étude caryo-taxinomique des Méliacées. *Bull. Soc. Bot. France* 110: 180-192.

MUELLNER, A. N. & al. (2003). Molecular phylogenetics of Meliaceae (Sapindales) based on nuclear and plastid DNA sequences. *Amer. J. Bot.* 90: 471-480.

MUELLNER, A. N. & al. (2008). An evaluation of tribes and generic relationships in Melioideae (Meliaceae) based on nuclear ITS ribosomal DNA. *Taxon* 57: 98-108.

MULHOLLAND, D. A. (1996). The chemistry of the Meliaceae of South Africa and Namibia. In: HOSTETTMANN, K. & al., eds., *Chemistry, Biological and Pharmacological Properties of African Medicinal Plants. Proceedings of the First International IOCD-Symposium Victoria Falls, Zimbabwe, February 25-28, 1996*: 199-210. University of Zimbabwe Publications, Harare.

WHITE, L. & P. GASSON (2008). *Mahogany*. Kew Publishing, Royal Botanic Gardens, Kew. VI + 98 pp.

## [AGLAIA]

[*Aglaia odorata* Lour.]; Fl. Trop. E. Afr., Meliaceae: 3, 1991. – Icon.: Fl. Males. Ser. 1, 12/1: 382, 1995 (male inflorescence).

Shrub or tree to 10 m tall, dioecious; indumentum of yellowish-brown stellate scales; leaves of 3-5 leaflets, glabrous; flowers yellow, fragrant, widely spaced in 15 cm long panicles.

Native of Indochina (map in C. M. Pannell, A taxonomic monograph of the genus *Aglaia*. . . : 300, 1992). – Cultivated as an ornamental; flowers used for flavouring tea and clothes.

## SYNONYM:

*Aglaia somalensis* Chiov. = **Sorindeia madagascariensis** Thouars ex DC. (*Anacardiaceae*).

## [AZADIRACHTA]

[*Azadirachta indica* A. Juss.] – Nim or Neem, Margosa Tree. – Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 88-92, 1997; White & al., Evergreen for. fl. Malawi: 360, 2001; Irvine, Woody pl. Ghana: 512, 1961; Keay, Trees Nigeria, ed. 2: 354, 1989; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 247, 2009. – Icon.: Thulin, Fl. Somalia 2: 235, 1999; Chaudhary, Fl. Kingd. Saudia Arabia ill. 2/1: 480, 2001; Akoegninou & al., Fl. analyt. Bénin: 793, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 730, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 49, 2007; Steentoft, Flow. pl. W. Afr.: 172, 2008; Fl. Trop E. Afr., Meliaceae: 26, 1991.

syn.: *Melia azadirachta* L. (1753).

Evergreen tree to 15(-24) m; bole short, stout; bark brown, rough, fissured; slash bitter; crown rounded, spreading; leaves to 40 cm long, drooping, imparipinnate, 8-18-jugate; leaflets falcate, long-acuminate, coarsely serrate; flowers white, fragrant, in panicles to 35 cm long; staminal tube flushed purple; drupe ellipsoid, 1.5-2 cm long, yellow, with an unpleasant taste (bitter oil), dispersed by bats and baboons.

Native of India, Burma. Widely planted in drier (savanna) areas of Africa, Arabia and elsewhere.

Quick growing very useful drought-resistant tree: shade tree; timber resembling mahogany, not attacked by insects; all parts having medicinal uses; insecticide (limonoid azadirachtin).

KUNDU, S. K. (1999). *Genetic diversity, mating system, adaptation and domestication in the Neem Tree (Azadirachta indica A. Juss.)*. Academic dissertation in tree breeding, Department of Plant Biology, Forest Tree Breeding, University of Helsinki.

OBARA, A. O. & al. (2004). Neem, *Azadirachta indica* A. Juss. (Meliaceae), and its potential for sustainable woodcarving in Kenya. *Econ. Bot.* 58: 98-111.

PURI, H. S. (1999). *Neem: the divine tree*. Harwood Academic Publishers, Australia, etc. XI + 182 pp.

RANDHAWA, N. S. & B. S. PARMAR, eds. (1996). *Neem*, ed. 2. Society of Pesticide Science, India; New Age International (P) Limited, Publishers, New Delhi, etc. XVI + 332 pp.



## CARAPA / 1

A poorly known genus. Four species are known in the Neotropics (Forget & al. *Brittonia* 61: 366-374, 2009). Currently, only one species is recognized in Africa. But there is a general consensus concerning the extreme variability of the species. It is probably possible to distinguish over 12 species, many already described and now placed in synonymy (Kenfack & al., l.c.).

A taxonomic revision is being prepared by D. Kenfack. Before the publication of this work, we have maintained only one species. However, Burkill (*Useful pl. W. trop. Afr.*, ed. 2, 4: 92, 1997), Chapman & Chapman (*Forests Taraba & Adamawa States, Nigeria*: c 27, 2001), and Cheek (in: Cheek & al., *Pl. Mt Oku*: 148, 2000; Harvey & al., *Pl. Bali Ngemba...*: 111, 2004; Cheek & al., *Pl. Kupe...*: 337, 2004) have maintained *C. grandiflora* Sprague for the montane forest entity, a lower tree, occurring from Nigeria to Uganda.

CHEVALLIER, M.-H. & al. (2010). Refuges forestiers dans les genres *Entandrophragma* et *Carapa* dans le bassin du Congo. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 115.

KENFACK, D. & al. (2007). Diversity and distribution of *Carapa* Aubl. (Meliaceae) in Africa. In: ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February-2 March 2007 Yaoundé, Cameroon, Abstracts*: 34.

KENFACK, D. & al. (2010). Why do ants abound in *Carapa* trees? Insights into an overlooked ant-plant interaction. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 232.

\* \* \*

GUËYE, M. & al. (2007). Importance socio-culturelle, potentialités économiques et thérapeutiques du *Carapa* (Meliaceae) en Afrique: exemple du Sénégal. In: ACHOUNDONG, G., o.c.: 100.

GUËYE, M. & al. (2010). Importance socio-culturelle, potentialités économiques et thérapeutiques du *Carapa* (Meliaceae) au Sénégal. In: VAN DER BURGT, X. & al., eds., *Systématique et Conservation des Plantes Africaines*: 359-367. Royal Botanic Gardens, Kew.

***Carapa procera* DC., incl.  $\beta$  *splendens* C. DC., var. *palustre* (*palustris*) G. C. C. Gilbert and var. *gentilii* De Wild.** – Talli-coonah or Kunda Oil Tree, Monkey Kola, African Crabwood. – Irvine, Woody pl. Ghana: 512-514, 1961; Burkill, *Useful pl. W. trop. Afr.*, ed. 2, 4: 92-95, 1997; Akoegninou & al., *Fl. analyt. Bénin*: 793, 2006; Lovett & al., *Field guide moist for. trees Tanzania*: 163, 2006; L. White & Gasson, *Mahogany*: 22 (map), 2008. – Icon.: Engler & Drude, *Veg. d. Erde* 9, *Pflanzenwelt Afr.* 3/1B: 809, 810, 1915; Harms in Engler & Prantl, *Natürl. Pflanzenfam.*, ed. 2, 19b1: 78-80, 1940; Adam, *Fl. descr. Mts Nimba* 2: 816-819, 1971; Berhaut, *Fl. ill. Sénégal* 6: 321, 1979; Keay, *Trees Nigeria*, ed. 2: 349, 1989; Wilks & Issembé, *Arbres Guin. Equat.*: 317, 2000; Troupin, *Fl. pl. ligneuses Rwanda*: 138, 1982; Pennington & Styles, *Fl. Neotrop. Monogr.* 28, *Meliaceae*: 416, 1981 (map, S. America p. 417); Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 730, 739, 2006; Latham & Konda, *Pl. utiles Bas-Congo*, ed. 2: 75, 2007; Fischer & Killmann, *Ill. field guide pl. Nyungwe Natl. Park Rwanda*: 139, 2008 (*C. grandiflora*).

syn.: *C. guineensis* Sweet ex A. Juss.; *C. touloucouna* Guill. & Perr.; *Touloucouna gigantea* M. Roem.; *Carapa gumiflua* C. DC.; *C. microcarpa* A. Chev.; *C. grandiflora* Sprague; *C. parviflora* Harms; *C. surinamensis* Miquel; *C. guyanensis* sensu Oliv. in *Fl. Trop. Afr.* 1: 336, 1868, non Aublet; *C. velutina* C. DC.; *C. angustifolia* Harms; *C. hygrophila* Harms; *C. gogo* A. Chev.; *C. batesii* C. DC.; *C. macrantha* Harms; *C. dinklagei* Harms; ? *Deinbollia albido-kermessina* Gilg (*Sapindaceae*, fide Radlkofer in Engler, *Pflanzenreich* 4/165: 690, 1932, also

## CARAPA PROCERA

Harms in *Natürl. Pflanzenfam. o.c.*: 80, 1940; Zenker 4944; Cameroon, Bipinde); *Zurloa splendens* Tenore; *Z. insignis* Tenore

Sprawling tree 6-9 m tall or tall tree to 17 m in swamp-forest and 30 m or more in lowland rain-forest; crown stout; bole irregular, branched low down, rarely straight, to 1,8 m in girth, to 40-60 cm Ø, slightly fluted and  $\pm$  grooved at base; bark blackish; branches widespreading and arching; leaves paripinnate, to 1,5-2 m long, crowded at ends of branchlets, bright red when young; leaflets 6-18, 40-50  $\times$  10-16 cm, apex rounded with short glandular acumen, asymmetric, glabrous; flowers unisexual, pink, 5-merous, in much-branched inflorescences 3-80 cm long; capsules subglobose, c. 15 cm long, 1-3 per infructescence; seeds 10-30 per capsule, dark brown, shining, c. 3 cm long. – Timber reddish brown, resembling true mahogany (*Swietenia*).

Very variable in habit, size of leaves, shape and number of leaflets, size of flowers, number of ovules (seeds). “Some of this variation is correlated with ecology and geography but only weakly so” (Styles & White, *Fl. Trop. E. Afr.*, *Meliaceae*: 61, 1991).

As noted above, ecological-morphological entities can be distinguished. Keay (*Trees of Nigeria*, ed. 2: 348, 1989) notes the presence of 3 forms in Nigeria:

- of swamp and river-side forest: sprawling lower tree; capsule knobly with > 25 seeds; first seedling leaves simple (Keay, o.c.: fig. p. 349);
- of lowland rain-forest away from swamps and rivers: tall tree with a clear bole 1,8 m in girth, branched, fluted; capsule with a pair of vertical ridges on the middle of each valve; seeds 15-25; first seedling leaves pinnate;
- swamp and lowland forests at 1-1400 m alt.
- of montane forest (= *C. grandiflora*): small tree with shorter leaves only 4-7-jugate, leaflets oblong c. 18  $\times$  7 cm; panicles 30 cm long; flowers larger than in the 2 former; capsule smooth or knobly with 10-20 seeds. – 900-2450 m alt. – Accepted as a distinct species by Cheek in Cheek & al., *Plants of Dom, Bamenda Highl., Cameroon*, 2010. However, he notes that the genus is currently being revised, after which several additional taxa might be revealed. “The Dom taxon is probably to become *C. oreophila* Kenfack...”

Bioko/Fernando Poo, São Tomé; S. America: Surinam, French Guiana, Brazil (State of Amazonas; map in Pennington & al., *Fl. Neotrop.*, o.c.: 417). Amphi-Atlantic distribution.

Planted in villages (Senegal) as a beautiful shade-tree. Used for timber and seed oil (content 60%), very bitter “mote nuts” used for soap, candles.

## INSUFFICIENTLY KNOWN:

*Carapa* cf. *procera* DC. sensu Cheek in Cheek & al., *Pl. Kupe...*: 337, 2004.

“Shrub 2m [tall], glabrous, resembling *C. grandiflora*, but leaves 3-jugate; petiole 27 cm [long]; panicle 12 cm.” – Forest; 810 m alt.

*Carapa* spec. nov. ? “montana” sensu Sosef & al., Check-list pl. vascul. Gabon: 274, 2006. – Probably a new species; in NE Gabon (WN).

\* \* \*

## CARAPA

[**Carapa guianensis** (“guyanensis”) Aublet]; Mabberley & al., Fl. Males. Ser. 1, Spermat., 12/1, Meliaceae: 383, 1995; Whyte & Gasson, Mahogany: 22, 2008. – Icon.: Pennington & al., Fl. Neotrop. Monogr. 28: 409, 1981.

Resembling *C. procera* but flowers usually 4-merous, sessile (not pedicellate); leaflets 8-16, elliptic, acute at apex; capsule 5-10 cm long.

Swampy ground, edge of mangroves, along rivers, low-lying wet forest; 1-350 (1-1400) m alt. – Only known from the New World (from Belize along the Atlantic coast of Central America & Pacific slope in Costa Rica), in S. America from Colombia to Brazil (maps in Pennington & al., o.c.: 411).

Many literature references report this species from Africa. This may be due to the name confusion *C. guineensis* Sweet ex A. Juss. the name was also used by Oliver in F.T.A.

SYNONYMS (see also under *C. procera* above):

*Carapa mekongensis* (Pierre) Pellegr. = **Xylocarpus mekongensis**

*moluccensis* Lam. = **X. moluccensis**

*moluccensis* sensu F.T.A., p.p., non Lam. = **X. granatum**, **X. moluccensis**

*obovata* Blume = **X. granatum**

*rumphii* Kostel. = **X. moluccensis**

## [CEDRELA]

[**Cedrela odorata** L.], incl. *C. mexicana* M. Roem., *C. glaziovii* C. DC. – Cedar Box or Honduras Cedar, West Indian or Mexican or Spanish Cedar. – Irvine, Woody pl. Ghana: 514, 1961; Keay, Trees Nigeria, ed. 2: 346, 1989; Lisowski; Fl. (angiosp.) Rép. Guinée 1: 247, 2009; Mabberley & al., Fl. Males., Ser. 1, Sperm. 12/1: 383, 1995; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 95, 1997; Friis & Vollesen, Fl. Sudan-Uganda border area E Nile 1/1: 281, 1998; White & al., Evergreen for. fl. Malawi: 361, 2001. – Icon.: Pennington & al., Fl. Neotrop. Monogr. 28: fig. 76, 76a, maps 78-79, 1981; Fl. Trop. E. Afr., Meliaceae: 44, 1991 (partial).

syn.: *C. toona* sensu Exell, Catal. vascul. pl. S. Tomé, non Roxb. ex Rottl. & Willd.; full synonymy in Fl. Neotrop. 28: 374-375.

Deciduous tree, to 30-35 m; bole 1,5 m Ø; bark grey, rough, longitudinally fissured; branchlets ± glabrous, often with conspicuous round lenticels; leaves usually paripinnate, clustered at twig ends, 30-60 cm long; leaflets 12-28, entire, oblong-lanceolate, with short broad acumen; inflorescence to 50 cm long, much-branched; flowers unisexual, 5-merous; capsule ± obovoid, 3-4 cm long, pendulous; valves thick woody, lenticellate; seed 2-3 cm long incl. wing. – Branchlets, bark and unripe fruits smell of garlic when crushed.

Native of dry and moist lowland deciduous forest in Central America – West Indies through S. America south to N Argentina (28° S), absent from Chile; 1-1200 m alt.

In Africa extensively grown in cultivated fields, orchards, plantations (for timber) and as shade tree for coffee and cacao; neglected *Cedrela* plantations with regrowth of *Combretum collinum*, *Stereospermum kunthianum*, *Acacia hockii*, *Albizia grandibracteata*.

Species very variable; easily grown from seed; growth rapid; selection of improved strains necessary; as a roadside tree and for shade needs topping at 2-3 m height.

## CEDRELA ODORATA

Source of Spanish Cedar of commerce (timber, cigar boxes): wood light, and pink to red-brown, fragrant.

SYNONYMS:

*Cedrela australis* (F. Muell.) Harms = **Toona ciliata**

*serrata* Royle = **T. serrata** (= **T. sinensis**)

*sinensis* A. Juss. = **T. sinensis** (cf. **T. serrata**)

*toona* Roxb. ex Rottler & Willd., incl. var. *australis* C. DC. = **T. ciliata**

(*CHARIA*)

*Charia chevalieri* C. DC. = **Ekebergia capensis**

*indeniensis* A. Chev. = **E. capensis**

## EKEBERGIA / 2

syn.: *Charia* C. DC.

African genus, 3 species.

MULHOLLAND, D. A. & al. (1997). A comparison of extractives from the bark of *Ekebergia capensis* and *Ekebergia senegalensis*. *S. African J. Bot.* 63: 259-260.

**Ekebergia benguelensis** Welw. ex C. DC.; Beentje, Kenya trees, shrubs & lianas: 404, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 451, 2002. – Icon.: White, For. fl. North. Rhod.: 179, 1962.

syn.: *E. welwitschii* Hiern; *E. fruticosa* C. DC.; *E. discolor* O. Hoffm.; *E. arborea* Bak. f.; *E. velutina* Dunkley; Enum. 2: 212, 1992.

Semi-evergreen dioecious shrub 1,2-2,1 m tall or tree to 13 m, frequently stunted and of irregular growth; bole to 30 cm Ø; bark rough, exfoliating in irregular scales; first-year branchlets often with smooth reddish bark; second-year branchlets stout, usually more than 0,7 cm Ø, rough, with thick corky bark and crowded leaf-scars, but without conspicuous lenticels; leaves imparipinnate, to 20 cm long, 3-4-jugate, petiole and rachis often reddish; leaflets elliptic, bluish green above, *whitish* green *beneath*, apex rounded to ± square; flowers (pinkish) white, scented, in many-flowered heads or panicles 7 cm long, appearing with the new leaves; drupe round, c. 1,5 cm Ø, bright red.

Woodland; wooded grassland; stony thickets at river bank; *Brachystegia* woodland on infertile soils; 275-1900 m alt.

Considered to be indigenous in S Kenya (3 trees known at a golf course before land clearing in the 1920's (fide Beentje, l.c.).

**E. capensis** Sparrm. (in earlier literature cited under its synonyms, cf. below); Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 96-97, 1997; Akoegninou & al., Fl. analyt. Bénin: 793, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 248, 2009. – Icon.: Guillemin & al., Fl. Senegamb. Tent. 1: pl. 31, 1831; Engler & Drude, Veg. d. Erde 9, Pflanzenwelt Afr. 3/1B: 819, 1915, and Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b 1: 120, 1940; Berhaut, Fl. ill. Sénégal 6: 324, 1979; Andrews, Flow. pl. Anglo-Egyptian Sudan 2: 327, 328, 1952; Irvine, Woody pl. Ghana: 515, 1961; Keay, Trees Nigeria, ed. 2: 355, 1989; Beentje, Kenya trees, shrubs & lianas: 404, 1994; Schmidt & al., Trees & shrubs Mpumalanga...: 252-253, 2002; White & al., Evergreen for. fl. Malawi: 362, 2001; Coates Palgrave, Trees south. Afr., ed. 3: 452, illustr. 126, 2002; Lovett & al., Field guide moist for. trees Tanzan.: 164, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 730, 739, 2006; Mendes Ferrão, Fruticult. tropi- cal 2: 16, 2001; B. van Wyk & P. van Wyk, How to identify trees

## EKEBERGIA CAPENSIS

in south. Afr.: 19, 159, 2007; Latham, Plants visited by bees... S Tanzania: 75, 2007; B. van Wyk & al., Photo guide trees south. Afr., ed. 2: 126, 2008.

syn.: Enum. 2: 212, 1992; *Trichilia rueppelliana* Fresen. (“rupelliana” sphalm. in Hooker, Niger Flora: 255, 1849); *T. capensis* (Sparrm.) Pers.; *T. ekebergia* E. Mey. ex Drège, nom. nud.; *T. ekebergia* E. Mey. ex Sond.; *Ekebergia buchananii* Harms; *E. dahomensis* A. Chev.; *Charia chevalieri* C. DC.; *C. indeniensis* A. Chev.; *Ekebergia chevalieri* (C. DC.) Harms; *E. indeniensis* (A. Chev.) Harms; *E. senegalensis* A. Juss., incl. var. *coriacea* C. DC.; *E. meyeri* C. Presl ex C. DC.; *Sorindeia doeringii* Engl. & K. Krause (*Anacardiaceae*!); *Polyscias lepidota* Chiov. (*Araliaceae*!).

Tree 7-10-20-35 m, dioecious, (semi-)evergreen or briefly deciduous; bole straight, 10-12 m high, 0,6-1 m Ø, slightly buttressed or fluted at base; bark smooth, pale grey, becoming rough and scaly; crown spreading dense; second-year branchlets usually < 0,6 cm Ø, smooth, with scattered leaf-scars and large whitish lenticels; leaves glossy, 10-35 cm long, imparipinnate, glabrous to pubescent or tomentose; leaflets 7-15, elliptic, apex tapering-acuminate; flowers (pinkish) white, sweet-scented (attracting bees), in many-flowered slender panicles 8-17 cm long; drupe cherry-like, deep red, 1,5-2 cm Ø, with 2-4 pyrenes.

Lowland scrub; dry forest; riverine and highland forest; growing well in deep sandy soils; montane forest, incl. *Juniperus* and *Widdringtonia* forest; montane rain-forest, rarely in lowland rain-forest; often at forest edges; more rarely in woodland (in Sudanian region); very local in Guineo-Congolian rain-forest; half-deciduous forest; *Podocarpus latifolius* mixed forest; *Albizia* forest; *Podocarpus latifolius*, *Olea capensis*, *Syzygium guineense* forest; forest edges towards *Loudetia* grassland and *Hagenia abyssinica* woodland; fringing forest with *Syzygium cordatum*, *Phoenix reclinata*, *Croton leuconurus*, *Trichilia roka*; laterite cliffs; 1-3000 m alt.

Variable in: number and shape of leaflets (cf. White in Bothalia 16: fig. 5, 1986), hairiness. Also of a considerable ecological versatility.

S. Africa, Botswana, Swaziland.

Reasonably fast growing. Wood light, soft, straw-coloured. Also planted (shade and street tree, wind breaks, soil conservation; interplanted with bananas and coffee). Easily propagated by seed. – All parts considered to be toxic.

ALEMAYEHU WASSIE & al. (2009). Tree generation in church forests of Ethiopia: effects of microsites and management. *Biotropica* 41: 110-119.

ANOZIE, V. C. (2001). *Ekebergia capensis* Sparrm. (Meliaceae) – The correct name for the West African *Ekebergia senegalensis* A. Juss. In: RAN-GASWAMY, N. S., ed., *Phytomorphology Golden Jubilee Issue 2001: Trends in Plant Sciences*: 405-419.

FRIIS, I. (2001). The identity of *Polyscias lepidota* Chiov. (1940). A name missing in Vol. 3 of the Flora of Ethiopia. *Biol. Skr.* 54: 49-54.

In savanna confused with *Khaya senegalensis*; also with *Ekebergia benguelensis*.

An *Ekebergia* sp. (Klaine 1002, P) cited by Sosef & al., Checklist pl. vascul. Gabon (Estuaire Prov.) is of unknown identity.

## SYNONYMS:

*Ekebergia arborea* Bak. f. = ***Ekebergia benguelensis***

*buchananii* Harms = ***E. capensis***

*chevalieri* (C. DC.) Harms = ***E. capensis***

*complanata* Bak. f. = ***E. capensis***

*dahomensis* A. Chev. = ***E. capensis***

## EKEBERGIA

*discolor* O. Hoffm. = ***E. benguelensis***

*fruticosa* C. DC. = ***E. benguelensis***

*holtzii* Harms = ***E. capensis***

*indeniensis* (A. Chev.) Harms = ***E. capensis***

*meyeri* C. Presl ex C. DC. = ***E. capensis***

*mildbraedii* Harms = ***E. capensis***

*nana* Harms = ***E. benguelensis***

*petitiana* A. Rich., incl. var. *australis* Bak. f. = ***E. capensis***

*rueppelliana* (Fresen.) A. Rich. = ***E. capensis***

*sclerophylla* Harms = ***E. benguelensis***

*senegalensis* A. Juss., incl. var. *coriacea* C. DC. = ***E. capensis***

*velutina* Dunkley = ***E. benguelensis***

*welwitschii* Hiern = ***E. benguelensis***

## ENTANDROPHRAGMA / 10

syn.: *Leiopyx* Pierre ex De Wild.; *Wulffhorstia* C. DC.

African genus closely related to the American *Swietenia* Jacq. (true mahogany). Many species produce a high quality timber (“African mahogany”). “Relative densities of ... species vary across tropical Africa and correspond with changes in soil fertility and moisture status” (J. S. Hall & al., 2003: 55). The species, tall trees, are recognized when mature by their straight boles and long compound leaves clustered at twig ends. Leaves paripinnate but appearing imparipinnate. Saplings are distinctive; they have long leaves clustered on top of unbranched stems, often seen in semi-shade of forest understorey (Hawthorne & Jongkind, Woody pl. west. Afric. for.: 744, 2006). A certain amount of variation is known within each species (see Amer. J. Bot. 20: 646, 1933; Notizbl. Bot. Gart. Berlin-Dahlem 14: 431, 1939; Notulae Syst. 9: 37, 1940). The large number of synonyms is due to this intra-specific variation. Extreme forms are therefore mistaken for separate species. About 30 species have been described, the actual number is much smaller.

CHEVALLIER, M.-H. & al. (2010). See above under **Carapa**.

DOUMENGE, C. & al. (2010). Aires de répartition et modélisation des niches climatiques: un exemple dans le genre *Entandrophragma*. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 153.

HALL, J. S. & al. (2003). Seedling performance of four sympatric *Entandrophragma* species (Meliaceae) under simulated fertility and moisture regimes of a Central African rain forest. *J. Trop. Ecol.* 19: 55-66 [*E. angolense*, *E. candollei*, *E. cylindricum*, *E. utile*].

KIEHN, M. & K. RAYNER (2001). Mahagoni – wertvolle Tropenhölzer der Alten und Neuen Welt. *Palmengarten* 61/1: 40-45.

WHITE, L. & P. GASSON (2008). [p. 42-43]. See under *Meliaceae* above.

***Entandrophragma angolense*** (Welw.) C. DC., incl. var. *macrophyllum* (A. Chev.) Panshin, var. *acuminatum* Pellegr. and var. *lucens* Pellegr., gallice; and incl. *E. congoense* (De Wild.) A. Chev. – Irvine, Woody pl. Ghana: 516, 1961; Jaeger & Adam, Boissiera 32: 286-287, 1980; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 98-99, 1997; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 248, 2009; Cheek & al., Pl. Dom, Bamenda Highl., Cameroon, 2010. – Icon.: Ann. Mus. Congo, Bot., Sér. 5/2: pl. 76-77, 1908 (De Wildeman, Fl. Bas- & Moyen-Congo 2); Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 56, 1940; Bull. Jard. Bot. Natl. Belg. 36: 417, 1966; Adam, Fl. Mts Nimba (Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 22): 821, 827, 1971; Voorhoeve, Liberian high for. trees: 253, 1979; Keay, Trees Nigeria, ed. 2: 343, 1989; Fl. Trop. E. Afr., Meliaceae: 55, 1991;



## ENTANDROPHRAGMA ANGOLENSE

Beentje, Kenya trees, shrubs & lianas: 405, 1994; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 745, 2006; Steentoft, Flow. pl. W. Africa: 172, 2008; Wilks & Issembé, Arbres Guinée Equat.: 331, 2000 (sub nom. *E. congoense*); Harris & Wortley, Sangha trees: 180, 2008.

bas.: *Swietenia angolensis* Welw.

syn.: *Entandrophragma macrophyllum* A. Chev.; *E. septentrionale* A. Chev.; *E. rederi* Harms; *E. leplaei* Vermeesen; *E. casimirianum* De Wild. & Th. Durand; *E. candollei* De Wild. & Th. Durand, non *E. candollei* Harms; *E. gregoireianum* Staner; *E. pierrei* A. Chev. (nom. nov.); *E. platanoides* Vermeesen; *E. congoense* (Pierre ex De Wild.) A. Chev., non Pierre in sched.; *Leioptyx congoensis* Pierre ex De Wild.

Deciduous (for a short period) tree to 55(-60) m; bole long, straight, clean to 30 m high, 2 m Ø, 5-9 m in girth, with moderately developed blunt buttresses extending to 3-6 m height; crown open; bark ± smooth, pale grey-brown to orange-brown, scaling in irregular large or small pieces which leave concave scars; slash dark red and pink; leaves to 60 cm long, 9-12-jugate; leaflets oblong-elliptic, apex rounded and often folded up, with a line of reddish small glands beneath, and often with a fringe of long hairs along midrib, venation indistinct; flowers yellowish in inflorescences 13-40 cm long; capsule 10-22 cm long, 1-3-5 cm wide, pendulous, opening at base first, all 5 valves falling off together; seed incl. wing 9,5 cm long. – Rapid-growing, with good natural regeneration.

Forest with *Triplochiton scleroxylon*; rain-forest with *Heritiera utilis*; *Albizia gummifera* forest; farm-bush; very common but very scattered in Ivory Coast fide Aubréville; fringing forest; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; damp depressions near streams; 350-1830 m alt.

Bioko/Fernando Poo.

Plant “grown from a seed collected around the stump of an illegally cut tree on the slopes of Etinde..., Cameroon in 1986” (collection by R. Faden), in the Botany Research Greenhouse, has been donated to the US Botanic Garden (Plant Press, N.S. 8/1: 6, 2005).

Leaflets resemble those of *Khaya anthotheca*; they may also be confused with *Lannea welwitschii*.

**E. bussei** Harms – Icon.: Engler & Drude, Veget. d. Erde 9, Pflanzenwelt Afr. 3/1 B: 806, 1915.

Deciduous tree, spreading, 10-20 m tall; bark grey, scaly (like a *Platanus*); leaves to 30 cm long, 5-7-jugate; leaflets ovate, asymmetric, softly pubescent beneath; flowers and fruits similar to those of *E. utile*; valves of capsule very closely mottled with smaller buff lenticels outside and pale buff inside with indistinct markings; valves dehiscing from apex; seed incl. wing 9,5 cm long.

Deciduous *Commiphora* thicket, often with *Cordyla densiflora*, *Adansonia digitata*; deciduous woodland and bushland; 785-1220 m alt.

Closely related to *E. spicatum*.

**E. candollei** Harms; Irvine, Woody pl. Ghana: 517, 1961; Voorhoeve, Liberian high for. trees: 255-256, 1979; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 99-100, 1997; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 248, 2009. – Icon.: Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 59, 1940; Adam, Fl. descr. Mts Nimba: 821, 823, 1971; Wilks & Issembé, Arbres

## ENTANDROPHRAGMA CANDOLLEI

Guinée Equat.: 323, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 745, 746, 2006; Harris & Wortley, Sangha trees: 181, 2008.

syn.: *E. ferrugineum* A. Chev.; *E. choriandrum* Harms

Tree, deciduous after the rainy season, 45-60 m tall; bole straight, cylindrical, 1,8-2 m Ø, 7 m in girth, with heavy root swellings or rounded buttresses to 4 m height; young twigs brown, velvety hairy; bark thick, yellowish or dark grey, with rough scales leaving pits after peeling; slash pinkish, granular with orange grit, bitter, not scented (in *E. cylindricum* scented!); crown dark, wide spreading; leaves 20-50 cm long, 5-8-jugate, with long wing on petiole and rhachis, both brown tomentose-puberulous; leaflets ± bullate, nerves impressed above, venation reticulate and prominent beneath; flower panicles lax, 10-30 cm long, axes densely rusty puberulous; capsule 15-23 cm long, 3-5 cm Ø, opening from the top with 5 thin recurving valves, central column stalked. – Wood harder and heavier than in other *Entandrophragma* species; sinks in water.

Forests, evergreen and semi-deciduous, in moist and moist-dry subtypes; granitic soil; scattered; to 500 m alt. – Natural regeneration poor.

Leaflets often galled.

**E. caudatum** (Sprague) Sprague – Icon.: Hook. Ic. Pl. 31: pl. 3023, 1915; Palmer & Pitman, Trees south. Afr. 2: 1054-1056, 1972; Fl. South. Afr. 18/3: 58, 1986; Flow. Pl. Africa 56: pl. 2153 and p. 80 (map p. 77), 1999; Coates Palgrave, Trees south. Afr., ed. 3: p. 445 ill. 123, 2002; Schmidt & al., Trees & shrubs Mpumalanga...: 252, 255, 2002; B. van Wyk & P. van Wyk, How to identify trees in south. Afr.: 148, 2007; B. van Wyk & al., Photo guide trees south. Afr., ed. 2: 133, 2008.

bas.: *Pseudocedrela caudata* Sprague

Deciduous tree 10-20-30 m; bole long, straight, to 2 m Ø; bark thick, grey or grey-brown, exfoliating in large irregular woody flakes to 12,5 cm Ø, leaving buff circular patches and producing a mottled appearance; crown narrow or rounded, spreading; branchlets knobby (from leaf scars), with rust-brown indumentum when young; leaves 5-8-jugate, puberulous, 25-30 cm long; leaflets ± ovate with a *tapered apex* and *filiform tip* (“tailed”); flowers in clusters on racemes 20 cm long, densely puberulous; capsule cucumber-like, 15-21 cm long, lenticellate, dehiscing from apex, valves bending outwards; seed incl. wing 9-10 cm long; central core often housing spiders.

Dense mutemwa thicket with *Baikiaea plurijuga* on Kalahari sands; also in other thicket types on deep well-drained soil in low-lying river valleys; open woodland on rocky slopes.

Botswana, NE S. Africa, Caprivi Strip, Swaziland (60-662 m alt.).

Seeds germinate easily; plants fast-growing.

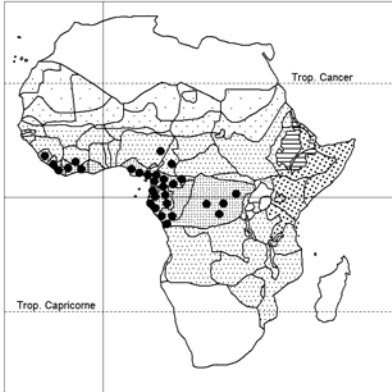
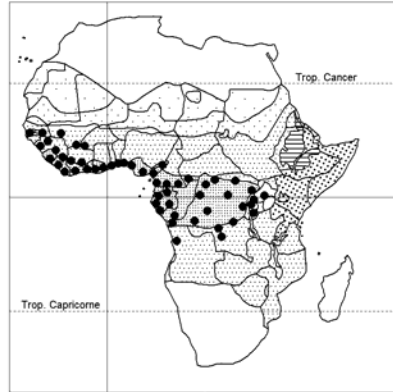
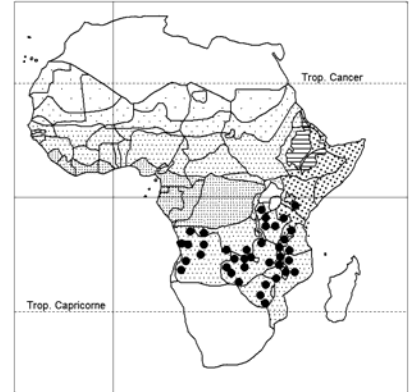
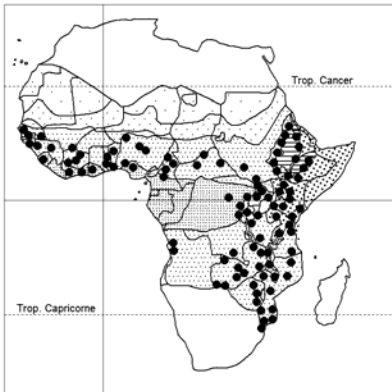
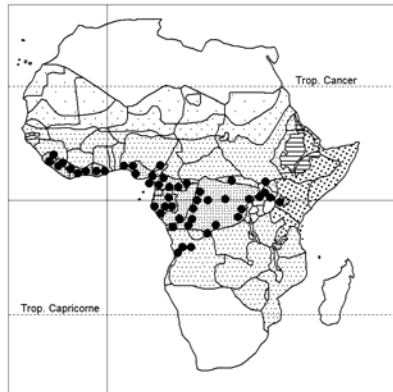
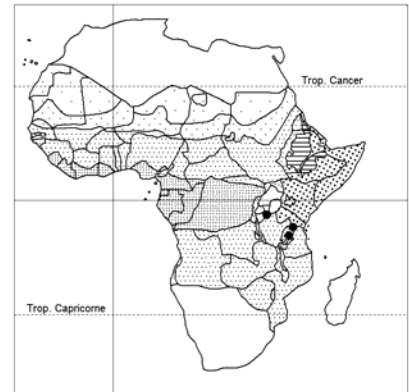
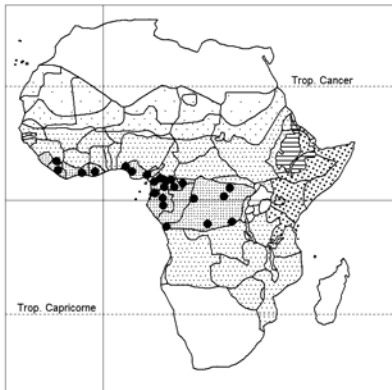
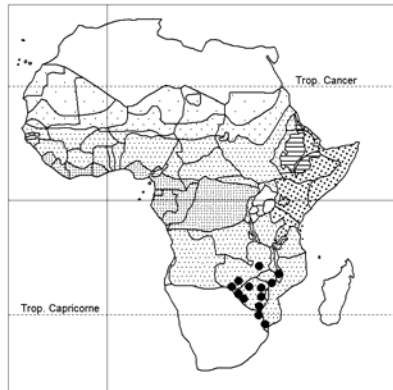
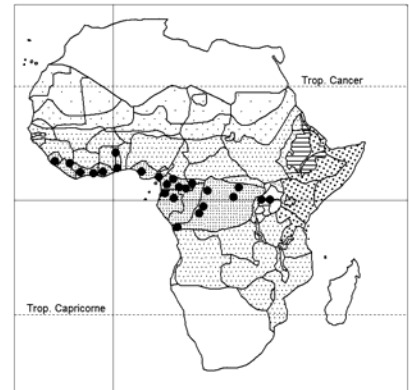
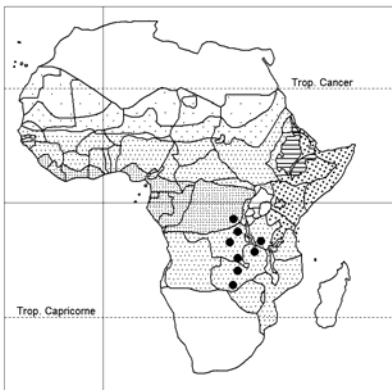
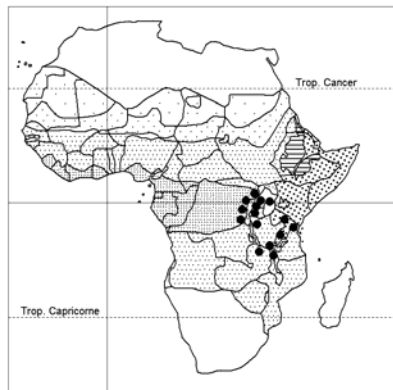
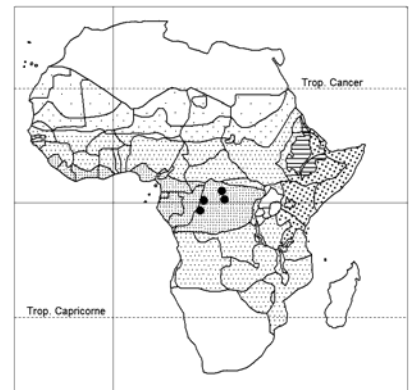
Seedlings develop a ± succulent stem, and the species is cultivated for this pachycaul tendency (van Jaarsveld in Egli, III. handbook succ. pl.: dicot.: 311, 2002).

This is the “Royal Tree” of Barotseland (= W Zambia), and canoes are manufactured for the Chief from the trunk.

Leaves may be confused with those of *Kirkia acuminata* (however, imparipinnate!).

**E. cylindricum** (Sprague) Sprague, incl. var. *ugoensis* Kennedy; emend. Hoyle, Kew Bull. 1932: 40-42. – West African Cedar, Scented Mahogany. – Irvine, Woody pl. Ghana: 517-518, 1961; Keay, Trees Nigeria, ed. 2: 344, 1989; Burkill, Useful pl. W. trop.



*Santiria trimera**Carapa procera**Ekebergia benguelensis**Ekebergia capensis**Entandrophragma angolense**Entandrophragma bussei**Entandrophragma candollei**Entandrophragma caudatum**Entandrophragma cylindricum**Entandrophragma delevoiyi**Entandrophragma excelsum**Entandrophragma palustre*

## ENTANDROPHRAGMA CYLINDRICUM

Afr., ed. 2, 4: 100-101, 1997; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 248, 2009. – Icon.: Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 64, 1940; Voorhoeve, Liberian high for. trees: 259, 1979; Wilks & Issembé, Arbres Guinée Equat.: 325, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 745, 2006; Fl. Trop. E. Afr., Meliaceae: 51, 1991; Harris & Wortley, Sangha trees: 181, 2008.

bas.: *Pseudocedrela cylindrica* Sprague

syn.: *Entandrophragma tomentosum* A. Chev. ex Hutch. & Dalziel; *E. rufum* A. Chev.; *E. lebrunii* Staner; *E. pseudocylindricum* Vermeesen (no type cited); *E. cedreloides* Harms, nomen.

Tree, evergreen, to 40-60 m; crown rounded, symmetrical; bole straight, ± cylindrical, free to 40 m height, to > 2 m Ø, with broad low buttresses at base, occasionally 3,5 m high, or absent; bark peeling in oblong irregular pieces; slash brown-pink with creamy markings, sweetly scented; branchlets angular, brown puberulous, later glabrescent, lenticellate; leaves 5-9-jugate, 20-30(-50) cm long, tomentellous, petiole (5-10 cm long) slightly winged; leaflets reticulate, shortly pointed, with tuft domatia; flower panicles lax, slender; capsule *small* (6,5-10 cm long), purplish black, pendulous, opening at base *and* apex, valves falling singly; seed incl. wing c. 7 cm long.

Evergreen and (semi-)deciduous forests; (moister types of) rain-forest, with *Heritiera utilis*; on rocky ground; sometimes common (?-)-350-1600 m alt.

Resembling *E. angolense*. – Timber (first-class) heavy-scented, fragrance persistent (cf. *E. candollei*); it just floats (Sapele wood).

Fruits and seeds often attacked by boring insects.

**E. delevoiyi** De Wild.; Lovett & al., Field guide moist for. trees Tanzania: 164, 2006. – Icon.: Bull. Misc. Inf. Kew 1932: 268 (*E. lucens*); Fl. Zambes. 2/1: 291, 1963; Fl. Trop. E. Afr., Meliaceae: 55, 1991.

syn.: *E. lucens* Hoyle

Semi-evergreen tree to 27-35 m; crown rounded; bole straight, cylindrical, to 20 m long, 1,5 m Ø, very slightly buttressed at base; bark grey brown, flaking in large irregular pieces; terminal branchlets glabrous; leaves to 25 cm long, 3-5-jugate, petiolules slender, 1-2 cm long, leaflets shortly acuminate, ± glabrous, small (9 × 4 cm); flower panicles lax, to 15 cm long; capsule cylindrical, 12-20 cm long (similar to that of *E. excelsum*, but suddenly contracted near apex, and less lenticellate); valves dehiscing from base and falling from apex like a calyptra; seed incl. wing c. 8 cm long.

Patches of dry evergreen forest; muhulus, muteshi (evergreen forest and thicket on well-drained soils); usually with *Parinari excelsa*, *Syzygium guineense*; sometimes persisting in chipya vegetation after the destruction of thicket but easily killed by fierce fires; river banks; 1200-1675 m alt.

**E. excelsum** (Dawe & Sprague) Sprague; Lovett & al., Field guide moist for. trees Tanzania: 164, 2006. – Icon.: Engler & Drude, Veg. d. Erde 9, Engler, Pflanzenwelt Afr. 3/1 B: 806, 1915 (*E. speciosum*); Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 63, 1940 (idem); Fl. Trop. E. Afr., Meliaceae: 55, 1991; White & al., Evergreen for. fl. Malawi: p. 371 & photos 5, 6, 2001; Fisher & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 315, 2008.

bas.: *Pseudocedrela excelsa* Dawe & Sprague

syn.: *Entandrophragma speciosum* Harms; *E. deiningeri* Harms; *E. gillardinii* Ledoux; *E. stolzii* Harms

## ENTANDROPHRAGMA EXCELSUM

Tree, briefly deciduous 30-55-60 m; bole straight, cylindrical, *buttressed* to a height of 4 m, to 2,5 m Ø above the buttresses; crown wide-spreading, branches massive; bark greyish with pale orange patches, scaling in plates on older trees and leaving shallow depressions; leaves large (60 cm long), 5-7-jugate; leaflets 18 × 8 cm (much larger on saplings), glabrous, venation prominent and reticulate on both surfaces, apex appearing rounded or retuse; inflorescence 25 cm long; capsule 12-20 cm long, tapered to the pointed apex; valves dehiscing from the base and falling off as a calyptra (similar to those of *E. angolense*); seed incl. wing 6-8 cm long.

Rain-forests; sometimes riverine forest; rarely occurs almost pure; 925-2220 m alt.

Used for shade in coffee plantations.

**E. palustre** Staner

Tree to 40 m tall; crown dense, slightly spreading; bole free to 20 m, ± 1 m Ø, cylindrical, sometimes with basal lobes; bark grey-brownish, with fissures, with verrucose lenticels; branches glabrous; leaves 15-45 cm long, petiole rusty puberulous, glabrescent; leaflets 6-10, ovate-oblong, puberulous on nerves beneath when young, apex short-attenuate; flower panicles 20-35 cm long, little branched, with short brown indumentum; capsule oblong, 22-27 cm long, lenticellate, dehiscing from apex; seed incl. wing 9-12 cm long.

Swampy forest periodically flooded.

Harms (in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 58, 1940) places this species near *E. candollei*.

**E. spicatum** (C. DC.) Sprague – Icon.: Harms in Baum, Warburg Kunene-Sambesi-Exped.: pl. 3, 1903; Curtis & Mannheimer, Tree Atlas Namibia: 312-313, 2005.

bas.: *Wulffhorstia spicata* C. DC.

syn.: *W. spicata* C. DC. var. *viridiflora* Schinz; *W. ekebergioides* Harms; *Entandrophragma ekebergioides* (Harms) Sprague

Deciduous tree to 8-16 (- > 20) m; crown wide spreading; bark grey, rough, flaking in large round pieces, under-bark yellowish; leaves 3-5-7-jugate, to 16 cm long; leaflets rounded, blunt at apex, with soft short hairs; flower spikes slender, 20 cm long, soft-hairy; capsule 15 cm long, splitting from base, to reveal a central woody column to which the seeds are attached (resembling a peeled banana, hence the name “wooden banana tree”).

Sandy soil; 1200 m alt.

NW Namibia (cf. also Aloe 45: 57, 2008; dry bushland vegetation with *Commiphora*, *Adansonia digitata*, *Combretum apiculatum*, *C. zeyheri*, *Kirkia acuminata*).

Closely related to *E. bussei*.

**E. utile** (Dawe & Sprague) Sprague; Irvine, Woody pl. Ghana: 518, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 101-102, 1997; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 248, 2009. – Icon.: Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 61, 1940; Adam, Fl. descr. Mts Nimba 2: 821, 822, 1971; Keay, Trees Nigeria, ed. 2: 343, 345, 1989; Fl. Trop. E. Afr., Meliaceae: 53, 1991; Voorhoeve, Liberian high for. trees: 261, 1979; Wilks & Issembé, Arbres Guinée Equat.: 327, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 730, 731, 745, 2006; Harris & Wortley, Sangha trees: 182, 2008.

bas.: *Pseudocedrela utilis* Dawe & Sprague

syn.: *Entandrophragma macrocarpum* A. Chev.; *E. roburoides* Vermeesen; *E. thomasi* Ledoux; *Antrocaryon brieiyi* De Wild. p.p. (leaves).

## ENTANDROPHRAGMA UTILE

Tree, briefly deciduous, 50-63 m; crown regular with few but massive branches; bole cylindrical, straight, sparsely tapered, clear to 26-40 m height, 2,5 m Ø, 8 m in girth above well-developed buttresses which are narrow, to 5 m high; bark thick, grey, longitudinally fissured, not peeling; slash thick, reddish-brown with paler lines, slightly scented; branchlets, leaves and inflorescences densely brown pubescent; leaves to 60 cm long, 6-12-jugate; leaflets lanceolate, shortly acuminate or rounded at apex, with tuft domatia in midrib nerves only beneath; flower panicles long, lax, appearing with new leaves; capsule obovate, club-shaped, broadest above middle, 13-28 cm long, with large rusty lenticels, often falling unopened; valves straight, dehiscing from apex, persistent at base; seed incl. wing 8-10 cm long.

Rain-forest with *Heritiera utilis*; evergreen and moist semi-deciduous forests; in moist-dry and dry types of forest, absent in wettest types; often in groups; distribution very patchy, decreasing in density S-wards; 50-1400 m alt.

Bioko/Fernando Poo.

Wood resembling that of *E. cylindricum* but lighter and coarser; important export from Ivory Coast, Gabon, also Ghana.

The largest tree in the genus. May be confused (also in herbaria!) with *Canarium schweinfurthii* (*Burseraceae*). – Resembling *Entandrophragma angolense*.

## SYNONYMS:

- Entandrophragma candolleianum* De Wild. & T. Durand = **Entandrophragma angolense**  
*casimirianum* De Wild. & T. Durand = **T. angolense**  
*cedreloides* Harms, nom. = **E. cylindricum**  
*choriandrum* Harms = **E. candollei**  
*congoense* (De Wild.) A. Chev. = **E. angolense**  
*deiningeri* Harms = **E. excelsum**  
*ekebergioides* (Harms) Sprague = **E. spicatum**  
*ferrugineum* A. Chev. = **E. candollei**  
*gillardinii* Ledoux = **E. excelsum**  
*gregoireianum* Staner = **E. angolense**  
*lebrunii* Staner = **E. cylindricum**  
*leplaei* Vermeesen = **E. angolense**  
*lucens* Hoyle = **E. delevoiyi**  
*macrocarpum* A. Chev. = **E. utile**  
*macrophyllum* A. Chev. = **E. angolense**  
*pierrei* A. Chev. = **E. angolense**  
*platanoides* Vermeesen = **E. angolense**  
*pseudocylindricum* Vermeesen = **E. cylindricum**  
*rederi* Harms = **E. angolense**  
*roburoides* Vermeesen = **E. utile**  
*rufum* A. Chev. = **E. cylindricum**  
*septentrionale* A. Chev. = **E. angolense**  
*speciosum* Harms = **E. excelsum**  
*stolzii* Harms = **E. excelsum**  
*thomasi* Ledoux = **E. utile**  
*tomentosum* A. Chev. ex Hutch. & Dalziel = **E. cylindricum**

(GARRETIA)

*Garretia anthotheca* Welw. = **Khaya**

## GUAREA / 7

A largely tropical American genus (46-50 species distributed from Central America – West Indies S-wards to c. 30° S latitude in S. America).

Diocious trees or treelets often with paripinnate leaves with a dormant terminal bud usually showing intermittent growth, rarely with a terminal leaflet.

Two species insufficiently known in our area (specimens without fruits; no ecology; known only from the types).

**Guarea cedrata** (A. Chev.) Pellegr.; Irvine, Woody pl. Ghana: 519, 1961, Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 102-103, 1997. – Icon.: Bull. Jard. Bot. Etat, Brux. 16: 189, 1941; Adam, Fl. descr. Mts Nimba: 825, 1971; Voorhoeve, Liberian high for. trees: 265, 1979; Keay, Trees Nigeria, ed. 2: 353, 1989; Wilks & Issembé, Arbres Guinée Equat.: 315, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731, 739, 2006; Harris & Wortley, Sangha trees: 182, 2008.

bas.: *Trichilia cedrata* A. Chev.

syn.: *Guarea alatipetiolata* De Wild.; *Khaya canaliculata* De Wild.; ? *Guarea kennedyi* Burt Davy ex Kennedy, nomen.

Tree, evergreen, 35-48(-55) m; bole straight, clear to 15-26 m height, to c. 3 m in girth, 1(-2) m Ø, fluted above, with thin, concave buttresses below to 3 m high; bark smooth, grey, sometimes reddish-tinged, often with concentric rings of lenticels and “mussel-shell” pits where scales fall off; slash soft, orange-pinkish, without latex but sweetly cedar-scented (cf. *G. thompsonii*, with latex, not scented); crown dense, rather open, new flush of leaves pink to red or bronze; young parts of plant with woolly orange-yellow hairs, glabrescent, young branchlets soon white and corky; leaves (im)paripinnate, 20 cm long, petiole deeply grooved but not winged; leaflets 7-5, papery, long acuminate, often galled; flowers yellowish, fragrant, in panicles to 7 cm long, in axils of fallen leaves or on young shoots below the developing leaves; capsule ± round, flattened at top, 3-5 cm Ø, pinkish velutinous, with 3-5 leathery valves; seeds with sweet orange oily aril forcing themselves out of the ripening fruit (eaten by parrots, monkeys).

Rain-forest, evergreen or half-deciduous; to 500-1100 m alt.

Confused with *Blighia welwitschii* (*Sapindaceae*); their leaves are said to be “indistinguishable”.

**G. glomerulata** Harms, incl. var. *obanensis* Bak. f.; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 104, 1997; Cable & Cheek, Pl. Mt Cameroon: 83, 1998; Cheek & al., Pl. Kupe...: 338, 2004; Sosef & al., Check-list pl. vascul. Gabon: 274, 2006.

syn.: *G. claessensii* De Wild.

Shrub or tree to 1-6 m tall, with drooping branches and *pendulous flower racemes* 25-60 cm long, very ramose; leaves dark green, ± 5-jugate, petiole 15 cm long, puberulent; rhachis 30 cm long; leaflets ± elliptic, c. 24 cm long, long acuminate; flowers pink, scattered on distal part of racemes; fruit ± globose, rosstrate, densely brown hairy, 1,5 cm Ø; seeds yellow without aril.

Rain-forest, in understory; < 200-1400 m alt.

Bioko/Fernando Poo.



## GUAREA

**G. laurentii** De Wild. – Icon.: Bull. Jard. Bot. Etat, Brux. 16: 193, 194, 197, 1941.

syn.: *Trichilia reygartii* De Wild.; ? *T. guentheri* Harms

Tree to 10-35 m; crown dome-shaped with some stout ascending branches; bole straight, cylindrical, fluted at base, to 20 m in height, 1 m Ø; bark rusty brown, peeling in pieces 2-6 cm Ø and 2-6 mm thick; slash creamy yellow, with whitish latex, cedarscented; branchlets shortly puberulous, glabrescent; leaves (im)paripinnate, 20-45 cm long; leaflets 11-15, oblong-oblongolate, acuminate, glabrous; flower panicles 7-13 cm long, puberulous; capsule round, 3-4 cm Ø, glabrous, pinkish; seeds with mealy red aril.

Dry primary forest; termite mound; 470-± 900 m alt.

**G. leonensis** Hutch. & Dalziel; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 104, 1997. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 163!, 1959; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731, 736, 737, 2006.

Tree 4.5-12 m; bole deeply fluted, to 30 cm Ø, branched below; bark dark, scaly; branches drooping, spreading; twigs dark, cracked, with buds in leaf axils orange fine-hairy; leaves 15-25 cm long; leaflets 3-7(-13), oblong, long acuminate with spatulate drip tips, with pit domatia; flower racemes pendulous, 20 cm long; fruit ± round, 2-3 cm Ø, minutely tomentellous.

Wet evergreen rain-forest on slopes, in understorey.

**G. mangentiana** (Aké Assi & Lorougnon) J. J. de Wilde, Blumea 52: 197, 2007. – Icon.: Bull. Soc. Bot. France 136, Lettres Bot. 1989/2: 166, 1989 (as pointed out by de Wilde, l.c., the figure cited does not match the original description as to the ovary which in the text is said to be unilocular, but drawn as 2-locular; in fact, a sessile 2-locular ovary is not found in *Heckeldora* and de Wilde transferred the species to *Guarea*); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 737, 2006.

Shrub or tree 2-5 m tall, “flexuosus”; branches pubescent or glabrous; leaves 30-60 cm long, of 5-9(-11) leaflets, glabrous coriaceous, ± oblongolate, margins slightly recurved, petiole and rachis flat to winged, yellow; inflorescence pubescent, pendulous (length in original description given as of 2-3 cm, but the accompanying figure shows a cut-off inflorescence > 4 cm long; also commented on by Hawthorne & Jongkind, l.c.); fruit berry-like, ellipsoid, 3.5-4 cm long, pointed at apex.

River side and ravine in wet evergreen forest; 200 m alt.

**G. mayombensis** Pellegr., incl. var. *coalescens* (Vermoesen) Pellegr.; Cheek & al., Pl. Kupe...: 338, 2004; Sosef & al., Check-list pl. vascul. Gabon: 275, 2006. – Icon.: Pellegrin, Fl. Mayombe: 54, 1924; Bull. Jard. Bot. Etat, Brux. 16: pl. 12 facing p. 204, 1941; Fl. Trop. E. Afr., Meliaceae: 42, 1991.

syn.: *Leplaea mayombensis* (Pellegr.) Staner, incl. var. *coalescens* (Vermoesen) Staner; *L. coalescens* Vermoesen

Tree to 25 m tall; bole to 15 m, 1m Ø with winged buttresses; crown dense; bark grey, rough; leaves pari- or imparipinnate, to 60 cm long, petiole winged; leaflets ± 15, (ob)lanceolate, tapering gradually to the acuminate tip; flowers large (c. 3 cm Ø), in few-flowered inflorescences; resembling *G. cedrata* but fruit 8-20 cm long, 12 cm Ø, indehiscent, opening on ground weakly and irregularly.

Rain-forest; 350-1600 m alt.

## GUAREA

(**G. ngounyensis** Pellegr.)

Shrub ± 1 m tall; branchlets velvety hairy; leaves 30-40 cm long, 8-jugate, petiole cylindrical; leaflets alternate, shortly villose, oblong, 7-13 × 3.5-4 cm, apex acuminate, base obtuse or rounded; flowers pink, in slender hairy racemes c. 10 cm long; fruit unknown.

Forest ?

Known only from the syntypes collected in 1925 (SC Gabon: Haute-Ngounyé).

According to Sosef & al., Check-list pl. vascul. Gabon: 275, 2006, certainly a synonym of *G. glomerulata* (in Pellegrin's key, Bull. Soc. Bot. France 86: 149, 1939, the differences between these two taxa are negligible, although the length of the inflorescence and size of flowers do not correspond with those given in the description of *G. ngounyensis*).

Not mapped.

(**G. oyemensis** Pellegr.)

Tree; leaves imparipinnate, 4-jugate, 35-45 cm long; petiole glabrous, base deeply grooved; petiolules 8-15 mm long, glabrous; leaflets oblong, base cuneate, apex obtuse, 10-16 × 5-7 cm, glabrous; panicle axillary, or on old branches, racemose, dense, 4-7 cm long, pubescent; fruit unknown.

Ecology unknown (N Gabon: Oyem).

Pellegrin (o.c. 152-153) compares this species with *G. thompsonii*; it keys to near *G. mayombensis*; and is considered by Sosef & al. (l.c.) as a probable synonym of *G. mayombensis*.

Not mapped.

**G. thompsonii** Sprague & Hutch.; Voorhoeve, Liberian high for. trees: 266-268, 1979; Keay, Trees Nigeria, ed. 2: 352, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 104-105, 1997. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 737, 2006; Harris & Wortley, Sangha trees: 183, 2008. – Sweet Cedar, Black Guarea.

syn.: *G. le-testui* Pellegr.

Tree 35-48-55 m; bole straight, cylindrical, 1.5-3 m Ø, 3.6 m in girth, fluting at base and with low buttresses; bark dark grey to brown, ± smooth, falling to expose “mussel-shell” depressions, 2-4 cm broad; slash yellow, slightly scented or not, latex white, sticky (cf. *G. cedrata*); crown dark, dense; leaves of 7-17 elliptic leaflets, petiole 7-14 cm long, not winged but with 2 lateral ribs, rachis 8-30 cm long; young flush of leaves with scurfy brown hairs or scales; flowers yellow, in erect stout panicles 25 cm long; fruit fig-shaped, 3-5 cm Ø, glabrous, orange or purple-red, with 4 valves, on a very thick short stipe; seed aril orange (attracting ants, small flies).

Evergreen and deciduous forests; 250-600 m alt.

Fresh wood (slightly heavier than *G. cedrata*) sinks in water, floats when dry.

## SYNONYMS:

*Guarea alatipetiolata* De Wild. = **Guarea cedrata**

*angustifolia* (Pierre) Pellegr. = **Heckeldora staudtii**

*bipindeana* C. DC. = **H. zenkeri**

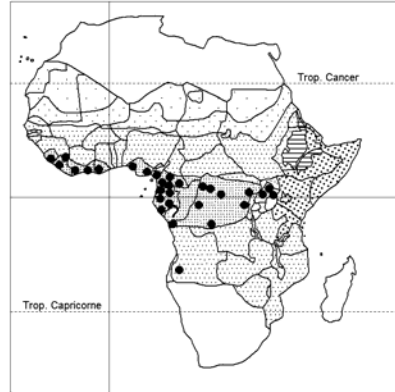
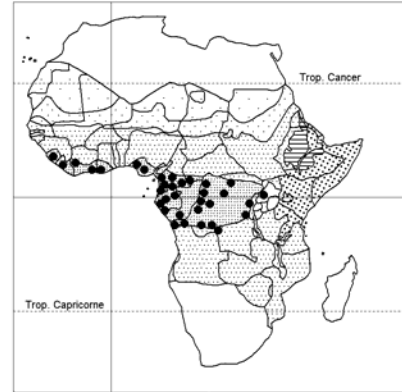
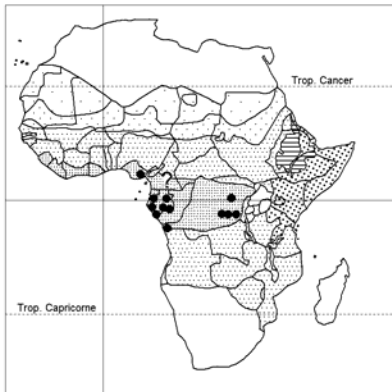
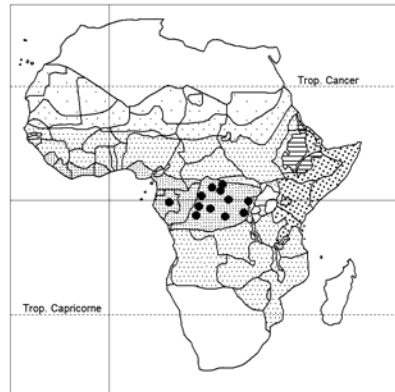
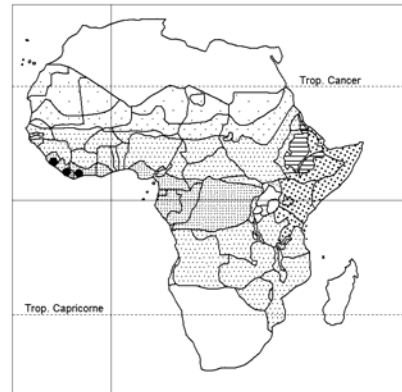
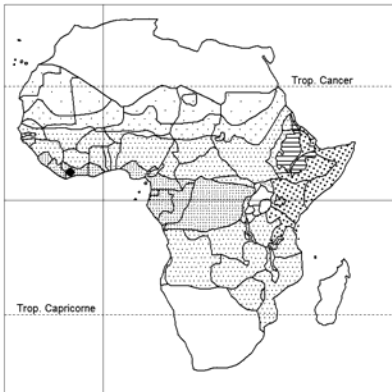
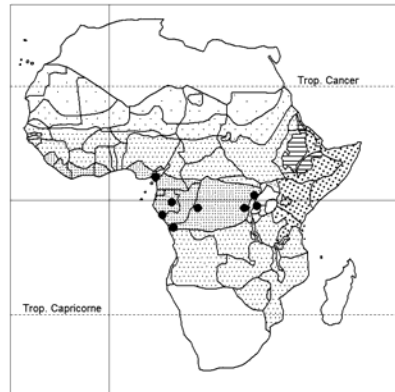
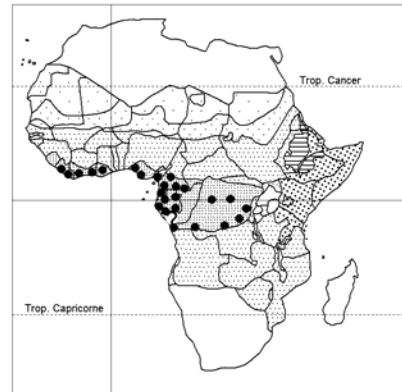
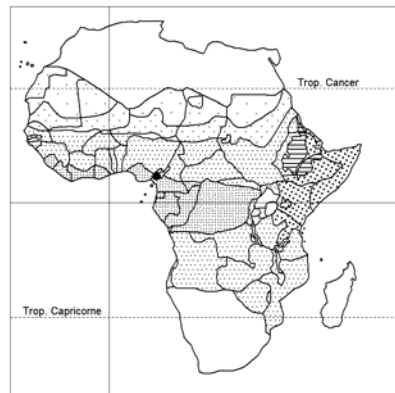
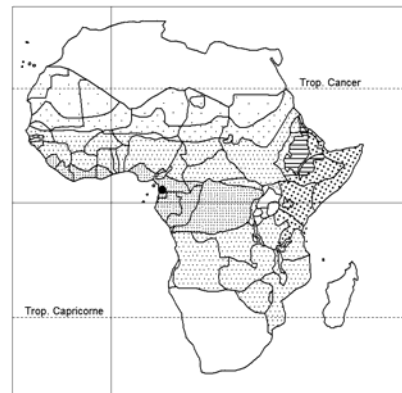
*claessensii* De Wild. = **Guarea glomerulata**

*kennedyi* Burt Davy ex Kennedy, nom. = ? **G. cedrata**

*ledermannii* Harms = **Heckeldora ledermannii**

*leptotricha* Harms = **H. leptotricha**



**Entandrophragma spicatum****Entandrophragma utile****Guarea cedrata****Guarea glomerulata****Guarea laurentii****Guarea leonensis****Guarea mangelotiana****Guarea mayombensis****Guarea thompsonii****Heckeldora jongkindii****Heckeldora ledermannii****Heckeldora leptotricha**

## GUAREA

*le-testui* Pellegr. = **Guarea thompsonii**  
*nigerica* Bak. f. = **Heckeldora zenkeri**  
*parviflora* Bak. f. = **H. staudtii**  
*pierreana* Harms = **H. staudtii**  
*staudtii* Harms = **H. staudtii**  
*zenkeri* Harms = **H. zenkeri**

## HECKELDORA / 6

syn.: *Guarea* L. sect. *Heckeldora* (Pierre) Pellegr. 1939;  
*Guarea* L. sect. *Heckeldora* (Pierre) Harms 1940.

Plants dioecious, with imparipinnate leaves. Tropical African genus. Some species incompletely known: female flowers unknown in 3 species (= 50%), no mature fruit seen in 1 species).

DE WILDE, J. J. F. E. (2007). Revision of the African genus Heckeldora (Meliaceae). *Blumea* 52: 179-199.

**Heckeldora jongkindii** J. J. de Wilde – Icon.: *Blumea* 52: 183, 2007; Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 737, 2006.

syn.: *H. staudtii* sensu F.W.T.A., ed. 2, 1(2): 707, 1958, quoad specim. Baldwin 11468.

Shrub 1,5-2 m tall; leaves of 5-9 leaflets elliptic to obovate 4,5-16,5 × 2,2-12 cm, distal leaflets largest; male flowers fragrant, few clustered at tops of the branched pendulous inflorescence 35 cm long; female flowers unknown; fruit a stalked berry, obovoid, 2 cm long, 3 cm Ø, 8-ridged, hairy, beaked.

Disturbed and secondary forests; wet forest; c. 115 m alt.

Also in SW Ivory Coast fide Hawthorne & Jongkind, o.c.: 736.

**H. ledermannii** (Harms) J. J. de Wilde; Harvey & al., *Pl. Lebalem Highl., Cameroon*: 80, 129, 2010. – Icon.: *Blumea* 52: 185, 2007. – Neotype: Leenwenberg 8813 (WAG, BR).

bas.: *Guarea ledermannii* Harms

Shrub or tree to 5 m tall; stem to 1,5 cm Ø, sparsely branched, the branches shortly pubescent, becoming glabrescent; leaves of 5-11(-13) leaflets elliptic to oblong, 10-20 × 2-7 cm, distal leaflets largest; male inflorescences raceme-like, to 33 cm long, with short lateral branches; female inflorescence and flowers unknown, but young infrutescence perpendicular to stem, to 67 cm long, puberulous; immature fruit obovoid, 2-3 × 1-2 cm, puberulous, not ribbed, stalked, apiculate (not beaked).

Fertile volcanic soils in transitional zone of evergreen rain-forest towards submontane forest; 900-1500 m alt.

**H. leptotricha** (Harms) J. J. de Wilde – Icon.: *Blumea* 52: 187, 2007. – Lectotype: Zenker 1028 (K, E).

bas.: *Guarea leptotricha* Harms

Shrub or treelet 2 m tall, usually unbranched; leaves congested at top, of (3-)5-11 leaflets, elliptic to obovate, 3-23 × 1,5-9,5 cm, distal ones largest; lamina glabrous above but with short indumentum on impressed midrib; lower surface with weak sericeous hairs, especially on prominent midrib and nerves; inflorescences on the stem among the leaves, single or in fascicles, dull purplish red; female ones 1-10 cm long, male pendulous to 55 cm long; berry long-stalked, ovoid to cylindrical, 3,5 × 2,2 cm, irregular, knobbed (not ribbed), brown-orange or reddish, minutely puberulous-shortly pubescent, felty, with sparse white silky hairs and 1,5 cm long rostrum.

Evergreen high forest, in shrub layer, often in deep shade; up to 400 m alt.

## HECKELDORA

**H. staudtii** (Harms) Staner – Icon.: *Blumea* 52: 190, 2007.

bas.: *Guarea staudtii* Harms

syn.: *Heckeldora latifolia* Pierre; *H. angustifolia* Pierre; *H. acuminata* Pierre ex Pellegr.; *H. klainei* Pierre ex Pellegr.; *Guarea parviflora* Bak. f.; *G. pierreana* Harms; *G. angustifolia* (Pierre) Pellegr.

Shrub or treelet to 2,5-3,5 m tall; stem thin, to 0,8 cm Ø, sparsely branched; bark dark greenish brown or blackish; leaves in upper part of stem and branches; leaflets 5-11(-15), narrowly (ob)ovate, 4-20 × 2-8 cm, distal ones largest; flowers sweetly scented, in single or clustered racemes axillary or supra-axillary, 40 cm long (male) or 15 cm (female), borne below or between the leaves; berry long-stalked, ovoid to cylindrical, asymmetric, knobbed, 7-9-ridged, minutely puberulous or densely velvety, pinkish brown or orange-yellow, rostrum 2 cm long.

Mature evergreen and semi-deciduous forest, in shrub layer; old secondary forest; dry land; alluvial soil along watercourses; 5-1000(-?1750) m alt.

Two morphological groups can be distinguished, but intermediates also occur: – a: with conspicuous short brown glandular trichomes on calyx, in W part of range; – b: plants without such trichomes in E part of range (Zaire).

**H. trifoliolata** J. J. de Wilde – Icon.: *Blumea* 52: 194, 2007.

Shrublet to 1,5 m tall; leaves 3-foliolate; leaflets elliptic to (ob)ovate, 9-20 × 5-10 cm, terminal one largest, glabrous above except for short stiff indumentum on impressed midrib and nerves, lower surface with a few scattered minute dark glandular (?) trichomes and slightly puberulous on prominent midrib and nerves; inflorescences (male) raceme-like narrow panicles, pendulous, to 33 cm long, axillary or spaced among the leaves in upper part of stem; female flowers unknown; infrutescences sparse, 1-4 cm long, with 1 or 2 fruits; berry stalked, obovoid or cylindrical (not asymmetric or ribbed), yellowish, densely shortly pubescent, 3,5 × 2,5 cm, rostrum 1,5 cm long, curved,.

Mature or secondary forests in shrub layer; sand or rocky outcrops; up to 480 m alt.

**H. zenkeri** (Harms) Staner – Icon.: *Blumea* 52: 190, 2007.

syn.: *Guarea bipindeana* C. DC.; *G. nigerica* Bak. f.

Shrub or treelet to 4 m tall, sparsely branched; leaves congested terminally, 3-13-foliolate; leaflets elliptic to obovate, 4-21 × 2,5-7 cm, distal ones largest, glabrous except for a short stiff indumentum on the impressed midrib above (but sometimes glabrous), glabrous or sparsely puberulous on prominent midrib beneath; inflorescences axillary or between the leaves near tip of stem, female ones 28 cm long, male ones 60(-80) cm, pendulous, not or sparsely branched; flowers sweetly scented, orange-yellow; berry (ob)ovoid, irregular, knobbed (not ribbed), 3-7 × 2-5 cm, yellowish, velvety, apex tapering, c. 1 cm long.

Old evergreen and semi-deciduous forest in shrub layer; also old secondary forests; up to 800 m alt.

## SYNONYMS:

*Heckeldora acuminata* Pierre ex Pellegr. = **Heckeldora staudtii**

*angustifolia* Pierre = **H. staudtii**

*klainei* Pierre ex Pellegr. = **H. staudtii**

*latifolia* Pierre = **H. staudtii**

*staudtii* sensu F.W.T.A., ed. 2, 1/2: 707, 1958, p.p.  
= **H. jongkindii**

## (HEIMODENDRON)

*Heimodendron tisserantii* Sillans = **Entandrophragma palustre**

## KHAYA / 4

syn.: *Garretia* Welw.

Closely related to the American genus *Swietenia*, and timber very similar in appearance. Four species in Africa and 2 endemic in Madagascar and the Comoros.

Deciduous monoecious trees with scaly bark and paripinnate leaves. Fruit characteristic: a large woody round 4-5-valved capsule held erect. Seeds flat, narrowly winged all around.

GITHITHO, A. N. (2002). Coastal plant conservation in East Africa: the work of the National Museums of Kenya in the sacred Khaya forests of coastal Kenya. In: MAUNDER, M. & al., eds., *Plant Conservation in the Tropics, Perspective and Practice*: 135-150. Royal Botanic Gardens, Kew.

KIEHN, M. & K. RAYNER (2001). See above under **Entandrophragma**.

LEHMANN, I. & E. KIOKO (2005). Lepidoptera diversity, floristic composition and structure of three Kaya forests on the south coast of Kenya. *J. E. Afric. Nat. Hist.* 94: 121-163.

**Khaya anthotheca** (Welw.) C. DC. – White Mahogany, Acajou blanc. – Irvine, Woody pl. Ghana: 520-521, 1961; Burkill, Useful Pl. W. trop. Afr., ed. 2, 4: 106-107, 1997. – Icon.: Consp. fl. Angol. 1/2: pl. 13 B, 1951; Fl. Congo belge 7: 179, 1958; Fl. Zambes. 2/1: 288, 1963; Voorhoeve, Liberian high for. trees: 269, 1979; White & al., Evergreen for. fl. Malawi: 364, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 742, 743, 2006; Lovett & al., Field guide moist for. trees Tanzania: 165, 2006; B. van Wyk & P. van Wyk, How to identify trees in south. Afr.: 149, 2007; Harris & Wortley, Sangha trees: 183, 2008; B. van Wyk & al., Photo guide trees south. Afr., ed. 2: 184, 2008.

bas.: *Garretia anthotheca* Welw.

syn.: *Khaya nyasica* Bak. f.; *K. euryphylla* Harms; *K. agboensis* A. Chev., 1928; *K. mildbraedii* Harms; *K. wildemanii* Ghesq.; *K. dawei* Stapf ex A. F. Broun & R. E. Massey, Fl. Sudan: 231, 1929, p.p. (fide Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 54, 1940).

Tree, semi-deciduous, 45-> 60 m, often with very prominent surface roots; crown wide spreading, subglobose; bole straight, unbranched for a considerable height but short in some riverine situations, 3,6 m in girth, to 1,2 m Ø, in large trees markedly buttressed to 3-6 m height; bark smooth but flaking in circular scales ± 3 cm Ø leaving a pock-marked mottled grey and brown surface; leaves 30-40 cm long; leaflets in 3-4 pairs, broadly or ovate elliptic, 8-15 × 4-8 cm, leathery, glabrous; inflorescences 6-25 cm long, glabrous, crowded at end of branchlets; capsule woody, smooth, appressed globose, 6-8(-10) cm Ø with 4-5 spreading valves ("anthotheca" refers to the open fruit resembling a flower); seeds incl. broad wing 2-2,5 cm long.

Rain-forest, often in gullies, also riparian but not necessarily near surface water, often in association with *Newtonia buchananii*; in wet and dry limits of moist-dry types of deciduous forest; 125-1600 m alt.

Introduced in S. Africa.

Grown in plantations in Tanzania, also in Uganda. Cultivations often failed in Malawi due to attacks by the larvae of the shoot borer *Hypsipyla* tunneling in the young sapling stems, with the result that trees get badly formed.

Wood pinkish white, much lighter than that of *K. ivorensis*.

## KHAYA ANTHOTHECA

Closely related to *K. ivorensis* that replaces *K. anthotheca* in the wettest forests in W. Africa. In herbaria the two species are often difficult to distinguish.

It is probable that the tallest tree in the Fl. Zambes. area is a *K. anthotheca* (Chirinda Forest, near Chipinga, Zimbabwe).

Record from Imatong Mts, Uganda side, unlikely, fide Friis & Vollesen, Fl. Sudan-Uganda border 2: 623, 2005.

**K. grandifoliola** C. DC. – Benin Mahogany. – Irvine, Woody pl. Ghana: 521, 1961; Keay, Trees Nigeria, ed. 2: 340, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 107-108, 1997; Akoegninou & al., Fl. analyt. Bénin: 794, 2006. – Icon.: Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 329, 1952; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731, 743, 2006.

syn.: *K. punchii* Stapf; *K. grandis* Stapf; *K. kerstingii* Engl.; *K. kissiensis* A. Chev., nom.; *K. dawei* Stapf ex A.F. Broun & R. E. Massey, Fl. Sudan: 231, 1929, p.p. (fide Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 54, 1940); *K. grandifolia* C. DC., sphalm., Lisowski, Fl. (angiosp.) Rép. Guinée 1: 249, 2009.

Tree 20-30(-40) m, unbuttressed or slightly buttressed; bole straight, to 21 m high, 5 m in girth, 1,2 m Ø, but sometimes twisted and branching low into 2 or more branches; bark rough, scaly, pitted where scales fall off; slash red with white streaks, scented, with viscous exudate; young leaves conspicuously bright red; leaves to 50 cm long, of 6-10 leaflets ± papery, oblong (-elliptic), 12-20 × 5-10 cm, with conspicuous often twisted apiculum; panicles 35 cm long; capsule 7(-9) cm Ø, valves 5 massive.

Savannas; closed forest; forest islands in savanna; sometimes with *Khaya senegalensis*; along edge of scarp; sometimes gregarious and dominant; riverine forest with *Ficus sur*, *F. vallis-choudae*, *Syzygium guineense*, *Cola sp.*; sometimes locally common; hilly and rocky areas in the forest zone; a pioneering species growing rapidly; 229-1800 m alt.

Sometimes planted (Nigeria, roadside tree).

Wood pink turning a rich mahogany brown, lighter than that of *K. senegalensis* but heavier than that of *K. ivorensis*. – Regeneration by seed good, growth rapid; also producing root-suckers. Very similar to *K. anthotheca* (cf. syn. *K. dawei*) and *K. senegalensis*.

**K. ivorensis** A. Chev., incl. var. *quadrifida* A. Chev., Explor. Bot. Afr. Occ. Franç. 1: 116, 1920, nom. – Lagos or Red Mahogany, Acajou de Bassam. – Aubréville, Bull. Mens. Agence Economique Afrique Occ. Franç. 10: 213-219, 1930; Adam, Fl. Mts Nimba 2: 824, 1971; Irvine, Woody pl. Ghana: 521-522, 1961; Keay, Trees Nigeria, ed. 2: 340, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 109-110, 1997. – Icon.: Wilks & Issembé, Arbres Guinée Equat.: 311, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 743, 2006.

syn.: *K. caudata* Stapf ex Hutch. & Dalziel; *K. klainei* Pierre ex Pellegr.

Tree 30-60 m, strongly buttressed, buttresses winged, unevenly developed, extending to 1,5 m height, sometimes extending along ground; bole cylindrical, clear to ± half of the tree height, 4,5-6 m in girth, 2 m Ø; crown fairly open, leafless for 3-4 weeks (Ghana); bark thick, pitted, flaky, ashy white to brownish black, scales leaving a reddish patch contrasting with lighter patches; slash deep red, scented, exuding some pale gum, very bitter; leaves crowded at ends of branches and branchlets; leaflets 8-10-14, glabrous, leathery, ± oblong, 10 × 5 cm, margins wavy, abruptly acuminate into a drip-tip; panicles few-flowered; capsule 4-7 cm Ø, valves 5 rather thin.



## KHAYA IVORENSIS

Deciduous (not in the driest type) and evergreen moist forests, sometimes dominant; also on banks of streams and rivers; rain-forest; small marigot, temporarily dry; humid alluvial soils; slightly humid clays; often with spiny palm-trees; lateritic hill slopes; sandy grounds along lagoons; 400-700 m alt. – In the wettest forests replaces *K. anthotheca*.

Wood pale red and darkening. Probably the most widely used mahogany; it is the cheapest and most readily available.

**K. senegalensis** (Desr.) A. Juss., incl. var. *spectabilis* A. Chev. – Senegal Mahogany, Acajou du Sénégal. – Irvine, Woody pl. Ghana: 523-524, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 110-113, 1997; Lisowski, Fl. (angiosp) Rép. Guinée 1: 249, 2009. – Icon.: Guillemain & al., Fl. Senegamb. Tent. 1: pl. 32, 1831; Engler, Pflanzenwelt Afr. 3/1 B: 802, 1915; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 50, 52, 1940; Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 328, 1952; Keay, Trees Nigeria, ed. 2: 341, 1989; Akoegninou & al., Fl. analyt. Bénin: 794, 2006.

bas.: *Swietenia senegalensis* Desr.

Tree 20-30 m, with short buttresses or such absent; bole often crooked, short, 3 m in girth, often divided at c. 6 m height into 2-3 large vertical limbs giving a widely spread rounded crown characteristic by its evergreen shining foliage; bark grey, scaly, with reddish tinge; slash bright red exuding a pale greenish-yellow or golden gum; leaves 15-25(-45) cm long at ends of branches; leaflets 4-12, oblong(-elliptic), apex rounded or shortly acuminate; panicles to 20 cm long; capsule c. 5 cm Ø, valves 4 rather thin.

Half-humid rain-forest with *Detarium*, *Parinari*, *Erythrophleum* (sometimes excessively abundant) and at their edges, around rice-fields; wooded savannas (moister zones); fringing forest; low-lying places beside streams; often gregarious; often on rocky places; sometimes with *K. grandifoliola*; alluvial soils on river banks; light silty soils; to 915-1525 m alt.

Cape Verde Isl. – Cultivated in S Somalia (S2, fide Thulin, Fl. Somal. 2: 236, 1999) and in Ethiopia (fide Wickens, *Jebel Marra*: 123, 1976). – Also in NW Gabon ? (cf. Sosef & al., Check-list pl. vascul. Gabon: 275, 2006; specim. Klaine 2836, P).

Grown as a shade and avenue tree. It is the most beautiful tall tree in the long dry season of the sahelo-guinean regions.

Wood red-brown, tinged purple. Probably the first-known African mahogany to be exported from W. Africa (Gambia). The timber is much heavier than that of the other *Khaya* species.

Young twigs used as toothbrushes, peeled stem or root as chew-sticks.

GAOUE, O. G. & T. TICKTIN (2007). Patterns of harvesting foliage and bark from the multipurpose tree *Khaya senegalensis* in Benin: Variation across ecological regions and its impacts on population structure. *Biol. Conservation* 137: 424-436.

SOKPON, N. & C. OUINSAVI (2002). Utilisations du *Khaya senegalensis* en médecine traditionnelle au Bénin. *Rev. Médecine Pharmacopées Afric.* 16: 9-19.

Very similar to *K. anthotheca*, *K. grandifoliola*, but smaller in all parts.

## SYNONYMS:

*Khaya agboensis* A. Chev. = **Khaya anthotheca**  
*canaliculata* De Wild. = **Guarea cedrata**  
*caudata* Stapf ex Hutch. & Dalziel = **Khaya ivorensis**  
*dawei* Stapf ex A. F. Broun & R. E. Massey, p.p.  
 = **K. anthotheca**, **K. grandifoliola**

## KHAYA

*euryphylla* Harms = **K. anthotheca**  
*grandis* Stapf = **K. grandifoliola**  
*kerstingii* Engl. = **K. grandifoliola**  
*kissiensis* A. Chev., nom. = **K. grandifoliola**  
*klainei* Pierre ex Pellegr. = **K. ivorensis**  
*mildbraedii* Harms = **K. anthotheca**  
*nyasica* Bak. f. = **K. anthotheca**  
*punchii* Stapf = **K. grandifoliola**  
*wildemanii* Ghesq. = **K. anthotheca**

## (LEIOPTYX)

*Leioptyx congoensis* Pierre ex De Wild. = **Entandrophragma angolense**

## LEPIDOTRICHILIA / 1

syn.: *Trichilia* P. Browne sect. *Lepidotrichilia* Harms

One species in E Africa, 3 endemic in Madagascar.

**Lepidotrichilia volkensii** (Gürke) Leroy, Fl. Zambes. 2/1: 305, 1963 ! – Friis, Forest trees N.E. trop. Afr.: 197-198, 319 (map), 1992; Friis & Vollesen, Fl. Sudan-Uganda border ... 1: 382-383, 1998. – Icon.: Fl. Trop. E. Afr., Meliaceae: 36, 1991; Beentje, Kenya trees, shrubs & lianas: 405, 1994; White & al., Evergreen for. fl. Malawi: 362, 2001; Lovett & al., Field guide moist for. trees Tanzania: 166, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 143, 2008.

syn.: *Trichilia volkensii* Gürke (August, 1894), incl. var. *buchananii* (C. DC.) Pic. Serm. and var. *genuina* Pic. Serm., nom. superfl.; *T. buchananii* C. DC. (September, 1894); *T. bilocularis* Pax; *Commiphora kilimandscharica* Engl. (*Burseraceae*).

Evergreen tree 3-15-20 m, sometimes flowering as a shrub; branches arching; bole fluted; bark smooth, grey; leaves alternate, imparipinnate, c. 30 cm long, of 7-9-11 leaflets; petiole and rachis densely *stellate*-pubescent, lower surface of leaflets puberulous with small stellate hairs and minute red and black glands; flowers bisexual, yellowish, fragrant, in contracted cymose panicles 20 cm long; berry ellipsoid, orange, c. 1.5 cm long, encrusted with stellate scales.

Forest with *Podocarpus latifolius*, *Syzygium*; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; mixed *Podocarpus* forest, in high altitudes with *Hagenia*, *Schefflera*; bamboo forest; evergreen and riverine forest; also secondary evergreen bushland; 1050-3300 m alt.

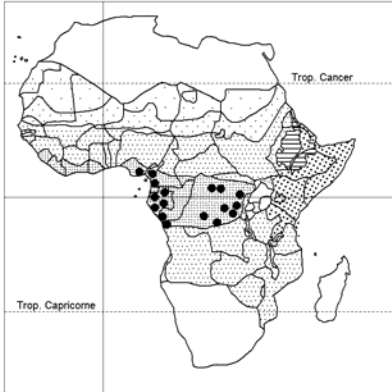
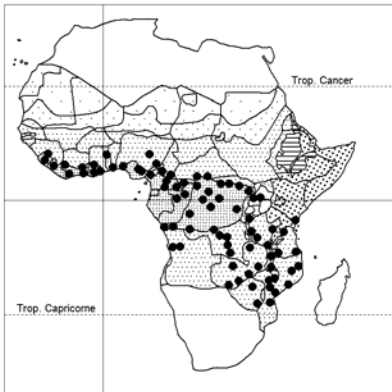
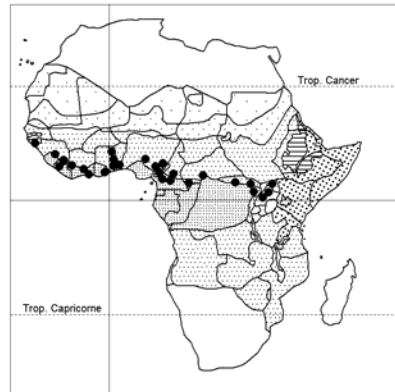
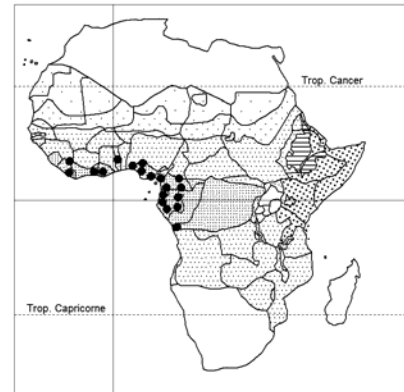
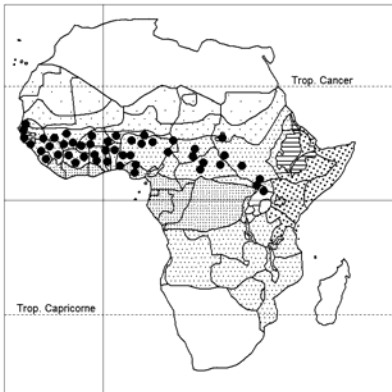
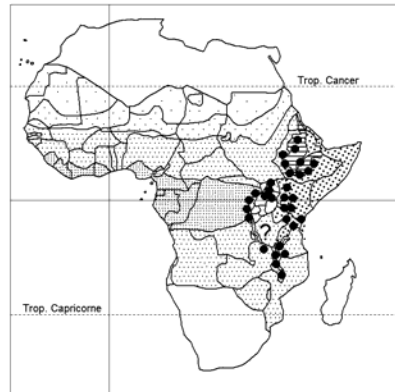
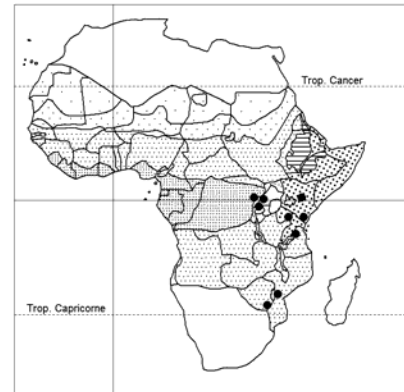
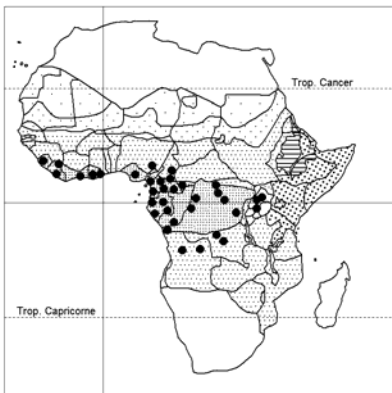
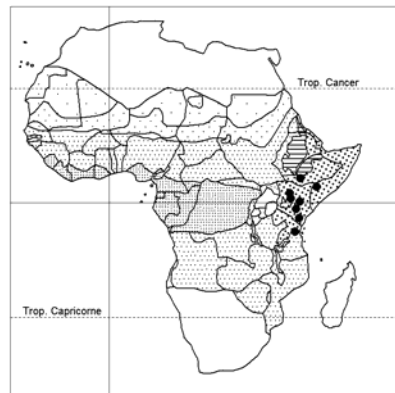
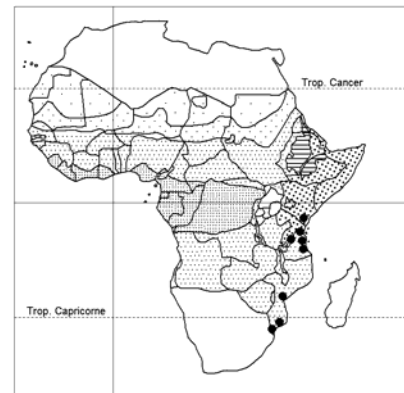
Leaflets very variable in shape and size.

## (LEPLAEA)

*Leplaea coalescens* Vermeesen = **Guarea mayombensis**

*mayombensis* (Pellegr.) Staner, incl. var. *coalescens* (Vermeesen) Staner = **G. mayombensis**



**Heckeldora staudtii****Heckeldora trifoliolata****Heckeldora zenkeri****Khaya anthotheca****Khaya grandifoliola****Khaya ivorensis****Khaya senegalensis****Lepidotrichilia volkensii****Lovoa swynnertonii****Lovoa trichilioides****Melia volkensii****Pseudobersama mossambicensis**

## LOVOA / 2

syn.: *Lithosiphon* Pierre ex Harms

Tropical African genus; monoecious (flowers unisexual in large panicles) trees with paripinnate leaves; fruit a pendulous elongate, thinly woody capsule; seeds winged, directed upwards in the fruit (*downwards* in *Entandrophragma*).

**Lovoa swynnertonii** Bak. f.; Coates Palgrave, Trees south. Afr., ed. 3: 446, 2002. – Icon.: J. Linn. Soc. London 40: pl. 3, 1911; Beentje, Kenya trees, shrubs & lianas: 406, 1994; Lovett & al., Field guide moist for. trees Tanzania: 166, 2006.

Evergreen tree 20-40-50 m; crown narrow, flattened; bole straight, clean (sometimes to 30 m height), to 2 m Ø, fluted or slightly buttressed at base; bark smooth, grey, flaking in circular patches c. 3 cm Ø; leaves c. 30 cm long, pubescent when young; leaflets 6-16, asymmetrical, oblong-elliptic, 5-11 × 2-5 cm; flowers white, numerous, in dense panicles 10-15 cm long, axes densely puberulous; capsule ellipsoid, cigar-shaped, dark brown, 5 × 2 cm, valves separating from the apex first (resembling the fruit of *Entandrophragma caudatum* but smaller).

Rain-forest; moist forest; well-drained slopes of stream banks; riverine forest; 150-1525 m alt. (coastal Kenya 150-450 m, inland > 1150 m).

Timber dark brownish red, difficult to work; formerly marketed with *L. trichilioides*. Now very rare in Zimbabwe needing protection.

**L. trichilioides** Harms – African Walnut. – Irvine, Woody pl. Ghana: 524-525, 1961; Keay, Trees Nigeria, ed. 2: 346, 348, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 114-115, 1997; Lovett & al., o.c.: 166; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 249, 2009. – Icon.: Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2 19b/1: 76, 1940 (sub nom. *L. mildbraedii* and fruits *Lovoa* sp.); Voorhoeve, Liberian high for. trees: fig. 21 facing p. 272, p. 275, 1979; Fl. Trop. E. Afr., Meliaceae: 60, 1991; Wilks & Issembé, Arbres Guinée Equat.: 319, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 743, 2006; Steentoft, Flow. pl. W. Afr.: 176, 2008; Harris & Wortley, Sangha trees: 184 2008.

syn.: *L. klaineana* Pierre ex Sprague; *L. pynaertii* De Wild.; *L. corbisieriana* Staner; *L. leplaeana* Staner; *L. mildbraedii* Harms; *L. angulata* Harms; *L. brachysiphon* Sprague (“trachysiphon” Engl. sphalm.); *L. brownii* Sprague; *L. budongensis* Sprague

Tree, evergreen, 40-45 m; crown dome-like of dark heavy foliage; bole cylindrical, clean to 12-30 m height, 2 m Ø, 4 m in girth, quadrangular where the buttresses (short, blunt, concave, 1-1.5 m high) join it; branchlets glabrous; bark brownish to greenish grey, fairly smooth with prominent lenticels and typical horizontal and diagonal cracks, peeling in large irregular pieces; slash dark red, exuding strongly cedar-scented gum (not the wood); leaves 24-35 cm long, petiole and rhachis winged; leaflets 10-14, elliptic, symmetrical, glabrous, 6-20 × 3-8 cm, often folded up (not flat); young leaves reddish; flowers (greenish) white, numerous, in wide lax panicles 15-40 cm long, axes glabrous; capsule spindle-shaped, 3-6 cm long, purplish black, splitting at both ends, often first from the base.

Rain-forest with *Heritiera utilis*; evergreen and deciduous forests, preferring good humid deep soils; gregarious or in clumps; extremely common in the lake shore forest of Uganda; sandy soil; 50-1515 m alt. – Regeneration good, though the seed soon loses viability; seedlings tolerant of shade.

## LOVOA TRICHILIOIDES

important timber species (wood worked easily, substitute for mahogany or walnut), in great demand and heavily exploited. Grown in plantations (taungya system) in Nigeria, Ivory Coast. In Zaire one of the principal timber species, also planted under old stands of *Hevea* rubber.

## MELIA / 1

Two species, 1 in NE Africa; the second in Asia and the Pacific.

**Melia volkensii** Gürke – Icon.: Fl. Trop. E. Afr., Meliaceae: 24, 1991; Beentje, Kenya trees, shrubs & lianas: 406, 1994; Thulin, Fl. Somal. 2: 234, 1999.

Tree, deciduous, spreading, (6-)15-20 m; crown rounded, often with a browse-line produced by giraffe; bark rough, with pronounced vertical fissures; leaves to 35 cm long, impari-3-pinnate, leaflets usually entire (rarely with a basal lobe), almost glabrous; flowers white, bisexual, in dense-headed panicles, 12 cm long, axillary and on older branches; drupe yellow, ovoid, 3-4 cm long; stone very thick, bony.

*Acacia*, *Commiphora* deciduous bushland; sometimes fringing seasonal watercourses; rock outcrops; reddish soils over limestone; 350-1675 m alt.

Timber used and easily worked. Difficult to grow from seed, propagation by root suckers recommended.

MAUSCHE KIKUNDO (1997). *Melia volkensii* – propagating the tree of knowledge. *Agroforestry Today* 9 (2): 21-22.

ROGERS, L. L. & al. (1998). New bioactive triterpenoids from *Melia volkensii*. *J. Nat. Prod.* 61: 64-70.

Can be confused with *M. azedarach* (forms with sub-entire leaves, but apex of leaflets different).

Discovered in Ethiopia in 1988.

\* \* \*

[**Melia azedarach** L., incl. var. *sempervirens* L.] – Persian Lilac. – Irvine, Woody pl. Ghana: 525-527, 1961; Keay, Trees Nigeria, ed. 2: 354, 356, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 115-117, 1997; Coates Palgrave, Trees south. Afr., ed. 3: 451, 2002. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 481, 2001; Flora de Cabo Verde 61, Meliaceae: 10, 2002; Fl. south. Afr. 18/3: 48, 1986; Curtis's Bot. Mag. 27: pl. 1066, 1807; E. Schmidt & al., Trees & shrubs Mpumalanga...: 254-255, 2002; Akoegninou & al., Fl. analyt. Bénin: 795, 2006; Mabberley in Fl. Males., Ser. 1, Spermat., Flow. Pl. 12/1: 333, 1995; Thulin, Fl. Somal. 2: 233, 1999; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 100, 1940; B. van Wyk & al., Photo guide trees south. Afr., ed. 2: 198, 2008.

syn.: *M. dubia* Cav.; *M. angustifolia* Schumach. & Thonn.; *M. composita* Willd.; *M. guineensis* G. Don.; for full synonymy, see Mabberley, o.c.: 330-332.

Tree, deciduous, rapidly growing, short-lived, 3-5-15(-30) m, sometimes flowering as a shrub; bole fluted below when old; bark grey-brown, smooth, lenticellate, becoming lightly fissured or scaling; crown wide spreading, sparsely branched; twigs upturned at ends of drooping branchlets; leaves (2(-3)-pinnate, c. 40 cm long; leaflets serrate, subglabrous, apex long-acuminate; flowers scented, white (rarely) or lilac-bluish, in many-flowered cymose panicles 10-22 cm long, axillary or on short shoots; drupe ovoid, 2 cm long, glabrous, pale yellow; stone very hard.

## MELIA AZEDARACH

Planted as a shade tree (coffee plantations), live fence or for ornament, but does not flourish in the wetter zones. Sometimes naturalized and becoming an invasive alien.

Native of SE Asia, from India-Sri Lanka through to tropical Australia, Solomon Isl. (growing in forests, bamboo thickets). – Grown in all the warmer parts of the World.

Fruit very toxic to man and pig, and apparently not to birds, sheep, goats. – The stones can easily be pierced at the ends, and used for bead necklaces, rosaries, and as counters in children's games.

The species is a complex of wild and cultivated forms. Cultivated for > 2500 years in India: deciduous forms almost glabrous with bluish-lilac flowers. Introduction into Africa from the West Indies; then a later reintroduction to Europe as an African plant (fide Mabberley, l.c.).

## SYNONYM:

*Melia azadirachta* L. = **Azadirachta indica**

## (NAREGAMIA)

*Naregamia africana* (Welw.) Exell = **Turraea africana**

*alata* Wight & Arn. var. *africana* Welw. and var. *africana* C. DC. = **T. africana**

## (NELANAREGAM)

*Nelanaregam alata* (Wight & Arn.) O. Kuntze, incl. var. *africana* (Welw.) Hiern = **Turraea africana**

## PSEUDOBERSAMA / 1

Monotypic. Differs from *Trichilia* by its very woody 5-valved capsule with conspicuous ridges developed into short antler-like appendages. "Can be maintained as a genus distinct from *Trichilia*, but only just ... Had Verdcourt studied the whole of *Trichilia* before creating the genus, he might equally have justifiably placed it in *Trichilia*" (Pennington & Styles, Blumea 22/3: 471, 1975).

**Pseudobersama mossambicensis** (Sim) Verdc. – Icon.: J. Linn. Soc. London, Bot. 55: 505, 1956; Sim, For. Fl. Portug. E. Afr.: fig. 23, 1909 (sub gen. *Bersama*); Fl. south. Afr. 18/3: 56, 1986; Fl. Trop. E. Afr., Meliaceae: 28, 1991; Beentje, Kenya trees, shrubs & lianas: 407, 1994; Lovett & al., Field guide moist for. trees Tanzania: 167, 2006.

bas.: *Bersama mossambicensis* Sim (*Melanthaceae*).

Evergreen dioecious tree to 20 m, sometimes flowering as a shrub 2-4 m tall; leaves alternate, imparipinnate, petiole with rhachis to 30 cm long; leaflets 9-17, pubescent when young, glabrescent, base asymmetric; flowers white, in simple 3-flowered cymes; capsule ellipsoid, 2,5-5 cm long, 3-4,5 cm Ø, covered in warty lobes.

At edges of and in moist forest; 1-500 m alt.

S. Africa (10-500 m alt.), on the S Mozambique border.

Used for its timber and wood.

Type Sim 5204, not located; lectotype: Sim's figure.

Near *Trichilia capitata*.

## PSEUDOCEDRELA / 1

Monotypic.

**Pseudocedrela kotschy** (Schweinf.) Harms; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 117-119, 1997. – Icon.: Engler, Pflanzenwelt Afr. 3/1 B: 804, 1915; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b1: 68, 1940; Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 330, 1952; Irvine, Woody pl. Ghana: pl. 25 b, 1961 (photo.); Fl. Trop. E. Afr., Meliaceae: 57, 1991; Akoegninou & al., Fl. analyt. Bénin: 795, 2006.

bas.: *Cedrela kotschy* Schweinf. – Icon.: Schweinf., Reliq. Kotschyanae: pl. 35, 1868.

syn.: *Soymida roupalifolia* Schweinf.; *Pseudocedrela chevalieri* C. DC.

Tree 4-6-20 m; bole clear to 8 m height, 2 m in girth; but often crooked, branched from near the base; tree commonly only 6-9 m tall due to fire damage; crown oblong or pyramidal; branches ascending; often coppicing; bark greyish, thin, fissured, yielding a brown dye, intensely bitter; slash crimson, exuding an odourless sticky dark gum; leaves 30-50 cm long, often in tufts at ends of branchlets, reddish brown, densely hairy when young; leaflets 12-18, ± elliptic, margins undulate; flowers fragrant, white, unisexual in panicles 28 cm long crowded towards ends of branches; capsule pyriform, 7-14 cm long, 4-5-valved, dehiscent from apex, the valves remaining connected; seed with a long wing on one side, incl. wing 4-6 cm long.

Savanna woodland, especially on moist heavy soil of valleys or swampy areas; with *Combretum adenogonium*, *Dombeya quinqueseta*, *Maytenus senegalensis*, *Grewia mollis*, *Dichrostachys cinerea* on black cotton soil on ground with rocky outcrops; woodland; wooded grassland; savannas; often gregarious on heavy soils; deep soils; terraces along streams; marigots; hollows; deep sands; forest gallery; sometimes with *Terminalia macroptera*; clearings; ? -120-1200 m alt.

Wood fragrant, handsome, red-brown, resembling mahogany, but heavier.

Fruit resembling an upright *Entandrophragma* but the valves are connected by fibres as in *Khaya*.

Numerous seeds are produced, but few germinate; many killed by fire. Seedlings few, with very long taproot. Regeneration mainly by root-suckers.

## SYNONYMS:

*Pseudocedrela caudata* Sprague = **Entandrophragma caudatum**

*chevalieri* C. DC. = **Pseudocedrela kotschy**

*cylindrica* Sprague = **Entandrophragma cylindricum**

*excelsa* Dawe & Sprague = **E. excelsum**

*utilis* Dawe & Sprague = **E. utile**

## PTERORACHIS / 2

**Pterorachis le-testui** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 275, 2006.

Shrub 0,8-1,5 m tall; branches with stellate indumentum; leaves imparipinnate, 1-3-jugate or 3-foliolate; petiole 1-15 cm long, rhachis 0-10 cm long, *winged*, slightly stellate-villous; leaflets *entire*, sessile; panicle axillary, laxly ramose, 25 cm long, densely stellate-villous; fruit unknown ?

Ecology not recorded (forest ?); 300-500 m alt.

## PTERORACHIS

**P. zenkeri** Harms; Sosef & al., l.c. – Icon.: Engler, Pflanzenwelt Afr. 3/1 B: 824, 1915.

Shrub or small tree; leaves at the ends of branchlets (stellate-villous), to ± 30-40 cm long; petiole and rachis with wings 1.5-3 mm broad; leaves imparipinnate 2-3-jugate; leaflets with 1-3 large teeth towards the apex, rarely entire or subentire; flowers in raceme-like panicles, stellate-villous, borne on short axillary shoots; immature fruit round, slightly 3-lobed; unripe seed with short aril.

Ecology not recorded (forest ?); 350 m alt.

The fresh bark with taste of hazel-nut (eaten as an aphrodisiac).

May be confused with *Turraea africana*.

## [SWIETENIA]

KIEHN, M. & K. RAYNER (2001). See under **Entandrophragma**.

Deciduous (or evergreen) trees with usually paripinnate leaves; capsules woody with winged seeds. The 3 species recognized by Pennington & Styles (Fl. Neotrop. 28: Meliaceae: 389-406, 1981) are poorly defined biologically; they hybridize freely. Their distributions are allopatric.

[**Swietenia humilis** Zuccarini] – Icon.: Pennington & Styles, o.c.: 392, map p. 398.

Tree 15-20 m; bole short, often crooked; bark dark grey or brownish-black, longitudinally fissured, later rough and flaking; leaves clustered at ends of branchlets, 14-22 cm long, of 3-6 pairs of leaflets with long filiform apex; the large capsules, 8-16(-20) cm long, 10-12 cm Ø, stand erect above the foliage.

Native of dry deciduous forest and savanna, rough scrub, rocky hillsides, 0-1200 m alt., in the coastal Pacific zone from Mexico to N Costa Rica.

Bark and seeds very poisonous.

[**S. macrophylla** King] – Honduras Mahogany. – Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 119-120, 1997. – Icon.: Hook. Ic. Pl. 16: pl. 1550, 1886; Pennington & Styles, o.c.: 397, maps p. 398-399.

Tree 35-40 m; bole straight, cylindrical, 1 m Ø, unbranched to 25 m height, with very broad plank-like buttresses to 5 m at base; bark scaly, shaggy, deeply longitudinally furrowed, brownish grey with reddish tinge; crown umbrella-shaped; young leaves pinkish; leaves 16-30 cm long, 3-6-jugate; leaflets petiolulate, 12-15 cm long, ± falcate, apex acute; flowers unisexual, in panicles 10-18 cm long; capsule 12-15 cm long, 6-8 cm Ø, mottled brown and white; seed lustrous brown, 7.5-10 cm long incl. wing.

Native of dry forest, and also moist and gallery forest in an area from E Mexico, Atlantic slope of S. America to Venezuela and Brazil, also in Colombia-Peru-Bolivia, 0-1500 m alt. – Planted in W Africa, Uganda. It has now superseded *S. mahagoni* as the source of mahogany timber. Also planted as an avenue and shade tree.

First described from India (Calcutta Bot. Gard.) !

Has been confused with an *Ekebergia*.

[**S. mahagoni** (L.) Jacq.] – Spanish or Cuban Mahogany. – Burkill, o.c.: 120. – Icon.: Hook. Bot. Misc. 1: pl. 16 & 17 between pp. 20 & 21, 1830; Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b1: 72, 1940; Pennington & Styles, o.c.: 402, map p. 403; Palmengarten 65/1: 41, 43, 44, 2001.

## SWIETENIA MAHAGONI

Tree 10-20 m; bole short, to 1 m Ø; crown round; in plantations reaching 30 m in height, with very short blunt buttresses; bark smooth, greyish, shallowly fissured; leaves clustered, 12-15 cm long, leaflets 4-8, 4-6 cm long, ovate-elliptic, apex acute; capsule 6-10 cm long, 3-6 cm Ø, erect; seed chestnut-brown, 4-5 cm long incl. wing.

Native of hummock vegetation, subtropical dry or moist forest from S Florida throughout the Keys-Bahamas-Cuba-Jamaica-Hispaniola, 0-800 m alt. – Occasionally grown in lower rainfall areas.

This was the original *Swietenia* species valued for its timber, now superseded by the faster-growing *S. macrophylla*.

## SYNONYMS:

*Swietenia angolensis* Welw. = **Entandrophragma**

*chloroxylon* Roxb. = **Chloroxylon swietenia** (Rutaceae), cult.

*senegalensis* Desr. = **Khaya**

## [TOONA]

With 4 or 5 species in Asia, from E Pakistan through India, Malaysia, New Guinea to E Australia. In Africa planted for ornament (avenue trees) and timber. Closely allied to *Cedrela*. – The species are extremely variable.

[**Toona ciliata** M. Roem.] – Indian Mahogany, Toon Tree, Red Cedar. – Edmonds in Maberley & al., Fl. Males., Ser. 1, 12/1: 366-370, 1995; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 120-121, 1997; White & al., Evergreen for fl. Malawi: 365-366, 2001; Coates Palgrave, Trees south. Afr., ed. 3: 444, 2002. – Icon.: Fl. Trop. E. Afr., Meliaceae: 44, 1991; E. Schmidt & al., Trees & shrubs Mpumalanga...: 254-255, 2002.

syn.: *Cedrela toona* Roxb. ex Rottler & Willd., incl. var. *australis* C. DC.; *C. australis* F. Muell.; *Toona australis* (F. Muell.) Harms (full synonymy by Edmonds, l.c.).

Tree, fast-growing, semi-evergreen, 20-25 m, with or without buttresses; crown round; bark greyish-white to brown, fissured, flaking; sapwood white to pink or red, smelling strongly of cedar when cut; leaves paripinnate, 25-69 cm long, 9-15-jugate; leaflets entire, ± lanceolate, asymmetric, without domatia; rachis glabrous to sparsely pilose, often reddish; inflorescence paniculate, to 55 cm long, pendent, fragrant; capsule woody, c. 2 cm long, smooth with small inconspicuous lenticels; seed winged at both ends, 11-19 mm long, wing unequal.

Native of S Asia-Australia, in primary and disturbed, often riparian rain-forests; 1-1500 m alt.

Planted for ornament (avenue tree), shade and experimental forestry. In e.g. Malawi and S. Africa frequently naturalized, invading transition woodland, forest gaps, roadsides, riverine fringes. On Mt Mulanje one of the commonest trees.

Often confused with the superficially similar *Cedrela odorata*.

[**T. serrata** (Royle) M. Roem.] – Treated by Edmonds in Maberley & al., o.c.: 360-363, as a synonym under **T. sinensis** (A. Juss.) M. Roem. [bas.: *Cedrela sinensis* A. Juss.; syn.: *Surenus sinensis* (A. Juss.) Kuntze] – Icon.: Fl. Trop. E. Afr., Meliaceae: 44, 1991.

bas.: *Cedrela serrata* Royle (full synonymy by Edmonds, l.c.).

Tree 30(-40) m, buttressed; bole free to 20 m height, 1.5 m in girth; bark rough, brownish black, deeply fissured; inner bark pink to red, smelling strongly of garlic and pepper when cut;



## TOONA SERRATA

leaves 0,3-1,2 m long; leaflets 18-40, narrowly lanceolate, asymmetric, margins serrulate; midrib and proximal nerves with domatia below, on upper surface with club-shaped glandular hairs; inflorescence pendent, 90 cm long; capsule 2-3 cm long, reddish to dark brown, with small lenticels; seed winged at one end only, 8-16 mm long.

Native of S Asia-Australia in primary montane forests on steep slopes often near rivers; 350-2000 m alt.

Grown in E. Africa as an avenue tree and in windbreaks and plantations.

Extremely variable in shape and indumentum of leaves: 8 infra-specific variants have been recognized.

## TRICHILIA / 18

syn.: *Elkaja* M. Roem.; *Mafureira* Bertol.; *Geniostephanus* Fenzl, nom.

Pantropical genus of c. 92 species, the majority in tropical America (70-76 spp.), 6 endemic Malgasy spp., 2 spp. in the Indo-Malayan region. – The African species are dioecious. In herbaria male specimens are much more numerous than female ones. Male flowers often galled (insect attacks). Often the flowers resemble those of *Citrus* (*Rutaceae*), but also in other characters the two families come close.

The African species have imparipinnate leaves, the fruit is a capsule, the seeds covered by an arillodium (sarcotesta) in all species but for *T. capitata* (with a true aril). Only one of the African species extends beyond the continent (to Arabia, *T. emetica*).

This treatment is mainly based on J. J. F. E. de Wilde (1968), A revision of the species of *Trichilia* P. Browne (Meliaceae) on the African continent.

In two species the female flowers are unknown.

***Trichilia capitata*** Klotzsch; Coates Palgrave, *Trees south. Afr.*, ed. 3: 453-454, 2002.

Shrub (with a tendency to scramble) 3-6 m tall or tree 9-15 m; bark grey, smooth, later finely cracked in small squares; young leaf-bearing parts of twigs somewhat angular or flattened, densely pubescent, becoming leafless and glabrous when old; scars of fallen leaves conspicuous; lenticels present; leaves 10-37 cm long, leaflets 9-15, asymmetric, thin, c. 7 × 3 cm, finely velvety above, below densely so; flowers white to yellow, very small, crowded in heads c. 4 cm Ø, on long stalk; capsule round, woody, creamy brown, c. 1,5 cm Ø; seed with dull dark red aril.

Deciduous thicket or woodland along stream banks; sandy river banks; sometimes on termite mounds; 180-300 m alt.

***T. djalonis*** A. Chev. (“*djalonensis*” sphalm.); Aubréville, *Fl. forest. Côte d’Iv.*, ed. 2, 2: 184, 1959, in syn. of *T. priureana*, and in *Fl. W. Trop. Afr.*, ed. 2, 1/2: 704, 1958, in syn. of *T. heudelotii* (= *T. monadelpha*). – Burkill, *Useful pl. W. trop. Afr.*, ed. 2, 4: 121, 1997. – Icon.: Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 732, 740, 2006.

Treelet or shrub to ± 6-15 m tall; stem 15 cm at breast height; young twigs terete or flattened, reddish-brown to very dark brown, densely but shortly tomentose, indumentum greyish, becoming terete, glabrescent, longitudinally wrinkled; leaves 9-30 cm long, sometimes paripinnate; leaflets (3-)5-9(-11), glabrous or glabrescent, base rounded, midrib broadly channelled above; inflorescences 1,5-5 cm long, near tip of branches, few-flowered; capsule round, 1-2 cm Ø, ± 3-lobed, densely covered with mealy indumentum; seed arillodium orange-red.

## TRICHILIA DJALONIS

Rain-forest, soil layer thin; rather xerophilous vegetation; ± 650-1600 m alt.

Confused with *T. monadelpha* (leaves and fruit different, larger in all parts), growing at lower altitude.

***T. dregeana*** Sond., incl. var. *oblonga* Harv. ex Sond.; Keay, *Trees Nigeria*, ed. 2: 351, 1989; Friis, *Forest trees N.E. Trop. Afr.*: 198-199, 320 (map), 1992; Beentje, *Kenya trees, shrubs & lianas*: 407, 1994; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2, 4: 121-122, 1997; Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 740, 2006. – Icon.: *Fl. Trop. E. Afr.*, *Meliaceae*: 31, 1991; White & al., *Evergreen for. fl. Malawi*: 35 (map), 367, 2001; Coates Palgrave, *Trees south. Afr.*, ed. 3: 454, ill. 127, 2002; Schmidt & al., *Trees & shrubs Mpumalanga...*: 254-255, 2002; Lovett & al., *Field guide moist for. trees Tanzania*: 167, 2006; A. Maroyi in Van der Vossen & Mkamilo, eds., *Plant resources of Tropical Africa 14, Vegetable oils*: 171, 2007; B. van Wyk & al., *Photo guide trees south. Afr.*, ed. 2: 310, 2008.

syn.: Enum. 2: 213-214, 1992; *T. chirindensis* Swynn. & Bak. f.; *T. dregei* E. Mey. ex C. DC., incl. var. *oblonga* C. DC.; *T. redacta* Bullock ex Burt Davy & Bolton, nom. nud.; *T. redacta* Bullock ex Eggeling, nom. invalid.; *T. splendida* sensu F.W.T.A., ed. 2: 705, 1958, quoad specim. Chevalier 20708, Aubréville 993; *T. dregei* E. Mey. ex Drège, nom. nud.; ? *T. emetica* Vahl var. *paucijuga* Pellegr. (cf. under *T. emetica* subsp. *suberosa*).

Tree, evergreen, 6-30(-40) m; bole usually cylindrical, rarely fluted, 4-16 m long before branching, 30-200 cm Ø, often slightly buttressed at base, buttresses sometimes to 3,5 m high; crown large, spreading, mostly much branched, dense, shady and often rounded; bark smooth or nearly so, with a few longitudinal fissures or finely cracked, pale grey to grey-brown, sometimes orange tinged; young leaf-bearing twigs often flattened or angular, otherwise terete, dark reddish-brown or greenish-brown, puberulous to densely tomentose, indumentum pale grey or pale brown; older twigs ± terete, 4-16 mm Ø, becoming glabrous; leaf-scars conspicuous or absent; leaves imparipinnate 7-65 cm long, 1-6-jugate, with very conspicuous hairs on petiole and rachis (more hairy than *T. djalonis* from same localities); leaflet lamina with inconspicuous hairs beneath (*T. megalantha* not so); inflorescences paniculate, 2,5-24 cm long; flowers creamy white, petals 1,3-2,6 cm long; capsule ± round, brown to red, 2,4-4 cm Ø; seed arillodium scarlet.

Moist or riverine or swamp forest; relatively moist type of savanna woodland; forest-savanna mosaic; moist semi-deciduous rain-forest with *Cynometra alexandri*; forest on moister mountain slopes; sometimes < 500 to 500-2100 m alt.

E S. Africa. – Disjunct species: W and E Africa, both north and south of the Equator.

Planted for shade (over coffee) and amenity. Cultivated on a small scale; seeds (oily) generally collected from wild stands. Timber used for furniture, etc. Easily propagated by seed.

Confused with *T. emetica* (see table in De Wilde’s revision: 42: 1968).

***T. emetica*** Vahl; Wickens, *Jebel Marra (Sudan Rep.)*, *Kew Bull. Add. Ser.* 5: 123, 1976; Lisowski, *Fl. (angiosp.) Rép. Guinée* 1: 249, 2009. – Icon.: Grant & Thomas, *Sappi tree spotting*, *Lowveld*, ed. 2: 235-236, 2001; B. van Wyk & al., *Photo guide trees south. Afr.*, ed. 2: 311, 2008.

Shrub to small tree; leaves to 28 cm long, of 9-11 leaflets, sparsely to densely puberulous beneath with short, weak curly

## TRICHILIA EMETICA

or flexuous hairs; flowers cream-green, fragrant, petals 1-1,6 cm long; capsule (unopened but mature) brown to red, 1,8-2,5 cm Ø, stipitate (stipe 0,5-1 cm long; ± sessile in *T. dregeana*); seed arilodium red.

Savanna woodland, forest-savanna mosaic vegetation; 10-1850 m alt.

Caprivi Strip, Botswana, Swaziland, S. Africa; SW Saudi Arabia, Yemen (all subsp. **emetica**). – Record from Angola/Cabinda doubtful: Gossweiler 6977, with mixed material; flowers, male = *T. gilgiana*, the rest = *T. emetica* subsp. *emetica*, perhaps originating from plants cultivated at Luanda (fide de Wilde, o.c.: 62); perhaps occurring on the E border with Zambia.

Comprises 2 subspp.:

- Subsp. **emetica**; Friis, Forest trees N.E. Trop. Afr.: 199-200, 1992. – Icon.: Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 332, 1952; Fl. Trop. E. Afr., Meliaceae: 31, 1991; Beentje, Kenya trees, shrubs & lianas: 407, 1994; Thulin, Fl. Somal. 2: 237, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 479, 2001; White & al., Evergreen for. fl. Malawi: 367, 2001; Schmidt & al., Trees & shrubs Mpumalanga...: 256-257, 2002; Coates Palgrave, Trees south. Afr., ed. 3: 455, 2002; Curtis & Mannheimer, Tree atlas Namibia: 310-311, 2005; Lovett & al., Field guide moist forest trees Tanzania: 168, 2006; Mashungwa & Mmolotsi in van der Vossen & Mkamilo, o.c.: 173.

syn.: Enum. 2: 214, 1992; *Elcaja* “*roka*” Forssk.,” nom. sine descr.” et ”cum descr. gen. -specif. sed sine nom. specif.”; *Mafureira oleifera* Bertol.; *Trichilia umbrifera* Swynn. & Bak. f.; *Geniostephanus* (“*Goniostephanus*” Hooker, Niger Flora: 255, 1849, sphalm.) *tomentosus* Fenzl, Flora 27/19: 312, 1844, nom.; ? ? *Trichilia holtzii* Harms, nom.

Tree (3-8-)20-30 m, evergreen or briefly deciduous; bole cylindrical, 3-6 m long before branching, 30-90 cm Ø; crown spreading, rounded, much branched, shady, foliage very dark green; bark hard, ± smooth or slightly rough, dark grey or brown; older twigs, often leafless, terete, thin, 0,3-0,8 mm Ø, densely tomentose, glabrescent; leaf-scars conspicuous; inflorescences usually condensed, rarely ± lax.

Woodland; riverine fringe forest; dry semi-deciduous forest; moist coastal forest on coral limestone; rarely on rocky outcrops in wooded grassland; termite mounds; sandy hummocks on flood plains.

- Subsp. **suberosa** J. J. de Wilde; Keay, Trees Nigeria, ed. 2: 350, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 122-124, 1997. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 796, 2006; Aubréville, Fl. for. Soud.-Guin.: pl. 80/1-3, 1950; Irvine, Woody pl. Ghana: 531, 1961.

syn.: *T. emetica* Vahl var. *chorisepala* Pellegr., var. *trichandra* Pellegr., var. *macrocarpa* Pellegr., var. *microcarpa* Pellegr., var. *laevicarpa* Pellegr., and ? var. *paucijuga* Pellegr. (perhaps = *T. dregeana*); *T. roka* sensu Fl. W. Trop. Afr., ed. 2, 1/2: 705, 1958, non Chiov. (= subsp. **emetica**).

Shrub or small tree, ± deciduous, 2-10 m tall; stem (3,5-)5-15 (-20) cm Ø; older branchlets, often leafless, stout, 8-20 mm Ø, with soft corky bark; inflorescences lax, rarely ± condensed, 3-9-14 cm long.

On drier soil types than subsp. **emetica**. Forest-savanna mosaic; moist savanna woodland, rarely very abundant; open savanna with *Isobertinia doka*; annually burnt, recently cultivated bush with regrowth of *Butyrospermum*, *Bridelia*, *Terminalia spekei*, *Hymenocardia acida*, *Combretum*, *Grewia*; derived savanna with

## TRICHILIA EMETICA

scattered relict forest trees and small patches of forest, with *Parkia*, *Daniellia*, *Hymenocardia*, *Afrormosia*, etc.; plants are poorly developed in burnt savanna; 300-1340 m alt.

The areas of the two subspecies overlap in S Sudan-Uganda: subsp. **suberosa** in W Africa, subsp. **emetica** in E part of range.

**T. emetica** is a multi-purpose species, and also cultivated for, e.g., shade (parklands in rural coastal Mozambique), seed oil, its medicinal properties (bark; cf. J. Ethnopharmacology 84: 279-287, 2003). Wood pinkish brown, working well (furniture, etc.). Leaves eaten by cattle and goats.

Occurs in drier country than *T. dregeana* with which it may be confused.

**T. gilgiana** Harms; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 124-125, 1997.

syn.: Enum. 2: 214, 1992; *T. gilgiana* Harms, Fl. Congo Belge 7: 166, 1958, p.p. excl. syn. *T. kisoko* De Wild. (= *T. welwitschii*); *T. emetica* Vahl, quoad specim. Gossweiler, Angola/ Cabinda et Mayumbe, p.p. (cf. under *T. emetica* subsp. *emetica* above).

Evergreen tree 5-32 m; bole usually cylindrical, sometimes fluted, 1 m in girth, 20-70 cm Ø; crown large, spherical, strongly branched; bark smooth, fragrant, with some latex, with small dilatation lines, greyish-brown, peeling off in small plates; young twigs terete or somewhat flattened, dark brown, puberulous; older twigs terete, (greyish-)brown, puberulous or glabrescent, longitudinally wrinkled; leaves imparipinnate (rather often paripinnate) 20-55 cm long, (2-)5-8-jugate, leaflets with *glandular dots and dashes* (in transmitted light); flowers pale orange-red, very fragrant, in panicles 10-30 cm long, with conspicuous bracts and bracteoles; capsule round-pyriform, yellow-brown, puberulent, 2-3,5 cm Ø; seed arilodium scarlet.

Rain-forest (especially disturbed); older secondary forest; river banks; ancient cultivated areas; *Terminalia superba* forest; *Scorodophloeus* forest; mixed forest; in forest growing with *Julbernardia sereti*, *Cynometra alexandri*, *C. hankei*, *Pentadesma butyracea*; 5-± 1000 m alt.

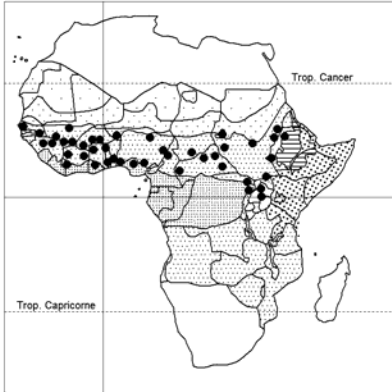
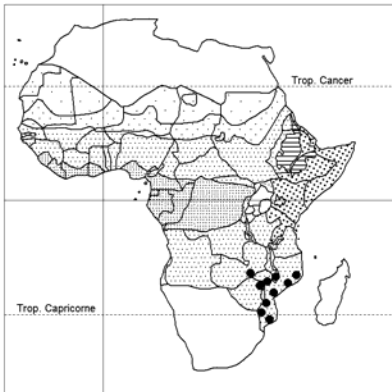
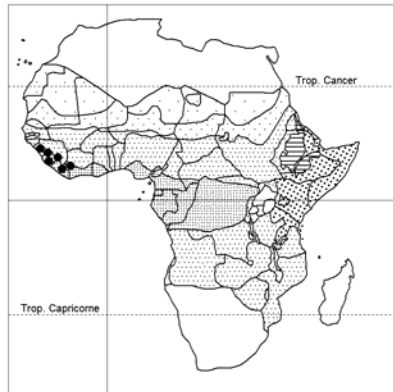
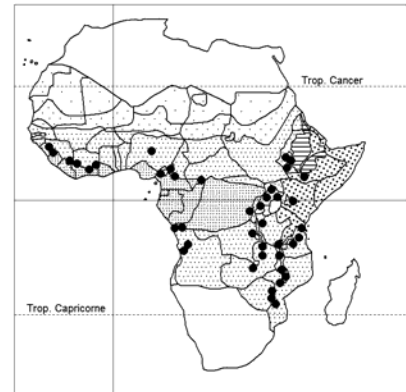
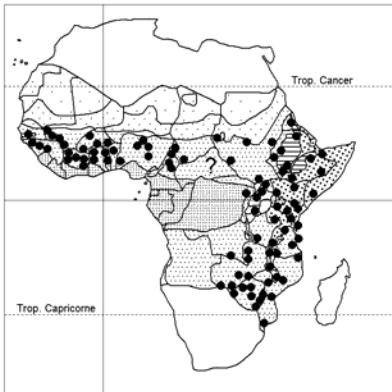
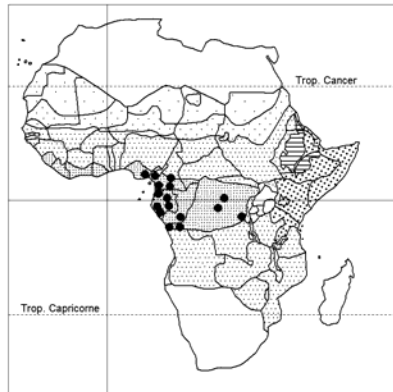
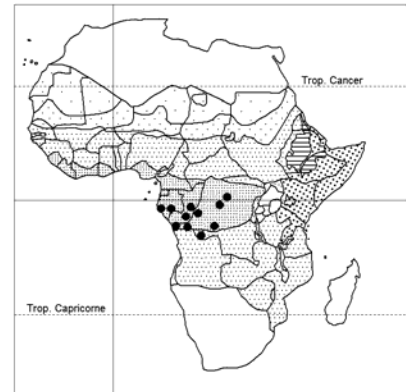
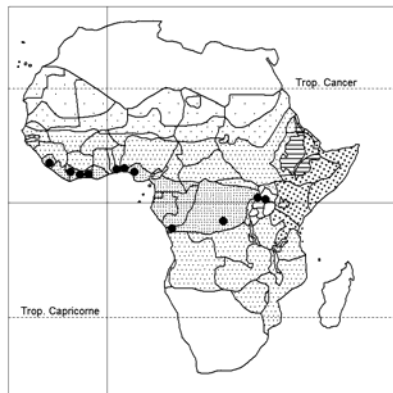
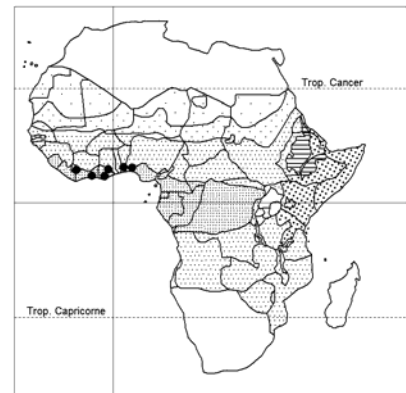
Resembling *T. mondadelpha* but usually taller.

**T. gillettii** De Wild.; Sosef & al., Check-list pl. vascul. Gabon: 276, 2006.

Tree 5-25-35 m tall; bole cylindrical, free to 15 m height, 10-60 cm Ø at breast-height, sometimes with small buttresses at base; bark longitudinally fissured, peeling off in scales, greyish-brown; young twigs terete (or youngest parts somewhat flattened and angular), 4-5 mm Ø, brown to dark brown, puberulous; older twigs terete, becoming glabrous; leaves imparipinnate or rather often paripinnate, 14-44 cm long, (1-)3-4-jugate; leaflets distinctly but finely *glandular dashed and dotted*; inflorescences paniculate, 5-15 (-21) cm long, bracts early deciduous; capsule incompletely 2-chambered, stipitate (5-10 mm long), 1,5-2 cm Ø; seed arilodium orange-red.

Hills in remnants of high forest; secondary forest; open, drier forest; forest gallery; fallows with shrubs; sometimes in periodically inundated primary forest; 20-480 m alt.

Closely related to *T. welwitschii* (number of leaflets different; leaflets glabrous or glabrescent beneath in *T. gillettii*, pubescent to puberulous with minute resinous secretions in *T. welwitschii*; fruit of *T. welwitschii* completely 2-chambered).

*Pseudoceadrela kotschy**Pterorhachis le-testui**Pterorhachis zenkeri**Trichilia capitata**Trichilia djalonis**Trichilia dregeana**Trichilia emetica**Trichilia gilgiana**Trichilia gillettii**Trichilia lovettii**Trichilia martineaui**Trichilia megalantha*



## TRICHILIA

**T. lovettii** Cheek; Lovett & al., Field guide moist forest trees Tanzania: 168-169, 2006. – Icon.: Fl. Trop. E. Afr., Meliaceae: 33, 1991.

Dioecious tree to 10 m; twigs of second year leafless, chestnut-brown or grey, 2-3 mm wide, with prominent white circular lenticels 0,3-0,5 mm Ø; leaves imparipinnate, 3-4-jugate, 15-27 cm long, drying green or pale yellow-brown; inflorescences (male) on current year's shoots, few-flowered cymes to 3,5 cm long, petals small; capsule depressed-globose, 1,8 cm Ø, glabrous, sulcate, *densely covered by warts*; female flowers unknown.

Rain-forest with *Parinari excelsa*, *Ficalhoa laurifolia*, *Afroseralia* sp.; also with *Ficalhoa*, *Parinari excelsa*, *Polyceratocarpus scheffleri*; and also with *Allanblackia ulugurensis*, *Isobertinia scheffleri*, *Rapanea melanophloeos*; ? 1220-1480 m alt.

The African *Trichilia* with the *smallest flowers* (male with sepals 0,8 × 0,8 mm, petals 2,5-3 × 1 mm), female unknown; also the only species with *verruculose fruit*.

Discovered in 1981 in Uzungwa Mts (Tanzania), a very rich but threatened area (with at least 40 new species of plants and several new taxa of primates and birds).

Closely related to *T. capitata* Klotzsch, from SE Africa but more closely related to *Pseudobersama mossambicensis*; also has closer affinities with the *Trichilia* of America and Madagascar than with the Guineo-Congolian *T.* species of Africa.

**T. martineau** Aubrév. & Pellegr.; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 125, 1997; Akoegninou & al., Fl. analyt. Bénin: 797, 2006. – Icon.: Bull. Soc. Bot. France 83: 490, 1936; Aubréville, Fl. for. Côte d'Iv., ed. 2, 2: 183, 1959; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 733, 739, 2006; Harris & Wortley, Sangha trees: 184, 2008.

Tree 30-45 m, evergreen; bole straight or slightly sinuous, cylindrical, not buttressed (but sometimes with short buttresses), 0,8-1 m Ø, 3 m in girth, branching high up, with strong ascending branches; crown open; bark dark grey, longitudinally fissured, peeling off in small ± rectangular, grey-green scales, ± 5 × 1 cm; slash pink, with sticky brownish latex of unpleasant smell; young twigs terete, ± 3-5 mm Ø, very dark brown to blackish, glabrescent; older twigs dark reddish-brown, often longitudinally fissured; leaves imparipinnate (sometimes paripinnate), 20-35 cm long (of saplings to 60 cm; leaflets 7-11(-19), lanceolate, long-acuminate to drip-tipped, with translucent gland dots, and superficial glands near midrib beneath, base asymmetric; flower panicles little-branched, 10-12 cm long; petals 1-1,2 cm long; capsule ± round, c. 3 cm Ø, 2-3-lobed, tomentellous; seed arillodium orange-red.

Moist forests: true evergreen, deciduous, transitional and semi-deciduous; old secondary forests; up to 1200 m alt.

Disjunct distribution.

Probably also in Ghana.

Confused with *T. gillettii*.

**T. megalantha** Harms; Irvine, Woody pl. Ghana: 529, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 125, 1997; Akoegninou & al., Fl. analyt. Bénin: 797, 2006. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731, 740, 741, 2006; Aubréville, Fl. for. Côte d'Iv., ed. 2, 2: pl. 195 B6, 1959.

syn.: *T. megalantha* sensu Aubréville, o.c.: 188, excl. specim. Aubréville 946 (= *T. dregeana*), et sensu F.W.T.A., ed. 2, 1/2: 705, 1958, idem.

## TRICHILIA MEGALANTHA

Evergreen tree 8-36 m; bole 30-160 cm Ø at breast-height, 2 m in girth, cylindrical, to 12 m long, sometimes with very low and blunt buttresses; crown often rather compact and dense but sometimes spreading and more open; bark dark grey, grey or reddish, rough, scaling; young twigs, ± 5-8 mm Ø, dark brown, purplish-brown or blackish, densely covered with an indumentum of short pale brown hairs; older twigs with hard, dark brown, grey-brown or reddish-brown bark, becoming glabrescent; scars of fallen leaves often conspicuous; leaves imparipinnate, 15-45 cm long (of saplings to 70 cm), 4-6(-7)-jugate; rachis densely short-hairy; leaflets acuminate at apex, variously hairy beneath, the terminal one often conspicuously shorter than the adjacent pair; inflorescences lax, paniculate, near top of branches, 5-13 cm long, flowers large, scented; petals 18-28 cm long; capsule stipitate, obovoid, 15-25mm Ø, ribbed, greyish pink, indumentum of pale brown short stiff hairs mixed with fewer long tomentose hairs, valves thick leathery; seed arillodium orange-red.

Drier parts of moist evergreen forest ("moist semi-deciduous"); secondary forest; old farm regrowth; with *Triplochiton scleroxylon*, *Celtis*, *Antiaris* cf. *africana*; with *Celtis*, *Mansonia*, *Drypetes*, *Nesogordonia papaverifera*; on or near rocky hills in forest; low alt.

**T. monadelpha** (Thonn.) J. J. De Wilde; Keay, Trees Nigeria, ed. 2: 351-352, 1989; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 125-127, 1997; Akoegninou & al., Fl. analyt. Bénin: 797, 2006; Lisowski, Fl (angiosp.) Rép. Guinée 1: 250, 2009. – Icon.: Staner in Bull. Jard. Bot. Etat, Brux. 16: pl. 6, 1941 ("*T. zenkeri*"); Adam, Fl. descr. Mts Nimba 2: 827, 1971 (sub nom. *T. heudelotii*); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731, 740, 741, 2006; Jaeger & Adam, Vég. vascul. Mts Loma 1: 290, 1980 (Boissiera 32; sub nom. *T. heudelotii*); Harris & Wortley, Sangha trees: 185, 2008.

syn.: Enum. 2: 214, 1992; *T. acutifoliola* A. Chev. quoad Chevalier 16112, B 22310; *T. heudelotii* Planch. ex Oliv., excl. syn. *T. zenkeri* Harms (= *T. welwitschii*), "*T. heudelotii* var. *zenkeri* [Harms] Aubrév.", *T. djaloni* A. Chev., sensu Adam, o.c.: 826; *T. integrifilamentosa* C. DC. ex Briquet, nom. in sched.; ?? *T. sibangensis* A. Chev. ex Pellegr., ms. name, in syn. of *T. heudelotii* Planch. ex Oliv.

Evergreen tree ± 4-16(-20) m; bole cylindrical, not fluted at base, rarely very slightly buttressed, 14-40 cm Ø at breast-height, 1,7 m in girth, often low branching; crown large, open, spreading; bark smooth, pale grey to dark brown or greenish-brown like a *Platanus*; slash pale pink, rapidly darkening, with cedar-like smell, sometimes with some creamy white latex; young twigs brown, short grey tomentose; older twigs sometimes with pale brown or brown lenticels, ± 0,5-1 mm Ø; leaves imparipinnate (rarely paripinnate), 15-20 cm long, (3-)4-6(-7)-jugate; leaflets papery, without dots and dashes, acuminate at apex; new flush of leaves paler green; flowers fragrant, visited especially by butterflies, hairy inside; petals 8 mm long, greenish-white; panicles < 10 cm long; capsule ± round, 1,5-2,5 cm Ø, yellow-brown puberulous; seed arillodium orange-red, with large black spot on dorsal side.

Common in secondary forest; often on river banks in evergreen and semi-deciduous forest; sometimes abundant in very old secondary forest; gallery forest; humid forest; in understory; in high forest where undergrowth had been cleared away; 0-650 m alt.

Bioko/Fernando Poo.

Bark medicinal and used as a dye; wood reddish brown, relatively light, easily cut.



## TRICHILIA

**T. ornithothera** J. J. De Wilde; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 127-128, 1997. – Icon.: Hawthorne & Jongkind, Woody pl. west Afr. for.: 731, 740, 741, 2006; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 185 (fig. 196 b), 1959; Adam, Fl. descr. Mts Nimba 2: 828, 1971 (sub nom. *T. heudelotii*).

syn.: *T. heudelotii* var. *zenkeri* Aubrév., descr. gall. 1936, and in Fl. West Trop. Afr., ed. 2, 1 (2): 704, 1958, nom.; *T. velutina* A. Chev. 1920, non Mart. 1878, nom. illegit.; *T. heudelotii* sensu Fl. W. Trop. Afr., ed. 2, 1/2: 704, 1958, p.p., and sensu Adam, Fl. Mts Nimba 2: 289, 1971, p.p., and sensu Jaeger & Adam, Vég. vascul. Mts Loma 1: 289, 1980 (Boissiera 32), p.p. (cf. under *T. monadelpha* above); *T. acutifoliola* A. Chev. quoad Chevalier 19290.

Evergreen tree 5-20 m; bole usually cylindrical, sometimes with low buttresses, 15-30 cm d.b.h.; bark smooth, greyish-green or brown; bark slash with cedar-like smell; young twigs grey-brown, brown or reddish-brown, very shortly and densely pubescent; older twigs terete, brown, becoming glabrous; leaves imparipinnate, rather often paripinnate, 19-95 cm long, rachis flat above; leaflets in (4-)8-9(-10) pairs, narrowly oblong, with 15-19 pairs of lateral nerves (fewer in *T. monadelpha*), punctate with minute translucent glands, lower surface puberulous; panicles lax, 5-30(-50) cm long; petals fleshy, 1 cm long; capsule thick, leathery, with very short hairs,  $\pm 2.5$  cm  $\emptyset$ ; seed arillodium conspicuously red, attracting birds (caught in this tree by local people by means of lime-twigs; hence the Latin epithet).

Evergreen and moist semi-deciduous forests of dryland type; older secondary forests; places where the primary forest is disturbed or interrupted; wet places; edge around swampy places in evergreen forest; coastal to 400, and to 1650 m alt.

Wood yellowish-white, fragrant.

**T. priureana** A. Juss. (“prieuriana”); Irvine, Woody pl. Ghana: 529, 1961; Keay, Trees Nigeria, ed. 2: 350-351, 1989; Friis, Forest trees N.E. trop. Afr.: 200, 321 (map), 1992; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 128-129, 1997; Akoegninou & al., Fl. analyt. Bénin: 797, 2006; Lovett & al., Field guide moist for. trees Tanzania: 169, 2006. – Icon.: Guillemain & al., Fl. Senegamb. Tent. 1: pl. 30, 1831; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 185, 1959; Berhaut, Fl. ill. Sénégal 6: 348, 1979; Hawthorne & Jongkind, Woody pl. west Afr. for.: 739, 2006; Harris & Wortley, Sangha trees: 185, 2008; (all = subsp. **priureana**, **vermoesenii**); Fl. Trop. E. Afr., Meliaceae: 31, 1991 (subsp. **orientalis**).

syn.: *T. euryphylla* Harms ex Burtt Davy & Bolton, nom. nud.

Evergreen shrub or tree 3-30 m tall, sometimes flowering as a shrub; bole crooked or irregularly, deeply fluted at base, often low and much branched (subsp. **priureana**), 20-100 cm d.b.h., sometimes with small low buttresses (subsp. **vermoesenii**); bark pale grey-brown, with many fine vertical striations, scaling in thin flakes or rectangular stringy strips; slash fibrous, salmon-pink, with slight cedar scent; crown variously shaped, either dense and spreading (subsp. **priureana**), sometimes with drooping branches (subsp. **orientalis**), or small and spherical; foliage dark; young twigs  $\pm 3-5$  mm  $\emptyset$ , glabrous or glabrescent, smooth, pale grey-greenish(-brown); older twigs terete, pale (grey-)brown, often lenticellate (lenticels  $\pm 0.5$  mm  $\emptyset$ ), scars of fallen leaves rather conspicuous; leaves imparipinnate, sometimes paripinnate, 10-57 cm long, usually not clustered in the crown, rachis slightly winged; leaflets (3-)5-9(-11), petiolulate, the largest ones towards the tip of leaf, the 3 terminal leaflets inserted on the expanded, 3-angled apex of rachis, base asymmetric, decurrent, drying (grey-)greenish or glaucous; inflorescences much-branched, congested panicles  $< 7$  cm long, on old wood; flowers greenish white, very fragrant, petals 4-8 mm long, staminal

## TRICHILIA PRIUREANA

filaments united into a tube 5-7 mm long; capsule pink, leathery, glabrous, not stiped, 1.5-2.5 cm  $\emptyset$ , 3-chambered (subsp. **priureana**) or 2-chambered (subsp. **vermoesenii**); seed arillodium orange-red, mealy.

Riparian forest; moist semi-deciduous rain-forest; deciduous forest; *Khaya grandifoliola* forest; savanna woodland; secondary forest; mountain slopes; forest-savanna mosaic; near a dry water-course in a forested gully with *Albizia coriaria*, *Vangueria apiculata*, *Allophylus africanus*, *Harrisonia abyssinica*, *Ziziphus abyssinica*; forest with *Aningeria sp.*, *Cordia abyssinica*; coastal to  $\pm 1500$  m alt. – Gregarious in forest, solitary in savanna.

De Wilde recognizes 3 subspp. that are “based on minor and not very constant differences of floral structure and indumentum” (Fl. Trop. E. Afr., Meliaceae: 30, 1991). Distribution maps in De Wilde, o.c.: 143.

- Subsp. **priureana** [syn.: *T. senegalensis* C. DC.; *T. priureana* A. Juss. var. *senegalensis* (C. DC.) Pellegr.], with glabrous style, distinctly lobed stigma, 3-chambered fruit, leaflets in 2-3 pairs; in forest-savanna mosaic, forest gallery, moist forest in W Africa (Senegal-Sierra Leone-Dahomey Gap/Benin-SW coastal Nigeria to c. 750 m alt.).
- Subsp. **vermoesenii** J. J. De Wilde, with somewhat hairy style, obscurely lobed stigma, fruit incompletely 2-chambered, leaflets in 3-4 pairs; in rain-forest, from Sierra Leone-Ivory Coast-SW Ghana, E Nigeria-Cameroon-Sudan-S+W Uganda-Zaire-Angola/Cabinda; on lower slopes of hills, etc., to 500-1500 m alt.
- Subsp. **orientalis** J. J. De Wilde, with puberulous ovary and style, obscurely lobed stigma, fruit incompletely 2-chambered, leaflets in 2-4 pairs; in forest-savanna mosaic and moist woodland types, ecologically closely related to subsp. **priureana**, in understorey and edge of *Khaya grandifoliola* forest, in E part of range (perhaps Sudan, N+E Uganda, Tanzania-S Zaire-N Zambia), 1200-1500 m alt.

Apparently the ranges of subsp. **priureana** and subsp. **vermoesenii** do not overlap.

Wood reddish, close-grained, sinking in water. Used for firewood, tool handles, etc.

Formerly regarded as a “weed” in Uganda, and poisoned. – Regeneration poor as fruits rot quickly.

**T. quadrivalvis** C. DC. – Icon.: Fl. Congo belge 7: 171, 1958; Bull. Jard. Bot. Etat, Brux. 16: 179, 1941.

*Rhizomatous suffrutex*, 10-40 cm tall, often growing in spreading clumps, with long flexible rhizomes just below or on the surface of the ground; stems terete, longitudinally wrinkled, 2-3 mm  $\emptyset$ , brown, pubescent with grey or greyish-brown indumentum; bark soft, rarely peeling off in small longitudinal flakes; leaves imparipinnate, 3-15 cm long, 1-2-jugate or unifoliolate, distal leaflet largest; upper surface of leaflets  $\pm$  glabrous, with long white and brownish sericeous hairs and blackish glandular trichomes beneath; inflorescences 1-5-flowered, 1.5 cm long; flowers small, petals 5 mm long; capsule  $\pm$  round, dull crimson, 13-22 mm  $\emptyset$ ; seed arillodium orange-red.

Miombo woodland with *Brachystegia*, *Julbernardia* on Kalahari sands or with *Cryptosepalum pseudotaxus*, *Guibourtia coleosperma*;  $\pm$  forming carpets on the ground; *Brachystegia*, *Isobertinia* woodland on sand; degraded *Baphia obovata*, *Bauhinia* scrub on white Kalahari sands; locally abundant (Zaire: Kwango); to 1200-1250 m alt.

## TRICHILIA

**T. retusa** Oliv., incl. *fa. pubescens* C. DC.; Friis, Forest trees N.E. Trop. Afr.: 200, 321 (map), 1992; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 129, 1997; Akoegninou & al., Fl. analyt. Bénin: 798, 2006.

Shrub or tree, ± 5-15 m tall, evergreen, almost glabrous; bole to 60 cm d.b.h., sometimes slightly fluted at base; bark smooth or somewhat verrucose, grey or greyish-brown; slash pinkish to deep red, fragrant, with some whitish latex; young twigs terete, brown, ± puberulous, becoming glabrescent to glabrous; leaves imparipinnate, sometimes paripinnate, ± 9-27 cm long, (1-)2-3 (-4)-jugate; leaflets ± glandular-punctate, distal leaflet largest, cuneate, deeply notched or bilobed at apex; flowers white, in panicles 2-9 cm long, petals 8-10 mm long; capsule stipitate, pear-shaped, c. 2,5 cm Ø, thick leathery or woody, transversely wrinkled; seed arilodium orange-red.

Moist forest; forest-savanna mosaic; savanna woodland of relative moist type; savanna woodlands with *Isoberlinia* spp.; rather strictly confined to riparian vegetations, sometimes in periodically inundated habitats: semi-evergreen riverine forest with *Celtis toka*, *Ziziphus pubescens*, with *Ficus capreaefolia* common on river banks; semi-evergreen riverine forest with *Celtis toka*, *Lecanodiscus*, *Lepisanthes*, *Malacantha alnifolia*, *Tapura fischeri*, *Baphia abyssinica*, *Mallotus*, *Ziziphus pubescens*; coastal to 700 m alt.

**T. rubescens** Oliv.; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 130, 1997; Lovett & al., Field guide moist for. trees Tanzania: 169, 2006. – Icon.: Harris & Wortley, Sangha trees: 186, 2008.

Evergreen shrub or tree 2-18 m tall; bole 6-20(-50) cm d.b.h., often crooked; crown dense, with spreading branches (well developed plant); bark pale grey or brown, smooth, in old trees sometimes flaking in thin strips; slash pale pink or cream, darkening to ± brown on exposure, cedar-scented, without latex; young twigs greyish-green or brown, towards the top angular or flattened, puberulous, with *orange-brown lenticels*; older twigs terete, greyish reddish-brown, brown, glabrous, sometimes *pustular*; hollow in the centre; leaves imparipinnate, rarely paripinnate, 20-70 cm long, petiole with knife-like edges at base, 3-5-7-jugate; leaflets not glandular dashed nor dotted, acuminate, acute, drying red-brown beneath; flowers yellowish, small (petals 5 mm long), in panicles 25 cm long; capsule ± obovoid, transversally wrinkled, c. 2 cm Ø, glabrous, sessile; seed arilodium scarlet, occupying 1/2 of the seed.

Moist forest; forest-savanna mosaic; *Aframomum* thicket; with *Celtis* sp., *Bombax* sp., *Nesogordonia papaverifera* in drier, deciduous forest; secondary forest with *Triplochiton scleroxylon*, *Celtis* sp.; evergreen forest with *Julbernardia seretii*, *Staudtia stipitata*, *Gilbertiodendron dewevrei*, *Grossera multinervis*, *Uapaca guineensis*, *Anonidium mannii*; secondary forest with *Markhamia lutea*, *Sapium ellipticum*, *Maesopsis emini*, *Funtumia africana*; swamp forest; 1-1500 m alt.

Bioko/Fernando Poo.

In Uganda one of the commonest “weed” species; poisoned in managed forest.

**T. tessmannii** Harms; Adam, Fl. descr. Mts Loma 2: 826, 829, 1971; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 130, 1997; Akoegninou & al., Fl. analyt. Bénin: 798, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 249, 2009 (*T. lanata*). – Icon.: Aubréville, Fl. for. Côte d’Iv., ed. 2, 2: 181, 1959 (sub nom. *T. lanata*); Wilks & Issembé, Arbres Guinée Equat.: 321, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 740, 741, 2006; Harris & Wortley, Sangha trees: 186, 2008.

syn.: *T. le-testui* Pellegr.; Enum. 2: 214, 1992; *T. montchalii* De Wild.

## TRICHILIA TESSMANNII

Tree 8-10-30 m; bole straight, cylindrical, 40-70 cm Ø at breast height; crown dense, rounded, dark; bark rather smooth, pale grey with greyish-brown spots, peeling off in plates ± 10 × 1-1,5 cm; slash pinkish-white, sweet-scented, soft, fibrous, with drops of yellowish latex; young twigs terete or angular, reddish-brown, hairy with pale brown or yellowish ± dense indumentum; older twigs terete, becoming glabrescent, scars of fallen leaves mostly conspicuous; leaves imparipinnate, sometimes paripinnate, 15-75 cm long, 2-7-10-jugate; leaflets with markedly impressed nerves above, prominent below with dense long soft orange hairs, margins recurved; apex acuminate, obtuse; flowers greenish-white (petals 1,2-2 cm long), in lax inflorescences 7-10-26 cm long; capsule ± round, 2-3(-3,5) cm Ø, purplish red, conspicuously stipitate, sparsely hairy with short and long hairs; seed arilodium vermilion, occupying the seed for c. 5/6.

Moist forests; trees often occurring as solitary specimens; half-deciduous forest with *Scorodophloeus zenkeri* or *Mansonia*; river banks, forest gallery; edge of *Mitragyna* forest; 25-470 m alt.

**T. welwitschii** C. DC., excl. var. *grandiflora* C. DC. (= *T. dregeana*). – Icon.: Harris & Wortley, Sangha trees: 187, 2008.

syn.: Enum. 2: 214, 1992; *T. oddonii* De Wild.

Tree 5-30 m; bole usually cylindrical, 9-60 cm d.b.h.; crown rather dense with ascending main branches; bark smooth or slightly rough; slash pale pinkish, darkening rapidly reddish-brown, not scented or slightly cedar-scented; young twigs terete or flattened, brown, shortly and densely pubescent; older twigs terete, brown, becoming glabrous; leaves imparipinnate, sometimes paripinnate, 15-75 cm long; leaflets glabrous above except for midrib furrow, densely brown pubescent beneath, indumentum silvery or pale or reddish brown; flowers green (petals 7-9 mm long) in lax panicles 10-20(-30) cm long; capsule fig-shaped or round, 11-15 mm long, stipitate, purplish red, completely 2-chambered; seed arilodium orange-red.

Common in the central African rain-forests in understorey; deciduous forests and gallery; secondary forest; ancient cultivations; marshy forest with *Mitragyna stipulosa*; forest subject to floods; with *Scorodophloeus zenkeri* in primary forest; with *Gilbertiodendron dewevrei*, *Cynometra* sp.; dense secondary vegetation with *Musanga cecropioides*, *Pycnanthus angolensis*, *Trichilia rubescens*, *Arthrosamea* sp., *Albizia* sp. (in *Julbernardia seretii* forest); 1-1515 m alt.

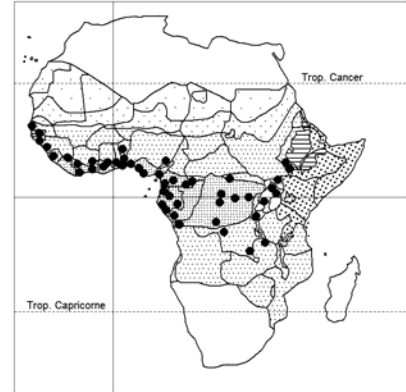
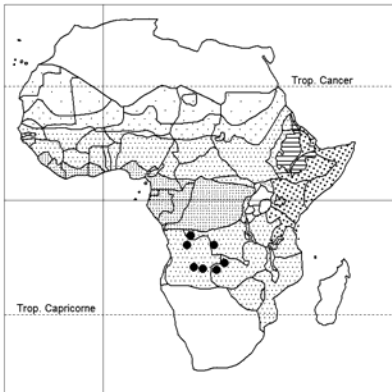
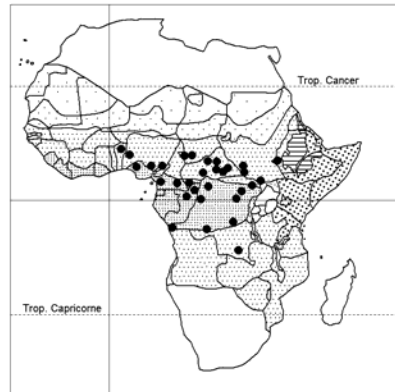
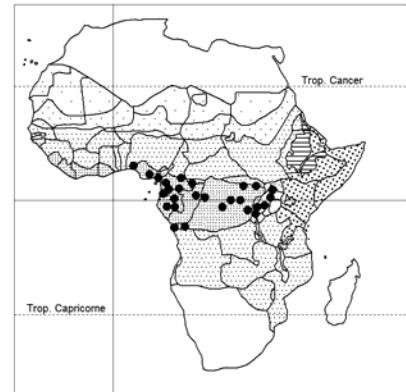
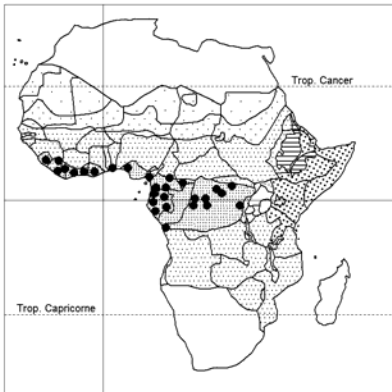
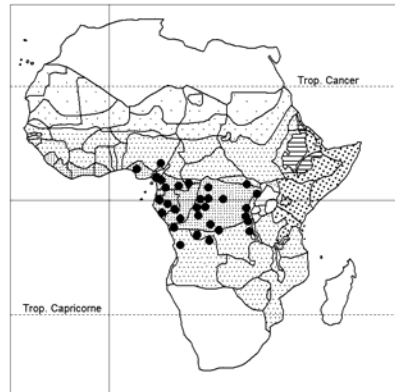
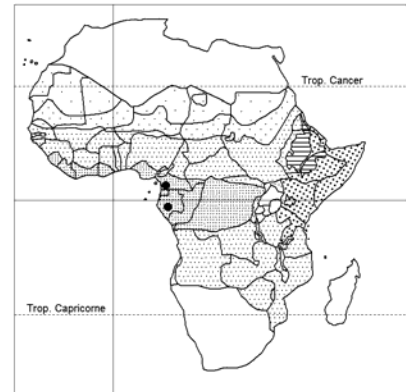
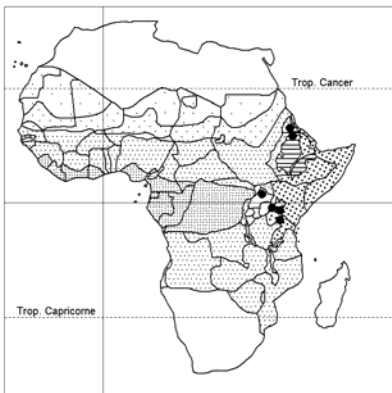
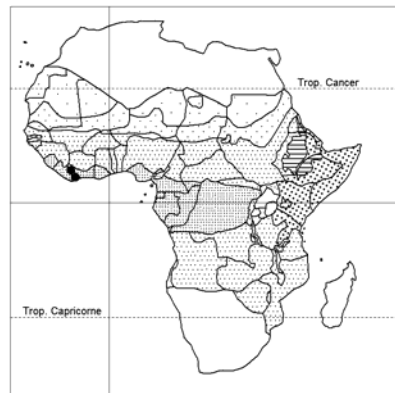
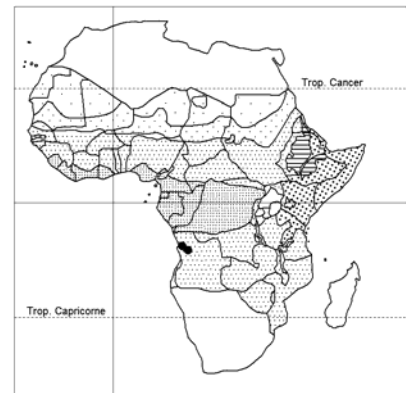
**T. zewaldae** J. J. De Wilde; Sosef & al., Check-list pl. vascul. Gabon: 276, 2006.

Tree evergreen, 7-25 m, rather branched; bole 20-60 cm d.b.h.; young twigs very dark brown, shortly but densely tomentose, indumentum grey; older twigs terete, brown or reddish-brown, becoming loosely tomentose; leaves imparipinnate, sometimes paripinnate, 29-62 cm long, (1-)4-6-jugate; leaflets when young ± distinctly glandular dashed and dotted, distal ones the largest, acuminate, glabrous above, glabrescent beneath; flower panicles lax, 5-16 cm long; petals (male flower) 9-11 mm long; female flowers unknown; capsule stipitate, beaked at tip, ± obovoid, brownish, short-hairy, 3-chambered; seed arilodium orange-red, occupying ± 1/2 of the seed.

More or less primary forest; edge of secondary forest; ± 200 m alt. (Cameroon), 1020 m (Gabon).

Flowers creamy or greenish yellow, very fragrant, “frequently visited by insects”. They resemble those of *T. monodelpha*.

\* \* \*

*Trichilia monadelpha**Trichilia ornithotheca**Trichilia priureana**Trichilia quadrivalvis**Trichilia retusa**Trichilia rubescens**Trichilia tessmannii**Trichilia welwitschii**Trichilia zewaldae**Turraea abyssinica**Turraea adjanohounii**Turraea africana*



## TRICHILIA

**Trichilia grandifolia** Oliv. (“grandiflora” sphalm.) is an incompletely known endemic species in São Tomé.

## DOUBTFUL SPECIES:

**Trichilia subcordata** Gürke; Engler, Pflanzenwelt Afr. 3/1B: 821, 1915; J. J. De Wilde, Revis. Trichilia: 198, 1968.

Shrub or small tree to 10 m tall; leaves 6-7-jugate; leaflets nearly cordate; capsule 1-seeded; type material (Holst 2723) studied by Harms has no flowers, he also noted that the fruits were badly developed.

In fertile coastal forest at foot of mountain in Tanzania (Tanga District, Amboni).

Harms (Bot. Jahrb. Syst. 23: 163, 1896) considers this species as close to *T. megalantha*, *T. gilgiana*, *T. dregeana*, and to *T. emetica*. This was rejected by J. J. De Wilde, who doubts that it is a *Trichilia*.

For rejected names, see De Wilde, o.c.: 203-204, also listed in our Enum. 2: 214, 1992.

\* \* \*

Under **Chytranthus setosus** Radlk. (*Sapindaceae*) Chevalier (Explor. Bot. 1: 152, 1920) cited two collections, viz. Chevalier 22884 and 22885, that do not belong in the family. It has been suggested that N° 22884 be p.p. a *Canarium* (*Burseraceae*), whereas N° 22885 be a *Trichilia*; both from Benin (not figuring in Akoegninou & al., Fl. analyt. Bénin, 2006).

## SYNONYMS:

*Trichilia acutifoliata* A. Chev. = **Trichilia monadelpha**  
*acutifoliola* A. Chev. = **T. monadelpha**, **T. ornithothera**  
*batesii* C. DC. = **T. rubescens**  
*bilocularis* Pax = **Lepidotrichilia volkensii**  
*bipindeana* C. DC. = **Trichilia gilgiana**  
*brieyi* De Wild. (sphalm.) = *Treculia brieyi* De Wild.  
= **Treculia** cf. **obovoidea** N. E. Br. (*Moraceae*)  
*buchananii* C. DC. = **Lepidotrichilia volkensii**  
*caloneura* Pierre ex Pellegr. = **Trichilia welwitschii**  
*candollei* A. Chev. = **T. monadelpha**  
*capensis* (Sparrm.) Pers. = **Ekebergia**  
*cedrata* A. Chev. = **Guarea**  
*chirindensis* Swynnerton & Bak. f. = **Trichilia dregeana**  
*chirindensis* sensu Garcia (Mozambique) = **T. emetica**  
subsp. **emetica**  
*derumieri* De Wild. = **T. rubescens**  
*dregei* E. Mey. ex C. DC., incl. var. *oblonga* C. DC.  
= **T. dregeana**  
*dregei* E. Mey. ex Drège, nom. nud. = **T. dregeana**  
*ekebergia* E. Mey. ex Sond. = **Ekebergia capensis**  
*ekebergia* E. Mey. ex Drège, nom. nud. = **E. capensis**  
*emetica* Vahl var. *chorisepala* Pellegr., var. *laevicarpa*  
Pellegr., var. *macrocarpa* Pellegr., var. *microcarpa*  
Pellegr., var. *trichandra* Pellegr. = **T. emetica** subsp.  
**suberosa**  
var. *paucijuga* Pellegr. = **T. ? dregeana**

## TRICHILIA

*emetica* Vahl quoad specim. Angola, p.p. = **T. gilgiana**  
*euryphylla* Harms ex Burt Davy & Bolton = **T. priureana**  
*grotei* Harms = **T. emetica** subsp. **emetica**  
*guentheri* Harms = ? **Guarea laurentii**  
*heudelotii* Planch. ex Oliv. = **Trichilia monadelpha**  
var. *zenkeri* [Harms] Aubrév. = **T. ornithothera**  
*heudelotii* sensu auct. = **T. ornithothera**  
*holtzii* Harms, nom. = ? ? **T. emetica** subsp. **emetica**  
*hylobia* Harms = **T. gilgiana**  
*integrifilamenta* C. DC. = **T. monadelpha**  
*integrifilamentosa* C. DC. ex Briquet, nom. in sched.  
= **T. monadelpha**  
*johannis* Harms = **T. monadelpha**  
*jubensis* Chiov. = **T. emetica** subsp. **emetica**  
*kisoko* De Wild. = **T. welwitschii**  
*lanata* A. Chev. = **T. tessmannii**  
*lancei* Vermoesen = **T. tessmannii**  
*laurentii* De Wild. = **T. rubescens**  
*ledermannii* Harms = **T. dregeana**  
*le-testui* Pellegr. = **T. tessmannii**  
*megalantha* Harms, p.p. quoad specim. Aubréville 946 in  
F.W.T.A., ed. 2, 1: 705, 1958 = **T. dregeana**  
*mildbraedii* Harms = **T. tessmannii**  
*montchalii* De Wild. = **T. tessmannii**  
*oddonii* De Wild. = **T. welwitschii**  
*papillosa* Pierre ex A. Chev. = **T. rubescens**  
*priureana* A. Juss. var. *vermoesenii* Pellegr.  
= **T. priureana** subsp. **vermoesenii**  
*pynaertii* De Wild. = **T. welwitschii**  
*redacta* Bullock ex Burt Davy & Bolton, nom. nud.  
= **T. dregeana**  
*redacta* Bullock ex Eggeling, nom. invalid. = **T. dregeana**  
*reygaertii* De Wild. = **Guarea laurentii**  
*roka* Chiov. = **Trichilia emetica** subsp. **emetica**  
*roka* sensu F.W.T.A. = **T. emetica** subsp. **suberosa**  
*rueppelliana* [ruppelliana] Fresen. = **Ekebergia capensis**  
*schliebenii* Harms = **Trichilia dregeana**  
*senegalensis* C. DC. = **T. priureana** subsp. **priureana**  
*sibangensis* A. Chev. ex Pellegr., ms. name, in syn. of  
*T. heudelotii* Planch. ex Oliv. = ? ? **T. monadelpha**  
*siderotricha* Chiov. = **Brucea antidysenterica**  
(*Simaroubaceae*) p.p. (leaves)  
*somalensis* Chiov. = **Trichilia emetica** subsp. **emetica**  
*splendida* A. Chev. sensu F.W.T.A., p.p. = **T. dregeana**  
*strigulosa* Welw. ex C. DC. = **T. dregeana**  
*stuhlmannii* Harms = **T. dregeana**  
*tomentosa* A. Chev., non Kunth = **T. dregeana**  
*umbellata* C. DC. ex Bews = ?  
*umbellata* C. DC. ex Medley Wood = ?  
*umbriifera* Swynnerton & Bak. f. = **T. emetica** subsp.  
**emetica**  
*umbrosa* Vermoesen = **T. dregeana**  
*velutina* A. Chev. = **T. ornithothera**  
*vestita* C. DC. = **T. dregeana**



## TRICHILIA

*volkensii* Gürke, incl. var. *buchananii* (C. DC.) Pic. Serm. and var. *genuina* Pic. Serm. = **Lepidotrichilia volkensii**

*welwitschii* C. DC. var. *grandiflora* C. DC. = **Trichilia dregeana**

*zenkeri* Harms = **T. welwitschii**

*zenkeri* sensu Staner, Bull. Jard. Bot. Etat, Brux. 16: 165, pl. 6, 1941 = **T. mondelfa**

## TURRAEA / 28

syn.: *Naregamia* Wight & Arn.; *Nelanaregam* Adans.; *Nelanaregam* O. Kuntze

Old world genus of c. 70 species; 31 in Africa, 35 in Madagascar, the Comoros and Mascarenes; 1 species in SE Asia-Australia. Characterized by indumentum of simple hairs, simple leaves (except for *T. africana* in Africa), and hermaphrodite flowers with an erect cylindrical staminal tube as conspicuous as the usually pendant petals; fruit a leathery, depressed capsule; seeds with fleshy aril.

Some African taxa are insufficiently known: 2 species with only immature fruits, 1 species without fruit and seeds, 1 species with no ecology recorded, and 1 species known only from the type.

**Turraea abyssinica** Hochst. ex A. Rich., excl. var. *longipedicellata* Oliv. (= *T. holstii*); Beentje, Kenya trees, shrubs & lianas: 408, 1994; Lovett & al., Field guide moist for. trees Tanzania: 169, 2006. – Icon.: A. Richard, Tent. Fl. Abyss., Atlas: pl. 25, 1847; Fl. Ethiopia 3: 482, 1989.

Shrub or tree 2-12-18 m tall, sometimes scrambling; leaves ovate to elliptic, 4-11 × 2-5 cm, sparsely puberulous, apex acuminate with rounded tip, with hairy domatia in nerve axils beneath; flowers cream in short cymes, petals 1,2-1,6 cm long; capsule 3-lobed, c. 1 cm Ø; seed aril orange-red.

Forest usually of drier types, and at its edges; sometimes in riparian forest; persisting in grassland as forest remnant; evergreen bushland, thicket; 1820-2300 m alt.

**T. adjanohounii** Aké Assi; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 734, 2006.

Ramose sarmentous shrub to 2,5 m tall; leaves entire, oblong, 6-11 × 2-3 cm, glabrescent, margins and midrib ciliate; flowers greenish, 1 cm long, solitary or 2 together; capsule green, pubescent, 1 cm Ø; seed aril yellow.

Evergreen forest (subhygrophilous) in the Tai-Tabou area (SW Ivory Coast).

Near *T. heterophylla*; discovered in 1960.

**T. africana** (Welw.) Cheek; Figueiredo & Smith, Pl. Angola: 119, 2008.

syn.: *Nelanaregam alata* (Wight & Arn.) O. Kuntze var. *β africana* (Welw.) Hiern; Enum. 4: 638, 1997; *Naregamia alata* Wight & Arn. *β africana* Welw. 1869, and *β africana* C. DC. 1878.

Herb, 5-7,5 cm tall, caespitose, with a many-headed woody rootstock, or a dwarf rhizomatous, deciduous shrublet; leaves pinnately 3-foliolate, flaccid, with patent hairs; flowers white.

Thin woods at forest edges with Leguminosae at stream bank.

## TURRAEA

**T. barbata** Styles & F. White; Beentje, Kenya trees, shrubs & lianas: 408, 1994. – Icon.: Fl. Trop. East Afr., Meliaceae: 9, 1991; Thulin, Fl. Somal. 2: 230, 1999 (both a flower).

Shrub or tree 2-4 m tall; lateral shoots slow growing, with crowded internodes; leaves ovate, 2-6 × 1-4,5 cm, puberulous, cordate at base, apex rounded or emarginate, domatia absent; inflorescence short, 1-3-flowered; flowers (creamy) white, petals 1,5-1,9 cm long; immature fruit tomentellous, 0,8 cm Ø.

*Acacia*, *Commiphora* deciduous bushland on sand; 70-610 m alt.

**T. cabrae** De Wild. & Th. Durand; Sosef & al., Check-list pl. vascul. Gabon: 276, 2006; Figueiredo & Smith, Pl. Angola: 119, 2008. – Icon.: Ann. Mus. Congo, Sér. 1, Ill. Fl. Congo: pl. 16, 1898.

syn.: *T. angolensis* Exell

Sarmentous shrub 1-4 m tall; twigs puberulous, glabrescent; leaves ovate-oblong or lanceolate, 4-15 × 2,5-7 cm, 2-5-lobed towards the apex, glabrous except for hairy domatia in nerve axils beneath; inflorescence umbel-like (cymes), 2-4-10-flowered; flowers white or greenish-yellow, scented, petals 3 cm long; capsule glabrous, c. 1 cm Ø.

Patches of secondary forest; fallow land; shady primary thickets; mixed woods; 300-1000 m alt. (Gabon).

Not in Uganda, Nigeria. In Cameroon ?

**T. cornucopia** Styles & F. White; Beentje, Kenya trees, shrubs & lianas: 408, 1994. – Icon.: Fl. Trop. E. Afr., Meliaceae: 9, 1991 (flower).

Shrub or tree, 2-4 m tall; leaves in fascicles on short lateral shoots of limited growth; lamina ovate or elliptic, 3-7 × 1,5-4 cm, base rounded or cuneate, apex obtuse or emarginate, puberulous only on midrib beneath, with domatia; flowers (greenish) white, (1-)2-10 in short cymes, petals 2-2,7 cm long; capsule c. 1 cm Ø, glabrous; seed aril red.

Towards the upper limits of *Acacia*, *Commiphora* deciduous bushland, and towards the lower limits of evergreen bushland with *Euphorbia kibwezensis*, *Dracaena ellenbeckii*, *Vepris samburensis*, *Teclea simplicifolia*; on rocky soils; 1200-1830 m alt.

**T. elephantina** Styles & F. White

Shrub 2,6 m tall; leaves coriaceous, ovate-lanceolate, c. 5 × 2 cm, densely puberulous beneath with prominent reticulate venation, base rounded, apex obtuse; inflorescences 3-5-flowered, congested, in axils of fallen leaves, petals 4 cm long; capsule and seeds unknown.

Sparse bush on sandstone.

Known only from the type collected in 1969, where the collector (Hucks) found only one plant damaged by elephants.

**T. fischeri** Gürke; Coates Palgrave, Trees south. Afr., ed. 3: 448, 2002. – Icon.: Fl. Trop. E. Afr., Meliaceae: 9, 1991 (flower).

Deciduous shrub or much-branched tree to 8 m tall; first-year branchlets glabrous, reddish-brown or grey; bark rather scaly; leaves ovate to elliptic, 5-10 × 3-6 cm, glabrous or softly pubescent beneath with domatia, apex attenuate, base tapering; flowers (greenish) white, fragrant, 4-12 in fascicles terminating leafless lateral dwarf shoots; petals 2-3 cm long, staminal tube conspicuous; capsule 1,3 cm Ø, reddish-brown, puberulous; seed aril red.

## TURRAEA FISCHERI

Granite hills; bushland and scrub forest; usually on rocky outcrops; 1200-1850 m alt.

Comprises 2 subsp.: – subsp. **fischeri** in N part of range, with hairy leaves; – subsp. **eylesii** (Bak. f.) Styles & F. White in Zimbabwe, with lower leaf surface usually hairless.

**T. floribunda** Hochst., incl. var. *macrantha* Oliv., nom. nud.; Beentje, Kenya trees, shrubs & lianas: 408-409, 1994; Friis & Vollesen, Fl. Sudan-Uganda border ... 1: 284, 1998; F. White & al., Evergreen for. fl. Malawi: 368, 370, 2001. – Icon.: de Candolle, Monogr. phan. 1: pl. 6/4, 1878 (flower); Curtis's Bot. Mag.: pl. 8944, 1923; Flow. Pl. Afr.: pl. 1499, 1967; Fl. south. Afr. 18/3: 42, 1986; Lovett & al., Field guide moist for. trees Tanzania: 170, 2006; Coates Palgrave, Trees south. Afr., ed. 3: 449, ill. 124, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 256-257, 2002; Latham, Pl. visited by bees..., ed. 3: 192, 2007; Fl. Trop. E. Afr., Meliaceae: 15, 1991; Bloesch & al., Plantes ligneuses Rwanda: 157, 2009.

syn.: *T. kaessneri* Bak. f.; *T. heterophylla* sensu Sond. in Fl. Cap. 1: 245, 1860, non Sm.

Deciduous semi-scandent scrambler, many-stemmed spreading shrub or tree 3-6-10-15 m tall; bark grey; stem to c. 30 cm Ø; branchlets hairy; leaves ovate-elliptic, 7-20 × 2,5-10 cm, base cuneate, apex short-acuminate, densely hairy when young, later glabrous except for veins, domatia absent; flowers white or greenish-yellow, sweet-scented, in short cymes on brownish bracteate short branchlets; petals 3,5-9 cm long, staminal tube white, 2,5-10 cm long; capsule woody, glabrous, 10-lobed, pendulous, 1,5-2 cm Ø, valves reflexed when mature; seeds orange, aril white.

Evergreen forest, including riverine, especially at edges; secondary forest; abandoned cultivations; rain-forest with *Diospyros abyssinica*, *Garcinia buchananii*, *Uvariopsis congoensis*, *Manilkara butugi*; kopjes; 15-2150 m alt.

Length of petals and staminal tube very variable, very long-flowered specimens occurring in SE Kenya-NE Tanzania (*T. kaessneri*).

E S. Africa, Swaziland.

Widely grown for ornament in the tropics, in conservatories in temperate regions. Easily grown from seed. The plant illustrated in Bot. Mag. (l.c.) was grown from seed in a hot-house at Kew Gardens in the early 20<sup>th</sup> century. – Also used in traditional medicine and for its (white) wood.

Sometimes confused with *T. abyssinica*; leaves similar but domatia distinctive; fruits with 5 lobes in *T. abyssinica*. Also confused with *T. heterophylla* (with obovate 3-lobed leaves!).

**T. ghanensis** J. B. Hall – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 735, 2006.

Shrub or tree to 6 m tall, much branched with twigs to 1,5 mm Ø; leaves thin, ovate-elliptic, with soft pale hairs beneath, domatia absent, margins often slightly toothed; flowers white, 1-3, produced successively on short side-shoots 1,6 cm long, densely pubescent; capsule yellowish, grooved, spreading-pubescent, 2 cm Ø, splitting halfway when ripe; seeds brown, aril orange.

Coastal dry forest and margins on gorge slopes with *Pteleopsis habeensis*, *Talbotiella gentii*, *Acalypha neptunica*; all these species have disjunct areas. So is also the case with *Ochna ovata* growing nearby on rocky outcrops in forest.

**T. heterophylla** Sm.; Irvine, Woody pl. Ghana: 532, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 131, 1997 (Burkill included here: *T. leonensis*, *T. pellegriniana*); Akoegninou & al.,

## TURRAEA HETEROPHYLLA

Fl. analyt. Bénin: 798, 2006. – Icon.: Edwards's Bot. Reg. 30/1: pl. 4, 1844; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731, 735, 2006; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 163, 1959.

syn.: *T. quercifolia* G. Don, type not found; *T. gracilis* A. Chev., nom. subnud.; *T. lobata* Lindl.; *T. graciliflora* Schtdl.

Evergreen shrub, often sprawling, 0,3-4 m tall; leaves thin, obovate to cuneate, 3-lobate in upper part, lobes rectangular, 2,5-9 × 1-3,5 cm, somewhat pubescent apart from midrib below and tuft domatia; flowers white, sweet-scented, solitary or in pairs in leaf axils, petals 1,5-2,3 cm long, staminal tube < 1,5 cm long; capsule 1,2 cm Ø, 5-8-lobed, transversely ridged; seeds shining black, aril red.

Forest, forest edges, secondary forest; near sea-level – ? m alt.

Ornamental; also used in traditional medicine. Was grown as a stove plant at Chiswick House, England, collected in Sierra Leone by Whitfield (Edwards's Bot. Reg., l.c.); cf. note under *T. leonensis*.

Not in Uganda; Angola ?? (cited by Figueiredo & Smith, Pl. Angola: 119, 2008). In S. Africa has been confused with *T. floribunda*. – Also confused with *T. vogelioides*.

**T. holstii** Gürke; Friis, Forest trees N.E. trop. Afr.: 201, 321 (map), 1992; Beentje, Kenya trees, shrubs & lianas: 409, 1994. – Icon.: Fl. Trop. E. Afr., Meliaceae: 9, 1991 (flower); Thulin, Fl. Somalia 2: 230, 1999; White & al., Evergreen for. fl. Malawi: 369, 2001; Lovett & al., Field guide moist for. trees Tanzania: 170, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 141, 2008.

syn.: *T. usambarensis* Gürke; *T. laxiflora* C. DC.

Tree 3-10-18 m, more rarely a shrub, sometimes scrambling, 3-4 m tall; bark in older trees grooved; branchlets glabrous; leaves papery, lanceolate-elliptic, 3-9 × 1-4 cm, matt above, conspicuously acuminate at apex, base cuneate, with conspicuous hairy domatia beneath; flowers white to cream, ageing yellow, very fragrant, (1-)2-3(-4) in cymes, petals 1,4-2,5 cm long; capsule thinly woody, glabrous, c. 1 cm Ø; seeds reddish black, aril red.

Forest (in understorey and at edges); sometimes on stream banks; abandoned cultivations; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; mixed forest with *Podocarpus latifolius*, *Olea*, *Syzygium*; open forest with *Olea*, *Albizia gummifera*; forest with *Podocarpus latifolius*, *Syzygium*, *Pouteria adolfi-friederici*; 700-2500 m alt.

Arabian Peninsula.

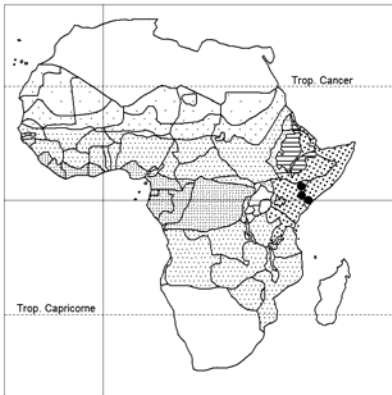
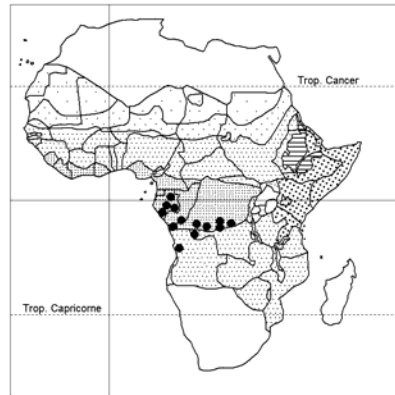
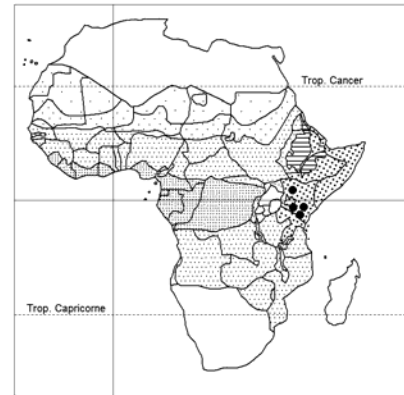
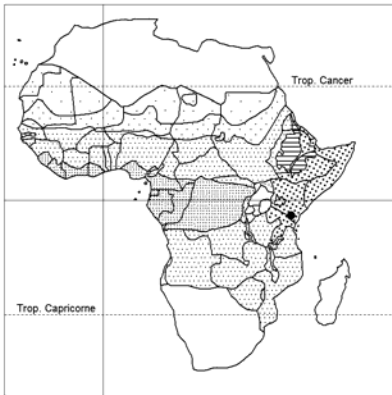
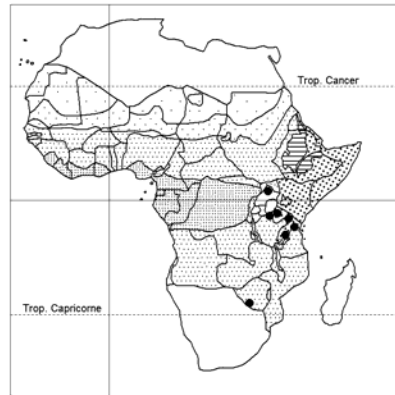
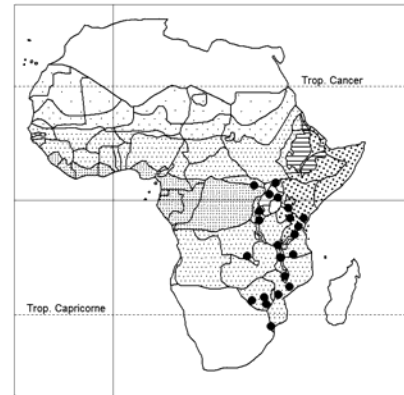
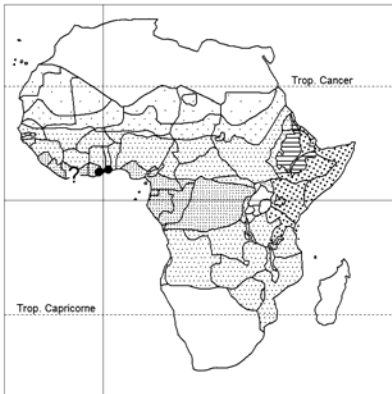
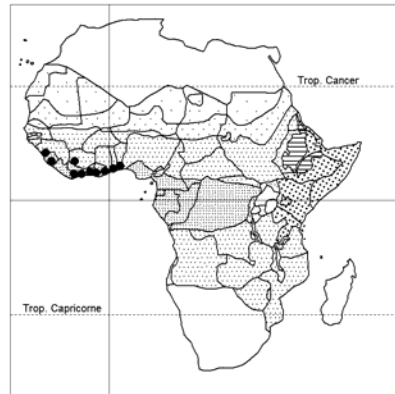
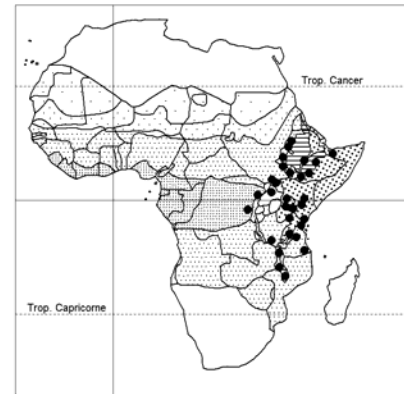
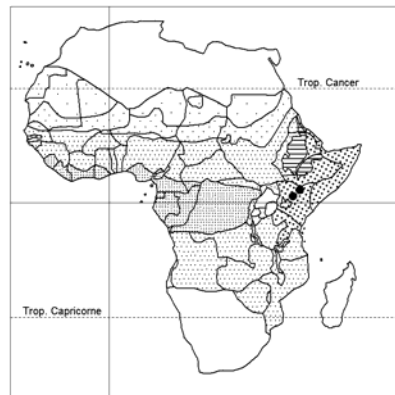
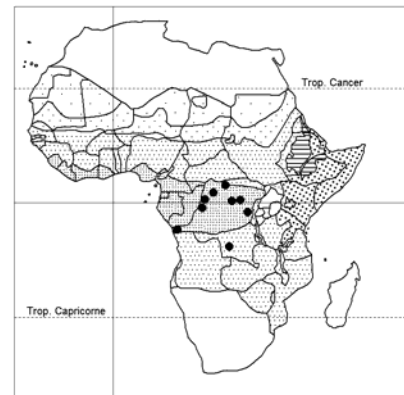
**T. kimbozensis** Cheek

Treelet 1-2 m; leaves mostly borne on long shoots, (oblanceolate-)elliptic, to 21 × 10 cm, glabrous beneath except for inconspicuous hairy domatia, apex distinctly acuminate, margins repand, sometimes deeply sinuate; flowers 7-15 in congested cymes or false racemes, petals 1 cm long; capsule round, 1,8 cm Ø, glabrous, thinly woody, shallowly sulcate; seed black, aril red.

Rain-forest on limestone; 300-450 m alt.

**T. kokwaroana** Styles & F. White; Beentje, Kenya trees, shrubs & lianas: 409, 1944.

Shrub or tree to 6 m tall; leaves broadly ovate, to 6 × 3,8 cm, densely puberulous beneath and with prominent reticulate venation, base cordate, usually borne on short slow-growing lateral shoots; flowers creamy white, precaucious or with the leaves,

**Turraea barbata****Turraea cabrae****Turraea cornucopia****Turraea elephantina****Turraea fischeri****Turraea floribunda****Turraea ghanensis****Turraea heterophylla****Turraea holstii****Turraea kimbozensis****Turraea kokwaroana****Turraea laurentii**



## TURRAEA KOKWAROANA

3-12 in short fascicles terminating short shoots or in axils of fallen leaves; petals c. 3 cm long; capsule round, c. 1,2 cm Ø, thinly woody, densely puberulous; seed black, aril red.

*Commiphora*, *Acacia* scrub with scattered *Delonix*, *Terminalia*, *Gyrocarpus*; sometimes in rocky places; 775 m alt.

**(T. lamyi Bonnet 1901)**

Much-branched shrub; young branchlets pubescent, adult ones glabrous; leaves short-petiolate, membranous, ovate-oblong, 5-7 × 1,5-2,5 cm, apex acuminate, base narrowed, margins entire and slightly wavy, pilose on nerves beneath, with domatia; flowers pedunculate, 1-3 in axillary clusters; petals 2,5-3 cm long, ovary 10-locular; capsule glabrous, 5-valved; seeds black.

River (Oubangui) bank.

“Resembling *T. vogelii* but flowers larger, and few together”.

Type: “a poor specimen”, Fourreau coll. – Fourreau collected in the area between the Chari R., Gribingui Plateau-Oubangui R. (actual Centr. Afr. Rep.), and the Congo R. (N Zaire) in the years 1899-1900.

Pellegrin [Not. Syst. (Paris) 9: 12-13, 1940] compared *T. laurentii* and *T. pellegrinii* with this species and concluded that they may be conspecific in spite of minor differences. He may be right. In that case, **T. lamyi** is the correct name of the species (cf. Note under *T. laurentii* below).

**T. laurentii** De Wild. 1908 – Icon.: Ann. Mus. Congo Belge, Bot., Sér. 5 (2): tab. 88 (1908); Bull. Jard. Bot. Etat, Brux. 26: 132, 1941 (flower).

syn.: *T. ? thollonii* Pellegr. 1911; ? *T. lamyi* Bonnet 1901 (cf. note below).

Sarmentous shrub or large liane; twigs cylindrical, shortly pubescent; leaves papery, obovate, 3,5-9 × 2-4,5 cm, glabrous above except for the impressed mid-rib, very sparsely pubescent beneath but nerves pubescent, with domatia; margins entire, ± undulate; flowers white, single, rarely 2 together, on pedicels 1 cm long; petals 3-3,5 cm long; capsule c. 2 cm Ø, glabrous, 5-valved; seeds shining black, aril orange.

Rain-forest; edge of terra firma forest.

“Fruit resembling that of *T. heterophylla*”.

Note: Pellegrin [Not. Syst. (Paris) 9: 12-13, 1940] placed *T. laurentii* and *T. thollonii* Pellegr. 1911 as probable synonyms under *T. lamyi* Bonnet 1901.

We have compared the descriptions of these taxa (types not seen). Pellegrin may be right. If so, **T. lamyi** is the correct name.

**T. leonensis** Keay (1956). – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 735, 2006.

Tree 4-5 m; young twigs densely pubescent, becoming glabrescent, bark purplish; leaves very thinly papery, (elliptic-)ovate, 12 × 3,5 cm, entire or lobed, cuneate at base, apex acuminate, nerves puberulous beneath, glabrescent; flowers 6-16 in racemes 1,5 cm long, densely pubescent; petals 3,5 cm long, anthers exerted; capsule glabrous (immature).

Ecology unknown.

Has been confused with *T. lobata* Lindl. 1843 (= *T. heterophylla*) the type of which is at Cambridge University Herbarium. At Kew there are 3 sheets of *T. leonensis* from Thomas Moore's herbarium cultivated at Chelsea in 1851-1853, bearing the names *T. lobata* Lindl., *T. heterophylla* ? and *T. diversifolia* (ms. name). They were also collected in Sierra Leone by Whitfield (Keay, Bull. Jard. Bot., Brux. 26: 189, 1956).

## TURRAEA LEONENSIS

Recorded from SW coastal Guinea (near the border to Sierra Leone) and from W Guinea (S of Fouta Djallon, the Kaba) by Boulvert (Documents phytogéographiques guinéens: 104, 1999).

**T. mombassana** C. DC.; Fl. Ethiop. & Erit. 2/2: 382, 1995, and 1: 230, 2009. – Icon.: Engler, Pflanzenw. Afr. 3/1 B: 87, 1915; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 87, 1940; Fl. Trop. E. Afr., Meliaceae: 15, 1991; Beentje, Kenya trees, shrubs & lianas: 409, 1994; White & al., Evergreen for. fl. Malawi: 369, 2001.

Shrub 0,5-5 m tall, sometimes scrambling; leaves, flowers and fruits usually borne on short slow-growing lateral shoots; leaves very variable in shape and size, rhombic(-spathulate) to broadly elliptic, irregular in outline or shallowly 3-lobed, 1-6,0,5-3 cm, base decurrent, apex ± acuminate to emarginate, usually glabrous beneath, with domatia; flowers white to yellow, 1-6-fasciculate among the leaves, petals 3-6 cm long, staminal tube 2-6 cm long; capsule round, 8-14 mm Ø; seed orange-red, aril white covering 1/3-1/2 of the seed.

Evergreen forest, inside and at edges; mid-altitude rain-forest; coastal scrub; secondary forest colonizing abandoned cultivations; dry forest; bushland, thicket, especially on rocky slopes; sometimes in grassland; 0-2225 m alt.

Comprises 3 subspp.: – subsp. **mombassana** [syn.: ? *Pittosporum spathulifolium* Engl.], with rather large subacuminate leaves, small flowers and short staminal tubes, from Kenya S to Malawi; – subsp. **cuneata** (Gürke) Styles & F. White [syn.: *Pittosporum jaegeri* Engl.; *Turraea mombassana* C. DC. var. *cuneata* (Gürke) Engl.], with small leaves and mid-size flowers, replacing the former in drier areas to the N and W (Ethiopia, Somalia, Kenya, Tanzania), at higher altitudes; – subsp. **schliebenii** (Harms) Styles & F. White, with rather large leaves and very large flowers with long staminal tube, only in the Uluguru Mts (Tanzania). – Some specimens are variously intermediate or anomalous.

**T. nilotica** Kotschy & Peyr., incl. var. *glabrata* Fiori ex Chiov., but excl. var. *robusta* Oliv. (= *T. robusta*); Beentje, Kenya trees, shrubs & lianas: 409, 1994. – Icon.: Kotschy & Peyritsch, Pl. tinn. 12: pl. 6, 1867; Engler, Pflanzenwelt Afr. 3/1 B: 814, 1915; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 87, 1940; Fl. Trop. E. Afr., Meliaceae: 9, 1991 (flower); Fl. south. Afr. 18/3: 42, 1986; Thulin, Fl. Somal. 2: 230, 1999; Coates Palgrave, Trees south. Afr., ed. 3: 449, ill. 125, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 258-259, 2002.

syn.: *T. randii* Bak.; *T. tubulifera* C. DC.

Shrub or tree, deciduous, 2-10 m tall, occasionally flowering as a shrublet; bark rough, brown, flaking in squarish pieces; older branches stout, often with a thick corky bark; leaves obovate (-elliptical) obtuse, 10-15 × 6-8 cm, densely and softly pubescent to glabrous beneath, more sparsely so above, base cuneate, margins entire, wavy; flowers greenish white, ageing yellow, 5-18 in umbellate sessile clusters on short shoots, often appearing before the leaves, petals 1,2-2,2 cm long; capsule round, thinly woody, 5-10 mm Ø, glabrous, rarely puberulous; seed black, aril orange or red.

Very variable in leaf-shape and indumentum, with a certain geographical correlation.

Woodland; bushland; wooded grassland; riparian communities; also on rocky ground; on the more fertile soils dominated by *Acacia*, *Combretum*; termite mounds; 60-1525 m alt.

NE S. Africa, Swaziland.



## TURRAEA

**T. obtusifolia** Hochst., incl. var. *microphylla* C. DC., var. *matopensis* Bak. f. – Icon.: Bothalia 16: 150, 1986; Fl. south. Afr. 18/3: 42, 44, 1986; E. Schmidt & al., Trees & shrubs Mpumalanga...: 258-259, 2002; Coates Palgrave, Trees south. Afr., ed. 3: 450, 2002.

Shrub 0,6-3-5 m tall, usually deciduous, sometimes scrambling; first-year branchlets puberulous with spreading hairs, second-year more sparsely so, reddish-brown or grey; leaves mostly in fascicles on dwarf branchlets, very variable in shape and size, from narrowly oblanceolate and unlobed to cuneate-obovate and  $\pm$  deeply lobed, 3-5,5  $\times$  0,8-2,5 cm, glossy green, glabrous, base tapering, margins entire; flowers pure white, showy, not scented, petals 2,5-3,5 cm long, staminal tube conspicuous, in 1-4-flowered clusters; capsule round, shallowly sulcate, c. 1 cm  $\emptyset$ ; seed red, aril small, white.

Rocky kopjes or granite hills; sand dunes; 0-1525 m alt.

E Botswana, Swaziland, E S. Africa.

Easily grown from seed. An attractive garden plant.

A southern vicariant of *T. mombassana*.

**T. parvifolia** Deflers, 1895 (“parviflora” sphalm. in Engler, Pflanzenw. Afr. 3/1 B: 813, 1915); Beentje, Kenya trees, shrubs & lianas: 409, 1994. – Icon.: Fl. Trop. E. Afr., Meliaceae: 9, 1991 (flower); Thulin, Fl. Somal. 2: 230, 1999.

syn.: *T. lycioides* Bak., 1895, nom. illegit., non Baillon 1892; *T. somaliensis* Li & Chen, 1984, nom. nov., illegit.

Rigidly branched shrub or tree 1,5-4 m tall; branches slender, drooping; bark on older branchlets dark brown or blackish with white waxy bloom, finely striate; leaves in fascicles on short lateral shoots of limited growth, or alternate with long internodes on extension shoots; blade narrowly oblong-oblanceolate, 1-3  $\times$  0,6-0,9 cm, base cuneate, apex rounded,  $\pm$  glabrous, without domatia; flowers white to cream, single; petals 8-10 mm long; capsule round, 7-10 mm  $\emptyset$ , glabrous, thinly woody; seeds black, aril red.

*Acacia*, *Commiphora* bushland, especially around rock outcrops and on banks of wadis; 260-1250 m alt.

Yemen, Saudi Arabia.

CHEPLOGOI, P. K. & D. A. MULHOLLAND (2003). Limonoids from *Turraea parvifolia* (Meliaceae). *Biochem. Syst. Ecol.* 31: 799-803.

When heavily browsed by camels, sheep and goats growing dwarf and densely branched.

**T. pellegriniana** Keay; Fl. Trop. E. Afr., Meliaceae: 12-13, 1991.

Deciduous shrub or tree 4-8 m tall; young twigs densely pubescent, becoming glabrescent, light-brown becoming blackish,  $\pm$  6 mm  $\emptyset$ ; leaves membranous, (ovate-) elliptic, 5-15  $\times$  1,3-6 cm, puberulous beneath; flowers (greenish) white, sweetly scented, c. 20 together in clusters usually on older branchlets; petals 12-15 mm long; tip of staminal tube frilled; capsule round, lobed, glabrous, orange, c. 1 cm  $\emptyset$ ; seeds black, aril orange or vermilion.

Rain-forest; among rocks; secondary forest; savanna; c. 1000-1050 m alt.

Described as resembling *T. nilotica*. Included under *T. heterophylla* by Burkill (Useful pl. W. trop. Afr., ed. 2, 4: 131, 1997).

**T. retusa** Styles & F. White – Icon.: Kew Bull. 46: 685, 1991 sub nom. *T. pevelingii* Cheek; Fl. Somalia 2: 231, 1999 (modified from o.c.: 685).

## TURRAEA RETUSA

Deciduous shrub, 1-2,5 m tall, sometimes with spiny ends developing from main axes; spur shoots with numerous, very short internodes; leaves *polymorphic*, obovate to orbicular c. 5-12  $\times$  5-8 mm, apex rounded or truncate or retuse or trilobed, base decurrent, margins revolute, white-hairy or glabrous on both surfaces, without domatia; flowers (yellowish or greenish) white, single or 2 together; staminal tube curved; capsule round, c. 1 cm  $\emptyset$ ; seeds black, aril bright red.

*Acacia*, *Commiphora* bushland, usually on stabilized orange sand dunes; rarely on limestone; 130-975 m alt.

Leaves extremely variable in size, outline and indumentum.

Can be confused with *T. parvifolia* when sterile.

**T. robusta** Gürke; Beentje, Kenya trees, shrubs & lianas: 410, 1991. – Icon.: Staner in Bull. Jard. Bot. Etat, Brux. 16: 128 (fig. 3), 1941 (sub nom. *T. nilotica*); F. White & al., Evergreen for. fl. Malawi: 369, 2001; Lovett & al., Field guide moist for. trees Tanzania: 171, 2006.

syn.: *T. volkensii* Gürke; *T. goetzei* Harms; *T. sacleuxii* C. DC.; *T. squamulifera* C. DC.; *T. nilotica* Kotschy & Peyr. var. *robusta* Oliv.; *T. nilotica* sensu Staner, Bull. Jard. Bot. Etat, Brux. 16: 127, 1941, and sensu Fl. Congo belge 7: 156, 1958, non Kotschy & Peyr.

Shrub or tree, 1-16 m tall, sometimes weak-stemmed and scrambling; first year branchlets densely puberulous, second year almost glabrous, reddish-brown to purple-brown, often with conspicuous white or pale brown lenticels; leaves elliptic or obovate, 3,5-12  $\times$  2-8 cm, base cuneate, apex rounded to acute, short-pubescent beneath, with domatia; flowers (yellowish) white, in pedicellate cymes; petals 12-14 mm long; capsule yellow, round, c. 1,5 cm  $\emptyset$ , woody, pilose or rarely glabrous; seeds dark red-black; aril red.

Evergreen forest, particularly secondary; edges of montane rain-forest, thickets and fire-protected *Brachystegia* woodland; termite mounds; also riparian; also in small forest remnants; 900-2000 m alt.

Sometimes planted for ornament. Wild seedlings transplanted into banana gardens, grown as fodder for goats. Wood used for fire wood, tool handles, etc.

Close to *T. nilotica* with which it has often been confused. Their ranges are sympatric, but their ecology different: *T. robusta* in forest, *T. nilotica* in savanna. *T. nilotica* with corky bark, sessile inflorescence.

**T. stolzii** Harms – Icon.: F. White & al., Evergreen for. fl. Malawi: 369, 2001.

Shrub or tree to 4-8 m tall, with arching branches; leaves (lanceolate-)jellyptic, to 13  $\times$  6 cm, coriaceous, glabrous except for scattered hairs on veins below, with inconspicuous domatia, apex shortly acuminate, base cuneate; flowers white, ageing yellow, in (2-3(-4)-flowered cymes; petals 2-2,8 cm long; capsule round, c. 1,5 cm  $\emptyset$ , sulcate, glabrous, thinly woody; seeds black, aril red.

Rain-forest; in moist forest on riverbanks; 1400-1800 m alt.

Closely related to *T. holstii*, but with larger flowers and staminal tubes different.

## TURRAEA

**(T. thollonii** Pellegr. 1911)

Shrub, branchlets terete, shortly pubescent when young, glabrescent; leaves simple, entire, petiolate, glabrous, with domatia, ovate-oblong, 4-7 × 2,5-3,5 cm, base obtuse or ± rounded, apex shortly acuminate, with 5-6 pairs of lateral nerves; flowers single or by pairs, axillary, pedicel 1,5 cm long; petals 3 cm long, ovary 10-locular; capsule (immature), round, glabrous.

River (Oubangui) bank in terra firma forest.

Similar to *T. laurentii* but leaf-base rounded.

Two specimens (Fourreau 3110, Thollon s.n.) seen by Pellegrin [Not. Syst. (Paris) 9: 13, 1940] who places this species as a probable synonym under *T. lamyi* and *T. laurentii* (see Note under *T. laurentii* above).

**T. vogelii** Hook f. ex Benth., incl. var. *proceroides* Vermeosen, var. *kisantuensis* Vermeosen, var. *congoensis* Vermeosen with fa. *typica* and fa. *laurentiorum* Vermeosen, var. *camerunensis* Vermeosen, and var. *scandens* C. DC.; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 132, 1997; Y. Harvey & al., Pl. Bali Ngemba...: 112, 2004; Cheek & al., Pl. Kupe...: 339, 2004; Sosef & al., Check-list pl. vascul. Gabon: 277, 2006. – Icon.: Engler, Pflanzenw. Afr. 3/1 B: 814, 1915; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19b/1: 87, 1940; Irvine, Woody pl. Ghana: 533, 1961; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 735, 2006.

syn.: *T. propinqua* Hook. f. ex Benth.; ? *T. procera* (Welw. ex) C. DC. (Principe Isl.); *T. zenkeri* C. DC.; *T. hexamera* Pierre ms. in herb. P; *T. doniana* Hook. f., nom.

Climbing shrub 5-12 m tall, rarely a shrub to 2 m; young branchlets and leaves with dense white hairs; leaves elliptic-obovate, c. 11-15 × 5-7 cm, with domatia beneath, with 3-6 pairs of lateral nerves, unlobed, base cuneate or rounded, apex acuminate; flowers pure white, fragrant, long-pedicellate, 6-28 in pseudo-umbels on stout peduncles 2-6 cm long; petals 1,8-2,5 cm long; capsule obovoid, 3,5 cm long, c. 2 cm Ø, glabrous, ± sulcate; seeds black, aril orange to vermilion. – Very ornamental.

Evergreen forest and at its edges; humid forest; fallow land; regrowths; river banks (primary forest); edges of forest gallery in savanna; 10-1375 m alt.

Bioko/Fernando Poo, Principe, S. Tomé [var. *propinqua* (Hook f.) Oliv.; bas: *T. propinqua* Hook f., with smaller and narrower leaves].

*T. vogelii* was formerly cited from the Cape Verde Isl., São Nicolau (Gonçalves, Flora de Cabo Verde 61, Meliaceae: 8, 2002).

Often confused with *T. vogelioides* (with sometimes lobed leaves, few-flowered cymes on short peduncles).

**T. vogelioides** Bagsh. & Bak. f. – Icon.: Troupin, Fl. pl. ligneuses Rwanda: 403, 1982; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 141, 2008.

Erect, sparsely branched shrub to 3-5 m tall; leaves (oblanceolate-)elliptic, to 12 × 6 cm, ± glabrous except for hairy domatia beneath, apex acuminate, base cuneate-rounded, margins ± repand and sometimes 3-lobed at apex; flowers pure white, waxy, 2-5 in axillary cymes on short peduncles; petals 1,2-2,2 cm long; capsule obovoid, 2,7 cm long, 1,3 cm Ø, glabrous; seeds black, aril small, vermilion.

Riparian forest in understorey; well-drained and swampy rain-forest; 1150-1800 m alt.

Has been confused with *T. heterophylla* (cf. Eggeling & Dale, Indigenous trees Uganda Protectorate, ed. 2: 200, 1952).

## TURRAEA

**T. wakefieldii** Oliv.; Beentje, Kenya trees, shrubs & lianas: 410, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 450, 2002. – Icon.: Fl. Trop. E. Afr., Meliaceae: 15, 1991.

syn.: *T. junodii* Schinz; *T. breviracemosa* C. DC.; ? *T. cylindrica* Sim; *T. schlechteri* Harms

Shrub or tree 3-7 m tall, sometimes scrambling; leaves sometimes crowded at the ends of slow-growing shoots but usually widely spaced on long shoots; lamina ovate or elliptic, 4-8 × 2-4 cm, glabrous, with domatia, apex acuminate, base cuneate; flowers white to cream, ageing yellowish, 1-6 in subsessile fascicles; petals 5-7 cm long; capsule round, 1-1,5 cm Ø, fulvous-tomentellous, slightly ribbed, valves thin; seeds red, aril (half-covering) white.

Coastal evergreen bushland, coastal forest; secondary forest and bushland; 1-500 m alt.

Fruit resembling that of *T. floribunda* but less woody.

Juvenile specimen, grown from seed in Kenya from Mafia Isl., with deeply pinnately lobed leaves (Fl. Trop. E. Afr., Meliaceae: 21, 1991).

**T. zambesica** [Sprague & Hutch. ex Hutch.] Styles & F. White; Coates Palgrave, Trees south. Afr., ed. 3: 450-451, 2002. – Icon.: Fl. south Afr. 18/3: 42, 1986.

Shrub or slender tree, to 4-5 m tall; first-year branchlets fulvous-puberulous, second-year glabrous, grey-brown, slender; leaves elliptic, 8-10 × 5 cm, glabrous above, ± glabrous beneath, apex and base tapering, margins entire; flowers creamy white, 3-7 in axillary or terminal clusters, petals 2,2 cm long, staminal tube frilled, ciliate; capsule thinly woody, round, glabrous, 1,2 cm Ø.

Riverine woodland, wooded grassland and thicket; 250-975 m alt.

Caprivi Strip, N. Botswana.

Resembling *T. nilotica* (with larger leaves velvety hairy beneath).

\* \* \*

INSUFFICIENTLY KNOWN:

*Turraea macrophylla* A. Chev., nomen in Herb. P; Pellegrin, descr. gall. 1940.

Specimen of a branch with fruits that resemble those of a *Turraea*, but the (simple) leaves are elliptical, acuminate, and much larger (20 × 9 cm) than those of other *Turraea* from the area [fide Pellegrin, Not. Syst. (Paris) 9: 13, 1908].

From Gabon (Nboro on the R. Ramboué, Chevalier 27075).

It is not for certain that the specimen belongs to this genus.

SYNONYMS:

*Pittosporum jaegeri* Engl. (*Pittosporaceae*) = **Turraea mombassana** subsp. **cuneata**

*spathulifolium* Engl. = ? **T. mombassana** subsp. **mombassana**

*Turraea abyssinica* Hochst. ex A. Rich. var. *longipedicellata* Oliv. = **Turraea holstii**

*angolensis* Exell = **T. cabrae**

*breviracemosa* C. DC. = **T. wakefieldii**

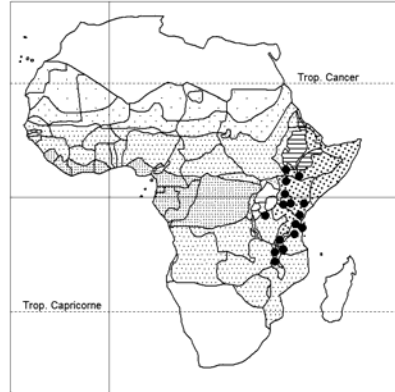
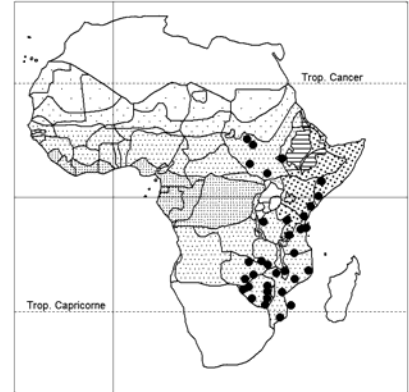
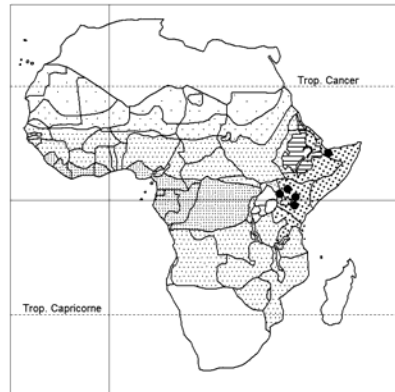
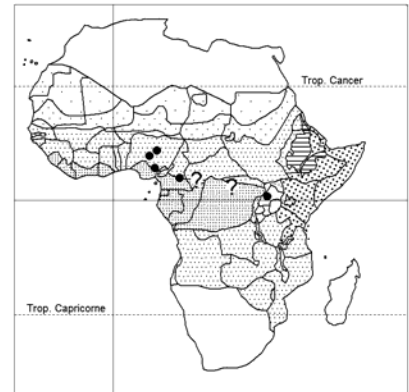
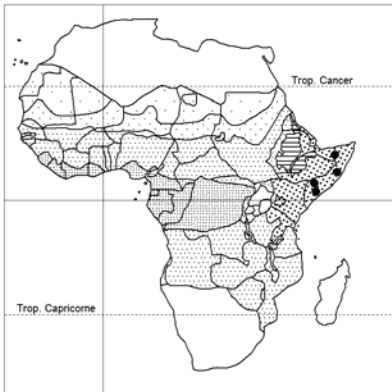
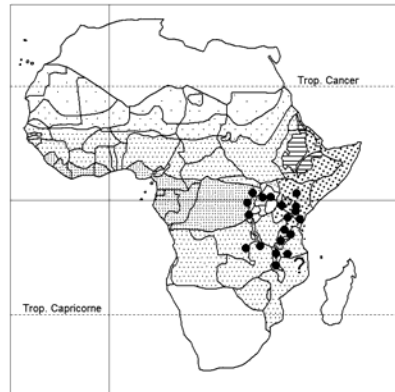
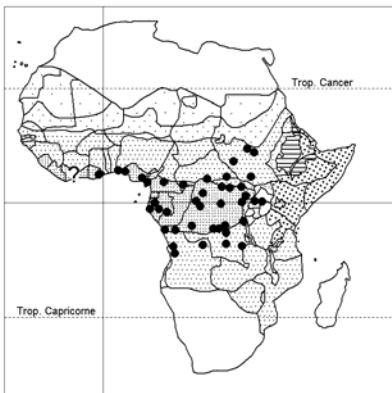
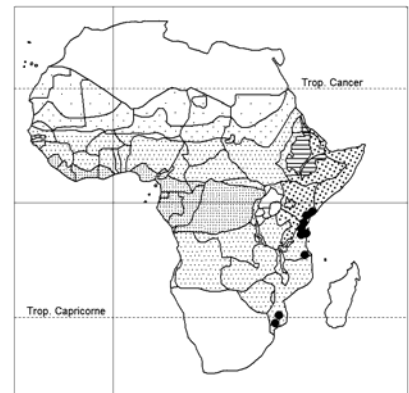
*cuneata* Gürke = **T. mombassana** subsp.

*cylindrica* Sim = **T. ? wakefieldii**

*diversifolia* ms. herb. K = **T. leonensis**

*doniana* Hook. f., nom. = **T. vogelii**

*eylesii* Bak f. = **T. fischeri** subsp.

***Turraea leonensis******Turraea mombassana******Turraea nilotica******Turraea obtusifolia******Turraea parvifolia******Turraea pellegriniana******Turraea retusa******Turraea robusta******Turraea stolzii******Turraea vogelii******Turraea vogelioides******Turraea wakefieldii***

## TURRAEA

- goetzei* Harms = **T. robusta**  
*graciliflora* Schldl. = **T. heterophylla**  
*gracilis* A. Chev., nom. subnud. = **T. heterophylla**  
*heterophylla* sensu Sond., Fl. Cap., non Sm.  
 = **T. floribunda**  
*heterophylla* sensu Eggeling & Dale 1952 = **T. vogelioides**  
*hexamera* Pierre ms. in herb. P = **T. vogelii**  
*junodii* Schinz = **T. wakefieldii**  
*kaessneri* Bak. f. = **T. floribunda**  
*kilimanscharica* Gürke = **T. abyssinica**  
*kirkii* Bak. f. = **T. wakefieldii**  
*laxiflora* C. DC. = **T. holstii**  
*lobata* Lindl. = **T. heterophylla**  
*lycioides* Bak. = **T. parvifolia**  
*macrophylla* A. Chev., nom. =? (see at end of species list)  
*mombassana* C. DC. var. *cuneata* (Gürke) Engl.  
 = **T. mombassana**  
*nilotica* Kotschy & Peyr. var. *robusta* Oliv. = **T. robusta**  
*nilotica* sensu Staner 1941 et Fl. Congo belge 7: 156, 1958,  
 non Kotschy & Peyr. = **T. robusta**  
*oblancifolia* Bremek. = **T. obtusifolia**  
*parviflora* Engl. sphalm. = **T. parvifolia**  
 sp. aff. *parvifolia* Deflers = **T. retusa**  
*pevelingii* Cheek = **T. retusa**  
*procera* (Welw. ex) C. DC. = **T. ? vogelii**  
*propinqua* Hook. f. ex Benth. = **T. vogelii**  
 [var. **propinqua**]  
*quercifolia* G. Don = **T. heterophylla**  
*randii* Bak. f. = **T. nilotica**  
*sacleuxii* C. DC. = **T. robusta**  
*schlechteri* Harms = **T. wakefieldii**  
*schliebenii* Harms = **T. mombassana** subsp.  
*somaliensis* Li & Chen = **T. parvifolia**  
 sp.? nov. sensu Kuchar, Pl. Somalia: 161, 182, 1986  
 = **T. retusa**  
*squamulifera* C. DC. = **T. robusta**  
*tisserantii* Pellegr. = **T. pellegriniana**  
*thollonii* Pellegr. = **T. ? laurentii** (see also note there)  
*tubulifera* C. DC. = **T. nilotica**  
*usambarensis* Gürke = **T. holstii**  
*volkensii* Gürke = **T. robusta**  
*zenkeri* C. DC. = **T. vogelii**

## TURRAEANTHUS / 3

syn.: *Bingeria* A. Chev.

Dioecious plants of tropical Africa; flower petals (4-5) fused to the staminal tube.

**Turraeanthus africanus** (Welw. ex C. DC.) Pellegr.; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 132-133, 1997; L. White & P. Gasson, Mahogany: 74-75, 2008. – Icon.: Pellegrin, Not. Syst. (Herb. Mus. Paris) 2: 16, 1911 (flower); Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19 b/1: 139, 1940 (sub nom. *T. zenkeri*, flower); Adam, Fl. descr. Mts Nimba 2: 830, 1971; Voorhoeve, Liberian high for. trees: 279, 1979; Wilks & Issembé, Arbres Guinée Equat.: 313, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 731-732, 735, 2006; Harris & Wortley, Sangha trees: 187, 2008.

bas.: *Guarea africana* Welw. ex C. DC.

## TURRAEANTHUS AFRICANUS

syn.: *Turraeanthus zenkeri* Harms; *T. vignei* Hutch. & Dalziel; *Bingeria africana* (Welw. ex C. DC.) A. Chev.; *B. leucoxydon* A. Chev., nom. in sched.; *Turraeanthus klainei* Pierre ex De Wild.; *T. malchairi* De Wild.

Evergreen tree 13-21-35 m; crown spreading, irregular, dense, with terminal clusters of long pinnate leaves (50-60 cm long); bole 0,5-1,2-1,5 m Ø, irregular, branched low down; branchlets and petioles densely rusty puberulous when young, glabrescent; bark grey or whitish, shallowly fissured, scaling in small pieces; slash pale yellow, moist, cedar-scented; leaflets 8-20-36, elliptic-oblong, progressively larger towards top of rachis, with ± 20 pairs of secondary nerves, 16-22 × 4 cm, coriaceous, glabrous, petiole 5-17 cm, swollen or slightly winged at base, tip spoon-shaped; flower buds club-shaped; panicles 15-30(-70) cm long; petals creamy tomentose, 2,5 cm long; capsule yellow-orange, fig-shaped, puberulous, glabrescent, 3,5 cm long; seed aril white-yellow.

Rain-forest; often gregarious, especially in moist places; evergreen and deciduous forests; regenerating well; in rather dense populations but very localized; riparian and poorly drained areas; 30-1700 m alt.

Wood light yellow, very lustrous, light, similar to that of *Lovoa*, of importance (especially Ivory Coast); traded as Avodiré. Bark and leaves used for poisoning fish.

May be confused with *Entandrophragma cylindricum*.

**T. longipes** Baillon; incl. var. *komoensis* Pellegr. (syn.: *T. komoensis* A. Chev., nom. in sched.), var. *albiflora* Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 277, 2006. – Icon.: Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19 b/1: 148, 1940 (sub nom. *T. bracteolatus*).

Shrub 2-3 m or tree 10 m tall; near *T. africanus*, but: leaflets often 9, oblong-lanceolate, thin, ± velvety hairy below, (glabrous in var. *albiflorus*), with 10-12 pairs of secondary nerves; flowers yellowish white, fragrant, c. 2 cm long, bracteoles linear and developed (not ± absent), calyx teeth obtuse but visible.

Forest; 30-700 m alt.

The specimen Vigne 948 from Ghana (in Pellegrin 1940) represents *T. africanus*.

**T. mannii** Baill.; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 133, 1997.

Shrub or tree 2,4-3 m tall; branchlets glabrous but roughly lenticellate; bark slash exudes sticky white latex; leaves 25 cm long, imparipinnate of 3(-5) leaflets, these broadly elliptic, 10-25 × 8-14 cm, thin, glabrous, with 3-5 pairs of lateral nerves, petiole 6-16 cm long, petiolules 5 mm long, often twisted; cymes axillary, to 2 cm long; petals c. 1 cm long; fruit unknown.

Evergreen rain-forest.

## SYNONYMS:

*Turraeanthus bracteolatus* Harms = **Turraeanthus longipes**  
*komoensis* A. Chev., nom. = **T. longipes**

## (WULFHORSTIA)

*Wulforstia ekebergioides* Harms = **Entandrophragma spicatum**  
*spicata* C. DC., incl. var. *viridiflora* Schinz = **E. spicatum**



## XYLOCARPUS / 2

syn.: *Monosoma* Griff.; *Carapa* auct., non Aubl. 1775; *Granatum* Rumph. ex O. Kuntze

Three species distributed in coastal regions of the Old World tropics: 2 in Africa, extending into the Far East – Australia; 1 in Asia from India through to Malesia-Australia [*X. mekongensis* Pierre; *Carapa mekongensis* (Pierre) Pellegr.; *Xylocarpus moluccensis* sensu Mabberley].

Closely related to *Carapa* (occurring in the Neotropics and W & C Africa). *Xylocarpus* has a corky seed testa, adaptation to dispersal by water.

A nomenclatural dilemma: *X. moluccensis* (Lam.) M. Roemer – *X. rumphii* (Kostel.) Mabb. “The names ... hinge on an interpretation of Rumphius’s plates in Herbarium Amboinense”, plates 61 and 62 (Mabberley & al., Fl. Males., Ser. 1, 12/1: 378, 1995). “Merrill (1917) interpreted t. 61 in Rumphius’ Herb. Amboin. (1743) as representing *X. granatum*. Mabberley (1982) [*Malayan Forester* 45: 448-455] attributed the whole of t. 61 to *X. moluccensis*” (Arisdason & al., 2008: 46). But in Fl. Males. (l.c.) Mabberley & al. state that “should the two branches depicted there ever be shown to represent both this species [*X. moluccensis*] and *X. granatum*, it would be wise, in the interest of nomenclatural stability, to designate the smaller of them, the one which most closely resembles both Lamarck’s brief description and the plant here, as lectotype” [= of *Carapa moluccensis* “sensu” Mabberley, the Asiatic species]. This is the lower twig in Table 61. – Later Arisdason & al. (l.c.) selected the upper larger twig in Table 61 as the lectotype of *X. granatum*.

However, Styles & F. White (Fl. Trop. E. Afr., Meliaceae: 63, 1991) base their arguments on the interpretation made by Noamesi (A revision of the Xylocarpeae, Ph. D. Thesis, Univ. Wisconsin, USA, unpublished, 1958) of *X. granatum* and *X. moluccensis*. They write: “He [Mabberley] has (in our opinion prematurely) substituted the name *X. rumphii* (Kostel.) Mabb. (*Carapa rumphii* Kostel., 1836) for *X. moluccensis* sensu Robinson (printed ticket on specimen, *Pl. Rumph. Amb.* N°. 491 collected on 19 September 1913)... Mabberley uses the name *X. moluccensis* (Lam.) M. Roemer for the plant that Noamesi and others (e.g. Tomlinson, The botany of mangroves: 281 (1986) call *X. mekongensis*.” – “In Asia and the Pacific, however, the taxonomy remains unresolved and needs critical study.” – cf. also Mabberley’s Plant-Book, ed. 3: 916, 2008.

In our compilation we have found it wise to follow authors of African floras, e.g., Fl. Trop. E. Afr., Meliaceae: 63-65, 1991; Friis, Forest trees N.E. trop. Afr.: 201-202, 1992; Beentje, Kenya trees, shrubs & lianas: 410-411, 1994; Thulin, Fl. Somal. 2: 236-238, 1999; Beentje & Bandeira, Field guide mangrove trees Afr. & Madag.: 72-75, 79, 2007. They use *X. granatum* J. König and *X. moluccensis* (Lam.) M. Roemer for the two African species.

\* \* \*

“The species are most readily distinguished in the field and collectors have so far reported no intermediate specimens... but species “are frequently confused by herbarium workers. Indeed, in the absence of ecological information, ripe fruit, details of the bark, buttresses, pneumatophores... plants may be impossible to determine” (Mabberley & al., Fl. Males., Ser. 1, 12/1: 373, 1995).

ARISDASON, W. & al. (2008). The genus *Xylocarpus* J. König (Meliaceae) in India. *Rheedea* 18: 43-52.

## XYLOCARPUS

***Xylocarpus granatum*** J. König; Friis, Forest trees N.E. Trop. Afr.: 201-202, 321 (map), 1992; Coates Palgrave, Trees south. Afr., ed. 3: 447, 2002. – Icon.: Sim, For. fl. Portug. E. Afr.: pl. 16, 1909 (sub nom. *Carapa moluccensis*); Engler, Pflanzenw. Afr. 3/1 B: 811, 1915 (sub nom. *X. obovatus*); Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19 b/1: 83, 1940; Pennington & Styles, Blumea 22: 514, 1975; Fl. Trop. E. Afr., Meliaceae: 64, 1991; Beentje, Kenya trees, shrubs & lianas: 410, 1994; Tomlinson, The botany of mangroves, ed. 2: 276, 279, 280, 1994; Fl. Males., Ser. 1, 12/1: 380-381, 1995; Thulin, Fl. Somal. 2: 238, 1999; Beentje & Bandeira, Field guide mangrove trees Afr. & Madag.: 72, 74, 2007; Arisdason & al., o.c.: 45.

syn.: *X. benadirensis* Mattei; *X. obovatus* (Blume) A. Juss.; *Carapa obovata* Blume; *C. moluccensis* sensu F.T.A. 1: 337, 1868, p.p., non Lam. (1785).

Tree, or shrub, evergreen, crooked, 3-15(-20) m tall; bole to 0,9-1,8 m Ø; bark smooth, pale green or yellowish brown peeling in irregular flakes (trunk blotchy); with ribbon-like buttresses, laterally compressed, spreading out from the tree base, forming a network of snake-like masses, the upper edges protruding above the mud; leaves paripinnate, alternate, c. 10 cm long; leaflets glabrous, coriaceous, 2-6, oblong-elliptic, c. 12 × 6 cm, apex rounded-emarginate, base cuneate; flowers white or cream in axillary clusters 4-7 cm long, petals c. 6 mm long; capsule pendulous, leathery, ± round, 8-25 cm Ø, tardily dehiscent; seeds germinating in the capsule or soon after their release (on the ground).

Intertidal mud flats of mangrove swamps, especially towards their upper limits; landward side of mangrove; sea-level.

From E. Africa, Aldabra, Madagascar throughout the Indian Ocean (islands), Malesia, Australia, Fiji, Tonga.

Drift seeds.

***X. moluccensis*** (Lam.) M. Roemer, non sensu Mabberley nec Arisdason & al. – Friis, Forest trees N.E. trop. Afr.: 202, 321 (map), 1992; Beentje, Kenya trees, shrubs & lianas: 410-411, 1994. – Icon.: Thulin, Fl. Somal. 2: 238, 1999 (partial); Beentje & Bandeira, Field guide mangrove trees Afr. & Madag.: 79, 2007; sub nom. *X. rumphii*: Fl. Males., Ser. 1, 12/1: 374-375, 1995, and Arisdason & al., Rheedea 18: 50, 2008.

bas.: *Carapa moluccensis* Lam.

syn.: *C. moluccensis* sensu F.T.A. 1: 337, 1868, p.p. (cf. under *C. granatum*); *Xylocarpus rumphii* (Kostel.) Mabb.; *Carapa rumphii* Kostel.

Tree 3-15-18 m, lacking buttresses and surface ribbon-like roots; bole usually solitary, to c. 50 cm Ø, frequently of poor form; bark rough, longitudinally fissured, greyish; leaves to 16 cm long, glabrous, drying yellowish green; leaflets 2-6, subcoriaceous, ovate(-lanceolate), 5-9-12 × 3-6 cm, tapering from the obtuse-subtruncate base to the subacuminate tip; inflorescences 5-15 cm long, a lax raceme of lax cymes; flowers greenish white, petals c. 7 mm long, glabrous; capsule c. 8 cm Ø.

Coastal bushland and thicket on coral; coastal scrub just above high-water mark, especially on sandy soil and coral rocks; mangroves; 1-20 m alt.

Madagascar, Sri Lanka, Andaman and Nicobar Isl., Indonesia, Australia, Fiji, Tonga.

Drift seeds.

(ZURLOA)

*Zurloa insignis* Tenore = ***Carapa procera***

*splendens* Tenore = ***C. procera***

## SAPINDACEAE / 35 g. / 207 (209?) spp.

The family as circumscribed by Buerki & al. (Syst. Bot. 35: 172-180, 2010), i.e. including other families such as *Aceraceae* and *Hippocastanaceae*, comprises ca. 1900 species.

Many genera (and species) poorly known, in particular *Allophylus*, *Aporrhiza*, *Chytranthus*, *Deinbollia*, *Eriocoelum*, *Lychnodiscus*, *Pancovia*, and *Placodiscus*. In need of revision; material lacking. Leaves are unknown in 1 species; no flowers known in 2 (+1?) species, no male flowers in 2 (+1) species, no female flowers in 17 (+5?) species (= >8 %). The fruit is lacking in 28 (+10?) species (= c. 14 %), and in further 4 species the fruit is immature. No ecology is recorded for 11 (+2?) species (= c. 5 %), and 22 species are known only from the type (= > 11 %); and further 12 species are known from only very few collections.

AGARWAL, M. & S. GUPTA (2008). *Wood anatomy of Sapindales*. Bishen Singh Mahendra Pal Singh, Dehra Dun. VIII + 172 pp. [see p. 47-62, 101-112].

ADEYEMI, T. O. & al. (2010). Distribution and conservation of Sapindaceae in western Africa. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 14.

BUERKI, S. (2009). Résumé de thèse: Biogéographie et systématique des Sapindacées. *Ermite Herbu* 39: 18-19.

BUERKI, S. & al. (2010). Phylogeny and circumscription of Sapindaceae revisited: molecular sequence data, morphology and biogeography support recognition of a new family, Xanthoceraceae. *Pl. Ecol. Evol.* 143: 148-159.

FOREST, F. (2009). Sapindaceae. *Kew Scientist* 36: 7.

KLAASSEN, R. K. W. M. (1999). *Wood anatomy of the Sapindaceae*. Doctorate thesis. (IAWA Journal, Suppl. 2) International Association of Wood Anatomists at the National Herbarium of the Netherlands, Leiden. 214 pp.

VOUTQUENNE-NAZABADIOKO, L. (2010). Etude chimiotaxonomique de la famille des Sapindaceae. *Ethnopharmacol.* 45: 53-58.

## ALLOPHYLUS / 53

syn.: *Schmidelia* L. 1767, nom. illegit., non Boehm 1760 (*Boraginaceae*, fide Ind. Kew. Suppl. 15: 123, 1974); *Ornitrophe* Comm. ex Ant. L. Juss.

Very similar to *Rhus* (*Anacardiaceae*). Pantropical genus of c. 150-200 (or 100) species: "There is much disagreement about how many species should be recognised in the genus which is of exceptional difficulty... the forest species are easier to delimit than the dry country and bushland species" (Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 75, 1998). – "In many cases 'difficult' means that the systematic basis is either unsound or insufficiently understood" (Leenhouts in Blumea 15: 302, 1967, analysing main key characters of the genus and Radlkofer's monograph in Engler, Das Pflanzenreich 4, 165: 455-604, 1932). – "... the characters, accepted by him [Radlkofer] as diagnostic, are all extremely vague, and often grading or overlapping. Of course, the species defined by these characters in most cases appeared to be hardly better" (Leenhouts, o.c.: 301). Flowers and fruits are very uniform, and many species are very variable in the vegetative parts. As morphological gaps do not exist in *Allophylus* Leenhouts (o.c.: 313) proposed to accept only one species: *A. cobbe* (L.) Raeusch. All names enumerated by him are thus considered as synonyms. – "...collectors should concentrate on collecting samples which adequately show variation of populations (F. White, Forest flora of Northern Rhodesia: 223, 1962).

There are frequent illegitimate combinations under *Schmidelia* L.

\*\*\*

## ALLOPHYLUS

Among the species figuring below in our list many are incompletely known: In four species (+ 2?) female flowers are lacking (= c. 8 %); male and female flowers are immature in one species, and male flowers are perhaps unknown in one species; for 11+5? species fruits are unknown or known only in immature state (1 sp.), (= c. 22 %), the ecology not reported for 4+1? species (= c. 8 %); 5 species are known only from the type (= c. 10 %), and further 9 species have been collected only 2 or a few times.

***Allophylus abyssinicus*** (Hochst.) Radlk.; Engler, Pflanzenreich 4/165: 534-535, 1932; Coates Palgrave, Trees south. Afr., ed. 3: 641, 2002; Burrows & Willis, Pl. Nyika Plateau: 259, 2005. – Icon.: White & al., Evergreen forest fl. Malawi: 524, 2001.

bas.: *Schmidelia abyssinica* Hochst.

syn.: *S. africana* sensu Bak. in Fl. Trop. Afr. 1: 421, 1868, p.p. quoad syn. *S. abyssinicus* Hochst., non (P. Beauv.) DC.; *Azamaza trifoliata* Hochst. in sched. and Hochst. ex Reichenb. 1841, or Hochst. ex Bak. ("*Azamara*") in Oliv., Fl. Trop. Afr. 1: 421, 1868; according to Richard 1847-1848: 102, synonym of *Schmidelia africana* = *Allophylus africanus* (fide Friis in Fragm. Flor. Geobot., Suppl. 2/1: 194, 1993). – See also Radlkofer o.c.: 534, regarding the use of *Allophylus africanus* and *Schmidelia africana*.

Tree 6-25 m, or shrub c. 1,2 m tall, monoecious; trunk 0,5-1 m Ø, sometimes fluted; wood hard, white, brittle; bark smooth, grey(-green); side shoots sometimes arising from the trunk; young branchlets irregularly angular, swollen at nodes, finely rusty velvety; leaves 3-foliolate, thin, petiole with soft rusty hairs; leaflets with hair-tuft domatia in nerve axils beneath; flowers very small, white, unisexual, in tight clusters, on paniculate, richly branched minutely tomentellous inflorescences 5-22 cm long; fruit a drupe, round, c. 6 cm Ø. – Plant drying black.

*Juniperus*, *Podocarpus*, *Aningeria-Olea* and *Albizia-Croton* forest, forest edges; mixed *Podocarpus latifolius* forest; riverine forest; often persisting after forest clearing; montane evergreen rain-forest; dry or moist forest (remnants); evergreen thicket; woodland; (650-)1000-4000 m alt.

One of the more distinctive species in the genus.

In the absence of flowers difficult to distinguish from robust specimens of *A. africanus*.

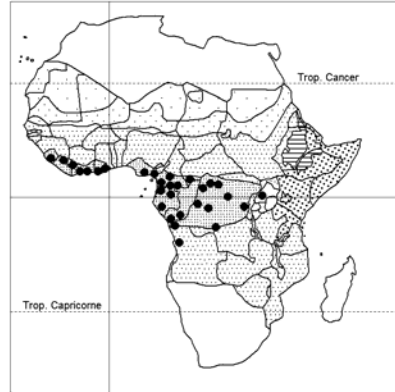
According to Leenhouts hardly different from *A. bullatus*, and not separable from *A. nigrescens* (Madagascar).

***A. africanus*** P. Beauv.; Coates Palgrave, Trees south. Afr., ed. 3: 642, 2002; Figueiredo & Smith, Pl. Angola: 156, 2008; Steentoft, Flowering plants in West Africa: 181, 2008. – Icon.: Palisot de Beauvois, Fl. Oware & Bénin 2: pl. 107, 1819; Radlkofer in Engler, Pflanzenreich 4/165: 537, 1932; Aubréville, Fl. forest. Soud.-Guin.: 389, 1950, and Fl. forest. Côte d'Iv., ed. 2, 2: 237, 1959; Adam, Fl. descr. Mts Nimba 2: 832, 1971; Fl. Gabon 23: 51, 53, 1973; Fl. Camer. 16: 51, 53, 1973; Palmer & Pitman, Trees south. Afr. 2: 1139, 1972 (sub nom. *A. melanocarpus*); E. Schmidt & al., Trees & shrubs Mpumalanga...: 366-367, 2002; Burrows & Willis, Pl. Nyika Plateau: 261, 2005; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 763, 2006 (partial); Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 396, 2009.

syn.: See below under vars., and in Radlkofer, o.c.: 536. – Cf. also above under *A. abyssinicus*.



*Turraea zambesica*



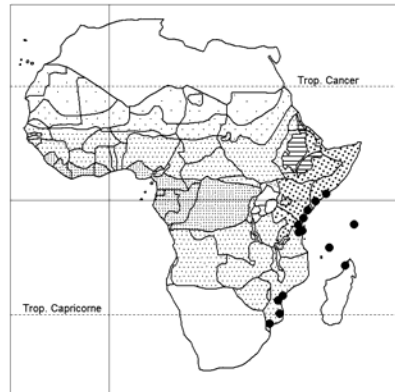
*Turraeanthus africanus*



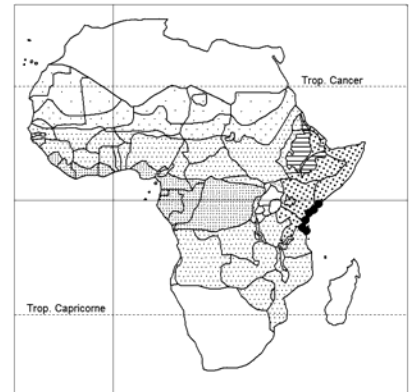
*Turraeanthus longipes*



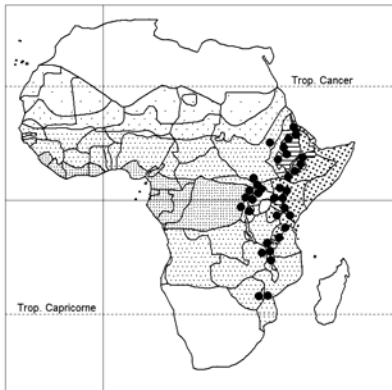
*Turraeanthus mannii*



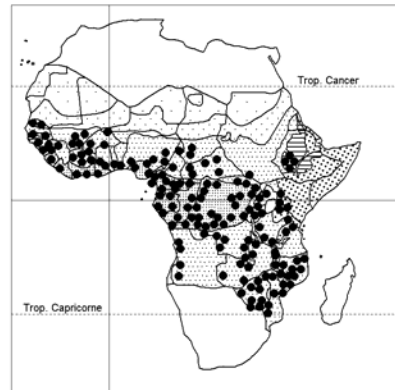
*Xylocarpus granatum*



*Xylocarpus moluccensis*



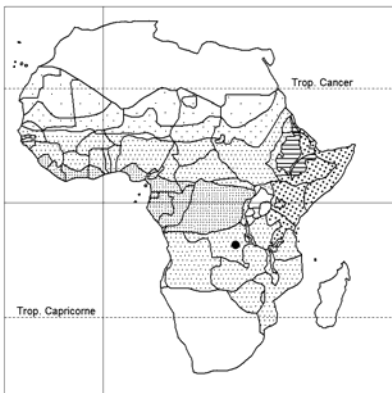
*Allophylus abyssinicus*



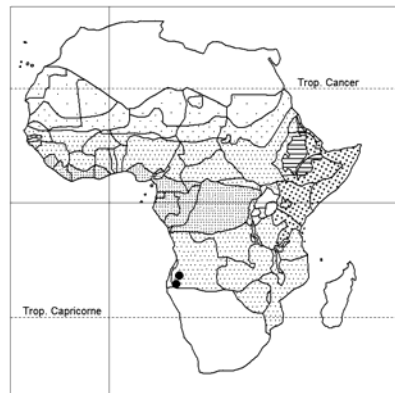
*Allophylus africanus*



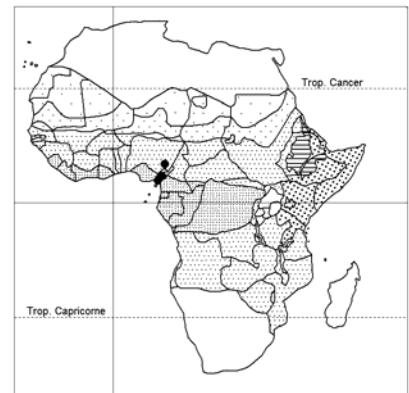
*Allophylus alte-scandens*



*Allophylus amplissimus*



*Allophylus antunesii*



*Allophylus bullatus*



## ALLOPHYLUS AFRICANUS

Shrub 1-2 m tall (sometimes climbing), or tree 2-10 m, branching low; crown heavy, spreading; stems sometimes very pale, like bleached; bark smooth or rough, grey to (reddish) brown; branchlets pale grey to white, glabrous to pubescent; leaves 3-foliolate, terminal leaflet largest; leaflets very discolorous, thin to leathery, glabrous and dark and shiny above (var. **africanus**), or (velvety) hairy (var. **griseotomentosus**), sometimes with hair-tuft domatia in the vein axils beneath; flowers creamy yellow or greenish, sweet-scented, small, often galled, in slender axillary spike-like racemes to 26 cm long, usually branched, occasionally unbranched; drupes round, c. 6 mm Ø, orange(-red to black) on long hanging spikes, edible.

*Manilkara-Baikiaea* forest; fringing and riverine forests (sometimes rooted in water); forest margins; light gaps or clearings in forest; dry riverine forest; wooded and semi-open grassland; *Combretum-Terminalia* woodland on rocky granitic slopes; (riverine) thickets, scrub; understory in forest regrowth; sometimes on termite mounds; protected places in savanna areas free from fire; river banks and forest edges in high rainfall savanna; 1-2400 m alt.

A widespread and abundant, very variable species (e. g., leaf texture and hairiness). Specimens with unbranched inflorescences merge with various forms of *A. rubifolius*. – Requiring experimental studies.

Bioko/Fernando Poo; N Namibia, Caprivi Strip, N Botswana, Swaziland, S. Africa.

Two varieties and many forms have been described:

- var. **africanus**, incl. fa. *senegalensis* (A. Rich.) Radlk. subfa. *subcoriaceus* (Bak. f.) Radlk.

syn.: *Schmidelia africana* (P. Beauv.) DC., p.p. (cf. above under *A. abyssinicus*) and sensu Baker in Fl. Trop. Afr. 1: 421, 1868 p.p.; *Allophylus schweinfurthii* Gilg (in some recent floras and checklists treated as a distinct species); *A. goetzeanus* Gilg; *A. subcoriaceus* Bak. f.; *A. africanus* P. Beauv. fa. *mawambensis* (Gilg) Hauman; *A. mawambensis* Gilg; *Ornitrophe tristachyos* Schumach. & Thonn.; *Schmidelia senegalensis* A. Rich.; *Allophylus africanus* P. Beauv. Group A sensu Exell in Fl. Zambes. 2: 507, 1966; ?*A. elongatus* Radlk.; *A. transvaalensis* Burt Davy; *A. melanocarpus* (Sond.) Radlk.; *A. rhodesicus* Exell; *Schmidelia melanocarpa* Sond.; *S. leucocarpa* Sond. (*Rhus melanocarpa* and *R. leucocarpa* E. Mey. in Pl. Drège); *Schmidelia rehmanniana* Szysyl.; *S. affinis* Guill. & Perr., incl. var. *ciliata* A. Chev. and var. *glabra* A. Chev. (Explor. bot. 1: 149, 1920, nomina); *S. touraca* A. Chev., nom.; *Allophylus touracus* Pellegr., nom.; *A. timboensis* Hua

- var. **griseotomentosus** (Gilg) Verdc.

bas.: *A. griseotomentosus* Gilg

syn.: *A. griseotomentosus* Gilg fa. *genuinus* Radlk., nom. illegit.; *A. africanus* P. Beauv. Group B sensu Exell in Fl. Zambes. 2: 507, 1966, p.p. (with branched inflorescences; if unbranched merging with forms of *A. rubifolius*); *A. usambaricus* Gilg in sched.

- *A. griseotomentosus* Gilg fa. *glabrius* Radlk. is perhaps intermediate between the 2 vars.

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We are inclined to treat *Allophylus cataractarum* Bak. f., *A. holubii* Bak. f. and *A. spragueanus* Burt Davy as synonyms under *A. rubifolius*.

## ALLOPHYLUS AFRICANUS

Radlkofer (o. c.: 538) distinguished 5 forms: – fa. **genuinus** Radlk. (syn.: *Ornitrophe tristachyos* Schumach. & Thonn.); – fa. **subvelutinus** Radlk. (syn.: *Schmidelia affinis* Guill. & Perr.); – fa. **chrysothrix** Radlk., with subfa. *pseudopaniculatus* (Bak. f.) Radlk. [bas.: *A. pseudo-paniculatus* Bak. f.; however, in contradiction with himself Radlkofer enumerates « *A. pseudo-paniculatus* E. G. Baker » as a separate species from E Africa (o. c.: 547), maintained also by Davies & Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 83, 1998) [syn.: *Schmidelia touraca* A. Chev., nomen; *Allophylus touracus* Pellegr., nomen]; – fa. **timboensis** (Hua) Radlk. (bas.: *A. timboensis* Hua); – fa. **senegalensis** (A. Rich.) Radlk. [bas.: *Schmidelia senegalensis* A. Rich.; syn.: *S. senegalensis* subfa. *subcoriaceus* (Bak. f.) Radlk. (bas.: *Allophylus subcoriaceus* Bak. f.)].

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Hawthorne & Jongkind (Woody plants of western African forests: 762, 2006) distinguish 2 forms in their area, viz. fa. **africanus** (small tree of secondary forest, with leaflets sparsely hairy beneath), and fa. **chrysothrix** Radlk. (shrub of rocky riversides in savanna, with leaflets long brown-hairy beneath).

Note: Fa. **chrysothrix** Radkl. is considered by Lisowski [Flore (angiospermes) de la République de Guinée] as a distinct species, ultimately validated by E. Robbrecht as **A. chrysothrix** (Radkl.) Lisowski comb. et stat. nov. in syst. Geogr. Pl. 78: 232, 2008.

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Sosef & al. (Check-list des plantes vasculaires du Gabon: 379, 2006) recognize 4 entities in Gabon, without giving any hierarchy, viz. fa. **acuminatus** Robyns! ex Hauman (of humid places, with densely pubescent branchlets), var. **africanus**, var. **griseotomentosus** (Gilg) Verdc., and fa. **mawambensis** (Gilg) Hauman (of forest margins and clearings, with reddish leaf petiole and lamina). They maintain *A. schweinfurthii* Gilg as a distinct species.

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Harris (The vascular plants of the Dzanga-Sangha Reserve, Central African Republic: 189, 2002) suggests that fa. **mawambensis** (Gilg) Hauman be kept as a separate unit based on its morphological characters and special ecology (forest clearings, not a « savanna species »). But « the delimitation... is notoriously difficult and little can be done until the genus is carefully monographed. »

*A. africanus* (like some other *Allophylus* species) may be confused with *Rhus* spp., but lacks the latter's resinous latex.

**A. alte-scandens** Hauman

Large liane reaching the top of the high canopy, ± glabrous, dioecious; bark of young branchlets rough; leaves 3-foliolate, leaflets ± equal; flowers white, 2-3 in cymes on unbranched lax inflorescences 10-22 cm long; female flowers and fruits unknown.

Moist and montane forests; 880-1970 m alt.

Known from only 2 collections made in 1932.

Resembling *A. chaunostachys* in habit, but perhaps nearer to *A. ferrugineus* (or a form of it).



## ALLOPHYLUS

**A. amplissimus** Hauman

Tree c. 20 m, monoecious (fide Fl. Congo belge 9: 298, 1960, but dioecious according to the description, 1958); branchlets glabrous, lenticellate; leaves 3-foliolate; leaflets (and inflorescences) densely short-hairy, elliptic, 8-12 × 2,5-4 cm, the laterals scarcely smaller than the terminal one, papery, blackish above, paler and glossier beneath, without domatia; inflorescences richly branched panicles 25 cm long and wide; mericarps 1-3, each c. 3 mm long, with sparse hairs.

Gallery forest at foot of mountain (Mont Kia, Upemba Natl. Park); 1050 m alt.

Known only from the type collected in 1949.

Resembling a robust *A. africanus*.

**A. antunesii** Gilg; Figueiredo & Smith, Pl. Angola: 156, 2008.

Tree to 4 m, or shrub; leaves 3-foliolate, 8-12 cm long, petiole densely yellow-tomentose; leaflets subcoriaceous, ± equal, glabrescent, on nerves and veins densely ferruginous pilose; inflorescence usually branched, densely yellowish-hairy, 9-11 cm long; fruits unknown.

Xerophilous forest; 800-1300 m alt.

According to Gilg related to *A. rubifolius* var. *alnifolius*.

**A. bullatus** Radlk.; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 104, 143, 2010; Harvey & al., Pl. Lebiale Highl., Cameroon: 84, 143, 2010. – Icon.: Fl. Cameroun 16: 41, 1973.

syn.: *Schmidelia abyssinica* sensu Hook. f. in J. Proceed. Linn. Soc., Bot. 7: 189, 1864, non Hochst.; *Allophylus africanus* sensu Engler, Hochgebirgsfl. d. trop. Afr.: 292, 1892, quoad specim. Mann 1184, non P. Beauv.

Tree 10-18 m; young branchlets yellowish-grey pubescent, glabrescent, 5-6 mm Ø; leaves 3-foliolate, distinctive; leaflets bullate, sparsely puberulous beneath but with conspicuous tufts of hairs on midrib and in the vein axils, drying blackish green above, brown below; flowers whitish in branched erect panicles 10-21 cm long; fruit pear-shaped, green drying black, 9 × 5 mm.

Forest; forest with *Albizia gummifera*; 500-2500 m alt.

Príncipe, São Tomé.

First described in 1864 (Mann 1184) on collections by Mann (Dec. 1859-1863). Refound in 1908 by Mildbraed in the same area. Collected several times since then.

**A. camptoneurus** Radlk.; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 762, 2006. – Icon.; Fl. Cameroun 16: 51, 1973.

Shrub with reddish-brown rounded branchlets, c. 3 mm Ø, puberulous when young; leaves 3-foliolate, 15-24 cm long; leaflets shiny on both surfaces, reddish above, brown below and with small domatia, ± glabrous, ± equal, entire; inflorescences branched, with short dense inconspicuous hairs, 18 cm long; fruits round, c. 8 mm Ø.

Primary forest.

Known from the type collected in 1904 (Zenker 3161, Cameroun: Bipinde), and from Ivory Coast (Chevalier 1524) but not cited in Fl. W. Trop. Afr., ed. 2, 1/2: 713-714, 1958, or by Aké Assi (Fl. Côte-d'Iv. 2: 117, 2002).

Resembling *A. talbotii*, *A. sapinii*.

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**A. chaunostachys** Gilg; Coates Palgrave, Trees south Afr., ed. 3: 642, 2002. – Icon.: Fl. Zambes. 2(2): 499, 1966 (partial; sub nom. *A. richardsiae*, *A. chaunostachys*); E. Schmidt & al., Trees & shrubs Mpumalanga...: 369, 2002; Fischer & Killmann, III. Field guide pl. Nyungwe Natl. Park Rwanda: 307, 2008; Bloesch & al., Plantes ligneuses Rwanda: 561, 2009.

syn.: *A. buchananii* Gilg ex Radlk., excl. var. *ugandensis* Bak. f. (= ? *A. ferrugineus* var. *ferrugineus*); *A.* sp. sensu F. White, Forest fl. N. Rhodesia: 223, 1962; *A. richardsiae* Exell (type specimen Buchanan 427, destroyed B, p. p.; the second plant on the sheet is a syntype of *A. africanus* var. *griseotomentosus*; cf. Fl. Zambes. 2/2: 503, 1966; – treated as a distinct species in Fl. Trop. E. Afr., Sapindaceae: 92, 1998); *A. didymadenius* Radlk.; *A. tenuifolius* Radlk.; *A. gazensis* Bak. f.; *A. yeru* Gilg; *A. uwembae* Gilli

Tree (less often), shrub or straggling or scrambling, evergreen, (0,6-)1,5-6(-7) m tall or long; stems weak, arching; bark pale grey to brown; branchlets ± green with conspicuous white lenticels, fulvous-tomentose when young and soon glabrescent, later glabrous or ferruginous velvety; leaves 3-foliolate, petiole glabrous to densely pubescent; leaflets very discolorous, at first thin, becoming leathery and shiny dark green above, drying brown (greyish), ± glabrous except for domatia in vein axils beneath, the laterals smaller than the terminal one; petiole fluted above the petiolules, prominently dark and bent; flowers often large for the genus (c. 3 mm Ø), white-greenish yellow, in slender usually unbranched lax catkin-like racemes 5-22 cm long; drupes round, 6 mm Ø, yellow to red, in drooping sprays.

Evergreen forest in understory; dense forest and relict forest patches; *Podocarpus* montane forest; *Uapaca*, *Syzygium*, *Parnari* seepage mushitu; riverine and swamp forest; ravine forest; forest edges; montane rain-forest; mist forest; also *Brachystegia* woodland, wooded savanna; often overlooked in forest; (20-) 400-2500 m alt.

Swaziland, NE S. Africa.

Further work needed on the circumscription of the species. *A. didymadenius* from Zambia may be specifically distinct. – Perhaps part of *A. ferrugineus* (s. lat.; fide White & al., Evergreen forest fl. Malawi: 523, 2001).

**A. chirindensis** Bak. f.; Coates Palgrave, Trees south. Afr., ed. 3: 643, 2002.

syn.: *A. bussei* Gilg ex Engl., nom. nud.; *A. zimmermannianus* Gilg, nom. nud.; *A. zimmermannianus* F. G. Davies ined. in Beentje, Kenya trees, shrubs & lianas: 413, 1994, nom. invalid.

Much-branched shrub or tree 3-15 m tall; bark silvery grey; branchlets greyish white, glabrous, with prominent lenticels; leaves 3-foliolate, large; leaflets thin, glabrous or finely hairy on nerves beneath with occasional domatia in vein axils; flowers yellowish to greenish white, in slender, branched racemes 9-30 cm long; fruit ± round, c. 7 mm Ø, bright red.

Evergreen forest; 375-1030 m alt.

Vulnerable, endangered in Kenya (Shimba Hills, K7, fide Beentje, l. c.).

**A. chrysothrix** (Radkl.) Lisowski – See above under **A. africanus**.

## ALLOPHYLUS

**A. congolanus** Gilg, incl. var. *monophyllus* Bak. f. [non *A. monophyllus* Radlk. nec *Schmidelia monophylla* C. Presl, nom. nud. = *Allophylus dregeanus* (E. Mey. ex Sond.) De Winter, S. Africa].  
syn.: *A. appendiculato-serratus* Gilg; ? *A. holstii* Gilg, nom. subnud. [error for *A. holtzii* in sched., B, ?, cf. Fl. Trop. E. Afr., Sapindaceae: 97, 1998].

Shrub 1,5-6 m tall, monoecious, erect, scrambling or scandent; bark grey-brown or purplish black, smooth, with conspicuous lenticels; branchlets and leaves ferruginous-velvety-tomentose, glabrescent; leaves 1- or 3-foliolate, laterals when present much reduced; flowers yellow-green in slender usually unbranched racemes 6-20 cm long; fruits green, later orange to red, ± round, 7 mm Ø.

Grassland with scattered trees or shrubs; lakeside woodland; dry bushland in limestone gorges; forest gallery; open forest; forest edges and regrowth; evergreen forest and thickets; 500-1800 m alt.

Not in Kenya.

**A. conraui** Gilg ex Radlk.; Cheek & Etuge, Kew Bull. 64: 495-499, fig. 1, p. 498, 2009; Fl. W. Trop. Afr., ed. 2, 1/2: 714, 1958, p.p. quoad specim. Olorunfemi, FHI 30611; *non sensu* Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 189, 2002; nec sensu Sosef & al., Check-list pl. vascul. Gabon: 379, 2006. – Type: Conrau 219 (B, probably destroyed); neotype: Tchiengue 2787 (K; iso-, WAG, YA).

syn.: *A. sp.1 sensu* Cheek & Etuge, Pl. Kupe...: 398, fig 13D, 2004.

Shrub 0,8-1,5 m tall, not spiny; stem leaves and inflorescence with whitish hairs 3 mm long; leaves membranous, 3-foliolate; leaflets subequal, oblanceolate, ± sessile, toothed, c. 9-13 × 3,5-5 cm; flowers white in simple 2-4 cm long panicles shorter than petiole; flowers c. 1 mm long, stamens as long as petals; fruit red, obovoid, c. 8 mm long.

Evergreen forest; 200-1100 m alt. (cf. below under *A. ujori*.)

Probably related to *A. hirtellus* (but leaves different). They may even be conspecific.

**A. decipiens** (Sond.) Radlk.; Coates Palgrave, Trees south. Afr., ed. 3: 643, 2002. – Icon.: Fl. Zambes. 2(2): 499, 1966 (partial); Palmer & Pitman, Trees south. Afr. 2: 1343, 1972; E. Schmidt & al., Trees & shrubs Mpumalanga...: 369, 2002. – Nomenclature complicated.

bas.: *Schmidelia decipiens* Sond. in Harv. & Sond. 1860 (nom. illegit., see Leenhouts l.c.).

syn.: *Rhus decipiens* E. Mey. ex Drège, 1839, nom. nud. et nom. illegit., non Wight & Arn. 1834 [= *Filicium decipiens* (Wight & Arn.) Thwaites (Fl. Males., Ser. 1, 11/3: 754-755, 1994)]; *Schmidelia decipiens* Arn., J. Bot. Hooker 3: 152-153, 1841, nom.; *Schmidelia decipiens* “(E. Mey. ex Drège) C. Presl”, Bot. Bemerk.: 41, 1846 (= Abhandl. K. Böhm. Ges. Wiss., Ser. 5, 3: 471, 1845), nom. nud. [for nomenclature, see de Winter in Bothalia 6: 407, 1954, and Leenhouts in Blumea 15/2: 325, 1967]; *Rhus spicata* Thunb., 1818; *Allophylus spicatus* (Thunb.) Fourcade, 1934, nom. illegit., non *A. spicatus* (Poir.) Radlk., 1895 (a species in W. Africa). – “*Schmidelia undulata* C. Presl” sensu Radlkofer (in Pflanzenreich), o.c.: 523, is a misapplied name (*A. decipiens* was misidentified by E. Meyer as *Rhus undulata* Jacq.).

Shrub many-stemmed or graceful tree 3-4(-10) m tall; bark silver-grey or -white; branchlets hairy when young, glabrescent; leaves 3-foliolate, darkish green above, paler below, satin-

## ALLOPHYLUS DECIPIENS

textured; leaflets ± glabrous except for domatia in vein axils beneath, the laterals shorter than the ± lobed terminal one; flowers white, sweet-scented in unbranched catkin-like racemes 2-6 cm long; drupes round, red, 6 mm Ø.

Riverine fringe forest and thicket; wooded ravines; bushveld on alluvial and sandy soils; coastal forest; 5-300 m alt. (S. Africa). E S. Africa, Swaziland.

**A. delicatulus** Verdc.

Shrub 2-4 m tall, ± glabrous; bark pale or brownish grey; leaves 3-foliolate, drying pale bright green; leaflets 4-11 × 1,3 cm, sometimes very small; inflorescences very graceful, branched (side branches few, short), to 16 cm long; fruit unknown, (female flowers?).

Mist forest; 1000-1100 m alt.

Known only from the type collected in 1932 (T6: Ulanga Distr., Mahenge): Schlieben 1978 («on the same day in the same place Schlieben collected (N° 1980) *A. ferrugineus* Taub.» (Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 84, 1998).

Resembling *A. ferrugineus* but inflorescences more slender with fewer flowers.

(**A. dregeanus** (Sond.) de Winter); Coates Palgrave, Trees south. Afr., ed. 3: 643, 2002.

bas.: *Schmidelia dregeana* Sond.

syn.: *Allophylus monophyllus* (E. Mey.) Radlk. in Fl. Zambes. 2/2: 508, 1966 (further synonyms in Bothalia 6: 407, 1954), non Hook. Ic. Pl. 1848 (= *A. hirtellus*).

Tree or shrub to 7 m tall with *simple leaves* occurring in evergreen forest from the coast to the mist-belt in E S. Africa, was cited by Sim as *Schmidelia monophylla* C. Presl (nom. nud.) in his Forest fl. Port. E. Afr.: 31, 1909: “scarce but present throughout”.

This record is doubtful.

**A. dummeri** Bak. f.; Friis & Vollesen, Fl. Sudan-Uganda border 2: 624-625, 2005.

syn.: *A. ussheri* Bak. f.; *A. schweinfurthii* sensu Hauman in Fl. Congo belge 9: 307, 1960, p.p., non Gilg (= *A. africanus* var. *africanus*); ? *A. buchananii* Gilg ex Radlk. var. *ugandensis* Bak. f. (Dummer 542, 1388; or = *A. ferrugineus* var. *ferrugineus*).

(Shrub or) spreading tree 2,5-10 m tall; bark thin, light brown; branchlets ± glabrous; leaves 3-foliolate; leaflets ± thick, large (7,5-25 × 4-11 cm), glabrous or with indistinct hairy domatia beneath, drying bright green; flowers cream or greenish in robust branched inflorescences 5-24 cm long, rhachis ferruginous pubescent; drupes (orange-)red(-brown), scented.

Moist forest; widespread in lower altitude forests, occasional in undestorey of closed forest and in logged treated forest; forest clearings; valley forest; 1050-1300 m alt.

Also in Angola, but not the same as *A. gossweileri* (fide Verdcourt, Fl. Trop. E. Afr. Sapindaceae: 80, 1998).

**A. ferrugineus** Taub. s. lat. (species concept as proposed in Fl. Trop. E. Afr., Sapindaceae: 85-87, 1998, mainly known in W Africa as *A. welwitschii*, and in E Africa as *A. macrobotrys*; cf. Friis & Vollesen, Fl. Sudan-Uganda border 2: 625, 2005). – Icon.: Fl. Cameroun 16: 37, 1973, and Fl. Gabon 23: 37, 1973 (sub. nom. *A. welwitschii*); Troupin, Fl. Rwanda 2: 299, 1983 (sub. nom. *A. macrobotrys*); Fl. Ethiop. 3: 501, 1990 (idem).

## ALLOPHYLUS FERRUGINEUS

syn.: *A. macrobotrys* Gilg; *A. oreophilus* Gilg; *A. macrurus* Gilg; *A. schirensis* Gilg ('*shirensis*'); *A. volkensii* Gilg; *A. welwitschii* Gilg; *A. latefoliolatus* Bak. f.; *A. cuneatus* Bak. f.; *A. toroensis* Bak. f.; *A. leptocaulos* Radlk.; *A. ? brachycalyx* Bak. f.; *A. ? agbala* Hauman (tentatively placed here; only female flowers known, no male flowers, no fruit, only known from the type: De Graer 444, cited as De Graer 449 in Fl. Congo belge 9: 306, 1960; collected in 1936, Ubangi Uele); *A. andongensis* Bak. f.; *A. cazengoensis* Bak. f.; *A. africanus* sensu Hiern in Cat. Welwitsch 1: 167-168, p.p., quoad specim. Welwitsch 4508, 4509, 4510, 4511, 4512, 6682, non P. Beauv.; ? *A. buchananii* Gilg ex Radlk. var. *ugandensis* Bak. f. (J. Bot. 57: 182-183, 1919); Uganda: Dummer 542, 1388 (or = *A. dummeri* ?). – All of var **ferrugineus**.

Tree or shrub, sometimes a climber or a creeper, 1-10 m tall or long, monoecious; bark grey, brown or reddish, smooth; branches weak, arching; branchlets (young), leaves and inflorescences ferruginous puberulous to pubescent; leaves 3-foliolate, drying bright green; leaflets elliptic, large (8-25 × 4-12 cm), ± equal, the laterals very asymmetric, sometimes ± glabrous, with or without domatia in vein axils beneath; flowers green, white or yellow in small cymules in usually unbranched, slender, drooping inflorescences 7-35 cm long; fruits fleshy, orange to scarlet, ± 7 mm Ø, glabrescent.

Forest and bushland, often by streamsides; patches of evergreen bushland; hillside thicket; sometimes on termite mounds in woodland; plantations; forested ravines; forest edges; gallery forest; near rivers and khors in high rainfall savanna; secondary forests; lowland rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophloeum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa* at small brook, in deep shade; lowland forest with *Khaya*, *Cola*; 300-2500(-2700 ?) m alt.

Very variable in shape and hairiness of leaflets.

Comprises 2 vars.: – var. **ferrugineus**; – var. **stipitatus** Verdc., with ± glabrous leaflets, in Tanzania (T2, 4, 6, 7), at 1000-2100 m alt.

Un unnamed taxon, *A. sp.* sensu Fl. Trop. E. Afr., Sapindaceae: 87, 1998, from Ruwenzori (2700 m alt.) probably belongs to *A. ferrugineus*.

**A. fulvotomentosus** Gilg

syn.: *A. kassneri* Bak. f.; ? *A. rutete* Gilg (type Mildbraed 318, B, lost).

Tree or shrub 1,8-7 m tall; bark rough, black or grey-brown; stems, leaves, inflorescences densely ferruginous velvety, ± glabrescent; leaves 3-foliolate, drying darker grey-brown above, pale brown beneath; leaflet venation very prominent, especially beneath; flowers yellow-green in very densely placed cymules on branched racemes; fruits pale orange, ± round, 6 mm Ø.

Grassland with scattered trees; *Brachystegia* and *Combretum-Terminalia* woodland, thicket; cultivated steppe; 800-1800 m alt. Intermediates *A. africanus*-*A. fulvotomentosus* have lax inflorescences and ± glabrous leaflets.

**A. gossweileri** Bak. f.; Figueiredo & Smith, Pl. Angola: 156, 2008.

syn.: *A. zenkeri* sensu Exell, J. Bot. 66, Suppl., Polypet.: 84, 1928 (Gossweiler 7710), non Gilg ex Radlk.

Shrub branched from the base, c. 2,5 m tall; branchlets glabrous; leaves 3-foliolate, glabrous, shining; flowers white in densely flowered branched racemes, rhachis pubescent; fruits reddish brown, round, c. 6 mm Ø.

## ALLOPHYLUS GOSSWEILERI

Swampy situations among bog ferns; riverine and moist forests; ?-750-1000 m alt.

Not synonymous with *A. dummeri* (fide Verdcourt, Fl. Trop. E. Afr., Sapindaceae: 80, 1998).

**A. grandifolius** (Bak.) Radlk.; Aubréville, Fl. forest. Soudano-Guin.: 390, 1950. – Icon.: Fl. Cameroun 16: 39, 1973.

bas.: *Schmidelia grandifolia* Bak.

syn.: *Allophylus megaphyllum* Hutch. & Dalziel p.p. quoad specim. Talbot 414.

Tree or shrub 3-4(-12) m tall; branchlets strong, woody, sparingly puberulous or glabrous, smooth, ash-coloured; leaves 3-foliolate, shiny reddish above, mat and sparingly puberulous beneath; central leaflet very long (18-38 cm), the laterals (strongly) asymmetric; flowers yellow in much-branched racemes.

Forest, farmbrush; primary forest; forest gallery; low altitudes. Principe, S. Tomé.

According to Fouilloy & Hallé (Fl. Camer. 16: 38, 1973) a similar plant was collected in 1954 by Cowan (n° 38784) on an expedition to French Guiana; only the hairy branches and some inflorescence details are different (a tree 7 m tall with white flowers; Mt Kaw, 220-275 m alt.; = ? *A. robustus* Radlk.).

**A. grotei** (Gilg ex) F. G. Davies & Verdc.

syn.: *A. sp.* sensu Brenan, Check-lists forest trees & shrubs Brit. Emp. 5(2), Tang. Terr.: 552, 1949.

Tree, much branched, to 9 m; branchlets pale grey-brown, ± pubescent, glabrescent; leaves simple, thin, drying brown, 6,5-12,5 × 2,5-6 cm, without hairy domatia beneath; flowers greenish white in unbranched inflorescences 4-7 cm long; fruit ellipsoid, c. 1 cm long.

Evergreen rain-forest with *Ocotea*, *Cephalosphaera*; not very common; 1050 m alt.

Only in the E. Usambaras, Tanzania (T3). Not seen since 1932 (fide Fl. Trop. E. Afr., Sapindaceae: 94, 1998). Known from the type collected in 1932, and a specimen (Grote) seen by E. G. Baker at B.

Resembling *A. melliodorus*, but without leaf domatia.

**A. hallaei** Fouilloy; Sosef & al., Check-list pl. vascul. Gabon: 379, 2006. – Icon.: Fl. Cameroun 16: 33, 1973.

Shrub, erect or scandent, 2-3 m tall, or tree?; branchlets slender, subtomentellous; leaves 3-foliolate, tomentellous; flowers whitish in unbranched or little-branched inflorescences, shortly puberulous, 4-7 cm long; fruit pear-shaped, yellow, c. 1 cm long.

Forest?; riverside; 20-900 m alt

**A. hamatus** Vermoesen ex Hauman; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 189, 2002. – Icon.: Fl. Cameroun 16: 41, 1973.

Liane, monoecious, heliophilous, to 5 m tall, or tree 3(-6) m; stems 5 cm Ø; young branches glabrous, 6-8 mm Ø, with spines 0,5-2 cm long; leaves 3-foliolate, 10-15 cm long; leaflets glabrous, shiny, domatia absent; flowers white to yellowish green in much-branched panicles 10-20 cm long; fruits pear-shaped, c. 1 cm long, orange-red.

Swamp and riverine forests, swamps, swamp edges, riversides; usually by water.

Herbarium specimens sometimes seem to be labelled *A. africanus* (fide Harris, l. c.).



## ALLOPHYLUS

**A. hirtellus** (Hook. f.) Radlk., incl. var. *barteri* Bak. f.; Sosef & al., Check-list pl. vascul. Gabon: 379, 2006. – Icon.: Hook. Ic. Pl. 8: pl. 775, 1848 (sub nom. *Schmidelia monophylla*) Hooker, Niger Fl.: pl. 25, 1849; Fl. Cameroun 16: 39, 1973.

bas.: *Schmidelia hirtella* Hook. f.

syn.: *S. monophylla* Hook. f. 1848, non C. Presl 1845, nom. nud., nec *Allophylus monophyllus* (E. Mey.) Radlk. (= *A. dregeanus*).

Tree or shrub 1-6 m tall; branchlets slender, ash-grey, (and leaf petioles) shortly pubescent; leaves simple, 9-22 × 4-10 cm, glabrous except for midrib, with hairy domatia beneath; flowers white, in simple racemes, axis downy; fruits black.

Forest; 1-600 m alt.

Bioko/Fernando Poo.

Very few recent collections known; the ancient specimens were collected at the end of the 19th century.

Similar to *A. nigericus* (shrub with densely hairy leaves). – Perhaps conspecific with *A. conraui* (cf. above under this species).

(**A. holstii** Gilg – See above under **A. congolanus**).

#### **A. hylophilus** Gilg

Small shrub; leaves simple, oblong-lanceolate, 8-18 × 2, 5-6 cm; flower calyx rusty tomentose; inflorescence unbranched, only 3-4,5 cm long; fruit unknown.

Moist forest.

Known only from the type collected in October 1874, in bloom; Buchholz, B, no coll. nr. given by Gilg: Cameroon, Mungo.

According to Gilg near "*A. monophyllus*" (= *A. dregeanus* from S. Africa) and *A. pervillei* Blume, but this seems improbable. Not cited in Fl. Cameroun 16, 1973, nor by Radlkofer (in Engler Pflanzenreich 4/165, Sapindaceae, 1932). However, the latter mentions a collection Buchholz 141, B, from the same place and the same month and year, but with fruits, under *A. africanus* var. *africanus*. In Fl. Cameroun (16:23, 1973), the plant would key out between *A. megaphyllus* and *A. hirtellus*.

**A. imenoensis** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 379, 2006. – Icon.: Fl. Cameroun 16: 45, 1973.

Shrub; young branchlets smooth, at first finely pubescent, glabrescent; leaves 3-foliolate; leaflets concolorous, glabrous; inflorescences lax, little-branched, about as long as petioles; female flower and fruit unknown?

Forest; c. 200 m alt.

Near *A. talbotii*; very similar to *A. longicuneatus*.

Known from only 3 collections.

#### **A. katangensis** Hauman

Shrub on tree 4-6 m tall; dioecious?; branchlets grey, finely striate, glabrous; leaves 3-foliolate; leaflets discolorous, dark above, paler beneath, glabrous, larger nerves yellowish beneath; inflorescences unbranched, glabrous, 6-8 cm long; male flowers white; female flowers and fruits unknown.

Summit of rocks and spring head, common; edges of forest gallery; 2000 m alt.

Resembling *A. chaunostachys*.

## ALLOPHYLUS

**A. lasiopopus** Bak. f.; Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae: 549, 1932.

Treelet c. 3 m; young branchlets ferruginous-tomentose; leaves 3-foliolate, small, rather thick, drying brown or black; terminal leaflet 6-10 × 3-4,5 cm; leaflets glabrous above except on nerves, pubescent beneath on nerves; petiole brown tomentose; inflorescences slender, unbranched, 5-9 cm long, lax-flowered; fruit unknown.

Ecology unknown.

Known only from the type (G. L. Bates 209; c. 1895-1896).

Not mentioned in Fl. Cameroun.

**A. lastoursvillensis** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Cameroun 16: 37, 1973.

syn.: *A. macrobotrys* sensu Radlk. 1932 p.p., quoad specim. Dewèvre 650 et Laurent "Ubangi", non Gilg (= *A. ferrugineus* var. *ferrugineus*).

Shrub 2-4 m tall, often sarmentose, or tree, probably dioecious; young branchlets pubescent; leaves 3-foliolate, ± glabrous except for midrib, petiole pubescent to tomentellous; lateral leaflets smaller than the terminal one, very asymmetric; flowers white, in unbranched inflorescences longer than leaves, to 40 cm long; drupes red, glabrous, 5-7 mm long.

Primary and secondary rain-forests; forest galleries, watersides; fallow land.

Very close to *A. ferrugineus* var. *ferrugineus*, and resembling *A. chaunostachys*.

**A. le-testui** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Cameroun 16: 31, 1973.

Shrub; young branchlets and leaf petioles golden hairy; leaves 3-foliolate, large, petiole 10-22 cm long; leaflets 22-25 × 9-10 cm, glabrous and brown above, very hairy and green beneath; flowers in dense cymes on branched inflorescences 12-16 cm long, pubescent.

Forest?; 200-500 m alt.

Resembling *A. grandifolius*.

**A. longicuneatus** Vermoesen ex Hauman; Cable & Cheek, Pl. Mt Cameroon: 125, 1998; Sosef & al., l.c. – Icon.: Fl. Cameroun 16: 45, 1973.

syn.: *A. ngounyensis* Pellegr., p.p. quoad specim. Klaine 1407, 2040.

Shrub or tree 3-15 m tall, monoecious; stem to 20 cm Ø; young branchlets glabrous, lenticellate; leaves 3-foliolate, glabrous, petiole 5-14 cm long; leaflets papery, large (9-18 × 3-6 cm), drying blackish purple above, pale brown or reddish beneath; inflorescences branched, 8-15 cm long, of dense white or green flowers.

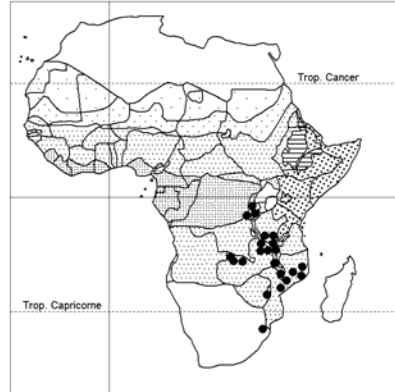
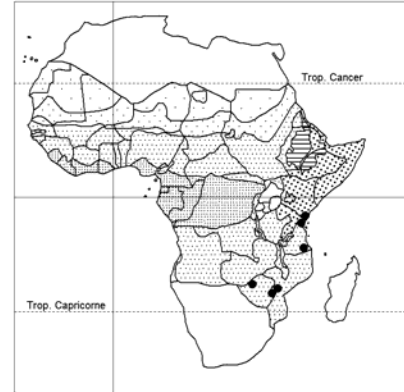
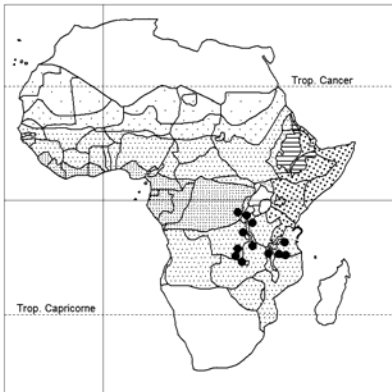
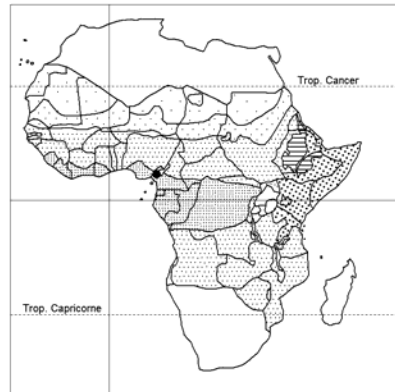
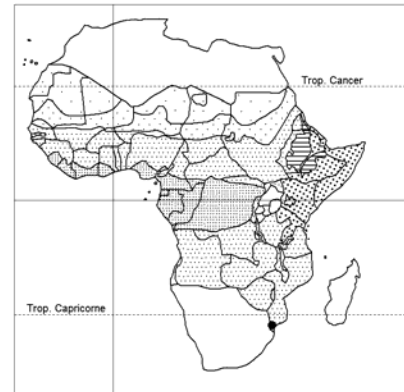
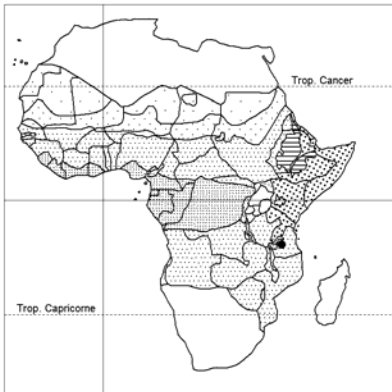
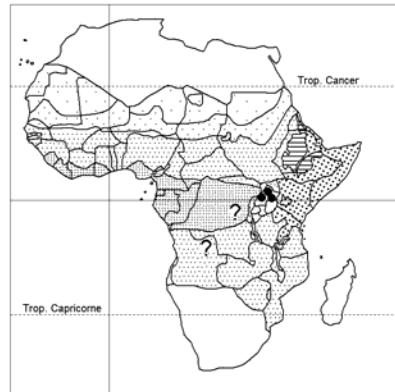
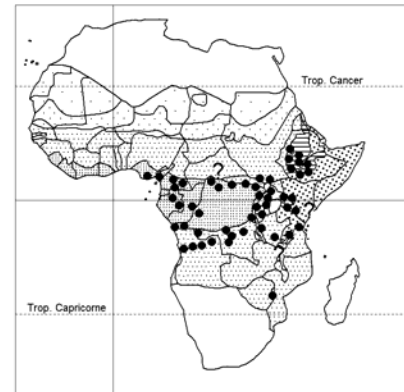
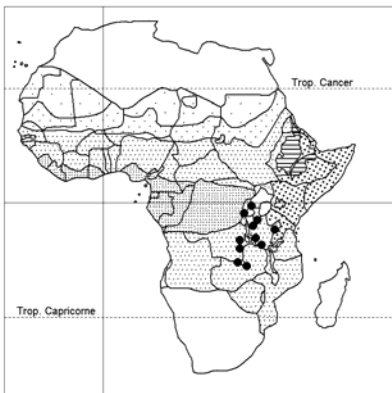
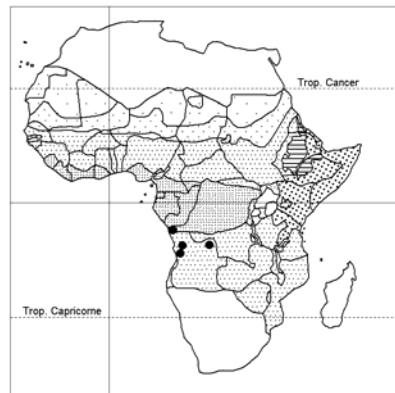
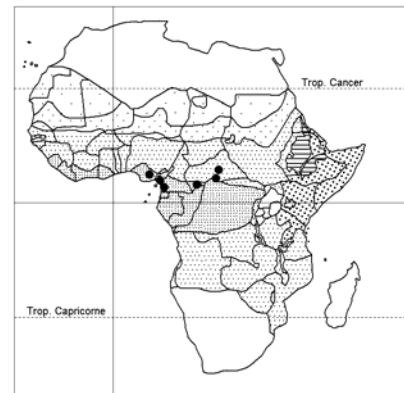
Forest; forest with *Cynometra*, *Khaya*, in understorey; island in river in *Alchorbietum*; forest gallery, riversides; 1-1400 m. alt. – Heliophilous.

Related to *A. grandifolius*.

#### **A. longipetiolatus** Gilg

Shrub or tree; leaves 3-foliolate, glabrous, 30-35 cm long; petiole long (c. 15 cm), brown pilose; leaflets 16-17 × 6-8 cm; flowers dense in branched inflorescences shorter than leaf petioles; fruit unknown.



***Allophylus camptoneurus******Allophylus chaunostachys******Allophylus chirindensis******Allophylus congolanus******Allophylus conraui******Allophylus decipiens******Allophylus delicatulus******Allophylus dummeri******Allophylus ferrugineus******Allophylus fulvotomentosus******Allophylus gossweileri******Allophylus grandifolius***

## ALLOPHYLUS LONGIPETIOLATUS

Rain-forest, forest clearings, riversides.

Seems to be only an extreme form of *A. africanus* or perhaps a juvenile form of it (fide Leenhouts in Blumea 15: 337-338, 1967). Not cited in Fl. Cameroun 16, 1973.

Uganda ?

**A. mayimbensis** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon. – Icon.: Fl. Cameroun 16: 57, 1973.

Shrub c. 3 m tall; all parts ferruginous long-hairy, hairs 1-2 mm long; leaves 3-foliolate, c. 20-25 cm long; leaflets reddish above, tobacco-brown and densely hairy beneath, domatia absent, the laterals smaller than the terminal one; inflorescences 3-branched, lax, c. 50 cm long; fruit unknown ?

Forest ?, ecology not recorded.

Resembling *A. zenkeri*.

**A. megaphyllus** Hutch. & Dalziel; Cable & Cheek, Pl. Mt Cameroon: 125, 1998.

syn.: *A. megaphyllus* sensu Fl. W. Trop. Afr., ed. 1, 1: 498, 500, 1928, excl. specim. Talbot 414 (= *A. grandifolius*).

Shrub, little-branched, 2-4 m tall; twigs coarsely pubescent; leaves simple, large, oblong-lanceolate, with short densely pubescent petiole (1-4 cm long), 18-45 × 7-15 cm; flowers white in dense simple inflorescences 3-8 cm long; fruit scarlet, pyriform, 9 mm long.

In undergrowth of high forest, occasional; 1-400 m alt.

According to Brenan (Kew Bull. 7: 449-450, 1952) differs from *A. pervillei* by the coarse pubescence, and from *A. melliodorus* by the simple inflorescences, and from *A. hirtellus* and *A. nigericus* by the much larger leaves.

**A. melliodorus** Gilg ex Radlk.; Fl. Trop. E. Afr., Sapindaceae: 94, 1998.

Tree 5-12 m; also small shrublet?; bark rough; young branchlets puberulous, soon glabrous, dark, lenticels pale; leaves simple, rather thin, not shiny above (= *A. pervillei*), elliptic-lanceolate, 4-14(-18) × 2-7 cm, glabrous except for the conspicuous hairy domatia beneath; flowers yellow(-green), in simple (sometimes ± branched) inflorescences 6-12 cm long; fruit ± round, finely pubescent, c. 5-6 mm Ø.

Rain-forest, forest edges; montane *Albizia-Podocarpus* forest; ?-850-1500 m alt.

**A. mossambicensis** Exell – Icon.: Fl. Zambes. 2/2: 499, 1966 (partial).

Shrub to c. 2,5 m tall; young branchlets pale, pubescent, tardily glabrescent; leaves 3-foliolate, petiole long (7 cm), densely pubescent; leaflets subequal or the laterals much shorter than the terminal one, thinly papyraceous, shortly pubescent above and beneath, with inconspicuous hairy domatia beneath; inflorescences 3-8 cm long, pubescent, usually unbranched; only immature flowers known; fruit unknown.

Coastal dunes, (edge of) mixed forest, riverside.

Resembling *A. chaumostachys* but leaves pubescent.

**A. natalensis** (Sond.) De Winter; Bothalia 6: 408, 1954; Coates Palgrave, Trees south. Afr. ed., 3: 644, 2002. – Icon.: Fl. Zambes. 2/2: 499, 1966 (partial).

## ALLOPHYLUS NATALENSIS

bas.: *Schmidelia natalensis* Sond.

syn.: *Allophylus erosus* Radlk., nom. nud.; *Rhus erosa* sensu E. Mey. in Pl. Drège non Thunb.; *Schmidelia erosa* Arn. (J. Bot. Hooker 3: 152-153, 1841).

Shrub (or tree) up to 5 m tall; bark smooth or wrinkled, grey-brown; branchlets greyish white, minutely hairy; leaves 3-foliolate, small, shiny green above, paler beneath with yellow midrib, almost glabrous; flowers greenish yellow, sweet-scented; in branched catkin-like racemes 3-9 cm long, equalling the leaves; fruits round, bright red, 7 mm Ø.

Coastal dunes.

S. Africa.

**A. ngounyensis** Pellegr. 1953 and 1955 p.p., excl. specim. Klaine 1407, 2040, Libreville (= *A. longicuneatus*); Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Cameroun 16: 35, 1973.

Shrub; branchlets glabrous, ash-grey; leaves coriaceous, 3-foliolate, glabrous, slightly discoloured, c. 25 cm long, hairy domatia absent; inflorescences c. 15 cm long, unbranched; fruit unknown ?

Forest ?

Resembling *A. hallaei*.

Known from ? only 2 collections.

**A. nigericus** Bak. f.

Shrub 1-2 m tall; (young) branchlets and leaves (both sides) densely spreading setose; leaves simple, oblong-lanceolate, 9-22 × 4-10 cm; flowers white; inflorescences simple, 1,5-3 cm long; fruit unknown.

Forest.

Resembling *A. hirtellus* but leaves different. According to Leenhouts (Blumea 15: 342, 1967) the differences “are so slight that there seems to be no reason whatever to keep them separate”.

**A. oyemensis** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Cameroun 16: 57, 1973.

Shrub, erect or scandent; branchlets reddish, velvety hairy when young; leaves 3-foliolate, petiole 11-15 cm long; leaflets green above, glabrous except for midrib, paler green beneath, hairy, hairy domatia absent, lamina 11-15 × 5-6 cm; flowers white in 3-branched inflorescences, up to 20 cm long; fruit unknown ?

Forest ?

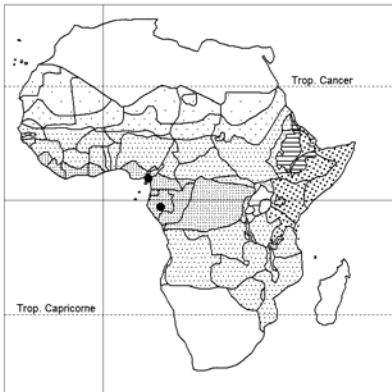
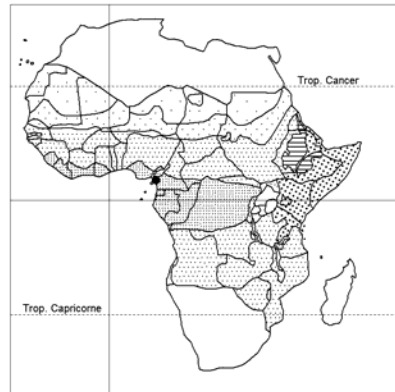
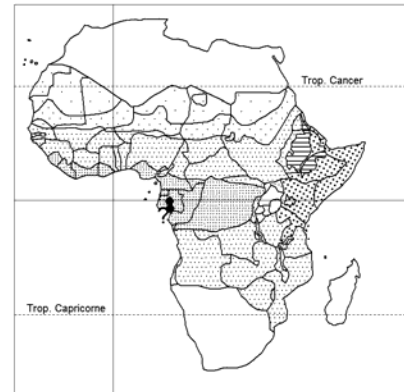
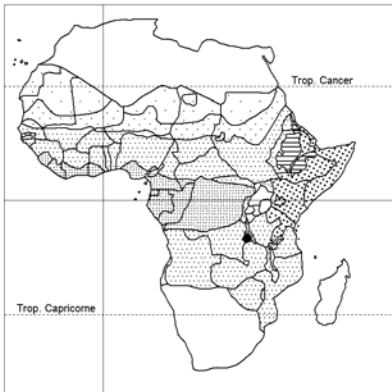
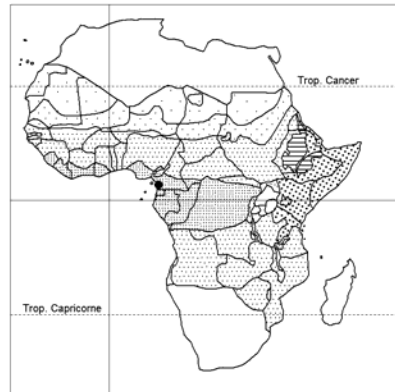
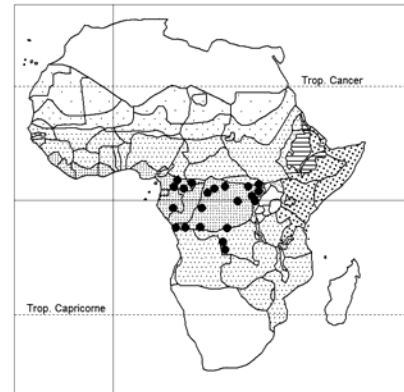
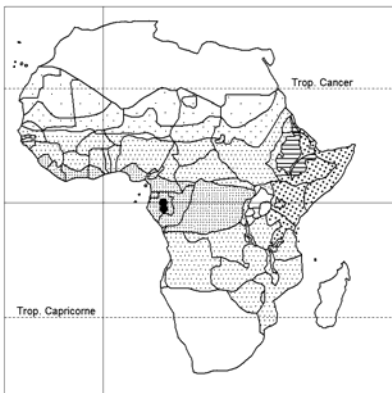
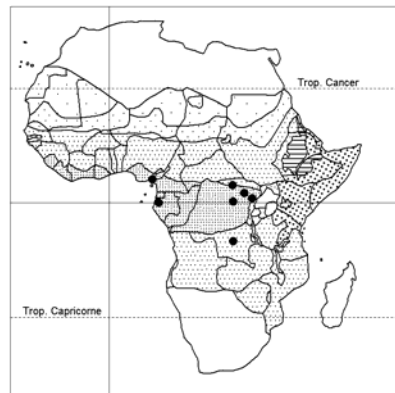
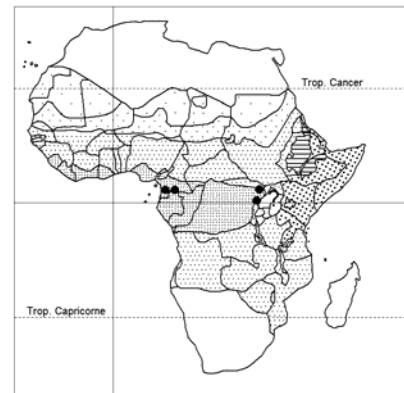
Resembling *A. mayimbensis*.

**A. persicifolius** Hauman

Shrub, dioecious; branchlets almost glabrous; leaves 3-foliolate, petiole 1,5-3 cm long puberulous; leaflets glabrous except for hairy domatia beneath, the laterals 4-9 cm long, the terminal one 7-14 × 2-3,5 cm; male flowers in simple numerous laxly-flowered inflorescences 10-18 cm long; female flower and fruit unknown.

Forest gallery; 1700 m alt.

According to Fouilloy & Hallé (Fl. Gabon 23: 30, 1973) also in Tanzania (Bruce 1075), but not cited in Fl. Trop. E. Afr. Sapindaceae, 1998.

**Allophylus grotei****Allophylus hallaei****Allophylus hamatus****Allophylus hirtellus****Allophylus hylophilus****Allophylus imenoensis****Allophylus katangensis****Allophylus lasiopus****Allophylus lastoursvillensis****Allophylus le-testui****Allophylus longicuneatus****Allophylus longipetiolatus**

## ALLOPHYLUS

**A. pervillei** Blume – Icon.: Fl. Trop. E. Afr., Sapindaceae: 96, 1998 (fa. **pervillei**); Capuron in Mém. Mus. Natl. Hist. Nat. Paris, Sér. B, Bot. 19: 61, 1969 (sub nom. *A. cobbe* “*pervillei*”); Been-tje, Kenya trees, shrubs & lianas: 413, 1994.

syn.: *A. cobbe* (L.) Rausch. “*pervillei*” sensu Capuron, o.c.: 63; *A. simplex* Baillon (1893), non Quisumbing (1944); *A. monophyllus* sensu Taub. in Pflanzenwelt Ost-Afr., C: 250, 1895, non (E. Mey.) Radlk.; *Schmidelia monophylla* sensu Bak. in Fl. Trop. Afr. 1: 424, 1868, non (E. Mey.) C. Presl – All of fa. **pervillei**.

Shrub 0,5-4(-5) m tall, occasionally tree (6-9 m in Seychelles) or prostrate shrub; branchlets glabrous, ash-grey; bark smooth or rough, pale; leaves usually 1-foliolate (fa. **pervillei**), rarely 3-foliolate (fa. **trifoliolatus**) with lateral leaflets much reduced c. 1 cm long, terminal leaflet elliptic, 4-17(-20) × 1,5-9 cm, glandular, glabrous except for hairy domatia beneath; flowers (greenish) white or cream in unbranched racemes 2-10(-12-18) cm long; fruits red, round, 5-9 mm Ø.

Fringing forest, forest clumps, swamp forest; *Brachystegia* woodland; coastal forest bushland and thicket; cliff tops; on coral, limestone; 0-550 m alt. – A variant occurs at 750-900 m alt. (Fl. Trop. E. Afr., Sapindaceae: 95, 1998; Tanzania, Iringa D.).

Madagascar, Seychelles, Comoro Isl.

Comprises 2 forms: – fa. **pervillei** (syn.: *A. pervillei* Blume fa. *genuinus* Radlk.); – fa. **trifoliolatus** Radlk.

*A. vestitus* is closely related.

**A. poungouensis** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Cameroun 16: 35, 1973.

Shrub? or tree to 15 m tall; branchlets brown, glabrous, densely lenticellate; leaves 3-foliolate, petiole 6-7 cm long, tomentellous; leaflets coriaceous, ± glabrous, concolorous, 15-18 × 5-8 cm, the laterals smaller than the terminal one; flowers white, in little-branched dense panicles; fruit unknown?

Forest?; 200-900 m alt.

Resembling *A. africanus* fa. *mawambensis*, also *A. amplissimus*.

**A. pseudopaniculatus** Bak f.; Fl. Trop. E. Afr., Sapindaceae: 83, 1998. – Icon.: Fl. Congo belge 9: 299, 1960 (sub nom. *A. kiwuensis*; from Robyns, Fl. spermat. Parc Natl. Albert 1: pl. 50 p. 519, 1948); Troupin, Fl. Rwanda 2: 301, 1983 (*A. kiwuensis*).

syn.: *A. kiwuensis* Gilg; *A. crebriflorus* Bak. f.; *A. africanus* P. Beauv. fa. *chysothrix* Radlk. subfa. *pseudopaniculatus* (Bak. f.) Radlk.

Tree, much-branched, spreading, or shrub or climbing shrub (less often), monoecious, 3-15 m tall; stem to 15 cm Ø; branchlets glabrous or tomentose, glabrescent; leaves 3-foliolate, drying very discoloured, dark purplish brown above, dark green beneath, petiole tomentose to glabrescent 5-7 cm long; leaflets glabrous, only nerves hairy beneath; flowers cream or yellow-green, in simple or little-branched panicles 10-15 cm long, axes long-hairy; fruits green, round, 5 mm Ø.

Swamp forest; riversides; rain-forest; transitional forest; valley bushland, hillside thicket; tangled termite mound vegetation; 1200-2250 m alt.

Specimens with extremely dense inflorescences and with densely ± velvety long-hairy leaflets (beneath) and with velvety ferruginous branchlets are discussed in Fl. Trop. E. Afr., Sapindaceae: 83, 1998, as being perhaps extreme variants.

## ALLOPHYLUS

**A. rubifolius** (Hochst. ex A. Rich.) Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 644-645, 641, 2002.

syn.: See below under the varieties.

Bushy shrub or tree 1-3-7(-12) m tall, occasionally a climber or creeper; bark grey, smooth or rough; branchlets, leaves and inflorescences glabrous to sparsely pubescent or brownish or greyish white pubescent to tomentose; leaves 3-foliolate, drying deep or purplish brown above, grey-green beneath, often with conspicuous hairy domatia beneath, petiole 1-5 cm long; leaflets elliptic-ovate with dense indumentum of spreading hairs beneath (vars. **rubifolius**, **dasystachys**) or ± round with appressed hairs or glabrescent beneath (vars. **alnifolius**, **rhusiphyllus**), terminal leaflet 1-10(-14) × 1-8 cm, the laterals smaller; flowers greenish white in usually unbranched racemes 2-22 cm long (short in vars. **alnifolius**, **rubifolius**), occasionally slightly branched (var. **dasystachys**); fruit orange to red, ellipsoid, 6-8 mm Ø.

In a great variety of habitats from dry bushland, woodland, thickets, along rivers to dry forest and coastal moist forest; 1-2250 m alt.

Very variable. Forest forms tend to have larger leaves, whitish pubescence and sometimes branched inflorescences.

S. Africa, Swaziland (var. **rubifolius**); Yemen (Edinb. J. Bot. 65: 123, 2008), Saudi Arabia (SW heights), Oman (var. **rubifolius**); Socotra (var. **rhusiphyllus**).

Comprises 4 vars.:

– var. **rubifolius** – Icon.: Fl. Ethiop. 3: 501, 1989 (partial); Thulin, Fl. Somal. 2: 244, 1999; Fl. Zambes. 2/2: 499, 1966 (partial); Troupin, Fl. Rwanda 2: 301, 1983, Fl. Eth. 3: 501, 1989.

bas.: *Schmidelia rubifolia* Hochst. ex A. Rich.

syn.: *Allophylus fischeri* Gilg; *A. tristis* Radlk.; *A. erlangeri* Gilg ex Chiov.; *A. erlangeri* Gilg ex Engl.; *A. alnifolius* sensu Radlk. in Englers Pflanzenreich 4/165/98: 521, 1932, p.p., non (Bak.) Radlk. s. str. (Radlkofer here included specimens outside Ethiopia); *A. africanus* Groups B & C p.p., with simple inflorescences sensu Fl. Zambes. 2/2: 507-508, 1966. (cf. above under *A. africanus* var. *griseotomentosus*).

? syn.: *A. cataractarum* Bak. f.; *A. spragueanus* Burt Davy; *A. holubii* Bak. f.; Group D sensu Exell, Fl. Zambes. 2/2: 507-508, 1966. – Icon.: Fl. Zambes. 2/2: 499, 1966 (partial).

Grassland with scattered trees; *Acacia-Commiphora*, *Acacia-Combretum*, *Combretum-Terminalia* woodland and bushland; rough grassland; alluvial *Acacia* woodland, riverine forest; termite mounds; narrow mountain gorges; dense or open *Brachystegia* woodland; dry rocky hillsides; bush, thicket; woodland at foot of rocky hills in high rainfall savanna; edges of cultivations; 1-2250 m alt.

From Ethiopia-Sudan, through E. Africa to S. Africa.

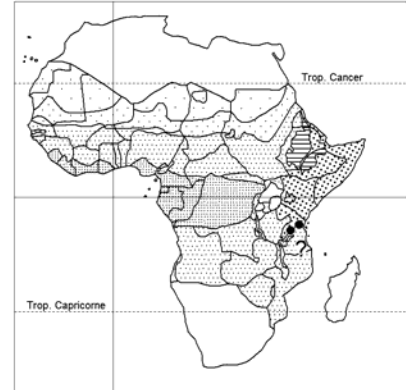
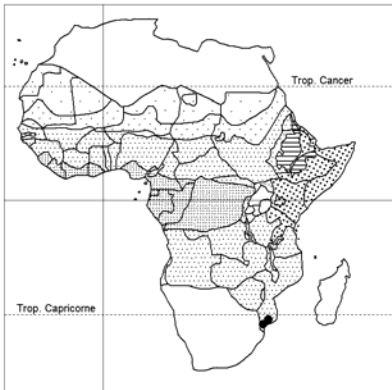
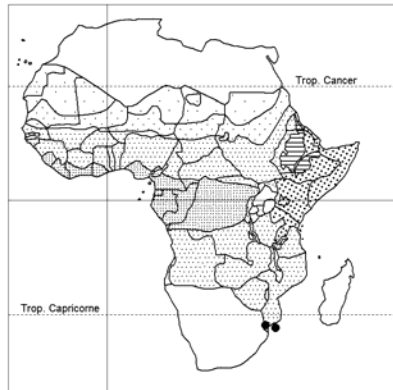
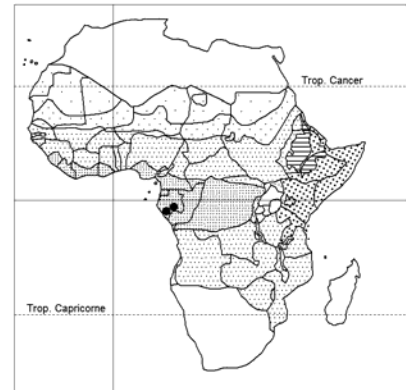
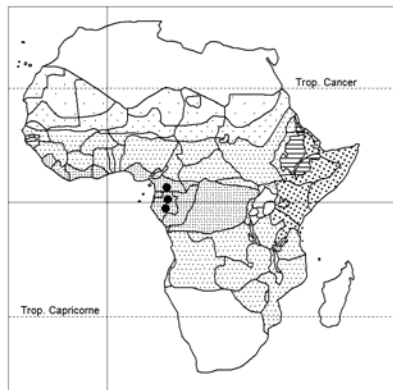
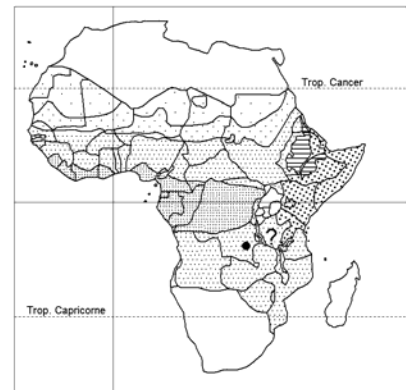
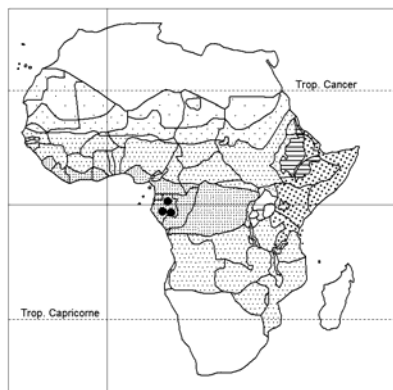
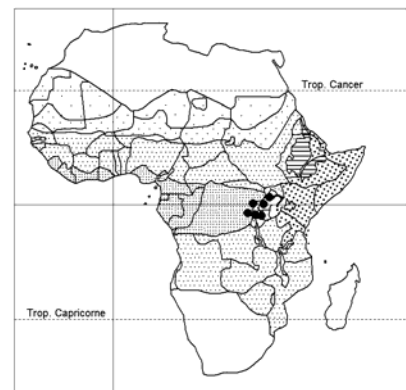
– var. **alnifolius** (Bak.) Friis & Vollesen – Icon.: Fl. Zambes. 2/2: 499, 1966 (partial); Thulin, Fl. Somal. 2: 245, 1999 (partial).

bas.: *Schmidelia alnifolia* Bak.

syn.: *S. repanda* Bak.; *Allophylus repandus* (Bak.) Engl.; *A. alnifolius* (Bak.) Radlk. p.p. (cf. under other varieties); ? *A. kilimandscharicus* Faub. (type: a fragment extant, could be an abnormal form of *A. ferrugineus*); *A. tenuis* Radlk.; *Schmidelia minutiflora* Mattei

“The true ‘*A. alnifolius*’ is a coastal E. African species with glabrous pedicels and flowers”.



***Allophylus mayimbensis******Allophylus megaphyllus******Allophylus melliodorus******Allophylus mossambicensis******Allophylus natalensis******Allophylus ngounyensis******Allophylus nigericus******Allophylus oyemensis******Allophylus persicifolius******Allophylus pervillei******Allophylus poungouensis******Allophylus pseudopaniculatus***

## ALLOPHYLUS RUBIFOLIUS

Intermediates var. **rubifolius** – var. **alnifolius** are known; also with *A. ferrugineus*.

*Commiphora* and *Diospyros-Acacia* bushland; grassland with scattered trees; evergreen thicket often on coral rag; dry forest edges; *Brachystegia* and *Colophospermum mopane* woodlands; dry forest (remnants); riverine fringes; 0-700 m alt.

Intermediate forms with *A. ferrugineus* occur in *Juniperus* forest; 1000-1400(-1900) m alt.

From Ethiopia-Somalia south to Mozambique.

– var. **dasystachys** (Gilg) Verdc.; Fl. Trop. E. Afr., Sapindaceae: 90, 1998.

bas.: *A. dasystachys* Gilg

syn.: *A. stachyanthus* Gilg fa. *genuinus* Radlk.; *A. calophyllus* Gilg – Fa. *calvus* Radlk. (with glabrous leaves, on Zanzibar), is perhaps a glabrous form but other similar specimens with branched inflorescences have been referred to *A. africanus*.

Dry evergreen forest; open woodland, bushland, cultivations; 50-150 m alt. (coast), -10-100-2100 m (inland).

Kenya, NE Tanzania.

According to Verdcourt, Fl. Trop. E. Afr., l.c., this is a very stable variety (dense-flowered forms, forms with branched inflorescences frequent) collected at the same locality over a long period, e.g. at Nairobi.

Some forms seem to be possible to name and have been determined as hybrids with *A. africanus*.

– var. **rhusiphyllus** (Balf. f.) Friis & Vollesen – Icon.: Thulin, Fl. Somal. 2: 244, 1999 (partial).

bas.: *A. rhusiphyllus* Balf. f., 1882.

syn.: *A. rhoidiphyllus* Balf. f., 1888, nom. illegit.

With rounded terminal leaflet.

Low scrub on limestone slopes with sparse vegetation; 500-700 m alt.

NE Somalia; Socotra.

#### **A. sapinii** Vermoesen ex Hauman

Tall tree with reddish glabrous branches 3,5-5 mm Ø; branchlets slender, numerous; leaves 3-foliolate, petiole 1,5-2,5 cm long; terminal leaflet elliptic, 5-8 × 1,5-2,5 cm, the laterals nearly equal, all coriaceous, glabrous, dark green above, reddish beneath; inflorescences 12-15 cm long, with 2-3 short branches; male flower unknown?; fruit 6-7 mm Ø.

Forest.

Known from only 2 collections (Sapin) made in 1907.

At first included in and very similar to *A. africanus*.

#### **A. spectabilis** Gilg

Shrub; branches brown, glabrous; leaves 3-foliolate, petiole 4-5 cm long; terminal leaflet ± oblong, 7-9 × 3,5-4 cm, the laterals slightly smaller, all glabrous except for the midrib, dull on both surfaces; inflorescences simple, 13-18 cm long, axis short-hairy; fruits unknown.

Forest, in understorey; c. 1900 m alt.

Known only from the type collected in 1907.

Seems close to *A. ferrugineus*.

**A. spicatus** (Poir.) Radlk., non *A. spicatus* (Thunb.) Fourc. (= *A. decipiens*); Sosef & al., Check-list pl. vascul. Gabon: 380, 2006; Steentoft, Flowering plants in W. Africa: 181, 2008;

## ALLOPHYLUS SPICATUS

Lisowski, Fl. (angiosp.) Rép. Guinée: 330, 2009. – Icon.: Fl. Cameroun 16: 31, 1973; Akoegninou & al., Fl. analyt. Bénin: 918, 2006.

bas.: *Ornithrope spicata* Poir.

syn.: *Schmidelia spicata* (Poir.) DC.; *S. magica* (Thonn.) Bak.; *Ornithrope magica* Thonn. in Schumach. & Thonn.; *Allophylus magicus* (Thonn.) Taub.; *A. warneckeii* Gilg ex Engl.; *A. spicatus* sensu Aubréville, Fl. Forest. soudano-guin.: 390, 1950 p.p., excl. specim. Chevalier 21510 (= *A. africanus*).

Shrub 3-4 m tall; young branchlets with fine, spreading ferruginous silky hairs, later glabrescent; leaves 3-foliolate, terminal leaflet largest, elliptic-obovate, leaflets and petioles spreading long-hairy; flowers white, sweet-scented in slender hanging unbranched racemes to 17 cm long, sometimes slightly branched; fruit red.

Forest; forest gallery; degraded forest; savanna, in rocky sites and along streams; on granitic rocks; rocky riversides; shrub; rare in the forest zone; 300-600 m alt.

**A. talbotii** Bak. f.; Fl. Cameroun 16: 46, 1973. – Icon.: Adam, Fl. descr. Mts Nimba 4: 1579, 1975; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 763, 2006 (partial).

syn.: *Schmidelia nuonensis* A. Chev.

Liane 10 m long; twigs reddish, slightly lenticellate; leaves 3-foliolate; leaflets papery, glabrous, entire, 8-12 × 3-6 cm, drying silvery brown; flowers white in branched slender panicles with a few scattered hairs, longer than leaves.

Evergreen or moister forests; higher alt. (850 m, Liberia, Mt Nimba).

Related to *A. zenkeri*.

According to Adam, o.c.: 1495, from Sierra Leone to Nigeria.

**A. tanzaniensis** F. G. Davies, Fl. Trop. E. Afr., Sapindaceae: 87-88, 1998.

syn.: *A. sp. nov.* sensu Vollesen, Op. Bot. 59: 58, 1980.

Shrub, much-branched, or tree 1-5 m tall; branches (light) brown, brown-lenticellate; young branchlets pubescent, glabrescent; leaves 3-foliolate, discolorous, petiole 5-9 cm long; leaflets 5-9 × 2-4 cm, drying brown(-green) above, ± glabrous, sometimes with hairy domatia beneath; flowers white or yellow in slender usually unbranched racemes, (3-)8-12(-17) cm long; fruit round, red, c. 5 mm Ø.

Deciduous bushland; woodland with *Acacia*, *Premna*, *Commiphora*, *Euphorbia*; “Makonde thicket” on sand; rocky hillsides; sometimes on limestone; 350-1400(-? 1560) m alt.

Resembling and difficult to separate from *A. ferrugineus* but more glabrescent, and also from *A. rubifolius* and *A. africanus* (specimens with slightly branched inflorescences). However, “in the field it has a distinctive facies”.

Perhaps also in Mozambique.

**A. torrei** Exell & Mendonça – Icon.: Garcia de Orta, Sér. Bot. 1: pl. 1-2, 1973.

Shrub 3-4 m tall; branchlets pale, tomentose when young, soon glabrescent; leaves 3-foliolate, petiole 12 cm long, tomentose; leaflets obovate, the terminal 4-15 × 2,5-12 cm, much larger than the laterals; densely pubescent above, tomentose beneath; inflorescences 8-12 cm long, usually branched; female flowers unknown; fruits 4-5 mm Ø, sparsely pubescent.

## ALLOPHYLUS TORREI

*Brachystegia* woodland, wooded savanna, dry stony places; 30-400 m alt.

Similar to *A. rubifolius* but petiole longer, leaflets wider. Also resembling *A. africanus* var. *griseotomentosus* but larger in all parts.

**A. ujori** Cheek, Kew Bull. 64: 499-501, fig. 2 p. 500, 2009; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 104-105, 143, 88 (fig.), 2010.

syn.: *A. conraui* sensu F.W.T.A., ed. 2, 1/2: 214, 1958, p.p., quoad specim. Ujor FHI 30334, et sensu Cheek in Harvey & al., Pl. Bali Ngemba: 69, 124, 2004, non Gilg ex Radlk. (cf. above under *A. conraui*).

Evergreen tree, multistemmed, or shrub 5-10 m tall; main stems (not the leafy branches) with simple *spines* 0,5-2 cm long; stems, leaves and inflorescences with patent “dirty” yellowish hairs 1-2 mm long (cf. *A. conraui*); leaves coriaceous, 3-foliolate; leaflets sessile, elliptic, 7,5-13 × 3,5-6 cm, inconspicuously toothed on distal part; inflorescence branched, 7-9-14 cm long; flowers c. 1,2 mm long, yellow; stamens > twice as long as petals; fruit (immature) ± round, c. 8 mm long.

Evergreen forest, especially on stream banks; remnant riparian forest; 1400-1600 m alt.

Resembling *A. bullatus* (but not spiny); but spiny like *A. hamatus*.

In 1972 described (by Chapman) as “one of the commonest stream bank trees on Mambilla” (Nigeria). This is no more the case as “only two specimens of the species are known out of many hundreds gathered in recent decades” (Cheek in Kew Bull. 64: 501, 2009). Known from very few collections.

**A. vestitus** F. G. Davies, Fl. Trop. E. Afr., Sapindaceae: 93, 1998.

Tree 3,6-4 m; all parts covered with soft, spreading brittle-like hairs (3 mm long), but appressed on leaves; stems grey or purplish brown, lenticellate, glabrescent; leaves 3-foliolate, discoloured, thin, the lateral leaflets much smaller than (or absent) the terminal one; inflorescences unbranched, c. 6 cm long; fruit ± round, 8 mm Ø, spreading hairy.

Rain-forest (low-land) with e.g. *Odyendyea*, *Antiaris*, *Erythrophleum*; upland evergreen forest; 10- ? 1500 m alt.

Closely related to *A. pervillei*.

**A. whitei** Exell – Icon.: Fl. Zambes. 2/2: 499, 1966 (partial).

Shrub 1,5-2 m tall; branches densely yellowish hairy, tardily glabrescent; leaves 3-foliolate, petiole 2,5-5 cm long, densely hairy; leaflets papery, elliptic, 10 × 6,5 cm, yellow-pubescent, densely so beneath and with inconspicuous domatia; inflorescences 12 cm long, unbranched, densely yellowish hairy; flowers immature; fruit ± round, pubescent.

*Baikiaea plurijuga* forest on Kalahari sand; dense thickets of *Brachystegia spiciformis*-*Afrormosia angolensis*.

Near *A. ferrugineus* but leaves densely pubescent.

**A. zenkeri** Gilg ex Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Cameroun 16: 53, 1973.

Shrub 2-3 m tall, or tree 5-20 m, or liane; branches pubescent; leaves 3-foliolate, petiole hairy, 3-5 cm long; leaflets discolorous, reddish above, light brown beneath, 12-18 × 5-6 cm, glabrous except for midribs and nerves on both surfaces, hairy domatia small; inflorescence little branched, lax, 12-20 cm long; fruits yellow or red, pear-shaped, 7-8 mm long.

Forest.

Related to *A. africanus*.

## ALLOPHYLUS

NOMINA NUDA (Engler in Engler, Veg. d. Erde 9, Pflanzenw. Afr. 3/2: 271, 1921):

*Allophylus comani* Gilg, with 3-foliolate leaves.

*laeteviridus* Gilg

*oreodryadum* Gilg, (wokaka) occurring on Mt Cameroon, between 1600 and 1800 m alt.; Fl. W. Trop. Afr., ed. 2, 1/2: 714, 1958 (Fernando Poo).

*pachyneurus* Gilg

*paralleloneurus* Gilg, in S Cameroon.

*tessmannii* Gilg, in S Cameroon, up to 800 m alt.

\* \* \*

## SYNONYMS:

*Allophylus africanus* P. Beauv.

fa. *acuminatus* Robyns ex Hauman = **Allophylus africanus**

fa. *chrysothrix* Radlk. = **A. africanus**

fa. *chrysothrix* Radlk. subfa. *pseudopaniculatus* (Bak. f.) Radlk. = **A. pseudopaniculatus**

fa. *mawambensis* (Gilg) Hauman = **A. africanus** var. **africanus**

Group A sensu Fl. Zambes. = **A. africanus** var. **africanus**

Groups B & C sensu Fl. Zambes. p.p. = **A. africanus** var. **griseotomentosus**, **A. rubifolius** var. **rubifolius**

Group D sensu Fl. Zambes. = ? **A. rubifolius** var. **rubifolius**

*africanus* sensu Engl. 1892 p.p. = **A. bullatus**

*africanus* sensu Hiern p.p. = **A. ferrugineus** var. **ferrugineus**

*agbala* Hauman = ? **A. ferrugineus** var. **ferrugineus**

*alnifolius* (Bak.) Radlk. = **A. rubifolius** var. **alnifolius**

*andongensis* Bak. f. = **A. ferrugineus** var. **ferrugineus**

*appendiculato-serratus* Gilg = **A. congolanus**

*brachycalyx* Bak. f. = ? **A. ferrugineus** var. **ferrugineus**

*buchananii* Gilg ex Radlk. = **A. chaunostachys**

var. *ugandensis* Bak. f. = ? **A. ferrugineus** var. **ferrugineus** or **A. dummeri**

*bussei* Gilg ex Engl. = **A. chirindensis**

*calophyllus* Gilg = **A. rubifolius** var. **dasystachys**

*cataractarum* Bak. f. = ? **A. rubifolius** var. **rubifolius**

*cazenoensis* Bak. f. = **A. ferrugineus** var. **ferrugineus**

*chrysothrix* (Radkl.) Lisowski = **A. africanus**

*cobbe* (L.) Räsch. “*pervillei*” sensu Capuron = **A. pervillei** fa. **pervillei**

*comani* Gilg (ex Engl.) = ? (nom. nud.)

*conraui* sensu F.W.T.A., ed. 2, p.p., non Gilg ex Radlk. = **A. ujori**

*conraui* sensu Cheek in Harvey & al., Pl. Bali Ngemba (2004) = **A. ujori**

*conraui* sensu Harris (Dzanga-Sangha Res.), 2002, and sensu Sosef & al. (Gabon), 2006 = ?

*crebriflorus* Bak. f. = **A. pseudopaniculatus**

*cuneatus* Bak. f. = **A. ferrugineus** var. **ferrugineus**

*dasystachys* Gilg = **A. rubifolius** var. **dasystachys**

*didymadenius* Radlk. = **A. chaunostachys**

## ALLOPHYLUS

*elongatus* Radlk. = ? **A. africanus** var. **africanus**  
*erlangeri* Gilg ex Chiov. = **A. rubifolius** var. **rubifolius**  
*erlangeri* Gilg ex Engl. = **A. rubifolius** var. **rubifolius**  
*erosus* Radlk. = **A. natalensis**  
*fischeri* Gilg = **A. rubifolius** var. **rubifolius**  
*gazensis* Bak. f. = **A. chaunostachys**  
*goetzeanus* Gilg = **A. africanus** var. **africanus**  
*griseotomentosus* Gilg = **A. africanus** var. fa. *glabrior*  
 Radlk. = **A. africanus** intermediate ? var. **africanus**  
 – var. **griseotomentosus**  
*holstii* Gilg ex Engl. = ? *A. holtzii* in sched. B.  
 = ? **A. congolanus**  
*holubii* Bak. f. = ? **A. rubifolius** var. **rubifolius**  
*kassneri* Bak. f. = **A. fulvotomentosus**  
*kilimandscharicus* Taub. = ? **A. rubifolius** var. **alnifolius**  
*kiwuensis* Gilg = **A. pseudopaniculatus**  
*laeteviridis* Gilg (ex Engl.) = ? (nom. nud.)  
*latefoliolatus* Bak. f. = **A. ferrugineus** var. **ferrugineus**  
*leptocaulos* Radlk. = **A. ferrugineus** var. **ferrugineus**  
*macrobotrys* Gilg = **A. ferrugineus** var. **ferrugineus**  
*macrobotrys* sensu Radlk. 1932 p.p. = **A. lastoursvillensis**  
*macrurus* Gilg = **A. ferrugineus** var. **ferrugineus**  
*magicus* (Thonn.) Taub. = **A. spicatus**  
*mawambensis* Gilg = **A. africanus** var. **africanus**  
*megaphyllus* Hutch. & Dalziel p.p. (Talbot 414)  
 = **A. grandifolius**  
*melanocarpus* (Sond.) Radlk. = **A. africanus** var.  
**africanus**  
*monophyllus* Radlk. = **A. dregeanus** (S. Afr.)  
*monophyllus* sensu Taub. 1895, non (E. Mey.) Radlk.  
 = **A. pervillei** fa. **pervillei**  
*ngounyensis* Pellegr. p.p. = **A. longicuneatus**  
*oreodryadum* Gilg (ex Engl.) = ? (nom. nud.)  
*oreophilus* Gilg = **A. ferrugineus** var. **ferrugineus**  
*pachyneurus* Gilg (ex Engl.) = ? (nom. nud.)  
*paralleoneurus* Gilg (ex Engl.) = ? (nom. nud.)  
*pierrei* Pellegr. = **Klaineanthus gaboniae** (*Euphorbiaceae*)  
*repandus* (Bak.) Engl. = **Allophylus rubifolius**  
 var. **alnifolius**  
*rhodesicus* Exell = **A. africanus** var. **africanus**  
*rhoidiphyllus* Balf. f. = **A. rubifolius** var. **rhusiphyllus**  
*rhusiphyllus* Balf. f. = **A. rubifolius** var. **rhusiphyllus**  
*richardsiae* Exell p.p. = **A. chaunostachys**, **A. africanus**  
 var. **griseotomentosus**  
*rutete* Gilg = ? **A. fulvotomentosus**  
*schirensis* Gilg = **A. ferrugineus** var. **ferrugineus**  
*schweinfurthii* Gilg = **A. africanus** var. **africanus**  
*schweinfurthii* sensu Hauman p.p. = **A. dummeri**  
*simplex* Baillon 1893 = **A. pervillei** fa. **pervillei**  
 sp. I sensu Cheek & Etuge (Kupe) = **A. conraui**  
 sp. sensu F.T.E.A. 1998 = ? **A. ferrugineus** (Ruwenzori)  
 sp. sensu White, Rhodesia = **A. chaunostachys**  
 sp. nov. sensu Vollesen 1980 = **A. tanzaniensis**  
*spicatus* (Thunb.) Fourc., non (Poir.) Radlk.  
 = **A. decipiens**  
*spicatus* sensu Aubrév. 1950, p.p.  
 = **A. spicatus**, **A. africanus**

## ALLOPHYLUS

*spragueanus* Burt Davy = ? **A. rubifolius** var. **rubifolius**  
*stachyanthus* Gilg and fa. *genuinus* Radlk. = **A. rubifolius**  
 var. **dasystachys**  
 fa. *calvus* Radlk. = ? **A. rubifolius** var. **dasystachys** or  
**A. africanus**  
*subcoriaceus* Bak. f. = **A. africanus** var. **africanus**  
*tenuifolius* Radlk. = **A. chaunostachys**  
*tenuis* Radlk. = **A. rubifolius** var. **alnifolius**  
*tessmannii* Gilg (ex Engl.) = ? (nom. nud.)  
*timboensis* Hua = **A. africanus** var. **africanus**  
*toroensis* Bak. f. = **A. ferrugineus** var. **ferrugineus**  
*touracus* Pellegr. = **A. africanus** var. **africanus**  
*transvaalensis* Burt Davy = **A. africanus** var. **africanus**  
*tristis* Radlk. = **A. rubifolius** var. **rubifolius**  
*usambaricus* Gilg in sched. = **A. africanus**  
 var. **griseotomentosus**  
*ussheri* Bak. f. = **A. dummeri**  
*uwembae* Gilli = **A. chaunostachys**  
*volkensii* Gilg = **A. ferrugineus** var. **ferrugineus**  
*warneckeii* Gilg ex Engl. = **A. spicatus**  
*welwitschii* Gilg = **A. ferrugineus** var. **ferrugineus**  
*yeru* Gilg = **A. chaunostachys**  
*zenkeri* sensu Exell 1928, non Gilg ex Radlk.  
 = **A. gossweileri**  
*zimmermannianus* Gilg = **A. chirindensis**  
*zimmermannianus* F. G. Davies ined. in Beentje 1994  
 = **A. chirindensis**  
*Azamaza trifoliata* Hochst. in sched. = **Allophylus abyssinicus**

## (APHANIA)

*Aphania cuspidata* (Blume) Radlk. = **Lepisanthes senegalensis**  
*golungensis* Hiern = **Pancovia**  
*montana* Blume = **Lepisanthes senegalensis**  
*rubra* (G. Don ex Wight) Radlk. = **L. senegalensis**  
*senegalensis* (Juss. ex Poir.) Radlk., incl. var. *senegalensis*  
 [but excl. fa. *perrieri* (Choux) Capuron = Madagascar]  
 and var. *silvatica* (A. Chev. ex Hutch. & Dalziel) Aubrév.  
 = **L. senegalensis**  
*silvatica* A. Chev. ex Hutch. & Dalziel = **L. senegalensis**

## APORRHIZA / 6

Tropical African genus, poorly known. Flowering material needed, in particular. One species known only from the type, another one from only 3 collections; fruits are immature in one species. *A. tessmannii* is of uncertain taxonomic status.

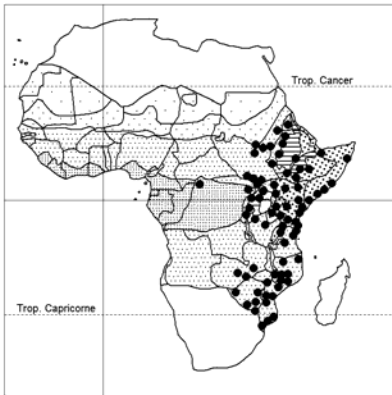
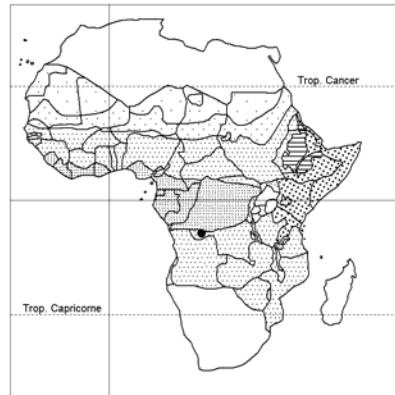
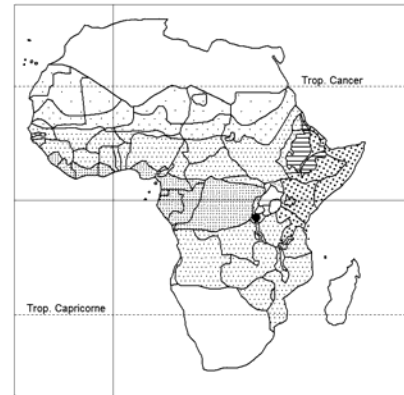
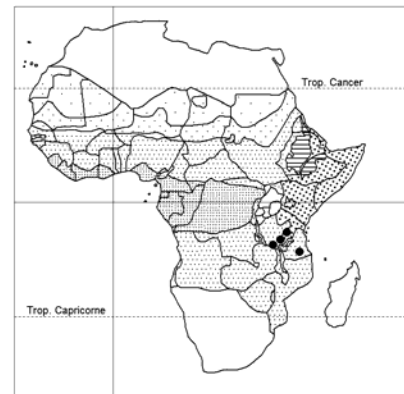
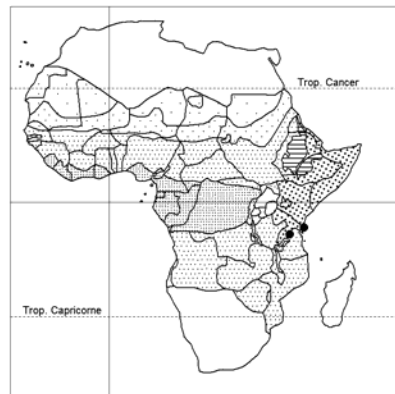
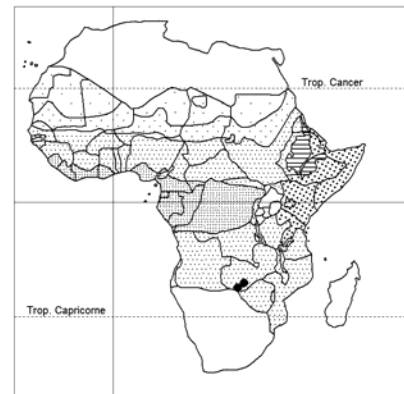
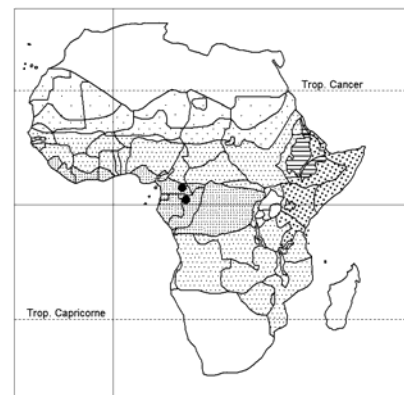
**Aporrhiza lastoursvillensis** Pellegr.; Pellegrin in Mém. Soc. Bot. France 1955: 63, 1956; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Gabon 23: 155, 1973.

Small monoecious tree; branchlets shortly pubescent; leaves of 3-7 pairs of leaflets glabrous above, densely woolly/yellowish-rusty hairy beneath; flowers white in densely ferruginous hairy branched panicles.

Ecology not stated; ? forest; 100-400 m alt.

Resembling *A. talbotii*, but pubescence different.



***Allophylus rubifolius******Allophylus sapinii******Allophylus spectabilis******Allophylus spicatus******Allophylus talbotii******Allophylus tanzaniensis******Allophylus ujori* ○  
*Allophylus torrei* ●*****Allophylus vestitus******Allophylus whitei******Allophylus zenkeri******Aporrhiza lastoursvillensis******Aporrhiza letestui***

## APORRHIZA

**A. letestui** Pellegr.; Pellegrin, l.c.; Sosef & al., l.c. – Icon.: Fl. Gabon 23: 153, 1973.

Tree or shrub, monoecious; branchlets powdery pubescent; leaves of 2-4 pairs of leaflets, shiny, glabrous and minutely pitted above, minutely golden-yellow-hairy beneath (hairs only 0,05-0,1 mm long, visible through a lens); flowers white in branched panicles; only immature fruits known, rusty hairy.

Ecology not given; ? forest.

Known from 2 collections in Gabon, 1 in Cameroon.

**A. multijuga** Gilg

Shrub, somewhat scandent; stems thick; leaves large (60-100 cm long, 50 cm wide), rachis densely brown-tomentose; leaflets, 10-11 pairs, large (12-30 × 6-8 cm), glabrous or slightly hairy; inflorescence branched, densely and shortly fulvous tomentose, 15-25 cm long; capsule 2-lobed.

Primary forest (“Urwald”), on laterite.

Known only from the type collected in 1895 (Staudt 9, Cameroon: Lolodorf), probably lost (B).

**A. paniculata** Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006 (maintained as 2 separate entities, *A. nitida*, *A. paniculata*); Akoegninou & al., Fl. analyt. Bénin: 919, 2006. – Icon.: Fl. Zambes. 2/2: 515, 1966 (sub nom. *A. nitida*); Beentje, Kenya trees, shrubs & lianas: 414, 1994; F. White & al., Evergreen for. fl. Malawi: 526, 2001; L. White & K. Abernethy, Guide vég. Réserve Lopé, Gabon: 152, 1996 (partial); Fl. Trop. E. Afr., Sapindaceae: 21, 1998.

syn.: *A. nitida* Gilg (ex Milne-Redh.); Gilg’s description seems adequate for validation of the name).

Tree 4,5-22 m, or shrub, monoecious; crown wide-spreading, with irregular branches; bole tortuous, to 15 cm Ø; bark smooth, grey(-brown); young branchlets and fruits velvety-hairy, reddish (*A. nitida*) or grey-green (*A. paniculata*); leaves 20-40 cm long with 2-5(-6) pairs of coriaceous leaflets, glabrous or with some hairs on veins beneath, the terminal pair largest, the others progressively smaller; flowers whitish, unisexual, in branched panicles 15-50 cm long; capsules flattened, 2-lobed (like a *Biscutella*); seed black with orange aril.

Riverine and swamp forests, sometimes in water, along streams and khors in high rainfall savanna; rain-forest in understory; 1-1200 m alt.

Without fruits confused with *Eriocoelum macrocarpum* (glabrous !).

**A. talbotii** Bak. f., incl. var. *gabonensis* Pellegr., 1955, nom.; Sosef & al., Check-list pl. vasc. Gabon: 380, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 752, 2006. – Icon.: Fl. Gabon 23: 153, 1973.

Tree 7-10 m, monoecious; branchlets brownish pubescent; leaves 30-40 cm long, with 4-7(-8) pairs of leaflets, the terminal one largest; leaflets shiny above, matt and glabrous or ± pubescent beneath; panicles branched, to 40 cm long, with dense short whitish hairs; capsule 2-lobed, densely hairy (or also glabrous ?), c. 25 mm Ø.

Forest; 25-500 m alt.

**A. tessmannii** Gilg ex Radlk.

Tree; leaves 20-30 cm long, with 5 pairs of leaflets, coriaceous, glabrous, shiny (7-14 × 3,5-5 cm); flowers 5-merous (petals shorter than sepals, 7 stamens), in terminal dense panicles longer than the leaves; ovary 2-lobed, lens-shaped, densely pilose.

## APORRHIZA TESSMANNII

Forest ?

Known only from the Tessmann (year 1907) and Mildbraed (1911) collections, probably lost (B).

Uncertain taxonomic position.

**A. urophylla** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Aubréville, Fl. Forest. Côte d’Iv., ed.2, 2: 219, 1959; Fl. Gabon 23: 155, 1973; Adam, Fl. descr. Mts Nimba 2: 833, 1971; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 753, 2006.

syn.: *A. rugosa* A. Chev., nom.; *A. talbotii* sensu Fl. W. Trop. Afr., ed. 1, 1: 501, 1928, p.p. (specim. Sierra Leone, Ivory Coast), non Bak. f., and sensu Aubréville, Fl. forest. Côte d’Iv., ed. 1, 2: 184, pl. 197 (p. 183), 1936.

Straggly tree 5-15-20 m, monoecious; bole to 40 cm Ø, often tortuous; bark smooth, ash-grey; slash red or orange-brown, not scented; young branchlets deeply striate to grooved; young parts of plant and midrib of leaflets below with dust-like layer of minute orange hairs; leaves (20-)50-100 cm long, with (2-)5-6 pairs of leaflets, glabrous, acuminate, leaflet bases inrolled on lower surface; flowers creamy-white in branched brown-grey tomentellous panicles 15-40 cm long; capsules grey-tomentellous, 2-lobed, flattened; seed black, aril yellow-orange.

Evergreen forest and transitional (to semideciduous) forest; high forest in understory; riverbanks and on sandy soil near swamps; coastal forest; ? 1-1000 m alt.

Disjunct species.

## SYNONYMS:

*Aporrhiza nitida* Gilg = **Aporrhiza paniculata**

*rugosa* A. Chev., nom. = **A. urophylla**

*talbotii* sensu F.W.T.A., ed. 1, p.p. and sensu Aubréville 1936 = **A. urophylla**

## ATALAYA / 1

syn.: *Diacarpa* Sim

Malesian-Australian (9 species) genus of ca. 12 species; three in southern Africa, 2 of which only in S. Africa.

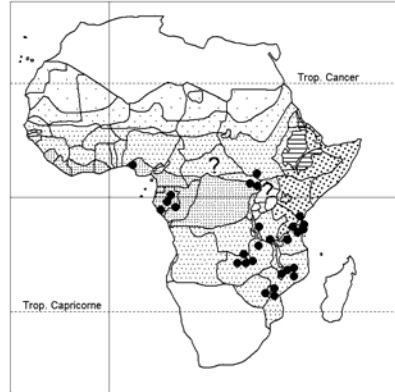
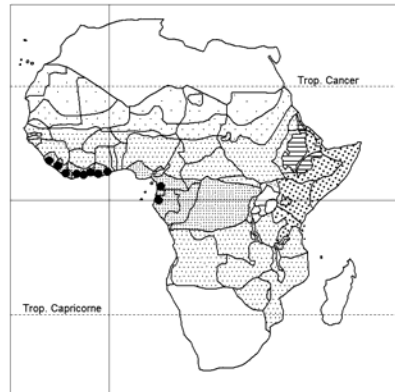
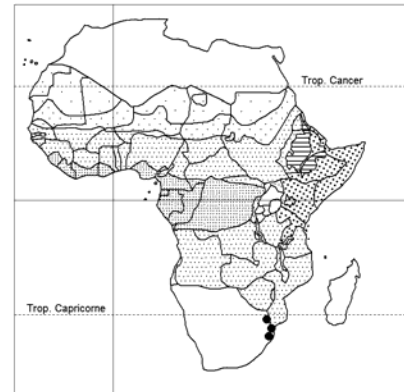
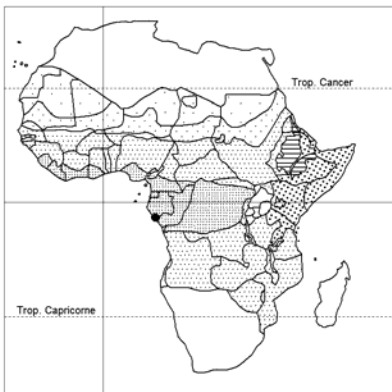
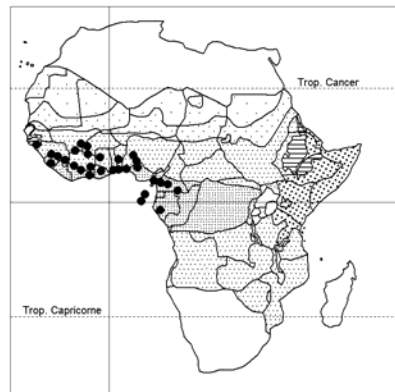
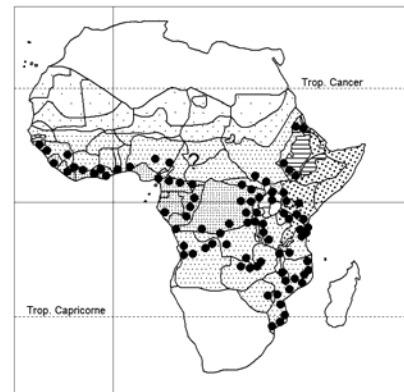
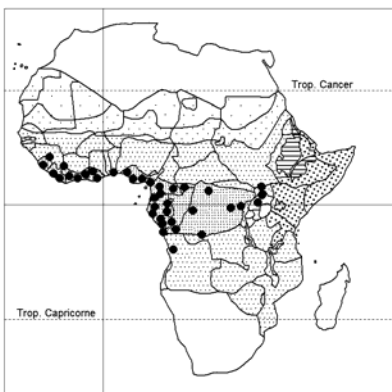
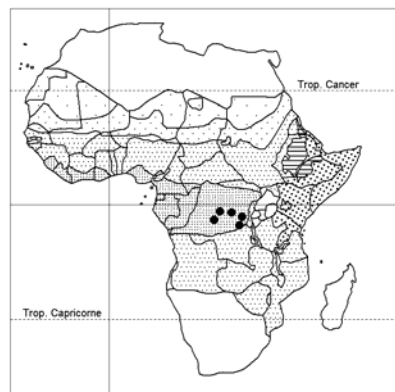
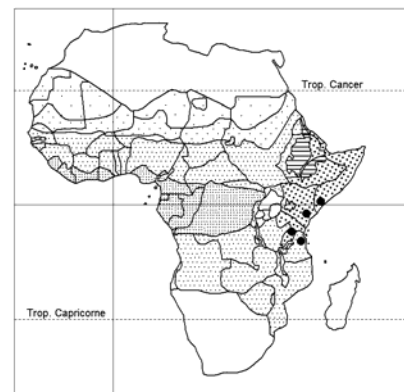
**Atalaya alata** (Sim) H. M. L. Forbes – Icon.: Sim., Forest fl. Port. E. Afr.: pl. 5C, 1909 (sub gen. *Diacarpa*); Palmer & Pitman, Trees south. Afr. 2: 1348, 1972; Coates Palgrave, Trees south. Afr., ed. 3: 645, illustr. 166, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga ....: 368-369, 2002.

bas.: *Diacarpa alata* Sim

Tree 4,5-9 m, deciduous, monoecious, spreading, much-branched, graceful; trunk fluted; bark light grey or whitish, smooth to warty; branchlets minutely pubescent, soon glabrescent; leaves 15-20 cm long, with 5-7 pairs of leaflets (elliptic, sickle-shaped), ± glabrous, turning golden yellow in autumn; flower white, attractive in loose terminal sprays 3-15 cm long; fruit a (1-)2 (-3)-winged samara, wings c. 3 cm long, green flushed reddish.

*Androstachys* thickets, stream banks, wooded and densely bushed hillslopes; 15-765 m alt. (S. Africa).

S. Africa, Swaziland.

***Aporrhiza multijuga******Aporrhiza paniculata******Aporrhiza talbotii******Aporrhiza tessmannii******Aporrhiza urophylla******Atalaya alata******Bizonula letestui******Blighia sapida******Blighia unijugata******Blighia welwitschii******Blighiopsis pseudostipularis******Camptolepis ramiflora***

**BIZONULA / 1**

Monotypic.

**Bizonula letestui** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 380, 2006. – Icon.: Fl. Gabon 23: 147, 1973; Pellegrin, Fl. Mayombe: pl. 9, 1924.

Tree, monoecious?, 4-5 m, habit unknown; leaves bipinnate, c. 70 cm long, rachis and lower surface of leaflets with ferruginous *stellate* hairs, upper surface subglabrous, margins ciliate; panicle branched, 40-50 cm long, ferruginous stellate hairy; flowers functionally unisexual; fruit unknown.

Forest.

Known only from the type collected in 1910.

Leaves resembling those of a *Macphersonia pteridophylla* Baill.

**BLIGHIA / 3**

syn.: *Phialodiscus* Radlk.

Tropical African genus.

**Blighia sapida** K. D. Koenig – Akee Apple – Icon.: Ann. Bot. König & Sims 2: pl. 16-17, 1806; Radlkofer in Engler, Pflanzenreich 4, 165/2: 1144, 1933; Tussac, Fl. Antill. 1: pl. 3, 1808 (colour, sub nom. *Akeesia africana*); Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 223, 1959; Irvine, Woody pl. Ghana: 537, 1961; Vivien & Faure, Arbres forêts denses Afr. Centr.: 401, 1985; Keay, Trees Nigeria, ed. 2: 359, 1989; Adam, Fl. descr. Mts Nimba 2: 835-836, 1971; Akoegninou & al., Fl. analyt. Bénin: 919, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 747, 753, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 399, 2009.

syn.: *Cupania edulis* Schumacher & Thonn.; *Bonannia nitida* Raf.; *Sapindus obovatus* Wight & Arn. ex Hiern; *Cupania akeesia* Spach; *C. sapida* Voigt; *Akeesia africana* Tussac

Tree, evergreen 6-25 m; crown round, heavy, or umbrella-shaped; bole long, fluted at base, or often short and crooked, 0.5-1.2 m Ø, 2.5 m in girth; bark smooth, grey; young branchlets yellow-tomentose, striate, glabrescent and whitish; branches ribbed; foliage heavy, dark green; leaves pinnate, 25-35 cm long, petiole flattened but not winged; leaflets glabrous above, shortly hairy or glabrous beneath; flowers unisexual, sometimes bisexual, greenish white, very fragrant, in slender densely short-hairy racemes as long as leaves; fruit bluntly 3-gonous, pear-shaped, large, fleshy, glabrous, pendant, dehiscent, at first yellowish, finally red with 3 cells hairy inside, each with a large black seed with a prominent yellowish aril. New flush of leaves bronze-coloured.

Moist or drier forest areas and forest outliers and patches in savanna regions; dry places in forest areas; forest regrowth; gallery forest; low alt.

São Tomé, Príncipe.

Often planted as an ornamental or a shade tree. Introduced in E. Africa, India, tropical America, West Indies.

Fruits (aril) poisonous when unripe (green) or overripe and decaying. The raphe (bitter, fibrous, reddish) of the seed is the dangerous part. Used as a fish poison.

Leaves resembling those of *B. welwitschii* of evergreen forests, but leaflet apex rounded or bluntly acute.

## BLIGHIA

**B. unijugata** Bak. (“unijuga” A. Chev., Explor. Bot. 1: 154, 1920); Friis, Forest trees N.E. Trop. Afr.: 188, 315, 1992; Figueiredo & Smith, Pl. Angola: 156, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 331, 2009. – Icon.: Engler, Veg. d. Erde 9, Pflanzenwelt Afr. 3/2: 284, 1921 (sub nom. *Phialodiscus zambeziacus*); Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 225, 1959; Irvine, Woody pl. Ghana: 539, 1961; Sim, Forest fl. Port E. Afr.: pl. 22, 1909 (sub nom. *B. sapida*); Fl. Zambes. 2/2: 517, 1966; Adam, Fl. descr. Mts Nimba 2: 837, 1971; Fl. Gabon 23: 185, 1973; Fl. Ethiop. 3: 510, 1989; Beentje, Kenya trees, shrubs & lianas: 414, 1994; Fl. E. Trop. Afr., Sapindaceae: 27, 1998; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 747, 753, 2006; Akoegninou & al., Fl. analyt. Bénin: 920, 2006; Harris & Wortley, Sangha trees: 166, 2008.

syn.: *B. zambeziaca* Bak.; *Phialodiscus zambeziacus* (Bak.) Radlk.; *P. unijugatus* (Bak.) Radlk.; *P. plurijugatus* Radlk.; *P. verschuerenii* De Wild.; *P. laurentii* De Wild. (type: Laurent 1883; Zaire: Yambuya, 1906), non *Blighia laurentii* De Wild. (= *B. welwitschii*); *Phialodiscus myrmecophilus* Gilg in sched. (Stapf 497, fide Fl. Camer. 16: 186, 1973); *P. dewevrei* Gilg [ex De Wild.], nom.; *Blighia sapida* sensu Sim, o.c.: 32, pl. 22, 1909, non K. D. Koenig; *Hitzeria edulis* Klotzsch (*Burseraceae*, female specimen); *Commiphora edulis* (Klotzsch) Engl.

Tree, ? dioecious, 3-18-20(-30-40) m; bole short, slightly fluted, 50-80 cm Ø, to 2 m in girth; crown dense, spreading; bark smooth, grey-brown, thin, brittle; young branchlets golden-hairy, striate, glabrescent; leaves reddish when young, drying bright green or brownish, 10 cm long, with (1-)-2-4(-5) pairs of leaflets, ± glabrous, often with hairy domatia, the upper ones largest, the lower pair resembling stipules; inflorescences 2-10 cm long, simple or branched; flowers whitish-yellow, sweet-scented; capsule reddish; seed black with bright yellow aril.

Evergreen forest, transitional forest, Afromontane rain-forest, sometimes riverine; forest margins; sometimes persisting in gully forests and in cultivations; lake shores; semi-deciduous wet forest, and transitional to evergreen forest; secondary forests and wooded thickets; also woodland, bushland, grassland with trees and termite mounds; *Anogeissus-Khaya grandifolia* wood; often retained when bush is cleared; 0-1900 m alt.

S. Africa.

Planted as a shade tree around villages and in coffee plantations (Ethiopia, Angola). Considered a weed tree in tsetse fly control programmes.

Fruits, seeds, flowers used as fish poison.

Easily confused with *B. sapida*, but leaflets broadly acuminate and fruit valves glabrous inside, fruit smaller (1.5-3 cm long) and lobes sharp-edged.

Regenerates from root suckers; freely coppicing.

**B. welwitschii** (Hiern) Radlk., incl. var. *bancoensis* (Aubrév. & Pellegr.) Aubrév. & Pellegr. – Kâkâ – Figueiredo & Smith, Pl. Angola: 156, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 331, 2009. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 225, 227, 1959; Adam, Fl. descr. Mts Nimba 2: 836, 838, 1971; Fl. Gabon 23: 183, 185, 1973; Vivien & Faure, Arbres forêts denses Afr. Centr.: 405, 1985; L. White & Abernethy, Guide Vég. Réserve Lopé, Gabon: 153, 1966; Wilks & Issembé, Arbres Guinée Equat.: 447, 2000; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 753, 2006; Gilg in Mildbraed, Wiss. Ergebn. Deutsch. Zentral-Afr.-Exped. 1907-1908: pl. 54 opposite p. 480, 1912 (*Blighia mildbraedii*); Harris & Wortley, Sangha trees: 166, 2008.



## BLIGHIA WELWITSCHII

bas.: *Phialodiscus welwitschii* Hiern (specim. Welwitsch 4517, 4518; 6674 = *B. unijugata*).

syn.: *Blighia wildemaniana* Gilg apud De Wild. ex Radlk.; *B. laurentii* De Wild. (type: Laurent 940; Zaire: Eala, 1905), non *Phialodiscus laurentii* De Wild. (= *Blighia unijugata*); *B. mildbraedii* Radlk.; *B. kamerunensis* Radlk.; *Phialodiscus mortehanii* De Wild.; *P. bancoensis* Aubrév. & Pellegr.; *P. plurijugatus* sensu Aubréville, Fl. forest. Côte d'Iv., ed. 1, 2: 189-192, 1936, non Radlk.

Tree, deciduous, 20-50 m; bole straight, cylindrical, somewhat fluted at base, to 20 m high, 0,8-1 m Ø; bark grey with small reticulate fissures, or thin and smooth, hard, flaking; slash orange and brownish mottled; young branchlets, petioles, rhachides, petiolules orange-pubescent, twigs soon glabrescent; leaves (when young fragrant) ± glabrous, leathery, discolorous, with (2-)3-4 pairs of leaflets, the outer pair largest, midribs channelled above (prominent in *B. unijugata*), petiole winged; flowers unisexual, yellowish-white, very fragrant, in simple or little branched racemes 3-15 cm long; capsule 3-4-lobed, turbinate, reddish, glabrous outside, valves hairy inside, 2,5-6 cm long; seeds black, aril yellow.

Closed forest; forest with *Leguminosae* and *Sapotaceae*; evergreen wet forest; secondary forests; 1-1150 m alt.

Fruit used as fish poison.

Confused with *B. sapida*, but leaflets (long-)acuminate, ± glabrous, and fruits sharply angled.

## BLIGHIOPSIS / 1

Monotypic.

**Blighiopsis pseudostipularis** Van der Veken

Tree, dioecious, 8-30 m; bole straight 6-18 m high, 0,2-0,8 m Ø; bark light brown to violet brown, with wavy elevated lines, with sticky reddish sap; leaves paripinnate, with 1-6 pairs of leaflets, concolorous, glabrous, the inner pair smallest, stipule-like; flowers white-pink-red, petals absent, stamens 5(-7); inflorescences 2-10 cm long, simple or fasciculate, axillary, axes ± densely silvery puberulous, with sparse minute glands; capsule 3-lobed (1 ovule in each lobe), 3-4 cm long, late dehiscent, outside and inside glabrous; seed 2-2,5 cm long with fleshy testa, aril absent.

Semi-deciduous forest with *Scorodophleus-Oxystigma*; rain-forest; forest with *Chrysophyllum*, *Pentadesma*, *Anonidium*; transitional forest on steep mountain slopes; riverine forest with *Pentadesma*; forest with *Michelsonia*; terra firma primary forest; 660-1400 m alt.

In Fl. Congo Belge 9: 282, 1960, would key out with (18) *Lecaniodiscus* and (19) *Haplocoelum*, if to the line β "seed with aril" one added "or fleshy tegument" (cf. Van der Veken, Bull. Jard. Bot. Etat, Brux. 30: 415, 1960).

BOTTEGOA – See below under **Ptaeroxylaceae**

## CAMPTOLEPIS / 1

syn.: *Hypseloderma* Radlk.

Four species in Madagascar, one of which also in mainland Africa.

**Camptolepis ramiflora** (Taub.) Radlk.; Friis, Forest trees N.E. Trop. Afr.: 189, map p. 315, 1992. – Icon.: Fl. Trop. E. Afr., Sapindaceae: 49, 1998; Capuron in Mém. Mus. Natl. Hist. Nat. Paris 19: 109, 1969 (reproduced by Schatz, Generic tree flora Madagascar: 363, 2001); Thulin, Fl. Somal. 2: 251, 1999.

syn.: *Hypseloderma jubense* (Chiov.) Radlk.

Tree, dioecious, evergreen, much-branched, 3-12(-30) m; bole clear; older bark reddish brown, exfoliating in plates like a *Platanus*; young branchlets golden pubescent, later glabrous, with whitish smooth bark; leaves 2-8(-13) cm long, with 2-4(-5) pairs of thick leathery leaflets ± glabrous, drying purplish brown beneath, midrib sunken, outer pair largest; flowers white 5-6 mm long, in short fascicles of cymes from older wood, axes yellowish pubescent; fruit leathery, indehiscent, c. 3 cm long.

Forest with *Trichilia*, *Garcinia*, *Hyphaene*; riverine forest; 10-200 m alt.

Madagascar.

Populations in Kenya threatened by habitat loss and degradation (Maunder & al., eds., Plant conservation in the Tropics: 272, 2002).

## CARDIOSPERMUM / 3

Mainly tropical American genus of c. 15 species three of which widespread in tropical regions.

**Cardiospermum corindum** L., incl. fa. *canescens* (Wall.) Radlk., and fa. *clematideum* (A. Rich.) Radlk.; Agnew & Agnew, Upl. Kenya wild fl.: 164, 1994; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 450, 2001; J. Gaertner, De fruct. et sem. pl. 2: pl. 115 fig. 1 (1790 + p. 161, fruit, sub nom. *Cysticapnos africana*).

syn.: *C. canescens* Wall., incl. var. *glabrescens* Almagia; *C. clematideum* A. Rich.; *C. oblongum* A. Rich.; *C. pubescens* Lagasca; *C. molle* Kunth; *C. pilosum* Turcz.; *C. alatum* Bremek. & Oberm.; *Corydalis vesicaria* auct. non (L.) Pers.: Schinz in Bull. Herb. Boiss. 5, App. 3: 88, 1897, and Dinter in Feddes Repert. 16: 242, 1919 (*Papaveraceae*); *Cysticapnos africana* J. Gaertn.

Perennial (and annual ?) climbing herb, slightly woody, monoecious, rarely suberect, 0,3-4,5 m long, reaching the tops of Acacias, densely pubescent; stems deeply grooved; leaves stipulate, biternate or pinnate, triangular in outline, medium division largest, densely velvety; flowers whitish, 4-6 mm long, in corymb-like to panicle grey-pubescent inflorescences longer than the leaves, with a pair of opposite spirally coiled tendrils near apex; capsule papery, inflated, green to orange to rusty red, 3-4 cm long, pubescent, broadest near the middle; seeds black with conspicuous white hilum.

(*Acacia-Commiphora*) bushland and woodland, wooded grassland; also scrub on rocky hills; sometimes along (seasonal) streams; riverine and ground-water forests; low altitude savannas; abandoned fields; 150-2400 m alt.

## CARDIOSPERMUM CORINDUM

Very variable: Radlkofer (in Engler, Pflanzenreich, 4/165: 397-407, 1932) proposes 14 forms (whereof fa. *clematideum* and fa. *pechuelii* in Africa). It is, however, impossible to maintain his infraspecific system. – **C. pechuelii** Kuntze [*C. corindum* L. fa. *pechuelii* (Kuntze) Radlk.] occurs in Namibia.

S. Africa, Caprivi Strip, Namibia, Swaziland, Botswana; Saudi Arabia; widespread in tropical and subtropical regions of the world.

Sometimes cultivated as an ornamental.

**C. grandiflorum** Sw., incl. fa. *genuinum* Radlk. nom. inval., fa. *elegans* (Kunth) Radlk., fa. *hirsutum* (Willd.) Radlk., and var. *elegans* (Kunth) Hiern and var. *hirsutum* (Willd.) Hiern; Agnew & Agnew, Upl. Kenya wild fl.: 164, 1994; Figueiredo & Smith, Pl. Angola: 156, 2008; Steentoft, Flow. plants in W. Africa: 183, 2008; Subramanyam & al., Ethnobot. 19: 1-16, 2007. – Icon.: Fl. Gabon 23: 15, 1973; Fl. Trop. E. Afr., Sapindaceae: 99, 1998 (partial); F. White & al., Evergreen forest fl. Malawi: 528, 2001; Akoegninou & al., Fl. analyst. Bénin: 921, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 747, 763, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 398, 2009; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 76, 2007.

syn.: *C. caillei* A. Chev.; *C. hirsutum* Willd., *C. elegans* Kunth; *C. barbicaule* Bak.; *C. hispidum* Kunth; *C. halicacabum* L. var. *grandiflorum* A. Chev. (further synonyms in Radlkofer, o.c.: 372-379).

Climber, perennial, herbaceous or slightly woody, vigorous, monoecious, 0, 9-9 m long, smothering over vegetation; stems annual, slender, wiry, fibrous, green, deeply ridged, with long spreading stiff hairs (fa. *hirsutum*) or without such (fa. *elegans*); leaves biternate, less often ternate, sparsely pubescent or glabrescent, often with hairy domatia beneath; flowers white, sweet-scented, 6-11 mm long, in horizontally spreading panicles with a pair of tendrils at apex of peduncle; capsule 3-angled, lantern-shaped, 5-7 cm long, ± glabrous; seeds black with white hilum (used for necklaces).

Rain-forest on edges, riverine forest and thicket; thicket under *Albizia zygia*; lowland rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum*, *Alstonia boonei*, *Parinari excelsa*; grassland patches within forest; forest gallery; savannas; roadsides, abandoned fields, plantations; secondary jungle in the forest zone; 1-1800(-2000) m alt.

Three varieties (referring to pubescence) are retained by Radlkofer (o.c.: 375), and in Fl. Cameroun 16: 17-18, 1973. But great variation in pubescence exists even in a single plant.

Namibia, Caprivi Strip, S. Africa, Swaziland, Botswana; C. & tropical America (amphi-Atlantic). – Introduced into S Europe, Sri Lanka, Malaya, Australia. The typical form (fa. *grandiflorum*) is said to occur in tropical America (type Swartz, from Jamaica). Cultivated in Kenya.

**C. halicacabum** L., excl. var. *grandiflorum* A. Chev. (= *C. grandiflorum*). – Icon.: Radlkofer, o.c.: 380 (partial); Andrews, Flow. pl. Anglo-Eg. Sudan 2: 338, 1952; Schnell in Icon. Pl. African. 1: pl. 13, 1953; F. Busson, Pl. aliment. Ouest afric.: 349, 1965; F. Zambes. 2/2: 510, 1966; Fl. Gabon 23: 15, 1973; Fl. Eth. 3: 497, 1990 (var. **halicacabum**); Leenhouts in Fl. Males., Ser. 1, 11: 485, 1994; Agnew & Agnew, Upl. Kenya wild fl.: pl. 60, 1994; Fl. Mascar. 76: 4, 1997 (var. **microcarpum**); Fl. Trop. E. Afr., Sapindaceae: 99, 1998; Thulin, Fl. Somal. 2: 242, 1999; Boulos, Fl. Egypt 2: 79, 2000; Chaudhary, Fl. Kingd. Saudi Ara-

## CARDIOSPERMUM HALICACABUM

bia ill. 2/1: 450, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 763, 2006.

syn.: *C. corindum* L.; *C. luridum* Blume; *C. halicacabum* L. var. *luridum* (Blume) Adelb.; *Halicacabus peregrinus* Rumphius

Annual climbing monoecious herb sometimes forming clumps; stems ± woody, slender, 0,2-3 (-5) m long, straw-coloured with green grooves, glabrous or finely grey-downy; leaves biternate, stipitate, triangular in outline, glabrescent or sparsely pubescent, leaflets sharply toothed; peduncle with tendrils at apex; inflorescence an umbel with 3 stalked racemes, ± as long as leaves; flowers whitish-yellow, 2-3 mm long; capsule ± round, hairy, yellow green turning chestnut brown, membranous-winged, broadest at apex, seeds black with white hilum (used for necklaces). – Sometimes flowering when only 0,2 m tall.

Woodland, evergreen bushland, forest edges; rocky or stony places in grassy woodland; *Acacia* forests; riverine forest; edges of flood plains; on rocks covered with thin soil, short grass, and thickets; waste places in forest regions extending into drier areas; by drying-up pools, in muddy places both cultivated and uncultivated; marshy sandy places at river banks; field with cotton or *Phaseolus* or maize; lake shores; sometimes on volcanic soil; coastal grassland and coconut plantations (var. **microcarpum**); 0-2250 m alt. – A common riverside plant in many areas.

Cape Verde Is.; Annobón, Bioko/Fernando Poo; Namibia, S. Africa, Botswana, Swaziland; Egypt; Madagascar, Comoros, Mascarenes, Mauritius. Tropics and subtropics of the world: tropical Asia incl. Arabia, tropical America (var. **microcarpum** typically in S. America); pantropical weed. – Naturalised in Crete (Bergmeier in Willdenowia 37: 440, 2007; Igersheim in Ann. Naturhist. Mus. Wien, B 110: 263, 2009), S France, Spain, Balkans (fide Vivant, Monde Plantes 472: 2, 2001).

Comprises 2 vars.: – var. **halicacabum**, with larger capsules (3-3,5 cm long); – var. **microcarpum** (Kunth) Blume [bas.: *C. microcarpum* Kunth; syn.: *C. truncatum* A. Rich.] with smaller capsules (1-1,5 cm long), in E. Africa coastal and inland; a well-marked variety, but intermediates with var. **halicacabum** occur in Kenya and Tanzania.

[**C. integerrimum** Radlk.]. Martius, Fl. brasil. 13/3: 438, 1897. – Icon.: *ibid.*: pl. 95; Radlkofer in Engler, Pflanzenreich 4/165: 380, 1932 (flower).

Slightly woody climber with biternate leaves and flowers ca. 1 cm long, tendrils at apex of peduncle, sepals 5 (4 in the African spp.).

Native of Brazil. Introduced into Cameroon.

## CHONOPETALUM / 1

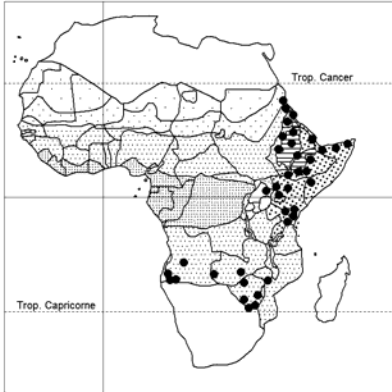
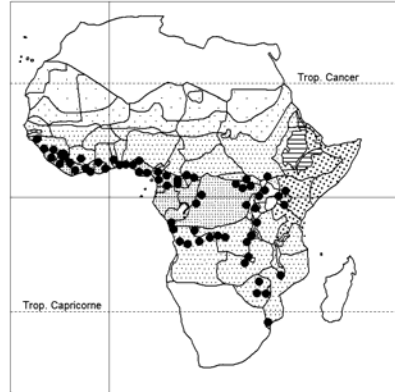
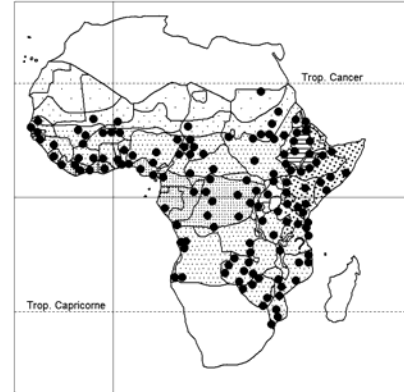
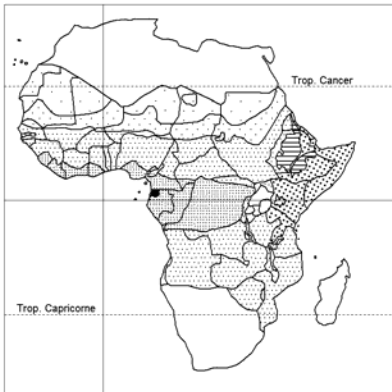
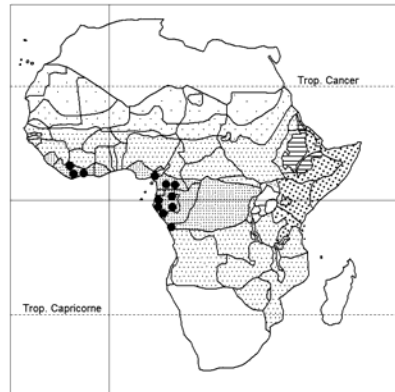
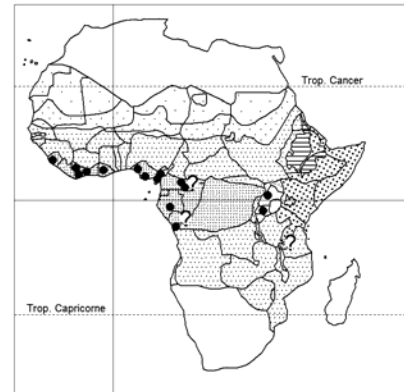
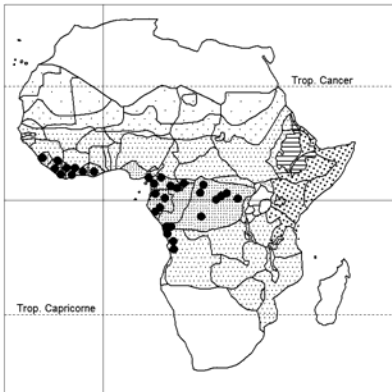
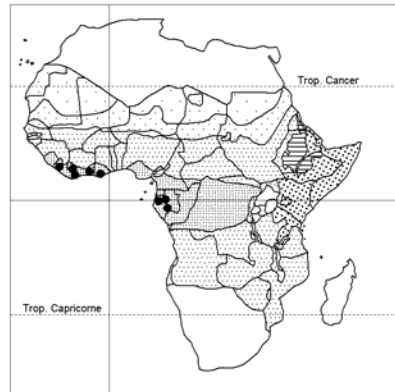
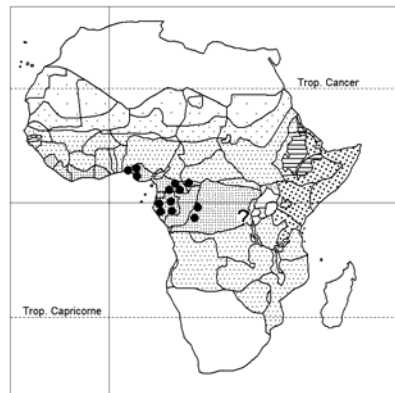
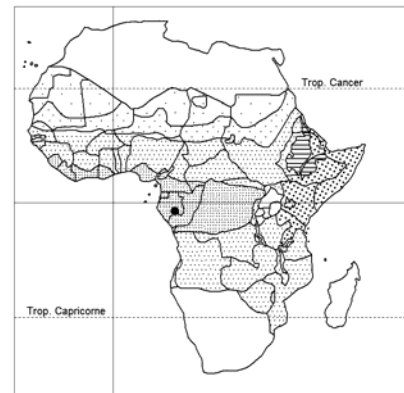
Monotypic. According to Leenhouts in Fl. Males., Ser. 1, 11/3: 541, 1994, related to *Lepisanthes*, *Placodiscus* and *Glenniea*.

**Chonopetalum stenodictyum** Radlk.

Shrub; branchlets terete, glabrous, grooved; leaves 30 cm long, with 3 pairs of leaflets densely reticulate, coriaceous; flowers (male) white, numerous, small, in axillary fascicles of branched racemes, 14 cm long, axes finely yellowish pubescent; female flowers and fruit unknown. Petals present.

Ecology unknown.

Known only from the type collected in 1908 (Tessmann 440a, Equatorial Guinea: Uelleburg near Npamenkan), B, probably lost.

**Cardiospermum corindum****Cardiospermum grandiflorum****Cardiospermum halicacabum****Chonopetalum stenodictyum****Chytranthus angustifolius****Chytranthus atroviolaceus****Chytranthus carneus****Chytranthus cauliflorus****Chytranthus edulis****Chytranthus ellipticus****Chytranthus gillettii****Chytranthus imenoensis**



## CHYTRANTHUS / 19

syn.: *Glossolepis* Gilg

Tropical African genus: Small trees or shrubs with unbranched palm-like trunks and large pinnate leaves of many leaflets; inflorescences borne on roots, trunk or branches; flowers slightly zygomorphic.

Several taxa insufficiently known (cf. list at the end of the species treated below). No male flowers known in 1 species, no female flowers in 1 species, no fruit in 1 species and only the immature fruit known in 2 species. No ecology recorded for 1 (or 2?) species, and 2 species known only from the type.

**Chytranthus angustifolius** Exell, incl. var. *ngounyensis* Pellegr., Mém. Soc. Bot. France 1955: 72, 1956; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 760, 2006; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Fl. Cameroun 16: 103, 1973; Aké Assi, Etude florist. Côte d'Iv.: pl. 5 opposite p. 92, pl. 6 opposite p. 94, 1963 (sub nom. *C. bracteosus*).

syn.: *C. bracteosus* Radlk. ("*bracteatus*" sensu auctt., sphalm).

Tree (or undershrub) with simple fleshy trunk 3-8 m tall, 5 cm Ø; leaves 45-90 cm long with 8-12 pairs of leaflets hairy or velvety to touch, shiny beneath, middle ones the largest, acuminate to drip-tipped, narrow, (9-16-)20 × (3-)4-5 cm, drying (olive) green; inflorescences brown, rigid, narrow, 10-40 cm long, finely puberulous, borne all up the trunk; fruit glabrous, with 5(-7) sharp wings and 10 grooves, 7-10 × 8-15 cm.

Forest; shady humid forests; 50-700 m alt.

Variable in flower and fruit characters.

Resembling *C. stenophyllus* which has, however, more numerous leaflets with laxly pilose nerves beneath.

**C. atroviolaceus** Bak. f. ex Hutch. & Dalziel; Irvine, Woody pl. Ghana: 540, 1961; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 760, 2006; Fl. Trop. E. Afr., Sapindaceae: 66, 1998. – Icon.: Aké Assi, Etude florist. Côte d'Iv.: pl. 6 between pp. 92 and 93, 1963; Fl. Cameroun 16: 105, 1973; Fl. Congo belge 9: 355, 1960 (fruit, sub nom. *C. brunneotomentosus*).

syn.: *C. macrophyllus* Gilg var. *obanensis* Bak. f.; *C. macrophyllus* sensu Walker & Sillans, Pl. utiles Gabon: 386, 1961, non Gilg

(Shrub or) slender tree, unbranched, 0,8-5-18 m; trunk (2-)15 cm Ø; small axillary buds conspicuously hirsute; leaves 0,5-1,2 m long, in terminal clusters, with 3-6 pairs of leaflets, elliptic, 15-40 × 7-15 cm, the largest pairs at apex, ± hairy or glabrous, shiny on both surfaces, midrib impressed above and hairy; calyx red with short (purplish) black hairs, petals yellow, in slender racemes borne below leaves or clustered on trunk at ground-level and on main branches; fruits deeply 5-lobed, densely purplish-hairy, c. 7 × 7 cm.

(Evergreen) forest; in understory of high forest; moist and periodically flooded forest, on grey clay loams; forest margins; 1-1300 m alt.

Material from Uganda has very large fruits (c. 12-13 cm) and glabrous leaves. A specimen from Ulanga Distr., Tanzania (= T6) uncertain (Cribb & al. 11155).

**C. carneus** Radlk., incl. var. *secundiflorus* Hauman; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Adam, Fl. descr. Mts Nimba 2: 841, 842, 1971 (*C. longiracemosus*); Fl. Cameroun 16: 95, 1973; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 747, 761, 2006; Harris & Wortley, Sangha trees: 167, 2008.

## CHYTRANTHUS CARNEUS

syn.: Enum. 2: 218, 1992; *C. mannii* sensu Hiern, Cat. Welwitsch Afr. pl. 1: 170, 1896, p.p. (Welwitsch 1690 = *C. welwitschii* Exell), non Hook. f.; and sensu Engler, Veg. d. Erde 9, Pflanzenzw. Afr. 3/2: 273, 1921 (idem); and sensu Pellegrin, Fl. Mayombe: 70-71, 1924 (idem).

Tree (or shrub) monoecious, palmlike, rarely branched, 3-10 m tall; stem 10-15 cm Ø, hairy when young, with 2 deep grooves below the basal thickening of the petioles; leaves 0,6-1,2 m long, with 4-12 pairs of leaflets, the outermost largest; rhachis projected beyond the terminal pair, grooved; midrib of leaflets channelled above, with long hairs or short orange hairs, or glabrous; flowers red, c. 1 cm long, in pinkish bristly tomentose racemes, later branching, 0,2-0,4 (-1) m long (very long in var. *secundiflorus*), often borne on trunk near ground-level; capsule turbinate, at first violet-brown, velvety hairy and 6-winged, later reddish, 6-lobed, glabrous, c. 3-5 × 4-6 cm.

Various types of forests, in understory; evergreen forest; riverine forest; 1-700 m alt.

*C. subvilliger* Radlk. (of uncertain status) from S Cameroon seems to be closely related.

**C. cauliflorus** (Hutch. & Dalziel) Wickens; Fl. W. Trop. Afr., ed. 2, 1/2: 721, 1958 (sub gen. *Laccodiscus*); Sosef & al., Checklist pl. vascul. Gabon: 381, 2006. – Icon.: Fl. Cameroun 16: 93, 1973; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 747, 761, 2006.

Unbranched shrub or tree 2-8 m tall; branchlets, leaf-rhachis, lower surface of leaflets and inflorescence densely orange-brown long-hairy; trunk 2-8 cm Ø; leaves 0,5-1 m long, with 3-7(-11) pairs of leaflets; racemes pendulous, 10-70 cm long, borne on trunk between 0,5 m and 2 m height; fruit green with 3 major and 3 minor lobes, glabrescent, 11-15 × 6 cm.

Evergreen forest in understory; in small stands in primary rainforest; 500-586 m alt. (Gabon).

**C. edulis** Pierre – Icon.: Fl. Cameroun 16: 87, 1973 (partial).

syn.: Enum. 2: 218, 1992; *C. mannii* sensu Radlkofer in Engler, Pflanzenreich 4/165: 791, 1932, p.p. (= syn. *C. edulis* Pierre), and sensu Fl. Trop. Afr. 1: 430, 1868, p.p., non Hook. f.

Shrub, unbranched, 0,5-6 m tall, usually 1,5-2 m; apex of trunk, young petioles, midrib of leaf lamina above slightly pubescent, glabrescent; leaves with 4-7 pairs of leaflets; inflorescences 3-6 cm long, red or pinkish, borne on the trunk; fruit 3-lobed, slightly yellowish hispid, > 3 cm wide (edible fruit flesh).

Forest; 30-700 m alt.

The true **C. mannii** Hook. f. is a tree c. 5 m tall with cream-coloured flowers and edible fruit, endemic to Principe and S. Tomé; 90-200 m alt. "in wooded places in plantations" and in mountainous places (Exell, Catalogue vascul. pl. S. Tomé: 144, 1944).

**C. ellipticus** Hutch. & Dalziel; Keay, Trees Nigeria, ed. 2: 363, 1989; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 332, 2009.

Tree to 9 m, cauliflorous; leaves with 3-4 pairs of leaflets which are rounded or subcordate and unequal at base (not obtuse to cuneate as in *C. setosus*); petiole and rhachis conspicuously hairy, and leaflet nerves densely hairy beneath; flowers whitish in dense spike-like racemes 15 cm long.

Evergreen and semideciduous forests.

Also in Liberia ??

Resembling *C. setosus* but leaves different.



## CHYTRANTHUS

**C. gillettii** De Wild. – Icon.: Fl. Cameroun 16: 91, 1973; Harris & Wortley, Sangha trees: 167, 2008.

syn.: *C. sp.* A sensu Fl. W. Trop. Afr., ed. 2, 1/2, 718, 1958; Enum. 2: 218, 1992.

Tree, unbranched, 2-8(-10) m; leaves 35-70 cm long, with (3-) 4-6(-7) pairs of leaflets; petiole, rhachis and nerves of leaflets ± densely tomentose; flowers white-bright yellow in fascicled unisexual racemes, (yellowish) brown puberulous, 5-10-20 cm long borne on the trunk often ca 0,5 m above the base; fruit 3-lobed, hispid, orange-yellow, c. 3 cm Ø (5-6 cm on lobes), flesh edible.

Forest with *Gilbertiodendron dewevrei*; terra firma mixed-species forest; in understorey; gallery forest; 480-950 m alt.

Near *C. edulis* and *C. macrobotrys*.

**C. imenoensis** Pellgr.; Sosef & al., Check-list pl. vascul. Gabon: 381, 2006. – Icon.: Bull. Soc. Bot. France 102: 227, 1955 (partial).

Tree or shrub; leaves c. 60 cm long, with 6 pairs of leaflets; petiole, rhachis and nerves of leaflets densely golden hairy; leaflets acuminate at apex; inflorescences 15-20 cm long, axis striate, ± velvety and glandular; only male flowers with 12 stamens present on herbarium sheet.

Ecology unknown.

Known only from the type (Le Testu 8606) collected in 1930/1931. Said to be related to *C. setosus* but hairs more golden yellow; in number of stamens more similar to *C. talbotii*. Fouilloy & N. Hallé in Fl. Gabon 23: 112-114, 1973, compare this plant with *C. macrobotrys* as regards flower and inflorescence morphology, but leaves very different. But the homogeneity of the herbarium material is doubtful (only pieces).

**C. klaineanus** Radlk. – Icon.: Fl. Cameroun 16: 101, 1973.

syn.: *Pancovia ? klaineana* Pierre ms. in Herb. P.

Tree (or shrub), unbranched, 1-3,5 m tall; leaves pubescent, with 3-4 pairs of leaflets densely yellowish pubescent beneath; inflorescences slender, golden yellowish pubescent, 5-20 cm long, borne on the trunk from the base to c. 0,6 m height; fruit 3-lobed, orange-red, 3,5-4 × 2 cm, when dry resembling that of a *Placodiscus*.

Forest; 700-1000 m alt.

**C. longibracteatus** F. G. Davies; Fl. Trop. E. Afr., Sapindaceae: 67, 1998.

Small tree, dioecious; bark grey; leaves c. 1 m long, with short woody ribbed petioles (6 cm), with c. 12 pairs of leaflets, crowded, glabrous; inflorescences (female) 10-25 cm long, brownish velvety, borne on trunk and lower parts of the branches, with flowers singly or paired subtended by *long bracts* (2 cm); immature fruit ovoid, 2,5 cm long, 3-ribbed, orange-brown hairy; male flowers unknown.

Forest ?; c. 1000 m alt.

Known only from the type collected in 1953.

**C. macrobotrys** (Gilg) Exell & Mendonça; Akoegninou & al., Fl. analyt. Bénin: 921, 2006; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Bot. Jahrb. Syst. 24: pl. 1, 1897 (sub gen. *Glossolepsis*), and Radlkofer in Engler, Pflanzenreich 4/165: 779, 1932; Fl. Cameroun 16: 113, 1973; Keay, Trees Nigeria, ed. 2: 364, 1989; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 747, 759, 2006; Harris & Wortley, Sangha trees: 168, 2008.

## CHYTRANTHUS MACROBOTRYS

bas.: *Glossolepis macrobotrys* Gilg

syn.: *G. giorgii* De Wild.; *Chytranthus mayumbensis* Exell; *C. sp.* sensu Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 211, 1959 (specim. Aubréville 391).

Tree, palm-shaped, with 1 or 2 short branches, (1,5-)2-11 m tall, or often a straggling shrub, sparingly branched, arching over the ground; leaves 50-80 cm long (petiole 16-25 cm), glabrous, with (2-)3-6 pairs of leaflets, the upper ones much larger than the lower ones, cuneate at base, *bluish or silvery beneath*, petiolules very stout, glabrous; flowers brownish in narrow shortly pubescent, silvery racemes often pendulous, 10-50 cm long, borne on the trunk at 10-120 cm height from the base; stamens 11-15 (cf. *C. imenoensis*); fruit broadly spindle-shaped, 6-7-ribbed, glabrous, green, 10-15 × 7-13 cm, flesh yellowish, edible.

Closed forest in wet situations, in understorey; primary riverine forest, swamp forest; also in drier forest, mountainous forest; forest with *Gilbertiodendron dewevrei* and with mixed species; 1-950 m alt.

Variable. Leaflets vary in size and shape even on the same leaf.

**C. macrophyllus** Gilg, excl. var. *obanensis* Bak. f. (= *C. atroviolaceus*), and excl. sensu Pellegrin p.p. (= *C. gillettii*); Sosef & al., Check-list pl. vascul. Gabon: 381, 2006. – Icon.: Fl. Cameroun 16: 87, 1973 (partial).

Tree (or shrub), unbranched or little branched, palm-shaped, 3-8 m tall; trunk to 8 cm Ø; leaves 1-1,5 m long, 0,5 m wide, with rhachis striate, sparsely brown-tomentose; leaflets in 4-6(-8) pairs, glabrous or sparsely hairy beneath, long acuminate (acumen 2-3 cm); flowers pinkish-reddish in ? pendulous racemes 10-20 cm long borne on the trunk from ground-level to 0,5 m height, axis brown tomentose; fruit 3-lobed.

Forest, in shade; 80-500 m alt.

**C. mortehanii** (De Wild.) de Voldere ex Hauman; Harris, vascul. pl. Dzanga-Sangha Reserve: 191, 2002. – Icon.: Fl. Cameroun 16: 97, 1973; Harris & Wortley, Sangha trees: 168, 2008.

Shrub 2-5 m tall or tree 4-25 m, palm-shaped; trunk 4-5 cm Ø; leaves c. 75 cm long with finely striate petiole and rhachis; leaflets in 3-5(-7) pairs, glabrous, discolourous when dry (reddish beneath), long-acuminate; inflorescences 9-24 cm long, slender, puberulous, borne all along the trunk; fruit yellowish-green, glabrous, 3-lobed, often wider than long, 5-8 × 5-6 cm, fleshy, edible.

Forest, dry or wet, seasonally flooded; gallery forest; forest clearings; 350-850 m alt.

**C. obliquinervis** Radlk.; Verdcourt, Kew Bull. 11: 603, 1957; Fl. Trop. E. Afr., Sapindaceae: 66, 1998. – Icon.: Beentje, Kenya trees, shrubs & lianas: 415, 1994.

Tree 1,2-6-16 m, or shrub, dioecious or ? monoecious, palm-shaped; trunk usually unbranched; bark grey-brown, smooth or ± wrinkled; leaves to 1 m long, drooping, purplish when young; leaflets in 7-12 pairs, glabrous except for scattered long hairs on veins beneath, the lowermost small (2 cm long), the uppermost to 45 cm long; flowers white-cream in racemes 5-15 cm long, borne in clusters along the trunk; mature fruit unknown.

Moist or riverine forest, evergreen, on sand and coral; evergreen rain-forest with *Parinari*, *Piptadenia*, *Allanblackia*, *Cephalosphaera*; 5-900 m alt.

## CHYTRANTHUS

**C. priureanus** Baill., incl. subsp. *longiflorus* (Verdc.) N. Hallé; Verdcourt, Kew Bull. 11: 604, 1957. – Icon.: Fl. Trop. E. Afr. Sapindaceae: 65, 1998.

syn.: *C. sacleuxii* Pierre & Sacleux, incl. subsp. *longiflorus* Verdc.; *Talisia prieuriana* nom., in D. Bois, Bull. Mus. Natl. Hist. Nat. Paris 7/7: 379, 1901 (liste des plantes ... fleuri dans les serres ... en 1901).

Shrub, single-stemmed, or tree (0,2-)1-2 m tall, dioecious, resembling a seedling or sapling of a forest tree; bark ± rough with raised lenticels, covered with ± stellate corky cell masses when young; root thick, starchy; leaves to 50 cm long with 3-6 pairs of leaflets, glabrous except for occasional hairs on midrib beneath, the uppermost pair the largest (23 cm long); flowers cream, sweet-scented in long-pedunculate pseudoracemes (4-)15-30 cm long, brown-puberulous, borne below or just above ground-level; fruit finely pubescent, orange, 3-lobed, 3-5 cm Ø, fleshy, infructescences lying on the ground.

Ground-water forest in shrub layer, evergreen forest (remnants), riverine forest; coastal forest on coral rag; miombo woodland in fairly long grass near stream; 0-600 m alt.

First believed to have been collected (seeds) in French Guiana (or ? Guinea, misspelling). Then thought to have been grown from material collected by Leprieur in Senegambia. Later Hallé showed that the plant is identical with *C. sacleuxii* described from Zanzibar, and cultivated in Paris, July 1866.

**C. setosus** Radlk.; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 191, 2002; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Radlkofer in Engler, Pflanzenreich 4/165, 1: 785, 1932, and Engler, Veg. d. Erde 9, Pflanzenw. Afr. 3/2: 274, 1921 (fruit figure doubtful; cf. Fl. Cameroun, l.c.); Fl. Cameroun 23: 107, 1973; Aké Assi, Etude florist. Côte d'Iv.: pl. 8 opposite p. 96, 1963; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 761, 2006; Harris & Wortley, Sangha trees: 169, 2008.

Tree 1,5-6 m, palm-shaped, or shrub 2,5-4 m tall, dioecious; trunk slender, 1,5-10 cm Ø; young branchlets grooved; all parts whitish tomentose; leaves 50-80 cm long, petiole longer than rhachis (20-45 cm), with 3-4-6 pairs of leaflets glabrous above, long- and short-hairy on nerves beneath; uppermost leaflet pair the largest (25-40 cm long); flowers yellowish-white in clustered pendulous racemes 7-25 cm long borne on the trunk; fruit densely pubescent; 8-winged, greenish-yellow with ± 5 conspicuous calyx lobes at base. – Cf. above under *C. ellipticus*.

Terra firma forest; evergreen forests; shady woods; forest gallery and on islands; secondary forests; ?-200-400 m alt.

Not in Benin: according to N. Hallé & Aké Assi (Adansonia, Sér. 2, 2: 297, 1962) the specimens A. Chevalier, sterile, do not belong to this species (Chevalier, Explor. Bot. 1: 152, 1920); Chevalier No 22884 is partly *Canarium* (*Burseraceae*); N° 22885 is probably a shoot of a *Trichilia* (*Meliaceae*).

### **C. stenophyllus** Gilg

Small tree or shrub, palm-shaped; leaves 50-60 cm long, petiole 15-20 cm long; leaflets in 4-6-10 pairs, long-acuminate, glabrous above, densely tawny tomentose on petiole, rhachis and nerves beneath [var. *stenophyllus*] or ± glabrous [var. *gerardii* (De Wild.) Hauman]. inflorescences dense, tawny tomentose, 15-20 cm long borne on the trunk; fruit 3-lobed (6-locular), tawny tomentose, 3,5-4 cm Ø, edible (fruit unknown in var. *stenophyllus*).

Terra firma and swampy forests; primary and secondary rain-forests.

Comprises 2 vars.

## CHYTRANTHUS

**C. talbotii** (Bak. f.) Keay; Hawthorne & Jongkind, Wood pl. west. Afr. forests: 758, 2006. – Icon.: Fl. Cameroun 16: 109, 1973; L. White & Abernethy, Guide vég. Rés. Lopé, Gabon: 153, 1996.

syn.: Enum. 2: 218, 1992; *Glossolepis ? klainei* Pierre in Herb. P.

Shrub or tree, palm-shaped, sparingly branched, 3-10 m tall; trunk c. 8 cm Ø; leaves 0,4-1 m long (0,2-0,4 m petiole length), with 7-14 pairs of leaflets all of similar size, long-acuminate at apex, glabrous, shining above; flowers whitish; stamens 12-15, with mauve filaments and reddish anthers; racemes 12-40(-80) cm long, borne on bosses near base of trunk and lying on the ground; fruit c. 12 cm long, 9 cm Ø, glabrous, yellowish, 6-7-ribbed, edible; seeds large (4-5 cm long).

Rain-forest near the coast; forest with *Terminalia*; swamps in wetter forests; 1-770 m alt.

Resembling *C. macrobotrys* but number of leaflets, and their size and shape different. May also be confused with *Trichoscypha acuminata* (*Anacardiaceae*).

**C. verecundus** N. Hallé & Aké Assi – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 761, 2006 (partial).

Shrub 0,4-0,8 m tall; trunk unbranched, c. 0,8 cm Ø, pubescent at apex; leaves c. 20 cm long (petiole 6-8 cm), rhachis and young parts densely yellowish-brown hairy; leaflets in 2-6 pairs, the uppermost the largest (sometimes an unpaired terminal leaflet); mature leaflets glabrous, papery, with long drip-tip, dark greyish when dry; inflorescences whitish, 1 cm long, borne on the stem at 0,5-1 m above ground-level; fruit 3-angular, pyramidal, glabrous when mature, fleshy, 11 × 6 cm.

Evergreen forest, scattered.

May be mistaken for an *Eriocoelum* sapling when sterile. Resembling *C. atroviolaceus* but fruit different (deeply 5-lobed, c. 7 cm Ø, purplish hairy).

\* \* \*

TAXA OF UNCERTAIN STATUS (not mapped):

*Chytranthus calophyllus* Radlk.

Small tree with an unbranched trunk, hairy; leaves 0,9-1 m long, tomentellous, paripinnate, the uppermost pair of leaflets the largest; inflorescences rusty-tomentose, pendulous, 12-18 cm long, borne at base of trunk; (male) flowers 9 mm long, stamens 8; female flowers and fruit unknown.

In hilly country; c. 200 m alt.

Known only from the type (Mildbraed 6011) collected in 1911, from S Cameroon (Kribi).

In Radlkofer 1932 keying out near *C. macrophyllus* (but anthers hispidulous, not glabrous).

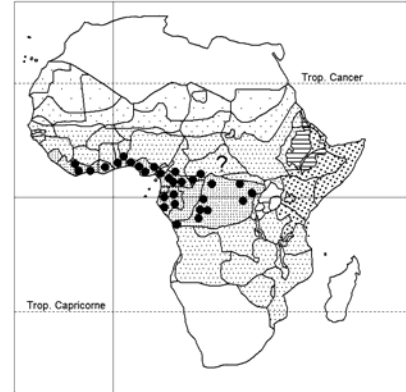
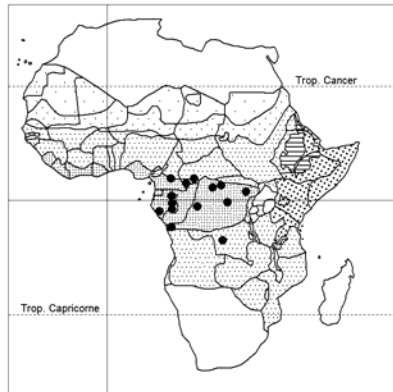
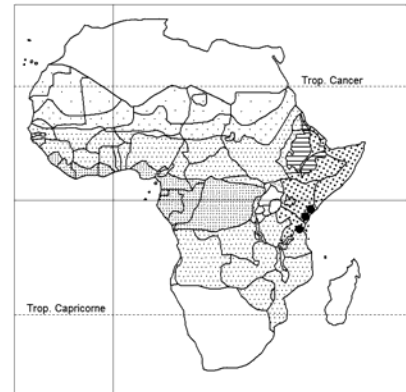
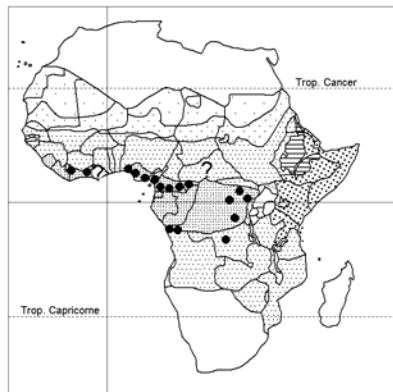
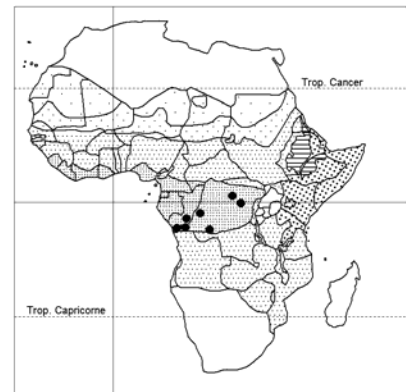
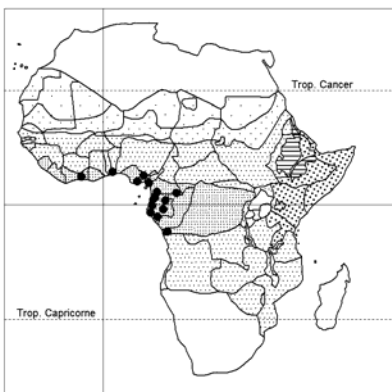
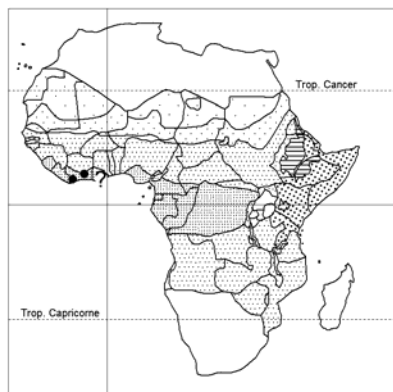
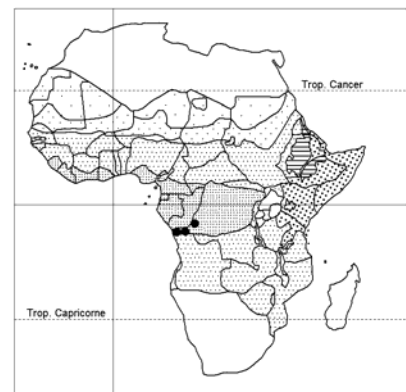
*C. dasystachys* Gilg ex Radlk.

Small hairy tree to 6 m tall, with slender trunk; leaves 1,1-1, 2 m long, with 7 pairs of leaflets slightly bullate, glabrous, the uppermost the largest; flowers greenish-white, 5 mm long (stamens 7), in racemes 15-20 cm long, rusty-tomentose, borne in the middle of the trunk; fruit unknown.

Forest.

Known only from the type (Mildbraed 5101) collected in 1911, from S. Cameroon (Lomié).

In Radlkofer 1932 keys out near *C. gilletii*.

**Chytranthus klaineanus****Chytranthus longibracteatus****Chytranthus macrobotrys****Chytranthus macrophyllus****Chytranthus mortehanii****Chytranthus obliquinervis****Chytranthus priureanus****Chytranthus setosus****Chytranthus stenophyllus****Chytranthus talbotii****Chytranthus verecundus****Deinbollia acuminata**

## CHYTRANTHUS

*C. dinklagei* Gilg ex Radlk. 1932 (in Engler, Pflanzenwelt Afr. 3/2: 273, 1921, nomen).

Shrub with terete stems 1 cm Ø in leafy parts; leaves 40-50 cm long, petiole c. 10 cm long, striate, powdery puberulous; leaflets in 3 pairs, the outermost the largest, glabrous above, minutely puberulous on nerves beneath; inflorescences on the trunk; flowers unknown; fruit 3,8 × 2,6 cm, 3-lobed, 3-locular, glabrous.

Brush-wood.

Known only from the type (Dinklage 1130) collected in 1891; from S Cameroon (Gross-Batanga).

*C. flavoviridis* Radlk.

Small tree; leaves c. 50 cm long (petiole 10 cm), with 3 pairs of leaflets, petiole and rhachis puberulous, lamina glabrous, yellowish-green beneath; inflorescences 1,5-3 cm long borne on the trunk; male flowers white, stamens 6; female flowers and fruit unknown.

Ecology not recorded; 25 m alt.

Known only from the type (Lederemann 1028) collected in 1908; from S Cameroon (Kribi).

*C. ledermannii* Gilg ex Radlk.

Tree 15-20 m tall; leaves 25-30 cm long, short-petiolate (4-7 mm), rhachis glabrous; leaflets in 3 pairs, yellowish green, the outermost the largest, lamina with secretory cells; inflorescences 18-22 cm long, slender, borne on the trunk; flowers 6-8 mm long, pinkish; stamens 6; immature fruit 3-angled, tawny tomentose.

Forest with few very tall trees but rich in medium-sized trees, lianes, shrubs, partly quite open; 200-300 m alt.

Known only from the type (Lederemann 6444) collected in 1909; from W Cameroon (Lom).

Seems related to *C. carneus*.

*C. micranthus* Gilg ex Radlk.

Small tree; leaves c. 60 cm long, yellowish-green, rhachis grey-tomentellous, with 4-5 pairs of leaflets, the uppermost much larger than lowest ones, lamina glabrous above, minutely hairy beneath, with secretory cells; inflorescences 8-16 cm long, slender, tawny tomentose; male flowers small with 8 stamens; female flowers and fruit unknown.

In hilly country; 200 m alt.

Known only from the type (Mildbraed 5894) collected in 1911; from S Cameroon (Kribi).

*C. punctatus* Radlk. – Icon.: Bot. Jahrb. Syst. 24: pl. 2 H, 1897 (sub nom. *Pancovia macrophylla*); Engler, Pflanzenreich 4/165, Sapindaceae 1: 777 fig. 16 H, 1932.

syn.: *Pancovia macrophylla* Gilg

Shrub 2 m tall; branchlets and petioles terete, striate, powdery-puberulous at apex, soon glabrescent; bark ash-grey; leaves 30-50 cm long, petiole 6-8 cm; leaflets in 2-3 pairs, long-acuminate at apex, glabrous, shining above, dot-marked, with secretory cells (also present in the flowers); inflorescences only 0,7-1,5 cm long, with dense small yellow flowers, stamens 7; female (fertile) flowers and fruit unknown.

Forest, in understory; 90 m alt.

Known only from the type (Zenker 1067) collected in 1896; from S Cameroon (Bipinde).

Seems related to *C. carneus*.

## CHYTRANTHUS

*C. strigosus* Radlk.

Small tree or shrub, yellowish bristly-hairy; leaves large with c. 5 pairs of leaflets; petiole, rhachis and leaflet midribs (beneath) densely yellowish hairy; leaflets long-acuminate (acumen 2-3 cm); inflorescences densely hairy, 12-22 cm long, clustered on the trunk; flowers white, petals (4 mm long) shorter than sepals; female (fertile) flowers and fruit unknown.

Dense forest; 200 m alt.

Known only from the type (Lederemann 791) collected in 1908; from SW Cameroon (Nkolebunde).

Seems related to *C. edulis*.

*C. subvilliger* Radlk.

Small tree, palm-shaped, 7,4 m tall; leaves c. 1 m long, with 3-4 pairs of leaflets, the lowermost much smaller than the upper ones, subglabrous, light brown beneath, rhachis striate, glabrescent; inflorescences borne at base of trunk, 17-18 cm long; male flowers with 8 stamens; female (fertile) flowers and fruit unknown.

In an extension of the closed rain-forest.

Known only from the type (Mildbraed 8717) collected in 1914; from S Cameroon (Deng Deng).

Similar to (*C. villiger* =) *C. carneus* but inflorescences shorter, bracts (5-6 mm) longer, and stamen filaments pilose (not glabrous).

*C. xanthophyllus* Radlk.

Tree 12-15 m; branches and petioles terete, striate, densely and minutely rusty puberulous; leaves 80 cm long (petiole 8-10 cm), with 10-11 pairs of leaflets linear-lanceolate (22 × 3,5 cm), long-acuminate, glabrous, yellowish-green (like in *C. flavoviridis*); inflorescences c. 15 cm long in clusters on the trunk; flowers (male) white, c. 5 mm long, stamens 7, anthers glabrous; female (fertile) flowers and fruits unknown.

Open forest in a flooded place at brook-side; 220 m alt.

Known only from the type (Lederemann 875) collected in 1908; from SW Cameroon (Nkolebunde).

Perhaps near *C. carneus*.

\* \* \*

## SYNONYMS:

*Chytranthus bracteosus* Radlk. (“*bracteatus*” sensu auctt., sphalm.) = **Chytranthus angustifolius**

*brunneotomentosus* Gilg ex Radlk. = **C. atroviolaceus**

*fouilloyanus* Pellegr. = **C. mortehanii**

*gerardii* De Wild. = **C. stenophyllus** var.

*laurentii* De Wild. = **Pancovia**

*longiracemosus* Gilg ex Radlk. = **Chytranthus carneus**

*macrophyllus* sensu Pellegr. p.p., non Gilg = **C. gillettii**

*macrophyllus* sensu Walker & Sillans = **C. atroviolaceus**

*macrophyllus* Gilg var. *obanensis* Baker f. = **C. atrovio-**  
**laceus**

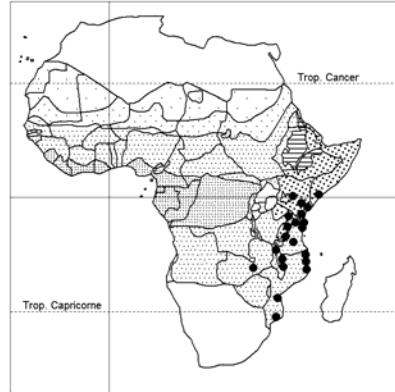
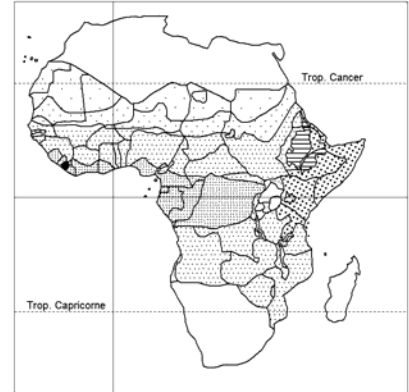
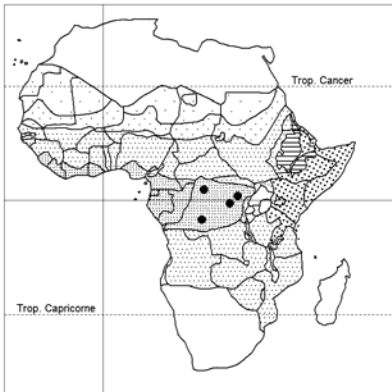
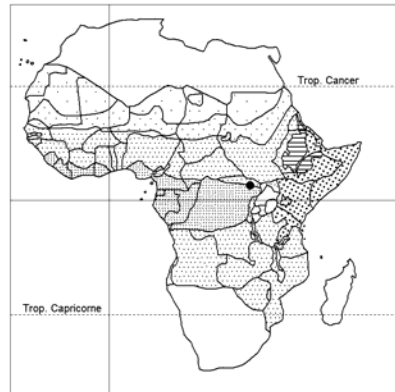
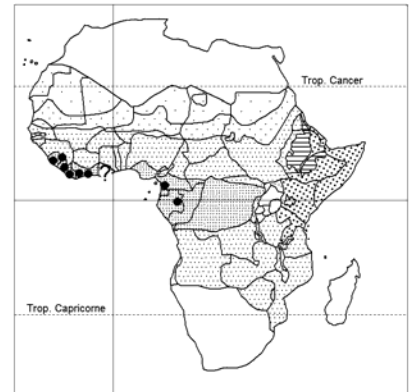
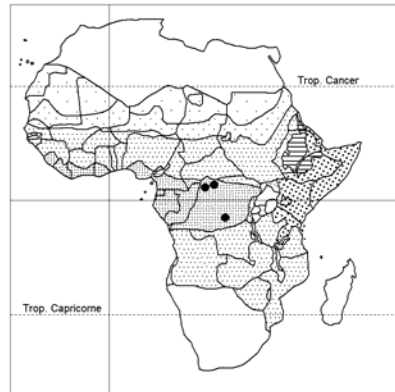
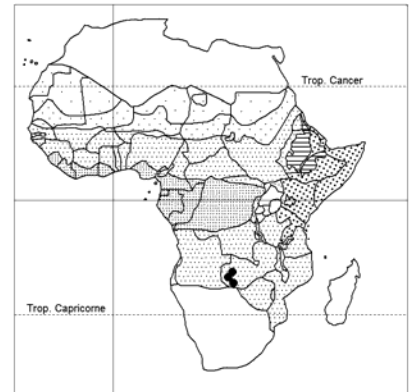
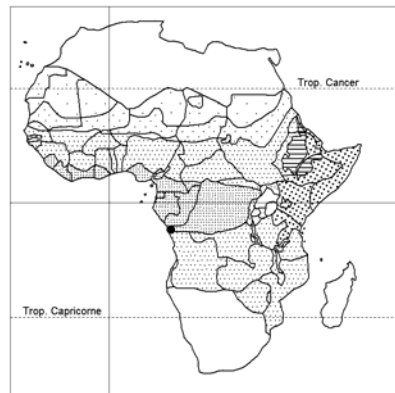
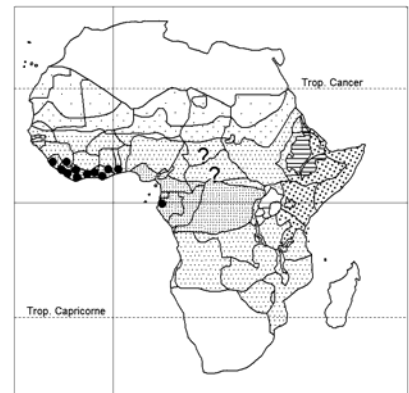
*malendeensis* Pellegr. = **Pancovia le-testui**

*mangenotii* N. Hallé & Aké Assi = **Chytranthus cauliflorus**

*mannii* sensu Hiern p.p., non Hook. f., et sensu auctt. =

**C. carneus, C. welwitschii, C. edulis**



***Deinbollia angustifolia******Deinbollia borbonica******Deinbollia calophylla******Deinbollia cauliflora******Deinbollia crassipes******Deinbollia cuneifolia******Deinbollia dasybotrys******Deinbollia evrardii******Deinbollia fanshawei******Deinbollia fulvo-tomentella******Deinbollia gossweileri******Deinbollia grandifolia***

## CHYTRANTHUS

- mayumbensis* Exell = **C. macrobotrys**  
*pilgerianus* (Gilg) Pellegr. = **C. talbotii**  
*sacleuxii* Pierre ex Sacleux, incl. subsp. *longiflorus* Verdc.  
= **C. priureanus**  
*sexlocularis* Radlk. = **C. talbotii**  
sp. sensu Aubréville 1959 = **C. macrobotrys**  
sp. A sensu F.W.T.A., ed. 2 = **C. gilletii**  
*villiger* Radlk. = **C. carneus**  
*welwitschii* Exell = **C. carneus**  
*welwitschii* sensu Pellegr., non Exell = **C. edulis**  
*zenkeri* Gilg = **C. macrophyllus**  
*Talisia prieuriana* nom. in D. Bois, 1901 = **Chytranthus priureanus**

## (CROSSONEPHELIS)

- CrossonepHELIS adamii* = **Glennia**  
*africana* (Radlk.) Leenh. = **G. africana**  
*oblongus* Capuron ex Fouilloy, nom. invalid. = **G. africana**  
*unijugatus* Capuron ex Fouilloy, nom. invalid. = **G. unijugata**

## (CUPANIA)

- Cupania akeesia* Spach = **Blighia sapida**  
*edulis* Schumach. & Thonn. = **B. sapida**  
*ferruginea* Baker = **Laccodiscus**  
*sapida* Voigt = **Blighia sapida**

## DEINBOLLIA / 35

About 40 species in Africa, Madagascar (7 endemic) and the Mascarenes.

Poorly known genus in need of revision: among the species listed below several are incompletely known: 2 (+1) species have no flowers (= c. 6%), 4+1 ? no female flowers (= c. 12%), 4+3 ? no fruit (= c. 12%); for 4 species no ecology is recorded (= c. 12%), and 5 species are known only from the type (= c. 15%). In addition 2 taxa are listed as insufficiently known. To these can be added: a series "Deinbollia sp." cited in F.W.T.A., ed. 2, 1/2: 715 (sp. A, also in Cable & Cheek, Pl. Mt Cameroon: 126, 1998); in Harvey, Pl. Bali Ngemba: 125 (spp. 1 & 2), 2004; in Chapman & Chapman, Forests Taraba & Adamawa ...: c 41, 2001; and a probably undescribed species from Kribi, Cameroon, mentioned by Thomas in Ann. Missouri Bot. Gard. 73: 219, 1986.

**Deinbollia acuminata** Exell; Figueiredo & Smith, Pl. Angola: 156, 2008.

Tree 18-25 m; bole to 60 cm Ø, short, tortuous; primary branches numerous, ascending, much divided towards the extremities; bark smooth, dusky; leaves glabrous, 15-25 cm long, with 5-7 pairs of leaflets elliptic, *small* (5-7 × 2-2,5 cm), acumen 1-2 cm long; flowers *small*, white-ciliate, unisexual, in panicles 20 cm long with short branches; mericarp(s) 1-1,5 cm Ø, glabrous.

Hot dry hilly exposed situation in a group; forests with *Terminalia*; fallow land in forest.

Very close to *D. laurifolia*, observations in the field needed; determination of sterile specimens doubtful.

## DEINBOLLIA

**D. angustifolia** D. W. Thomas

Much branched shrub to 1 m tall; leaves with 1 pair of leaflets linear-lanceolate, 10-30 × 0,8-2,2 cm; panicles sparsely pubescent, to 12 cm long; fruits c. 1,5 cm Ø.

Exposed rocky river banks; rheophyte.

Similar to *D. unijuga* (occurring in deep shade in forest), with 2 leaflets only, like *D. mezilii* also.

Known from only 2 collections, both from the type locality.

**D. borbonica** Scheff.; Exell & Sousa in Fernandes, Fl. Moçamb. 51, Sapind.: 27-28, 1973; Friis, Forest trees NE trop. Afr.: 189, 315 (map), 1992; Burrows & Willis, Pl. Nyika Plateau: 260, 2005. – Icon.: Thulin, Fl. Somalia 2: 246, 1999.

syn.: *D. nyikensis* Baker

Shrub or tree 0,5-4,5-7(-10) m tall, monoecious; stem simple (always ?) with a rosette of leaves at its top; branchlets brownish-black, golden hairy when young, glabrescent; leaves 15-40 cm long; leaflets in (3-)4-6-10 pairs, ± elliptic, all ± the same size, 5-23 × 2-9 cm, apex rounded (cf. *D. kilimandscharica*); flowers white in panicles 30-60 cm long; dry berry, yellow or reddish, 1-1,5 cm long, flesh white, mucilaginous, edible.

Moist or dry and riverine forests; riverine *Acacia* thorn bush and evergreen thicket; open *Combretum-Acacia* woodland, on sandy soils; low evergreen forest on limestone outcrops; bushland on wet sand dunes; coastal forest; 0-1050 m alt.

Variable in pubescence of leaflets: from densely ferruginous hairs to nearly glabrous beneath (fa. **glabrata**).

The type is from a tree grown at Bogor (Indonesia, Java) said to originate from material sent from île Bourbon (La Réunion). The types of fa. **glabrata** are from Comoro Isl., Mayotte and Zanzibar. In his treatment for Fl. Trop. E. Afr., Sapindaceae: 71-72, 1992) Verdcourt discusses the distribution area of the species. He thinks that the presence of *D. borbonica* in Madagascar (Capuron in Mém. Mus. Natl. Hist. Nat. Paris, N. S. Sér. B, Bot. 19: 72-74, 1969, where *Omalocarpus macrophyllus* Choux 1927 is treated as a synonym) is doubtful. It is not known from Mauritius or La Réunion.

Comprises 2 forms in E. Africa: – fa. **glabrata** Radlk. and fa. **subcordata** Verdc. – Radlkofer (in Engler, Pflanzenreich 4/165, Sapind. 1: 674-675, 1932) distinguished 4 forms: – fa. **genuina** (leaflets hairy beneath); – fa. **glabrata** Radlk.; – fa. **trichogyna** Radlk.; – fa. **minor** Radlk. (Somalia, Hildebrandt 1325) whose status is unknown according to Verdcourt l.c. However, in Fl. Somalia, l.c., this specimen is included by Friis & Vollesen in *D. borbornica* s.l. – Capuron l.c. distinguished 2 further forms for Madagascar (fa. **arenicola** Capuron and fa. **pilosula** Capuron).

*D. nyasica* is similar.

**D. calophylla** Gilg ex Radlk.; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 758, 2006.

syn.: *D. polypus* sensu F.W.T.A., ed. 1, 1/2: 503, 1928, p.p. quoad specim. Dinklage 1887, non Stapf (= *D. cuneifolia*).

Shrub 3-4 m tall; branches terete, glabrous, dark grey, c. 1 cm Ø; leaves 35-50 cm long (petiole 17-25 cm); leaflets in 3-4 pairs, papery, glabrous, large (20-33 × 8-12 cm), short-acuminate; inflorescences little branched, axillary, c. 20 cm long; fruit orange, c. 1,5 cm Ø.

Ecology not recorded, near the coast; c. 5 m alt.

Hawthorne & Jongkind l.c. suggest that it may be conspecific with *D. cuneifolia*.

## DEINBOLLIA

**D. cauliflora** Hauman

Shrub or tree, palm-shaped, with simple stem or little branched, 4-6 m tall; stem 12-20 cm Ø; leaves 50-70 cm long (petiole 15-25 cm); leaflets in 6-8 pairs, glabrous, elliptic (15-30 × 6-12 cm), long-acuminate; inflorescences on stem or in lower leaf axils, 10-20 cm long; fruit orange, 2 cm Ø.

Forest; primary plateau forest, in understorey; secondary forests; semi-deciduous forest.

**D. crassipes** Hauman

Shrub 3-4 m tall; leaves c. 45 cm long; leaflets in at least 8 pairs, ± elliptic, glabrous, papery, 15-18 × 3-4 cm; panicles 20-35 cm long, spreadingly branched, 15-20 cm wide; flowers unknown; mericarp ± round, 11 × 13 mm, glabrous, light brown.

Dry forest gallery.

Known only from the type collected in 1952.

**D. cuneifolia** Baker, non sensu Hiern in Cat. Welwitsch Afr. pl. 1: 168-169, 1896 (= *D. laurifolia*); Lisowski, Fl. (angiosp.) Rép. Guinée 1: 332, 2009. – Icon.: Fl. Cameroun 16: 71, 1973; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 748,759, 2006.

syn.: *D. polypus* Stapf p.p. (cf. under *D. calophylla*); ?  
*D. unguiculata* Gilg (cf. below, at end of species list).

Shrub or tree 1-4 m tall; branches striate, glabrous, 6 mm Ø; leaves 40-55 cm long (petiole 8-15 cm); leaflets in (4-)5-6(-8) pairs, glabrous, oblong, (7-)12-18 × 2-5 cm, long-acuminate; flowers whitish (stamens 10-17) in simple inflorescences (or with short side branches), 4-25(-80) cm long, on the stem below the leaves; fruit round, orange, c. 1,2 cm Ø.

Evergreen and semi-deciduous forests, forest gallery, swampy places, in understorey; 300-1100 m alt.

*D. calophylla* is perhaps a synonym (cf. above under this species). May be confused with depauperate specimens of *D. grandifolia*.

Specimens A. Chevalier from Guinea partly doubtful according to Fl. Cameroun l.c.: Chevalier 20833 (or ? 20823 in Chevalier, Explor. Bot. 1: 150, 1920) has glabrous ovary, not hairy as in *Deinbollia* species.

**D. dasybotrys** Gilg ex Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 382, 2006.

syn.: “*D. brachybotrys* Gilg” (sphalm.) in Mildbraed, Wissenschaft. Ergebn. Deutsch Zentral-Afr.-Exped. 1907-1908, 2: 96, 1922 (= Mildbraed, 5908).

Shrub with simple stem; branches ± flexuous at apex, white-lenticellate, glabrous, 4-6 mm Ø; leaves c. 55 cm long (petiole 10-12 cm); leaflets in 4-5 pairs, glabrous, obovate, 18-20 × 6-8 cm, acumen 2 cm long; inflorescences axillary at tips of branches, 2-4 cm long; stamens 10-13; female flowers and fruit unknown ?

Ecology not recorded; 200-380 m alt.

Resembling *D. macroua* (with only 3 pairs of leaflets, and with 12-15 stamens).

**D. evrardii** Hauman

Tree 8-10 m; trunk 15-20 cm Ø; branches 1,5 cm Ø on leafy parts; leaves large (1 m and more ?), petiole 14-20 cm long; leaflets in 7-8 pairs, glabrous, oblong-elliptic, 10-23 × 3-8 cm; panicles axillary, 20-40 cm long, 15-20 cm wide, pedicels and sepals sparsely rusty-hairy or glabrous; stamens 22; female flowers unknown; mericarp glabrous, ± 2 cm Ø.

Semi-deciduous and gallery forests.

Resembling *D. pynaertii*.

## DEINBOLLIA

**D. fanshawei** Exell

Shrub to 30 cm tall; branchlets densely appressed-pubescent to tomentose, glabrescent; leaves 15 cm long (petiole 5 cm, narrowly winged), with 2-4 pairs of leaflets, oblong-elliptic, 9 × 2,5 cm, ± glabrous; inflorescences 2-4 cm long; flowers white on glabrous pedicels “articulated to a tomentose branch of the rhachis” (the fruit “later breaks off at this point with the pedicel attached to it as a short stipe”); fruit mericarps (1-2) glabrous, c. 1 cm Ø.

Woodland on Kalahari sand.

**D. fulvo-tomentella** Baker f.; Fl. Trop. E. Afr., Sapindaceae 68-69, 1998, s. str.

Tree 3-7 m, slender, monoecious; branchlets hollow; leaves to 50-90 cm long; leaflets in 7-8 pairs, 15-24 × 6-9 cm, ± glabrous on upper surface, densely yellow-brown hairy below; flowers white (stamens 18-22), fragrant, in large (1 m long) panicles, densely dark-ferruginous hairy; fruit golden-yellow, depressed, 1,7-2,5 cm Ø.

Evergreen forest, riverine and lakeshore forest, in understorey; 750-1350 m alt.

In Fl. Trop. E. Afr., Sapindaceae: 69, 1998, *D. molliuscula* Radlk. is considered a synonym. The latter is, however, maintained as a separate entity by authors of W African floras and check lists. This is also the case in our compilation.

**D. gossweileri** Exell; Figueiredo & Smith, Pl. Angola: 156, 2008.

Tree 2 m, unbranched, palm-shaped, monoecious; leaves to c. 1,2 m long, rhachis glabrous; leaflets in 11 pairs, oblong, 28-35 × 9-10 cm, sometimes sparsely pilose; inflorescences 35-45 cm long, brown-tomentose; stamens 14-17; fruit densely yellow tomentose, 2-lobed.

River side in forest.

Known from the type (Gossweiler 6499) and perhaps also another gathering (Gossweiler 6115), Angola (Mayumbe).

Leaflets even larger than in *D. grandifolia*.

**D. grandifolia** Hook f.; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 332, 2009. – Icon.: Busson, Pl. aliment. Ouest afric.: 351, 1965; Fl. Cameroun 16: 71, 1973; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 748,759, 2006.

syn.: *D. insignis* sensu Fl. Trop. Afr. 1: 431-432, 1868, p.p. quoad specim. Vogel, Cape Palmas, non Hook. f.

Shrub or single-stemmed tree, straight, 1,5-4-8(-15?) m tall; trunk to 30 cm Ø; bark ash-grey, scaly, resinous, with pungent smell; branchlets often zigzag, reddish with white lenticels; leaves in terminal whorls, 0,7-1 m long; leaflets in (5-)6-7(-10) pairs, papery, minutely hairy, conspicuously petiolulate, ± oblong, 13-28 × 5-8 cm, ± long-acuminate; flowers whitish(-greenish-yellow) in brown-hairy much-branched panicles 10-30 cm long near top of tree; fruit orange, c. 1,5 cm Ø, pulp and seed edible.

Deciduous forest, in understorey; forest with *Triplochiton scleroxylon*; riverine forest; up to c. 700 m alt.

Confusion with *D. cunifolia* possible; also sometimes confused with *D. insignis*.

Not in Sudan (Equatoria: Iwatoka, cited by El Amin, Trees & shrubs Sudan: 329, 1990, and by Andrews, Fl. pl. Anglo-Eg. Sudan 2: 339, 1952, is not *D. grandifolia*, fide Fl. W. Trop. Afr., ed. 2, 1/2: 716, 1958).

## DEINBOLLIA

**D. insignis** Hook. f. (cf. list of synonyms p. 123).

Tree 3,5-8 m, palm-shaped; leaves 60-100 cm long (petiole 20 cm); leaflets in 6-8 pairs, oblong-elliptic, acuminate, the uppermost the largest (45 × 16 cm); inflorescence terminal, paniculate or ± simple, pubescent, 10-35(-70) cm long; flowers yellow, large (5-8 mm Ø in bud); fruit yellowish-orange.

Forest.

Bioko/Fernando Poo.

Not in Liberia (= *D. grandifolia*), or in Cameroon (specim. Keay, FHI 37428, see below under *D. macrantha*), or in Gabon (= *D. maxima*), or in Zaire (= *D. molliuscula*).

**D. kilimandscharica** Taub.; Friis, Forest trees N. E. trop. Afr.: 190, 315 (map), 1992; F. White & al., Evergreen for. fl. Malawi: 529, 2001. – Icon.: Beentje, Kenya trees, shrubs & lianas: 416, 1994; Fl. Trop. E. Afr., Sapindaceae: 70, 1998 (var. **kilimandscharica**); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 307, 2008.

Tree 1,2-8-12 m, or shrub; trunk unbranched; branchlets and leaves subglabrous to dark brownish pubescent; leaves in terminal rosette, 20-80 cm long (petiole 5-30 cm); petiole and rhachis mottled brown or green and straw-coloured when dry, appressed pubescent when young; leaflets in 3-7 pairs, oblanceolate, 4-27 (-30) × 2-10(-16) cm, apex abruptly acuminate (rounded in *D. borbonica*); flowers large, white (stamens 14-18) in terminal dark brown- pubescent inflorescences 60 × 40 cm; drupe round, glabrous, yellow or red-brown, c. 1,5 cm Ø, edible.

Evergreen moist or dry forest, *Podocarpus-Ocotea* forest, gorge and riverine forests, primary upland *Aningeria-Olea* forest, lowland *Aningeria altissima-Chlorophora-Celtis* forest; downward extensions of upland rain-forest; sometimes also in secondary montane evergreen bushland; 600-2600 m alt.

Variable in pubescence of calyx.

Comprises 2 vars.: – var. **kilimandscharica** (calyx ± glabrous); – var. **adusta** (Radlk.) Verdc. (bas.: *D. adusta* Radlk.), with dense dark brown pubescence on calyx; but their ranges of distribution not clearly separate.

Closely related to *D. laurentii*.

**D. laurentii** De Wild.; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 191, 2002. – Icon.: Harris & Wortley, Sangha trees: 169, 2008.

Tree 4-8(-12) m or shrub 2-2,5 m tall; stem simple, to 15 cm Ø; branchlets glabrous, 1 cm Ø; leaves in rosettes at tips of branches, ± 50 cm long (petiole 8-12 cm); leaflets in 5-8 pairs, glabrous, obovate, ± acuminate, 6-18 × 3-6 cm; flowers white (stamens ± 15) in panicles 40-60 cm long, 20 cm wide, axes shortly brown-hairy, glabrescent; mericarps round, glabrous, c. 1,2 cm Ø.

Riparian forest, edges of moist forest.

Variable in shape of leaves and petals, and in indumentum of ovary.

Comprises 3 vars.; var **gymmocarpa** Hauman approaching *D. kilimandscharica*.

**D. laurifolia** Baker; Figueiredo & Smith, Pl. Angola: 156, 2008.

syn.: *D. obovata* Radlk. and sensu Consp. Fl. Angol. 2: 81, 1954; *D. patentinervis* Radlk.; *D. grandifolia* sensu Exell, J. Bot. 66, Suppl., Polypet.: 83, 1928 (= Gossweiler 8194), non Hook. f.; *D. hierniana* Gilg; *D. cuneifolia* sensu Hiern, Cat. Welwitsch Afr. pl. 1: 168-169, 1896.

## DEINBOLLIA LAURIFOLIA

Shrub, tree-like, monoecious, evergreen, 1-3 m tall; branchlets 3-5 mm Ø, glabrous, greyish when young; leaves 40-50 cm long (petiole 5-15 cm); leaflets in (2-)4-8 pairs, glabrous, ± oblong, 5-12 × 2-4 cm, very variable in size and shape even on the same branchlet; flowers whitish (stamens 14-20), in panicles 45 cm long, either wide and spreading or narrow; fruit reddish, 0-8-1,3 mm Ø.

Riverine forest, secondary thickets or river banks.

Very variable (cf. above).

Near *D. acuminata*.

**D. longiacuminata** Hauman

Small tree; branchlets 7 mm Ø; leaves glabrous, 25-30 cm long (petiole 10 cm); leaflets in 4-5 pairs, ± elliptic, 10-20 × 3-6 cm, long-acuminate (1,5-2 cm); panicles c. 20 cm long; flowers unknown; mericarps round, glabrous, 1,4 cm Ø.

Primary forest on firm ground, in understory; 470 m alt.

Known only from the type collected in 1939.

Leaves resembling those of *D. laurentii* var. *cuspidata* (Radlk.) Hauman. Also similar to *D. dasybotrys* and *D. macroura*.

**D. macrantha** Radlk.; Cable & Cheek, Pl. Mt Cameroon: 126, 1998 (“sp. aff. *macrantha*”, specim. Keay, FHI 37428), cited under *D. insignis* in Fl. Cameroun 16: 63, 1973).

Small, branched tree; bark punctate-lenticellate, ± blackish brown; leaves c. 1 m long, with leaflets lanceolate-oblong, coriaceous, subsessile, glabrous, yellowish-green, 20-22 × 6-7 cm, acuminate (1,5 cm); panicles 40 cm long, lower branches 20-30 cm long, glabrous; male flowers with 27-29 stamens, rudimentary ovary 5-6-locular, glabrous; female flowers and fruit unknown.

Primary forest; 250 m alt.

Known with certainty only from the type collected in 1908 (cf. above).

**D. macroura** Gilg ex Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 382, 2006.

Shrub; branchlets terete, glabrous, c. 4 mm Ø; leaves c. 50 cm long (petiole 8-11 cm); leaflets in 3 pairs, oblong, glabrous, 21 × 6,5 cm, long-acuminate (2 cm), brownish green above, pale brownish beneath, with secretory cells; inflorescences c. 6 cm long; male flowers with 12-15 stamens, rudimentary ovary 2-lobed, pilose; female flowers and fruit unknown?

Ecology unknown; 200 m alt. (Gabon).

Known from the type (Mildbraed 6198, B, lost) collected by A. Schultze in 1911, and a collection from Gabon.

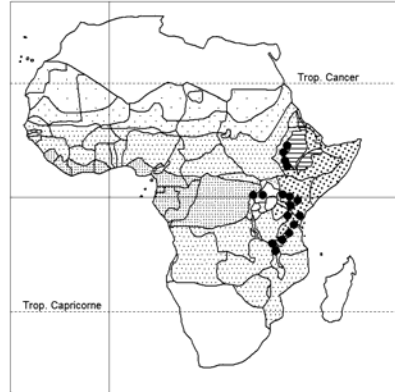
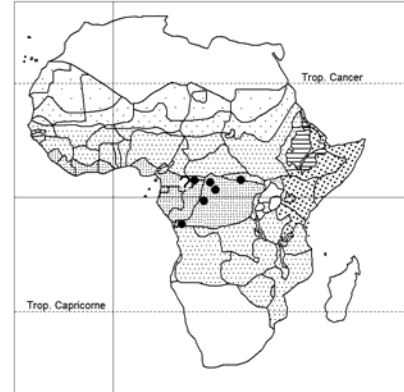
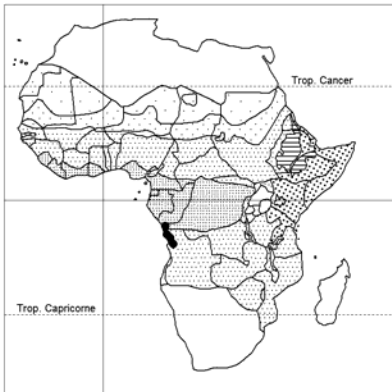
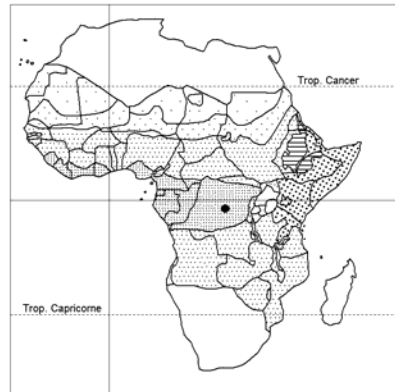
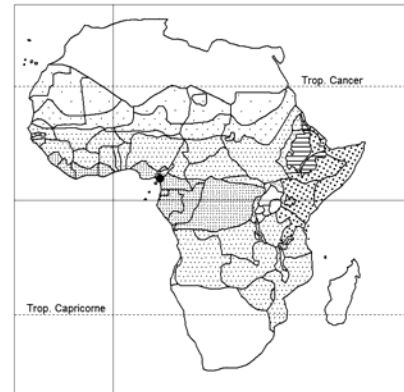
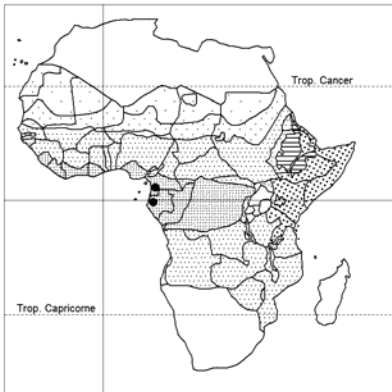
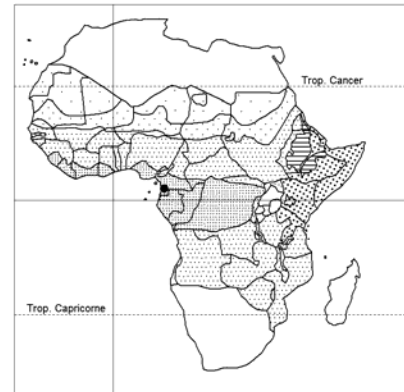
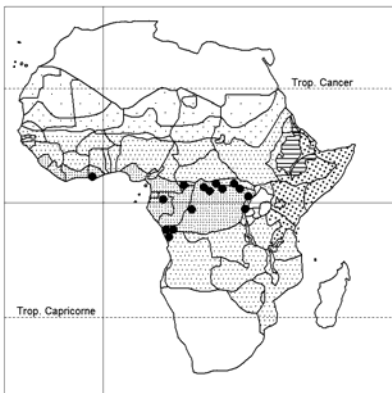
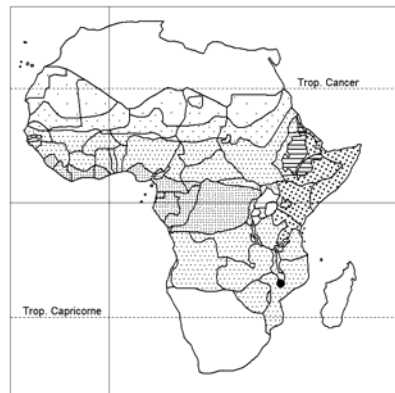
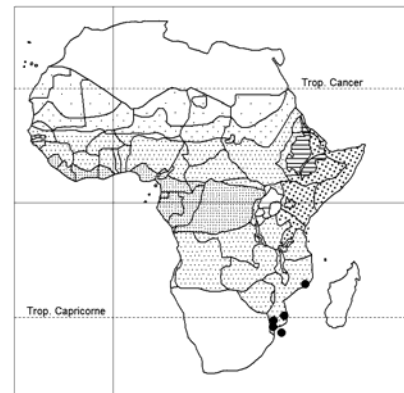
Near *D. dasybotrys*. Resembling *D. longiacuminata*.

**D. maxima** Gilg; Cable & Cheek, Pl. Mt Cameroon: 126, 1998; Sosef & al., Check-list pl. vascul. Gabon: 382, 2006. – Icon.: Fl. Cameroun 16: 67, 1973.

syn.: *D. insignis* sensu Pierre, Bull. Soc. Linn. Paris 2/158: 1250-1251, 1896 (Klaine 280), non Hook. f.

Tree 4-6 m or shrub 1-3 m tall, branched; branchlets terete, striate, inconspicuously lenticellate-punctate, glabrous, 1,2 cm Ø; bark greyish-brown; leaves 50-65 cm long (petiole 10-22 cm); leaflets in 4-6 pairs, glabrous, ± oblong, 12-24 × 6-10 cm (the lower ones the smallest), acuminate; inflorescences simple or paniculate, 10-30 cm long, usually on *old*



**Deinbollia insignis****Deinbollia kilimandscharica****Deinbollia laurentii****Deinbollia laurifolia****Deinbollia longiacuminata****Deinbollia macrantha****Deinbollia macroura****Deinbollia maxima****Deinbollia mezilii****Deinbollia molliuscula****Deinbollia nyasica****Deinbollia oblongifolia**

## DEINBOLLIA MAXIMA

wood; axes whitish-pubescent (yellowish brown in *D. grandifolia*); flowers small (2 mm long), patent white-hairy, yellowish-white (stamens 9-10); fruit glabrescent.

Forest; 1-400 m alt.

Resembling *D. oreophila*.

**D. mezilii** D. W. Thomas & D. J. Harris – Icon.: Kew Bull. 54: 956, 2000.

Tree to 1,5 m, unbranched; stem terete terminating in a cluster of leaves; bark pale grey, smooth, shining; leaf petiole stout, triangular, thickened at base and apex c. 1 cm long; leaflets 2, thinly coriaceous, oblanceolate, 24-40 × 6-11 cm, long-acuminate (1-3 cm); petiole and midrib (keeled beneath, prominent above) sparsely short-pubescent; leaflet midrib terminating in a sessile gland at apex; margins ± revolute; panicle terminal, solitary, with dense bracteate cymes, densely pale yellow-brown pubescent; flowers small, white, stamens 10-11; fruit glabrous, 1,5 cm Ø.

Evergreen forest with *Tetraberlinia bifoliolata*, *Sacoglottis*, *Lophira alata* dominant; 40-100 m alt.

Plant with distinctive characters, resembling *Aporrhiza* (stamen filaments) and *Deinbollia*. It is one of the 3 species in the latter genus with 2 leaflets only (*D. angustifolia*, *D. unijuga*).

**D. molliuscula** Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 382, 2006; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 191, 2002; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 760, 2006; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Harris & Wortley, Sangha trees: 170, 2008.

syn.: Enum. 2: 218, 1992; *D. insignis* sensu Radlk. 1932: 680, p.p., quoad specim. C. Smith, Congo).

Tree, palm-shaped or little-branched, 1-6(-15) m tall; with trunk 5-20 cm Ø; or shrub 3-4 m tall, with stems 2-5 cm Ø; leaves 40-100 cm long (petiole 8-20 cm); leaflets in (5-)8-12 pairs, ± oblong, 14-28 × 5-10 cm, densely orange-brown hairy (hairs 1 mm long) on both surfaces; panicles much-branched 50 cm long, amongst leaves; flowers white, stamens c. 20; fruit c. 1 cm Ø, velutinous.

Forest, riverine forest, forest remnants or light gaps in forest; wooded savanna; up to 1600 m alt.

Resembling *D. pinnata* but pubescence soft to touch (not rough).

In Fl. Trop. E. Africa, Sapindaceae: 69, 1998, put in synonymy under *D. fulvo-tomentella*. – Looks “like a large, very hairy *D. pinnata*” (Hawthorne & Jongkind, l.c.).

**D. nyasica** Exell

Large tree; branchlets yellowish tomentose; leaves c. 20 cm long (petiole 3-7 cm), rhachis densely yellow pubescent-tomentose; leaflets in 3-5 pairs, elliptic, 14-16 × 5-8,5 cm, glabrous above, sparsely pubescent beneath, reticulation on upper surface inconspicuous (conspicuous in *D. borbonica*), leaf base cuneate (vs. rounded-subcordate); mature flowers and fruit unknown.

Ecology unknown.

Known only from the type collected in 1943.

Resembling *D. borbonica* (syn.: *D. nyikensis*).

**D. oblongifolia** (E. Mey. ex Arn.) Radlk.; Coates Palgrave, Trees south. Afr., ed. 3: 647, 2002. – Icon.: E. Schmidt & al., Trees and shrubs Mpumalanga...: 370-371, 2002; B. van Wyk & P. van Wyk, How to identify trees in south. Africa: 149, 2007.

bas.: *Rhus oblongifolia* E. Mey. ex Arn. (*Anacardiaceae*).

## DEINBOLLIA OBLONGIFOLIA

syn.: *Hippobromus oblongifolius* (E. Mey. ex Arn.) Drège; *Sapindus oblongifolius* (E. Mey. ex Arn.) Sond.; *Prostea oblongifolia* (E. Mey. ex Arn.) C. Presl

Erect shrub, sparsely branched or slender tree 0,3-5(-9) m tall; branchlets striate, grey, glabrescent; leaves crowded at end of branches, c. 30 cm long (petiole 6-9 cm); leaflets in 5-7 pairs, ± elliptic, ± glabrous, 3,5-15 × 1,5-5 cm, hard-textured, venation prominent; flowers white-cream, c. 1 cm Ø, in dense axillary racemes forming large heads 20-35 cm long, soft greyish brown to ± silvery hairy; berry c. 1 cm Ø, pale yellowish, in tight clusters, edible.

Coastal thickets or woodland, forest margins, riverine fringes; 5-610 m alt. (S. Africa).

E S. Africa.

**D. oreophila** Cheek, Kew Bull. 64: 504, fig. 1 p. 506, map p. 507, 2009; Harvey & al., pl Lebiale Highl., Cameroon: 85, 143, 2010.

syn.: *D. maxima* sensu Cable, in Cable & Cheek, Pl. Mt Cameroon: 126, 1998, p.p. quoad specim. Keay FHI 37489, non Gilg; *D. sp.* 1 sensu Cheek in Harv. & al., Pl. Bali Ngemba...: 125, 2004, et sensu Cheek in Cheek & al., Pl. Kupe: 399, 2004.

Monoecious monopodial tree 0,8-3-5 m tall; stems brown with dense clusters of powdery-white raised lenticels; leaves alternate, 25-63 cm long, paripinnate, petiole 9-16 cm long, glabrous; leaflets (4-)6-8(-10), glabrous, oblong-elliptic, 15-24 × 5-10 cm; petiolules 1-5 mm long; inflorescences branched, terminal and axillary panicles, ± conical 8-20 cm long, with c. 150 flowers (yellow-)white, 3-4 mm long, smelling of *Hyacinthus*; fruit (one carpel only reaching maturity) yellow-orange, fleshy, glabrous, ± round, 2-3 cm Ø; edible (taste sweet).

Evergreen forest, in understory, on steep ridges, rocks, along paths and roads; also farm bush; 880-2050 m alt.

Not evenly distributed over its range.

Variable in habit, and in number of leaflets (increasing with altitude).

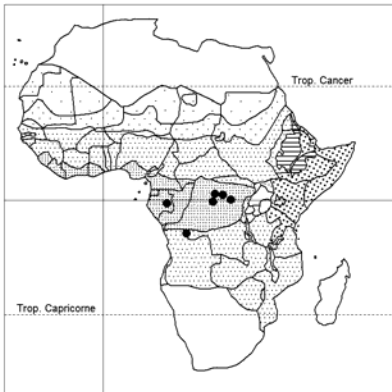
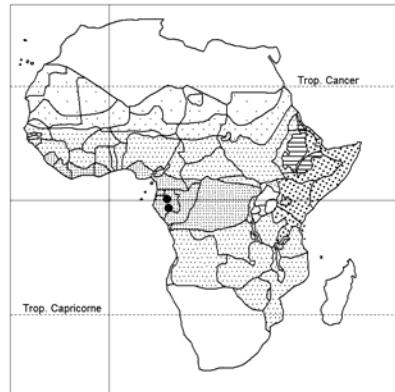
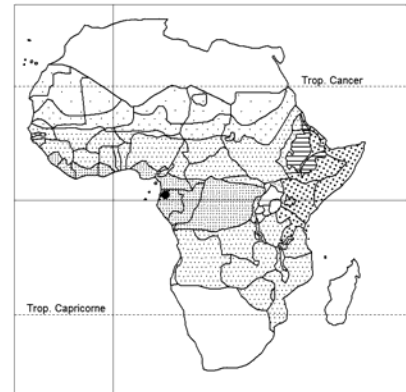
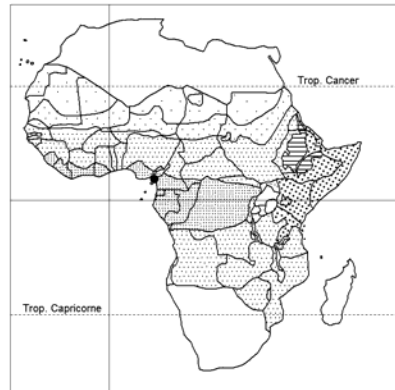
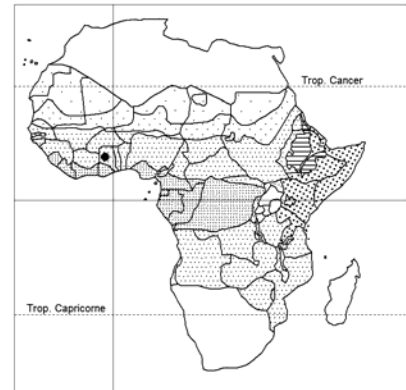
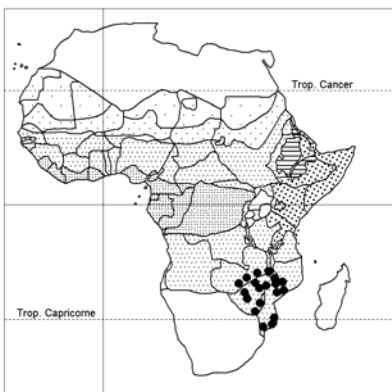
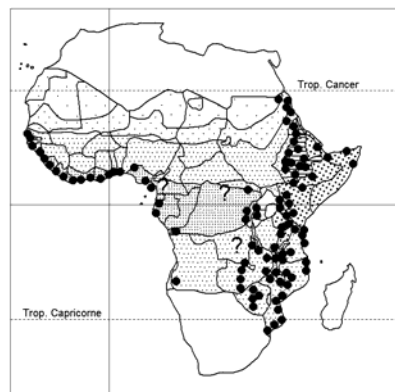
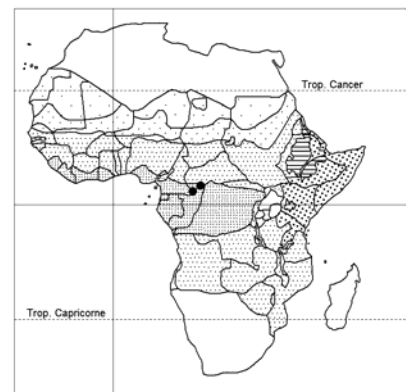
Resembling *D. maxima* (with longer leaves and axillary inflorescences on *old wood*; flowers 2 mm long, patent-hairy), growing at low altitude (0-400 m).

**D. pinnata** (Poir.) Schumach. & Thonn., incl. var. (unnamed) A. Chev., Explor. Bot. 1: 151, 1920 (non sensu auctt., cf. list of synonyms p. 123); Steentoft, Flow. plants in W. Africa: 183, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 332, 2009. – Icon.: Mém. Mus. Hist. Nat. Paris 18: pl. 1 C opposite p. 48, 1829 (partial; sub gen. *Prostea*); Irvine, Woody pl. Ghana: 542, 1961; Aubréville, Fl. forest. Côte d’Iv., ed. 2, 2: 215, 1959; Hawthorne & Jongkind, Woody pl. west Afr. forests: 748, 759, 2006.

bas.: *Ornitrophe pinnata* Poir.

syn.: Enum. 2: 208, 1992; *Deinbollia leptophylla* Gilg; *Prostea pinnata* (Poir.) Cambess. (errore = *Pometia pinnata* J. R. Forster & G. Forster sensu B. D. Jackson in Ind. Kew. 3: 630, 1894); ? *Sapindus guineensis* G. Don; *Schmidelia pinnata* (Poir.) DC. (an potiùs *Talisia* species?).

Erect shrub or tree 0,3-5 m tall; twigs 5 mm Ø, densely lenticellate, slightly grey-downy or glabrous; leaves 20-30 cm long (petiole 8-10 cm); leaflets in (4-)5-9(-12) pairs, variable in shape, elliptic-oblong, 5-18 × 2,3-10 cm, coriaceous, margins recurved, glabrous or with sparse stiff red-brown hairs on nerves beneath, the uppermost ones the largest; flowers whitish (stamens 10-15) in erect panicles at tips of shoots, densely brown-hairy, 20-60 cm long; fruits tomentose, orange, c. 1,5 cm Ø, pulp sweet, edible.

**Deinbollia oreophila****Deinbollia pinnata****Deinbollia pycnophylla****Deinbollia pynaertii****Deinbollia rambaensis****Deinbollia reticulata****Deinbollia saligna****Deinbollia unijuga****Deinbollia voltensis****Deinbollia xanthocarpa****Dodonaea viscosa****Eriocoelum dzangense**

## DEINBOLLIA PINNATA

Coastal grass savanna; sandy laterite soils; forest, especially secondary forest, savanna/forest edges and gaps in forest; old farms; teak plantations; weedy; 400-1300(-1818) m alt.

Resembling *D. molliuscula* but pubescence rough to touch (not soft).

NOUMON, C. J. & al. (2007). Phytocénose à *Mallotus oppositifolius* (Geisl.) Müll. Arg. et *Deinbollia pinnata* Schumach. & Thonn. dans le sous-bois des teckeraies du Centre-Bénin. *J. Bot. Soc. Bot. France* 36: 55-61.

**D. pycnophylla** Gilg ex Radlk. – Icon.: Fl. Cameroun 16: 59, 1973.

syn.: *D. klainei* Pierre ms. (Herb. P.).

Tree 8-12 m, branched, palm-shaped; branches c. 1 cm Ø, sparsely hairy, soon glabrescent; bark ash-grey; leaves 55-80 cm long (petiole 10-15 cm); leaflets in 12-18(-20) pairs, very closely set on the rachis, oblong, 6-18 × 2,5-5 cm, the outermost largest, acuminate (1 cm), sparsely hirtellous; panicle 20-40 cm long, whitish hairy; flowers small, greenish white, stamens 13-14; fruit glabrous, 15 × 20 mm.

Primary forest; c. 400 m alt.

Said to be near *D. pynaertii*.

**D. pynaertii** De Wild.

Shrub or tree, unbranched, palm-shaped, 3-4 m tall; stem 10-12 cm Ø; leaves 60-70 cm long (petiole 10-20 cm), rachis subvelutinous or glabrous; leaflets in 6-11 pairs, ± oblong, glabrous, 8-35 × 4-15 cm, very variable even on the same plant; panicles 45-50 cm long; flowers small, white, densely whitish tomentose in bud, stamens 14; fruits orange, 10-14 mm Ø.

Plateau and swampy forest, on islands (muddy soil); c. 400 m alt.

Comprises 2 vars.; var. **giorgii** (De Wild.) Hauman is based on only 2 incomplete specimens.

Near *D. pycnophylla*.

**D. rambaensis** Pellegr. (later sphalm. *ramboensis* Pellegr. et auctt. div.); Sosef & al., Check-list pl. vascul. Gabon: 382, 2006. – Icon.: Fl. Cameroun 16: 67, 1973.

Shrub or tree, unbranched; leaves 1-1,35 m long (petiole 20-30 cm); leaflets in 17 pairs, glabrous but finely glandular, oblong-lanceolate, 20-25 × 4-5 cm, the outermost largest, venation reticulate; panicles c. 60 cm long; flowers white, stamens 14: extrorse, an exception in *Sapindaceae* (fide Fl. Cameroun l.c.); fruit unknown?

Ecology not recorded.

Resembling *D. grandifolia* but leaves longer and leaflets more numerous.

**D. reticulata** Gilg ex Engl.

Small tree; leaves 60 cm long (petiole 10 cm), petiole and rachis striate, dark-brown-pubescent; leaflets in 9 pairs, unequal-sided, oblong, 15-4,5 cm, dark green and ± glabrous above with secretory cells, venation reticulate and pilose beneath; panicles c. 40 cm long, dark-brown puberulous; flowers greenish, stamens 18; female flowers and fruit unknown.

Ecology unknown; 450 m. alt.

Known only from the type collected in 1907 (Tessmann 37, Equatorial Guinea).

## DEINBOLLIA

**D. saligna** Keay – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 759, 2006.

Shrub to 1 m tall; young branchlets minutely appressed puberulous, soon glabrescent; mature branchlets 5-10 mm Ø, bark brownish grey, lenticellate; leaves at tips of branchlets, minutely appressed puberulous when young, 20-25 cm long (petiole 3-6,5 cm); leaflets in 5-7 pairs, lanceolate, “almost grasslike”, 2,5-13 × 0,5-2,5 cm; panicles narrow, puberulous, 1,5-12 cm long; flowers white (stamens 15-17); fruit glabrous, smooth, orange, 1 cm Ø.

Waterfall on exposed rocks and rocky riverbanks, in evergreen forest; ± 30 m alt. Very common.

Closely related to *D. unijuga*.

**D. unijuga** D. W. Thomas

Shrub < 1-3 m tall, usually unbranched; leaves few, clustered at tips of branchlets, glabrous (mature); petiole 1-4 cm long, stout, triangular, smooth and grey when old; leaflets 2, coriaceous, oblanceolate, 17-50 × 5-14 cm, yellow-green above, paler beneath; panicles among the leaves, stout, c. 6 cm long, little-branched, densely pale-yellow appressed pubescent; flowers few, white, small, stamens 8-12; fruits pale yellow c. 1 cm Ø.

Forest, in deep shade; 50-100 m alt.

Closely related to *D. angustifolia*, with 2 leaflets only as in *D. mezilii*.

**D. voltensis** Hutch. ex Burt Davy & Hoyle (English description only, 1937); Irvine, Woody pl. Ghana: 543, 1961. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 759, 2006.

Undershrub; leaves < 30 cm long, rachides, petiolules and undersurface of leaves ± hirsute; leaflets in 2-3 pairs, rounded (6-9 × 2-3 cm) with *notched apex*, minute crater-like pustules beneath; petiole 5-9 cm long, rachis 4-6 cm; “flowers white in clusters on the long slender branches of the terminal panicle”; fruit unknown?

Dry forest and savanna areas, on riversides; annually flooded plains (Lake, River Volta, Ghana). Common.

**D. xanthocarpa** (Klotzsch) Radlk.; Coates Palgrave, Trees south Afr., ed. 3: 647, 2002. – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga ...: 370-371, 2002.

bas.: *Sapindus xanthocarpa* Klotzsch

Tree or (scrambling) shrub 1-7(-10) m tall; branchlets ± densely pubescent, eventually glabrescent; leaves subsessile, rarely imparipinnate, rachis narrowly winged, pubescent; leaflets in 3-9 pairs, the lowest resembling large stipules, ± oblong, 6-10 × 2-5 cm, glabrous except for nerves beneath, apex rounded or notched; flowers white, large, in catkin-like racemes forming terminal clusters, velvety hairy, c. 20 cm long; berry yellow, ± tomentose, 1,4 cm Ø, edible.

Thickets, rocky outcrops (kopjes), mixed woodland, riverine vegetation (thickets); 250-350 m alt. (S. Africa).

NE S. Africa.

\* \* \*



## DEINBOLLIA

INSUFFICIENTLY KNOWN TAXA (not mapped):

*Deinbollia brachybotrys* Gilg

Shrub?; branches glabrous, bark greyish-black; leaves 20-40 cm long (petiole 7-10 cm); leaflets in 4-5 pairs, glabrous, coriaceous, nervation prominent, oblong 7-10 × 2-3,5 cm; inflorescences axillary, 2-3 cm long; stamens 17-20; female flowers and fruit unknown.

Ecology unknown. Sierra Leone, coll. Afzelius c. 1796.

Resembling *D. grandifolia* or *D. cuneifolia*.

*D. unguiculata* Gilg (= *D. cuneifolia* ?)

Shrub?; branches glabrous, bark greyish; leaves 25-34 cm long (petiole 8-9 cm); leaflets in 3 pairs, thick, glabrous, ± elliptic, 8-19 × 4-6,5 cm, with secretory cells; inflorescences 10-13 cm long, glabrous or slightly pilose; stamens 17-20; female flowers unknown; mericarp glabrous, 1,2 cm Ø.

Ecology unknown. Sierra Leone, coll. Afzelius c. 1796.

*D. sp. 2* of Kupe sensu Cheek & al., plants of Dom, Bamenda Highl., Cameroon: 143, 89 (fig.), 2010.

Tree to 4 m, leaves 60 cm long, 10-jugate.

Forest 1600-1980 m alt. (Mt. Kupe & Dom).

\* \* \*

SYNONYMS:

*Deinbollia adusta* Radlk. = **Deinbollia kilimandscharica** var.

*albido-kermesina* Gilg ex Engl. = **Carapa procera** (Meliaceae)

“*brachybotrys* Gilg” in Mildbraed 1922, sphalm.

= **Deinbollia dasybotrys**

*claessensii* De Wild. = **Lepisanthes senegalensis**

*cuneifolia* sensu Hiern, non Baker = **Deinbollia laurifolia**

*cuspidata* Radlk. = **D. laurentii** var.

*dahomensis* A. Chev., nom. nud. = **D. pinnata**

*elliottii* Gilg = **D. pinnata**

*giorgii* De Wild. = **D. pynaertii** var.

*grandifolia* sensu Exell 1928, non Hook. f. = **D. laurifolia**

*hierniana* Gilg = **D. laurifolia**

*indeniensis* A. Chev. = **D. grandifolia**

*insignis* sensu F.T.A. p.p., sensu Fl. Camer. 16 p.p., sensu

Pierre, sensu Radlkofer 1932 p.p., non Hook. f.

= **D. grandifolia**, **D. macrantha**, **D. maxima**,

**D. molliuscula**

*klainei* Pierre ms. = **D. pycnophylla**

*leptophylla* Gilg ex Radlk. = **D. pinnata**

*marginata* Radlk. = **D. xanthocarpa**

*maxima* sensu Cable (Mt. Cameroon), 1998, p.p.

= **D. oreophila**

*nyikensis* Baker = **D. borbonica**

*obovata* Radlk. = **D. laurifolia**

*patentinervis* Radlk. = **D. laurifolia**

*pinnata* sensu Consp. Fl. Angol., non Schumach. & Thonn.

= **D. molliuscula**

*polypus* Stapf = **D. cuneifolia**

*polypus* sensu auctt. = **D. calophylla**

*ramiflora* Taub. = **Camptolepis**

sp. 1 sensu Cheek, 2004 (Mt. Kupe) = **Deinbollia oreophila**

## DEINBOLLIA

*stenobotrys* Gilg = **Deinbollia cuneifolia**

*unguiculata* Gilg = **D.? cuneifolia** (cf. end of species list)

*variabilis* De Wild. = **D. molliuscula**

## DODONAEA / I

Ca. (20-)50 species, mostly in Australia (70 in continental Australia according to Harrington & Gadek, o.c.).

HARRINGTON, M. G. & P. A. GADEK (2009). A species well travelled – the *Dodonaea viscosa* (Sapindaceae) complex based on phylogenetic analyses of nuclear ribosomal ITS and ETSf sequences. *J. Biogeogr.* 36: 2313-2323.

In Flora of Tropical East Africa, Sapindaceae (p. 11), 1988, Verdcourt discusses the separation into 2 species, viz. *D. viscosa* and *D. angustifolia*, such as proposed by Leenhouts (Blumea 28: 271-289, 1983). Although the demarcation seems to be weakest in America, it is also difficult to separate them clearly where they occur together in SE Africa (Mozambique coast and Zanzibar). We here follow Verdcourt's wide concept with 2 varieties recognized in tropical Africa (other distinctive ones occur in S. Africa and Australia). As to the rank, the 2 varieties belong to subsp. *viscosa* “if all the other subspecies ... are genuine subspecies”.

**Dodonaea viscosa** Jacq.; Schatz, Generic tree fl. Madag.: 365-366, 2001; Burkill, Useful pl. W. trop. Afr. 5: 19-20, 2000; Coates Palgrave, Trees south Afr., ed. 3: 655-656, 2002.

Tree or semi-prostrate shrub, monoecious (var. **viscosa**) or dioecious (var. **angustifolia**), 0,5-9 m tall, evergreen; bark ± rough, black or red-brown; young branchlets glandular, glabrescent, ridged, resinous; leaves simple, sticky, oblanceolate to narrowly elliptic (6-12 × 2-4 cm, var. **viscosa**; 1,5-10-13 × 0,5-3-3,5 cm, var. **angustifolia**), glabrous; flowers yellow-green, unisexual (var. **angustifolia**) or whitish, bisexual (var. **viscosa**) in loose thyrsoid panicles 2-5 cm long at ends of twigs; fruit disk-shaped, (greenish) white or brown to straw coloured and 2-winged (var. **viscosa**), or white to reddish and 2-3(-4)-winged (var. **angustifolia**), c. 1,5 cm Ø.

One of the most widespread woody plants of the world.

– Var. **viscosa**; Leenhouts, Blumea 28: 285-287, 1983; Akoegninou & al., Fl. analyt. Bénin: 922, 2006. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 215, 1959; Irvine, Woody pl. Ghana: pl. 5, opposite p. 544, 1961; Capuron, Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 19: 25, 1969 (*D. viscosa* fa. *repanda*); Fl. Cameroun 16: 175, 1973; Fl. Gabon 23: 175, 1973; Fl. Males., Sér. 1, 11/3: 525, 1994; Beentje & Bandeira, Field guide mangrove trees of Africa ...: 40, 76, 2007; Pearman in Oyen & Lemmens, eds., Ressources végétales Afr. trop., précurseur: 83, 2002; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 401, 2009.

syn.: *D. viscosa* Jacq. subsp. *viscosa* (J. G. West in Brunonia 7: 37, 1985); *D. senegalensis* Blume, Rumphia 3: 191, 1847 (type Leprieur, Safal, November, 1828, G !; Guillemain & Perrottet, Fl. Senegamb. 1: 122, 1831); *D. repanda* Schumach. & Thonn.; *D. viscosa* var. *vulgaris* Benth. (= var. *viscosa*) fa. *repanda* (Schumach. & Thonn.) Radlk.; *D. kohautiana* Schldtl., Linnaea 18: 36, 1844 ! (sphalm. p. 52; type Sieber 54, Senegal, G !); *D. latifolia* Schumach., Beskr. Guineiske pl.: 194, 1827 (Salisbury, Prodr.: 276, 1796).

Shrub or small tree 1,5-4 m tall; scars of fallen sepals below the fruit strongly bilobed; leaves when dried slack, papery; seed subglobose, rolling easily when dropped on a flat surface.

## DODONAEA VISCOSA

Coastal bushland, sand dunes, niayas; coral rock mostly just above high watermark; landward edge of mangrove; *Casuarina* woodland, *Grewia glandulosa* scrub and plantations; 0-75 m alt. – Useful as a sand-binder.

Along the tropical coasts of Africa (Senegal S- & E-wards); not yet found in Ethiopia-Somalia (but might be found along the Red Sea coast). Yemen (Edinb. J. Bot. 65: 134, 2008). Shores of Madagascar, India, Malesia, Australia (map in Fl. Austral. 25: 123 fig. 148, 1985), Pacific Isl.; America. – On the verge of extinction in certain African countries, e.g. Benin, Togo (Acta Bot. Gallica 150: 107-115, 2003).

– Var. **angustifolia** (L. f.) Benth.; Leenhouts, Blumea 28: 280-284, 1983; Friis, Forest trees N. E. Trop. Afr.: 190-191, 316 (map), 1992. – Icon.: Fl. Zambes. 2/2: 543, 1966; Capuron, Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 19: 25, 1969 (*D. viscosa* fa. *burmanniana*); Palmer & Pitman, Trees south. Afr. 2: 1368, 1972; Audru & al., Pl. vascul. Rép. Djibouti, fl. ill. 2/2: 495, 1994 (photo. herb.); Fl. Trop. E. Afr., Sapindaceae: 10, 1998; El Amin, Trees & shrubs Sudan: 328, 1990; Beentje, Kenya trees, shrubs & lianas: 417, 1994; Thulin, Fl. Somal. 2: 240, 1999; Boulos, Fl. Egypt 2: 79, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 449, 2001; White & al., Evergreen forest fl. Malawi: 530, 2001; P. Latham, Pl. visited by bees, S. Tanz., ed. 3: 68, 2007; E. Schmidt & al., Trees & shrubs Mpumalanga...: 370-371, 2002.

bas.: *D. angustifolia* L. f. (1782).

syn.: *D. viscosa* subsp. *angustifolia* (L. f.) J. G. West; *Ptelea viscosa* L. (1753); *Dodonaea viscosa* (L.) L. (Mant. 2, 1771), excl. cit. Jacq., nom. illegit., non Jacq.; *D. viscosa* sensu auctt. (see Fl. Trop. E. Afr., l.c.); *D. burmanniana* DC. (see Fl. Males., Ser. 1, 11/3: 523-524, 1994); *D. viscosa* Jacq. var. *vulgaris* Benth. (= var. *viscosa*) fa. *burmanniana* (DC.) Radlk. and subsp. *burmanniana* (DC.) J. G. West, and fa. *spathulata* (Sm.) Pichi Serm.; *D. thunbergiana* Eckl. & Zeyh., incl. var. *linearis* E. Mey. ex Harv. & Sond.; *D. viscosa* var. *linearis* (E. Mey. ex Harv. & Sond.) Sherff; *D. linearis* E. Mey. in Herb. Drège; *D. viscosa* var. *angustifolia* (L. f.) Benth. fa. *thunbergiana* (Eckl. & Zeyh.) Radlk.; *D. viscosa* var. *spathulata* (Sm.) Benth.; *D. viscosa* Jacq. var. *arborescens* (A. Cunn. ex J. D. Hook.) Sherff fa. *spathulata* (Sm.) Sherff; *D. spathulata* Sm.; *D. salicifolia* DC.; *D. arabica* Hochst. & Steud. ex Webb, Fragm. florul. aethiop.-aegypt.: 55-56, 1854; *D. natalensis* Sond.

Shrub or tree 0,5-9 m tall; leaves when dried stiff, chartaceous; scars of fallen sepals annular or slightly lobed; seeds compressed, not easily rolling when dropped on a flat surface.

Evergreen (montane) bushland and scrub, invading overgrazed *Acacia-Commiphora* bushland; thicket; grassland; mixed *Podocarpus* and *Juniperus-Podocarpus* montane forest, *Juniperus* and *Juniperus-Olea* dominant forests; mainly along edges and in clearings; woodland and forest on lava; stony hill-sides, rocky places; persisting in disturbed places, even bad wasteland; secondary growth in abandoned cultivations in forest areas; sometimes penetrating into deciduous bushland: (0-)500-2900 m alt.

Regenerates rapidly after bush fires. Useful for reclaiming poor land.

Pantropical. In tropical Africa from Zaire in the W (cultivated in Burkina Faso, Ghana, Nigeria, Cameroon) to Egypt (Gebel Elba), Sudan ("once forming pure stands at Erkowit, now hardly encountered, fide El Amin, l.c.), Ethiopia, Somalia in the E, then

## DODONAEA VISCOSA

S to S. Africa (Cape Peninsula; naturalised in Botswana); an alien invasive in Namibia (Cunningham & al., in Dinteria 29: 11-18, 2004); Madagascar, Mascareignes; Arabia (Ghazanfar, Fl. Sult. Oman 2: 109, 2007), Socotra; all parts of the tropics and subtropics of the world. – New record for Spain (Valencia) as naturalized (Flora Montiber. 43: 3-7, 2009).

Cultivated as a hedge plant in Egypt and some other Mediterranean and tropical countries. Not browsed by livestock.

LIU, J. & S. NOSHIRO (2003). Lack of latitudinal trends in wood anatomy of *Dodonaea viscosa* (Sapindaceae), a species with a worldwide distribution. *Amer. J. Bot.* 90: 532-539 [world map].

PAOLI, A. A. S. & J. SARTI (2008). [Morphology and anatomy of the fruits and seeds in *Dodonaea* (sic!) *viscosa* (L.) Jacquin (Sapindaceae).] *Revista Brasil. Sementes* 30/2: 33-42.

According to Coates Palgrave, Trees south. Afr., ed. 3: 656-657, 2002, *D. viscosa* subsp. *angustissima* (DC.) J. G. West (bas.: *D. angustissima* DC.) occurs in S. Africa (W Cape, Namaqualand, E Cape).

## ERIOCOELUM/ II

Tropical African genus, in need of revision.

**Eriocoelum dzangense** («dzangensis») D. J. Harris & Wortley – Icon.: Kew Bull. 61: 278, 2006; Harris & Wortley, Sangha trees: 170, 2008.

syn.: *E. sp. aff. oblongum* Keay sensu Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 192, 2002; *E. paniculatum* sensu Chevalier, Etudes Fl. Afr. Centr. 1: 67, 1913 p.p. quoad specim. Chevalier 5999, non sensu Baker

Tree 25-30 m, monoecious; bole straight, 30 cm dbh; bark dark grey, rough, finely vertically and horizontally lined; slash red, yellowish towards the centre; (young) twigs, stipules, leaves, inflorescences and flowers with dense short curly orange-brown hairs, glabrescent; leaves with 2-4 pairs of leaflets, sometimes with an extra pair of small leaflets at inflorescence insertion; leaflet lamina 10-25 × 4-12 cm, elliptic-ovate or oblong, leathery, discoloured (pinkish brown above when dried), larger veins very prominent beneath, impressed above; panicles dense, c.15 cm long with flowers of 2 types (2 types of stamens) in the same inflorescence; capsule 3-angular, orange-brown, velvety at first, becoming glabrous and shiny.

Rain-forest of drier type.

Similar to *E. oblongum* (in Nigeria only) but flowers apparently bisexual, and size and pubescence of leaves different.

**E. kerstingii** Gilg ex Engl. 1921 ("barely adequately published", Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 28, 1998) or Hutch. & Dalziel 1928 (F.W.T.A. 1: 502); excl. var. *katangense* Hauman (= *E. lawtonii*); Steentoft, Flow. pl. in W. Africa: 183, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: fig. 332-333, 2009. – Icon.: Fl. Cameroun 16: 177, 1973. Engler, Veg. d. Erde 9, Pflanzenw. Afr. 3/2: 283, 1921; Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae 2: 1154, 1933; Adam, Fl. descr. Mts Nimba 2: 846, 1971; Fl. Trop. E. Afr., l.c.: 29; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 751, 2006; Akeginou & al., Fl. analyt. Bénin: 922, 2006.

## ERIOCOELUM KERSTINGII

syn.: *E. racemosum* sensu A. Chev., Explor. Bot. 1: 154, 1920 p.p., quoad specim. Chevalier 24324, non Baker; *E. paniculatum* sensu A. Chev., l.c. (specim. Chevalier 12317, 13387, 20335), et sensu A. Chev., Etudes Fl. Afr. Centr. 1: 67, 1913 p.p. quoad cit. Haut-Chari (specim. Chevalier 6245, 6256, 6257, 6301, 6912, 7379).

Tree 3-6-15-20 m, spreading; crown round, dense, branches often drooping; bole crooked, 30 cm Ø, 1,6 m in girth; bark dark green; slash red with fine white streaks; branchlets with yellow curly hairs; leaves with 2-3(-4) pairs of leaflets, the lowermost small stipule-like; lamina ± elliptic, 8-16(-22) × 4-6 cm, with minute orange-brown glands, midrib prominent above, sparingly pilose-pubescent on larger veins beneath, tip ± rounded-acute (not mucronate); flowers white (anthers mauve) in rusty panicles 20 cm long; capsule silky hairy at first, soon glabrescent, yellowish-orange-red, c. 2 cm long, valves woody.

Stream banks in closed gallery forest in high rainfall savanna; relic deciduous forest on stream sides; evergreen moist forest; waterlogged soils of dry and upland areas; banana plantation; 10-1000 m alt.

Resembling *E. macrocarpum* which is, however, less hairy and has larger fruits.

**E. lawtonii** Exell

syn.: *E. kerstingii* Gilg ex Engl. var. *katangense* Hauman (we agree with Verdcourt's interpretation, Fl. Trop. E. Afr., l.c.); *E. sp. 1* sensu White, Forest fl. N. Rhodes.: 225, 1962.

Tree c. 10 m; bark grey, smooth; twigs yellow tomentose; leaves with 2-4 pairs of leaflets; leaflet lamina glandular-pubescent on midrib above and sparsely pubescent beneath, tufts of hairs in axils of veins, otherwise glabrous, chartaceous, oblong-elliptic, 12-30 × 7-11 cm, lowermost pair smallest (often caducous), apex acuminate; flowers white, scented, in yellow tomentose panicles 7-20 cm long; capsule 1,5-2 cm, glabrescent.

Riverine forest; 1325 m alt. (Zaire).

Resembling *E. microspermum* but hairs in *E. lawtonii* longer and more patent, and fruit somewhat smaller.

**E. macrocarpum** Gilg ex Radlk. («*macrosperrum* Gilg») sphalm. auctt.); L. White & Abernethy, Guide vég. Rés. Lopé, Gabon: 154, 1996. – Icon.: Fl. Cameroun 16: 177, 1973; Vivien & Faure, Arbres forêts denses Afr. Centr.: 407, 528, 1985.

syn.: *E. macrocarpum* Gilg ex De Wild., nomen.

Tree 4-20-30-35 m, monoecious; bole straight, cylindrical, to 20 m high, 40-60 cm Ø; branchlets rusty puberulous; bark grey, smooth; leaves with 2-3 pairs of leaflets, the lowermost the smallest and cordate (5-6 cm Ø), the uppermost the largest, obovate, 10-30 × 5-14 cm, ± acuminate; lamina punctate, glabrous all over; flowers white in spike-like unisexual inflorescences 10-20 cm long, axes rusty puberulous; capsule 3-4 cm Ø, woody, orange, smooth, soon glabrescent; seed aril orange (cf. *E. microspermum*, *E. oblongum*).

Forest, also coastal; abundant on savanna edges; 1-1400 m alt.

In habit resembling a *Blighia*. Easily confused with *Eriocoelum microspermum* (leaves similar). – Also resembling *E. oblongum* (having, however, leaves densely brown-hairy beneath, hairy fruits and red seed aril). *E. kerstingii* has smaller fruits. Confusion also possible with *Aporrhiza paniculata*.

Not in Ivory Coast (= *E. pungens*).

Angola ?

## ERIOCOELUM

**E. microspermum** Gilg ex Radlk.; Vivien & Faure, Arbres forêts denses Afr. Centr.: 406-407, 1985; Pauwels, Nzayilu N'ti, Guide arbres & arbustes Kinshasa-Brazzaville: 204, 1993; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 192, 2002; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Harris & Wortley, Sangha trees: 171, 2008.

syn.: *E. microspermum* Gilg ex De Wild., nomen.

Tree 25-30-35 m, or shrub 4 m tall; bole to 13 m high, 60-80 cm Ø; young branchlets rusty pulverulent; leaves with 2-3 pairs of leaflets, the lowermost the smallest, the upper one large, ± oblong, 20-30 × 7-10 cm, ± acute-acuminate, coriaceous, ± glabrous, punctate (similar to *E. macrocarpum*); panicles branched, densely yellow-tomentose 20-30 cm long; capsule rusty-tomentose, soon glabrescent, orange, woody, 1,5-2,5 cm Ø; seed aril red.

Riverine and coastal forest, islands in streams, swampy gallery forest, swamps, moist forest or seasonally flooded; 700-1400 m. alt.

Poorly known species, often confused with other *Eriocoelum* spp. – Resembling *E. lawtonii*.

**E. oblongum** Keay; L. White & Abernethy, Guide vég. Rés. Lopé, Gabon: 154, 1996; Wilks & Issembé, Guide arbres Guinée Equat.: 448, 2000; Sosef & al., Check-list pl. vascul. Gabon: 382, 2006.

Tree to 25 m; branchlets densely golden-brown hairy, bark greyish or brown; slash dark red; leaves with 3-4(-5) pairs of leaflets; leaflet lamina with dense short curly hairs beneath, main nerves impressed above, rounded at base, oblong, 3-16 × 2-6,5 cm, shortly acuminate; flowers apparently bisexual, in dense branched inflorescences 12 cm long; capsule woody, orange, hairy, 2,8-3,2 cm Ø (cf. *E. macrocarpum*); seed aril orange (not red).

Rain-forest, along rivers; 13-250 m alt. (Gabon).

Little known species, similar to *E. macrocarpum*.

**E. paniculatum** Baker – Icon.: Fl. Cameroun 16: 179, 1973.

Tree 6-10 or 20-25 m; bole 20-30 cm Ø; branchlets rusty spreading hirsute; leaves with 3-6 pairs of leaflets, the lowermost stipule-like, cordate, c. 3 cm Ø, the others obovate, 4-16 × 3,5-5,5 cm; lamina punctate, glabrous above except for midrib, glabrous beneath except for larger veins, hairs rusty-brown; flowers pinkish (anthers red) in erect, stiff, branched, densely hairy panicles 20 cm long; capsule c. 3,5 cm Ø, woody, orange, hairy.

River banks, moist places in forest; 100-475 m alt. (Gabon).

Not in Centr. Afr. Rep. or Guinea (= *E. dzangense*, *E. kerstingii*). According to Radlkofer (in Engler, Pflanzenreich 4/165, Sapindaceae 2: 1155, 1933) also in Cameroon, Gross-Batanga, specim. Dinklage 1107).

**E. petiolare** Radlk.; Sosef & al., Checklist pl. vascul. Gabon: 383, 2006; Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Fl. Cameroun 16: 179, 1973; Wilks & Issembé, Guide arbres Guinée Equat.: 449, 2000.

Tree 8-20(-25) m; bole straight, cylindrical, to 35 cm Ø; branchlets slightly grey-puberulous; leaf petiole 3-6 cm long, glabrous like the leaflet surfaces; leaflets in 3-5 pairs, the lowermost the smallest but not stipule-like (only species in the genus), lamina not punctate, 14-18 × 5-6 cm, acuminate; inflorescences erect, branched, yellowish-pubescent; capsule ± glabrous, 2,5-3,5 cm Ø.

Forest; 10-350 m alt. (Gabon).

Probably also in Zaire (Mayumbe) and Angola (Cabinda); these specimens not complete.



## ERIOCOELUM

**E. pungens** Radlk. ex Engl.; Irvine, Woody pl. Ghana: 544, 1961. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 751, 2006.

syn.: *E. macrocarpum* sensu Chevalier, Explor. bot. 1: 154, 1920, non Gilg ex Radlk. (specim. Chevalier 15236); *E. racemosum* sensu Chevalier, l.c. p.p., non Baker (Chevalier 15585, 19764); all of var. **pungens**, Ivory Coast.

Tree to c. 11 m tall or spreading shrub, stilt-rooted; trunk to c. 1,5 m in girth; twigs and leaves with scattered stiff, bristly hairs (pungens!); branchlets rusty-hairy; leaves red when young; leaf rhachis short (10 cm); leaflets in 2-4 pairs, oblong, 6-22 × 3-9 cm, margins recurved, lowermost pair stipule-like, 1 cm Ø; flowers white in slender simple racemes 5-8 cm long; capsule thin-shelled (brittle), orange, at first with bristly hairs (absent in var. **inermis** Keay, from SE Nigeria).

Evergreen forest, often in moist places, riversides, swamps, in understory; persisting in cocoa plantations.

Comprises 2 vars.

**E. racemosum** Baker; Sosef & al., Checklist pl. vascul. Gabon: 383, 2006. – Icon.: Busson, Pl. alimant. Ouest africain: 351, 1965; Fl. Cameroun 16: 175, 1973; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 748, 751, 2006.

Tree, spreading, 9-15 m tall or shrub; trunk c. 45 cm in girth, with low buttresses; branches and leaf rhachis with long soft spreading rusty hairs; leaves red when young; leaflets in (2-)3-4(-5) pairs, oblong-lanceolate, acuminate, not punctate, 6-14 × 3-4,5 cm, lowermost pair stipule-like clasping the stem; flowers white in stout pendulous inflorescences simple or branched, axes rusty pubescent; capsule 1,3-1,5 cm high, c. 2 cm Ø, thin-shelled, yellow with long brown soft hairs, glabrescent; seed aril yellow-red, edible.

Evergreen closed forest, in wet places, riversides, in understory; 100-125 m alt. (Gabon).

Bark poisonous.

**E. rivulare** Exell; Figueiredo & Smith, Pl. Angola: 156, 2008.

Tree 15 m; branchlets at first yellow-tomentellous, glabrescent; leaves 30-40 cm long, with 4-5 pairs of leaflets 12-25 × 5-9 cm, the lowest pair stipule-like and sometimes borne on the twigs (like in *E. racemosum*), rhachis and petiolules and leaflet nerves pubescent (lamina glabrous); panicles 20 cm long, yellow-tomentellous like the capsule, which is also rough, warty, 3-4 cm Ø, valves thin, scarlet.

Forest on riversides; 0-20 m alt.

Described as resembling *E. macrocarpum*.

## INSUFFICIENTLY KNOWN SPECIES:

*Eriocoelum ledermannii* Gilg ex Engler, Veg. d. Erde, Pflanzenw. Afr. 3/2: 282, 1921 (barely adequately published), a tree (?), leaves with 3 pairs of leaflets; from NW Cameroon (Mt Gendero) in gallery forest.

Not mapped.

Not cited in Fl. Cameroun 16 (1973).

## SYNONYMS:

*Eriocoelum kerstingii* Gilg ex Engl. var. *katangense* Hauman = **Eriocoelum lawtonii**

*macrocarpum* Gilg ex De Wild. = **E. macrocarpum** Gilg ex Radlk.

## ERIOCOELUM

*macrocarpum* sensu A. Chev. 1920, non Gilg ex Radlk. =

**E. pungens** var. **pungens**

*microspermum* Gilg ex De Wild. = **E. microspermum** Gilg ex Radlk.

*paniculatum* sensu A. Chev. 1913 p.p., non Baker

= **E. dzangense**, **E. kerstingii**

*paniculatum* sensu A. Chev. 1920 = **E. kerstingii**

*pendulum* Stapf = **E. racemosum**

*racemosum* sensu A. Chev. 1920 p.p., non Baker

= **E. kerstingii**, **E. pungens** var. **pungens**

sp. aff. *macrocarpum* Gilg, sensu Consp. Fl. Angol. = ?

sp. aff. *oblongum* Keay sensu Harris 2002

= **E. dzangense**

sp. 1 sensu White, N. Rhodes. 1962 = **E. lawtonii**

## ERYTHROPHYSA / 2

sphalm.: *Erythrophila* Arn. in J. Bot. (Hooker) 3: 258, 1841.

Three species in mainland Africa one of which [*E. alata* (Eckl. & Zeyh.) Hutch.; syn.: *E. undulata* E. Mey. ex Sond.] only in SW Namibia-NW S. Africa. *Erythrophysopsis* Verdc. (6 Malgasy species) is included in *Erythrophysa* by Schatz, Generic tree fl. Madag.: 366, 2001.

**Erythrophysa septentrionalis** Verdc.

Shrub or bushy tree 1,3-4 m tall, glabrous or ± pubescent; young branchlets purplish-violet; leaves 1,5-3,5 cm long, of 5-7 leaflets obovate-elliptic 0,3-2 × 0,2-1 cm, rhachis narrowly winged; flowers yellow-white, sweet-scented, c. 5 cm long, with red anthers, in narrow terminal panicles 3-5 cm long; capsule papery, inflated (resembling *Cardiospermum*). 3-4 cm Ø, red, attractive.

Mixed bushland of *Acacia*, *Commiphora*, *Terminalia polycarpa* on red sandy soil, with a rich shrub and forb layer; occasional on gravelly soil; 600-800 m alt.

Collected only 5 times (1989) in a restricted area (Ogaden, Ethiopia).

**E. transvaalensis** I. Verd.; Mapaura & Timberlake, Checklist Zimbabwe. vascul. pl.: 76, 2004. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 1366, 1972; Coates Palgrave, Trees south. Afr., ed. 3: 655, ill. 168, 2002. – Bushveld (Transvaal) Red-balloon.

Deciduous shrub or tree 1-5 m tall with many slender brittle stems from the ground; bark grey to red-brown with small raised dots; branches smooth, shiny; leaves crowded towards the end of young branchlets, appearing with the flowers; leaf rhachis winged; leaflets 15-21-31, lanceolate, dark grey green, 2-7 × 0,3-1 cm, base asymmetric and often with frond-like lobes; flowers attractive, c. 1,5 cm long, (green-)red; capsule bladder-like, 3-angled, long-stipitate, green or red, 8 × 5 cm.

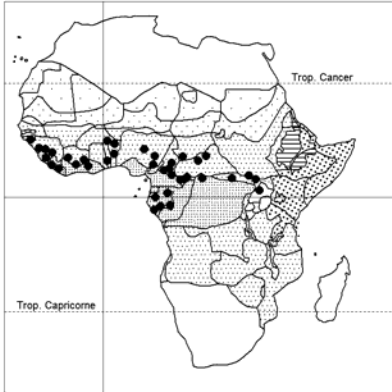
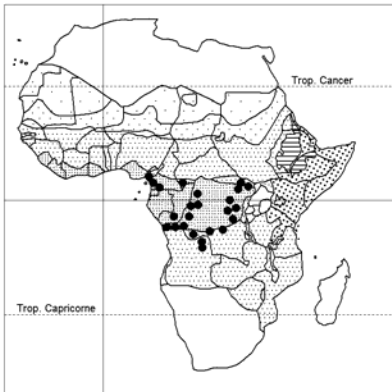
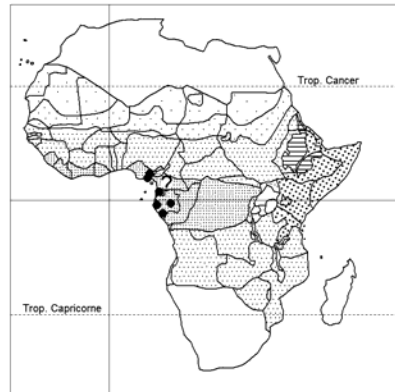
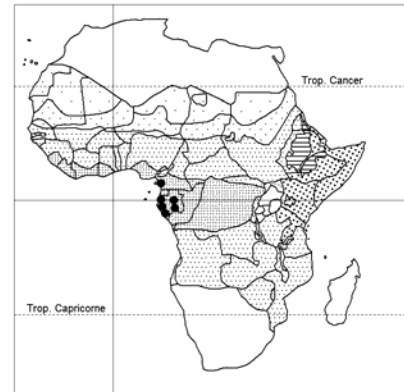
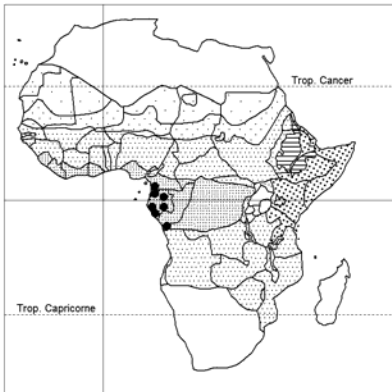
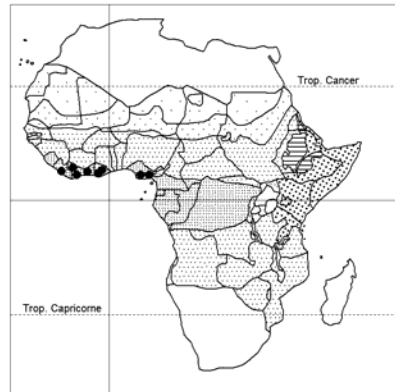
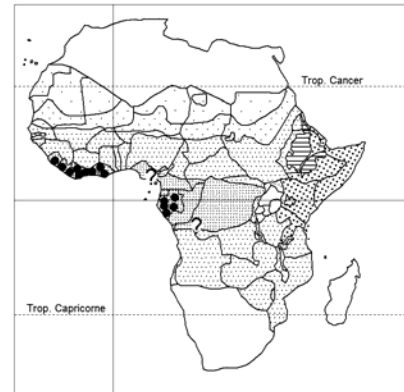
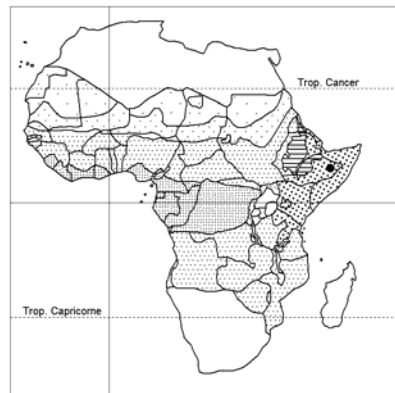
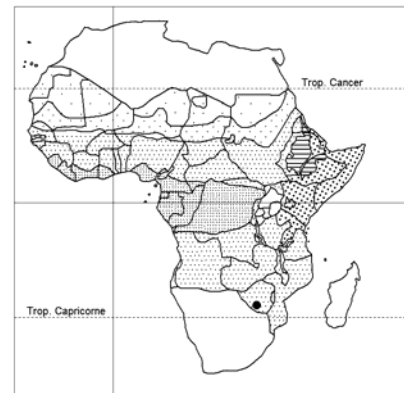
Stony hillsides, rocky koppies; 900-1200 m alt.

N S. Africa

Seeds (black, 2 cm Ø) used as beads; germinating readily; plant easily cultivated.

Mapaura & Timberlake (Checklist Zimbabwe. vascul. pl.: 76, 2004) give *Crocoxylon transvaalense* (Burt Davy) N. Robson as a synonym (the same quotation also on p. 33 under *Crocoxylon*, *Celastraceae*). This seems to be a misprint: *Elaeodendron transvaalense* should read *Erythrophysa transvaalensis*. The first name is based on *Salacia transvaalensis* Burt Davy (type: Burt Davy 1699). We have seen a photograph of the type specimen which perfectly corresponds with *Elaeodendron transvaalense* (*Celastraceae*), and not with *Erythrophysa transvaalensis* I. Verd.



*Eriocoelum kerstingii**Eriocoelum lawtonii**Eriocoelum macrocarpum**Eriocoelum microspermum**Eriocoelum oblongum**Eriocoelum paniculatum**Eriocoelum petiolare**Eriocoelum pungens**Eriocoelum racemosum**Eriocoelum rivulare**Erythrophysa septentrionalis**Erythrophysa transvaalensis*

**FILICIUM / 1**

syn.: *Pteridophyllum* Thwaites 1854, nom. illegit., non Sieb. & Zucc. 1843 (*Papaveraceae*).

Genus of 3 species one of which endemic to Madagascar, a second one on Madagascar and the Comoros.

**Filicium decipiens** (Wight & Arn.) Thwaites; Schatz, Generic tree fl. Madag.: 367-368, 2001; Coates Palgrave, Trees south. Afr., ed. 3: 658, 2002; Friis, Forest trees N. E. trop Afr.: 191, 316 (map), 1992. – Icon.: Thwaites, Hooker's J. Bot. 6: pl. 1 B facing p. 1, 1854 (partial; sub gen. *Pteridophyllum*); Capuron, Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 19: 39, 1969; Fl. Males., Ser. 1, 11/3: 755, 1994 (form without winged petiole-rhachis, cf. fa. *apterum* Capuron); Fl. Trop. E. Afr., Sapindaceae: 13, 1998; Beentje, Kenya trees, shrubs & lianas: 417, 1994 (partial + map); White & al., Evergreen forest fl. Malawi: 536, 2001 (leaf); Burrows & Willis, Pl. Nyika Plateau: 261, 2005.

bas.: *Rhus decipiens* Wight & Arn. 1834 (*Anacardiaceae*), non E. Mey. ex Drège 1839, nom. nud. (= *Allophylus decipiens*).

syn.: *Pteridophyllum decipiens* (Wight & Arn.) Thwaites; *Filicium elongatum* Radlk.

Tree, monoecious, evergreen, 2-4,5-8-25(-30) m, or shrub; all parts glabrous; bole straight, cylindrical, to 80 cm Ø; bark variable, smooth to flaky; wood very hard; foliage fern-like, leaves glossy dark green, resinous when young, petioles and rhachides broadly winged, wings tapering downwards to each pair of leaflets; leaflets in 5-10 pairs, ± linear, 5-16 × 0,5-4 cm; flowers creamy, very small, unisexual, in same inflorescence but supposed to be separated in time, in axillary panicles 6-25 cm long; drupe purple, ellipsoid, c. 7 × 6 mm, sepals persistent.

Riverine (fringing) forest, swampy sites in forest; mixed forest in river valleys, deep ravines, along mountain streams; evergreen forest; in understorey or sometimes a canopy tree; Afrotropical rain-forest transitional to woodland; thicket clumps and termitaria in *Combretum* woodland; 450-1800 m alt.

Madagascar, Comoro Isl.; S India, Sri Lanka. Cultivated in Indonesia, Fiji Isl., Samoa, Hawaii (sometimes escaped and naturalized).

SYNONYM:

*Filicium somalense* Chiov. = **Haplocoelum inoploenum**

**GANOPHYLLUM / 1**

Described in *Burseraceae*.

Two species: one in Africa, one in Flora Malesiana area from the Andamans and Nicobars to NE Australia and Solomon Isl.

**Ganophyllum giganteum** (A. Chev.) Hauman – Icon.: Fl. Cameroun 16: 193, 1973; Vivien & Faure, Arbres forêts denses Afr. Centr.: 409, 1985; L. White & Abernethy, Guide vég. Rés. Lopé, Gabon: 153, 1996 (partial); Wilks & Issembé, Guide arbres Guinée Equat.: 445, 2000; Harris & Wortley, Sangha trees: 172, 2008.

Tree 25-40 m, deciduous, dioecious; bole cylindrical, ± buttressed, bole free to 10-25 m height, 0,8-1,2 m Ø; bark red-brown, flaking off in irregular patches; leaves shiny, resinous; leaflets 10-24, alternate, 10-16 × 3-4 cm, acuminate; flowers white, unisexual, in branched inflorescences 15-30 cm long; drupe glabrous, c. 2 × 1,5-2 cm, orange, black olive-like when dry, sepals persistent.

Terra firma and gallery forest, semi-deciduous plateau forest; primary and managed rain-forests; 200-700 m alt.

**GANOPHYLLUM GIGANTEUM**

Distribution area poorly known.

Confusion possible with *Aucoumea klaineana* (*Burseraceae*).

The Malesian species, *G. falcatum* Blume differs only slightly, mainly in flower characters, but also in leaflets not sessile and drupe smaller (1-2 × 0,7-1 cm); see Leenhouts in Fl. Males., Ser. 1, 11/3: 538-540, 1994, with fig.

**GLENNIEA / 3**

syn.: *Crossonephelis* Baill.; *Melanodiscus* Radlk.

Published as *Glenniea* Hook. f. though in honour of Rev. S. O. Glenie, collector in Ceylon/Sri Lanka. Trimen in Fl. Ceylon 1: 305, 1893, corrected it to *Gleniea* which was followed by later authors. The original spelling *Glenniea* was re-instated by Leenhouts (cf. Blumea 22: 411-412, 1975). As *Glenniea* in Beentje, Kenya trees, etc.: 418, 1994.

Genus of wide and scattered distribution, from W Africa to New Guinea, one is endemic to Madagascar.

**Glenniea adamii** (Fouilloy) Leenh.; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 754, 2006. – Icon.: Adam, Fl. descr. Mts Nimba 3: 1370, 1975 (partial; sub gen. *Crossonephelis*).

Tree, monoecious, 15 m; branchlets terete; bole straight; bark dark coloured, rough, flaky when old; wood very hard; slash orange-brown; leaves with 2 pairs of leaflets, without pseudo-stipules; lamina 8-15 × 3-5,5 cm; glabrous except fine appressed hairs on midribs; flowers unisexual and bisexual, yellowish, in simple or little branched racemes 4-15 cm long, solitary or clustered; berry 2-equal-lobed, yellow, glabrous, 4 cm high.

Evergreen forest on lower mountain slopes; 400-600 m alt.

Known only from Liberia, Mt Nimba. Also in Sierra Leone? (according to Adam, o.c.: 1081, the specimen *Melanodiscus* Burbidge 497, "imperfectly known species" in Fl. W. Trop. Afr., ed. 2; 1/2: 720, 1958, could possibly belong here).

Very close to *Crossonephelis unijugatus*. Leenhouts (Blumea 21: 95, 1973) even suggests subspecific rank under that species.

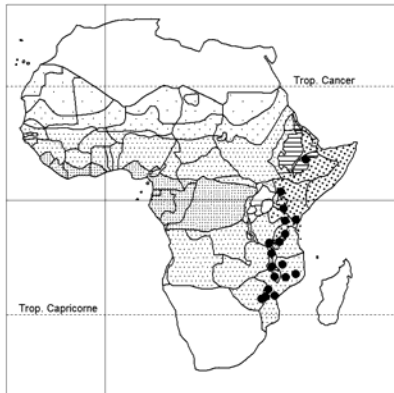
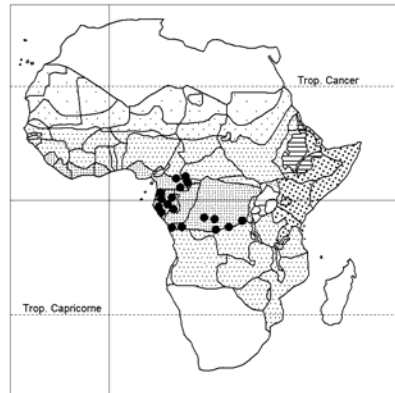
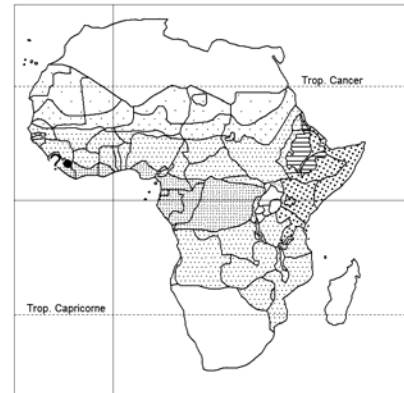
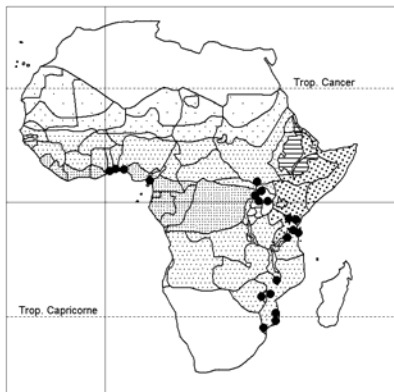
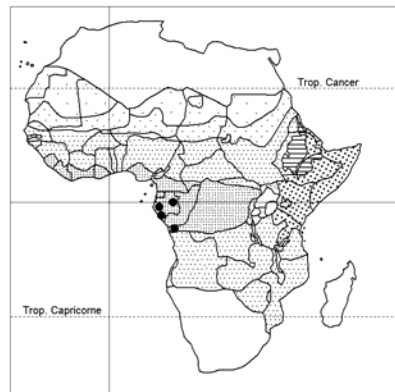
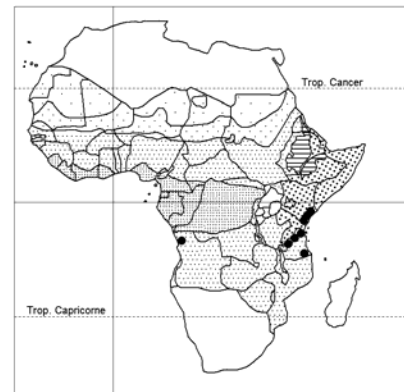
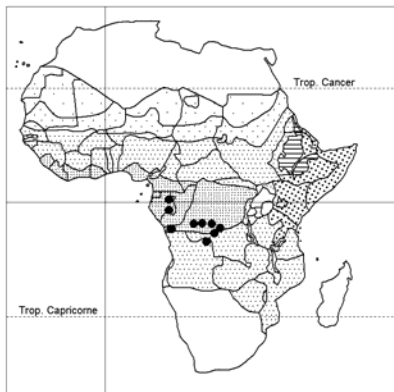
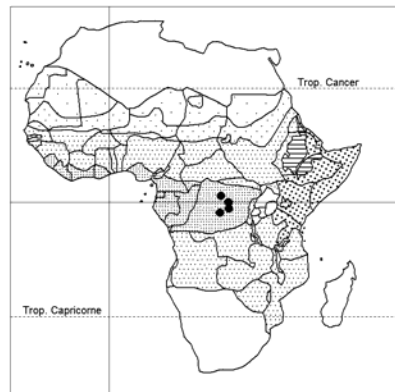
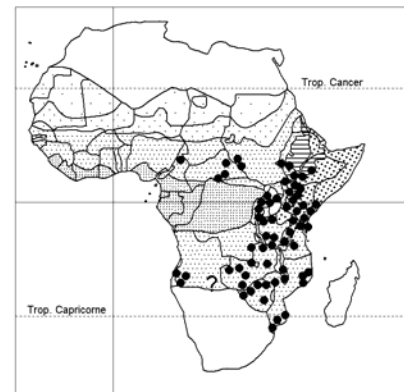
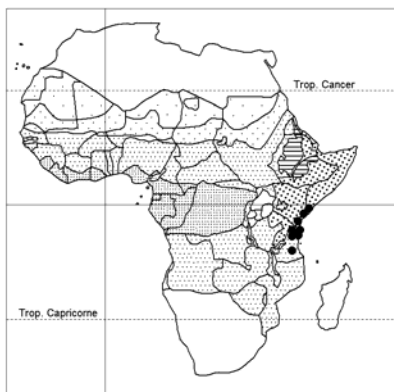
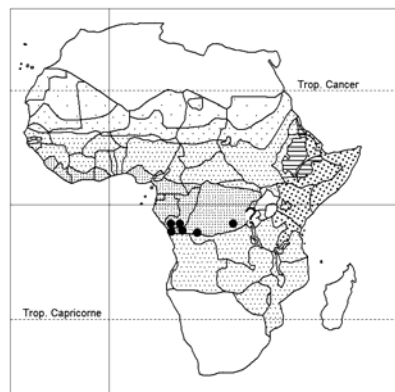
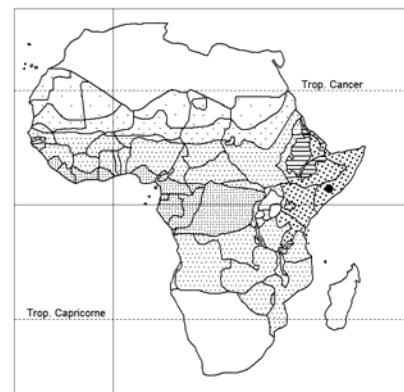
**G. africana** (Radlk.) Leenh., Blumea 22: 412, 1975; Coates Palgrave, Trees south. Afr., ed. 3: 649, 2002; Akoegninou & al., Fl. analyt. Bénin: 923, 2006. – Icon.: Fl. Zambes. 2/2: 529, 1966, and White & al., Evergreen for. fl. Malawi: 534, 2001, sub nom. *Melanodiscus oblongus*; Beentje, Kenya trees, shrubs & lianas: 418, 1994; Fl. Trop. E. Afr., Sapindaceae: 53, 1998.

syn.: Enum. 2: 219, 1992; *Crossonephelis africana* (Radlk.) Leenh.; *Melanodiscus* sp. sensu Hamilton, Field guide Uganda forest trees: 225 + fig. p. 224, 1971.

Tree, spreading, dioecious, 5-7-15-20 m tall, or shrub; trunk crooked, 45 cm Ø, branching low down; bark smooth, later rough, grey-green to brown, lenticels prominent; young branchlets pubescent; slash granular, yellow to orange, turning white at last; leaflets in 2-4 pairs, the terminal ones largest, lamina 7-19 × 3-9 cm, ± glabrous, the basal one stipule-like, petiolules swollen; new flush conspicuous, from pale pink via scarlet to green at last; flowers pinkish-yellow in panicles 5-12 cm long; berry round or 2-lobed, orange, velvety, c. 2 cm Ø.

Closed forest, wet evergreen forest, riparian forest and bushland; lowland rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia*, *Parinari excelsa*, *Milicia excelsa*; wooded ravines; in understorey, locally very common; rocky mountain sides; evergreen woodland; secondary forest; on acid soils and on limestone; 30-2600 m alt.

Variable in leaf size and texture, and in flower characters.

*Filicium decipiens**Ganophyllum giganteum**Glenniea adamii**Glenniea africana**Glenniea unijugata**Haplocoelopsis africana**Haplocoelum acuminatum**Haplocoelum congolanum**Haplocoelum foliolosum**Haplocoelum inoploeuum**Haplocoelum intermedium**Hirania rosea*

## GLENNIEA

**G. unijugata** (Pellegr.) Leenh., non *G. unijuga* (Thwaites) Radlk. (bas.: *Sapindus unijugus* Thwaites) from Ceylon/Sri Lanka. – Icon.: Fl. Cameroun 16: 139, 1973.

syn.: Enum. 2: 219, 1992; *Crossonephelis unijugatus* (Pellegr.) Leenh.

Shrub little branched at base, or tree, dioecious, 3-5 m tall; stem 10 cm Ø; branchlets terete, inconspicuously white-lenticellate, velvety like leaf petioles and inflorescences; leaflets in 1-2 pairs, without pseudo-stipules, glabrous except midrib, lamina 8-20 × 3-6 cm; flowers yellow in little-branched panicles 3-10 cm long; berry 2-lobed, compressed, 2,5 cm high, pinkish, tomentellous. Humid forests, managed forest, forest with *Terminalia*; 375-800 m alt. (Gabon).

Close to *C. adamii* (see above).

## SYNONYMS:

See under *Crossonephelis*, *Haplocoelopsis*, *Melanodiscus*

## (GLOSSOLEPIS)

*Glossolepis giorgii* De Wild. = **Chytranthus macrobotrys**

*klainei* Pierre in Herb. P. = ? **C. talbotii**

*macrobotrys* Gilg = **C. macrobotrys**

*pilgeriana* Gilg ex Engl. = **C. talbotii**

*talbotii* Bak. f. = **C. talbotii**

## HAPLOCOELOPSIS / 1

**Haplocoelopsis africana** F. G. Davies; Lebrun & Stork, Enum. 4: 663, 1997; Leenhouts, Blumea 22: 412, 1975 (sub *Glenniea africana*: “possibly a new genus” nearest to *Eriocoelum*); Figueiredo & Smith, Pl. Angola: 156, 2008. – Icon.: Fl. Trop. E. Afr., Sapindaceae: 31, 1998.

syn.: *Crossonephelis africanus* (Radlk.) Leenh., p.p. (in synonymy: *Melanodiscus* sp. nov. sensu Dale & Greenway, Kenya trees & shrubs: 515, 1961, quoad specim. Dale 3820); *Haplocoelum* sp. sensu Brenan, Checklists forest trees ... Brit. Emp. 5, Tangan. Terr. 2: 558, 1949, quoad specim. Gillman 1070; *Haplocoelopsis africana* F. O. (sic!) Davies in Beentje, Kenya trees, shrubs & lianas: 418, 1994, nom. invalid. (descr. angl.).

Shrub or tree, evergreen, 7-10(-20) m, monoecious?; young branchlets slender, grey-brown, coarsely hairy at first; crown dense, leafy; leaflets in 2-4 pairs, the lowest stipule-like; leaf rhachis white- or brown-bristly hairy; lamina 5-16 × 2-7 cm, olive green, glabrous except midrib; flowers unisexual, cream, in racemes in little branched inflorescences 3,5-11 cm long; fruit ± round, yellow, bilobed, 2,5 cm Ø.

Moist semi-deciduous groundwater forest with *Scorodophloeus*, *Cola clavata*, *C. minor*, *Ricinodendron*, *Combretum schumannii*, *Craibia*, *Dichapetalum*, etc., sometimes co-dominant with *Combretum schumannii*; also dry forest with *Combretum*, *Cassipourea*, *Lecaniodiscus*, *Erythroxylum platyclados*; thickets on light yellow sandy loam; xerophytic woods (Angola); 1-700 m alt.

Disjunct species Angola-E. Africa (2 taxa involved?).

The Tanzania material includes specim. Eggeling 6733 cited by Leenhouts 1975: 412.

First E African collection from 1937, supposed by Greenway to be a new species and cited as such by Brenan in 1949 (l.c.) and by Leenhouts in 1975 (l.c.); finally described in 1994/1997.

## HAPLOCOELOPSIS AFRICANA

– Collected in Angola in 1932 (Gossweiler 8416, 9645). – “The Angolan material may represent a separate taxon” (Figueiredo & Smith, l.c.).

## HAPLOCOELUM / 5

syn.: *Pistaciopsis* Engl. 1902 (*Simaroubaceae*; 1904 *Sapindaceae*).

African genus (plants lacking petals). The species (petals present) endemic to Madagascar is now placed in the genus *Gereaua* Buerki & Callm. [*G. perrieri* (Capuron) Buerki & Callm., Syst. Bot. 35: 178-180, 2010].

**Haplocoelum acuminatum** Radlk. [ex Engl. 1921, nom. subnud.], Radlk. in Engl. descr. 1932; Sosef & al., Check-list pl. vascul. Gabon: 383, 2006; Figueiredo & Smith, Pl. Angola: 156, 2008.

Shrub much-branched 1-4 m tall, or tree with bole to c. 50 cm Ø, dioecious?; young branchlets rusty puberulous, glabrescent; leaves (petiole + rhachis) c. 10 cm long, rhachis narrowly winged; leaflets in 2-3 pairs, the uppermost largest (6-12 × 2,5-5cm), glabrous, with secretory cells, tip rounded-acuminate; flowers numerous, clustered in short branched brown-yellow inflorescences; fruit round, orange, smooth, 1,5 cm Ø.

Forest patches; ? deciduous forest; river valleys; 200-750 m alt. Near *H. congolanum*.

**H. congolanum** Hauman

Shrub, monoecious, 0,6-2 m tall; stem 2 cm Ø; branchlets glabrescent; leaf rhachis narrowly winged; leaflets in 2-3 pairs, the outermost largest, c. 12 × 5 cm; inflorescences less compressed than in *H. acuminatum*; fruit yellow to reddish, 1,2-1,5 cm Ø.

High terra firma forest, semi-deciduous forest, riverine forest; in rocky places on mountain slopes.

Poorly known (material incomplete). Seems very close to (if not conspecific with?) *H. acuminatum*.

**H. foliolosum** (Hiern) Bullock; Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 44, 1998; Coates Palgrave, Trees south. Afr., ed. 3: 650-651, 2002; Figueiredo & Smith, Pl. Angola: 156, 2008.

Shrub or tree, 4-13-20 m tall; trunk to 30 cm Ø, often gnarled; bark grey, smooth; wood reddish; branchlets dark grey-brown-black, golden-brown pubescent like leaf petiole and rhachis; leaves often pinkish when young, mostly borne or short spur-shoots; leaflets in 2-16 pairs, asymmetric, ± oblong, 1,5-6 × 0,3-0,9 cm, glabrous to sparsely pubescent (midrib), terminal ones largest, tip ± emarginate; flowers white-yellow in axillary clusters or crowded on spur-shoots, often appearing before the leaves; drupe orange, ± round, ± glabrous, 1,5-2 cm Ø. – Very few female flowers collected.

S. Africa (subsp. **mombasense**).

Comprises 3 subspp.:

– subsp. **foliolosum**; White & al., Evergreen forest fl. Malawi: 531, 2001. – Icon.: Fl. Zambes. 2/2: 532, 1966.

bas.: ? *Balsamea foliolosa* Hiern (*Burseraceae*).

syn.: *Pistaciopsis dekindtiana* Engl.; *Haplocoelum dekindtianum* (Engl.) Radlk.; *Commiphora foliolosa* (Hiern) K. Schum. (*Burseraceae*).

Shrub or tree 4-7 m tall; leaflets in (6-)9-11(-16) pairs, small.



## HAPLOCOELUM FOLIOLOSUM

*Isoberlinia* and *Combretum-Pterocarpus* woodland; *Baikiaea* forest; evergreen bushland; deciduous *Pseudoprosopis* thickets; wooded grassland in rocky places, also along river cataracts, frequent on termitaria; forest gallery; may be thicket-forming; (550-)800-1800 m alt.

S Tanzania-Zaire-Angola-Zambia-Mozambique-Zimbabwe-Malawi.

- subsp. **mombasense** (Bullock) Verdc.; Beentje, Kenya trees, shrubs & lianas: 419, 1994. – Icon.: Thulin, Fl. Somal. 2: 249, 1999.

bas.: *Haplocoelum mombasense* Bullock

Tree or twiggy shrub 3-10 m tall; bark grey, finely grooved; leaflets in (2-)3-4 pairs, 0,6-3,2 × 0,4-1,8 cm.

Evergreen coastal scrub; hillside grassland, *Acacia-Combretum* woodland; relict floodplain forest, seashore bushland, *Avicennia* swamp edges; also *Brachystegia-Isoberlinia* woodland; river-banks in thickets; 1-500 m alt.

S Somalia-Kenya-Mozambique-S. Africa.

- subsp. **strongylocarpum** (Bullock) Verdc.; Aubréville, Fl. forest. Soudan.-guinéen.: 386-387 (map), 1950; Friis, Forest trees N. E. trop. Afr.: 191, 316 (map), 1992. – Icon.: Beentje, o.c.: 419 (sub nom. *H. foliolosum*); Troupin, Fl. Rwanda 2: 95, 1983; Fl. Cameroun 16: 175, 1993; Fl. Gabon 23: 175, 1993; all sub nom. *H. gallaense*; Fl. Trop. E. Afr., Sapindaceae: 45, 1998.

bas.: *Haplocoelum strongylocarpum* Bullock

syn.: *H. gallaense* (Engl.) Chiov.; *Pistaciopsis gallaensis* Engl.; *Haplocoelum foliolosum* sensu auct.: Fl. Eth. 3: 507 excl. fig., 1990; Beentje, Kenya trees, shrubs & lianas: 419, 1994, non (Hiern) Bullock s. str.; *H. trigonocarpum* sensu A. Chev., Etudes Fl. Afr. Centr. 1: 67, 1913, non Radlk. (= specim. Chevalier 8270).

Shrub or tree 2,7-10(-18) m tall; bark smooth, grey, flaking in patches; leaflets in 4-7(-8) pairs, 0,8-3,2 × 0,7-1,6 cm.

Dry *Juniperus* forest; *Acacia-Commiphora* and *Combretum-Terminalia* woodland and bushland; grassland with *Combretum* etc., dry thicket, particularly on rocky outcrops and hollows, rocky mountains with quartzite sand and pebbles; riverine forest; also often a dominant on lake shore soils; 650-2000 m alt.

Uganda-S Sudan-Kenya- N Tanzania-Rwanda-Cameroon-C. Afr. Rep. (sub nom. *H. trigonocarpum* sensu A. Chev.)-Ethiopia- ? S Somalia.

**H. inoploeum** Radlk.; Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 46-47, 1998; Friis, Forest trees N. E. trop. Afr.: 192, 316 (map), 1992; Beentje, Kenya trees, shrubs & lianas: 419-420 (maps) 1994. – Icon.: Thulin, Fl. Somal. 2: 249, 1999.

syn.: *H. trigonocarpum* Radlk. (type: Kirk, Zanguebar = not only Zanzibar but also mainland coast; cf. Verdcourt l.c.); *H. wakefieldii* (Engl.) Chiov.; *Pistaciopsis wakefieldii* Engl.; *Filicium somalense* Chiov.

Shrub or tree 2,4-15-20 m tall, semi-deciduous or evergreen, occasionally ± scandent with strong interlacing branches; trunk often gnarled; branchlets sparsely to densely brown-pubescent, glabrescent; bark grey(-brown-blackish), smooth to rough, ± fissured, flaking or peeling in irregular patches; leaves tufted on short shoots, rhachis narrowly winged; leaflets in (1-)2(-3) pairs, the outermost much larger than the inner one, yellow-green, 0,5-1,1 × 1-5,7 cm, lamina glabrous; flowers (greenish-)white(-yellowish), sweet-scented, in clustered cymes axillary or on short shoots, appearing before leaves; ovary and young fruit sharply trigonous, mature fruit losing angles, ribbed, yellow-orange-red, glabrous, breaking up irregularly, 1-2 cm long, edible.

## HAPLOCOELUM INOPLOEUM

Coastal forest, forest edges and thickets; semi-evergreen bushland and thicket on coral rag, dunes, rock outcrops; also wooded grassland, *Brachystegia* woodland, *Brachylaena* forest and swamp, riverine fringes; 0-600 m alt.

**H. intermedium** Hauman; Pauwels, Nzayilu N'ti, guide arbres ...Kinshasa-Brazzaville: 204, 1993.

Shrub 2-5 m tall or tree 13-18 m; bole 25-40 cm Ø; young branchlets puberulous, glabrescent, blackish; leaf rhachis narrowly winged; leaflets in 4-7 pairs, elliptic, shortly acuminate, 2,5-5 × 1-2 cm, the terminal much larger than the lowermost, lamina glabrous; flowers without petals in cymes 1 cm long; fruit ± round, glabrous, orange, c. 1 cm Ø.

Primary and old secondary forest, forest gallery, plateau forest, in understorey.

In leaf characters intermediate between *H. acuminatum* and *H. foliolosum*. Poorly known: the Zaire specimens lack flowers; specimen from NE Zaire sterile.

## SYNONYMS:

*Haplocoelum dekindtianum* (Engl.) Radlk. = **Haplocoelum foliolosum** subsp. **foliolosum**

*foliolosum* sensu auctt., non s. str. = **H. foliolosum** subsp. **strongylocarpum**

*gallaense* (Engl.) Radlk. = **H. foliolosum** subsp. **strongylocarpum**

*jubense* Chiov. = **Camptolepis ramiflora**

*mombasense* Bullock = **Haplocoelum foliolosum** subsp.

*scassellatii* Chiov. = **Lecaniodiscus fraxinifolius** subsp.

*strongylocarpum* Bullock = **Haplocoelum foliolosum** subsp.

*trigonocarpum* Radlk. = **H. inoploeum**

*trigonocarpum* sensu A. Chev. 1913 = **H. foliolosum** subsp. **strongylocarpum**

*wakefieldii* (Engl.) Chiov. = **H. inoploeum**

## [HARPULLIA]

[**Harpullia pendula** Planch. ex F. Muell.]; Burkill, Useful pl. W. trop. Afr. 5: 21, 2000. – Icon.: Fl. Australia 25, Melianthaceae-Simaroubaceae: 27, 1985 (colour photo).

Tree 15-20 m; leaves with 4-6 leaflets elliptic-oblong 5-10 × 2-4 cm, glabrous above; panicles 28 cm long; fruit yellow-orange to red, bladderly, lobed, 1,5-2,5 cm long.

Native to E Australia (Fl. Austral., l.c.: map 52, p. 51), occurring in dry rain-forest on basalt. Also cultivated as an ornamental, like in Africa (Ghana, Zaire).

## SYNONYMS:

*Harpullia fosteri* Sprague = **Majidea**

*madagascariensis* (Baill.) Radlk. = **M. zanguebarica** subsp.

*multijuga* Radlk. = **M. fosteri**

*zanguebarica* (Kirk ex Oliv.) Radlk. = **M. zanguebarica**

**HIRANIA / 1**

Isolated genus with some similarities to *Erythrophysa* E. Mey. ex Arn. or perhaps *Stocksia* Benth. (Middle East), and also to *Diplopeltis* Endl. (Australia). Material of the single species incomplete.

**Hirania rosea** Thulin – Icon.: Nord. J. Bot. 24: 510, 2007, and in Fl. Somal. 3: 579, 2006.

Shrub to 3 m tall, apparently dioecious; young twigs ± angular, shortly spreading-hairy, purplish brown, becoming terete with grey smooth bark; leaves simple, entire on long shoots and densely crowded on knob-like short-shoots, obovate, 0.5-2 × 0.3-1.3 cm, shortly spreading-hairy like the inflorescences (branched); male flowers zygomorphic with 5 sepals, hairy and glandular, and with 4 pink petals and a dark purple disc; female flowers and fruit unknown.

On a silt plane with slightly saline soil with *Suaeda*, *Limonium*, small clumps of trees and shrubs, e.g. *Acacia*, *Boswellia neglecta*; c. 125 m alt.

The area (S Centr. Somalia) has a rich flora. On the silt plane the near-endemic *Fadenia zygophylloides* Aellen & C. C. Towns. (*Chenopodiaceae*) also grows.

Known only from the type collected in 1986 (Kuchar 17 237). This gathering was included at the end of the Dicotyledons in Kuchar's Somali flora (1988) as a "Dicot. Fam. unknown", and with a note by John Gillett as perhaps belonging to *Capparaceae*. In 1988 Thulin thought it might be a *Sapindaceae*. In 1989 he visited the area in Somalia, without finding the plant.

**LACCODISCUS / 4**

Tropical African genus.

**Laccodiscus ferrugineus** (Baker) Radlk.; Cable & Cheek, Pl. Mt Cameroon: 127, 1998. – Icon.: Fl. Cameroun 16: 167, 1973. bas.: *Cupania ferruginea* Baker

Shrub, erect, 2-3 m tall, or scandent 5-6 m, or tree 6-7 m, all parts densely clothed with brown hairs 1-2 mm long; monoecious; leaf petiole 6-15 cm long; leaflets in 3-5 pairs, oblong, acuminate, dentate in upper half, 7-22(-30) × 4-10 cm; panicles terminal, 40 cm long, much-branched; capsule woody, bright red, ± round, 1.5 cm Ø, setulose outside, very setose inside; seed aril orange. Rain-forest, forest with *Lophira alata*, *Saccoglottis gabonensis*, gallery forest, forest gaps; 1-800 m alt.

Bioko/Fernando Poo.

Also in Gabon ?

**L. klaineanus** Pierre ex Engl., var. *dentatus* Pellegrin, Mém. Soc. Bot. France 1955: 60, 1956; Sosef & al., Checklist pl. vascul. Gabon: 383, 2006. – Icon.: Fl. Cameroun 16: 161, 1973.

syn.: *L. klaineanus* Pierre ms.

Shrub or tree 2-8 m tall, monoecious; differs from *L. ferrugineus* by: number of leaflets (7-8 pairs); first pair of leaflets smaller, almost stipule-like, 3-4 cm long, middle leaflets 20-25 × 4-7 cm, leaf petiole 0.5-1 cm long.

Forest; 1-40

**L. pseudostipularis** Radlk.; Sosef & al.: l.c.; Keay, Trees Nigeria, ed. 2: 360, 1989; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 192, 2002. – Icon.: Fl. Cameroun 16: 161, 1973; Harris & Wortley, Sangha trees: 172, 2008.

**LACCODISCUS PSEUDOSTIPULARIS**

Tree (3-)6-10(-20-27) m, monoecious; bole to 20 m high, 10-40 cm Ø; branchlets and panicles yellowish tomentellous; leaves to 40 cm long, sub-sessile, with 4-6 pairs of leaflets the lowest of which small (1-2 cm Ø), stipule-like, the outer ones 20 × 9 cm, acute (not rounded) at apex, margins spiny-dentate; panicles 50-60 cm long, much-branched, densely flowered, with bracts fused with the axes; capsule woody, red, velvety, 1.5-2 cm Ø.

Dry and swampy or riverine rain-forests; forest with *Cynometra alexandri*; 420-1400 m alt.

Harris (l.c.) remarks on the shape and size of the leaflets not quite correctly given in Fl. Cameroun 16 (and Fl. Gabon 23), l.c.

**L. spinulosodontatus** Radlk.; Sosef & al.: l.c. – Icon.: Fl. Cameroun 16: 161, 1973.

Tree ?, monoecious; similar to *L. pseudostipularis*, but differing by: leaflets in 7 pairs, 16-20 × 4-7 cm, lowermost pair c. 4 cm Ø, tips long-acuminate, inflorescences little-branched and bracts not fused to axes, capsule scarlet.

Forest; c. 450 m alt.

SYNONYM:

*Laccodiscus cauliflorus* Hutch. & Dalziel = **Chytranthus**

**LECANIODISCUS / 3**

syn.: *Chiarinia* Chiov.

Tropical African genus.

**Lecaniodiscus cupanioides** Planch. ex Benth.; El Amin, Trees & shrubs Sudan: 330, 1990; L. White & Abernethy, Guide vég. Rés. Lopé, Gabon: 191, 1996; Fl. Trop E. Afr., Sapindaceae: 19, 1998; Burkill, Useful pl. W. trop. Afr. ed. 2, 5: 22, 2000; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 333, 2009. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 235, 1959; Irvine, Woody pl. Ghana: 546, 1961; Adam, Fl. descr. Mts Nimba 2: 848, 1971; Fl. Cameroun 16: 139, 1973; Keay, Trees Nigeria, ed. 2: 362, 1989; Akoegninou & al., Fl. analyt. Bénin: 923, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 748, 753, 2006; Hawthorne & Gyakari, Photoguide forest trees Ghana: 276-277, 2006; Harris & Wortley, Sangha trees: 173, 2008.

Tree (2-)10-12(-30) m, sometimes shrub 1.5-3 m tall, dioecious; bole to 15 m high, 10-50 cm Ø, often with many adventitious shoots near base; crown spreading; young branchlets with dense orange soft curly hairs (also on petiolules which are swollen); leaf petiole flattened, 4-12 cm long, rachis 10-26-40 cm long; leaflets in 3-6(-7) pairs (in mature trees normally with 1 leaflet fallen), with hairs, the lowermost pair 3-5 × 6-9 cm, the uppermost 9-18 × 3-9 cm; flowers white-yellowish, fragrant, in racemes 5-15 cm long, golden pubescent at first; fruit orange, velvety hairy, breaking irregularly, c. 2 cm long; seed with white glutinous aril, edible.

Evergreen and semi-deciduous forests, periodically flooded forest, gallery forest on rocky riversides, islands in rivers; edges of gallery forest in high rainfall savanna; deciduous forest and transition to grassland; salty marigot; very common in semi-deciduous secondary forests; in understorey; 230-1100 m alt.

Sometimes planted: shade tree, ornamental. Also a weed in rice fields (Nigeria).

Similar to (the rare) *L. punctatus* (with less hairy leaves). Also resembling *Deinbollia pinnata* (often with orange hairs).

## LACCODISCUS

**L. fraxinifolius** Baker; Friis, Forest trees N. E. trop. Afr.: 192-193, 317 (map), 1992; Coates Palgrave, Trees south. Afr., ed. 3: 650, 2002. – Icon.: Beentje, Kenya trees, shrubs & lianas: 420, 1994.

Tree, untidy, or shrub, (2,4-)4-12-20(-30) m tall, dioecious; bole sometimes slightly buttressed; bark pale grey(-brown); young branchlets, leaf petioles and rhachides, petiolules tawny pubescent, sometimes glandular; young leaves often pink-orange; leaf petiole 1-6 cm long, rhachis 2-15 cm; leaflets in 2-6 pairs, sparsely pilose with or without glands, uppermost pair largest, 4-12 × 2-3,5 cm, margins very wavy; inflorescences (1-)4-12 cm long, simple or branched; fruit pink-orange, greyish tomentose, splitting irregularly; seed aril white, fleshy, edible. – Well known for its leaf galls with 3 types of galls, one only present in the subsp. **fraxinifolius** (icon.: F.T.E.A., Sapindaceae: 42, 1998). Gall inducers unknown.

Very variable in leaf shape, lanceolate to obovate (cf. under subsp. below).

Comprises 3 subspp. (such division not maintained by Beentje, l.c., but defended by Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 42-43, 1998, in spite of presence of forms intermediary between the entities). The morphological characters distinguishing the subspecies are presented in a table by Friis in Kew Bull. 39: 780, 1984, and distribution maps by Friis, o.c.: 782, and by White & al., Evergreen forest fl. Malawi: 37, 2001.

– Subsp. **fraxinifolius** – Icon.; Fl. Zambes. 2/2: 531, 1966; White & al., Evergreen forest fl. Malawi: 534, 2001.

syn.: *Sapindaceae* “Genus uncertain”, may be *Lecaniodiscus fraxinifolius*, sensu White, Forest fl. N. Rhodes.: 225, 1962.

Tree to 7-12(-18) m; leaflets bright green, pilose, glandular beneath, 2-3 times longer than broad.

Riverine thickets, mixed *Kirkia-Colophospermum-Adansonia* woodland; rain-forest; dry deciduous forest and thicket; transition woodland; 50-900 m alt.

In S part of range.

Intermediates between this and subsp. **vaughanii** in Zambia, Malawi.

– Subsp. **scassellatii** (Chiov.) Friis – Icon.: Fl. Trop. E. Afr., Sapindaceae: 41, 1998; Thulin, Fl. Somal. 2: 248, 1999.

syn.: *Chiarinia jubae-fluvii* Chiov.

Shrub or shrubby tree, 2,4-7-15(-20) m tall; leaves broad, rounded, pale green, glabrous or with scattered glands; inflorescences 0,4-4(-7) cm long; flowers white(-greenish), scented.

Coastal forest and evergreen scrub, bushland; often marginal between this and swamp forest; riverine forest; 0-200 m alt.

In coastal S Somalia, Kenya, where intermediates between this subsp. and subsp. **vaughanii** occur.

– Subsp. **vaughanii** (Dunkley) Friis

Tree 4-21(-30) m tall, or shrub; bole slightly buttressed; leaflets dark or dull green, ± lanceolate, glabrescent except for midrib; flowers yellow(-green).

From coastal forests in S Kenya and Tanzania, inland along drainage systems to Lake Victoria – Burundi.

Riverine, streamside or lakeside fringing forest, swamp forest; bushland, grassland with scattered trees; sometimes just above high tide mark; also persisting in cultivations; 0-1500 m alt.

## LACCODISCUS

**L. punctatus** J. B. Hall – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 748, 753, 2006; Hawthorne & Gyakari, Photoguide forest trees Ghana: 278-279, 2006.

Tree 20-25 m, monoecious; crown dense; bole to 50 cm Ø, low-branching, with many adventitious shoots near base; bark reddish brown, thin; leaf petiole and rhachis 10-15 cm long each; leaflets in 3-5 pairs, glabrous, 20-30 cm long, richly *pellucid-punctate* when dried; flowers with *petals* also (like in *Hypseloderma*), in branched inflorescences (4-)7-11(-17) cm long, with short pubescence and conspicuous glandular hairs (like fruit) exuding tiny drops of reddish resin. – Flowers male and female produced at different times on same tree.

Forest, in understorey; rare (but perhaps more widespread than herbarium collections suggest).

Resembling *L. cupanioides* but leaflets less hairy and wider. – The species is intermediary between *Hypseloderma* and *Lecaniodiscus*.

## SYNONYM:

*Lecaniodiscus vaughanii* Dunkley = **Lecaniodiscus fraxinifolius** subsp.

## LEPISANTHES / 1

syn.: *Aphania* Blume; *Didymococcus* Blume; *Manongarivea* Choux; *Sapindopsis* How & Ho (cf. also Leenhouts in Blumea 17: 60, 1969, and Flora Malesiana, Ser. 1, Spermatophyta, 11/3: 627-628, 1994).

Leenhouts (1969) combined several genera into *Lepisanthes*. *Aphania* was kept separate by Radlkofer (in Engler, Pflanzenreich 4/165, Sapindaceae 1: 699, 1932). Leenhouts's new delimitation is based on “the general resemblance in all [morphological] characters, the feeling that the group of taxa concerned forms a coherent and natural entity”. Most authors of recent floras and checklists follow his wide concept.

According to Leenhouts (1994) the genus comprises ca. 25 species distributed from W tropical Africa, Madagascar, through to S & SE Asia from India-Sri Lanka, Malesia to NW Australia.

**Lepisanthes senegalensis** (Juss. ex Poir.) Leenh., incl. var. *silvatica* (A. Chev. ex Hutch. & Dalziel) Aubrév.; Fl. Males., l.c.: 651-653; Friis & Vollesen, Forest & forest trees NE Trop. Afr.: 193-194, 317 (map), 1992. – Senegal Cherry, Cerisier du Cayor. – Icon.: Fl. Congo belge 9: 345, 1960; Fl. Zambes. 2/2: 526, 1966; Fl. Gabon 23: 77, 1973; Fl. Cameroun 16: 77, 1973; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 229, 1959, and Fl. forest. Soud.-guin.: 389, 1950 (sub gen. *Aphania*); Fl. Eth. 3: 505, 1989; Beentje, Kenya trees, shrubs & lianas: 420, 1994; Fl. Trop. E. Afr., Sapindaceae: 51, 1998; White & al., Evergreen for. fl. Malawi: 534, 2001 (partial; sub gen. *Aphania*); Thulin, Fl. Somalia: 247, 1999; Akoegninou & al., Fl. analyt. Bénin: 919, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 755, 2006; Steentoft, Flow. pl. in W. Africa: 182, 2008 (gen. *Aphania*); Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 397, 2009 (idem).

bas.: *Sapindus senegalensis* Juss. ex Poir.

syn.: *Aphania senegalensis* (Juss. ex Poir.) Radlk.; *A. silvatica* A. Chev. ex Hutch. & Dalziel; *A. montana* Blume; *A. cuspidata* (Blume) Radlk.; *Sapindus cuspidatus* Blume; *S. montanus* (Blume) Blume; *S. abyssinicus* Fresen.; *S. chariensis* A. Chev. in sched. (specim. 7529 bis); *Ornitrophe thyrsoides* Thonn.; *Schmidelia thyrsoides* (Thonn.) Bak.; *Pancovia thyrsoiflora* Gilg in sched. (Cameroon,



## LEPISANTHES SENEGALENSIS

specim. Staudt 777); *Aphania rubra* (G. Don ex Wight) Radlk.; *Nephelium rubrum* G. Don ex Wight; *Deinbollia claessensii* De Wild. according to Fl. Congo belge 9: 343-344, 1966 (specim. Claessens 527 cited by Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae 1: 689, 1932), but *D. claessensii* sensu Pellegrin, non De Wild., in Fl. Mayombe 1: 73, 1924 and in Mém. Soc. Bot. France 1955: 67, 1956 (specim. Le Testu 1674, 2071, 2073). – Full synonymy given by Leenhouts 1969: 85-87 and 1994: 651-652.

- *Aphania senegalensis* subsp. *senegalensis* fa. *perrieri* (Choux) Capuron (based on *Manongarivea perrieri* Choux) and *A. senegalensis* subsp. *chrysotricha* Capuron are distinct (Madagascar) and have been raised to the rank of species, viz. *Lepisanthes perrieri* (Capuron) Buerki, Callm. & Lowry and *L. chrysotricha* (Capuron) Buerki, Callm. & Lowry; they add a new (Malagasy) species, i.e., *L. sambiranensis* Buerki, Callm. & Lowry (Adansonia, Ser. 3, 31: 301-309, 2009).

Tree, evergreen, monoecious, 6-25 m, or shrub 6-9 m tall, rarely liane; crown dense, spreading; habit of *Mangifera indica*; bole short, to 11 m high, dbh to 50-75 cm, 1.6 m in girth; bark smooth, grey to brown, bark-slash strong-scented; all parts yellowish-pubescent; foliage dense, drooping, pinkish when young; leaves with 1-3 pairs of leaflets, sometimes simple, long (60 cm); flowers greenish-white to red (sepals), fragrant, polygamous, in branched panicles 5-20(-60) cm long; drupes red, c. 1.5 cm long. Evergreen forest, often in moist places, rain-forest, gallery forest; forest with *Khaya grandifolia*, *Cola gigantea*; streamsides in wooded depressions; fringing forest and moist gorges in savanna regions; secondary forests; in periodically wet or everwet conditions; dry and marshy sites; also forest near the sea; often on coral and lava rocks; 0-1900 m alt.

A bifoliolate form is distinctive E of Rift Valley in Kenya, Tanzania, Mozambique.

Larger-leaved forest forms have been named var. *silvatica*.

India, Sri Lanka, E Pakistan, Burma, Indo-China, Andamans, Nicobars, Malesia (with many morphological races correlated with different habitats); Queensland, Australia (Forster & Holmes, *Austrobaileya* 6: 559-560, 2003).

Seeds poisonous, fruit pulp edible. Twigs used as chew-sticks in Senegal. Plant poisonous to stock.

## LYCHNODISCUS / 6 (or 7 ?)

Tropical African genus, in “need of revision especially in the lower guinean and congoian forest block. The names on the specimens at Kew from this area appear to hardly correlate with the characters, and it is impossible to confidently name material” (Harris, The vascular plants of the Dzanga-Sangha Reserve, Central African Republic: 193, 2002).

*L. brevibracteatus* (fruit lacking, only type) and *L. papillosus* known from very few collections.

**(*Lychnodiscus brevibracteatus* Fouilloy)**

Shrubby tree 3 m tall or tree with sinuous trunk 50 cm Ø; bark dark green, grey or purplish, with small irregular scales and orange underbark; distinguished from *L. reticulatus* by: fewer leaflets (in 2-3 pairs, 10-15 × 4-5 cm, with 5-6 pairs of nerves, tips acuminate, margins entire); inflorescences with shorter hairs and greyish flowerbuds, shorter bracts; stamens 8, glabrous; fruit unknown.

Forest.

## LYCHNODISCUS BREVIBRACTEATUS

Known only from the type collected in 1925 (Le Testu 5819, Gabon) and a gathering by Letouzey (11438) from Cameroon.

Distinguished from *L. reticulatus* ? Maintained as a species by Sosef & al., Checklist pl. vascul. Gabon: 383, 2006.

**L. cerospermus** Radlk., incl. var. *mortehanii* (De Wild.) Hauman and var. *pedicellaris* (Radlk.) Hauman – Icon.: Hamilton, Field guide Uganda forest trees: 224 fig. 412, 1971 (fruit); Fl. Trop. E. Afr., Sapindaceae: 23, 1998.

syn.: *Pancovia lujai* De Wild. p.p. (leaves).

Tree, slender, 3-20 m, or partly scandent, monoecious; bole weak, leaning, 30 cm Ø; bark thin, smooth, greenish-greyish white with patches of orange; young parts with rusty spreading or ascending hairs; leaves with 4-7(-8) pairs of leaflets, ± oblong, the middle ones largest, 11-15 × 3-5 cm, glabrous apart from midrib, margins toothed (var. *cerospermus*) or only so towards apex (var. *mortehanii*); flowers white in panicles 14-45 cm long, golden brown; capsule brittle, 3-lobed, hairy outside, bright red, 1.6-2 cm long; seeds with waxy red aril.

Rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophloeum suaveolens*, *Alstonia*, *Parinari excelsa*, *Milicia excelsa*; forest with *Terminalia*, *Gilbertiodendron*; wet, seasonally flooded or dry forests; islands in rivers, gallery forest; sometimes abundant; in understorey; 1-1500 m alt.

Variable in colour and type of indumentum, length of fruiting pedicel (enlarged), size of flowers.

Seems to be near *L. multinervis*, and really distinct ? The type of *L. cerospermus* var. *pedicellaris* is Mildbraed 2155, and another gathering N° 2157, are from the same locality, Fort Beni near Muera (Zaire), as that of *L. multinervis*, i.e. Mildbraed 2202, all collected in January 1908, and gatherings N° 2851 & 2878 from near Irumu, where “*L. pedicellaris* Radlk.” also occurs, coll. March 1908.

**L. dananensis** Aubrév. & Pellegr. – Icon.: Fl. Cameroun 16: 165, 1973 (partial); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 751, 2006; Harris & Wortley, Sangha trees: 174, 2008.

Shrub or tree to 16 m tall; bole with petiole scars, 60 cm in girth; young parts rusty hairy; leaflets in 4-6 pairs, often entire, elongate-obovate, 10-40 × 4-13 cm, densely rusty tomentellous beneath, midrib guttered above with conspicuous line of hairs; flowers fragrant, 1.5 cm Ø, in panicles 30-40 cm long; capsule yellow, bristly tomentose outside; seeds with orange aril.

Closed forest, semi-deciduous forest, in understorey.

Also in Chad ?

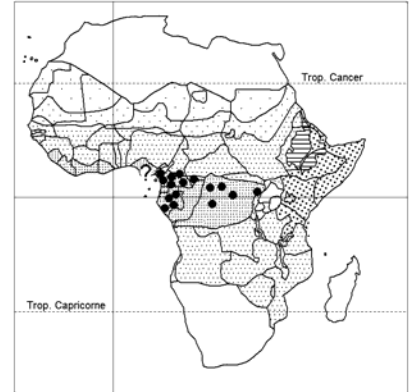
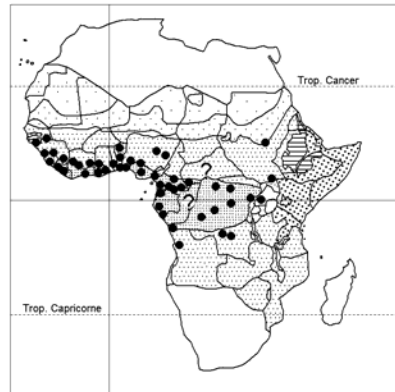
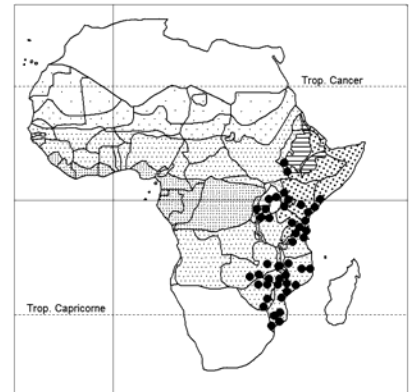
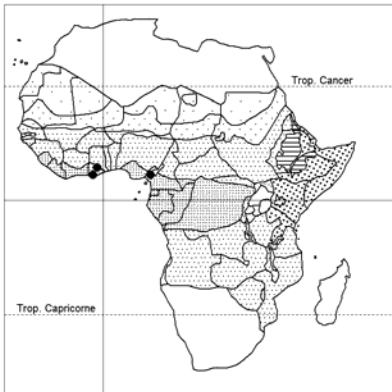
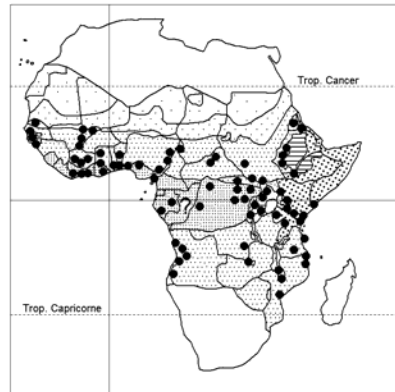
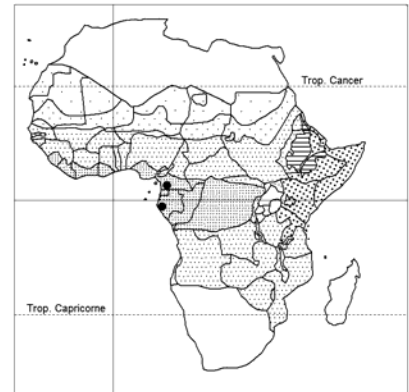
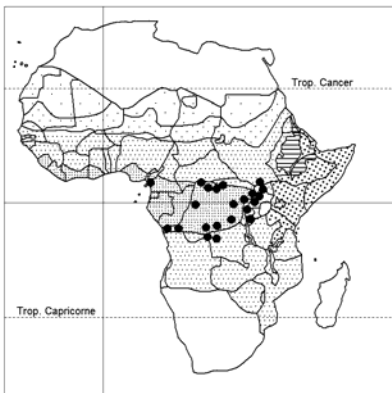
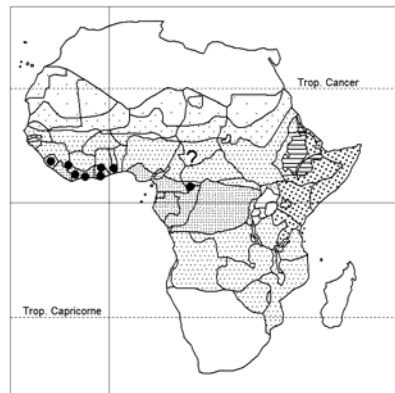
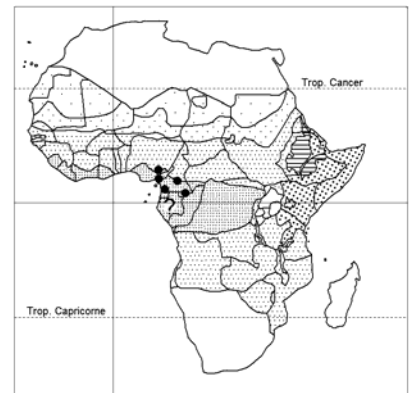
**L. grandifolius** Radlk.; Harvey, Pl. Bali Ngemba: 125, 2004. – Icon.: Fl. Cameroun 16: 165, 167, 1973; Harris & Wortley, Sangha trees: 174, 2008.

Tree 6-10 m; stems stout, densely pubescent; leaves to 1.2 m long, petiole shortly brown tomentellous, glabrescent; leaflets in 5-6 pairs, ± elliptic, 20-42 × 10-18 cm, glabrous, leathery, glossy, with few nerves, often entire; flowers white in little branched panicles 50 cm long, dark brown puberulent; capsule hairy, yellow, 3-4 cm long; seed aril waxy orange-red.

Primary forest, forest on shores and swamps; 1-200, 1700-1950 m alt.

Also in Gabon ?



**Laccodiscus ferrugineus****Laccodiscus klaineanus****Laccodiscus pseudostipularis****Laccodiscus spinulosodontatus****Lecaniodiscus cupanioides****Lecaniodiscus fraxinifolius****Lecaniodiscus punctatus****Lepisanthes senegalensis****Lychnodiscus brevibracteatus****Lychnodiscus cerospermus****Lychnodiscus dananensis****Lychnodiscus grandifolius**

## LYCHNODISCUS

**L. multinervis** Radlk.

Tree or large shrub, little branched; branchlets, leaf petioles and inflorescences rusty hairy; leaflets in 4 pairs, ± elliptic, glabrous except for larger nerves beneath, 20-35 × 12-17 cm, margins ± entire, only dentate near apex; panicles stout, 40-50 cm long; fruit hirsute at first, 3 cm long; seed aril orange-red.

Primary forest; dry forest with *Cynometra*; 1000-1100 m alt.

Really distinct from *L. cerospermus*? (see note above under that species).

**L. papillosus** Radlk. – Icon.: Fl. Cameroun 16: 171, 1973.

Tree or shrub; branchlets and inflorescences yellowish tomentelous; leaflets in 3-6 pairs, elliptic, dentate, 10-15 × 3-4 cm, glabrous above, pubescent with curly hairs and papillae beneath; panicles 15-25 cm long; fruit c. 2,5 cm long.

Dry forest with *Cynometra*.

Known from 3 collections: A. Chevalier 11002 (1903), Thollon 95 (±1895), and Bouquet 1703 (1960s?), from Congo-Brazzaville.

Close to *L. cerospermus*.

**L. reticulatus** Radlk. – Icon.: Fl. Cameroun 16: 171, 1973; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 751, 2006; Harris & Wortley, Sangha trees: 174, 2008.

Tree 10-15 m; crown spreading; bark thin, rough, sometimes slightly spiny; slash orange, brittle; branchlets ribbed, puberulous, drooping; leaf rachis slightly winged; leaflets in (3-)4-6 pairs, elongate-elliptic, 5-12-24 × 2-6 cm, with few nerves, glabrous above, sparingly puberulous and closely reticulate beneath, veins with “glandular” points, tips prominently acuminate, margins dentate to ± entire; flowers greenish cream, in pubescent panicles 15-25 cm long; capsule 3-4-lobed, softly hairy outside, creamy-yellow; seed aril scarlet, sticky.

Moist forest, in understorey.

Bioko/Fernando Poo.

Also in Centr. Afr. Rep. (Dzanga-Sangha Res.; fide Harris, l.c.).

## SYNONYMS:

*Lychnodiscus mortehanii* De Wild.

= *Lychnodiscus cerospermus*

*pedicellaris* Radlk. = *L. cerospermus*

var. *brevibracteatus* Pellegr. = *L. brevibracteatus*

## MACPHERSONIA / 1

About 8 species in Madagascar and neighbouring islands, one extending to E Africa.

**Macphersonia gracilis** O. Hoffm. var. **hildebrandtii** (O. Hoffm.) Capuron; Coates Palgrave, Trees south. Afr., ed. 3: 651, 2002; Lovett & al., Field guide moist forest trees Tanzan.: 248-249, 2006. – Icon.: Capuron in Mém. Mus. Natl. Hist. Nat. (Paris), N.S., Sér B, Bot. 19: 121, 1969; Beentje, Kenya trees, shrubs & lianas: 421, 1994; Fl. Trop. E. Afr., Sapindaceae: 38, 1998.

Shrub 2-4 m tall or tree to 10 m, dioecious; young branchlets densely golden hairy, hairs crisped, short, and long, spreading, glabrescent; leaves bipinnate, 20-25 cm long, legume-like (like *Albizia*), rhachides pubescent, with 4-10 pairs of pinnae, each pinna with 6-32 alternate leaflets, rounded ± emarginate,

## MACPHERSONIA GRACILIS

glossy, 1-2,5 × 0,2-0,8 cm; flowers white or pink in racemes 4-13(-20) cm long, stamens conspicuous; fruit red or purple, round, c. 1,3 cm Ø, 1-seeded.

Coastal bushland, thicket; often on coral outcrops; forest edges; riverine forests, along streambanks; salt tolerant; 0-400 m alt.

Madagascar, Comoro Isl., Aldabra (var. **gracilis**).

## SYNONYM:

*Macphersonia hildebrandtii* O. Hoffm. = **Macphersonia gracilis** var.

## MAJIDEA / 2

*Majidea* Kirk ex Oliv.

syn.: *Anoumabia* A. Chev.; *Harpullia* Roxb. subgen. *Majidea* (Oliv.) Radlk.

Tropical Africa and Madagascar.

**Majidea fosteri** (Sprague) Radlk.; Vivien & Faure, Arbres forêts denses Afr. centr.: 408-409 (map), 1985. – Icon.: Fl. Cameroun 16: 193, 1973; Hamilton, Field guide Uganda for. trees: 224 fig. 409, 1981; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 748, 751, 2006; Harris & Wortley, Sangha trees: 175, 2008.

bas.: *Harpullia fosteri* Sprague

syn.: *Anoumabia cyanosperma* A. Chev.; *Harpullia multijuga* Radlk.

Tree, 10-15-35(-40) m, monoecious, deciduous; bole straight, sometimes buttressed, clean to 10 m height, 0,6-1 m Ø, 1,5-2 m in girth; crown spreading; bark greyish(-brown) or yellowish, thin, smooth, slightly flaking, slash smelling of toothpaste; young branches dark brown, lenticels inconspicuous; young branchlets, leaves, inflorescences with dense fasciculate-stellate pubescence; leaf rachis 4-angled with lines of hairs on angles; leaflets in 3-7-10 pairs, falcate, glabrous, 5-10 × 2-3 cm; flowers green in terminal panicles 13-25 cm long; capsule inflated, 3-gonous, reddish outside and inside, c. 3,5 cm long; seeds purplish, velvety.

Semi-deciduous forest; closed high forest; terra firma forest; forest clearings, managed forest; c. 1000-1200 m alt.

Seedlings often abundant near adult trees, with dark green leaves, rachis winged.

**M. zanguebarica** Kirk ex Oliv. subsp. **zanguebarica** – Icon.: Hook. Ic. Pl. 11: pl. 1097, 1871; Capuron in Mém. Mus. Natl. Hist. Nat. (Paris), N.S., Sér. B, Bot. 19: 45, 1969; Beentje, Kenya trees, shrubs & lianas: 421, 1994; Fl. Trop. E. Afr., Sapindaceae: 19, 1998; Schatz, Generic tree fl. Madag.: 370, 2001; Lovett & al., Field guide moist for. trees Tanzan.: 250, 2006.

syn.: *Harpullia zanguebarica* (Kirk ex Oliv.) Radlk.

Tree, 2-22-25 m; bark rough or smooth, whitish, slash cream orange; similar to *M. fosteri* but: young branchlets pale-mid-brown, lenticels conspicuous; leaflets (5-7 pairs) 3-6 cm long, glabrous, shining, drooping when young; flowers pink or red; capsule brown outside, pink inside, pubescent; seeds bluish black, tomentose with persistent stellate hairs.

Riverine and coastal bushland; woodland with *Julbernardia*, *Cynometra*, *Brachystegia*; dry evergreen forest (fringes); semi-deciduous often flooded forest; open ground with *Hypaene*; often on coral; abandoned sisal plantations; 0-500 m alt.

Madagascar.

## MAJIDEA ZANGUEBARICA

Subsp. **madagascariensis** (Baill.) Radlk. [bas.: *Cossignia madagascariensis* Baill.; syn.: *Harpullia madagascariensis* (Baill.) Radlk.] endemic to Madagascar (with glabrescent capsules).

Cultivated, also in India, Sri Lanka, Singapore, Hawaii.

## SYNONYMS:

*Majidea cyanosperma* (A. Chev.) Radlk. = **Majidea fosteri**  
*multijuga* (Radlk.) Radlk. = **M. fosteri**

## (MELANODISCUS)

*Melanodiscus africanus* Radlk. = **Glennia**

*oblongus* Radlk. ex Taub. = **G. africana**

sp. sensu F.W.T.A., ed. 2, 1/2: 720, 1958 = **G. ? adamii**

sp. sensu Andrews, Fl. pl. Anglo-Eg. Sud. 2: 342, 1952 = **G. africana**

sp. sensu Hamilton, Field guide Uganda: 224 f, 1971 = **G. africana**

sp. nov. ? sensu Exell & Mendonça, Consp. fl. Angol. 2: 92, 1954 = **G. unijugata**

sp. nov. sensu Dale & Greenway, Kenya trees & shrubs: 515, 1961 (specim. Dale 3820, Eggeling 6733, Gillman 1070) = **Haplocoelopsis africana**

*unijugatus* Pellegr. = **Glennia unijugata**

*venulosus* Bullock ex Dale & Greenway, nom. nud. = **Stadmannia oppositifolia** subsp. **oppositifolia** var. **oppositifolia**

## NAMATAEA / 1

Close to *Chytranthus* Hook. f. Montypic.

**Namataea simplicifolia** D. W. Thomas & D. J. Harris – Icon.: Kew Bull. 54: 953, 2000.

syn.: *Sapindaceae* specim. Talbot 720 (Oban, S Nigeria) indet. affin. *Pancovia* sensu Fl. W. Trop. Afr., ed. 2, 1/2: 710, 1958 (a painting by Mrs. Talbot cited).

Tree, much-branched, up to 6 m, apparently dioecious; young branchlets shortly spreading-hairy, glabrescent; leaves simple, coriaceous, very variable in size, 8-43 × 3-13 cm, oblanceolate, glabrous; flowers white in racemes 2-10(-28) cm long, deflexed, borne on the trunk, branches and sometimes in leaf axils; fruit fleshy, indehiscent, 1-3-lobed.

Moist evergreen forest, rich in species, in understorey; 50-250 m alt.

Resembling *Pancovia* and *Pseudopancovia* in habit.

## [NEPHELIUM]

[**Nephelium lappaceum** L. var. **lappaceum**] – Rambutan; Fl. Males., Ser. 1, 11/3: 680-683, 1994; Figueiredo & Smith, Pl. Angola: 156, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée: 333, 2009. – Icon.: Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 216, 2007.

Tree 10-27 m; twigs hairy; leaves simple or of 1-5(-7) leaflets 5-30 × 2,5-11 cm; inflorescences lax; fruit variable in colour: crimson, purple, greenish, yellowish, orange, 6-8 cm long covered with soft fleshy ± spine-like appendages to 2 cm long; seed aril white, juicy.

Native to Thailand, Malaysia.

Grown for its edible fruits.

## SYNONYM:

*Nephelium rubrum* G. Don ex Wight = **Lepisanthes senegalensis**

## (ORNITROPHE)

*Ornitrophe magica* Thonn. = **Allophylus spicatus**

*pinnata* Poir. = **Deinbollia**

*spicata* Poir. = **Allophylus spicatus**

*thyrsoides* Thonn. = **Lepisanthes senegalensis**

*tristachyos* Schumach. & Thonn. = **Allophylus africanus** var. **africanus**

## PANCOVIA / 12 (13)

syn.: *Erioglossum* sensu Baker in Fl. Trop. Afr. 1: 420, 1868, quoad *E. cauliflorum*, non Blume

African genus, extremely difficult, “no proper account will be possible until correlated open male and female flowers and fruits are available ... This account is unsatisfactory” (Davies & Verd-court in Fl. Trop. E. Afr., Sapindaceae: 57, 1998). Field studies badly needed.

No leaves known in 1 species, no female flowers in 3 (?4) species (= c. 25%), no fruit in 4 species (= c. 33%); 3 species known only from the type (= 25%), and one species from only 2 collections (= the types of 2 names).

**Pancovia bijuga** Willd.; Sosef & al., Checklist pl. vascul. Gabon: 384, 2006; Akoegninou & al., Fl. analyt. Bénin: 924, 2006. – Icon.: Guillemain, Perrottet & A. Richard, Fl. Seneg. tent. 1: pl. 28 (sphalm. 29); Fl. Cameroun 16: 119, 1973; Aubréville, Fl. forest. Côte d’Iv., ed. 2, 2: 237, 1959; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 755, 2006.

syn.: *Erioglossum cauliflorum* Guill. & Perr.; *Pancovia guineensis* Willd. ex A. Chev., Explor. bot. 1: 152, 1920, nom.; *Afzelia bijuga* K. Sprengel, Syst. veg. 4.2 (curae post.): 170, 1827, non A. Gray (*Leguminosae*), cf. Jackson, Ind. Kew. 1/1: 52, 1893; *Afzelia ? pancovia* DC., Prodr. 2: 507, 1825; *Pancovia africana* (sphalm.) Baill., Adansonia 9: 229, 1870.

Tree, much-branched, 4-6-10 m tall, or shrub 2,5-3 m, low-branching (no bole); young branchlets at first angular, striate, with very short brown hairs, becoming ± glabrous, terete; leaflets in (1-)2-3(-4) pairs, the outermost largest, ovate-oblong, 7-14-18 × 3,5-6 cm, glabrous, reticulate beneath, apex shortly acuminate-obtuse; flowers zygomorphic, cream, sweet-scented, on rather long pedicels (3-8 mm) in racemes 1-3(-4) cm long; mericarp fleshy, densely hairy, 3 cm long, 3-lobed, edible.

In dry areas, on the N border of the forest zone along streams, gallery forest; forest, fringing forest; on laterite.

Pellegrin in Sapind. Gabon (Mém. Soc. Bot. France 1955: 74, 1956) treated *P. turbinata* as a synonym (cf. below under this species).

**P. floribunda** Pellegr., Fl. Mayombe 1: 73, 1924. – Icon.: Fl. Cameroun 16: 119, 1973.

Tree 4 m tall; trunk 35 cm Ø; leaflets in 4-5(-6) pairs, the uppermost largest, 8-20 × 4-6 cm, acumen 1 cm long; flowers yellow-white, pedicel 2-6 mm long, in slender (1 mm Ø), simple or little branched inflorescences 10-15 cm long, borne single or in clusters, axillary or on the branches; fruit 3-lobed, shortly pubescent, 1,5 cm long.

Forest; 50-500 m alt.

## PANCOVIA

**P. golungensis** (Hiern) Exell & Mendonça; Fl. Zambes. 2/2: 525 and fig. 109 p. 527, 1966 excl. specim. White 3729 (Malawi); Coates Palgrave, Trees south. Afr., ed. 3: 648, 2002; Figueiredo & Smith, Pl. Angola: 157, 2008. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 1352-1353, 1972; Beentje, Kenya trees, shrubs & lianas: 422, 1994; Lovett & al., Field guide moist for. trees Tanz.: 250, 2006.

bas.: *Aphania golungensis* Hiern

syn.: *Pancovia turbinata* sensu Radlk. in Engler, Pflanzenreich 4/165, Sapindaceae 1: 804, 1932, p.p. quoad syn. *Aphania golungensis* et specim. angol., non Radlk. s. str.; *P. golungensis* sensu White & al., Evergreen for. fl. Malawi: 533-535, 2001, p.p.; *Pancovia hildebrandtii* sensu Beentje, o.c.: 422, p.p., excl. type. – *P. sp. aff. ugandensis* F. G. Davies ined. (from coastal Kenya, with 2 pairs of leaflets) is tentatively placed here by Verdcourt, Fl. Trop. E. Afr., Sapindaceae: 59, 1998 (cf. also Beentje o.c.: 421), but the specimens so named might belong to *P. turbinata*.

Shrub, 0,7-2 m tall or slender tree to 12-18 m; dioecious; young twigs densely (red) lenticellate, tawny tomentellous, soon glabrescent; bark pale grey-brown, flaking in scales; leaflets in (2-)-3-5 pairs, ± oblanceolate, 5,5-27 × 1,7-7(-12) cm, thin, glabrous, glandular beneath, apex rounded to distinctly acuminate, petiolules swollen; young leaves whitish pink with red venation, drooping; flowers cream, sweet-scented, in rusty hairy clustered racemes on old wood, male 2-20 cm long, female stout 2,5-5 cm; mericarps fleshy, orange, c. 2 cm Ø, ± velvety hairy, hanging in clusters from the trunk and branches.

Coastal forest, dune forest, bushy woods, moist evergreen forest, streambanks; 0-900 and 1250-1450 m alt.

S. Africa (Natal populations, the only adequately known of the species: male inflorescences ± 3 cm long and resembling those of *P. holtzii*, female ones 5-7 cm long). Kenya coast and Angolan populations little known. Also “the occurrence of *P. holtzii* between the populations of *P. golungensis* with the females at least being difficult to separate is unsatisfactory” (Verdcourt in F.T.E.A., l.c.).

Disjunct (E Africa-Angola).

*P. turbinata* is perhaps conspecific: The Welwitsch specimens (4516, 6681 b) at G are very similar to the latter. Cf. also below under *P. hildebrandtii*.

**P. harmsiana** Gilg; Fl. Trop. E. Afr., Sapindaceae: 57, 62, 1998; Pellegrin, Fl. Mayombe 1: 74, 1924. – Icon.: Gilg in Mildbraed, Deutsch. Zentr.-Afr.-Exp. 1907-1908, 2: pl. 63 opposite p. 478, 1912; Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae 1: 805, 1932; Engler in Engler & Drude, Veg. d. Erde 9, Pflanzenw. Afr. 3/2: 275, 1921 (flower).

Tree 5-18-20 m; bole to 25 cm Ø; young branchlets at first rusty-tomentellous, soon glabrescent; young leaves whitish to light violet, drooping; petiole 4-18 cm long, swollen at base, glabrous; leaflets in (1-)-2-3(-4) pairs, oblong-elliptic, 14-21 × 3-6(-10) cm, glabrous, glandular beneath; flowers white, pedicels 3-7 mm long, petals 7-9 mm long, sepals shorter; inflorescences dense, 1-2,5 cm long, clustered on old wood (similar to those of *P. holtzii*); mericarps fleshy, ovoid, 1,2 cm Ø.

Terra firma forest, plateau forest; riverine or swampy forests; high forest in understorey; 100-450 m alt. (Gabon).

Close to *P. pedicellaris*. According to Fouilloy & Hallé, Fl. Camer. 16: 116, 1973, resembling *P. subcuneata*.

## PANCOVIA HARMSIANA

*Pancovia aff. harmsiana* sensu Consp. Fl. Angol. 2: 85, 1954 (Angola: Zaire, rio Muanda, 50 m alt., Gossweiler 8619) might belong here.

**P. hildebrandtii** Gilg; Beentje, Kenya trees, shrubs & lianas: 422, 1994, p.p., quoad type from Voi River (Hildebrandt 2491).

Scandent shrub; stems terete with fissured lenticellate dark-brown bark; leaves unknown; inflorescences paniculate, 2-6 fasciculate, 5-7 cm long, borne at thickened leafless nodes; ultimate cymules shortly stalked; axis pale rusty tomentose with dense stiff sharply pointed hairs; male flowers with 5 sepals joined to middle, 5 mm long; petals 4, slightly exceeding the sepals; stamens 7, filaments pilose; disk fleshy, glabrous; ovary absent; female flowers and fruit unknown.

Riverine forest ?; ± 550 m alt.

Known only from the type collected in 1877.

Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 60, 62, 1998, maintains this species, put in synonymy under *P. golungensis* by F. G. Davies, and suspected by Radlkofer (in Engler, Pflanzenreich 4/165, Sapindaceae 1: 807, 1932) perhaps not to be a *Pancovia*. “I have been unable to correlate the material with any other species and assume that it is, despite the fact that the area has been fairly well collected, something never refund” (Verdcourt, l.c.), i.e. Kilimanjaro, Teita Distr., Kenya.

**P. holtzii** Gilg ex Radlk.; Lovett & al., Field guide moist for. trees Tanzan.: 250, 2006.

Tree or shrub (0,5-)-2-20 m tall, dioecious; bark blackish; young branchlets ± pubescent, soon glabrescent; leaves drying grey-green; leaflets in (1-)-3-4 pairs, coriaceous, ± oblong-lanceolate, 5-22 × 2-8 cm, midrib glabrous or pubescent, apex ± rounded (subsp. **faulkneri**) or acuminate (subsp. **holtzii**), petiolules thickened; male inflorescences very condensed, 1-3 cm long; female ones not so, 3-3,5(-8,5) cm long; borne in leaf axils and on old wood; fruit greenish-yellow, deeply 3-lobed, 3 cm long.

Coastal thicket; evergreen forest, riverine forest; 20-450 (-750 - ? 900) m alt.

Comprises (tentatively) 2 subspp.: – subsp. **holtzii**; – subsp. **faulkneri** Verdc. (flowers lacking). – Leaf venation different.

Some material formerly named *P. golungensis*, was determined by Verdcourt (Fl. Trop. E. Afr., Sapindaceae: 58, 1998) as *P. holtzii* based on geographical distribution and female flowers. In Fl. Zambes. 2/2: 528, 1966, it is suggested that these two taxa be conspecific. Vollesen (Opera Bot. 59: 58, 1980, Selous Game Res.), however, notes that the latter interpretation is unfounded, as “they are clearly distinct in inflorescence- and flower-characters”.

**P. laurentii** (De Wild.) Gilg ex De Wild. – Icon.: De Wildeman, Mission Emile Laurent 2: pl. 33, 1905; Fl. Cameroun 16: 123, 1973; Harris & Wortley, Sangha trees: 175, 2008.

bas.: *Chytranthus laurentii* De Wild.

syn.: *Pancovia angustifolia* Radlk.; *P. lujai* De Wild., p.p., flowers.

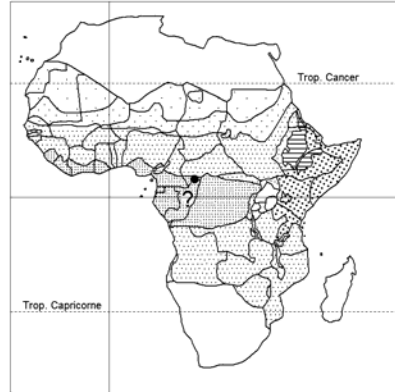
Tree 20-25 m, dioecious; bole to 10 m high, 45 cm Ø; young plants palm-like; leaves in rosettes at apex of branches, petiole thickened at base; leaflets in 7-10-12 pairs, the outermost largest, 15-23 × 4,5-6 cm, glandular beneath; flowers smelling like those of *Tilia*, in stout, usually simple racemes 10-15(-30) cm long, axis pubescent, borne on old wood; fruit 3-gonous, shortly 3-winged, 2,5 cm long, fleshy, orange, edible.

Primary terra firma plateau forest; riverine forest.

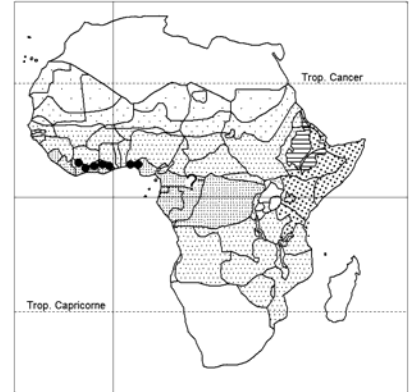




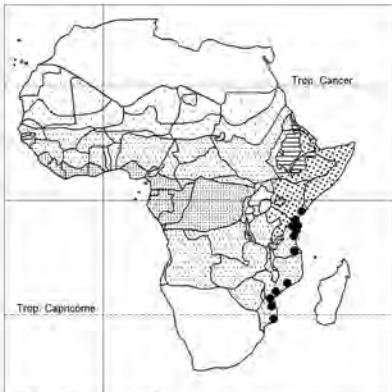
*Lychnodiscus multinervis*



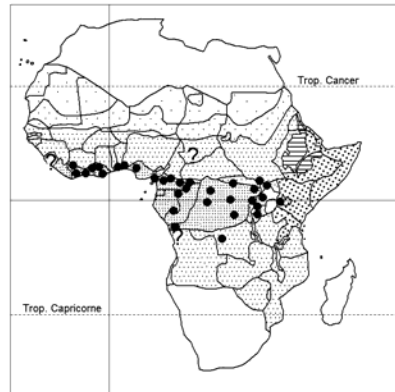
*Lychnodiscus papillosus*



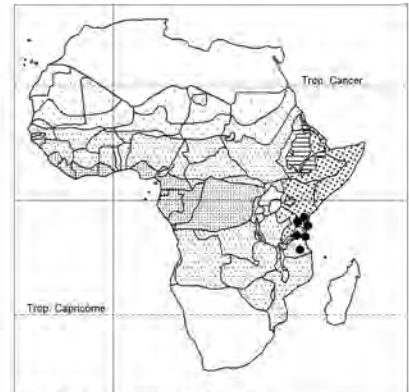
*Lychnodiscus reticulatus*



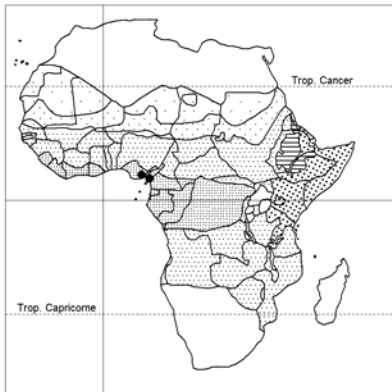
*Macphersonia gracilis*  
var. *hildebrandtii*



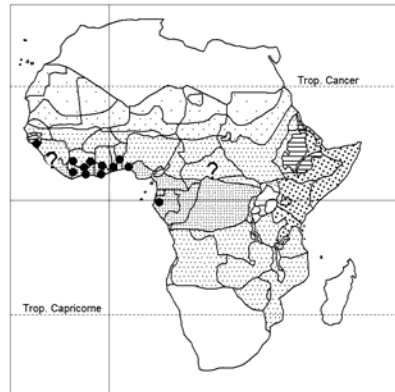
*Majidea forsteri*



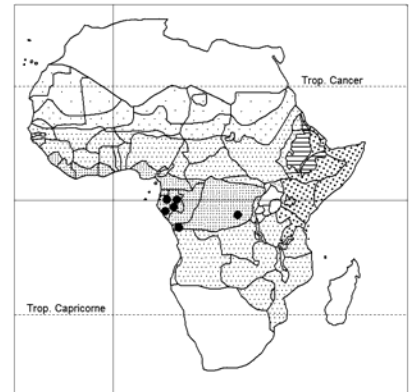
*Majidea zanguebarica*  
subsp. *zanguebarica*



*Namataea simplicifolia*



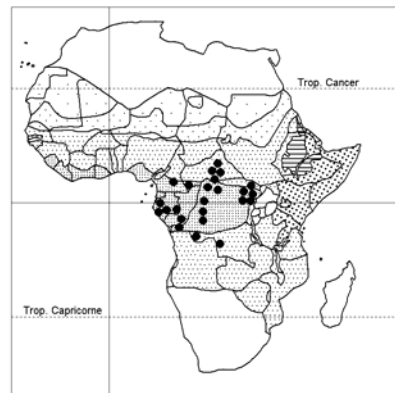
*Pancovia bijuga*



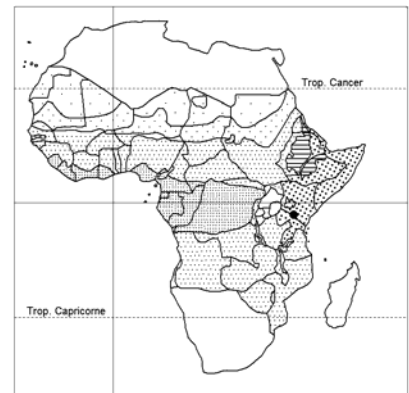
*Pancovia floribunda*



*Pancovia golungensis*



*Pancovia harmsiana*



*Pancovia hildebrandtii*

## PANCOVIA

**P. lubiniana** Belesi Katula, nom. nud. – *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 70, 69, 2010. Described from Zaire and Gabon.

**P. le-testui** Pellegr. – Icon.: Pellegrin in Bull. Soc. Bot. France 102: 227, 1955 (flowers), sub nom. *P. le-testui* et *Chytranthus malendeensis*; Fl. Cameroun 16: 123, 1973.

Tree or shrub; leaves large, petiole 25-30 cm long, rhachis 40 cm, hairy, glandular; leaflets in (5-)7-8 pairs, 18-30 × 6,5-7 cm, finely glandular beneath; inflorescences slender, simple or branched, 15-20 cm long, axes rusty-hairy, glandular; female flowers?, and fruit unknown.

Forest.

Similar to *P. laurentii*.

Known from only 2 gatherings (= 2 types collected in 1929 and in 1930/1931, respectively).

**A. polyantha** Gilg ex Engl.

Shrub?; leaf petiole glabrous, 8-14 cm long, thickened at base, rhachis 40-45 cm long; leaflets in 3-4 pairs, ovate-lanceolate-elliptic, 14-20 × 4,8-8 cm, without glands beneath, acuminate at apex; petiolules 1 cm long, thickened; flowers (male) with pedicels 5 mm long, calyx campanulate, tomentellous outside, ± glabrous inside, stamens 7-8, in puberulous racemes 15-30 cm long, borne in leaf axils; female flowers and fruit unknown.

Forest.

Known only from the type collected in 1897 (Staudt 906, Cameroon: Kumba/Johann Albrechtshöhe; G!). The specimen at G keys out in floras etc. as *P. floribunda*.

Similar to *P. subcuneata* according to Engler.

**P. sessiliflora** Hutch. & Dalziel; J. B. Hall & Swaine, Distrib. & ecol. vascul. pl. trop. rain forest: 255, 1981. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 749, 755.

Small shrub, often trailing, monoecious; young branchlets glabrous; leaf petiole 1,5-6,5 cm long, rhachis 0,5-1,2 cm; leaflets in (1-)2 pairs (simple leaves on lower/shaded parts of shoots), thin-textured, ± glabrous, venation reticulate, 4,5-17 × 1,5-6 cm; flowers small, whitish (calyx 4 mm long, cupular, tomentellous outside), sessile, in small dense clusters in leaf axils or on stem just below leaves; fruit red-orange, glabrous, 2-3-lobed.

Rain-forest.

Common from Ivory Coast to Nigeria, fide Hawthorne & Jongkind, o.c.: 754.

Very similar to *P. subcuneata* (supposed to differ in presence of scale-like glands on lower surface of leaflets, a dubious character).

**P. subcuneata** Radlk.; Hawthorne & Jongkind, o.c.: 754.

syn.: *P. turbinata* sensu Gilg in Bot. Jahrb. Syst. 24: 302, 1897, p.p. quoad specim. Afzelius, Sierra Leone, non Radlk.

Shrub?; young branchlets rusty pulverulent, glabrescent; leaf petiole 3,5-9 cm long, rhachis 25-40 cm, both glabrous; leaflets in 2-3 pairs, glandular, elliptic-lanceolate, upper ones 15-20 × 5-9 cm, lower ones 7-9 × 3-3,5 cm, petiolules 6 mm long; flower calyx campanulate, tomentellous; inflorescences short, c. 4 cm long, at nodes; female flowers?, and fruit unknown.

Forest?

Known only from the type collected in 1796 (Afzelius 15).

## PANCOVIA SUBCUNEATA

Hawthorne & Jongkind suppose this plant to be conspecific with *P. sessiliflora* (cf. above under this species), whereas Fouillou & Hallé (Fl. Cameroun 16: 116, 1973) suggest a close relationship with *P. harmsiana*.

**P. turbinata** Radlk. 1878, excl. syn. *Aphania golungensis* Hiern in Pflanzenreich 4/165, Sapindaceae 1: 804, 1932; incl. *P. pedicellaris* Radlk. & Gilg 1897; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 333, 2009. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 237, 1959; Adam, Fl. descr. Mts Nimba 2: 849, 1971; Fl. Cameroun 16: 119, 1973; Hamilton, Field guide Uganda for. trees: 224/fig. 417, 1981; Troupin, Fl. Rwanda 2: 309, 1983; Fl. Trop. E. Afr., Sapindaceae: 61, 1998; Akoegninou & al., Fl. analyt. Bénin: 925, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 749, 755, 2006.

syn.: *P. sp.* near *P. turbinata* Radlk. sensu Hamilton, Field guide Uganda for. trees: 225, 1981; *P. sp.* A sensu Troupin, Fl. Rwanda 2: 306, 1983.

Shrub or small tree 1-3,5 m tall (*P. turbinata*, in W Africa) or tree to 15(-25) m (*P. pedicellaris*), monoecious, with dense crown and trunk to 30 cm Ø, much-branched, fluted or gnarled; bark (red-)brown, thin, smooth, horizontally striated; young shoots reddish, rusty pubescent to glabrous; leaves (lower ones often simple), glossy, puberulous or glabrescent, petioles 1,5-10 cm long, rhachides red 1-5 cm; leaflets in (1-)2-5 pairs, broadly oblanceolate-obovate, 3,5-20 × 2-7,5 cm, upper pair sometimes largest, rounded or shortly acuminate at apex; lamina usually without blister-like spots beneath; flowers yellowish, with 2-4 mm hairy pedicels, in densely orange-hairy little-branched inflorescences (0,3-)10 cm long, axillary or on old wood; fruit fleshy, orange-red, 2-3-lobed, ± hairy, 1-2 cm Ø, edible.

Evergreen rain-forest, in understory; riverine forest, primary forest with *Celtis*, *Sterculiaceae*; common in various types of forest, also dry forest on coastal sand; low alt. to 1500 m.

Very variable in habit and in flower characters (with intermediates between "*P. turbinata*" and "*P. pedicellaris*"). Also variable in shape and texture of fruit: "there is probably scope to subdivide the hugely variable range of specimens in herbaria" (Hawthorne & Jongkind, o.c.: 754).

Close to *P. harmsiana*. May be confused with *P. bijuga* (cf. above under this species). *P. golungensis* is perhaps conspecific (cf. above).

IMPERFECTLY KNOWN TAXA (not mapped):

*Pancovia sp.* A sensu Verdcourt in Fl. Trop. E. Afr., Sapindaceae: 62, 1998.

Tree 5-6 m; young parts rusty hairy, glabrescent; leaves with 2-3 pairs of leaflets, uppermost pair largest. Sterile specimens from Tanzania (T4); in riverine forest; 1150-1600 m alt.

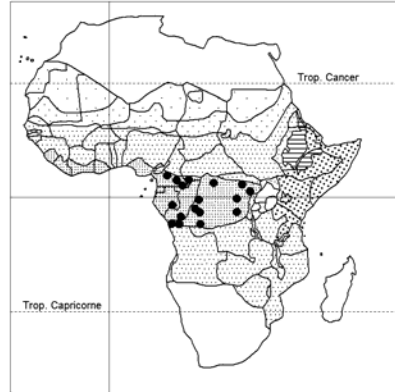
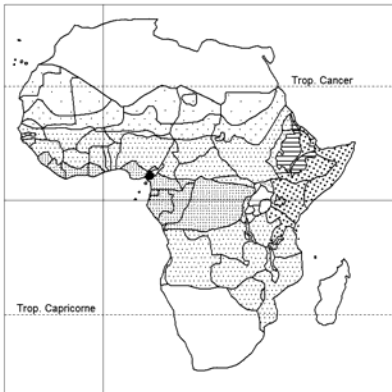
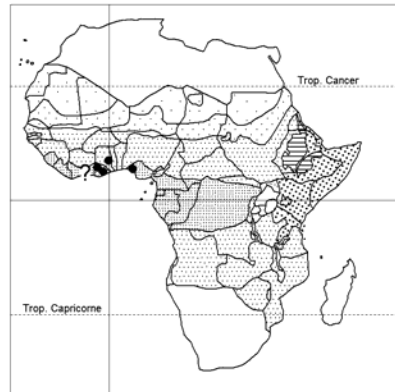
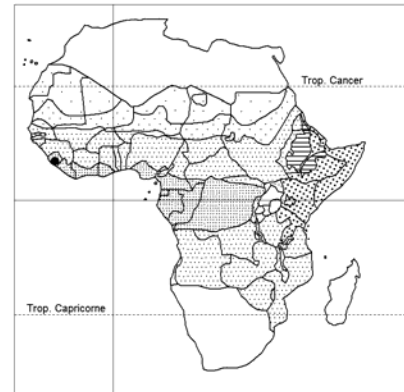
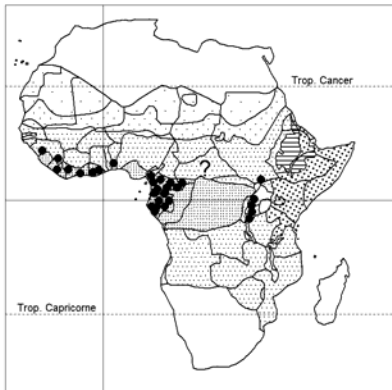
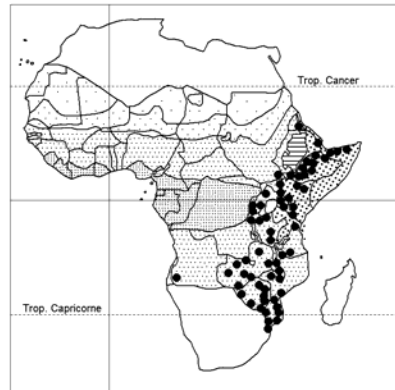
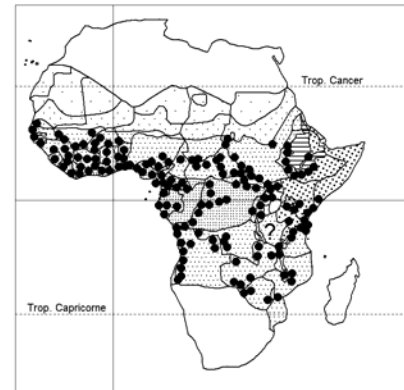
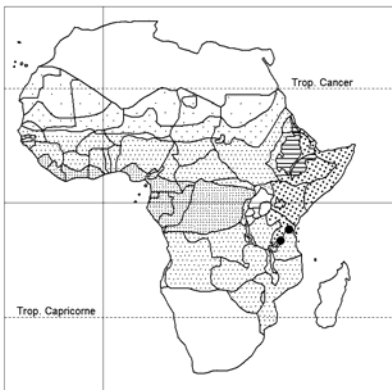
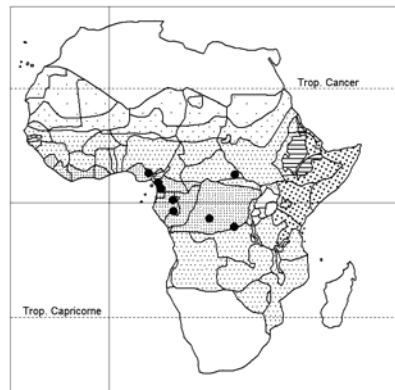
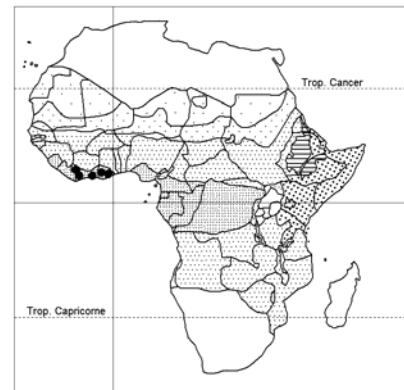
*P. sp.* B sensu Verdcourt l.c.

syn.: *P. sp.* 1 sensu White, For. fl. N. Rhodes.: 225, 1962 (White 3729) = *P. golungensis* (Hiern) Exell & Mendonça, Fl. Zambes. 2/2: 528 and fig. 109 p. 527, 1966, p.p.

Tree 10-15 m; leaves with 1-2 pairs of ± elliptic leaflets; young male (axillary) inflorescences 1,2 cm long. S Tanzania (T7), N Malawi; in closed canopy evergreen forest; 1450-1800 m alt.

*P. sp.*? sensu Consp. fl. Angol. 2: 85, 1954; Figueiredo & Smith, Pl. Angola: 157, 2008.

Tree 25 m; close to *P. golungensis*. Angola, Cabinda: Maiombe, Belize (Gossweiler 7572), in forest.

***Pancovia holtzii******Pancovia laurentii******Pancovia le-testui******Pancovia polyantha******Pancovia sessiliflora******Pancovia subcuneata******Pancovia turbinata******Papea capensis******Paullinia pinnata******Placodiscus amaniensis******Placodiscus angustifolius******Placodiscus attenuatus***

## PANCOVIA

*P. sp.* sensu Fl. Trop. W. Afr., ed. 2, 1/2: 719, 1958.

Tree c. 15 m; leaves with 1 pair of leaflets; sterile. Nigeria, Plateau Prov., forest in understorey (Keay & Onochie FHI 21660).

*P. sp.* sensu Chapman & Chapman, Forests Taraba & Adamawa states, Nigeria: c42, 2001.

Woody climber; forest; 229 m alt.

*P. sp. nov.* sensu Cable & Cheek, Pl. Mt Cameroon: 127, 1998.

## SYNONYMS:

*Pancovia africana* (sphalm.) Baill. = **Pancovia bijuga**

*angustifolia* Radlk. = **P. laurentii**

*golungensis* sensu Fl. Zambes. 2/2: 528, 1966 p.p. (White 3729) = **P. sp. B** sensu F.T.E.A. (imperfectly known taxon)

*guineensis* Willd. ex A. Chev. 1920, nom. = **P. bijuga**

*heckelii* Claudel = **Paullinia pinnata**

*hildebrandtii* sensu Beentje 1994 p.p., non Gilg = **Pancovia golungensis**

*klaineana* Pierre ms. in herb. P. = **Chytranthus klaineanus**

*lujai* De Wild. = **Lychnodiscus cerospermus** (leaves), **Pancovia laurentii** (flowers)

*macrophylla* Gilg = **Chytranthus punctatus** (insuff. known)

*mortehanii* De Wild. = **C. mortehanii**

*pedicellaris* Radlk. & Gilg = **Pancovia turbinata**

sp. aff. (*Pancovia*) = Talbot 720, sensu F.W.T.A., ed. 2, 1/2: 710, 1958 = **Namataea**

sp. aff. *P. ugandensis* F. G. Davies, ined. = **Pancovia ? golungensis**

sp. near *P. turbinata* Radlk., sensu Hamilton 1981 = **P. turbinata**

sp. A sensu Troupin, Rwanda 1983 = **P. turbinata**

sp. I sensu White, N. Rhodes. (White 3729) = **Pancovia**  
sp. B sensu F.T.E.A.

*teckelii* Claudel (sphalm., Ind. Kew. Suppl. 1 = *heckelii*) = **Paullinia pinnata**

*thyriflora* Gilg, nom. = **Lepisanthes senegalensis**

*turbinata* sensu Gilg 1897 p.p. (specim. Afzelius), non Radlk. = **Pancovia subcuneata**

*turbinata* sensu Radlk. 1932 p.p. quoad syn. *Aphania golungensis* = **P. golungensis**

*ugandensis* F. G. Davies, ined. = (*P. ? turbinata*)  
see **P. golungensis**

## PAPPEA / 1

Monotypic.

**Pappea capensis** Eckl. & Zeyh., incl. var. *radlkoferi* (Penzig ex Schweinf.) Schinz, and fa. *schumanniana* (Schinz) Schinz; Coates Palgrave, Trees south. Afr., ed. 3: 651, 2002; Figueiredo & Smith, Pl. Angola: 157, 2008. – Jacket Plum. – Icon.: Hook. Ic. Pl. 4: pl. 352, 1841; Radlkofer in Engler, Pflanzenreich 4/165, Sapind. 1: 1012, 1933 (seed); Fl. Ethiop. 3: 509, 1989; Thulin, Fl. Somal. 2: 252, 1999; Beentje, Kenya trees, shrubs & lianas: 422, 1994; Fl. Trop. E. Afr., Sapindaceae: 36, 1998; V. Thomas & R. Grant, Sappi tree spotting, highveld, rev. ed.: 203-205, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 372-373, 2002; Curtis & Mannheimer, Tree atlas Namibia: 408-409, 2005; Maundu & al., Traditional food pl. Kenya: 186-187, 1999.

## PAPPEA CAPENSIS

syn.: *P. ugandensis* Bak. f.; *P. schumanniana* Schinz; *P. radlkoferi* Penzig (nom. semi-nud. 1892) ex Schweinf. 1899, incl. var. *angolensis* Schltr. and var. *ugandensis* (Bak. f.) Schltz.; *P. fulva* Conrath; *Kiggelaria integrifolia* E. Mey. in herb. Drège, non Jacq. (= *Flacourtiaceae*); *Sapindus pappea* Sond., nom. illegit.; *Baccaurea capensis* Sprengel in Flora 12/1, Beil.: 3, n° 158, nomen; *Pappea sp.* sensu Andrews, Fl. pl. Anglo-Eg. Sudan 2: 342, 1952.

Tree or much-branched shrub (1)-2-15 m, evergreen, monoecious; trunk straight or crooked, to 35 cm Ø; crown thick, round; bark rough, dark grey-blackish, variable in aspect according to fire regime; (young) branchlets yellowish tomentellous, knobly with raised leaf-scars; leaves yellowish-green, simple, puberulous to tomentellous, oblong or elliptic, 3-18 × 1.5-8 cm, clustered at tips of branches; flowers yellowish in axillary tomentellous racemes 2-15(-20) cm long; capsule 1 cm Ø, yellowish, green-velvety when young, with 1 seed; aril red, fleshy, edible.

Grassland, often with scattered trees; *Buxus-Acokanthera* bushland, deciduous *Acacia-Commiphora* bushland; *Combretum-Terminalia*, *Combretum-Piliostigma* woodland, and scrub, often in rocky places; dembos; termitaria; semi-evergreen to evergreen montane woodland; forest; 650-2300 m alt.

Very variable in habit (in drier areas a small stout tree, in wetter ones a tall tree); leaf form and size very variable (*P. ugandensis* = forms with larger leaves, 6-18 cm long).

S Namibia, Botswana, Swaziland, S. Africa; Yemen, Oman, rare (Thulin & al. in Biol. Skr. 54: 150, 2001; Kilian & al. in Willdenowia 32: 260, 2002, and 34: 165, 2004).

The “gap about 9° and 15° N on the eastern escarpment of the NW Highlands [Ethiopia-Eritrea] is [likely] due to under-collection” (Friis, Forest trees N. E. trop. Afr.: 195, 1992, with map p. 318).

Concluded from experiments (see Coates Palgrave, o.c.: 652), “trees can produce male flowers first, followed later by female flowers, either on the same inflorescence or on separate inflorescences. Under adverse conditions, no flowers or only male flowers were produced.”

## PAULLINIA / 1

In tropical and subtropical America (194 species, fide Klaassen, Wood anatomy of the Sapindaceae: 15, 1999, including one species in Africa).

**Paullinia pinnata** L., incl. var. *subherbacea* Hiern; Burkill, Useful pl. W. trop. Afr. 5: 26-30, 2000; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 143, 2010. – Icon.: Plumier, Descr. pl. Amérique: pl. 91, 1693 (lectotype); Schnell in Icon. Pl. Afric. 2: pl. 36, 1953; Andrews, Fl. pl. Anglo-Eg. Sudan 2: 342, 1952; Irvine, Woody pl. Ghana: 548, 1961; Fl. W. Trop. Afr., ed. 2, 1/2: 710, 1958; Fl. Zambes. 2/2: 513, 1966; Fl. Cameroun 16: 15, 1973; Troupin, Fl. Rwanda 2: 307, 1983; Beentje, Kenya trees, shrubs & lianas: 423, 1994; Fl. Trop. E. Afr., Sapindaceae: 104, 1998; Howard, Fl. Lesser Antilles 5: 149, 1989; El Amin, Trees & shrubs Sudan: 332, 1990; Thulin, Fl. Somal. 2: 241, 1999; Fl. Ethiop. 3: 496, 1989; White & al., Evergreen for. fl. Malawi: 532, 2001; Adam, Fl. descr. Mts Nimba 2: 845, 1971; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 749, 763, 2006; Akoegninou, Fl. analyt. Bénin: 925, 2006; Burrows & Willis, Pl. Nyika Plateau: 261, 2005; F. Busson, Pl. aliment. Ouest Afr.: 352, 1965; Steentoft, Flow. pl. in W. Africa: 179, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 400, 2009.



## PAULLINIA PINNATA

syn.: *P. uvata* Schumach. & Thonn., Beskr. guineisk. pl.: 195, 1827; *P. africana* G. Don; *P. senegalensis* A. L. Juss.; *Pancovia heckelii* Claudel (“*theckelii*” sphalm., Ind. Kew. Suppl. 1). For full synonymy, cf. Radlkofer, Monographie...Paullinia: 69-100, 1895.

Liane or scandent shrub 2,5-10-25 m tall, ± pubescent, monoecious; branchlets and stems (cable-like, dark brown) sharply ribbed, 3-4 cm Ø at base; leaves 30 cm long, with stipules; petiole (10 cm) and rhachis with leafy wings; leaflets 5, glabrous, shining, hairs on veins and in tufts at nerve axils beneath; flowers white-yellow, sweet-scented, in contracted panicles, with 2 coiled tendrils at base of fertile (= upper) portion; capsule woody, pear-shaped, 3-lobed, red, 2,5-3,5 cm long; seed aril white.

Evergreen and mixed forests and forest margins; *Albizia gum-mifera* forest; lake-shore and riverine forest; gaps in forest; seasonally flooded forest; moist thicket and scrub, seepage mushitu; thin bushy woods along river banks; stream-sides in tall grass savanna; forest regrowth; farm-bush; sometimes forming low tangles in forest; lowland rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa* at edge; marigot edges; 0-2300 m alt.

Cape Verde Isl.; Bioko/Fernando Poo, S. Tomé; Botswana; Madagascar, Comoros; tropical America.

Twigs and roots used as chew-sticks.

**Paullinia sphaerocarpa** D. Rich. ex A. L. Juss. cited by Bentham in Hooker fil., Flora Nigritiana: 248, 1849, as from Guinea, is a mistake for Guyana, S. America (derived from De Candolle, Prodrum 1: 605, 1825).

## (PHIALODISCUS)

*Phialodiscus bancoensis* Aubrév. & Pellegr.

= **Blighia welwitschii**

*dewevrei* Gilg, nom. = **B. unijugata**

*laurentii* De Wild. = **B. unijugata**

*mortehanii* De Wild. = **B. welwitschii**

*myrmecophilus* Gilg in sched. = **B. unijugata**

*plurijugatus* Radlk. = **B. unijugata**

*plurijugatus* sensu Aubrév. 1936 = **B. welwitschii**

*unijugatus* (Baker) Radlk. = **B. unijugata**

*verschuerenii* De Wild. = **B. unijugata**

*welwitschii* Hiern = **B. welwitschii**, **B. unijugata**

*zambesiacus* (Baker) Radlk. = **B. unijugata**

## PLACODISCUS / 20

Poorly known genus; mainly in W tropical Africa.

Venation of leaf lamina characteristic: finely reticulate, conspicuously prominent beneath (less marked on fresh plants than in dry state).

Male flowers unknown in 1 species (= 5%); no female flowers recorded for 2 + 1 ? species (= 10-15%), no fruit for 4 + 2 ? species (= 20-30%); 3 species (= 15%) known only from the type.

## PLACODISCUS

**Placodiscus amaniensis** Radlk.; Fl. Trop. E. Afr., Sapindaceae: 55, 1998; Lovett & al., Field guide moist for. trees Tanzania: 251, 2006.

Tree with weak stem, c. 15 m tall; leaves glabrous, shining, drying brown; petiole 5-17 cm long, woody, rhachis 4-20 cm long, glabrous; leaflets in 3-5 pairs, ± lanceolate, 10-26 × 4-13 cm, the uppermost pair largest; petiolules swollen, channelled; lamina with very fine reticulum of veins on both surfaces; apex shortly acuminate; flowers in spike-like simple inflorescences 27-40 cm long, rusty-pubescent, on old wood, opposite or between leaves; ? female flowers, and fruit unknown.

Rain-forest; 900 m alt. – Said to be common in Amani forest, Tanzania (T3).

GEREAU, R. E. & al. (2006). Endemic plant species of the Eastern Arc Mountains of Kenya and Tanzania: Analysis and refinement of distribution patterns. In: GHAZANFAR, S. A. & H. J. BEENTJE, eds., *Taxonomy and ecology of African plants, their conservation and sustainable use*: 267-277 [map p. 274].

Very similar to *P. leptostachys*.

**P. angustifolius** Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 384, 2006; J. B. Hall, Adansonia, Sér.2, 20: 288, 1980. – Icon.: Fl. Cameroun 16: 129, 1973.

syn.: *P. cuneatus* Radlk. p.p. excl. specim. Zenker 2120 p.p. (an unbranched inflorescence = *P. glandulosus*); sensu Fl. Camer., l.c., excl. specim. Aubréville 2793 (= *P. bracteosus*).

Tree 6-15-18 m; branches angular; leaf petiole 5 cm long, rhachis 50-70 cm; leaflets in 7-12 pairs, ± linear, 11-22(-30) × 2-4(-6) cm, the uppermost pair largest, tip acuminate (1 cm); flowers white, in 40-50 cm long inflorescences borne on large branches.

Forest; 200-300 m alt.

**P. attenuatus** J. B. Hall, Adansonia, Sér. 2, 20: 290, 1980. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 757, 2006 (partial).

syn.: Enum. 2: 221, 1992.

Tree to 3-5(-15) m tall; bole cylindrical; bark smooth; twigs glabrous, rounded; terminal bud covered by reddish indumentum (like *P. boya*); leaves tufted as a result of rhythmic growth (first leaf with long petiole, next leaf with shorter petiole, ± forth leaf bijugate with short petiole, last leaves of cycle separated by short internodes, with a pair of sessile leaflets; fide Hall, l.c.); leaf rhachis with sharp terminal point; leaflets glabrous, in 1-2 pairs, ± ovate-lanceolate, 7-18 × 3-7 cm; base of lamina decurrent onto swollen petiolule; racemes slender, 12 cm long, on old wood; fruit 3-lobed, tomentellous, c. 2,5 cm long, not wrinkled when dry.

Forest, on rocky hills and stream-sides; also moist semi-deciduous and moist evergreen forest.

Leaves resembling those of *P. riparius*. Similar to *P. boya*.

**P. bancoensis** Aubrév. & Pellegr. – Icon.: Aké Assi, Fl. Côte d’Iv. 2: 123, 2002; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 749, 757, 2006.

Tree to 16 m tall; bole cylindrical, ± unbranched, to 30 cm Ø, 1,2 m in girth; slash orange-brown, gritty, hot-tasting; branches 5 cm Ø, glabrous; leaves c. 1 m long, petiole 5-20 cm long, triangular in cross-section, rhachis channelled, borne in clusters at apex of branches; leaflets in (15-)18-24 pairs, shiny, glabrous, subfalcate, ± lanceolate, 18-30 × 4,5-7,5 cm, coriaceous, mucronate at apex; inflorescences simple, very hairy, 35 cm long, pendulous, on trunk and stems; fruit yellow, tomentose, c. 2 cm long, pedicel 1 cm.

Moist evergreen forest.

## PLACODISCUS

**P. boya** Aubrév. & Pellegr., excl. specim. Aubréville 2017 (= *P. attenuatus*); Enum. 2: 221, 1992; J. B. Hall in Adansonia l.c.: 290-291; Sosef & al., Check-list pl. vascul. Gabon: 384, 2006; Akoegninou & al., Fl. analyt. Bénin: 926, 2006. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 757, 2006; ? Harris & Wortley, Sangha trees: 176, 2008.

Tree 20 m tall; trunk low-branching, twisted, 0,5 m Ø, fluted; bark rough, very hard, flaky with greenish-orange patches; young branchlets ± flattened; young axil buds very hairy; crown dense, spreading; leaf petiole 5-8 cm long, rhachis 4,5-6 cm; leaflets in 2-4 pairs, entirely glabrous beneath, ± elliptic, 6-22 × 3-8,5 cm, drying bluish-hued; inflorescences racemose, with some side branches at base, 15 cm long, puberulous, pedicels 0,5-1 cm long; fruit pear-shaped, 4-6 cm long, 3-4-lobed, tomentose (young), smelling of rotting apples (ripe).

Closed forest; dry forest; evergreen- and semi-deciduous forests; in understorey; very common in places, sometimes dominant; 350-586 m alt. (Gabon).

Also in Cameroon ?

Similar to *P. riparius*.

**P. bracteosus** J. B. Hall – Icon.: Fl. Cameroun 16: 131, 1973 (sub nom. *P. leptostachys*, specim. Vigne 1612, Ghana); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 757, 2006.

syn.: Enum. 2: 221, 1992; *P. sp. A* sensu Irvine, Woody pl. Ghana: 551, 1961.

Tree much-branched, or erect shrub 5-7 m tall; branchlets c. 8 mm Ø, glabrescent; leaf petiole 5-8(-12) cm long, rhachis (10-)15-22 cm; leaflets in 3-5 pairs, glabrous, oblong-lanceolate, 12-28 × 6-11 cm, cuneate, shortly acuminate at apex, margins often irregularly wavy; flowers greenish-yellow, in racemes, sometimes branched, 22-35 cm long, velutinous, bracts 5 mm long (in *P. leptostachys* 2-3 mm, and puberulous), borne on old wood; fruit 3-lobed, tomentellous, yellow, 4-5 cm Ø.

Semi-deciduous forest, dry forest, in rocky wet places, especially streamsides.

Inflorescence similar to that of *P. bancoensis*, but habit and leaves different. At first confused with *P. leptostachys*.

**P. caudatus** Pierre ex Radlk.; Sosef & al., Check-list pl. vascul. Gabon: 384, 2006. – Icon.: Fl. Cameroun 16: 129, 1973.

Shrub 1-3 m tall; branchlets, leaf petiole and rhachis minutely puberulous; leaf petiole 8-9 cm long, rhachis 25 cm; leaflets in 3-4 pairs, drying dark brown, lamina oblong-lanceolate, 12-15 × 7-8 cm, minutely puberulous on midrib, glandular hairs inconspicuous, short obtusely acuminate (1 cm) at apex; flowers white, in spike-like inflorescences 7-14 cm long, sessile on the trunk; fruit unknown ?

Forest; 50 m alt. (Gabon).

Also in Nigeria ?

Similar to *P. pynaertii* (tree 6-10 m) and *P. riparius* (tree 10-20 m), comparative table in Fl. Cameroun 16: 130, 1973 (idem in Fl. Gabon 23).

**P. gimbiensis** Hauman

Liane; stems 8 mm Ø, 6-grooved, brown puberulous; leaf petiole 5-10 cm long, rhachis 25 cm; leaflets in 9 pairs, elliptic, glabrous, 10-16 × 4,5-5 cm, shortly acuminate at apex; flowers (male) yellowish, in spike-like inflorescences 20-25 cm long, on stems; female flowers and fruit unknown.

## PLACODISCUS GIMBIENSIS

Plateau forest.

Known only from the type collected in 1948 (Zaire).

Resembling *P. angustifolius*.

**P. glandulosus** Radlk.; J. B. Hall in Adansonia, Sér. 2, 20: 292, 1980. – Icon.: Fl. Cameroun 16: 131, 1973.

syn.: *P. cuneatus* Radlk. p.p. (specim. Zenker 2120 p.p.); *P. leptostachys* sensu Gilg, Bot. Jahrb. Syst. 24: 305, 1897, non Radlk.

Tree or shrub 4-8(-15) m with few branches; branchlets glabrous; leaves crowded at apex of branches, drying reddish brown; glandular hairs present on some parts of the plant, but their development variable (lower surface, midrib of leaflets, inflorescences); leaf petiole 8-12-19 cm long, rhachis 13-25 cm; leaflets in 3-6 pairs, elliptic-lanceolate, 10-32 × 4-9 cm; flowers reddish or cream, with distinct pedicels 2-7 mm long, jointed below the buds; inflorescences 15-25(-36) cm long, puberulous-tomentellous, ± glandular, borne along the main stem; fruit 3-lobed, c. 3 cm Ø.

Forest, in understorey; 1-300 m alt.

Very close to *P. oblongifolius*; also similar to *P. turbinatus*.

**P. leptostachys** Radlk.; J. B. Hall, Adansonia, Sér. 2, 20: 289, 1980.

syn.: Enum. 2: 221, 1992; non *P. leptostachys* sensu Exell, J. Bot. 66, Suppl., Dicot. polypet.: 89, 1928 (specimens Gossweiler 6731, 6765, 7275 = *P. resendeanus*).

Tree 7 m tall; leaf petiole 6-8 cm long, rhachis 35 cm; leaflets in 2-5 pairs; flower pedicel 5 mm long; inflorescences 25-25 cm long.

Forest; 600-800 m alt.

Not in Liberia (= *P. oblongifolius*), Nigeria (= *P. opacus*) or Angola (= *P. resendeanus*).

Known only from scanty poor material. The type locality (Mann 2150) at Mt Cameroon (720 m alt.) is probably cleared for banana plantations (fide Hall, l.c.).

Closely related to *P. angustifolius*, *P. opacus*.

**P. oblongifolius** J. B. Hall, Adansonia, Sér. 2, 20: 291, 1980. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 749, 757, 2006.

syn.: Enum. 2: 221, 1992.

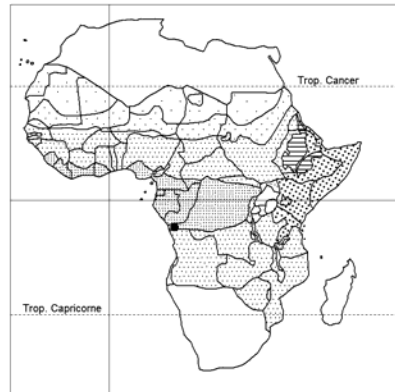
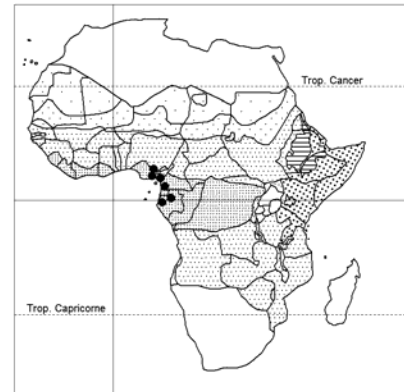
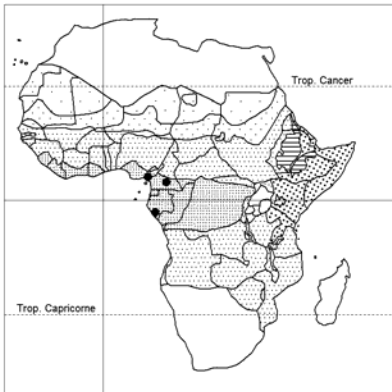
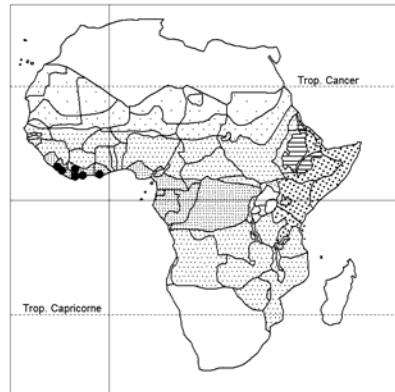
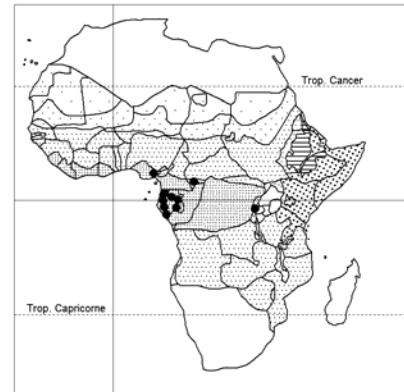
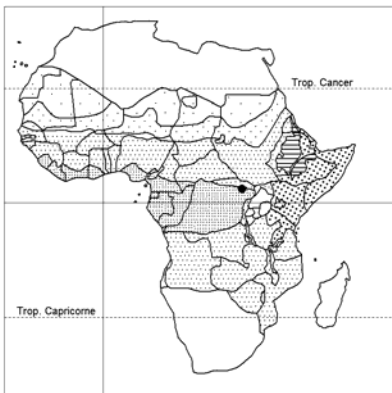
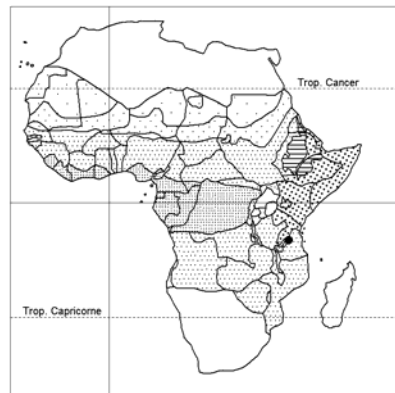
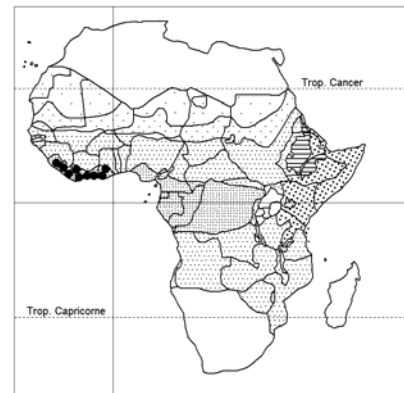
Tree 7 m; trunk 8 cm Ø; little branched; leaves in tufts at tips of branches; young leaves bright red; leaf axis 30-75 cm long whereof petiole = 1/3; leaflets in 5-7(-9) pairs, ± oblong, 15-25 × 4-6 cm, abruptly acuminate at apex, glabrous except for minute glands on midrib beneath, petiolules 3-8 mm; flowers reddish in red puberulous inflorescences simple or little branched, 8-15 cm long, often lacking glands, borne on the main stem; fruit 3-lobed, hairy, pedicel 1,5 cm long.

Evergreen (moist) forest.

Very close to and similar in habit to *P. glandulosus*.

**P. opacus** Radlk.; J. B. Hall, Adansonia l.c.: 289, 293-294; Sosef & al., Check-list pl. vascul. Gabon: 384, 2006. – Icon.: Fl. Cameroun 16: 135, 1973.

syn.: *P. caudatus* sensu Pellegrin, Fl. Mayombe 1: 70, 1924, non Pierre ex Radlk.; *P. leptostachys* sensu Fl. W. Trop. Afr., ed. 2, 1/2: 720, 1958, p.p. quoad specim. Latilo FHI 30970, non Radlk.

**Placodiscus bancoensis****Placodiscus boya****Placodiscus bracteosus****Placodiscus caudatus****Placodiscus gimbiensis****Placodiscus glandulosus****Placodiscus leptostachys****Placodiscus oblongifolius****Placodiscus opacus****Placodiscus paniculatus****Placodiscus pedicellatus****Placodiscus pseudostipularis**

## PLACODISCUS OPACUS

Shrub or tree 3-6 m tall, branched; branches angular, 7 mm Ø; branchlets glabrescent, without glands; leaf petiole 4-10 cm long, rhachis 15-30 cm; leaflets in 3-8 pairs, glabrous, without glands, elliptic-oblongate, 10-20 × 4-6-8 cm, shortly acuminate at apex, petiolules 5-10 mm; flowers greenish, sessile, in simple pendulous reddish inflorescences 8-25 cm long, axillary or on old wood.

Riverine forest, forest; 225-770 m alt. (Gabon).

Similar to *P. caudatus* and *P. angustifolius*.

**P. paniculatus** Hauman

Tree 20-25 m; trunk 40 cm Ø; branches 1 cm Ø, glabrous, striate; leaf petiole 10 cm long, glabrous, rhachis 20 cm; leaflets in 6 pairs, oblong-elliptic 20 × 6 cm, glabrous, apex abruptly acuminate, petiolules 4 mm long; male flowers with pubescent disc, pedicels 1,5 mm long, in stout axillary panicles 20-40 cm long; female flowers and fruit unknown.

Forest.

Known only from the type collected in 1912.

**P. pedicellatus** F. G. Davies; Lovett & al., Field guide moist for trees Tanzania: 251, 2006. – Icon.: Fl. Trop. E. Afr., Sapindaceae: 56, 1998.

Tree c. 20 m; leaf petiole 3,5-6 cm long, glabrescent, rhachis 13-17 cm, minutely hairy; leaflets in 6-7 pairs, drying brown, oblong-elliptic to lanceolate, 6-12 × 2-3 cm, glabrous, without glands, abruptly acuminate at apex, petiolules 2 mm long, swollen; female flowers velvety pubescent (also disk so), in branched pubescent panicles 27 cm long, ovary deeply 3-lobed; male flowers and fruit unknown.

Rain-forest; 1220 m alt.

Known only from the type collected in 1980.

Resembling W African species in the genus.

**P. pseudostipularis** Radlk. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 749, 757, 2006.

(Shrub or) tree to 15 m tall; trunk to 20 cm Ø; branches sulcate, glabrous; bark rough, bumpy, black-green; leaves sessile, rhachis 1-12 cm long; leaflets in 2 pairs, shiny, glabrous, lowest pair stipule-like clasping stem (if present at all), ovate, 2-6 × 1,2-4 cm; upper pair oblong, 6-25 × 1,5-8 cm; flowers white, in axillary (also cauliflorous?) racemes (5-)10-35 cm long; fruit hard, 1-2 (-3)-lobed, brown-tomentellous when young, smooth, 2,5-3 cm long, flesh sweet, edible.

Closed forest, rain-forest, in understorey; common.

**P. pynaertii** De Wild.; Harris, vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 194, 2002. – Icon.: Harris & Wortley, Sangha trees: 177, 2008.

Tree 5-10 m, or shrub, much-branched; trunk to 20 cm Ø; branches finely striate, 4 mm Ø; leaf petiole 6-8 cm long, rhachis 10-12 cm, glabrous; leaflets in 2-4 pairs, glabrous, elliptic-oblong, 6-13-20 × 4-8 cm, petiolules 5-7 mm, margins wavy; inflorescences axillary or cauliflorous, 20 cm long; flower disk pubescent; fruit (2-)3-lobed, c. 2,5 cm Ø, velvety, dark brown.

Riverbanks in forest, swamp forest, on islands in rivers, often also in water.

Close to *P. caudatus* (cf. above under this species) and *P. riparius*.

## PLACODISCUS

**P. resendeanus** Exell & Mendonça; Figueiredo & Smith, Pl. Angola: 157, 2008. – Icon.: Bot. Soc. Brot., Sér. 2, 26: pl. 12, 1952.

syn.: *P. leptostachys* Radlk. p.p., quoad specim. Gossweiler 6731, 6765 (p.p. BM), 6855 p.p., 7275 p.p. 7280 (type BM).

Tree or shrub, unbranched or little branched, 1,5-5 m tall; stem 1,5-2 mm Ø; leaves clustered at top of stem, leaf petiole 15 cm long; leaflets in 4-7 pairs, oblong-elliptic, 35-40 × 10-13 cm, glabrous; flowers reddish purple (pedicels 2 mm long), in axillary or cauliflorous racemes 2-10 cm long, flower disk glabrous; fruit 2-4-lobed, 1,5 cm Ø, rusty papillose-glandular.

Moist forest.

**P. riparius** Keay; J. B. Hall, Adansonia, Sér. 2, 20: 287, 294, 1980; Aké Assi, Et. florist. Côte d'Ivoire: 91, 1963, excl. specim. Aké Assi 3170 (= *P. attenuatus*); Lisowski, Fl. (angiosp.) Rép. Guinée 1: 333, 2009. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 757, 2006.

Tree, or shrub, branching low down, 3-6-10(-20) m tall; glands absent; young branchlets rusty-hairy; branches grey-brown, lenticellate; leaf petiole 2-12 cm long, rhachis 3-11 cm; leaflets in 2-3 pairs, elliptic-obovate, 3-10(-20) × 1,5-7 cm, minutely *spreading puberulous* on midrib or lamina beneath, ± rounded at apex; inflorescences narrow, spike-like, with very short lateral branches, densely tomentellous, 3-13 cm long, borne in leaf axils or just below the leaves; flower disk glabrous (not pubescent as stated by Keay), pedicels 1-2-5 mm long; fruit 3-lobed, yellowish-hairy, c. 2 cm long.

Riverbanks, sometimes completely submerged in rainy season, rheophyte.

Close to *P. caudatus* (cf. above under this species) and *P. pynaertii* (with similar ecology).

**P. splendidus** Keay; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 756, 2006.

Tree 3-10 m, unbranched or little branched; young branchlets thick, sulcate, densely pubescent at first, glabrescent; stem greyish brown, sulcate; leaves evergreen, clustered at top of stem, 50-80 cm long; petiole 9,5-18 cm long, rhachis 25-48 cm, pubescent; leaflets in (6-)8-12 pairs, oblong-lanceolate, 5-23 × 1,5-5 cm, petiolules 3-6 mm long, with small orange glandular and non glandular hairs on midrib beneath, with drip tip 1 cm long; flowers pinkish, disk pubescent; racemes tomentose, 2,5-15 cm long, axillary and on stem; fruit baccate, 1-2-3-lobed, yellow, pubescent, c. 3 cm long, pedicel 1 cm long.

Forest, forest regrowth.

**P. turbinatus** Radlk.; Cable & Cheek, Pl. Mt Cameroon: 127, 1998; Keay, Trees Nigeria, ed. 2: 363, 1989. – Icon.: Fl. Cameroun 16: 135, 1973.

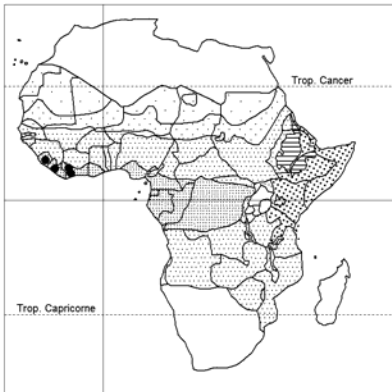
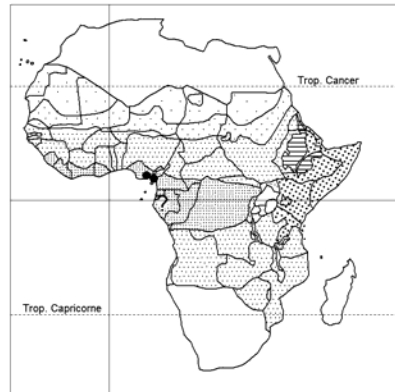
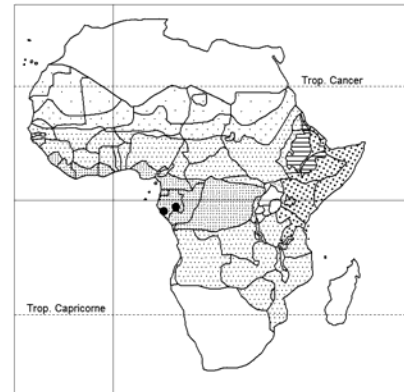
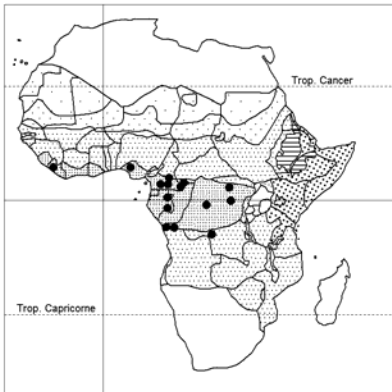
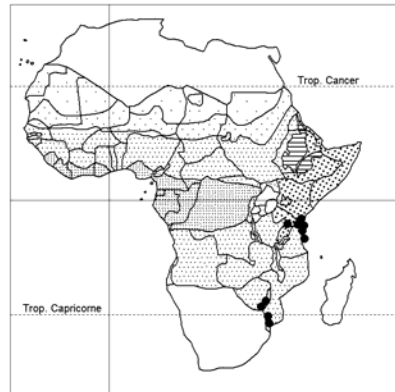
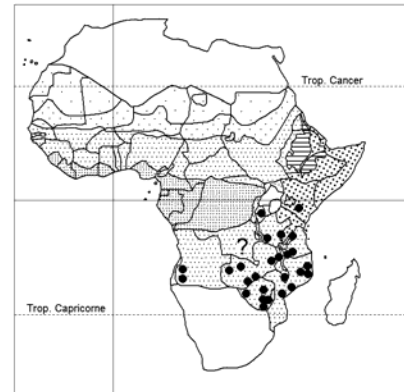
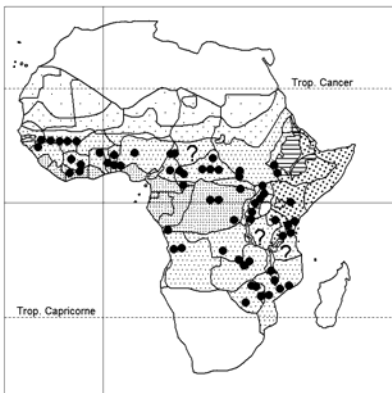
Tree 5-12 m; glandular hairs present; leaves 30-40 cm long, petiole 2-11 cm, rhachis 5-16 cm, drying pale green; leaflets in 4 pairs, oblong-elliptic, 15-21 × 3-7 cm, hairy beneath, acuminate at apex (1-1,5 cm long), petiolules 3-5 mm long; racemes simple, 8-20 cm long, borne on main stem; flower disk subglabrous, fruit unknown?

Forest.

Also in Gabon?

Similar to *P. glandulosus* but leaves smaller and flowers ± stalkless.



**Placodiscus pynaertii****Placodiscus resendeanus****Placodiscus riparius****Placodiscus splendidus****Placodiscus turbinatus****Pseudopancovia heteropetala****Radlkofera calodendron****Stadmania oppositifolia****Zanha africana****Zanha golungensis**

## PLACODISCUS

## INCOMPLETELY KNOWN SPECIES:

*Placodiscus* sp. nov. sensu Cable & Cheek, Pl. Mt Cameroon: 127, 1998.

## SYNONYMS:

- Placodiscus boya* sensu Aubréville 1959 p.p. and F.W.T.A., ed. 2, p.p., quoad specim. Aubréville 2017, non Aubrév. & Pellegr. = **Placodiscus attenuatus**
- caudatus* sensu Pellegrin, Fl. Mayombe 1924, non Pierre ex Radlk. = **P. opacus**
- cuneatus* sensu Fl. Camer. 16, p.p., quoad specim. Aubréville 2793, non Radlk. = **P. bracteosus**
- cuneatus* Radlk. p.p., quoad specim. Zenker 2120 p.p. = **P. glandulosus**
- leptostachys* sensu Fl. Camer. 16, p.p., quoad specim. Vigne 1612 and ill. p. 131, non Radlk. = **P. bracteosus**
- leptostachys* sensu Gilg 1897 = **P. glandulosus**
- leptostachys* sensu Exell 1928 p.p., quoad specim. Gossweiler 6731, 6765, 6855, 7275, 7280 = **P. resendeanus**
- leptostachys* sensu F.W.T.A., ed. 2, quoad specim. Latilo FHI 30970 = **P. opacus**
- leptostachys* sensu F.W.T.A. ed. 2, quoad specim. Baldwin 13079, 13095 = **P. oblongifolius**
- leptostachys* sensu Pellegr. = **P. opacus**
- riparius* sensu Aké Assi, Etude Fl. Côte d'Iv.: 91, 1963, quoad specim. Aké Assi 5466, non Keay = **P. attenuatus**
- sp. A. sensu Irvine, Woody pl. Ghana: 551, 1961 = **P. bracteosus**
- tristis* "Colenso in Trans. N. Z. Inst. 28: 271, 1886 (1886)" in Ind. Kew. Suppl. 1/4: 333, 1906, lapsus = **Pterostylis tristis** Colenso (*Orchidaceae*), New Zealand

**PSEUDOPANCOVIA / 1**

Monotypic.

**Pseudopancovia heteropetala** Pellegr.; Sosef & al., Check-list pl. vacul. Gabon: 384, 2006. – Icon.: Bull. Soc. Bot. France 102: 227, 1955 (partial); Fl. Cameroun 16: 77, 1973.

Shrub; branchlets terete, striate, villous, glandular; leaves alternate, petiole 7-12 cm long, with few scale-like hairs, rhachis 20-30 cm; leaflets in 8-10 pairs, oblong-lanceolate, 10-12 × 2,5-3,5 cm, coriaceous, (sub-)glabrous, obtusely acuminate (1-1,5 cm) at apex, with conspicuous reticulate venation on both surfaces; flowers (male) irregular, petals 4, of different types, disk glabrous, in pseudoracemes 5-6 cm long, rusty hirsute; female flowers and fruit unknown.

Forest.

Only 2 collections known, collected in 1927 and 1930 (type), respectively.

**RADLKOFERA / 1**

Monotypic.

**Radlkofera calodendron** Gilg; Keay, Trees Nigeria, ed. 2: 365, 1989; Figueiredo & Smith, Pl. Angola: 157, 2008. – Icon.: Engler, Veg. d. Erde 9, Pflanzenw. Afr. 3/2: 275, 1921; Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae 1: 777, 1932; Fl. Cameroun 16: 81, 1973; Fl. Gabon 23: 81, 1973; Harris & Wortley, Sangha trees: 177, 2008.

Tree, palm-like, usually unbranched, monoecious, 4-15 m tall; trunk 20 cm Ø, sometimes divided near the base; leaves tufted at apex, 1-2 m long, 40-50 cm wide, petiole 25-30(-50) cm long, 1,5 cm Ø, brownish velvety like the rhachis; leaflets in 15-27 (-36) pairs, ± elliptic, (20-)30-40(-50) × (6-)9-12(-14) cm, glabrous above, puberulous to glabrescent beneath; racemes brown, 5-20(-35) cm long, 1,5 cm Ø, with large persistent linear bracts, axillary and on the stem; fruit fleshy, pear- or fig-shaped, many-seeded, to 13 cm long, 14 cm Ø, suggesting that of a *Carapa*.

Humid shady forests, forest with *Terminalia*, mountain rain-forest; 200-800 m alt.

**[SAPINDUS]**

Masculine gender (Brummitt, Taxon 48: 369-370, 1999, proposed by Verdcourt).

[*Sapindus saponaria* L.] – Soap-berry Tree; Burkill, Useful pl. W. trop. Afr. 5: 32, 2000; Fl. Mascareignes 76, Sapindaceae: 14, 1997; Figueiredo & Smith, Pl. Angola: 157, 2008. – Icon.: Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae 1: 645, 1932; Fl. Cameroun 16: 59, 1973; Fl. Trop. E. Afr., Sapindaceae: 74, 1998; Fl. Males., Ser. 1, 11/3: 715, 1994.

Tree 8-18(-20) m, monoecious; crown rounded; bark yellowish brown, rough and corrugated on trunk, flaking off in large flakes to reveal brown patches, but smooth on branches; leaves 20-30(-60) cm long, petiole 4-8 cm, rhachis 14-40 cm, pale green or whitish, winged or with raised lines; leaflets in 2-6 pairs, curved; panicles branched, 30-75 cm long, puberulous; fruit 1(-3)-lobed, cherry-like, *glabrous*, gelatinous, brown, drying blue-black, c. 2 cm Ø.

Widely cultivated, but rarely (Zaire) naturalized.

Native of C. & S. America. Radlkofer, l.c., distinguished 3 forms and 2 subforms (synonyms also given).

Produces saponin (soap-substitute) in fruit epicarp and roots. Seeds, black, c. 1 cm Ø, used for necklaces, rosaries.

PANHUY-SIGLER, M. van (2008). Les noix de lavage. *Garance Voyageuse* 81: 17-20.

[*S. trifoliatus* L.] – Soapnut tree of S India; Burkill, o.c.: 33; Fl. Mascareignes, l.c. – Icon.: Fl. Trop. E. Afr., l.c. (fruit).

Tree to 18 m; bole 1,5 m in girth; branchlets purplish brown; leaves 15-25(-35) cm long; leaflets in (1-)3(-4) pairs, elliptic-oblong to obovate, 10-20 × 5-11 cm; panicles 6-15 cm long, velvety brown-pubescent; fruit brown, 1,6-2,2 cm Ø, (1-)3-lobed, hairy, toxic.

Cultivated, said to be naturalized at places in W Africa.

Native of India, Sri Lanka.

Radlkofer (o.c.: 656-661) distinguished 2 forms (synonyms also given).

## SAPINDUS

## SYNONYMS:

*Sapindus abyssinicus* Fresen. = **Lepisanthes senegalensis**  
*chariensis* A. Chev., nom. = **L. senegalensis**  
*cuspidatus* Blume = **L. senegalensis**  
*guineensis* G. Don = ? **Deinbollia pinnata**  
*montanus* (Blume) Blume = **Lepisanthes senegalensis**  
*oblongifolius* (E. Mey. ex Arn.) Sond.  
= **Deinbollia oblongifolia**  
*obovatus* Wight & Arn. = **Blighia sapida**  
*pappea* Sond. = **Pappea capensis**  
*senegalensis* Juss. ex Poir. = **Lepisanthes senegalensis**  
*xanthocarpus* Klotzsch = **Deinbollia xanthocarpa**

## [SCHLEICHERA]

[**Schleicheria oleosa** (Lour.) Oken] – Macassar Oil Tree, Ceylon Oak. – Icon.: Mém. Mus. Nat. Hist. Nat. Paris 3: pl. 8 (p. 188-189), 1817 (sub nom. *Melicocca trijuga*); Fl. Males., Ser. 1, 11/3: 729, 1994.

bas.: *Pistacia oleosa* Lour. (*Anacardiaceae*)

syn.: *Schleicheria trijuga* Willd.; *Meliococca trijuga* A.-L. Juss.; *Stadmannia trijuga* Spreng.; *Cussambium oleosum* O. Kuntze

Tree to 30 m, dioecious; bole to c. 3 m in girth, clear for 6 m; branchlets terete, black when young, becoming yellowish brown to ashgrey; young parts sparsely, shortly fulvous-sericeous, glandular; crown heavy; young leaves deep purple; leaflets in (2-)3(-4) pairs, elliptic-obovate, 5-18(-25) × 2,5-9 cm, dark brown or greyish green above, brighter coloured beneath, notched at apex; inflorescences 6-15 cm long; fruit ± round, ± bilobed, c. 1,5 cm Ø, granular, yellow, pointed at apex; seed aril yellow. Cultivated for its seed oil (hairdressing, etc.) in W Africa.

Native of tropical SE Asia to India, Malesia (perhaps introduced there).

## (SCHMIDELIA)

*Schmidelia abyssinica* Hochst. = **Allophylus abyssinicus**  
*abyssinica* sensu Hook. f. 1864 = **A. bullatus**  
*affinis* Guill. & Perr., incl. var. *ciliata* A. Chev. and var. *glabra* A. Chev. = **A. africanus** var. **africanus**  
*affinis* sensu A. Chev. (? p.p.) = ? **Rhus crenulata** (*Anacardiaceae*)  
*africana* (P. Beauv.) DC. p.p. = **Allophylus africanus** var. **africanus**  
*africana* sensu Bak., F.T.A. p.p. = **A. abyssinicus**, **A. africanus**  
*alnifolia* Bak. = **A. rubifolius** var. **alnifolius**  
*decipiens* Sond. = **A. decipiens**  
*decipiens* (E. Mey. in Drège) C. Presl = **A. decipiens**  
*dregeana* Sond. = **A. dregeanus** (S. Afr.)  
*erosa* Arn. = **A. natalensis**  
*grandifolia* Bak. = **A. grandifolius**  
*hirtella* Hook. f. = **A. hirtellus**  
*leucocarpa* Sond. = **A. africanus** var. **africanus**  
*magica* (Thonn.) Bak. = **A. spicatus**  
*melanocarpa* Sond. = **A. africanus** var. **africanus**  
*minutiflora* Mattei = **A. rubifolius** var. **alnifolius**

## SCHMIDELIA

*monophylla* C. Presl = **A. dregeanus** (S. Afr.)  
*monophylla* sensu Hook. Ic. Pl. 1848 = **A. hirtellus**  
*monophylla* sensu Bak., F.T.A = **A. pervillei** fa. **pervillei**  
*natalensis* Sond. = **A. natalensis**  
*nuonensis* A. Chev. = **A. talbotii**  
*oblongifolia* Bak. = **Maesobotrya griffoniana** (*Euphorbiaceae*)  
*pinnata* (Poir.) DC. = **Deinbollia pinnata**  
*reflexa* Bak. = ? **Maesobotrya barteri** (*Euphorbiaceae*)  
*rehmanniana* Szysyl. = **Allophylus africanus** var. **africanus**  
*repanda* Bak. = **A. rubifolius** var. **alnifolius**  
*rubifolia* Hochst. ex A. Rich. = **A. rubifolius**  
*senegalensis* A. Rich. = **A. africanus** var. **africanus**  
*spicata* (Poir.) DC. = **A. spicatus**  
*touraca* A. Chev. = **A. africanus** var. **africanus**  
*thyrsoides* (Thonn.) Bak. = **Lepisanthes senegalensis**  
*undulata* C. Presl sensu Radlk. (misapplied)  
= **Allophylus decipiens**

## (SENNIA)

FRIIS, I. (1981). Notes on Somalian Sapindaceae. *Kew Bull.* 36: 139-141.

*Sennia* Chiov., nom. illegit. non Pascher 1912 (= genus of algae). Proposed by Chiovenda, Fl. Somal. 2: 145, 1932, as perhaps belonging to tribus *Schleichereae*. Radlkofer (in Engler, Pflanzenreich 4/165, Sapindaceae 2: 1507-1508, 1934) cited the genus as of uncertain position.

*Sennia sciap-sciaple* Chiov. – Icon.: idem, Fl. Somal. 2: 146, 1932, from SW-most Somalia, in lowland dry evergreen forest; a tree with imparipinnate leaves (7 leaflets) and indehiscent fruits with distinct carpophores. Shown by Friis (o.c.: 140) to be **Dialium orientale** Bak. f. (*Leguminosae, Caesalpiniaceae*).

## STADMANIA / 1

“*Stadmannia*” (Radlkofer in Engler, Pflanzenreich 4/165, Sapindaceae 1: 1009, 1933).

syn.: *Pseudolitchi* Danguy & Choux

Six species 5 of which endemic in Madagascar.

**Stadmania oppositifolia** Poir.; Lovett & al., Field guide moist forest trees Tanzan.: 252, 2006. – Icon.: Capuron in Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 19: 153, 1969; Beentje, Kenya trees, shrubs & lianas: 423, 1994; Fl. Mascareignes 76: 9, 1997; Fl. Trop. E. Afr., Sapindaceae: 33, 1998. – All of subsp. **oppositifolia** var. **oppositifolia**.

syn.: Enum. 2: 222, 1992; *Nephelium oppositifolium* (Poir.) Cordem., 1895, nom. illegit., non *N. oppositifolium* (Roxb.) Walpers, 1845-1846.

Tree, monoecious, 4-9-30 m; young branchlets ± rusty pubescent, glabrescent; bark yellow or brown, smooth, finely fissured, flaking concentrically, mottled yellow and grey; slash pink; wood hard (“iron-wood”); leaf petiole 3-7 cm long, pubescent, angled, rachis 4-10 cm; leaflets in (1-)2-4 pairs, uppermost largest, elliptic, 4-15 × 2,5-7 cm, asymmetrical at base, thick-textured, shiny above, matt beneath, glabrous apart from midrib, microscopically glandular on both surfaces; flowers yellow, scented, male & female in same inflorescence; racemes axillary, 4-12 cm long; fruit yellow, green, red, round, c. 1 cm Ø, shortly velvety pubescent, dehiscent; seed aril red, loose.

## STADMANIA OPPOSITIFOLIA

Dry evergreen forest; coastal bushland on coral rag; 0-5 m alt. (E Africa); rocky kopjes, in gorges, on alluvial soils along rivers;  $\pm$  400 m alt. (subsp. **rhodesica**).

Madagascar, Mauritius, ? Réunion (extinct ?) (subsp. **oppositifolia** var. **oppositifolia**); subsp. **oppositifolia** var. **grevei** (Danguy & Choux) Capuron (bas.: *Pseudolitchi grevei* Danguy & Choux) in Madagascar. Subsp. **rhodesica** in NE S. Africa.

Comprises 2 subspecies in our area: – subsp. **oppositifolia** var. **oppositifolia** with large leaves and long inflorescences, in N part of range; – subsp. **rhodesica** Exell, small tree with smaller leaves and inflorescences, in S part of range (Coates Palgrave, Trees south. Afr., ed. 3: 652, 2002; icon.: E. Schmidt & al., Trees and shrubs Mpumalanga...: 372-373, 2002).

## SYNONYM:

*Stadmania sideroxyton* DC. = *Stadmania oppositifolia* subsp. **oppositifolia** var. **oppositifolia**.

## ZANHA / 2

syn.: *Dialiopsis* Radlk.

Three species one of which endemic in Madagascar.

**Zanha africana** (Radlk.) Exell – Icon.: Fl. Trop. E. Afr., Sapindaceae: 15, 1998; Coates Palgrave, Trees south. Afr., ed. 3: ill. 170, 2002.

bas.: *Dialiopsis africana* Radlk.

Shrub 3-6 m tall, or tree 3,5-12-20 m, dioecious, deciduous, flowering before the leaves; branches nodular, gnarled, grey; bark dark brown to red, brittle, flaking off in patches, with orange layer beneath; leaf petiole 1-5 cm long, rusty pubescent like rhachis (4-35 cm long) and leaflets that are sometimes  $\pm$  glabrous; leaflets in 3-8 pairs,  $\pm$  ovate (to  $\pm$  round), lower pair smaller, 8-15  $\times$  4-8 cm, venation prominent, apex obtuse; male inflorescences dense heads, 1,5 cm  $\varnothing$ ; female ones tawny felted, peduncle 2 cm long, lengthening in fruit; flowers greenish, sweet-scented; drupes orange, velvety, c. 3  $\times$  2 cm, often produced in profusion, sepals persistent.

Granite ridges, kopjes; open woodland, often among rocks; deciduous woodland with *Combretum*, *Brachystegia*; sometimes riverine forest; 100-1750 m alt.

S. Africa.

Probably overlooked in the field.

**Z. golungensis** Hiern; Friis, Forest trees N. E. trop. Afr.: 195, 318 (map), 1992; Coates Palgrave, Trees south. Afr., ed. 3: 657, 2002; Figueiredo & Smith, Pl. Angola: 157, 2008. – Icon.: Aubréville, Fl. forest. soudano-guin.: 389, 1950, and Fl. forest. Côte d'Iv., ed. 2, 2: 239, 1959; Fl. Gabon 23: 147, 1973; Fl. Cameroun 16: 147, 1973; Troupin, Fl. Rwanda 2: 309, 1983; Beentje, Kenya trees, shrubs & lianas: 424, 1994; Fl. Trop. E. Afr., Sapindaceae: 15, 1998; White & al., Evergreen for. fl. Malawi: 536, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 751, 2006; Akoegninou & al., Fl. analyt. Bénin: 926, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 307, 2008; Harris & Wortley, Sangha trees: 178, 2008.

syn.: *Talisiopsis oliviformis* Radlk.; *Zanha vUILLETII* A. Chev. (with dentate crenate leaflets); *Balsamea fraxinoides* Hiern; *Commiphora fraxinoides* (Hiern) K. Schum. (*Burseraceae*).

## ZANHA GOLUNGENSIS

Tree, monoecious, deciduous, 6-15-25(-35) m, or rarely shrub 2-3 m tall; crown dense; foliage shining; flowering with the new leaves; bole irregular, dbh 0,6-1,7 m, 2,6 m in girth; bark grey-brown to reddish, flaking in papery circular pieces, with warty lenticels and petiole-scars; slash yellow, fibrous, thymol-scented; leaf axis 15-25 cm long, winged when young, sparsely hairy, glabrescent; leaflets in 3-6 pairs, elliptic-ovate, 6-11  $\times$  2-4 cm, glabrous (mature), apex acuminate, margins sometimes dentate (in saplings densely so); flowers greenish-yellow, sweet-scented; male ones in clusters at tip of peduncle 3-10 cm long, falling off early as a single unit; female ones in densely pubescent sessile clusters; drupe 1,5-2 cm long, olive-like, glabrous, pink or orange.

Deciduous woodland, often with *Combretum*, *Brachystegia*; (semi-)evergreen lowland forest; transitional rain-forest; forest gallery; mushitu; fringing forest, riparian forest in savanna (mainly so in W Africa); riverbanks and near waterfalls; granitic scree; often on rocky hills; sometimes left after forest clearings and as a shade tree in coffee plantations (Ethiopia); often on termite mounds; densely wooded ravines; closed forest canopy; forest on rocky hills in tall grass savanna, in understorey (Sudan); 300-1700 m alt.

Bark used as chew-sticks (Senegal).

Without flowers or fruit the 2 species are sometimes difficult to separate where they overlap (E Zimbabwe-Mozambique).

## PTAEROXYLACEAE / 2 g. / 2 spp.

A family of 3 genera, and 9 species (*Cedrelopsis* in Madagascar with 7 species; the two other genera in Africa, both monotypic).

Oil cavities present in the younger parts of plants.

The genera have been variously placed in or near the *Meliaceae* (*Ptaeroxylon*), *Sapindaceae* and *Rutaceae* (by APG, Angiosperm Phylogeny Group, 1998).

## BOTTEGOA / 1

In our Enumération 2: 217, 1992, placed in *Sapindaceae* (originally described there).

**Bottegoa insignis** Chiov.; Enum. 4: 660, 1997. – Icon.: Chiov., Result. Sci. Miss. Stef.-Paoli, Coll. Bot.: p. 59 and pl. 6B, 1916; Beentje, Kenya trees, shrubs & lianas: 415, 1994 (*Sapindaceae*); Thulin, Fl. Somal. 2: 253, 1999.

Slender spreading tree, 2,5-10 m; crown dense; bark grey to black, deeply fissured; young twigs reddish brown, with white downy pubescence; leaves bipinnate, 4-10 cm long; pinnae 6-12; leaflets 6-14, glaucous, sparsely puberulous; inflorescences (small cymes) from axes of fallen leaves; fruit a flat 2-celled samara, yellow(-brown) with pinkish (red) wing, 2,2-5 cm  $\varnothing$ , centre spongy, wing 1-1,5 cm wide. – Some flowers at least are bisexual; pollen has been found in so-called staminodes. No plants with male flowers have been collected. – The plant was considered dioecious (fide Fl. Trop. E. Afr., Ptaeroxylaceae: 4, 1996).

*Acacia*, *Commiphora* bushland, woodland and wooded grassland; often on hills or scarps; sometimes on limestone; usually in shallow soil over limestone rocks (Somalia); also on basaltic soils; 250-1300 m alt.



## PTAEROXYLON / 1

**Ptaeroxylon obliquum** (Thunb.) Radlk. – Sneezewood – Icon.: Engler, Pflanzenwelt Afr. 3/1B: 801, 1915; Harms in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19 b/1: 49, 1940 (both in *Meliaceae*); Palmer & Pitman, Trees south. Afr. 2: colour pl. facing p. 1003, p. 1374-1377, 1973 (photos.); Fl. Trop. E. Afr., Ptaeroxyloaceae: 3, 1996; Coates Palgrave, Trees south. Afr., ed. 3: 659, ill. 171, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 374-375, 2002; Curtis & Mannheimer, Tree Atlas Namibia: 306, 2005.

bas: *Rhus obliqua* Thunb. (*Anacardiaceae*).

syn.: *Ptaeroxylon* [*Pteroxylon*] *utile* Eckl. & Zeyh., incl. fa. *robustum* Szyszyl.; *Kirkia lentiscoides* Engl. (*Simaroubaceae*); *Harrisonia lentiscoides* (Engl.) Boas (*Simaroubaceae*).

Shrub or low-branching tree 1-16(-20) m tall, dioecious, mostly deciduous and usually flowering just before or when the new leaves appear; bole  $\pm$  30 cm  $\varnothing$  at breast height; bark (whitish) grey, at first smooth, later rough and longitudinally fissured and flaking; leaves paripinnate, opposite, crowded at ends of branchlets, rhachis slightly winged, densely puberulous, glabrescent; leaflets 6-16, markedly asymmetric, elliptic-oblancoate, obliquely cuneate at base, venation prominent above; flowers tiny, pale yellow, in contracted thyrses to 5 cm long; capsule chestnut-brown, oblong, flat, 15  $\times$  10 mm, characteristically veined, splitting into 2 persistent bilobed valves; seed with long terminal wing.

Dry evergreen *Juniperus*, *Podocarpus* forest and bushland; open woodland and scrub, especially in rocky places; also in the mist-belt of montane forests (where the tree reaches its greatest size); near sea-level-2000 m alt.

NW Namibia, N Botswana, Swaziland, S. Africa (by Germishuizen & Meyer, Pl. south. Afr., *Strelitzia* 14: 851, 2003, placed in *Rutaceae*).

Wood very beautiful, rose-red, darkening to golden brown; much sought-after (“Cape Mahogany”); contains an aromatic resin.

Sawdust is pungent, irritating, causing violent sneezing (“sneezewood”, “nieshout”). Also made into snuff. – Leaves are aromatic when bruised; browsed by livestock and game.

## MELIANTHACEAE / 1 g. / c. 3 spp.

syn.: *Natalia* Hochst.; *Rhaganus* E. Mey.

Traditionally placed in *Sapindaceae* with 2 genera in Africa. The genus *Greyia* (confined to S. Africa) was originally included, but was later excluded and placed in *Greyiaceae*. “Modern studies based on macromolecular data have ... related Melianthaceae with Greyiaceae and Francoaceae in the order Geraniales” (Ronse Decraene & al. o.c.: 59-60). – Linder (2007) treats the family in a wide sense, including *Greyia*, *Francoa* and *Tetilla*, the latter two from Chile (name of the family, cf. Reveal, o.c.).

DOWELD, A. B. (2001). The systematic relevance of fruit and seed structure in *Bersama* and *Melanthus* (Melianthaceae). *Pl. Syst. Evol.* 227: 75-103.

LINDER, H. P. (2007). Melianthaceae. In: KUBITZKI, K., ed., *The families and genera of vascular plants 9. Flowering plants – Eudicots...*: 250-259. Springer Verlag, Berlin & Heidelberg.

LINDER, H. P. & al. (2006). The evolutionary history of *Melanthus* (Melianthaceae). *Amer. J. Bot.* 93: 1052-1064.

MANCHESTER, S. R. & E. L. O'LEARY (2010). Phylogenetic distribution and identification of fin-winged fruits. *Bot. Rev.* 76: 1-82 (see p. 41).

REVEAL, J. L. (2009). (1915) Proposal to conserve Melianthaceae, nom. cons., against Francoaceae (Magnoliophyta), a “superconservation” proposal. *Taxon* 58: 1373-1374.

## MELIANTHACEAE

RONSE DECRAENE, L. P. & al. (2001). Evolution and development of floral diversity of Melianthaceae, an enigmatic southern African family. *Int. J. Plant Sci.* 162: 59-82

## BERSAMA / c. 3

MIKKELSEN, K. S. & O. SEBERG (2001). Morphometric analysis of the *Bersama abyssinica* Fresen. complex (Melianthaceae) in East Africa. *Pl. Syst. Evol.* 227: 157-182.

“All the species of *Bersama*, although varying considerably, have a very characteristic appearance: they are all densely foliated, the leaves being strong, heavy, tending to curve down and often slightly flushed with maroon to brown; the flowers and the fruit [woody capsule] are usually in firm, upstanding racemes; the bracts are conspicuous” (Coates Palgrave, Trees of southern Africa, ed. 3: 659, 2002). – “The S. African species as well as *B. lucens* and *B. swynnertonii* from the SE. of our [Flora Zambesiaca] area are distinct and easy to distinguish: the tropical species are excessively variable and difficult to classify, 54 species have been described from tropical Africa” (F. White, Flora Zambesiaca 2/2: 544, 1966). – At least 64 species have been published since 1837.

“This variation is so intense that it is seldom that two populations are found which are exactly alike. This variation is probably genetic but of such a reticulate character that it would be quite absurd to give names to every variant ... Before the nature of this genus was realised several score of species had been described and separated often on illusory characters.” – For full synonymies see Kew Bull. 1950: 233-234, 1950 (Verdcourt in Flora of Tropical East Africa, Melianthaceae: 1, 1958).

The infraspecific classification (with some later modifications) proposed by Verdcourt, l.c., is presented in our *Enumération* 2: 222-223, 1992.

In their analysis of 59 morphological characters Mikkelsen & Seberg (o.c.) came to the following conclusions (investigations focused on S. Tanzanian populations, with a few from N Tanzania and Burundi): leaf margin serrations can be used; indumentum colour is justifiable (although discoloured by drying and storage); flower disc shape and leaf rhachis width used by Verdcourt gives a distinct grouping [although the shape of the disc as a distinguishing character within *B. abyssinica* was abandoned by Verdcourt in his treatment for Flora of Ethiopia 3: 511, 1989]; the number of flowers per inflorescence can separate certain groups; the two different flower types described by White (l.c.), male with long stamens and short gynoeceum and female with short abortive stamens and long gynoeceum (both types recorded from the same individuals), may simply be heterostyly and taxonomic value seems limited; the monopodial or sympodial branching pattern used by Toussaint, (Flore du Congo belge ... 9: 386, 1960) is not reliable; width of leaflets is doubtful to use as there is overlap; capsule length (used by Toussaint) is of no certain value; the size of the flowering tree and the colour of the flowers (red or not) used by Verdcourt to separate *B. rosea* Hoyle, are doubtful characters, as they may result from an understorey habit of the plants.

“Ideally, further collections of *Bersama* in any region throughout sub-Saharan Africa are needed, in order to gain a better understanding of the intrageneric variation” (Mikkelsen & Seberg, o.c.: 176). Sterile specimens cannot be determined with certainty due to polymorphism of the leaves and branches; e.g. the indumentum on small new shoots is usually very dense.

## BERSAMA

**Bersama abyssinica** Fresen.; Jaeger & Adam, Végét. vascul. Mts Loma 1: 293 (Boissiera 32, 1980); Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 134-135, 1997; Sosef & al., Check-list pl. vascul. Gabon: 277, 2006. – Icon.: Hooker, Niger flora: pl. 29, 1849 (sub nom. *Natalia paullinioides*); Engler, Pflanzenwelt Afr. 3/2: 291, 292, 294 (sub nom. *B. usambarica*, *B. engleriana*, *B. paullinioides*); Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 245, 1959 (subsp. *paullinioides*); Adam, Fl. descr. Mts Nimba 2: 851, 852, 1971 (subsp. *paullinioides*); El Amin, Trees & shrubs Sudan: 334, 1990; Beentje, Kenya trees, shrubs & lianas: 424, 1994; Troupin, Fl. Rwanda 2: 313, 1983 (sub nom. *B. abyssinica* subsp. *paullinioides* var. *ugandensis* and var. *englerana*); F. White & al., Evergreen for. fl. Malawi: 374, 2001 (subsp. *nyassae*); Coates Palgrave, Trees south. Afr., ed. 3: 660, ill. 172, 2002; Lovett & al., Field guide moist for. trees Tanzania: 171 (subsp. *abyssinica*, 172 (subsp. *paullinioides*), 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 700, 709, 2006; Latham, Plants visited by bees... south., Tanzania, ed. 3: 29, 2007; E. Fischer & Killmann, Pl. Nyungwe Natl. Park, Rwanda: 143, 2008.

syn.: Enum. 2: 222-223, 1992; see also below; full synonymy in Mikkelsen & Seberg, o.c.: 176-178.

Tree 6-12-25 m branching low down, but also shrub 1,5-3-8 m tall; bark smooth to rough, light brown; slash yellow with copious watery yellowish sap; leaves crowded at the ends of branchlets, 0,3-1 m long, imparipinnate, with large intrapetiolar stipules; rhachis wingless to widely winged; leaflets in 5-10(-12) pairs, glabrous to hairy, lanceolate to oblong, 3,5-22 × 1-8 cm, margins entire (often in savanna) to serrate (in forest); flowers sweetly scented, white to yellowish or pink-tinged, c. 2 cm Ø, velvety, in candle-like racemes to 35 cm long; capsule round, smooth, golden velvety at first, brown to red, c. 2,5 cm Ø; seeds bright red, with yellow-orange cup-shaped aril.

In a variety of habitats: secondary evergreen rain- and semi-swamp-forests; grassland with scattered trees; scrubland; thickets; grassland; woodland; *Acacia* grassland; dry evergreen- and riparian-forests; on well-drained soils; sometimes on termite mounds; *Juniperus*, *Podocarpus* forest and degraded remnants of it; fallows; lava-plains; 18-2715 m alt.

Bioko/Fernando Poo.

A fast growing tree which can be coppiced or pollarded. Propagation by seeds, root suckers, cuttings, wild seedlings (fide Latham, o.c.). Used as a shade and avenue tree. The wood (hard, white to grey) is used for timber, furniture, etc. The root, leaf and fruit are poisonous. The fragrant flowers are much visited by bees.

A very polymorphic (aggregate) species subdivided by Verdcourt for, e.g., Flora of Tropical East Africa (Melianthaceae: 2-7, 1958) into 2 subspecies, each with a number of varieties: – subsp. **abyssinica**, with leaf-rhachis mostly wingless or only narrowly winged, floral disc annular, fruit < 2 cm long, round, red-velvety; in E part of range; – subsp. **paullinioides** (Planch.) Verdc. (syn.: *B. andongensis* Hiern; *B. coriacea* Bak. f.; *B. oligoneura* Brehmer; ? *B. tessmannii* Brehmer; *B. schweinfurthii* Brehmer; *B. subalata* Hutch. & Dalziel), with leaf-rhachis wingless to very widely winged, flower racemes congested and usually golden-hairy (not so in subsp. *abyssinica*), floral disc  $\Lambda$ -shaped or 4-lobed but never annular, fruits larger (> 2 cm long, apex pointed, golden hairy) and smoother than in typical subspecies; in W part of range to E. Africa.

In Flora of West Tropical Africa 725-726, 1958), subsp. *paullinioides* is quoted with 2 vars., viz. var. **paullinioides**, with shorter and sparingly pubescent inflorescence (12-25 cm long), thin leaflets drying dark green or greyish, 2,5-13 cm long, 0,8-5 cm broad; and var. **engleriana** (Gürke) Verdc., with longer,

## BERSAMA ABYSSINICA

densely shaggy-pubescent inflorescence, coriaceous leaflets drying pale green or greyish, 1,5-9,5 cm long, 0,8-3 cm broad; from Nigeria to E. Africa. – In addition *B. acutidens* Welw. ex Hiern, and *B. maxima* are distinguished as separate entities. The latter is also quoted as such by N. Hallé (Flore du Gabon 4: 5-10, pl. 1, 1962) who treats *B. paullinioides* on specific level.

In their work on the W. Cameroon flora (Mt Cameroon, Kupe, Mt Oku) M. Cheek and co-authors put *B. maxima* and *B. acutidens* as synonyms under *B. abyssinica* with the remark that “at least three varieties might be recognised from our material”.

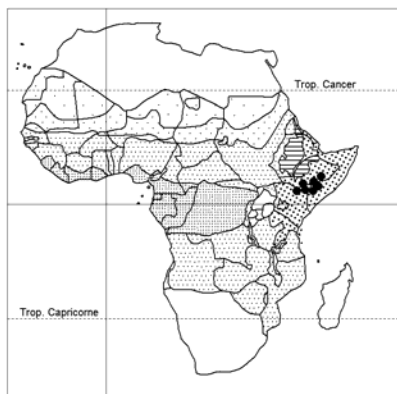
In Flora Zambesiaca (2/2: 544-546, 1966) F. White divided *B. abyssinica* into 3 subspecies: – subsp. **abyssinica**, with leaf-rhachis not winged, entire, glabrous leaflets, medium large flowers (petals 10-12 mm long), calyx red-tinged, floral disc annular (- pentagonal); afromontane, not reaching further south than Malawi-Mozambique; in evergreen forest (edges), 1200-1600-2000 m alt. – subsp. **engleriana** (Gürke) F. White [syn.: *B. abyssinica* subsp. *paullinioides* var. *engleriana* (Gürke) Verdc.], with leaf-rhachis narrowly to broadly winged, leaflets entire to deeply serrate, mostly glabrous beneath, large flowers (petals 11-18 mm long), calyx exceptionally red-tinged but densely golden-velutinous, floral disc  $\Lambda$ -shaped; in riverine forest, evergreen thicket on well-drained soil, also in *Brachystegia* woodland; at c. 800-1300-1900 m alt; occurring in Mozambique, rare in Zimbabwe, but also from Nigeria to E. Africa and Angola; this subspecies forms a link between subsp. *abyssinica* and subsp. *nyassae*; – subsp. **nyassae** (Bak. f.) F. White [syn.: *B. abyssinica* subsp. *paullinioides* var. *nyassae* (Bak. f.) Verdc.], with leaf-rhachis broadly winged, leaflets entire to deeply serrate, densely pubescent to tomentose beneath with long spreading golden hairs also present on calyx, flowers large (petals 12-21 mm long), floral disc  $\Lambda$ -shaped; afromontane, in evergreen (riverine) forest and at edges, secondary forest, sometimes termite mounds, at (600-) 1000-1800-2250 m alt; widespread in the area, also occurring north to Tanzania and Zaire. This grouping was kept by White & al. for the Evergreen forest flora of Malawi; with some interesting additions on the phenology. Subsp. **abyssinica** (with synonym *B. rosea* Hoyle) is leafless in June-July, then fruiting; flowers produced August-October. Subsp. **engleriana** is not fully deciduous, but some trees leafless in October. Subsp. **nyassae** is leafless in August-October, flowering December-January, fruiting October-November. – Subsp. **paullinioides** (Planch.) Verdc. is cited as occurring in W. Africa.

**B. rosea** Hoyle cited above as a synonym under *B. abyssinica* subsp. *abyssinica* (Malawi) was considered a separate species by Verdcourt (Fl. E. Trop. Afr.). It was sunk by Mikkelsen & Seberg (2001) into **B. abyssinica** as subsp. **rosea** (Hoyle) Mikkelsen. Its taxonomic level “is to an extent a matter of opinion”. See below under *B. rosea*.

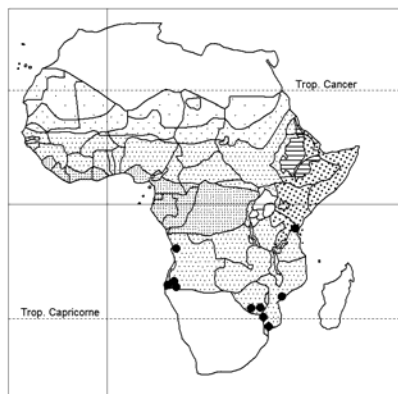
Mikkelsen & Seberg (l.c.) treated *B. abyssinica* in a very wide sense, in recognizing only 2 subspecies, viz. subsp. **abyssinica** and subsp. **rosea**.

\* \* \*

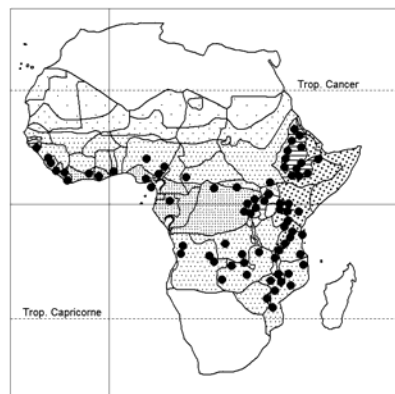
The following taxa figuring in certain earlier floras were sunk into synonymy under *B. abyssinica* aggr. by Mikkelsen & Seberg (2001). They are mapped by us as separate entities.



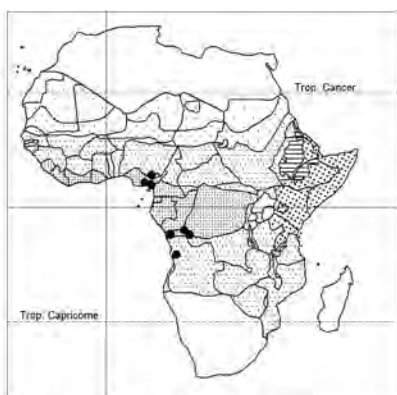
*Bottegoa insignis*



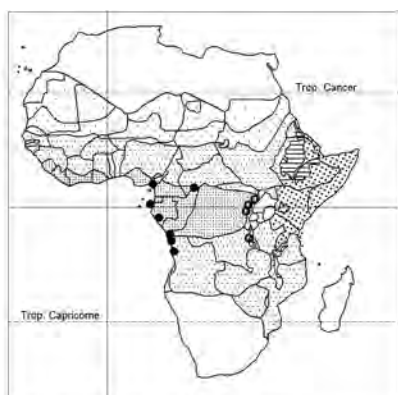
*Ptaeroxylon obliquum*



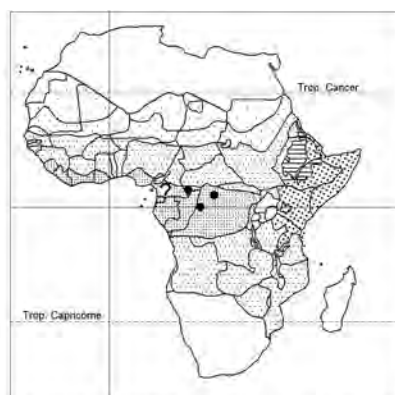
*Bersama abyssinica*



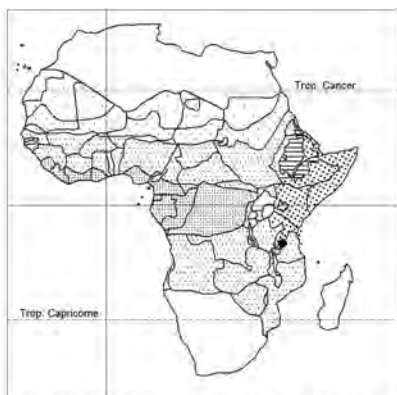
*Bersama abyssinica* aggr.  
(*B. acutidens*)



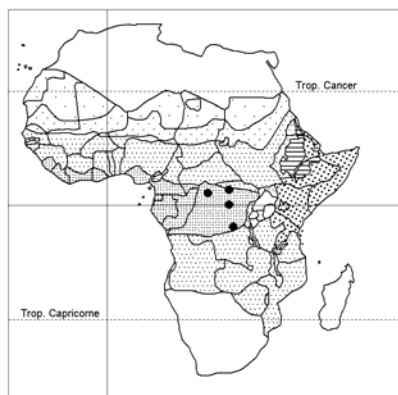
*Bersama abyssinica* aggr.  
(*B. maxima* ●, *B. mildbraedii* ○)



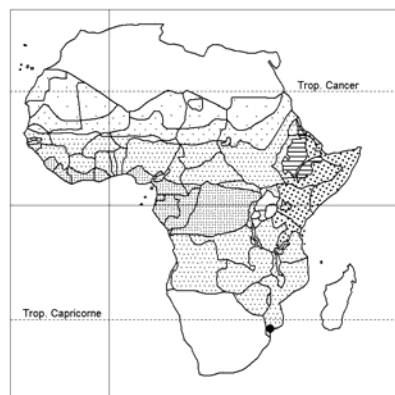
*Bersama abyssinica* aggr. (*B. palustris*)



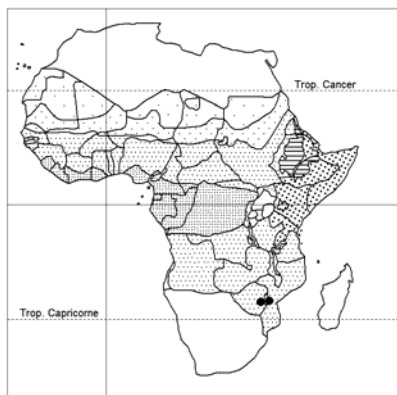
*Bersama abyssinica* aggr. (*B. rosea*)



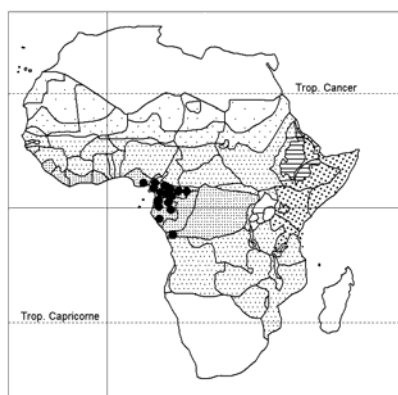
*Bersama yangambiensis*



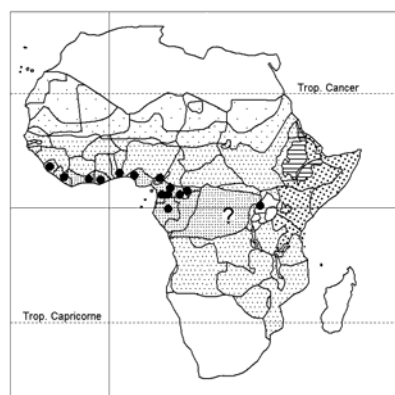
*Bersama lucens*



*Bersama swynnertonii*



*Antrocaryon klaineum*



*Antrocaryon micraster*



## BERSAMA

**B. acutidens** Welw. ex Hiern

syn.: Enum. 2: 223, 1992.

Shrub 1,8 m tall or very elegant palm-like tree 2,4-4,5(-6) m, erectly branched, glabrous except for inflorescence; branchlets terete, shining; leaves alternate, imparipinnate, 0,3-0,6 cm long, at the ends of the trunk and branches; leaflets in (2-)5-7 pairs, obovate-oblong, thin and shiny, 6,5-23,5 × 3,2 × 7,5 cm, margins entire or dentate-serrate (on the same plant), apex acutely acuminate, leaf rachis winged (in upper 1/3, wing < 6 mm broad on each side) or not, common peduncle 7,5-10 cm long; flowers pale sulphur, clove-scented, silky-hairy, disc  $\Lambda$ -shaped, in usually axillary racemes; capsule pink.

Dense primitive forests, rain-forest.

According to Verdcourt (Kew Bull. 5/2: 243, 1950) this plant resembles a very large form of *B. abyssinica* subsp. *paullinioides*, and may be very closely related. Cable & Cheek (Pl. Mt Cameroon: 84, 1998) placed it in synonymy under *B. abyssinica*, noting, however, that the material from W. Cameroon includes at least 3 varieties.

The species is cited from SE Nigeria (Ikome Div.) and ex-British Cameroon in Fl. W. Trop. Afr., ed. 2, 1/2: 726, 1958; from Zaire (Mayumbe, Bas-Congo, Kasai) in Fl. Congo belge 9: 394, 1960 (although we have some doubts about its identity); and from Angola (original description) in Cuanza Norte (Consp. Fl. Angol. 2: 94, 1954). However, its presence in E Zimbabwe is very doubtful; according to F. White (Fl. Zambes. 2/2: 547, 1966) "there is no convincing evidence" that the gatherings identified by Verdcourt (1950) belong here. "Similar juvenile foliage with deeply serrate leaflets occurs sporadically throughout the range of *B. abyssinica* subsp. *englerana*...".

*B. acutidens* is placed in synonymy under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001) and Cheek & al., Plants of Dom, Bamenda Highl., Cameroon, 2010.

**B. maxima** Bak.; Sosef & al., Check-list pl. vascul. Gabon: 277, 2006. – Icon.: Hook. Pl. 23: pl. 2268, 1893; Fl. Gabon 4: 9, 1962; Engler, Pflanzenwelt Afr. 3/2: 294, 1921 (partial).

syn.: Enum. 2: 223, 1992.

Tree 6-12 m, with candelabra-like branching; branches strong, woody, finely grey-downy when young; stipules large, 2,5-7,5 cm long; leaves (30-)75-90 cm long, imparipinnate, petiole woody, 5-7,5 cm long, rachis winged (wing 2-8 mm broad on each side), pubescent above; leaflets coriaceous, in 6-14 pairs, subsessile, elliptic, 12-26 × 4-7,5 cm, pubescent below, apex mucronate, hairy; flowers white, 13-19 mm long, in dense racemes 36-80 cm long, with strong woody peduncle 7,5-10 cm long, like the axes and calices densely yellowish-rusty pubescent; capsule 2,5 cm long, finely downy, brownish-red to purplish.

Gallery woods isolated by meadows (Angola); 100 m alt. (Gabon).

Cited by Cheek and co-authors from W (ex-British) Cameroon in synonymy under *B. abyssinica* (cf. above under *B. acutidens*). Considered a synonym under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

**B. mildbraedii** Gürke

Shrub or tree 8-14 m tall; trunk to 25-30 cm Ø; young twigs pubescent, glabrescent; stipules 3-4 cm long; leaves 20-40 cm long, imparipinnate, pubescent when young; rachis winged (wing 4-8 mm broad on each side); leaflets in 8-9 pairs, sessile, oblong or elliptic-lanceolate, 5-17 × 2-6,5 cm, dentate at least on

## BERSAMA MILDBRAEDII

upper 2/3, glabrous or sparsely hairy on midrib beneath; flowers in terminal racemes 20-50 cm long; petals 15-18 mm long, silky hairy, disc  $\Lambda$ -shaped; capsule 2,5 cm long, 2 cm broad, sub-tomentose, reddish.

Mixed bamboo forest, in valley; 2500 m alt.

Considered a synonym under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

**B. palustris** Toussaint; Harris, Vascul. pl. Dzanga-Sangha Res.: 138, 2002. – Icon.: Harris & Wortley, Sangha trees: 33, 2008.

Shrub or tree 4-6-10 m tall; trunk 20 cm Ø; leaves to 35 cm long, imparipinnate, petiole 3,5-5 cm long, glabrous; leaflets in 6-8 pairs, petiolules 3-4 mm long, blades oblong(-lanceolate), 5-12 × 1,8-4 cm; flowers unknown?; capsule with 4 winged valves, 3 cm long, 2 cm broad, velvety, red.

Seasonally flooded and swampy forests.

Considered a synonym under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

"From the little material available at Kew it appears to me that this taxon ... is more distinct and less variable than the taxa treated by Verdcourt... (1958). The strongly winged fruit and the habitat both appear to be consistent in the material treated as this species from Congo (Kinshasa) and Cameroon" (Harris, l.c.).

**B. rosea** Hoyle; Mikkelsen & Seberg in Pl. Syst. Evol. 227: 176, 2001. – Icon.: Kew Bull. 1931: 97, 1931.

syn.: *B. abyssinica* Fresen. subsp. *rosea* (Hoyle) Mikkelsen

Shrub 1,5-3 m; young branchlets striate, purplish-green, glabrous; bark brown; leaves, c. 30 cm long; leaflets 7-13, prominently petiolate, ovate to elliptic-lanceolate, 2,6-9,3 × 1,2-4,5 cm, ± glabrous, wrinkled, denticulate to serrate, venation raised and reticulate on both surfaces; flowers pink to purplish, hirsute, in ± lax drooping slender long-pedunculate racemes to 10 cm long, with fewer than 39-45 flowers per inflorescence (in the other groups/subspecies of the *B. abyssinica* aggr. with more than 39-45 flowers); petals c. 15 mm long, disc annular; fruit unknown. Rain-forest; 1800-1950 m alt.

Only known from a small area (Iringa Distr., Mufindi).

"The taxonomic level ... is ... a matter of opinion" (Mikkelsen & Seberg, o.c.: 176). "Its new status as subspecies is ... suggested for two main reasons: ... bushy forms of *B. abyssinica*, morphologically close to *B. rosea*, are known both from Mufindi, flowering at a height of only 2 m, ... of 4 m ..., bringing the size range of *B. rosea* within the range of *B. abyssinica* as reported by Verdcourt (1958). Secondly, bushes growing at Sao Hill, close to the *B. rosea* locality were ... observed by Verdcourt ... to be 'obviously related to *B. rosea*'. Thirdly, the development of a reddish tinge in the flowers of some *B. abyssinica* ssp. *abyssinica* populations appears to be fairly common ... In light of these observations, *B. rosea* in Kigogo forest may be better seen as a local population with adaptations to an understorey habit or as a result of genetic drift fixing a small, sufficiently isolated population of *B. abyssinica* ..." (Mikkelsen & Seberg, o.c.: 175-176).

**B. yangambiensis** Toussaint; Lejoly & al., Flore de la Tshopo (RD Congo), in Taxonomania 24: 2, 2008. – Icon.: Fl. Congo belge 9: 387, 1960.

Shrub or tree, 4-5 m tall, with monopodial ramification; bole 7-15 cm Ø, fistular, with broad, ogival leaf-scars, 1,8 cm long and broad; leaves clustered at tips of branches, imparipinnate,



## BERSAMA YANGAMBIENSIS

to 1 m and more long, glabrous, petiole to 33 cm long, stout, longitudinally striate; rhachis 30-50 cm long, striate; leaflets in 7-15 pairs; laminae 13-28 × 4,5-8,5 cm; racemes axillary, erect, rusty-tomentose, to 40 cm long; flowers white, petals 1 cm long; fruit pyriform, 4-5-lobed, 2 × 2,5 cm, very shortly tomentose, with 8 longitudinal furrows, red-violet; seeds red, aril orange.

Riparian- and swampy-forests; flooded forest; regrowths; islands in river; ± 470-±500 m alt.

Considered a synonym under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

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**B. lucens** (Hochst.) Szyszyl.; Coates Palgrave, Trees south. Afr., ed. 3: 660-661, 2002. – Icon.: J. M. Wood & M. S. Evans, Natal plants 1/2: pl. 88, 1899; Palmer & Pitman, Trees south. Afr. 2: 1382, 1972; E. Schmidt & al., Trees & shrubs Mpumalanga ...: 374-375, 2002; B. -E. van Wyk & al., Medicin. pl. S. Afr., ed. 2: 63, 2009.

bas.: *Natalia lucens* Hochst.

syn.: *Rhaganus lucidus* E. Mey. in Herb. Drège

Evergreen shrub, or tree, 3-10 m tall; bark pale grey to brown, rather rough; new growth reddish brown; leaves imparipinnate, 9 cm long, clustered at ends of branchlets; leaflets in 1-3(-4) pairs, obovate-oblong, 4-7,5 × 2,5-4,5 cm, leathery, shiny green, glabrous; margins thickened, undulate; venation prominent on both surfaces; flowers white-yellow, c. 6 mm Ø, on slender stalks in erect conspicuous racemes to 15 cm long; capsule round, hairy, ridged, 2 cm Ø, dull green; seeds bright scarlet, aril yellow-green, cup-shaped.

Rock-crevices; (riverine thickets; forest, forest margins; coastal dunes; S. Africa).

Swaziland, E S. Africa (5-1525 m alt.).

Leaves and roots deadly poisonous.

A very distinctive species.

**B. swynnertonii** Bak. f.; Coates Palgrave, Trees south. Afr., ed. 3: 661-662, 2002. – Icon.: Fl. Zambes. 2/2: frontispiece, 1966.

Evergreen tree 10-22 m; bark on bole rough, dark brown or brownish grey, often mottled with pale grey patches, smooth on branches; leaves to 20 cm long, imparipinnate, rhachis not winged; leaflets in 2-4 pairs, distinctly petiolulate (pinkish red), ovate-obovate to lanceolate, 8 × 3,5 cm, glossy dark green above, paler beneath, leathery, glabrous, venation prominent on both surfaces, margins entire; flowers at first whitish, turning pink and later dull purplish red, pedicellate, in slender erect racemes to 18 cm long, the flowers clustered in upper half, petals 1 cm long, tomentellous, disc Λ-shaped; capsule rugose, tomentose at first, glabrescent in patches, ± round, c. 2 cm Ø, greenish brown; seeds bright orange-red, aril yellow, cup-shaped.

Patches of evergreen forest, especially at edges; kloof forest; riverine; 1200-1800 m alt.

\* \* \*

Two further species occur in E S. Africa: **B. swinnyi** E. Phillips (± coastal) and **B. tysoniana** Oliv. (syn.: *B. stayneri* E. Phillips; *B. transvaalensis* Turrill: Swaziland-E coast).

\* \* \*

## BERSAMA

IN NEED OF FURTHER STUDY:

*Bersama magnifica* A. Chev., nom. invalid., sine descr. latin. (Rev. Int. Bot. Appl. Agric. Trop. 31: 386, 1951).

Tree 15-20 m; bole cylindrical, 50-80 cm Ø; bark grey, fissured; branchlets drooping, thick; intrapetiolar stipules 5 mm long; leaves imparipinnate, rhachis 20-25 cm long, not winged, pubescent; leaflets in 6-7 pairs, shortly petiolulate, coriaceous, glabrous, shining above, oblong-lanceolate, 8-12 × 3,5-4,5 cm, acuminate, with 8-10 pairs of lateral nerves; inflorescences terminal, 25-35 cm long, peduncle 10 cm long, axis pubescent; flowers very fragrant, yellowish white tinged pink (petals 8-10 or 12-15 mm long); ovary hairy; fruit unknown.

Edge of dense forest.

Central Afric. Rep.: Bangui-M'Baiki ("4° S"; must be an error for 4° N). Collected 10 March 1951.

*B. pachyneura* Gilg & Brehmer var. *pachyneura*

Tree 5-7-12 m; young branchlets blackish, striate, shortly subpilose; leaves chartaceous, 5-7-jugate, rhachis glabrous, not or scarcely winged, 20-25 cm long; leaflets shortly petiolulate, ± oblong, 7-12 × 3,5-4 cm, apex mucronate, margins slightly serrate, ± wavy, venation conspicuous beneath; inflorescences 15-35 cm long, bracteate; male flowers unknown; female ones white, on 1 cm long pedicels, petals c. 15 mm long, ± glabrous; fruit unknown.

Narrow rocky gallery forest in bush near the savanna zone; c. 1420 m alt.

Described as close to *B. tessmannii* Brehmer, *B. pallidinervia* Brehmer

Cameroon: Adamaua, Tchape Pass, 7°23' N × 11°55' E. Type: Ledermann 2691 (22 Febr. 1909).

*B. pachyneura* Gilg & Brehmer var. *roseostriata* Brehmer

Tree 10-12 m; flowers yellowish white with vermilion flower pedicels and reddish-striped petals c. 15 mm long.

Same ecology and locality as var. *pachyneura*.

Type: Ledermann 2836 (3 March 1909).

The species incl. vars. treated as a synonym under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

*B. pallidinervia* Brehmer

Large thick tree; young branchlets blackish, striate, subpilose; leaves imparipinnate, 6-8-jugate, subcoriaceous, rhachis 20-30 cm long, glabrous or subpilose, winged, wings 3-4 mm on each side; leaflets subsessile, elongate-ovate, 10 × 4 cm, apex ± rounded, glabrous except for some hairs on midrib beneath, margins slightly serrate, venation conspicuous on both surfaces, inflorescences subtomentose, 20-25 cm long, bracteate; male flowers unknown; female ones greenish, long-pedicellate, petals narrow, 14 mm long, subtomentose; fruit unknown.

Gallery forest.

Central African Rep.: Bosum, 6°N × 16°22'E. Type: Tessmann 265 (14 March 1914). Local name: biusé.

"Close to *B. pachyneura*."

Put in synonymy under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

*B. xanthotricha* Gilg & Brehmer

Shrub 2 m tall, or rarely tree 5-7-15 m; foliage bright green; leaves 25-35 cm long, imparipinnate, 4-6-jugate, rhachis slightly winged, glabrous in upper part; leaflets shortly petiolulate, elliptic, 8-11 × 2,5-3,5 cm, apex narrowed, glabrous except for

## BERSAMA XANTHOTRICHA

some hairs on midrib beneath, margins entire; inflorescences c. 30 cm long, rusty long-hairy, bracteate; flowers white outside, pink inside, long-pedicellate (c. 1 cm), petals c. 17 mm long, pilose; fruit unknown.

Syntypes: – Ledermann 2584, NW Cameroon, Mba-Madube (16 Febr. 1909): Gallery forest in rocky places; c. 1160 m alt. – Ledermann 2807 and 2727, Tchape Pass, in burnt savanna, 1400–1420 m alt. (Febr./March 1909).

Described as similar to *B. leiostegia* Stapf, *B. angolensis* Bak. f. Treated as a synonym under *B. abyssinica* subsp. *abyssinica* by Mikkelsen & Seberg (2001).

\* \* \*

## SYNONYMS:

*Bersama abyssinica* Fresen. subsp. *abyssinica* var. *abyssinica*, var. *gracilipes* (Mildbr.) Verdc., var. *holstii* (Gürke) Verdc., var. *kandtii* (Gilg & Brehmer) Verdc. = **B. abyssinica** subsp. **abyssinica**

*abyssinica* Fresen. subsp. *paullinioides* (Planch.) Verdc. var. *engleriana* (Gürke) Verdc. = **B. abyssinica** subsp. **engleriana**

*abyssinica* Fresen. subsp. *paullinioides* (Planch.) Verdc. var. *nyassae* (Bak. f.) Verdc. = **B. abyssinica** subsp. **nyassae**

*abyssinica* Fresen. subsp. *paullinioides* (Planch.) Verdc. var. *usambarica* (Gürke) Verdc. = **B. abyssinica** ? subsp. **engleriana**

*abyssinica* (Planch.) Verdc. subsp. *paullinioides* (Planch.) Verdc. var. *ugandensis* (Sprague) Verdc. = **B. abyssinica** subsp. **paullinioides**

*abyssinica* (Planch.) Verdc. subsp. *rosea* (Hoyle) Mikkelsen – See under **B. rosea**

*acutidens* Welw. ex Hiern = (**B. acutidens**) **B. abyssinica** aggr.

*andongensis* Hiern = **B. abyssinica** subsp. **paullinioides**

*andongensis* Hiern var. *ugandensis* Bak. f. = **B. abyssinica** subsp. **engleriana**

*angolensis* Bak. f. = (**B. acutidens**) **B. abyssinica** aggr.

*bolamensis* Brehmer = **B. abyssinica** subsp. **paullinioides**

*chippii* Sprague & Hutch. = **B. abyssinica** subsp. **paullinioides**

*chloroleuca* Brehmer = **B. abyssinica** subsp. **abyssinica**

*coriacea* Bak. f. = **B. abyssinica** subsp. **paullinioides**

*deiningeri* Brehmer = **B. abyssinica** subsp. **engleriana**

*deneckeana* Brehmer = **B. abyssinica** subsp. **engleriana**

*engleri* Gürke, nom. = **B. abyssinica** subsp. **engleriana**

*engleriana* Gürke = **B. abyssinica** subsp. **engleriana**

*erythrocarpa* Brehmer = **B. abyssinica** subsp. **abyssinica**

*faucicola* Gilg & Brehmer = **B. abyssinica** ? subsp. **nyassae**

*gallensis* Brehmer = **B. abyssinica** subsp. **abyssinica** (Ethiopia)

*giuliarellii* Chiov. = **B. abyssinica** subsp. **abyssinica** (Ethiopia)

*goetzei* Gürke = **B. abyssinica** subsp. **abyssinica**

*gossweileri* Bak. f. = (**B. acutidens**) **B. abyssinica** aggr.

*gracilipes* Mildbr. = **B. abyssinica** subsp. **abyssinica**

## BERSAMA

*hebecalyx* Gilg & Brehmer = **B. abyssinica** subsp. **abyssinica**

*holstii* Gürke = **B. abyssinica** subsp. **abyssinica**

*integrifolia* A. Rich. (1847), nom. illegit. = **B. abyssinica** subsp. **abyssinica**

*jaegeri* Gilg & Brehmer = **B. abyssinica** subsp. **abyssinica**

*kandtii* Gilg & Brehmer = **B. abyssinica** subsp. **abyssinica**

*kiwuensis* Gürke = **B. abyssinica** subsp. **paullinioides**

*leiostegia* Stapf = **B. abyssinica** subsp. **paullinioides**

*leucotricha* Brehmer = **B. abyssinica** subsp. **engleriana**

*lobulata* Sprague & Hutch. = **B. abyssinica** subsp. **paullinioides**

*magnifica* A. Chev., nom. invalid. = insufficiently known

*maschonensis* Gürke = **B. abyssinica** subsp. **nyassae**

*maxima* Bak. = **B. abyssinica** aggr.

*mildbraedii* Gürke = **B. abyssinica** aggr.

*mossambicensis* Sim = **Pseudobersama**

*myriantha* Gilg & Brehmer = **Bersama abyssinica** subsp. **nyassae**

*ninagongensis* Gürke = **B. abyssinica** subsp. **abyssinica**

*nyassae* Bak. f. = **B. abyssinica** subsp. **nyassae**

*oligoneura* Brehmer = **B. abyssinica** subsp. **paullinioides**

*pachyneura* Gilg & Brehmer, incl. var. *roseostriata* Brehmer = insufficiently known

*pachythyrsa* Brehmer = **B. abyssinica** subsp. **paullinioides**

*pallidinervia* Brehmer = insufficiently known

*palustris* Toussaint = (**B. palustris**) **B. abyssinica** aggr.

*paullinioides* (Planch.) Bak. = **B. abyssinica** subsp. **paullinioides**

*preussii* Bak. f. = **B. abyssinica** subsp. **paullinioides**

*rosea* Hoyle = (**B. rosea**) **B. abyssinica** aggr.

*schreberifolia* Brehmer = **B. abyssinica** subsp. **nyassae**

*schweinfurthii* Brehmer = **B. abyssinica** subsp. **paullinioides**

*serrata* A. Rich. = **B. abyssinica** subsp. **abyssinica** (Ethiopia)

*subalata* Hutch. & Dalziel = **B. abyssinica** subsp. **paullinioides**

*suffruticosa* Brehmer = **B. abyssinica** subsp. **abyssinica**

*tessmannii* Brehmer = **B. abyssinica** ? subsp. **paullinioides**

*ugandensis* Sprague, incl. var. *serrata* Bak. f. = **B. abyssinica** subsp. **paullinioides**

*usambarica* Gürke = **B. abyssinica** ? subsp. **paullinioides**, ? subsp. **engleriana**

*ussanguensis* Brehmer = **B. abyssinica** subsp. **abyssinica**

*volkensii* Gürke = **B. abyssinica** subsp. **abyssinica**

*xanthotricha* Gilg & Brehmer = insufficiently known

*yangambiensis* Toussaint = **B. abyssinica** aggr.

*zenkeri* Gürke ex A. Chev., nom. = **Canarium schweinfurthii** (*Burseraceae*)

*zombensis* Dunkley = **Bersama abyssinica** subsp. **nyassae**

*Natalia lucens* Hochst. = **Bersama lucens**

*paullinioides* Planch. = **B. abyssinica** subsp. **paullinioides**

*Rhaganus lucidus* E. Mey. in Herb. Drège = **Bersama lucens**

## ANACARDIACEAE / 12 g. / 162 spp.

Pantropical, with a few representatives also in temperate regions, e.g., the Mediterranean, East Asia, America. About 600 (or 850 ?) species in the 60-75 genera. Producing gums, resins and latex. The fruit is usually a drupe. Many species have edible fruits, the economically most important are Mango (*Mangifera*), Cashew Nut (*Anacardium*) and Pistachio Nut (*Pistacia*). The alien Pepper Trees (*Schinus*) are locally cultivated (and invasive).

In our Enumération (Vol. 2: 253, 1992) we indicated 223 species in tropical Africa as belonging to the *Anacardiaceae*. But after Breteler's thorough revisions of *Sorindeia* and *Tricoscypha* the number is now reduced to 162. Several species in our area are poorly known: in 1 species (= <1%) flowers are unknown; in 7 further species (= >4%) the male flowers are unknown, and in 14 (+2 ?) species (= c. 8.6%) the female flowers are unknown; in 12 (+2?) species (= c. 7.4%) the fruit is unknown and in further 7 species (= >4%) only immature fruits are known (in all = 19+2 ? species = c. 12,3%); for 2 species (= >1%) no ecology is recorded; 7 species (= >4%) are known only from the type.

AGARWAL, M. & S. GUPTA (2008). *Wood anatomy of Sapindales*. Bishen Singh Mahendra Pal Singh, Dehra Dun. VIII + 172 pp. [p. 21-45, 101-108].

BACHELIER, J. B. & P. K. ENDRESS (2009). Comparative floral morphology and anatomy of Anacardiaceae and Burseraceae (Sapindales), with a special focus on gynoeceum structure and evolution. *Bot. J. Linn. Soc.* 159: 499-571.

MARTÍNEZ-MILLÁN, M. & S. R. S. CEVALLOS-FERRIZ (2005). Arquitectura foliar de Anacardiaceae. *Rev. Mexic. Biodiversidad* 76: 137-190.

MITCHELL, J. D. & al. (2006). *Poupartopsis* gen. nov. and its context in Anacardiaceae classification. *Syst. Bot.* 31: 337-348. [With keys to the genera of Spondioideae.]

## [ANACARDIUM]

Modern native distribution in C. & S. America. A sister genus to *Fegimanra*.

[*Anacardium occidentale* L.] – Cashew – Irvine, Woody pl. Ghana: 552-553, 1961; Wickens, *Jebel Marra*: 123, 1976 (new record for Sudan); Burkill, *Useful pl. W. trop. Afr.*, ed. 2, 1: 71-73, 1985; Keay, *Trees Nigeria*, ed. 2: 367, 1989; M. Steentoft, *Flower. pl. W. Africa*: 187, 2008; Bachelier & Endress, o.c.: 536-537. – Icon.: Engler & Prantl, *Natürl. Pflanzenfam.* 3/5: 147, 1892; Engler, *Pflanzenwelt Afr.* 3/2: 177, 1921; Adam, *Fl. descr. Mts Nimba* 2: 854, 1971; Beentje, *Kenya trees, shrubs & lianas*: 425, 1994; Thulin, *Fl. Somal.* 2: 258, 1999; Latham & Konda, *Pl. utiles Bas-Congo*, ed. 2: 30, 2007; Arbonnier, *Arbres, arbustes & lianes zones sèches Afr. Ouest*, ed. 3: 136, 2009.

Shrub or tree (branching low down) 5-10-15 m tall; branches widely spreading, often drooping to ground; bark rough, grey; branchlets thick, glabrous; leaves alternate, persistent, simple, glabrous, shiny, leathery, obovate, 6,5-18 × 4-10 cm, apex obtuse or retuse; flowers yellowish or reddish, in panicles 10-25 cm long; fruit on a very thickened fleshy yellowish kidney-shaped pedicel to 7 cm long; seed kidney-shaped.

Native of tropical America (Mexico through to the Caribbean and Brazil); frequently cultivated on lagoon banks and at the coast; also in plantations; naturalized in the bush on sandy soils, in the coastal districts, rarely inland, in W and E Africa, Angola, islands of the Gulf of Guinea; 0-1400 m alt.

GANIYOU, T. (2010). Impact socio-économique et environnemental de l'*Anacardium occidentale* dans la partie septentrionale du Togo. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 182.

“Portugese adventurers dispersed it in the Seventeenth Century to Africa, India and the Far East adopting into their language

## ANACARDIUM OCCIDENTALE

a Brazilian vernacular name *caju...*” (Burkill l.c.). Adanson mentioned the plant from Senegal as early as 1750 (Y. Boulvert, *Documents phyto-géographiques guinéens*: 105, 1999).

Fossil fruits of *Anacardium* have been found in Europe/Germany (*A. germanicum* Manchester & al.) near Darmstadt in Messel oil shales (dated c. 47 million yr.) fide Manchester & al. in *Int. J. Plant Sci.* 168: 1199-1206 (2007).

For Cashew wilt disease and macro-fungi, see Sijaona in X. van der Burgt & al., eds., *Systematics and conservation of African plants*: 165-174, 2010 [in Tanzania].

## (ANAPHRENIUM)

*Anaphrenium abyssinicum* Hochst. = **Ozoroa insignis**

var. *lancoelatum* Engl. = **O. insignis** subsp. **latifolia**

var. *latifolium* Engl. = **O. insignis** var. **latifolia**

var. *mucronatum* (Bernh. ex Krauss) Engl. (sphalm. “*mucronifolium*”) = **O. obovata**

var. *obovatum* (Oliv.) Engl. = **O. obovata**

*crassinervium* Engl. = **O. crassinervia**

*kienerae* Sacleux = **O. stenophylla**

*paniculosum* (Sond.) Engl. = **O. paniculosa**

*pulcherrimum* Schweinf. = **O. pulcherrima**

*verticillatum* Engl. = **O. verticillata**

## ANTROCARYON / 3

*Antrocaryon* meaning (in Greek) “hollow nut”: there are conspicuous cavities in the hard stone of the fruit.

Tropical African genus of large forest trees with leaves in tufts at ends of branches. Flowers very small, 5-merous, polygamous; fruit a drupe.

**Antrocaryon klaineum** Pierre; Burkill, *Useful pl. W. trop. Afr.*, ed. 2, 1: 73, 1985; Harris, *Vascul. pl. Dzanga-Sangha Res.*, *Centr. Afr. Rep.*: 39-40, 2002; Sosef & al., *Check-list pl. vascul. Gabon*: 45, 2006; Figueiredo & Smith, *Pl. Angola*: 27, 2008. – Icon.: Engler, *Pflanzenwelt Afr.* 3/2: 179, Fig. 87 A-K, N-Q (sub nom. *A. soyauxii*); Raponda-Walker & Sillans, *Pl. utiles Gabon*: pl. 1 facing p. 56, 1961; Wilks & Issembé, *Arbres Guinée Equat.*: 101, 2000; Harris & Wortley, *Sangha trees*: 162, 2008. syn.: *Spondias soyauxii* Engl.

Tree 25-35 m; bole straight, cylindrical, > 3 m in girth, slightly buttressed at base; wood reddish-white (similar to mahogany but paler); bark brown to grey, fissured or vertically scaly (sometimes smooth and scarred; eaten by elephants); leaves imparipinnate; leaflets in 5-10 pairs, glabrous, with 10-14 pairs of lateral nerves; panicle c. 16 cm long; drupe yellowish, apple-like, to 2,5 cm wide, edible, with an acid taste; nut-shell thick, with 5 seeds, oily, edible.

Terra firma forest; 5-680 m alt.

Bioko/Fernando Poo.

Harris (l.c.) has pointed out, that Van der Veken's description in *Fl. Congo belge* 9: 63-64, 1960, refers to *A. micraster*. But to which species do the specimens belong?

**A. micraster** A. Chev. & Guillaumin; Adam, *Fl. descr. Mts Nimba* 4: 1495, 1975; Keay, *Trees Nigeria*, ed. 2: 377, 1989; Harris, *Vascul. pl. Dzanga-Sangha Res.*, *Centr. Afr. Rep.*: 40, 2002; Steentoft, *Flow. pl. W. Africa*: 187-188, 2008. – Icon.:



## ANTROCARYON MICRASTER

Irvine, Woody pl. Ghana: 554, 1961; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 718, 729, 2006; Harris & Wortley, Sangha trees: 162, 2008.

syn.: *A. polyneurum* Mildbr. ex J. D. Kennedy (For. fl. south. Nigeria: 187, 1936; English descr. only).

Deciduous tree 35-50 m; bole straight, cylindrical, to 1,5 m Ø, 3,5 m in girth, not buttressed at base, twisted near the top; branches stout, somewhat angled; bark thick, rough, (reddish) brown; slash red, streaked with white, exuding a fragrant resin; leaves imparipinnate, 30-60 cm long, closely and *shortly hairy* when young; leaflets in 6-10 pairs, oblong, 5-13 × 2,5-5 cm, sharply acuminate, *lateral nerves in 20-30 pairs*; flowers greenish in panicles 20 cm long; drupe (resembling a plum) yellowish, sweet-scented (mango-like), glabrous, flattened, c. 4 cm long, 5 cm Ø, edible, stone very large, resembling a *Panda oleosa*.

Terra firma high forest; rain-forest; half-deciduous forest; dry closed forest; 1050-1500 m alt. (Uganda).

In Zaire replaced by *A. nannanii*. Not yet reported from Equat. Guinea (Wilks & Issembé, l.c.). – Cf. also under *A. klaineum*.

The figure in Akoegninou & al., Fl. analyt. Bénin: 314, 2006, is not *Antrocaryon micraster* !

Pitted stones of old fruits usually abundant below mature trees (Hawthorne & Jongkind, o.c.: 728).

**A. nannanii** De Wild.; Lejoly & al., Flore de la Tshopo (RD Congo) in Taxonomania 24: 5 (2008).

Tree 20-40 m; bole straight, rarely slightly sinuous, cylindrical, 13-25 m long, 0,3-1,2 m Ø; bark grey-beige to black-olive-hued, peeling in thick, concave sheets; leaves imparipinnate, reddish when young, hairy, 20-40 cm long; leaflets in 5-9 pairs, oblong-lanceolate, long-acuminate at apex, 6-13 × 2,5-4 cm, papery, *with 20-30 pairs of lateral nerves*; flowers in lax panicles 10-30 cm long; drupe ± round, laterally flattened, c. 5 cm long and Ø, greenish yellow, slightly 5-grooved.

Primary and secondary rain-forests.

## INSUFFICIENTLY KNOWN:

*Antrocaryon schorkofii* Engl. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 179, fig. 87 L-M, 1921.

Leaflets larger than those of *A. klaineum*, to 15 cm long, softly hairy on the nerves; also fruit similar to the latter. – Only leaves and fruit known.

S Cameroon (Mindsange); type ?

## SYNONYMS:

*Antrocaryon brieyi* De Wild., p.p. (fruit) = **Antrocaryon nannanii**

*brieyi* De Wild., p.p. (leaves) = **Entandrophragma utile** (Meliaceae)

*polyneurum* Mildbr. ex J. D. Kennedy, nom. invalid. = **Antrocaryon micraster**

*soyauxii* (Engl.) Engl. = **A. klaineum**

(CALESIAM) (CALESIMUM)

*Calesiam ambacensis* Hiern = **Lannea ambacensis**

*antiscorbutica* Hiern = **L. antiscorbutica**

*rubra* Hiern = **L. rubra**

*somalense* Chiov. = **L. triphylla**

*triphyllum* (A. Rich.) Kuntze = **L. triphylla**

*welwitschii* Hiern = **L. welwitschii**

## FEGIMANRA / 3

Tropical African; sister genus to the tropical American *Anacardium*; flowers 4-merous, white, in terminal panicles; with unilocular syncarpous gynoecia, zygomorphic androecia with a single functional stamen, reflexed petals, and hypocarp (Manchester & al., Int. J. Plant Sci. 168: 1204, 2007; with a map).

**Fegimanra acuminatissima** Keay – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 719, 2006.

Shrub or tree to 7 m tall, glabrous except for the panicles; young branchlets chestnut-coloured, when dry becoming grey; leaves alternate, oblanceolate, 5-16 × 2-3,5 cm, aromatic scented when crushed, apex long-acuminate, base narrow cuneate, petiole angular, 0,3-3 cm long; also with a few much smaller leaves; panicle rather dense, puberulous, to 9 cm long, with lateral branches to 5 cm long; fruit unknown ?

Permanent swamps; sandy lake-sides.

**F. africana** (Oliv.) Pierre, Fl. for. cochinchin. (sub tab. 263, *Irvingia*, 1892); Engler & Prantl, Natürl. Pflanzenfam. 3/5: 458, 1896; Sosef & al., Check-list pl. vascul. Gabon: 45, 2006 (wrongly quoted “Bot. Jahrb. Syst. 24: 214, 1898”, should read: ibid. 36: 214, 1905). – Icon.: Engler, Pflanzenwelt Afr. 3/2: 174, 1921; Walker & Sillans, Pl. utiles Gabon: pl. 2 facing p. 58, 1961.

bas.: *Mangifera africana* Oliv.

Tree, wholly glabrous, to c. 9 m tall or more; branches very thick, drooping; bark reddish; young branchlets reddish; leaves coriaceous, simple, entire, obovate, acuminate, shiny, ± clustered towards ends of branches, mango-scented when crushed; panicles greenish, many-flowered, large, branched; fruit like that of *Anacardium occidentale*.

Sandy ground behind the shore-line or lagoons, plains near the coast; white sands; bush, woods; 5-17 m alt.

Kostermans & Bompard, The Mangoes, cite *Mangifera africana* Oliv. as a synonym under “*Irvingia barteri* Hook. f. (*Simaroubaaceae*) = *Irvingiaceae*).

**F. afzelii** Engl.; Boulvert, Documents phytogéographiques guinéens: 100 (map), 105, 1999; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 718, 2006; Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 44, 2009. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 175, 1921; F. Busson, Pl. aliment. Ouest afric.: Fig. 136, 1965.

Shrub or small tree, glabrous except for the inflorescences; branchlets thick; leaves obovate, simple, entire, rounded at apex, shortly narrowed into the petiole, 10-15 × 7-8 cm, shiny above; panicles terminal, very lax, 30-70 cm long, with long lateral branches each with puberulous cymules at the ends; flowers white to reddish; drupe obliquely kidney-shaped, subtended by a cupular growth of the floral axis.

Savanna, on sandstone and rocky places, crevices (inland), sometimes with *Parinari macrophylla*; near the sea-1000 m alt.

Seed edible.



## HAEMATOSTAPHIS / 1

**Haematostaphis barteri** Hook. f.; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 75, 1985; El Amin, Trees & shrubs Sudan: 335, 1990; Akoegninou & al., Fl. analyt. Bénin: 315, 2006. – Icon.: Trans. Linn. Soc. 23: pl. 25, 1860; Irvine, Woody pl. Ghana: 556, 1961; Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 137, 2009.

Tree 5-10 m; trunk c. 65 cm in girth; bark grey exuding a clear gum; branchlets purplish-glaucous, foliage ± glaucous; leaves imparipinnate, crowded at ends of branches, red when young; leaflets in 8-12 pairs, oblong(-elliptic), slightly emarginate at apex; flowers 3-merous, dioecious, creamy to red or pink, in slender pendulous panicles clustered at ends of branchlets, flowering after the leaves have fallen in the dry season; drupe plum-like, red-purple, smooth, c. 2 cm long, pulp and kernel edible.

(Dry) open woodland; rocky hills; stony soil; common in places; with *Commiphora*, *Boswellia*, *Lansea*, *Acacia* or with *Anogeissus*, *Terminalia brownii*, *Cassia arereh*; 400-758 m alt.

## IN NEED OF FURTHER STUDY:

*Haematostaphis purpurascens* Engl., Bot. Jahrb. Syst. 46: 333, 1911.

Tree 3-4 m tall; leaves 7-8-jugate, c. 10 cm long, purple-coloured when young; leaflets glabrous, lanceolate, 1-2 × 0,4 cm (only young leaves known); flower panicles 20-25 cm long, branched; flowers white, petals 3 mm long; fruit unknown.

*Acacia* (5-8 m tall) woodland (steppe) on rocky ground; c. 350 m alt. N Cameroon: between Tschamba (8°37'Nx12°48'E) and Doreba (8°34'Nx12°44'E). – Type probably lost: Ledermann 3155, collected in March (flowering) 1909.

Resembling "*H. Pierreana* Engl." (= *Pseudospondias longifolia*).

## SYNONYMS:

*Haematostaphis deliciosa* (A. Chev.) Pellegr. = **Dacryodes klaineana** (*Burseraceae*)

*pierreana* Engl. = **Pseudospondias longifolia**

## HARPEPHYLLUM / 1

Monotypic.

**Harpephyllum caffrum** Bernh. ex Ferdinand Krauss (C. Krauss); Coates Palgrave, Trees south. Afr., ed. 3: 540, 2002. – Icon.: J. E. Mendes Ferrão, Fruticultura tropical ...: 189, 2001; E. Schmidt & al., Trees & shrubs Mpumalanga...: 298-299, 2002; B.-E. van Wyk & al., Medicin. pl. S. Afr., ed. 2: 165, 2009.

Evergreen dioecious tree 6-15 m; trunk straight, clean, 45-75 cm Ø; bark thick, dark brown, rough; exuding watery sap when petiole picked; branches bowed upwards, candelabra-like when young; branchlets nodose due to leaf-scars, glabrous; leaves imparipinnate, crowded at tips of branchlets, 20-30 cm long, rachis slightly winged; leaflets 9-17, lanceolate to sickle-shaped, 5-10 × 1,3-2,5 cm, glabrous, dark shiny green; leaves turning red before they fall and remain c. 2 years on the tree; flowers small, whitish-yellowish green, in small branched panicles shorter than leaves; drupe oblong, plum-like, red, c. 2.5 cm long, hanging in bunches.

Riverine forest.

## HARPEPHYLLUM CAFFRUM

S. Africa, Swaziland (15-1400 m alt.); also cultivated as street tree, including in Zimbabwe. St. Helena (probably introduced).

The (sour) fruits make a good rosé wine and a jelly.

Confused with *Ekebergia capensis*.

## (HEERIA)

*Heeria arenophila* Schinz = **Ozoroa schinzii**

*argyrochrysea* Engl. & Gilg = **O. argyrochrysea**

*argyrochrysea* sensu Consp. fl. angol. 2: 122, 1954, p.p., quoad specim. Antunes 268 = **O. benguellensis**

*aromatica* Dinter = **O. crassinervia**

*aurantiaca* Van der Veken = **O. aurantiaca**

*benguellensis* Engl. = **O. benguellensis**

var. *petrophila* Engl. & Gilg = **O. argyrochrysea**

*benguellensis* sensu Consp. fl. angol. 2: 118, 1954

= **O. dekindtiana**

*crassinervia* (Engl.) Engl. = **O. crassinervia**

*dekindtiana* Engl. = **O. dekindtiana**

*dinteri* Schinz = **O. crassinervia**

*fulva* Van der Veken = **O. fulva** var. **fulva**

var. *nitidula* Van der Veken = **O. fulva** var. **nitidula**

*gossweileri* Exell = **O. gossweileri**

*homblii* De Wild. = **O. homblii**

*hypoleuca* Van der Veken = **O. hypoleuca**

*insignis* (Delile) Kuntze = **O. insignis**

var. *lanceolata* (Engl.) Engl. = **O. insignis** subsp. **latifolia**

var. *latifolia* (Engl.) Engl. p.p. = **O. insignis**

subsp. **latifolia** var. **latifolia**, **O. dekindtiana**

(Welwitsch 4408 A), **O. pulcherrima**

var. *reticulata* Bak. f. = **O. insignis** subsp. **reticulata**

*insignis* sensu Consp. fl. angol. 2: 122, 1954, p.p., quoad specim. Welwitsch 4408 = **O. benguellensis**

*kassneri* Engl. & Brehmer = **O. kassneri**

*kwangoensis* Van der Veken = **O. kwangoensis**

*longipes* Engl. & Gilg = **O. longipes**

*marginata* Van der Veken = **O. marginata**

*mildredae* Meikle = **O. mildredae**

*mucronata* Bernh. ex Krauss var. *acutifolia* Engl.

= ? **O. obovata**

*mucronata* Bernh. ex Krauss var. *obovata* (Oliv.) Engl.

= **O. obovata**

*nigricans* Van der Veken = **O. nigricans**

var. *elongata* Van der Veken = **O. nigricans** var.

**elongata**

*nitida* Engl. & Brehmer = **O. nitida**

*pallida* Van der Veken = **O. pallida**

"*paniculata*" sphalm. = **O. paniculosa**

*paniculosa* (Sond.) Kuntze = **O. paniculosa**

var. *angustifolia* Engl. = ? **O. paniculosa** var. **salicina**

*pseudoverticillata* Van der Veken = **O. pseudoverticillata**

*pulcherrima* (Schweinf.) Kuntze = **O. pulcherrima**

*pwetoensis* Van der Veken = **O. pwetoensis**

var. *subreticulata* Van der Veken = **O. pwetoensis** var. **subreticulata**

## HEERIA

*reticulata* (Bak. f.) Engl. = **O. insignis** subsp.

*robusta* Van der Veken = **O. robusta**

*schinzii* Engl. = **O. schinzii**

*schoenlandiana* Dinter, nom. nud. (Feddes Repert., Beih. 53: 61, 1928) = ? (described from S. Africa)

*stenophylla* Engl. & Gilg = **O. stenophylla**

*uelensis* Van der Veken = **O. uelensis**

var. *isotricha* Van der Veken = **O. uelensis** var. **isotricha**

*verticillata* (Engl.) Engl. = **O. verticillata**

*verticillata* sensu Fl. Congo belge 9: 21, 1961, non Engl. = **O. pseudoverticillata**

*xylophylla* Engl. & Gilg = **O. xylophylla**

## (HITZERIA)

*Hitzeria edulis* Klotzsch = **Commiphora**

## LANNEA / 27

syn.: *Calesiam* Adans. (*Calesium* Kuntze); *Odina* Roxb.; *Haberlia* Dennst.

27 species in tropical and S. Africa (+1 endemic species of S. Africa; *L. zastrowiana* Engl. & Brehmer); *L. transulta* (Balf. f.) A. R. Smith endemic of Socotra; *L. coromandelica* (Houtt.) Merr. from India, Pakistan to Malesia.

All young parts of the plants are densely covered with woolly stellate hairs; leaves imparipinnate or trifoliolate, clustered at tips of branchlets, margins entire; flowers 4-merous in panicles; fruit a fleshy drupe ("tree grapes"), usually edible.

A difficult genus in need of revision. "Diese Gattung ist eine der schwierigsten, namentlich für Bestimmungen nach trockenem, sehr brüchigem Material, erstens wegen des Diözismus, zweitens wegen der ausserordentlichen Verschiedenheit der Blätter in den Jugend- und Alterszuständen, drittens wegen der grossen Zahl der namentlich in den Baumsteppen verbreiteten Arten. Blütenlose Exemplare können leicht für *Commiphora* gehalten werden, mit denen sie auch vielfach zusammen vorkommen..." (Engler, Pflanzenwelt Afrikas 3/2: 182, 1921).

A key to the species of W Africa's dry zones is given by Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 138-139, 2009.

Several taxa are imperfectly known (material incomplete; see at end of species list). In 2 species male flowers are unknown, in ? 1 species no flowers are known.

**Lannea acida** A. Rich., incl. var. *klaineana* Aubrév., nom. invalid. – Irvine, Woody pl. Ghana: 557, 1961; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 75-76, 1985; Anonymous, Lost crops of Africa 3, fruits: 343, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 44, 2009. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 183, 1921; Aubréville, Fl. forest. soudano-guin.: 396, 1950; F. Busson, Pl. aliment. Ouest afric.: Fig. 137, 1965; Akoegninou & al., Fl. analyt. Bénin: 315, 2006; Arbonnier, o.c.: 141 and 146 (*L. microcarpa*).

syn.: *Odina acida* (A. Rich.) Oliv.; *Lannea egregia* Engl. & K. Krause; *L. djalonica* A. Chev.; *L. microcarpa* Engl. & K. Krause; *L. buettneri* Engl.; *L. glaucescens* Engl.; *L. oleosa* A. Chev.; *Sorindeia lagdoensis* Engl. & K. Krause – According to Arbonnier, o.c.: 143, *Lannea egregia* is a less pubescent form of *L. barteri*.

## LANNEA ACIDA

(Shrub or) tree, 1,5-10-18 m tall, dioecious, deciduous; bole 1,8-2,4-3 m in girth; bark silvery grey-blackish, fissured, fibrous, resisting bush-fires, yielding an edible gum; young parts with pinkish to reddish, floccose indumentum, soon ± glabrous; leaves of 7-13 leaflets, entire, long petiolulate, gummy, lanceolate, entire, 4-11,5 × 1,5-5 cm, rounded to cuneate at base, obtusely acuminate at apex, petiole 5-10 cm long; flowers greenish yellow in simple slender spikes 10-25 cm long, male ones scented; drupe ellipsoid, c. 1 cm long, glabrous, red to purplish black, with a bloom. – Flowering when leafless in dry season.

Wooded savanna; often on gravelly (deep) soils, rocky places and hills; bare granite rock; granitic hardpan; bush far from villages; very common; to 600-1600 m alt.

Planted but not cultivated on an organised basis.

**L. alata** (Engl.) Engl.; Beentje, Kenya trees, shrubs & lianas: 426, 1994; Thulin, Fl. Somal. 2: 256, 199. – Icon.: Chiovenda, Fl. Somala 2: 154, 1932; Maundu & al., Traditional food plants of Kenya: 160, 1999.

bas.: *Odina alata* Engl.

syn.: *O. minimifolia* Chiov.; *Lannea minimifolia* (Chiov.) Cufod.

Much-branched or spreading tree or shrub (1,5-)2-6 m tall; branches drooping; stem base and roots covered with brown thread-like growths resembling cotton wool; bark smooth, grey reddish, scaling off in papery strips; leaves 7-15-foliolate, crowded on short floriferous lateral branchlets or alternating on the branchlets, 1,5-5 cm long; rachis narrowly and usually interruptedly *winged*, sparsely stellate-pubescent or puberulent; leaflets 2-10 mm long and broad, incised-crenate halfway towards the apex; inflorescences (dioecious) spike-like, 1-4 cm long, clustered on short lateral branchlets and mixed with the leaves; drupe rounded or ovoid, 9-14 mm long, 9-11 mm Ø, glabrous, greenish with purple bloom, edible.

Dry *Acacia*, *Commiphora* bushlands; rocky outcrops and hill slopes; coastal forest edges; 1-1200 m alt. – Locally common; can form pure stands.

Fine fruit tree for dry lands.

Leaves resembling those of *L. obovata*. Easily confused with *Boswellia hildebrandtii* (*Burseraceae*).

Thulin (Fl. Somal.) has pointed out that the syntypes (Hildebrandt 2365, 2487) cited in Fl. Trop. E. Afr., Anacardiaceae: 12, 1986, are in fact those of *Scassellatia heterophylla* (= *Lannea schweinfurthii*).

**L. ambacensis** (Hiern) Engl.; Figueiredo & Smith, Pl. Angola: 27, 2008.

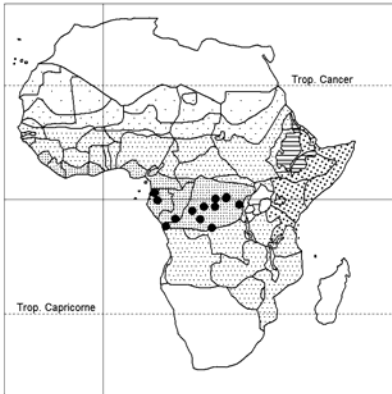
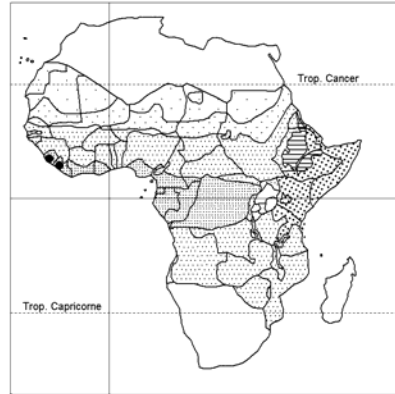
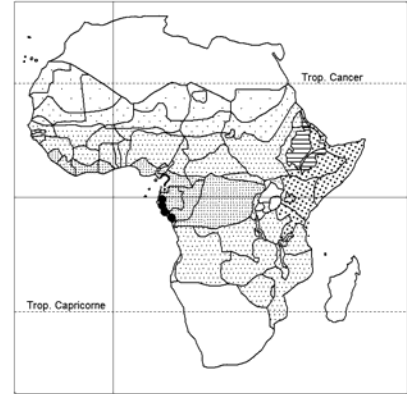
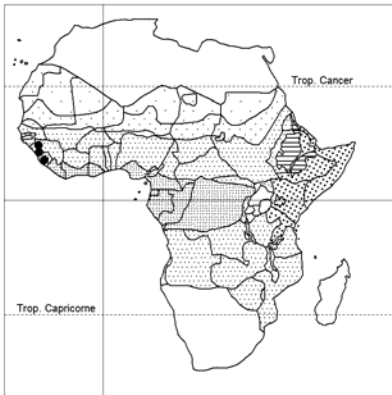
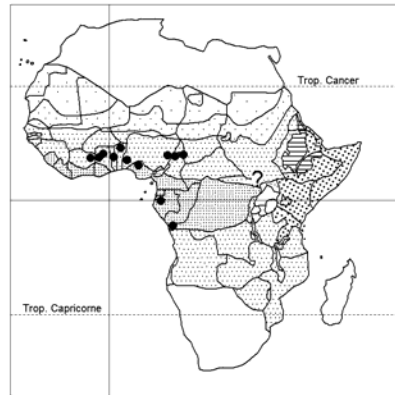
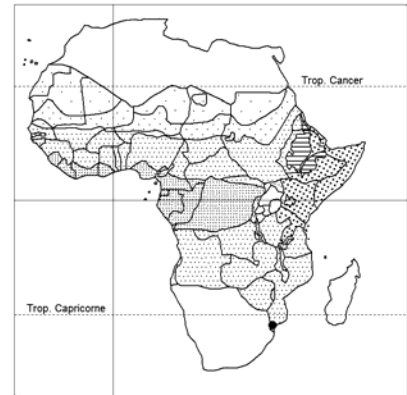
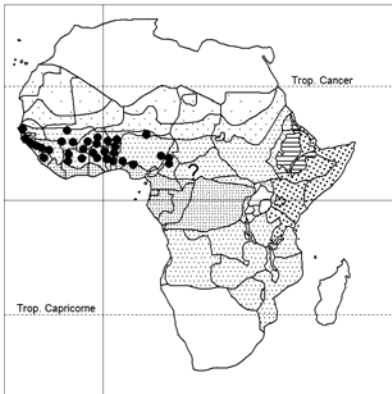
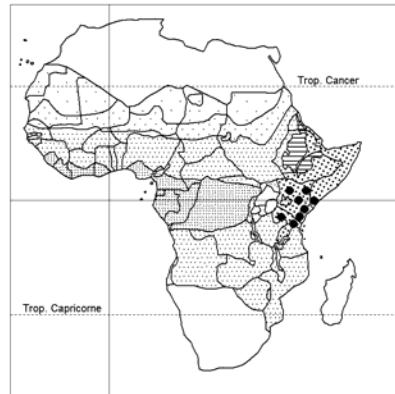
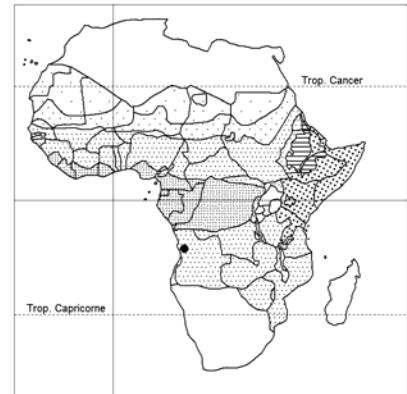
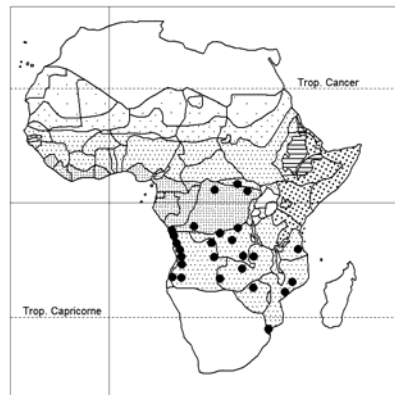
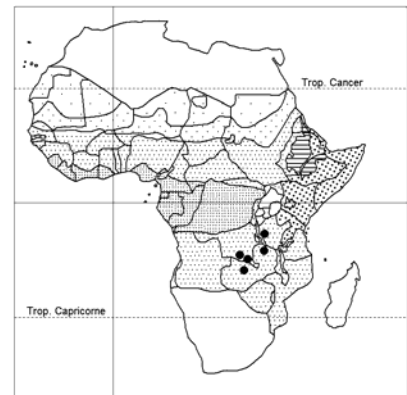
bas.: *Calesiam ambacensis* Hiern

Herb or undershrub 0,3-1 m tall with 1-3 creeping or erect stems arising from a thick hard-woody rootstock; young parts and foliage softly tawny velvety with stellate tomentum; leaves imparipinnate, to 20 cm long including a petiole of 5 cm; leaflets 5-7, ovate or rather obovate, 9,5 × 4,5 cm, dark green becoming nearly glabrous above, pallid-tawny beneath, unequal at the base; flowers blood-red, in thyrsoid panicles appearing before the leaves, emerging immediately from the ground or a little above the base of the stems; drupe ovoid, slightly compressed, 1 cm long, 0,5 cm thick, 0,8 cm broad, purplish-red.

Bushy plain: in pasture; not uncommon; abundant in open thickets; open grassy thickets; thicket after fires.

*L. ambacensis* formerly cited from NE Angola and "Rhodesia" (Zambia) = *L. edulis*.

Different from *L. edulis* (vide Bol. Soc. Brot., Sér. 2, 40: 323-326, 1966); near *L. rubra* and perhaps a variety of it.

**Antrocaryon nannanii****Fegimanra acuminatissima****Fegimanra africana****Fegimanra afzelii****Haematostaphis barteri****Harpephyllum caffrum****Lannea acida****Lannea alata****Lannea ambacensis****Lannea angolensis****Lannea antiscorbutica****Lannea asymmetrica**



## LANNEA

**L. angolensis** R. Fernandes & Mendes; Figueiredo & Smith, Pl. Angola: 27, 2008.

Shrub, slender, to 3 m tall; branchlets outspread, straight, brown when old, glabrous, striate; leaves 1-3-foliolate, near the ends of branchlets; petiole 0,5-3 cm long; lamina 2-9 × 1,5-7,5 cm, ovate or cordate at base, acuminate at apex, margins slightly undulate, green above, glabrescent, densely pale stellate-tomentose below; inflorescences spiciform, 2-6 cm long, simple, solitary, axillary; drupe 8-10 × 5-7 mm, ellipsoid, flattened, dark purple, glabrous. Xerophytic woodland; desert; 800-850 m alt.

Near *L. fulva*.

**L. antiscorbutica** (Hiern) Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 541, 2002; Izidine & al., Maputaland's Licuati Forest & Thicket, in Veld & Flora 89: 58, 2003; Figueiredo & Smith, Pl. Angola: 27, 2008. – Icon.: Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 178, 2007.

bas.: *Calesiam antiscorbutica* Hiern

syn.: *Odina acida* Ficalho, Pl. ut.: 126, 1884, non (A. Rich.) Oliv.

Shrub 5 m tall or tree to 15-18 m; trunk erect with greyish bark, cylindrical, to 0,8 m Ø; branchlets grey to almost black, glabrous or with scattered stellate hairs; leaves 3-11-foliolate, alternate, rhachis 4-43 cm long, glabrous or nearly so; leaflets lanceolate-elliptic, ovate to oblong, 4-18 × 2-8,2 cm, thin-textured, when young resinous and densely covered with pink or white glandular hairs some of which stellate, glabrescent except for domatia beneath; flowers creamy yellow in unbranched spike-like panicles clustered at tips of branchlets, appearing before the leaves and carried below them; axis 2,5-10 cm long, pinkish-salmon stellate-tomentose; drupe irregularly ovoid, 7-12 × 6-8 mm.

Deciduous woodland; dense thicket; sandy soils; forest and gallery edges; ± wooded savannas; alluvial soil; bushy places near stream; Kalahari sand; termite mounds; 50-1700 m alt.

“Abundant by the native villages, also cultivated near dwellings” (Welwitsch). Propagation from cuttings.

**L. asymmetrica** (“assymetrica”) R. E. Fries

syn.: *L. sp. A* in Fl. Zamb. 2(2): 567, 1966.

Shrub or tree 3-9 m tall; bole slender, sometimes tortuous, to 1 m tall; bark pale to purplish grey, rough; crown lax, round, sometimes broadly spreading, with greyish glabrous grooved branches; leaves appearing after the flowers, alternate or crowded at ends of twigs, 5-7-foliolate; rhachis 8-22 cm long; leaflets lanceolate, 4-12 × 1,2-4 cm, the lateral ones with asymmetric base, glabrous except for the dense tufts of white short hairs in the axis of the lateral nerves; flowers in dense fascicles in unbranched spike-like panicles 4,5-13 cm long arising before the leaves or carried below them, crowded at the apices of the branchlets, glabrous; drupe oblong-ellipsoid, compressed, 9-11 mm long, 6-7 mm Ø, glabrous.

*Brachystegia* woodland, along lake shore and in hills; lateritic or rocky soil; 780-1020 m alt.

**L. barteri** (Oliv.) Engl. – Lectotype: Barter 1109 quoad mature leaves (Kew Bull. 34: 748-749, 1980), incl. var. *charensis* Engl., var. *acutifoliolata* Engl. – Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 76-77, 1985; Keay, Trees Nigeria, ed. 2: 371, 1989; El Amin, Trees & shrubs Sudan: 336, 1990; Akoegninou & al., Fl. analyt. Bénin: 316, 2006; Steentoft, Flowering pl. W. Africa: 188, 2008. – Icon.: Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 142, 2009.

## LANNEA BARTERI

bas.: *Odina barteri* Oliv.

syn.: *Lannea egregia* Engl. & K. Krause is a less pubescent form according to Arbonnier (cf. under *L. acida*).

Spreading tree 5-18 m; bole usually straight and clear of branches for several meters, to 40 cm Ø, 1 m in girth; bark grey, spirally grooved, fairly smooth, with a gummy secretion becoming white and friable; bark slash deep red, turning brown; branchlets rusty tomentose; leaves 3-13-foliolate; rhachis 10-25 cm long, ferruginous tomentose; leaflets oblong-ovate or elliptic, 7-16 × 4-9 cm, mature ones with midrib and lateral nerves pubescent on both surfaces but more so beneath with numerous straight stiff hairs; lamina tomentose or puberulent above, pubescent or tomentose beneath; flowers glomerate, in terminal fascicles, spikes or spike-like, 6-25 cm long; drupe oblong, somewhat compressed and oblique, 10-13 mm long, 7-8 mm Ø, dull purplish, ± glabrous.

Tall grass savanna; forest edges; near rivers; forest gallery; woodland with *Albizia zygia*; rocky ground in stream valley; wooded grassland with *Combretum collinum*; savanna with *Lonchocarpus*, *Vitex cienkowskii*, clay soils; coastal to 1600 m alt.

Sometimes planted.

Very similar to and easily confused with *L. schimperi*. Records may be confused.

**L. cotoneaster** (Chiov.) Sacleux; Beentje, Kenya trees, shrubs & lianas: 427, 1994 (sub nom. *L. greenwayi*); Fl. Eth. & Eritrea 1: 231, 2009. – Icon.: Chiovenda, Fl. Somala 1: tab. XII (2 a, b), 1929.

syn.: *L. greenwayi* Kokwaro

Spreading much branched shrub or tree 0,3-6 m tall, with many stems ascending and arching, the outermost ones touching the ground, generally glabrous; bark grey; leaves 1-foliolate, rarely 3-5-foliolate, crowded on short node-like branchlets, or alternate; petiole of simple leaves 2-12 mm long, petiole + rhachis of compound leaves to 3,3 cm long; lamina ovate-elliptic to obovate-oblong, 1-4 × 1-3 cm, glabrous; male inflorescence unknown; female inflorescence to ± 8 mm long; drupe oblong, 6-9 × 4-6 mm, red, stellate-tomentose or glabrous.

Deciduous bushland; often on sand, 20-600 m alt.

**L. discolor** (Sond.) Engl.; Figueiredo & Smith, Pl. Angola: 27, 2008; Anonymous, Lost crops of Africa 3, fruits: 342, 2008. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 1196, 1199, 1972; Bot. J. Linn. Soc. 95: 128, 1987 (fructification); Coates Palgrave, Trees south. Afr., ed. 3: 542 & coul. ill. 146, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 300-301, 2002; Curtis & Mannheimer, Trees atlas Namibia: 356-357, 2005; Grant & Thomas, Sappi tree spotting, bushveld: 332-333, 2000.

bas.: *Odina discolor* Sond.

Tree, deciduous, 10-15 m; trunk 10-30 cm Ø; crown rounded; bark on bole pale grey, shallowly and irregularly fissured, exfoliating at base, smooth and grey-purple on the upper branches; floriferous branches ± short, very rugose, ± stellate-tomentose; leafy branchlets, young petioles, rhachis, juvenile leaflets densely grey or pinkish-to-rusty-reddish-tomentose; leaves appearing after the flowers, 5-11-foliolate; petiole and rhachis 13-35 cm long; leaflets very discoloured, dark green to red-brown above, with dense grey woolly covering beneath very obvious as silvery flashes in the wind, oblong-ovate to subcircular, 2,5-10,5 × 1,5-5,5 cm; flowers cream, sweetly scented, in generally unbranched spike-like inflorescences, 2,5-23 cm long, crowded at tips of short densely stellate-tomentose branches; drupe ovoid, 9-15 mm long, compressed, red to purple, pea-like, with a grape-like flavour.



## LANNEA DISCOLOR

Open woodlands of several types; especially on rocky slopes and outcrops; sandy soil; termite mounds; near forest gallery; c. 300 m alt.

Namibia, Caprivi Strip, Botswana, Swaziland, S. Africa (305-1480 m alt.).

The plant is known as “live-long” or “never die”. It coppices readily, and also grows from cut stumps or large branches jabbed into the soil (as fencing standards).

**L. ebolowensis** Engl. & Brehmer; Sosef & al., Check-list pl. vascul. Gabon: 45, 2006.

Tree; bark grey, striate, glabrous; leaves *glabrous*, imparipinnate, 1-2-jugate; lamina *red-brown* on both surfaces when dry (below more pallid); leaflets sessile or nearly so, *ovate* to *subrounded*, base broadly obtuse,  $\pm 6,5-7,5 \times 4,5-5,5$  cm, apex subacuminate, margins revolute; panicles axillary, nearly as long as the leaves; flowers unknown?; drupe glabrous, 10-11  $\times$  5-6 mm, bean-shaped.

? Forest; 500 m alt.

Near *L. schweinfurthii*, *L. acida*.

Type (Mildbraed 5547) collected in 1911, probably lost; recently collected in NE Gabon (Reitsma 1804).

**L. edulis** (Sond.) Engl.; Fl. Zambesiaca 2(2): 566-567, 1966, excl. specim. Angus 2994, Duff 186/34 (= *L. gossweileri* subsp. *tomentella*); and excl. *Odina edulis* Sond. var. *glabrescens* Engl. (= *Lannea gossweileri* subsp. *tomentella*); Nord. J. Bot. 1: 738, 1981; Engler, Pflanzenwelt Afr. 3/2: 185-186, 1921; Agnew & Agnew, Upl. Kenya wild fl.: 164, 1994; Anonymous, Lost crops of Africa 3, fruits: 341-342, 2008; Fl. Eth & Eritrea 1: 230-231, 2009. – Icon.: Fl. Congo belge 9: photo. 3 facing p. 55, 1960; Maundu & al., Tradit. food pl. Kenya: 162, 1999; E. Schmidt & al., Trees & shrubs Mpumalanga...: 300-301, 2002.

bas.: *Odina edulis* Sond.

syn.: *Lannea nana* Engl. (of var. **edulis**); *L. ambacensis* sensu Engl. 1921 p.p., non (Hiern) Engl.

Geoxylic shrublet with purple-brown stems, 3-60 cm tall, at first ferruginous-stellate-tomentose, later glabrescent, arising from a large, nodose, rugose, woody, trailing rootstock to 13 cm  $\emptyset$ , creeping just beneath the surface; with a penetrating root system; leaves 1-7-foliolate, to  $\pm 30$  cm long; petiole and rhachis 3-26 cm long; adult leaflets elliptic, oblong-ovate, ovate to subcircular, 9-25  $\times$  9-15 cm, discolorous, glabrescent to almost glabrous above, tomentose or glabrescent below; inflorescence a racemose or compressed panicle, 3-10 cm long, arising from short branches near ground-level before and below the leaves or with the young leaves; drupe ovoid, compressed, 8-11 mm long, 6-9 mm  $\emptyset$ , bright to deep red, in grape-like bunches hanging from the bare wood.

Deciduous woodland; wooded and open grassland subject to fire or seasonal flooding; short grassland with large, scattered basaltic rocks; rocky places; flat areas with thin soil over coarse gravel; dembos; open forests; 700-2200 m alt.

S. Africa, Namibia, Botswana, Swaziland (var. **edulis**).

Comprises 2 vars.: – var. **edulis** with compound leaves; wide-spread; – var. **integrifolia** Engl., very distinct, with 1-foliolate leaves; in W Tanzania, Zimbabwe. Occasionally the two vars. occur together (Zimbabwe).

Engler (Pflanzenwelt Afr. 3/2: 185, 1921) mentioned that specimens of *L. ambacensis* from NE Angola and “Rhodesia” (i.e. Zambia) represent *L. edulis*.

## LANNEA

**L. fruticosa** (Hochst. ex A. Rich.) Engl.; El Amin, Trees & shrubs Sudan: 336, 1990; Friis & Vollesen, Fl. Sudan-Uganda border...: 289, 1998. – Icon.: Fl. Ethiopia 3: 515, 1989 (leaf); Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 144, 2009.

bas.: *Odina fruticosa* Hochst. ex A. Rich.

syn.: *Lannea garuensis* Engl.; *L. multijuga* Engl.; *L. decorticans* Engl.; ? *Odina fraxinifolia* Fenzl, nom. (Fl. Trop. Afr. 1: 446, 1868); *Odina fruticosa* Hochst. ex A. Rich. var. ? *parvifolia* Oliv.

Tree or shrub 3-12 m tall; bark rough, deeply, longitudinally fissured when old; branchlets rough, with thick lenticels, glabrescent; leaves clustered at ends of branchlets, 11-17-foliolate; rhachis 15-26 cm long, glabrous or nearly so; leaflets  $\pm$  *falcate*, lanceolate-elliptic, 3-11  $\times$  1-4 cm, discolorous, sparsely pubescent to glabrous, widest near the base and tapering gradually into a broadly acuminate tip; nerves and reticulation prominent below; racemes axillary, stout, congested, *simple* or *1-3-branched near the base*, 2-12 cm long, reddish pubescent with stellate hairs; drupe oblong-ellipsoid, 7-9 mm long, 4-7 mm  $\emptyset$ , glabrous.

Wooded grassland; rocky hillsides; sometimes on black cotton soils; often gregarious; sandy hollows; with *Commiphora africana* on hill screes; woodland with *Terminalia brownii*, *Combretum adenogonium*, *Acacia seyal*; river valleys; locally common; 300-2300 m alt.

Yemen (Kew Bull. 34: 748, 1980).

**L. fulva** (Engl.) Engl.; Beentje, Kenya trees, shrubs & lianas: 426-427, 1994. – Icon.: Troupin, Fl. Rwanda 2: 287, 1983; Fl. Congo belge 9: photo. 9 facing p. 55, 1960; Bloesch & al., Plantes ligneuses Rwanda: 61, 2009.

bas.: *Odina fulva* Engl.

Shrub or straggling bushy tree 3-20 m tall, usually with short bole 0,6-1,2 m high, 20-30 cm in girth; crown spreading and much branched; bark brownish grey, flaking; leaves simple or 3-5-foliolate; leaflets discolorous, dark green and glossy above, first barely puberulous becoming glabrous, and beneath very *densely yellowish-white stellate-tomentose*, the terminal one ovate or sub-orbicular, 5-8  $\times$  4-5,5 cm, the laterals smaller; flowers yellow-green, glomerate, in spike-like or once-branched racemes 4-15 cm long, usually in leaf-axils; axis densely whitish-tomentose; drupe oblong, somewhat compressed and oblique, 7-9 mm long, 5-7 mm  $\emptyset$ ,  $\pm$  glabrous, purple, edible.

Wooded grassland, high rainfall savanna; often on rocky hills; deciduous thickets; *Brachystegia* woodland generally on termite mounds; forest edges; xerophyllous forests; woodland with *Acacia senegal*, *Grewia mollis*; bare rocky slopes with *Boswellia papyrifera*, *Terminalia brownii*, *Euphorbia magnicapsula*, *Xerophyta simulans*; 750-1650 m alt.

Confusion possible with *L. katangensis*.

**L. gossweileri** Exell & Mendonça; Kew Bull. 34: 749, 1980; Figueiredo & Smith, Pl. Angola: 27, 2008. – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga...: 300-301, 2002.

syn.: *L. edulis* (Sond.) Engl. var. *glabrescens* (Engl.) Burt Davy and sensu Fl. Zambes. 2/2: 567, 1966, p.p. quoad specim. Angus 2994, Duff 186/34 (= subsp. **gossweileri**); *Odina edulis* Sond. var. *glabrescens* Engl. (= subsp. **tomentella**).

Suffrutex with brownish glabrous or glabrescent striate ascending stems, 5-30 cm tall, arising from a horizontal trailing woody rootstock; leaves 3-11-foliolate; rhachis 3-18 cm long; leaflets

## LANNEA GOSSWEILERI

narrowly to broadly elliptic, 3-8 × 1,5-4 cm, *glabrous* or with *scattered persistent stellate hairs*, light green turning reddish brown (or almost black above) when dried; flowers yellow in dense unbranched spike-like panicle 1,5-3 cm long; drupe ovoid-oblong, flattened, 9-12 mm long, 6-10 mm Ø, red turning black. *Brachystegia* woodland; sandy plains; c. 1700 m alt.

S. Africa (subsp. **tomentella**); Namibia, Botswana (subsp. **gossweileri**); 1300-1600 m alt.

Comprises 2 subspp.: – subsp. **gossweileri** with glabrous leaves, in W part of range; – subsp. **tomentella** (R. Fern. & A. Fern.) J. B. Gillett, with stellate-hairy leaves, in E part of range, from Tanzania to S. Africa.

Easily confused with *L. edulis* where their ranges overlap, but the latter with larger leaflets.

**L. humilis** (Oliv.) Engl.; Keay, *Trees Nigeria*, ed. 2: 370-371, 1989; El Amin, *Trees & shrubs Sudan*: 337, 1990; Beentje, *Kenya trees, shrubs & lianas*: 427, 1994; Coates Palgrave, *Trees south Afr.*, ed. 3: 542, 2002. – Icon.: Aubréville, *Fl. forest. Soud.-guin.*: 396, 1950; Troupin, *Fl. Rwanda* 2: 287, 1983; Arbonnier, *Arbres, arbustes & lianes zones sèches Afr. Ouest*, ed. 3: 145, 2009.

bas.: *Odina humilis* Oliv.

syn.: *Lannea bagirmensis* Engl.; *Odina tomentosa* Engl.; *Lannea tomentosa* (Engl.) Engl.; *Commiphora taborensis* Engl. (*Burseraceae*).

Deciduous shrub or tree, 0,5-2-7,5 m tall, many-stemmed with tortuous branches; bark smooth, spongy, grey to almost black on bole, with milky latex; branches brownish grey, cylindrical, striate, lenticellate, glabrous; branchlets densely whitish tomentose with small rigid-armed stellate hairs; crown flat or spreading; leaves 3-21-foliolate, scattered along the terminal twigs or somewhat crowded on the short floriferous lateral branches; rhachis 3-15 cm long, densely stellate-tomentose; leaflets ovate to elliptic, the laterals 1-3 × 0,8-1,3 cm, the terminal 2-3 × 1-1,8 cm, obtuse at apex, *discolorous*, with sparsely *stellate* hairs mixed with *minute, simple* ones above, *densely white stellate-tomentose* beneath; inflorescences spike-like, 2-5 cm long, clustered on short lateral branches; drupe oblong, somewhat compressed and oblique, 9-13 mm long, 5-8 mm Ø, greyish tomentose.

Heavy, compact and hard sandy soils; locally common; deciduous woodland; wooded grassland; often at edges of seasonally flooded valleys and other local water catchments; sand on laterite or on gravel (plateaux); *Acacia senegal*, *Combretum* deciduous bushland; often in sites of old habitations; 700-750 (? and less) -1700 m alt.

Coppiced specimens sometimes with leaves to 22 cm long, leaflets to 9 cm long, 3 cm broad.

In W Africa readily distinguished by its small and numerous leaflets. If leafless resembling *Commiphora africana* (*Burseraceae*). Leaflets similar to those of *C. pedunculata* (but in this species dentate, not entire).

**L. katangensis** Van der Veken

Suffrutex or shrublet 0,6-1,2 m tall; stems arising from a woody rootstock, cylindrical, densely fulvous to greyish stellate-tomentose but later glabrescent; leaves *1-foliolate*; petiole 2-5 cm long, ferruginous tomentose; lamina ovate to broadly elliptic, 6-19,5 × 3,5-15 cm, at first subconcolorous (softly and densely stellate-hairy on both sides), later ± glabrous above, *whitish yellow* to greyish *tomentose* beneath; panicles spike-like, unbranched, 1,5-7,5 cm long, appearing with the leaves, *axillary*, solitary; drupe oblong-ovoid, compressed, 9-11 mm long, 7-8 mm Ø, glabrous.

## LANNEA KATANGENSIS

Deciduous woodland; seasonal swamps; sometimes in rocky places; degraded open forests; 900-1600 m alt.

Resembling *L. fulva* (confusion possible).

**L. malifolia** (Chiov.) Sacleux; Beentje, *Kenya trees, shrubs & lianas*: 427, 1994; Thulin, *Fl. Somal.* 2: 256, 1999; Ghazanfar, *Fl. Sultan. Oman* 2: 118, 2007. – Icon.: Chiovenda, *Fl. Somala* 1: pl. 12(1), 1929; Miller & Morris, *Pl. Dhofar...*: 27, 1988 (sub nom *L. triphylla*).

bas.: *Odina malifolia* Chiov.

Tree 2,5-10 m, branching from as low as 1 m; bark dark grey; leaves clustered at apices of branchlets, 1-7-foliolate; petiole 1-4 cm long in unifoliolate leaves, rhachis 6-8 cm long in compound leaves; leaflets obovate-elliptic or subrotundate 1,5-8,2 × 1-5,5 cm, *discolorous*; pseudoracemes or spike-like racemes crowded at ends of short corky branchlets, 2,5-10,5 cm long; drupe obliquely ovoid, 7-8 mm long, 5-8 mm Ø.

*Acacia*, *Commiphora* bushland; often on limestone; 300-1340 m alt.

S Oman (Dhofar), Saudi Arabia, ? SE Yemen (fide Ghazanfar, l.c.); uncommon.

**L. nigritana** (Scott-Elliot) Keay; Irvine, *Woody pl. Ghana*: 558-559, 1961; Burkill, *Useful pl. W. trop. Afr.*, ed. 2, 1: 78-79, 1985; Akoegninou & al., *Fl. analyt. Bénin*: 316, 2006; Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 728, 2006; Lisowski, *Fl. (Angiosp.) Rép. Guinée* 1: 44-45, 2009. – Icon.: Aubréville, *Fl. forest. Soud.-guin.*: 401, 1950 (sub nom. *L. afzelii*); Aubréville, *Fl. forest. Côte d'Iv.*, ed. 2, 2: 203, 1959; Keay, *Trees Nigeria*, ed. 2: 373, 1989.

bas.: *Odina nigritana* Scott-Elliot

syn.: *Lannea afzelii* Engl.; *L. grossularia* A. Chev.; *L. dahomensis* A. Chev., nom., p.p.; *L. glaberrima* Engl. & K. Krause; see also note below.

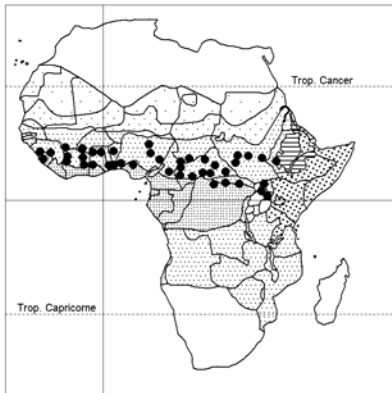
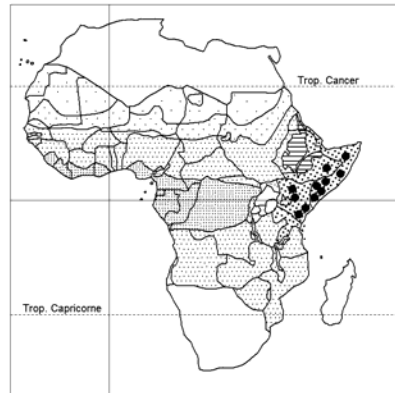
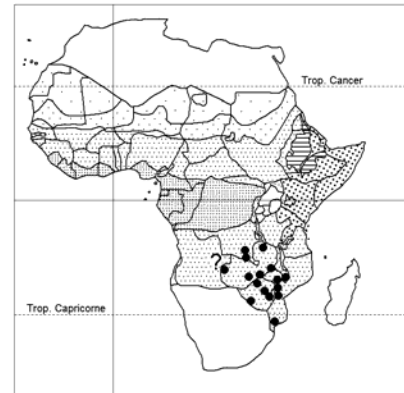
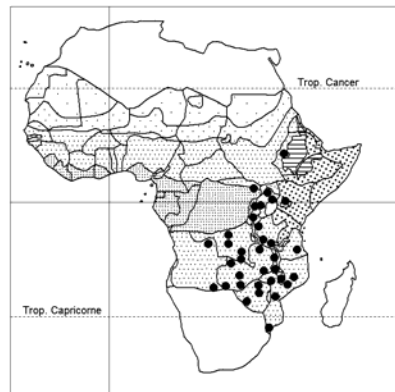
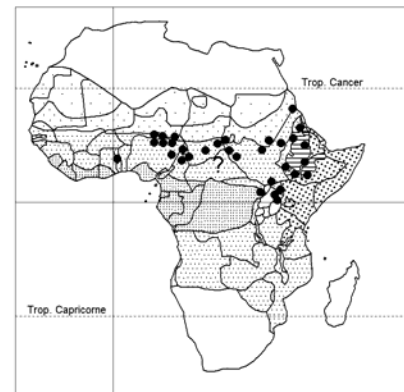
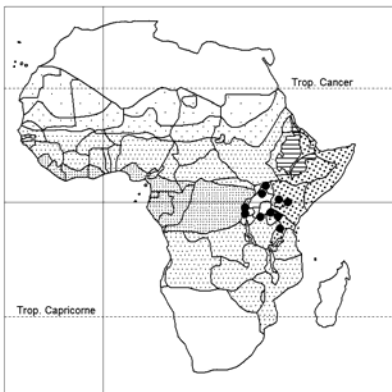
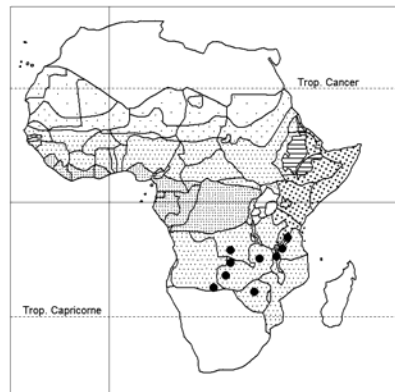
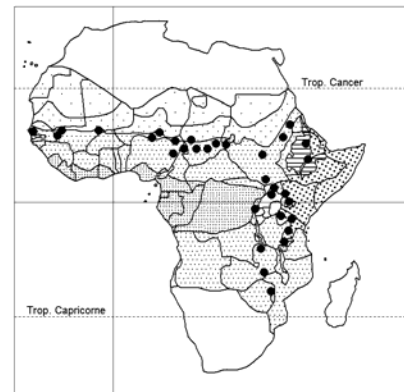
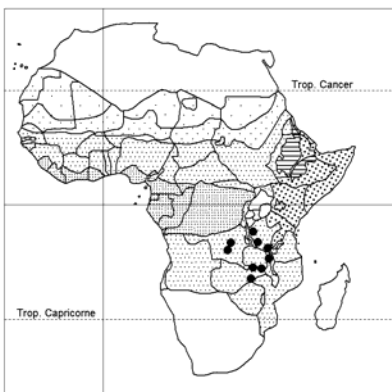
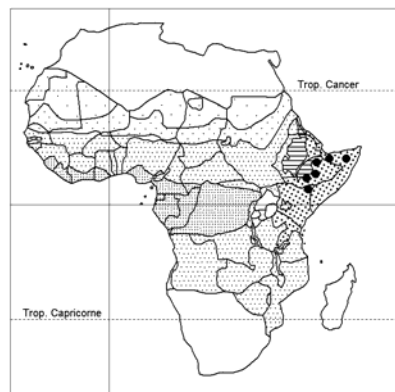
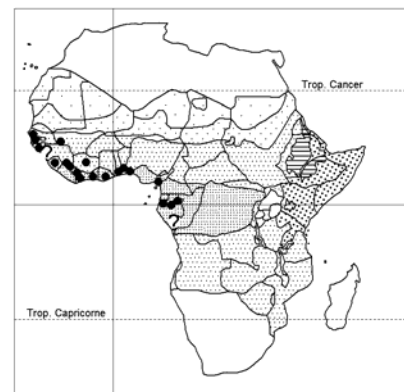
Tree 8-15 m, sparsely branched, branches widely spreading; trunk to 1 m in girth; bark grey, fairly rough, slash reddish-pink, exuding a sticky sap; branchlets glabrous or pilose only when young; leaves imparipinnate, leaflets in 2-5 pairs, oblong-lanceolate, long-acuminate, very asymmetric at base, 6-10 × 3-5 cm, with a long-stalked terminal leaflet; inflorescences unbranched, 15 cm long or more, clustered at ends of branchlets, glabrous, appearing when tree is leafless; drupe black, c. 7 mm Ø, ovoid, edible.

Extreme dry types of forest (var. **nigritana**); stony soil in coastal savanna; fringing forest, forest gallery; niayes; doleritic plateau; sometimes common; drier parts of secondary growth of the savanna in the forest zone; 5-718 m alt.

Comprises 2 vars.: – var. **nigritana** (Senegal to Bénin), with glabrous young shoots; – var. **pubescens** Keay (syn.: *L. afzelii* var. *pubescens* Aubrév., nom. nud.), Aubréville, *Fl. forest. soud.-guin.*: 403, 1950), with hairy young shoots (Ivory Coast to Nigeria, mainly savanna).

Often planted in villages for the fruit (Ivory Coast; Centr. Afr. Rep. fide Tisserant).

Note: As Keay has pointed out (*Bull. Jard. Bot. Brux.* 26: 204, 1956) the name *Odina nigritana* Scott-Elliot 1894 was overlooked, “probably because Engler [*Bot. Jahrb. Syst.* 24: 494, 1898] wrongly cited the type specimen (Sc. Elliot 4769) under *Lannea acida* A. Rich.”. – He further mentioned that a specimen at BM, collected by Don in Sierra Leone and quoted by Hooker in his *Niger flora* (p. 286, 1849) under *Odina oghigee* (G. Don) Hook. f. is *Lannea nigritana* (not *Spondias oghigee* G. Don which “is most probably only a form of *Spondias mombin* L.”).

**Lanea barteri****Lanea cotoneaster****Lanea discolor****Lanea ebolowensis****Lanea edulis****Lanea fruticosa****Lanea fulva****Lanea gossweileri****Lanea humilis****Lanea katangensis****Lanea malifolia****Lanea nigritana**



## LANNEA NIGRITANA

In Oliver, Fl. Trop. Afr. 1: 448, 1868, the same specimen was already dealt with: “*Spondias Oghigee* and *S. Zanzee* Don, Gen. Syst. II. 79, I cannot quite satisfactorily determine... *S. Oghigee*, collected at Sierra Leone by Don, in the herbarium of the British Museum, is evidently an *Odina*... I have quoted it as a doubtful synonym of *O. acida*.”

**L. obovata** (Hook. f. ex Oliv.) Engl. – Icon.: Thulin, Fl. Somal. 2: 167, 1999.

bas.: *Odina obovata* Hook. f. ex Oliv.

syn.: *O. cuneifoliolata* Engl.; *Lannea cuneifoliolata* (Engl.) Engl.; *L. obcordata* (Engl.) Engl.; *Odina obcordata* Engl.; *Commiphora bricchettii* Chiov.; *Boswellia bricchettii* (Chiov.) Chiov. (*Burseraceae*). – All based on sterile material.

Shrub or tree to 7 m tall, often with a swollen trunk base; bark smooth, purplish-brown; branches stout, divaricate, stellate-tomentose when young; leaves 3-17-foliolate, sparsely to densely stellate-tomentose at least when young; rhachis sometimes narrowly winged; leaflets oblanceolate to broadly obovate, 5-18 × 4-11 mm; male flowers unknown; female ones in axillary stellate-tomentose raceme-like spikes; drupe ovoid-oblong, 4-5,5 × 2,5-3,5 mm, red, glabrous.

Rocky limestone slopes; 15-1000 m alt.

**L. rivae** (Chiov.) Sacleux; Beentje, Kenya trees, shrubs & lianas: 427, 1994. – Icon.: Chiovenda, Miss. Biol. Borana, Racc. Bot.: 160, 1939 (sub nom. *L. cufodontii*); Maundu & al., Traditional food plants of Kenya: 163, 1999.

Deciduous shrub or tree, 2-9 m tall; crown flat, spreading; bark thick, rough, brownish grey; leaves mostly 1-foliolate, occasionally some 3-foliolate, crowded on short stout node-like branchlets; petiole 0,5-4 cm long; lamina obovate to elliptic, 4-10 × 2,5-8 cm, young ones floccose-stellate-tomentose on both surfaces, remaining so especially beneath; panicles spike-like, 1-3 cm long, clustered on short lateral branchlets; axis densely whitish tomentose; flowers fragrant! (unscented in *L. triphylla*); drupe ovoid, 10-14 mm long, 7-11 mm Ø, densely stellate-tomentose, edible.

Wooded grassland; deciduous bushland; rocky lava areas; with *Commiphora africana* on rocky slopes; margins of *Juniperus* forest; 350-2030 m alt.

Inner bark chewed for its sweet taste and as a source of water.

Resembling *L. triphylla* (ranges overlapping).

**L. rubra** (Hiern) Engl., incl. var. *angustifolia* Engl., var. *latifolia* Engl., ? var. *elongata* Van der Veken and ? var. *serrata* Van der Veken (the latter two with flowers unknown) from S Zaire. – Figueiredo & Smith, Pl. Angola: 27, 2008.

bas.: *Calesiam rubra* Hiern

Undershrub 5-60 cm tall arising from a woody rootstock; stems 5-10 cm tall, glabrescent; leaves 5-13-foliolate; petiole 10-15 cm long, tomentose with stellate hairs; leaflets sessile, linear, base subacute, 2-12 × 0,7-4,5 cm; ± pubescent on both surfaces; panicles 3-6 cm long arising from near the soil; flowers polygamous, blood-red, appearing before the full development of the young leaves; drupe ovoid, glabrescent, ± oblique, sometimes compressed, 10 mm long, 6-8 mm broad, 5-6 mm thick.

Lateritic plateau, slightly wooded; meadow and open forest on gravelly soils; dry bushy pastures; secondary *Berlinia*, *Brachystegia* woodland; rocky places; 1700-1900 m alt.

## LANNEA

**L. schimperi** (Hochst. ex A. Rich.) Engl., incl. var. *stolzii* (Engl. & Brehmer) R. Fern. & A. Fern., var. *glabrescens* (Engl.) J. B. Gillett, and var. *tisserantii* Aubrév. (Fl. forest. soud.-guin.: 399, 403, 1950; dwarf form in Oubangui-Chari); Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 79-80, 1985; El Amin, Trees & shrubs Sudan: 337, 1990; Beentje, Kenya trees, shrubs & lianas: 427, 1994. – Icon.: Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 347, 1952; Troupin, Fl. Rwanda 2: 286, 1983; Maundu & al., Traditional food plants Kenya: 164, 1999; Fl. Congo belge 9: 59, 1960; Fl. Trop. E. Afr., Anacardiaceae: 20, 1986; Puff & Sileshi Nemomissa, Pl. Simen: 119, 2005; Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 147, 2009.

bas.: *Odina schimperi* Hochst. ex A. Rich.

syn.: *Lannea rufescens* Engl., incl. var. *bijuga* Bak. f.; *L. stolzii* Engl. & Brehmer; *Odina schimperi* var. *glabrescens* Engl.

Shrub or tree 2-15 m tall; crown spreading; bole short, to 45 cm Ø; branches twisted; bark dark grey, reticulate, yielding a gum; twigs stout; leaves appearing after flowers and fruits, alternate or crowded at the end of spur-shoots, 5-13-foliolate; rhachis 8-33 cm long, densely pinkish rusty-tomentose becoming glabrescent; leaflets elliptic to ovate, 5-15,5 × 3-7,5 cm, the lateral ones asymmetric, at first densely pink rusty-tomentose on both surfaces becoming stellate-hairy above and rusty-tomentose beneath, finally glabrous above, to glabrescent below; panicle unbranched, spike-like, arising before the leaves or carried below them, crowded at the end of the short corky branches; male to 22 cm long, female to 8 cm long; axis tomentose; drupe obliquely ovoid, compressed, 8-14 × 4,9 mm, glabrous, wine-red.

Various types of deciduous woodland and wooded grassland; savanna; sometimes on termite mounds; rocky slopes, outcrops on volcanic, limestone and basement complex; woodland with *Pterocarpus* or with *Combretum collinum*, *C. molle*, *Steganotaenia araliacea*, or with *Combretum molle*, *Cussonia arborea*, *Stereospermum kunthianum*, *Erythrina abyssinica*, *Entada abyssinica* etc.; 800-2200 m alt.

Polymorphic species with some distinct local variants (cf. Fl. Ethiopia 3: 518, 1989). Var. *stolzii* (in southern part of range) is based on indumentum differences.

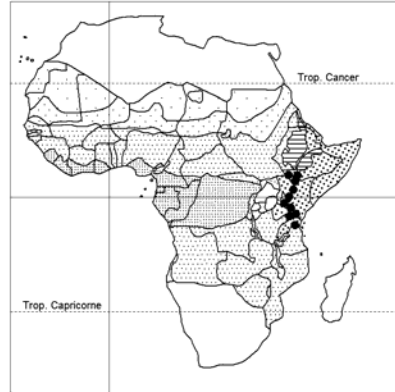
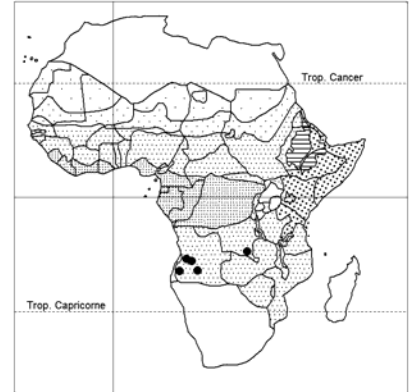
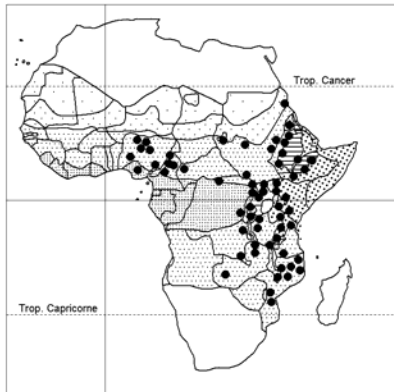
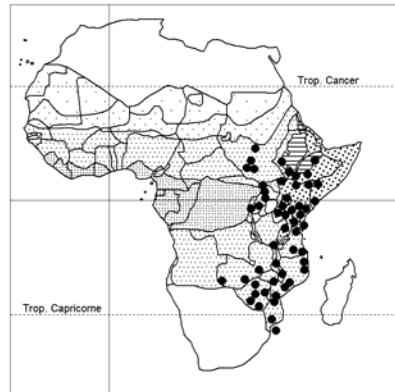
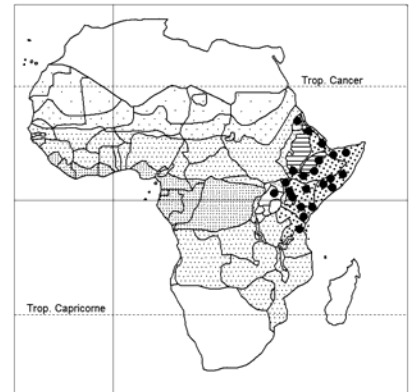
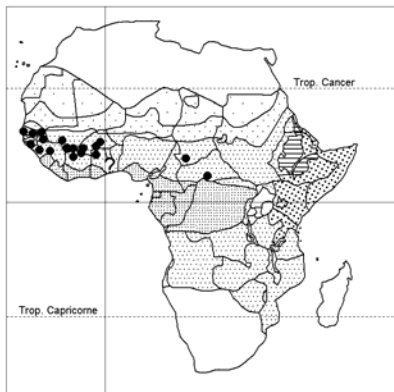
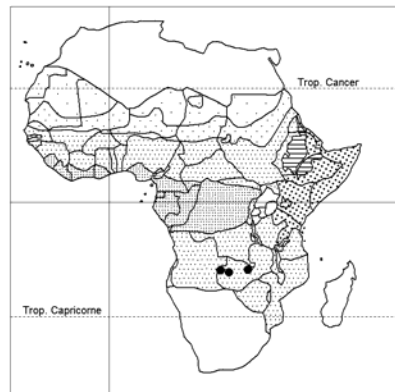
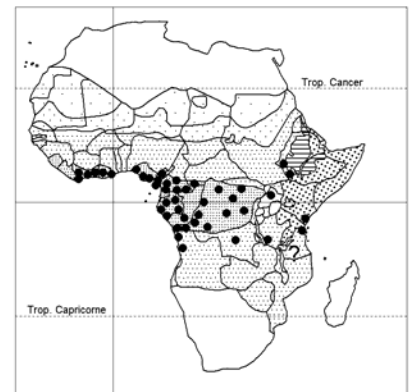
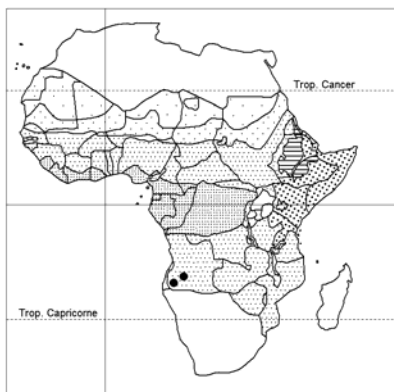
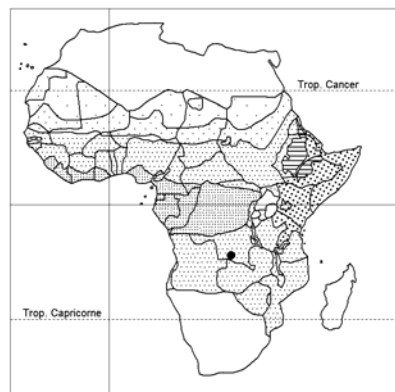
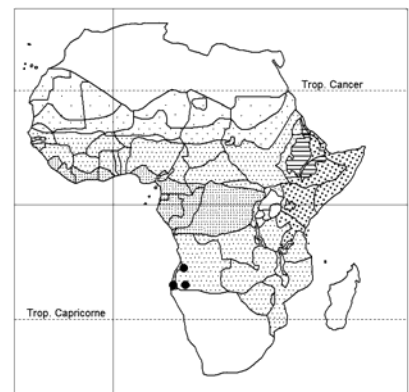
Resembling *L. edulis* (a suffrutex!), difficult to distinguish unless the collector indicates size of plants.

**L. schweinfurthii** (Engl.) Engl.; Kew Bull. 34: 751, 1980; El Amin, Trees & shrubs Sudan: 337, 1990; Coates Palgrave, Trees south. Afr., ed. 3: 543, 2002. – Icon.: Troupin, Fl. Rwanda 2: 287, 1983 (sub nom. *L. stuhlmannii*); Fl. Trop. E. Afr., Anacardiaceae: 24, 1986 (*L. schweinfurthii* var. *stuhlmannii* and form approaching var. *schweinfurthii*); Beentje, Kenya trees, shrubs & lianas: 428, 1994; Maundu & al., Traditional food plants Kenya: 161, 1999; Thulin, Fl. Somalia 2: 257, 1999; E. Schmidt & al., Trees & shrubs Mpumalanga...: 300, 303, 2002 (var. *stuhlmannii*); Curtis & Mannheimer, Tree atlas Namibia: 359, 2005 (var. *stuhlmannii*); Fl. Ethiopia 3: 515, 1989.

bas.: *Odina schweinfurthii* Engl.

syn.: Enum. 2: 225, 1992 (with varieties); *Commiphora poren-sis* Engl. (*Burseraceae*; Kew Bull. 28: 27, 1973); *Scas-sellatia heterophylla* Chiov., types Somalia, Senni 221 etc.; to be added: syntypes Hildebrandt 2365 & 2487 of *Lannea alata* (cf. above p. 160).

Shrub or tree 3-22 m tall, irregularly branched; crown spreading or rounded with drooping branchlets; bark grey or brown, reticulate, flaking off in fragments to 10 cm long; leaves clustered at apices of branchlets, 3-13-foliolate, rarely unifoliolate, rhachis 5-22 cm long, glabrous or nearly so; leaflets glabrous or with

**Lannea obovata****Lannea rivae****Lannea rubra****Lannea schimperi****Lannea schweinfurthii****Lannea triphylla****Lannea velutina****Lannea virgata****Lannea welwitschii****Ozoroa argyroschrysea****Ozoroa aurantiaca****Ozoroa benguellensis**

## LANNEA SCHWEINFURTHII

stiff white hairs nearly always in the axils of the nerves (sometimes pubescent on both surfaces); terminal leaflet elliptic to reniforme, 2-9 × 1,7-6 cm, symmetric at base, lateral leaflets 3-11 × 2-5,3 cm, asymmetric at base; all leaflets caudate; racemes spike-like or little branched panicles, 2-40 cm long, arising with the leaves, subglabrous or thinly pubescent; drupe oblong-ellipsoid, compressed, 8-12 × 6-8 mm, red or brown, edible.

Wooded grassland; coastal forests; deciduous or semi-evergreen woodland and bushland; dry forests; river valleys; termite mounds in *Pterocarpus* woodland; open *Acacia* woodland; stony soils, rocky outcrops; 1-1850 m alt.

S. Africa, Botswana, Swaziland, Caprivi Strip.

Kokwaro (Fl. Trop. E. Afr., Anacard.: 23-26, 1986) recognized 3 varieties for the area: var. **schweinfurthii**, var. **acutifoliolata** (Engl.) Kokwaro, and var. **stuhlmannii** (Engl.) Kokwaro, based on shape and indumentum of leaflets: – var. **stuhlmannii**, with broad obtuse leaflets on the coast; – var. **acutifoliolata**, with narrower leaflets and acuminate apices, in forests; and a 4<sup>th</sup> variety, var. **tomentosa** (Dunkley) Kokwaro, in the S part of species range, with pubescent leaves. – Thulin (Fl. Somal. 2: 258, 1999) considers the distinction between var. *stuhlmannii* and var. *schweinfurthii* “very unclear” and prefers not to use the varietal name.

RAMOVHA, L. I. (2007). Bark anatomical descriptions of *Lannea schweinfurthii* var. *stuhlmannii* (Engl.) Kokwaro. *S. Afric. J. Bot.* 73: 309.

Sometimes (without flower or fruit) confused with *Sclerocarya birrea* growing in similar areas (the latter with more pairs of leaflets distinctly stalked). According to Ramovha (l.c.) the bark of *Lannea schweinfurthii* is distinctive.

**L. triphylla** (A. Rich.) Engl.; Beentje, Kenya trees, shrubs & lianas: 428, 1994; Thulin, Fl. Somalia 2: 256, 1999. – Icon.: Maundu & al., Traditional food plants Kenya: 165, 1999.

bas.: *Odina triphylla* A. Rich.

syn.: *Calesium triphyllum* (A. Rich.) Kuntze; *Calesiam somalense* Chiov.; *Odina somalensis* (Chiov.) Senni; *Lannea somalensis* (Chiov.) Cufod.; *Odina cinerea* Engl.; *Lannea cinerea* (Engl.) Engl.; *Lanneoma velutina* Del. 1842, non *Lannea velutina* A. Rich. 1832, nec *Odina velutina* (A. Rich.) Walp. 1842.

Deciduous shrub or tree 2-5 m tall; crown spreading; bark rough, brownish grey; branches flexible; leaves usually 3-foliolate, very rarely 1- or 5-foliolate, often crowded on short node-like branchlets; petiole to 6 cm long; terminal leaflet obovate, 1-6,5 × 1-7,2 cm; laterals usually smaller, discolorous, young ones densely floccose-stellate-tomentose on both surfaces (upper one later with sparse stellate and simple hairs, lower one remaining whitish densely tomentose with both stellate and simple hairs); panicles spike-like, 1-3 cm long, clustered on short lateral branchlets; axis densely whitish tomentose; drupe ovoid, 6-9 mm long, 5-8 mm Ø, densely stellate-tomentose, somewhat longitudinally ridged, red, edible.

Wooded grassland; often on stony hills; rocky slopes; *Acacia*, *Commiphora* bushland on well drained sandy soils; 50-1650 m alt.

Arabia (Oman/Dhofar, Kew. Bull. 34: 748, 1980; Yemen, Willdenowia 32: 246, 2002), with a wide variability in the stellate indumentum of the fruits.

Some specimens approaching *L. cotoneaster*. May easily be confused with *L. rivae* but leaves different. Has been confused with *L. malifolia* (see above, p. 164).

## LANNEA

**L. velutina** A. Rich.; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 80, 1985; Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 45, 2009. – Icon.: Guillemain, Perrottet & Richard, Fl. Senegambiae tent. 1: pl. 42, 1832; Berhaut, Fl. ill. Sénégal 1: 256, 1971; Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 148, 2009.

syn.: *Odina velutina* (A. Rich.) Oliv.

Shrub or tree 2-8-15 m tall; bole to 50 cm Ø; leaves to 25 cm long (petiole 2-5 cm), 7-11-foliolate, sometimes 3-foliolate, often crowded at tips of branchlets; leaflets ovate, 4-12 × 3-7 cm, tomentose-velvety and reddish when young, later sometimes glabrous above; lower surface with simple hairs, upper one with simple and stellate hairs on the nerves; raceme terminal, tomentose, to 15 cm long; drupe ovoid, pubescent, ± 1 cm long, red-orange, edible.

Wooded savanna, on various types of soil; edge of lateritic hardpan (very abundant) in savanna; lateritic scree; gravel; sandy places.

The bark yields a red-brown dye.

**L. virgata** R. Fern. & A. Fern.

Dioecious shrub; ? annual stems several, arising from a woody rootstock, 60-90 cm tall, simple or ramose, cylindrical, striate, at first densely reddish-tomentose becoming glabrescent; petiole and rhachis 13-18 cm long, slender, tomentose or glabrescent; leaflets 7-15, suborbicular, ovate or oblong, 4,5-10,5 × 2,5-4,5 cm, apex with an acumen to 1 cm long, base rounded to cordate symmetric or slightly asymmetric, petiolules to 0,9 cm long, at first ± densely reddish-stellate-tomentose on both sides; inflorescences spike-like, 1,5-6 cm long, dense, crowded in fascicles; drupe 9-10 × 6-7 × 3 mm, oblong, asymmetric, compressed, red. Leaves arising before the flowers.

*Brachystegia* woodland; sometimes in swamps; termite mounds.

**L. welwitschii** (Hiern) Engl.; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 80-81, 1985; Beentje, Kenya trees, shrubs & lianas: 428, 1994; Lejoly & al., Flore de la Tshopo (RD Congo) in Taxonomia 24: 5, 2008; Anonymous, Lost crops Africa 3, fruits: 344, 2008. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 729, 2006; Steentoft, Flower. pl. W. Africa: 186, 2008; Aubréville, Fl. forest. Côte d’Iv., ed. 2, 2: 201, 1959; Harris & Wortley, Sangha trees: 163, 2008.

bas.: *Calesiam welwitschii* Hiern

syn.: *Lannea acidissima* A. Chev. (of var. **welwitschii**).

Tree 10-30 m; bole straight, cylindrical, usually scarcely buttressed, branching low, 0,7-1 m Ø, 2,5 m in girth; bark greyish, fairly smooth but with numerous lenticels and with conspicuous pits (like shot marks); slash thick, reddish, with clear, very sticky exudate; twigs and young foliage pinkish, with small stellate hairs, soon glabrescent; leaves clustered at tips of branchlets, rhachis 10-25 cm long; leaflets (3-)5-7(-13), broadly elliptic-ovate, 7-15 × 5-7,5 cm, long-acuminate; panicles 5-20 cm long, appearing among or shortly before the leaves at ends of shoots, axis stellate-hairy; drupe black, flattened, ellipsoid, resembling a tick, c. 6 mm long, viscous, resinous, smelling of turpentine, edible. Wood very light.

Deciduous, half-deciduous and secondary forests; *Celtis*, *Milicia*, *Aningeria altissima* forest; dry or moist forest; especially common in or near swamps in rain-forest; 1-1250 m alt.

Annobon, Bioko/Fernando Poo.



## LANNEA WELWITSCHII

Comprises 2 vars.: – var. **welwitschii**, widespread, with ± glabrous, large leaflets; – var. **ciliolata** Engl. (syn.: *L. amaniensis* Engl. & K. Krause), in SE Kenya, Tanzania, with smaller leaflets pubescent to glabrate with simple and stellate hairs; “it seems that the rank of subspecies should be considered for the East African taxon” (Friis, Forest trees N.E. Trop. Afr.: 203, 1992).

Sometimes cultivated (fide Lejoly & al., l.c.).

TAXA IN NEED OF FURTHER STUDY (many types probably lost):

*Lannea acuminata* Engl. – Tree 25-30 m; bark grey, densely lenticellate; young leaves light green, glabrescent, 12-15 cm long; leaflets 5-7, (ovate-)lanceolate, 6 × 2,8 cm, long-acuminate; inflorescences 10 cm long; fruit unknown.

Type: Ledermann 6445, Cameroon: Lom (= ? Lum, 4°43'Nx 9°43'E) (very) open rain-forest; December 1909.

*L. chevalieri* Engl. – Branchlets, leaf petioles and lower surface of leaflets grey-tomentose; leaves c. 4 cm long (?), probably 40 cm); leaflets 11, oblong, ± sessile, lower ones to 6 cm long, upper ones 8-10 cm long, all c. 4 cm broad; inflorescences 8-10 cm long, axis densely pilose; fruit 1 cm long, 5 mm broad, 4 mm thick.

Type: Chevalier 7702, Centr. Afr. Rep.: Ndellé – Mamoun, Dar Rounga, Koundé; March 1903.

*L. cinerascens* Engl. – Tree 5-7 m, with thick (c. 1 cm) branches and branchlets; bark grey, striate, glabrous; young leaves pubescent, 15 cm long, dark green to blackish when dried; leaflets 7-9, oblanceolate-oblong, 3,2 × 1,4 cm; inflorescences 10 cm long; fruit unknown.

Type: Ledermann 3040, Cameroon: Mashita-Kondscha (7°59'Nx 12°15'E); dense wooded savanna, c. 600 m alt.; March 1909.

*L. glabrescens* Engl. – Branchlets striate, sparsely lenticellate, with grey or brownish bark; young leaves pubescent, soon glabrescent, dark brown when dried, 12-15 cm long; leaflets 3-5, ovate(-oblong), 5-7 × 2,5-4 cm; inflorescences sparsely ferruginous pilose, soon glabrescent, 10 cm long; fruit unknown.

Type: Tessmann 560, Cameroon: Campo area (Bebai-Akum); September 1908.

*L. lagdoensis* (Engl. & K. Krause) Mildbr.

bas.: *Sorindeia lagdoensis* Engl. & K. Krause

Tree 12-15 m, wide spreading; branchlets glabrous, shortly puberulous when young; bark grey to light brown; leaves somewhat coriaceous, light green with yellow-whitish nerves, 20-26 cm long; leaflets 5-9, ovate-lanceolate, 6-10 × 3-5 cm; inflorescences 10 cm long; fruit unknown.

Type: Ledermann 4375, Cameroon: Lagdo, near Garua (9°03'Nx13°41'E); mountain slope with granite boulders, open forest, c. 300 m alt.; very common and characteristic; June 1909.

Collected again by Mildbraed (Nr. 8923 bis, July 1915) at Figil-Golombe, on a granitic hill in forest; sterile (Logone-Garua area; Bot. Jahrb. Syst. 65: 28, 1932).

*L. ledermannii* Engl. – Tree 12-15 m; branchlets thick, shortly ferruginous-tomentose when young, glabrescent; bark brown, rough, lenticellate; leaves simple, oblong-obovate, lamina 10-15 × 5-7,5 cm, petiole 3,5-5 cm long, sparsely pubescent above, densely grey-brownish pubescent below especially on main nerves; inflorescences at tips of branchlets, ferruginous-

## LANNEA LEDERMANNII

tomentose; fruit unknown. – “Impossible to determine” (Aubréville, Fl. forest. soud.-guin.: 400, 1950).

Type: Ledermann 2467, Cameroon: Tibati (6°25'Nx12°33'E); in swampy depressions of the sudanian wooded-savanna zone; February 1909.

*L. longifoliolata* Engl. & K. Krause – Branchlets sparsely puberulous when young, soon glabrescent; bark ash-grey with darker lenticels; leaves 3-foliolate, 25 cm long; leaflets elongate-oblong(-lanceolate), 8-10 × 2,5-3 cm, acuminate; inflorescences ferruginous-pilose, branched, 15-18 cm long; fruit unknown.

Type: Tessmann 890, Cameroon, Campo area: Akonango-Bendambejus, and Equatorial Guinea, Rio Campo (2°21'Nx 9°49'E); March 1909.

*L. ? sessilifoliolata* Engl. (“sessilifoliata”). – Branchlets and leaves greyish pilose; leaves 7-9-foliolate, tufted, 15-25 cm long; leaflets sessile, oblong, 6-7 × 2,5-3 cm.

Type: A. Chevalier 9763, SW Chad: Baguirmi area: Kolkélé and Moïto; November 1903.

“Imperfectly known species resembling in habit *L. barteri*”.

*L. tibatisensis* Engl. – Tree 12-16 m; branchlets glabrous; bark dark brown, densely lenticellate; young leaves pubescent, soon glabrescent, 20 cm long; leaflets 7-9, shortly petiolulate (3-6 mm), ovate(-oblong), 5-8 × 3-4,5 cm, shortly acuminate; inflorescences 6-10 cm long, sparsely ferruginous-stellate pilose; fruit unknown.

Type: Ledermann 2444, Cameroon: Tibati (6°25'Nx 12°33'E), on a broad canal surrounding the town; January 1909.

*L. zenkeri* Engl. & K. Krause; Sosef & al., Checklist pl. vascul. Gabon: 45, 2006. – Tree 10-15 m; branchlets ferruginous-tomentose when young, later glabrous; bark dark grey, smooth; leaves dark brown when dried, 24-28 cm long; leaflets 5-7, petiolulate (3-6 mm), ovate(-elliptic), 10-15 × 5-7,2 cm; inflorescences densely ferruginous-tomentose, 12 cm long; fruit unknown.

Type: Zenker 2511, Cameroon: Bipinde (3°06'Nx10°30'E); rain-forest; February 1902. Gabon: Le Testu 1467 (P). Also in Equatorial Guinea ?

## SYNONYMS:

*Lannea acidissima* A. Chev. = **Lannea welwitschii**

var. **welwitschii**

*acuminata* Engl. = ?

*afzelii* Engl. = **L. nigritana**

var. *pubescens* Aubrév. = **L. nigritana** var. **pubescens**

*alata* (Engl.) Engl., syntypes Hildebrandt

(= *Scasselatia heterophylla*) = **L. schweinfurthii**

*amaniensis* Engl. & K. Krause = **L. welwitschii**

var. **ciliolata**

*ambacensis* sensu Engl. 1921, p.p., non (Hiern) Engl.

= **L. edulis**

*ambigua* Engl. = **L. schweinfurthii** (var. **schweinfurthii**)

*bagirmensis* Engl. = **L. humilis**

*buettneri* Engl. = **L. acida**

*chevalieri* Engl. = ?

*cinerascens* Engl. = ?

## LANNEA

- cinerea* (Engl.) Engl. = **L. obovata**  
*cufodontii* Chiov. = **L. rivae**  
*cuneifoliolata* (Engl.) Engl. = **L. obovata**  
*dahomensis* A. Chev., nom., p.p. = **L. nigritana**  
*decorticans* Engl. = **L. fruticosa**  
*djalonica* A. Chev. = **L. acida**  
*edulis* (Sond.) Engl. var. *glabrescens* (Engl.) Burt Davy and  
sensu Fl. Zambes. 2/2: 567, 1966, p.p. = **L. gossweileri**  
subsp. **gossweileri** and subsp. **tomentella**  
*egregia* Engl. & K. Krause = **L. acida** (cf. also under  
**L. barteri**)  
*floccosa* Sacleux = **L. rivae**  
*garuensis* Engl. = **L. fruticosa**  
*glaberrima* Engl. & K. Krause = **L. nigritana**  
*glabrescens* Engl. = ?  
*glaucescens* Engl. = **L. acida**  
*gossweileri* Exell & Mendonça var. *tomentella* R. Fern. &  
A. Fern. = **L. gossweileri** subsp. **tomentella**  
*greenwayi* Kokwaro = **L. cotoneaster**  
*grossularia* A. Chev. = **L. nigritana**  
*kerstingii* Engl. & K. Krause = **L. barteri**  
*kirkee* Burt Davy = **L. schweinfurthii** (var. **schweinfurthii**)  
*lagdoensis* (Engl. & K. Krause) Mildbr. = ?  
*ledermannii* Engl. = ?  
*longifoliolata* Engl. & K. Krause = ?  
*microcarpa* Engl. & K. Krause = **L. acida**  
*minimifolia* (Chiov.) Cufod. = **L. alata**  
*multijuga* Engl. = **L. fruticosa**  
*nana* Engl. = **L. edulis** var. **edulis**  
*obcordata* (Engl.) Engl. = **L. obovata**  
*oleosa* A. Chev. = **L. acida**  
*rufescens* Engl., incl. var. *bijuga* Bak. f. = **L. schimperi**  
*ruspolii* Engl. = **L. schimperi**  
*schweinfurthii* (Engl.) Engl. var. *stuhlmannii* (Engl.)  
Kokwaro = **L. schweinfurthii** (var. **schweinfurthii**)  
*sessilifoliolata* Engl. = ?  
*somalensis* (Chiov.) Cufod. = **L. triphylla**  
sp. A sensu Fl. Zambes. 2/2: 567, 1966  
= **L. asymmetrica**  
sp. I sensu White, For. fl. N. Rhod.: 21, 1961  
= **L. gossweileri** subsp. **tomentella**  
*stolzii* Engl. & Brehmer = **L. schimperi**  
*stuhlmannii* (Engl.) Engl. = **L. schweinfurthii**  
var. *brevifoliolata* Engl. = **L. schweinfurthii**  
(var. **schweinfurthii**)  
var. *oblongifoliolata* Engl. = **L. schweinfurthii**  
(var. **schweinfurthii**)  
var. *tomentosa* Dunkley = **L. schweinfurthii**  
var. **tomentosa**  
*tibatensis* Engl. = ?  
*tomentosa* (Engl.) Engl. = **L. humilis**  
*zenkeri* Engl. & K. Krause = ?

(LANNEOMA)

*Lanneoma velutina* Delile = **Lannea triphylla**

## [MANGIFERA]

Some 57 species in the Indomalaysian region (maps in Kostermans & Bompard, o.c.: 4, 18).

CAMPBELL, R. (2008). The mangos of Africa. *Trop. Gard. (Fairchild)* Summer 2008: 21-24.

KOSTERMANS, A. J. G. H. & J.-M. BOMPARD (1993). *The Mangoes: Their botany, nomenclature, horticulture and utilization*. Academic Press, Harcourt Brace & Company, Publishers, London, etc. XVI + 233 pp.

NAIR, P. T. (1995-1996). *The mango in Indian life and culture*. [Part-I], 1 vol. III + p. 1-681 [682] (1996). – *Idem*. [Part-II], 1 vol., p. 683-1060 (1995). Bishen Singh Mahendra Pal Singh, Dehra Dun.

[*Mangifera indica* L.] – Mango – Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 81-83, 1985; Kostermans & Bompard, o.c.: 88-107; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 718, 2006. – Icon.: Jacquin, Ic. plant. rar. 2: pl. 337, 1786-1793; Andrews, Bot. Repos. 6: pl. 422, 1805; Engler & Prantl, Natürl. Pflanzenfam. 3/5: 146, 1892; Engler, Pflanzenwelt Afr. 3/2: 176, 1921; Sim, Forest fl. Portug. E. Afr.: pl. 27, 1909; Adam, Fl. descr. Mts Nimba 2: 855, 1971; Thulin, Fl. Somal. 2: 259, 1999; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 190-191, 2007; Kostermans & Bompard, o.c.: 22-23, fig. 61 plate section; Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 149-150, 2009.

Tree, branched, evergreen, 10-40 m; bole stout, straight; bark greyish-brown, fissured, with resinous gum; crown heavy, dense, dome-shaped; all parts when broken with smell of unripe mangoes (turpentine); leaves alternate, simple, entire, glabrous, oblong-lanceolate, acuminate, to 25 × 4.5 cm, with conspicuous reticulate venation, looping and joining lateral nerves; flowers polygamous in the same, upright, (sub-)terminal widely branched panicles 8-40-60 cm long, 2-10 cm broad; drupe glabrous, variable in size and shape, rounded-ovoid-oblong, sometimes laterally depressed, 8-30 × 7-12 cm, green to yellow or red. Kernel starchy, can be eaten roasted, dried or pickled.

Cultivated for its fruits nearly everywhere up to 1500 m alt. in our area; subsontaneous in places, especially in coastal areas, in farmbrush, thickets, riverine vegetation. Also an excellent shade and avenue tree if grown from seed (good fire break). Also grown as a boundary tree around forests.

Native of India. Dispersed from there by early Portuguese voyagers, and “certainly into E Africa under the influence of Arab traders”. It seems to have reached W Africa, not by the land connexion, but much later via the New World (fide Burkill, l.c.).

## SYNONYMS:

*Mangifera africana* Oliv. = **Fegimanra africana**

*gabonensis* Aubry-Lecomte ex O’Rorke = **Irvingia gabonensis** (Aubry-Lecomte ex O’Rorke) Baill. (*Irvingiaceae*)

## NOTHOSPONDIAS

See under **Simaroubaceae**.

## (ODINA)

*Odina acida* (A. Rich.) Oliv. = **Lannea acida**

*acida* sensu Ficalho 1884 = **L. antiscorbutica**

*alata* Engl. = **L. alata**

*barteri* Oliv. = **L. barteri**

*cinerea* Engl. = **L. triphylla**

*cotoneaster* Chiov. = **L. cotoneaster**

*cuneifoliolata* Engl. = **L. obovata**

## ODINA

- discolor* Sond. = **L. discolor**  
*edulis* Sond. = **L. edulis**  
*fraxinifolia* Fenzl, nom. = ? **L. fruticosa**  
*fruticosa* Hochst. ex A. Rich., ? incl. var. *parvifolia* Oliv.  
= **L. fruticosa**  
*fulva* Engl. = **L. fulva**  
*humilis* Oliv. = **L. humilis**  
*malifolia* Chiov. = **L. malifolia**  
*minimifolia* Chiov. = **L. alata**  
*nigritana* Scott Elliot = **L. nigritana**  
*obcordata* (Engl.) Engl. = **L. obovata**  
*oghigee* (G. Don) Hook. f., specim. Don, Sierra Leone  
(= sensu Hooker, Niger flora) = **L. nigritana**  
*obovata* Hook. f. ex Oliv. = **L. obovata**  
*rivae* Chiov. = **L. rivae**  
*schimperi* Hochst. ex A. Rich., incl. var. *glabrescens*  
Engl. = **L. schimperi**  
*schweinfurthii* Engl. = **L. schweinfurthii**  
*somalensis* (Chiov.) Senni = **L. triphylla**  
*stuhlmannii* Engl. var. *acutifoliolata* Engl.  
= **L. schweinfurthii** (var. *acutifoliolata*)  
*tomentosa* Engl. = **L. humilis**  
*triphylla* A. Rich. = **L. triphylla**  
*velutina* (A. Rich.) Oliv. = **L. velutina**

## OZOROA / 34

syn.: *Heeria* sensu auctt., p.p., non Meissner

Some 40 species in tropical and S. Africa, extending to Yemen.

Plants dioecious, with milky latex; leaves simple, often discoloured; drupe usually kidney-shaped, black and shiny, with oil-filled spaces in the flesh.

Several species poorly known (revision needed). In our area: no male flowers known in 1 species; female flowers unknown in 4 species; fruit unknown in 5 species and further 4 species with only immature fruit; no ecology recorded for 1 species; and 5 species known only from the type.

**Ozoroa argyrochrysea** (Engl. & Gilg) R. Fern. & A. Fern. (excl. specim. Antunes 268 = *O. benguellensis*); Figueiredo & Smith, Pl. Angola: 27, 2008; Bothalia 39: 191, 2009.

bas.: *Heeria argyrochrysea* Engl. & Gilg

syn.: *H. benguellensis* (Engl.) R. Fern. var. *petrophila* Engl. & Gilg

Shrub 1-1,5 m tall; young twigs densely grey-pilose, scarcely glabrescent; lower leaves alternate, upper ones opposite, the uppermost verticillate, petiolate, petiole blackish-pilose, blade (oblong-)lanceolate, 8-10 × 3,5-4,5(-5,5) cm; panicles 3-5 cm long, axes shortly and densely tomentose; fruit unknown?

Island in river; open forest on slope of river gorge; between high sandstone rocks; on muddy soil with tall grass in *Acacia*, *Combretum* vegetation; very scattered; 1150-±1470 m alt.

Related to *O. benguellensis*.

**O. aurantiaca** (Van der Veken) R. Fern. & A. Fern.

Undershrub with a woody rootstock; stems cylindrical ± striate, 0,5-0,75 m tall, light brown, subwoolly, soon glabrescent; leaf petiole woolly to velvety hairy; blade oblong-elliptic, 7-11 × 2-3 cm, with orange woolly hairs beneath; panicles dense, 2-5 cm long, axes woolly; fruit unknown.

## OZOROA AURANTIACA

Dembos with *Brachystegia stipulata* below rocky hills.

Only known from the type collected in 1956.

**O. benguellensis** (Engl.) R. Fern., excl. var. *petrophila* Engl. & Gilg (= *O. argyrochrysea*); Figueiredo & Smith, Pl. Angola: 27, 2008.

syn.: *Heeria argyrochrysea* sensu Consp. Fl. Angol. 2: 122, 1954, quoad specim. Antunes 268; *H. insignis* Kuntze var. *latifolia* sensu Hiern, Cat. Afr. pl. Welwitsch 1: 180, 1896, quoad specim. Welwitsch 4408, non 4409 (BM, LISU).

Tree 3-7 m or shrub 1,25-1,5 m tall, ramose from the base; branches cylindrical, somewhat striate, light brown, ± densely yellowish-brown pilose like petiole and leaf margin (hairs spreading, long, rarely short or absent); leaves petiolate, elliptic to oblong, 5-10 × 2-3 cm, sparsely pilose above, shortly appressed pilose beneath; male panicles 15-17 cm long, female ones 5-6 cm; fruit ellipsoid, compressed, 4-5 × 6-7 mm.

Rocky and stony places in woods on mountain tops; forest edges; forest with *Acacia kirkii*, *Elephantorrhiza* sp.; ± 600-1700 m alt.

**O. bredoi** R. Fern. & A. Fern.

Shrub; branches cylindrical in the lower part, ± striate in the upper portion with a double indumentum: rather short whitish appressed hairs, and stiff reddish patent ± curled long ones; leaves alternate, petioles densely hairy, lamina linear, 6-11 × 1-1,6 cm, apex acute and mucronate, with ± dense patent hairs above, double indumentum beneath; male panicles narrow, to 25 cm long, axes hairy; female flowers and fruit unknown.

Ecology unknown.

Only known from the type collected in 1941.

**(O. crassinervia** (Engl.) R. Fern. & A. Fern.)

bas.: *Anaphrenium crassinervium* Engl.

syn.: *Heeria crassinervia* (Engl.) Engl.; *H. aromatica* Dinter; *H. dinteri* Schinz

Tree or shrub, 1-9 m tall, deciduous; bark dark grey to black; leaves clustered at ends of branchlets, obovate, 2,5-11 × 2-8 cm, dark green, rough, leathery, hairy above, densely grey felt-hairy beneath, apex rounded or notched, margins slightly undulate; flowers in terminal sprays; drupe 5-7 × 6-9 mm, on long stalk.

In mountain areas, in woodland; rocky hills, stony arid places; 505-1850 m alt.

Namibia, reaching the SW border of Angola, and W coastal S. Africa (maps in Coates Palgrave, Trees, south. Afr., ed. 3: 550, 2002; Curtis & Mannheimer, Tree atlas Namibia: 360-361, 2005).

Var. *cotinifolia* Engl. with larger leaves cited from WC Namibia (Fransfontein) in Engler, Pflanzenwelt Afr. 3/2: 196, 1921).

**O. dekindtiana** (Engl.) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 27, 2008. – Neotype: R. Santos 616 (LISC).

syn.: Enum. 2: 225, 1992; *Heeria insignis* Del. var. *latifolia* sensu Hiern, Cat. Afr. Pl. Welw. 1: 180, 1896, quoad specim. Welwitsch 4408A (G, K, P).

Shrub with a woody rootstock, few- to many-stemmed; flowering stems 0,3-1,5 m tall, erect, simple or ramose, generally stout, cylindrical or subangular in the upper portion, striate, grey or yellowish-brown tomentose or puberulous, glabrescent at base;



## OZOROA DEKINDTIANA

leaves shortly petiolate, oblong to elliptic or obovate-oblong, 2-11,5 × 1-4 cm, apex acute or rounded, ± coriaceous, margins ± wavy, sparsely and shortly pilose above, with whitish appressed hairs beneath or mixed with yellowish patent hairs; inflorescences 1-3,5 cm long; drupe ± round, 10 × 11 mm.

Bushy rocky woods at mountain top; gravelly and rocky situations; herb-grown thickets on ferruginous rocks; here and there; limonite; lake shore; sometimes abundant; 1450-1760 m alt.

**O. engleri** R. Fern. & A. Fern.; Coates Palgrave, Trees south. Afr., ed. 3: 551, 2002. – Icon.: Schmidt & al., Trees & shrubs Mpumalanga...: 303, 304, 2002; Fl. Moçamb. 54, Anacard.: 33, 1969.

Tree or robust shrub 1-6-8 m tall; branches with many densely leafy branchlets, brownish- or reddish- or greyish-appressed-puberulous to glabrescent, cylindrical, slightly striate on the lower parts, a little more so or sulcate on the upper part; bark rough, dark brown to grey, flaking in small square segments; latex thin, watery; leaves usually in whorls of 3, drooping, often folded, elliptic-oblong, 4-14 × 1-3,3 cm, thin, glabrous above, densely finely appressed-hairy beneath, margins ± wavy; flowers sweetly scented, in terminal sprays; drupe rounded, 5 × 10 mm, green with red-brown spots at first.

Open forests; woodland and bush; dry sandy flats; rocky hill slopes; 60-450 m alt.

S. Africa, Swaziland (30-1740 m alt.)

**O. fulva** (Van der Veken) R. Fern. & A. Fern.

Undershrub 30-70 cm tall; stems subcylindrical at base, ± 3-angled towards the apex, ± striate, brownish, ± densely pubescent with ferruginous hairs; leaves oblong-lanceolate, acuminate and mucronate at apex, 12-17 × 2-3 cm, fairly thin, finely puberulous above, densely rusty tomentose beneath; panicles dense, 2-3 cm long, axes tomentose; drupe transversely ellipsoid, 9-11 × 7-8 mm.

Open forest on hills; 1100 m alt.

Comprises 2 vars.

**O. gossweileri** (Exell) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008.

Shrub with branches obliquely ascending to 85 cm tall, yellowish-brown tomentose becoming glabrescent, arising from a woody rootstock; leaves shortly petiolate, linear, apiculate, 2,5-5 × 0,1-0,2 cm, margins revolute, minutely appressed-hairy beneath; flowers red-brown tomentose in inflorescences 1,5 cm long, axillary; drupe round, 7-8 mm Ø.

Here and there in dwarf thicket-grown pasturage; short, thicket-grown, frequently gravelly pasturage; ± 1075-1420 m alt.

Near *O. stenophylla*.

**O. homblei** (De Wild.) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008.

Undershrub with erect annual shoots 0,5-2 m tall from a woody rootstock; stems or branches cylindrical, slightly angular towards the apex, striate, brown-red, ferruginous-pubescent to puberulous and nearly velvety, becoming glabrescent; leaves subverticillate, petiole 2-5 mm long, puberulous or minutely appressed-hairy; lamina cinnamon-coloured or (greenish-)brown, shiny, glabrous above, ± whitish beneath with dense minute appressed hairs, linear to oblong-lanceolate, 5-16 × 0,8-2 cm; inflorescences subverticillate, to 3 cm long; drupe broadly obovate, 6 × 7 mm.

Woodland, savanna, open forest, forest gallery; 1100-± 1360 m alt.

## OZOROA HOMBLEI

Confusion possible with *O. stenophylla* (cf. below under this species).

Near *O. dekindtiana*, *O. verticillata*.

**O. hypoleuca** (Van der Veken) R. Fern. & A. Fern.

Shrub to 1 m tall with a stout, running, ± fleshy to woody very large rootstock and roots; stems slender, cylindrical near base, square towards apex, striate, lenticillate, dark to light brown, appressed-puberulous to subpuberulous; leaves linear to oblong-lanceolate, 10-15 × 2-3,5 cm, apex obtuse and mucronate, glabrous above, minutely velvety and greyish-white beneath; inflorescences 3-5 cm long, 1-2 cm wide; male flowers unknown; drupe ellipsoid, 5-6 × 8-9 mm.

Open forests on sandy soil; valley periodically flooded, on black soil; hill.

**O. insignis** Delile; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 84-85, 1985; Keay, Trees Nigeria, ed. 2: 366-367, 1989; El Amin, Trees & shrubs Sudan: 337-338, 1990; Akoegninou & al., Fl. analyt. Bénin: 316-317, 2006; Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 45, 2009. – Icon.: Oyen in Oyen & Lemmens, Ressources végétales de l'Afrique tropicale. Précurseur (Programme Prota): 123, 2002; Curtis & Mannheimer, Tree atlas Namibia: 362, 2005; Beentje, Kenya trees, shrubs & lianas: 429, 1994; Berhaut, Fl. ill. Sénégal 1: 240, 1971; Engler, Pflanzenwelt Afr. 3/2: 196, 1921 (subgen. *Heeria*); Thulin, Fl. Somal. 2: 261, 1999 (subsp. **insignis**); Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 151, 2009.

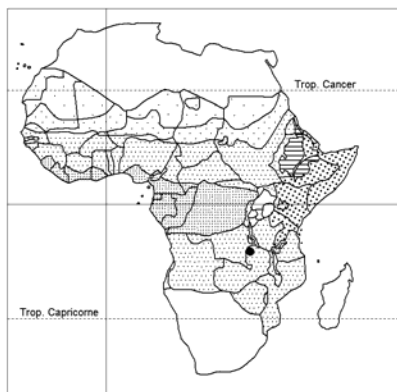
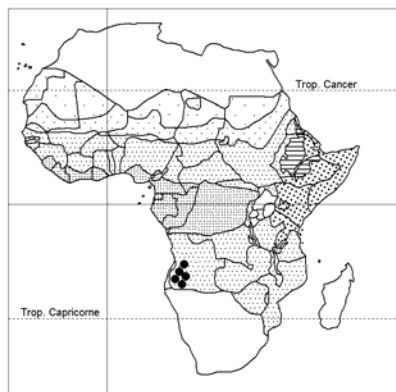
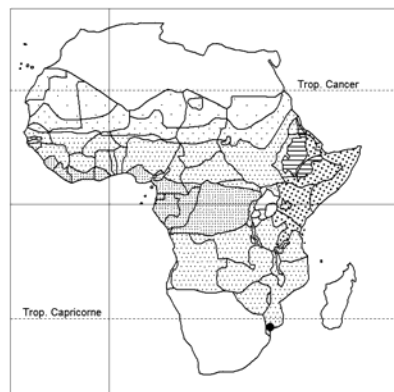
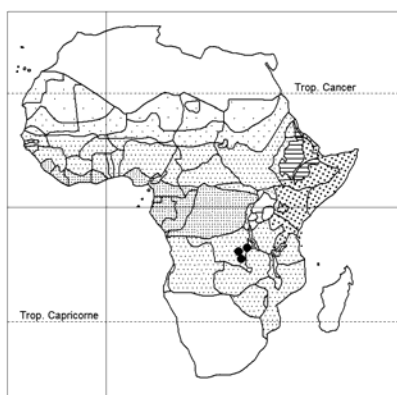
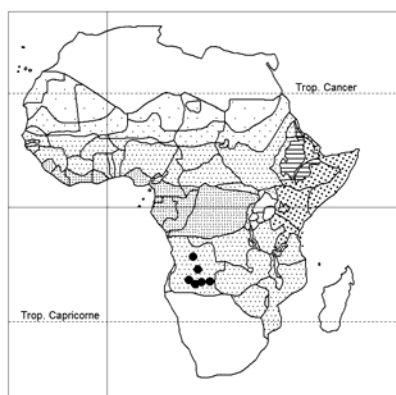
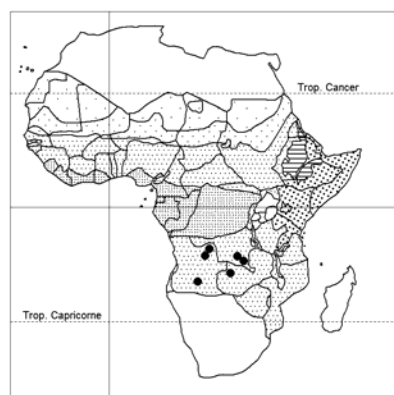
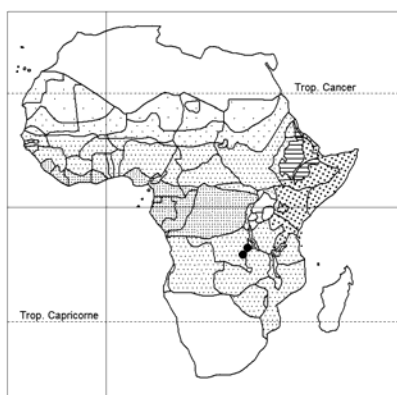
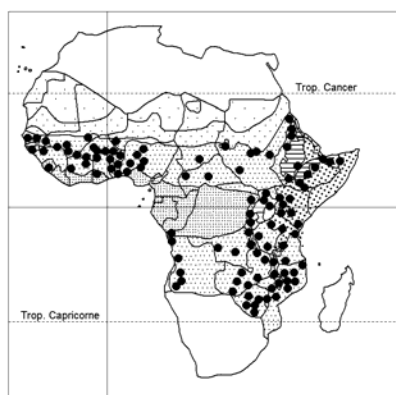
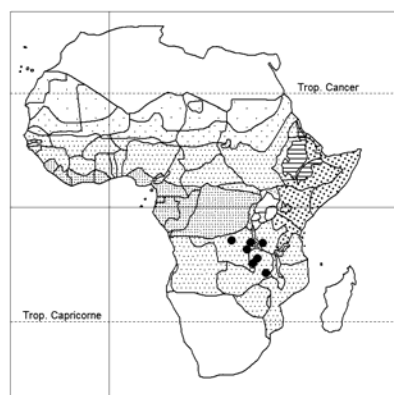
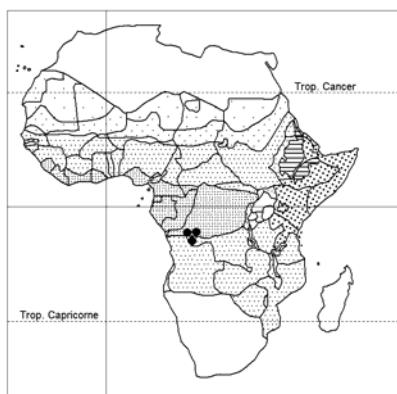
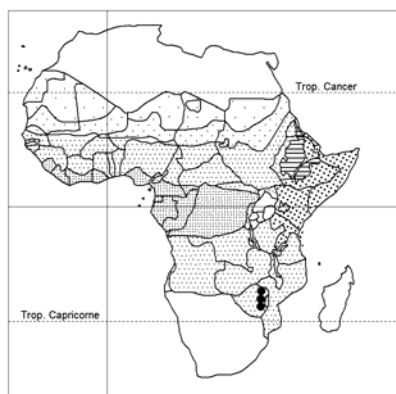
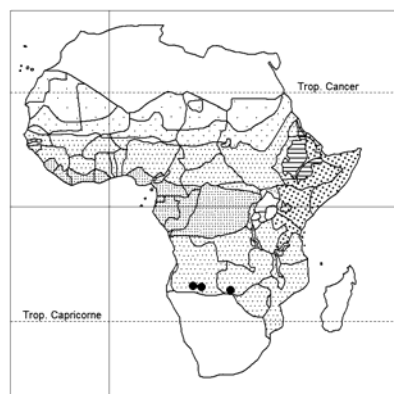
syn.: *Heeria insignis* (Delile) Kuntze; *Rhus insignis* (Delile) Oliv., excl. var. *obovata* Oliv. (= *Ozoroa obovata*); *Anaphrenium abyssinicum* Hochst., excl. var. *obovata* Oliv. (= *O. obovata*).

Much branched shrub or tree, 1-15 m tall; bark grey, corky and much fissured; branchlets cylindrical or grooved, rarely angled, puberulous to somewhat densely yellowish villous, the oldest glabrescent and lenticellate; leaves alternate or usually in whorls of 3, elliptic to lanceolate, 5-23 × 2-9 cm, glabrous above, lower surface with dense fine whitish(-silty) velvety hairs, apex acute, with numerous parallel lateral nerves at right angles to the midrib; panicles 5-17 cm long; drupe transversely ellipsoid, 6-8 × 8-12 mm, at first red.

Open deciduous to semi-evergreen bushland; open grassland; quartz scree; coastal bushland; sandy thickets; forest; wooded savanna on laterite ± gravelly; open woodland with *Combretum collinum*, *C. molle*, *Steganotaenia araliacea*, on rocky outcrop; rocky hillsides with woodland of *Euphorbia venenifera*, *Albizia anthelmintica*, *Combretum adenogonium*; on well drained rocky slopes; *Acacia* bushland; woodland overlying limestone; termite mounds; by streams; seasonal swamps; granite, basalt, sandy soil; *Uapaca* bush; 1-2200 m alt. – Sensitive to fire; in coppice growth often only 1-2 m tall.

Namibia, S. Africa, Botswana; Yemen. – Not in Djibouti (= *Tarchonanthus camphoratus*).

Comprises 3 subsp.: – subsp. **insignis**, with narrow leaves having the lower surface covered with dense appressed silvery hairs; ranges from W Africa to Sudan, Ethiopia, Somalia, Yemen; – subsp. **latifolia** (Engl.) R. Fern. & A. Fern. [syn.: Enum. 2: 225, 1992], in coastal areas of W Africa to Angola-Namibia, resembling *O. paniculosa*; with var. **latifolia**, and var. **intermedia** R. Fern. [syn.: ? *Anaphrenium abyssinicum* Hochst. var. *lanceolatum* Engl.; *Heeria insignis* (Delile) Kuntze var. *lanceolata* (Engl.) Engl.], occurring in a belt from Senegal/Gambia-

***Ozoroa bredoi******Ozoroa dekindtiana******Ozoroa engleri******Ozoroa fulva******Ozoroa gossweileri******Ozoroa homblei******Ozoroa hypoleuca******Ozoroa insignis******Ozoroa kassneri******Ozoroa kwangoensis******Ozoroa longipetiolata******Ozoroa longipes***

## OZOROA INSIGNIS

Mali-Burkina Faso; intermediate between subsp. *insignis* and subsp. *latifolia*; – subsp. **reticulata** (Bak. f.) J. B. Gillett [syn.: Enum. 2: 226, 1992; *O. reticulata* Bak. f. subsp. *reticulata* var. *reticulata*, var. *nyasica* R. Fern. & A. Fern. and var. *crispa* R. Fern. & A. Fern.; *O. reticulata* subsp. *foveolata* R. Fern. & A. Fern. var. *foveolata*, var. *cinerea* R. Fern. & A. Fern. and var. *mossambicensis* R. Fern. & A. Fern.; *O. reticulata* subsp. *grandifolia* R. Fern. & A. Fern.] – Icon.: Coates Palgrave, Trees south. Afr., ed. 3: ill. 150 + p. 555, 2002 (sub nom. *O. reticulata*); Troupin, Fl. Rwanda 2: 289, 1983 (idem); a geoxylic suffrutex (vide Nord. J. Bot. 1: 735, 1981), with broadly elliptic(-oblong) leaves with both short appressed and long spreading hairs beneath and vein-reticulum visible; occurring in E Africa southwards to S. Africa, at lower alt.; in coastal areas intermediates with *O. obovata* are recorded (interspecific introgression).

**O. kassneri** (Engl. & Brehmer) R. Fern. & A. Fern.

Shrub 0,5-1,8 m tall with simple or little branched stems, greyish or brown, cylindrical in the lower portion to somewhat 4-angled in the upper part, puberulous to villous, arising from a woody rootstock and usually densely leafy; leaves alternate to opposite, sub-verticillate in uppermost part, (obovate-)elliptic, 6-18 × 2,5-9 cm, ± rounded at apex, often bullate above, ± coriaceous, dull and pubescent above, rusty double tomentose beneath (short appressed whitish hairs + longer yellowish hairs on veins); inflorescences in upper leaf axils, shorter than leaves, very compact, ± head-like, or terminal in verticils (not « forming a rather large leafy panicle » !); drupe transversely ellipsoid, 5-7 × 6-8 mm.

Woodlands on fixed sand-dunes; rocky places; hill slopes; grassland; scrub or open woodlands; edge of riverine forests; escarpments on sandy rocky ground; 1220-1900 m alt.

Comprises 2 vars.: – var. **kassneri** with fa. **kassneri** and fa. **villosa** R. Fern. & A. Fern.; – var. **rhodesica** R. Fern. & A. Fern., with narrower more pointed leaves, in Zambia and Tanzania, with fa. **rhodesica** and fa. **velutina** R. Fern. & A. Fern.

**O. kwangoensis** (Van der Veken) R. Fern. & A. Fern.

Undershrub 30-70 cm tall; stems cylindrical, ± striate and glabrescent towards the base, densely pubescent to tomentose with ferruginous hairs; leaves (in whorls of 4 according to pl. 3 p. 25, in Fl. Congo belge 9, 1960, but not mentioned in descriptions) oblong-lanceolate to linear, mucronate at apex, 10-15 × 1,5-2,5 cm, ± coriaceous, finely ferruginous pubescent to puberulent above, densely ferruginous pubescent or velvety and hirsute-pubescent beneath; male flowers unknown; female panicles dense, 2-6 cm long, ferruginous-tomentose; drupe compressed, obovoid, 5-6 × 6-7 mm.

Open forest on Kalahari sands; grassy savanna; steppe after fires; 1350-1500 m alt.

**O. longepetiolata** R. Fern. & A. Fern.; Coates Palgrave, Trees & shrubs south. Afr., ed. 3: 552, 2002.

Tree to 6,5 m, round-topped, with cinnamon-coloured terete striate branches, the youngest ones shortly appressed-cinereous-pubescent, the oldest ones glabrous; leaves alternate, opposite or sub-3-verticillate, very discoloured when dried, (olive-)green, shiny and glabrous above, silvery greenish-sericeous with short dense appressed whitish hairs beneath, lanceolate, 6,5-17 × 2-4 cm, very acute; panicles loose heads, 15-24 cm long; drupe kidney-shaped, 7 × 8 mm.

Hills, pastures with serpentine, norite, chrome (N Great Dyke, Zimbabwe); 1350-1500 m alt. (vide Taxon 33: 392-399, 1984).

Close to *O. insignis* subsp. *latifolia* var. *latifolia*.

## OZOROA

**O. longipes** (Engl. & Gilg) R. Fern. & A. Fern.; Coates Palgrave, Trees & shrubs south. Afr., ed. 3: 552, 2002; Figueiredo & Smith, Pl. Angola: 28, 2008; Bothalia 39: 191, 2009; Curtis & Mannheimer, Tree atlas Namibia: 370, 2005.

Deciduous shrub or tree to 3-4 m tall, many-stemmed; branches dark brown, terete, striate, glabrous, drooping; leaves alternate, often in 2 vertical rows, broadly ovate to ± circular, c. 6,5 × 4,5 cm, shiny green above, silvery silky-hairy beneath, apex rounded, abruptly acuminate, with a bristle-like tip, petiole to 4 cm long; flowers in loose terminal heads; drupe kidney-shaped, 7 × 10 mm.

*Pterocarpus angolensis* woodland on Kalahari sands; 1200-1300 m alt.

Namibia, Caprivi Strip, Botswana (379-1220 m alt.).

**O. macrophylla** R. Fern. & A. Fern.

Shrub to 1,2 m tall; stems brownish, angular towards the apex, lenticels scattered, with minute appressed hairs; leaves ovate, 6-16 × 3-9 cm, subsessile, apex ± obtuse, in whorls of 3, minutely appressed pilose above, white-silky hairy beneath; panicles 30 × 16 cm; only immature fruit known.

*Uapaca forest* on lateritic soil; 1560 m alt.

Only known from the type collected in 1961.

Similar to *O. viridis*.

**O. marginata** (Van der Veken) R. Fern. & A. Fern.

Shrublet; stems arising from a fleshy to woody rootstock, brown or reddish-brown to 0,3-0,9 m tall, cylindrical in the lower part, subangulate-furrowed in the upper part, striate, sparsely to ± densely hairy, the hairs appressed to ± patent, short, weak, whitish to yellowish; leaves alternate, opposite to verticillate, erect, oblong-elliptic-obovate, 7-14 × 2-6 cm, ± coriaceous, glabrous or minutely puberulous above, whitish-silky hairy beneath, apex rounded or retuse and mucronate; inflorescences congested, 1-2 cm long, axes appressed-minutely-pilose; male flowers known!; drupe 7-10 × 9-12 mm, transversely ellipsoid.

Woodland; open forest with *Brachystegia* on relatively humid soil; clayey-sandy soil; red soil, clayey, gravelly; dry, grey soil.

**O. mildredae** (Meikle) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008.

Shrublet or shrub, ± 1 m tall, erect; stems (blackish) brown, glabrous or sparsely and finely pubescent; leaves alternate, opposite or verticillate, linear to ovate, 8-16(-22) × (0,8-)2,5-6 cm, glabrous and glossy above, densely appressed silvery hairy beneath; panicles congested, 1-3,5 cm long or lax and forming an ample inflorescence.

? Grassy places (“capinais; chanas”); 1000-1100 m alt.

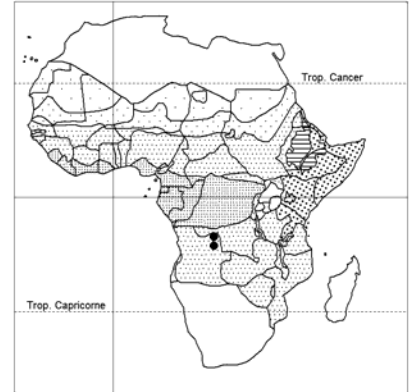
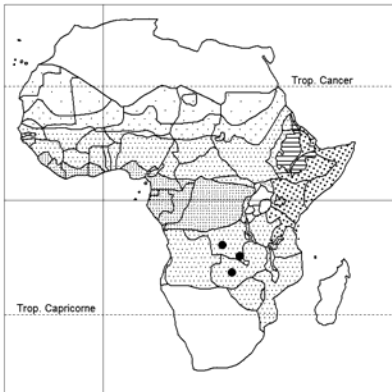
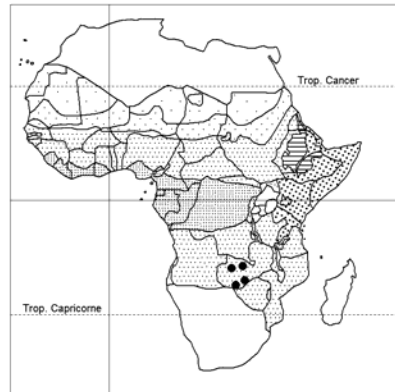
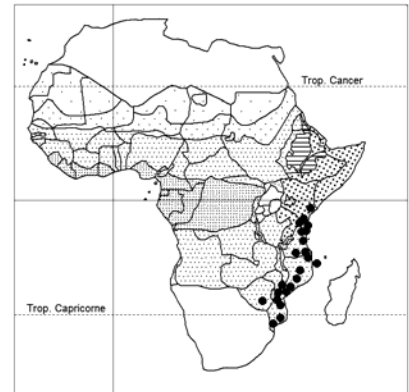
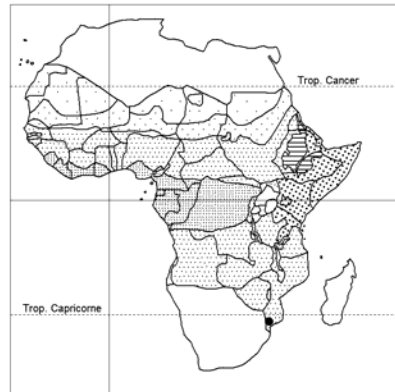
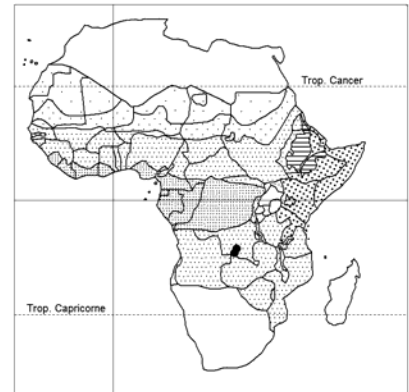
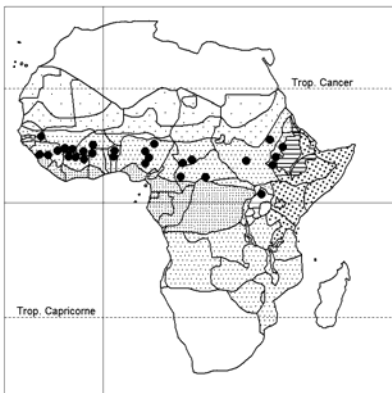
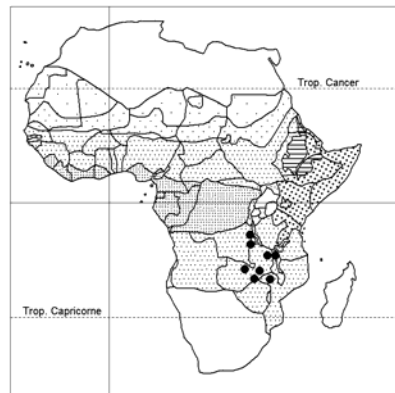
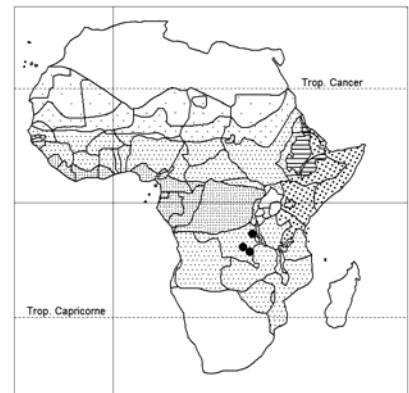
Comprises 2 vars.: – var. **mildredae**; – var. **longifolia** R. Fern., with longer, elliptic leaves.

Closely resembling *O. homblei*.

**O. nigricans** (Van der Veken) R. Fern. & A. Fern.

? Shrub or a many-stemmed suffrutex; stems from a woody rootstock, virgate, unbranched or nearly so, to 60 cm long, subterete, glabrescent below, ± angular, pale-yellowish-pubescent to densely ferruginous lanate in the upper part; leaves (oblong-) elliptic, 8-14 × 4-8 cm, papery, glabrous above, ferruginous tomentose below, apex ± rounded to acute; panicles congested, 1,5-4 cm long; drupe transversely ellipsoid, 4-5 × 6-7 mm.



***Ozoroa macrophylla******Ozoroa marginata******Ozoroa mildredae******Ozoroa nigricans******Ozoroa nitida******Ozoroa obovata******Ozoroa pallida******Ozoroa paniculosa* var. *paniculosa******Ozoroa pseudoverticillata******Ozoroa pulcherrima******Ozoroa pwetoensis******Ozoroa robusta***

## OZOROA NIGRICANS

*Brachystegia* woodland; savannas; swamps.

Comprises 2 vars.: – var. **elongata** (Van der Veken) R. Fern. & A. Fern., with longer petioles (1,5-2,5 cm, not 0,5-1,5 cm) and more numerous lateral nerves, 45-70 pairs; not 25-45 pairs, confined to Katanga (Zaire); – var. **nigricans** in Zambia.

**O. nitida** (Engl. & Brehmer) R. Fern. & A. Fern.

Many-stemmed shrub to 1,2 m tall; stems woody, cylindrical, thick, densely spreading yellowish-hairy; leaves usually alternate, petiole 1-2 cm long, blade elliptic-obovate, 8-20 × 4-12 cm, light green, shiny above, with a double indumentum beneath, midrib very prominent beneath; panicles congested, shorter than leaves; drupe compressed, 5,5-7 × 7-9 mm.

Mixed woodlands; edges of swamps; fire-damaged woodland on Kalahari sand.

**O. obovata** (Oliv.) R. Fern. & A. Fern.; Beentje, Kenya trees, shrubs & lianas: 429, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 553-554, 2002. – Icon.: Fl. Zambes. 2/2: 583, 1966; E. Schmidt & al., Trees & shrubs Mpumalanga...: 304-305, 2002 (var. **elliptica**).

syn.: *Anaphrenium abyssinicum* Hochst. var. *obovatum* (Oliv.) Engl., var. *mucronatum* (Bernh. ex Krauss) Engl. (sphalm.: “*mucronifolium*”); *Heeria mucronata* Bernh. ex Krauss var. *obovata* (Oliv.) Engl.; ? *H. mucronata* var. *acutifolia* Engl. (see note at end of the genus).

Much branched shrub 1,5-5 m tall or tree, 6-15 m; branchlets cylindrical, ferruginous-ochraceous or greyish, rather densely lenticellate, glabrescent; flowering and terminal branchlets subterete on the lower part, striate or grooved, angular, densely leafy, pubescent on the upper part; leaves alternate or whorled in 3, elliptic to obovate, 2,5-12 × 1,5-4 cm, apex rounded and often mucronate, densely hairy and *silky-shiny* beneath; panicles 4-10 cm long; drupe kidney-shaped, 6-8 × 8-12 mm.

Coastal bushland; dry forest woodland on sand or coral; sandy thickets; forest of several types; savanna; by streams; 1-720 m alt. S. Africa (15-1000 m alt.).

Comprises 3 vars. (with critical forms): – var. **obovata**, a lower bush with obovate(-oblong) leaves cuneate at base and stout panicle axis (c. 7 mm Ø), usually near the sea; – var. **elliptica** R. Fern. & A. Fern., taller and with elliptic leaves, rounded at both ends and slender panicle axis (c. 3 mm Ø), occurring further inland, in S part of range; with fa. **elliptica** and fa. **grandifolia** R. Fern. & A. Fern.; – var. **gomesiana** (R. Fern. & A. Fern.) R. Fern. & A. Fern. (bas.: *O. gomesiana* R. Fern. & A. Fern.), with dense long hairs on both leaf surfaces, in S Mozambique, on dry sandy soil.

Perhaps not distinct from *O. insignis*, although characteristic in E. Africa. Some specimens of *O. insignis* subsp. *latifolia* var. *intermedia* (Heudelot 67, Sieber 33 from Senegal) are “hardly distinguishable from exceptional forms of *O. obovata*” from Kenya, (Butler, 19, Rawlins 654) or S Tanzania (Kirk s.n.; fide Kokwaro, Fl. Trop. E. Afr., Anacard.: 8, 1986).

**O. pallida** (Van der Veken) R. Fern. & A. Fern.

Shrublet; stems cylindrical, angular towards the apex, striate, pilose to pubescent with reddish-brown hairs; leaves linear, apex ± acute and mucronate, 12-18 × 1,5-2,5 cm, petiole ferruginous-tomentose, blade subvelutinous above, whitish velutinous beneath, with 65-100 pairs of lateral nerves very prominent beneath; male panicles lax, 4-9 cm long; female flowers and fruit unknown.

## OZOROA PALLIDA

Open forest on slope of hill, on scree; 1080 m alt.

Described as close to *O. hypoleuca*.

Known only from the type collected in 1949.

**O. paniculosa** (Sond.) R. Fern. & A. Fern. var. **paniculosa**; Coates Palgrave, Trees south. Afr., ed. 3: 554, 2002. – Icon.: Curtis & Mannheimer, Tree atlas Namibia: 364-365, 2005; E. Schmidt & al., Trees and shrubs Mpumalanga: 304-305, 2002; Grant & Thomas, Sappi tree spotting bushveld: 316-317, 2000.

bas.: *Rhus paniculosa* Sond.

syn.: *Anaphrenium paniculosum* (Sond.) Engl.; *Heeria paniculosa* (Sond.) Kuntze; *H. paniculata* auct., sphalm.

Much branched shrub, “untidy”, or tree, 0,6-3-7 m tall; bark grey, rough; branchlets reddish brown, lenticellate, cylindrical, pilose when young; leaves very discolorous, alternate or in whorls of 3, narrowly elliptic to oblong, 2-12 × 0,6-4 cm, apex and base tapering, sericeous or with hairs only on the nerves above, lower surface with short whitish appressed hairs or pale yellowish hairs; flowers sweetly scented, in heads at ends of panicle branches to 6 cm long; drupe kidney-shaped, 7 × 10 mm.

Savanna woodland in rocky places; c. 300 m alt.

Namibia, Botswana, S. Africa, Swaziland (15-2400 m alt.).

Var. **salicina** (Sond.) R. Fern. & A. Fern. in Namibia, Botswana, S. Africa [syn. ? : *Heeria paniculosa* var. *angustifolia* Engl. (“leaves resembling those of *Salix repens*”, Engler, Pflanzenwelt Afr. 3/2: 195, 1921)].

**O. pseudovercillata** (Van der Veken) R. Fern. & A. Fern.

syn.: *Heeria verticillata* sensu Fl. Congo belge 9: 21, 1960, non Engl.

Undershrub; rootstock stout, woody; aerial stems 2-7, cylindrical, polygonal towards apex, ± striate, 0,6-1 m tall, reddish-brown to pale-brown, subpuberulous or finely tomentellous; leaves verticillate, sessile, oblong-elliptic, 5-10 × 2-3 cm, glossy and olive-brown above, greyish-white tomentellous beneath, with 50-80 pairs of lateral nerves, conspicuous beneath; panicles dense, 1-3 cm long; mature drupe unknown (immature 4,5 × 7 mm).

Open forest on rocky hill; steppe.

**O. pulcherrima** (Schweinf.) R. Fern. & A. Fern.; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 85, 1985; Akoegninou & al., Fl. analyt. Bénin: 317, 2006; Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 45, 2009. – Icon.: Berhaut, Fl. ill. Sénégal 1: 244, 1971 (sub gen. *Heeria*).

syn.: *Rhus pulcherrima* (Schweinf.) Oliv.; *Heeria pulcherrima* (Schweinf.) Kuntze; *Rhus djalonsensis* A. Chev., nom.; *R. herbacea* A. Chev., nom.; *Heeria insignis* (Delile) Kuntze var. *latifolia* (Engl.) Engl., p.p.

Suffrutex with erect stems usually 1 m tall, rarely to 6 m, arising from a woody rootstock; branchlets softly pubescent or yellowish villous; latex milky; leaves alternate or in whorls of 3, obovate-elliptic, 7-25 × 3,5-12 cm, apex truncate or emarginate(-mucronate), puberulous or glabrous and reddish above, softly tomentose beneath; panicles 2-11 cm long, densely pubescent or villous; drupe transversally ellipsoid, compressed to almost 2-lobed, c. 7-8 mm long.

Wooded grassland; savanna on deep soil; wooded savanna on gravelly plateau, laterite or on sandy-clayey deep soil; deciduous woodland with *Terminalia*, *Combretum*, *Pterocarpus* on rocky or sandy soils; 650 (? and less)-1400 m alt.

## OZOROA PULCHERRIMA

Confused with *O. insignis* (mature petals usually straight at tip; not usually inflexed as in *O. pulcherrima*). Not a state of *O. insignis* as suggested by Engler (Pflanzenwelt Afr. 3/2: 197, 1921) who considered the plant as coppice shoots of *Heeria insignis* var. *latifolia* appearing after fires.

Often stunted by bush fires.

**O. pwetoensis** (Van der Veken) R. Fern. & A. Fern.

Suffrutex to 1,5 m tall with a woody rootstock and thick creeping roots; stems sparsely branched, ± dark brown, terete, sometimes angulate on upper part, striate, ± pilose to glabrescent; leaves alternate, opposite or ± verticillate (the uppermost ones), discoloured, green or reddish-dark brown and glabrous above, silvery- or ± fulvous-sericeous beneath, elliptic or oblong-lanceolate, ± coriaceous, 6-18 × 1,5-5,5 cm; panicles congested, 1-4 cm long, in whorls; drupe 5-6 × 8-9 mm.

*Brachystegia* woodlands; hills; hills among crevices and rocks; *Julbernardia paniculata*, *Brachystegia* woodlands; clayey valley periodically flooded; clayey dembo edges; quartzitic, ironstone soil.

Comprises 4 vars.

**O. robusta** (Van der Veken) R. Fern. & A. Fern.

Shrublet with robust stems to 1,3 m tall, angular at base, triangular or squared towards apex, ± furrowed, striate, tomentose-woolly with reddish-brown hairs, glabrescent towards the base; leaf petiole stout, 0,7-1,5 cm long, ferruginous-hairy; blade obovate-elliptic or oblong-lanceolate, 15-22 × 5-12 cm, ferruginous-hairy beneath; male panicles dense, 2-6 cm long, reddish tomentose; female flowers unknown; drupe compressed-obovoid, 7-8 × 6-7 mm.

Scattered in deforested savanna; open forest on quartzite outcrops; c. 1400 m alt.

**O. schinzii** (Engl.) R. Fern. & A. Fern. – Icon.: Curtis & Mannheimer, Tree atlas Namibia: 366, 2005.

Deciduous shrub, 1-3 m tall, or tree, diffuse to twiggy strongly ramose; branches cylindrical, smooth or striate, young ones sub-ferruginous becoming ash grey; leaves 3-4-whorled, obovate to elliptic, 8-35 × 12-18 mm, dark green and slightly hairy above, olive-green and slightly hairy beneath, petiole 1-3 mm long; panicles 3 cm long; drupe flattened, 7-8 mm long.

Sandy plain.

N Namibia (1060-1140 m alt.).

**O. sphaerocarpa** R. Fern. & A. Fern.; Coates Palgrave, Trees south. Afr., ed. 3: 555-556, 2002. – Icon.: Fl. Moçamb. 54, Anacardiaceae: 27, 1969; E. Schmidt & al., Trees & shrubs Mpumalanga...: 306-307, 2002.

Tree to 7,5 m; crown rounded; young branches greyish-brown to cinnamon, cylindrical, striate, densely lenticellate, the oldest glabrescent to glabrous; bark rough, cracked in blocks; leaves (alternate or) 3-whorled, oblong, 5-12 × 1,5-4 cm, leathery, shiny to dull green above, densely velvety and long-hairy between the veins beneath, apex rounded, *margins thickened, wavy*; flowers in terminal heads at ends of branches and in upper leaf axils; drupe ± round, c. 1 cm Ø.

Bush; deciduous woodlands; often on rocky hillsides.

S. Africa, Swaziland (152-1300 m alt.).

Resembling *O. insignis*, *O. paniculosa*, but leaf margin and fruit different.

## OZOROA

**O. stenophylla** (Engl. & Gilg) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008; Bothalia 39: 191, 2009.

syn.: *Anaphrenium kienerae* Sacleux

Many-stemmed suffrutex, stems unbranched, brownish, tufted, to 1 m tall, cylindrical, striate, puberulous, from a many-headed woody underground rootstock; leaves ericoid, sessile, 7-15 cm × 1-5 mm, margins revolute, glabrous above, silvery-silky-hairy beneath, apex bristly; panicles 2-2,5 cm long (peduncle 1 cm).

Open *Burkea africana* or *Baikiaea plurijuga-Burkea africana* woodland on Kalahari sand, rather common, near river; grassy herb-grown “T’Chana”; rubber “T’Chana” (plantation); c. 1280- c. 1360 m alt.

Specimen Kassner 2634 from Katanga, Binga, cited by Engler in Pflanzenwelt Afr. 3/2: 195, 1921, under *Heeria stenophylla*, is a narrow-leaved form of *O. homblei*, fide Van der Veken, Fl. Congo belge 9: 21, 1960.

**O. uelensis** (Van der Veken) R. Fern. & A. Fern.

Trelet; stems cylindrical, square or pentagonal towards the apex, striate, brown, finely velvety and hirsute-pilose with reddish-brown hairs; leaves oblong-lanceolate to linear, 7-14 × 1,4-2,8 cm, margins revolute, chestnut-brown and glabrous between the nerves above and nerves ± puberulent, ferruginous hirsute-hairy beneath, nervation conspicuous; panicles 1-7 cm long (peduncle 0,5-3 cm), axes brown-velvety and hirsute-hairy; ripe fruit unknown.

Savanna; stream sides.

Comprises 2 vars.

**O. verticillata** (Engl.) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 196, 1921. – Neotype: Torre 8614 (LISC).

bas.: *Anaphrenium verticillatum* Engl.

Suffrutex with several erect stems to 50 cm tall arising from a rhizome; stems simple, ferruginous or yellowish pilose; leaves 4-whorled, sessile, oblong, 6,5-7 × 2,5-3 cm, reticulate on both surfaces, apex obtuse, shortly pilose above soon glabrescent, densely grey-pilose beneath; panicles 1-6 cm long with whorled branches; ripe fruit unknown.

Pastures; lake sides.

Not in Zaire (= *O. pseudoverticillata*).

**O. viridis** R. Fern. & A. Fern.

Suffrutex to 2,1 m tall; stems simple, brownish, cylindrical in the lower, striate in the upper portion, sparsely lenticellate, densely and shortly appressed-hairy; leaves alternate or subopposite, discoloured, green and shortly appressed-hairy above, whitish-silky with short appressed hairs beneath, elliptic or obovate, 4,5-8 × 2,5-4,5 cm, apex roundish or emarginate (and mucronate), venation very prominent beneath; male panicle 20 × 7 cm; female flowers and fruit unknown.

Ecology unknown.

Only known from the type collected in 1961.

Related to *O. marginata*, *O. kassneri*.

**O. xylophylla** (Engl. & Gilg) R. Fern. & A. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008; Bothalia 39: 191, 2009.

Suffrutex to 1,2 m tall, base rhizomatous; stems one to few, (sub-) erect, stout, simple or branched, cylindrical or angular, to 8 mm Ø at base, striate, reddish brown, blackish towards apex, glabrous;



## OZOROA XYLOPHYLLA

leaves opposite or by 3-4 on upper part, elliptic(-ovate), 2,5-14 × 1-6 cm, apex rounded, glabrous above, silvery silky hairy beneath; panicles to 8 cm long; drupe (immature ?) transversely ellipsoid, compressed, 6 × 8 mm.

Grassy savanna on sand; edge of open forest and open forest on grey or white sand; 1000-1360 m alt.

Resembling *O. pulcherrima*.

## TAXON INCERTAE SEDIS:

*Heeria mucronata* Bernh. ex Krauss var. *acutifolia* Engl. (Engler, Pflanzenwelt Afr. 3/2: 198, 1921), is discussed by R. B. Fernandes (Estudos nas Anacardiaceae africanas, 1966: 37), who does not ascribe this variety to any species. It was described from the coastal area of Kenya (Lamu to Mombassa) to NE Tanzania (Dar-es-Salaam). It is perhaps a synonym under *Ozoroa obovata* occurring in this same area. Not mentioned by Kokwaro in Fl. Trop. E. Afr., Anacardiaceae (1986).

## SYNONYMS:

*Ozoroa gomesiana* R. Fern. & A. Fern. = ***Ozoroa obovata*** var. *reticulata* (Bak. f.) R. Fern. & A. Fern., incl. subsp. *foveolata* R. Fern. & A. Fern. with var. *cinerea* R. Fern. & A. Fern., var. *foveolata* and var. *mossambicensis* R. Fern. & A. Fern., and incl. subsp. *grandifolia* R. Fern. & A. Fern., and incl. subsp. *reticulata* with var. *crispa* R. Fern. & A. Fern., var. *nyasica* R. Fern. & A. Fern. and var. *reticulata* = ***O. insignis*** subsp. ***reticulata***

## PISTACIA / 3

By some authors placed in *Pistaciaceae*.

Some 13 species disjunctly distributed: from the Atlantic Islands, the Mediterranean Region to W Asia, also in SE Asia, China-Malesia; Mexico and S USA (map by Yi & al., o.c.: 242).

Dioecious plants with resinous bark and mostly alternate pinnate leaves, and a reduced flower structure. Fruit a 1-seeded drupe.

*Pistacia* species “are the obligate hosts of highly specialized gall-forming aphids” feeding on the phloem sap (Inbar, o.c.).

INBAR, M. (2008). Systematics of *Pistacia*: Insights from specialist parasitic aphids. *Taxon* 57: 238-242.

KAFKAS, S. (2006). Phylogenetic analysis of the genus *Pistacia* by AFLP markers. *Pl. Syst. Evol.* 262: 113-124.

PARFITT, D. E. & M. L. BADENES (1997). Phylogeny of the genus *Pistacia* as determined from analysis of the chloroplast genome. *Proc. Natl. Acad. Sci. USA* 94: 7987-7992.

YI, Tingshuang & al. (2008). Phylogenetics and reticulate evolution of *Pistacia* (Anacardiaceae). *Amer. J. Bot.* 95: 241-251.

***Pistacia aethiopica*** Kokwaro; Friis, Forest trees N.E. trop. Afr.: 204, 1992 (with map 102). – Icon.: Beentje, Kenya trees, shrubs & lianas: 429, 1994.

syn.: ? *P. lentiscus* L. var. *falcata* Chiov.; Enum. 2: 227, 1992.

Glabrous evergreen spreading tree 5-15(-20) m, rarely a shrub, often multi-stemmed; bole to 0,6 m Ø; bark brown-black, fissured; leaves aromatic, 4-16-18-foliolate, glabrous, rachis to 10 cm long, winged; leaflets entire, leathery, reddish when young; flowers reddish or yellowish (petals absent), in sub-capitate, sometimes branched inflorescences 1-5 cm long; drupe ± round, red, c. 4 mm Ø.

## PISTACIA AETHIOPICA

Dry evergreen forest (often with *Juniperus* or *Olea-Euclea*) or associated bushland and wooded grassland; *Buxus* bushland; deciduous woodland with *Combretum*, *Acacia*, *Barkeya* on limestone, basalt or sandstone; sometimes on black cotton soil; 900-2550 m alt.

One locality known from Jebel Eraf (c. 13° 06' N × 44° 15' E) close to the Yemeni S coast, Arabian Peninsula; confirmed by Kilian & al., Willdenowia 32: 246, 2002. “A remarkable relic stand of a mixed evergreen *Juniperus procera* woodland...”

Twigs are used as toothbrushes. Yields a gum of some economic importance, also exported (Somalia).

Rather locally abundant in S Ethiopia.

Near the Mediterranean *P. lentiscus* L., but seems distinct (cf. also Inbar, o.c.: 240). – Treated under *P. lentiscus* L. by Boulos, Fl. Egypt 2: 76-77, 2000 (with fig.).

***P. atlantica*** Desf.; Lebrun, Pl. vascul. Mauritanie & Sahara Occid. (Boissiera 55): 159, 163, 1998 (map); Boulos, Fl. Egypt 2: 76, 2000; Fennane & al., Fl. pratique Maroc 2: 250, 2007 (and fig. 35).

Deciduous tree 3-10(-20) m; leaves 5-11-foliolate; leaflets ovate-oblong, obtuse, 2-6 × 0,5-2 cm; male panicles compact; female ones loose, 8-12 cm long; drupe obovoid-globular, yellowish brown, glabrous.

(Desert) wadis; mountain plains.

N Africa, Sinai; E Mediterranean Region; Caucasus; Crimea; Arabia, Iran, Pakistan.

***P. falcata*** Becc. ex Martelli; El Amin, Trees & shrubs Sudan: 338; 1990; Friis, Forest trees N.E. trop. Afr.: 204-205, 323 (map), 1992; Ghazanfar, Fl. Oman 2: 119, 2007. – Icon.: Thulin, Fl. Somal. 2: 266, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 472, 2001.

syn.: *P. chinensis* Bunge var. *falcata* (Becc. ex Martelli) Zohary; *Rhus falcata* (Becc. ex Martelli) Penzig

Deciduous tree (or shrub) 4-10 m; bark light brown, rough, longitudinally fissured; branchlets hanging; leaves 5-11-foliolate, terminal leaflet often missing; leaflets *falcate*, varnished resinous, 6-12 × 1,3-2,1(-3) cm, apex acuminate, sparsely puberulous when young; panicles appearing before the leaves, much branched, brownish, c. 10 cm long; drupe ± round, red, apiculate, c. 7 mm long.

In Ethiopia (Shawa region) dominant on recent lava flows; evergreen bushland or deciduous woodland, often on steep rocky slopes; hilly ground with *Juniperus procera*; 1100-2600 m alt.

SW Saudi Arabia, NW & SE Yemen, S Oman (Dhofar); Kilian & al., Willdenowia 32: 246-247, 2002.

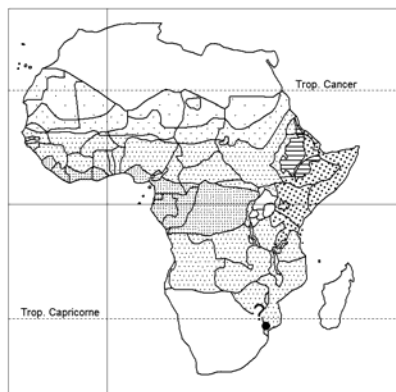
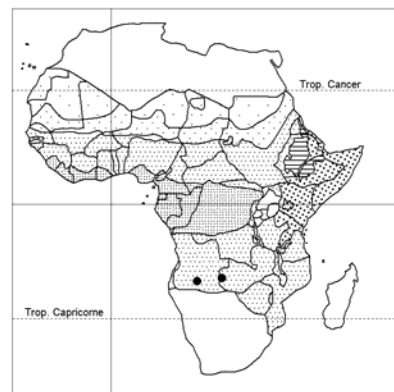
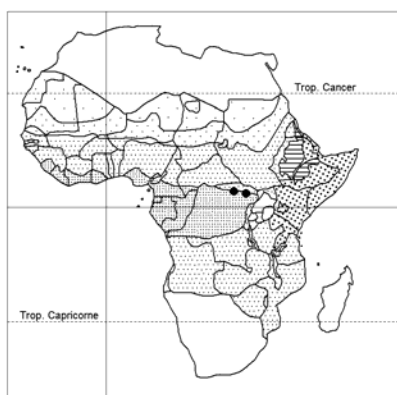
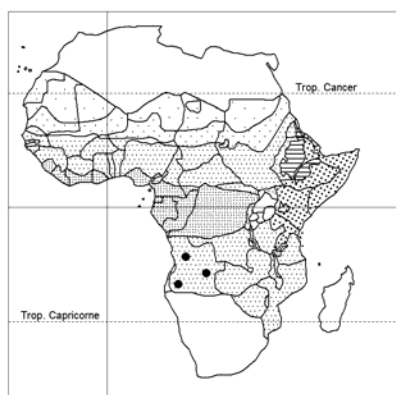
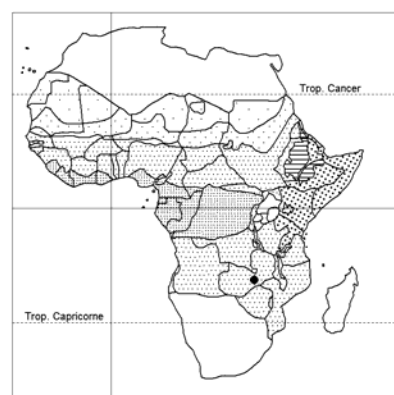
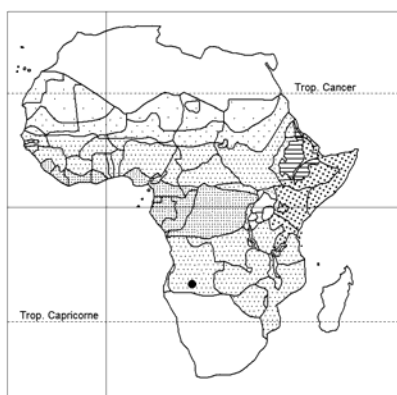
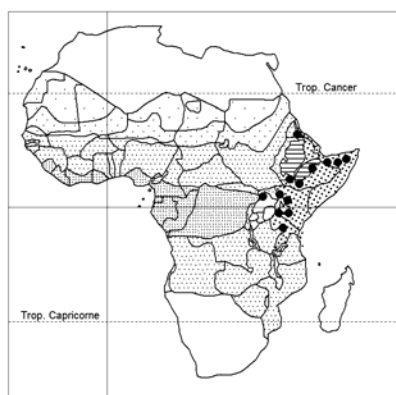
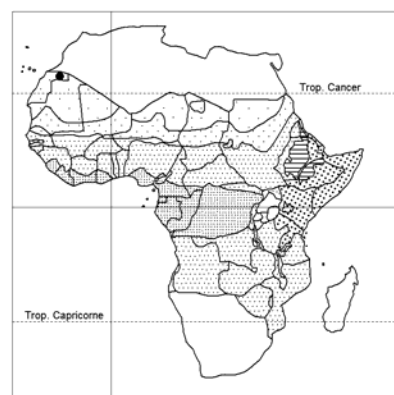
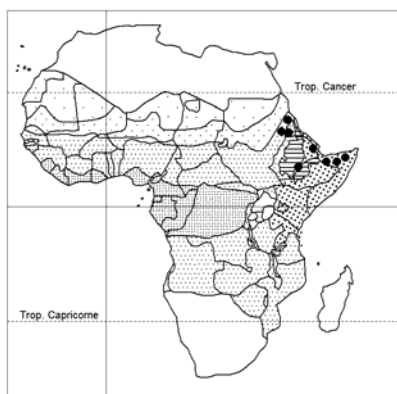
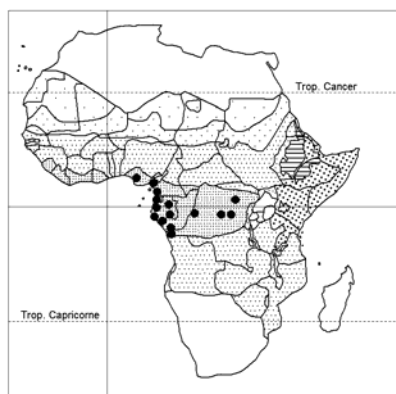
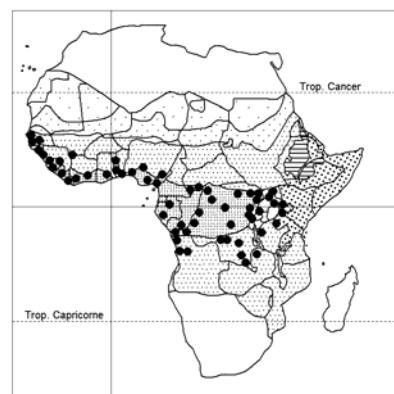
“Doubtfully distinct from *P. chinensis* from Afghanistan in the west to China in the east and the Philippines in the south” (Thulin, l.c.). “In fact, the situation is somewhat more complex, because the Ethiopian material is very close to ... *P. palaestina* Boiss... in Turkey and The Middle East as far south as tropical Arabia” (Friis, l.c.).

## SYNONYMS:

*Pistacia aethiopica* Dale & Greenway 1961, nom. invalid.

= ***Pistacia aethiopica*** Kokwaro 1979

*chinensis* Bunge var. *falcata* (Becc. ex Martelli) Zohary  
= ***P. falcata***

*Ozoroa schinzii**Ozoroa sphaerocarpa**Ozoroa stenophylla**Ozoroa uelensis**Ozoroa verticillata**Ozoroa viridis**Ozoroa xylophylla**Pistacia aethiopica**Pistacia atlantica**Pistacia falcata**Pseudospondias longifolia**Pseudospondias microcarpa*

## PISTACIA

*lentiscus* L.

var. *emarginata* Engl. = **P. aethiopica**

var. *falcatula* Chiov. = ? **P. aethiopica**

*oleosa* Lour. = **Schleichera oleosa** (*Sapindaceae*)

(POUPARTIA)

*Poupartia birrea* (A. Rich.) Aubrév. = **Sclerocarya birrea**

*caffra* (Sond.) H. Perrier = **Sclerocarya birrea** subsp. **caffra**

## PSEUDOSPONDIAS / 2

Tropical African genus, plants dioecious; leaves alternate, imparipinnate; drupe with resinous mesocarp and woody endocarp.

**Pseudospondias longifolia** Engl.; Engler, Pflanzenwelt Afr. 3/2: 181, 1921; Lejoly & al., Flore de la Tshopo in Taxonomia 24: 5, 2008 (*Pseudomonas sphalm. longifolia*); Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Raponda-Walker & Sillans, Pl. utiles Gabon: 60, 1961; Wilks & Issembé, Arbres Guinée Equat.: 99, 2000.

syn.: *Haematostaphis pierreana* Engl.; *Pseudospondias microcarpa* (A. Rich.) Engl. var. *longifolia* (Engl.) Keay

Tree 8-30 m, low-branching or tall and slim; bole cylindrical, straight, rarely ± fluted and sinuous, 5-20 m tall, 0,2-0,6 m Ø; bark slightly rugose scaling off in long sheets; leaves 13-21-foliolate, 15-50 cm long; leaflets ± glabrous, very variable in shape, asymmetric at base, apex acuminate, 5-17 × 2,5-6(-10) cm, with 6-12 pairs of lateral nerves; flowers 3-merous; drupe oblong-ovoid, dark red, c. 3 × 2 cm, edible.

Rain-forest; forest gallery; 20-300 m alt.

**P. microcarpa** (A. Rich.) Engl., incl. var. *hirsuta* Brenan; but excl. var. *longifolia* (Engl.) Keay (= *P. longifolia*); “*Pseudospondium microcarpa*” sphalm. sensu Lejoly & al., l.c. – Irvine, Woody pl. Ghana: 561, 1961; El Amin, Trees & shrubs Sudan: 338, 1990; Wilks & Issembé, l.c.; Figueiredo & Smith, l.c.; Sosef & al., Checklist pl. vascul. Gabon: 46, 2006; Steentoff, Flow. pl. W. Africa: 188, 2008. – Icon.: Guillemain & al., Fl. Senegambiae tent. 1: pl. 40, 1832 (sub gen. *Spondias*); Berhaut, Fl. ill. Sénégal 1: 264, 1971; Aubréville, Fl. forest. Côte d’Iv., ed. 2, 2: 203, 1959; Troupin, Fl. pl. ligneuses Rwanda: 99; 1982, and Fl. Rwanda 2: 289, 1983; Beentje, Kenya trees, shrubs & lianas: 430, 1994; Akoegninou & al., Fl. analyt. Bénin: 317, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 718, 729, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 242, 2007; Lisowski, Fl. (Angiosp.) Rép. Guinée 2: fig. 25, 2009; Harris & Wortley, Sangha trees: 163, 2008.

syn.: *Spondias angolensis* O. Hoffm.; *S. zanzee* G. Don; *Sorindeia obliquifoliolata* Engl.; (*Sorindeia obtusifoliolata* Engl. var. *parvifoliolata* Engl. is not a synonym under this species, but = *Sorindeia juglandifolia*).

Tree 6-15-20-40 m; crown broad, branches spreading, branchlets pendulous, upturned at tips, glabrous; bole 3-18 m high, 0,6-2 m Ø, twisted near ground, strongly buttressed; bark thick, greyish-yellow, falling off in large flakes, slash pink; leaves coriaceous, 5-17-foliolate, leaflets elliptic or ovate, 5-20 × 3-8 cm, base very unequal, with 4-7 pairs of lateral nerves, with hairy domatia beneath, petiolules scented of unripe mangoes; flowers 4-merous, in lax panicles 60 cm long; drupe bluish-black, plum-like, 1,5-2,5 cm long, edible. – “One of the most majestic trees of the interior of Angola” (Hiern, Cat. Welwitsch 1: 177, 1896).

## PSEUDOSPONDIAS MICROCARPA

Lake shores; gregarious in riverine and swamp forests, especially common in gallery forest; deciduous and half-deciduous forests; rain-forest edges; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophyllum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; stream banks; secondary forests; fringing forest in savanna areas; farmbush; savanna with *Parkia biglobosa*; sometimes abundant; 25-900-1700 m alt.

Bioko/Fernando Poo, Principe, São Tomé, Annobon.

Parasitized by *Phragmanthera polycrypta* (*Loranthaceae*) in Angola.

## SYNONYMS:

*Pseudospondias gigantea* A. Chev. = **Ganophyllum giganteum** (*Sapindaceae*)

*luxurians* A. Chev. = **Tricoscypha lucens**

*microcarpa* (A. Chev.) Engl. var. *longifolia* (Engl.) Keay = **Pseudospondias longifolia**

## RHUS / 49

Some 200(-250) species of woody plants with alternate (in Africa usually digitately 3-foliolate) leaves; usually dioecious; drupe with ± resinous mesocarp. Freshly picked leaves often exuding a watery liquid; crushed leaves with a strong, distinctive smell of green apples. Distributed in tropical and warm temperate countries.

Taxonomically difficult genus; flowers and fruits seem remarkably constant, but leaves very variable within a species. Size and shape of leaves are the most useful characters. The 3-foliolate leaves of *Rhus* are often confused with those of *Allophylus* (*Sapindaceae*), the latter, however, characterised by the presence of hairy domatia beneath. At least 12 species described from tropical Africa are not true *Anacardiaceae*. Our listing retains the genus *Rhus*, not *Searsia* F. A. Barkley as proposed by Moffett (2007).

MOFFETT, R. O. (2007). Name changes in the Old World *Rhus* and recognition of *Searsia* (*Anacardiaceae*). *Bothalia* 37: 165-175.

PELL, S. K. & al. (2008). Phylogenetic split of Malgasy and African taxa of *Protorhus* and *Rhus* (*Anacardiaceae*) based on cpDNA trnL-trnF and nrDNA ETS and ITS sequence data. *Syst. Bot.* 33: 375-383.

YI, TINGSHUANG & al. (2004). Phylogenetic and biogeographic diversification of *Rhus* (*Anacardiaceae*) in the Northern Hemisphere. *Molecul. Phylogenetics & Evol.* 33: 861-879.

YI, TINGSHUANG & al. (2007). Phylogeny of *Rhus* (*Anacardiaceae*) based on sequences of nuclear *Nia-i3* intron and chloroplast trnC-trnD. *Syst. Bot.* 32: 379-391.

In our area a few taxa are incompletely known: in one species (= 2%) the male flowers are unknown; in 4 species (= 8%) female flowers are lacking; in 2 species the fruit is unknown and in one further species only the immature fruit is known (= 6% in all); one species (= 2%) is known only from the type.

**Rhus acuminatissima** R. Fern. & A. Fern. – Icon.: White & al., Evergreen for. fl. Malawi: 126, 2001.

syn.: *Searsia acuminatissima* (R. Fern. & A. Fern.) Moffett

Shrub or tree to 6 m tall; branches brownish-red, glabrescent, cylindrical, slightly striate, with very small, roundish lenticels, branchlets hispidulous; leaf petiole 5-10 cm long, leaflets lanceolate-acuminate, 5-12 × 1,5-3 cm, > 3 times as long as broad, with a very acute subfiliform apex; panicles to 13 cm long, axes hispidulous; drupe ± round, c. 2,5 mm Ø.

Edges of riparian and montane forest, incl. *Widdringtonia* forest; 300-2200 m alt.



## RHUS

**R. albida** Schousb.; Lebrun, Pl. vascul. Mauritanie...: 159, 1998 (Boissiera 55; map); Fennane & al., Fl. pratique du Maroc 2: 251, 2007.

syn.: *Searsia albida* (Schousb.) Moffett

Shrub ? 0,3-1 m tall; branches and leaves with very short whitish pubescence ± dense, sometimes difficult to see (lens!); stem woody, erect, ramose, rounded, glabrous; bark white.

Coastal valleys and sands; clayey grara with *Euphorbia balsamifera*, *Nitraria retusa*; frequent along the W. Sahara coast to Boujdour and Cap Blanc; near sea-level to 30 m alt. Very rare inland.

SW Morocco (Casablanca to Tarfaya), Cape Verde Islands (Santo Antão, Santa Luzia, Sal); Canary Isl. (Fuerteventura).

**R. anchietae** Ficalho ex Hiern; White & al., Evergreen for. fl. Malawi: 123, 2001; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Webbia 19: pl. 48, 49, 1965.

syn.: *R. apiculata* Engl.; *Searsia anchietae* (Ficalho ex Hiern) Moffett

Much branched shrub or tree 1-8 m tall; branches dark-brown to reddish-brown, cylindrical, striate, glabrous or glabrescent; branchlets glabrous to ± densely and shortly fulvous-tomentose; leaf petiole 2-6 cm long; leaflets acute to obtuse, discolorous, 6-15 × 3-7 cm, sparsely pilose to glabrous, reticulation distinctly visible; panicles to 30 cm long; drupe 3-5 mm Ø, glabrous, shining, brown.

(Edges of) riparian and montane rain-forest; swamps; along streams; savanna; among tall bushes; 900-1700-2250 m alt.

Comprises 3 forms: – fa. **anchietae**, widespread; – fa. **mendoncae** (Meikle) R. Fern. [syn.: *Searsia anchietae* (Ficalho ex Hiern) Moffett fa. *mendoncae* (Meikle) Moffett], a hairier form, in SW Angola; – fa. **suffruticosa** (Meikle) R. Fern. & A. Fern. [syn.: *Searsia anchietae* fa. *suffruticosa* (Meikle) Moffett]; icon.: Consp. Fl. Angol. 2/1: 104, 1954; a suffrutex, with indumentum intermediate between the ± most glabrous fa. **anchietae** and hairy fa. **mendoncae**, in NE Angola (Lunda), Zambia and S Zaire (Haut-Katanga).

**R. angolensis** Engl.; Figueiredo & Smith, Pl. Angola: 28, 2008.

syn.: *R. virgatus* Hiern; *Toxicodendron angolense* (Engl.) Kuntze; *Searsia angolensis* (Engl.) Moffett

Subshrub 0,3-1,5 m tall; stems several, erect, ascending or decumbent, cylindrical, smooth, strongly ramose, densely leafy, with greyish double indumentum: short, crisped hairs and scattered spreading long hairs (± densely or nearly glabrous); leaf petiole short; leaflets narrowly lanceolate, 1-7 × 0,3-2 cm, discolorous, apex acute to shortly acuminate, ± densely hairy on both surfaces, reticulate venation conspicuous beneath; flowers yellowish green in spike-like inflorescences shorter than leaves; drupe ± round, depressed, brown, shining, 5 × 7 mm.

Rather dry wooded places; forest edges on sandy soil; c. 1400-1800 m alt.

Comprises 2 forms: – fa. **angolensis**; – fa. **glabrescens** R. Fern. [syn.: *Searsia angolensis* (Engl.) Moffett fa. *glabrescens* (R. Fern.) Moffett], with stems and leaves almost glabrous and prominent venation on both leaf surfaces.

**R. arenaria** Engl.; Figueiredo & Smith, Pl. Angola: 28, 2008. – Type: Antunes 156 destroyed; neotype: Dekindt 685. – Icon.: Bol. Soc. Brot., Ser. 2, 26: pl. 4 after p. 289, 1952 (*R. sordida*).

syn.: *Searsia arenaria* (Engl.) Moffett

## RHUS ARENARIA

Subshrub with 1-6 annual stems 0,3-1 m tall, erect, slightly ramose, arising from a rhizome; branches very densely brown-tomentose; leaf petiole thick, 1-2,5 cm long; leaflets oblong to lanceolate, 6-12 × 1,3-4,7 cm, vein reticulation prominent, brown-pubescent especially beneath; panicles large, densely branched. Sometimes abundant in savanna; sandy plain; stony places, in crevices; 1800-2000 m alt.

**R. blanda** Meikle, excl. fa. *exelliana* (Meikle) R. Fern. (= *R. exelliana*); Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Consp. fl. Angol. 2/1: pl. 23 p. 113, 1954; Garcia de Orta 14: pl. 23, 1966; Bol. Soc. Brot., Ser. 2, 26: pl. 5 after p. 289, 1952.

syn.: *Searsia blanda* (Meikle) Moffett, excl. fa. *exelliana* (Meikle) Moffett (= *Rhus exelliana*).

Subshrub or shrub 50-70 cm tall; stems erect, virgate, round, densely greyish-pubescent; leaf petiole to 4 cm long, densely pubescent; leaflets sparsely pubescent above when young, glabrescent, brownish when dried, lower surface densely pubescent, glabrescent, vein reticulation inconspicuous; middle leaflet oblanceolate, to 14 × 5 cm, apex acuminate, the laterals c. 10 × 3 cm; panicle shortly ramose; drupe round, 6 mm Ø, brown, shiny.

Scrub, forest, on reddish soil; c. 1700 m alt.

**R. brenanii** Kokwaro

syn.: *Searsia brenanii* (Kokwaro) Moffett

Scandent shrub forming a tree if supported; branches drooping; branchlets greenish purple or reddish, with brown conspicuously raised lenticels; older branches grey-brown, cylindrical, glabrous; leaf petiole 2-6 cm long, ± glabrous; leaflets (obovate-)jelliptic, 5-12 × 2-5,3 cm, the median longer than the laterals, often asymmetric, acute to acuminate at apex, papery, glabrous, lateral nerves conspicuous on both surfaces; panicles 6-24 cm long, pyramidal; drupe ± round, 7-9 mm Ø, orange-reddish, glabrous, shining.

Montane forest; 1800-2600 m alt.

**R. chirindensis** Bak. f., incl. fa. *legatii* (Schönland) R. Fern. & A. Fern.; White & al., Evergreen for. fl. Malawi: 123, 2001; Coates Palgrave, Trees south. Afr., ed. 3: 567, 2002. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 1242, 1973 (fa. *legatii*); Schmidt & al., Trees & shrubs Mpumalanga: 310-311, 2002; Fl. south. Afr. 19/3: 26, 1993; Webbia 19/2: pls. 44-47, 1965; Grant & Thomas, Sappi tree spotting bushveld: 374-375, 2000.

syn.: *Searsia chirindensis* (Bak. f.) Moffett; *S. legatii* (Schönland) F. A. Barkley; *Rhus acuminata* E. Mey., nom. nud.

Shrub or tree to 5(-23) m tall, semi-evergreen; branches spreading, dull brown or blackish when dried, cylindrical, pubescent or glabrous; often with spines on young and coppicing stems and on older branches; leaf petiole 1,5-6 cm long, leaflets ovate-lanceolate, 6-13 × 2,5-5,5 cm, terminal one the largest, glossy dark green, sometimes turning red before falling, ± glabrous, apex acuminate, vein reticulation not or only slightly visible; panicles much branched, to 20 cm long; drupe round, reddish-brown, shiny, c. 6 mm Ø.

Termite mounds; thickets, open woodlands, forest of several types; exposed places among rocks at the top and on slopes of mountains; c. 600 m alt.

S. Africa, Swaziland (5-1980 m alt.).

Easily rooting from truncheons. – Providing a rich red heartwood (furniture).

Resembling *R. longipes*. Often confused with *R. transvaalensis*.

## RHUS

**R. crenulata** A. Rich.; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 86-87, 1985 (sub. nom. *R. natalensis*); Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 46, 2009 (idem). – Icon.: Aubréville, Fl. forest. soud.-guin.: 411, 1950 (sub nom. *R. incana* incl. var. *dahomensis*, and *R. natalensis*); Troupin, Fl. Rwanda 2: 291, 1983 and Fl. pl. lign. Rwanda: 101, 1982 (*R. natalensis*); Fl. Trop. E. Afr., Anacardiaceae: 30, 1986; El Amin, Trees & shrubs Sudan: 340, 1990; Beentje, Kenya trees, shrubs & lianas: 431, 1994; Audru & al., Pl. vascul. Rép. Djibouti, fl. ill. 2: 499, 1994; Maundu & al., Traditional food plants of Kenya: 194, 1999; Thulin, Fl. Somal. 2: 262, 1999; Akoegninou & al., Fl. analyt. Bénin: 317, 2006; Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 152, 2009; (all "*R. natalensis*"). – Cf. Note under **R. longipes**.

syn.: *Searsia crenulata* (A. Rich.) Moffett; *Rhus glaucescens* A. Rich., with fa. *pubescens* Fiori, var. *brevifoliolata* Engl., var. *collina* Engl., var. *elliptica* Engl., var. *macrocarpa* Schweinf., var. "*natalensis*" (Bernh. ex C. Krauss) Engl., var. *obovatifoliolata* Engl., var. *subintegra* Engl., ? and var. *schellahensis* Engl.; *Searsia glaucescens* (A. Rich.) Moffett; *Rhus natalensis* auctt. p.p., non Bernh. ex C. Krauss, "extra South African material", with ? var. *hararensis* Engl., var. *macrocarpa* (Schweinf.) Cufod., var. *obovatifoliolata* (Engl.) Chiov., and var. *stuhlmannii* Engl.; ? *R. abyssinica* Oliv. var. *glabrata* Mart.; *R. incana* Mill. var. *dahomensis* Hutch. & Dalziel; ? *R. buettneri* Engl. (icon.: Engler, Pflanzenwelt Afr. 3/2: 213, 1921).

Densely branched shrub 1-4 m tall, sometimes spiny or scandent, or tree 4-8 m; twigs very pale fawn soon becoming very pale grey to whitish, and then densely lenticellate, glabrous to densely hairy; leaf petiole 2-5 cm long; leaflets  $\pm$  obovate, 2-10  $\times$  1-4 cm, glabrous to densely hairy, apex rounded or retuse, rarely acute, nerves  $\pm$  prominent; flower panicles slender, shorter than the leaves; drupe glabrous, kidney-shaped, 5-7 mm long, red-orange, edible.

Stony ground in high rainfall savanna; deciduous bushland with *Acacia* and or *Combretum*; evergreen bushland with *Euclea*, *Dodonaea*; usually on well drained slopes; less often along water courses; forest edges; coastal scrub and lake sides; *Julbernardia*, *Brachystegia* woodlands; evergreen forests on the top and slopes of mountains; termite mounds; granitic rocky places; 1-3000 m alt.

Saudi Arabia (SW), Yemen. – Cited by Kilian & al. (Willdenowia 32: 248, 2002) under *R. natalensis* C. Krauss

The true *R. natalensis* Bernh. ex C. Krauss is strictly a coastal species in S. Africa reaching the Mozambique border.

Fruits eaten. Twigs used as toothbrushes.

**R. dentata** Thunb., excl. var. *fulvescens* (Engl.) Burt Davy (= *R. divaricata* Eckl. & Zeyh., S. Africa) and var. *truncata* Burt Davy (= *R. rogersii* Schönland, S. Africa); but incl. var. *dentata* fa. *sparsepilosa* R. Fern., var. *parvifolia* (Harv. ex Sond.) Schönland with fa. *parvifolia* and fa. *villosissima* R. Fern., var. *puberula* Sond. with fa. *puberula*, fa. *glabra* (Schönland) R. Fern. and fa. *pilosissima* (Engl.) R. Fern. – Coates Palgrave, Trees south. Afr., ed. 3: 567-568, 2002. – Icon.: V. Thomas & R. Grant, Sappi tree spotting, highveld, rev. ed.: 237-239, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 313, 2002.

syn.: *R. micrantha* Thunb.; *R. grandidentata* DC.; *R. parvifolia* Harv. ex Sond.; *R. sonderi* Engl. var. *glaberrima* Engl., var. *pilosa* Engl., var. *pilosissima* Engl.; *Toxicodendron dentatum* (Thunb.) Kuntze; *Searsia dentata* (Thunb.) F. A. Barkley

## RHUS DENTATA

Much-branched, deciduous dwarf or spreading shrub 1-2,5 m tall or occasionally a tree to 5 m; bark smooth, dull grey-brown; young branches reddish or fulvous, glabrous to  $\pm$  densely pilose or hispid-villous, all the hairs very short and crisped or mixed with long patent ones; old branches dull greyish-brown, smooth or slightly striated, lenticellate, glabrous, sometimes thorny; canopy dense, round; leaf petiole 1-2(-3) cm long; leaflets (broadly) obovate, terminal one 1-4,5  $\times$  1-3 cm, the laterals half this size, thinly textured,  $\pm$  hairy, margins roughly and deeply toothed around the upper half, turning yellow to orange-red before falling; panicles much branched, longer than leaves; drupe round, glabrous, shiny, c. 4 mm  $\varnothing$ , reddish (brown), edible.

In a variety of habitats; rocky hillsides; *Acacia* bush; secondary thickets; forest edges; termite mounds; 1000-2100 m alt.

S. Africa, Swaziland (15-2500 m alt.).

**R. dumetorum** Exell; Figueiredo & Smith, Pl. Angola: 28, 2008.

syn.: *Searsia dumetorum* (Exell) Moffett

Subshrub, much and laxly branched, to 0,6 m tall; young branches pubescent to pilose, soon glabrescent; leaf petiole 1-2 cm long; leaflets (narrowly) elliptic, 2,5-6  $\times$  0,8-1,8 cm, puberulous above, tomentellous beneath, dry-papery; panicles to 10 cm long.

Not uncommon in short thicket-grown pasturage; 1200 m alt.

Collected twice: in 1905 and 1960.

**R. exelliana** Meikle; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Garcia de Orta 14: pl. 24-26, 1966.

syn.: *R. blanda* Meikle fa. *exelliana* (Meikle) R. Fern.; *Searsia blanda* (Meikle) Moffett fa. *exelliana* (Meikle) Moffett; *Rhus gossweileri* Exell 1928, non Engl. 1921 (= *R. kirkii*).

Subshrub with numerous annual erect cylindrical glabrous stems branched towards the top, 40-80 cm tall, arising from a many-headed rootstock; leaves soft, yellowish green beneath, glossy above; petiole 2-5 cm long, slightly winged, glabrous; leaflets elliptic, 7-14  $\times$  2-3,5 cm, venation conspicuous beneath; panicle to 15 cm long.

Common in thickets; rocky places in open forest; savanna; 1400-1700 m alt.

Could be a member of the *Rhus magalismontana* Sond. complex (S. Africa; fide Moffett, Fl. south. Afr. 19/3: 59, 1993).

**R. flexicaulis** Bak. – Icon.: El Amin, Trees & shrubs Sudan: 340, 1990; Boulos, Fl. Egypt 2: 74, 2000; Hassan, An illustrated guide to the plants of Erkowit: fig. 5-4, 1974.

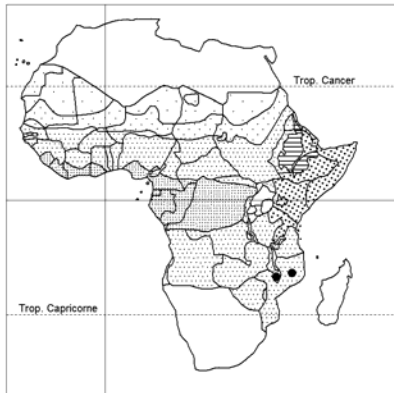
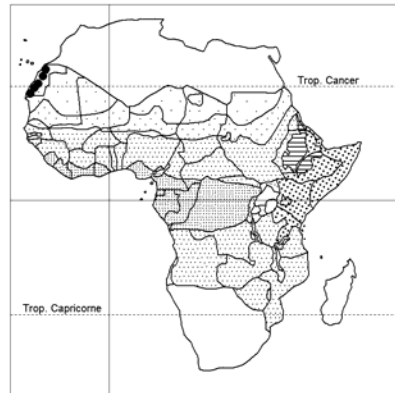
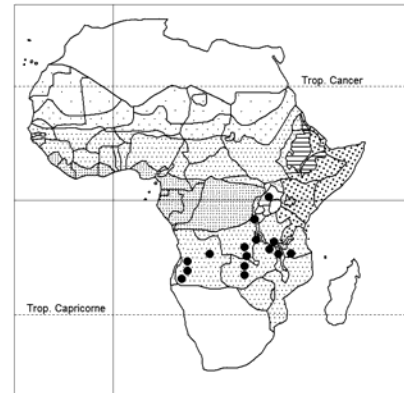
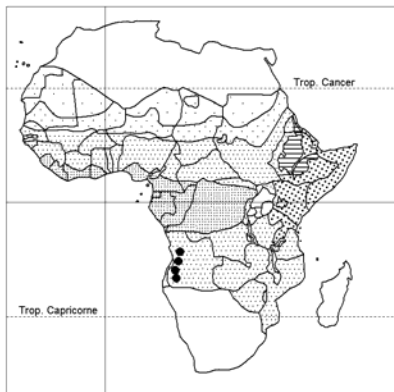
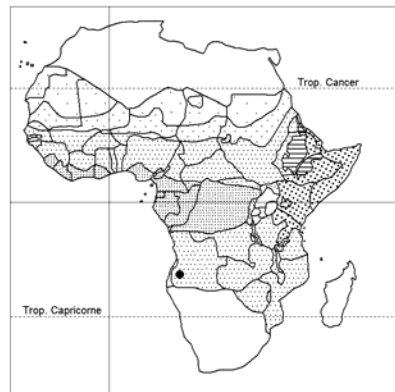
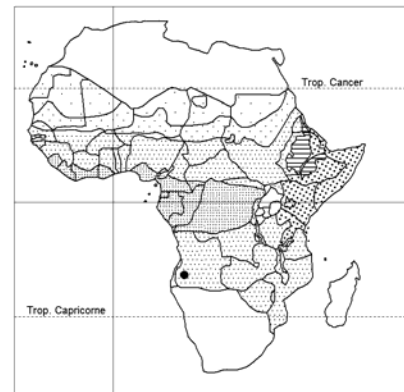
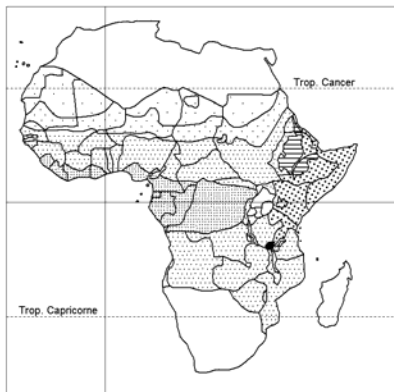
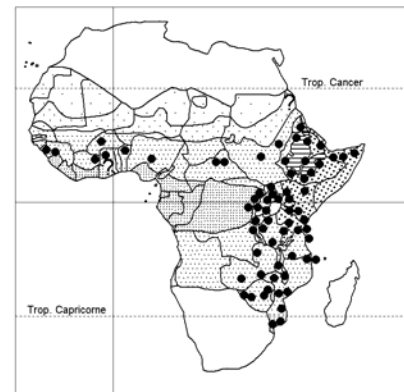
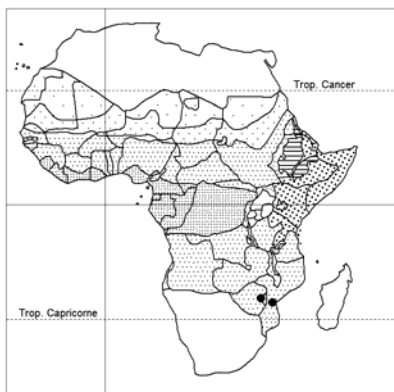
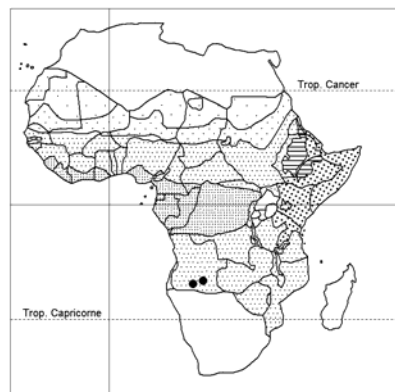
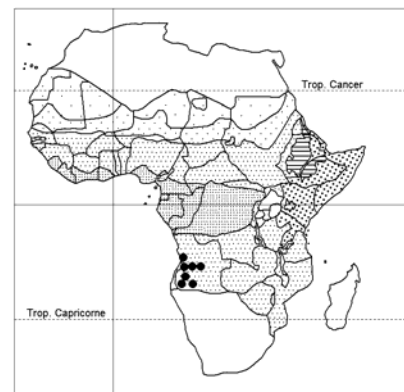
syn.: *Searsia flexicaulis* (Bak.) Moffett; *Rhus gallagheri* Ghaz.

Shrub 2-3 m tall or tree to 7 m; bark on twigs brown-grey; branchlets densely hairy; leaf petiole 1-2 cm long; leaflets suborbicular to ovate-elliptic, 2-5  $\times$  1,5-3 cm, entire, apex rounded, densely brown villous on both surfaces, terminal leaflet larger than the 2 laterals; panicles lax, axillary and terminal; flowers small; drupe 5  $\times$  4 mm, brownish, glossy, pedicel villous, 1-2 mm long.

Hilly ground, near valleys.

SE Egypt (Gebel Elba; 1000 m alt.); Yemen, Oman (Kilian & al., l.c.).

Described by Baker as close to the Indian *R. parviflora* Roxb.; it is true that the resemblance is great (cf. fig. in N. P. Singh & al., Fl. India 5: 491, 2000). The other species mentioned by Baker (*R. mysorensis* Heyne ex Wight & Arn.) is a quite different species.

**Rhus acuminatissima****Rhus albida****Rhus anchietae****Rhus angolensis****Rhus arenaria****Rhus blanda****Rhus brenanii****Rhus chirindensis****Rhus crenulata****Rhus dentata****Rhus dumetorum****Rhus exelliana**



## RHUS FLEXICAULIS

According to J. R. I. Wood, A handbook of the Yemen flora: 199, 1997, *R. flexicaulis* “appears to be endemic to SW Arabia since African plants given this name are probably a different species”. – Kilian & al. (Willdenowia 32: 247, 2002) put *R. vulgaris* Meikle 1951 and *R. villosa* sensu auct., non L. f. in synonymy under *R. flexicaulis*. In our treatment the latter names figure as synonyms under *R. pyroides* var. *pyroides*.

Also similar to *R. tenuinervis*.

**R. glutinosa** Hochst. ex A. Rich., excl. var. *obtusifolia* Engl. (= *R. longipes*); Friis, Forest trees N.E. Trop. Afr.: 205-206, 323 (map), 1992.

syn.: *Searsia glutinosa* (Hochst. ex A. Rich.) Moffett

Spreading or erect shrub or tree 1-10 m tall; trunk to 25 cm Ø; new shoots sometimes strikingly shiny-glutinous; leaflets subequal (laterals slightly smaller), oblong-elliptic to lanceolate, 8-23 × 2,8-7 cm, entire or occasionally with a few large teeth; panicles ± as long as subtending leaves; drupe ± compressed, kidney-shaped, 4-9 mm long, glossy pale fawn, fragile.

Evergreen bushland; forest margins; often conspicuous after clearance of *Podocarpus* or *Juniperus* forest; less often in more open bushland on rocky slopes; hills with *Olea*, *Euclea*, *Dodonaea*; 1500-2700 m alt.

SE Egypt, Saudi Arabia, Yemen (subsp. **abyssinica**); cf. Kilian & al., Willdenowia 32: 247-248, 2002.

Comprises 3 subspp.: – subsp. **glutinosa** with 2 vars., viz. – var. **glutinosa** [syn.: *R. glutinosa* var. *acutifoliolata* Engl.; *R. amharica* Pic. Serm.], with 3-foliolate leaves, leaflets obtuse to acute; and – var. **unifoliolata** Cufod. (icon.: Senckenb. Biol. 43/4: pl. 30 fig. 2, 1962, photo. type) with 1-foliolate leaves and tips acuminate, “a remarkable plant of uncertain position”, suggesting a relationship with *R. retinorrhoea* (“1-foliolate leaves are extremely unusual in the genus”), known only from the type (Kuls 149) collected in 1960; – subsp. **abyssinica** (Oliv.) M. G. Gilbert [syn.: Enum. 2: 227, 1992; *Searsia glutinosa* (Hochst. ex A. Rich.) Moffett subsp. *abyssinica* (Oliv.) Moffett] – Icon.: Boulos, Fl. Egypt 2: 74, 2000; El Amin, Trees & shrubs Sudan: 340, 1990; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 470, 2001 (all sub nom. *R. abyssinica*); with young shoots not visibly glutinous and stems and leaves often densely yellow-pilose, and drupe ± round; – subsp. **neoglutinosa** (M. G. Gilbert) M. G. Gilbert, [syn.: *Searsia glutinosa* subsp. *neoglutinosa* (M. G. Gilbert) Moffett]; Nord J. Bot. 6: 140, 1986 (map); with stems shiny reddish-brown, glabrous, leaflets acuminate, inflorescences longer than subtending petioles, drupe c. 4 mm; on forest margins and conspicuous after forest clearings in SC Ethiopia, Djibouti; reported from Yemen by Kilian & al., l.c.

**R. gracilipes** Exell; Figueiredo & Smith, Pl. Angola: 28, 2008.

syn.: *Searsia gracilipes* (Exell) Moffett

Perennial plant with 1-5 annual stems, erect, simple or rarely ramosa, to 1,5 m tall, cylindric, glabrous, shining, red at first; leaf petiole narrowly winged on upper part, to 3,5 cm long; leaflets narrowly lanceolate or elliptic, 3-10 × 0,3-1 cm, apex mucronate; panicles slender, terminal; drupe ± round, shiny, brown.

Degraded forest; common in open woods; thickets; rock cracks on torrent margins; 1420-1450 m alt.

Suggested by Moffett as a probable synonym under the South African *R. gracillima* Engl. var. *glaberrima* Schönland [Fl. south. Afr. 19(3): 114, 1993].

## RHUS

**R. grossireticulata** Van der Veken

syn.: *Searsia grossireticulata* (Van der Veken) Moffett

Glabrous shrub; branches cylindrical, indistinctly striate, lenticellate, brown; leaf petiole winged, 3-5 cm long; leaflets sessile, oblong-elliptic, 7,5-9,5 × 2-3 cm, finely glandular, midrib very prominent beneath, apex mucronate; male flowers unknown; female inflorescence narrow, slender, 1-6 cm long; fruit unknown.

Open forest with *Pseudoberlinia paniculata*, on plains.

Known only from the type collected in 1957.

**R. gueinzii** Sond., excl. var. *brevifoliolata* Burt Davy (= ?); but incl. var. *crispa* Harv. ex Engl. [syn.: *R. crispa* (Harv. ex Engl.) Schönland] and var. *spinescens* (Diels) R. Fern. & A. Fern. [syn.: *R. spinescens* Diels; *Searsia spinescens* (Diels) F. A. Barkley; *Rhus simii* Schönland, incl. var. *lydenburgensis* Schönland; *Searsia simii* (Schönland) F. A. Barkley]. – Coates Palgrave, Trees south. Afr., ed. 3: 571, 2002. – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga...: 314-315, 2002; Webbia 19: pl. 34, 1965.

syn.: See above; *Searsia gueinzii* (Sond.) F. A. Barkley; *Toxicodendron gueinzii* (Sond.) Kuntze

Shrub c. 3 m tall, or tree to 8 m, often with spiny shoots (spine 3,5-7,5 cm long, usually stout, cylindric-conic) leafless or leafy; bark on stems and spines pale grey with numerous and very prominent lenticels; branchlets whitish, shortly pubescent; petiole 0,5-3 cm long; terminal leaflet lanceolate-narrowly elliptic, 1,5-10 × 0,5-2,5 cm, the laterals 1-6,5 × 0,1-2 cm, shiny dark green above, paler beneath, glabrous, margins entire to finely toothed; panicles much branched, lax, to 8 cm long; drupe ellipsoid, shiny, light brown, c. 4 mm Ø, edible.

Deciduous semi-evergreen and evergreen thickets; termite mounds; *Acacia*-savanna; open forests; edges of riverine forest; c. 400 m alt.

Polymorphic species with “narrow-leaved (*R. gueinzii*-*spinescens* morph) through to broader-leaved *R. crispa*, often occurring in widely separated areas and with many intermediates” (Moffett in Fl. south. Afr. 19/3: 77, 1993).

The plants from our area are usually named var. *spinescens*, those from S. Africa var. *gueinzii*.

S. Africa, Swaziland (12-1280 m alt.).

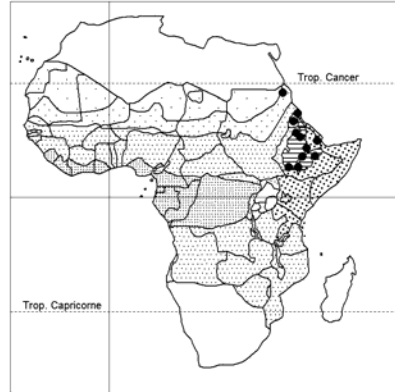
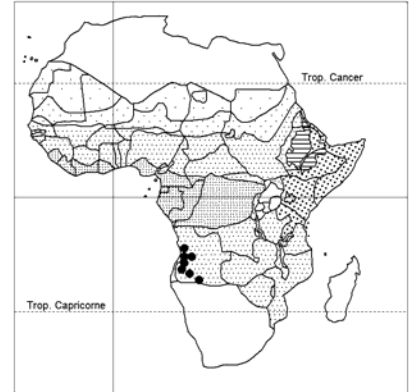
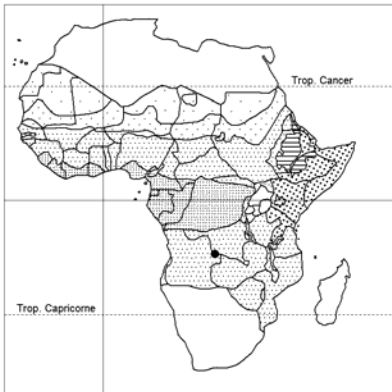
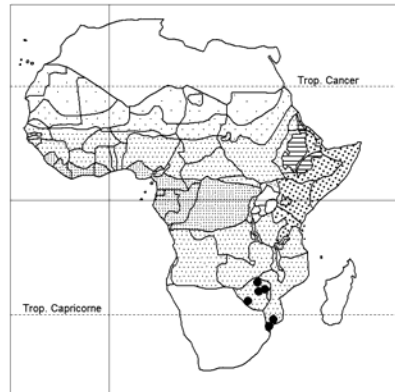
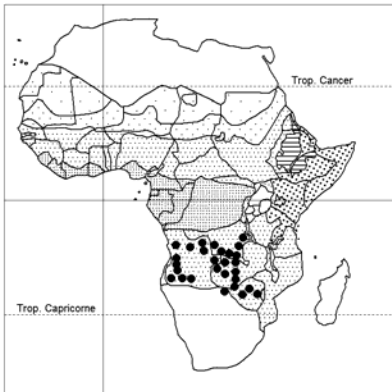
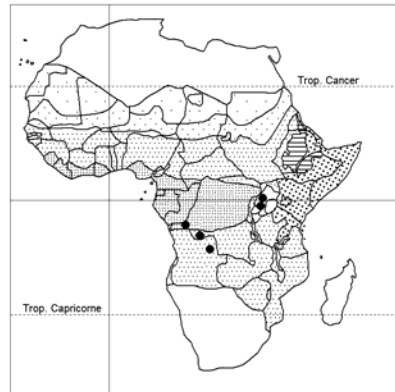
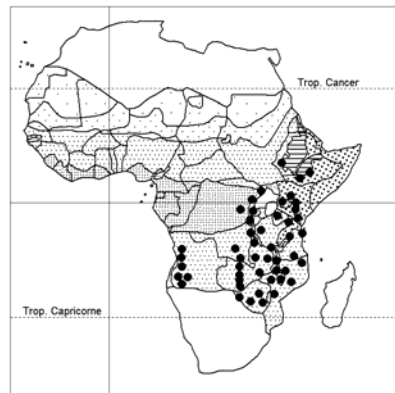
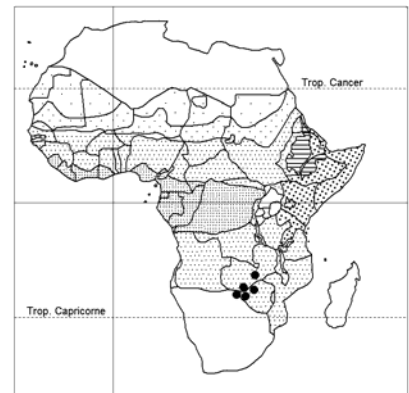
**R. humpatensis** Meikle, incl. fa. *subglabra* R. Fern.; Figueiredo & Smith, Pl. Angola: 28, 2008.

syn.: *Searsia humpatensis* (Meikle) Moffett fa. *humpatensis* and fa. *subglabra* (R. Fern.) Moffett

Shrub with few stems to ± 60 cm tall, erect, cylindrical, simple or branched, subglabrous with age, dark, brown- or yellowish-hirsute when young; leaf petiole 0,3-1,5 cm long, hirsute; leaflets ± coriaceous, sparsely hirsute above, densely hirsute or villous beneath, occasionally ± glabrous on both surfaces, obovate-lanceolate, 5-8 × c. 2 cm, apex acuminate; male inflorescence congested, shorter than subtending leaf, axes villous; female flowers unknown; drupe round, light brown, shiny, c. 6 mm Ø.

Stony ground; rock outcrops; 2220-2400 m alt.

**R. kirkii** Oliv., excl. var. *kwangoensis* Van der Veken (= *R. kwangoensis*); but incl. fa. *alatopetiolata* R. Fern. and fa. *polyneura* (Engl. & Gilg) R. Fern. & A. Fern. – Figueiredo & Smith, Pl. Angola: 28, 2008; Bothalia 39: 191, 2009 (sub *Searsia*). – Icon.: Webbia 19: pl. 38-43, 1965.

**Rhus flexicaulis****Rhus glutinosa****Rhus gracilipes****Rhus grossireticulata****Rhus gueinzii****Rhus humpatensis****Rhus kirkii****Rhus kwangoensis****Rhus lancea****Rhus leptodictya****Rhus longipes****Rhus lucens**

## RHUS KIRKII

syn.: *Searsia kirkii* (Oliv.) Moffett; *Toxicodendron kirkii* (Oliv.) Kuntze; *T. amplum* (Engl.) Kuntze; *Rhus ampla* Engl.; *R. welwitschii* Engl., incl. var. *angustifoliolata* Bak. (“*angustifoliola*”); *Toxicodendron welwitschii* (Engl.) Kuntze; *Rhus gossweileri* Engl. 1921, non Exell 1928 (= *R. exelliana*); *R. polyneura* Engl. & Gilg, incl. var. *hylophila* Engl. & Gilg; *R. eylesii* Hutch.

Shrublet or shrub 0,3-4 m tall, with trailing woody roots and cylindrical ± lanate or pubescent or glabrous stems and branches; leaf petiole 1-4 cm long; leaflets coriaceous, discolourous, green or brownish, arachnoid-hairy, floccose-tomentose to glabrous above, ± densely yellowish- or ferruginous-lanate with crisped hairs to glabrous beneath, nerves and reticulation very prominent beneath; median leaflet oblanceolate to elliptic, 5-12 × 1,6-5 cm, the laterals smaller; panicles glabrous or hairy, to 22 cm long, flowers glomerulate on short widely spread branches; drupe ± round, glabrous, shiny, cinnamon-brown, c. 6 mm Ø.

Open mainly *Brachystegia* woodlands; grasslands; grass-grown thickets; banks of rivers; stony soil; open bush; sandstone; rocky soil; clayey-sandy ground; white sand; margins of grassy hollow; termite mounds: 1200-2400 m alt.

Caprivi Strip (700-750 m alt).

**R. kwangoensis** (Van der Veken) Kokwaro

syn.: *R. polyneura* sensu Consp. fl. Angol. 2: 102, 1954, quoad specim. Exell & Mendonça 997; *Searsia kwangoensis* (Van der Veken) Moffett

Shrublet 30-80 cm tall, arising from a horizontal woody rootstock; stems slender, glabrous or with simple minute scattered hairs; leaf petiole 1-3 cm long; leaflets (elliptic-)obovate 2-7 × 1-3 cm, the median one larger than the laterals, apex obtuse, glabrous; panicles 1-5 cm long, pubescent; drupe ± round, dull red, shiny, c. 4 mm Ø.

In lake basin and river bank swamps; grassy savanna; ± 1200 m alt.

**R. lancea** L. f. – Icon.: Fl. south. Afr. 19/3: 66, 1993; Coates Palgrave, Trees south. Afr., ed. 3: 151, ill. 151, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 316-317, 2002; V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 233-235, 2002; B. Curtis & C. Mannheimer, Tree atlas Namibia: 378-379, 2005.

syn.: *Toxicodendron lanceum* (L. f.) Kuntze; *Rhus viminalis* Aiton, non Vahl (= *R. laevigata*); *R. denudata* Licht. ex Schult.; *R. fragrans* Licht. ex Schult.; *Searsia lancea* (L. f.) F. A. Barkley in Lundell & al., Flora of Texas 3: 104, 1961.

Semi-evergreen shrub or spreading tree, usually 6-8 m tall, rarely to 12 m; main stem often twisted or crooked; bark rough, irregularly fissured, dark brown to blackish; branches and branchlets reddish, pendulous; leaf petiole 1-3 cm long; leaflets linear to lanceolate, 2,5-12 × 0,5-1,2 cm, dark olive-green above, paler yellowish green beneath, glabrous, leathery, often with shiny exudate; flowers in dense clusters c. 9 cm long, at end of branchlets, sweetly scented (attracting bees); drupe ± round, glabrous, dull yellow to shiny brown, sometimes sticky, edible (used to make beer).

Open woodland; riverine forest; savanna; termite mounds.

Namibia, Botswana, S. Africa (100-2300 m alt.), widespread.

Attractive shade tree, growing fast from seed or cuttings. Also used as fencing posts.

## RHUS

**R. leptodictya** Diels, incl. fa. *pilosa* R. Fern. & A. Fern.; Coates Palgrave, Trees south. Afr., ed. 3: 574, 2002; Curtis & Mannheimer, Tree atlas Namibia: 390, 2005; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 1237, 1258, 1972; Webbia 19: pls. 33, 35, 37, 1965; Fl. south. Afr. 19/3: 64, 1993; Bol. Soc. Brot., Sér. 2, 39: pl. 10, 1965 (sub nom. *R. rhombocarpa*); E. Schmidt & al., Trees & shrubs Mpumalanga...: 318-319, 2002; V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 241-243, 2002.

syn.: *R. rhombocarpa* R. Fern. & A. Fern.; *Searsia leptodictya* (Diels) T. S. Yi, A. J. Miller & J. Wen, incl. fa. *pilosa* (R. Fern. & A. Fern.) Moffett; *Rhus gueinzii* sensu Schönland 1930, non Sond. – Cf. also under *R. tenuipes* below.

Spreading shrub or tree 3-4-9 m tall; trunk to 0,8 m Ø; bark rough, dark brown to blackish, reticulately fissured; branches pendulous; young branchlets reddish-brown, shining, ± angular, glabrous or sometimes pilose, the old ones subterete, greyish or brownish, lenticellate; leaf petiole slender, to 4 cm long; leaflets (oblong-)lanceolate, 3-11 × 0,6-2,5 cm, the laterals smaller and ± at right angles to the median one, fresh or greyish-green, paler beneath, thinly textured, glabrous or sometimes with very short hairs on midrib, lateral veins more conspicuous above than beneath, apex narrowly tapering, margins often toothed, occasionally entire; panicles much branched, lax, forming large sprays to 12 cm long; drupe shiny, brown to orange, squarish or flattened, 2 × 4 mm.

Rocks in granite and quartzite kopjes; sandy soils, reddish sandy loams in open savanna-woodland, *Acacia nigrescens*, *Colophospermum*, *Commiphora* associations; fringing forests, etc.; ± 800-1800 m alt.

Botswana, S. Africa, Namibia, Swaziland (50-2000 m alt.).

Attractive shade tree, easily raised from seed and cuttings; fairly drought-resistant.

**R. longipes** Engl.; White & al., Evergreen for. fl. Malawi: 123, 2001; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Troupin, Fl. pl. ligneuses Rwanda: 102, 1982, and Fl. Rwanda 2: 291, 1983; Fl. Ethiopia 3: 526, 1989 (var. **longipes**); Coates Palgrave, Trees south. Afr., ed. 3: colour ill. 152, and p. 574, 2002.

syn.: *Searsia longipes* (Engl.) Moffett; *Toxicodendron longipes* (Engl.) Kuntze

Shrub or tree 1-12 m tall, sometimes straggling or scandent to 15-20 m long; stems long, weak; branches arching, brownish grey, cylindrical, slightly furrowed; branchlets somewhat angular, dark brown, sparsely pilose to ± densely fulvous pilose, lenticellate; petiole to 6 cm long, hairy; leaflets (obovate-)elliptic, the terminal 4-13 × 2-8 cm, the laterals smaller, glabrous or ± hairy on nerves; mature leaves leathery, yellowish green, apex rounded and hair-tipped, margins entire; flowers greenish in loose heads to 8 cm long, together forming large clusters to 24 cm long; drupe red (-brown), round or kidney-shaped, 3-7 mm long.

Evergreen bushland; forest edges; riverine *Millettia*, *Celtis* forest; termite mounds; thicketed places in woodland to coastal forest and bushland; savannas; *Brachystegia* woodland on rocky outcrops; 1-2450 m alt.

Comprises 3 vars.: – var **longipes** [syn.: *R. villosa* L. f. var. *grandifolia* Oliv. and var. *usambarensis* Engl.; *R. glutinosa* A. Rich. var. *obtusifolia* Engl.; *R. longipes* Engl. var. *grandifolia* (Oliv.) Meikle; *R. villosa* sensu R. E. Fries in Wiss. Ergebn. Schwed. Rhod.-Kongo-Exped. 1: 127, 1914, incl. var. *grandifolia* sensu R. E. Fries; *R. incana* Miller var. *grandifolia* (Oliv.) Robyns & Lawalrée; *R. ruzizensis* Engl.; *R. incana*



## RHUS LONGIPES

Miller var. *cuneifoliolata* sensu Robyns, Fl. sperm. Parc Natl. Albert 1: 490 and pl. 47, 1948, non (Engl.) Chiov.; *R. huillensis* Engl., p.p., quoad specim. Welwitsch 4412]; with hairy branchlets and elliptic sparsely pilose leaflets (on nerves beneath), apex obtuse to acute; widespread in E. Africa; – var. **elgonensis** Kokwaro [syn.: *Searsia longipes* (Engl.) Moffett var. *elgonensis* (Kokwaro) Moffett; *Rhus inamoena* Standley ex Bullock, nom. nud.]; with glabrous branchlets and leaves, and leaflets elliptic, acuminate or acute, and long slender inflorescences, in upland evergreen bushland and riverine associations of N & E Uganda, W Kenya; – var. **schinoides** R. Fern. [syn.: *Searsia longipes* var. *schinoides* (R. Fern.) Moffett; *Rhus schinoides* Hutch., Bot. S. Afr.: 524 in adnot., 1946, non Willd. & Schult. 1820]; with glabrous branchlets and leaves; leaflets (elliptic-)obovate, obtuse; in upland Kenya and Tanzania, Zambia.

The separation of *R. longipes* var. *longipes* from *R. ruspolii* in W Ethiopia is not always clear. Also very similar to *R. tumulicola* (cf. this species).

Note: the true **R. longipes** is a plant of E Africa-Zaire-Angola. *R. longipes* sensu Fl. W. Trop. Afr., ed. 2, 1/2: 739, 1958 [syn.: *Schmidelia affinis* sensu A. Chev. at least in part, non Guillem. & Perr.] is probably **R. crenulata**; probable synonyms are: *R. incana* Miller var. *oubanguiensis* Aubrév., descr. gall.; *R. incana* var. *villosa* (Guillem. & Perr.) Aubréville, Fl. for soud. guin.: 412, 1950 (bas.: *R. villosa* Guillem. & Perr., Fl. Seneg. Tent. 1: 149, 1831), non L. f. [= *R. laevigata* L. var. *villosa* (L. f.) R. Fern., S. Africa]. – Cf. *R. longipes* in Berhaut, Fl. ill. Sénégal 1: 268-269, 1971; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 86, 1985; Irvine, Woody pl. Ghana: 561, 1961; Jaeger & Adam, Végétaux vascul. Mts Loma 1: 294, 1980; Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 45-46, 2009.

**R. lucens** Hutch.; Coates Palgrave, Trees south. Afr., ed. 3: 575, 2002.

syn.: *Searsia lucens* (Hutch.) Moffett

Shrub or tree 4-5 m tall; old branches dull-greyish, lenticellate, glabrous, the younger ones brownish, glabrous or sparsely patent-pilose; sometimes with spines; leaf petiole 2,5 cm long, brownish-orange; leaflets obovate to ± circular, ± glabrous, coriaceous, glaucous, grey-green, 2-8 × 2-5 cm, lateral ones much smaller than the median, apex rounded, venation brownish orange; panicles lax, 6 cm long, ± lost within the foliage; drupe rhombic, discoid, glossy, yellowish brown, c. 6 mm Ø.

Open areas in dry forest; escarpment woodland.

NE Botswana (c. 710 m alt.).

**R. lucida** L. fa. **lucida**; Coates Palgrave, Trees south. Afr., ed. 3: 575-576, 2002. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 204, 1921 (leaves); Fl. south. Afr. 19/3: 80, 1993; E. Schmidt & al., Trees & shrubs Mpumalanga...: 318-319, 2002.

syn.: *R. africana* Miller; *Toxicodendron lucidum* (L.) Kuntze; *Searsia lucida* (L.) F. A. Barkley; *Rhus lucida* var. *typica* Schönland and var. *outeniquensis* (Szyzyl.) Schönland and var. *subdentata* DC.; *R. cavanillesii* DC.; *R. outeniquensis* Szyzyl.

Much-branched, unarmed, evergreen shrub 2,5-3 m tall; young parts and leaves frequently covered with shiny resin; bark granular, greyish brown; old branches cylindrical, glabrous, irregularly fissured; branchlets ascending, slightly striate, ± angular, shortly pubescent with white hairs; leaves crowded, petiole c. 1-2 cm long; leaflets obovate to oblong, glabrous, terminal one

## RHUS LUCIDA

7 × 0,5-3,5 cm, the laterals much smaller, dark green on both surfaces, turning orange-yellow before falling, veining obscure, apex tapering to rounded, margins sometimes slightly toothed; panicles to 5 cm long; drupe round, smooth, shiny brown, c. 3-5 mm Ø.

Scrub, forest; to 1590-2300 m alt.

S & E S. Africa, widespread (5-2135 m).

Fa. **elliptica** (Sond.) Moffett [bas.: *R. elliptica* Sond.; syn.: *Searsia lucida* (L.) F. A. Barkley fa. *elliptica* (Sond.) Moffett; *Rhus lucida* var. *elliptica* Sond.; *R. dunensis* Gand.] occurs in the Cape Peninsula & Hermanus (S. Africa). Fa. **scoparia** (Eckl. & Zeyh.) Moffett [bas.: *R. scoparia* Eckl. & Zeyh.; syn.: *Toxicodendron scoparium* (Eckl. & Zeyh.) Kuntze; *Rhus lucida* var. *scoparia* (Eckl. & Zeyh.) Schönland; *Searsia lucida* fa. *scoparia* (Eckl. & Zeyh.) Moffett; *Rhus schlechteri* Diels] occurs in coastal S S. Africa, inland merging into fa. **lucida**.

**R. magalismontana** Sond.; Enum. 3: 298-299, 1995; Coates Palgrave, Trees south. Afr., ed. 3: 564, 576, 2002. – Icon.: Garcia de Orta, Bot. 3-4: pl. 2-6, 1976 (= subsp. **trifoliolata**, sub nom. *R. rhodesiensis*); E. Schmidt & al., Trees & shrubs Mpumalanga...: 318-319, 2002.

syn.: *Searsia magalismontana* (Sond.) Moffett

Much-branched shrublet 0,3-1 m tall with many stems arising from a woody rhizome; branches greyish, cylindrical, or slightly angular, rugose, hispidulous to glabrescent; branchlets brownish, densely hispidulous and furfuraceous; the oldest glabrous; leaf petiole c. 1,5 cm long; leaflets linear to oblanceolate, the median (2,5-)8(-10) × 0,5-0,9-3 cm, the laterals 3-5 × 0,6 mm, coriaceous, grey to greyish green, glabrous to *lepidote*-furfuraceous; panicles lax, to c. 7 cm long; drupe ellipsoid, glabrous, shiny brown, 4-5 × 3 mm.

Kalahari sand in scrub; watershed block; stony quartz outcrop; rocky places; *Hyparrhenia*, *Loudetia*, *Trachypogon* open grassland with many termitaria in granite sandveld; *Hyparrhenia*, *Themeda*, *Setaria* grassland on granite sand; *Brachystegia*, *Combretum*, *Terminalia*, *Hyparrhenia* spp. grassland; 600-1535 m alt. – Forming populations extending over an area 50 m long by 15-18 m wide, in clumps from one to several m<sup>2</sup>.

Botswana, S. Africa.

Species aggregate made up of many integrating forms. Three subspecies are distinguished by Moffett (Fl. south. Afr. 19/3: 57-59, 1993) two of which in our area [subsp. **coddii** (R. Fern. & A. Fern.) Moffett; syn.: *Searsia magalismontana* subsp. *coddii* (R. Fern. & A. Fern.) Moffett; *Rhus schliebenii* R. Fern. & A. Fern., in N-most S. Africa S of Zimbabwe].

– Subsp. **magalismontana** is a complex of “about seventeen morphs, differing slightly in colour, shape and vesture of the leaflets”, occurring in NE S. Africa and Zimbabwe (Matabeleland); syn: *Rhus oblanceolata* Schinz; *R. burkeana* Sond.; *Toxicodendron burkeanum* (Sond.) Kuntze; *T. coriaceum* (Engl.) Kuntze; *Rhus coriacea* Engl.; *R. cinerea* R. Fern. & A. Fern.

– Subsp. **trifoliolata** (Bak. f.) Moffett [syn.: *Searsia magalismontana* subsp. *trifoliolata* (Bak. f.) Moffett; *Rhus rhodesiensis* R. Fern. & A. Fern., incl. fa. *glabra* R. Fern. & A. Fern.; *R. rhodesiensis* R. Fern. & A. Fern. × *R. trifoliolata* Bak. f.; *R. fanshawei* R. Fern. & A. Fern.; *Searsia fanshawei* (R. Fern. & A. Fern.) Moffett

*Rhus exelliana* is possibly a member of this species aggregate (fide Moffett, l.c.).

## RHUS

**R. monticola** Meikle – Icon.: White & al., Evergreen for. fl. Malawi: 126, 2001.

syn.: *Searsia monticola* (Meikle) Moffett

Shrublet to 1 m tall; branchlets ± densely pilose, the hairs slender, whitish, patent or crisped; bark of stem and older branches reddish-brown; leaf petiole to 6 cm long; leaflets discolorous (brownish green above, lighter beneath), obovate to elliptic, margins entire, revolute, the median one 2,3-8 × 1-3,5 cm, the laterals smaller, nerves very prominent beneath, reticulation visible, apex acuminate; male panicles pyramidal, to 10 cm long; female flowers unknown; drupe brownish, ± round, c. 5 mm Ø.

Rocky situations in grassland; edge of *Widdringtonia* forest; 2000-2700 m alt.

**R. nebulosa** Schönland fa. **nebulosa**; Fl. South. Afr. 19(3): 39, 1993; Coates Palgrave, Trees south. Afr., ed. 3: 578, 2002.

syn.: *R. microcarpa* sensu R. Fern. & A. Fern., Fl. Zambes. 2/2: 613, 1966, non Schönland; and sensu Fl. Moçamb. 54, Anacardiaceae: 53, 1969; *Searsia nebulosa* (Schönland) Moffett

Shrub, straggling, scandent, slender, sometimes thorny (thorns ± 1 cm long, uncinat), sometimes tree-shaped, 2-6 m tall; all parts glabrous; bark smooth; branches and branchlets pale yellowish-grey, cylindric, the latter ± densely pubescent or always glabrous and brownish; leaf petiole 1,5-4 cm long; leaflets obovate to broadly elliptic, 1,5-7 × 1-3,5 cm, the laterals smaller, thinly textured, shiny dark green above, slightly paler beneath, lateral veins conspicuous on both surfaces, margins entire, revolute; panicles lax, pyramidal, ± as long as leaves; drupe red-brown, round, 3-4,5 mm Ø, in dense heavy heads.

Coastal bush and woodland, secondary thicket and riverine forest.

Coastal E S. Africa [with the local fa. **pubescens** Moffett; syn.: *Searsia nebulosa* fa. *pubescens* (Moffett) Moffett in the S]; 1-480 m alt.

**R. nitida** Engl.; Figueiredo & Smith, Pl. Angola: 28, 2008.

syn.: *Searsia nitida* (Engl.) Moffett; *Toxicodendron nitidum* (Engl.) Kuntze

Shrub 0,9-1,5 m tall, much branched from the base; branches elongate-irrigate, densely leafy, long-hairy; leaf petiole 2,5-3,5 cm long; leaflets broadly lanceolate, median one 5-7 × 3-3,7 cm, the laterals smaller, membranous, glabrous except for midrib, margins ciliate, nerves prominent, apex mucronate; panicles c. 1 cm long; drupe 5 mm Ø.

Open forest with *Berlinia paniculata*.

Perhaps only a form of *R. blanda*.

**R. obtusata** (Engl.) Meikle; Figueiredo & Smith, Pl. Angola: 28, 2008.

bas.: *R. villosa* L. f. var. *obtusata* Engl.

syn.: *R. villosa* ? var. *dekintiana* Engl.; *Searsia obtusata* (Engl.) Moffett

Very ramose shrub 1-5 m tall; young branches rounded, pale-brown to whitish, pubescent, greyish with age, glabrous to subglabrous; leaf petiole to 4,5 cm long, pubescent; leaflets yellowish green, greyish, sparsely pubescent above, sparsely to densely pubescent beneath and lepidote-glandular, median one (oblong-)ovate, 10 × 4,3 cm, the laterals smaller, apex obtuse

## RHUS OBTUSATA

to rounded or emarginate; panicles much branched, 15 × 14 cm to 20 × 20 cm, axes pubescent; drupe compressed, ± 4-angular or round, 4 mm Ø, red-brown.

*Brachystegia* woodland; thickets; siliceous stony soil; gallery; humid places; ± 1800-2000 m alt.

**R. ochracea** Meikle

syn.: *Searsia ochracea* (Meikle) Moffett

Suffrutex or branched shrub 0,5-3,6 m tall; branches reddish brown, cylindrical, rather densely puberulous with somewhat crisped hairs mixed with long patent ones; leaf petiole 1-4 cm long, densely hispidulous and scrofulous to glabrescent; leaflets papyraceous when young, rusty yellow, the adult ones ± coriaceous, discolorous when dry, sparsely to densely hispid, median one elliptic to (broadly) obovate, 3,5-11 × 1,7-5 cm, lateral ones obovate, smaller; panicles 2-10 cm long, terminal and axillary ones making a large terminal leafy inflorescence to 30 cm long, axes hispid and lepidote-glandular; drupe round, brown, shiny, glabrous, c. 4 mm Ø.

*Brachystegia* woodland; rocky hills; grassland; termite mounds; *Brachystegia*, *Julbernardia* woodlands; 1300-2100 m alt.

Comprises 2 vars.: – var. **ochracea**; – var. **saxicola** R. Fern. & A. Fern. [syn.: *Searsia ochracea* (Meikle) Moffett var. *saxicola* (R. Fern. & A. Fern.) Moffett], with smaller median leaflet, in N Zambia.

**R. pentheri** Zahlbr.; Coates Palgrave, Trees south. Afr., ed. 3: 579, 2002. – Icon.: Fl. south Afr. 19/3: 72, 1993; E. Schmidt & al., Trees & shrubs Mpumalanga...: 320-321, 2002.

syn.: *R. cuneata* N. E. Br.; *Searsia pentheri* (Zahlbr.) Moffett

Much-branched shrub or spreading tree 3-5 m tall and 6 m wide; bark dark, rough, segmented, corky; branches grey to brownish, cylindric, minutely striate, glabrous or puberulous; branchlets sometimes densely cinereous or whitish-villous and somewhat spinescent; leaf petiole to 2 cm long; leaflets obovate, terminal one 2-4 × 0,5-2,5 cm, laterals smaller, dark green above, paler olive-green beneath, thin, with fine white hairs when young, apex rounded to ± notched, margins entire or with 3 blunt teeth at apex; panicles triangular, pubescent, to 4-5 cm long; drupe ± flattened, shiny, (orange-)brown, round, 3-4 mm Ø, lenticellate.

Stony ground near seasonal streams.

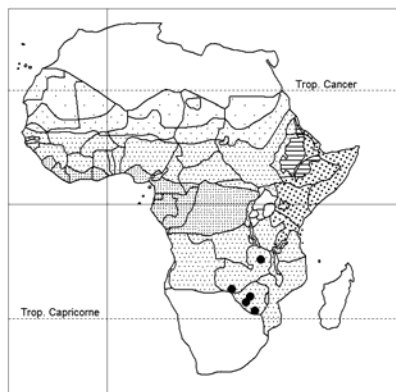
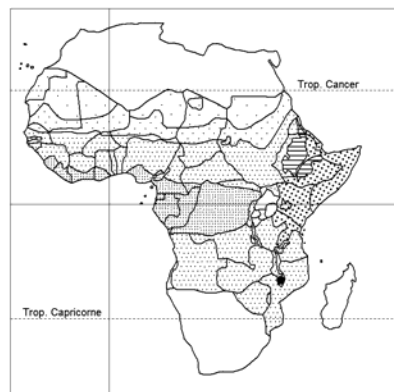
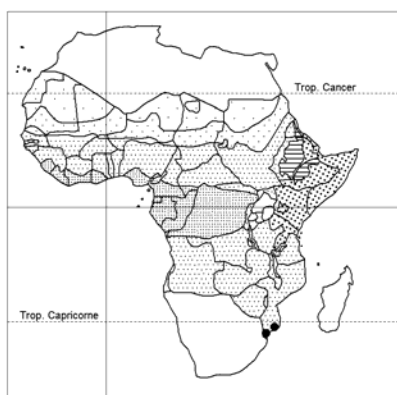
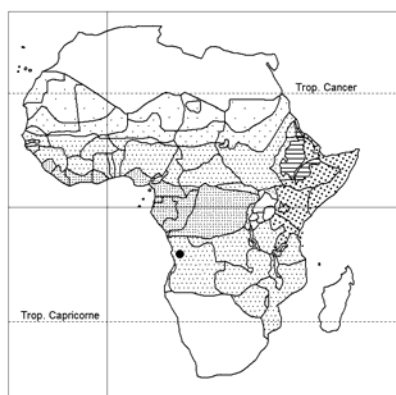
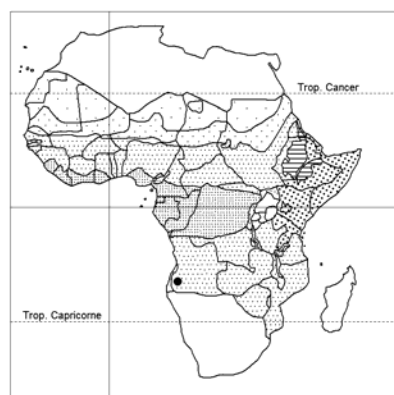
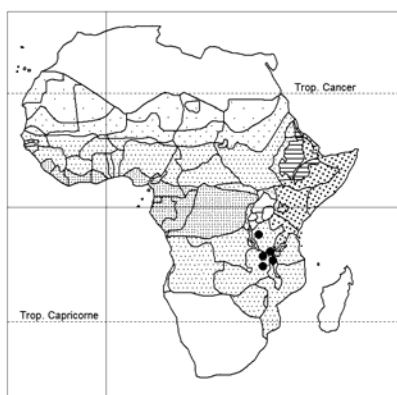
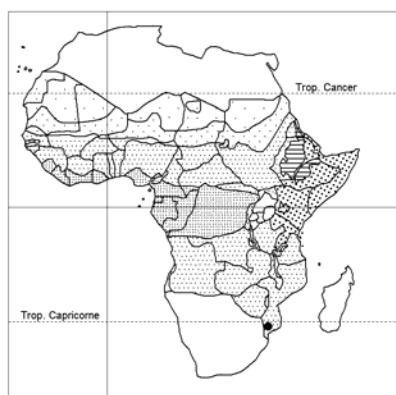
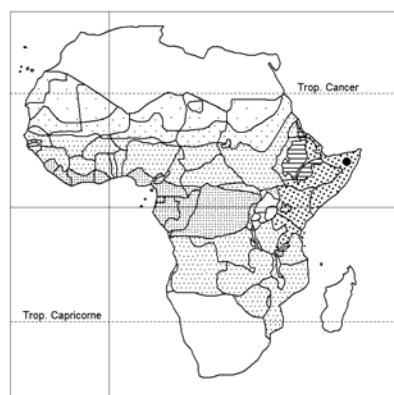
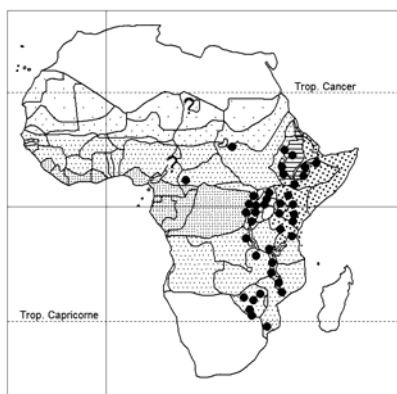
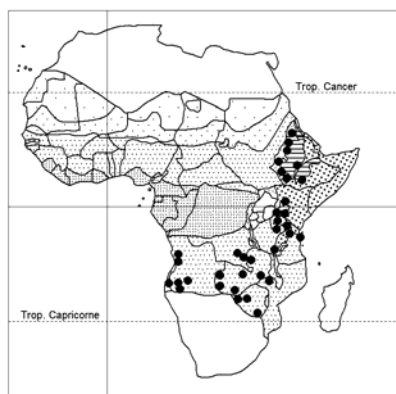
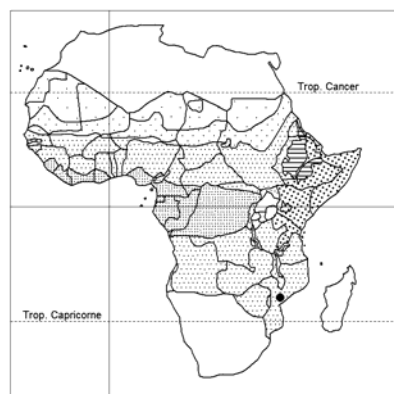
S. Africa, Swaziland (91-2045 m alt.).

**R. puccionii** Chiov. – Icon.: Thulin, Fl. Somalia 2: 263, 1999; Settesoldi & al., Esploratori italiani nell’Africa Orientale 1870-1930: 134, 2005.

syn.: *Searsia puccionii* (Chiov.) Moffett

Shrub 1-4 m tall; branchlets slender, flexuous, purplish-brown, glabrous to densely pubescent with spreading hairs; leaf petiole 1-2,5 cm long; leaflets oblanceolate or spatulate, middle one 2-6 × 0,6-2 cm, laterals shorter, glabrous to densely pubescent with spreading hairs, apex rounded, margins incised-crenate in upper part; panicles short, narrow; drupe ± round, c. 4 mm Ø, shiny, reddish.

Deciduous or semi-evergreen bushland; 60-1000 m alt.

**Rhus lucida f. lucida****Rhus magalismsontana****Rhus monticola****Rhus nebulosa****Rhus nitida****Rhus obtusata****Rhus ochracea****Rhus pentheri****Rhus puccinonii****Rhus pyroides****Rhus quartiniana****Rhus refracta**



## RHUS

**R. pyroides** Burch., *excl.* var. *erythraea* Fiori (= *R. quartiniana* var. *quartiniana*), var. *glabrata* Sond. [= *R. rehmanniana* var. *glabrata* (Sond.) Moffett, S. Africa] and var. *subdentata* E. Mey. ex Engl. (= *R. rehmanniana* var. *rehmanniana*). – Friis, Forest trees N.E. Trop. Afr.: 206, 324, 1992 (sub nom. *R. vulgaris*); Beentje, Kenya trees, shrubs & lianas: 432, 1994 (idem); White & al., Evergreen for. fl. Malawi: 125, 2001, idem. – Icon.: El Amin, Trees & shrubs Sudan: 341, 1990 (sub nom. *R. vulgaris*); Maundu & al., Traditional food plants of Kenya: 196, 1999 (idem); Fl. south. Afr. 19/3: 44, 1993; Coates Palgrave, Trees south. Afr., ed. 3: 580, col. ill. 153, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 322-323, 2002 (vars. **gracilis** and **pyroides**); V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 119-121, 2002; P. Latham, Plants visited by bees... Umalila, S Tanzania, ed. 3: 160, 2007.

syn.: *Toxicodendron pyroides* (Burch.) Kuntze; *R. villosa* auct. mult., non L. f. (species from S. Africa), probably also sensu Quézel, Mission bot. Tibesti (Inst. Rech. Sahar., Mém. 4: 151, 1958), and Bull. Soc. Hist. Nat. Afrique N. 50: 26, 1959; *R. villosa* L. f. ? var. *crenato-serrata* Engl. and ? var. *dentata* Engl. (Pflanzenwelt Afr. 3/2: 211, 1921).

Note: The priority of the combination in *Searsia* seems unclear. *S. pyroides* (A. Rich.) T. S. Yi, A. J. Miller & J. Wen was published in 2004 (Molecul. Phylogenetics & Evol. 33: 864), based on *R. pyroides* A. Rich., Tent. Fl. Abyss. 1: 145, 1847. Richard there cites the plant as *R. pyroides* Burch., Cat. n° 1769, the type of *R. pyroides* Burch., published in Travels in the interior of southern Africa 1: 340, 1822. When Meikle (Kew Bull. 6: 290, 1951) described a new species *Rhus vulgaris* he put in synonymy the plant referred to by A. Richard from Abyssinia, thus citing “*R. pyroides* (non Burch.) A. Rich.”, etc. However, the plants from Ethiopia are now considered conspecific with *R. pyroides*, *R. vulgaris* thus being a synonym under *R. pyroides* Burch. It may be argued that Yi & al. made an incomplete author citation when proposing the new combination in *Searsia* that would then read (corrected) *Searsia pyroides* (Burch.) T. S. Yi & al. (2004). – As to the identity of *R. vulgaris* Meikle 1951, Kilian & al. (Wildenowia 32: 247, 2002) consider this plant as conspecific with *R. flexicaulis* (cf. under this species p. 184).

In 2007 Moffett made several new combinations in *Searsia*, among others *S. pyroides* (Burch.) Moffett (Bothalia 37: 171), based on Burchell l.c. and specimen Burchell 1796.

Shrub or tree, multistemmed, unarmed or spiny (spines stout to 6 cm long) 1-6-10 m tall; bark grey, granular; young branches brownish and patent-hairy, the oldest ones greyish; branchlets slender, sometimes pendulous, puberulous; leaf petiole 1-2,5 cm long, slender, terete, pubescent; leaflets oblanceolate to elliptic, glaucous, ± membranous, appressed pilose or sometimes densely sericeous, to nearly glabrous, median one 3-8 × 1-2,5 cm, the laterals smaller, apex acute, margins entire or dentate; panicles 2-7-10 cm long, pubescent; drupe ± round, 3-4 mm Ø, glabrous, shiny, dull yellow to reddish, drying dark brown.

Savannas; forests of various types; thickets; termite mounds; rocky kopjes; along streams; forest gallery; fallows; hill slopes and valleys; lake shores; forest regrowth; margins of *Podocarpus*, *Juniperus* forest, evergreen bushland with *Euclea schimperi*; open deciduous woodland with *Combretum*, *Terminalia* and/or *Acacia*; *Loudetia arundinacea* grassland with scattered *Combretum molle*, *Erythrina abyssinica*, *Protea gaguedi*; 800-2800 m alt.

Comprises 2 vars. in our area: – var. **pyroides** [syn.: *R. puberula* Eckl. & Zeyh.; *Toxicodendron puberulum* (Eckl. & Zeyh.) Kuntze; *Rhus pyroides* var. *puberula* (Eckl. & Zeyh.) Schönland; *R. baurii* Schönland; *R. vulgaris* Meikle; *R. villosa* sensu Broun

## RHUS PYROIDES

& Massey, Fl. Sudan: 234, 1929, non L. f.; *R. villosa* sensu Engl. var. *cuneifoliolata* Engl.; *R. incana* sensu Robyns, non Mill., Fl. Sperm. Parc Natl. Albert 1: 489, 1948; *R. macowanii* auct., non Schönland (Pichi-Sermolli)], the most widespread occurring all over Africa except for the cold south; – var. **gracilis** (Engl.) Burt Davy [bas.: *R. villosa* L. f. var. *gracilis* Engl.; syn.: *R. pyroides* var. *transvaalensis* Schönland, nom. superfl.; *R. flexuosa* Diels; *R. sericophylla* Schlecht. ex Engl.; *R. villosa* var. *oliveri* Engl., var. *tomentosa* Oliv. and ? var. *gallaensis* Engl.; *Searsia pyroides* var. *gracilis* (Engl.) Moffett], in SE part of range, at higher altitudes along streams.

Namibia [var. **dinteri** Engl.) Moffett; bas. *R. dinteri* Engl.; syn.: *R. impermeabilis* Dinter; *Searsia pyroides* var. *dinteri* (Engl.) Moffett], S. Africa, Swaziland [var. **integrifolia** Engl. [bas.: *R. tridentata* Engl., non L. f. (= *Rhoicissus*) var. *integrifolia* Engl.; syn.: *Searsia pyroides* var. *integrifolia* (Engl.) Moffett; *Rhus tridentata* Sond. 1860, non L. f. (= *Rhoicissus*, *Vitaceae*), nom. illegit.; *Toxicodendron tridentatum* (Sond.) Kuntze; *Rhus fraseri* Schönland; *R. intermedia* Schönland; *R. microcarpa* Schönland]. – Var. **pyroides** also occurs in Lesotho, S. Africa, Swaziland.

In NW Namibia var. **dinteri** reaches the Angolan border.

Twigs used as toothbrushes. Important medicinal plant. Can be grown from fresh seed.

*R. steudneri* Engl. (see below at end of species list) is perhaps a synonym under *R. pyroides*.

**R. quartiniana** A. Rich., incl. var. *acutifoliolata* (Engl.) Meikle and var. *zambesiensis* R. Fern. & A. Fern.; Beentje, Kenya trees, shrubs & lianas: 431, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 581, 2002; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Webbia 19: pl. 50, 1965; Fl. south. Afr. 19/3: 48, 1993; Fl. Ethiopia 3: 527, 1989; Curtis & Mannheimer, Tree atlas Namibia: 391, 2005; Fl. Trop. E. Afr., Anacardiaceae: 34, 1986; Puff & Sileshi Nemomissa, Pl. Simen: 119, 2005.

syn.: *Toxicodendron quartinianum* (A. Rich.) Kuntze; *Rhus huillensis* Engl., incl. fa. *acutifoliolata* Engl.; *R. stolzii* Engl.; ? *R. villosa* L. f. var. *massaiensis* Engl.; *R. huillensis* var. *erythraea* (Fiori) Pic. Serm.; *R. glaucescens* A. Rich. var. *schimperi* Oliv.; *R. natalensis* Krauss var. *schimperi* (Oliv.) Engl.; *R. pyroides* Burch. var. *erythraea* Fiori; *R. huillensis* var. *obtusifoliolata* Engl.; *Searsia quartiniana* (A. Rich.) A. J. Miller

Unarmed or spiny shrub or tree to 7 m tall; willow-like; bark rough, somewhat striate, prominently lenticellate; old branches brownish, striate, pubescent or glabrous; branchlets cylindrical, glabrous to rather densely and shortly whitish or yellowish spreading pilose to yellowish tomentose-pubescent; leaf petiole 0,5-2,5 cm long, pilose to tomentose; leaflets lanceolate, oblong-elliptic to subrhombic or ovate, median one 2,5-8 × 1-3 cm, the laterals slightly smaller, discolorous, spreading hairy especially on the nerves and margins, covered with resin when young and with ephemeral small scales, with dense persistent scurf beneath, apex obtuse or acute; panicles 3-10 cm long, pyramidal; drupe ± round, reddish or yellowish brown, 3-4 mm Ø, glabrous, shiny.

Swampy situations; open woodland and on old ant hills in open mixed wood near rivers; with *Diplorhynchus* in hot and sunny situations; islands in rivers, along river banks and in adjacent woodland; riverine evergreen bush and woodland; bushy sandy and sandy-rocky situations; sometimes ± inundated forests; 700-2600 m alt.

Namibia, Caprivi Strip, Botswana.

## RHUS

**R. refracta** Eckl. & Zeyh.; Coates Palgrave, Trees south. Afr., ed. 3: 581-582, 2002.

syn.: *Toxicodendron refractum* (Eckl. & Zeyh.) Kuntze; *Searsia refracta* (Eckl. & Zeyh.) Moffett

Much-branched shrub to 3 m tall, or crooked-stemmed tree to 4 m, usually armed (branchlets with ridge often ending in short spine-tipped  $\pm$  square spurs); bark rough, irregularly fissured; stems cylindrical, greyish or pale rufous-villous; branches often divaricate; leaf petiole c. 1 cm long; leaflets  $\pm$  rugose, revolute, obovate, middle one 1-3  $\times$  0,5-1,2 cm, the laterals smaller, wrinkled, with or without hairs, apex rounded; panicles to 5 cm long; drupe round to ovoid, c. 5 mm  $\varnothing$ , pruinose, blueish brown.

Woodland.

SE S. Africa (40-1973 m alt.), with 2 forms: coastal with hairy leaves, and rolled-in margins; inland with glabrous leaves, only slightly rolled in, and difficult to distinguish from *R. pentheri* without fruits.

**R. rehmanniana** Engl.; Coates Palgrave, Trees south. Afr., ed. 3: 582, 2002. – Icon.: Fl. south. Afr. 19/3: 52, 1993; E. Schmidt & al., Trees & shrubs Mpumalanga...: 322-323, 2002.

syn.: *Toxicodendron rehmannianum* (Engl.) Kuntze; *Searsia rehmanniana* (Engl.) Moffett; *Rhus macowanii* Schönland fa. *rehmanniana* (Engl.) Schönland; *R. pyroides* Burch. var. *subdentata* E. Mey. ex Engl.; *R. rehmanniana* var. *longecuneata* R. Fern. & A. Fern. (all of var. **rehmanniana**).

Single-stemmed, much-branched tree 5-9 m tall, rarely a shrub, or with a shrubby spreading habit, often with pendulous branches and granular bark (var. **glabrata**); bark rough and blocky; branchlets tomentose; branches cylindrical, fulvous-ochraceous, densely villous; leaf petiole to 3 cm long; leaflets widely obovate, truncate, middle one 2-6,5  $\times$  0,8-4,5 cm, the laterals smaller, leathery, olive-green, rugose,  $\pm$  glabrous above, paler and velvety or furry and conspicuously net-veined beneath, apex truncate, margins crenate near apex; panicles much branched, lax, to 11 cm long; drupe round, yellowish, c. 3 mm  $\varnothing$ .

Riverine bush; open scrub.

S. Africa, Swaziland (30-2100 m alt.).

Comprises 2 vars.: – var. **rehmanniana** also in S Mozambique; – var. **glabrata** (Sond.) Moffett [bas.: *R. pyroides* Burch. var. *glabrata* Sond.; syn.: *R. pubescens* Thunb. var. *caledonica* Eckl. & Zeyh., nom. nud.; *R. pubescens* Thunb. var. *uitenhagensis* Eckl. & Zeyh., nom. nud.; *R. macowanii* Schönland; *Searsia rehmanniana* (Engl.) Moffett var. *glabrata* (Sond.) Moffett] differs from var. *rehmanniana* in having a shrubby spreading habit, velvety drooping branches, in S S. Africa (but indicated by Moffett in Bothalia 37: 172, 2007, from S. Africa, Swaziland, Zambia, Zimbabwe).

Resembling *R. pyroides* but lacking spines. E. Schmidt & al. (l.c.) “believe” that var. **glabrata**, very variable in leaf shape, “may represent a hybrid between *R. rehmanniana* and *R. pyroides* or *R. pentheri*”.

**R. retinorrhoea** Steud. ex Oliv. – Icon.: Fl. Ethiopia 3: 526, 1989 (partial); El Amin, Trees & shrubs Sudan: 340, 1990; Thulin, Fl. Somal. 2: pl. 4 F, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 471, 2001.

syn.: *Searsia retinorrhoea* (Steud. ex Oliv.) Moffett

Slender shrub, multistemmed, or tree 1,5-6 m tall; bark grey, smooth; twigs slender, usually pendent, brown, glabrous, lenticellate; young shoots conspicuously shiny glutinous; leaf

## RHUS RETINORRHOEA

petiole 3-5 cm long; leaflets lanceolate, glabrous, middle one 8-20  $\times$  0,7-4,7 cm, the laterals slightly shorter, apex acute to acuminate, margins often finely crisped; panicles lax, drooping, clear of foliage; drupe  $\pm$  round, c. 4 mm  $\varnothing$ , glossy, pinkish.

Dry rocky slopes with evergreen bushland; *Juniperus* forests on hilly ground; often near wells; 840-2700 m alt.

Saudi Arabia; Yemen; Oman.

Young plants with pubescent leaves confused with *R. glutinosa* subsp. *abyssinica*.

**R. rogersii** Schönland – Icon.: Fl. Moçamb. 54: 39, 1969; E. Schmidt & al., Trees & shrubs Mpumalanga...: 325-326, 2002.

syn.: *R. dentata* Thunb. var. *truncata* Burt Davy; *Searsia rogersii* (Schönland) Moffett

Suffrutex or slender, fastigate shrub 0,3-2 m tall with a woody rootstock; stems upright, branched, cinnamon-coloured, cylindrical, slightly striate, glabrescent at the base, villous at the apex; bark smooth, prominently lenticellate, dull grey-brown, young branchlets glabrous, sometimes puberulous, chestnut-brown to grey; leaf petiole 0,3-1,8 cm long,  $\pm$  villous; leaflets discolorous ferruginous above, pale cinnamon-coloured beneath, elliptic, middle one 3,5-8  $\times$  1,3-3,3 cm, the laterals smaller, apex short-acuminate, margins entire or with 1-3 mucronate-cuspidate teeth towards apex; panicles narrow, as long as the leaves, villous; drupe round, glabrous, shiny (yellowish to) dark brown, c. 4 mm  $\varnothing$ .

Scrub.

S. Africa, Swaziland (550-1675 m alt.). – Possibly in Zimbabwe.

**R. ruspolii** Engl.; Beentje, Kenya trees, shrubs & lianas: 431, 1994. – Icon.: Fl. Ethiopia 3: 526, 1989 (partial).

syn.: *Searsia ruspolii* (Engl.) Moffett

Shrub 1-2 m tall or tree 2-8 m; branchlets somewhat cylindrical, ferruginous tomentose to glabrate and lenticellate; leaf petiole 2-4 cm long, indumentum as for branchlets; leaflets oblong-obovate or elliptic, 5,5-18  $\times$  3-11 cm, the laterals slightly smaller than the median, short-pubescent, rather asymmetric, margins broadly crenate in upper half, veins prominently raised; panicles 10-28 cm long, pyramidal, ferruginous tomentellous to pubescent; drupe round, red, glabrous, shiny, 3-4 mm  $\varnothing$ .

Forest with *Podocarpus latifolius*, *Olea capensis* subsp. *hochsteteri*, *Syzygium guineense* subsp. *afromontanum*, rocky area at forest edge towards *Hagenia abyssinica* woodland (Imatong Mts, Sudan); evergreen bushland; forest edges; *Combretum*, *Terminalia* or *Acacia* woodland; riverine associations; secondary forest growth; locally abundant; 1100-2450 m alt.

Very variable in W Ethiopia.

**R. somalensis** Engl. – Icon.: Miller & Morris, Plants of Dhofar: 29, 1988.

syn.: *R. myriantha* Bak.; *Searsia somalensis* (Engl.) Moffett

Shrub or tree to 6-10 m tall, dioecious; bark blackish grey; young branches very finely appressed hairy, yellowish brown or scurfy-pubescent; leaf petiole 1-4 cm long; leaflets elliptic-oblong to ovate-oblong, 5-9,5  $\times$  3-5 cm, the laterals shorter than median, entire, leathery, minutely scurfy-pubescent (when young) and much paler beneath, venation prominent especially above; panicles scurfy-pubescent, equalling or longer than leaves; drupe  $\pm$  round, c. 4 mm  $\varnothing$ , red, glabrous.

Evergreen bushland; *Juniperus* forest; 1340-2370 m alt.

Oman (Dhofar), SE Yemen. See Kilian & al., Willdenowia 32: 248, 2002.

## RHUS

**R. squalida** Meikle; Figueiredo & Smith, Pl. Angola: 28, 2008.  
syn.: *Searsia squalida* (Meikle) Moffett

Shrub 0,3-6 m tall, erect, very ramose; old branches cylindrical or angular; bark brown or ash grey, lenticellate and fissured, glabrous or glabrescent; branchlets densely brown pubescent with short spreading hairs, scarcely striate; leaf petiole to 2,5 cm long, pubescent; leaflets discolorous, greyish green drying dark brown above, paler beneath, narrowly obovate or oblanceolate, entire, 9 × 3 cm, the laterals smaller than the median, apex obtuse, mucronate, venation prominent; panicles much branched, densely brown-pubescent; drupe round, brown, c. 5 mm Ø.

Clearing in wooded plains; secondary formation with *Pseudoberlinia* or *Berlinia*; with *Brachystegia spiciformis* on red or orange soil; lake shores; stony soil; bushy sandy places; 1740-2400 m alt.

**R. tenuinervis** Engl., incl. var. *meikleana* R. Fern. & A. Fern.; Beentje, Kenya trees, shrubs & lianas: 431, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 583-584, 2002; Figueiredo & Smith, Pl. Angola: 28, 2008; Bothalia 39: 191, 2009 (sub *Searsia*). – Icon.: Engl. Pflanzenw. Afr. 3/2: 209, 1921 (*R. commiphoroides*); Fl. Ethiopia 3: 526, 1989 (partial); V. Roodt, Shell field guide 1, Trees & shrubs Okavango Delta: 128, 1998; Maundu & al., Traditional food plants of Kenya: 195, 1999; Curtis & Mannheimer, Tree atlas Namibia: 388-389, 2005.

syn.: *Toxicodendron tenuinerve* (Engl.) Kuntze; *Searsia tenuinervis* (Engl.) Moffett; *Rhus kwebensis* N. E. Br.; *R. amboensis* Schinz; *R. commiphoroides* Engl. & Gilg

Much-branched sometimes thorny shrub or rounded bushy tree 1-8 m tall; branches with dull greyish rough lenticellate bark, glabrous or glabrescent; branchlets sometimes densely spreading pilose with slender hairs, yellowish; leaf petiole 1-4 cm long, pubescent or pilose; leaflets obovate (or elliptic), 1-8 × 0,8-4,5 cm, short pubescent (softly hairy), the laterals smaller than median, olive-green above, paler and densely velvety beneath, apex obtuse or rounded, margins crenate in upper half; panicles large, branched, to 15-20 cm long, lax, pilose; drupe compressed, ± round, red, 5-7 mm Ø, edible.

Wooded grassland and bushland, especially on rocky slopes, hardly in miombo; white sand soils; termite mounds; river banks; deciduous woodland and bushland with *Combretum*, *Terminalia* also with *Acacia*, *Commiphora* on blackish soil; gravelly stations, *Brachystegia* woodland; *Brachystegia*, *Oxytenanthera* woodland; open savanna with *Albizia*, *Acacia*; locally very common (Kenya); 690-2000 m alt.

Namibia, Caprivi Strip, Botswana, S. Africa.

The crushed leaves with a strong, distinctive smell. Leaves are sour and chewed like khat (*Catha edulis*).

**R. tenuipes** R. Fern. & A. Fern.; Coates Palgrave, Trees south. Afr., ed. 3: 584, 2002.

syn.: *Searsia tenuipes* (R. Fern. & A. Fern.) Moffett

Shrub or graceful tree 3-5 m tall, much branched, glabrous; young branches reddish, slender, slightly striate, flexuous, pendulous, sparsely lenticellate, the oldest ones greyish and lenticellate; leaf petiole very slender, to 5 cm long; leaflets long, narrow, pendulous, median one 4,5-12 × 0,5-1 cm, the laterals slightly shorter, veining inconspicuous, apex sharply pointed, margins toothed; panicles to 15 cm long, among leaves; drupe flattened, ± square, 3-4,5 mm Ø, shiny dark brown.

## RHUS TENUIPES

Bush on stony hills; woodland; roadsides usually in soil with serpentine and chromium; locally abundant (Great Dyke, Zimbabwe).

Leaves aromatic when crushed. Roots with unpleasant smell when cut.

The specimen Myre & Balsinhas 626 cited by Fernandes is *R. leptodictya* (Mozambique).

**R. tomentosa** L., incl. var. *petiolaris* Sond., var. *swellendamensis* Eckl. & Zeyh., var. *uitenhagensis* Eckl. & Zeyh., var. *sylvatica* Eckl. & Zeyh.; Coates Palgrave, Trees south. Afr., ed. 3: 584-585, 2002. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 201, 1921 (leaf forms); E. Schmidt & al., Trees & shrubs Mpumalanga...: 326-327, 2002.

syn.: *Toxicodendron tomentosum* (L.) Kuntze; *Rhus lobata* Poir.; *R. elliptica* (*ellipticum*) Thunb.; *R. bicolor* Licht. ex Schult.; *R. plukenetiana* Eckl. & Zeyh.; *R. viticifolia* F. Muell. ex Benth.; *Searsia tomentosa* (L.) F. A. Barkley 1961, not 1943 !

Much-branched shrub or tree 3-5 m tall; bark smooth, grey-brown; branches spreading, reddish brown, glabrous or puberulous to tomentose, shallowly ridged, minutely lenticellate, cylindrical or ± angular; leaf petiole 1-3,5 cm long, slender, often reddish or greyish; leaflets widely lanceolate, elliptic or obovate, the median 3-8,5 × 1-4,5 cm, the laterals slightly smaller, leathery, dark grey-green and glabrous to slightly velvety with distinct net-veining above, creamy white and velvety to woolly with prominent veining beneath, apex tapering, margins entire or sometimes with 1-2 teeth in upper 2/3; panicles lax, 5-9 cm long, with unpleasant scent; drupe ovoid, greyish furry-hairy, 6 mm long.

Rocky slopes; forests; 1800-2490 m alt.

S. Africa (20-2135 m alt.).

Very attractive plant, very early introduced overseas. Now escaped in India.

(**R. transvaalensis** Engl.) – Icon.: Fl. south. Afr. 19/3: 30, 1993.

syn.: *Searsia transvaalensis* (Engl.) Moffett; *Toxicodendron transvaalense* (Engl.) Kuntze; *Rhus eburnea* Schönland

Lax many-stemmed shrub to 2 m tall, rarely tree to 4 m, with pendulous branches and dark green glabrous leaves (leaflets 1-4-6 × 0,5-1-2 cm).

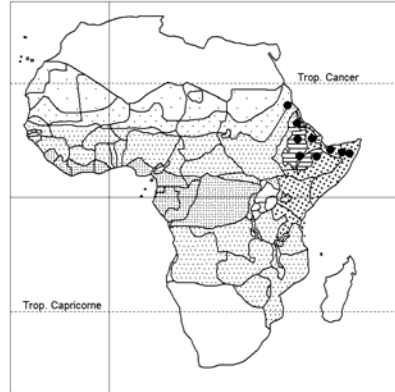
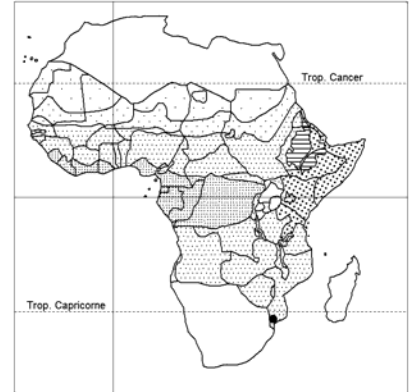
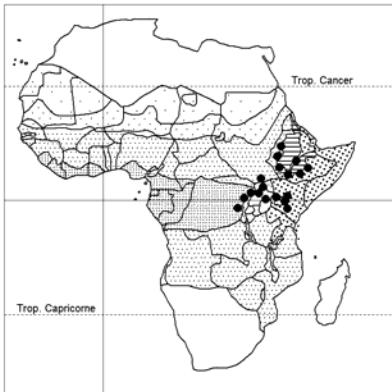
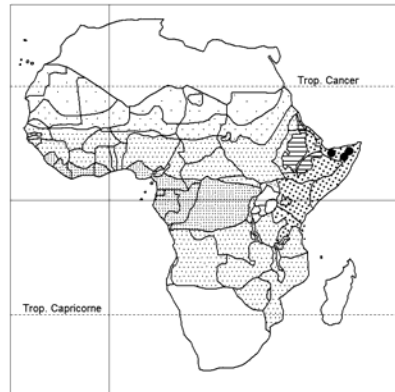
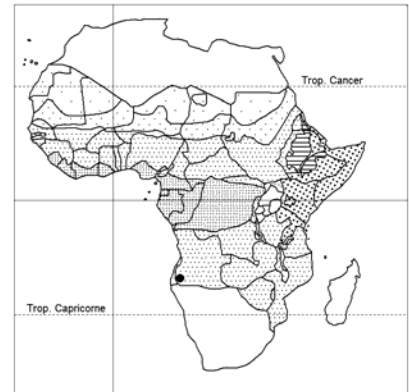
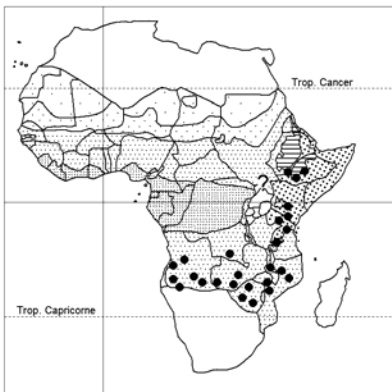
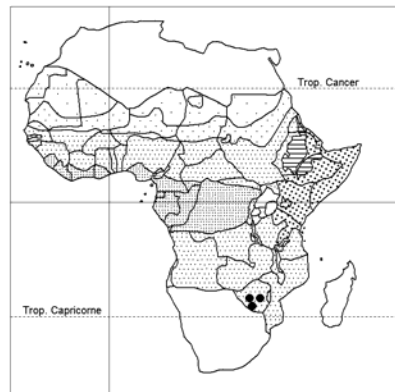
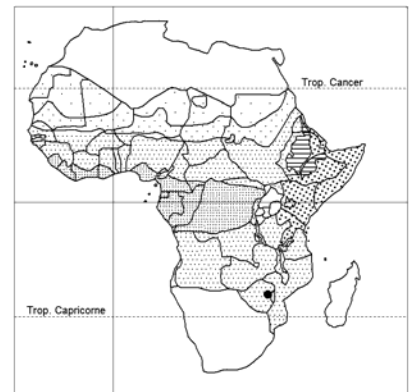
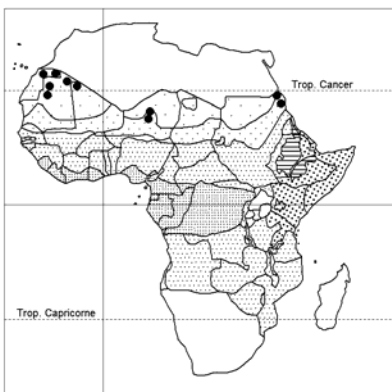
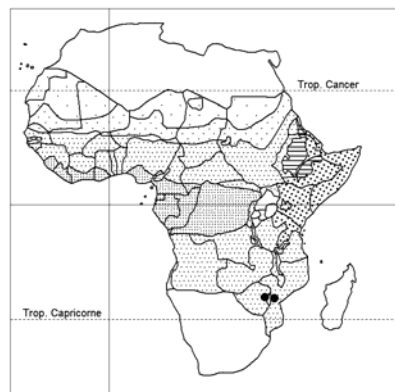
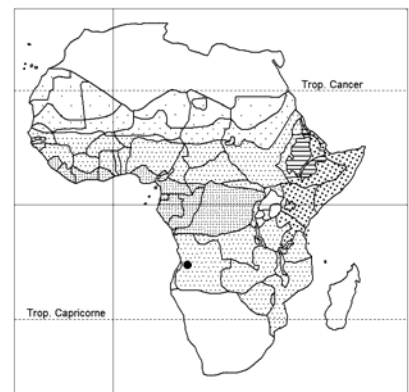
A species from S. Africa and Swaziland.

Is stated by Engler (Pflanzenwelt Afr. 3/2: 215, 1921) to occur in E Zimbabwe (Chirinda), but specimens from there not seen by R. & A. Fernandes, Fl. Zambes. 2/2: 615, 1966. – According to Moffett (Fl. south. Afr. l.c.) the species is often confused with *R. chirindensis*.

**R. tripartita** (Ucria) Grande, incl. var. *hispidulum* Sauvage, nom. invalid.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 87, 1985; J. Edmondson & al., Checklist... Kbnifiss-Tarfaya [Trav. Inst. Sci., Rabat, Mém. h.-s. (1988): 42, 1989]; Lebrun, Pl. vascul. Mauritanie...: 159, 1998 (map: Boissiera 55). – Icon.: Aubréville, Fl. for. soud.-guin.: 411, 1950; Jafri & El Gadi, Fl. Libya 52, Anacardiaceae: 8, 1978; Boulos, Fl. Egypt 2: 74, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 469, 2001; Fennane & al., Fl. prat. Maroc 2: fig. 35 g, 2007 (partial).

bas.: *Rhamnus tripartita* Ucria (cf. Moffett, Bothalia 37: 173, 2007, for fig. in plate of *Rhamnus polytriphylus*).



**Rhus rehmanniana****Rhus retinorrhaea****Rhus rogersii****Rhus ruspolii****Rhus somalensis****Rhus squalida****Rhus tenuinervis****Rhus tenuipes****Rhus tomentosa****Rhus tripartita****Rhus tumulicola var. tumulicola****Rhus wellmanii**

## RHUS TRIPARTITA

syn.: *Rhus oxyacanthoides* Dum. Cours.; *R. ziziphina* Tineo; *R. oxyacantha* Schousb. ex Cav., incl. var. *ziziphina* (Tineo) Ball and var. *ballii* Maire; *R. dioica* Brouss. ex Willd.; *Searsia tripartita* (Ucria) Moffett

Dioecious shrub 1-3 m tall, almost glabrous, very rarely with stiff, short, sparse hairs; stems reddish; branchlets spine-tipped, twisted; leaf petiole 0,5-1,2 cm long; leaflets obovate, cuneate, 0,5-1,5-3 × 0,3-1 cm, entire or 2-3-toothed near apex; panicles 2-3 cm long; drupe round, red, glabrous, glossy, 5-6 mm Ø.

Galb and kedia (gully, rocky valley), sometimes common; cultivated clayey-sandy grara; hilly ground in dry savanna; to 1500 m alt.

Canary Isl.; Sicily, Morocco, Algeria, Tunisia, Libya, Egypt; Saudi Arabia; Israel, Lebanon, Syria.

**R. tumulicola** S. Moore var. **tumulicola**; Coates Palgrave, Trees south. Afr., ed. 3: 585-586, 2002. – Icon.: Bol. Soc. Brot., Sér. 2, 38: pl. 44-45, 1965 (sub nom. *R. culminum*); 39: pl. 13, 1965 (*R. synstylica*); Fl. Moçamb. 54, Anacardiaceae: 55, 57, 1969 (idem); E. Schmidt & al., Trees & shrubs Mpumalanga...: 328-329, 2002.

syn.: *R. dura* Schönland; *R. synstylica* R. Fern. & A. Fern. var. *synstylica*; *R. culminum* R. Fern. & A. Fern.; *Searsia tumulicola* (S. Moore) Moffett var. *tumulicola*.

Straggling shrub to 3 m tall or tortuous (stem) tree to 3-4,5 m; bark rough, somewhat fissured; older branches gnarled, younger branches occasionally striate, glabrous to densely puberulous, sparsely lenticellate, cylindric, reddish-brown, straight or tortuous; leaf petiole to 4 cm long; leaflets obovate to elliptic, 2-5-11 × 1,5-5 cm, lateral ones smaller, hard, leathery, glabrous, dark olive-green above, paler beneath, nerves prominent on both surfaces, pale yellow to rufous, apex rounded, margins entire or irregularly serrated towards apex; panicles pyramidal, much-branched, pubescent, males terminal, females axillary, ± as long as leaves; drupe ovoid, shiny brown, 4-5 mm Ø, glabrous.

Forests, woodlands; among rocks; 1350-2100 m alt.

NE S. Africa, together with var. **meeuseana** (R. Fern. & A. Fern.) Moffett [bas.: *R. synstylica* R. Fern. & A. Fern. var. *meeuseana* R. Fern. & A. Fern.; syn.: *Searsia tumulicola* var. *meeuseana* (R. Fern. & A. Fern.) Moffett], with 2 forms, viz., fa. **meeuseana** [syn.: *Rhus ernestii* Schönland], and fa. **pumila** Moffett [bas.: *Rhus tumulicola* var. *meeuseana* fa. *pumila* Moffett; syn.: *Searsia tumulicola* var. *meeuseana* fa. *pumila* (Moffett) Moffett].

Very similar to *R. longipes*; they are perhaps conspecific.

**R. wellmanii** Engl. (“Wellmannii”); Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 213, 1921. – Neotype: Gossweiler 12357.

syn.: *Searsia wellmannii* (Engl.) Moffett

Ramose subshrub or shrub 1-3 m tall, glabrous; branches brownish-red, striate or sulcate, lenticellate, with scars of fallen leaves; leaf petiole slender, 2,3-5 cm long; leaflets (broadly) elliptic, median one 5-8 × 1,8-5,3 cm, the laterals slightly shorter, fairly discolorous, apex long acute, margins entire, nerves conspicuous; male panicles terminal, lax; female ones (with unripe fruits) lax, terminal and axillary; unripe drupe ± round, light brown, c. 5 mm Ø.

Rocky mountain tops (“the only shrub growing at such altitudes”); 1360-2550 m alt.

Known from only 3 gatherings (Gossweiler 11981, 12357, 12401).

## RHUS

**R. wildii** R. Fern. & A. Fern.

syn.: *Searsia wildii* (R. Fern. & A. Fern.) Moffett

Shrublet ± 0,2 m tall, with dark grey fissured glabrescent spreading branches and somewhat angular puberulous branchlets; leaf petiole 5-8 mm long, winged at apex above; leaflets pale green, concolorous, glabrous, obovate, 1,5-3 × 0,8-1,5 cm, apex rounded or truncate, venation inconspicuous, margins shallowly crenate in upper half; male panicles to 5 cm long, lax, axes slender, reddish; female flowers and drupe unknown.

Exposed chrome ridges; hyperaccumulator of nickel with *Pearsonia metallifera*, *Dicoma nicolifera*, *Blepharis acuminata*, *Merremia xanthophylla* (Taxon 33: 392-399, 1984).

Related to *R. lucida*, also *R. glauca* Thunb. (S. Africa).

## IN NEED OF FURTHER STUDY:

*Rhus argentea* A. Chev., nom., non Miller 1768 (= *R. angustifolia* L.) nec Eckl. & Zeyh. 1836 (= *R. dissecta* Thunb.), in Etudes Fl. Afr. Centr. Franç. 1: 69, 1913; specimen Chevalier 7743, from NC Central African Rep. (Ndellé, c. 8°25'Nx 20°38'E).

*R. buluwayensis* Diels; Engler, Pflanzenw. Afr. 3/2: 211, 1921 (“*bulawayensis*”); shrub 1-1,5 m tall, with villous branches, and at first ferruginous hairy, serrate-crenate leaflets, soon glabrous, obovate, median one 3,5-4 × 2-2,5 cm, the laterals somewhat smaller; flowers and fruit unknown.

Collected in 1905 (Engler 2923<sup>a</sup>, B) at Bulawayo, S Zimbabwe (20°10'Sx28°42'E), in wooded savanna (“Baumsteppe”); 1400 m alt.

R. & A. Fernandes (Fl. Zambes. 2/2: 615, 1966) suggest *R. tenuinervis* Engl. or (*R. vulgaris* Meikle) = *R. pyroides*.

*R. steudneri* Engl., Pflanzenwelt Afr. 3/2: 211, 1921; plant with spatulate leaflets rusty-hairy beneath; occurs in “N Abyssinia”, between Arno-Garno and Foggara (= Foghera?, Lake Tana area, c. 12°Nx37°41'E). No herbarium specimen indicated, probably B, destroyed? – Is perhaps a synonym under *R. pyroides*.

## SYNONYMS:

*Rhamnus tripartita* Ucria (*Rhamnaceae*) = **Rhus tripartita**

*Rhus abyssinica* Oliv. = **Rhus glutinosa** subsp. **abyssinica**

var. *glabrata* Mart. = **R. crenulata**

*acuminata* E. Mey., nom. nud. = **R. chirindensis**

*africana* Miller = **R. lucida** fa. **lucida**

var. *macrophylla* Sond. = **R. scytophylla** var. **scytophylla** (S. Afr.)

*africana* sensu auctt. mult., non Miller = **R. scytophylla** var. **scytophylla** (S. Afr.)

*amboensis* Schinz = **R. tenuinervis**

*amerina* Meikle = **R. leptodictya**

*amharica* Pic. Serm. = **R. glutinosa** subsp. and var. **glutinosa**

*ampla* Engl. = **R. kirkii**

*apiculata* Engl. = **R. anchietae**

*argentea* A. Chev., nom. = ? (see at end of species list)

*baurii* Schönland = **R. pyroides** var. **pyroides**

*bequaertii* Robyns & Lawalrée = **R. ruspolii**

RHUS

*bicolor* Licht. ex Schult. = **R. tomentosa**  
*blanda* Meikle fa. *exelliana* (Meikle) R. Fern. = **R. exelliana**  
*buettneri* Engl. = ? **R. crenulata**  
*buluwayensis* Diels = ? (see at end of species list)  
*burkeana* Sond. = **R. magalismontana** subsp. **magalismontana**  
*cavanillesii* DC. = **R. lucida** fa. **lucida**  
*chirindensis* Bak. f. fa. *legatii* (Schönland) R. Fern. & A. Fern. = **R. chirindensis**  
*cinerea* R. Fern. & A. Fern. = **R. magalismontana** subsp. **magalismontana**  
*cirrhiiflora* L. f. = **Rhoicissus digitata** (*Vitaceae*)  
*coddii* R. Fern. & A. Fern. = **Rhus magalismontana** subsp.  
*commiphoroides* Engl. & Gilg = **R. tenuinervis**  
*coriacea* Engl. = **R. magalismontana** subsp. **magalismontana**  
*crispa* (Harv. ex Engl.) Schönland = **R. gueinzii**  
*culminum* R. Fern. & A. Fern. = **R. tumulicola** var. **tumulicola**  
*cuneata* N. E. Br. = **R. penteri**  
*decipiens* Arn., nom. = **Allophylus decipiens** (*Sapindaceae*)  
*decipiens* E. Mey. ex Drège, nom. nud. = **A. decipiens** (*Sapindaceae*)  
*decipiens* Wight & Arn. = **Filicium decipiens** (*Sapindaceae*)  
*dentata* Thunb. var. *fulvescens* (Engl.) Burtt Davy = **Rhus divaricata** (S. Afr.)  
*dentata* Thunb. var. *truncata* Burtt Davy = **R. rogersii**  
*denudata* Licht. ex Schult. = **R. lancea**  
*digitata* L. f. = **Rhoicissus** (*Vitaceae*)  
*dinteri* Engl. = **Rhus pyroides** var. **dinteri** (Namibia)  
*dioica* Brouss. ex Willd. = **R. tripartita**  
*discolor* sensu Suesseng., non E. Mey. ex Sond. = **R. kirkii**  
*djalonensis* A. Chev., nom. = **Ozoroa pulcherrima**  
*dunensis* Gand. = **Rhus lucida** fa. **elliptica** (S. Afr.)  
*dura* Schönland = **R. tumulicola** var. **tumulicola**  
*eburnea* Schönland = **R. transvaalensis**  
*elliptica* Sond. = **R. lucida** fa. **elliptica** (S. Afr.)  
*ellipticum* Thunb. = **R. tomentosa**  
*ernestii* Schönland = **R. tumulicola** var. **meeuseana** (S. Afr.)  
*erosa* sensu E. Mey. in Drège, non Thunb. = **Allophylus natalensis** (*Sapindaceae*)  
*eyesii* Hutch. = **R. kirkii**  
*falcata* (Becc. ex Martelli) Penzig = **Pistacia falcata**  
*fanshawei* R. Fern. & A. Fern. = **Rhus magalismontana** subsp. **trifoliolata**  
*flexuosa* Diels = **R. pyroides** var. **gracilis**  
*foliosa* Hochst. ex A. Rich. = **R. glutinosa** subsp. **abyssinica**  
*fragrans* Licht. ex Schult. = **R. lancea**  
*fraseri* Schönland = **R. pyroides** var. **integrifolia** (S. Afr.)  
*glaucescens* A. Rich., with fa. *pubescens* Fiori, var. *brevifoliolata* Engl., var. *collina* Engl., var. *elliptica* Engl., var. *macrocarpa* Schweinf., var. "natalensis" (Bernh. ex C. Krauss) Engl., var. *obovatifoliolata* Engl., var. *subintegra* Engl., and ? var. *schellahensis* Engl. = **R. crenulata**  
*glaucescens* A. Rich. var. *schimperii* Oliv. = **R. quartiniana**

RHUS

*glutinosa* A. Rich. var. *acutifoliolata* Engl. = **R. glutinosa** subsp. and var. **glutinosa**  
*glutinosa* A. Rich. var. *obtusifolia* Engl. = **R. longipes** var. **longipes**  
*glutinosa* A. Rich. var. *unifoliolata* Cufod. = **R. glutinosa** subsp. **glutinosa**  
*gossweileri* Engl. = **R. kirkii**  
*gossweileri* Exell = **R. exelliana**  
*grandidentata* DC. = **R. dentata**  
*gueinzii* sensu Schönland 1930, non Sond. = **R. leptodictya**  
*gueinzii* Sond. var. *brevifoliolata* Burtt Davy = ?  
*herbacea* A. Chev., nom. = **Ozoroa pulcherrima**  
*huillensis* Engl. p.p. quoad specim. Welwitsch 4412 = **Rhus longipes** var. **longipes**  
 fa. *acutifoliolata* Engl., var. *erythraea* (Fiori) Pic. Serm. and var. *obtusifoliolata* Engl. = **R. quartiniana**  
*impermeabilis* Dinter = **R. pyroides** var. **dinteri** (Namibia)  
*inamoena* Standley ex Bullock = **R. longipes** var. **elgonensis**  
*incana* Miller  
 var. *cuneifoliolata* sensu Robyns, non (Engl.) Chiov. = **R. longipes** var. **longipes**  
 var. *dahomensis* Hutch. & Dalziel = **R. crenulata**  
 var. *grandifolia* (Oliv.) Robyns & Lawalrée = **R. longipes** var. **longipes**  
 var. *oubanguiensis* Aubrév. = **R. ? crenulata** (cf. Note under **R. longipes**)  
 var. *villosa* (Guillem. & Perr.) Aubrév. (bas.: *R. villosa* Guillem. & Perr., non L. f. = **R. ? crenulata**; cf. Note under **R. longipes** [*R. villosa* L. f. = **R. laevigata** L. var. *villosa* (L. f.) R. Fern., S. Africa])  
*incana* sensu Robyns 1948 = **R. pyroides** var. **pyroides**  
*insignis* (Delile) Oliv. = **Ozoroa insignis**  
*insignis* (Delile) Oliv. var. *obovata* Oliv. = **O. obovata**  
*intermedia* Schönland = **Rhus pyroides** var. **integrifolia** (S. Afr.)  
*kirkii* Oliv. var. *kwangoensis* Van der Veken = **R. kwangoensis**  
*kwebensis* N. E. Br. = **R. tenuinervis**  
*laevigata* sensu Thunb., non L. = **R. chirindensis**  
*legatii* Schönland = **R. chirendensis**  
*leucocarpa* E. Mey. in Drège = **Allophylus africanus** var. **africanus** (*Sapindaceae*)  
*lobata* Poir. = **Rhus tomentosa**  
*longipes* sensu F.W.T.A., ed. 2, non Engl. = **R. ? crenulata** (cf. Note under **R. longipes**)  
*longipes* Engl. var. *grandifolia* (Oliv.) Meikle = **R. longipes** var. **longipes**  
*lucida* L. var. *elliptica* Sond. = **R. lucida** fa. **elliptica** (S. Afr.)  
*lucida* L. var. *outeniquensis* (Szyszyl.) Schönland, var. *subdentata* DC., var. *typica* Schönland = **R. lucida** fa. **lucida**  
*lucida* L. var. *scoparia* (Eckl. & Zeyh.) Schönland. = **R. lucida** fa. **scoparia** (S. Afr.)  
*macowanii* Schönland = **R. rehmanniana** var. **glabrata**  
 fa. *rehmanniana* (Engl.) Schönland = **R. rehmanniana** var. **rehmanniana**



## RHUS

- macowanii* auctt. (e.g. Pic. Serm.), non Schönland  
= **R. pyroides** var. **pyroides**
- melanocarpa* E. Mey. in Drège = **Allophylus africanus** var.  
**africanus** (*Sapindaceae*)
- mendoncae* Meikle = **Rhus anchietae** fa. **mendoncae**
- microcarpa* sensu R. Fern. & A. Fern., and sensu Fl.  
Moçamb., non Schönland = **R. nebulosa** fa. **nebulosa**
- microcarpa* Schönland = **R. pyroides** var. **integrifolia**  
(S. Afr.)
- myriantha* Bak. = **R. somalensis**
- natalensis* auctt. p.p., non Bernh. ex C. Krauss, “extra S.  
African material”, with var. *macrocarpa* (Schweinf.)  
Cufod., var. *obovatifoliolata* (Engl.) Chiov., var. *stuhlmannii*  
Engl., and ? var. *hararensis* Engl. = **R. crenulata**
- natalensis* var. *schimperi* (Oliv.) Engl. = **R. quartiniana**
- neoglutinosa* M. G. Gilbert = **R. glutinosa** subsp.
- oblanceolata* Schinz = **R. magalismontana** subsp. **magal-**  
**ismontana**
- obliqua* E. Mey. in herb. Drège = **Clausena anisata**  
(*Rutaceae*)
- obliqua* Thunb. = **Ptaeroxylon obliquum** (*Ptaeroxylaceae*)
- oblongifolia* E. Mey. = **Deinbollia oblongifolia** (*Sapin-*  
*daceae*)
- outeniquensis* Szyszyl. = **Rhus lucida** fa. **lucida**
- oxyacantha* Schousb. ex Cav., incl. var. *ballii* Maire and var.  
*ziziphina* (Tineo) Ball = **R. tripartita**
- oxyacanthoides* Dum. Cours. = **R. tripartita**
- paniculosa* Sond. = **Ozoroa paniculosa**
- parvifolia* Harv. ex Sond. = **Rhus dentata**
- petitiana* Hochst. ex A. Rich. = **R. glutinosa** subsp.  
**abyssinica**
- plukenetiana* Eckl. & Zeyh. = **R. tomentosa**
- polyneura* Engl. & Gilg, incl. var. *hylophila* Engl. & Gilg  
= **R. kirkii**
- polyneura* sensu Consp. Fl. Angol. p.p. = **R. kwangoensis**
- puberula* Eckl. & Zeyh. = **R. pyroides** var. **pyroides**
- pubescens* Thunb. var. *caledonica* Eckl. & Zeyh.  
= **R. rehmanniana** var. **glabrata**
- pubescens* Thunb. var. *uitenhagensis* Eckl. & Zeyh., nom.  
nud. = **R. rehmanniana** var. **glabrata**
- pulcherrima* (Schweinf.) Oliv. = **Ozoroa pulcherrima**
- pyroides* Burch.  
var. *erythraea* Fiori = **Rhus quartiniana**  
var. *glabrata* Sond. = **R. rehmanniana** var. **glabrata**  
var. *puberula* (Eckl. & Zeyh.) Schönland = **R. pyroides**  
var. **pyroides**  
var. *subdentata* E. Mey. ex Engl. = **R. rehmanniana** var.  
**rehmanniana**  
var. *transvaalensis* Schönland = **R. pyroides** var. **gracilis**  
var. *uitenhagensis* Eckl. & Zeyh. = **R. rehmanniana** var.  
**glabrata**
- rehmanniana* Engl. var. *longecuneata* R. Fern. & A. Fern.  
= **R. rehmanniana** var. **rehmanniana**
- rhodesiensis* R. Fern. & A. Fern., incl. fa. *glabra* R. Fern. &  
A. Fern. = **R. magalismontana** subsp. **trifoliolata**

## RHUS

- rhodesiensis* × *R. trifoliolata* R. Fern. & A. Fern.  
= **R. magalismontana** subsp. **trifoliolata**
- rhomboarpa* R. Fern. & A. Fern. = **R. leptodictya**
- ruziziensis* Engl. = **R. longipes** var. **longipes**
- saeneb* Forssk. = **Debregeasia saeneb** (*Urticaceae*)
- salicina* Sond. = **Ozoroa paniculosa** var.
- schinoides* Hutch. 1946, non Willd. & Schultes 1820  
= **Rhus longipes** var. **schinoides**
- schlechteri* Diels = **R. lucida** fa. **scoparia** (S. Afr.)
- schliebenii* R. Fern. & A. Fern. = **R. magalismontana** subsp.  
**coddii** (S. Afr.)
- scoparia* Eckl. & Zeyh. = **R. lucida** fa. **scoparia** (S. Afr.)
- sericophylla* Schlecht. ex Engl. = **R. pyroides** var. **gracilis**
- simii* Schönland, incl. var. *lydenburgensis* Schönland  
= **R. gueinzii**  
var. *lydenburgensis* Schönland = **R. gueinzii**
- sonderi* Engl., incl. var. *glaberrima* Engl., var. *pilosa* Engl.,  
var. *pilosissima* Engl. = **R. dentata**
- sordida* Meikle = **R. arenaria**
- spicata* Thunb. = **Allophylus decipiens** (*Sapindaceae*)
- spinescens* Diels = **Rhus gueinzii**
- squalida* sensu White, non Meikle nec L. = **R. ochracea** var.  
**ochracea**
- steudneri* Engl. = ? **R. pyroides**
- stolzii* Engl. = **R. quartiniana**
- suffruticosa* Meikle = **R. anchietae** fa. **suffruticosa**
- synstylica* R. Fern. & A. Fern. var. *meeuseana* R. Fern. &  
A. Fern., incl. fa. *pumila* Moffett = **R. tumulicola** var.  
**meeuseana** (S. Afr.)
- synstylica* R. Fern. & A. Fern. var. *synstylica*  
= **R. tumulicola** var. **tumulicola**
- tridentata* Engl. = **R. pyroides** var. **integrifolia** (S. Afr.)
- tridentata* Sond. = **R. pyroides** var. **integrifolia** (S. Afr.)
- tridentata* L. f. = **Rhoicissus** (*Vitaceae*)
- trifoliolata* Bak. f. = **Rhus magalismontana** subsp.  
**trifoliolata**
- villosa* Guillem. & Perr., non L. f. = ? **R. crenulata** (cf. Note  
under **R. longipes**)
- villosa* sensu Broun & Massey, Sudan = **R. pyroides** var.  
**pyroides**
- villosa* sensu Engl. var. *cuneifoliolata* Engl. = **R. pyroides**  
var. **pyroides**
- villosa*, incl. var. *grandifolia* sensu R. E. Fr. 1914  
= **R. longipes** var. **longipes**
- villosa* L. f.  
var. *crenato-serrata* Engl. = **R. ? pyroides**  
var. *dekindtiana* Engl. (Angola) = ? **R. obtusata**  
var. *gallaensis* Engl. = **R. ? pyroides** var. **gracilis**  
var. *dentata* Engl. = **R. ? pyroides**  
var. *gracilis* Engl. = **R. pyroides** var. **gracilis**  
var. *grandifolia* Oliv. = **R. longipes** var. **longipes**  
var. *massaiensis* Engl. = **R. ? quartiniana**  
var. *obtusata* Engl. = **R. obtusata**  
var. *oliveri* Engl. = **R. pyroides** var. **gracilis**  
var. *tomentosa* Oliv. = **R. pyroides** var. **gracilis**  
var. *usambarensis* Engl. = **R. longipes** var. **longipes**

## RHUS

*villosa* sensu Quézel, non. L. f. = **R. ? pyroides**  
*villosa* auctt. mult., non L. f. = **R. pyroides**  
*viminalis* Aiton, non Vahl = **R. lancea**  
*virgatus* Hiern = **R. angolensis**  
*viticifolia* F. Muell. ex Benth. = **R. tomentosa**  
*vulgaris* Meikle = **R. pyroides** var. **pyroides**  
*vulgaris* sensu auctt. mult., non Meikle = **R. rehmanniana**  
 var. **rehmanniana**  
*welwitschii* Engl., incl. var. *angustifoliolata* (“angustifoliola”)  
 Bak. f. = **R. kirkii**  
*ziziphina* Tineo = **R. tripartita**

*Searsia* F. A. Barkley (cf. Moffett, *Bothalia* 37: 166-173, 2007):

The following name combinations in the genus *Searsia* correspond to **species** listed above under *Rhus* (basionyms and synonyms not cited below):

*Searsia acuminatissima* (R. Fern. & A. Fern.) Moffett  
*albida* (Schonsb.) Moffett  
*anchietae* (Ficalho & Hiern ex Hiern) Moffett fa. *anchietae*,  
 fa. *mendoncae* (Meikle) Moffett and fa. *suffruticosa*  
 (Meikle) Moffett  
*angolensis* (Engl.) Moffett fa. *angolensis* and fa. *glabrescens*  
 (R. Fern.) Moffett  
*arenaria* (Engl.) Moffett  
*blanda* (Meikle) Moffett, excl. fa. *exelliana* (Meikle)  
 Moffett (= *Rhus exelliana*)  
*brenanii* (Kokwaro) Moffett  
*chirindensis* (Baker f.) Moffett  
*crenulata* (A. Rich.) Moffett  
*dentata* (Thunb.) F. A. Barkley  
*dumetorum* (Exell) Moffett  
*flexicaulis* (Baker) Moffett  
*glutinosa* (Hochst. ex A. Rich.) Moffett subsp. *glutinosa*,  
 subsp. *abyssinica* (Oliv.) Moffett, subsp. *neoglutinosa*  
 (M. G. Gilbert) Moffett  
*gracilipes* (Exell) Moffett  
*grossireticulata* (Van der Veken) Moffett  
*gueinzii* (Sond.) F. A. Barkley  
*humpatensis* (Meikle) Moffett, incl. fa. *subglabra* (R. Fern.)  
 Moffett  
*kirkii* (Oliv.) Moffett  
*kwangoensis* (Van der Veken) Moffett  
*lancea* (L. f.) F. A. Barkley 1961 (not 1943!)  
*leptodictya* (Diels) T. S. Yi, A. J. Miller & J. Wen, incl. fa.  
*pilosa* (R. Fern. & A. Fern.) Moffett  
*longipes* (Engl.) Moffett var. *longipes*, var. *elgonensis* (Kok-  
 waro) Moffett, var. *schinoides* (R. Fern.) Moffett  
*lucens* (Hutch.) Moffett  
*lucida* (L.) F. A. Barkley fa. *lucida*, fa. *elliptica* (Sond.)  
 Moffett (S. Africa), fa. *scoparia* (Eckl. & Zeyh.) Moffett  
 (S. Africa)  
*magalismontana* (Sond.) Moffett subsp. *magalismontana*,  
 subsp. *coddii* (R. Fern. & A. Fern.) Moffett (S. Africa),  
 subsp. *trifoliolata* (Baker f.) Moffett  
*monticola* (Meikle) Moffett

## (RHUS) SEARSIA

*nebulosa* (Schönland) Moffett fa. *nebulosa*, fa. *pubescens*  
 (Moffett) Moffett (S. Africa)  
*nitida* (Engl.) Moffett  
*obtusata* (Engl.) Moffett  
*ochracea* (Meikle) Moffett var. *ochracea*, var. *saxicola*  
 (R. Fern. & A. Fern.) Moffett  
*pentheri* (Zahlbr.) Moffett  
*puccionii* (Chiov.) Moffett  
 “*pyroides* (A. Rich.) T. S. Yi, A. J. Miller & J. Wen”  
 = *S. pyroides* (Burch.) T. S. Yi & al. = *S. pyroides*  
 (Burch.) Moffett (see Note under *Rhus pyroides*)  
*pyroides* var. *pyroides*, var. *dinteri* (Engl.) Moffett (Namibia),  
 var. *gracilis* (Engl.) Moffett, var. *integrifolia* (Engl.) Mof-  
 fett (S. Africa)  
*quartiniana* (A. Rich.) A. J. Miller  
*refracta* (Eckl. & Zeyh.) Moffett  
*rehmanniana* (Engl.) Moffett var. *rehmanniana*, var. *glabrata*  
 (Sond.) Moffett  
*retinorrhoea* (Steud. ex Oliv.) Moffett  
*rogersii* (Schönland) Moffett  
*ruspolii* (Engl.) Moffett  
*somalensis* (Engl.) Moffett  
*squalida* (Meikle) Moffett  
*tenuinervis* (Engl.) Moffett  
*tenuipes* (R. Fern. & A. Fern.) Moffett  
*tomentosa* (L.) F. A. Barkley 1961 (not 1943 !)  
*transvaalensis* (Engl.) Moffett  
*tripartita* (Ucria) Moffett  
*tumulicola* (S. Moore) Moffett var. *tumulicola*, var.  
*meeuseana* (R. Fern. & A. Fern.) Moffett with fa. *meeuse-*  
*ana* and fa. *pumila* (Moffett) Moffett (S. Africa)  
*wellmanii* (Engl.) Moffett  
*wildii* (R. Fern. & A. Fern.) Moffett

*Searsia*:

The following name combinations correspond to **synonyms** under species of *Rhus* cited above in our list:

*Searsia blanda* (Meikle) Moffett fa. *exelliana* (Meikle) Moffett  
 = **Rhus exelliana**  
*fanshawei* (R. Fern. & A. Fern.) Moffett = **R. magalismont-**  
**tana** subsp. **trifoliolata**  
*glaucescens* (A. Rich.) Moffett = **R. crenulata**  
*legatii* (Schönland) F. A. Barkley = **R. chirindensis**  
*simii* (Schönland) F. A. Barkley = **R. gueinzii**  
*spinescens* (Diels) F. A. Barkley = **R. gueinzii**

*Toxicodendron*:

For synonyms see list under (*Toxicodendron*) p. 204.

## (SCASSELLATIA)

*Scassellatia heterophylla* Chiov. = **Lannea schweinfurthii** (var. **schweinfurthii**); cf. also under **Lannea alata**

## [SCHINUS]

Tropical American genus of some 30 species. Two commonly planted (ornamental, shade), also naturalized in subtropical and tropical Africa.

[**Schinus molle** L.] Pepper Tree; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 87-88, 1985; El Amin, Trees & shrubs Sudan: 341, 1990; Coates Palgrave, Trees & shrubs south. Afr., ed. 3: 546, 2002; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 46, 2009. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 193, 1921; Berhaut, Fl. ill. Sénégal 1: 270, 1971; Siddiqi in Fl. Libya 52, Anacardiaceae: 11, 1978; Beentje, Kenya trees, shrubs & lianas: 432, 1994; Thulin, Fl. Somalia 2: 264, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 474, 2001.

Graceful dioecious tree, evergreen, 3-15 m; bark deeply fissured, flaking; branchlets slender, drooping, willow-like; leaves alternate, 19-41-foliolate, ± glabrous, rachis not or very narrowly winged, with a milky latex and strong peppery smell (crushed); leaflets linear-lanceolate, 2-6 × 0,4-0,8 cm, margins entire to minutely serrate [var. **areira** (L.) DC., African material matching this form] or clearly dentate (var. **molle**); flowers small, whitish, in long (30 cm) hanging puberulous panicles; drupes round, shiny, rosy-red, 5-7 mm Ø, in long clusters, with smell and taste or peppercorn.

Heat- and drought-resistant; planted from near sea-level; gone wild in dry areas at 1400-2400 m alt. Cf. Iponga & al., Austral. Ecol. 34: 678-687, 2009.

Native of S Brazil to N Argentina.

[**S. terebinthifolius** Raddi, incl. var. *acutifolius* Engl.] – Brazilian Pepper Tree; Burkill, o.c.: 88; El Amin, l.c.; Coates Palgrave, l.c.; Akoegninou & al., Fl. analyt. Bénin: 318, 2006; Lisowski, l.c. – Icon.: Berhaut, o.c.: 274; Siddiqi, l.c.; Chaudhary, l.c.

Shrub or bushy tree 5-7 m tall, dioecious, evergreen; lateral branches spreading, stiff; leaves 5-11-foliolate, rachis winged; leaflets oblong-ovate, 2,5-5 × 0,8-2,5 cm, margins entire to serrate; panicles dense; drupe red, round, c. 3 mm Ø.

Grown as an ornamental and hedge plant; bark resinous, aromatic. Gone wild (± invasive) on roadsides, around dwellings, river banks, bush.

Native of Brazil, Paraguay.

Without flowers may be confused with *Pistacia aethiopica*.

## SCLEROCARYA / 2

Two species in Africa and Madagascar, closely related to the Madagascan *Poupartia*.

Deciduous dioecious trees with alternate imparipinnate leaves, crowded at ends of branchlets. Female inflorescence with 1 (-3) flower(s) (not several as in *Ekebergia capensis*).

FRIIS I. (1993). C. F. Hochstetter's scientific names for G. W. Schimper's early collections of African plants. *Fragm. Flor. Geobot., Suppl.* 2/1: 183-201 [*Sclerocarya*, date of publication p. 200].

KADU, C. A. C. & al. (2006). Genetic management of indigenous fruit trees in southern Africa: A case study of *Sclerocarya birrea* on nuclear and chloroplast variation. *S. African J. Botany* 72: 421-427.

PETERS, C. R. (1988). Notes on the distribution and relative abundance of *Sclerocarya birrea* (A. Rich.) Hochst. (Anacardiaceae). *Monogr. Syst. Bot. Missouri Bot. Gard.* 25: 403-410.

## SCLEROCARYA

**Sclerocarya birrea** (A. Rich.) Hochst. – Marula – Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 88-89, 1985; Figueiredo & Smith, Pl. Angola: 28, 2008. – Icon.: Beentje, Kenya trees, shrubs & lianas: 432, 1994; Maundu & al., Traditional food pl. Kenya: 205-206: 1999; Schmelzer in Oyen & Lemmens, Ressources végétales de l'Afrique tropicale, Précurseur: 146, 2002; G. Ngugi & G. Mwachala, Marula, in Nature E. Africa 32/ 1-2: 32, 35, 37, 2002; J. E. Mendes Ferrão, Fruticultura Tropical 3: 248, 2002; National Research Council (Washington, DC.), Lost crops of Africa 3, fruits: 116, 120, 2008; Grant & Thomas, Sappi tree spotting bushveld: 232-233, 2000; Arbonnier, Arbres, arbustes & lianes zones sèches Afr. Ouest, ed. 3: 153, 2009.

bas.: *Spondias birrea* A. Rich

syn.: *Poupartia birrea* (A. Rich.) Aubrév; *Kirkia glauca* Engl. & Gilg (*Simaroubaceae*) specim. Baum 966 B† quoad leafy branch [= *Sclerocarya birrea* subsp. *caffra* (Sond.) Kokwaro] according to Engler (in Engler & Drude, Veg. d. Erde, 9, Afrika 3(1) B: 777, 1915).

possible syn.: *Commiphora chevalieri* Engl. (*Burseraceae*) fide Aubréville

Spreading tree 10-18 m; bark (bole) pale grey, widely reticulate, flaking in small or large scales; branchlets thick; leaves 7-31-foliolate, 10-38 cm long; leaflets elliptic to round, 0,8-11 × 0,7-6 cm (cf. below under subspecies, base asymmetric, margins entire to dentate-serrate especially on new outgrowths); flowers whitish-purple to red, the males in 7-22 cm long racemes, the females much shorter; drupe solitary, obovoid, 2,5-7 cm long, yellow, eaten raw.

Widespread in deciduous woodland and wooded grassland; often on rocky hills; gneiss rocks; in the drier savanna regions; lateritic places; sandy soils; sometimes frequent and forming stands; basement complex soils; dominant on eroding soils of *Anogeissus* savanna; open woodland with *Acacia seyal*, *Albizia amara*, *Lannea humilis*; woodland with *Piliostigma thonningii*, *Combretum*, *Grewia mollis*; sand on laterite or sandstone; old dunes; 1-1975 m alt. – Sometimes very abundant, or common.

Namibia, Caprivi Strip, S. Africa, Botswana, Swaziland; Madagascar. – Introduced into Mauritius and Réunion.

Comprises 3 subspecies, with the following differences: – leaflets 7-21, < 3 cm long, apex obtuse or acute, petiolules < 5 mm long; male inflorescence < 9 cm long (subsp. **birrea**; from Senegal to Ethiopia, Kenya, Tanzania); – leaflets 7-13(-17), 3-9-11 cm long, apex acuminate or cuspidate, lower ones with petiolules 0,5-3 cm long; male inflorescence 7-22 cm long (subsp. **caffra**; in Kenya, Tanzania to S. Africa, Angola, Namibia, Madagascar); – leaflets 25-29-37, up to 1,5 cm long, ± round to broadly elliptic, petiolules short, margins entire or deeply sinuate-lobed; male inflorescence < 9 cm long (subsp. **multifoliolata**; in W half of Tanzania, 750-1800 m alt.).

– Subsp. **birrea**; Wickens, Jebel Marra: 124, 1976. – Icon.: Guillemin & al., Fl. Seneg. Tent. 1: pl. 41, 1831; Aubréville, Fl. forest. soud.-guin.: pl. 89, 1950 (sub gen. *Poupartia*); Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 352, 1952; Irvine, Woody pl. Ghana: 564, 1961; Berhaut, Fl. ill. Sénégal 1: 276, 1971; Keay, Trees Nigeria, ed. 2: 375, 1989; El Amin, Trees & shrubs Sudan: 342, 1990; Akoegninou & al., Fl. analyt. Bénin: 318, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2 (ill.): fig. 27, 2009.

– Subsp. **caffra** (Sond.) Kokwaro [syn.: Enum. 2: 229, 1992; *Sclerocarya schweinfurthiana* Schinz; *S. caffra* Sond., incl. var. *dentata* Engl., var. *oblongifoliolata* Engl.]. – Icon.: Engler, Pflanzenw. Afr. 3/2: 180, 1921; Fl. Zambes, 2/2: 554, 1966; Coates Palgrave, Trees south.



## SCLEROCARYA BIRREA

Afr., ed. 3: colour ill. 145, 2002; E. Schmidt & al., Trees & shrubs Mpumalanga...: 330-331, 2002; V. Roodt, Shell field guide 1, trees & shrubs Okavango Delta: 150, 1998; Curtis & Mannheimer, Tree atlas Namibia: 354, 2005; B. van Wyk & P. van Wyk, How to identify trees in south. Afr.: 156, 2007.

Highly valued in south. Afr.; proposed for introduction to Israeli Negev, cf. A. Nerd & Y. Mizrahi in Israel J. Pl. Sci. 48: 217-222, 2000; J. N. Eloff, Antibacterial activity of bark and leaves, in J. Ethnopharmacol. 76: 305-308, 2001; A. M. Viljoen & al. in S. Afric. J. Bot. 74: 325-326, 2008 [fruit pulp volatiles].

– Subsp. **multifoliolata** (Engl.) Kokwaro

Often planted around villages in E. Africa. Propagated from seed or cuttings. Varieties with exceptionally large fruit have been bred. Grafted plants fruit in c. 3 years – A borer attacking the tree is eaten in places (fide Burkill, l.c.).

Leaves of *S. birrea* subsp. *caffra* “may be virtually indistinguishable from those of *Ekebergia capensis* Sparrm. Fruiting material of the latter species... from Mozambique, have been misidentified as *Sclerocarya caffra* Sond., and this may have helped to create the wrong impression that the female inflorescence of *Sclerocarya* may be several-flowered” (Fl. Trop. E. Afr., Anacard.: 42, 1986). – In herbaria easily confused with *Commiphora* species.

GOUWAKINNOU, G. N. & B. SINSIN (2010). Phenotypic variations of *Sclerocarya birrea* subsp. *birrea* fruits and component traits in agroforestry systems in Northern Benin. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 197.

**S. gillettii** Kokwaro; Beentje, Kenya trees, shrubs & lianas: 433, 1994.

Spreading bush or tree 2-5 m tall; bark grey, flaking; branchlets grey, smooth, or bark flaking off in papery pieces, lenticellate; leaves alternate, especially on new shoots, or crowded at the ends of short corky branchlets, *mostly unifoliolate*, occasionally 3-9-foliolate, the higher numbers (5-9) rare, occurring mainly on new shoots; leaflets broadly oblong to obovate, 1,5-6 × 1,5-3,7 cm (unifoliolate), smaller in compound leaves, glabrous, apex broadly obtuse, margins broadly dentate (unifoliolate) to entire (compound leaves), brownish green above, paler beneath; inflorescence near or at ends of branchlets, spike-like, males 5-15 mm long, females 1-flowered; drupe irregularly ovoid, broadest towards apex, 2,2-3 cm long, pale green.

Semiarid deciduous bushland on eluvial soils; 150-300 m alt.

(SEARSIA)

Synonyms are listed above under **Rhus**.

## SORINDEIA / 9

syn.: *Dupuisia* A. Rich.

Genus described by Du Petit Thouars in 1806 based on the only species from Madagascar. Since then over 80 species have been described, 55 from continental Africa. After revision most of these fell into synonymy. Engler and co-authors described 32 species.

Almost all the holotypes in Berlin are lost, in 14 cases a neotype had to be chosen (Breteler, o.c.). *Sorindeia* species described from tropical America have been transferred to *Mauria*. Thirteen species belong to other genera, of which 5 (or 6) are *Tricoscypha*. Two other species are a *Meliaceae* and *Burseraceae*, respectively.

Woody plants with light exudate and alternate leaves; inflorescence a panicle, flowers unisexual, mostly dioecious, 5-merous; fruit an ovoid drupe c. 3 cm long.

## SORINDEIA

Certain species poorly known: one species without male flowers; one without female flowers and another with incomplete female flowers; in 2 species only unripe fruits seen.

BRETELER F. J. (2003). The African genus *Sorindeia* (Anacardiaceae): A synoptic revision. *Adansonia, Sér.* 3, 25: 93-113.

**Sorindeia africana** (Engl.) Van der Veken, incl. var. *lastoursvillensis* (Pellegr.) Van der Veken – Sosef & al., Check-list pl. vascul. Gabon: 46, 2006; Lejoly & al., Fl. Tshopo (RD Congo) in Taxonomania 24: 5, 2008. – Icon.: Ann. Mus. Congo, Sér. 5, Bot. 1: tab. 66, 1906 (sub nom. *S. gillettii*) and tab. 72 (sub nom. *S. kimuenzae*); Breteler, o.c.: 95, 99; Bol. Soc. Brot., Sér. 2, 41: pl. 9-10, 1966; 41: pl. 11, 1967 (*S. gillettii*).

bas.: *Thyrsodium africanum* Engl.

syn.: *Sorindeia nitidula* Engl. (“*S. nitida* Engl.”, sphalm.); *S. gillettii* De Wild.; *S. kimuenzae* De Wild.; *S. crassifolia* Engl. & K. Krause; *S. lamprophylla* Engl. & K. Krause; *S. ochracea* Engl.; *S. tessmannii* Engl.; *S. lemairi* De Wild.; *S. revoluta* Engl. & Brehmer; *S. lestui* Pellegr.; *S. tchibangensis* Pellegr.; *S. maxima* Vermeesen; *S. lastoursvillensis* Pellegr.; *S. befaensis* Van der Veken; *S. multifoliolata* Van der Veken, incl. var. *watsaensis* Van der Veken; *S. ferruginea* Engl. 1911, nom. illegit., non Marchand 1869.

Shrub or tree to 33 m tall; bole 40 cm d.b.h.; branches ± glabrous to distinctly (brown-)hairy; leaves (1-)7-13(-19)-foliolate, leaflets very variable in size and shape; inflorescence ± pubescent, to c. 50 cm long; drupe c. 2 cm long, yellow to orange, glabrous to puberulous.

Rain-forest; 100-1500 m alt.

Very variable species (reflected by the numerous synonyms), in hairiness of leaves and fruits, number and size of leaflets.

As regards the name *Sorindeia africana* DC., Prodr. 2: 280, 1825 (nomen subnudum), see Brummitt in Taxon 51: 171, 2002; cf. under *S. juglandifolia*.

**S. batekeensis** Lecomte – Icon.: Breteler, o.c.: 99.

Tree; leaves 19-23-foliolate, rhachis puberulous, leaflets ± oblong, 7-11 × 2-2,5 cm; panicle narrow, cauliflorous, 8-18 cm long; male and complete female flowers unknown; drupe (immature) obovoid, sparsely puberulous.

Forest gallery (river bank).

Known only from 2 collections without precise localities, made in c. 1895.

**S. calantha** Mildbr. – Icon.: Breteler, o.c.: 99, 103.

Shrub or tree 5-10 m tall; young branches glabrous but later covered with lenticels; leaves 3-7(-11)-foliolate; leaflets 10-16 × 4-6 cm; inflorescence borne on the main stem, well below the leaves, axillary or terminal; female flowers unknown; drupe (known !) ellipsoid, glabrous, c. 3 cm long.

Rain-forest; 1200-2000 m alt.

**S. gabonensis** Bourobou & Breteler; Sosef & al., Check-list pl. vascul. Gabon: 46, 2006. – Icon.: Breteler, o.c.: 95, 99; Bull. Jard. Bot. Natl. Belg. 66: 343, 1997.

Deciduous shrub or treelet to 3,5 m tall, sometimes weak-stemmed and somewhat lianescent; branches glabrous, sometimes sparsely appressed-puberulous when young; leaves 1(-3-5)-foliolate, leaflets (7-)15-20(-25) × 4-7(-11) cm, acuminate; panicle slender, loose, puberulous, to 25 cm long, axillary or pseudoterminal; drupe orange to dark red, 1-1,8 cm long, glabrous.

Rain-forest; 200-475(-600 ?) m alt.

## SORINDEIA

**S. grandifolia** Engl.; Akoegninou & al., Fl. analyt. Bénin: 318-319, 2006. – Icon.: Breteler, o.c.: 95, 96, 99; Aubréville, Fl. forest. soud.-guin.: 408, 1950 (*S. warnecke*); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 729, 2006.

syn.: *S. acutifolia* Engl.; *S. schweinfurthii* Engl.; *S. warnecke* Engl.; *S. zenkeri* Engl.; *S. ledermannii* Engl. & K. Krause; *S. protioides* Engl. & K. Krause; *S. schroederi* Engl. & K. Krause; *S. longipetiolulata* Engl. & Brehmer; *S. reticululata* Engl. & Brehmer

Tree 3-10 and up to 30 m tall with bole to 45 cm d.b.h., or shrub or liane or scrambling shrub 5-6 m tall, exuding a little milky latex; branches and leaf axes (sub)glabrous to pubescent; leaves 3-7-9-foliolate; leaflets elliptic, 10-30 × 3-15 cm, acuminate; panicle narrow, 5-60 cm long on old wood or trunk below the leaves; drupe ± ellipsoid, 1,5-2,5 cm long, orange(red), glabrous.

Rain-forest, gallery forest; often on stream-banks of the forest zone; wooded savanna, high rainfall savanna (Equatoria, Sudan); scrambling on trees in sandy muddy soil (Sierra Leone); c. 100-1600 m alt.

Variable in habit, in indumentum of branches, leaves and inflorescence, in number and size of leaflets. This is reflected by the numerous synonyms. – Hawthorne & Jongkind, l.c., distinguish 2 forms in W Africa: “*S. warnecke*” a small liane or shrub with 3-7-foliolate leaves glabrous beneath with a folded-up drip tip (leaflets), occurring on riverbanks; and “*S. collina*”, a treelet 3-10 m with 9-foliolate leaves and inflorescences on the trunk, occurring in mountains and hills in Sierra Leone.

São Tomé.

Sosef & al., Check-list pl. vascul. Gabon (p. 46, 2006) cite *S. grandifolia* from Gabon, with e.g. specimen Florence 1612 (P). The latter gathering figures under *S. juglandifolia* in Breteler, 2003 (p. 107).

**S. juglandifolia** (A. Rich.) Planch. ex Oliv., incl. var. *dahomensis* (Engl.) A. Chev. ex Guillaumin, and ? incl. var. *divaricata* Oliv. (Fl. Trop. Afr. 1: 440, 1868; Chevalier, Explor. Bot. 1: 160-161, 1920), and ? incl. var. *gracilis* A. Chev., nomen (l.c.), from SW Ivory Coast (not cited by Breteler, 2003). – Irvine, Woody pl. Ghana: 563, 1961; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 90, 1985; Coates Palgrave, Trees south. Afr., ed. 3: 544, 2002; Sosef & al., Check-list pl. vascul. Gabon: 46-47, 2006; Figueiredo & Smith, Pl. Angola: 28, 2008; Lejoly & al., Fl. Tshopo (RD Congo) in Taxonomania 24: 5-6, 2008. – Icon.: Guillemin & al., Fl. Seneg. tent. 1: pl. 38, 1831 (sub gen. *Dupuisia*); Bol. Soc. Brot., Sér. 2, 38: pl. 5-7 (*S. rhodesica*), pl. 8 (*S. undulata*), 1965; 40: pl. 7-8 (*S. gossweileri*), 1966; 41: pl. 12-13 (*S. poggei*), pl. 14 (*S. lundensis*), 1967; Aubréville, Fl. forest. soud.-guin.: 408, 1950; Fl. W. Trop. Afr., ed. 2, 1/2: 738, 1968; Adam, Fl. descr. Mts Nimba 2: 860, 1971; Berhaut, Fl. ill. Sénégal 1: 280, 1971; Breteler, 2003: 95, 96, 99; Akoegninou & al., Fl. analyt. Bénin: 319, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 729, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2 (ill.): fig. 28, 2009; ? Harris & Wortley, Sangha trees: 146, 2008.

bas.: *Dupuisia juglandifolia* A. Rich.

syn.: *Sorindeia poggei* Engl.; *S. obtusifoliolata* Engl. var. *parvifoliolata* Engl.; *S. thollonii* Lecomte; *S. claessensii* De Wild. s. str.; *S. sparanoi* De Wild.; *S. adolphi-friederici* Engl. & Brehmer; *S. gossweileri* Exell; *Sapindus simplicifolius* G. Don; *Sorindeia simplicifolia* (G. Don) Exell, 1944, nom. illegit., non Marchand 1869; *S. lundensis* Exell & Mendonça; *S. ngounyensis* Pellegr.; *S. collina* Keay; *S. katangensis* Van der Veken; *S. mayumbensis* Van der Veken; *S. submontana* Van der Veken; *S. rhodesica*

## SORINDEIA JUGLANDIFOLIA

R. Fern. & A. Fern.; *S. undulata* R. Fern. & A. Fern.; *S. ripicola* Champluvier; *S. africana* DC., nom. subnud. (cf. above under *S. africana*); *S. heterophylla* Hook. f., nom. illegit.; *S. afzelii* Engl. 1917, nom. illegit., non Engl. 1892 (= *Tricoscypha longifolia*); *Dacryodes dahomensis* (Engl.) H. J. Lam p.p. quoad specim. Chevalier 4441 (*Burseraceae*); *Pachylobus dahomensis* Engl. p.p. (idem), cf. Note below.

Shrub to 6 m tall, or tree to 23 m with bole 40 cm d.b.h., or liane; branchlets, leaves and inflorescences (sub)glabrous or (sparsely) puberulous, or more rarely, pubescent; leaves (1-)5-11(-15)-foliolate, leaflets elliptic, (2-)10-18(-28) × (1-)3-6(-12) cm, lateral nerves meeting in a (looping) submarginal nerve (characteristic !); panicles large, longer than leaves, ± pendant, to 60 cm long, axillary or terminal, or rarely cauliflorous; drupe ellipsoid, 1,2-2 cm long, smooth, yellow orange (often dark red when unripe).

Rain-forest; forest gallery; half-dry guinean forests; edge of dry deciduous forest; regrowth in humid forest; coastal dune bush; 5-2000 m alt.

Variable in habit, number of leaflets, position of flower panicles (ramiflorous, cauliflorous).

Not in São Tomé (misidentification of *S. grandifolia*).

Fruit (“Damson”) edible, sold in markets (Sierra Leone, Freetown). Stems used as chew-sticks.

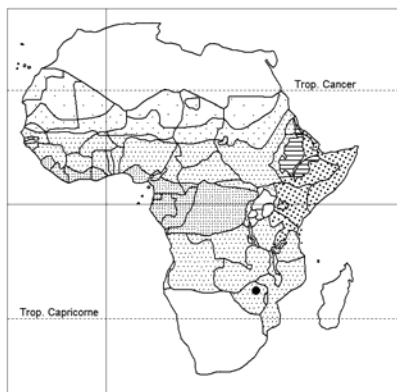
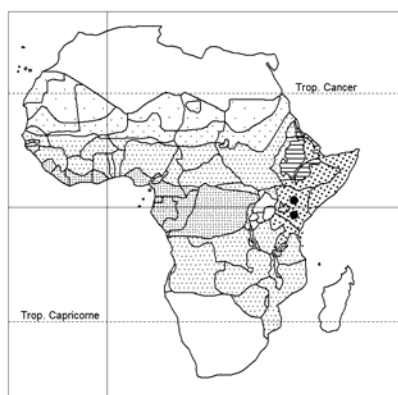
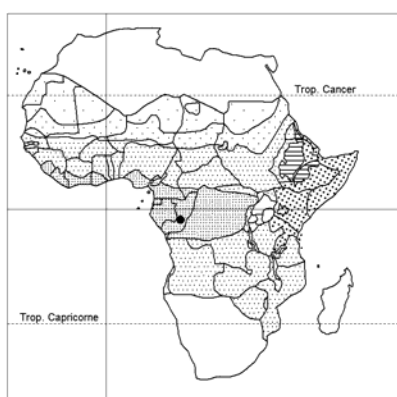
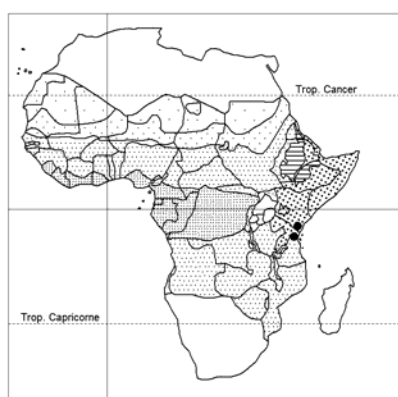
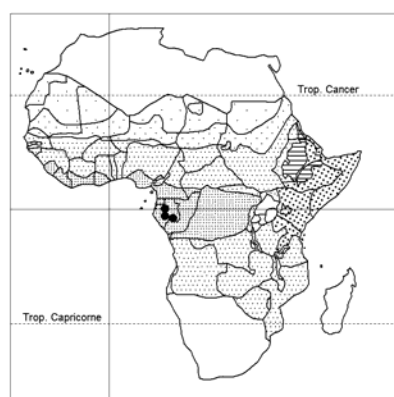
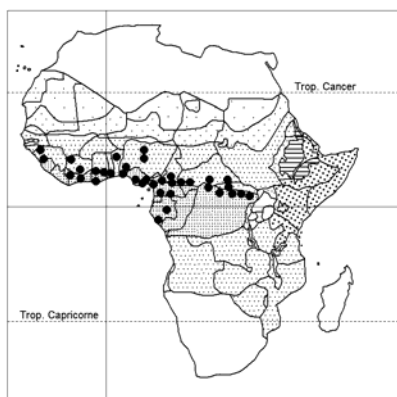
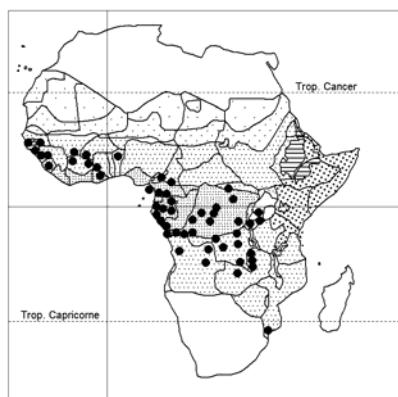
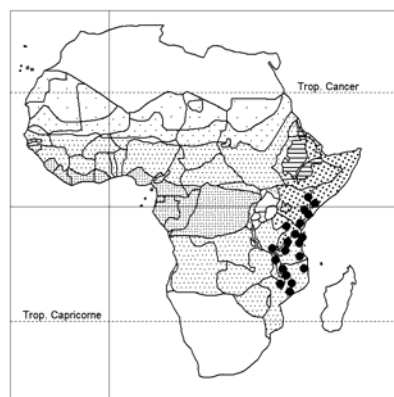
Note: *Pachylobus dahomensis* Engl. [= *Dacryodes dahomensis* (Engl.) H. J. Lam] figures as a synonym under *P. barteri* Engl. [= *Dacryodes klaineana* (Pierre) H. J. Lam] in Hutchinson & Dalziel, Fl. W. Trop. Afr., ed. 1, 1/2: 487, 1928. – In 1931, Engler stated (in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 452) that « this plant belongs to *Sorindeia juglandifolia* Oliv. var. *dahomensis* A. Chev.». He based his statement on Guillaumin’s report on the germination of fresh seed obtained from Cotonou, Dahomey/Benin, in 1910 (in Bull. Soc. Bot. France 57: 414-416, 1910). At the same time Guillaumin received a letter from A. Chevalier (of 20 March, 1910) who had seen, at the same site as in 1902, date of his first gathering, a specimen in full bloom and fruit which the latter determined as *Sorindeia juglandifolia*, however, with a small difference, i.e. the young shoots were pubescent and not glabrous. He explained this by the special habitat of the plant (coastal dunes).

Engler first described *Pachylobus dahomensis* (in Mém. Soc. Bot. France 8: 9, 1907) on a collection made on 4 July 1902 (n° 4441) received from Chevalier. “Tree; young branchlets reddish, minutely puberulous, soon glabrous; leaves glabrous, mostly 2-jugate, petiole 10 cm long; leaflets c. 8-10 × 3 cm, shortly acuminate, with 7-8 pairs of secondary arched nerves, very prominent beneath, petiolules 4-5 mm long; infrutescence 5 cm long; immature drupe ovoid, c. 1 cm long, 7-8 mm thick, with thin exocarp and crust-like endocarp, 1-seeded, style 1 mm long.”

Engler gave a second description of *Pachylobus dahomensis* (in Bot. Jahrb. Syst. 44: 138, 1910), based on dried leaves and young fruits collected at Cotonou by Chevalier (n° 277, date not cited). “Leaf imparipinnate, 2-jugate, petiole 4,5 cm long; leaflets glabrous on both surfaces, greyish-brown above, brown beneath, 5-8 × 2,8-3,2 cm, petiolules 3-5 mm long; dried fruits 1,3-1,5 cm long, 8-10 mm wide, 6-8 mm thick, blackish, stalk 2-3 mm long”.

This gathering was studied by Guillaumin (6 leaves, 2 young flat fruits), who concluded that this material belongs to *Sorindeia*, not *Pachylobus*.

The gathering n° 277 sent from Cotonou (Benin) by Chevalier, does not correspond to Chevalier 277 listed by the latter in Sudania 1: 6, 1911 (Énumération des plantes récoltées en Afrique tropicale par M. Aug. Chevalier de 1898 à 1910 inclus). Here n° 277 represents

***Rhus wildii******Sclerocarya birrea******Sclerocarya gillettii******Sorindeia africana******Sorindeia batekeensis******Sorindeia calantha******Sorindeia gabonensis******Sorindeia grandifolia******Sorindeia juglandifolia******Sorindeia madagascariensis***



## SORINDEIA JUGLANDIFOLIA

"*Diospyros mespiliformis* (A. DC.) Hochst." collected on 26 January 1899 at Kéniégué (Middle Niger R. country; actually in the border region SW Mali/N Guinea).

*Pachylobus dahomensis* Engl. is not cited as a synonym under *Sorindeia juglandifolia* by Breteler 2003 or Akoegninou & al., Fl. analyt. Bénin (2006), nor the two Chevalier gatherings.

**S. madagascariensis** Thouars ex DC. – Neotype: Commerson s.n., N° 1598 in Herb. A. L. de Jussieu (P). – Friis, Forest trees N.E. Trop. Afr.: 207, 324 (map), 1992. – Icon.: Breteler, 2003: 95, 96, 99; Beentje, Kenya trees, shrubs & lianas: 433, 1994; Thulin, Fl. Somalia 2: 265, 1999; White & al., Evergreen for. fl. Malawi: 124, 2001; Schatz, Generic tree fl. Madagascar: 43, 2001; J. E. Mendes Ferrão, Fruticultura tropical 3: 289, 2002.

syn.: *S. pinnata* (L.) Desf. as regards reference to Madagascar; *S. glaberrima* Hassk.; *S. elongata* Blume; *S. obtusifoliolata* Engl. var. *obtusifoliolata*; *S. usambarensis* Engl.; *S. goudotii* Briq.; *Aglaiia somalensis* Chiov. (*Meliaceae*); *Sorindeia somalensis* (Chiov.) Chiov.

Shrub or tree much-branched, evergreen, 5-20(-35 ?) m tall; bole 20 cm d.b.h.; leaves mostly crowded at tips of branches; leaves (3-)7-13-foliolate; glossy; leaflets glabrous, ovate-elliptic to oblong-ovate, 9-34 × 3-13 cm, margins entire, undulate, apex rounded to acuminate; panicles hanging, 0,2-1 m long (1,6 m in fruit), from older wood, glabrous; drupe yellow-orange, ellipsoid, 1,5-2,5 cm long, smooth, glabrous, edible.

Riverine, lake-shore, coastal forest; often in wet or seasonally flooded places; woodland; fringing forest; rain-forest; 1-1830 m alt.

Comoros, Mahore/Mayotte, Mauritius.

**S. oxyandra** Boubou & Breteler; Sosef & al., Check-list pl. vascul. Gabon: 47, 2006. – Icon.: Syst. Geogr. Pl. 69: 116, 1999; Breteler, 2003: 95, 99.

Dioecious tree to 8 m, with somewhat angular bole; branches puberulous to glabrescent; leaves up to 18-foliolate, to 73 cm long; leaflets papery, lanceolate, 10-19 × 3-4 cm, glossy, glabrous, apex long-acuminate; panicles glabrous, to 14 cm long, borne on the stem; fruit (immature), glabrous, 1,5-2 cm long.

Rain-forest; ± 500-1000 m alt.

Only known from 4 specimens.

Closely related to *S. batekeensis* but pistil glabrous.

**S. winkleri** Engl.; Sosef & al., Check-list pl. vascul. Gabon: 47, 2006. – Icon.: Breteler, 2003: 95, 99.

syn.: *S. rubriflora* Engl.; *S. immersinervia* Engl. & Brehmer; *S. mildbraedii* Engl. & Brehmer; *S. claessensii* De Wild. var. *monticola* Van der Veken

Slender shrub or tree to 8-15 m tall; branches grey to dark brown, very shortly pubescent or sparsely pilose; leaves (1-)7-11(-13)-foliolate; leaflets oblong-elliptic, 5-18 × 3-6 cm, apex acuminate; panicles hanging, to 60 cm long, reddish-purple, puberulous; drupe yellow-orange, ± ovoid, c. 3,5 cm long.

Rain-forest, transitional dense forest; 100-1500 m alt.

## INSUFFICIENTLY KNOWN SPECIES:

*Sorindeia albiflora* Engl. & K. Krause

Tree 10-12 m; branches and branchlets terete, with brown bark, shortly puberulous when young; leaves 6-7-jugate, 20-30 cm

## SORINDEIA ALBIFLORA

long; leaflets 5-8 × 2,5-3 cm, apex shortly acuminate; panicle 30-40 cm long, puberulous; flowers 5-merous, pistil densely pilose.

Montane forest; c. 1800 m alt.

Known only from the type (Ledermann 1938) collected in 1938 (B, lost), from Bamenda, Cameroon.

According to Breteler (2003: 113) not fitting any known *Sorindeia*, but rather supposed to be a *Trichoscypha*.

*Thyrsodium subglabrum* Mildbr. ex Engl.

Tree c. 10 m, with leaves less hairy than in *Sorindeia africana* and with smaller flowers.

Collected at Lomié, S Cameroon (3°09'Nx13°35'E).

A synonym of *Sorindeia africana* or *S. juglandifolia* ??

## SYNONYMS:

*Aglaiia somalensis* Chiov. (*Meliaceae*) = **Sorindeia madagascariensis**

*Dupuisia juglandifolia* A. Rich. = **Sorindeia juglandifolia**

*Sapindus simplicifolius* G. Don (*Sapindaceae*) = **Sorindeia juglandifolia**

*Sorindeia acutifolia* Engl. = **Sorindeia grandifolia**

*adolphi-friederici* Engl. & Brehmer = **S. juglandifolia**

*africana* DC., non (Engl.) Van der Veken = **S. juglandifolia** (vide Taxon 51: 171, 2002)

*afzelii* Engl. 1892 = **Tricoscypha longifolia**

*afzelii* Engl. 1917 = **Sorindeia juglandifolia**

*albiflora* Engl. & K. Krause = ? **Tricoscypha** sp.

*befalensis* Van der Veken = **Sorindeia africana**

*claessensii* De Wild. s. str. = **S. juglandifolia**

*claessensii* De Wild. var. *monticola* Van der Veken = **S. winkleri**

*collina* Keay = **S. juglandifolia**

*crassifolia* Engl. & K. Krause = **S. africana**

*deliciosa* A. Chev. ex Hutch. & Dalziel = **Dacryodes klaineana** (*Burseraceae*)

*doeringii* Engl. & K. Krause = **Ekebergia capensis** (*Meliaceae*)

*elongata* Blume = **Sorindeia madagascariensis**

*ferruginea* Engl. 1911 = **S. africana**

*gilletii* De Wild. = **S. africana**

*glaberrima* Hassk. = **S. madagascariensis**

*gossweileri* Exell = **S. juglandifolia**

*goudotii* Briq. = **S. madagascariensis**

*heterophylla* Hook. f. = **S. juglandifolia**

*immersinervia* Engl. & Brehmer = **S. winkleri**

*katangensis* De Wild. = **S. africana**

*kimuenzae* De Wild. = **S. africana**

*lagdoensis* Engl. & K. Krause = **Lannea acida**

*lamprophylla* Engl. & K. Krause = **Sorindeia africana**

*lastoursvillensis* Pellegr. = **S. africana**

*ledermannii* Engl. & K. Krause = **S. grandifolia**

*lemairei* De Wild. = **S. africana**

*letestui* Pellegr. = **S. africana**

## SORINDEIA

- longifolia* (Hook. f.) Oliv. = **Trichoscypha longipetiolulata** Engl. & Brehmer = **Sorindeia grandifolia lundensis** Exell & Mendonça = **S. juglandifolia macrophylla** Planch., nom. = **Trichoscypha oliveri mannii** Oliv. = **Trichoscypha acuminata maxima** Vermeesen = **Sorindeia africana mayumbensis** Van der Veken = **S. juglandifolia mildbraedii** Engl. & Brehmer = **S. winkleri multifoliolata** Van der Veken, incl. var. *watsaensis* Van der Veken = **S. africana ngounyensis** Pellegr. = **S. juglandifolia "nitida** Engl.", sphalm. = **S. africana nitidula** Engl. = **S. africana obliquifoliolata** Engl. = **Pseudospondias microcarpa obtusifoliolata** Engl. var. *obtusifoliolata* = **Sorindeia madagascariensis obtusifoliolata** Engl. var. *parvifoliolata* Engl. = **S. juglandifolia ochracea** Engl. = **S. africana patens** Oliv. = **Trichoscypha pinnata** (L.) Desf. = **Sorindeia madagascariensis poggei** Engl. = **S. juglandifolia protioides** Engl. & K. Krause = **S. grandifolia reticulata** Engl. & Brehmer = **S. africana revoluta** Engl. & Brehmer = **S. africana rhodesica** R. Fern. & A. Fern. = **S. juglandifolia ripicola** Champluvier = **S. juglandifolia rubriflora** Engl. = **S. winkleri** (non *Panda oleosa*!) *schroederi* Engl. & K. Krause = **S. grandifolia schweinfurthii** Engl. = **S. grandifolia simplicifolia** (G. Don) Exell = **S. juglandifolia somalensis** (Chiov.) Chiov. = **S. madagascariensis sparanoi** De Wild. = **S. juglandifolia submontana** Van der Veken = **S. juglandifolia tchibangensis** Pellegr. = **S. africana tessmannii** Engl. = **S. africana thollonii** Lecomte = **S. juglandifolia trimera** Oliv. = **Santiria** (*Burseraceae*) *undulata* R. Fern. & A. Fern. = **Sorindeia juglandifolia usambarensis** Engl. = **S. madagascariensis warneckei** Engl. = **S. grandifolia zenkeri** Engl. = **S. grandifolia**  
*Thyrsodium africanum* Engl. = **Sorindeia africana**

## [SPONDIAS]

A pantropical genus of c. 18 taxa nine of which in the Neotropics. One of the most important genera in *Anacardiaceae* with an agro-industrial potential. – Introduced, sometimes naturalized, and cultivated in farms and gardens of Africa.

DE SOUZA ALMEIDA, C. C. & al. (2007). Karyotype differentiation among *Spondias* species and the putative hybrid Umba-cajá (*Anacardiaceae*). *Bot. J. Linn. Soc.* 155: 541-547.

MILLER, A. J. (2008). Characterization of a domesticated tree lineage (*Spondias purpurea*, *Anacardiaceae*) based on nuclear and chloroplast sequence data. *J. Torrey Bot. Soc.* 135: 463-474.

## SPONDIAS

[*Spondias cytherea* Sonnerat] – Ambarella or Otaheite or Golden Apple, English Plum. – Burkill, *Useful pl. W. trop. Afr.*, ed. 2, 1: 91, 1985; Boulvert, *Documents phytogéogr. guinéens*: 106, 1999; Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 728, 2006; Akoeagninou & al., *Fl. analyt. Bénin*: 319, 2006; Lejoly & al., *Fl. Tshopo* (RD Congo) in *Taxonomania* 24: 6, 2008. – Icon.: Engler & Prantl, *Nat. Pflanzenfam.* 3/5: 150, 1896 (*S. dulcis*); Adam, *Fl. descr. Mts Nimba* 2: 861, 1971; Verheij & Coronel, *Pl. Resources S-E Asia (PRUSEA)* 2: 287, 1991; Latham & Konda, *Pl. utiles Bas-Congo*, ed. 2: 282, 2007.

syn.: *S. dulcis* Soland. ex Forster f., 1786; *S. dulcis* Soland. ex Parkinson, 1786; non *S. dulcis* Blanco, 1837 (= *S. purpurea*).

Erect deciduous tree, 9-20 m; bole c. 45 cm Ø; bark shallowly fissured or smooth (2 cultivated varieties recognized); leaves 20-60 cm long, chartaceous, 9-25-foliolate, clustered at tips of branches; leaflets ovate-oblong, glabrous, 6-10(-25)×3,5-5 cm, unequal at base, apex acuminate, margins entire to denticulate; panicles terminal, usually appearing before the leaves, to 35 cm long, much branched; drupes ellipsoid, 5-7 cm long, 3,5-5 cm Ø, golden yellow, pendant in clusters.

Native throughout S & SE Asia in forests up to 700 m alt. (also planted in forest clearings). Also cultivated in other tropical countries.

Grown (fast growing) in orchards and gardens in (W) Africa, for its fruit (market-produce); young shoots also eaten as pot herb.

[*S. mombin* L. 1753] – Hog or Spanish or Ashanti Plum, Myrobalan, Mombin or monbin. – Irvine, *Woody pl. Ghana*: 565-566, 1961; Burkill, o.c.: 91-94; El Amin, *Trees & shrubs Sudan*: 343-344, 1990 ("*S. mombito* L."); Boulvert, l.c.: Sosef & al., *Check-list pl. vascul. Gabon*: 47, 2006; Lejoly & al., l.c.; Steentoft, *Flow. plants in W Africa*: 189, 2008; Lisowski, *Fl. (angiosp.) Rép Guinée* 1: 46, 2009. – Icon.: Aubréville, *Fl. for. Côte d'Iv.*, ed. 2, 2: 205, 1959; Berhaut, *Fl. ill. Sénégal* 1: 284, 1971; Adam, *Fl. descr. Mts Nimba* 2: 861, 1971; Akoeagninou & al., *Fl. analyt. Bénin*: 320, 2006; Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 729, 2006; Latham & Konda, *Pl. utiles Bas-Congo*, ed. 2: 281-282, 2007; Arbonnier, *Arbres, arbustes & lianes zones sèches Afr. Ouest*, ed. 3: 154, 2009.

syn.: *S. lutea* L. 1762; *S. ? dubia* A. Rich.

Tree, deciduous 10-25 m; bole straight, cylindrical, moderately buttressed, c. 50 cm Ø, 1,5 m in girth, sometimes spiny when young; bark thick, corky, deeply fissured; slash pale pink, darkening rapidly; exudate sticky; branches low; branchlets glabrous; leaves 11-19-foliolate, 20-45 cm long, clustered at tips of branches; leaflets oblong-lanceolate, ± glabrous, 5-10 × 2-5 cm, asymmetric, broadly acuminate, margins wavy; flowers sweet-scented, white, small, in lax terminal panicles 10-15 cm long; drupe golden yellow, ellipsoid, 2,5-4 cm long.

Forest regrowth in savanna; frequent in dry forest; deciduous forest in high rainfall savanna (S Sudan); semi-deciduous forest; secondary forest; around villages and farmlands, c. 90-250 m alt. (Gabon).

Native in tropical America, Caribbean; "dispersed under Spanish influence to the Philippines and thence into Asia proper" (Burkill, l.c.). Planted for its fruit (sharp acid taste), for fencing purposes, graveyards; living stems used as yam poles. Grows easily from stakes, propagated by seed and cuttings.

Sometimes stated as indigenous in Africa. Widely planted or naturalized in the tropics.

Engler (*Pflanzenwelt Afr.* 3/2: 177, 1921) distinguishes 2 forms: – *fa. latifolia*; – *fa. angustifolia*, with respect to shape of leaflets.

## SPONDIAS

[**S. purpurea** L.] – Gambia Plum, Red Mombin. – Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 94, 1985; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 728, 2006; Miller l.c. – Icon.: Berhaut, Fl. ill. Sénégal 1: 288, 1971; Coronel in Verheij & Coronel, Pl. resources S.-E. Asia (PROSEA) 2: 289, 1991.

syn.: *S. dulcis* Blanco (1837), non Soland. ex Forster f. (= *S. cytherea*).

Tree, deciduous, 3-5-10 m; low branches thick, brittle, ± horizontal; bark grey to brown; leaves 9-21-foliolate, c. 20 cm long; petiole 3-5 cm long, thick; leaflets (elliptic)-oblong, 2-5 × 1-2,5 cm, asymmetric, margins entire, apex acuminate; flowers small, red, few in axillary panicles to 4 cm long, appearing before the leaves; drupe plum-like, 3-4 cm long, purple-red, with a large stone, edible (market-fruit).

Native in tropical America, mainly on the W coastal plain of the Andes (including both cultivated and wild populations and hybrids between them), up to c. 600 m alt. Cultivated throughout the tropics of the World. Introduced in the 16<sup>th</sup> century by the Spaniards in the Philippines.

A hardy tree growing well in dry areas.

KOZIOL, M. J. & M. J. MAC A (1998). Chemical composition, nutritional evaluation and economic prospects of *Spondias purpurea* (Anacardiaceae). *Econ. Bot.* 52: 373-380.

## SYNONYMS:

*Spondias angolensis* O. Hoffm. = **Pseudospondias microcarpa**

*birrea* A. Rich. = **Sclerocarya birrea**

*dubia* A. Rich. = ? **Spondias mombin**

*dulcis* Soland. ex Forster f. = **S. cytherea**

*dulcis* Soland. ex Parkinson = **S. cytherea**

*dulcis* Blanco = **S. purpurea**

*lutea* L. = **S. mombin**

*microcarpa* A. Rich. = **Pseudospondias microcarpa**

*oghigee* G. Don, specimen Don, Sierra Leone  
= **Lannea nigritana**

*oghigee* G. Don = probably a form of **Spondias mombin**

*soyauxii* Engl. = **Antrocaryon klaineinum**

*zanzee* G. Don = **Pseudospondias microcarpa**

## (SPONDIOPSIS)

*Spondiopsis trifoliolata* Engl. = **Commiphora eminii** subsp. **trifoliolata** (*Burseraceae*)

## (THYRSODIUM)

*Thyrsodium africanum* Engl. = **Sorindeia africana**

*subglabrum* Mildbr. ex Engl. = ? **Sorindeia** ? **africana** or **juglandifolia**

## (TOXICODENDRON)

*Toxicodendron amplum* (Engl.) Kuntze = **Rhus kirkii**

*angolense* (Engl.) Kuntze = **R. angolensis**

*burkeanum* (Sond.) Kuntze = **R. magalismontana** subsp. **magalismontana**

*coriaceum* (Engl.) Kuntze = **R. magalismontana** subsp. **magalismontana**

*dentatum* (Thunb.) Kuntze = **R. dentata**

*gueinzii* (Sond.) Kuntze = **R. gueinzii**

*kirkii* (Oliv.) Kuntze = **R. kirkii**

*lanceum* (L. f.) Kuntze = **R. lancea**

*longipes* (Engl.) Kuntze = **R. longipes**

## TOXICODENDRON

*lucidum* (L.) Kuntze = **R. lucida**

*nitidum* (Engl.) Kuntze = **R. nitida**

*puberulum* (Eckl. & Zeyh.) Kuntze = **R. pyroides** var. **pyroides**

*pyroides* (Burch.) Kuntze = **R. pyroides**

*quartinianum* (A. Rich.) Kuntze = **R. quartiniana**

*refractum* (Eckl. & Zeyh.) Kuntze = **R. refracta**

*rehmannianum* (Engl.) Kuntze = **R. rehmanniana**

*scoparium* (Eckl. & Zeyh.) Kuntze = **R. lucida** fa. **scoparia** (S. Africa)

*tenuinerve* (N. E. Br.) Kuntze = **R. tenuinervis**

*tomentosum* (L.) Kuntze = **R. tomentosa**

*transvaalense* (Engl.) Kuntze = **R. transvaalensis**

*tridentatum* (Sond.) Kuntze = **R. pyroides** var. **integrifolia** (S. Africa)

*welwitschii* (Engl.) Kuntze = **R. kirkii**

## TRICOSCYPHA / 28

syn.: *Emiliomarcelia* Th. Durand & H. Durand

African genus.

BRETELER, F. J. (2001). The genus *Trichoscypha* (Anacardiaceae) in Upper Guinea: A synoptic revision. *Adansonia, Sér.* 3, 23: 247-264.

BRETELER, F. J. (2004). The genus *Trichoscypha* (Anacardiaceae) in Lower Guinea and Congolia: A synoptic revision. *Adansonia, Sér.* 3, 26: 97-127.

The genus was described in 1862. Since then 84 species have been described from continental Africa; but after revision only 28 species are recognised, including a few new species. An interesting example of how relative the notion of biodiversity is.

Woody dioecious plants with some exudate, alternate usually imparipinnate leaves crowded at tips of trunk or branches; fruit a drupe, one-seeded.

Certain species are poorly known: Two species (= c. 8%) without male flowers, 5+1 ? (= c. 21%) without female flowers; two species (= c. 8%) known only from the type; a few other species are known from very few collections.

**Trichoscypha acuminata** Engl.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 94, 1985; Keay, Trees Nigeria, ed. 2: 376, 1989; Harris, Vascul. pl. Dzanga-Sangha Res., C. Afr. Rep.: 40, 2002; Sosef & al., Check-list pl. vascul. Gabon: 47, 2006; Figueiredo & Smith, Pl. Angola: 29, 2008. – Icon.: Bot. Jahrb. Syst. 15: pl. 4, 1892 (*T. ferruginea*); Aké Assi, Contrib. à l'identification... plantes...Rép. Centrafricaine: 100, 1981; White & Abernethy, Guide végétation Réserve Lopé Gabon: 115, 1996; Wilks & Issembé, Arbres Guinée Equat.: 95, 2000; Breteler, 2004: 101.

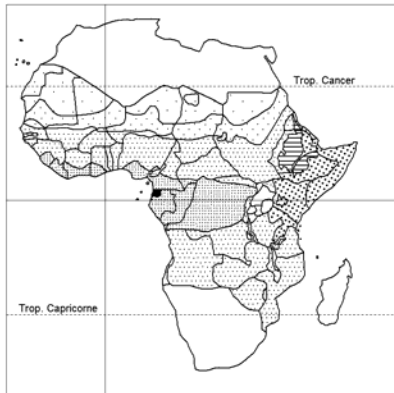
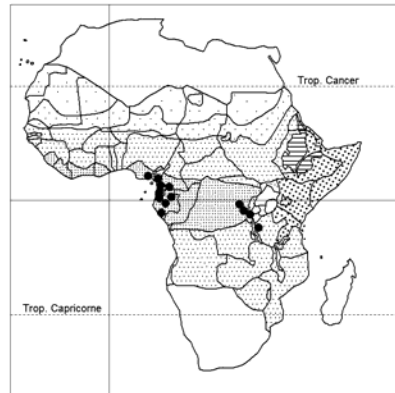
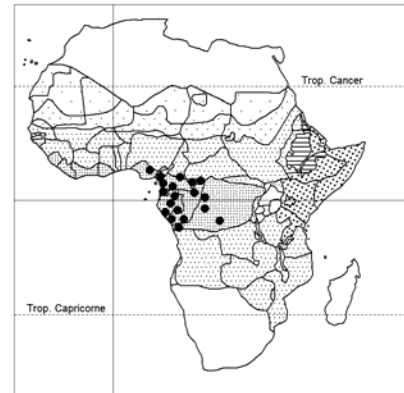
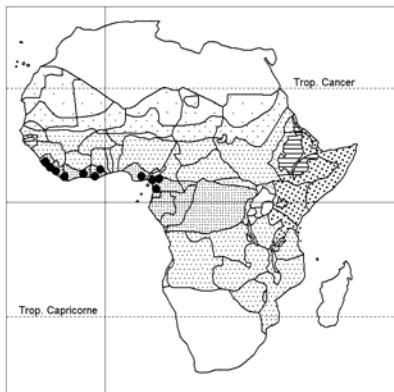
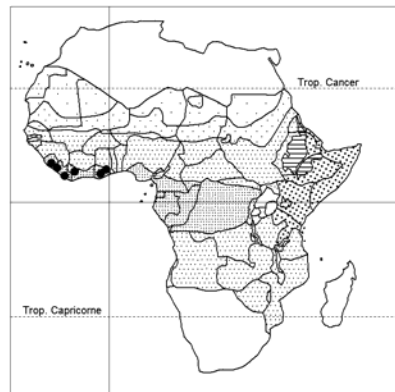
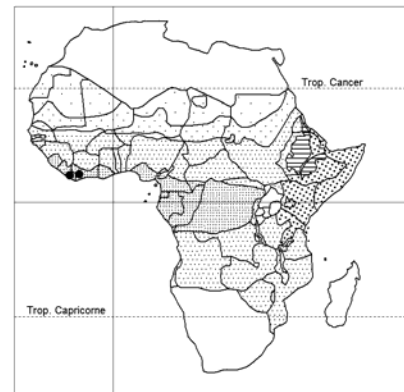
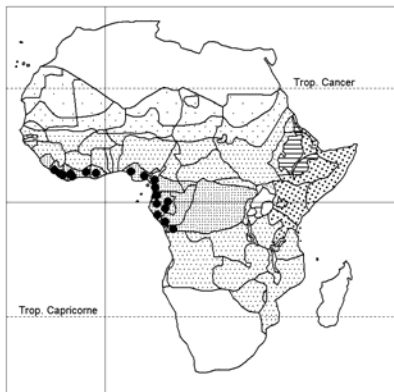
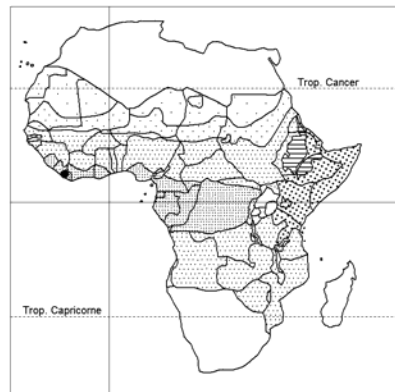
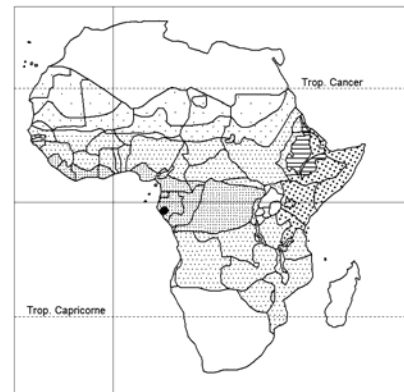
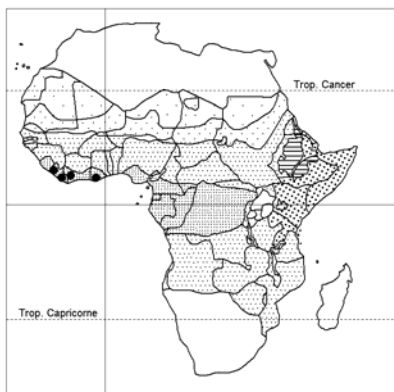
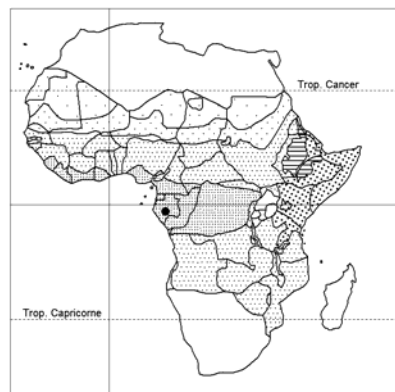
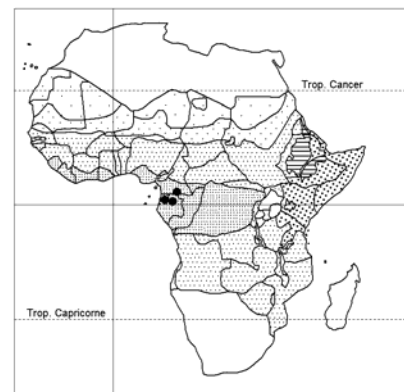
syn.: *Sorindeia mannii* Oliv. 1868, non *Trichoscypha mannii* Hook f. 1862; *Trichoscypha braunii* Engl.; *T. ferruginea* Engl.; *T. congoensis* Engl.; *T. laurentii* De Wild.; *T. flamignii* De Wild.; *T. redingii* De Wild.; *Schubea heterophylla* Pax (*Europhorbiaceae*); *Trichoscypha bueteneri* Engl., nom.

Unbranched or poorly branched tree 15-20 m tall; bole straight, 50 cm Ø, and 1 m in girth; leaves usually crowded at tops of stem or branches, 7-17-jugate, to 1,5 m long; petiole 15 cm long; leaflets oblong-elliptic, 15-25 × 3-10 cm, ± glabrous beneath; inflorescences 15-30 cm long borne on lower part of main stem, densely rusty hairy when young, bracts conspicuous; drupe ± ellipsoid, 3-6 cm long, dark red, puberulous to shortly velutinous, edible.

Rain-forest; terra firma forest; 90-1500 m alt.

Closely related to *T. oddonii* (cf. below).



**Sorindeia oxyandra****Sorindeia winkleri****Trichoscypha acuminata****Trichoscypha arborea****Trichoscypha baldwinii****Trichoscypha barbata****Trichoscypha bijuga****Trichoscypha blydeniae****Trichoscypha bracteata****Trichoscypha cavalliensis****Trichoscypha debuijnii****Trichoscypha engong**

## TRICOSYPHA

**T. arborea** (A. Chev.) A. Chev.; Jaeger & Adam, Végétaux vascul. Mts Loma (Boissiera 32): 295, 1980; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 95, 1985; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 46-47, 2009. – Icon.: Breteler, 2001: 249; Breteler, 2004: 101; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 720, 727, 2006.

bas.: *Emiliomarcelia arborea* A. Chev.

syn.: *Trichoscypha rubriflora* Engl. & Brehmer

Tree to 30 m; bole straight, to 40 cm Ø, > 1 m in girth; bark rough; slash red, soft fibrous with spots of white latex; wood greenish or pinkish; leaves 6-8-jugate; leaflets coriaceous, glabrous, 20-25 × 5-7,5 cm; flowers red in stiff and erect, branched terminal inflorescences to 80 cm long; axes ferruginous tomentose; drupe red, glabrous, ellipsoid, c. 2,5 cm long; pulp sweetish, edible.

Rain-forest; forest gallery with *Parinari excelsa*; common in evergreen and moister semi-deciduous forests; < 300 m-1600 m alt.

May be difficult to distinguish from *T. patens* where they meet (Nigeria, W Cameroon), but flower colour different.

**T. baldwinii** Keay; Aké Assi, Etude floristique de la Côte d'Ivoire: 92, 1963; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 724, 2006. – Icon.: Breteler, 2001: 249.

Tree 5-10 m; trunk to c. 6 cm Ø; leaves 4-7(-8)-jugate, sometimes 1-foliolate, < 30 cm long; leaflets papery, pustulate on both surfaces (when dried), glabrous except on midrib, oblong-elliptic, acuminate, 4-15 × 2-5 cm; flowers pink, in rusty pubescent inflorescences, conspicuously leafy, open, lax, to ca 75 cm long; drupe black, ± glabrous, ellipsoid, 2-2,5 cm long.

Wet evergreen forests; rain-forest.

**T. barbata** Breteler – Icon.: Breteler, 2001: 253; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 719, 720, 2006.

syn.: *T. sp. A* and *sp. B*, sensu Keay, Fl. W. Trop. Afr., ed. 2, 1/2: 735, 1958.

Tree to c. 10 m with a trunk to 15 cm Ø, or liane; branchlets densely brown to yellow-velutinous to tomentose; leaves 6-10-jugate; leaflets oblong-elliptic, (4,5-)10-18(-23) × (2-)4-6 (-8) cm, with spreading long hairs around recurved margins and on surfaces, midribs with long and short hairs intermixed, and channelled into the acuminate drip-tipped apex which is curled up and inwards (fringe of marginal hairs conspicuous); inflorescences terminal, woolly tomentose, with large hairy bracts 2 cm long, to c. 40 cm long; flower disk very hairy; fruit unknown.

Wet evergreen forest, in understorey; rain-forest.

**T. bijuga** Engl.; Sosef & al., Check-list pl. vascul. Gabon: 47, 2006. – Icon.: Breteler, 2001: 249; Breteler, 2004: 101; Consp. fl. Angol. 2: 125, 1956 (*S. gossweileri*); Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 197, 1959 (*T. beguei*); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 720, 723, 2006.

syn.: *T. beguei* Aubrév. & Pellegr.; *T. preussi* Engl.; *T. reticulata* Engl.; *T. dinklagei* Engl.; *T. gossweileri* Exell & Mendonça

Shrub or tree up to 20 m tall; trunk c. 15 cm Ø; leaves 2-10(-13)-jugate; leaflets papery, midrib impressed above, with long hairs as on young parts, oblong-elliptic, 40 × 11 cm, apex 1-2 cm acuminate, tip mucronate, lower surface shiny or silky, margins thickened, venation pale reddish beneath; flowers pale red, in pendulous inflorescences to 60 cm long borne on leafy shoots above, between or below the leaves; drupe ellipsoid, red, glabrous, 3-4,5 cm long.

## TRICOSYPHA BIJUGA

Evergreen rain-forest, widespread; 40-1000 m alt.

Bioko/Fernando Poo: perhaps extinct; discovered there but not recollected during the 20<sup>th</sup> century: Almost all forest below 1000 m alt. cleared for agriculture (fide Cable & Cheek, Pl. Mt Cameroon: XXXIX, 1998).

**T. blydeniae** Breteler – Icon.: Breteler, 2001: 255 (flowers); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 723, 2006.

Tree ± 5 m; trunk ± 5 cm Ø; branchlets, leaf petiole, rachis and petiolules red-brown velutinous-tomentous, glabrescent; leaves 5-8-jugate; leaflets narrowly elliptic, 12-15 × 3-6 cm, acumen – drip-tip 0,5-1,5 cm, midrib impressed above to thickened drip-tip with short dense hairs inside, upper surface drying black; rachis corky, black; male flowers unknown; female ones in (sub)terminal short-brown-hairy inflorescence; drupe ellipsoid, 1,5 cm long, ± appressed-brown-hairy.

Lowland evergreen rain-forest (near Tchien, Liberia).

**T. bracteata** Breteler; Sosef & al., Check-list pl. vascul. Gabon: 47, 2006. – Icon.: Breteler, 2004: 101, 108.

Tree, medium-sized; branchlets, leaf petiole and rachis appressed-pubescent; leaves 7-13-foliolate; leaflets elliptic-lanceolate, 8-15 × 2,5-5 cm, apex shortly acuminate, glabrous above except for impressed midrib, appressed-puberulous beneath on nerves; male flowers in (sub)terminal paniculate compact inflorescences to c. 5 cm long, pubescent, densely bracteate; female flowers and fruit unknown.

Rain-forest; < 300 m alt.

**T. cavalliensis** Aubrév. & Pellegr.; Irvine, Woody pl. Ghana: 567, 1961. – Icon.: Breteler, 2001: 249; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 720, 725, 2006.

Tree to c. 20 m; trunk to c. 20 cm Ø; leaves 7-9-foliolate, < 30 cm long, rachis glabrous; leaflets papery, ± glabrous, apex caudate-acuminate; (male) flowers white, tiny, glabrous, in “clouds”, in not very hairy, (sub)terminal inflorescences c. 50 cm long; female flowers unknown?; drupes curved, glabrous, hanging in bunches.

Rain-forest, wet evergreen forest, in understorey.

**T. debriuijii** Breteler; Sosef & al., Check-list pl. vascul. Gabon: 47, 2006. – Icon.: Breteler, 2004: 110.

Treetlet ± 5 m; trunk 3-5 cm Ø; branchlets tomentellous, *hairs stellate*; leaves 13-jugate, to c. 80 cm long; leaflets obliquely elliptic-lanceolate, 14-20 × 4-5 cm, apex caudate-acuminate (acumen 2-2,5 cm long), sparsely stellate-hairy on midrib above, densely so beneath; inflorescence borne on main stem, brown-short-hairy (hairs mainly simple); male flowers unknown, female flowers described on debris attached to infrutescence; drupe red, ± ovoid, 3,5-5 cm long, velvety simple-hairy.

Rain-forest; 300-400 m alt.

Only species in the genus with stellate hairs (common in *Lannea*).

**T. engong** Engl. & Brehmer (as *eugong*); Sosef & al., Check-list pl. vascul. Gabon: 48, 2006. – Icon.: Breteler, 2004: 101; Wilks & Issembé, Arbres Guinée Equat.: 97, 2000 (*T. spp.*, Engong).

syn.: *T. tessmannii* Engl. & Brehmer; *T. spp.* sensu Wilks & Issembé, o.c.: 96.

## TRICOSYPHA ENGONG

Tree to 35 m; trunk 1 m d.b.h.; crown large; leaves crowded at the end of the branches, to  $\pm$  12-jugate; leaflets ovate-elliptic-oblong(-obovate), 16-20  $\times$  6-9 cm, acutely acuminate, glabrous above except for midrib, sparsely puberulous beneath; flowers red; inflorescences mainly on the thick branches, sometimes extending below these, i.e. on the upper part of the trunk as well, with large bracts, ferruginous; drupe pink to red, glabrous, c. 4 cm long, edible.

Primary or old secondary rain-forest; to  $\pm$  800 m alt.

Epithet based on the vernacular name "engong" mentioned by Mildbraed who collected the type.

**T. hallei** Breteler; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006. – Icon.: Breteler, 2004: 101.

Shrub or treelet 3-6 m tall; branchlets pubescent; leaves 7-8-jugate, petiole and rachis pubescent; leaflets oblong-elliptic, 11-30  $\times$  3,5-8 cm, apex caudate-acuminate (acumen 1-2,5 cm long),  $\pm$  pubescent; inflorescences terminal or axillary, loose, pubescent, male one to 60 cm long, female one shorter; male flowers yellowish, females unknown; drupe subglobose, dark red, velvety, 2-2,5 cm long.

Rain-forest; 500-900 m alt.

**T. imbricata** Engl.; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006. – Icon.: Breteler, 2004: 101.

syn.: *T. nigra* Lecomte

Shrub, lianescent shrub or liane; leaves (1-)3-7(-9)-foliolate; leaflets pustulate, glabrous above, glabrous to sparsely appressed-puberulous beneath; flowers pale green; drupe  $\pm$  subglobose, dark red, 1,5-2,5 cm long, sparsely appressed-puberulous.

Coastal scrub on sandy soil; 0-10 m alt.

**T. laxiflora** Engl., Bot. Jahrb. Syst. 15!: 110, 1892; Cable & Cheek, Pl. Mt Cameroon: XXXIX, 9, 1998 (*T. camerunensis*); Sosef & al., l.c. – Icon.: Breteler, 2004: 101.

syn. *T. camerunensis* Engl. ("kamerunensis" Engl. Pflanzenwelt Afr. 3/2: 191, 1921), Bot. Jahrb. Syst. 15: 109, 1892; type: B, Preuss 99, lost; neotype: Bos 4918; *T. talbotii* Bak. f.; *T. heterophylla* Engl. & Brehmer; *T. dusenii* Engl.

Shrub to treelet 1-2,5-? 15 m tall; leaves very variable, (1-)3-5(-13)-foliolate; leaflets variable in size and shape, broadly elliptic to oblong-ovate, (5-)12-30(-40)  $\times$  (2-)5-10(-16) cm,  $\pm$  glabrous; flowers dark red to purple, male ones in loose many-flowered panicles, females in narrow panicles; drupe ellipsoid, glabrous, orange, glossy, 1,5-4,5 cm long, pulp sweet.

Rain-forest; lowland evergreen (? or semi-deciduous) forest; 190-1850 m alt.

*T. camerunensis* and *T. laxiflora* were published simultaneously (see above), the former preceding the latter.

**T. laxissima** Breteler – Icon.: Breteler, 2001: 257; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 725, 2006.

Shrublet; branchlets, leaf petiole and rachis appressed-puberulous; leaves 7-foliolate; leaflets papery, smooth ("like thin plastic"), drying pale brown, midrib above with fringe of white hairs, drip-tip pronounced, 1-1,5 cm long; flowers pink (male), long-pedicellate, "almost in whorls on the end of very slender inflorescence axes of lax panicles", bracts small; female flowers and fruit unknown.

River bank in beach-side forest (Firestone Plantation).

Known only from the type locality near Monrovia (Liberia).

## TRICOSYPHA

**T. liberica** Engl. – Neotype: Jansen 2151. – Hawthorne & Jongkind, Woody pl. west. Afr. for.: 726, 2006. – Icon.: Breteler, 2001: 249.

Shrub or tree to 10 m tall; trunk to 15 cm  $\emptyset$ ; leaves c. 40 cm long, 7-11-foliolate; leaflets coriaceous, minutely pustulate above, elliptic, 28  $\times$  8 cm, with pale stiff appressed hairs beneath, margins folded up into petiole channel, "the basal ones collecting litter around stems"; flowers (male) purple, in massive axillary or terminal inflorescences 5-30 cm long, axes appressed dark-red-hairy; fruit unknown?

Wet evergreen rain-forest.

**T. linderi** Breteler – Icon.: Breteler, 2001: 258; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 721, 2006.

syn.: *T. smythei* sensu Fl. W. Trop. Afr., ed. 2, 1/2: 735, 1958, quoad specim. Linder 1329, non Hutch. & Dalziel

Tree to c. 10 m; trunk c. 10 cm  $\emptyset$ ; leaves crowded at tips of branches, to 1,5 m long, 9-15-jugate; leaflets lanceolate to oblong, 20-35  $\times$  3-6 cm, tapering into a 3 cm long acumen, midrib with long hairs on both sides, glossy and pustulate above and beneath; inflorescences (male) borne below the leaves, shaggy pilose; female flowers unknown; drupe smooth, glabrous, ellipsoid, red, 2,5 cm long.

Rain-forest.

Known from only 2 gatherings.

**T. longifolia** (Hook. f.) Engl. – Icon.: Breteler, 2001: 249; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 727, 2006.

bas.: *Dupuisia* ? *longifolia* Hook. f.

syn.: *Sorindeia afzelii* Engl. 1892, non Engl. 1917 (= *Sorindeia juglandifolia*); *S. longifolia* (Hook. f.) Oliv.; *S. (Oligandra) macrophylla* Planch. in sched. (K).

Tree to 25 m; bole to 30 cm  $\emptyset$ , clean, not buttressed; with latex soon becoming black; young branchlets densely soft caramel-coloured-hairy; leaves 6-9-jugate, petiole base deeply grooved and winged; leaflets coriaceous, glabrous, smooth, oblong-lanceolate, to 30  $\times$  10 cm, very pale beneath, often with long drip-tip, margins recurved; inflorescences lax, red-brown-hairy, to 33 cm long; fruit ellipsoid,  $\pm$  flat, 2,5 cm long, glabrous, dehiscent (cf. Breteler, 2001: 259).

Rain-forest.

**T. lucens** Oliv.; White & al., Evergreen for. fl. Malawi: 125, 2001 (*T. ulugurensis*); Coates Palgrave, Trees south. Afr., ed. 3: 544-545, 2002 (*T. ulugurensis*); Akoegninou & al., Fl. analyt. Bénin: 320, 2006; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006; Lejoly & al., Fl. Tshopo (RD Congo) in Taxonomania 24: 6, 2008; Figueiredo & Smith, Pl. Angola: 29, 2008 (*T. ulugurensis*); Lisowski, Fl. (angiosp.) Rép. Guinée: 46, 2009 (*T. oba*). – Icon.: Bol. Soc. Brot., Ser. 2, 26: pl. 3, 1952 (*T. silveirana*); Aubréville, Fl. for. Côte d'Iv., ed. 2, 2: 197 (*T. chevalieri*, *T. yapoensis*), 199 (*T. oba*), 1959; Fl. Zambes. 2/2: 573, 1966 (*T. ulugurensis*); Fl. Trop. E. Afr., Anacardiaceae: 52; 1986 (*T. ulugurensis*); Fl. Congo belge 9: 81, 1960 (*T. submontana*, flower); Breteler, 2001: 249; Breteler, 2004: 101; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 721, 723, 725 ("yapoensis"), 727, 2006.

syn.: *T. albiflora* Engl.; *T. chevalieri* Aubrév. & Pellegr.; *T. oba* Aubrév. & Pellegr.; *T. yapoensis* Aubrév. & Pellegr.; *T. coriacea* Engl. & Brehmer; *T. ledermannii* Engl. & Brehmer; *T. pallidiflora* Engl. & Brehmer; *T. rhoifolia*



## TRICOSYPHA LUCENS

Engl. & Brehmer; *T. ulugurensis* Mildbr.; *T. silveirana* Exell & Mendonça; *T. diversifoliolata* Van der Veken; *T. ealaensis* Van der Veken; *T. kwangoensis* Van der Veken; *T. liketensis* Van der Veken; *T. parvifoliolata* Van der Veken; *T. submontana* Van der Veken; *T. volubilis* Van der Veken; *T. ulugurensis* Mildbr, incl. subsp. *submontana* (Van der Veken) Kokwaro; “*T. alba* Aubrév. & Pellegr.” (1934) sphalm. for *T. oba* in Akoegninou & al., l.c.; *Pseudospondias luxurians* A. Chev.

Shrub or tree, evergreen, 5-15-20-25 m tall, trunk to 15-35 cm Ø, with or without buttresses; more rarely scandent shrub or liane (stem 3-7 cm Ø); with some latex; leaves 50-70 cm long, 7-11-15(-25)-foliolate; leaflets oblong-elliptic, 5-17-20 × 3-6-7,5 cm, ± glabrous above except for pubescent midrib, ± glabrous to sparsely appressed puberulous to pubescent beneath, acuminate, the lowest pairs often close to the stem; flowers white(-pinkish) in branched, brown velutinous panicles 40-50 × 25-30 cm, terminal or borne below the leaves; stamens orange; drupe red, ellipsoid, 1,5-3 cm long, sparsely to densely hairy.

Rain-forest; forest gallery; evergreen forest; forest relics on sandy soil; swampy forests; dry secondary forest; regrowth; bush with *Dissotis leonensis*; 5-2000 m alt. – The most common species in the genus in W Africa.

Variable in shape, size, texture of leaflets (thus a large number of synonyms).

Oliver’s description of *T. lucens* (1868) was based on two Mann gatherings (1749 male fl., 1830 young fruits) from River Muni (1°N lat.) that are not conspecific. Engler later based his *T. oliveri* on Mann 1830 (cf. Breteler, 2001: 259).

Coates Palgrave, l.c., notes that this plant causes “an allergic rash, similar to that caused by *Smodingium argutum* E. Mey. ex Sond. (S. Africa) and the American Poison-ivy *Toxicodendron radicans* L. K.

**T. mannii** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006. – Icon.: Bull. Jard. Bot. Natl. Belg. 63: 225, 1994 (*T. gambana*); Breteler, 2001: 251; Breteler, 2004: 102, 116; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 720, 723, 2006.

syn.: *T. turbinata* Lecomte; *T. longipetala* Bak. f.; *T. soyauxii* Engl. & Brehmer; *T. subretusa* Engl. & Brehmer; *T. gambana* Jongkind; *T. atropurpurea* Engl.

Shrub to treelet or tree 4-10-25 m, with trunk to 15 cm Ø, or liane to > 25 m high; leaves 11-17-23-jugate, 0,7-1 m long, petiole ± winged; leaflets papery, oblong-elliptic, (8-)12-20(-27) × (1-)3-8(-12) cm, mostly with long hairs but sometimes ± glabrous, venation ± prominent beneath, tip slender, the lowest pair sometimes very close to the stem (stipule-like); flowers deep red, in dense short terminal or axillary panicles, hispid or soft-hairy; drupe ovoid, dark red, sparsely hispid, glabrescent, 2-3,5 cm long, beaked.

Rain-forest; wet and moist evergreen forest; wet semi-deciduous forest, in sandy areas; widespread; 10-350 m alt.

Extremely variable in shape of leaflets (*T. gambana* is an extreme form).

**T. nyangensis** Pellegr.; Sosef & al., Check-list pl. vascul. Gabon: 48. – Icon.: Breteler, 2004: 119 (partial).

Tree ± 12 m; branches, petiole, rhachis, petiolules appressed-puberulous, more sparsely so on the leaflets beneath; leaves 7-10-jugate; leaflets coriaceous, oblong-lanceolate, 12-18 × 3,5-6 cm, midrib impressed above, prominent beneath, margins revolute; flowers purplish, in axillary inflorescences to 30 cm long; fruit unknown.

## TRICOSYPHA NYANGENSIS

Rain-forest; c. 400 m alt.

Only known from the type collected in 1915 (a mixture of leaves, male and female flowers; observations needed to see if the species is dioecious like all other members of the genus, or polygamous).

**T. oddonii** De Wild.; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006; Figueiredo & Smith, Pl. Angola: 29, 2008. – Icon.: Ann. Mus. Congo Belge, Bot., Ser. V, 1: pl. 60, 61, 1906; Consp. Fl. angol. 2/1: 129, 1954 (*T. cabindensis*); White & Abernethy, Guide végétation Réserve Lopé: 115, 1996 (*T. abut*); Wilks & Issembé, Arbres Guinée Equat.: 95, 2000 (*T. abut*); Breteler, 2004: 102; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 303, 2007.

syn.: *T. letestui* Lecomte; *T. brieyi* De Wild.; *T. abut* Engl. & Brehmer; *T. ejui* Engl. & Brehmer; *T. cabindensis* Exell & Mendonça; *Emiliomarcelia oddonii* (De Wild.) T. Durand & H. Durand

Unbranched or poorly branched tree 5-26 m; trunk 10-50 cm Ø; leaves crowded at top of stem or branches, to 2,5 m long, (16-)20-28-jugate; leaflets lanceolate-oblong, (13-)22-35(-50) × (3-)7-12 cm, usually pubescent beneath; flowers pink to wine-red, in panicles borne on the lower part of the stem, male ones 30 × 25 cm, females 15 cm long; drupe ellipsoid, puberulous to ± velutinous, dark red, c. 7 cm long, edible.

Rain-forest; 5-600 m alt.

Closely related to *T. acuminata*; separation by Breteler based on leaf features, as flowers are too variable. Both species have the same vernacular name: amvout or amvut (cf. Wilks & Issembé, l.c.).

**T. oliveri** Engl.; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006. – Icon.: Breteler, 2004: 102.

syn.: *T. parviflora* Engl.; *T. bipindensis* Engl.; *T. gabonensis* Lecomte; *T. macrophylla* Lecomte; *T. parvifloroides* Pellegr.; *T. platycarpa* Van der Veken; *Sorindeia macrophylla* Planch., nom.

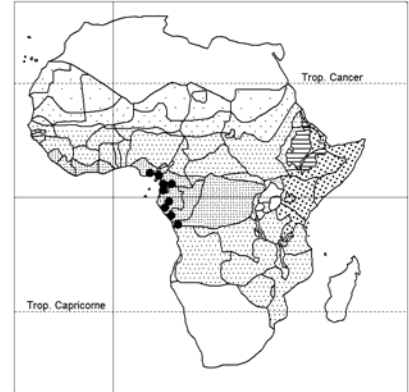
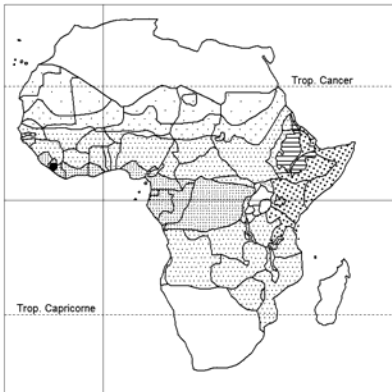
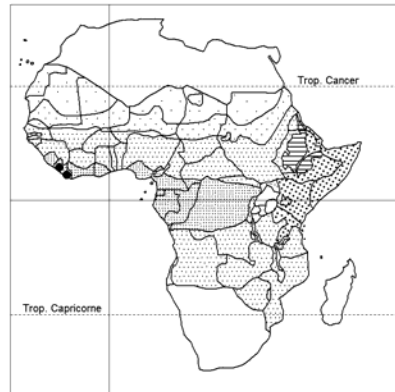
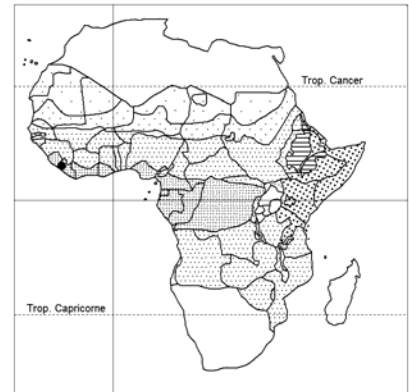
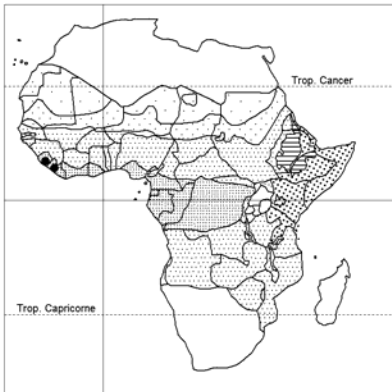
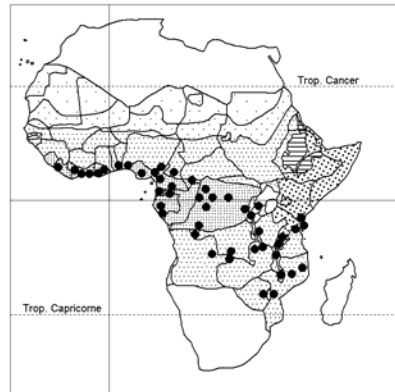
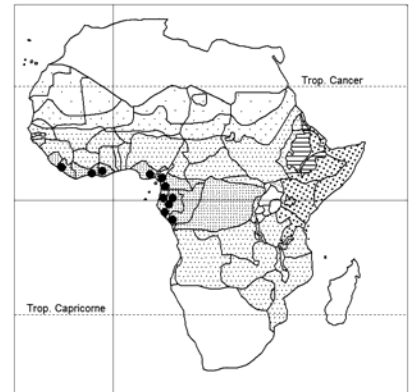
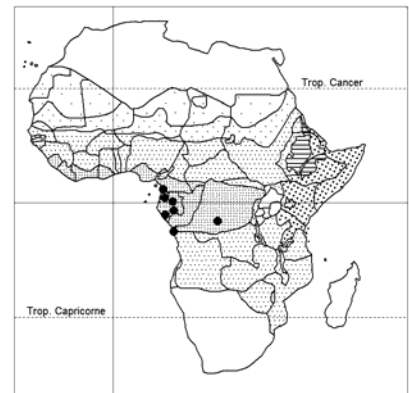
Treelet or tree 20-30-? 50 m; bole straight, 35 cm Ø (? and more); branches, petiole, rhachis, leaflets beneath and fruit puberulous, appressedly or not; leaves 30-60-100 cm long, 3-6 (-10 ?)-jugate; leaflets oblong-lanceolate to ovate, (8-)15-20 (-32) × 4-8(-12) cm, apex acuminate (acumen 1-1,5 cm); flowers dark red to purple (also yellow to orange), in terminal and axillary, widely branched panicles > 50 cm long; drupe red, obliquely ovoid, apiculate, 3 cm long.

Rain-forest; ?-400-c. 600 m alt.

**T. olodiana** Breteler – Icon.: Breteler, 2001: 260; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 721, 2006.

Tree 4 m; branchlets densely velutinous; leaves 9-jugate or simple (on specialized fertile branches); petiole, rhachis, petiolules and midrib of leaflets beneath with dense furry hairs; leaves c. 70 cm long; leaflets papery, elliptic-lanceolate (8-)13-30 × (3-)4-8 cm, subcordate, bullate at base (with crowded impressed lateral nerves), shortly acuminate (acumen 0,5-1cm); side shoots bearing terminal softly hairy inflorescences (male) above a few reduced leaves, bracteoles with a conspicuous dense long brush of orange hairs; disk glabrous; female flowers and fruit unknown.

Lowland wet evergreen forest.

**Trichoscypha hallei****Trichoscypha imbricata****Trichoscypha laxiflora****Trichoscypha laxissima****Trichoscypha liberica****Trichoscypha linderi****Trichoscypha longifolia****Trichoscypha lucens****Trichoscypha mannii****Trichoscypha nyangensis****Trichoscypha oddonii****Trichoscypha oliveri**

## TRICOSYPHA

**T. patens** (Oliv.) Engl.; Sosef & al., Check-list pl. vascul. Gabon: 48, 2006. – Icon.: Breteler, 2004: 102.

bas.: *Sorindeia patens* Oliv.

syn.: *Trichoscypha victoriae* Engl.; *T. paniculata* Engl., non *Brucea paniculata* Lam. (= *Trichoscypha smythei*).

Very variable in habit: shrub 0,25-0,35 m tall, usually a tree 9-10-22 m, trunk to 40 cm Ø, perhaps also a liane; leaves 25-80 cm long, 3-5(-7)-jugate; leaflets ± coriaceous, ± glabrous, elliptic to obovate or oblong, 10-20(-28) × 3-7 cm, apex caudate-acuminate (acumen c. 1,5 cm long); flowers yellowish in (sub) terminal loose, hanging panicles 60 × 30 cm; drupe red, ellipsoid, to 4 cm long, glabrous.

Humid rain-forest; c. 150-600 m alt.

**T. pauciflora** Van der Veken – Icon.: Breteler, 2004: 102.

Shrub 2-8 m tall; leaves 8-11-jugate, to > 1 m long, crowded at tips of branches; leaflets ovate to oblong-lanceolate, (6-)12-25(-30) × (3-)5-7 cm, apex long-acuminate; flowers red, in panicles borne on basal part of trunk; drupe ellipsoid, glabrous, c. 2,5 cm long.

Montane rain-forest; 800-1200 m alt.

**T. reygartii** De Wild.; Sosef & al., Check-list pl. vascul. Gabon: 49, 2006; Lejoly & al., Fl. Tshopo (RD Congo) in Taxonomania 24: 6, 2008. – Icon.: Fl. Congo belge 9: 89, 1960 (*T. altescandens*); Breteler, 2004: 102.

syn.: *T. lescrauwaetii* De Wild.; *T. mildbraedii* Engl. & Brehmer; *T. altescandens* Van der Veken; *T. arborescens* Van der Veken; *T. scandens* Van der Veken

Shrub to ± 5 m tall, tree to 15 m with trunk 30-40 cm Ø, or liane to 20 m tall with stem to ± 15 cm Ø; leaves 3-6-7 jugate, 20-50 cm long; leaflets oblong-elliptic-lanceolate, 4-9-18(-25) × (1,5-)3-7(-10) cm, glabrous above except for impressed midrib (pubescent), glabrous to sparsely appressed-puberulous beneath, apex caudate-acuminate (acumen 1,5-2-3 cm long); flowers yellowish, in terminal to axillary inflorescences (sometimes borne below the leaves), much branched, to > 55 cm long, ± pubescent mixed with patchy arachnoid white indumentum (sometimes also present on lower leaflet surface); drupe round-obovoid, 1,5-2,5 cm long, glabrous.

Rain-forest; riverine; savanna with shrubs; 10-1000 m alt.

Extremely variable.

**T. rubicunda** Lecomte; Sosef & al., Check-list pl. vascul. Gabon: 49, 2006 – Icon.: Breteler, 2004: 102, 125.

syn.: *T. africana* Lecomte; *T. fusca* Lecomte; *T. klainei* Lecomte; *T. escherichii* Engl.; *T. braunii* Engl. var. *regularis* Lecomte, nom. in sched.

Shrub or tree 1,5-26 m tall; trunk to 25 cm d.b.h.; leaves 5-12-jugate, 50-60 cm long; leaflets ovate-lanceolate-oblong, (11-)17-25(-35) × 5-7(-11) cm, acumen 1-2 cm long; flowers pink to red, in panicles terminal to axillary but also rarely borne on the leafy shoots and on the trunk, male ones 70 cm long, females 110 cm long, pubescent to puberulous often also with patchy whitish arachnoid indumentum; drupe red, ovoid-ellipsoid, appressed short-hairy and also with arachnoid indumentum, 1,5-2 cm long.

Rain-forest; up to 1200 m alt.

Very variable in habit.

## TRICOSYPHA

**T. smythei** Hutch. & Dalziel; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 47, 2009 (*T. smeathmannii*). – Icon.: Bull. Jard. Bot. Etat, Brux. 26: 207, 1956 (*T. smeathmannii*); Breteler, 2001: 249; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 723, 2006.

syn.: *T. smeathmannii* Keay; *Brucea paniculata* Lam., excl. syn. *B. guineensis* G. Don, non *Trichoscypha paniculata* Engl. (= *T. patens*).

(Straggling) shrub or tree 6,5-8-15 m tall; trunk to 20 cm Ø; branchlets very lenticellate; leaves 2-7-jugate; leaflets elliptic-lanceolate, 8-22 × 2,5-6 cm, glabrous or glabrescent, slightly bullate, acuminate with drip-tip (2 cm long), margins thickened, wavy, not recurved; flowers white, fragrant, in compact terminal inflorescences, rarely cauliflorous; drupe red, glabrous, c. 2,5 cm long.

Rain-forest; forest gallery; forest remnants; mountain areas; 600-1400 m alt.

Closely related to *T. lucens*. More fruiting material, especially from Ivory Coast, is needed to decide whether *T. smythei* can be maintained as a distinct species (fide Breteler). The specimens cited by Aké Assi (Boissiera 57: 91, 2001) have to be revised; Aké Assi 12963 is *T. bijuga*; Aubréville 2789 is *T. barbata*.

## UNIDENTIFIED MATERIAL:

*Trichoscypha* sp. 1 sensu Cable & Cheek, Pl. Mt Cameroon: 9, 1998 (Wheatley 822).

*T.* sp. 2, idem (Watts 668).

*T.* sp. 3, idem (Tekwe 295, Wheatley 736).

*T.* sp. 4, idem (Tchouto 609).

*T.* sp. nov., idem and p. XXXIX (Thomas 9147; Akogo 14; Cheek 5003, 5052; Ndam 664).

Shrub to 2 m tall.

“Strictly endemic to Mt Cameroon, known only from 6 collections, mostly from the coastal strip Idenau-Limbe...made in 1992, 1993”.

*T.* spp. sensu Breteler, 2004: 126 (Le Testu 8261 from Gabon; Van Anel & Mva 4261, Etuge & al. 4504, Tchouto & al. EBIAX 17, Senterre & Ngomo 3442 from Cameroon).

## SYNONYMS:

*Brucea paniculata* Lam., excl. syn. *B. guineensis* G. Don  
= **Trichoscypha smythei**

*Dupuisia* ? *longifolia* Hook. f. = **Trichoscypha longifolia**

*Emiliomarcelia arborea* A. Chev. = **Trichoscypha arborea**

*oddonii* (De Wild.) T. Durand & H. Durand = **T. oddonii**

*Schubea heterophylla* Pax (*Euphorbiaceae*) = **Trichoscypha acuminata**

*Trichoscypha abut* Engl. & Brehmer = **Trichoscypha oddonii africana** Lecomte = **T. rubicunda**

“*alba*” Aubrév. & Pellegr., sphalm. (= *T. oba*) = **T. lucens**

*albiflora* Engl. = **T. lucens**

*altescandens* Van der Veken = **T. reygartii**

*arborescens* Van der Veken = **T. reygartii**

*atropurpurea* Engl. = **T. mannii**

*beguei* Aubrév. & Pellegr. = **T. bijuga**

*bipindensis* Engl. = **T. oliveri**

*braunii* Engl. = **T. acuminata**



## TRICOSYPHA

*braunii* Engl. var. *regularis* Lecomte = **T. rubicunda**  
*brieyi* De Wild. = **T. oddonii**  
*buettneri* Engl. = **T. acuminata**  
*cabindensis* Exell & Mendonça = **T. oddonii**  
*camerunensis* Engl. (“kamerunensis” Engl. 1921)  
= **T. laxiflora**  
*chevalieri* Aubrév. & Pellegr. = **T. lucens**  
*congoensis* Engl. = **T. acuminata**  
*coriacea* Engl. & Brehmer = **T. lucens**  
*dinklagei* Engl. = **T. bijuga**  
*diversifoliolata* Van der Veken = **T. lucens**  
*dusenii* Engl. = **T. laxiflora**  
*elaensis* Van der Veken = **T. lucens**  
*ejui* Engl. & Brehmer = **T. oddonii**  
*escherichii* Engl. = **T. rubicunda**  
*ferruginea* Engl. = **T. acuminata**  
*flamignii* De Wild. = **T. acuminata**  
*fusca* Lecomte = **T. rubicunda**  
*gabonensis* Lecomte = **T. oliveri**  
*gambana* Jongkind = **T. mannii**  
*gossweileri* Exell & Mendonça = **T. bijuga**  
*heterophylla* Engl. & Brehmer = **T. laxiflora**  
*kamerunensis* Engl. 1921 = **T. camerunensis**  
*klainei* Lecomte = **T. rubicunda**  
*kwangoensis* Van der Veken = **T. lucens**  
*laurentii* De Wild. = **T. acuminata**  
*ledermannii* Engl. & Brehmer = **T. lucens**  
*lescrauwaetii* De Wild. = **T. reygartii**  
*letestui* Lecomte = **T. oddonii**  
*liketensis* Van der Veken = **T. lucens**  
*longipetala* Bak. f. = **T. mannii**  
*macrophylla* Lecomte = **T. oliveri**  
*mannioides* A. Chev., Explor. Bot. 1: 161, 1920, quoad  
Chevalier 16212 (= *Pierreodendron kerstingii*)  
= **Quassia grandifolia** (*Simaroubaceae*)  
*mildbraedii* Engl. & Brehmer = **Trichoscypha reygartii**  
*nigra* Lecomte = **T. imbricata**  
*oba* Aubrév. & Pellegr. = **T. lucens**  
*pallidiflora* Engl. & Brehmer = **T. lucens**  
*paniculata* Engl. = **T. patens**  
*parviflora* Engl. = **T. oliveri**  
*parvifloroides* Pellegr. = **T. oliveri**  
*parvifoliolata* Van der Veken = **T. lucens**  
*platycarpa* Van der Veken = **T. oliveri**  
*preussii* Engl. = **T. bijuga**  
*redingii* De Wild. = **T. acuminata**  
*reticulata* Engl. = **T. bijuga**  
*rhoifolia* Engl. & Brehmer = **T. lucens**  
*rubriflora* Engl. & Brehmer = **T. arborea**  
*scandens* Van der Veken = **T. reygartii**  
*silveirana* Exell & Mendonça = **T. lucens**  
*smeathmannii* Keay = **T. smythei**  
*smythei* sensu F.W.T.A., ed. 2 (Linder 1329) = **T. linderi**  
*soyauxii* Engl. & Brehmer = **T. mannii**

## TRICOSYPHA

sp. A sensu F.W.T.A., ed. 2 = **T. barbata**  
sp. B sensu F.W.T.A. ed. 2 = **T. barbata**  
spp. sensu Wilks & Issembé = **T. engong**  
*submontana* Van der Veken = **T. lucens**  
*subretusa* Engl. & Brehmer = **T. mannii**  
*talbotii* Bak. f. = **T. laxiflora**  
*tessmannii* Engl. & Brehmer = **T. engong**  
*turbinata* Lecomte = **T. mannii**  
*ulugurensis* Mildbr. = **T. lucens**  
*ulugurensis* subsp. *submontana* (Van der Veken) Kokwaro  
= **T. lucens**  
*victoriae* Engl. = **T. patens**  
*volubilis* Van der Veken = **T. lucens**  
*yapoensis* Aubrév. & Pellegr. = **T. lucens**

## CONNARACEAE / 10 g. / 50 spp.

Tropical family of 20 (25?) genera and c. 200 (or ? 300-350 or ? 580) species (cf. Breteler & al., Wageningen Univ. Papers 89/6: 11-13, 1989; Forero, Flora Neotropica 36: 1, 1983; Schatz, Generic tree flora Madagascar: 119, 2001), whereof c. 101 in tropical America, c. 43 in Asia.

“...shrubs or woody climbers..., form a great feature in the primitive forests of the hilly and highland regions, by reason of their remarkable fruits, nearly always covered with scarlet velvet... [that] excites in the skin the same strong itching as nettles cause...” (Hiern, Cat. Welwitsch’s Afric. Pl. 1: 185-186, 1896).

In Africa often lianes, with alternate usually imparipinnate leaves without stipules (may be confused with Legumes, however, with stipules). Climbing by means of the winding ends of young branchlets, sometimes also with hooks on petioles. Flowers regular, bisexual. Common in logged forest.

Three (or four?) species are incompletely known: in 1 species no complete flower; fruit lacking in 1 species and only immature in another one; mature seeds are unknown in 1 (or 2 ?) species; one species known only from the type.

## AGELAEA / 6

syn.: *Castanola* Llanos; *Troostwykia* Miquel

Six species in tropical Africa, 2 in Asia [*A. borneensis* (Hook f.) Merr. from Burma through to Indonesia, Philippines; *A. macrophylla* (Zoll.) Leenhouts, from Thailand through to Indonesia, Philippines].

**Agelaea gabonensis** Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 123, 2006. – Icon.: Fl. Gabon 33: 29, 1992.

Large liane; branches *with red exudate*; branchlets, petiole and rhachis velutinous, brownish red when young; leaves *imparipinnate*, *5-foliolate*, petiole to 18 cm long, rhachis 8 cm; leaflets papery, velutinous, purplish to greenish-white when young, 26 (-30) × 8(-10) cm; sepals fringed with very small multicellular hairs; immature follicle velutinous.

Forest; 40-230 m alt.

Discovered in 1989.

## AGELAEAE

**A. palmata** Jongkind; Sosef & al., l.c. – Icon.: Bull. Jard. Bot. Natl. Belg. 66: 151, 1997.

Large liane without red exudate; branchlets velutinous; leaves *imparipinnate-subpalmate*, 5-foliolate; petiole to c. 16 cm long, densely pilose; leaflets glabrous, 24 × 8 cm; petiolules velutinous, indumentum with fascicles of 2 hairs; flowers fragrant, in panicles to 80 cm long, axes velutinous; sepals fringed with short multicellular hairs; fruit unknown.

Forest; 120-520 m alt.

Together with *A. gabonensis* forming the section *Gabonensis* Jongkind.

**A. paradoxa** Gilg; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 519: 1985 (*Castanola*); Harris, Vascul. pl. Dzanga-Sangha Res., C. Afr. Rep.: 70-71, 2002; Hawthorne & Jongkind, A botanical synopsis of the lianes and other climbers, in Bongers & al., Forest climbing plants of West Africa: 24, 2005; Sosef & al., Check-list pl. vascul. Gabon: 123, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 135, 2009. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 320, 1915; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 765, 773, 2006; Fl. Gabon 33: 33, 1992 (vars. **paradoxa** and **microcarpa**).

syn.: *Castanola paradoxa* (Gilg) G. Schellenb. ex Hutch. & Dalziel; *Hemiandrina paradoxa* (Gilg) G. Schellenb.

Liane 25-40 m long, or sarmentous tree 4-5 m tall; branchlets puberulous to almost glabrous, older ones pale corky; leaves 3-foliolate, petiole 4-19 cm long, rhachis 0,5-5 cm long; leaflets 2,5-26 × 1-11 cm, upper surface with numerous tiny pits (mucous cells, appearing as brown spots when dried); flowers white, heterotristylous, in axillary panicles 6(-15) cm long; sepals not fringed with multicellular hairs; hairs not fascicled; follicles 1-5 per flower, pear-shaped, 2-4,5 cm long.

Rain-forest; forest gallery; *Gilbertiodendron dewevrei* forest; secondary forest; commonest in semi-deciduous forests; 1-800 m alt.

Comprises 2 vars., separated mainly on fruit characters (follicles smooth to rugulose or with coarse protuberances, small or larger).

Stems used as chew-sticks.

*A. paradoxa* is rather similar to the Asiatic *A. borneensis*.

**A. pentagyna** (Lam.) Baill., includ. var. *emetica* (Baill.) G. Schellenb. ? or Baill.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 516-517, 1985 (all names cited = synonyms); El Amin, Trees & shrubs Sudan: 344, 1990 (*A. ugandensis*); Sosef & al., Check-list pl. vascul. Gabon: 123-124, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Palisot de Beauvois, Fl. Oware 1: pl. 59, 1807 (*Cnestis obliqua*); Grandidier, Hist. phys. Madagascar 2, Atlas 1 (= vol. 33): pl. 15, 1886 (*A. emetica*); Engler, Pflanzenreich 4/127, Connar.: 69 (*Agelaea villosiflora*), 71 (*A. tricuspidata*), 76 (*A. heterophylla*), 91 (*A. obliqua*), 1938; Fl. Trop. E. Afr., Connar.: 10, 1956 (*A. heterophylla*, *A. setulosa*, *A. ugandensis*); Keraudren in Fl. Madag. 97, Connar.: 15, 1958 (*A. pentagyna*, *A. mayottensis*); Fl. Zambes. 2/2: 619, 1966 (*A. heterophylla*); Adam, Fl. descr. Mts Nimba 2: 864 (*A. obliqua*), 866 (*A. trifolia*), 1971; Berhaut, Fl. ill. Sénégal 3: 14 (*A. obliqua*), 18 (*A. trifolia*), 1975; Fl. Gabon 33: 35, 37, 1992; Beentje, Kenya trees, shrubs & lianas: 434, 1994; Akoegninou & al., Fl. analyt. Bénin: 494, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 765, 773, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 169, 2009.

bas.: *Connarus pentagynus* Lam.

## AGELAEAE PENTAGYNA

syn.: Enum. 2: 231, 1992; *Cnestis trifolia* Lam., non Blanco (= *Rourea minor*); *Agelaea villosa* (DC.) Solander ex Planch., nom. ill. superfl.; *Omphalobium villosum* DC.; *Agelaea lamarckii* Planch.; *A. emetica* Baill.; *A. koneri* O. Hoffm. & Hildebr. ex O. Hoffm.; *A. preussii* Gilg; *A. demusei* De Wild. & T. Durand; *A. hirsuta* De Wild., incl. var. *likimensis* De Wild. and var. *malchairsi* De Wild.; *A. pynaertii* De Wild.; *A. sublanata* De Wild.; *A. tricuspidata* Gilg ex G. Schellenb.; *A. annobonensis* G. Schellenb.; *A. conraui* G. Schellenb.; *A. cordata* G. Schellenb.; *A. elegans* G. Schellenb.; *A. longecalyculata* G. Schellenb.; *A. longifoliolata* G. Schellenb.; *A. lucida* G. Schellenb.; *A. macrocarpa* G. Schellenb.; *A. duchesnei* De Wild. & T. Durand.; *A. grisea* G. Schellenb.; *A. neglecta* G. Schellenb.; *A. obovata* G. Schellenb.; *A. ovalis* G. Schellenb.; *A. phaseolifolia* Gilg ex G. Schellenb.; *A. zenkeri* G. Schellenb.; *A. coccinea* Exell; *A. phaeocarpa* Exell; *A. reticulata* Exell; *Omphalobium pentagynum* (Lam.) DC.; *O. nervosum* G. Don; *Cnestis obliqua* Bojer, nom. illegit., non P. Beauv.; *Agelaea punctulata* (Hiern) G. Schellenberg, based on *Connarus* (?) *punctulatus* Hiern, flowers from *Agelaea pentagyna* (Welwitsch 6685a) and leaves of a non-Connaraceae species (Welwitsch 6685b).

Shrub 3-4 m tall or liane 6-25-40 m; branches sometimes deeply furrowed; branchlets glabrous to tomentose; leaves 3-foliolate; leaflets 2-24-30 × 1,5-12-17 cm, glabrous to softly rusty hairy, not pitted (= without mucous cells), the main lateral nerves usually originating at base of leaflets (= palmate) but sometimes with pinnate venation; most hairs fascicled, 3-4 together; flowers whitish, heterotristylous, fragrant, in lax terminal panicles 10-40 cm long; sepals fringed with multicellular hairs; follicles pyriform, 1,5-2,5 cm long, orange to red, velvety, without coarse protuberances; seed with white aril.

All kinds of forests; gallery forest in high rainfall savanna; 1-2100 m alt.

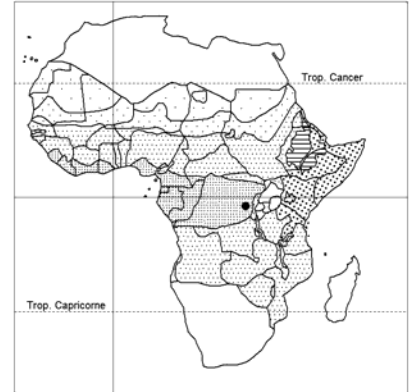
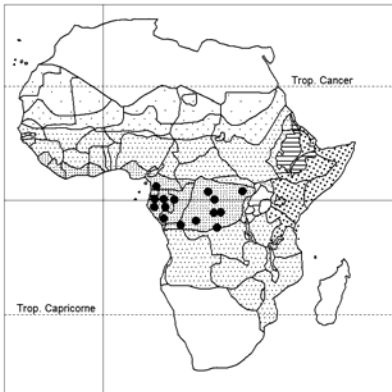
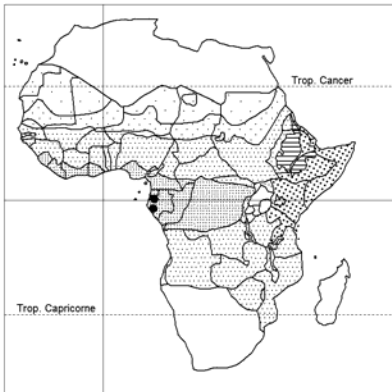
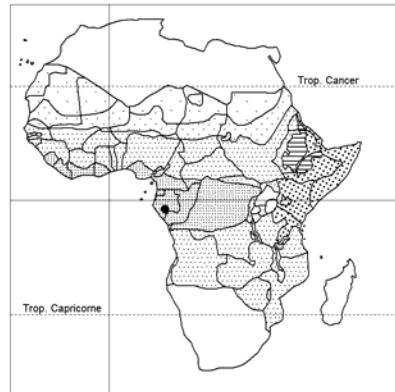
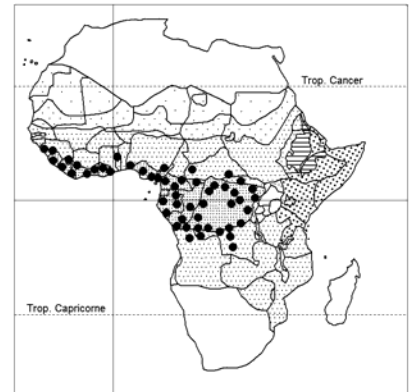
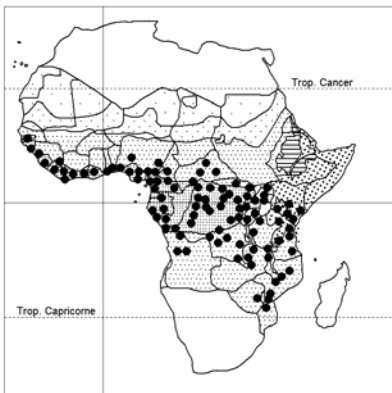
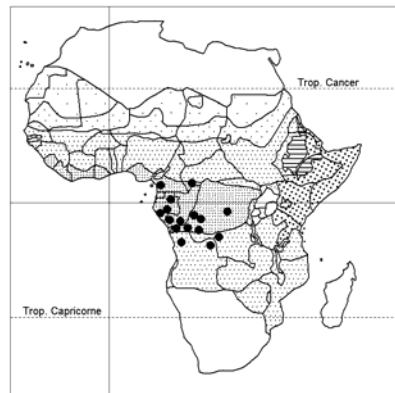
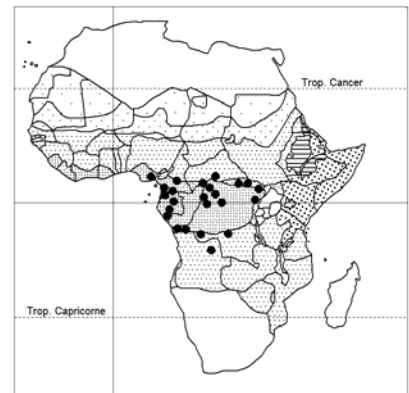
In Jongkind's (1989) view "*A. pentagyna* is a complex of many micro species or forms... partly genetically isolated". Many "forms" grow together, their offspring (abundant on the forest floor) looks similar to the parent. Schellenberg (1923, 1938) described a large number of species based on differences in leaf shape and indumentum; however, flowers and fruits are similar. "The resulting list of species will... be endless because every new accession... will represent 'new species' with new combinations of characters...bridging the gap between already described taxa". Thus Schellenberg recognized > 40 species. – The variation is extremely great in the area from Cameroon-Gabon eastwards. In W Africa Hawthorne & Jongkind (2006: 772) distinguish 2 groups, viz. "trifolia", commonest in evergreen forest, and "obliqua" in wet or dry areas especially near the coast on clay soils; with intermediate forms present (map in Agric. Univ. Wageningen Papers 89-6: 154, 1989).

Bioko/Fernando Poo, Principe, São Tomé, Annobon; Madagascar, Comoros, Mauritius.

Stems used as chewsticks.

In Sierra Leone – Guinea the leaflets are sometimes galled; the galls are velutinous, c. 1 cm Ø.

Chevalier (Explor. Bot. 1: 164, 1920) and Jaeger & Adam (Végét. vascul. Mts Loma 1: 296, 1980) have recorded that the plant is always seen sterile, without flowers, and rarely in fruit.

*Trichoscypha olodiana**Trichoscypha patens**Trichoscypha pauciflora**Trichoscypha reygartii**Trichoscypha rubicunda**Trichoscypha smythei**Agelaea gabonensis**Agelaea palmata**Agelaea paradoxa**Agelaea pentagyna**Agelaea poggeana**Agelaea rubiginosa*



## AGELAEA

**A. poggeana** Gilg; Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 71, 2002; Sosef & al., Check-list pl. vascul. Gabon: 124, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Fl. Gabon: 39, 41, 1992.

syn.: *A. ferruginosa* De Wild.; *A. tenuinervis* G. Schellenb.

Liane to 20-25 m long; branches glabrous, often clearly furrowed; branchlets with an arachnoid indumentum sometimes mixed with long simple hairs; leaves 3-foliolate; terminal leaflet always with a pinnate venation; flowers heterotristylous, in inflorescences to 20 cm long, often a few grouped together at end of leafy branches thus resembling a terminal inflorescence; sepals fringed with multicellular hairs; follicles pear-shaped 12-18 mm long, without coarse protuberances.

Rain-forest, terra firma, and gallery forest; 1-850 m alt.

Much rarer than the other species in C Africa.

**A. rubiginosa** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 124, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: De Wildeman, Ann. Mus. Congo, Bot. Sér. 5/3: pl. 12, 1909 (*A. laurentii*); Fl. Gabon 33: 43, 1992.

syn.: *A. kivuensis* Troupin; *A. vanderystii* G. Schellenb.; *A. schweinfurthii* Gilg; *A. laurentii* De Wild.; *A. gracilis* G. Schellenb.; *A. macrophysa* Gilg ex De Wild. (Études Fl. Bas & Moy. Congo, Ann. Mus. Congo, Bot. Sér. 5/3: 102, 1909), then ex G. Schellenb. (Mitt. Bot. Mus. Univ. Zürich 50: 62, 1910); *A. principensis* Exell

Liane to 20-40 m long; stem to 9 cm Ø; branches glabrous, often clearly furrowed; branchlets puberulous; leaves 3-foliolate, glabrous when mature; leaflets ovate to elliptic, with ± palmate venation, mucous cells absent; flowers heterotristylous, in inflorescences 15(-35) cm long, often a few together at ends of leafy branches thus resembling a terminal inflorescence; sepals fringed with multicellular hairs; follicles 1,5-2 cm long, red velutinous, with many coarse protuberances.

Rain-forest; forest gallery; 1-100 m alt.

Principe.

## SYNONYMS:

*Agelaea annobonensis* G. Schellenb. = **Agelaea pentagyna**

*australis* G. Schellenb. = **A. pentagyna**

*baronii* G. Schellenb. = **A. pentagyna**

*brevipaniculata* Cummins = **A. paradoxa** var. **microcarpa**

*claessensii* De Wild. = **A. pentagyna**

*coccinea* Exell = **A. pentagyna**

*conraui* G. Schellenb. = **A. pentagyna**

*cordata* G. Schellenb. = **A. pentagyna**

*demeusei* De Wild. & T. Durand = **A. pentagyna**

*dewevrei* De Wild. & T. Durand = **A. pentagyna**

*duchesnei* De Wild. & T. Durand = **A. pentagyna**

*elegans* G. Schellenb. = **A. pentagyna**

*emetica* Baill. = **A. pentagyna**

*ferruginea* Soland., nom. in sched. = **Cnestis ferruginea**

*ferruginosa* De Wild. = **Agelaea poggeana**

*floccosa* G. Schellenb. = **A. pentagyna**

*fragrans* Gilg = **A. paradoxa** var. **microcarpa**

*glandulosissima* Gilg = **A. pentagyna**

*gracilis* G. Schellenb. = **A. rubiginosa**

## AGELAEA

*grisea* G. Schellenb. = **A. pentagyna**

*heterophylla* Gilg = **A. pentagyna**

*hirsuta* De Wild., incl. var. *likimensis* De Wild. and var. *malchairsi* de Wild. = **A. pentagyna**

*katangensis* Troupin = **A. pentagyna**

*kivuensis* Troupin = **A. rubiginosa**

*koneri* O. Hoffm. & Hildebr. ex O. Hoffm. = **A. pentagyna**

*lamareckii* Planch. = **A. pentagyna**

*laurentii* De Wild. = **A. rubiginosa**

*leopoldvilleana* De Wild. = **A. pentagyna**

*lescrauwaetii* De Wild. = **A. pentagyna**

*longecalyculata* G. Schellenb. = **A. pentagyna**

*longifoliolata* G. Schellenb. = **A. pentagyna**

*lucida* G. Schellenb. = **A. pentagyna**

*macrocarpa* G. Schellenb. = **A. pentagyna**

*macrophysa* Gilg ex De Wild., and Gilg ex G. Schellenb. = **R. rubiginosa**

*marginata* G. Schellenb. = **A. pentagyna**

*mayottensis* G. Schellenb. = **A. pentagyna**

*neglecta* G. Schellenb. = **A. pentagyna**

*nitida* Soland. ex Planch. = **A. pentagyna**

*obliqua* (P. Beauv.) Baill., incl. var. *cordata* (G. Schellenb.) Exell and var. *usambarensis* Gilg = **A. pentagyna**

*obovata* G. Schellenb. = **A. pentagyna**

*oligantha* Gilg ex G. Schellenb. = **A. pentagyna**

*ovalis* G. Schellenb. = **A. pentagyna**

*phaeocarpa* Exell = **A. pentagyna**

*phaseolifolia* Gilg ex G. Schellenb. = **A. pentagyna**

*pilosa* G. Schellenb. = **A. pentagyna**

*preussii* Gilg = **A. pentagyna**

*principensis* Exell = **A. rubiginosa**

*pruriens* Soland. = **Cnestis corniculata**

*pseudobliqua* G. Schellenb. = **Agelaea pentagyna**

*punctulata* (Hiern) G. Schellenb. = **A. pentagyna** p.p.

*pynaertii* De Wild. = **A. pentagyna**

*reticulata* Exell = **A. pentagyna**

*schweinfurthii* Gilg = **A. rubiginosa**

*setulosa* G. Schellenb. = **A. pentagyna**

*sublanata* De Wild. = **A. pentagyna**

*tenuinervis* G. Schellenb. = **A. poggeana**

*thouarsiana* Baill. = **A. pentagyna**

*tricuspidata* Gilg ex G. Schellenb. = **A. pentagyna**

*trifolia* (Lam.) Baill. = **A. pentagyna**

*ugandensis* G. Schellenb. = **A. pentagyna**

*ustulata* G. Schellenb. = **A. pentagyna**

*vanderystii* G. Schellenb. = **A. rubiginosa**

*villosa* (DC.) Soland. ex Planch. = **A. pentagyna**

*villosiflora* G. Schellenb. = **A. poggeana**

*zenkeri* G. Schellenb. = **A. pentagyna**

## BURTTIA / 1

Monotypic.

**Burtia prunoides** Bak. f. & Exell – Icon.: Fl. Zambes. 2(2): 621, 1966.

Shrub or tree, deciduous, to 4(-8) m tall, branching subradially; branches pale grey, smooth to fibrous, with many lenticels; branchlets greyish brown, pubescent when young, hairs ferruginous with unequal arms, becoming glabrous; leaves unifoliate, crowded at end of shoots, sometimes also spread out along shoots; young leaves salmon pink to crimson and copper or silvery, brown-veined, or pale green, covered with soft short white hairs, dark green above when mature, paler beneath, brilliant in autumn; inflorescence simple, 1-3-flowered raceme, petals white or pink c. 6-17 mm long; flowers and leaves appearing with the first rains (Oct.-Dec.); follicle flattened, 14 × 6-18 × 8 mm, with persistent calyx, densely brown-pilose-pubescent when young, later greyish; seed 1, black and shining, with crimson fleshy edible sarcotesta (seed poisonous).

Thickets; woodlands on sandier soils; often among rocks; with *Cassipourea*, *Grewia holstii*, *Acacia*, *Baphia*, *Landolphia*, *Combretum*, *Brachystegia*, *Isobertinia*, *Commiphora*, *Euphorbia*; 800-1500 m alt.

## (BYRSOCARPUS)

*Byrsocarpus albido-flavescens* (Gilg) Greenway ex Burt Davy = **Rourea thomsonii**

*albo-flavescens* (Gilg) Greenway ex Burt Davy = **R. thomsonii**

*astragalifolius* A. Chev. = **Rourea coccinea** subsp. and var. **coccinea**

*baillonianus* Gilg = **R. orientalis**

*baronii* Baker = **R. orientalis**

*baumannii* (Gilg) G. Schellenb. = **R. thomsonii**

*boivinianus* (Baill.) G. Schellenb. = **R. coccinea** subsp. **boiviniana**

*buchholzii* (Gilg) G. Schellenb. = **R. thomsonii**

*caillei* A. Chev., nom. = **Dalbergia boehmii** (*Fabaceae*)

*cassioides* (Hiern) G. Schellenb. = **Rourea cassioides**

*coccineus* Thonn. ex Schumach. = **R. coccinea**

var. *parvifolius* Planchon ex G. Schellenb. = **R. coccinea** subsp. and var. **coccinea**

*coriaceus* (De Wild.) G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

*dinklagei* (Gilg) G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

*foenum-graecum* (De Wild.) G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

*goetzei* (Gilg) G. Schellenb. = **R. coccinea** subsp. **boiviniana**

*laurentii* (De Wild.) G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

*ledermannii* G. Schellenb. = **R. coccinea** subsp. and var. **coccinea**

*maximus* Baker = **R. coccinea** subsp. **boiviniana**

*monticolus* (Gilg) G. Schellenb. = **R. thomsonii**

*niveus* (Gilg) G. Schellenb. = **R. thomsonii**

*oddonii* (De Wild.) G. Schellenb. = **R. thomsonii**

## BYRSOCARPUS

*orientalis* (Baill.) Baker, incl. var. *hirtella* Keraudren and var. *pubescens* Keraudren = **R. orientalis**

*ovalifoliolatus* (Gilg) G. Schellenb. = **R. orientalis**

*ovatifolius* Baker = **R. coccinea** subsp. **boiviniana**

*papillosus* G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

*parviflorus* (Gilg) G. Schellenb. = **R. parviflora**

*parvifolius* Planchon = **R. coccinea** subsp. and var. **coccinea**

*pervilleanus* (Baill.) G. Schellenb. = **R. orientalis**

*poggeana* (Gilg) G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

*pseudobaccata* (Gilg) G. Schellenb. = **R. thomsonii**

*puberulus* G. Schellenb. = **R. coccinea** subsp. and var. **coccinea**

*pumilus* Thonn. ex Schumach. = **R. coccinea** subsp. and var. **coccinea**

*puniceus* Thonn. ex Schumach. = **R. coccinea** subsp. and var. **coccinea**

*tisserantii* Aubrév. & Pellegr. = **R. coccinea** subsp. and var. **coccinea**

*tomentosus* G. Schellenb. = **R. coccinea** subsp. and var. **coccinea** (Angola), **R. orientalis**

*usambaricus* G. Schellenb. = **R. orientalis**

*usaramensis* (Gilg) G. Schellenb. = **R. coccinea** subsp. **boiviniana**

*viridis* (Gilg) G. Schellenb. = **R. coccinea** subsp. **coccinea** var. **viridis**

## (CASTANOLA)

*Castanola paradoxa* (Gilg) G. Schellenb. ex Hutch. & Dalziel = **Agelaea paradoxa**

## CNESTIS / 12

syn.: *Spondioides* Smeathman, nom. in sched.; Lamarck, Encycl. meth. 3/1, in syn.

Twelve species in tropical Africa, and one in tropical Asia.

Woody plants with imparipinnate leaves; fruit a reddish follicle; seed single, with a yellow to red sarcotesta at base, testa shiny black.

**Cnestis bomiensis** Lemmens – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 769, 2006.

Liane; stem to c. 10 cm d.b.h.; branches cylindrical; branchlets densely brown-pilose when young, glabrescent; leaves 6-10-jugate; leaflets leathery, densely brown-pilose beneath, glabrous above except midrib; racemes 1-3 per leaf-axil on young branches, 1,5-2,5 cm long, sometimes the supporting leaves reduced resulting in a compound pseudoterminal inflorescence, 5-10-flowered, densely brown-pilose; follicle oblique-ellipsoid, 3-3,5 × 1,5 cm, velvety (without irritating hairs).

Secondary rain-forest, wet evergreen forest.

Also in Ghana.

## CNESTIS

**C. corniculata** Lam.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 519-520, 1985; Sosef & al., Check-list pl. vascul. Gabon: 124-125, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 135, 2009. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 319, 1915 (*C. grisea*); Fl. Trop. E. Afr., Connar.: 3, 1956 (*C. confertiflora*); Adam, Fl. descr. Mts Nimba 2: 869, 1971; Berhaut, Fl. ill Sénégal 3: 24, 1975; Fl. Gabon 33: 47, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 769, 2006.

syn.: Enum. 2: 231, 1992; *C. ferruginea* Vahl ex DC. var. *pilosa* Dewèvre, nom.; *C. confertiflora* Gilg, incl. fa. *macrophylla* G. Schellenb.; *C. iomalla* Gilg, incl. var. *grandifoliolata* De Wild.; *C. setosa* Gilg; *C. polyantha* Gilg; *C. emarginata* De Wild. & T. Durand, non Jack (= *Rourea*); *C. leucantha* Gilg ex G. Schellenb.; *C. trichopoda* Gilg ex G. Schellenb.; *C. claessensii* De Wild.; *C. angolensis* G. Schellenb., nom.; *C. calantha* G. Schellenb.; *C. zenkeri* G. Schellenb.; *C. prehensilis* A. Chev., 1920, nom.; *C. leucanthoides* Pellegr.; *C. agelaeoides* G. Schellenb.; *Agelaea pruriens* Soland., nom. in sched.; Planchon, 1850, in syn.; *Spondioides pruriens* Smeathm., nom. in sched.; *Cnestis* sp. A sensu Hepper, Fl. W. Trop. Afr., ed. 2, 1/2: 743, 1958.

Erect (as sapling in shade with tendrillar branches) or climbing shrub to liane, evergreen, often small, 3,6 m tall, sometimes reaching 5-20-35 m in length; branches cylindrical, branchlets often slightly angular, brown or yellow-pilose or ± glabrous; leaves 2-18-jugate; leaflets papery, ± sessile, unequal at base, glabrous or pilose above, glabrous to densely pilose beneath, midrib with conspicuous long spreading silky hairs or shorter or orange hairs; flowers creamy white in racemes or rarely panicles, 1-20 per leaf-axil on the stem, old or young branches, 1-25 cm long, 5-40-flowered, densely brown-pilose, rarely also with reddish brown glandular hairs; follicles 1-4 in fruit, (narrowly) ellipsoid, ± oblique, 2,5-5 × 0,5-1,2 cm, cuneate, with very short red spine-like hairs and long, easily caducous pungent stinging hairs, beak 0,5-2 cm long; seed sarcotesta orange.

Evergreen and semi-deciduous forests, rain-forest, shady forest, dense woods; (secondary and) coastal thickets; palm groves; old fields; seasonally flooded forest; forest gallery; 1-950 m alt.

The most variable species in the genus. The leaves can vary in number and size of leaflets, in indumentum (also of young branches), and the flowers can vary in length of sepals and petals. Even leaf variation within a single plant can be considerable. The best character to distinguish the species is the beaked stinging-hairy follicle, in combination with the racemose inflorescence.

**C. ferruginea** Vahl ex DC., incl. “var. β Baker (*C. fraterna* Planch.)”; but excl. var. *pilosa* Dewèvre, nom. (= *C. corniculata*); Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 520-521, 1985; Sosef & al., Check-list pl. vascul. Gabon: 125, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Andrews, Flow. pl. Anglo-Eg. Sudan: 354, 1952; Irvine, Woody pl. Ghana: 571, 1961; Adam, Fl. descr. Mts Nimba 2: 870, 1971; Berhaut, Fl. ill. Sénégal 3: 26, 1975; Fl. Gabon 33: 51, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 765, 769, 2006; Akoegninou & al., Fl. analyt. Bénin: 495, 2006; Garon & al. in Bull. Soc. Linn. Normandie 119: 3, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 94, 2007; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 170, 2009.

syn.: *C. fraterna* Planch.; *C. ferruginea* Vahl ex DC. var. *fraterna* Baker; *C. oblongifolia* Baker; *C. togoensis* Gilg; *Agelaea ferruginea* Soland., nom. in sched.; *Spondioides ferruginea* Smeathm., nom. in sched.

## CNESTIS FERRUGINEA

Shrub, climbing shrub, or tree or liane, 2,5-8 m tall, evergreen; branches cylindrical; branchlets often somewhat angular, densely rusty brown-pubescent (also such indumentum even on old leaves beneath); leaves 4-19-jugate; leaflets papery, shortly petiolulate, base rounded (not very asymmetric, cf. *C. corniculata*); flowers pinkish white, fragrant, star-shaped, in panicles or (pseudo-) racemes, 1-10 per leaf-axis, on young branches, often the supporting leaves reduced resulting in a compound pseudoterminal inflorescence, 5-20 cm long, to 100-flowered, densely rusty brown-pilose, also with short glandular hairs; follicles 1-5 in fruit, often united at base, ovoid, ± oblique, 2-5 × 1-2,5 cm, red soft-velutinous, without irritating hairs (cf. *C. corniculata*), beak blunt 0,5-2 cm long.

Rain-forest; bushes in savanna; often in secondary regrowths on farm land; in fences; fringing lagoons and near the beach; forest edges; forest gallery, riverine forest; thickets; teak plantations; old fields; 14-1061 m alt. – Very common in many countries.

São Tomé, Principe.

The scarlet fruits are ornamental. Their pulp is juicy, somewhat bitter and acid (used to rub on the teeth and whiten them). The bark yields a red dye (for clothing). The leafy tips of the plants contain drinkable water (fide Irvine, o.c.). Caterpillars of *Imbrasia eblis* attacking the leaves, are edible (Latham & Konda, l.c.).

GARON, D. & al. (2006). Une plante tropicale responsable d'intoxications mortelles en Casamance (Sénégal): *Cnestis ferruginea* DC. (Connaraceae). *Bull. Soc. Linn. Normandie* 119: 1-7.

**C. macrantha** Baill.; Sosef & al., Check-list pl. vascul. Gabon: 125, 2006. – Icon.: Fl. Gabon 33: 55, 1992.

Liane or climbing shrub; branches cylindrical; branchlets often somewhat angular, densely yellowish brown-pilose; leaves 10-17-jugate; leaflets thinly papery, elliptic oblong, scattered pilose above, densely so with long hairs beneath; racemes or panicles single in leaf-axils on top of young branches, the supporting leaves often reduced, resulting in a compound pseudoterminal inflorescence 5-24 cm long, to 40-flowered, densely yellowish-brown-pilose, also with short brown glandular hairs; follicles 1-4 in fruit, narrowly ovoid-ellipsoid, ± oblique, 4-6 × 1-1,5 cm, with short red hairs and some longer yellowish hairs, beak blunt, broad, 1,5-2 cm long.

Secondary rain-forest; thickets; 5-100 m alt.

**C. macrophylla** Gilg ex G. Schellenb.; Sosef & al., l.c. – Icon.: Fl. Gabon 33: 57, 1992.

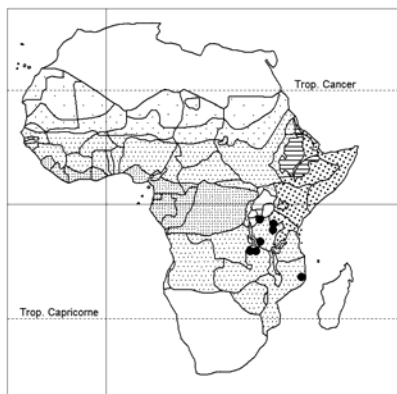
Liane; branches cylindrical, branchlets often somewhat angular, brown-pubescent, soon glabrescent; leaves 2-4-jugate, petiole with distinct blackish articulation at base, glabrous or minutely pubescent; leaflets stiff papery, obovate, acuminate, glabrous; racemes 3-5 together, *cauliflorous*, to 16,5 cm long, to 30-flowered, brown-pubescent; follicles 1-3 in fruit, (narrowly) ellipsoid, oblique, 3,5-4,4 × 0,7-1,1 cm, with short red spine-like hairs and long, easily caducous, stinging hairs, beak ± slender, distinct, 0,5-2 cm long.

Rain-forest.

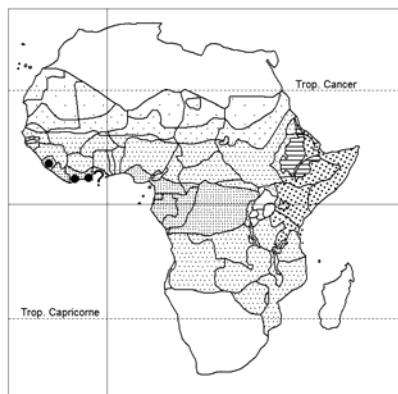
Resembling *C. corniculata*, but leaf petiolules c. 1 cm long (not 5 mm) and black when dry.

Only 2 fruiting specimens known, and flowering material incomplete. More material needed.

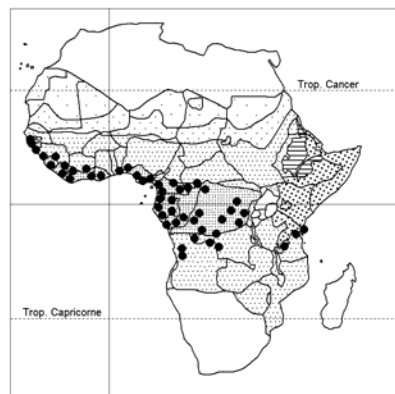




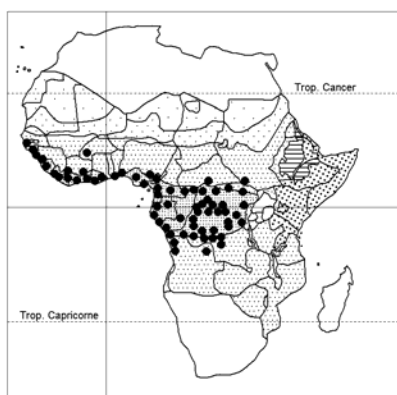
*Burtia prunoides*



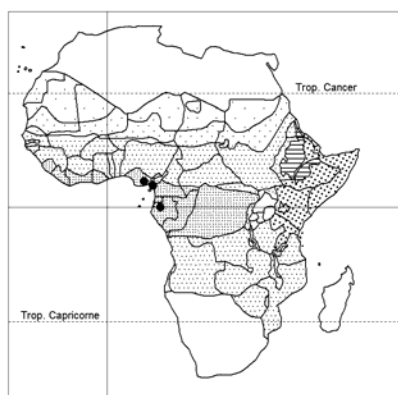
*Cnestis bomiensis*



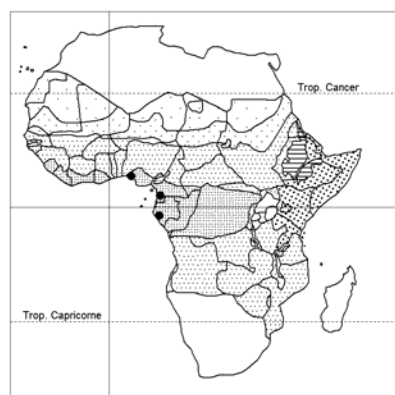
*Cnestis corniculata*



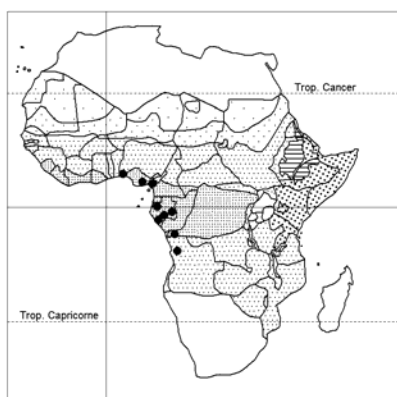
*Cnestis ferruginea*



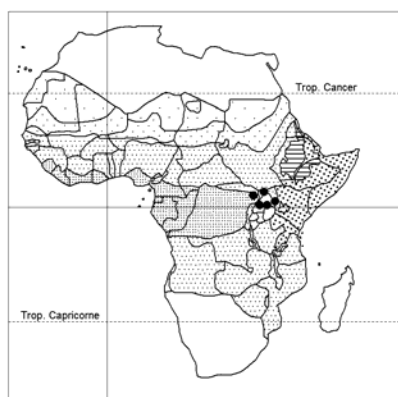
*Cnestis macrantha*



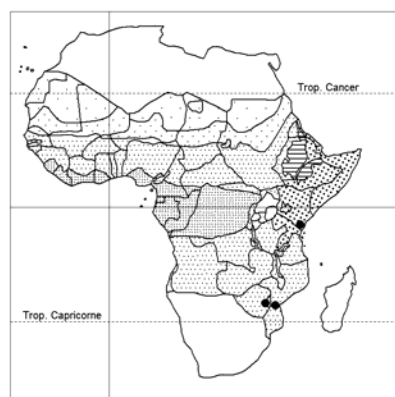
*Cnestis macrophylla*



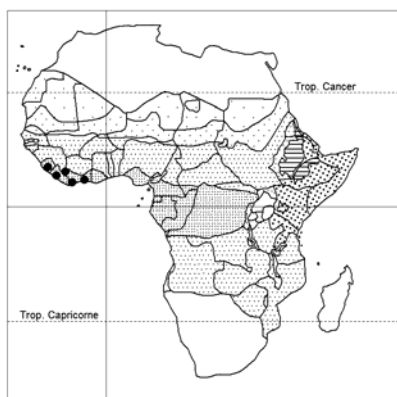
*Cnestis mannii*



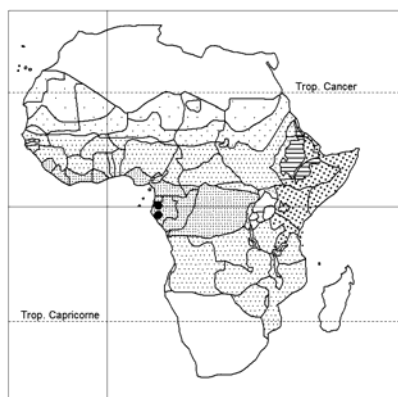
*Cnestis mildbraedii*



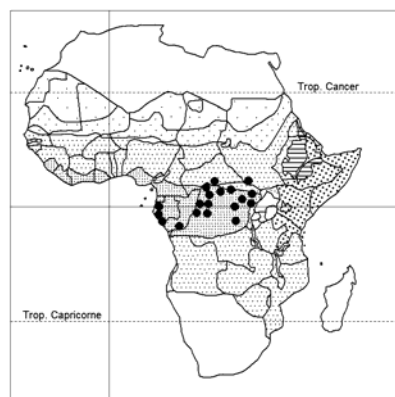
*Cnestis polyphylla*



*Cnestis racemosa*



*Cnestis uncata*



*Cnestis urens*

## CNESTIS

**C. mannii** (Bak.) G. Schellenb.; Cable & Cheek, Pl. Mt Cameroon: 39, 1998; Sosef & al., Check-list pl. vascul. Gabon: 125, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Fl. Gabon 33: 59, 1992.

bas.: *Connarus mannii* Baker

syn.: *Connarus pseudoracemosus* Gilg; *Cnestis pseudoracemosa* (Gilg) G. Schellenb.; Enum. 2: 231, 1992.

Liane to 30 m long; branches cylindrical, branchlets somewhat angular, densely brown-pubescent, more rarely glabrous; leaves 2-5-jugate; leaflets thickly papery to leathery, rounded to subcordate, acuminate, glabrous above, brown-tomentose or pubescent, rarely glabrous beneath; panicles single in leaf-axils on top of young branches, the supporting leaves usually reduced, resulting in a compound pseudoterminal inflorescence to 40 cm long, many-flowered, densely yellowish-brown pubescent, sometimes with short glandular hairs; follicles 1(-2) in fruit, narrowly ovoid-ellipsoid, oblique, 3-6,5 × 1-2,5 cm, with short red hairs and some longer yellowish hairs, beak slender, 0,5-2 cm long, distinct.

Rain-forest; occasionally in farmland; farmbush; 30-680 m alt.

Very variable in leaflet characters: number, shape, size, venation, indumentum. Variation in fruit characters poorly known; only 5 specimens with mature fruits known, and their variation is considerable.

The species seems to be rare in its rather large range of distribution.

**C. mildbraedii** Gilg; Beentje, Kenya trees, shrubs & lianas: 434, 1994; Friis & Vollesen, Fl. Sudan-Uganda border area E of the Nile: 293-294, 1998; El Amin, Trees & shrubs Sudan: 344, 1990 (Gnestis”, sphalm.): Lotti (sub nom. *C. ferruginea*).

syn.: *C. ugandensis* G. Schellenb.; *C. ferruginea* sensu El Amin, l.c., non DC.

Shrub or tree to 7 m tall; branches cylindrical; branchlets with longitudinal grooves, brown-pilose, glabrescent; leaves 12-18-jugate; yellowish-brown pubescent; leaflets papery, narrowly oblong, apex obtuse; racemes or sometimes panicles, 1-20 per leaf-axil on young and older branches, 7-17 cm long, 15-30-flowered, yellowish brown-pilose; follicles 1 in fruit, (narrowly) ellipsoid, oblique, 3-3,5 × 1 cm, with short scarlet hairs, beak slender, c. 1 cm long.

Rain-forest, in understorey; 900-2000 m alt.

Only 2 flowering specimens known.

**C. polyphylla** Lam., incl. var. *bullata* Baill. – Icon.: Grandidier, Hist. phys. Madagascar 2, Atlas 1/1 (= vol. 33): pl. 16A (*C. glabra*), 17 (*C. bullata*), 1886; Fl. Madag. 97, Connar.: 19 (*C. lurida*), 23 (*C. boiviniana*, *C. polyphylla*, *C. glabra*), 1958; Fl. Zambes. 2/2: 617, 1966 (*C. natalensis*); Beentje, Kenya trees, shrubs & lianas: 435, 1994.

syn.: Enum. 2: 231, 1992; *C. scandens* J. F. Gmelin; *C. borbonensis* Raeusch., nom.; *C. madagascariensis* Raeusch., nom.; *C. bullata* Baill., *Omphalobium discolor* Sonder, nom. in sched.; *Sarmienta cauliflora* Sieber, nom. in sched.; *Zanthoxylum* (“*Xanthoxylum*”) *natalense* Hochst. ex C. Krauss (*Rutaceae*).

Liane or shrub 2-4 m tall, usually climbing; branches cylindrical, usually distinctly lenticellate; branchlets cylindrical, usually densely brown, rarely grey-pilose, later ± glabrescent; leaves 4-14-jugate; leaflets papery to leathery, ovate-elliptic-oblong, apex obtuse, acuminate, usually glabrous above, glabrous or densely pilose beneath; racemes or panicles to 15 per leaf-axil on older or young branches, rarely the supporting leaves reduced,

## CNESTIS POLYPHYLLA

resulting in a compound pseudoterminal inflorescence 3-10 cm long, 5-30-flowered, brown-pilose; follicles 1-5 in fruit, obovoid or ellipsoid, ± oblique, 1-2,5 × 0,7-1 cm, with short or fairly long soft red hairs, beak very short.

Forest margins; dry forest; shrubby vegetation on rocky slopes, both in wet and dry places; 0-2000 m alt.

S. Africa, Swaziland (L. & P. Loffler, Swaziland tree atlas: 66, 2005; map); Madagascar, Réunion, Mauritius.

Similar to *C. mildbraedii*, but number of leaflets different, petals and fruits smaller. – Seems to be related to *C. racemosa*.

**C. racemosa** G. Don – Icon.: Adam, Fl. descr. Mts Nimba 2: 872, 1971; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 771, 2006.

syn.: *C. liberica* G. Schellenb.; *Manotes racemosa* (G. Don) Gilg

Liane or straggling shrub to 5 m tall; branches cylindrical; branchlets somewhat angular, ± densely brown-pubescent, later glabrescent; leaves 1-3-jugate; leaflets papery, broadly ovate, glabrous above, sparsely pilose or glabrous beneath, acuminate; racemes or rarely panicles 1-5 per leaf-axil, on young branches, sometimes the supporting leaves reduced, resulting in a compound pseudoterminal inflorescence, 3-10 cm long, 15-30-flowered, yellowish-brown-pubescent; follicles 1(-2) in fruit (narrowly) obovoid, oblique, 1,7-3 × 0,8-1 cm, with short soft hairs, apex acute or mucronate.

Evergreen and secondary rain-forests; bushes; up to 900 m alt.

Related to *C. polyphylla*: leaflets fewer, but flowers and fruits similar.

**C. uncata** Lemmens; Sosef & al., Check-list pl. vascul. Gabon: 125, 2006.

Liane or climbing shrub; branches and branchlets cylindrical, initially densely brown-pubescent, later glabrescent; leaves 6-10-jugate; leaflets thickly papery, ± ovate, glabrous above, densely pilose with curled hairs beneath, apex obtuse; flowers clustered in fascicles (rarely also some short racemes), 3-10 together on nodose thickenings on older branches, heterodistylous; follicles 1-2 in fruit, hook-shaped, 2-3 × 1 cm; beak broad, strongly reflexed towards the ventral side of the follicle, 10-13 mm long, with very short red spine-like hairs and long, easily caducous stinging hairs.

Rain-forest; secondary regrowths; 10-170 m alt.

Flower fascicles resembling those of *C. urens*, but fruits and leaves different.

**C. urens** Gilg; Sosef & al., l.c. – Icon.: Fl. Congo belge 3: 121, 1952 (fruit).

syn.: *C. laurentii* De Wild.

Liane or climbing shrub; branches and branchlets cylindrical, initially (yellowish) brown-pilose, later ± glabrescent; leaves 12-21-jugate; leaflets thickly papery, oblong, scattered pilose above, densely pilose with erect hairs beneath, apex obtuse or rounded; flowers clustered in fascicles, 2-15 together on nodose thickenings in the leaf-axils of young and old branches, heterodistylous; follicles 1-3 in fruit, ellipsoid, oblique, 2,5-5 × 0,6-1,5 cm, with very short red spine-like hairs and numerous long, easily caducous stinging hairs, beak slender, curved, 1-3 cm long.

Rain-forest; semi-deciduous forest; regrowths; 30-350 m alt.

Inflorescences resembling those of *C. uncata*; in flowers and fruits similar to certain forms of *C. corniculata*.

## CNESTIS

**C. yangambiensis** Louis ex Troupin – Icon.: Fl. Congo belge 3: 121, 1952 (fruit).

Liane, sometimes small; stem 2-3 cm Ø; branches and branchlets cylindrical, initially yellowish-brown-pubescent, often also with long hairs, later ± glabrescent; leaves 13-20-jugate; leaflets papery, oblong, acuminate, glabrous above, pilose beneath, especially on the nerves; racemes 1-10 per leaf-axil on stem or older branches, 3-7,5 cm long, 10-20-flowered, densely yellowish-brown-pilose with curled hairs; follicles 1-3 in fruit, oblique pyriform or oblique-obovate, 2-3,2 × 1,2-1,6 cm, with very short red spine-like hairs and long, easily caducous stinging hairs, beak lacking.

Primary, sometimes secondary rain-forest, sometimes flooded; often near rivers; c. 470 m alt.

Fruiting material needed for identification; flowering and sterile material may be confused with *C. corniculata*.

## SYNONYMS:

- Cnestis acuminata* Wall., nom. nud. = **Rourea minor**  
*agelaoides* G. Schellenb. = **Cnestis corniculata**  
*angolensis* G. Schellenb., nom. = **C. corniculata**  
*aurantiaca* Gilg = **C. corniculata**  
*boiviniana* Baill. ex G. Schellenb. = **C. polyphylla**  
*borbonensis* Raeusch. = **C. polyphylla**  
*bullata* Baill. = **C. polyphylla**  
*calantha* G. Schellenb. = **C. corniculata**  
*calocarpa* Gilg = **C. corniculata**  
*cinnabarina* G. Schellenb. = **C. corniculata**  
*claessensii* De Wild. = **C. corniculata**  
*confertiflora* Gilg, incl. fa. *macrophylla* G. Schellenb. = **C. corniculata**  
*congolana* De Wild. = **C. corniculata**  
*corniculata* Benth., non Lam. = **Manotes expansa**  
*dinklagei* G. Schellenb. = **Cnestis corniculata**  
*emarginata* De Wild. & T. Durand = **C. corniculata**  
*emarginata* Jack = **Rourea emarginata**  
*erecta* Blanco = **R. minor**  
*ferruginea* sensu El Amin (Sudan), non Vahl ex DC. = **Cnestis mildbraedii**  
*ferruginea* Vahl ex DC. var. β (= *fraterna*) Baker = **C. ferruginea**  
*ferruginea* Vahl ex DC. var. *pilosa* Dewèvre = **C. corniculata**  
*florida* Jack = **Rourea minor**  
*fraterna* Planch. = **Cnestis ferruginea**  
*gabunensis* G. Schellenb. = **C. corniculata**  
*gimbiensis* Troupin = **C. corniculata**  
*glabra* Blanco = **Rourea minor**  
*glabra* Lam. = **Cnestis polyphylla**  
*grandiflora* Gilg = **C. corniculata**  
*grandifoliolata* De Wild. & T. Durand = **C. mannii**  
*grisea* Baker = **C. corniculata**  
*hirsuta* Troupin = **C. corniculata**  
*iomalla* Gilg, incl. var. *grandifoliolata* De Wild. = **C. corniculata**  
*laurentii* De Wild. = **C. urens**  
*lescrauwaetii* De Wild. = **C. corniculata**

## CNESTIS

- leucantha* Gilg ex G. Schellenb. = **C. corniculata**  
*leucanthoides* Pellegr. = **C. corniculata**  
*liberica* G. Schellenb. = **C. racemosa**  
*longiflora* G. Schellenb. = **C. corniculata**  
*lurida* Baill. = **C. polyphylla**  
*madagascariensis* Raeusch. = **C. polyphylla**  
*monadelphica* Roxb. ex DC. = **Rourea minor**  
*mullendersii* Troupin = **Cnestis corniculata**  
*natalensis* (Hochst.) Planchon ex Sonder = **C. polyphylla**  
*obliqua* Bojer = **Agelaea pentagyna**  
*obliqua* P. Beauv. = **A. pentagyna**  
*oblongifolia* Baker = **Cnestis ferruginea**  
*pinnata* P. Beauv. = **Rourea thomsonii**  
*polyantha* Gilg = **Cnestis corniculata**  
*prehensilis* A. Chev. = **C. corniculata**  
*pseudoracemosa* (Gilg) G. Schellenb. = **C. mannii**  
*pynaertii* De Wild. = **C. corniculata**  
*riparia* Gilg = **C. corniculata**  
*sapinii* De Wild., incl. var. *claessensii* (De Wild.) Troupin = **C. corniculata**  
*scandens* J. F. Gmelin = **C. polyphylla**  
*setosa* Gilg = **C. corniculata**  
 sp. A sensu Hepper, F.W.T.A., ed. 2 = **C. corniculata**  
*togoensis* Gilg = **C. ferruginea**  
*tomentosa* Hepper = **C. mannii**  
*trichopoda* Gilg ex G. Schellenb. = **C. corniculata**  
*trifolia* Blanco = **Rourea minor**  
*trifolia* Lam. = **Agelaea pentagyna**  
*ugandensis* G. Schellenb. = **Cnestis mildbraedii**  
*vanderystii* Troupin = **C. corniculata**  
*zenkeri* G. Schellenb. = **C. corniculata**  
*Zanthoxylum* (“Xanthoxylum”) *natalense* Hochst. (*Rutaceae*) = **Cnestis polyphylla**

## CONNARUS / 7

syn.: *Omphalobium* Gaertner; *Tricholobus* Blume

Circumtropical genus of 77 species. Woody plants with trifoliolate or imparipinnate leaves and solitary carpel; follicle one-seeded with sarcotesta below the hilum. Generally confined to rain-forests.

In our area one species (*C. gabonensis*) is incompletely known: flowers are not complete, and mature seeds are unknown.

**Connarus africanus** Lam.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 522, 1985; Lemmens in Oyen & Lemmens, Ressources végét. Afrique tropicale. Précurseur: 63-64, 2002; Akoegninou & al., Fl. analyt. Bénin: 496, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 135, 2009. – Icon.: Fl. Gabon 33: 71, 1992; Adam, Fl. descr. Mts Nimba 2: 873, 1971; Berhaut, Fl. ill. Sénégal 3: 30, 1975; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 773, 2006.

syn.: *C. venosus* DC.; *C. nigrens* Gilg; *C. djalonenis* A. Chev.; *Omphalobium africanum* (Lam.) DC.; *Tricholobus africanus* Heckel; *Manotes griffoniana* sensu A. Chev., Explor. Bot. 1: 166, 1920, non Baill. (Chevalier 15162 or 15163, Ivory Coast); *M. aff. staudtii* sensu A. Chev., l.c., non Gilg



## CONNARUS AFRICANUS

Liane reaching the canopy of high trees, or lianescent shrub 4-10 m tall; branches cylindrical, lenticellate; branchlets brown-pubescent, soon glabrescent; slash with red exudate; leaves trifoliolate, rarely uppermost leaves unifoliolate; leaflets papery, ovate, acuminate (shade leaves drip-tipped), glabrous, sometimes with red gland dots beneath; panicles to 35 cm long, to  $\pm$  50-flowered, densely brown-pubescent; follicle narrowly obovoid, slightly oblique, hardly compressed, 4,3-6,2  $\times$  1,2-2,4 cm, glabrous, red.

Rain-forest, often near rivers or marigots; sometimes in thickets in savanna; forest patches; sporadic on clayey and stony soils; sandy field; hollows; forest gallery; 380-475 m alt. – Common as sapling in shady forest understorey.

São Tomé.

Grown from stakes to make a hedge.

Leaf-sap is irritant to mucosae.

Resembling *C. congolanus*. Closely related to the Asiatic *C. monocarpus* L. subsp. *monocarpus*.

**C. congolanus** G. Schellenb.; Sosef & al., Check-list pl. vascul. Gabon: 126, 2006. – Icon.: Fl. Gabon 33: 73, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 773, 2006.

syn.: *C. sapinii* G. Schellenb. 1938, non De Wild. 1909 (= *C. griffonianus*).

Liane or lianescent shrub; branches cylindrical, lenticellate; branchlets occasionally somewhat angular, brown-pubescent, soon glabrescent; leaves trifoliolate; leaflets leathery, ovate-elliptic, acumen to 2,5 cm long, glabrous, petiolules wrinkled; panicles to 27 cm long, to  $\pm$  50-flowered, densely brown-pubescent; follicle ellipsoid, ovoid or obovoid, not or hardly oblique, 5-7,3  $\times$  2-3 cm; pericarp thick, woody, glabrous, distinctly veined. Flowers known!

Primary or secondary (wet) rain-forest, often near rivers; 100 m alt. (Gabon).

Related to the Asiatic *C. monocarpus* L. subsp. *malayensis* Leenhouts.

**C. gabonensis** Lemmens; Sosef & al., Check-list pl. vascul. Gabon: 126, 2006. – Icon.: Fl. Gabon 33: 75, 1992.

Liane; branches cylindrical or somewhat angular, lenticellate; branchlets soon glabrescent; leaves 3-4-jugate; leaflets leathery, narrowly elliptic, acute, glabrous, petiolules wrinkled; panicle to 70 cm long, many-flowered, brown-pubescent; follicle ellipsoid, sometimes triangular in cross section, not oblique, 5,5-7,5  $\times$  2-2,5 cm; pericarp thick, woody, brown-pubescent, soon glabrescent, distinctly veined. Flowers incompletely known; mature seeds unknown.

Riverbanks in rain-forest; 320 m alt.

Only known from the type.

Resembling *C. congolanus*, but with pinnate leaves.

Related to the Asiatic *C. monocarpus* L. subsp. *malayensis* Leenhouts.

**C. griffonianus** Baill., incl. var. *subsericeus* (G. Schellenb.) Troupin; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 523, 1985; Cable & Cheek, Pl. Mt Cameroon: 39, 1998; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Walker & Sillans, Pl. utiles Gabon: pl. 14 facing p. 134, 1961; Fl. Gabon 33: 77, 1992; Consp. flor. Angol. 2/2: pl. 34 p. 153, 1956 (*C. fernandesianus*).

syn.: *C. subsericeus* G. Schellenb. (as “sericeus” in De Wild. 1931); *C. luluensis* Gilg; *C. englerianus* Gilg; *C. florulentus* sensu Hiern (Welwitsch 614) in Hiern, Cat.

## CONNARUS GRIFFONIANUS

Welwitsch’s Afric. pl. 1: 189, 1896, non Thonning (cf. under *C. thonningii*); *C. villosiflorus* Gilg; *C. sapinii* De Wild. 1909, non G. Schellenb. 1938 (= *C. congolanus*); *C. macrothyrsus* Gilg ex G. Schellenb.; *C. incurvatus* G. Schellenb.; *C. obovatus* G. Schellenb.; *C. puberulus* G. Schellenb.; *C. triangularis* G. Schellenb.; *C. fernandesianus* Exell & Mendonça; *Manotes staudtii* Gilg, non *Connarus staudtii* Gilg

Liane to 20 m long and stem 15 cm  $\varnothing$  with the habit of a *Derris* (*Fabaceae*), or lianescent shrub 4-8 m tall; branches cylindrical, slender, often with shallow longitudinal grooves, lenticellate; branchlets densely brown-pubescent, later glabrescent; bark-slash exudate colourless, turning red on exposure; leaves 2-5-jugate; leaflets papery to leathery, elliptic-obovate, acuminate, glabrous above, densely brown-pubescent to glabrous beneath, petiolules often wrinkled, panicles to 35 cm long, to  $\pm$  50-flowered, densely brown-pubescent; follicle oblique-pyriform, compressed, 1,5-2,5  $\times$  1,3-1,8 cm; pericarp thin, brown-pubescent, often glabrescent.

Closed forest in wet sites; terra firma and riparian forest; (young) secondary forest; escarp and fringing forest; forest margins; disturbed forest; 5-1515 m alt.

Bioko/Fernando Poo, São Tomé, Principe.

Very close to the Asiatic *C. paniculatus* Roxb. (number of fertile stamens different). Confusion possible with *C. longistipitatus* (usually found above 1000 m alt.).

**C. longistipitatus** Gilg (“longestipitatus”); Sosef & al., Check-list pl. vascul. Gabon: 126, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 315, 1915; Fl. Trop. E. Afr., Connaraceae: 25, 1956; Fl. Gabon 33: 81, 1992; Beentje, Kenya trees, shrubs & lianas: 435, 1994.

syn.: Enum. 2: 231, 1992; *C. stuhlmannianus* Gilg

Liane to 30 m long or tree to 12 m tall or shrub; branches cylindrical, sometimes somewhat angular or with shallow longitudinal grooves, mostly lenticellate; branchlets initially brown-pubescent, soon glabrescent; leaves 1-4-jugate; leaflets papery, elliptic, acuminate, glabrous; panicle 3-20 cm long, to  $\pm$  50-flowered, densely brown-pubescent; follicle oblique-pyriform, somewhat compressed, 2,5-3,5  $\times$  1,1-1,7 cm, stipe 5-10 mm long; pericarp red, thin, brown-pubescent, soon glabrescent; seeds known!

Moist forest, swamps, lake side forest; sometimes in thickets in savanna; 100-1500 m alt., mostly above 1000 m.

Confusion possible with *C. griffonianus*, but usually at higher altitudes.

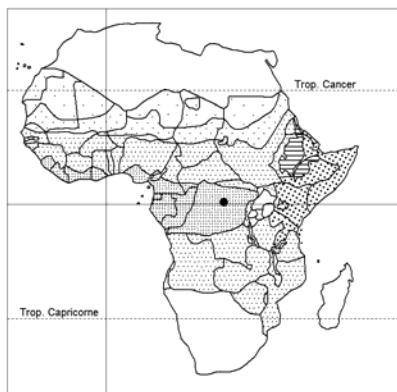
Resembling the S.-American *C. beyrichii* Planch., and very closely related to the Asiatic polymorphic *C. semidecandrus* Jack.

**C. staudtii** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 126, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 316, 1915; Engler, Pflanzenreich 4/127, Connar.: 286, 1938; Fl. Gabon 33: 85, 1992.

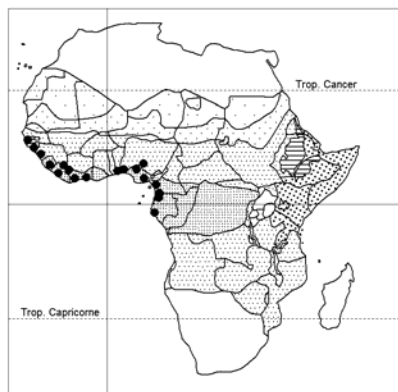
syn.: *C. macrourus* Gilg, nom. in sched.; *C. odoratissimus* Gilg, nom. in sched.

Liane or lianescent treelet 5-7 m tall or shrub; branches cylindrical, lenticellate; branchlets often somewhat angular, brown-pubescent, soon glabrescent; leaves 2-5-jugate; leaflets papery, ovate-elliptic, long acuminate, brown-pubescent when very young, soon becoming glabrous; panicle 6-17 cm long, to c. 50-flowered, brown-pubescent; follicle ellipsoid or obovoid, not or hardly oblique, 3,6-6,8  $\times$  2,1-3,2  $\times$  1,6-2,6 cm; pericarp thick, glabrous.

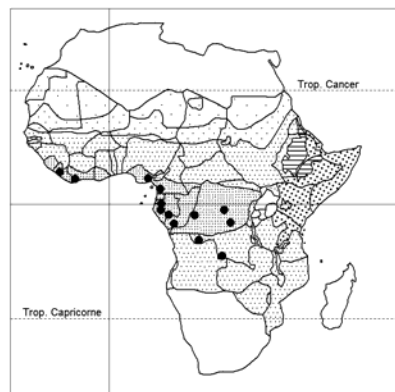
Rain-forest, often along rivers; 30-500 m alt.



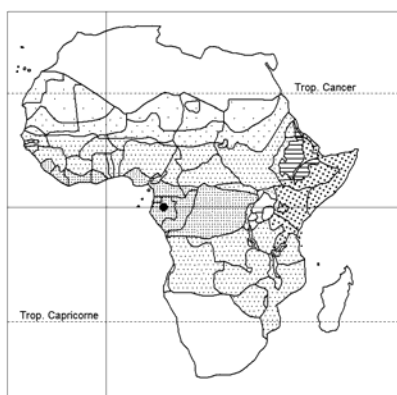
*Cnestis yangambiensis*



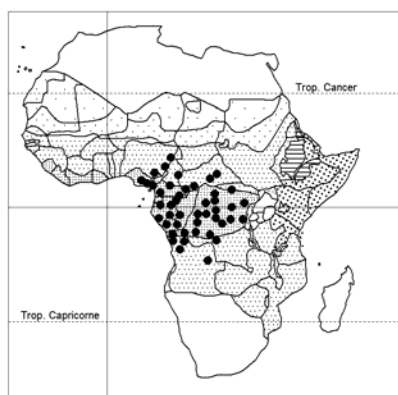
*Connarus africanus*



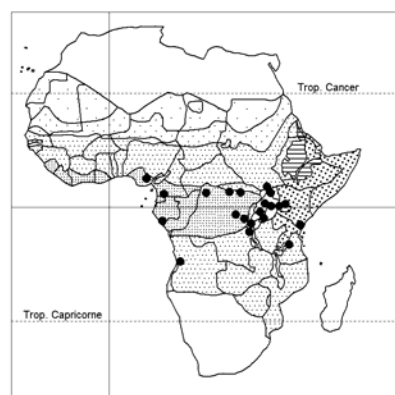
*Connarus congolanus*



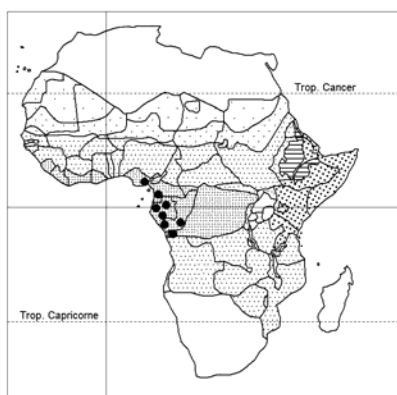
*Connarus gabonensis*



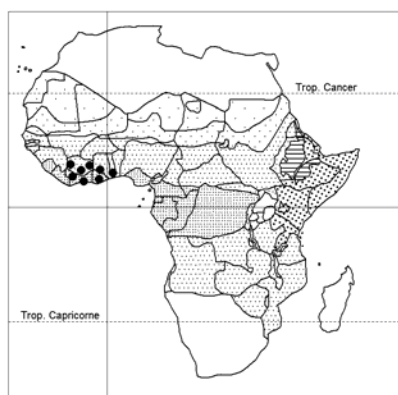
*Connarus griffonianus*



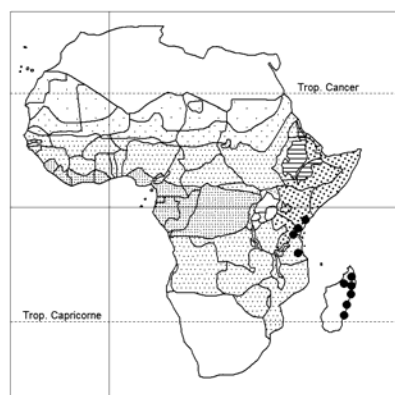
*Connarus longistipitatus*



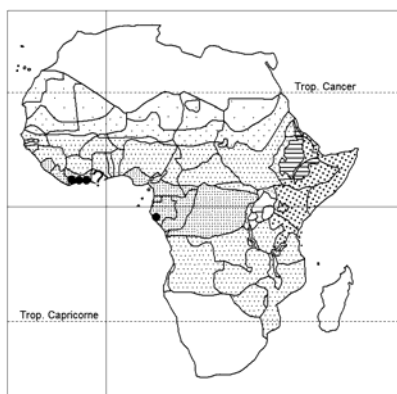
*Connarus staudtii*



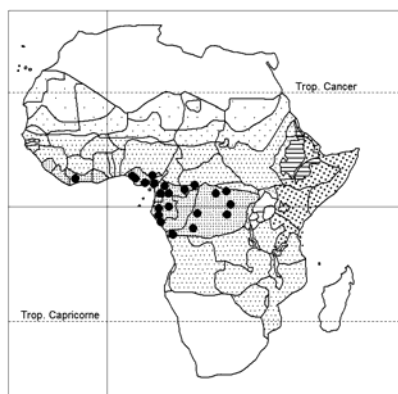
*Connarus thonningii*



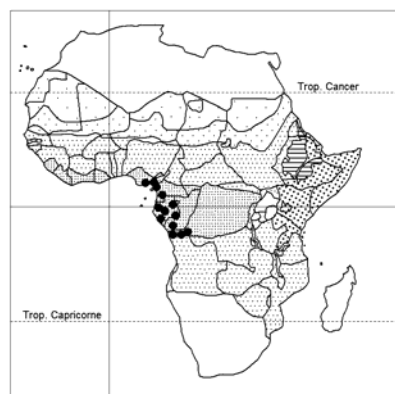
*Ellipanthus madagascariensis*



*Hemadradenia chevalieri*



*Hemadradenia mannii*



*Jollydora duparquetiana*

## CONNARUS

**C. thonningii** (DC.) G. Schellenb.; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 770, 772, 2006. – Icon.: *ibid*: 771; Akoegninou & al., Fl. analyt. Bénin: 496, 2006.

bas.: *Omphalobium thonningii* DC.

syn.: *Connarus florulentus* Thonn., nom. in sched.; *C. floribundus* Thonn. ex Schumach.; *C. nemorosus* Vahl ex Schumach., nom.

Liane or lianescent shrub; branches cylindrical, often with shallow longitudinal grooves, mostly lenticellate; branchlets glabrous, sometimes initially pubescent but very soon glabrescent; old stems with red exudate; leaves 1-4-jugate; leaflets elliptic, ± glabrous but with microscopic red dots, apex obtuse or shortly acuminate; panicle 4-15 cm long, to 50-flowered, densely brown-pubescent; follicle oblique-pyriform, slightly compressed, 2,2-2,5 × 1-1,3 cm, pericarp thin, at first brown-pubescent, very soon glabrous and sometimes with glands, reddish; seed shiny black with yellow-orange sarcotesta.

Thickets in (wetter) savanna; forest remnants; dry forest; usually near rivers.

Hiern (Welwitsch's Afric. pl. 1: 189, 1896) treated *Omphalobium smeathmannii* DC. in synonymy under "*Connarus florulentus* Thonning ex DC.", as he also did with *C. griffonianus* Baill. Bailon (*Adansonia* 7: 235, 1867) did not exclude that *C. smeathmannii* (from Sierra Leone) and *C. griffonianus* are conspecific. However, Schellenberg (Bot. Jahrb. Syst. 58: 225, 1923) excluded this possibility, as no Smeathmann material from Sierra Leone had been found that fits De Candolle's description. Lemmens (Agric. Univ. Wageningen Papers 89-6: 267, 1989) is of the opinion that *C. smeathmannii* is a nomen dubium.

*C. thonningii* is closely related to the Asiatic polymorphic *C. semidecandrus* Jack, and also resembles the S.-American *C. punctatus* Planch.

## DOUBTFUL SPECIES:

*Connarus smeathmannii* (DC.) Planch.

bas.: *Omphalobium smeathmannii* DC.

"This species is based on a supposed Smeathmann specimen from Sierra Leone which has not yet been traced" (Hepper, Fl. W. Trop. Afr., ed. 2, 1/2: 748, 1958).

See above under *C. thonningii*.

## SYNONYMS:

*Connarus djalonensis* A. Chev. = **Connarus africanus**  
*duparquetianus* Baill. = **Jollydora duparquetiana**  
*englerianus* Gilg = **Connarus griffonianus**  
*fernandesianus* Exell & Mendonça = **C. griffonianus**  
*floribundus* Thonn. ex Schumach. = **C. thonningii**  
*florulentus* sensu Hiern p.p. (Welwitsch 614)  
 = **C. griffonianus**  
*florulentus* Thonn. = **C. thonningii**  
*incurvatus* G. Schellenb. = **C. griffonianus**  
*libericus* Stapf = **Rourea thomsonii**  
*longistipulatus* Gossw. & Mendonça, sphalm.  
 = **Connarus longistipitatus**  
*luluensis* Gilg = **C. griffonianus**  
*macrothyrus* Gilg ex G. Schellenb. = **C. griffonianus**  
*macrourus* Gilg = **C. staudtii**  
*mannii* Baker = **Cnestis mannii**  
*mildbraedii* G. Schellenb. = **Connarus longistipitatus**  
*nemorosus* Vahl ex Schumach. = **C. thonningii**

## CONNARUS

*nigrensis* Gilg = **C. africanus**

*obovatus* G. Schellenb. = **C. griffonianus**

*odoratissimus* Gilg = **C. staudtii**

*orientalis* G. Schellenb. = **C. griffonianus**

*pentagynus* Lam. = **Agelaea pentagyna**

*pseudoracemosus* Gilg = **Cnestis mannii**

*puberulus* G. Schellenb. = **Connarus griffonianus**

*pubescens* Baker = **Rourea thomsonii**

*punctulatus* Hiern = **Agelaea pentagyna** (flowers)  
 and a non-Connaraceae species (leaves)

*reynoldsii* Stapf = **Rourea solanderi**

*santaloides* Vahl = **R. minor**

*sapinii* De Wild. = **Connarus griffonianus**

*sapinii* G. Schellenb. = **C. congolanus**

*sericeus* De Wild. (= *C. subsericeus*) = **C. griffonianus**

*smeathmannii* (DC.) Planchon = ? (see under **C. thonningii**  
 and "doubtful species")

*stuhlmannianus* Gilg = **C. longistipitatus**

*subsericeus* G. Schellenb. = **C. griffonianus**

*thomsonii* Baker = **Rourea thomsonii**

*triangularis* G. Schellenb. = **Connarus griffonianus**

*venosus* DC. = **C. africanus**

*villosiflorus* Gilg = **C. griffonianus**

*vrydaghii* Troupin = **C. longistipitatus**

## ELLIPANTHUS / 1

Genus of about 6 species in E Africa, Madagascar and Asia.

"The differences between all species of *Ellipanthus* are extremely subtle" (Lemmens, Agric. Univ. Wageningen Papers 89-6: 269, 1989).

For Africa and Madagascar Lemmens (Bull. Mus. Natl. Hist. Nat., Paris, Sér. 4, Sect. B, *Adansonia*, Bot. Phytochimie 14: 99-108, 1922) recognizes a single species, «although considerable variation among the Malgasy material might allow recognition of additional species» (Schatz, Generic tree flora Madagascar: 119, 2001).

**Ellipanthus madagascariensis** (G. Schellenb.) Capuron ex Ker-audren – Icon.: Hook. Ic. Pl. 35: pl. 3452, 1947; Fl. Madag. 97, Connaracées: 5, 1958; Fl. Trop. E. Afr., Connaraceae: 23, 1956 (*E. hemandradenioides*); Lemmens, o.c.: 104, 1992; Beentje, Kenya trees, shrubs & lianas: 435, 1994 (idem); Schatz, l.c.

bas.: *Hemandradenia madagascariensis* G. Schellenb.

syn.: *Ellipanthus hemandradenioides* Brenan; *E. curvipetalus* Capuron, nom. in sched.; *E. dioicus* Capuron, nom. in sched.

(Straggling) tree 7,5-20 m; trunk to 40 cm Ø; branchlets slender, puberulous with appressed hairs when young, becoming glabrous; bark purplish brown, longitudinally striate, with scattered lenticels; leaves unifoliolate, narrowly to broadly ovate, 4,5-11,5 × 2,5-5,2 cm; panicles axillary, single or paired, 1-6,5 cm long, to 25-flowered, indumentum dense, (grey-)brown; follicle oblique-ellipsoid, 2-2,8 × 0,8-1,1 × 0,8-1 cm, ± woody, densely golden-yellow or orange brown tomentose; seed single, dark brown, with white basal aril (sarcotesta).

*Azelia-Trachylobium* rain-forest on deep white sands; 0-500 m alt. Madagascar.



## ELLIPANTHUS MADAGASCARIENSIS

As a result of the discovery probably in 1991 of some mislaid collections of *Ellipanthus* from Madagascar after the death of R. Capuron (1971), it is evident that *Ellipanthus hemandradenioides* Brenan 1947 is conspecific with *E. madagascariensis* (G. Schellenb.) Capuron ex Keraudren based on *Hemandradenia madagascariensis* G. Schellenb. 1938.

Specimens with peltate leaves are known.

## HEMANDRADENIA / 2

African genus, with unifoliolate leaves and non-stipitate indehiscent fruits and completely fleshy seed coat (not so in *Ellipanthus*).

**Hemandradenia chevalieri** Stapf; Sosef & al., Check-list pl. vascul. Gabon: 126, 2006. – Icon: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 197, 1959; Sattler & al. (Kasperek, ed.) Fl. Parc Nat. Taï (Côte d'Iv.): 106, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 767, 2006.

Low-branching shrub or tree to 15 m tall; trunk to 35 cm Ø; branches dark-brown, with few scattered or many lenticels; branchlets pale-brown tomentose, soon glabrescent; leaves unifoliolate, 7-14 cm long, more often c. 5 cm, margin not recurved at base; flowers in axillary and/or subterminal panicles, many-flowered, c. 2-10 cm long; fruit obovoid, 2,6-2,9 cm long, 1,5-1,8 cm Ø, densely tomentose.

Sea-shore formations; rain- and semi-deciduous forests; 10-20 m alt. – Rare, but widespread.

Cultivated in the Banco Forest Reserve (Ivory Coast).

**H. mannii** Stapf; Cable & Cheek, Pl. Mt Cameroon: 39, 1998; Harris, Vascul. pl. Dzangha-Sangha Res., Centr. Afr. Rep.: 72, 2002; Sosef & al., Check-list pl. vascul. Gabon: 126, 2006. – Icon: Aubréville, Fl. for. Côte d'Iv., ed. 2, 1: pl. 59 p. 195, 1959 (*H. glomerata*); Fl. Gabon 33: 87, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 767, 2006; Harris & Wortley, Sangha trees: 89, 2008.

Shrub or tree 3-15 m tall; trunk 8-10 cm Ø, sometimes very inclined, nearly recumbent; branchlets terete, pale-brown, appressed-pubescent, glabrescent; leaves unifoliolate, margin revolute near the base, ± elliptic, 7-18 × 1,5-6,5 cm, long-acuminate; inflorescence glomerate, dense, axillary, few to many-flowered, pale-brown appressed-pubescent; fruit ellipsoid or ovoid, 3-3 cm long, 2 cm Ø, densely tomentose, yellowish brown, often solitary.

Rain- and semi-deciduous forests, perhaps ± associated with rivers; 40-850 m alt.

Rare but widespread (according to Harris, l.c., up to 2002 “no more than 50 herbarium specimens ever collected”).

*H. glomerata* is a short-styled form of *H. mannii*.

## SYNONYMS:

*Hemandradenia glomerata* Aubrév. & Pellegr.

= **Hemandradenia mannii**

*madagascariensis* G. Schellenb. = **Ellipanthus madagascariensis**

## (HEMIANDRINA)

*Hemiandrina paradoxa* (Gilg) G. Schellenb. = **Agelaea**

## (JAUNDEA)

*Jaundea baumannii* (Gilg) G. Schellenb. = **Rourea thomsonii**

*congolana* G. Schellenb. = **R. thomsonii**

*lescrauwaetii* (De Wild.) G. Schellenb. = **R. thomsonii**

*monticola* (Gilg) G. Schellenb. = **R. thomsonii**

*oddonii* (De Wild.) G. Schellenb. = **R. thomsonii**

*pinnata* (P. Beauv.) G. Schellenb. = **R. thomsonii**

*pseudobaccata* (Gilg) G. Schellenb. = **R. thomsonii**

*pubescens* (Baker) G. Schellenb., incl. var. *oddonii* (De Wild.) Troupin = **R. thomsonii**

*zenkeri* Gilg = **R. thomsonii**

## JOLLYDORA / 3

*Pierre*, illustration by E. Delpy dated December 1895 (see Breteler, Adansonia, Sér. 3, 27: 328, 2005).

syn.: *Anthagathis* Harms; *Ebandoua* Pellgr.

Tropical African genus of evergreen small trees with large leaves often clustered at top of stem; flowers heterotristylous; fruit indehiscent; seed with ± complete sarcotesta.

**Jollydora duparquetiana** (Baill.) Pierre; Sosef & al., Check-list pl. vascul. Gabon: 126, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Fl. Gabon 33: 91, 93, 1992.

bas.: *Connarus duparquetianus* Baill.

syn.: *Jollydora rufobarbata* Gilg ex G. Schellenb.; *J. acuta* G. Schellenb.; *J. cinnabarina* Gilg; *J. gigantophylla* Gilg; *J. gilgiana* G. Schellenb., nom. in sched.; *J. villosissima* Gilg, nom. in sched.; *Anthagathis monadelphia* Harms (in Engler & Prantl, Natürl. Pflanzenfam., Nachträge zu 3/3: 195-196, 1897; *Leguminosae, Caesalpinioideae*).

Usually unbranched treelet to ± 8 m tall; stem to ± 5 cm Ø; bark brown-red to grey-yellow, rather smooth; wood reddish to pale brown; leaves of 5-11 leaflets, elliptic to obovate, 10-47 × 3-13 cm, acuminate (acumen to 2,5 cm long); inflorescences cauliflorous, usually consisting of one to several, to 7-flowered, clustered racemes, very rarely axillary, reddish tomentose; fruit obovoid-ellipsoid to subglobose, 2-4 cm long, 1-2,2 cm Ø. Vegetative parts and sepals with non glandular hairs only.

Primary or old secondary forest; often in rather wet habitats; 5-820 m alt.

**J. glandulosa** G. Schellenb.; Cable & Cheek, Pl. Mt. Cameroon: 39, 1998. – Icon.: Fl. Gabon 33: 91, 1992 (partial).

syn.: *J. pedunculosa* Mildbr.; *J. peduncula* Mildbr., nom.

Treelet to ± 5 m tall, usually unbranched, weak-stemmed; leaves of up to 13 leaflets, papyraceous, oblong to obovate-elliptic, 8-43 × 2,5-10,5 cm, acumen at apex 1,5 cm long; inflorescences of clustered racemes, axillary or just below the leaves, each raceme to 9 mm long, 1-3-flowered, with mixture of appressed and red glandular hairs; fruit 1(-2?)-seeded, ovoid-ellipsoid, to 4 × 2,5 cm.

Rain-forest.

Sterile material may be difficult to distinguish from *J. duparquetiana* (nerv-angles of leaflets different).

## JOLLYDORA

**J. pierrei** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 127, 2006. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 314, 1915; Engler, Pflanzenreich 4/127, Connaraceae: 27, 1938; Fl. Gabon 33: 91, 1992 (partial).

syn.: *J. elimabouro* Pierre ex Gilg (“*elimaboura*”), nom. in sched.

Treelet to 5 m tall, usually unbranched; leaves of 3-7 leaflets, papyraceous, narrowly elliptic, 11-22 × 3,5-8 cm, abruptly acuminate, acumen 0,5-1,5 cm long; inflorescences of clustered racemes, cauliflorous; raceme ± 7-flowered, to 1,5 cm long; sepals with appressed and erect glandular hairs outside; fruit narrowly ellipsoid, 4,5-6(-9) cm long × 0,9-1,7 cm Ø, smooth, glossy, glabrous.

Rain-forest.

## SYNONYMS:

*Jollydora acuta* G. Schellenb. = **Jollydora duparquetiana**

*cinnabarina* Gilg = **J. duparquetiana**

*elimaboura* Pierre = **J. pierrei**

*elimabouro* Pierre = **J. pierrei**

*gigantophylla* Gilg = **J. duparquetiana**

*gilgiana* G. Schellenb. = **J. duparquetiana**

*peduncula* Mildbr. = **J. glandulosa**

*pedunculosa* Mildbr. = **J. glandulosa**

*rufobarbata* Gilg ex G. Schellenb. = **J. duparquetiana**

*villosissima* Gilg = **J. duparquetiana**

## MANOTES / 5

syn.: *Dinklagea* Gilg

Tropical African genus. Fruit a follicle, 1-5 per flower; seeds solitary with shiny complete sarcotesta. To distinguish most species in the genus the types of hairs on the pistil are useful (presence or absence): – glandular (erect) one-celled tiny hairs with globular tip often with small crystals; – globular many-celled hairs (= a stalked globe) often strikingly coloured, up to 1 mm long; – long non glandular hairs, often 1-celled, with a sharp tip, ± appressed, to c. 1,5 mm long (figs. in Agric. Univ. Wageningen Papers 89-6: 295, 296, 1989; Flore Gabon 33: 97, 1992).

**Manotes expansa** Soland. ex Planch.; Adam, Fl. descr. Mts Nimba 2: 875, 1971; Akoegninou & al., Fl. analyt. Bénin: 496, 2006; Sosef & al., Check-list pl. vascul. Gabon: 127, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 136, 2009. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 317, 1915 (*M. sanguineo-arillata*); Fl. Gabon 33: 299, 1992 (partial); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 765, 771, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 196, 2007; Engler, Pflanzenreich 4/127, Connaraceae: 60, 1938 (*M. pruinosa*).

syn.: *M. sanguineo-arillata* Gilg; *M. aschersoniana* Gilg; *M. brevistyla* Gilg; *M. cabrae* De Wild. & T. Durand; *M. moandensis* De Wild.; *M. leptothyrsa* Gilg, nom. in sched.; *Cnestis corniculata* sensu Benth. in Hooker, Niger flora: 290, 1849, non Lam.

Liane to 30 m long or lianescent shrub to 6 m tall; branchlets with a dense indumentum of long hairs; older branches spreading, glabrous or with a few hairs and lenticellate; leaves 3-13-foliolate; leaflets ovate to elliptic, acuminate, ± glabrous or with long

## MANOTES EXPANSA

yellow spreading hairs, pink when young; inflorescence to 40 m long, pubescent to glabrous; follicles 1-5, to 2 × 1 cm, reddish, with short *glandular* hairs, beaked; seed coat fleshy, red, with black dorsal part.

Primary or secondary rain-forests, dry or sometimes flooded; forest gallery; particularly at forest edges; secondary forest on sandy soil; cultivated fields; sometimes common; 25-700 m alt.

Very variable in indumentum, plants getting more hairy the farther from the Equator they grow. In W Africa plants are less variable than in Gabon, Zaire.

**M. griffoniana** Baill.; Cable & Cheek, Pl. Mt Cameroon: 39, 1998; Sosef & al., Check-list pl. vascul. Gabon: 127, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Fl. Congo belge 3: 75, 1952; Fl. Gabon 33: 97, 99, 1992.

syn.: *M. tomentosa* Gilg; *M. laurentii* De Wild.; *M. tessmannii* G. Schellenb.; *M. rosea* G. Schellenb.; *M. rubiginosa* G. Schellenb.; *M. altiscandens* Gilg, nom. in sched.; *M. zenkeri* Gilg ex G. Schellenb.

Scrambling shrub or liane 3-5(-15) m tall; branchlets with a usually dense ferruginous indumentum of long hairs, lenticellate; leaves 7-13-foliolate; leaflets ovate-elliptic, pubescent, acuminate, pink when young; inflorescence to 40 cm long, pubescent; flowers with all (=3) kinds of hairs; follicles 1-5, to 2 × 1 cm, orange- to red-brown, with long hairs (> 0,3 mm), ± distinctly *mixed* with glandular and globular hairs; seed coat fleshy, red with thin black part.

Forest thickets; rain-forest, dry or periodically flooded; secondary formations; forest gallery; particularly at forest edges; 5-900 m alt.

**M. lomamiensis** Troupin

syn.: *M. griffoniana* sensu Troupin, Fl. Congo belge 3: 76, 1952, quoad specim. De Giorgi 219, Gillardin 213.

Shrub or treelet to 4-5 m tall; branchlets violaceous, sparsely ferruginous-pubescent with long hairs; leaves 9-13-foliolate; leaflets ovate-elliptic, pubescent; inflorescence to 35 cm long, densely ferruginous-tomentose; flowers with 3 kinds of hairs; follicles 1-5, to 2 × 1 cm, beaked, with *globular* and long hairs, short glandular hairs inconspicuous.

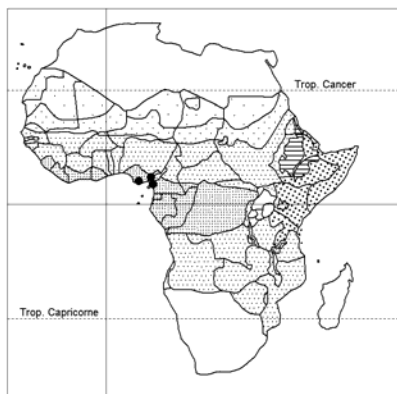
Forest gallery; wooded savanna on sandy soil; 860-900 m alt.

**M. macrantha** (Gilg) G. Schellenb.; Sosef & al., Check-list pl. vascul. Gabon: 127, 2006. – Icon.: Fl. Gabon 33: 103, 1992; White & Abernethy, Guide végét. Rés. Lopé, Gabon: 52, 1996; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 771, 2006; Engler, Pflanzenreich 4/127, Connar.: 63, 1938.

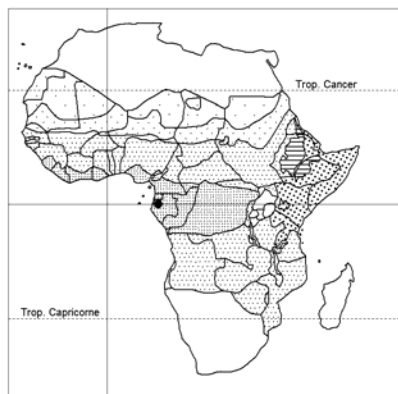
bas.: *Dinklagea macrantha* Gilg

Liane, mainly climbing by leaves modified to *strong woody hooks*; branchlets velutinous, soon glabrescent; leaves 5-9-foliolate; leaflets ovate-elliptic, cordate, acuminate; inflorescence to 10 cm long, pubescent or glabrous, frequently in the axil of a hook; flowers frequently with all 3 kinds of hairs; follicles 1-5, to 2 × 1 cm, beaked, with short *glandular* hairs only; seed with red sarcotesta.

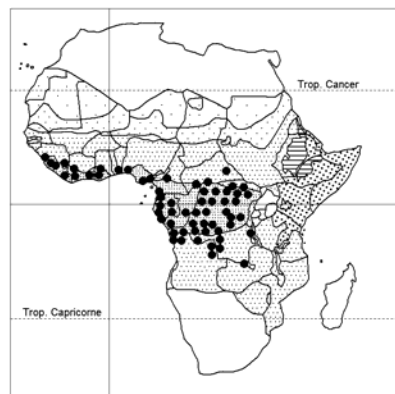
Wet evergreen rain-forest; forest gallery; observed particularly at forest edges; mosaic forest-savanna; 50-500 m alt.



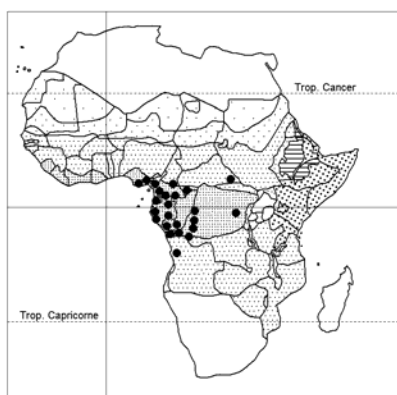
*Jollydora glandulosa*



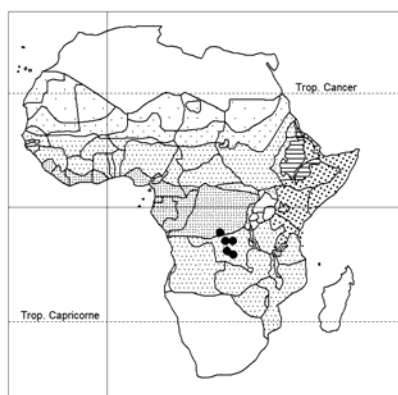
*Jollydora pierrei*



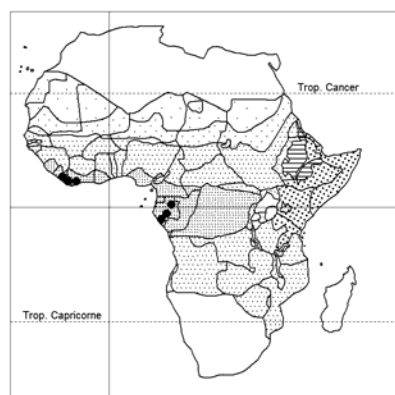
*Manotes expansa*



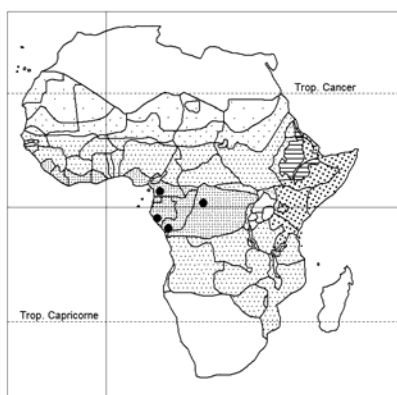
*Manotes griffoniana*



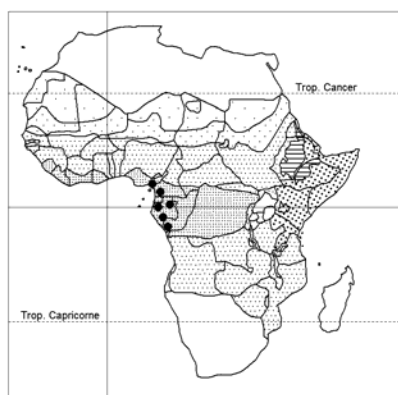
*Manotes lomamiensis*



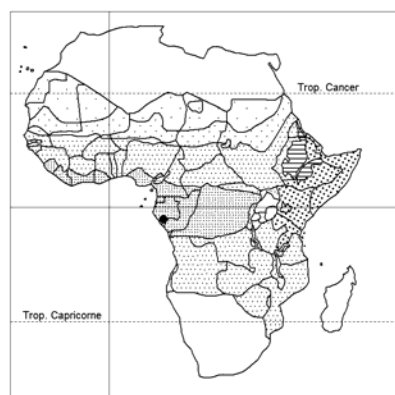
*Manotes macrantha*



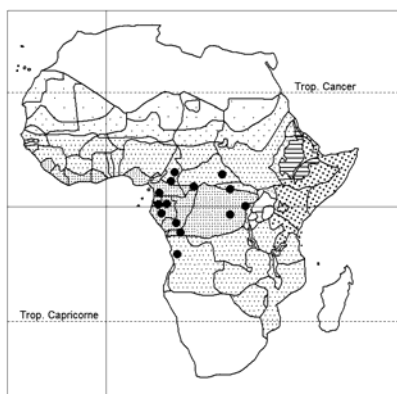
*Manotes soyauxii*



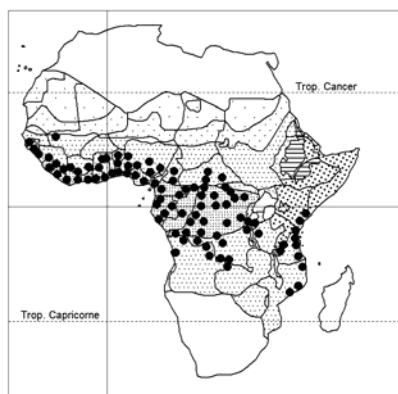
*Rourea calophylla*



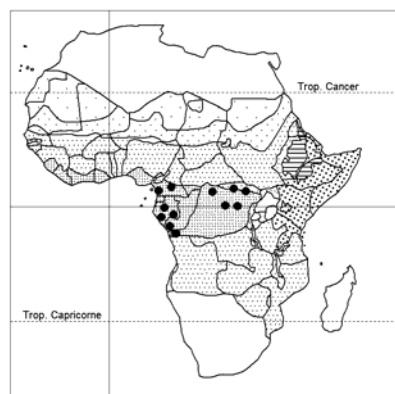
*Rourea calophylloides*



*Rourea cassioides*



*Rourea coccinea*



*Rourea erythrocalyx*



## MANOTES

**M. soyauxii** G. Schellenb.; Sosef & al., Check-list pl. vascul. Gabon: 127, 2006. – Icon.: Fl. Gabon 33: 97, 1992 (partial).

Half-scandent shrub; branchlets with a long indumentum of long hairs; leaves 9-13-foliolate; leaflets ovate-elliptic, slightly pubescent or glabrous; inflorescence to 27 cm long, pubescent to glabrous; flowers often with all 3 types of hairs, like the follicles (globular, glandular + long).

Ecology unknown.

The species was treated by Schellenberg (Engler, Pflanzenreich 4/127, Connar.: 59, 138) as a synonym under *M. pruinosa* Gilg together with *M. brevistyla* Gilg and *M. cabrae* De Wild. & T. Durand (all = **M. expansa**). Jongkind (Agric. Univ. Wageningen Papers 89-6: 309, 1989) remarked that the 8 specimens examined by him, grow in an area where *M. expansa* and *M. griffoniana* occur together and that they seem intermediate between the two taxa. The *M. soyauxii* specimens are very different in morphological characters, which may be explained by the fact that they represent different levels of hybridisation and introgressions.

## SYNONYMS:

*Dinklagea macrantha* Gilg = **Manotes macrantha**

*Manotes altiscandens* Gilg = **Manotes griffoniana**

*aschersoniana* Gilg = **M. expansa**

*brevistyla* Gilg = **M. expansa**

*cabrae* De Wild. & T. Durand = **M. expansa**

*griffoniana* sensu Troupin in Fl. Congo belge, p.p., non Baill. = **M. lomamiensis**

*griffoniana* sensu A. Cheval., Explor. Bot. 1: 166, 1920, non Baill. (Chevalier 15162 or 15163, Dabou, Ivory Coast) = **Connarus africanus**

*laurentii* De Wild. = **Manotes griffoniana**

*leptothyrsa* Gilg = **M. expansa**

*longiflora* Baker = **M. expansa**

*macrophylla* Hiern = **Ostryoderris lucida** (*Fabaceae*)

*moandensis* De Wild. = **Manotes expansa**

*palisotti* Planchon = **Rourea thomsonii**

*pruinosa* Gilg = **Manotes expansa**

*racemosa* (G. Don) Gilg = **Cnestis racemosa**

*rosea* G. Schellenb. = **Manotes griffoniana**

*rubiginosa* G. Schellenb. = **M. griffoniana**

*sanguineo-arillata* Gilg = **M. expansa**

*staudtii* Gilg = **Connarus griffonianus**

aff. *staudtii* sensu A. Chev., Explor. Bot. 1: 166, 1920, non Gilg = **C. africanus**

*tessmannii* G. Schellenb. = **Manotes griffoniana**

*tomentosa* Gilg = **M. griffoniana**

*zenkeri* Gilg ex G. Schellenb. = **M. griffoniana**

## (OMPHALOBIMUM)

*Omphalobium africanum* (Lam.) DC. = **Connarus africanus**

*discolor* Sonder = **Cnestis polyphylla**

*nervosum* G. Don = **Agelaea pentagyna**

*pentagynum* DC. = **A. pentagyna**

*smeathmannii* DC. = **Connarus smeathmannii** (*doubtful species*)

*thonningii* DC. = **C. thonningii**

*villosum* DC. = **Agelaea pentagyna**

## (PAXIA)

*Paxia calophylla* Gilg ex G. Schellenb. = **Rourea calophylla**

*calophylloides* G. Schellenb. = **R. calophylloides**

*cinnabarina* G. Schellenb. = **R. myriantha**

*dewevrei* De Wild. & T. Durand = **R. thomsonii**

*erythrocalyx* Gilg = **R. erythrocalyx**

*lancea* G. Schellenb. = **R. myriantha**

*liberosepala* (Baker f.) G. Schellenb. = **R. myriantha**

*myriantha* (Baill.) Pierre = **R. myriantha**

*scandens* Gilg = **R. myriantha**

*soyauxii* (Gilg) Pierre ex G. Schellenb. = **R. myriantha**

*zenkeri* G. Schellenb. = **R. myriantha**

## (PSEUDELLIPANTHUS)

*Pseudellipanthus beccarii* (Pierre) G. Schellenb.

= **Ellipanthus beccarii**

## ROUREA / 12

Circumtropical genus of c. 81 species (49 in tropical America, 12 in tropical Africa, 15 in Asia, c. 5 in Melanesia).

The concept of *Rourea* is now almost the same as that proposed by Baillon (1867-1870). Later on, a much narrower generic concept (Gilg, G. Schellenberg) resulted in splitting up *Rourea* into many small genera (*Byrsocarpus*, *Roureopsis*, *Paxia*, *Spiropetalum*, *Santalodes*, *Santaloides*, *Santaloidella*, *Jaundea*). The African species were then treated under *Byrsocarpus* and *Roureopsis*. The ultimate synthesis was made by Schellenberg in his treatment for Engler's Pflanzenreich (4/127, 1938). A good summary is due to Jongkind (Agric. Univ. Wageningen Papers 89-6: 310-368, 1989).

Woody plants with branches often ending in a tendrilloid tip, leaves usually imparipinnate, fruit a follicle (1-5 per flower, rounded at base, not stipitate, glabrous inside), seed solitary with ± complete sarcotesta.

**Rourea calophylla** (Gilg ex G. Schellenb.) Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 128, 2006; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Fl. Gabon 33: 109, 1992.

Large shrub or liane; leaflets 3-7, ovate to elliptic, glabrous, with 3-5 pairs of long arching lateral nerves, acuminate; inflorescence to 20 cm long, with many striking reddish, glandular hairs; follicles 1-2 per flower, rarely more, ± 30 × 15 mm, covered with many reddish glandular hairs; seed coat fleshy for ca 1/3.

Rain-forest; 5-640 m alt.

**R. calophylloides** (G. Schellenb.) Jongkind; Sosef & al., l.c. – Icon.: Fl. Gabon 33: 111, 1992.

Very large liane; leaflets 3-7, elliptic-obovate, glabrous, acuminate, with 4-5 pairs of shorter arching lateral nerves; inflorescence to 10 cm long, with many small glandular hairs, often (*sub*)cauliflorous; follicles velutinous, often more than 1 per flower, beaked; seed coat fleshy for ca 1/4.

Rain-forest; 220-300 m alt.

## ROUREA

**R. cassioides** Hiern; Sosef & al., l.c.; Figueiredo & Smith, Pl. Angola: 61, 2008. – Icon.: Fl. Gabon 33: 113, 1992.

Liane c. 9 m long, or slender climbing shrub “with the habit of a *Cassia* or of *Millettia gracilis* Welw. [ex Bak.]” (*Fabaceae*); branches glabrous, never lenticellate, bark dark; branchlets puberulous; leaflets 9-13-31, glabrous to puberulous, papillate beneath, elliptic to oblong, base asymmetrical, apex rounded; inflorescence to 6 cm long, puberulous, in the axil of immature or reduced leaves on developing shoots; follicles 1 per flower rarely more, 13-16 × 7-8 mm, glabrous, tip rounded; sarcotesta entire.

Rain-forest; (dense) mountain forest but rather rare (Angola).

**R. coccinea** (Thonn. ex Schumach.) Bentham

bas. and syn.: Enum. 2: 232, 1992; cf. below under subspecies and varieties.

Rhizomatous shrub, treelet, 1,2-5 m tall; standing erect or climbing, or liane to 25 m, branched from the base, the stems spreading rod-like, branches and branchlets slender and beset with crowded purple-brown lenticels; branches cylindrical, sometimes with a distinct cork layer; leaves very sensitive, deciduous or evergreen, 1-21-foliolate; inflorescence 2-11 cm long, few-flowered, glabrous to pubescent; follicles 1-2 per flower, rarely more, ellipsoid, 15-20 × 7-10 mm, glabrous, yellow to very bright scarlet, pendulous, resembling the berries of *Capsicum frutescens* (very elegant especially in the fruit stage, fide Welwitsch); decorative by its young pink-tinged foliage, white sweet-scented flowers, coloured fruit. Dense thickets; forest edges; coastal bush; rain-forest, dry or periodically flooded; forest gallery; secondary forests; forest regrowths in savanna; open areas in woodland; river banks; fallow land; 0-1650 m alt.

Variable in number, size and shape of leaflets. “Every possible number and shape between the[se] extremes are found”.

Disjunction in subspecies distribution: – subsp. **coccinea** in W part of range, E-wards and S-wards to Zaire-Burundi-W Tanzania-Zambia-Angola; – subsp. **boiviniana** in E part of range, from E Kenya S-wards to N coastal Mozambique.

Comprises 2 subspecies, one with 2 varieties: – subsp. **coccinea** var. **coccinea** [syn.: *Byrsocarpus coccineus* Thonn. ex Schumach. var. *parvifolius* Planch. ex G. Schellenb.; *B. parvifolius* Planch., nom.; *B. puniceus* Thonn. ex Schumach.; *B. ledermannii* G. Schellenb.; *B. puberulus* G. Schellenb.; *Rourea inodora* De Wild. & T. Durand]; Sosef & al., Check-list pl. vascul. Gabon: 128, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 136, 2009; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 518, 1985. – Icon.: Irvine, Woody pl. Ghana: 569, 1961; Adam, Fl. descr. Mts Nimba 2: 866, 1971; Berhaut, Fl. ill. Sénégal 3: 20, 1975; Fl. Gabon 33: 115, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 765, 769, 2006; Akoegninou & al., Fl. analyt. Bénin: 497, 2006. – (Rhizomatous) shrub or subshrub to 3 m tall, or liane, often deciduous; leaflets 5-21, ovate-elliptic, apex emarginate to acute; inflorescences c. 6 cm long, in axils of adult (or fallen) leaves. – Savanna, wooded savanna; secondary forest; 0-1250 (-1500) m alt. – From Senegal E- and S-wards to Burundi-W Tanzania-Zambia-Angola;

– subsp. **coccinea** var. **viridis** (Gilg) Jongkind [syn. *Rourea mannii* Gilg; *R. poggeana* Gilg; *R. unifoliolata* Gilg; *R. dinklagei* Gilg; *R. pallens* Hiern; *R. foenum-graecum* De Wild. & T. Durand; *R. ealensis* De Wild.; *R. laurentii* De Wild.; *R. coriacea* De Wild.; *R. zenkeri* Gilg, nom. in sched.; *Byrsocarpus foenum-graecum* (De Wild.) G. Schellenb.; *B. coriaceus* (De Wild.) G. Schellenb.; *B. laurentii* (De Wild.) G. Schellenb.; *B. papillosus* G. Schellenb.]; Sosef & al., l.c.; Figueiredo & Smith,

## ROUREA COCCINEA

l.c.; Burkill, o.c.: 518-519 (*Byrsocarpus dinklagei*, *B. poggeanus*, *B. viridis*); Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 72, 2002. – Icon.: Engler, Pflanzenreich 4/127: 159, 1938; Fl. Congo belge 3: 95, 1952 (*B. poggeanus*); Fl. Gabon 33: 117, 1992. – Liane to 20-25 m long or shrub with virgate sarmentose branches 5 m tall; young branchlets glabrous, often green; leaflets 1-5-7, (ob)ovate, apex acuminate, almost glabrous; inflorescences c. 2 cm long (rarely to 11 cm), usually in the axils of well developed leaves. – Rain-forest, gallery forest; cleared forest; flooded sedge meadow; 0-870 m alt. – From Nigeria E and S-wards to Central African Republic, Angola;

– subsp. **boiviniana** (Baill.) Jongkind [syn.: *Rourea maxima* (Bak.) Gilg; *R. ovatifolia* (Bak.) Gilg; *R. usaramensis* Gilg; *R. goetzei* Gilg; *Byrsocarpus goetzei* (Gilg) Greenway; *B. usaramensis* (Gilg) G. Schellenb.; *B. maximus* Bak.]; Beentje, Kenya trees, shrubs & lianas: 436, 1994; Fl. Moçamb. 55, Connaraceae: 7-8, 1969. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 326, 1915 (*Byrsocarpus maximus*); Engler, Pflanzenreich 4/127: 156, 1938 (idem); Fl. Zambes. 2/2: 626, 1966 (*B. boivinianus*). – Deciduous (sometimes scandent) shrub 4 m tall; branches with distinct cork-layer; branchlets puberulous to glabrous, reddish brown when young, later grey; leaflets 5-11, ± symmetrical at base, ovate-elliptic, apex acute to acuminate; inflorescences to 10 cm long, flowering with the young leaves. – Coastal bush, thicket edges of savanna; 0-750 m alt. – E Kenya S-wards to coastal N Mozambique.

Ornamental plant used in medicine (A. J. Akindele & O. O. Adeyemi, Fitoterapia 78: 25-28, 2007).

**R. erythrocalyx** (Gilg ex G. Schellenb.) Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 128, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008. – Icon.: Fl. Gabon 33: 119, 1992.

syn.: *Paxia erythrocalyx* Gilg, nom. in sched.; *Rourea thonneri* De Wild.; Enum. 2: 232, 1992.

Liane to 15-20 m long; branchlets puberulous; leaflets 3-11, ovate-elliptic, with mucous cells above (pitted surface when dried), apex acuminate(-emarginate); inflorescence to 6 cm long, puberulous; follicles 1-5 per flower, 14-22 × 6-8 mm, glabrous, turning brilliant scarlet; sepals in fruit reddish; seed coat fleshy for c. 1/4.

Rain-forest on firm ground or flooded; single on wooded hills and in thickets; disturbed forests; shady humid woods; 0-500 m alt.

**R. minor** (Gaertner) Alston; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 525, 1985 (*Santaloides afzelii*); El Amin, Trees & shrubs Sudan: 345, 1990 (*S. splendidum*); Beentje, Kenya trees, shrubs & lianas: 436, 1994; Akoegninou & al., Fl. analyt. Bénin: 497, 2006; Sosef & al., Check-list pl. vascul. Gabon: 128, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 136, 2009. – Icon.: Ann. Mus. Congo belge, Bot., Sér. 5, 3: pl. 26 fig. 8, 1909; Engler, Pflanzenwelt Afr. 3/1A: 327, 1915 (*Santaloides gudjuanum*); Engler, Pflanzenreich 4/127: 139, 1938 (idem); Fl. Trop. E. Afr., Connarac.: 14, 1956 (*S. splendidum*); Fl. Congo belge 3: 85, 1952 (idem); Fl. Zambes. 2/2: 623, 1966 (*S. afzelii*); Berhaut, Fl. ill. Sénégal 3: 40, 1975 (idem); Fl. Gabon 33: 121, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 765, 771, 2006; Arbonnier, Arbres, arbustes & lianes des zones sèches de l’Afrique de l’Ouest, ed. 3: 279, 2009.

## ROUREA MINOR

bas.: *Aegicerus minus* Gaertner

syn.: Enum. 2: 232, 1992; *Rourea santaloides* (Vahl) Wight & Arn.; *Connarus santaloides* Vahl; *Rourea afzelii* R. Br. ex Planch.; *R. gudjuana* Gilg; *R. splendida* Gilg; *R. chiliantha* Gilg; *R. bamangensis* De Wild. & T. Durand; *R. striata* De Wild.; *R. bipindensis* Gilg, nom.; *Santaloides minus* (Gaertner) G. Schellenb.; *Santaloides platysepalum* (Bak.) G. Schellenb.; *S. bamangensis* (De Wild. & T. Durand) G. Schellenb.; *Cnestis acuminata* Wall., nom. nud.; *C. glabra* Blanco, non Lam. (= *Cnestis polyphylla*); *C. florida* Jack; *C. monodelpha* Roxb. ex DC.; *C. trifolia* Blanco, non Lam. (= *Agelaea pentagyna*); *C. erecta* Blanco

Straggling shrub or treelet 3-5 m tall or liane 10-30 m long, much branched from the base; stem 15 cm Ø; evergreen; branches glabrous, cylindrical to deeply furrowed, often with interxylary phloem; branchlets puberulous or glabrous; leaflets 1-19, glabrous, often wax-coated beneath (glaucous), with drip-tip 2,5 cm long, not mucronate; inflorescence to 9 cm long, glabrous; follicles 1 per flower, rarely more, 10-22 × 5-12 mm, ovate, finely longitudinally striate, glabrous, scarlet; sarcotesta free from seed surface, pulp yellowish, sweet, edible.

Semi-deciduous forests; riparian forest; gallery forest in high rainfall savanna; savanna edges; woodland; also evergreen forest; 0-1500 m alt. – Widespread.

Madagascar; Asia. – Not yet found in Benin.

**R. myriantha** Baill.; Harris, Vascul. pl. Dzangha-Sangha Res., Centr. Afr. Rep.: 73, 2002; Sosef & al., Check-list pl. vascul. Gabon: 128-129, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 324, 1915 (*Paxia zenkeri*); Engler, Pflanzenreich 4/127: 117, 1938 (idem); Fl. Gabon 33: 123, 1992.

syn.: Enum. 2: 232, 1992; *R. soyauxii* Gilg; *Santalodes myriantha* (Baill.) O. Kuntze; *Paxia scandens* Gilg; *P. soyauxii* (Gilg) Pierre ex G. Schellenb.; *P. lancea* G. Schellenb.; *P. zenkeri* G. Schellenb.; *Spiropetalum liberosepalum* Bak. f.

Erect or climbing shrub 2 m tall or liane to 15-40-? 80 m long; branches glabrous, often silvery grey; branchlets puberulous; leaflets 1-11, very variable in shape and size, 3-18 × 2-8,5 cm, apex acute to acuminate, almost glabrous; flowers white (in shade) to red (sun-exposed side), in inflorescences to 15 cm long, puberulous or glabrous; bracts and bracteoles similar to small sepals; follicles 1 (sometimes more) per flower, 2,5-4,5 × 1,5-2 cm, beaked, glabrous, sepals persistent; seed coat fleshy for 1/3, the rest very dark red to black, shiny.

Forest gallery, with *Annonaceae* and *Hippocratea*; wet places; rain-forest; mixed species terra firma and *Gilbertiodendron dewevrei* forest; 0-520 m alt.

**R. obliquifoliolata** Gilg – Neotype: Zenker 2992. – Harris, l.c.; Bongers & al. in Bongers & al., Forest climbing plants of W Africa: 26, 2005 (map); Sosef & al., Check-list pl. vascul. Gabon: 129, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 322, 1915 (gen. *Roureopsis*); Engler, Pflanzenreich 4/127: 109, 1938 (idem); Fl. Gabon 33: 125, 1992.

syn.: *R. fasciculata* Gilg, incl. var. *flagelliflora* Welw. ex Hiern; *R. adianthoides* Gilg; *R. ptaerxyloides* Gilg; *Roureopsis fasciculata* (Gilg) G. Schellenb.

## ROUREA OBLIQUIFOLIOLATA

Climbing shrub or liane to 25 m long; stem to 2,5 cm Ø; branchlets puberulous; leaflets 13-41, ovate-elliptic or rhombic to kidney-shaped, 1-9 × 1-5 cm, very asymmetrical, apex rounded-subacuminate, the lowest pair small, stipule-like; inflorescence to 1,2 cm long, subglobose, often many together at the end of a leafy branch resembling a terminal inflorescence, follicles 1-5 per flower, 15-24 × 7-10 mm, scarlet, almost glabrous; seed coat fleshy for 1/4, the rest shiny, black.

Rain-forest; forest gallery; shady humid forest; terra firma and *Gilbertiodendron dewevrei* forest; here and there in forest clearings; sometimes common along roads and on termite mounds; 1-1000 m alt.

Very uniform species throughout its range.

**R. orientalis** Baill., incl. var. *madagascariensis* Curchet, var. *hirtella* Keraudren and var. *pubescens* Keraudren; Fl. Moçamb. 55, Connaraceae: 6-7, 1969; Beentje, Kenya trees, shrubs & lianas: 436, 1994. – Icon.: Fl. Trop. E. Afr., Connaraceae: 5, 1958; Fl. Madagascar 97, Connaraceae: 5, 1958 (also vars. *hirtella* and *pubescens*); Pickering & Roe, Wild flow. Victoria Falls area: 52, 2009.

syn.: Enum. 2: 232, 1992; *R. pervilleana* Baill.; *R. ovalifoliolata* Gilg; *R. macrantha* Gilg; *R. bussei* Gilg; *Byrsocarpus orientalis* (Baill.) Bak.; *B. pervilleanus* (Baill.) G. Schellenb.; *B. baronii* Bak.; *B. ovalifoliolatus* (Gilg) G. Schellenb.; *B. usambaricus* G. Schellenb.; *B. baillonianus* Gilg, nom.

Shrub 1-3 m tall, sometimes scandent to > 8 m, treelet 3-8 m, rhizomatous shrublet, usually deciduous, often evergreen in SE Zaire; branches strongly lenticellate, terete and often with a distinct cork layer; branchlets puberulous to tomentose; leaflets 13-33, oblong(-ovate), glabrous to tomentose, apex rounded to acute; inflorescence to 7 cm long, glabrous to tomentose; follicles 1 per flower, rarely more, 15-23 × 5-12 mm, glabrous; seed coat entirely fleshy, scarlet.

Open woodland and bushland complexes; forest margins; thicket edges in savanna and thickets fringing water-courses; frequently on termite mounds; semi-deciduous forest; persisting in fire-climax grassland as a shrublet in Zambia, Malawi; 200-2500 m alt. NE Namibia, Caprivi Strip, Botswana; Madagascar.

Not in Angola (= *R. coccinea* subsp. *coccinea* var. *coccinea*).

**R. parviflora** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 129, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008. – Icon.: Fl. Gabon 33: 129, 1992.

syn.: *R. strigulosa* Gilg

Woody liane to 35m long; stem 15 cm Ø; branches deeply furrowed, usually with interxylary phloem (like *R. minor*); branchlets puberulous to glabrous; leaflets 5-19, ovate-oblong-ovate, almost glabrous, apex acuminate; inflorescence to 2cm long, puberulous; follicles 1 per flower, rarely more, 25-32 × 10-15 mm, ovoid, glabrous except for a few hairs at tip; seed coat for c. 1/3 fleshy, yellow, the rest very dark, shiny.

Rain-forest, generally riverine; dominant liane; 0-1000 m alt.

The species was known under 2 names: *Byrsocarpus parviflorus* (Gilg) G. Schellenb. for flowering specimens, *Santaloidella gillettii* G. Schellenb. for fruiting material.

Long flat tough hairs, often red or black, can be found on branches, leaf petiole and rhachis, also present on seedlings.

Probably undercollected: few herbarium specimens known (inconspicuous inflorescences and fruit branches), but seedlings are very frequent in nature.



## ROUREA

**R. solanderi** Bak.; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 525-526, 1985 (sub gen. *Spiropetalum*); Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep.: 73, 2002; Figueiredo & Smith, Pl. Angola: 62, 2008. – Icon.: Engler, Pflanzenwelt Afr. 3/1A: 321, 1915 (sub nom. *Spiropetalum odoratum*); Fl. Gabon 33: 131, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 771, 2006.

syn.: *R. heterophylla* Bak.; *Santalodes solanderi* (Bak.) O. Kuntze; *S. bakeri* O. Kuntze; *Spiropetalum polyanthum* Gilg; *S. triplinerve* Stapf; *S. calophyllum* Gilg, nom.; *S. erythrocarpum* Gilg, nom.; *S. erythrosepalum* Gilg, nom.; *S. klaineianum* Pierre, nom.; *S. phaeseosepalum* Gilg, nom.; *Connarus reynoldsii* Stapf; Enum. 2: 232, 1992.

Liane, lofty, to 40 m long or sometimes (straggling) shrub to 6 m tall; branches glabrous, terete or furrowed; branchlets tomentose to glabrous; latex blood-red; leaflets (1-)3-9, ovate to elliptic, glabrous to tomentose with many mucous cells on upper surface (pitted in herbarium specimens), apex acute-acuminate, thickened; inflorescence to 7 cm long, puberulous to tomentose; flowers whitish, sweet-scented; follicles 1-3 per flower, rarely more, 20-35 × 10-25 mm, velutinous and sometimes also with a few glandular hairs; fruit reddish; seed coat for 1/4 fleshy, yellow or reddish, the rest black.

Evergreen forest, rain-forest; riversides; up into the savanna zone and down to the sea shore; in wetter areas 0-650 m alt.

**R. thomsonii** (Bak.) Jongkind; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 523 (sub gen. *Jaundeia*); Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep. 73, 2002; Sosef & al., Check-list pl. vascul. Gabon: 129, 2006; Figueiredo & Smith, Pl. Angola: 62, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 136, 2009. – Icon.: Palisot de Beauvois, Fl. Oware: pl. 60, 1807 (sub nom. *Cnestis pinnata*); Engler, Pflanzenwelt Afr. 3/1A: 325, 1915 (sub nom. *Byrsocarpus pseudobaccatus*); Fl. Trop. E. Afr., Connaraceae: 20, 1956 (*Jaundeia pinnata*); Fl. Zambes. 2/2: 628, 1966 (idem); Adam, Fl. descr. Mts Nimba 2: 874, 1971 (idem); Berhaut, Fl. ill. Sénégal 3: 34, 1975; Beentje, Kenya trees, shrubs & lianas: 436, 1994; White & al., Evergreen for. fl. Malawi: 209, 42 (map), 2001; Fl. Gabon: 33: 133, 1992, Akoegninou & al., Fl. analyt. Bénin: 497, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 771, 2006; Arbonnier, Arbres, arbustes & lianes des zones sèches d'Afrique de l'Ouest, ed. 3: 280, 2009.

bas.: *Connarus thomsonii* Bak.

syn.: *Rourea pseudobaccata* Gilg; *R. monticola* Gilg; *R. buchholzii* Gilg; *R. baumannii* Gilg; *R. nivea* Gilg; *R. venulosa* Hiern; *R. albido-flavescens* Gilg; *R. lescrauwaetii* De Wild., incl. var. *seretii* De Wild. and var. *tenuifolia* De Wild.; *R. oddonii* De Wild.; *R. verruculosa* De Wild.; *R. claessensii* De Wild.; *R. hypovellerea* Gilg, nom.; *R. ivorensis* A. Chev. 1920, nom.; *Cnestis pinnata* P. Beauv.; *Manotes palisotii* Planch., nom. illegit.; *Rourea palisotii* (Planch.) Baill.; *Connarus pubescens* Bak.; *C. libericus* Stapf; *Jaundeia pseudobaccata* (Gilg) G. Schellenb.; *J. zenkeri* Gilg; *J. monticola* (Gilg) G. Schellenb.; *J. lescrauwaetii* (De Wild.) G. Schellenb.; *J. congolana* G. Schellenb.; *Santalodes monticola* (Gilg) O. Kuntze; *Paxia dewevrei* De Wild. & T. Durand; *Byrsocarpus pseudobaccatus* (Gilg) G. Schellenb.; *B. monticolus* (Gilg) G. Schellenb.; *B. buchholzii* (Gilg) G. Schellenb.; *B. baumannii* (Gilg) G. Schellenb.; *B. niveus* (Gilg) G. Schellenb.; *B. oddonii* (De Wild.) G. Schellenb.; *B. alb(id)o-flavescens* (Gilg) Greenway ex Burt Davy; “genus unknown” sensu Fl. Zambes. 2/2: 629, 1966; Enum. 2: 232-233, 1992.

## ROUREA THOMSONII

Evergreen liane 15-30 m long, with stems to 25 cm Ø, long branches and drooping crown, or tree or straggly shrub 4-10 m tall; glabrous except on young parts and inflorescence; branches brown, lenticellate; twigs dark with pale lenticels; leaflets 5-13, elliptic-ovate, apex acuminate, mucronate, *not thickened* (cf. *R. solanderi*); flowers white to pinkish, fragrant in inflorescences to 18 cm long, often 1 or more together at the end of a leafy branch and resembling a terminal inflorescence, glabrous or pubescent; follicles 1 per flower sometimes more, 20-45 × 10-25 mm, glabrous; fruit red; seed coat fleshy, red or orange-yellow.

Wet tropical forests including periodically inundated riverine forest; semi-deciduous forest; (secondary) rain-forest; high rainfall savanna edges; coffee plantations; forest-cleared openings; sometimes abundant; 0-3500 m alt. – In E Africa only in evergreen & montane forest (> 1200 m).

Very variable in shape of leaflets and their nervation (cf. number of synonyms !). Some leaf forms are found in particular parts of the distribution area (map by Jongkind in Agric. Univ. Wageningen Papers 89-6: 365, 1989; and note by Harris, l.c.).

The oldest known name for this taxon is *Cnestis pinnata* P. Beauv. 1804, but the combination *Rourea pinnata* (Merr.) Veldkap 1968 exists for a plant from Borneo based on *Sarcotheca pinnata* Merr. 1922. For *Roureopsis pinnata* (King) Leenhouts 1958 (bas.: *Agelaea pinnata* King), from Asia, there is a new name *Rourea dictyophylla* Jongkind.

Note: “Genus unknown” figuring in Flora Zambes. 2/2: 629, 1966, specimen Richards 15140 from Abercorn, Zambia (incomplete: “long-staminate flowers and fruit unknown”), belongs here according to Jongkind (Agric. Univ. Wageningen Papers 89-6: 364, 1989).

## SYNONYMS:

*Aegicerus minus* Gaertner = **Rourea minor**

*Rourea adiantoides* Gilg = **Rourea obliquifoliolata**

*afzelii* R. Br. ex Planchon = **R. minor**

*albido-flavescens* Gilg = **R. thomsonii**

*bamangensis* De Wild. & T. Durand = **R. minor**

*baumannii* Gilg = **R. thomsonii**

*bipindensis* Gilg = **R. minor**

*boiviniana* Baill. = **R. coccinea** subsp.

*buchholzii* Gilg = **R. thomsonii**

*bussei* Gilg = **R. orientalis**

*chiliantha* Gilg = **R. minor**

*claessensii* De Wild. = **R. coccinea** subsp. **coccinea** var. **viridis**

*coriacea* De Wild. = **R. coccinea** subsp. **coccinea** var. **viridis**

*dinklagei* Gilg = **R. coccinea** subsp. **coccinea** var. **viridis**

*ealensis* De Wild. = **R. coccinea** subsp. **coccinea** var. **viridis**

*fasciculata* Gilg, incl. var. *flagelliflora* Welw. ex Hiern = **R. obliquifoliolata**

*foenum-graecum* De Wild. & T. Durand = **R. coccinea** subsp. **coccinea** var. **viridis**

“genus unknown” sensu Fl. Zambes. 2/2: 629, 1966 = **R. thomsonii**

*goetzei* Gilg = **R. coccinea** subsp. **boiviniana**

*gudjuana* Gilg = **R. minor**

*heterophylla* Baker = **R. solanderi**

## ROUREA

- hypovellerea* Gilg = **R. thomsonii**  
*inodora* De Wild. & T. Durand = **R. coccinea** subsp. and var. **coccinea**  
*ivorensis* A. Chev. = **R. thomsonii**  
*laurentii* De Wild. = **R. coccinea** subsp. **coccinea** var. **viridis**  
*lescrauwaetii* De Wild., incl. var. *seretii* De Wild. and var. *tenuifolia* De Wild. = **R. thomsonii**  
*macrantha* Gilg = **R. orientalis**  
*mannii* Gilg = **R. coccinea** subsp. **coccinea** var. **viridis**  
*maxima* (Baker) Gilg = **R. coccinea** subsp. **boiviniana**  
*monticola* Gilg = **R. thomsonii**  
*nivea* Gilg = **R. thomsonii**  
*oddonii* De Wild. = **R. thomsonii**  
*ovalifoliolata* Gilg = **R. orientalis**  
*ovatifolia* (Baker) Gilg = **R. coccinea** subsp. **boiviniana**  
*palisotii* (Planch.) Baill. = **R. thomsonii**  
*pallens* Hiern = **R. coccinea** subsp. **coccinea** var. **viridis**  
*pervilleana* Baill. = **R. orientalis**  
*platysepala* Baker = **R. minor**  
*poggeana* Gilg = **R. coccinea** subsp. **coccinea** var. **viridis**  
*pseudobaccata* Gilg = **R. thomsonii**  
*ptaeroxylodes* Gilg = **R. obliquifoliolata**  
*santaloides* (Vahl) Wight & Arnott = **R. minor**  
*soyauxii* Gilg = **R. myriantha**  
*splendida* Gilg = **R. minor**  
*striata* De Wild. = **R. minor**  
*strigulosa* Gilg = **R. parviflora**  
*thonneri* De Wild. = **R. erythrocalyx**  
*unifoliolata* Gilg = **R. coccinea** subsp. **coccinea** var. **viridis**  
*usaramensis* Gilg = **R. coccinea** subsp. **boiviniana**  
*venulosa* Hiern = **R. thomsonii**  
*verruculosa* De Wild. = **R. thomsonii**  
*viridis* Gilg = **R. coccinea** subsp. **coccinea** var. **viridis**  
*zenkeri* Gilg = **R. coccinea** subsp. **coccinea** var. **viridis**

## (ROUREOPSIS)

- Roureopsis erythrocalyx* Gilg ex G. Schellenb.  
 = **Rourea erythrocalyx**  
*fasciculata* (Gilg) G. Schellenb. = **Rourea obliquifoliolata**  
*obliquifoliolata* (Gilg) G. Schellenb. = **Rourea obliquifoliolata**  
*thonneri* (De Wild.) G. Schellenb. = **Rourea erythrocalyx**

## (SANTALODES)

- Santalodes bakeri* O. Kuntze = **Rourea solanderi**  
*monticola* (Gilg) O. Kuntze = **R. thomsonii**  
*myriantha* (Baill.) O. Kuntze = **R. myriantha**  
*solanderi* (Baker) O. Kuntze = **R. solanderi**

## (SANTALOIDELLA)

- Santaloidella gillettii* G. Schellenb. = **Rourea parviflora**

## (SANTALOIDES)

- Santaloides afzelii* (R. Br. ex Planchon) G. Schellenb.  
 = **Rourea minor**  
*bamangensis* (De Wild. & T. Durand) G. Schellenb.  
 = **R. minor**  
*gossweileri* Exell & Mendonça = **R. minor**  
*gudjuanum* (Gilg) G. Schellenb. = **R. minor**  
*minus* (Gaertn.) G. Schellenb. = **R. minor**  
*platysepalum* (Baker) G. Schellenb. = **R. minor**  
*splendidum* (Gilg) G. Schellenb. = **R. minor**  
*urophyllum* G. Schellenb. = **R. minor**

## (SARMIENTA)

- Sarmienta cauliflora* Sieber, nom. in sched. = **Cnestis polyphylla**

## (SPIROPETALUM)

- Spiropetalum calophyllum* Gilg = **Rourea solanderi**  
*erythrocarpum* Gilg = **R. solanderi**  
*erythrosepalum* Gilg = **R. solanderi**  
*heterophyllum* (Baker) Gilg = **R. solanderi**  
*heterophyllum* sensu Liberato, Fl. Guiné-Bissao,  
 Connaraceae: 10, 1980 = **R. thomsonii**  
*klaineanum* Pierre = **R. solanderi**  
*liberosepalum* Baker f. = **R. myriantha**  
*odoratum* Gilg = **R. solanderi**  
*phaeosepalum* Gilg = **R. solanderi**  
*polyanthum* Gilg = **R. solanderi**  
*reynoldsii* (Stapf) G. Schellenb. = **R. solanderi**  
*solanderi* (Baker) Gilg = **R. solanderi**  
*triplinerve* Stapf = **R. solanderi**

## (SPONDIROIDES)

- Spondioides ferruginea* Smeathm., nom. in sched. = **Cnestis ferruginea**  
*pruriens* Smeathm., nom. in sched. = **C. corniculata**

## (TRICHOLOBUS)

- Tricholobus africanus* Heckel = **Connarus africanus**

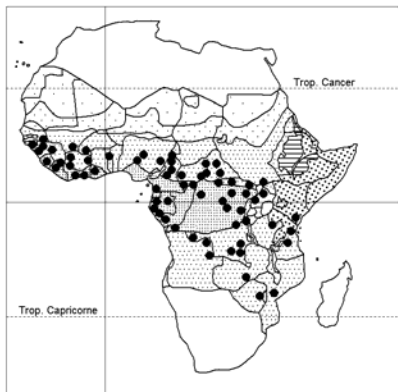
## VISMIANTHUS / 1

Comprising 2 species, one in tropical Africa, one in Burma [*V. sterculiifolius* (Prain) Breteler & Brouwer].

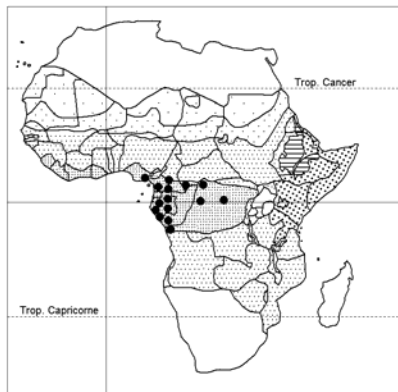
**Vismianthus punctatus** Mildbr. – Icon.: Engler, Pflanzenreich 4/127, Connaraceae: 99, 1938; Fl. Trop. E. Afr., Connaraceae: 8, 1956.

Much branched shrub 1-5 m tall; young branches cylindrical, slightly grooved, pubescent, later becoming glabrous with pale brown smooth bark and inconspicuous transverse ringing; leaves usually crowded at ends of shoots, unifoliolate, ovate to almost cordate, dotted and streaked with many dark resinous glands (0,3 mm); inflorescence simple or compound, 2-6-flowered, with peduncle 1-4,5 cm long; fruit purplish brown, 15-20 mm long, 6 mm wide, virtually glabrous but with many glands.

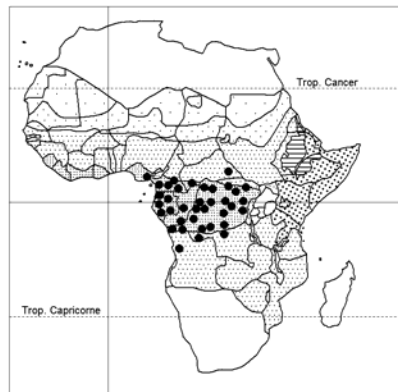
Coastal evergreen bushland; secondary forest on margins of native cultivation; savanna; 250-800 m alt.



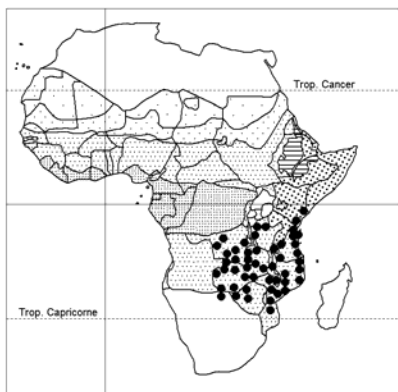
*Rourea minor*



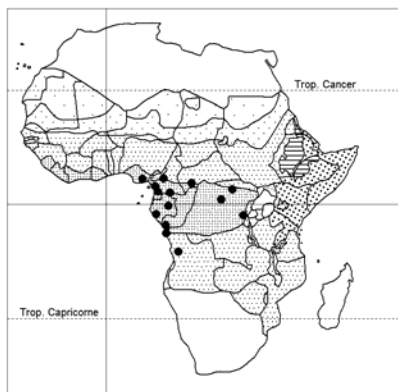
*Rourea myriantha*



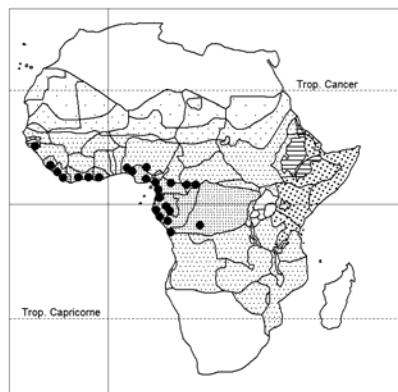
*Rourea obliquifoliolata*



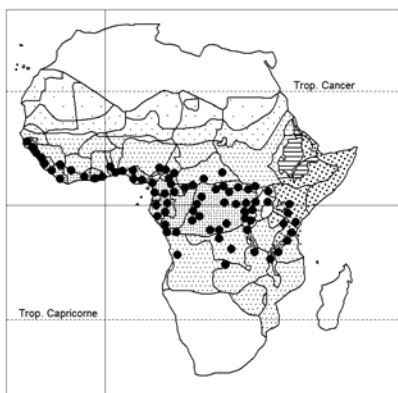
*Rourea orientalis*



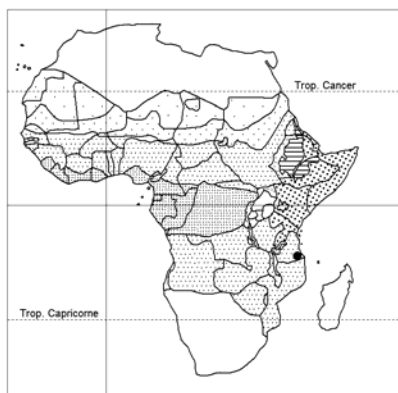
*Rourea parviflora*



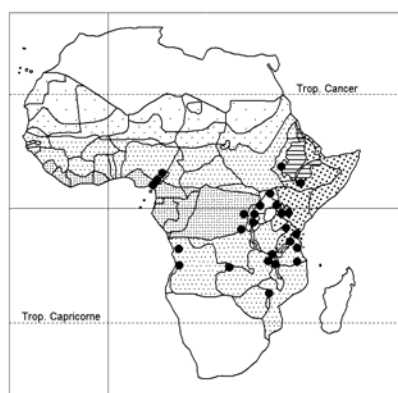
*Rourea solanderi*



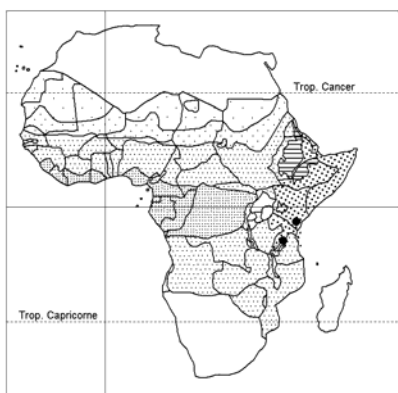
*Rourea thomsonii*



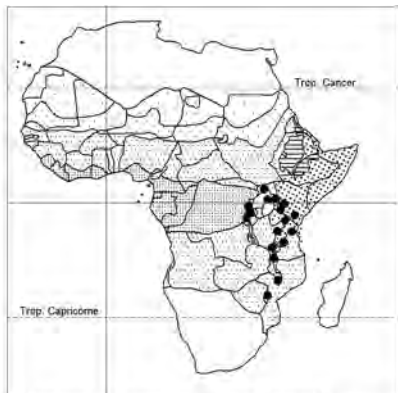
*Vismianthus punctatus*



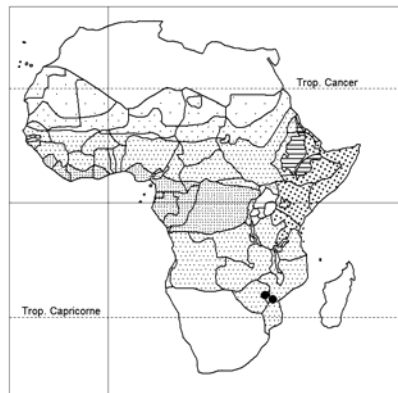
*Alangium chinense*



*Alangium salviifolium*



*Cornus (Afrocrania) volkensis*



*Curtisia dentata*



**ALANGIACEAE / 1 g. / 2 spp.**

With only one genus of some 19 (or 37 ?) species in the Old World from Africa, Madagascar, Comoro Isl., China, SE Asia to E Australia. Formerly included in *Cornaceae*. Leaves alternate, simple, without stipules.

**ALANGIUM / 2**

syn.: *Stylidium* Lour.; *Marlea* Roxb.

**Alangium chinense** (Lour.) Harms 1897; Burkill, Useful pl. W. trop. Afr., ed. 2, 1: 41, 1985; El Amin, Trees & shrubs Sudan: 346, 1990; Friis, Forest trees N.E. Trop. Afr.: 208, 324 (map), 1992. – Icon.: Engler, Pflanzenreich 4/220b: 3, 1910 (sub nom. *A. begoniifolium*); Engler, Pflanzenwelt Afr. 3/2: 680-681, 1921 (idem); Fl. Trop. E. Afr., Alangiaceae: 2, 1958; Beentje, Kenya trees, shrubs & lianas: 437, 1994; White & al., Evergreen forest fl. Malawi: 120, 13 (map), 2001; Coates Palgrave, Trees south. Afr., ed. 3: 858, 2002; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 327, 2008.

bas.: *Stylidium chinense* Lour.

syn.: *Marlea begoniifolia* Roxb.; *Alangium begoniifolium* (Roxb.) Baill. subsp. *eubegoniifolium* Wangerin (very extensive synonymy in Bloembergen, Bull. Jard. Bot. Buitenzorg, Ser. 3, 16: 170-172, 1939); *Alangium chinense* (Lour.) Rehder 1916; ?? *A. kenyense* Chiov. (sterile, ? juvenile shoot).

Tree, deciduous, 5-25-30 m tall, sometimes treelet; trunk to 1,6-2,4 m in girth, with winged buttresses at base; bark smooth, grey; branchlets purple-brown, at first pubescent later glabrous; leaves very variable: usually ovate, cuneate, truncate or subcordate at base, *asymmetric*, acuminate at apex, entire when adult but often palmately lobed on coppice shoots; petiole 0,5-2,5 cm long; lamina 4-19 × 2,5-10 cm (juvenile to 25 × 27 cm); inflorescences 1-4-branched, with 3-23 whitish to orange, fragrant flowers golden pubescent; petals ca. 1 cm long; fruit (drupe) laterally compressed, globose or ellipsoidal, rather costate when dry, 8-10 × 4-5,5 to 6,5-9 mm, yellow-green.

Pioneer species in partly cleared areas of rain-forest; member of the canopy in gullies; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Okotea*, second storey with *Dracaena*, *Ensete*; *Albizia gummifera* forest and *Pouteria altissima* forest; secondary forest; farm bush; forest margins; bamboo formations; sometimes (high rainfall) savanna or fallow land; 750-2400 m alt.

Bioko/Fernando Poo; from India to Vietnam, Laos, Cambodia, S China, Japan, Sunda Islands, Philippines.

Fast growing, "said to be only 25 years" (Burkill, l.c.).

**A. salviifolium** (L. f.) Wangerin subsp. **salviifolium**; Beentje, o.c.: 438. – Icon.: Engler, Pflanzenreich, l.c.; Engler, Pflanzenwelt Afr., l.c.; Fl. Madagascar 158 bis, Alangiaceae: 15, 1958 (subsp. *decapetalum*).

bas.: *Grewia salviifolia* L. f. (*Tiliaceae*).

syn.: *Alangium salviifolium* subsp. *decapetalum* (Lam.) Wangerin and subsp. *hexapetalum* (Lam.) Wangerin, quoad nom., excl. descr.; *A. mohillae* Tul.

Tree, deciduous, 4-18 m; trunk 0,6 m Ø; branchlets at first pubescent, later glabrous, often with *strong spines* to 1,2 cm long; bark light brown, scaly-fissured; leaves elliptic or obovate, *symmetrical*, cuneate at base, 3-9,5 × 1,7-4,3 cm; flowers cream, 2-5 in sessile inflorescences; fruit ellipsoid, shortly pubescent, 9-22 mm long, purple.

## ALANGIUM SALVIIFOLIUM

Rain-forest, riparian forest; (1-)500-750 m alt.

Comoro Isl., India to Vietnam, Laos, Cambodia, Thailand, Hainan, Indonesia, Sumatra, New Guinea, Lesser Sunda Isl., Philippines [subsp. **sundanum**] (Miq.) Bloembergen.

In India pollinated and seeds dispersed by passerine birds (J. Natl. Taiwan Mus. 58/1: 69-82, 2005).

**CORNACEAE / 2 g. / 2 spp.**

incl. *Curtisiaceae*.

A family of ca. 5 genera and about 85 species, widely distributed in N temperate regions, but represented on tropical mountains by *Cornus peruviana* J. F. Macbr. in S. America and *C. volkensii* Harms in Africa. Also present in boreal areas. Many species are of horticultural interest [e.g. *Aucuba japonica* Thunb. (recently placed in *Garryaceae*), *Cornus alba* L., *C. florida* L., *C. kousa* Hance].

XIANG, Q.-Y. (J.) & D. T. THOMAS (2008). Tracking character evolution and biogeographic history through time in Cornaceae – Does choice of methods matter? *J. Syst. Evol.* 46: 349-374 [especially *Cornus*].

**(AFROCRANIA)**

syn.: *Cornus* L. subgen. *Afrocrania* Harms

*Afrocrania volkensii* (Harms) Hutch. = **Cornus**

**CORNUS / 1**

GOETGHEBEUR, P. (1999). Morfologie & [en] systematiek van het genus *Cornus* L. *Belg. Dendrol.* 1998: 51-79.

XIANG, Q.-Y. (J.) & al. (2006). Species level phylogeny of the genus *Cornus* (Cornaceae) based on molecular and morphological evidence – implications for taxonomy and Tertiary intercontinental migration. *Taxon* 55: 9-30.

**Cornus volkensii** Harms; Coates Palgrave, Trees south. Afr., ed. 3: 859, 2002. – Icon.: Engler, Pflanzenreich 4/229: 77, 1910; Engler, Pflanzenwelt Afr. 3/2: 835, 1921; Fl. Trop. E. Afr., Cornaceae: 2, 1958 (sub gen. *Afrocrania*); Fl. Congo, Rwanda..., Cornaceae: 3, 1971; Fl. Zambes. 4: 638, 1978; Troupin, Fl. Rwanda 2: 550, 1983; Beentje, Kenya trees, shrubs & lianas: 437, 1994; Goetghebeur, o.c.: 69; White & al., Evergreen for. fl. Malawi: 215, 2001; Eyde in Bot. Rev. 54/3: 243, 1988; Lovett & al., Field guide moist for. trees Tanzania: 62, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 289, 2008; Bloesch & al., Plantae ligneuses Rwanda: 195, 2009 (sub *Afrocrania*).

syn.: *Afrocrania volkensii* (Harms) Hutch.

Evergreen shrub or tree 4-24-30 m tall, low branched, sometimes with large surface roots; *dioecious*; bole straight, or twisted; crown wide-spreading, tabular or subglobose; bark grey or black, glandular; young stems finely appressed pubescent, later glabrous; leaves opposite, elliptic, acuminate at apex, ± cuneate at base, light green, 5-17,5 × 2,5-6,3 cm, finely appressed pubescent; inflorescence dense, 20-100-flowered; *male* flowers in cymules arranged subumbellately; *female* ones in terminal umbels; fruit purplish-black, ellipsoidal, 13 × 6,5 mm, minutely appressed pubescent (eaten by Rameron Pigeons).

## CORNUS VOLKENSI

Rain-forests; secondary forests; regrowths; associated with *Arundinaria*, *Ocotea*; scrub forest with *Hypericum revolutum*, *Agarista salicifolia*; mostly along or near streams; forest with *Podocarpus latifolius*, *Olea capensis*, *Syzygium guineense*; conspicuous in the bamboo zone; 1500-3200 m alt.

Not known actually from Ethiopia, but pollen has been found there from the late Miocene. The first known fossils of *Cornus* are said to occur in the late Cretaceous (White & al., Malawi, l.c.).

## CURTISIA / 1

Monotypic genus, excluded from *Cornaceae* by Eyde (Bot. Rev. 54: 309, 316, 1988) as “an ill-fitting” genus, “close to some of Takhtajan’s Hydrangeales”. There is a “support for a separate family, *Curtisiaceae*, or a close relationship with... *Grubbiaceae*” (Yembaturova & al., o.c.: 87).

MANCHESTER, S. R. & al. (2007). *Curtisia* (Cornales) from the Eocene of Europe and its phylogeographical significance. *Bot. J. Linn. Soc.* 155: 127-134 [map p. 128; fossil *C. quadrilocularis* in S England].

YEMBATUROVA, E. Yu. & al. (2009). A review of the genus *Curtisia* (Curtisiaceae). *Bothalia* 39: 87-96.

***Curtisia dentata*** (Burm. f.) C. A. Sm.; Coates Palgrave, Trees south. Afr., ed. 3: 858-859, 2002; L. & P. Loffler, Swaziland tree atlas: 66, 2005 (map). – Icon.: Engler, Pflanzenwelt Afr. 3/2: 834, 1921 (*C. faginea*); E. Schmidt & al., Trees & shrubs Mpumalanga...: 495, 2007; B. van Wyk & P. van Wyk, How to identify trees in south. Afr.: 111, 2007; Yembaturova & al., o.c.: 88, 93 (Burman’s plate 82, 1738).

bas.: *Sideroxylon dentatum* Burm. f.

syn.: *Curtisia faginea* Aiton

Shrub or tree, evergreen, 6-13-20 m tall; twigs densely covered with a rusty tomentum when young, becoming dark purplish brown and finally greyish and ± glabrous; leaves opposite, 2.5-10 × 3-7.5 cm, simple, ovate, margins ± regularly serrate, lower surface densely rusty tomentose when young; the branches and the terminal panicle with a dense yellowish-brown tomentum; flowers sessile or nearly so; fruit drupaceous, 5-7 × 3-5 mm, subglobose to ovoid, bitter.

Evergreen forest; montane forest; stream gullies; coastal scrub forest; 0-2300 m alt.

S. Africa, Swaziland (map in *Bothalia* 39: 95, 2009).

Wood very hard but elastic, reddish, fine-grained, used for tool handles, etc. Once heavily exploited; bark (also twigs and leaves) used for tanning. Important in traditional medicine. Coppicing rapid, which is important for the survival of the tree.

For fossil remains, see Manchester & al., o.c.

## ARALIACEAE / 3 g. / 37 spp.

According to Frodin & Govaerts (o.c.): 50 genera, 1412 species, with a cosmopolitan distribution: tropical and subtropical Asia, the Indian and Pacific Oceans, the Neotropics; several genera in N and S temperate zones. Many species are cultivated for ornament [e.g., *Aralia elata* (Miq.) Seem., *A. fragrans* (D. Don) Jebb & J. Wen, *Fatsia japonica* (Thunb.) Decne. & Planch., all from E Asia; *Hedera helix* L. from Europe through the Mediterranean to Iran, and the sterile hybrid × *Fatsia* × *Hedera*]; and others used for medicine (the E Asiatic *Panax ginseng* C. A. Mey., the American *P. quinquefolius*; roots used).

A few species in our area are incompletely known: one species (= >2%) with no flowers; 4 species (= c. 10%) without fruit; one species (= >2%) known only from the type.

## ARALIACEAE

FRODIN, D. G. & R. GOVAERTS (2003). *World checklist and bibliography of Araliaceae*. The Royal Botanic Gardens, Kew. IX + 444 pp.

LOWRY II, P. P. & al. (2003). Araliaceae in Africa and Madagascar: major taxonomic changes resulting from recent phylogenetic studies. *XVIIIth AETFAT Congress 21-26 September 2003 Abstracts*: 108-109. Addis Ababa University Press.

LOWRY II, P. P. & al. (2004). Generic relationships in Araliaceae: looking into the crystal ball. *S. African J. Bot.* 70: 382-392.

NURALIEV, M. S. & al. (2008). Variation in flower ground-plan in Araliaceae: Evolutionary implications. In: PIMENOV, M. G. & P. M. TILNEY, eds., *Apiales – 2008: The programme and proceedings of the 6<sup>th</sup> International Symposium on Apiales*: 90-93. Moscow.

NURALIEV, M. S. & al. (2010). Flowers of Araliaceae: structural diversity, developmental and evolutionary aspects. *Plant Div. Evol.* 128: 247-268.

OSTROUMOVA, T. A. & A. A. OSKOLSKI (2008). Leaf anatomy of Araliaceae: Importance of foliar characters in the systematics of the family. In: PIMENOV, M. G. & P. M. TILNEY, o.c.: 101-104.

PLUNKETT, G. M. & al. (2004). Intrafamilial classifications and characters in Araliaceae: Insights from the phylogenetic analysis of nuclear (ITS) and plastid (trnL-trnF) sequence data. *Pl. Syst. Evol.* 245: 1-39.

WEN, Jun & al. (2001). The evolution of Araliaceae: A phylogenetic analysis based on ITS sequences nuclear ribosomal DNA. *Syst. Bot.* 26: 144-167.

YI, Tingshuang & al. (2004). Chromosomal evolution in Araliaceae and close relatives. *Taxon* 53: 987-1005.

ZHURAVLEV, Yu. N. & A. S. KOLYADA (1996). *Ginseng and others*. Russian Academy of Sciences, Far East Branch, Vladivostok. 280 pp. [map, world distribution p. 15].

## (ARALIA)

*Aralia abyssinica* Hochst. ex A. Rich. = **Schefflera**

*farinosa* Del. = **Polyscias farinosa**

*guilfoylei* W. Bull = **P. guilfoylei**

## (ASTROPANAX)

*Astropanax abyssinicus* (Hochst. ex A. Rich.) Seem.

= **Schefflera**

*baikiei* Seem. = **S. barteri**

*barteri* Seem. = **S. barteri**

*elatus* (Hook. f.) Seem. = **S. abyssinica**

*mannii* (Hook. f.) Seem. = **S. mannii**

## (BOTRYOPANAX)

*Botryopanax fulvum* (Hiern) Hutch. = **Polyscias**

## (BRASSAIA)

*Brassaia mannii* (Hook. f.) Hutch. = **Schefflera mannii**

*volkensis* (Engl.) Hutch. = **S. volkensis**

## CUSSONIA / 14

syn.: *Sphaerodendron* Seem.

About 20 species in Africa, Madagascar, Comoro Isl., Arabian Peninsula (Yemen). Many have ornamental value.

Fruit unknown in one species (*C. brieiyi*).

DE VILLIERS, B. J. & al. (2007). The taxonomic significance of leaf anatomical characters in *Cussonia* (Araliaceae). *S. Afric. J. Bot.* 73: 285.

DE VILLIERS, B. J. & al. (2008). A taxonomic study of the genus *Cussonia* and related genera (Araliaceae). In: PIMENOV, M. G. & P. M. TILNEY, eds., *Apiales – 2008. The programme and proceedings of the 6th International Symposium on Apiales*: 33-37.

## CUSSONIA

**Cussonia angolensis** (Seem.) Hiern; Figueiredo & Smith, Pl. Angola: 40, 2008; idem, Succulent flora Angola in Haseltonia 15: 73, 2009. – Icon.: J. Bot. (London) 3: pl. 26 facing p. 34, 1865; Seemann, Revision of the natural order Hederaceae: pl. 1, 1868; Veld & Flora 89/4: 152, 2003.

bas.: *Sphaerodendron angolense* Seem.

Deciduous tree 4,5-12 m; trunk erect, 0,3-0,6 m Ø, spongy-corky, bare for 2/3 of the height, terminated by a globular head of branches and foliage; branches more than 2,5 cm thick below the inflorescence; leaves digitate, 6-9-foliolate; racemes 15-20, erect, crowded at the ends of the branches, 15-40 cm long; fruit ovoid, 4-5 × 3-5 mm.

Drier forests, especially on sandy soil; forest with *Brachystegia*; savannas; 300-2250 m alt.

Namibia (discovered in 2002, locally common on the Omavanda Plateau, Baynes Mts (see Veld & Flora, l.c.; Aloe 45/3: 58, 2008).

Flowering when leafless or nearly so.

**C. arborea** Hochst. ex A. Rich.; Wickens, Jebel Marra: 124, 281 (map), 1976; Jaeger & Adam, Végét. vascul. Mts Loma 1 (Boissiera 32): 298, 1980; Bois Forêts Trop. 191: 39, 1980 (map Centr. Afr. Rep.); Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 211-212, 1985; El Amin, Trees & shrubs Sudan: 346, 1990; Beentje, Kenya trees, shrubs & lianas: 438, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 847, 2002. – Icon.: Engler, Pflanzenw. Afr. 3/2: 782, 1921 (photo.); Fl. Cameroun 10: 25, 1970 (*C. djalensis*); Berhaut, Fl. ill. Sénégal 1: 460, 1971 (*C. barteri*); Adam, Fl. descr. Mts Nimba 2: 877, 1971 (idem); Fl. Afr. Centr., Araliaceae: 10, 1974 (leaf indumentum details); Keay, Trees Nigeria, ed. 2: 379, 1989; Akoegninou & al., Fl. analyt. Bénin: 355, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 83, 2009 (*C. djalensis*); Frodin & Govaerts, World checklist Araliaceae: 117, 2003; Puff & Sileshi Nemomissa, Pl. Simen: 119, 2005.

syn.: *C. hamata* Harms; *C. laciniata* Harms; *C. homblei* De Wild.; *C. delevoiyi* De Wild.; *C. nigerica* Hutch.; *C. longissima* Hutch. & Dalziel; *C. djalensis* A. Chev., incl. var. *camerounensis* Aubrév., nom nud.; *C. kirkii* Seem., incl. var. *bracteata* Tennant and var. *quadripetala* Tennant; *C. angolensis* sensu De Wild. & Staner, Contr. Fl. Katanga, Suppl. 4: 79, 1932, p.p., non (Seem.) Hiern; Enum. 2: 234, 1992.

Deciduous shrub or tree 2-12 m tall; bole crooked, to 1 m or more in girth; branching candelabra-like; crown low; branches few, thick, stumpy (when leafless resembling amputated, deformed limbs); bark thick, fissured, dark (reddish) grey; leaves simple (especially on suckers and young plants), digitately lobed or digitately compound with 5-11 sessile leaflets, these elliptic, 15-25 × 5-10 cm; petiole to 80 cm long, 8 mm Ø; margins ± entire to serrate; lamina densely hairy when young; flowering spikes 5-30 together, 10-50 cm long, flowers greenish; fruit ovoid, 4-5 × 3 mm, thinly fleshy, dark purple. – Woody dirty grey, soft, brittle.

Woodland, wooded grassland; rocks; on red acid clay, laterite; sometimes on termite mounds; forest gallery; tall grass savanna; rocky steep hillsides with *Combretum*, *Erythrina abyssinica* woodland; woodland with *Combretum molle*, *Stereospermum kunthianum*, *Erythrina abyssinica*, *Entada abyssinica*; *Combretum*, *Terminalia*, *Faurea* grassland; sometimes in villages; 200-2470 m alt.

## CUSSONIA

**C. arenicola** Strey; Coates Palgrave, Trees south. Afr., ed. 3: 848, 2002; Fl. Moçamb. 88, Araliaceae: 13-14, 1981.

Single-stemmed shrub, 1-2-3 m tall; stem 1-2 cm thick, arising from a globose, ovoid or turbinate tuber; basal tuber to 14 cm broad, to 25 cm long, often several spaced along a single root; leaves bi-digitately compound, glabrous; petiole to 25 cm long, 4-12-foliolate; leaflets 6-18 cm long, base tapering; flowers small, greenish in dense spike-like racemes, 5-23 in terminal umbels; fruit fleshy, mauve, barrel-shaped, 4 × 4 mm.

Coastal sand dunes; occasionally in open woodland on sandy soil.

S. Africa (5-300 m alt.). Map in Bothalia 11: 195, 1973.

**C. bancoensis** Aubrév. & Pellegr.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 1: 212-213, 1985; Irvine, Woody pl. Ghana: 574, 1961. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for: 700, 703, 2006.

Tree 20-40 m, little branched, low-branching; branches thick, bole to 0,6 m Ø, to 3 m in girth, straight or tortuous, base buttressed; bark thick, deeply fissured; leaves clustered at tips of branchlets, digitate, 7-10-foliolate, glabrous, shiny; juvenile leaves simple, 5-7-lobed, margins serrate, with tufts of white hairs at base of lateral nerves; stipules persistent, joined to base of petiole; petiole long, leaflets 8-29 × 2,5-6 cm; flowers with unpleasant smell attracting flies, in spikes to 40 cm long, clustered at ends of branches, axes c. 1 cm Ø, densely whitish pubescent; fruit probably known. – Wood very soft, light.

Rain-forest or drier forest; abundant on some moist rocky hills; also scattered in coastal forests; to 300 m alt.

Perhaps also in Cameroon (Letouzey 5586, 8013 = *Cussonia* sp. in Fl. Cameroun 10: 26, 1970) and Nigeria (Onochie & Keay FMI 19658) but specimens sterile.

**C. brieyi** De Wild.; Figueiredo & Smith, Pl. Angola: 40, 2008; idem, Succulent flora Angola in Haseltonia 15: 73, 2009; Fl. Afr. Centr., Araliaceae: 14, 1974.

Tree to 20 m; bark greyish brown, deeply fissured; leaves digitate, clustered at ends of branches; petiole to > 55 cm long, glabrous, channelled; leaflets 7-9, ± sessile, glabrous, 9-25 × 3-8 cm; flowers spaced along the pubescent axes of racemes to 25 cm long, clustered in large numbers at ends of branches; fruit unknown.

Heliophilous plant in disturbed rain-forest.

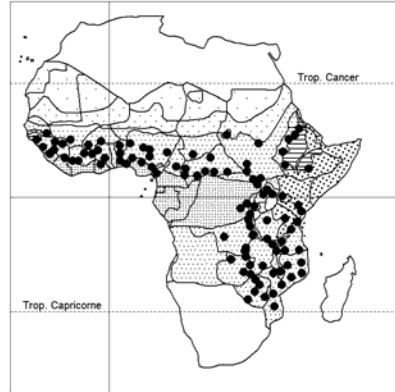
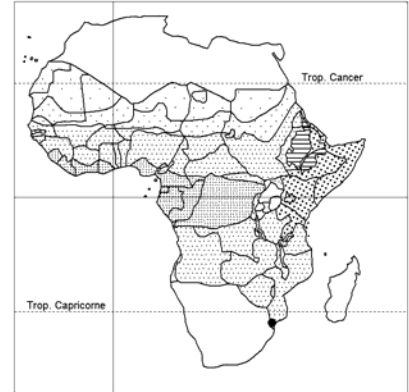
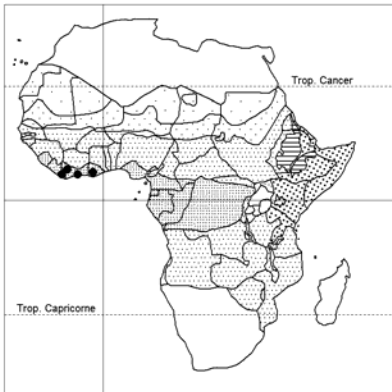
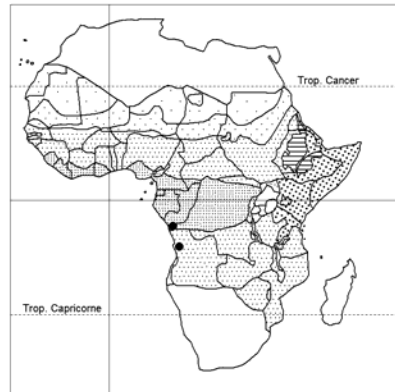
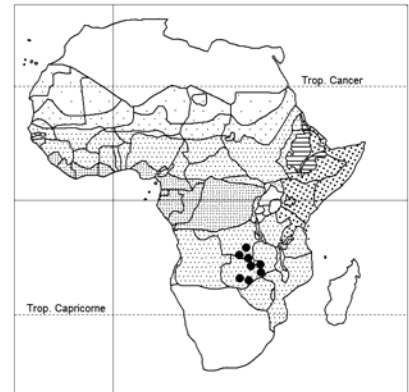
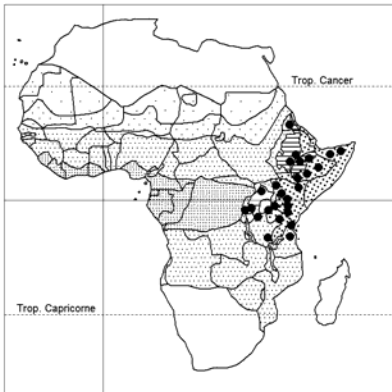
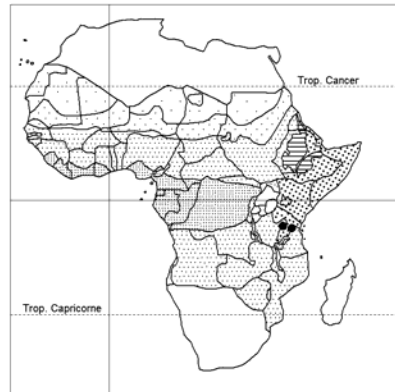
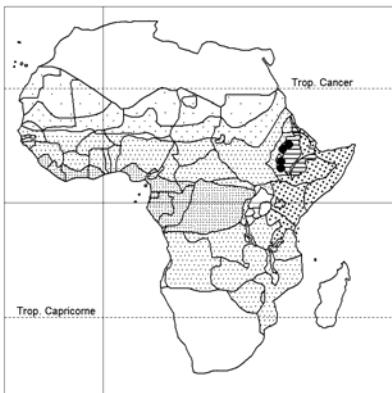
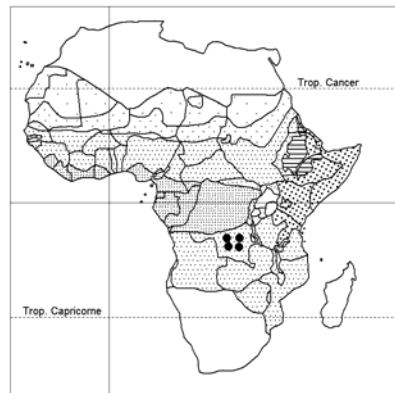
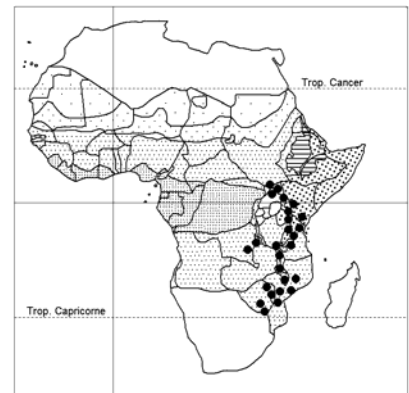
**C. corbisieri** De Wild.; Distrib. Pl. African. 8: map 215, 1974. – Icon.: Fl. Afr. Centr., Araliaceae: 10 (leaf details), 13, 1974.

syn.: *C. quarrei* De Wild.

Erect geoxylic suffrutex to 1 m tall, with a thick turnip-like rhizomatous rootstock; leaves and inflorescences arising from the latter; leaves deeply palmate; petiole to 55 cm long, furrowed, pubescent; lamina 50 × 50 cm, pubescent and scabrous on both surfaces, lobes 5-7, ovate; spikes 2-4 together, to 70 cm long and more, axes pubescent; fruit ovoid 5-8 × 4-6 mm, glabrous, slightly ribbed.

Open woodland; savannas; wooded grassland; grazed meadows; gravelly, rocky or lateritic soils; 700-2000 m alt.



**Cussonia angolensis****Cussonia arborea****Cussonia arenicola****Cussonia bancoensis****Cussonia brieyi****Cussonia corbisieri****Cussonia holstii****Cussonia jatrophoides****Cussonia natalensis****Cussonia ostinii****Cussonia sessilis****Cussonia spicata**

## CUSSONIA

**C. holstii** Harms ex Engl., incl. var. *tomentosa* Tennant and its fa. *integrifoliola* Tennant; Friis, Forest trees N. E. trop. Afr.: 208-209, 324 (map), 1992; Beentje, Kenya trees, shrubs & lianas: 438-439, 1994; Lovett & al., Field guide moist for. trees Tanzania: 32, 2006. – Icon.: Engler, Pflanzenw. Afr. 3/2: 783, 1921 (*C. microstachys*); Robyns, Fl. Spermat. Parc Natl. Albert 1: 693, 1948 (photo.); Thulin, Fl. Somalia 2: 268, 1999; Frodin & Govaerts, World checklist Araliaceae: 119, 2003.

syn.: *C. bequaertii* De Wild.; *C. microstachys* Harms

Tree 3-20-25 m; bole straight, sometimes > 1 m Ø and 10 m or more tall; bark rather fissured, shed in oblong papery scales; leaves digitately compound; petiole to 41,5 cm long, ± glabrous; lamina to ± 18 × 36 cm; leaflets 3-7, ovate, to 18,5 × 9 cm, glabrous or puberulous; juvenile leaves simple; spikes 15-30 together, to 12-25 cm long, dense or ± lax; fruit ± round, 4-6 mm long, glabrous or puberulous, whitish or yellow, sometimes galled, enlarged.

Granite rocks; sometimes frequent locally on rock-outcrops with *Brachystegia microphylla*; dry evergreen forest (edges); grouped-tree grassland; semi-evergreen bushland with *Buxus*, *Juniperus*; on lava; termite mounds; forest gallery; sclerophyllous communities; 1050-2600 m alt.

Variable in shape of leaves.

**C. jatrophoides** Hutch. & E. A. Bruce; Distrib. Pl. African. 8: map 217, 1974. – Icon.: Fl. Trop. E. Afr., Araliaceae: 10, 1968 (partial).

Straggling shrub or sometimes small spreading tree; leaves closely spirally arranged at ends of branches, or with internodes to 4 cm long; lamina simple, palmatisect to the middle or beyond; petiole ± 8 cm long, lamina 8 × 13 cm; lobes 3-5, to 4,5 cm long and wide, glabrous or slightly hairy above; spikes to 6 together, to 20 cm long, very lax, bearing few well-spaced flowers; fruit to 7 mm long, glabrous.

Thicketed hill slopes in lower presumably *Julbernardia* zone; 1070-1360 (? 1450) m alt.

**C. natalensis** Sond.; Coates Palgrave, Trees south. Afr., ed. 3: 848-849, 2002. – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga...: 486-487, 2002.

Thicket, deciduous tree 2-10 m tall; crown round; foliage light green turning yellow in autumn; bark dark grey or brown, deeply rectangularly fissured, corky; leaves palmate or deeply 3-5-lobed; petiole 18-30 cm long; lamina 7-14 × 7-22 cm, hairless, shiny, lobes lanceolate, 1-4 cm wide, midrib conspicuous, margins regularly serrate to subentire; spikes cylindrical, to 15 × 1,5 cm, in groups radiating from the end of a branch; fruits ± round, fleshy, purple, c. 6 mm Ø, crowded along the spikes.

Wooded grassland, rocky hills and hillsides.

NE S. Africa, Swaziland (100-1640 m alt.).

Easily cultivated; decorative.

**C. ostinii** Chiov.

Tree to 7 m; bark corky; leaves palmately lobed, peltate, to 35 × 35 cm; lobes 7, glabrous, margins crenulate to serrate, apex caudate-acuminate; racemes several, to 60 cm long; fruit ovoid, to 6 × 4 mm.

Savanna; 1500-2100 m alt.

## CUSSONIA

**C. sessilis** Lebrun; Distrib. Pl. African. 8: map 221, 1974.

syn.: *C. angolensis* sensu De Wild. & Staner, Contr. Fl. Katanga, Suppl. 4: 79, 1932, p.p., non (Seem.) Hiern (cf. above under *C. arborea*).

Tree to 6-7 m; leaves palmate; petiole 25-50 cm long; leaflets 3-7; lamina obovate, base attenuate, apex caudate-acuminate, 10-30 × 5-15 cm, irregularly crenate, glabrous, nervation prominent beneath; racemes 6-25 together at ends of branches, to 60 cm long; flowers spaced; fruit ovoid, 5-7 × 3-5 mm, glabrous.

Savannas; open forests; rather widely distributed in clayey, slightly humid places; 600-1100 m alt.

**C. spicata** Thunb.; El Amin, Trees & shrubs Sudan: 346, 1990; Coates Palgrave, Trees south. Afr., ed. 3: 850-851, 2002. – Icon.: Thunberg in Nova Acta Regiae Soc. Sci. Upsal. 3: pl. 13, 1780; Engler, Pflanzenw. Afr. 3/2: 783, 1921; Fl. Afr. Centr., Araliaceae: 7, 1974; Fl. Zambes. 4: 631, 1978; Fl. Moçambique 88, Araliaceae: 12, 1981; Beentje, Kenya trees, shrubs & lianas: 439, 1994; White & al., Evergreen for. fl. Malawi: 153, (24, map), 2001; E. Schmidt & al., Trees & shrubs Mpumalanga...: 486-487, 2002; Lovett & al., Field guide moist for. trees Tanzania: 32, 2006; Frodin & Govaerts, World checklist Araliaceae: 120, 2003; Latham, Plants visited by bees...Umalila, S Tanzania, ed. 3: 61, 2007; Grant & Thomas, Sappi tree spotting bushveld: 96-97, 2000.

syn.: *C. kraussii* Hochst.; *C. calophylla* Miq.; *C. boivinii* Drake; *C. triptera* Colla; *C. quercifolia* hort. ex Colla

Thicket tree 3-17 m, often with an unbranched thick trunk but sometimes with sparse branches; crown rounded, much branched; bark grey, corky, fissured; leaves usually bi-digitate, crowded at ends of branches, palmate, to 70 cm Ø, shiny, dark to bluish green; petiole 60-100 cm long; leaflets 5-12, ± divided into 2 parts, lanceolate, deeply lobed, with lateral pinnules adding to the pattern given by the winged rachillae, 7-15-2-4 cm, glabrous, margins dentate; spikes closely packed, 5-15 × 1,5-4 cm, forming a candelabra-like head; fruit ± angular, purple, 10-15 × 4-7 mm.

Forest with *Podocarpus latifolius*; dry upland forest edges; riverine forest; open woodland, (wooded) grassland; wet upland forest; forest margins; 1100-2500 m alt.

S. Africa, Swaziland (5-1800 m alt.); Comoro Isl.

Easily grown from seed. Important honey source. The large succulent roots are eaten in times of need.

**C. zimmermannii** Harms; Beentje, Kenya trees, shrubs & lianas: 439, 1994; Thulin, Fl. Somal. 2: 267, 1999. – Icon.: Fl. Trop. E. Afr., Araliaceae: 10, 1968; Lovett & al., Field guide moist for. trees Tanzania: 32, 2006.

Tree 6-25(-30) m; bark greenish-grey, fissured; leaves digitately compound; petiole to 20-53 cm long, 5 mm Ø; leaflets 5-9, *sessile*, lanceolate to narrowly ovate, to 25 × 8 cm, glabrous above, glabrous to slightly puberulous beneath; spikes terminal, to ± 12 together, to 35 cm long; fruit subglobose, to 6 mm long, greenish white.

Semi-evergreen woodland on granitic outcrop; rain-forest?; (dry) evergreen forest; woodland; evergreen coastal bushland; forest edge; 1-400 m alt.

Not in Zanzibar; but collection (Kirk) probably from the "Zanzibar Coast" on the mainland.

Medicinal plant (cf. J. Nat. Prod. 70: 1565-1569, 2007).

## CUSSONIA

**C. zuluensis** Strey; Coates Palgrave, Trees south. Afr., ed; 3: 851-852, 2002.

Tree with several stems, to 2-4-10 m tall; trunk 2-5 cm thick, rarely branched; bark smooth, flaking, grey-green; roots tuberous, with fleshy fusiform swellings; leaves similar to those of *C. spicata*; petiole 20-30 cm long, 2-4 mm thick, ribbed, glabrous; leaflets 5-8, to 15 × 7 cm with petiolules to 35 mm long; lobes very variable in outline, with decurrent deltate wings; margins remotely and irregularly serrate, slightly undulate; racemes pendunculate, densely-flowered, to 25 cm long, in terminal umbels; fruit goblet-shaped, fleshy, pale purplish, glabrous, ± 6 mm long.

Dry coastal scrub; open forest; sandy soils; often in river valleys.

S. Africa, Swaziland (10-1000 m alt.).

## SYNONYMS:

*Cussonia angolensis* sensu De Wild. & Staner, p.p., non (Seem.)

Hiern = **Cussonia arborea**, **C. sessilis**

*barteri* Seem. = **C. arborea**

*bequaertii* De Wild. = **C. holstii**

*boivinii* Drake = **C. spicata**

*boranensis* Cufod. = **C. holstii**

*buchananii* Harms = **Schefflera umbellifera**

*calophylla* Miq. = **Cussonia spicata**

*chartacea* Schinz = **Schefflera umbellifera**

*delevoyi* De Wild. = **Cussonia arborea**

*djalonensis* A. Chev., incl. var. *camerounensis* Aubrév.  
= **C. arborea**

*hamata* Harms = **C. arborea**

*homblei* De Wild. = **C. arborea**

*kirkii* Seem., incl. var. *bracteata* Tennant and var.  
*quadripetala* Tennant = **C. arborea**

*kraussii* Hochst. = **C. spicata**

*laciniata* Harms = **C. arborea**

*longissima* Hutch. & Dalziel = **C. arborea**

*lukwangulensis* Tennant = **Schefflera**

*microstachys* Harms = **Cussonia holstii**

*myriantha* Bak. = **Schefflera**

*nigerica* Hutch. = **Cussonia arborea**

*quarrei* De Wild. = **C. corbicieri**

*quercifolia* hort. ex Colla = **C. spicata**

*tisserantii* = **C. arborea**

*triptera* Colla = **C. spicata**

*umbellifera* Sond., incl. var. *buchananii* (Harms) Tennant  
= **Schefflera**

## (GASTONIA)

*Gastonia stuhlmannii* (Harms) Harms = **Polyscias**

## [HEDERA]

ACKERFIELD, J. & JUN WEN (2003). Evolution of *Hedera* (the ivy genus, Araliaceae): insights from chloroplast DNA data. *Int. J. Pl. Sci.* 164: 593-602.

## HEDERA

[**Hedera helix** L.] – Icon.: Fl. Eth. 3: 542, 1989.

Woody creeping or climbing (adventitious roots) plant; leaves shining, dark green, dimorphic; flowering shoots erect, with elliptical entire leaves; vegetative shoots with palmately lobed leaves; flowers in round umbels, solitary or in racemose panicles; berry black or yellow.

Introduced into Ethiopia as an ornamental, often in towns; grown in gardens, etc.; c. 2300 m alt.

Native of Europe.

## (HEPTAPLEURUM)

*Heptapleurum abyssinicum* (A. Rich.) Benth. ex Vatke  
= **Schefflera**

*baikiei* (Seem.) Hiern = **S. barteri**

*barteri* (Seem.) Hiern = **S. barteri**

*dananensis* A. Chev. = **S. barteri**

*elatum* (Hook. f.) Hiern = **S. abyssinica**

*mannii* (Hook. f.) Benth. = **S. mannii**

*scandens* Hiern = **S. hierniana**

*volkensii* Engl. = **S. volkensii**

## HYDROCOTYLE – See APIACEAE

## (NEOCUSSONIA)

*Neocussonia buchananii* (Harms) Hutch.

= **Schefflera umbellifera**

*myriantha* (Baker) Hutch. = **S. myriantha**

*umbellifera* (Sond.) Hutch. = **S. umbellifera**

## (PANAX)

*Panax ferrugineum* Hiern = **Polyscias fulva**

*fulvum* Hiern = **Po. fulva**

*guilfoylei* (W. Bull) Cogn. & Marchal = **Po. guilfoylei**

*nigericum* A. Chev. = **Po. fulva**

*pinnatum* A. Rich. = **Po. farinosa**

## (PARATROPIA)

*Paratropia elata* Hook. f. = **Schefflera abyssinica**

*mannii* Hook. f. = **S. mannii**

## POLYSCIAS / 9

Paleotropic genus of 159 species; most diverse in Madagascar (c. 50 endemic species).

A few species are cultivated in tropical areas: e.g. *P. guilfoylei* (W. Bull) L. H. Bailey, *P. scutellaria* (Burm. f.) Fosberg, incl. cultivars.

Trees with pinnate leaves; inflorescences paniculate. Sapling leaflets can be very much larger than those of mature trees.

In our area flowers are unknown in one species and fruits in two species. One species is known only from the type.

EIBL, J. M. & al. (2001). Evolution of *Polyscias* sect. *Tieghemopanax* (Araliaceae) based on nuclear and chloroplast DNA sequence data. *Adansonia, Sér.* 3, 23: 23-48.

LOWRY II, P. P. & G. M. PLUNKETT (2010). Recircumscription of *Polyscias* (Araliaceae) to include six related genera, with a new infrageneric classification and a synopsis of species. *Plant Div. Evol.* 128: 55-84.



## POLYSCIAS

PLUNKETT, G. M. & P. P. LOWRY II (2010). Paraphyly and polyphyly in *Polyscias* sensu lato: molecular evidence and the case for recircumscribing the "pinnate" genera of Araliaceae. *Plant Div. Evol.* 128: 23-54.

PLUNKETT, G. M. & al. (2001). The phylogenetic status of *Polyscias* (Araliaceae) based on nuclear ITS sequence data. *Ann. Missouri Bot. Gard.* 88: 213-230.

PLUNKETT, G. M. & al. (2004). Phylogenetic relationships among *Polyscias* (Araliaceae) and close relatives from the western Indian Ocean basin. *Int. J. Pl. Sci.* 165: 861-873.

***Polyscias aequatoguineensis*** Lejoly & Lisowski; Sosef & al., Check-list pl. vascul. Gabon: 79, 2006.

Shrub or tree to 3 m tall; young twigs subcylindrical, with scattered whitish stellate indumentum; leaves alternate, compound-imparipinnate, with petiole 3-7 cm long, 11-15-foliolate; leaflets 5-7 × 2,5-3 cm, *cuneate at base*; rhachis constricted with tufts of stellate hairs at the insertion of leaflets; inflorescences in narrow panicles 1,5-2 cm long, branches short, each ending in a 2-5-flowered *umbel*, axes with whitish stellate indumentum; fruit ellipsoid, 8-9 × 4,5 mm, slightly compressed, ribbed, glabrous, black when dry.

Wooded fringes at margins of inselbergs; 620-758 m alt.

***P. albersiana*** Harms (excl. specim. Richards 7413 B in Fl. Trop. E. Afr., Araliaceae: 15, 1968 = *P. richardsiae*); Lovett & al., Field guide moist for. trees Tanzania: 33, 35, 2006.

syn.: *P. albersii* Harms (in Engler, sphalm.); *Sciadopanax albersiana* (Harms) R. Viguier

Tree to 20 m; crown flattish; bole straight, regularly branched; bark grey; leaves imparipinnate, to 60 cm long (> 1,2 m on sapling branches); leaflets in 7-11 pairs, lanceolate to broadly elliptic, frequently ± oblique, to 13 × 5,5 cm (sometimes nearly twice as large on saplings), acuminate, entire to shallowly undulate, stellate-pubescent beneath, sparsely so above when young; inflorescence branched, axes glabrous, to 30 cm long, 3 mm Ø; peduncle of umbellules 1,5-2 cm long; flower pedicels 3-6 mm long; fruit flattened-ovoid to ellipsoid, to 7 mm long, ribbed, glabrous.

Rain-forest; 1000-2000 m alt.

Type (Albers 317) destroyed; so also Naepfel 2968.

***P. farinosa*** (Delile) Harms; Friis in Friis & Ryding, eds., Biodiversity research in the Horn of Africa region (Biol. Skr. 54): 49-54, 2001. – Icon.: Puff & Sileshi Nemomissa, Pl. Simen: 121, 2005.

bas.: *Aralia farinosa* Del.

syn.: *Panax pinnatum* A. Rich. – See note below.

Tree ± 7 m tall, leafless at flowering time; bark exuding some resin; leaves > 40 cm long; leaflets in several pairs, ovate, 8-15 × 2,5-5 cm, glabrous or glabrescent beneath, somewhat asymmetric at base, apex acute; racemes of umbels to 25 cm long, axes whitish tomentose; fruit unknown.

Open woodland, on slopes near streamside; 1700-2000 m alt.

Note: The binomial *Polyscias lepidota* Chiov. (1940) is not a synonym of *P. farinosa* as quoted by Bamps (Bull. Jard. Bot. Natl. Belg. 44: 121, 1974). The type material consisting of a rhachis and nine detached leaflets, has been identified by Friis (l.c.) as *Ekebergia capensis* Sparrm. (*Meliaceae*).

## POLYSCIAS

***P. fulva*** (Hiern) Harms; Cable & Cheek, Pl. Mt Cameroon: 18, 1998; Y. Harvey & al., Pl. Bali Ngemba: 85, 2004; Wickens, *Jebel Marra*: 124, 282 (map), 1976; El Amin, *Trees & shrubs Sudan*: 347, 1990; Friis, *Forest trees N. E. trop. Afr.*: 209-210, 325 (map), 1992; Coates Palgrave, *Trees south. Afr.*, ed. 3: 845-846, 2002; Figueiredo & Smith, *Pl. Angola*: 40, 2008. – Icon.: Engler, *Pflanzenwelt Afr.* 3/2: 781, 1921 (*P. polybotria*); Fl. Cameroun 10: 13, 1970; Fl. Moçamb. 88, Araliaceae: 7, 1981; Beentje, *Kenya trees, shrubs & lianas*: 440, 1994; White & al., *Evergreen for. fl. Malawi*: 155, 33 (map), 2001; Hawthorne & Jongkind, *Woody pl. west. Afr. for.*: 703, 2006; Lovett & al., *Field guide moist for. trees Tanzania*: 34, 2006; Akoegninou & al., *Fl. analyt. Bénin*: 357, 2006; Latham, *Plants visited by bees...* Umalila, south. Tanzania, ed. 3: 155, 2007; Fischer & Killmann, *Ill. field guide pl. Nyungwe Natl. Park Rwanda*: 285, 2008; Lisowski, *Fl. (angiosp.) Rép. Guinée* 2: fig. 84, 2009.

bas.: *Panax fulvum* (fulvus) Hiern

syn.: *Panax ferrugineum* (ferrugineus) Hiern; *Polyscias preussii* Harms; *P. elliotii* Harms; *P. polybotrya* Harms; *P. malosana* Harms; *Sciadopanax ferruginea* (ferrugineus) (Harms) R. Viguier; *S. fulva* (fulvus) (Hiern) R. Viguier; *S. preussii* (Harms) R. Viguier; *S. elliotii* (Harms) R. Viguier; *S. polybotrya* (Harms) R. Viguier; *S. malosana* (malosanus) (Harms) R. Viguier; *Panax nigericum* (nigericus) A. Chev.

Tree, 6-30-35 m, often with a large grey extremely straight unbranched cylindrical bole to 7-15 m tall, 0,3-1 m Ø, generally dividing into a small number of main branches which themselves each branch in a similar manner; young branchlets thick, to 1,5 cm Ø; crown flat, umbrella-like; leaves to 80 cm long, generally imparipinnate, rarely paripinnate, clustered at ends of long looping branches; leaflets in 3-12 pairs, lanceolate to very broadly ovate, to 14-17 × 5,5-7,5 cm, entire, densely stellate-tomentose when young; inflorescence branches of three orders, racemosely borne, pubescent to tomentose; primaries to 70 cm long, 3-6,5 mm Ø; secondary ones to 3-12 × 0,7-2 mm Ø; tertiary ones 4 mm; drupe (ob)ovoid, or ellipsoid, 3,5-6 mm long, ± ribbed and markedly flattened, glabrous or very sparsely stellate-hairy. Whole plant resinous-aromatic.

Rain-forest; riverine forest; grassland; *Parinari excelsa* forest; *Aframomum* thicket; secondary formations; wet upland and swamp forest; *Acacia abyssinica* woodland; *Albizia*, *Croton*, *Macaranga* forest; mixed *Podocarpus* forest, often in clearings and regrowth; forest edges; 750-2500 m alt.

Variable in shape of leaflets (base cordate or non-cordate).

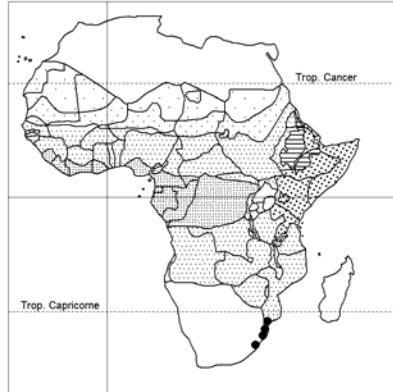
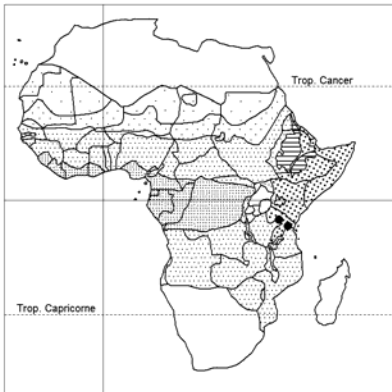
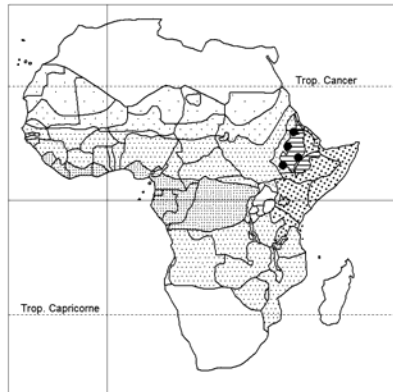
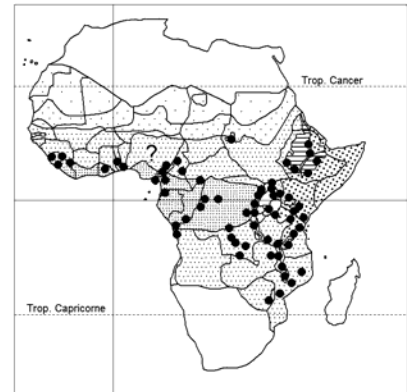
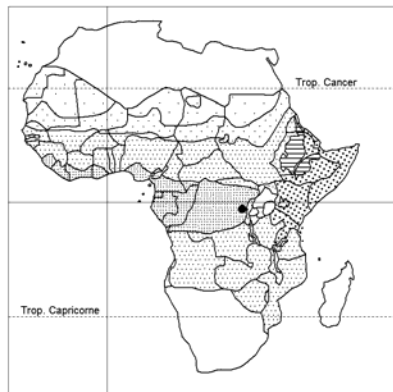
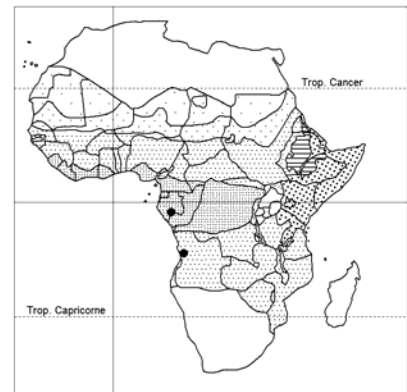
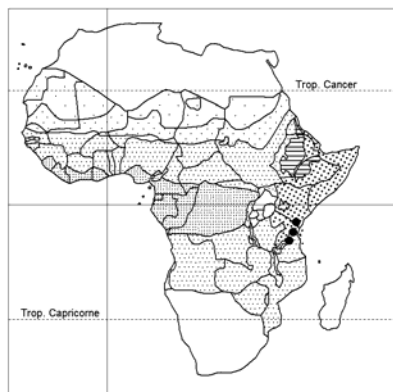
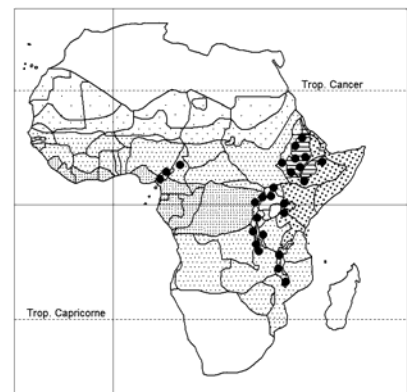
Bioko/Fernando Poo. – Uncertain in N Nigeria.

Fast growing pioneer tree, important in agroforestry; also ornamental. Most commonly grown from wild seedlings (Latham, l.c.). Is becoming rare in nature due to over exploitation.

[***P. guilfoylei*** (W. Bull) L. H. Bailey, incl. var. *laciniata* (B. S. Williams ex W. Richards) L. H. Bailey, var. *victoriae* (W. Bull) L. H. Bailey, and other cultivars]; Akoegninou & al., *Fl. analyt. Bénin*: 357, 2006; Lisowski, *Fl. (angiosp.) Rép. Guinée* 1: 65, 2009; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2,1: 213, 1985. – Icon.: Staples & Herbst, *A tropical garden flora*: 135, 2005.

bas.: *Aralia guilfoylei* W. Bull

syn.: *Panax guilfoylei* (W. Bull) Cogn. & Marchal, etc. (see Frodin & Govaerts, *Araliaceae*: 291, 2003); misapplied: *Polyscias paniculata* hort., non (DC.) J. G. Baker (Mascarene Isl.).

***Cussonia zimmermannii******Cussonia zuluensis******Polyscias aequatoguineensis******Polyscias albersiana******Polyscias farinosa******Polyscias fulva******Polyscias kikuyuensis******Polyscias kivuensis******Polyscias letestui******Polyscias richardsiae******Polyscias stuhlmannii******Schefflera abyssinica***

## POLYSCIAS GUILFOYLEI

An easily recognized and well defined *Polyscias*. Column-shaped shrub 1-2-5 m tall; young branchlets with whitish spots; leaves imparipinnate, 15-15 cm long; leaflets 5-9, variable, elliptic-oblong, 6-10 cm long, shiny dark green above, often whitish-spotted or -bordered, with stellate hairs beneath, margins toothed (and crisped); base of leaf petiole enlarged, like a sheath; inflorescence a compound terminal panicle of small umbels; fruit (rare) fleshy, round.

Cultivated as an ornamental, solitary or as hedge.

“A cultigen that may have originated in eastern Malesia”; at first widely grown in the SW Pacific. Probably introduced to cultivation by W. R. Guilfoyle in Australia in 1868 (Staples & Herbst l.c.).

Leaves smelling like parsley (used for flavour).

**P. kikuyuensis** Summerh.; Beentje, Kenya trees, shrubs & lianas: 440, 1994; Lejoly & Lisowski in Bull. Jard. Bot. Natl. Belg. 67: 114, 1999 (in key).

Tree 15-25 m, often with an unbranched bole to 12 m tall, 1,2-1,4 m Ø, branching candelabra-like; bark grey, smooth; leafy branches ca. 1,5 cm Ø; leaves to 55 cm long, imparipinnate, less frequently paripinnate; leaflets in 3-6 pairs, lanceolate to very occasionally rounded, 8-14 × 4-6 cm (larger in saplings), densely ferruginous stellate-tomentose when young; inflorescence branches puberulous to tomentose; primaries to 40 cm long, 2,5-4 mm Ø; secondary ones to 2,7 cm long, 0,8-1,2 mm Ø, both orders racemosely borne; tertiaries 2-9 mm long, 0,5-0,8 mm Ø; fruit flattened-ovoid to round, 4-7,5 mm long, black, ribbed, with stellate hairs.

Rain-forest; often in valleys; 1750-2750 m alt.

**P. kivuensis** Bamps

Tree to 30 m; bole 35 cm Ø; crown umbrella-like; leaves to 65 cm long; petiole to 22 cm long, glabrous to sparsely stellate-pubescent; rachis constricted; leaflets (ob)ovate-oblong, base rounded to cordate, often asymmetric, apex acuminate to cuspidate, 10-16 × 3,6-5 cm, main nerves sparsely stellate-pubescent beneath; panicle axillary, to 40 cm long; axes sparsely stellate-pubescent; secondary axes to 6 cm long; fruit ovoid, compressed, ribbed, 3-4 × 2,5-3 mm, glabrous.

Rain-forests; secondary forests; regrowth; 800-1800 m alt.

**P. lestestui** C. Norman; Sosef & al., Check-list pl. vascul. Gabon: 79, 2006; Figueiredo & Smith, Pl. Angola: 40, 2008.

Tree 7-8 m; leaves ± 60 cm long, pinnate; leaflets in 6 pairs, opposite, 18 × 9 cm, ovate to oblong, base rounded to subcordate, glabrous above, stellate brown tomentose beneath; inflorescence multi-ramose, axes stellate-tomentose, umbellules ± 1 cm long, pedunculate; flowers unknown; fruit sessile, ovoid, ribbed, glabrous.

Clearings in rain-forest (fide Bamps).

Two collections known from Gabon, (Le Testu 8027, 8814) made in 1930 and 1931, respectively, and one from Angola (Murta 375).

Near *P. albersiana* and *P. kikuyuensis* but flower and fruit sessile, and in *P. kikuyuensis* the fruit is rather densely tomentose.

**P. richardsiae** Bamps

syn.: *P. albersiana* sensu Fl. Trop. E. Afr., Aral.: 15, 1968, quoad specim. Richards 7413 B.

Tree 6 m; leaves imparipinnate; petiole 10-12 cm long, glabrous to glabrescent; leaflets 15-19, sessile, ovate, to 10 × 5,5 cm, base rounded to subcordate, apex acuminate, sparsely stellate-

## POLYSCIAS RICHARDSIAE

pubescent above, densely stellate-tomentose beneath; raceme of umbellules to 30 cm long, peduncle 3-5 cm long; fruit unknown.

Among rocks overhanging waterfalls; 1500 m alt.

Only known from the type collected in 1956.

Near *P. albersiana* but leaflets sessile, sparsely pubescent above, densely tomentose beneath; umbellules with peduncle 3-5 cm (not 1,5-2 cm) long; flower pedicels 8-14 mm (not 3-6 mm) long.

**P. stuhlmannii** Harms, incl. var. *inarticulata* Tennant; Beentje, Kenya trees, shrubs & lianas: 440, 1994; Lejoly & Lisowski in Bull. Jard. Bot. Natl. Belg. 67: 114, 199 (in key); Lovett & al., Field guide moist for. trees Tanzania: 34-35, 2006. – Icon.: Fl. Trop. E. Afr., Araliaceae: 13, 1968.

Shrub or tree, evergreen, 2-20 m tall (sometimes a large spreading shrub); bark grey or whitish; crown large, spreading; leaves to 40-60 cm long, almost always imparipinnate; leaflets in 4-5 pairs, narrowly ovate to obovate, to 12 × 5,5 cm, base broadly cuneate to attenuate, apex obtuse to acute; inflorescence paniculate, branches glabrous; pedicels umbellate, other orders of branching may be umbellate or racemose (occasionally flowers borne singly); fruit urceolate, 7-9 mm long, terete, glabrous, deeply 5-sulcate when mature, with 5 styles.

Rain- and mist-forest; 1450-2300 m alt.

Not considered a distinct species by Lowry & Plunkett, 2010.

\* \* \*

**P. quintasii** Exell occurs in São Tomé, Príncipe.

## SYNONYMS:

*Polyscias albersiana* sensu F.T.E.A., Aral., p.p.

= **Polyscias richardsiae**

*albersii* “Harms”, sphalm. in Engler = **P. albersiana**

*elliottii* Harms = **P. fulva**

*lepidota* Chiov. = **Ekebergia capensis** Sparrm. (*Meliaceae*)

*malosana* Harms = **Polyscias fulva**

*paniculata* hort., non (DC.) J. G. Baker = **P. guilfoylei**

*polybotrya* Harms = **P. fulva**

*preussii* Harms = **P. fulva**

## SCHEFFLERA / 14

Pantropical (and subtropical). About 600 species (or many more as probably many species remain undescribed), perhaps 900 species in all. The largest genus in the family. “The genus *Schefflera* presents one of the greatest challenges to the systematics of Araliaceae” (Plunkett & Lowry, in Apiales – 2008: 112, 2008).

Recognized by its palmately compound leaves (sometimes reduced to 3- or 1-foliolate); pedicel not articulate.

In our area for one species no fruit is recorded (*S. lukwangulensis*).

FRODIN, D. G. & al. (2010). Schefflera (Araliaceae): taxonomic history, overview and progress. *Plant Div. Evol.* 128: 561-595.

GOSTEL, M. R. & al. (2010). Evolutionary relationships in African-Malagasy Schefflera: exploring phylogenetic and biographic connections. *Scripta Bot. Belg.* 46 (AETFAT XIX Madagascar, 2010): 195.

KONSTANTINOVA, A. I. (2008). Fruit structure of Schefflera: A contribution of comparative carpology to the system of the largest genus of Araliaceae. In: PIMENOV, M. G. & P. M. TILNEY, eds., *Apiales – 2008: The programme and proceedings of the 6<sup>th</sup> International Symposium on Apiales*: 54-58. Moscow.



## SCHEFFLERA

LOWRY II, P. P. & al. (2004). See above under the family (p. 233).

PLUNKETT, G. M. & P. P. LOWRY II (2010). Paraphyly, polyphyly and multiple dispersal in Afro-Malagasy Polyscias (Araliaceae). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 357.

PLUNKETT, G. M. & al. (2005). Phylogeny and geography of Schefflera: Pervasive polyphyly in the largest genus of Araliaceae. *Ann. Missouri Bot. Gard.* 92: 202-224.

**Schefflera abyssinica** (Hochst. ex A. Rich.) Harms; El Amin, Trees & shrubs Sudan: 347, 1990; Friis, Forest trees N.E. Trop. Afr.: 210, 325 (map), 1992; Lovett & al., Field guide moist for. trees Tanzania: 35, 2006. – Icon.: Fl. Ethiopia 3: 540, 1989; Beentje, Kenya trees, shrubs & lianas: 441, 1994; White & al., Evergreen for. fl. Malawi: 157, 33 (map), 2001; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 287, 2008; Fl. Cameroun 10: 17, 1970; Puff & Sileshi Nemomissa, Pl. Simen: 121, 2005.

bas.: *Aralia abyssinica* Hochst. ex A. Rich.

syn.: *Sciodaphyllum abyssinicum* Steud., 1841, nom. nud.; *Sciodaphyllum* (written *Sciadophyllum* after 1828) *abyssinicum* (Hochst. ex A. Rich.) Seem.; *Astropanax abyssinicus* (Hochst. ex A. Rich.) Seem.; *A. elatus* (Hook. f.) Seem.; *Heptapleurum abyssinicum* (A. Rich.) Benth. ex Vatke; *H. elatum* (Hook. f.) Hiern, nom. nud.; *Paratropia elata* Hook. f.; *Schefflera acutifoliolata* De Wild.; *S. hookeriana* Harms

Self-supporting tree to 12 m (at forest edges) or strangling epiphyte 10-25-30 m high; bark rough, fissured or smooth, grey-brown to grey-black, ± corky; crown spreading; leaf petiole 12-38-42 cm long, 5-6 cm Ø, glabrous or hairy-puberulous; leaflets 5-7, elliptic-ovate-oblongate, 9-27-40 × 5-15-20 cm, with conspicuous regularly spaced lateral nerves branching only near the margin; flowers yellow, sweetly scented; umbel or raceme of c. 12 racemes of pedunculate umbellules; primary branches to 41 cm long; drupe vinaceous, urceolate to ± round c. 5 mm Ø, sulcate, glabrous or puberulous.

*Rapanea*, *Hagenia* forest; secondary forest; forest-grassland transition; forest gallery; ravines; near streams in *Albizia*, *Croton-Macaranga* forest; isolated tree in *Cupressus lusitanica* plantation, on rock over river with *Aloe*, *Kigelia*; near stream in *Podocarpus latifolius* forest; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; sometimes as an isolated tree in farmland, left after forest clearing; 1200-3500 m alt.

Not in Somalia (= *Cussonia holstii*); easily confused with *Schefflera abyssinica* when sterile).

**S. barteri** (Seem.) Harms, excl. var. *urostachya* (Harms) Tennant (= *S. urostachya*); Jaeger & Adam, Végét. vascul. Mts Loma (Boissiera 32): 300, 1980; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 65, 2009; Sosef & al., Check-list pl. vascul. Gabon: 79, 2006. – Icon.: Fl. descr. Mts Nimba 2: 1971 (Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 22); Hawthorne & Jongkind, Woody pl. west. Afr. for.: 703, 2006.

bas.: *Astropanax barteri* Seem.

syn.: [excl.: *S. hierniana* Harms (good species); *S. goetzenii* Harms, *S. stuhlmannii* Harms, *S. adolphi-friderici* Harms, *S. mildbraedii* Harms, *S. sycifiifolia* Lebrun (all = *S. goetzenii*); *Sciodaphyllum* (*Sciadophyllum*) *barteri* (Seem.) Seem.; *Heptapleurum barteri* (Seem.) Hiern; *H. baikiei* (Seem.) Hiern; *Schefflera baikiei* (Seem.) Harms; *S. dananensis* (A. Chev.) Harms; *Heptapleurum dananensis* A. Chev.; *Astropanax baikiei* Seem.; *Sciodaphyllum baikiei* (Seem.) Seem.; *Schefflera ledermannii* Harms; *S. henriquesiana* Harms

## SCHEFFLERA BARTERI

Woody liane, evergreen, 15-30 m or more long, usually epiphytic, straggling over trees or rocks, or erect tree 3-12 m tall or large or low scrambling shrub; leaf petiole 10-57 cm long, 9 mm Ø at base, ribbed, glabrous or discontinuously puberulous; leaflets 4-11, narrowly elliptic to oblong, 15-29 × 6-12 cm; raceme like panicles of umbellules, primary branches 9-45 cm long, with bracts c. 1 cm long; fruit fleshy, obovoid, sulcate, c. 5 mm long (fig. in Fl. Cameroun 10: 19, 1970).

Locally common in rain-forest with *Parinari excelsa*, *Newtonia buchananii*, *Cephalosphaeria usambarensis*; rare in secondary forest of *Dracaena paphau*, *Bridelia micrantha*, *Parinari excelsa*, *Isobertinia scheffleri*; fresh water swamp with *Cyrtosperma*, *Uapaca*, *Parkia bicolor*, *Macrolobium*, *Raphia*; flooded forests; riverine with *Parinari excelsa*; rocky hills in forest; mixed forest of *Podocarpus*, *Parinari*, *Carapa*; 60-2200 (? 2400) m alt.

Principe. The single Angolan record (Figueiredo & Smith, Pl. Angola: 40, 2008) may represent cultivated plants (fide Frodin & Govaerts, Araliaceae: 326, 2003). Not in S. E. trop. Africa (= *S. goetzenii*).

Leaf galls are reported from Mt Loma (Jaeger & Adam, l.c.).

**S. evrardii** Bamps

Woody epiphyte; leaves compound-digitate; petiole 7-15 cm long, 1-2 mm Ø at base, channelled, glabrous; leaflets 5-7, elliptic to oblanceolate, 6-15 × 2,5-6 cm, glabrous; raceme of umbellules 20-36 cm long; fruit subglobose, ribbed, 3-4 mm Ø.

Rain-forest, swamp forest, secondary forests; 300-450 m alt.

Related to *S. goetzenii*.

**S. goetzenii** Harms (not a synonym under *S. barteri*); here including *S. stuhlmannii* Harms from the E Arc Mountains, Tanzania, but considered as distinct by Frodin & Govaerts, World checklist Araliaceae: 377, 2003. – Icon.: Fl. Moçambique 88, Araliaceae: 3, 1981; Lovett & al., Field guide moist for. trees Tanzania: 36, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 287, 2008; Frodin & Govaerts, World Checklist Araliaceae: 377, 2003 (*S. stuhlmannii*).

syn.: *S. stuhlmannii* Harms; *S. adolphi-friderici* Harms; *S. mildbraedii* Harms; *S. sycifiifolia* Lebrun; *S. barteri* sensu Tennant p.p.

Near *S. barteri* but: bark sometimes corky; leaf petiole 1-3 mm Ø (not 3-8 mm); inflorescence bracts 1-4 mm long (not 3-10 mm).

Closed, sclerophyllous, secondary forests; 800-2500 m alt.

**S. hierniana** Harms; Harvey & al., Plants Lebialem Highl., Cameroon: 68-69, 2010.

syn.: *Heptapleurum scandens* Hiern, nom. illegit.

Resembling *S. barteri* but: leaflets with slender acumen 1-2 cm long (not 0,5 cm); bracts at base of inflorescence persistent, fleshy-leathery, most conspicuous when inflorescence immature; inflorescence congested, densely brown-scurfy-pubescent, with secondary branches 2-3 mm long (not 1 cm), and pedicels 2 mm long (not 5 mm).

Cloud forest; 900-2100 m alt.

Bioko/Fernando Poo.

Rare: known from only six sites.

## SCHEFFLERA

**S. kivuensis** Bamps

Liane; stem to 7 cm Ø; leaves compound-digitate, petiole 20-40 cm long, channelled, glabrous; leaflets 9-12, ovate-oblong, 20-30 × 5,7 cm, margins undulate, glabrous; panicle of terminal umbellules, as long as leaves, axes with tiny, ramose, sparse hairs; fruit subglobose, ribbed, 4-5 mm Ø.

Rain-forest; 1000-1700 m alt.

**S. lukwangulensis** (Tennant) Bernardi; Lovett & al., Field guide moist for. trees Tanzania: 35 (map), 36, 2006. – Icon.: Frodin & Govaerts, World Checklist Araliaceae: 353, 2003.

Much-branched tree 10-15 m; leaves digitately compound, petiole to 18 cm long, 1,5 mm Ø, ribbed, glabrous, expanding considerably at base; leaflets 1-4, oblanceolate to oblong-elliptic, to 14,5 × 3,3 cm, long-acuminate, ± glabrous, often with circular pustules to 0,3 mm Ø covering both surfaces; inflorescence a group of to ± 20 racemes of umbellules, each raceme to 20 cm long, floriferous only on the upper third; fruit unknown.

Rain-forest on steep slopes; locally dominant on rocky ridges with *Ocotea usambarensis*, *Memecylon*, *Piptadenia*, *Parinari holstii*, *Lachnophylis*, *Albizia gummifera*; savanna above cloud forest; 1350-2400 m alt.

Very close to *S. umbellifera* and subspecific rank might be more appropriate (fide F. White & al.).

**S. mannii** (Hook. f.) Harms, incl. var. *lancifolia* Harms (on Fernando Poo, in Engler, Pflanzenwelt Afr. 3/2: 777, 1921); Keay, Trees Nigeria, ed. 2: 378, 1989; Cable & Cheek, Pl. Mt Cameroon: 18, 1998; Cheek & al., Pl. Mt Oku: 115, 2000; Harvey & al., Pl. Bali Ngemba...: 60, 85, 2004.

bas.: *Paratropia mannii* Hook. f.

syn.: *Astropanax mannii* (Hook. f.) Seem.; *Sciodaphyllum mannii* (Hook. f.) Seem.; *Heptapleurum mannii* (Hook. f.) Benth.

“Tree 12-15 m, initially an epiphyte, but ends up strangling and substituting for the host” (Harvey & al., l.c.), evergreen; crown compact; leaves digitate, glabrous; petiole to 20-22 cm long, striate; leaflets 5-9, elliptic-oblong, 4,5-8,5 × 12-20 cm; inflorescence a terminal fascicle of 15-20 racemes (30-40 cm long each); fruit ellipsoid to obovoid, 5-angled or more, 5 × 7 mm.

Forest; (350-)1400-2300 m alt.

Bioko/Fernando Poo, São Tomé, Annobon.

**S. myriantha** (Bak.) Drake, incl. var. *attenuata* Bernardi; Friis, Forest trees N.E. trop. Afr.: 211, 326 (map), 1992; Beentje, Kenya trees, shrubs & lianas: 441, 1994; Lovett & al., Field guide moist for. trees Tanzania: 36-37, 2006. – Icon.: White & al., Evergreen for. fl. Malawi: 157, 23 (map), 2001; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 287, 2008.

bas.: *Cussonia myriantha* Bak.

syn.: *Schefflera humblotii* Harms; *S. bequaertii* De Wild.; *S. polysciadia* Harms; *S. congesta* De Wild.; *S. angiensis* De Wild.; *S. nyasensis* De Wild.

Liane to 25 m, or tree 9-16 m tall, shrub or straggling tree; stipules large, to 4,5 cm long; leaves digitate; petiole to 22 cm long, 6 mm Ø, glabrous; leaflets 4-8, elliptic to ovate, to 28 × 12,5 cm, glabrous; inflorescence a group of ± 6 primary branches (panicles of umbellules) 2,5-18 cm long, each typically with a racemose arrangement of secondary branches for some distance and an umbel at apex; secondary branches 0,8-7 cm long with tertiary branches (peduncles of umbellules aggregated at their

## SCHEFFLERA MYRIANTHA

ends); peduncles of umbellules 0,75-3,2 cm long; pedicels to 8-11 mm long, to ± 12 per peduncle (fig. 5/9 p. 18, in Fl. Trop. E. Afr., Araliaceae: 18, 1968); fruit urceolate to subspherical, to 4,5 cm long, 5 mm Ø, deeply sulcate.

Moist bamboo thickets; rain-forest; forest edges; sclerophyllous communities on lava plains; arborescent *Ericaceae* formations; riverine; secondary montane evergreen bushland; swampy forests; 1450-3500 m alt.

Comoro Islands, Madagascar.

**S. stolzii** Harms; Lovett & al., Field guide moist for. trees Tanzania: 37, 2006.

Liane; bark grey-brown; stems to 20 m long; leaf petiole to 22 cm long, 3,5 mm Ø, glabrous, leaflets 5-6, narrowly ovate to obovate, *long-acuminate*, glabrous, to 15 × 8 cm; inflorescence an umbel of racemes of small shortly pedunculate ± globular capitula 5-7 mm Ø when flowers in bud; primary branches to 25 cm long, 3 mm Ø, with scattered lenticels; secondary branches (*peduncles of capitula*) to 5-9 mm long (fig. in Fl. Trop. E. Afr., Araliaceae: 18, 1968); fruit ± urceolate, ± 4 mm long, ± 5-ribbed.

Rain-forest; 1600-±2120 m alt.

**S. tessmannii** Harms; Sosef & al., Check-list pl. vascul. Gabon: 79, 2006.

syn.: *S. barteri* var. *urostachya* sensu Tennant, Kew Bull. 15: 333-334, 1961, quoad syn. *S. tessmannii* and specim. Tessmann 344, Klein 56.

Sarmentous shrub, treelet or liane, sometimes epiphytic; bark corky; leaves compound-digitate; petiole to 24 cm long, 1-3 mm Ø at base, channelled, glabrous; leaflets 6-9, elliptic to obovate, apex acuminate, 10-20 × 3-8 cm, glabrous; raceme of umbellules, crowded at ends of twigs, 10-15 cm long; fruit subglobose, ribbed, 2-3 mm Ø.

Rain and swampy forests; riversides; 0-750 m alt.

**S. umbellifera** (Sond.) Baill., incl. var. *buchananii* (Harms) Bernardi; Coates Palgrave, Trees south. Afr., ed. 3: 845, 2002; White & al., Evergreen for. fl. Malawi: 156, 21 (map), 2001. – Icon.: Gibson, Wild flow. Natal (coastal reg.): pl. 73/5, 1975; E. Schmidt & al., Trees & shrubs Mpumalanga...: 488-489, 2002; B. van Wyk & P. van Wyk, How to identify trees in south. Afr.: 160, 2007.

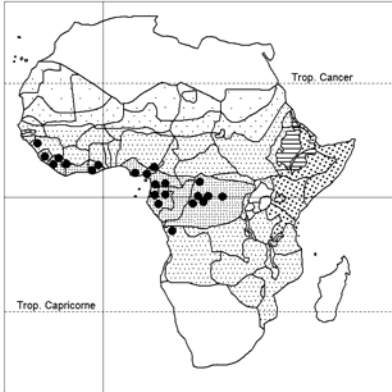
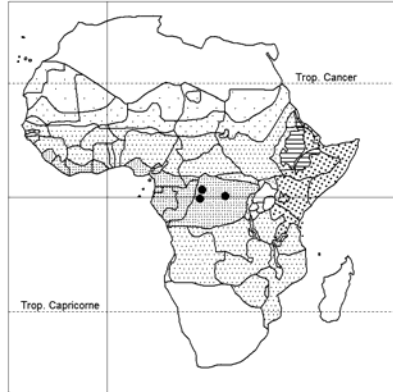
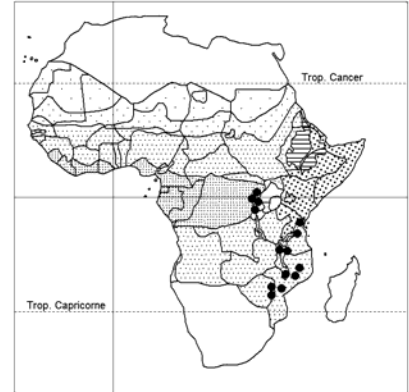
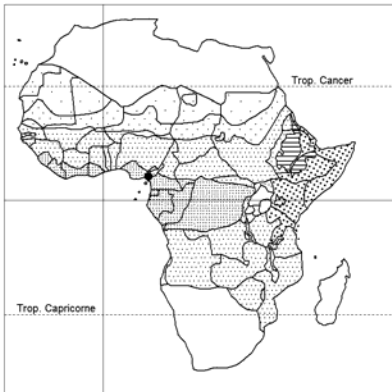
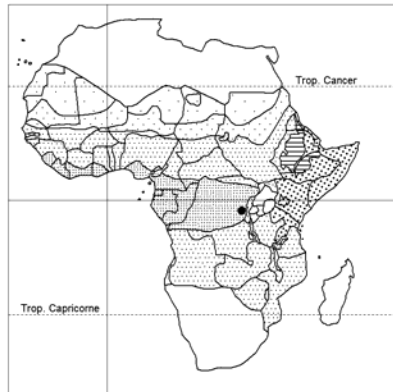
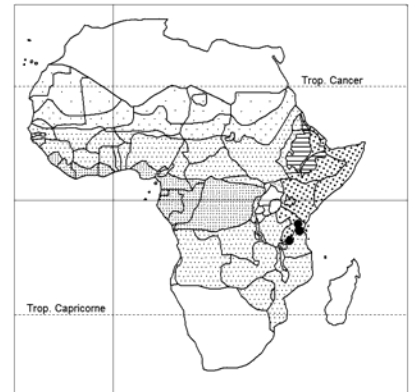
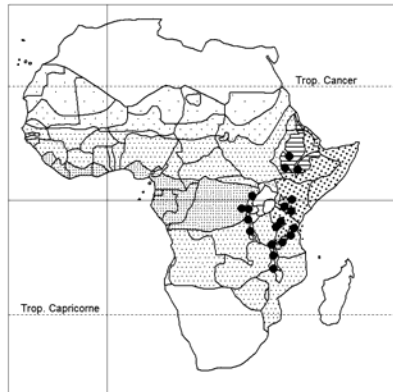
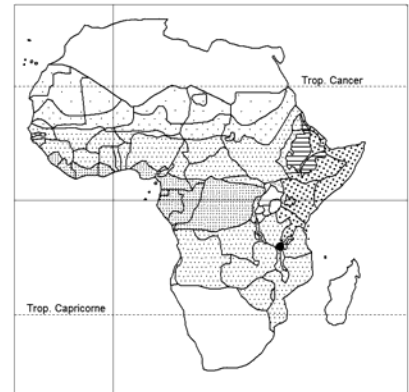
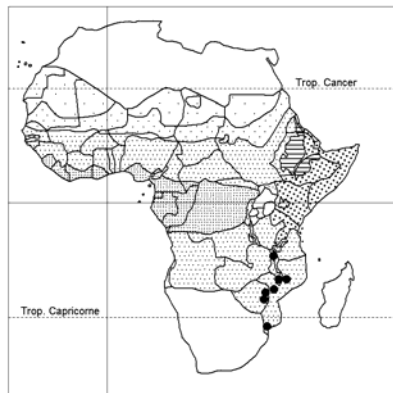
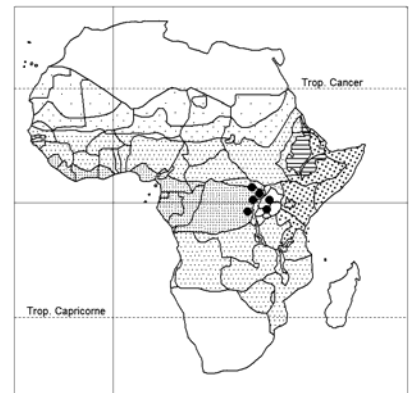
syn.: *Cussonia chartacea* Schinz; *C. buchananii* Harms; Enum. 2: 234, 1992.

Tree, evergreen, 6-15-20 m; crown broad, rounded; trunk tall; bark grey-brown, smooth at first, rough and longitudinally fissured; leaves digitate, crowded at ends of branches; leaflets 3-5, glossy dark green above, paler beneath, elliptic to oblanceolate, 8-15 × 3-7 cm, ± glabrous, margins ± wavy; inflorescence a paniculate complex of umbels, to 18 cm Ø; fruit fleshy, round, glabrous, 3-7 mm Ø, dark red.

Moist forest, forest margins; locally common; 1350-2200 m alt.

S. Africa, Swaziland (60-1980 m alt.). Here antimalarial compounds tested (S. Afric. J. Bot. 76: 82-85, 2010).

Very close to *S. lukwangulensis*, differing only in shape of leaflets; subspecific rank probably more appropriate.

**Schefflera barteri****Schefflera evrardii****Schefflera goetzenii****Schefflera hierniana****Schefflera kivuensis****Schefflera lukwangulensis****Schefflera mannii****Schefflera myriantha****Schefflera stolzii****Schefflera tessmannii****Schefflera umbellifera****Schefflera urostachya**



## SCHEFFLERA

**S. urostachya** Harms

syn.: *S. barteri* sensu Tennant, Kew Bull. 15: 333-334, 1961, excl. syn. *S. tessmannii* and specim. Tessimann 344, Klein 56; *S. tridentata* De Wild.

Near *S. barteri* but: bark corky; peduncle of umbellules 0,4-6 mm long. Near *S. tessmannii* but: leaf petiole 3-8 mm Ø at base; leaflets usually dentate or denticulate towards apex; flower pedicels 2-4 mm long; ovary 6-8-locular.

Fresh water swamp-forest; rain-forest; forest gallery; 700-1700 m alt.

**S. volkensii** (Engl.) Harms; Beentje, Kenya trees, shrubs & lianas: 441, 1994; Friis, Forest trees N.E. trop. Afr.: 211, 326 (map), 1992; Lovett & al., Field guide moist for. trees Tanzania: 37-38, 2006. – Icon.: Frodin & Govaerts, World Checklist Araliaceae: 385, 2003.

bas.: *Heptapetalum volkensii* Engl.

Scandent shrub, sometimes spreading and much branched, or tree to 24-30 m tall, epiphytic at first; leaves digitately compound; petiole to 13-17 cm long, 3,2-3,8 mm Ø; leaflets 4-7, narrowly obovate to broadly elliptic, to 15 × 7 cm, glabrous; inflorescence a ± extended or compressed raceme of bracteate racemes: a central axis 10-25 cm long with small branches on which sessile flowers are arranged in umbellules (fig. in Fl. Trop. E. Afr., Araliaceae: 18, 1968); fruit urceolate, to 5,5 cm long, 4-5 mm Ø, ± 5-ribbed, minutely puberulous or glabrous, red.

Rain-forest; dry evergreen forest; mixed *Podocarpus* forest; sometimes single-dominant in bamboo forest; also secondary evergreen bushland, and left as an isolated tree in farmland; often associated with *Prunus africana*, *Hagenia*, *Rapanea*, at its upper altitudinal range; 1550-3600 m alt.

Used as an ornamental and as shade tree for coffee farms.

## SYNONYMS:

*Schefflera acutifoliolata* De Wild. = **Schefflera abyssinica**

*adolphi-friderici* Harms = **S. goetzenii**

*angiensis* De Wild. = **S. myriantha**

*baikiei* (Seem.) Harms = **S. barteri**

*barteri* sensu Tennant p.p., non (Seem.) Harms

= **S. goetzenii**, **S. tessmannii**, **S. urostachya**

*barteri* var. *urostachya* sensu Tennant p.p. = **S. tessmannii**

*bequaertii* De Wild. = **S. myriantha**

*congesta* De Wild. = **S. myriantha**

*dananensis* (A. Chev.) Harms = **S. barteri**

*henriquesiana* Harms = **S. barteri**

*hookeriana* Harms = **S. abyssinica**

*humblotii* Harms = **S. myriantha**

*ledermannii* Harms = **S. barteri**

*mildbraedii* Harms = **S. goetzenii**

*nyerensis* De Wild. = **S. myriantha**

*polysciadia* Harms = **S. myriantha**

sp. sensu Cooper & Record, Evergr. for. Liberia: 98, 1931

= **Vepris tabouensis** (*Rutaceae*)

*stuhlmannii* Harms = **Schefflera goetzenii**

*sycidiifolia* Lebrun = **S. goetzenii**

*tridentata* De Wild. = **S. urostachya**

## (SCIADOPANAX)

*Sciadopanax albersiana* (Harms) R. Viguier = **Polyscias**

*elliottii* (Harms) R. Viguier = **P. fulva**

*ferruginea* (Harms) R. Viguier = **P. fulva**

*fulva* (Hiern) R. Viguier = **P. fulva**

*malosana* (Harms) R. Viguier = **P. fulva**

*polybotrya* (Harms) R. Viguier = **P. fulva**

*preussii* (Harms) R. Viguier = **P. fulva**

## (SCIADOPHYLLUM / SCIODAPHYLLUM)

*Sciodaphyllum abyssinicum* Steud. 1841, nom. nud. = **Schefflera abyssinica**

*abyssinicum* (Hochst. ex A. Rich.) Seem. = **S. abyssinica**

*baikiei* (Seem.) Seem. = **S. barteri**

*barteri* (Seem.) Seem. = **S. barteri**

*mannii* (Hook. f.) Seem. = **S. mannii**

## (SPHAERODENDRON)

*Sphaerodendron angolense* Seem. = **Cussonia**

**APIACEAE (UMBELLIFERAE) / 45 g. / 151 spp.**

incl. *Hydrocotyle* L. (now considered as belonging to the closely related *Araliaceae*).

A cosmopolitan, but especially north temperate and tropical-mountainous family of 3300 to 3700 (predominantly) herbaceous species with unique features of the inflorescence (simple or compound umbel), flower and fruit (schizocarp) borne on a slender carpophore. Leaves are alternate with sheathing petioles. The plants are aromatic (crushed leaves often with a carrot-like smell), well known as vegetables or condiments; others are deadly poisonous.

About 80 genera and 354 species occur in Sub-Saharan Africa and Madagascar (van Wyk & al., 2008). There exists a remarkable morphological and anatomical diversity in these genera. On the whole, the generic delimitation is complicated. "Natural relationships of African Apiaceae genera are often hard to predict on the basis of morphological characters alone" (Magee & al., 2008).

The coverage of the family in floristic accounts is patchy (Watson in Edinb. J. Bot. 58: 357-370, 2001). In our area, for instance, the family is not yet published for the Democratic Republic of Congo/Zaire.

\* \* \*

"The Umbelliferae – an impossible family ?" (Heywood in Symb. Bot. Upsal. 26/2: 173, 1986). Interestingly, already Olof (Olaus) J. Rudbeck (1630-1702) apparently had difficulties with the *Apiaceae*. Together with his son Olof/Olaus O. Rudbeck (1660-1740) he had accomplished much work for his *Campus Elysii*, an illustrated world flora, when the great Uppsala fire of 16<sup>th</sup> May, 1702, destroyed drawings, blocks and the first two volumes prepared. However, many original drawings are still extant. They form 12 volumes called "Blomboken" (The Flower Book), bound in the late 1690s, only Volume 1 is missing. Between certain plates blank pages are inserted, so as to allow the later systematic comments and additions. Such blank pages are most common (i.e. every other page) in Volume 4, containing the umbel family and many illustrations are not even finished (K. Martinsson & S. Ryman, Blomboken: Bilder ur Olof Rudbecks stora botaniska verk; Prisma, Stockholm, 2008).

## APIACEAE

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“In no family is it more necessary to collect complete material” (Townsend, Fl. Trop. E. Afr., Umbelliferae: 1, 1989). At least fruits and basal leaves are often essential for the identification of genera and species.

\* \* \*

In our area many species (and genera) are poorly known, and revisions are needed. The material is sometimes not complete. Basal leaves are unknown in 1 species; flowers unknown in 1 species and no petals seen in further 2 species (in all = 2%); the fruit is lacking for 1 species, no ripe fruit is known in 11 (+1?) species (in all = c. 8%), and the carpophore is unknown in 2 species; no ecology is recorded for 5 species (= > 3%); 9 (+ 3?) species are known only from the type (= > 6%), and further 7 species are known from only 2 gatherings (= > 4%) one of which made at the type locality.

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## AFRAMMI / 2

Obscure genus (2 species) of dubious affinities.

**Aframmi angolense** (C. Norman) C. Norman; Figueiredo & Smith, Pl. Angola: 32, 2008.

Robust rigid herb, glabrous; base woody; stem longitudinally grooved when dried; leaves in threes, subsessile, finely divided; umbels compound.

Open forest; short grown thickets; not abundant; 1650-2000 m alt.

**A. longiradiatum** (H. Wolff) Cannon

Erect, glabrous biennial or perennial herb, 1-1,25 m tall; rootstock woody; stem terete with fine regular grooves, leafy; leaves at base of stem smaller than those at middle levels, finely divided, 3-10 cm long; umbels compound; carpophore unknown.

In tall grass.

Collected twice: in 1908 (type Kassner 2666) and 1955, respectively.

## AFROCARUM / 1

syn.: *Baumiella* H. Wolff, 1927, non Hennings 1903.

**Afrocarum imbricatum** (Schinz) Rauschert; Figueiredo & Smith, Pl. Angola: 32, 2008. – Icon.: *Consp. Fl. Angol.* 4: pl. 41 facing p. 348, 1970.

syn.: *Pimpinella imbricata* (Schinz) Engl.; *Berula imbricata* (Schinz) Spalik & S. R. Downie, *Taxon* 58: 745, 2009; *Enum.* 2: 235, 1992.

Glabrous perennial herb 0,2-1 m tall with a thickened, dark, woody rhizome sending out numerous fibrous rootlets and occasionally hypogean stolons; stem fistular, strongly ridged and sulcate, with generally few, slender, ascending branches; first leaves generally of a single oblong to elliptic leaflet with 1-2 pairs of rudimentary lower leaflets, other lower leaves with an increasing number of leaflets; main lower leaves linear-oblong in outline, to 70 cm long, simply pinnate with 16-40 pairs of firm, roundish to oblong, flabellate or linear-falcate leaflets, ± 5-20 × 3-15 mm; umbels compound.

Peaty soil in bogs or swamps, especially along rivers; damp grassland; lake sides; marshes; woodland; 960-2100 m alt.

## AFROLIGUSTICUM / 11

African genus of 13 species, two of which in S. Africa [*A. thodei* (T. H. Arnold) P. J. D. Winter, *A. wilmsianum* (H. Wolff) P. J. D. Winter].

**Afroligusticum aculeolatum** (Engl.) P. J. D. Winter, *Taxon* 57: 359, 2008. – Icon.: Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: pl. 63, 1994 (sub gen. *Peucedanum*); Troupin, *Fl. Rwanda* 2: 571, 1983.

bas.: *Peucedanum aculeolatum* Engl.

Perennial erect, massive herb 0,9-3 m tall; stems broadly fistular, to ± 1 cm Ø, sulcate below, ± terete above, finely striate, purplish when young, ± densely furnished below with broad, large-celled scales similar to those of ferns (as in *A. elliotii*), more sparingly so towards the middle and often ± glabrous above; branches numerous, slender, ascending, indumentum similar to that of the stem; leaves 2-3-ternate, triangular in outline; umbel compound.

Forest, locally common (Kenya); bushland; short grassland; shady ravines, river beds; 1360-3030 m alt.

**A. claessensii** (C. Norman) P. J. D. Winter – Icon.: *Fl. Trop. E. Afr.*, *Umbellif.*: 104, 1989 (sub gen. *Peucedanum*).

bas.: *Peucedanum claessensii* C. Norman

syn.: *P. valerianifolium* Bak., fruiting material only.

Perennial herb 1-3,5 m tall; stem terete, fistular, finely striate, to ± 1,75 cm Ø at base, glabrous or ± furnished with fine hairs; branches numerous above, opposite or whorled, divaricate; inflorescence much branched.

Among dense vegetation or long grass by forest edges and tracks; by streams; in swamp; occasionally as a weed in cultivated areas; 1066-2300 m alt.

**A. elgonense** (H. Wolff) P. J. D. Winer – Icon.: *Fl. Trop. E. Afr.*, *Umbellif.*: 104, 1989 (sub gen. *Peucedanum*); Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: pl. 64, 1994 (idem).

bas.: *Peucedanum elgonense* H. Wolff

Perennial or biennial herb 1,2-3 m tall; stem terete, widely fistular, striate, to ± 1,5 cm Ø at base, ± furnished with fine hairs; branches numerous above, opposite or whorled, divaricate; leaves 2-3 times pinnately cut, ovate lanceolate in outline; inflorescence much branched.

Edges and glades of forest; swamps; marshy edges of streams; margins of bamboo forests; damp grassland; among ericaceous shrubs; 1640-3600 m alt.

**A. elliotii** (Engl.) C. Norman

syn.: *Enum.* 2: 236, 1992.

Erect perennial 50-150 cm tall, with a woody, probably rhizomatous rootstock; stem fistular, succulent, finely ribbed and grooved with hard inflated nodes, ± branched with ascending branches, ± furnished with brown or pale, flattened, simple or fimbriate scaly hairs (± like scales on fern stipes), soon evanescent; leaves deltoid in outline, pinnate (2-3 pairs of pinnae, each with a single pair of pinnules); umbel compound.

Bamboo forests, near water; gallery in savanna; road sides; slopes; brushwoods; thickets; 1840-2600 m alt.

## AFROLIGUSTICUM

**A. linderi** (C. Norman) P. J. D. Winter – Icon.: Troupin, *Fl. Rwanda* 2: 571, 1983; *Fl. Trop. E. Afr.*, *Umbellif.*: 104, 1989 (sub gen. *Peucedanum*); *Anal. Jard. Bot. Madrid* 54: 275, 1996 (fruits, sub nom. *Peucedanum winkleri*).

bas.: *Peucedanum linderi* C. Norman, 1934.

syn.: *Peucedanum aberdaricum* Chiov.; *P. petitianum* A. Rich. var. *kilimandscharicum* Engl.; *P. winkleri* sensu *Fl. Cameroun* 10: 87, 1970, p.p., quoad syn. *P. petitianum* var. *kilimandscharicum* Engl.

probable syn.: *P. winkleri* H. Wolff, 1912 (Townsend in *Kew Bull.* 42: 593, 1987); lectotype: Winkler 3862 from Kilimanjaro, Tanzania, lost in Berlin 1943, so also the syntype Ledermann 1768 from Cameroon; isotypes not located. – *P. winkleri* sensu *Fl. Ethiopia* 4/1: 40, 2003, excl. “type from Cameroon”. – “The binomial *Peucedanum winkleri* Wolff is best regarded as of doubtful application, and not used unless an isotype specimen turns up...” (*Kew Bull.* 42: 596, 1987).

Perennial herb 0,3-3 m tall; stem widely fistular, ± terete, striate below, often angular, ± sulcate-striate above, ± 8-19 mm Ø at base, glabrous, usually flushed with purple below; branches numerous, alternate and (above) opposite, divaricate; leaves ovate-triangular in outline, 2-3-pinnate; umbel compound.

Evergreen forest; grassland; forest margins and glades; hillside scrub; bamboo-heath-*Hypericum* scrub; along streams; boggy places; rock crevices; *Podocarpus latifolius*, *Rapanea* forest; moist places in *Podocarpus latifolius*, *Dombeya torrida* forest; 1860-3422 m alt.

The distribution in Ethiopia [among *Erica*, in *Podocarpus* or *Arundinaria* forest; (1600-)2600-3700 m] is uncertain (as *Peucedanum winkleri* Wolff in *Fl. Ethiopia*, l.c.).

**A. mattirolii** (Chiov.) P. J. D. Winter

bas.: *Peucedanum mattirolii* Chiov.

Perennial herb, 1-2 m tall; stems sometimes with scattered short hairs; branches arising singly or in pairs; leaves lanceolate to ovate in outline, with few divisions; leaflets hairy; umbel compound.

Stream banks; sometimes in *Juniperus* forest; 2600-3050 m alt.

**A. petitianum** (A. Rich.) P. J. D. Winter

bas.: *Peucedanum petitianum* A. Rich. (excl. var. *kilimandscharicum* Engl. = *A. linderi*).

syn.: *P. altum* Hiern

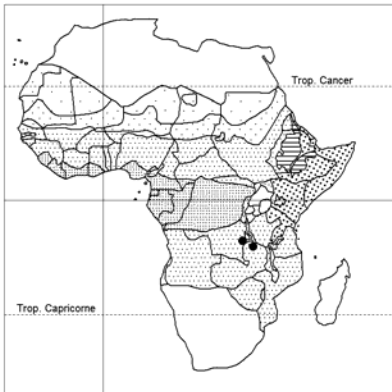
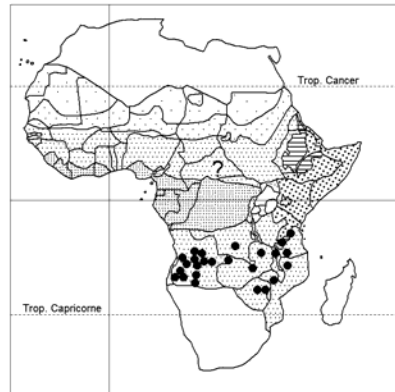
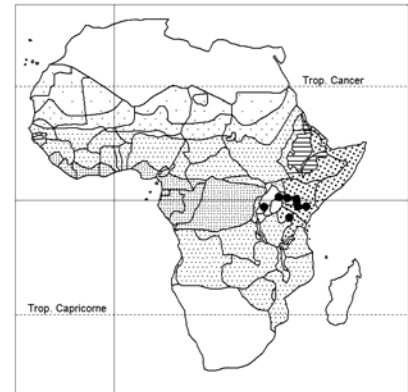
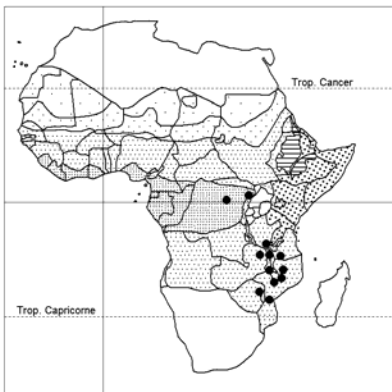
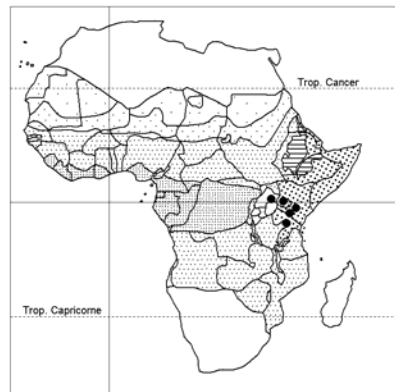
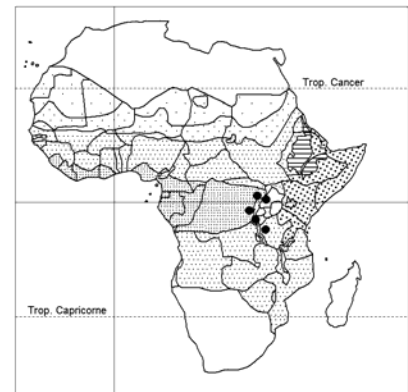
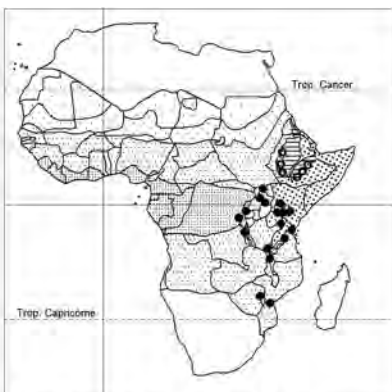
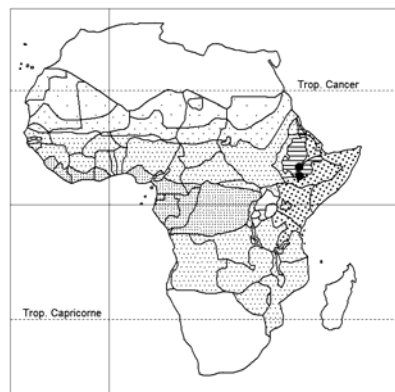
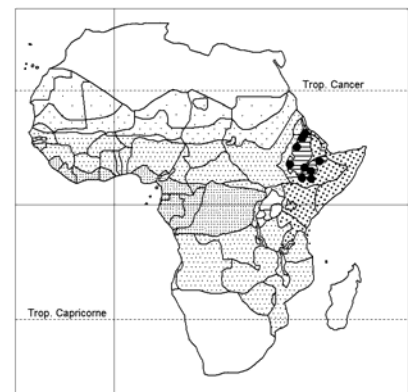
Perennial herb, 1-3 m tall, hairy, densely branched towards top of plant; branches whorled on stem; leaves very large (to > 1 m ? long), 3-pinnate or 3-ternate, with few pairs of leaflets; umbel compound.

Thicket margins; sometimes at edges of streams and forests; 1750-3350 m alt.

**A. runssoricum** (Engl.) P. J. D. Winter – Icon.: *Fl. Parc. Natl. Albert* 1: 715, 1948; Troupin, *Syllabus Fl. Rwanda*, *Spermat.*: VI. 195, 1971; Troupin, *Fl. Rwanda* 2: 573, 1983; Fischer & Killmann, *Ill. field guide pl. Nyungwe Natl. Park Rwanda*: 439, 2008 (all sub gen. *Peucedanum*).

bas.: *Peucedanum runssoricum* Engl.



**Schefflera volkensii****Aframmi angolense****Aframmi longiradiatum****Afrocarum imbricatum****Afroligusticum aculeolatum****Afroligusticum claessensii****Afroligusticum elgonense****Afroligusticum elliotii****Afroligusticum linderi** ●  
A. winkleri in Fl. Ethiopia ○**Afroligusticum mattirolii****Afroligusticum petitianum**

## AFROLIGUSTICUM RUNSSORICUM

Perennial herb  $\pm$  0,5-1,8 m tall, with a stout rootstock; stem broadly fistular,  $\pm$  4-10 mm  $\varnothing$  at base, terete, finely striate, often purplish, glabrous except at the insertion of the upper leaves; branches few, long and slender, leafless except for the reduced leaves subtending the peduncles; lower leaves 20-90 cm long, deltoid-ovate in outline, 3-pinnatisect; umbel compound.

*Erica* formations; grassland; open *Hypericum*, *Myrica* forest; sometimes in swamps or rock crevices; 2050-3820 m alt.

**A. scottianum** (Engl.) P. J. D. Winter – Icon.: Fl. Trop. E. Afr., Umbellif.: 99, 1989.

bas.: *Peucedanum scottianum* Engl.

syn.: ? *P. doctoris* C. Norman; *P. monticolum* C. Norman; *P. serratum* (H. Wolff) C. Norman; *Lefebvrea serrata* H. Wolff; *Peucedanum ugandium* M. Hiroe

Perennial herb with a short, tough, fibrous rootstock,  $\pm$  0,5-2 m tall; stem broadly fistular, deeply grooved, angular, striate,  $\pm$  3,5-8 mm  $\varnothing$  at base, glabrous; branches several, slender, ascending; lower leaves 35-95 cm long, deltoid-ovate in outline, 2-(to 3-)pinnatisect, with 4-7 pairs of pinnae; umbel compound.

Drier parts of banks of stream; marshy depression; swamps; open or bushy hillsides; old lava; 1515-2910 m alt.

**A. townsendii** (Charpin & Fern. Casas) P. J. D. Winter – Icon.: Anal. Jard. Bot. Madrid 54: 274-276, 1996; Fl. Cameroun 10: 91, 1970 (sub nom. *Peucedanum winkleri*).

bas.: *Peucedanum townsendii* Charpin & Fern. Casas

syn.: *Peucedanum winkleri* H. Wolff p.p. quoad specim. from the Gulf of Guinea, not from East Africa; sensu Jacques-Félix, Fl. Cameroun 10: 87-88, 1970, excl. syn. *P. petitionum* var. *kilimandscharicum* Engl. (= *Afroligusticum linderi*), et sensu Fl. W. Trop. Afr., ed. 2, 1/2: 755, 1958 (excl. citation French Cameroons and E. Africa). – Cf. also under *A. linderi*.

Herb 0,7-2 m tall, very ramose, weak, glabrescent; stems fistular, grooved when young, becoming  $\pm$  rounded; differs from *A. linderi* by: fruit oblong, not rounded with base slightly cordate, apex entire, not emarginate.

Thickets, mountain meadows;  $\pm$  1980-2740 m alt.

Bioko/Fernando Poo.

A revision of all known specimens of *A. linderi* and *A. townsendii* is needed.

**A. volkensis** (Engl.) P. J. D. Winter

bas.: *Peucedanum volkensis* Engl.

Perennial herb with a tough taproot, 25-75 cm tall; stem broadly fistular,  $\pm$  4-8 mm  $\varnothing$  at base, terete, striate, often purplish with green ridges,  $\pm$  furnished with short, whitish hairs; branches few, slender, ascending, leafless except for reduced leaves subtending the umbels; lower leaves 6-17  $\times$  3,5-6 cm, deltoid-oblong in outline, 2(-3)-pinnatisect; leaf sheaths often purplish; umbel compound; mature fruit unknown.

Boggy ground; open *Philippia* scrub; 3300-4200 m alt.

Seems confined to Kilimanjaro.

## SYNONYM:

*Afroligusticum chaerophylloides* C. Norman, nom. illegit.  
= **Afroligusticum elliotii**

## AFROSCIADIUM / 14

syn.: *Peucedanum* L.

African genus of 18 species, four of which in S. Africa [*A. caffrum* (Meisn.) P. J. D. Winter, *A. magalimontanum* (Sond.) P. J. D. Winter, *A. natalense* (Sond.) P. J. D. Winter, *A. platycarpum* (Sond.) P. J. D. Winter].

Plants rather similar to the Eurasian *Peucedanum* (Winter & al., Taxon 57: 359, 2008), but with a unique combination of characters: leaf division, petiole dilation, flower colour, fruit wing thickness.

**Afrosciadium abyssinicum** (Vatke) P. J. D. Winter – Icon.: Notizbl. Bot. Gart. Mus. Berlin-Dahlem 9: 1120, 1927.

bas.: *Peucedanum abyssinicum* Vatke

syn.: *P. silaifolium* Hiern

Perennial herb to 1 m tall, glabrous; leaves variously pinnate, finely divided; petals white; umbel compound.

Damp grassland; 2100-2800 m alt.

**A. articulatum** (C. C. Townsend) P. J. D. Winter – Icon.: Kew Bull. 42: 601, 1987.

bas.: *Peucedanum articulatum* C. C. Townsend

Herb probably perennial, glabrous, 55-65 cm tall; stem terete, fistular, striate or subfurrowed-striate, 4-6 mm  $\varnothing$ ; branches slender, ascending; leaves fleshy, 2-3-pinnatisect, leaflets filiform; petals (yellowish) white, umbel compound.

Seepage rocks in dambo; damp parts of grassland; 2287-2409 m alt.

**A. dispersum** (C. C. Townsend) P. J. D. Winter – Icon.: Kew Bull. 42: 595, 1987.

bas.: *Peucedanum dispersum* C. C. Townsend

Perennial (? or biennial) herb,  $\pm$  2 m tall; stem fistular, sulcate-striate, at least 8 mm  $\varnothing$  at base, furnished with very small 1-2-celled hairs when young, becoming glabrescent except often at the nodes, with numerous divaricate branches above, the branches opposite or the uppermost subverticillate; basal leaves deltoid or oblong in outline, 3-4-pinnatisect; petals cream-yellow; umbel compound.

Grazed- and swampy grassland; among rough grass; swamp; 1950-2590 m alt.

**A. englerianum** (H. Wolff) P. J. D. Winter – Icon.: Fl. Trop. E. Afr., Umbellif.: 92, 1989 (partial).

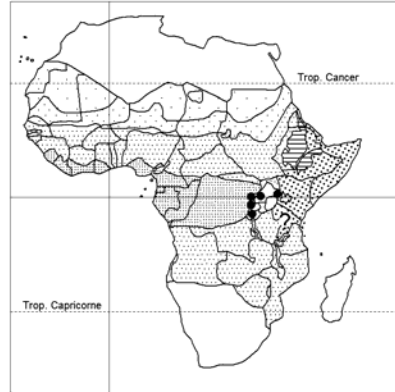
bas.: *Peucedanum englerianum* H. Wolff

Slender to rather stout perennial herb,  $\pm$  35-80 cm tall; root stout, tough, tuberiform, to  $\pm$  30 cm long; stem erect, fistular, terete, striate,  $\pm$  4-5 mm  $\varnothing$  at base,  $\pm$  densely hirtellous; branches very few, long, ascending; leaves triangular in outline, pinnae dissected in narrow lobes; petals white-greenish; umbel compound.

Tussocky grassland on moorland; scattered; ? 3000-3750 m alt.



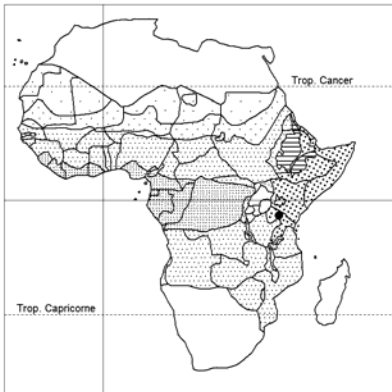
*Afroligusticum runssoricum*



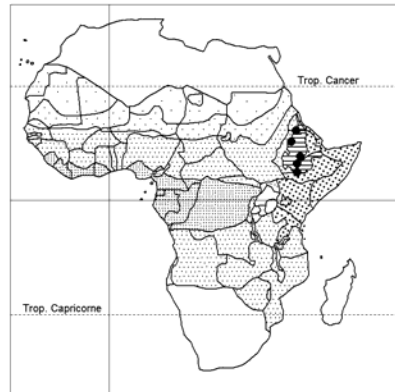
*Afroligusticum scottianum*



*Afroligusticum townsendii*



*Afroligusticum volkensis*



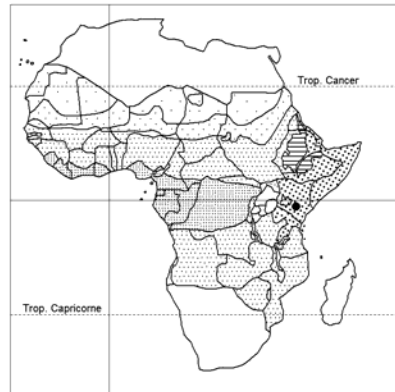
*Afroscidium abyssinicum*



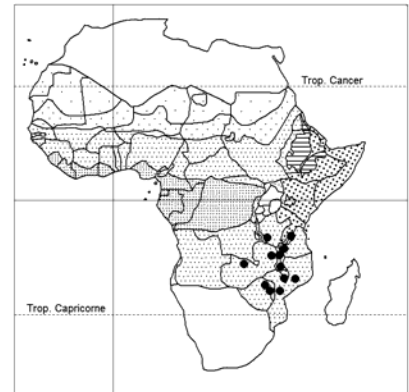
*Afroscidium articulatum*



*Afroscidium dispersum*



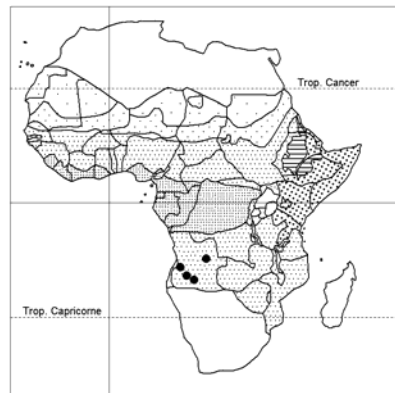
*Afroscidium englerianum*



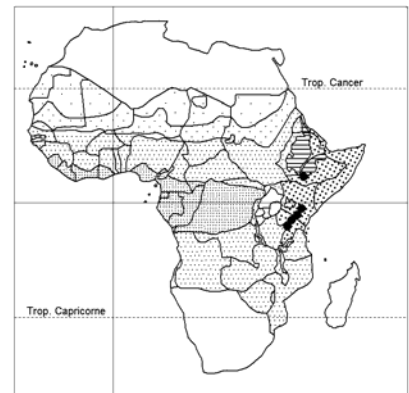
*Afroscidium eylesii*



*Afroscidium friesiorum*



*Afroscidium grossweileri*



*Afroscidium harmsianum*



## AFROSCIADIUM

**A. eylesii** (C. Norman) P. J. D. Winter – Icon.: Fl. Trop. E. Afr., Umbellif.: 99, 1989 (partial).

bas.: *Peucedanum eylesii* C. Norman

syn.: *P. nyassicum* sensu Cannon in Fl. Zamb. 4: 610, 1978 quoad specim. Chase 1425, non H. Wolff

Perennial herb with stout, gnarled, woody rootstock, 0,9-2 m tall; stem not fistular, angular and sulcate-striate, often purplish, glabrous except for rings of hairs at the insertion of the upper leaves; branches few, slender, ascending; leaves deltoid-ovoid in outline, 2(-3)-pinnatisect, pinnae 6-8 pairs; umbel compound; flowers yellow(-green).

Damp grassland; seasonally flooded valley grassland; marshy areas at stream sides in the shade; 1500-2100 m alt.

Closely related to *A. nyassicum* (in Fl. Rwanda 2: 572, 1983, reduced to synonymy under *A. nyassicum*).

**A. friesiorum** (H. Wolff) P. J. D. Winter – Icon.: Fl. Trop. E. Afr., Umbellif.: 92, 1989 (sub gen. *Peucedanum*).

bas.: *Peucedanum friesiorum* H. Wolff

Slender perennial herb, ± 16-60 cm tall; root slender but tough, frequently with whitish hypogeal stolons, the main rootstock sometimes expanded to a narrow tuber to 8 × 0,7 cm; stem erect, widely fistular, terete, striate, glabrous, ± 2-5 mm Ø at base; base often surrounded by the fibrous remains of previous year's leaf-sheaths; branches few, long, ascending or none; leaves oblong in outline, 2-3-pinnate; umbel compound; flowers white.

Grassy places in the bamboo and ericaceous zone, often with trickling water in boggy places or by springs, higher among rocks also where ± wet (var. **friesiorum**); tussocky grassland on moorland, damp but without trickling or standing water (var. **bipinnatum**); 2950-4260 m alt. – Locally common.

Comprises 2 vars.: – var. **friesiorum**, with 3-pinnate leaves; – var. **bipinnatum** (C. C. Townsend) P. J. D. Winter (bas.: *Peucedanum friesiorum* H. Wolff var. *bipinnatum* C. C. Townsend; syn.: *P. aberdarensis* H. Wolff), with 2-pinnate leaves.

Distinguished from some other species by the ease with which it can be pulled up (Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 169, 1994).

**A. gossweileri** (C. Norman) P. J. D. Winter; Figueiredo & Smith, Pl. Angola: 33, 2008.

bas.: *Peucedanum gossweileri* C. Norman

Perennial herb to 1 m tall, slightly ramose; stem striate, glabrous; leaves long-petiolate, 2-3-pinnate, finely divided; umbel compound.

Open woods on river margins; 1200-1700 m alt.

Remarkable species for its hair-like, spreading fruiting pedicels, 2,5-3 cm long.

**A. harmsianum** (H. Wolff) P. J. D. Winter – Icon.: Fl. Trop. E. Afr., Umbellif.: 94, 1989; Fl. Eth. & Eritrea 4/1: 41, 2003 (sub gen. *Peucedanum*).

bas.: *Peucedanum harmsianum* H. Wolff

Perennial herb with a cylindrical, tuberous, stout rootstock; stem erect, ± 11-90 cm tall, fistular, to 6 mm Ø at base, terete, striate, ± smooth below, more sulcate and often minutely scabrid above especially at branch junctions; branches few to rather numerous, long, slender, ascending or divaricate; leaves deltoid-ovate in outline, 2-3-pinnate; umbel compound; flowers white.

## AFROSCIADIUM HARMSIANUM

Closely grazed grassland, dry grassland, uncommon; common but scattered in *Oldenlandia abyssinica*, *Pentanisia ouranogyne*, *Orthosiphon*, *Cyphia glandulifera* association with *Polygala usambarensis*, *Ajuga bracteosa*, *Indigofera volkensii*, *Amaranthus blitum*, *Aspilia*, *Acalypha indica* on a very dark loam of volcanic origin planted to wheat; locally common in stands of *Athroisma hastifolium*, *Amaranthus tricolor*, *Cynodon dactylon*, *Digitaria scalarum* in a recently abandoned cultivation on a black loam of volcanic origin; locally common but scattered in *Themeda triandra*, *Hyparrhenia rufa* grassland in a heavy black clayey loam of volcanic origin; black loamy soil among grass, *Acacia drepanolobium*; 1400-2170 m alt. (vide Kew Bull. 9: 41, 1954).

Comprises 2 subsp.: – subsp. **harmsianum** (syn.: *Peucedanum multivittatum* Cufod. 1939, non Maxim. 1887, nom. illegit.; *P. canaliculatum* sensu Agnew, Upl. Kenya wild flow.: 358, 1974, non Verdc.), with narrow ultimate leaf segments, in Kenya, Ethiopia; – subsp. **australe** (C. C. Townsend) P. J. D. Winter (bas.: *P. harmsianum* H. Wolff subsp. *australis* C. C. Townsend; syn.: *P. canaliculatum* Verdc.) with broad ultimate leaf segments, in Tanzania.

**A. kerstenii** (Engl.) P. J. D. Winter; O. Hedberg, Afroalpine vascul. pl. (Symb. Bot. Upsal. 15/1): 138, 1957; Troupin, Fl. Rwanda 2: 573, 1983; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 169, 1994. – Neotype: Hedberg 1206.

bas.: *Peucedanum kerstenii* Engl.

syn.: *P. dissectum* (C. H. Wright) Dawe, p.p., non Ledeb., nec DC.; *P. mildbraedii* H. Wolff; *Anthriscus dissecta* C. H. Wright, p.p. (leaf).

Hairy perennial herb, 0,25-3 m tall, with a stout taproot; stems fistular, to 1,8 cm Ø, sulcate-striate, ± furnished with slender white hairs, a dense ring of hairs present at the point of insertion of each leaf-sheath; branches numerous, ascending, slender to short and stouter, those at apex of stem solitary or often in whorls of to 7, to ± 14 cm long, the whorl subtended by an involucre of reduced leaves with inflated sheaths; leaves finely divided, lanceolate in outline; umbel compound; flowers cream.

Rough damp grassland and swamps; open places in the bamboo, *Erica*, *Hypericum* zone; among arborescent *Senecio*; among or on wet rocks in gorges and craters; rarely in forest; *Philippia* formations; 2550-4300(-4600) m alt.

One of the commoner upland species of *Apiaceae*.

According to Hedberg (o.c.: 296) the plant “is often parasited by a rust fungus, which... deforms the fruits”.

**A. lundense** (Cannon) P. J. D. Winter; Figueiredo & Smith, Pl. Angola: 33, 2008. – Icon.: Consp. Fl. Angol. 4: pl. 42 facing p. 354, 1970.

bas.: *Peucedanum lundense* Cannon

Perennial erect, glabrous herb, 0,7-1 m tall; stem simple or slightly ramose; leaves alternate, ternate-pinnatisect with remote lobes, 15-30 mm long, 1 mm broad; ripe fruit unknown; umbel compound.

Subxerophytic bush; 1100-1300 m alt.

Known only from 2 gatherings from the same (type) locality, made in 1937.

Near *A. trisectum*.

## AFROSCIADIUM

**A. lynesii** (C. Norman) P. J. D. Winter

bas.: *Peucedanum lynesii* C. Norman

Slender perennial herb 50-90 cm tall, glabrous, with an oblong tuberous root to 7 cm long; stem fistular, striate, 2-3 mm Ø at base; base surrounded by the (probably burnt-off) remains of previous years' leaves; branches few, slender, long and ascending; basal leaves few, ± flabellate in outline, 2-pinnate; umbel compound; flowers (greenish) yellow.

Wooded grassland; secondary *Brachystegia*, *Uapaca* woodland; mountain side amongst grass and rocks; 900-2400 m alt.

Variable in shape of leaves.

**A. nyassicum** (H. Wolff) P. J. D. Winter (in Flora Zambes. 4: 610, 1978, *excl.* specim. Chase 1425 (= *A. eylesii*); Droop in Troupin, Fl. Rwanda 2: 572, 1983, *excl.* syn. *P. eylesii* and *P. scottianum*).

bas.: *Peucedanum nyassicum* H. Wolff

Glabrous perennial, 0,3-1,2 m tall (not 0,90-2 m as *A. eylesii*); stem subterete with relatively fine grooves; leaves to 75 cm long, narrowly triangular in outline, 2-pinnate; umbel compound; flowers yellowish-green.

Marshy ground; near streams.

**A. rhodesicum** (Cannon) P. J. D. Winter – Icon.: Fl. Zambes. 4: 612, 1978.

bas.: *Peucedanum rhodesicum* Cannon

Glabrous perennial herb 1-1,5 m tall; stem subterete to somewhat angled, with finely prominent grooves, often tinged purple-brown; leaves long-petiolate, ovate to triangular in outline, 3-4-pinnate, finely divided, resembling those of *Foeniculum*; umbel compound; flowers greenish-yellow.

Grassland, scrub, especially in marshy places and near streams.

**A. trisectum** (C. C. Townsend) P. J. D. Winter – Icon.: Kew Bull. 32: 602, 1978.

bas.: *Peucedanum trisectum* C. C. Townsend

Erect perennial glabrous herb, ± 50-80 cm tall, with tuberous roots; stem erect, white-striate, slightly ramose; basal leaves to 24 cm long, petiolate, once-trisect with segments to 14 × 0,2 cm, white-striate; umbel compound; flowers white.

Damp, sandy grassland; ± 1700 m alt.

Near *A. lundense*.

Only known from the type collected in 1975.

## AFROSISON / 3

Poorly known genus, in NE Africa. Plants resembling *Sison* in habit. Leaves divided ternately or 2-ternately or pinnate with rather large divisions. Umbel compound, without involucre.

**Afrosison djurense** H. Wolff – Icon.: Engler, Pflanzenwelt Afr. 3/2: 804, 1921 (partial).

Perennial glabrous herb, ± 1 m tall, with a thickened root; stem erect, *terete*, finely striate.

Ecology unknown.

## AFROSISON

**A. gallabatense** Schweinf. ex H. Wolff; Fl. Eth. & Eritrea 4/1: 2, 2003.

syn.: *Sium gallabatense* Schweinf., nom.

Glabrous perennial herb, with a thickened root; stems erect, hollow; umbels small; ripe fruit unknown.

Shady brooks on the water edge.

Only known from the type collected in 1865 and destroyed in 1943.

**A. schweinfurthii** H. Wolff – Icon.: Engler, Pflanzenwelt Afr. 3/2: 804, 1921.

Glabrous perennial herb to 1,5 m tall; stems angular, *sulcate*, hollow; leaves bipinnate, pinnae in 2-4 pairs, distant.

Ecology unknown.

## AGROCHARIS / 3

*Agrocharis* Hochst. in Flora 27: 19, 14. I. 1844.

Has been included in *Caucalis* L., reviewed by Heywood in 1973, later by Jury (1986).

Weak-stemmed herbs with long-petiolate leaves; umbels compound, leaf-opposed, appearing capitate; leaf characters most useful for distinction of species; fruit ribbed with glochidiate spines similar to *Daucus*.

BYOUNG-YOON LEE (2002). Taxonomic review on the African Umbelliferous genus *Agrocharis*: Inferences based on molecular data. *Israel J. Pl. Sci.* 50: 211-216.

JURY, S.L. (1986). Fruit and leaf variation in the African species of the Umbelliferae tribe *Caucalideae*. *Symb. Bot. Upsal.* 26/2: 181-188 [see p. 182].

**Agrocharis incognita** (C. Norman) Heywood & Jury; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 166, 1994. – Icon.: Fl. Zambes. 4: 574, 1978; Troupin, Fl. Rwanda 2: 180, 1983; Fl. Moçamb. 87, Umbellif.: 21, 1981; Fl. Eth. & Eritrea 4/1: 13, 2003; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 741, 2008.

syn.: *Torilis eminii* Engl., nom. nud.; *Caucalis gracilis* (Hook. f.) Engl. subsp. *umbrosa* (Engl.) Engl., and fa. *umbrosa* (Engl.) H. Wolff and fa. *typica* H. Wolff

Annual or short-lived perennial herb, with a slender rootstock; sometimes rooting at the lower nodes, straggling or scrambling, 15-150 cm tall; stem terete, pithy, striate, moderately to densely furnished with whitish, ± deflexed tuberculate-based, strigose hairs, often purplish suffused, simple to rather sparingly branched; leaves 2-3-pinnate, ovate to broad triangular in outline; inflorescence of stalkless umbels; flowers white, rarely purplish.

Open grassland; forest margins and clearings; deep shade in damp places; road, tracksides, ditches; near marshes; weed of agriculture; light forest shade; meadow; forest with *Podocarpus latifolius*, *Olea capensis*, *Syzygium guineense* at edge; forest with *Podocarpus latifolius*, *Dombeya torrida*; 900-3600 m alt. – Locally common.

## AGROCHARIS

**A. melanantha** Hochst.; O. Hedberg, Afroalpine vascul. pl. (Symb. Bot. Upsal. 15/1): 135, 1957 (*Caucalis*); Wickens, Jebel Marra (W Sudan): 125, 283 (map), 1976; I. Friis, Fragm. Florist. Geobot., Suppl. 2/1: 193-194, 1993; Chapman & Chapman, Forests Taraba & Adamawa States, Nigeria: 04, 2001; Y. Harvey & al., Pl. Bali Ngemba...: 129, 2004; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 145, 2010. – Icon.: Fl. Cameroun 10: 53, 1970; Troupin, Fl. Rwanda 2: 567, 1983 (partial); Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 62, 1994.

syn.: *Daucus melananthos* Steud.; *Torilis melanantha* (Hochst.) Vatke; *Agrocharis gracilis* Hook. f.; *Caucalis gracilis* (Hook. f.) H. Wolff s. str. (a plant from Bioko); *Daucus yemensis* Defl.; *Caucalis latifolia* sensu Jacot Guillarmod, Fl. Lesotho: 218, 1971, (“introduced: weed”), non L. [= *Turgenia latifolia* (L.) Hoffm.].

Perennial herb with a somewhat thickened cylindrical rootstock, erect or ascending, 7-85 cm tall; stems striate, with tuberculate-based setose hairs, branched below or not, sometimes very short and most of the height of the plant owing to the peduncle; leaves 2-4-pinnate, lanceolate-linear in outline, ultimate segments linear; umbels subcapitate; flowers purple-red, rarely cream.

Grassland and forest on plateaux; moist pathsides; streamsides; thicket; forest glades; meadows; 1350-4200 m alt.

Bioko/Fernando Poo; E S. Africa, Lesotho; Madagascar; Yemen. Cited as *A. gracilis* Hook. f. by Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 227, 2000: grazed by cattle.

“It is with some hesitation that I venture to describe this plant [from Fernando Poo] as different from the Abyssinian [*Agrocharis melanantha*], fearing the characters depend wholly on locality” (J. D. Hooker, J. Proceed. Linn. Soc. London 6: 9-10, 1862; read March 7<sup>th</sup>, 1861).

**A. pedunculata** (Bak. f.) Heywood & Jury; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 166, 1994; Israel J. Pl. Sci. 50: 212, 2002 (fruit).

syn.: *Caucalis longisepala* H. Wolff; Enum. 2: 236, 1992.

Perennial weak-stemmed herb 7-90 cm tall, with a slightly to considerably thickened rootstock smelling of carrot; stems terete, pithy to fistular, striate, moderately to very densely furnished with whitish ± deflexed tuberculate-based strigose hairs, rarely glabrous or almost so, simple or somewhat branched, sometimes ± purplish, elongate or ± obsolete, the peduncle then appearing as a scape; leaves 2-4-pinnate, deltoid-oblong in outline, the ultimate segments linear; umbels and flowers stalked; petals greenish.

Most commonly in grassland subject to burning; frequently in damp depressions; scrub; among grass in forest; by forest tracks; in vegetation by streams; secondary *Parinari*, *Uapaca*, *Protea* forest; evergreen bushland; forest edges and clearings; wooded grassland; 1060-2800 m alt.

Rather variable; fruits occasionally with much reduced spines or lacking spines.

## SYNONYM:

*Agrocharis gracilis* Hook. f. = **Agrocharis melanantha**

## ALEPIDEA / 2

*Alepidea* F. Delaroché; *Alepida* O. Kuntze, orth. var.

About 25 species in Africa chiefly in S. Africa. Leaves simple, the stem leaves clasping or auriculate, all with serrate-dentate margins tipped with long cilia. Umbels simple surrounded by broad, rigid coloured involucre bracts. Fruit rugose or with tubercles. *A. amatymbica* Eckl. & Zeyh. (S. Africa) is an important medicinal plant (Prentice & al., Plantlife 19: 22-24, 1998; Olivier & al., Biochem. Syst. Ecol. 36: 724-729, 2008; Mulaudzi & al., S. Afric. J. Bot. 75: 584-587, 2009).

YEMBATUROVA, E. Yu. & al. (2008). A review of the African genus *Alepidea* F. Delaroché (Apiaceae, Subfamily Saniculoideae). In: PIMENOV, M. G. & P. M. TILNEY, eds., *Apiaceae – 2008*: 152-156, 2008.

YEMBATUROVA, E. Yu. & al. (2010). The taxonomic significance of fruit morphology and anatomy in the genus *Alepidea* Delaroché (Apiaceae, subfamily Saniculoideae). *Plant Div. Evol.* 128: 369-385.

**Alepidea cordifolia** B.-E. Van Wyk – Icon.: S. Afric. J. Bot. 74: 741-742, 743 (map), 2008.

syn.: *A. amatymbica* Eckl. & Zeyh. var. *cordata* Sond.; *A. amatymbica* sensu Cannon in Fl. Zamb. 4: 567-68, 1978, quoad specim. Wild 4464, E. M. & W. 221 (the specimen Torre 297 must be revised), not Eckl. & Zeyh.; *A. amatymbica* sensu C. Prentice & al., l.c., p.p.; *A. amatymbica* sensu Fl. Moçamb. 87, Umbellif.: 13, 1981.

Acaulescent, perennial herb with one or more rosettes of leaves and sturdy, erect, hollow, grooved, leafy inflorescences, 1-1,80 m tall; roots numerous, slightly fleshy, arising on thick, resinous rhizomes to 25 mm Ø; basal leaves simple, to 48 cm long; petiole to 20 cm long, 10 mm Ø, lamina narrowly ovate to oblong, 9-37 × 3,5-7 cm, *cordate at base*, margins regularly dentate; inflorescence scape racemously or paniculately branched from below the middle, lateral branches short or long, *peduncles and bracts with hispid hairs*.

Open grassland; stream banks; 2140-2275 m alt.

Resembling *A. amatymbica* s. str., which has the radical leaves attenuate at base. The two species are vicariants: *A. amatymbica* is restricted to E Cape Prov. and SW KwaZulu-Natal (S. Africa), at lower alt.; *A. cordifolia* occurs N of this area, through Lesotho, Mpumalanga Prov. (S. Africa) to Mozambique, E Zimbabwe, at higher alt.

**A. peduncularis** Steud. ex A. Rich., incl. var. *fischeri* Engl. – Icon.: Fl. Zambes. 4: 569, 1978 (sub nom. *A. swynnertonii*); Fl. Moçamb. 87, Umbellif.: 16, 1981 (idem); Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 61, 1994; Fl. Eth. & Eritrea 4/1: 8, 2003; Puff & Sileshi Nemomissa, Pl. Simen: 123, 2005.

syn.: *A. gracilis* Dummer, incl. var. *major* Weim.; *A. longifolia* E. Mey. ex Dummer, incl. subsp. *coarctata* (Dummer) Weim., subsp. *propinqua* (Dummer) Weim., and subsp. *swynnertonii* (Dummer) Weim.; *A. propinqua* Dummer; *A. swynnertonii* Dummer; *A. coarctata* Dummer; *A. fischeri* Schlechter & H. Wolff; *A. congesta* Schlechter & H. Wolff; *A. massaica* Schlechter & H. Wolff; *A. sp.* sensu Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 359, 1952; *Eryngium pedunculare* (Steud. ex A. Rich.) Koso-Poljansky

Glabrous perennial herb ± 0,1-1,75 m tall, with clustered, thick, rather fleshy, fibrous roots; stem striate, with numerous long, slender, ascending to 1-numerous divaricate branches above; basal leaves lanceolate, to 25 cm long, petiole c. 10 cm long; involucre white to purple-black; petals white; fruit white-verruculose.





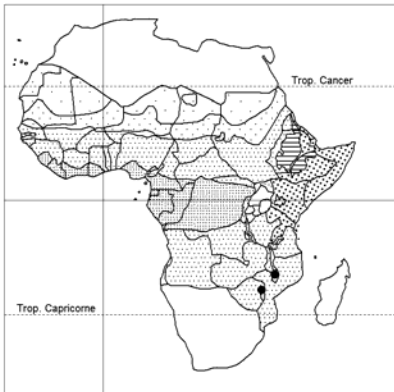
*Afrosciadium kerstenii*



*Afrosciadium lundense*



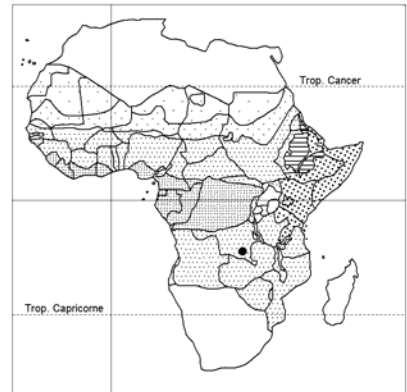
*Afrosciadium lynesii*



*Afrosciadium nyassicum*



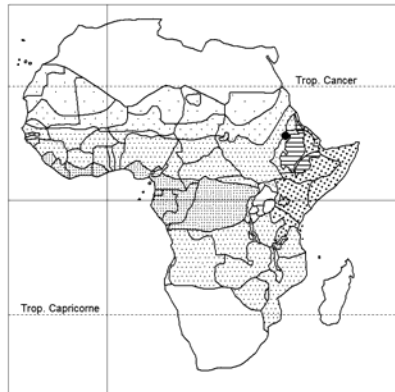
*Afrosciadium rhodesicum*



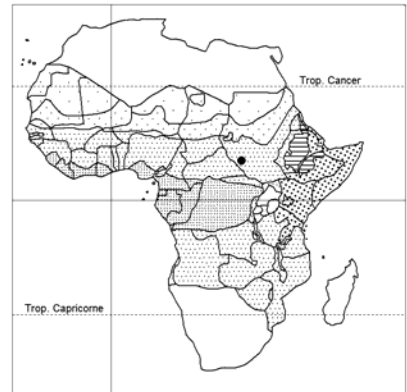
*Afrosciadium trisectum*



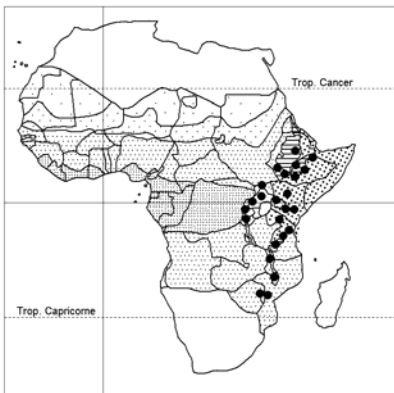
*Afrosison djurense*



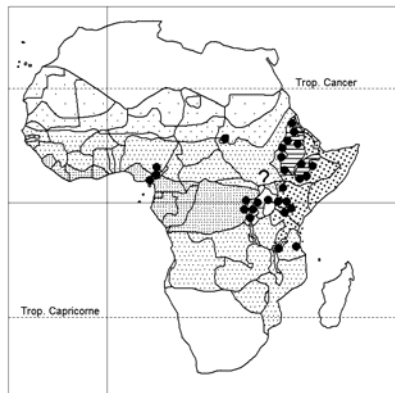
*Afrosison gallabatense*



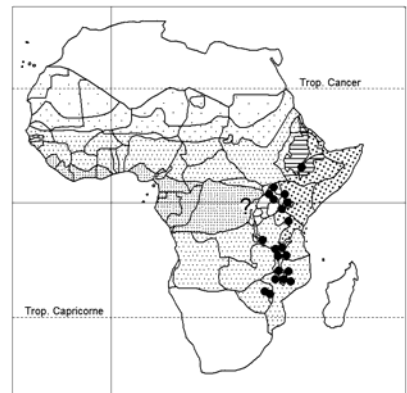
*Afrosison schweinfurthii*



*Agrocharis incognita*



*Agrocharis melanantha*



*Agrocharis pedunculata*

## ALEPIDEA PEDUNCULARIS

Grassland often where burnt, locally abundant; open places (clearings) in forest (including bamboo); *Brachystegia* woodland; evergreen bushland, low ericaceous scrub; rocky hillsides; 1000-3800 m alt.

S. Africa.

## (ALVARDIA)

*Alvardia arborescens* Fenzl, nom. = **Steganotaenia araliacea** var. **daramolana**

## AMMI / 2

incl. *Visnaga* Miller

Some 9 species in the Macaronesian Isl., Mediterranean Basin, C Europe. Introduced in S. Africa, Asia and Americas.

**Ammi majus** L.; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 167, 1994; Boulos, Fl. Egypt 2: 168-169, 2000. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 626, 2001; Fl. Eth. & Eritrea 4/1: 26, 2003; J.-P. Reduron, Ombellifères de France 1: 252, 262, 263, 2007.

syn.: *A. pauciradiatum* Hochst. ex A. Rich., pro syn.; *Apium ammi* Crantz; *Ammi copticum* L.

Erect annual glabrous herb, very variable, 0,1-1 m tall, with a tap root; stems erect, branched, ridged; leaves greenish-glaucous, 1-2(-3)-pinnate, variable in appearance and dissection; involucre bracts 3-fid or pinnatisect, lobes filiform not exceeding umbels; umbel compound; petals white; umbel in fruit open, flat; fruit ribbed.

Weed in waste places and tef cultivations; 1350-2450 m alt.

Canary Isl., Mediterranean Basin to Iran, Egypt, Saudi Arabia, Yemen, UAE, Oman. Naturalised in cultivations and disturbed ground in S Kenya (1680 m alt.) where commonly grown for cut flowers. Introduced in gardens at Yaounde (Cameroon) where Zenker (N° 688) collected a blooming specimen in 1911 (Fl. Cameroun 10: 59, 1970; Engler, Pflanzenw. Afr. 3/2: 813, 1921). Naturalised or adventive in many temperate and warm regions; Asia; Americas; S. Africa [var. **glaucifolium** (L.) not Godron (cf. Burt in Edinb. J. Bot. 48: 171, 1991), but (L.) Mérat according to Jarvis & al. in Taxon 55: 208, 2006 (with neotype: L. Gouas s.n., VII, 1853, designated by Reduron)].

Reduron, o.c., distinguishes 3 vars., viz. var. **majus**, var. **daucifolium** (Noulet) Litard. and var. **glaucifolium** (L.) Mérat.

**A. visnaga** (L.) Lam.; Fl. Eth. & Eritrea 4/1: 25, 2003. – Icon.: Boulos, Fl. Egypt 2: 169, 2000; Chaudhary, Fl. Kingdom Saudi Arabia ill. 2/1: 627, 2001; Fennane & al., Fl. prat. Maroc 2: 324, 2007 (inflor.); J.-P. Reduron, Ombellifères de France 5: 2585, 2589, 2595, 2008 (sub nom. *Visnaga daucooides*).

bas.: *Daucus visnaga* L.

syn.: *Visnaga daucooides* Gaertner; *Ammiopsis daucooides* Salzm. ex Boiss.

Robust annual or biennial herb up to 2 m tall; leaves 2-3-pinnate, lobes linear; involucre bracts deflexed, pinnatisect, exceeding umbels; petals white; rays 50-100, pedicels erect, packed together in fruit (used as tooth picks).

Grassland, weed of cultivations; 1800-2400 m alt.

Atlantic Isl., Portugal, Mediterranean Basin, incl. Egypt; introduced elsewhere.

## AMMI

SYNONYM:

*Ammi copticum* L. = **Trachyspermum ammi**

## (AMMIOPSIS)

*Ammiopsis daucooides* Boiss. = **Ammi visnaga**

## AMMODAUCUS / 1

Monospecific.

**Ammodaucus leucotrichus** Coss. & Durieu subsp. **leucotrichus**, incl. var. *longipilus* L. Chevall. and var. *brevipilus* L. Chevall.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 227-228, 2000; Le Floch & Boulos, Fl. Tunisie: 60, 2008; Fennane & al., Fl. prat. Maroc 2: 297, 2007. – Icon.: Jafri, Fl. Libya, Apiaceae: 150, 1985; Boulos, Fl. Egypt 2: 182, 2000.

Erect glabrous annual herb 10-25 cm tall, with a slender taproot; stems striate, branched from the base; leaves ± fleshy with sheathing petioles, 2-3-pinnatisect, segments linear; umbel compound, bracts pinnatisect; petals 2-lobed, white; fruit with dense yellowish-brown soft hairs.

Kedia slopes; clayey graras with *Euphorbia balsamifera*, *E. echinus*; sandy hollow on hamada; wadi beds; sand between pebbles, sandy valleys.

Canary Islands (subsp. **nanocarpa** Beltrán Tejera); N Africa from Morocco to Egypt.

Also cultivated (seeds sold in markets for flavour) in Mali, Niger, Chad.

## ANETHUM / 2

According to recent authors a monotypic genus (*A. graveolens* L.). Two other species are described from NW Africa; their taxonomic status needs revision.

**Anethum foeniculoides** Maire & Wilczek, incl. var. *erythropotamicum* Maire; Sauvage, Mém. Office Natl. Anti-Acrdien 2: 33-34, 1946; Förther & Podlech, Sendtnera 8: 52, 2002; Fennane & al., Fl. prat. Maroc 2: 329, 2007.

Perennial non-aromatic shrub or treelet, 0,5 to near 2 m tall; rootstock ramose, corky, thick like an arm at base; stem erect or ascending, sparsely ramose, long and slender, rounded, glabrous, striate, stiff; cauline leaves reduced to a spiny coriaceous sheath; umbel compound.

Kreb of the coastal hammada; sometimes in graras; flat sandy wadi; 20-100 m alt.

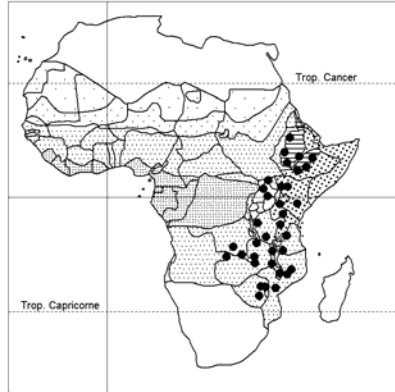
Morocco (ravines, sublittoral stony places).

[**A. graveolens** L.] – Dill – Wickens, Jebel Marra (W Sudan): 124-125, 1976; Andrews & Andrews, Upl. Kenya wild flow., ed. 2: 168, 1994; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 228, 2000; Figueiredo & Smith, Pl. Angola: 32, 2008. – Icon.: Fl. Cameroun 10: 91, 1970 (fruit); Fl. Zambes. 4: 608, 1978; Thulin, Fl. Somal. 2: 283, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 640, 2001; Fl. Eth. & Eritrea 4/1: 36, 2003; J.-P. Reduron, Ombellifères de France 1: 275, 278, 2007.

syn.: *A. sowa* Roxb. ex Fleming; *A. graveolens* L. subsp. *sowa* (Roxb. ex Fleming) N. F. Koren; *A. segetum* L. (cf. Taxon 55: 208, 2006); *Peucedanum graveolens* (L.) Benth. & Hook. f., 1867, (Hiern, 1877), C. B. Clarke, 1879, non S. Wats. 1871; *Pastinaca graveolens* Bernh.; *Ferula graveolens* Spreng.



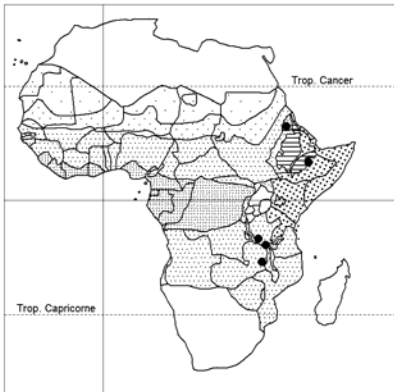
*Alepidea cordifolia*



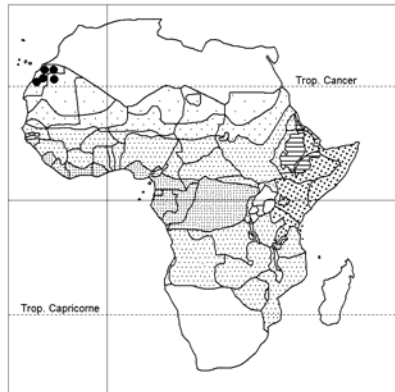
*Alepidea peduncularis*



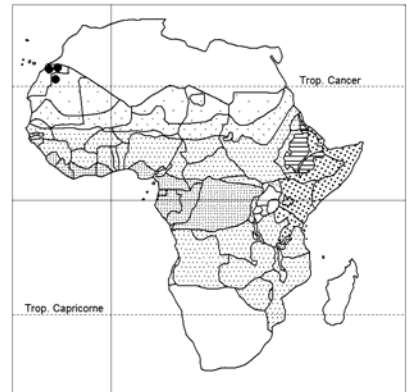
*Ammi majus*



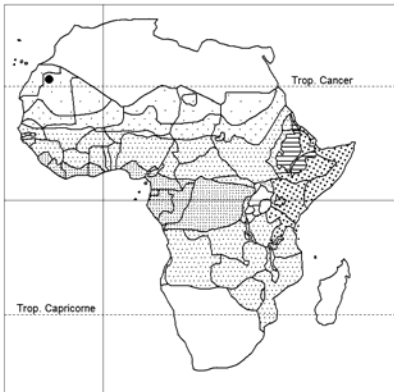
*Ammi visnaga*



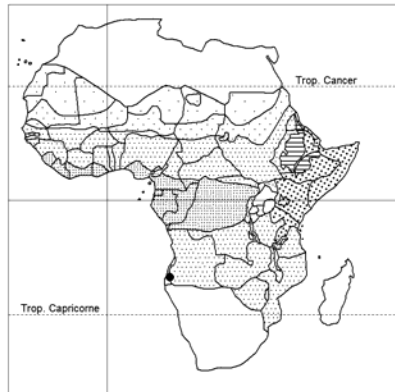
*Ammodaucus leucotrichus*



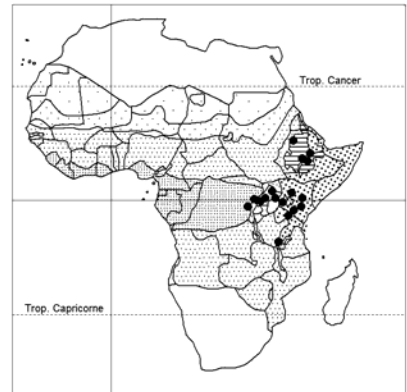
*Anethum foeniculoides*



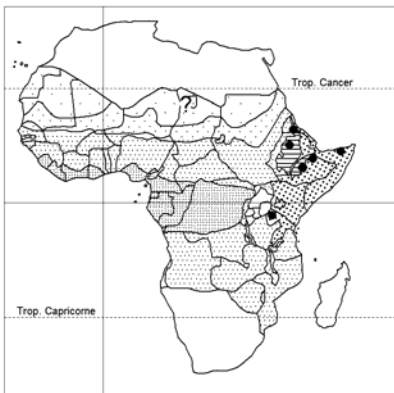
*Anethum theurkauffii*



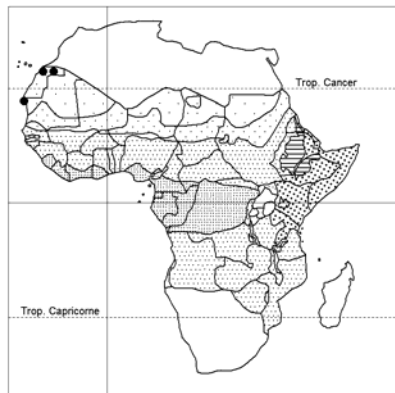
*Angoseseli mossamedensis*



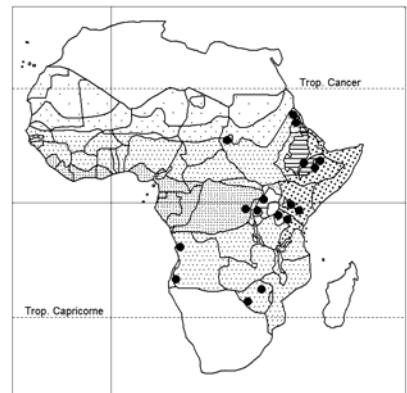
*Anthriscus sylvestris* var. *sylvestris*



*Apium nodiflorum*



*Astydamia latifolia*



*Berula erecta* subsp. *erecta*



## ANETHUM GRAVEOLENS

Aromatic glabrous annual herb 0,2-1 m tall; stems terete, finely striate, hollow; leaves finely divided, sheaths winged; umbel compound, bracts absent; petals yellow; fruit ribbed, winged.

Occurring extensively in NE & E Africa; arable lands, abandoned gardens, roadsides, weed of cultivation, waste places; woodland, grassy savanna; also cultivated; 1350-2300 m alt.

Probably native of SW Asia. Now almost cosmopolitan.

Very similar to *Foeniculum* (not annual, fruit different), but smell very different. Herbarium material lacking root and fruit is impossible to distinguish from the latter.

**A. theurkauffii** Maire; Fennane & al., Fl. prat. Maroc 2: 328, 2007.

Annual (or perennial ?) glabrous herb 30-60(-80) cm tall; stem finely ribbed; basal leaves long-petiolate, 3-pinnatisect, segments filiform; umbel compound.

Among rocks and stones on galb and kedia. Rather rare.

Morocco ?

SYNONYMS (see also above under the species):

*Anethum foeniculum* L. = **Foeniculum vulgare**

*piperitum* Ucria = **F. vulgare** subsp. **piperitum**

## ANGOSESELI / 1

Monotypic.

**Angoseseli mossamedensis** (Welw. ex Hiern) C. Norman; Jury, Symb. Bot. Upsal. 26/2: 182-183, 1986; Figueiredo & Smith, Pl. Angola: 32, 2008.

bas.: *Caucalis mossamedensis* Welw. ex Hiern

syn.: *Pimpinella involucrata* Welw. ex Engl. 1921, non Wight & Arn., 1840-1843, nom. illegit.; *Angoseseli mazzochii-alemannii* Chiov.; Enum. 2: 236, 1992.

Annual herb 15-45 cm tall, dichotomously branched from the base; branches divaricate or spreading, glabrate or nearly so, furrowed, leafy; leaves pinnatisect, ultimate segments linear; umbels compound, leaf-opposed, involucre bracts linear; flowers white.

Sparingly herbaceous maritime depressions among gravelly hills; moist sandy places at river banks; abundant by places or rather rare; 50-150 m alt.

## (ANISUM)

*Anisum caffrum* Eckl. & Zeyh. = **Pimpinella**

*stadense* Eckl. & Zeyh. = **Pimpinella**

## (ANNESORHIZA)

*Annesorhiza abyssinica* A. Braun, nom. nud. = **Heteromorpha arborescens** var. **abyssinica**

*gossweileri* C. Norman = **H. gossweileri**

## ANTHRISCUS / 1

Nine species ranging from Europe to E Africa, and east to Japan and Kamtchatka (sea-level to 4100 m alt.).

SPALIK, K. (1997). Revision of *Anthriscus* (Apiaceae). *Polish Bot. Studies* 13: 1-69.

**Anthriscus sylvestris** (L.) Hoffm. subsp. **sylvestris**, incl. var. *abyssinica* Gay ex A. Rich.; O. Hedberg, Afroalpine vascul. pl. (Symb. Bot. Upsal. 15/1): 134, 294, 1957. – Icon.: Fl. Eth. & Eritrea 4/1: 14, 2003 (as var. *sylvestris*); Spalik, o.c.: 45; J.-P. Reduron, Ombellifères de France 1: 387, 402, 403, 409, 2007; Troupin, Fl. Rwanda 2: 577, 1983.

bas.: *Chaerophyllum sylvestre* L. (fig. lectotype, Taxon 38: 292, 1989).

syn.: *Chaerophyllum tumidum* Gilib., nom. illegit.; *Myrrhis sylvestris* (L.) Spreng.; *Cerefolium sylvestre* (L.) Besser; *Chaerophyllum affine* Steud. ex A. Rich., pro syn.; *Myrrhodes sylvestris* (L.) Kuntze, nom. illegit.; *Chaerofolium sylvestre* (L.) Schinz & Thell., nom. illegit.; *Anthriscus yunnanensis* W. W. Smith, *A. keniensis* H. Wolff, incl. fa. *gracilis* H. Wolff; *A. aemula* (Woronow) Schischk.; *A. sylvestris* var. *aemula* Woronow; *A. dissecta* C. H. Wright, p.p. (inflorescences); *Peucedanum dissectum* (C. H. Wright) Dawe, p.p., non Ledeb. nec DC. (leaf = *Afroscidium kerstenii*). – In N Africa named: *Anthriscus sylvestris* subsp. *mollis* (Boiss. & Reuter) Maire; *A. mollis* Boiss. & Reut.; *Chaerofolium sylvestre* (L.) Schinz & Thell., subsp. *molle* (Boiss. & Reuter) Batt. But, according to Spalik, o.c.: 46, *A. mollis* is a synonym under *A. sylvestris* subsp. *nemorosa* (M. Bieb.) Koso-Pol. (cf. below).

Perennial or biennial herb to 2 m tall; stem glabrous above, sometimes hispid at nodes, usually hispid below; leaves (2-)3(-4)-pinnate, triangular in outline, dark green, blade to 40 cm long, glabrous or scabrous to densely hispid along nerves; umbel compound, bracts absent; fruit black, smooth, shining, usually with bristles at base.

Most commonly in forest margins and clearings; along forest paths; more rarely in open grassland; along streams or drains; margin of woodland; in bamboo formations; *Juniperus*, *Olea*, *Arundinaria*, *Erica*, *Podocarpus*, *Myrsine* forest; *Hagenia*, *Hypericum* forest; scrub with *Senecio erici-rosenii*; belt of *Erica*; ? screes; 912-4100 m alt.

N Africa (cf. above under synonyms); S. Africa (native ? or introduced); Europe; Yemen; temperate Asia.

Spalik (o.c.) distinguished 4 subspecies, viz. subsp. **sylvestris**; subsp. **nemorosa** (M. Bieb.) Koso-Pol. (cf. below); subsp. **fumarioides** (Waldst. & Kit.) Spalik with involucre bracts and plant shortly hispid, in the W Balkans; and subsp. **alpina** (Vill.) Gremli, with small, finely divided leaves, in mountains of France, Switzerland, S Germany.

“Var. **nemorosa** (M. Bieb.) Trautv.” is reported by C. C. Townsend in Fl. Trop. E. Afr., Umbellif.: 26, 1989 [syn.: *Chaerophyllum nemorosum* M. Bieb.; *Anthriscus nemorosa* (M. Bieb.) Sprengel]. It differs from the typical form by its fruit, covered with antrorse tuberculate-based bristles. It is reported from Tanzania, Masai Distr. (T2), in forest at 912-2430 m alt. (specim. Greenway 4295, Carmichael 1318). – Spalik does not quote these gatherings, although he remarks that tuberculate-fruited plants are occasionally found in E Africa (under his subsp. *sylvestris*). He also notes that the only discrimination character between subsp. *sylvestris* and subsp. *nemorosa* is the aspect of the fruit surface. Subsp. **nemorosa** occurs in SE Europe, SW & C Asia.

## ANTHRISCUS SYLVESTRIS

Other variations of the African populations observed by Spalik are: creeping rootstocks and long petioles found in Ethiopian plants (suggesting “plants growing in screes”). In Ethiopia plants also show variation in other features: “dense and short pubescence, and narrow lobes [of leaves]” reminding forms named *Anthriscus velutina* Sommier & Levier, described from the Caucasus.

In his thorough revision J.-P. Reduron (*Ombellifères de France* 1: 386-417, 2007) recognizes only 2 subspecies: – subsp. **sylvestris**, with var. **sylvestris**, var. **angustisecta** Druce and var. **latisecta** Druce; – subsp. **alpina** (Vill.) Gremlin, with var. **alpina** and var. **torquata** W. D. J. Koch; based principally on shape and division of the leaves.

As regards **A. nemorosa** (M. Bieb.) Sprengel [= **A. sylvestris** var. **nemorosa** (M. Bieb.) Trautv.] Reduron states that the presence of tuberculate fruits is of little taxonomic importance, as such fruits may be present on the same plant as well as non-tuberculate ones (Reduron, o.c.: 390).

It may be concluded that the tuberculate-fruited plants from N Tanzania are local variants of **A. sylvestris** subsp. **sylvestris**.

SYNONYMS (cf. also under **A. sylvestris** above):

*Anthriscus africana* Hook f. = **Cryptotaenia**

*dissecta* C. H. Wright, p.p. (inflorescence) = **Anthriscus sylvestris**

*dissecta* C. H. Wright, p.p. (leaf) = **Afroscidium kerstenii**

*nemorosa* (M. Bieb.) Sprengel = **Anthriscus sylvestris** subsp. **sylvestris**

## APIUM / 1

(including *Helosciadium* W. D. J. Koch): About 25-25 species in temperate and tropical regions, chiefly in temperate S. America, also naturalized.

RONSE, A. C. & al. (2010). Taxonomic revision of European *Apium* L. s.l.: *Helosciadium* W. D. J. Koch restored. *Pl. Syst. Evol.* 287: 1-17.

SPALIK, K. & al. (2009). See below under **Berula** (p. 258).

[**Apium graveolens** L.]; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 228, 2000; Fl. Eth. & Eritrea 4/1: 20, 2003; Figueiredo & Smith, Pl. Angola: 32, 2008. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 631, 2001; J.-P. Reduron, *Ombellifères de France* 1: 419, 420, 2007.

syn.: *Sison ruta* Burm. f.; *Smyrnum laterale* Thunb.; *Helosciadium* ? *ruta* (Burm. f.) DC.; *Apium decumbens* Eckl. & Zeyh.; vide Ronse & al., o.c.: 13.

Biennial herb 20-100 cm tall, characteristically strong-smelling (celery); stem solid, erect, strongly grooved, from a large fleshy taproot; lower leaves long-petiolate, simply pinnate; umbels compound, often leaf-opposed, bracts absent; petals greenish (white).

Cultivated; also an escape or relic of cultivation. Native of the coasts of Europe, N Africa, temperate Asia.

“Its occurrence in southern Africa seems to be natural in some cases (in South Africa)”, vide Figueiredo & Smith, l.c.

Var. **dulce** (Miller) Poir. (bas.: *A. dulce* Miller), celery, is grown for its succulent edible petioles; var. **rapaceum** (Miller) Poir. (bas.: *A. rapaceum* Miller), celery, grown for its swollen stock.

## APIUM

[**A. leptophyllum** (Pers.) F. Muell. ! ex Benth., Fl. austral. 3: 372, 1867]; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 167, 1994; Figueiredo & Smith, Pl. Angola: 32, 2008 (sub gen. *Cyclosperrum* Lag.). – Icon.: Fl. Zambes. 4: 583, 1978; Fl. Moçamb. 87; Umbellif.: 31, 1981; Boulos, Fl. Egypt 2: 164, 2000; Fl. Eth. & Eritrea 1: 232, 2009.

bas.: *Pimpinella leptophylla* Pers.

syn.: *Sison ammi* Jacq. 1772, non L. 1753 (= *Trachyspermum*); non *A. ammi* Crantz (= *Ammi majus*); *Apium ammi* (Jacq.) Urb.; *Cyclosperrum leptophyllum* Sprague 1923, nom. inval.; *C. leptophyllum* (Pers.) Sprague ex Britton & Wilson, 1925; *C. leptophyllum* (Pers.) Eichler ! 1986 (vide Brittonia 4/2: 276, 1990); *Cnidium tenuifolium* Moench; vide Ronse & al., o.c.: 14.

Weak glabrous annual herb, erect or sprawling, 5-60 cm tall; stem simple or branched from the base, strongly striate, often branched chiefly below the middle, with long ascending branches; taproot slender; leaves ovate-circular in outline, 3-pinnate, segments filiform; umbel compound, without bracts, sessile, leaf-opposed; petals white.

Weed of cultivated and waste ground; sometimes in damp places; disturbed stony places and by rivers; occasionally even in very shallow water; 1270-2400 m alt. in East Africa.

Probably Central American in origin; here and there in tropical Africa (Niger, Uganda, Ethiopia, Kenya, Tanzania, Zambia, Zimbabwe, Mozambique, Angola); and in other tropical regions of the world (not mapped).

Some authors have adopted *Cyclosperrum* for this plant (cf. Burt, Edinb. J. Bot. 48: 268-269, 1991), fitting Lagasca’s description of the genus, which however referred to *Sison ammi* L. [= *Trachyspermum copticum* (L.) Link based on *Carum copticum* L.]. Linnaeus’s name is the type of *Cyclosperrum* as it was mentioned under the newly described genus. This needed the conservation of *Cyclosperrum* that otherwise would have become a synonym of *Trachyspermum* Link. – It has been shown that *Cyclosperrum* differs from *Apium* in shape of cotyledons and pollen, and in the haploid chromosome number. – *Cyclosperrum* is reinstated for this plant by Ronse & al. (2010): 14.

**A. nodiflorum** (L.) Lagasca – Icon.: Thulin, Fl. Somal. 2: 276, 1999; Boulos, Fl. Egypt 2: 164, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 632, 2001; Fl. Eth. & Eritrea 4/1: 21, 2003; Reduron, *Ombellifères de France* 3: 1359, 2007 (sub gen. *Helosciadium*). – Type species of *Helosciadium* W. D. J. Koch

bas.: *Sium nodiflorum* L.

syn.: *Helosciadium nodiflorum* (L.) Koch; *Sium radiatum* Viv.

prob. syn.: *Helosciadium muratianum* Maire – Icon.: Bull. Soc. Hist. Nat. Afrique N. 28/6: pl. 31 between pp. 376-377, 1937.

Weak trailing or ascending perennial herb, glabrous, 11-100 cm tall; stems hollow, rooting at lower nodes, finely striate, fleshy, 0.3-1.6 cm Ø; leaves pinnate, leaflets in 2-6 pairs, lanceolate-ovate, serrate; umbel compound, leaf-opposed, ± sessile, bractlets present; petals white; fruit ± round.

Marshy soil near permanent water; along streams; ± 1500-2500 m alt.

Extremely variable. Reduron (l.c.) recognizes 2 varieties.

Atlantic Isl.; N Africa incl. Egypt; C & S Europe; SW & C Asia. Naturalized in the New World.

As to its generic position (*Apium* vs. *Helosciadium*), see also note below under **Helosciadium**.

## APIUM

## SYNONYMS:

*Apium ammi* (Jacq.) Urb. = **Apium leptophyllum**  
*ammi* Crantz = **Ammi majus**  
*decumbens* Eckl. & Zeyh. = **Apium graveolens**

## ASTYDAMIA / 1

Monotypic.

**Astydamia latifolia** (L. f.) O. Kuntze; Förther & Podlech, Sendtnera 8: 52, 2002. – Icon.: Bramwell & Bramwell, Wild. flow. Canary Isl., ed. 2: 236, 2001.

bas.: *Crithmum latifolium* L. f.

syn.: *Buprestis latifolia* Sprengel; *Tenoria canariensis* Sprengel; *Bupleurum canariense* (Sprengel) Sprengel; *Laserpitium crithmum* Link; *Heracleum canariense* (Sprengel) Choisy ex DC.; *Astydamia canariensis* (Sprengel) DC.

Subperennial or biennial herb; base fibrous-fleshy, roots deep; stems 1-2,5 m tall, lower branches alternate, upwards opposite or verticillate; leaves fleshy, petiole amplexicaul; lamina to 30 cm long, pinnate or deeply incised-dentate; umbel compound, flowers yellow.

Abundant on coastal rocks, sandy and sandy-salty places; 20-100 m alt.

Salvage Isl.; Canary Isl.; Morocco (from c. 32° S-wards; from Safi to Sidi Moussa d'Aglou); map: J.-P. Lebrun, Eléments atlas pl. vascul. Afrique sèche 2: 21, 1979.

## SYNONYMS:

*Astydamia canariensis* (Sprengel) DC. = **Astydamia latifolia**  
*ifniensis* Caball. = **A. latifolia**

## (ATHAMANTHA)

*Athamantia canescens* DC. = *Psammogeton capensis* Burm. f. = probably a **Dasispermum**, not *Torilis arvensis* (cf. below under this species)

## (BAUMIELLA)

*Baumiella imbricata* (Schinz) H. Wolff = **Afrocarum**

## BERULA / 1

SPALIK, K. & al. (2009). Generic delimitations within the Sium alliance (Apiaceae tribe Oenantheae) inferred from cpDNA rps16-5'trnK (uuu) and nrDNA ITS sequences. *Taxon* 58: 735-748.

A monotypic genus, or comprising 5-6 species [Spalik & Downie's circumscription of the genus including *B. bracteata* (Roxb.) Spalik & S. R. Downie (bas.: *Angelica bracteata* Roxb.) and *B. burchellii* (Hook. f.) Spalik & S. R. Downie (bas.: *Lichtensteinia burchellii* Hook. f.) from St. Helena, *B. imbricata* (Schinz) Spalik & S. R. Downie (bas.: *Carum imbricatum* Schinz, treated by us as *Afrocarum imbricatum* p. 245), and *B. repanda* (Hiern) Spalik & S. R. Downie (bas.: *Sium repandum* Hiern; treated by us under this name, p. 291), as well as *B. erecta* and *B. thunbergii* (of specific or subspecific rank)].

## BERULA

**Berula erecta** (Huds.) Coville subsp. **erecta**; Wickens, *Jebel Marra* (W. Sudan): 125, 282 (map), 1976; Figueiredo & Smith, *Pl. Angola*: 32, 2008. – Icon.: Andrews & Andrews, *Upl. Kenya wild flow.*, ed. 2: pl. 63, 1994; C. D. K. Cook, *Aquatic pl. book*: 32, 1996; Boulos, *Fl. Egypt* 2: 164, 2000; *Fl. Eth. & Eritrea* 4/1: 32, 2003; *Fl. Zambes.* 4: 599, 1978; J.-P. Reduron, *Ombellifères de France* 1: 480, 483, 486; Troupin, *Fl. Rwanda* 2: 577, 1983; B.-E. Van Wyk & al., *Medicin. pl. S. Africa*, ed. 2: 65, 2009.

bas.: *Sium erectum* Huds.

syn.: *S. angustifolium* L.; *Berula angustifolia* (L.) Mert. & W. D. J. Koch; *Siella erecta* (Huds.) Pimenov

Weak glabrous erect or decumbent rhizomatous perennial herb rooting at the lower nodes, 0,2-2 m tall, rather sparingly branched from the base upwards; stem and branches succulent, fistular, with raised lines and alternating grooves, stems sometimes reddish about the base; leaves simply pinnate, petiole dilated and sheathing at base, sheaths auricled or appendaged at apex; leaflets (5-10 pairs) variable in shape, ovate-oblong, serrate; stem leaves similar but smaller; umbel compound, leaf-opposed, bracts leaf-like; flowers greenish-white; fruit round (morphological differences Europe-Africa discussed in *Taxon* 58: 744-745, 2009).

Aquatic or subaquatic in swamps, by streams, rivers or marshy places, edges of lakes (sometimes salt); 605-2450 m alt. – Locally frequent in E. Africa.

Little variable in morphological features over its vast range.

Egypt; Mediterranean region; temperate Eurasia from the British Isles to Himalaya (syn.: *B. orientalis* Woronow ex Schischk., nom. inval.); N. America S to Mexico [var. *incisa* (Torr.) Cronq., with dimorphic leaves: filiform-dissected present]. Introduced in Australia and elsewhere.

Subsp. **thunbergii** (DC.) B. L. Burt [bas.: *Sium thunbergii* DC.; syn.: *Berula thunbergii* (DC.) H. Wolff; *Sium angustifolium* sensu Thunb., *Prodr. et Fl. Cap.*, non L. s. str.; *S. thunbergii* DC. var. *mossii* Burt Davy] in S. Africa.

“Probably the most widespread umbellifer species excluding weeds” (Spalik & al., o.c.: 736).

SYNONYMS (cf. also above under the species):

*Berula imbricata* (Schinz) Spalik & S. R. Downie = **Afrocarum repanda** (Hiern) Spalik & S. R. Downie = **Sium**

## BOWLESIA / 1

syn.: *Drusa* DC., 1807.

15 species, the majority in S. America, some in N. and C. America; one in the Canary Islands, Morocco, Somalia (cf. Thulin in J. H. Seyani & A. C. Chikuni, eds., *Proceedings of the XIIIth Plenary Meeting of AETFAT, Zomba, Malawi, 2-11 April 1991*, 2; Zomba, Malawi 1994: 1105-1119, vide p. 1109-1110, with map, Morocco lacking).

MATHIAS, M. E. & L. CONSTANCE (1965). A revision of the genus *Bowlesia* Ruiz & Pav. (Umbelliferae-Hydrocotyloideae) and its relatives. *Univ. Calif. Publ. Bot.* 38: 1-73.

These authors distinguish *Drusa* from *Bowlesia*. However, Thulin in *Flora of Somalia* 2: 271, 1999, notes that the “actual characters distinguishing *Drusa* from *Bowlesia* are trivial and I prefer to treat the two as congeneric”.



## BOWLESIA

**Bowlesia glandulosa** (Poir.) O. Kuntze; Fennane & al., Fl. prat. Maroc 2: 286, 2007 (sub gen. *Drusa*). – Icon.: Ann. Mus. Hist. Nat. (Paris) 10: pl. 38, 1807; Mathias & Constance, o.c.: 56; Thulin, Fl. Somal. 2: 272, 1999; Bramwell & Bramwell, Wild. flow. Canary Isl., ed. 2: 234, 2001 (sub gen. *Drusa*).

bas.: *Sicyos glandulosa* Poir.

syn.: *Bowlesia oppositifolia* Buch., incl. var. *maroccana* Domin; *B. maroccana* Domin, nom.; *Drusa glandulosa* (Poir.) Bornm.; *D. oppositifolia* DC.

Annual creeping herb 15-150 cm tall, sparsely branched; stems often inflated, armed with slender-stalked asteroid 4-rayed glochids and sessile 4-8-rayed stellate hairs; leaves opposite; petiole slender, 3-10 cm long; blade ovate to orbicular, 2-7 × 3-8 cm, rather shallowly 3-lobed, sparsely strigulose; umbel simple, capitate, pedunculate, bracts absent; petals white; fruit with glochidiolate-dentate wing.

Shady places in humus of evergreen bushland; often on rocks and boulders; ± 1150-1250 m alt.

Canary Isl.; Morocco.

On the maps published, i.a. by Mathias & Constance, localities in Morocco are lacking: Anti-Atlas: Tazeroualt, oued Noun, Man (oued Cherrat) – Boulhaut.

*(BUNIUM)*

*Bunium imbricatum* (Schinz) Drude = **Afrocarum**

*pituranthon* Sprengel = **Deverra denudata**

Zakharova (in M. G. Pimenov & P. M. Tilney, eds., *Apiales* – 2008: 156-159, 2008) suggests a transfer of *Carum piovanii* Chiov. to this genus (no new combination given).

**BUPLEURUM / I**

One of the largest genera of *Apiaceae*: some (150) 190 species in Europe, temperate Asia, N Africa, Macaronesia, S. Africa (*B. mundii* Cham. & Schltldl., ne endemic apparently closely related to the Eurasian *B. falcatum* L.), N. America (one species, *B. americanum* J. M. Coult. & Rose, Rocky Mts., cf. Castanea 74: 424-433, 2009).

NEVES, S. S. & M. F. WATSON (2004). Phylogenetic relationships in *Bupleurum* (*Apiaceae*) based on nuclear ribosomal DNA ITS sequence data. *Ann. Bot. (London)* 93: 379-398.

STEPANOVA, A. V. & A. A. NOTOV (2008). Wood anatomy of *Bupleurum* L. (*Apiaceae*, *Apiaceae*) in relation to habit and phylogenetic relationships. In: PIMENOV, M. G. & P. M. TILNEY, eds., *Apiales* – 2008: 130-134.

STEPANOVA, A. V. & A. A. OSKOLSKI (2010). Wood anatomy of *Bupleurum* L. (*Apiaceae*, *Apiaceae*) in relation to habit, phylogenetic relationships, and infrageneric taxonomy. *Plant Div. Evol.* 128: 501-516.

Genus distinctive in having simple entire leaves, very uncommon in the family.

[**Bupleurum lancifolium** Hornem]. – Icon.: Fl. Eth. & Eritrea 4/1: 19, 2003; Boulos, Fl. Egypt 2: 161, 2000; Fennane & al., Fl. prat. Maroc 2: 318, 2007; Fl. Iber. 10: 250, 2003 (fruit).

syn.: *B. heterophyllum* Link; *B. subovatum* Link ex Spreng. var. *heterophyllum* (Link) H. Wolff; *B. protractum* Hoffmans. & Link, incl. var. *heterophyllum* (Link) Boiss.

Annual herb ± 15-40 cm tall, glabrous, branched from the base with erecto-patent to ascending branches; upper leaves conspicuously *perfoliate*; umbel compound, bracts absent, bracteoles present; petals yellow; fruit tuberculate, ribbed.

## BUPLEURUM LANCIFOLIUM

Casual alien: gardens, waste places, dry open habitats (N Ethiopia, Western Sahara). – Not mapped.

Native of S Europe, NW Africa, E Mediterranean region E-wards to Iran, Transcaucasus.

**B. semicompositum** L. [var. **glaucum** (Robill. & Castagne ex DC.) H. Wolff, in Engl. Pflanzenz. 43 (4/228): 106, 1910; Batt., in Contr. Fl. Atl.: 39, 1919]; J.-P. Reduron, *Ombellifères de France 2* (Bull. Soc. Bot. Centre-Ouest, N. S., N° Spécial 27): 701-705, 2007; Fennane & al., Fl. prat. Maroc 2: 315, 2007. – Icon.: Boulos, Fl. Egypt 2: 161, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 630, 2001; Fl. Iber. 10: 250, 2003 (fruit); J.-P. Reduron, *Ombellifères de France 2*: 701, 2007 (fruit).

bas.: *B. glaucum* Robill. & Castagne ex DC.

syn.: *B. semicompositum* L. subsp. *glaucum* (Robill. & Castagne ex DC.) Rouy & E. G. Camus

Dwarf glabrous glaucous annual herb 5-15 cm tall; stems dichotomously branched from the base, angular; leaves linear-subulate; umbel compound, bracts shorter than the longer rays, bracteoles exceeding flowering umbellules; petals yellowish-greenish; fruit tuberculate.

Wild or cultivated graras; very common in Western Sahara.

Mediterranean region, Egypt; Saudi Arabia, Middle East from Palestine, Turkey, Azerbaijan to SW Iran.

SYNONYMS (see also under the species above):

*Bupleurum angolense* C. Norman = **Heteromorpha gossweileri**  
*arborescens* Thunb., non Jacq. = **H. arborescens**  
*canariense* (Sprengel) Sprengel = **Astydamia latifolia**  
*collinum* (Eckl. & Zeyh.) D. Dietr. = **Heteromorpha arborescens** var. **collina**  
*trifoliatum* H. L. Wendl. = **H. arborescens** var. **abyssinica**

*(BUPRESTIS)*

*Buprestis arborescens* Spreng. = **Heteromorpha latifolia** Spreng. = **Astydamia**

*(CACHRYS)*

*Cachrys abyssinica* Hochst. ex A. Rich., nom. illegit. = **Diplophium africanum**

**CARUM / I**

A genus with very uncertain limits; about 20 (30 ?) species in Europe, N & NE Africa, temperate Asia and N. America.

BARCLAY, E. L. & M. F. WATSON (1998). A revision of *Carum* and *Trachyspermum* (*Umbelliferae*) in the Socotran Archipelago. *Kew Bull.* 53: 897-907.

NÉMETH, É., ed. (1998). *Caraway: The genus Carum*. Harwood Academic Publishers, Australia etc. × + 200 pp. (Medicinal & Aromatic Plants – Industrial Profiles 7).

ZAKHAROVA, E. A. (2008). Morphological evidence of polyphyletic nature of traditional *Carum* (*Umbelliferae*-*Apiaceae*) In: PIMENOV, M. G. & P. M. TILNEY, eds., *Apiales* – 2008: 156-159.

ZAKHAROVA, E. A. (2010). Morphological evidence of polyphyletic nature of traditional *Carum* (*Apiaceae*-*Apiaceae*). *Plant Div. Evol.* 128: 409-421.

## CARUM

**Carum piovanii** Chiov. – Icon.: Fl. Eth. & Eritrea 4/1: 28, 2003.

Biennial or ? perennial herb to 25 cm tall; stems striate, with basal leaf or rosette; leaves narrowly triangular in outline, 2-3-pinnate, to 7 cm long; umbel compound; petals white with central marking.

Evergreen bushland; dry grassland; river banks; 2000-2800 m alt.

Zakharova (o.c.) notes that this species “has the same life form, globose tuber, as well as leaf, umbel and fruit structure as in species of *Bunium*” from which it differs in the presence of calyx teeth. So she proposes a transfer to the genus *Bunium* (no combination given).

## SYNONYMS:

*Carum angolense* C. Norman = **Aframmi**

*calcicolum* Balf. f. = **Trachyspermum pimpinelloides**

*copticum* (L.) Hiern = **T. ammi**

*imbricatum* Schinz = **Afrocarum**

*kuriense* Vierh. = **Trachyspermum pimpinelloides**

*pimpinelloides* Balf. f., incl. var. *trichocarpum* (Vierh.) C. C. Towns. = **T. pimpinelloides**

*trichocarpum* Vierh. = **T. pimpinelloides**

## (CAUCALIOPSIS)

*Caucaliopsis stolzii* H. Wolff = **Agrocharis pedunculata**

## (CAUCALIS)

*Caucalis africana* Thunb. = **Torilis arvensis** subsp. **heterophylla** var. **purpurea** (cf. also sensu Reduron, under Note p. 294)

*arvensis* Huds., incl. subsp. *divaricata* (Moench) Thell. and subsp. *recta* Jury = **T. arvensis** subsp. **arvensis**

*fallax* Boiss. & Blanche = **T. arvensis** (see under Note for Fl. Egypt)

*gracilis* (Hook. f.) H. Wolff = **Agrocharis melanantha** subsp. *umbrosa* (Engl.) Engl., and fa. *umbrosa* (Engl.) H. Wolff and fa. *typica* H. Wolff = **A. incognita**

*gracilis* sensu R. E. Fr. = **A. incognita**

*helvetica* Jacq. = **Torilis arvensis** subsp. **arvensis** var. **elatior**

*incognita* C. Norman = **Agrocharis**

*infesta* (L.) Curtis = **Torilis arvensis**

var. *elatior* Gaudin = **T. arvensis** subsp. **arvensis** var. **elatior** (cf. also under Note)

subsp. *heterophylla* (Guss.) Ball = **T. arvensis** subsp. **heterophylla**

*latifolia* sensu Jacot Guill., non L. = **Agrocharis melanantha**

*longisepala* H. Wolff = **A. pedunculata**

*melanantha* (Hochst.) Hiern = **A. melanantha**

*mossamedensis* Welw. ex Hiern = **Angoseseli mossamedensis**

*pedunculata* Baker f. = **Agrocharis pedunculata**

*purpurea* Ten. = **Torilis arvensis** subsp. **heterophylla** var. **purpurea** (cf. also under Note, sensu Reduron)

*segetum* Thuill. = **T. arvensis**

## CENTELLA / 4

syn.: *Solandra* L., 1759, non Swartz 1787; *Hydrocotyle* L. subgen. *Centella* (L.) Benth. & Hooker

45-50 species, predominantly in S. Africa, one more or less pantropical.

Creeping herbs with long stolons; leaves often in rosettes, stalked, reniform; umbel simple.

ADAMSON, R. S. (1951). A revision of the sub-genus *Solandra* of *Centella*. *J. South Afric. Bot.* 17: 1-44.

OSKOLSKI, A. A. & B.-E. VAN WYK (2010). Wood and bark anatomy of *Centella*: scalariform perforation plates support an affinity with the subfamily Mackinlayoideae (Apiaceae). *Plant Syst. Evol.* 289: 127-135.

**Centella asiatica** (L.) Urb.; Wickens, Jebel Marra (W Sudan): 125, 1976; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 165, 1994; Dokosi, Herbs of Ghana: 243, 1998; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 228, 2000; Lejoly & al., Flore Tshopo (RD Congo) in Taxonomania 24: 8, 2008; Figueiredo & Smith, Pl. Angola: 32, 2008; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 145, 2010. – Icon.: A. Richard, Monographie du genre *Hydrocotyle* (extr. Ann. Gén. Sci. Phys. Bruxelles 4): pl. 55 fig. 11, 1820 (*H. asiatica*); Adam, Fl. descr. Mts Nimba 2: 879, 1971; Troupin, Fl. Rwanda 2: 563, 1983; C. D. K. Cook, Aquatic pl. book: 34, 1996; Thulin, Fl. Somalia 2: 1971, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 610, 2001; Akoegninou & al., Fl. analyt. Bénin: 331, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 82, 2007; Lisowski, Fl. (angiosp.) Rép. Guinée 2 (ill.): fig. 35, 2009; Fl. Gabon 38, Apiaceae (Sosef): 7, 2009; Fl. Eth. & Eritrea 4/1: 5, 2003; Fl. Zambes. 4: 563, 1978; Fl. Cameroun 10: 39, 1970.

bas.: *Hydrocotyle asiatica* L.

syn.: *H. abyssinica* Gand.; *H. thunbergiana* Spreng.; *H. pallida* DC.; *Centella coriacea* Nannf.

Procumbent perennial herb 10 cm to at least 1 m in length, glabrous to softly pilose, with a slender to stout taproot, and stolons c. 10 cm long rooting at the nodes; stem terete, green or suffused purplish; leaves solitary or in groups of up to 6; lamina roundish to reniform 2-9 cm Ø, with a narrow to very wide basal sinus, margins crenate, petiole 1-20 cm long; flowers white to purplish, umbel 1-7-flowered; fruit round, 2-4 mm Ø.

Mat-forming. Most commonly in damp grassland along rivers and by swamps and lakes; sometimes sprawling over rocks; occasionally aquatic or in deep mud; forest clearings; among *Sphagnum*; under bushes; fields; dry banks; waste ground; degraded pastures; gardens, lawns; streets, wooded savanna; evergreen bushland; rocky outcrops with wet flushes and thin soil with *Selaginella njamnjamensis*, *Aeollanthus* spp., *Aloe* sp. and many annuals; also reported as a weed (not too troublesome); near sea-level-3540 m alt. – Often overlooked.

Variable, formerly split into several taxa. – Plants from Uganda and Kenya named *C. ulugurensis* perhaps represent montane forms of *C. asiatica*.

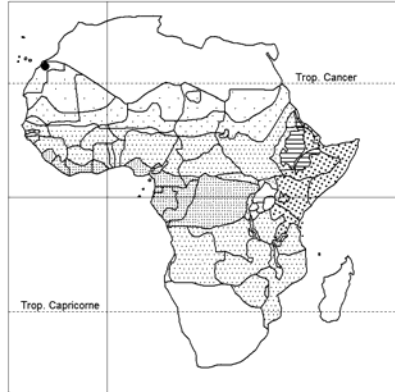
Bioko/Fernando Poo, Principe, S. Tomé; Namibia, Caprivi Strip, Botswana, S. Africa, Swaziland. – Widely distributed in the tropics, extending into some subtropical areas.

Sometimes grown as a cover crop, in Ethiopia occurs as a tea plantation weed. Young leaves are eaten raw (pot herb, medicine).

**C. glabrata** L. var. **natalensis** Adamson – Icon.: A. Richard, Monographie du genre *Hydrocotyle* (extr. Ann. Gén. Sci. Phys., Bruxelles 4): pl. 67 fig. 39, 1820; Gledhill, Eastern Cape wild flow.: 45 fig. 4, 1981; E. Pooley, Field guide wild flow. Kwazulu-Natal: 541, 1998 (photo.). – Neotype of *C. glabrata* L.: Herb. Linn. N° 332.11 (LINN), in Taxon 55: 210, 2006.



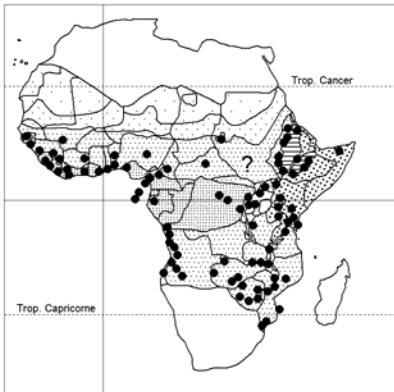
*Bowlesia glandulosa*



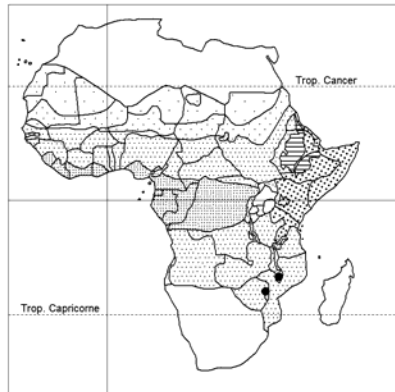
*Bupleurum semicompositum*



*Carum piovanii*



*Centella asiatica*



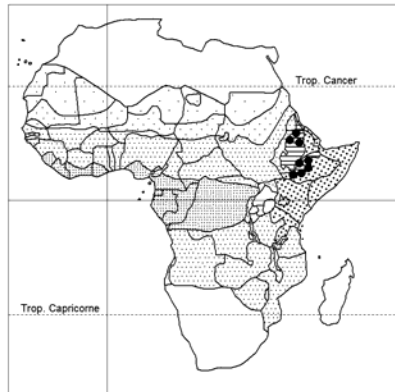
*Centella glabrata* var. *natalensis*



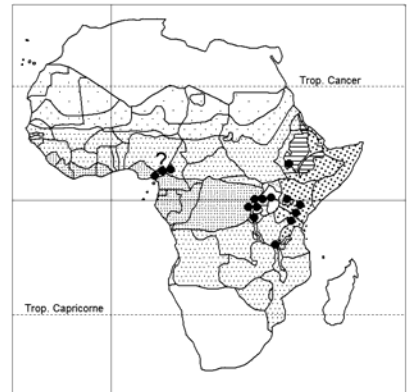
*Centella obtriangularis*



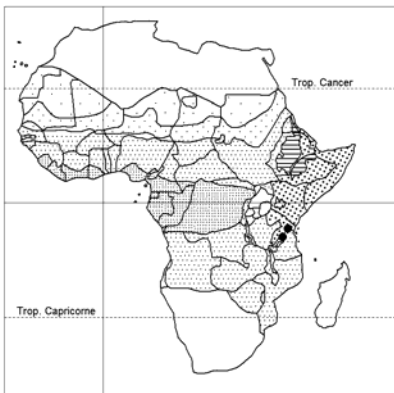
*Centella virgata* var. *gracilescens*



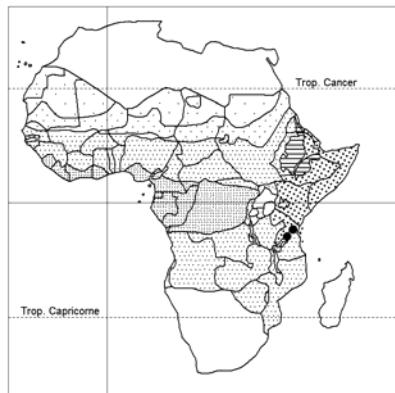
*Conium maculatum*



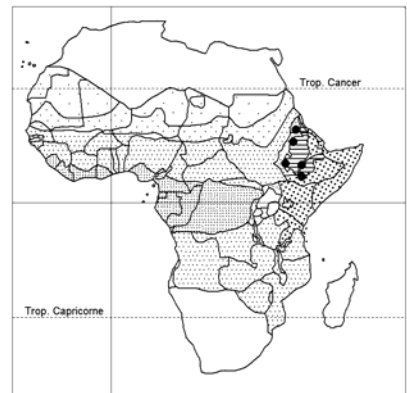
*Cryptotaenia africana*



*Cryptotaenia calycina*



*Cryptotaenia polygama*



*Daucus hochstetteri*



## CENTELLA GLABRATA

syn.: *Hydrocotyle glabrata* (L.) L. f.; *H. centella* Cham. & Schltldl., nom. illegit.; *H. bupleurifolia* A. Rich.; *Centella chamissonis* Drude; *Hydrocotyle glabra* Thunb., nom. illegit.; *H. plantaginea* Spreng.; *H. falcata* Eckl. & Zeyh.; *H. heterophylla* Schinz; *Centella bupleurifolia* (A. Rich.) Adamson; *Hydrocotyle centella* Cham. & Schltldl. var. *plantaginea* (Spreng.) Sond.; *Centella glabrata* L. var. *plantaginea* (Spreng.) Engl.

Prostrate or sprawling herb, becoming woody at base; stems terete, branching below ground, the aerial part forming long prostrate lateral branches which frequently root at nodes and often bear erect short shoots; stems striate, often dark brown to purplish, glabrous to pubescent by crisped hairs; leaves in fascicles or pairs or apparently single in young parts, very narrowly lanceolate to linear, 2.5-5 cm long; umbel sessile, 1-3-rayed; flowers whitish-green tinged red.

Under shrubs; grassland.

Very variable (a very difficult complex).

E S. Africa (30-1900 m alt.).

**C. obtriangularis** Cannon

Glabrous creeping herb, rooting at nodes; stolons often with long internodes to 19 cm long; leaves in groups of 3-10; lamina 3-11 mm long, *very shallowly obtriangular*, apex deeply cleft into 3-7 triangular teeth; flowers white.

Wet grassy slopes or banks.

**C. virgata** (L. f.) Drude var. **gracilescens** Domin

bas.: *Hydrocotyle virgata* L. f.

syn.: *H. filicaulis* Eckl. & Zeyh.; *H. lanuginosa* Eckl. & Zeyh.; *H. trichophylla* Eckl. & Zeyh.

Stems many from the root, erect, sprawling or semiproscumbent, woody at base only, branched especially at base, to 80 cm long with short internodes, glabrous or hairy; leaves terete or needle-like, with a small groove, the lower ones in crowded groups, to 15 cm long, scattered or in groups of 2-3; flowers white to greenish.

Boulders; sometimes margins of streams.

Very variable.

S. Africa (up to 1000 m alt).

## SPECIES OF UNCERTAIN STATUS:

**Centella ulugurensis** (Engl.) Domin; Engler Pflanzenwelt Afr. 3/2: 795, 1921; Townsend, Kew Bull. 45: 383-384. – Icon.: Bot. Jahrb. Syst. 28: pl. 7 A-M, 1900 (very beautiful!).

bas.: *Hydrocotyle ulugurensis* Engl.

Creeping perennial herb with internodes 1.5-2 cm long; leaf petiole 8-12 mm long, patent hairy; blade 5-6 mm Ø, margins wavy, shallowly lobed without apical point; umbel 1-flowered, on peduncle 1-1.2 cm long, with 2 bracts below the flower, petals light violet; fruit 3 mm long, 5 mm Ø.

Forming small mats on a bog of the Lukwangule Plateau (Uluguru Mts, Tanzania); c. 2400 m alt.

Known only from the type (Goetze 312, B lost) collected in 1898. – Not mapped.

Recent gatherings (K) from the same area fit the original description and “may prove to be a distinct taxon” (Townsend, l.c.). Similar plants from Uganda and Kenya probably represent montane forms of *C. asiatica* (e.g. sensu Agnew & Agnew, Upl. Kenya wild flowers, ed. 2: 165, 1994).

## CENTELLA

## SYNONYMS:

*Centella bupleurifolia* (A. Rich.) Adamson = **Centella glabrata**  
*chamissonis* Drude = **C. glabrata**  
*coriacea* Nannf. = **C. asiatica**  
*glabrata* L. var. *plantaginea* (Spreng.) Engl. = **C. glabrata**  
var. **natalensis**  
*verticillata* (Thunb.) Fourcade = **Hydrocotyle**

## (CEREFOLIUM)

*Cerefolium sylvestre* (L.) Besser = **Anthriscus**

## (CHAEREFOLIUM)

*Chaerofolium sylvestre* (L.) Schinz & Thell., nom. illegit., incl. subsp. *molle* (Boiss. & Reuter) Maire and var. *molle* (Boiss. & Reuter) Batt. = **Anthriscus sylvestris**

## (CHAEROPHYLLUM)

*Chaerophyllum affine* Steud. ex A. Rich. = **Anthriscus sylvestris**  
*arborescens* L. = **Conium maculatum**  
*nemorosum* M. Bieb. = **Anthriscus sylvestris**  
*sylvestre* L. = **A. sylvestris**  
*tumidum* Gilib., nom. illegit. = **A. sylvestris**

## (CICUTA)

*Cicuta major* Lam. = **Conium maculatum**

## (CNIDIUM)

*Cnidium kraussianum* (Meisn.) Sond., incl. var. *elatius* Sond. and var. *glabratum* Sond. = **Pimpinella caffra**  
*tenuifolium* Moench = **Apium leptophyllum**

## CONIUM / I

Some 5 (2-6) species in the Mediterranean region.

**Conium maculatum** L. – Icon.: Fl. Moçambique 87, Umbellif.: 25, 1981; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 625, 2001; Fl. Eth. & Eritrea 4/1: 16, 2003; J.-P. Reduron, Ombellifères de France 2: 874, 2007; Puff & Sileshi Nemomissa, Pl. Simen: 123, 2005.

syn.: *C. chaerophylloides* (Thunb.) Sond.; *Seseli chaerophylloides* Thunb.; *Cicuta major* Lam.; *Chaerophyllum arborescens* L. (cf. Taxon 55: 210, 2006).

Erect glabrous biennial herb 0.5-3 m tall, with a white tuberous taproot; stems with rather fine regular grooving, often with irregular, characteristic purple spots, much branched, hollow; leaves bright green, triangular in outline, 2-4-pinnate; umbels compound, small, terminal ones overtopped by the laterals; bracts and bracteoles present; petals white, apex inflexed.

Waste places; damp ground; streamsides; 2400-3350 m. alt. (Ethiopia).

Reduron (l.c.) recognizes 2 subspp. in France [subsp. *maculatum*, stem with purple spots; and subsp. *viride* (DC.) Espeut without such spots].

## CONIUM MACULATUM

N temperate region of Europe through to Central Asia; N Africa; with frequent introductions elsewhere, also in tropical Africa (Zimbabwe, Mozambique); S. Africa. Probably spontaneous in high regions of Ethiopia as well as in Yemen (2100-3600 m alt.). Nevertheless, the plant prefers organically rich habitats.

Two other species, viz., *C. fontanum* Hilliard & B. L. Burtt and *C. sphaerocarpum* Hilliard & B. L. Burtt, are endemic in S. Africa.

*Whole plant extremely poisonous* due to the alkaloid coniine (propylpiperidine).

## SYNONYM:

*Conium verrucosum* M. J. Gay ex A. Rich. = *Oreoschimperella*

## [CORIANDRUM]

syn.: *Keramocarpus* Fenzl

[*Coriandrum sativum* L.]; Wickens, *Jebel Marra* (W Sudan): 125, 1976; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2, 5: 229-230, 2000; Thulin, *Fl. Somalia* 2: 276, 1999; Akoegninou & al., *Fl. analyt. Bénin*: 331, 2006; Figueiredo & Smith, *Fl. Angola*: 32, 2008. – Icon.: *Fl. Cameroun* 10: 91, 1970 (fruit); *Fl. Zambes.* 4: 576, 1978; Boulos, *Fl. Egypt* 2: 158, 2000; Chaudhary, *Fl. Kingd. Saudi Arabia* ill. 2/1: 623, 2001; *Fl. Eth. & Eritrea* 4/1: 15, 2004; Reduron, *Ombellifères de France* 2: 919, 2007.

syn.: *C. majus* Gouan; *C. globosum* Salisb.

Annual glabrous erect herb, branched from the base, 10-80 cm tall, with unpleasent smell; stems finely striate; leaves 1-3-pinnatisect, basal ones long-petiolate; umbel compound, bracts 0-1; petals white to pink, the 2 outer ones large; fruit round, 4-6 mm Ø, crowned by the persistent sepals.

Cultivated; sometimes an escape from cultivation; weed of lawns, cultivated ground, also damp places; 1200-1700(-2600) m alt. – Rarely in W Africa; from Sudan-Ethiopia S-wards to S. Africa, Angola; also N Africa.

Of very ancient cultivation (for its seeds, coriander); probably native in SW Asia. Escape of cultivation in Europe, Asia, America.

## (CRITHMUM)

*Crithmum latifolium* L. f. = *Astydamia*

## CRYPTOTAENIA / 3

Some 6(-8) species in Africa, Europe, E Asia, N. America. According to Spalik & al., l.c., the three African species and the Canary Islands endemic (*C. elegans* Webb) do not belong to *Cryptotaenia* s. str., represented by 2 species in S Italy and the Caucasus as well as 2 species in E Asia-E N. America.

MAGEE, A. R. & al. (2010). Phylogenetic position of African and Malagasy Pimpinella species and related genera (Apiaceae, Pimpinelleae). *Plant Syst. Evol.* 288: 201-211.

SPALIK, K. & al. (2009). See above under *Berula*.

*Cryptotaenia africana* (Hook. f.) Drude; Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: 167, 1994; Cheek & al., *Plants of Dom, Bamenda Highl.*, Cameroon: 145, 2010. – Icon.: *Fl. Cameroun* 10: 85, 1970; *Fl. Eth. & Eritrea* 4/1: 27, 2003.

bas.: *Anthriscus africana* Hook. f.

## CRYPTOTAENIA AFRICANA

Perennial herb, 0,5-2 m tall with an underground creeping rootstock; stem sparingly branched above, ± terete, hollow, striate, generally ± multicellular-pilose above the base and increasingly glabrous upwards, sometimes glabrous; basal leaves long-petiolate (petiole ± 8-16 cm), 1-2-pinnate; umbels compound, numerous, on divergent glabrous peduncles 5-7 cm long; bracts and bracteoles absent; pedicels very thin, to 3 cm long; petals (greenish) white.

Arborescent *Acanthus* forest; forest on old volcanic ashes; rank vegetation where forest has been cleared; commonly in dense shade; along streams; damp track sides; forest margins; *Podocarpus-Hagenia* forest; bamboo forest; moist ground; 960-3000 m alt.

Bioko/Fernando Poo.

*C. calycina* C. C. Townsend

Perennial herb 30-70 cm tall, with a rather slender underground creeping rootstock; stem sparingly branched above, ± terete, hollow, pale-striate, slender, glabrescent to ± furnished with fine, rather long, multicellular hairs; basal leaves long-petiolate (petiole 3-16 cm), 2-3-pinnate; umbels compound, few, on erect divergent pilose peduncles 2-5 cm long, bracts 1-2; petals (greenish) white; fruit crowned by unequal sepals.

Forest with *Allanblackia*, *Zenkerella*, upper parts steep and rocky with *Hypericum revolutum*, *Philippia*; rain-forest on ridge top; field layer in *Podocarpus*, *Myrica*, *Ocotea* forest; 1600-2300 m alt.

Comprises 2 vars.: – var. *calycina*; – var. *dissecta* C. C. Townsend.

*C. polygama* C. C. Townsend

Perennial herb ± 0,5-2,5 m tall, with an underground creeping rootstock; stem sparingly branched above, ± terete, hollow, pale-striate, glabrescent below the inflorescence to ± furnished throughout with brownish multicellular hairs; basal leaves long-petiolate (petiole ± 8-16 cm), 2-3-pinnate, leaflets ovate to elliptic; umbels compound, numerous on divergent ± glabrous to multicellular pilose peduncles 2-8 cm long; bracts 1-3; pedicels pilose; petals white, occasionally tinged green or violet.

In grass amongst rocks by stream in semi-open forest; forest with *Albizia* cf. *petersiana*, *Dombeya*, *Dissotis aprica*, *Maesopsis*; forest patches as an occasional ground layer in glades; 1510-2500 m alt.

## [CUMINUM]

[*Cuminum cyminum* L.]; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2, 5: 230, 2000; Akoegninou & al., *Fl. analyt. Bénin*: 331, 2006. – Icon.: *Fl. Eth. & Eritrea* 4/1: 10, 2003; Chaudhary, *Fl. Kingd. Saudi Arabia* 2/1 ill.: 620, 2001.

syn.: *C. officinale* Garsault, nom. inval.; *C. cyminum* var. *scabridum* DC. and var. *hirtum* Boiss.; *C. aegyptiacum* Mérat ex DC.

Slender annual herb branching from the base, 5-50 cm tall, glabrous, ± glaucous; leaves 1-2-pinnate, lobes filiform; umbel compound, bracts and bracteoles unequal in length, filiform; petals red to pink; calyx teeth prominent, persistent.

Cultivated since Antiquity, perhaps indigenous to C Asia (oases); cultivated in the oases of the Hoggar, in the Mediterranean Region, Egypt and India. Often naturalised. Seeds sold in markets in Ethiopia-Eritrea.

## CUMINUM

*Cuminum sudanense* H. Wolff is perhaps a synonym under **C. cyminum**. Type: Schweinfurth, s. n.; Sudan s. l.; probably destroyed at Berlin.

## SYNONYM:

*Cuminum crinitum* (Boiss.) Koso-Pol. = **Psammogeton canescens**

## (CYCLOSPERMUM)

*Cyclosperrum leptophyllum* Sprague, nom. inval.

= **Apium leptophyllum**

*leptophyllum* (Pers.) Eichler and (Pers.) Sprague ex Britton & Wilson = **A. leptophyllum**

## DAUCUS / 1

Some 20 species in N Africa, Europe, SW Asia.

Plants hispid or bristly, with compound umbels, bracts and bracteoles pinnately divided, and fruit with glochidiate spines.

[**Daucus carota** L.] – Carrot. – Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 230, 2000; Akoegninou & al., Fl. analyt. Bénin: 331, 2006; Thulin, Fl. Somalia 2: 275-276, 1999; Reduron, Ombellifères de France 2: 968-1090, 2007. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 620, 2001 (fruit); Fl. Eth. & Eritrea 4/1: 12, 2003.

syn.: *D. carota* L. var. *abyssinica* A. Braun; *D. mauritanicus* L. (Taxon 55: 211-212, 2006); *D. abyssinicus* C. A. Meyer 1842, non Hochst. ex A. Rich. 1848 (= *D. hochstetteri*).

Erect annual or biennial herb to 1 m tall, hispidly hairy, with a swollen usually orange taproot; leaves 2-3-pinnate, segments linear; umbels terminal; flowers white or pink, often one or more (central) purple.

In many different habitats (Ethiopia); 1800-2100 m alt.

Widely cultivated for its edible root. Cosmopolitan. Probably native in SW Asia.

Wild and cultivated carrots belong to *D. carota* s. l., a complex taxon. Cultivated forms are usually placed in subsp. **sativus** Schübl. & G. Martens 1834 [syn.: *D. carota* var. *sativus* Hoffm.; *D. sativus* (Hoffm.) Roehl.; *D. carota* subsp. *sativus* (Hoffm.) Ancang. 1882]; cf. Reduron, o.c.: 1017-1038.

Accounts of the infraspecific taxa are given by Reduron, l.c., Le Floch & Boulos, Fl. Tunisie: 63, 2008, and Fennane & al., Fl. Pratique Maroc 2: 299-300, 2007.

**D. hochstetteri** A. Braun ex Drude

syn.: *D. abyssinicus* Hochst. ex A. Rich. 1848, non C. A. Meyer 1842 (= *D. carota*); *Caucalis abyssinica* Hochst. ex A. Rich., pro syn.; *Durieu abyssinica* Boiss. & Reuter

Annual herb 15-25 cm tall, branched from the base; leaves 2-3-pinnate, segments linear; vegetative leaves serving as bracts; umbels sessile, axillary; petals white, small.

Common on rocky hills and in valleys; open, often eroded areas in evergreen bushland; 1650-2700 m alt.

## SYNONYMS (see also under the species above):

*Daucus coptica* (L.) Persoon = **Trachyspermum ammi crinitus** (Boiss.) Kuntze, non Desf. = **Psammogeton canescens**

*melananthos* Steud. = **Agrocharis melanantha** Hochst.

*visnaga* L. = **Ammi**

*yemenensis* Defl. = **Agrocharis melanantha**

## DEVERRA / 3

syn.: *Pituranthos* Viv. 1824, non *Pityranthos* Mart. 1814.

Generic boundaries between *Eriocyclus*, *Seseli*, *Deverra* and *Pituranthos* are problematic. 10-12 species essentially distributed from Morocco to Arabia, Iraq; 2 species endemic in S. Africa, Namibia, Botswana, Zimbabwe.

They are dwarf shrubs or perennials, almost leafless; umbels compound.

**Deverra burchellii** (DC.) Eckl. & Zeyh.

bas.: *D. aphylla* (Cham. & Schltdl.) DC. var. *burchellii* DC.

syn.: *Pituranthos burchellii* (DC.) Benth. & Hook. f. ex Schinz

Almost leafless, subglaucous shrub or subshrub 0.4-1.25 m tall, arising from a woody rootstock; basal leaves with linear leaflets, but soon withering and often absent in mature plants; stem leaves reduced to short linear petioles, or frequently to persistent bases alone; umbels long-pedunculate, bracts and bracteoles early caducous; petals yellowish-white; fruit tuberculate.

Open woodland on sandy soils in semi-arid situations.

S. Africa, Namibia, Botswana (300-1800 m alt.).

**D. denudata** (Viv.) Pfisterer & Podlech subsp. **denudata**; Fennane & al., Fl. prat. Maroc 2: 323, 2007; Le Floch & Boulos, Fl. Tunisie: 64, 2008. – Icon.: Ozenda, Fl. Sahara, ed. 2: 359, 1977, sub nom. *Pituranthos chloranthus*. – Neotype: P. Davis 49865.

bas.: *Pituranthos denudata* Viv.

syn.: *Bunium pituranthos* Sprengel; *Deverra pituranthos* DC., nom. illegit.; *D. chlorantha* Coss. & Durieu ex Coss.; *Pituranthos chloranthus* (Coss. & Durieu ex Coss.) Benth. & Hook. f. ex Schinz, incl. subsp. *cossonianus* Maire, subsp. *robustus* Maire, subsp. *intermedius* Maire var. *calvescens* Maire – *Deverra aphylla* (Cham. & Schltdl.) DC. var. *denudata* Sond. is nomenclaturally independent = *D. denudata* subsp. *aphylla*.

probable syn.: *Pituranthos chloranthus* subsp. *intermedia* sensu Guinea 1948 et Dubuis 1960, non (Chevallier) Maire [= *Deverra triradiata* Hochst. ex Boiss. subsp. *intermedia* (Chevallier) Pfisterer & Podlech]; it is a plant from Algeria (Beni-Abbes to Ourgla); the map drawn by Pfisterer & Podlech in Mitt. Bot. Staatsamml. München 22: 603 map 3, 1986, is partly inaccurate.

Subshrub, glabrous, 0.6-1.5 m tall; stem ramose from the base; branches elongate, spreading to suberect, rarely subtortuous, greenish to glaucous; lower leaves 2-3-pinnate, with short linear lobes, upper ones reduced to sheaths or with a linear limb, early deciduous; bracteoles early deciduous; petals greenish yellow; fruit hairy.

Wadis; nebkas; sandy hollows on coastal hamada with *Rhus albida*, *Teucrium chardonianum*; rocky valley with nebkas.

Very variable.

Morocco, Algeria, Tunisia, Libya.

Subsp. **aphylla** (Cham. & Schltdl.) Pfisterer & Podlech [bas.: *Bubon aphyllus* Cham. & Schltdl.; syn.: *Deverra aphylla* (Cham. & Schltdl.) DC.; *Pituranthos aphyllus* (Cham. & Schltdl.) Benth. & Hook. ex Schinz; *D. aphylla* var. *denudata* Harv. & Sond.] in Namibia, Botswana, S. Africa (60-2000 m alt.).



## DEVERRA

**D. scoparia** Coss. & Durieu ex Coss. subsp. **scoparia**; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 230, 2000; Fennane & al., Fl. pratique Maroc 2: 322, 2007; Le Floch & Boulos, Fl. Tunisie: 64, 2008.

syn.: *D. fallax* Batt. & Trab.; *Pituranthos reboudii* (Coss. & Durieu) Benth. & Hook. f. ex Schinz; *P. scoparius* (Coss. & Durieu ex Coss.) Benth. & Hook. f. ex Schinz; *P. fallax* (Batt. & Trab.) H. Wolff; *P. scoparius* var. *fallax* (Batt. & Trab.) Maire

probable syn.: *P. scoparius* var. *muratianus* Maire

Caespitose erect broom-like perennial herb, much branched at base with erect branches; stem leafless, nodose, greenish, 30-100 cm tall; basal and lower leaves 2-3-pinnatisect, cauline ones reduced to small ovate virgate sheaths, membranous at margins; bracts and bracteoles tardily caducous; petals white; fruit short hairy to papillose.

Ecology unknown in Mauretania; in Morocco: rocks, dry hill-sides.

Morocco, Algeria (S to the Hoggar on N border of our area), Tunisia; Libya [subsp. **tripolitana** (Andreansky) Pfisterer & Podlech; syn.: *D. rohlfsiana* Aschers.; *Pituranthos rohlfsianus* (Aschers.) Schinz].

Comprises 2 subspp. (see above).

**DIPLOLOPHIUM / 7**

Seven species in tropical and S. Africa.

Leaves often finely divided into linear segments, with sheathing bases conspicuously inflated; umbels compound, with numerous ± large bracts and bracteoles.

**Diplolophium africanum** Turcz.; Wickens, Jebel Marra (W Sudan): 125, 283 (map), 1976; Agnew & Agnew, Upl. Kenya wild. flow., ed. 2: 168, 1994; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 231, 2000. – Icon.: Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 361, 1952; Troupin, Fl. Rwanda 2: 567, 1983; Fl. Eth. & Eritrea 4/1: 34, 2003, and note on the key to the Ethiopian species, *ibid.* 1: 231, 2009.

syn.: *Cachrys abyssinica* Hochst. ex A. Rich., nom. illegit.; *Diplolophium abyssinicum* (Hochst. ex A. Rich.) Benth., incl. var. *angustibracteatum* Engl.

Perennial herb 0.6-3 m tall, usually in considerable stands of single stems; stems simple or with a few branches near the top, rigid, 3-8 mm wide, green to purplish, glabrous, terete, finely striate, with a soft pith; leaves flabellate; flowers many in each umblet; petals whitish.

Wooded and open grassland, locally abundant and conspicuous (Kenya); persisting in disturbed places; road sides; cultivated ground; fallow lands, with *Pennisetum*; neglected *Cedrela* plantation with regenerating mixed woodland of *Combretum collinum*, *Stereospermum kunthianum*, *Acacia hockii*, *Albizia grandibracteata* on ground with rocky outcrops; savannas; 950-3000 m alt.

**D. boranense** Bidgood & Vollesen – Icon.: Kew Bull. 61: 240, 2006; Fl. Eth. & Eritrea 1: 233, 2009.

Perennial herb with a thick vertical tuberous rootstock; aerial stems annual, to 60 cm tall; stems, leaves, inflorescences glabrous; leaves all basal; blade rhomboid in outline; flowers white; fruit densely pubescent, curved.

## DIPLOLOPHIUM BORANENSE

Open *Acacia*, *Commiphora* bushland on rocky limestone ridge; fairly common; 1575 m alt.

Unusual flowering time: October at the height of the dry season.

Closely related to *D. somaliense*.

Only known from the type collected in 2003 in the insufficiently collected region of Oromiya, S Ethiopia.

**D. buchananii** (Benth. ex Oliv.) C. Norman; Fl. Moçamb. 87, Umbelliferae: 43, 1981. – Icon.: Hook. Ic. Pl. 14: pl. 1358, 1881 (sub gen. *Physotrichia*).

Perennial herb 1-2 m tall, often glaucous and sometimes subshrubby; stems arising several together, relatively simple and unbranched, terete, rigid, solid and with distinct rather fine grooves, glabrous to slightly puberulous, often tinged purplish-brown; leaves glabrous, 2-ternate to pinnate, juvenile ones deeply cut; petals greenish white to creamy yellow; fruit densely bristly pubescent.

Rocky ground; moist spots in *Brachystegia* woodland; 1500 m alt.

S. Africa [subsp. **swynnertonii** (Baker f.) Cannon].

Comprises 2 subspp.

“As with most tropical African umbels, information on the biology of *Diplolophium buchananii* is very scanty” (Cannon, Notes Roy. Bot. Gard. Edinb. 32: 200, 1973, with notes given by collectors).

**D. diplolophioides** (H. Wolff) Jacq. – Fél.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 231, 2000; Akoegninou & al., Fl. analyt. Bénin: 332, 2006 (both sub nom. *D. africanum*). – Icon.: Bull. Inst. Franç. Afrique Noire, A, Sci. Nat. 20: 30 and photos. p. 32-33, 1958 (specimens parasitized by a fungus of the “*Sphaeropsisidales*”); Lisowski, Fl. (angiosp.) Rép. Guinée 2 (ill.): fig. 36, 2009 (*D. africanum*).

syn.: *D. africanum* sensu Hutch. & Dalziel, Fl. W. Trop. Afr., ed. 2, 1/2: 755, 1958, non Turcz.; and sensu Burkill, l.c., Akoegninou & al., l.c.; *D. africanum* fa. *kankanense* Jaeger & Schnell, descr. gall. (icon., see above, 1958); Enum. 2: 237, 1992.

Perennial erect herb, subwoody at base, 1-2.5 m tall; stems rigid, leafy; leaves deeply divided, glabrous, with linear segments to 30 cm long; umbels few, with showy white flowers, sepals persistent; fruit densely hirsute.

Woodland, grassy savanna; plateau savanna, slopes; road sides; brook; 400-1500 m alt.

Highly aromatic; bruised plants yield a smell of “terpentine”.

**D. marthozianum** P. A. Duvign.

Perennial herb 50-70 cm tall; basal leaves with petiole 10-15 cm long, lamina 7-10 × 10-15 cm, repeatedly trichotomously dissected, segments hair-like, short; stem leaves almost reduced to sheaths; fruit with 10 ribs, densely tuberculate, crowned by persistent spinulose sepals.

Steppe with *Vellozia* on rocky mineralized soil, clearly radioactive; hill poisoned with copper (but not growing on soils rich in cobalt).

Known ? from only 2 specimens collected in 1956.

Duvigneaud suggests that the species would be better placed in a new genus due to the characters of the fruit.

FAUCON, M.-P. & al. (2010). Copper endemism in the Congolese flora: a database of copper affinity and conservational value of cuprophytes. *Pl. Ecol. Evol.* 143: 5-18 (see p. 9, Katanga).

## DIPLOLOPHIUM

**D. somaliense** Verdc.; Kew. Bull. 61: 242, 2006. – Icon.: Thulin, Fl. Somalia 2: 279, 1999.

Slender shrub, 0,5-4 m tall, with a woody trunk below; stems glabrous, finely ridged; leaves ± scattered along the stem, to 30 cm long, glabrous, 3-pinnate, blade sessile on the sheath or with a petiole to 3,5 cm long; petals white (cream); fruit densely pubescent.

Evergreen bushland with *Buxus*, *Juniperus* on limestone; forest with *Juniperus*, *Buxus*, *Dracaena*, *Sideroxylon*, *Dodonaea*, *Tarchonanthus*; cliff faces and narrow gorges; cliffs in cracks of limestone blocks; steep sea-facing slopes in Juniper forest; grows to its full height in the inaccessible hills; ± 1000-2050 m alt.

**D. zambesianum** Hiern; Figueiredo & Smith, Pl. Angola: 32, 2008. – Icon.: Fl. Zambes. 4: 601, 1978; Fl. Moçamb., Umbellif.: 42, 1981.

Perennial herb 0,6-2,2 m tall, usually in stands of single stems; stems simple or with a few branches near the top, rigid, 3,5-6 mm Ø, sometimes purplish below, glabrous, terete, finely striate, solid; leaves broadly deltoid in outline, 2-3-pinnate, segments setaceous, rigid with thickened and ± recurved margins; umbels solitary to few, bracts often purplish; petals (creamy) white; fruit with long yellowish or whitish hairs.

*Brachystegia* woodland and associated grassland; sometimes in damp places; derelict cultivations; 1060-1900 m alt.

The specimen Gossweiler 14158 from Angola is perhaps a new, distinct species.

\* \* \*

*Diplolophium guineense* A. Chev., nom. in sched. (A. Chevalier 13522, Guinea) = ? **Pycnocycla ledermannii** [not cited by Lisowski, Fl. (angiosp.) Rép. Guinée 1, 2009].

## SYNONYMS:

*Diplolophium abyssinicum* (Hochst. ex A. Rich.) Benth., incl. var. *angustibracteatum* Engl. = **Diplolophium africanum africanum** sensu F.W.T.A., ed. 2 et auct. div., non Turcz., incl. fa. *kankanense* Jaeger & Schnell = **D. diplolophioides guineense** A. Chev. = ? **Pycnocycla ledermannii swynnertonii** (Baker f.) C. Norman = **Diplolophium buchananii** subsp. *tisserantii* C. Norman = **D. diplolophioides**

## (DRUSA)

*Drusa glandulosa* (Poir.) Bornm. = **Bowlesia oppositifolia** DC. = **B. glandulosa**

## [ERYNGIUM]

CALVIÑO, C. I. & al. (2010). Unraveling the taxonomic complexity of *Eryngium* L. (Apiaceae, Saniculoideae): Phylogenetic analysis of 11 non-coding cpDNA loci corroborates rapid radiations. *Plant Div. Evol.* 128: 137-149.

WÖRZ, A. (1999). A taxonomic index of the species of *Eryngium* L. (Apiaceae: Saniculoideae). *Stuttgart. Beitr. Naturkunde, Ser. A, Biol.* 596. 48 pp.

WÖRZ, A. & H. DIEKMANN (2010). Classification and evolution of the genus *Eryngium* L. (Apiaceae-Saniculoideae): results of fruit anatomical and petal morphological studies. *Plant Div. Evol.* 128: 387-408.

[**Eryngium foetidum** L.]; Adam, Fl. descr. Mts Nimba 2: 880, 1971; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 231, 2000; Y. Harvey & al., Pl. Bali Ngemba...: 130, 2004; Fennane & al., Fl. prat. Maroc 2: 334, 2007. – Icon.: Dokosi, Herbs of Ghana: 245, 246, 1998; Lisowski, Fl. (angiosp.) Rép. Guinée 2 (ill.): fig. 37, 2009; Fl. Cameroun 10: 47, 1970.

Perennial erect herb 15-60-80 cm tall with a fleshy rootstock; stems robust, glabrous, furrowed; leaves in basal rosette simple, oblanceolate, c. 17 cm long, finely dentate, spiny; cauline leaves sessile, ± lobed, spiny; umbels simple, ± elongate spike-like, bracts spiny; fruit with dense whitish scales or warty. – Smell unpleasant.

Native of tropical and subtropical America. Naturalised in waste places, streamsides, etc. in W Africa from Sierra Leone to W Camerouns, Uganda, islands of the Gulf of Guinea.

## SYNONYM:

*Eryngium pedunculare* (Steud. ex A. Rich.) Koso-Poljansky = **Alepeidea peduncularis**

## (ERYTHROSELINUM)

*Erythroselinum atropurpureum* (Hochst. ex A. Rich.) Chiov. = **Lefebvrea atropurpurea**

*lefebvrioides* Engl. = ? **L. atropurpurea**

## FERULA / 1

About 150-170 species from the Mediterranean Region to SW and C Asia (centre of endemism).

KURZYNA-MŁYNIK, R. & al. (2008). Phylogenetic position of the genus *Ferula* (Apiaceae) and its placement in tribe Scandiceae as inferred from nrDNA ITS sequence variation. *Plant Syst. Evol.* 274: 47-66.

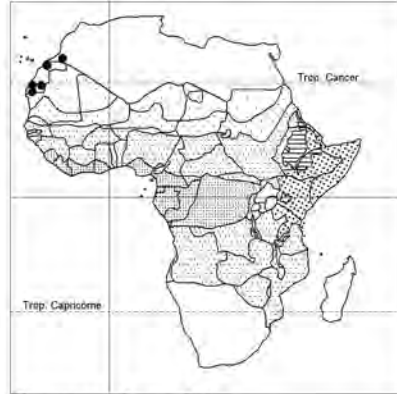
**Ferula communis** L.; Wickens, Jebel Marra (W Sudan): 125, 284 (map), 1976; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 169, 1994. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 642, 2001; Fl. Eth. & Eritrea 4/1: 39, 2003; Fennane & al., Fl. prat. Maroc 2: 335, 2007 (fruit); Reduron, Ombellifères de France 3: 1264, 1267, 2007; Puff & Sileshi Nemomissa, Pl. Simen: 125, 2005. – Lectotype: Herb. Clifford: 95, *Ferula* 6 (Taxon 55: 212, 2006).

syn.: *F. abyssinica* Hochst. ex A. Rich.; *F. erythraeae* Schweinf. ex Penzig, nom. nud.; *F. montis-elgonis* Bullock; *Ferula* sp. sensu Andrews, Flow. pl. Anglo-Egypt. Sudan 2: 362, 1952; *F. ferulago* L.; *F. nodiflora* L.; *F. lobeliana* Vis.; *F. meoides* L.

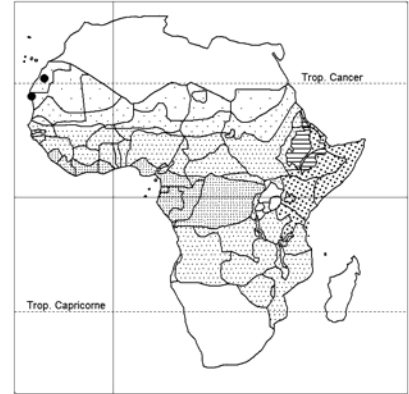
Glabrous perennial herb, c. 0,9-4 m tall; stem stout, to c. 4 cm Ø, solidly pithy, terete and finely striate like the branches; basal and stem leaves with very conspicuous sheathing bases and long fine linear leaf lobes; umbels compound, numerous, mostly 3 on a common branch, bracts absent; petals yellow; fruit 1-2 cm long, pear-shaped, flat.



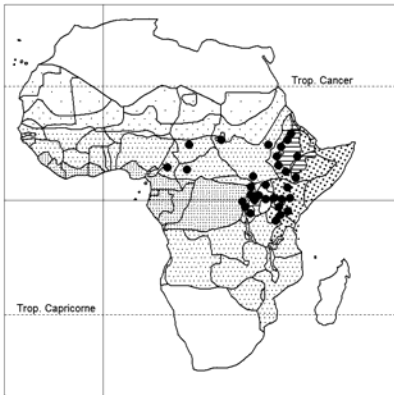
*Deverra burchellii*



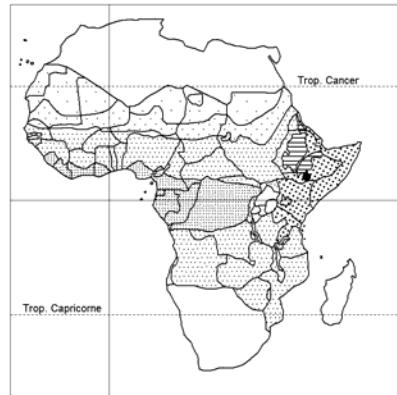
*Deverra denudata*  
subsp. *denudata*



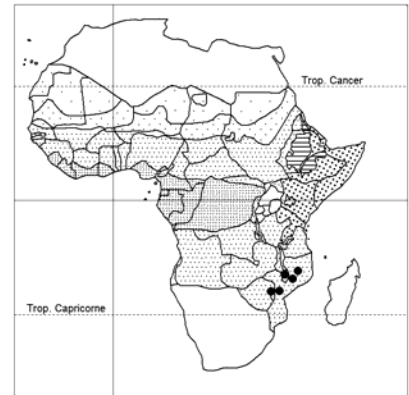
*Deverra scoparia* subsp. *scoparia*



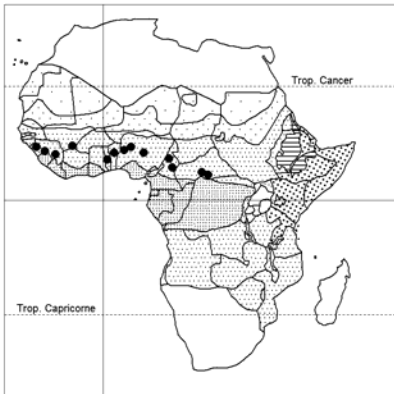
*Diplolophium africanum*



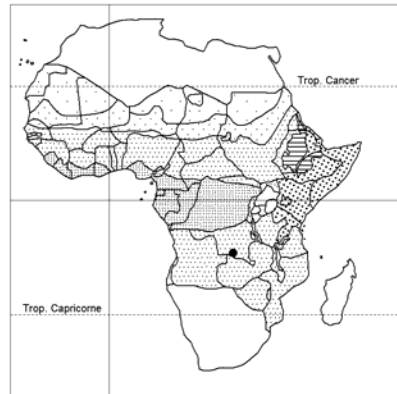
*Diplolophium boranense*



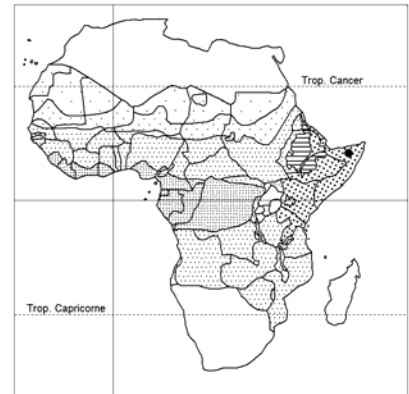
*Diplolophium buchananii*



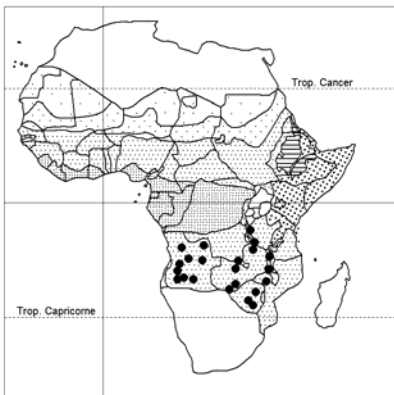
*Diplolophium diplolophioides*



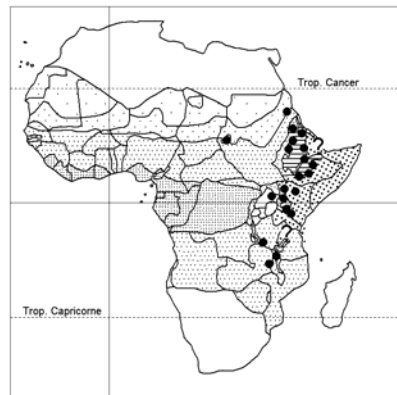
*Diplolophium marthozianum*



*Diplolophium somaliense*



*Diplolophium zambesianum*



*Ferula communis*



*Frommia ceratophylloides*



## FERULA COMMUNIS

Rocky grassy hill slopes, mountain tops; open forest; wooded grassland (dry or wet); pasture land; *Tarchonanthus* scrub; conspicuous in disturbed areas of dry evergreen woodland; 1400-3750 m alt.

S Europe, Canary Isl., N Africa, Aegean Region, Turkey, Lebanon, Syria, Saudi Arabia, Yemen.

For N Africa 3 subspecies are mentioned by El Alaoui-Faris & al. (Rev. Cytol. Biol. Végét. – Le Botaniste 27/1-2: 3-19, 2005) and El Alaoui-Faris & Cauwet-Marc (Fl. Medit. 14: 295-304, 2004, and *ibid.* 16: 341-354, 2006), viz., subsp. *brevifolia* (Link) Mariz with 2 vars., subsp. *sousseensis* El Alaoui & Cauwet with 2 vars., and subsp. *genuina* (Gren. & Godr.) Burnat. In his work on French Apiaceae, Reduron (l.c.) distinguishes 2 subspecies: – subsp. *communis* with var. *communis*, var. *brevifolia* (Link) Mariz based on *F. brevifolia* Link, and var. *microcarpa* Cauwet-Marc ex Reduron; – subsp. *catalaunica* (Pau) Sanchez-Cuxart & Bernal Cid, with var. *catalaunica* and var. *microcarpa* Cauwet-Marc. The tropical African material was not included in the studies cited above, but subsp. *communis* has the largest distribution area. – Notes on the variability by Reduron, Bull. Soc. Bot. Centre-Ouest, N. S. 40: 197, 2010.

SYNONYMS (cf. also under the species above):

*Ferula graveolens* Spreng. = **Anethum**

## [FOENICULUM]

[**Foeniculum vulgare** Miller]; Wickens, *Jebel Marra* (W Sudan): 125, 1976; Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: 168, 1994; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2, 5: 232, 2000; Figueiredo & Smith, *Pl. Angola*: 32, 2008. – Icon.: Andrews, *Flow. pl. Anglo-Egypt. Sudan* 2: 362, 1952; *Fl. Zambes.* 4: 606, 1978; Thulin, *Fl. Somalia* 2: 282, 1999; Boulos, *Fl. Egypt* 2: 175, 2000; Chaudhary, *Fl. King. Saudi Arabia ill.* 2/1: 633, 2001; *Fl. Eth. & Eritrea* 4/1: 35, 2003; Reduron, *Ombellifères de France* 3: 1303, 1309, 2007.

syn. *F. officinale* All.; *F. capillaceum* Gilib., nom. inval.; *Anethum foeniculum* L.

Erect glabrous glaucous biennial or perennial herb 0,6-2 m tall; stems finely striate, hollow when mature; leaves long-petiolate, to 50 cm long, 3-4-pinnate, segments filiform, petioles sheathing; cauline leaves reduced; umbel compound, bracts and bracteoles absent; petals yellow. Resembling *Anethum graveolens* (annual!), but fruit not winged and the strong aromatic odour is different.

Widely cultivated; naturalised (abundantly in Ethiopia) in disturbed places or persisting after cultivation (in the northern mountains of Somalia); 30-2550 m alt.

Of very ancient cultivation in the Mediterranean Region and SW Asia and probably native there. Now locally established all over the world.

A polymorphic species. Two subspecies are recognized: – subsp. **vulgare** with 3 vars., the cultivated forms usually named var. **dulce** (Miller) Batt. & Trab.; – subsp. **piperitum** (Ucria) Bég. [bas.: *Anethum piperitum* Ucria; syn.: *Foeniculum piperitum* (Ucria) Presl; illustrations and synonyms in Reduron, o.c.: 1322-1324; Lebrun & Stork, *Enum.* 2: 238, 1992].

A third subspecies, **F. vulgare** subsp. **subinodorum** (Maire, Weiller & Wilczek) M. Ibn Tattou is cited by Fennane & al., *Fl. prat. Maroc* 2: 313-314, 2007, present in Morocco.

## FOENICULUM

SYNONYM:

*Foeniculum kraussianum* Meisn. = **Pimpinella caffra**

## (FRANCHETELLA)

*Franchetella arborescens* (Spreng.) Kuntze, incl. var. *abyssinica* (A. Rich.) Kuntze, var. *acuminata* Kuntze, var. *normalis* Kuntze, and var. *sylvatica* Kuntze = **Heteromorpha arborescens** var. **abyssinica**

var. *collina* (Eckl. & Zeyh.) Sond., incl. fa. *normalis* H. Wolff, fa. *anomala* H. Wolff = **H. arborescens** var. **collina**

var. *platyphylla* Welw. ex Hiern, nom. nud. = **H. occidentalis**

var. *stenophylla* (Schinz) Hiern = **H. stenophylla**

## FROMMIA / 1

Monotypic.

MAGEE, A. R. & al. (2010). See above under **Cryptotaenia**.

**Frommia ceratophylloides** H. Wolff – Icon.: *Fl. Zambes.* 4: 588, 1978; Magee & al., o.c.: 206 (fruit).

Perennial herb, glabrous or with a few hairs on stem and branches, 0,6-1,5 m tall; stem single, much branched from a little above the base with alternate opposite or verticillate branches diverging at  $\pm 30^\circ$ - $90^\circ$  to form a broad compound inflorescence; branches wiry, green to purplish, terete, striate; basal leaves resembling those of *Ceratophyllum demersum*, forming a rosette above a scaly or fibrous collar formed by the decaying sheaths of previous year's leaves; umbels compound in sparsely branched inflorescence, bracts and bracteoles absent.

Open dry grassland with or without scattered shrubs, on mountain tops among rocks; shallow soil over rock; rarely in open woodland; 1820-2400 m alt.

A very unusual *Apiaceae* with yellow flowers and *Ceratophyllum*-like leaves. Recently placed near some *Pimpinella*.

## (GYMNOSCIADIUM)

*Gymnosciadium pimpinelloides* Hochst. = **Pimpinella**

*pusillum* Pic. Serm. = **P. pimpinelloides**

## (GYNOPHYGE)

*Gynophyge tanzaniensis* Gilli = **Agrocharis pedunculata**

## HAPLOSCIADIUM / 1

Monotypic.

**Haplosciadium abyssinicum** Hochst.; Hedberg, *Afroalpine vascul. pl.* (Symb. Bot. Upsal. 15/1): 136, 294-295, 1957; I. Friis, *Fragm. Flor. Geobot. Suppl.* 2/1: 196, 1993. – Icon.: Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: pl. 63, 1994; *Fl. Eth. & Eritrea* 4/1: 17, 2003, Puff & Sileshi Nemomissa, *Pl. Simen*: 123, 2005.

syn.: *Trachydium abyssinicum* (Hochst.) Benth. & Hook. f. ex Hiern, incl. var. *fischeri* Engl., var. *kilimandschari* Engl., and var. *lindblomii* H. Wolff

Perennial herb, usually solitary or in small groups, with an (extremely) stout, deep blackish rootstock, the latter frequently furnished with fibrose rootlets above with often annulate appearance; leaves glabrous (to hirtellous), numerous, in basal dense rosette,

## HAPLOSCIADIUM ABYSSINICUM

linear, 2-16 cm long, pinnate with pinnatisect segments; umbel compound; bracts and bracteoles numerous; stalk short, hidden in the leaf rosette; petals white; fruit hidden, plant almost geocarpic.

Rolling grassy hills with scattered trees to moorland; mounds in swamps; among mosses in peaty soil on flat rocks; commonly in damp or wet ground, volcanic or sandy to black peaty ground; ericaceous scrub; adapted to solifluction soil; 2110-4600 m alt.

*(HELOSCIADIUM)*

The separation between *Apium* L. and *Helosciadium* W. D. J. Koch has been very much discussed. Restitution of *Helosciadium* and its morphological circumscription was announced by Spalik & al. (Taxon 58: 744, 2009). The genus is retained by Reduron (Ombellifères de France 3: 1344, 2007) who gives a key to species of *Apium* (*graveolens*), *Helosciadium* and *Berula* (*erecta*). R. Hand (Willdenowia 39: 309, 2009) also maintains the species in *Helosciadium*, and so does Reduron in Bull. Soc. Bot. Centre-Ouest, N. S. 40: 198, 2010.

**Helosciadium nodiflorum** (L.) W. D. J. Koch figures in Reduron, o.c.: 1361-1370. This species is treated by us as **Apium nodiflorum** (L.) Lag. (based on *Sium nodiflorum* L.).

## SYNONYMS:

*Helosciadium muratianum* Maire = ? **Apium nodiflorum**

*ruta* (Burm. f.) DC. = **A. graveolens**

*simense* M. J. Gay ex A. Rich. = **Oreoschimperella verrucosa**

## HERACLEUM / 3

65-70 species mainly in temperate Eurasia, one in N. America (*H. maximum* Bartr.; syn.: *H. lanatum* Michx).

**Heracleum abyssinicum** (Boiss.) C. Norman – Icon.: Fl. Zambes. 4: 620, 1978; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 64, 1994; Fl. Eth. & Eritrea 4/1: 44, 2003.

syn.: Enum. 2: 238, 1992; *Malabaila abyssinica* Boiss. var. *kirungae* (Engl.) Robyns

Perennial, or biennial, erect or trailing herb 0,2-2,5 m tall (sometimes supported by bushes); stems fistular, sulcate-striate, densely pilose, 3-8 mm Ø below, simple or frequently with one or more long, ascending branches from the lower half upwards, branches with much-reduced leaves; leaves pinnate with toothed, often distant leaflets; umbel compound; bracts very small or absent; petals white in symmetric corolla, 2-3 mm long; fruit flat, winged (Manchester & O'Leary, Bot. Rev. 76: 1-82, 2010; see p. 17).

Most frequently in damp grassland; often at or near forest margins; in long grass on cliff ledges; beds of dried-up stream in *Erica*, *Protea* community; among rocks in volcanic craters; previously burned *Erica*, *Hypericum*, *Protea* bushland; grassy slopes with *Juniperus*, *Maerua*, *Rhus* bushland; damp peaty soil; naked lava among *Helichrysum* amid *Philippia* bush; 1680-3970 m alt.

**H. elgonense** (H. Wolff) Bullock; Hedberg, Afroalpine vascular plants (Symb. Bot. Upsal. 15/1): 139-140, 296, 1957; Agnew & Agnew, l.c.

syn.: *H. inexpectatum* C. Norman

## HERACLEUM ELGONENSE

Perennial herb 0,6-1,8 m tall, with stout but easily broken, fistular, sulcate-striate, densely finely pilose stems, 1,25-1,80 cm Ø below, simple or with 1-2 ascending branches with much reduced leaves; basal leaves in loose rosette, pinnate with roundish or bluntly deltoid leaflets; umbel compound, bracts absent; petals white often tinged purple, the outer ones c. 1 cm long, much longer than the inner ones in outer umblets; fruit pilose.

From shade of *Hagenia*, *Rapania* woodland to open moorland and tree *Senecio* communities; *Alchemilletum*; *Hypericum* scrub near edge of swamp; frequently in damp grassy places by streams; open glades in *Podocarpus latifolius* forest; 2700-4200 m alt.

**H. taylorii** C. Norman; Hedberg, o.c.: 140, 296; Agnew & Agnew, l.c. – Icon.: Fl. Trop. E. Afr., Umbelliferae: 122, 1989 (partial).

Perennial herb 30-50 cm tall, with fistular, sulcate-striate, densely pubescent stems, 3-6 mm Ø below, branching only in the inflorescence; rootstock short, stout with much-thickened side-roots; leaves narrowly oblong in rosette, pinnate with 7-11 pairs of roundish to ovate leaflets crowded upwards, incised-dentate; umbel compound, with or without bracts; petals white, the outermost ones in umblets twice as long as the others; mature fruit unknown.

Moor; streamsides; grassland from the upper part of the montane forest belt into the alpine belt; 3000-3810 m alt.

## SYNONYMS:

*Heracleum canariense* (Sprengel) Choisy ex DC. = **Astydamia latifolia**

*inexpectatum* C. Norman = **Heracleum elgonense**

## HETEROMORPHA / 5

syn.: *Franchetella* Kuntze 1891, non Pierre 1890; *Annesorhiza* (*Anesorhiza*) Cham. & Schltldl.

Seven species in temperate and subtropical Africa, one extending into S Yemen. Taxonomically isolated genus of woody habit.

Our compilation follows the revision by Winter & van Wyk (Kew Bull. 51: 225-265, 1996). Species and synonyms figure in our Enumération 4: 584-585, 1997.

*Annesorhiza* is maintained on generic level by Manchester & O'Leary, Bot. Rev. 76: 1-82, 2010, see p. 17.

OSKOLSKI, A. A. & B.-E. VAN WYK (2008). Systematic and phylogenetic value of wood anatomy in the Heteromorphae (Apiaceae, Apioidae). *Bot. J. Linn. Soc.* 158: 569-583.

**Heteromorpha arborescens** (Spreng.) Cham. & Schltldl., excl. var. *kassneri* (H. Wolff) De Wild. (= *H. involucrata*); El Amin, Trees & shrubs Sudan: 347-348, 1990; Friis, Forest trees N.E. Trop. Afr.: 212-213, 327 (map), 1992 (sub *H. trifoliata*). – Icon.: Fl. Zambes. 4: 580, 1978; Troupin, Fl. Rwanda 2: 569, 1983 (idem); Beentje, Kenya trees, shrubs & lianas: 442, 1994; Fl. Trop. E. Afr., Umbelliferae: 39, 1989; White & al., Evergreen for. fl. Malawi: 578, 43 (map, partly inaccurate), 2001; E. Schmidt & al., Trees & shrubs Mpumalanga...: 490-491, 2002; Coates Palgrave, Trees south. Afr., ed. 3: 854, col. ill. 233, 2002; V. Thomas & R. Grant, Sappi tree spotting, highveld: 270-271, 2002; Latham, Plants visited by bees...Umalila, south. Tanz., ed. 3: 100, 2007; B.-E. van Wyk & al., Medicin. pl. S. Africa, ed. 2: 171, 2009.

## HETEROMORPHA ARBORESCENS

syn.: Enum. 4: 584, 1997; *Tenoria arborescens* (Spreng.) Spreng.; *Franchetella arborescens* (Spreng.) Kuntze

Well branched woody shrub or tree, from one or several trunks, 1,25-15 m tall, rarely a facultative climber; trunk 5-25 cm Ø; stems well branched, terete, smooth, glabrous to pilose; bark peeling in horizontal bands, translucent for several years, sometimes waxy; newly exposed bark smooth, shiny, reddish or yellowish brown, becoming dull black or grey with age; leaves 1-20 cm long incl. petiole (0,5-8 cm), simple or trisect to pinnately compound, or 2-pinnatifid; inflorescence a single compound umbel or a panicle of compound umbels; bracts small; petals cream to greenish yellow.

In a wide range of habitats: forest; forest margins especially where fires are frequent; bushland; wooded grassland; rupicolous shrubland/boulder scrub; riverine woodland; hillsides and rocky outcrops; wooded ravines; littoral dune scrub; secondary forest; dolomite; open woodland with *Brachystegia*, *Uapaca*, *Combretum* or *Acacia*, *Euphorbia*; *Juniperus* forest; sometimes persisting in disturbed places; 455-2730 m alt.

Extremely variable. Various regional forms have been recognised as species, varieties or forms, but intermediates exist between these. However, "the traditional infraspecific rank of variety is quite useful to describe the ... morphological and geographic variation, while maintaining nomenclatural stability..." (Winter & van Wyk, o.c.: 239).

Namibia, Botswana, Swaziland, S. Africa; Yemen (map Kew Bull. 51: 241, 243, 1996).

Comprises 5 varieties, 3 in our area: – var. **abyssinica** (Hochst. ex A. Rich.) H. Wolff (syn.: Enum. 4, l.c.; *H. abyssinica* Hochst., nom. nud.) a tree with 3- or 5-foliolate or pinnate leaves; the most widely distributed variety, in a wide range of habitats; from Yemen-Ethiopia Swards to S. Africa, SW Angola; at higher altitudes; – var. **frutescens** P. J. D. Winter, a lower shrub from a woody rootstock, leaves 3-foliolate and pinnately decompound; Swards from S Malawi, NE Namibia to NE S. Africa, often in dry woodland up to 1500 m alt.; – var. **montana** P. J. D. Winter, similar to var. *abyssinica* but with pinnate leaves, pinnae with decumbent bases, leaflets ± sickle-shaped; from S Tanzania/Malawi Swards to E to W Mozambique.

2 varieties occur S of our area only: – var. **arborescens** [syn.: *Bupleurum arborescens* Thunb. 1794, non Jacq. 1789, nom. illegit.; *Heteromorpha arborescens* (Spreng.) Cham. & Schltld. var. *integrifolia* Sond., and var. *platyphyllum* sensu H. Wolff p.p.]; – var. **collina** (Eckl. & Zeyh.) Sond. [bas: *Heteromorpha collina* Eckl. & Zeyh.; syn.: *Bupleurum collinum* (Eckl. & Zeyh.) D. Dietr.; *Franchetella arborescens* (Spreng.) Kuntze var. *collina* (Eckl. & Zeyh.) Sond., incl. fa. *normalis* H. Wolff and fa. *anomala* H. Wolff].

**H. gossweileri** (C. Norman) C. Norman; Figueiredo & Smith, Pl. Angola: 32, 2008. – Map in Kew Bull. 51: 253, 1996.

syn.: Enum. 4: 584, 1997.

Suffrutex 0,2-1,2 m tall; stems thin, simple or weakly branched, smooth to longitudinally grooved, glabrous to pilose; bark insignificant or weakly developed; leaves 8-9 cm long, subsessile, 1-3-foliolate; inflorescence a lax panicle of compound umbels; petals yellow, broader than long.

Mosaic of edaphic grassland; *Brachystegia bakeriana* thicket; gravelly ground; 1000-1950 m alt.

Plant with an extraordinary resemblance to *Bupleurum*.

## HETEROMORPHA

**H. involocrata** Conrath; Burt, Edinb. J. Bot. 48: 214, 1991; Figueiredo & Smith, Pl. Angola: 32, 2008. – Map in Kew Bull. 51: 253, 1996. – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga...: 492-493, 2002.

syn.: Enum. 4: 584, 1997; *H. arborescens* (Spreng.) Cham. & Schltld. var. *kassneri* (H. Wolff) De Wild., Pl. Bequaert. 4/2: 299, 1927; *H. glauca* Engl. ex Lemesle

Suffrutex to woody shrub 0,4-2,4 m tall; stems simple or weakly branched, smooth to longitudinally grooved, glabrous to pilose; bark absent or weakly developed; leaves 5-28 cm long, ± petiolate, 3-foliolate to pinnately compound, leaflets variable in shape, pilose; flowers cream to greenish yellow in a single umbel or a loose group of umbels.

Rough grassland and pasture; miombo woodland; streamside bushland; open *Brachystegia* woodland; 2100-2760 m alt.

Extremely variable; several forms can be recognized.

NE S. Africa, Swaziland (500-2600 m alt.).

**H. occidentalis** P. J. D. Winter; Figueiredo & Smith, l.c. – Icon.: Fl. Cameroun 10: 77, 1970 ! – Map in Kew Bull. 51: 253, 1996.

syn.: *Franchetella arborescens* (Spreng.) Kuntze var. *platyphylla* Welw. ex Hiern, nom. nud.; *Heteromorpha arborescens* (Spreng.) Cham. & Schltld. var. *platyphylla* sensu H. Wolff 1910, p.p. min., species exclusae *H. arborescens*; *H. trifoliata* sensu Jacq.-Fél., p.p., non (H. L. Wendl.) Eckl. & Zeyh.; *H. abyssinica* sensu Jacq.-Fél. in Fl. Cameroun, l.c., non Hochst. ex A. Rich.

Suffrutex 2-3 m tall; stems pithy, smooth, with very fine longitudinal striations, normally only branched in the inflorescence; bark insignificant or weakly developed; leaves 10-17 cm long incl. petiole (2-5 cm), 3-foliolate; inflorescence a panicle of compound umbels, inflorescence leaves not markedly reduced; petals cream-greenish yellow.

Damp thickets, marshy meadows along watercourses; grassland; woodland; 1000-1650 m alt.

**H. stenophylla** Welw. ex Schinz; Figueiredo & Smith, Pl. Angola: 33, 2008. – Map in Kew Bull. 51: 248, 1996.

syn.: Enum. 4: 584, 1997; *H. trifoliata* sensu Cannon in Consp. Fl. Angol. 4: 341, 1970, p.p. quoad specim. Newton 132, Welwitsch 2508.

Suffrutex 0,5-1,8 m tall; stems simple or weakly branched, smooth to longitudinally grooved, glabrous (or pilose); bark absent or weakly developed; leaves 11-12(-32) cm long incl. petiole (3-4-10 cm), 3-sect or pinnately and/or pedately compound, or 2-pinnatifid, pinnae narrow; flowers cream to greenish yellow, in a lax panicle of compound umbels.

Miombo or other woodlands; rupicolous bushland; wooded grassland; rather dry bushy places with *Trichodesma medusa*, *Pimpinella huillensis*; stony spots; 1230-1800 m alt.

Namibia (var. **stenophylla**), NE S. Africa (var. **transvaalensis**); 350-1600 m alt.

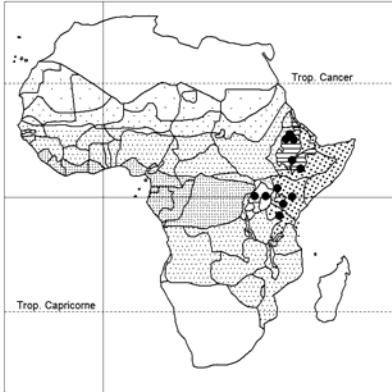
Comprises 2 vars.: – var. **stenophylla**, with 3-foliolate or pinnate leaves; – var. **transvaalensis** (Schltr. & H. Wolff) P. J. D. Winter, with pinnate to 2-pinnatifid leaves. – Intermediates exist.

## SYNONYMS:

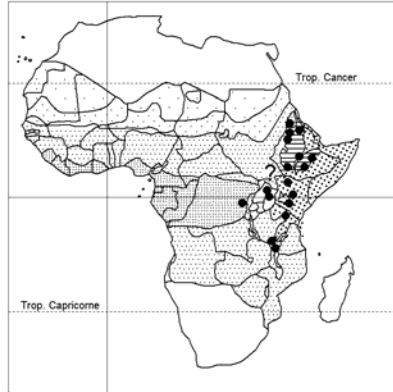
*Heteromorpha abyssinica* sensu Jacq.-Fél. = **Heteromorpha occidentalis**

*abyssinica* Hochst. ex A. Rich. var. *abyssinica*, var. *simplicifolia* A. Rich. = **H. arborescens** var. **abyssinica**

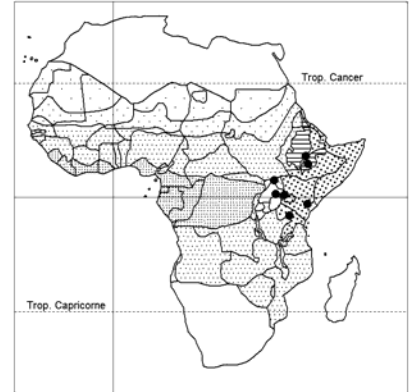




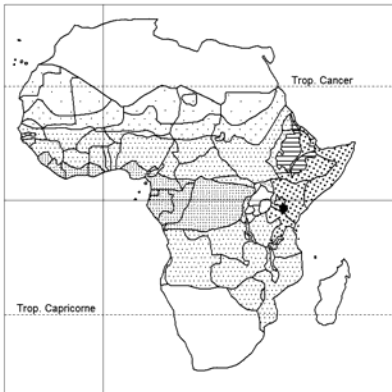
**Haplosciadium abyssinicum**



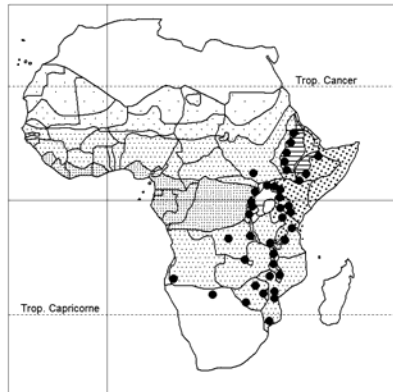
**Heracleum abyssinicum**



**Heracleum elgonense**



**Heracleum taylorii**



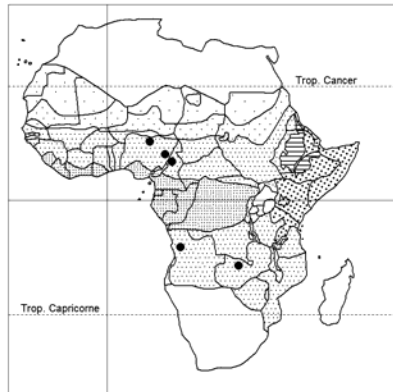
**Heteromorpha arborescens**



**Heteromorpha gossweileri**



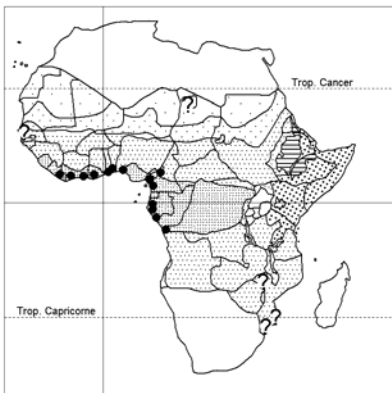
**Heteromorpha involucrata**



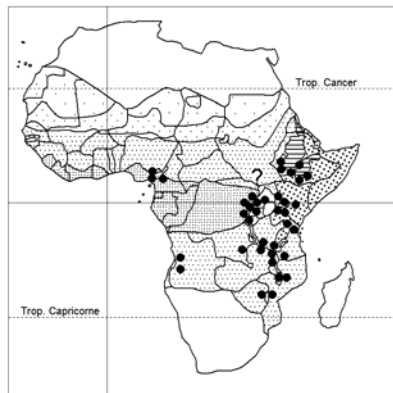
**Heteromorpha occidentalis**



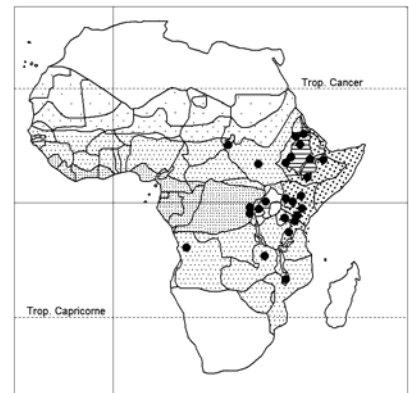
**Heteromorpha stenophylla**



**Hydrocotyle bonariensis**



**Hydrocotyle mannii**



**Hydrocotyle ranunculoides**

## HETEROMORPHA

- angolensis* (C. Norman) C. Norman = **H. gossweileri**  
*arborescens* (Spreng.) Cham. & Schtdl. var. *integrifolia* Sond.,  
 var. *platyphylla* sensu H. Wolff p.p. = **H. arborescens** var.  
**arborescens**  
 var. *kassneri* (H. Wolff) De Wild. = **H. involucrata**  
 var. *platyphylla* sensu H. Wolff p.p. minima, excl. spec.  
*H. arborescens* = **H. occidentalis**  
 var. *trifoliata* (H. L. Wendl.) Sond. = **H. arborescens** var.  
**abyssinica**  
*collina* Eckl. & Zeyh. = **H. arborescens** var. **collina**  
*glaucula* H. Wolff = **H. involucrata**  
*glaucula* Engl. ex Lemesle = **H. involucrata**  
*kassneri* H. Wolff = **H. involucrata**  
*multifoliolata* M. B. Moss, nom. inval. = **H. arborescens** var.  
**abyssinica**  
*scandens* C. B. Clarke = **Pseudocarum eminii**  
*stenophylla* Welw. ex Engl., nom. nud. = **H. stenophylla**  
*stolzii* H. Wolff = **H. involucrata**  
*transvaalensis* Schltr. & H. Wolff = **H. stenophylla**  
 var. *trifoliata* (H. L. Wendl.) Eckl. & Zeyh. =  
**H. arborescens** var. **abyssinica**  
*trifoliata* sensu Jacq.-Fél., Cannon p.p. = **H. occidentalis**  
*trifoliata* sensu Cufod., C. C. Towns., p.p. = **H. arborescens**  
 var. **arborescens**

## HYDROCOTYLE / 5

Some 130 species in temperate and tropical regions worldwide. Perennial creeping herbs with simple leaves. – Sometimes placed in *Araliaceae*.

KONSTANTINOVA, A. I. & E. Yu. YEMBATUROVA (2010). Structural traits of some species of Hydrocotyle (Araliaceae) and their significance for constructing the generic system. *Plant Div. Evol.* 128: 329-346.

**Hydrocotyle bonariensis** Commerson ex Lam.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 232, 2000; Figueiredo & Smith, Pl. Angola: 40, 2008; Reduron, Ombellifères de France 3: 1539-1541, 2007. – Icon.: Akoeigninou & al., Fl. analyt. Bénin: 332, 2006; Bolòs & Vigo, Flora manual dels país catalans: 443, 1990; Fl. Mascareignes 105, Ombellifères: 3, 1990.

syn.: *H. umbellata* L. subsp. *bonariensis* (Commerson ex Lam.) Drude 1897 nom., and Thellung & Hegi 1925; *H. umbellata* L. var. *bonariensis* (Commerson ex Lam.) Sprengel; *H. pelviformis* Gand.; *H. multiflora* Ruiz & Pavon; *H. caffra* Meisn.; *H. petiolaris* A. Rich.; *H. polystachya* A. Rich. var. *quinqueradiata* Thouars ex A. Rich.

Glabrous creeping perennial herb with slender stems, rooting at nodes; leaves *peltate*; lamina to 12 cm Ø, petiole to > 30 cm long; inflorescence a proliferous umbel on a peduncle which exceeds the subtending petiole.

Submaritime habitats; often in sandy soils near sea shores and brackish lagoons; 1-100 m alt.

Islands of the Gulf of Guinea; S. Africa (0-50 m alt.). Reported from Mozambique (Tete and SE coast) in Fl. Zambes. 4: 558-559, 1978, and Fl. Moçamb. 85, Umbellif.: 4-5, 1981. The presence of *H. bonariensis* Commerson ex Lam. var. *superposita* (Baker) Humbert, a plant of Madagascar, at Borkou, Chad (fide Quézel 1958) needs confirmation.

Native of N., C. and S. America, first described from Uruguay. Used as a vegetable and medicine.

## HYDROCOTYLE

**H. mannii** Hook. f.; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 165, 1994; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 233, 2000; Y. Harvey & al., Pl. Bali Ngemba...: 130, 2004 (sub nom. *H. hirta*); Figueiredo & Smith, Pl. Angola: 40, 2008; Lejoly & al., Fl. Tshopo (RD Congo) in Taxomania 24: 7, 2008. – Icon.: Fl. Cameroun 10: 35, 1970 (sub nom. *H. hirta*); Fl. Zambes. 4: 560, 1978; Troupin, Fl. Rwanda 2: 563, 1983; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 743, 2008.  
 syn.: *H. hirta* sensu Jacq.-Fél. In Fl. Cameroun 10: 34, 1970, et Humbert in Bull. Jard. Bot. Etat, Brux. 27: 7, 1957, non R. Br. ex A. Rich. (Australian plant); *H. moschata* sensu Fl. Trop. Afr. 3: 5, 1877, non Forst. f. (described from New Zealand; discussed by Townsend in Fl. Trop. E. Afr., Umbellif.: 14, 1989); *H. javanica* sensu Fl. Trop. Afr. 3: 5, 1877, non Forst. f.; *H. sibthorpioides* auct. afric., non Lam.

Slender trailing perennial herb rooting at the lower nodes with the flowering tips frequently ascending and ± erect, rising to as much as ± 30 cm; stem greenish to red or brownish, striate; leaves *not peltate*, the lamina reniform or almost round, ± 7-50 mm Ø, 5-9-lobed; petiole 0,7-20 cm long, umbel rounded capitate.

Commonly among grass in wet to somewhat damp situations at edges of lakes, swamps, marshes; forest tracks and margins; disturbed places; *Podocarpus* forest; old cultivation in grassy savanna; fallow land; 650-3200 m alt.

Bioko/Fernando Poo, São Tomé.

Comprises 2 vars. Var. **acutiloba** C. C. Townsend in Uganda, Burundi.

Part of the *H. moschata* Forst. f. complex; “the African material should continue to be recognized as a separate species until a thorough revision is undertaken of the whole group” (Fl. Eth. & Eritrea 4/1: 4, 2003).

**H. ranunculoides** L. f., incl. var. *adoensis* Urb. – Floating Pennywort. – Wickens, Jebel Marra (W Sudan): 125, 284 (map), 1976; Figueiredo & Smith, Pl. Angola: 40, 2008; Reduron, Ombellifères de France 3: 1542-1543, 2007. – Icon.: Fl. Eth. & Eritrea 4/1: 4, 2003.

syn.: Enum. 2: 239, 1992; *H. triflora* Ruiz & Pavon; *H. ranunculoides* L. f. var. *lobata* Urb. (nom. illegit.) fa. *minima* (Hochst. ex A. Rich.) Engl., nom. illegit. (Pflanzenwelt Afr. 3/2: 794, 1921; cf. Eichler, Feddes Repert. 98: 192-193, 1987).

Glabrous creeping perennial herb, rooting freely with dense clusters of white, slender rootlets from the nodes; stem slender to ± 5 mm Ø, terete, pale green or brownish; leaves *not peltate*, the lamina resembling that of *Ranunculus peltatus*, with 5-8 rounded, crenate or dentate lobes, ± 1,4-12 × 0,8-8 cm; petiole 2-32 cm long; umbel dense.

Muddy ground by streams, swamps, lakes with *Spilanthus*, *Jussisiaea*, *Sphaeranthus*, *Juncellus*; sometimes in quite deep water with *Nymphaeaceae*; also floating [for example in the Sudd area in Sudan where the spectacular *Suddia sagittifolia* Renvoize (*Poaceae*) occurs]; 1160-2300 m alt.

Probably a native of N., C. & S. America; widely naturalized in the Old World and throughout tropical and South Africa (e.g., Spain, Italy, Sicily, Sardinia; Yemen, Palestine, Syria, Iran). It has been suggested (Fl. Europaea 2: 319, 1968) as possibly native in Italy.

Reported to be a serious weed, e.g., in Europe (i. a. France), Japan, Australia, Americas (cf. C. D. K. Cook, Aquatic plant book: 36, 1996; Hussner & Lösch in Flora 202: 653-660, 2007; Lachaud in E.R.I.C.A. 22: 3-10, 2009).

## HYDROCOTYLE

**H. sibthorpioides** Lam., excl. var. *oedipoda* O. Deg. & Greenwell (= *H. bowlesioides* Mathias & Constance, from C. America, introd. New Zealand); Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 233, 2000; Lejoly & al., Fl. Tshopo (RD Congo) in Taxonomiana 24: 8, 2008; Figueiredo & Smith, Pl. Angola: 40, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 53, 2009; Reduron, Ombellifères de France 3: 1543, 2007. – Icon.: Fl. Cameroun 10: 35, 1970; Troupin, Fl. Rwanda 2: 563, 1983; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 61, 1994; Sida 21: 2451, 2452, 2005 (with a key to the other introduced species, Texas); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 743, 2008; Fl. Eth. & Eritrea 4: 4, 2003; Fl. Mascareignes 105, Ombellifères: 5, 1990.

syn.: Enum. 2: 239, 1992; *H. rotundifolia* Roxb. ex DC.; *H. americana* L. var. *monticola* (Hook. f.) Hiern and var. *minima* (Hochst. ex A. Rich.) Hiern; *H. americana* sensu A. Chev., 1920, non L.; *H. nitidula* A. Rich.; *H. minima* Hochst. ex A. Rich.

Slender creeping perennial herb rooting at nodes; stem terete or striate, greenish or brownish; leaves *not peltate*, lamina reniform or almost round, ± 4-20 mm Ø, 5-7-lobed to ± halfway, glabrous or ± pilose below with long hairs; petiole 0.5-3 cm long; umbel 2-7-flowered, peduncle 0.2-1 cm; fruits in axillary clusters on the stem.

Mostly in bogs, swamps; either in grassland or forests (e.g. of bamboo, *Hagenia* or *Hypericum*); along wet paths, muddy and peaty streambanks, gravelly lakeshores and flats; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; stunted *Podocarpus latifolia* forest; open waste places; under waterfall spray; 1134-3900 m alt.

Very variable in shape of leaves and hairiness of fruits.

Bioko/Fernando Poo; Madagascar, Mascarene Isl.; widespread in the tropics of the Old World to China and Japan (cf. J. Japan. Bot. 81: 262-267, 2006). Introduced and naturalized in the New World (E USA, cf. Sida 21: 2449-2456, 2005), parts of S Europe (and also at the Jardin des Plantes, Paris, France).

Also cultivated (ornamental, vegetable).

**H. verticillata** Thunb.; Reduron, Ombellifères de France 3: 1545-1546, 2007; Figueiredo & Smith, Pl. Angola: 40, 2008. – Icon.: Aqua Planta 18/2: 49, 50, 53, 1993; Thulin, Fl. Somal. 2: 270, 1999.

syn.: *H. interrupta* Muhl. ex Elliott; *H. vulgaris* L. var. *verticillata* (Thunb.) A. Rich. and var. *communis* Cham. & Schldtl.

Glabrous creeping herb, rooting freely, with white slender rootlets from the nodes; stem slender, terete, pale greenish or brownish; leaves peltate, lamina mostly 1-6 cm Ø, with 9-12 shallow lobes; spike interrupted, of 1-5 umbels.

Creeping among other vegetation in swamps, by lakes and pools, sometimes running out into the water and floating; sugar-cane plantation; 1000-1950 m alt.

Caprivi Strip, Botswana; S. Africa (0-1500 m alt); widespread in the tropics and subtropics of the Old and New World; naturalized in S Europe. For New Zealand, see Ecroyd in New Zealand J. Bot. 45: 479-484, 2007.

According to Reduron (l.c.) native in N. & C. America.

Aquarium plant.

Very closely related to the European *H. vulgaris* (vide Fl. Zambesiaca 4: 558, 1978).

## HYDROCOTYLE

## SYNONYMS:

- Hydrocotyle abyssinica* Gand. = **Centella**  
*adoensis* Hochst. = **Hydrocotyle ranunculoides**  
*americana* sensu A. Chev. 1920 = **H. sibthorpioides**  
*americana* L. var. *minima* (Hochst. ex A. Rich.) Hiern and var. *monticola* (Hook. f.) Hiern = **H. sibthorpioides**  
*asiatica* L. = **Centella**  
*bupleurifolia* A. Rich. = **C. glabrata**  
*caffra* Meisn. = **Hydrocotyle bonariensis**  
*centella* Cham. & Schldtl., incl. var. *plantaginea* (Spreng.) Sond. = **Centella glabrata**  
*confusa* H. Wolff = **Hydrocotyle sibthorpioides**  
*falcata* Eckl. & Zeyh. = **Centella glabrata**  
*filicaulis* Eckl. & Zeyh. = **C. virgata** var. **gracilescens**  
*glabra* Thunb. = **C. glabrata**  
*glabrata* (L.) L. f. = **C. glabrata**  
*heterophylla* Schinz = **C. glabrata**  
*hirta* sensu auctt., non R. Br. ex A. Rich. = **Hydrocotyle mannii**  
*interrupta* Muhl. ex Elliott = **H. verticillata**  
*javanica* sensu F.T.A., non Forst. f. = **H. mannii**  
*lanuginosa* Eckl. & Zeyh. = **Centella virgata** var. **gracilescens**  
*minima* Hochst. ex A. Rich. = **Hydrocotyle sibthorpioides**  
*monticola* Hook. f. = **H. sibthorpioides**  
*moschata* sensu F.T.E.A., non Forst. f. = **H. mannii**  
*multiflora* Ruiz & Pavon = **H. bonariensis**  
*natans* Cirillo = **H. ranunculoides**  
*nitidula* A. Rich. = **H. sibthorpioides**  
*pallida* DC. = **Centella asiatica**  
*pelviformis* Gand. = **Hydrocotyle bonariensis**  
*petiolaris* A. Rich. = **H. bonariensis**  
*plantaginea* Spreng. = **Centella glabrata**  
*polystachya* A. Rich. var. *quinqueradiata* Thouars ex A. Rich. = **Hydrocotyle bonariensis**  
*rotundifolia* Roxb. ex DC. = **H. sibthorpioides**  
*sibthorpioides* auct. afric., non Lam. = **H. mannii**  
*thunbergiana* Spreng. = **Centella asiatica**  
*trichophylla* Eckl. & Zeyh. = **C. virgata** var. **gracilescens**  
*triflora* Ruiz & Pavon = **Hydrocotyle ranunculoides**  
*ulugurensis* Engl. = **Centella ulugurensis**  
*umbellata* L. subsp. *bonariensis* (Commers. ex Lam.) Drude 1897 nom., Thellung & Hegi 1925 = **Hydrocotyle bonariensis**  
*umbellata* L. var. *bonariensis* (Commers. ex Lam.) Spreng. = **H. bonariensis**  
*virgata* L. f. = **Centella virgata**  
*vulgaris* L. var. *communis* Cham. & Schldtl. and var. *verticillata* (Thunb.) A. Rich. = **Hydrocotyle verticillata**

## (LASERPITUM)

*Laserpitium crithmum* Link = **Astydamia latifolia**



## LEFEBVREA / 10

(“*Lefeburea*” Endl. 1842, Lindl. 1847)

syn.: *Erythroselinum* Chiov. (cf. *Taxon* 57: 361-362, 2008; also Winter & al. in Pimenov & Tilney, *Apiales* – 2008: 148-150, 2008).

Ten species in tropical and subtropical Africa; distinguished from all other indigenous African platyspermous genera by the monocarpic habit. Stems are usually red or purple-spotted near base, and petals often with reddish pigmentation.

OSTROUMOVA, T. A. & M. G. PIMENOV (1997a). Carpological diversity of African Peucedanum s.l. (Umbelliferae) I. The species of southern Africa. *Feddes Repert.* 108: 299-318.

OSTROUMOVA, T. A. & M. G. PIMENOV (1997b). Carpological diversity of African Peucedanum s.l. (Umbelliferae) II. The species of tropical Africa. *Feddes Repert.* 108: 533-547.

**Lefebvrea abyssinica** A. Rich., incl. var. *angustisecta* Engl. 1895, type Kilimanjaro (non *L. angustisecta* Engl. 1921, type Mt Cameroon); Troupin, *Fl. Rwanda* 2: 575, 1983; Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: 169, 1994; Friis & Vollesen, *Fl. Sudan-Uganda border area* 1: 299-300, 1998; *Feddes Repert.* 108: 534, 543, 1997; Figueiredo & Smith, *Pl. Angola*: 33, 2008. – Icon.: *Fl. Eth. & Eritrea* 4/1: 42, 2003; *Fl. Zambes.* 4: 615, 1978 (*L. stuhlmannii*); *Fl. Cameroun* 10: 97, 1970 (idem).

syn.: *Enum.* 2: 239, 1992; *Peucedanum lefebvria* Drude

Glabrous blue-green perennial (? sometimes biennial) herb, 0,9-3 m tall; root sometimes slender, usually  $\pm$  tuberous, 3 cm  $\varnothing$ ; stem terete, finely striate, slender, frequently bowed over in fruit, 5-10 mm broad at base, with slender flowering branches above; lower leaves to  $>$  50 cm long, bipinnatisect with 2-3 pairs of pinnae; leaflets linear to broadly lanceolate, 4-33  $\times$  0,2-3 cm; umbel compound, bracts few or absent; flowers yellow.

Short or long grassland, on deep soil, frequently with bushes; *Brachystegia*, *Uapaca* woodland; disturbed places; upland rainforest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*, on wet bank in forest; 870-2550 m alt.

**L. angustisecta** Engl.; *Feddes Repert.* 108: 541, 543, 1997. – Icon.: *Fl. Cameroun* 10: 91 (sub gen. *Peucedanum*), 95 (*P. camerunense*), 1970; *Kew Bull.* 59: 135, 2004 (*P. kupense*).

syn.: *Peucedanum angustisectum* (Engl.) C. Norman; *P. camerunense* Jacq.-Fél.; *P. kupense* I. Darbyshire & Cheek

Annual, erect herb, 0,3-2 m tall,  $\pm$  divaricately branched, glabrous; stems and branches rounded, very slightly striate; stems pale green-brown; main stems to 9,5 mm  $\varnothing$  at  $\pm$  1,5 m height; lower leaves 2-pinnate, to 25 cm long, with 2-3 pairs of pinnae; leaflets linear 7  $\times$  0,2 cm; umbel compound, flowers greenish.

Meadows; rocky, volcanic slopes; grassland; 1200-3200 m alt.

**L. atropurpurea** (Hochst. ex A. Rich.) P. J. D. Winter; Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: 169, 1994 (sub gen. *Erythroselinum*); Verdcourt, *Kew Bull.* 42: 590-591, 1987. – Icon.: *Fl. Trop. E. Afr., Umbelliferae*: 108, 1989 (idem); *Fl. Eth. & Eritrea* 4/1: 43, 2003 (idem).

bas.: *Pastinaca atropurpurea* Hochst. ex A. Rich.

syn.: *Peucedanum atropurpureum* (Hochst. ex A. Rich.) Hiern; *P. ruspolii* Engl.; *Erythroselinum atropurpureum* (Hochst. ex A. Rich.) Chiov.; *Malabaila atropurpurea* (Hochst. ex A. Rich.) Vatke; ? *M. lefebvrioides* Engl., ? *Peucedanum lefebvrioides* (Engl.) M. Hiroe

## LEFEBVREA ATROPURPUREA

Glabrous herb, probably biennial to perennial, 0,2-1,3 m tall; root slender or somewhat thickened below the surface of the soil; stem simple or sparingly branched, terete, sometimes red-spotted, finely striate, upper branches sometimes opposite or in whorls of 3; leaves 1-2-pinnate, with 1-4 pairs of pinnae; leaflets very variable in shape; umbels compound, numerous; bracts few, small; petals purple.

Grassland with scattered bushes; open bushland; scrub, usually on swampy ground; 1200-2600 m alt.

Apparently a rare plant.

**L. brachystyla** Hiern

Glabrous perennial herb, 0,7-1m tall, with a thick oblong tuberous root  $\pm$  5 m long; stem terete, finely striate, slender,  $\pm$  2,5 mm  $\varnothing$  at base, yellowish green, with 1-2 very slender branches above; lower leaves simple or trisect; lamina  $\pm$  lanceolate, 12  $\times$  2 cm, with 2 prominent nerves parallel with the midrib, segments linear, 7-8,5  $\times$  2-3 mm; umbel compound, bracts absent; flowers unknown.

Marsh in river backwater; seasonally flooded valley; 1180-1400 m alt.

Only known from two gatherings, collected in 1860-1863 and 1963, respectively.

**L. droopii** C. C. Townsend

Very similar to *L. longipedicellata* but: stylopodia very conical, acute, the disk sessile on the fruit apex; dorsal vittae in deep parallel-sided grooves (vide *Fl. Trop. E. Africa, Umbellif.*: 112, fig. 38 / H, J, 1989).

Dense shade within, or at margin of evergreen forest; 1450-2200 m alt.

**L. grantii** (Hiern) S. Droop; Troupin, *Fl. Rwanda* 2: 575, 1983; *Feddes Repert.* 108: 539, 1997; Figueiredo & Smith, *Pl. Angola*: 33, 2008; Akoegninou & al., *Fl. analyt. Bénin*: 332, 2006 (sub nom. *L. nigeriae*). – Icon.: *Trans. Linn. Soc. London* 29: pl. 43, 1873 (sub gen. *Peucedanum*); *Fl. Cameroun* 10: 89, 1970 (*P. zenkeri*).

syn.: *Enum.* 2: 239, 1992; *L. upingtoniae* Schinz; *Peucedanum madense* C. Norman; *P. wildemanianum* C. Norman; *P. upingtoniae* (Schinz) Drude; *P. dinteri* H. Wolff; *P. venosum* Burt Davy; *Lefebvrea dinteri* (H. Wolff) Mattf.; *L. lancifolia* Mattf.; *Peucedanum lancifolium* (Mattf.) M. Hiroe

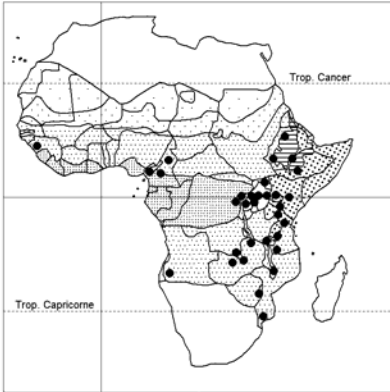
Biennial (? sometimes perennial) herb, glabrous, 0,6-3 m tall, with a slender to subtuberous rootstock; stem terete or slightly angular, striate, pale green to purple-spotted or eventually  $\pm$  entirely reddish, 3-10 mm  $\varnothing$  at base, considerably branched upwards with slender divergent branches; lower leaves simply pinnate to 2-pinnate; leaflets linear to broadly ovate, 2-25  $\times$  0,6-6 cm, with 2 distinct lateral veins parallel to the midrib; upper leaves reduced, narrowly pinnatisect; umbel compound, with or without bracts; petals greenish yellow to cream.

Grassland; road- and riversides; hill slopes; marshy thickets; forest gallery; open *Brachystegia* woodland; current and abandoned cultivations; sometimes on termitaria; often on heavily grazed areas; edges of clump of trees; *Andropogon* beds; *Acanthus* steppe; 500-1850 m alt.

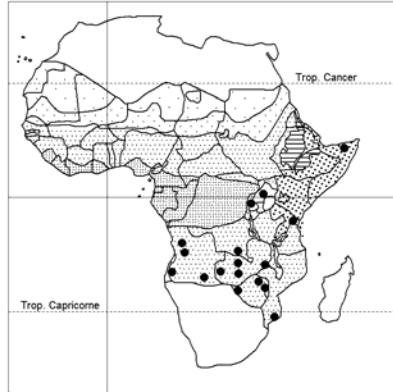
Extremely variable, in leaf form and size of fruit.

Namibia, S. Africa, Swaziland (925-1220 m alt.).

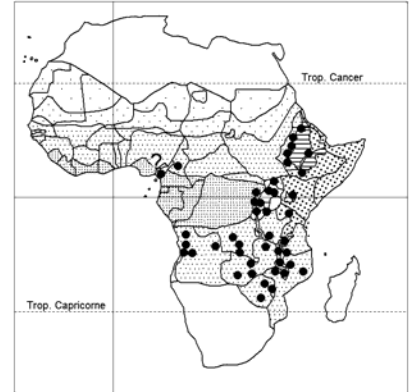
Has a smell of *Angelica* or *Levisticum*.



*Hydrocotyle sibthorpioides*



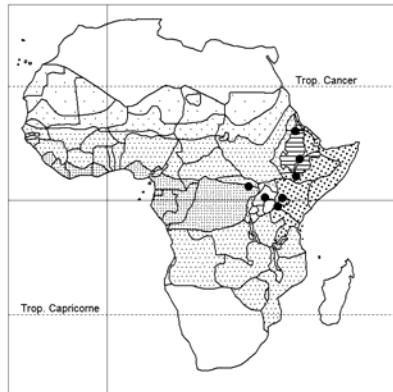
*Hydrocotyle verticillata*



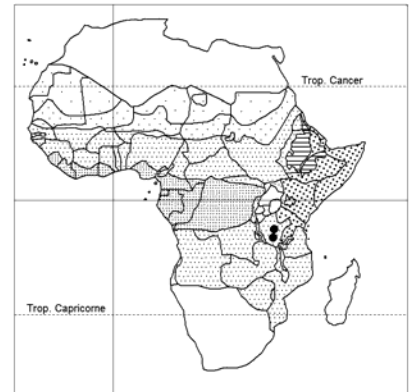
*Lefebvrea abyssinica*



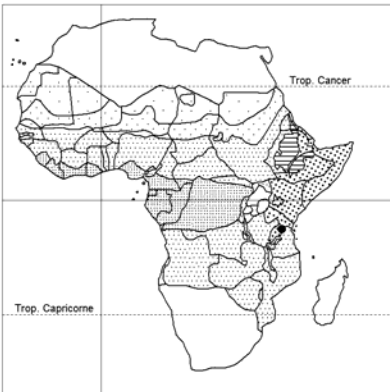
*Lefebvrea angustisecta*



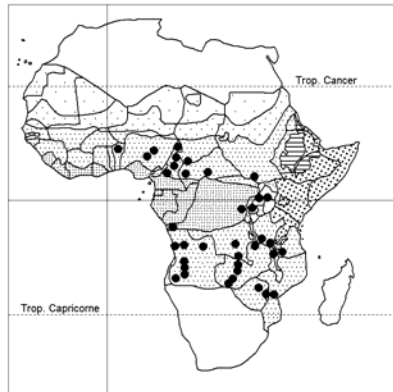
*Lefebvrea artropurpurea*



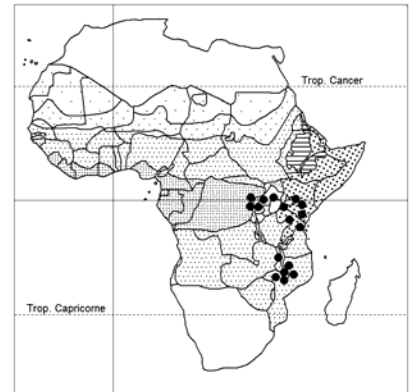
*Lefebvrea brachystyla*



*Lefebvrea droopii*



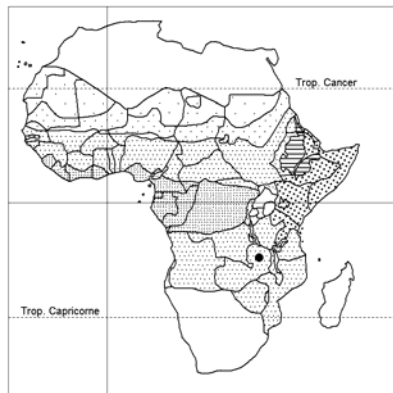
*Lefebvrea grantii*



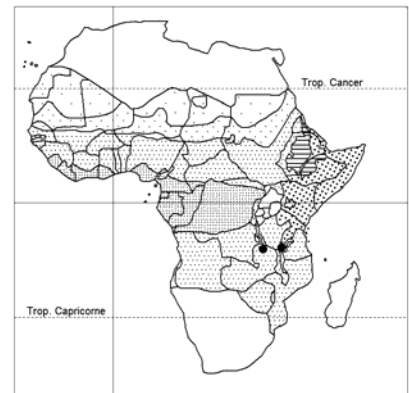
*Lefebvrea longipedicellata*



*Lefebvrea oblongisecta*



*Lefebvrea stenosperma*



*Lefebvrea tenuis*

## LEFEBVREA

**L. longipedicellata** Engl., incl. var. *levisticifolia* H. Wolff; Troupin, Fl. Rwanda 2: 575, 1983 (*L. brevipes*); Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 169, 1994; Feddes Repert. 108: 306-308, 1997.

syn.: Enum. 2: 239, 1992.

Glabrous biennial or perennial herb 0,9-4 m tall; root slender or branched; stems terete, finely striate, hollow, 8-15 mm broad at base, yellowish green and sometimes with a glaucous bloom, usually purple-spotted, sometimes entirely purplish below, with slender flowering branches above; lower leaves to 80 cm long, 2-pinnatisect with 2-4 pairs of pinnae, leaflets linear-lanceolate, 3-25 × 1-5 cm; umbels compound, large; bracts few, small or absent; petals (yellowish) green, ± purple-flushed. – Resembling *L. abyssinica* but leaflets broader.

Long grassland (sometimes along streams); forest margins; roadsides; plantations; shrub layer in dense shade of evergreen forest; open woodland; secondary vegetation; 720-2425 m alt. Very variable in leaf form, with many local forms.

**L. oblongisecta** (C. C. Townsend) P. J. D. Winter – Icon.: Kew Bull. 42: 597, 1987.

bas.: *Peucedanum oblongisectum* C. C. Townsend

Erect perennial (? or biennial) herb ± 0,8-0,9 m tall, with a broadly ellipsoid tuber 3-4 cm long; stem fistular, finely striate, glabrous, ± 5 mm Ø at base, with rather few, opposite (occasionally verticillate) or alternate, long, slender, ascending branches above; basal leaves few, 30-40 cm long, 1-2-pinnate with 2-4 pairs of pinnae, leaflets and pinnae decurrent along the axes and petiole; leaflets oblong, 6-12 × 1-5 cm; umbel compound, bracts 1-2 (minute) or absent; petals yellowish sometimes purple-tinged dorsally.

Grassland and scattered bushes; among rocks in woodland; grassland on steep bank; open hillside with secondary grassland, much burnt; seasonally flooded grassland; 1500-2000 m alt.

**L. stenosperma** (C. C. Townsend) P. J. D. Winter – Icon.: Kew Bull. 42: 599, 1987.

bas.: *Peucedanum stenospermum* C. C. Townsend

Perennial or biennial herb, glabrous, ± 0,9 m tall with ovoid tuber ± 3 cm long; stem slender, furrowed-striate, ± 4 mm Ø at base, with a single slender branch; basal leaves few, 27 cm long, pinnatisect, 3-jugate, segments elliptic, 3-6 × 0,8-1,8 cm, irregularly serrate; cauline leaves few, reduced; umbel compound, bracts absent (or caducous in fruit); petals unknown.

Miombo woodland; 1460 m alt.

Only known from the type collected in 1972.

**L. tenuis** (C. C. Townsend) P. J. D. Winter – Icon.: Kew Bull. 42: 603, 1987.

bas.: *Peucedanum tenue* C. C. Townsend

Slender herb, probably biennial, ± 1 m tall, glabrous, with a tuberous root; stem erect, wiry, 3-4 mm Ø at base, purplish suffused at least below; with several slender branches divaricate at ± 45°, alternate below, opposite above; (basal leaves not present at collecting time, withered); stem leaves 2-pinnatisect, with 4-5 pairs of pinnae, leaflets linear-filiform, 25 × 1 mm; umbel compound, bracts 1-2, small, or absent; petals unknown.

In light shade at edge of riverine forest; extensive grassy swamps in depressions on plain.

Two collections known (1975, 1980).

## LEFEBVREA

## SYNONYMS:

*Lefebvrea angolensis* Welw. ex Ficalho = **Lefebvrea grantii**

*benguelensis* Welw. ex Engl. = **L. grantii**

*brevipes* H. Wolff = **L. longipedicellata**

*cardiocarpa* Gilli = **Peucedanum linderi**

*dinteri* (H. Wolff) Mattf. = **Lefebvrea grantii**

*lancifolia* Mattf. = **L. grantii**

*microcarpa* H. Wolff, non Howell = **L. grantii**

*naegeleana* H. Wolff = **L. longipedicellata**

*nigeriae* H. Wolff = **L. grantii**

*serrata* H. Wolff = **Afrologisticum scottianum**

*stuhlmannii* Engl. = **Lefebvrea abyssinica**

*upingtoniae* Schinz = **L. grantii**

*welwitschii* Engl. = **L. grantii**

*zenkeri* Engl. = **L. grantii**

## (LEVISTICUM)

*Levisticum latifolium* (L. f.) Batt., incl. var. *canariense* (DC.) Maire and var. *ifniense* (Caball.) Maire = **Astydamia**

## (MALABAILA)

*Malabaila abyssinica* Boiss. = **Heracleum**

*atropurpurea* (Hochst. ex A. Rich.) Vatke = **Lefebvrea**

*elgonense* H. Wolff = **Heracleum**

*kirungae* Engl. = **H. abyssinicum**

*lefebvrioides* Engl. = ? **Lefebrea atropurpurea**

*princeae* Engl. & H. Wolff = **Peucedanum princeae**

*quarrei* C. Norman = **P. quarrei**

*rivae* Engl. = **Heracleum abyssinicum**

*stolzii* Engl. & H. Wolff = **H. abyssinicum**

## (MERINGOGYNE)

*Meringogyne mossamedensis* (Welw. ex Hiern) H. Wolff = **Angoseseli**

## (MYRRHIS)

*Myrrhis sylvestris* (L.) Spreng. = **Anthriscus**

## (MYRRHODES)

*Myrrhodes sylvestris* (L.) Kuntze, nom. illegit. = **Anthriscus**

## OENANTHE / 3

syn.: *Oenanthe* L. subgen. *Stephanorossia* (Chiov.) C. C. Townsend and subgen. *Phellandrium* (L.) Rchb.

25-30-40 species, wetland and aquatic plants, from Europe through to C. Asia, from SE Asia to Japan and N Australia, NW coast of N. America, Africa.

Umbels compound with inconspicuous bracts (or absent); sepals conspicuous.

PAPINI, A. & M. RAFFAELLI (2008). Problematika tassonomica in Oenanthe sottogenere Stephanorossia (Chioevenda) Townsend, un sottogenere endemica dell'Africa orientale. *Inform. Bot. Ital.* 39, *Suppl. 1*: 43-45.



## OENANTHE

**Oenanthe mildbraedii** H. Wolff, incl. fa. *acuta* H. Wolff and fa. *obtusata* H. Wolff – Icon.: Troupin, Fl. Rwanda 2: 561, 1983.

Ascending, glabrous, perennial herb with the lower part of the stem long-prostrate and rooting in the mud,  $\pm 0,25-0,7$  m from the uppermost rooting node to the tip of the plant; stem fistular, succulent, coarsely ribbed and furrowed, with 0-few branches; lower leaves pinnate, lamina  $3-7 \times 3-6$  cm, leaflets (oblong-) ovate,  $5-20 \times 3-15$  mm; umbel bracts absent; petals white. – Sometimes half-floating.

Bogs; swamps; edges of streams in open *Hagenia* forest; wet depressions in grassland; also in similar places in forests; *Acanthus* bush; 1400-2400 m alt.

**O. palustris** (Chiov.) C. Norman; Troupin, Fl. Rwanda 2: 560, 1983; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 168, 1994. – Icon.: Fl. Eth. & Eritrea 4/1: 33, 2003 (partial); Papini & Raffaelli, o.c.: 44 (flower).

syn.: Enum. 2: 239, 1992.

Ascending glabrous perennial herb, sometimes scrambling over other herbs, with the lower internodes rooting,  $0,5-1,6$  m long from the uppermost rooting node upwards; stem fistular, succulent, coarsely ribbed and furrowed, to  $\pm 1$  cm  $\varnothing$  below, little branched; lower leaves long, lamina deltoid,  $8-22 \times 10-30$  cm, 2-pinnate with 3-5 pairs of pinnae, leaflets lanceolate,  $12-50 \times 5-20$  mm; bracts of umbels 1-2, linear; petals (greenish) white; umbels soon overtopped by leafy shoots.

In or by water; along rivers and streams (often in or at the edge of forests); lakesides; marshes; *Papyrus* swamps; along drains on heaths; 1130-3260 m alt. – Locally common.

**O. procumbens** (H. Wolff) C. Norman; Agnew & Agnew, l.c. – Icon.: Troupin, Fl. Rwanda 2: 561, 1983; Fischer & Killmann, Ill. Field guide pl. Nyungwe Natl. Park Rwanda: 741, 2008; Fl. Eth. & Eritrea 4/1: 33, 2003.

syn.: Enum. 2: 239, 1992.

Weak, glabrous perennial herb, ascending or scrambling up other herbage, the lower part of the stem rooting at nodes,  $\pm 0,15-0,6$  m long from the uppermost rooting nodes upwards; stem fistular, succulent, coarsely ribbed and furrowed with few branches; lower leaves 3-pinnate or ternate, long-petiolate, lamina long triangular in outline,  $4-16 \times 5-24$  cm, leaflets oblong-elliptic,  $6-25 \times 4-8$  mm, toothed with a bristle-tip; umbel bracts 5-8, linear; bracteoles much exceeding the flower stalks; petals greenish-white to pinkish-purplish.

Most commonly by streamsides; boggy places in forests, frequently in the bamboo zone; *Papyrus* swamp; tracksides; on or between rocks in the spray zone of waterfalls; *Hagenia*, *Schefflera*, *Hypericum*, *Rapanea* forest; forest on very old lava; 1830-3400 m alt.

## SYNONYMS:

*Oenanthe ruwenzoriensis* C. Norman, nom. illegit. = **Oenanthe procumbens**

*uhligii* (H. Wolff) C. Norman = **O. palustris**

## OREOSCHIMPERELLA / 2

syn.: *Schimperella* H. Wolff 1927, non Thériot 1926.

Three species: 2 in Africa, 1 in Arabia [*O. arabiae-felicis* (C. C. Townsend) C. C. Townsend]. Very close to *Trachyspermum* but petals glabrous and fruit verruculose. Umbel compound, bracts present.

TOWNSEND, C. C. (1986). *Oreoschimperella* and *Trachyspermum* (Umbelliferae) in East Africa and Arabia. *Kew Bull.* 41: 453-458.

**Oreoschimperella aberdarensis** (C. Norman) Rauschert; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 167, 1994.

Annual herb  $\pm 0,9-1,5$  m tall, glabrous, much branched from near the base, with numerous, long, slender, divergent branches; stem fistular, it and the branches terete, striate, sometimes with a whitish bloom; basal leaves withered at time of flowering; lamina 2-pinnate with 8 pairs of sessile pinnae; margins of leaflets sharply toothed, acumen mucronate; involucre conspicuous; petals white.

Along streams; rare in disturbed places, in forest; 2200-2910 m alt.

**O. verrucosa** (J. Gay ex A. Rich.) Rauschert – Icon.: Fl. Ethiopia 4/1: 24, 2003.

syn.: Enum. 2: 239, 1992; *Pimpinella verrucosa* (M. J. Gay ex A. Rich.) Vatke, incl. var. *simensis* M. J. Gay ex A. Rich.) Vatke; *Pimpinella simensis* (M. J. Gay ex A. Rich.) Benth. & Hooker ex Hiern; *Heliosciadium simense* M. J. Gay ex A. Rich.; *Conium verrucosum* M. J. Gay ex A. Rich. (for Ethiopian material under the name *Sium simense*, see Bot. J. Linn. Soc. London 110: 351, 369, 1992).

Annual or biennial herb to 2 m tall, much branched from near the base, glabrous; stem striate; leaves variously pinnate, with irregularly toothed margins, sheaths with broad hyaline margin; involucre pinnately divided; petals (greenish) white.

Evergreen forest and scrub; *Erica arborea* vegetation; cloud forest; 1900-3800 m alt.

Uganda ?

## (PASTINACA)

*Pastinaca atropurpurea* A. Rich. = **Lefebvreia**

*graveolens* Bernh. = **Anethum**

## (PEUCEDANUM)

See under **Afrologisticum**, **Afroscidium**, **Lefebvreia**.

Malagasy species are placed in *Billburtia* (Pl. Syst. Evol. 283: 237-245, 2009).

MAGEE, A. R. & al. (2008). New generic circumscriptions of southern African peucedanoid genera. In: PIMENOV, G. & P. M. TILNEY, Eds., *Apiales – 2008*: 73-77.

MANCHESTER, S. R. & E. L. O'LEARY (2010). See above under the family.

NORMAN, C. (1934). Peucedanum and Steganotaenia in Tropical Africa. *J. Linn. Soc. London* 49: 503-516.

ONANA, J.-M. (2010). Endemisme floristique du Cameroun: inventaire systématique et conservation de la biodiversité. In: VAN DER BURGT, X. & al., eds., *Systématique et conservation des plantes africaines*: 509-521. Royal Botanic Gardens, Kew [see p. 516].

OSTROUMOVA, T. A. & M. G. PIMENOV (1997a & b). See above under **Lefebvreia**.

PIMENOV, M. G. & al. (2007). Critical taxonomic analysis of *Dichoropetalum*, *Johrenia*, *Zeravschania* and related genera of Umbelliferae-Apioideae-Peucedaneae. *Willdenowia* 37: 465-502.

## PEUCEDANUM

SHNEYER, V. S. & al. (2003). Systematic relationships within and between Peucedanum and Angelica (Umbelliferae-Peucedaneae) inferred from immunological studies of seed proteins. *Plant Syst. Evol.* 236: 175-194.

WINTER, P. J. D. & al. (2008). Peucedanum (Apiaceae) – Past, current and future taxonomy of the African continent. In: PIMENOV, G. & P. M. TILNEY, Eds., *Apiales – 2008*: 148-150.

## INSUFFICIENTLY KNOWN SPECIES:

*Peucedanum princeae* (Engl. & H. Wolff) M. Hiroe (“prin-caeum”), nom. subnud. – *Taxon* 57: 362, 2008.

bas.: *Malabaila princeae* Engl. & H. Wolff.

«In this plant the lowermost pinnae of the basal leaves are 3-pinnate and the segments are ovate, serrate».

Described from the Utschungwe Mts, “N Nyassaland” (= S Tanzania, Ulunga/Iringa Distr., 8°15’Sx35°50’E); Engler, *Pflanzenwelt Afr.* 3/2: 830, 1921.

*P. quarrei* (C. Norman) M. Hiroe – *Taxon*, l.c.

bas.: *Malabaila quarrei* C. Norman in De Wild., *Contr. Fl. Katanga Suppl.* 2: 96, 1929.

Erect herb c. 1 m tall; stem glabrous, sulcate; basal leaves long-petiolate (petiole 25 cm long) lamina 25 × 25 cm, much divided, 4-jugate, leaflets sessile, sparsely pubescent, margins dentate; umbel compound, flowers bisexual, bracts and bracteoles absent; petals minute, white.

“Easily distinguishable from *M. abyssinica* (= *Heracleum abyssinicum*) by its ± glabrous stem and umbels.

Described from Kisenga, Katanga (Zaire).

*P. winkleri* H. Wolff;

Syntypes destroyed (B): Ledermann 1768, Mt Bambuto, Cameroon; and Winkler 3862, Kilimanjaro, Tanzania.

The latter is a “perennial plant, very tall, glabrous; upper pinnae of the leaves confluent along rhachis, surfaces glabrous”. Townsend (*Kew Bull.* 42: 593-594, 1987) identified this plant as *P. linderi* C. Norman (= *Afroligusticum linderi*). Winkler 3862 was chosen as lectotype of *P. winkleri* by Townsend, l.c. However, this lectotypification is not uncritically accepted by Winter & al. (*Taxon* 57: 362, 2008).

Ledermann 1768 represents *Afroligusticum townsendii*.

A specimen Schimper 871 from Ethiopia (BM) “cannot be matched with any Kilimanjaro *Peucedanum*”, and requires a new name (fide Townsend, l.c.). This collection is apparently not cited in *Fl. Eth. & Eritrea* 4/1: 2003.

The specimen Mann 608 from Fernando Poo (BM) is *P. townsendii* (= *Afroligusticum townsendii*).

The specimen Volkens 290 (probably an error for 890) refers “unhesitatingly to *P. linderi*” (Townsend, l.c.).

## SYNONYMS:

*Peucedanum aberdareense* H. Wolff = **Afrosciadium friesiorum** var. **bipinnatum**

*aberdaricum* Chiov. = **Afroligusticum linderi**

*abyssinicum* Vatke = **Afrosciadium**

*aculeolatum* Engl. = **Afroligusticum**

*altum* Hiern = **Afroligusticum petitionum**

*angolense* (Welw.) Cannon = **Lefebvrea grantii**

*angustisectum* (Engl.) C. Norman = **Lefebvrea angustisecta**

*araliaceum* (Hochst.) Benth. & Hook. f. ex Vatke, incl. var. *fraxinifolium* (Hiern ex Oliv.) Engl., var. *petiolulatum* Engl., var. *subintegrifolium* Engl. = **Steganotaenia araliacea** var. **araliacea**

## PEUCEDANUM

*articulatum* C. C. Towns. = **Afrosciadium**

*atacorense* A. Chev., nom. = **Steganotaenia araliacea** var. **daramolana**

*atropurpureum* (A. Chev.) Hiern = **Lefebvrea**

*benguelense* (Welw. ex Engl.) Eyles = **L. grantii**

*bequaertii* C. Norman = **Physotrichia muriculata**

*brachystylum* (Hiern) Drude = **Lefebvrea brachystyla**

*buchananii* Bak. = **L. grantii**

*camerunense* Jacq.-Fél. = **L. angustisecta**

*canaliculatum* Verdc. = **Afrosciadium harmsianum** subsp. **australe**

*canaliculatum* sensu Agnew 1974 = **A. harmsianum** subsp. **harmsianum**

*caneroonsum* M. Hiroe = **Lefebvrea grantii**

*claessensii* C. Norman = **Afroligusticum**

*clematidifolium* (C. Norman) M. Hiroe = **Pseudocarum eminii**

*dinteri* H. Wolff = **Lefebvrea grantii**

*dispersum* C. C. Towns. = **Afrosciadium**

*dissectum* (C. H. Wright) Dawe p.p. = **Afrosciadium kerstenii** (leaf), **Anthriscus sylvestris**

*doctoris* C. Norman = ? **Afroligusticum scottianum**

*elgonense* H. Wolff = **Afroligusticum**

*elliottii* Engl. = **Afroligusticum**

*eminii* Engl. = **Pseudocarum**

*englerianum* H. Wolff = **Afrosciadium**

*eylesii* C. Norman = **Afrosciadium**

*fraxinifolium* Oliv., incl. var. *galpinii* Burt Davy, var. *haemanthum* Hiern, var. *petiolatum* Hiern = **Steganotaenia araliacea** var. **araliacea**

*friesiorum* H. Wolff var. *friesiorum* = **Afrosciadium friesiorum**

var. *bipinnatum* C. C. Towns. = **A. friesiorum** var. **bipinnatum**

*gossweileri* C. Norman = **Afrosciadium**

*grantii* Hiern = **Lefebvrea**

*graveolens* (L.) Benth. & Hook. f. 1867, (Hiern 1877), C. B. Clarke 1879, non L. Watson 1871 = **Anethum**

*harmsianum* H. Wolff subsp. *harmsianum* = **Afrosciadium harmsianum**

subsp. *australis* C. C. Towns. = **A. harmsianum** subsp. **australe**

*heracleoides* Baker = **Physotrichia muriculata**

*hockii* C. Norman = **Steganotaenia**

*kerstenii* Engl. = **Afrosciadium**

*kingaense* Engl. = **Physotrichia muriculata**

*kirungae* (Engl.) M. Hiroe = **Heracleum abyssinicum**

*kupense* I. Darbyshire & Cheek = **Lefebvrea angustisecta**

*lancifolium* (Mattf.) M. Hiroe = **Lefebvrea grantii**

*lefebvria* Drude = **Lefebvrea abyssinica**

*lefebvrioides* (Engl.) M. Hiroe = **Lefebvrea** ? *atropurpurea*

*linderi* C. Norman = **Afroligusticum**

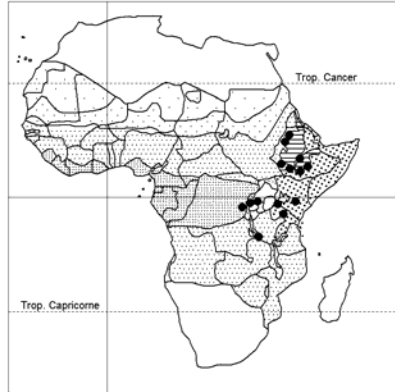
*longipedicellatum* (Engl.) Drude = **Lefebvrea**

*lundense* Cannon = **Afrosciadium**

*lynesii* C. Norman = **Afrosciadium**



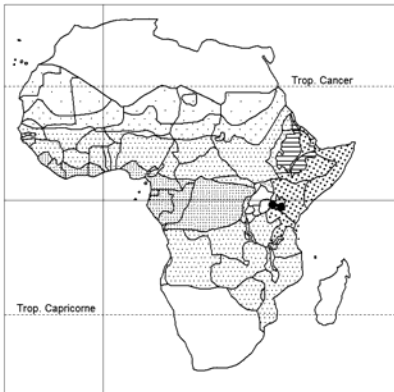
*Oenanthe mildbraedii*



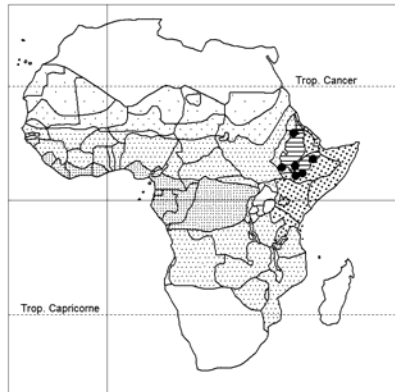
*Oenanthe palustris*



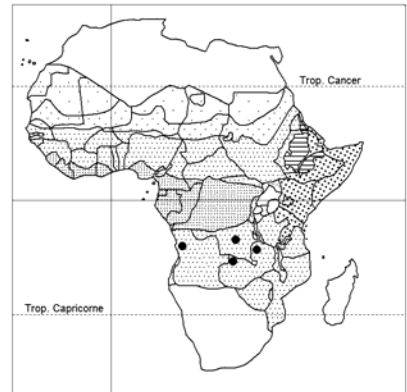
*Oenanthe procumbens*



*Oreoschimperella aberdarensis*



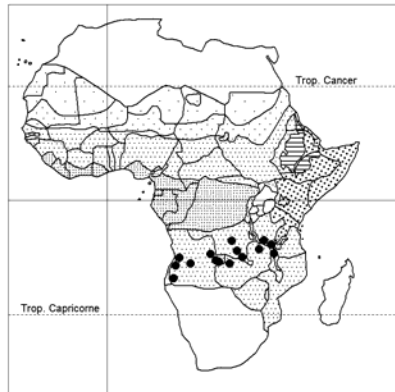
*Oreoschimperella verrucosa*



*Physotrichia atropurpurea*



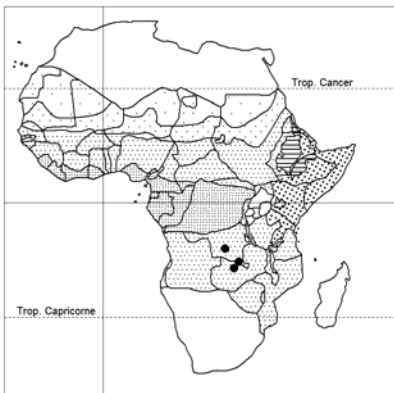
*Physotrichia heracleoides*



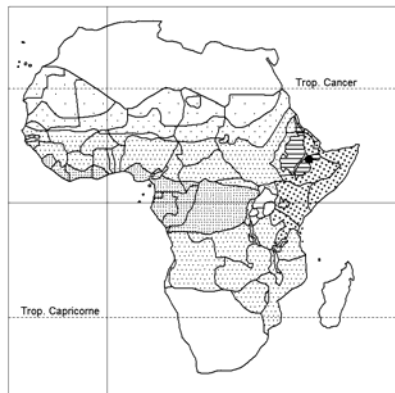
*Physotrichia muriculata*



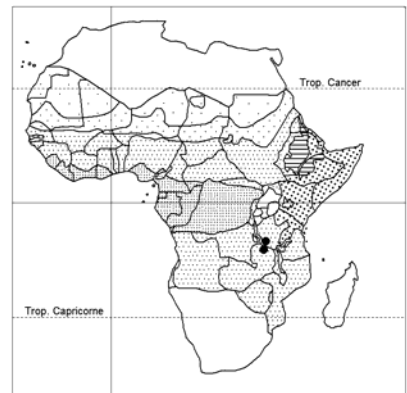
*Physotrichia welwitschii*



*Pimpinella acutidentata*



*Pimpinella ahmarenensis*



*Pimpinella alismatifolia*



- madense* C. Norman = **Lefebvrea grantii**  
*mattirolii* Chiov. = **Afroligusticum**  
*mildbraedii* H. Wolff = **Afroscidium kerstenii**  
*monticolum* C. Norman = **Afroligusticum scottianum**  
*multivittatum* Cufod. = **Afroscidium harmsianum** subsp.  
**harmsianum**  
*muriculatum* Hiern, incl. var. *goetzeanum* Engl.  
= **Physotrichia muriculata**  
*naegeleanum* (H. Wolff) M. Hiroe = **Lefebvrea**  
**longipedicellata**  
*nigeriae* H. Wolff = **Lefebvrea grantii**  
*normanii* M. Hiroe = **Afroligusticum elliotii**  
*nyassicum* H. Wolff = **Afroscidium nyassicum**  
*nyassicum* sensu Cannon, Fl. Zambes. = **Afroscidium**  
**eylesii**  
*oblongisectum* C. C. Towns. = **Lefebvrea oblongisecta**  
*petitianum* A. Rich. = **Afroligusticum petitianum**  
var. *kilimanscharicum* Engl. = **Afroligusticum linderi**  
*rhodesicum* Cannon = **Afroscidium**  
*rivae* (Engl.) M. Hiroe = **Heracleum abyssinicum**  
*runssoricum* Engl. = **Afroligusticum**  
*ruspolii* Engl. = **Lefebvrea atropurpurea**  
*scottianum* Engl. = **Afroligusticum**  
*serratum* (H. Wolff) C. Norman = **Afroligusticum scot-**  
**tianum**  
*silaiifolium* Hiern = **Afroscidium abyssinicum**  
*stenospermum* C. C. Towns. = **Lefebvrea stenosperma**  
*stolzii* (Engl. & H. Wolff) M. Hiroe = **Heracleum**  
**abyssinicum**  
*stuhlmannii* (Engl.) Drude = **Lefebvrea abyssinica**  
*tenuis* C. C. Towns. = **Lefebvrea tenuis**  
*townsendii* Charpin & Fern. Casas = **Afroligusticum**, cf.  
also under **Peucedanum**  
*trisectum* C. C. Towns. = **Afroscidium**  
*ugandium* M. Hiroe = **Afroligusticum scottianum**  
*uhligii* H. Wolff = **Oenanthe palustris**  
*upingtoniae* (Schinz) Drude = **Lefebvrea grantii**  
*valerianifolium* Baker (fruit only) = **Afroligusticum**  
**claessensii**  
*venosum* Burt Davy = **Lefebvrea grantii**  
*volkensii* Engl. = **Afroligusticum**  
*welwitschii* (Engl.) M. Hiroe = **Lefebvrea grantii**  
*whytei* M. Hiroe = **Lefebvrea grantii**  
*wildemanianum* C. Norman = **Lefebvrea grantii**  
*winkleri* H. Wolff = ? **Afroligusticum linderi**, cf. also  
under **Peucedanum**  
*winkleri* quoad specim. Golf of Guinea = **Afroligusticum**  
**townsendii**, cf. also under **Peucedanum**  
*wrightii* M. Hiroe = **Afroscidium kerstenii**  
*zenkeri* H. Wolff = **Lefebvrea grantii**

**PHYSOTRICHIA / 4**

Poorly known genus of 4-5 species, exclusively Central African. Tall plants with nearly bare stems; umbel compound; sepals well developed, sometimes persisting. Close to *Diplophium*, but distinguished by the *vesicular hairs on the fruit*.

OSTROUMOVA, T. A. & M. G. PIMENOV (1997a & b). See above under **Lefebvrea**.

**Physotrichia atropurpurea** (C. Norman) Cannon [non *Lefebvrea atropurpurea* (Hochst. ex A. Rich.) P. J. D. Winter (bas.: *Pastinaca atropurpurea* Hochst. ex A. Rich.)]; Figueiredo & Smith, Pl. Angola: 33, 2008.

probable syn.: *Spuriodaucus asper* C. Norman – Icon.: J. Bot. 70: 138, 1932 (upper pinnae); distinguished by the stiff hairs on stem and leaves, and (as it seems) procumbent or trailing plant.

Rigidly erect perennial or biennial herb to 1 m tall; rootstock woody; stem terete with regular, rather coarse grooves; leaves glabrous, mostly basal, petiole to 20 cm long, 3-pinnatisect to finely divided; stem leaves few and much reduced, on the inflorescence only present as sheathing bases with small appendages; bracts and bracteoles many, c. 1 cm long; petals white to deep purple; mature fruit unknown?

Tall grass vegetation.

**P. heracleoides** H. Wolff, non *Peucedanum heracleoides* Bak. (= *Physotrichia muriculata*). – Icon.: Fl. Zambes. 4: 604, 1978.

Perennial (? or biennial) herb with a tough taproot, ± 0,3-0,9 m tall; stem simple with a few generally long, ascending branches, terete, narrowly striate, grooved, ± densely hirtellous; leaves mostly basal, the lowest usually simple and broadly reniform, the remaining basal leaves varying from 3-5-lobed, with the lobes broadly rounded through trifid or trisect; umbels flat, terminal; bracts and bracteoles conspicuous; petals (greenish) yellowish; fruit with firm vesicular papillae.

Rough, rather dry grassland; open *Brachystegia* woodland; bushland; 1500-2100 m alt.

**P. muriculata** (Hiern) S. Droop & C. C. Townsend; Figueiredo & Smith, Pl. Angola: 33, 2008; Feddes Repert. 108: 541-542, 1997.

Robust dingy or grey-green perennial herb, often ± purplish suffused, 0,3-1,2 m tall, branched from near the base upwards with long, ascending branches, or in taller form often branched only above; stem and branches narrowly sulcate, the raised striae ± furnished with divergent, short scabrid hairs or finally ± glabrescent; basal leaves 10-50 × 9-19 cm, lamina broadly oblong, 1-2-pinnatisect, pinnae broadly decurrent along rhachis; lobes oblong to elliptic, 1-8 × 0,5-3 cm, denticulate, prominently nerved; petiole to 30 cm long in tall forms, none in short forms; stem leaves ± sessile, the uppermost bract-like; bracts and bracteoles 3-18 mm long, ciliate; petals purplish black to brown or greenish or white; fruit shallowly verruculose.

Grassy places, sometimes burnt; open hillsides with or without scattered trees; grassy edges of forest track; in somewhat rocky bushy pastures; sandy bushy places among short grasses; termite mound; 1500-2420 m alt.

**P. welwitschii** Hiern; Figueiredo & Smith, Pl. Angola: 33, 2008.

Perennial herb; root thick, vertical, branched at apex below the ground; flowering stems several, scape-like, sparingly branched in the upper part, 0,6-0,9 m tall; leaves coriaceous, rather hard, ternately or pinnately compound; ultimate leaflets crenate-

## PHYSOTRICHIA WELWITSCHII

dentate, narrowed towards the base, rather strongly nerved, not rarely folded in the living state; flowers white; bracts and bracteoles numerous, ± membranous; fruit with straight conspicuous papillae.

Thinly bushy sandy places no far from the river bank; roadsides; 1000-1600 m alt.

Habit of a *Tordylium*.

## SPECIES IN NEED OF FURTHER STUDY:

*Physotrichia verdickii* C. Norman

Herb apparently slender, glabrous; basal leaves ternate; leaflets linear, 10-16 × 3 cm; petiole unknown. Apex of floriferous stem only known.

Ecology unknown.

Known only from the type ?, collected in 1900, Zaire: Lukafu.

*Spuriodaucus quarrei* C. Norman, non *Malabaila quarrei* C. Norman = **Heracleum** ? – Icon.: J. Bot. 70: 138, 1932 (portion of pinna).

Zaire (Dem. Rep. Congo).

## SYNONYMS:

*Physotrichia arenaria* Engl. = **Diplolophium zambesianum**  
*buchananii* Benth. ex Oliv. = **D. buchananii**  
*diplolophioides* H. Wolff = **D. diplolophioides**  
*gorungosensis* Engl. = **D. buchananii** subsp. **swynertonii**  
*helenae* Buscal. & Muschler = **D. zambesianum**  
*kassneri* H. Wolff = **Pimpinella**  
*longiradiata* H. Wolff = **Aframmi**  
*swynnertonii* Baker f. = **Diplolophium buchananii** subsp.

## PIMPINELLA / 35

Some 150 species with a disjunct distribution between Europe-Asia, Africa; 4 endemic in S. Africa. Taxonomically complex genus (Fl. China 14, 2005). Relationships with *Cryptotaenia* and *Frommia* are discussed by Magee & al., o.c

MAGEE, A. R. (2010). See above under *Cryptotaenia*.

MIRÓ JODRAL, M., ed. (2004). *Illicium, Pimpinella* and *Foeniculum*. (Medicinal and Aromatic Plants – Industrial Profiles 40) CRC Press, Boca Raton, etc. XI+232 pp.

NORMAN, C. (1927). The Pimpinellas of Tropical Africa. *J. Linn. Soc. London* 47: 583-593.

Herbs with compound umbels, bracts usually absent, bracteoles absent to conspicuous; calyx obsolete, petals usually white.

One species sometimes cultivated: *P. anisum* L., Anise.

Poorly known genus in our area: 1 species without basal leaves; 1 species without fruit and further 7 species with immature fruit only; for 3 species no ecology recorded; 5(+3 ?) species known only from the type, and 2 species known only from 2 collections.

The following species listed below are in need of further study: *P. camptotricha*, *P. homblei*, *P. neumannii*, *P. physotrichioides*, *P. robynsii*.

**Pimpinella acutidentata** C. Norman

Very slender perennial or biennial herb 25-45 cm tall; rootstock rather fleshy; stem terete, finely grooved, somewhat flexuous; basal leaves apparently single, 3-5 × 5-8 cm, orbicular or reniform, puberulent on the veins below, margins regularly denticulate; stem almost leafless, with a few much-reduced bases only;

## PIMPINELLA ACUTIDENTATA

inflorescence very slender; very sparsely branched, bearing only 2 umbels (with 4 slender rays) on peduncles 5-15 cm long; ripe fruit unknown.

Open woodland; 1200 m alt.

A striking plant but poorly known.

**P. ahmarensis** Dawit Abebe; Bot. J. Linn. Soc. London 110: 360, 1992.

Perennial herb 10-100 cm tall; root fusiform; stem erect or ascending, tomentose, striate-sulcate, branching from or above the base; basal leaves 3-foliolate, (rarely bi-), serrate, narrowly lanceolate-elliptic, 0,8-2,9 × 0,5-0,9 cm; petioles densely pubescent, clasping; umbel axes with dense hispid hairs.

Grassy hillsides with remnants of *Juniperus* forests, often with *Pimpinella hirtella* (*volkensii*); 2200-2400 m alt.

**P. alismatifolia** C. C. Townsend

syn.: “an obscure plant... remarkable specimens... Some have... *Plantago*-like leaves” (Richards 559, 8312, 8372) sensu Cannon in Fl. Zambes. 4: 589, 1978.

Slender glabrous perennial herb, 55-70 cm tall with a swollen tuberous root ± 2,5 cm Ø; stem slender, terete, sparingly to moderately branched in the inflorescence; upper flowering branches alternate, opposite or sometimes verticillate; leaves principally basal; lamina finely denticulate, usually narrowly lanceolate-elliptic or oblong, 6-11 × 1-3 cm, rarely almost round, 4-7 × 3-6,5 cm; petiole 1,5-15 cm long; cauline leaves below the inflorescence 1-2, very narrow, denticulate, rarely pinnate.

Usually wet grassland; boggy ground or dambos; only once recorded from dry grassland; swampy pasture; in water 2,5 cm deep; 1500-1680 m alt.

**P. buchananii** H. Wolff, excl. subsp. *septentrionalis* C. C. Towns. (= *P. trifurcata*; Fl. Trop. E. Afr., Umbellif.: 63-64, 1989); Bot. J. Linn. Soc. London 110: 361, 1992. – Icon.: Fl. Cameroun 10: 91, 1970 (fruit); Figueiredo & Smith, Pl. Angola: 33, 2008.

Biennial or perennial herb, 35-150 cm tall with usually short (rarely to ± 7 cm long), firm, oblong, tuber-like root; stem terete, wiry, sulcate-striate, sometimes purplish suffused, glabrous to densely pilose with whitish multicellular hairs, divergently branched from near the base or the middle of the stem upwards; umbel rays very slender.

Commonly in *Brachystegia* and *Brachystegia*, *Uapaca* woodland; river banks; gullies; among rocky outcrops; open bushland; rocky meadow; yellow-grey or reddish sandy loam; grassland at edge of forest; swamps, lakes; grassy hill slopes, summits; 430-1880 m alt.

Basal leaves very variable in shape and size, usually pinnate, only rarely simple or 3-lobed.

Comprises 2 vars.: – var. **buchananii** (syn.: Enum. 2: 240, 1992); – var. **longistyla** C. C. Townsend

**P. caffra** (Eckl. & Zeyh.) D. Dietr.; Fl. Zambes. 4: 590, 1978; Fl. Moçamb. 87, Umbellif.: 37, 1981. – Icon.: Gibson, Wild flow. Natal (coastal region): pl. 75 fig. 4, 1975.

bas.: *Anisum caffrum* Eckl. & Zeyh.

syn.: *Pimpinella cordata* E. Meyer, nom.; *P. kraussiana* Meisn. ex C. (Ferdinand) Krauss; *Foeniculum kraussianum* Meisn.; *Cnidium kraussianum* (Meisn.) Sonder, incl. var. *elatius* Sonder and var. *glabratum* Sonder

## PIMPINELLA CAFFRA

Biennial or perhaps perennial herb, 22-110 cm tall with a short, oblong to tapering firm, tuber-like root, the rootstock often crowned with the remains of previous years' leaves; stem terete, slender, wiry, finely striate, flexuose,  $\pm$  densely pilose with short stiff hairs above, somewhat longer pilose or occasionally glabrous below, divergently branched from usually  $\pm$  the middle upwards, often unbranching; basal leaves deltoid-ovate in outline, almost coriaceous, lamina  $\pm$  1,5-5 cm long, varying from simple, denticulate, truncate to deeply cordate at base, to basally palmatisect; median leaves resembling the basal or more deeply divided, to pinnate; upper leaves much reduced to bract-like.

Exceedingly variable.

Subsp. **conopodioides** C. C. Townsend

Basal leaves deeply palmately divided into narrow segments which are pinnate or toothed; stem leaves simply pinnate or bipinnate with very narrow segments not exceeding 2 mm wide and generally less; stylopodial disk broad, concave.

Grassland, among rocks; on rocky outcrops; walls of gullies; 2340-2800 m alt. – Tanzania.

Subsp. **caffra** in S. Africa, Swaziland (10-3275 m alt.). The presence of this subspecies in Malawi, Mozambique and Zimbabwe is doubtful, probably by confusion with **P. stadensis**.

**P. camptotricha** Penzig; Andrews, Flow. pl. Anglo-Eg. Sudan 2: 364, 1952.

Annual or perennial herb; stems erect, 80-130 cm tall, ramose, rounded, glabrous, purplish, striate; radical leaves pinnate, sub-5-jugate, petiole long, rhachis to 30 cm long, with sheaths slightly softly pilose; lower leaflets shortly petiolulate, upper ones sessile, the lateral ones oblique at base, triangular to ovoid, slightly acute, margins crenate-dentate, slightly pilose especially beneath; terminal leaflet ovoid to 3-lobate, the laterals  $\pm$  of the same size; upper leaves pinnate, the pinnae pinnately trifid, base cuneate-lanceolate, margins entire or slightly dentate; umbels long pedunculate with 4-6-10 thread-like rays, glabrous, 1,25 cm long; bracts and bracteoles 0; umbellules, pedicels many; fruit ellipsoid, stylopodia thick, with white hooked hairs.

*Olea* grove; 2595 m alt.

Type: Penzig s.n., 5 April 1891, Eritrea: Monte Saber, gheleb (15°48'N x 38°48'E; 15°50'N x 38°47'E).

Not in Fl. Eth. & Eritrea 4/1, 2003.

Resembling *P. hirtella*, *P. etbaica*, *P. erythraeae*.

**P. duridentata** C. C. Townsend

Perennial herb 40-65 cm tall, with an oblong or carrot-shaped tuber 3-4 cm long; stem terete, wiry, rigid, striate, glabrous, usually surrounded at base by a *fibrous collar* formed of the remains of previous years' leaves; basal leaves coriaceous, simply pinnate with 2-4 pairs of leaflets, narrowly lanceolate, with firm *cartilaginous-tipped teeth*; mature fruit unknown.

Damp, swampy ground; 2250-2800 m alt.

**P. erythraeae** Armari; Bot. J. Linn. Soc. London 110: 367, 1992.

syn.: *P. peregrina* L. var. *hirtella* fa. *erythraeae* Firoi; *P. tenuisima* C. Norman

Annual herb 10-65 cm tall; stem erect, sparsely branched, slightly striate, hairy; leaves papyraceous, 5-35  $\times$  5-25 mm; basal stem leaves simple, ovate; middle stem leaves trifoliate, intermixed with some undivided leaves; uppermost stem leaves trifid with linear segments and entire margins.

Ecology unknown;  $\pm$  200-800 m alt.

## PIMPINELLA

**P. etbaica** Schweinf.; Bot. J. Linn. Soc. London 110: 366, 1992. – Icon.: Boulos, Fl. Egypt 2: 173, 2000.

Annual glabrous or sparsely hairy herb 5-25 cm tall; stem erect but often procumbent, profusely branching, striate; radical leaves reniform, 5-15  $\times$   $\pm$  16 mm, trisect at margins; stem leaves ternate, linear to oblanceolate to elliptical, entire or trilobed, each lobule pinnatisect or entire, papyraceous; petiole 2-4 cm long to 3-5 mm long; sheaths scarious-margined, ciliate; fruit dense white-hispid, hairs hooked.

Rocky or stony ground; sand of brook; gneiss;  $\pm$  300->600 m alt. SE Egypt; Yemen (Candollea 47: 619, 1992), N Oman, possibly Saudi Arabia (Ghazanfar, Fl. Oman 2: 144, 2007).

Not in Somalia (= *Trachyspermum pimpinelloides*).

With its single vitta in each groove of the fruit, *P. etbaica* is probably a *Trachyspermum* (fide Thulin).

**P. filiformis** H. Wolff

syn.: *P. pseudocaffra* C. Norman

Slender annual herb  $\pm$  1 m tall; stem simple or alternately branched, erect, glabrous, pithy, rounded; basal leaves simple, triangular, obtuse, membranous, glabrous on both sides, widely cordate, margins unequally serrate; petiole 10-12 cm long, with sparingly fairly long hairs; lamina 4,5-6  $\times$  5-6,5 cm; lower stem leaves unequally 2-divided to the base, margins denticulate, lower teeth bifid, lobes of lower stem leaves 5-1,5 cm and 3  $\times$  1 cm, petiole 7 cm long; upper stem leaves 2-pinnate, 2,4-4,5 cm long; umbels glabrous,  $\pm$  10-rayed, slender, 1,5-2 cm long; pedicels slender, 4-5 mm long; involucre and involucl 0; calyx teeth rudimentary; styles long reflexed; ovary glabrous; petals white; young fruit glabrous, stylopodia flattened from above.

Damp places.

? Only known from the type collected in 1908; described twice on the same specimen Kässner 2783, in 1920 by H. Wolff and in 1923 by C. Norman.

**P. heywoodii** Dawit Abebe; Bot. J. Linn. Soc. London 110: 362, 1992. – Icon.: Fl. Eth. & Eritrea 4/1: 30, 2003.

syn.: *P. cyclophylla* Chiov., nom. nud.

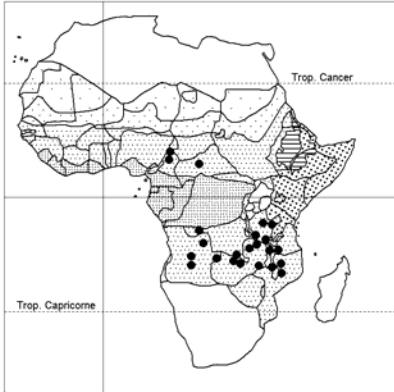
Biennial or perennial herb 27-80 cm tall; stem strictly erect, often unbranching, hispid or hirsute, rarely glabrous, conspicuously striate; petioles very broadly sheathing in the upper end of the stem; leaves pubescent-setose, membranous; radical leaves simple, in rosette, always flat on the ground, ovate to rotundate, rarely oblong, 10-57  $\times$  8-65 mm, deeply cordate at base, apex rounded to obtuse, margins crenate or dentate; stem leaves simple, remotely spaced, sub-rotundate to rectangular; uppermost leaves trifid, narrowly elliptical; petals white, often with hairs; fruit round, covered with vesicular hairs.

Red soil in open grassy stretches alternating with patches of shrubs or small trees; open grassy slopes; grassy places in evergreen forest; 1400-2400 m alt.

**P. hirtella** (Hochst.) A. Rich.; Bot. J. Linn. Soc. London 110: 368, 364, 1992; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 162, 1994; Friis & Vollesen, Flora Sudan-Uganda border area 1: 300, 1998; Thulin, Fl. Somalia 2: 277, 1999; Lisowski, Fl. (angiosp.) Rép. Guinée 1: 53, 2009 (*P. praeventa*). – Icon.: Jaeger & Schnell in Bull. Inst. Franç. Afrique Noire 20: 37, 1958; Kew Bull. 40: 762, 1985.

bas.: *Tragium hirtellum* Hochst.





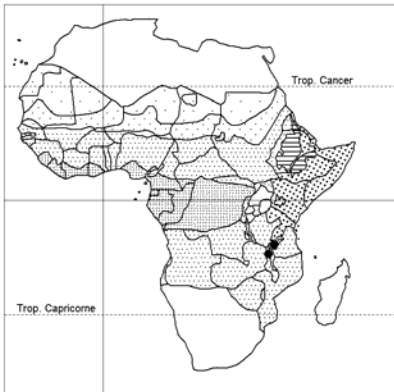
*Pimpinella buchananii*



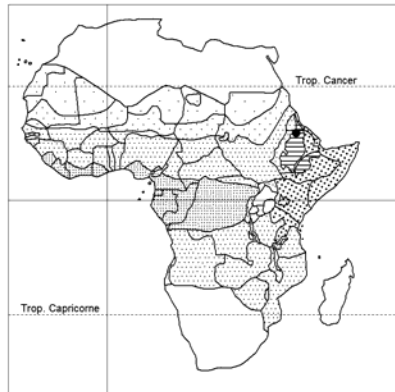
*Pimpinella caffra*



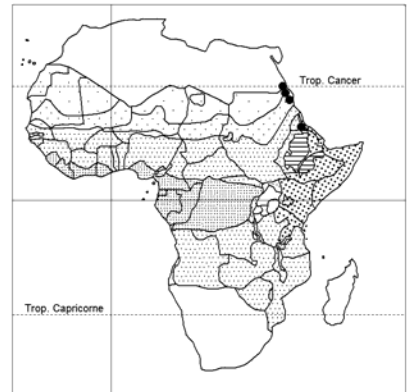
*Pimpinella camptotricha*



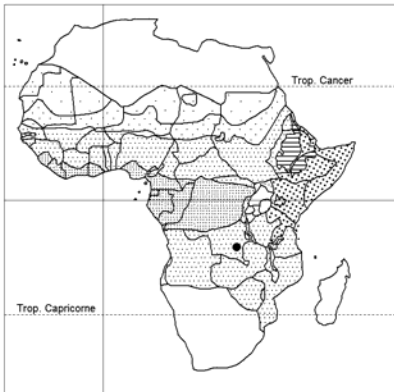
*Pimpinella duridentata*



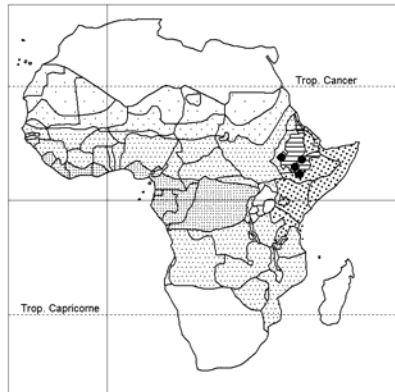
*Pimpinella erythraeae*



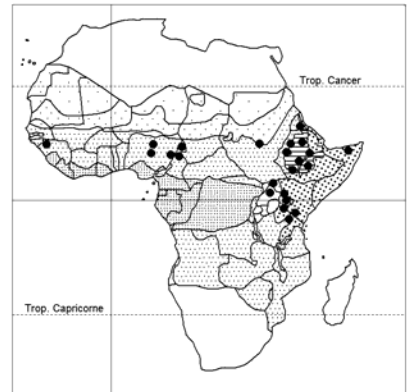
*Pimpinella etbaica*



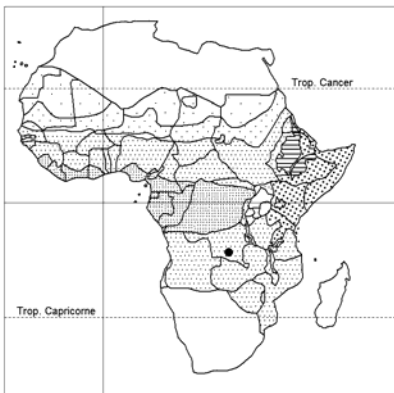
*Pimpinella filiformis*



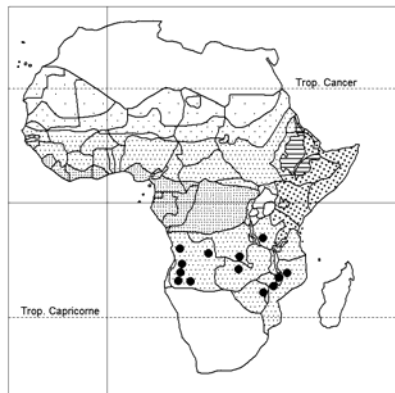
*Pimpinella heywoodii*



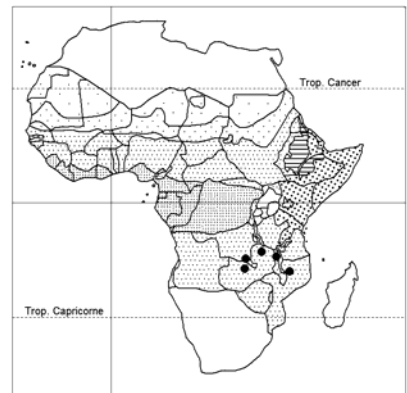
*Pimpinella hirtella*



*Pimpinella homblei*



*Pimpinella huillensis*



*Pimpinella kassneri*

## PIMPINELLA HIRTELLA

syn.: Enum. 2: 241, 1992; *Pimpinella praeventa* C. Norman; *P. peregrina* L. var. *praeventa* Jaeger & Schnell, o.c.: 36, nom.; *P. arussorum* Chiov.; *P. petrosa* Dawit Abebe (fide Fl. Eth. & Eritrea 4/1: 31, 2003); *P. rivae* Engl.

Biennial herb with a slender to somewhat incrassate, narrowly subtuberous root, 16-150 cm tall; stem terete, slender, wiry, finely striate, sometimes tinged with red, glabrous to somewhat pilose with  $\pm$  deflexed white hairs; leaves very variable in form and size, glabrous to  $\pm$  pubescent at least beneath; basal leaves simple to pinnate with a terminal leaflet and 1-3 pairs of ovate-dentate leaflets; upper leaves small, divided, segments linear; umbels nodding when young; fruit densely covered with  $\pm$  stiff upwardly appressed hairs.

Open grassy areas or stony places in *Juniperus* forest; scrub; grassland; open forest; roadsides; rocks on stony ground on mountain ridges; savannas; bamboo forest; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea* on moist slope along trail; cultivated ground (common, Kenya); 700-3200 m alt. – Locally common: a conspicuous constituent of the grassland.

Saudi Arabia (fig. in Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 634, 2001), S Yemen [*P. menachensis* Schweinf. ex H. Wolff is part of the complex *P. peregrina* L. and doubtfully distinct from plants from Ethiopia and Sudan named *P. hirtella* (= *P. peregrina* sensu auctt. al. afric., non L.)].

Not in Mali: confusion with the locality Mali (12°08'Nx12°19'W) in Guinea.

**P. homblei** C. Norman

Perennial herb 1,2 m tall, glabrous; roots woody; stem striate, grooved at base,  $\pm$  ramose; basal leaves very deeply *pinmatisect*, with 3 pairs of linear, acutely serrate segments to  $16 \times \pm 0,3-0,6$  cm, the terminal segment longer than the upper pair; leaves including petiole to 22 cm long, petiole shortly sheathing; stem leaves similar but shorter; involucre 0; umbels with  $\pm 6$  unequal, spreading, thread-like rays, 2-3,5 cm long; involucre 0; pedicels  $\pm 10, 0,3-0,5$  cm long; flowers yellow; ripe fruit unknown (immature glabrous).

Ecology unknown (valley).

? Only known from the type collected in 1913 (Hombre 1225).

**P. huillensis** Engl., incl. var. *elator* Hiern and var. *welwitschii* (Engl.) Engl.; Bot. J. Linn. Soc. London 110: 365, 1992; Figueiredo & Smith, Pl. Angola: 33, 2008. – Icon.: Engler Pflanzenreich 4/228: 260, 1927 (*P. platyphylla*).

syn.: Enum. 2: 241, 1992; *P. welwitschii* Engl. 1892 (and Hiern 1898 !); *P. platyphylla* Hiern, incl. var. *mechowii* Engl.

Slender to more robust (biennial or ?) perennial herb, 0,6-2 m tall; root tuberous, globose to carrot-shaped; stem terete, glabrous, finely striate, simple or with few branches below, the inflorescence considerably branched with the branches increasingly slender; basal leaves  $\pm$  rosulate, with cordate to reniform lamina, rarely 3-sect,  $3,5-11 \times 2,5-11$  cm, margins serrate to crenate,  $\pm$  pilose beneath, palmately nerved; petiole to 15 cm long; stem leaves similar but smaller; petals white, sometimes flushed with red; fruit with short and sometimes subvesicular hairs.

*Brachystegia*, *Uapaca* woodland; shallow boggy soil overlying laterite by streams; open situations in dry bush; rather open forests of *Panda oleosa*; rocky pastures among short bushes with *Heteromorpha arborescens*; 960-1950 m alt.

## PIMPINELLA

**P. kassneri** (H. Wolff) Cannon

Biennial herb, 1-1,5 m tall with a narrow fleshy taproot; stems terete, finely grooved; basal leaves ternate to partially 2-ternate, rarely with simple lamina; margins regularly dentate; stem leaves much reduced; inflorescence much branched with terminal and lateral umbels; fruit insufficiently known (probably  $2 \times 1,5$  mm, carpophore unknown).

Under trees.

Only 5 specimens known (1908, 1933, 1955, 1961, 1970); little-known taxon, perhaps related to *P. huillensis*.

**P. keniensis** C. Norman; Bot. J. Linn. Soc. London 110: 360, 1992. – Icon.: Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 62, 1994.

Slender perennial herb, 25-65 cm tall with a narrow to somewhat thicker tuberous root; basal leaves *simply pinnate* with  $\pm$  *round segments*; stem terete, glabrous or pilose towards base, striate, sparingly to moderately branched with slender branches; petals (creamy) white with 3-5 purplish or brownish oil vittae; fruit glabrous. – Resembling *P. lindblomii*.

Disturbed ground in *Acacia* bushland; cultivated land; grassland on hill tops; swampy ground; usually on red loam soil; 1545-2500 m alt.

**P. kilimandscharica** Engl.; Bot. J. Linn. Soc. London 110: 358, 1992; O. Hedberg, Afroalpine vascul. pl. (Symb. Bot. Upsal. 15/1): 137, 295, 1957.

syn.: *P. oreophila* Hook. f. var. *kilimandscharica* (Engl.) C. C. Townsend

Perennial stoloniferous herb 30-50 cm tall; stem erect unbranching, villose to glabrous; leaves membranous, ciliated; radical leaves simple, in rosette, reniform 6-20  $\times$  8-15 mm, cordate to subcordate at base, occasionally 3-sect; stem leafy, leaves 3-foliate; uppermost leaves trifid with linear lobes; bracteoles present.

Ericaceous forest and scrub; grassland; in *Sphagnum* in closed *Philippia* forest;  $\pm$  open dry ground in *Philippia* scrub; earthy slopes; (3000-)3040-4100 m alt.

In recent floras usually treated as a variety of *P. oreophila*.

**P. kyimbilaensis** H. Wolff

Perennial herb, probably with a creeping rhizome, 25-44 cm tall; stem slender, sulcate-striate, with a few divergent branches from the base upwards, minutely pilose at least in the lower internodes; basal leaves pinnate with 1 or 2-3 pairs of  $\pm$  roundish leaflets; fruit glabrous.

Ecology unknown; 2600 m alt.

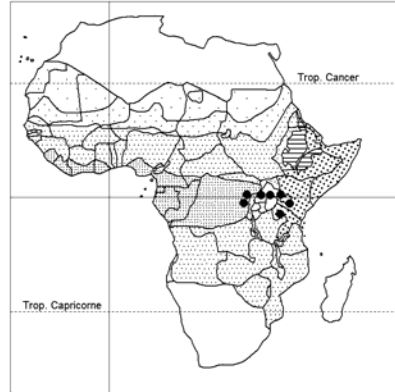
Only known from the type collected in 1914.

**P. ledermannii** H. Wolff; Bot. J. Linn. Soc. London 110: 363, 1992; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 233, 2000.

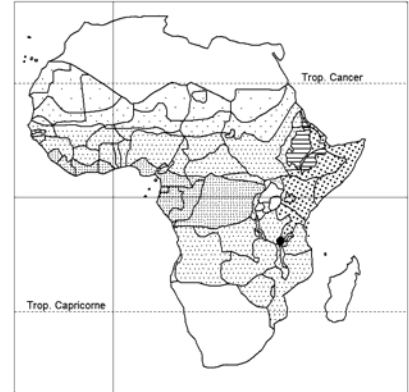
Biennial or short-lived perennial herb, 18-200 cm tall; stem simple or sparingly branched with long ascending branches, stiffly erect, terete, finely striate, glabrous or sparingly hairy; basal and lower stem leaves with  $\pm$  *coriaceous* lamina  $\pm 5-15 \times 4-13$  cm, *oblong-ovate*, regularly broadly and rather bluntly toothed, deeply cordate at base, blunt to subacute at apex; pedicels of flowers and fruits densely *hairy*; umbels *flat-topped*; fruit with velutinous hairs.



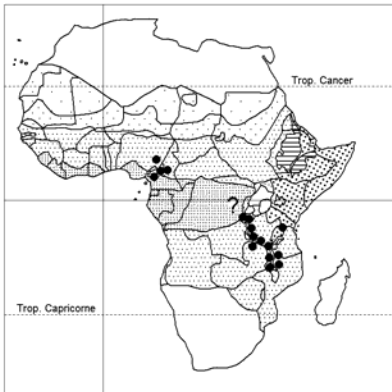
*Pimpinella keniensis*



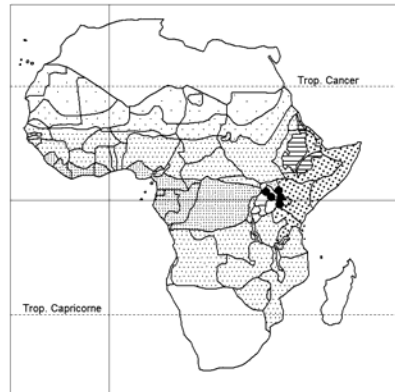
*Pimpinella kilimandscharica*



*Pimpinella kyimbilaensis*



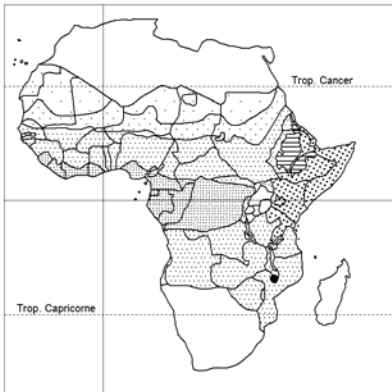
*Pimpinella ledermannii*



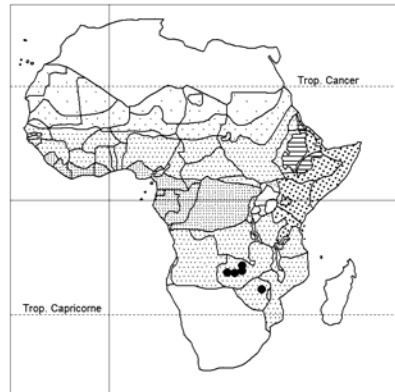
*Pimpinella lindblomii*



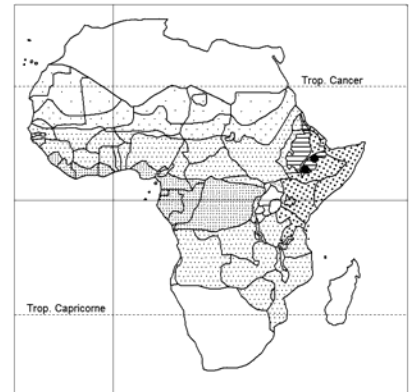
*Pimpinella lineariloba*



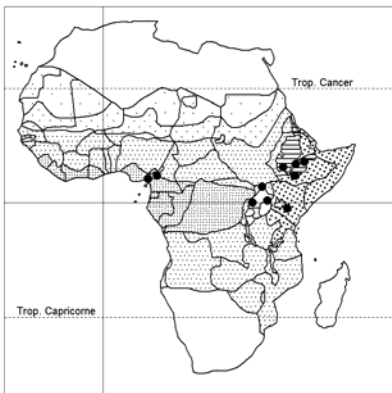
*Pimpinella mulanjensis*



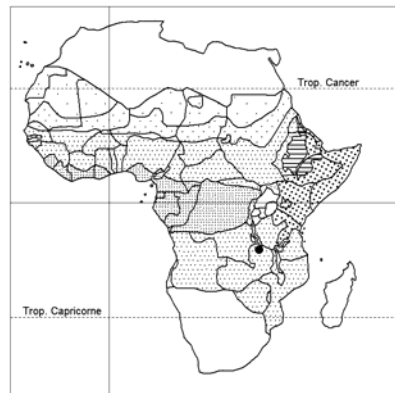
*Pimpinella neglecta*



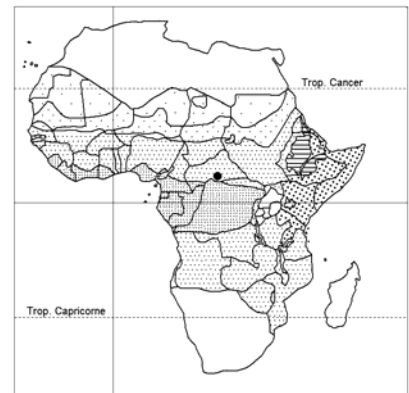
*Pimpinella neumannii*



*Pimpinella oreophila*



*Pimpinella paludosa*



*Pimpinella physotrichioides*



## PIMPINELLA LEDERMANNII

Open grassland on plateaux and hill slopes; open (sometimes burnt) woodland with *Brachystegia*, *Uapaca*, *Protea*; usually scattered and occasional; 810-2600 m alt.

Comprises 2 subspp.: – subsp. **ledermannii** (syn.: *P. tessmannii* H. Wolff), in W part of range; – subsp. **engleriana** (H. Wolff) C. C. Townsend [bas.: *P. engleriana* H. Wolff, nom. nov., 1927, non Fedde ex H. Wolff, nom. nov., 1930, illegit. (= *P. kingdonwardii* H. Wolff, 1929; syn.: *P. asianensis* M. Hiroe, nom. nov., 1979, illegit.; *P. engleriana* Fedde ex H. Wolff, 1930, non 1927; *P. feddei* W. C. Wu & C. Y. Wu, 1984, nom. illegit.; *P. thrysiflora* H. Wolff; *P. weishanensis* R. H. Shan & F. T. Pu – China); syn.: *P. tomentosa* Engl., 1902, nom. illegit., non Dalziel ex C. B. Clarke, 1879; *P. africana* M. Hiroe, 1979, nom. nov. & superfl., 1979]; with umbel rays and pedicels with long fine hairs (not hirtellous); in E part of range.

**P. lindblomii** H. Wolff; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 168, 1994.

Slender perennial herb 25-65 cm tall, with usually a narrow sub-tuberous vertical root, rarely thicker; stem terete, glabrous or ± pilose at least in the lower internodes, striate, moderately branched; lower leaves often twice pinnate, leaflets roundish; umbel bracts and bracteoles 0; petals white or pinkish; fruit glabrous.

Apparently always in grassland on mountain slopes; open forest; wooded grassland; dry or damp ground; 900-2600 m alt. – Common in some areas.

Similar to *P. keniensis*, but basal leaves different, and petals with only 1 oil duct.

**P. lineariloba** Cannon; Figueiredo & Smith, Pl. Angola: 33, 2008.

Erect perennial herb, glabrous except the ovary, ± 60 cm tall; stem with several branches; leaves alternate, *digitate*, to 16 cm long; *lobes linear*, entire, to 10 cm × 2,5 mm; conspicuous bracts subtending the lateral umbels; fruit (immature) with a *dense covering of fine scales*.

Stony ground; 2400 m alt.

Only known from the type collected in 1938.

**P. mulanjensis** C. C. Townsend

Perennial plant 20-45 cm tall, often altogether purplish; root thickened; stem fistular, grooved-striate, glabrous, flexuous, well-branched with strongly diverging branches; basal leaves 2-pinnate, leaflets 5-10 × 4-8 mm, petiole 2-7 cm long; umbel bracts and bracteoles 0; *petals yellow*; fruit glabrous.

syn.: *P. sp.* A sensu Fl. Zambes. 4: 594, 1978.

Black peaty soil over rock; in moss and short turf; wettish grassland; ± 1970-2270 m alt.

Endemic to Mt Mlanje, Malawi.

Clearly separated from *P. buchananii* by: yellow flowers, trivittate petals, “small leaves dissected in a way that never occurs even in the variable *buchananii*, and divergent but not reflexed styles” (Kew Bull. 40: 775, 1985).

**P. neglecta** C. Norman

Sinuous, wiry, glabrous perennial or biennial herb to 45 cm tall with a large elongate or subglobular taproot; stems terete, with few grooves; basal leaves with petioles to 5 cm long, with large membranous sheathing bases; lamina simple, emarginate to

## PIMPINELLA NEGLECTA

cordate at base, apex rounded, margins dentate to denticulate; stem leaves much reduced; bracts and bracteoles 0; petals *bright yellow*.

Open grassland; ± 1000 m alt.

**P. neumannii** Engl. ex H. Wolff in Engler, Pflanzenreich 4/228: 263, 1927. – The publication of Engler’s name by Hutchison & E. A. Bruce in Bull. Misc. Inf. 1941/2: 140, 1941, is superfluous.

Herb 0,3->1 m tall, minutely setose-hirsute, heterophyllous, with fibrous remains of leaves at base; stem erect, rounded, often ridged, pubescent; leaves almost glabrous, very variable, some simple and ovate-elliptic, lamina cordate at base, apex rounded c. 2(2,5) cm long, 1(2,5) cm wide, margins crenate-dentate, petiole as long as lamina; other leaves 3-foliolate, leaflets resembling the simple leaves, still other leaves pinnately partite with linear subentire segments; umbels long-pedunculate, compound, the primary ones with c. 12 rays, the secondary ones with c. 20 rays, bracts 0; secondary peduncles c. 2 cm long, pubescent; pedicels 2-3 mm long, pubescent; bracteoles 0; flowers white; calyx obsolete; petals ovate, c. 1 mm long, dorsally sparingly pubescent; stamens slightly longer than petals; hypanthium ovoid-ellipsoid, densely pubescent; styles divergent.

On limestone in *Podocarpus*, *Juniperus* forest; meadow near barley field; 2730-±2800 m alt.

? Only known from two collections (Neumann 133, Gillett 5324).

Not in Fl. Eth. & Eritrea 4/1, 2003.

**P. oreophila** Hook. f., excl. var. *kilimandscharica* (Engl.) C. C. Townsend (= *P. kilimandscharica*); Bot. J. Linn. Soc. London 110: 359, 1992; Friis & Vollesen, Fl. Sudan-Uganda border area 1: 300-301, 1998. – Icon.: Fl. Eth. & Eritrea 4/1: 29, 2003.

syn.: *P. friesiorum* H. Wolff; ?? *P. erlangeri* Engl., nom. nud. (cf. below at end of species list).

Perennial herb 5-95 cm tall, with a tough stoloniferous rootstock; stem erect, sulcate, green to blackish purple, moderately to densely furnished with 1-2-many-celled hairs which are sometimes violet-coloured; basal leaves sometimes purplish tinged, 1-pinnate, with 2-4 pairs of leaflets 5-9(-15) × 3-8(-20) mm; umbel bracts 0-2, linear; bracteoles 2-3(-6), linear; rays with 3-many-celled hairs.; petals glabrous; fruit glabrous.

Mountain summit in rocky area with grassland and scattered low ericaceous scrub, low shrubs and herbs in rock crevices (Imatong Mts); in short grass between rocks; mountain pastures and clearings in woodland; swampy ground on *Sphagnum*; by streams in bamboo forest; 2300-4200 m alt.

Bioko/Fernando Poo.

**P. paludosa** C. C. Townsend

Straggling biennial or perennial herb 38-55 cm tall; root small, tuberous, oblong to ± round; stem fistular, glabrous or clothed with long whitish hairs, simple or ramose, spreading; basal leaves 6-9 × 6-10 cm, pinnate with 3-4 pairs of pinnae; leaflets oblong, 35-60 × 5-9 mm; lower stem leaves similar, but sessile in the sheath; umbel peduncles glabrous; bracts 3-7, bracteoles 3-6, all very short; petals glabrous; fruit glabrous.

River marsh on low ant hills; valley grassland on ant hill in long grasses; plain, wet short grass, marsh and mud; 1500-1515 m alt.

Once confused with *P. buchananii* (cf. Townsend, Kew Bull. 40: 775, 1985).

## PIMPINELLA

(*P. peregrina* L.) sensu Dawit Abebe in Bot. J. Linn. Soc. 110: 367, 1992 = *P. hirtella*.

**P. physotrichioides** C. Norman

Biennial herb; stem rounded, striate,  $\pm 1,5$  m tall, glabrous, ramose above; basal leaves and lower stem leaves simple, acute, ovate-triangular in outline, 3-7 cm long, towards the base 4-5,5 cm wide; base truncate or subcordate; margins toothed, mucronate; upper stem leaves reduced to pennatisect bracts; umbels with many erect rays, 3,5-4 cm long, glabrous, pedicels  $\pm 1$  cm long; bracts 0; bracteoles 0 or 1, narrowly linear acute; fruit ovate with papillose tubercles; disk remarkably broadened; stylopodia small, scarcely raised; styles short, divaricate.

Wooded tall savanna.

Fruits similar to those of *Physotrichia welwitschii* and *Pimpinella olivieri* Boiss. from Syria, Iraq, Iran. "In foliage, however, and in the lack of involucre bracts, it is a true *Pimpinella*" (fide Norman, J. Bot. London 75: 167, 1937).

**P. pimpinelloides** (Hochst.) H. Wolff; Bot. J. Linn. Soc. London 110: 358, 1992; Fragm. Florist. Geobot., Suppl. 2(1): 195, 1993 (I. Friis). – Icon.: Pichi Sermolli, Miss. Stud. Lago Tana 7, Ricerche Bot. 1: pl. 45, 1951 (*Gymnosciadium pusillum*); Puff & Sileshi Nemomissa, Pl. Simen: 125, 2005.

syn.: *Gymnosciadium pusillum* Pic. Serm.; *Pimpinella pusilla* (Pic. Serm.) M. Hiroe; *Trachydium pimpinelloides* (Hochst.) C. Norman; *Pimpinella gymnosciadium* Hiern; *Gymnosciadium pimpinelloides* Hochst.

Perennial herb with a thick rootstock; stem scapiform, erect, non-branching, 4-10 cm tall, glabrous to thinly pubescent; leaves all radical, rosette-forming, mostly pinnate,  $\pm$  hairy, ciliate, leaflets 6-11  $\times$  8-14 mm, rounded, with crenate margins; petioles sheathing; bracts and bracteoles 0; petals white, glabrous; fruit sparsely hairy, glabrescent.

Grassland; 4200-4520 m alt. – For more information on ecology, see Webbia 13: 94, 1957.

Very similar to *P. oreophila* and perhaps only a high level form of that species (Fl. Eth. & Eritrea 4/1: 28, 2003).

Only 2 collections known from 1838 and 1937, respectively.

**P. richardsiae** C. C. Townsend

Herb  $\pm 70$  cm tall, probably perennial, glabrous; stem terete, finely striate, branched above with the branches divergent; lower leaves pinnate with 1-2 pairs of leaflets; these to 20  $\times$  1,6 cm, narrowly lanceolate, regularly serrulate with firm, white, cartilaginous teeth, only the terminal leaflet stalked (petiolule 0,5-2 cm long); petiole to 12 cm long including the 2-3 cm long sheath; upper leaves rapidly reducing, the uppermost trisect; umbel bracts 7-9, to 1 cm long, sometimes toothed; bracteoles 3-6, 3 mm long; calyx 0; petals white, univittate; fruit unknown.

Among tall coarse grass; 1800 m alt.

Only known from the type collected in 1957.

**P. rigidistyla** C. C. Townsend

Biennial or perennial herb, 20-26 cm tall with a short oblong tuberous rootstock; stem terete, wiry, finely striate, flexuose, moderately furnished with rather long fine flexuose whitish hairs, divergently branched from the middle upwards, with very reduced leaves; lower stem leaves with lamina 4,5-5 cm long, subtripinnatisect with linear-oblong acute mucronate ultimate segments, to  $\pm 4 \times 1$  mm; petiole slender,  $\pm 4,5$  cm long; umbel rays 4-5, moderately to *densely furnished* with crisped hairs, 0,8-1,4 cm

## PIMPINELLA RIGIDISTYLA

long; bracts and bracteoles 0; petals white, glabrous, 1-vittate; fruit (young) with scattered long white flexuose hairs; styles *rigid, divergent* as in *P. peregrina* L.

Grassland; 2610 m alt.

Only known from the type collected in 1960.

**P. rigidiuscula** C. C. Townsend

Slender but rigid, wiry biennial or perennial herb 35-60 cm tall with a short firm oblong tuber-like root; stem subterete, striate, glabrous or very sparingly hairy, with a few ascending branches from about the middle upwards; basal leaves coriaceous, simple, ovate-oblong, lamina 6-7,5  $\times$  3-5 cm, bluntly serrate with the teeth more prominent towards the base, glabrous, apex subacute, base deeply cordate; petiole slender,  $\pm 7$  cm long; lower stem leaves smaller; upper stem leaves pinnate with narrow segments; umbel rays 3-5 with a rather sparse indumentum of *upwardly directed* substrigose hairs, 1,5-2,5 cm long; bracts and bracteoles 0; petals white, glabrous, 1-vittate; fruit glabrous.

Grassy bank near stream; 2800 m alt.

Only known from the type collected in 1980 (two plants).

**P. robynsii** C. Norman

Robust erect herb c. 1,8 m tall; stem rounded, glabrous, little branched above; stem leaves all similar, pinnate, with 3 pairs of leaflets; lamina c. 12 cm long of same length as petiole; leaflets lanceolate, 3,5-5  $\times$  2-3 cm, glabrous above, scabrid on the prominent nerves beneath, apex acute, base rounded or subtruncate, margins  $\pm$  serrate; umbels  $\pm 10$ -rayed, rays slender, glabrous, unequal in length; ovary glabrous; ripe fruit unknown; also basal leaves unknown.

River valley; 1700 m alt.

Known only from the type.

Allied to *P. buchananii*.

**P. schimperi** Dawit Abebe; Bot. J. Linn. Soc. London 110: 369, 1992; Fl. Eth. & Eritrea 4/1: 30, 2003.

Perennial herb with a thick taproot; stem 12-66 cm tall, thinly pubescent, erect, striate, branched from the subwoody often deeply purplish base; leaves *pinnate with 3-5-entire, oblong or elliptic, coarsely serrate*, coriaceous segments; umbel bracts and bracteoles 0-1; petals yellowish white, hairy dorsally; fruit hirsute.

Grassy glades; degraded *Juniperus* forest, often with *Dodonaea viscosa*; open grassland on lava with black soil or red sandy soil; 1650-2500 m alt.

Only 4 collections known.

**P. stadensis** (Eckl. & Zeyh.) D. Dietr.; Fl. Moçambique 87, Umbellif.: 33-34, 1981.

bas.: *Anisum stadense* Eckl. & Zeyh.

syn.: *Pimpinella reenensis* Rech. f.

Relatively slender, probably biennial herb lightly pubescent to 60 cm tall with a narrow taproot; basal leaves on long petioles (to 15 cm), lamina rarely simple with dentate margins, but usually (sub)ternate, rarely finely divided; stem leaves variable (2-)ternate or rarely pinnate; umbels long-pedicellate, rays pubescent; bracts and bracteoles 0.

Grassland; amongst rocks; 1800-2000 m alt.

S. Africa (300-2800 m alt), widespread.

## PIMPINELLA

**P. caffra** (Eckl. & Zeyh.) D. Dietr. and **P. transvaalensis** H. Wolff (S. Africa, Swaziland) are distinct species.

**P. trifurcata** H. Wolff; Bot. J. Linn. Soc. London 110: 361, 1992. syn.: *P. buchananii* H. Wolff subsp. *septentrionalis* C. C. Townsend

Biennial or perennial herb, wiry, ± glabrous, 50-80 cm tall; taproot narrow; stem erect, striate-sulcate, often branching at the upper end into 3 branchlets that terminate as umbel peduncles; basal leaves often rather *coriaceous*, simple, broadly elliptic to rarely rhomboid or ovate, or imperfectly or completely ternate, 30-120 × 25-80 mm, base attenuate to cuneate, margins serrate, apex apiculate to mucronate; middle stem leaves trifoliolate; uppermost stem leaves trifid with entire or incised lobes; *peduncles subtending leaves opposite*; umbel rays and *pedicels glabrous*; bracts and bracteoles 0; fruit glabrous.

*Brachystegia* woodland; grassland at edges of forest; swamps or lakes; grassy hill slopes or summits; 900-1800 m alt.

## NOMEN NUDUM:

*Pimpinella erlangeri* Engl., Sitzungsber. Königl. Preuss. Akad. Wiss. Berlin, Physikal.-Mathem. Cl., 1906: 734, 1906; Engler, Pflanzenw. Afr. 3/2: 815, 1921.

No morphological description given; but locality and ecology: growing at Gura Mulata (Gara Muleta, 9°15'N×41°44'E; = NW of Harare) in Harar, on the plateau pasture land (grassland) between forests, in the grass, together with "*Phagnalon nitidum* Fresen." (= ? *Phagnalon quartianum* A. Rich.), on sunny rocky slopes, at 2600 m alt.

Supposed that this plant is a true *Pimpinella*, and that it is not a hitherto undescribed species, we have the choice between three species occurring in the area, viz. *P. hirtella* found on grassy slopes (1400-3100 m alt.); *P. neumannii* in *Juniperus* forest (2730-2800 m alt.); *P. oreophila* on mountain pastures and scrub (2400-4200 m alt.).

In view of the ecological data given by Engler *P. erlangeri* might well represent a form of **P. oreophila**.

However, C. Norman (J. Linn. Soc. Bot. London 47: 593, 1927) had seen the specimen at Berlin, that has a "quite immature" fruit. He found that it is "not unlike a *Psammogeton*".

## SYNONYMS:

*Pimpinella africana* M. Hiroe = **Pimpinella ledermannii** subsp. **engleriana**

*arussorum* Chiov. = **P. hirtella**

*buchananii* H. Wolff subsp. *septentrionalis* C. C. Towns. = **P. trifurcata**

var. *triradiata* C. Norman = **P. buchananii** var. **buchananii**

*cordata* E. Mey. = **P. caffra**

*crinita* Boiss., p.p. = **Psammogeton canescens**

*cyclophylla* Chiov., nom. nud. = **Pimpinella heywoodii**

*engleriana* H. Wolff = **P. ledermannii** subsp.

*erlangeri* Engl., nom. nud. = ?? **P. oreophila** or

**Psammogeton** (see above at end of species list)

*favifolia* C. Norman = **Pimpinella buchananii**

var. **buchananii**

*friesiorum* H. Wolff = **P. oreophila**

*gossweileri* H. Wolff = **P. huillensis**

*gymnosciadium* Hiern = **P. pimpinelloides**

## PIMPINELLA

*hiernii* M. Hiroe = **Angoseseli mossamedensis**

*imbricata* (Schinz) Engl. = **Afrocarum**

*involutrata* Hiern ex Engl. = **Angoseseli mossamedensis**

*kraussiana* Meisn. ex C. Krauss = **Pimpinella caffra**

*leptophylla* Pers. = **Apium**

*mechowii* (Engl.) H. Wolff = **Pimpinella huillensis**

*menachensis* Schweinf. ex H. Wolff – See under **P. hirtella**

*mossamedensis* (Welw. ex Hiern) M. Hiroe = **Angoseseli**

*nandensis* C. Norman = **Heracleum abyssinicum**

*neumannii* Engl. ex Hutch. & E. A. Bruce 1941, nom. superfl.

= **P. neumannii** Engl. ex H. Wolff 1927

*nyassica* C. Norman = **Pimpinella stadensis**

*oreophila* Hook. f. var. *kilimandscharica* (Engl.) C. C. Towns.

= **P. kilimandscharica**

*peregrina* auctt. plur. Afr., non L. = **P. hirtella**

var. *hirtella* fa. *erythraeae* Fiori = **P. erythraeae**

var. *praeventa* Jaeger & Schnell = **P. hirtella**

*petrosa* Dawit Abebe = **P. hirtella**

*platyphylla* Hiern, incl. var. *mechowii* Engl. = **P. huillensis**

*praeventa* C. Norman = **P. hirtella**

*pseudocaffra* H. Wolff = **P. filiformis**

*pusilla* (Pic. Serm.) M. Hiroe = **P. pimpinelloides**

*reenensis* Rech. f. = **P. stadensis**

*rivae* Engl. = **P. hirtella**

*robusta* C. Norman = **P. huillensis**

*simensis* (M. J. Gay ex A. Rich.) Benth. & Hook. f. ex Hiern

= **Oreoschimperella verrucosa**

sp. sensu Fl. Zambes. 4: 589, 1978 = **Pimpinella**

**alismatifolia**

sp. A sensu Fl. Zambes. 4: 594, 1978 = **P. mulanjensis**

*stolzii* H. Wolff = **P. buchananii** var. **buchananii**

*tenuissima* C. Norman = **P. erythraeae**

*tessmannii* H. Wolff = **P. ledermannii** subsp. **ledermannii**

*tomentosa* Engl. = **P. ledermannii** subsp. **engleriana**

*volkensii* Engl. = **P. hirtella**

*welwitschii* Engl. 1892, and Hiern 1898 = **P. huillensis**

*zernyi* Gilli = **P. buchananii** var. **buchananii**

## (PITURANTHOS)

*Pituranthos burchellii* (DC.) Benth. & Hook. f. ex Schinz =

**Deverra burchellii**

*chloranthus* (Coss. & Durieu) Benth. & Hook. f. ex Schinz,

incl. subsp. *cossonianus* Maire, subsp. *intermedius*

Maire var. *calvescens* Maire, and subsp. *robustus* Maire

= **D. denudata**

*denudata* Viv. = **D. denudata**

*fallax* Batt. & Trab. = **D. scoparia** subsp. **scoparia**

*reboudii* (Coss. & Durieu) Benth. & Hook. f. ex Schinz =

**D. scoparia** subsp. **scoparia**

*rohlfianus* (Aschers.) Schinz = **D. scoparia** subsp.

**tripolitana**

*scoparius* (Coss. & Durieu ex Coss.) Benth. & Hook. f. ex

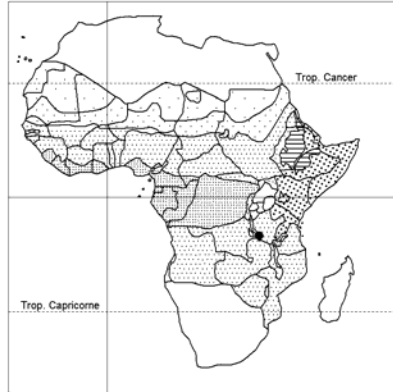
Schinz, incl. var. *fallax* (Batt. & Trab.) Maire, and var.

*muratianus* Maire = **D. scoparia**

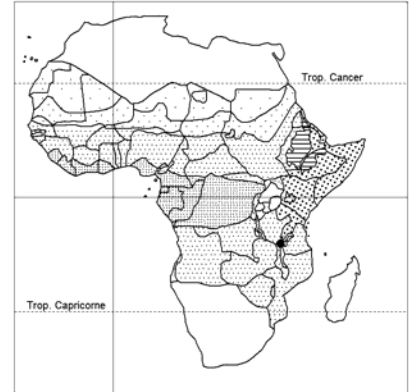




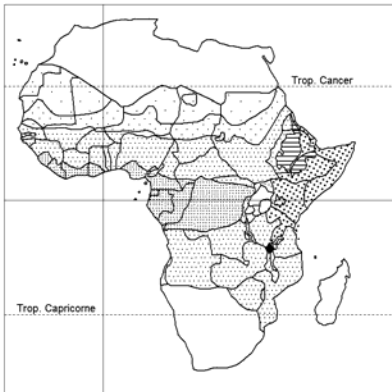
*Pimpinella pimpinelloides*



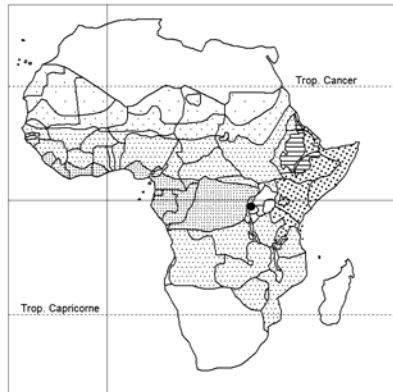
*Pimpinella richardsiae*



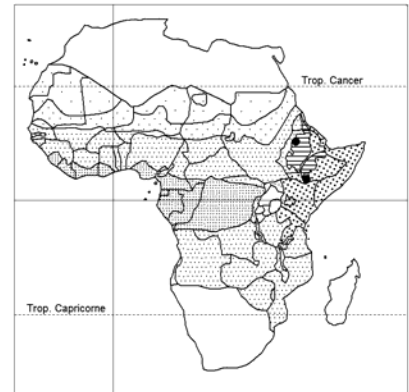
*Pimpinella rigidistyla*



*Pimpinella rigidiuscula*



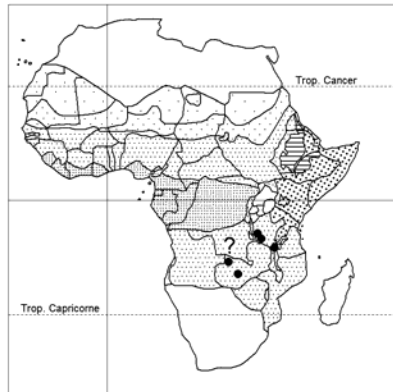
*Pimpinella robynsii*



*Pimpinella schimperi*



*Pimpinella stadensis*



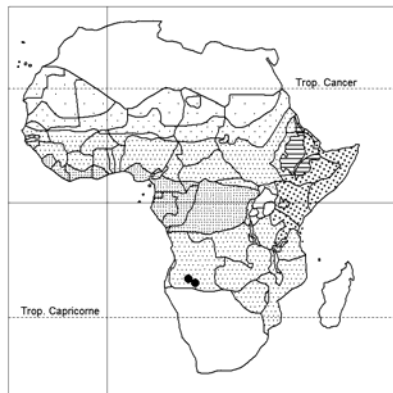
*Pimpinella trifurcata*



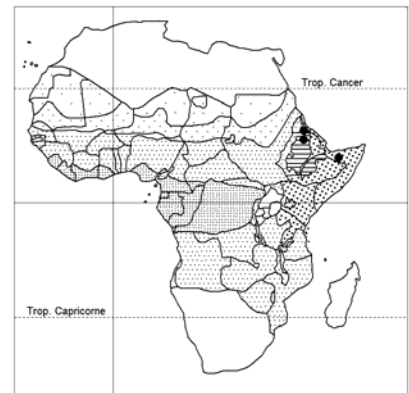
*Psammogeton canescens*



*Pseudocarum eminii*



*Pseudoselinum angolense*



*Pycnocycla glauca*

## PSAMMOGETON / 1

Seven species in SW and C Asia.

WAGENITZ, G. (1956). Die Gattung Psammogeton Edgew. (Umbelliferae). *Ber. Deutsch. Bot. Ges.* 69: 227-238.

**Psammogeton canescens** (DC.) Vatke subsp. **canescens**; J.-P. Lebrun, *Candollea* 52: 228, 1997. – Icon.: *Fl. Iranica* 162, Umbel. (Tabulae): tab. 93, 1987.

bas.: *Athamantha canescens* DC.

syn.: *Psammogeton crinitum* Boiss.; *Daucus crinitus* (Boiss.) Kuntze 1887, non Desf. 1798; *Cuminum crinitum* (Boiss.) Koso-Pol.; *Pimpinella crinita* Boiss., p.p.; *Psammogeton biternatum* Edgew. var. *villosa* C. B. Clarke, p.p.; *P. carmanicum* Bornm.; *P. "kermanense"* Bornm., sphalmate; *P. canescens* (DC.) Vatke var. *villosum* (C. B. Clarke) Raizada

Annual herb 3-40 cm tall; stem with short, patent hairs or almost glabrous, branched from the base with decumbent or erect branches; lower leaves 2-ternate, very short, with patent hairs, glabrescent at length, withered often already at flowering time, with lanceolate to spatulate segments, usually 2-3-toothed; umbels compound, with 5-12 rays; involucre bracts ( $\pm 5$ ) with shining margins; bracteoles 5-7, long mucronate, with ciliate margins; fruit with stellate hairs on the ribs and glochidia at apex.

Organic soils; meadow patches on rhyolitic hill; scree; mountain slopes; 100-1085 m alt.

Variable species, with 4 subspecies.

Syria, Iraq, Iran, Afghanistan, Pakistan, Turkmenistan.

*Pimpinella erlangeri* Engl., nom. nud., may belong here (cf. above at end of species list, **Pimpinella**).

## PSEUDOCARUM / 1

Two species, one in E tropical Africa, one in Madagascar [*P. laxiflorum* (Baker) B.-E. van Wyk (bas.: *Pimpinella laxiflora* Bak.; syn.: *Heteromorpha laxiflora* (Baker) Humbert), *Taxon* 48: 744, 1999, with var. *laxiflorum* and var. *alticola* (Humbert) B.-E. van Wyk, l.c. (bas.: *Pimpinella laxiflora* var. *alticola* Humbert)].

**Pseudocarum eminii** (Engl.) H. Wolff; *Taxon* 48: 744, 1999; Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: 167, 1994. – Icon.: *Fl. Eth. & Eritrea* 4/1: 23, 2003.

Scandent herb scrambling to  $\pm 7,5$  m or more by means of prehensile petioles and petiolules; stem slender, glabrous, weak, terete, striate,  $\pm$  shrinking at nodes when dry; leaves glabrous, ternate to 2-3-triternate with slender petioles 2,5-8 cm long; umbel compound, with c. 16 rays very unequal in length; bracts c. 6, reflexed, c. 5 mm long, bracteoles similar but smaller; petals (greenish or yellowish) white; fruit with usually only one fertile mericarp ("humped appearance").

Usually in bamboo forest, especially where there has been disturbance (common in the bamboo zone, Kenya); sometimes with *Dracaena*, *Podocarpus* and various tall herbs; *Podocarpus*, *Celtis* forest; 1750-3350 m alt.

SYNONYM:

*Pseudocarum clematidifolium* C. Norman = **Pseudocarum eminii**

## PSEUDOSELINUM / 1

Monotypic.

**Pseudoselinum angolense** (C. Norman) C. Norman; Figueiredo & Smith, *Pl. Angola*: 33, 2008. – Icon.: *J. Bot.* 67, Suppl. Polypet.: 202, 1929.

Perennial, erect herb 0,5-1 m tall; stem simple, rounded, glabrous; basal leaves with long petiole, base sheathing, bi-pinnatisect, yellowish-green,  $\pm 14$  cm long, spreading on the ground; stem leaves bractiform; umbel compound; petals purplish; fruit flat, with broad dorsal wings.

Open herb-grown thickets; short shrub-grown meadows on margin of river; 1320 m alt.

(PTYCHOTIS)

*Ptychotis coptica* (L.) DC. = **Trachyspermum ammi**

## PYCNOCYCLA / 2

Some 12 species from W Africa and NW India.

**Pycnocycla glauca** Lindl. – Icon.: Royle, *Ill. bot. Himal. Mts.* part V: pl. 51, 1835; Thulin, *Fl. Somalia* 2: 273, 1999; Chaudhary, *Fl. Kingd. Saudi Arabia* ill. 2/1: 612, 2001.

syn.: *P. abyssinica* Hochst. ex A. Rich.

Prostrate, ascending or erect perennial herb 30-75 cm tall with a woody base; leaves basal, glabrous, long-petiolate, 1-3-pinnate, the segments linear with involute margins, often forked, to  $\pm 50 \times 1$  mm; stems finely striate, pubescent to subglabrous with short hairs; umbels compound, on very long pubescent peduncles 10-20 cm long, unbranched, with numerous rays to c. 8 mm long; bracts and bracteoles present; petals white or pink.

Grassland; woodland; openings in forest; 1600-2650 m alt.

Saudi Arabia, Yemen; N & C India (map: Notes Roy. Bot. Gard. Edinb. 32: 172, 1973).

**P. ledermannii** H. Wolff; Boissiera 57: 111, 2001; Akoegninou & al., *Fl. analyt. Bénin*: 333, 2006. – Icon.: Lisowski, *Fl. (angiosp.) Rép. Guinée* 2: 53-54, 2009; *Fl. Eth. & Eritrea* 4/1: 9, 2003.

syn.: *P. occidentalis* Hutch.; ?? *Diplophium guineense* A. Chev., nom. in sched. (Chevalier 13522, Guinea).

Perennial herb with a thick rootstock clothed with coriaceous remains of leaf sheaths; stems one or several, erect, richly branched from the base, 0,7-1,5 m tall, scabrous in the upper part, striate, with leafy base; leaves repeatedly 2-4-furcate, with lamina to 20 cm long, petiole thick to 25 cm long; segments to 5 cm long,  $\pm$  filiform, apiculate; upper leaves reduced, sheathing; inflorescence of 3-4 axillary, or more often terminal, compound umbels,  $\pm 5$  cm across; bracts and bracteoles numerous; petals white with brown veins.

Bamboo scrub; open woodland; plateau; humid meadow; bushland; humid mountain slopes; burnt woodland; 750-1400 m alt.

## SANICULA / 1

Some 40 species, predominantly in temperate regions.

CALVIÑO, C. I. & al. (2008). Morphology and biogeography of Apiaceae subfamily Saniculoideae as inferred by phylogenetic analysis of molecular data. *Amer. J. Bot.* 95: 196-214.

KADEREIT, J. W. & al. (2008). The phylogeny and biogeography of Apiaceae subf. Saniculoideae tribe Saniculeae: from south to north and south again. *Taxon* 57: 365-382 (map *Sanicula* p. 366).

## SANICULA

**Sanicula elata** Buch.-Ham. ex D. Don; Friis & Vollesen, Fl. Sudan-Uganda border area 1: 301, 1998; Y. Harvey & al., Pl. Bali Ngemba...: 130, 2004; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 146, 2010. – Icon.: Robyns, Fl. Parc. Natl. Albert 1: 699, 1948 (*S. europaea* var *elata*); Fl. Cameroon 10: 43, 1970; Fl. Zambes. 4: 566, 1978; Fl. Moçamb. 87, Umbellif.: 11, 1981; Troupin, Fl. Rwanda 2: 563, 1983; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 61, 1994; Fl. Eth. & Eritrea 4/1: 6, 2003; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 439, 2008; Puff & Sileshi Nemomissa, Pl. Simen: 123, 2005.

syn.: *S. europaea* L. var. *capensis* Cham. & Schltdl., var. *elata* (Buch.-Ham. ex D. Don) H. Boissieu 1906, H. Wolff 1913, and var. *partita* (Kuntze) M. Hiroe; *S. europaea* sensu auctt. (e.g., Hiern in F.T.A. 3: 8, 1877; Sond.; Guinea; Andrews, Flow. Pl. Anglo-Eg. Sudan 2: 364, 1952), non L.; *S. capensis* (Cham. & Schltdl.) Eckl. & Zeyh.; *S. natalensis* Gandoger

Erect or occasionally ascending, glabrous perennial herb 15-100 cm tall; rootstock thick, oblique, ± scaly, with fibrous rootlets; stem green to purplish, sulcate-striate, sparingly branched or simple below the inflorescence; leaves broadly palmately lobed, glabrous; basal leaves with petiole ± 5-20 cm long, 2-4 in rosette; inflorescence cymose, bifurcating 3-4 times with a central cyme on peduncle c. 1 cm long; lateral primary peduncles 5-6 cm, secondary peduncles 1-2 cm long; flowers white; fruit covered in hooked bristles, green.

Forests of various kinds (broad-leaved, *Juniperus*, bamboo); from dense shade to more open parts; frequently in damp or swampy places or along streams; sides of ravines and by waterfalls; sclerophyllous forest on lava plain; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; *Pouteria altissima* forest; *Podocarpus latifolius* forest; 300-3500 m alt.

Bioko/Fernando Poo; S. Africa, Swaziland; Comoro Isl., Madagascar; Yemen; N India, Nepal, Bhutan, Pakistan, Myanmar, Vietnam, Sri Lanka, China, Japan, Philippines, Indonesia, (map: Univ. Calif. Publ. Bot. 25: 48, 1951). – Iran ?

*S. europaea* L. belongs to a group of species with 10-25 staminate flowers in each umbel; *S. elata* makes part of a group of species having 3-8 staminate flowers. The distribution areas of the two species are very different.

## (SCANDIX)

*Scandix infesta* L. = **Torilis arvensis**

## (SCHIMPERELLA)

*Schimperella aberdarensis* C. Norman = **Oreoschimperella verrucosa** (M. J. Gay ex A. Rich.) Vatke, incl. var. *simensis* (M. J. Gay ex A. Rich.) Vatke = **O. verrucosa**

## (SELINUM)

*Selinum angolense* C. Norman = **Pseudoselinum**

## SESELI / I

Some 80 species (100-120 incl. *Libanotis*, fide Reduron, Ombel-lifères de France 4: 2251, 2008), in Europe and Asia.

**Seseli scopulorum** C. C. Townsend – Icon.: Thulin, Fl. Somal. 2: 280, 1999.

Perennial herb, softly woody towards the base, aromatic; stems ascending, terete, finely striate, shortly pubescent to glabrous, to

## SESELI SCOPULORUM

40 cm long; leaves 1 to 2 times ternately divided, rigid; umbel compound, bracts 1-several, c. 5 mm long; bracteoles 4-7, filiform; petals cream or yellowish-green.

In crevices on escarpment cliffs and slopes with *Juniperus*, *Cadia*, *Dodonaea*, *Pistacia*; 900-2050 m alt.

The only species of *Seseli* sensu stricto recorded in tropical Africa (fide Townsend); but its generic position is not entirely certain; a similar undescribed species is found on Socotra (fide Thulin).

## SYNONYM:

*Seseli chaerophylloides* Thunb. = **Conium maculatum**

## (SICYOS)

*Sicyos glandulosa* Poir. = **Bowlesia**

## (SIELLA)

*Siella erecta* (Huds.) Pimenov = **Berula**

## (SISON)

*Sison ammi* Jacq. = **Apium leptophyllum**

*ammi* L. = **Trachyspermum ammi**

*ruta* Burm. f. = **Apium graveolens**

## SIUM / I

Some 12 (or 14 ?) species, in Europe, Asia, Africa, N. America.

Glabrous aquatic or marshland perennial herbs; umbels compound, leaf-opposed.

SPALIK, K. & S. R. DOWNIE (2006). The evolutionary history of *Sium* sensu lato (Apiaceae): dispersal, vicariance, and domestication as inferred from ITS rDNA phylogeny. *Amer. J. Bot.* 93: 747-761 [maps p. 753, 755, 756].

SPALIK, K. & al. (2009). Generic limitations within the *Sium* alliance (Apiaceae tribe Oenantheae) inferred from cpDNA rps16-5'trnK(UUU) and nrDNA ITS sequences. *Taxon* 58: 735-748.

**Sium repandum** Welw. ex Hiern, incl. var. *latifolium* Burt Davy; Figueiredo & Smith, Pl. Angola: 33, 2008. – Icon.: Fl. Zambes. 4: 597, 1978.

syn.: *Berula repanda* (Hiern) Spalik & S. R. Downie, l.c. (p. 745).

Coarse erect, rhizomatous perennial herb rooting at the lower nodes, ± 0.6-2 m tall, moderately branched from the base upwards; stem and branches succulent, fistular, narrowly sulcate, ribbed; leaves simply pinnate, lowest to 50 × 25 cm; involucre and involucel conspicuous; sepals obvious; petals white to pale greenish-yellow.

Banks of rivers and streams; often in standing water; primitive forest (stream banks with *Ranunculus pinnatus*, *Salix* sp.); flooded places; sometimes abundant; 1500-±2400 m alt.

S. Africa, Swaziland.

Two species occur on Saint Helena: *Sium burchellii* (Hook. f.) Hemsl. and *S. bracteatum* (Roxb.) Cronk



## SIUM

## SYNONYMS:

*Sium ammi* Jacq. = **Apium leptophyllum**

*angustifolium* L., incl. var. *mossii* Burt Davy = **Berula erecta**  
subsp. **erecta**

*angustifolium* sensu auctt. = **B. erecta** subsp. **thunbergii**

*erectum* Huds. = **B. erecta**

*gallabatense* Schweinf., nom. = **Afrosison**

*nodiflorum* L. = **Apium nodiflorum**

*radiatum* Viv. = **A. nodiflorum**

*simense* M. J. Gay ex A. Rich. = **Oreoschimperella**  
**verrucosa**

*thunbergii* DC. = **Berula erecta** subsp.

*verrucosum* M. J. Gay ex A. Rich. = **Oreoschimperella**  
**verrucosa**

## (SMYRNIUM)

*Smyrniium laterale* Thunb. = **Apium graveolens**

## (SPURIODAUCUS)

*Spuriodaucus asper* C. Norman = ? **Physotrichia atropurpurea**

*atropurpureus* C. Norman = **P. atropurpurea**

*quarrei* C. Norman, non *Malabaila quarrei* C. Norman  
= ? **Heracleum** (cf. under **Physotrichia**)

## STEGANOTAENIA / 3

African genus with a rather peculiar carpological structure (fide Ostroumova & Pimenov).

LIU, Mei (Rebecca) & al. (2004). Ontogeny of the fruits of two anomalous African woody genera, *Polemanniopsis* and *Steganotaenia* (Apiaceae), and their phylogenetic relationship. *Edinb. J. Bot.* 60: 249-257.

LIU, Mei (Rebecca) & al. (2007). Irregular vittae and druse crystals in *Steganotaenia* fruits support a taxonomic affinity with the subfamily Saniculoideae (Apiaceae). *S. Afric. J. Bot.* 73: 252-255.

OSKOLSKI, A. A. & al. (2010). Wood and bark anatomy of *Steganotaenia* and *Polemanniopsis* (tribe *Steganotaenieae*, Apiaceae) with notes on phylogenetic implications. *Bot. J. Linn. Soc.* 163: 55-69.

OSTROUMOVA, T. A. & M. G. PIMENOV (1997a). See above under **Peucedanum**.

**Steganotaenia araliacea** Hochst.; Irvine, Woody pl. Ghana: 575, 1961; Wickens, *Jebel Marra* (W Sudan): 125-126, 285 (map), 1976; Keay, *Trees Nigeria*, ed. 2: 380, 1989; El Amin, *Trees & shrubs Sudan*: 348, 1990; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2, 5: 234-235, 2000; Van Jaarsveld in Egli, ed., *Ill. handbook succul. pl.: Dicotyledons*: 9, 2002; Figueiredo & Smith, *Pl. Angola*: 33, 2008. – Icon.: *Icon. Pl. Afric.* 6: 137, 1964; *Fl. Zambes.* 4: 618, 1978; Troupin, *Fl. Rwanda* 2: 569, 1983; *Flow. Pl. Africa* 51/2: pl. 2031, 1991; Beentje, *Kenya trees, shrubs & lianas*: 442, 1994; Thulin, *Fl. Somal.* 2: 284, 1999; Coates Palgrave, *Trees south. Afr.*, ed. 3: 857, ill. 234, 2002; Schmidt & al., *Trees & shrubs Mpumalanga...*: 492-493, 2002; Liu & al. (2004): 252-253, and (2007): 253-254; Curtis & Mannheimer, *Tree atlas Namibia*: 506-507, 2005; Akoegninou & al., *Fl. analyt. Bénin*: 333, 2006; *Fl. Eth. & Eritrea* 4/1: 38, 2003; Bekele-Tesemma, *Useful trees & shrubs Ethiopia*: 475, 2007; Latham, *Plants visited by bees ... Umalila, south. Tanz.*, ed. 3: 177, 2007; Latham & Konda, *Pl. utiles Bas-Congo*, ed. 2: 283, 2007; Lisowski, *Fl. (angiosp.) Rép. Guinée* 2: fig. 39, 2009; Arbonnier, *Arbres, arbustes & lianes zones sèches Afr. Ouest*, ed. 3: 160, 2009.

## STEGANOTAENIA ARALIACEA

syn.: *Peucedanum araliaceum* (Hochst.) Benth. & Hook. f. ex Vatke 1876 (Hiern 1877), incl. var. *fraxinifolium* (Hiern ex Oliv.) Engl., var. *petiolulatum* Engl., var. *subintegri-foliolatum* Engl.; *P. fraxinifolium* Hiern ex Oliv., incl. var. *galpinii* Burt Davy, var. *haemanthum* Welw. ex Hiern – All of var. **araliacea**.

Deciduous glabrous, somewhat pachycaul sparsely branched shrub or tree 0,75-12 m tall with stem 0,15-0,75 m Ø at base, rarely a bush 0,45-0,9 m tall, usually straggling and untidy; crown irregularly spreading; trunk with soft, sappy, pale yellow wood; bark thick, corky, grey-brown with white papery peel and a green slash; branches and twigs thick; leaves clustered at tips of young twigs and more scattered along some old wood, drooping, carrot- or fennel-scented, imparipinnate with 3-4 pairs of leaflets, to ± 45 × 25 cm; leaflets ovate, bright green, thin, margins coarsely toothed, each tooth ending in a fine point; umbels compound, large, forming a large inflorescence; flowers greenish-white; fruits flat, heart-shaped, 2-winged, remaining dry on the trees for months.

Chiefly in rather dry situations, dry savanna, commonly as scattered individuals on rocky slopes and hilltops; walls of ravines and escarpments; dry woodland; deciduous bushland; open grassland; sometimes abundant; *Loudetia arundinacea* grassland with *Terminalia laxiflora*, *T. brownii*, *Pterocarpus lucens*, *Combretum collinum*, *Vitex doniana* on rocky outcrop; wooded grassland with *Combretum molle*, *C. collinum*, *Entada abyssinica*, *Erythrina abyssinica*, *Pennisetum purpureum*, *Hyparrhenia rufa*; woodland with *Bridelia scleroneura*, *Vitex doniana*; riverbanks; sandy soil; screes on granitic hills; sometimes planted; stony primitive forests; rich damp soil, ... "to attain its greatest height in places covered with the remains of leaves" (Welwitsch); ? -150-2200 m alt.

Namibia, S. Africa, Swaziland, N Botswana.

Comprises 2 vars.: – var. **araliacea** widespread; – var. **daramolana** Jacq.-Fél. [syn.: *Peucedanum atacorensense* A. Chev., nom.; *Alvardia arborescens* Fenzl, nom.], with leaflet margins thick, ± entire; from N Nigeria to Ethiopia.

Beautiful garden plant. Planted for hedges, village fences. Twigs used for toothbrushes. Bark of young shoots are removed in the form of a tube which children use as a squirt. Wood very soft, said to sink when fresh.

Fast-growing, can be coppiced or pollarded. Browsed by cattle and camels.

"If no measures are taken to prevent the devastation of the primeval forests in the highlands of Angola... the possibility is that the noble Calusange will soon become very rare and may before long quite disappear from the country" (Welwitsch, in Hiern 1898: 429).

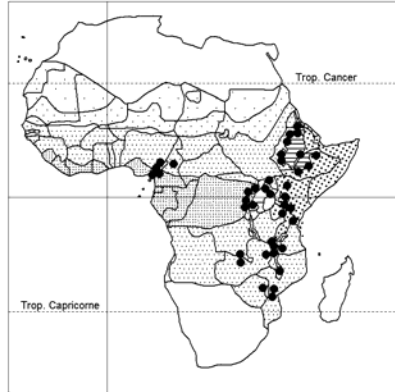
A fossil related to *S. araliacea* has been reported from SW Ethiopia (see *Bull. Jard. Bot. Natl. Belg.* 47: 473-482, 1977).

**S. commiphoroides** Thulin – Icon.: *Fl. Somalia* 2: 285, 1999.

Shrub or tree 1,5-10 m tall, brittle; crown usually spreading; bark smooth, pale yellow to grey, peeling off in small papery flakes; leaves scattered on long shoots, clustered at tips of short shoots, pinnately 3-foliolate, occasionally simple, glabrous; leaflets suborbicular, 1,5-8 × 1-5,5 cm; umbel compound; flowers appearing before the leaves.



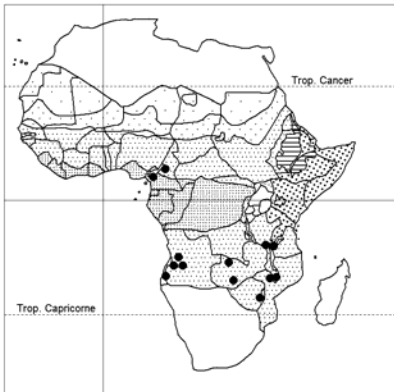
*Pyncocykla ledermannii*



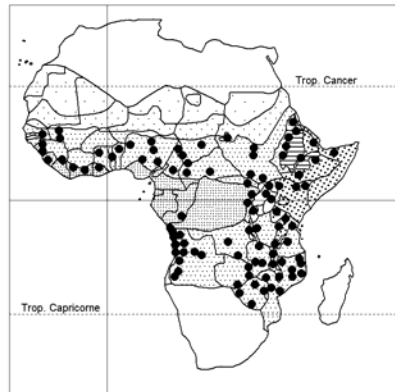
*Sanicula elata*



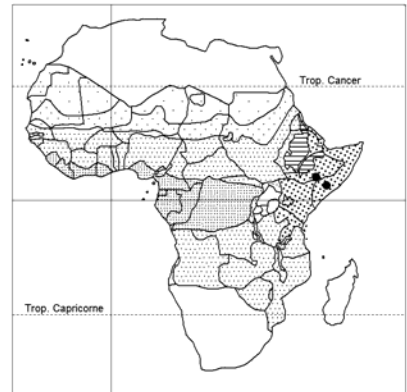
*Seseli scopulorum*



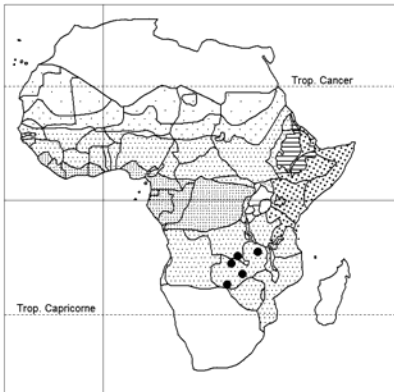
*Sium repandum*



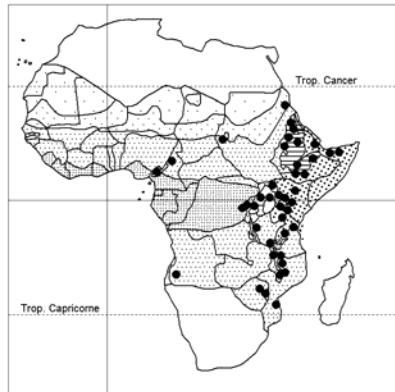
*Steganotaenia araliacea*



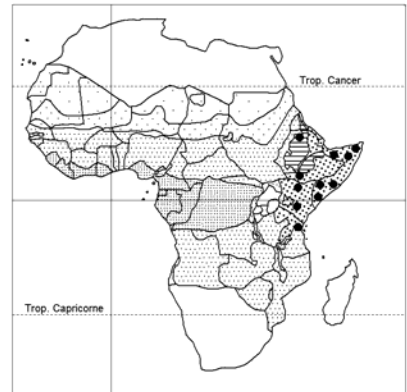
*Steganotaenia commiphoroides*



*Steganotaenia hockii*



*Torilis arvensis*



*Trachyspermum pimpinelloides*



## STEGANOETAENIA COMMIPHOROIDES

Locally common; in a fairly wide variety of habitats: semi-evergreen woodland on granitic outcrops, *Acacia*, *Commiphora* bushland on red soil over limestone or on limestone outcrops, open *Acacia*, *Commiphora*, *Jatropha* bushland on gypsum; 230-550 m alt.

First collected in 1982.

**S. hockii** (C. Norman) C. Norman

Glabrous *perennial herb*, 0,2-0,6 m tall with a stout, woody root-stock, often flowering as secondary growth, an old burnt-off stem-base visible alongside the flowering shoot; stem wiry, purplish, terete, rather sparingly branched with branches diverging at  $\pm 45^\circ$ . At flowering times no leaves present. Carpophore unknown.

Sandy loam in burnt grassland; open deciduous woodland with *Brachystegia*, *Isobertinia*, *Terminalia*, *Combretum*; dambos; dry bush; 1210-1360 m alt.

## SYNONYM:

*Steganotaenia* sp. sensu Friis & Vollesen, Willdenowia 18: 461-462, 466, 1989 = ***Steganotaenia commiphoroides***

## (STEPHANOROSSIA)

*Stephanorossia elliotii* C. B. Cl. = ***Oenanthe procumbens palustris*** Chiov. = ***O. palustris***

## (TENORIA)

*Tenoria arborescens* (Spreng.) Spreng. = ***Heteromorpha arborescens***  
*canariensis* Sprengel = ***Astydamia latifolia***

## TORILIS / 1

Some 15 species in Europe, Asia, Africa, N. and S. America, New Zealand.

JURY, S. L. (1986). Fruit and leaf variation in the African species of the Umbelliferae tribe Caucalideae. *Symb. Bot. Upsal.* 26/2: 181-188.

***Torilis arvensis*** (Huds.) Link, incl. *T. africana* (Thunb.) Spreng. (= *T. arvensis* subsp. *heterophylla* var. *purpurea*); Wickens, *Jebel Marra* (W Sudan): 126, 285 (map), 1976; Burkill, *Useful pl. W. Trop. Afr.*, ed. 2, 5: 235, 2000; Figueiredo & Smith, *Pl. Angola*: 33, 2008. – Icon.: Jury, o.c.: 183, 184; *Fl. Cameroun* 10: 57, 1970; *Fl. Zambes.* 4: 571, 1978; Agnew & Agnew, *Upl. Kenya wild flow.*, ed. 2: pl. 62, 1994; Thulin, *Fl. Somal.* 2: 274, 1999; Chaudhary, *Fl. Kingd. Saudi Arabia ill.* 2/1: 621, 2001; *Fl. Eth. & Eritrea* 4/1: 11, 2003; Reduron, *Ombellifères de France* 5: 2497, 2008.

bas.: *Caucalis arvensis* Huds.

syn.: *Scandix infesta* L.; *Caucalis infesta* (L.) Curtis; *Torilis infesta* (L.) Clairv.; *C. segetum* Thuill.; *Torilis divaricata* Moench, nom. illegit.; *T. arvensis* subsp. *divaricata* (Moench) Thell.; *T. arvensis* subsp. *recta* Jury

Annual herb with a slender taproot, 0,1-2 m tall, branched from the base and densely bushy with many short, branched stems to tall and simple or with rather few long, ascending branches; stem slender, wiry, terete, finely striate, glabrous or with downwardly-appressed strigulose hairs; basal leaves generally withered by the time of fruiting, bi- to subtripinnate with pinnatifid segments and stiff forwardly directed hairs particularly beneath; umbels compound; bracts absent or 1 linear, bracteoles present; petals white,

## TORILIS ARVENSIS

pink or purple, setulose outside, sometimes the outermost petals of outer partial umbels longer than the others; fruit covered by glochidiate-tipped spines.

Grassland; weed of cultivated fields; forest edges and along paths; scrub and bush with e.g. *Vernonia* / *Clerodendron*; river shingle or by river banks; disturbed places; lava plains; riverine forest; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*, edge of forest on steep bank; 1100-3650 m alt.

Variable in leaf-lobing and surface sculpturing of the fruit. According to Jury (o.c.: 185) who studied the fruit morphology of Ethiopian material, the inner mericarps of the umbel are tuberculate whereas the outer ones are spiny.

S. Africa (6-1340 m alt.); Macaronesia; Mediterranean Region, C. Europe; SW Asia, Yemen, Saudi Arabia, Syria, Iraq, Iran, Pakistan, Afghanistan, C Asia. Introduced elsewhere: N. America, West Indies.

Sometimes subdivided into a number of subspecies and varieties, e.g. by Townsend in *Fl. Trop. E. Afr., Umbelliferae*: 27-30. The circumscription of taxa proposed by Reduron (o.c.) is different (cf. Note below). -A note on the nomenclature in subspecific rank is found in Willdenowia 8: 575, 1979 (W. Greuter).

– Subsp. **arvensis**: – var. **elatior** (Gaudin) Thell. [bas.: *Caucalis infesta* (L.) Curtis var. *elatior* Gaudin; syn.: *Caucalis helvetica* Jacq.; *Torilis helvetica* (Jacq.) C. C. Gmel.; *T. arvensis* subsp. *arvensis* var. *arvensis* sensu Reduron o.c.: 2503], a tall, slender plant with long slender branches, in E Africa, S & C Europe, SW to C Asia; [- var. **arvensis** is a dwarf  $\pm$  bushy, intricately branched plant in W Europe].

– Subsp. **heterophylla** (Guss.) Thell.: – var. **heterophylla** [bas.: *T. heterophylla* Guss.; syn.: *Caucalis infesta* (L.) Curtis subsp. *heterophylla* (Guss.) Ball; *Torilis infesta* (L.) Clairv. var. *heterophylla* (Guss.) Vis.; *T. infesta* subsp. *heterophylla* Bonnier; *T. africana* Spreng. var. *heterophylla* (Guss.) Reduron]. – Icon.: Reduron, o.c.: 2492; with very elongate and entire to serrate segments of upper leaves, from Cameroon to Somalia, southwards to Malawi, Angola, S. Africa; – var. **purpurea** (Ten.) Thell. [bas.: *Caucalis purpurea* Ten.; syn.: *Caucalis africana* Thunb.; *Torilis africana* Spreng.; *T. purpurea* (Ten.) Guss.; *T. arvensis* (Huds.) Link subsp. *purpurea* (Ten.) Hayek; *T. africana* var. *africana* sensu Reduron, o.c.: 2483, 2490; *T. homophylla* Stapf & Wettst.]. – Icon.: Reduron, o.c.: 2485; a short plant with upper leaves similar to lower ones, in E Africa from Uganda-Ethiopia to S. Africa, Mediterranean region.

Note: In his *Ombellifères de France* 5 (p. 2482-2510, 2008) Reduron distinguishes 2 species: – *T. africana* Spreng., autogamous, with reddish or greenish  $\pm$  unequal petals, few umbels, and finely divided upper leaves; – *T. arvensis* (Huds.) Link, with white flowers in well developed umbels, and less reduced upper leaves.

– **T. africana** Spreng. [syn.: *Caucalis africana* Thunb., nom. illegit.; *C. purpurea* Ten.; *Torilis purpurea* (Ten.) Guss.; *T. arvensis* subsp. *purpurea* (Ten.) Hayek], circum-Mediterranean and E African, S. African, also in Macaronesia, W & S France (var. *heterophylla*):

– var. **africana**; – var. **heterophylla** (Guss.) Reduron [bas.: *T. heterophylla* Guss.; see also above under *T. arvensis* subsp. and var. *heterophylla*].

*Athamantha capensis* Burm. f. (lectotype chosen by Reduron & Jacquemond in Reduron, o.c.: 2491) seems to belong to *Dasispermum*, not *Torilis*.



## TORILIS ARVENSIS

- **T. arvensis** (Huds.) Link, with 2 subspecies, viz.: – subsp. **arvensis** [syn.: *Scandix infesta* L.; *Caucalis helvetica* Jacq.; *C. segetum* Thuill.; *Torilis divaricata* Moench, nom. illegit.; *T. helvetica* (Jacq.) C. C. Gmel.; *T. arvensis* subsp. *divaricata* (Moench) Thell.; *T. arvensis* subsp. *recta* Jury], with 2 vars.: – var. **arvensis** (syn.: see above, and *Caucalis infesta* var. *elator* Gaudin); *Torilis arvensis* var. *elator* (Gaudin) Thell.] and – var. **anthriscoides** (DC.) Schinz & Thell.;
- subsp. **neglecta** Thell. [syn.: *T. neglecta* Spreng., nom. illegit.; *Scandix infesta* Jacq. 1773, non L. 1767; *Torilis radiata* Moench; *T. helvetica* var. *infesta* Rchb. f.; *T. infesta* var. *longistyla* Rchb. f.; *T. infesta* subsp. *neglecta* Coutinho].

This classification has been followed by the authors of Flore de Tunisie (Le Floc'h & Boulos, 2008) and Flore pratique du Maroc 2 (Fennane & al., 2007).

Boulos in Fl. Egypt 2 (p. 187, 2000) recognizes **T. arvensis** with 2 subspecies in Africa-Mediterranean region-Asia, viz.: – subsp. **arvensis** [syn.: *Torilis helvetica* C. C. Gmel.; *Caucalis fallax* Boiss. & Blanche) in Egypt and tropical Africa, etc.]; and – subsp. **neglecta** (Spreng.) Thell. [syn.: *Torilis radiata* Moench; *T. neglecta* Spreng.; *T. arvensis* (Huds.) Link var. *heterocarpa* (Batt.) Maire; *T. infesta* Hoffm. var. *heterocarpa* Batt.] for Egypt, Mediterranean region, SW Asia.

SYNONYMS (see also above under **Torilis arvensis**):

*Athamantha capensis* Burm. f. = probably a **Dasispermum**, not *Torilis arvensis*

*Torilis eminii* Engl., nom. nud. = **Agrocharis incognita gracilis** Engl., incl. fa. *umbrosa* Engl. = **A. incognita melanantha** (Hochst.) Vatke = **A. melanantha**

## (TRACHYDIUM)

*Trachydium abyssinicum* (Hochst.) Benth. & Hook. f. ex Hiern, incl. var. *fischeri* Engl., var. *kilimandschari* Engl., var. *lindblomii* H. Wolff = **Haplosciadium abyssinicum pimpinelloides** (Hochst.) C. Norman = **Pimpinella**

## TRACHYSPERMUM / 1

syn.: *Ammios* Moench

About 15(-20) species from Africa in the W to China in the E.

BARCLAY, E. L. & M. F. WATSON (1998). A revision of *Carum* and *Trachyspermum* (Umbelliferae) in the Socotran Archipelago. *Kew Bull.* 53: 897-907.

TOWNSEND, C. C. (1986). See under **Oreoschimperella**.

The delimitation of the genus from *Tragiopsis* (Mediterranean), *Sonderina* (S. Africa) and *Sison* needs further study.

[**Trachyspermum ammi** (L.) Sprague]; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: 167, 1994; Reduron, Ombellifères de France 5: 2548-2553, 2008. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 639, 2001; Fl. Eth. & Eritrea 4/1: 22, 2003.

bas.: *Sison ammi* L., non Jacq. (= *Apium leptophyllum*).

syn.: *Ammi copticum* L.; *Carum copticum* (L.) Hiern; *Bunium copticum* (L.) Spreng.; *Daucus coptica* (L.) Persoon; *Ptychotis coptica* (L.) DC.; *Trachyspermum copticum* (L.) Link, s. str.

## TRACHYSPERMUM AMMI

Annual herb ± 25-65 cm tall, much branched from near the base upwards, with long divergent or more divaricate branches; stem and branches glabrous, slender, striate, terete, or the stem somewhat sulcate; basal leaves withered at time of flowering; lowest stem leaves ± 5-14 × 2-6 cm, lamina bi- or subtripinnate; umbels compound, numerous, rays unequal in length, bracts 2-4(-10), conspicuous, linear like the bracteoles; petals white or tinged with purple; fruit with white papillae, and deeply grooved (used as spice and medicine).

Occasional weed; waste ground, presumably as an escape; 1700-1950 m alt. (Kenya).

Apparently native to India. Widely cultivated as a spice in certain warmer regions of the Old World, from N Africa, Ethiopia, Asia Minor, Iran, Afghanistan, Pakistan, India. – Not mapped.

According to Thulin (Fl. Somal. 2: 277, 1999) records from Somalia (as *T. copticum* in Cufod., Enum.: 643, 1959) refer to *T. pimpinelloides*.

**T. pimpinelloides** (Balf. f.) H. Wolff; Agnew & Agnew, l.c.; Barclay & Watson, o.c.: 904. – Icon.: Denkschr. Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 71: pl. 8, 1907; Chiovenda, Fl. Somala 2: 229, 1932; Thulin, Fl. Somalia 2: 278, 1999.

bas.: *Carum pimpinelloides* Balf. f.

syn.: *C. calcicolum* Balf. f.; *Trachyspermum calcicolum* (Balf. f.) H. Wolff; *Carum kuriense* Vierh.; *C. pimpinelloides* var. *trichocarpum* (Vierh.) C. C. Townsend; *Trachyspermum copticum* (L.) Link. var. *maritimum* Chiov.; *T. aethusifolium* Chiov., incl. var. *verruculosum* C. C. Towns. (as *verrucosa* in Kew Bull. 41: 458, 1986); *T. trichocarpum* (Vierh.) H. Wolff; *Carum trichocarpum* Vierh.; *Trichospermum copticum* sensu Cufod., Enum.: 643, 1959, non (Balf. f.) H. Wolff

Erect annual herb 1-70 cm tall; stems terete or somewhat angular, glabrous, scabrid or sparsely hairy, more so at the nodes; leaves 1-2-ternate, with 2-3 pairs of pinnae, tripartite or doubly tripartite; umbels compound; bracts 0 or 1-6, linear; bracteoles 3-6, with scabrid papillose margins; petals white; fruit ± pilose with straight to hooked hairs, or papillose or glabrous, ribs indistinct.

Deciduous bushland or woodland; often in somewhat disturbed places; rocks; dunes; cultivated land; *Boswellia*, *Commiphora*, *Acacia* bushland; bush-grassland; edges of swamps; roadsides; black cotton soil; sticky grey clay or powdery light brown soil; probably always where water lies seasonally; 10-1800 m alt.

Very variable in: presence, and number and length of umbel bracts; type of hairs on fruit, with or without papillae.

Socotra, Abd al Kuri, Samhah.

Plants from N Somalia with hooked hairs on the fruits have sometimes been named *Pimpinella etbaica* Schweinf. According to Thulin (Fl. Somal. 2: 278, 1999) "this species seems distinct in its complete lack of an involucre, and is confined to Eritrea, Sudan and south-eastern Egypt. There seems to be good reasons for a transfer of *P. etbaica*, with its single vitta in each groove of the fruit, to *Trachyspermum*".

The Arabian species *Trachyspermum arabiae-felicis* C. C. Towns. is an **Oreoschimperella**.

## TRACHYSPERMUM

## SYNONYMS:

*Trachyspermum aethusifolium* Chiov., incl. var. *verruculosum*  
C. C. Towns. (“verrucosa”) = **Trachyspermum pimpinelloides**  
*calcicolum* (Balf. f.) H. Wolff = **T. pimpinelloides**  
*copticum* (L.) Link = **T. ammi**  
var. *maritimum* Chiov. = **T. pimpinelloides**  
*copticum* sensu Cufod. 1959 (Somalia) = **T. pimpinelloides**  
*trichocarpum* (Vierh.) H. Wolff = **T. pimpinelloides**  
*trifoliatum* Hiern = **Pimpinella hirtella**

*(TRAGIUM)*

*Tragium hirtellum* Hochst. = **Pimpinella**

*(VISNAGA)*

*Visnaga daucoides* Gaertner = **Ammi visnaga**

*(VOLKENSIELLA)*

*Volkensiella procumbens* H. Wolff = **Oenanthe**

## VII. ADDENDUM TO VOLUMES 1-5 (FAMILIES A-C)



Since the publication of the precedent volumes (1 in 2003, 2 in 2006, 3-4 in 2008, 5 in 2010) the following taxonomic changes and/or newly described taxa are recorded. New monographs and/or important articles are also cited. To facilitate consultation the families are listed in alphabetical order, with the corresponding page(s) figuring within brackets. When these changes are taken into consideration, the number of genera and species included in certain volumes has slightly changed. A statistical summary is given in Table 2.

For most species figuring in the Addendum, we have used the already published maps of distribution as basis. Modifications or additions are shown by a triangle (▲).

**Table 2**

Statistical summary: number of genera (Nr. gen.) and species (Nr. spp.), according to previous (prev. vol.) and present (pres. vol.) volume(s).

**Volume 1**

Family	Nr. gen. prev. vol.	Nr. gen. act. vol.	Nr. spp. prev. vol.	Nr. spp. act. vol.
Aizoaceae	23	24	77	79
Ancistrocladaceae	1	1	13	12
Annonaceae	40	40	320	327
Balsaminaceae	1	1	114	119
Begoniaceae	1	1	105	106
Brassicaceae	31	33	92	98
Cappar(id)aceae	14	14	210	207
Caryophyllaceae	27	25	103	103 (+1?)
Chenopodiaceae	22	22	69	72
Cistaceae	1	1	7	8
Cochlospermaceae	1	1	5	6
Combretaceae	10	10	196	198
Crassulaceae	8	8	95	92 (+1?)
Curcubitaceae	31	31	189	195
Total for Vol. 1	621	622 (=+1)	4811	4838 (=+27)

**Volume 2**

Family	Nr. gen. prev. vol.	Nr. gen. act. vol.	Nr. spp. prev. vol.	Nr. spp. act. vol.
Chrysobalanaceae	9	9	61	62
Total for Vol. 2	123 (+1)	123 (+1)	1551	1552 (=+1)

**AIZOACEAE** (Volume 1: 255/256-270) / 24 g. / 79 spp. (former account: 23 / 77)

incl. *Molluginaceae*, *Gisekiaceae*, *Mesembryanthemaceae*, *Tetragoniaceae*.

Add new information for family and following genera.

- HARTMANN, H. E. K. (2004). Aizoaceae in East Africa. In: RUSSO, L., ed., *The succulent plants of eastern Africa. Proceedings of the International Symposium: The succulent plants of eastern Africa: History, botanical exploration and research. Verbania, 20-22 September 2002*: 28-71. I.O.S., Regione Piemonte, Comune di Verbania, Roma.
- HARTMANN, H. E. K. & I. M. NIESLER (2009). On the evolution of nectaries in Aizoaceae. *Bradleya* 27: 69-120.
- HASSAN, N. M. S. & al. (2005). Seed coat morphology of Aizoaceae-Sesuvioideae, Gisekiaceae and Molluginaceae and its systematic significance. *Bot. J. Linn. Soc.* 148: 189-206.
- HASSAN, N. [M.] S. & al. (2005). Conspectus of Aizoaceae, Gisekiaceae and Molluginaceae of Egypt and the Sudan. *Feddes Repert.* 116: 1-42.
- KLAK, C. (2008). A new classification for the Mesembryanthemoideae (Aizoaceae). *Cactus-world* 26/2: 71-80.
- KLAK, C. & al. (2007). A phylogeny and new classification for Mesembryanthemoideae (Aizoaceae). *Taxon* 56: 737-756. see also Brummitt in *Taxon* 59: 1272, 2010.
- NYFFELER, R. & U. EGGLI (2010). An up-to-date familial and suprafamilial classification of succulent plants. *Bradleya* 28: 125-144.
- REVEAL, J. L. & A. DOWELD (2008). (1799) Proposal to conserve the name Aizoaceae against Mesembryanthemaceae, a "superconservation" proposal. *Taxon* 59: 302. – See also Brummitt in *Taxon* 59: 1272, 2010.
- SCHÄFERHOFF, B. & al. (2009). Caryophyllales phylogenetics: disentangling Phytolaccaceae and Molluginaceae and description of Microteaceae as a new isolated family. *Willdenowia* 39: 209-228.
- THIEDE, J. (2004). Phylogenetics, systematics and classification of the Aizoaceae: a reconsideration based on molecular data. *Schumannia* 4, *Biodiversity & Ecol.* 2: 51-69.

**AIZOON** (Volume 1: 256)

**Aizoon canariense** L., incl. var. *denudatum* Sond.; Hassan & al., 2005: 6. – Icon.: *Fl. Eth. & Eritrea* 2/1: 241, 2000; Hartmann 2004: 33..

Add the following *synonyms*: *Veslingia cauliflora* Moench; *V. heisteri* Fabr. ex Willd., nom. nud.; *Glinus procumbens* Forssk.; *G. chrySTALLINUS* Forssk.; *Mesembryanthemum dubium* Haw. (1795), non Haw. (1803) = *Jordaaniella dubia* (Haw.) H. E. K. Hartmann; *Aizoon spathulatum* Eckl. & Zeyh.

Map in Volume 1: 255.

**APTENIA** (Volume 1: 258)

Genus (of 4 species in all) maintained by us; not considered a synonym under **Mesembryanthemum** (Clade A: Aptenia group) as treated by Klak & al., 2007: 737, 749, 750.

**BROWNANTHUS** (Volume 1: 258)

Genus (of 14 species in all) maintained by us; not considered a synonym under *Mesembryanthemum* (Clade B: Brownanthus group) as treated by Klak & al., 2007: 737, 749, 753.

KLAK, C. & al. (2006). Phylogeny and revision of Brownanthus and its close allies *Aspazoma* and *Dactylopsis* (Aizoaceae) based on morphology and four DNA regions. *Kew Bull.* 61: 353-400.

**Brownanthus kuntzei** (Schinz) Ihlenf. & Bittrich; Klak & al., 2006: 377 (map), 389.

"In sand and gravel in the coastal plain throughout the Namib fog belt; at 10-550 m."

Map in Volume 1: 257.

**CARPOBROTUS** / 1 (Volume 1, add to p. 258)

BUYS, M. H. & al. (2010). *Carpobrotus* (Aizoaceae): a phylogenetically enigmatic flagship genus. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 101.

WISURA, W. & H. F. GLEN (1993). The South African species of *Carpobrotus* (*Mesembryanthema*-Aizoaceae). *Contr. Bolus Herb.* 15: 76-107.

**Carpobrotus dimidiatus** (Haw.) L. Bolus; Wisura & Glen 1993: o.c.: 87-89 (with map). – Icon.: o.c. 103.

bas.: *Mesembryanthemum dimidiatum* Haw.

syn.: *M. juritzii* L. Bolus; *Carpobrotus juritzii* (L. Bolus) L. Bolus

Robust succulent herb c. 2 m long; branches c. 8 mm Ø, vigorously trailing, winged; flowering branches ascending with 2-4 pairs of leaves; leaves spreading to ascending, connate at base, dark to glaucous green, canaliculate above, to 8 × c. 1 cm; flowers pedicellate, solitary, 4-6 cm Ø, petals 2-3-seriate, rose purple; fruit oval± round, c. 2 cm Ø.

Coastal.

NE S. Africa.

Haworth (Synopsis plant. succ.: 235, 1821) referred to a "small sprig, communicated by Mr. Ross in October 1811, grown in the open air. It is extremely like *M. edule*, but with leaves only half as long, although nearly of the same thickness." In his Revisionses (plant succ.: 119, 1921) he noted that the plant grown in England had died. He there quoted "*M. acinaciforme*. Pl. gr. 89, nec *Aliorum*" (= A. P. de Candolle, Plant hist. succ. 15, 1802) as "lecto-icotype". – No original specimen seems to be known.

"Differs from all other purple-flowered species in having a smaller number of loculi (styles 9-11) and a turbiniiform receptacle tapering to the pedicel".

Resembling *C. edulis* (L.) L. Bolus, sometimes naturalised, which has yellow larger (7-9 cm Ø) flowers and leaves 5-12 × 0,7-2 cm.

Map on p. 303.

**CORBICHONIA** (Volume 1: 258)

Now placed in *Molluginaceae*.

**Corbichonia decumbens** (Forssk.) Exell; Hassan & al. in *Feddes Repert.* 116: 25-28, map p. 27 (Egypt).

bas.: *Orygia decumbens* Forssk.

syn.: *O. decumbens* Forssk. var. *inconspicua* Maire; *Portulaca decumbens* (Forssk.) Vahl

Map in Volume 1: 257.

**(CORRIGIOLA)**

Now placed in *Molluginaceae* (cf. *Fl. Eth. & Eritrea* 2/1: 232, 2000) – See **Caryophyllaceae** in Volume 1: 240.

**DELOSPERMA** (Volume 1: 258)

BURGOYNE, P. M. (2006). Character delimitations in the family Mesembryanthemaceae: Delosperma, a case study. In: GHAZANFAR, S. A. & H. J. BEENTJE, eds., *Taxonomy and ecology of African plants, their conservation and sustainable use*: 575-582. Royal Botanic Gardens, Kew.

HAMMER, S. (2004). A note on *Delosperma schimperii*. *Mesemb Study Group Bull.* 19/2: 41.

HARTMANN, H. E. K. (2004). See above under the family. Vide p. 34-40, with a key to the E African species.

HARTMANN, H. E. K. (2008). A synopsis of *Delosperma* N. E. Br. (Aizoaceae) in North East Africa and South West Arabia. *Bradleya* 26: 41-62.

NIESLER, I. M. & H. E. K. HARTMANN (2005). Scanning fruits and flowers of *Trichodiadema* permits the identification of *Delosperma neethlingiae*. *Bradleya* 23: 105-116 [map p. 115].

## DELOSPERMA

**Delosperma abyssinicum** (Regel) Schwantes – Icon.: Fl. Eth. & Eritrea 2/1: 243, 2000; Hartmann, 2008: 43.

bas.: *Mesembryanthemum abyssinicum* Regel 1873, non Pax 1892.

Succulent herb with a strong taproot, lacking adventitious roots; with 6-8 stems woody at base, with mostly 2 (up to 6) internodes below the well-developed, loosely elongated terminal cyme; plants decumbent with hanging branches; internodes spongy; leaves with small bladder cells also at tips; outermost calyx lobes twice the length of innermost ones; flowers purple; capsule  $\pm$  7 mm  $\emptyset$ .

Hanging on rocks and on steep northern slopes over a volcanic complex of cinders and quartz; also on degraded ground; 2300-2600 m alt.

Insufficiently known species. Plants with pink flowers and with bigger growth form collected in NE Africa from Eritrea to N Kenya have been named *D. abyssinicum* (cf. map in our Volume 1: 257, 2003).

Material from Eritrea, “D. eritrea” sensu Hartmann, 2008: 60 (coll. Pappi and Danelli & Marinelli, 1902-1905) named *D. abyssinicum* needs further investigations: they are delicate plants with small flowers and capsules – perhaps a new species (Hartmann, 2008: 51). No further material has been collected. Once material available, it should be compared with *D. harazianum* (Yemen) and *D. sawdahense* (Saudi Arabia).

The original collecting site of *D. abyssinicum* is unknown, as seed of it was sent from Abyssinia by Schimper (without precise locality) to Regel (St. Petersburg). Recent collections come from E Tigray (TU in Fl. Ethiopia).

Map on p. 303.

**D. nakurense** (Engl.) Herre – Icon.: Fl. Eth. & Eritrea 2/1: 243, 2000; Hartmann, 2008: 46, 49.

Dense to lax shrub to c. 1 m tall and 1 m  $\emptyset$ ; branches first erect, later often scrambling over other shrubs; with deep-reaching taproot; shoots long, spongy, internodes longer than leaves, always visible, corky; leaves canaliculate to semi-terete, to 7 cm long, with round inconspicuous bladder cells; flowers white, rarely pinkish, at ends of long shoots, appearing solitary but in cymes, 2,5-3 cm  $\emptyset$ .

Rocky volcanic cliffs or outcrops, hanging down from cliffs; or decumbent in open grassy places.

Very variable in habit, flower colour.

Map on p. 303.

**D. oehleri** (Engl.) Herre – Icon.: Hartmann, 2008: 50; Cactus Succ. J. (U.S.) 82: 87, 2010 (colour photo).

Plant lying on the ground, with long shoots and internodes, thus resembling *D. nakurense*. But with a central thickened soft taproot forming a storage organ, and later with adventitious thickened roots. Flowers *solitary* at ends of long shoots, c. 2,5 cm  $\emptyset$ ; petals purple apically, white basally, shorter than calyx lobes.

Creeping in pans and crevices on quartitic basement rocks in grassland;  $\pm$  2000 m alt.

Map on p. 303.

## DELOSPERMA

**D. schimperi** (Engl.) H. E. K. Hartmann & Niesler – Icon.: Hartmann, 2008: 44.

Matforming compact creeping plants ca. 6 cm tall, 17-30 cm  $\emptyset$ , looking like a “green hedgehog” due to the conspicuous long hairs on the leaves; branches short, brittle, ca. 4 mm  $\emptyset$ , white with age, breaking easily when touched, internodes shorter than leaves; taproot soft, thickened, to ca. 2,5 cm  $\emptyset$ , 15 cm long, with branches developing adventitious roots later thickening; leaves, with hairs and long bladder cells at apex and margin forming dense groups of papillae (break off easily when touched), in 2 pairs on short shoots and at apex of long shoots, ca. 2 cm long, 3-4 mm  $\emptyset$ ; flowers solitary, terminal, ca. 2 cm  $\emptyset$ , on erect shoots, petals magenta with white base; calyx lobes equal in length.

In “hostile surroundings”: in crevices of rocks or porous basalt, or in loose basaltic sand, often on vertical cliffs, at foot of cliffs or in small “natural rockeries”; on rocky islands in grassland or above fields; ca. 3000-4110 m alt.

HAMMER, S. (2004). A note on *Delosperma schimperi*. *Mesemb Study Group Bull.* 19/2: 41.

Map on p. 303.

**GISEKIA** (Volume 1: 259)

Now placed in *Gisekiaceae*.

**Gisekia africana** (Lour.) Kuntze, incl. var. *pedunculata* (Oliv.) Brenan, var. *decagyna* Hauman, and var. *cymosa* Adamson

Map (completed) on p. 303.

**GLINUS** (Volume 1: 259)

Now placed in *Molluginaceae*.

**Glinus lotoides** L.; Lisowski, Fl. (Angiosp.) Rép. Guinée 1: 261, 2009; Hassan & al., Feddes Repert. 116: 28-30, 2005 (Egypt). – Icon.: Fl. Eth. & Eritrea 2/1: 235, 2000.

Map on p. 303.

**G. oppositifolius** (L.) A. DC.; Lisowski, l.c. – Icon.: Fl. Eth., l.c.; Pickering & Roe, Wild flow. Victoria Falls area: 83, 2009.

Map on p. 303.

**HYPERTELIS** (Volume 1: 260)

Now placed in *Molluginaceae*.

**Hypertelis bowkeriana** Sonder – Icon.: Fl. Eth. & Eritrea 2/1: 236, 2000.

Map on p. 303.

**LIMEUM** (Volume 1: 260-264)

syn.: *Semonvillea* J. Gay

Now placed in *Molluginaceae*.

**Limeum angustifolium** Verdc.; Fl. Eth. & Eritrea 1: 204, 2009. – Icon.: Thulin, Fl. Somalia 1: 108, 1993.

Map on p. 303.

**L. obovatum** Vicary; Hassan & al., Feddes Repert. 116: 30-31 (map), 2005.

Map on p. 303.

**L. praetermissum** C. Jeffrey; Fl. Eth. & Eritrea 1: 204, 2009.

Map on p. 303.

## LIMEUM

**L. viscosum** (J. Gay) Fenzl; Hassan & al., o.c.: 30-33 (map). – Icon.: Fl. Eth. & Eritrea 2/1: 231, 2000.

With subsp. **viscosum** var. **viscosum** (syn.: *L. viscosum* var. *kotschyi* Moq., and var. *leiocarpum* Oliv.; *L. kotschyi* (Moq.) Schellenb.), var. **kenyense** Friedrich (syn.: *L. orientale* Schellenb.), var. **dubium** Friedrich, var. **glomeratum** (Eckl. & Zeyh.) Friedrich (bas.: *L. glomeratum* Eckl. & Zeyh.), var. **kraussii** Friedrich (syn.: *L. natalense* Schellenb.) in Tropical Africa.

Map on p. 305.

**MESEMBRYANTHEMUM** (Volume 1: 264)

KLAK, C. (2008). See above under the family.

KLAK, C. & al. (2007). See above under the family.

LIEDE-SCHUMANN, S. & H. E. K. HARTMANN (2009). *Mesembryanthemum* – back to the roots? *Taxon* 58: 345-346.

The generic circumscription was questioned by Klak (2008). She found that the genus “*Mesembryanthemum* breaks up into five lineages, which are not closely related”. And that none of the three subgenera set up by Gerbault in Hartmann (2001) form a natural group. Although “several genera were well supported natural groups, our analyses of morphological and molecular characters showed that the current generic circumscription of both *Mesembryanthemum* and *Phyllobolus* could no longer be upheld.” – “Since it is important that classification is stable and provides easy identification of the species... we have proposed that the *Mesembryanthemoideae* should consist of the single genus *Mesembryanthemum*.”

Klak & al. (2007) put in synonymy the following genera present in our area: **Aptenia** N. E. Br., **Brownanthus** Schwantes, **Mesembryanthemum** L. s. str., and **Psilocaulon** N. E. Br. All these genera figure as such in our treatment. We agree with Liede-Schumann & Hartmann (2009) that a “morphological data matrix” has to be added to molecular data. We should not “sweep away a well-established classification comprising several morphologically distinguished genera...”.

\* \* \*

Add the following synonyms under:

**Mesembryanthemum cryptanthum** Hook. f. (cf. Lebrun, *Plantes vasculaires Mauritanie & Sahara Occid.*, Boissiera 55: 63, 1998).

syn.: *Aizoon theurkauffii* Maire; *Opophytum theurkauffii*; (Maire) Maire; *Mesembryanthemum theurkauffii*; (Maire) Maire; *M. crystallinum* sensu Cheval., non L.; *M. forskahlii* Hochst. ex Boiss.; *Opophyton forskahlii* (Hochst. ex Boiss.) N. E. Br.; *Hydrodea cryptantha* (Hook. f.) Jacobs.; *H. bossiana* Dinter; *H. hampdenii* N. E. Br.; *Mesembryanthemum sarcocalycanthum* Dinter & Berger; ? *Mesembryanthemum gausсенii* Leredde; *Opophytum gausсенii* (Leredde) Greuter & Burdet

**MOLLUGO** (Volume 1: 264)

Now placed in *Molluginaceae*.

Additions to the maps (Volume 1: p. 263).

**Mollugo cerviana** (L.) Sringee; Hassan & al., Feddes Repert. 116: 32-35 (map var. **spathulifolia** Fenzl), 2005. – Icon.: Fl. Eth. & Eritrea 2/1: 235, 2000 (var. **cerviana**).

## MOLLUGO CERVIANA

This delicate inconspicuous and ephemeral herb is easily overlooked, and probably much more common in deciduous bushland than collections suggest (var. **cerviana**, in Ethiopia).

Var. **spathulifolia** Fenzl seems to be ecologically isolated from var. **cerviana**, and may well be considered a taxon of higher rank as suggested by Dinter (cf. Fl. Eth. & Eritrea, l.c.).

Map on p. 305.

**M. nudicaulis** Lam.; Hassan & al., o.c.: 34-37; Sosef & al., Check-list pl. vascul. Gabon: 280, 2006.

Map on p. 305.

**M. sp.** sensu Fl. Eth. & Eritrea 2/1: 237, 2000 = Corradi 8502.

Annual or short-lived perennial herb; stems to 20 cm long, prostrate?; stem leaves opposite, quickly developing axillary leaves and thus apparently in whorls of 4-5; leaf blade elliptic, 6 × 3,5 mm, stipules interpetiolar.

Very rare at margin of bushland, at Lake Turkana (Lago Rodolfo). – Not mapped.

Resembling the Angolan *M. fragilis*.

**OPOPHYTUM** (Volume 1: 264)

*Opophytum forskahlii* (Hochst. ex Boiss.) N. E. Br. = **Mesembryanthemum cryptanthum**

*gaussenii* (Leredde) Greuter & Burdet = ? **M. cryptanthum**  
*theurkauffii* (Maire) Maire = **M. cryptanthum**

**PSILOCAULON** (Volume 1: 266)

Genus maintained by us; not considered a synonym under *Mesembryanthemum* (Clade B, *Psilocaulon* group) as treated by Klak & al. (*Taxon* 56: 753, 2007).

**SESUVIUM** (Volume 1: 266)

HARTMANN, H. E. K. (2004). See above under the family.

**Sesuvium hydaspicum** (Edgew.) M. L. Gonçalves; Fl. Eth. & Eritrea 2/1: 246, 2000.

Additions made to the map (Volume 1, p. 265); see p. 305.

Once included in *S. sesuvioides* (Fenzl) Verdc., a species from Angola-Namibia with smooth seeds.

In her treatment of Aizoaceae in East Africa Hartmann (2004: 42-44) questions whether *S. hydaspicum* and *Trianthema polysperma* Oliv. are synonymous. She does not exclude that 2 species are involved.

*S. crystallinum* Welw. ex Oliv. = **S. mesembryanthemoides**.

**S. mesembryanthemoides** Wawra & Peyr. (“mesembrianthemoides”); Figueiredo & Smith, Pl. Angola: 25, 2008.

syn.: *S. crystallinum* Welw. ex Oliv.; *Halimum crystallinum* (Welw. ex Oliv.) Kuntze; *H. mesembryanthemoides* (Wawra & Peyr.) Hiern

Also in Namibia.

Map in Volume 1: 265 (under *S. crystallinum*).

**S. nyasicum** (Bak.) M. L. Gonçalves; Figueiredo & Smith, l.c. Also in Botswana.

Map on p. 305.



## SESUVIUM

**S. portulacastrum** (L.) L.; Sosef & al., Check-list pl. vascul. Gabon: 43, 2006.  
Map on p. 305.

**TETRAGONIA** / 4 (Volume 1: 264)

**Tetragonia acanthocarpa** Adamson – Icon.: Fl. Eth. & Eritrea 2/1: 248, 2000; Fl. Trop. E. Afr., Aizoaceae: 33, 1961.

Annual ± succulent erect herb with decumbent branches; stems 8-30 cm long; leaves petiolate, blade elliptic to rhombic, 1-4 × 0,5-2,4 cm, base decurrent; flowers solitary, axillary, pedicellate; fruit round, 3-7 mm Ø, densely covered with soft spines, often forked at tip.

Disturbed places, along paths in deciduous bushland; grassland; 1500-1700 m alt.

S. Africa (up to 600 m alt.; “open ground in the central Karroo”). Supposed to be introduced in Kenya, from S. Africa. But according to Adamson in Thulin, Fl. Somalia 1: 116, 1993, it is indigenous in Kenya and S Ethiopia, and could occur in Somalia.

Map on p. 305.

**T. tetragonoides** (Pall.) Kuntze (this spelling correct according to Hartmann, 2004: 60). – Figueiredo & Smith, Pl. Angola: 25, 2008; introduced.

syn.: *T. expansa* Murray; *T. quadricornis* Stokes

The “New Zealand spinach” is said to have originated in New Zealand. Now grown in most tropical and subtropical countries.

## SYNONYMS:

*Tetragonia arbusculoides* Engl. = **Tetragonia reduplicata**

*chisimajensis* Chiov. = **Trianthema portulacastrum**

*pentandra* Balf. f. = **Patellifolia procumbens** (C. Sm.) A. J. Scott & al. (*Chenopodiaceae*)

*somalensis* Engl. = **Tribulocarpus dimorphanthus**

**TRIANTHEMA** (Volume 1: 268)

HARTMANN, H. E. K. (2004). See above under the family. [A large chapter on this genus, with comparative tables, p. 44-57.]

**Trianthema salsoloides** Fenzl ex Oliv.; Fl. Eth. & Eritrea 2/1: 245, 2000.

Map on p. 305 (additions to former map).

**T. triquetra** Willd. ex Sprengel

The delimitation and occurrence of this species require thorough studies, and it is “impossible to name material with certainty” (Hartmann, o.c.: 50). There is no agreement “about the synonymy of parts of *T. triquetra* with some apparently endemic species in East Africa”. Hartmann gives a key to the species involved, viz.:

**T. portulacastrum**, ± glabrous plants with single flowers and capsule with 4 seeds or more;

**T. ceratosepala** Volkens & Irmscher, hairy plants with single flowers and capsule with 4 seeds or more.

The remaining species have capsules with only 2 seeds, viz.:

**T. crystallina** (Forssk.) Vahl, the whole plant glittering due to prominent bladder cells;

## TRIANTHEMA

**T. salsoloides** Fenzl ex Oliv., with linear leaves and flowers forming round glomerula; agrees with *T. multiflora* Peter;

**T. nigricans** Peter (usually placed in synonymy with *T. sanguinea* Volkens & Irmscher, under *T. triquetra*), with solid horns (glands) from the tepals;

**T. sanguinea** Volkens & Irmscher, has tepal lobes with entire margins and perianth densely covered with bladder cells;

**T. sedifolia** Visiani, with glands along the tepal margins, later turning into scales;

**T. triquetra** Willd. ex Sprengel, with tepals without prominent bladder cells on margins.

What is usually named **T. triquetra** in the World shows a series from smooth to ± papillate plants in Asia to sparsely papulose ones in E Africa, and to hirsute or densely papillate in southern Africa. As to the tepal lobes, these are short in Australia, deeply incised in India, and short in Africa. The seeds are also different from one area to another; e.g., Australian material has papillate margins, in Pakistan they are shiny and smooth.

Map on p. 305.

**TRIBULOCARPUS** (Volume 1: 268)

**Tribulocarpus dimorphanthus** (Pax) S. Moore

bas.: *Tetragonia dimorphantha* Pax

The synonym given by us in Enum. 1: 89, 1991, i.e.. *Nitraria retusa* Chiov., “appears to relate to a possible misidentification of a sheet numbered 699” (Chiovenda, Fl. Somalia: 118, 1929). The same synonym is taken up in Thulin, Fl. Somalia: 117, 1993. According to Hartmann (2004: 62) this sheet refers to *Nitraria*.

**AMARANTHACEAE** (Volume 1: 299/300-325)

MÜLLER, K. & T. BORSCH (2005.) Phylogenetics of Amaranthaceae based on matK/trnK sequence data – evidence from parsimony, likelihood, and Bayesian analyses. *Ann. Missouri Bot. Gard.* 92: 66-102.

OGUNDIPE, O. T. & M. CHASE (2009). Phylogenetic analysis of Amaranthaceae based on matK DNA sequence data with emphasis on West African species. *Turk. J. Bot.* 33: 153-161.

OGUNDIPE, O. T. & M. CHASE (2010). A molecular phylogenetic study of the family Amaranthaceae in West Africa. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar): 340.

PRATT, D. B. & L. G. CLARK (2010). Occurrence of anisophylly and anisoclady within the Amaranthaceae. *J. Bot. Res. Inst. Texas* 4: 271-279.

WILHELM, K. & al. (2007). Re-assembling African Amaranthaceae. In: ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February – 2 March 2007, Yaoundé, Cameroon, Abstracts*: 54. Yaoundé.

**ACHYRANTHES** (Volume 1: 300)

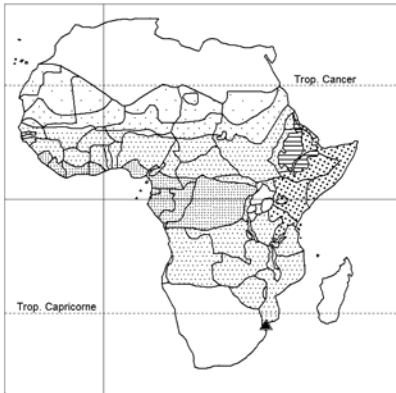
**Achyranthes aspera** L.; Sosef & al., Check-list pl. vascul. Gabon: 43, 2006; Lisowski, Fl. Rép. Guinée 1: 40, 2009. – Icon.: Fl. Eth. & Eritrea 2/1: 330, 2000.

Add the following synonyms:

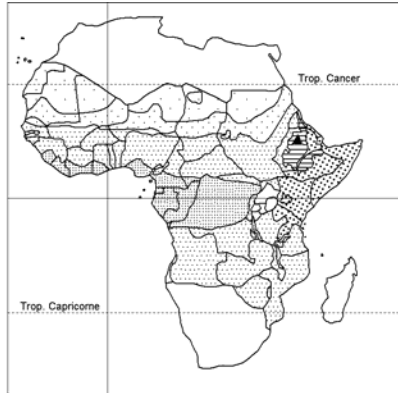
– var. **pubescens** (Moq.) C. C. Towns.: *A. aspera* L. var. *fruticosa* (Lam.) Boerlage, and var. *virgata* (Moq.) Boerlage, and var. *procera* Fiori;

– var. **sicula** L.: *A. argentea* Lam. var. *viridescens* Moq.; *A. aspera* L. var. *argentea* (Lam.) Boiss. fa. *suffruticosa* Fiori

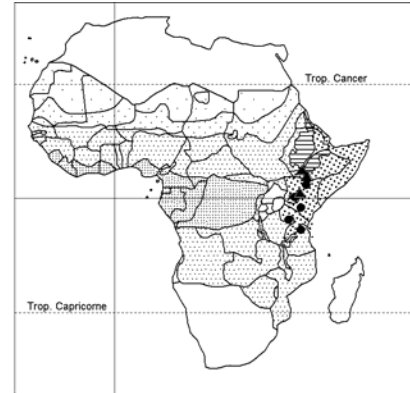
Map on p. 305.



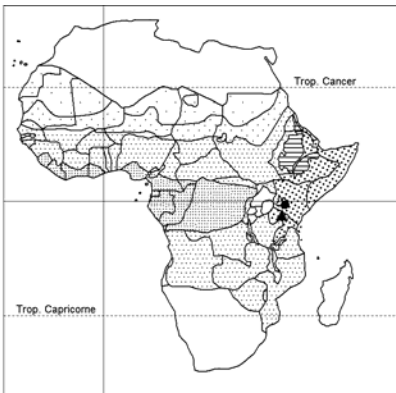
*Carpobrotus dimidiatus*



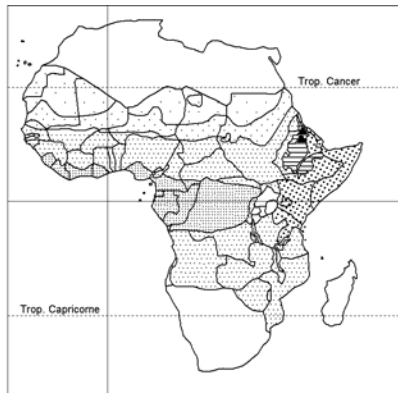
*Delosperma abyssinicum*



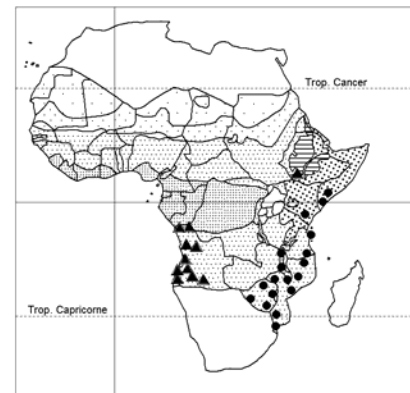
*Delosperma nakurense*



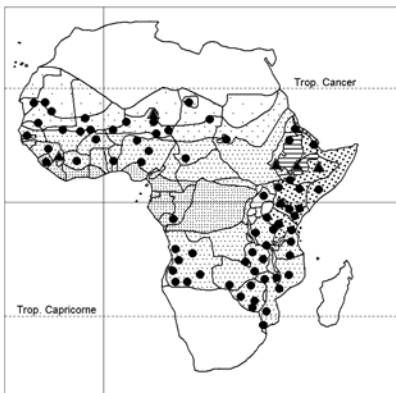
*Delosperma oehlerii*



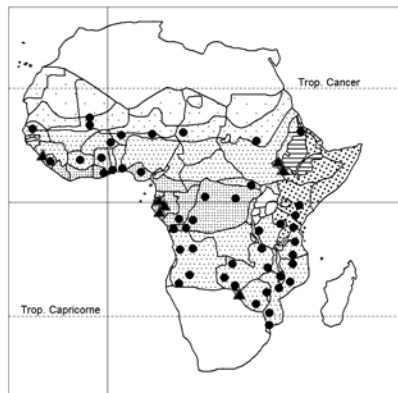
*Delosperma schimperi*



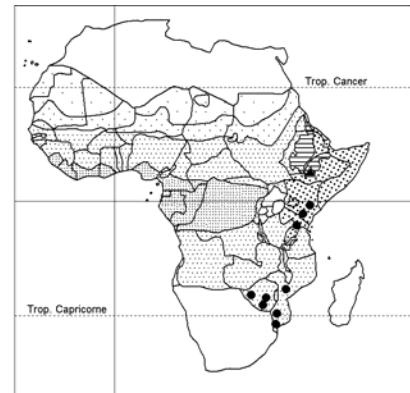
*Gisekia africana*



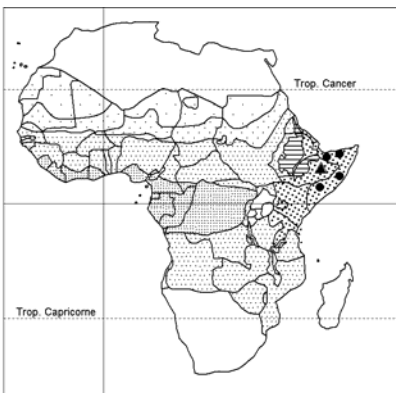
*Glinus lotoides*



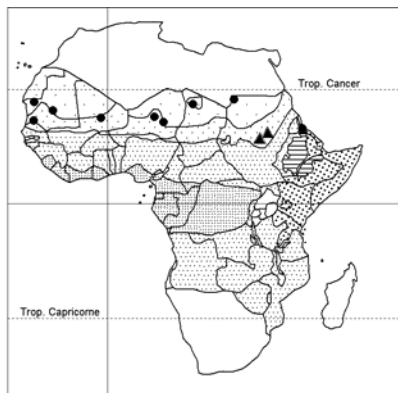
*Glinus oppositifolius*



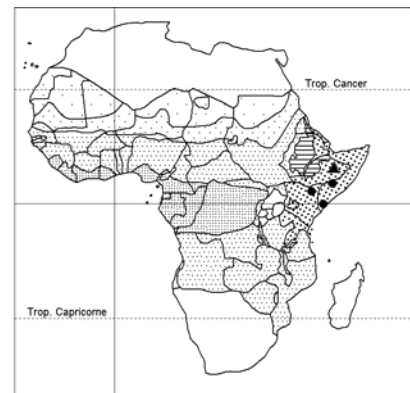
*Hypertelis bowkeriana*



*Limeum angustifolium*



*Limeum obovatum*



*Limeum praetermissum*

**AERVA** (Volume 1: 301)

SOLIMAN, M. A. (2006). Cytogenetical studies on *Aerva javanica* (Amaranthaceae). *Fl. Medit.* 16: 333-339.

THIV, M. & al. (2006). Eritreo-Arabian affinities of the Socotran flora as revealed from the molecular phylogeny of *Aerva* (Amaranthaceae). *Syst. Bot.* 31: 560-570.

***Aerva lanata*** (L.) Juss. ex Schult.

syn.: *Amaranthus aervoides* Hochst. & Steud. ex A. Rich.; *Aerva leucura* sensu Cufod., non Moq.

In Ethiopia from riverine forest with *Ficus* and *Syzygium* to fallow or cultivated land; limestone hillsides, open or with *Acacia-Commiphora* scrub to dry slopes with *Aerva javanica*; up to 2400 m alt.

Map on p. 305.

**ALTERNANTHERA** (Volume 1: 302/303)

***Alternanthera sessilis*** (L.) DC.; Sosef & al., Check-list pl. vascul. Gabon: 43, 2006. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 17, 2009.

Map on p. 305.

**AMARANTHUS** (Volume 1: 302-304)

NAKAMATTE, E. & R. BUKENYA-ZIRABA (2004). The uses of different *Amaranthus* species in southwestern Uganda. *Lidia* 6: 83-92.

NAKAMATTE, E. & al. (2005). Germplasm enhancement of selected *Amaranthus* taxa from southwestern Uganda and their suitability for commercial production. *Lidia* 6: 121-128.

SARR, R. S. & al. (2006). Réexamen de la systématique du genre *Amaranthus* L. (Amaranthaceae) au Sénégal. *Webbia* 61: 227-243 [with drawings].

***Amaranthus graecizans*** L. – Icon.: Fl. Eth. & Eritrea 2/1: 304, 309, 2000 (fruits of different varieties); Sarr & al., o.c.: 240.

– Subsp. **graecizans**: syn.: *A. angustifolius* Lam., nom. illegit., incl. fa. *nanus* (Moq.) Thell.; *A. blitum* L. var. *nanus* Moq.

– Subsp. **aschersonianus** (Thell.) Costea, Brenner & Tardif in Econ. Bot. 57: 646-649, 2004 (with illustration):

bas: *A. angustifolius* Lam., **nom. illegit.**, subsp. *aschersonianus* Thell.; syn.: *A. aschersonianus* (Thell.) Chiov.; *A. roxburghianus* Nevski var. *aschersonianus* (Thell.) N. C. Nair; plants cultivated in India as *A. blitum* L.

– The name is illegitimate. The fruits-flowers seem very similar to those of ***A. graecizans*** subsp. **thellungianus** drawn in Fl. Eth. & Eritrea 2/1: 304, 2000. However, in the latter flora, *A. aschersonianus* (Thell.) Chiov., with diverse combinations, is considered synonymous with subsp. **graecizans** whereas they are listed as synonyms under subsp. **silvestris** in our Enum. 1: 99, 1991.

– Subsp. **silvestris** (Vill.) Brenan (see Enum. 1, l.c.).

– Subsp. **thellungianus** (Nevski) Gusev; bas.: *A. thellungianus* Nevski

In Ethiopia the “subspecies appear to meet and mingle... to a greater extent than...seen anywhere else.”

Map in Volume 1: 303.

***A. lividus*** L. – Icon.: Fl. Eth. & Eritrea 2/1: 304, 2000; Sosef & al., Check-list pl. vascul. Gabon: 43, 2006.

– Subsp. **lividus**; syn.: *A. oleraceus* L.; *A. blitum* L., nom. confus. (see also above under *A. graecizans* subsp. *aschersonianus*); *A. adscendens* Lois.

## AMARANTHUS LIVIDUS

– Subsp. **polygonoides** (Moq.) Probst; syn.: *A. adscendens* sensu Cufod. (1953), non Lois.

Map on p. 307.

***A. spinosus*** L.; Sosef & al., Check-list pl. vascul. Gabon: 43, 2006. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 19, 2009.

Map on p. 307.

**CELOSIA** (Volume 1: 304-308)

***Celosia argentea*** L., incl. fa. *crystata* (L.) Schinz; Sosef & al., Check-list pl. vascul. Gabon: 44, 2006. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 19.

Map on p. 307.

**CENTEMOPSIS** (Volume 1: 306-310)

***Centemopsis kirkii*** (Hook. f.) Schinz; Fl. Eth. & Eritrea 1: 204-205, 2009. – Icon.: Fl. Eth. & Eritrea 2/1: 314, 2000.

Earlier not recorded with certainty from Ethiopia.

*Acacia-Terminalia* woodland on sandy soil; c. 1400 m alt.

Map on p. 307.

**CYATHULA** (Volume 1: 310-313)

***Cyathula achyranthoides*** (Kunth) Moq.; Fl. Eth. & Eritrea 2/1: 317, 2000; Sosef & al., Check-list pl. vascul. Gabon: 44, 2006. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 21, 2009.

Map on p. 307.

***C. cylindrica*** Moq.; Fl. Eth., l.c.

Map on p. 307.

***C. erinacea*** Schinz; Fl. Eth. 2/1: 319.

Map on p. 307.

***C. orthacantha*** (Hochst. ex Aschers.) Schinz; Fl. Eth., l.c.

Map on p. 307.

***C. polycephala*** Bak. – Icon.: Fl. Eth. & Eritrea 2/1: 318, 2000.

Map on p. 307.

***C. prostrata*** (L.) Blume; Fl. Eth. 2/1: 316-317; Sosef & al., Check-list pl. vascul. Gabon: 44, 2006; Lisowski, Fl. Rép. Guinée 1: 42, 2009.

Map on p. 307.

***C. uncinulata*** (Schrad.) Schinz, incl. var. *abyssinica* (Moq.) Pic. Serm. and var. *pleiocephala* Suesseng. – Icon.: Fl. Eth. & Eritrea 2/1: 318, 2000.

syn.: *Pupalia globosa* Hochst. & Steud.; *Cyathula globulifera* Moq., incl. var. *abyssinica* Moq.

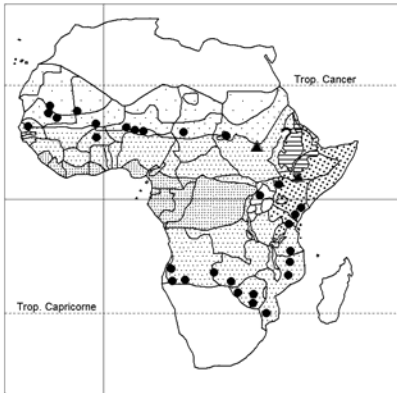
Map on p. 307.

**NOTHOSAERVA** (Volume 1: 318)

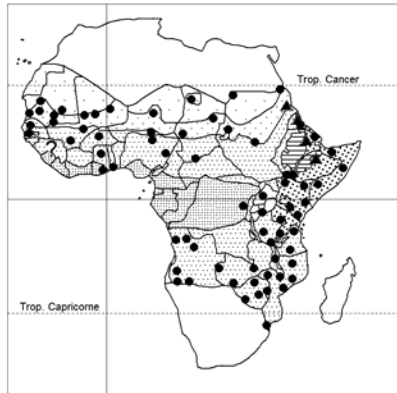
***Nothosaerva brachiata*** (L.) Wight – Icon.: Fl. Eth. & Eritrea 2/1: 327, 2000.

In Ethiopia up to 2100 m alt.

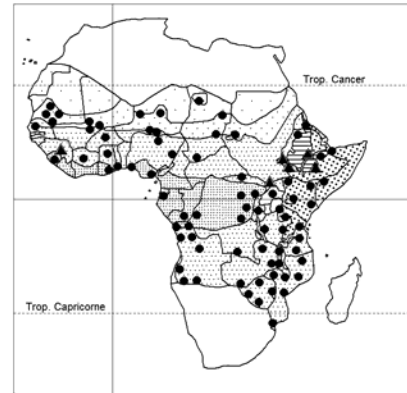
Map on p. 307.



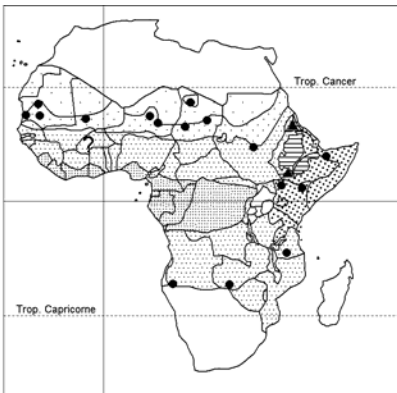
*Limeum viscosum*



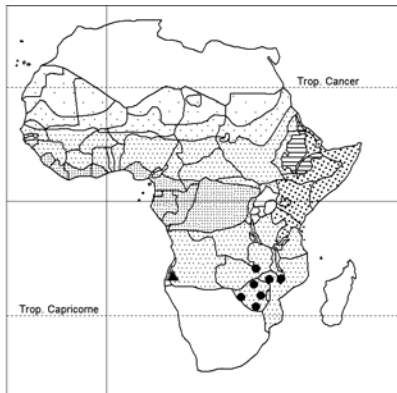
*Mollugo cerviana*



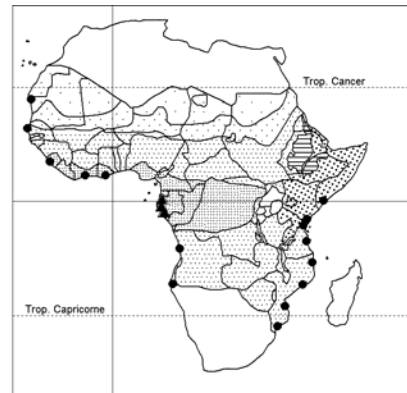
*Mollugo nudicaulis*



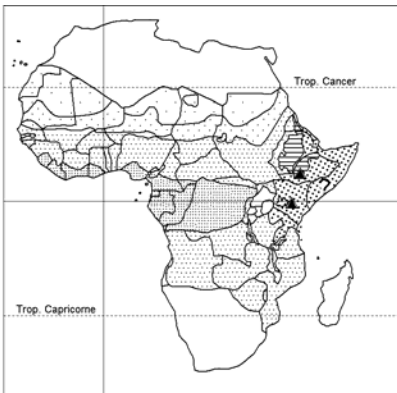
*Sesuvium hydaspicum*



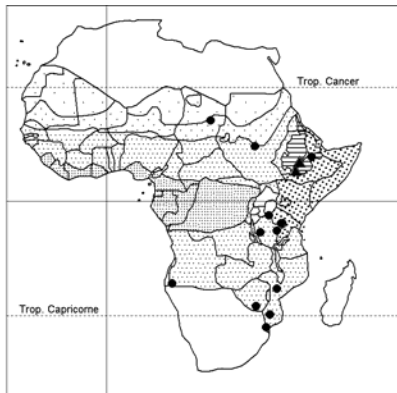
*Sesuvium nyasicum*



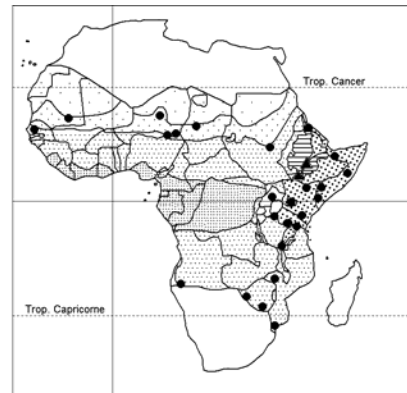
*Sesuvium portulacastrum*



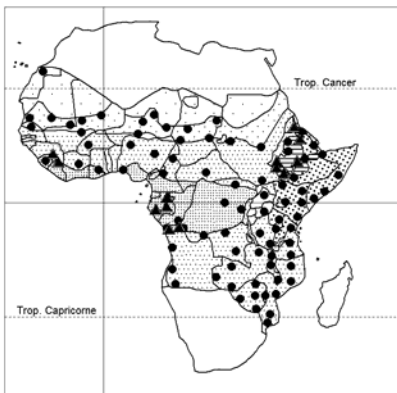
*Tetragonia acanthocarpa*



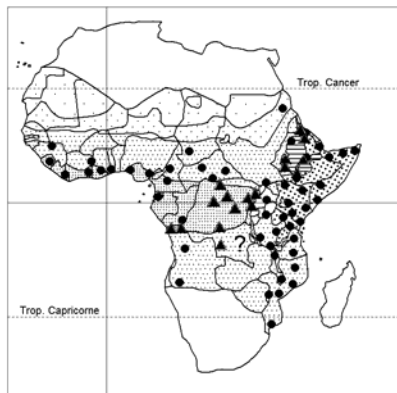
*Trianthema salsoloides*



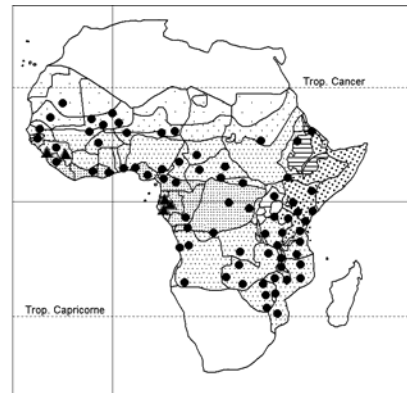
*Trianthema triquetra*



*Achyranthes aspera*



*Aerva lanata*



*Alternanthera sessilis*



**PANDIAKA** (Volume 1: 317/318-320)

**Pandiaka angustifolia** (Vahl) Hepper; Lisowski, Fl. Rép. Guinée 1: 43, 2009. – Icon.: Fl. Eth. & Eritrea 2/1: 332, 2000.

In Ethiopia 550-650 m alt.

Map on p. 309.

**Pandiaka carsonii** (Bak.) C. B. Cl. var. **carsonii**

For Katanga (Zaire) M.-P. Faucon & al. (Plant Ecol. & Evol. 143: 11, 2010) mention an “ecophénotype cupricole”, i.e., a strict endemic metallophyte, the name of which is unpublished [cited from Leteinturier B. (2002) Evaluation du potentiel phytocénologique des gisements cuprifères d’Afrique centro-australe en vue de la phytoremédiation de sites pollués par l’activité minière. PhD. thesis, Faculté des Sciences agronomiques de Gembloux, Gembloux, Belgium].

Map in Volume 1: 317.

**PLEUROPTERANTHA** (Volume 1: 320)**Pleuropterantha revoilii** Franch.

Presence in Ethiopia confirmed (Fl. Eth. & Eritrea 2/1: 311, 2000), in Harare region.

Map in Volume 1: 319.

**PSILOTRICHUM** (Volume 1: 319/320-323)

**Psilotrichum elliotii** Bak.; Fl. Eth. & Eritrea 2/1: 324, 2000.

In Ethiopia up to 1900 m alt.

Map on p. 309.

**P. gracilipes** Hutch. & E. A. Bruce; Fl. Eth. & Eritrea 1: 205, 2009.

Map on p. 309.

**P. lanatum** C. C. Towns.; Fl. Eth. & Eritrea 1: 205-206, 2009.

In Ethiopia 500-550 m alt.

Map on p. 309.

**P. schimperii** Engl. – Icon.: Fl. Eth. & Eritrea 2/1: 325, 2000.

In Ethiopia 900-2050 m alt.

Map on p. 309.

**P. stenanthum** C. C. Towns.; Fl. Eth. & Eritrea 1: 205, 2009.

In Ethiopia: rocky hillside with mixture of sand and rocks; open silt plain with scattered bushes; 500-900 m alt.

Map on p. 309.

**PUPALIA** (Volume 1: 322-324)

**Pupalia grandiflora** Peter – Icon.: Fl. Eth. & Eritrea 2/1: 321, 2000.

syn.: *P. scandens* ? Fiori

Map on p. 309.

**P. lappacea** (L.) A. Juss. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 22, 2009.

Var. **velutina** (Moq.) Hook. f. – Icon.: Fl. Eth., l.c.

bas.: *P. velutina* Moq.

**PUPALIA LAPPACEA**

syn.: *P. distantiflora* A. Rich.; *P. atropurpurea* sensu Chiov. 1916 and Cufod. 1953, non *Achyranthes purpurea* Lam. 1789.

Map on p. 309.

**P. micrantha** Hauman – Icon.: Fl. Eth., l.c.; Taiwania 51: 304-305, 2006 [with a map].

syn.: *P. atropurpurea* sensu Richard 1850 et auct., non *Achyranthes atropurpurea* Lam. 1789.

Recently naturalized in Taiwan.

Map on p. 309.

**SERICOCOMOPSIS** (Volume 1: 324)

**Sericocomopsis pallida** (S. Moore) Schinz – Icon.: Fl. Eth. & Eritrea 2/1: 313, 2000.

Map on p. 309.

**SERICOSTACHYS** (Volume 1: 324)

**Sericostachys scandens** Gilg & Lopr., incl. var. *maior* Chiov. and var. *tomentosa* (Gilg & Lopr.) Cavaco – Icon.: Fl. Eth. & Eritrea 2/1: 312, 2000; Taxonomania 21: 8, 2007.

Invasive plant in forest ecosystems of NE Zaire.

Map on p. 309.

**ANCISTROCLADACEAE**  
(Volume 1: 510-513) / *Ig.* / 12 spp.  
(former account: *I* / 13)

Add new information for the family.

**ANCISTROCLADUS** / 12 spp. (former account: 13)

syn.: *Bembix* Lour.; *Bigamea* K. Koenig ex Endl.; *Ancistrella* Tiegh.

12 species in Africa, 6 in SE Asia.

Plants of unusual habit: originate as monopodial self-supporting saplings, later becoming sympodial lianes climbing by means of recurved or spiraling woody hooks formed from the true stem apex. – Poorly understood; delimitation of species problematic. Seem to be fairly rare in nature and not flowering abundantly. Under-collected. Contain biologically active naphthylisoquinoline alkaloids (antiparasitic and against HIV).

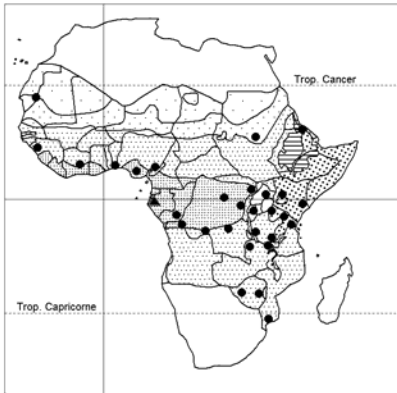
In our area, lack of information: for 5 species (= > 41%) the juvenile state is unknown, and for 6 species (= 50%) juvenile leaves are unknown; in one species the flowers are known in bud only; the fruit is unknown in 1+?1 species (= ± 16%) and the seeds in 1 species; 1 species (= c. 8%) is known only from the type.

TAYLOR, C. M. & al. (2005). Revision of *Ancistrocladus* Wall. (Ancistrocladaceae). *Ann. Missouri Bot. Gard.* 92: 360-399.

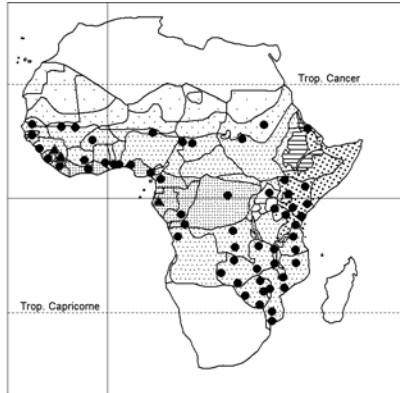
Replace former treatment.

**Ancistrocladus abbreviatus** Airy Shaw; Taylor & al., o.c.: 372-374.

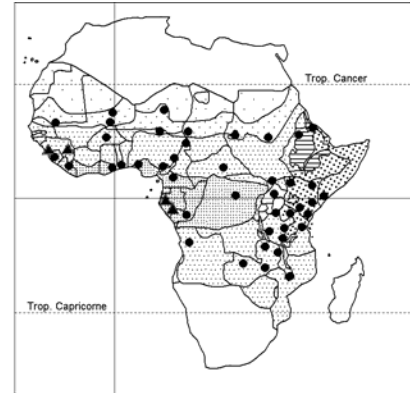
Liane; juvenile plants and leaves unknown; stems to at least 10 m long, to 1 cm Ø; bark grey to purplish brown, smooth to ± rough or longitudinally fissured; main stem with scattered leaves; lateral branchlets numerous, to 30 cm long, with one to several hooks 1-2 cm Ø, and a group of leaves at apex; leaves elliptic-obovate, 10-20 × 4-12 cm, concolorous when dried, margins thickened; inflorescences ± capitate, lateral or terminal on branchlets.



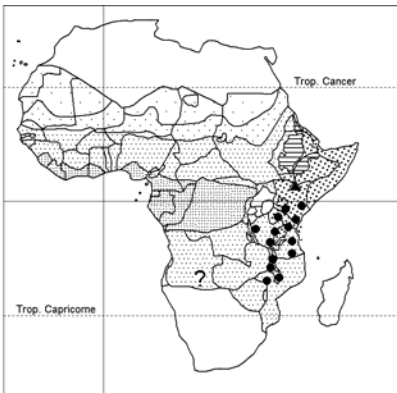
*Amaranthus lividus*



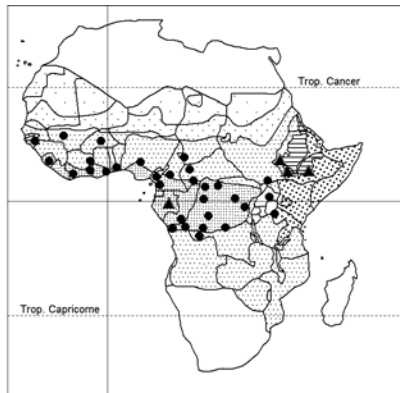
*Amaranthus spinosus*



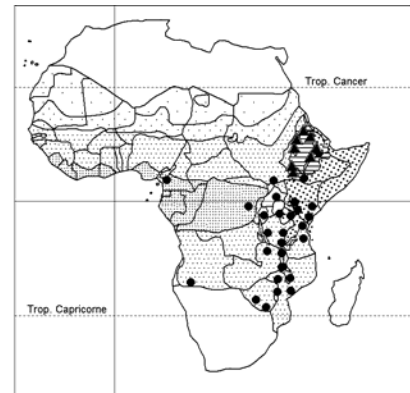
*Celosia argentea*



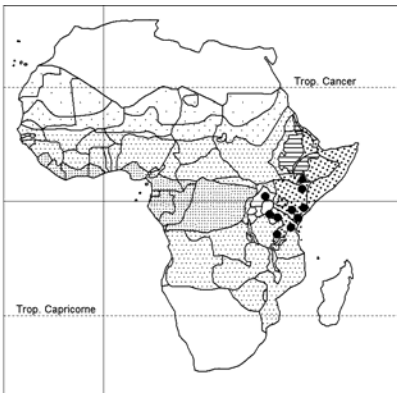
*Centemopsis kirkii*



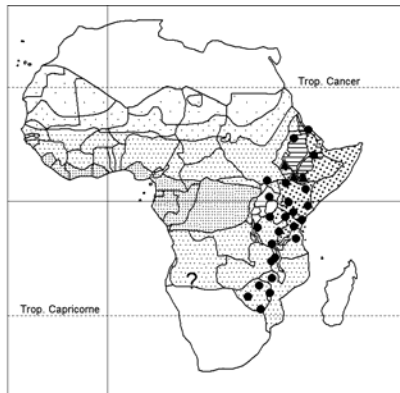
*Cyathula achyranthoides*



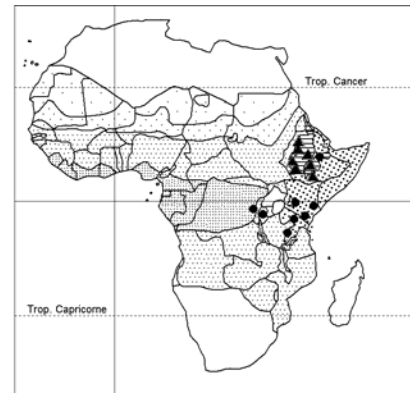
*Cyathula cylindrica*



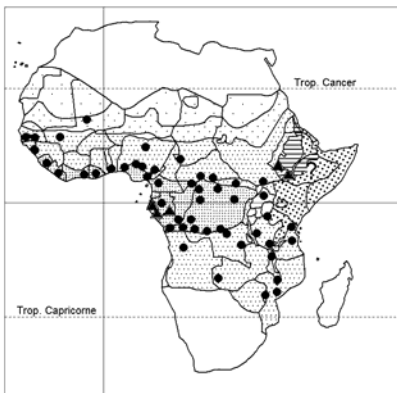
*Cyathula erinacea*



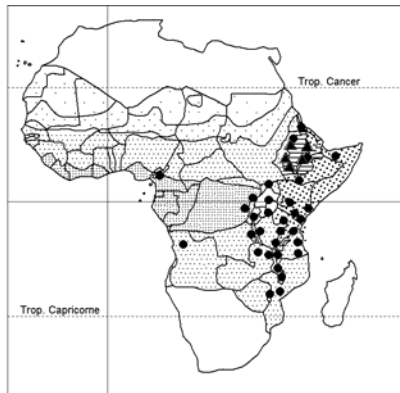
*Cyathula orthacantha*



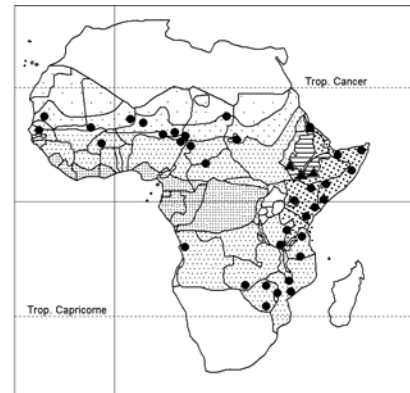
*Cyathula polycephala*



*Cyathula prostrata*



*Cyathula uncinulata*



*Nothosaerva brachiata*

## ANCISTROCLADUS ABBREVIATUS

Wet evergreen forests along rivers and on river islands; swamp forest; seasonal swamps; 5-200 m alt.

Comprises 2 subspp.: – subsp. **abbreviatus** from Sierra Leone to Ghana; – subsp. **lateralis** Gereau (syn.: *A. barteri* Scott-Elliot, p.p.; *Ancistrella barteri* Tiegh.) with narrower leaves, paniculate inflorescences, in swamp forests, Nigeria.

Map on p. 309.

**A. barteri** Scott-Elliot; Taylor & al., o.c.: 375-377; Lisowski, Fl. Rép. Guinée 1: 47, 2009. – Type: Scott-Elliot 4860 (cf. *A. abbreviatus* subsp. *lateralis* below, under “synonyms”).

syn.: *A. pachyrrhachis* Airy Shaw

Liane or climbing shrub; juvenile plants slender, 2 m tall, without hooked branchlets; juvenile leaves oblanceolate, 36-60 × 8-12 cm; adult stems climbing, to 15 m long, c. 1 cm Ø; bark grey-brown, smooth or shallowly longitudinally fissured; leaves scattered; lateral branches to 50 cm long, with a terminal group of leaves, with or without hooks; hooks recurved or spiraling, 0,6-2,5 cm Ø; adult leaves shiny, discoloured, elliptic-oblanceolate, 6-41 × 2-10 cm; inflorescences lax, paniculate, lateral among the leaves at apices of branchlets; fruit unknown.

Wet forest; coastal bluffs; along rivers; laterite pit; 0-95 m alt.

Very similar to *A. guineensis* (corolla aestivation different, also leaf surface pits).

Map on p. 311.

**A. congolensis** J. Léonard; Taylor & al., o.c.: 377-378; Taxonomania 24: 7, 2008.

Liane; juvenile stems and leaves unknown; adult stems to 20 m long, 5 cm Ø; bark smooth to shallowly longitudinally fissured, grey to purple-brown; with scattered leaves; lateral branchlets to 15 cm long, with 1 to several hooks and terminal group of leaves; hooks recurved to spiraling, 0,6-1,7 cm Ø; leaves ± dull, ± concolorous when dried, elliptic, 9-18 × 5-8 cm; inflorescences lax, paniculate; flowers yellow.

Swamp- and riverine forests; c. 470 m. alt.

Similar to *A. ealaensis* (shape of leaves different).

Taylor & al., o.c.: 378, remark on the presence of stipules. They quote Léonard's drawing (Bull. Soc. Roy. Bot. Belg. 82: fig. 1D) where stipules seem to be present, and also the fact that Léonard had seen the plants in the field. On the other hand Taylor & al. have not seen stipules (or scars) on the herbarium material studied. They also note Léonard's illustrations of galled flowers and fruits. “These galls are similar in form to those of *A. ealaensis*, but apparently less frequent”.

Map on p. 311.

**A. ealaensis** J. Léonard; Taylor & al., o.c.: 378-379.

Liane; juvenile plants and leaves unknown; stems 12 m long, 4 cm Ø; bark smooth to longitudinally ± fissured, purple to grey-brown, with scattered leaves and lateral branchlets to 50 cm long bearing 1 to several hooks and groups of leaves; hooks recurved to spiraling, 0,5-1,7 cm Ø; leaves ± dull, discoloured when dried, elliptic-oblanceolate, 3,4-29 × 1,6-10 cm; stipules early caducous; inflorescences lax, paniculate, lateral among the leaves; flowers golden-yellow.

Flooded or riverine forests; 20-400 m alt.

Distinctive by its narrowly acuminate leaves, slender peduncles and inflorescence axes. Similar to *A. congolensis* (cf. above). Flowers often attacked by insects and thus galled. Such galls are

## ANCISTROCLADUS EALAENSIS

present on most herbarium specimens incl. the type. The galls are ± round with leaf-like appendages or similar to a normal flower with thickened structures, and thus easily confused with flowers.

Map on p. 311.

**A. grandiflorus** Cheek – Icon.: Taylor & al., o.c.: 362.

Liane; juvenile saplings unbranched, to 3 m tall; juvenile leaves oblanceolate, 49-79 × 11-19 cm, acuminate; adult stems to 25 m long, to 30 cm Ø; bark dark brown, very rough, with scattered leaves and lateral branches 27 cm long bearing hooks and groups of leaves; slash dark red; hooks recurved to spiraling, 1-2 cm Ø; leaves somewhat shiny, discoloured when dried, obovate, 19-26 × 5-7 cm; inflorescences lax, paniculate, lateral; fruit unknown. Flowers large (sepals, petals > 1 cm long) for the genus and sometimes 4-merous.

Wet primary forest; old secondary forest; on sandy and clay soils; 60-940 m alt.

Map on p. 311.

**A. guineensis** Oliv.; Taylor & al., o.c.: 382-383.

syn.: *A. uncinatus* Hutch. & Dalziel

Liane; juvenile plants unbranched or little branched, to 3 m tall, leaves unknown; adult stems to 15 m long, 5 cm Ø; bark (purple-)brown, smooth or shallowly fissured, with some scattered leaves and branchlets 25 cm long bearing hooks and sometimes a terminal rosette of leaves; hooks recurved to spiraling, 1-2,4 cm Ø; leaves dull to shiny, ± discoloured when dried, elliptic-obovate, 55-23 × 2,6-9 cm; inflorescences lax, paniculate, mostly lateral.

Evergreen vegetation, open roadsides, along rivers; 80-600 m alt.

Other species in the genus have been called *A. guineensis*, in particular *A. barteri*. These two are similar in many features and may “represent extremes of continuous variation”. But their ranges are disjunct. *A. uncinatus* is a form with smaller leaves.

Map on p. 311.

**A. ileboensis** Heubl, Mudogo & G. Bringmann – Icon.: Plant Ecol. Evol. 143: 66-67, 2010.

Liane; older sapling leaves crowded at end of shoot, sessile, elliptic-obovate, 17-35 × 2,5-5,5 cm; adult stem length not recorded; bark purplish-grey, smooth to longitudinally fissured; lateral branches bearing 1-2 circinate hooks; adult leaves discoloured when dried, sessile, elliptic-oblong, 9-25 × 2,5-5 cm; inflorescences paniculate lateral or terminal with 2-3 hooks; flowers bright red.

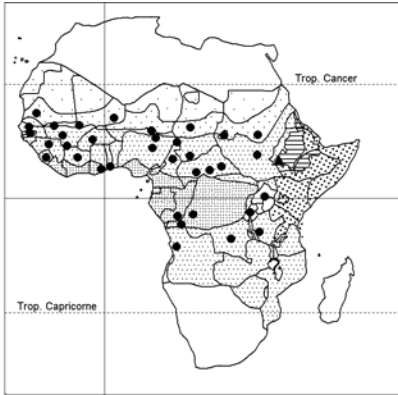
Dry land forest; secondary forests, with clay soils; 420-465 m alt.

Similar to *A. congolensis* (also with 3 styles). First (sterile specimens) referred to *A. letestui*. The metabolite pattern of *A. ileboensis* differs completely from that of *A. congolensis*, *A. likoko*, *A. ealaensis*.

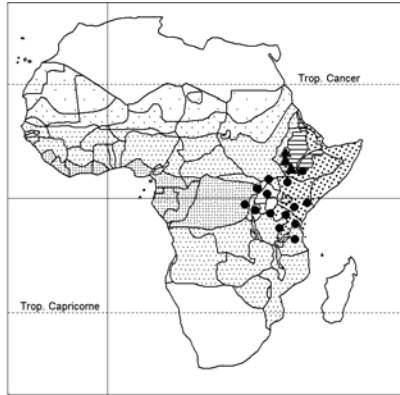
Known only from the type collected in 2000.

Cultivated at Würzburg Botanical Garden, Germany.

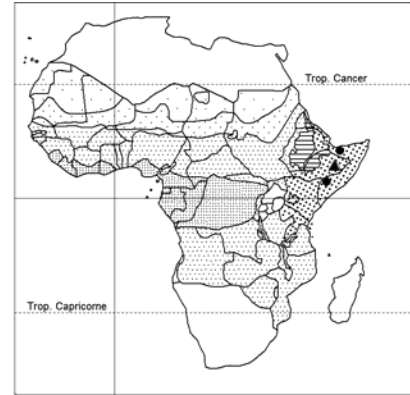
Map on p. 311.



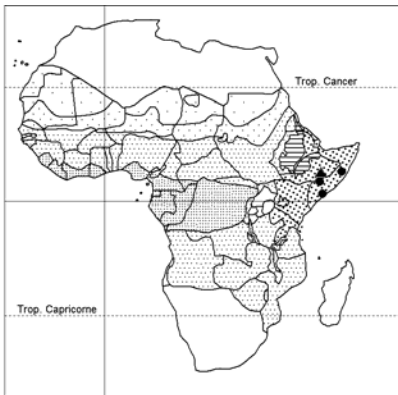
*Pandiaka angustifolia*



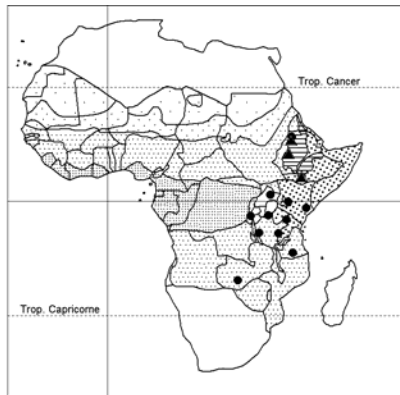
*Psilotrichum elliotii*



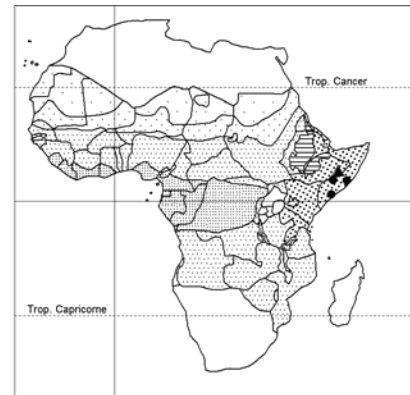
*Psilotrichum gracilipes*



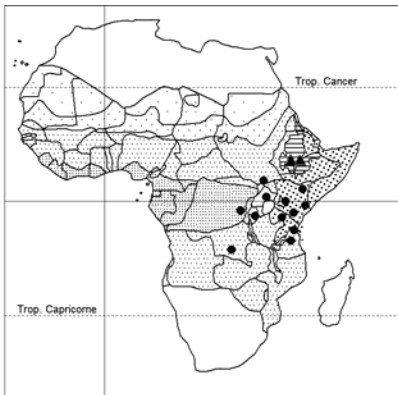
*Psilotrichum lanatum*



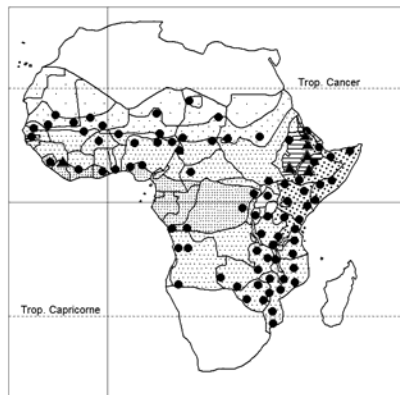
*Psilotrichum schimperi*



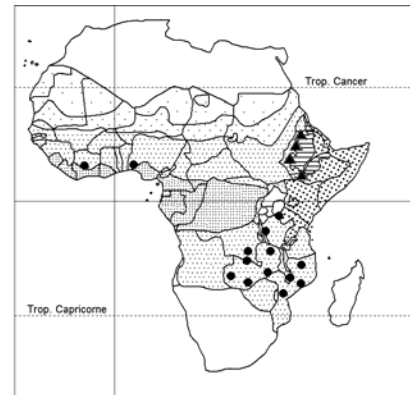
*Psilotrichum stenthanthum*



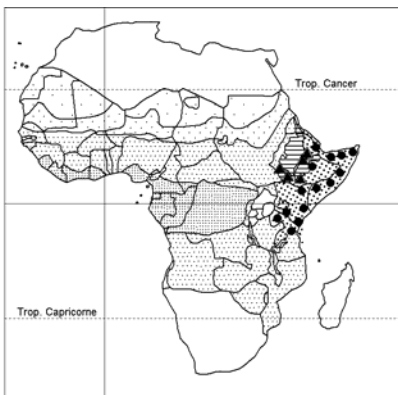
*Pupalia grandiflora*



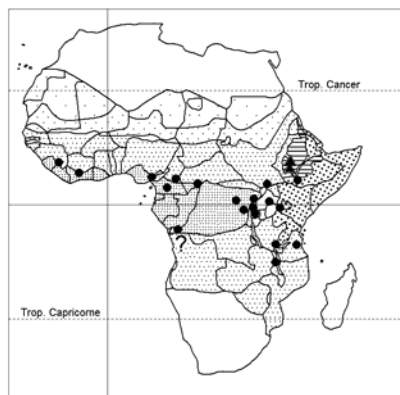
*Pupalia lappacea*



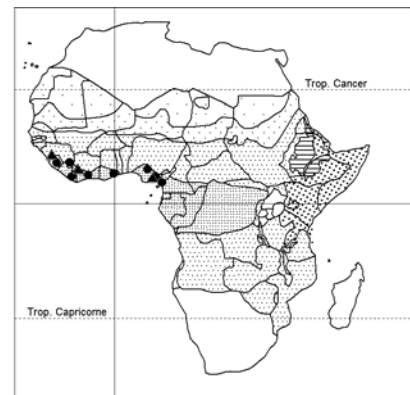
*Pupalia micrantha*



*Sericocomopsis pallida*



*Sericostachys scandens*



*Ancistrocladus abbreviatus*



## ANCISTROCLADUS

**A. korupensis** D. W. Thomas & Gereau – Icon.: Taylor & al., o.c.: 362 (partial).

Liane; for description see Volume 1: 512, 2003; flowers yellow to rose-pink.

Moist evergreen forests; 50-360 m alt.

Population densities and seedling recruitment are low. Populations highly inbred.

Map in Volume 1: 511.

**A. letestui** Pellegr.

Liane; juvenile plants branched, to 2 m tall; juvenile leaves numerous, crowded near tips of branches, linear-lanceolate, 29-35 × 1,5 cm; adult stems to 30 m long, 5 cm Ø, not twining; bark grey, shallowly longitudinally fissured; stems with scattered leaves and lateral branchlets to 30 cm long bearing 1 to several hooks and sometimes a cluster of leaves at apex; hooks recurved to spiraling, 0,7-1,6 cm Ø; adult leaves dull or ± shiny, drying discolourous, oblanceolate, 4-43 × 1-5 cm; inflorescences lax, paniculate; flowers cream; fruit unknown?; seed unknown.

Evergreen forest, on river margins; hills; 125-950 m alt.

Map on p. 311.

**A. likoko** J. Léonard (not “likokoi” sensu Gereau, 1997); Taxonomania 24: 7, 2008. – Icon.: Taylor & al., o.c.: 362 (partial).

Liane; juvenile plant and leaves unknown; adult stems to 12 m long, 5 cm Ø; bark purplish grey to brown; stem with lateral branchlets to 15 cm long bearing 1 to several hooks and a cluster of leaves; hooks recurved to spiraling, 1-2,5 cm Ø; leaves shiny, drying discolourous, elliptic-obovate, 5-8 × 2-3,5 cm; inflorescences lax, paniculate; flowers cream-yellow, similar to those of *A. ealaensis*.

Helophilous; along rivers; swamp forests; 430-470 m alt.

The fruits float; are water-dispersed. Often galled.

Map in Volume 1: 511.

**A. robertsoniorum** J. Léonard; Taylor & al., o.c.: 389-390.

Liane; juvenile plants usually unbranched, to 4 m tall, lacking hooked branches; juvenile leaves ± crowded at stem apex but not in rosette, oblanceolate, 43-55 × 9-10 cm; adult stems to 15 m tall, 3,5 cm Ø; bark dark brown, roughened; with scattered leaves and lateral branchlets to 25 cm long bearing 1 to several hooks and sometimes a terminal cluster of leaves; leaves discolourous when dried, obovate-elliptic, 18-50 × 5-10 cm; inflorescences lax, paniculate; flowers greenish cream. Number of stamens variable: 10-15.

Moist evergreen coastal forest; 25-300 m alt.

Map in Volume 1: 511.

**A. tanzaniensis** Cheek & Frimodt-Møller; Taylor & al., o.c.: 390-391.

Liane; juvenile plants and leaves unknown; adult stems to 25 m long, 1,3 cm Ø, not twining, sparingly branched; bark purplish brown; with scattered leaves and lateral branchlets to 30 cm long bearing 1 to several hooks and a terminal cluster of leaves; hooks recurved to shortly spiraling, 0,5-1,5 cm Ø; leaves shiny, reported pink when flushing, drying discolourous, oblanceolate, 9-38 × 2,5-8,5 cm; inflorescences lax, paniculate, lateral, sometimes with hooks; flowers known in bud only.

## ANCISTROCLADUS TANZANIENSIS

Wet evergreen forest; steep slopes on W-facing escarpment; 1100-1310 m alt.

BRINGMANN, G. & al. (2003). Ancistrotanzanine A, the first 5,3'-coupled naphthylisoquinoline alkaloid, and two further 5,8'-linked related compounds from the newly described species *Ancistrocladus tanzaniensis*. *J. Nat. Prod.* 66: 1159-1165.

Poorly known species.

Map in Volume 1: p. 511.

## SYNONYMS:

*Ancistrella barteri* Tiegh. = **Ancistrocladus abbreviatus** subsp. **lateralis**

*Ancistrocladus barteri* Scott-Elliot, p.p., quoad specim. Scott-Elliot 4797, Barter 1699 = **Ancistrocladus abbreviatus** subsp. **lateralis**

*pachyrrhachis* Airy Shaw = **A. barteri** sp. nov. sensu Cheek 1992, 1998, and in Lebrun & Stork, Enum. 4: 578, 1997 = **A. grandiflorus**

*uncinatus* Hutch. & Dalziel = **A. guineensis**

## ANISOPHYLLEACEAE

(Volume 1: 608-609, 611)

Add new information for the family.

## ANISOPHYLLEA (Volume 1: 608-609, 611)

**Anisophyllea myriosticta** Floret; Sosef & al., Check-list pl. vascul. Gabon: 49, 2006.

In Gabon: 50-480 m alt.

Map on p. 311.

**A. purpurascens** Hutch. & Dalziel; Sosef & al., l.c.

In Gabon: 10-750 m alt.

Map on p. 311.

**A. quangensis** Engl. ex Henriques; Sosef & al., l.c.

In Gabon: 600-630 m alt.

Map on p. 311.

## POGA (Volume 1: 608, 611)

**Poga oleosa** Pierre; Sosef & al., l.c.

In Gabon: 5-30 m alt.

Map on p. 311.

## ANNONACEAE

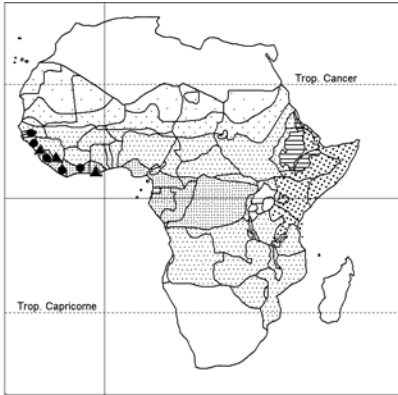
(Volume 1: 22-67) / 40 g. / 327 spp.  
(former account: 40 / 320)

Add new information for family and the following genera.

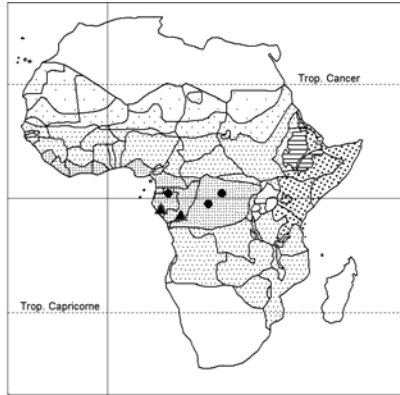
COUVREUR, T. L. P. & al. (2007). Generic relationships and morphological character evolution in African Annonaceae: A Bayesian perspective. In: ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February-2 March 2007, Yaoundé, Cameroon Abstracts*: 22, L'Herbier National du Cameroun, Yaoundé.

COUVREUR, T. L. P. & al. (2008). Pollen morphology within the *Monodora* clade, a diverse group of five African Annonaceae genera. *Grana* 47: 185-210 [*Asteranthe, Hexalobus, Isolona, Monodora, Uvariastrum*].

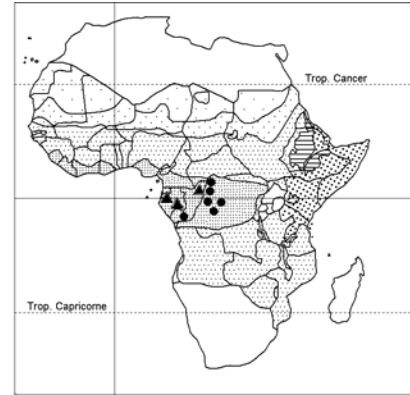
DOYLE, J. A. & al. (2004). Phylogeny, molecular and fossil dating, and biogeographic history of Annonaceae and Myristicaceae (Magnoliales). *Int. J. Plant Sci.* 165 (4 Suppl.): S55-S67.



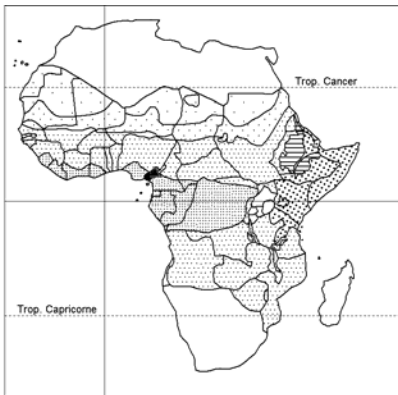
*Ancistrocladus barteri*



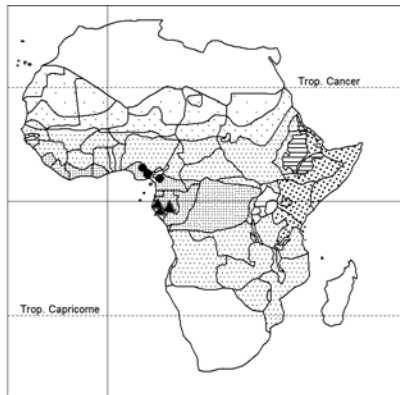
*Ancistrocladus congolensis*



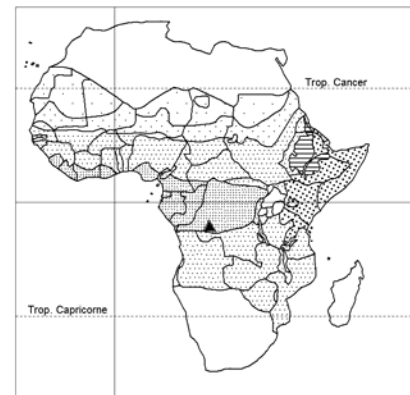
*Ancistrocladus ealaensis*



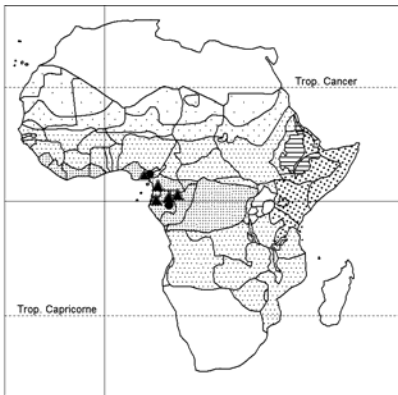
*Ancistrocladus grandiflorus*



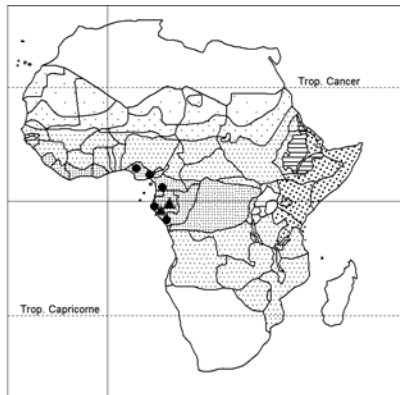
*Ancistrocladus guineensis*



*Ancistrocladus ileboensis*



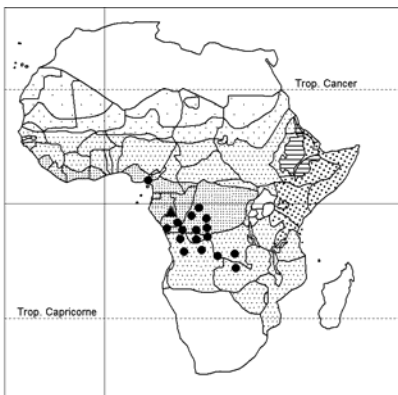
*Ancistrocladus letestui*



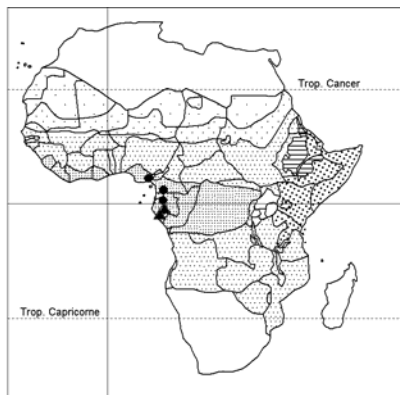
*Anisophyllea myriosticta*



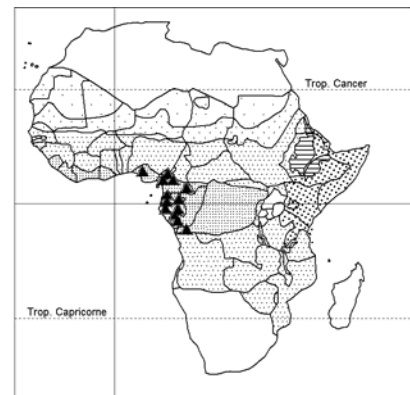
*Anisophyllea purpurascens*



*Anisophyllea quangensis*



*Poga oleosa*



*Annickia affinis*

## ANNONACEAE

HUYSMANS, S. & al. (2010). Distribution of orbicules in Annonaceae mirrors evolutionary trends in angiosperms. *Pl. Ecol. Evol.* 143: 199-211.

JOHNSON, D. M. (2003). Phylogenetic significance of spiral and distichous architecture in the Annonaceae. *Syst. Bot.* 28: 503-511.

MARLE, E. J. VAN (2006 ?) Leaf anatomy within the Annonaceae of the Old World. A preliminary survey. *Annonaceae Newsl.* 14: 22.

MEINKE, S. & al. (2010). Evolution of lianas in Annonaceae. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar): 299.

SAUNDERS, R. M. K. (2010). Floral evolution in the Annonaceae: hypothesis of homeotic mutations and functional convergence. *Biol. Rev.* 85: 571-591.

SILBERBAUER-GOTTSBERGER, I. & al. (2003). Morphological and functional flower characteristics of New and Old World Annonaceae with respect to their mode of pollination. *Taxon* 52: 701-718.

**ANNICKIA** (Volume 1: 22-23) / 8 (former account: 10)

In one species flowers unknown (*A. lebrunii*).

VERSTEEGH, C. P. C. & M. S. M. SOSEF (2007). Revision of the African genus *Annickia* (Annonaceae). *Syst. Geogr. Pl.* 77: 91-118 [with keys, drawings and distribution maps].

Replace former treatment.

***Annickia affinis*** (Exell) Versteegh & Sosef, o.c.: 95-100. – Icon.: *ibid.*; Wilks & Issembé, *Arbres Guinée Equat.*: 108-109, 2000 (sub nom. *Enantia chlorantha*).

bas.: *Enantia affinis* Exell

syn.: *E. chlorantha* auctt., non Oliv.: Pellegrin, *Fl. Mayombe*: 6, 1924; *Fl. W. Trop. Afr.*, ed. 2, 1: 15, 1954, p.p.; *Fl. Gabon* 16: 313-314, 1969; *E. chlorantha* var. *soyauxii* Engl. & Diels

Tree or treelet 2,5-30 m; bole cylindrical; bark smooth, mottled grey-brown-silver-black; young branchlets green, glabrescent, becoming black; indumentum of single, bifid and fasciculate hairs; leaves shortly petiolate, sparsely pubescent, elliptic-obovate, 3,5-26 × 1,5-9 cm, ± coriaceous, apex acute to gradually acuminate; flowers with strong apple scent; fruit with stipes 1-4 cm long, monocarps 3-34, 2-3,5 cm long, fleshy, purple to black in sicco.

Primary, secondary and degraded rain-forests, in understory, on steep slopes to level land and swamps; 5-650 m alt.

Map on p. 311.

***A. ambigua*** (Robyns & Ghesq.) Setten & P. J. Maas – Icon.: Versteegh & Sosef, o.c.: 98, 101 (map).

syn.: *A. atrocyanescens* (Robyns & Ghesq.) Setten & P. J. Maas; *Enantia atrocyanescens* Robyns & Ghesq.; *E. kwiluensis* Robyns & Ghesq.; *Annickia kwiluensis* (Robyns & Ghesq.) Setten & P. J. Maas; *A. olivacea* (Robyns & Ghesq.) Setten & P. J. Maas; *Enantia olivacea* Robyns & Ghesq.

Treelet 2-8 m; branches of crown vertically and evenly spread; bark grey to black, ± grooved; indumentum bright brown; hairs single, bifid or fasciculate; young shoots glabrescent, yellow-brown, becoming grey-brown; leaves short-petiolate, narrowly (ob-)ovate, 6-24 × 2-9 cm, apex acute to acuminate, deep brown to grey or yellowish brown above, brown and pubescent beneath; fruit stipes 0,6-1,9 cm long, monocarps 3-23, ovoid, 2-2,6 cm long, red to black.

Primary forest; old secondary forest; 300-400 m alt.

Disjunct.

Map on p. 313.

## ANNICKIA

***A. chlorantha*** (Oliv.) Setten & P. J. Maas – Icon.: Versteegh & Sosef, o.c.: 104, 103 (map).

bas.: *Enantia chlorantha* Oliv. (s. str.).

syn.: *E. chlorantha* var. *soyauxii* auctt., non Engl.; & Diels p.p., quoad specim. Zenker 726 (cf. *Annickia affinis*).

Tree 9(-25) m; bark greyish; young branchlets pubescent, pale green, becoming black; indumentum of single, bifid and fasciculate hairs; leaves short-petiolate, narrowly elliptic-obovate, 7-28 × 2-9 cm, apex acuminate, glossy dark green, pilose above (brown to grey-green when dried), whitish to pale green and puberulous beneath; fruit stipes 0,6-2 cm long, monocarps 3-27, ± ellipsoid, 1-1,6 cm long, red to black.

Primary rain-forest, along roads, on slopes; 150-850 m alt.

Map on p. 313.

***A. kummerae*** (Engl. & Diels) Setten & P. J. Maas (“kummeriae”). – Icon.: Versteegh & Sosef, o.c.: 107, 106 (map).

Tree 25-30 m; bark rugulose, grey-brown; all parts becoming almost glabrous; leaves short-petiolate, elliptic, 7,5-23(-30) × 3-7(-10) cm, apex acute to acuminate, greyish brown above, brown and puberulous beneath; fruit stipes c. 1 cm long, monocarps 15-35, ellipsoid, 2,2 cm long, glabrous.

Rain-forest, locally abundant; 800-1000 m alt.

Very few collections known.

Map in Volume 1: 23.

***A. lebrunii*** (Robyns & Ghesq.) Setten & P. J. Maas – Icon.: Versteegh & Sosef, o.c.: 104, 108 (map).

Treelet 2-8 m; stem to 25 cm Ø; bark dark green-greyish; crown elongated, branches verticillate; young branchlets sparsely pubescent, dull brown, becoming grey-brown; indumentum of simple, bifid and fasciculate hairs, or stellate; leaves short-petiolate, narrowly elliptic, 5,5-23 × 2,5-6 cm, apex acute to acuminate, pale green and glabrous above, pale brownish green and puberulous beneath; *flowers unknown*; fruit stipes 1,4-5 cm long, monocarps 4-28, obovoid, 1,5-2,2 cm long, green marble red.

Forest in understory, on sandy-clay soils; 700-1200 m alt.

Disjunct.

Map on p. 313.

***A. letestui*** (Le Thomas) Setten & P. J. Maas – Icon.: Versteegh & Sosef, o.c.: 110, 111 (map).

syn.: *Enantia chlorantha* sensu Pellegr. 1948: 141, p.p., non Oliv.

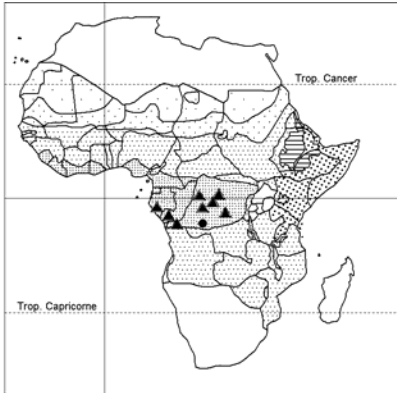
Treelet 2-8 m; all young parts tomentose, rusty, later glabrescent; old branchlets grey-brown to black; indumentum of simple, bifid, fasciculate and stellate hairs; leaves short-petiolate, narrowly elliptic-obovate, 10-30 × 3,5-11 cm, apex blunt to acuminate, brown-grey and glabrous above, yellow-brown and pubescent beneath; *fruit* (known !) stipes 1-2 cm long, monocarps 8-20, ellipsoid, 2-2,5 cm long, black, with very few simple hairs.

Evergreen forests primary and secondary; also on inselbergs; 300-700 m alt.

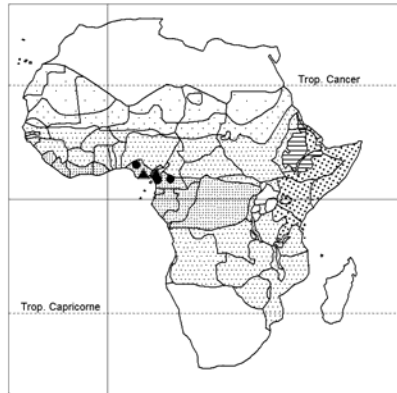
Map on p. 313.

***A. pilosa*** (Exell) Setten & P. J. Maas – Icon.: Versteegh & Sosef, o.c.: 110, 112 (map).

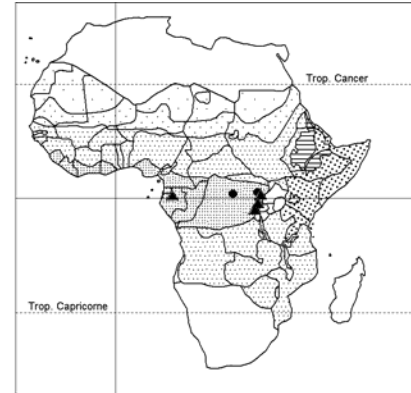
Tree to 15 m; young parts tomentose; old branchlets rugulose, dark to greyish brown, glabrescent; indumentum of simple, bifid or fasciculate hairs, bright brown; leaves short-petiolate, narrowly elliptic-obovate, 6,5-24 × 2-7,5 cm, apex acuminate to



*Annickia ambigua*



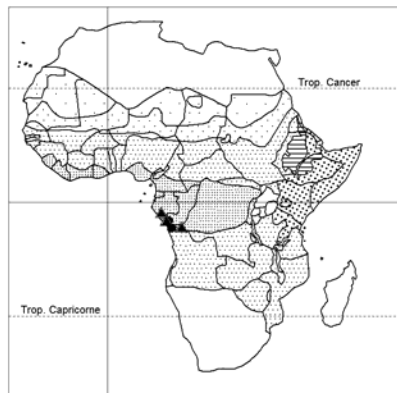
*Annickia chlorantha*



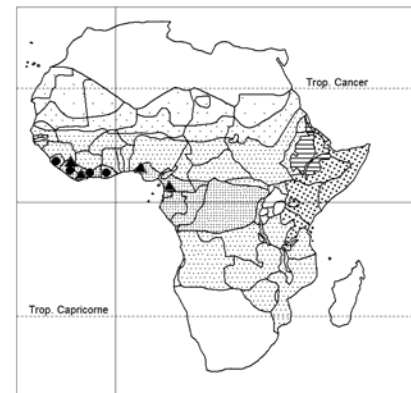
*Annickia lebrunii*



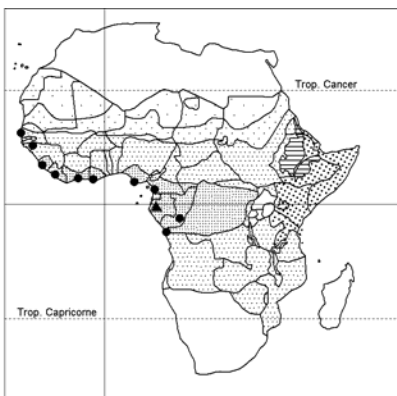
*Annickia letestui*



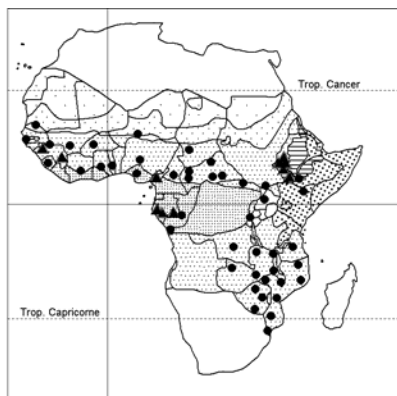
*Annickia pilosa*



*Annickia polycarpa*



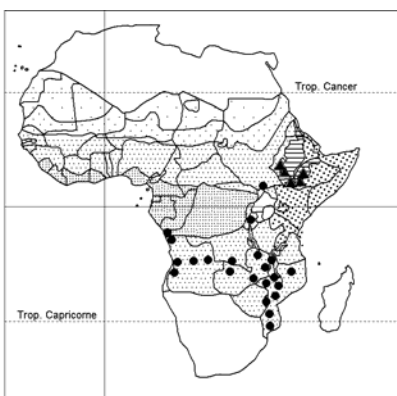
*Annona glabra*



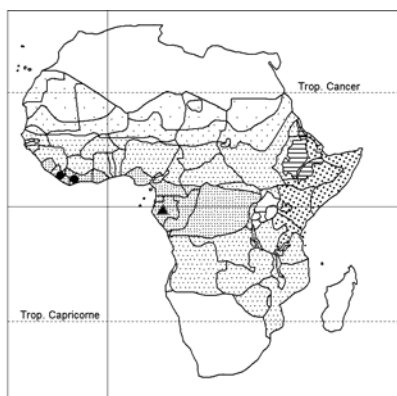
*Annona senegalensis*



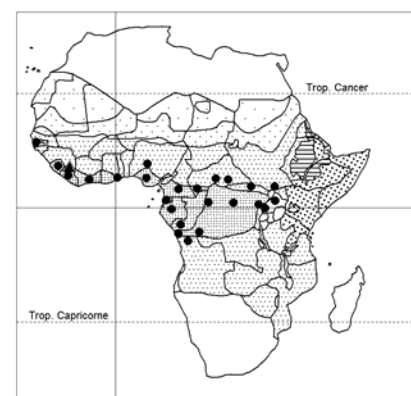
*Anonidium brieii*



*Artabotrys monteiroae*



*Artabotrys oliganthus*



*Cleistopholis patens*



## ANNICKIA PILOSA

± blunt, glossy and short-hairy above, pale green to brown and softly pilose beneath; fruit stipes 1-2 cm long, hairy, monocarps 9-23, ellipsoid, 2-2,8 cm long, purple-black, glossy.

Evergreen rain-forest, primary and secondary, on slopes; sometimes in ± swampy sites; 90-400 m alt.

Map on p. 313.

**A. polycarpa** (DC.) Setten & P. J. Maas – Icon.: Versteegh & Sosef, o.c.: 115, 114 (map).

syn.: *Melodorum polycarpum* (DC.) Benth.; *Enantia chlorantha* sensu Robyns & Ghesq. 1933: 308, p.p., non Exell

Tree or treelet 2-20 m; bark smooth to rough, green to blackish with white-grey patches; indumentum of single, bifid, fasciculate or stellate hairs, bright brown; leaves short-petiolate, narrowly elliptic-obovate, 5-27 × 2-8 cm, leathery, apex (short-) acuminate, glossy dark green with short indumentum above, dull greyish green and pubescent beneath; fruit stipes 2-6 cm long, monocarps 5-55, elliptic-obovate, ca. 2 cm long, black, with very few simple hairs.

Primary forest in understorey; 110-1400 m alt.

Map on p. 313.

## SYNONYMS:

*Annickia atrocyanescens* (Robyns & Ghesq.) Setten & P. J. Maas = **Annickia ambigua**

*chlorantha* sensu auctt., non (Oliv.) Setten & P. J. Maas = **A. affinis**, **A. letestui**, **A. polycarpa**

*kwiluensis* (Robyns & Ghesq.) Setten & P. J. Maas = **A. ambigua**

*olivacea* (Robyns & Ghesq.) Setten & P. J. Maas = **A. ambigua**

*Enantia affinis* Exell = **Annickia affinis**

*chlorantha* var. *soyauxii* Engl. & Diels = **A. affinis**

## ANNONA (Volume 1: 23-25)

**Annona glabra** L.; Sosef & al., Check-list pl. vascul. Gabon: 50, 2006; Lisowski, Fl. Rép. Guinée 1: 48, 2009.

Map on p. 313.

**A. senegalensis** Pers.; Sosef & al., l.c.; Lisowski, l.c.; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 117, 2010. – Icon.: Fl. Eth. & Eritrea 2/1: 12, 2000; Bloesch & al., Pl. ligneuses Rwanda: 69, 2009.

100-1800 m alt.

Map on p. 313.

## ANONIDIUM (Volume 1: 24-25) / 4 (former account: 4)

BELE, M. Y. & T. L. P. COUVREUR (2010). Taxonomic revision of *Anonidium* (Annonaceae). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar): 68.

Replace the former account.

**Anonidium brieyi** De Wild; Bele & Couvreur, l.c.; Consp. Fl. Angol. 1/1: 15, 1937 (*A. friesianum*); Fl. W. Trop. Afr., ed. 2, 1/1: 51, 1954; Fl. Congo belge 2: 278, 1951; Sosef & al., Check-list pl. vascul. Gabon: 50, 2006. – Icon.: Fl. Gabon 16: 331, 1969.

syn.: *A. mannii* (Oliv.) Engl. & Diels var. *brieyi* (De Wild.) Fries; *A. friesianum* Exell

Differs from *A. mannii* by its narrower, lanceolate petals.

Moist rain-forest.

Map on p. 313.

## ANONIDIUM

**A. floribundum** Pellegr.; Bele & Couvreur, l.c.; Sosef & al., o.c.: 50-51.

See Volume 1: 24, and map on p. 25.

Rain-forest; 170-320 m alt.

**A. letestui** Pellegr.; Bele & Couvreur, l.c.; Sosef & al., o.c.: 51.

See volume 1: 24, and map on p. 25.

**A. mannii** (Oliv.) Engl. & Diels, excl. var. *brieyi* (De Wild.) R. E. Fries (= *A. brieyi*); Bele & Couvreur, l.c.; Sosef & al., o.c.: 51.

syn.: *Uvaria crassipetala* Engl. ex Engl. & Diels

See Volume 1: 24, and map on p. 25.

In Gabon: 50-770 m alt.

*Anonidium laurentii* Engl. & Diels is an invalid name as the original material is a mixture of plants from two different families.

## SYNONYMS:

*Anonidium friesianum* Exell = **Annonidium brieyi**  
*usambarensis* R. E. Fries = **Polyceratocarpus**

## ARTABOTRYS (Volume 1: 24-30)

**Artabotrys monteiroae** Oliv. – Icon.: Fl. Eth. & Eritrea 2/1: 7, 2000; Bloesch & al., Pl. ligneuses Rwanda: 69, 2009.

In Ethiopia riverine forest with *Syzygium*, *Tamarix*, *Adinia*, *Ficus*, *Sapium*; 1150-1800 m alt.

Map on p. 313.

**A. oliganthus** Engl. & Diels; Sosef & al., Check-list pl. vascul. Gabon: 51, 2006.

In Gabon: 650 m alt.

Map on p. 313.

## CLEISTOPHOLIS (Volume 1: 30/29)

**Cleistopholis patens** (Benth.) Engl. & Diels, incl. var. *klaineana* Pellegr. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 31.

Map on p. 313.

**C. staudtii** Engl. & Diels; Sosef & al., o.c.: 52.

In Gabon: 45 m alt.

Map on p. 315.

## DENNETTIA (Volume 1: 30, 29) / 0 (former account: 1)

*Dennettia tripetala* Bak. f. = **Uvariopsis tripetala**

## DUGUETIA (Volume 1: 30-31)

**Duguetia barberi** (Benth.) Chatron; Sosef & al., Check-list pl. vascul. Gabon: 52, 2006.

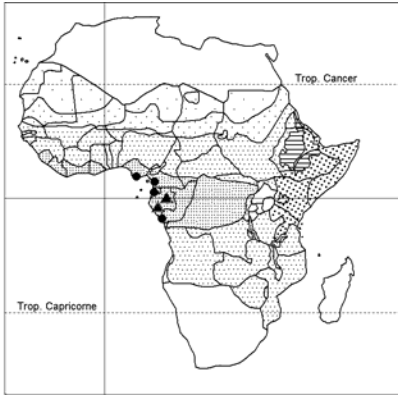
In Gabon: 120-400 m alt.

Map on p. 315.

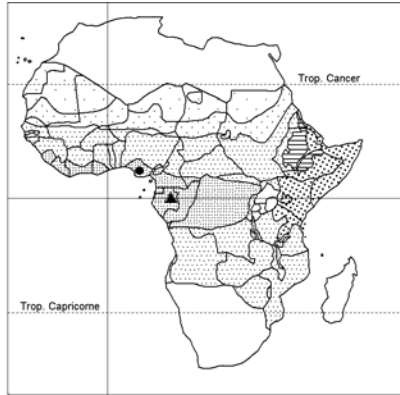
**D. confinis** (Engl. & Diels) Chatron; Sosef & al., l.c.

In Gabon: 8-500 m alt.

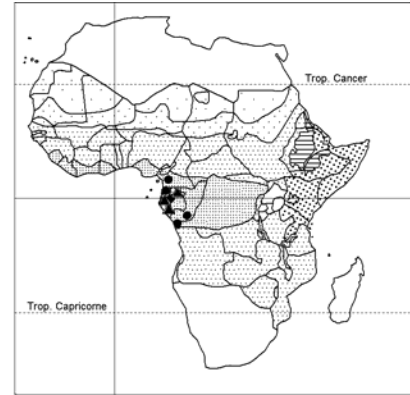
Map on p. 315.



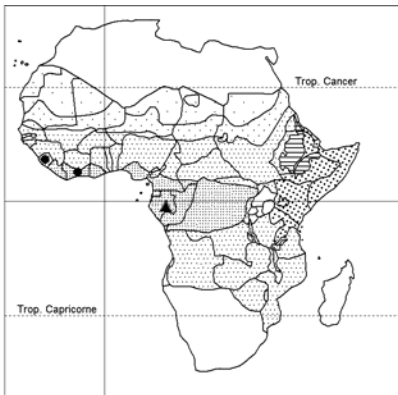
*Cleistopholis staudtii*



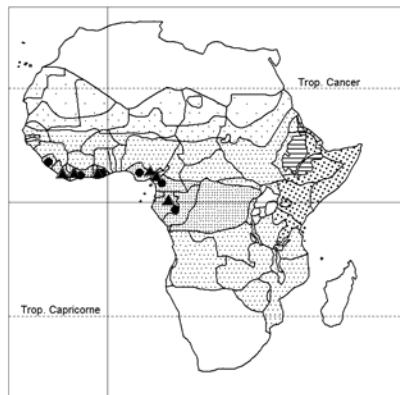
*Duguetia barteri*



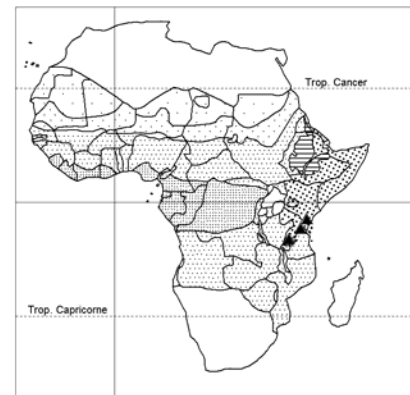
*Duguetia confinis*



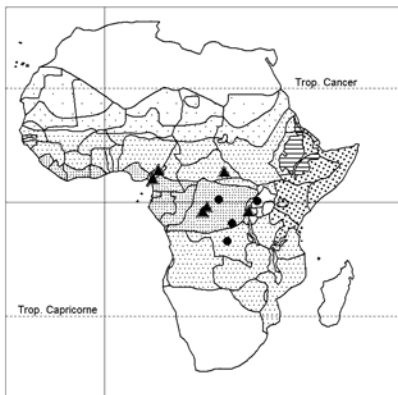
*Friesodielsia velutina*



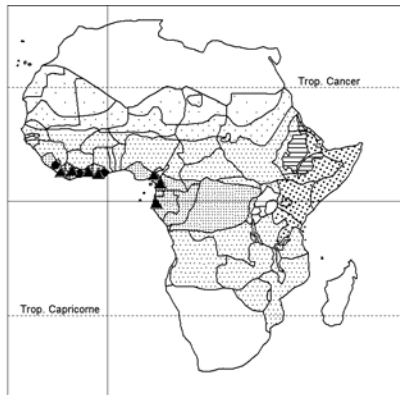
*Isolona campanulata*



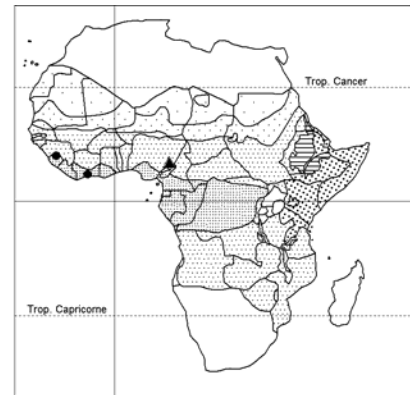
*Isolona cauliflora*



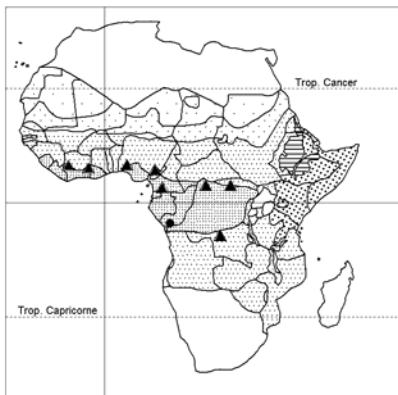
*Isolona congolana*



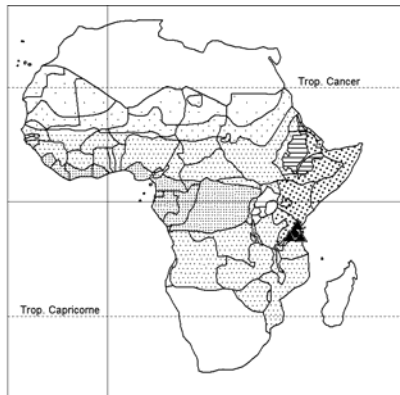
*Isolona cooperi*



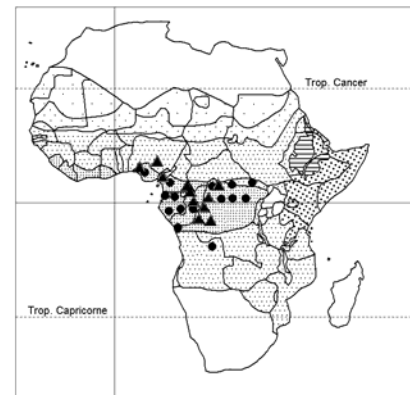
*Isolona deightonii*



*Isolona dewevrei*



*Isolona heinsenii*



*Isolona hexaloba*

**FRIESODIELSIA** (Volume 1: 32/31)

**Friesodielsia velutina** (Sprague & Hutch.) Steenis; Sosef & al., Check-list pl. vascul; Gabon: 53, 2006.

Map on p. 315.

*(GREENWAYODENDRON)*

*Greenwayodenron oliveri* (Engl.) Verdc. – See below under **Polyalthia**

**ISOLONA** (Volume 1: 33/34-35) / 15 (former account: 14)

COUVREUR, T. L. P. (2009). Monograph of the syncarpous African genera *Isolona* and *Monodora* (Annonaceae). *Syst. Bot. Monogr.* 87: 1-150 [30-88].

COUVREUR, T. L. P. & al. (2006). Description of four new species of *Monodora* and *Isolona* (Annonaceae) from Tanzania and an overview of Tanzanian Annonaceae diversity. *Adansonia, Sér.* 3, 28: 243-266 [253-260].

Some species are rarely represented in herbaria. Fruits are unknown in *I. letestui*; seeds unknown in *I. pleurocarpa*.

Replace the former treatment.

**Isolona campanulata** Engl. & Diels; Couvreur (2009): 34-36 (+ map). – Icon.: Engler & Diels in Engler, Monogr. Afrikan. Pflanzen-Familien...6, Anonaceae: pl. 27-C, 1901.

syn.: *I. soubreana* A. Chev. (1920).

Tree or shrub 10(-15) m; bole to 10(-15) cm d.b.h., often narrowly fluted to base of crown; branchlets dark green, glabrous; leaves ± sessile, lamina inserted laterally, elliptic, 10-18 × 3-7 cm; sepals large, foliaceous, glabrous, not appressed against flower tube; upper bracts sometimes leaf-like.

Rain-forest, primary and secondary; along rivers; 0-500 m alt.

Map on p. 315.

**I. cauliflora** Verdc. – Icon.: Couvreur (2009): 39.

Tree to 8 m; stem 10 cm d.b.h.; bark striate, smooth, grey to brown; young branchlets drying black, covered with short erect hairs, becoming grey and glabrous; leaves ± sessile, elliptic, 12-23 × 5-9 cm, coriaceous, glabrous and dark green above, lighter green beneath, acumen 1-2 cm long, midrib raised above; inflorescence cauliflorous, multiflowered, to 2 m long, departing from the trunk and growing on forest floor, young part green, fleshy, short appressed hairy; fruit lying on or sometimes buried in forest floor.

Rain-forest; along rivers, streams; on rocky soil; 20-500 m alt.

Map on p. 315.

**I. congolana** (De Wild. & T. Durand) Engler & Diels – Icon.: Couvreur (2009): 42, 43 (map).

syn.: *I. maitlandii* Keay

Tree 20(-30) m; bole to 45 cm d.b.h.; bark smooth, pale grey-brown; young branchlets dark brown to black, striate, densely covered with short reddish appressed hairs, becoming glabrous; leaves ± sessile, elliptic, 13-19 × 4-5 cm, sparsely hairy when young; corolla tube glabrous outside, hairy inside.

Rain-forest, primary and secondary; along rivers; farm bush; (450-)800-1700 m alt.

Leaves resembling those of *I. heinsenii*.

Map on p. 315.

## ISOLONA

**I. cooperi** Hutch. & Dalziel ex Cooper & Record – Icon.: Couvreur (2009): 46, 47 (map).

Shrub or tree 6-10(-18) m tall; stem to 20 cm d.b.h.; bark brown, coarsely rugulose; young branchlets *glabrous*, smooth (drying black); later becoming dark brown, striate; leaves oblong, 17-29 × 6-15 cm, shortly petiolate, *glabrous*, pale green beneath, dark green and ± shiny above, acumen 1-2 cm long, midrib prominent beneath; flowers bright yellow, *glabrous*, strongly sweet scented (persisting in herbarium material).

Rain-forest, primary and secondary; along rivers; on sandy soil; 0-300 m alt.

Resembling *I. campanulata* in shape of fruits and also *I. hexaloba* in shape of flowers, but differs from the latter in having the leaf lamina inserted at apex of petiole (not laterally).

Map on p. 315.

**I. deightonii** Keay – Icon.: Couvreur (2009): 49, 50 (map).

Tree to 5 m; bark grey brown; young branchlets with *dense curly reddish hairs*, becoming dark brown, striate; leaves inserted at apex of petioles, ± elliptic, 13-21 × 4-6 cm, shortly petiolate, glabrous above, sparsely covered with erect hairs beneath, acumen 1 cm long; petiole and midrib with short *curly hairs*; flowers green, with *curly reddish hairs*.

Rain-forest.

Very few collections known; not collected since 1967. Sites in forest N of Abidjan (Ivory Coast) have been logged, and turned into *Hevea* cultivations.

Map on p. 315.

**I. dewevrei** (De Wild. & Th. Durand) Engler & Diels – Icon.: Couvreur (2009): 52, 53 (map).

Shrub or tree to 15 m tall; stem to 20 cm d.b.h.; young branchlets glabrous, drying black; leaf lamina inserted laterally on petiole; leaves ± obovate-elliptic, 10-17 × 4-7 cm, petiole 4-15 mm long; lamina papyraceous, glabrous, base decurrent, acumen 1 cm long; flowers yellow with red centre, margins of petals hairy.

Evergreen moist forest, secondary forest, in understory; 0-860 m alt.

Very similar to *I. thonneri*.

Map on p. 315.

**I. heinsenii** Engler & Diels – Icon.: Couvreur (2009): 58, 59 (map).

Shrub or tree 3-6-12 m tall; stem to 15 cm d.b.h.; bark smooth, green-grey; branches horizontal; young branchlets black, short appressed hairy, rarely glabrous, becoming striate, glabrescent; leaves obovate-elliptic, 8-15-22 × 3-8 cm, short petiolate, (glabrous or) densely appressed hairy, acumen 1 cm long; flowers light yellow with red centre, hairy, lobes of petals curving inwards; fruits conspicuously 6-ribbed.

Rain-forest, mainly montane, rare in lowland; (500-)1000-1440 m alt.

Similar to *I. linearis* (having not ribbed fruits); also with similar habitat, their ranges are partially overlapping.

Map on p. 315.

**I. hexaloba** (Pierre) Engler – Icon.: Couvreur (2009): 62, 63 (map); Ann. Mus. Congo Belge Bot., Sér. 5, 3: pl. 8 (*I. solheidii*), 9 (*I. seretii*), 10 (*I. bruneelii*).

bas.: *Monodora hexaloba* Pierre

## ISOLONA HEXALOBA

syn.: *Isolona seretii* De Wild., incl. var. *grandifolia* De Wild.; *I. bruneelii* De Wild.; *I. pleurocarpa* Diels subsp. *nigerica* Keay

Tree 10-30-40 m; bole 50-60 cm Ø, fluted; bark smooth, brown or grey-green; young branchlets glabrous, drying black; leaves short petiolate, ovate-elliptic, 10-28 × 3-11 cm, glabrous, shiny dark green above, light green beneath, acumen 1-2 cm long; lamina inserted laterally; corolla greenish yellow becoming dark red, lobes coriaceous.

Forest primary and secondary, near rivers; also semi-deciduous forest; 0-700 m alt.

Resembling *I. cooperi*, but flowers without strong smell. Also similar to *I. pleurocarpa* (with decurrent leaf base and papyraceous corolla lobes) and to *I. lebrunii*.

Couvreur (2009: 63) notes that Pierre's species *Monodora hexaloba* is validly published (based on a detailed drawing by Delpy of the specimen Klaine 60, but lacking text).

Map on p. 315.

**I. lebrunii** Boutique – Icon.: Couvreur (2009): 68 (map).

(Shrub or) tree 6-15 m tall; bole to 40 cm d.b.h.; young branchlets finely rugulose, glabrous, dark grey, becoming grey, striate; leaf petiole (= long, glabrous) 6-10 mm long; lamina ± obovate, 10-25 × 3,5-8 cm, glabrous, apex acute; flowers yellow with a red centre.

Moist rain-forest; 1700-2100 m alt.

Few herbarium collections known; not collected since 1971 ("perhaps owing to the civil war in the region").

Similar to *I. hexaloba* in shape of corolla lobes.

Map on p. 319.

**I. letestui** Pellegr. – Icon.: Couvreur (2009): 78, 69 (map).

Shrub or tree 3-10 m tall; young branchlets glabrous, drying black, becoming striate; leaves short-petiolate, elliptic, 10-14 × 4-5 cm, papyraceous, glabrous, dark green, acumen 1-1,5 cm long; flowers green at base, lobes red, very long, linear (5-10 × 0,5 cm); fruit unknown.

Known from only 2 collections, the last from 1975.

Resembling *I. thonneri* (with shorter corolla lobes).

Map in Volume 1: 35.

**I. linearis** Couvreur – Icon.: Couvreur & al., *Adansonia*, Sér. 3, 28: 255, 256 (map), 2006; Couvreur (2009): 71, 72 (map).

Tree to 15 m; bole to 60 cm d.b.h.; bark smooth, brown-black; young branchlets glabrous (drying black), becoming striate, dark brown-grey; leaves short petiolate, oblong-elliptic, 14-25 × 5-9 cm, coriaceous, glabrous, acumen 0,5-1,7 cm long; corolla red, lobes glabrous, very variable in shape and size (1-3 × 0,3-0,8 cm).

Moist forest; 1100-1700 m alt.

Closely related to *I. heinsenii*.

Map on p. 319.

**I. pilosa** Diels – Icon.: Couvreur (2009): 78, 79 (map).

syn.: *I. theobromina* Exell

(Shrub or) tree 3-13 m tall; bole to 50 cm d.b.h.; young branchlets light brown, *densely curly hairy*, glabrescent; petiole 3-12 mm long, *densely curly hairy*; lamina obovate, 19-27 × 6-10 cm, papyraceous, *densely appressed hairy* beneath, sparsely so above, *midrib above densely hairy*, acumen 1-2 cm long; corolla yellow, *hairy*, but inner part of tube glabrous (*hairy* in *I. congolana*).

## ISOLONA PILOSA

Primary rain-forest; swampy forest; c. 420 m alt.

Disjunct.

Herbarium collections old, the latest one from 1998.

Map on p. 319.

**I. pleurocarpa** Diels – Icon.: Couvreur (2009): 45 (map).

syn.: *I. leucantha* Diels

Tree to 15-30 m; bole to 40-50 cm d.b.h., fluted; bark thick, black with grey markings; young branchlets glabrous (drying black) becoming longitudinally rugulose, dark grey; leaves elliptic, 8-15 × 3-6 cm, short petiolate, papyraceous, glabrous (also when young), dull dark green above, lighter beneath, base decurrent, acumen 1-1,5 cm long; lamina inserted laterally on petiole; corolla yellow with red tube, glabrous; fruit rounded, ribbed; seeds unknown.

Rain-forest; 0-100 m alt.

Resembling *I. hexaloba* in shape of corolla (they have been considered conspecific). This species has "conical and lumpy" fruits.

Map on p. 319.

**I. thonneri** (De Wild. & Th. Durand) Engl. & Diels – Icon.: Couvreur (2009): 84, 85 (map).

(Shrub or) tree 3-10 m tall; stem to 25 cm d.b.h.; bark smooth; young branchlets glabrous (drying black), becoming striate; leaves short-petiolate, obovate-elliptic, 11-20 × 4-7 cm, ± coriaceous, glabrous, dark green, acumen 1-2 cm long; corolla yellow, centre reddish, glabrous, lobes long, linear (1,4-3 × 0,4 cm), hanging vertically.

Rain-forest, near rivers and swamps; 450-750 m alt.

Related to *I. letestui* (with much longer corolla lobes); also similar to *I. linearis* in shape and size of corolla lobes; fruits resembling those of *I. dewevrei*, closely related.

Map on p. 319.

**I. zenkeri** Engl. – Icon.: Couvreur (2009): 84, 87 (map).

syn.: *Diospyros oblongicarpa* Gürke; *Maba oblongicarpa* Gürke in *Index Kewensis* (Ebenaceae).

(Shrub or) tree 2-7-15 m tall; stem to 15 cm d.b.h.; bark (dark) brown; younger branchlets glabrous (drying black), becoming finely rugulose; leaves short petiolate, obovate-oblongate, 16-23 × 6-8 cm, glabrous, coriaceous, acumen 1-2 cm long, lamina inserted at apex of petiole; corolla light red, verrucose when dried (due to presence of oil cells); lobes coriaceous with incurved margins.

Rain-forest near streams; secondary forest; in understory; 0-800 m alt.

Map on p. 319.

## SYNONYMS:

*Isolona bruneelii* De Wild. = ***Isolona hexaloba***

*leonensis* Sprague & Hutch. = ***I. campanulata***

*leucantha* Diels = ***I. pleurocarpa***

*maitlandii* Keay = ***I. congolana***

*pleurocarpa* Diels subsp. *nigerica* Keay = ***I. hexaloba***

*seretii* De Wild., incl. var. *grandifolia* De Wild.

= ***I. hexaloba***

*solheidii* De Wild. = ***I. hexaloba***

*soubreana* A. Chev. = ***I. campanulata***

*theobromina* Exell = ***I. pilosa***



**MONANTHOTAXIS** (Volume 1: 36-42)**Monanthotaxis capea** (E. G. Camus & A. Camus) Verdc.

ADOU YAO, C. Y. & al. (2010). Proposition d'inscription de *Monanthotaxis capea* (Annonaceae) de Côte d'Ivoire sur la liste rouge de l'UICN. In: VAN DER BURGT, J. & al., eds., *Systematique et Conservation des Plantes Africaines*: 445-449. Royal Botanic Gardens, Kew [a list of localities and collectors is presented].

Map in Volume 1: 37.

**M. ferruginea** (Oliv.) Verdc.; Fl. Eth. & Eritrea 2/1: 8, 2000; Sosef & al., Check-list pl. vascul. Gabon: 54, 2006.

Also in SW Ethiopia (ca. 1000 m alt.); map on p. 319.

**M. letouzeyi** (Le Thomas) Verdc.; Sosef & al., o.c.: 55.

In Gabon: 500 m alt.

Map on p. 319.

**M. parvifolia** (Oliv.) Verdc.; Lisowski, Fl. Rép. Guinée 1: 51, 2009 (*Popowia oliveriana*). – Icon.: Fl. Eth. & Eritrea 2/1: 9, 2000 (subsp. **kenyensis** Verdc.).

Also in S Ethiopia (ca. 1400 m alt.); map on p. 319.

**M. sp. nov.** recorded from Cameroon, Lebiale Highl. – See Harvey & al., *ibid.*: 109, 2010.**MONODORA** (Volume 1: 43-44 / 14 (former account: 13)COUVREUR, T. L. P. (2009). See above under **Isolona**.COUVREUR, T. L. P. & al. (2006). See above under **Isolona**.

Fruit unknown in one species.

Replace the former treatment.

**Monodora angolensis** Welw., incl. var. *sempervirens* Oliv., var. *decidua* Hiern and var. *microphylla* Hiern – Icon.: Couvreur (2009): 92, 93 (map, geographical coordinates wrong).syn.: *M. louisii* Boutique

(Shrub or) tree 3-20 m tall; bole to 80 cm d.b.h.; bark ash grey-black, vertically shallowly furrowed; young branchlets glabrous; leaves short petiolate, ± obovate, 4-20 × 2-7 cm, glabrous; flowers solitary, leaf-opposed, pendulous, red-brown with yellow spots; inner petals clawed, non-undulate, glabrous.

Primary and secondary rain-forests; forest gallery; sometimes dry forest; 0-1800 m alt.

Very variable in size of leaves and flowers.

Map on p. 319.

**M. carolinae** Couvreur – Icon.: Couvreur & al. (2006): 249; Couvreur (2009): 95, 96 (map).syn.: *M. sp. A.* sensu Fl. Trop. E. Afr., Annonaceae: 122, 1971.

Tree or shrub to 6 m tall; bark grey, striated, with white lenticels; young branchlets glabrous, sometimes ± pubescent, soon glabrescent (drying black); leaves coriaceous, short petiolate, glabrous (young ones sometimes pubescent), oblanceolate, 8-10 × 4-6 cm; flowers solitary, axillary, pendulous, flowering before or during leaf flush, small (petals 15-29 mm long), sepals with hairy margins.

Semi-deciduous coastal forest, on deep leached sandy soil; 50-800 m alt. – Growing with *M. minor*.Closely related to *M. stenopetala*.

Map on p. 319.

## MONODORA

**M. crispata** Engl., incl. var. *klaineana* Engl. – Icon.: Couvreur (2009): 92, 98 (map). – Neotype: Bos 6224, and lectotype (var. *klaineana*): Klaine 1435.

Climbing (sometimes, shrub or) tree 9-20 m tall; stem to 30 cm d.b.h.; bark dark brown with vertical lenticels; young branchlets glabrous, drying black; leaves short petiolate, obovate-elliptic, 5-17 × 3-6 cm, glabrous, dark green, acumen 0.3-1 cm long; flowers solitary, yellow striate red-brown, leaf-opposed, sometimes extra-axillary, pendulous; inner and outer petals crisped; fruit conspicuously 6-7-ribbed.

Rain-forest, primary and secondary, along streams; on sandy soil; 0-400 m alt.

Resembling *M. angolensis*, but flowers different.

Map on p. 319.

Sometimes planted as an ornamental, e.g. also in the Netherlands.

**M. globiflora** Couvreur – Icon.: Couvreur & al. (2006): 251; Couvreur (2009): 100, 101 (map).syn.: *M. sp. B* sensu Fl. Trop. E. Afr., Annonaceae: 123-124, 1971.

Tree 6-12 m; stem to 30 cm d.b.h.; bark grey with white lenticels; young branchlets densely short erect hairy, rarely glabrous (drying black), glabrescent; leaves short petiolate, lamina inserted on side of petiole, obovate-elliptic, 12-21 × 4-7 cm, papyraceous, short erect hairy, rarely glabrous, with a clear percurrent tertiary venation (unique in the genus); flowers solitary, colour varying from green to yellow with white or red streaks, leaf-opposed, pendulous; inner petals longer than the claw; fruit irregularly round, reticulate, glabrous.

Rain-forest, on well-drained brown sandy loam with vast areas of rock faces; 1700-2000 m alt.

Known only from the E Arc Mountains, Tanzania (Iringa, Morogoro).

Map on p. 321.

**M. grandidieri** Baill. – Icon.: Couvreur (2009): 104, 105 (map); Engler & Diels, Annonaceae in Engler, Monograph. afr. Pflanzenfam. u. -Gattungen 6: pl. 28F, 1901.syn.: *M. veithii* Engl. & Diels

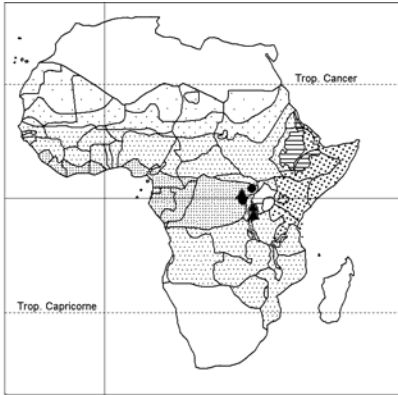
(Shrub or) much-branched tree, 2-12 m tall; stem to 15 cm d.b.h.; bark grey or brown, ± smooth, somewhat longitudinally striate, sometimes peeling off; young branchlets green, densely short erect hairy or glabrous, becoming black with white lenticels, sparsely hairy to glabrous; leaves short petiolate, base cordate, ± obovate, 4-25 × 3-10 cm, lamina inserted at apex of hairy petiole, short appressed hairy to glabrous; flowers solitary, leaf-opposed, borne on young shoots before or during leaf flush; petals short appressed hairy, greenish-yellow with red-purple streaks, ± linear; fruit ± round, ± rugose, glabrous to densely hairy.

Rain-forest; thicket; 0-900 m alt.

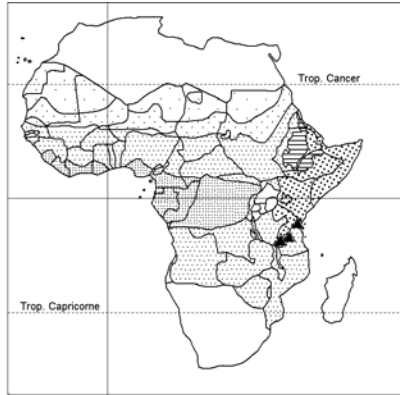
Very variable in size of flowers and indumentum of leaves and branchlets.

Resembling *M. myristica* by the cordate leaf base; and *M. stenopetala* by the ± linear outer petals.

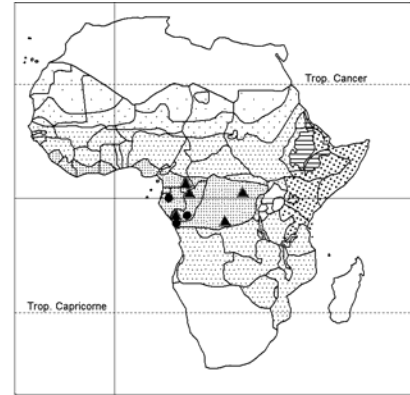
Map on p. 321.



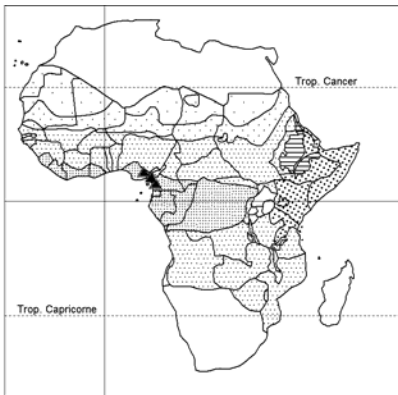
*Isolona lebrunii*



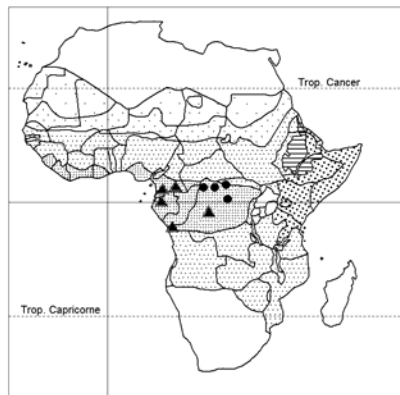
*Isolona linearis*



*Isolona pilosa*



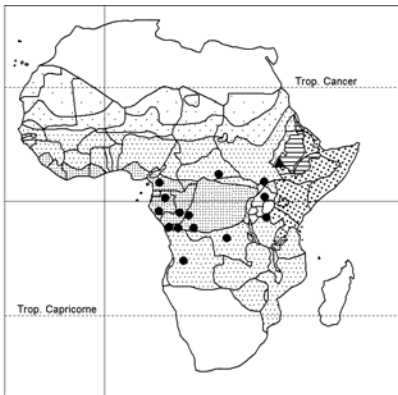
*Isolona pleurocarpa*



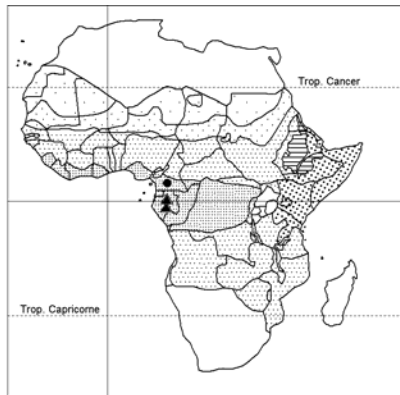
*Isolona thonneri*



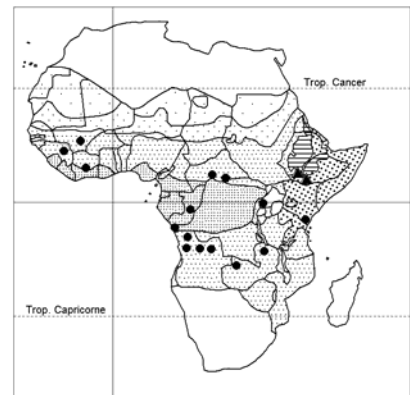
*Isolona zenkeri*



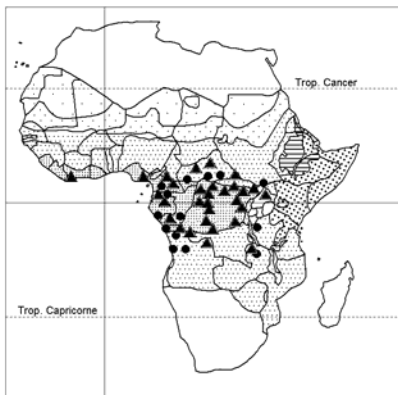
*Monanthotaxis ferruginea*



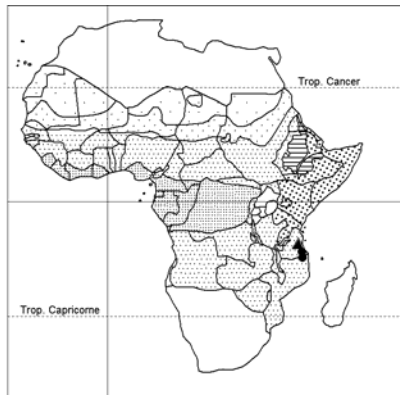
*Monanthotaxis letouzeyi*



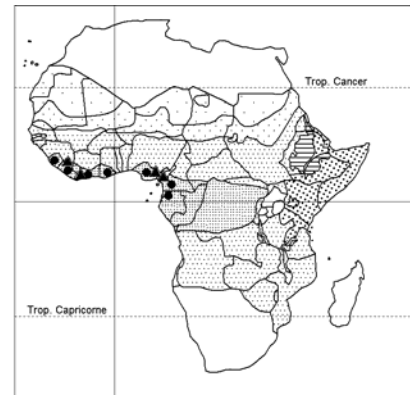
*Monanthotaxis parvifolia*



*Monodora angolensis*



*Monodora carolinae*



*Monodora crispata*

## MONODORA

**M. hastipetala** Couvreur – Icon.: Couvreur & al. (2006): 252; Couvreur (2009): 107, 101 (map).

Tree to 8 m; stem to 5 cm d.b.h.; bark grey with white lenticels; young branchlets glabrous, drying black, older ones grey, striate; leaves ± sessile, obovate-elliptic, 10-12 × 3-4 cm, glabrous, acumen 1-1.5 cm long; flowers solitary, leaf-opposed, pendulous; inner petals with short straight hairs on inner surface, white, connivent at centre (resembling *M. junodii*); fruit ovoid, glabrous, green white-spotted.

Dry scrub; riverine coastal forest; 200-400 m alt.

Quite different from the sympatric *M. minor* and *M. carolinae*.

Map on p. 321.

**M. junodii** Engl. & Diels, incl. var. *macrantha* J. Paiva – Icon.: Couvreur (2009): 104, 110 (map); Coates Palgrave, Trees south. Afr., ed. 3: 212, ill. 39, 2002. – Type: Junod 411 (B) extant!

Shrub or tree 7-8 m tall; stem to 10 cm d.b.h.; bark light grey to brown, striate; young branchlets blackish with white lenticels, glabrous; leaves short-petiolate, obovate-elliptic, 5-16 × 2-6 cm, glabrous, acumen < 1 cm long; flowers solitary, leaf-opposed, pendulous, developing before or during leaf flush; *margins* of outer petals *straight*; fruit round, wrinkled.

Coastal riverine thicket; moist forest; evergreen coastal forest; 0-900 m alt.

Variable in size of leaves, petioles, pedicels, and in shape of leaves.

NE S. Africa.

Resembling *M. zenkeri*, *M. hastipetala*.

Map on p. 321.

**M. laurentii** De Wild. – Icon.: Couvreur (2009): 112, 113 (map).

Tree to 4 m; young branchlets glabrous (drying black), later dark brown; leaves short petiolate, ± ovate, 12-14 × 3.5-4.5 cm, glabrous, *acumen 1.5-2 cm long*; flowers solitary, leaf-opposed, pendulous, on old branches or on new branchlets; petals non-undulate (like *M. zenkeri*, *M. junodii*); outer petals with straight margins; *inner petals with ribbon-like hairs* inside; fruit conical, apiculate, conspicuously 5-6-ribbed, glabrous.

Primary rain-forest; 400-500 m alt.

Old collections only known from Zaire-Congo, not collected since 1960; collection from Gabon recent (2003).

Map on p. 321.

**M. minor** Engl. & Diels – Icon.: Engler & Diels, Anonaceae in Engler, Monogr. afr. Pflanzen-Fam. u. -Gattungen 6: pl. 28A, 1901; Couvreur (2009): 115, 116 (map).

Tree with several stems 6-7 m tall; stem to 5 cm d.b.h.; bark smooth, blue-grey; young branchlets green, smooth, glabrous, with a *grey-bluish wax layer* on dried material; older ones dark grey-brown; leaves short petiolate, ± obovate, 7-13 × 3.5-6 cm, coriaceous, glabrous, acumen 1 cm long; *inflorescences erect* above foliage, of 2-3 flowers, leaf-opposed or supra-axillary, born during leaf flush; inner petals connivent at base (cf. *M. carolinae*), with long (2 mm) straight hairs inside; fruit ± ovoid, apiculate, smooth, glabrous.

Woodland; coastal wet forest; thicket; 100-780 m alt.

Resembling *M. carolinae* (flowers).

Map on p. 321.

## MONODORA

**M. myristica** (Gaertner) Dunal, ? incl. fa. *atypica* Tiss. & Sill. – Icon.: Gaertner, Fruct. sem. pl. 2: pl. 125, 1791 (sub *Annona*); Bot. Mag.: pl. 3059, 1831; Engler & Diels, Anonaceae, in Engler, Monogr. afr. Pflanzen-Fam. u. -Gattungen 6: pl. 30A, 1901; Couvreur (2009): 119, 120 (map). – African or false nutmeg.

syn.: *M. borealis* Scott-Elliot; *M. claessensii* De Wild.; *M. unwinii* Hutch. & Dalziel

Tree 5-20-40 m; bole 0.4-1 m Ø, cylindrical, slightly fluted and fissured; crown drooping; bark pale grey; young branchlets with blue-greyish wax layer, older ones ash-grey to brown; leaf petiole 0.8-1.4 cm long, lamina inserted laterally, obovate-elliptic, 11-50 × 4-14 cm, glabrous, green above, paler beneath, acumen 1-1.5 cm long; flowers solitary, leaf-opposed, pendulous, pedicels very long (7-27 cm) with undulate upper bract; *fruit round, smooth*, finely ribbed, *black*, 9-15 cm Ø.

Rain-forest, primary and secondary; along rivers, near marshes; on sandy or rocky soils; 0-1600 m alt.

Bioko/Fernando Poo, S. Tomé, Principe.

Described on a plant cultivated in Jamaica, obtained from Banks (holotype, BM). The aromatic seeds with spicy taste used as an alternative to nutmeg (*Myristica fragrans*); eaten grilled or squashed; also used as beads for necklaces.

Resembling *M. undulata*, *M. laurentii*.

Map on p. 321.

**M. stenopetala** Oliv. – Icon.: Coates Palgrave, Trees south. Afr., ed. 3: 212, 2002 (leaf); Couvreur (2009): 122 (map); Engler & Diels, Anonaceae, in Engler, Monogr. afr. Pflanzen-Fam. u. -Gattungen 6: pl. 28E, 1901.

Shrub or tree 7-8 m; bark of stem smooth, grey with black lenticels; young branchlets dark green, densely short hairy (hairs erect and appressed); older ones ash-grey, glabrous to sparsely hairy; leaves short petiolate, elliptic, 5-13 × 2-4 cm, short appressed hairy, glabrous above with age; flowers solitary, pendulous, leaf-opposed, born on old leafless branches before leaf flush; *outer petals non-undulate*, glabrous, yellow; inner petals with long (2 mm) curly hairs inside, glabrous outside; *fruit* ellipsoid, 7-8 cm long, 4 cm Ø, *finely rugose*, glabrous.

Dense thickets; woodland; 100-500 m alt.

Has not been collected for > 30 years.

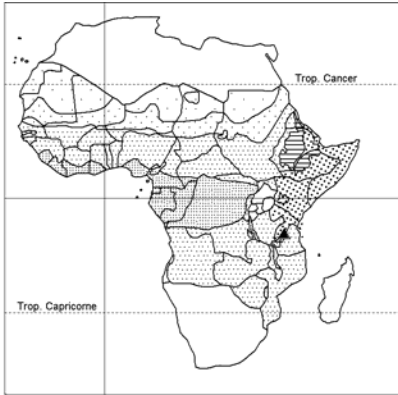
Map on p. 321.

**M. tenuifolia** Benth., excl. var. *schlechteri* Engl. (identity unknown); Lisowski, Fl. Rép. Guinée 1: 50, 2009. – Icon.: Engler & Diels, Anonaceae in Engler, Monogr. afr. Pflanzen-Fam. u. -Gattungen 6: pl. 28B, 1901; Couvreur (2009): 124, 125 (map). – Holotype: Barter 3298 (K).

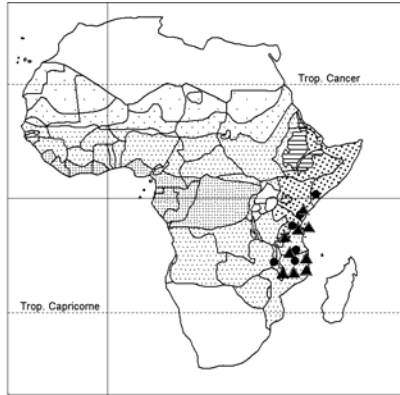
syn.: ? *M. klaineana* Pierre ex Engl. & Diels; *M. cabrae* De Wild.

Tree 20-30 m; bole to 60 cm Ø; bark dark grey to greenish, reticulate-striated dark green or with white lenticels; young branchlets green to brown, glabrous; leaves short petiolate, ± ovate, 6-21 × 2-8 cm, glabrous, paler green beneath, acumen 0.5-1 cm long; flowers solitary, usually leaf-opposed, pendulous, born on old branches before or during leaf flush, yellow-green with red brown markings; inner petals with 2 small hairy appendages halfway up the laminae; young fruit with grey-blue wax layer, mature fruit round, smooth, glabrous, edible.

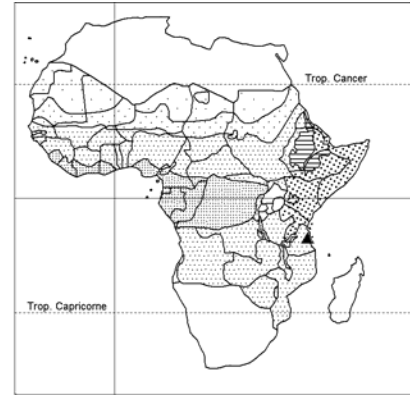
Evergreen rain-forest, primary and secondary; forest gallery; disturbed and deciduous forests; sometimes savanna; on sandy soil; 0-800 m alt.



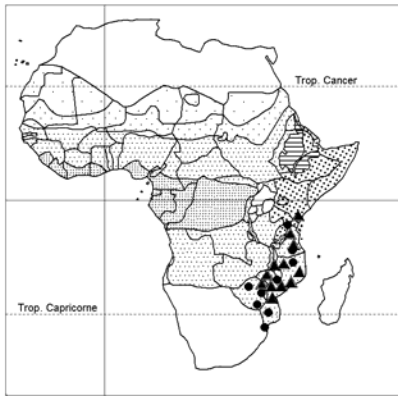
*Monodora globiflora*



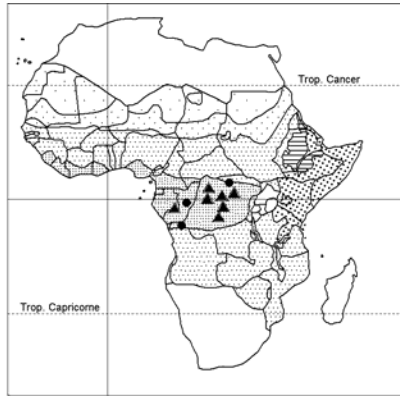
*Monodora grandidieri*



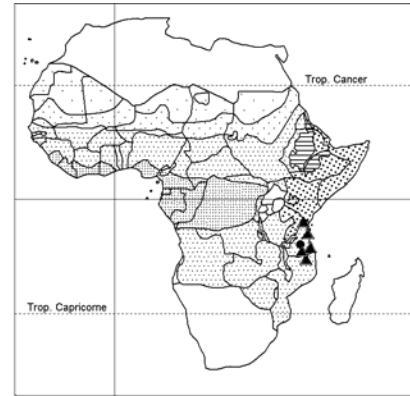
*Monodora hastipetala*



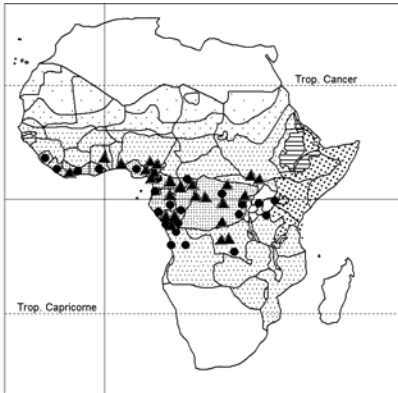
*Monodora junodii*



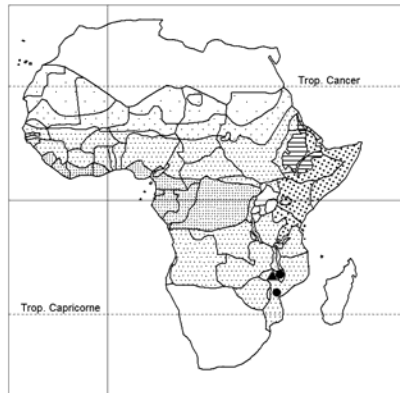
*Monodora laurentii*



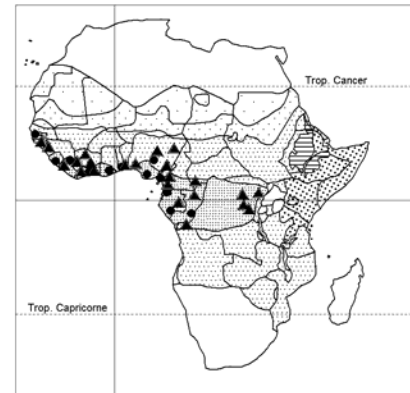
*Monodora minor*



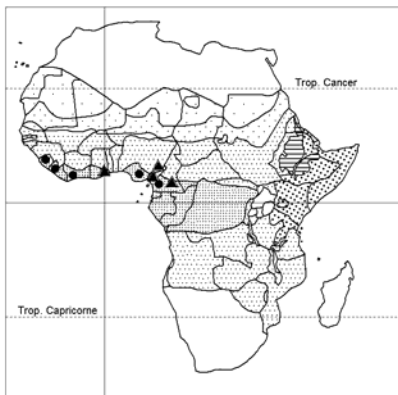
*Monodora myristica*



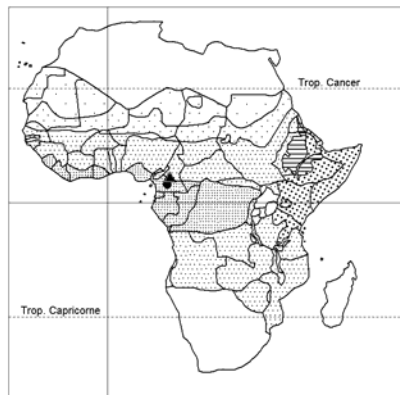
*Monodora stenopetala*



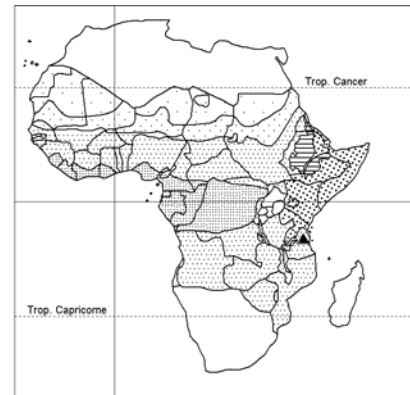
*Monodora tenuifolia*



*Monodora undulata*



*Monodora zenkeri*



*Mwasumbia alba*



## MONODORA TENUIFOLIA

Bioko/Fernando Poo.

Seeds, aromatic, used as condiment.

Related to *M. crispata*.

Map on p. 321.

**M. undulata** (P. Beauv.) Couvreur – Icon.: Palisot de Beauvois, Fl. Owar. 1: fig. 16, 1804 (sub gen. *Xylopia*); Couvreur (2009): 129, 130 (map); Engler & Diels, Anonaceae in Engler, Monogr. afr. Pflanzen-Fam. u. Gattungen 6: pl. 29A, 30B, 1901 (*M. preussii*).

bas.: *Xylopia undulata* P. Beauv. (excl. fruit).

syn.: *Unona undulata* (P. Beauv.) Dunal; *Monodora grandiflora* Benth., nom. superfl.; *M. brevipes* Benth.; *M. preussii* Engl. & Diels

Tree 13-20 m; trunk to 1 m Ø; bark brown to greyish, smooth; young branchlets glabrous (drying black); older ones ash-grey to pale brown; leaves short petiolate, ± obovate, 10-40 × 8-15 cm, lamina inserted laterally on petiole, glabrous; flowers solitary, leaf-opposed, sometimes extra-axillary, pendulous; inner petals sparsely erect hairy inside, yellow spotted brown-purple, connivent along the margins over receptacle, margins straight; fruit ovoid, glabrous, smooth, farinose.

Primary and secondary rain-forests; along rivers; swamps; 0-700 m alt.

Bioko/Fernando Poo, Principe.

Closely resembling (and confused with) *M. myristica* by their large leaves and connivent inner petals, but *M. undulata* has smaller flowers and non-undulate upper bract and farinose fruit.

The fruit figuring in Palisot de Beauvois' plate is apocarpous with several monocarps, i.e. not a species of *Monodora* (the original description does not include the fruit!, nor the holotype at G-DC).

Map on p. 321.

**M. zenkeri** Engl. – Icon.: Engler & Diels, Anonaceae in Engler, Monogr. afr. Pflanzen-Fam. u. -Gattungen 6: pl. 28c, 1901; Couvreur (2009): 129, 132 (map).

Climbing shrub or tree to 6 m tall; bark dark grey-brown with pale brown lenticels; young branchlets glabrous, rarely sparsely appressed hairy (drying black), older ones glabrous; leaves short petiolate, obovate-elliptic, 10-15 × 4-5 cm, glabrous; flowers solitary, extra-axillary or sometimes leaf-opposed, pendulous; outer petals with 2 small lobes; outer and inner petals with straight margins, white or pale green tinged dark red; fruit unknown.

Rain-forest, secondary and disturbed; 600-700 m alt.

Resembling *M. junodii*.

Known from only 8 collections, the latest known made in 1978.

Map on p. 321.

## DOUBTFUL NAMES OR NOMINA NUDA:

*Monodora gibsonii* Bullock ex Eggeling & al., Check-lists trees & shrubs Brit. Emp. 1, Uganda 20, 1935, nom. nud.

*hirsuta* E. Peter, Tanganyika Terr. Ch. Lists 2: 42, 1949, nom. nud.

*klaineana* Pierre ex Engl. & Diels, Monogr., 6 Anonaceae: 90, 1901, pro syn. *M. tenuifolia* Benth.

*taylori* Engl., ms name only.

*tenuifolia* Benth. var. *schlechteri* Engl.; type destroyed, identity uncertain.

## MONODORA

## SYNONYMS:

*Monodora borealis* Scott-Elliot = **Monodora myristica**

*brevipes* Benth. = **M. undulata**

*cabrae* De Wild. = **M. tenuifolia**

*claessensii* De Wild. = **M. myristica**

*congolana* De Wild. & T. Durand = **Isolona congolana**

*dewevrei* De Wild. & T. Durand = **I. dewevrei**

*durieuxii* De Wild. = **Monodora angolensis**

*gibsonii* Bullock ex Eggeling, nom. nud. = ?

*gibsonii* Bullock ex Burt Davy = ? **M. angolensis**

*grandiflora* Benth. = **M. undulata**

*hexaloba* Pierre = **Isolona hexaloba**

*hirsuta* E. Peter, nom. nud. = ? (**M. grandidieri**)

*klaineana* Pierre ex Engl. & Diels [pro syn. *M. tenuifolia* Benth.] = **M. ? tenuifolia**

*letestui* Pellegr. = **M. angolensis**

*louisii* Boutique = **M. angolensis**

*microcarpa* Dunal = **Diospyros cargillia** F. Mueller (*Ebenaceae*)

*preussii* Engl. & Diels = **Monodora undulata**

*somalensis* Chiov. = **M. grandidieri**

sp. A. sensu F.T.E.A. = **M. carolinae**

sp. B. sensu F.T.E.A. = **M. globiflora**

*stocksii* Sprague = **M. grandidieri**

*taylori* Engl., nom. nud. = ?

*tenuifolia* Benth. var. *schlechteri* Engl. = ?

*thonneri* De Wild. & T. Durand = **Isolona thonneri**

*unwinii* Hutch. & Dalziel = **Monodora myristica**

*veithii* Engl. & Diels = **M. grandidieri**

## MWASUMBIA / 1

syn.: *Annonaceae*, species of uncertain generic position sensu Verdcourt in Fl. Trop. E. Afr. Annonaceae: 127-128, 1971, p.p.

Relationships with *Greenwayodendron* (*Polyalthia*) and *Polyceratocarpus*.

Add this new genus to former treatment.

**Mwasumbia alba** Couvreur & D. M. Johnson – Icon.: Syst. Bot. 34: 268 (pollen), 271, 2009.

syn.: See above (coll. Semsei 810, July 1952).

Tree 2-3 m; stem 3-5 cm Ø; branchlets slender, densely erect hairy, soon glabrescent; leaves short petiolate, obovate-elliptic, 7-14 × 3-6 cm, ± glabrous, acumen 0.5-2 cm long; inflorescence axillary, sometimes cauliflorous, 1-flowered; buds not enclosed in sepals; flowers bisexual with 2 whorls of 3 free petals; sepals 3; petals (cream-)white, sericeous outside, glabrous inside, drying black; carpels 4 or 3; monocarps ellipsoid, 1.8-2.5 × 1-1.5 cm, sessile, densely covered with short dark brown hairs and sparse longer light brown hairs; seed ± 2 per monocarp.

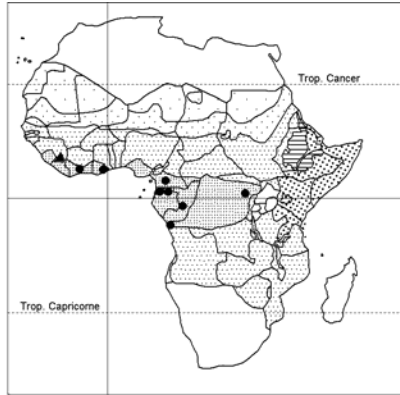
Coastal rain-forest, in a karstic landscape with large isolated blocks of marble, soil of dolomitic marble base rock; 200-500 m alt.

Occurring in a single known locality (Tanzania, Kimboza Forest Reserve, Uluguru Mts). Collected 7 times since 1952. The Reserve was severely logged in the 1980s.

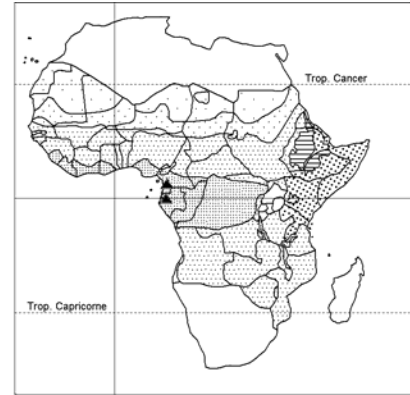
Map on p. 321.



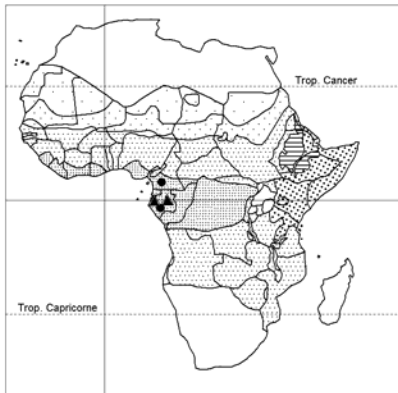
*Neostenanthera robsonii*



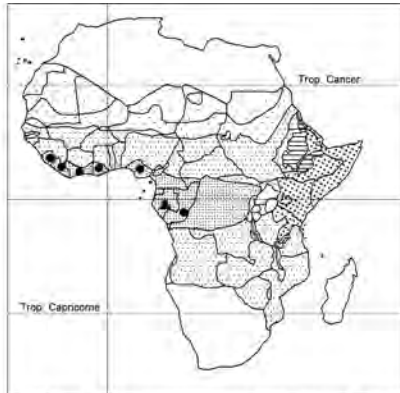
*Piptostigma fasciculatum*



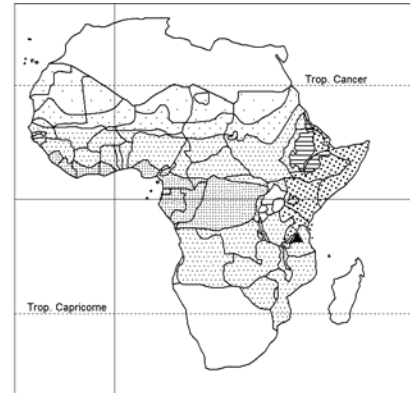
*Piptostigma macranthum*



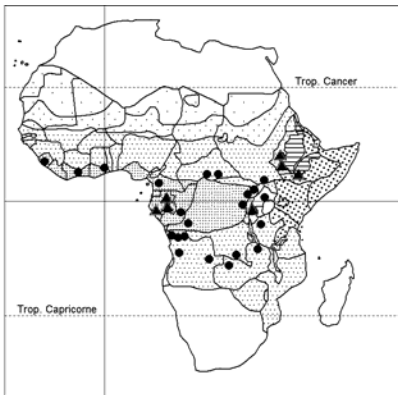
*Piptostigma multinervium*



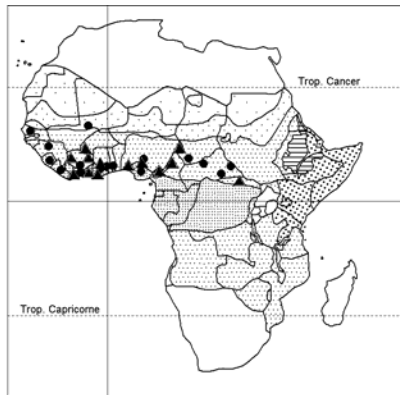
*Polyalthia (Greenwayodendron) oliveri*



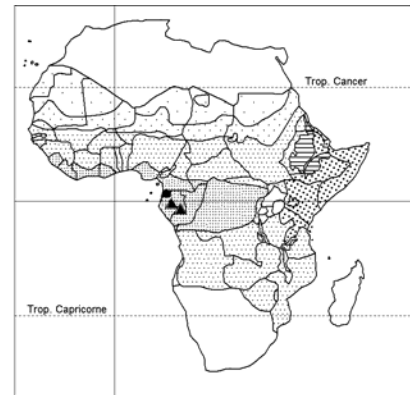
*Toussaintia patriciae*



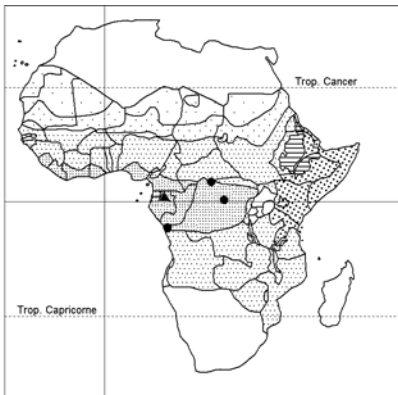
*Uvaria angolensis*



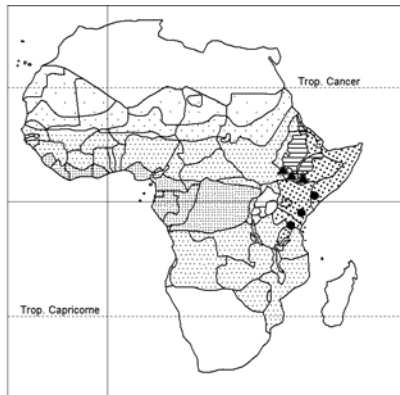
*Uvaria chamae*



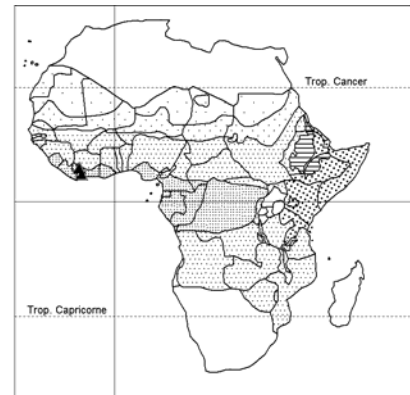
*Uvaria clavata*



*Uvaria laurentii*



*Uvaria leptocladon*



*Uvaria sassandrensis*

**NEOSTENANTHERA** (Volume 1: 44-45)

**Neostenanthera hamata** (Benth.) Exell – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 33, 2009.

Also in the Ziama Massif of SE Guinea.

Map in Volume 1: 45.

**N. robsonii** Le Thomas; Sosef & al., Check-list pl. vascul. Gabon: 56, 2006.

In Gabon: 200-800 m alt.

Map on p. 323.

**PIPTOSTIGMA** (Volume 1: 46/45, 47) / 12  
(former account: 11)

**Piptostigma fasciculatum** (De Wild.) Boutique; Lisowski, Fl. Rép. Guinée 1: 50-51, 2009; Sosef & al., Check-list pl. vascul. Gabon: 56, 2006.

Map on p. 323.

Add the following species:

**P. macranthum** Mildbr. & Diels; Sosef & al., l.c.

Tree; stem thin; crown small; young branchlets silky velutinous; leaves short-petiolate, densely pilose when young, later coriaceous, glabrous and ± shiny above, minutely pilose below; inflorescence ca. 5 cm long, ± branched shoots; flowers large, yellowish, downy hairy outside; inner petals to 8 × 2,3 cm; monocarps ellipsoid, 5 × 4 cm.

Ecology not recorded; 50-100 m alt.

Map on p. 323.

**P. multinervium** Engl. & Diels; Sosef & al., l.c.

In Gabon: 5-600 m alt.

Map on p. 323.

**POLYALTHIA** (Volume 1: 46-47)

In recent flora lists treated under **Greenwayodendron**.

**Polyalthia oliveri** Engl.; Sosef & al., Check-list pl. vascul. Gabon: 53, 2006.

syn.: *Greenwayodendron oliveri* (Engl.) Verdc.

In Gabon: 5 m alt.

Map on p. 323.

**POLYCERATOCARPUS** (Volume 1: 40-49) / 9  
(former account: 8)

BELE, M. Y. & T. L. P. COUVREUR (2010). See above under **Anonidium**.

Add the following species (transferred from *Anonidium*):

**Polyceratocarpus usambarensis** (R. E. Fries) ? ... ; Bele & Couvreur, l.c;

bas.: *Anonidium usambarensis* R. E. Fries

See Volume 1: 24, and map on p. 25.

**TOUSSAINTIA** (Volume 1: 48-49) / 4 (former account: 3)

Add the following species:

**Toussaintia patriciae** Q. Luke & Deroin – Icon.: J. E. Afric. Nat. Hist. 94: 167-169, 172 (comparative drawings of all *T.* species, androgynophores), 2005.

## TOUSSAINTIA PATRICIAE

Erect or scandent shrub or climbing tree to 5 m tall; stem to 3 cm Ø; bark pale; branchlets green (drying dark brown), minutely dark ferruginous hairy, soon replaced by reticulate bark with protruding reddish brown lenticels; leaves ovate-elliptic-obovate, 2-11 × 1-4 cm, strongly discolorous, with minute ferruginous hairs, soon glabrescent, apex obtuse, margins strongly undulate; inflorescences 1-3-flowered, terminal or axillary, crowded at tips of twigs; sepals reflexed, thick, ovate, c. 2 × 1 cm; petals 6-12, white in 2-3 whorls, ± oblong, 2-4 × 0,5-1 cm, glabrous inside with rose middle line; androgynophore cylindrical; stamens ± 850 [sic!], without filament; carpels 9-11; fruit unknown.

Ridge in montane forest; 1400-1800 m alt.

Known from 3 collections (2001), 2 in Udzungwa Mountain Natl. Park, Tanzania, 1 in Ndundulu Forest Reserve (2004).

Distinctive by its long receptacle (androgynophore) and irregular double corolla. Similar to *T. hallei*. The sympatric *T. orientalis* has smaller flowers with a regular corolla of 6 petals in 2 whorls.

Map on p. 323.

## (UNONA)

Add the following synonym:

*Unona undulata* (P. Beauv.) Dunal = **Monodora undulata**

**UVARIA** (Volume 1: 48-57) / 61 (former account: 60)

LINLIN ZHOU & al. (2009). Molecular phylogenetic support for a broader delimitation of *Uvaria* (Annonaceae), inclusive of *Anomianthus*, *Cyathostemma*, *Ellipeia*, *Ellipeopsis* and *Rauwenhoffia*. *Syst. Biodiversity* 7: 249-258.

LINLIN ZHOU & al. (2010). Molecular phylogenetics of *Uvaria* (Annonaceae): relationships with *Balonga*, *Dasoclema* and Australian species of *Melodorum*. *Bot. J. Linn. Soc.* 163: 33-43.

**Uvaria angolensis** Welw. ex Oliv.; Sosef & al., Check-list pl. vascul. Gabon: 57, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 5, 2000 (var. **angolensis**); Bloesch & al., Pl. ligneuses Rwanda: 71, 2009.

In Ethiopia, riverine forest with *Syzygium*, *Aningeria*, *Sapium*; 1400-1700 m alt.

Map on p. 323.

**U. chamae** P. Beauv.; Bongers, F. & al., eds., Forest climbing plants of West Africa: 25, 2005 (map).

Map on p. 323.

**U. clavata** Pierre ex Engl. & Diels; Sosef & al., Check-list pl. vascul. Gabon: 57, 2006.

In Gabon: 20-39 m alt.

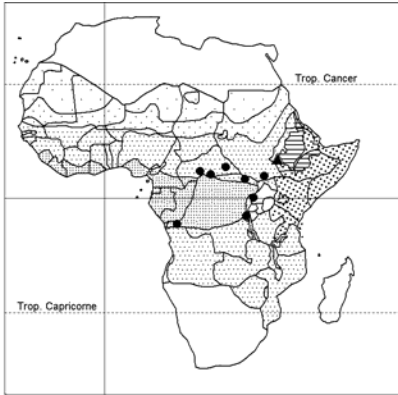
Map on p. 323.

(**U. cornuana** Engl. & Diels); Sosef & al., l.c.

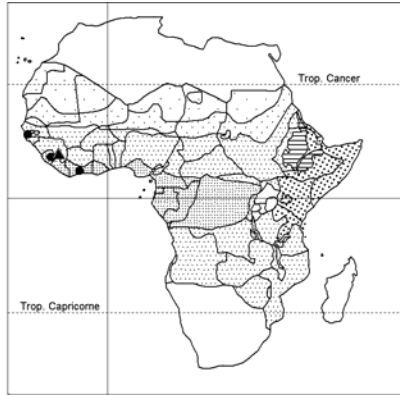
According to A. Le Thomas (Fl. Gabon 16, Annonacées: 79-80, 1969) this plant is insufficiently known. The holotype (B) is composed of 2 leaves and a flower. It was collected on cultivated material derived from a gathering by Klaine (s.n., s.l.) in January, 1899.

Small shrub; young branchlets slender, rusty pubescent, hairs simple or in fascicles, wavy; leaves short-petiolate, membranous, oblong, 8 × 3 cm, nearly glabrous; flowers rusty stellate hairy; fruit unknown.

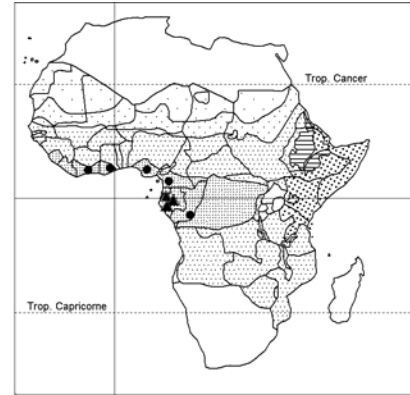
Not mapped.



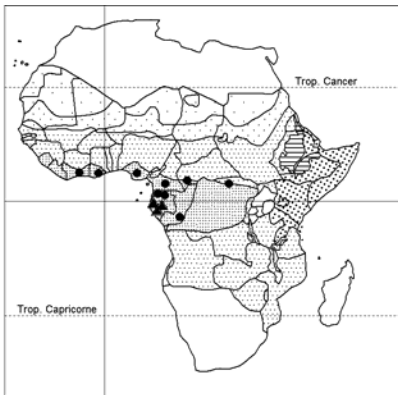
*Uvaria schweinfurthii*



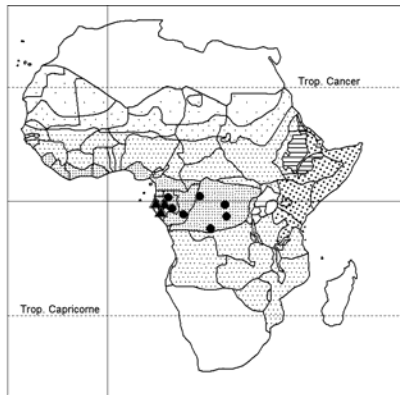
*Uvaria thomasi*



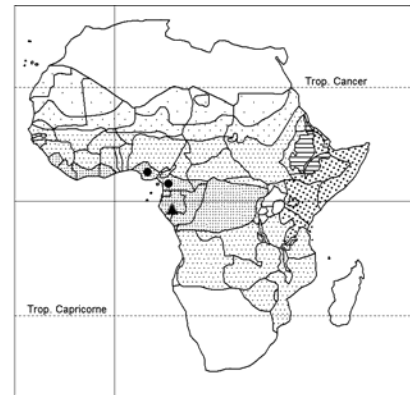
*Uvariastrum insculptum*



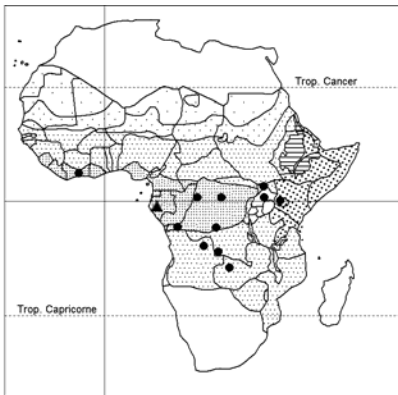
*Uvariastrum pierreanum*



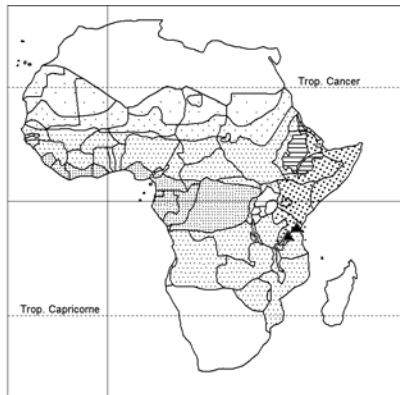
*Uvariastrum pynaertii*



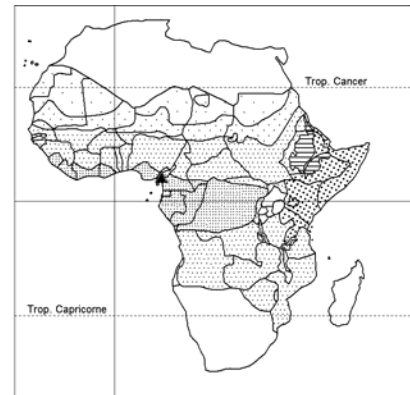
*Uvariadendron connivens*



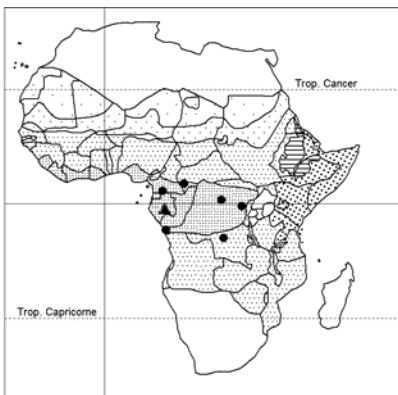
*Uvariopsis congensis*



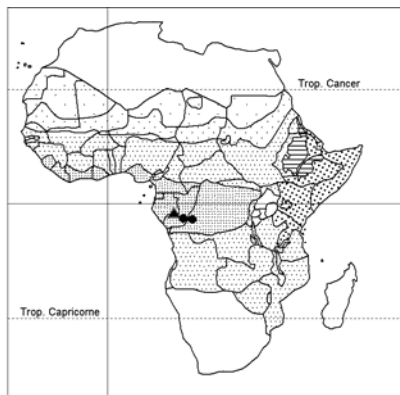
*Uvariopsis lovettiana*



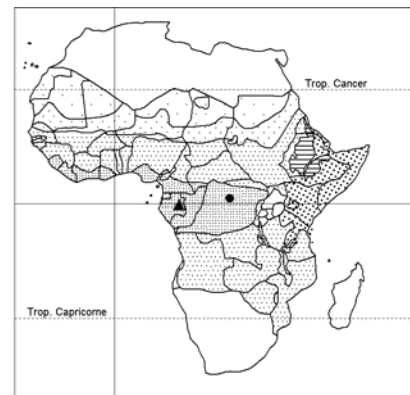
*Uvariopsis submontana*



*Xylopiya cupularis*



*Xylopiya flamigni*



*Xylopiya gilbertii*



## UVARIA

**U. laurentii** De Wild.; Sosef & al., l.c.

In Gabon: 635 m alt.

Map on p. 323.

**U. leptocladon** Oliv.; Fl. Eth. & Eritrea 2/1: 5-6, 2000 (subsp. *septentrionalis* Verdc.).

In Ethiopia, riverine forest and bush; 375-1400 m alt.

According to Verdcourt in Fl. Eth., l.c., it is possible that subsp. *septentrionalis* "may prove to be the same as *U. lungonyana* Vollesen... If so, and if considered a separate species, which seems the correct course, then Vollesen's name has precedence".

Map on p. 323.

**U. sassandrensis** Jongkind, spec. nov. – Icon.: Blumea 48: 464, 2003.

Large liane; stem dark violet-brown; branchlets with erect fasciculate brown hairs; leaves short petiolate, obovate-elliptic, c. 17 × c. 5 cm, glabrous or hairy on nerves, apex acuminate; flowers single, terminal, petals ± circular, c. 2 cm Ø, short fasciculate hairy, pinkish; monocarps to 8, c. 1,5 cm long, smooth, covered with short fasciculate yellowish hairs; mature seeds unknown.

Forest.

Herbarium material has sometimes been named *U. thomasi* Sprague & Hutch. (also with bristly hairs on branchlets and petioles). Also distinguished by its smooth fruits (spiny in *U. thomasi*).

Map on p. 323.

**U. schweinfurthii** Engl. & Diels; Fl. Eth. & Eritrea 2/1: 4, 2000.

In Ethiopia semi-deciduous forest; 500-550 m alt.

Map on p. 325.

**U. thomasi** Sprague & Hutch.; Lisowski, Fl. Rép. Guinée 1: 51, 2009.

Map on p. 325.

## SYNONYM:

*Uvaria crassipetala* Engl. ex Engl. & Diels = **Anonidium manni**

## UVARIASTRUM (Volume 1: 56-58)

**Uvariastrum insculptum** (Engl. & Diels) Sprague & Hutch.; Sosef & al., Check-list pl. vascul. Gabon: 58, 2006.

Map on p. 325.

**U. pierreanum** Engl. & Diels; Sosef & al., l.c.;

In Gabon: 10-250 m alt.

Map on p. 325.

**U. pynaertii** De Wild.; Sosef & al., o.c.: 59.

In Gabon: 50-480 m alt.

Map on p. 325.

## UVARIODENDRON (Volume 1: 58-59, 61)

**Uvariiodendron connivens** (Benth.) R. E. Fries; Sosef & al., Check-list pl. vascul. Gabon: 59, 2006.

Map on p. 325.

## UVARIOPSIS (Volume 1: 60-61, 63) / 17

(former account: 14)

KENFACK, D. & al. (2003). The genus *Uvariopsis* (Annonaceae) in tropical Africa, with a recombination and one new species from Cameroon. *Novon* 13: 443-449 [with a key to all species].

**Uvariopsis congensis** Robyns & Ghesq.; Sosef & al., Check-list pl. vascul. Gabon: 59, 2006.

In Gabon: 360 m alt.

Map on p. 325.

Add the following species:

**U. lovettiana** Couvreur & Q. Luke, sp. nov. – Icon.: Blumea 55: 69, 70 (map), 2010.

Tree, monoecious, 3-7 m; stem 7-30 cm d.b.h.; young branches short appressed hairy; leaves narrowly elliptic, 15-28 × 4,5-7 cm, glabrous, but sparsely appressed hairy when young, coriaceous, dark green above, lighter so beneath, acumen 0,5-1 cm; male and female flowers single, born on leafy branches, axillary; sepals 2, petals 4, free; male flowers with numerous stamens, female ones with numerous tight carpels; monocarps c. 3 cm long, oblong, constricted between seeds (herbarium material), glossy orange red.

Wet forests with *Aframomum laxiflorum*, *Agarista salicifolia*, *Alsodeiopsis schumannii*, *Coffea mufindiensis*, etc.; 1300-1700 m. alt.

Similar to *U. bisexualis* (with bisexual flowers !).

Map on p. 325.

**U. submontana** Kenfack, Gosline & Gereau, sp. nov. – Icon.: *Novon*: 445, 446, 2003.

Tree 8-15(-25) m, monoecious; bole to 30 cm d.b.h.; bark dark green to black, slash pale yellow-light brown, quickly darkening; young branchlets appressed pubescent, glabrescent; leaves short petiolate, oblong-lanceolate, 16-38 × 5-11 cm, glabrous above, glabrous or sparsely pubescent beneath, apex acutely acuminate; inflorescences of up to 500 dark red flowers, cauliflorous, covering base of trunk in dense patches up to first branches at 6-8 m height; staminate flowers with > 100 stamens; pistillate ones with 50-60 ovaries; fruit of 9-25 densely packed ± sessile monocarps, dark yellow, sparsely pubescent, 2-8 cm long.

Wet forest on well-drained slopes; 780-1300 m alt.

Similar to *U. korupensis* (with larger leaves and inflorescences mostly born at base of trunk), and they may be confused without flowering material.

Map on p. 325.

**U. tripetala** (Bak. f.) G. E. Schatz, comb. nov., *Novon* 13: 447, 2003.

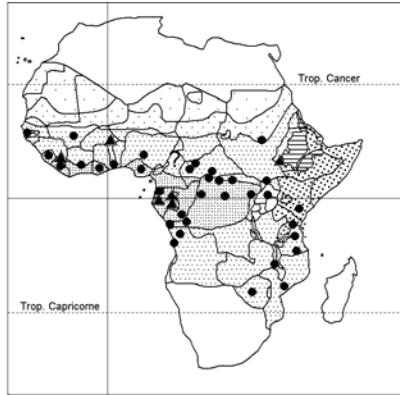
bas.: *Dennettia tripetala* Bak. f.

Description in Vol. 1: 30 (sub *Dennettia*).

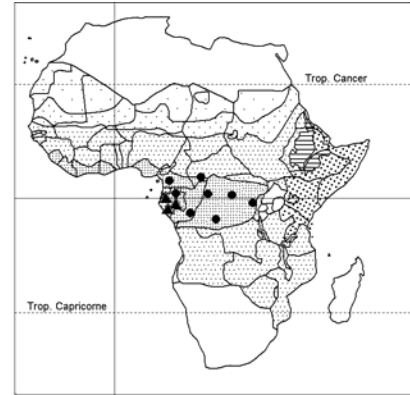
Map in Vol. 1: 29 (sub *Dennettia*).



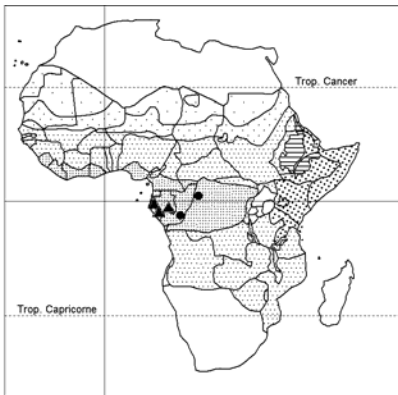
*Xylopia hypolampra*



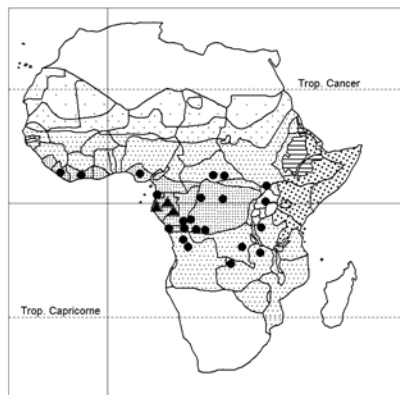
*Xylopia parviflora*



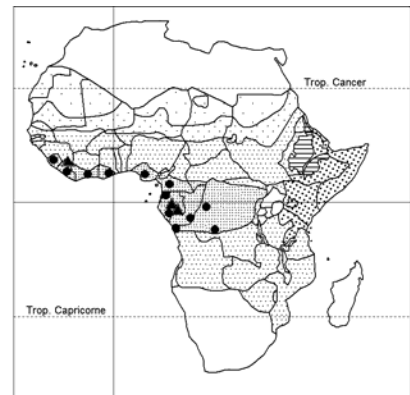
*Xylopia phloiodora*



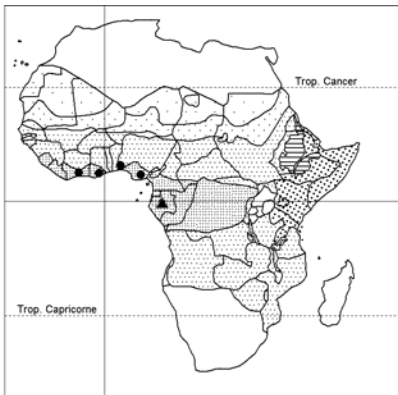
*Xylopia pynaertii*



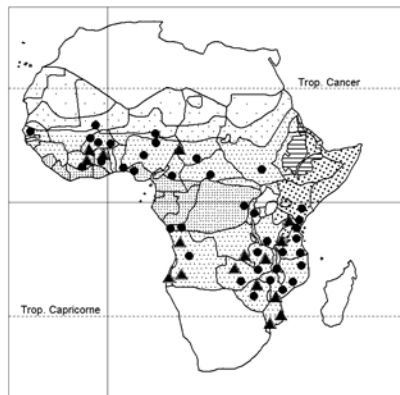
*Xylopia rubescens*



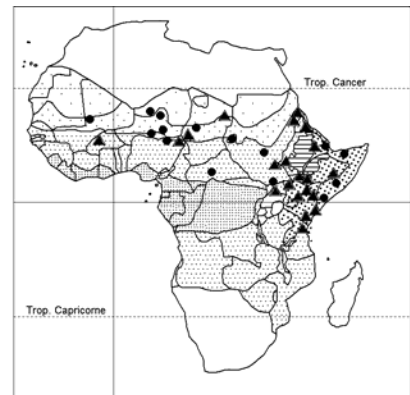
*Xylopia staudtii*



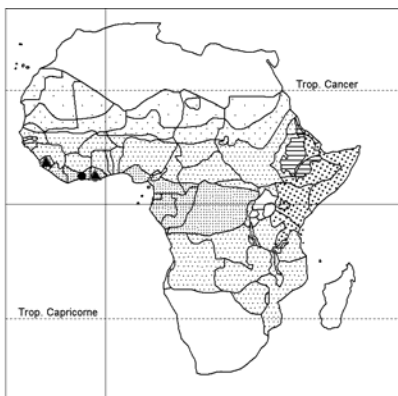
*Xylopia villosa*



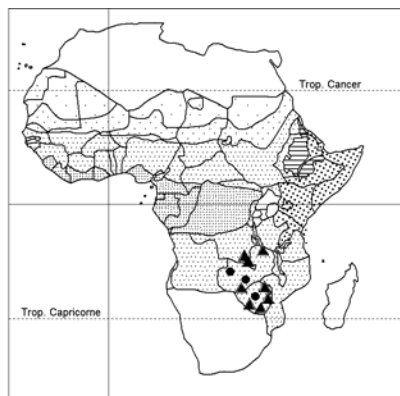
*Aristolochia albida*



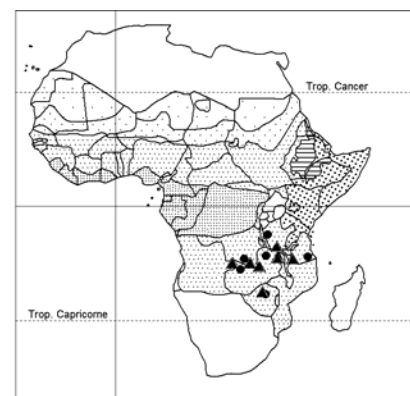
*Aristolochia bracteolata*



*Aristolochia embergeri*



*Aristolochia heppii*



*Aristolochia hockii*

**XYLOPIA** (Volume 1: 60-67)

**Xylopia cupularis** Mildbr.; Sosef & al., Check-list pl. vascul. Gabon: 60, 2006.

In Gabon: 300 m alt.

Map on p. 325.

**X. flamignii** Boutique; Sosef & al., l.c.

In Gabon: 430 m alt.

Map on p. 325.

**X. gilbertii** Boutique; Sosef & al., l.c.

Map on p. 325.

**X. hypolampra** Mildbr.

In Gabon: 100-800 m alt.

Map on p. 327.

**X. parviflora** (A. Rich.) Benth., excl. specim. Mann; Sosef & al., l.c.; Lisowski, Fl. Rép. Guinée 1: 52, 2009. – Icon.: Fl. Eth. & Eritrea 2/1: 9, 2000.

In Gabon: 10-661 m alt.

Map on p. 327.

**X. phloiodora** Mildbr.; Sosef & al., l.c.

In Gabon: 20-480 m alt.

Map on p. 327.

**X. pynaertii** De Wild.; Sosef & al., l.c.

In Gabon: 200-480 m alt.

Map on p. 327.

**X. rubescens** Oliv.; Sosef & al., l.c.

In Gabon: 25-421 m alt.

Map on p. 327.

**X. staudtii** Engl. & Diels; Sosef & al., o.c.: 61; Lisowski, Fl. Rép. Guinée 1: 52, 2009.

In Gabon: 10-650 m alt.

Map on p. 327.

**X. tomentosa** Exell

Also recorded from Namibia, Okavango River (Curtis & Mannheimer, Tree atlas Namibia: 89, 2005).

Map in Volume 1: 67.

**X. torrei** N. Robson – Icon.: Veld & Flora 89: 58, 2003.

Also recorded from southernmost Mozambique, Licuati Forest Reserve.

Map in Volume 1: 67.

**X. villosa** Chipp; Sosef & al., l.c.

Map on p. 327.

SYNONYM (correction):

*Xylopia undulata* P. Beauv. (excl. fruit) = **Monodora undulata**

**ARISTOLOCHIACEAE** (Volume 1: 109-113)

Add new information for family and genera.

KELLY, L. M. & F. GONZÁLEZ (2003). Phylogenetic relationships in Aristolochiaceae. *Syst. Bot.* 28: 236-249.

NICKRENT, D. L. & al. (2002). Molecular data place Hydnoraceae with Aristolochiaceae. *Amer. J. Bot.* 89: 1809-1817.

**ARISTOLOCHIA** (Volume 1: 109-111)

DE GROOT, H. & al. (2006). Revision of the genus *Aristolochia* (Aristolochiaceae) in Africa, Madagascar and adjacent islands. *Bot. J. Linn. Soc.* 151: 219-238.

OHI-TOMA, T. & al. (2006). Molecular phylogeny of *Aristolochia* sensu lato (Aristolochiaceae) based on sequences *rbcl*, *matK*, and *phyA* genes, with special reference to differentiation of chromosome numbers. *Syst. Bot.* 31: 481-492.

**Aristolochia albida** Duch.; De Groot & al. (2006): 231-233. – Icon.: Fl. Trop. E. Afr., Aristolochiaceae: 9, 1986.

syn.: *A. multiflora* Duch.; *A. aurita* Duch.; *A. bernieri* Duch.; *A. angulata* Bojer ex Duch.; *A. bongoensis* Engl.

Variable in size and shape of leaves and in number of inflorescences per axil and of flowers per inflorescence.

Closely related to *A. embergeri* but shape of bracts, indumentum and seed morphology different.

Described from a plant cultivated on Mauritius. Madagascar.

Map on p. 327.

**A. bracteolata** Lam., incl. var. *altissima* (N. Terracc.) Almagia and var. *integrifolia* Beck; De Groot & al. (2006): 227-228. – Icon.: Fl. Eth. & Eritrea 2/1: 55, 2000.

syn.: *A. sempervirens* Forssk.; *A. kotschyi* Hochst. ex A. Rich.; *A. maurorum* Klotzsch

In habit similar to *A. hockii* and *A. heppii*, but leaves and seeds different.

Map on p. 327.

**A. embergeri** Nozeran & N. Hallé; De Groot & al. (2006): 230-231.

Closely related to *A. albida*.

Few collections known.

Map on p. 327.

**A. heppii** Merxm.; De Groot & al. (2006): 228-229.

Map on p. 327.

**A. hockii** De Wild.; De Groot & al. (2006): 229-230.

Map on p. 327.

**A. incisiloba** Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 79, 2006.

Not quoted by De Groot & al., o.c.

According to Sosef & al. (Check-list pl. vascul. Gabon: 79, 2006) this plant should probably be transferred to **Pararistolochia**.

Map in Volume 1: 111.

## ARISTOLOCHIA

**A. rigida** Duch., incl. var. *major* C. H. Wright; De Groot & al. (2006): 226-227. – Icon.: Hook. Ic. Pl.: pl. 1273, 1878 (sub nom. *A. somaliensis* Oliv.).

The only African species in the genus with bilabiate trumpet-shaped flowers.

Map in Volume 1: 111.

**PARARISTOLOCHIA** (Volume 1: 100-113)

**Pararistolochia ceropegioides** (S. Moore) Hutch. & Dalziel; Sosef & al., Check-list pl. vascul. Gabon: 79, 2006; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 94, 119, 2010.

In Gabon: 100-500 m alt.; in Bamenda: 600-1600 m.

Map on p. 331.

[**P. incisiloba** (Jongkind) ?] – See above under **Aristolochia**.

**P. mannii** (Hook. f.) Keay; Sosef & al., l.c.

Map on p. 331.

**P. promissa** (Mast.) Keay; Sosef & al., l.c.

In Gabon: 100-900 m alt.

Map on p. 331.

**P. triactina** (Hook. f.) Hutch. & Dalziel; Sosef & al., l.c.

In Gabon: 5-120 m alt. – The distribution area in Gabon is larger than that shown on the map in Volume 1:11.

**BALANITACEAE** (Volume 1: 786-790)

Add new information for family and genus.

DAS, S. & S. KHANRA (2007). Foliar sclereids in Simaroubaceae and Balanitaceae with taxonomic implications. *J. Econ. Taxon. Bot.* 31: 367-373.

SINGH, B. P. & al. (2002). Floral anatomy and systematic position of the genus *Balanites*. *Acta Bot. Hungar.* 44: 137-143.

**BALANITES** (Volume 1: 786-790)

Sometimes included in *Zygophyllaceae*.

Several species are economically important in Africa: fruits (desert dates) edible, yielding oil, and of pharmaceutical importance. Wood used for furniture. Plants browsed by livestock.

Add new information for the following species:

**Balanites aegyptiaca** (L.) Delile – Icon.: Fl. Trop. E. Afr., Balanitaceae: 7, 2003 (var. **aegyptiaca**); Akoegninou & al., Fl. analyt. Bénin: 1008, 2006 (*Zygophyllaceae*); Singh & al., o.c.: 139 (flower); Schütt & al., eds., Bäume der Tropen: 111-115, 1994; Bois Forêts Trop. 293/3: 34, 2007 (wind erosion); Boesch & al., Pl. ligneuses Rwanda: 137, 2009.

AMER, W. M. & al. (2002). Biosystematic studies for *Balanites aegyptiaca* (Balanitaceae) populations in Egypt. *Fl. Medit.* 12: 353-367.

HALL, J. B. & D. H. WALKER (1991). *Balanites aegyptiaca*, a monograph. School of Agriculture and Forest Sciences, University of Wales, Bangor. 65 pp.

Map in Volume 1: 787.

**B. angolensis** (Welw.) Welw. ex Mildbr. & Schltr. – Icon.: Curtis & Mannheimer, Tree atlas Namibia: 254-255, 2005 [subsp. **welwitschii** (Tiegh.) Sands].

Map in Volume 1: 787.

## BALANITES

**B. maughamii** Sprague; Fl. Trop. E. Afr., Balanitaceae: 4-5, 2003. – Icon.: Coates Palgrave, Trees south. Afr., ed. 3: 407, 2002.

WILLIAMS, V. L. & al. (2007). Stem diameter and bark surface area of the fluted trunk of *Balanites maughamii* (Balanitaceae). *Bothalia* 37: 211-214.

Map in Volume 1: 787.

**B. pedicellaris** Mildbr. & Schltr. – Icon.: Kew Bull. 56: 77, 2001; Fl. Trop. E. Afr., Balanitaceae: 11, 2003 (subsp. **pedicellaris**); Coates Palgrave, l.c.

Map on p. 331.

**B. rotundifolia** (Tiegh.) Blatter – Icon.: Kew Bull. 56: 91, 2001; Fl. Trop. E. Afr., Balanitaceae: 11, 2003 (var. **rotundifolia**).

Map on p. 331.

**B. wilsoniana** Dawe & Sprague; Akoegninou & al., Fl. analyt. Bénin: 1008, 2006. – Icon.: Kew Bull. 56: 20, 2001.

BABWETEERA, F. & al. (2007). *Balanites wilsoniana*: Regeneration with and without elephants. *Biol. Conservation* 134: 40-47.

Add on map (Volume 1: 787): south Bénin.

**BALANOPHORACEAE**  
(Volume 5: 269/270-272/275)

incl. *Cynomoriaceae*.

Add new information for family and genera.

FAY, M. F. & al. (2010). Parasites, their relationships and the disintegration of Scrophulariaceae sensu lato. *Bot. Mag.* 26/4: 286-313 [vide p. 297-298 and p. 294 (*Cynomoriaceae*)].

**CYNOMORIUM** (Volume 5: 271)

(*Cynomoriaceae*)

ZHANG, Zhi-Hong & al. (2009). Phylogenetic placement of *Cynomorium* in Rosales inferred from sequences of the inverted repeat region of the chloroplast genome. *J. Syst. Evol.* 47/4: 297-304 [cover illustration of this issue: *Cynomorium songaricum* Rupr.].

**THONNINGIA** (Volume 5: 272, 275)

**Thonningia sanguinea** Vahl; Sosef & al., Check-list pl. vascul. Gabon: 82, 2006. – Icon.: Fl. Gabon 40: 7, 2010; Lisowski, Fl. Rép. Guinée 2: fig. 106, 2009.

In Gabon: 5-750 m alt.

Map in Volume 5: 275.



**BALSAMINACEAE**(Volume 1: 338-357) / *Ig.* / 119 spp.  
(former account: *Ig.* / 114 spp.)Add new information for *Impatiens*.**IMPATIENS** (Volume 1: 338-357) / 119 spp.  
(former account: 114)JANSSENS, S. [B.] & al. (2006). Phylogenetics of *Impatiens* and *Hydrocera* (Balsaminaceae) using chloroplast atpB-rbcL spacer sequences. *Syst. Bot.* 31: 171-180.JANSSENS, S. B. & al. (2010). Rapid diversification of African *Impatiens*: a biogeographical study. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar): 222.LEJOLY, J. & al., eds. (2008). Flore de la Tshopo (RD Congo): Familles des Alismataceae...Punicaceae. *Taxonomania* 24: 23-24 [Balsaminaceae].MORGAN, R. [J.] (2003). Balsams with perennial appeal. *Garden* 128/8: 598-601.MORGAN, R. J. (2007a). *Impatiens. The vibrant world of Busy Lizzies, Balsams, and Touch-me-nots*. Timber Press, Portland/Oregon. 219 pp.MORGAN, R. [J.] (2007b). Parrot-billed *Impatiens*. *Plantsman, N. S.* 6: 184-187.SOARES, M. & al. (2010). Phylogenetic origin of *Impatiens* (Balsaminaceae) of São Tomé e Príncipe. In: VAN DER BURGT, J. & al., eds., *Systematics and Conservation of African Plants*: 81-90. Royal Botanic Gardens, Kew.YONG-Ming YUAN & al. (2004). Phylogeny and biogeography of Balsaminaceae inferred from ITS sequences. *Taxon* 53: 391-403.***Impatiens clivalcar*** E. Fischer – Icon.: Morgan (2007b): 185; Morgan (2007a): 84, 43 (hybrids).Used in crosses with, e.g., *I. niarniamensis*, *I. epiphytica*.

Map in Volume 1: 341.

***I. ethiopica*** Grey-Wilson – Icon.: Fl. Eth. & Eritrea 2/1: 390, 2000.syn.: *I. filicornu* sensu Cufod. 1965, p.p. quoad specim. Kuls 693, non Hook. f.

Map in Volume 1: 343.

***I. hochstetteri*** Warb.; Lisowski, Fl. Rép. Guinée 1: 97, 2009 (as *I. jacquesii*); Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 119-120, 2010. – Icon.: Fl. Eth. & Eritrea 2/1: 389, 390, 2000 (subsp. **hochstetteri**).

In Ethiopia also in shaded coffee plantations; 1300-2800 m alt.

Comprises 4 subsp.: – subsp. **hochstetteri** [syn.: *I. tenella* R. Br., nom. nud.; *I. micrantha* Hochst. ex A. Rich. 1847, non D. Don 1825, nom. illegit.; *I. capensis* Thunb. 1794, non Meerb. 1775; *I. duthieae* Bolus; *I. gilgii* T. C. E. Fries; *I. petrophila* Gilg & Ledermann, nom. nud.; *I. marlothiana* G. M. Schulze]; – subsp. **angolensis** Grey-Wilson; – subsp. **fanshawei** Grey-Wilson; – subsp. **jacquesii** (Keay) Grey-Wilson [bas.: *I. jacquesii* Keay; syn.: *I. jaegeri* Pellegr. & Jacques-Félix 1958, non Gilg 1909].

Map on p. 331.

***I. irangiensis*** E. Fischer – Icon.: Morgan (2007a): 92; Morgan (2007b): 185.

Map in Volume 1: 345.

***I. issembei*** S. B. Janssens, Stévant & Eb. Fischer, *Taxon* 59: 1513, 2010. – Icon.: *ibid.*: 1515, 1516.

Perennial epiphytic herb; stems flexuose, erect to ascending, to 14-25 cm long, glabrous; leaves dark green, glabrous, lanceolate-oblong, petiole c. 1 cm long, blade 10 × 2,5 cm, margin

## IMPATIENS ISSEMBEI

dentate, apex acute; flowers vivid red, 2-4 in lateral racemes, glabrous 2,5 × 4 cm long, bracts vivid red; lower sepal c. 2 cm long, constricted into a curved spur abruptly swollen into an erect apex; dorsal petal 1 × 1 cm, deeply cucullate, with a narrow crest; young fruit known.

Dense humid, deeply shaded primary forest; growing as an epiphyte at 20-30 m above ground on mossy branches or lianes; 670 m alt.

Known only from the type collected in 2008 (Mt Songo, Chaillu Massif, Gabon).

Resembling *I. etindense*, *I. wilksiana*.

Map on p. 331

***I. letouzeyi*** Grey-Wilsson; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 69, 112, 2010.

Described in 1981 from a single specimen collected in the 1970s. Rediscovered in 1998, and subsequently found to be fairly common. Easily spotted when in bloom by the fallen flowers under the trees.

Epiphyte; 1200-1350 m alt.

Map in Volume 1: 345.

***I. macroptera*** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 83, 2006.

Map on p. 331.

***I. mannii*** Hook. f., incl. var. *adenopus* (Gilg) N. Hallé; Sosef & al., l.c.; Cheek & al., o.c.: 112.

In Gabon: 468-900 m alt.

Map on p. 331.

***I. msisimwanensis*** S. B. Janssens & E. B. Knox, sp. nov. – Icon.: S. Afric. J. Bot. 75: 105, 106 (map), 107 (pollen), 2009.

Herb to 20 cm tall with decumbent weakly branched glabrous stems to 40 cm long rooting at lower nodes; leaves ovate-rhombic, 14-27 × 9-23 mm, petiole 4-12 mm long, sparsely pubescent on veins above, glabrous beneath; flowers solitary, axillary, long-pedicelled; lateral sepals linear, 2,5-3 cm long, green, lower one deep pink, spur white, navicular, 0,6-0,8 cm long, filiform; dorsal petal deep pink, ± round, c. 8 cm Ø, emarginate; lateral united petals deep pink with dark magenta spots; fruit and seeds unknown.

Forest; 1800 m alt.

Known only from the type collected in 1996.

Related to *I. nana*, *I. sylvicola* (comparative table in S. Afric. J. Bot. 75: 108, 2009), but shape of leaves, indumentum of stem and shape of lateral sepals different.

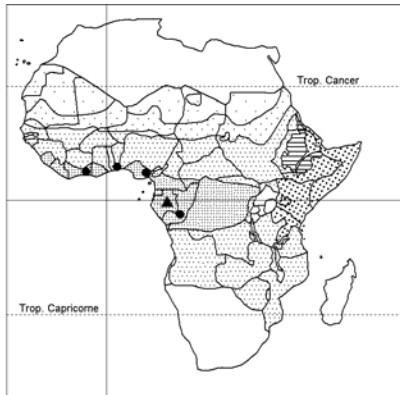
Map on p. 331.

***I. nguruensis*** Pócs, sp. nov. – Icon.: Acta Bot. Hungar. 49: 378-381, 2007.

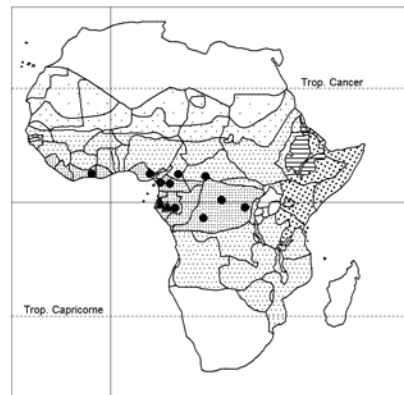
Herb, ascending, rooting at nodes, with a creeping rhizome; erect stems 20-30 cm tall, glabrous; leaves deltoid-ovoid, 2-4 × 4-6 cm, crenate; petiole 1-4 cm long, sparsely hairy; veins slightly pubescent; flowers solitary with pedicels 4-5 cm long, scarlet except for the greenish-yellow crest and paler pink margins of dorsal petal, pubescent; flowers 3-3,5 cm long, incl. falcate spur; ovary orange, glabrous; fruit unknown.



*Pararistolochia ceropegioides*



*Pararistolochia mannii*



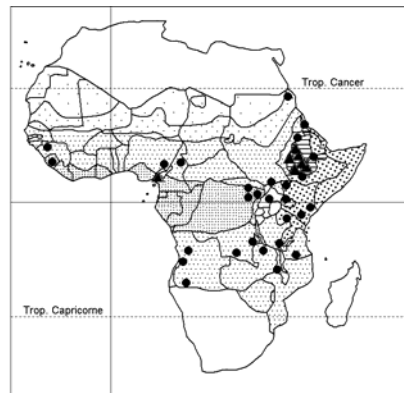
*Pararistolochia promissa*



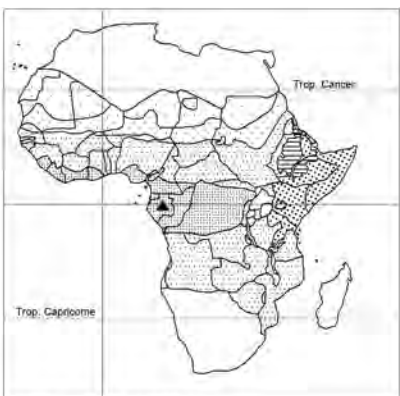
*Balanites pedicellaris*



*Balanites rotundifolia*



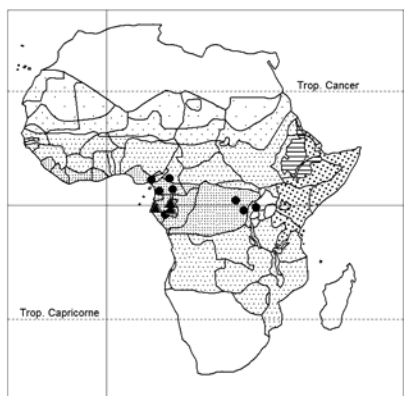
*Impatiens hochstetteri*



*Impatiens issembei*



*Impatiens macroptera*



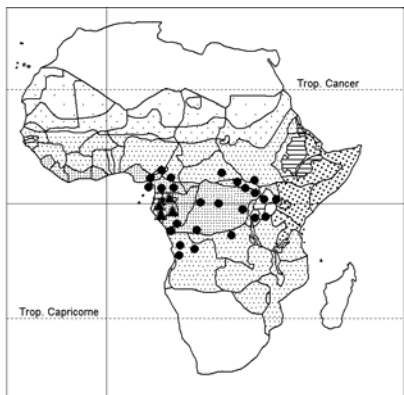
*Impatiens mannii*



*Impatiens msisimwanensis*



*Impatiens nguruensis*



*Impatiens niamniamensis*

## IMPATIENS NGURUENSIS

Elfin forest; mossy rain-forest (cloud forest) on summit of mountain ridge; 1900-2260 m alt.

Resembling *I. ukaguruensis* but margins (crenulate) of leaves and shape of spur different.

Collected in 1989, described in 2007.

Map on p. 331.

**I. niarniamensis** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 83-84, 2006.

In Gabon: 330-1000 m alt.

Map on p. 331.

**I. nyungwensis** E. Fischer, Dhetchuvi & Ntaganda, sp. nov. – Icon.: *Syst. Geogr. Pl.* 73: 92, 93, 2003; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park: 505, 2008; Morgan (2007a): 97.

Perennial herb; stems prostrate to ascending, 25-30 cm long, minutely hairy, glabrescent; leaves cordate, 4,5-6 × c. 4 cm, pilose, with pluricellular hairs, margins crenate-dentate-fimbriate, petiole 1,5-6,5 cm long, glabrous; inflorescence of lateral 2-3-flowered racemes, peduncle pilose with glandular hairs near tip; flowers deep orange-red, dorsal petal greenish, pedicels c. 2 cm long; sepals pilose, lower one 3-3,5 cm long incl. spur, spirally curved and sparsely pilose to glabrescent; ovary pilose; fruit unknown.

Mossy forest with *Podocarpus-Syzygium*, on quartzitic rock; 2800-2850 m alt.

Related to *I. bururiensis*, *I. gesneroidea*, but indumentum and shape of leaves, shape and size of petals different.

Known only from the type collected in 2002.

Map on p. 333.

**I. rothii** Hook. f. – Icon.: Fl. Eth. & Eritrea 2/1: 393, 2000; Morgan (2007a): 100.

Map on p. 333.

**I. sakeriana** Hook. f.

For comment on this plant in Bamenda Highlands, Cameroon, see Cheek & al.,: 96, 119, 2010; and Harvey & al.: 112, 2010.

Map in Volume 1:70

**I. salpinx** Schulze & Launert – Icon.: Bot. Mag. 23: pl. 558, p. 167, 2006.

Fruit known: fusiform capsule, c. 2 cm long, 5-ribbed, glabrous; seeds pyriform, c. 2 × 1,5 mm, tuberculate.

Distinctive by its habit (erect herb c. 70 cm tall, sub-shrubby) and its solitary deep red flowers.

Map in Volume 1: 353.

**I. sodenii** Engl. & Warb. ex Engl. – Icon.: Fl. Eth. & Eritrea 2/1: 389, 2000 (flower); Morgan (2007a): 101 (treated as subsp. *sodenii* and subsp. *oliveri*); S. Dumoulin in La Salicaire 53: 17, 2005.

A recent introduction in Ethiopia: cultivated in gardens at Addis Ababa; c. 2400 m alt.

Map in Volume 1: 353.

## IMPATIENS

**I. tinctoria** A. Rich. – Icon.: Fl. Eth. & Eritrea 2/1: 392, 2000 (subsp. **abyssinica**); S. Dumoulin in La Salicaire 53: 16, 2005; Morgan (2007a): 65, 104.

**I. wilksiana** Stévant, S. B. Janssen & Eb. Fischer, Taxon 59: 1513, 2010. – Icon.: *ibid.*: 1514, 1516.

Perennial epiphytic herb; stems erect to ascending, glabrous, to 25 cm long; leaves glabrous, dark green, lanceolate-oblong, 4,5-5,5 × 1-1,2 cm, petiole 5 mm long with 1 pair of short filiform glands, margin toothed, apex acute; flowers in lateral racemes with up to 20 dense vivid red bracts; sepals vivid red, petals yellow tinged red; lower sepal c. 1,5 cm long, constricted into a curved spur, abruptly swollen into an erect apex; dorsal petal 6 × 5 mm, deeply cucullate with a narrow crest; fruit unknown.

Dense and slightly open forest; humid forest; growing as an epiphyte about 25 m above ground in moss cushions on small branches; 580-680 m alt.

Resembling *I. issembei*, *I. grandisepala*.

Map on p. 333.

## BASELLACEAE (Volume 1: 324-325)

ERIKSSON, R. (2007). A synopsis of Basellaceae. *Kew Bull.* 62: 297-320.

NYFFELER, R. & U. EGGLI (2010). Disintegrating Portulacaceae: A new familial classification of the suborder Portulacineae (Caryophyllales) based on molecular and morphological data. *Taxon* 59: 227-240 [p. 233, *Basellaceae*].

## BASELLA (Volume 1: 324-325)

*Basela* L. orth. var.

**Basella alba** L., incl. var. *subcordata* Blume ex Hassk. 1844 and ex Moq. 1849, var. *virescens* Moq. 1849, and fa. *culta* Hauman, nom. inval.; Sosef & al., Check-list pl. vascul. Gabon: 84, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 349, 2000; Eriksson (2007): 299, 300, 302; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park: 417, 2008; Lisowski, Fl. Rép. Guinée 2: fig. 107, 2009. – Malabar spinach.

Complete synonymy in Eriksson (2007): 305.

Map on p. 333.

**B. paniculata** Volkens; Eriksson (2007): 305. – Neotype: Engler 1515 (Tanzania, Pare; 9. X. 1902).

Map in Volume 1: 325.

BEGONIACEAE (Volume 1: 470-490) / *Ig.* / 106 spp. (former account: *Ig.* / 105 spp.)

Add new information for family and genus. Two genera: *Hillebrandia* (1 sp.) in Hawaii, and *Begonia* (ca. 1400 spp.) pan-tropical.

## BEGONIA (Volume 1: 470-490) 106 spp. (former account: 105 spp.)

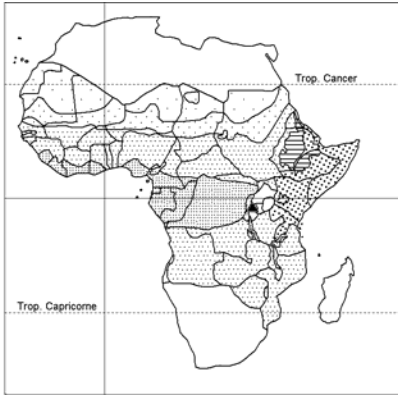
For illustrations of Gabonese species, see Fl. Gabon (2009).

DE WILDE, J. J. F. E. & V. PLANA (2003). A new section of *Begonia* (Begoniaceae) from west central Africa. *Edinb. J. Bot.* 60: 121-130.

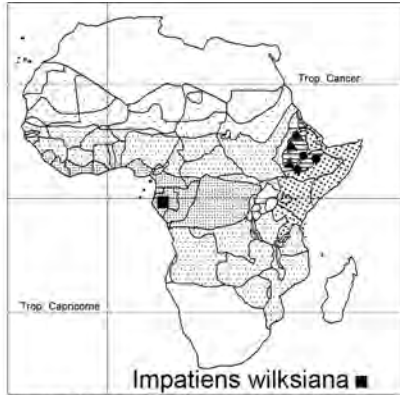
DURUISSEAU, J. (2004). Trip in Gabon: In search of yellow flowered begonias. *Begonian* 71: 131-133.

DURUISSEAU, J. (2005). Trip in Gabon: In search of yellow flowered begonias, part 2. *Begonian* 72: 104-106.

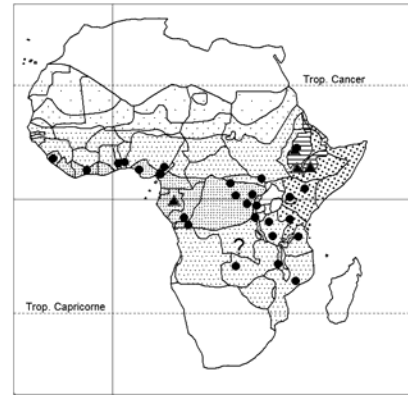




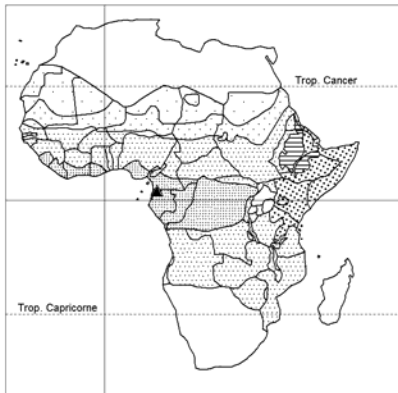
*Impatiens nyungwensis*



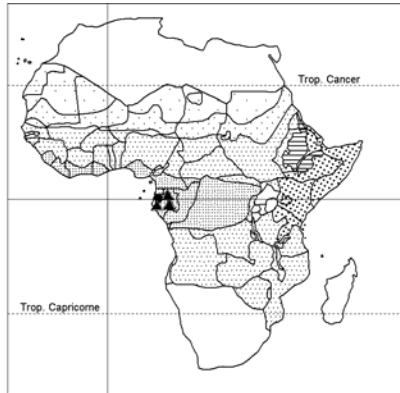
*Impatiens wilksiana* ■



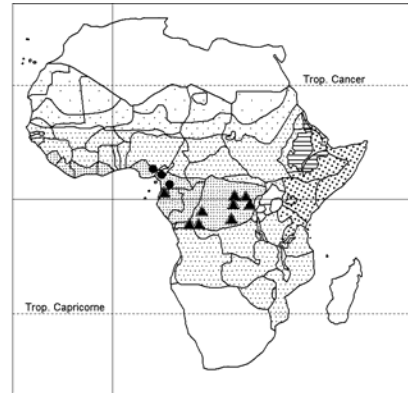
*Basella alba*



*Begonia aequatoguineensis*



*Begonia auriculata*



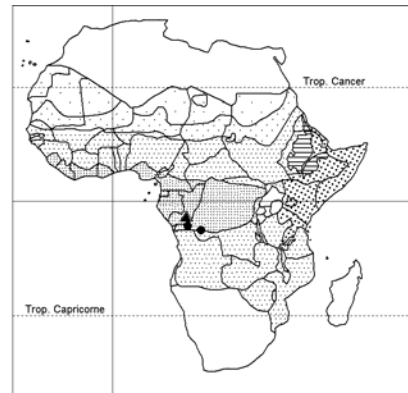
*Begonia ciliobracteata*



*Begonia elaeagnifolia*



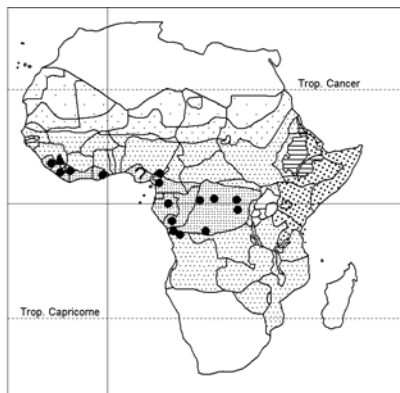
*Begonia elatostemmoides*



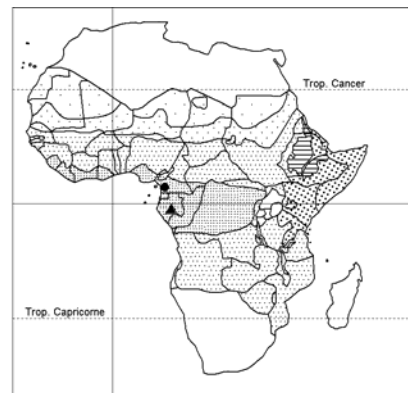
*Begonia iucunda*



*Begonia johnstonii*



*Begonia macrocarpa*



*Begonia mbangaensis*



## BEGONIA

- FORREST, L. L. & P. M. HOLLINGSWORTH (2003). A recircumscription of *Begonia* based on nuclear ribosomal sequences. *Pl. Syst. Evol.* 241: 193-211.
- FORREST, L. L. & P. M. HOLLINGSWORTH (2004). A molecular evolutionary study of *Begonia*. *Begonian* 71: 94-99.
- FORREST, L. L. & al. (2005). A phylogeny of *Begonia* using nuclear ribosomal sequence data and morphological characters. *Syst. Bot.* 30: 671-682.
- GOLDING, J. (2003). Descriptive terminology for *Begonia* peltate and sinus. *Begonian* 70: 15-16.
- GOLDING, J. (2003). *Begonia* sections. *Begonian* 70: 47-50.
- GOODALL-COPESTAKE, W. P. & al. (2009). The origin of a mega-diverse genus: dating *Begonia* (Begoniaceae) using alternative datasets, calibrations and relaxed clock methods. *Bot. J. Linn. Soc.* 159: 363-380.
- PLANA, V. (2003). Phylogenetic relationships of the Afro-Malagasy members of the large genus *Begonia* inferred from trnL intron sequences. *Syst. Bot.* 28: 693-704.
- PLANA, V. & al. (2006). Begoniaceae. In: BEENTJE, H. J. & G. A. GHAZANFAR, eds., *Flora of Tropical East Africa*. Royal Botanic Gardens, Kew. 23 pp.
- SOSEF, M. S. M. & al. (2009). *Flore du Gabon 39: Begoniaceae*. Margraf Publishers, Weikersheim, etc. 109 pp.
- TEBBITT, M. C. (2005). *Begonias. Cultivation, identification, and natural history*. Timber Press, Portland, Oregon. 272 pp.

**Begonia adpressa** Sosef; Harvey & al., Pl. Lebialem Highl., Cameroon: 70, 112-113, 2010.

Now 9 locations known in SW Cameroon.

Map in Volume 1: 473.

**B. aequatoguineensis** Sosef & Nguema, sp. nov. – Icon.: *Blumea* 55: 92, 2010.

Rhizomatous herb to 5 cm tall, hairy and with two types of minute glandular hairs, viz. brownish + dark purple-black, the latter abundant on rhizome, petiole and peduncle; rhizome slender, c. 1 mm Ø; stipules triangular-ovate, 2-3 mm long, acuminate, ciliated near apex; leaves peltate, ± asymmetric, elliptic-ovate, 2.5 × 0.4-1.7 cm, long-acuminate, main nerves (3-6) palmate, margins finely dentate, bullate above, hairy, patent hairy beneath; inflorescence axillary, monochasial, of 1-2 male flowers and 1 terminal female flower; flowers yellow, glabrous, with 2 perianth segments; fruit erect, elliptic-oblong, 0.5-1 cm long. Primary forest with large rocks, growing on moss-covered rock faces; c. 450 m alt.

Known only from the type collected in 2002.

Related to *B. atroglandulosa*, *B. minuta*, these two also with minute purple glands.

Map on p. 333.

**B. ampla** Hook. f.; Harvey & al., Pl. Lebialem Highl., Cameroon: 113, 2010. – Icon.: *Begonian* 73: 167, 2006; Fl. Trop. E. Afr., Begoniaceae: 7-8, 2006; Fl. Gabon 39: 67, 2009.

Moist forest in E. Africa; 1200-1800 m alt.

Map in Volume 1: 473.

**B. auriculata** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 85, 2006. – Icon.: *Begonian* 76: 180, 2009; Fl. Gabon 39: 9, 2009.

syn.: *Begonia sciaphila* Gilg ex Engl. var. *longipedunculata* R. Wilczek

Endemic in Gabon; 130-720 m alt.

Several collections cited by Sosef & al., l.c.

Map on p. 333.

## BEGONIA

**B. ciliobracteata** Warb.; Lejoly & al., eds., Flore de la Tshopo (RD Congo) in *Taxonomania* 24: 25, 2008 (*Begoniaceae*).

Map on p. 333.

**B. clypeifolia** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 85, 2006. – Icon.: *Begonian* 72: 105, 2005; Fl. Gabon 39: 40, 2009.

In Gabon 30-980 m alt.

The hybrid **B. clypeifolia** × **B. lacunosa** is cited from Gabon, Ngounié (NG); 500-640 m alt.

Map in Volume 1: 475.

**B. ebolowensis** Engl.; Sosef & al., Check-list pl. vascul. Gabon: 85, 2006. – Icon.: *Begonian* 73: 167, 2006; Fl. Gabon 39: 77, 2009.

Map in Volume 1: 475.

**B. elaeagnifolia** Hook. f.; *Begonian* 71: 131, 2004; Sosef & al., Check-list pl. vascul. Gabon: 85-86, 2006. – Icon.: Fl. Gabon 39: 79, 2009.

Not in Zaire-Rwanda (*B. schultzei* misapplied = *B. sp.*)

Map on p. 333.

**B. elatostemmoides** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 86, 2006; *Begonian* 71: 131, 2004; Figueiredo & Smith, Pl. Angola: 50, 2008 (Cabinda). – Icon.: Fl. Gabon 39: 11, 2009.

Common also in Gabon; 30-950 m alt.

Map on p. 333.

The hybrid **B. elatostemmoides** × **B. minutifolia** is recorded from NW Gabon; 640-750 m alt.

**B. engleri** Gilg, incl. var. *nuda* Irmscher; Fl. Trop. E. Afr., Begoniaceae: 11-12, 2006.

Vulnerable species; Tanzania, (350-)800-1800 m alt.

Map in Volume 1: 475.

**B. fusialata** Warb.; *Begonian* 71: 131, 2004; Sosef & al., Check-list pl. vascul. Gabon: 87, 2006; Figueiredo & Smith, Pl. Angola: 50, 2008 (Cabinda). – Icon.: Fl. Gabon 39: 83, 85, 2009.

Map in Volume 1: 477.

**B. hirsutula** Hook. f.; *Begonian* 71: 131, 2004; Sosef & al., Check-list pl. vascul. Gabon: 87-88, 2006. – Icon.: *Begonian* 77: 68-69, 2010; Tebbitt (2005): pl. 159; Fl. Gabon 39: 48, 2009.

In cultivation difficult to grow: fragile, slow-growing (*Begonian* 77, l.c.).

Map in Volume 1: 477.

**B. horticola** Irmscher; Fl. Trop. E. Afr., Begoniaceae: 20, 2006.

According to V. Plana & al. in F.T.E.A., l.c., occurrence in Uganda doubtful (Purseglove 2674), and this specimen is perhaps **B. eminii**. However, it “could possibly be found there [East Africa] in future.”

Map in Volume 1: 477.

## BEGONIA

[**B. humilis** Dryand.] – Fl. Trop. E. Afr., Begoniaceae: 19, 2006. Annual or short-lived perennial herb, terrestrial, 8-20 cm tall; stem glabrous with persistent stipules; leaves one side larger than the other, margins doubly dentate or ± lobed, venation palmate-pinnate; inflorescence axillary, bisexual; male flowers with 2 tepals, female ones with 4 tepals, all white, elliptic; ovary 3-winged.

Frequent as a garden escape, naturalized in certain countries; collected as apparently wild; evergreen forest, wet ground, in forest in shade. NE Tanzania (T3), c. 900 m alt.

Native of West Indies, S. America.

Not mapped.

**B. iucunda** Irmscher – Icon.: Edinb. J. Bot. 60: 125, 126 (map), 2003 [with an extended description].

Erect, or procumbent (on cliffs), herb, 6-60 cm tall, unbranched or branched from lower leaf axils; rhizome subterranean, to 14 cm long, rooted, borne on tunicate sausage-shaped tubers to 3 × 0,8 cm, new tubers and rhizome white; stem zigzag, fleshy, wine red, ± patently hairy, hairs multicellular, uniseriate, glandular; stipules persistent, margin ciliate; leaves not peltate, asymmetrical, herbaceous, 2-12 × 1-4 cm, venation palmate; margins coarsely serrate-dentate; inflorescences reduced to solitary flowers, axillary; male flowers with 2 tepals, yellow, female ones similar, ovary 3-winged, wings unequal.

Shaded places among rocks; in cracks and on ledges of steep exposed rock faces; steep slopes near waterfalls; c. 650 m alt.

Placed in a new section **Chasmophila** J. J. de Wilde & Plana, sect. nov., Edinb. J. Bot. 60: 122, 2003.

Map on p. 333.

**B. johnstonii** Oliv. ex Hook. f., incl. fa. *pilosa* Irmscher – Icon.: Fl. Trop. E. Afr., Begoniaceae: 5, 2006.

Only in Kenya and Tanzania; 700-2400 m alt.

Typification unclear.

Map on p. 333.

*B. keniensis* Gilg ex Engl. = **B. wollastonii** Bak. f.

**B. kisuluana** Büttner; Fl. Trop. E. Afr., Begoniaceae: 9-10, 2006; Sosef & al., Check-list pl. vascul. Gabon: 88, 2006; Figueiredo & Smith, Pl. Angola: 50, 2008. – Icon.: Fl. Gabon 39: 91, 2009.

Map in Volume 1: 479.

**B. lacunosa** Warb.; Sosef & al., Check-list pl. vascul. Gabon: 88, 2006; Figueiredo & Smith, Pl. Angola: 50, 2008 (Cabinda). – Icon.: Fl. Gabon 39: 50, 2009.

In Gabon 10-900 m alt.

Map in Volume 1: 479.

The hybrids **B. lacunosa** × **B. scutulium** and **B. clypeifolia** × **B. lacunosa** are reported from S Central Gabon (NG), at ca. 700 m and 500-640 m alt., respectively.

**B. macrocarpa** Warb.; Sosef & al., Check-list pl. vascul. Gabon: 89, 2006; Fl. Gabon 39: 12, 2009; Figueiredo & Smith, Pl. Angola: 50, 2008 (Cabinda); Begonian 71: 132, 2004; Lisowski, Fl. Rép. Guinée 1: 97-98, 2009.

The hybrid **B. macrocarpa** × **B. sessilifolia** is reported from S Central Gabon (NG), at 700 m alt.

Map on p. 333.

## BEGONIA

**B. mannii** Hook.; Sosef & al., l.c.; Lisowski, Fl. Rép. Guinée 1: 98, 2009. – Icon.: Fl. Gabon 39: 101, 2009.

Also in SE Guinea, Ziama Massif, not clearly indicated on the map in Volume 1: 479.

**B. mbangaensis** Sosef; Sosef & al., Check-list pl. vascul. Gabon: 89, 2006. – Icon.: Fl. Gabon 39: 53, 2009.

Also in Gabon at 450 m alt.

Map on p. 333.

**B. meyeri-johannis** Engl. – Icon.: Fl. Trop. E. Afr., Begoniaceae: 5, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 539, 2008.

Also in Burundi and Malawi.

Map in Volume 1: 481.

**B. microsperma** Warb.; Sosef & al., Check-list pl. vascul. Gabon: 89, 2006. – Icon.: Fl. Gabon 39: 22, 2009.

The hybrid **B. microsperma** × **B. staudtii** is reported by Duruisseau (2005) from Gabon (fig. in Begonian 72: 105, 2005).

Map on p. 337.

**B. mildbraedii** Gilg; Sosef & al., Check-list pl. vascul. Gabon: 90, 2006; Begonian 71: 131, 2004. – Icon.: Begonian 76: 181, 2009; Fl. Gabon 39: 511, 2009.

In Gabon at 30-800 m alt.

Map in Volume 1: 481.

The hybrid **B. mildbraedii** × **B. scutifolia** is recorded from EC Gabon (OI) at 775 m alt.

**B. minutifolia** N. Hallé; Sosef & al., Check-list pl. vascul. Gabon: 90, 2006; Begonian 72: 104, 2005. – Icon.: Fl. Gabon 39: 13, 2009.

The hybrid **B. elatostemoides** × **B. minutifolia** is recorded from Gabon.

Map in Volume 1: 481.

**B. oxyanthera** Warb.; Harvey & al., Pl. Lebialem Highl., Cameroon: 71, 113, 2010.

For comments on the distribution and threat, see Harvey & al., l.c.

Map in Volume 1: 481.

**B. oxyloba** Welw. ex Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 90, 2006; Figueiredo & Smith, Pl. Angola: 50, 2008; Begonian 71: 150-151, 2004; Lisowski, Fl. Rép. Guinée 1: 98, 2009. – Icon.: Fl. Trop. E. Afr., Begoniaceae: 16, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 409, 2008; Gartenflora 49: fig. 1470, 1900 (sub nom. *B. heddei*); Fl. Gabon 39: 13, 2009.

In Gabon at 180-335 m alt. – For SW Cameroon, see Harvey & al., Pl. Lebialem Highl., Cameroon: 113, 2010.

Map in Volume 1: 481.

**B. poculifera** Hook. f.; Harvey & al., l.c.; Figueiredo & Smith, Pl. Angola: 50, 2008 (var. **poculifera**, also in Cabinda); Sosef & al., Check-list pl. vascul. Gabon: 90, 2006 [vars. **poculifera**

## BEGONIA POCULIFERA

and **teusziana** (J. Braun & K. Schum.) J. J. de Wilde]. – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 541, 2008 (sub nom. *B. haullevilleana* De Wild.); Fl. Gabon 39: 69, 71, 2009.

Map in Volume 1: 481.

**B. polygonoides** Hook. f.; Sosef & al., l.c.; Lisowski, Fl. Rép. Guinée 1: 98, 2009. – Icon.: Fl. Gabon 39: 103, 2009.

Distribution area in Gabon larger than shown on the map in Volume 1: 481.

**B. preussii** Warb.; Harvey & al., Pl. Lebialem Highl., Cameroon: 71-72, 113, 2010.

More common in SW Cameroon than previously thought.

Map in Volume 1: 483.

**B. princeae** Gilg, incl. var. *princeae* fa. *grossidentata* Irmscher and fa. *vulgata* Irmscher, var. *rhodesiana* Irmscher fa. *rhodesiana* and fa. *racemigera* Irmscher, and var. *racemigera* (Irmscher) R. Wilczek; Fl. Trop. E. Afr., Begoniaceae: 14-15, 2006; Figueiredo & Smith, Pl. Angola: 51, 2008.

Map on p. 337.

**B. pseudoviola** Gilg

Also in Lebialem Highl., Cameroon (Harvey & al., o.c.: 72, 113, 2010).

Map in Volume 1: 483.

**B. pulcherrima** Sosef – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 469, 2008.

Map in Volume 1: 483.

**B. quadrialata** Warb., incl. var. *speciosa* Irmscher; Check-list pl. vascul. Gabon: 90-91, 2006; Figueiredo & Smith, Pl. Angola: 51, 2008; Lisowski, Fl. Rép. Guinée 1: 98, 2009. – Icon.: Fl. Gabon 39: 25, 2009; Tebbitt (2005): pl. 156, 157.

Map in Volume 1: 483.

**B. riparia** Irmscher; Fl. Trop. E. Afr., Begoniaceae: 15, 2006. First collected in 1932 (type: Songea Distr., T8), then in the early 2000s in Udzungwa Mtn Natl. Park (T7).

Map on p. 337.

**B. rostrata** Welw. ex Hook. f.; Figueiredo & Smith, Pl. Angola: 51, 2008; Lisowski, Fl. Rép. Guinée 1: 98, 2009.

Map on p. 337.

**B. schliebenii** Irmscher; Fl. Trop. E. Afr., Begoniaceae: 13, 2006. Collected in 1933 (type: Morogoro Distr., T6) and then in the early 2000s (T7).

Map on p. 337.

**B. sciaphila** Gilg ex Engl., excl. var. *longipedunculata* R. Wilczek (= *B. auriculata*); Sosef & al., Check-list pl. vascul. Gabon: 91, 2006; Fl. Gabon 39: 2009; Figueiredo & Smith, Pl. Angola: 51, 2008.

Map in Volume 1: 485.

## BEGONIA

**B. scutifolia** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 91, 2006; Figueiredo & Smith, l.c.; Harvey & al., Pl. Lebialem Highl., Cameroon: 114, 2010. – Icon.: Tebbitt (2005): pl. 158; Fl. Gabon 39: 29, 2009; The Begonian 76: 180, 2009.

Related to *B. sosefiana*.

Map in Volume 1: 485.

The hybrid **B. mildbraedii** × **B. scutifolia** is recorded.

**B. scutulum** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 91, 2006. – Icon.: Fl. Gabon 39: 58, 2009.

Endemic in Gabon; 200-980 m alt.

Map in Volume 1: 485.

The hybrid **B. lacunosa** × **B. scutulum** is recorded.

**B. sessilifolia** Hook. f.; Sosef & al., l.c.; Figueiredo & Smith, Pl. Angola: 51, 2008 (Cabinda). – Icon.: Fl. Gabon 39: 14-15, 2009.

Comprises 2 subspp.: – subsp. *sessilifolia*; – subsp. *ogooensis* Wieringa, endemic in Gabon.

Map on p. 337.

The hybrid **B. macrocarpa** × **B. sessilifolia** is recorded.

**B. sonderiana** Irmscher, incl. var. *transgrediens* Irmscher

Crouch & McLellan (Bothalia 38: 146-147, 2008) report the species from NE S. Africa-Swaziland. Earlier herbarium specimens had been misidentified as *B. homonyma* Steud. Confusion with *B. sutherlandii* is also reported. According to Fl. Trop. E. Afr., Begoniaceae: 20, 2006, *B. sonderiana* “is a name often found on labels of specimens from our area”.

Map on p. 337.

**B. sosefiana** J. J. de Wilde & J. L. C. H. van Valkenburg, sp. nov. – Icon.: Blumea 50: 468, 2005; Fl. Gabon 39: 31, 2009.

Rhizomatous herb with creeping stems, red-brown, to 15 cm long, 1 mm Ø, drooping, rooting from (lower) nodes, not or little branched; whole plant with scattered minute brown glandular hairs; stipules conspicuous, imbricate, covering ± the stem, obovate, 6-2,5 mm, 3-5-fissured or fimbriate on upper half; leaves arranged in a ± vertical plane, succulent, obovate, 7-20 × 3-6 mm, margins entire; inflorescence axillary, with 1(-2) male and 1 terminal female flower; tepals 2, yellow; fruit ± ellipsoid. Evergreen rain-forest with large rock outcrops, attached to moist mossy vertical rock faces; c. 800 m alt.

Related to *B. scutifolia* (with ascendent stems, at lower altitude).

Known only from the type collected in 2005.

Map on p. 337.

**B. staudtii** Gilg, incl. var. *dispersipilosa* Irmscher – Icon.: Henthorne in Begonian 73: 86, 2006.

In cultivation: “huge size of the blooms [yellow]”... “large size of the leaves”.

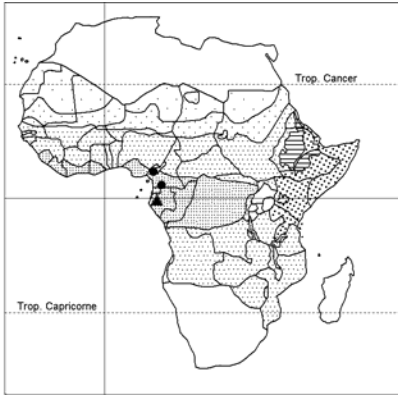
Map in in Volume 1: 487.

The hybrid **B. microsperma** × **B. staudtii** is recorded.

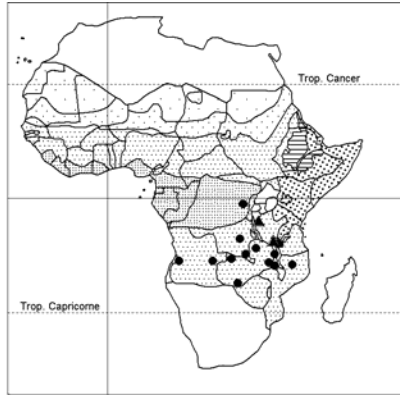
**B. stolzii** Irmscher; Fl. Trop. E. Afr., Begoniaceae: 15, 17, 2006.

According to F.T.E.A., l.c. “*B. stolzii* may be better regarded as part of the range of variation of *B. sutherlandii*”.

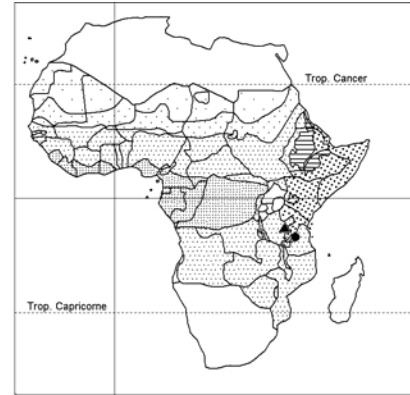
Map in Volume 1: 487.



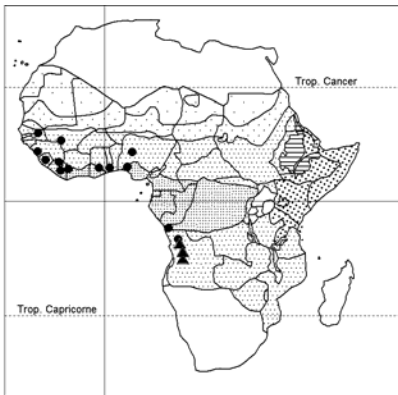
*Begonia microsperma*



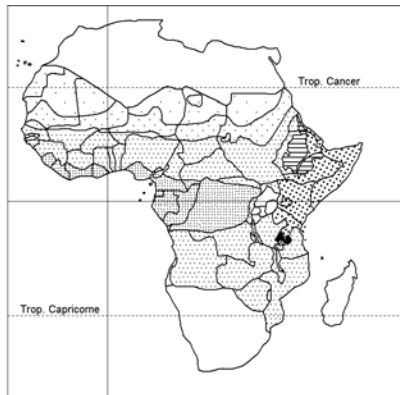
*Begonia princeae*



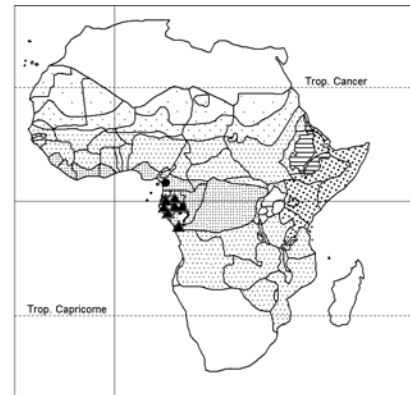
*Begonia riparia*



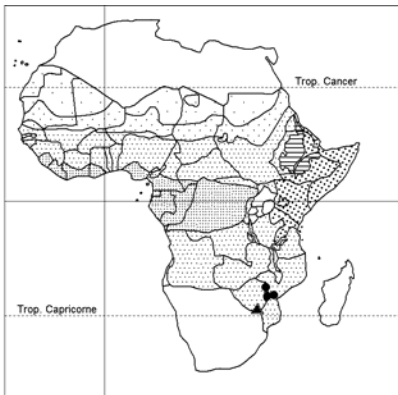
*Begonia rostrata*



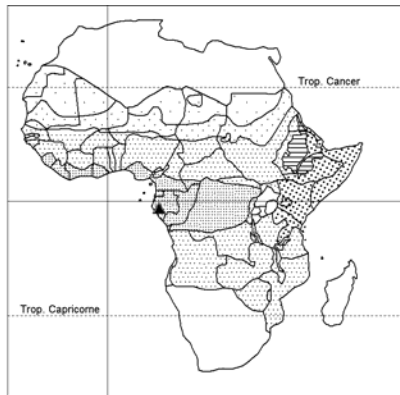
*Begonia schliebenii*



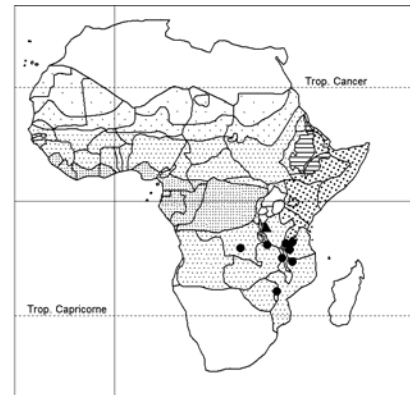
*Begonia sessilifolia*



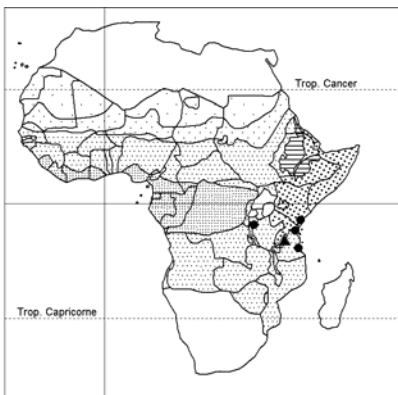
*Begonia sonderiana*



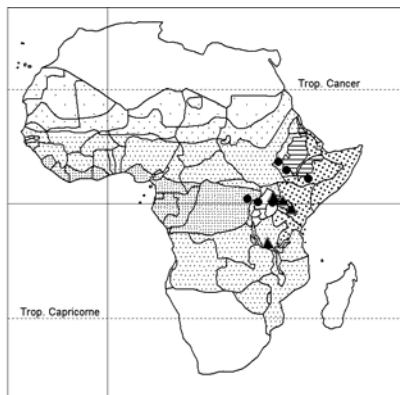
*Begonia sosefiana*



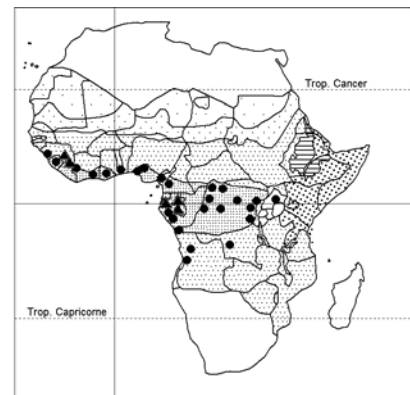
*Begonia sutherlandii*



*Begonia wakefieldii*



*Begonia wollastonii*



*Bombax buonopozense*



## BEGONIA

**B. sultani** Hook. f., nomen); Fl. Trop. E. Afr., Begoniaceae: 20, 2006.

Cited by Warburg in Gartenflora 49: 1, 1900, under *B. heddei* (= **B. oxyloba**) as recently introduced from Deutsch Ostafrika (Tanzania, Usambaras ?).

**B. sutherlandii** Hook. f., incl. var. *subcuneata* Irmscher, subsp. *laticor* (Irmscher) Kupicha, var. *laticor* fa. *densiserrata* Irmscher, var. *rubrifolia* Irmscher, and var. *minuscula* Irmscher – Icon.: Fl. Trop. E. Afr., Begoniaceae: 16, 2006.

Has been confused with *B. sonderiana* (cf. under this species; Bothalia 38: 146, 2008).

*B. stolzii* is perhaps only a variant.

Map on p. 337.

**B. vittariifolia** N. Hallé; Sosef & al., Check-list pl. vascul. Gabon: 92, 2006. – Icon.: Begonian 76: 181, 2009; Tebbitt (2005): pl. 160; Fl. Gabon 39: 63, 2009.

Map in Volume 1: 487.

**B. wakefieldii** Engl., incl. fa. *dentilobata* Irmscher; Fl. Trop. E. Afr., Begoniaceae: 18-19, 2006.

60-1500 m alt.

Map on p. 337.

**B. wollastonii** Bak. f.; Fl. Trop. E. Afr., Begoniaceae: 13-14, 2006.

syn.: *B. keniensis* Gilg ex Engl.

Separation between *B. wollastonii* and *B. keniensis* is based on flower colour, tepal shape (male flower) and size of the largest fruit wing. But intermediates occur, and variation is continuous.

Map on p. 337.

## SYNONYMS:

*Begonia keniensis* Gilg ex Engl. = **Begonia wollastonii**

*sciaphila* Gilg ex Engl. var. *longipedunculata* R. Wilczek = **B. auriculata**

## BERBERIDACEAE (Volume 1: 96, 95)

## BERBERIS (Volume 1: 96, 95)

Add new information for:

**Berberis holstii** Engl. – Icon.: Fl. Eth. & Eritrea 2/1: 41, 2000; L. E. Newton in J. E. Afric. Nat. Hist. 93: 52, 2004 (cf. note below).

syn.: *B. tinctoria* sensu A. Rich., Tent. Fl. Abyss. 1: 10, 1847.

Note: the figure published by Newton (l.c.) is a drawing by Evelyn Napier (1902-1952), who established the herbarium of the Coryndon Museum, where she worked as botanist 1930-1934. This herbarium was later transferred to the East African Herbarium. As a hobby Evelyn Napier (born in India, arrived in Kenya 1922) started drawing and painting wild flowers.

YOUNG-Dong Kim & al. (2004). Taxonomic and phylogeographic implications from ITS phylogeny in Berberis (Berberidaceae). *J. Plant Res.* 117: 175-182.

## BERBERIS HOLSTII

These authors found that the ITS sequence of *B. holstii* “was identical to that of Himalayan species, *B. coriaria* and *B. edgeworthiana*”.

Map in Volume 1: 95.

## BOMBACACEAE (Volume 1: 708-710)

Add new information for the family and genera.

BEENTJE, H. & S. SMITH (2002). FTEA and after. *Syst. Geogr. Pl.* 71: 265-290 [(the *Bombacaceae* is taken as an example of an abbreviated format for a future Flora of tropical Africa, with approximate distribution maps (each species)].

## ADANSONIA (Volume 1: 708-709)

DRAKE, E. (2006). *A book of Baobabs*. Aardvark Press, Cape Town. VI + 90 pp.

FLETCHER, E. (2002). I baobab, l’Australia e la Gondwana. *Piante Grasse* 22/4: 140-148.

HART, G. (2008). Baobabs, giants of the succulent world. *Cactus Succ. J. (U.S.)* 80: 28-35.

PAKENHAM, T. (2004). *The remarkable baobab*. W. W. Norton & Co. New York, 142 pp.

PAKENHAM, T. (2006). *Baobabs*. Editions du Chêne, Hachette-Livre, Paris. 143 pp.

WICKENS, G. E. (2008). *The Baobabs: Pachycauls of Africa, Madagascar and Australia*. Springer Science & Business Media, s.l. XL + 498 pp. [the most remarkable treatise on *Adansonia* !].

**Adansonia digitata** L. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 431, 2006; Lisowski, Fl. Rép. Guinée 2: fig. 118, 2009. – Maps in Wickens (2008): 273 and Blench (2007): 4, and Watson (2007): 32 (all detailed), and Syst. Geogr. Pl. 71: 284, 2002.

ASSOGBADJO, A. E. & al (2005). Ecological diversity and pulp, seed and kernel production of the Baobab (*Adansonia digitata*) in Benin. *Belg. J. Bot.* 138: 47-56 [with map].

BATIONO, B. A. & al. (2009). Culture du baobab *Adansonia digitata* L. (Bombacaceae) en planche maraîchère: une méthode pour simplifier sa récolte et favoriser sa propagation au Sahel. *Bois Forêts Trop.* 299/1: 79-85.

BLENCH, R. M. (2007). The intertwined history of silk-cotton and baobab. In: CAPPERS, R., ed., *Fields of Change: Progress in African archaeobotany*: 1-19. Barkhuis & Groningen University Library (Groningen Archaeological Studies 5).

CUNI SANCHEZ, A. & al. (2010). Biogeography of the African baobab *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar 2010): 450.

DE CALUWÉ, E. & al. (2010). Domestication and development of baobab and tamarind (dadobat). In: VAN DER BURGT, X. & al., eds., *Systematics and Conservation of African Plants*: 341-349. Royal Botanic Gardens, Kew.

DE SMEDT, S. & al. (2010). Variability of baobab (*Adansonia digitata*) fruit and seed traits: a mechanism for climatic adaptation? *Scripta Bot. Belg.* 46 (AETFAT XIX Madagascar 2010): 131.

DUVALL, C. S. (2007). Human settlement and baobab distribution in south-western Mali. *J. Biogeogr.* 34: 1947-1961 [with map].

ELLIS, D. (2003). Walking amongst the baobab trees – *Adansonia digitata* in Kenya and Tanzania. *Cactus Succ. J. (U.S.)* 75: 207-213 [photographs].

JØDAL, M. (2007). *Baobab – verdens rareste tre*. Omnipax, Oslo. 92 pp. [review by B. Stedje in *Blyttia* 65: 149-150, 2007; in Norwegian].

KYNDT, T. & al. (2009). Spatial genetic structuring of baobab (*Adansonia digitata*, Malvaceae) in the traditional Agroforestry systems of West Africa. *Amer. J. Bot.* 96: 950-957.

LENOBLE-PRÉDINE, F. & L. ALLORGE (2009). Baobab alimentaire. *Hommes & Plantes* 69: 34-35.

NIANG BELKO, N. & al. (2010). Pré-traitement des graines de baobab (*Adansonia digitata*) avec l’acide sulfurique concentré pour une germination optimale. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar 2010): 324.

SAVARD, V. & al. (2006). Technique de production maraîchère de feuilles de baobab: potentiel d’adoption. *Bois Forêts Trop.* 287: 21-34.

## ADANSONIA DIGITATA

- SCHUMANN, K. & al. (2010). Impact of harvesting and land use on population structures and reproductive performance of the baobab (*Adansonia digitata*) in savanna areas of Burkina Faso. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar 2010): 454.
- SMALL, E. & P. M. CATLING (2003). Blossoming treasures of biodiversity 9. African Baobab – The World's Fattest Tree. *Biodiversity* 4/3: 27-29.
- WATSON, R. (2007). *The African Baobab*. Struik Publishers, Cape Town. 200 pp. Map in Volume 1: 709 (gives a general view of the range).

**BOMBAX** (Volume 1: 710 / 709)

incl. species under *Rhodognaphalon* (Ulbr.) Roberty

**Bombax brevicuspe** Sprague; Sosef & al., Check-list pl. vascul. Gabon: 93-94, 2006; Lisowski, Fl. Rép. Guinée 1: 101, 2009. In Gabon: 300 m alt. Map in Volume 1: 709 (distribution area in Gabon larger than shown on the map).

**B. buonopozense** P. Beauv.; Sosef & al., l.c.; Lisowski, l.c. In Gabon: 40-600 m alt. Map on p. 337.

**B. lukayense** De Wild. & T. Durand; Sosef & al., o.c.: 94. In Gabon: 2-10 m alt. Map on p. 341.

**CEIBA** (Volume 1: 710)

**Ceiba pentandra** (L.) Gaertner – Icon.: Akoegninou & al., Fl. analyt. Bénin: 433, 2006; Lisowski, Fl. Rép. Guinée 2: figs. 119-120, 2009.

syn.: *Bombax occidentalis* Spreng.; *Ceiba occidentalis* (Spreng.) Burkill, nom. illegit.; *C. anfractuosa* M. Gómez, nom. illegit.; *Bombax mompoxense* Kunth; *B. cumanense* Kunth

BLENCH, R. M. (2007). See above under *Adansonia digitata*.

GIBBS, P. & J. SEMIR (2003). A taxonomic revision of the genus *Ceiba* Mill. (Bombacaceae). *Anales Jard. Bot. Madrid* 60: 259-300 [includes *Chorisia*; map of distribution in the Americas p. 286].

HOYOS F., J. (2005). La Ceiba o Ceibo, *Ceiba pentandra* (L.) Gaertner. *Natura (La Salle)* 126: 26-31 [with photographs].

**(RHODOGNAPHALON)**

Treated as synonym under **Bombax** in Volume 1: 710. In recent floras or lists retained for the following species:

*Bombax brevicuspe* Sprague = **Rhodognaphalon brevicuspe** (Sprague) Roberty  
*lukayense* De Wild. & Th. Durand = **R. lukayense** (De Wild. & Th. Durand) A. Robyns  
*rhodognaphalon* K. Schum. = **R. schumannianum** A. Robyns

**BRASSICACEAE** (Volume 1: 154-170) / 33 g. / 98 spp. (former account: 31 / 92)

Add new information for the family and genera.

- ABDEL KHALIK, K. (2005). Morphological studies on trichomes of Brassicaceae in Egypt and taxonomic significance. *Acta Bot. Croat.* 64: 57-73.
- AL-SHEHBAZ, I. A. & al. (2006). Systematics and phylogeny of the Brassicaceae (Cruciferae): an overview. *Pl. Syst. Evol.* 259: 89-120.
- BEILSTEIN, M. A. & al. (2006). Brassicaceae phylogeny and trichome evolution. *Amer. J. Bot.* 93: 607-619.
- BEILSTEIN, M. A. & al. (2008). Brassicaceae phylogeny inferred from phytochrome A and ndhF sequence data: tribes and trichomes revisited. *Amer. J. Bot.* 95: 1307-1327 ["Brassicaceae comprises 3710 species in 338 genera"].
- EL NAGGAR, S. M. I. (2002). Revised list of Brassicaceae for flora aegyptiaca. *Fl. Medit.* 12: 169-176.
- KOCH, M. A. & C. KIEFER (2006). Molecules and migration: biogeographical studies in cruciferous plants. *Pl. Syst. Evol.* 259: 121-142.
- KOCH, M. A. & K. MUMMENHOFF (2006). Editorial: Evolution and phylogeny of the Brassicaceae. *Pl. Syst. Evol.* 259: 81-83.
- KOCH, M. [A.] & al. (2003). Molecular systematics, evolution, and population biology in the mustard family (Brassicaceae). *Ann. Missouri Bot. Gard.* 90: 151-171.
- WARWICK, S. I. & C. A. SAUDER (2005). Phylogeny of tribe Brassiceae (Brassicaceae) based on chloroplast restriction site polymorphisms and nuclear ribosomal internal transcribed spacer and chloroplast trnL intron sequences. *Canad. J. Bot.* 83: 467-483.
- WARWICK, S. I. & al. (2006). Brassicaceae: Species checklist and database on CD-Rom. *Pl. Syst. Evol.* 259: 249-258 [list of genera with number of species].
- WARWICK, S. I. & al. (2007). Phylogenetic relationships in the tribes Anthonieae, Chorisporeae, Euclidideae, and Hesperideae (Brassicaceae) based on nuclear ribosomal ITS DNA sequences. *Ann. Missouri Bot. Gard.* 94: 56-78.
- WARWICK, S. I. & al. (2010). Closing the gaps: phylogenetic relationships in the Brassicaceae based on DNA sequence data of nuclear ribosomal ITS region. *Pl. Syst. Evol.* 285: 209-232.

**ANASTATICA** (Volume 1: 154-155)

**Anastatica hierochuntica** L. – Icon.: Fl. Eth. & Eritrea 2/1: 138, 2000; Gartenbau 128/51-52: 26, 27, 2007.

Also in the Canary Isl., Fuerteventura [S. Scholz & al., Adiciones a la flora vascular de Fuerteventura (Islas Canarias), in Bot. Macaron. 25: 116, 2004].

For "Roses of Jericho" see also Fournier in Bull. Soc. Bot. France 105: 354-356, 1959.

Map in Volume 1: 155.

**ARABIDOPSIS** (Volume 1: 154-156)

- FRANZKE, A. & al. (2009). Arabidopsis family ties: molecular phylogeny and age estimates in Brassicaceae. *Taxon* 58: 425-437.
- LEONELLI, S. (2007). Arabidopsis, the botanical Drosophila: from mouse cress to model organism. *Endeavour* 31/1: 34-38.
- KOCH, M. A. & al. (2008). Arabidopsis thaliana's wild relatives: an updated overview on systematics, taxonomy and evolution. *Taxon* 57: 933-943.
- NAGATA, T. & S. TABATA, eds. (2003). *Brassicas and legumes: from genome structure to breeding*. (Biotechnology in Agriculture and Forestry 52) Springer-Verlag, Berlin, etc. VIII + 268 pp. [see p. 4, 36, 73-86, 117-123].
- O'KANE, S. L. Jr. & I. A. AL-SHEHBAZ (2003). Phylogenetic position and generic limits of Arabidopsis (Brassicaceae) based on sequences of nuclear ribosomal DNA. *Ann. Missouri Bot. Gard.* 90: 603-612.
- PROVAN, J. & J. J. CAMPANELLA (2003). Patterns of cytoplasmic variation in Arabidopsis thaliana (Brassicaceae) revealed by polymorphic chloroplast microsatellites. *Syst. Bot.* 28: 578-583.
- QUIRICI, O. G. (2003). *Cycle de vie d'Arabidopsis thaliana*. Diplôme de Biologie, Mémoire, Faculté des Sciences, Université de Genève, Département de botanique et de biologie végétale, Genève. 79 pp.

## ARABIDOPSIS

**Arabidopsis thaliana** (L.) Heynh., incl. var. *pusilla* (A. Rich.) O. E. Schulz; Thulin, Fl. Somal. 4 (Appendix): 276, 1995 – Icon.: Fl. Eth. & Eritrea 2/1: 145, 2000 (sub gen. *Arabis*).

Evergreen bushland in grassy patches, 1650 m alt. (Somalia); (1400-)2000-4400 m in Ethiopia.

Map on p. 341.

**ARABIS** (Volume 1: 156-157) / 3 (former account: 2)

**Arabis alpina** L., incl. var. *meruensis* (O. E. Schulz) Pic. Serm.; Thulin, Fl. Somalia 3: 560, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 145, 2000.

Sandstone cliffs, ca. 1800 m alt. (Somalia; plants large in all parts and white-flowered). Rocky slopes in forests, etc., 2000-4350 m alt. (Ethiopia).

KOCH, M. A. (2007). Phylogeography of *Arabis alpina* in African high mountains. In: ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February-2 March 2007, Yaoundé, Cameroon, Abstracts*: 82.

Map on p. 341.

**A. elgonensis** Al-Shehbaz, sp. nov. – Icon.: Harvard Papers Bot. 12: 388, 2007.

Herb 20-40 cm tall; stems (densely) pubescent, hairs simple, and stalked 2-4-rayed; basal leaves unknown; cauline leaves pubescent, sessile, linear-oblongate, 2-3 × 0,5 cm; raceme *bracteate* below; petals white, 6-7 × 1,5 mm (2-3,5 × 1,5 mm in *B. alpina*); fruit linear, *pubescent along replum* (not so in *B. alpina*); seeds ovate, c. 1 × 0,6 mm, *wingless* (winged in *B. alpina*).

Heath zone in moist places; 3658 m alt.

Known only from the type (Dummer 3438) collected in 1918 (Uganda, Mt. Elgon).

Character combination not previously known in *Arabis*.

Map on p. 341.

**BARBAREA** (Volume 1: 156/ 155)

**Barbarea intermedia** Boreau – Icon.: Fl. Eth. & Eritrea 2/1: 145, 2000.

In Ethiopia in grassland often on streamsides or waterlogged areas; 3000-4200 m alt.

Map in Volume 1: 155.

**BRASSICA** (Volume 1: 156-157, 155)

**Brassica carinata** A. Br.; Sosef & al., Check-list pl. vascul. Gabon: 132, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 124, 2000.

In Ethiopia 1300-3000(-3850) m alt. Also cultivated for its leaves and seeds. Reported introduced in Gabon.

Map on p. 341.

**B. tournefortii** Gouan – Sahara Mustard – Icon.: To the Point 77/3: 91, 93, 2005.

In California “a most invasive wildland pest plant”, also so in Arizona, USA. Occupies undisturbed natural ecosystems in arid deserts; without human assistance.

EMMING, J. (2005). Observations on Sahara mustard. *To the Point* 77/3: 91-94.

MALUSA, J. & al. (2003). Distribution of the exotic mustard *Brassica tournefortii* in the Mohawk Dunes and Mountains, Arizona. *Desert Plants* 19/1: 31-35.

SCHIERMEIER, Q. (2005). Pall hangs over desert's future as alien weeds fuel wildfires. *Nature* 435: 724.

TRADER, M. R. & al. (2007). Seed production by the non-native *Brassica tournefortii* (Sahara mustard) along desert roadsides. *Madroño* 53: 313-320.

Map in Volume 1: 157.

**CAPSELLA** (Volume 1: 156-157) / 1 (former account: 2)

**Capsella bursa-pastoris** (L.) Medik. – Icon.: Fl. Eth. & Eritrea 2/1: 136, 2000.

syn.: *C. rubella* sensu Cufod., Enum. Pl. Aeth.: 154, 1954, et Adumbr. Fl. Aethiop. 7: 187, map 5, 1958, non Reut.

In the fruit 2 kinds of seeds are formed [see Teppner in Phytion (Horn) 43: 381-391, 2003].

In Ethiopia at 2200-3500 m alt. (weed of fields).

Map on p. 341.

**Capsella rubella** Reut.

Not in Ethiopia fide Fl. Eth. & Eritrea 2/1: 135, 2000. Cf. map in Volume 1: 157.

**CARDAMINE** (Volume 1: 158, 157) / 5 (former account: 4)

CARLSEN, T. & al. (2009). Biogeography and phylogeny of Cardamine (Brassicaceae). *Ann. Missouri Bot. Gard.* 96: 215-236.

**Cardamine africana** L.; Fl. Eth. & Eritrea 2/1: 142, 2000.

Leaves with 3 leaflets.

Map on p. 341.

**C. hirsuta** L., incl. var. *glabra* Schweinf., var. *exigua* O. E. Schulz, var. *pilosa* O. E. Schulz, and var. *simensis* Hochst. ex Hook. f.; Thulin, Fl. Somal. 4: 276, 1995; Sosef & al., Check-list pl. vascul. Gabon: 132, 2006.

A diploid species close to (and confused with) the tetraploid *C. flexuosa* Withering, Eurasian and N African, described from Great Britain (lectotype, Curtis' Flora Londin.: pl. 277, 1777, labeled *C. hirsuta*; A. R. Post & al. in J. Bot. Res. Inst. Texas 3: 227-230, 2009).

In Gabon: 5-570 m alt.; in Somalia: evergreen bushland in grassy patches; 1650 m alt.

LIHOVÁ, J. & al. (2006). Worldwide phylogeny and biogeography of Cardamine *flexuosa* (Brassicaceae) and its relatives. *Amer. J. Bot.* 93: 1206-1221.

Map on p. 341.

**C. jonselliana** Al-Shehbaz, sp. nov. – Icon.: Harvard Papers Bot. 9: 6, 2004.

Perennial herb 10-25 cm tall, rhizomatous, glabrous in all parts except leaflet margins (ciliate, simple hairs); rhizomes branched, not scaly; stems erect, rooting at lowermost nodes; leaves cauline, pinnate, petiole 2-4 cm long, pinnae in 2-4 pairs, terminal leaflet largest; racemes *bracteate*; flowers purple; mature fruit and seeds unknown.

Moist open ground amongst grasses; c. 4560 m alt.

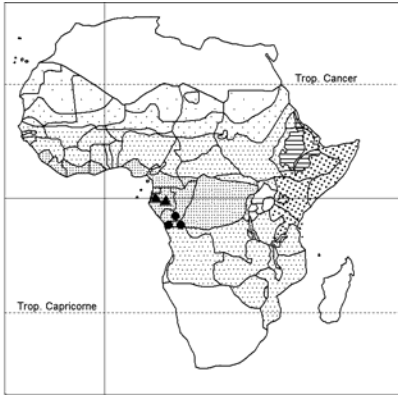
Known only from the type collected in 1968 (Hamilton 742).

Resembling *C. obliqua* (ebracteate racemes !).

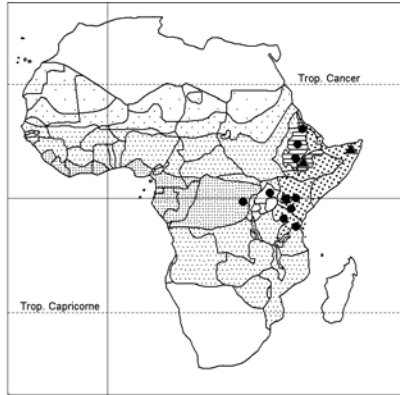
Map on p. 341.

**C. obliqua** Hochst. ex A. Rich., incl. fa. *alpina* (Engl.) O. E. Schulz; Fl. Eth. & Eritrea 2/1: 142, 2000.

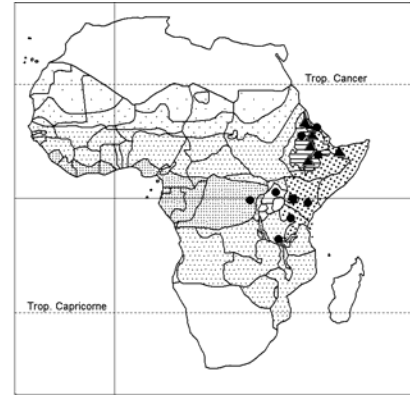
Map on p. 341.



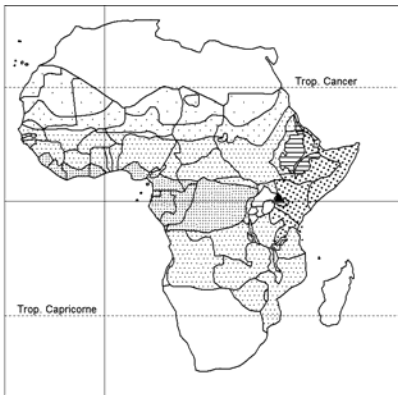
*Bombax lukayense*



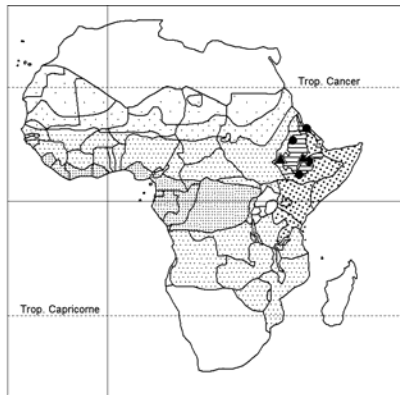
*Arabidopsis thaliana*



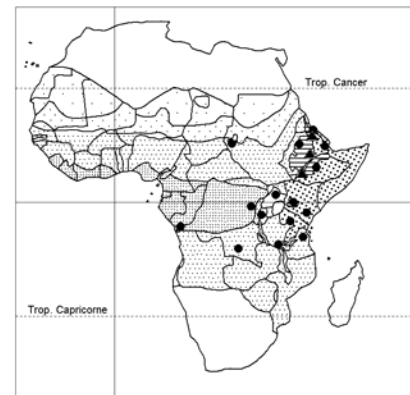
*Arabis alpina*



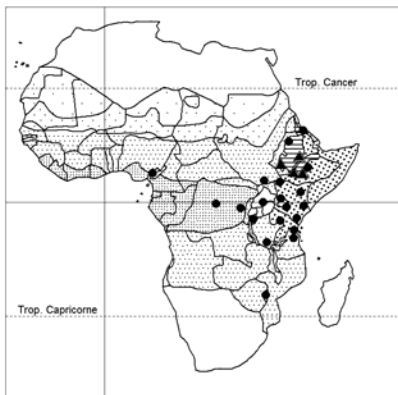
*Arabis elgonensis*



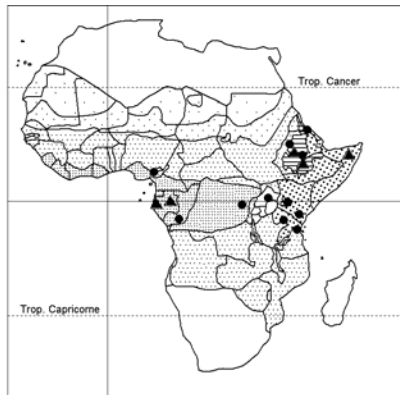
*Brassica carinata*



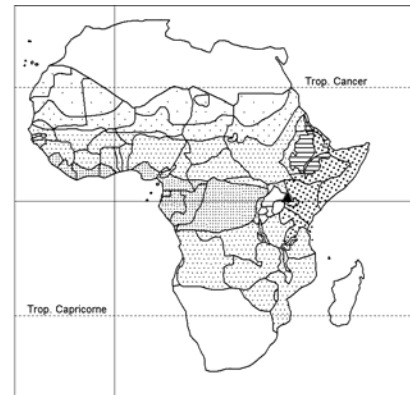
*Capsella bursa-pastoris*



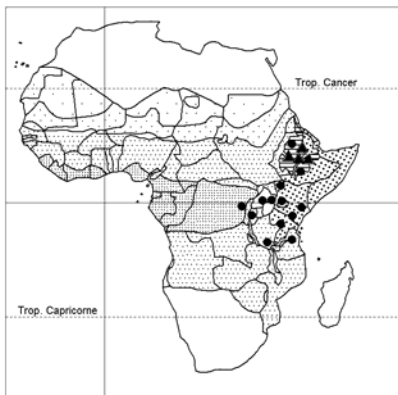
*Cardamine africana*



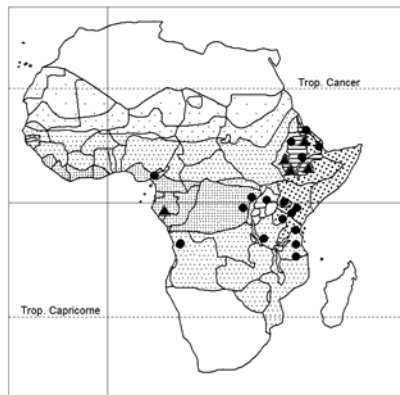
*Cardamine hirsuta*



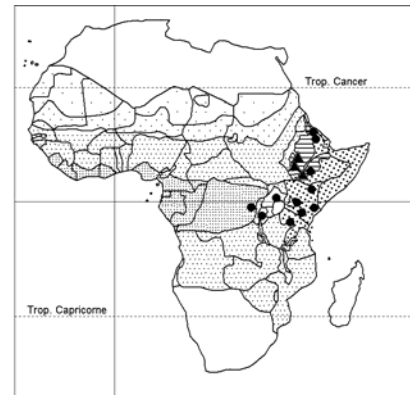
*Cardamine jonselliana*



*Cardamine obliqua*



*Cardamine trichocarpa*



*Crambe hispanica*



## CARDAMINE

**C. trichocarpa** Hochst. ex A. Rich., incl. var. *usambarensis* Engl., fa. *leiocarpa* O. E. Schulz, and subsp. *elegans* (Engl.) O. E. Schulz (bas.: var. *elegans* Engl.); Sosef & al., Check-list pl. vascul. Gabon: 132, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 143, 2000.

In Ethiopia: open forests and clearings, beside tracks, in shade; 700-3100 m alt.; in Gabon: 690 m.

Map on p. 341.

**CORONOPUS** (Volume 1: 158/157)

*Coronopus* Zinn was united with **Lepidium** L. by Al-Shehbaz (& al.), Novon 12: 5-11, 2002. The species occurring in our area were maintained by us in the genus **Coronopus**.

**Coronopus squamatus** (Forssk.) Aschers.

bas.: *Lepidium squamatum* Forssk. 1775.

If *C. squamatus* is transferred to **Lepidium**, this basionym does not have priority. The earliest name for this taxon is *Cochleria coronopus* L. 1753. Thus this epithet should be used in a new combination: **Lepidium coronopus** (L.) Al-Shehbaz. This latter name should then be added as synonym under the species **Coronopus squamatus** in our list.

**CRAMBE** (Volume 1: 158-159)

**Crambe hispanica** L. – Icon.: Fl. Eth. & Eritrea 2/1: 130, 2000.

In Ethiopia little is known about its natural occurrence and variation.

Map on p. 341.

**C. sinuato-dentata** Hochst. ex Petri; Fl. Eth. & Eritrea 2/1: 129, 2000.

In Ethiopia on open soil in grasslands, weed in fields; 1600-2000 m alt.

Map on p. 343.

**DICERATELLA** (Volume 1: 158-160)

**Diceratella revoilii** (Franch.) Jonsell; Fl. Eth. & Eritrea 2/1: 150, 2000.

In Ethiopia on limestone hills; ca. 400 m alt.

Map on p. 343.

**D. smithii** (Bak. f.) Jonsell; Fl. Eth. & Eritrea, 2/1: 148, 2000.

In Ethiopia in open *Acacia* woodland; 900-1800 m alt.

Map on p. 343.

**DIPLLOTAXIS** (Volume 1: 159-161) / 5 (former account: 4)

Add a new species for our area:

**Diplotaxis ollivieri** Maire; Förther & Podlech, Sendtnera 8: 48, 2002; Maire, Fl. Afrique N. 12: 259, 1965. – Icon.: Nègre, Petite flore régions arides Maroc occid. 1: 277 fig. 290, 1961; Fennane & al., Fl. prat. Maroc 1: 378, 1999; F. Gómiz García, Flora selecta Marroquí: 87 fig. 31, 2001.

Annual glabrous herb to ca. 28 cm tall; stems flexuous, ramose at base, leafy; leaves 6-8-pinnatifid, segments linear; inflorescence of 7-35 yellow flowers, petals obovate, 0.5-1 cm long.

Roadside; wadi beds, sandy, loamy and gravelly ground (Morocco); c. 40 m alt.

SW Morocco.

Map on p. 343.

**EROPHILA** (Volume 1: 160/161)

For discussion of characters, see:

KALHEBER, H. (2003). Zur Gliederung von *Erophila verna* s.l. mit Merkmalprüfungen für die in Hessen vorkommenden Arten. *Botanik & Naturschutz Hessen* 16: 39-56.

**ERUCA** / 1

Add a new species for our area:

**Eruca vesicaria** (L.) Cav. subsp. **sativa** (Mill.) Thell.; Thulin, Fl. Somal. 4: 276, 1995; Fl. Eth. & Eritrea, 2/1: 129, 2000. – Icon.: Boulos, Fl. Egypt 1: 216, 1999.

bas.: *Eruca sativa* Mill.

syn.: *Brassica hispida* Ten.; *Eruca cappadocica* Boiss.

Annual herb 0.2-1 m tall, usually hispid; stems erect, simple or branching; lower leaves lyrate-pinnatisect, upper ones shorter, terminal lobe larger than laterals (1-5); flowers whitish yellow veined violet, petals 1.5-2.4 cm long; silique erect, beak sword-like.

Weed in garden near sea-level. (Somalia); weed of annual crops, particularly linseed (*Linum usitatissimum*); 1850-2550 m alt. (Ethiopia).

Mediterranean Region, SW Asia; widely naturalized.

Widely cultivated in temperate regions (leaves = salad rocket).

Easily confused with *Raphanus raphanistrum* without fruits.

Map on p. 343.

**ERUCASTRUM** (Volume 1: 160-162)

*Erucastrum* C. Presl, 1826 conserved against *Kibera* Adans. 1763 and *Hirschfeldia* Moench (cf. Taxon 54: 204-205, 2005; ibid. 56: 590, 2007).

FEOLI CHIAPELLA, L. & al. (2006). Karyological notes on *Erucastrum palustre* (Pirona) Vis. (Brassicaceae) and allied species. *Webbia* 61: 35-43 [*E. arabicum*].

WARWICK, S. I. & al. (2002). See below under **Sisymbrium**.

**Erucastrum abyssinicum** (A. Rich.) O. E. Schulz – Icon.: Fl. Eth. & Eritrea 2/1: 127, 2000.

In Ethiopia: waste land, roadsides, dry and stony banks; 1700-2000(-3200) m alt.

Map on p. 343.

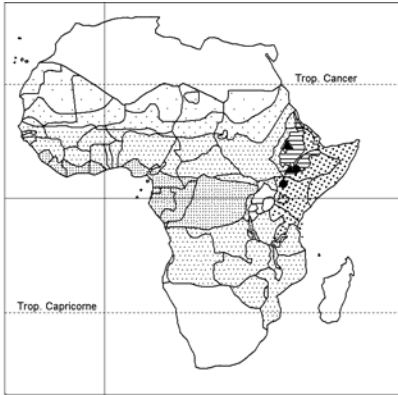
**E. meruense** Jonsell – Icon.: Fl. Eth. & Eritrea 2/1: 127, 2000.

In Ethiopia: subsp. **balense** Jonsell

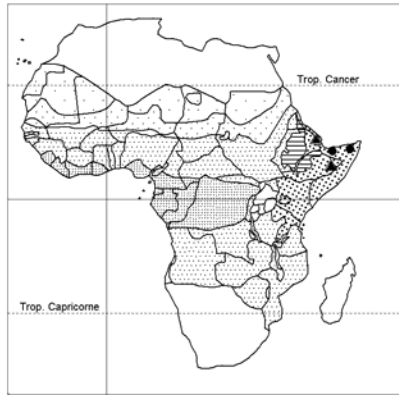
Clearings and margins of forest; ericaceous bushland; 3000-3450 m alt.

Subsp. **meruense** in N Tanzania.

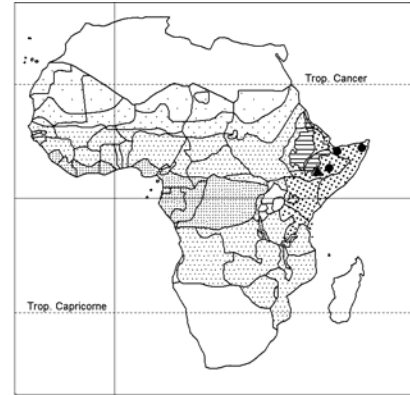
Map on p. 343.



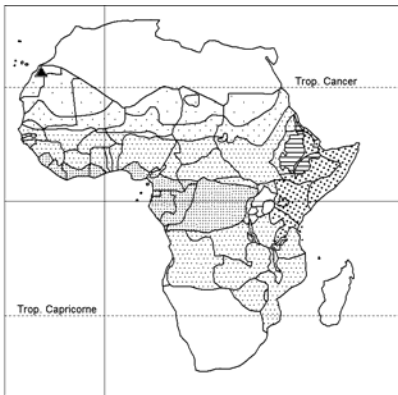
*Crambe sinuato-dentata*



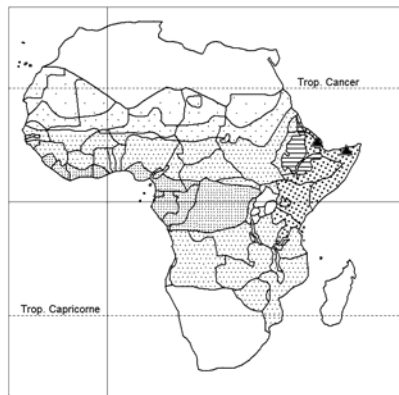
*Diceratella revoilii*



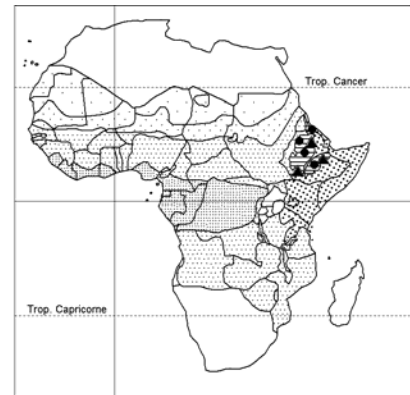
*Diceratella smithii*



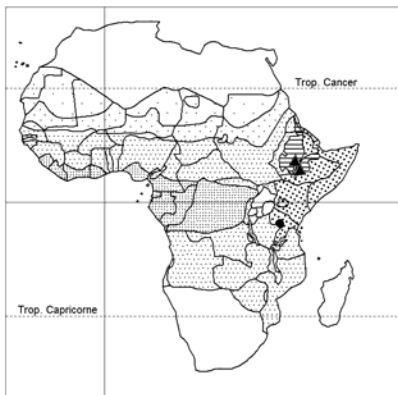
*Diplotaxis ollivieri*



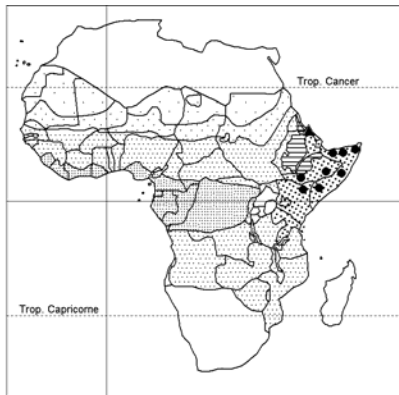
*Eruca vesicaria* subsp. *sativa*



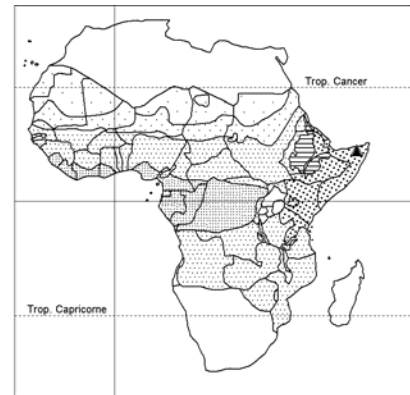
*Erucastrum abyssinicum*



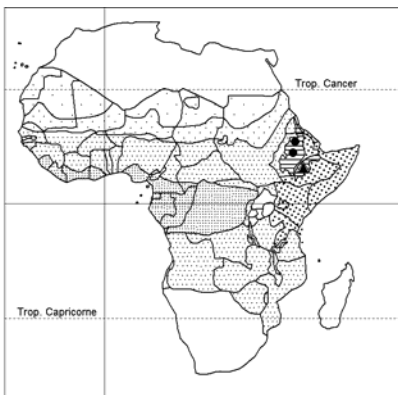
*Erucastrum meruense*



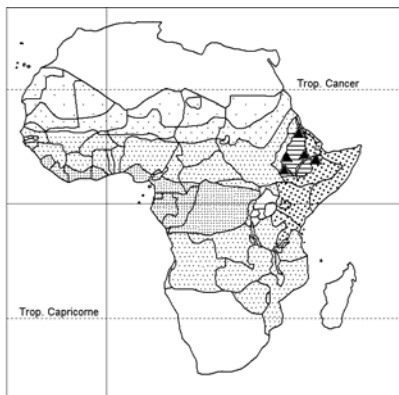
*Farsetia robecchiana*



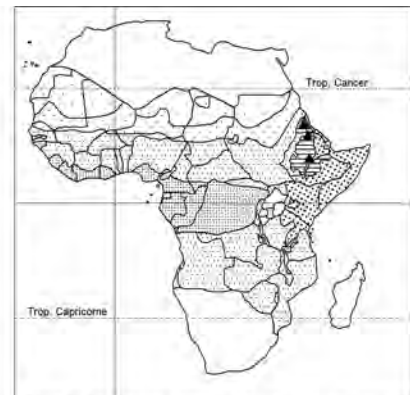
*Moricandia sinaica*



*Oreophyton falcatum*



*Raphanus raphanistrum*



*Rapistrum rugosum* subsp. *orientale*

**FARSETIA** (Volume 1: 162/161-165)

WARWICK, S. I. & al. (2008). Phylogenetic relationships in the tribe Alysseae (Brassicaceae) based on nuclear ribosomal ITS DNA sequences. *Botany (Canada)* 86: 315-336 [see p. 327, 329, 330, 332, 333].

**Farsetia robecchiana** Engl., incl. var. *viridiflora* Chiov. – Icon.: Fl. Eth. & Eritrea 2/1: 139, 2000.

In Ethiopia 200-1100 m alt.

Map on p. 343.

**LEPIDIUM** (Volume 1: 164-165)

*Coronopus* Zinn was united with *Lepidium* L. by Al-Shehbaz. We maintained the genus *Coronopus* (Volume 1: 158).

The new combination *Lepidium coronopus* (L.) Al-Shehbaz was proposed for **Coronopus squamatus** (Forssk.) Aschers. See above under **Coronopus**.

\* \* \*

DIERSCHKE, T. & al. (2009). A bicontinental origin of polyploid Australian/New Zealand *Lepidium* species (Brassicaceae)? Evidence from genomic in situ hybridization. *Ann. Bot.* 104: 681-688.

MUMMENHOFF, K. & al. (2006). African species of *Lepidium* (Brassicaceae) contributed via hybridization to the origin of Australian/New Zealand species. In: GHAZANFAR, S. A. & H. J. BEENTJE, eds., *Taxonomy and ecology of African plants, their conservation and sustainable use*: 291-308. Royal Botanic Gardens, Kew.

MUMMENHOFF, K. & al. (2010). A bicontinental hybrid origin of polyploid Australian/New Zealand *Lepidium* species (Brassicaceae). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar 2010): 315.

**MORICANDIA** (Volume 1: 166-167) / 2 (former account: 1)

Add a new species for our area:

**Moricandia sinaica** (Boiss.) Boiss.; Thulin, Fl. Somalia 3: 560, 2006. – Icon.: Boulos, Fl. Egypt 1: 222, 1999; Zohary, Fl. Palest. 1, Plates: pl. 452a, 1966.

bas.: *Brassica sinaica* Boiss.

Perennial herb 0,4-1 m tall, glabrous, glaucous; stems whitish, much branched; leaves fleshy, entire, oblong-ovate, 2-10 × 2-6(-8) cm, upper ones clasping, auriculate; racemes dense; flowers pink or white, petals 1-1,5 cm long; siliqua 3-8 cm long.

Gypsum outcrop; ca. 1300 m alt.

Egypt, Sinai, Arabia, Israel, Jordan, Iran, Pakistan.

Map on p. 343.

**OREOPHYTON** (Volume 1: 166-167)

**Oreophyton falcatum** (Hochst. ex A. Rich.) O. E. Schulz, incl. var. *depauperatum* with fa. *leiophyllum* O. E. Schulz – Icon.: Fl. Eth. & Eritrea 2/1: 154, 2000.

Map on p. 343.

**RAPHANUS** / 1

Add this genus to Volume 1.

ILJINSKA, A. P. (2008). A taxonomic analysis of the genus *Raphanus* L. (sect. *Raphanus*; Brassicaceae). *Ukrain. Bot. J.* 65: 811-822 [in Ukrainian].

**Raphanus raphanistrum** L. – Icon.: Fl. Eth. & Eritrea 2/1: 128, 2000; Boulos, Fl. Egypt 1: 222, 1999.

syn.: *Raphanistrum arvense* Mérat; *Raphanus sylvestris* Lam. Annual herb 20-150 cm tall, covered with rough hairs; lower leaves petiolate, to 15 cm long, lyrate-pinnatifid to pinnatisect, coarsely toothed; upper ones ± undivided; racemes elongate;

**RAPHANUS RAPHANISTRUM**

flowers white, yellow or pale violet with dark veins; siliqua 2-9 cm long, constricted between the seeds into 2-10 locules, beak conical 1-2 cm long.

Weed, waste places; 1800-2400 m alt.

N. Africa, Europe, SW and C Asia; widely introduced elsewhere.

Difficult to distinguish from (the cultivated) escaped *R. sativus* L. It is possible that A. Richard in Tent. Fl. Abyss. 1: 25, 1847, who noted that *R. sativus* was widely found in Ethiopia, mistook it for *R. raphanistrum* (fide Fl. Eth. & Eritrea 2/1: 127, 2000).

Map on p. 343.

**RAPISTRUM** / 1

Add this genus to Volume 1.

**Rapistrum rugosum** (L.) All. subsp. **orientale** (L.) Arcangeli – Icon.: Fl. Eth. & Eritrea 2/1: 132, 2000; Boulos, Fl. Egypt 1: 216, 1999.

bas.: [*Myagrimum rugosum* L.]; *Myagrimum orientale* L.

syn.: *Rapistrum clavatum* (Poir.) DC.; *R. confusum* Pomel; *R. conoideum* Pomel; *R. hispidum* Godron; *R. orientale* (L.) Crantz

Annual herb, erect, 15-60 cm tall, hispid below, often glabrous above; lower leaves pinnate, upper ones toothed; racemes branched; flowers yellow, petals 6-10 mm long; silicula 3-10 mm long, ± globose, abruptly contracted into a filiform beak 1-3 mm long.

Weed; 1900-2000 m alt.

E Mediterranean, W and C Asia.

Map on p. 343.

**RORIPPA** (Volume 1: 166-169)

**Rorippa madagascariensis** (DC.) Hara; Sosef & al., Check-list pl. vascul. Gabon: 132, 2006.

In Gabon: 200 m alt.

Map on p. 345.

**R. micrantha** (Roth) Jonsell – Icon.: Fl. Eth. & Eritrea 2/1: 147, 2000.

In Ethiopia: 1450-1700 m alt.

Map on p. 345.

**R. microphylla** (Boenn.) Hyl. – Icon.: Fl. Eth., l.c.

In Ethiopia: brooks, ditches, grassland overrun by water, sometimes floating; 1200-2600 m alt.

Together with *R. nasturtium-aquaticum* flourishing in the highly polluted ditches of Addis Ababa.

Map on p. 345.

**SCHOUWIA** (Volume 1: 168-169)

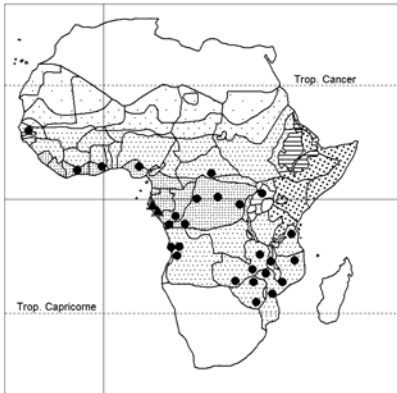
**Schouwia purpurea** (Forssk.) Schweinf.; Fl. Eth. & Eritrea 1: 203, 2009. – Icon.: Fl. Eth. & Eritrea 2/1: 131, 2000.

In Ethiopia: open sand along wadis, probably near sea-level; and open *Acacia senegal*-*Grewia* semi-desert scrub on lava flows; to ca. 1200 m alt.

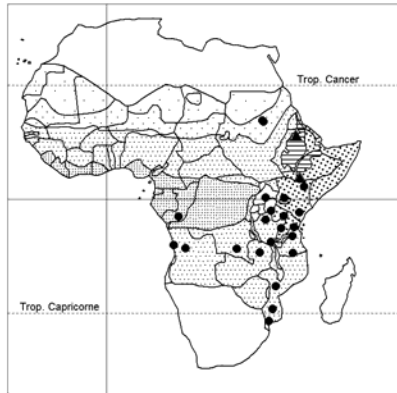
In Fl. Ethiopia, l.c., *S. purpurea* is considered conspecific with *S. thebaica* and treated as one widespread polymorphic species.

In Greuter & al., Med-Checklist 3: 155, 1986, *S. thebaica* is treated as *S. purpurea* subsp. *schimperii* (Jaub. & Spach) Maire

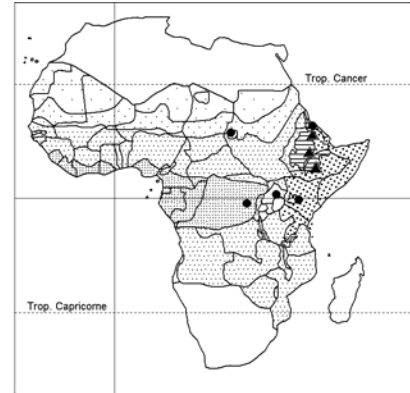
Map on p. 345.



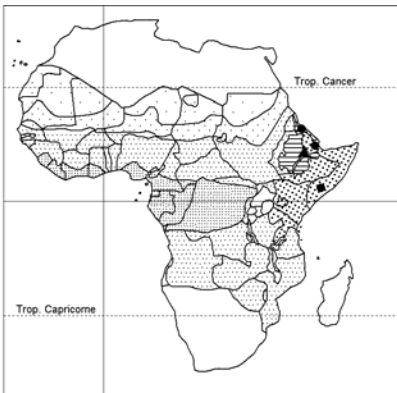
*Rorippa madagascariensis*



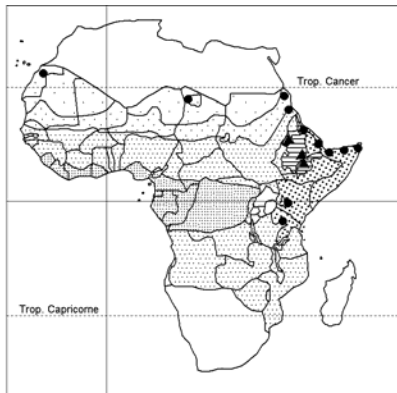
*Rorippa micrantha*



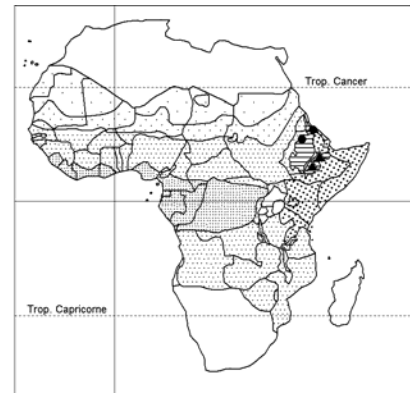
*Rorippa microphylla*



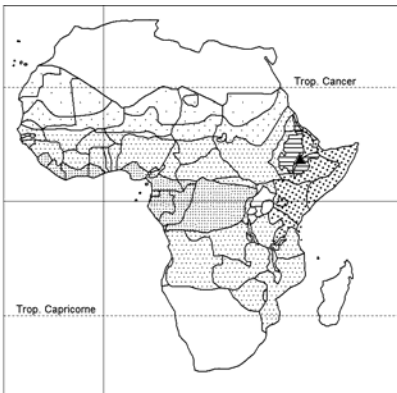
*Schouwia purpurea*



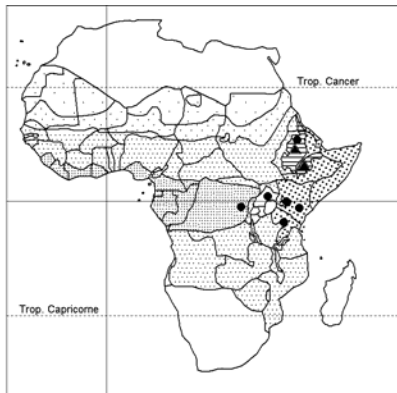
*Sisymbrium erysimoides*



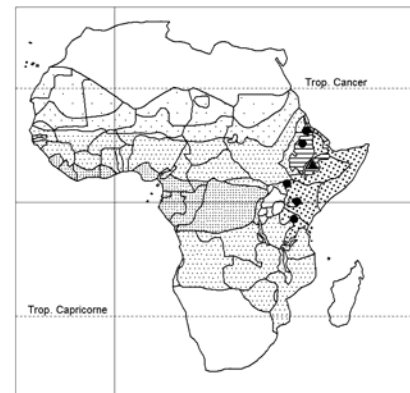
*Sisymbrium maximum*



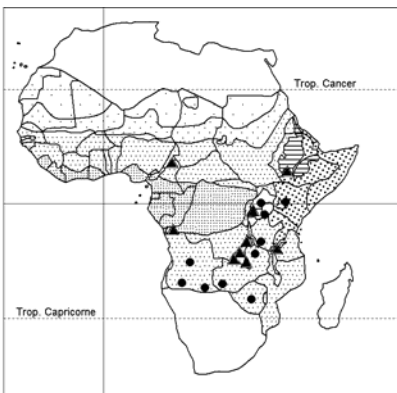
*Sisymbrium officinale*



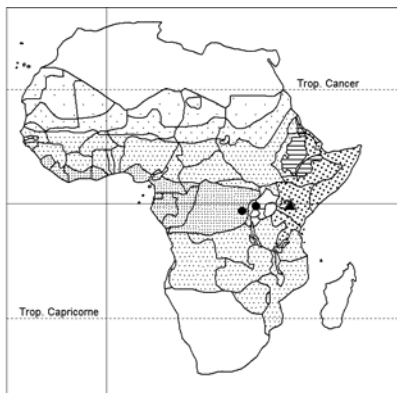
*Subularia monticola*



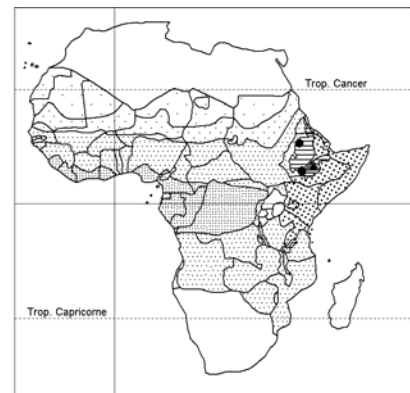
*Thlaspi alliaceum*



*Brasenia schreberi*



*Callitriche anisoptera*



*Callitriche favageri*



**SISYMBRIUM** (Volume 1: 168-169) / 5 (former account: 4)

Add a further species to our list.

WARWICK, S. I. & al. (2002). Phylogeny of *Sisymbrium* (Brassicaceae) based on ITS sequences of nuclear ribosomal DNA. *Canad. J. Bot.* 80: 1002-1017.

WARWICK, S. I. & al. (2006). Molecular phylogeny, morphology and cytological diversity of *Sisymbrium* (Brassicaceae). In: SHARMA, A. K. & A. SHARMA, eds., *Plant Genome: Biodiversity and Evolution 1/C, Phanerogams (Angiosperm-Dicotyledons)*: 219-250. Science Publishers, Enfield (NH), etc.

***Sisymbrium erysimoides*** Desf. – Icon.: Fl. Eth. & Eritrea 2/1: 152, 2000.

In Ethiopia: (850-)1300-2700 m alt.

Map on p. 345.

***S. maximum*** Hochst. ex E. Fourn. – Icon.: Fl. Eth. & Eritrea 2/1: 153, 2000.

In Ethiopia: roadsides; forest glades; 2200-3900 m alt.

Map on p. 345.

***S. officinale*** (L.) Scop. – Icon.: Fl. Eth. & Eritrea 2/1: 153, 2000; Zohary, Fl. Palaest. 1, Plates: pl. 371, 1966.

bas.: *Erysimum officinale* L.

syn.: *Chamaeplium officinale* (L.) Wallr.

Annual to short-lived perennial herb 20-100 cm tall; stems with rough retrorse hairs; leaves to 20 × 8 cm; lower ones long-petiolate, lyrate-pinnate with 2-3 pairs of side lobes, terminal lobe hastate; flowers yellow, petals 2,5-4 mm long; fruit narrowly conical, 1-1,8 cm long, with rough hairs.

Weed in urban areas, waste places; 2500 m alt.

Europe, N Africa, W Asia; widely introduced.

Map on p. 345.

**SUBULARIA** (Volume 1: 168-169)

***Subularia monticola*** A. Br. ex Schweinf. – Icon.: Fl. Eth. & Eritrea 2/1: 137, 2000.

In Ethiopia: along streams; in pools, bogs; 3100-4300 m alt.

Map on p. 345.

**THLASPI** (Volume 1: 168-170)

***Thlaspi alliaceum*** L. – Icon. Fl. Eth. & Eritrea 2/1: 137, 2000.

In Ethiopia: grassland on open soil; soliflux areas; mountain tops; 3900(-4307)-4620 m alt.

Map on p. 345.

**CABOMBACEAE** (Volume 1: 93/91)

Add new information for the family and genera.

LÖHNE, C. & al. (2008). Biogeography of Nymphaeales: extant patterns and historical events. *Taxon* 57: 1123-1146.

TAYLOR, D. W. (2008). Phylogenetic analysis of Cabombaceae and Nymphaeaceae based on vegetative and leaf architectural characters. *Taxon* 57: 1082-1095.

**BRASENIA** (Volume 1: 93/91)

***Brasenia schreberi*** J. F. Gmel. – Icon.: Lisowski & Malaisse, Groupements végétaux des mares et des anses calmes des rivières du Plateau des Kundelungu: 38, 1989; Fl. Eth. & Eritrea 2/1: 35, 2000.

In Ethiopia: 1750 m alt.

Map on p. 345.

**CACTACEAE** (Volume 1: 491/489)**RHIPSALIS** (Volume 1: 491/489)

Add new references.

BRUNEAU DE MIRÉ, P. (2005). Une curieuse affaire de *Rhipsalis*. *Succulentas (France)* 2005/4: 14-16 [Cameroon].

SÜPPLIE, F. (s.d. = 2007 ?). *Rhipsalis* & [und] *Lepismium*. (EPRIC) Epiphytic Plant Research and Information Center-Foundation, Nijmegen. 144 pp. [p. 94-92: list and description of subspecies, *R. baccifera*].

***Rhipsalis baccifera*** (J. Miller) W. T. Stearn; Sosef & al., Checklist pl. vascul. Gabon: 97, 2006. – Icon.: Bruneau de Miré, o.c.: 15-16; Fl. Eth. & Eritrea 2/1: 260, 2000.

Map in Volume 1: 489. Distribution area in Gabon larger than shown on this map.

**CALLITRICHACEAE** (Volume 1: 374/377)

Phylogenetic analyses of the plastid gene *rbcL* reveal a relationship between *Antirrhinum* (*Scrophulariaceae*) and *Callitriche*. *Callitriche* and *Hippuris* (*Hippuridaceae*) have been recovered in the *Veronicaceae* clade (Tank & al. in Austral. Syst. Bot. 19: 296, 2006; Albach & al. in Amer. J. Bot. 92: 297, 2005).

**CALLITRICHE** (Volume 1: 374-377)

Add new information.

HEDBERG, I. & O. HEDBERG (2003). Callitrichaceae. In: BEENTJE, H. J. & S. A. GHAZANFAR, eds., *Flora of Tropical East Africa*. Royal Botanic Gardens, Kew. 4 pp.

LANSDOWN, R. V. (2008). *Water-starworts (Callitriche) of Europe* (BSBI Handbook 11) Botanical Society of the British Isles, London. 180 pp.

***Callitriche anisoptera*** Schotsman – Icon.: Fl. Trop. E. Afr., o.c.: 3.

Map on p. 345.

***C. favargeri*** Schotsman – Icon.: Fl. Eth. & Eritrea 2/1: 428, 2000.

Swampy meadow; small streams and ponds; 2500-3800-4050 m alt.

Map on p. 345.

***C. hedbergiorum*** Schotsman; Fl. Eth. & Eritrea 2/1: 427, 2000.

± Submerged, in small streams; 3150-3950 m alt.

Map on p. 347.

***C. keniensis*** Schotsman – Icon.: Fl. Trop. E. Afr., o.c.: 3.

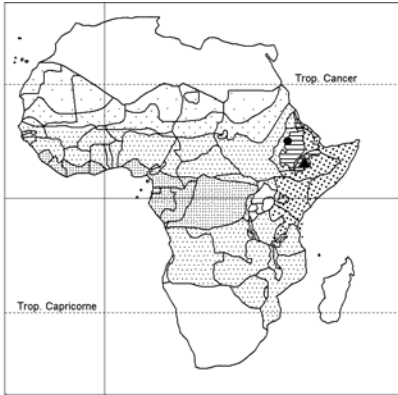
Map on p. 347.

***C. oreophila*** Schotsman – Icon.: Fl. Eth. & Eritrea 2/1: 428, 2000.

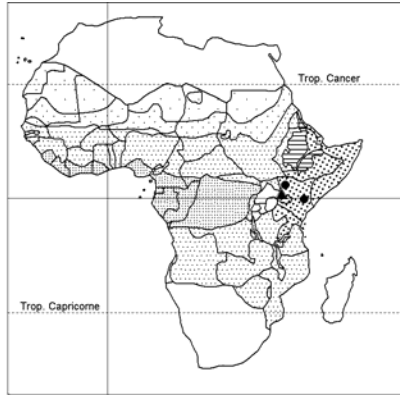
1150-3800 m alt.

Also in W Tropical Africa and Cameroon (fide Hedberg & Hedberg, o.c.).

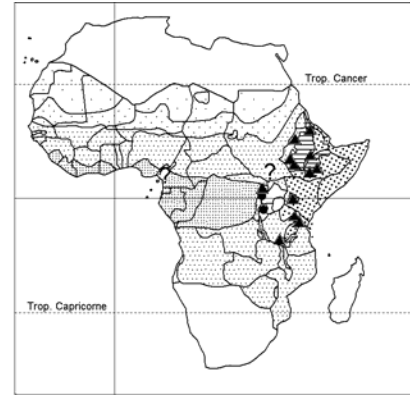
Map on p. 347.



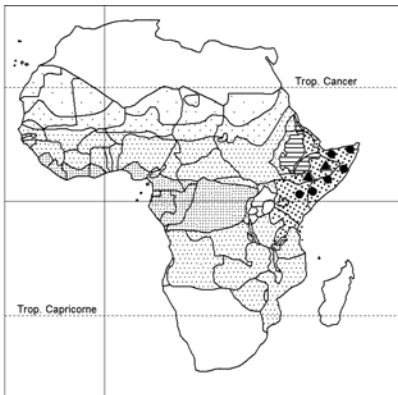
*Callitriche hedbergiorum*



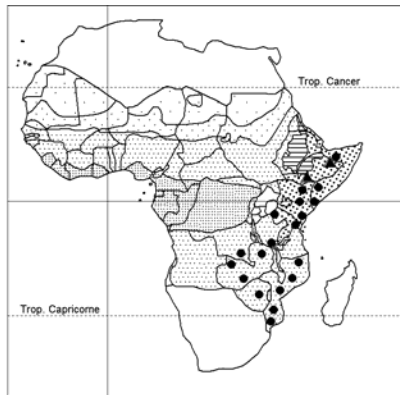
*Callitriche keniensis*



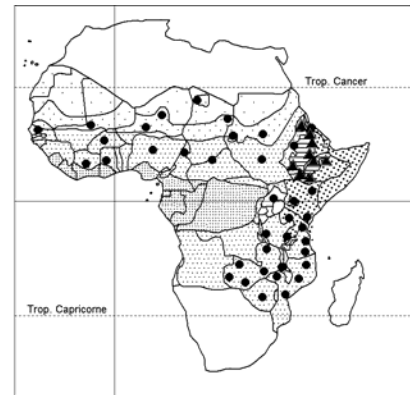
*Callitriche oreophila*



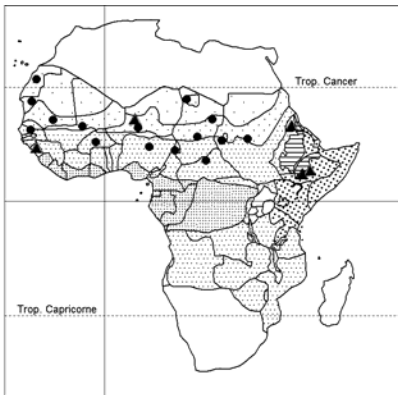
*Boscia minimifolia*



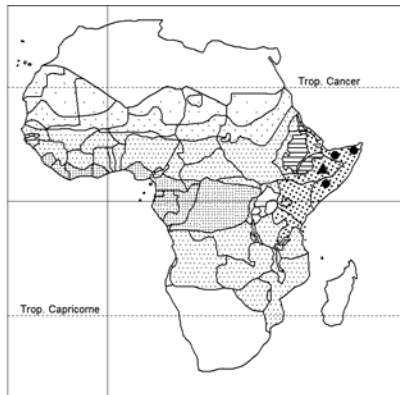
*Boscia mossambicensis*



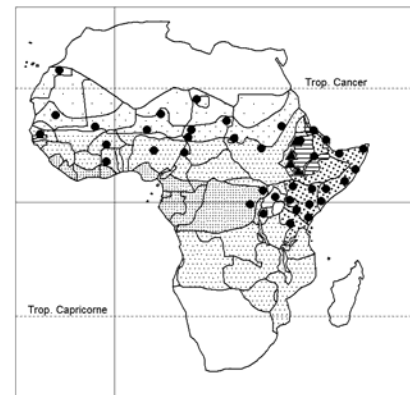
*Boscia salicifolia*



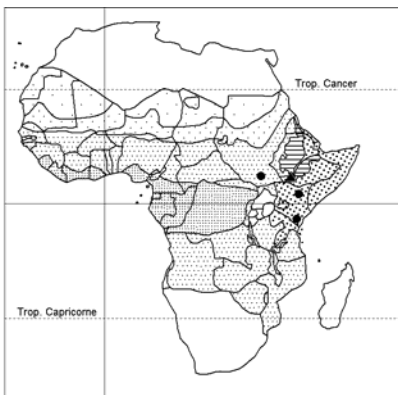
*Boscia senegalensis*



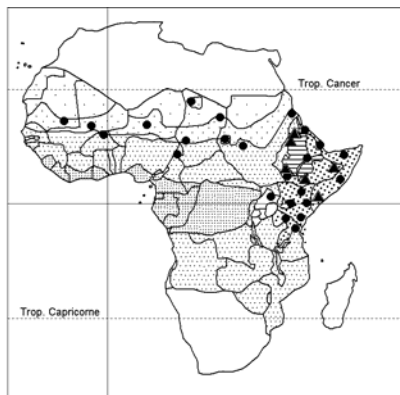
*Cadaba baccarinii*



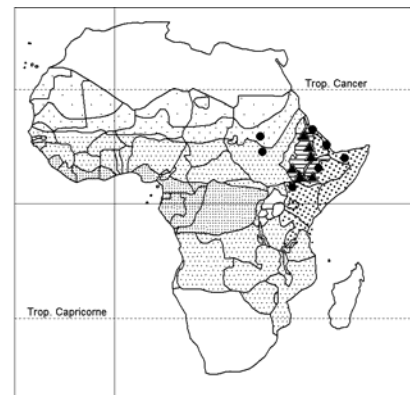
*Cadaba farinosa*



*Cadaba gillettii*



*Cadaba glandulosa*



*Cadaba rotundifolia*

## CALLITRICHE

[**C. deflexa** Hegelm.]; Fl. Trop. E. Afr., o.c.: 4. – Icon.: Lansdown (2008): 140-141.

A *terrestrial* plant with small leaves and fruits.

Native of S. America; introduced in Portugal, Morocco, Tanzania, southern Africa.

## CANELLACEAE (Volume 1: 93/91)

## WARBURGIA (Volume 1: 93/91)

Add new references for:

**Warburgia salutaris** (Bertol. f.) Chiov., an important (and endangered) medicinal plant.

BOTHA, J. & al. (2004). The impact of commercial harvesting on *Warburgia salutaris* ('pepper-bark tree') in Mpumalanga, South Africa. *Biodiversity & Conserv.* 13: 1675-1698.

CALANE DA SILVA, M. (2004). Collectors' favourites get protection in Mozambique. *SABONET News* 9/1: 42.

DAWS, M. I. & al. (2003). Some ecological and conservation aspects of *Warburgia salutaris* seed biology. In: SMITH, R. D. & al., eds., *Seed Conservation, turning science into practice*: 431-444. The Royal Botanic Gardens, Kew.

KIOKO, J. I. & al. (2003). Responses to dehydration and conservation of the non-orthodox seeds of *Warburgia salutaris*. *S. Afric. J. Bot.* 69: 532-539.

SCOTT-SHAW, R. & al. (1998). The conservation status of the Pepper Bark Tree. *SABONET News* 3/2: 73-75.

XABA, P. (2010). The Pepper-bark Tree. *Veld & Flora* 96/1: 40-42.

Map in Volume 1: 91.

CAPPAR(ID)ACEAE (Volume 1: 122-153) /  
14 g. / 207 spp. (former account: 14 / 210)

Add new information for family and following genera.

ABREU, J. A. & al. (2010). Capparaceae s.l. endemic to Angola: occurrences, potential distribution and ecology. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar 2010): 12.

## BOSCIA (Volume 1: 122-126)

**Boscia angustifolia** A. Rich. var. **angustifolia**; Fl. Eth. & Eritrea 2/1: 114, 116, 2000.

syn.: *B. intermedia* Hochst. ex A. Rich., nom. nud., pro syn.; *B. reticulata* Hochst. ex A. Rich.; *B. angustifolia* var. *reticulata* (Hochst. ex A. Rich.) Pirota; *B. abyssinica* Hochst. ex Pestalozzi, nom. nud., pro syn.

Map in Volume 1: 123.

**B. foetida** Schinz – Icon.: Curtis & Mannheimer, Tree Atlas Namibia: 94, 2005.

In our *Énumération* 1: 55, 1991, and later in our *Trop. Afr. Flow. Pl.*, Volume 1: 122, 2003, two subspecies were recognized in our area, viz. subsp. **foetida** and subsp. **rehmanniana** (Pestal.) Toelken (syn.: *B. filipes* Gilg). Lötter in E. Schmidt & al., *Trees & shrubs Mpumalanga and Kruger Natl. Park*, made the new combination: **B. foetida** Schinz subsp. **filipes** (Gilg) M. C. Lötter; type: Schlechter 11707, Mozambique, Lourenço Marques (Maputo).

Map in Volume 1: 123.

## BOSCIA

**B. gossweileri** Exell

According to Abreu & al. (2010), l.c., the distribution range of this Angolan endemic is extended into new provinces. Cf. map in Volume 1: 123.

**B. minimifolia** Chiov. – Icon.: Fl. Eth. & Eritrea 2/1: 115, 2000.

Shrub or small tree with a dense crown; apical shoot often spine-tipped when old.

In Ethiopia: 750-1500 m alt.

Map on p. 347.

**B. mossambicensis** Klotzsch; Fl. Eth. & Eritrea 2/1: 116, 2000. – Icon.: Curtis & Mannheimer, Tree atlas Namibia: 99, 2005.

In Ethiopia: open *Acacia* bush, scrub, semi-desert areas; 1000-1500 m alt.

Very variable in growth; frequent browsing results in low, dense specimens.

Map on p. 347.

**B. pestalozziana** Gilg

According to Abreu & al. (2010), l.c., this Angolan endemic has been found in new habitats not yet reported. Cf. map in Volume 1: 124.

**B. pruinosa** Chiov.; Fl. Eth. & Eritrea 2/1: 118, 2000.

According to Kers in Fl. Eth., l.c., this species is known from very few collections in N Kenya and S Somalia, and could be found in SE Ethiopia.

Map in Volume 1: 124.

**B. salicifolia** Oliv., non De Wild.; Fl. Eth. & Eritrea 2/1: 116-117, 2000.

In Ethiopia: dense savanna or bushland; *Dodonaea-Euclea-Olea* scrub; on rocky slopes; 800-1900 m alt.

Map on p. 347.

**B. senegalensis** (Pers.) Lam. ex Poir.; Fl. Eth. & Eritrea 2/1: 116, 2000. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 135, 2009.

syn.: *B. octandra* Hochst. ex Radlk., incl. var. *firma* (Radlk.) Fiori; *B. firma* Radlk.; *B. hypoglaucia* Gilg

In Ethiopia: deciduous woodland; semi-desert scrub; riverine formations; rocky outcrops; on sandy soil; 700-1300 m alt.

Also in N Kenya.

Small-leaved plants have sometimes been wrongly identified as *B. mazzochii*.

Map on p. 347.

## CADABA (Volume 1: 126/125-129)

**Cadaba baccarinii** Chiov.; Fl. Eth. & Eritrea 2/1: 89, 2000.

In Ethiopia: deciduous woodland with scattered trees; semi-desert scrub; 500-1000 m alt.

Arabia; also Yemen, locally not rare, fide Kilian & al., *Willdenowia* 32: 251, 2002.

Resembling *B. longifolia* but smaller in all parts.

Map on p. 347.

## CADABA

**C. farinosa** Forssk. subsp. **farinosa**; Fl. Eth. & Eritrea 2/1: 88, 2000.

syn.: *Stroemia farinosa* (Forssk.) Vahl; *Cadaba dubia* DC.; *C. farinosa* Forssk. var. *microphylla* A. Rich. and var. *dubia* (DC.) Boiss.; *Streblocarpus fenzlii* Parl.

In Ethiopia: 0-2000 m alt.

Map on p. 347.

**C. gillettii** R. A. Graham; Fl. Eth. & Eritrea 2/1: 89-90, 2000.

In Ethiopia: *Acacia* woodland in understory; riverine forest; tuff deposits; on deep cracking clay (silt); possibly tolerant of salty soil; 300-450 m alt.

Map on p. 347.

**C. glandulosa** Forssk.; Fl. Eth. & Eritrea 2/1: 91-92, 2000; Jonkers in Brit. Cactus Succ. J. 21: 79-80, 2003.

Map on p. 347.

**C. kassasii** Chrtk, 1971.

Kers in Fl. Eth. & Eritrea: 2/1: 92, 2000, compares the collection Schimper 1028 from Modat Distr. (TU, Tigray), the type of *C. mollis* Steud. ex A. Rich., with *C. kassasii* from Sudan (map in Volume 1: 128). Although he has not seen the type of the latter, he argues that the leaf and fruit characters agree with those of *C. mollis*. Another gathering, Baldrati 2146 from Mogareb (EE, Eritrea East), appears to represent the same taxon. – They may be conspecific.

Map in Volume 1: 128.

**C. longifolia** DC., incl. var. *scandens* (Pax) Chiov. and var. *frutescens* Chiov.; Fl. Eth. & Eritrea 2/1: 89, 2000.

In Ethiopia: 200-1200 m alt.

Map in Volume 1: 128.

**C. mirabilis** Gilg, incl. var. *glutinosa* Chiov. and var. *hirtella* Chiov.; Fl. Eth. & Eritrea 2/1: 91, 2000.

Map in Volume 1: 128.

**C. rotundifolia** Forssk. – Icon.: Fl. Eth. & Eritrea 2/1: 93, 2000.

In Ethiopia: 500-1200 m alt.

Map on p. 347.

**C. ruspolii** Gilg; Fl. Eth. & Eritrea 2/1: 90-91, 2000.

In Ethiopia: open *Acacia-Commiphora* woodland or scrub; semi-desert regions; dry rocky soil or along river beds; 1200-2000 m alt.

Map on p. 351.

### CAPPARIS (Volume 1: 129-132) / 14 (former account: 13)

Add new information, and a new species for our area.

FICI, S. (2004). Micromorphological observations on leaf and pollen of *Capparis* L. sect. *Capparis* (Capparaceae). *Plant Biosystems* 138: 125-134.

HALL, J. C. (2008). Systematics of Capparaceae and Cleomeaceae: an evaluation of the generic delimitations of *Capparis* and *Cleome* using plastid DNA sequence data. *Botany* 86: 682-696.

INOCENCIO, C. & al. (2006). A systematic revision of *Capparis* section *Capparis* (Capparaceae). *Ann. Missouri Bot. Gard.* 93: 122-149.

## CAPPARIS

RIVERA, D. & al. (2002). Archaeobotany of capers (*Capparis*) (Capparaceae). *Veget. Hist. Archaeobot.* 11: 295-313.

RIVERA, D. & al. (2004). Review of food and medicinal uses of *Capparis* L. subgenus *Capparis* (Capparidaceae). *Econ. Bot.* 57: 515-534.

**Capparis cartilaginea** Decne.; Fl. Eth. & Eritrea 2/1: 94-95, 2000.

syn.: *C. spinosa* L. var. *cartilaginea* (Decne.) Maire & Weiller and var. *galeata* (Fresen.) Hook. f. & Thomson; *C. inermis* Forssk. 1775; *C. inermis* Turra 1780, nom illegit.; *C. sinaica* Veillard; *C. uncinata* Edgeworth

In Ethiopia: 0-1300 m alt.

RIVERA, D. & al. (2003). The typification of *Capparis inermis* Forssk., *C. sinaica* Veill. and *C. cartilaginea* Decne. (Capparaceae). *Taxon* 52: 307-311.

RIVERA, D. & al. (2003). (1581) Proposal to conserve the name *Capparis cartilaginea* against *C. inermis* (Capparaceae). *Taxon* 52: 357. – Recommended, see *Taxon* 54: 530, 2005.

The illustration selected as lectotype of *C. sinaica* is **C. aegyptia** Lam. (= *C. spinosa* L. var. *aravensis* Zohary), belonging to a different section within *Capparis*.

Map on p. 351.

**C. decidua** (Forssk.) Edgew.; Fl. Eth. & Eritrea 2/1: 94, 2000.

syn.: *C. sodada* R. Br.

In Ethiopia: grassland with scattered trees, *Acacia* scrub; semi-desert scrub; sandy or gravelly plains; 0-1600 m alt.

Also in Socotra, Yemen.

Map in Volume 1: 130.

**C. erythrocarpos** Isert var. **erythrocarpos**; Fl. Eth. & Eritrea 2/1: 95, 2000; Lisowski, Fl. Rép. Guinée 1: 117, 2009.

In Ethiopia: deciduous woodland; often in thickets on termitaria; riverine forest, forest margins and glades; *Baphia* forest; 950-1700 m alt.

Map on p. 351.

**C. fascicularis** DC. var. **fascicularis**; Fl. Eth. & Eritrea 2/1: 96, 2000.

syn.: *C. macrosperma* Del., nom. nud.

In Ethiopia: 500-1900 m alt.

Map on p. 351.

**C. micrantha** A. Rich.; Fl. Eth. & Eritrea 2/1: 97, 99, 2000.

Kers in Fl. Eth., l.c., considers this species in Ethiopia as imperfectly known. It is characterized by long and narrow leaf blades (5 × 0,2-1,4 cm), obtuse at both ends. To cite Kers: It is closely related to *C. sepiaria*, but it is uncertain to which variety it belongs.

*C. micrantha* has been applied to narrow-leaved *C. sepiaria* var. *boscioides* (Pax) Kers, but more often to var. *fischeri* from Sudan-Uganda. The Ethiopian material does not agree with the Sudanese specimens.

Map in Volume 1: 130.

**C. ovata** Desf. subsp. **myrtifolia** Inocencio, D. Rivera, Obón & Alcaraz, subsp. nov., *Ann. Missouri Bot. Gard.* 93: 137-138, 131 (map), 2006; *Econ. Bot.* 57: 522-523, 2004.



## CAPPARIS OVATA

syn.: [of subsp. **ovata**: *C. sicula* Veill. var. *kruegeriana* Pamp.; *C. spinosa* L. var. *rupestris* Viv. fa. *kruegeriana* (Pamp.) Pamp.; *C. spinosa* L. subsp. *orientalis* (Veill.) Jafri var. *kruegeriana* (Pamp.) Jafri].

Pendulous shrub, of large dimensions if in shade; twigs dark green, or reddish when young; *stipules* curved, *retorse*, not decurrent; leaves ± lanceolate, 2,5-4 × 1-2 cm; indumentum lax of thick short hairs; leaf veins prominent; flowers slightly zygomorphic; fruit pulp yellow.

Rock crevices in rivulet gorges; ca. 1000 m alt.

SE Algeria (Tamanrasset).

Subsp. **ovata** in N Africa from Morocco to Libya.

Map on p. 351. – Compare also below under *C. spinosa* var. *canescens* fa. *coriacea*.

**C. sepiaria** L. – Icon.: Fl. Eth. & Eritrea 2/1: 98, 2000 (var. **boscioides**).

In Ethiopia: var. **rivae** (Gilg) De Wolf, var. **boscioides** (Pax) Kers and var. **fischeri** (Pax) De Wolf; 1000-2200 m alt.

Map on p. 351.

**C. spinosa** L. var. **canescens** Coss. fa. **coriacea** (Coss. ex Maire) Maire

bas.: *C. spinosa* L. var. *coriacea* Coss. ex Maire

Occurs on rocky slopes, 1400-2300 m alt. in Chad (Tibesti). See map Volume 1: 130.

The **identity of this plant is uncertain**. It does not figure in the revision by Inocencio & al. (2006). – Cf. also above under **C. ovata**.

It is quoted by Maire from Tassili-n-Ajjer (Etudes sur la flore et la végétation du Sahara central; Mém. Soc. Hist. Nat. Afr. N. 3: 100-101, 1933). It is also listed by Quézel (Mission botanique au Tibesti; Mém. Univ. Alger, Inst. Rech. Sahar. 4: 137, s.d. [1958]) who reports it as common in Tassili. It also figures in Leredde (Etude écologique et phytogéographique du Tassili N'Ajjer; Trav. Labor. Forest. Toulouse 5, Sect. 3, Vol. 3: 302, 1957) who writes that it is common in rocky sites below 2300 m alt.

The specimens cited in the above-mentioned literature were collected by: Chudeau, Geyr, Juge, Leredde, Lhote, Maire, Quézel. The specimen Leredde 214 from Adjiri is said to be transitional between var. *canescens* and var. *aegyptiaca* [sic !] (Lam.) Boiss.: its leaves are orbicular and obtuse.

Already Diels (Beiträge zur Flora der Zentral-Sahara...; Bot. Jahrb. Beibl. 120: 79-80, 1917), who studied H. Geyr von Schweppenburg's collections, wrote about the galls of *C. spinosa*. The plant named "telulut" was found in very dry sites, appressed to the ground. The leaves are described as very small, and rounder than usually, leathery and with well developed indumentum and spines. Diels believed that this plant, very common in all the Tuareg mountains crossed by Geyr, might be identical with "var. *coriacea* Cosson nom. solum in Duveyrier p. 152", although he had not seen the description.

In "Fleurs du Sahara" by A.-C. Benchelah & al. (Paris 2000) there is a colour photograph of "talulut", *Capparis spinosa*.

According to Inocencio & al. (2006): 140, *C. spinosa* var. *canescens* Coss. [syn.: *C. spinosa* subsp. *canescens* (Coss.) A. & O. Bolòs; *C. ovata* Desf. var. *canescens* (Coss.) Heywood; *C. ovata* var. *palaestina* Zohary] is a synonym under **C. sicula** Veill. subsp. **sicula**, a plant occurring in Morocco and N Algeria. – *C. spinosa* var. *aegyptia* (Lam.) Boiss. is treated as **C. aegyptia** Lam. by the same authors. It occurs in Egypt, Arabia, Palestine, India.

## CAPPARIS

**C. tomentosa** Lam., incl. var. *persicifolia* (A. Rich.) Penz.; Fl. Eth. & Eritrea 2/1: 95-96, 2000. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 137, 2009.

syn.: *C. corymbosa* Lam. 1785, non auctt. mult.; *C. polymorpha* A. Rich.; *C. globifera* Del., nom. nud.

In Ethiopia: also often in riverine forest or at temporary ponds; 500-2200 m alt.

Map on p. 351.

**CLEOME** (Volume 1: 132/131-140) / 55 (former account: 57)

Sometimes placed in *Cleomaceae*.

HALL, J. C. (2008). See above under **Capparis**.

INDA, L. A. (2008). Phylogeny of Cleome L. and its close relatives Podandrogynue Ducke and Polanisia Raf. (Cleomoideae, Cleomaceae) based on analysis of nuclear ITS sequences and morphology. *Pl. Syst. Evol.* 274: 111-216.

Add new information, and a species new in our area.

**Cleome afrospina** Iltis; Sosef & al., Check-list pl. vascul. Gabon: 97, 2006.

In Gabon: 15-800 m alt.

Map on p. 351.

**C. albescens** Franch.; Thulin, Nord. J. Bot. 22: 218, 2002.

In his study on *Cleome* in the Horn of Africa region Thulin (o.c.) raised its var. *omanensis* Chamberlain & Lamond to species level. It is known from Oman, Yemen. These two species share glaucous foliage and bract-less inflorescences. **C. omanensis** (Chamberlain & Lamond) Thulin generally has 3-foliolate leaves, but 1-foliolate in **C. albescens**.

Map in Volume 1: 131.

**C. allamanii** Chiov.; Kers in Fl. Eth. & Eritrea 2/1: 83, 2000.

In Ethiopia: 400-500 m alt. – All collections come from a small area NE of Lake Turkana.

Specimen Wellby s.n., cited as syntype of *C. gallaensis*, represents *C. allamanii* according to Kers (l.c.)

Map on p. 351.

**C. angustifolia** Forssk.; Fl. Eth. & Eritrea 2/1: 79, 81, 2000.

In Ethiopia: subsp. **angustifolia**, widespread, and subsp. **petersiana** (Klotzsch) Kers in the South; 600-2000 m alt.

Map on p. 351.

**C. brachyadenia** O. Schwartz; Kers in Fl. Eth. & Eritrea 2/1: 77, 79, 2000.

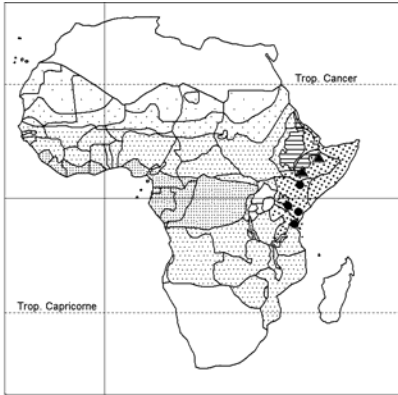
syn.: *C. roridula* R. Br. ex Salt, nom. nud., p.p.

Half-shrub, cushion-like, sticky, to > 25 cm tall; young stems pale yellow-green, densely glandular-puberulous; glands sessile and stalked mixed with longer hairs; bark of older stems grey-brown, corky, fissured; leaves crowded in upper parts, absent from old stems; leaves simple, ± round, ca. 0,5 cm Ø, glandular and hairy; flowers single, axillary, pale yellow-whitish, petals unequal; stamens 4; capsule erect, ca. 1 cm long, glandular, hairy. Hot desert, coastal areas; sea-level.

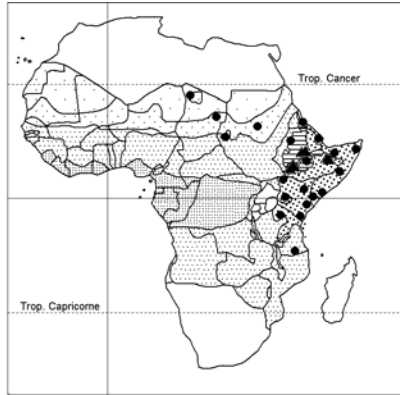
Yemen (Hadramaut).

Note: *C. roridula* R. Br. ex Salt is based on 2 specimens collected by Salt, labelled "Abyssinia". One specimen represents *C. polytrichia*, the other *C. brachyadenia*, fide Kers, l.c.

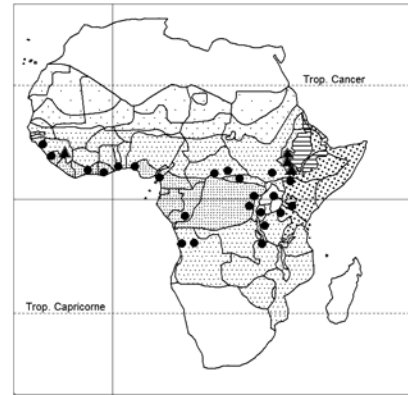
Map on p. 351.



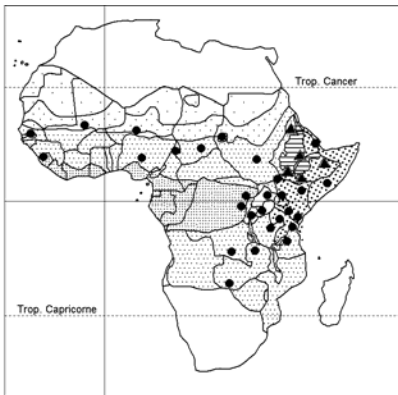
*Cadaba ruspolii*



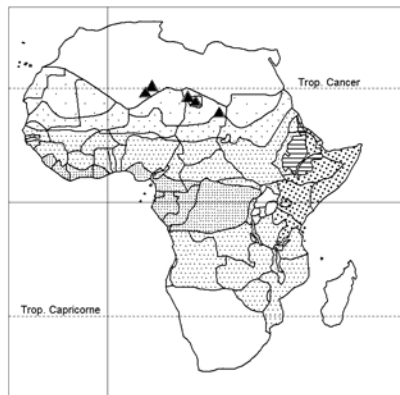
*Capparis cartilaginea*



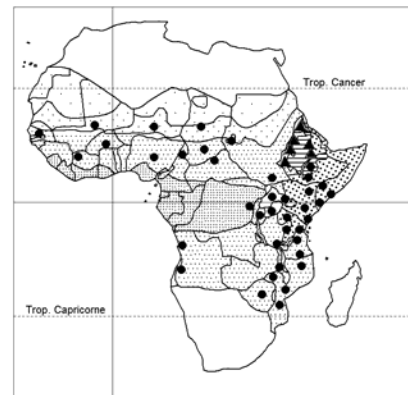
*Capparis erythrocarpos*



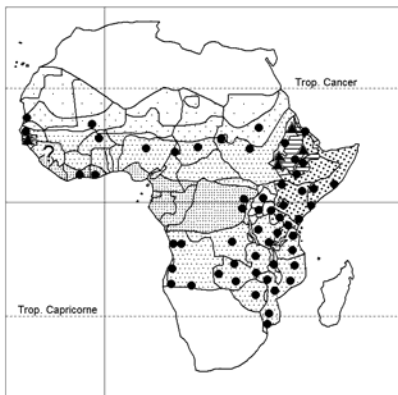
*Capparis fascicularis*



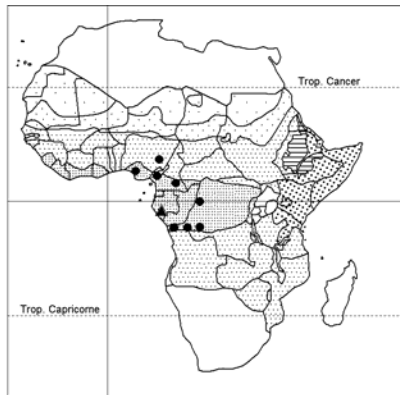
*Capparis ovata* subsp. *myrtifolia*



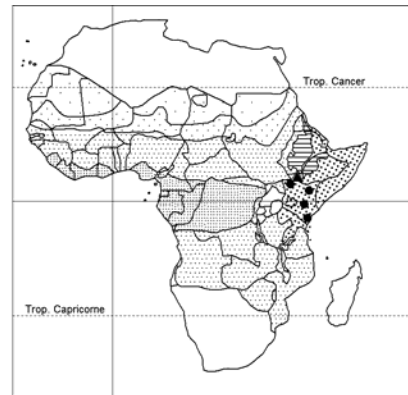
*Capparis sepiaria*



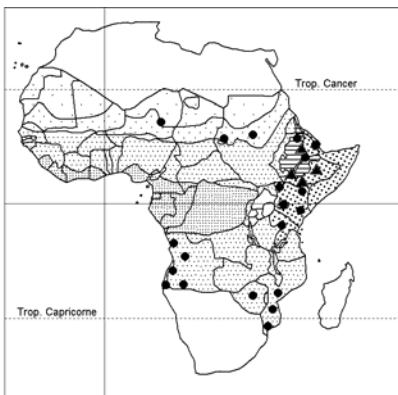
*Capparis tomentosa*



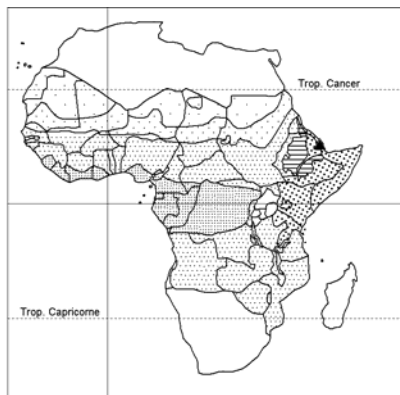
*Cleome afropina*



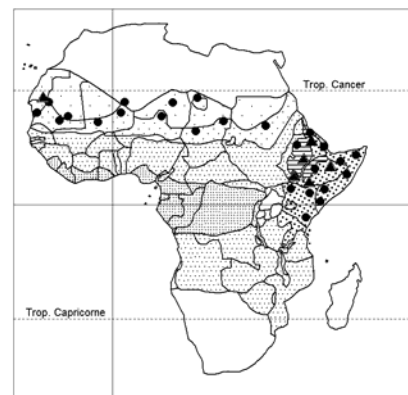
*Cleome allamanii*



*Cleome angustifolia*



*Cleome brachyadenia*



*Cleome brachycarpa*

## CLEOME

**C. brachycarpa** Vahl ex DC., incl. fa. *diversifolia* (Hochst. & Steud. ex T. And.) N. Terracc., fa. *latifolia* N. Terracc., var. *angustifolia* Gilg; Fl. Eth. & Eritrea 2/1: 81-82, 2000.

syn.: *C. parviflora* R. Br. ex DC.; *C. vahliana* Fresen.; *C. diversifolia* Hochst. & Steud. ex T. And.

In Ethiopia: 0-1200 m alt. In S Western Sahara (N of Choum, Mauritania) according to Maire, Fl. Afr. N. 12: 130, 1965, confirmed by Sauvage in Greuter, Med-Checklist Notulae 3: 41, 1981. Map on p. 351.

**C. chrysantha** Decne.; Fl. Eth. & Eritrea 2/1: 77, 2000.

syn.: *Polanisia chrysantha* (Decne.) T. Durand & Schinz; *Capparis parviflora* Hochst. ex Schweinf., nom. nud., pro syn.

Habitat in Ethiopia not known. Perhaps in the NW, i.e. GD (Gonder region).

Map in Volume 1: 133.

**C. droserifolia** (Forssk.) Del.; Kers in Fl. Eth. & Eritrea 2/1: 77, 2000.

In Ethiopia this name has “been loosely applied to several distinct but poorly known species in the section *Thylacophora* which have sticky, glandular-hairy leaves and are found in hot, dry habitats” (text under *C. polytricha*). The leaves of *C. droserifolia* are (sub-)orbicular with rounded apices.

Map in Volume 1: 133.

**C. gallaensis** Gilg & Bened.; Kers in Fl. Eth. & Eritrea 2/1: 86, 2000.

Kers assigns two of the original syntypes to closely related species: James & Thrupp s.n. (N Somalia) = *C. hanburyana*, and Welby s.n. (E shore, Lake Turkana) = *C. allamanii*.

A poorly collected species.

Map in Volume 1: 133.

**C. gynandra** L.; Fl. Eth. & Eritrea 2/1: 78-79, 2000; Sosef & al., Check-list pl. vascul. Gabon: 98, 2006. – Icon.: Jansen van Rensburg & al., S. Afric. J. Bot. 70: 55, 2004 (with map); Lisowski, Fl. Rép. Guinée 2: fig. 139, 2009.

syn.: *Gynandropsis pentaphylla* (L.) DC. var. *sativa* A. Chev. Treated as the unique species in *Gynandropsis* DC., viz. *G. gynandra* (L.) Briq. by J. C. Hall (2008): 683, 693.

Introduced weed in tropical America.

Used as a leafy vegetable.

Map on p. 353.

**C. hanburyana** Penz. – Icon.: Kers in Fl. Eth. & Eritrea 2/1: 85, 2000.

syn.: *C. areysiana* Defl.; *C. lupinifolia* Gilg & Bened.; *C. platysepala* Gilg & Bened., also as “*C. platycephala* Gilg & Bened.” Pax & Hoffm.; *Polanisia hirta* (Klotzsch) Pax var. *hanburyana* (Penz.) Schweinf.

One of the syntypes of *C. gallaensis*, viz. James & Thrupp s.n. (N Somalia) represents *C. hanburyana* (Kers, l.c.).

In Ethiopia: deciduous bushland or scrub; semi-desert regions; on rocks or on stony or sandy ground; sometimes on roadsides; 500-1500 m alt.

Also in Arabia.

Map on p. 353.

## CLEOME

**C. hirta** (Klotzsch) Oliv.; Fl. Eth. & Eritrea 2/1: 83, 2000.

syn.: *Polanisia hirta* (Klotzsch) Pax 1888; *P. hirta* (Klotzsch) Durand & Schinz 1898.

Recently introduced to Madagascar.

Map in Volume 1: 133.

**C. iberidella** Welw. ex Oliv.; Sosef & al., Check-list pl. vascul. Gabon: 97, 2006.

In Gabon: 600 m alt.

Map on p. 353.

**C. kelleriana** (Schinz) Gilg & Bened.; Fl. Eth. & Eritrea 2/1: 83-84, 2000.

In Ethiopia: scattered bush, scrub; semi-desert regions; water margins; on sandy soil; ca. 600-1500 m alt.

Resembling *C. hanburyana* and sometimes confused with it (mixed collections).

Map in Volume 1: 135.

*C. lupinifolia* Gilg & Bened. = **C. hanburyana**.

*C. massae* Chiov. = **C. monophylla**.

**C. monophylla** L., incl. var. *cordata* (Burch. ex DC.) Sond.; Fl. Eth. & Eritrea 2/1: 78, 2000; Lisowski, Fl. Rép. Guinée 1: 117, 2009.

syn.: *C. cordata* Burch. ex DC.; *C. subcordata* Steud. ex Oliv.; *C. massae* Chiov.

In Ethiopia: 850-2200 m alt.

Map on p. 353.

*C. moscatelliana* Lusina = **C. paradoxa**.

**C. paradoxa** R. Br. ex DC.; Fl. Eth. & Eritrea 2/1: 81, 2000.

syn.: *C. venusta* Fenzl; *C. grandiflora* Ehrenb. ex Schweinf. 1867, pro syn.; *Dianthera grandiflora* Klotzsch 1862; *Polanisia grandiflora* (Klotzsch) T. Durand & Schinz; *Cleome moscatelliana* Lusina

In dry and hot areas; 100-600 m alt. (Ethiopia).

Map in Volume 1: 137.

**C. parvipetala** R. A. Graham; Fl. Eth. & Eritrea 2/1: 86-87, 2000.

In Ethiopia: 1300 m alt.

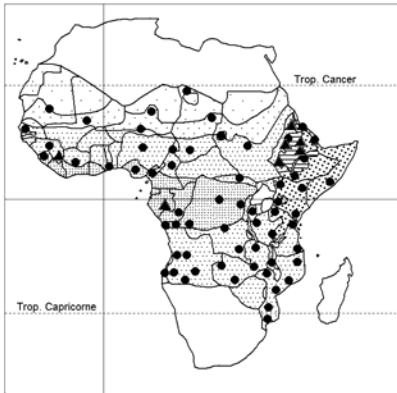
Map on p. 353.

**C. polytricha** Franch.; Fl. Eth. & Eritrea 2/1: 77, 2000.

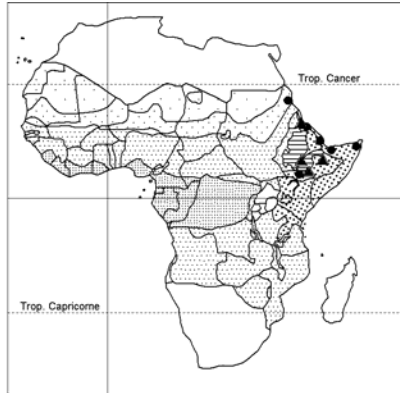
syn.: *C. roridula* R. Br. ex Salt, nom. nud., p.p. (cf. *C. brachyadenia*); *C. hispida* auct., non Ehrenb. ex Franch.: Deflers, in sched.

Habitat in Ethiopia not known; EE (Eritrea East) ?

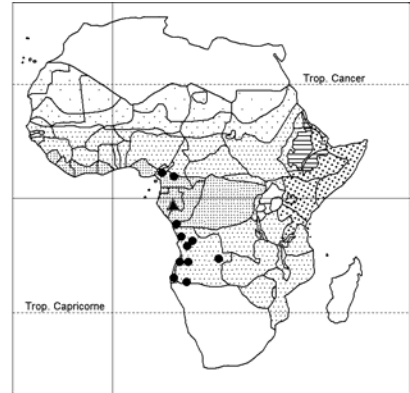
Map in Volume 1: 137.



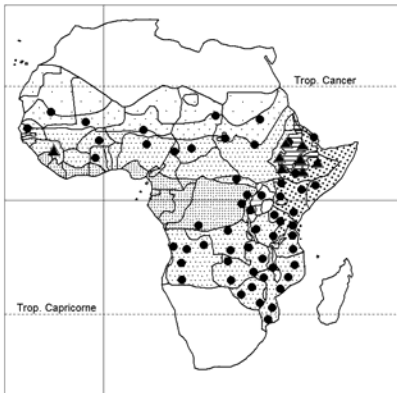
*Cleome gynandra*



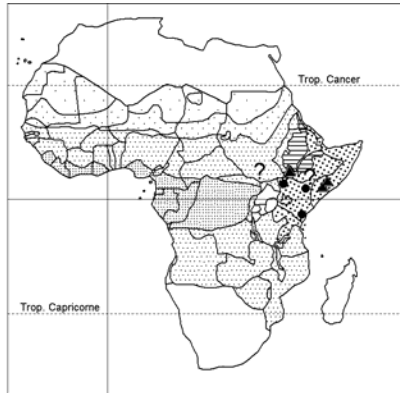
*Cleome hanburyana*



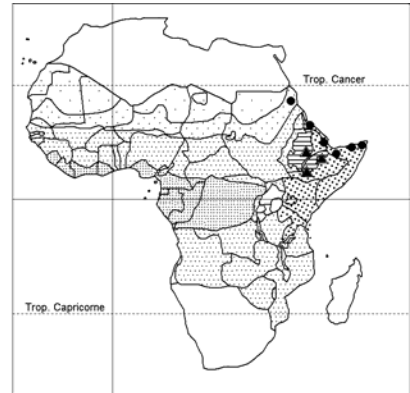
*Cleome iberidella*



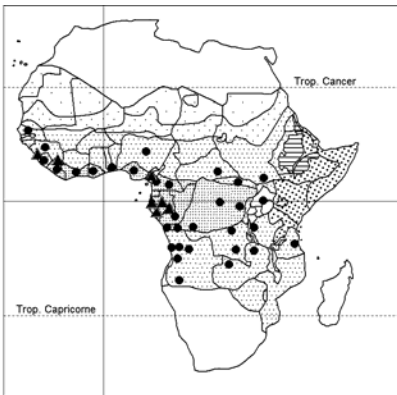
*Cleome monophylla*



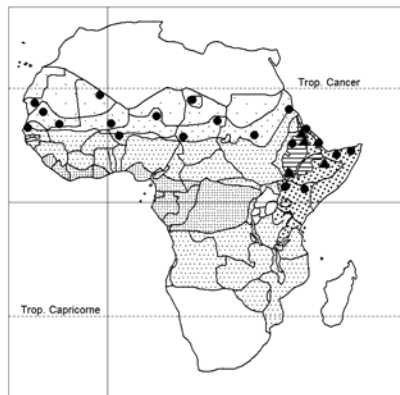
*Cleome parvipetala*



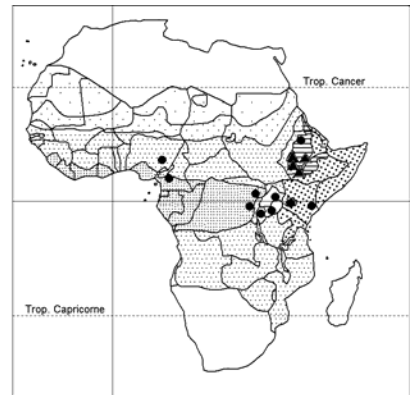
*Cleome ramosissima*



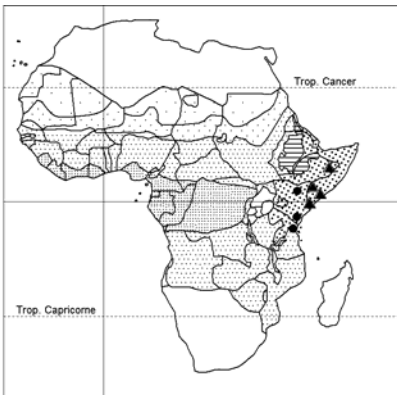
*Cleome rutidosperma*



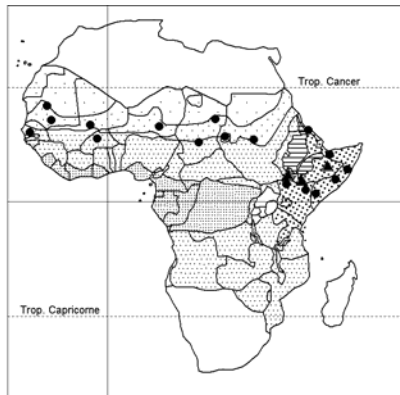
*Cleome scaposa*



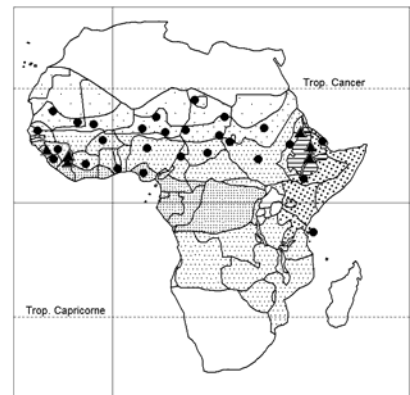
*Cleome schimperi*



*Cleome strigosa*



*Cleome tenella*



*Cleome viscosa*



## CLEOME

**C. ramosissima** Webb ex Parl.; Fl. Eth. & Eritrea 2/1: 81, 2000.  
syn.: *C. schweinfurthii* Gilg; *C. arabica* L. var. *stenocarpa* Franch.; *Polanisia ramosissima* (Webb ex Parl.) T. Durand & Schinz

In Ethiopia: in dry hot situations; often among boulders; sometimes in shade of rocks; wadis; 1000-2500 m alt.

Map on p. 353.

**C. rutidosperma** DC.; Sosef & al., Check-list pl. vascul. Gabon: 98, 2006; Lisowski, Fl. Rép. Guinée 1: 117, 2009; Cheek & al. Plants Dom, Bamenda Highl., Cameroon: 120, 2010.

Map on p. 353.

**C. scaposa** DC.; Fl. Eth. & Eritrea 2/1: 78, 2000.

syn.: *C. radula* Fenzl, nom. nud.; *C. papillosa* Steud. ex T. Anders.; *C. linearis* Stocks ex T. Anders.; *C. cordata* Ehrenb. ex Schweinf. 1867, non Burchell & Sond. 1824; *C. ehrenbergiana* Schweinf.; *C. radiata* Fenzl, sphalm. for *C. radula* Fenzl

In Ethiopia: 0-1500 m alt.

Map on p. 353.

**C. schimperi** Pax; Fl. Eth. & Eritrea 2/1: 82-83, 2000.

In Ethiopia: 600-1900 m alt.

Map on p. 353.

**C. strigosa** (Bojer) Oliv. – Icon.: Fl. Eth. & Eritrea 2/1: 80, 2000.

Sandy sea shores; sometimes introduced inland.

Map on p. 353.

**C. tenella** L.; Fl. Eth. & Eritrea 2/1: 82, 2000.

Map on p. 353.

**C. viscosa** L.; Fl. Eth. & Eritrea 2/1: 82, 2000; Lisowski, Fl. Rép. Guinée 1: 117, 2009.

syn.: *C. icosandra* L.; *Polanisia icosandra* (L.) Wight & Arn.; *P. viscosa* (L.) Wight & Arn. var. *icosandra* (L.) Schweinf. ex Oliv., in syn.

In Ethiopia: woodland, grassland; open soil or on rocky ground; often as a weed on roadsides or cultivated ground; 0-1050 m alt.

Map on p. 353.

## CRATEVA (Volume 1: 140-141)

**Crateva adansonii** DC. subsp. **adansonii** – Icon.: Fl. Eth. & Eritrea 2/1: 100, 2000; Lisowski, Fl. Rép. Guinée 2: fig. 138, 2009.

In Ethiopia: 450-1250 m alt.

Map on p. 355.

## DIPTERYGIUM (Volume 1: 140-141)

**Dipterygium glaucum** Decne., incl. var. *scabrum* (Decne. ex Boiss.) Boiss. – Icon.: Fl. Eth. & Eritrea 2/1: 119, 2000.

syn.: *Pteroloma arabicum* Hochst. & Steud. ex Steud., nom. nud.; *Isatis spartioides* Edgew. ex Hook. f. & Thoms.; *Dipterygium scabrum* Decne. ex Boiss.

In Ethiopia: Red Sea coast on sandy soil; on stabilized dunes inland; 0-400 m alt.

Map on p. 355.

## EUADENIA (Volume 1: 140-141)

**Euadenia trifoliolata** Oliv.; Sosef & al., Check-list pl. vascul. Gabon: 98, 2006; Lisowski, Fl. Rép. Guinée 1: 118, 2009.

Map on p. 355.

## (GYNANDROPSIS)

See above under **Cleome gynandra**.

## MAERUA (Volume 1: 140-150) / 55 (former account: 57)

**Maerua aethiopica** (Fenzl) Oliv.; Fl. Eth. & Eritrea 2/1: 110, 2000.

In Ethiopia: tall grass and grassland with scattered *Acacia* trees, or open *Anogeissus-Terminalia* woodland regularly burnt; 650-850 m alt.

Not in Somalia (= *M. triphylla* var. *calophylla*, not *M. sphaerogyna*).

Map on p. 355.

**M. angolensis** DC., Fl. Eth. & Eritrea 2/1: 108-109, 2000. – Icon.: Coates Palgrave, Trees south. Afr., ed. 3: 233, ill. 43, 2002; Lisowski, Fl. Rép. Guinée 2: fig. 140, 2009.

In Ethiopia: 500-1400 m alt.

Both subspecies, viz. **angolensis**, and **socotrana** (Schweinf. ex Balf. f.) Kers with 2 vars., var. **socotrana** and var. **africana** Kers, present there.

Subsp. **angolensis** also in the SW Yemen mountains and Hadhramout (Kilian & al., Willdenowia 32: 251, 2002).

According to Figueiredo & Smith, Pl. Angola: 55, 2008, var. **heterophylla** Welw. ex Oliv. is known from near Luanda.

Map on p. 355.

**M. boranensis** Chiov.; Fl. Eth. & Eritrea 2/1: 105, 2000.

*Acacia* bushland, on friable calcareous loam; sometimes rocky roadsides; 750-1400 m alt.

Known from a restricted area in S Ethiopia.

Map in Volume 1: 141.

**M. candida** Gilg.; Fl. Eth. & Eritrea 2/1: 105, 2000.

In Ethiopia: dry rocky areas, mainly with *Commiphora*, *Grewia*, *Euphorbia*, etc.; 100-300 m alt.

Poorly known species, but distinct by the white-woolly indumentum.

Map on p. 355.

**M. crassifolia** Forssk.; Fl. Eth. & Eritrea 2/1: 109, 2000.

syn.: *M. rigida* R. Br.; *Wiegmannia arabica* Hochst. & Steud. ex Steud., nom. nud. – Neotype: Wood 3153, Yemen.

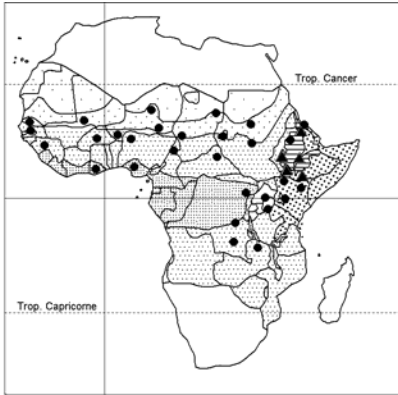
In Ethiopia: *Acacia-Combretum-Euphorbia tirucalli* woodland; by rivers; on sandy or loamy or salty soil; 400-1350 m alt.

The Forsskål specimen from Arabia belongs to *M. thomsonii*.

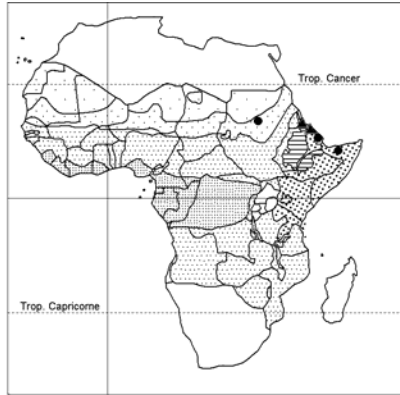
Some atypical material from coastal Eritrea approach *M. thomsonii*.

DIATTA, S. & al. (2010). Possibilités de régénération d'une espèce forragère menacée, *Maerua crassifolia* (Capparaceae). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 138 [Sénégal].

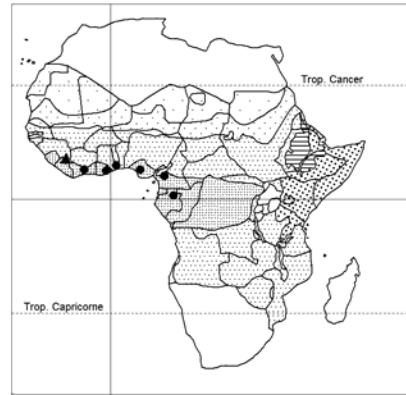
Map on p. 355.



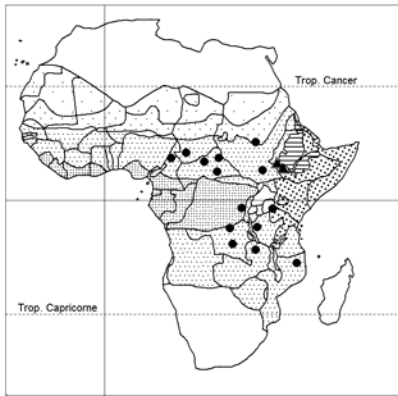
*Crateva adansonii*



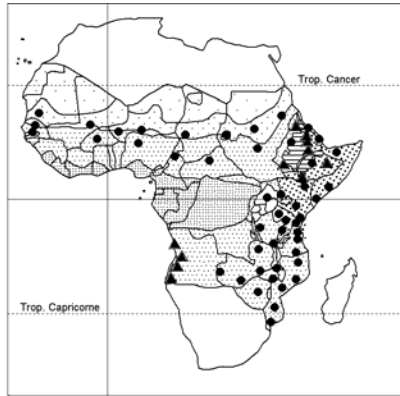
*Dipterygium glaucum*



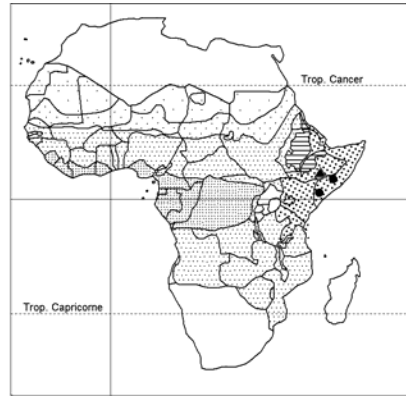
*Euadenia trifoliata*



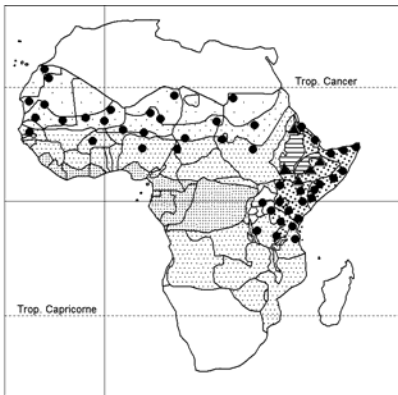
*Maerua aethiopica*



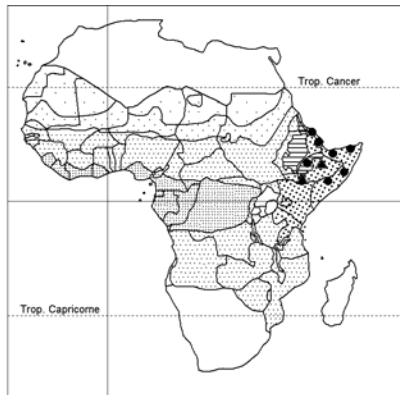
*Maerua angolensis*



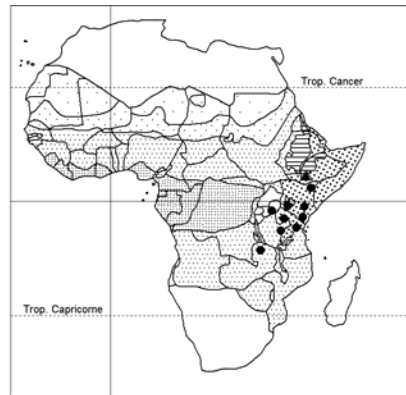
*Maerua candida*



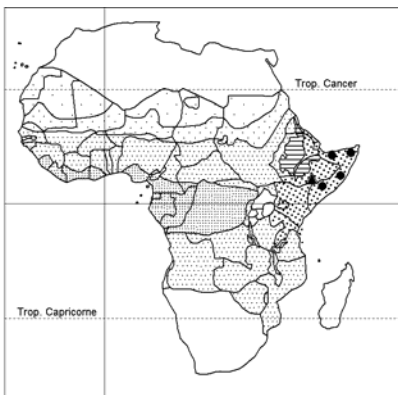
*Maerua crassifolia*



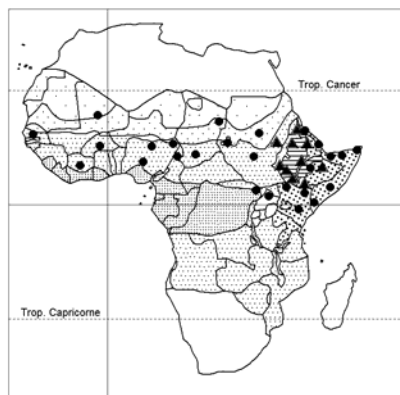
*Maerua decumbens*



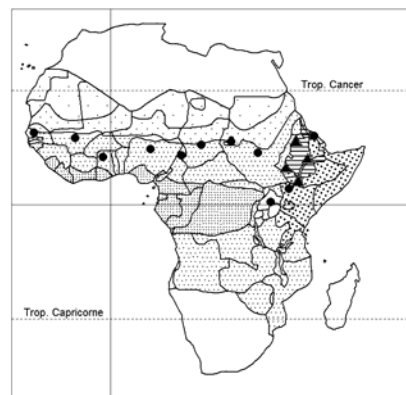
*Maerua endlichii*



*Maerua intricata*



*Maerua oblongifolia*



*Maerua pseudopetalosa*

## MAERUA

**M. decumbens** (Brogn.) De Wolf; Fl. Eth. & Eritrea 2/1:104-105, 2000.

In Ethiopia: grassland with scattered trees in semi-desert regions; sandy soil; mountain slopes; 0-1500 m alt.

Difficult to distinguish from *M. edulis*. Also close to *M. pseudopetalosa*.

Map on p. 355.

*M. dolichobotrys* Gilg & Bened. = **M. oblongifolia** (Forssk.) A. Rich.

**M. endlichii** Gilg & Bened.; Fl. Eth. & Eritrea 2/1:109-110, 2000.

In Ethiopia: *Acacia-Lannea* bushland; *Euclea-Rhus* woodland; on rocky slopes or in stony soil; 1150-1250 m alt.

Map on p. 355.

**M. intricata** Kers

In Ethiopia: 300-400 m alt.

Map on p. 355.

(**M. kaokoensis** Swanepoel) – Icon.: *Bothalia* 36: 82-83, 84 (map), 2006.

Slender tree to 10 m; trunk usually single, erect, straight, slender; leaves simple, drooping or pendulous, glabrous.

Occurs in NW-most Namibia, in the Baynes and Otjihipa Mts, S of the Kunene; 700-1850 m alt.

Resembling *M. schinzii*, *M. angolensis*.

“Almost certainly occurs in the adjacent mountainous parts of southwestern Angola as well”.

The whiplike habit recalls that of *Acacia flagellaris* Thulin in NE Somalia (Nord. J. Bot. 8: 461, 1989).

*M. lanzae* Fiori = **M. oblongifolia** (Forssk.) A. Rich.

**M. macrantha** Gilg; Fl. Eth. & Eritrea 2/1:110, 112, 2000. – Icon.: Kilian & al., *Willdenowia* 34: 175, 2004.

Also in Yemen.

Map in Volume 1: 145.

**M. oblongifolia** (Forssk.) A. Rich., incl. var. *amphilahensis* (“amphilahensis”) (N. Terracc.) Pirota, var. *angustifolia* Becc. ex Martelli, var. *pallida* Pirota, and var. *mithridatica* (Forssk.) Pirota; Fl. Eth. & Eritrea 2/1:112, 2000.

syn.: *M. lanzae* Fiori 1911; *M. lanzaei* Gilg & Bened. 1915; *M. racemosa* Lanza 1909, non Vahl 1790; *M. amphilahensis* N. Terracc.; *M. dolichobotrys* Gilg & Bened.; *Niebhuria oblongifolia* (Forssk.) DC.; *Capparis mithridatica* Forssk.

In Ethiopia: 0-1800 m alt.

Map on p. 355.

**M. pseudopetalosa** (Gilg & Bened.) De Wolf; Kers in Fl. Eth. & Eritrea 2/1:104, 2000.

syn.: *Saheria virgata* Fenzl & Schweinf.

In Ethiopia: also tall grassland burnt through annually; bushland; thickets; 800-1500 m alt.

Very close to *M. edulis*, and according to Kers, l.c., *M. edulis* and *M. pseudopetalosa* would be better treated as subspecies of the same taxon.

Map on p. 355.

## MAERUA

**M. subcordata** (Gilg) De Wolf; Fl. Eth. & Eritrea 2/1:103, 2000.

In Ethiopia: also in grassland burnt every few years and grazed by cattle; 450-1250 m alt.

Map on p. 357.

**M. thomsonii** T. Anders.; Kers in Fl. Eth. & Eritrea 2/1:109, 2000.

syn.: *M. crassifolia* sensu Forssk. 1775, non sensu auctt. plur.

In Ethiopia included here by Kers, l.c., on basis of sterile branches, but more material needed to understand relationship with *M. crassifolia* Forssk.; coastal.

Map on p. 357.

**M. triphylla** A. Rich. – Icon.: Fl. Eth. & Eritrea 2/1:107, 2000 (var. **pubescens**).

syn.: *M. ternata* Durand & Schinz, nom. nud.

In Ethiopia: 500-2100 m alt.

Var. **johannis** (Volkens & Gilg) De Wolf, also in Yemen.

Map on p. 357.

**RITCHIEA** (Volume 1: 149-153)

**Ritchiea albersii** Gilg & Bened.; Cheek & al. *Plants Dom*, Bamenda Highl., Cameroon: 120, 2010. – Icon.: Fl. Eth. & Eritrea 2/1:102, 2000.

In Ethiopia: 1300-2400 m alt.

Map on p. 357.

**R. aprevaliana** (De Wild. & T. Durand) Wilczek; Sosef & al., *Check-list pl. vascul. Gabon*: 98, 2006.

In Gabon: 270-350 m alt.

Map on p. 357.

**R. capparoides** (Andr.) Britten; Sosef & al., l.c. – Icon.: Lisowski, *Fl. Rép. Guinée* 2: fig. 141, 2009.

In Gabon: 700-1000 m alt.

Map on p. 357.

**R. macrantha** Pax & Gilg; Sosef & al., l.c.

In Gabon more widespread than shown on the map in Volume 1: 151.

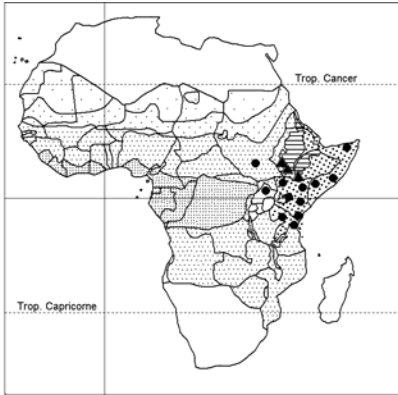
**R. reflexa** (Thomn.) Gilg & Benedict; Sosef & al., l.c.; Lisowski, *Fl. Rép. Guinée* 1: 118, 2009.

In Gabon: 500 m alt.

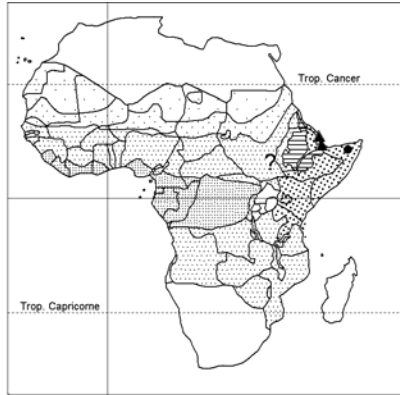
Map on p. 357.

**R. simplicifolia** Oliv.; Sosef & al., l.c.

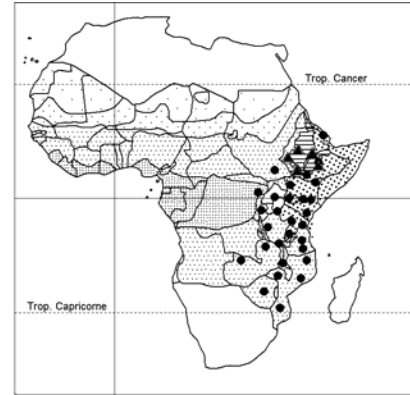
Map on p. 357.



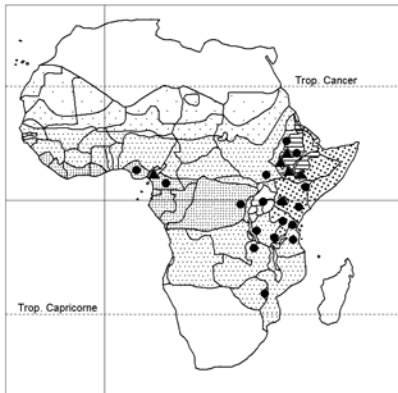
**Maerua subcordata**



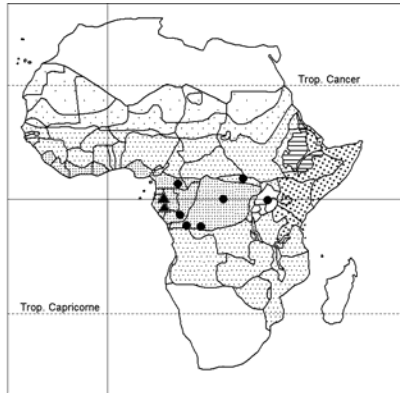
**Maerua thomsonii**



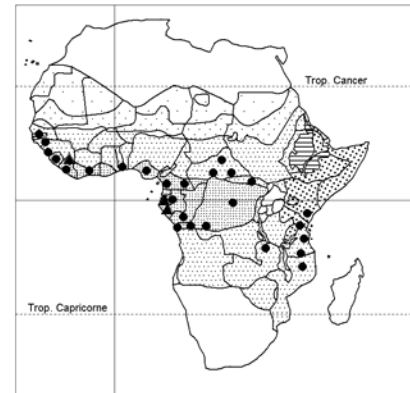
**Maerua triphylla**



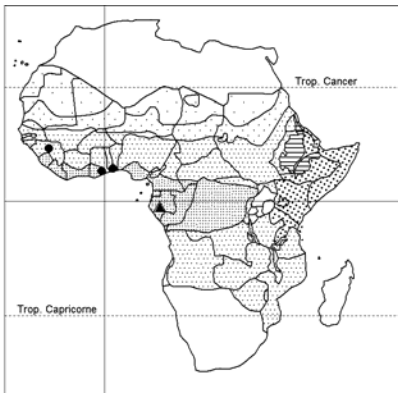
**Ritchiea albersii**



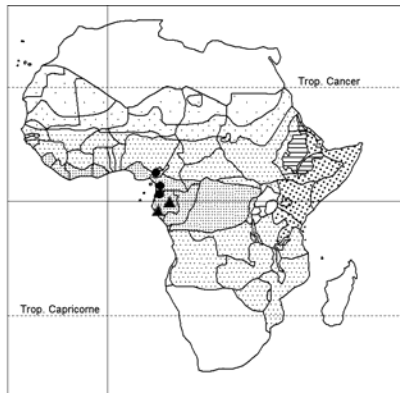
**Ritchiea aprevaliana**



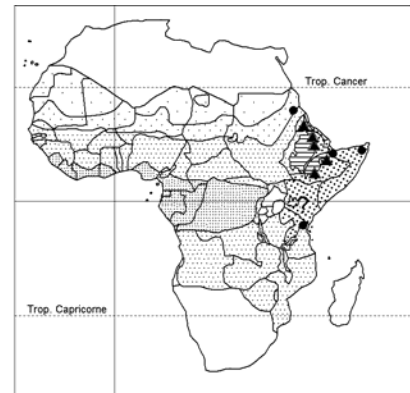
**Ritchiea capparoides**



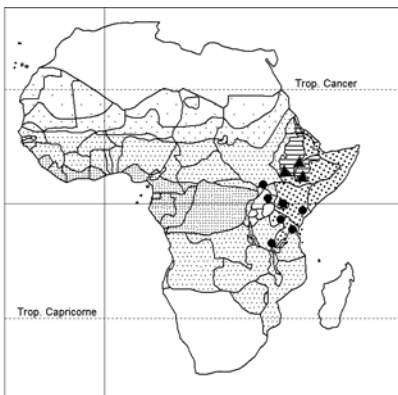
**Ritchiea reflexa**



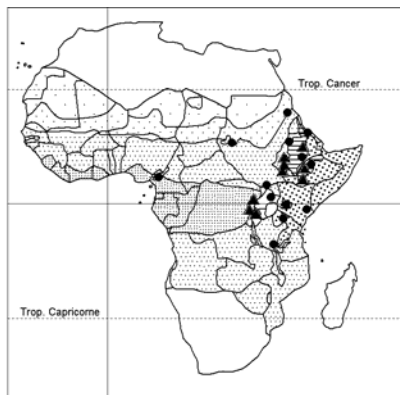
**Ritchiea simplicifolia**



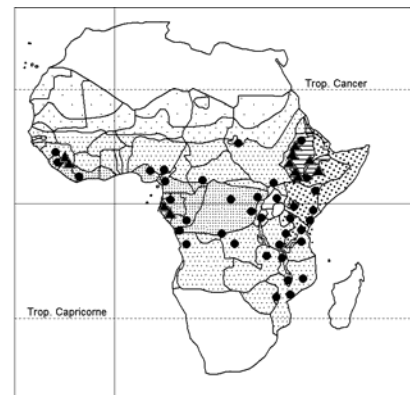
**Arenaria leptoclados**



**Cerastium afromontanum**



**Cerastium octandrum**



**Drymaria cordata**



**CARYOPHYLLACEAE** (Volume 1: 238-256)  
25 g. / 103 (+1?) spp. (former account: 27 / 103)

Add new information for following genera.

**ARENARIA** (Volume 1: 238, 241)

**Arenaria leptoclados** (Rchb.) Guss. – Icon.: Fl. Eth. & Eritrea 2/1: 214, 2000; Thulin, Fl. Somalia 1: 104, 1995.

syn.: *A. serpyllifolia* L. subsp. *leptoclados* (Rchb.) Nyman; *A. serpyllifolia* L. var. *leptoclados* Rchb.; *A. serpyllifolia* subsp. *tenuior* (Koch) Arcangeli; *A. serpyllifolia* var. *tenuior* Koch

In Ethiopia: shaded places at margins of forest or thickets; 1350-2600(-2800) m alt.

Also in Yemen (Kilian, Willdenowia 34: 169, 2004).

The boundary between *A. leptoclados* and *A. serpyllifolia* needs further study.

Map on p. 357.

**CERASTIUM** (Volume 1: 238, 240-241)

**Cerastium afromontanum** T. C. E. Fries & Weim.; Fl. Eth. & Eritrea 2/1: 216, 2000.

Less variable in Ethiopia than in E. Africa.

Similar to *C. indicum* in most features.

Map on p. 357.

**C. indicum** Wight & Arn.; Fl. Eth. & Eritrea 2/1: 216, 2000. – Icon.: Adansonia, Sér. 3, 28: 291, 294-295, 2006 (sub nom. *C. lanceolatum*).

syn.: *Stellaria lanceolata* Poir.; *C. lanceolatum* (Poir.) Valponi (type from Cameroon).

Map in Volume 1: 241.

**C. octandrum** Hochst. ex A. Rich., ampl. Möschl, incl. var. *scandens* (Engl.) Cufod., comb. inval., var. *hirsutum* Möschl, nom. nud., and var. *humile* (Schweinf.) Möschl – Icon.: Fl. Eth. & Eritrea 2/1: 217, 2000 (var. **octandrum**).

syn.: *C. caespitosum* Gilib. var. *octandrum* (Hochst. ex A. Rich.) Engl., var. *simense* Engl. with fa. *humile* (Schweinf.) Engl., and var. *scandens* Engl.; *C. simense* Hochst., nom. nud., with var. *humile* Schweinf.; *C. vulgatum* auct., non L.

Closely related to *C. glomeratum*.

Map on p. 357.

**DIANTHUS** (Volume 1: 240, 242-243)

**Dianthus leptoloma** Steud. ex A. Rich.; Fl. Eth. & Eritrea 2/1: 227, 2000.

On rocks; (1500-)2200-2600 m alt.

Map in Volume 1: 243.

**D. longiglumis** Del. – Icon.: Fl. Eth. & Eritrea 2/1: 228, 2000.

Map in Volume 1: 243.

**DRYMARIA** (Volume 1: 242-243)

**Drymaria cordata** (L.) Willd. ex Schultes in Roem. & Schultes; Sosef & al., Check-list pl. vascul. Gabon: 98, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 210, 2000; Volponi in Adansonia, Sér. 3, 28: 292, 294-295, 2006; Lisowski, Fl. Rép. Guinée 2: fig. 143, 2009; Cheek & al. Plants Dom, Bamenda Highl., Cameroon: 79, 120-121 (text), 2010.

syn.: *Stellaria rotundifolia* Poir.; *Drymaria rotundifolia* (Poir.) Hariot 1900, non A. Gray 1854, “type de Magellan, Commerson. cum 101. Hb Lam.” (Volponi, o.c.: 289).

Map on p. 357.

**GYMNOCARPOS** (Volume 1: 242-243, 245) / 3  
(former account: 2)

**Gymnocarpus parvibractus** (M. G. Gilbert) Petruss. & Thulin; Thulin, Fl. Somalia 3: 561, 2006.

bas.: *Lochia parvibracta* M. G. Gilbert

Map in Volume 1: 245.

**G. sclerocephalus** (Decne.) Ahlgren & Thulin; Thulin, Fl. Somal. 3: 561, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 200, 2000 (sub gen. *Sclerocephalus*).

See under **Sclerocephalus arabicus** in Volume 1: 252, and map on p. 251.

Also in Yemen (Kilian & al., Willdenowia 32: 251, 2002).

**GYPSOPHILA** (Volume 1: 242, 245) / 2 ?  
(former account: 1)

**Gypsophila elegans** M. Bieb. var. **elegans** – Icon.: Fl. Eth. & Eritrea 2/1: 222, 2000.

syn.: *G. erythraeae* Chiov., nom. nud.

Waxy glabrous annual herb to 40 cm tall, branching in upper parts; leaves oblong, 2-4 × 0.2-0.5 cm; inflorescence lax, with scarious bracts; calyx campanulate; petals emarginate, white to pink; capsule longer than calyx.

Ecology unknown.

Ukraine to Iran.

First believed to have been introduced (widely grown as an ornamental). But Chiovenda believed it to be native.

In Eritrea West: Comailé Valley. Not mapped.

**HERNIARIA** (Volume 1: 242, 245)

**Herniaria abyssinica** Chaudhri; Fl. Eth. & Eritrea 2/1: 201, 2000.

Low *Helichrysum* bushland; 3300-3900 m alt.

Known from only 5 collections.

Map on p. 361.

**H. hirsuta** L. – Icon.: Fl. Eth. & Eritrea 2/1: 201, 2000.

In Ethiopia: cultivated fields; 2400-2800(-4050) m alt.

Can be confused with certain forms of *Polygonum plebeium* L. (*Polygonaceae*).

Map on p. 361.

**(HOLOSTEUM)**

**(Holoosteum umbellatum** L.) – Icon.: Fl. Eth. & Eritrea 2/1: 215, 2000.

Annual herb, much branched from base, to 8 cm tall; glabrous or minutely glandular on inflorescence; leaves oblong-lanceolate, fleshy, 8 × 4 mm; umbel 4-5-flowered; petals white, tip 3-toothed.

“Edge of recent graded road through afroalpine *Helichrysum* heath; c. 4300 m alt.”

Polymorphic species.

Europe, Mediterranean Region; SW Asia.

In Ethiopia occurring in an isolated habitat (Sanetti Plateau, Bale Region); it also has a distinctive morphology. It seems to be a “more ancient, natural introduction” (Fl. Eth., l.c.). M. G. Gilbert (Fl. Eth., l.c.) suggests the Ethiopian plant to belong to (var.) subsp. **umbellatum**, with stamens as many as the sepals. The latter is also cited by Zohary, Flora Palaestina 1 / Text: 119, 1966. Subsp. **glutinosum** (M. Bieb.) Nyman, with 10 stamens, occurs in Egypt (Boulos, Fl. Egypt 1: 77, 1999) as well as in Palestine (l.c.).

Not mapped.

**KRAUSEOLA** (Volume 1: 244-245)

**Krauseola gillettii** Turrill – Icon.: Fl. Eth. & Eritrea 2/1: 208, 2000.

Not yet collected in Ethiopia, but known from the N Kenyan border area, not far from Sidamo.

Collected for the seed bank “Seeds for Life” in Kenya (Muthoka, Samara 6: 2, 2004).

Map in Volume 1: 245.

**LYCHNIS** / 6 (*Uebelinia* former account: 6)

In our Enumération Volume 1, the species are treated under **Uebelinia** (1: 256, 255).

OXELMAN, B. & al. (2001). A revised generic classification of the tribe Sileneae (Caryophyllaceae). *Nord. J. Bot.* 20: 743-748 (a draft version was published *ibid.* 20: 513-518, 2000).

POPP, M. (2008). New combinations in Lychnis (Caryophyllaceae) from Africa. *Novon* 18: 99-100.

POPP, M. & al. (2007). Colonization and diversification in the afro-alpine “sky islands” by Eurasian Lychnis L. (Caryophyllaceae). In: ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February-2 March 2007, Yaoundé, Cameroon, Abstracts*: 87.

POPP, M. & al. (2008). Colonization and diversification in the African ‘sky islands’ by Eurasian Lychnis L. (Caryophyllaceae). *J. Biogeogr.* 35: 1016-1029 [with maps].

**Lychnis abyssinica** (Hochst.) Lidén, *Nord. J. Bot.* 20: 746, 2001. – Icon.: Fl. Eth. & Eritrea 2/1: 220, 2000. (gen. *Uebelinia*).

bas.: *Uebelinia abyssinica* Hochst. (cf. Friis, *Fragm. Flor. Geobot. Suppl.* 2/1: 201, 1993).

syn.: *U. spathulifolia* Hochst. ex T. C. E. Fries

The most widespread of the afro-montane species in the genus.

Map in Volume 1: 255.

**L. crassifolia** (T. C. E. Fries) M. Popp, *Novon* 18: 99, 2008.

bas.: *Uebelinia crassifolia* T. C. E. Fries

Map on p. 361.

## LYCHNIS

**L. kigesiensis** (R. D. Good) M. Popp, l.c. – Icon.: Fl. Eth. & Eritrea 2/1: 221, 2000 (var. **ragazziana**).

bas.: *Uebelinia kigesiensis* R. D. Good

In Ethiopia: 1500-3000 m alt.

Comprises 2 subspp.: – subsp. **kigesiensis**, in Uganda; – subsp. **ragazziana** (S. Outsted) M. Popp, l.c. (bas.: *Uebelinia kigesiensis* subsp. *ragazziana* S. Outsted).

Map in Volume 1: 255.

**L. kiwuensis** (T. C. E. Fries) M. Popp, l.c. – Icon.: Fl. Eth. & Eritrea 2/1: 221, 2000 (figs. *U. kiwuensis* and *U. erlangeriana*).

bas.: *Uebelinia kiwuensis* T. C. E. Fries

In Ethiopia: 1800-3800 m alt.

Comprises 2 subspp.: – subsp. **kiwuensis** (capsule 3-valved); – subsp. **erlangeriana** (Engl.) M. Popp, l.c. [bas.: *Uebelinia rotundifolia* Oliv. var. *erlangeriana* Engl.; syn.: *U. erlangeriana* (Engl.) T. C. E. Fries; *U. kiwuensis* T. C. E. Fries subsp. *erlangeriana* (Engl.) S. Outsted].

Map in Volume 1: 255.

**L. rotundifolia** (Oliv.) M. Popp, l.c.

bas.: *Uebelinia rotundifolia* Oliv.

Map in Volume 1: 255.

**L. scottii** (Turrill) M. Popp, l.c.; Fl. Eth. & Eritrea 2/1: 220-221, 2000.

bas.: *Uebelinia scottii* Turrill

Map in Volume 1: 255.

*(MELANDRIUM)* (Volume 1: 244-245) / 0

*Melandrium lomalasinense* Engl. = **Silene lomalasinense**

*syngei* Turrill = **S. syngei**

**MINUARTIA** (Volume 1: 244-245, 247)

**Minuartia ellenbeckii** (Engl.) M. G. Gilbert; Fl. Eth. & Eritrea 2/1: 212, 2000.

syn.: *Alsine schimperi* Hochst. ex A. Rich. var. *erlangeriana* Engl., nom. nud., and var. *ellenbeckii* Engl.; *Minuartia filifolia* (Forssk.) Mattf. var. *erlangeriana* Chiov., nom. inval.

In Ethiopia: (2550-)2900-3700 m alt.

Closely related to *M. filifolia*.

Map on p. 361.

**M. filifolia** (Forssk.) Mattf. – Icon.: Fl. Eth. & Eritrea 2/1: 211, 2000.

syn.: *Alsine filifolia* (Forssk.) Schweinf., incl. var. *schimperi* (Hochst. ex A. Rich.) Fiori; *A. schimperi* Hochst. ex A. Rich., incl. var. *graminifolia* Webb

In Ethiopia: open slopes, often in rock crevices; 1800-4050 m alt.

Map on p. 361.

**PARONYCHIA** (Volume 1: 244, 247)

**Paronychia chlorothyrsa** Murb.; Fl. Eth. & Eritrea 2/1: 202, 2000.

In Ethiopia: – var. **chlorothyrsa** in Eritrea West, in woodland areas, from Egypt W to Morocco, 2500-2700 m alt.; – var. **coarctata** Chaudhri (syn.: *P. sedifolia* R. Br., nom. nud.) with only one unlocalised collection in Ethiopia, also in Libya, Algeria; – var. **erythraea** (Fiori) Chaudhri, known only from the type, West Eritrea, 2200 m alt.

Map in Volume 1: 247.

**POLLICHIA** (Volume 1: 244, 247)

**Pollichia campestris** Ait. – Icon.: Fl. Eth. & Eritrea 2/1: 198, 2000.

syn.: *Bergia abyssinica* A. Rich.

In Ethiopia: disturbed and eroded areas, often in *Acacia tortilis* woodland, usually at margins of bushes; 1250-2350 m alt.

Map on p. 361.

**POLYCARPAEA** (Volume 1: 246-250) / 24  
(former account: 23)

KOOL, A. & M. THULIN (2007). Rapid diversification of Polycarpaea (Caryophyllaceae) in the Horn of Africa region. In: ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February-2 March 2007, Yaoundé, Cameroon, Abstracts*: 83. Yaoundé.

**Polycarpaea corymbosa** (L.) Lam.; Akoegninou & al., Fl. analyt. Bénin: 456, 2006; Fl. Eth. & Eritrea 2/1: 205, 2000; Lisowski, Fl. Rép. Guinée 1: 119, 2009.

syn.: *P. corymbosa* var. *grandiflora* Pax

In Ethiopia: deciduous woodland in disturbed places; sometimes weed of cultivation; 0-1800(-2600 ?) m alt.

A new variety, var. **yadagiriense** C. S. Reddy, V. S. Raju & Y. N. R. Varma is described from India, Andhra Pradesh (J. Econ. Taxon. Bot. 32: 519-520, 2008).

The separation from *P. linearifolia* not clear cut in W lowlands of Ethiopia. More work on the species complex throughout Africa needed.

Map on p. 361.

**P. eriantha** Hochst. [ex A. Rich.]; Akoegninou & al., l.c.; Sosef & al., Check-list pl. vascul. Gabon: 98, 2006; Lisowski, Fl. Rép. Guinée 1: 119, 2009. – Icon.: Fl. Eth. & Eritrea 2/1: 206, 2000.

In Ethiopia: along seasonal water courses on sand; shallow soils overlying flat rocks; (700-)1100-2200 m alt.

The type, Schimper Ser. 2: 823, is a mixed collection with *P. corymbosa*. “Hochstetter included a diagnosis on the herbarium label, thus predating Richard who is usually given as the authority for this species” (Fl. Eth., l.c.: 205).

Map on p. 361.

**P. linearifolia** (DC.) DC.; Fl. Eth. & Eritrea 2/1: 205-206, 2000; Akoegninou & al., l.c.; Lisowski, Fl. Rép. Guinée 1: 119, 2009.

In Ethiopia: *Terminalia* grassland; ± 550 m alt.

Separation from *P. corymbosa* difficult. The Ethiopian material seems intermediate between the two.

Map on p. 361.

## POLYCARPAEA

**P. robbairea** (O. Kuntze) Greuter & Burdet; Dobignard, J. Bot. Soc. Bot. France 20: 42, 2002; Fl. Eth. & Eritrea 2/1: 296-297, 2000.

bas.: *Polycarpon* (“Polycarpa”) *robbairea* O. Kuntze

syn.: *Alsine prostrata* Del. 1813, non Forssk. 1775; *Robbairea prostrata* (Forssk.) Boiss., p.p., excl. nom. et synonym. Forssk.; *Robbairea delileana* Milne-Redh.; *Polycarpaea confusa* Maire, nom. illegit.; *Robbairea confusa* (Maire) Maire, nom. illegit.

Treated as **Polycarpon robbairea** in our Tropical African Flowering Plants Volume 1: 250 and map p. 249.

In Ethiopia: sandy soil in subdesert; 0-250 m alt.

Dobignard, l.c., made the new combination, subsp. **garamantum** (Quézel) Dobignard (bas.: *Polycarpaea confusa* Maire subsp. *garamantum* Quézel), from the Hoggar (endemic).

Specimens from Somalia have been seen, but information not available (Thulin, Fl. Somalia 1: 100-101, 1993).

Plant originally misidentified as *Alsine* (*Polycarpon*) *prostratum*. Synonymy complex; based on Delile’s collection and description, not the original species of Forsskål.

Map in Volume 1: 249.

**P. rupicola** J.-P. Lebrun & Stork

New collections seen by us at the herbarium of Yaoundé, Cameroon.

Abundant between rocks and boulders of gneiss on river sides (Letouzey 9792, 3.I.1970: 70 km SSW Bafia; J. Lowe 3485, 12.II.1978: bridge near Ngok, 4°10’N x 11°01’E).

Map on p. 361.

**POLYCARPON** (Volume 1: 250/249) / 2  
(former account: 3)

KOOL, A. & al. (2007). Polyphyly of Polycarpon (Caryophyllaceae) inferred from DNA sequence data. *Taxon* 56: 775-782.

**Polycarpon prostratum** (Forssk.) Aschers. & Schweinf.; Fl. Eth. & Eritrea 2/1: 204, 2000; Sosef & al., Check-list pl. vascul. Gabon: 98, 2006; Lisowski, Fl. Rép. Guinée 1: 120, 2009. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 457, 2006.

In Gabon: 20 m alt.

According to Kool & al., o.c., this species “is nested with Macaronesian species of *Polycarpaea*... and should therefore be excluded from *Polycarpon*... although their exact position among the paronychioids will have to be determined by future studies”.

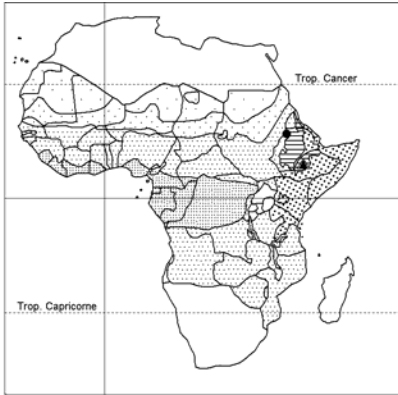
Map on p. 361.

**P. tetraphyllum** (L.) L. (type of the genus); Thulin, Fl. Somal. 4: 277, 1995. – Icon.: Fl. Eth. & Eritrea 2/1: 204, 2000.

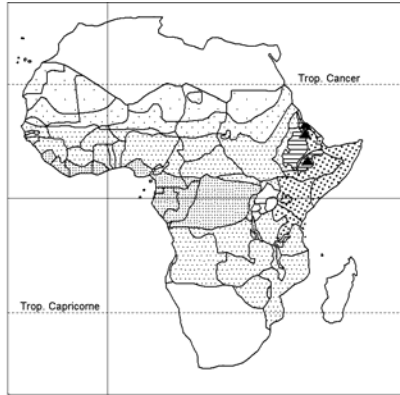
In grassy patches in evergreen bushland (Somalia); along gravel paths or in crevices between paving stones (Ethiopia); 1200-2800 m alt.

Probably more widespread in towns (Ethiopia).

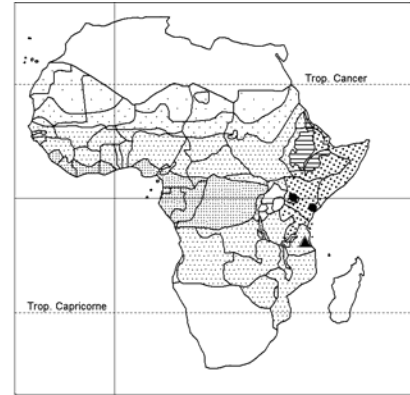
Map in Volume 1: 249.



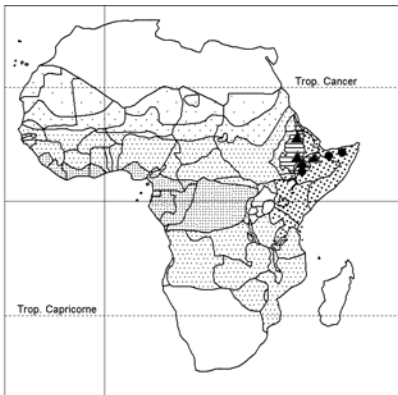
*Herniaria abyssinica*



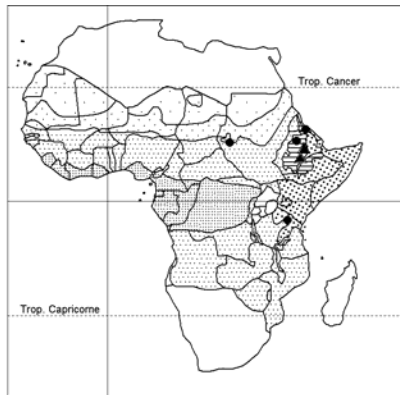
*Herniaria hirsuta*



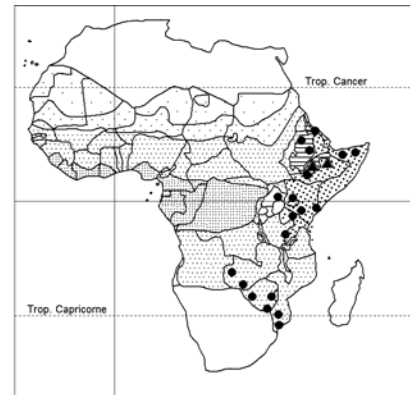
*Lychnis crassifolia*



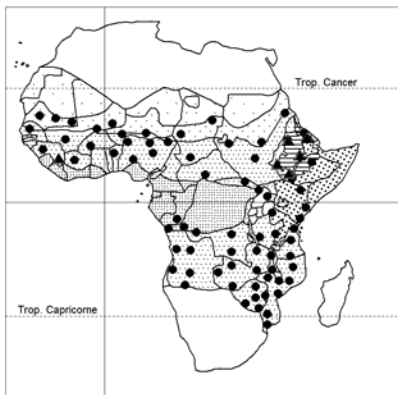
*Minuartia ellenbeckii*



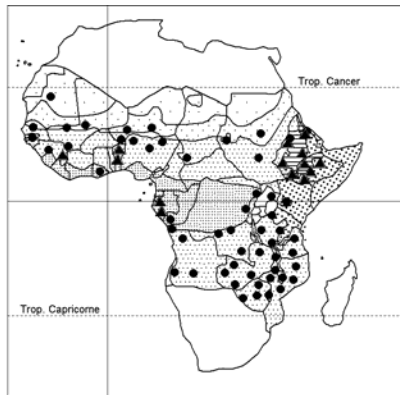
*Minuartia filifolia*



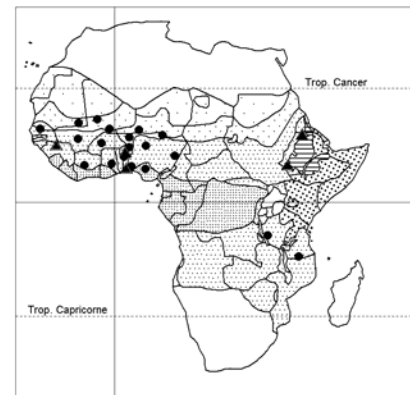
*Pollichia campestris*



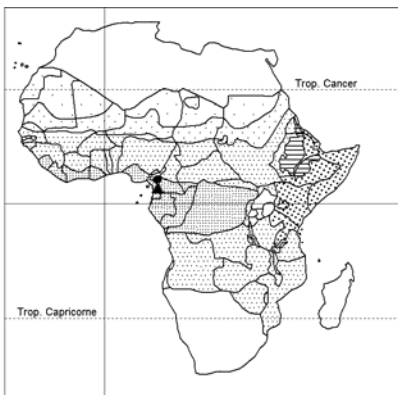
*Polycarpaea corymbosa*



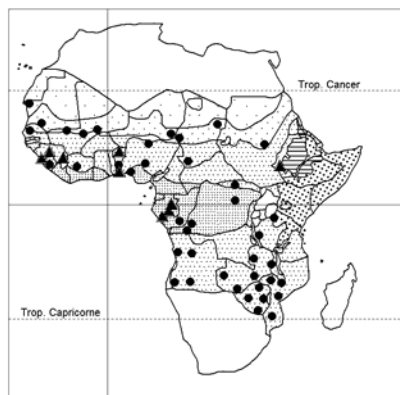
*Polycarpaea eriantha*



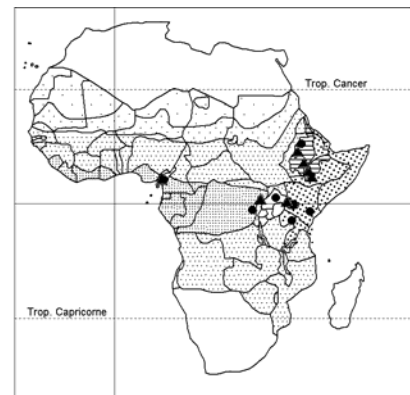
*Polycarpaea linearifolia*



*Polycarpaea rupicola*



*Polycarpon prostratum*



*Sagina abyssinica*



**SAGINA** (Volume 1: 250-252)

**Sagina abyssinica** Hochst. ex A. Rich., excl. fa. *apetala* Hauman (= *S. afroalpina*) – Icon.: Fl. Eth. & Eritrea 2/1: 213, 2000 (subsp. **abyssinica**).

Subsp. **aequinoctialis** Hedberg (Svensk Bot. Tidskr. 48: 208, 1954) with smaller, papillate seeds on Mt Cameroon, in Bioko/Fernando Poo, Zaire, E. Africa.

– Subsp. × = Thulin 1548, from E C Ethiopia (AR, BA; 2000-3050 m alt.).

Map on p. 361.

**S. afroalpina** Hedberg – Fl. Eth. & Eritrea 2/1: 213, 2000.

The relationship with *S. brachysepala* poorly understood. Field investigations needed.

Map on p. 363.

(**S. apetala** L.) – Icon.: Fl. Eth. & Eritrea 2/1: 213, 2000.

syn.: *S. ciliata* Fries; *S. patula* Jordan; *S. reuteri* Boiss.

Ephemeral annual herb to 7 cm tall; internodes as long as leaves; leaves subulate, to 1 cm long, tip-aristate; flowers 4-merous; capsule splitting into 4 valves easily taken for petals (silvery).

Weed in damp sand or gravel; 1600-2450 m alt.

Cosmopolitan weed, probably native in Europe.

In Ethiopia reported from Shewa Region (Su). Not mapped.

**S. brachysepala** Chiov. – Icon.: Fl. Eth. & Eritrea 2/1: 213, 2000.

Similar to *S. abyssinica* and *S. afroalpina*, distinguished by the flowers with vestigial petals.

Ecology unknown.

Known only from the type collected in 1909.

Map in Volume 1: 251.

**SCLERANTHUS** (Volume 1: 252/251)

**Scleranthus annuus** L. – Icon.: Fl. Eth. & Eritrea 2/1: 203, 2000.

syn.: *S. orientalis* Rössler; *S. hamatus* Chiov. 1940, nom. illegit., non Hausskn. 1890; *S. comosus* Dumort.; *S. divaricatus* Dumort.; *S. venustus* Strobl.

In Ethiopia: weed of cereal crops, roadsides; often in poorly drained soils; 1850-3350 m alt.

Widespread invader, probably native in Europe or the Middle East. Also in S. Africa; N. America.

Map on p. 363.

**SCLEROCEPHALUS** (Volume 1: 252/251) / 0

(former account: 1)

*Sclerocephalus arabicus* Boiss. = **Gymnocarpus sclerocephalus**

**SILENE** (Volume 1: 252/251-254) / 14

(former account: 14)

syn.: *Melandrium* Röhl

A genus in urgent need of revision.

OXELMAN, B. & al. (2001). A revised generic classification of the tribe Sileneae (Caryophyllaceae). *Nord. J. Bot.* 20: 743-748 (an earlier version, *ibid.* 20: 513-518, 2000).

## SILENE

**Silene burchellii** Otth ex DC., excl. var. *gillettii* Turrill (= *S. gillettii*), var. *schweinfurthii* (Rohrb.) Täckholm & Boulos (= *S. schweinfurthii*), and var. *syngei* (Turrill) Turrill (= *S. syngei*). – Icon.: Fl. Eth. & Eritrea 2/1: 225, 2000; Thulin, Fl. Somalia 1: 105, 1993 (sub nom. *S. flammulifolia*), cf. Vol. 4: 278, 1995.

Very variable plant: ephemeral or perennial herb, 10-70 cm tall, often branched from base; leaves glabrous or hairy, linear to ± spatulate, 2-6 × 0,2-1,2 cm.

In Fl. Eth., o.c.: 224, M. G. Gilbert suggests that formal taxa should be recognized according to morphology. The name *S. burchellii* should perhaps be restricted to S. African material. Most Ethiopian material should be called *S. chirensis* A. Rich. Instead of naming varieties Gilbert divides the species into 5 forms, viz.: – form **A** [syn.: *S. chirensis* A. Rich.; *S. schweinfurthii* Rohrb.; *S. chirensis* var. *schweinfurthii* (Rohrb.) Schweinf.; *S. burchellii* var. *schweinfurthii* (Rohrb.) Täckholm & Boulos; *S. chirensis* var. *macropetala* Schweinf.; ? *S. hochstetteri* Rohrb., *S. cerisea* sensu A. Rich. 1847, non All.], in N Ethiopia, 1850-3000 m alt.; – form **B** in *Podocarpus* forest of Harare Region, 2000-2250 m alt.; – form **C** among rocks, in C Ethiopia, 3600-4000 m alt.; form **D** in C Ethiopia, on steep rocky slopes and in crevices, 3000-3500 m alt.; – form **E** in grassland subjected to seasonal waterlogging, in S C Ethiopia, 2500-3550 m alt. The calyx shape and indumentum of each form is illustrated.

The cupricolous form in Katanga (Zaire) seems to be a new species not yet described (Pl. Ecol. Evol. 143: 11, 2010).

Map on p. 363.

*S. engleri* Pax = **S. yemensis**

**S. flammulifolia** Steud. ex A. Rich. – Icon.: Fl. Eth. & Eritrea 2/1: 225, 2000.

Perennial herb, lax and trailing in shade, but with short, much branched stems covered with old leaf bases, and with leaves in rosettes in sun; leaves oblanceolate, 3-5 × 0,5 cm.

Rocks, limestone and basalt; limestone crevices at foot or near top of cliffs; sometimes in shade of *Juniperus*; 1350-3700 m alt.

Yemen.

Map on p. 363.

(**S. gallica** L.); Fl. Eth. & Eritrea 2/1: 226, 2000.

Erect or sprawling annual herb, pubescent or thinly villous, upper parts sticky; calyx conspicuously 10-veined; petals white fading pink.

Weed, along paths in short grass; ± 2000 m alt. in Sidamo Region, Ethiopia, and well established in E. African highlands.

Native in S Europe.

Not mapped.

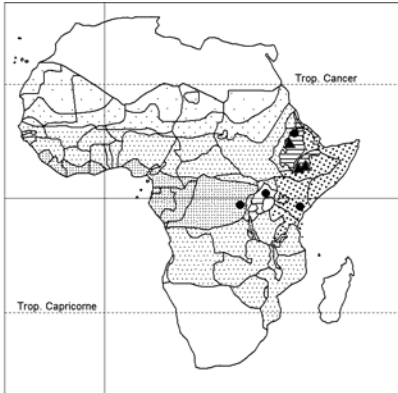
*S. hochstetteri* Rohrb. = **S. ? burchellii**

**S. lomalasinensis** (Engl.) T. Harris & Goyder, Kew Bull. 61: 35, 2006. – Neotype: B. D. Burt 4381 (K).

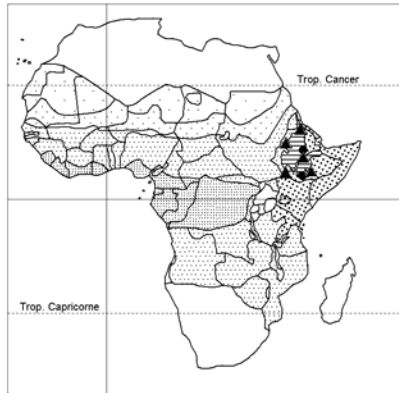
bas.: *Melandrium lomalasinense* Engl. 1912.

syn.: *Silene lomalasinensis* Engl. ex F. Jaeger 1911, nom. nud.

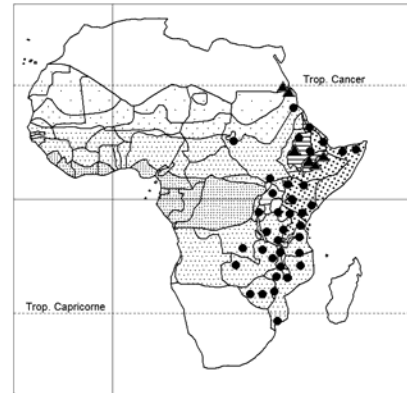
For description and map, see under *Melandrium* in Volume 1: 244 and 245.



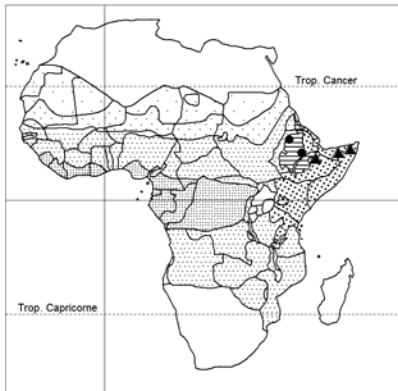
*Sagina afroalpina*



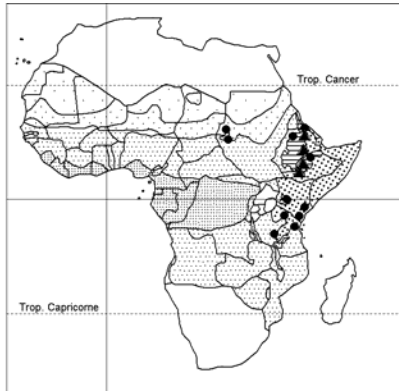
*Scleranthus annuus*



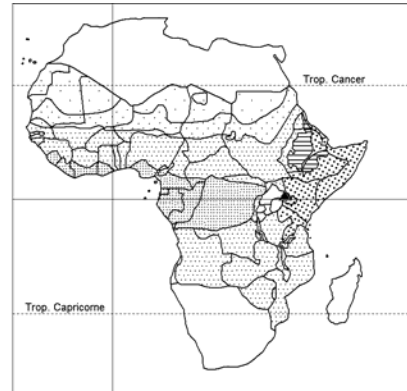
*Silene burchellii*



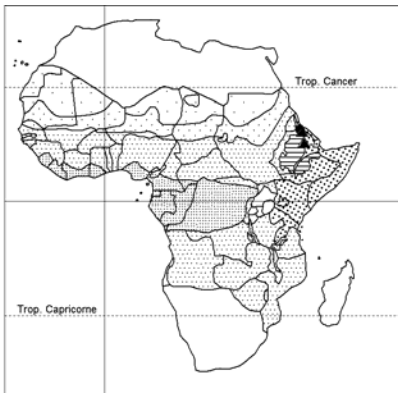
*Silene flammulifolia*



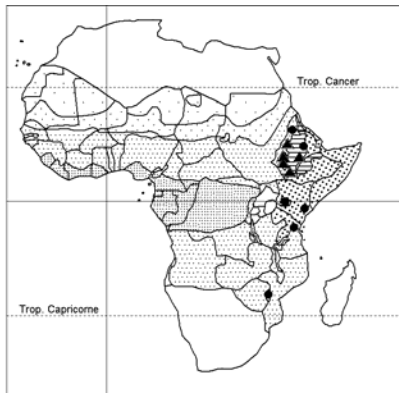
*Silene macrosolen*



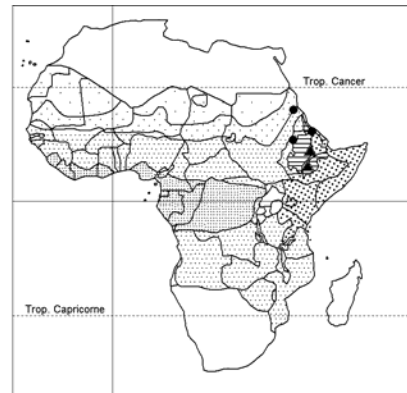
*Silene syngei*



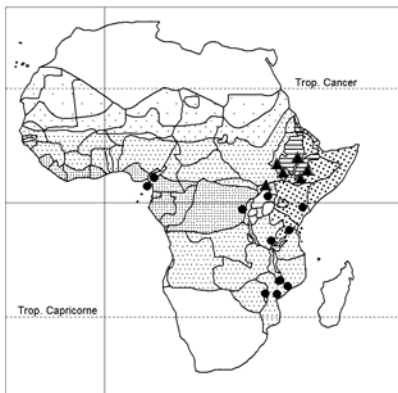
*Silene yemensis*



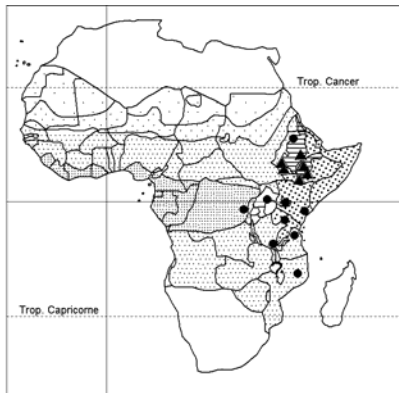
*Spergula arvensis*



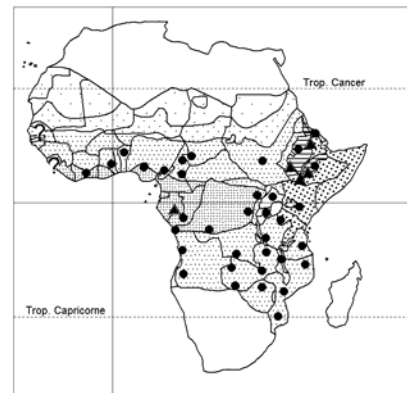
*Spergularia rubra*



*Stellaria mannii*



*Stellaria sennii*



*Ceratophyllum demersum*

## SILENE

**S. macrosolen** Steud. ex A. Rich. – Icon.: Fl. Eth. & Eritrea 2/1: 225, 2000.

In Ethiopia: steep rocky slopes in soil pockets and crevices, less often in black valley bottom soil in grassland; 1900-3600 m alt. Map on p. 363.

*S. schweinfurthii* Rohrb. = **S. burchellii**

**S. syngaei** (Turrill) T. Harris & Goyder, Kew Bull. 61: 35, 2006. bas.: *Melandrium syngaei* Turrill

syn.: *S. burchellii* Oth ex DC. var *syngaei* (Turrill) Turrill

Perennial branched herb to 22 cm tall; stems very leafy, internodes densely spreading hairy; leaves ± lanceolate, 1,4-3,5 × 0,2-0,7 cm, densely pubescent like the inflorescence; petals white, pubescent outside; fruit known ?

Damp rocks and cliff face in upland moor; 3750 m alt.

Endemic on Mt. Elgon (Uganda).

Known only from the type collected in 1935.

Map on p. 363.

(**S. vulgaris** (Moench) Garcke; Fl. Eth. & Eritrea 2/1: 226, 2000.

Perennial, glabrous herb to 60 cm tall; leaves sessile, lanceolate, 4 × 0,7 cm; inflorescence a divaricate cyme, bracts ovate, reduced; calyx conspicuously inflated.

Probably introduced: ecology not recorded; Asmara in Eritrea West. – Not mapped.

Widespread in Europe, Middle East, temperate Asia.

**S. yemensis** Defl.; Fl. Eth. & Eritrea 2/1: 223, 2000.

syn.: *S. engleri* Pax

Rock crevices; 2200-2800 m alt.

Yemen.

Map on p. 363.

## SPERGULA (Volume 1: 254/253)

**Spergula arvensis** L. – Icon.: Fl. Eth. & Eritrea 2/1: 209, 2000.

In Ethiopia: 2030-3400 m alt.

Invasive weed, probably native in Europe.

Map on p. 363.

## SPERGULARIA (Volume 1: 254/253)

**Spergularia maritima** (All.) Chiov. subsp. **intermedia** (Maire) Greuter & Burdet; Dobignard, J. Bot. Soc. Bot. France 20: 42-43, 2002.

Map in Volume 1: 253.

Dobignard, l.c., reinstates the binomial *Spergularia media* (L.) J. Presl & C. Presl (bas.: *Arenaria media* L.) for the Moroccan plants, with the following infraspecific taxa: – *S. media* subsp. *angustata* (Clavaud) Kerguelen & Lambinon [bas.: *S. marginata* var *angustata* Clavaud; syn.: *S. marginata* subsp. *angustata* (Clavaud) P. Monnier; *S. maritima* subsp. *angustata* (Clavaud) Greuter & Burdet]; – subsp. *intermedia* (Maire) Lambinon & Dobignard [bas.: *S. marginata* var. *intermedia* Maire; syn.: *S. marginata* subsp. *intermedia* (Maire) P. Monnier; **S. maritima** subsp. **intermedia** (Maire) Greuter & Burdet]; – subsp. *media* [syn.: *S. maritima* auctt. pl.; *S. marginata* subsp. *marginata* auctt. pl.;

## SPERGULARIA MARITIMA

*S. marginata* subsp. *vulgaris* auctt. afr. sept.]; – subsp. *occidentalis* (P. Monnier) Lambinon & Dobignard (bas.: *S. maritima* subsp. *occidentalis* P. Monnier); – subsp. *sauvagei* (P. Monnier) Lambinon & Dobignard (bas.: *S. maritima* subsp. *sauvagei* P. Monnier); – subsp. *tunetana* (Maire) Lambinon & Dobignard [bas.: *Spergula tunetana* Maire; syn.: *Spergularia marginata* subsp. *tunetana* (Maire) P. Monnier; *S. maritima* (All.) Chiov. subsp. *tunetana* (Maire) Greuter & Burdet].

Flora of Ethiopia & Eritrea 2/1: 208-209, 2000, mentions **Spergularia media** (L.) J. Presl & C. Presl (bas.: *Arenaria media* L.) from a Schimper collection, a plant of saline soils.

**S. rubra** (L.) J. Presl & C. Presl – Icon.: Fl. Eth. & Eritrea 2/1: 209, 2000.

syn.: *Lepigonium microspermum* Kindb.

In Ethiopia: fields; eroded areas; usually not characteristic of saline soils; 2200-2800 m alt.

Map on p. 363.

## SPHAEROCOMA (Volume 1: 254-255)

syn.: *Hafunia* Chiov.

Recently placed in *Illecebraceae*.

KOOL, A. & al. (2010). Phylogeny and biogeography of Sphaerocoma (Caryophyllaceae). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 248.

**Sphaerocoma hookeri** T. Anderson; Fl. Eth. & Eritrea 2/1: 198-199, 2000.

Gillett divided this species into 2 subspecies, viz. subsp. **hookeri** with glabrous stems and leaves 2-3 cm long, and subsp. **intermedia** J. B. Gillett with hairy internodes and leaves ± 1 cm long.

According to Kool & al. there is evidence to raising subsp. **intermedia** to species level with the name **S. intermedia** (new combination not given).

Map in Volume 1: 255.

## STELLARIA (Volume 1: 256/255)

VOLPONI, C. R. (2006). Type and new combination for *Stellaria lanceolata* and a new synonymy for *S. rotundifolia* (Caryophyllaceae). *Adansonia, Sér.* 3, 28: 287-298.

**Stellaria mannii** Hook f.; Fl. Eth. & Eritrea 2/1: 218, 2000. – Icon.: Volponi, o.c.: 293-295.

In Ethiopia: forest margins and clearings; often in dense undergrowth in high rainfall areas; 1200-1970 m alt.

Also in the Comores and Mascarene Isl.

Map on p. 363.

[**S. media** (L.) Vill., excl. var. *brauniana* Fenzl ex Engl. (= *S. sen-nii*); Fl. Eth. & Eritrea, l.c.

bas.: *Alsine media* L.

In Ethiopia: weed in damp places; 1350-3500 m alt.

Worldwide weed, probably native in the Old World temperate zone. Ruderal in Guinea (Lisowski, Fl. Rép. Guinée 1: 120, 2009).

Not mapped.

## STELLARIA

**S. sennii** Chiov. – Icon.: Fl. Eth. & Eritrea 2/1: 219, 2000.  
In Ethiopia: in damp places on forest margins; or margins of cultivations; 1300-2500 m alt.  
Also in Malawi ?  
Map on p. 363.

**UEBELINIA** (Volume 1: 256/255) / 0 (former account: 6)  
See above under **Lychnis**.

## [VACCARIA]

**[Vaccaria hispanica** (Miller) Rauschert] – Icon.: Fl. Eth. & Eritrea 2/1: 227, 2000.

bas.: *Saponaria hispanica* Miller

syn.: *S. vaccaria* L.; *Vaccaria segetalis* Ascherson, nom. illegit.

Erect waxy glabrous herb, 10-60 cm tall, not branching from base; leaves amplexicaule, oblong-lanceolate, 3-10 × 1-2 cm; cyme much branched; calyx enlarging becoming urn-shaped; petals pink.

Weed of cereals and flax; 1700-2200 m alt.

Widespread in temperate Europe, N Africa, Asia; adventive elsewhere.

Recorded from Eritrea West and central Ethiopia.

Not mapped.

**CELASTRACEAE** s. str. (Volume 5: 99-117)**EUONYMUS** (Volume 5: 102-103)

SAVINOV, I. A. (2010). Comparative morphological study of some Celastraceae from Madagascar and their relationships with other African representatives of the family. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 451.

**Euonymus congolensis** R. Wilzcek

Savinov (l.c.) believes that the *Euonymus* species from Africa and Madagascar are not related to other species in the genus: “*E. congolensis* has opposite leaves, but its flowers are cyathiform... not saucer-shaped and flat as in other... species... its capsules are pear-shaped and (3-)4(-5)-lobed... and its seeds have a large, boat-shaped, yellow aril.”

Map in Volume 5: 111.

**GYMNOSPORA** (Volume 5: 102-113)

**Gymnosporia buchananii** Loes.; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 121, 2010 (sub gen. *Maytenus*).

Add a locality in SW Cameroon (l.c.) on the map in Volume 5: 107.

**CERATOPHYLLACEAE** (Volume 1: 91, 93-94)

**Ceratophyllum demersum** L.; Figueiredo & Smith, Pl. Angola: 58, 2008; Sosef & al., Check-list pl. vascul. Gabon: 107, 2006. – Icon.: Fl. Eth. & Eritrea 2/1: 37, 2000 (var. **demersum**).

In Ethiopia: 400-2000 m alt. – Little material collected, and only one fruiting gathering.

Plant tolerant to salt.

Map on p. 363.

## CERATOPHYLLUM

**C. muricatum** Cham. subsp. **muricatum** – Icon.: Fl. Eth. & Eritrea, l.c.

syn.: *C. demersum* L. var. *muricatum* (Cham.) K. Schum.

In Ethiopia: 2000-2300 m alt.

Map on p. 367.

**CHENOPODIACEAE** (Volume 1: 287/288-300)  
22 g. / 72 spp.

(former account: 22 g. / 69 spp.)

Add new information for family and following genera.

KADEREIT, G. & al. (2006). Phylogeny of Salicornioideae (Chenopodiaceae): diversification, biogeography, and evolutionary trends in leaf and flower morphology. *Taxon* 55: 617-642.

OLVERA, H. F. & al. (2006). Pollen morphology and systematics of Atripliceae (Chenopodiaceae). *Grana* 45: 175-194.

SHEPHERD, K. A. & al. (2005). Morphology, anatomy and histochemistry of Salicornioideae (Chenopodiaceae) fruits and seeds. *Ann. Bot. (London)* 95: 917-933.

TURKI, Z. A. (2005). An enumeration of the family Chenopodiaceae of Egypt. *Phytomorphology* 55: 103-121.

**ANABASIS** (Volume 1: 287/288-290)

SUKHORUKOV, A. P. (2008). Fruit anatomy of the genus *Anabasis* (Salsoloideae, Chenopodiaceae). *Austral. Syst. Bot.* 21: 431-442.

**ARTHROCNEMUM** (Volume 1: 290/289)

PAPINI, A. & al. (2004). New insights in *Salicornia* L. and allied genera (Chenopodiaceae) inferred from nrDNA sequence data. *Plant Biosystems* 138: 215-223.

**Arthrocnemum macrostachyum** (Moric.) C. Koch; Rahman & al., Notes succ. pl. spp. Saudi Arabia in Bangladesh J. Pl. Tax. 9: 34, 2002. – Icon.: Fl. Eth. & Eritrea 2/1: 289, 2000.

Map in Volume 1: 289. Add a locality in Eritrea East.

**Arthrocnemum indicum** (Willd.) Moq. is mentioned from Angola by Figueiredo & Smith, Pl. Angola: 58, 2008, under **Halosarcia** [*H. indica* (Willd.) Paul G. Wilson].

Map in Volume 1: 289.

## SYNONYMS:

*Arthrocnemum africanum* Moss = **Sarcocornia natalensis**

*natalense* (Bunge ex Ung.-Sternb.) Moss = **S. natalensis**

**ATRIPLEX** (Volume 1: 290/289, 291-292) / 8  
(former account: 7)

**Atriplex erogavensis** Thulin, Nord. J. Bot. 24: 507, 2006. – Icon.: *ibid.*: 508; Thulin, Fl. Somal. 3: 563, 2006.

*Prostrate* perennial herb, monoecious, whitish mealy; stems to 20 cm long, 1.5 mm Ø; leaves *alternate*, oblong, 4-14 × 1.5-5 mm, base cuneate or sometimes ± hastate; flowers in axillary clusters, male and female, or only female; clusters aggregated into spike-like inflorescences intergrading with the vegetative parts; female flowers *subsessile*, bracteoles each with a ± lobed dorsal appendage at base looking like an extra pair of small bracteoles.

In gypsum silt in a grassy area near wadi; ± 1500 m alt.

A single population seen by Thulin in 2002. Known only from the type collected in 2002.

Map on p. 367.



## ATRIPLEX

**A. halimus** L.; Fl. Eth. & Eritrea 2/1: 288, 2000.

In Ethiopia: has been grown in forage trials in Shewa Region (SU). – 0-1500 m alt.

ORTÍZ-DORDA, J. & al. (2005). Genetic structure of *Atriplex halimus* populations in the Mediterranean Basin. *Ann. Bot. (London)* 95: 827-834 [map on p. 829].

TALAMALI, A. & al. (2001). Polygamie chez *Atriplex halimus* L. (Chenopodiaceae). *Compt. Rend. Acad. Sci. Paris, Sci. Vie* 324: 107-113.

TALAMALI, A. & al. (2004). Variations phénologiques, morphologiques et niveaux de ploïdie chez *Atriplex halimus* L. (Amaranthaceae). *Rev. Cytol. Biol. Végét., Botaniste* 27: 31-41.

WALKER, D. J. & al. (2005). Determination of ploidy and nuclear DNA content in populations of *Atriplex halimus* (Chenopodiaceae). *Bot. J. Linn. Soc.* 147: 441-448.

Map on p. 367.

**A. nogalensis** Friis & M. G. Gilbert; Fl. Eth. & Eritrea 1: 204, 2009.

Probably present in Ethiopia: gypsum plain; ca. 300 m alt. In Harerge Region (HA), but material young and identification uncertain.

Map in Volume 1: 291.

The following species are reported in Fl. Eth. & Eritrea 1: 286-288, 2000.

**A. breweri** Wats.

Shrub to 2,5 m tall, dioecious (no female flowers or fruits seen); leaves very pale grey green; flowers in dense clusters in slender paniculate spikes.

Grown as a hedge plant; 2300-2400 m alt. Native in California (USA).

**A. hastata** L.

Annual or short-lived perennial herb; stems strongly ribbed; lower leaves to 10 × 7 cm. Very variable.

Weed in S Ethiopia (Sidamo); ± 1500 m alt. Native in Europe, temperate Asia, N Africa.

**A. holocarpa** F. Muell.

Annual or short-lived perennial herb, monoecious, to 30 cm tall; leaves thin, ± rhomboidal, 1,5-3 cm long; flowers in axillary clusters.

Found in Eritrea West; 2300 m alt. Native in Australia.

**A. leptocarpa** F. Muell.

Decumbent annual or short-lived perennial monoecious herb; leaves narrowly elliptic to rhombic, 1-3 cm long; flowers in axillary clusters, bracteoles fused, 4-6 mm long.

Periodically waterlogged sites; found in Eritrea West. Native in Australia.

**A. lindleyi** Moq.

syn.: *A. halimoides* Lindl. 1838, non Tineo 1827.

Similar to *A. holocarpa*.

Found in Eritrea West. Native in Australia.

## ATRIPLEX

**A. muelleri** Benth.

Spreading or erect herb to 70 cm tall, often annual. Similar to *A. semibaccata*; leaves spatulate or rhombic, 1-7 × 0,4-4 cm.

Weed, in Eritrea West, SW-most Ethiopia; 2300-2400 m alt. Native in Australia; naturalized elsewhere, incl. S. Africa.

**A. pumilio** R. Br.

syn.: *A. prostrata* R. Br. 1810, non DC. 1805.

Similar to *A. semibaccata* but more prostrate, with smaller leaves, 0,2-0,6 cm; bracteoles united.

Weed in Eritrea West (Asmara); ± 2350 m alt. Native in Australia.

**A. semibaccata** R. Br. – Icon.: Fl. Eth., o.c.: 287

syn.: *A. prostrata* auct., non DC. 1805 nec R. Br. 1810.

Prostrate or decumbent perennial monoecious herb; taproot woody; branches slender, spreading; leaves thin, oblong-elliptic, 0,2-2 cm long, scaly, margins sinuate or entire; flowers in axillary clusters; fruiting bracteoles united in lower half.

Weed in Eritrea West; 2250-2450 m alt. Native in Australia.

**A. vesicaria** Benth.

Erect or decumbent shrub, usually dioecious, to 1 m tall; leaves elliptic-obovate, 0,5-3 × 0,2-1,5 cm; male flowers in terminal spikes or panicles 2-4 cm long; female flowers 2 or more together in upper leaf axils.

Found in Eritrea West; 2350 m alt. Native in Australia.

**BASSIA** (Volume 1: 292/291)

TURKI, Z. & al. (2006). Taxonomic studies in the Camphorosmeae (Chenopodiaceae) in Egypt. 1. Subtribe Kochiinae (Bassia, Kochia and Chenolea). *Fl. Medit.* 16: 275-294.

TURKI, Z. & al. (2008a). Taxonomic studies in the Camphorosmeae (Chenopodiaceae) 1. Subtribe: Kochiinae (genera: Bassia All., Kochia Roth and Chenolea Thunb.). *Acta Bot. Hungar.* 50: 181-201.

TURKI, Z. & al. (2008b). Biosystematic studies of *Bassia muricata* complex. *Acta Bot. Hungar.* 50: 203-213.

**Bassia muricata** (L.) Asch.

syn.: *Kochia muricata* (L.) Schrad.

This polymorphic species has been divided into 4 varieties (see Turki & al., 2008b: 203, 212).

Map in Volume 1: 291.

*Bassia indica* (Wight) A. J. Scott = **Kochia indica**

**[BETA]**

[**Beta vulgaris** L.] – Icon.: Fl. Eth. & Eritrea 2/1: 279, 2000.

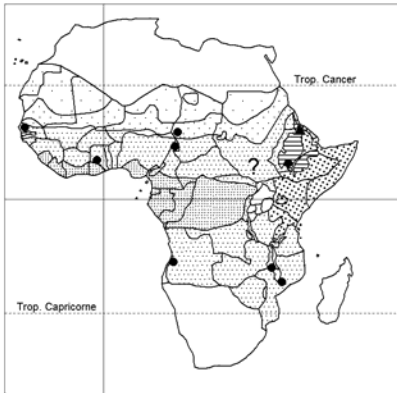
Erect glabrous annual herb occurring as wild-type escapes or weed at margins of fields; also cultivated in Eritrea West and NC Ethiopia; 2000-2400 m alt.

## SYNONYMS:

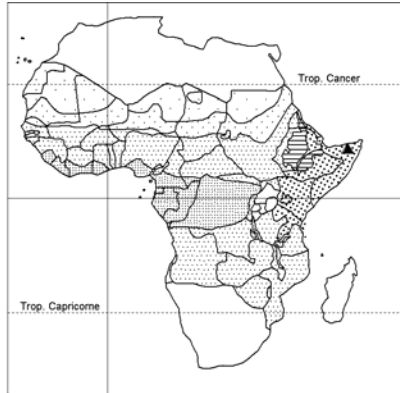
The following names are all synonyms of **Patellifolia procumbens** (see below under **Patellifolia**):

*Beta campanulata* Coss. 1875, nom. nud. (also cited as *B. patellaris* var. *campanulata* or fa. *campanulata*)

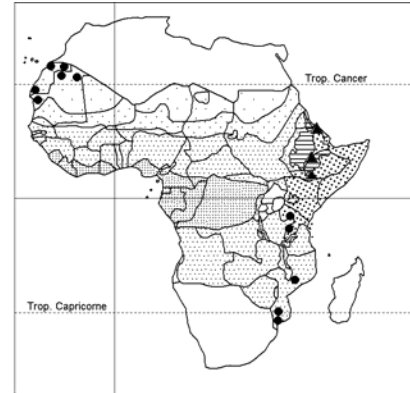
*diffusa* Coss. (lectotypification by Thulin & al., Willdenowia 40: 9, 2010)



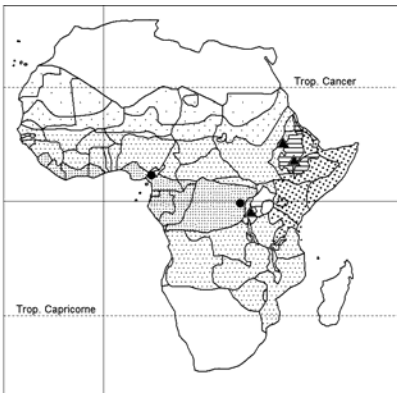
*Ceratophyllum muricatum*



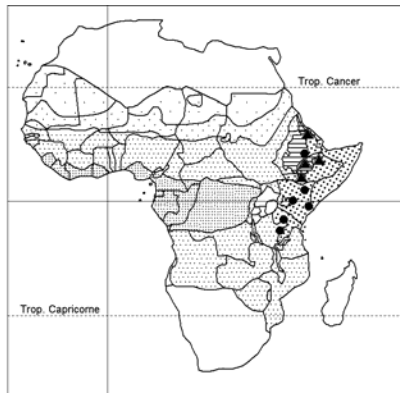
*Atriplex erigavoensis*



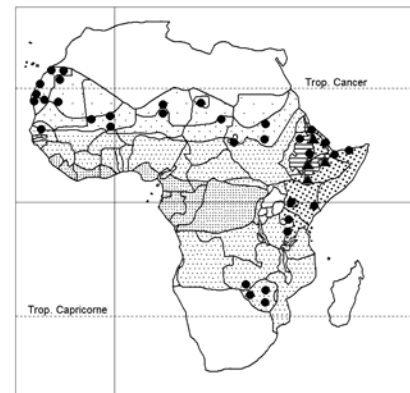
*Atriplex halimus*



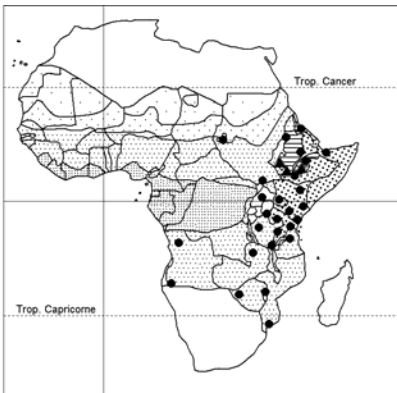
*Chenopodium congolanum*



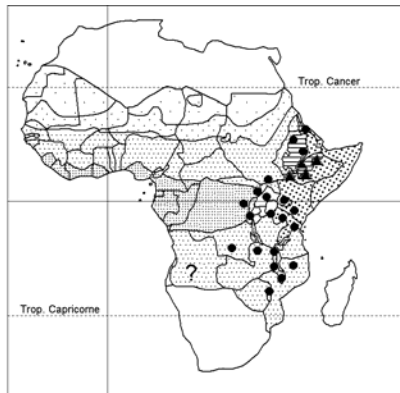
*Chenopodium fasciculosum*



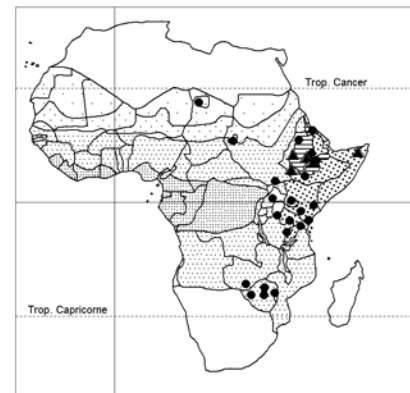
*Chenopodium murale*



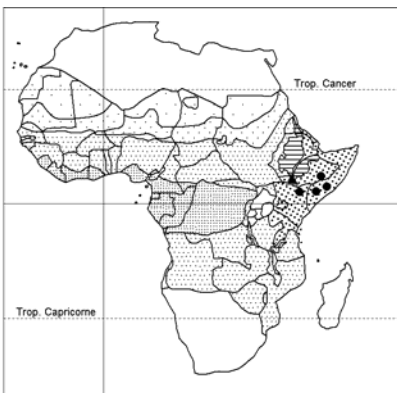
*Chenopodium opulifolium*



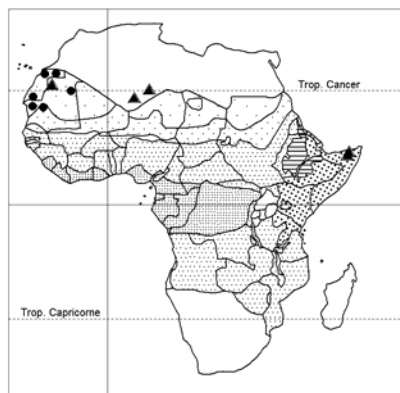
*Chenopodium procerum*



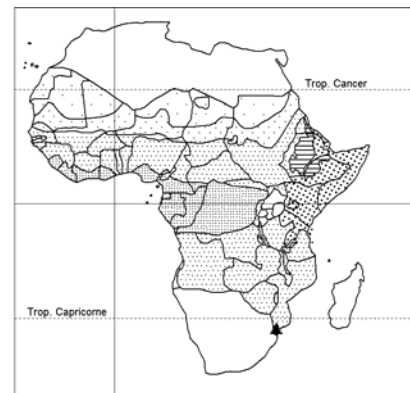
*Chenopodium schraderianum*



*Fadenia zygophylloides*



*Patellifolia procumbens*



*Sarcocornia mossambicensis*

## BETA

*hastata* Link 1825, nom. inval.

*hastata* Desf. 1829

*monodiana* Maire (lectotypification, idem p. 8)

*patellaris* Moq., incl. var. or fa. *campanulata* (see above), var. *diffusa* (Coss.) Maire or fa. *diffusa* (Coss.) Maire (nom. inval.), var. *luthereauii* Maire or fa. *luthereauii* (Maire) Maire, var. *monodiana* (Maire) Maire or fa. *monodiana* (Maire) Maire, and fa. *vilmoriniana* Maire & Weiller, nom. invalid.

*procumbens* C. Sm.

*pumila* Link 1825, nom. nud.

*webbiana* Moq.

**CHENOLEA** (Volume 1: 292/291)

For recent literature: see above under **Bassia**.

**CHENOPODIUM** (Volume 1: 292/291-294)

(**Chenopodium album** L.) – Icon.: Fl. Eth. Eritrea 2/1: 281, 282, 2000; Boulos, Fl. Egypt 1: 97, 285, 1999.

Resembling *C. opulifolium* but: leaves narrower, 1,2-8,5 × 0,3-5,5 cm; tip acute, without basal lobes.

Roadside weed in urban areas, also on vertisols in *Acacia* woodland; 1250-2350 m alt.

Reported from N-C Ethiopia. – Almost cosmopolitan.

Not mapped.

(**C. ambrosioides** L.); Sosef & al., Check-list pl. vascul. Gabon: 107, 2006; Figueiredo & Smith, Pl. Angola: 58, 2008. – Icon.: Fl. Eth. & Eritrea 2/1: 281, 282, 2000; Boulos, Fl. Egypt 1: 97, 384, 1999.

In Ethiopia: weed of cultivated and disturbed areas, often in seasonally wet sites; 950-2500 m alt.

Comprises 2 vars.: – var. **ambrosioides**; – var. **anthelminticum** (L.) A. Gray (bas.: *C. anthelminticum* L.) grown as a medicinal plant.

**C. congolanum** (Hauman) Brenan; Fl. Eth. & Eritrea 2/1: 283-284, 2000.

In Ethiopia: “moister parts of grassland”; 1650-2550 m alt.

A distinctive but rarely collected species.

Map on p. 367.

**C. fasciculosum** Aellen – Icon.: Fl. Eth. & Eritrea 2/1: 281, 284, 2000 [var. **fasciculosum**].

syn.: *C. murale* sensu Fl. Trop. Afr. 6/1: 78-79, 1909, non L.

Map on p. 367.

**C. murale** L.; Figueiredo & Smith, Pl. Angola: 58, 2008. – Icon.: Fl. Eth. & Eritrea 2/1: 281, 282, 2000; Boulos, Fl. Egypt 1: 97, 1999.

In Ethiopia: disturbed sites, sometimes poorly drained; (0-)1300-2900 m alt.

Map on p. 367.

## CHENOPODIUM

**C. opulifolium** Schrader ex W. D. J. Koch & Ziz, incl. subsp. *orientale* Murr.; Figueiredo & Smith, Pl. Angola: 58, 2008. – Icon.: Fl. Eth. & Eritrea 2/1: 281, 2000; Boulos, Fl. Egypt 1: 97, 1999.

In Ethiopia: also in open habitats, such as *Acacia-Balanites* woodland, *Acacia-Commiphora* bushland; 1000-2250 in alt.

Resembling *C. album* (cf. above).

Map on p. 367.

**C. procerum** Hochst. ex Moq.; Figueiredo & Smith, Pl. Angola: 58, 2008. – Icon.: Fl. Eth. & Eritrea 2/1: 281, 2000.

Also in Yemen.

Map on p. 367.

**C. schraderianum** Schultes; Thulin, Fl. Somal. 4: 278, 1995; Figueiredo & Smith, Pl. Angola: 58, 2008. – Icon.: Fl. Eth. & Eritrea 2/1: 281, 2000.

syn.: *C. foetidum* Schrader 1808, non Lam. 1778, incl. subsp. *resediforme* Murr.

In Ethiopia: common weed of cultivation and disturbed areas; 1350-2670 m alt.; in Somalia: in open grassy patches in evergreen bushland; 1400 m.

Also in Saudi Arabia, Yemen.

Map on p. 367.

**(EXOMIS)**

[**Exomis microphylla** (Thunb.) Aellen var. **microphylla**]; Figueiredo & Smith, Pl. Angola: 58, 2008.

bas.: *Chenopodium microphyllum* Thunb.

syn.: *Atriplex microphylla* Willd.

Shrub, 0,15-0,75 m tall; branches terete, virgate; leaves entire, glaucous.

Leistner, Seed pl. south. trop. Afr.: fam. & genera (Sabonet Rep. 26): 127, 2005, indicates that this plant might be present in Angola.

NE S. Africa (2-1385 m alt.).

**FADENIA** (Volume 1: 294/293)

**Fadenia zygophylloides** Aellen & C. C. Towns. – Icon.: Fl. Eth. & Eritrea 2/1: 294, 2000.

Without mature fruits often confused with a *Suaeda*. Mature perianth with 5 longitudinal wings.

In Ethiopia: top of river bank; sandy soils; ± 300 m alt.

Map on p. 367.

**HALOSARCIA**

KADEREIT, G. & al. (2006). See above under the family.

See under **Arthrocnemum** for:

*Halosarcia indica* (Willd.) Paul G. Wilson, reported from Angola.

Map in Volume 1: 289.

**PATELLIFOLIA** (Volume 1: 296/295)

syn.: *Patellaria* J. T. Williams & Ford-Lloyd ex J. T. Williams & al. 1976, nom. illegit.; *Beta patellares* Tranzschel; *B.* section *Procumbentes* Ulbr.

HOHMANN, S. & al. (2006). Understanding Mediterranean-Californian disjunctions: molecular evidence from Chenopodiaceae-Betoideae. *Taxon* 55: 67-78 [*Oreobliton-Patellifolia*].

THULIN, M. & al. (2010). Identity of *Tetragonia pentandra* and taxonomy and distribution of *Patellifolia*. *Willdenowia* 40: 5-11.

**Patellifolia procumbens** (C. Sm.) A. J. Scott; Thulin, Fl. Somal. 3: 562, 2006 (sub nom. *Beta patellaris*).

syn.: *P. patellaris* (Moq.) A. J. Scott, Ford-Lloyd & J. T. Williams; *P. webbiana* (Moq.) A. J. Scott, Ford-Lloyd & J. T. Williams; *Patellaria cordata* J. T. Williams & al., 1976, nom. illegit.; *P. procumbens* (C. Sm.) J. T. Williams & al.; *P. webbiana* (Moq.) J. T. Williams & al. – For synonyms under *Beta*, see above under this genus. – *Tetragonia pentandra* Balf. f. (*Aizoaceae*).

Annual ± fleshy herb, procumbent; leaves ovate-triangular, 4-7 × 2,5-4 cm. Very variable.

In W Mediterranean Region, Cape Verde Islands and Macaronesia; Libya; coastal habitats, 0-250 m alt.; in N African mountains (Ahaggar, Tassili des Ajjer) up to 2000 m; in Somalia on limestone gravel below escarpment; ± 1150 m alt. (map in Thulin & al., o.c.: 9).

Map on p. 367.

**SALICORNIA** (Volume 1: 296/295)

KADEREIT, G. & al. (2006). See above under the family.

KADEREIT, G. & al. (2007). A taxonomic nightmare comes true: phylogeny and biogeography of glassworts (*Salicornia* L., Chenopodiaceae). *Taxon* 56: 1143-1170.

PAPINI, A. & al. (2004). See above under **Arthrocnemum**.

**Salicornia senegalensis** A. Chev.

In our former treatment we treated *S. praecox* A. Chev. as a synonym under this species. However, Kadereit & al. (2007): 1153, consider *S. praecox* (W Senegal) as a distinct species.

Map in Volume 1: 259.

**SALSOLA** (Volume 1: 296/295-298)

KLOPPER, R. R., née VISSER (2000). *Leaf structure in southern African species of Salsola L. (Chenopodiaceae)*. Degree Magister Scientiae, Faculty of Natural and Agricultural Sciences, Department of Botany, University of Pretoria, Pretoria. 109 pp.

PADRÓN MEDEROS, M. A. & al. (2009). Genetic resources of *Atriplex*, *Salsola* and *Suaeda* shrubby species from the Canary Islands: a taxonomic survey for agronomic purposes. *Bocconea* 23: 253-260.

(**Salsola aphylla** L. f.); Figueiredo & Smith, Pl. Angola: 58, 2008; Klopper, o.c.: 104 (map).

syn.: *Caroxylon brevifolium* St.-Lag.; *C. salsola* Thunb.; *Salsola aphylla* var. *canescens* Fenzl ex Drège; *S. caffra* Sparrm.; *S. caroxylon* Moq.

Shrub with tender, pallid, pubescent, not jointed branches, 1-3 m tall; leaves usually glabrous; flowers solitary.

Occurring in S. Africa, Botswana, Namibia (60-1405 m alt.).

Perhaps also present in Angola.

## SALSOLA

**S. imbricata** Forssk.; Fl. Eth. & Eritrea 2/1: 206, 2000; Boulos, Fl. Egypt 1: 118, 1999.

syn.: *Caroxylon imbricatum* (Forssk.) Moq.; *Salsola foetida* Delile ex Spreng.; *S. baryosma* (Schult. ex Roem. & Schult.) Dandy; *Chenopodium baryosmum* Schult. ex Roem. & Schult. (all of subsp. **imbricata**).

In Ethiopia only found once near a groove of *Hyphaene*, at ± 30 m alt. Subsp. **imbricata** in E part of range, E Egypt, Sudan, Kenya.

Subsp. **gaetula** (Maire) Boulos [bas.: *S. foetida* var. *gaetula* Maire; syn.: *S. gaetula* (Maire) Botsch.; *S. baryosma* subsp. *gaetula* (Maire) Freitag, comb. inval.] in W part of range, from Chad, Central African Republic W-wards.

Map in Volume 1: 297 (not complete).

**S. longifolia** Forssk., non Lam. – Add a synonym:

syn.: *S. sieberi* C. Presl var. *glomerata* Maire; Murat, Zemmour, Kedia Gengoum, syntype from Mauritania.

Map in Volume 1: 297.

**S. spinescens** Moq. – Icon.: Fl. Eth. & Eritrea 2/1: 297, 2000; Boulos, Fl. Egypt 1: 122, 1999.

syn.: *S. forsskaolii* Schweinf.; *S. congesta* N. E. Br.; *S. aethiopica* Botsch.

In Ethiopia also in Harerge region (HA) near Somalian localities. – Map in Volume 1: 297.

Juvenile material can have long slender leaves with prominent brownish indumentum; such plants were named *S. aethiopica*.

**S. tetrandra** Forssk.; Boulos, Fl. Egypt 1: 120, 1999. – Icon.: Molero & Montserrat in *Lagascalia* 26: 16, 2006.

syn.: *Salsola pentandra* Botsch., incl. subsp. *adisca* Botsch., subsp. *occidentalis* Botsch.; *S. tetragona* sensu Batt. in Batt. & Trabut 1888; *S. vermiculata* L. var. *graciosa* Kuntze

In SW Egypt: Uweinat (on Libyan-Sudanian border).

Map in Volume 1: 297.

**SARCOCORNIA** (Volume 1: 298/297) / 3  
(former account: 1)

KADEREIT, G. & al. (2006). See above under the family.

KADEREIT, G. & al. (2007). See above under **Salicornia**.

PAPINI, A. & al. (2004). See above under **Arthrocnemum**.

STEFFEN, S. & al. (2009). Three new species of *Sarcocornia* (Chenopodiaceae) from South Africa. *Kew Bull.* 64: 447-459.

STEFFEN, S. & al. (2010). Revision of *Sarcocornia* (Chenopodiaceae) in South Africa, Namibia and Mozambique. *Syst. Bot.* 35: 390-408.

A genus of some 20-24 halophytic species; stems composed of fleshy, cylindrical, barrel- or club-shaped internodes, with opposite connate leaves strongly reduced. In Eurasia, Africa, Australia, N. and S. America.

**Sarcocornia mossambicensis** Brenan – Icon.: Steffen & al. (2010): 396, 401 (map).

Prostrate or decumbent subshrub 10-40 cm tall; main branches prostrate, 2-4 mm Ø, often ± thickened and rooting at the nodes; lateral branches arising in pairs from the nodes; segments strongly succulent, dead cortex adhering to the stem but disintegrating from prostrate branches; inflorescence terminal, 13-45 mm long.



## SARCOCORNIA MOSSAMBICENSIS

Estuarine salt marshes (pioneer), edges of mangroves.

Similar to *S. tegetaria*, sometimes growing together; they can only be distinguished in flowering and fruiting stage.

Map on p. 367.

**S. natalensis** (Bunge ex Ung.-Sternb.) A. J. Scott subsp. **natalensis**; Steffen & al. (2010): 402-403.

bas.: *Salicornia natalensis* Bunge ex Ung.-Sternb.

syn.: *Arthrocnemum natalense* (Bunge ex Ung.-Sternb.) Moss; *A. africanum* Moss

Short-lived perennial herb to subshrub, prostrate to decumbent, branching irregularly at base, spider-like, rarely forming dense mats, to 20 cm tall and 20(-60) cm Ø; main branches prostrate, occasionally rooting at nodes; segments strongly succulent, cylindrical, 7-22 mm long, dead cortex adhering to the stem; inflorescences terminal and lateral, 22-65 mm long; flowers covered by subtending bracts.

Coastal; salt pans, along saline alluvia; also deeply inland along tidal rivers (Cape Prov.); mud flats; nutrient-rich freshwater and brackish wetlands; can be submerged for up to 3 months.

Variable. – Can form dense mats similar to *S. tegetaria*.

Coastal S & E S. Africa.

Subsp. **affinis** (Moss) S. Steffen, Mucina & G. Kadereit [bas.: *Arthrocnemum affine* Moss; syn.: *A. natalense* var. *affine* (Moss) Tölken; *Sarcocornia natalensis* var. *affinis* (Moss) O'Callaghan] in W coastal S. Africa.

Map on p. 371.

**S. tegetaria** S. Steffen, Mucina & G. Kadereit – Icon.: Kew Bull. 64: 454, 455, 456 (map), 2009.

Prostrate to decumbent subshrub forming dense mats to 20 cm tall; main branches prostrate, 1-3 mm Ø, rooting at nodes; branches often arising in pairs from the nodes; segments succulent, 7-15 mm long, dead cortex adhering to the stem but disintegrating from prostrate main branches; inflorescences terminal, spike-like thyrses.

Intertidal zones of estuaries, estuarine salt marshes.

Coastal S. Africa, SW Namibia.

Similar to the Eurasian *S. perennis* (Mill.) A. J. Scott and to *S. mossambicensis*; distinguishable only in flowering and fruiting stage; most important diagnostic feature: the projections of the exotesta epidermal cells. Seeds of *S. tegetaria* with long hooked hairs at the edge.

Map on p. 371.

**SUAEDA** (Volume 1: 298/297-300)

PADRÓN MEDEROS, M. A. & al. (2009). See above under **Salsola**.

SCHÜTZE, P. & al. (2003). An integrated molecular and morphological study of the subfamily Suaedoideae Ulbr. (Chenopodiaceae). *Pl. Syst. Evol.* 239: 257-286.

**Suaeda monoica** Forssk. ex J. F. Gmel. – Icon.: Fl. Eth. & Eritrea 2/1: 291, 2000.

In Ethiopia: 0-1200 m alt.

Map on p. 371.

## SUAEDA

(**S. plumosa** Aellen); Figueiredo & Smith, Pl. Angola: 58, 2008.

Dwarf succulent shrub, glaucous, 0,3-0,6(-2) m tall; branches erect; leaves linear, 5 mm long; inflorescences lateral.

In Namibia, Botswana: common along rivers; dunes; 400-1035 m alt.

Possibly also in Angola.

**CHRYSOBALANACEAE** (Volume 2: 254-270) / 9 g. / 62 spp. (former account: 9 / 61)

Add new information for family and following genera.

MATTHEWS, M. L. & P. K. ENDRESS (2008). Comparative floral structure and systematics in Chrysobalanaceae s.l. (Chrysobalanaceae, Dichapetalaceae, Euphroniaceae, Trigoniaceae; Malpighiales). *Bot. J. Linn. Soc.* 157: 249-309.

YAKANDAWALA, D. & al. (2010). Phylogenetic relationships of the Chrysobalanaceae inferred from chloroplast, nuclear, and morphological data. *Ann. Missouri Bot. Gard.* 97: 259-281.

“...the family is a well-defined monophyletic group” including 17 genera and about 525 species (Yakandawala & al., o.c.: 259).

For information on altitudes (plant distribution), see Sosef & al., Check-list pl. vascul. Gabon: 107-110, 2006.

## (ACIOA)

See below under **Dactyladenia**.

**DACTYLADENIA** (Volume 1: 256/255-261)

**Dactyladenia barteri** (Hook. f. ex Oliv.) Prance & F. White; Sosef & al., Check-list pl. vascul. Gabon: 107, 2006. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 149, 2009 (sub gen. *Acioa*).

In Gabon: 375-486 m alt.

Map on p. 371.

**MAGNISTIPULA** (Volume 1: 260-264) / 11 spp. (former account: 10)

BURGT, X. M. VAN DER (2010). Two new taxa in Magnistipula (Chrysobalanaceae) from Korup National Park, Cameroon. *Pl. Ecol. Evol.* 143: 191-198.

The two new taxa key out as *M. butayei* in Prance & Sothers 2003 (Spec. Plant., Fl. World 10). They were difficult to find in flower as hardly anything drops on the ground when flowering. Flowers were collected on the very tall trees (30-40 m), using alpine climbing equipment !

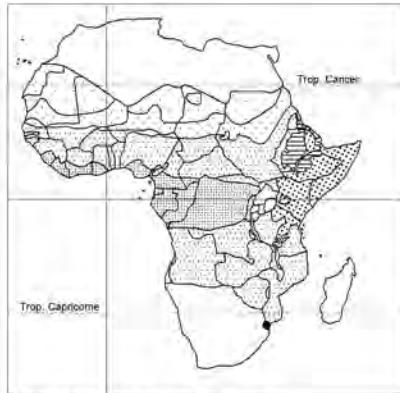
**Magnistipula butayei** De Wild. subsp. **korupensis** Burgt – Icon.: Burgt, o.c.: 194, 196.

Tree ± 30 m; bole to 74 cm dbh, cylindrical or slightly fluted; buttresses to 3 m high, extending to 50 cm from the stem; differs from subsp. **ituriensis** Champl. by longer stipules (2,8, not 2 cm long), leaves somewhat larger (7, not 5,5 cm), receptacle larger.

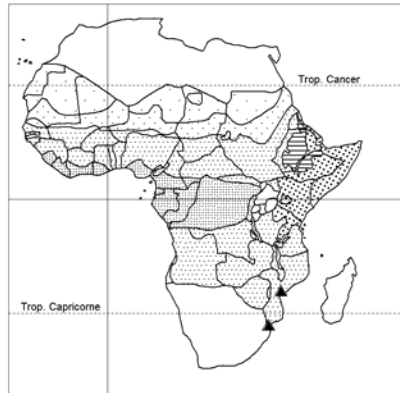
Primary rain-forest rich in *Caesalpiniaceae*, on well-drained sandy soil; 100 m alt.

Known only from the permanent plots in southern Korup Natl. Park.

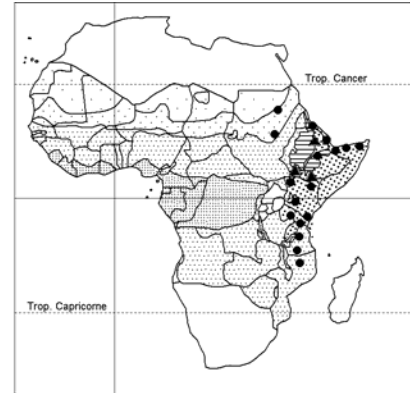
Map in Volume 2: 263 (location: 5°01'N × 8°48'E); cf. map for *M. multinervia*.



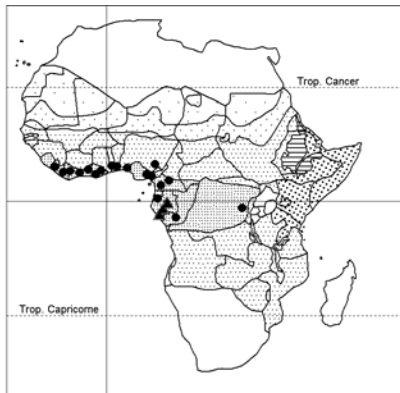
*Sarcocornia natalensis*  
subsp. *natalensis*



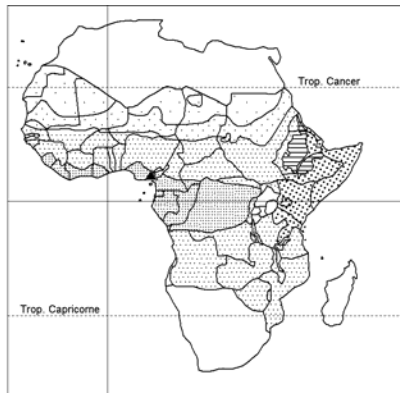
*Sarcocornia tegetaria*



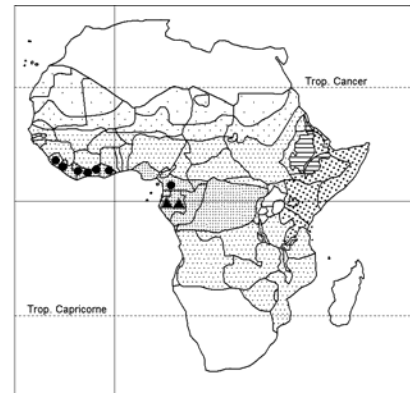
*Suaeda monoica*



*Dactyladenia barteri*



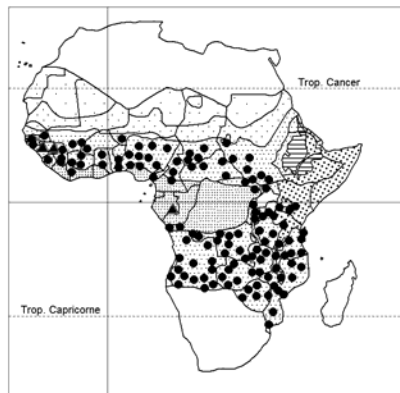
*Magnistipula multinervia*



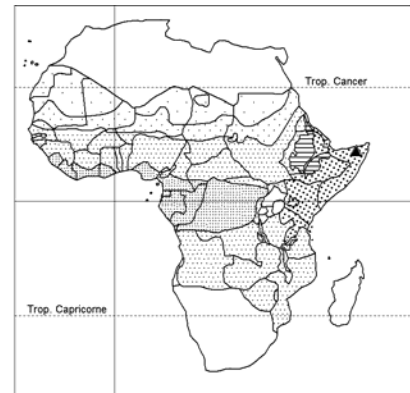
*Maranthes aubrevillei*



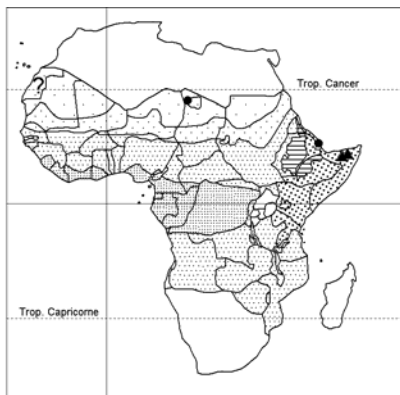
*Parinari capensis*



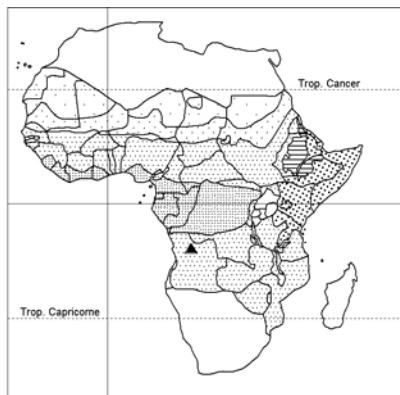
*Parinari curatellifolia*



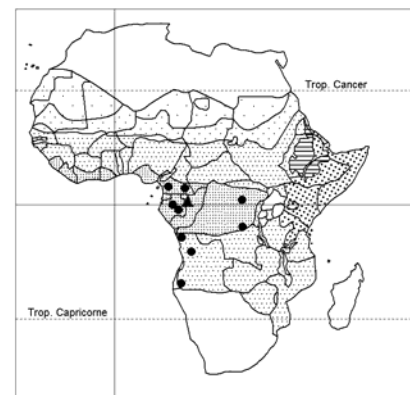
*Helianthemum speciosum*



*Helianthemum stipulatum*



*Cochlospermum noldeae*



*Combretum auriculatum*

## MAGNISTIPULA

**M. conrauana** Engl.; Harvey & al., Pl. Lebiale Highl., Cameroon: 74, 116, 2010.

Plant fairly widespread in submontane forest, SW Cameroon; 1000-1500 m alt.

For discussion, see Harvey & al., l.c.

Map in Volume 2: 263.

**M. multinervia** Burtg – Icon.: Burtg, o.c.: 193, 196.

Tree to 41 m; bole to 57 cm dbh, cylindrical, to 25 m high, without buttresses; bark brown, rough, brittle, flaking; stems hairy when young, glabrescent; stipules with 10-20 parallel veins (not 1 as in *M. butayei*); leaves cuneate at base, 7-10 × 2,5-4 cm, ± glossy, with many erect hairs above, glabrescent, leaving behind small gland-like scars, hairy beneath especially on the veins.

Primary rain-forest rich in *Caesalpinaceae*, on well-drained sandy soil; 100 m alt.

Known only from one plot in southern Korup Natl. Park; 8936 trees identified.

Map on p. 371.

## MARANTHES (Volume 2: 264/263-266)

**Maranthes aubrevillei** (Pellegr.) Prance; Sosef & al., Check-list pl. vascul. Gabon: 109, 2006.

In Gabon: 200 m alt.

Map on p. 371.

**M. glabra** (Oliv.) Prance – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 151, 2009.

Map in Volume 2: 265; a locality in SE Guinea (Macenta) to be added.

## PARINARI (Volume 2: 266/265-270)

**Parinari capensis** Harv.; Sosef & al., Check-list pl. vascul. Gabon: 110, 2006; Figueiredo & Smith, Pl. Angola: 59, 2008.

Map on p. 371.

**P. curatellifolia** Planch. ex Benth.; Sosef & al., l.c.; Figueiredo & Smith, l.c. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 153, 2009.

Map on p. 371.

CISTACEAE (Volume 1: 116/115-118) 1 g. / 8 spp.  
(former account: 1 / 7)

Add new information for:

HELIANTHEMUM (Volume 1: 116/115-118) / 8 spp.  
(former account: 7)

MARRERO, A. & R. MESA (2003). El género *Helianthemum* Mill. en la isla de la Gomera, Islas Canarias. *Candollea* 58: 149-162.

**Helianthemum canariense** (Jacq.) Pers.; Marrero & Mesa, o.c.

Also in Morocco.

Map in Volume 1: 115.

## HELIANTHEMUM

**H. speciosum** Thulin – Icon.: Nord. J. Bot. 22: 42, 2002; Thulin, Fl. Somal. 3: 568, 2006.

Shrublet, much branched, usually forming dense cushions, to 40 cm tall; young stems with silvery indumentum of appressed hairs, glabrescent; leaves mostly opposite, but ± alternate in flowering shoots; leaves linear, 6-20 × 1-5,5 mm, acute, silvery hairy, margins revolute; flowers yellow, in leaf-opposed lax cymes; petals ± 1 cm long.

Gypsum outcrops; 1600-1650 m alt. Locally conspicuous.

Variable species.

Known only from the type locality and its vicinity, type collected in 2000.

Related to *H. argyraeum* Bak. (S Yemen, Oman).

Map on p. 371.

**H. stipulatum** (Forssk.) C. Chr.; Thulin, Nord. J. Bot. 22: 43, 2002; Thulin, Fl. Somal. 3: l.c. – Icon.: Boulos, Fl. Egypt 2: 121, 323.

In Somalia: open bushland on limestone or gypsum; 1150-1650 m alt.

Mediterranean region, Egypt, Sinai, Yemen.

Map on p. 371.

COCHLOSPERMACEAE (Volume 1: 404, 406,  
407) / 1 g. / 6 spp. (former account: 1 / 5)

Add the following new information:

## COCHLOSPERMUM (idem) / 6 spp. (former account: 5)

POPPENDIECK, H.-H. (2004). A new species of *Cochlospermum* (Cochlospermaceae) from Angola with notes on its collector Ilse von Nolde and her botanical illustrations. *Schumannia* 4: 225-235.

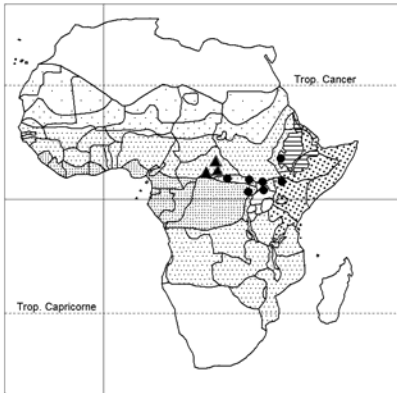
**Cochlospermum noldeae** (“noldei”) Poppendieck – Icon.: o.c.: 226.

Geoxylic suffrutex with a subterranean rootstock; annual shoots reddish brown to 3-4 m tall (yielding a strong fibre); young shoots and petioles reddish pubescent; leaves alternate, palmately lobed, 16 cm long, 18 cm wide, decreasing in size upwards the stem, glabrous, shiny, light green; inflorescence a terminal thyrsoid; flowers 6 cm Ø, yellow with red dots or stripes.

Grass savanna, common.

Known only from the type collected in 1938 (material at B destroyed; original drawing at HBG).

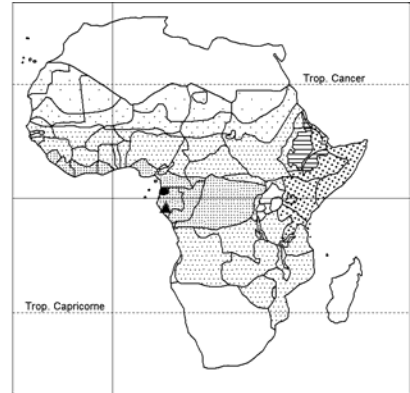
Map on p. 371.



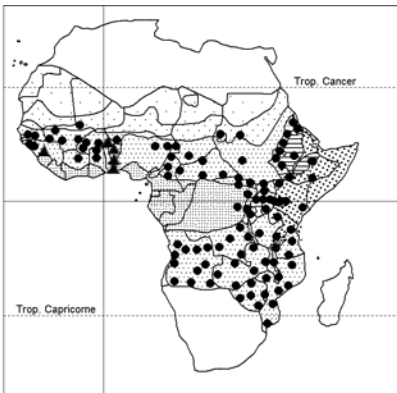
**Combretum capituliflorum**



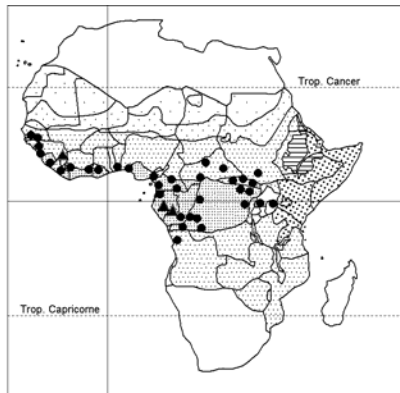
**Combretum cinnabarinum**



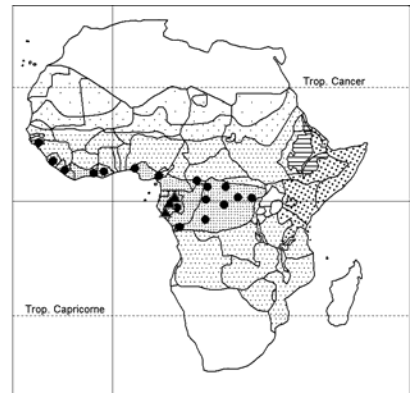
**Combretum clarense**



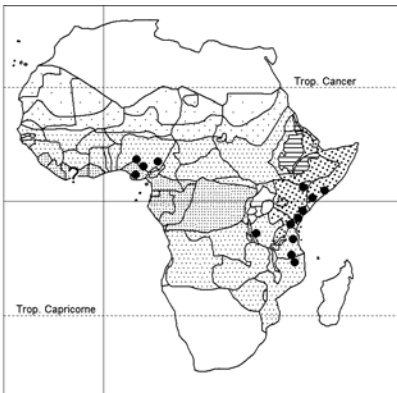
**Combretum collinum**



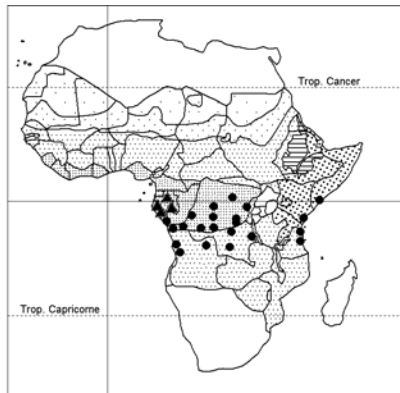
**Combretum comosum**



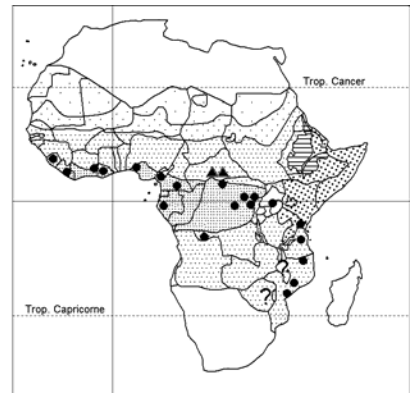
**Combretum conchipetalum**



**Combretum constrictum**



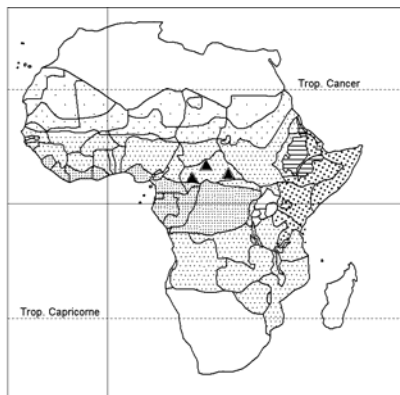
**Combretum falcatum**



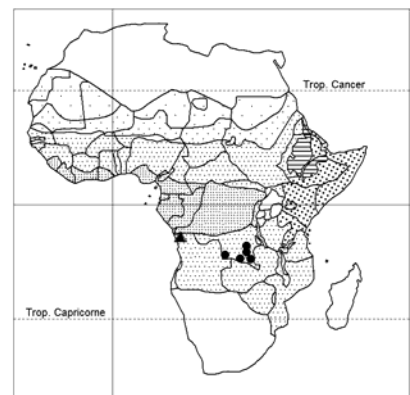
**Combretum fuscum**



**Combretum goossensii**



**Combretum harmsianum**



**Combretum haullevilleianum**



**COMBRETACEAE** (Volume 1: 568, 570-602) /  
10 g. / 198 spp. (former account: 10 / 196)

Add new information for family and following genera:

FYHRQUIST, P. (2008). En etnobotanisk expedition till Tanzania – studier av Combretum- och Terminalia-arter som medicinalväxter i byar i Mbeya-regionen. *Nordenskiöld-samfundets Tidskr.* 68: 93-115.

KOED, J. (1992). *Special report on Combretum (Combretaceae) of Burkina Faso and chorological patterns of the genus in Africa*. University of Aarhus. 120 pp.

MAURIN, O. & al. (2010). Phylogenetic relationships of Combretaceae inferred from nuclear and plastid DNA sequence data: implications for generic classification. *Bot. J. Linn. Soc.* 162: 453-476 [*Anogeissus* and *Pteleopsis* put in synonymy under *Terminalia*].

THIOMBIANO, A. & F. BOGNOUNOU (2010). Mécanismes de régénération de cinq espèces de Combretaceae le long d'un gradient climatique du Burkina Faso (Afrique de l'Ouest). *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 480.

THIOMBIANO, A. & al. (2002). Place des Combretaceae dans la société gourmantché à l'est du Burkina Faso. *Etudes Flor. Vég. Burkina Faso* 7: 17-22.

THIOMBIANO, A. & al. (2006). Influence du gradient climatique sur la distribution des espèces de Combretaceae au Burkina Faso (Afrique de l'Ouest). *Candollea* 61: 189-213 [distribution maps].

TILNEY, P. M. & A. E. VAN WYK (2004). Extrafloral nectaries in Combretaceae: morphology, anatomy and taxonomic significance. *Bothalia* 34: 115-126.

**COMBRETUM** (Volume 1: 568, 570-593) / 144  
(former account: 142)

DIONE, D. & A. T. BA (2003). Quelques critères anatomiques dans la position systématique de sept espèces du genre *Combretum* Loefl. *Webbia* 58: 121-132.

LE TESTU, G. & A. W. EXELL (1937). Les espèces de *Combretum* de l'Afrique occidentale tropicale dans l'herbier de M. Le Testu. *Bull. Soc. Linn. Normandie*, Sér. 8, 9: 117-144.

MARTINI, N. D. & al. (2004). Biological activity of five antibacterial flavonoids from *Combretum erythrophyllum* (Combretaceae). *J. Ethnopharmacol.* 93: 207-212.

MARTINI, N. D. & al. (2004). Seven flavonoids with antibacterial activity isolated from *Combretum erythrophyllum*. *S. Afric. J. Bot.* 70: 310-312.

MASOKO, P. & al. (2007). The antifungal activity of twenty-four southern African *Combretum* species (Combretaceae). *S. Afric. J. Bot.* 73: 173-183.

SIMON, G. & al. (2003). Cytotoxic pentacyclic triperpenes from *Combretum nigricans*. *Fitoterapia* 74: 339-344.

**Combretum adenogonium** Steud. ex A. Rich.

*C. fragrans* F. Hoffm. is treated in our Tropical African Flowering Plants Volume 1: 572, as part of *C. adenogonium*. Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 121, 2010, consider *C. fragrans* as a distinct species. A locality can be added in SW Cameroon to our map of *C. adenogonium*, Volume 1: 570.

**C. auriculatum** Engl. & Diels, incl. var. *longispicatum* De Wild.; Sosef & al., Check-list pl. vascul. Gabon: 110, 2006; Figueiredo & Smith, Pl. Angola: 60, 2008; Lachenaud, Syst. Geogr. Pl. 79: 203, 2009.

Map on p. 371.

**C. capituliflorum** Fenzl ex Schweinf.; Le Testu & Exell, o.c.: 141 (sub nom. *C. undulato-marginatum*); Tisserant, Mém. Inst. Etudes Centrafricaines 2: 31, 1950.

Map on p. 373.

## COMBRETUM

**C. cinnabarinum** Engl. & Diels; Sosef & al., Check-list pl. vascul. Gabon: 110, 2006.

In Gabon: 320-400 m alt.

Map on p. 373.

**C. clarense** Jongkind; Sosef & al., l.c.

Map on p. 373.

**C. collinum** Fresen.; Figueiredo & Smith, Pl. Angola: 60, 2008; Akoegninou & al., Fl. analyt. Bénin: 484, 2006; Lisowski, Fl. Rép. Guinée 1: 129, 2009.

Map on p. 373.

**C. comosum** G. Don; Sosef & al., l.c.; Figueiredo & Smith, l.c.; Lisowski, l.c.

Map on p. 373.

**C. conchipetalum** Engl. & Diels; Sosef & al., o.c.: 111; Lisowski, l.c. (sub nom. *C. afzelii*).

Map on p. 373.

**C. constrictum** (Benth.) Laws., incl. var. *somalense* Pamp.

New report for Ivory Coast (s.l.), fide Aké-Assi in *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 23, 2010.

Map on p. 373.

**C. falcatum** (Welw. ex Hiern) Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 111, 2006; Figueiredo & Smith, Pl. Angola: 60, 2008.

Map on p. 373.

**C. fuscum** Planch. ex Benth.; Le Testu & Exell, o.c.: 139; Tisserant, Mém. Inst. Etudes Centrafricaines 2: 31, 1950.

Map on p. 373.

**C. glutinosum** Perr. ex DC.; Lisowski, Fl. Rép. Guinée 1: 129-130, 2009.

For more precise ecology, see J. Trochain, La végétation et le sol au Sénégal. *Compt. Rend. Sommaire Séances Soc. Biogéogr.* 118: 19-22, 1937.

In Guinea more widespread than shown on the map in Volume 1: 579.

**C. goossensii** De Wild. & Exell

Lachenaud (Nouvelles données pour la flore du Congo, *Syst. Geogr.* 79: 203, 2009) remarks that this plant has been confused with *C. tarquense* (in Ivory Coast and Ghana).

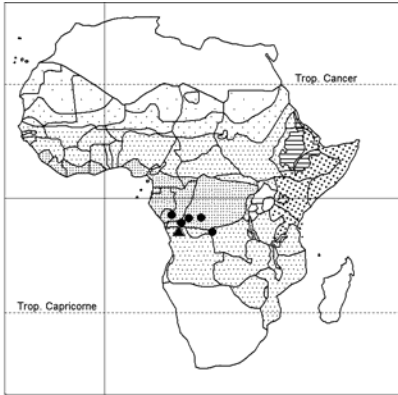
Map on p. 373.

**C. haullevilleianum** De Wild.; Figueiredo & Smith, Pl. Angola: 60, 2008.

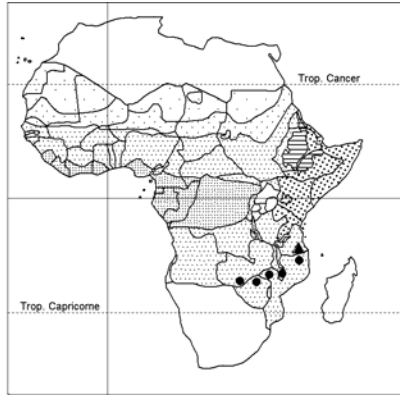
Map on p. 373.

**C. hensii** Engl. & Diels; Figueiredo & Smith, l.c.

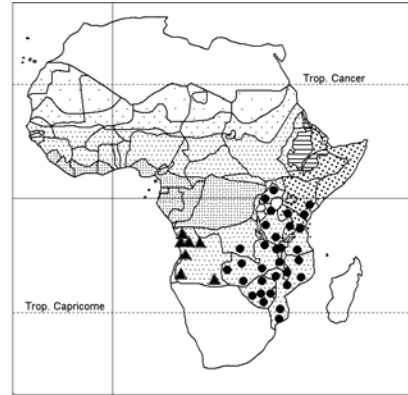
Map on p. 375.



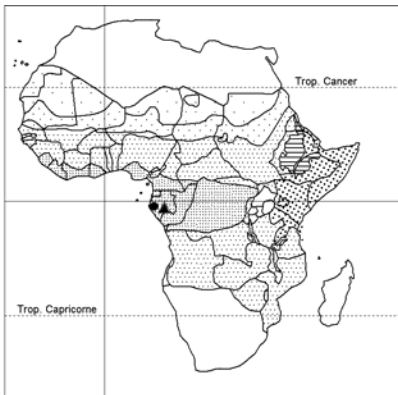
*Combretum hensii*



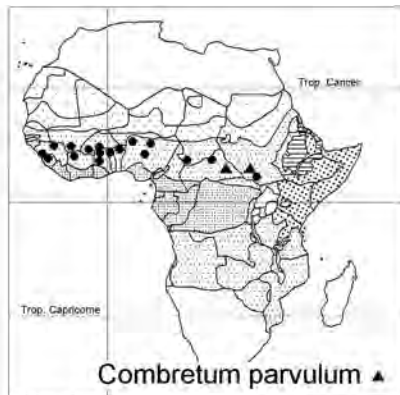
*Combretum kirkii*



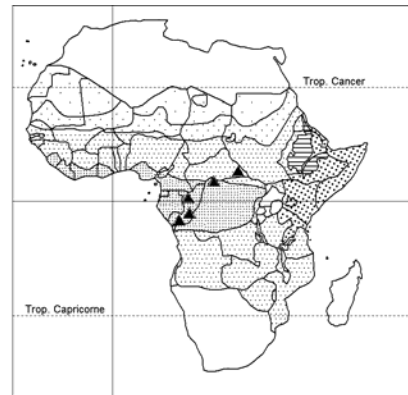
*Combretum mossambicense*



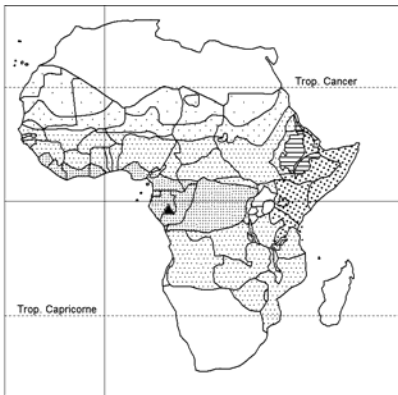
*Combretum oudenhovenii*



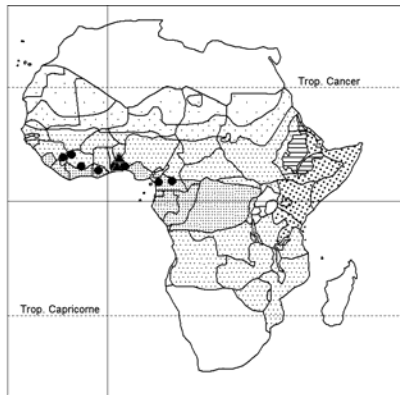
*Combretum parvulum* ▲



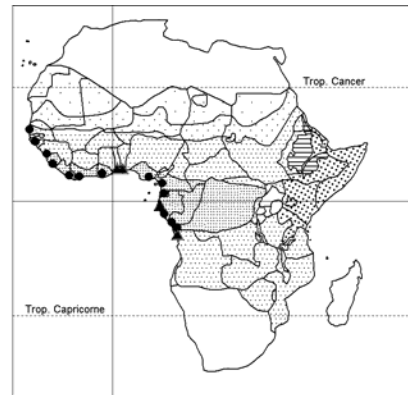
*Combretum stenopterum*



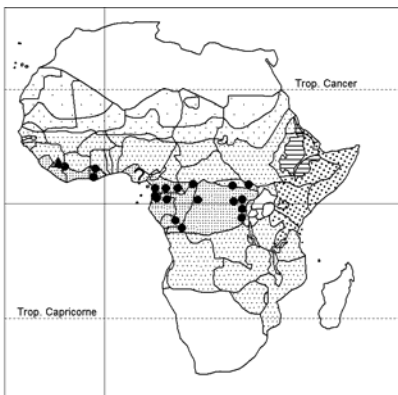
*Combretum wilksii*



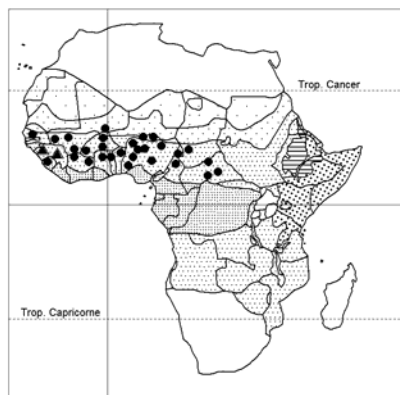
*Combretum zenkeri*



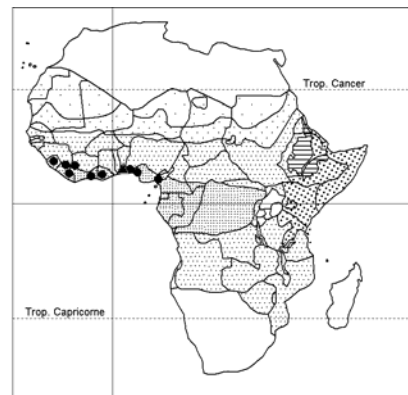
*Conocarpus erectus*



*Pteleopsis hydodendron*



*Terminalia avicennioides*



*Terminalia ivorensis*

## COMBRETUM

**C. kirkii** Laws.; Vollesen, Opera Bot. 59: 53, 1980.

Map on p. 375.

**C. lineare** Keay; Lisowski, Fl. Rép. Guinée 1: 130, 2009.

Also in E Guinea – cf. map in Volume 1: 582.

**C. micranthum** G. Don; Lisowski, l.c.

Also in E Guinea, not shown on the map in Volume 1: 583.

**C. mossambicense** (Klotzsch) Engl.; Figueiredo & Smith, Pl. Angola: 60, 2008.

Map on p. 375.

**C. mucronatum** Schumach. & Thonn.; Lisowski, o.c.: 130-131.

Also in SE Guinea, not shown on the map in Volume 1: 583.

**C. oudenhovenii** Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 112, 2006.

Rain-forest; 30-100 m alt.

Map on p. 375.

**C. paniculatum** Vent.; Lisowski, Fl. Rép. Guinée 1: 131, 2009.

Also in E-SE Guinea, not shown on the map in Volume 1: 585.

**C. racemosum** P. Beauv.; Lisowski, l.c.

Also in E-SE Guinea, not shown on the map in Volume 1: 587.

**C. stenopterum** Exell; Lachenaud, Nouvelles données pour la flore du Congo in Syst. Geogr. Pl. 79: 203, 2009; Tisserant, Mém. Inst. Etudes Centrafricaines 2: 31, 1950.

Climbing shrub with puberulous branchlets soon glabrescent; leaves opposite, oblong-elliptic, 4-12 × 2-6,5 cm, apex acute; fruit ellipsoid, ± 2,5 × 1 cm, 5-angled (adapted to water dispersal).

Riverine forest (in the Congo Basin).

Little known species, similar to *C. platypterum* which has, however, round fruits with broad wings.

Map on p. 375.

**C. wilksii** Jongkind; Sosef & al., Check-list pl. vascul. Gabon: 113, 2006; Novon 16: 500, 2006.

Large liane; leaves opposite, petiole ± 1 cm long, blade 18 × 9 cm, ± glabrous; inflorescence paniculate; flowers 4-merous; upper receptacle flat and covered with scattered scales and few hairs; petals round, 2 mm Ø, glabrous, yellowish; fruit unknown.

Ecology not recorded; 300 m alt.

Known only from the type collected in 1996.

Map on p. 375.

**C. zenkeri** Engl. & Diels; Akoegninou & al., Fl. analyt. Bénin: 489, 2006.

Map on p. 375.

## COMBRETUM

## TAXA OF UNCERTAIN STATUS:

*Combretum flaviflorum* Exell in Le Testu & Exell, o.c.: 133-135; Tisserant, Mém. Inst. Etudes Centrafricaines 2: 31, 1950.

Small tree or shrub 2-6 m tall; young stems tawny velutinous, later glabrescent; leaves 3-4-verticillate; petiole 7-15 mm long, tawny velutinous; lamina oblong-elliptic, 5-13 × 2,5-6 cm, brown silky velutinous above, densely white-scaly beneath; flowers 4-merous, yellow, in short spikes; fruit unknown.

Savanna.

Said to be intermediary between *C. kottoense* and *C. binderianum* (= *C. collinum* subsp. *binderianum*). It is probably a synonym of *C. collinum*.

In the southern eastern half of Central African Republic: Yalinga (= Haute Kotto), Maroubas-Bambari (= Waka).

*C. harmsianum* Diels; Tisserant, l.c.; Le Testu & Exell, o.c.: 130-131.

Rhizomatous subshrub 0,5-1 m tall; leaves lanceolate, 10-12 × 2-3 cm, petiole 5-8 mm long; flowers greenish; fruit 2 cm long, peduncle 5-8 mm long.

Savanna.

Map on p. 373.

*C. kottoense* Exell; Le Testu & Exell, o.c.: 133; Tisserant, l.c.

Shrub 1 m tall; stems tawny tomentose; leaves pseudo-4-verticillate; petiole 5-15 mm long, brown tomentous; lamina ± elliptic, 8-13 × 2,5-6 cm, apex shortly acuminate; flowers yellowish, 4-merous, in densely bracteate spikes; fruit unknown.

In E Central African Republic: Haute Kotto.

Is perhaps a synonym of *C. collinum*.

*C. oubanguense* Exell in Le Testu & Exell, o.c.: 131; Tisserant, l.c.

Shrub to 1 m tall; stems densely brown tomentose; leaves pseudo-3-verticillate, petiole 5-15 mm long, densely tomentose as well as lamina, ovate-lanceolate, 5-14 × 2,5-5,5 cm, apex acutely acuminate; flowers 4-merous, in spikes 7-12 cm long, fruit unknown.

In E Central African Republic: Haute Kotto

*C. parvulum* Engl. & Diels; Le Testu & Exell, o.c.: 138; Tisserant, l.c. – Icon.: Engler & Diels, Mongr. Afrik. Pflanzen-Fam. u. -Gattungen III. Combretaceae – Combretum: pl. 20 E, 1899.

Subshrub ± 40 cm tall from a thick rootstock; branched from the base, branches very straight, softly pilose; leaves alternate, silky when young, later glabrous above, sparsely pilose beneath, oblong-lanceolate, 7-12 × 3-5 cm, apex rounded, petiole 5-6 mm long; fruit ca. 3 cm long, 2,5-2,8 cm wide, peduncle 2-3 mm long.

Savanna.

Recorded from Sudan: source of El Ghazal, W of Kuru (Schweinfurth) and E Central African Republic (Yalinga).

It is probably a synonym of *C. sericeum*. We have compared the figure of *C. sericeum* (Fl. Cameroun 25, Combretaceae: 17, 1983) and that of *C. parvulum* (Engler & Diels, l.c.). The difference is minimal.

Map on p. 375 (= *C. sericeum* with localities for *C. parvulum* indicated separately).

## COMBRETUM

*C. tisserantii* Exell in Le Testu & Exell, o.c.: 131-132; Tisserant, l.c. Small tree or shrub 2,5-8 m tall; young branchlets densely brown tomentose, later greyish tomentellous; leaves ± opposite or pseudo-3-verticillate, or alternate; petiole 5-15 mm long, brown tomentellous; lamina ± elliptic, 7-8 × 2-7,5 cm; flowers yellowish, 4-merous, in long spikes; fruit 4-winged.

Savanna; near river.

In SC Central African Republic, region of Bambari.

Is perhaps a synonym of *C. schweinfurthii*.

SYNONYM (correction):

*Combretum lecananthum* Engl. & Diels = **Combretum nigricans** var. **elliottii**

**CONOCARPUS** (Volume 1: 593/591)

**Conocarpus erectus** L.; Figueiredo & Smith, Pl. Angola: 61, 2008; Sosef & al., Check-list pl. vascul. Gabon: 113, 2006. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 489, 2006; Beentje & Bandeira, Field guide mangrove trees Africa & Madagascar: 28, 29 (map), 2007.

KPEMISSI, E. A. & al. (2003). Propriétés antimicrobiennes de trois plantes psamphiles du littoral togolais menacées de disparition. *Acta Bot. Gall.* 150: 107-115.

Map on p. 375.

**GUIERA** (Volume 1: 593/591)

**Guiera senegalensis** J. F. Gmel. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 490, 2006.

SEGHIERI, J. & al. (2005). Adaptive above-ground biomass, stand density and leaf water potential to droughts and clearing in *Guiera senegalensis*, a dominant shrub in Sahelian fallows (Niger). *J. Trop. Ecol.* 21: 203-213.

SILVA, O. & E. T. GOMES (2003). Guieranone A, a naphthyl butenone from the leaves of *Guiera senegalensis* with antifungal activity. *J. Nat. Prod.* 66: 447-449.

Map in Volume 1: 591; add a locality in northern-most Bénin.

**LAGUNCULARIA** (Volume 1: 593/591)

**Laguncularia racemosa** (L.) Gaertn. f.; Sosef & al., Check-list pl. vascul. Gabon: 61, 2006; Figueiredo & Smith, Pl. Angola: 113, 2008. – Icon.: Beentje & Bandeira, Field guide mangrove trees Africa & Madagascar: 30, 31 (map), 2007; Lisowski, Fl. Rép. Guinée 2: fig. 163, 2009.

Map in Volume 1: 591.

**LUMNITZERA** (Volume 1: 593/591)

**Lumnitzera racemosa** Willd. var. **racemosa** – Icon.: Beentje & Bandeira, o.c.: 60, 61 (map).

Map in Volume 1: 591.

**PTELEOPSIS** (Volume 1: 594-595)

**Pteleopsis hyloendron** Mildbr.; Lisowski, Fl. Rép. Guinée 1: 132, 2009.

Map on p. 375.

**TERMINALIA** (Volume 1: 594-602)

SRIVASTAV, P. K. & al. (1998). *Treatise on terminalias*. Indian Publishers Distributors, Delhi. XII ± 272 pp.

THIOMBIANO, A. & al. (2001). Anatomical study of *Terminalia* (Combretaceae) species collected from eastern Burkina Faso. *Ann. Bot. Afrique Ouest* 0: 43-52.

## TERMINALIA

**Terminalia avicennioides** Guill. & Perr. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 165, 2009.

Map on p. 375.

[**T. catappa** L.]; Sosef & al., Check-list pl. vascul. Gabon: 114, 2006. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 492, 2006; Beentje & Bandeira, Field guide mangrove trees Africa & Madagascar: 77, 2007; Lisowski, Fl. Rép. Guinée 2: fig. 167, 2009.

BEGOUBE, B. A. D. & al. (2010). Botryosphaeriaceae associated with *Terminalia catappa* in Cameroon, South Africa and Madagascar. *Mycol. Progress* 9: 101-123.

**T. ivorensis** A. Chev.; Akoegninou & al., Fl. analyt. Bénin: 492, 2006; Lisowski, Fl. Rép. Guinée 1: 134, 2009.

Map on p. 375.

**T. macroptera** Guill. & Perr.; Akoegninou & al., o.c.: 493. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 166, 2009.

Map on p. 381.

**T. mollis** Laws.; Lisowski, Fl. Rép. Guinée 1: 134, 2009; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 121, 2010.

NAMUNABA, I. B. (2007). Endangered woodland of *Terminalia mollis* at Makhonge, Tongaren Division, Bungoma District, Western Kenya. *Nature E. Africa* 35/2: 23-25.

This plant in Kenya only occurring in the SE foothills of Mt Kenya, seems to be endangered: “no young woodlands of the species... have grown to maturity in the last fourteen years especially in the intensively cultivated areas.”

Map in Volume 1: 599. Add a locality in SW Cameroon.

**CRASSULACEAE** (Volume 1: 208/207-223) / 8 g. / 92 (+1 ?) spp. (former account: 8 / 95)

Add new information for family and following genera.

EGGLI, U. ed. (2003a). *Sukkulanten-Lexikon Band 4, Crassulaceae (Dickblattgewächse)*. Verlag Eugen Ulmer, Stuttgart (Hohenheim). XVI + 475 pp. + XLVIII colour plates.

EGGLI, U. ed. (2003b). *Illustrated handbook of succulent plants: Crassulaceae*. Springer, Berlin, etc. XIII + 458 pp. + 48 colour plates. – Reviews (critical) by: P. I. Forster in Pl. Syst. Evol. 241: 131-135, 2003, and T. Burén in Sedum Soc. Newsl. 66: 85-88, 2003.

STEPHENSON, R. (2010). Inter-relationships within family Crassulaceae updated and simplified. *Sedum Soc. Newsl.* 94: 86-92.

**AEONIUM** (Volume 1: 208/207)

MALKMUS, B. (2002). Il genere *Aeonium* Webb & Berthelot (Crassulaceae): uno sguardo su nuove specie/The genus *Aeonium* (Crassulaceae): outlook to new species. *Piante Grasse* 22/4: 134-139.

NYFFELER, R. (2003). *Aeonium*. In: EGGLI, U., ed. (2003b): 15-23.

SCHWERDTFEGGER, M. (2009). Faszinierende Aeonien. *Kakteen & Sukk.* 60: 281-288.

ZAHRA, R. (2008). Mysterious aeoniums from the East. *Cactus World* 26: 28-30.



## AEONIUM

**Aeonium leucoblepharum** Webb ex A. Rich., incl. var. *glandulosum* (Chiov.) Cufod.

syn.: *Sempervivum leucoblepharum* (Webb ex A. Rich.) Hutchins. & E. A. Bruce; *S. chrysanthum* Hochst. ex Britten, nom. illegit.; *Aeonium chrysanthum* (Hochst. ex Britten) A. Berger; *Sempervivum chrysanthum* var. *glabrum* Chiov. and var. *glandulosum* Chiov.

The identity of this plant is discussed by Zahra, l.c., in comparison with specimens from Yemen. Their leaf morphology seems to be different. He thinks that *A. stuessyi* Liu described from Tanzania in 1989 is conspecific with *A. leucoblepharum*. On the other hand, new collections from N C Kenya, discussed and illustrated, seem to represent another taxon.

Map in Volume 1: 207.

## AFROVIVELLA

**Afrovivella semiensis** (J. Gay ex A. Rich.) A. Berger

bas.: *Umbilicus semiensis* J. Gay ex A. Rich.

syn.: *Rosularia semiensis* (J. Gay ex A. Rich.) H. Ohba; *Sempervivum simense* Hochst. ex A. Rich., nom. inval.; *Cotyledon simensis* Britten

Treated by H. 't Hart in Eggl (2003b) under *Afrovivella*. It figures under **Rosularia** in our Volume 1: 220, map p. 221.

**COTYLEDON** (Volume 1: 208/207) / 2 (former account: 3)

JAARSVELD, E. VAN (2003). *Cotyledon*. In: EGGLI, U., ed. (2003b): 27-32.

JAARSVELD, E. VAN & D. KOUTNIK (2004). *Cotyledon and Tylecodon*. Umdaus Press, Hatfield, S.A. VIII + 156 pp. – Review by P. V. Bruyns in Pl. Syst. Evol. 258: 124-127, 2006.

**Cotyledon barbeyi** Schweinf. ex Bak.; Jaarsveld (2003): 28. – Icon.: Jaarsveld & Koutnik, o.c.: 21-22.

syn.: *C. sturmiiana* Poelln.; *C. transvaalensis* Guillaumin

Map in Volume 1: 207.

**C. orbiculata** L.; Jaarsveld (2003); 29-30. – Icon.: Jaarsveld & Koutnik, o.c.: 29-36.

Shrubby perennial to 1,5 m tall; branches grey, decumbent to erect; leaves decussate, very variable; inflorescence a thyrses 20-100 cm long; flowers tubular, 1-4 cm long, yellow to red.

Comprises 5 vars.: – var. **orbiculata** (full synonymy in Jaarsveld & Koutnik, o.c.: 30-31); in S. Africa, Namibia, S Angola; – var. **oblonga** (Haw.) DC. (bas.: *C. oblonga* Haw.; full synonymy in Jaarsveld & Koutnik, o.c.: 33, 35); in S Africa, but does not reach Mozambique (cf. map in our Volume 1: 207); in S Africa only: – var. **dactyloopsis** Tölken; – var. **flanagani** (Schönl. & Bak. f.) Tölken; – var. **spuria** (L.) Tölken.

Map in Volume 1: 207.

**CRASSULA** (Volume 1: 208/207-213) / 23 (+1?) spp.  
(former account: 26)

By recent authors transferred to **Tillaea** (contradictory).

BYALT, V. V. (2002). Combinations novae in genere *Tillaea* L. (Crassulaceae). *Novitat. Syst. Pl. Vascul.* 34: 76-78.

DORTORT, F. (2009). Under discussion: *Crassula*. Part 2, Stocks, spirals, and spires. *Cactus Succ. J. (U.S.)* 81: 280-289.

JAARSVELD, E. VAN (2003). *Crassula*. In: EGGLI, U., ed. (2003b).

## CRASSULA

MORT, M. E. & al. (2009). Analyses of cpDNA matK sequence data place *Tillaea* (Crassulaceae) within *Crassula*. *Pl. Syst. Evol.* 283: 211-217.

PIIRAINEN, M. (2006). Pitäisikö maksaruohokasvien sukujako uudistaa / Should we adopt new generic names in Crassulaceae. *Lutukka* 22: 17-25.

ROWLEY, G. (2003). *Crassula. A grower's guide*. Cactus & Co., Venegono, California. 247 pp. – Reviews (with corrections) by: P. V. Bruyns in Pl. Syst. Evol. 243: 125-127, 2003; S. Hammer in Cactus Succ. J. (U.S.) 75: 113-114, 2003; and T. Smale in Brit. Cactus Succ. J. 21: 179, 2003.

**Crassula alata** (Viv.) A. Berger – Icon.: Boulos, Fl. Egypt 1: 241, 1999.

syn.: for full synonymy of the 2 subsp., see Jaarsveld, o.c.: 35-36.

In Somalia [subsp. **pharnaceoides** (Fisch. & C. A. Mey.) Wickens & Bywater]: slopes and foot of limestone cliffs; ± 1100 m alt.

Saudi Arabia (Rahman & al., Bangladesh J. Pl. Taxon. 9: 36, 2002).

Map on p. 381.

**C. alba** Forssk. – Icon.: Rowley, o.c.: 82.

syn.: for full synonymy, see Jaarsveld, o.c.: 36.

Comprises 3 vars.: – var. **alba**; – var. **pallida** Tölken; – var. **parvisepala** (Schönland) Tölken [bas.: *C. rubicunda* var. *parvisepala* Schönland; syn.: *C. similis* Bak. f.; *C. rubicunda* var. *similis* (Bak. f.) Schönland and var. *lydenburgensis* Schönland; *C. atrosanguinea* Beauverd; *C. wilmsii* Diels].

Map in Volume 1: 207 and 213 (*C. similis*).

**C. alsinoides** (Hook. f.) Engl.; Jaarsveld, o.c.: 67 (*C. pellucida*); Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 142, 2010. – Icon.: Rowley, o.c.: 152 (*C. pellucida*).

syn.: *Crassula alsinoides* (Hook. f.) Engl.; *C. nummularifolia* Bak.; *C. pellucida* L. subsp. *alsinoides* (Hook. f.) Tölken

Treated by Jaarsveld, o.c.: 67, as a subspecies of the very variable **C. pellucida** although he notes that *C. alsinoides* should be re-instated.

Also in Madagascar.

Map in Volume 1: 207.

**C. capitella** Thunb. subsp. **nodulosa** (Schönland) Tölken; Figueiredo & Smith, Pl. Angola: 64, 2008; Jaarsveld, o.c.: 42; Rowley, o.c.: 97.

bas.: *C. nodulosa* Schönland

syn.: *C. enantiophylla* Bak. f.; *C. elata* N. E. Br.; *C. pectinata* Conrath; *C. avasimontana* Dinter; *C. guchabensis* Merxm.; *C. nodulosa* fa. *rhodesica* R. Fern. and var. *longiseepala* R. Fern.

See under **C. nodulosa** in Volume 1: 211, and map on p. 209.

The polymorphic **C. capitella** comprises 5 subspecies, the other ones in S. Africa and one also in Namibia (see Jaarsveld, o.c.: 42-43 and Rowley, o.c.: 97).

*C. cooperi* Regel var. *subnodulosa* R. Fern. = **C. exilis** subsp. **cooperi**.

(**C. ericoides** Haw.) – Icon.: Rowley, o.c.: 113.

Shrublet 10-30 cm tall, glabrous; branches densely clothed in 4 dense vertical rows of small leaves 2-7 × 1-4 mm, tips recurved; flowers whitish.

A collection made by Lavranos on Mt Kenya in 1988, is distributed in cultivation under this name. The true identity of this plant is not known.

## CRASSULA

*C. ericoides* occurs in S. Africa. Two subspecies have been described.

**C. exilis** Harv. subsp. **cooperi** (Regel) Tölken; Jaarsveld, o.c.: 51. – Icon.: Rowley, o.c.: 115.

bas.: *C. cooperi* Regel

syn.: *C. cooperi* var. *subnodulosa* R. Fern.; *C. bolusii* Hook.; *C. picturata* Boom; *Sedum regelii* Kuntze

See under **C. cooperi** var. **subnodulosa** in Volume 1: 210, and map on p. 209.

*C. exilis* comprises 5 subsp. in S. Africa-Namibia (Rowley, o.c.: 115). Subsp. *fragilis* mentioned by Rowley from Madagascar must be an error for *C. expansa* subsp. *fragilis* (Bak.) Tölken.

**C. expansa** Dryand. in Ait. (Hort. Kew. 1: 390-391, 1789), or Ait. ?; Jaarsveld, o.c.: 51-52; Figueiredo & Smith, Pl. Angola: 64, 2008.

Note: Hortus Kewensis, ed. 1, 1789, was edited by J. Dryander. "Neither of the Aitons wrote the botanical descriptions of the new species ... Authors... were D. Solander, J. Dryander, and R. Brown". Comprises 4 subsp.; – subsp. **fragilis** in our area and Madagascar (cf. above under *C. exilis* "subsp. *fragilis*" sensu Rowley).

Subsp. **fragilis** (Bak.) Tölken.

bas.: *Crassula fragilis* Bak.

syn.: *C. woodii* Schönland; *C. zimmermannii* Engl.; *C. browniana* Burt Davy; *C. thorncroftii* Burt Davy; *C. fragilis* var. *suborbicularis* R. Fern.

Map on p. 381.

**C. globularioides** Britten; Jaarsveld, o.c.: 54.

syn.: *C. whyteana* Schönland

Comprises 2 subsp. in our area: – subsp. **globularioides** [syn.: *C. globularioides* fa. *globularioides* and fa. *longiciliata* R. Fern. and fa. *pilosa* R. Fern.; *C. nyikensis* Baker f.; *C. liebuschiana* Engl.; *C. whyteana* Schönland] in C & S Malawi; – subsp. **illichiana** (Engl.) Tölken from Tanzania to Malawi.

Also in Uganda ?

Map on p. 381.

**C. granvikii** Mildbr.; Jaarsveld, o.c.: 54-55.

syn.: *C. erubescens* Bak. (not Bullock); *C. rivularis* (Peter) Hutch. & E. A. Bruce; *Tillaea granvikii* (Mildbr.) Byalt, o.c.: 76-77; *Crassula hedbergii* Wickens & Bywater (cf. Jaarsveld, o.c.: 55); *Bulliardia abyssinica* A. Rich. 1848, non *Crassula abyssinica* A. Rich. 1848.

Yemen.

Map in Volume 1: 209.

(**C. hedbergii** Wickens & Bywater)

See above under *C. granvikii*.

*C. heterotricha* Schinz = **C. perfoliata** var. **heterotricha**

## CRASSULA

**C. inanis** Thunb.; Jaarsveld, o.c.: 56.

syn.: *Tillaea inanis* (Thunb.) Steud.; *Bulliardia perfoliata* (L. f.) DC.; *Helophytum inane* (Thunb.) Eckl. & Zeyh., incl. var. *latifolium* Eckl. & Zeyh.; *Tillaea perfoliata* L. f., incl. var. *latifolia* (Eckl. & Zeyh.) Walpers

Map in Volume 1: 209.

**C. lanceolata** (Eckl. & Zeyh.) Endl. ex Walpers; Figueiredo & Smith, Pl. Angola: 64, 2008; Jaarsveld, o.c.: 57. – Icon.: Rowley, o.c.: 127.

bas.: *Tetraphyle lanceolata* Eckl. & Zeyh.

syn.: *Crassula schimperi* C. A. Mey. var. *lanceolata* (Eckl. & Zeyh.) Tölken, nom. nud.; *Combesia lanceolata* (Eckl. & Zeyh.) P. V. Heath

Comprises 3 subsp.: – subsp. **lanceolata** in S. Africa, Lesotho; – subsp. **denticulata** (Brenan) Tölken [bas.: *C. pentandra* Royle ex Edgw. var. *denticulata* Brenan; syn.: *C. schimperi* Fischer & C. A. Mey. subsp. *transvaalensis* (Kuntze) R. Fern. var. *denticulata* (Brenan) R. Fern.; *Combesia lanceolata* (Eckl. & Zeyh.) P. V. Heath subsp. *denticulata* (Brenan) P. V. Heath], in S Malawi, S. Africa; – subsp. **transvaalensis** (Kuntze) Tölken [bas.: *Sedum transvaalense* Kuntze; syn.: *Crassula transvaalensis* (Kuntze) K. Schum.; *C. schimperi* Fischer & C. A. Mey. subsp. *transvaalensis* (Kuntze) R. Fern. var. *transvaalensis*, etc.; *Tillaea schimperi* (Fischer & C. A. Mey.) M. G. Gilbert, H. Ohba & K. T. Fu subsp. *transvaalensis* (Kuntze) M. G. Gilbert & al.; *T. subulata* (Hook. f.) Britten; *Thisantha subulata* Hook. f.; *Crassula selago* Dinter; see also Fl. Zambes. 7/1: 10, 1983] in Malawi, Mozambique, Zimbabwe, Angola, Namibia, S. Africa, Swaziland, Lesotho; icon.: Jaarsveld, o.c.: pl. VIIIa.

Map on p. 381.

*C. nodulosa* Schönland = **C. capitella** subsp. **nodulosa**.

*C. nyikensis* Bak. f. = **C. globularioides** subsp. **globularioides**.

(**C. ovata**) (Mill.) Druce; Jaarsveld, o.c.: 66, 73. – Icon.: Rowley, o.c.: 150-151.

The presence of this plant in C Mozambique is doubtful (map in Volume 1: 213). It may be a confusion with *C. ovata* E. Mey. ex Drège 1844, nom. inval. (= *C. sarmentosa*). *C. ovata* (Mill.) Druce occurs in S. Africa. – Or is it a garden escape in Mozambique ?

*C. pellucida* L. – See above under **C. alsinoides**.

*C. pellucida* subsp. *brachypetala* (Drège ex Harv.) Tölken [bas.: *C. brachypetala* Drège ex Harv.; syn.: *C. prostrata* E. Mey. ex Drège; *Bulliardia dregei* Harv.; *Crassula dregei* (Harv.) Schönland; *C. elongata* Schönland; *C. involucrata* Schönl.; *C. tysonii* Schönland; *C. diabolica* N. E. Br., etc.] also occurs in tropical E Africa according to Jaarsveld, o.c.: 67; adding that *C. brachypetala* should probably be re-instated.

**C. perfoliata** L. var. **heterotricha** (Schinz) Tölken; Jaarsveld, o.c.: 68; Rowley, o.c.: 155.

bas.: *C. heterotricha* Schinz

See under **C. heterotricha** in Volume 1: 210 and map on p. 209.

*C. perfoliata* comprises 4 vars., 5 according to Rowley, l.c. [but var. **falcata** (J. C. Wendl.) Tölken is considered as a synonym under var. **minor** (Haw.) G. D. Rowl. by Jaarsveld, l.c.].

## CRASSULA

**C. sarmentosa** Harv.; Jaarsveld, o.c.: 73. – Icon.: Rowley, o.c.: 167.

Comprises 2 vars.: – var. **integrifolia** Tölken in S. Africa; – var. **sarmentosa** in our area [syn.: *C. ovata* E. Mey. ex Drège, nom. nud.; cf. above under *C. ovata* (Mill.) Druce].

Map in Volume 1: 213.

**C. schimperi** C. A. Mey., excl. subsp. *denticulata* (Brenan) P. V. Heath and subsp. *transvaalensis* (Kuntze) Tölken (both = *C. lanceolata*); Jaarsveld, o.c.: 73-74; Thulin, Fl. Somal. 3: 561, 2006; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 124, 2010.

Comprises 2 subspp.: – subsp. **schimperi** in Uganda, Kenya, Tanzania, Yemen, W Asia to Nepal-Pakistan; – subsp. **phyturus** (Mildbr.) R. Fern., in N part of range, Socotra (full synonymy in Jaarsveld, o.c.: 73). – According to Thulin, l.c., the Somali plant belongs to subsp. **schimperi**.

Map on p. 381.

**C. setulosa** Harv.; Jaarsveld, o.c.: 74-76. – Icon.: Rowley, o.c.: 170.

Jaarsveld, l.c., divides this polymorphic species into 5 vars. Var. **setulosa** seems to appear in our area (map in Volume 1: 213), although this is not mentioned in his text.

Our synonymy (Volume 1: 211), incl. *C. scheppigiana* Diels, refers to var. **setulosa**, with the exception of *C. setulosa* var. *curta* (N. E. Br.) Schönland [bas.: *C. curta* N. E. Br. and its var. *rubra* N. E. Br. which are mentioned as and under **C. setulosa** var. **rubra** (N. E. Br.) Rowley].

S. Africa.

**C. swaziensis** Schönland, excl. var. *zombensis* (Bak. f.) R. Fern. (= *C. zombensis*); Jaarsveld, o.c.: 79. – Icon.: Jaarsveld, o.c.: pl. 9 g; Rowley, o.c.: 177; Gildenhuys in Aloe 45: 69, 2008.

syn.: for full synonymy, see Jaarsveld, l.c.

Map in Volume 1: 213 (Jaarsveld does not mention this species from Malawi-Mozambique).

**KALANCHOE** (Volume 1: 212-221) / 51  
(former account: 50)

A new classification is proposed by Descoings: a single genus *Kalanchoe* subdivided in 3 sub-genera, viz., *Kalanchoe*, *Bryophyllum* (Salisb.) Koorders and *Calophygia* Descoings (intermediate).

AKULOVA-BARLOW, Z. (2009). Kalanchoe: beginner's delight, collector's dream. *Cactus Succ. J. (U.S.)* 81: 268-276.

BYALT, V. V. (2008). New combinations in the genera *Bryophyllum* and *Kalanchoe* (Crassulaceae). *Bot. Žurn.* 93: 461-465 [in Russian].

DESCOINGS, B. (2003). Kalanchoe. In: EGGLI, U., ed., *Illustrated handbook of succulent plants: Crassulaceae*: 143-181.

DESCOINGS, B. (2006). Le genre *Kalanchoe* (Crassulaceae): structure et définition. *J. Bot. Soc. Bot. France* 33: 3-28.

DESCOINGS, B. (2007). Une nouvelle définition du genre *Kalanchoe* (Crassulaceae). *Succulentes (France)* 2007/2: 7-16.

SHAW, J. M. H. (2008). An investigation of the cultivated *Kalanchoe daigremontiana* group, with a checklist of *Kalanchoe* cultivars. *Hanburyana* 3: 17-79.

## KALANCHOE

(**Kalanchoe angolensis** N. E. Br.); Figueiredo & Smith, Pl. Angola: 64, 2008.

Insufficiently known. Known only from the type collection, N. E. Brown, s.n. [Descoings (2003): 144].

**K. antennifera** Descoings – Icon.: Acta Bot. Gallica 151: 443, 2004.

Annual herb 10-25 cm tall; stem single, erect, slightly glandular; leaves petiolate, petiole thick, 6-8 mm long; lamina succulent, 1-5 cm long, deeply 3-lobed, lobes lanceolate and acute at apex, margins glandular-hairy; flowers erect, ± 1,5 cm long, orange, calyx succulent and glandular, corolla lobes long.

Exact geographical origin unknown. Plant described on cultivated material (S France, Côte d'Azur), grown from seed.

The morphological features correspond to those of African species. Resembling *K. fadeniorum* and *K. ndotoensis*, both from Kenya.

Not mapped.

*K. auriculata* (Raadts) Byalt – See below under **K. nyikae**.

**K. boranae** Raadts; Descoings (2003): 149.

P. Muthoka in Samara 6: 2 (2004) reports that this plant had not been collected since 30 years. Seeds were collected in 2003 by Kew staff.

Map in Volume 1: 215.

(**K. connata** Sprague); Figueiredo & Smith, Pl. Angola: 64, 2008.

Insufficiently known species, known only from the type [cf. Descoings (2003): 144].

**K. crenata** (Andr.) Haw.; Descoings (2003): 152; Sosef & al., Check-list pl. vascul. Gabon: 132, 2006; Figueiredo & Smith, Pl. Angola: 64, 2008; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 124, 2010. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 519, 2006; Crouch & al., Flow. Pl. Afr. 61: pl. 2249, 2009; Lisowski, Fl. Rép. Guinée 2: fig. 180, 2009; Fl. Gabon 41: 29, 2010 (subsp. **crenata**).

syn.: *K. brasilica* (Vellozo) Stellfield; *Cotyledon brasilica* Vellozo; *Kalanchoe brittenii* Raym.-Hamet; *K. schumacheri* Koorders; *K. coccinea* Britten; see also Descoings, l.c.

CROUCH, N. R. & al. (2009). *Kalanchoe crenata* subsp. *crenata* – Crassulaceae. *Flow. Pl. Afr.* 61: 62-68.

Map on p. 381. – In Gabon: sometimes also cultivated in villages. Indigenous at least in the provinces Woleu-Ntem, Ngounié and Haut-Ogooué.

(**K. hauseri** Werderm.); Figueiredo & Smith, Pl. Angola: 64, 2008.

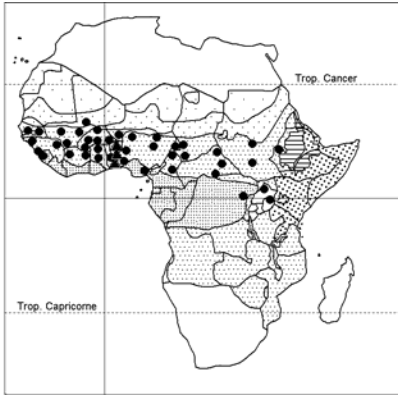
Insufficiently known; known only from the type (destroyed, B). Cf. Descoings (2003): 144.

**K. marmorata** Bak., incl. var. *maculata* Terracc. ex Senni; Descoings (2003): 165. – Icon.: Aloe 43: 69, 2006; Cactus Succ. J. (U.S.) 81: 272, 2009.

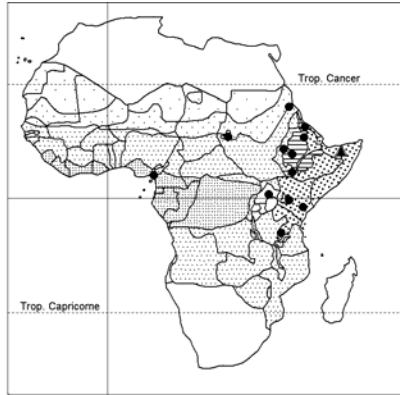
syn.: for full synonymy, see Descoings, l.c.

Map in Volume 1: 217.

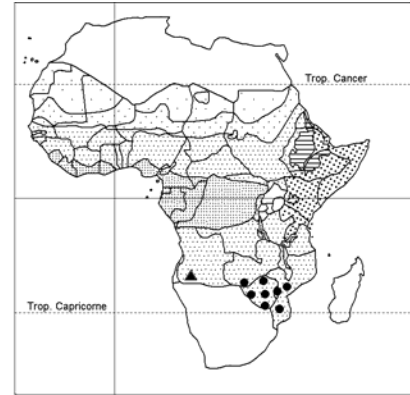




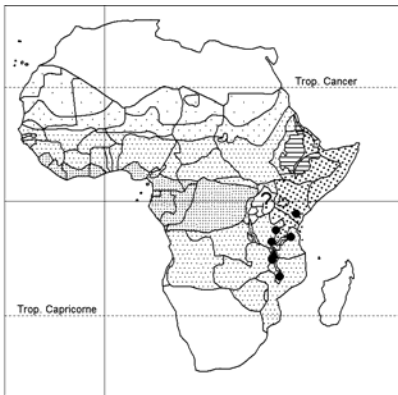
*Terminalia macroptera*



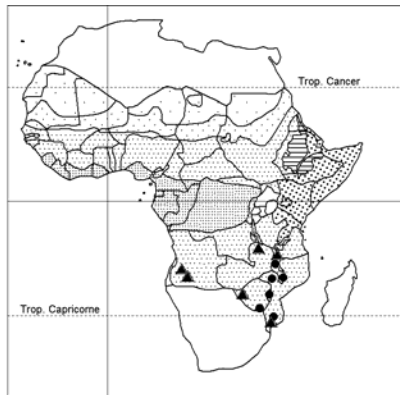
*Crassula alata*



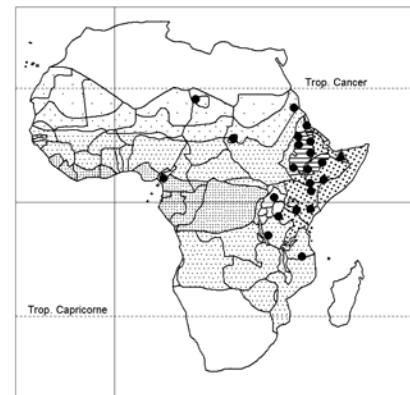
*Crassula expansa*



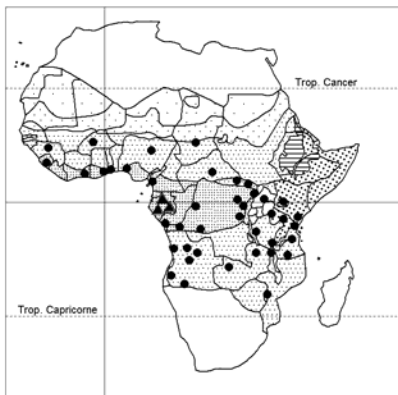
*Crassula globularioides*



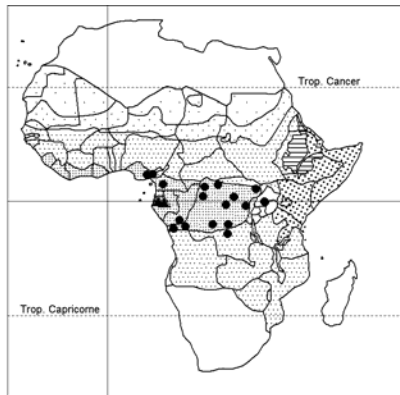
*Crassula lanceolata*



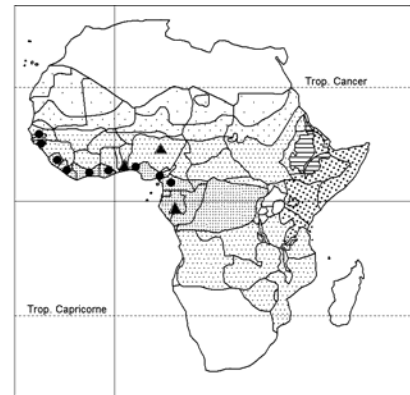
*Crassula schimperi*



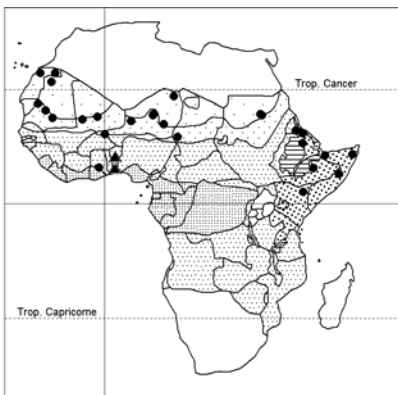
*Kalanchoe crenata*



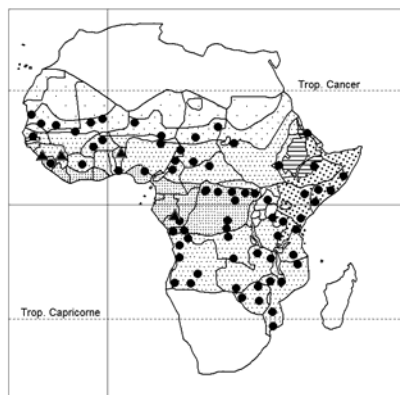
*Bambekea racemosa*



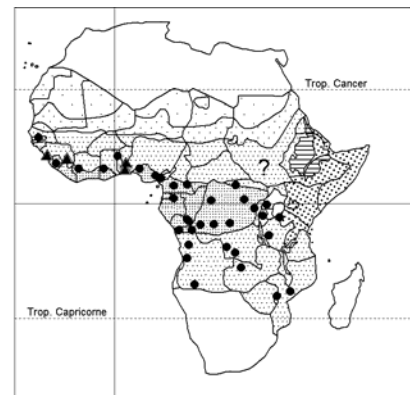
*Cayaponia africana*



*Citrullus colocynthis*



*Citrullus lanatus*



*Coccinia barteri*



## KALANCHOE

**K. nyikae** Engl.; Descoings (2003): 167.

Comprises 2 subspp.: – subsp. **nyikae**; – subsp. **auriculata** Raadts [syn.: *K. auriculata* (Raadts) Byalt].

Map in Volume 1: 217.

**K. paniculata** Harv.; Descoings (2003): 168. – Icon.: Bradleya 21: 23, 2003.

SMITH, G. F. & al. (2003). Notes on the distribution and ethnobotany of *Kalanchoe paniculata* (Crassulaceae) in southern Africa. *Bradleya* 21: 21-24.

Map in Volume 1: 217.

**K. petitiiana** A. Rich.; Descoings (2003): 169.

syn.: *K. petitiiesii* A. Rich. ex Jacques; *K. longiflora* Schltr. ex J. M. Wood var. *coccinea* Marnier-Lapostolle, nom. inval.; *K. quartiniana* A. Rich. var. *micrantha* Pampanini – All of var. **petitiiana**.

Map in Volume 1: 217.

**K. sexangularis** N. E. Br.; Descoings (2003): 175.

syn.: *K. rogersii* Raym.-Hamet; *K. rubinea* Tölken; for full synonymy, see Descoings, l.c.

According to Shaw in *Hanburyana* 3: 27, 2008, this plant is misidentified in cultivation, commonly sold (and also illustrated) as *K. longiflora*, *K. paniculata*, *K. pinnata*.

Distinctive species: its foliage becomes rich red in sunlight.

Map in Volume 1: 219.

**K. velutina** Welw. ex Britten; Descoings (2003): 179; Figueiredo & Smith, *Pl. Angola*: 64, 2008.

syn.: *K. exellii* Raym.-Hamet (of subsp. **velutina**)

Map in volume 1: 219.

**ROSULARIA** (Volume 1: 220/221)

**Rosularia semiensis** (A. Rich.) Ohba

Cf. above under **Afrovivella**.

Map in Volume 1: 221.

**SEDUM** (Volume 1: 220-222)

Correction:

**Sedum glomerifolium** M. G. Gilbert

Cited as *S. glomeriferum* in Volume 1: 220, and map 221.

**S. hispanicum** L.; H. 't Hartr & B. Bleij in Eggli, *Ill. handbook succ. pl., Crassulaceae*: 277-278.

syn.: for full synonymy see citation above.

Map in Volume 1: 221.

*(TILLAEA)*

A number of new combinations in *Tillaea* were made by Byalt (2002) for species of *Crassula*. See above under **Crassula**, in particular **C. granvikii**.

**UMBILICUS** (Volume 1: 222/223)

WALKER, C. C. (2003). *Umbilicus*. In: EGGLI, U., ed., *Illustrated handbook of succulent plants: Crassulaceae*: 364-367.

**Umbilicus paniculiformis** Wickens is recognized as a distinct species by Walker, o.c.: 366. The differences between this taxon and *U. tropaeolifolius* Boiss. (Walker, o.c.: pl. XLVIIIb) seem small. However, the illustrations given by Walker, l.c. and by Wickens, *Kew Bull.* 33: 422, 1979, are difficult to compare.

Map in Volume 1: 223, under *U. tropaeolifolius*: the locality in Sudan, Red Sea Hills.

**CURCUBITACEAE** (Volume 1: 442-471) / w31 g. / 195 spp. (former account: 31 /189)

Add new information for family and following genera.

ANONYMOUS (2003). From past profiles: Cucurbits in color. *Cucurbit Network News* 10/2: 2-3.

ANONYMOUS (2005). A new perspective on the Cucurbitaceae. *Cucurbit Network News* 12/1: 3 [Jeffrey's new classification and a short note on Charles Jeffrey].

JEFFREY, C. & W. J. J. O. DE WILDE (2006). A review of the subtribe Thladianthinae (Cucurbitaceae). *Bot. Žurn.* 91: 766-776.

*(ADENOPUS)*

See below under **Lagenaria**.

**BAMBEKEA** (Volume 1: 442-443)

**Bambekea racemosa** Cogn.; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006.

Map on p. 381.

**CAYAPONIA** (Volume 1: 442-443)

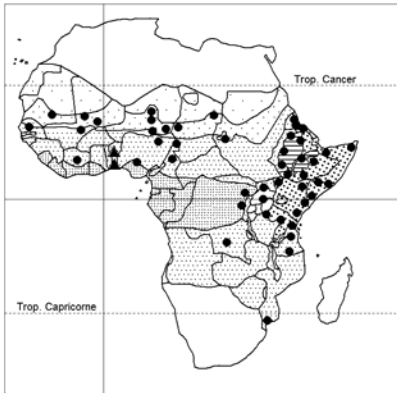
DUCHEN, P. & S. S. RENNER (2010). The evolution of Cayaponia (Cucurbitaceae): repeated shifts from bat to bee pollination and long-distance dispersal to Africa 2-5 million years ago. *Amer. J. Bot.* 97: 1129-1141.

**Cayaponia africana** (Hook. f.) Exell; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006; Akoegninou & al., *Fl. analyt. Bénin*: 521-522, 2006. – Icon.: Lisowski, *Fl. Rép. Guinée* 2: fig. 181, 2009.

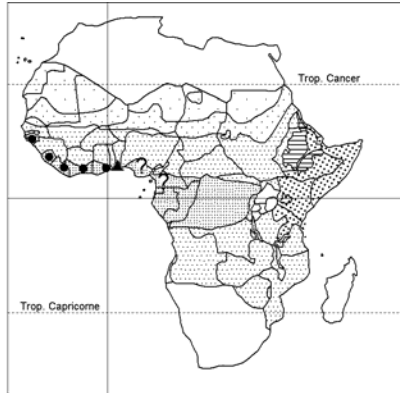
Also in Madagascar (introduced by man?).

Map on p. 381.

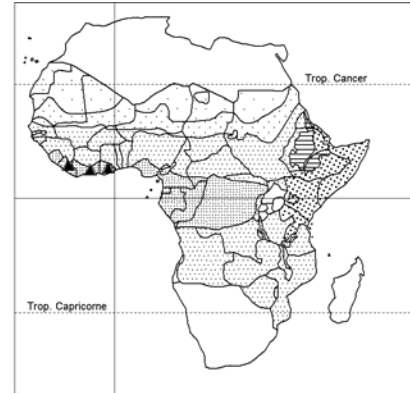
*C. multiglandulosa* R. Fern. from NW Angola is perhaps not distinct from *C. africana* but this needs confirmation.



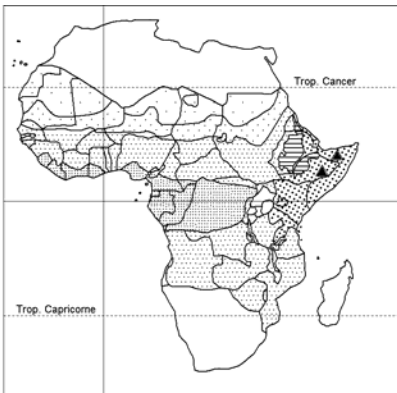
*Coccinia grandis*



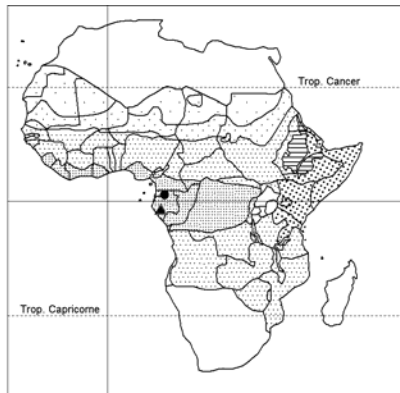
*Coccinia keayana*



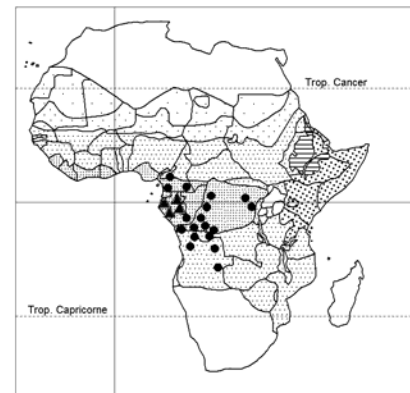
*Coccinia longicarpa*



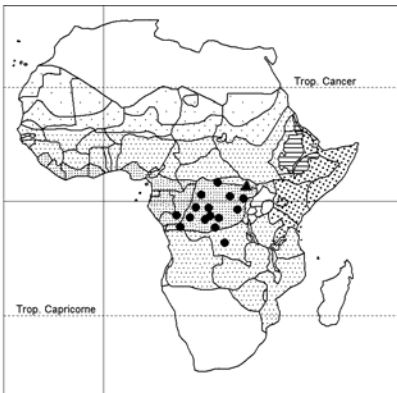
*Coccinia ogadensis*



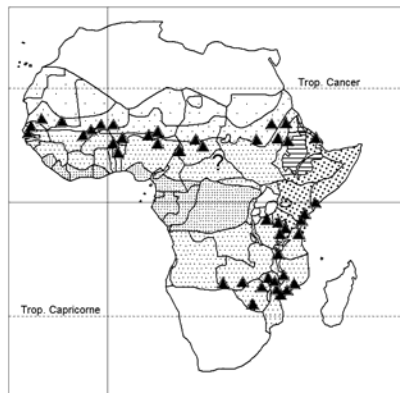
*Coccinia racemiflora*



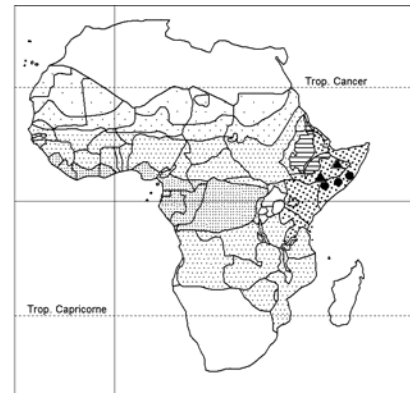
*Cogniauxia podolaena*



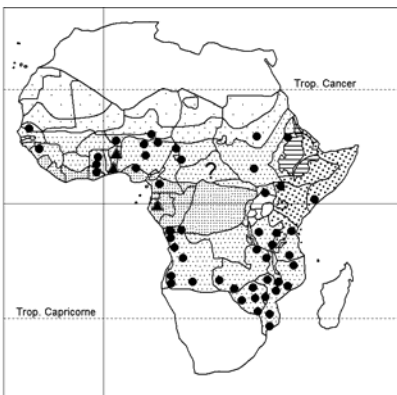
*Cogniauxia trilobata*



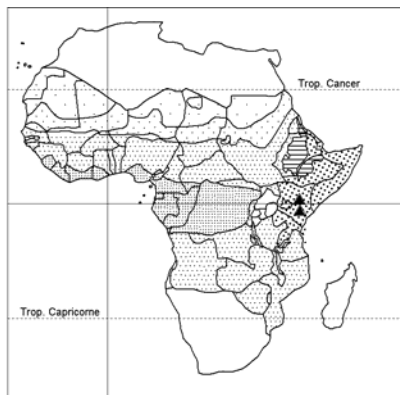
*Ctenolepis cerasiformis*



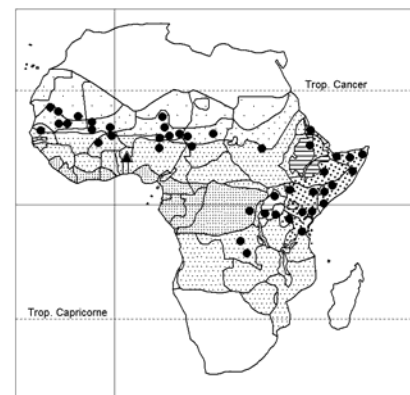
*Cucumis hastatus*



*Cucumis metuliferus*



*Cucumis prolator*



*Cucumis prophetarum*

**CITRULLUS** (Volume 1: 442-443)**Citrullus colocynthis** (L.) Schrad.; Akoegninou & al., l.c.

Map on p. 381.

**C. lanatus** (Thunb.) Matsumara & Nakai; Sosef & al., l.c.; Lisowski, Fl. Rép. Guinée 1: 146, 2009. – Icon.: Akoegninou & al., o.c.: 522.WASYLIKOWA, K. & M. VAN DER VEEN (2004). An archaeobotanical contribution to the history of watermelon, *Citrullus lanatus* (Thunb.) Matsum. & Nakai (syn.: *C. vulgaris* Schrad.). *Veget. Hist. Archaeobot.* 13: 213-217.“... the modern range of *C. lanatus* should be regarded as a relict of a former wider distribution, which... might have included the area from southern Africa, through the eastern part of the continent, to Sudan and Egypt (and possibly to India)”. “The presence of 5000-year old seeds... in Libya indicates that a wild form of this species was present in the Libyan Sahara at that time... the domestication... could have occurred somewhere in northern Africa...”.

Map on p. 381.

**COCCINIA** (Volume 1: 442-447) / 23 (former account: 21)**Coccinia barteri** (Hook. f.) Keay; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006; Akoegninou & al., Fl. analyt. Bénin: 523, 2006; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 124, 2010. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 182, 2009.

Map on p. 381.

**C. grandis** (L.) Voigt – Icon.: Akoegninou & al., l.c.XU You-Kai & al. (2003). The nutritional contents and its evaluation as a wild vegetable. *Acta Bot. Yunnan.* 25: 680-686.

Map on p. 383.

**C. keayana** R. Fern.; Akoegninou & al., l.c.Jongkind (Blumea 49: 84, 2004) notes that this species is probably not present in Cameroon. The drawing published by Keraudren (Fl. Cameroun 6: 133, 1967) of *C. keayana* is different from the one given by R. Fernanades (Bot. Soc. Brot., Sér. 2, 33: pl. 3, 1959) describing *C. keayana*.

Map on p. 383.

**C. longicarpa** Jongkind – Icon.: Blumea 49: 84, 2004.syn.: *C. sp. B* sensu Keay in Fl. W. Trop. Afr., ed. 1, 1/1: 216, 1954, p.p., quoad specim. Vigne 1735; *C. sp. A* sensu Jeffrey in J. W. Afric. Sci. Assoc. 9: 87, 1964, p.p., quoad specim. Vigne 1735, Linder 576.Slender climbing herb to 2 m tall; tendrils simple; leaves long-angular ovate to ± deeply 3-lobed, 12 cm long, 11 cm wide, with small glands above and on teeth of margin, petiole 4,5 cm long; flowers *urceolate*, 1-1,5 cm long, yellow-orange, male ones in racemes to 5 cm long, female ones usually solitary; stamens united; fruit cylindrical, *long*, to 20 cm long, 1 cm Ø, glabrous.

Forest, in open places; forest margins.

Map on p. 383.

**C. ogadensis** Thulin – Icon.: Kew Bull. 64: 486, 2009.syn.: “*Cephalandra quinqueloba*, Sch. ?” sensu Oliver 1888 (Flora of Somali-Land, in F. L. James, The unknown horn of Africa); *C. sp. sensu* Jeffrey & Thulin, Fl. Somal. 1: 238, 1993, specim. Hemming 1713; *C. sp. sensu* Jeffrey in Fl. Eth. & Eritrea 2/2: 53, 1995, specim. Bally 12989.**COCCINIA OGADENSIS**Climbing or trailing plant to > 2 m tall, dioecious; main stems softly woody; terminal branches herbaceous; stems glabrous except for somewhat pubescent nodes, purplish brown, angular; leaves broadly ovate in outline, *palmately divided* to the base into 5 *linear lobes*, scabrid-punctate above with flat whitish hair-bases, central lobe 2-8 × 0,1-0,8 cm, leaf lobes lobulate (Somalian material) or entire (Ethiopia); tendrils simple, slender; male flowers solitary or in small clusters, yellow or white, ± 2 cm long; female flowers unknown; fruit fusiform, 5 × 1,5 cm, red when ripe, pulp red. *Acacia-Commiphora* semi-desert bushland, often on sand; 300-800 m alt.

Collected first more than 120 years ago; described in 2009.

Map on p. 383.

**C. racemiflora** Keraudren; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006.

In Gabon: 300 m alt.

Map on p. 383.

**COGNIAUXIA** (Volume 1: 446-447)**Cogniauxia podolaena** Baill.; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006. – Icon.: Engler, Pflanzenreich 4/275/2: 197, 1924.

In Gabon: 30-550 m alt. – Also reported by Lisowski (Fl. Rép. Guinée 1: 146, 2009) from SE Guinea (Macenta).

Map on p. 383.

**C. trilobata** Cogn.; Engler, Pflanzenreich, l.c.: 199-200.syn.: *Letourneuxia niarniamensis* Schweinf. in sched. (Schweinfurth 3617, Zaire, Bongua-Bongua, ca. 4°N × 28°E).

Map on p. 383.

**CTENOLEPIS** (Volume 1: 446)**Ctenolepis cerasiformis** (Stocks) Hook. f.; Akoegninou & al., Fl. analyt. Bénin: 524, 2006; Figueiredo & Smith, Pl. Angola: 65, 2008.

Perhaps also in Angola (occurs on the border Angola/Zambia).

Map on p. 383.

**CUCUMELLA** (Volume 1: 448-449, 451)GHEBRETINSAE, A. G. & al. (2007). Nomenclatural changes in *Cucumis* (Cucurbitaceae). *Novon* 17: 176-178 (published 20 June).SCHAEFER, H. (2007). *Cucumis* (Cucurbitaceae) must include *Cucumella*, *Dicoelospermum*, *Mukia*, *Myrmecosicyos*, and *Oreosyce*: A circumscription based on nuclear and plastid DNA data. *Blumea* 52: 165-177 (published 4 July).Ghebretinsae & Thulin, followed by Schaefer, make the following new combinations under **Cucumis**:*Cucumis aetheocarpus* (C. Jeffrey) Ghebretinsae & Thulin, priority over H. Schaefer. – bas.: **Cucumella aetheocarpa** C. Jeffrey*Cucumis bryoniifolius* (Merxm.) Ghebretinsae & Thulin, priority over H. Schaefer. – bas.: *Hymenosicyos bryoniifolia* Merxm.; syn.: **Cucumella bryoniifolia** (Merxm.) C. Jeffrey*Cucumis cinereus* (Cogn.) Ghebretinsae & Thulin, priority over H. Schaefer. – bas.: *Kedrostis cinerea* Cogn.; syn.: **Cucumella cinerea** (Cogn.) C. Jeffrey*Cucumis engleri* (Gilg) Ghebretinsae & Thulin, priority over H. Schaefer. – bas.: *Kedrostis engleri* Gilg; syn.: **Cucumella engleri** (Gilg) C. Jeffrey

## CUCUMELLA

*Cucumis kelleri* (Cogn.) Ghebretinsae & Thulin, priority over H. Schaefer. – bas.: *Oreosyce kelleri* Cogn.; syn.: **Cucumella kelleri** (Cogn.) C. Jeffrey

*Cucumis kirkbrideana* Ghebretinsae & Thulin, priority over H. Schaefer., nom. nov., non *Cucumis jeffreyanus* Thulin – syn.: **Cucumella jeffreyana** J. H. Kirkbr.

*Cucumis reticulatus* (R. Fern. & A. Fern.) Ghebretinsae & Thulin, priority over H. Schaefer. – bas.: **Cucumella reticulata** R. Fern. & A. Fern.

**CUCUMEROPSIS** (Volume 1: 448, 451)

SCHAEFER, H. & S. S. RENNER (2010). A gift from the New World? The West African crop *Cucumeropsis mannii* and the American *Posadaea sphaerocarpa* (Cucurbitaceae) are the same species. *Syst. Bot.* 35: 534-540

**Cucumeropsis mannii** Naud.; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006; Figueiredo & Smith, Pl. Angola: 65, 2008. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 524, 2006; Schaefer, H. & S. S. Renner, o.c.: 535-537 [with map].

syn.: *Posadaea sphaerocarpa* Cogn.

In Gabon more widespread than shown on the map in Volume 1: 451. Also present in SW Central African Republic (not shown on this map either). Schaefer, H. & S. S. Renner, o.c., suggest that the American and the African populations be perhaps treated as two distinct subspecies. They also think that the plant was first introduced from N S. America to West Africa by Brazilian ships, then spread further inland through trade, but natural dispersal cannot be ruled out.

KOFFI, K. K. & al. (2008). Morphological and allozyme variation in a collection of *Cucumeropsis mannii* Naudin (Cucurbitaceae) from Côte d'Ivoire. *Biochem. Syst. Ecol.* 36: 777-789.

**CUCUMIS** (Volume 1: 448, 450-454) / 27  
(former account: 25)

GHEBRETINSAE, A. G. & al. (2007). See above under **Cucumella**.

GHEBRETINSAE, A. G. & al. (2007). Relationships of cucumbers and melons unraveled: Molecular phylogenetics of Cucumis and related genera (Benicaseae, Cucurbitaceae). *Amer. J. Bot.* 94: 1256-1266.

SCHAEFER H. (2007). See above under **Cucumella**.

Several new combinations have been made in *Cucumis* by Ghebretinsae & Thulin (names having priority) and published later by Schaefer. Readers are invited to check new combinations, basionyms, and synonyms under **Cucumella**, **Mukia**, **Myrmecosicyos**, and **Oreosyce**.

**Cucumis hastatus** Thulin; Fl. Eth. & Eritrea 1: 208-209, 2009.

In Ethiopia: up to 1200 m alt. – An amended key to *Cucumis* in Fl. Eth. & Eritrea 2/1: 451, 2000 is given, l.c.

Map on p. 383.

**C. melo** L., incl. var. *agrestis* Naudin and var. *cultus* Kurz; Figueiredo & Smith, Pl. Angola: 65, 2008; Akoegninou & al., Fl. anal. Bénin: 525, 2006; Lisowski, Fl. Rép. Guinée 1: 146, 2009.

Reported also from the southern part of Benin (not shown on the map in Volume 1: 452).

The plant is a sister to *C. sagittatus* Peyr. in southern Africa (fide Ghebretinsae & al., o.c.).

## CUCUMIS

**C. metuliferus** E. Mey. ex Naudin; Figueiredo & Smith, l.c.; Lisowski, l.c.; – Icon.: Akoegninou & al., l.c.; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006.

Map on p. 383.

**C. prolator** J. H. Kirkbr. – Icon.: Kirkbridge, Biosyst. monograph of Cucumis: 54, 1993.

syn.: *C. sp. A.* sensu Jeffrey, Fl. Trop. E. Afr., Cucurbitaceae: 99, 1967.

Trailing herb, monoecious; stems sulcate, hirsute with bulbous-based hairs ca. 1 mm long; leaves 5-palmately lobed, ovate in outline, 5-6 × 4-4,5 cm, margins serrate, hirsute on the veins; tendrils simple, 2-5 cm long; inflorescence unisexual; male flowers solitary or fasciculate; female flower unknown; fruit maturing above ground, visible, not geocarpic.

Bushland; 960-1524 m alt.

Known from only 2 collections.

Resembling *C. prophetarum*.

Map on p. 383.

**C. prophetarum** L., excl. subsp. *zeyheri* (Sond.) C. Jeffrey; Akoegninou & al., Fl. anal. Bénin: 525, 2006.

Resembling *C. prolator*.

Map on p. 383.

**C. zambianus** Widrechner, J. H. Kirkbr., Ghebretinsae & K. R. Reitsma – Icon.: Syst. Bot. 33: 736, 737, 738 (map), 2008 [with a key as supplement to that of Kirkbride 1993].

Procumbent herb, probably annual, monoecious; rootstock fibrous, tubers 0; stems slightly sulcate, 5-sided, *pilose*, nodes not geniculate; leaves broadly ovate to circular, 4-11 × 8-14(-18) cm, 3- or 5-palmately lobed, blade surfaces antrorse-strigose to pilose; inflorescences unisexual or gynecandrous; the bisexual ones fasciculate, 3-5-flowered, sessile; the male ones paniculate, 6-10(-30)-flowered, sessile; pistillate-flower pedicels long, cylindrical; corolla infundibular, puberulent inside, 1-1,5 cm long; fruit maturing above ground, visible, yellow with orange longitudinal stripes, ± round, 4-6 cm Ø.

Sampled from on-farm storage and backyard gardens; it is not known if the plant occurs wild or only cultivated; 1320 m alt.

Perhaps also in Angola and Zaire.

Described on material grown from seed at the USDA North Central Regional Plant Introduction Station, Ames, Iowa.

Seems closest to *C. pustulatus* Naudin ex Hook.f., but crosses with this species were unsuccessful.

Map on p. 387.

## [CUCURBITA]

AGBAGWA, I. O. & B. C. NDUKWU (2002). Morpho-anatomical characters and the taxonomy of the Cucurbita L. (Cucurbitaceae) species in Nigeria. *Bol. Soc. Brot.*, Ser. 2, 71: 195-205.

AGBAGWA, I. O. & al. (2007). Floral biology, breeding system, and pollination ecology of *Cucurbita moschata* (Duch. ex Lam.) Duch. ex Poir. varieties (Cucurbitaceae) from parts of the Niger Delta, Nigeria. *Turk. J. Bot.* 31: 451-458.

TEPPNER, H. (2004). Notes on *Lagenaria* and *Cucurbita* (Cucurbitaceae) – Review and new contributions. *Phyton (Horn)* 44: 245-308.

These publications concern: *C. maxima* Duch. ex Lam., *C. moschata* (Duch. ex Lam.) Duch. ex Poir., *C. pepo* L. (see also Akoegninou & al., Fl. anal. Bénin: 526-527, 2006).



**CYCLANTHEROPSIS** (Volume 1: 454/453)

**Cyclantheropsis parviflora** (Cogn.) Harms; Figueiredo & Smith, Pl. Angola: 65, 2008. – Icon.: Kakteen & Sukk. 60: 251, 2009 (in cultivation, with notes on growing conditions).

Map in Volume 1: 453.

**DIPLOCYCLOS** (Volume 1: 454/453, 455)

**Diplocyclos decipiens** (Hook. f.) C. Jeffrey; Figueiredo & Smith, Pl. Angola: 65, 2008.

Map on p. 387.

**D. palmatus** (L.) C. Jeffrey; Keraudren-Aymonin in Bull. Soc. Bot. France 129: 325-328, 1983.

Also in Madagascar.

Map on p. 387.

**EUREIANDRA** (Volume 1: 454-456)

**Eureiandra formosa** Hook. f.; Figueiredo & Smith, Pl. Angola: 65, 2008.

Map on p. 387.

**GERRARDANTHUS** (Volume 1: 456/455)

**Gerrardanthus paniculatus** (Mast.) Cogn.; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 184, 2009.

Map on p. 387.

**KEDROSTIS** (Volume 1: 456-458)

DE WILDE, W. J. J. O. & B. E. E. DUYFJES (2004). *Kedrostis* Medik. (Cucurbitaceae) in Asia. *Reinwardtia* 12: 129-133.

**Kedrostis foetidissima** (Jacq.) Cogn.; De Wilde & Duyfjes, o.c.: 132; Akoegninou & al., Fl. anal. Bénin: 527, 2006.

syn.: *Rhynchoscarpa foetida* Schrad., nom. illegit.; *Bryonia rostrata* Rottler; *Aechmandra rostrata* (Rottler) Arn.; *Rhynchoscarpa rostrata* (Rottler) Naudin; *Kedrostis rostrata* (Rottler) Cogn.

Map on p. 387.

**LAGENARIA** (Volume 1: 456-459)

ACHIGAN DAKO, E. G. & al. (2008). Caractérisation morphologique des cultivars locaux de *Lagenaria siceraria* (Cucurbitaceae) collectés au Bénin et au Togo. *Belg. J. Bot.* 141: 21-38.

DECKER-WALTERS, D. S. & al. (2004). Discovery and genetic assessment of wild Bottle Gourd [*Lagenaria siceraria* (Mol.) Standley; Cucurbitaceae] from Zimbabwe. *Econ. Bot.* 58: 501-508.

DECKER-WALTERS, D. S. & al. (2005). The early multiple migrations of Bottle Gourd around the globe. *Cucurbit Network News* 12/2: 2-3.

FULLER, D. Q. & al. (2010). A contribution to the prehistory of domesticated bottle gourds in Asia: measurements from Jomon Japan and Neolithic Zhejiang, China. *Econ. Bot.* 64: 260-265.

NDUKWU, B. C. & G. C. OBUTE (2002). Morphological and ethnobotanical consideration of the genus *Lagenaria* Ser. (Cucurbitaceae) in the Niger delta area. *J. Econ. Taxon. Bot.* 26: 751-757.

TEPPNER, H. (2004). See above under *Cucurbita*.

WILKINS-ELLERT, M. (2003). The discovery of wild Bottle Gourd (*Lagenaria siceraria*). *Cucurbit Network News* 10/2: 1, 7.

WILKINS-ELLERT, M. (2006). New information on the origins of Bottle Gourd (*Lagenaria siceraria*). *Desert Plants* 22/1: 8-17 [gives photographs of all African species].

## LAGENARIA

**Lagenaria breviflora** (Benth.) Roberty; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006; Figueiredo & Smith, Pl. Angola: 65, 2008. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 185, 2009; Decker-Walters & al. (2004): 503; Wilkins-Ellert (2006): 9-10.

In Gabon: 200-325 m alt.

Map on p. 387.

**L. guineensis** (G. Don) C. Jeffrey; Sosef & al., l.c. – Icon.: Lisowski, o.c.: fig. 186; Ndukwu & Obute, o.c.: 755; Wilkins-Ellert (2006): 10 (seeds).

Map on p. 387.

**L. siceraria** (Molina) Standley; Sosef & al., l.c.; Figueiredo & Smith, l.c. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 185, 2009; Akoegninou & al., Fl. anal. Bénin: 527, 2006. Other figures are shown by the authors cited above under the genus.

A wild plant was discovered in SE-most Zimbabwe by Wilkins-Ellert in March 1992. She then found gourds hanging high up in a tree in *Colophospermum mopane* woodland near a dry stream bed in Gonarezhou Natl. Park.

This plant is pan-tropical. Archaeological remains have been discovered in America, Africa and Asia. It is one of the earliest plants to have been domesticated for human use (perhaps by Pleistocene humans), that ranges from food to medicine, as well as diverse utensils such as music instruments, boxes, containers or fishing floats. Humans have used this plant for at least 10,000 years. Archaeological studies have shown that it was present in East Asia 9,000 to 8,000 years before present (B.P.), and also that it was domesticated in the New World by 10,000 B.P., with a wide distribution in the Americas by 10,000 B.P. However, wild plants had not yet been found on any continent. – The seeds and fruits from the wild population in Zimbabwe share characteristics with both *L. sphaerica* and *L. siceraria*, as well as possessing unique traits. Fertile hybrids between these species have been produced. As to the fruit of cultivated *L. siceraria* its form is often manipulated during the growing season by binding or restricting parts to ensure desired shapes. Thus the fruit has little resemblance to the round ones of the wild species. In addition *L. siceraria* is annual, the others perennial with tuberous roots.

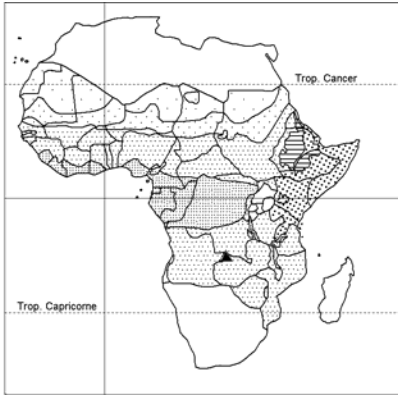
The African native *L. siceraria* probably reached Asia and America “as a wild species whose fruits had floated across the seas. Independent domestications from wild populations are believed to have occurred in both the Old and New Worlds”. Fuller & al. (2010) suggest that the bottle gourd was spread by human propagation from Africa to Asia at an early Pleistocene period, and that bottle gourds were carried from East Asia to America (presumably via the Bering Straits) in prehistory. Recent genetic studies suggest that bottle gourds of the New World represent a subset of genetic variation derived from bottle gourds in Eastern Asia.

Map on p. 387.

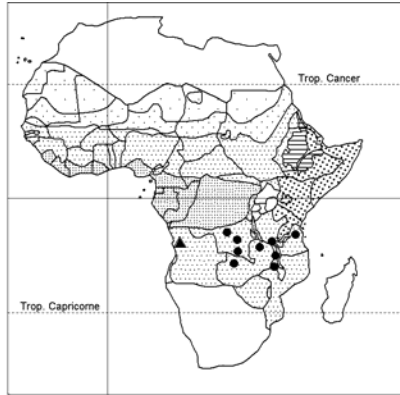
**LUFFA** (Volume 1: 458-459)

**Luffa cylindrica** (L.) M. J. Roem., incl. var. *triangularis* Cogn.; Figueiredo & Smith, Pl. Angola: 65, 2008; Akoegninou & al., Fl. anal. Bénin: 526, 2006; Lisowski, Fl. Rép. Guinée 1: 147, 2009 (sub nom. *L. aegyptiaca*).

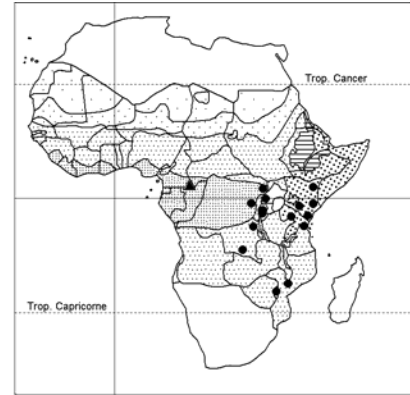
Map on p. 387.



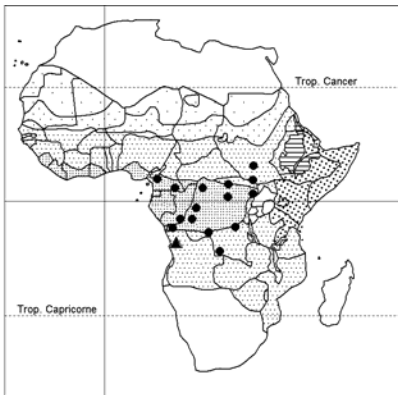
*Cucumis zambianus*



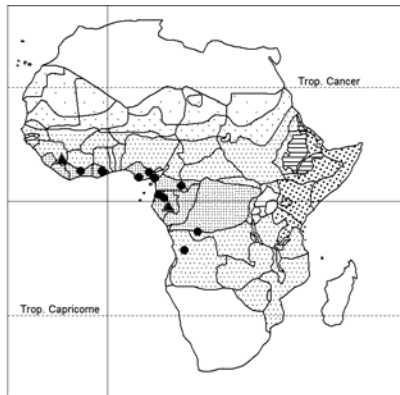
*Diplocyclos decipiens*



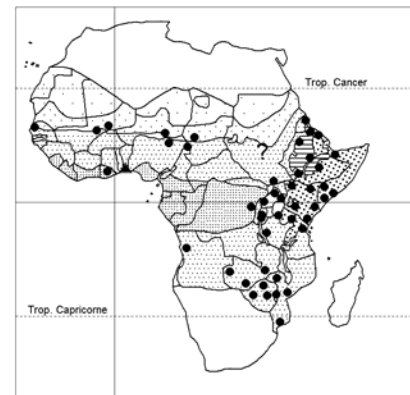
*Diplocyclos palmatus*



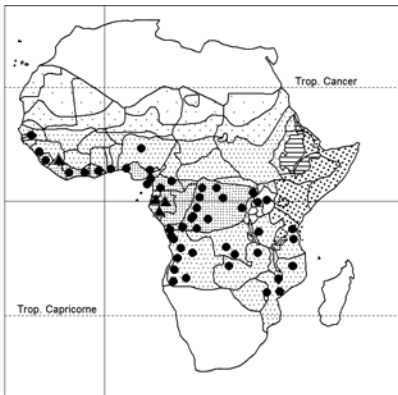
*Eureiandra formosa*



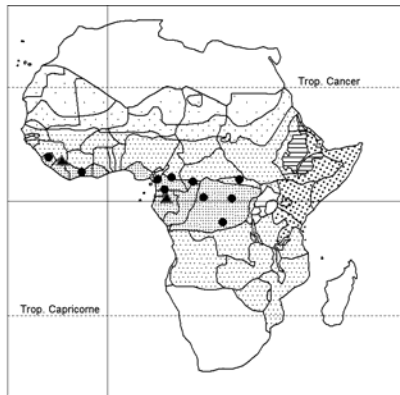
*Gerrardanthus paniculatus*



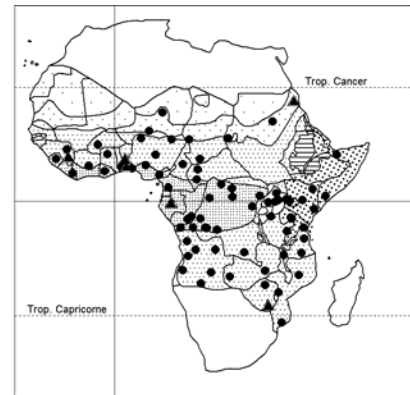
*Kedrostis foetidissima*



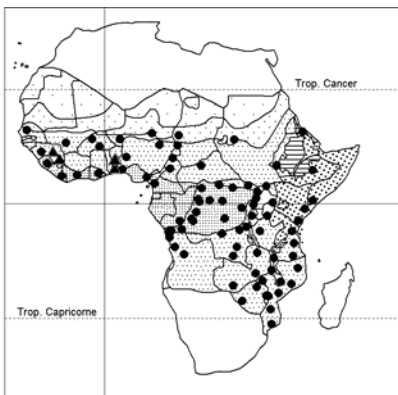
*Lagenaria brevipflora*



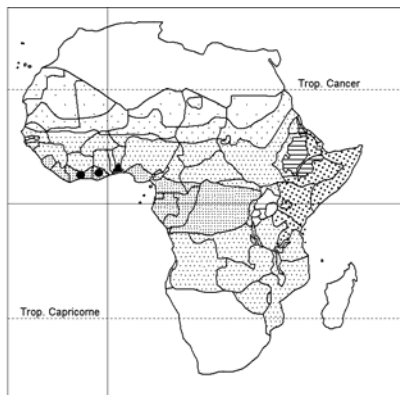
*Lagenaria guineensis*



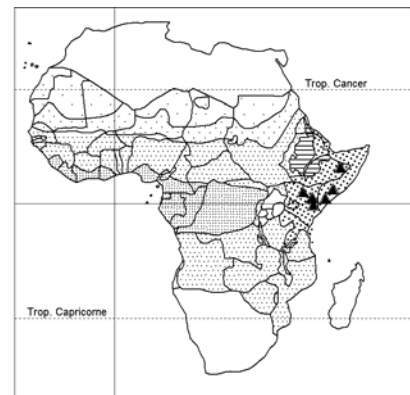
*Lagenaria siceraria*



*Luffa cylindrica*



*Momordica angustisepala*



*Momordica argillicola*

*(MICROLAGENARIA)*

*Microlagenaria africana* (C. Jeffrey) A. M. Lu & J. Q. Li (Acta Phytotax. Sin. 31: 52, 1993) = **Thladiantha**

**MOMORDICA** (Volume 1: 458-465) / 40  
(former account: 38)

SCHAEFER, H. (2005). The biography of Momordica. *Cucurbit Network News* 12/1: 5.

**Momordica angustisepala** Harms; Akoegninou & al., Fl. anal. Bénin: 529, 2006.

Map on p. 387.

**M. argillicola** Thulin – Icon.: Kew Bull. 64: 488, 2009.

syn.: *M. boivinii* sensu Jeffrey in Fl. Trop. E. Afr., Cucurbitaceae: 34, 1967, p.p., quoad specim. Adamson 353 in Bally 5847 et in herb. Kew Adamson 375 in Bally 7368; et sensu Jeffrey & Thulin in Fl. Somal. 1: 234, 1993; et sensu Lebrun & Stork, Trop. Afr. Flow. Pl. 1: 460/459, 2003, p.p.

Trailing or climbing herb with annual stems to ± 1 m long, monoecious; rootstock perennial; stems longitudinally ribbed, sparsely to densely pubescent, hairs spreading; leaves ± round to reniform in outline, 2-9 × 2,5-11 cm, shallowly 5-lobed; tendrils simple; male flowers orange with dark (or white) centre, 1-3, on peduncle 3-7 cm long; petals 2,5-3,5 cm long; female ones yellow, solitary or sometimes in male inflorescences, peduncle 1,5-3 cm long, ovary fusiform, ribbed ± pubescent; fruit fusiform, fleshy, beaked, 3-5 × ±1 cm, longitudinally 8-ribbed, ± pubescent, many-seeded; seeds with rugose appendage at one end.

Open plains or bushland on silty or clayey alluvial soils; 60-900 m alt. – Widespread.

Related to *M. cymbalaria*. Differs from *M. boivinii* by the many-seeded fruit (not up to 4-seeded) and the rugose-appendaged seeds at one end only (not at both ends).

Map on p. 387.

**M. balsamina** L.; Figueiredo & Smith, Pl. Angola: 65, 2008. – Icon.: Akoegninou & al., Fl. anal. Bénin: 529, 2006.

Map on p. 389.

**M. boivinii** Baill.; Thulin, Kew Bull. 64: 487, 489, 2009. excl. specim. Adamson 353 in Bally 5847 in Jeffrey, Fl. Trop. E. Afr., Cucurbitaceae: 34, 1967, et Adamson 375 in Bally in herb. Kew; et excl. Jeffrey & Thulin in Fl. Somal. 1: 234, 1993 (= *M. argillicola*).

Similar to *M. argillicola* but fruit only up to 4-seeded and seeds rugose-appendaged at both ends.

Not in Somalia. (= *M. argillicola*).

Map on p. 389.

**M. cabrae** (Cogn.) C. Jeffrey; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006; Figueiredo & Smith, Pl. Angola: 65, 2008; Akoegninou & al., Fl. anal. Bénin: 530, 2006.

In Gabon: 80-430 m alt.

Map on p. 389.

## MOMORDICA

**M. charantia** L.; Sosef & al., Check-list pl. vascul. Gabon: 133, 2006; Akoegninou & al., Fl. anal. Bénin: 530, 2006; Figueiredo & Smith, Pl. Angola: 65, 2008. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 188, 2009; Candollea 63: 164-165, 154 (map), 2008.

Two varieties were already described, viz. var. *abbreviata* Ser. [also on subspecific level: subsp. *abbreviata* (Ser.) Greb.], and var. *longirostrata* Cogn. A new subspecies is described in Candollea 63: 153-167, 2008: subsp. **macroloba** Achigan-Dako & Blattner, ibid.: 163, distinguished by its not so deeply 3-5-lobed leaves. It occurs in the Dahomey gap and in N Benin and Togo.

BELOIN, N. & al. (2005). Ethnomedicinal uses of *Momordica charantia* (Cucurbitaceae) in Togo and relation to its phytochemistry and biological activity. *J. Ethnopharmacol.* 96: 49-55.

Map on p. 389.

**M. cissoides** Planch. ex Benth.; Sosef & al., l.c.; Akoegninou & al., l.c.; Figueiredo & Smith, l.c.; Harvey & al., Pl. Lebialem Highl., Cameroon: 118, 2010. – Icon.: Lisowski, o.c.: fig. 188.

Map on p. 389.

**M. foetida** Schumach.; Sosef & al., o.c.: 134; Akoegninou & al., l.c.; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 124, 2010. – Icon.: Flow. Pl. Africa 60: pl. 2237, p. 114 (map), 2007; Lisowski, o.c.: fig. 189.

Map on p. 389.

**M. gilgiana** Cogn.; Sosef & al., o.c.: 135.

In Gabon: 1000 m alt.

Map on p. 389.

**M. henriquesii** Cogn.; Vollesen in Opera Bot. 59: 28-30, 1980. – Icon.: ibid: 29.

Vollesen describes the mature fruit and the seed, as well as the female flower hitherto unknown.

Female flowers in inflorescences developed as short branches on older woody branches just above ground level; normally a single flower is developed, but rudimentary ones present; mature fruit glabrous, indehiscent, red-orange-brown, 8-11 cm long, 5-7 cm Ø excl. tubercles, these fleshy to 3 cm long, 2,5 cm high; seeds in a white pulp, broadly elliptic, 3 × 2 × 0,5 cm.

Rare, known from very few collections.

Map in Volume 1: 461.

**M. jeffreyana** Keraudren; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006.

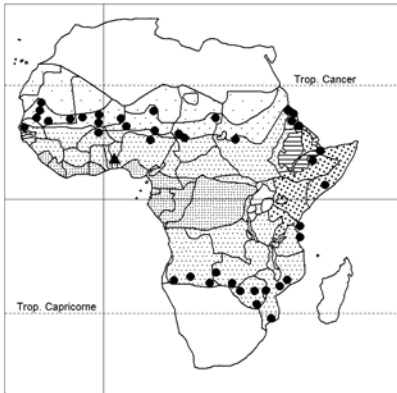
In Gabon: 535 m alt.

Map on p. 389.

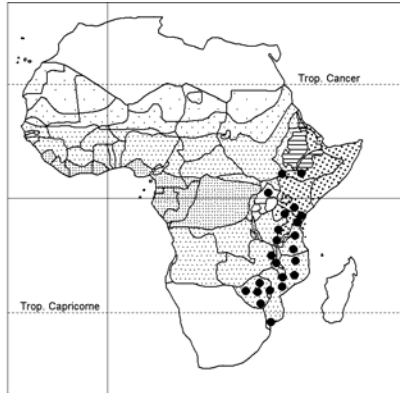
**M. mossambica** H. Schaefer. – Icon.: Nord. J. Bot. 27: 360-361, 2009.

syn.: *M. sp.* A sensu Jeffrey in Fl. Zambes. 4: 429, 1978; *M. aff. calantha* Gilg sensu R. Fernandes in herb. K., specim. Torre & Paiva 9867.

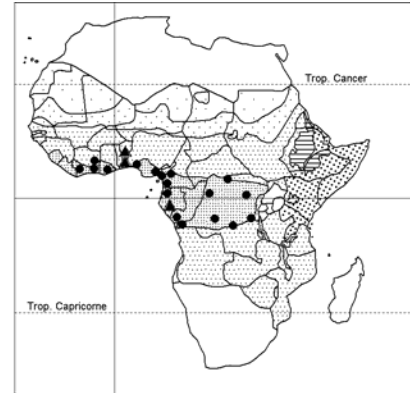
Liane, dioecious with a tuberous rootstock; stems scandent, several m long, sparsely finely pubescent; bark grey; leaves simple, petiolate, blade broadly ovate to ± round in outline, pubescent on veins, scabrid-punctate beneath, palmately 5-7-lobed to below middle, margins sinuate-lobulate, denticulate; male flowers



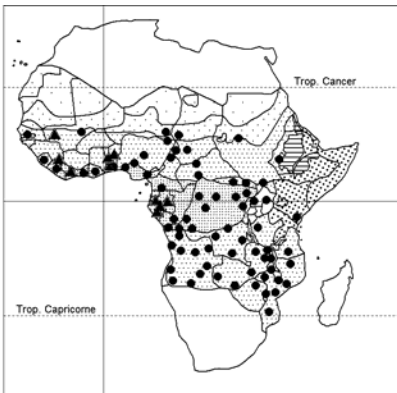
**Momordica balsamina**



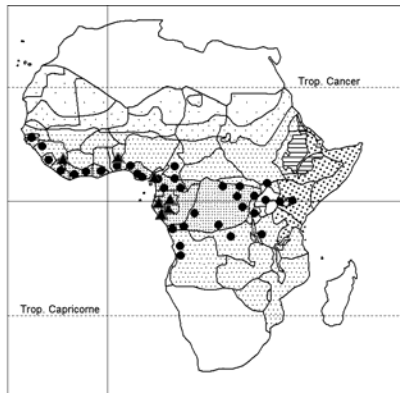
**Momordica boivinii**



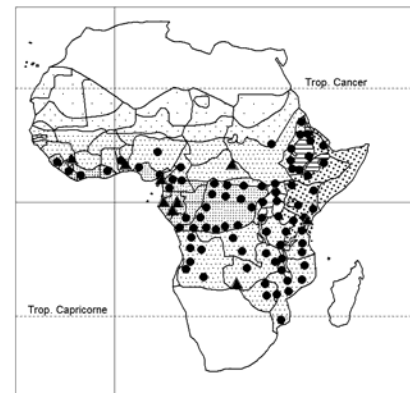
**Momordica cabrae**



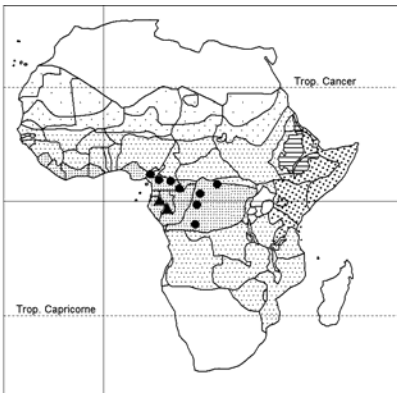
**Momordica charantia**



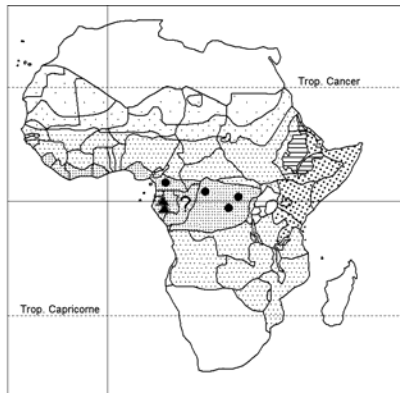
**Momordica cissoides**



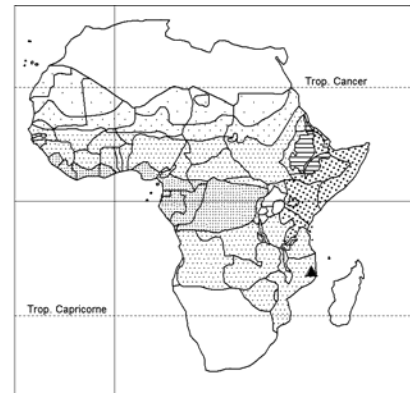
**Momordica foetida**



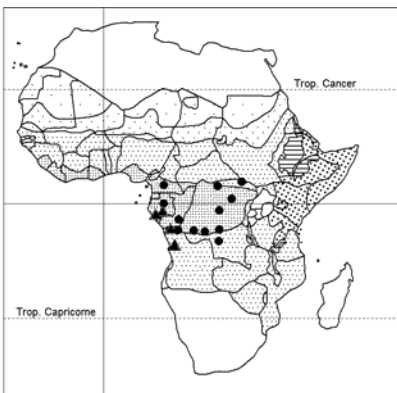
**Momordica gilgiana**



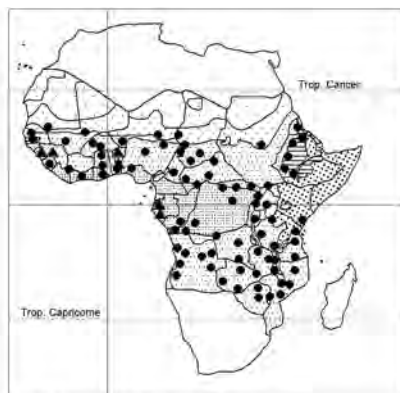
**Momordica jeffreyana**



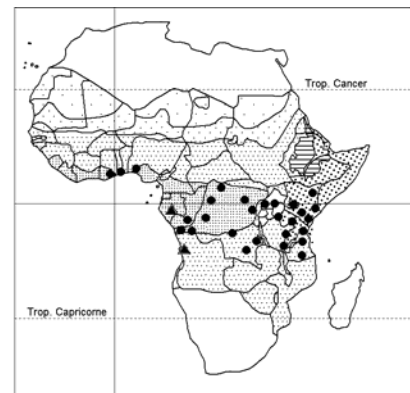
**Momordica mossambica**



**Momordica parvifolia**



**Mukia maderaspatana**



**Peponium vogelii**



## MOMORDICA MOSSAMBICA

20-30 in pedunculate racemes; corolla campanulate, petals 2,5-3 cm long, yellowish-cream with dark brown base; female flower, fruit and seed unknown.

Open *Brachystegia* woodland on red clay soil, among *Panicum* and *Digitaria*; 280 m alt.

Known only from the type collected in 1964.

Map on p. 389.

**M. parvifolia** Cogn.; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006; Figueiredo & Smith, Pl. Angola: 64, 2008.

In Gabon: 350-600 m alt.

Map on p. 389.

**M. rostrata** A. Zimm. – Icon.: Brand, l.c.

BRAND, T. (2006). *Momordica rostrata* – ein ungewöhnliches Kürbisgewächs. *Kakteen & Sukk.* 57: 248-250 [plants in cultivation].

Map in Volume 1: 465.

## MUKIA (Volume 1: 464-465)

Now put into synonymy under **Cucumis**.

GHEBRETINSAE, A. G. & al. (2007). See above under **Cucumis**.

GHEBRETINSAE, A. G. & al. (2007). See above under **Cucumella**.

SCHAEFER, H. (2007). See above under **Cucumella**.

**Mukia maderaspatana** (L.) M. J. Roem.; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006; Figueiredo & Smith, Pl. Angola: 65, 2008. – Icon.: Lisowski, Fl. Rép. Guinée 2: fig. 190, 2009; Akoegninou & al., Fl. analyt. Bénin: 531, 2006.

bas.: *Cucumis maderaspatanus* L.

Map on p. 389.

## MYRMEKOSICYOS (Volume 1: 464-465)

Recently put into synonymy under **Cucumis**.

GHEBRETINSAE, A. G. & al. (2007). Nomenclatural changes in *Cucumis* (Cucurbitaceae). *Novon* 17: 176-178.

SCHAEFER, H. (2007). See above under **Cucumella**.

*Cucumis messorius* (C. Jeffrey) Ghebretinsae & Thulin, priority over H. Schaefer. = **Myrmekosicyos messorius** C. Jeffrey.

Map in Volume 1: 465.

## OREOSYCE (Volume 1: 464-465)

Recently put into synonymy under **Cucumis**. For References, see above under **Myrmekosicyos**.

*Cucumis oreosyce* H. Schaefer, nom. nov.; replaced synonym: **Oreosyce africana** Hook. f., non *Cucumis africanus* L. f.

Map in Volume 1: 465.

*Oreosyce kelleri* Cogn. = *Cucumis kelleri* (Cogn.) Ghebretinsae & Thulin, priority over H. Schaefer. = **Cucumella kelleri** (Cogn.) C. Jeffrey

## PEPONIUM (Volume 1: 464-466)

BODINE, S. A. & Z. S. ROGERS (2010). *Peponium*: an interesting genus of Cucurbitaceae from Africa, Madagascar, and the Seychelles. *Scripta Bot. Belg.* 46 (AETFAT XIX, Madagascar, 2010): 92.

**Peponium vogelii** (Hook. f.) Engl.; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006; Akoegninou & al., Fl. anal. Bénin: 531, 2006; Figueiredo & Smith, Pl. Angola: 66, 2008.

Map on p. 389.

## RUTHALICIA (Volume 1: 466-467)

**Ruthalicia longipes** (Hook. f.) C. Jeffrey; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006; Bongers & al., Forest climbing plants of West Africa: 25 (map), 2005.

In Gabon: 10-500 m alt.

Map on p. 391.

## TELFAIRIA (Volume 1: 466-467)

**Telfairia occidentalis** Hook. f.; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006; Akoegninou & al., Fl. anal. Bénin: 531, 2006; Figueiredo & Smith, Pl. Angola: 66, 2008.

Map on p. 391.

## THLADIANTHA (Volume 1: 466-467)

**Thladiantha africana** C. Jeffrey; Jeffrey & de Wilde, A review of the subtribe Thladianthinae (Cucurbitaceae); in *Bot. Žurn.* 91: 770-771, 2006.

syn.: *Micrologenaria africana* (C. Jeffrey) A. M. Lu & J. Q. Li

Map in Volume 1: 467.

## TROCHOMERIA (Volume 1: 466, 468-469)

Insufficiently known species:

**Trochomeria baumiana** Gilg; Engler Pflanzenreich 4/275/2: 187, 1924; Figueiredo & Smith, Pl. Angola: 66, 2008; Bothalia 39: 194, 2009 (Baum, Kunene-Sambesi-Exp.).

Trailing herb, dioecious; stems slightly scabrid hairy, to 2 m long; leaves ovate to ± round in outline, palmately 5-partite to the base, segments lanceolate-linear, margins (dentate-)ciliate; flowers single on filiform peduncles 3-3,5 cm long, without bracts; sepals minute, petals greenish-yellow, acute, ± 1,5 cm long, fruit unknown.

River bank on sandy soil; 1100 m alt.

Known only from the type collected in 1899 (B, destroyed).

In S Angola: Kubango River. Not mapped.

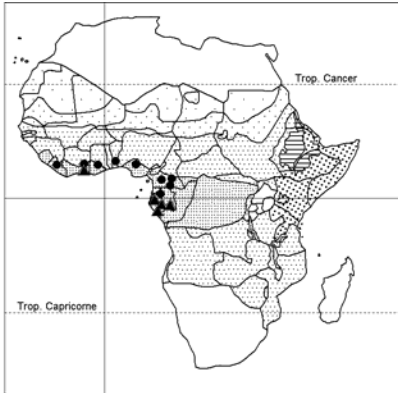
**T. teixeirae** R. Fern. & A. Fern.; Figueiredo & Smith, l.c. – Icon.: Bol. Soc. Brot., Sér. 2, 43: pl. 2 after p. 309, 1969; Consp. Fl. Angol. 4: pl. 33, 1970.

Treated by us (Tropical African Flowering Plants, Volume 1: 468, 2003) as a synonym under **T. polymorpha** (Welw.) Cogn., but maintained as a distinct species by Figueiredo & Smith, l.c.

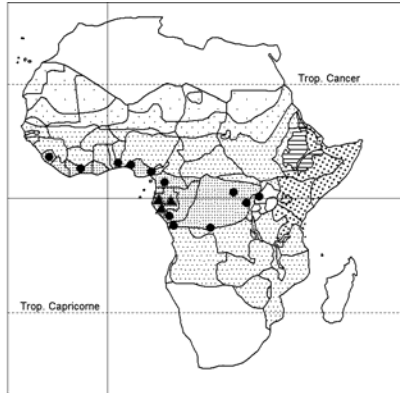
In C Angola: Bié, Andulo; 1650 m alt.

Known only from the type collected in 1965.

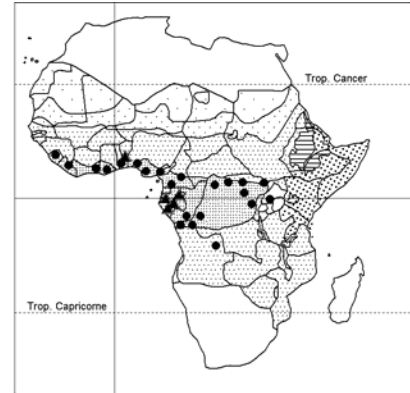
Map for *T. polymorpha* in Volume 1: 469.



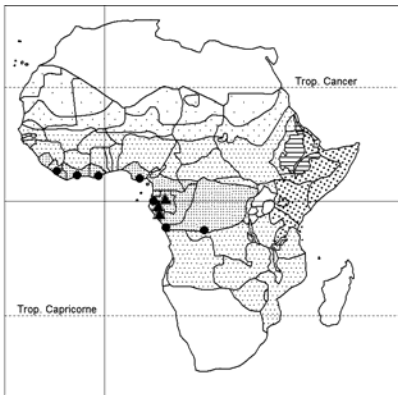
*Ruthalicia longipes*



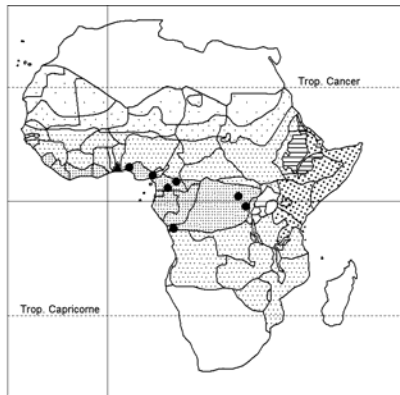
*Telfairia occidentalis*



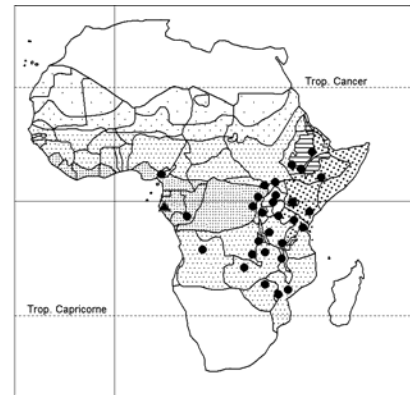
*Zehneria capillacea*



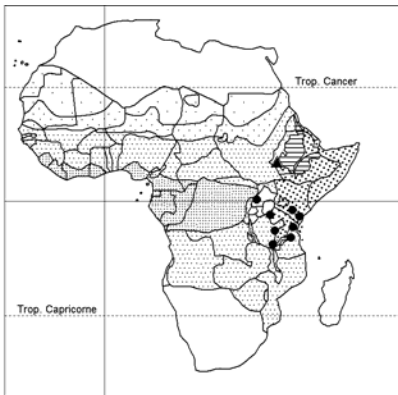
*Zehneria gillettii*



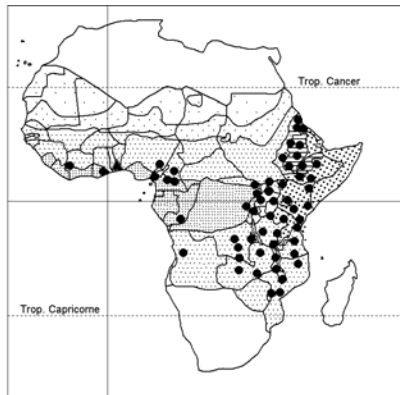
*Zehneria keayana*



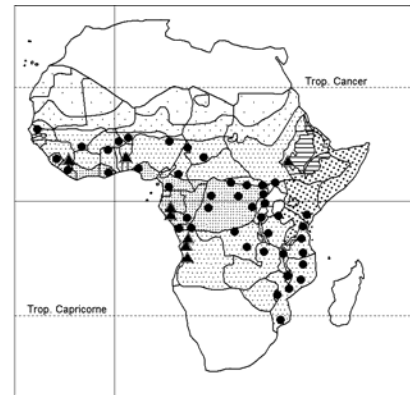
*Zehneria minutiflora*



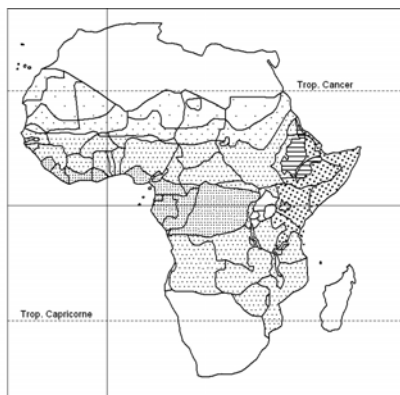
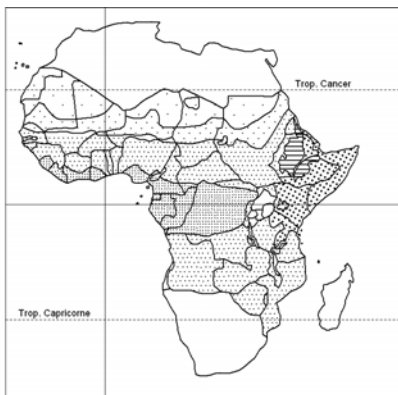
*Zehneria oligosperma*



*Zehneria scabra*



*Zehneria thwaitesii*



**ZEHNERIA** (Volume 1: 468-471)

HAM, R. VAN DER & K. PRUESAPAN (2006). Pollen morphology of *Zehneria* s.l. (Cucurbitaceae). *Grana* 46: 241-248.

WILDE, W. J. J. O. DE & B. E. E. DUYFJES (2006). Redefinition of *Zehneria* and four new related genera (Cucurbitaceae), with an enumeration of the Australasian and Pacific species. *Blumea* 51: 1-88.

***Zehneria capillacea*** (Schumach. & Thonn.) C. Jeffrey; Sosef & al., Check-list pl. vascul. Gabon: 134, 2006; Akoegninou & al., Fl. anal. Bénin: 533, 2006; Figueiredo & Smith, Pl. Angola: 66, 2008.

Regarding two W Ethiopian lowland gatherings, cf. below under ***Z. thwaitesii***.

Map on p. 391.

***Z. gillettii*** (De Wild.) C. Jeffrey; Sosef & al., l.c.

In Gabon: 2-5 m alt.

Map on p. 391.

***Z. keayana*** R. Fern. & A. Fern.; Akoegninou & al., Fl. anal. Bénin: 534-535, 2006; Figueiredo & Smith, l.c.

Map on p. 391.

***Z. minutiflora*** (Cogn.) C. Jeffrey; Sosef & al., l.c.; Figueiredo & Smith, l.c.

Map on p. 391.

***Z. oligosperma*** C. Jeffrey; Fl. Eth. & Eritrea 2/1: 451, 2000; idem 1: 208, 2009.

Map on p. 391.

## ZEHNERIA

***Z. peneyana*** (Naud.) Aschers. & Schweinf.

Flora of Ethiopia & Eritrea 2/1: 452, 2000, and idem 1: 208, 2009, report two records from the W lowlands of Ethiopia of a climbing *Zehneria* growing in riverine vegetation at 500 and 550 m alt., respectively (Ilubabor region, IL.). Complete male inflorescences and flowers are lacking. These specimens could represent *Z. peneyana* occurring in the Sudd in Sudan. Or they could represent *Z. capillacea*. – Cf. maps in Volume 1: 471, and in the present Volume: 391.

***Z. scabra*** (L. f.) Sond.; Akoegninou & al., o.c.: 534; Figueiredo & Smith, l.c.; Cheek & al., Plants of Dom, Bamenda Highl., Cameroon: 125, 2010; Harvey & al., Pl. Lebialem Highl., Cameroon: 118, 2010.

Similar to *Z. somalensis* Thulin but dioecious and leaves distinctly palmately lobed (*Z. scabra* monoecious).

Map on p. 391.

***Z. thwaitesii*** (Schweinf.) C. Jeffrey; Fl. Eth. & Eritrea 2/1: 451-452, 2000; idem 1: 208, 2009; Sosef & al., l.c.; Figueiredo & Smith, l.c.; Akoegninou & al., l.c.; Lisowski, Fl. Rép. Guinée 1: 149, 2009.

Map on p. 391.

## INDEX TO FAMILIES AND GENERA

This Index only gives reference to current names of families and genera used in the text (not on the maps which are in turn placed as closely as possible to the matching descriptions). Synonyms are sometimes cited (printed in *italics*).

However, many synonyms, but perhaps not all, families and genera figure in the Cumulative Index "Énumération des plantes à fleurs d'Afrique tropicale" present at the end of the forth volume (1997: pp. 678-712). Readers are invited to consult that index.

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