

# TROPICAL AFRICAN FLOWERING PLANTS

Ecology and Distribution

Vol. 2 – Euphorbiaceae - Dichapetalaceae



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

Conservatoire  
et Jardin botaniques  
de la Ville de Genève  
2006





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VOLUME 2: EUPHORBIACEAE – DICHAPETALACEAE

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At the time of a change of Director at the Conservatoire et Jardin botaniques de la Ville de Genève, we have great pleasure in dedicating this volume to Professor Rodolphe Spichiger on his retirement, with appreciation for continuing the superb support given to us by Professor Miège in his time.

*A l'occasion d'une succession directoriale aux Conservatoire et Jardin botaniques de la Ville de Genève, nous tenons à dédier ce volume à Monsieur le Directeur honoraire Rodolphe Spichiger, qui sut si bien être le continuateur du superbe soutien, qu'en son temps, nous avait accordé un de ses prédécesseurs, le Professeur Jacques Miège.*



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JEAN-PIERRE LEBRUN – ADÉLAÏDE L. STORK

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VILLE DE GENÈVE

ÉDITIONS DES CONSERVATOIRE ET JARDIN BOTANIKUES

Genève, le 11 octobre 2006

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Cover page illustration: *Rosa xrichardii* Rehd. (photograph: A. L. Stork).

Back cover illustration: *Croton lobatus* L. Nicolaas Meerburgh, "Plantae rariores vivis coloribus depictae...": pl. 9. Lugduni Batavorum [Leiden] 1789. [*Papilio (Demophon) alis dentatis: supra fascia viridi subtus griseo marmoratis*. Linn. Syst. Nat. 753.]. "Cette plante croît dans les royaumes d'Oware et de Benin. Elle est remarquable par l'involucre de ses fleurs femelles profondément divisée en cinq portions égales, par ses trois styles surmontés chacun de cinq stigmates, et par ses feuilles dont les supérieures sont à trois lobes et les inférieures à cinq. Elle aurait été mieux nommée HÉTÉROPHYLLÉ..." (A. M. F. J. Palisot-Beauvois, "Flore d'Oware et de Benin, en Afrique": p. 59. and pl. 36. Paris 1804).

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### CONTENTS

Acknowledgements.....	7
New combinations.....	8
I. Introduction.....	9
II. Bibliography.....	10
III. Statistical summary.....	11
IV. List of families included in Volume 2.....	12
V. How to use this book.....	12
VI. The Checklist: Euphorbiaceae – Dichapetalaceae.....	15
Index to families and genera.....	305





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## ACKNOWLEDGEMENTS

Since we published Volume 1, we have had a new system to compile the text. A multidisciplinary group in the Conservatoire botanique very kindly devised the computer program. We extend our sincere thanks to them, viz. Drs. L. Gautier and C. Chatelain, Mr. P. Perret and Mr. M. Ottone, as well as to Mrs. P. Mériçout (Créteil) who has been associated with the team. We also extend our thanks to Mrs. V. Compagnon, who has assisted us in all sorts of practical ways.

As almost inevitably tends to happen with new computer systems, unexpected problems arose. These were solved thanks to Mr. P. Perret, Head of the Library and Editor of publications, who acted like a spider in his web, dealing promptly with the

difficulties as they arose. To him and to Dr. C. Chatelain in particular, we express our special gratitude. We are also indebted to the library staff, always ready to help with technical assistance, and last but not least, to the Director, Professor R. Spichiger, for providing us with the facilities to work at the Conservatoire botanique of Genève.

We extend our thanks to Dr. and Mrs. R. M. Polhill (Kew), who have kindly checked the main English texts.

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**New combinations**

*Euphorbiaceae*

<b>Dalechampia parvifolia</b> var. <b>natalensis</b> (Müll. Arg.) J.-P. Lebrun & Stork.....	57
<b>Sebastiania acetosella</b> var. <b>elatus</b> (Radcl.-Sm.) J.-P. Lebrun & Stork .....	224
<b>Sebastiania acetosella</b> var. <b>lineare</b> (J. Léonard) J.-P. Lebrun & Stork .....	224



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## I. INTRODUCTION

“Paradoxically, we are not limited by lack of knowledge,  
but by our failure to synthesize and distribute what we know.”

(S. L. Pimm & al., Science 293: 2208, 2001)

This volume includes one of the largest families of flowering plants in tropical Africa, viz. *Euphorbiaceae*.

In general it follows the rules outlined for the first volume. However, due to the horticultural interest of certain genera of *Euphorbiaceae* and to the exceptional morphological variation of these plants, we have opted for an elaborate description of the species listed under *Euphorbia* and *Monadenium*. These descriptions are mostly taken from current floras cited in our “*Énumération*”, Vol. 1: 26-27, 30 (1991), and at the beginning of the first and the present volume of this new series. Their sources

are, however, not explicitly acknowledged. We are quite aware of the fact that these descriptions do not allow determination of the species, but they may be helpful in checking the presumed identity of a particular specimen. When appropriate there is also a note about presence in cultivation and its potential.

We want to draw attention to the fact that the basic map has been slightly modified. The Sahelian-Sudano-Zambeian zone (zone B in Fig. 1) is now split into two parts, the northern area corresponding to F. White’s “Sahel regional transition zone” (see p. 13).

## II. BIBLIOGRAPHY

In addition to the general Floras and catalogues in the list of abbreviations found at the beginning of each of the four volumes of our "Énumération" (1991-1997) and under "Bibliography" in volume 1 of this new series (2003), the following recent works and articles have been consulted:

- BAMPS, P. & J. DEGREEF (2003). Répertoire des familles de phanérogames traitées dans les principales Flores de l'Afrique tropicale, 5<sup>e</sup> édition – Catalogue of the families of phanerogams dealt with in the main floras of tropical Africa, 5th edition. *Syst. Geogr. Pl.* 73: 101-132.
- BONGERS, F. & al., Eds. (2005). *Forest Climbing Plants of West Africa: Diversity, ecology and management*. CABI Publishing, Wallingford & Cambridge. 273 pp.
- BOULVERT, Y. (2003). *Carte morphopédologique de la République de Guinée. Documents phytogéographiques guinéens avec 52 cartes à 1:4 000 000. Annexe 3. (Cartes et Notices 114)* Institut de recherche pour le développement, Paris. 234 pp.
- CHEEK, M. & al. (2004). *The plants of Kupe, Mwanenguba and the Bakossi Mountains, Cameroon – A conservation checklist – with introductory chapters ...* Royal Botanic Gardens, Kew. IV + 508 pp.
- COATES PALGRAVE, M. (2002). *Trees of Southern Africa. New edition revised and updated (= 3rd edition)*. Struik Publishers, Cape Town. 1212 pp.
- FRIIS, I. & K. VOLLESEN (2005). Flora of the Sudan-Uganda border area east of the Nile II. Catalogue of vascular plants, 2nd part, vegetation and phytogeography. *Biol. Skrifter* 51 (2): 399-855.
- GERMISHUIZEN, G. & N. L. MEYER, Eds. (2003). Plants of southern Africa: An annotated checklist. *Strelitzia* 14. VI + 1231 pp.
- GRANT, R. & al. (2000). *Sappi tree spotting: Bushveld. Including Pilanesberg & Magaliesberg. The identification made easy*. Ed. 2. Jacana, Johannesburg. XII + 428 pp.
- GRANT, R. & al. (2001). *Idem: Lowveld. Including Kruger National Park. The identification made easy*. Jacana, Johannesburg. X + 350 pp.
- GRUBBEN, G. J. H. & O. A. DENTON, Eds. (2004). *Ressources végétales de l'Afrique tropicale 2. Légumes*. (Traduction de: Plant Resources of Tropical Africa 2. Vegetables. 2004.) Fondation PROTA, Wageningen/Backhuis Publishers, Leiden/CTA, Wageningen. 737 pp.
- HARVEY, Y. & al. (2004). *The plants of Bali Ngemba Forest Reserve, Cameroon – A conservation checklist*. Royal Botanic Gardens, Kew. IV + 154 pp.
- KILIAN, N. & al. (2004). Further notes on the flora of the southern coastal mountains of Yemen. *Willdenowia* 34: 159-182.
- KRISKA, M. A. (2001). *Contribution à l'inventaire chorologique des biogéocénoses de l'Air et du Tamesna nigérien*. (Mémoire de diplôme EPHE du 30 novembre 1999) Ecole pratique des hautes études, Sciences de la Vie et de la Terre. Mémoire et Travaux de l'Institut de Montpellier 24. XII + 132 pp. + 191 maps of plants and 177 maps of animals.
- LUKE, Q. (2005). Annotated checklist of the plants of the Shimba Hills, Kwale District, Kenya. *J. E. Afric. Nat. Hist.* 94: 5-120.
- MAPAURA, A. & J. TIMBERLAKE (2004). A checklist of Zimbabwean vascular plants. *SABONET Rep.* 33. VI + 148 pp.
- MAUNDU, P. M. & al. (1999). *Traditional Food Plants of Kenya*. National Museums of Kenya, Nairobi. X + 270 pp.
- OYEN, L. P. A. & R. H. M. J. LEMMENS, Eds. (2002). *Ressources végétales de l'Afrique tropicale. Précurseur*. [Traduction de: Plant Resources of Tropical Africa. Precursor. 2002.] Programme PROTA, Wageningen.
- PHIRI, P. S. M. (2005). A checklist of Zambian vascular plants. *SABONET Rep.* 32. XII + 169 pp.
- POORTER, L. & al., Eds. (2004). *Biodiversity of West African Forests. An Ecological Atlas of Woody Plant Species*. CABI Publishing, Oxon. 521 pp.
- RUSSO, L., Ed. (2004). *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. I.O.S., Regione Piemonte, Comune di Verbania. Roma. 301 pp.
- SETSHOGO, M. P. & F. VENTER (2003). *Trees of Botswana: Names and Distribution*. SABONET (Report N°. 18), Pretoria & University of Botswana Herbarium, Gaborone.
- SILVA, M. Calane da (2004). A preliminary checklist of the vascular plants of Mozambique. *SABONET Rep.* 30. VIII + 183 pp.
- SMITH, P. & Q. ALLEN (2004). *Field Guide to the Trees and Shrubs of the Miombo Woodlands*. The Board of Trustees of the Royal Botanic Gardens, Kew. 176 pp.
- THOMAS, V. & R. GRANT (2004). *Sappi tree spotting: Kwa-Zulu-Natal and Eastern Cape*. Jacana Media (Pty) Ltd, Johannesburg. 316 pp.

\* \* \*

The following works can be used to identify a plant to family:

GOLDBERG, A. (2003). Character Variation in Angiosperm Families. *Contr. U. S. Natl. Herb.* 47: 1-185 [treating 100 characters and some ecological and geographical traits in table form for each family].

KELLER, R. (2004). *Identification of tropical woody plants in the absence of flowers. A field guide (2nd edition)*. Birkhäuser Verlag, Basel, etc. XII + 294 pp. + numerous colour plates.

### III. STATISTICAL SUMMARY

The present volume covers 6 families, including 123 (+1) genera and 1551 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 1551 species, Table 1 shows the following results (figures within brackets indicate uncertain data):

- 4 (+5?) species ( $\leq 0,3\%$ ) without known habit;
- 6 (+3?) species ( $\leq 0,4\%$ ) for which flowers are unknown;
- 36 (+6?) species ( $\leq 2,3\%$ ) for which male flowers are not known;

- 62 (+2) species ( $\leq 4\%$ ) without female flowers recorded;
- 155 (+3?) species ( $\geq 10\%$ ) for which fruits have not been seen;
- 83 (+2?) species ( $= 5,3\%$ ) without records on their ecology;
- 119 (+10+15?) species ( $\leq 8\%$ ) 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 2 (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
Chryso	9	61					9	2	2 (+1)
Dichap	2	98					16		11 (?)
Euphor	98 (+1)	1329	3 (+5)	6 (+3)	36 (+6)	62 (+2)	130 (+3?)	81 (+2?)	104 (+9+15?)
Neurad	1	1							
Pandac	2	10							
Rosace	11	52	1						2
6	123 (+1)	1551	4 (+5) $\leq 0,3\%$	6 (+3) $\leq 0,4\%$	36 (+6) $\leq 2,3\%$	62 (+2) $\leq 4\%$	155 (+3) $\geq 10\%$	83 (+2) $\geq 5,3\%$	119 (+25) $\leq 8\%$

Chryso: no ripe fruit 1.

Euphor: no ripe fruit 17; no seeds 85 (+1); no ripe seeds 29.



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## IV. LIST OF FAMILIES INCLUDED IN VOLUME 2

- Chrysobalanaceae (p. 254)  
Dichapetalaceae (p. 282)  
Euphorbiaceae (p. 16)  
(Hymenocardiaceae – see Euphorbiaceae)  
Neuradaceae (p. 282)  
Pandaceae (p. 252)  
Rosaceae (p. 270)

## 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-Zambeziian zone:
  - Ba. Sahel regional transition zone [corresponding to White's zone XVI];
  - Bb. Sudano-Zambeziian zone [corresponding to the following phytochoria of White: III (Sudanian regional centre of endemism), XI (Guinea-Congolia/Sudania regional transition zone); X (Guinea-Congolia/Zambezia regional transition zone); II (Zambeziian 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)].

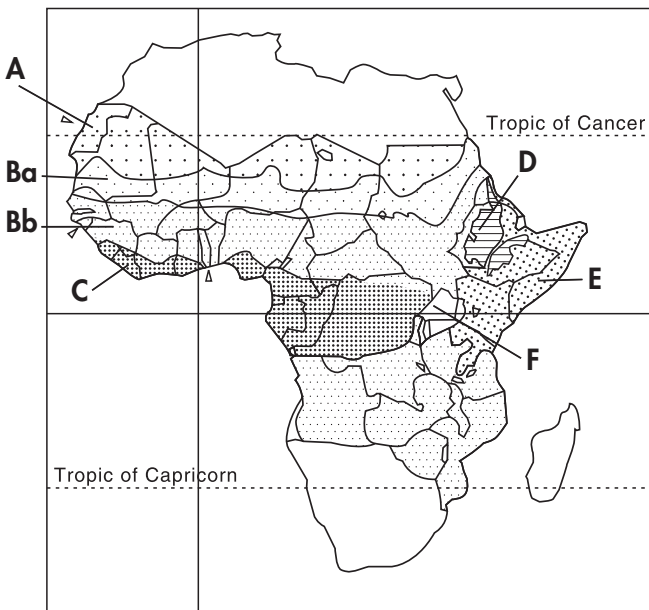


Fig. 1. – Main phytogeographical zones of tropical Africa used in the present work. For zones A through F, see explanations in the text.

- E. Somalia-Masai/Afroriental 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 indicate, 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 Rwanda-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).

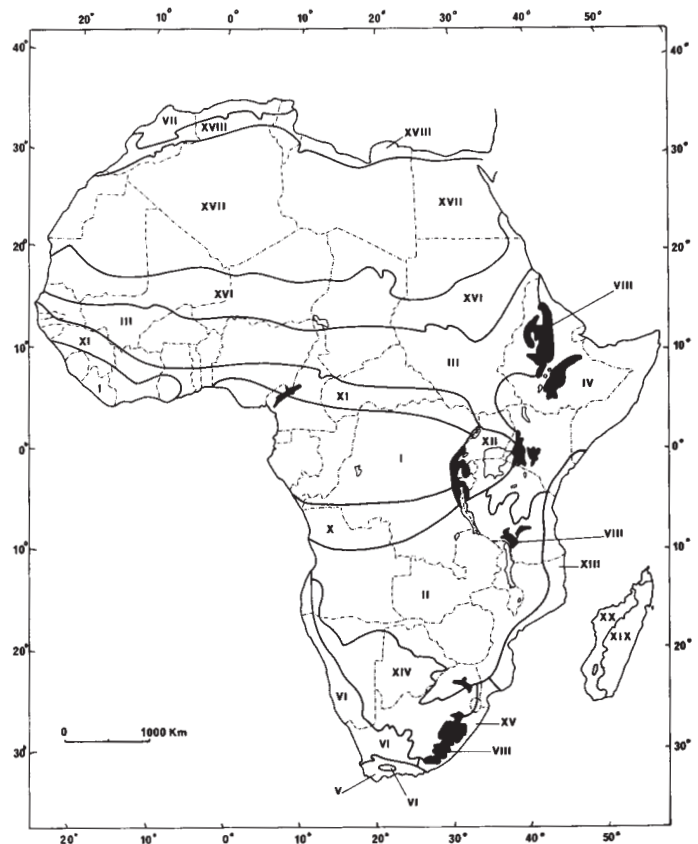


Fig. 2. – Main phytochoria of F. White (1983): p. 38 (cf. quotations in the text). See also "Énumération", vol. 1: pp. 24-25 (1991).

#### BASIC REFERENCE

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





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VI. THE CHECKLIST: Euphorbiaceae – Dichapetalaceae

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**EUPHORBIACEAE / 98 (+1) g. / 1329 (+6 ?) spp.**(incl. *Hymenocardiaceae*, *Phyllanthaceae*, *Picrodendraceae*)

“The Euphorbiaceae is one of the largest families of angiosperms with about 8000 species in more than 300 genera... and is known as a taxonomically and systematically poorly studied family because of its mainly tropical distribution and minute flowers” (T. Kurosawa, *Acta Phytotax. Geobot.* 52: 11, 2001).

- BRETELIER, F. J. (2005). *Novitates Gabonenses* 55. Manuscript names and drawings of French botanist Louis Pierre (1833-1905): a discussion about their validity with some examples of nomenclatural consequences for Gabonese flora in particular. *Adansonia, Sér.* 3, 27: 325-335.
- CARTER, S. (2002). Euphorbiaceae. In: EGGLI, U., Ed., *Illustrated Handbook of Succulent Plants: Dicotyledons*: 99-230. Springer, Berlin, etc. XVIII + 545 pp. + LXIV coul. pl.
- FAQI, A. S. & al. (1998). The native Euphorbiaceae used in traditional African medicine. *Quad. Bot. Ambientale Appl.* 6: 83-103 (1995).
- GOVAERTS, R., D. G. FRODIN & A. RADCLIFFE-SMITH (2000). *World Checklist and Bibliography of Euphorbiaceae 1-4 (with Pandaceae)*. –1: *Introduction, Euphorbiaceae: general references, Euphorbiaceae: Aalius-Crossophora*. X pp. + p. 1-415. –2: *Euphorbiaceae: Croton-Excoecariopsis*. VIII pp. + p. 417-921. –3: *Euphorbiaceae: Fahrenheitia-Oxydectes*. IX pp. + p. 923-1232. –4: *Euphorbiaceae: Pachystemon-Zygospermum. Pandaceae. Summaries and Addendum*. X pp. + p. 1233-1621. Royal Botanic Gardens, Kew.
- KLUCKING, E. P. (1997). *Leaf venation patterns 8: Euphorbiaceae Part I: Phyllanthoideae & Oldfieldioideae*. J. Cramer, Berlin & Stuttgart. 93 pp. + 143 plates.
- KLUCKING, E. P. (2003). *Leaf venation patterns 9: Euphorbiaceae Part II: Acalyphoideae, Crotonoideae & Euphorbioideae*. J. Cramer, Berlin & Stuttgart. 131 pp. + 187 plates.
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- NEWTON, L. (1995a). Morphology of succulent Euphorbiaceae (other than Euphorbia). *Ballya* 2(2): 45-46 [*Elaeophorbia, Jatropha, Monadenium, Synadenium*].
- NEWTON, L. (1995b). An update on succulent Euphorbiaceae (other than Euphorbia). *Ballya* 2(2): 47-48 [*Elaeophorbia, Jatropha, Monadenium, Synadenium*].
- NOWICKE, J. W. & al. (1998). Pollen morphology, exine structure and systematics of Acalyphoideae (Euphorbiaceae) Part 1. Tribes Clutieae (Clutia), Pogonophoreae (Pogonophora), Chaetocarpeae (Chaetocarpus, Trigonopleura), Pereae (Pera), Cheiloseae (Cheilosa, Neoscortechinia), Erismantheae pro parte (Erismanthus, Moultonianthus), Dicoelieae (Dicoelia), Galearieae (Galearia, Microdesmis, Panda) and Ampereae (Amperea, Monotaxis). *Rev. Palaeobot. Palynol.* 102: 115-152.
- NOWICKE, J. W. & al. (1999). Pollen morphology, exine structure and systematics of Acalyphoideae (Euphorbiaceae) Part 2. Tribes Agrostistachydeae (Agrostistachys, Pseudagrostistachys, Cyttarantus, Chondrostylis), Chrozophoreae (Speranskia, Caperonia, Philyra, Ditaxis, Argythammia, Chiropetalum, Doryxylon, Sumbaviopsis, Thyrsanthera, Melanolepis, Chrozophora), Caryodendreae (Caryodendron, Discoglyprena, Alchorneopsis), Bernardieae (Bernardia, Necepsia, Paranecepsia, Discocleidon, Adenophaedra) and Pycnocomaeae (Pycnocomma, Droceloncia, Argomuellera, Blumeodendron, Podadenia, Ptychopyxis, Botryophora). *Rev. Palaeobot. Palyn.* 105: 1-62.
- NOWICKE, J. W. & M. TAKAHASHI (2002). Pollen morphology, exine structure and systematics of Acalyphoideae (Euphorbiaceae), Part 4. Tribes Acalyphaeae pro parte (Erythrococca, Claoxyton, Claoxylopsis, Mareya, Mareyopsis, Discoclaoxyton, Micrococca, Amyrea, Lobanilia, Mallotus, Deuteromallotus, Cordemoya, Cococeras, Trewia, Neotrewia, Rockinghamia, Octospermum, Acalypha, Lasiococca, Spathiostemon, Homonoia), Plukenetieae (Haematostemon, Astrococcus, Angostyles, Romanoa, Eleutherostigma, Plukenetia, Vigia, Cnesmone, Megistostigma, Sphaerostylis, Tragiella, Platygyne, Tragia, Acidoton, Pachystylidium, Dalechampia), Omphaleae (Omphalea), and discussion and summary of the complete subfamily. *Rev. Palaeobot. Palynol.* 121: 231-336.

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TOKUOKA, T. & H. TOBE (2001). Ovules and seeds in subfamily Phyllanthoideae (Euphorbiaceae): structure and systematic implications. *J. Plant Res.* 114: 75-92.

TOKUOKA, T. & H. TOBE (2002). Ovules and seeds in Euphorbioideae (Euphorbiaceae): structure and systematic implications. *J. Plant. Res.* 115: 361-374.

WELZEN, P. C. van & W. STUPPY (1999). Phylogenetic considerations of Euphorbiaceae tribe Aleuritideae. *Ann. Missouri Bot. Gard.* 86: 894-903.

WESTRA, L. Y. T. & J. KOEK-NOORMAN (2004). *Wood Atlas of the Euphorbiaceae s.l.* International Association of Wood Anatomists (IAWA Journal Supplement 4), National Herbarium Nederland, Utrecht. 110 pp.

## PERIODICALS:

- *The Euphorbiaceae Study Group Bulletin* published by the Euphorbiaceae Study Group, England (in *Cactus & Succulent Journal U.S.* 71/3: 142, 1999).
- *Malesian Euphorbiaceae Newsletter*. Flora Malesiana Foundation, Rijksherbarium/Hortus Botanicus, Leiden University, P.O. Box 9514, NL-2300 RA Leiden.

\* \* \*

Statistical summary of *Euphorbiaceae* (our lack of knowledge):

- Habit unknown: 3 ( $\leq 1\%$ )
- Base of plant unknown: 2 (*Dalechampia, Euphorbia*) ( $\leq 1\%$ )
- Roots unknown: 1 (*Euphorbia*) ( $\leq 1\%$ )
- Vegetative state unknown: 1 (*Monadenium*) ( $\leq 1\%$ )
- Rootstock unknown: 1 (*Phyllanthus*) ( $\leq 1\%$ )
- Leaves unknown: 5 (*Euphorbia, Monadenium*) + no leaves on vegetative shoots: 2 (*Monadenium*) + no fully developed leaves: 1 (*Monadenium*)
- Inflorescences unknown (male + female): 2 (*Croton, Euphorbia*) + no mature stage: 2 (*Euphorbia*) + no male inflorescence: 1 (*Oldfieldia*) + no female inflorescence: 2 (*Tetrorchidium, Tragia*) ( $\leq 1\%$ )
- Flowers unknown: 6 (+1) + only young: 1 and incomplete: 1 ( $\leq 1\%$ )
- Male flowers unknown: 36 (+4?) + 3 only bud known + 2 very young (= c. 3%)
- Female flowers unknown: 61 (+5?) + 1 not mature ( $\geq 4\%$ )
- Fruit unknown: 130 (+3?) ( $\geq 9\%$ )
- Ripe fruit unknown: 17 ( $\geq 1\%$ )
- Seeds unknown: 85 (+1) ( $\geq 6\%$ )
- Ripe seeds unknown: 29 ( $\geq 2\%$ )
- Ecology unknown: 81 (+2?) ( $\geq 6\%$ )
- Only type known: 104 (+15?) (= c. 8%)
- Only known from syntypes: 8 ( $\leq 1\%$ )

## ACALYPHA / 45

For two species (= c. 4%) no fruit and no seeds have been seen; for further 2 species no ecology is recorded and they are known only from the type (at least one of them).

**Acalypha acrogyna** Pax

Much-branched scrambling shrub to 3 m tall or tree to 5 m, unarmed, slender-stemmed, with long shoots and short lateral shoots (brachyblasts).

Riverine and lakeshore evergreen forest; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*, scandent along trail in rain forest; forest clearings and edges; 500-1250 m alt.

See under *A. boiviniana*. – Possibly not distinct from *A. sonderiana*; confused with *A. neptunica*.

**A. allenii** Hutch.

Perennial caespitose herb or suffrutex 15-50(-90) cm tall; stems annual from a rhizomatous woody rootstock, several, erect, sometimes decumbent or semiprostrate, simple or occasionally few-branched, burned back each year.

Miombo; plateau woodland; mixed deciduous woodlands; wooded grassland; usually on granite sand, stony soil and Kalahari Sand; 750-1525 m alt.

Botswana.

**A. ambigua** Pax

syn.: *A. polymorpha* Müll. Arg. var. *angustifolia* Müll. Arg. and var. *depauperata* Müll. Arg.; *A. dumetorum* Pax, non Müll. Arg.

Erect caespitose perennial herb to 50 cm tall, arising from a stout woody rootstock; stems several, simple or sparingly branched.

Plateau miombo; high-rainfall wooded grassland and dambo margins; particularly noticeable after bush fires; *Brachystegia* woodland; 900-1760 m alt.

Intermediates occur in W Zambia between this species and *A. fuscescens*.

Namibia.

**A. angustissima** Pax

Stems 8-20 cm tall, many, erect, compressed or deeply grooved, blue-green, arising from a woody rhizome.

Ecology unknown.

Only known from the type? (from Angola, Lunda).

**A. benguelensis** Müll. Arg., incl. var. *trichogyne* Müll. Arg. and var. *adenogyne* Müll. Arg.

syn.: *Ricinocarpus benguelensis* (Müll. Arg.) Kuntze; *A. teuschii* Pax

Stems woody, erect, shortly branched towards the base, to 30,5-45 cm tall or less, angular, arising from a thick rhizome; monoecious.

Herbaceous wooded places; not abundant.

## ACALYPHA

**A. bipartita** Müll. Arg.

syn.: *Ricinocarpus bipartitus* (Müll. Arg.) Kuntze

Woody herb or scrambling subshrub to 3 m tall; stems sub-quadrangular.

Forest undergrowth, edges and associated grassland and bushland; sometimes riverine; extending into wooded grassland mainly in disturbed places; forest with *Milicia* and *Caloncoba*; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*, on forest floor; closed forest patch near stream; 800-1500 m alt.

**A. boiviniana** Baill.

syn.: *Ricinocarpus boivinianus* (Baill.) Kuntze

Very similar to *A. acrogyna* but with densely pubescent shoots, and with 5-12 female flowers in the upper part of the inflorescence, 1-3 per bract.

Ecology unknown.

Only known from the type collected in 1848. Conspecific with *A. engleri*? Further material is desirable.

**A. brachiata** Krauss

syn.: *A. petiolaris* Hochst. ex Krauss; *A. hirsuta* Hochst. ex A. Rich.; *A. sidifolia* A. Rich.; *A. villicaulis* Hochst. ex A. Rich., incl. var. *minor* Müll. Arg.; *A. senensis* Klotzsch; *A. zambesica* Müll. Arg.; *A. tenuis* Müll. Arg.; *A. villicaulis* Müll. Arg.; *A. haplostyla* Pax; *A. rehmannii* Pax; *A. chariensis* Beille; *A. senegalensis* Pax & K. Hoffm.

Perennial herb or subshrub, 0,3-1(-2) m tall, monoecious, with a few erect ascending or decumbent stems arising from a woody rootstock.

Wooded and open grassland, extending marginally into woodland and forest edges; persisting in cultivated ground (*Cedrela* plantation with regenerating mixed woodland of *Combretum collinum*, *Stereospermum kunthianum*, *Acacia hockii*, *Albizia grandibracteata* on ground with rocky outcrops); deciduous woodland/wooded grassland with *Combretum*, *Protea*, *Piliostigma*, etc.; miombo; mopane woodland, woodland on Kalahari sand; dambos; coastal and lakeshore grassland; sometimes riverine forest; 30-2135 m alt.

Caprivi Strip, Namibia, S. Africa, Botswana.

**A. bussei** Hutch.

Similar to *A. ciliata* but usually not exceeding 50 cm in height, leaf-blade smaller and with a proportionately longer petiole, more markedly caudate-acuminate, inflorescences more laxly flowered, sometimes almost unisexual, the female bracts smaller, to 2 mm long and 4 mm wide in fruit, with shorter teeth (less than 1 mm long), the capsules smaller, 1 mm long and 1,5 mm wide.

Coastal forest, often on coral outcrops; 0-160 m alt.

More material needed (depauperate ecotypical form of *A. ciliata*?).

**A. caperonioides** Baill., incl. var. *galpinii* Prain

syn.: *A. peduncularis* Pax nom. illegit., incl. var. *glabrata* Sond.; *A. peduncularis* E. Mey. ex Meisn. var. *glabrata* Sond.

Perennial herb to 40 cm tall; stems few to many, usually simple, arising from a branched rhizome system associated with a fist-sized woody rootstock.

## ACALYPHA CAPERONIOIDES

Plateau and montane grassland; *Brachystegia* woodland; sometimes on dambo margins; particularly noticeable after grass fires; 915-2230 m alt.

Somewhat variable in leaf characters.

S. Africa (in this area the species shows intermediates with *A. peduncularis*, *A. punctata* and *A. wilmsii*).

**A. ceraceopunctata** Pax

Shrub to 1,5 m tall with angular branches; fruits hidden by the enlarged pale bracts, 3-lobed and dotted with yellow scale-like glands.

Sandy wooded savanna or fringing forest; swampy spiny forests; 300 m alt.

**A. chirindica** S. Moore

Deciduous, much-branched, straggling or scrambling, slender-stemmed shrub or tree to 5 m tall; branches over-arching and pendant, terete; young branchlets twiggy.

Mixed evergreen rain-forest; dense evergreen riverine forest; in gully and escarpment ravine forest; in closed canopy *Brachystegia* woodlands and dense kopje vegetation; in understory thicket of dry deciduous forest on Kalahari Sand (mutemwa); termite mounds and pemba thicket; rocky hills; (275-) 500-1675 m alt.

In Malawi, this species hybridizes with *A. ornata* (= *A. x malawiensis*).

**A. ciliata** Forssk.; Kew Bull. 44: 441, 1989.

Erect, simple or slightly branched annual herb 15-50(-100) cm tall; stems grooved.

Disturbed areas in deciduous woodland and riverine forest; often in shade; sometimes weed of cultivation; hydromorphic hollow; on sand; alluvial soils; pan margins in floodplain mopane; lakeshore thicket vegetation; wooded grassland; deciduous and coastal bushland; often in rocky places; 0-1700 m alt.

Caprivi Strip, Namibia, Botswana; tropical Arabia, Pakistan, India, Sri Lanka.

See under *A. fimbriata* and *A. bussei*.

**A. clutioides** Radcl.-Smith; Bull. Jard. Bot. Natl. Belgique 65: 131, 1996.

Densely caespitose perennial herb or suffrutex to 50 cm tall, from a stout woody rootstock; stems many red-brown, simple, or with 1-2 ramifications near the base, densely leafy.

Watershed grassland plains, on Kalahari sand; sandy dambos; moist deep black soil; *Uapaca* woodland; 1200-1490 m alt.

Angola? (East Moxico).

Near *A. dikuluwensis*.

**A. crenata** Hochst. ex A. Rich.

syn.: *A. abortiva* Hochst. ex Baill.; *A. indica* L. var. *abortiva* (Hochst. ex Baill.) Müll. Arg.; *A. indica* L. "lusus" *abortiva* (Baill.) Müll. Arg.; *Ricinocarpus vahlianus* (Oliv.) Kuntze; *Acalypha vahliana* Oliv., non Müll. Arg.

Similar to *A. indica* but rarely exceeding 40 cm height and leaves more uniformly distributed along the stem; very similar to *A. segetalis* in habit, but the leaves are more rounded at the base and the muricate allomorphic female flowers are usually

## ACALYPHA CRENATA

subsessile and may be terminal or lateral on the inflorescence, and are glabrous except for a single white hair at the apex of each tubercle.

Weed of cultivation; mopane woodland on damp black clay soils; moist grassland; sandy river banks; often on waste ground; sandy-clayey soils; rice-fields; 510-2000 m alt.

Cape Verde Islands; Botswana.

See under *A. lanceolata*.

**A. deltoidea** Robyns & Lawalrée

Erect shrub, ±1 m tall; base unknown; branches rounded, elongated, 3-4 mm Ø, simple, reddish with lines of white lenticels at the base, internode to 3 cm long.

Savanna; 1100-1200 m alt.

**A. dikuluwensis** P. A. Duvign. & Dewit

syn.: *A. cupricola* Robyns, nom. nud.

Very similar to *A. clutioides*, but distinguished by: stems not more than 25 cm tall, more densely pilose, less densely leafy, lower leaves more broadly ovate to almost suborbicular; fruit unknown.

Polycuprophyte on substrate where the copper content is above 2,500 ppm., and it can tolerate concentrations of up to 50,000 ppm. In Katanga observed on 10 outcrops (Geo-Eco-Trop. 23: 42, 1999); rocky grassland with *Xerophyta*; colluvial meadow with *Ascolepis metallorum*, at base of slope; watershed grassland, on termite mounds in open at edge of boggy dambos.

**A. dumetorum** Müll. Arg., non Pax (= *A. ambigua*).

syn.: *Ricinocarpus dumetorum* (Müll. Arg.) Kuntze

Shrub 0,5-2 m tall with ramose or subsimple stems.

Forest understory or clearing; forest edges; thickets; rocks; 1760 m alt.

**A. echinus** Pax & K. Hoffm.

Many-stemmed straggling shrub to 4 m tall, sometimes developing short shoots; older branches sometimes spinescent.

Riverine forest; 60-300 m alt.

*A. aff. echinus* is reported from Rwanda (Runyinya 949).

**A. engleri** Pax

Much-branched shrub to 3 m tall; short shoots absent.

Forest undergrowth, edges and associated bushland; (100)-400-500 m alt.

*A. sigensis* Pax & K. Hoffm. is probably a synonym (type destroyed: Braun 1503).

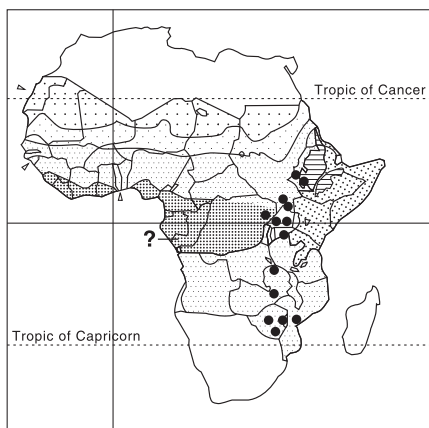
**A. eriophylla** Hutch.

Stems arising from a woody rhizome, erect, simple, to 30 cm tall, deeply channelled or sulcate; monoecious. – Very remarkable by the large trilobed stipules, which enclose the female flower at the base of each male axis.

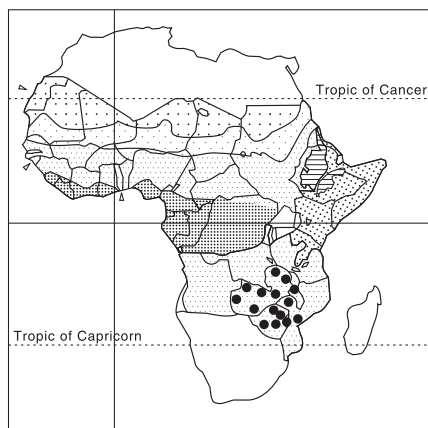
Edge of forest with low timber trees, on sandy soil; 1200 m alt.

Only known from two collections made in 1899 and 1964.

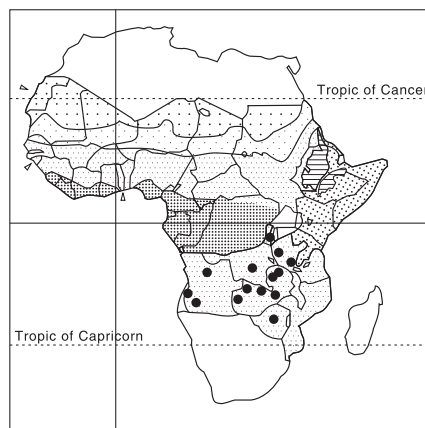




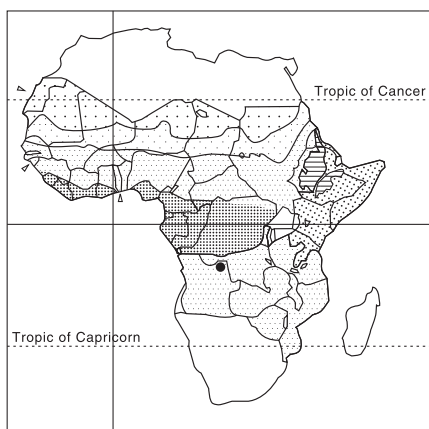
*Acalypha acrogyna*



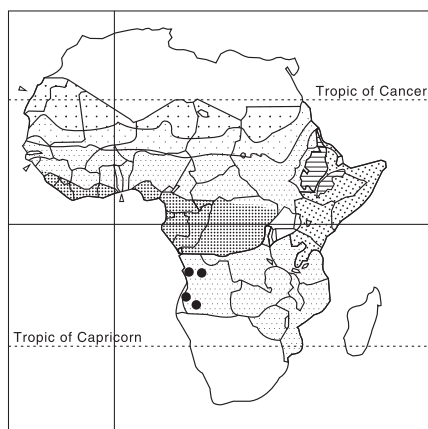
*Acalypha allenii*



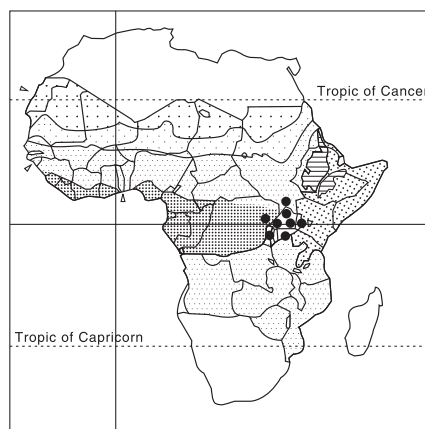
*Acalypha ambigua*



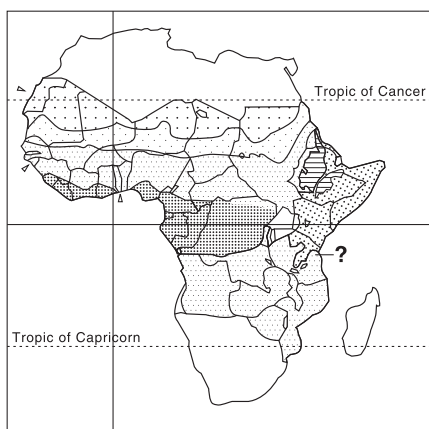
*Acalypha angustissima*



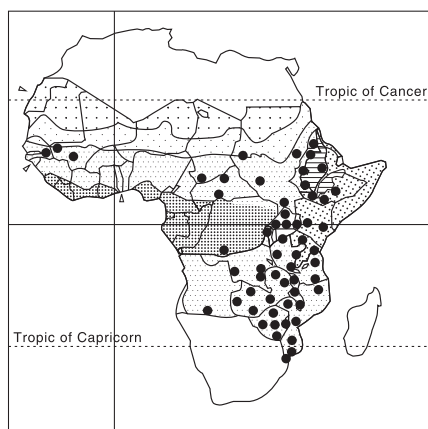
*Acalypha benguelensis*



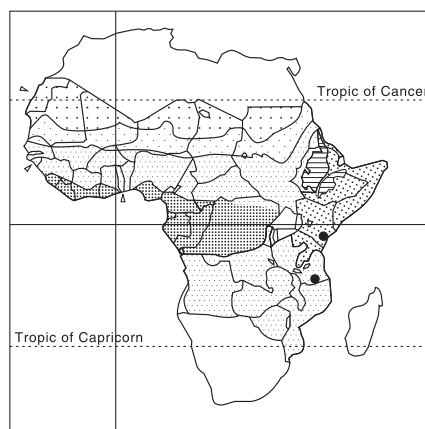
*Acalypha bipartita*



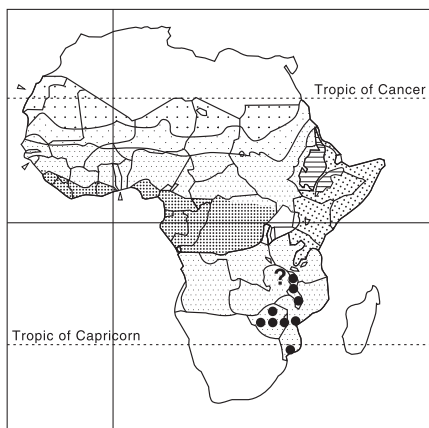
*Acalypha boiviniana*



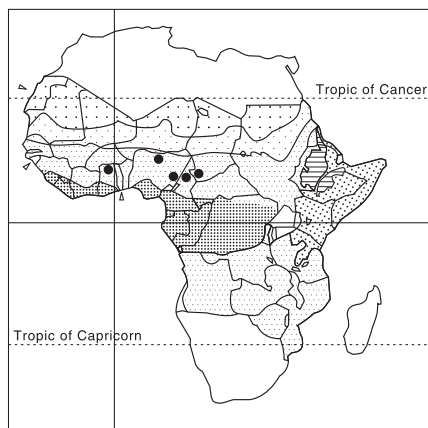
*Acalypha brachiata*



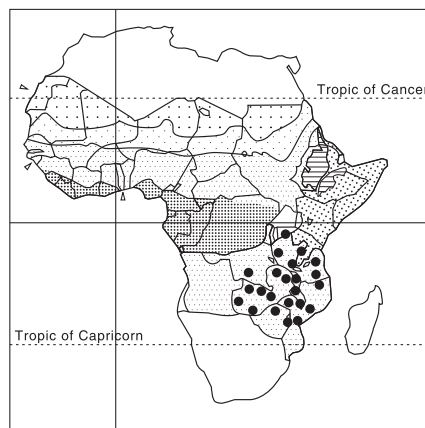
*Acalypha bussei*



*Acalypha caperonioides*



*Acalypha ceraceopunctata*



*Acalypha chirindica*

## ACALYPHA

**A. fimbriata** Schumach. & Thonn. 1827 and Hochst. ex A. Rich. 1850; Kew Bull. 44: 441, 1989.

syn.: *A. vahliana* Müll. Arg. non Oliv.

Similar to *A. ciliata* in all respects except for the female bracts; in *A. fimbriata* the teeth of the bracts are to 1,5 mm long, falcate-lanceolate and curved towards the apex, often lying alongside each other and almost contiguous; furthermore the teeth are minutely puberulous, and the bracts as a whole are frequently sparingly long-hispid; the allomorphic female flowers always have the fimbriate whorls, in stead of just sometimes as in *A. ciliata*.

Ground layer of high rainfall miombo; riverine, lakeshore and coastal woodlands; thicket; dense vegetation at base of rocky outcrops; mopane woodland on alluvium; dambos and moist grassland; frequently a weed of waste ground; 0-1650 m alt.

Possibly occurs in SW Ethiopia.

**A. fruticosa** Forssk.

Aromatic shrub to 4 m tall.

Riverine thicket; dry forest; evergreen tangle on termite mound; open woodland with *Acacia seyal*, *Albizia amara* subsp. *sericocephala*, *Lannea humilis*, etc. on sandy soil; woodland in extensive cultivations; gully with *Combretum* and *Acacia*; under *A. ataxacantha*; probably favoured by overgrazing and becoming locally dominant; on alluvium; near edges of wadis often with *Sansevieria* on hilly ground (Sudan); rocky shores or outcrops; 0-1800 m alt.

Namibia; S Arabia, S India, Sri Lanka, Burma (Myanmar).

Comprises 3 vars.: – var. **fruticosa** (syn.: *A. betulina* Retz.; *A. chrysadenia* Suess. & Friedrich); – var. **eglandulosa** Radcl.-Smith (syn.: *A. kilimandscharica* Pax & K. Hoffm.); – var. **villosa** Pax ex Hutch.

The specimen Richards 22785 from Zambia is intermediate between var. *eglandulosa* and *A. welwitschiana*.

**A. fuscescens** Müll. Arg.

syn.: *Ricinocarpus fuscescens* (Müll. Arg.) Kuntze.

Perennial herb to c. 30 cm tall, arising from a woody rootstock; stems several, simple.

Plateau miombo; chipya woodland; open *Brachystegia-Protea* woodland on dambo margins; particularly noticeable after bush fires; 1220 m alt.

Certain specimens varying towards *A. ambigua* and others towards *A. polymorpha*.

**A. gilmanii** Radcl.-Smith

Shrub 1-1,5 m tall.

Dry evergreen forest; deciduous coastal thicket; 180-450 m alt.

**A. glabrata** Thunb. var. **glabrata**

syn.: *Ricinocarpus glabratus* (Thunb.) Kuntze

Many-stemmed, much-branched spreading shrub or small tree to 5 m tall.

Evergreen-forest margins, usually on rocky hillsides; coastal woodlands with *Androstachys*, *Spirostachys*, *Hymenocardia* and *Afzelia* species; (100-)1160-1585 m alt.

S. Africa, Botswana.

## ACALYPHA GLABRATA

Var. **pilosa** Pax [syn.: *A. glabrata* var. *pilosior* (Kuntze) Prain & Hutch.; *Ricinocarpus glabratus* var. *genuinus* fa. *pilosior* Kuntze] is cited from S Mozambique, Maputo, by M. Calane da Silva & al., Prel. Checklist vasc. pl. Moz.: 54, 2004, but not by Fl. Zambes. 9(4): 202, 1996, only from Botswana, S. Africa.

**A. grueningiana** Pax & K. Hoffm.

Perennial with erect, ramose stems; fruit and seeds unknown.

Weakly wooded and sandy plain; 1300 m alt.

Near *A. senensis*.

**A. hochstetteriana** Müll. Arg.

syn.: *Ricinocarpus alternifolius* (Hochst. ex Baill.) Kuntze; *Mercurialis alternifolia* Hochst. ex Baill.

Annual herb to 60 cm tall, weakly ramose or simple; stems and branches shallowly sulcate.

Swampy place.

Not in Ethiopia (Kotschy 26).

**A. indica** L., incl. var. *bailloniana* (Müll. Arg.) Hutch., but excl. var. *abortiva* (Hochst. ex Baill.) Müll. Arg. (= *A. crenata*).

syn.: *A. bailloniana* Müll. Arg.; *A. somalium* Müll. Arg.; *A. somalensis* Pax

Erect, usually simple-stemmed annual, or sometimes a woody subperennial herb or subshrub to 1,2 m tall; stems ribbed, and pubescent along the ribs.

Sandy margins of rivers; seasonal water courses and pans; usually in shade of thickets; rocky hillsides, rocky outcrops; often in disturbed ground; weed of cultivation; 0-1330 m alt.

Senegal? – More or less throughout the Old World tropics; introduced into the warmer parts of the New World.

See under *A. segetalis* and *A. crenata*.

**A. lanceolata** Willd. var. **glandulosa** (Müll. Arg.) Radcl.-Smith.

Similar to *A. crenata* in general habit, but the leaf bases are cuneate, the inflorescences crowded towards the shoot apices, the female bracts smaller (accrescent to 1,5 × 4 mm), closely enfolding the ovary and fruit, and evenly beset with gland-tipped hairs; and the allomorphic female flowers have 2 conspicuous lateral fimbriate whorls and are rugulose and puberulous, but not muricate.

In shade of semi-evergreen coastal forest, at or near sea level; damp grassland; rocky and other open places with little grass competition, readily becoming a weed of cultivated ground; disturbed sites under riverine trees or degraded *Terminalia* woodland; 15-2000 m alt.

The Old World tropics.

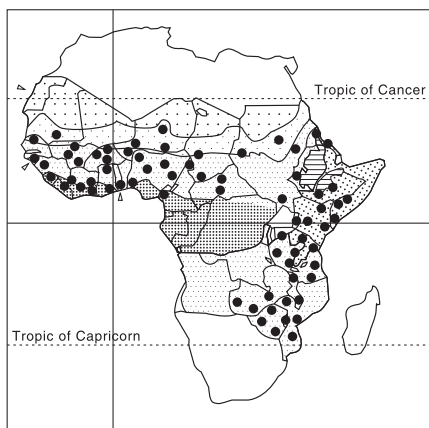
Var. **lanceolata** only in tropical Asia.

**A. manniana** Müll. Arg.

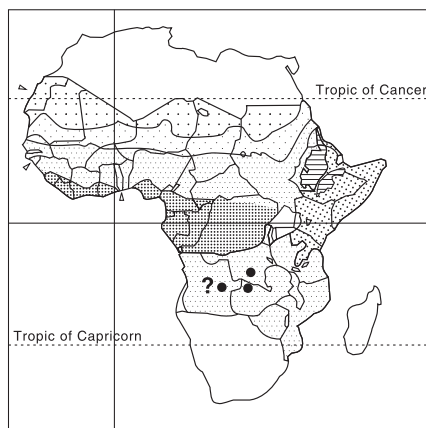
syn.: *Ricinocarpus mannianus* (Müll. Arg.) Kuntze

Herbaceous, slender, climbing shrub to 2 m tall; branches angular, at length terete.

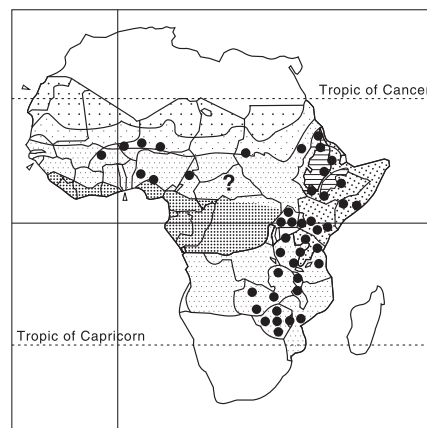
Edge of forest; 800-2000 m alt.



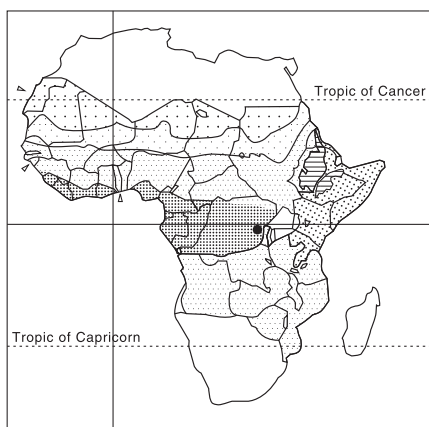
*Acalypha ciliata*



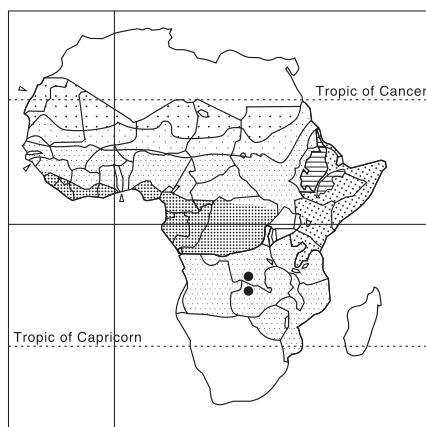
*Acalypha clutioides*



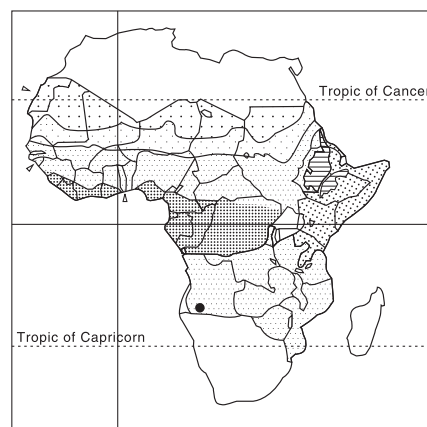
*Acalypha crenata*



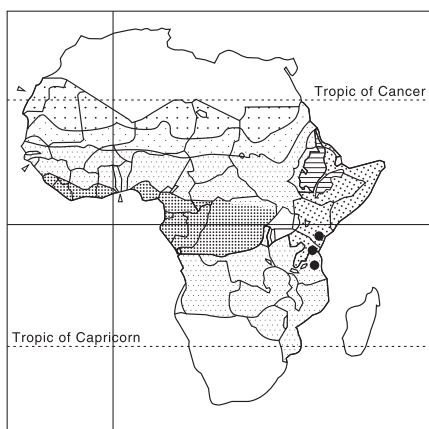
*Acalypha deltoidea*



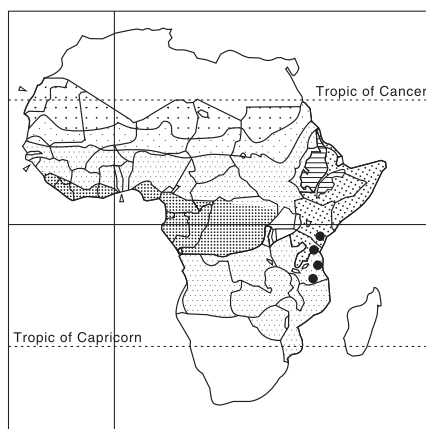
*Acalypha dikuluwensis*



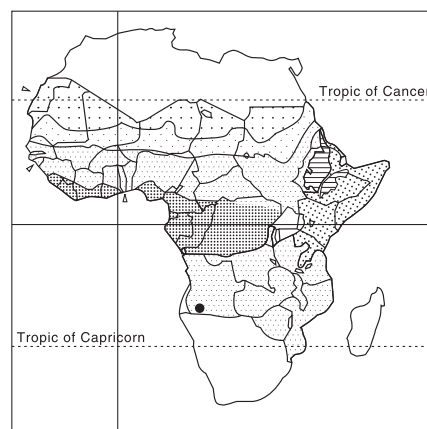
*Acalypha dumetorum*



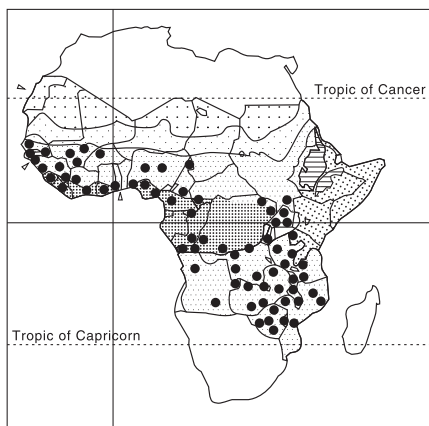
*Acalypha echinus*



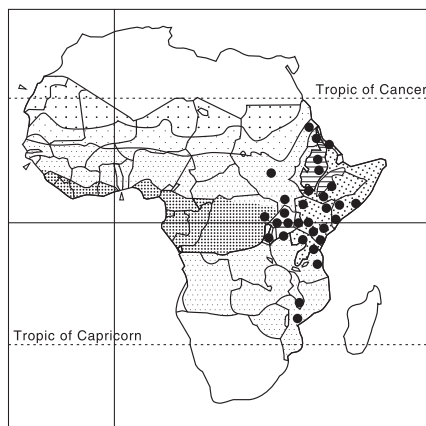
*Acalypha engleri*



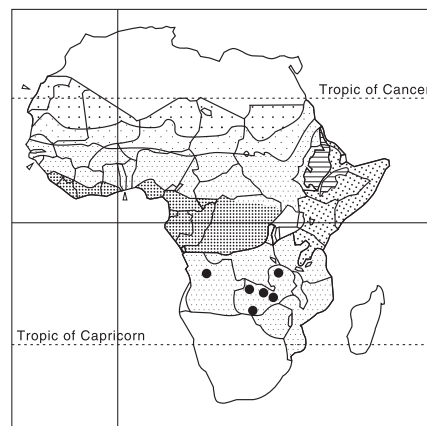
*Acalypha eriophylla*



*Acalypha fimbriata*



*Acalypha fruticosa*



*Acalypha fuscescens*

## ACALYPHA

**A. marissima** M. G. Gilbert

Slender shrub or shrubby herb 1-1,5 m tall; stems semi-woody, green and angular, soon becoming reddish brown and terete with scattered sessile glands, particularly near the nodes.

Moist north facing slope in gallery forest; 1900-2050 m alt. Related to *A. volkensii*. Growing on the western slopes of the Ethiopian plateau like *Phyllanthus dewildeorum*, *P. mooneyi*, in a zone between the typical Sudanian flora of the western lowlands and the Afromontane flora of the plateau proper.

**A. neptunica** Müll. Arg., incl. var. *glabrescens* (Pax) Pax & K. Hoffm.

Shrub or tree to 6 m tall, rarely higher, although usually not exceeding 3 m.

Fringing forest with *Coffea canephora*; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophyllum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; forest undergrowth, edges, and associated bushland; riverine communities; sandy soil or associated with termitaria; thickets; 0-1700 m alt.

Comprises 2 vars.: – var. **neptunica** (syn.: *A. mildbraediana* Pax var. *glabrescens* Pax; *A. subsessilis* Hutch., incl. var. *glabra* Pax & K. Hoffm., nom. illegit.) and – var. **pubescens** (Pax) Hutch. (syn.: *A. mildbraediana* Pax var. *pubescens* Pax; *A. subsessilis* Hutch. var. *mollis* Hutch.; *A. neptunica* Müll. Arg. var. *vestita* Pax & K. Hoffm.). – The two varieties are ± sympatric, and can occur together in the same community.

Not in Ethiopia (= *A. acrogyne*).

**A. nyasica** Hutch.

Prostrate annual herb with branches to 0,5 m long.

Deciduous woodland and thicket; often in open or rocky places; lakeshore sand dunes; *Brachystegia* woodland on sandy soils; 240-900 m alt.

**A. ornata** Hochst. ex A. Rich.

Much-branched woody herb or lax shrub to 3,5 m tall, but more commonly 1,5-2,5 m; also prolific vine or tree to 5 m.

Forest undergrowth and edges; wooded grassland; deciduous woodland and thicket; often riverine or in rocky places; in secondary associations and disturbed ground; *Acacia* and mopane woodland beside river; termitaria thicket; evergreen riverine and gully forest; occasionally on swamp forest margins; usually on sandy soil; pioneer in moist woodland; 0-2000 m alt.

Botswana, Namibia, Caprivi Strip.

**A. paucifolia** Bak. & Hutch.

Very similar to *A. villicaulis* (local race ?), but with glabrous or sparingly patent-hirsute stems; no glands at the base of the leaf-blade; the leaf margin more remotely serrate or shallowly repandenticulate, the upper surface of the leaf-blade glossy green with contrastingly pale green midrib and nerves; the female inflorescences somewhat laxer, with the fruiting bracts bright bluish green and the glands cream.

*Brachystegia* woodland and in *Combretum*, *Vitex*, *Isobertlinia* secondary bushland; damp soil in riverine woodland shade; 400-1465 m alt.

Also very similar to *A. allenii* but differs in having the glandular hairs confined to the inflorescences; the stems terete; the leaves linear-lanceolate, more remotely toothed and usually ± glabrous.

## ACALYPHA

**A. polymorpha** Müll. Arg. emend. Hutch. (var. *angustifolia* Müll. Arg. and var. *depauperata* Müll. Arg. = **A. ambigua**).

syn.: *A. crotonoides* var. *caudata*! Hutch. in R. E. Fries; ? *A. scleropumila* A. Chev., nom. invalid.

Erect densely caespitose perennial herb to 45 cm tall, from a woody rootstock; stems simple, numerous.

Usually in open woodland with grass; woodland with dense ground cover; dambo margins; tall grasslands; particularly noticeable after bush fires; rocky places; often places subject to grazing; 350-2470 m alt.

**A. psilostachya** Hochst. ex A. Rich.

syn.: *Ricinocarpus psilostachyus* (Hochst. ex A. Rich.) Kuntze

Erect or scrambling perennial herb or subshrub 0,6-3 m tall. Swamp forest (mushitu); edges and associated bushland; persisting in disturbed places; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; rock in woodland; along valley bottoms and margins; rarely a weed of cultivation; grassland; 520-3050 m alt.

Variation in indumentum characters is quite considerable. Intermediate conditions known.

Comprises 2 vars.: – var. **psilostachya** (syn.: *A. johnstonii* Pax) and – var. **glandulosa** Hutch. (syn.: *A. bequaertii* Staner).

See under *A. brachystachya*. Food plant of the Giant Forest Hog.

**A. pubiflora** Baill. subsp. **pubiflora**

Much-branched shrub to 6 m tall, similar to *A. fruticosa* but with lanceolate, long-acuminate, shallowly crenate-serrate leaves to 15 × 5 cm; leaves ± penninerved, with 5-7 pairs of lateral nerves; male flower buds sometimes glabrous; female bracts much larger, spatheaceous, accrescent to 1,5-2,5 × 1,5-3 mm in fruit.

Deciduous woodland, often at the base of rocky outcrops or in riverine vegetation, in granite sand; 30-1220 m alt.

Botswana, S. Africa (northern Transvaal); subsp. **australiana** Radcl.-Sm. in NW Australia.

**A. racemosa** Baill.

syn.: *A. paniculata* Miq.

Laxly branched perennial herb or subshrub 0,5-2(-3) m tall. Evergreen forest: open places; edges and riverine; sometimes in rocky or disturbed places nearby (more open dry habitats) rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; cultivated places; 100-2000 m alt.

Arabia, southern India, Sri Lanka, Indonesia.

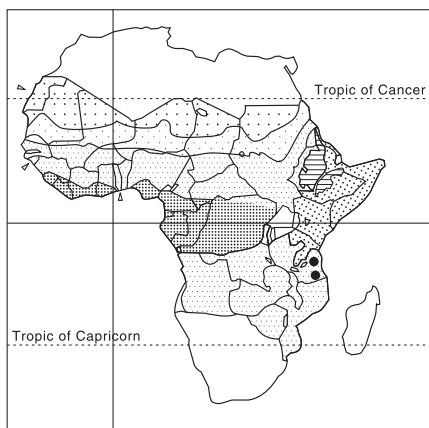
The terminal female panicle is immediately diagnostic but one collection has the female flowers in axillary racemes (Mesfin & al. 4654, Ethiopia).

**A. segetalis** Müll. Arg.; Kew Bull. 33: 234, 1978.

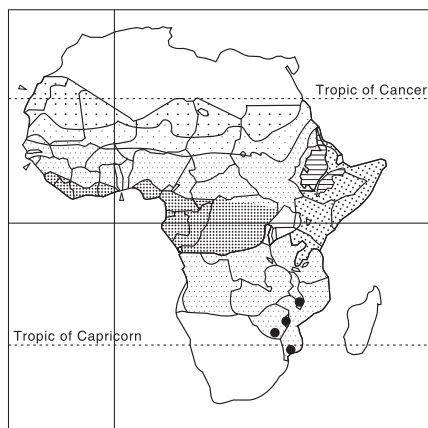
syn.: *A. sessilis* Poir. var. *brevibracteata* Müll. Arg. and var. *exserta* Müll. Arg.; *A. gemina* (Lour.) Spreng. var. *brevibracteata* (Müll. Arg.) Müll. Arg. and var. *exserta* (Müll. Arg.) Müll. Arg.

Similar to *A. indica*, but usually much more branched, with a number of decumbent-ascending stems arising from the base, and seldom exceeding 50 cm height; inflorescences usually shorter (less than 2,5 cm long) with only 1-3 female bracts per inflorescence; bracts crenate; the few-flowered male portion of the inflorescence

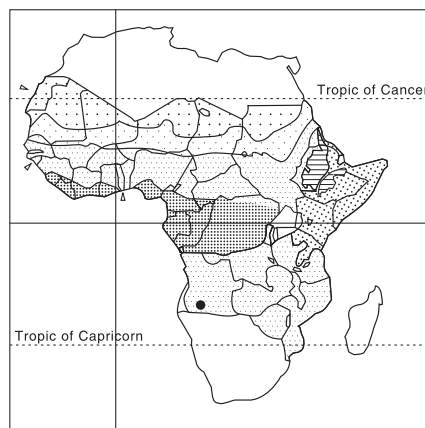




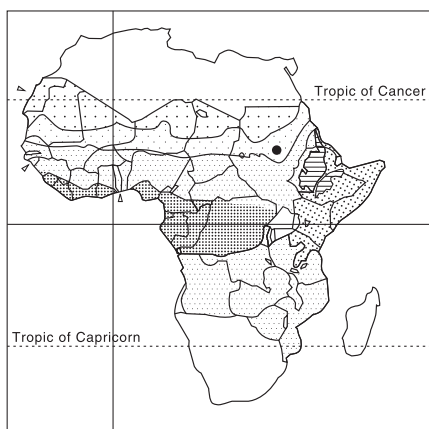
*Acalypha gillmanii*



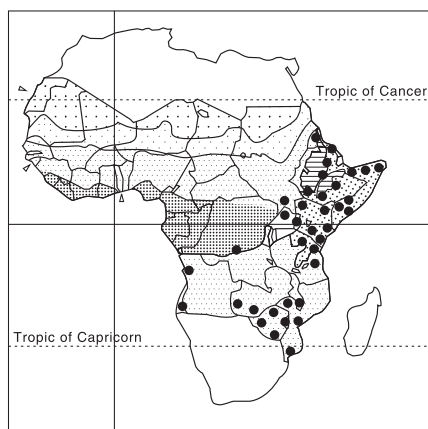
*Acalypha glabrata*



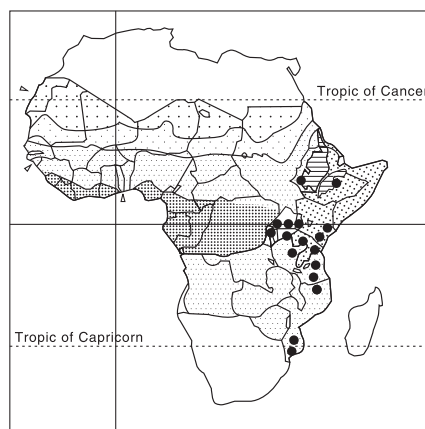
*Acalypha grueningiana*



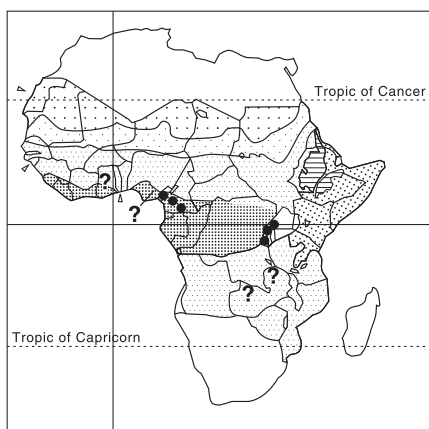
*Acalypha hochstetteriana*



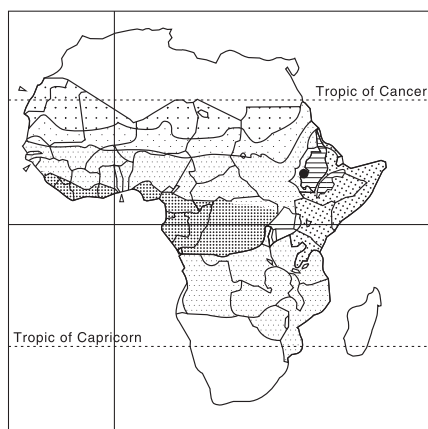
*Acalypha indica*



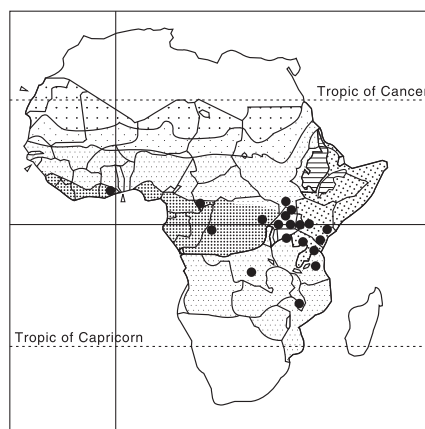
*Acalypha lanceolata*



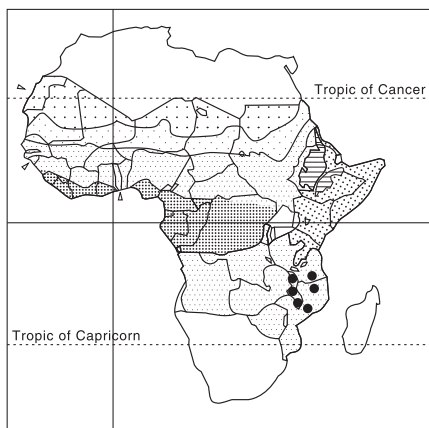
*Acalypha manniana*



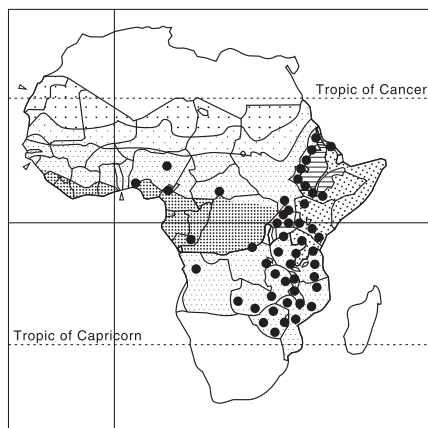
*Acalypha marissima*



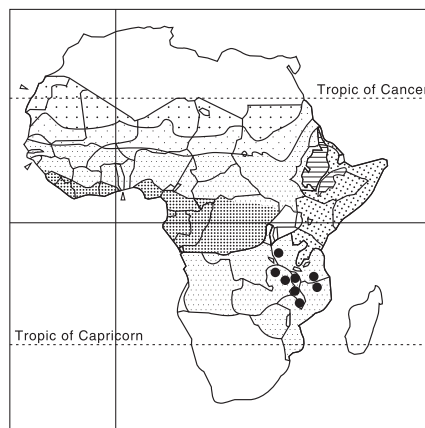
*Acalypha neptunica*



*Acalypha nyasica*



*Acalypha ornata*



*Acalypha paucifolia*

## ACALYPHA SEGETALIS

pedunculate; male flowers often reddish; allomorphic female flowers usually long-pedicellate but most commonly arising from the base of the inflorescence, muricate, obovoid and eventually whitish-puberulous.

Grassland; roadsides; cultivated ground; floodplain alluvium; black clay soils; pans and moist grassy dambos; rocky outcrops; miombo and mopane woodlands; often as a weed of cultivation and disturbed ground; ± sea-level-1500 m alt.

S. Africa, Namibia, Botswana.

**A. sonderiana** Müll. Arg.

Very similar to *A. acrogyna*, but a thorny shrub with stout branches; leaves usually obtuse or rounded at the apex.

Hot dry locality in *Androstachys* (*Euphorbiaceae*) woodland, beside seasonal watercourse; low alt.

S. Africa (Kwazulu-Natal).

**A. supera** Forssk.

syn.: *A. brachystachya* Hornem.; *A. elegantula* Hochst. ex A. Rich.

Weak annual herb, in tuft, 20-40 cm tall; very similar to *A. psilostachya*.

Deciduous woodland in shade or deep shade often under other herbs; weed of waste places; riverine and montane forests; damp places in forest openings; rocky places with local water-catchment; 750-2300 m alt.

In Ethiopia exhibits greater diversity in indumentum and leaf-shape. Caprivi Strip, Botswana, Namibia, S. Africa (Transvaal, Swaziland); the Old World tropics and subtropics.

See under *A. pauciflora*.

**A. volkensii** Pax

syn.: *A. psilostachyooides* Pax p.p. excl. specim. Buchanan; type not indicated.

Prostrate, procumbent, ascending or scandent woody herb or subshrub to 3 m tall, but commonly not exceeding 1 m.

Forest, forest edges and associated bushland and grassland; in drier country along rivers and in rocky places or disturbed ground; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea* (edge); 765-3000 m alt.

Not in Somalia.

**A. welwitschiana** Müll. Arg.

syn.: *A. angolensis* Müll. Arg.; *A. whytei* Hutch. unpublished.

Shrublet to 2 m tall; many-stemmed, erect or procumbent suffrutex with annual stems arising from a woody rootstock.

*Brachystegia* woodland; often on scarps or other rocky places; closed canopy plateau woodlands; Kalahari Sand woodlands; evergreen riverine forest and thicket; swamp forest (mushitu), margins and dambo margins often on termite mounds; gully forest; 800-2000 m alt.

SPECIES INSUFFICIENTLY KNOWN AND NOM. INVALID.:

*Acalypha scleropumila* A. Chev. (near *A. polymorpha*) – Congo Brazzaville, Brazzaville and neighbourhood, sandy soil, pays Bateké, Chevalier s.n., April 1951.

TAXA IN NEED OF FURTHER STUDY:

*Acalypha elskensii* De Wild. – Male flowers unknown; Burundi: Kanzigiri Lake, Kitete Hill, natural pastures, Elskens 147.

## ACALYPHA

*A. intermedia* De Wild. – Zaire: Katanga, Verdick s.n., 1900; near grex *A. fruticosa*.

SYNONYMS:

*Acalypha abortiva* Hochst. ex Baill. = **Acalypha crenata**

*acuta* Thunb. = **Adenocline**

*angolensis* Müll. Arg. = **Acalypha welwitschiana**

*bailloniana* Müll. Arg. = **A. indica**

*betulina* Schweinf. = **Cephalocroton cordofanus**

*brachystachya* Hornem. = **Acalypha supera**

*chariensis* Beille = **A. brachiata**

*crotonoides* var. *caudata* Hutch. = **A. polymorpha**

*cupricola* Robyns = **A. dikuluwensis**

? *dentata* Schumach. & Thonn. = **Mallotus oppositifolius**

*dumetorum* Pax non Müll. Arg. = **Acalypha ambigua**

*elegantula* Hochst. ex A. Rich. = **A. supera**

*gemina* (Lour.) Spreng. and var. *brevibracteata* (Müll. Arg.) Müll. Arg. and var. *exserta* (Müll. Arg.) Müll. Arg. = **A. segetalis**

*haplostyla* Pax = **A. brachiata**

*hirsuta* Hochst. ex A. Rich. = **A. brachiata**

*indica* L. lus *abortiva* (Baill.) Müll. Arg. = **A. crenata**

*indica* L. var. *abortiva* (Hochst. ex Baill.) Müll. Arg. = **A. crenata**

*leonensis* Benth. = **Mareya micrantha**

*micrantha* Benth. = **Mareya**

*paniculata* Miq. = **A. racemosa**

*peduncularis* Pax and var. *glabrata* Sond. = **A. caperonioides**

*peduncularis* E. Mey. ex Meisn. var. *glabrata* Sond. = **A. caperonioides**

*petiolaris* Hochst. ex Krauss = **A. brachiata**

*polymorpha* Müll. Arg. var. *angustifolia* Müll. Arg. = **A. ambigua**

*polymorpha* Müll. Arg. var. *depauperata* Müll. Arg. = **A. ambigua**

*psilostachyooides* Pax p.p. = **A. volkensii**

*rehmannii* Pax = **A. brachiata**

*scleropumila* A. Chev. = ? **A. polymorpha**

*senegalensis* Pax & K. Hoffm. = **A. brachiata**

*senensis* Klotzsch = **A. brachiata**

*sessilis* Poir. var. *brevibracteata* Müll. Arg. and var. *exserta* Müll. Arg. = **A. segetalis**

*sidifolia* A. Rich. = **A. brachiata**

*somalensis* Pax = **A. indica**

*somalium* Müll. Arg. = **A. indica**

*tenuis* Müll. Arg. = **A. brachiata**

*teuscii* Pax = **A. benguelensis**

*vahliana* Müll. Arg. = **A. fimbriata**

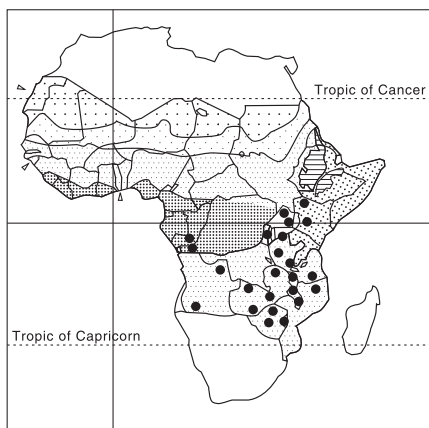
*vahliana* Oliv. = **A. crenata**

*villicaulis* Hochst. ex A. Rich. = **A. brachiata**

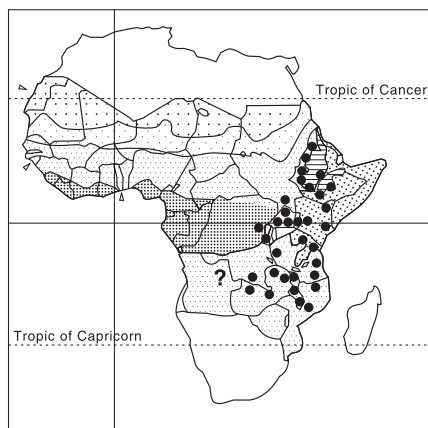
*villicaulis* Müll. Arg., incl. var. *minor* Müll. Arg. = **A. brachiata**

*whytei* Hutch. = **A. welwitschiana**

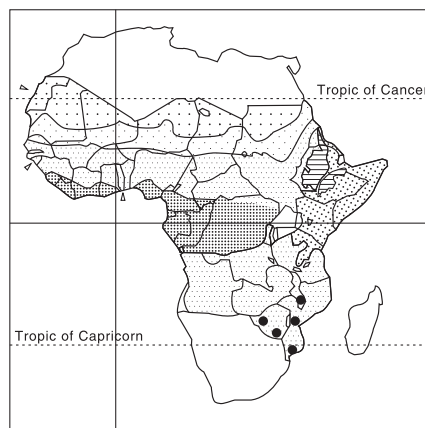
*zambesica* Müll. Arg. = **A. brachiata**



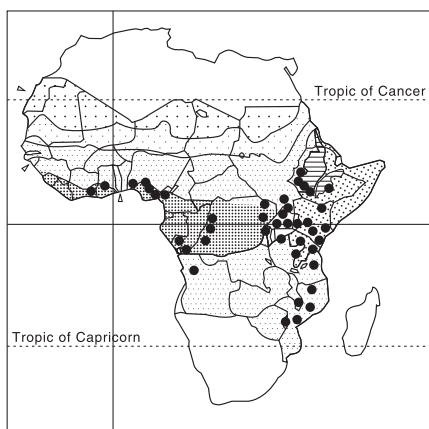
*Acalypha polymorpha*



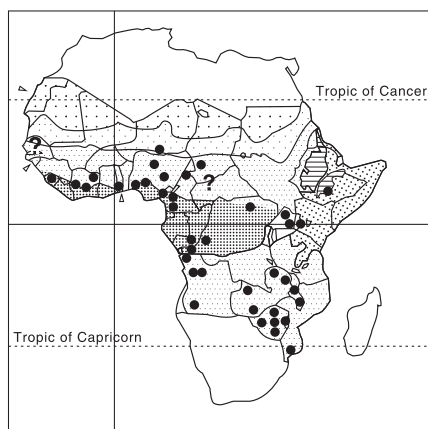
*Acalypha psilostachya*



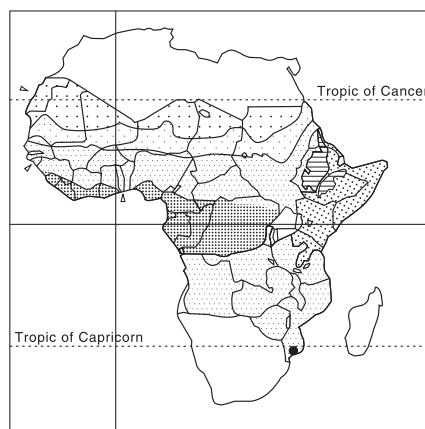
*Acalypha pubiflora*



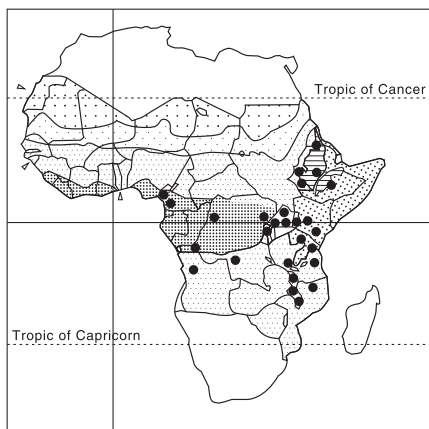
*Acalypha racemosa*



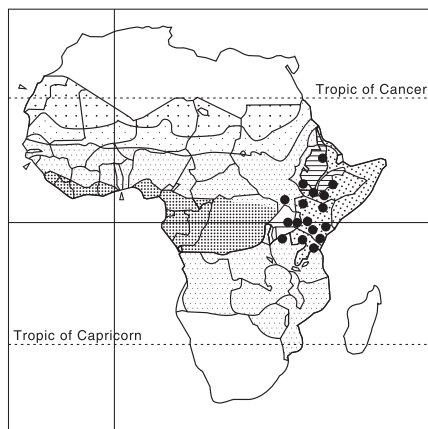
*Acalypha segetalis*



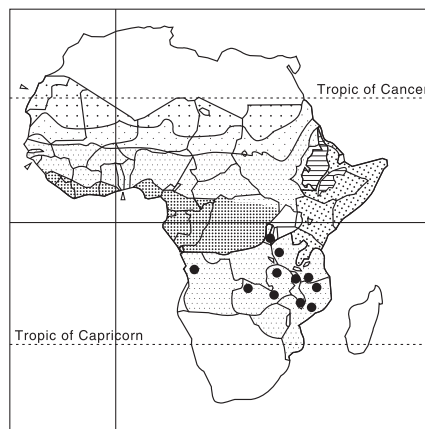
*Acalypha sonderiana*



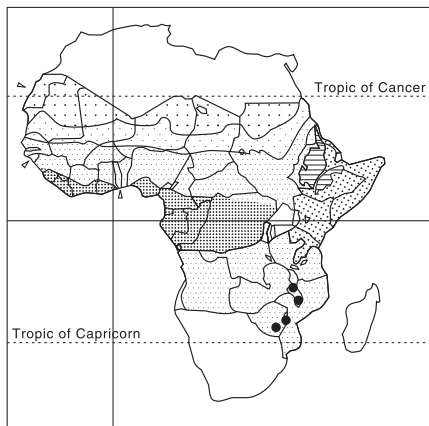
*Acalypha supera*



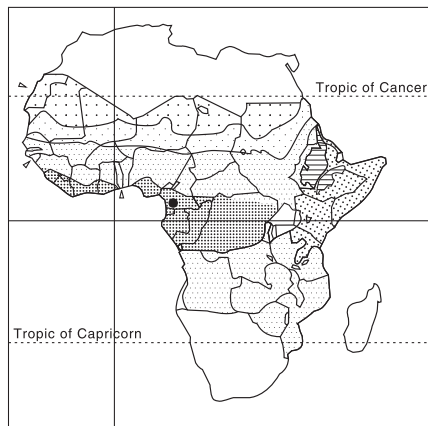
*Acalypha volkensii*



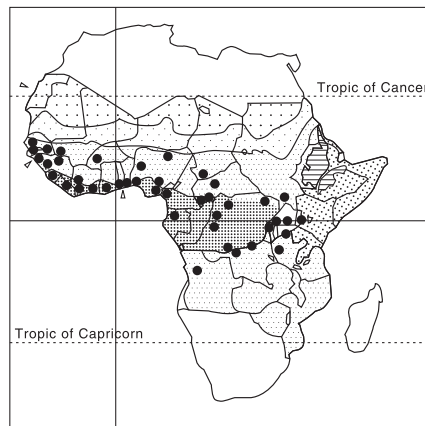
*Acalypha welwitschiana*



*Adenocline acuta*



*Afrotrewia kamerunica*



*Alchornea cordifolia*

**ADENOCLINE / 1**

**Adenocline acuta** (Thunb.) Baill.

bas.: *Acalypha acuta* Thunb.

syn.: *Adenocline mercurialis* Turcz.

Much branched annual or perennial herb, or suffrutex, dioecious; stems weak, trailing or scrambling, to 3 m in extent, hollow, cylindrical, ribbed.

Grassland; rain-forest margins; shady riverbanks in forest; thickets; wooded granite kopjes; 1340-2300 m alt.

S. Africa; first reported outside by Milne-Redhead in 1951 from Malawi; first collected outside in 1931 from Zimbabwe.

**AFROTREWIA / 1**

Fruit unknown, and the species only known from the type.

**Afrotrewia kamerunica** Pax & K. Hoffm.

Tree; branches terete; flower monoecious; fruit unknown.

Outer mountain range.

Only known from the type (destroyed).

In our Enum. 3: 107 1995 erroneously cited as *Afrotrewia kamerunica* Pax & K. Hoffm. (*Burmanniaceae*).

**ALCHORNEA / 7**

One species insufficiently known: no fruit and no ecology recorded, and probably known only from the syntypes.

**Alchornea cordifolia** (Schumach. & Thonn.) Müll. Arg.

bas.: *Schousboea cordifolia* Schumach. & Thonn.

syn.: *Alchornea cordata* Benth.

Straggling, somewhat diffusely branched evergreen dioecious creeper, shrub or tree to 8 m tall; branches differentiated into horizontal-spreading leafless branches and erect leafy shoots; branches hollow; fruits in lax pendulous spikes or racemes.

Edges of swamp, lakeside and riverine forest and associated bushland; often forming thickets in disturbed unburned places; 650-1500 m alt.

**A. floribunda** Müll. Arg.

Laxly branched spreading dioecious or rarely monoecious shrub or tree commonly to 4,5 m tall, rarely more.

Clearings in swamp- and rain-forest where it is often a common constituent of the understorey; gallery, wooded gully; farmbush, secondary forest; 200-1700 m alt.

Confusion with *Grossera* spp. possible.

**A. hirtella** Benth.

syn.: *A. comoensis* Beille

Rather spindly semiscandent monoecious or dioecious shrub or tree with slender arching stems commonly to 9 m tall, more rarely developing into a much-branched tree to 15 m tall.

**ALCHORNEA HIRTELLA**

Spray zone of waterfalls; often gregarious in understorey of evergreen forest, secondary and riverine forest; swamp forest (mushitu); occasionally in associated bushlands; 400-2500 m alt. S. Africa (Natal).

Comprises 3 forms: – fa. **hirtella**, – fa. **glabrata** (Müll. Arg.) Pax & K. Hoffm. [syn.: *A. glabrata* (Müll. Arg.) Prain] and – fa. **crenata** Pax & K. Hoffm.

**A. laxiflora** (Benth.) Pax & K. Hoffm.

syn.: *A. schlechteri* Pax; *Macaranga thonneri* De Wild.

Shrub, ± erect, monoecious but functionally dioecious, coppicing from 1 m height, or scandent, densely and irregularly branched deciduous tree of open habit to 8-10 m tall, but more commonly not exceeding 4,5 m, and spreading to 9 m across; twigs robust; buds perulate, ovoid.

Evergreen forest, associated bushland in fire-protected places; deciduous and riverine thickets near the coast; mixed deciduous woodland; often on rocky outcrops; swamp forest (mushitu); *Celtis-Aningera altissima* forest; sea-level-1000-1600 m alt. S. Africa (Transvaal).

**A. mildbraedii** Pax & K. Hoffm.

Shrub or tree; fruit unknown.

Ecology unknown.

Only known from the syntypes?

**A. occidentalis** (Müll. Arg.) Pax & K. Hoffm.

Deciduous, slender ± erect lax-branched multistemmed shrub to 1,5 m tall (when exposed to fire) or tree to 7 m (when fire protected); monoecious, with male and female inflorescences on separate branches.

Riverine evergreen forest on sandy alluvium; dry deciduous forest (mutemwa) and *Cryptosepalum* woodland on Kalahari Sand; rocky outcrops; gully vegetation; 1000-1100 m alt.

**A. yambuyaensis** De Wild.; icon.: Fries, Wiss. Ergebn. d. schwed. Rhodesia-Kongo-Exped. 1: 124, 1916.

syn.: *A. bangweolensis* R. E. Fr.; *A. verrucosa* Pax

Monoecious or dioecious shrub to 3 m tall; buds perulate, ellipsoid, 2-3 mm long.

Evergreen forest; riparian woodland and thicket (see *Tragia micromeres*); 900-1350 m alt.

## SYNONYMS:

*Alchornea bangweolensis* R. E. Fr. = **Alchornea yambuyaensis**

*caloneura* Pax = **Discoglyprena**

*comoensis* Beille = **Alchornea hirtella**

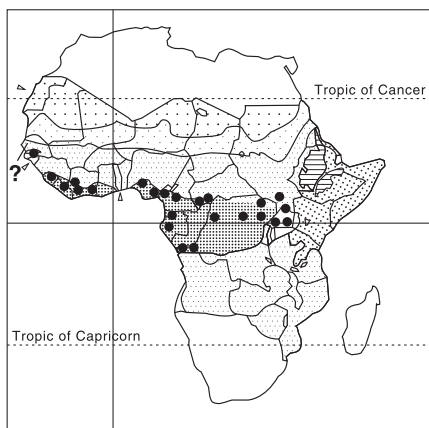
*cordata* Benth. = **A. cordifolia**

*engleri* Pax = **A. laxiflora**

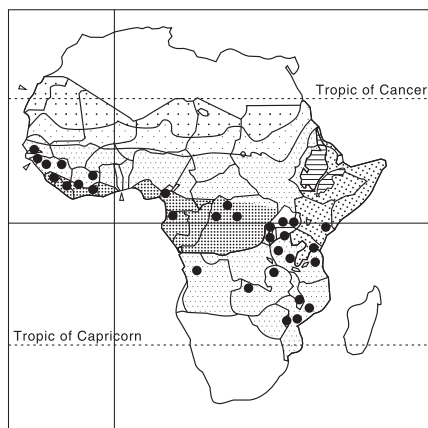
*schlechteri* Pax = **A. laxiflora**

*verrucosa* Pax = **A. yambuyaensis**

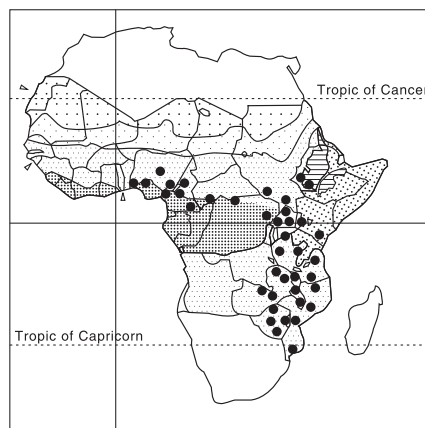




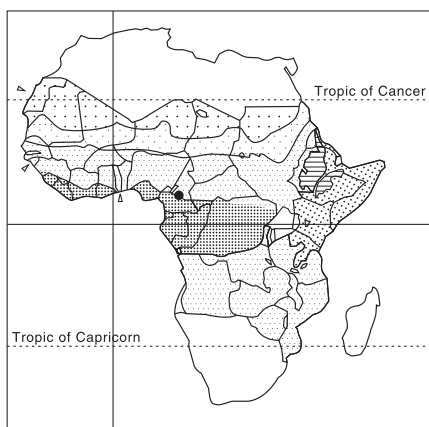
*Alchornea floribunda*



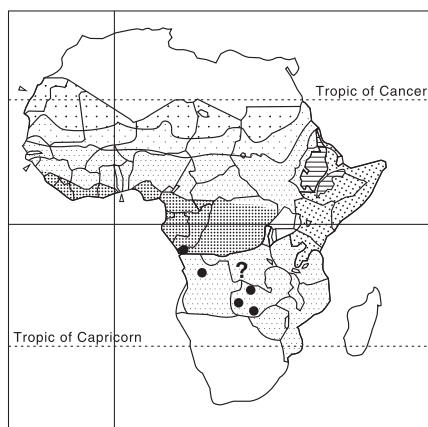
*Alchornea hirtella*



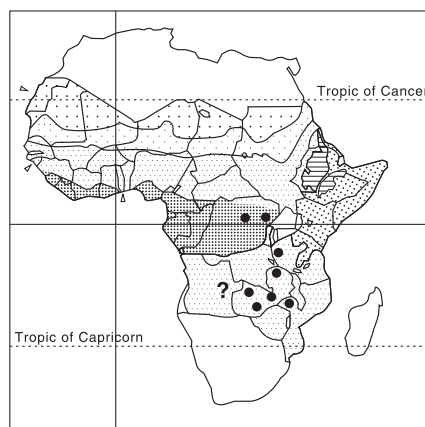
*Alchornea laxiflora*



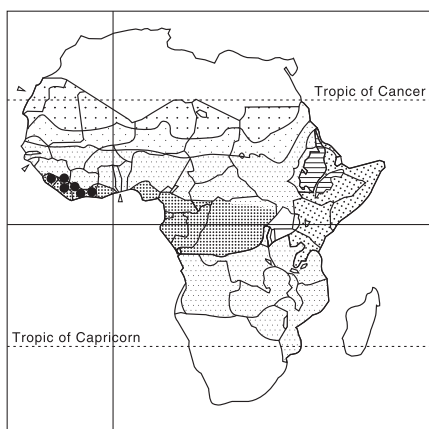
*Alchornea mildbraedii*



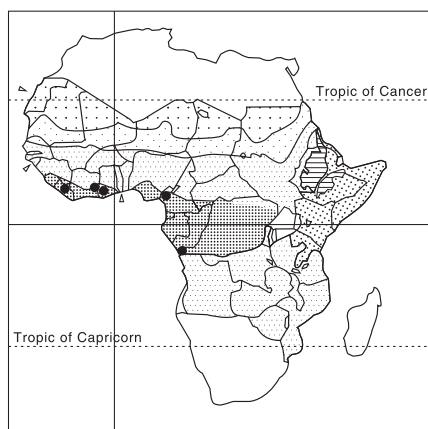
*Alchornea occidentalis*



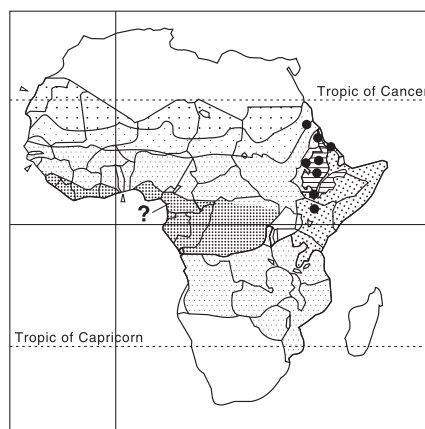
*Alchornea yambuyaensis*



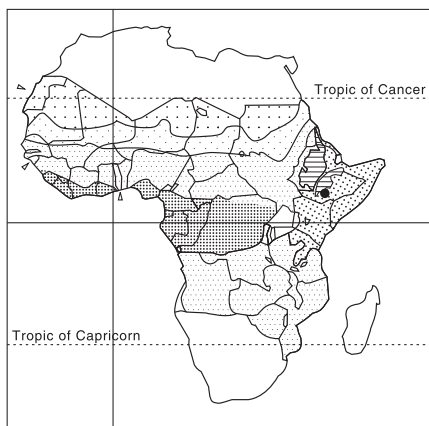
*Amanoa bracteosa*



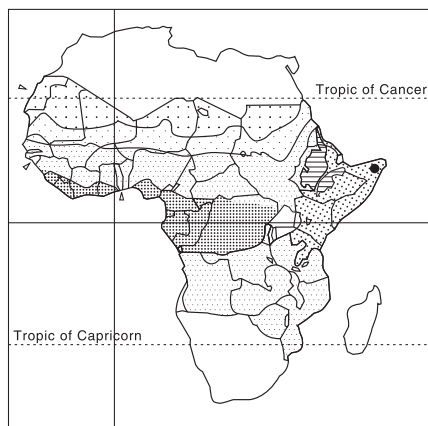
*Amanoa strobilacea*



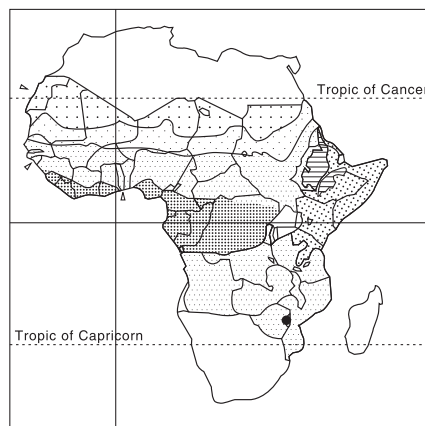
*Andrachne aspera*



*Andrachne ephemera*



*Andrachne fragilis*



*Andrachne ovalis*



## AMANOIA / 2

**Amanoa bracteosa** Planch.syn.: *A. strobilantha* Planch.

Tree to 20 m; trunk 40 cm Ø; monoecious.

Forest on ridges and slopes; sometimes in pure stands; also sporadic; 900-1100 m alt.

**A. strobilacea** Müll. Arg.

Tree to 10 m.

Riverine forest.

SYNONYM:

*Amanoa laurifolia* Pax = **Pentabrachion reticulatum**

## ANDRACHNE / 6

One species known only from the type.

**Andrachne aspera** Spreng., incl. var. *maritima* Terrac.

Prostrate or decumbent, rarely erect perennial herb with several usually simple or subsimple stems to 60 cm long, arising from a woody rootstock; rarely flowering in the first year.

Open dry places; open deciduous woodland or bushland; often in rock crevices; about sea level-2400 m alt.

Cape Verde Islands; Morocco; Egypt; Turkey, Palestine; Arabia; Abd al Kuri; Iraq, Iran, Pakistan. Could turn up in Somalia.

**A. ephemera** M. G. Gilbert

Erect sparsely branched ephemeral herb to 20 cm tall, usually less.

Gregarious with other ephemerals in the shade of bushes in *Acacia-Commiphora* bushland, often with *Combretum* and *Barbeya*, on limestone; 1000-1400(-1900) m alt.**A. fragilis** M. G. Gilbert & Thulin

Dwarf shrub with stems to 30 cm long, much branched with very brittle, often hanging branches.

Holes and crevices in ± vertical and north-facing limestone rocks in the mist zone; 1100-1150 m alt.

Known only from the type collected in 1986.

**A. ovalis** (E. Mey. ex Sond.) Müll. Arg.; *Adansonia*, Sér. 3, 22: 129, 2000.

Rather lax slender virgate ±glabrous shrub or tree to 6 m tall, but more commonly 1-3 m; young twigs terete; dioecious, more rarely monoecious.

Ravines; forest margins; grassy and stony slopes; 650-1700 m alt. S. Africa.

**A. somalensis** Pax

Perennial herb or dwarf shrub, sometimes flowering in the first year; stems to 45 cm long, slender, often trailing.

Limestone cliffs or scree in areas at least formerly with evergreen forest; rarely on gypsum; 700-2100 m alt.

## ANDRACHNE

**A. telephioides** L.Very similar to *A. somalensis* but stems prostrate, leaves obovate to ± orbicular, (2-)2,5-6,5(-12) × (1,5-)2,2-6(-8) mm, male petals over 1/2 as wide as sepals, and female sepals 1,1-1,3 × 1 mm; also similar to *A. aspera* but leaves suborbicular-ovate, glabrous; stipules chaffy, petiole 0,5-2 mm; capsule glabrous; persistent sepals rhombic.

Coastal plain: deciduous bushland on limestone; cliff; sandy wadi beds and regs; sandy plains; sandy hollow on hamada; rags; grara; 10- ±1500 m (and more?).

Mediterranean region (except Portugal and France); rare in central Sahara; not in Sudan and Ethiopia. Cape Verde Islands; Middle-East: Palestine, Jordan, Iraq, Libanon, Syria; Socotra, Abd al Kuri, Arabia, Iran, Afghanistan, NW India; Central Asia to the Pamir Mts.

SYNONYM:

*Andrachne gruelii* Daveau = **Phyllanthus rotundifolius**

## ANDROSTACHYS / 1

**Androstachys johnsonii** Prainsyn.: *A. subpeltatus* (Sim) Phillips

Tree to 20 m.

Locally common in hot dry localities on well drained soils; usually gregarious on rocky hillsides and along seasonal watercourses; often forming dense shrub thickets; mixed deciduous woodland; 100-900 m alt.

S. Africa; Madagascar.

## ANTHOSTEMA / 2

MAHLBERG, P. G. & L. AKÉ ASSI (2002). A new shape of plastid starch grains from laticifers of *Anthostema* (Euphorbiaceae). *S. African J. Bot.* 68: 231-233.**Anthostema aubryanum** Baill.

Tree to 25 m; trunk 40-60 cm Ø.

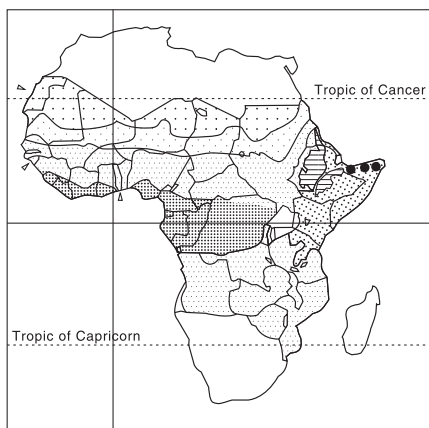
Tall evergreen forest; swamps and river banks.

Confusion possible with *Cleistopholis patens* (*Annonaceae*) but this species is without latex.**A. membranaceum** Müll. Arg., incl. var. *tenuifolium* Müll. Arg.syn.: *A. venosum* Tul. subsp. *membranaceum* (Müll. Arg.) Lye, *Lidia* 4: 91, 1998.

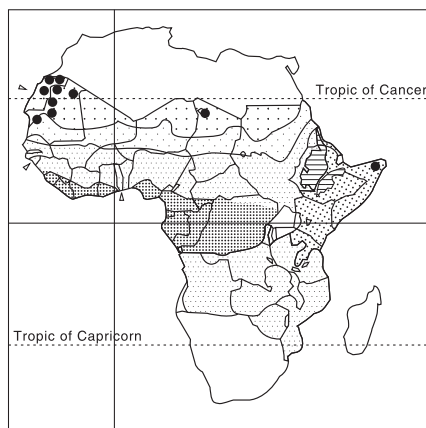
Shrub or tree 2-10(-15) m tall; trunk 10-30 cm Ø; branchlets finely grooved.

Wooded savanna; gallery forest and forest edges; open forest with *Brachystegia*; termite mounds; rain-forest and drier evergreen forest, especially at edges and in secondary associations; lakes, rivers, swamps; thickets; wooded grassland; miombo; coastal forest and woodland; 10-1830 m alt.

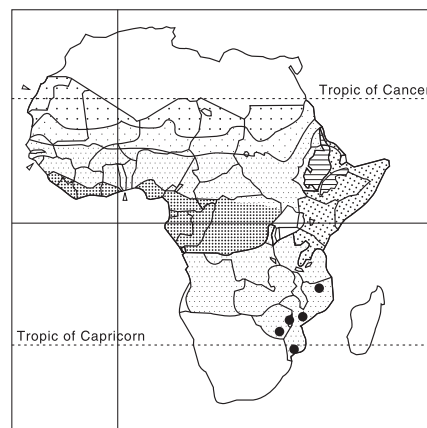
S. Africa (Transvaal).



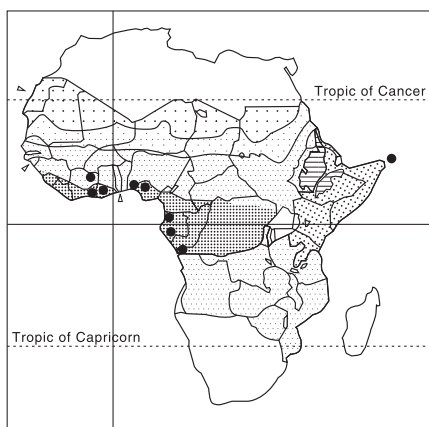
*Andrachne somalensis*



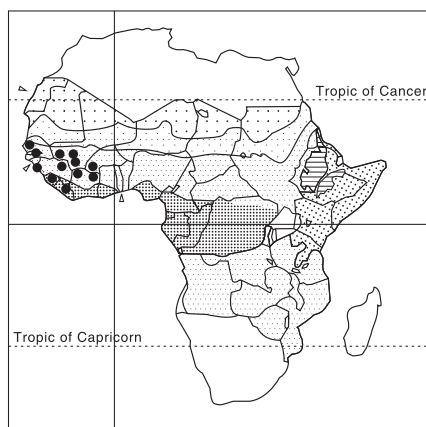
*Andrachne telephioides*



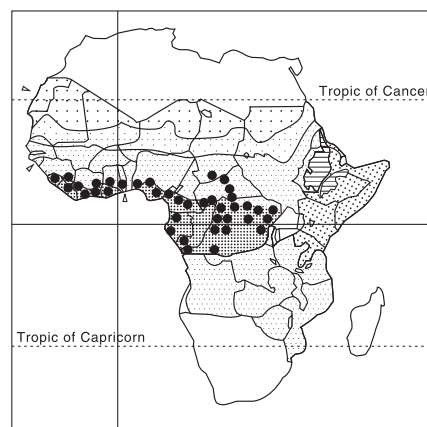
*Androstachys johnsonii*



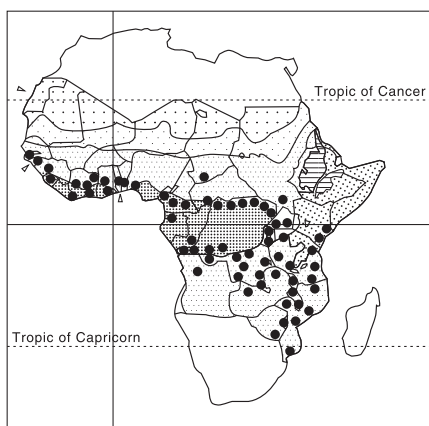
*Anthostema aubryanum*



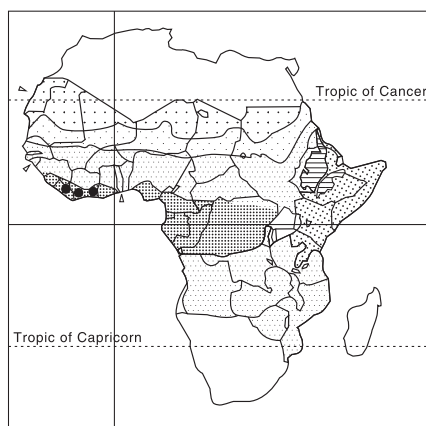
*Anthostema senegalense*



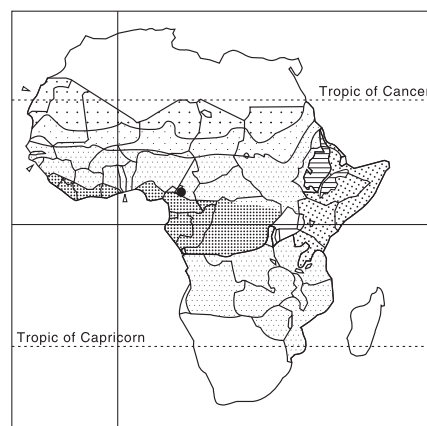
*Antidesma laciniatum*



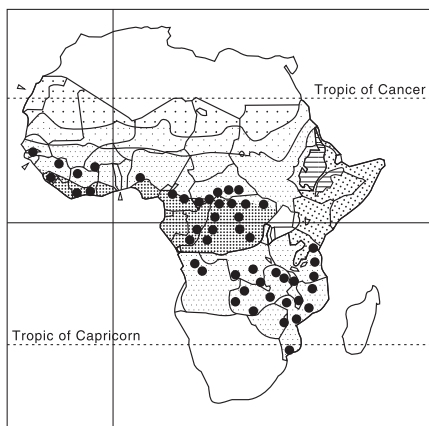
*Antidesma membranaceum*



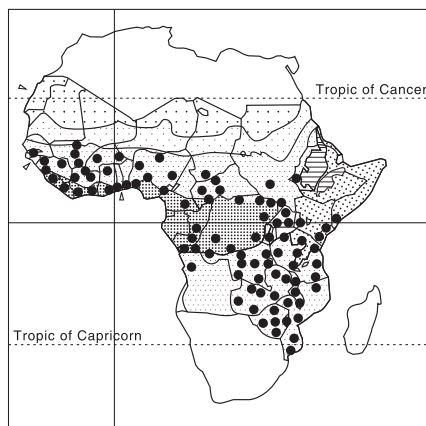
*Antidesma oblonga*



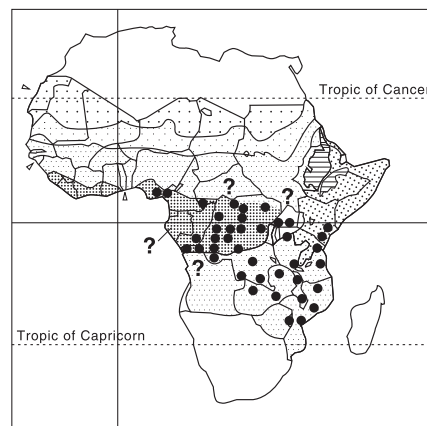
*Antidesma pachybotryum*



*Antidesma rufescens*



*Antidesma venosum*



*Antidesma vogelianum*

## ANTIDESMA / 7

**Antidesma laciniatum** Müll. Arg.

Shrub 2-3 m tall or tree 7-15 m, with tortuous bole 10-35 cm Ø, branched from near the base; branches sarmentous, pendent to the soil.

Forests (moist, deciduous, secondary, rain); fallow fields; gregarious; edges of forest patches; 200-1275 m alt.

Bioko (Fernando Poo).

Comprises 2 subspp.: – subsp. **laciniatum** (bas.: *A. laciniatum* Müll. Arg., incl. var. *genuinum* Pax & K. Hoffm. and var. *laciniatum*) and – subsp. **membranaceum** (Müll. Arg.) J. Léonard (bas.: *A. laciniatum* var. *membranaceum* Müll. Arg.; syn.: *A. pseudolaciniatum* Beille).

**A. oblonga** (Hutch.) Keay

Shrub or tree 1,2-3 m tall.

Rain-forest.

**A. pachybotryum** Pax & K. Hoffm.

Shrub or tree to 5 m tall.

Gallery forest on sometimes ± swampy soil.

**A. rufescens** Tul.

Shrub 2-3 m tall, or tree 5-8(-15) m; bole 5-40(-60) cm Ø.

Riverine forest on islands in stream or along river between wet meadows with *Echinochloa* and the shrubby belt with *Alchornea cordifolia*; edges of swampy forest with *Hallea stipulosa*; riverine fringes periodically flooded, with *Uapaca heudelotii* and *Hymenocardia ripicola*; mangrove; often in pure stands and forming thickets; usually on sand banks; lagoon margins; swampy scrub of floodplains; coastal dunes; sea-level to 1066 m alt.

Caprivi Strip, Namibia.

**A. senegalense** A. Juss.

Tree to 20-30 m tall or more.

Gallery forest.

Comprises 2 forms.

**A. venosum** E. Mey. ex Tul., excl. subsp. *membranaceum* (Müll. Arg.) Lye (= **A. membranaceum**).

syn.: *A. bifrons* Tul.; *A. boivinianum* Baill.; *A. fuscocinerea* Beille

Spreading, sometimes scrambling, deciduous shrub or evergreen tree, 1-9(-15) m tall; bole 10-20 cm Ø; branched from the base or with a clear bole to 4,5 m high; branches sometimes drooping; crown often dense.

Forest edges; riverine (with *Kigelia africana*) and lakeshore vegetation; open forest with *Brachystegia* or *Isoberlinia*; sandy banks and alluvial soils of permanent and seasonal rivers and lakes; mixed deciduous *Acacia* and miombo woodlands; dry evergreen thickets; dambo margins; termite mounds in grassy floodplains; sometimes in granite outcrop vegetation; gully forest; coastal forest; dune vegetation; 0-1830 m alt.

Namibia, Caprivi Strip, Botswana, S. Africa; ? Madagascar.

## ANTIDESMA

**A. vogelianum** Müll. Arg.

syn.: *A. nervosum* De Wild. (err. cal. pro *A. venoso*), p.p.

Evergreen shrub 2-3 m tall or tree 5-12(-15) m; bole 10-30 cm Ø.

Rain-forest with *Scorodophloeus zenkeri* or *Gilbertiodendron dewevrei* or *Cynometra alexandri*; periodically flooded forest with *Guibourtia demeusei*; mixed forests with *Julbernardia seretii* and *Grossera multinervis*; gallery forest; small wood in grassy formations; sheltered kloof forest; often along streams, lakes and swamps; 0-1980 m alt.

## SYNONYMS:

*Antidesma guineensis* G. Don = **Uapaca**

*schweinfurthii* Pax = **Maesobotrya floribunda**

*stenopetalum* Müll. Arg. = **Thecacoris**

## APODISCUS / 1

One species poorly known: fruit unknown? and only known from 2 syntypes?

**Apodiscus chevalieri** Hutch.

Tree 8-10 m, with sulcate or longitudinally wrinkled branchlets; fruit unknown?

River banks?

Only known from the two syntypes?

## ARGOMUELLERA / 5

Some species incompletely known: for 1 species (= 20%) no fruit known; for 1 species no ripe seeds seen; for 2 species no ecology recorded; 2 species ? only known from the type.

**Argomuellera basicorda** Peter ex Radcl.-Sm.

Unbranched evergreen shrub to 4 m tall.

Locally dominant in rain-forest undergrowth along river; 305 m alt.

**A. lancifolia** (Pax) Pax

syn.: *Wetriaria lancifolia* (Pax) Pax

Shrub or tree, monoecious; branchlets compressed, striate; fruit unknown.

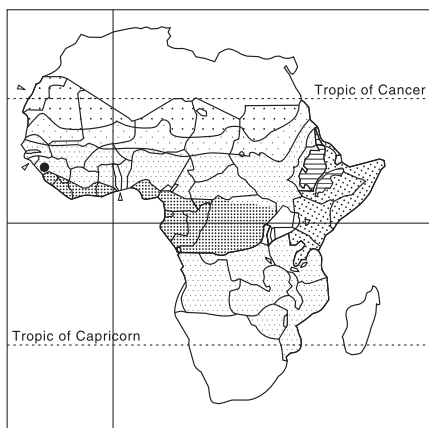
Ecology unknown; 450 m alt.

Only known from the type?

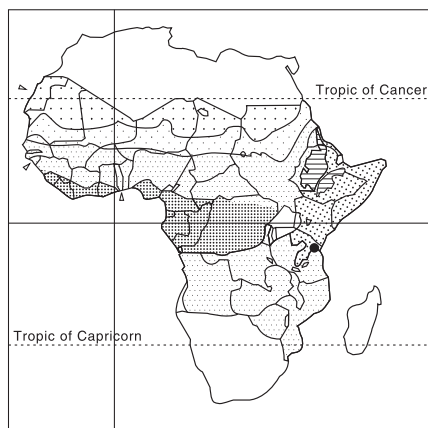
**A. macrophylla** Pax, incl. var. *laurentii* (De Wild.) Prain and fa. *laurentii* (De Wild.) Prain

syn.: *Pycnocomma hirsuta* Prain; *P. parviflora* Pax; *Wetriaria macrophylla* (Pax) Pax; *Pycnocomma laurentii* De Wild.; *P. sapinii* De Wild.; *P. sassandrae* Beille

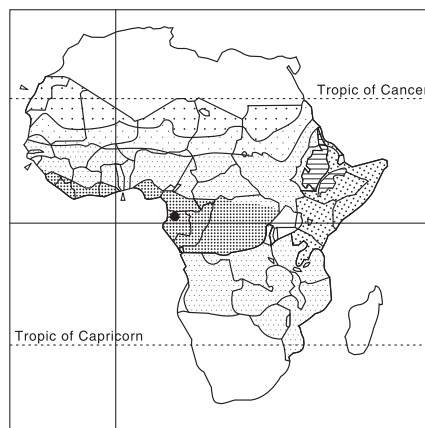
Unbranched or sparingly-branched woody herb, subshrub or tree 0,5-4(-9) m tall, but commonly not exceeding 4 m; stems with long leaves crowded at the apex (10-)25-40 cm long.



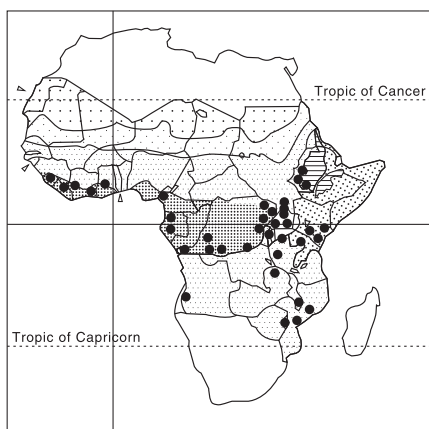
*Apodiscus chevalieri*



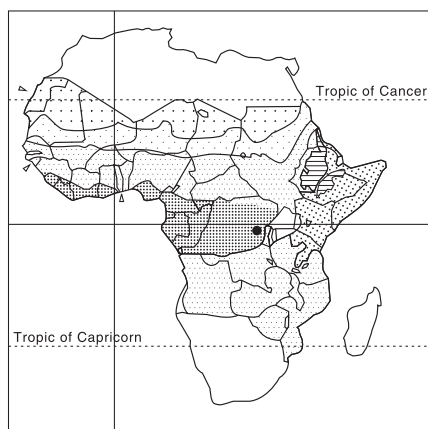
*Argomuelleria basicorda*



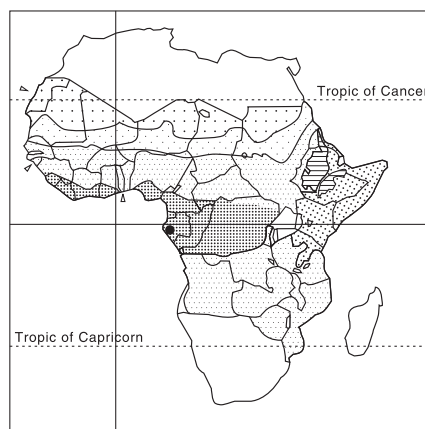
*Argomuelleria lancifolia*



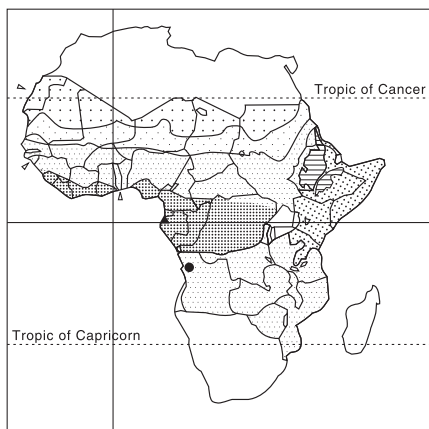
*Argomuelleria macrophylla*



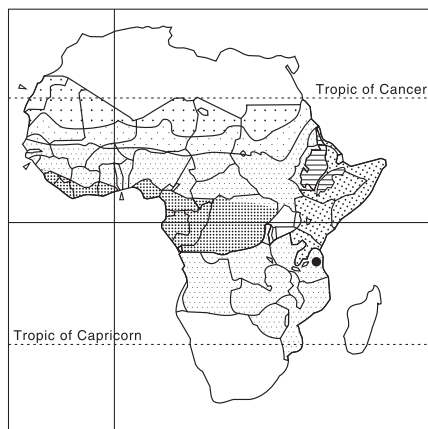
*Argomuelleria pierlotiana*



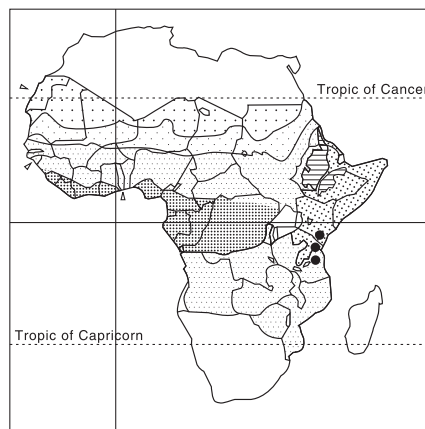
*Argomuelleria sessilifolia*



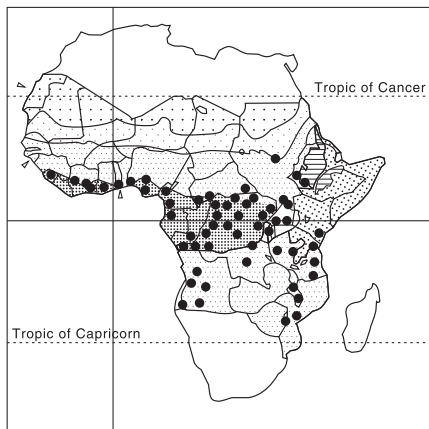
*Aristogeitonia gabonica* ▲  
*Aristogeitonia limoniifolia* ●



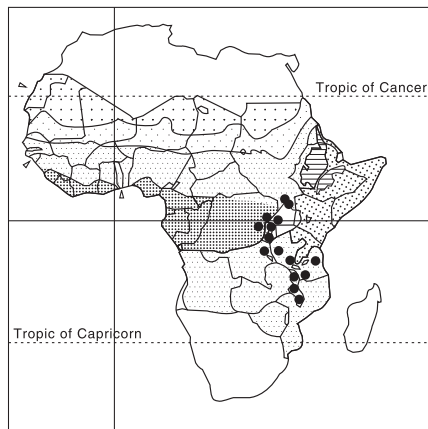
*Aristogeitonia magnistipula*



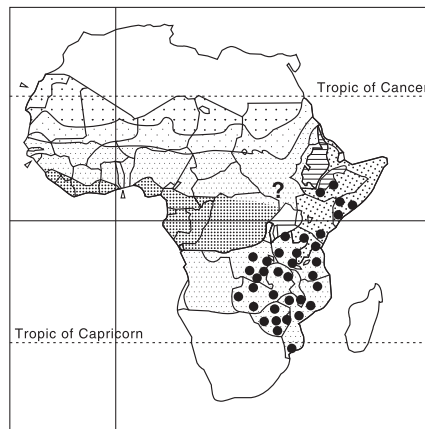
*Aristogeitonia monophylla*



*Bridelia atroviridis*



*Bridelia brideliifolia*



*Bridelia cathartica*



## ARGOMUELLERA MACROPHYLLA

Understorey of evergreen rain and mist forest; often near rivers; dry evergreen lakeshore forest; rain-forest with *Cynometra alexandri*; sclerophyllous forest with succulent *Euphorbia*; gallery forest; edges of grassy formations; sometimes common; 450-2000 m alt.

(**A. mjikendae** Q. Luke ined., Annotated checklist Shimba Hills, Kwale Distr., Kenya, in J. E. Afric. Nat. Hist. 94(1): 40, 2005.)  
syn.: *A.* sp. nov. sensu Beentje, Kenya trees, shrubs, lianas.  
Shrub 50 cm tall.  
SE Kenya, endemic. Not mapped.

**A. pierlotiana** J. Léonard

Shrub or tree 2-6(-8) m tall; ripe seeds unknown.  
Rain-forest with *Julbernardia*, *Celtis*, *Strombosia*, *Garcinia*, *Anonidium*; 800-1000 m alt.

**A. sessilifolia** Prain

syn.: *Wetriaia sessilifolia* (Prain) Pax & K. Hoffm.  
Shrub or tree.  
Ecology unknown.  
Only known from the type?

## ARISTOGEITONIA / 4

*Euphorbiaceae*, recently placed in *Picrodendraceae*.  
An Afro-Malagasy genus of 6 species.

Some species insufficiently known: for 1 species no flower seen; for another one no ecology recorded; for 1 species no ripe fruit nor seeds known; 2 species known only from the type.

**Aristogeitonia gabonica** Breteler, *Adansonia*, Sér. 3, 26: 168, 2004. – Icon: Breteler, o.c.: 169.

Shrub or small tree to 5 m tall; dioecious; trunk 30 cm D.B.H.; branches and branchlets glabrous; stipules partly united with petiole; leaves 1-foliolate (2-3-foliolate in *A. limoniifolia*); flowers fasciculate; on knob-like structures; ripe fruit and seeds unknown. Calcareous outcrops at inner border of mangrove vegetation.

**A. limoniifolia** Prain

Tree, monoecious.  
Ecology unknown.  
Only known from the type.

**A. magnistipula** Radcl.-Sm.

Shrub with leaves to 29 × 10,5 cm, the petioles to 10 cm, with foliaceous stipules to 4,5 × 2,5 cm; flower unknown.  
Dry coastal forest, in shade on hill- or ridge-tops (very abundant), on red soils.  
Only known from the type collected in 1995.

**A. monophylla** Airy Shaw; Kew Bull. 50: 809, 1995.

Laxly branched dioecious shrub or tree of untidy habit, to 9 m tall.

## ARISTOGEITONIA MONOPHYLLA

Pale reddish brown sandy loam and red sand, on limestone outcrops with evergreen forest patches; in coastal thickets above the high-tide line; 0-220 m alt.

## ATHROANDRA = ERYTHROCOCCA

## BRIDELIA / 16

No ripe fruit seen in 1 species (*B. eranalis*).

**Bridelia atroviridis** Müll. Arg.

syn.: *B. zenkeri* Pax

Straggling shrub or small much-branched spreading tree 2-12 (-20) m tall, with stiff straight branchlets; bole to 45 cm Ø; branches sometimes spiny.

Forest edges, associated bushland and thicket; common in secondary formations; also by lakes and rivers; infrequent in evergreen forest and forest openings; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; 70-1675 m alt.

**B. brideliifolia** (Pax) Fedde, incl. subsp. *pubescentifolia* J. Léonard; Kew Bull. 50: 809, 1995.

bas.: *Neogoetzea brideliifolia* Pax

syn.: *Bridelia neogoetzea* Gehrm.

Shrub or more commonly a low-branched small to large tree 4-30 m tall, with clear bole 10-60 cm Ø and a spreading rounded crown; trunk sometimes spiny.

Evergreen forest, mostly at edges, along rivers or in secondary formations, also in associated bushland and thickets; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; often together with *Macaranga kilimandscharica* in and at edge of *Albizia* forest; edge of dense mixed evergreen relict forest patches; 860-2440 m alt.

**B. cathartica** G. Bertol.

syn.: *B. microphylla* Chiov.

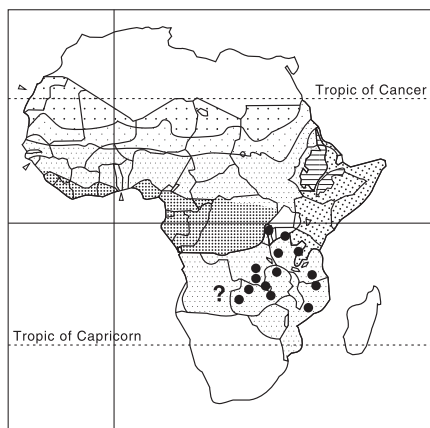
Rather variable scrambling single- or many-stemmed much branched shrub or tree to 7 m tall with a dense rounded crown and with horizontal or pendent branches.

Open forest with *Brachystegia* and *Pterocarpus* on rocky screes; riverine *Commiphora* woodland on steep limestone slopes; sandy soil and dunes in coastal bush, littoral scrub and dune woodland and forest; also in secondary forest and old cultivations; floodplain clay and alluvium; sandveld; riverine vegetation; mixed deciduous woodland and evergreen rain-forest; sandy clay soils; Kalahari sand; sandy loam; rocky outcrops and hill slopes; dambos; floodplain and mushitu margins; wooded grassland; mopane veld; mixed deciduous woodland; quartzitic and granite soils; grassland, mixed tree savanna, deciduous thicket, miombo and mopane woodlands; 0-2000 m alt.

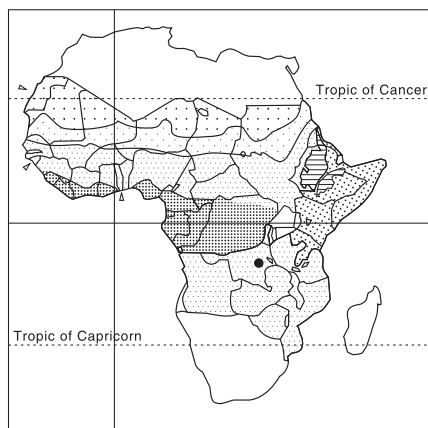
Namibia, Caprivi Strip, Botswana, S. Africa.

Comprises 2 subspp.; 2 vars., 5 forms (see Enum. 4: 608-609, 1997) but intermediates known.

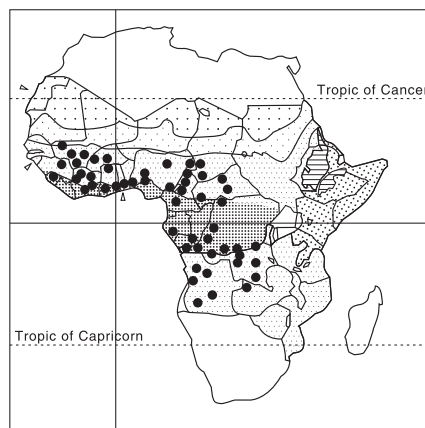




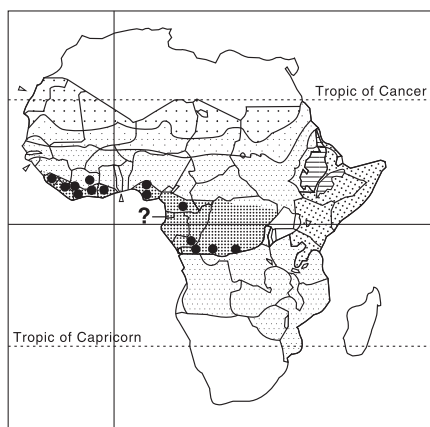
*Bridelia duvigneaudii*



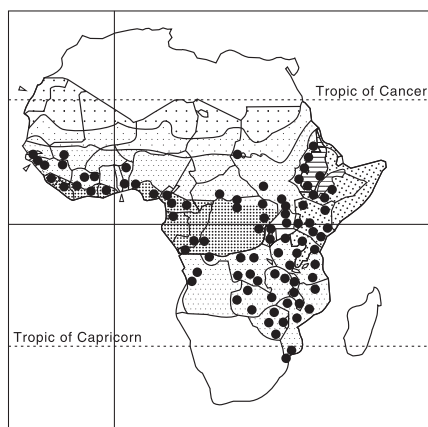
*Bridelia eranalis*



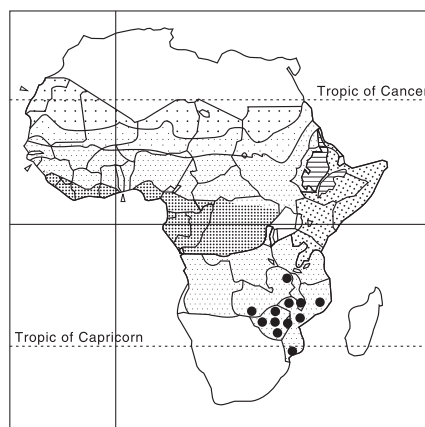
*Bridelia ferruginea*



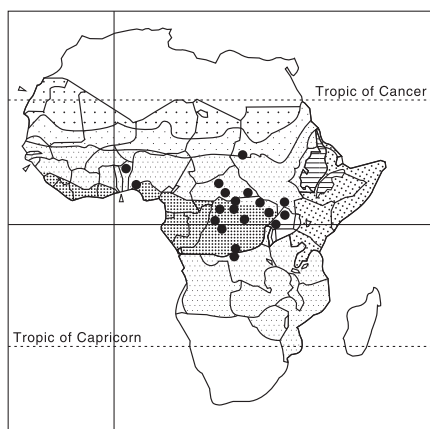
*Bridelia grandis*



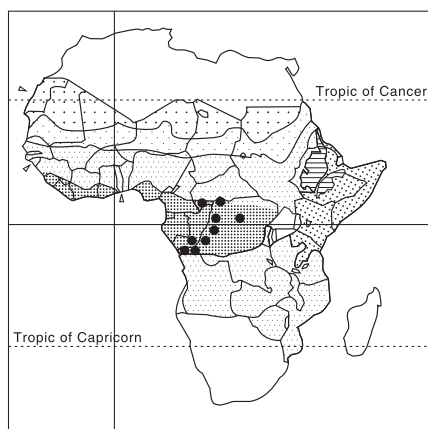
*Bridelia micrantha*



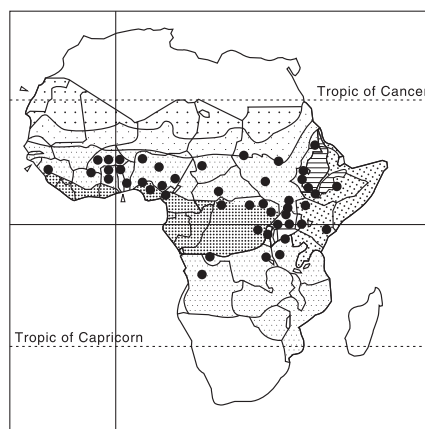
*Bridelia mollis*



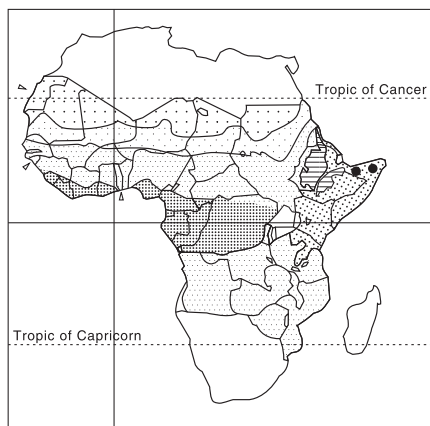
*Bridelia ndellensis*



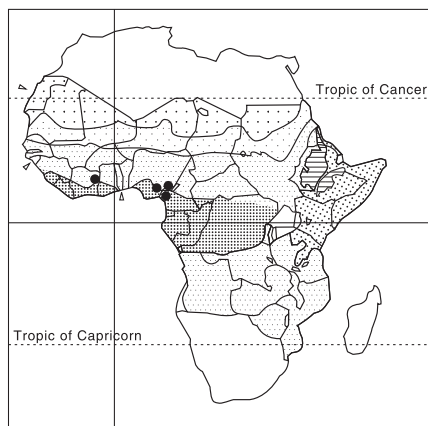
*Bridelia ripicola*



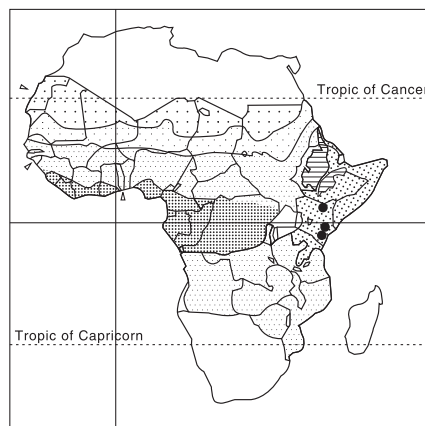
*Bridelia scleroneura*



*Bridelia somalensis*



*Bridelia speciosa*



*Bridelia taitensis*

## BRIDELIA

**B. duvigneaudii** J. Léonard

Shrub 1,5-6 m tall; stem 4-7 cm Ø.

Open forest, very often on quartzite or copper-rocks; sometimes at edges of muhulu; miombo and Kalahari Sand woodlands and thickets; riverine vegetation and occasionally mushitu; sometimes in chipya woodland; often on sandy soil (see *Tragia micromeres*); sometimes amongst rocks and on granite outcrops; 1000-1675 m alt.

Angola?

**B. eranalii** J. Léonard

Perennial herb 50-80 cm tall with some erect, woody, simple or little ramose stems arising from a woody rootstock; mature fruit unknown.

Savanna; ±700 m alt.

**B. ferruginea** Benth., excl. var. *orientalis* Hutch. (= *B. ndellensis*).

syn.: *B. micrantha* var. *ferruginea* (Benth.) Müll. Arg.; *B. speciosa* var. *kourousensis* Beille

Shrub or tree 1-8 m tall, often ± deformed, sometimes with spiny branches.

Grassy or wooded savanna; grassy plain; laterite in savanna with *Hymenocardia acida*; gallery forest; bushy wooded places; secondary thickets; outskirts of primitive forest; 500-1000 m alt.

**B. grandis** Pierre ex Hutch.; Bull. Jard. Bot. Etat, Bruxelles 29: 195, 1959.

syn.: *B. aubrevillei* Pellegr.

Bushy shrub 3-5 m tall with spreading branches, or tree; aerial roots at the base of the stem; spines on branches and on young trees.

Forest; wooded savanna; fallow land; secondary humid regrowth; 525 m alt.

Comprises 2 subspp.

**B. micrantha** (Hochst.) Baill.

bas.: *Candelabria micrantha* Hochst.

syn.: *Bridelia abyssinica* Pax (? incl. var. *rosenii* Gehrm.); *B. mildbraedii* Gehrm.; *B. speciosa* Müll. Arg. var. *trichoclada* Müll. Arg.; *B. zanzibarensis* Vatke & Pax; *B. stenocarpa* Müll. Arg.

Shrub, sometimes scandent, or much-branched tree 2-18(-27) m tall; bole 2-25(-50) cm Ø; with spreading or often pendulous branches; trunk and branches usually with scattered woody thorns.

Evergreen forest, generally at edges or in regrowth, associated bushland and thicket; along rivers, by lakes and swamps; gully forest; miombo woodlands; seasonally flooded grassland, dambos; swamp forest and mangrove swamp margins; sometimes on granite outcrops and on termitaria; locally common or often abundant; sclerophyllous formations on lava; 50-2300 m alt.

S. Africa; Réunion.

Comprises 2 vars.: – var. **micrantha** and – var. **gambicola** (Baill.) Müll. Arg. (bas.: *B. gambicola* Baill.).

CHEEK, M. & al. Pl. Kupe..., Cameroon: 284, 2004, treat *B. micrantha* and *B. stenocarpa* separate.

## BRIDELIA

**B. mollis** Hutch.

Shrub or tree to 9 m tall, branching close to the ground.

Common on well drained stony or sandy soils, often among rocks and on granite outcrops (kopjes, dwalas) and sandstone ridges; sandveld and dry deciduous bush and thickets; wooded grassland; deciduous woodland; riverine vegetation; 200-1525 m alt.

Botswana, Namibia, S. Africa.

**B. ndellensis** Beille

syn.: *Gentilia hygrophila* Beille; *Bridelia ferruginea* Benth. var. *orientalis* Hutch.

Much-branched deciduous tree 4-8-15 (-20) m tall; bole 10-30 cm Ø, with woody spines 1-5 cm long; aerial roots at base of stem.

Stony ground; moist ravines; swamps; fringing forest; open bushland; exceptionally in fallows; *Albizia gummifera*-*Macaranga* forest; 1200-2000 m alt.

Could well occur in Ethiopia.

**B. ripicola** J. Léonard

Shrub or tree 4,5-10 m tall; bole 10-27 cm Ø; generally with aerial roots and woody simple or ramose spines.

Riverine formations periodically flooded; rarely in swampy forests or regrowth on alluvium; common.

**B. scleroneura** Müll. Arg.

syn.: *B. scleroneuroides* Pax; *B. paxii* Gehrm.; *B. angolensis* Müll. Arg. var. *nitida* Beille

Usually single-stemmed densely crowned shrub or tree 1,5-5-10 m tall, with the ultimate branches drooping.

Deciduous woodland; thicket; wooded grassland; commonly associated with *Combretum*; rarely in *Brachystegia* woodland; grassy savanna; dry riverine forest; *Loudetia arundinacea* grassland with scattered trees of *Terminalia laxiflora*, *T. brownii*, *Pterocarpus lucens*, *Combretum collinum*, *Vitex doniana* on rocky outcrop; 440-2400 m alt.

Not in the Flora Zambesiaca area (**B. cathartica**). Yemen.

Comprises 2 subspp.

A long list of West African taxa is known to have their eastern limit within Ethiopia: *Bridelia scleroneura*, *Dissotis decumbens*, *Lannea barteri*, *Sclerocarya birrea* subsp. *birrea*, *Zanthoxylum lepreurii*, *Anogeissus leiocarpus*, *Abrus canescens*, *Desmodium schweinfurthii*, *Macrotyloma stenophyllum*.

**B. somalensis** Hutch.

Multistemmed shrub or tree 2-4,5(-7) m tall.

Seasonally dry rocky limestone river-beds; 400-700(-1340) m alt.

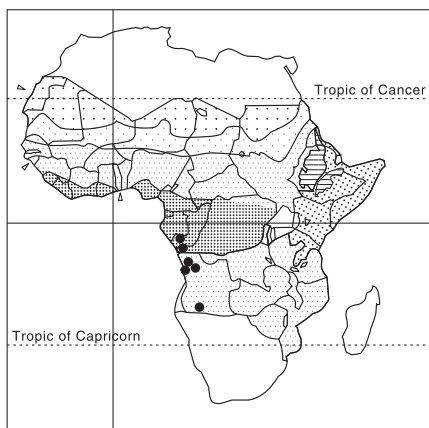
**B. speciosa** Müll. Arg., excl. var. *kourousensis* Beille (= *B. ferruginea*), but incl. vars. *psiloclada* Müll. Arg. and *medinanensis* Beille

syn.: *B. perrotii* Beille

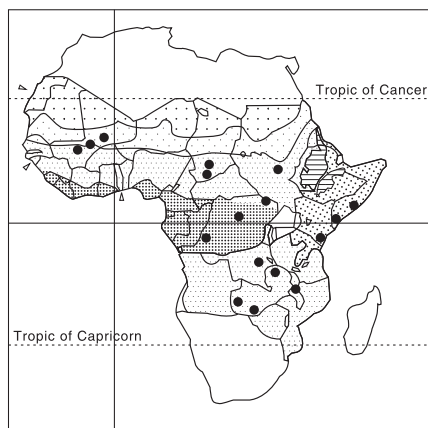
Tree to 10 m.

Forest; 1400-1600 m alt.

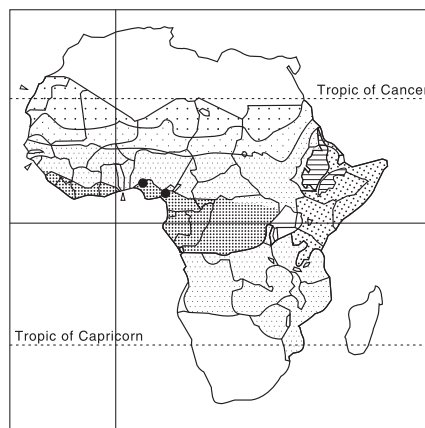
Not in Central African Rep. (**B. micrantha**).



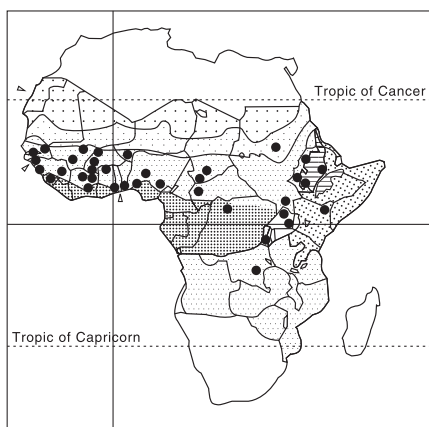
*Bridelia tenuifolia*



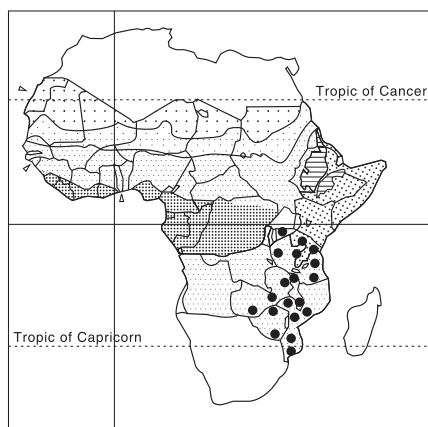
*Caperonia fistulosa*



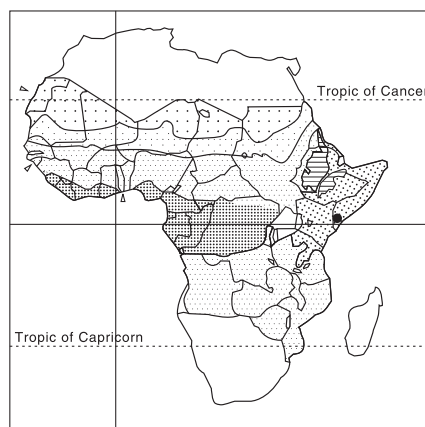
*Caperonia latifolia*



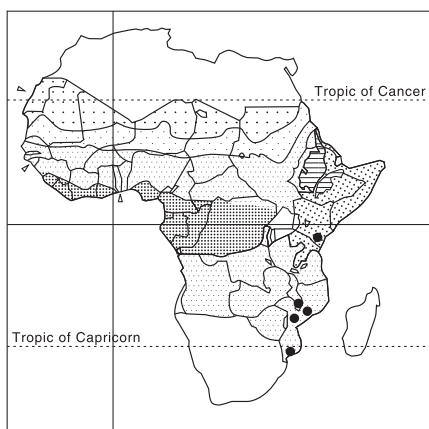
*Caperonia serrata*



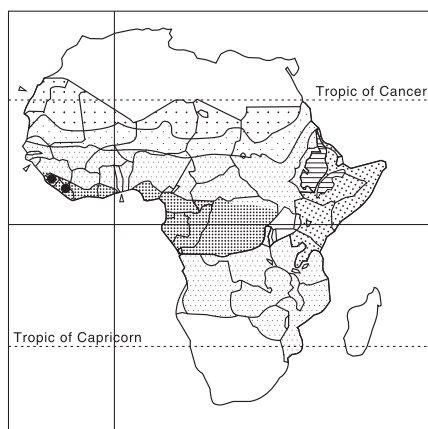
*Caperonia stuhlmannii*



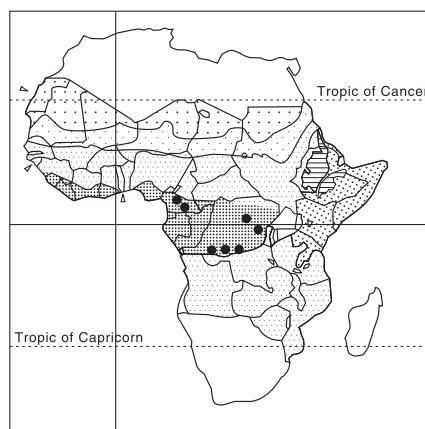
*Caperonia subtrotunda*



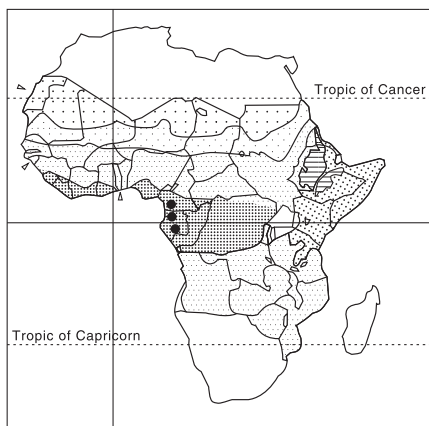
*Cavacoa aurea*



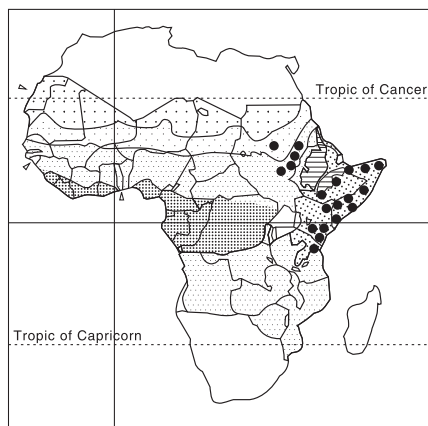
*Cavacoa baldwinii*



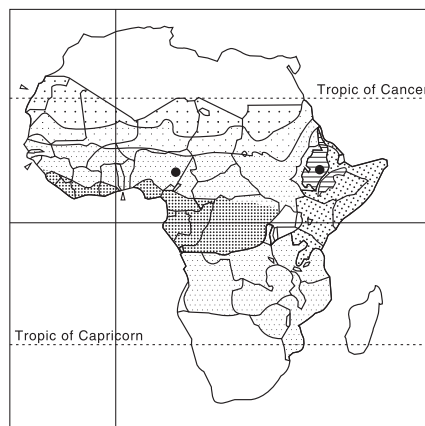
*Cavacoa quintasii*



*Centroplicus glaucinus*



*Cephalocroton cordofanus*



*Cephalocroton incanus*

## BRIDELIA

**B. taitensis** Vatke & Pax

syn.: *B. nigricans* Gehrm.

Straggling or spreading many-stemmed shrub or tree 1,5-4,5 m tall, rarely taller.

Dry evergreen bushland and forest edges; deciduous bushland; often along streams or in rocky places; 440-1200 m alt.

**B. tenuifolia** Müll. Arg.

Shrub or tree 1,5-5 m tall.

Coastal wooded formations and gallery forest; edge of mangrove; around a lake; also dry hills?

Comprises 2 vars.

Not in West Africa (**B. scleroneura**).

SYNONYMS (see also Enum. 4: 609, 1997):

*Bridelia polystachya* (Hook. f. ex Planch.) Baill. = **Cleistanthus**

**CAPERONIA / 5**

For one species (= 20%) no ecology recorded and only known from the type.

**Caperonia fistulosa** Beille

Similar to *C. stuhlmannii*, but differing as follows: plant not glanduliferous; the hollow stem somewhat thicker (to 1 cm thick) and somewhat inflated; stipules 2-8 × 1,5-5 mm, ovate to ovate-lanceolate and slightly fimbriate; leaf-blade very slightly shorter and broader; inflorescences slightly shorter; male flower buds to 1,5 mm Ø and glabrous; female sepals larger, accrescent to 3-8 × 1-4 mm; styles 1-2 mm long; fruit somewhat larger (5 × 7-9 mm), more coarsely echinate and hispid.

River banks, floodplains, dambos and drying waterholes in heavy black clay and sandy soils; in seasonally waterlogged or permanently moist ground, with grasses and reeds; valley grassland and forest; mud, very heavy black cotton soil; swamp; 0-1030 m alt.

Caprivi Strip, Namibia; Botswana.

Comprises 2 vars.

**C. latifolia** Pax

syn.: *C. macrocarpa* Pax & K. Hoffm.

Annual, weak herb with simple, rather stout stems to 90 cm tall.

In and by ponds; 20-570 m alt. (São Tomé).

São Tomé; tropical America.

**C. serrata** (Turcz.) C. Presl

bas.: *Lepidococca serrata* Turcz.

syn.: *Croton serratus* (Turcz.) Hochst. ex Baill.; *Argythamnia senegalensis* (Müll. Arg.) Kuntze; *A. hochstetteri* Kuntze

Erect or ascending somewhat branched deep-rooted annual herb (20-)75-90(-150) cm tall; root pithy; stem and branches hollow.

In and around standing water of seasonal flooding; swamp on lateritic slab; very heavy black cotton soil; 550-1600 m alt.

## CAPERONIA

**C. stuhlmannii** Pax – Icon.: C. D. K. Cook, Aquat. Wetland Pl. South. Africa: 134, 2004.

Erect, ascending, scrambling or floating, tufted annual herb, to 1,8 m tall, although commonly much shorter, often branched; stems fibrous, to 7 mm thick.

River banks, floodplains and pans; swamps; lakesides; heavy black clay and sandy soils; seasonally waterlogged or permanently moist ground; sometimes in standing water; 6-1830 m alt. S. Africa.

**C. subrotunda** Chiov.

Annual herb to over 30 cm tall; stem ± 4 mm Ø near base, branching from near the base; leaves subcordate.

Ecology unknown.

Only known from the type collected in 1912. – Very distinctive but incompletely known taxon.

**CAVACOA / 3**

One species insufficiently known: no fruit seen, no ecology recorded.

**Cavacoa aurea** (Cavaco) J. Léonard

Shrub or tree to 13 m tall with regular branching; trunk irregularly fluted below.

Forest, possibly on limestone; dense mixed evergreen forest and coastal forest; often beside streams; sandy soil; 1-850 m alt. S. Africa.

**C. baldwinii** (Keay & Cavaco) J. Léonard

Dioecious shrub 2-3 m tall; fruit unknown.

Ecology unknown.

**C. quintasii** (Pax & K. Hoffm.) J. Léonard

bas.: *Grossera quintasii* Pax & K. Hoffm.

Tree 4-20 m tall with bole 2-8 m, 10-50 cm Ø, deeply fluted.

Rain-forest; sometimes very common; on schist and mica-schist; with *Julbernardia* sp.

São Tomé, Annobon.

Ornamental tree with numerous, decorative flowers, linden-tree smelling.

**CENTROPLACUS / 1**

Placed in *Pandaceae* by R. Govaerts & al., World Checklist and Bibliography of Euphorbiaceae... 4: 1597, 2000.

**Centroplacus glaucinus** Pierre

syn.: *Microdesmis paniculata* Pax (type Zenker 1775 and Zenker 1157 in herb. Madrid, MA, fide Gamarra, Anal. Jard. Bot. Madrid 57: 193, 1999).

Dioecious tree 10-20 m tall; bole 20 cm Ø, with slender, terete branchlets, first horizontal then curved to the soil.

Rain-forest on laterite; common; 450-500 m alt.



## CEPHALOCROTON / 3

**Cephalocroton cordofanus** Hochst., incl. var. *genuinus* Müll. Arg., nom. invalid., and var. *betulinus* (Schweinf.) Müll. Arg. syn.: *Acalypha betulina* Schweinf.

Erect, sprawling or subscaudent much-branched shrub 0,3-3 m tall, with the young parts often somewhat viscid.

Sandy or generally black clayey soils in seasonally waterlogged grassland; *Acacia-Commiphora* bushland on deep red sands; mixed scrub or thickets; along banks of water courses in *Boswellia-Commiphora-Acacia* bushland; troublesome weed of cultivations; cultivated patch with *Acacia seyal*, *Balanites* sp., *Hyparrhenia pseudocymbaria*, *Sorghum* sp.; 20-1600 m alt.

**C. incanus** M. G. Gilbert

syn.: *C. cordofanus* sensu Radcliffe-Smith, Kew Bull. 39: 785, 1984 quoad specim. Daramola, Okoro & Akin 5 (in FHI 99594).

Shrub to 1 m tall.

Open bushland with *Anogeissus leiocarpa*, *Grewia*, *Euclea schimperi*, *Combretum*; found near edge of road; 1400 m alt.

The Western valley of Ethiopia is a refugium for a small but select set of Ethiopian endemics: *Boswellia pirottae*, *Cussonia ostinii*, *Polyscias farinosa*; *Cephalocroton incanus* is found in exactly the same altitudinal zone; these species could turn up far to the west of Ethiopia in other refugia.

**C. mollis** Klotzsch

Perennial slightly woody much-branched herb or subshrub to 2 m tall, rarely taller.

Clay soil and black cotton soil in dried-out depressions; areas of impeded drainage and seasonal swamps in open, rough grassland and mixed open bushland; hot dry veld, usually on sandy soil; dry water courses; mopane woodland and scrub; *Acacia-Colophospermum* woodland; 335-1500 m alt.

Botswana, Namibia, S. Africa.

## CHAETOCARPUS / 2

A tropical genus of 17 species, mainly American, a few in Asia (4) and 1 in Madagascar.

**Chaetocarpus africanus** Pax – Icon.: Breteler in Adansonia, Sér. 3, 24: 223, 2202 (neotype designated).

syn.: *Neochevaliera brazzavillensis* Beille

Straggling or scandent shrub 2-7 m tall with bole 20-25 cm Ø, or weak-stemmed tree 8-18 m.

Riverine evergreen forest and thicket; understory of adjacent woodland; mostly on sandy alluvium; fallow land; rain-forest; ukundu; muhulu; very common in Bas-Congo and Kasai (Zaire); 1280-1290 m alt. (Zambia).

**C. gabonensis** Breteler – Icon: Breteler l.c.

Shrub or tree to at least 25 m tall; bole 30 cm D.B.H.; distinguished from *C. africanus* by: smaller stipules (3-9 × 0.5-1, 3 mm vs. 8-12 × 3-5 mm), pypyraceous leaves (vs. coriaceous), male flower with fewer inner sepals (2-3 vs. 4-5) and fewer stamens (8-10 vs. c 13), and from of female flower disc.

Gallery forest, forest edge in forest-savanna mosaic.

## CHLAMYDOJATROPHA / 1

Genus of uncertain status: male flower and fruit unknown; the single species only known from the type.

**Chlamydojatropha kamerunica** Pax & K. Hoffm.

Dioecious shrub known only from female material; until male flowers are found, no proper evaluation of it can be made; fruit unknown.

Cameroon: Nkolebunde, flooded place in open forest; 200 m alt. – Not mapped.

Only known from the type (Ledermann 884).

## CHROZOPHORA / 4

**Chrozophora brocchiana** (Vis.) Schweinf., incl. var. *hartmannii* Schweinf.

bas.: *Croton brocchianus* Vis.

syn.: *Croton macrocalyx* Ehrenb. ex Schweinf.; *Chrozophora senegalensis* var. *lanigera* Prain; *Croton lanigerus* (Prain) Perr. ex Prain

Undershrub 0,25-1 m tall with stout, ± erect, much-branched stems.

Sandy soil.

Cape Verde Islands; SE Egypt; Arabia.

**C. oblongifolia** (Del.) A. Juss. ex Spreng.

Perennial herb, 30-80 m tall, woody at the base with many erect stems.

Detritus at edge of dry water course; 10-1200 m alt.

Socotra to NW India.

**C. plicata** (Vahl) A. Juss. ex Spreng., excl. syn. Lam.; incl. var. *erecta* Prain; incl. var. *obliquifolia* (Vis.) Prain

syn.: *C. parvifolia* Klotzsch ex Schweinf.; *Croton lanuginosus* K. Schum. ex Schweinf.

Branched, prostrate or ascending annual herb or short-lived subshrub, 15-50 cm tall and 1,5 m across.

Mostly in areas subjected to seasonal flooding, along rivers and run-off channels; damp or drying black clay and alluvium; mudflats; sandbanks; pan margins; 40-2200 m alt.

S. Africa; Egypt; Syria, Palestine, W Arabia.

**C. senegalensis** (Lam.) A. Juss. ex Spreng., excl. var. *lanigera* Prain (= *C. brocchiana*).

bas.: *Croton senegalensis* Lam.

Undershrub, much-branched, sometimes prostrate or half erect, 25-40 cm tall; stems slender, woody.

Sands.

The true **Chrozophora tinctoria** (L.) Raf. [syn.: *C. obliqua* (Vahl) Juss. ex Spreng.] does not occur in tropical Africa.

**CLAOXYLON = ERYTROCocca***Claoxylon preussii* Pax = **Discoclaoxylon hexandrum****CLEIDION / 1****Cleidion gabonicum** Baill.

Monoecious or dioecious shrub or tree, 2-10(-16) m tall.

Periodically flooded forest or swampy forest; common in places.

## SYNONYM:

*Cleidion preussii* (Pax) Bak. = **Tetracarpidium conophorum****CLEISTANTHUS / 22 (+1)**

«La révision des *Cleistanthus* confirme donc une fois de plus l'impression... que la flore guinéo-congolaise est une flore fixée dont la fixation des caractères remonte à une époque reculée» (J. Léonard, Bull. Jard. Bot. Etat, Bruxelles 30: 460, 1960).

Several species incompletely known: for 2 species (= 9%) no habit recorded, for 3 species (= 13%) the male flower known only in bud, for 2 species (= 9%) no female flower seen, for 5 species (= 22%) the fruit is unknown and in another species no ripe fruit seen (= together 26%), for 1 species (= 4%) ripe seeds unknown, no ecology recorded for 5 species (= 22%), and 5 species (= 22%) known only from the type.

(***Cleistanthus beentjei*** Q. Luke, ined., Annotated checklist Shimba Hills, Kwale Distr., Kenya, in J. E. Afric. Nat. Hist. 94(1): 41, 2005.)

syn.: *C.* sp. nov. aff. *michelsonii*

Tree 12 m tall; bark brown, branches pendent; with flowers. SE Kenya. Not mapped.

**C. bipindensis** Paxsyn.: *Zenkerodendron bipindensis* Gilg in sched.

Monoecious tree ± 6 m tall; bole 15-50 cm Ø.

Swampy or riverine forest.

**C. camerunensis** J. Léonard

Habit and fruit unknown.

Ecology unknown.

Only known from the type collected in 1955-56.

**C. caudatus** Pax ex De Wild. & T. Durand

Monoecious shrub; male flowers only known in bud; ripe fruit unknown.

Rain-forest.

Only known from the type collected ante 1900 (Dewèvre 1099; specim. Michelson 711 excl.).

**C. duvipermaniorum** J. Léonard

Monoecious, climbing shrub or tree, 1-10 m tall; bole straight, 10 cm or more Ø; ripe seeds unknown.

Gallery in open forest zones; humid to swampy soil; ± 1000-1300 m alt.

**CLEISTANTHUS****C. evrardii** J. Léonard

Monoecious tree 7 m tall; bole 20 cm Ø; male flower only known in bud.

Rain-forest, sometimes flooded, with *Gilbertiodendron dewevrei*.

Only known from the type collected in 1958.

**C. gabonensis** Hutch.

Monoecious tree 5-9 m tall or liane.

Ecology unknown.

**C. inundatus** J. Léonard

Monoecious shrub or tree 4-18 m tall; bole 9-35 cm Ø, sometimes with stilt roots.

Periodically flooded forest with *Guibourtia demeusei*; riverine formations with *Uapaca heudelotii*, *Irvingia smithii*; rarely in swampy forest; to 500 m alt. in Zaire; to 700 m in Angola.

Comprises 2 vars.

**C. itsoghensis** Pellegr.

Monoecious tree to 15-16 m tall (bole 20-30 cm Ø) or smaller 4-5 m tall.

Rain-forest; swampy or riverine forests; fallow land.

**C. kasaiensis** J. Léonard

Monoecious or dioecious tree 6-18 m tall, bole 10-25 cm or more Ø.

Half-deciduous forest.

Comprises 2 vars.

**C. kwangensis** J. Léonard

Monoecious tree 3-6 m.

Swampy forest; edge of gallery; common in places.

**C. letouzeyi** J. Léonard; Cable & Cheek, Plants of Mt. Cameroon: 48, 1998.

Monoecious shrub or tree to 8 m tall; bole 20 cm Ø; fruit unknown.

Forest.

**C. libericus** N. E. Br.

Monoecious shrub or tree, 3-15 m tall.

Rain-forest.

? Nigeria (sterile material). – São Tomé.

**C. michelsonii** J. Léonard

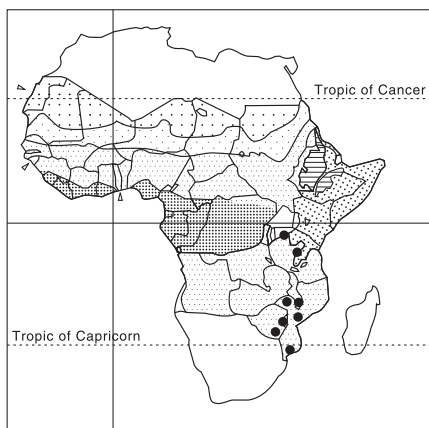
Monoecious tree 30-40 m; bole 0,8-1,5 m Ø, to 20 m high, rounded, generally without buttresses.

Rain-forest; common in places (Maniema, Zaire); 500-700 m alt.

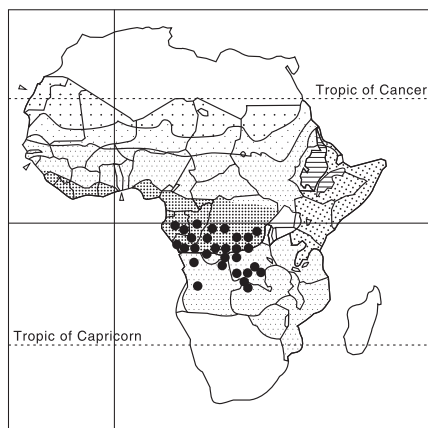
**C. mildbraedii** Jabl.

Monoecious or dioecious tree (5-)10-35 m; bole 7-18 m tall, 20-80 cm Ø.

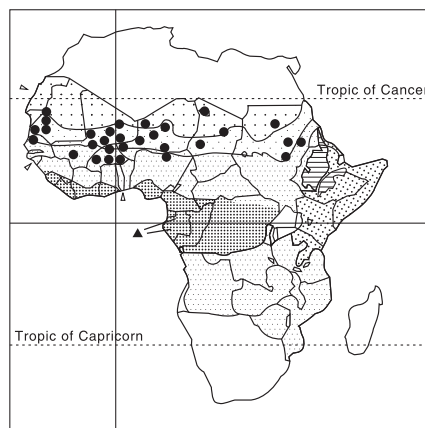
Riverine forest; half-deciduous rain-forest with *Scorodophloeus zenkeri* or with *Gilbertiodendron dewevrei*; sometimes swampy or periodically flooded forest; rather common.



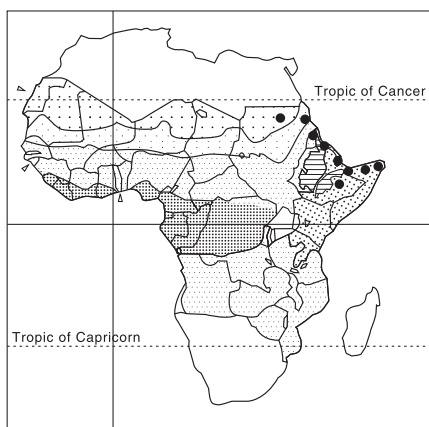
*Cephalocroton mollis*



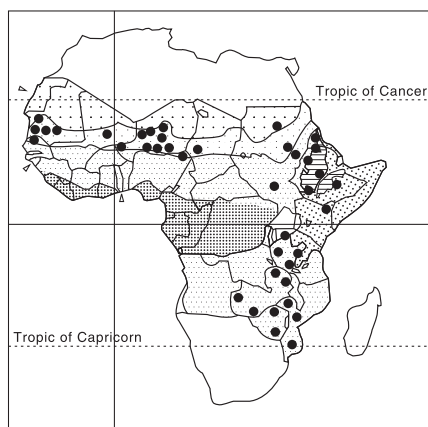
*Chaetocarpus africanus*



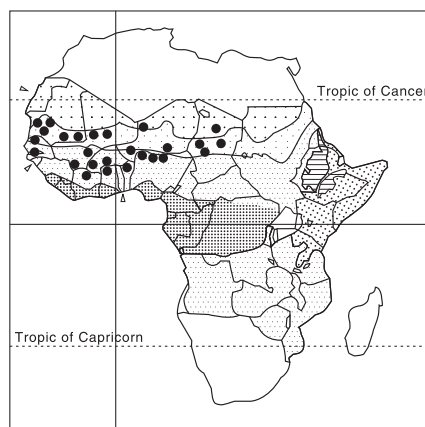
*Chaetocarpus gabonensis* ▲  
*Chrozophora brocchiana* ●



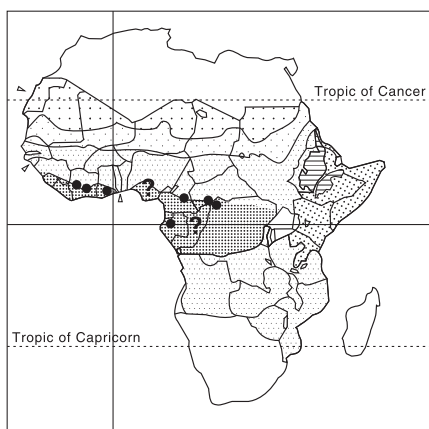
*Chrozophora oblongifolia*



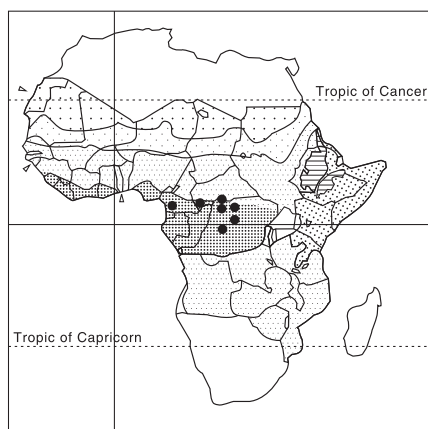
*Chrozophora plicata*



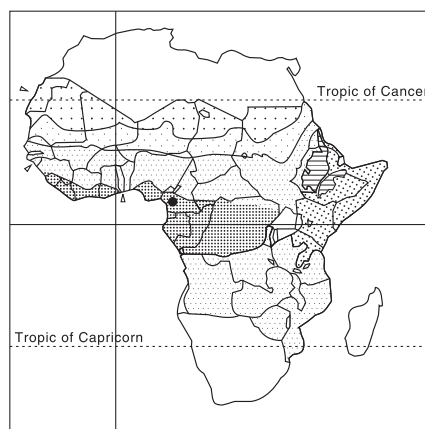
*Chrozophora senegalensis*



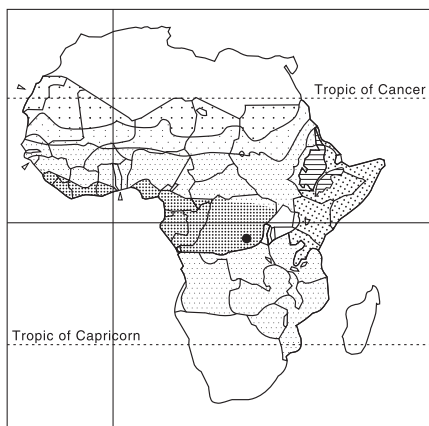
*Cleidion gabonicum*



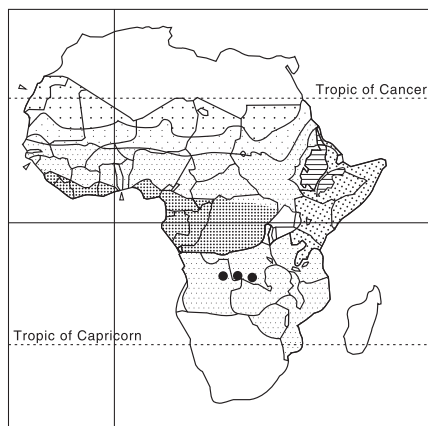
*Cleistanthus bipindensis*



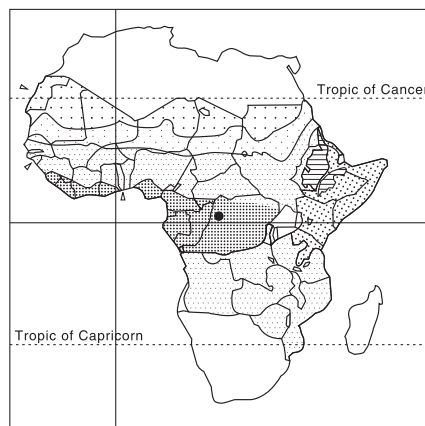
*Cleistanthus camerunensis*



*Cleistanthus caudatus*



*Cleistanthus duvipermaniorum*



*Cleistanthus evrardii*

## CLEISTANTHUS

**C. ngounyensis** Pellegr.

Tree with slender striate branches; female flower and fruit unknown.

Ecology unknown.

Only known from the type collected in 1916.

**C. pierlotii** J. Léonard

Monoecious tree 17-35 m, with rounded bole without buttresses, to 20 m tall, 28-70 cm Ø; male flower only known in bud.

Transitional rain-forest; common in places; 850-1400 m alt.

**C. polystachyus** Hook. f. ex Planch.

syn.: *Bridelia polystachya* (Hook. f. ex Planch.) Baill.

Dioecious or monoecious straggly shrub or much-branched tree 3-30 m tall (bole 10-100 cm Ø), with pendulous branches reaching the ground; trunk fluted.

Riverine forest; sometimes in swampy forest; gallery in savanna; mountain forest with *Newtonia* and *Parinari*; locally common; deep red soil and pink shale outcrops, in miombo and riverine woodlands; evergreen rain-forest margins and subcanopy; fringing and riverine forest with *Anthocleista*, *Chrysophyllum*, *Pachystela*, *Albizia*, *Myrianthus*, *Macaranga*, *Cussonia*, *Aphloia*; mushitu swamp; 350-2100 m alt.

Comprises 2 subspp.: – subsp. **polystachyus** (syn.: *C. angolensis* Müll. Arg.; *C. amaniensis* Jabl.) and – subsp. **milleri** (Dunkley) Radcl.-Sm. (bas.: *C. milleri* Dunkley; syn.: *C. apetalus* S. Moore; *C. nyasicus* Dunkley in sched.).

**C. racemosus** Pierre ex Hutch.

Dioecious tree 6-8 m; bole 40 cm Ø; female flower and fruit unknown.

Ecology unknown.

Only known from the type.

Near *C. polystachyus*.

**C. ripicola** J. Léonard

Monoecious tree 3,5-10 m; bole 8-30(-50) cm Ø.

Riverine formations, sometimes swampy; rather common on the Yangambi islands (Zaire).

Not in Ivory Coast ? (= *C. libericus*, *C. polystachyus*?).

**C. schlechteri** (Pax) Hutch.

bas.: *Securinea schlechteri* Pax

Shrub or tree to 23 m tall with spreading branches; monoecious.

Dry evergreen forest and associated communities; also riverine; *Brachystegia* woodland and thicket; sandy clay soils, limestone valley, sandy soil; rocky hillsides (microphyllous specimens); termitaria in deciduous thicket, dune thickets; miombo and mixed deciduous woodlands with *Combretum*, *Acacia*, *Azelia*, *Sclerocarya*, *Pterocarpus*, *Ostryoderris*, *Diplorrhynchus*, etc.; forest with *Parkia*, *Khaya*, *Milletia*, *Landolphia*; mangrove swamp margins; secondary forest; old cultivation with regenerating bush; silty river banks; 0-760 m alt.

S. Africa.

## CLEISTANTHUS SCHLECHTERI

Comprises 2 vars.: – var. **schlechteri** (syn.: *C. johnsonii* Hutch.) and – var. **pubescens** (Hutch.) J. Léonard [syn.: *C. holtzii* var. *pubescens* (Hutch.) Hutch.].

**C. willmannianus** J. Léonard

Habitus and fruit unknown.

Ecology unknown.

Near *C. racemosus*.

**C. zenkeri** Jabl.

Monoecious tree 6-20 m.

Swampy forest with *Entandrophragma palustre*.

## SYNONYMS:

*Cleistanthus glaucus* Hiern = **Pseudolachnostylis maprounei-folia** var. **glabra**

*holtzii* sensu Pellegrin, non Pax = **Pentabrachion**

## CLUTIA / 18

For three species (= 16%) the female flower is unknown and for another species the female flower is known only from the fruit. For 3 species (= 16%) no fruit has been seen.

**Clutia abyssinica** Jaub. & Spach

Large woody herb or shrub 1-2(-4) m tall or tree to 8 m, erect, lax, ramose, often shrubby; stem brittle, flagelliform.

Forest edges, associated bushland and wooded grassland; secondary associations (often an indicator of old forest area); lakeside, riverine, evergreen thickets; bamboo- and near arborescent *Ericaceae* formations; gallery forest; evergreen bushland or margins of *Juniperus*, *Podocarpus* forest, mostly in disturbed sites; plateau swamp forest (mushitu) margins; *Brachystegia* woodland; gully and ravine forests; steep rocky slopes and ridgetops; rain-forest regrowth; 300-3700 m alt.

This species presents a considerable diversity.

S. Africa.

Comprises 3 vars.: – var. **abyssinica** [syn.: *C. lanceolata* Forssk. var. *glabra* A. Rich.; *C. abyssinica* var. *glabra* Pax, var. *calvescens* Pax, and var. *firma* Pax]; – var. **pedicellaris** (Pax) Pax [bas.: *C. richardiana* Müll. Arg. var. *pedicellaris* Pax, *C. pedicellaris* (Pax) Hutch.]; – var. **usambarica** Pax & K. Hoffm. [syn.: *C. leuconoura* Pax]; this variety is the most distinctive and has the most restricted area.

**C. angustifolia** Knauf

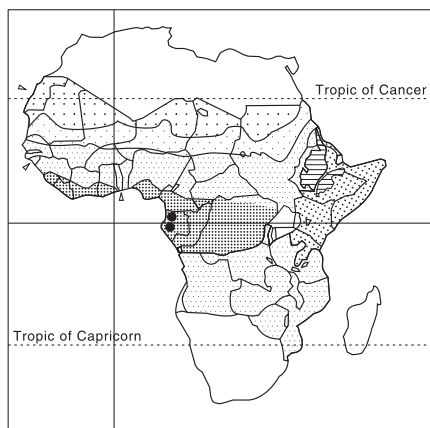
syn.: *C. lasiococca* Pax & K. Hoffm.

Monoecious or dioecious erect, ramose shrub 1-2,5 m tall.

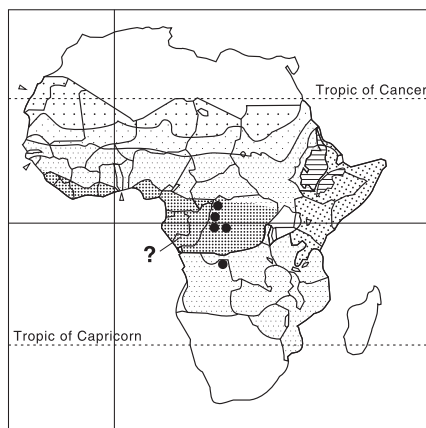
Gallery forest; savannas; open forests with *Marquesia*, *Brachystegia spiciformis*; forest edges, associated bushland and grassland; clearings; often along streams; 1100-2200 m alt.

Near *C. swynnertonii*.

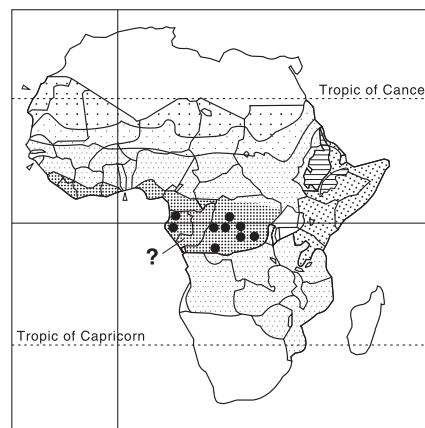




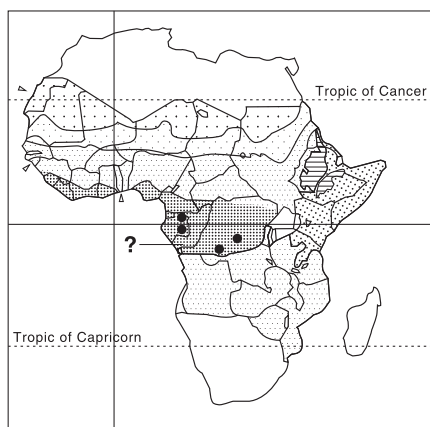
*Cleistanthus gabonensis*



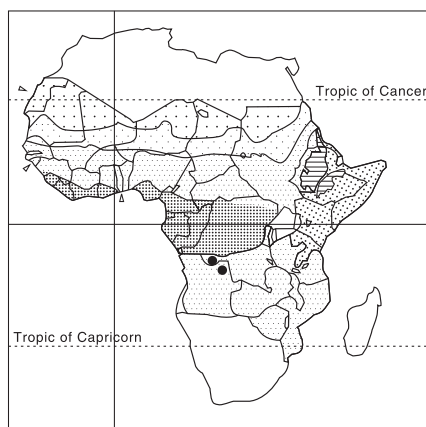
*Cleistanthus inundatus*



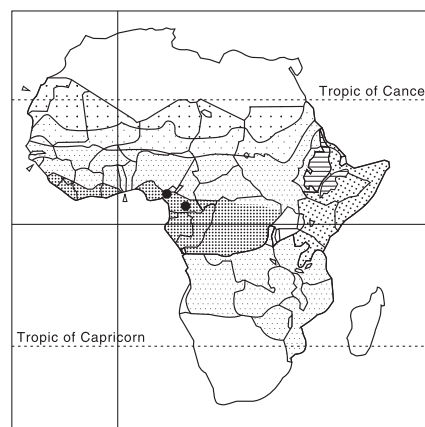
*Cleistanthus itsoghensis*



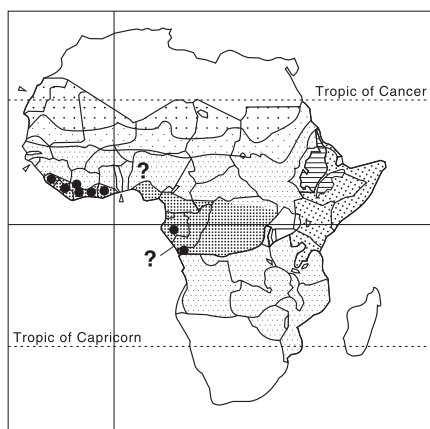
*Cleistanthus kasaiensis*



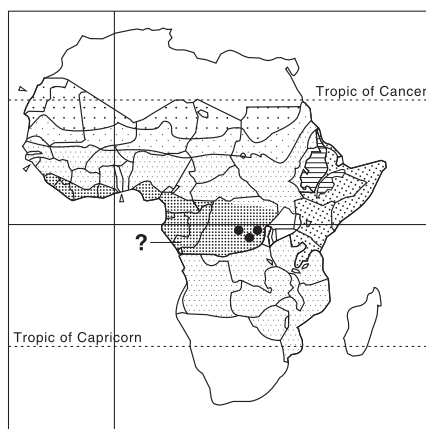
*Cleistanthus kwangensis*



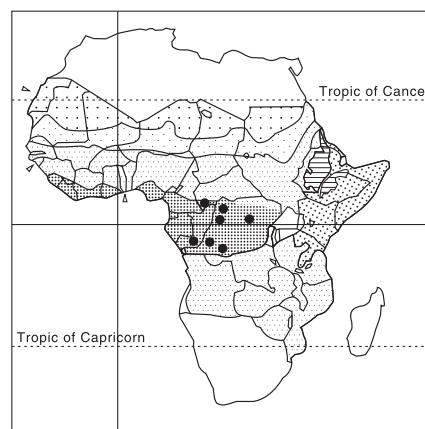
*Cleistanthus letouzeyi*



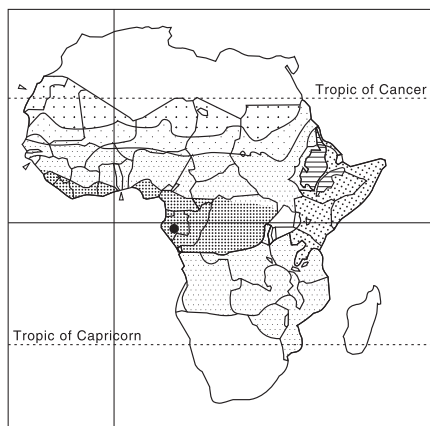
*Cleistanthus libericus*



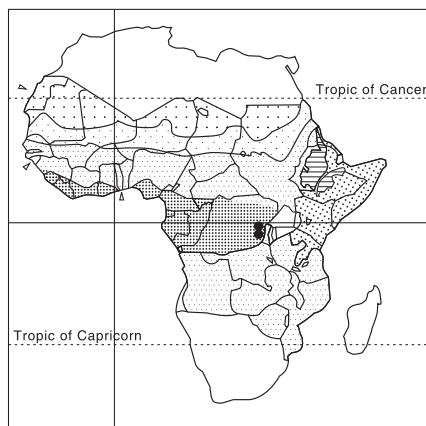
*Cleistanthus michelsonii*



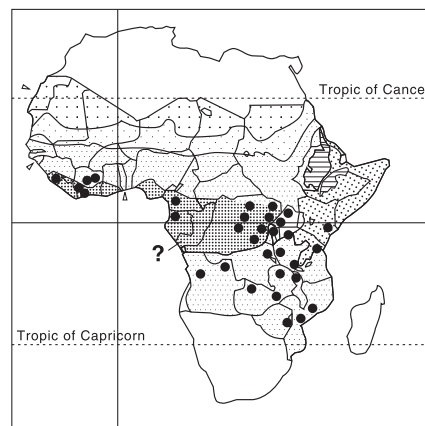
*Cleistanthus mildbraedii*



*Cleistanthus ngounyensis*



*Cleistanthus pierlotii*



*Cleistanthus polystachyus*

## CLUTIA

**C. benguelensis** Müll. Arg.

Several annual stems 30-45 cm high and more arising from a very thick woody many-headed, unbranched rhizome; habit of *Clutia* and of *Phyllanthus*; dioecious; fruit unknown.

Rocky thickets with *Gnidia* cf. *rendlei*, *Thesium* cf. *lopollense*, *Osyris abyssinica* and other *Euphorbiaceae*.

**C. brassii** Brenan

Shrub to 2 m tall, dioecious; stems sparingly branched, closely beset with longitudinal usually centrally punctate tubercles, greenish.

Shrubby grassland among rocks; forest edge; sporadic and locally common; 1830-2120 m alt. (Strugnell, Syst. Geogr. Pl. 72: 17, 2002).

**C. conferta** Hutch.

Shrub or woody herb to 2 m tall, sparingly branched, monoecious; branches usually simple, longitudinally ridged; leaf scars prominent on stem and branches; female flowers unknown.

Rocky slopes in low tussock grassland with low shrubs; between boulders with *Philippia* scrub; sporadic and locally common; 2133-2590 m alt. (Strugnell, l.c.).

**C. hirsuta** (Sond.) Müll. Arg.

Perennial herb 30-90(-120) cm tall, dioecious; stems several, simple or sparingly branched, arising from a woody rootstock. Grassland; kloof forest; 975-2400 m alt.

Very variable species.

S. Africa.

**C. kamerunica** Pax; Y. Harvey & al. Pl. Bali Ngemba F.R.: 63, 2004 (photo pl. 3 F).

Erect white downy shrub 0,9-4,5 m tall, monoecious.

Streamside forest; mountain forest with usually single isolated plants; 1300-2300 m alt.

**C. lanceolata** Forssk., excl. var. *glabra* A. Rich. (= *C. abyssinica* var. *abyssinica*).

Very similar to *C. abyssinica* but often persistently hairy, stems more robust, leaves often narrower, male flowers with (19-) 20-33 disc-glands; fruiting pedicels not over 7 mm long; fruit sometimes densely hairy.

Evergreen bushland; open deciduous woodland; margins of *Juniperus* forest; often along streams or in disturbed areas; kloof forest and grassland; (1270-)2000-3250 m alt.

Arabia.

Polymorphic species; comprises 2 subspp.

**C. monticola** S. Moore

Perennial herb, dioecious; stems several, simple or subsimple, to 60 cm tall, arising from a woody rootstock; often a pyrophyte.

Grassland; 1375-2135 m alt.

Comprises 2 vars.

S. Africa.

**C. paxii** Knauf ex Pax

Virgate much-branched subshrub or shrub 1-4 m tall, dioecious; sometimes sarmentous.

## CLUTIA PAXII

Evergreen forest margins; kloof and gully forest; grassland with ericoid scrub; bamboo formations; *Hagenaria abyssinica* vegetation; meadow; clearing; edge of swamp; often along streams; 1525-3200 m alt.

**C. polyadenia** Pax

Very similar to *C. robusta*; differing chiefly on account of the more numerous glands on the male sepals but female flower and fruit unknown.

Meadows; ± 3000 m alt.

**C. pulchella** L.; Plant Syst. Evol. 226: 13-22, 2001.

Very similar to *C. abyssinica*, but differing chiefly in its leaves which are mostly less than twice as long as broad, broadly ovate to suborbicular, and rounded at the apex; dioecious.

Hot dry localities: rocky hillsides, along seasonal water-courses; riverine forest; mixed deciduous woodland; 500-1400 m alt.

S. Africa, Botswana.

Comprises 2 vars.

Southern vicariat of *C. abyssinica*.

**C. punctata** Wild

Similar to *C. abyssinica* but the plant completely glabrous, the stems tuberculate and the leaf blades not more than  $4,5 \times 3$  cm and rounded to truncate at the base with reticulate venation.

Grassland among quartzite crags on rocky summits and steep slopes; 2135-2285 m alt.

**C. sessilifolia** Radcl.-Sm.

Shrublet to 1 m tall, dioecious; female flower and fruit unknown.

Rocky mountain summit; in boulder scree; 1980-2440 m alt. Sparse.

**C. stuhlmannii** Pax

Shrublet with several, periodically appearing, woody, erect stems, simple or little ramose, 20-60 cm tall, arising from a woody rhizome.

Wooded savannas; grassy formations with *Brachiaria* or *Andropogon* in periodically burned area; secondary scrub; deciduous woodland; 1200-1600 m alt.

**C. swynnertonii** S. Moore

Very similar to *C. hirsuta*, but a much-branched shrub to 4 m tall without a woody rootstock, with the leaf blades to  $11 \times 4-5$  cm and with the female flowers 1-3 per axil on pedicels to 6 mm long in fruit.

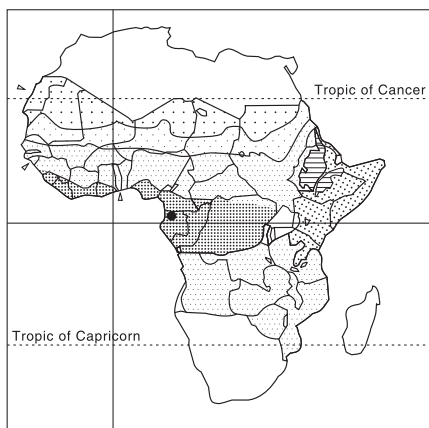
Grassland; evergreen forest margins; often with *Philippia* scrub; in *Uapaca kirkiana* woodland; open mixed savanna woodland; riverine vegetation; 370-2130 m alt.

Field studies may reveal that *C. swynnertonii* and *C. hirsuta* are two states of the same taxon.

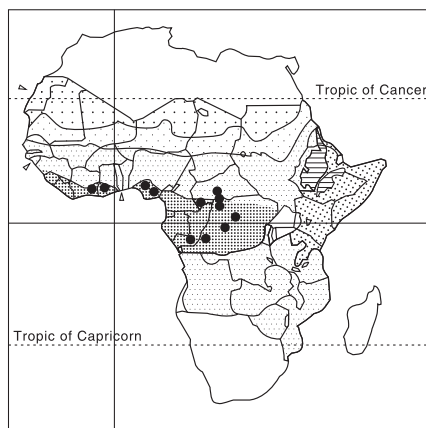
**C. timpermaniana** J. Léonard

Shrublet with periodically appearing tufts of woody stems, erect, simple or slightly ramose, 35-65 cm tall, grooved, arising from a woody rhizome; female flower only known from the fruit.

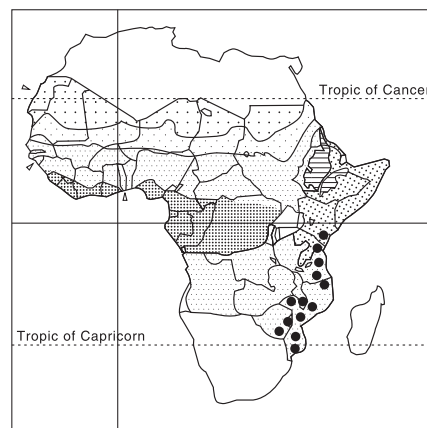
Grassy and wooded savanna, open forest at valley margin in periodically burned area; ± 1500-1600 m alt.



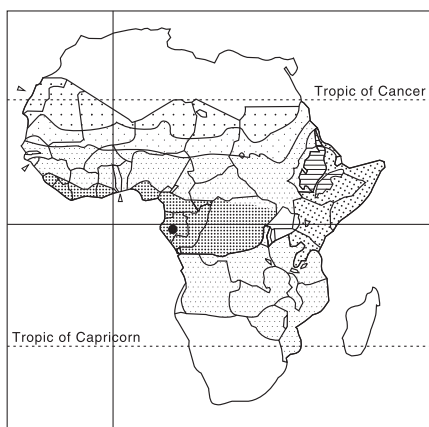
*Cleistanthus racemosus*



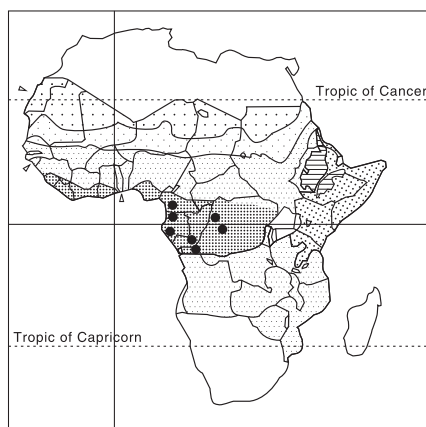
*Cleistanthus ripicola*



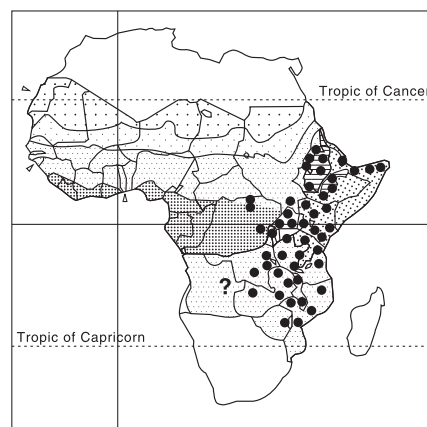
*Cleistanthus schlechteri*



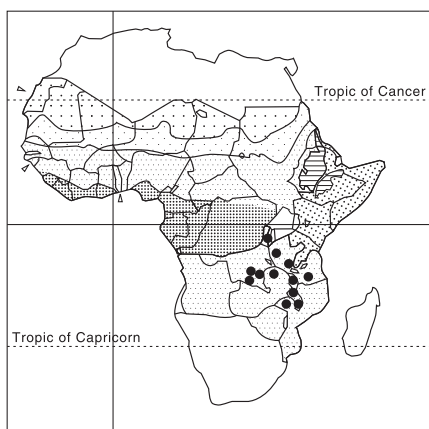
*Cleistanthus willmannianus*



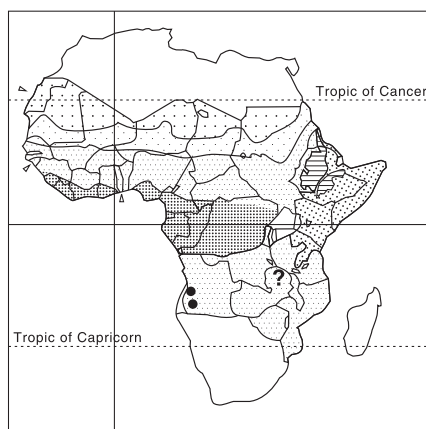
*Cleistanthus zenkeri*



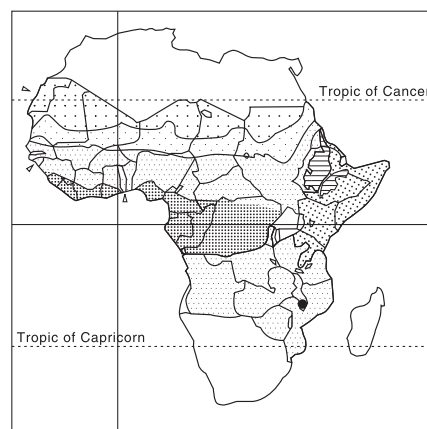
*Clutia abyssinica*



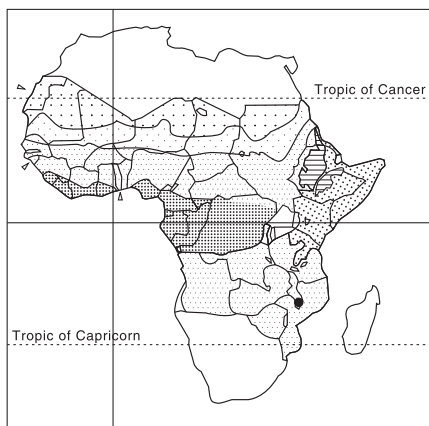
*Clutia angustifolia*



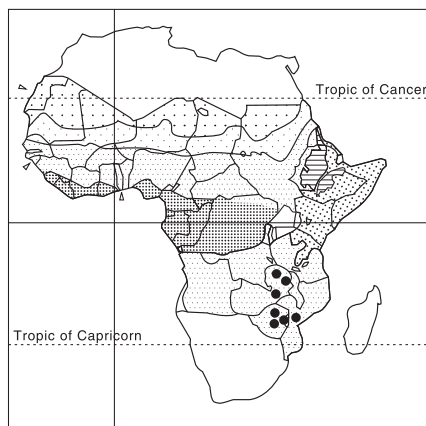
*Clutia benguelensis*



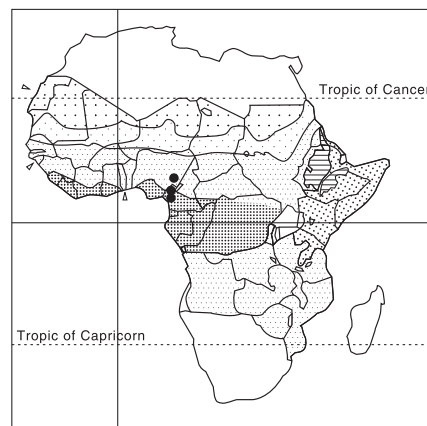
*Clutia brassii*



*Clutia conferta*



*Clutia hirsuta*



*Clutia kamerunica*

## CLUTIA

**C. whytei** Hutch.

Dioecious, perennial pyrophytic herb or subshrub, with a woody rootstock and several erect, usually unbranched stems to 120 cm tall although commonly 40-80 cm.

Herb-rich annually burned grassland, deciduous woodland and edges of relict forest patches; grassland often by streams; *Brachystegia* woodland; plateau grassland, amongst bracken; dambos; 1525-2375 m alt.

Comprises 2 vars. (Bullock 2041 may represent a distinct taxon).

## REMARK:

In Lebrun & Stork (1991), "Énumération" 1: 208, 209 *C(lutia) dictyophlebodes* and *C(lutia) steenkampianus* are in fact two *Croton* species.

## SYNONYMS:

*Clutia abyssinica* Jaub. & Spach

var. *calvescens* Pax = **Clutia abyssinica** var. **abyssinica**

var. *firma* Pax & K. Hoffm. = **C. abyssinica** var. **abyssinica**

var. *glabra* Pax = **C. abyssinica** var. **abyssinica**

var. *ovalifolia* Pax & K. Hoffm. = **C. abyssinica** var. **usambarica**

*anomala* Pax & K. Hoffm. = **C. abyssinica** var. **abyssinica**

*brachyadenia* Volkens ex Pax = **C. lanceolata** subsp. **robusta**

*densifolia* Gilli = **C. whytei**

*gracilis* Hutch. = **C. paxii**

*heterophylla* Thunb. var. *hisuta* Sond. = **C. hirsuta**

*inyangensis* Hutch. = **C. hirsuta**

*jaubertiana* Müll. Arg. = **C. lanceolata** subsp. **lanceolata**

*kilimandscharica* Engl. = **C. lanceolata** subsp. **robusta**

*lanceolata* Forssk.

var. *angustifolia* A. Rich. = **C. lanceolata** subsp. **lanceolata**

var. *glabra* A. Rich. = **C. abyssinica** var. **abyssinica**

var. *pubescens* A. Rich. = **C. lanceolata** subsp. **lanceolata**

*lasiococca* Pax & K. Hoffm. = **C. angustifolia**

*leuconeura* Pax = **C. abyssinica** var. **usambarica**

*mollis* Pax = **C. abyssinica** var. **usambarica**

*myricoides* Jaub. & Spach = **C. lanceolata** subsp. **lanceolata**

*pedicellaris* (Pax) Hutch. = **C. abyssinica** var.

*phyllanthoides* S. Moore = **C. paxii**

*richardiana* Müll. Arg.

var. *pedicellaris* Pax = **C. abyssinica** var. **pedicellaris**

var. *trichophora* Müll. Arg. = **C. lanceolata** subsp. **lanceolata**

*robusta* Pax = **C. lanceolata** subsp. **robusta**

*rotundifolia* Pax = **C. abyssinica** var. **usambarica**

*stelleroides* S. Moore = **C. monticola**

*stenophylla* Pax & K. Hoffm. = **C. lanceolata** subsp. **robusta**

*usambarica* Pax & K. Hoffm. = **C. lanceolata** var. **usambarica**

*volubilis* Hutch. = **C. hirsuta**

## CONCEVEIBA / 2

**Conceveiba leptostachya** Breteler

Monoecious shrub to ± 5 m tall.

Stream bank, rain-forest.

**C. macrostachys** Breteler; White & Abernethy, Guide Végétation Réserve Lopé: 126, 1996.

syn.: *C. africana* D. W. Thomas 1990, non Müll. Arg. 1864.

Much-branched, monoecious tree to 19 m tall; similar to *Mareyopsis longifolia*.

Forest.

## CROTON / 54

One of the largest genera of flowering plants, with 1200-1300 species of herbs, shrubs, trees and lianes; important elements of secondary vegetation.

For two (+1?) species (= c. 4%) the male flower is unknown, for 2 species the female flower is unknown, and in one species the male and female inflorescences have not been seen. No fruit is known in 4(+1?) species (= c. 8%), the type of dehiscence is unknown in another species, and for one species mature seeds are unknown. No ecology is recorded for 4 species (c. 7%).

Two species are known only from the type, another one is known only from fragments of the type and from a drawing, and another one is known only from 2 syntypes (together = 4 species = c. 7%).

BERRY, P.E. & al. (2005). Molecular phylogenetics of the giant genus *Croton* and tribe *Crotoneae* (Euphorbiaceae sensu stricto) using ITS and trn2-trnF DNA sequence data. *Amer. J. Bot.* 92: 1520-1534.

**Croton aceroides** Radcl.-Sm.

Many-stemmed tree to 7 m; fruit unknown; *Acer* like foliage.

Margins of dry coastal forest, in pallid sands.

Only known from the type collected in 1973.

**C. alienus** Pax

Monoecious or ? dioecious shrub or tree to 4,5 m tall.

Dry evergreen forest; 1525-1825 m alt.

**C. angolensis** Müll. Arg.; Hutchinson in Thiselton-Dyer, Fl. Trop. Africa 6(1): 773-774, 1913 excl. specim. Gillet 2012.

Ramose shrub 2-4 m tall with virgate, spreading branches, leafy towards the apex; fruit unknown?

Shady wooded place.

**C. aubrevillei** J. Léonard

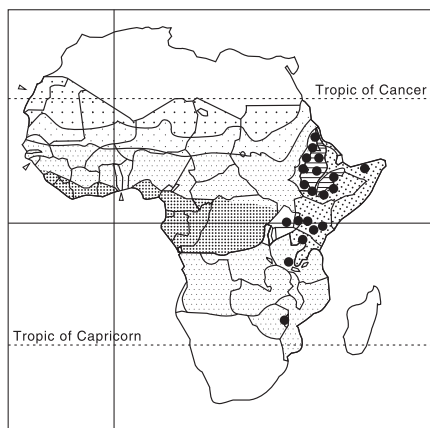
syn.: *C. sp.* near *mubango* Müll. Arg.

Monoecious tree 6-7 m; bole 40-80 cm Ø.

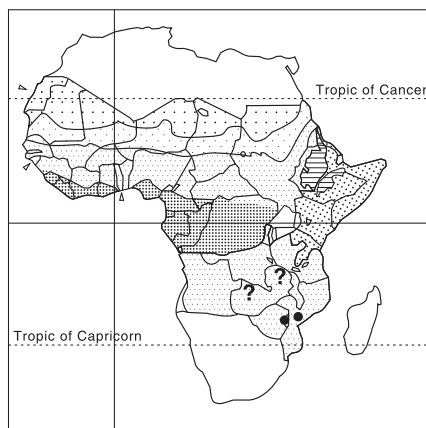
Rain-forest; secondary formations; abundant between Soubré and Buyo (Ivory Coast), not common elsewhere in this country; lowland evergreen forest; to 850-1000 m alt.

Only one collection known from Cameroon (Cheek & al. Pl. Kupe..., Cameroon: 155, 2004).

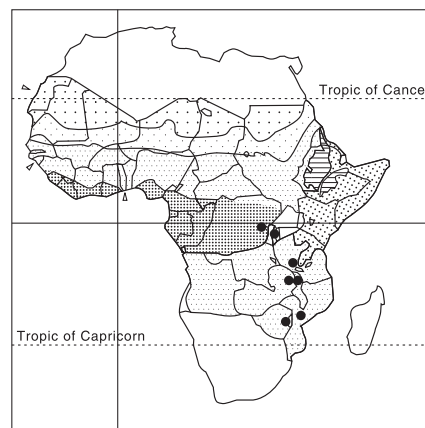




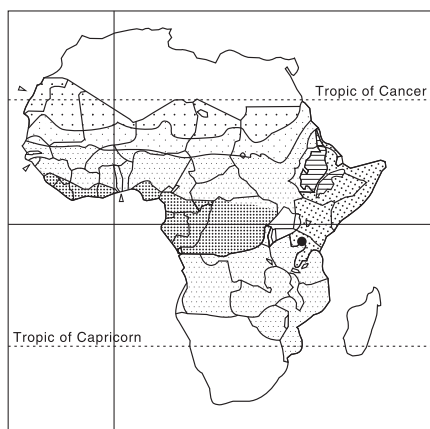
*Clutia lanceolata*



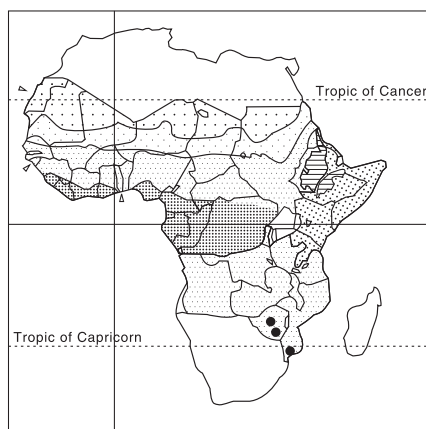
*Clutia monticola*



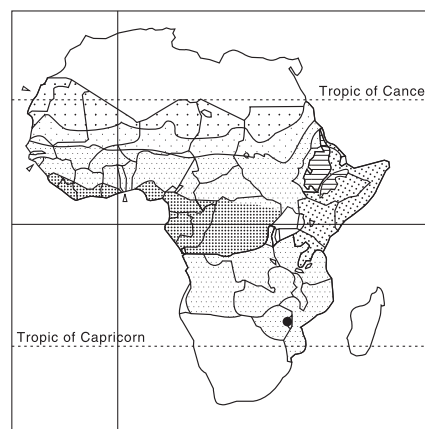
*Clutia paxii*



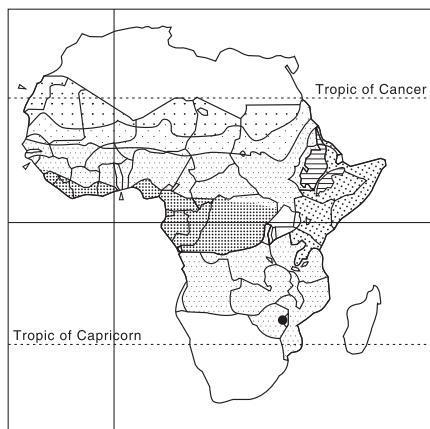
*Clutia polyadenia*



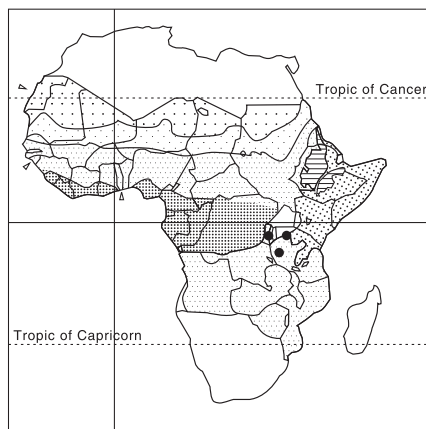
*Clutia pulchella*



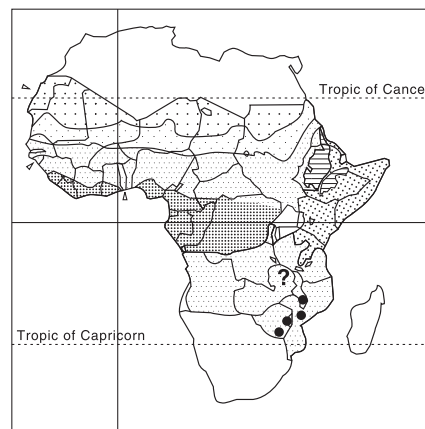
*Clutia punctata*



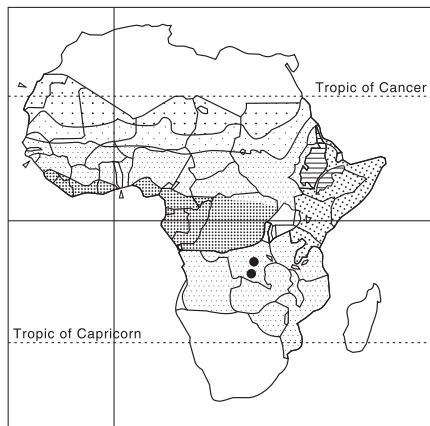
*Clutia sessilifolia*



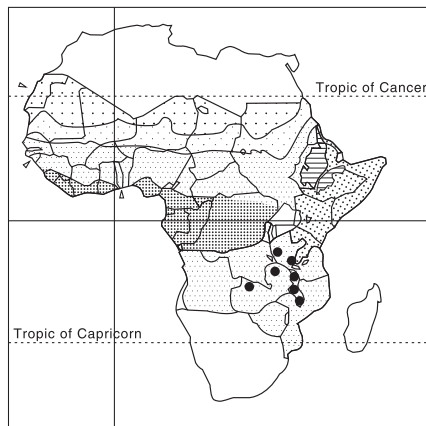
*Clutia stuhlmannii*



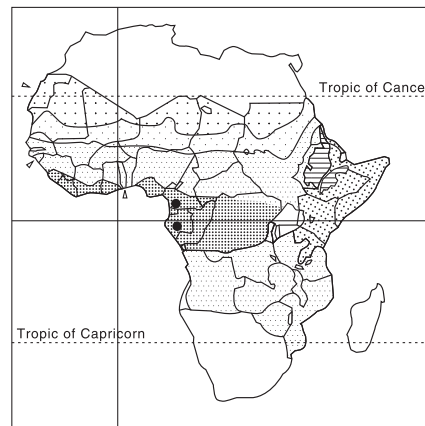
*Clutia swynnertonii*



*Clutia timpermaniana*



*Clutia whytei*



*Conceveiba leptostachya*

## CROTON

**C. brieyi** De Wild.

Shrub or tree 6-25 m tall; bole 25-45 cm Ø.

Forest regrowth; secondary forest with *Terminalia superba*; sometimes riverine forest.

**C. confertus** Bak.

Shrub or tree 1-3 m tall.

Semi-evergreen bushland on rocky ground; usually on limestone; 540-1340 m alt.

Arabia. See M. Thulin & al. in I. Friis & O. Ryding, Eds., Biodiversity Research in the Horn of Africa Region (Biol. Skr. 54: 146, 2001).

**C. congensis** De Wild.

Shrub or tree.

Ecology unknown. New material needed.

**C. crispatus** Thulin

Shrub 1-1,5 m tall; male flower unknown.

*Acacia-Commiphora* bushland on red or orange sand; associated woody plants are: *Loewia glutinosa*, *Oxygonum altissimum* (endemic in the same area), *Wrightia demartiniana*, *Cordyla somalensis*, *Kirkia tenuifolia*, *Gyrocarpus angustifolius*; 150-170 m alt.

**C. dibindi** Pellegrin

Tree 20-25 m tall, trunk 20 cm Ø; branches slender, slightly striate; fruit unknown.

Ecology unknown.

Near *C. pynaertii*, *C. longiracemosus*.

Only known from the type collected in 1914.

**C. dichogamus** Pax

Monoecious pyramidal or sometimes straggling shrub or tree to 7,5 m tall or more, but usually 2-5 m, with symmetrical, frequent branching.

Dry forest, bushland and thicket, on rocky ground, lava, limestone and porous soils; open *Acacia* woodland; sometimes forming dense stands; probably a good indicator of overgrazing; 550-1800(-2250) m alt.

**C. dictyophlebodes** Radcl.-Sm.

Dioecious much-branched tree to 20 m tall; female flowers, mature seeds, and manner of dehiscence of fruit unknown (probably septicidal).

Dry evergreen forest; 1500-1820 m alt.

**C. dispar** N. E. Br.

syn.: *C. collenettei* Hutch. & Dalz.

Straggling bush to 3 m tall or tree 7,5 m; branchlets subterete ± 0,2 cm thick.

Forest clearings; mesophilous forests; 1000 m alt.

## CROTON

**C. draconopsis** Müll. Arg.; Bull. Jard. Bot. Etat, Bruxelles 26: 385, 1956.

syn.: *C. vermoesonii* De Willd.; *C. dracoideus* St. Lag.

Shrub or tree from some m to 15 m tall; trunk 15-20 cm Ø; branchlets stout, sulcate; branches elongated, rambling, leafy at the apex.

Damp forests with *Flagellaria guineensis*; river bank, secondary thickets; primitive forests.

**C. dybowskii** Hutch.

Shrub 0,5-2 m tall, sometimes sarmentous.

Coastal thicket; 100 m alt.

**C. gossweileri** Hutch.

Tree 9-12 m tall with the habit of a *Populus*; branches wrinkled or sulcate.

Riverine vegetation, in *Syzygium* fringing bush; also with *Croton pyrifolius*.

**C. gratissimus** Burch.; Fl. Pl. Africa 55: 64-68, 1997.

Shrub or tree to 12 m tall with bole to 40 cm d.b.h.; monoecious or sometimes dioecious; trunk usually Y-forked with drooping branches, these often in whorls of 3; branchlets sulcate.

Coastal dune forest; riverine fringe vegetation; mopane woodland on floodplain alluvium; *Androstachys johnstonii* woodland and thicket; rocky outcrops; escarpment miombo; Kalahari Sand woodland; *Baikiaea mutemwa*; mixed deciduous woodland and pamba thicket; termitaria; locally common; stony stream beds; damper hollows within broad-leaved deciduous woodland; in West Africa often planted; wooded grassland; often locally gregarious on poor shallow soils; *Grewia*, *Commiphora*, *Kirkia* associations in sandy soil; rather dense forest with species of *Mimosaceae*, *Tarchonanthus* and *Proteaceae*; 90-1650 m alt.

Caprivi Strip, Namibia, Botswana, S. Africa.

Comprises 2 vars.

Trimodal disjunct distribution, on either side of the Equator.

**C. haumanianus** J. Léonard

Tree 5-15 m tall, sometimes 20-35 m; bole cylindrical 10-40 cm to 50-100 cm Ø.

Extremely common in regrowth and secondary formations in rain-forest areas; to 900-1000(-1200) m alt.

**C. inhambanensis** Radcl.-Sm.

Shrub or small tree to 5 m tall; male and female inflorescences and flowers unknown; fruits and seeds recalling those of *Ricinus*.

Coastal plain in thick, dense woodland with *Androstachys johnstonii*; dry sandy soil in ancient cultivations.

**C. integrifolius** Pax

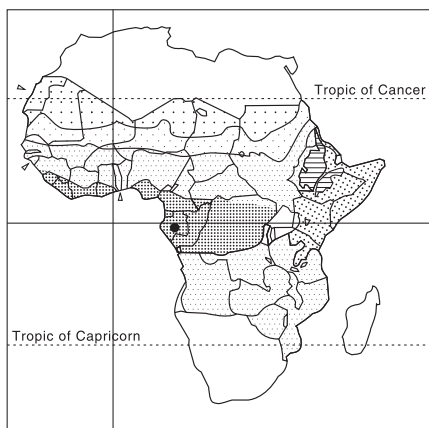
Shrub 1 m tall with sulcate branches.

Stony hillocks; 1300 m alt.

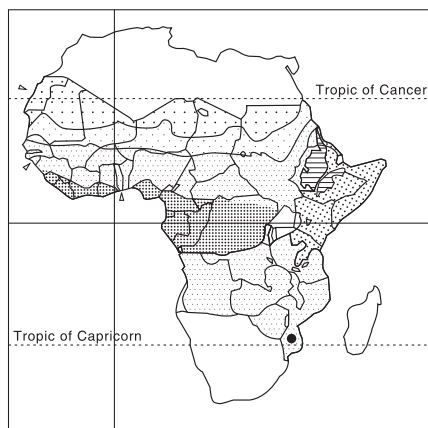
**C. jansii** J. Léonard

Monoecious tree.

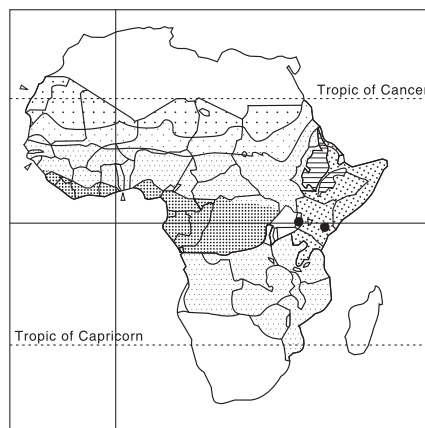
Forest edge; ± 500 m alt.



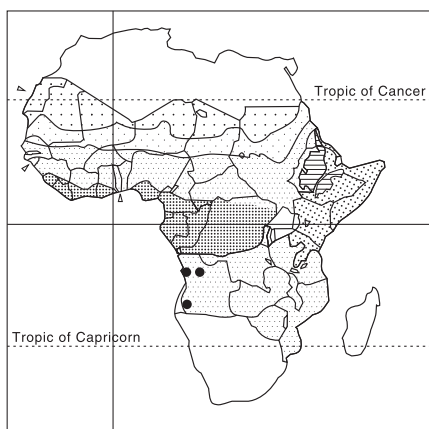
*Conceveiba macrostachys*



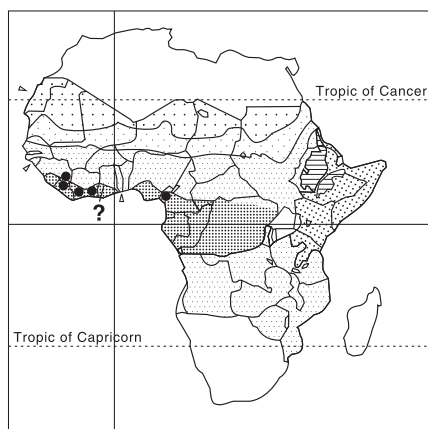
*Croton aceroides*



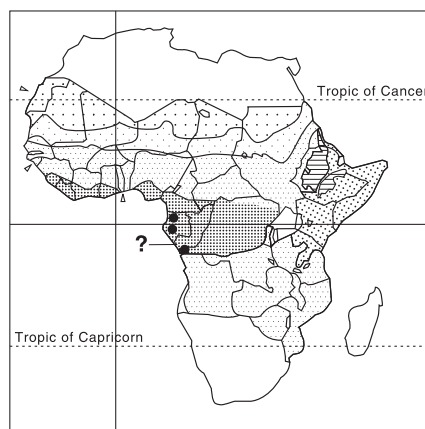
*Croton alienus*



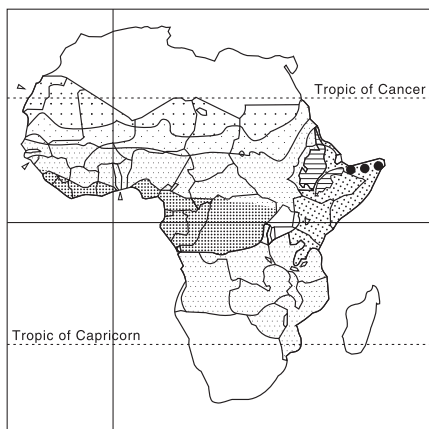
*Croton angolensis*



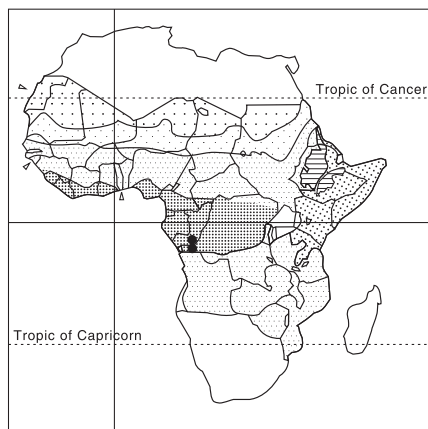
*Croton aubrevillei*



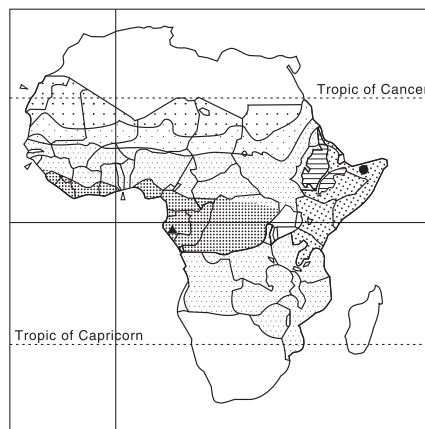
*Croton brieyi*



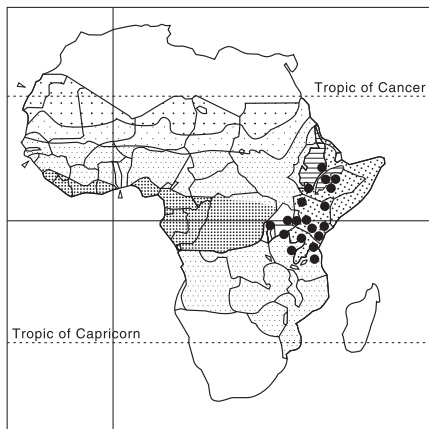
*Croton confertus*



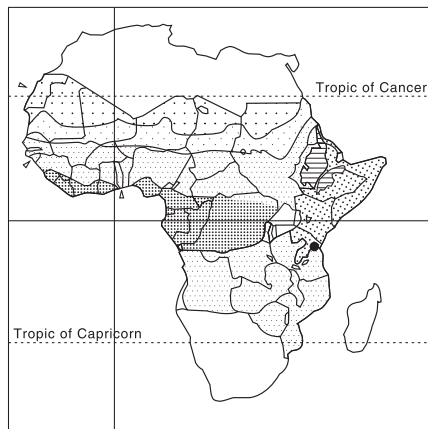
*Croton congensis*



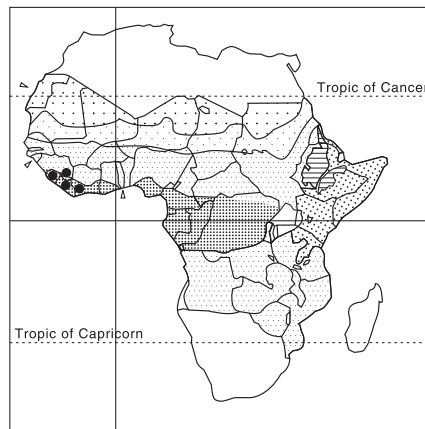
*Croton crispatus* ●  
*Croton dibindi* ▲



*Croton dichogamus*



*Croton dictyophlebodes*



*Croton dispar*

## CROTON

**C. jatrophioides** Pax

Monoecious or dioecious tree 13-18,5 m.

Forest edges and clearings; riverine forest; 50-250 m alt.

**C. kilwae** Radcl.-Sm.

Graceful monoecious shrub 1,5-4 m tall.

Ground-water forest; *Brachylaena* forest; grassland with scattered trees and shrubs; granite rock outcrops; 45-400 m alt.

**C. laciniatistylus** J. Léonard

Tree 7-10 m tall (or more?); bole 30 cm Ø.

Planted in villages as a shade tree; origin unknown (from forest?); 700 m alt.

**C. leonensis** Hutch.

Shrub 1,5-2 m tall; branches sulcate when young; male flower unknown?

A somewhat moist place.

**C. leuconeurus** Pax; Bull. Jard. Bot. Etat, Bruxelles 26: 387, 1956.

Dioecious or monoecious tree 4-9(-15) m tall, often several-stemmed; bole clean, to 30 cm Ø; branches drooping.

Riverine forest; fringing thicket; evergreen forest; often overhanging the water; sandy banks; swampy margins of rivers; 880-1650 m alt.

Botswana.

Comprises 2 subspp.: – subsp. **leuconeurus** (syn.: *C. kamerunicus* Pax & K. Hoffm.; *C. mearnsii* De Wild.) and – subsp. **mossambicensis** Radcl.-Sm.

**C. lobatus** L., non *C. lobatum* Forssk.

syn.: *C. courteti* Beille; *C. decorsei* Beille

Erect herb to 1 m tall, slightly woody at base, branching after flowering from below racemes, often in whorls.

Weed of cultivation; roadsides; sandy soil; to 1200 m alt. in Ethiopia.

Perhaps an ancient introduction from the New World; Yemen, Pakistan.

**C. longipedicellatus** J. Léonard

Weak, lax, spreading or scrambling shrub or tree to 4,5 m tall, monoecious or sometimes dioecious.

Deciduous coastal thicket; open woodland; dry thicket vegetation: *Baikiaea* mutemwa (understorey thicket of dry deciduous forest on Kalahari Sand); mateshi thicket (dry evergreen thicket in NW Zambia); jesse bush thicket (Zambesi valley); itigi forest-thicket (N Zambia); granite outcrops; gully forest; evergreen riverine vegetation; lakeshore mushitu (swamp forest); 400-1800 m alt.

Caprivi Strip.

Comprises 2 subspp.

**C. longiracemosus** Hutch.

syn.: *C. lehmbachii* Hutch.

Tree 12-30 m; bole 30-40 cm Ø, 2 m in girth, straight; sometimes a shrub 5-6 m tall.

Forest; gallery; secondary regrowth; 200-1000 m alt.

## CROTON

**C. macrostachyus** Hochst. ex Del., incl. var. *butaguensis* (De Wild.) Lebrun; *Adansonia*, Sér. 2, 3: 68, 1963; Bull. Jard. Bot. Etat, Bruxelles 26: 390, 1956.

syn.: *C. butaguensis* De Wild.; *C. megalobotryoides* De Wild.; *C. claessensii* Vermoesen ex De Wild.; *C. seretii* Vermoesen ex De Wild.; *C. mearnsii* De Wild.; *C. guerzesiensis* Beille ex A. Chev.

Monoecious or dioecious tree 2-30 m tall (2-10 m in savanna, 10-28 m in forest) with bole 10-80 cm Ø and 1,8 m in girth. *Albizia-Macaranga* forest; *Podocarpus latifolius* forest; savanna, fallows; forest; gallery; swamp edge; secondary formation near forests; termitaria; edges of roads; mostly in soils of volcanic origin (Ethiopia); *Brachystegia* woodland and wooded grassland; often on rocky hillsides; gully forest; swamp forest (mushitu); around lake; 200-3400 m alt.

Madagascar.

**C. madandensis** S. Moore

Shrub or tree to 5 m tall.

Often beside seasonal watercourses; dry thickets and *Androstachys johnsonii* associations; *Brachystegia* woodland; 30-400 m alt. S. Africa.

**C. mayumbensis** J. Léonard; Bull. Jard. Bot. Etat, Bruxelles 29: 196, 1959.

syn.: *C. mubango* sensu Tisserant, Cat. Flore Oubangui-Chari, Mém. Inst. Etudes Centrafr. 2: 49, 1950, non Müll. Arg.

Tree to 30-34 m; bole clean to 15-16 m height, 40-60 cm Ø, winged or straight at the base.

Rain-forest.

? Cabinda (sterile material).

**C. megalobotrys** Müll. Arg.

syn.: *C. gubouga* S. Moore

Monoecious or sometimes dioecious spreading or straggling tree, often lax-branched from the base, to 14 m tall with trunk to 60 cm Ø, 180 cm in girth.

Deciduous woodland; riverine fringing vegetation; sand banks of rivers and seasonal watercourses; on floodplain alluvium forming thickets; as understorey to larger trees; seasonal pan margins; island vegetation in swamps (Okavango); 110-1070 m alt. Caprivi Strip, Botswana, S. Africa.

**C. megalocarpoides** Friis & M. G. Gilbert; Kew Bull. 50: 810, 1995.

Shrub or tree to 8 m tall.

Semi-evergreen coastal bushland or forest; further inland in mixed semi-evergreen bushland in depressions, in river valley; often where extra water collects at base of "bur" (large isolated inselberg of granite, gneiss or dorie in S Somalia) and hills (see Nord. J. Bot. 4: 330, 1984); coastal thicket on dark grey clayey loam with *Albizia*, *Grewia*, etc.; 5-275 m alt.

**C. megalocarpus** Hutch.

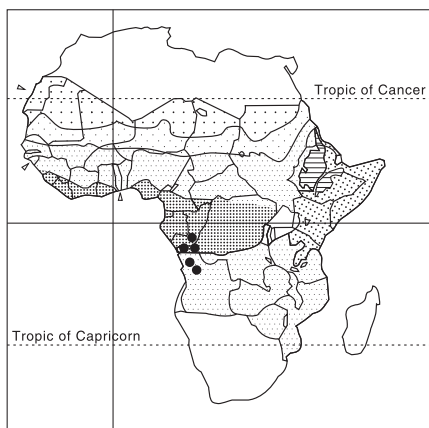
syn.: *C. elliotianus* Engl. & Pax 1903, non Baill. 1890.

Tree (10-)20-35 m tall with clean bole to (5-)10-20 m height, and (12-)40-100 cm Ø; monoecious or dioecious.

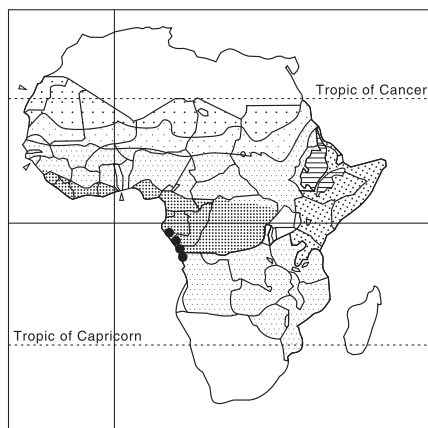
Evergreen forest; riverine gully forest; *Brachystegia* woodland; sometimes on old lava flows; more rarely in mixed rain-forest; (35-)1500-2400 m alt.

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

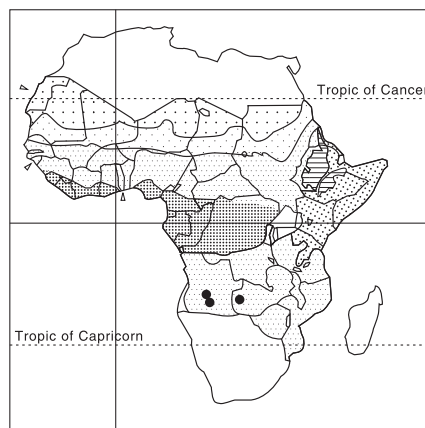




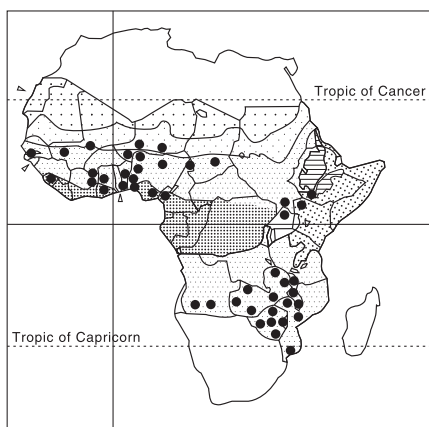
*Croton draconopsis*



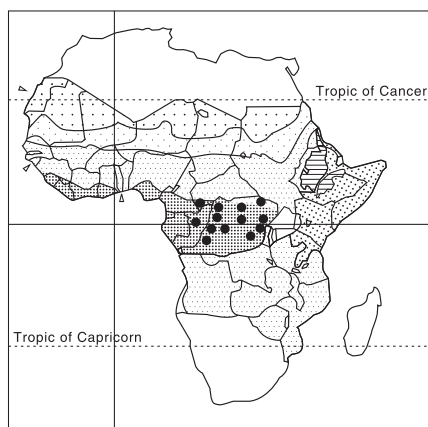
*Croton dybowskii*



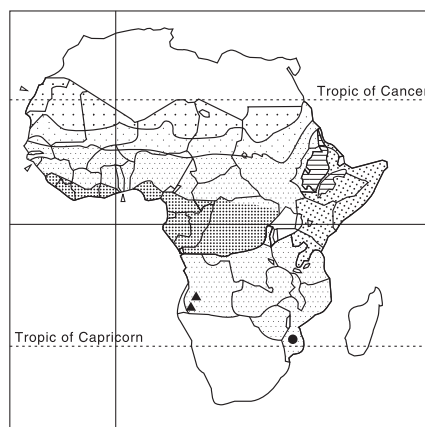
*Croton gossweileri*



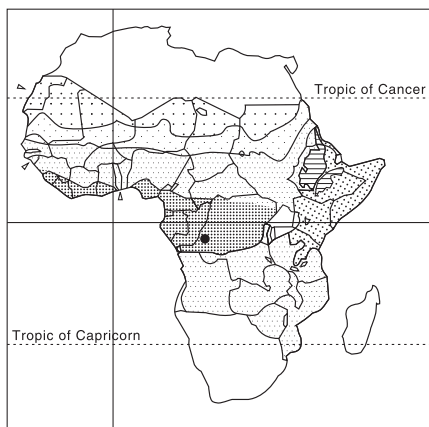
*Croton gratissimus*



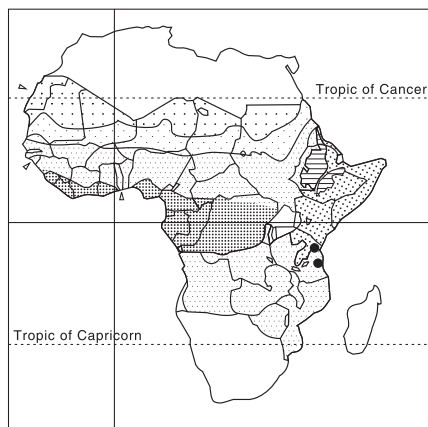
*Croton haumanianus*



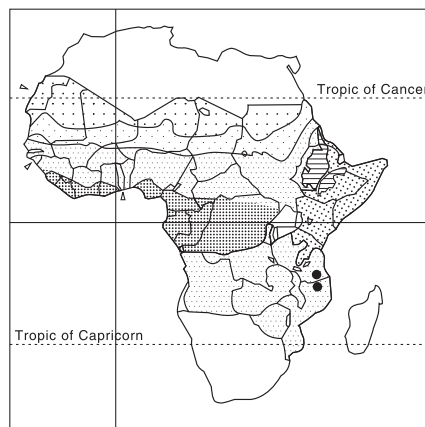
*Croton inhambanensis* ●  
*Croton integrifolius* ▲



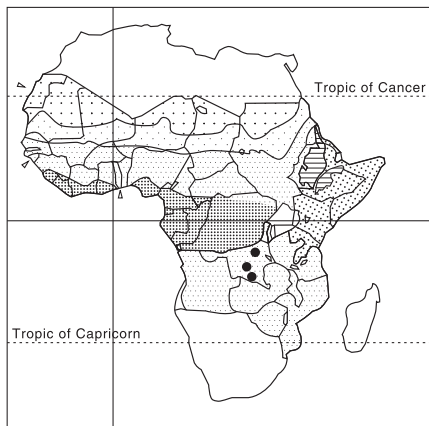
*Croton jansii*



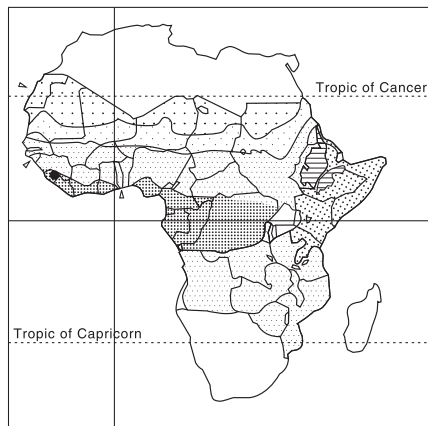
*Croton jatrochoides*



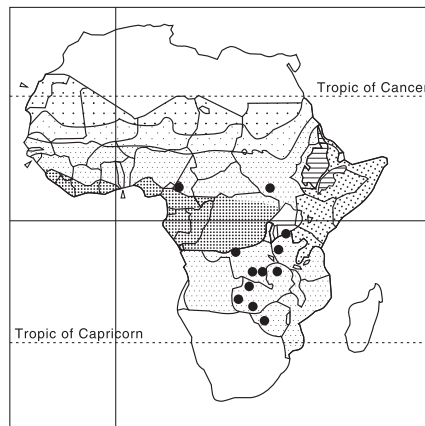
*Croton kilwae*



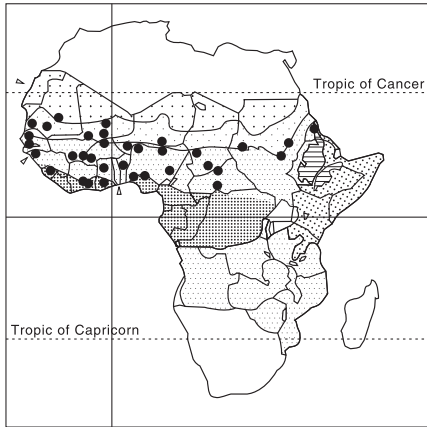
*Croton laciniastylus*



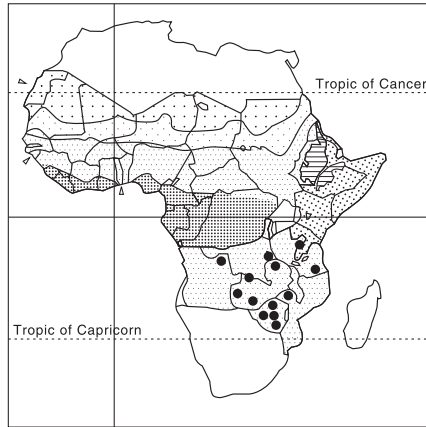
*Croton leonensis*



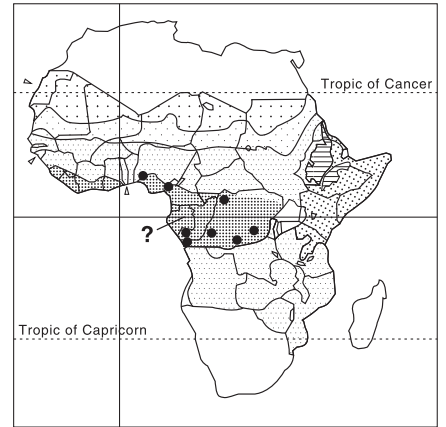
*Croton leuconurus*



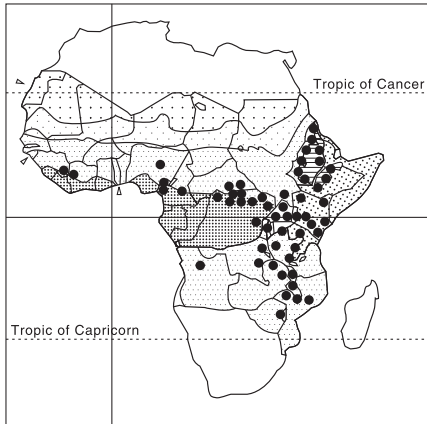
*Croton lobatus*



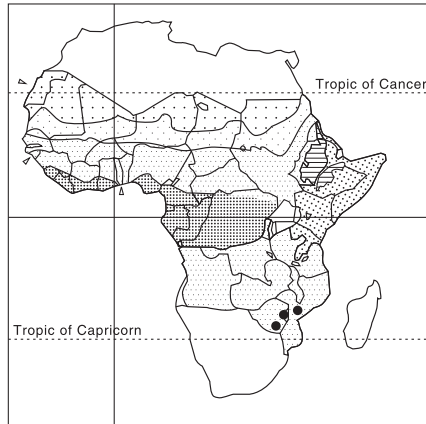
*Croton longipedicellatus*



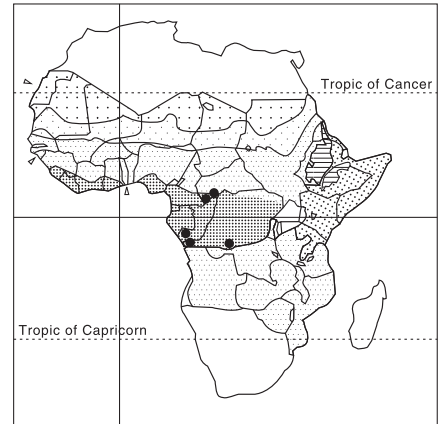
*Croton longiracemosus*



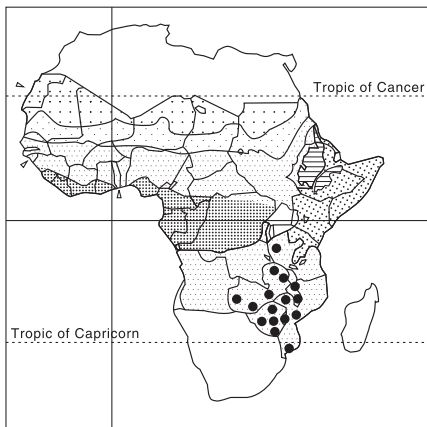
*Croton macrostachyus*



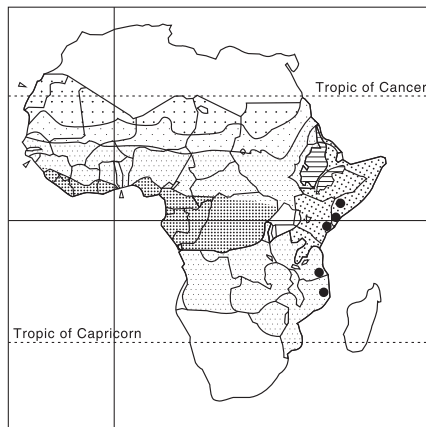
*Croton madandensis*



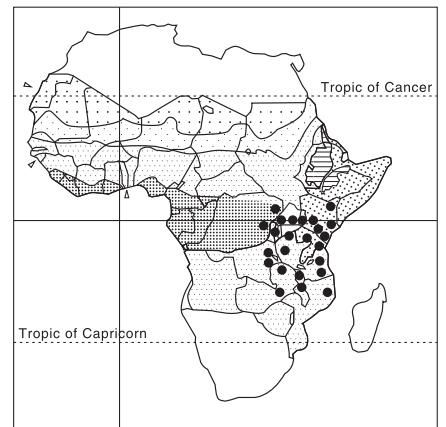
*Croton mayumbensis*



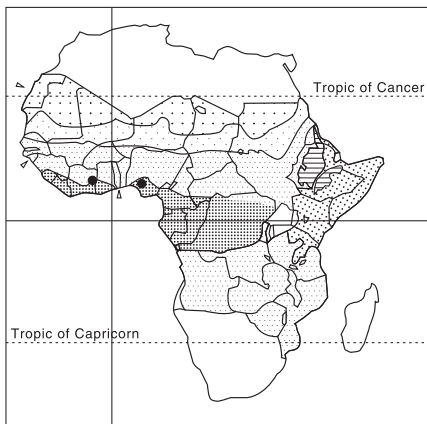
*Croton megalobotrys*



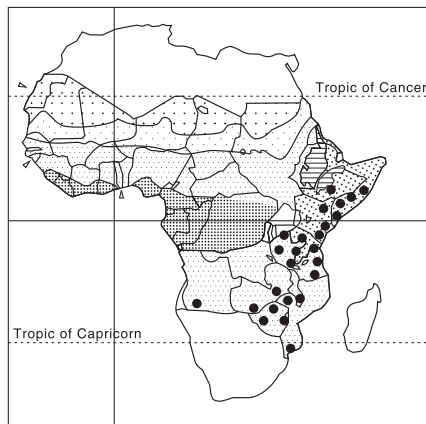
*Croton megalocarpoides*



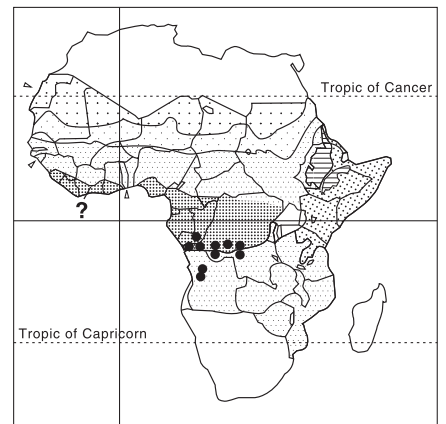
*Croton megalocarpus*



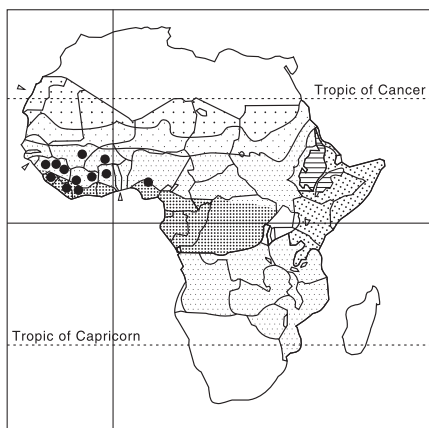
*Croton membranaceus*



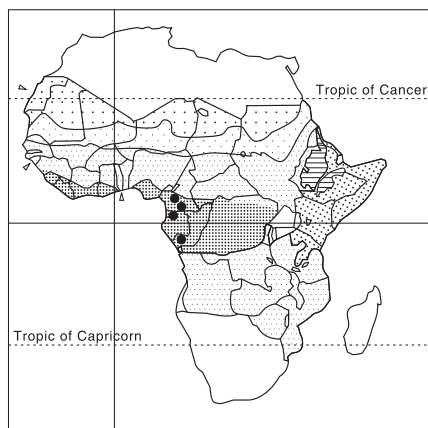
*Croton menyharthii*



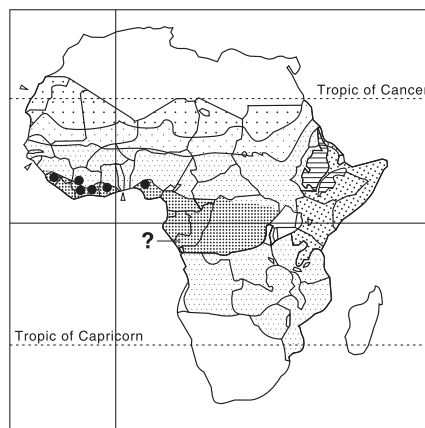
*Croton mubango*



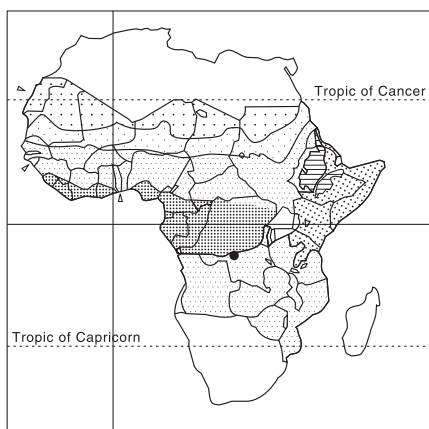
*Croton nigritanus*



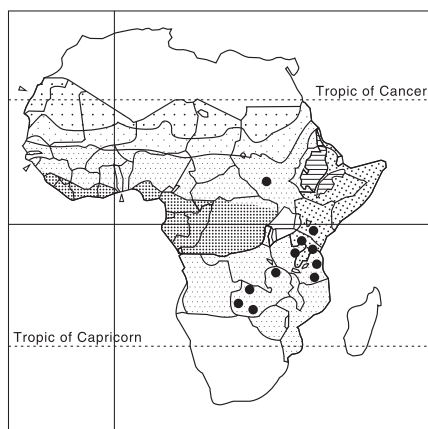
*Croton oligandrus*



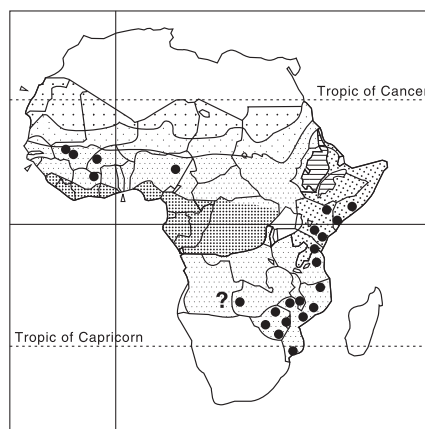
*Croton penduliflorus*



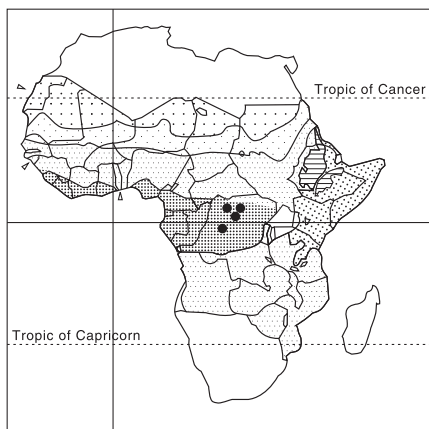
*Croton poggei*



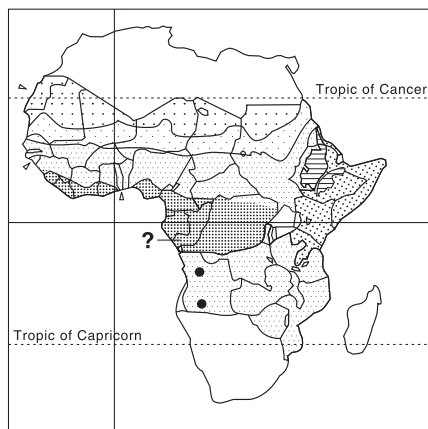
*Croton polytrichus*



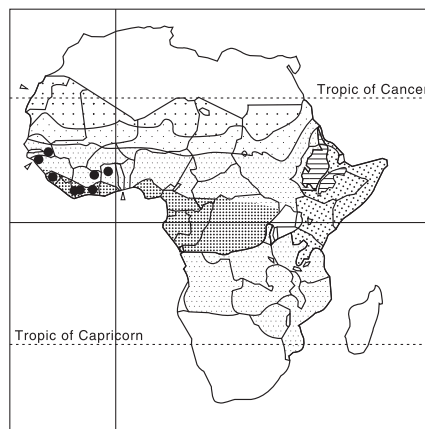
*Croton pseudopulchellus*



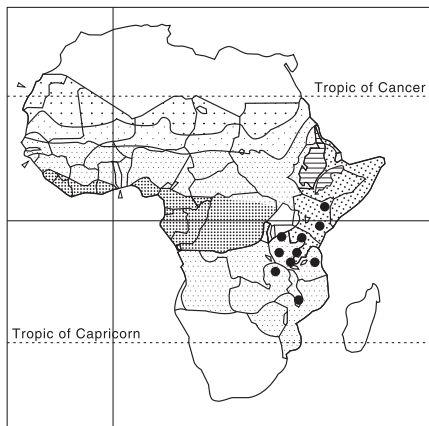
*Croton pynaertii*



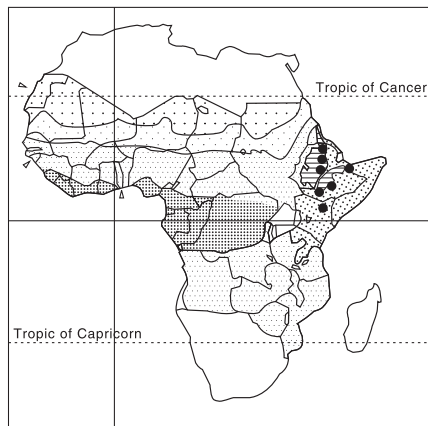
*Croton pyrifolius*



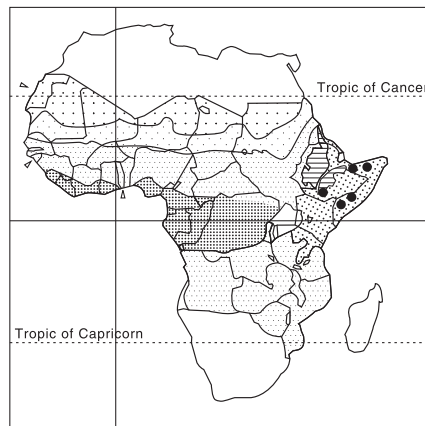
*Croton scarcesii*



*Croton scheffleri*



*Croton schimperianus*



*Croton somalensis*

## CROTON

**C. membranaceus** Müll. Arg.

Herb or undershrub to 1 m tall with slender branches, slightly angular.

River side; scarce.

**C. menyharthii** Pax

syn.: *Argyrodendron bicolor* Klotzsch, non *Croton bicolor* Roxb.; *Croton kwebensis* N. E. Br.

Much-branched shrub or tree 1-5 m tall, monoecious or sometimes dioecious.

Deciduous or semi-evergreen bushland and thicket; *Acacia-Commiphora* woodland; sand, silt or red soil over limestone; dense riverine thickets and evergreen forest; sandy banks of seasonal watercourses; wooded rocky outcrops; stony hillsides; mopane woodland; *Acacia*, *Combretum*, *Dichrostachys*, *Terminalia* thorn scrub; 0-1300 m alt.

Namibia, Caprivi Strip, Botswana, S. Africa.

**C. mubango** Müll. Arg.

Shrub or tree 3-15 m tall, very elegant with trunk 15-30-45 cm Ø; branches patent, branchlets drooping.

Savannas; disturbed forests; "nkunku" (Bas-Congo); rather dry sandy hilly places; outskirts of forests; frequently planted as a shade tree.

Not in Central African Rep. (= **C. mayumbensis**).

**C. nigritanus** Scott-Elliot

syn.: *C. nudifolius* Bak. & Hutch.; *C. chevalieri* Beille; *C. dinklagei* Pax & K. Hoffm.

Shrub to 3,5 m tall.

Usually in moist places by rivers.

**C. oligandrus** Pierre ex Hutch.

Tree 8 m.

Secondary bush on lateritic ground.

**C. penduliflorus** Hutch.

syn.: *C. rubinoensis* Aubrév., nom. invalid.; *C. mooriae* Greenway ex Burt Davy & Hoyle

Tree 10 m tall; bole 50 cm Ø; with spreading habit.

Savanna; forest?

**C. poggei** Pax

Tree; fruit unknown.

Riverine forest.

Only known from fragments of the type collected in 1882 and one drawing.

**C. polytrichus** Pax

Monoecious, sometimes semi-scandent shrub or tree to 7,5 m tall, but usually 3-5 m.

Dry evergreen forest and thicket; occasionally in woodland; sometimes on rocky hills or riverine; *Baikiaea mutemwa* (thicket of dry deciduous forest on Kalahari Sand); pemba thicket (S Zambia); itigi forest-thicket (N Zambia); ridge thicket under *Pteleopsis anisoptera*, *Brachystegia spiciformis*, *Ostryoderris stuhlmannii*, *Amblygonocarpus androgynus*; riparian thicket and lakeshore sand dune scrub; 300-1600 m alt.

Comprises 2 subspp.

## CROTON

**C. pseudopulchellus** Pax

Shrub to 2-4(-6) m tall, monoecious or occasionally dioecious.

Bushland; sometimes abundant in secondary regrowth; coastal dune forest and scrub; *Androstachys johnsonii* thicket and dry forest; *Baikiaea mutemwa*; mopane and *Burkea* woodlands on Kalahari Sand; open *Brachystegia*, *Julbernardia*, *Kirkia*, *Lannea*, *Isoberlinia* woodland; usually in sandy soils; also on rocky outcrops; riverine vegetation; 0-1800 m alt.

S. Africa.

**C. pynaertii** De Wild.

Liane to 10 m long with stems 3-10 cm Ø, or sarmentous shrub.

Riverine forest; islands in streams; swampy or flooded forests with *Guibourtia demeusei*.

**C. pyrifolius** Müll. Arg.

Shrub or tree to 6 m tall; trunk 45 cm Ø at the base; branchlets sulcate; habit like a poplar's.

Rain-forest; gallery forest; 1500 m alt.

**C. scarciesii** Scott-Elliot

Shrub 2-3 m tall in tuft, with slender, terete branches; monoecious. Obligate rheophyte.

Rocks by streams, under water in the rainy season.

**C. scheffleri** Pax

Monoecious or sometimes dioecious virgately-branched shrub or tree to 12 m tall, although most commonly 3-6 m.

Bushland and thicket, generally in rocky places, on lava, poor soils; riverine thicket; dry deciduous woodland with *Sterculia*, *Adansonia*, *Commiphora*, *Combretum*; 550-2300 m alt.

**C. schimperianus** Müll. Arg., incl. var. *acutissimus* Chiov., 1893.

Shrub 1-3 m tall with flexuous stems, branching at ± acute angles; monoecious.

*Acacia-Commiphora* bushland and fringes of riverine woodland; often on limestone; 740-1650 m alt.

**C. somalensis** Vatke ex Pax

Monoecious or sometimes dioecious shrub 1-2,5 m tall; twigs ± straight and diverging at wide angles.

Lava ridges, limestone slopes in *Acacia*, *Commiphora* deciduous bushland; (400-)1200 m alt.

Rather variable in leaf-shape.

**C. steenkampianus** Gerstner

Shrub to 1-4,5 m tall or tree to 7 m; dioecious or monoecious.

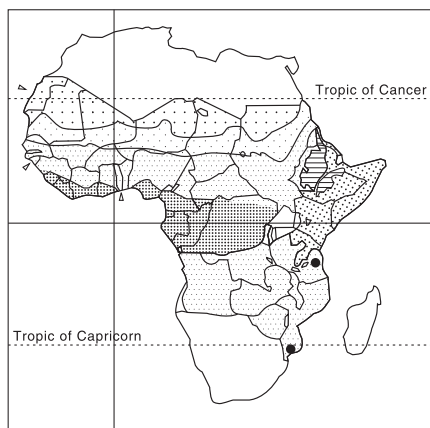
Coastal semi-evergreen woodland; *Androstachys johnsonii* woodland; wooded grassland with *Entandrophragma*, *Combretum*, *Pteleopsis*, *Vitex*, *Croton gratissimus*; 150-350 m alt.

S. Africa.

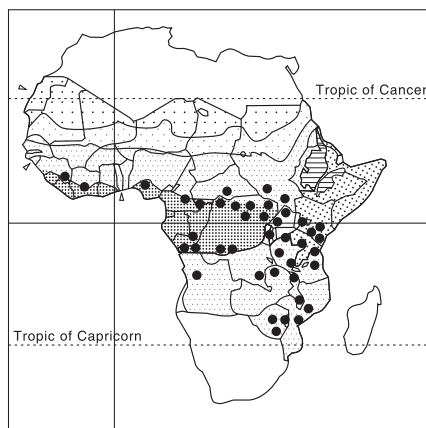
**C. sylvaticus** Hochst. ex Krauss; *Adansonia*, Sér. 2, 3: 68, 1963.

syn.: *C. stuhlmannii* Pax; *C. verdickii* De Wild.; *C. bukobensis* Pax; *C. asperifolius* Pax; *C. elskensii* De Wild.; *C. sphaerocarpum* Kuntze

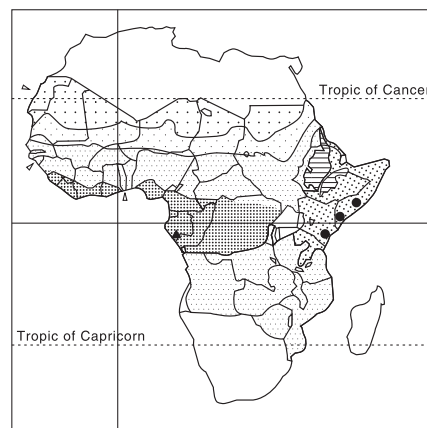




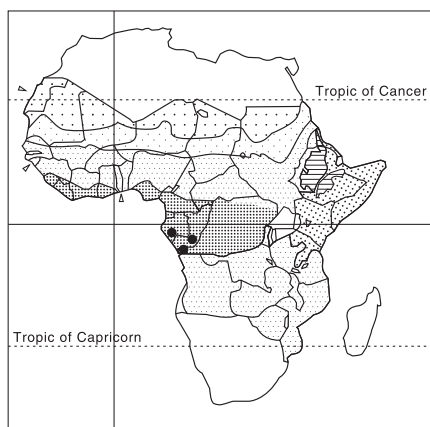
*Croton steenkampianus*



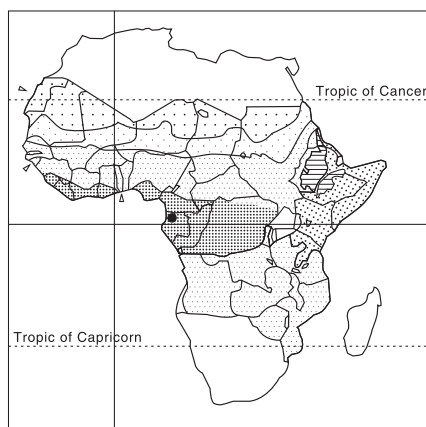
*Croton sylvaticus*



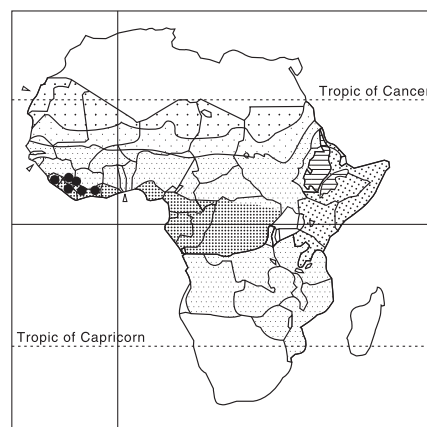
*Croton talaeporos* ●  
*Croton tchibangensis* ▲



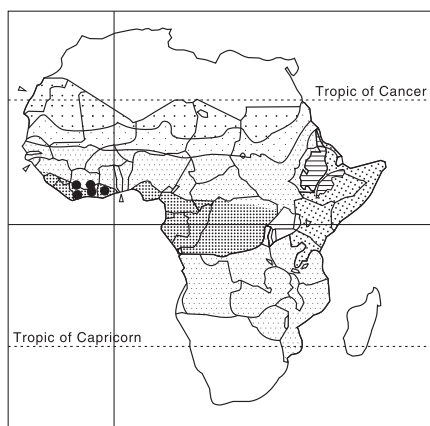
*Croton wellensii*



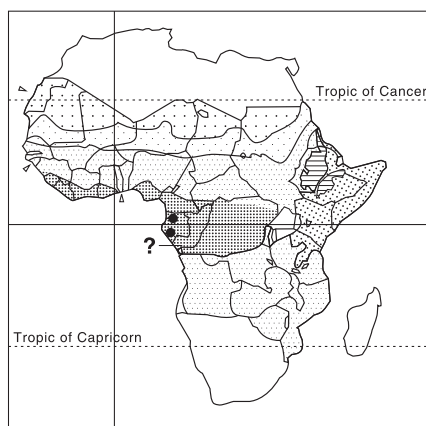
*Crotonogyne angustifolia*



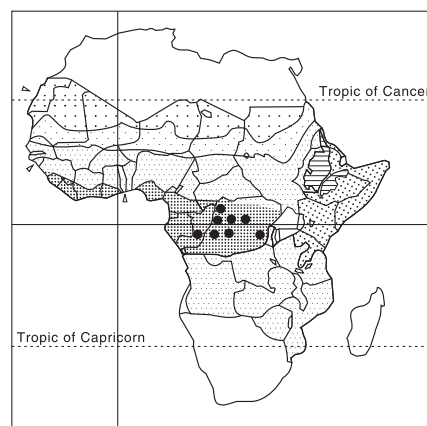
*Crotonogyne caterviflora*



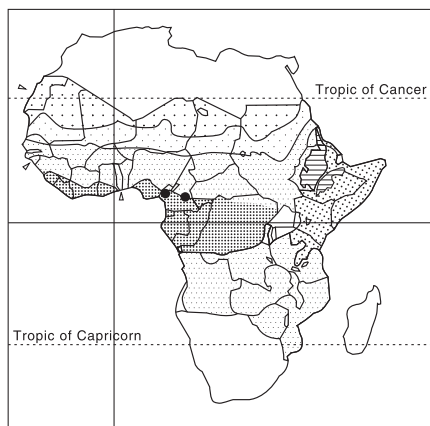
*Crotonogyne chevalieri*



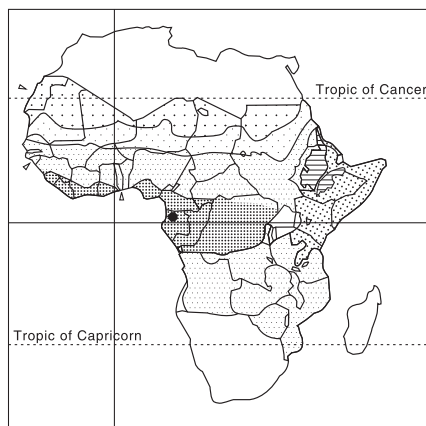
*Crotonogyne gabunensis*



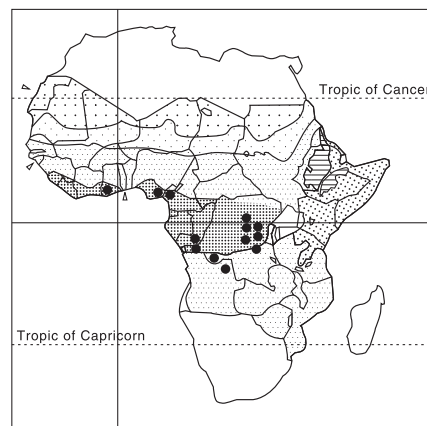
*Crotonogyne giorgii*



*Crotonogyne impedita*



*Crotonogyne lasiocarpa*



*Crotonogyne manniana*

## CROTON SYLVATICUS

Monoecious or dioecious shrub or tree (1-)3-20-40 m tall with clean trunk 12 m tall, and 10-50-125 cm Ø.

Mixed evergreen forest; also a pioneer on forest margins; often on rocky slopes; river gully forest; *Combretum* woodland; *Celtis-Aningeria altissima* forest; grassy savanna with *Imperata* regrowth; gallery; 50-1800 m alt.

S. Africa.

Not in Ivory Coast? (= *C. macrostachyus*).

**C. talaeporos** Radcl.-Smith

Monoecious or sometimes dioecious many-stemmed tree 2-10 m tall.

Coastal bushland on sand and wooded grassland; 0-100 m alt.

**C. tchibangensis** Pellegr; icon.: Pellegrin, Flore du Mayombé 2: 69, 1928.

Tree 7-8 m tall, (bole 11-15 cm Ø) with slender sulcate branches; fruit unknown.

Ecology unknown.

Only known from the 2 syntypes collected in 1908.

Near *C. sylvaticus*.

**C. wellensii** De Wild.

Tree 12-25(-30) m; bole 20-45(-80) cm Ø.

Secondary forests.

## TAXON IN NEED OF STUDY:

*Croton loukandensis* Pellegr.

## SYNONYMS:

*Argyrodendron bicolor* Klotzsch = **Croton menyharthii**

*Croton asperifolius* Pax = **C. sylvaticus**

*broccianus* Vis. = **Chrozophora**

*bukobensis* Pax = **Croton sylvaticus**

*butaguensis* De Wild. = **C. macrostachys**

*chevalieri* Beille = **C. nigritanus**

*claessensii* Vermeesen ex De Willd. = **C. macrostachyus**

*collenettei* Hutch. & Dalz. = **C. dispar**

*courteti* Beille = **C. lobatus**

*decorsei* Beille = **C. lobatus**

*dinklagei* Pax & K. Hoffm. = **C. nigritanus**

*draconoideus* St. Lag. = **C. draconopsis**

*elliottianus* Engl. & Pax = **C. megalocarpus**

*elskensii* De Willd. = **C. sylvaticus**

*gubanga* S. Moore = **C. megalobotrys**

*guerzesiensis* Beille ex A. Chev. = **C. macrostachyus**

*hastatus* L. = **Tragia plukenetii**

*kwebensis* N. E. Br. = **Croton menyharthii**

*lanuginosus* K. Schum. ex Schweinf. = **Chrozophora plicata**

*lehmbachii* Hutch. = **Croton longiracemosus**

*mearnsii* De Wild. = **C. macrostachyus**

*megalobotryoides* De Wild. = **C. macrostachyus**

*mooriae* Greenway ex Burt Davy & Hoyle = **C. penduliflorus**

## CROTON

*mubango* sensu Tisserant = **C. mayumbensis**

*nudiflorus* Bak. & Hutch. = **C. nigritanus**

*oppositifolius* Geisel. = **Mallotus**

*rubinoensis* Aubrév. = **Croton penduliflorus**

*senegalensis* Lam. = **Chrozophora**

*seretii* Vermeesen ex De Wild. = **Croton macrostachyus**

*serratus* (Turcz.) Hochst. ex Baill. = **Caperonia**

*sphaerocarpum* Kuntze = **Croton sylvaticus**

*spinous* sensu Forssk. = **Jatropha spinosa**

sp. near *mubango* Müll. Arg. = **Croton aubrevillei**

*stuhlmannii* Pax = **Croton sylvaticus**

*swynnertonii* S. Moore = **Tannodia**

*urens* L. = **Tragia plukenetii**

*verdickii* De Wild. = **Croton sylvaticus**

*vermeesenii* De Wild. = **C. draconopsis**

*villosus* Forssk. = **Jatropha pelargoniifolia**

*zambesicus* Müll. Arg. = **Croton gratissimus**

## CROTONOGYNE / 13

One species poorly known (*C. angustifolia*): only very young male flowers known, but no female flowers; no ecology recorded; only known from the type. For another species ecology unknown.

**Crotonogyne angustifolia** Pax 1895, non (Baill.) Prain 1912, *excl.* Ic. Pl. 31: tab. 3019, 1915.

syn.: *C. soyauxii* Prain; *C. stenophylla* (Pax) Pax; *Neomanniophyton stenophyllum* Pax

Shrub ± 3,5 m tall, dioecious.

Ecology unknown.

Only known from the type collected in 1881? With very young male flowers.

**C. caterviflora** N. E. Br.

syn.: *Neomanniophyton caterviflorum* (N. E. Br.) Pax

Shrub or tree to 6 m tall.

Rain-forest; 500-1300 m alt.

**C. chevalieri** (Beille) Keay

Shrub 3,5 m tall.

Closed forest.

**C. gabunensis** Pax

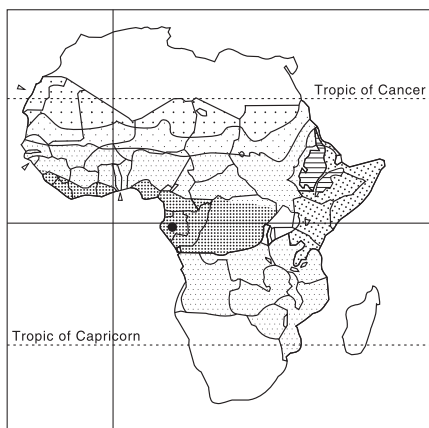
Shrub 3-3,5 m tall.

Forest.

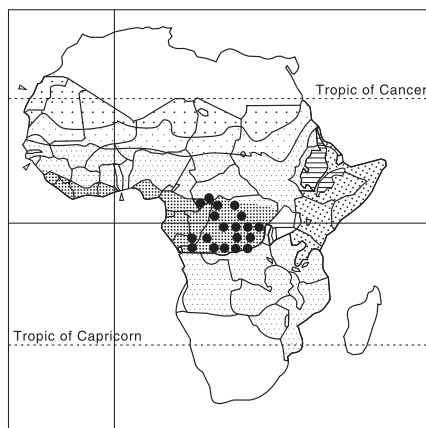
**C. giorgii** De Wild.

Shrub or tree (1,5-)3-10 m tall; trunk 5-10 cm Ø; with long horizontal, drooping, sometimes sarmentous branches with erect branchlets, ending in a tuft of leaves.

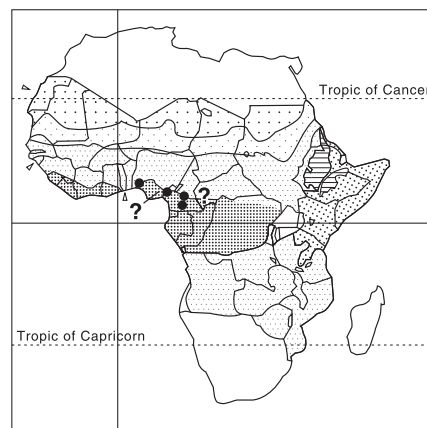
Swampy rain-forests; riverine forests; periodically flooded forests with *Guibourtia demeusei*.



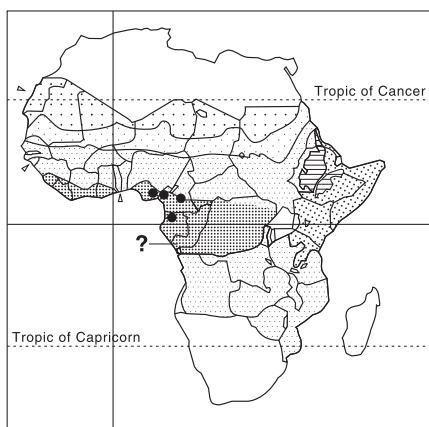
*Crotonogyne parvifolia*



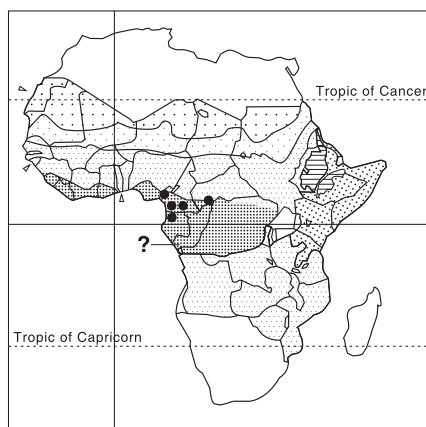
*Crotonogyne poggei*



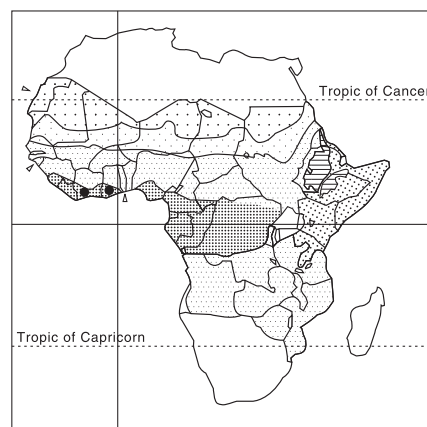
*Crotonogyne preussii*



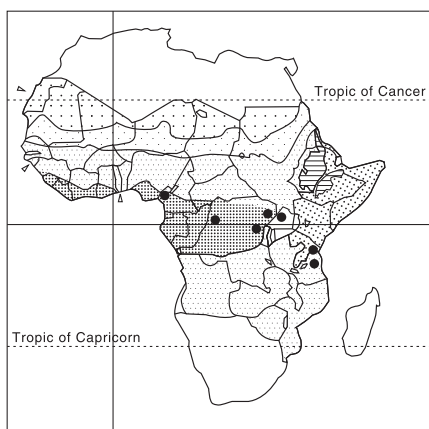
*Crotonogyne strigosa*



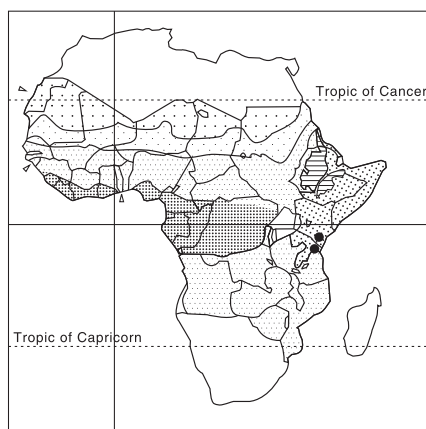
*Crotonogyne zenkeri*



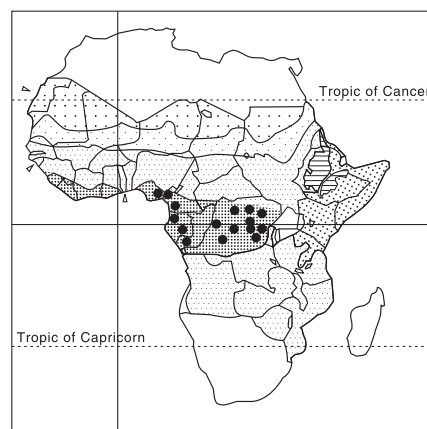
*Crotonognopsis akeassii*



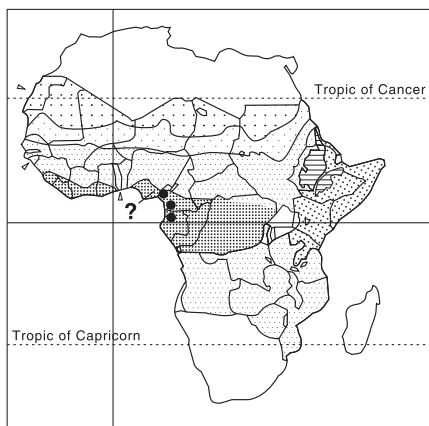
*Crotonognopsis usambarica*



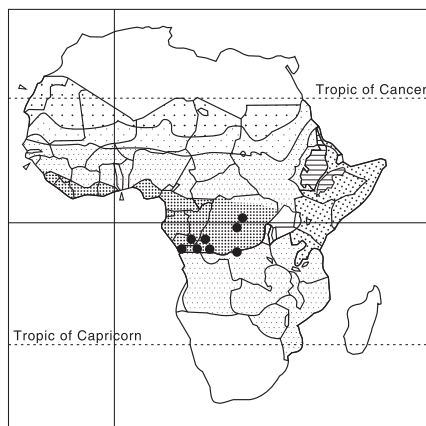
*Cyathogyne usambarensis*



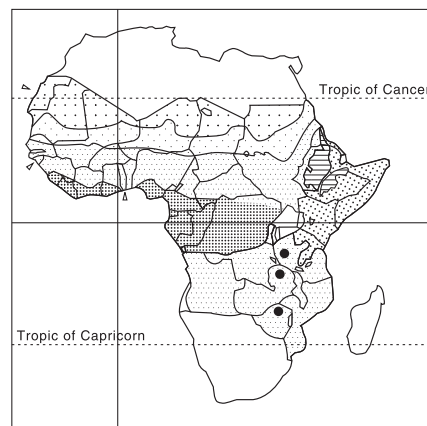
*Cyathogyne viridis*



*Cyrtogone argentea*



*Cyttaranthus congolensis*



*Dalechampia capensis*

## CROTONOZYNE

**C. impedita** Prain

syn.: *Neomanniophyton impeditum* (Prain) Pax

Shrub 2-2,5 m tall.

Rain-forest, semi-deciduous and evergreen; to 400 m alt.

Known from only 4 collections, Cameroon (Cheek & al. Pl. Kupe..., Cameroon: 155-156, 2004).

**C. lasiocarpa** Prain

Shrub.

Ecology unknown.

**C. manniana** Müll. Arg.

Shrub or tree 1,5-7 m tall; sometimes climbing.

Rain-forests; riverine-, swampy-, gallery forests; 200-1100 m alt.

Fernando Poo/Bioko.

Comprises 2 subspp.

**C. parvifolia** Prain

syn.: *Manniophyton angustifolium* Baill.; *Neomanniophyton angustifolium* (Baill.) Pax; *Crotonogyne angustifolia* (Baill.) Prain, non Pax

Shrub 5-6 m tall.

Rocks in river-beds which are completely submerged when the rivers are in flood; habitat like that of the Asiatic *Euphorbiaceae Homonoia riparia* Lour. (Kew Bull. 26: 282, 1972).

**C. poggei** Pax – Icon.: Ann. Mus. Congo Belge 5(2): pl. 73, 1908 (Etudes Fl. Bas- Moyen-Congo).

syn.: *C. laurentii* De Wild. var. *ikelembensis* De Wild. and var. *simpliciracemosa* De Wild.; *C. sapinii* De Wild.; *C. thonneri* De Wild.; *C. ikelembensis* (De Wild.) Prain; *Neomanniophyton poggei* (Pax) Pax; *N. laurentii* (De Wild.) Pax; *N. ikelembense* (De Wild.) Pax; *N. thonneri* (De Wild.) Pax & K. Hoffm. (*C. ikelembensis* is perhaps a good species).

Undershrub or shrub 0,5-3 m tall, sometimes to 4-6 m.

Riverine-, swampy-, and gallery forests; semi-deciduous forest; in valley in *Gilbertiodendron dewevrei* forests.

**C. preussii** Pax

Shrub or tree 3-7,5 m tall with erect stem and long horizontal branches curved upwards at apex with erect leaf-tufts; sometimes a pyramidal shrub.

Gaps in rain-forest with *Celtis mildbraedii*; periodically flooded rather disturbed forest; also riverine; 1-1000 m alt.

**C. strigosa** Prain

syn.: *Neomanniophyton ledermannianum* Pax & K. Hoffm.; *Crotonogyne ledermanniana* (Pax & K. Hoffm.) Pax & K. Hoffm.

Shrub or tree 2-5 m tall, with red exudate and long shaggy indumentum.

Open forest; lowland evergreen forest; c. 100 m alt.

Occurrence in French Cameroons erroneous ?

## CROTONOZYNE

**C. zenkeri** Pax (= ? *C. manniana*).

Dioecious tree 1,2-5,5 m.

Rain-forest; flooded area in open forest; alluvial forest; ± 1000-2300 m alt; wet lowland evergreen forest, c. 100-250 m alt. (Cameroon).

SYNONYM:

*Crotonogyne ? argentea* Pax = **Cyrtogonone**

## CROTONOGYNOPSIS / 2

**Crotonogynopsis akeassii** J. Léonard; Léonard in Bull. Jard. Bot. Natl. Belg. 65: 342, 1996; Distrib. Pl. African. 44: map 1499, 1999.

Monoecious (and also dioecious) shrub, 1-8 m tall; stem to 8 cm Ø, finely grooved.

Rain-forest.

**C. usambarica** Pax; Distrib. Pl. African. 44: map 1500, 1999.

Shrub or tree (1-)2,5-5(-10) m tall; stem 8 cm Ø, slightly ramose, finely grooved.

Mixed forest with *Scorodophloeus zenkeri*, *Polyalthia suaveolens*, *Gilbertiodendron dewevrei*; rain-forest with *Staudtia*, *Cynometra alexandri*, *Grossera multinervis*, *Julbernardia seretii*, *Gilbertiodendron dewevrei*; along river; 400-1700 m alt.

Not in Ivory Coast (= **C. akeassii**).

## CYATHOZYNE / 2

**Cyathogyne usambarensis** (Verdc.) J. Léonard

Erect many-stemmed shrub 1-2 m tall.

Dry evergreen forest and associated bushland; sometimes on limestone; 200-244 m alt.

**C. viridis** Müll. Arg.

Undershrub or shrub 0,2-1(-4) m tall, with prostrate-radicant then erect branches.

Rain-forest with *Scorodophloeus zenkeri* or *Gilbertiodendron dewevrei*; sometimes in periodically flooded or swampy forests; also in rain-forest with *Cynometra alexandri* or *Julbernardia seretii*; 1-1600 m alt.

Comprises 3 vars.

SYNONYMS:

*Cyathogyne bussei* Pax = **Thecacoris spathulifolia**  
*spathulifolia* Pax = **T. spathulifolia**



**CYCLOSTEMON = DRYPETES****CYRTOGONONE / 1****Cyrtogonone argentea** (Pax) Prain

bas.: *Crotonogyne argentea* Pax

Tree 8-30 m tall, dioecious, with *Croton* habitus.

Evergreen rain-forest; 1-1000 m alt.

**CYTTARANTHUS / 1****Cyttaranthus congolensis** J. Léonard

Shrub 1-2,5 m tall; stem 2,5-7 cm Ø.

Rain-forest with *Gilbertiodendron dewevrei*; half-deciduous forests with *Scorodophloeus zenkeri*; sometimes riverine formations and swampy forests.

**DALECHAMPIA / 8**

For one species no ecology is recorded. For another species the base of the plant and the fruit are unknown.

ARMBRUSTER, W. S. (2002). Can indirect selection and genetic context contribute to trait diversification? A transition-probability study of blossom-colour evolution in two genera. *J. Evol. Biol.* 15: 468-486.

**Dalechampia capensis** A. Spreng.

syn.: *D. kirkii* Prain; *D. volubilis* E. Mey. ex Baill.

Prostrate, creeping or climbing perennial with stems to 3,5 m long arising from a woody rootstock.

Lakeshore and riverine associations in deciduous woodland, on sandy soil; often in stony or rocky places; roadsides; 800-1830 m alt.

S. Africa.

**D. chevalieri** Beille

Slender twiner.

Ecology unknown (valley); 200-300 m alt.

Near *D. katangensis*.

**D. galpinii** Pax

Rhizomatous trailing or climbing perennial herb to over 2 m long.

Hot dry wooded grassland with scattered deciduous trees and shrubs or thicket; often on stony or rocky hillsides; near sea-level to 1220 m alt.

Botswana, S. Africa.

**D. ipomoeifolia** Benth., Kew Bull. 50: 810, 1995.

syn.: *Tragia buettneri* Pax

Slender twiner to 7 m long; stem 3-5 mm Ø at the base.

**DALECHAMPIA IPOMOEIFOLIA**

Forest edges; regrowth; plantations; more rarely in aquatic meadows; periodically flooded wooded formations with *Alchornea cordifolia*; gallery forest; 200-1150 m alt.

**D. katangensis** J. Léonard

Slender twiner.

Grassy savannas; open forests.

**D. parvifolia** Lam.

Woody-based twiner to 3 m long; leaves vary dramatically.

Deciduous bushland, thicket or woodland on rocky or silty soils; weed of cultivation on black soils; riverine forest; evergreen coastal scrub and bushland; often in seasonally wet places; disturbed places; sand dune thickets; dry sandy ground; humus rich soil; clearings; 0-1500 m alt.

Cape Verde Islands; S. Africa, Namibia; Madagascar?; Arabia, Pakistan, India (Gujarat).

Comprises 2 vars.:

- var. **parvifolia**; syn.: *D. scandens* Lam. var. *cordofana* (Hochst. ex Webb) Müll. Arg.; *D. cordofana* Hochst. ex Webb; *D. tripartita* R. Br.; *D. senegalensis* A. Juss. ex Webb
- var. **natalensis** (Müll. Arg.) J.-P. Lebrun & Stork **comb. nov.**; bas: *Dalechampia natalensis* Müll. Arg. in A. P. de Candolle, Prodr. 15(2): 1243 (1866); syn.: *D. scandens* L. var. *natalensis* (Müll. Arg.) Pax & K. Hoffm.; *D. capensis* Sond., nom. illeg., non A. Spreng.

*D. scandens* L. var. *hildebrandtii* (Pax) Pax from East Africa, coastal region, is perhaps distinct although collections could almost be regarded as intermediate. Some material are intermediate between var. *parvifolia* and var. *natalensis*.

**D. pavoniifolia** (Chiov.) M. G. Gilbert

Twining herb, but base unknown; fruit not seen.

Open wooded bushland on red sandy soil; 150-600 m alt.

Only known from 2 collections; the type has very poorly preserved inflorescences.

**D. trifoliata** Peter ex Verdc. & Greenway

Perennial semi-prostrate herb, sometimes subscandent; stems slender to 60 cm long, arising from a woody rootstock.

Deciduous and coastal bushland or woodland; often in rocky, seasonally waterlogged, overgrazed or disturbed places; *Acacia-Commiphora* bushland; on red sandy soil over limestone; limestone outcrops; 60-950 m alt.

Comprises 2 vars.

**DICHOSTEMMA / 1****Dichostemma glaucescens** Pierre

syn.: *D. amplum* Pax; *D. zenkeri* Pax (good species ?); type Zenker 1774 in herb. Madrid, MA, fide Gamarra, Anal. Jard. Bot. Madrid 57: 192, 1999).

Shrub or slender tree, 4-12 m tall, or said sometimes to be climbing.

Forest; gaps in rain-forest; gallery forest; 500 m alt.

**DISCOCLAOXYLON / 1**

**Discoclaoxylon hexandrum** (Müll. Arg.) Pax & K. Hoffm.  
syn.: *Claoxylon preussii* Pax

Dioecious, sparingly branched spindly pithy tree to 20 m tall, but more commonly 5-6 m.

By pathsides in forest; mostly in secondary regrowth; stream banks; 1-1830 m alt.

**DISCOGLYPREMNA / 1**

**Discoglyprena caloneura** (Pax) Prain, incl. var. *rigidifolia* Pax  
bas.: *Alchornea caloneura* Pax

Dioecious tree (6-)9-45 m tall with a clear bole 6-30 m, 25-65 (-90) cm Ø, generally with small buttresses.

Rain-forest with *Scorodophloeus zenkeri*; secondary forest; evergreen forest with *Staudtia stipitata*, *Julbernardia seretii*, *Grossera multinervis*; gallery; forest with *Garcinia polyantha*; to 600-1300 m alt.

Bioko/Fernando Poo, São Tomé, Annobon.

**DRYPETES / 57**

Many species incompletely known. For one species no habit recorded. For 4 species (c. 7%) the male flower is unknown, and in another species the male flower is known only very young, and in another species the male flower of one of the 2 varieties is unknown. The female flower is unknown in 7 species (c. 12%) and in one of the varieties of another species. The fruit is unknown for 11 species (c. 20%) and so ripe fruit in another species. For 2 species no ripe seeds have been seen. No ecology is recorded for 7 species (c. 12%). Three species (= c. 6%) are known only from the type and further 4 species (together = c. 14%) are known only from 2 or 3 syntypes.

**Drypetes aframensis** Hutch.

Tree to 13 m; bole short, branching low down; branchlets slightly sulcate.

Forest; 950-1150 m alt.

**D. afzelii** (Pax) Hutch.

bas.: *Cyclostemon afzelii* Pax

Tree 24 m; flowers on bole and branches; slightly buttressed. Fringing forest; ± 800 m alt.

**D. angustifolia** Pax & K. Hoffm.

Dioecious tree to 10 m with slender, angular branches; male flower and fruit unknown ?

Forest; 700 m alt.

Near *D. gilgiana*.

**D. arguta** (Müll. Arg.) Hutch.

bas.: *Cyclostemon argutus* Müll. Arg.

Shrub or slender tree to 6 m tall.

**DRYPETES ARGUTA**

Forest (generally dryer types); evergreen- and evergreen-kloof forest; coastal deciduous woodland, scrub and thicket; 0-750 m alt. S. Africa.

**D. aubrevillei** Léandri

syn.: *D. paxii* Hutch. var. *aubrevillei* (Léandri) J. Léonard  
Tree 13-25 m; bole 0,3-0,5 m Ø.

Rain-forest.

**D. aylmeri** Hutch. & Dalziel

syn.: *D. mottikoro* Léandri

Tree 12 m; bole 0,25 m Ø.

Rain-forest.

**D. bipindensis** (Pax) Hutch.

bas.: *Cyclostemon bipindensis* Pax

Much-branched polygamo-dioecious shrub or tree 6-8 m tall, more rarely to 15 m; ripe seeds unknown.

Rain-forest; particularly in rocky gorges; 1220-1520 m alt.

**D. calvescens** Pax & K. Hoffm.

Tree to 7,5 m tall; mature fruit unknown.

Rain-forest; 1220 m alt.

**D. capillipes** (Pax) Pax & K. Hoffm.

bas.: *Lingelsheimia capillipes* Pax

Shrub or tree to 3,6 m tall.

Forest.

**D. celastrinea** Pax & K. Hoffm.

Shrub or small tree with slender branches; female flower and fruit unknown.

Rain-forest, grassfield on contiguous rocks.

Only known from the type (Milbbraed 5345).

**D. chevalieri** Beille ex Hutch. & Dalziel

Shrub or tree 4-5 m tall.

Rain-forest; by streams; secondary forest; 300-700 m alt.

**D. cinnabarina** Pax & K. Hoffm., incl. var. *congolensis* J. Léonard, nomen; icon.: Engler, Pflanzenreich IV.147. XV: 257, 1922.

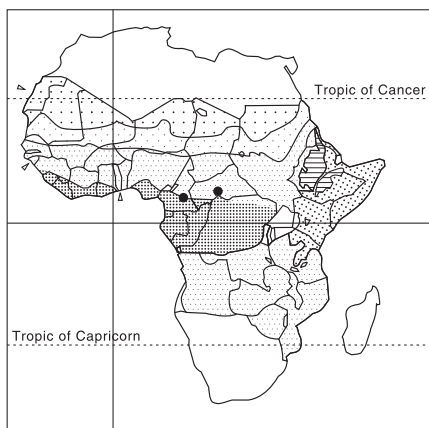
Tree to 6 m tall with sulcate branches.

Bush.

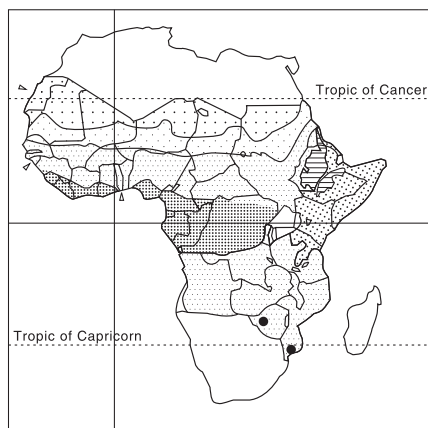
**D. darimontiana** J. Léonard

Dioecious shrub (1,5-)4-8 m tall or tree to 19 m with clean bole 10 m high and 20-25 cm Ø, 55 cm in girth; leaf reticulation ± *Styracaceae*-like.

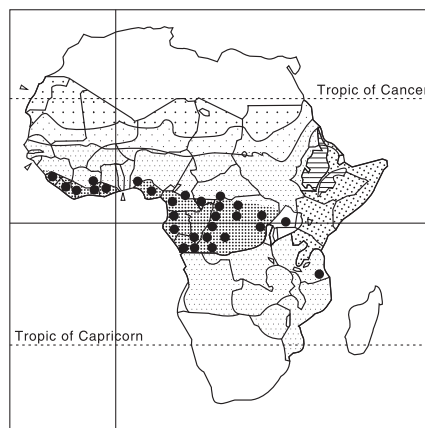
Gallery and half-deciduous rain-forest with *Staudtia gabonensis*, *Cynometra alexandri*, *Grossera multinervis*, *Julbernardia seretii*, *Gilbertiodendron dewevrei*, *Khaya anthoteca*; 850-1000 m alt.



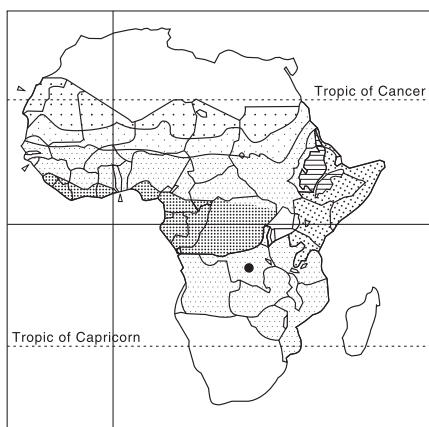
*Dalechampia chevalieri*



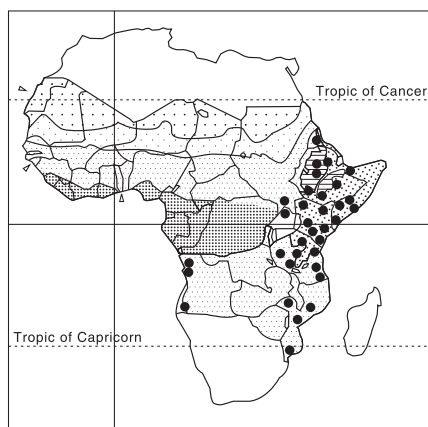
*Dalechampia galpinii*



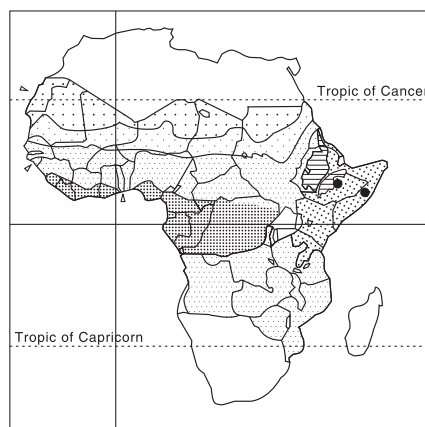
*Dalechampia ipomoeifolia*



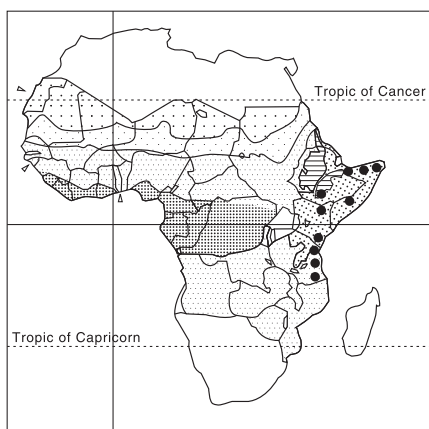
*Dalechampia katangensis*



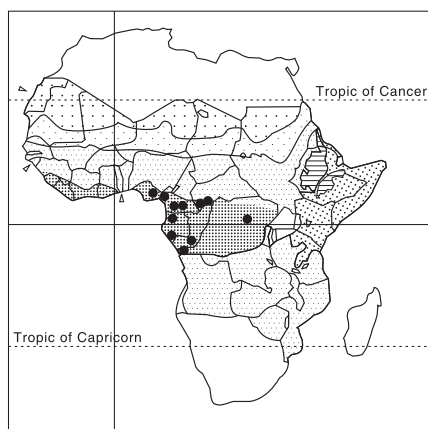
*Dalechampia parvifolia*



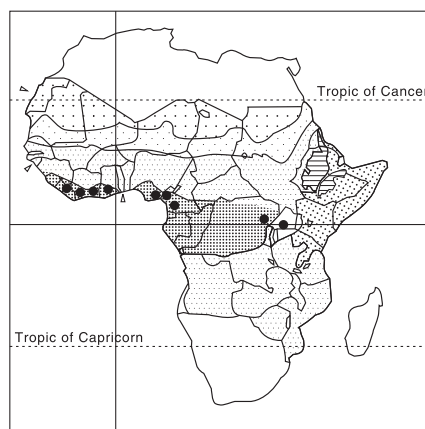
*Dalechampia pavoniifolia*



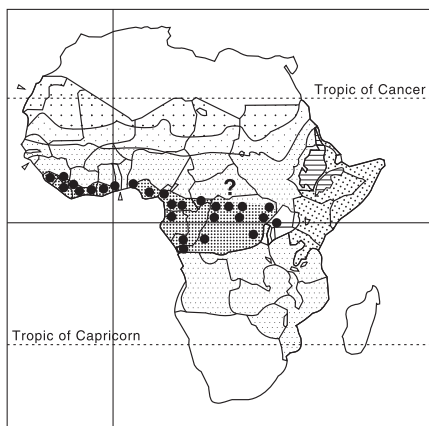
*Dalechampia trifoliata*



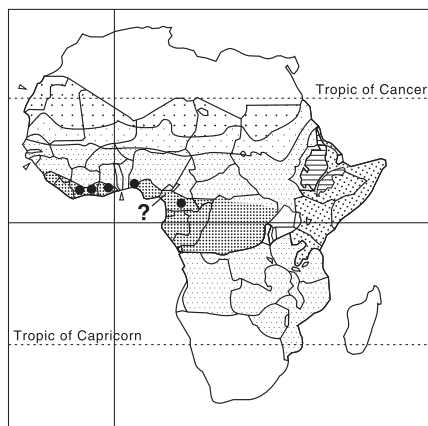
*Dichostemma glaucescens*



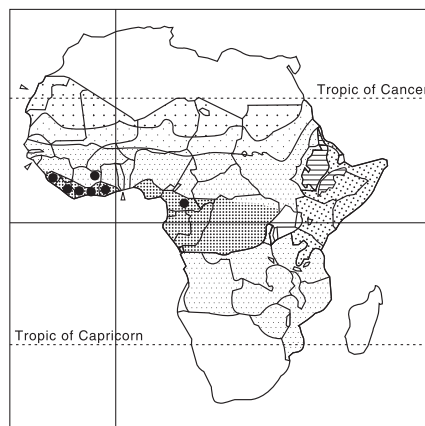
*Discoclaoxylon hexandrum*



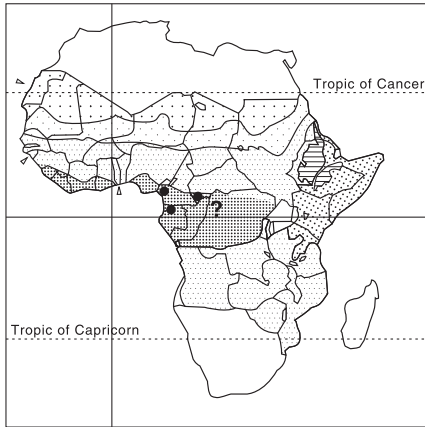
*Discoglypremna caloneura*



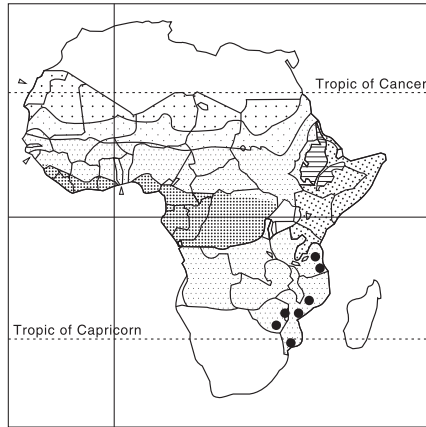
*Drypetes aframensis*



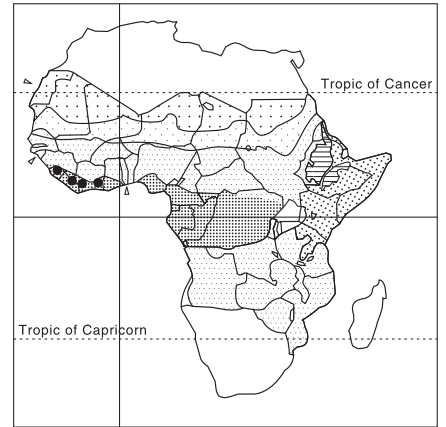
*Drypetes afzelii*



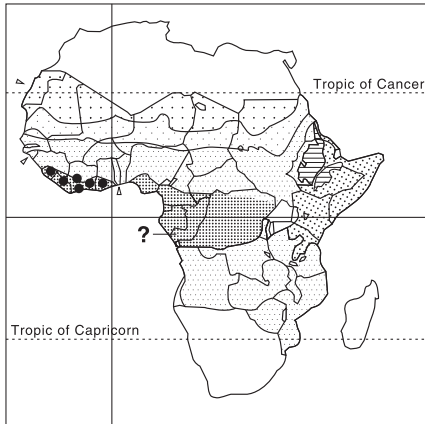
*Drypetes angustifolia*



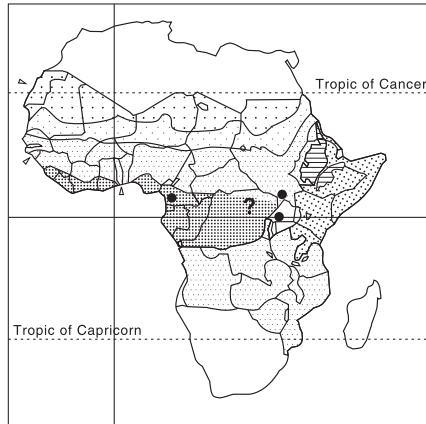
*Drypetes arguta*



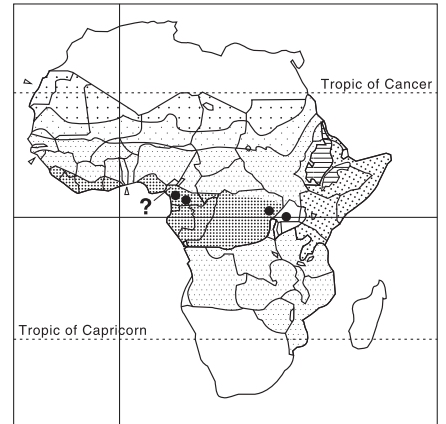
*Drypetes aubrevillei*



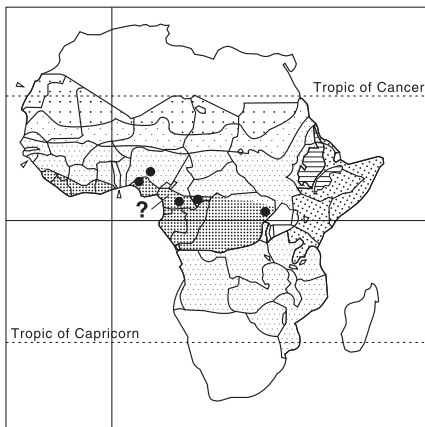
*Drypetes aylmeri*



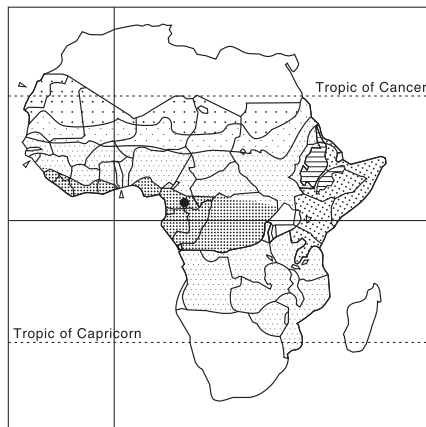
*Drypetes bipindensis*



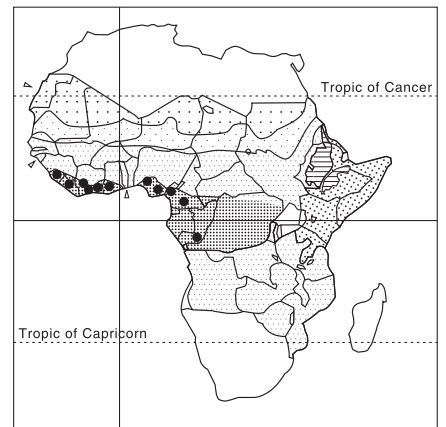
*Drypetes calvescens*



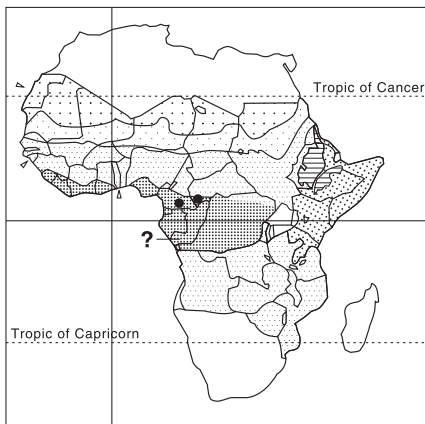
*Drypetes capillipes*



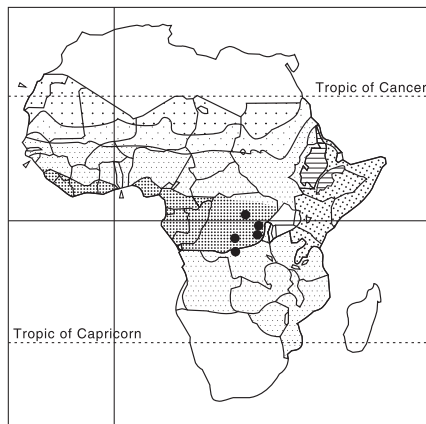
*Drypetes celastrinea*



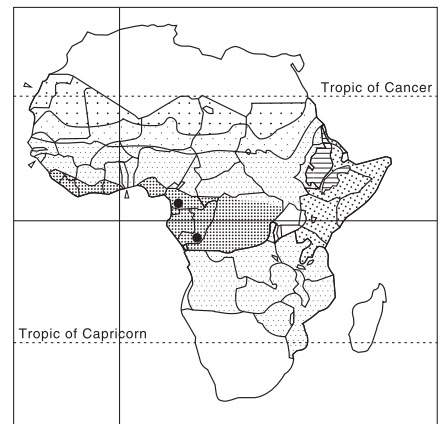
*Drypetes chevalieri*



*Drypetes cinnabarina*

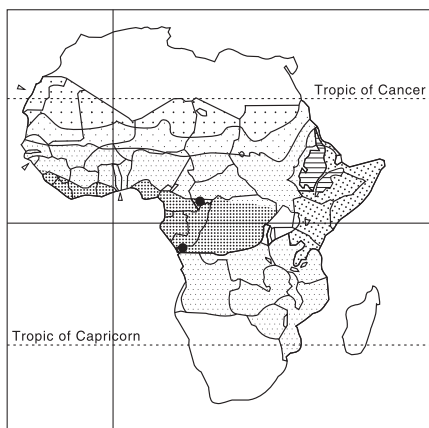


*Drypetes darimontiana*

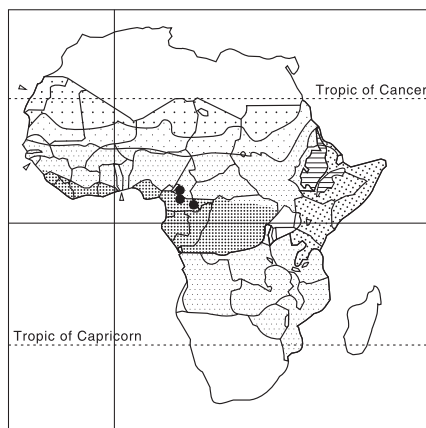


*Drypetes dinklagei*

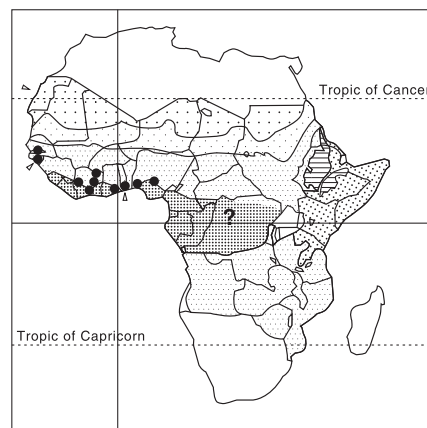




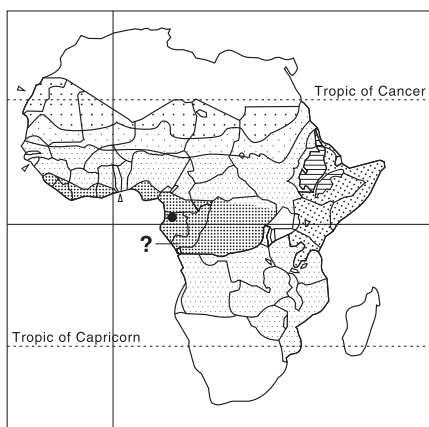
*Drypetes diopa*



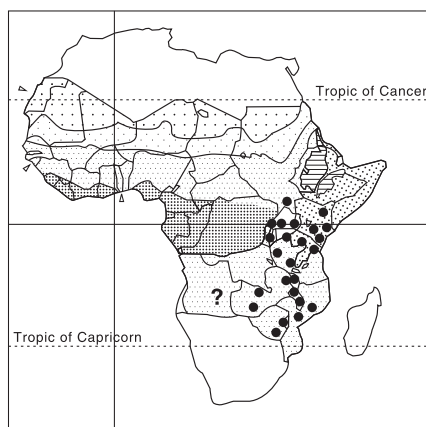
*Drypetes fallax*



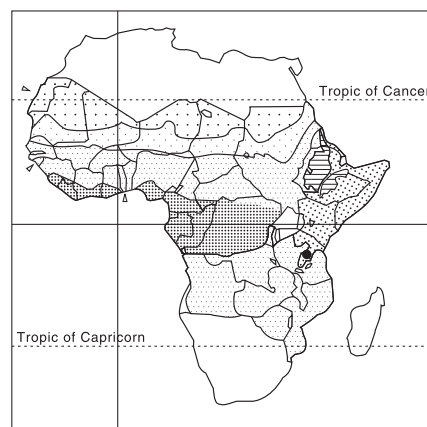
*Drypetes floribunda*



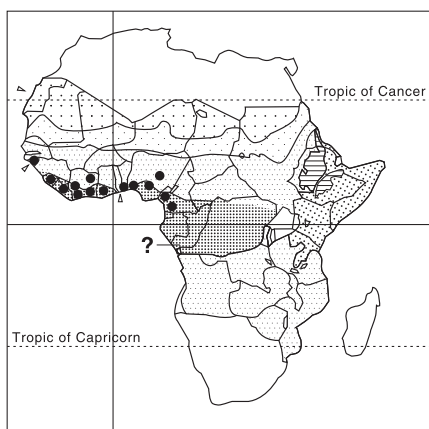
*Drypetes gabunensis*



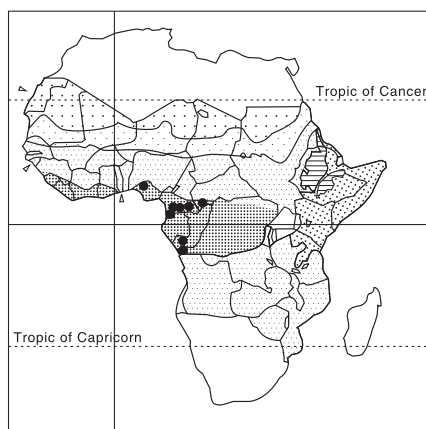
*Drypetes gerrardii*



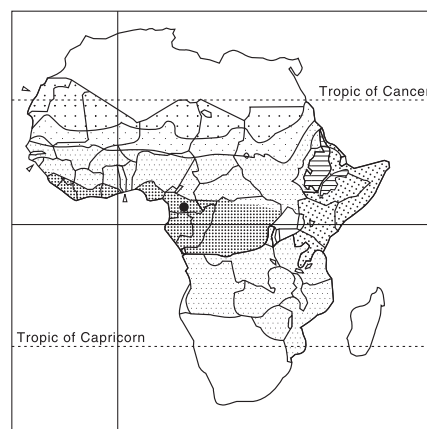
*Drypetes gerrardinoides*



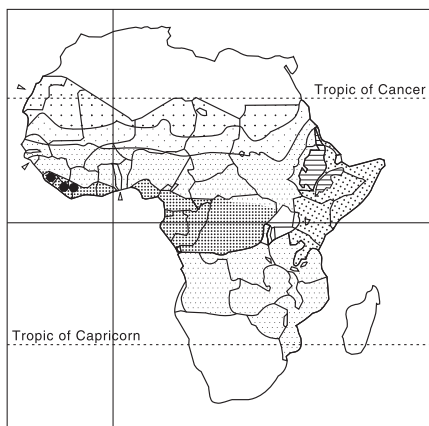
*Drypetes gilgiana*



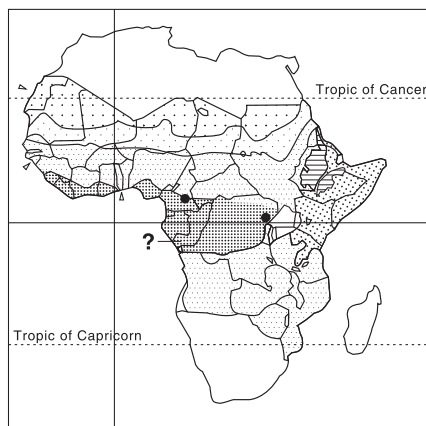
*Drypetes gosseileri*



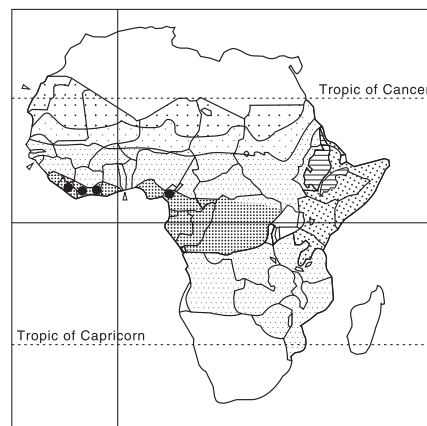
*Drypetes gracilis*



*Drypetes inaequalis*



*Drypetes ituriensis*



*Drypetes ivorensis*

## DRYPETES

**D. dinklagei** (Pax) Hutch.

bas.: *Cyclostemon dinklagei* Pax

Tree 3,5-6 m tall; branches somewhat flexuous; female flower unknown; male flower on branchlets (cauliflorous).

Rain-forest.

**D. diopa** (Hiern) Brenan

Shrub or tree, dioecious, 15-20 m tall with numerous short thin branches.

In the shade of other trees.

Near *D. gilgiana*.

**D. fallax** Pax & K. Hoffm.

Shrub; young branches slender, sulcate, later rounded; fruit unknown.

Swampy bush.

**D. floribunda** (Müll. Arg.) Hutch.

bas.: *Cyclostemon floribundus* Müll. Arg.

syn.: *Drypetes ovata* Hutch.

Cauliflorous tree to 10 m tall, or sarmentous shrub.

Drier parts of the forest regions, extending also into the savanna; gully; near humidity.

**D. gabunensis** Hutch.

syn.: *Cyclostemon gabunensis* Pierre ex Hutch.

Tree 5-6,5 m tall with terete branchlets.

Ecology unknown.

**D. gerrardii** Hutch.; Kew Bull. 50: 810, 1995.

Much-branched evergreen shrub or tree to 30 m tall with pendent branches.

Dry evergreen forest; sometimes riverine or in rocky places; occasionally extending into wetter forest; evergreen forest and secondary associations; rain-forest; 1000-2300 m alt.

S. Africa.

Comprises 4 vars.: – var. **gerrardii**; syn.: *D. subdentata* Mildbr.; *D. battiscombei* Hutch.; for the others see “Enumération” 1: 211 + 243, 1991; 3: 307, 1995.

**D. gerrardinoides** Radcl.-Sm.

Shrub or tree to 4m tall with long branches, over-arching; twigs slender; habit similar to that of the genus *Gerrardina* (*Flacourtiaceae*).

Isolated patches of closed high mixed rain-forest with *Anthocleista*, *Aphloia*, *Bersama*, *Cassipourea gummiflora*, etc.; 1430-1500 m alt.

**D. gilgiana** (Pax) Pax & K. Hoffm.

bas.: *Cyclostemon gilgianus* Pax

syn.: *Lingelsheimia gilgiana* (Pax) Hutch.

Tree to 8-12 m; bole 90 cm in girth, 10 cm Ø; sarmentous; branchlets slender, slightly sulcate.

Evergreen and deciduous forest; also river banks; dry deciduous forest; 800-1000 m alt. (Mount Cameroon); 500-800 m (Nimba).

## DRYPETES

**D. gossweileri** S. Moore

syn.: *D. armoracia* Pax & K. Hoffm.; *D. “arinozacia”* in Kennedy, Forest Fl. S. Nig.: 75, 1936, nom. illegit.

Tree to 38 m tall; bole straight, clear ± 3 m in girth.

Forest.

**D. gracilis** Pax & K. Hoffm.

Shrub 2-3 m tall with slender angular branches; fruit unknown.

Ecology unknown (? rain-forest).

Only known from 3 syntypes (Mildbraed 5042, 5046, 5070).

**D. inaequalis** Hutch.

syn.: *Cyclostema leonensis* Pax; *Drypetes leonensis* (Pax) Pax & K. Hoffm. 1922 non Pax 1909 (= *D. leonensis* above).

Shrub 4-5 m tall; with angular branchlets.

Forest; 500-800 m alt.

**D. ituriensis** Pax & K. Hoffm., incl. var. *gemina* Pax & K. Hoffm.

Tree with sulcate slender branches; fruit unknown.

Rain-forest.

Comprises 2 vars.: – var. **ituriensis** (female flower unknown) and – var. **pilosa** Pax & K. Hoffm. (male flower unknown).

Only known from the syntypes (Mildbraed 2997, 8752).

**D. ivorensis** Hutch. & Dalziel

Shrub or tree 3-8 m tall; female flowers cauliflorous.

Evergreen rain-forest; 220-500 m alt.

**D. klaineana** (Pierre) Breteler – see **D. pierreana****D. klainei** Pierre ex Pax

Tree to 25 m; bole straight, 0,5 m Ø, buttressed.

Flood plain of river in forest area.

**D. laciniata** (Pax) Hutch., incl. var. *acuta* Pax & K. Hoffm. and var. *glabrescens* Pax & K. Hoffm.

bas.: *Cyclostemon laciniatus* Pax

Shrub 3-4 m tall with subterete branches; female flower cauliflorous.

Rain-forest; 90 m alt.

**D. leonensis** Pax 1909, non (Pax) Pax & K. Hoffm. 1922 (= **D. inaequalis**).

syn.: *D. hutchinsonii* Pax & K. Hoffm.; *D. rowlandii* Pax; *D. kamerunica* Pax & K. Hoffm.; *D. urophylla* Pax & K. Hoffm.; *Aporusa inaequalis* Pax & K. Hoffm.

Tree to 23 m tall; branches slender, sulcate, angular.

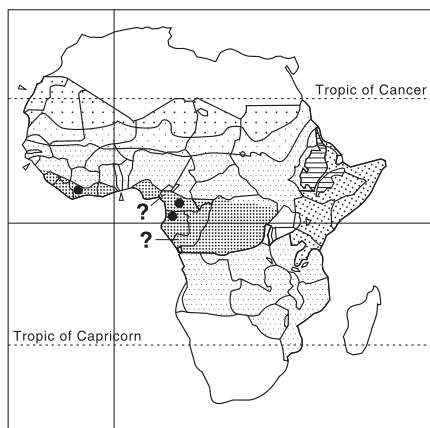
Rain-forest; open forest; 1-800 m alt.

**D. magnistipula** (Pax) Hutch.

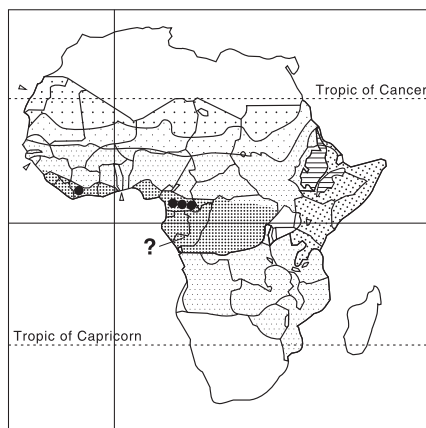
bas.: *Cyclostemon magnistipulus* Pax

Treelet to 4 m, with large persistent ovate stipules; stems 4-ridged; female flowers cauliflorous; male flowers unknown; stipules 4-6 cm long × 1,5-2 cm broad; branches angular; fruit unknown.

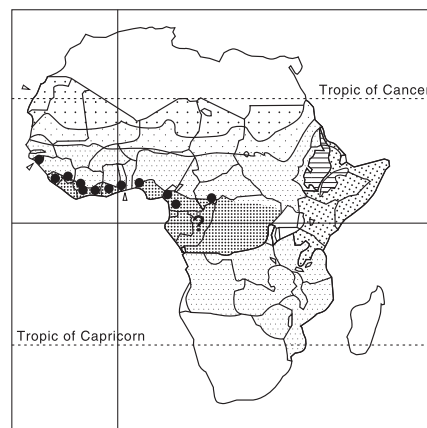
Rain-forest; also riverine; evergreen forest; 800-1000 m alt.



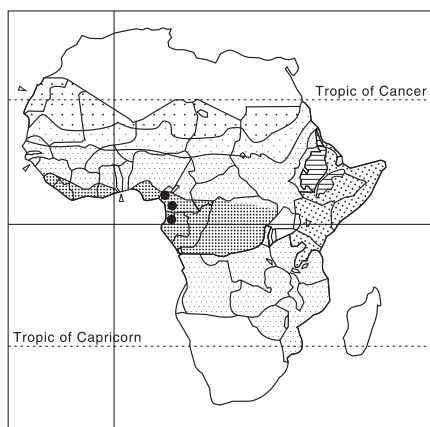
*Drypetes klainei*



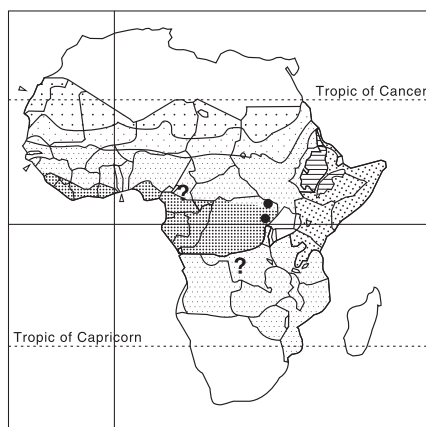
*Drypetes laciniata*



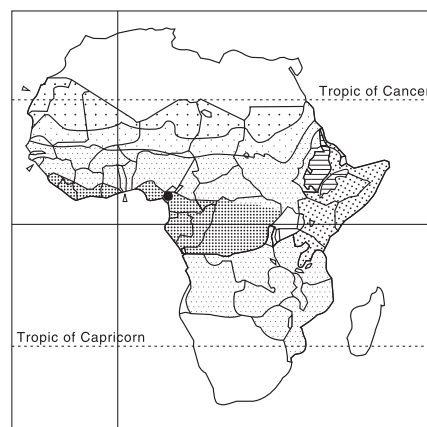
*Drypetes leonensis*



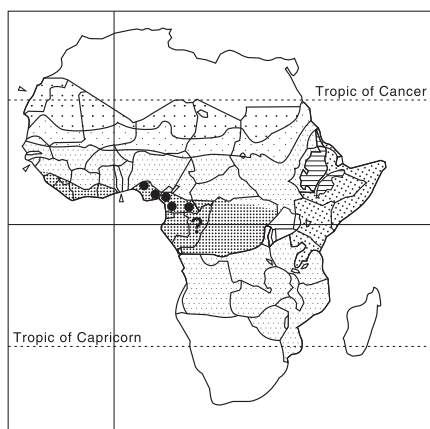
*Drypetes magnistipula*



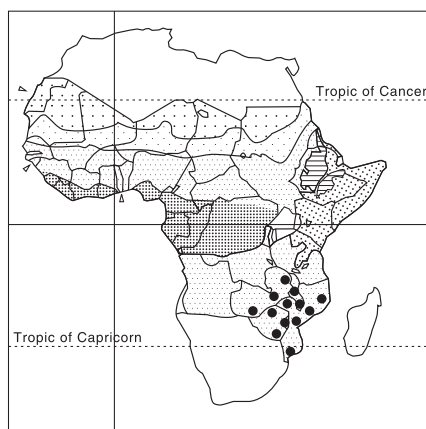
*Drypetes mildbraedii*



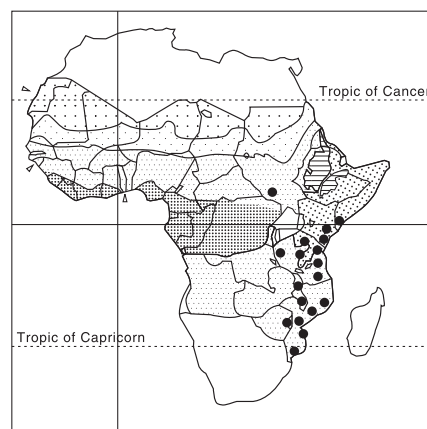
*Drypetes moliwensis*



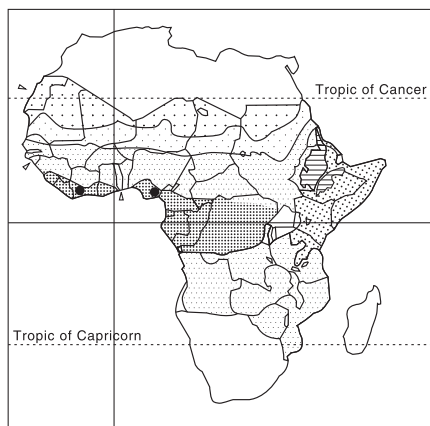
*Drypetes molunduana*



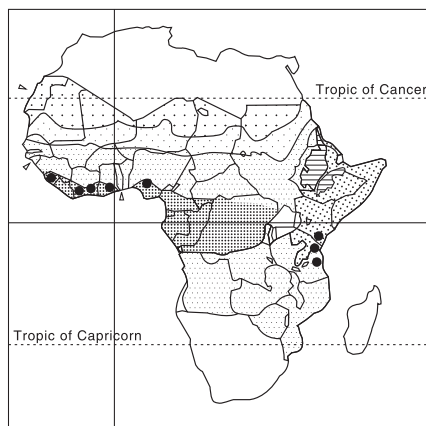
*Drypetes mossambicensis*



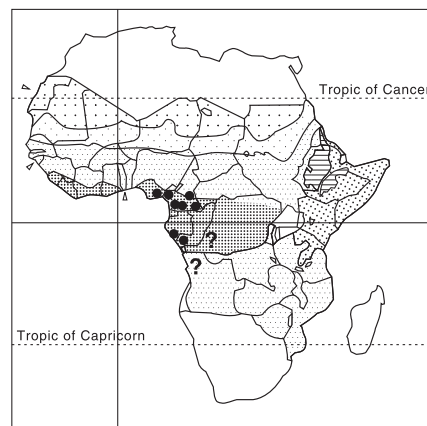
*Drypetes natalensis*



*Drypetes obanensis*



*Drypetes parvifolia*



*Drypetes paxii*

## DRYPETES

**D. mildbraedii** (Pax) Hutch.

bas.: *Cyclostemon mildbraedii* Pax

Shrub with subterete branches, young branchlets angular and sulcate; fruit unknown.

Rain-forest.

**D. moliwensis** Cheek & Radcl.-Sm.

syn.: *Drypetes* sp. nov. aff. *similis* Hutch. in Cheek, A Botanical Inventory of the Mabeta-Moliwe Forest: 32 and map 6, 1992; *Sibangea* sp. nov. aff. *similis* (Hutch.) Radcl.-Sm. in Radcliffe-Smith & al., *Euphorbiaceae* in Cable & Cheek, The Plants of Mount Cameroon, a Conservation Checklist: 54, 1998.

Slender tree 4-8 m; fruit unknown; dioecious.

Disturbed evergreen forest on old volcanic soil with *Lophira*, *Desbordea*, *Strombosia*; 80-100 m alt.

Near *D. ivorensis*, *D. principium*, *D. aylmeri* and *Sibangea similis*.

**D. molunduana** Pax & K. Hoffm.

Tree 4-6-10 m tall with deeply grooved branchlets and persistent, ridged stipules; flowers in dense fascicles all down the main stem, not on the twigs.

Forests; 1-1200 m alt.

**D. mossambicensis** Hutch.

Deciduous shrub or tree to 20 m tall; sometimes ± evergreen; branching at 3-5 m height to form a dense broadly conical crown to 10 m Ø.

Riverine woodland or thicket on alluvium of river valley, often beside seasonal watercourses; floodplain mopane woodland; beside pans and at base of rocky scarpments; sometimes on dambo margins and on termitaria; 90-760 m alt.

S. Africa.

**D. natalensis** (Harv.) Hutch.

bas.: *Cyclostemon natalensis* Harv.

Shrub or tree commonly to 9 m tall, rarely 15 m; bole 30 cm Ø; flowers fasciculate on bosses or transverse knobby ridges on the older branches of the trunk; branches borne above 4,5 m, upright and spreading to form a dense rounded crown.

Dry evergreen and riverine forest; often in rocky places; rarely in wetter forests; semi-deciduous forest; also on sands; gully- and coastal forest; woodland and dune thickets; 0-1500 m alt.

S. Africa.

Comprises 2 vars.: – var. **natalensis** (syn.: *Cyclostemon major* Pax; *Drypetes holzti* Pax & K. Hoffm.; *D. zombensis* Dunkley); and – var. **leiogyna** Brenan.

**D. obanensis** S. Moore

Tree; female flowers and fruits have only recently been identified (Keay, 1989).

Forest.

**D. parvifolia** (Müll. Arg.) Pax & K. Hoffm.

bas.: *Cyclostemon parvifolius* Müll. Arg.

syn.: *Lingelsheimia parvifolia* (Müll. Arg.) Hutch.

Shrub or tree of rather spreading habit, to 6 m tall.

## DRYPETES PARVIFOLIA

Savanna forest; on limestone, dolomitic marble and other rocky places in evergreen semi-deciduous coastal and riverine forest; 0-450 m alt.

Distribution curiously West-East disjunct.

**D. paxii** Hutch.

Tree to 40 m tall, with slender, sulcate branches; with 5-6 buttresses.

Forest; 250 m alt.

**D. pellegrinii** Léandri

syn.: *D. vinei* Hoyle

Tree 7,5-12 m tall; bole 25-30 cm Ø and 90 cm in girth; branches spreading.

Forest; locally abundant.

**D. peltophora** S. Moore

Habit, male flower and fruit unknown.

Ecology unknown.

Only known from the type (Bates 1295).

Near *D. dinklagei*.

**D. pierreana** Hutch. – The correct name should be: **D. klaineana** (Pierre) Breteler

syn.: *Cyclostemon klaineanus* Pierre [non ex Hutch. fide Breteler in *Adansonia*, Sér. 3, 27: 328, 2005], non *Drypetes klainei* Pierre ex Pax

Tree 6-7,5 m tall with subterete branchlets; flower fascicles produced on the old wood.

Ecology unknown.

**D. polyantha** Pax & K. Hoffm.

Tree; female flowers unknown.

Rain-forest.

**D. preussii** (Pax) Hutch.

bas.: *Cyclostemon preussii* Pax

Tree (3,5-)6-21 m tall; flowers borne on the stem.

Forest; evidently a rare species; 1-250 m alt.

**D. principium** (Müll. Arg.) Hutch.

bas.: *Cyclostemon principium* Müll. Arg.

Tree to 10 m tall; flowers borne on leafy shoots and the woody branches; leaves resembling those of *Tapura africana*.

Forest; 1-1400 m alt.

Bioko/Fernando Poo, Principe.

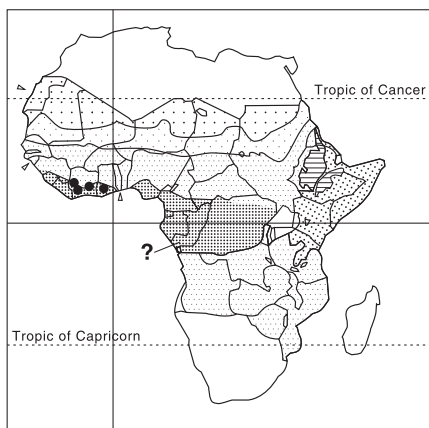
**D. reticulata** Pax; Kew Bull. 50: 811, 1995.

Shrub, several-stemmed, or slender, sometimes ill-formed or long-branched tree to 15 m tall. – For female flowers see Thulin, Fl. Somalia 1: 277, 1993; ripe seed unknown.

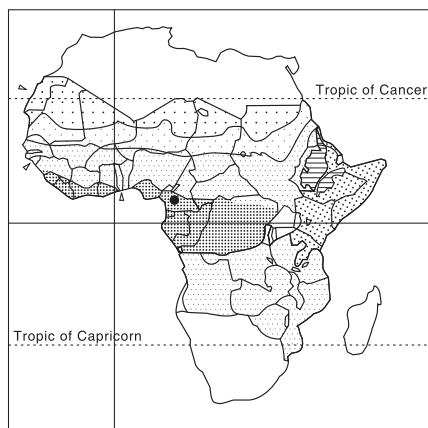
Woodland on granitic outcrops; evergreen forest and thicket; often riverine; evergreen rain-forest; *Brachystegia glaucescens* woodland on rocky hillsides; 0-1800 m alt.

S. Africa.

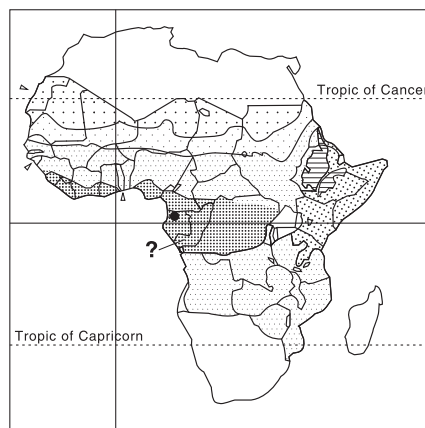




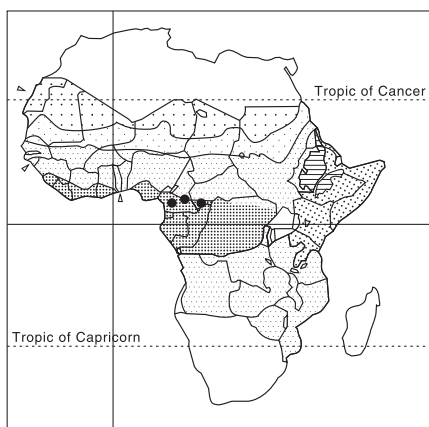
*Drypetes pellegrinii*



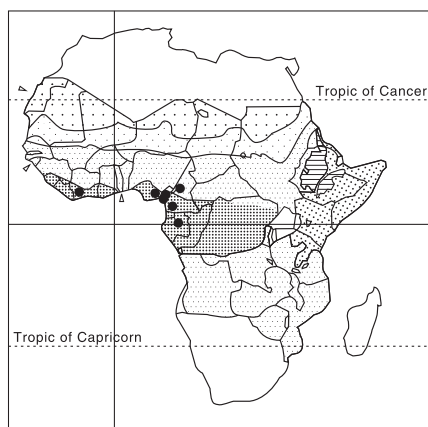
*Drypetes peltophora*



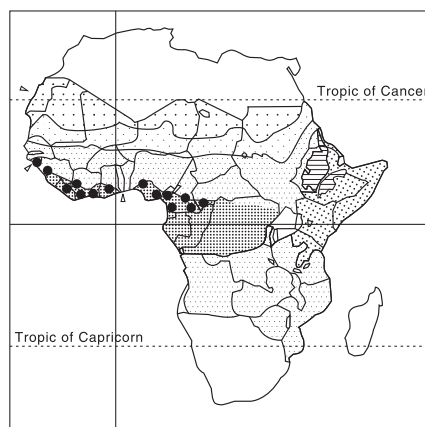
*Drypetes pierreana*



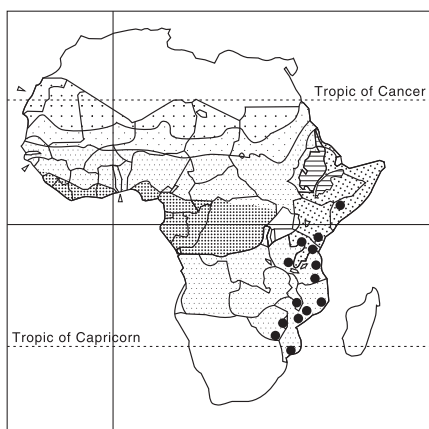
*Drypetes polyantha*



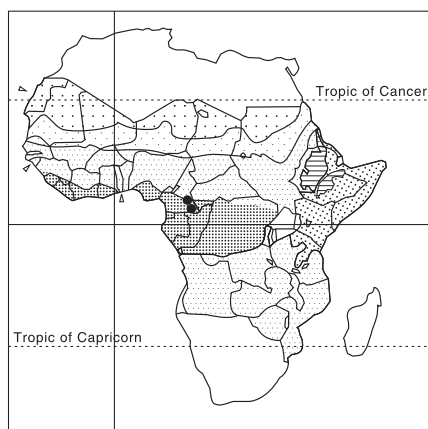
*Drypetes preussii*



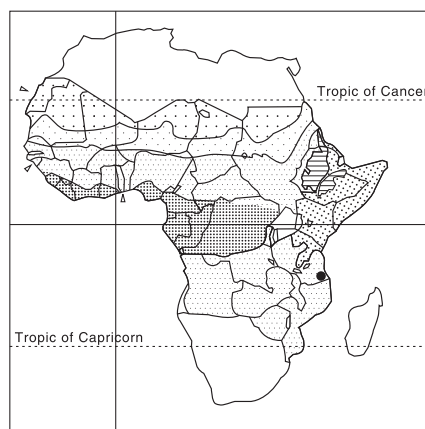
*Drypetes principum*



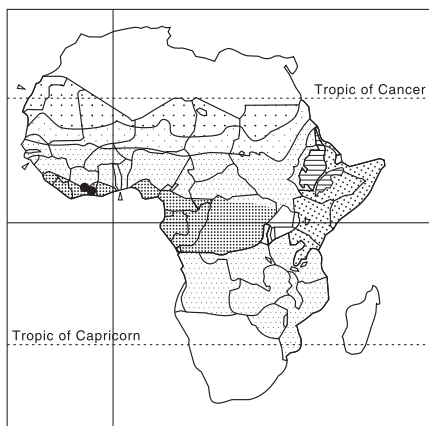
*Drypetes reticulata*



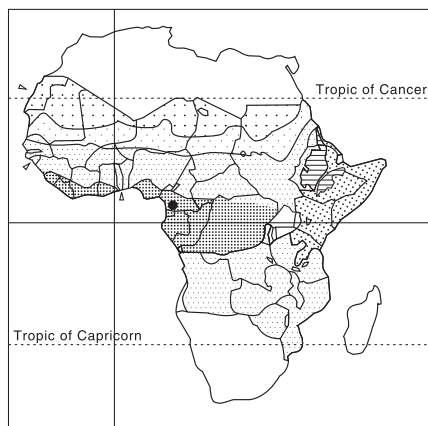
*Drypetes rubriflora*



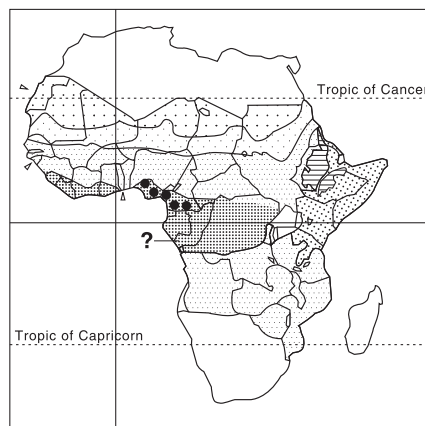
*Drypetes sclerophylla*



*Drypetes singroboensis*



*Drypetes spinosodentata*



*Drypetes staudtii*

## DRYPETES

**D. rubriflora** Pax & K. Hoffm.

Shrub or tree 2-4 m tall with slender branches; female flower unknown.

Rain-forest.

Only known from 3 syntypes (Mildbraed 4650, 5056, 8658).

**D. sclerophylla** Mildbr.

Tree to 18 m, with a straight bole; female flowers unknown. Woodland and thicket; riverine as well as on ridges; 200-750 m alt.

**D. singroboensis** Aké Assi

Shrub to 3 m tall, very ramose.

Along streams; humid places.

Near *D. molunduana*.

**D. spinosdentata** (Pax) Hutch.

bas.: *Cyclostemon spinosdentatus* Pax

Dioecious shrub or tree; female flowers unknown.

Rain-forest.

**D. staudtii** (Pax) Hutch.

bas.: *Cyclostemon staudtii* Pax

Tree to 13 m; flowers on main stem; branchlets ± angular; stem purple-brown, 4-angled.

Wet evergreen forest; 1-400 m alt.

**D. stipularis** (Müll. Arg.) Hutch.

bas.: *Cyclostemon stipularis* Müll. Arg.

syn.: *Drypetes cauliflora* Pax

Tree to 4,5 m; young branchlets deeply grooved; stipules 10-12 mm long; female flowers produced on the old wood; male flowers and fruits unknown.

East slope; 200 m alt.

**D. taylorii** S. Moore; Kew Bull. 50: 811, 1995.

Shrub? with subterete branches; near *D. bipindensis* but with six sepals somewhat aberrant from the genus, and larger, more coriaceous leaves.

Ecology unknown.

Only known from the type collected in Mtoni; there are several Mtonis in East Africa, all in Kenya or Tanzania.

**D. tessmanniana** (Pax) Pax & K. Hoffm.

bas.: *Cyclostemon tessmannianus* Pax.

syn.: *Lingelsheimia tessmanniana* (Pax) Hutch.

Shrub or tree, to 2 m tall; female flowers unknown?

Forest.

**D. ugandensis** (Rendle) Hutch.

bas.: *Cyclostemon ugandensis* Rendle

Tree similar to *D. natalensis*; flowers produced on the old wood. Rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; rocky slope; 900-1140 m alt.

## DRYPETES

**D. usambarica** (Pax) Hutch.; Kew Bull. 50: 811, 1995; 45: 673, 1990.

bas.: *Cyclostemon usambaricus* Pax

Tree to 60 m, with a straight trunk and horizontally-spreading branches; twigs angular at first; male flowers sometimes rami-floriferous, female flowers cauliflorous, or all flowers cauliflorous.

Rain-forest; sometimes riverine or in rocky places; evergreen forest; 100-2000 m alt.

Comprises 4 vars.: – var. **usambarica**, – var. **mrirmae** Radcl.-Sm., – var. **stylosa** Radcl.-Sm. and – var. **trichogyna** Radcl.-Sm. (syn.: *D. usambarica* var. *rugulosa* Radcl.-Sm.).

**D. verrucosa** Hutch.

syn.: *Cyclostemon verrucosus* Pierre ex Hutch.

Tree 15-20 m; male flowers unknown?; female flowers produced in fascicles from the old wood.

Ecology unknown.

**D. vilhenae** Cavaco; Contribution étude Fl. Lunda: 80, 1959.

Tree ± 9 m tall with sulcate, angular branches; male flowers only known young; fruit unknown.

Gallery forest.

Near *D. kamerunica*, *D. gerrardii* and *D. paxii*.

Only known from 2 syntypes.

The following species are known from the Guinea golf islands:

**Drypetes glabra** (Pax) Hutch. – São Tomé.

**henriquesii** (Pax) Hutch. – São Tomé.

**occidentalis** (Müll. Arg.) Hutch. – Bioko/Fernando Poo; also Congo-Brazzaville?

## SYNONYMS:

*Cyclostemon* (basonyms of *Drypetes* are not cited, only synonyms).

*klaineanus* Pierre ex Hutch. = **Drypetes pierreana**

*major* Pax = **D. natalensis** var. **natalensis**

*Drypetes "arinozacia"* in Kennedy, Forest Fl. S. Nig. = **Drypetes gossweileri**

*armoracia* Pax = **D. gossweileri**

*cauliflora* Pax = **D. stipularis**

*holzii* Pax & K. Hoffm. = **D. natalensis** var. **natalensis**

*hutchinsonii* Pax & K. Hoffm. = **D. leonensis**

*leonensis* Pax & K. Hoffm. 1922 = **D. inaequalis**

*mottikoro* Léandri = **D. aylmeri**

*ovata* Hutch. = **D. floribunda**

*paxii* Hutch. var. *aubrevillei* (Léandri) J. Léonard = **D. aubrevillei**

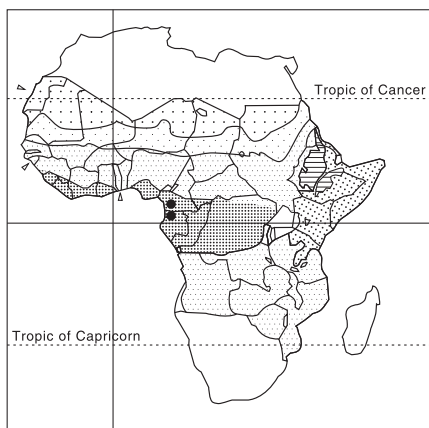
*rowlandii* Pax = **D. leonensis**

sp. nov. aff. *similis* Hutch. in Cheek and Cable & Cheek = **D. moliwensis**

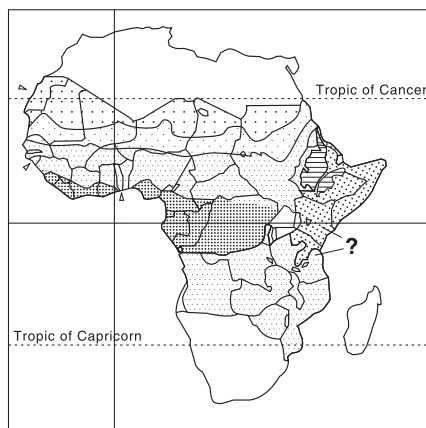
*usambarica* (Pax) Hutch. var. *rugulosa* Radcl.-Sm. = **D. usambarica** var. **trichogyna**

*vignei* Hoyle = **D. pellegrinii**

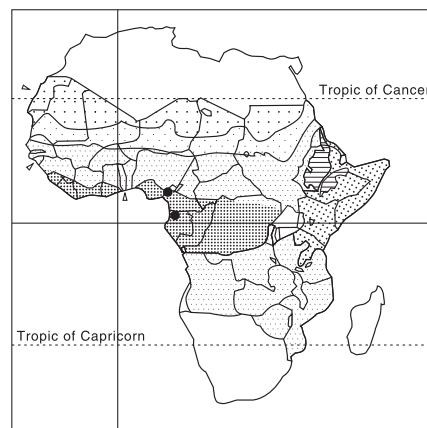
*zombensis* Dunkley = **D. natalensis** var. **natalensis**



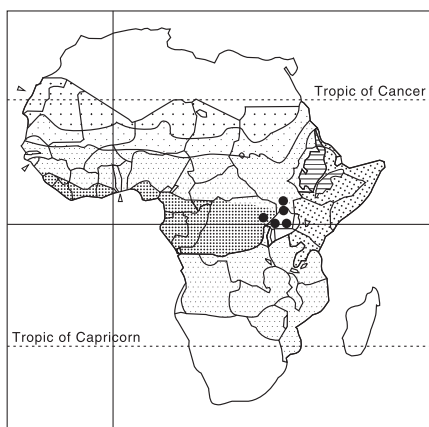
*Drypetes stipularis*



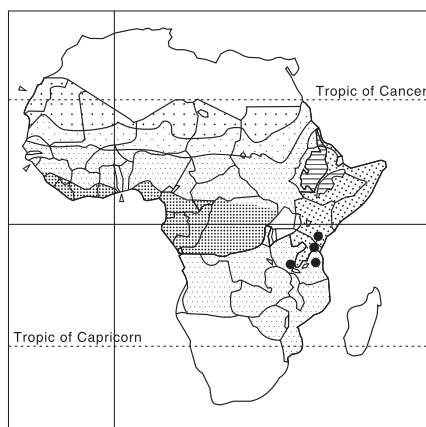
*Drypetes taylorii*



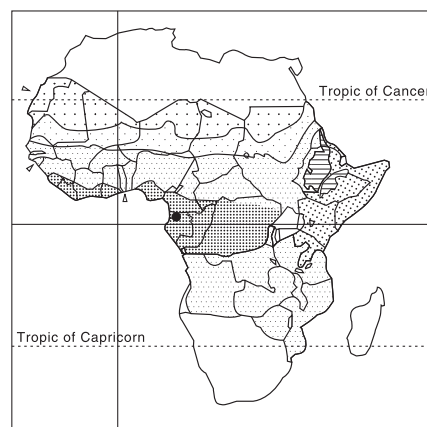
*Drypetes tessmanniana*



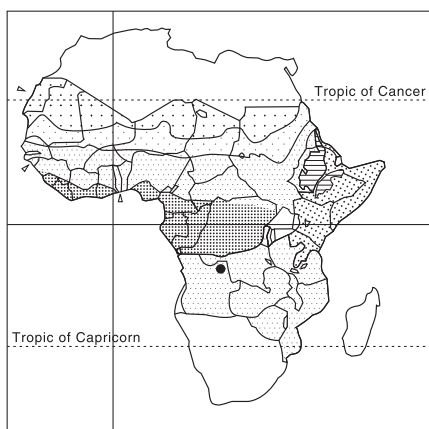
*Drypetes ugandensis*



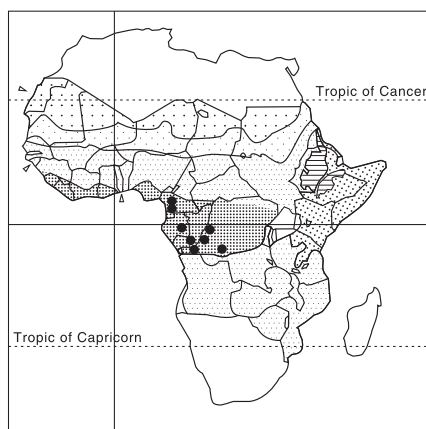
*Drypetes usambarica*



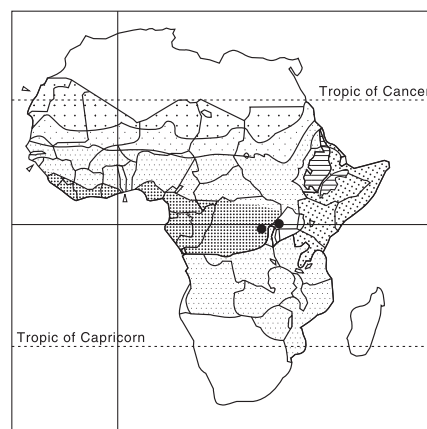
*Drypetes verrucosa*



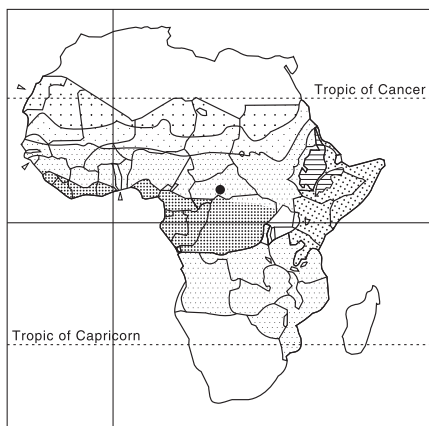
*Drypetes vilhenae*



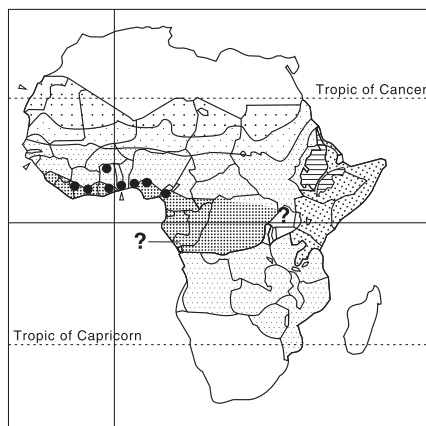
*Duvigneaudia inopinata*



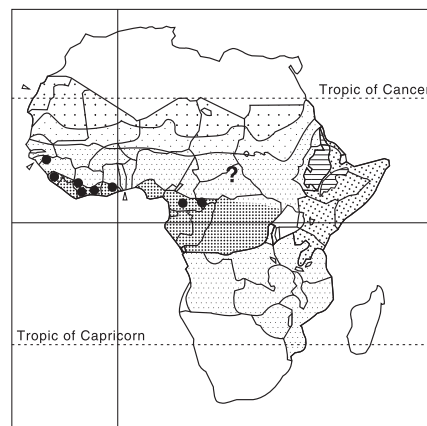
*Duvigneaudia leonardi-crispi*



*Elaeophorbia beillei*



*Elaeophorbia drupifera*



*Elaeophorbia grandifolia*

**DUVIGNEAUDIA / 2**

Sunk into *Gymnanthes* Sw. by H.-J. Esser, Blumea 44: 168, 1999.

**Duvigneaudia inopinata** (Prain) J. Léonard

syn.: *Gymnanthes inopinata* (Prain) Esser comb. nov. (invalid.?) in Blumea, l.c.

Shrub or tree, 2-10 m tall, with rounded branches, smooth or striate in mature material, 1-3 cm in width.

Gallery forest on periodically inundated river banks.

Occasionally cultivated because of its fragrant flowers.

**D. leonardii-crispi** (J. Léonard) Kruijt & Roebers

Shrub 1-7,5 m tall, or tree to 15 m, with rounded branches, smooth or striate in mature material, 1-3 cm in width.

Forests with *Michelsonia microphylla* and with *Staudtia* and *Cynometra*; 700-1830 m alt.

Comprises 2 vars.

Epiphyllous algae grow on or even into the leaves, penetrating the leaf surface through the stomata; these algae show a remarkable likeness to hairs, but could not be identified.

**ELAEOPHORBIA / 4**

The fleshy fruit is about the only feature distinguishing it from *Euphorbia* subgen. *Euphorbia*.

Flowers and fruit unknown? in one species.

MENNEGA, A. M. W. (1999). Elaeophorbia Stapf is it an Euphorbia or not? A wood anatomical contribution. *Ann. Mus. Roy. Afrique Centr., Sci. Econ.* 25:37-42.

**Elaeophorbia bellei** (A. Chev.) Jacobsen

bas.: *Euphorbia bellei* A. Chev.

Sarmentous, branched shrub to 8 m tall; stems 6-8 mm Ø, with subulate angles spirally disposed; thorns 1-2 mm long; flowers and fruit unknown?

Gallery forest with *Fagara*.

**E. drupifera** (Thonn.) Stapf; Euphorbia J. 8:114, 1992.

bas.: *Euphorbia drupifera* Thonn.

syn.: ? *E. juvoklanti* Pax

Candelabrum like tree with woody stem and fleshy branches; stem 3-22 m tall and 60 cm Ø, branching in open situations but with a long clear bole in forest; branches stiff, branchlets slightly spiny, 5-sided at first, becoming round later, with pairs of short, broad-based prickles. Confused with *Euphorbia teke*.

Flooded coastal plains; occasional in rain-forest; brown-black humid soil with shrub, near termitaria; c. 700 m alt.

**E. grandifolia** (Haw.) Croizat; Euphorbia J. 8: 115, 1992.

bas.: *Euphorbia grandifolia* Haw.

syn.: *E. leonensis* N. E. Br.; *Elaeophorbia leonensis* (N. E. Br.) Jacobsen, nom. illegit.

Tree like the precedent; stem 12-25 m tall, 0,8 m Ø; leaves 8-50 × 4-12 cm.

Coastal bushland (locally abundant); also disseminated in forest.

**ELAEOPHORBIA****E. hiernii** Croizat

syn.: *Euphorbia hiernii* (Croizat) Oudejans

Erect, open tree, somewhat sparingly branched except at the extremities; stem 15 m tall, 30 cm Ø at height of a man; leaves permanent; branchlets scattered, alternate and opposite, in part at least apparently flexuose, prickly; section of ultimate branchlets apparently obscurely pentagonal.

Gallery forest; 750-800 m alt.

**ENDADENIUM / 1**

Fruits and seeds unknown in the single species.

**Endadenium gossweileri** (N. E. Br.) L. C. Leach

Unarmed, succulent shrub ± 1 m tall, to ± 3 m then usually to some extent supported by associated vegetation; with shallow, horizontally radiating, thick somewhat *Commiphora*-like ± cylindrical fleshy roots; stem ± cylindrical, irregularly obscurely torulose, ± 4 cm Ø towards the base; branches randomly or subverticillately arranged, arcuate-ascending or ascending, rather sparingly rebranched, similar to the stem but more knobby from the somewhat tubercular leafbases which gradually become inconspicuous with age; new growth at first obscurely angular, very soon becoming cylindrical, ± 8-10 mm Ø; fruits and seeds unknown.

Dense bush with scattered *Adansonia*.

One specimen flowered in cultivation during the 1971-72 season but no fruits were developed.

Only known from 2 specimens.

**ERYTHROCOCCA / 35**

Most or all species have bright yellow, orange or red seeds.

No male flowers known in 4 species (= c. 11%), no female flowers in 5 species (= c. 14%), no fruit in 8 species (= 23%), and probably no ripe seeds in another species. No ecology is recorded for 6 species (= 17%). Two (+ two?) species (≤ 6%, and together c. 11%) are known only from the type.

**Erythrococca abyssinica** Pax

syn.: *Claoxylon deflersii* Schweinf. ex Pax & K. Hoffm.

Erect shrub 1-3 m tall; stipules forming spines to 1,5 mm long.

Forest or dense woodland, mostly along rivers; less often in more open *Acacia* woodland; 1250-2000 m alt.

Yemen.

**E. africana** (Baill.) Prain

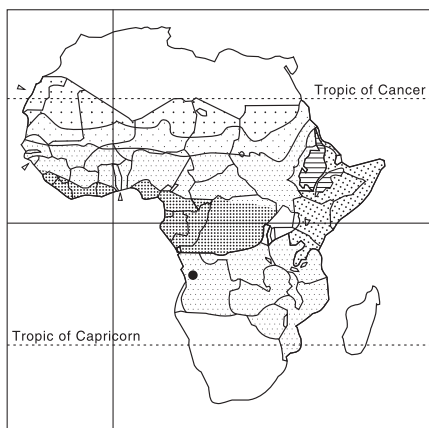
bas.: *Trewia africana* Prain

syn.: *Claoxylon barteri* Hook. f.; *Athroandra africana* (Baill.) Pax & K. Hoffm.; *Claoxylon africanum* (Baill.) Müll. Arg.

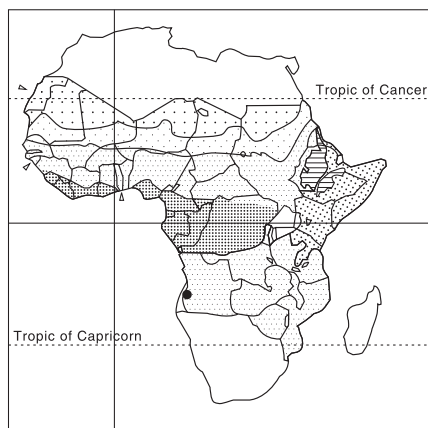
Erect shrub or tree 3-5 m tall, many-stemmed.

Deciduous or secondary forest; 1400-1600 m alt. (Mount Cameroon).

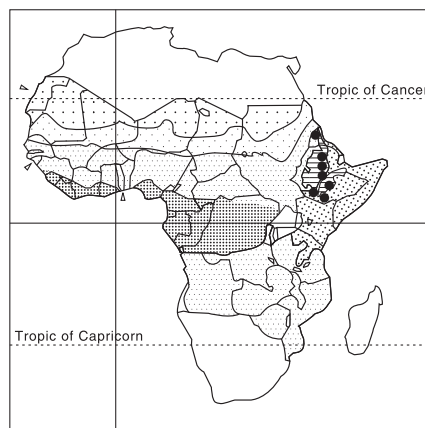




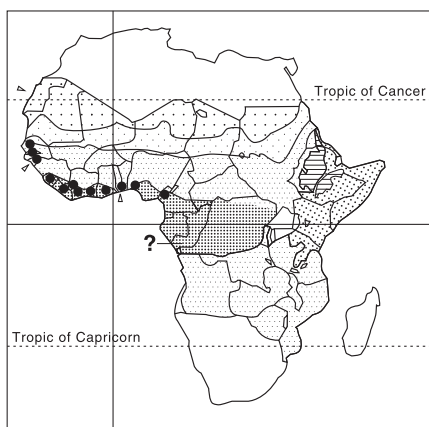
*Elaeophorbia hiernii*



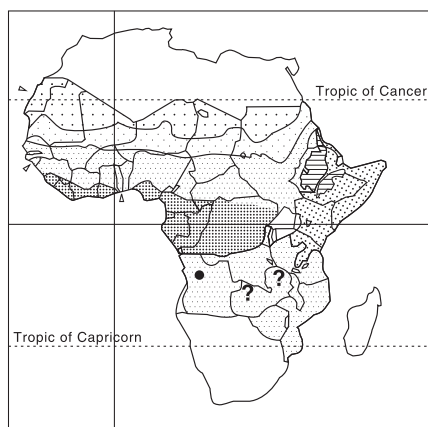
*Endadenium gosseileri*



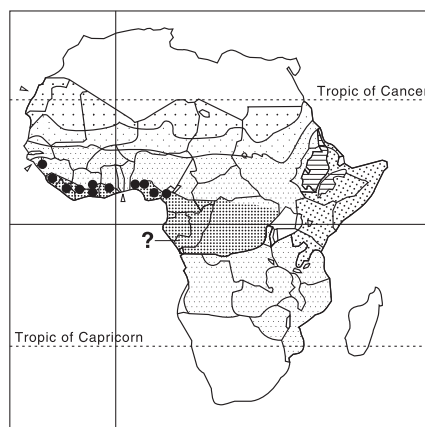
*Erythrococca abyssinica*



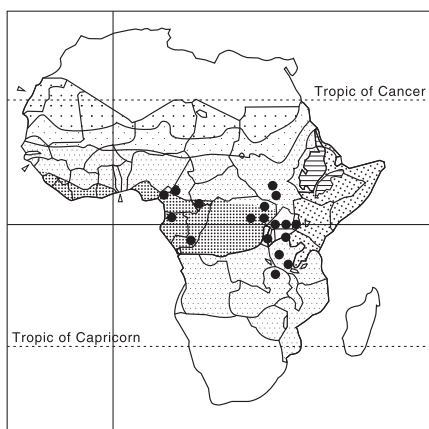
*Erythrococca africana*



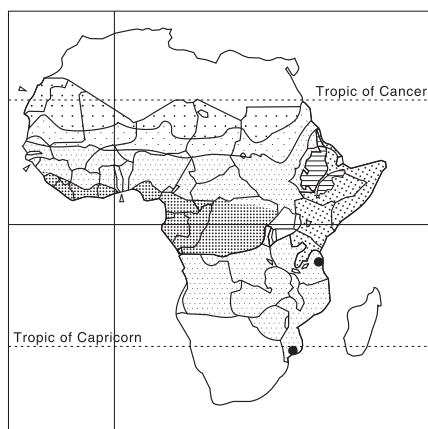
*Erythrococca angolensis*



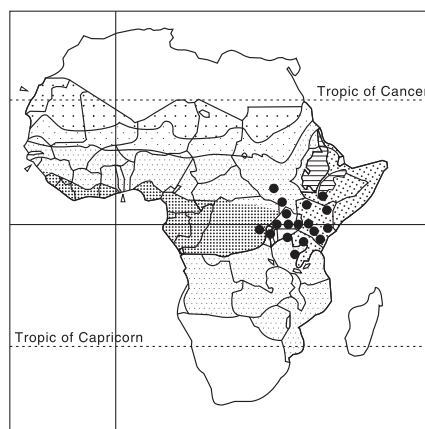
*Erythrococca anomala*



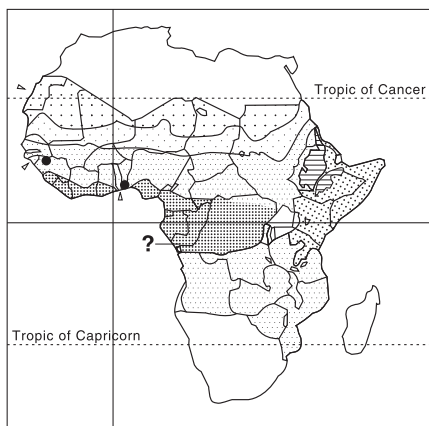
*Erythrococca atrovirens*



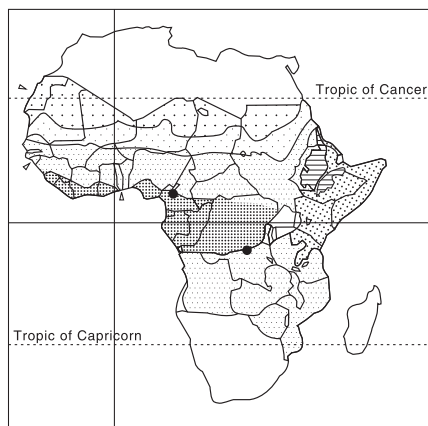
*Erythrococca berberidea*



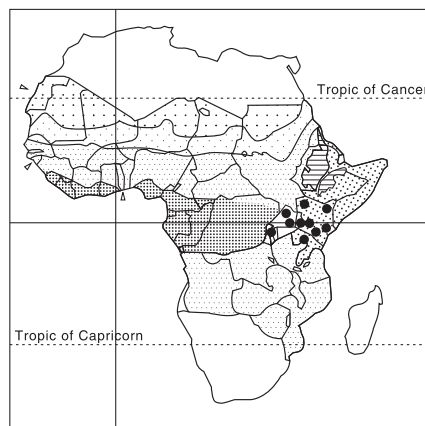
*Erythrococca bongensis*



*Erythrococca chevalieri*



*Erythrococca dewevrei*



*Erythrococca fischeri*

## ERYTHROCOCCA

**E. angolensis** (Müll. Arg.) Prain

bas.: *Claoxylon angolense* Müll. Arg.

syn.: *Athroandra angolensis* (Müll. Arg.) Pax & K. Hoffm.

Shrub ± 1 m tall, with several stems; stamen unknown.

Rocky rather poor thickets.

Only known from the type ?

**E. anomala** (Juss. ex Poir.) Prain

bas.: *Adelia anomala* Juss. ex Poir.

syn.: *Erythrocca aculeata* Benth.

Spiny shrub 1-3 m tall; paired stipular spines at base of each leaf.

Forest; fringing forest; coastal thickets; clearings; open forest on skeletal soil; 1-1100 m alt.

Bioko/Fernando Poo.

**E. atrovirens** (Pax) Prain, incl. var. *schweinfurthii* (Pax) Pax & K. Hoffm.

bas.: *Claoxylon atrovirens* Pax

syn.: *C. schweinfurthii* Pax; *C. inaequilaterum* Pax; *Athroandra atrovirens* (Pax) Pax & K. Hoffm.

Weakly ascending or scandent deciduous shrub or tree to 4,5 m tall.

Evergreen forest, edges and associated bushland; along rivers and lake sides; dry evergreen thicket (mateshi) of *Marquesia* woodland; 1000-2100 m alt.

Comprises 2 vars.: – var. **atrovirens** and – var. **flaccida** (Pax) Radcl.-Sm. [syn.: *Chloropatane africana* Engl. p.p., quoad specim. Zenker; *Claoxylon oleraceum* Prain; *Erythrocca oleracea* (Prain) Prain; *E. flaccida* (Pax) Prain; *Athroandra atrovirens* (Pax) Pax var. *flaccida* Pax & K. Hoffm.].

**E. berberidea** Prain

syn.: *Micrococca berberidea* (Prain) E. Phillips

Straggly or scandent shrub or tree 2,5-5 m tall; stipules thorny, 3-4 mm long, straight or slightly curved, arising from an elongate spine-shield, strongly accrescent.

Dry evergreen forest; coastal forest margins, woodland and scrub; locally common; 230 m alt. (Tanzania).

S. Africa.

**E. bongensis** Pax

syn.: *E. rigidifolia* Pax

Erect or semi-scandent shrub or tree to 6 m tall, but more commonly to 3,5 m; stipules aculeolate, 2 mm long, straight or hooked, pungent, slightly accrescent.

Forest edges and associated bushland or thicket, especially in fire-protected places; along rivers and lakesides; in shade of riverine *Acacia* forest; savannas; 200-2440 m alt.

**E. chevalieri** (Beille) Prain

bas.: *Claoxylon chevalieri* Beille

syn.: *Athroandra chevalieri* (Beille) Pax & K. Hoffm.

Shrub.

Plateau; 900-1200 m alt.

## ERYTHROCOCCA

**E. dewevrei** (Pax ex De Wild.) Pax & K. Hoffm.

bas.: *Claoxylon dewevrei* Pax ex De Wild.

syn.: *Athroandra dewevrei* (Pax) Pax & K. Hoffm.

Shrub 1-1,5 m tall; ripe seeds unknown ?

Gallery forest; 1600 m alt.

Comprises 2 vars.: – var. **dewevrei** and – var. **inopinata** Prain [syn.: *Athroandra inopinata* (Prain) Pax & K. Hoffm.].

**E. fischeri** Pax

Thin-stemmed lax- to much-branched shrub 1-5 m tall, or tree to 7,5 m, but more commonly 2-3 m; stipules aculeolate, 1-1,5 mm long, straight or hooked, pungent, slightly accrescent.

Forest edges and associated bushland; gallery forest; 1350-2700 m alt.

**E. hispida** (Pax) Prain

bas.: *Claoxylon hispidum* Pax

syn.: *Athroandra hispida* (Pax) Pax & K. Hoffm.

Shrub or tree to 5 m tall.

Forest; 1200-1820 m alt.

**E. integrifolia** Radcl.-Sm.

Shrub 1,5-2 m tall; female flowers and fruits unknown.

Shelf in limestone mountain with a trace of gypsum, dissected by gorges; 1340 m alt.

Only known from the type collected in 1981; only one individual was encountered; endangered ?

Presents a number of distinctive features, which combination is unknown in any other species of the genus: – small entire leaves (0,7-)1-1,6 × 0,7-0,9 cm; absence of pungent stipules; subsessile anthers.

**E. kirkii** (Müll. Arg.) Prain

bas.: *Claoxylon kirkii* Müll. Arg.

syn.: *Erythrocca mitis* Pax

Much-branched, straggling, often scandent or erect shrub to 4,5 m tall, but more often 3 m.

Forest edges and coastal bushland, forest and thicket; inland mostly along rivers or lakesides; 0-1250 m alt.

**E. laurentii** Prain

Shrub; stipules accrescent, very strongly spinescent; male flowers and fruit unknown.

Ecology unknown.

**E. macrophylla** Prain

bas.: *Claoxylon macrophyllum* Prain, nom. illegit.

syn.: *Athroandra hispida* Pax & K. Hoffm. non *Erythrocca hispida* (Pax) Prain; *A. macrophylla* Pax & K. Hoffm.

Shrub; female flower and fruit unknown.

Ecology unknown.

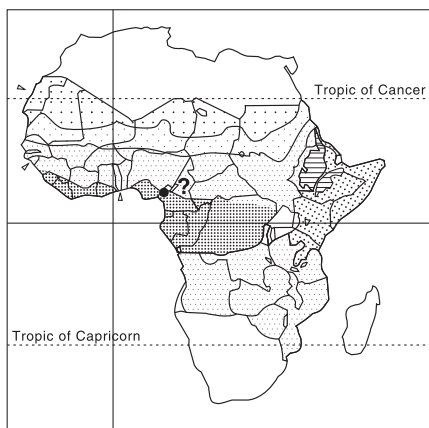
**E. membranacea** (Müll. Arg.) Prain

bas.: *Claoxylon membranaceum* Müll. Arg.

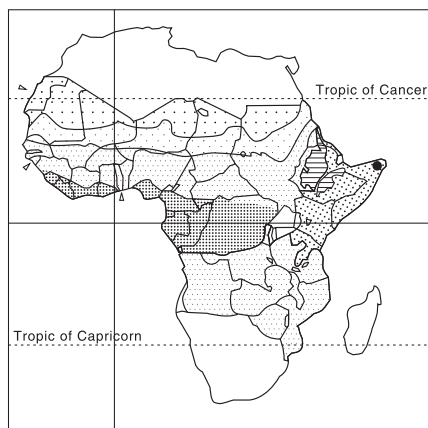
syn.: *Athroandra membranacea* (Müll. Arg.) Pax & K. Hoffm.

Shrub to 3 m tall.

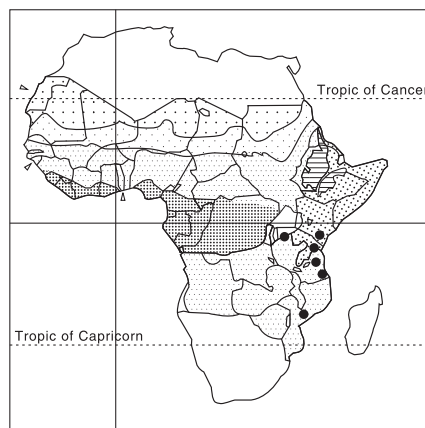
Forest; 200-1800 m alt.



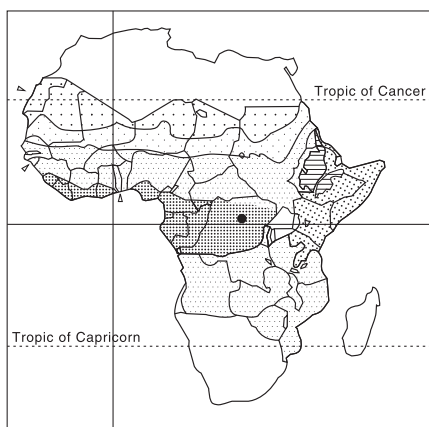
*Erythrococca hispida*



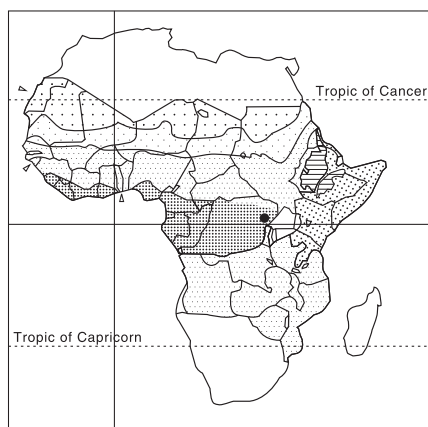
*Erythrococca integrifolia*



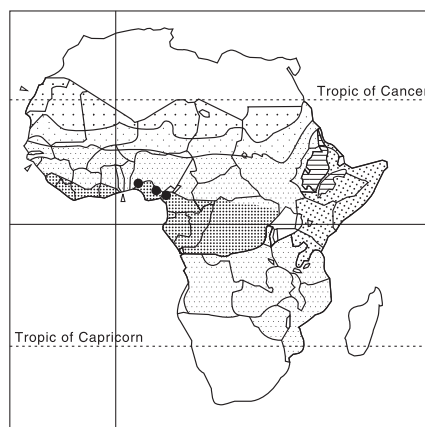
*Erythrococca kirkii*



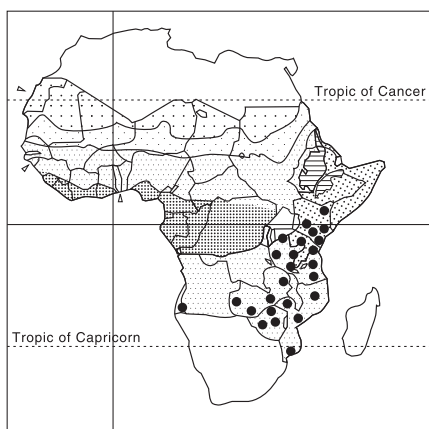
*Erythrococca laurentii*



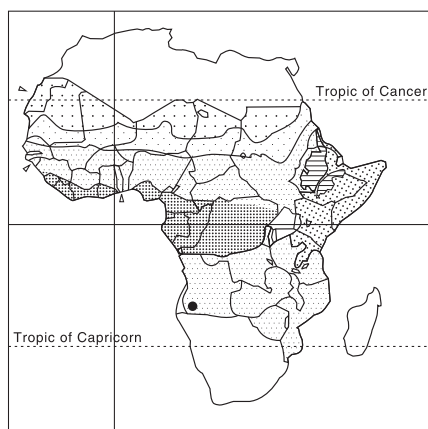
*Erythrococca macrophylla*



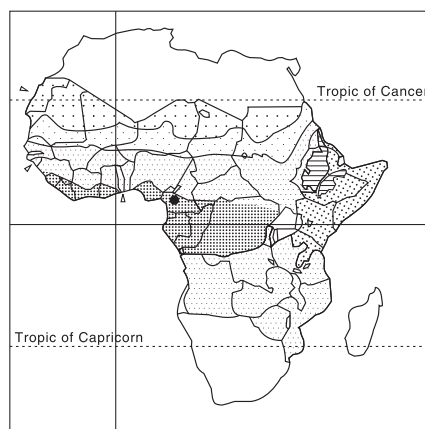
*Erythrococca membranacea*



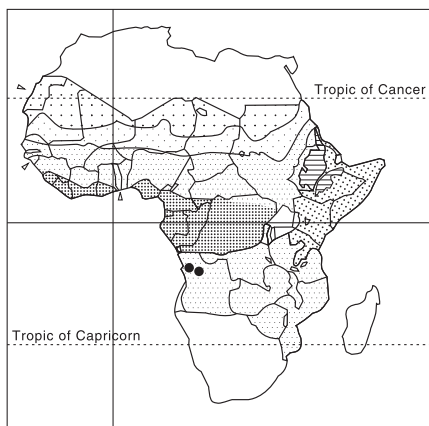
*Erythrococca menyharthii*



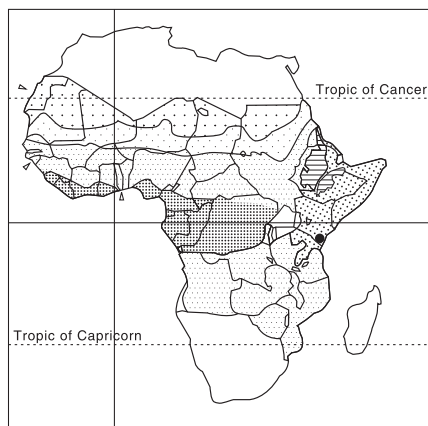
*Erythrococca neglecta*



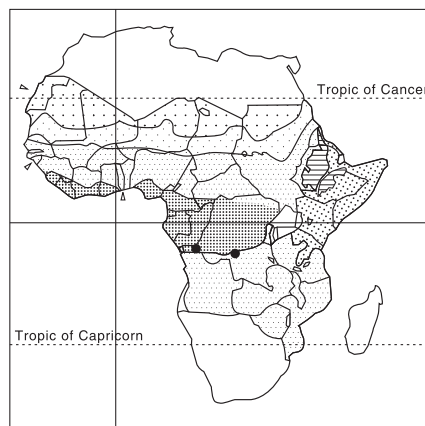
*Erythrococca patula*



*Erythrococca pauciflora*



*Erythrococca pentagyna*



*Erythrococca poggei*

## ERYTHROCOCCA

**E. menyharthii** (Pax) Prain

bas.: *Claoxylon menyharthii* Pax

syn.: *C. virens* N. E. Br.

Straggly shrub (0,5-)1,5-3 m tall; branches usually not exceeding 4 cm Ø at the base.

Deciduous bushland; often as a constituent of thickets on sandy soil in rocky places; *Baikiaea* woodland on Kalahari Sand (mutemwa); dense riverine thicket and thicket on floodplain termitaria; dry mopane woodland on sandy soil; forest margins; 300-1850 m alt.

Caprivi Strip, Namibia, Botswana, S. Africa.

**E. neglecta** Pax & K. Hoffm.

syn.: *E. tristis* (Müll. Arg.) Prain, Fl. Trop. Afr. 6(1): 861, 1912 p.p. quoad specim. Antunes 313.

Shrub 2-3 m tall, ramose; male flower unknown.

Bushland; 1800 m alt.

**E. patula** (Prain) Prain

bas.: *Claoxylon patulum* Prain

syn.: *Athroandra patula* (Prain) Pax & K. Hoffm.

Shrub or tree with slender branches; female flowers and fruits unknown.

Ecology unknown; 60-100 m alt.

**E. pauciflora** (Müll. Arg.) Prain

bas.: *Claoxylon pauciflorum* Müll. Arg.

Shrub 0,6-1 m tall, dioecious, much branched from the base; stems oblique or ascending.

Somewhat dry sandy hilly places, in short grass among other shrubs.

**E. pentagyna** Radcl.-Sm.

Slender, sparsely branched shrub to 1,2 m tall; female flowers and fruit unknown.

Shrub-layer in moist coastal forest on massive limestone outcrops with *Pandanus*, *Euphorbia wakefieldii*, *Gyrocarpus*, *Sterculia*, *Cordyla*, *Oxystigma msao*, *Dialium holtzii*, *Diospyros mespiliiformis*; 80-160 m alt.

**E. poggei** (Prain) Prain

bas.: *Claoxylon poggei* Prain

syn.: *Athroandra poggei* (Prain) Pax & K. Hoffm.

Shrub; female flowers and fruit unknown.

Ecology unknown.

**E. poggeophyton** Prain

syn.: *Poggeophyton aculeatum* Pax & K. Hoffm.

Shrub; stipules accrescent, very strongly spinescent.

Ecology unknown.

Only known from the type collected in 1882 ?

**E. polyandra** (Pax & K. Hoffm.) Prain; Kew Bull. 46: 333, 1991.

bas.: *Claoxylon polyandrum* Pax & K. Hoffm.

Shrub or tree to 4-6-10 m tall.

Rain-forest (uncommon); mixed evergreen forest; 200-2200 m alt. Equatorial Guinea ? (fide Fl. Zambesiaca 9/4, 1996).

## ERYTHROCOCCA

**E. pubescens** Radcl.-Sm.

Much-branched shrub with twiggy, spreading branches, to 3 m tall; stipules aculeate, 2-5 mm long, straight, pungent, slightly accrescent.

Deciduous bushland and transition to coastal bushland; 15-350 m alt.

**E. rivularis** (Müll. Arg.) Pax & K. Hoffm.

bas.: *Claoxylon rivulare* Müll. Arg.

syn.: *Chloropatane africana* Engl.; *Athroandra rivularis* (Müll. Arg.) Pax & K. Hoffm.

Shrub 5 m tall with slender branches; fruit unknown.

In a wood.

**E. sanjensis** Radcl.-Sm.

Shrub; fruit unknown.

*Beilschmiedia*, *Berlinia*, *Parinari* forest on steep mountain-sides; 1300-1700 m alt.

**E. subspicata** Prain

Shrub; stipules accrescent, very strongly spinescent.

Ecology unknown.

Very nearly allied to *E. poggeophyton*.

**E. trichogyne** (Müll. Arg.) Prain

bas.: *Claoxylon trichogyne* Müll. Arg.

syn.: *Erythrococca lasiococca* (Pax) Prain; *E. mildbraedii* (Pax) Prain; *E. ledermanniana* Prain

Rather weak, straggling shrub 1-6 m tall.

Moist evergreen forest; sometimes persisting in more open degraded forest; edges and associated bushland: along rivers and lakesides; kopje and rocky outcrops, termite mounds; dry evergreen thicket (*mateschi*) of *Brachystegia* woodland but also in the submontane aspect of this formation; disturbed savannas; pastures; 900-2750 m alt.

Comprises 2 vars.

**E. tristis** (Müll. Arg.) Prain, Ann. Bot. 25: 616, 1911, excl. specim. Antunes 313 (= **E. neglecta**).

bas.: *Claoxylon triste* Müll. Arg.

Shrub 1-2 m tall, branched from the base, branches erect; male flowers unknown.

Rocky places; 1500-1800 m alt.

**E. ulugurensis** Radcl.-Sm.

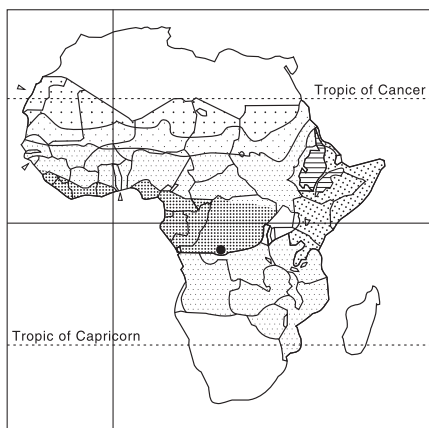
Weak, straggly, lax, much-branched shrub or tree to 3 m tall; branches arching, spreading.

Upland evergreen forest; along river at lower altitude; (450-)1220-2200 m alt.

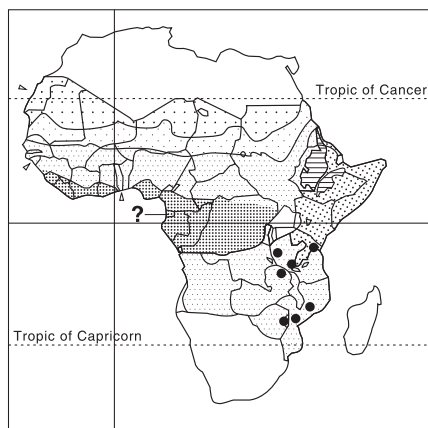
**E. uniflora** M. G. Gilbert (epithet not always appropriate: sometimes many flowers clustered on a short-shoot).

Dense shrub to 1,5 m tall; young stems very angular; dioecious; stipules spinescent to 5 mm long, slender, ascending.

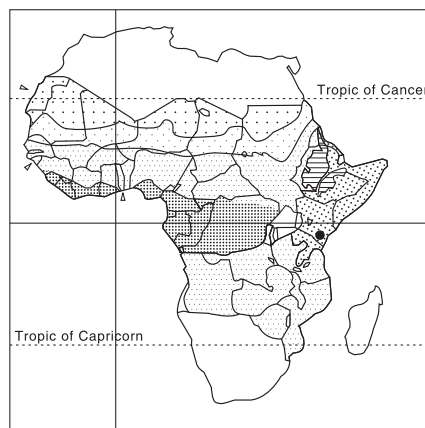




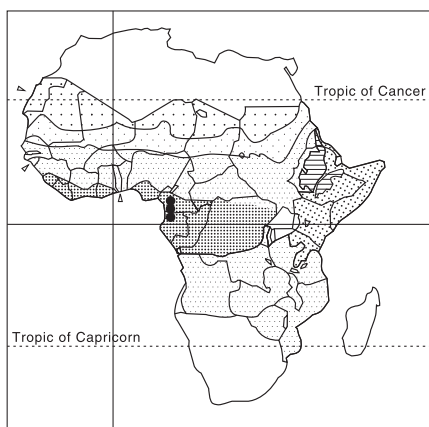
*Erythrococca poggeophyton*



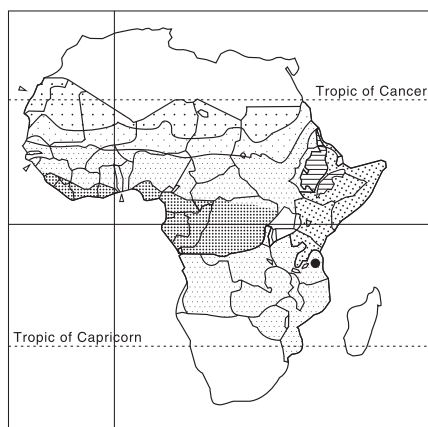
*Erythrococca polyandra*



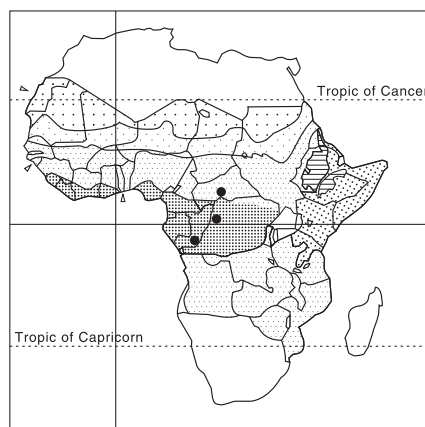
*Erythrococca pubescens*



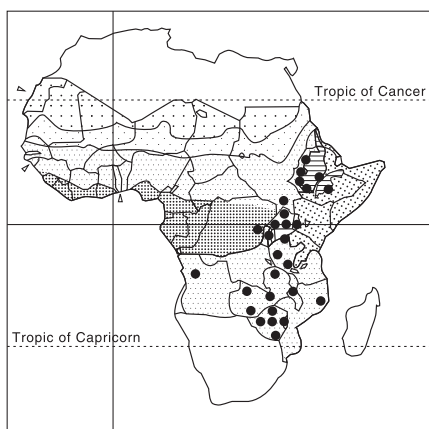
*Erythrococca rivularis*



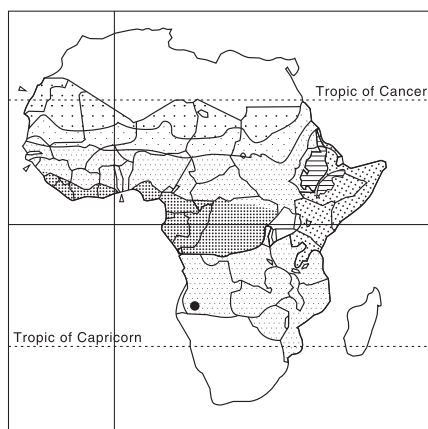
*Erythrococca sanjensis*



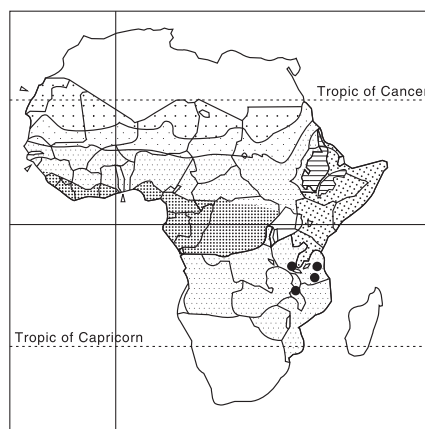
*Erythrococca subspicata*



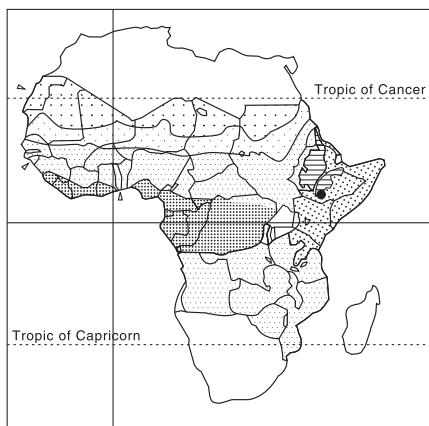
*Erythrococca trichogyne*



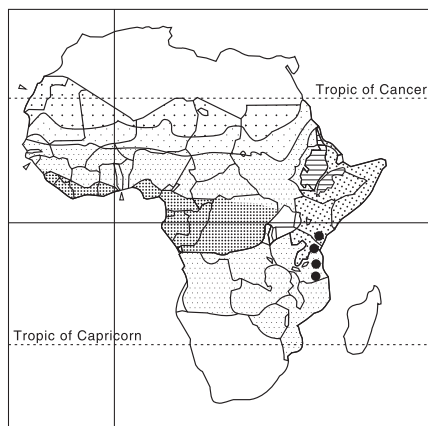
*Erythrococca tristis*



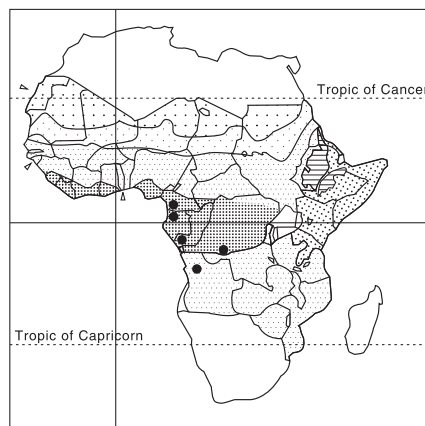
*Erythrococca ulugurensis*



*Erythrococca uniflora*



*Erythrococca usambarica*



*Erythrococca welwitschiana*

## ERYTHROCOCCA UNIFLORA

Limestone slope in *Acacia-Commiphora* bushland/woodland; locally abundant and forming understorey in more open areas; 950-1325 m alt.

It belongs, with *Andrachne ephemera* and *Phyllanthus borensis*, to what can be termed the Borana group of endemics characteristic of the lower altitude limestones of S Ethiopia and NE Kenya.

Near *E. integrifolia*.

**E. usambarica** Prain; Kew Bull. 50: 812, 1995 (lectotype Schefler 160).

Evergreen shrub or subshrub 1-4,5(-8) m tall.

Primary and secondary evergreen forest; coastal *Berlinia* forest on deep white sand; 150-1000 m alt.

**E. welwitschiana** (Müll. Arg.) Prain

bas.: *Claoxylon welwitschianum* Müll. Arg.

syn.: *Chloropatane batesii* C. H. Wright; *Athroandra welwitschiana* (Müll. Arg.) Pax & K. Hoffm.

Slender shrub 1,2-4,5(-6) m tall; stem 7,5 cm Ø; branches almost horizontally patent; branchlets with cartilaginous scales at the base; dioecious.

Slopes of rather dense forest towards river; sporadic in primitive forest.

**E. zambesiaca** Prain

Shrub or tree, commonly 1,5-3 m tall; stipules 2-4 mm long, narrowly conical to subulate, spinescent, thorn-like.

Dry *Newtonia* and *Xylia* forest on sandy soil; bushy clump savanna; termitaria thickets; alluvium; 70-110 m alt.

Very close to *E. natalensis* Prain (KwaZulu-Natal).

\* \* \*

The following species are known from the Guinea golf islands:

**Erythrococca columnaris** (Müll. Arg.) Prain – Principe.

**E. mannii** (Hook. f.) Prain – Bioko/Fernando Poo.

**E. molleri** (Pax) Pax & K. Hoffm. – São Tomé.

**E. pallidifolia** (Pax & K. Hoffm.) Keay – Bioko/Fernando Poo.

## SYNONYMS:

*Athroandra hispida* Pax & K. Hoffm. = **Erythrococca macrophylla**

*inopinata* (Prain) Pax & K. Hoffm. = **E. macrophylla**

(see also under the different species combinations).

*Chloropatane africana* Engl. = **Erythrococca rivularis**

*batesii* C. H. Wright = **E. welwitschiana**

*Claoxylon* (basionyms not cited)

*barteri* Hook. f. = **Erythrococca africana**

*deflersii* Schweinf. ex Pax & K. Hoffm. = **E. abyssinica**

*inaequilaterum* Pax = **E. atrovirens**

*oleraceum* Prain = **E. atrovirens** var. **flaccida**

*schweinfurthii* Pax = **E. atrovirens**

*virens* N. E. Br. = **E. menyharthii**

*Erythrococca aculeata* Benth. = **E. anomala**

*flaccida* (Pax) Prain = **E. atrovirens** var.

*lasiococca* (Pax) Prain = **E. trichogyne**

*ledermanniana* Prain = **E. trichogyne**

*mildbraedii* (Pax) Prain = **E. trichogyne**

*mitis* Pax = **E. kirkii**

## ERYTHROCOCCA

*oleracea* (Prain) Prain = **E. atrovirens** var. **flaccida**

*rigidifolia* Pax = **E. bongensis**

*tristis* (Müll. Arg.) Prain p.p. = **E. neglecta**

*Poggeophyton aculeatum* Pax & K. Hoffm. = **Erythrococca poggeophyton**

## EUPHORBIA / 421 (+6?)

“With at least 2000 species, *Euphorbia* is the largest angiosperm genus (or at least among the three largest genera) in the world. It is astonishingly diverse in growth form, flower structure and habitat. About a third of the species display some degree of succulence” (R. H. Archer & al, *Fl. Pl. Africa* 59: 86, 2001). “From dried material of succulent Euphorbias, it is often extremely difficult to distinguish between taxa which are obviously distinct in the field” (S. Carter, *Nord. J. Bot.* 12: 409, 1992).

“... succulent euphorbias... range from large spiny... trees... through shrubby, ... spiny plants, ... to non-spiny shrubs, to low growing, persistent succulent herbs, to deciduous, low-growing perennial herbs...” (A. F. N. Ellert, *Desert Pl.* 17 (2): 16, 2001). – “Medusoid” habit stands for a dwarf succulent with simple branches arising ± at ground level from the apex of a very short stout stem. – A few examples may illustrate “the ridiculously wide range of morphology that is represented in the genus *Euphorbia* [M. G. Gilbert, *Natl. Cactus Succ. J.* 29 (4): 99, 1974]. *E. tanaensis* is a tree 12->30 m tall and *E. brunellii* a hysteranthous geophyte with a subterranean caudex (± 3 × 1 cm Ø); *E. asclepiada* at first sight looks like an *Asclepias*, *E. betulicortex* has a trunk similar to that of some species of *Betula*, and *E. columnaris* has a great resemblance to a cactus, which is also the case with *A. piscidermis* whose subglobose stem is covered with “fish scales” which are in fact highly modified tubercles.

The medusoid-type Euphorbias are in need of revision.

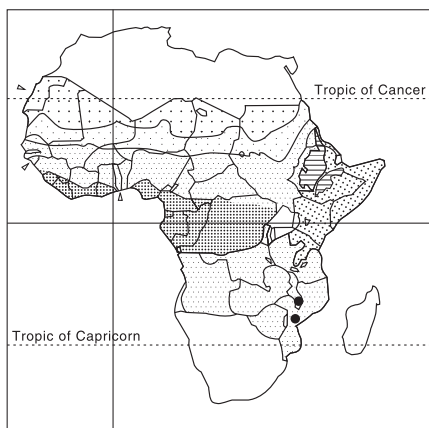
In Zimbabwe five indigenous species of *Euphorbia* are specially protected whereas others are given limited protection; and all Euphorbias are specially protected in the eleven national parks of the country (Parks and Wildlife Act of 1975).

Two species are heavy metal hyperaccumulators: *E. memorialis*, *E. wildii*; another two are metallophytes: *E. fanshawei*, *E. ingens*.

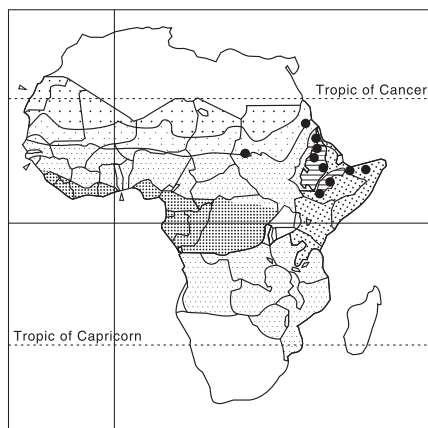
In our listing below, *Euphorbia* is treated sensu lato, following Steinmann & Porter (*Ann. Missouri Bot. Gard.* 89: 479, 2002) who “disagree that *Euphorbia* should be divided...” They even find “that the best long-term solution... is to expand *Euphorbia* to encompass all members of the subtribe [Euphorbiinae]”.

Statistical summary of our *lack of knowledge* for the genus *Euphorbia* in tropical Africa (421+6? species):

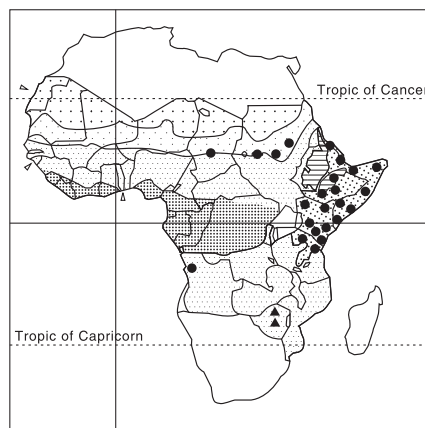
- no roots: 1 sp. (*E. scyphadena*),
- no basal part of plant known: 1 sp. (*E. repetita*),
- no leaves seen: 4 spp.,
- no inflorescence: 1 sp. + no mature inflorescence: 2 spp.,
- no flowers: 4 spp. + no fully mature flowers: 1 sp.,
- no male flower: ? 1 sp., + no mature male flower: 1 sp.,
- no female flower: 3 spp. + no mature female flower: 2 spp. (*E. densispina*, *E. taruensis*) + no style: 1 sp. (*E. borensis*),
- no fruit: 55 spp. (= c. 13%) + no entire fruit: 2 spp. + no mature fruit: 4 spp. (together: 61 spp. = c. 14%),
- no seeds: 58 spp. (= c. 13%) + no mature seeds: 9 spp. (together 67 spp. = c. 15%),



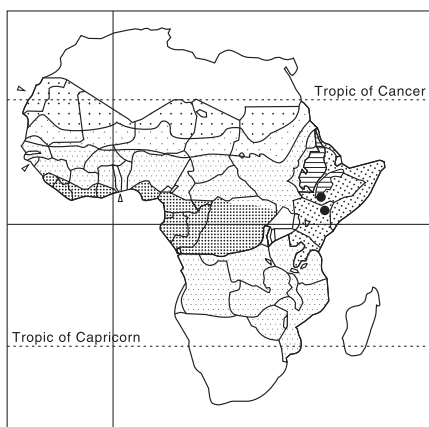
*Erythrococca zambesiaca*



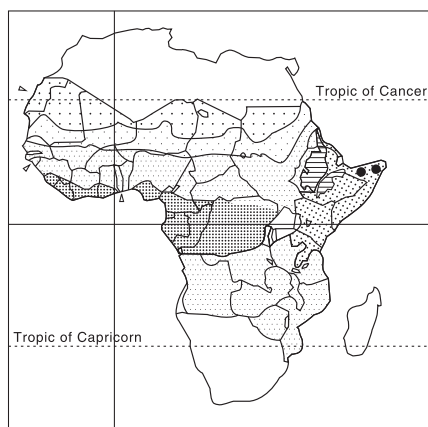
*Euphorbia abyssinica*



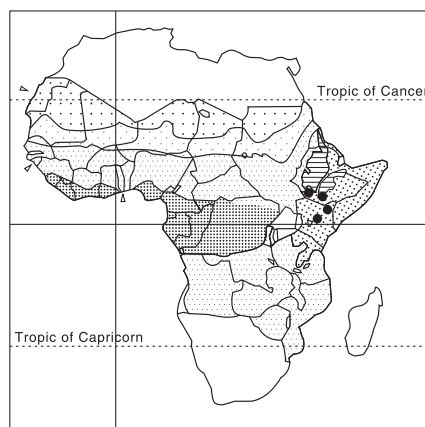
*Euphorbia acalyphoides* ●  
*Euphorbia acervata* ▲



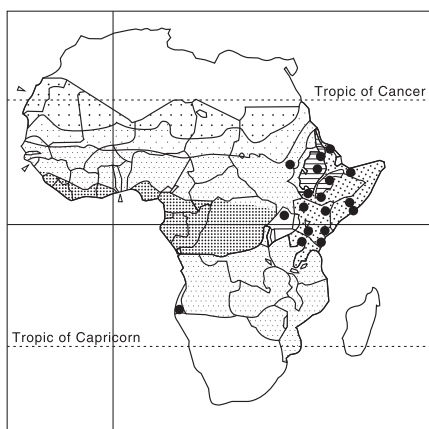
*Euphorbia actinoclada*



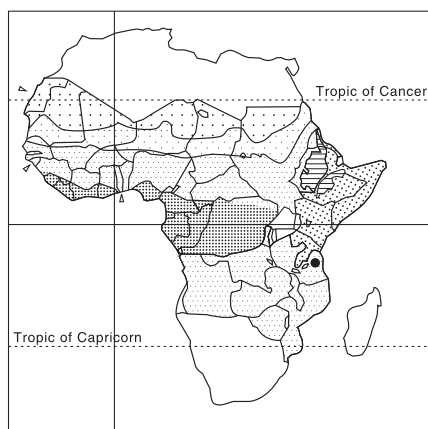
*Euphorbia adenochila*



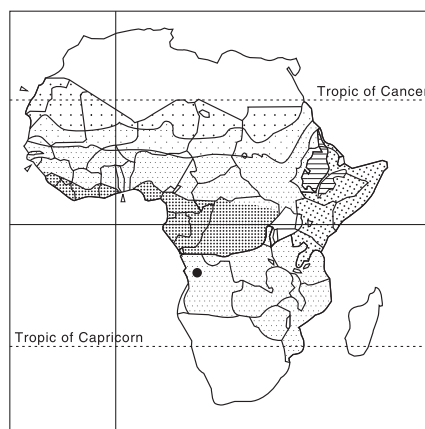
*Euphorbia adjurana*



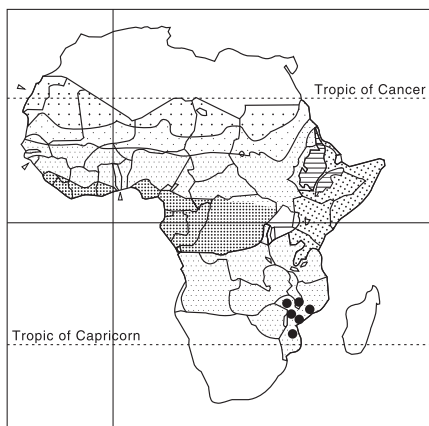
*Euphorbia agowensis*



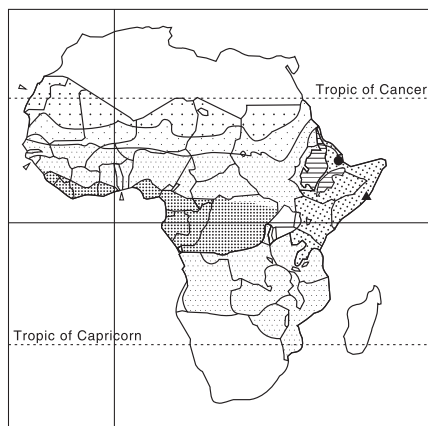
*Euphorbia allocarpa*



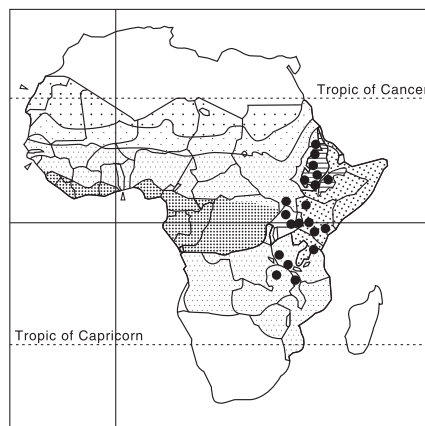
*Euphorbia ambacensis*



*Euphorbia ambroseae*



*Euphorbia amicum* ●  
*Euphorbia ammophila* ▲



*Euphorbia ampliphylla*



## EUPHORBIA

- in several recently described species no fruits and seeds seen;
- no ecology: 10 spp. (+1?) = c. 2%,
- species known only from the type: 29 spp. (+6?) = c. 7%; one species (*E. mossamedensis*) known only from 2 syntypes; *E. allocarpa* and *E. ammophila* known from only 1 locality each. *E. somalensis* is insufficiently known. *E. taruensis* is thought to be extinct in the wild.

\* \* \*

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**Euphorbia abyssinica** J. F. Gmel., incl. var. *tetragona* Schweinf. and var. *erythraeae* Berger; *Collectanea Bot.* 21: 68, 1992.  
syn.: *E. officinarum* L. β *kolquall* Willd.; *E. grandis* Lem.; *E. richardiana* Baill.; ? *E. hararensis* Pax; *E. neutra* A. Berger; *E. candelabrum* Kotschy var. *erythraeae* A. Berger; *E. acruensis* N. E. Br.; *E. controversa* N. E. Br.; *E. disclusa* N. E. Br.

## EUPHORBIA ABYSSINICA

Tree to 9 m; branches usually erect, persistent, forming a dense broadly obconical crown; stems stout, 4-8-ribbed, usually slightly but regularly constricted into segments; ribs thick, undulate only in seedlings, spiny; male flowers unknown?

Steep rocky hillsides; sometimes forming pure stands, often around churches; locally abundant or common (Sudan: Red Sea Hills, N Ethiopia); 840-2400 m alt.

S. Carter & U. Eggerli, *Cites Checklist Succulent Euphorbia*, Ed. 2: 1, 2003 (with synonyms).

The separation from *E. candelabrum* Trémaux ex Kotschy is very poorly understood; detailed field work needed.

**E. acalyphoides** Hochst. ex Boiss.

syn.: *E. thelesperma* Hochst. ex Boiss.

Annual herb 15-60 cm tall with spreading branches; stems sometimes slightly swollen and succulent; stem and branches longitudinally grooved; not spiny.

Open *Acacia* bushland; sandy soils; open disturbed area on gritty soil; *Acacia etbaica*-*A. seyal* association; stony soils; 35-1550 m alt.

Arabia (M. A. Rahman & al., *Bangladesh J. Pl. Taxon.* 9/1: 36, 2002). – A disjunct population in Angola.

Comprises 2 subspp.

**E. acervata** S. Carter, *Kew Bull.* 54: 962, 963, 1999.

Dwarf perennial succulent with several short stems from a fleshy tuberous root, and densely tufted branches forming compact cushions to 30 cm height and 50 cm Ø; branches seldom rebranched, succulent, 1-1.5 cm Ø, very obtusely 4-angled; angles with prominent tubercle-teeth 3-4 mm high, 10-17 mm apart; spiny.

In grass among rocks in open woodland; 1400-1700 m alt. (or 1240-1450?).

Near *E. tortistyla*.

**E. actinoclada** S. Carter

Tufted perennial succulent with a thick fleshy root and main stem to 5 cm height and 2 cm Ø, the apex just above ground-level; branches produced successively from the apical growing-point (medusoid), erect and then spreading, to 15 cm long, usually shorter, 1 cm thick, cylindrical, seldom rebranched, dark green with lighter longitudinal stripes and shallow teeth to 1.5 cm apart in 5 longitudinal series; spiny.

*Acacia seyal*, *Commiphora* bush on black cotton soil, amongst grass; frequent; gravelly eroding soil; sparse deciduous bushland; also with *Acacia drepanolobium*; 400-1350 m alt.

Of relatively easy culture.

Related to the Arabian *E. triaculeata* Forssk. and *E. monacantha*.

**E. adenocheila** S. Carter; *Euphorbia J.* 9: 115, 116, 224, 1994; 10: 217, 1996.

Perennial herb to 5 cm tall, with a cylindrical tuberous root to 3 cm thick merging into a short tuberculate stem branching at ground-level; branches several, ± 1 cm thick, 1-1.5 cm long, densely covered with short overlapping tubercles 2 mm long; not spiny.

Rocky ground on limestone, with very sparse low scrub; 200-1000 m alt.

Rare in cultivation.

Like *E. globulicaulis* it becomes visible only at time of good rain, when the leaves appear in a loose rosette at ground-level.



## EUPHORBIA

**E. adjurana** Bally & S. Carter; *Euphorbia* J. 8: pl. opposite to p. 61, 1992.

Tree 4.5-7 m tall with simple trunk marked with pit-scars resulting from fallen branches; trunk spreading, then ascending and rebranching to form a rounded crown; terminal branches fleshy, 4-6-angled, 2-5(-6) cm wide, shallowly winged, constricted at irregular intervals into pear-shaped segments 5-15 cm long; angles straight to shallowly and sinuately toothed, with teeth 5-15 mm apart; spiny.

Margin of old field (very likely planted); basement complex, gneiss formation or basalt hills in *Acacia-Commiphora* bushland; granite mountain; 700-1800 m alt.

Of easy culture.

Closely related to *E. kibwezensis*.

**E. agowensis** Hochst. ex Boiss.

syn.: *E. effusa* Ehrenb. ex Boiss.; *Tithymalus agowensis* (Hochst. ex Boiss.) Schweinf.; *Chamaesyce wightiana* V. S. Raju & P. N. Rao

Annual or short-lived perennial herb 10-100 cm tall with a woody base.

In grass, usually in the shade of bushes in small thickets; open wood; cultivated land; open gravelly plains; woodland, usually with *Acacia*; 70-1650 m alt.

Yemen, Saudi Arabia (M. A. Rahman & al., *Bangladesh J. Pl. Taxon.* 9/1: 37, 2002); India. – Disjunct area in Angola.

Comprises 2 vars.

**E. allocarpa** S. Carter

Prostrate branching annual herb with branches  $\pm$  15 cm long; not spiny.

Exposed stony slopes and sandy soil with deciduous bushland; in shade; 600 m alt.

Only known from one locality.

**E. ambacensis** N. E. Br.

Succulent leafless spiny bush to 3.5 m tall, branching at the base; stems single or numerous, strictly erect; branches parallel to the stems, 3-4-angled, 5-7.5 cm (or more?)  $\emptyset$ , constricted into subelliptic to  $\pm$  conical segments, 5-15 (or more?) cm long; angles 0.33-0.44 cm thick, slightly sinuate-toothed; spiny; ovary and fruit unknown.

Ecology unknown.

Only known from the type?

**E. ambroseae** L. C. Leach; *Euphorbia* J. 9: 176, 1994; *Kirkia* 10: 396, 1977.

Succulent, spinulose, virgate shrub 1.8(-2.5) m tall (sometimes relatively dwarfed), with divaricately spreading branches when growing in the open; main stem subcylindric towards the base, becoming angled above, to 4 cm  $\emptyset$ , branching sparingly at or near the base, sometimes very sparingly branched and rebranched above; branches ascending, erect, not usually constricted into segments, 4-(very rarely 5-) angled, 1-2 cm  $\emptyset$ , the sides concave or flat between the angles, becoming subterete with age, the margins repand-crenate, with the crenations 0.75-2.5 cm long along the angles, somewhat truncate at the apex, not prominently tuberculate.

## EUPHORBIA AMBROSEAE

In shade of dense thickets and patches of woodland in seasonally swampy coastal plain; wooded grassland, dry forest; 40-760 m alt.

Comprises 2 vars. (See *Euphorbia* J. 7: 141, 1991).

Commercially available; of easy culture.

Closely related to *E. complexa* Dyer

**E. amicum** S. Carter, *Cactus Succ. J. (U.S.)* 73: 177, 2001; Lavranos in L. Russo, *Succ. Pl. E. Africa*: 141, 2004 (photo).

Tree to 4 m with a stout trunk to  $\pm$  40 cm  $\emptyset$ ; bark covered in pit-scars from fallen branches in  $\pm$  7 slightly spiralled series; branches to 3 m long, spreading horizontally, with secondary branches in whorls and rebranching to form a broad flattened crown; terminal branches 2-3 cm  $\emptyset$ , obtusely 4-angled, obscurely tubercle-toothed, with teeth 1-1.5 cm apart; spiny.

Rocky hillsides, with sparse, overgrazed vegetation; 1500 m alt.

Near *E. robecchii*, *E. qarad*.

Discovered by the Swiss explorer F. Aubert de la Rüe between November 1937 and May 1938 (La Somalie française: 113 and pl. XXVIII, 1939). Seen by Lavranos in 1973; collected in 1976 by Lavranos and Newton. – There seems to be no regeneration at the denuded locality in the dry valley of Wadi Gago near Garanié (W slopes of the Goda Mts, Djibouti).

Only known from the type collected in 1976.

**E. ammophila** S. Carter & Dioli; *Nord. J. Bot.* 23: 295, 2005.

syn.: *E. sp.* sensu Thulin, *Fl. Somalia* 1:334, 1993.

Succulent perennial with few erect branches, soon procumbent, creeping, to 15 cm long, simple or sometimes with 1-3 branchlets, terete, 8-10 mm  $\emptyset$ ; stem tubercles small but prominent, 1-1.5 mm high, 3-5 mm apart, in 6-8 longitudinal ridges; tuber globose, c. 2 cm  $\emptyset$ , producing a few fleshy roots and merging into a subterranean stem 1 cm long; leaves fleshy, soon deciduous; spine shields crowning the tubercles, 1-2 mm  $\emptyset$ , spines paired, slender, to 6 mm long; prickles thread-like; female flowers unknown.

Open grassland in loose pale sand on flat coastal plain; c. 150 m alt.

Known only from the type locality; 2 collections (1989, 2001).

Related to *E. baradii*.

**E. ampliphylla** Pax; *Euphorbia* J. 7: 60, 1991; 9: 176, 1994; *Collectanea Bot.* 21: 69, 1992.

syn.: *E. sancta* Pax; *E. menelikii* Pax

Tree to 10-(30) m with a simple trunk to  $\pm$  90 cm  $\emptyset$ ; primary branches ascending, rebranching irregularly and  $\pm$  densely at the apices to form a spreading rounded crown; terminal branchlets fleshy, 3-(4)-angled, 5-17 cm wide, deeply and thinly winged with wings 2-7 cm wide,  $\pm$  constricted at irregular intervals into oblong segments 15-40 cm long; angles straight to sinuately toothed, with teeth 1.5-3 cm apart; spiny.

Well-drained rocky slopes with evergreen moister forest; often left after clearance; *Podocarpus latifolius*, *Olea capensis* forest; (1200-)2700 m alt.

Probably the tallest succulent *Euphorbia*.

**E. angularis** Klotzsch

syn.: *E. abyssinica* J. F. Gmel. var. *mozambicensis* Boiss.

Densely branched and rebranched, spreading shrub, often with a diameter 2-3 times its height, 3-5 m tall, with a much reduced trunk initially 3-angled, soon becoming 4-angled, subcylindric, usually much gnarled and distorted; branches spreading, often

## EUPHORBIA ANGULARIS

decumbent with the apical portion ascending; much branched and rebranched, with the secondary branches and branchlets arising from the margins, usually towards the base of the segments; 3-4-, usually 3-angled or winged (branchlets 3-angled), sometimes scarcely winged, then with the faces flat or only slightly concave, constricted into segments of varying shape and size with a stout solid central core which is  $\pm$  angular in cross-section; segments oblong, elliptic, ovate or sometimes  $\pm$  circular, generally  $\pm$  7,5-20 cm long  $\times$  5-12 cm broad; the  $\pm$  even or sinuate-toothed angles are provided with a continuous, horny, brown (becoming whitish grey) margin, usually  $\pm$  2,5 mm broad, widening to 5 mm at the flowering eye and slightly less at the spine pairs.

Rocks on tiny coral islet;  $\pm$  5 m alt. – References of occurrence elsewhere are erroneous.

Easily grown in cultivation.

Near *E. cooperi* N. E. Br. ex Berger var. *calidicola* L. C. Leach

**E. angustiflora** Pax

Densely branched perennial succulent forming clumps to  $\pm$  20 cm height and 50 cm  $\emptyset$ ; branches 4-angled, to 1 cm thick; angles prominently sinuate-toothed, with teeth 1-1,5 cm apart; spiny; mature seeds unknown.

Rocky outcrops in *Brachystegia* woodland; 1100-1500 m alt.

**E. appendiculata** Bally & S. Carter

Shrub or tree 1,5-3 m tall; branches subfleshy; not spiny.

Sandy soil over limestone, with open *Acacia* woodland; gypseous area with sandy mantle; gypseous plain with *Acacia*, *Boscia*, *Cadaba* and grasses; alluvial soil; 610-880 m alt.

**E. arabica** Anderson, 1860; Steud. & Hochst. ex Boiss., 1862, incl. var. *brevifolia* Boiss.; excl. var. *latiappendiculata* Pax (= **E. neopolynemoides**).

syn.: *Chamaesyce arabica* (Anderson) Soják; *Euphorbia seclusa* N. E. Br.; *E. propinqua* N. E. Br.; *Anisophyllum arabicum* (Anderson) Schweinf.

Slender annual herb with spreading branches, erect to 25 cm tall; the whole plant often tinged with red; not spiny.

Stony, rocky soils; bare shallow soil overlying lava with open *Acacia* bushland or *Chrysopogon* grassland; basalt slopes with very poor cover of *Rhigozum somalense* and *Moringa peregrina*; near sea-level-1000 m alt.

**E. arabicoides** N. E. Br.

Annual herb 15-20 cm tall, erect, dichotomously branching from the cotyledon-node upwards; branches slender, at the stoutest parts not more than 0,11 cm thick; not spiny.

Open forest.

Only known from the type?

**E. arguta** Banks & Soland., incl. var. *dasycarpa* Pittmann

syn.: *Tithymalus argutus* (Banks & Soland.) Soják; *T. calendulifolius* (Del.) Raf.; *Euphorbia calendulifolia* Del.

Annual herb 20-60 cm tall with erect, simple or branched stems from the base, striate; not spiny.

Weed of cultivation.

E Mediterranean region: Egypt, Palestine, etc.

## EUPHORBIA

**E. arrecta** N. E. Br. ex R. E. Fries

Perennial herb with a woody rootstock producing annual sparsely branching stems to 45 cm tall; not spiny; pyrophyte.

Sandy soil amongst grass in *Brachystegia* woodland; 1150-1625 m alt.

**E. asclepiadea** Milne-Redh.

Perennial herb with subterranean stems arising from a tuberous root and annual erect, simple, striate, rounded stems to 36 cm tall, 3 mm  $\emptyset$  at the base; internodes 7-22 mm long; not spiny. Remarkable species, at first sight looking like a species of *Asclepias*.

Ecology unknown; 1300 m alt.

Near *E. erythrocephala*.

Only known from the type collected in 1930 from an unknown locality in Bié District, Angola.

**E. asthenacantha** S. Carter

Shortly rhizomatous perennial erect succulent to 15 cm tall; rhizomes tuberous; stems very sparsely branched, 4-angled,  $\pm$  6 mm thick; angles straight, without teeth; spiny.

Depression of low domed rocky outcrop; 1500 m alt.

Affinity with *E. angustifolia* and particularly with *E. torta*.

Only known from 2 collections.

**E. atrocarmesina** L. C. Leach

syn.: *E. dispersa* sensu L. C. Leach, Garcia de Orta, Sér. B. 2: 49, 1974 (= *E. atrocarmesina* subsp. *arborea*).

Succulent spiny shrub or tree, with short stout trunk  $\pm$  0,75-1,5 m tall, branched from the base (sometimes forming large clumps, probably then comprising several plants) with spreading, ascending-erect, segmented branches with 4-6, usually 5 (very rarely 6) broadly winged angles, deeply constricted into subcircular, elliptic, ovate or sometimes oblong segments which are 3-8(-15) cm long, 2-6 cm wide; with weakly or strongly crenate, continuous, horny brown margins.

Granite slopes, in shallow soil;  $\pm$  900 m alt.

New growth is produced from the remains of plants (*Phoenix*-like plant); juveniles have an appearance quite unlike that of the mature plant.

Comprises 2 subspp.

Near *E. seretii*, *E. strangulata*.

**E. atroflora** S. Carter; *Euphorbia* J. 7: 123, 1991.

Sturdy erect, much-branched succulent shrub to 2,5 m tall; branches 4-5(-6)-angled, to 2-3 cm thick,  $\pm$  constricted at intervals of 10-20 cm; angles straight to sinuately toothed, with teeth 1-2 cm apart; spiny.

Stony soil, usually on rocky slopes, with open deciduous bushland; 600? or 900-1760 m alt.

Near *E. scarlatina*.

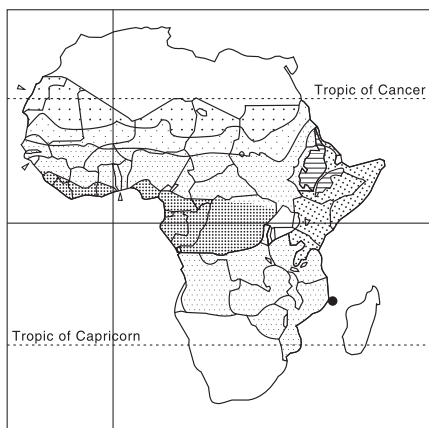
**E. atrox** S. Carter; *Euphorbia* J. 9: 92, 103, 105, 225, 1994.

Succulent perennial, to 30 cm tall and 40 cm  $\emptyset$ , sparsely branching from a short stem to form conical "cushions"; roots fibrous; branches 1,5-2,5 cm thick, with very prominent tubercles 1-1,5 cm apart in 5 spiral series; spiny.

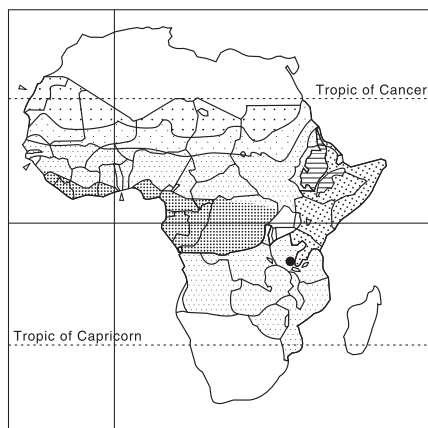
Steep rocky limestone slopes, with very sparse *Commiphora* scrub; 90-550 m alt.

Known from 2 discrete populations in situ; in cultivation since 1970.

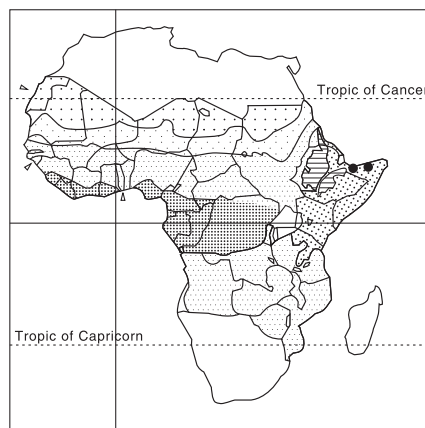
Near *E. umbonata*, *E. ponderosa*, *E. perarmata*.



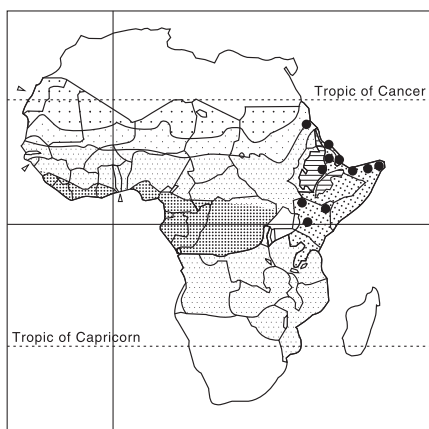
*Euphorbia angularis*



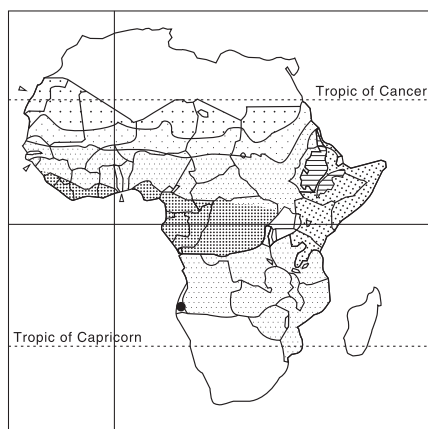
*Euphorbia angustiflora*



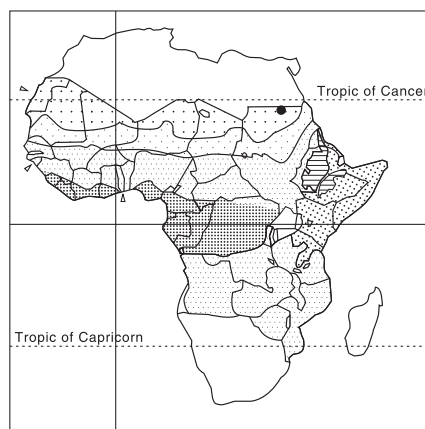
*Euphorbia appendiculata*



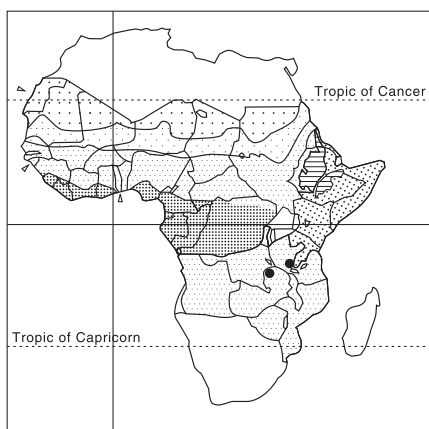
*Euphorbia arabica*



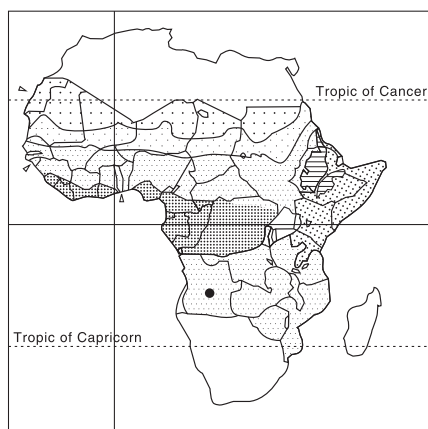
*Euphorbia arabicoides*



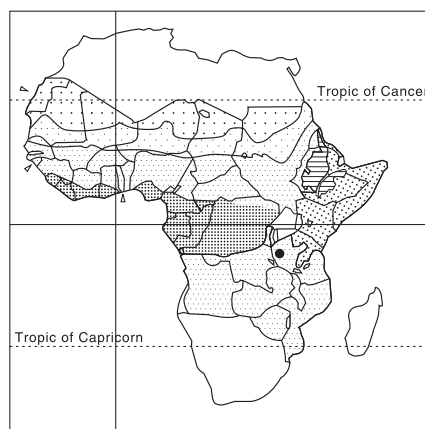
*Euphorbia arguta*



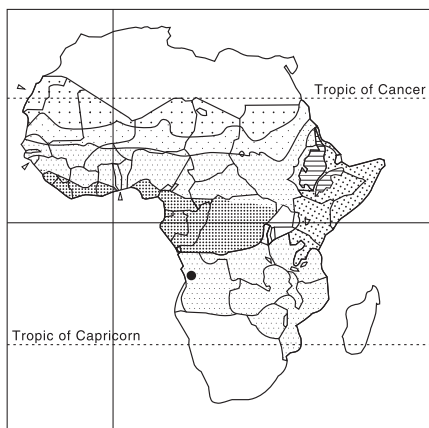
*Euphorbia arrecta*



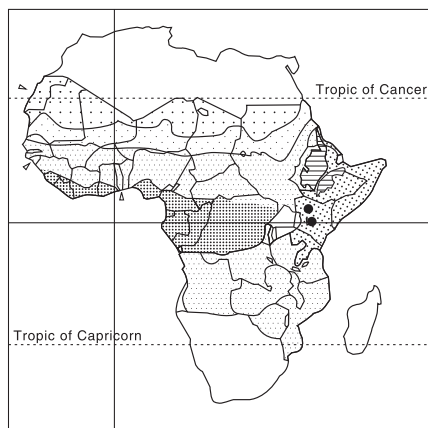
*Euphorbia asclepiadea*



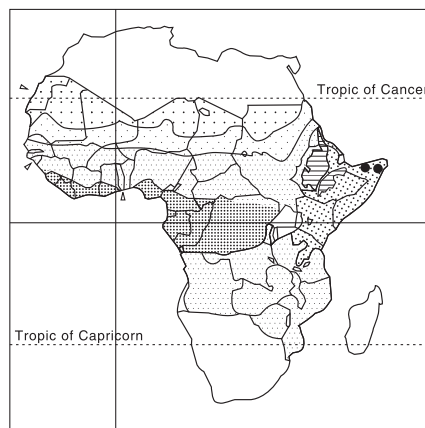
*Euphorbia asthenacantha*



*Euphorbia atrocarminea*



*Euphorbia atroflora*



*Euphorbia atrox*

## EUPHORBIA

**E. awashensis** M. G. Gilbert

Main stem underground (adaptation to fire?), with relatively few erect lateral stems to 30 cm tall,  $\pm$  7 mm thick, almost terete; spiny; fruit unknown.

*Chrysopogon* grassland on shallow volcanic soils in area with open *Acacia* bushland or *Acacia-Balanites* woodland;  $\pm$  1000 m alt.

Extremely distinctive plant certainly different from any described species; allied to *E. triaculeata*, *E. monacantha*, *E. schizacantha*.

**E. бага** A. Chev.; Euphorbia J. 8: 115, 1992.

Conical or rarely napiform taproot, 10-21 cm tall and 4-8 cm thick; a stem 3-8 cm long, 1-1,5 cm broad arises from the top of this underground tuber; the apex of this stem may be just below the soil surface or may reach the surface, but does not grow above ground to become an aerial shoot; stem branched in older plants; inflorescences appearing before the leaves, rarely leaves and inflorescences together; not spiny. – During its dormancy no vegetative parts occur above ground; the leaves are produced at the beginning of the wet season; during the dry season (January-February), inflorescences appear from the stem apices.

Flat-topped laterite hills; wooded places; isolated savanna outliers on areas of shallow soil overlying sandstone; 300 m alt. (Ghana).

Comprises 2 vars.

Extremely rare in collections (and only 13 localities known in nature). In cultivation it seems to stay dormant for long periods.

**E. baiensis** S. Carter; Euphorbia J. 7: 37-41, 1991; 10: 134-141, 1996.

Spreading succulent cushion-like perennial, densely branching from the base; branches shortly decumbent or erect to 30 cm tall, cylindrical, to 2 cm thick, with 8-10 longitudinal ribs (angles), without teeth; spiny.

Covering flat granite surfaces; small soil pockets and cracks in the rock;  $\pm$  1400-1750 m alt.

Easily grown in cultivation and presenting no unusual problems.

Affinity with *E. inaequispina*.

**E. baleensis** M. G. Gilbert

Succulent; taproot thickened but not napiform, rhizome absent; stems few to many from the base, soon bending over and eventually sprawling, to 75 cm long, usually less; stems 4-sided  $\pm$  8 mm thick, with angles slightly rounded with obscure teeth 15-20 mm apart; spiny; mature cymes, fruit and seeds unknown.

Fairly dense *Commiphora-Kirkia-Acacia* woodland on reddish soil overlying limestone; 1150-1450 m alt.

Species of the *E. glochidiata-E. fissispina* complex.

**E. ballyana** Rauh; Ballya 2: 42, 1995.

Succulent perennial branching from the base, with a thick fleshy root; branches erect to 30(-50) cm tall, 7-10 mm thick, sparsely rebranching, cylindrical, teeth very obscure,  $\pm$  2 mm apart; spiny.

Dry *Acacia-Commiphora* bushland, among thickets of *Sansevieria*; 900 m alt.

Widespread in cultivation due to its ease in both cultural requirements and propagation.

Near *E. graciliramea*.

Not rediscovered in the wild since 1960.

## EUPHORBIA

**E. ballyi** S. Carter; the illustration accompanying the type description in Fl. Pl. Afr. 36: tab.1408, 1963 = *E. leontopoda*.

Compact shrub 1,2-1,5 m tall, 1,8 m  $\varnothing$ , branching from the base, sparsely rebranching above; branches 4-6-angled, deeply winged, regularly constricted into segment 3-4 cm long, 4-7 cm wide; angles sinuately toothed, with teeth to 1,5 cm apart at the base of the segments, closer above; spiny.

Exposed rocky limestone slopes and gravelly plain with sparse xerophytic scrub; also gypsaceous soils; 1140-2000 m alt.

Still rare in cultivation.

Near *E. grandicornis*.

**E. balsamifera** Ait.; Euphorbia J. 7: 75, 1991; 9: 92, 106, 1994; Kakteen Sukk. 54(12): Insert 24, 2003.

syn.: *E. balsamifera* subsp. *eu-balsamifera* Maire var. *rogeri* (N. E. Br.) Maire; *E. capazii* Caballero; *E. rogeri* N. E. Br.; *E. balsamifera* subsp. *sepium* (N. E. Br.) Maire; *E. sepium* N.E. Br.

Dichotomously branching shrub 0,7-3 m tall, with semi-succulent branches 5-10 mm thick, covered with transversely elongated leaf-scars; not spiny.

Clayey soil on plain with *E. officinarum*; sandy-clayey soil; compact sand overlying laterite or shallow sandstone formation; scree; rocky limestone and gypseous soils with low open scrub vegetation; mostly on volcanic soils (subsp. *adenensis*); near sea-level to 1550 m alt.

Canary Is., Morocco; Arabia (M. A. Rahman & al., Bangladesh J. Pl. Taxon. 9/1: 37, 2002).

Comprises 2 subspp. (disjunct area).

Commonly grown in hedges. Evergreen in very favorable situations. Somewhat sensitive to excess water; enjoys light shading in cultivation; and is particularly attractive due to the bonsai appearance of small plants.

MOLERO, J. & al. (2002). Karyological evolution and molecular phylogeny in Macaronesian dendroid spurges (Euphorbia subsect. Pachycladae). *Pl. Syst. Evol.* 231: 109-132.

**E. baradii** S. Carter; Euphorbia J. 9: 89, 226, 1994.

Tiny perennial succulent 4-8 cm tall; branches few from near the base, terete, 1-1,3 cm thick, 2-4 cm long, with tightly congested prominent tubercles 2-3 mm apart, in 7-8 spiral series separated by deep grooves; spiny; fruits and seeds unknown.

Rocky limestone plateaux, under shelter of sparse *Acacia-Commiphora* bushland; 200-550 m alt.

Very rare in cultivation.

Near *E. inaequispina*.

**E. barbicollis** Bally

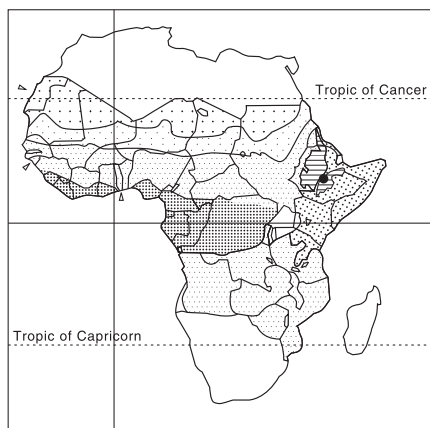
Perennial herb 10-30 cm tall or scandent to 1 m; stems 5 mm thick; a long thick taproot from an ovoid tuber 10-12 cm long, 3-4 cm thick; stems few, twining, sparsely branched at soil level; not spiny.

Rocky limestone slopes with open scrub vegetation; 900-1500 m alt.

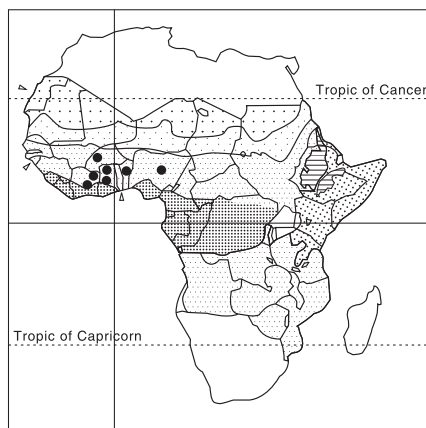
**E. bariensis** S. Carter

Shrub 30-90 cm tall, with compact branching; branches crowded, fleshy; not spiny.

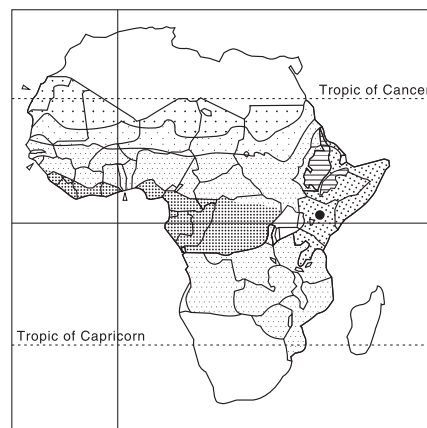




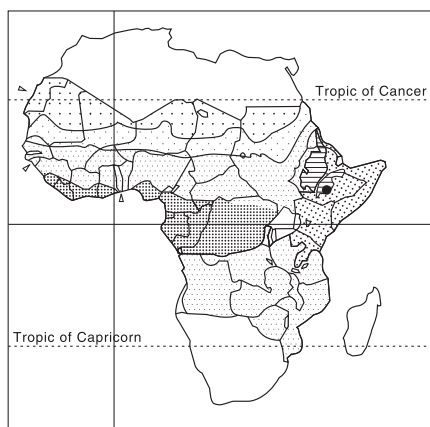
*Euphorbia awashensis*



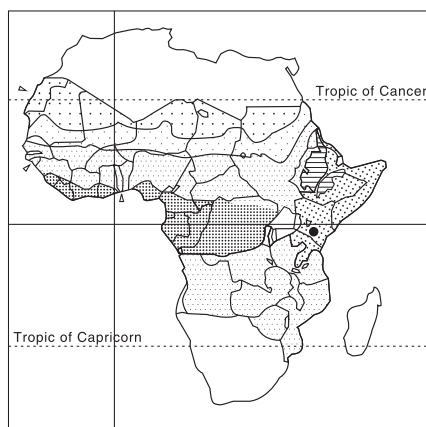
*Euphorbia бага*



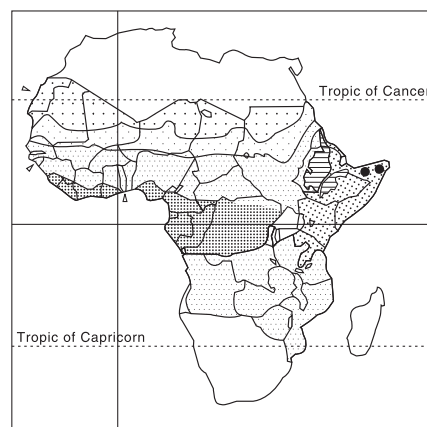
*Euphorbia baiouensis*



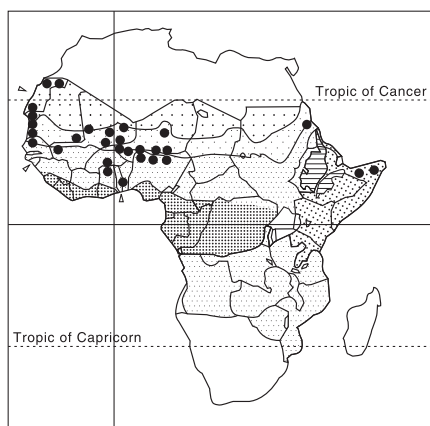
*Euphorbia baleensis*



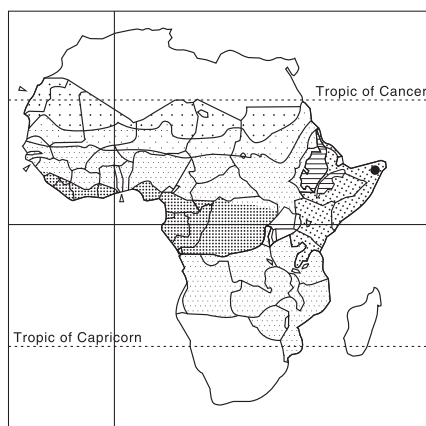
*Euphorbia ballyana*



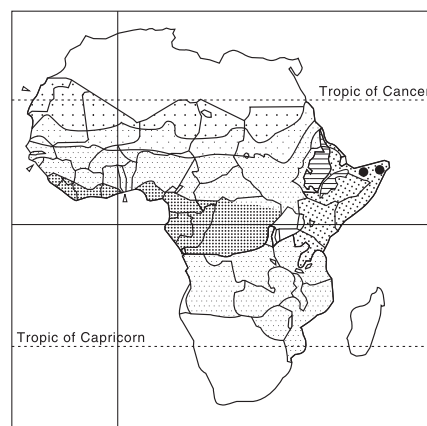
*Euphorbia ballyi*



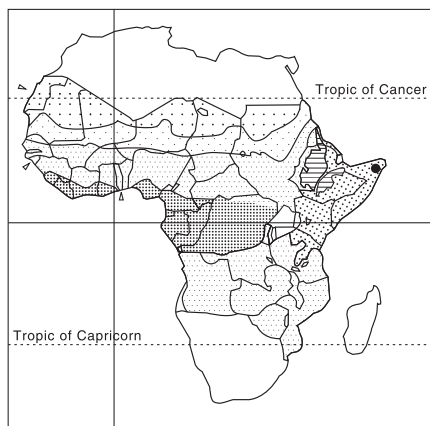
*Euphorbia balsamifera*



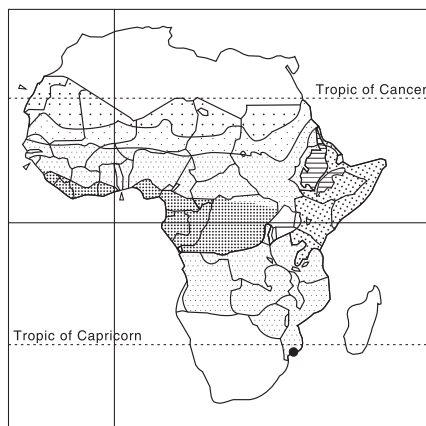
*Euphorbia baradii*



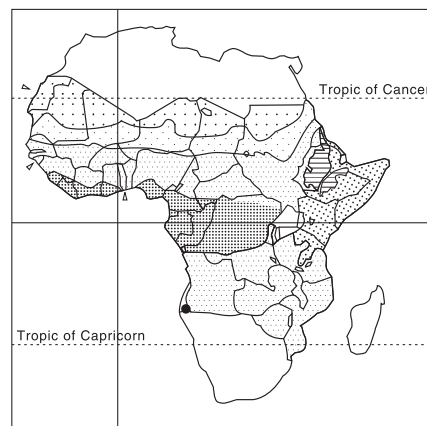
*Euphorbia barbicollis*



*Euphorbia bariensis*



*Euphorbia baylissii*



*Euphorbia bellica*

## EUPHORBIA BARIENSIS

Rocky limestone slopes with low *Commiphora* scrub; 110-1310 m alt.

Near *E. arbuscula* Balf. f. endemic to Socotra, and *E. tirucalli*.

**E. baylissii** L. C. Leach

Erect succulent spiny shrub 0,3-1,8 m tall, usually single-stemmed, sparingly branched and very sparingly rebranched above; stems and branches constricted at intervals (usually distant) with 4 prominently sinuate-toothed wing-like angles and a very small central core; wings to 1,2 cm wide excluding the teeth,  $\pm 1$  mm or less thick; teeth  $\pm$  deltoid or with the upper slope truncate, to 4,5 mm high, 8-17 mm apart along the angles; branches and branchlets horizontally spreading or ascending, produced from the constrictions or from the margins of the wings very shortly above the constrictions, generally  $\pm 1,5$  cm  $\emptyset$ .

Coastal white sand dunes, in heavy shade of evergreen scrub (*Androstachys johnsonii*, gregarious tree living in patches of closed and shadowy forest never far from the sea); 0-100 m alt.

Of very easy culture.

Closely related to *E. ambroseae*.

**E. bellica** Hiern, excl. syn. *E. dekindtii* and specim. Dekindt 1030.

Stout leafless spiny succulent bush 1-1,5 m tall; trunk branched from the base; branches crowded, ascending-curved at the base; branchlets probably 3-4-angled, with a rather small central solid part, divided by deep constrictions into many elliptic or orbicular segments 2,5-4 cm long, 3-8-4,4 cm broad; angles wing-like, somewhat sinuate-toothed and with a dark brown continuous horny border along the margins; flowers and fruit unknown.

Sandy maritime hills; frequent.

Allied to *E. opuntioides*; identical with *E. virosa*?

**E. benthamii** Hiern

Slender, erect, rigid, annual herb to 1 m tall with stem often woody at the base, sparingly branched; not spiny. Lamina of leaves 11,5  $\times$  3 cm.

Red sandy soil in grass amongst mixed dry scrub; wooded meadows; often near streams; 950-1750 m alt.

Caprivi Strip, Namibia.

**E. berotica** N. E. Br.

Shrub, spineless, much branched from the base, to  $\pm 75$  cm tall; root rhizomatous, thick, horizontal often giving rise to adventitious plantlets at some little distance from the parent plant; branches alternate or occasionally forked or subverticillate, spreading-ascending or suberect, initially succulent, soon becoming woody, terete, slender (from 3,5-5 mm  $\emptyset$  to 1-2,5 mm at the apex).

Red-sand rocks close to stream; with *Cissus* sp. in sand on rocky slope; on stony bare hills, with *Euphorbia virosa*; sandy flats; in close association with *E. congestiflora* in scattered mopane association on sandy flat.

Namibia.

The coastal and inland populations should probably be recognized as taxonomically distinct.

Related to *E. mauritanica* and *E. gossypina*.

## EUPHORBIA

**E. bertemariae** Dioli & Bisseret, Cactus Succ. J. (US) 77: 208, 2005. – Icon: ibid: 209 (photos).

Much branched perennial succulent with fibrous roots and forming compact cushions to 15-20 cm tall, 30 cm  $\emptyset$ ; branches cylindrical, 4-5-angled, ca. 15 cm long, 0,6-0,7 cm  $\emptyset$ ; spine-shields on spirally arranged tubercles, grey, oblong, 5-7  $\times$  1-3 mm; spines paired, 7 mm long, dull brown with reddish tinge, becoming black; prickles vestigial or absent; leaves soon deciduous; cyathia and capsules subsessile; mature seeds unknown.

Rocky limestone cliff in scattered *Acacia-Commiphora* bushland; 1000-1200 m alt.

Close to *E. fascicularis* (that has a tuberous tap root, smaller cyathia, longer spine shields, dull brown spines). Similar to *E. ellenbeckii* and *E. inaequispina* (also with spirally arranged tubercles but different in spinescence, and in having pedunculate cyathia and capsules).

Known only from the type gathering (made in 2000)? Also in cultivation.

**E. betulicortex** M. G. Gilbert

Slender erect tree to 6-7 m, with trunk resembling that of some species of *Betula*, the bark exfoliating horizontally in large pale brownish-yellow papery sheets; stems dark red; not spiny.

Dense *Commiphora erythraea* woodland with *Kirkia burgeri*, *Lannea malifolia* on steep limestone slope;  $\pm 950$  m alt.

Collections with young inflorescences are needed.

**E. biharamulensis** S. Carter

Straggling, loosely branched succulent shrub to 50 cm tall and 1 m  $\emptyset$ ; branches numerous from the base, 4-angled, 1,5-3 cm wide, constricted at irregular intervals in upper parts of the branches into  $\pm$  obovate segments 1,5 cm or more long; angles compressed, sinuately-toothed with teeth irregularly spaced 0,5-2 cm apart; spiny.

In crevices of rocky outcrops in *Brachystegia* woodland; 1200-1400 m alt.

Near *E. williamsonii* and *E. pseudoburuana*.

**E. bitataensis** M.G. Gilbert

Succulent forming dense tufts of stems when growing in open situations but, more usually, with elongated fairly stout rhizomes and isolated little-branched stems growing in crevices among rocks; stems sprawling, clearly 4-sided with fairly prominently toothed rounded angles; spiny; fruits and seeds unknown.

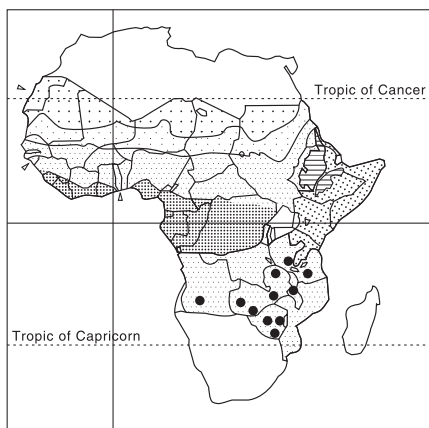
In crevice on a massive granitic outcrop with *Combretum-Terminalia-Lannea-Ozoroa* woodland;  $\pm 1600$  m alt.

Near *E. saxorum* and *E. gemmea*.

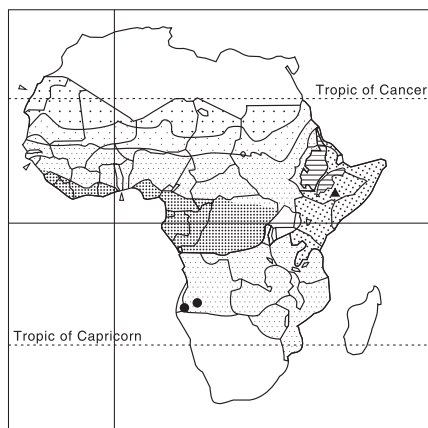
**E. bongensis** Kotschy & Peyr. ex Boiss.

Perennial herb with a tuberous rootstock to 30  $\times$  1-5 cm, producing several woody subterranean stems branching at ground-level; branches decumbent, 15-40(-60) cm high, usually woody, sometimes herbaceous when produced after burning; not spiny.

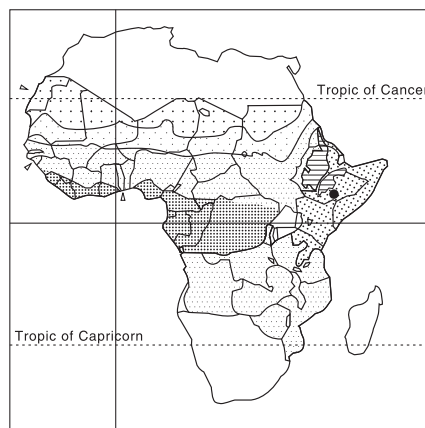
Sandy rocky soils in grassland and open woodland; often appearing after burning; dry *Acacia seyal* savanna; woodland with *Combretum collinum*, *C. molle*, *Annona senegalensis*; 630-2100 m alt.



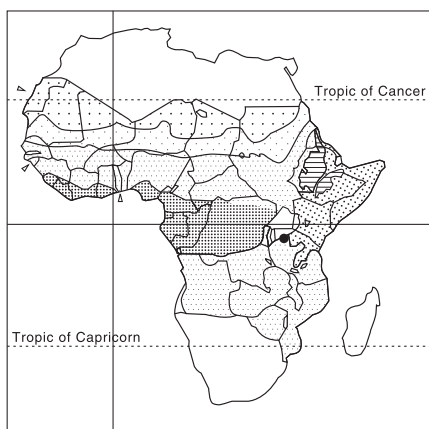
*Euphorbia benthamii*



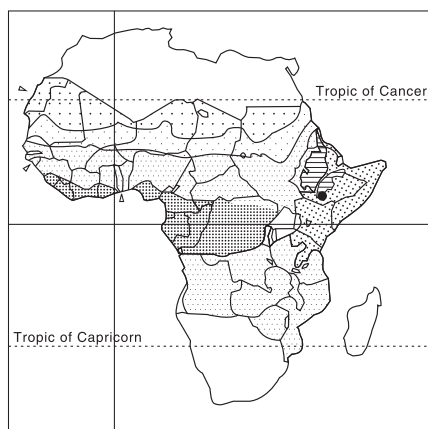
*Euphorbia berotica* ●  
*Euphorbia bertemariae* ▲



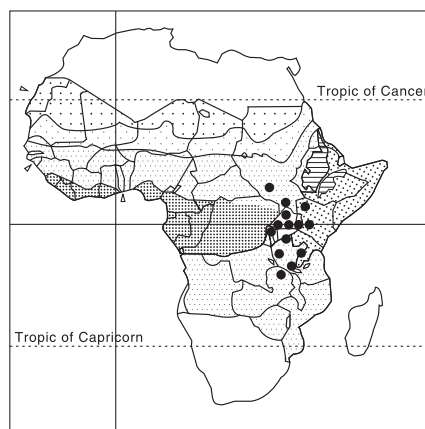
*Euphorbia betulicortex*



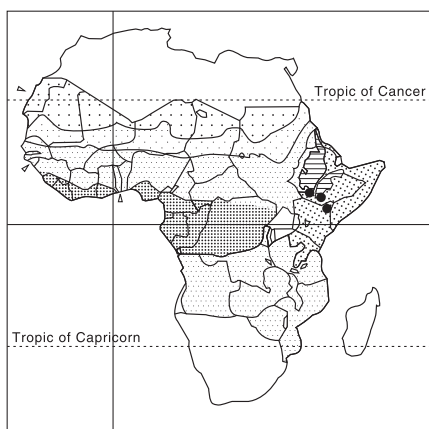
*Euphorbia biharamulensis*



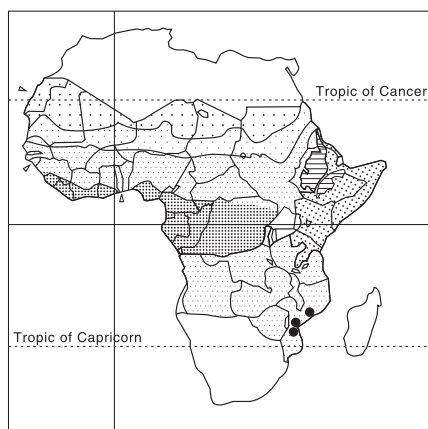
*Euphorbia bitataensis*



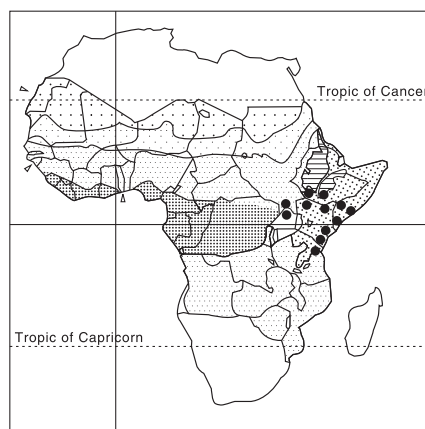
*Euphorbia bongensis*



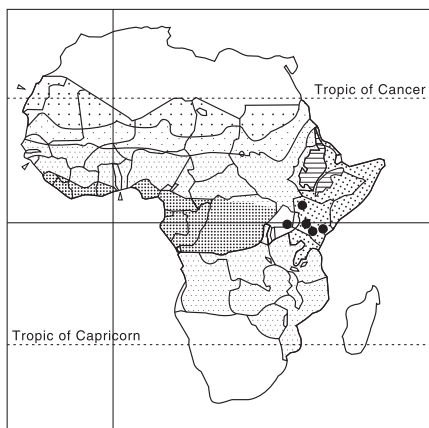
*Euphorbia borenensis*



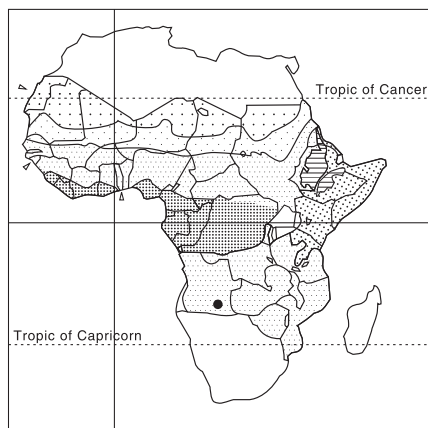
*Euphorbia bougheyi*



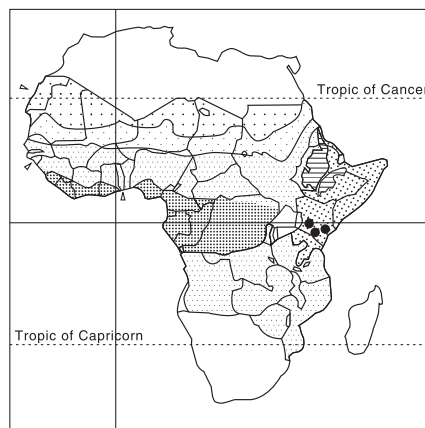
*Euphorbia breviarticulata*



*Euphorbia brevicornu*



*Euphorbia brevis*



*Euphorbia brevitorta*

## EUPHORBIA

**E. borensis** M. G. Gilbert; *Euphorbia* J. 1: 84, 1983 sub nom. *E. heterochroma*, Ethiopian form.

Irregularly, sparsely branched, erect, succulent, sometimes scandent shrub to 3 m tall; branches 4-angled, 1-2 cm thick; angles straight or shallowly toothed at the base of the plant, with teeth  $\pm 1$  cm apart; spiny; style unknown.

Rocky limestone, lava, granite slopes with *Acacia-Commiphora* or *Acacia-Terminalia* woodland; 400-1560 m alt.

Easily grown; good plant for the beginning collector.

Near *E. heterospina*, *E. heterochroma*.

**E. bougheyi** L. C. Leach

Xerophytic spiny tree to  $\pm 7$  m, with a nude, cylindrical, relatively slender trunk, the apical portion of which is spiny and angular, with to 9 angles; rather small crown, 2-3 m  $\varnothing$ , of verticillate, spreading, arcuate-ascending, winged branches; branches with wide, extremely thin wings and a central terete woody core, and constricted into segments of very variable shape and size, usually oblong, sometimes constricted only at the stalk-like base, 2-5-winged; wings 2,5-5 cm wide, with margins prominently or obscurely crenate-toothed, usually much crisped and wavy; ultimate branchlets frequently 2-winged, produced in clusters from the wing margins or occasionally from the constrictions towards the apex of the branches; apices of the branches and branchlets obtuse or emarginate; spiny.

Swampy coastal plain in evergreen scrub; small patches of dense woodland in low lying grassland savanna; 0-120 m alt.

A popular plant among collectors, easily propagated from cuttings.

Related to *E. dawei*, *E. halipedicola*, *E. nyikae*.

**E. breviarticulata** Pax; Chiovenda, Result. Sci. Miss. Stefanini-Paoli: tab. 23 B, 1916 sub nom. *E. mbaluensis*; *Euphorbia* J. 9: 84, 99, 127, 218, 1994.

Large straggling shrub to 4,5 m tall, branching from the base, or occasionally a shrubby tree to 6 m; branches fleshy, erect and spreading, the lowest  $\pm$  prostrate, loosely rebranching, 3(-4)-angled, to 12 cm wide, deeply winged, deeply and  $\pm$  regularly constricted into segments to  $\pm 8$  cm long, usually broader than long; angles undulate, sinuately toothed, with teeth distant, to  $\pm 4$  cm apart at the base of each segment, closer, to  $\pm 1$  cm or less above, and towards the constrictions.

Dry open or fairly dense *Acacia-Commiphora* bushland, often forming thickets, on sandy soils, silt and coastal dune remnants; rock outcrops; in tangle with *Lannea*, *Grewia*, *Sansevieria* on termite mound; 60-1200 m alt.

Comprises 2 vars.

Providing no difficulties in cultivation.

Near *E. grandicornis*; confusion possible with young *E. bussei*.

**E. brevicornu** Pax

Annual or probably short-lived shrubby perennial herb to 2 m tall; not spiny.

Open forest, in shade or damp situations; 2000-3250 m alt.

Related to *E. schimperiana*, *E. repetita*.

## EUPHORBIA

**E. brevis** N. E. Br.

Perennial, leafless, spiny succulent; rootstock a tuber, sometimes  $\pm 7-8$  cm  $\varnothing$ ; stems numerous, erect, 5-7,5 cm tall, slender, 0,45-0,55 cm  $\varnothing$ , 3-angled, branched at or near the base; fruits and seeds unknown.

Shrub-grown thickets and pasture above the torrent of river; not uncommon.

Related to *E. schmitzii*.

**E. brevitorta** Bally

Dwarf very densely tufted perennial succulent to 15 cm tall; root large, tuberous; stem much reduced, subterranean, with short underground branches producing secondary plants crowded together to form a domed "cushion" 15-100 cm  $\varnothing$ ; branches usually simple, to 15 cm long, (2-)3-angled, 1-2,5 cm wide; angles compressed and often spirally twisted, prominently toothed with the teeth irregularly spaced 0,5-2 cm apart; spiny.

In rock crevices on exposed sloping usually swampy ground with free drainage; 1500-2000 m alt.

Of easy culture (A. Pritchard, Introduction to Euphorbiaceae: 39, 2003).

Living material was collected in 1939; herbarium material was prepared in 1957 from material collected at the original locality.

Related to *E. tortirama*; general habit and the 2-angled clavate branches are reminiscent of *E. clavigera*.

**E. brunellii** Chiov.

Hysteranthous geophyte with a tuberous root  $\pm 3 \times 2$  cm, tapering abruptly into a long taproot and with several horizontal to ascending lateral roots; subterranean caudex arising from the root,  $\pm 3 \times 1$  cm, closely covered with tessellated leaf-scars; not spiny.

Grassland; open sites in deciduous woodland-bushland with *Combretum*, *Terminalia*, *Lannea rivaie*, *Commiphora africana*; usually on well drained sandy soils overlying basement complex rocks; rarely in poorly drained dark grey soils on volcanic rock; usually noticeable only after burning; 1080-2500 m alt.

Locally common; possibly more widespread than records indicate.

Relationship obscure.

**E. burgeri** M. G. Gilbert

Candelabriform shrub or tree to 3 m tall with a distinct main stem and ascending branches; old branches deciduous leaving clear trunk; stems 3(-4)-sided, to 3-4,5(?-7)cm wide, strongly constricted at intervals of to 12 cm length; segments widest near to base, occasionally uniformly slender, wider portions shallowly toothed; spiny; fully mature flowers unknown.

Limestone slopes; locally common, sometimes subdominant; 1200-1560 m alt.

Near *E. cactus*.

**E. buruana** Pax; *Piante Grasse* 24(3): Insert, 2004.

Dwarf perennial succulent with a large tuberous root  $\pm 10$  cm  $\varnothing$ , and a much reduced underground stem; branches numerous, weakly erect to  $\pm 30$  cm high, or often semi-prostrate to 60 cm long, simple or occasionally rebranched, 3(-4)-angled, 1-4 cm wide, deeply winged, constricted at irregular intervals into  $\pm$  obovate segments 2 cm or more long; angles toothed with teeth irregularly spaced 1-5 cm apart; spiny; leafless.



## EUPHORBIA BURUANA

Sandy soil amongst grass in open *Acacia-Commiphora* bushland; 600-1100 m alt.

Of easy culture.

**E. bussei** Pax; *Euphorbia* J. 7: 146, 1991; L. E. Newton in L. Russo, *Succ. Pl. E. Afr.*: 86, 2004 (photo hedge).

Tree to 10(-15) m with a trunk to  $\pm$  30 cm thick and grey fissured bark marked with usually 6 vertical rows of persistent spines and pit-scars resulting from fallen branches; seedlings 3-4-angled; branches spreading to 3(-5) m, rebranching several times to form a rounded crown; terminal branchlets fleshy, 3-4-angled, to 15 cm wide, deeply winged and deeply constricted into ovate to subcircular segments to 15 cm long or more, elongated with undulate margins on young plants; angles sinuately toothed with teeth 1-3 cm apart.

Rocky slopes; sandy soils with open deciduous woodland; steep rocky slopes with fairly dense deciduous woodland; 350-2000 m alt.

Comprises 2 vars.

Cultivation fairly easy.

Some overlapping of distinguishing features between *E. bussei* var. *bussei* and *E. nyikae* var. *neovolkensii*.

**E. bwandensis** S. Carter

Tree to 6,5 m, with  $\pm$  drooping branches sparsely rebranched to form a loose untidy crown; branches fleshy, shortly 3(-5)-angled, or narrowly winged, 1-2,5 cm wide; angles shallowly toothed, with teeth 1-4 cm apart; spiny.

*Cynometra* forest;  $\pm$  800 m alt.

**E. cactus** Ehrenb. ex Boiss. var. **cactus**

Shrub to 1,8 m tall, much broader than high with branches ascending; stems 3(-4)-angled, to 3,6 cm wide, irregularly segmented; spiny.

Sandy coastal plains, *Acacia oerfota* bushland on light volcanic soils;  $\pm$  5-1000 m alt.

Arabia (much more robust plant). – M. A. Rahman & al., *Bangladesh J. Pl. Taxon.* 9/1: 37, 2002.

Var. **tortirama** Rauh & Lavranos in Yemen (S. Mosti & al. in *Cactus & Co.* 4(9): 227-228, 2005 (photos).

Cultivation without any difficulty.

**E. calamiformis** Bally & S. Carter; *Euphorbia* J. 8: 70, 71, 1992.

Perennial shrub scrambling to 3 m high, forming tangled masses of semi-woody branches, with very slender brittle branchlets to  $\pm$  15 cm long arising at right angles to the main branches and possibly deciduous; branches less than 1 cm thick, with leaf-scars made  $\pm$  prominent by the formation of a dark brown callus produced as the leaf falls; not spiny.

Dry rocky slopes and sandy soils with open *Acacia* woodland; *Acacia-Commiphora* bushland ascending to lower margins of *Juniperus* forest; 400-1900 m alt.

Not in Somalia (= *E. sp.* Bally E 309).

**E. caloderma** S. Carter, *Cact. Succ. J. (U.S.)* 72: 189, 2000.

syn.: *E. quadrialata* sensu S. Carter, *Fl. Trop. E. Africa*, *Euphorb.* 2: 508 quoad Perdue & Kibuwa 11046, non Leach, 1988.

## EUPHORBIA CALODERMA

Densely branching perennial forming sprawling mats; branches to 1 m long, fleshy, sharply 4-angled, 1-1,5 cm  $\emptyset$ ; angles sinuate with tubercle teeth 7-10 mm apart; spiny.

Rocky slopes; 1830 m alt.

Near *E. proballyana*.

**E. calyptrata** Coss. & Kralik var. **involutrata** Batt.

syn.: *Tithymalus calyptratus* (Coss. & Kralik) Soják

Annual or biennial herb with a thick root and with several stems, rather often ramose, 20-70 cm tall; not spiny.

Sandy wadi and sandy regs; also on sandy-muddy soil; sometimes in large stands.

Morocco, Algeria, Tunisia, Libya.

**E. cameronii** N. E. Br. emend. Bally; *Euphorbia* J. 10: 205, 1996.

Densely branched shrub or tree 2-8 m tall and 3,5 m  $\emptyset$  and more?; branches terete, fleshy, marked with prominent crescent-shaped leaf-scars, erect-spreading; not spiny.

Dry alluvial sandy soil, open scrub with *Commiphora*, *Acacia*; rocky limestone slopes; 400-1600 m alt.

**E. candelabrum** Trémaux ex Kotschy, non Welw.; *Taxon* 34: 701, 1985; *Vegetatio* 30: 49-54, 1975.

syn.: *E. canariensis* sensu Trémaux, *Voy. Soudan Orient.*, *Atlas*: tabs. 13, 14 with text, 1853, non L. 1753.

Tree to 12(-20) m with a simple trunk to  $\pm$  90 cm  $\emptyset$ ; branches persistent from  $\pm$  3 m upwards, suberect, densely rebranching to form eventually a large broadly rounded crown; terminal branchlets fleshy (3-)4(-5)-angled, 5-10 cm wide,  $\pm$  square in cross-section to distinctly winged, with wings to 2,5 cm wide, usually  $\pm$  constricted at irregular intervals into oblong segments 15-25 cm long; angles straight to shallowly sinuately toothed, with teeth 1-1,5 cm apart; spiny; red-purple flowers like *E. lividiflora*.

Rocky slopes and well-drained flat-land; termite mounds; *Combretum* or *Acacia tortilis* subsp. *spirocarpa* deciduous woodland or bushland; on laterite in dense *Acacia-Commiphora* woodland; (15-)900-2000 m alt.

Species exhibiting considerable variation.

Comprises 2 vars.

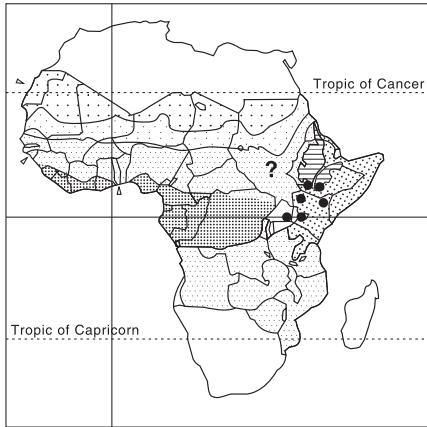
Very closely related to *E. ingens*.

**E. cannellii** L. C. Leach

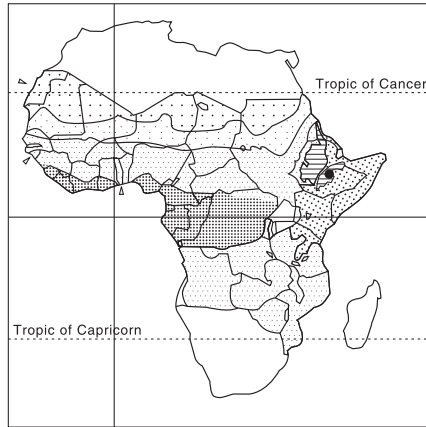
Acaulescent, spreading and sometimes straggling, succulent, spiny shrub, to  $\pm$  70 cm tall (usually less), and as much as 3 m  $\emptyset$ ; branches spreading, arcuate-ascending, with the lower portion often somewhat decumbent and sometimes developing adventitious roots, mostly simple or only sparingly rebranched, constricted at intervals into very variably shaped segments which are 4- or rarely 5-angled or winged, of very variable length, with a continuous sinuate-dentate, horny margin.

Among rocks in woodland shade and in *Adansonia* bush; often on exposed rock outcrops.

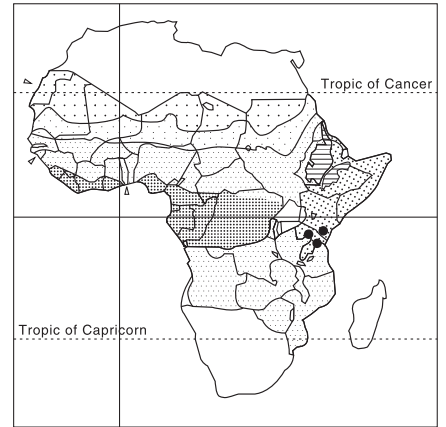
Member of a closely related group of acaulescent shrubs: *E. atrocarmesina*, *E. dekindtii*, *E. semperflorens*, *E. williamsonii*.



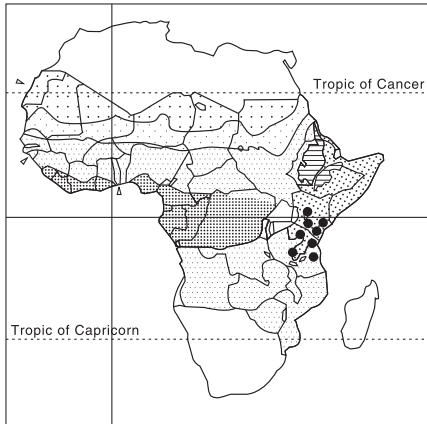
*Euphorbia brunellii*



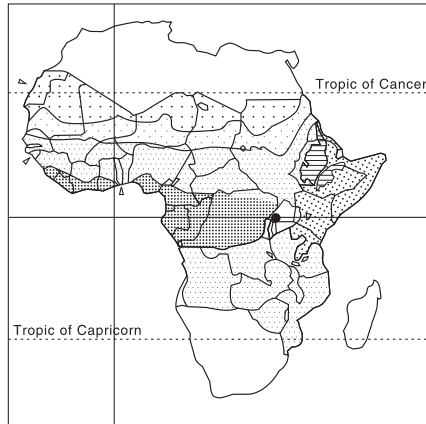
*Euphorbia burgeri*



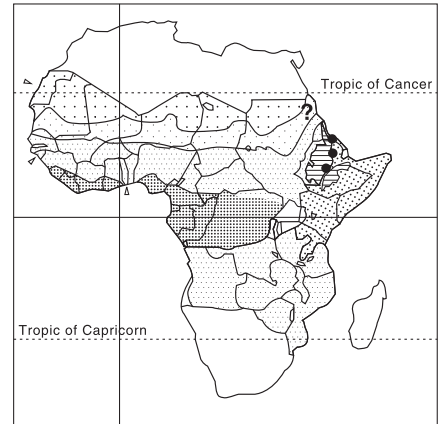
*Euphorbia buruana*



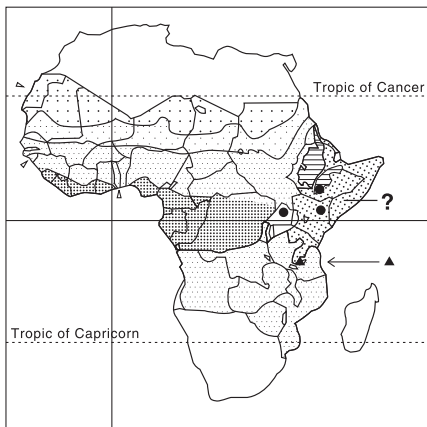
*Euphorbia bussei*



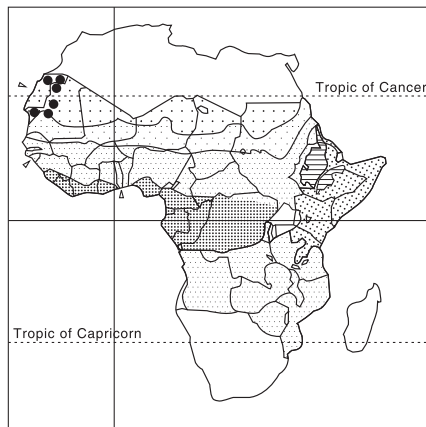
*Euphorbia bwambensis*



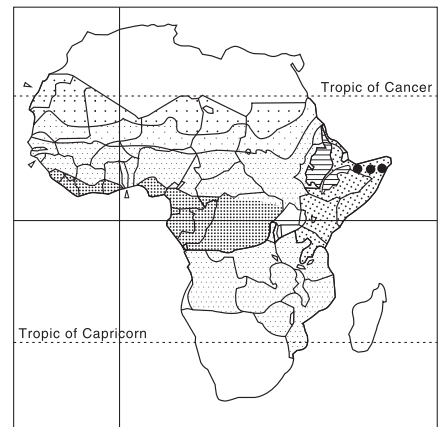
*Euphorbia cactus*



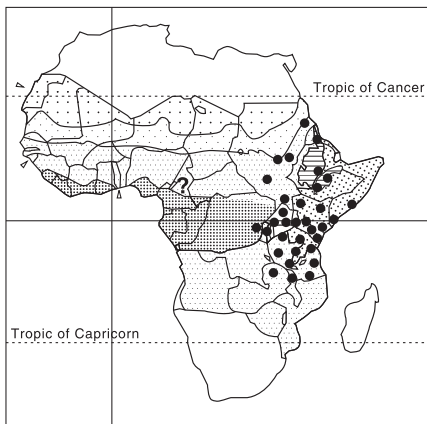
*Euphorbia calamiformis* ●  
*Euphorbia caloderma* ▲



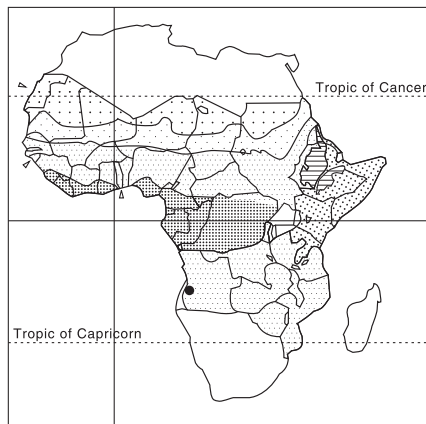
*Euphorbia calytrata*



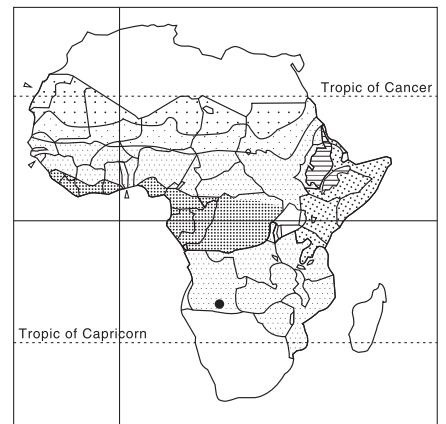
*Euphorbia cameronii*



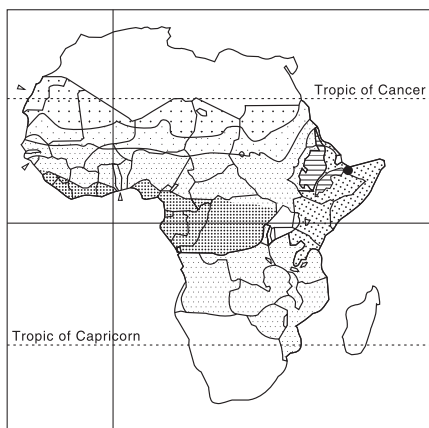
*Euphorbia candelabrum*



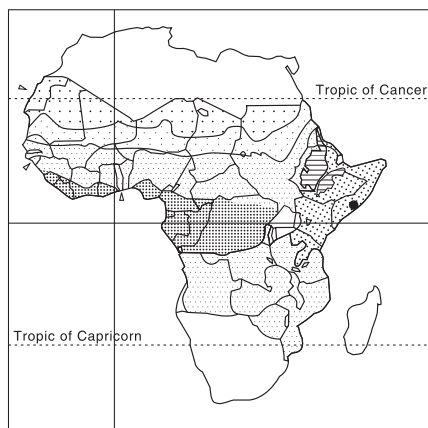
*Euphorbia cannellii*



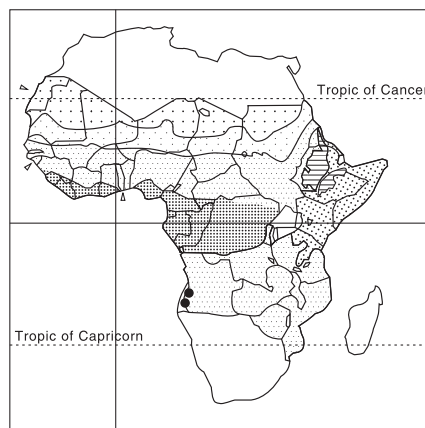
*Euphorbia carinifolia*



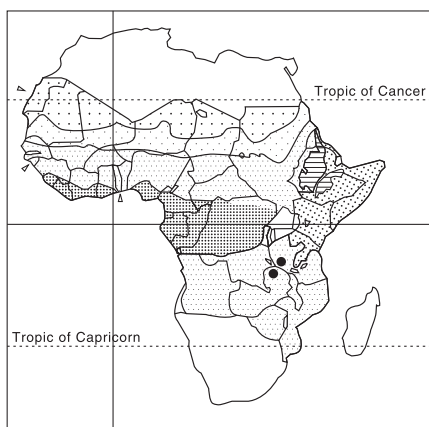
*Euphorbia carinulata*



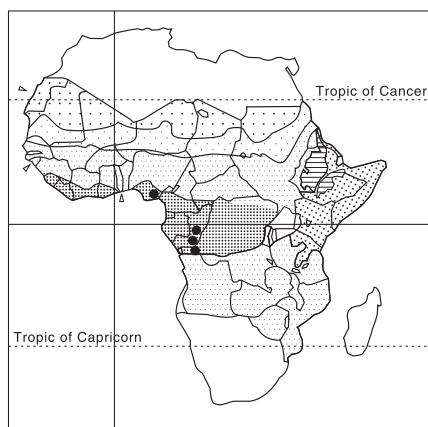
*Euphorbia carteriana*



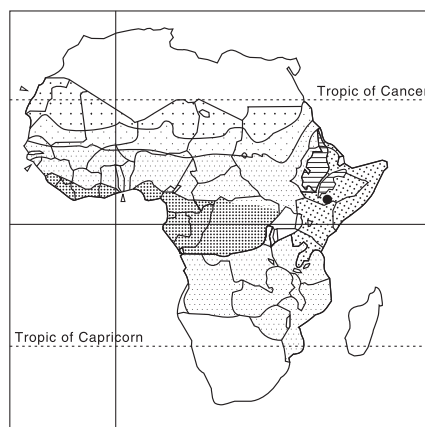
*Euphorbia carunculifera*



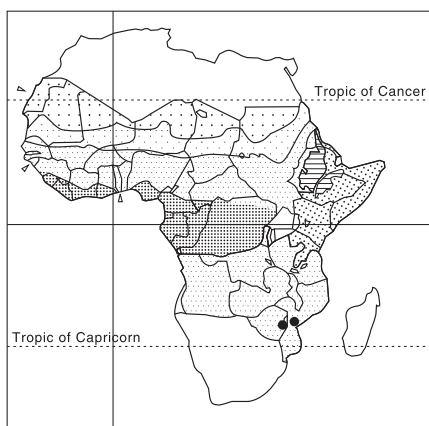
*Euphorbia cataractarum*



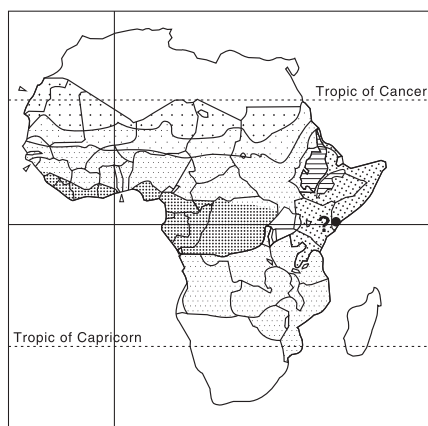
*Euphorbia cervicornu*



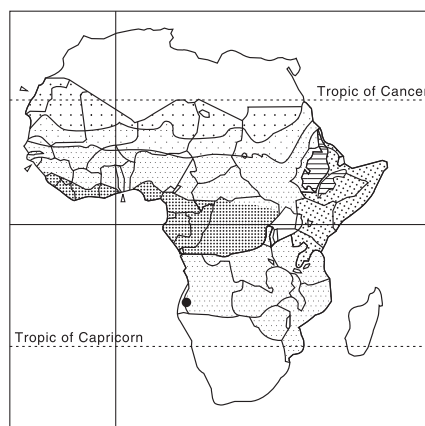
*Euphorbia charleswilsoniana*



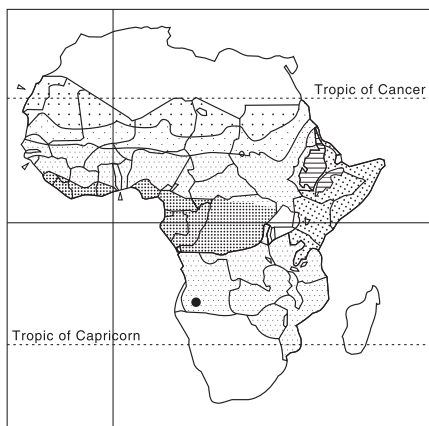
*Euphorbia citrina*



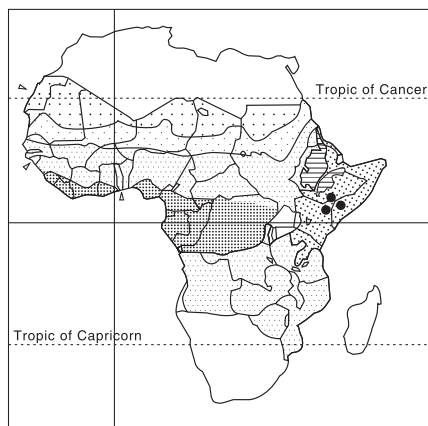
*Euphorbia classenii*



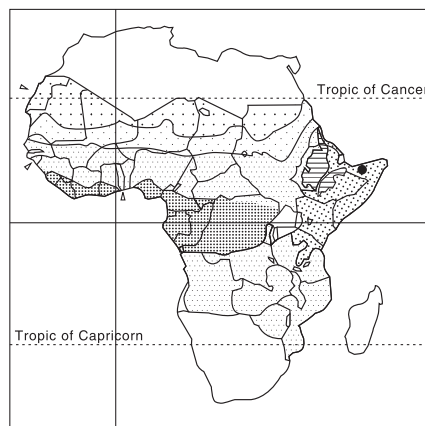
*Euphorbia claytonioides*



*Euphorbia coerulans*



*Euphorbia colubrina*



*Euphorbia columnaris*

## EUPHORBIA

**E. carinifolia** N. E. Br.

Stems annual, branching close to the ground, ascending, 10-15 cm tall arising from a fleshy tuber with an elongated woody neck; not spiny.

Woods.

Only known from the type ?

**E. carinulata** Bally & S. Carter

Spreading shrub or tree 2-4 m tall; branches thin and twig-like, softly woody.

Rocky slopes with open *Commiphora* bushland; also by streams; 850-975 m alt.

Near *E. giumboensis*

**E. carteriana** Bally

Spreading much-branched shrub 2-4 m tall; branches fleshy, 3(-4)-angled, deeply winged, irregularly and shallowly constricted into oblong segments  $\pm 20 \times 3,5$  cm; angles sinuately toothed, with teeth 2-4 cm apart; spiny; seeds unknown.

Sandy soil with open *Acacia* woodland; red, sandy soil with *Euphorbia grandicornis*, *Aloe trichosantha*, *Adenia globosa*, *Adenium somalense*, *Acacia* spp., *Boscia*, *Edithcolea grandis*; 50-150 (?300) m alt.

"The ever increasing inroads on the formerly considerable stands threaten to exterminate this interesting species..." (Bally, 1964).

**E. carunculifera** L. C. Leach

Unarmed, possibly unisexual shrub to 2,5 m tall (more erect and frequently more treelike in subsp. *subfastigiata* L. C. Leach), freely branched from the base, with rod-like branches; branches succulent when young, becoming woody with age, irregularly wrinkled and furrowed when dried, freely rebranched towards the base, ascending, becoming sparingly dichotomously branched (forked on each side of an old terminal inflorescence), sub-erect and  $\pm$  straight above, with a few randomly arranged lateral branchlets which are not appreciably smaller in  $\emptyset$  than those below; leaves unknown.

Stony maritime hills and hills of the intermediate hinterland; along dry watercourses among mudstone hills; 40 m alt.

Comprises 2 subspp.

Related to *E. gummifera*, *E. gregaria*, *E. tirucalli*.

**E. cataractarum** S. Carter; Euphorbia J. 7: 131, 1991.

Shrubby succulent perennial, sparingly branched, erect, to 1,5 m tall; branches 4-angled,  $\pm 1$  cm thick; angles shallowly toothed with teeth to 1,5 cm apart; spiny.

Amongst rocks in river gorges leading into lake Tanganyika characteristically near waterfalls; 1200(or 900 ?)-1290 m alt.

Near *E. nyassae*.

**E. cervicornu** Baill.

syn.: *E. ? zenkeri* Pax; *E. calabarica* Burkill; *E. quintasii* Pax

Erect (also decumbent?) perennial to 60-90 cm tall, with rather soft half-woody branches to 8 mm thick?; stem rounded, woody at the base, 0,65-0,9 cm thick, fleshy.

Ecology unknown.

## EUPHORBIA

**E. charleswilsoniana** Vlk, Kaktusy 33: 47, 1997; Kakteen & Sukk. 48: 174, 1997.

syn.: *E. wilsonii* Vlk 1997, non (Millsbaugh) Correll, 1980, nom. illegit.; *E. cryptocaulis* M. G. Gilbert, Kew Bull. 42: 231-232, 1987, p.p. quoad Gilbert & Jones 121 ("? Dwarf form"); *E. infossa* nom. prov.

Hysteranthous geophyte near *E. cryptocaulis* but differs in a number of features: the stems are consistently smaller with much more reduced tubercles only 1,5 mm high, in  $\pm 12$  regular longitudinal rows and usually producing only 1, rarely 2, leaves which appear to lack stipules. The largest specimen had stems only 1,2 high  $\times$  1,1 cm  $\emptyset$ , were fully mature and not just juvenile *E. cryptocaulis*.

Rather drier habitat at lower altitude than *E. cryptocaulis*.

**E. citrina** S. Carter

Striking, suffrutescent, erect herb or straggly shrub 0,5-2 m tall; branches leafless below and marked with crowded leaf-scars; not spiny.

Grassland, often at evergreen forest edges; quartzite soils; 1530-2100 m alt.

Obviously closely related to *E. whyteana*.

**E. classenii** Bally & S. Carter

Succulent shrub, densely branching from the base, erect to 1 m tall; branches sparsely rebranched, prominently 6-8-angled, 1-3 cm thick; angles sinuately and shallowly toothed, with teeth 6-12 mm apart; spiny.

Exposed rock faces with deciduous woodland; 900-1200 m alt. Of easy culture.

**E. clavigera** N. E. Br.; Excelsa 6: 17, 1976; Court, Succ. Fl. S. Africa: 14, 1981; Kew Bull. 54: 960, 1999 (map under *E. persistens*).

syn.: *E. persistens* R. A. Dyer

Dwarf, spiny, succulent plant with the main stem and root forming a large tuberous body, mostly below ground, to 30 cm long and 15 cm thick; main stem unbranched or bearing one or several short stem-like branches, all of which produce a few to many flowering branches from the apex; flowering branches 3-5- but usually 4-angled, 10-20 cm long, drying hard with age, in young stage 1-1,5 cm thick without constrictions, older branches constricted at irregular intervals; segments 7-10 mm thick at the base, increasing to 2-3 cm thick towards the next constrictions; angles straight, rarely somewhat twisted.

Rock fissures and sandy soil in open woodland and coastal forest;  $\pm 50$ -120 m alt.

S. Africa.

Cultivated by specialized collectors.

Near *E. schinzii*, *E. tortirama*, *E. groenewaldii*.

**E. claytonioides** Pax

Ascending annual or perennial somewhat fleshy herb; rootstock woody 0,33-0,66 cm thick, resembling an annual taproot; stems 10-20 cm tall, repeatedly dichotomously branched a little above the base; not spiny.

Red-sand rock declivities.

Only known from the type collected in 1859?

Related to *E. phylloclada*.



## EUPHORBIA

**E. coerulea** Pax

Perennial, spiny, dwarf succulent with numerous short branches arising from a relatively large irregularly shaped tuberous root; branches mostly simple, 4-angled, prominently sinuately crenate along the angles, generally 6-7 cm long (exceptionally to 15 cm), (8-)12-20 mm Ø including the decussately arranged crenations which are to 5 mm high, with their apices 10-15 mm apart along the angles.

Ecology unknown; 1800 m alt.

**E. colubrina** Bally & S. Carter; *Euphorbia* J. 8: 66, 1992.

Densely branched succulent perennial, spreading to form tangled masses to 15 cm high and 50 cm Ø; branches 4-angled, to 25 cm long and 8 mm thick, with branchlets spreading at right-angles; angles shallowly toothed with teeth 5-10 mm apart; spiny.

Rocky gravelly limestone slopes with open *Acacia* bushland; *Commiphora*, *Boswellia-Acacia* bushland; red stony gravelly soil with *Commiphora*, *Cordia*, *Ipomoea donaldsonii*; 180-400 m alt.

Has proved difficult in cultivation for many growers. Not a plant which could be recommended for beginners.

Near *E. ellenbeckii*.

**E. columnaris** Bally; *Euphorbia* J. 9: 89, 118, 120, 1994; 10: 93, 1996.; P. Bisseret in L. Russo Succ. Pl. E. Afr.: 78, 2004.

Succulent perennial with a solitary stem erect to 1,3 m height and 8 cm Ø; stem branched *only* when damaged at the apex, terete, 5-8 cm thick, 13-17-angled; angles separated by deep grooves, sinuately toothed, with teeth 5-15 mm apart; spiny; capsule and seeds unknown. Looks more like a cactus than a *Euphorbia*.

Crevices of gypsum rock with *Aloe inermis*, *Jatropha nogalensis*, *Cleome droserifolia*, *Negripteris scioana*, *Adenia aculeata*, *Launaea* sp., *Commiphora* spp.; 730-760 m alt.

There are a few grafted plants in cultivation.

Bally (1964) observed an alarming decrease in numbers among the few scattered populations. The causes must be sought in the heavy overgrazing. "Probably the rarest *Euphorbia* of all, this species is virtually extinct in its habitat" (*Euphorbia* J. 1: 66, 1983).

But after a visit in the field on 5th February 1981, Margaret Johnson wrote: "... and although it was thought to be rare and on the verge of extinction, we saw plenty of plants of all ages and therefore do not think the species to be in any immediate danger" (*Cact. Succ. J. Gr. Brit.* 44:11, 1982).

**E. confinalis** R. A. Dyer; *Euphorbia* J. 10: 90, 195, 214, 1996.

Tree 4,5-7,5(->10) m tall, with a straight unbranched trunk or occasionally with 1-2 trunk-like branches, with a crown of curved ascending branches which wither with age and fall, leaving the natural trunk 3-6-angled; branches 0,9-1,2 m long, 4- or occasionally 3-5-angled, constricted at intervals of 5-20 cm with ± parallel sides, 2,5-5 cm between adjacent angles, usually about 3 cm on flowering segments; angles moderately compressed, about 5 mm thick near the margin and projecting 3-3,5 cm from the centre, furnished with paired spines or their rudiments.

Rocky hills in shallow but well drained soils; usually in open tall woodland or dense montane bushland; sometimes in scrub forest. Plants occur as isolated groups ranging in number from a few individuals to virtual forests covering large areas; 90-1400 m alt.

S. Africa.

Comprises 2 subspp.

Near *E. triangularis* and *E. excelsa*.

## EUPHORBIA

**E. congestiflora** L. C. Leach

Subsucculent virgate shrub 1,2(-2) m tall with sparingly rebranched, somewhat whip-like branches which are relatively long, ± straight, extremely slender, woody and rigid when dry, 3-3,5 mm Ø, finely striolate, longitudinally slightly sharply ribbed when dry; lateral branches and branchlets alternately or randomly arranged, arising (not jointed) in the leaf axils, 1,5-2 mm Ø; leaves unknown; not spiny.

Ecology unknown.

Near *E. tirucalli*, *E. carunculifera*.

**E. conspicua** N. E. Br.; *Taxon* 34: 701, 1985.

syn.: *E. candelabrum* Welw. nom. invalid. and Welw. ex Hiern 1900, nom. illegit., non Kotschy 1857.

Succulent, spiny tree, 5-15 m tall with trunk to 0,75 m Ø; habit very variable; trunk simple, erect or more often with a number of trunk-like branches randomly or subverticillately arranged, often freely branched and rebranched from towards the base; trunk and branches ± nude, cylindrical, each crowned with a rather crowded pseudo-verticil of winged, spiny, flowering branches which are spreading, arcuate-ascending, eventually falling, mostly simple, to ± 1 m long, 3-5-7 cm Ø, narrowed into a short, stout, stalk-like base and constricted into segments of variable shape and length, mostly long, ± parallel-sided, to ± 45 cm long (generally ± 20 cm), with 3-4 wing-like angles (almost invariably 3), with sinuate (sometimes almost even) sinuate-dentate or crenate spiny margins.

Coastal areas about 3 km inland (between Ambriz and Benguela, especially around Luanda); dry, hilly, maritime and rocky places; constituting dense forests, but sometimes solitary; maritime fields.

Related to *E. lividiflora*.

**E. contorta** L. C. Leach

Spiny, succulent, erect, rather untidy shrub, about 1 m tall, with spreading branches, sometimes somewhat decumbent and scrambling; branches almost horizontally spreading, spirally twisted and bent, 4-7(-9)-angled, most frequently 5-angled, sometimes constricted into segments to 30 cm long, 2,5-3 cm Ø, deeply grooved between the prominently sinuate-tubercled, compressed angles; sometimes, particularly on younger parts, the sides may be flat or only slightly concave.

Granite rocks; W facing granite slopes in scanty soil with perennial grasses, *Vellozia* sp., *Aloe* sp.; 480-700 m alt.

Closely related to *E. ambroseae*.

**E. convolvuloides** Hochst. ex Benth., *excl.* var. *integrifolia* Pax

syn.: *E. prieuriana* Baill.; *Anisophyllum convolvuloides* (Hochst. ex Benth.) Klotzsch & Garcke; *Chamaesyce prieuriana* (Baill.) Soják

Annual herb with one to several, erect, branched stems, 15-50 cm tall; not spiny; branches drooping at the tips; usually tinged pink.

Savanna; waste places; dunes; banded vegetation; sands and sandy soils.

Not in East Africa (= **E. kilwana**).

It looks most like an unusually robust *E. scordifolia* with regularly overlapping leaves.

## EUPHORBIA

**E. cooperi** N. E. Br. ex A. Berger; *Euphorbia* J. 8: 46, 1992; 9: 176, 1994; *Desert Pl.* 17(2): 18, 2001.

Impressive tree 2-6-9(-12) m, or occasionally shrub to  $\pm$  2 m; trunk simple to 3 m long, to 35 cm thick, with whorls of 4-9 pit-scars resulting from fallen branches; branches curving upwards, to 2,5 m long, occasionally rebranching to form a rounded, flat-topped crown, fleshy, (3-)4-6(-8)-angled, 5-20 cm wide, distinctly winged, deeply constricted at  $\pm$  regular intervals into pear-shaped to subcircular segments 10-50 cm long; angles shallowly sinuately toothed, with teeth  $\pm$  regularly spaced 5-25 mm apart; spiny.

Rocky slopes with deciduous woodland; wooded gorge; riverine thickets; granite kopjes; often growing in colonies; 200-1800 m alt.

Comprises 3 vars.

Easy in cultivation.

S. Africa, Botswana.

**E. corniculata** R. A. Dyer

Succulent spinescent shrublet, to  $\pm$  15 cm tall, branched from the base; branches not perceptibly constricted at intervals, spreading, subcylindric, 1-1,5 cm thick, often with 2-3 branchlets arising from the same level indistinctly 6-8-angled, tubercled and with rudimentary deciduous leaves, green when young; the whole surface except within the grooves becoming horny metallic-grey or brownish-grey; tubercles 0,75-1,25 cm long, 2 mm prominent and  $\pm$  5 mm broad above the middle (from which area a pair of spines is produced), contracted to the apex and base, those of one row alternating with those of the adjacent rows and the rows separated by narrow sinuating longitudinal grooves and the tubercles within each row indistinctly separated at the flowering eye above the leaf-scar by a slight transverse groove.

Rare on granite rocks; 400-500 m alt.

Related to *E. inaequispina*.

**E. crebrifolia** S. Carter

Sparsely branched straggly herb, erect, to 1 m tall, usually less; branches slender, woody; not spiny.

In grass with ericoid bushland on quartzite soils of rocky slopes; 1220-2400 m alt.

Closely related to *E. cyparissoides*.

**E. crotonoides** Boiss.

Annual much-branched somewhat fleshy herb to 50(-150) cm tall; stem often woody below; branches and upper part of the stem longitudinally ridged to distinctly winged; not spiny.

Usually on sandy, stony often disturbed soils amongst grass in open woodland (i.e. *Acacia* or *Juniperus*) or scattered bushland; near forest edge; mostly in well drained soils; disturbed ground; 350-  $\pm$  2440 m alt.

S. Africa, Namibia, Botswana.

Comprises 2 subspp.

Near *E. lophiosperma*.

**E. cryptocaulis** M. G. Gilbert

Hysteranthous geophyte; stem vertical well below ground, cylindrical-ovoid, to 2  $\times$  2-4 cm, with  $\pm$  12 well defined, slightly spiral ranks of slender, recurved, soft, acute tubercles to 4,5 mm long, extended into a fine point; not spiny.

## EUPHORBIA CRYPTOCAULIS

Quite deep shade under bushes in *Acacia-Commiphora* bushland, and open *Combretum* woodland; brown soil overlying limestone; 1350-1600 m alt.

Probably "difficult" in cultivation.

Near *E. rubella*, *E. brunellii*. Several geophytic *Euphorbia* from NE Africa appear to have more affinity with some species from Madagascar than they do to others from continental Africa.

**E. cryptospinosa** Bally; *Euphorbia* J. 10: 91, 1996.

Perennial succulent with a small tuberous root, much branched and erect from 20 cm high, or subscaudent to 3(-5) m and sparsely branched; branches cylindrical, 3-10 mm thick, with 5-10 ribs (angles); spiny.

Sandy gravelly soils with open dry deciduous bushland; *Commiphora erythraea* woodland; mixed *Acacia-Commiphora* bushland; usually scrambling through bushes and small trees, with branches considerably lengthened; completely different appearance when growing without support: tightly branched shrublets; 120-1350 m alt.

Closely related to *E. erlangeri*.

**E. cuneata** Vahl; *Collect. Bot.* 21: 58, 1992; *Euphorbia* J. 9: 129, 1994; 10: 69, 1996.

Woody shrub 1-4 m tall; branches with alternating spine-tipped branchlets to 12 cm long, spreading at right-angles.

Sandy soils near the shore or in coastal forest; red- or dry-sandy soils and lava plains in open *Acacia-Commiphora* bushland; grassland; rocky slopes; limestone or basement complex slopes; on gypsum bearing soils; 0-1750 m alt.

Arabia.

Comprises 5 subspp. (widespread and variable).

Apparently introduced as a hedge plant along the E African coast as far south as Mozambique.

**E. cuneneana** L. C. Leach

Subshrub, spiny  $\pm$  60 cm tall, succulent with rather untidy straggling habit with few to many, usually spreading, often rather straggling branches, arising from a relatively large tuberous root (to  $\pm$  23 kilos), or rhizomatose root system; branches simple, or randomly divaricately few-branched, to 90 cm long, relatively slender, subterete, weaker,  $\pm$  10(-12,5) mm thick towards the base, becoming obtusely 4-angled, 6-8 mm thick above.

Gravelly, calcrete strewn slope with *Aloe esculenta*, *Colophospermum mopane*, *Senecio* sp.; compact sandy alluvial soils with *Duvalia polita*.

In the rhizomatous form, one usually simple stem arising singly, of less than 30 cm length.

Comprises 2 subspp.

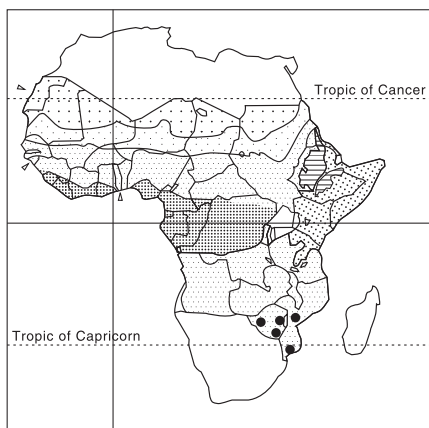
**E. cuprispina** S. Carter

Succulent perennial with a fleshy rootstock, densely branched, forming tufts erect to 20 cm tall and  $\pm$  30 cm  $\varnothing$ , sometimes sprawling, rarely stoloniferous; branches cylindrical,  $\pm$  8 mm thick, 20 cm long with very shallow teeth to 1,5 cm apart, in 4 longitudinal series; spiny.

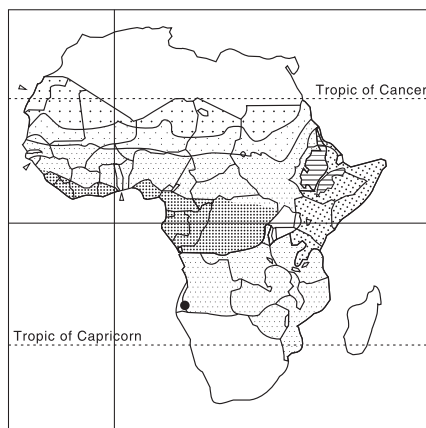
Rocky soil with dry, open deciduous bushland; 950-1500 m alt.

Very easy in cultivation; this is sure to be a popular plant among collectors.

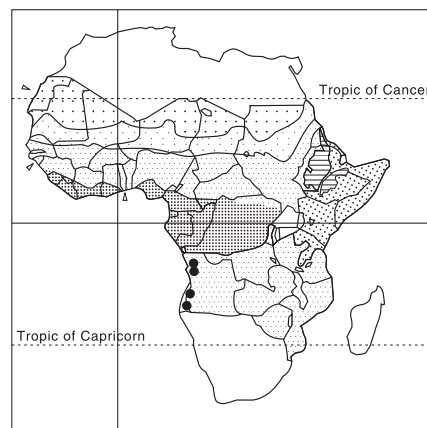
Related to *E. septentrionalis*, *E. samburuensis*.



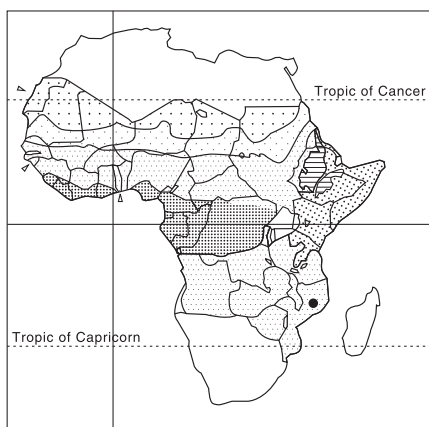
*Euphorbia confinalis*



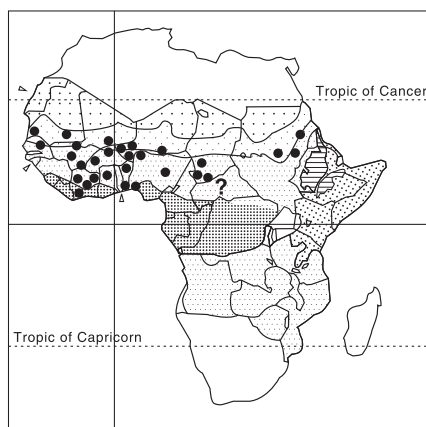
*Euphorbia congestiflora*



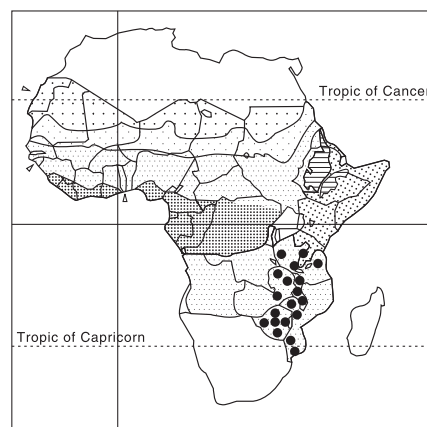
*Euphorbia conspicua*



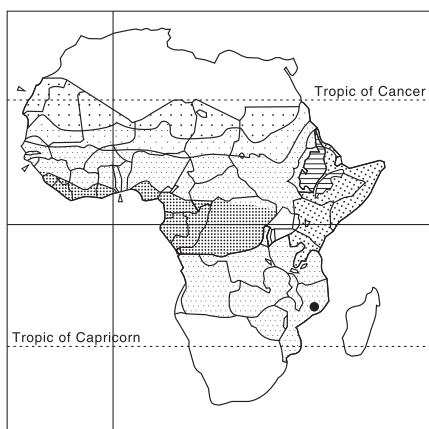
*Euphorbia contorta*



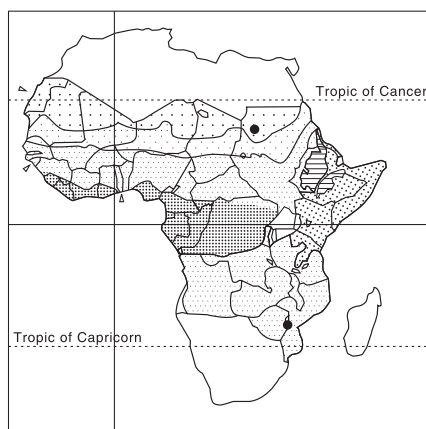
*Euphorbia convolvuloides*



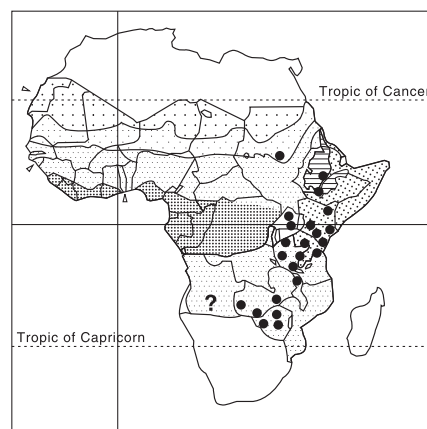
*Euphorbia cooperi*



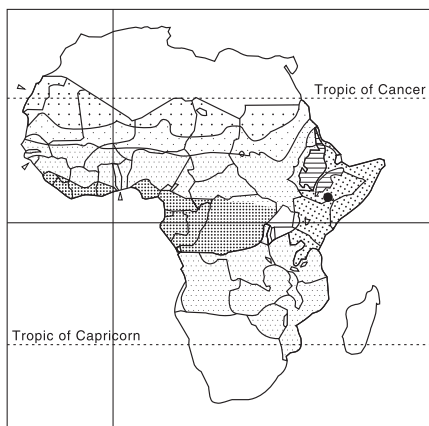
*Euphorbia corniculata*



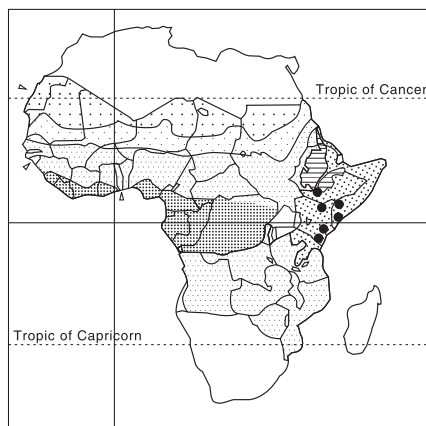
*Euphorbia crebrifolia*



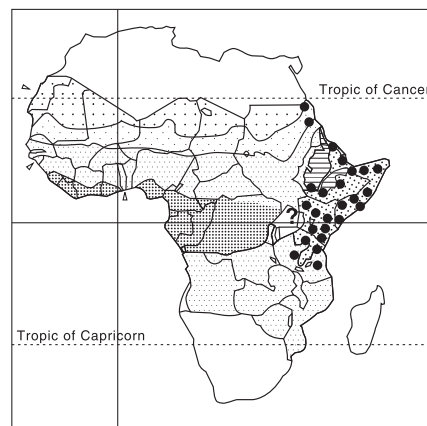
*Euphorbia crotonoides*



*Euphorbia cryptocaulis*



*Euphorbia cryptospinosa*



*Euphorbia cuneata*



## EUPHORBIA

**E. curocana** L. C. Leach

Dwarf, densely branched and rebranched, hemispherically pulvinate, subsucculent, spiny shrublet with a tuberous root, generally about 30 cm tall (to 60 cm); branches and branchlets divaricate, alternately or somewhat spirally arranged, terete, tapering to the apex (young branchlets almost to be described as narrowly conical), rigid, with the hardened apex often forming a strong sharp spine.

Quartz strewn desert plain; semi-desert East of dune desert, in association with *Welwitschia*, *Sarcocaulon*, *Enneapogon scoparius*, *Commiphora* sp.; steep sides of schist ravine.

Closely related to *E. lignosa*.

**E. cussonioides** Bally

Tree to 25 m, with a simple trunk to 12 m height and  $\pm 80$  cm  $\varnothing$ ; primary branches spreading-ascending, sparsely rebranched, with clusters of fleshy branchlets at the apices forming a loose crown; branchlets irregularly rebranching, 3-4-angled, 2-6 cm wide, deeply and thinly winged,  $\pm$  constricted at irregular intervals into pear-shaped or oblong segments to  $\pm 20$  cm long; angles sinuately toothed with teeth  $\pm 1,5$  cm apart; spiny.

Steep rocky slopes in dry evergreen forest in which its lofty crown merges over the closed canopy; with *Brachylaena hutchinsii*, *Croton macrostachys*, *C. megalocarpus*, *Calodendrum capense*, *Cussonia holstii*, *Olea chrysophylla*, *Warburgia ugandensis*, etc; 1300-1800 m alt.

Seldom encountered in cultivation and little is known of this species in this situation.

One of the tallest and most imposing of the tree Euphorbias; its general appearance is not unlike that of *Cussonia holstii*. –Near *E. obovalifolia*.

Discovered in 1939; described in 1958; the last remaining tree at the type locality of Ngong Boma was cut down in 1980. The species is endangered; it is now restricted to a few small pockets of remnant forest.

**E. cyparissioides** Pax, incl. var. *minor* N. E. Br.

Perennial herb with a woody rootstock 1-2 cm thick, producing densely tufted simple or sparsely branched annual stems, erect to 30 cm tall, seldom more, growth continuing vegetatively; not spiny.

Grassland and open woodland on well-drained soils; appearing especially after burning; *Protea-Combretum* bushland; *Protea gagedi* grassland 930-2700 m alt.

Extremely variable.

**E. dalettiensis** M. G. Gilbert

Succulent shrub with clustered erect stems to 1,5-2,8 m tall; branches 4-angled, soon becoming square in cross section, to 15 mm thick; angles very shallowly toothed towards base of plant; flowering stems more slender, 6-8 mm thick; spiny; female flower unknown; fully mature seeds not seen.

Steep limestone slopes; 1200 m alt.

Resembling *E. heterochroma*.

## EUPHORBIA

**E. darbandensis** N. E. Br.

Half-woody, fleshy, erect or half-prostrate plant, cactus-like, 40-60(-150) cm tall; stem simple or slightly ramose, cylindric, 5-8 cm  $\varnothing$ , spiny and tuberculate at the upper part; tubercles  $\pm 1$  cm high with in the middle a spine 1 cm long.

Sandstone rocks in dry stony places; very dry rocky plateaux; common; also rarely cultivated.

Affinity obscure (*E. venenifica*, *E. unispina*, *E. sapinii*).

**E. dasyacantha** S. Carter; Euphorbia J. 9: 92, 102, 103, 227, 1994; 10: 196, 1996.

Dwarf succulent perennial; stem semi-prostrate, to 20 cm long, branching above the base; branches spreading, terete, 1-1,5 cm thick; basal part of the plant (to 10 cm) with small tightly congested tubercles 1-2 mm apart in 10-12 longitudinal series; spiny.

Steep rocky limestone slopes with very sparse *Commiphora* scrub;  $\pm 400$  m alt.

Cultivated.

Near *E. inaequispina*.

**E. dauana** S. Carter

Succulent perennial, spreading-erect or subscandent to  $\pm 1$  m tall, laxly branched; branches 4-angled, to 1 cm thick; angles with prominent teeth 1-2 cm apart; spiny; capsule and seeds unknown.

Rocky limestone slopes with *Acacia-Commiphora* woodland;  $\pm 400$  m alt.

Becoming fairly widespread in cultivation but seems to be a bit difficult (losing its roots, flowering infrequent).

Near *E. odontophora* and also *E. fissispina*, *E. tenuispinosa*.

**E. daviesii** E. A. Bruce

Perennial herb with a woody rootstock  $\pm 1$  cm thick, producing numerous usually simple annual stems, erect, to 30 cm tall; not spiny.

In grass amongst rocks; dry sandy soil; usually appearing after burning; 1700-2700 m alt.

**E. davyi** N. E. Br.; Euphorbia J. 8: 47, 1992; Aloe 37: 43, 2000; Desert Pl. 17(2): 23, 2001.

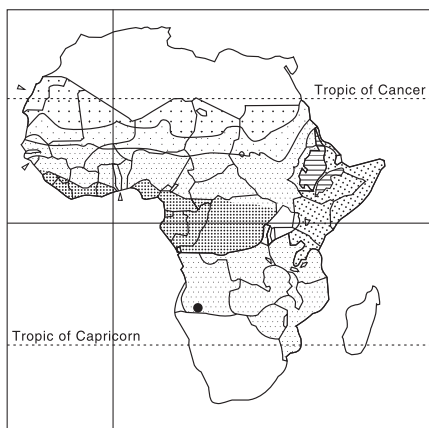
Very dwarf, succulent medusoid spineless plant with a body or main stem subglobose to elongated-obconic or obovoid, with the greater part buried in the ground and only rising 2,5-3,7 cm above it,  $\pm 6$  cm  $\varnothing$ , subtruncate or broadly rounded at the top, covered with large rhomboid tubercles and bearing a lax crown of branches in 2-3 series around the top, but none in the central part; tubercles on the top of the plant laterally compressed, 1-2 cm long, 0,6-1,3 cm broad and 0,6-1 cm prominent, becoming with age as they pass to the sides of the stem compressed from above and twice as broad as long; branches arising between the tubercles, erect, curved at the base, finally deciduous, 3,7-7,5 cm long, 1,4-2 cm thick (including the tubercles), cylindric, covered with conical tubercles 0,3-0,45 cm prominent and very much smaller than those on the main stem; leaves terminating the tubercles of the branches linear or linear-lanceolate, acute, shortly narrowed to the sessile base, entire, longitudinally folded, fleshy, 1,7-2,3 cm long.

Ecology?

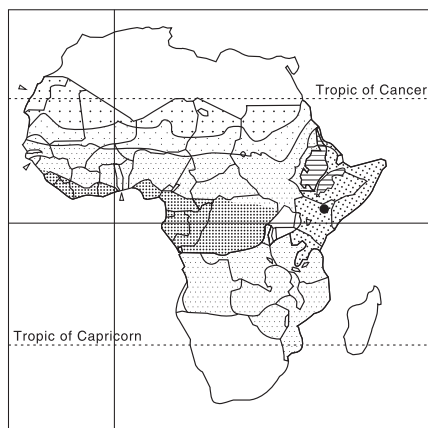
Botswana, S. Africa.

Specially protected in Zimbabwe.

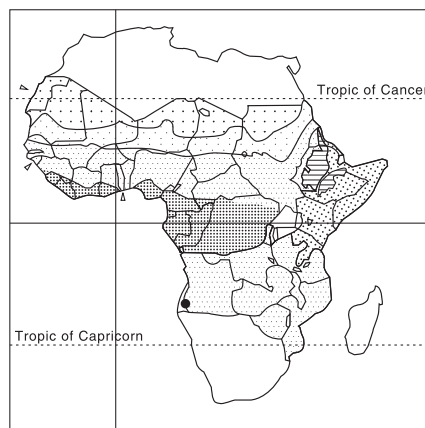




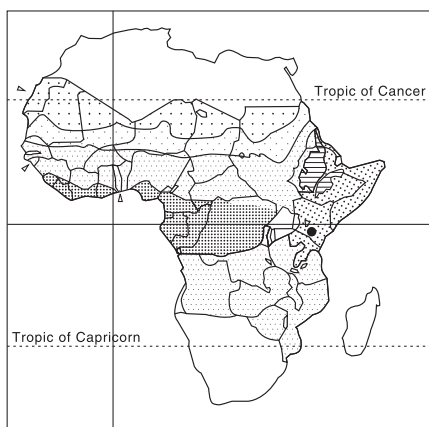
*Euphorbia cuneneana*



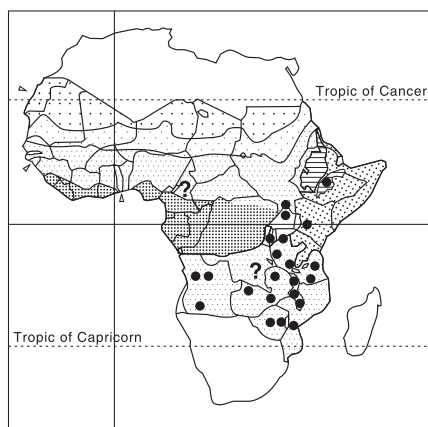
*Euphorbia cuprispina*



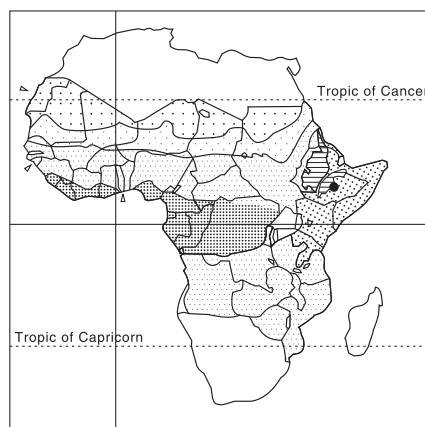
*Euphorbia curocana*



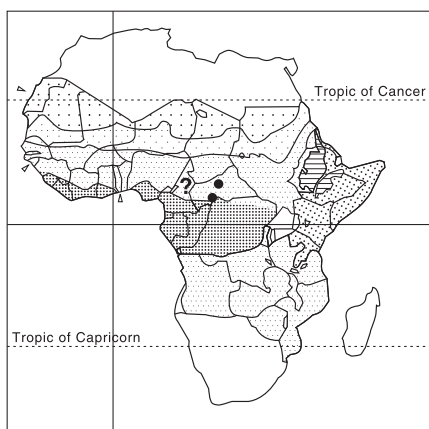
*Euphorbia cussonioides*



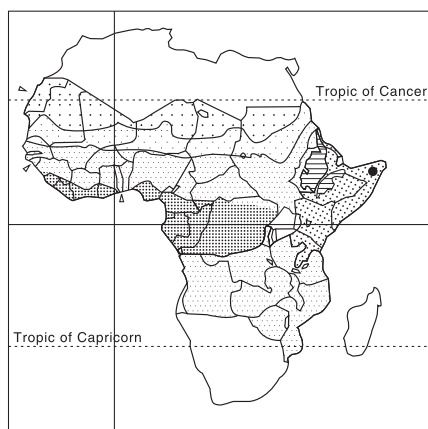
*Euphorbia cyparissioides*



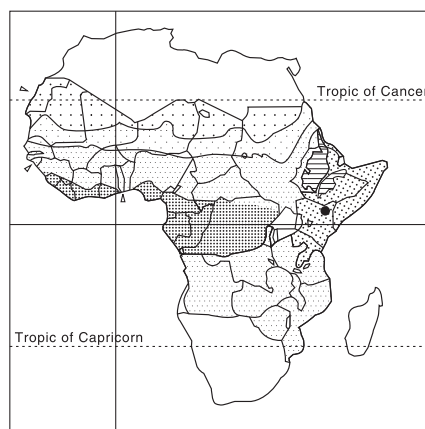
*Euphorbia dalettiensis*



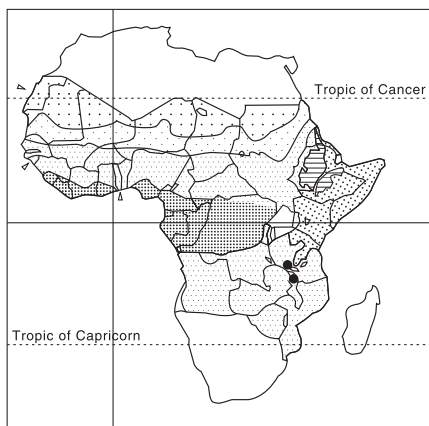
*Euphorbia darbandensis*



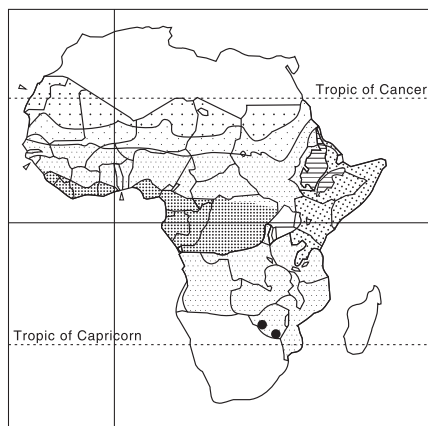
*Euphorbia dasyacantha*



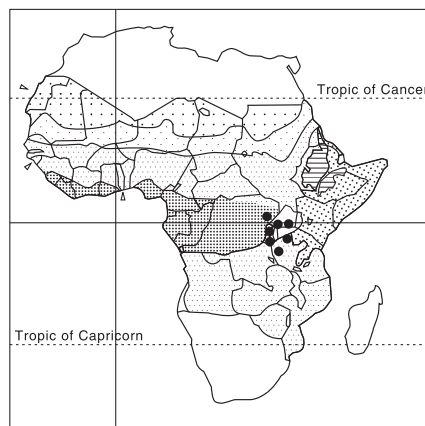
*Euphorbia dauana*



*Euphorbia daviesii*



*Euphorbia davyi*



*Euphorbia dawei*

## EUPHORBIA

**E. dawei** N. E. Br.

Tree to 15(-25) m, with a simple trunk rarely branching, to 60 cm Ø, marked with 4(-5) vertical rows of persistent spines and pit-scars resulting from fallen branches; branches spreading horizontally, to ± 4 m long, densely and irregularly rebranching to form a rounded crown; terminal branchlets fleshy, 2-3(-4)-angled, 4-10 cm wide, deeply and thinly winged, ± constricted at irregular intervals of 5-40 cm into oblong segments; angles sinuately toothed with teeth 1-2,5 cm apart.

Deciduous woodland, sometimes open with grassland; xerophilous forests; wooded gully; 800-1300 m alt.

Of easy culture but cold-sensitive.

**E. debilis** L. C. Leach; Aloe 38: 58, 61, 2001.

Succulent, weakly spinulose, dwarf shrublet, branched from the base, forming large densely branched clumps, ± 15 cm tall; branches subcylindric or obtusely subquadrangular, ± 8-10 mm Ø tapering into a stalk-like base; tubercles variably swollen, smoothly rounded, not at all laterally compressed, forming a gently crenulate, sometimes almost even margin which is quite different from the angled, often compressed, sometimes almost wing-like, toothed angles of typical members of section *Tetran-canthes*.

Sometimes covering quite large patches in open woodland on limestone seepage pavement; highly fragmented habitat threatened by urban expansion and, in particular, quarrying; ± 1250 m alt.

Clones are widely distributed (Williamson & Drummod, 1995).

Closely related to *E. whellanii*; also to *E. isacantha*, *E. nyassae*.

**E. decidua** Bally & L. C. Leach, Candollea 18: 347, 1962, syntypes cited, excl. specim. Angola; Kirkia 10: 293, 1975, holotype cited; Euphorbia J. 9: 177, 1994; Aloe 38: 59-60, 70, 2001.

Dwarf, fleshy herb with a tuberous taproot; stem reduced to a subterranean growing point; branches few to numerous, simple or rarely forked or rebranched, erect, to 12 cm tall and to 6 cm thick, 3-(-4-6)-angled, *deciduous*; teeth along the angles to 2,5 cm high, 2-10 mm distant, crowned with rotund, double-spined, reddish-brown shields about 2,5-3 mm Ø; leaf produced from the upper edge of the spine-shield, fleshy, erect, lanceolate, acute, to 3 mm long, 1 mm wide; after the shedding of the branches few to numerous 1-2-forked cymes are produced on longish peduncles from the subterranean stem.

Wet, often badly drained woodland (*Brachystegia boehmii*, *B. bussei*), even growing inundated in clayish soils; riverbanks; completely dried up ground without other vegetation; 1000-1520 m alt.

Production of independent, sometimes floating leaves from the base of the spiny branches seems to be of somewhat sporadic occurrence. Another unusual feature is the cluster of flowers borne on leafless, spineless branches which, in fact, usually arise when the leaf-bearing branches are absent.

Cultivated by collectors; very slow growing plant (A. Pritchard, Introduction to Euphorbiaceae: 40, 2003).

Specially protected in Zimbabwe. The species will disappear as a result of agricultural development and building (Lilongwe, Malawi).

A seedling showing the characteristic leaf-bearing juvenile stage is possibly confused with a seedling of *Haemanthus* sp.

The only spiny succulent *Euphorbia* which is wholly *deciduous*.

Near *E. imitata*.

## EUPHORBIA

**E. declivicola** L. C. Leach

Succulent, spiny tree or tree-like shrub, to ± 3 m tall, with a stout, eventually multi-angled simple trunk which is clearly marked with rings of scars of the fallen branches and crowned with a head of crowded, verticillately arranged, mostly simple, winged, spiny branches; branches spreading, arcuate-ascending, ± 0,6 m long, constricted into 2,5-15 cm long, mostly oblong segments, generally ± 6 cm thick with 4-6 wing-like angles; the wings 2-2,5 cm broad with a continuous, whitish, horny margin 1,5-3 mm wide.

Exposed granite slopes and ridges; 600-800 m alt.

Seems to present no unusual difficulties in cultivation but still very rarely cultivated.

Near *E. granitica*.

**E. dedzana** L. C. Leach

Perennial, spiny, densely intricately branched succulent, ± 30 cm tall, increasing by prostrate, thickened, subtuberous, root-like branches, buried in loose soil and accumulated debris, forming patches to 1 m across, sometimes establishing separate plants; branches 4-angled, 8-10 mm thick, lightly variably toothed (crenate to angular) along the angles, teeth 12-14 mm apart, suberect to prostrate, 30-75 cm long.

Rocky copses in dwarfed *Brachystegia*, *Uapaca*, *Monotes* woodland (1954); in 1967 the woodland had been reduced to a few scattered, stunted individuals. The *Euphorbia* however, was still thriving in rock crevices; 1600-1800 m alt.

Near *E. reclinata*.

**E. deightonii** Croizat; Euphorbia J. 8: 34, 35, 113, 1992.

Candelabra-like shrub or tree to 4,5-6 m tall, apparently without a distinct trunk forming large clumps to 12 m Ø; new shoots arising from the base; branches 3-6-angled, 4,5 cm thick, constricted at intervals to 4,5 cm long, angles somewhat winged, margins wavy with paired thorns; leaves absent or minute.

Dry coastal plains; occasional; often planted as a hedge plant.

In cultivation, this fast growing species should be protected from cold.

**E. dekindtii** Pax

Succulent, spiny, dwarf shrub with a subtuberous root often forming a very short, gnarled and woody, ± cylindrical, trunk-like body above ground, from which the segmented winged branches arise; branches simple, 5-7-winged (usually 6), to ± 20 cm long; segments ± subcircular or elliptic, 2-4 cm long, to 4,5 cm Ø, with a continuous, crenate-toothed, horny margin.

A number of scattered, discrete populations, mostly on rocky eminences; ± 1800 m alt.

Rather variable species; considerable variation in habit.

Cultivated by growers.

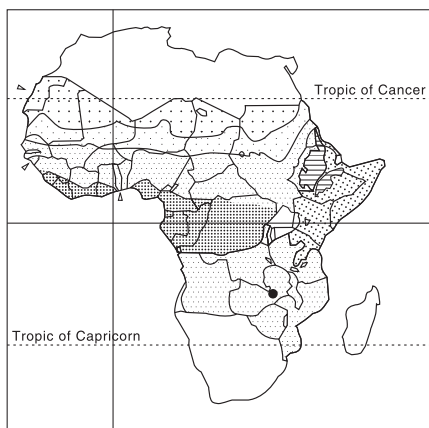
Related to *E. strangulata*, *E. williamsonii*.

**E. delicatissima** S. Carter

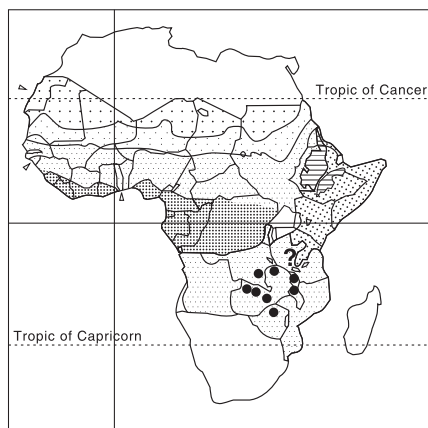
Spreading laxly-branched annual herb, erect, to 30 cm tall; branches very slender; not spiny. Lamina of leaves to 30 × 2 mm, linear.

In grass on stony serpentine soils; 1400-1700 m alt.

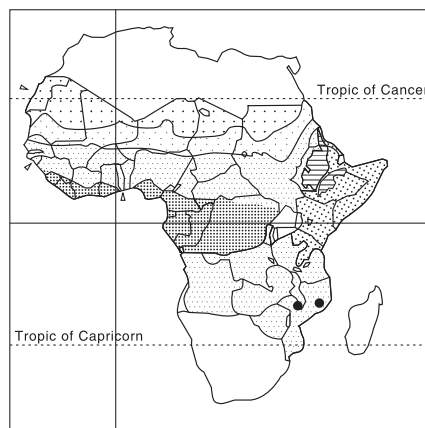
Graceful delicate plant near *E. eylesii* but with pilose capsule.



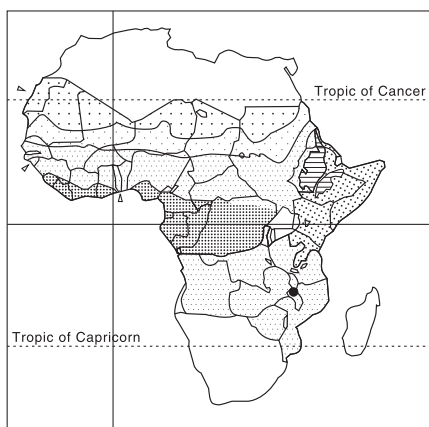
*Euphorbia debilispinga*



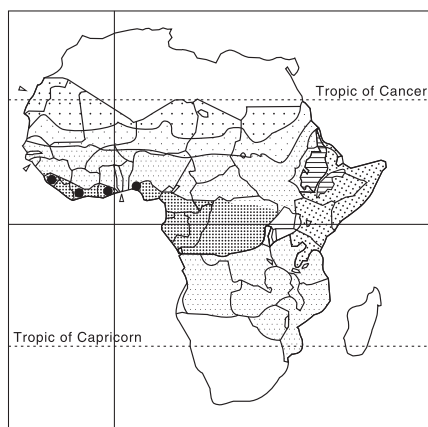
*Euphorbia decidua*



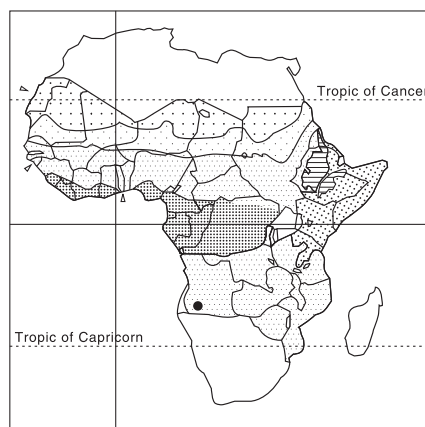
*Euphorbia decliviticola*



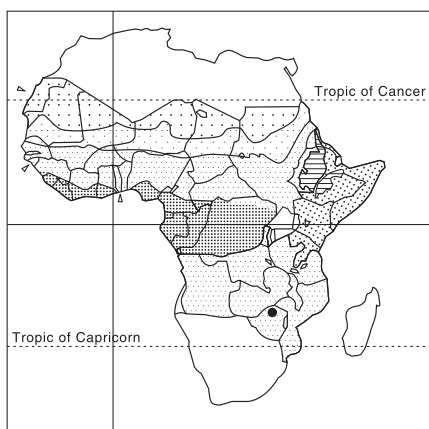
*Euphorbia dedzana*



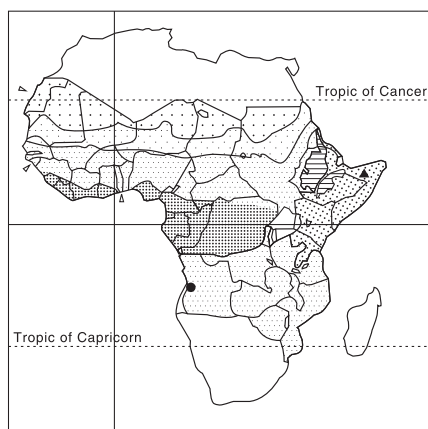
*Euphorbia deightonii*



*Euphorbia dekindtii*

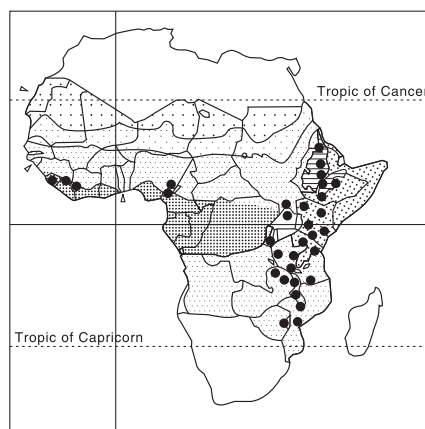


*Euphorbia delicatissima*

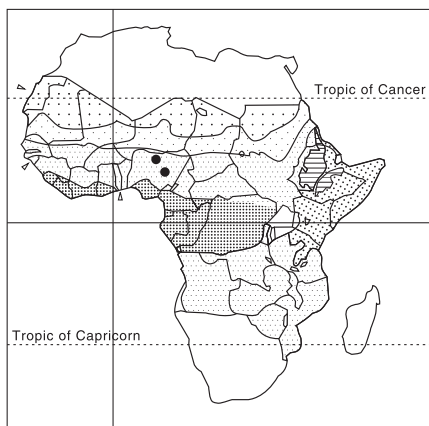


*Euphorbia demissa* ●

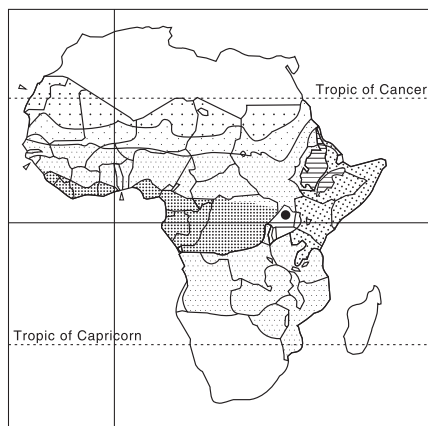
*Euphorbia densispina* ▲



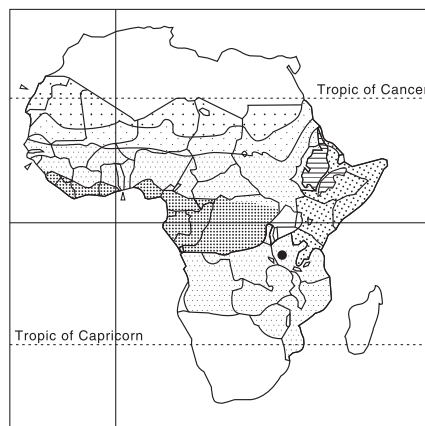
*Euphorbia depauperata*



*Euphorbia desmondii*



*Euphorbia dichroa*



*Euphorbia dilobadena*

## EUPHORBIA

**E. demissa** L. C. Leach

Dwarf, spinulose, succulent shrublet with crowded, relatively short branches arising from the apex of a woody taproot; branches spreading, sometimes sub-decumbent, usually simple, not or scarcely constricted into segments, 8-10 mm thick, usually  $\pm$  8 cm, to 15 cm long, 4-angled, with the sides usually deeply concave and the angles often somewhat wing-like, shallowly sinuate-dentate, with the teeth 1-1,5 mm high, 3,5-6,5 mm apart along the angles; leaves unknown (immediately caducous?). On low ridges of partially decomposed granite with *Aloe andongensis*, *Huernia volkartii*;  $\pm$  1000 m alt.

Closely related to *E. nubigena*, *E. coeruleans*.

Only known from the type collected in 1970.

**E. densispina** S. Carter; Nord. J. Bot. 23: 296, 2005.

Succulent perennial with a thick short tapering tap-root merging into a thick stem c. 1 cm long; plant densely branching, forming a compact tufted cushion 8 cm tall, 30 cm  $\varnothing$ ; branches terete, 3-4 cm long, 7-10 mm  $\varnothing$ , with shallow tubercle-teeth to 1,5 mm apart in 8-10 longitudinal ridges; leaves minute, soon deciduous; spine shields crowning the tubercles suborbicular, 0,5-0,8 mm  $\varnothing$ , sometimes confluent to cover the ridges; spines slender, paired, to 9 mm long, widely divergent; prickles vestigial; mature male and female flowers unknown.

Limestone rocks in holes; 1350 m alt.

Related to *E. umbonata*.

Known only from the type collected in 2001.

**E. depauperata** Hochst. ex A. Rich.; Cactus Succ. J. (U.S.) 65: 12-15, 1993.

Perennial herb, with a thick woody rootstock 30-40 cm long, 1-3,5 cm  $\varnothing$  producing numerous simple or sparsely branched annual stems, erect or spreading and  $\pm$  decumbent, 30-100(-150) cm long.

Watershed swampy grassland; rocks and boulders on windswept meadow with *Cussonia spicata*, *Diospyros* cf. *whiteana*, *Heteropyxis natalensis*, *Olinia vanguardoides*, etc.; humus-rich, sandy, rocky soils in grassland, often in forest clearings; savanna with *Kotschyia lutea*, meadow with *Hyparrhenia diplandra*; (-1000)-3350 m alt.

Very variable species whose habit is environmentally influenced, particularly by fire (Boissiera 32: 166, 1980).

Comprises 5 vars.

**E. desmondii** Keay & Milne-Redh.; Euphorbia J. 8: 116, 1992.

Succulent shrub or tree 4-6 m tall, with erect rather stiff branching and large (12  $\times$  6 cm) deciduous leaves; usually cactus-like; branches thick, fleshy, 1,5-3,5 cm thick, 3-5-angled with spines in pairs along the edges; root constricted into segments; trunk to 10 cm  $\varnothing$ .

Rocky hills in savanna; sometimes planted around villages; 780 m alt.

Near *E. teke*.

**E. dichroa** S. Carter

Tufted succulent perennial with a fleshy rootstock; stems branching densely from the base, unbranched above; branches to 15 cm long and 5-8 mm thick, subcylindrical, with prominent teeth 5-10 mm apart in 4 longitudinal series; spiny; Cactus-like, forming small clumps.

## EUPHORBIA DICHROA

Rocky outcrops in dry wooded grassland; boulders; 1350-1500 m alt.

Of easy culture but very rare in collections (1984).

Near *E. septentrionalis*.

Only known from a small area.

**E. dilobadena** S. Carter

Perennial herb with a vertical woody rootstock 12  $\times$  1,3 cm, producing annual sparsely branching, erect to 20 cm high stems; capsule and seeds unknown.

Sandy soil between flat laterite rocks; 900 m alt.

Near *E. ruficeps*.

Only known from type collected in 1959.

**E. diminuta** S. Carter

Branching prostrate annual herb, with branches to 13 cm long (usually  $\pm$  5 cm). – A very insignificant little plant, the smallest of the East African *Chamaesyce* species. Easily overlooked.

Red sandy soils in open *Acacia-Commiphora* bushland; usually in shade; 185-(or 210?)-550 m alt.

Near *E. mossambicensis*.

**E. discrepans** S. Carter; Euphorbia J. 9: 217, 1994.

Shrubby succulent perennial, densely branching, spreading-erect to 1,5 m tall; branches 4-angled,  $\pm$  1 cm thick; angles shallowly toothed, with teeth to 1 cm apart; spiny.

Rocky ground at the foot of north-facing scarp; 1340-1370 m alt.

Near *E. tetracanthoides*.

More study material needed.

**E. dispersa** L. C. Leach

Succulent, spiny, candelabriform, sometimes tree-like shrub to 2,2 m tall (usually  $\pm$  1,25 m), branched from the base, or occasionally with a stout,  $\pm$  nude, cylindrical trunk to  $\pm$  1 m high, 30 cm  $\varnothing$ , with widely spreading, arcuate-ascending, crowded branches; branches simple, to 2,4 m long, constricted into segments at varying intervals; segments variably shaped, often expanded near the base with broad wing-like angles, then produced above into  $\pm$  oblong, angular portions; with 4-5 (mostly 4) angles, with continuous,  $\pm$  even or slightly sinuate, horny margins, armed with stout paired spines.

Very scattered on otherwise almost bald granite hills; scattered in close association with large numbers of *Aloe scorpioides*, on rock slopes in open woodland.

Closely related to *E. seretii*.

**E. dissitispina** L. C. Leach

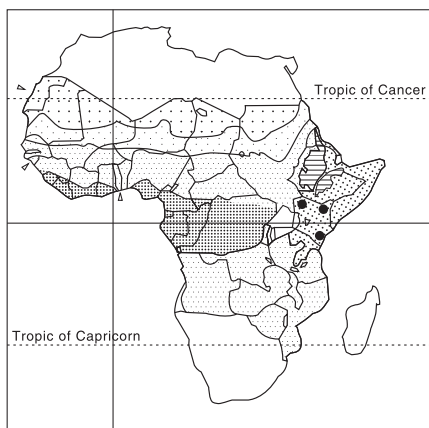
Spiny, much branched succulent shrub, to  $\pm$  50 cm tall; branches divaricately and intricately rebranched, slender, 5-7,5 mm thick, 4-angled with the angles usually rather obtuse and the sides slightly convex, becoming subcylindrical on older parts, with the angles very slightly sinuate-toothed or very often  $\pm$  even, with the tubercle teeth 12-18 mm apart along the angles.

Inhabiting an otherwise bare, stony area in mixed deciduous woodland;  $\pm$  500 m alt.

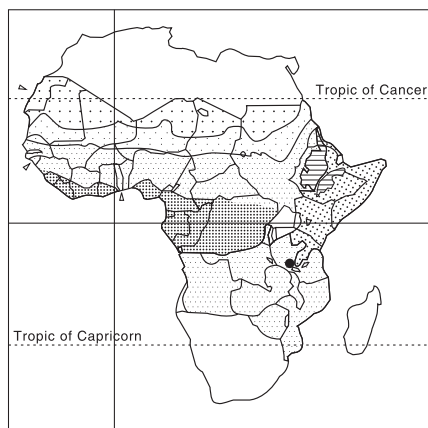
Known from the sterile type collected in 1966 but flowering and fruiting material was obtained in 1974 from plants in cultivation in 1974 at Salisbury (= Harare).

Near *E. malevola* or a weak form of this.

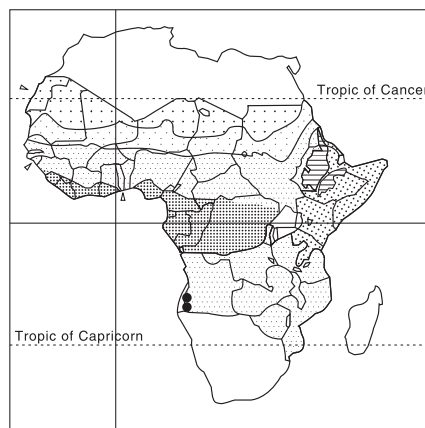




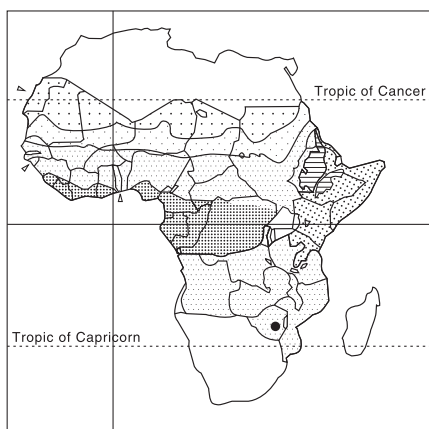
*Euphorbia diminuta*



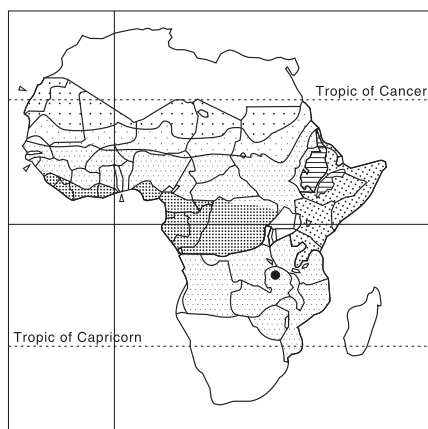
*Euphorbia discrepans*



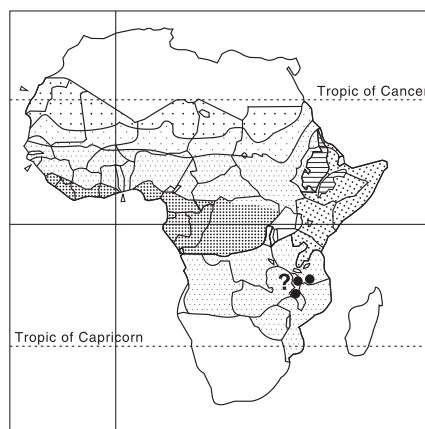
*Euphorbia dispersa*



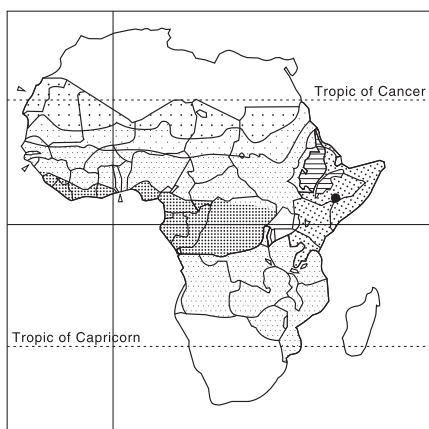
*Euphorbia dissitispina*



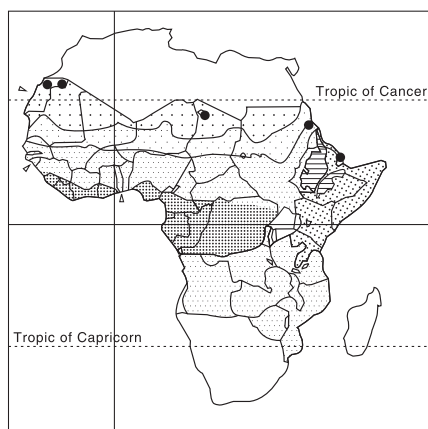
*Euphorbia distinctissima*



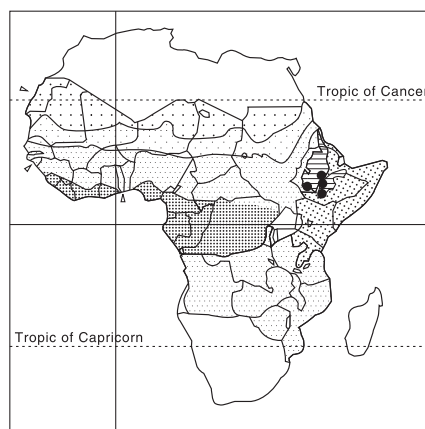
*Euphorbia dolichoceras*



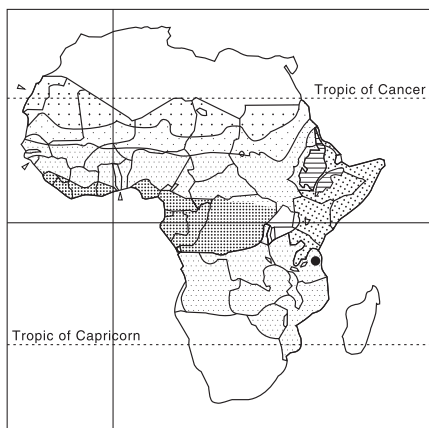
*Euphorbia doloensis*



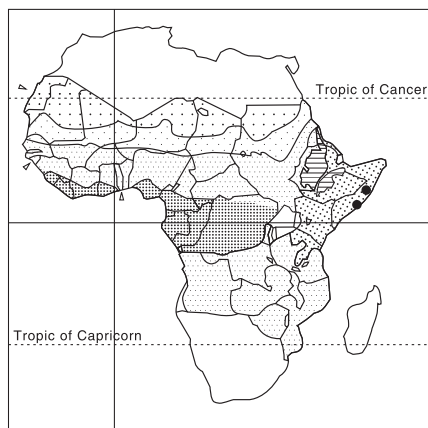
*Euphorbia dracunculoides*



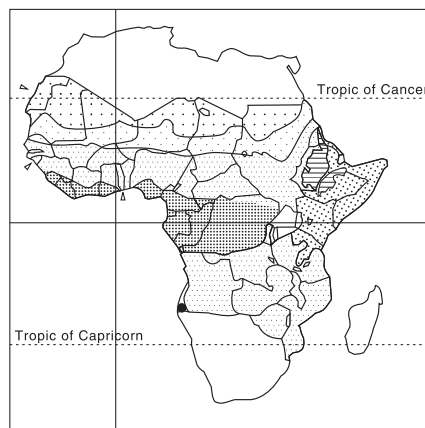
*Euphorbia dumalis*



*Euphorbia dumeticola*



*Euphorbia dunensis*



*Euphorbia eduardoi*

## EUPHORBIA

**E. distinctissima** L. C. Leach; Aloe 38: 64, 68, 2001.

Succulent, spiny shrublet ± 25 cm tall, branching freely from the base and forming large clumps; branches usually simple (branchlets, when present, very short), subcylindric, ventricose-tuberculate; tubercles smoothly rounded, not at all laterally compressed, arranged, usually spirally, in 3-5 ranks, seldom in opposite pairs, and then only partially in any one branch. – A very attractive plant.

Rocky outcrops in *Brachystegia* woodland; 1600-1750 m alt. Closely related to *E. nyassae*.

**E. dolichoceras** S. Carter

Perennial herb with a thick fleshy rhizomatous rootstock and annual stems to 60 cm tall; not spiny.

At edge of *Brachystegia*, *Uapaca* woodland on white sand or sandy loam; 970-1500 m alt.

Near *E. transvaalensis*.

**E. doloensis** M. G. Gilbert

Densely branched spreading shrub to 3 m tall; trunk thick; stems dark reddish brown; capsule unknown; not spiny.

Very open *Commiphora*, *Boswellia*, *Moringa* bushland on steep rocky slope of small ? gypsum hill; 400 m alt.

Near *E. jatrophoides*.

Only known from the type collected in 1983.

**E. dracunculoides** Lam.

Annual herb 1- to many-stemmed with erect or ascendant stems, more rarely decumbent, simple or ramose, 5-60 cm tall; not spiny.

Sandy alluvium; sandy hollow with *Anvillea radiata*, *Echinops spinosus*; sandy river bed; clayey grara with *Euphorbia balsamifera*, *E. echinus*.

Spain; N Africa; Arabia, India to SW China; Mauritius, Madagascar. – Presumably a garden weed in Tanzania.

Comprises 2 subspp.: – subsp. **dracunculoides** [syn.: *E. lanceolata* Spreng.; *E. dracunculoides* var. *africana* Rikli & Schröt.] and – subsp. **flamandii** (Batt.) Maire [bas.: *E. flamandii* Batt.; syn.: *Tithymalus dracunculoides* subsp. *flamandii* (Batt.) Soják].

**E. dumalis** S. Carter

Shrub 0,3-2 m tall, densely branched from the base, with stems and branches a rich red; not spiny.

Grass in open forest, particularly on cultivated wasteland; 2400-3600 m alt.

Near *E. ugandensis* and *E. depauperata*.

**E. dumeticola** Bally & S. Carter

Tree to 4(-6) m, with a simple or rarely branching trunk to 15 cm Ø, with 4 longitudinal spiny ridges 1 cm high; branching fairly loose, forming a ± rounded crown; primary branches to 2 m long, spreading horizontally then upturned at the tips, with whorls of secondary branches which branch again; terminal branchlets fleshy, 4-angled and ± winged, 2-4 cm wide, slightly constricted at intervals of 10-20 cm; angles sinuately toothed, with teeth ± 1 cm apart; capsules and seeds unknown.

Sandy stony soil on steep slopes, with dense deciduous bushland; 500 m alt.

Uncommon in cultivation; rather slow growing but is of easy culture.

## EUPHORBIA

**E. dunensis** S. Carter; Euphorbia J. 9: 228, 1994.

Woody shrublet 10-30 cm tall, 30-40 cm wide; branches spreading horizontally, semi-prostrate, with branchlets at right angles, 0,5-1 cm apart, 1-5 cm long, becoming ± spinescent.

Fixed dunes of white sand with low, open, mixed scrub; 40-60 m alt. (common).

Very rare in cultivation.

Near *E. cuneata*.

**E. eduardoi** L. C. Leach; Euphorbia J. 9: 164, 165, 1994; 10: 216, 1996.

Succulent, spiny, candelabriform tree, to 10 m tall, with a nude, cylindric or 5-6-angled, stout, unbranched trunk, often with the somewhat splintered remains of fallen branches persisting below the relatively small crown of ± whorled, arcuate-ascending or ascending-erect branches; branches usually simple, slightly and unevenly constricted into ± elliptically shaped segments (sometimes almost parallel-sided) which are about 7,5 cm Ø and somewhat variable in length, obtuse at the apex, 4-5-angled (usually 5) with the margins generally slightly wavy, not prominently winged except on younger parts, the stout wings then about 20-25 mm broad and ± 8 mm thick at the margin; leaves unknown (immediately caducous?).

Stony and rocky hills; scattered distribution in desert habitat; 550 m alt.

Namibia.

It is thought that the species is relatively long lived (lower branches of the smaller trees had ± 23 segments).

Near *E. fortissima*, *E. virosa*.

**E. eilensis** S. Carter; Euphorbia J. 9: 87, 229, 1994.

Dwarf succulent perennial, with a thick fleshy root wedged in rock clefts, densely branching to form clumps to 2 cm high and 5 cm Ø; branches 2-3 cm long, or sometimes rhizomatous to 7 cm long, terete, ± 7 mm thick, with prominent rounded tubercles 4-5 mm apart in 5 slightly spiral series; spiny; capsules and seeds unknown.

Exposed limestone plateau marked by small erosion pockets, with a few prostrate xerophytic shrubs; only 2 km from the coast; ± 215 m alt.

Extremely rare in cultivation and has a reputation for being rather difficult.

Near *E. inaequispina*.

**E. elegantissima** Bally & S. Carter; Euphorbia J. 7: 57, 1991.

Spreading many-stemmed succulent shrub, erect or subscandent to 3 m high, ± sparsely branched above; branches slender, sharply 4(-5)-angled, 1-2 cm thick; angles without teeth; spiny.

Rocky soil with *Acacia-Commiphora* and succulent bushland; 1370-1550 m alt.

Near *E. heterochroma*.

**E. ellenbeckii** Pax

Densely tufted succulent perennial branching from the base to 10(-15) cm tall and 30(-45) cm Ø; branches simple, cylindrical, 8-14 mm thick, 10-20 cm long, surface tessellated, with divisions to 8 × 6 mm arranged in 5 loosely spiralled series and each surmounted by a spine-shield; mature seeds unknown.

## EUPHORBIA ELLENBECKII

On stony limestone slopes with open *Acacia* bushland; *Commiphora* woodland; 250-1100 m alt.

Of easy culture.

**E. engleri** Pax

Shrubby perennial herb to 3 m tall, woody at base.

Forest and dense bushland; 1600-1700 m alt.

Not in Somalia (= **E. goetzei**).

**E. epicyparissias** (Klotzsch & Garcke) Boiss., incl. var. *wahlbergii* N. E. Br., nom. invalid.

bas.: *Tithymalus epicyparissias* Klotzsch & Garcke

syn.: *T. involucratus* Klotzsch & Garcke; *Euphorbia involucrata* (Klotzsch & Garcke) Boiss.; *E. wahlbergii* Boiss., nom. illegit.

Much-branched shrubby perennial herb, 0,2-1 m tall, from a woody shortly rhizomatous rootstock; leaves crowded, subsessile, spreading or reflexed with lamina 10-20 × 1-3 mm, linear, with thickened and ± revolute margins.

Grassland, especially alongside rivers and streams; 50-150 m alt.

S. Africa.

**E. eranthes** R. A. Dyer & Milne-Redh.

Perennial herb with tuberous root, spherical, 3-4 cm Ø; rootstock woody, subterranean, simple, erect ± 2,5 cm long, to 1 cm Ø; branches annual, fleshy, 1-2, arising from the rootstock, ± 15 cm high, simple; foliage shoots not developed when in flower and fruit; not spiny.

Dry burnt ground in dambo; rock lateritic soils in open woodland; flowering shoots appearing often after annual fires; 1220-1650 m alt.

Near *E. ledermanniana*.

**E. ericoides** Lam.; Govaerts & al., World Checklist Euphorb. 2: 720, 2000.

syn.: *Tithymalus confertus* Klotzsch & Garcke

Erect plant 15-45 cm tall, probably branching at the base; stems or branches somewhat woody, 0,22-0,33 cm thick, often branching in a whorled or subumbellate manner, leafy throughout or naked at the base; leaves crowded, alternate, reflexed, with their tips upcurved, sessile 0,33-1,30 × 0,05-0,11 cm, linear, with revolute margins, truncate and mucronate or minutely 3-toothed at the apex.

Ecology unknown in Malawi? (not in Fl. Zambesiaca 9/5, 2000); among boulders in grassveld in Swaziland.

S. Africa.

**E. erigavensis** S. Carter; Euphorbia J. 9: 230, 1994.

Succulent perennial, with the apex of a very short thick stem at ground level; branches few, erect to 30 cm tall, sparsely rebranched, 1,5-2,5 cm thick, shallowly toothed, tessellated, with teeth ± 1 cm apart in 5 spiral series; spiny; capsule and seeds unknown.

Open rocky limestone plain in very sparse *Acacia* scrub; 1465-1790 m alt.

Virtually unknown in cultivation.

Near *E. triaculeata*.

## EUPHORBIA

**E. erlangeri** Pax; Euphorbia J. 9: 84, 1994; 10: 91, 1996.

Tuberous-rooted perennial succulent, scandent to 3 m, sparsely branched; branches cylindrical, 5-10 mm thick, with 3-6 ribs (angles) without teeth; spiny.

Red sandy soils usually overlying limestone, with open *Acacia-Commiphora* bushland; 460-650 m alt.

Rare in cultivation, but fairly easy.

Near *E. cryptospinosa*.

**E. erythrocephala** Bally & Milne-Redh.

Perennial herb with thick vertical cylindrical woody rootstock to 13 mm Ø; annual stems 11-20, erect, caespitose, to ± 1 m long, 2 mm Ø at the base, simple, rounded, internodes ± 3,5-5,5 cm long, with linear alternate leaves; fruit unknown; not spiny.

Sandy grassland, open woodland; watershed plain and dambo on Kalahari Sand; ± 1300 m alt.

Very striking spurge, *Rhynchospora*-like, without close ally, apart from *E. asclepiadea*.

**E. espinosa** Pax; Succulentes (France) 18: 6, 1995; Euphorbia J. 7: 148, 1991; 9: 178, 1994; Desert Pl. 17(2): 22, 2001.

Erect or sometimes scandent woody shrub to 2-4 m tall with elliptic leaves to 4,5 × 2,5 cm; leafless at the time of flowering; branches alternate, subopposite or subverticillate, ascending to very widely spreading, moderately straight 0,22-0,44 cm thick, slightly tuberculate at the node with flower-scars, not spine-tipped.

*Acacia-Commiphora* bushland; mopane, miombo and other deciduous woodlands; 300-1500 m alt.

Caprivi Strip.

**E. etuberculosa** Bally & S. Carter

Bushy perennial 15-30 cm tall and to 90 cm wide, with a swollen succulent stem to 5 cm high, 2,5 cm thick, marked with prominent leaf-scars; branches numerous from the stem apex, somewhat fleshy, rebranching trichotomously and dichotomously.

Rocky slopes and gritty soils with *Acacia-Commiphora* scrub; 90-865 m alt.

Near *E. longetuberculosa*.

**E. exilispina** S. Carter

Branching succulent erect perennial to 1 m tall; branches 4-angled, 5-8 mm thick; angles very shallowly toothed with teeth 5-8 mm apart; spiny.

Sandy stony soil in dry woodland; 530 m alt.

Only known from the type collected in 1958.

Near *E. isacantha*, *E. nyassae*.

**E. eyassiana** Bally & S. Carter; Euphorbia J. 8: 64, 65, 1992.

Succulent perennial, with shortly rhizomatous stems densely branching at the base, sparsely so above, erect to 80 cm; stems and branches 4(-5)-angled, to 1 cm thick; angles with shallow teeth 1-2 cm apart; spiny. Growing in clumps to 1,5 m across.

Stony soils with sparse grassland and open dry bushland; brown powdery loam; dark grey-brown compacted clay loam; rock crevices; with *Sansevieria* and *Aloe ballyi*; rocky lava hill with bare earth, much eroded by goats; dry *Commiphora* woodland; 1000-1800 m alt.

Near *E. tenuispinosa*.

## EUPHORBIA

**E. eylesii** Rendle; Fl. Trop. Afr. 6(1): 512, 1911 excl. specim. Monro 910.

syn.: *Chamaesyce eylesii* (Rendle) Koutnik

Perennial with a woody rootstock; stems numerous, procumbent, 15-50 cm long, slender, dichotomously branched; not spiny; leaf lamina to 30(50) × 3(3,5) mm, linear.

Deciduous woodland on Kalahari Sand; 300-1250 m alt. Fairly common.

Botswana, Caprivi Strip, Namibia (NE corner).

Easy to confuse with *E. neopolycnemoides*.

**E. fanshawei** L. C. Leach; Bull. Jard. Bot. Natl. Belgique 46: 251, 1976; Aloe 38: 65, 69, 2001.

Dwarf perennial herb with a turnip-shaped or ± oblate tuberous root, with succulent spiny branches radiating from the apex of the much reduced, subterranean stem which merges imperceptibly with the root; branches usually numerous, simple, somewhat clavate, initially erectly spreading, becoming flaccid and often decumbent with age, to 12,5 cm long, (4-)5-6-angled, with prominent fleshy tubercle teeth to 7 mm high (becoming smaller towards the base) along the angles; mature seeds unknown.

In very humid conditions in pebbly sandy pans, on shallow quartzitic soil and outcrops in *Brachystegia* woodland shade; small depressions inundated in summer and associated with terrestrial orchids (*Brachycorythis friesii*, *Platycoryne protearum*) and epiphytic orchids; 1100-1280 m alt. –Very rare.

Zaire: Fungurume; cobalt: 73 µg/g dry weight; copper: 7.

Near and can be mistaken for *E. decidua*.

**E. fasciculis** S. Carter; Lavranos in L. Russo, Succ. Pl. E. Afr.: 140, 2004 (photo).

Densely tufted succulent perennial to 20 cm tall and 30 cm Ø, with a thick, fleshy, tuberous root to 5 cm thick at the apex; branches subterete, 1-1,5 cm thick, with fairly prominent tubercles ± 1 cm apart arranged in 3 loose spiral series; spiny; mature capsule and seeds unknown.

Rocky limestone, sometimes gypseous, slopes with open evergreen woodland; 1500-2000 m alt.

Near *E. tetracanthoides*.

**E. faucicola** L. C. Leach

Spiny, succulent, candelabriform shrub, usually 1-1,5 m tall, occasionally to 3,7 m, usually acaulescent branching from the base or occasionally somewhat tree-like, then with a stout, gnarled trunk to 1,8 m high (usually much less); branches usually simple, only occasionally and very sparingly rebranched, arcuate-ascending, usually becoming erect, 3-4-(very rarely 5-6)-winged, variably constricted into segments, with the segments mostly subcircular, sometimes ± ovate, elliptic, oblong, or rarely, tapering to almost triangular; wings usually rather thin, to 3,5 cm wide, with a continuous, crenate or sometimes ± even, horny margin which is usually considerably broadened immediately above the spine pairs.

Fire protected habitat on almost bare rock cliffs and steep sides of a river gorge; with *Aloe metallica*, *Myrothamnus flabellifolius*, *Strobilanthis linifolia*, *Xerophyta* sp., *Selaginella dregei*, *Anemia angolensis*, *Cheilanthes inaequalis*; ± 1470 m alt.

Near *E. seretii*.

## EUPHORBIA

**E. fischeri** Pax

Much-branched, prostrate, annual herb with branches to 25 cm long; not spiny.

Open *Brachystegia* woodland on sandy soil; 800-1430 m alt.

**E. fissispina** Bally & S. Carter

Shrub to 1,2 m tall with erect or subscandent stems with few irregularly placed branches; stems 4-ribbed, to 10 mm thick; spiny; flowers and leaves unknown.

*Acacia-Commiphora* woodland on rocky slopes; ± 750 m alt. or 300-750 (-1400) ?

Near *E. glochidiata*.

**E. fluminis** S. Carter

Succulent perennial with a fleshy root, subscandent to 2 m tall; stems and branches 4-angled, to ± 1 cm thick; angles with shallow to subprominent teeth to ± 3 cm apart; spiny; entire capsule and seeds unknown.

Alluvial soils in dry deciduous woodland; terrace above river; dense thicket of *Commiphora*; dense coastal dry bush on sand; thicket clumps on grey-brown clayey soil with seasonally flooded depressions between clumps; 15-70 m alt.

Still infrequently seen in cultivation.

Near *E. glochidiata*.

**E. forolensis** L. E. Newton

Stem-succulent, sparingly branched; branches spreading and recurved to form a loose, open mound to 55 cm high, 50 cm Ø; stem quadrangular, to 25 cm long, 10 mm thick; spiny.

Rocky slopes below summit ridge on south-west side.

Near *E. heterochroma*.

Only known from the type collected in 1984.

**E. forskalii** J. Gay, excl. var. *glabrata* J. Gay (= *E. granulata* var. *glabrata*).

syn.: *Anisophyllum forskalii* (J. Gay) Klotzsch & Garcke; *A. aegyptiacum* (Boiss.) Schweinf.; *Phyllanthus forskalii* Lepr. ex Baill. pro syn.; *Euphorbia austrooccidentalis* Thell.; *E. burmanniana* J. Gay

Prostrate annual, 10-30 cm long; stems many, branched from the base; not spiny.

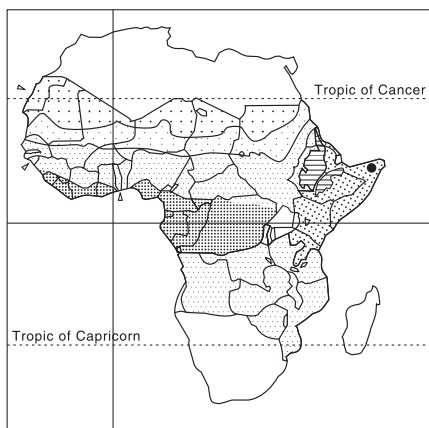
River banks, waste ground, weed of cultivation; sandy soils; sometimes in very calcareous sites; to 1000 m alt.

Canary and Cape Verde Islands; Libya, Egypt, Palestine, Syria, Arabia.

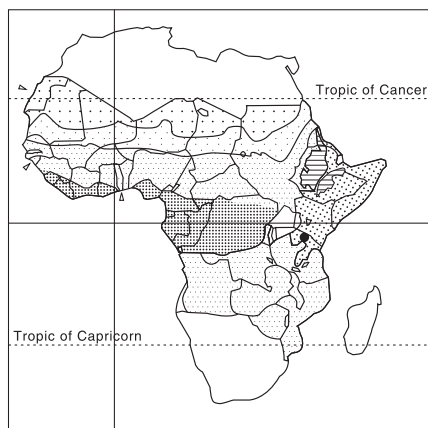
**E. fortissima** L. C. Leach; Desert Pl. 17(2): 18, 2001.

Candelabriform, succulent, spiny tree ± 5(-7) m tall with a short stout trunk ± 22,5(-30) cm Ø and numerous spreading ascending, persistent, winged branches which are simple or occasionally rebranched from about the middle, usually much exceeding the central trunk and often bearing 1-3 very short erect terminal branchlets; branches 3-4-winged (usually 3), to 5 m long, constricted into 35-40 subcircular, broadly ovate or elliptic segments which are 4,5-9 cm wide, 3-10 cm long towards the obtuse emarginate apex of the branches, lengthening towards the base to 20 cm long with the wings becoming obsolescent; the stout wing-like angles are provided with a broad continuous ± even horny margin 3-8 m wide, armed with strong, diverging, paired spines;

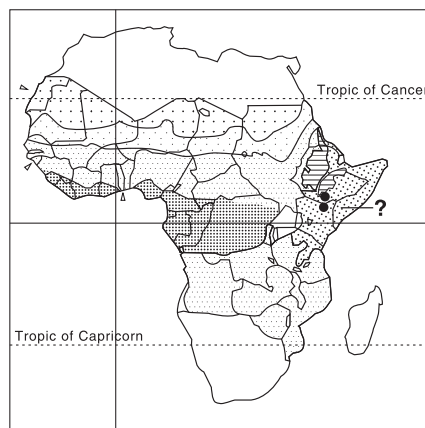




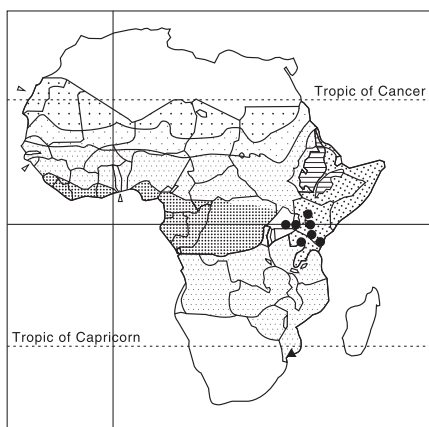
*Euphorbia eilensis*



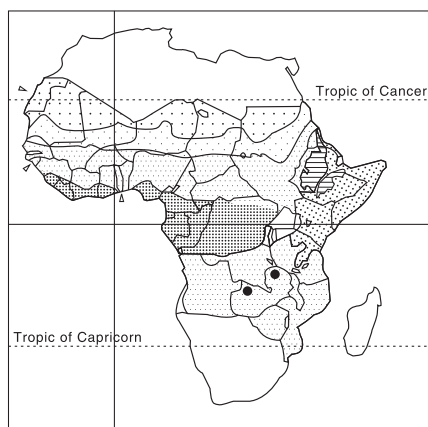
*Euphorbia elegantissima*



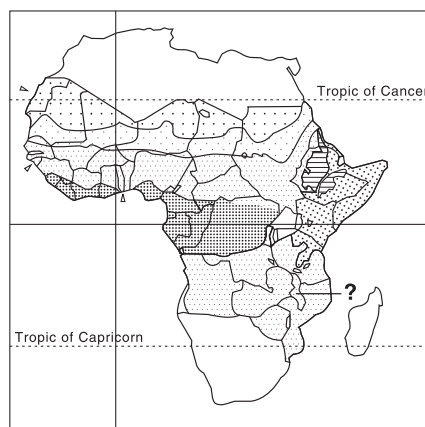
*Euphorbia ellenbeckii*



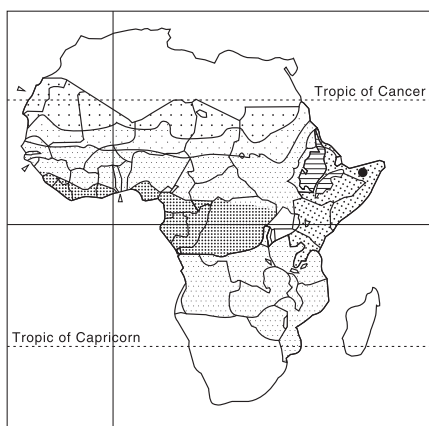
*Euphorbia engleri* ●  
*Euphorbia epicyparissias* ▲



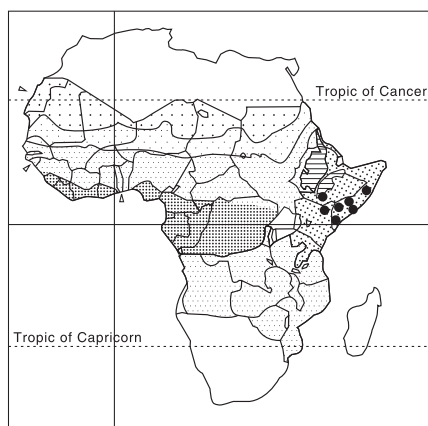
*Euphorbia eranthes*



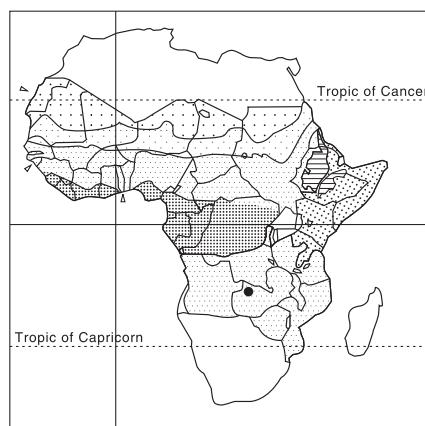
*Euphorbia ericoides*



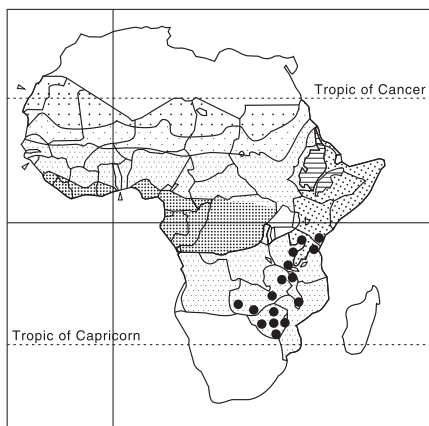
*Euphorbia erigavensis*



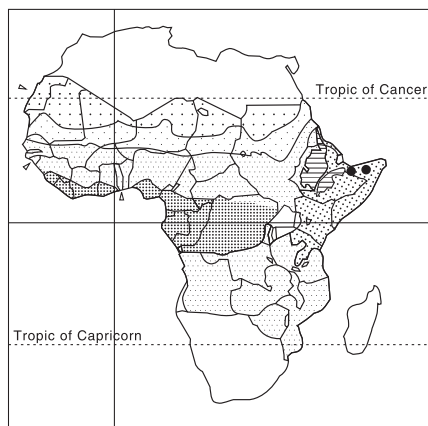
*Euphorbia erlangeri*



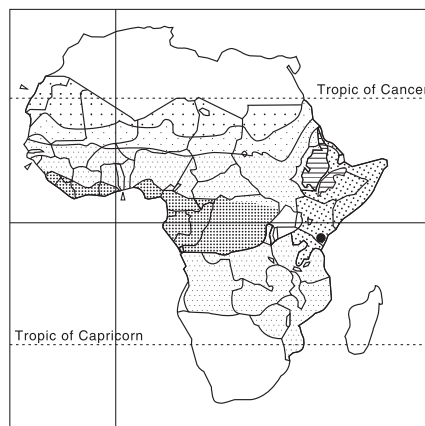
*Euphorbia erythrocephala*



*Euphorbia espinosa*



*Euphorbia etuberculosa*



*Euphorbia exilisipina*

## EUPHORBIA FORTISSIMA

secondary branchlets and terminal branchlets are produced from the margins of the wings at the broadest part of the segments; terminal branchlets erect, 3-5-winged, usually very short; leaves minute.

*Euphorbia-Combretum* thicket; open *Colophospermum mopane-Commiphora* savanna; steep stony hillside; *Mopane-Commiphora-Combretum* association, Karroo sandstone; basalt rock;  $\pm 700$  m alt.

Presents no unusual difficulties in cultivation.

Near *E. cooperi*.

**E. friesiorum** (Hässler) S. Carter

Straight-stemmed shrub or tree 2-7 m tall; branches semi-succulent with large leaf-scars; leaves oblanceolate to lanceolate, to  $20 \times 6$  cm; not spiny.

Sandy soils, usually on rocky slopes, in *Acacia-Commiphora* bushland and deciduous woodland; 700-2000 m alt.

Near *E. grantii*, *E. pseudograntii*.

**E. furcata** N. R. Br.

Succulent perennial with densely tufted stems from a thick fleshy root, branching from the base, 4-angled, to 15 cm long and  $\pm 7$  mm thick; angles with laterally compressed prominent very sharply pointed teeth to 1 cm long and  $\pm 1,5$  cm apart; spiny; mature seeds unknown.

Dry rocky sandy soils with *Acacia* bushland; 300-915 m alt.

Presents few difficulties in cultivation.

Known only from a small area.

**E. furcatifolia** M. G. Gilbert

Erect rather woody annual  $\pm 30$  cm tall, with ascending branches from near the base; leaves linear with *forked* tip, to  $20 \times 1$  mm, sessile, subamplexicaul, apical lobes  $\pm 2$  mm long, rounded, sometimes with a minute mucro in sinus, margins inrolled, reflexed; not spiny.

Open woodland with *Combretum*, *Barbeya oleoides*, *Pistacia aethiopica*, *Olea europea* subsp. *africana* etc.; area with a sticky dark soil overlying limestone; 1600 m alt.

Near *E. schimperiana*.

**E. fuscolanata** Gilli

Much-branched shrub 1 m tall, probably annual; not spiny.

Slopes with bushes; 2050 m alt.

Only known from the type collected in 1958.

**E. galgalana** S. Carter; Collect. Bot. 21: 62, 1992; Euphorbia J. 9: 90, 104, 231, 1994.

Succulent perennial, much-branched from the base, forming sprawling clumps 15-60 cm high and to 1 m  $\emptyset$ ; branches spreading, terete, 4-5-angled, 1-1,5 cm thick; angles very shallowly toothed, with teeth 8-10 mm apart; spiny; capsule and seeds unknown.

Rocky limestone slopes, with sparse xerophilic and succulent scrubland; 1000-1340 m alt.

Rare in cultivation.

Closely related to *E. geldorensis*, *E. nigripina*.

## EUPHORBIA

**E. gariepina** Boiss. subsp. **balsamea** (Welw. ex Hiern) L. C. Leach

syn.: *E. bergerana* Dinter; *E. halleri* Dinter ex Frick, nom. invalid.

Fleshy perennial shrub 0,45-1 m tall, much branched from the base; primary stem  $\pm 2,5$  cm thick; young branches tapering upwards, becoming leafless; flowering branches forking alternately, forming a lax flat-topped corymb-like cyme, 10-15 cm  $\emptyset$ ; dioecious; not really spiny.

Hilly sandy maritime places; rocky hilly places thinly covered with brown sand.

Namibia; subsp. **gariepina**: Namibia, S. Africa; ?Angola.

Collected in 1859 and it does not appear to have been again collected until 1970, despite its occurrence in quite close proximity to Moçâmedes (Angola).

**E. geldorensis** S. Carter

Much-branched succulent perennial forming tangled clumps to 30 cm tall and 75 cm  $\emptyset$ , or  $\pm$  erect to 50 cm high; branches terete, 5-7-angled, 1-1,5 cm thick; angles very shallowly toothed, with teeth 5-8 mm apart; spiny; capsule and seeds unknown.

Stony limestone slopes with very open xerophilic and succulent scrub; 1030-1800 m alt.

Near *E. nigripina*.

**E. gemmea** Bally & S. Carter; Euphorbia J. 8: 65, 1992.

Succulent perennial, with stems shortly rhizomatous, decumbent and weakly erect to 45 cm high, sparsely branching; stems and branches sharply 4-angled, 5-10 mm thick; angles with shallow teeth 1-1,5 cm apart; spiny.

Very shallow soil on granite rock; scrub on gneiss rocks, steep rocky hillsides of basement complex and gneiss formation with browsed thorn scrub; in shade of *Acacia-Commiphora* bushland; 700-1000 m alt.

Near *E. saxorum*.

**E. gillettii** Bally & S. Carter

Densely tufted succulent perennial, with a thick fleshy tuberous root, 5 cm thick at the apex, tapering and branched below and, in all,  $\pm 20$  cm long; branches to 30 cm long, erect to 20 cm, then arching over, 0,7-1,5 cm thick, 4(-5)-angled; angles toothed, with teeth 1-2 cm apart; spiny.

Gneiss mountain top; stony hillside of sandstone or quartzite overgrazed hillside with limestone and sandstone strata; open *Acacia* woodland and dry evergreen scrub; mixed *Acacia* scrub; 1100-1825 (or  $\pm 1900$ ?) m alt.

Comprises 2 subspp.

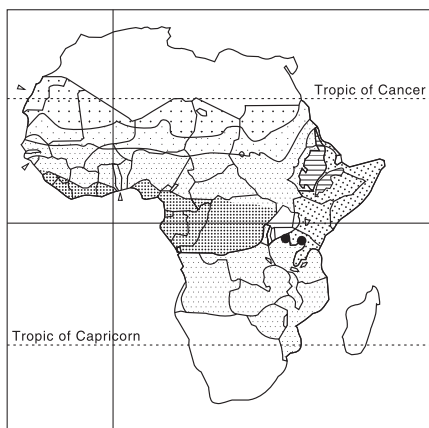
Of fairly easy culture.

Near *E. tetraanthoides* (first collection in 1932; second locality in 1954; third in 1957). Description in 1977 (subsp. **gillettii**); second subsp. discovered in 1973.

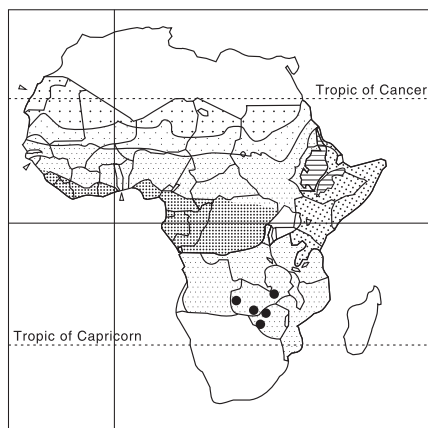
**E. giumboensis** Hässler

Spreading shrub or tree 1-3 m tall; branches subfleshy; leaves  $2-7 \times 1,5-5$  cm, obovate; not spiny.

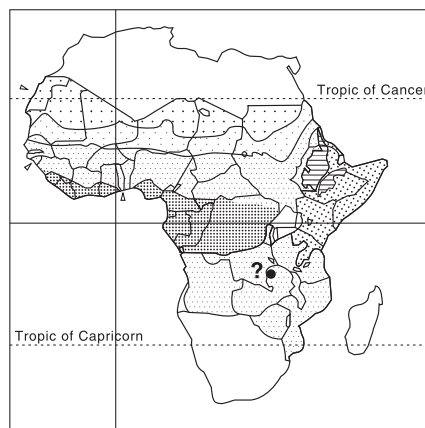
Deep sand with *Acacia-Commiphora* bushland; 20-140 m alt.



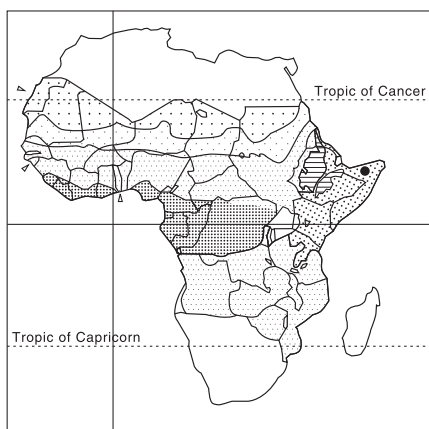
*Euphorbia eyassiana*



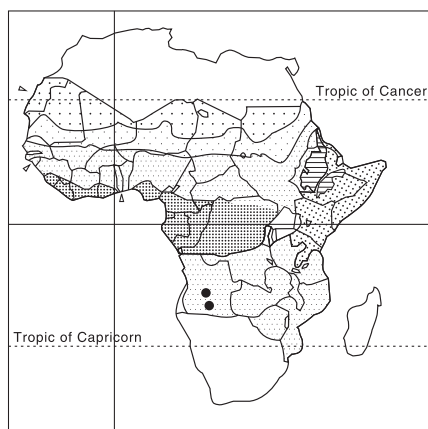
*Euphorbia eylesii*



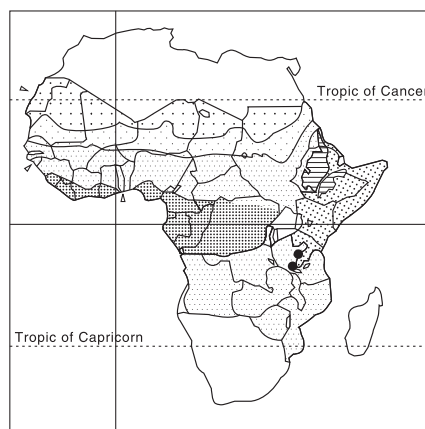
*Euphorbia fanshawei*



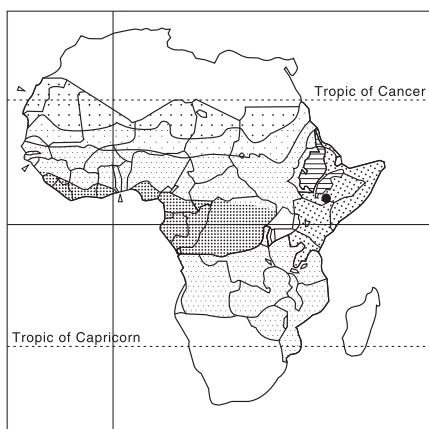
*Euphorbia fasciculis*



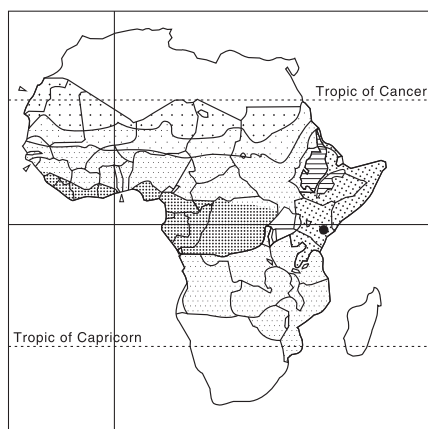
*Euphorbia faucicola*



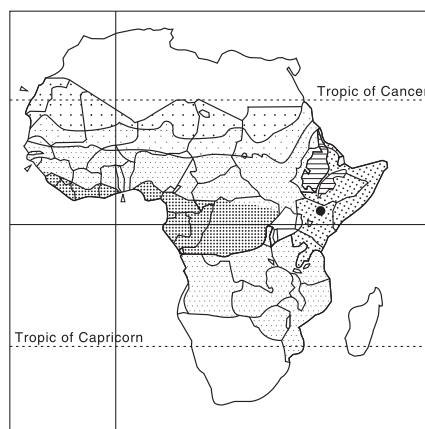
*Euphorbia fischeri*



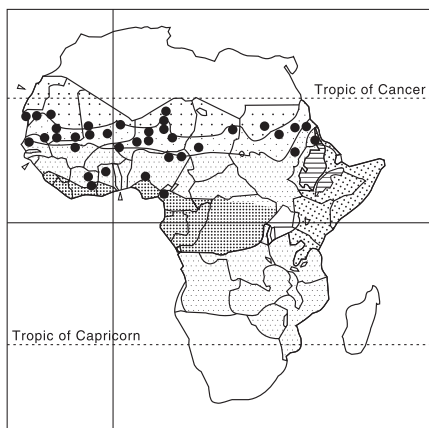
*Euphorbia fissispina*



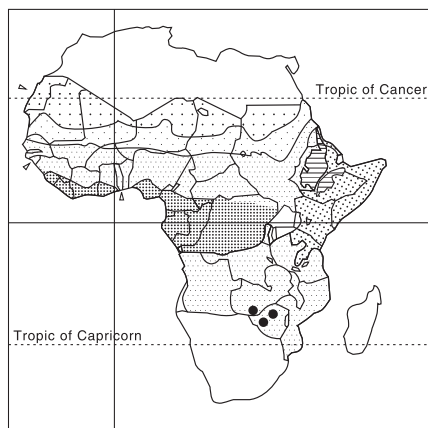
*Euphorbia fluminis*



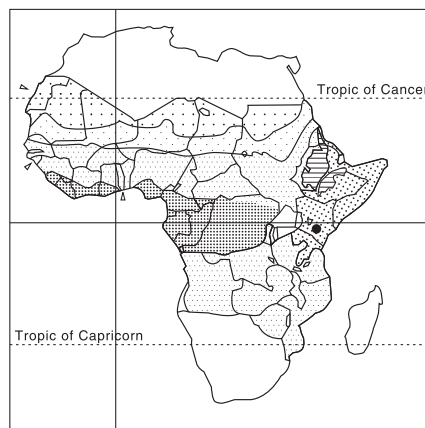
*Euphorbia forolensis*



*Euphorbia forskalii*



*Euphorbia fortissima*



*Euphorbia friesiorum*

## EUPHORBIA

**E. globulicaulis** S. Carter; Euphorbia J. 9: 232, 1994.

Perennial herb 3-5 cm tall, with a subglobose fleshy stem 2-3 cm Ø, sparsely covered with minute tubercles; branches several from the stem apex, to 3 cm long, somewhat fleshy, with small tubercles formed by prominent leaf-scars; leaves ovate, ± 10 × 6 mm with undulate margins; not spiny.

Limestone slope, rocky with stony soil and low *Commiphora* (or *Acacia*?) scrub; 725-800 m alt.

Tiny plant visible only at times of good rain, when its small globose fleshy stem swells and just protrudes above the soil. Extremely rare in cultivation and may prove ephemeral.

Near *E. longituberculosa*.

**E. glochidiata** Pax; Euphorbia J. 9: 84, 118, 119, 1994; 10: 190, 1996; Brit. Cactus Succ. J. 21: 75-81, 2003.

Succulent perennial with a fleshy root, ± sparsely branched, shrubby to ± 1,5 m tall or occasionally subscaudent to 2 m; stems and branches 4(-5)-angled, to 1,5 cm thick; angles with shallow teeth to 3 cm apart; spiny.

Red and sandy soils usually overlying limestone, with open *Acacia-Commiphora* bushland; *Acacia mellifera-A. senegal* bushland on soft black soil; stony limestone slopes; 140-1200 m alt.

A somewhat variable species.

Easily grown.

**E. godana** Buddensiek, Lawant & Lavranos, Kakteen & Succ. 56: 43, 2005. – Icon: o.c.: 43-46.

syn.: “*Euphorbia* spec. Lavranos 13176” in collections, in error for “Lavranos & Newton 13176”

Succulent spiny shrub to 30 cm tall forming cushions 40 cm Ø; irregular and densely branched, with fibrous roots; primary shoot short, 25 mm Ø, branches horizontal to ascending, glabrous, to 75 mm long, 8-10 mm Ø, cylindrical or slightly angled, green or brown mottled to clearly green-and-brown striate, slightly tubercled, tubercles in 3(-4) spirally arranged rows; spine shields with 1 central spine 2-8 mm long, grey with dark apex, and with 2 lateral diverging spines 1-3 mm long; cyathial glands golden yellow to orange, attractive; seeds not seen.

Mountain slopes, lee side in stony soil on basalt in association with *Euphorbia amicornum*, *Tarchoanthus camphoratus* and some grasses, in winter rainfall area; 1000-1500 m alt.

Grown in specialist collections.

Related to *E. triaculeata*.

**E. goetzei** Pax

Shrubby perennial herb (0,5-)1-2(-4,5) m tall, with succulent stems and branches; leaves obovate, to 17 × 6 cm, petiole to 4 cm; not spiny.

Rocky slopes, usually near lake or stream beds in area of *Acacia-Commiphora* dense bushland or light woodland; 450-1800 m alt.

**E. gossypina** Pax; Euphorbia J. 9: 97, 1994; 10: 204, 1996.

Much branched perennial shrub, sprawling, to 1,5 m tall or scrambling in bushes and trees to 4 m high; branches spreading, ± succulent, ± 1 cm thick, with dark brown leaf-scars becoming ± prominent on older branches; leaves lanceolate to linear-lanceolate to 4 × 1 cm, reflexed, caducous.

*Acacia-Commiphora* bushland; lightly wooded grassland; 15-1900 m alt.

Comprises 3 – vars. incl. **mangulensis** S. Carter, Kew Bull. 54: 959; 1999.

## EUPHORBIA

**E. gracilicaulis** L. C. Leach

Spiny, succulent shrub or tree to 3,5(-5) m tall, with a slender, simple, central stem (very rarely with a stem-like branch), initially 5-6-angled, later becoming ± cylindrical in older tree-like specimens, with the lower branches fallen and the then nude trunk supporting a crown of branches; branches 5-6-angled, relatively slender, ± 3 cm Ø, almost parallel-sided, to 3 cm long, spreading, arcuate-ascending, becoming erect (older branches at first descending), only very slightly constricted into segments of varying lengths usually simple, rarely with subterminal branchlets.

Dense bush in *Adansonia digitata* association; rock cliffs; ± 560-± 1750 m alt.

Near *E. hottentota*.

**E. graciliramea** Pax

Tufted succulent perennial to 15 cm tall and 30(-60) cm Ø, branching densely from the base at the apex of a thick fleshy root; branches to 25 cm long and 5-10 mm thick, cylindrical, seldom rebranched except at the base, with teeth shallow to ± prominent, ± 2 cm apart in 4 longitudinal series, and in strictly opposite pairs; spiny; mature seeds unknown.

Stony soils in grassland and dry open deciduous bushland; 700-2025 m alt.

Very easily grown as a hanging plant.

**E. grandicornis** Goebel ex N. E. Br.

Stout succulent leafless bush, 0,5-2 m tall, much branched from the base, spiny; branches 3-angled, erect or ascending, very deeply constricted into subsagittate-ovate or sagittate-reniform segments 5-13 cm long and 5-15 cm Ø, with the solid central core usually not thicker than 3-4 cm; wavy wing-like angles; leaves rudimentary.

Dense dry mixed woodland; granite slopes, rocks; ± 40-700 m alt.

S. Africa. Not in Ethiopia and Somalia (**E. breviarticulata**).

Comprises 2 subspp.

Cultivated under the name “*E. longispina*” which is an entirely different species; also known as the “cowhorn euphorbia”. A cristate form is also in cultivation.

Near *E. ballyi*.

**E. grandidens** Haw.; Euphorbia J. 9: 81, 82, 1994.

syn.: *E. arborescens* Salm-Dyck, nom. nud.; *E. magnidens* Haw. ex Salm-Dyck

Tree 7-12(-16) m, with one or more main stems round or angled, branching; topped with fine candelabra-like crowns (0,5-1 m Ø) of secondary branches at their ends, naked below; secondary branches and branchlets succulent, spiny, leafless, not segmented, 10-20 mm Ø, acutely 3-4-angled, rather deeply sinuate-toothed, deciduous.

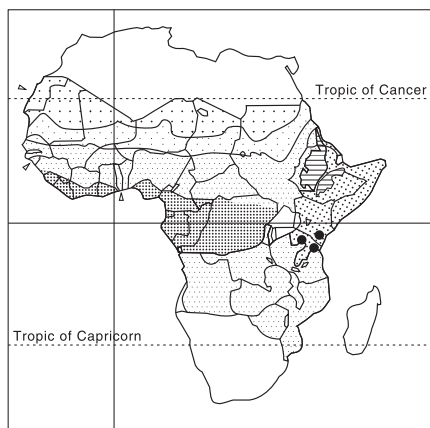
Open dry woodland on rocky slopes; dry dune forest margins; 5-550 m alt.

S. Africa.

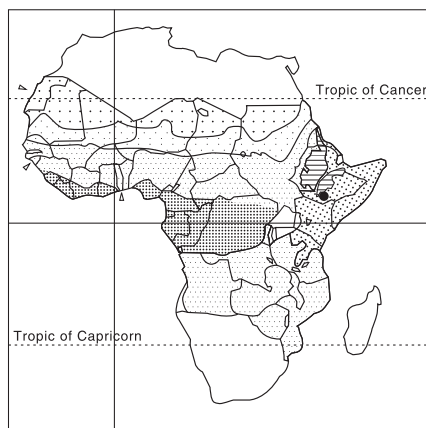
**E. graniticola** L. C. Leach

Succulent spiny shrub or tree to ± 2 m tall (very rarely 2,75), acaulescent or with a stout, cylindrical trunk ± 12 cm Ø (very rarely with one or more trunk-like branches and numerous, crowded,

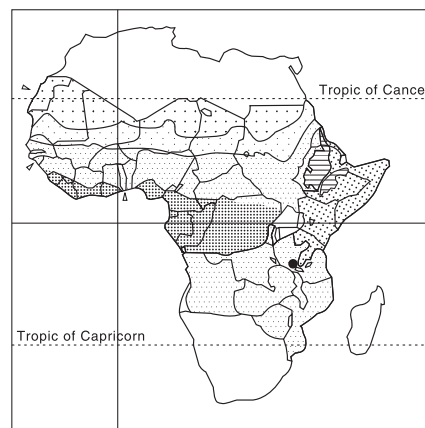




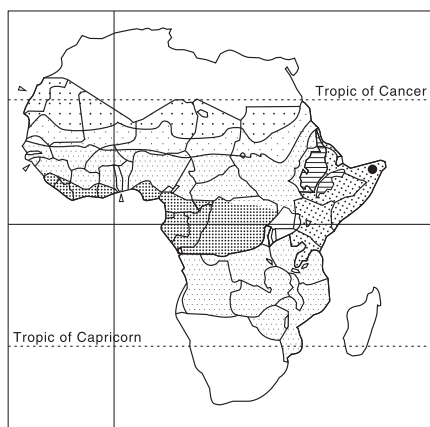
*Euphorbia furcata*



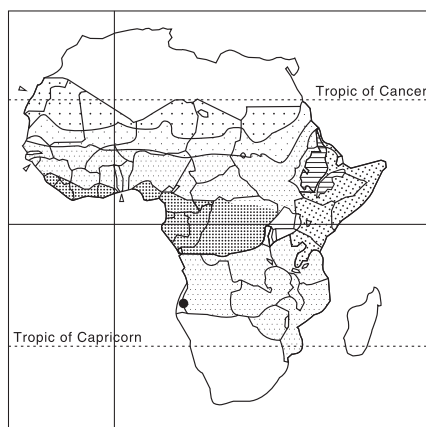
*Euphorbia furcatifolia*



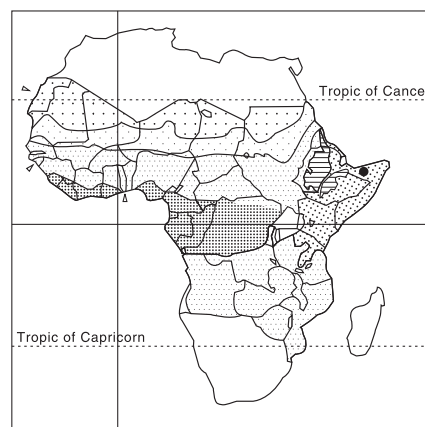
*Euphorbia fuscolanata*



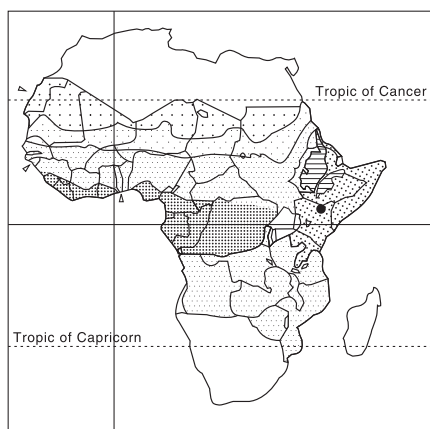
*Euphorbia galgalana*



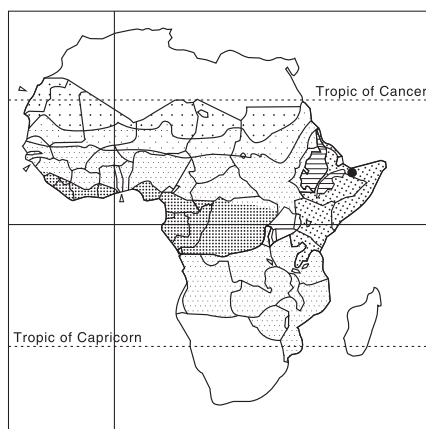
*Euphorbia gariepina*



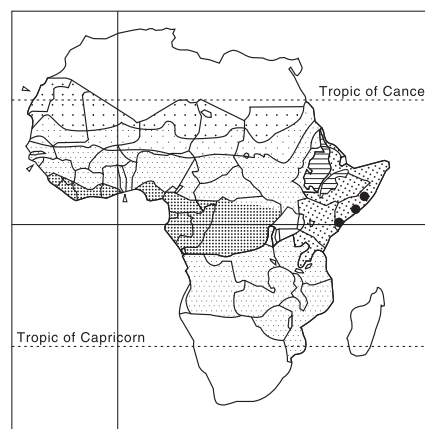
*Euphorbia geldorensis*



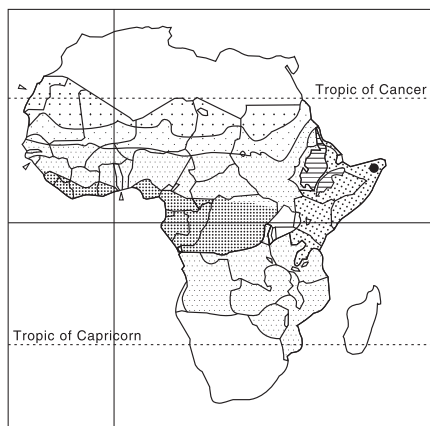
*Euphorbia gemmea*



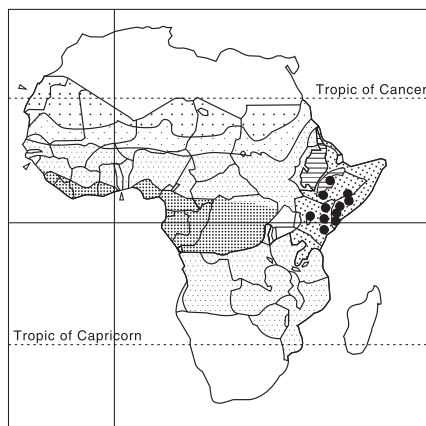
*Euphorbia gillettii*



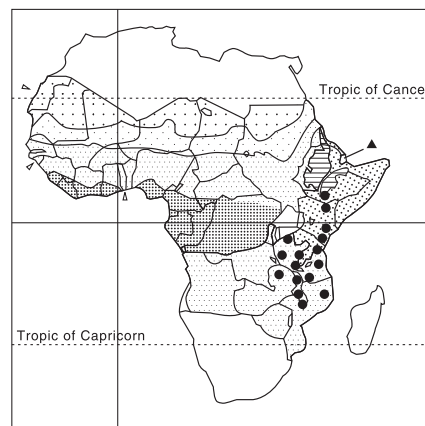
*Euphorbia giumboensis*



*Euphorbia globulicaulis*



*Euphorbia glochidiata*



*Euphorbia godana* ▲  
*Euphorbia goetzei* ●

## EUPHORBIA GRANITICOLA

spreading ascending branches, rarely rebranched); branches 4-6-angled,  $\pm 1$  m long, constricted into segments of varying length to 25 cm long, tapering gradually upwards, generally  $\pm 6$  cm thick towards the base and  $\pm 4$  cm towards the apex, with the central portion 1,5-2,5 cm  $\varnothing$  and thin wing-like angles 3-5 mm thick and to 3 cm wide, with a conspicuous continuous horny margin, even or somewhat sinuate-toothed,  $\pm 3$  mm wide and of  $\pm$  uniform width for the whole of its length, thickened slightly at the base of the spine.

Granite slopes; dominant species in an association of succulent plants and *Vellozia* sp. growing in grass clumps on shallow soil patches;  $\pm 600$  m alt.

Beautiful species, infrequently encountered in cultivation but not difficult. Extremely slow growing.

Near *E. memoralis*, *E. keithii*, *E. mlanjeana*, *E. declivicola*.

**E. grantii** Oliv.; Bull. Soc. Roy. Bot. Belgique 84: 48, 1951.

Few-stemmed bush or sparingly branched tree 1,5-9 m tall, with a smooth but horizontally grooved grey bark; branches semi-succulent, with large prominent closely-set leaf-scars; leaves sessile, linear to linear-lanceolate, to 30  $\times$  3 cm; not spiny. Red sandy gritty soil often among rocks on hillsides, in open woodland; savanna, gallery forest; 800-1740 m alt.

Sometimes cultivated as an ornamental.

**E. granulata** Forssk., *excl.* var. *dentata* N. E. Br. and var. *glabra* Maire (See **E. inaequilatera**).

Prostrate annual herb, with branches to 15 cm long; not spiny; leaves obovate 8  $\times$  4,5 mm.

Exposed sandy gritty soils; sandy regs; galb, kedia, wadi beds; stony plains and schistous rocks.

Cape Verde and Canary Islands; N Africa, Egypt; Arabian Peninsula, Syria, Palestine, Jordan, Iran, Afghanistan, Pakistan, N India, central Asia.

Comprises 4 vars.

**E. greenwayi** Bally & S. Carter; Euphorbia J. 7: 58, 1991; Cact. Succ. J. (U.S.) 72: 184, 196, 2000; G. Sleiter in *Piante Grasse* 25(1): Insert, p. 22-23, 2005 (with photos).

Much-branched, procumbent or semi-scandent succulent perennial 0,3-1,2 m tall; branches sharply 4-angled; angles with shallow to prominent teeth 1-1,5 cm apart; spiny; capsule and seeds unknown.

Rocky scarp with *Brachystegia* open woodland; among rocks in open deciduous woodland; 1000-1500 m alt.

Comprises 2 subspp.

Of very easy culture (A. Pritchard, *Introduction to Euphorbiaceae*: 36, 2003).

Plant with extraordinary colourful flowers, white, yellow, red, and sometimes almost blue or more commonly dark green stems, sometimes with a paler longitudinal streak; spines red or  $\pm$  black.

**E. griseola** Pax, incl. var. *robusta* Pax; Euphorbia J. 7: 131, 1991; 8: 47, 1992; 9: 178, 1994; Desert Pl. 17(2): 19, 2001; Aloe 38: 68, 69, 2001.

Shrub without or with very much reduced main stem (to a mere "crown"), generally less than 1 m (but up to 2 m) tall, with  $\leq 4$ -6-angled branches and branchlets which are not or only slightly constricted at distant intervals, or shrub of tree-like habit with a slender, 9-12-angled central stem, often attaining a height of 3,5 m or more although usually somewhat smaller, with branches distinctly segmented; spiny.

## EUPHORBIA GRISEOLA

Granite hills in *Brachystegia* woodland; widely distributed in somewhat scattered colonies; 300-1700 m alt.

Plants exhibit a considerable degree of variation, both in habit and in vegetative characters.

Botswana, S. Africa; ? Zaire (SE).

Comprises 3 subspp.

Seems to present no unusual difficulties in cultivation.

[**E. groenewaldii** R. A. Dyer]

Cited from S Mozambique, Maputo, by M. Calane da Silva & al., *Prel. Checklist Vasc. Pl. Moz.*: 56, 2004, but only from S. Africa by Carter & Egli (2003): 27.

**E. grosseri** Pax

Very similar to *E. scheffleri*: spreading shrub or tree to 6 m tall; young stems with leaf-scars prominent; leaves *glabrous* occasionally except for margins, obovate, 5-12  $\times$  2,5-6 cm, clustered at stem tips; branches subfleshy.

Rocky hills in dense *Acacia-Commiphora* bushland; sandy soil with open *Acacia* woodland; 150-750 m alt.

NE Kenya?

**E. guerichiana** Pax; Euphorbia J. 5: 64, 1988; 9: 156, 157, 1994; 10: 115, 1996; Cact. Succ. J. (U.S.) 72: 279-284, 2000; Desert Pl. 17(2): 22, 2001.

syn.: *E. commiphoroides* Dinter; *E. frutescens* N. E. Br.

Slender shrub to 3 m tall, deciduous, unarmed, with erect, virgate, angular branches; often leafless for long periods; leaves semi-succulent; lamina of leaves 1,5-3,5  $\times$  0,5-1,3 cm, obovate to lanceolate.

Usually in rocky places; dry deciduous woodland;  $\pm 560$  m alt.

Namibia, Botswana, S. Africa.

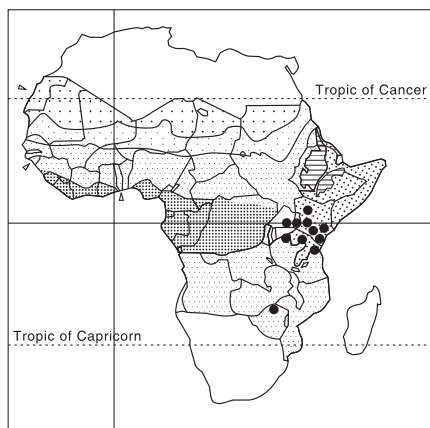
May be mistaken for a species of *Commiphora*.

**E. gymnocalycioides** M. G. Gilbert & S. Carter; Euphorbia J. 7: 165, 1991; 8: 52, 1992; 10: 172, 191, 1996; Aloe 30: 107, 1993; Cactus & Co. 5(1): inside of front cover – p.1, 2001; Kakt. & Sukk. 50: 191-192, 1999; Cactus Succ. J. (U.S.) 76: 308-310, 2004 (photos); P. Bisseret & al. in L. Russo, *Succ. Pl. E. Afr.*: 74-75, 2004 (photos).

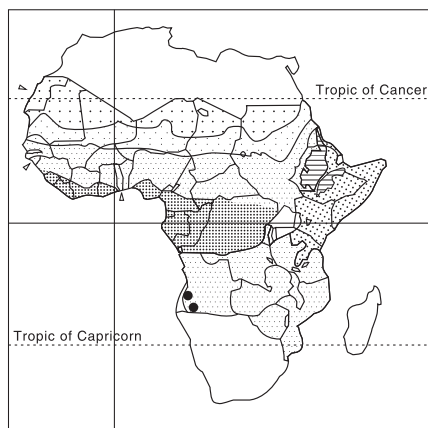
Succulent plant with a taproot 10 cm or more  $\times$  1,5 cm at the apex where a few thickened lateral roots spread horizontally; stem reduced to a subspherical fleshy body to  $\pm 6 \times 6$  cm, with to 18 well-marked vertical angles, grooved horizontally into prominent tubercles  $\pm 5$  mm high and 1 cm apart, tessellated around the slightly depressed apex; tubercles crowded by round weakly horny shields 1-2,5 mm  $\varnothing$  (a cultivated plant has produced small side shoots with paired spines).

More open areas within *Commiphora-Kirkia-Acacia* bushland/ woodland in shallow soil overlying limestone; nearly all specimens seen growing under low shrublets, mostly *Acanthaceae*, especially *Barleria*;  $\pm 1350$  m alt.

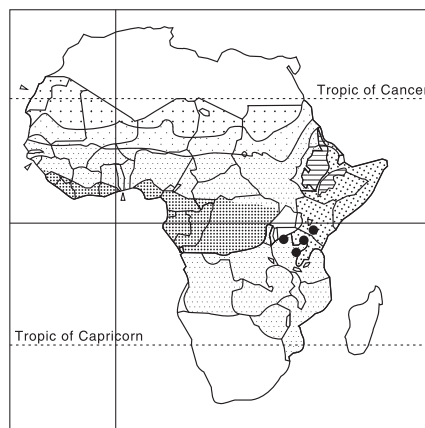
Very rare in cultivation, but now readily available as seedlings or grafted plants (A. Pritchard, *Introduction to Euphorbiaceae*: 35, 2003) or grown on its own roots (G. Marx, *Cactus Succ. J. (U.S.)* 76: l.c.).



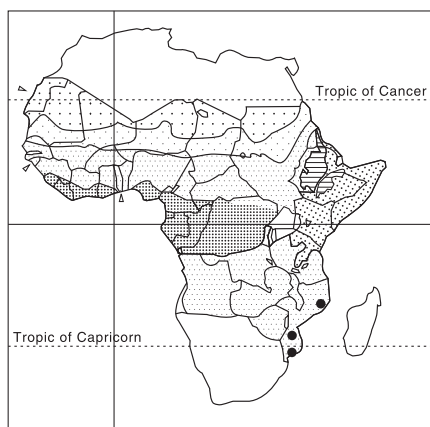
*Euphorbia gossypina*



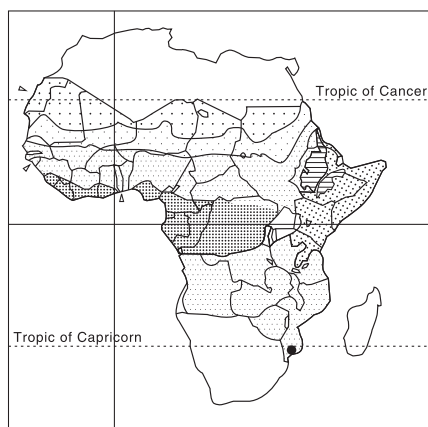
*Euphorbia gracilicaulis*



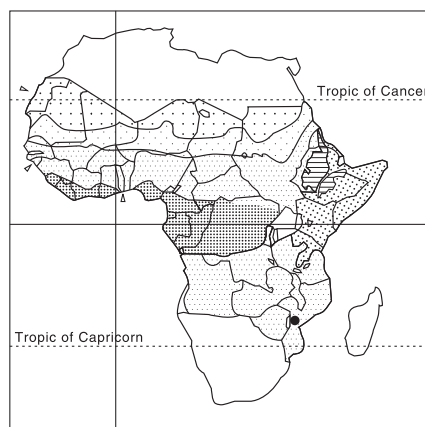
*Euphorbia graciliramea*



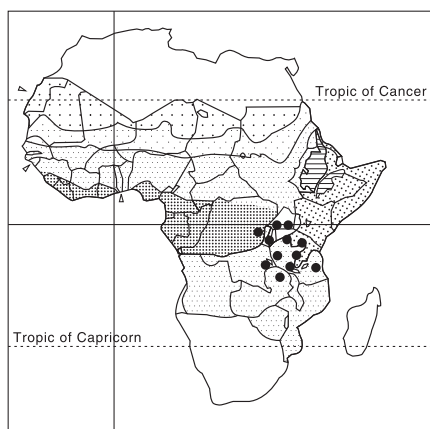
*Euphorbia grandicornis*



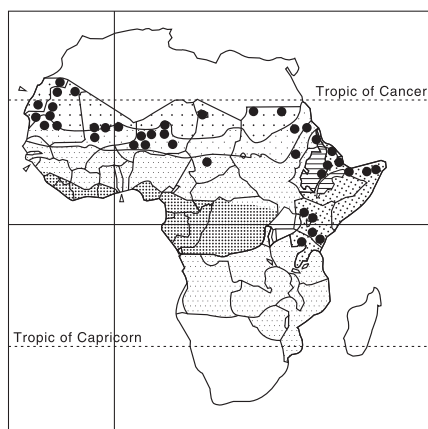
*Euphorbia grandidens*



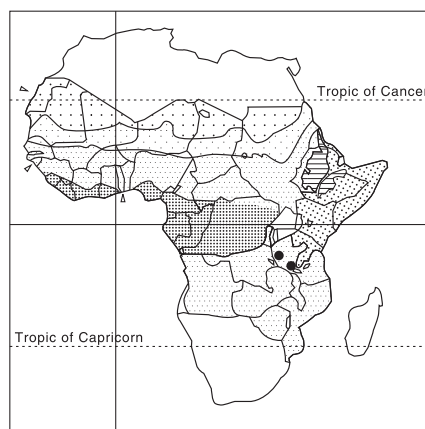
*Euphorbia graniticola*



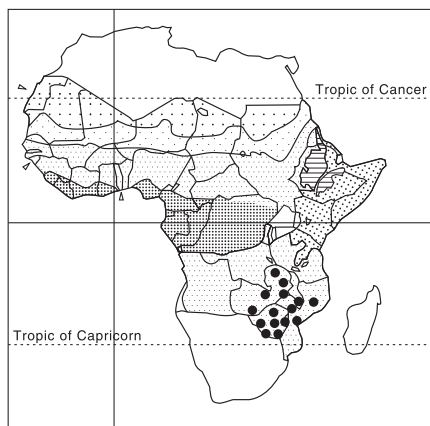
*Euphorbia grantii*



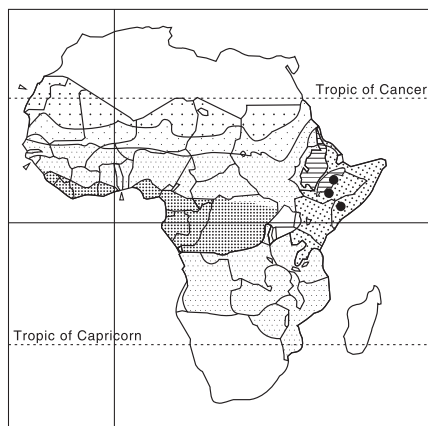
*Euphorbia granulata*



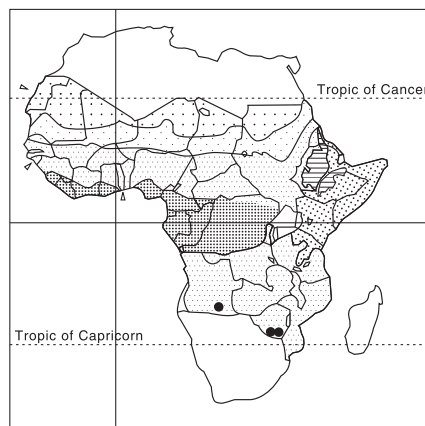
*Euphorbia greenwayi*



*Euphorbia griseola*



*Euphorbia grosseri*



*Euphorbia guerichiana*

## EUPHORBIA GYMNOCALYCIOIDES

Near *E. turbiniformis* and *E. columnaris*.

The plant looks like a cactus such as *Gymnocalycium* from S. America.

**E. gypsophila** S. Carter

Densely branched woody shrub to 1,5 m tall with branchlets alternate, 1-1,5 cm apart, spreading at right angles to the branches, to 8 cm long, spine-tipped; leaves unknown, but evidently produced in fascicles on much abbreviated shoots 1-2 mm long.

Rocky slopes of pure gypsum hills, with scattered *Commiphora* and mixed scrub; ± 900 m alt.

Near *E. cuneata*.

**E. hadramautica** Bak.; Euphorbia J. 9: 100, 106, 1994; S. Mosti & al., in Cactus & Co. 4(9): 229-233, 2005 (photos).

Perennial, probably short-lived plant with a fleshy stem 3-12 cm tall, 1-3 cm thick, erect to procumbent, with crowded spirally arranged leaf-scars which are usually prominent or even tuberculate, but sometimes obscure; leaves crowded at the stem apex, ovate to usually linear-lanceolate, 3-9 × 0,5-1,5 cm; not spiny.

Gritty rocky soils, usually in exposed places at the base of slopes; very open *Acacia-Commiphora* bushland; 550-1500 m alt.

S Arabia, Socotra.

Extremely rare in cultivation; difficult to maintain (but since 20 years successful in cultivation in the "Botanischer Garten der Universität Kiel", Germany, in 1987). – Cf. A. Pritchard, Introduction to Euphorbiaceae: 36, 2003.

An extremely insignificant plant, certainly undercollected.

Related to *E. bupleurifolia* from S. Africa.

**E. halipedicola** L. C. Leach; Euphorbia J. 9: 179, 1994.

Spiny, succulent shrub or tree, usually to 4-5 m tall (sometimes to 10 m), with a stout trunk and spreading, often at first descending, arcuate-ascending, usually finally erect branches, which often much exceed the central trunk; the lower branches sometimes falling, plants then assuming a more tree-like habit with a ± rounded crown of branches; trunk somewhat segmented, initially 3-angled, soon becoming 4-6-angled, ± cylindrical when plants become tree-like; branches ± whorled, sparingly rebranched, 3-4-winged (mostly 3), deeply constricted into segments, narrowed at the base into a stalk-like, ± terete, central woody core; secondary branches and branchlets usually 3-winged, arising from the wing margins near the base of the segments; these segments mostly oblong or slightly tapering, to 32 cm long (40 cm) × 20 cm broad, sometimes broadly triangular or ± ovate; the wings to 2 mm thick at the prominently crenate-toothed, strongly undulate margins, which are scarcely thicker towards the small central core; with a narrow continuous horny margin, broadening at the spine pairs and the flowering eyes; leaves ± 3 mm long.

Areas of seasonal or perennial vleis, generally in or at the margins of thickets and small patches of woodland, often in association with *E. lividiflora*, *Aloe marlothii*, *Hyphaene* sp..

Near *E. breviarticulata*.

Most plentiful specimens have the general aspect, from a distance, of large specimens of *E. cooperi*.

## EUPHORBIA

**E. handeniensis** S. Carter

Woody shrub 30-40 cm tall, with spreading branches; leaves alternate or fasciculate on much abbreviated branchlets, obovate to oblanceolate, to 4,5 × 1 cm; branchlets spine-tipped.

Soil pockets on granite rocks; 600-700 m alt.

Near *E. cuneata*.

Species difficult to define.

**E. heterochroma** Pax; Euphorbia J. 7: 117-118, 137, 1991.

Straggly succulent shrub with erect or decumbent branches rooting where they touch the ground, to 2 m tall, sparingly rebranched above; branches 4(-5)-angled, to ± 2 cm thick; angles straight to shallowly undulate; spiny.

Sandy stony soils with *Acacia-Commiphora* bushland; rock outcrops with deciduous bushland; 450-1300 m alt.

Comprises 2 subspp.

**E. heterospina** S. Carter; Euphorbia J. 7: 120, 1991.

Erect or subsucculent succulent shrub to 3,5 m tall; branches 4-5-angled, 1-2 cm thick, slightly constricted at irregular intervals of 20-60 cm; angles straight to shallowly toothed, with teeth 0,5-3 cm apart; spiny.

Sandy stony soil with deciduous woodland; rocky slopes with low herbs and sparse deciduous woodland; 550-1600 m alt.

Comprises 2 subspp.

**E. holmesiae** Lavranos; Euphorbia J. 9: 87, 233, 1994.

Dwarf, succulent perennial 15-25 cm tall, with a thick fleshy root to 20 cm long and to 5 cm Ø; branches spreading, to 30 cm long, rebranching irregularly, terete, 5-7 mm thick; spiny; capsule and seeds unknown.

Hills with stony limestone and gypsum-anhydrite rocks of the Eocene Nogal series, with sparse *Acacia-Commiphora* scrub with *Pseudolithos cubiformis*, *Caralluma edithae*, *Monadenium linderi*, etc.; 600-730 m alt.

Extremely rare in cultivation.

Near *E. inaequispina*.

**E. horwoodii** S. Carter & Lavranos; Kakteen & Sukk. 41(7): insert 14, 1996; Euphorbia J. 9: 93, 99, 1994; Aloe 30: 107, 1993.; P. Bisseret & al. in L. Russo, Succ. Pl. E. Afr.: 77-78, 2004 (photos).

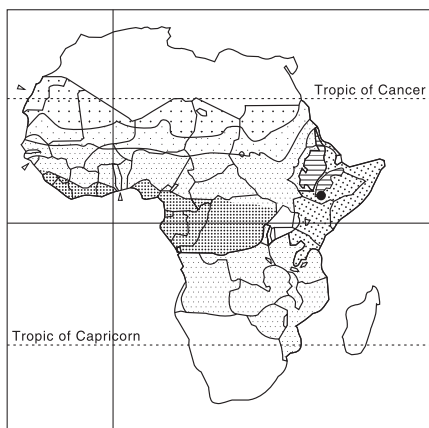
Fibrous rooted dwarf succulent, developing from a depressed globose seedling 3-5 cm Ø, marked by 5-7 vertical rows of minute, usually spineless spine-shields and incipient branches; mature plant to ± 5 cm tall and 12 cm Ø, eventually to 8 cm high and 30 cm Ø, with laterally spreading branches tightly packed in 5-7 vertical series; branches terete, 1-1,5 cm thick, to 5(-12) cm long, occasionally very shortly rebranching, with very shallow tubercles ± 1 cm apart in 4-5 longitudinal series; spiny (usually only when the branches begin to elongate from the globose body).

Flat plain of calcareous silt over limestone, with scattered low shrubs, tufted grass and *Aloe*; under *Commiphora* sp. with *Pseudolithos horwoodii*; large plants with branches more than 5 cm long are found only in the shelter of other vegetation; ± 400?-600-700 m alt.

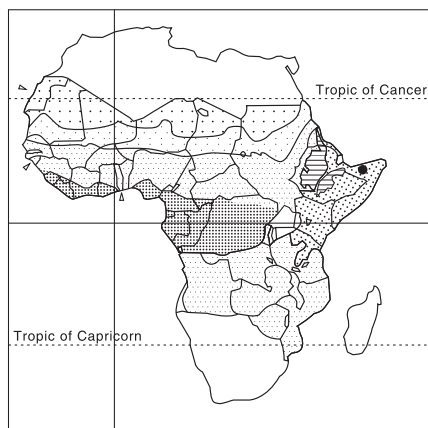
Extremely rare in cultivation. In this case the spherical plant (seedling) soon changes character and becomes a shrub.

Near *E. phillipsiae*.

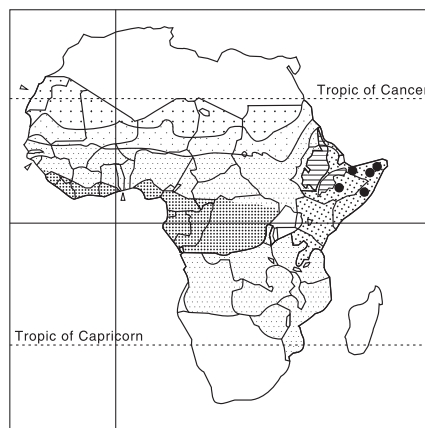




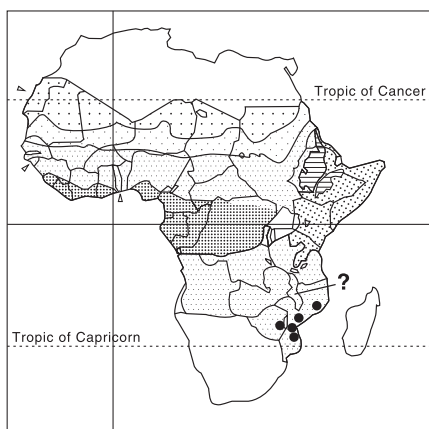
*Euphorbia gymnocalycioides*



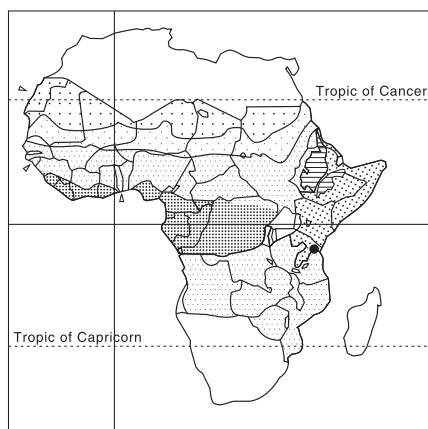
*Euphorbia gypsophila*



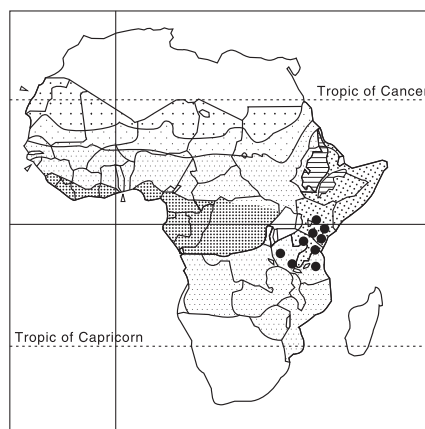
*Euphorbia hadramautica*



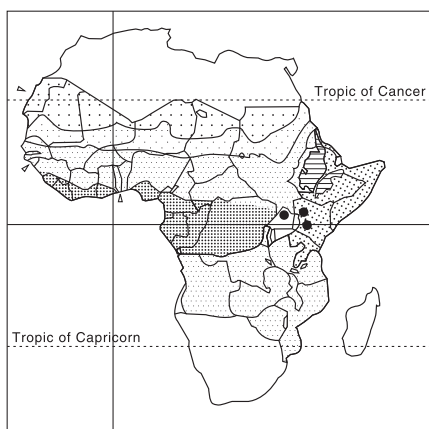
*Euphorbia halipedicola*



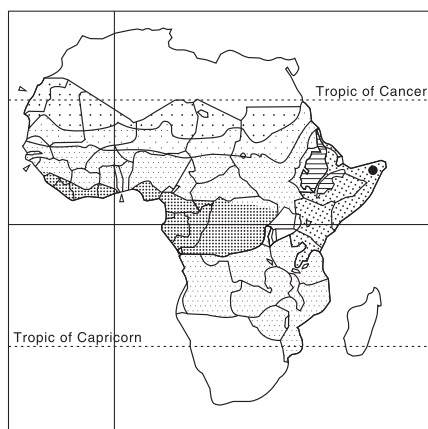
*Euphorbia handeniensis*



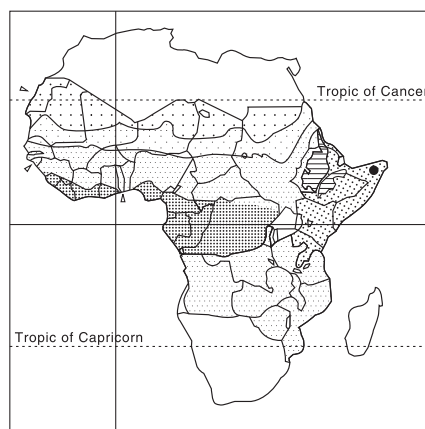
*Euphorbia heterochroma*



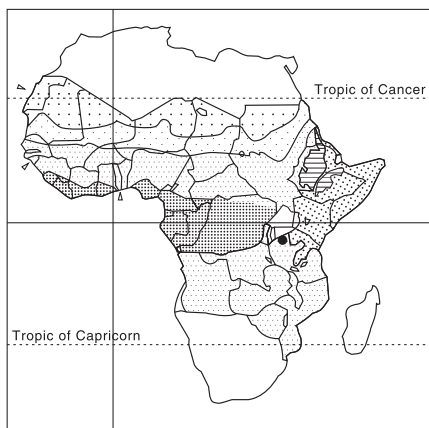
*Euphorbia heterospina*



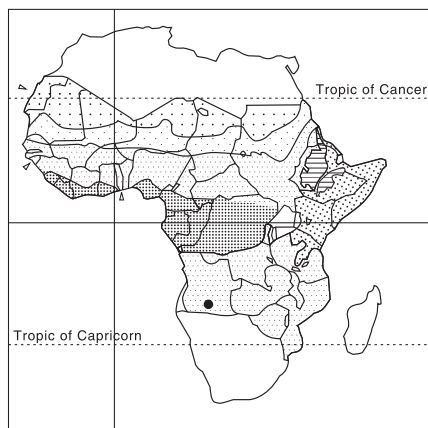
*Euphorbia holmesiae*



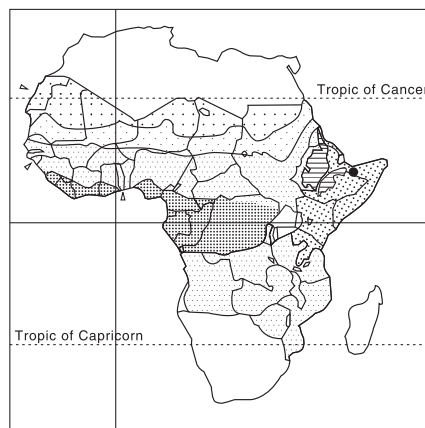
*Euphorbia horwoodii*



*Euphorbia hubertii*



*Euphorbia imitata*



*Euphorbia immersa*

## EUPHORBIA

**E. hubertii** Pax

Tree to 6 m; trunk simple or occasionally forked, to 30 cm Ø; branches spreading then ascending and rebranching to form a large rounded crown; terminal branches fleshy (3-)4-5(-6)-angled, 3-7 cm wide, distinctly winged, constricted at irregular intervals into pear-shaped segments 5-15 cm long; angles sinuately toothed, with teeth  $\pm$  1 cm apart; spiny.

Rocky outcrops near lake shore; 1025-1200 m alt.

**E. imitata** N. E. Br.

Rootstock a globular tuber; stems numerous, erect, 5-8 cm tall, slender, terete at the base, 3-angled above; angles acute, sinuate-toothed; leaves thick, fleshy, deciduous, elliptic, cuneate, acute,  $\pm$  5 mm wide  $\times$  7 mm long and heavily crisped on the margins; capsule and seeds unknown.

Between granite rocks in mixed woods on bank of river; rather rare.

Of easy culture.

Only known from the type collected in 1905 as a herbarium specimen.

**E. immersa** Bally & S. Carter; Euphorbia J. 10: 94, 1996.

Dwarf, succulent plant; root beet-like merging into a short thick subterranean stem with the flattened apex at ground level; branches 5-15, erect, fleshy, terete, tufted around the central growing point; 0,4-3 cm long  $\times$  6-8 mm thick, with very shallow tubercles 5-10 mm apart in 3 spiral series; spiny; capsule and seeds unknown.

Overgrazed stony ground, both on limestone and sandstone; with few woody plants; 1310-1370 m alt.

Extremely rare in cultivation.

Depauperate form of *E. xylacantha*? Near *E. monacantha*.

**E. imparispina** S. Carter; Euphorbia J. 9: 234, 1994.

Succulent perennial to 10 cm tall, densely branched to form tufted clumps to 25 cm Ø; branches to 7 cm long, terete, 6-12 mm thick, with very shallow rounded tubercles 7-12 mm apart, in 5 longitudinal series separated by shallow sinuate grooves; spiny; capsule and seeds unknown.

Steep rocky slope with sparse low xerophytic scrub; 915 m alt.

Extremely rare in cultivation.

Near *E. mitriformis*.

**[E. impressa** Chiov.]

Caespitose perennial with prostrate branches.

Type: Basile 96, Ethiopia, stream Uebi-Scebeli, Arusi.

Not in Flora of Ethiopia and Eritrea 2(2), 1995.

**E. inaequilatera** Sonder

syn.: *E. granulata* Forssk. var. *glabra* Maire

Annual much-branched herb, prostrate, to  $\pm$  50 cm Ø, or sometimes decumbent with branches to 30 cm long, longitudinally ridged, conspicuously so when dry, *the whole plant completely glabrous* or with few scattered hairs on the lower leaf-surface and occasionally on the capsules; leaves ovate, to 14  $\times$  6 mm, base very obliquely rounded to subcordate. Rarely perennial (var. *perennis* N. E. Br., Botswana).

## EUPHORBIA INAEQUILATERA

Open patches amongst grass on seasonally wet gravelly, sandy or clay soils; roadsides; grazed areas; also weed of cultivation; dry deciduous bushlands with *Acacia* and *Commiphora*; margins of montane forest; sides of irrigation channels; disturbed areas; gritty stony soils in open exposed places; sand of dunes included coastal; 10-3000 m alt.

S. Africa, Botswana; Arabian peninsula.

Comprises 3 vars.: – var. **inaequilatera**, – var. **spanothrix** S. Carter, and – var. **dentata** (N. E. Br.) M. G. Gilbert.

**E. inaequispina** N. E. Br.; Euphorbia J. 9: 84, 1994; S. Carter in L. Russo, Succ. Pl. E. Afr.: 128, 2004 (photos).

Dwarf succulent perennial with 5-15 tufted trailing branches which die off at the base but root to form new plants; branches to 30 cm long, rarely rebranching, terete, 0,7-1,5 cm thick, tessellated with rounded tubercles 3-7 mm apart in 7 slightly spiral series; spines 3-18 mm long on the same stem giving the plant a somewhat skewed look.

Very open, flat, stony ground; limestone rocks and scree and sandstone slopes, with open *Acacia-Commiphora* bushland; 180-300 m alt. – Locally common.

Cultivated.

Very similar to *E. ellenbeckii*.

**E. inculta** Bally

Succulent shrub 1-2,3 m tall, densely branched from the base, rebranching irregularly; branches erect, 4-5-angled, 1,5-2,5 cm thick; angles very shallowly toothed, with teeth 6-15 mm apart; spiny.

Gentle rocky slopes, with very open xerophytic bushland; 300-650 m alt.

Seldom seen in cultivation.

Near *E. nigrispina*.

**E. indurescens** L. C. Leach

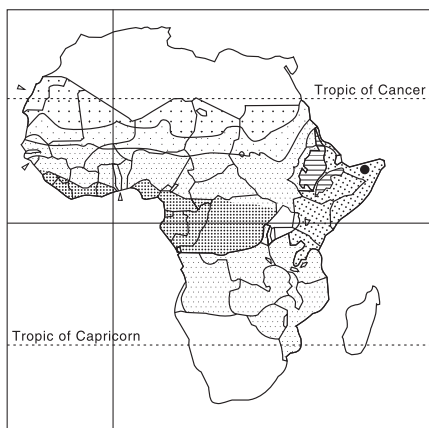
Dwarf, rather twiggy, succulent shrublet, to 20 cm tall (usually less), with a large, usually  $\pm$  oblong, tuberous root bearing one or more underground stems or “necks”, with the aerial branches arising from the apex of the stems, at or just below ground level; branches freely randomly branched and rebranched, spreading (sometimes almost prostrate, occasionally strictly erect), terete, 4-5 mm Ø towards the base, tapering slightly towards the apex, usually somewhat flexuose, with prominent alternate leaf bases, initially green and succulent, becoming grey and woody, often dying back at the apex but not at all spine-tipped; leaves and seeds unknown.

Cliff top on calcrete with *Sarcostemma*; rocky maritime places; on steep sand and pebble slope with *Euphorbia virosa*.

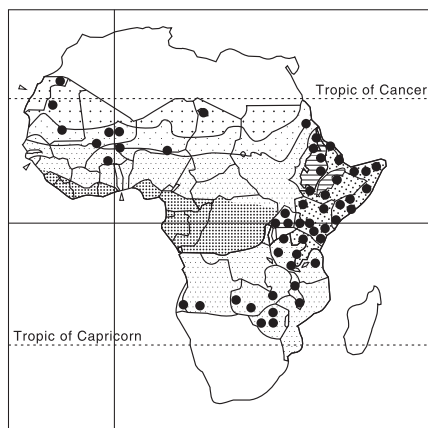
Near *E. curocana*.

**E. ingens** E. Mey. ex Boiss.; Euphorbia J. 9: 180, 1994; Desert Pl. 17(2): 18, 2001.

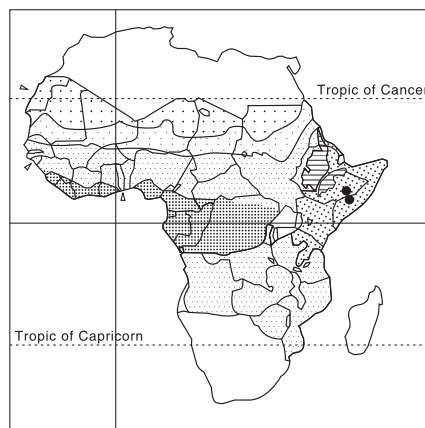
Spiny succulent tree with a short main trunk rebranching freely very low down, which usually results in neither the candelabrum shape nor the individual crown of branches being evident; not shedding its older branches but retaining them, which eventually results in the tree becoming massive, many-branched with a  $\pm$  rounded crown; branchlets 4-5-angled, to 12 cm Ø, irregularly constricted, forming segments with parallel sides; leaves sometimes to 2,5  $\times$  1,2 cm.



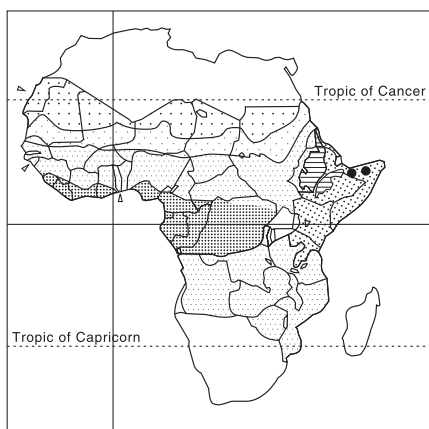
*Euphorbia imparispina*



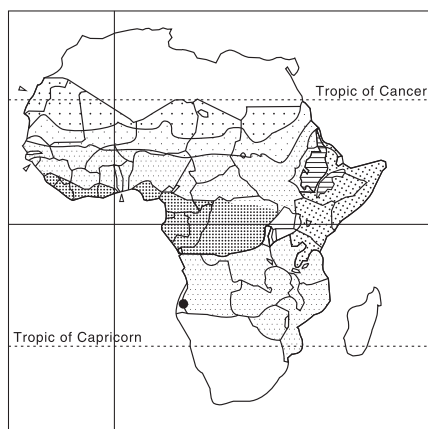
*Euphorbia inaequilatera*



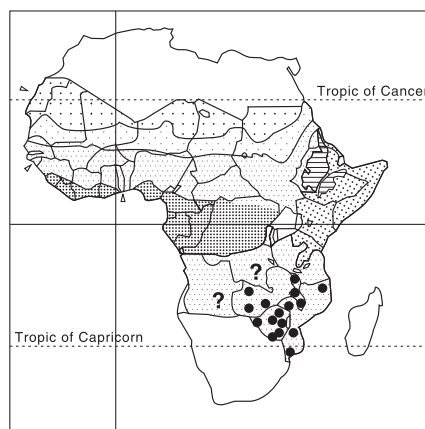
*Euphorbia inaequispina*



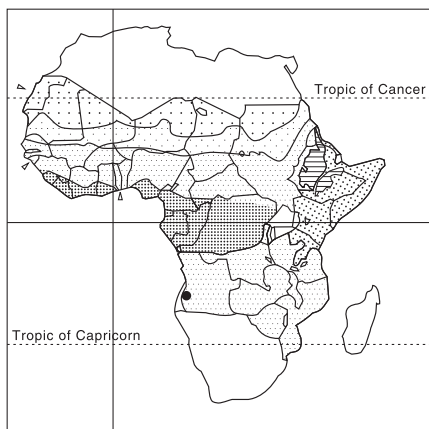
*Euphorbia inculta*



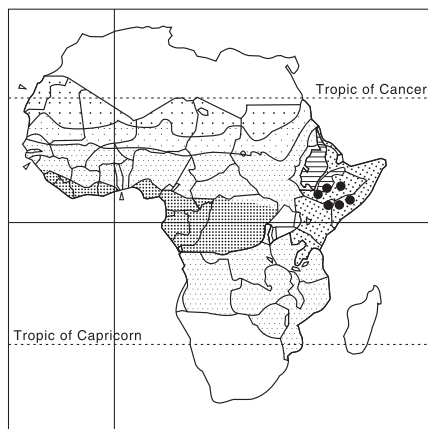
*Euphorbia indurescens*



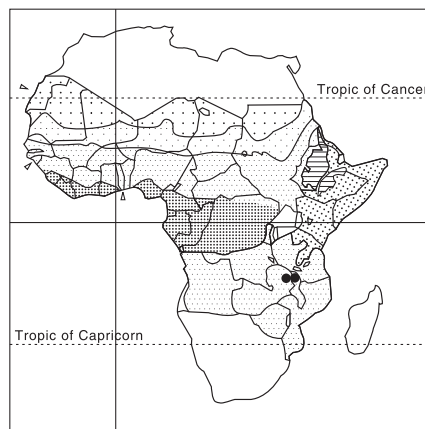
*Euphorbia ingens*



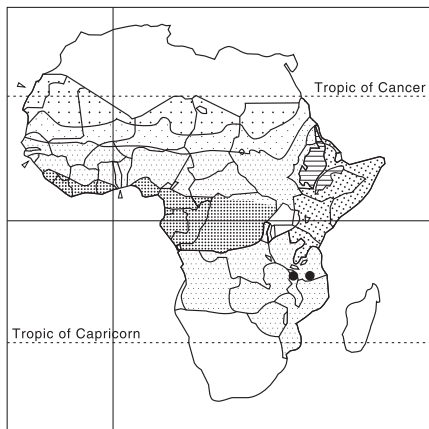
*Euphorbia ingenticapsa*



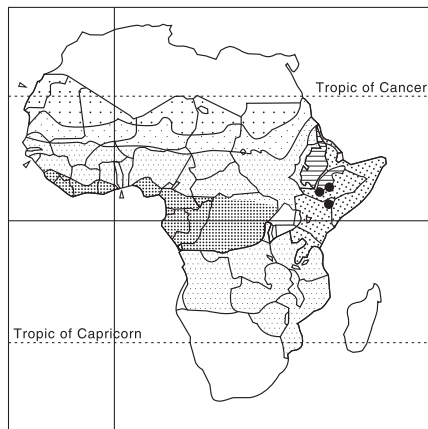
*Euphorbia intricata*



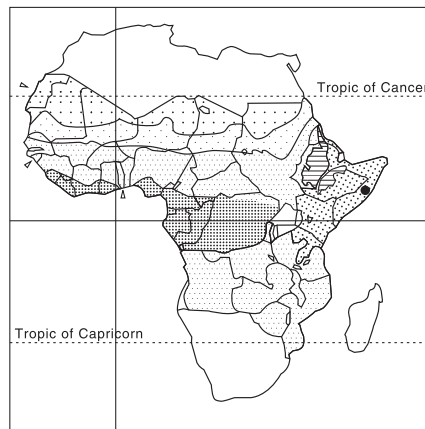
*Euphorbia inundaticola*



*Euphorbia isacantha*



*Euphorbia jatrophoides*



*Euphorbia johannis*

## EUPHORBIA INGENS

Rocky hills, termite mounds; also in alluvial clays (resulting in basic differences between specimens from these two different habitats); 10-1600 m alt.

S. Africa; Botswana; ? S Zambia; ! S Zaire (Fungurume; cobalt: 37 µg/g dry weight; copper: 50).

Easily grown; cristate and monstrous forms known. Now officially lumped under the erroneous name *E. candelabrum* var. *candelabrum*.

The largest *Euphorbia* and probably the most photographed; massive tree, can weigh many tons at maturity and is a dominant feature of the landscape. Described in 1834. To (4-)12(-15) m tall.

Near *E. candelabrum*.

**E. ingenticapsa** L. C. Leach

Succulent, spiny, erect shrub (rarely with a spreading habit), to ± 2,5 m, usually 1,8 m tall, branched from the base, appearing to be acaulescent, with a much reduced stout trunk, which appears, on the evidence of juveniles, to be initially 3-angled with 5 or more angles soon developing; branches spreading ascending, mostly simple, very rigid, deeply constricted into segments, 4-5(-7)-winged (sometimes initially 3-angled), the broad wings much compressed, ± 5 mm thick; segments usually ± truncate or elliptic or sometimes subcircular, ± 6-12 cm long × 9-12 cm broad, with a hard, horny, sinuate-dentate, often wavy, continuous margin which is widened, thickened and hump-like at the base of the spines; leaves thick and fleshy, ovate-acute, to 6 mm long.

Boulder strewn, steep, rocky hillsides.

Not frequently encountered in collections; of relatively easy cultivation.

Near *E. venenata*; easily confused with *E. virosa*.

**E. intricata** S. Carter

Intricately branched woody shrublet to 30(-80) cm tall, from a tuberous, subfleshy rootstock 1-2 cm thick; terminal branchlets very numerous, thin and usually contracted, with leaves subfasciculate; leaves oblanceolate, to 18(-35) × 8 mm; mature seeds unknown; not spiny and lacking spine-tipped branchlets.

*Acacia mellifera* or *Combretum-Terminalia* bushland in areas of impeded drainage or on rocky slopes with *Acacia-Commiphora* bushland; (500)-1300 m alt.

Near *E. cuneata*.

**E. inundaticola** L. C. Leach; Aloe 37: 54, 2000; 38: 62, 63, 2001.

Succulent, spiny, spreading subshrub to 1 m tall, branching from the base, sparingly rebranched above; branches spreading, often much elongated, becoming trailing, often with stout, aerial, adventitious roots emerging from the sides of the branches, 4-angled, sinuate-toothed along the angles, teeth to 2 mm prominent, in subopposite pairs, decussately arranged; spines spreading outwards, to 8 mm long.

Small mounds in seasonally inundated (in summer), flat terrain in mopane woodland associated with succulent *Sansevieria* (unusual habitat for a succulent spiny *Euphorbia*); 700-1350 m alt.

Most closely related to *E. cataractarum* and *E. luapulana* (both from rocky habitats in close proximity to waterfalls).

## EUPHORBIA

**E. isacantha** Pax; Excelsa 15: 14, 1992; Euphorbia J. 9: 150, 1994.

Succulent perennial densely branching from the base forming tangled masses ± 25 cm tall and 1 cm Ø; branches decumbent to ± 50 cm long, 8-10 mm thick, sparsely rebranched, sharply 4-sided from the regularly decussate arrangement of the ventricose tubercles which are usually ± 10 mm apart along the slightly crenulate angles, with the parallel sides of the branches slightly flexosely convex; angles ± without teeth; spiny; capsule and seeds unknown.

Rocks in the shade of *Brachystegia* woodland; 55-1015 m alt. Of easy culture.

**E. jatrophoides** Pax

syn.: *E. reghinii* (Chiov.) Vollesen; *Commiphora reghinii* Chiov. (sterile material).

Erect shrub or tree 5 m tall; leaves alternate or occasionally fasciculate, panduriform, to 6 × 3 cm, base cuneate; capsule and seeds unknown.

Limestone hills with open *Acacia-Commiphora* bushland with *Terminalia*, *Barbeya*, *Delonix*; 400-1600 m alt.

Material from central Kenya is *E. joyae*.

**E. johannis** S. Carter; Euphorbia J. 9: 87, 235, 1994.

Dwarf prostrate succulent perennial to 25 cm Ø; stem to 15 cm long, with 5-8 branches; both terete, 1-1,5 cm thick, with prominent tubercles 3-5 mm apart, crowned by the spine-shields and forming 8-10 longitudinal ridges; capsule and seeds unknown.

Rocky limestone ground with open *Acacia-Commiphora* and mixed xerophytic bushland; locally common; 360 m alt.

Virtually unknown in cultivation.

Near *E. inaequispina*.

Only known from the type collected in 1985.

**E. joyae** Bally & S. Carter

Much-branched, spreading, woody shrub to 2,5 m tall; leaves alternate, occasionally fasciculate, obovate to panduriform, to 5 × 3 cm, base rounded.

Sandy gravelly soils and lava; with open *Acacia-Commiphora* bushland; 180-750 m alt.

Near *E. jatrophoides*.

**E. jubata** L. C. Leach; Aloe 38: 64, 68, 2001.

Spiny, succulent, dwarf shrub, ± 18 cm tall, densely branched and rebranched, somewhat pulvinate; branches 4-angled (very rarely 5), ± 1,2 cm thick excluding the tubercles, sharply longitudinally furrowed between the angles, usually slightly constricted into segments of varying length; tubercle teeth obtuse, frequently truncate on the upper slope, particularly at and towards the apex of the branches, to 2,5 mm high, 7-12 mm apart along the angles; leaves prominent, succulent, soon deciduous; spines widely diverging.

Granite rocks on small kopje, in shade with *Brachystegia-Uapaca* woodland; common on the quartzitic ridges, in extremely wet habitats, growing in deep moss amongst lichens and epiphytic orchids (*Bulbophyllum*, *Cyrtorchis*, *Polystachya*, *Rangaeris*); ± 1455 m alt.

Relatively common in collections; easily grown.

Near *E. schinzii*.



## EUPHORBIA

**E. kalisana** S. Carter; Euphorbia J. 9: 212, 1994; Carter in L. Russo, Succ. Pl. E. Afr.: 126 (photo), 2004.

Medusoid plant forming spiny mounds to 1 m Ø, with a short, subterranean, thick central stem broader than high, with spiral tubercles, each axil producing a persistent, tuberculate, spreading, lateral stem to 1 m long, 20 mm thick; leaves ovate 3,5 × 2,5 mm.

Sandy gravelly soil; rocky slopes and in plain; lava hill; *Acacia-Commiphora* scrub; sandy alluvium; plain of lava boulders with soft damp mud beneath; *Commiphora-Grewia* bushland on tan sandy soil; locally common; 100-1000 m alt.

Uncommon in cultivation.

Near *E. triaculeata*.

**E. kamerunica** Pax, incl. var. *barteri* (N. E. Br.) A. Chev.; Euphorbia J. 8: 33, 117, 118, 1992.

syn.: *E. barteri* N. E. Br.; *E. garuana* N. E. Br.

Shrub or tree with candelabriform branching to 7,5-10 m tall, forming tangled masses 5-6 m Ø, normally with a distinct trunk 50 cm Ø at the base; branches succulent, spiny, 7,5 cm or more Ø, 3-5-(usually 4-)angled, with a solid central part 1,2-2 cm thick; angles wing-like, sinuate-toothed; leaves rudimentary.

Rocks. – Often planted in towns and villages; also as fencing. Not in Guinea and Ivory Coast.

[**E. kaokoensis** (A. C. White, R. A. Dyer & B. Sloane) L. C. Leach] – Icon.: Dinteria 12: 34, 1976 (photo).

bas.: *E. subsalsa* Hiern var. *kaokoensis* A. C. White, R. A. Dyer & B. Sloane

Dense stout spiny shrub to 50 cm tall; stems 2 cm Ø; 5-7-ribbed; spines brown at base of branches, rufous towards tips, plant seeming red-crowned from a distance.

Rocky slopes; crevices and fissures on rocky slabs in mopane woodland; limestone ridges; stony soil; along rocky outcrops; to 770 m alt. – Occurring in colonies.

NW Namibia, on the frontier to Angola (S. Loots, Red Data Book Namibian Pl.: 52, 2005).

**E. karibensis** S. Carter

Erect annual herb to ± 30 cm tall, with somewhat woody stem (to 3 mm thick) and branches; branches spreading; leaves linear to 45 × 3 mm (shape variable from linear to lanceolate); not spiny.

Stony soils on hillsides; 760-1100 m alt.

Near *E. eylesii*.

**E. kassneri** Pax

Perennial shrub, with a fleshy tuberous root to 30 cm long, producing numerous erect woody stems and branches to 1 m high; leaves oblanceolate, to 25 × 6 mm; not spiny.

Grassland, bushland near the coast; 20-100 m alt.

**E. keithii** Dyer

Succulent spiny shrub or tree to 2-6 m tall, with a crown of spreading-ascending branches; branches 1-2 m long, (3-)5 (-6)-angled, constricted into segments to 25 × 3-4 cm; angles ± winged, with wings 7-15 mm deep and shallowly sinuate, the tubercles 1-1,75 cm apart along the margins.

Rocky slopes; ± 150 m alt.

S. Africa.

## EUPHORBIA

**E. kelleri** Pax

Densely branched woody shrub, 1-5 m tall; new shoots slender; leaves narrowly oblong-lanceolate 30-80 × 4-12 mm or broadly cuneate-spathulate 23 × 14 mm; not spiny.

Gypsaceous silt and sandy clay, with very open *Acacia-Commiphora* bushland; 145-400 m alt.

Comprises 2 vars. (– var. **latifolia** Pax only known from the type).

**E. kerstingii** Pax

Perennial with annual stems arising from a woody rootstock; stems branching at the base, 5-10-75 cm long; leaves linear-lanceolate to ovate-lanceolate 1-2 × 0,2-0,9 cm, cordate or subcordate and slightly unequal at the base; not spiny.

After grass fire in savanna on ferruginous hardpan; 525 m alt.

**E. kilwana** N. E. Br.

Annual semi-prostrate herb, with branches to 45 cm long, often red tinged; leaves ovate-oblong, to 25 × 8 mm, base obliquely rounded to subcordate; not spiny.

Seasonally wet grassland, in clay; river bank alluvium, usually seasonally flooded; 0-600 m alt.

**E. kiritensis** Bally & S. Carter

Spreading shrub to 2,5 m tall; leaves in terminal tufts, obovate, 1,5-3 × 1-2 cm.

Red sandy rocky soil with open *Acacia-Commiphora* bushland; 790-914 m alt.

Near *E. giumboensis*.

**E. knuthii** Pax; Euphorbia J. 8: 72, 73, 1992.

Very dwarf leafless, spiny succulent, 7,5-15 cm tall; rootstock a tuber, with a short or elongated neck, producing many branches at the ground level; branches simple or branched, 5-15 cm long, 3-4-angled; angles rather deeply sinuate-toothed, with the teeth 0,6-1,25 cm apart and 0,22-0,44 cm prominent, deltoid or the upper margins nearly truncate and the lower sloping.

Low-lying, black turf areas; also in close association with equally large numbers of *Stultitia paradoxa*; most plentiful in semi-vlei areas to the south of Maputo with *Acacia xanthophloea*, *Adenium obesum*, *Orbea paradoxa*; flat coastal grassland and semi-vlei in the vicinity of salinas; 4-200 m alt.

S. Africa (Komatipoort, Madelane). Not in Nampula in northern Mozambique (cf. *E. corniculata*), but near Cherinda between Rio Beira and the mouth of the Save river (Mambone) and to Ampara.

Comprises 2 subspp. which only differ in habit and the number of angles to the branches; – subsp. **knuthii**: 3-4 angled (rarely 5), produced from a rhizomatous mass of roots, usually with a large main tuber, often with plantlets arising at some little distance from the parent plant; individuals sometimes occupying an area 60 cm or more in Ø; – subsp. **johnsonii** (N. E. Br.) L. C. Leach is normally a solitary plant with relatively few 2-3-angled branches arising from a single large tuberous root, with only rarely a tendency towards a rhizomatous habit.

Culture exceedingly easy.

Near *E. evansii*, *E. griseola*, *E. jubata*, *E. richardsiae*, etc.; little affinity with *E. vandermerwei*.

## EUPHORBIA

**E. kouandenensis** Beille

Perennial herb, sending up rather fleshy shoots from a woody stock, 10-15 cm × 6-8 mm; stems 10-12 cm × 2-3 mm; leaves ovato-lanceolate 5,5-8 × 2,5-3,5 cm.

After grass fire in savanna.

**E. laikipiensis** S. Carter; *Euphorbia* J. 9: 216, 1994.

Tufted succulent perennial to 10 cm tall and 20 cm Ø, branching densely from the base, with a thick fleshy root; branches to 10 cm long and 8-10 mm thick, cylindrical, not rebranching, with shallow teeth 1-1,5 cm apart in 4 longitudinal series; spiny. Rocky soil in grassland, with deciduous shrubs; 1700-1850 m alt. Near *E. graciliramea*, *E. similiramea*.

**E. lateriflora** Schumach. & Thonn.; *Euphorbia* J. 8: 118, 1992.

Shrub with smooth-glaucous ± erect, rounded stems, simple or ramose, 0,8-1,5 m tall; stems 3-5 mm Ø, arising from a woody rootstock; branches slender, spreading, alternate with leaf-scars. Dry places; savanna with cultivation; 150 m alt. Also cultivated, and planted as fencing.

**E. lavicola** S. Carter

Much-branched woody shrub to 60 cm tall; leaves alternate, obovate to 1,5-1,3 cm, base rounded; entire capsule unknown; not spiny.

Exposed lava gravel with very sparse vegetation; 600-800 m alt. Near *E. jatrophoides*.

**E. ledermanniana** Pax & K. Hoffm.; *Cactus Succ. J. (U.S.)* 77: 99, 2005.

syn.: *E. calva* N. E. Br.

Perennial herb with rather fleshy shoots arising from a woody rootstock; stems 7,5-20 cm tall, 0,22 cm thick, usually forking into a 2-branched cyme at the apex, simple or rarely branched below; leaves linear-lanceolate, acute, coriaceous.

Savanna, after grass fires; also small river-forest; ± 915-1520 m alt.

**E. lenewtonii** S. Carter; *Cact. Succ. J. (U.S.)* 72: 186, 187, 188, 2000; 77: 99, 2005.

Densely branching perennial forming cushions to 10 cm tall and 50 cm Ø; roots thickened, to 7 mm Ø; lowest branches spreading at ground level and rooting; branches fleshy, cylindrical, to 8 cm long and 1 cm Ø including prominent tubercular teeth ± 1 cm apart in 5 spiral series; spiny.

Soil pockets on rock slabs; ± 1225 m alt.

Near *E. tetracanthoides*.

Only known from the type collected in 1993.

**E. leontopoda** S. Carter

Shrublet, weakly erect to 50 cm tall, with spreading succulent branches from a large, fleshy, tuberous root; branches (3-)5-6-angled, deeply winged and deeply constricted into segments to 5 cm long, 6 cm wide; angles prominently toothed, with teeth to 2 cm apart at the broadest basal part of the segments, much closer and less prominent towards the constrictions; spiny. Rocky ground in open *Buxus hildebrandtii* woodland; 1300-1650 m alt.

Near *E. ballyi*; closely resembles *E. buruana* and *E. pseudoburuana*.

## EUPHORBIA

**E. letestui** J. Raynal; *Acta Bot. Gall.* 148: 356, 2001.

Cactus-like erect, succulent perennial, 2-4 m tall, with hemispherical outline; trunk ± cylindrical to 20 cm thick, with candelabiform branching; branches succulent, slightly spiny, thinner than in the closely resembling *E. kamerunica*, 3-winged, segmented, with segments oblong-elliptic or oblanceolate, 10-30 cm long, 5-10 cm Ø; young branches leaved; mature leaves fleshy, obovate or oblanceolate, 35-80 × 12-30 mm, with obtuse or rounded tips, falling off before the flowers appear; glands of cyathia sessile (pedunculate in *E. kamerunica*).

Crystalline rock slopes of inselberg dominating the rain-forest. Only on the moderately abrupt low slopes between forest and denuded stone flags with *Afrotrilepis*.

Near *E. kamerunica* and *E. hermentiana* Lemaire (= *E. trigona* Mill., known only in cultivation).

**E. leucochlamys** Chiov.

Shrub 1,5-2 m tall, branching from the base; branches softly woody; leaves subsessile, tufted at the branch apices, obovate, 1-3 × 0,7-1,8 cm; capsule and seeds unknown; not spiny.

Gypseous limestone with low sparse vegetation; 700-850 m alt.

**E. limpopoana** L. C. Leach ex S. Carter; *Kew Bull.* 54: 960, 1999.

syn.: *E. malevola* L. C. Leach subsp. *bechuanica* L. C. Leach

Densely tufted succulent perennial to ± 45 cm tall, with a short stem merging into a fleshy tuberous root and with numerous branches arising at or below ground level, sparsely rebranching to form a compact clump to 2 m Ø; branches succulent, to 50 cm long, 1-2 cm Ø, acutely 4-angled; angles shallowly sinuate with tubercle-teeth ± 1,5-2 cm apart, crowned by the spine-shields.

Rocky hills and sandy soils in mopane woodland; 180-1370 m alt.

Botswana, S. Africa.

Near *E. schinzii*.

**E. linearibracteata** L. C. Leach

Perennial herb with annual stems arising singly from the apex of a somewhat torulose, ± cylindrical woody root ± 4 mm Ø; stems simple, finely striate when dry; leaves alternate (or rarely opposite), verticillately crowded at the apex, subsessile, with a subulate dark amber tooth ± 0,3 mm long, on each side at the base, narrowly linear, apiculate, ± 2,5 mm wide at the base, soon widening to ± 3,5 mm (but to ± 2,25 mm due to the tightly rolled revolute margins); the lowest ± 5 mm long, lengthening above to ± 60 mm, with those of the verticillaster to 85 mm long; capsule and seeds unknown; not spiny.

*Brachystegia* woodland with *Julbernardia baumii*.

Near *E. erythrocephala*, *E. asclepiadea*.

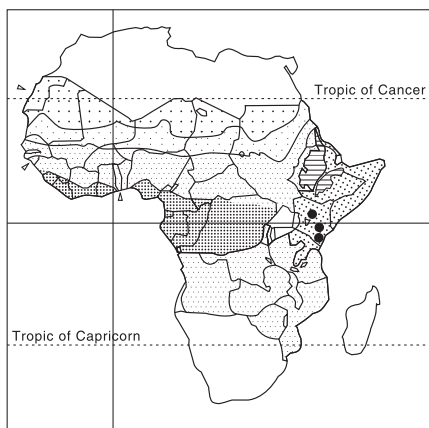
Only known from the type collected in 1906.

**E. lissosperma** S. Carter

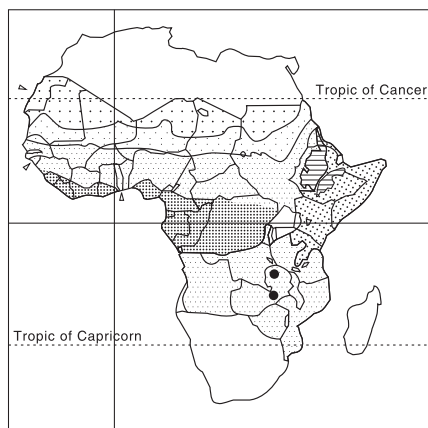
Prostrate or suberect annual herb, with branches to 25 cm long, longitudinally ridged; leaves ovate, to 10 × 7 mm, base rounded to subcordate and markedly oblique; not spiny.

Seasonally wet open grassland on black fissuring clay; 800-1750 m alt.

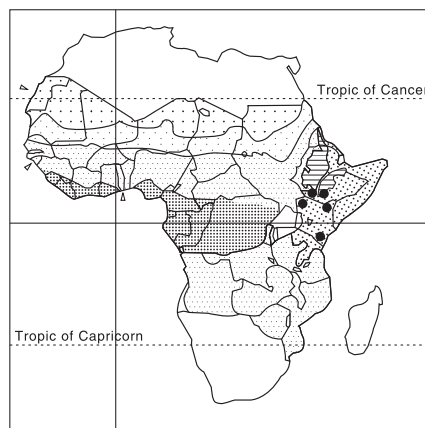
Near *E. inaequilatera*. Overlooked by collectors (insignificant appearance).



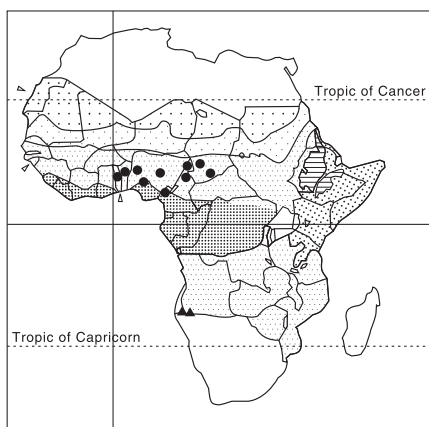
*Euphorbia joyae*



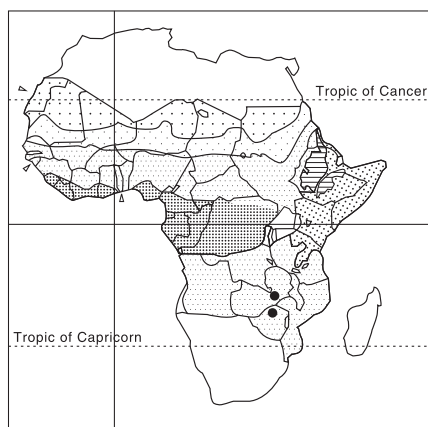
*Euphorbia jubata*



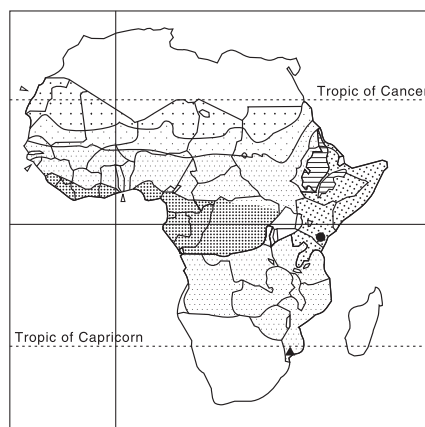
*Euphorbia kalisana*



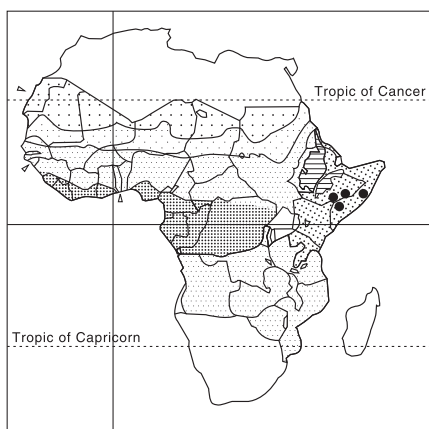
*Euphorbia kamerunica* ●  
(*Euphorbia kaokoensis*) ▲



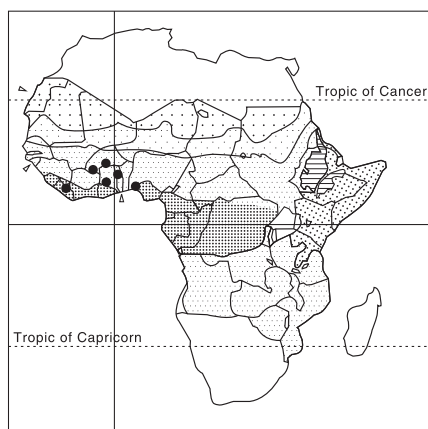
*Euphorbia karibensis* (Zambia with reservation)



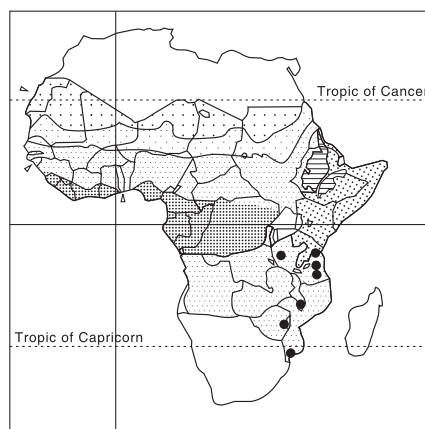
*Euphorbia kassneri* ●  
*Euphorbia keithii* ▲



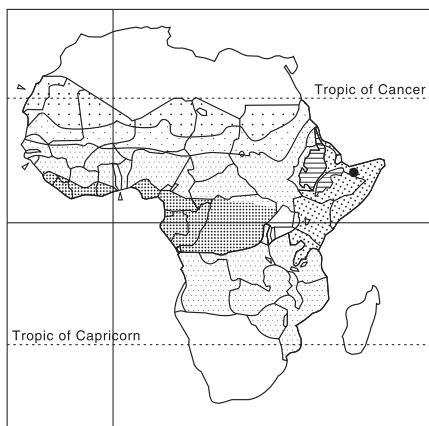
*Euphorbia kelleri*



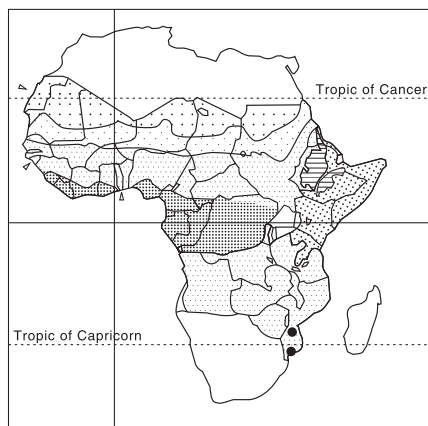
*Euphorbia kerstingii*



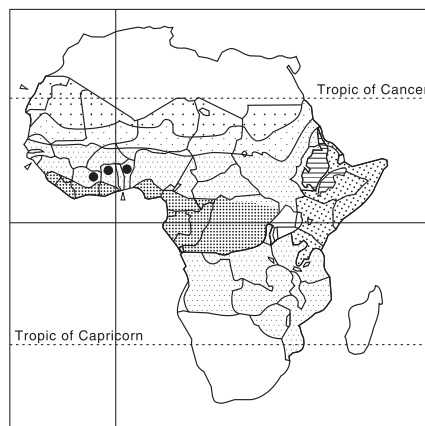
*Euphorbia kilwana*



*Euphorbia kiritensis*



*Euphorbia knuthii*



*Euphorbia kouandenensis*

## EUPHORBIA

**E. lividiflora** L. C. Leach; Euphorbia J. 7: 65, 1991; 9: 181, 182, 1994.

Tree to (-1)-4(-10) m tall, with a simple trunk 12-25 cm Ø; branches at first ascending and 5-angled, finally horizontal and cylindrical to ± 3 m long, with secondary branches arising loosely in whorls and rebranching to form a ± rounded slightly flattened crown; terminal branchlets fleshy, 3-4-angled and ± winged; angles sinuate-toothed with teeth 1,5-3 cm apart; spiny; leaves deltoid, ± 5(-13) × 3 mm. Note: unusual dark purple colour of the cyathia like those of *A. candelabrum*.

Sandy soils (among coral rocks near the coast), with open deciduous woodland; dense thickets and patches of woodland on the swampy coastal plain; habitats almost completely inaccessible during the flowering season, when the rains are at their heaviest (Mozambique); 15 (-1000 m in Malawi) alt.

Rare in cultivation; of generally easy culture.

Near *E. pimeleodendron*.

**E. loandensis** N. E. Br.

Annual herb with stems spreading on the ground, 5-15 cm long, laxly branched, thinly sprinkled all round with very spreading straight hairs; leaves opposite, 0,33-0,77 cm long × 0,14-0,33 cm broad, oblong, obtusely rounded at the apex, very unequal at the base; not spiny.

Sandy clay flooded in summer; also seashore.

Near *E. prostrata* and *E. granulata*.

**E. longispina** Chiov.; Euphorbia J. 9: 121, 1994; 10: 208, 1996.

Spreading shrub to 1,5 m tall, branched from the base; branches fleshy, very sharply 4-angled, 1-2,5 cm wide; angles sinuately toothed, with teeth to 3 cm apart; spiny.

Red sand overlying limestone with open *Acacia-Commiphora* bushland; 140-700 m alt.

**E. longituberculosa** Hochst. ex Boiss.; Euphorbia J. 7: 150, 1991; 9: 89, 1994; 10: 215, 1996.

Perennial herb to 30 cm tall, with a thick taproot merging into a swollen ± succulent tuberculate or occasionally smooth stem to 8 cm high and 4 cm thick; branches radiating from the stem apex to 8 cm long, tuberculate or smooth and ± succulent, sometimes with further thinner branches at the apices in groups of 3-6; leaves from the apices of the tubercles, linear-lanceolate to 50 × 8 mm; leaf-bases persisting as prominent, spirally arranged tubercles, often purple marked; not spiny.

Bare sandy rocky soils usually near watercourses; on usually seasonally flooded sandy soils; rather open, often disturbed, sites on steep rocky slopes and level sites in areas of *Acacia* or *Acacia-Commiphora* bushland; sometimes in black soils; 150-1150 m alt. S Yemen.

Still rare in cultivation and often difficult to grow.

Habit as *E. pirottae*. The short ovate main stem tapers below, giving the plant the general appearance of a child's toy top.

**E. lophiosperma** S. Carter

syn.: ? *E. platypoda* Pax; *E. systyloides* Pax var. *pedunculata* N. E. Br. and var. *lata* N. E. Br.

Annual herb to 1 m tall; stem woody at the base; branches longitudinally ridged; leaves ovate to 7,5 × 4 cm, base cuneate, apex acute; not spiny.

## EUPHORBIA LOPHIOSPERMA

Usually on sandy soils in grass amongst scattered trees and shrubs; deciduous woodland with *Lannea rivae* and *Commiphora africana* (0-)-600-1700 m alt.

Near *E. crotonoides*.

**E. luapulana** L. C. Leach; Aloe 37: 55, 2000; 38: 62, 2001.

Succulent spiny, very distinctive (due to the mottled branches and the multicoloured inflorescence) subshrub to ± 1 m tall, branched from the base, sparingly rebranched above; branches 4-angled, sinuate-toothed along the angles, ± 10 mm thick, often much reduced towards the base, these 5-6 mm thick with much reduced spinescens; leaves caducous, deltate, ± 1,0 × 1,25 mm; spines ± at right angles to the branch teeth.

On bare quartzitic rocks in close proximity to waterfalls and rapids, in close association with *Aloe luapulana*, *Summerhaysia zambesiaca*; ± 1140 m alt.

Near *E. cataractarum*, *E. inundaticola*.

Only known from the type as herbarium specimen; clones from type cultivated (Williamson 1147 sub Leach 14147). Masonda Falls, wrongly stated as Luapula River.

**E. lukoseana** S. Carter; Cact. Succ. J. (U.S.) 72: 188, 189, 2000.

Densely branching perennial forming compact clumps to 30 cm tall and 1 m Ø; branches spreading and rooting, 10-30 cm long, fleshy, sharply 4-angled, 1-1,5 cm Ø; angles sinuate, with tubercle-teeth ± 1 cm apart; spiny.

Rocky slabs above river, with deciduous woodland; 750-900 m alt.

Near *E. proballyana*.

**E. lupatensis** N. E. Br.

Sparsely branched erect or spreading annual to ± 30 cm tall, the whole plant usually red tinged; leaves lanceolate, to 45 × 7 mm; not spiny.

Open places by roadsides; open woodlands, wooded grassland in stony, sandy clay soils; 300-1025 m alt.

Extremely variable; species unsatisfactorily defined.

**E. lutosa** S. Carter

Annual herb to 60 cm tall; leaves broadly ovate to 4,5 × 2,5 cm; not spiny.

Black clay soil amongst grass in scattered *Acacia* bushland; 100-1500 m alt.

Near *E. lophiosperma*.

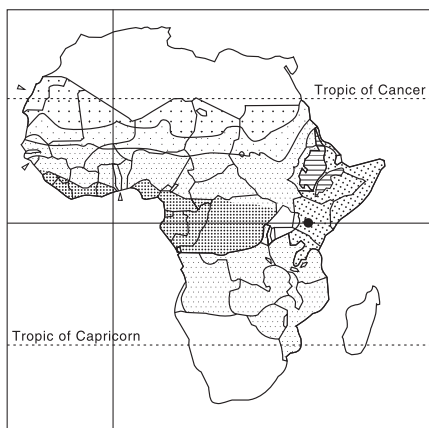
**E. macra** Hiern

syn.: *E. tenella* Pax, nom. illegit. non Kunth; *E. nenensis* Hiern

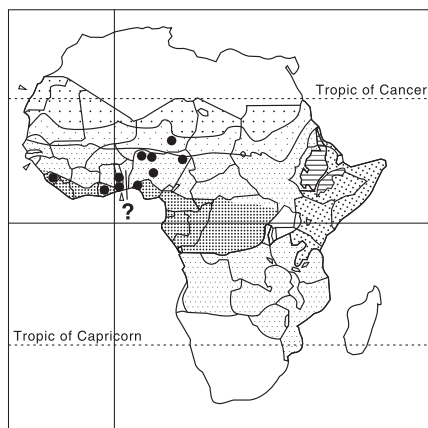
Perennial plant, very variable in appearance; rootstock woody or perhaps a tuber with a long woody neck; stems few or many, 5-30 cm high, 0,11-0,16 cm thick at the base, 2-3-times forked, in the taller specimens with long slender internodes; leaves opposite, linear, 1-2,5 × 0,1-0,3 cm, with the pairs more crowded in dwarf specimens; leaf margins often inrolled; not spiny.

Pastures among low herbage, on a somewhat sandy soil; poor, sparingly bushy, rather dry pasture; hilly and rather bushy places; 1700 m alt.

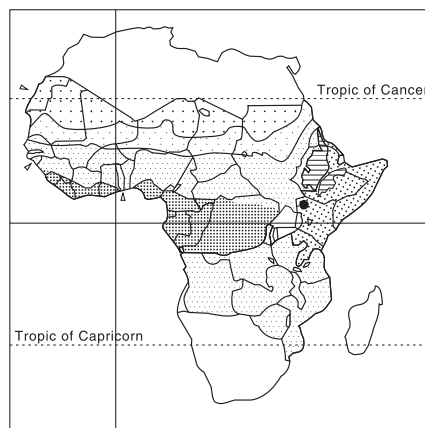




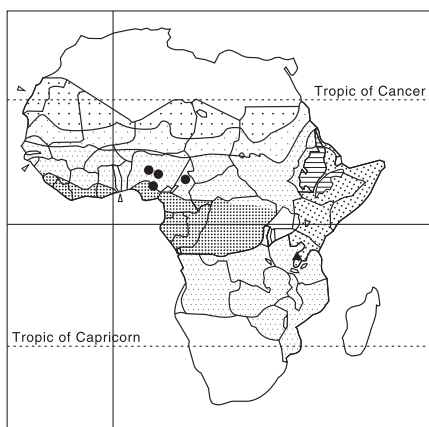
*Euphorbia laikipiensis*



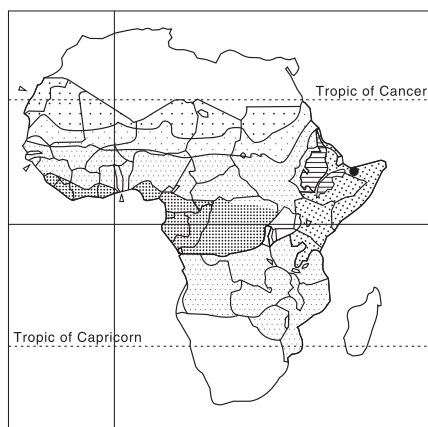
*Euphorbia lateriflora*



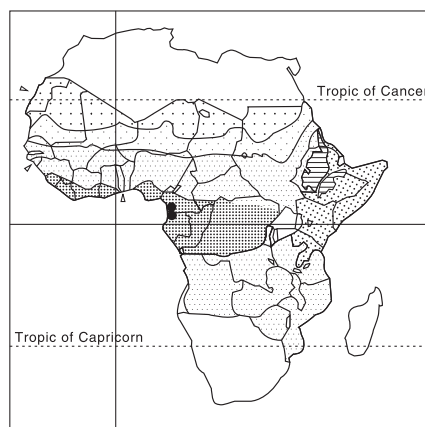
*Euphorbia lavicola*



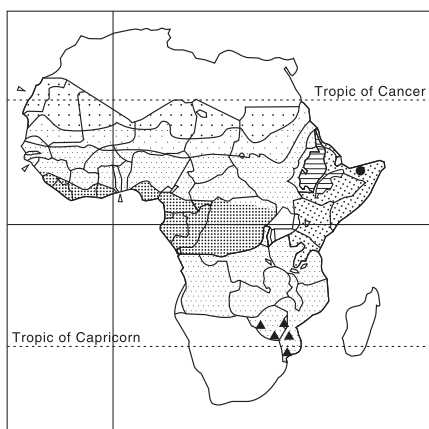
*Euphorbia ledermanniana* ●  
*Euphorbia lenewtonii* ▲



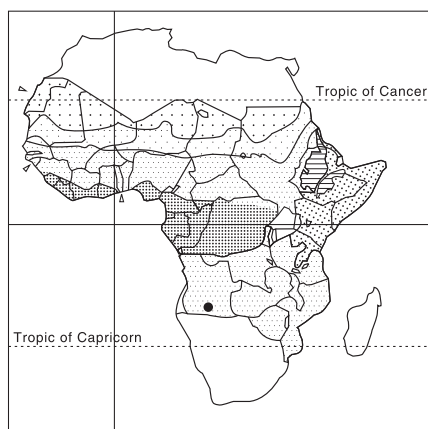
*Euphorbia leontopoda*



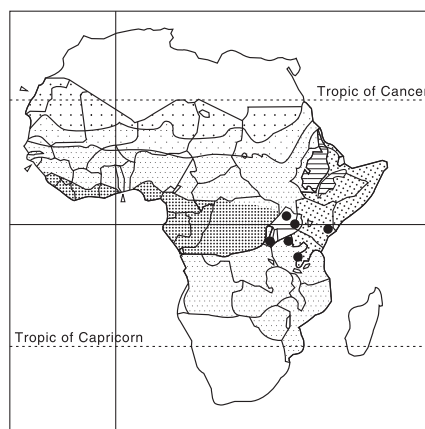
*Euphorbia letestui*



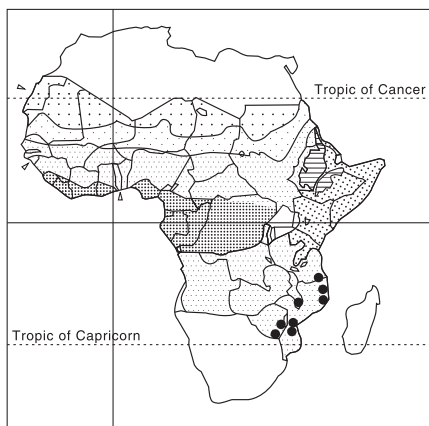
*Euphorbia leucochlamys* ●  
*Euphorbia limpopoana* ▲



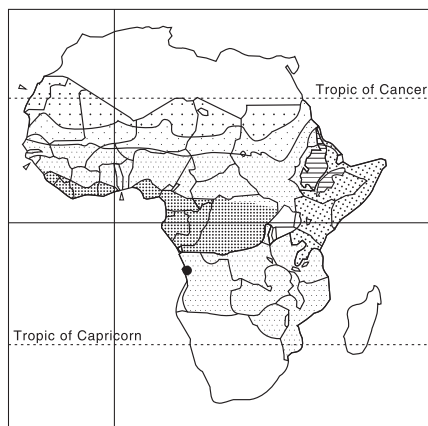
*Euphorbia linearibracteata*



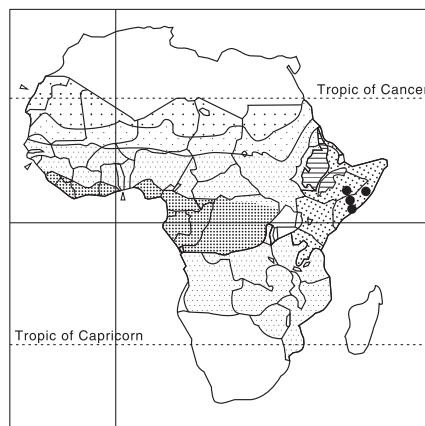
*Euphorbia lissosperma*



*Euphorbia lividiflora*



*Euphorbia loandensis*



*Euphorbia longispina*

## EUPHORBIA

**E. macrophylla** Pax

Erect perennial plant with annual stems 25-60 cm tall arising from a tuberous rootstock; lower leaves alternate 7-15 × 3-7 cm, whorled by 3-5 below the umbel of bracteate involucre.

Wooded savanna.

Not in Tanzania; but in Ethiopia; *E. omariana* is closely related.

**E. magnicapsula** S. Carter; Euphorbia J. 9: 219, 1994.

Tree 3-12 m, with a trunk to 45 cm Ø, rarely branched; seedlings 4-5-angled; branches spreading upwards, to 2,5 m long, rebranching to form a ± compact rounded or flattened crown; terminal branches fleshy, 3-5-angled, to 15 cm wide, prominently and stoutly winged, deeply constricted to form subcircular or ovate segments to 20 cm long, or shallowly constricted into oblong segments with undulate margins in young plants; angles sinuately toothed, with teeth 1-3 cm apart, ± regularly spaced on older plants; spiny; capsule 12 × 22-25 mm.

Rocky slopes with open deciduous bushland; 1000-2165 m alt.

Comprises 2 vars. with some intergrading of the two extreme forms. – Trees usually forming dense stands (var. **magnicapsula**) or usually scattered or forming small groups (var. **lacertosa** S. Carter).

Near *E. bussei*.

**E. makallensis** S. Carter; Collect. Bot. Barcelona 21: 73, 1993.

Shrub with close-packed erect stems to 50 cm tall forming cushions to 1,5 m Ø or low mounds to 5 m Ø; stems 4(-5)-sided, to 3 cm Ø; spiny; fruit known to day but not the seeds.

Known only from an area of ± 4 square kms in Tigray Region (Ethiopia). – Common in rocky places and steep hillsides on dolerite and sedimentaries including limestone, now with sparse cover of *Acacia etbaica* with occasional *Euclea schimperi*, *Echinops* spp., *Cynodon dactylon* etc.; 2260-2385 m alt.

Of rather easy culture.

Related to *E. polyacantha* and *E. nigrispina*.

Only known from the type collected in 1975 and cultivated plants.

**E. malevola** L. C. Leach excl. specim. Greenway 8814 (= *E. dedzana*); and excl. subsp. *bechuanica* L. C. Leach (= *A. limpopoana*); Euphorbia J. 7: 137, 139, 1991; 8: 48, 1992; 9: 174, 1994; Excelsa 19: 88-91, 1999; Desert Pl. 17(2): 19, 2001.

Spiny succulent shrub, branching from the base, sparingly branched above, to 1,5 m tall (usually ± 1 m, exceptionally to 3 m); branches spreading, ascending or ascending-erect (sometimes trailing), 4(-5)-angled, ± 1(-2) cm thick, with the sides concave or flat, the angles sinuate-tuberculate.

*Commiphora* sp. association; mixed deciduous woodland; granite slab rocks; rocks in tree shade; 450-1300 m alt.

Near *E. complexa*.

**E. margaretae** S. Carter

Spreading succulent perennial to 25 cm tall and 75 cm Ø; branches to 40 cm long, densely rebranched, terete, 2-8 mm thick, with shallow tubercles 1-1,5 cm apart in 3-4 spirally arranged series; spiny; flowers and fruits unknown.

Steep rocky slopes of north-facing limestone escarpment, amongst sparse low scrub; 915 m alt.

Near *E. schizacantha*.

Only known from the type collected in 1981.

## EUPHORBIA

**E. maritae** Rauh

Perennial with a round tuber, ± 5-10 cm Ø, which is covered by a yellowish brown cork, or with a cylindrical fleshy taproot of 10-20 cm length and 4 cm Ø; the swollen parts proceed in both growing patterns into an erect, subterranean, sympodial-monopodial branching shoot to 20 × 0,5-1 cm width; from these, the overground inflorescence-bearing shoots develop; with the exception of a basal stem part, from which the innovation emerges, these shoots die off after flowering and setting fruit; axis of innovating shoot to 3-6 cm long and ending with a terminal cyathium; leaves of vegetative part of the shoot are basally cataphyll-like, enlarging successively to the apical part; the last two leaves in front of the primary terminal cyathium act as cyathophylls; leaves of the vegetative shoots are sessile; leaf blade ovate to 6,5 × 3,5 cm, surface dark green, underside light green with a prominent white midrib; cyathophylls oblong-ovate, shortly apiculate, basally subcordate, to 3 × 2,5 cm, coarse, bluish-green, lower side dull grey green, with thick raised midribs, margin narrowly red; not spiny.

Open savanna, laterite soil; ± 500 m alt.

Near *E. platycephala*.

Only known from the type collected in 1999.

**E. marsabitensis** S. Carter; Euphorbia J. 9: 214, 1994.

Succulent perennial with stems densely tufted, (forming minute-stemmed, close-cropped cushions) procumbent usually to one side, sparsely branched, to 30 cm long and 8 mm thick, subcylindrical; branches with shallow teeth to 1,5 cm apart in 4 longitudinal series; spiny.

Volcanic rocky soils amongst grass and low open bushland; on tufa; ± 1200 m alt.

Very easily grown.

Near *E. uhligiana*.

**E. matabelensis** Pax; Euphorbia J. 8: 48, 1992; 9: 182, 1994; Desert Pl. 17(2): 22, 2001.

Woody shrub or tree to 3(-5) m tall; *branching trichotomous*, with *branchlets spine-tipped*; leaves alternate or more usually fasciculate, oblanceolate to 6 × 1,7 cm. Deciduous.

Dry sandy soils and rocky slopes with fairly open mixed deciduous bushland; 450-1900 m alt.

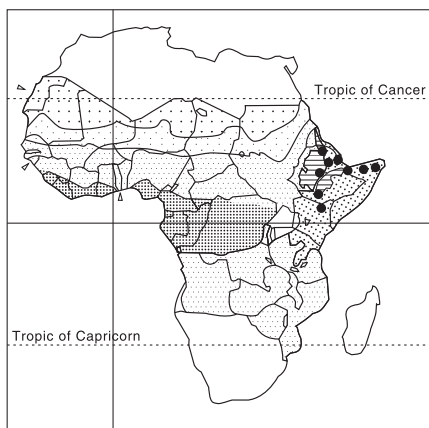
Botswana, Caprivi Strip.

**E. memorialis** R. A. Dyer, excl. specim. Stevenson in Natl. Herb. Pretoria 28439 (= *E. persistentifolia*); Euphorbia J. 10: 217, 1996.

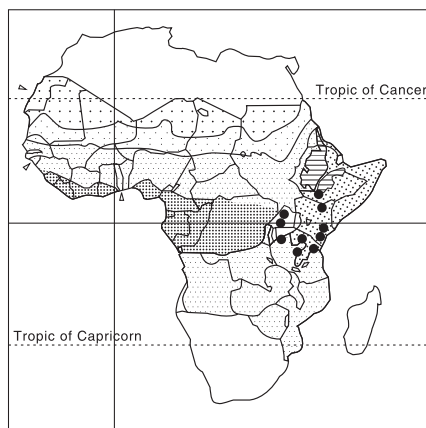
Shrub or tree to ± 3 m tall, usually appreciably less with main stem cylindrical, 5-7-angled, about 10 cm Ø with or without stem-like branches, and with ascending branches which die back with age and fall away; branches rebranched 4-6-angled, constricted at 5-15 cm intervals, to 3 or rarely 4 cm broad, 1,5-2,5 cm across the angles; angles wing-like with continuous horny margin; spiny; leaves of 2 forms: those produced on fast-growing young growth foliaceous, oblong-lanceolate to 2 cm × 6-7 mm, soon deciduous; those produced later in the growing season reduced, 1,5-2 mm long.

Well developed stony slopes of the rugged hills in savanna grassland, where it grows in association with other serpentine tolerant succulent species, including *Aloe ortholopha*, *Euphorbia wildii*; also with *Aloe cryptopoda*, *Euphorbia griseola*, *E. schinzii*, *Crassula argyrophylla*. Habitat well watered; 1450 m alt.

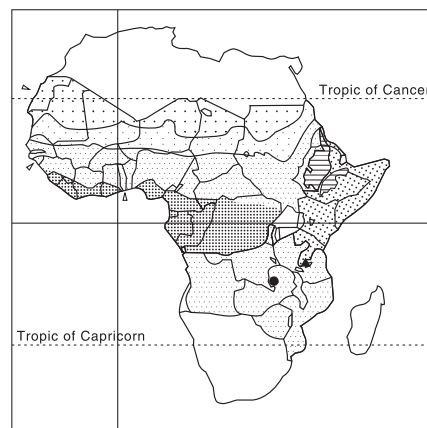
Grows well in cultivation.



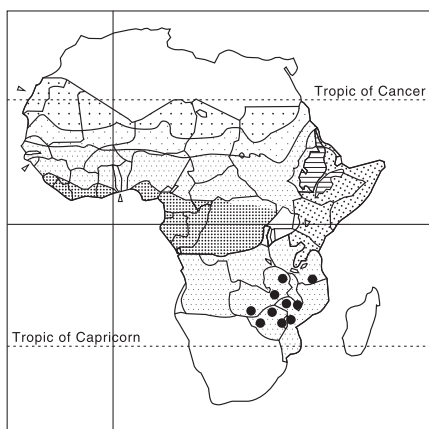
*Euphorbia longituberculosa*



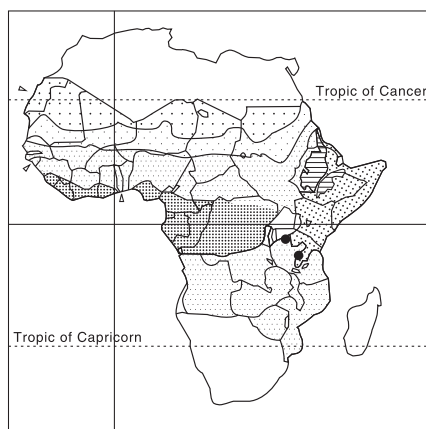
*Euphorbia lophiosperma*



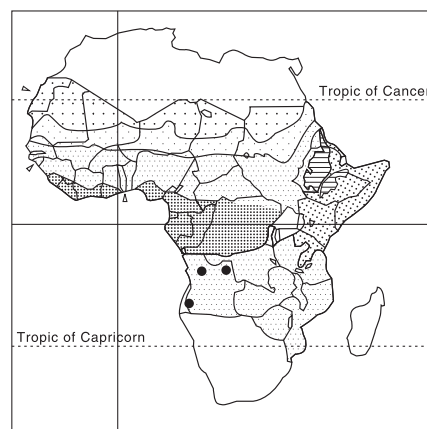
*Euphorbia luapulana* ●  
*Euphorbia lukoseana* ▲



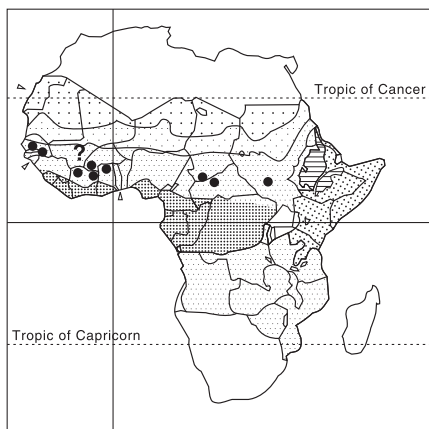
*Euphorbia lupatensis*



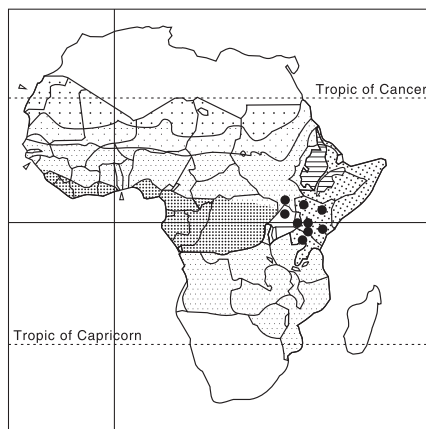
*Euphorbia lutosa*



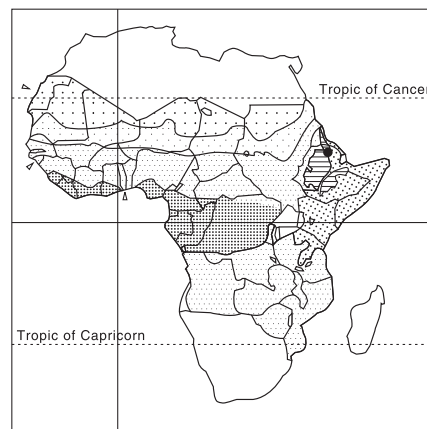
*Euphorbia macra*



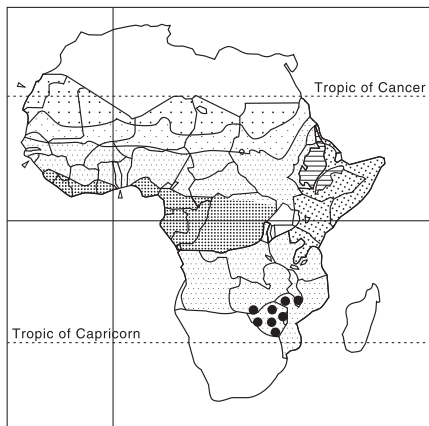
*Euphorbia macrophylla*



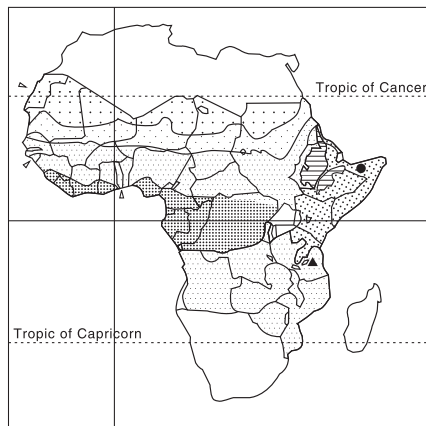
*Euphorbia magnicapsula*



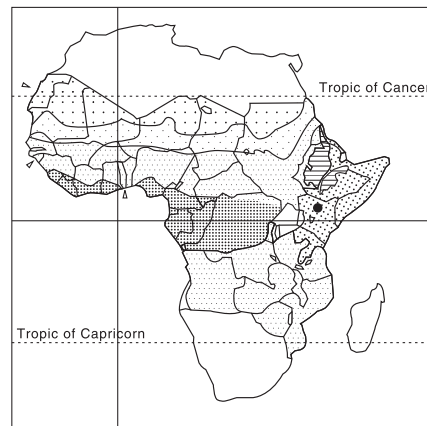
*Euphorbia makallensis*



*Euphorbia malevola*



*Euphorbia margaretae* ●  
*Euphorbia maritae* ▲



*Euphorbia marsabitensis*



## EUPHORBIA MEMORALIS

% in roots and stems: nickel 0,96-0,37; chromium 0,36-0,10; calcium oxide 19,40-15,00; magnesium oxide 16,50-29,00; ratio Mg/Ca 0,72-1,63 (see also Taxon 33: 395, 1984).

Specially protected in Zimbabwe.

**E. meridionalis** S. Carter; Euphorbia J. 8: 66, 67, 1992.

Succulent perennial, with a thick fleshy root, branching from the base and weakly erect to 1 m, or grazed to  $\pm 25$  cm high and then usually more densely branched; branches 4-angled, to 1,5 cm thick; angles with prominent teeth to  $\pm 2(-3,5)$  cm apart; spiny.

Sandy stony soils amongst grass (*Themeda triandra*, *Pennisetum mezianum*, *Ischaemum afrum*) in dry open bushland; brown soil in open *Pennisetum masaicum* grassland; bush of *Commiphora* spp., *Euphorbia spinescens*, *Acacia mellifera*; dry sandy soil; locally common; 1200-1750 m alt.

**E. migiurtinorum** Chiov.; Euphorbia J. 9: 86, 108, 1994; S. Carter in L. Russo, Succ. Pl. E. Afr.: 126, 2004.

Spreading branching shrub to 50 cm tall, or scrambling to 2 m; root tuberous; branches fleshy, 4-angled, 5-10 mm thick; angles very shallowly toothed, with teeth 5-15 mm apart; spiny.

Rocky often gypseous limestone, sometimes overlaid with red sand, in very open *Acacia-Commiphora* scrubland; also in deep sand; *Andropogon* grassland; 100-1000 m alt.

Presenting few problems in cultivation.

Near *E. cryptospina*, *E. erlangeri*.

Ethiopia?

**E. mitriformis** Bally & S. Carter; Euphorbia J. 9: 90, 108, 109, 1994; Zanovello in L. Russo, Succ. Pl. E. Afr.: 149 (photo), 2004.

Succulent perennial to 40 cm tall, with dense compact branching forming neat conical or rounded cushions to 1 m  $\emptyset$ ; branches 1-10 cm long, deeply 5-angled,  $\pm 1,5$  cm thick; angles shallowly toothed, with teeth 3-5 mm apart; spiny.

Between rocks of limestone slopes, with very open *Buxus* and succulent scrub; sometimes the plant is squeezed in a tight cleft in the rock; 1220-1600 m alt.

Rare in cultivation.

Near *E. golisana* (= **E. phillipsiae**).

**E. mlanjeana** L. C. Leach; Euphorbia J. 9: 183, 1994.

Succulent, spiny, often tree-like shrub, to  $\pm 1$  m tall (usually shorter), acaulous or with a short (seldom attaining 0,5 m in height), stout ( $\pm 10$  cm  $\emptyset$ ), cylindrical, nude trunk; with a crown of crowded, almost straight or slightly curved, spreading, ascending branches; branches to 0,6 m long (generally less),  $\pm 3$  cm  $\emptyset$ , narrowing towards the base, sometimes slightly constricted into 2-3 relatively long segments; 3-5(-6)-winged, with wings to 1,5 cm wide, 1,5-2 mm thick at the weakly-armed sinuate toothed margin.

Exposed precipitous granite slopes above river gorges on the lower slope of mountain, among grasses, pteridophytes and *Vellozia*; steep slopes of the syenitic Piedmont granite at an angle of about 60°; 1000-1800 m alt.

Somewhat new to cultivation.

Near *E. graniticola*.

## EUPHORBIA

**E. monacantha** Pax

Medusoid succulent; main stem short and thick, every axil producing a slender, little-branched lateral stem to 20 cm long,  $\pm 10$  mm thick with 5 spiral ranks of tubercles; spiny; fruit unknown.

*Acacia-Combretum* woodland on stony ground over limestone; 1200-1800 m alt.

Near *E. actinoclada*.

Not in Somalia (= **E. xylacantha**); ? Sudan (Suakin).

**E. monadenioides** M. G. Gilbert; Euphorbia J. 7: 153, 1991.

Hysteranthous geophyte, with branched rhizomes to 4 cm thick and  $\pm 15$  cm long; stems erect, below ground,  $\pm 5$  cm high, with horizontally spreading branches; leaves crowded and spreading in a rosette at soil level from the stem apex, oblanceolate to obovate to 8,5  $\times$  3,2-4 cm,  $\pm$  fleshy; seeds unknown.

Old lava flow in dark, rather sticky soil, in crevices between lava blocks in open deciduous woodland with *Albizia*, *Hymenodictyon floribundum*, *Stereospermum kunthianum*, *Ficus*, etc.; 1100-1900 m alt.

Difficult to cultivate, one of the rarest Euphorbias in cultivation (A. Pritchard, Introduction Euphorbiaceae: 36, 2003).

Related to *E. бага* but affinities obscure.

**E. monteiri** Hook. f. subsp. **monteiri** ("monteiroi"); Aloe 29: 36, 1992; Euphorbia J. 8: 48, 49, 1992; 9: 166, 167, 1994; 10: 77, 202, 1996; Desert Pl. 17(2): 22, 2001.

syn.: *E. marlothii* Pax; *E. longibracteata* Pax, nom. illegit.; ? *E. baumii* Pax

Erect, succulent perennial, with a stout, generally subclavate, occasionally subcylindric, tuberculate stem with the dry remains of old peduncles erect and incurved above the apex; stem to  $\pm 10$  cm  $\emptyset$ , generally  $\pm 30$  cm or less high (rarely to  $\pm 1$  m), usually simple, occasionally sparingly and rather vestigially branched above or with a few stem-like branches from the base; tubercles closely spirally arranged, becoming obsolescent with age; leaves singly from the apex of the tubercles, variable in shape, most commonly linear-elliptic, to 21  $\times$  0,6-3 cm; not spiny.

Ecology unknown in Angola; in Ovamboland in the extreme north of Namibia: very common on open sandy flats, often in association with scrub of *Colophospermum mopane*, *Hyphaene ventricosa*, *Caralluma vaga*, *Aloe littoralis* fa.; sandy soils in wooded grassland (Botswana, Zimbabwe);  $\pm 1000-1070$  m alt.

Namibia, Botswana, S. Africa (subsp. **monteiri**); two other subsp. in Namibia and S. Africa; intermediates exist.

Easily cultivated.

**E. mosaica** Bally & S. Carter

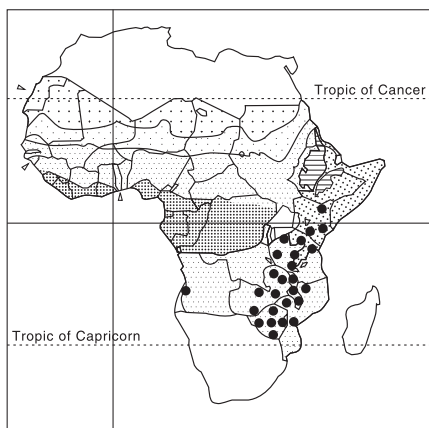
Succulent perennial to 8 cm tall and 15 cm wide, with compact branching and a thick fleshy root; branches terete, 1-2 cm thick, 1-4 cm long, 6-8-angled; angles separated by distinct grooves, sinuately toothed, with teeth 3-5 mm apart; spiny.

Gypseous limestone plain with very low sparse scrub; 1390-1550 m alt.

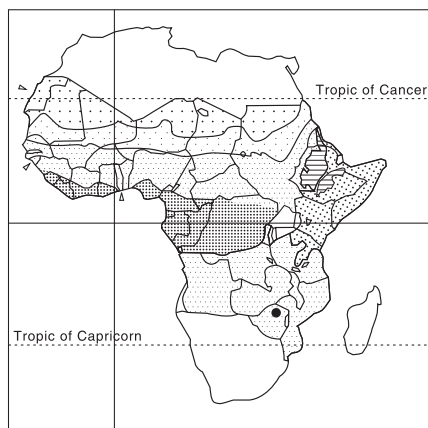
Rare in cultivation (needs warm and very good light); to propagate from cuttings.

Near *E. multiclava*.

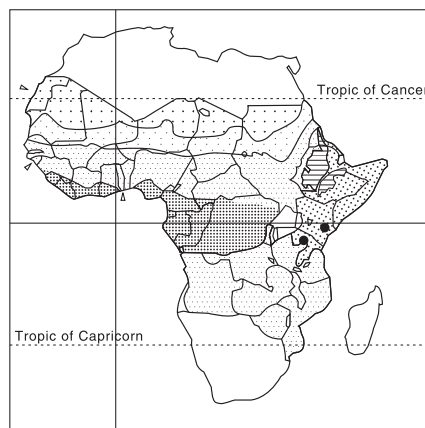




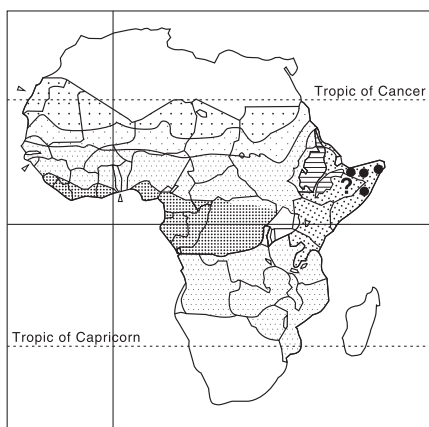
*Euphorbia matabelensis*



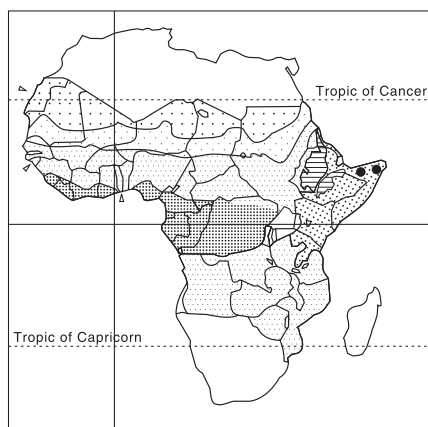
*Euphorbia memoralis*



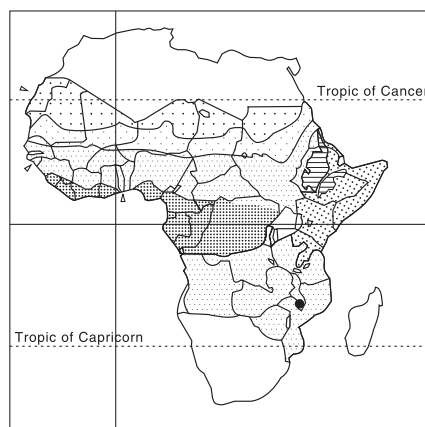
*Euphorbia meridionalis*



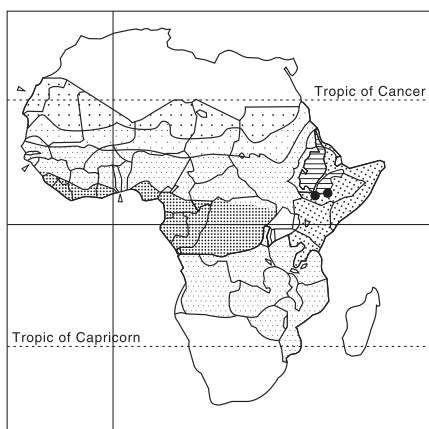
*Euphorbia migiurtinorum*



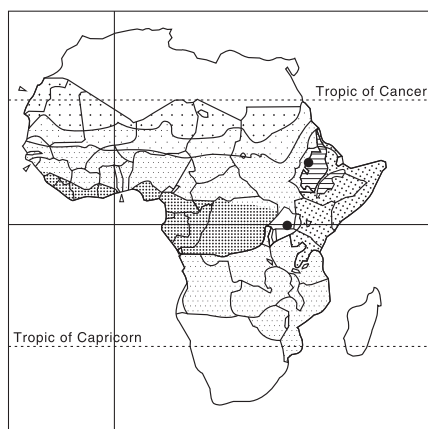
*Euphorbia mitriformis*



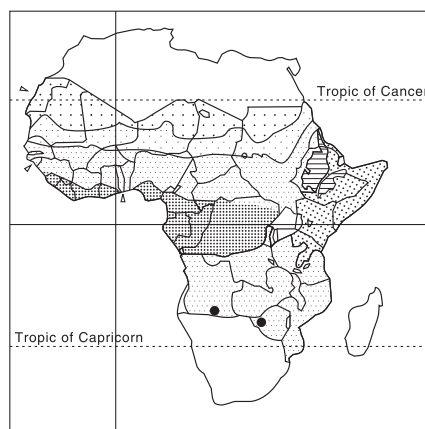
*Euphorbia mlanjeana*



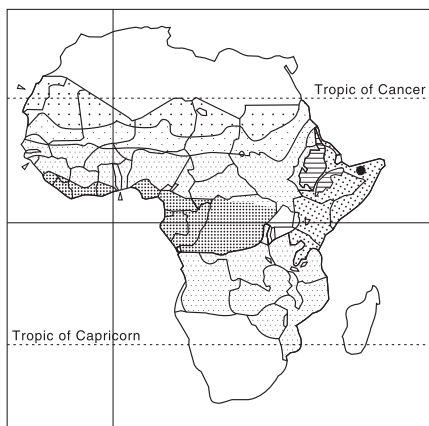
*Euphorbia monacantha*



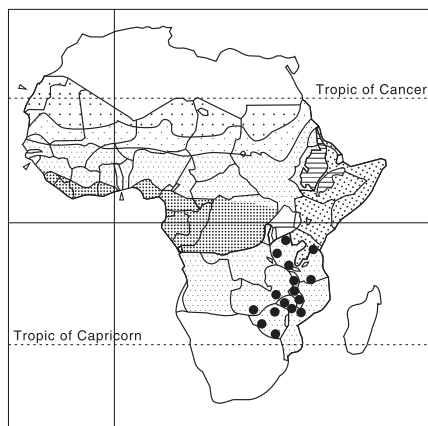
*Euphorbia monadenioides*



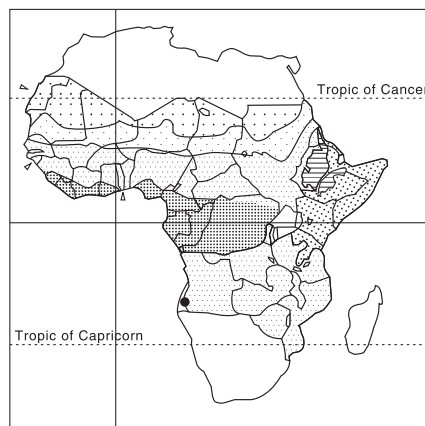
*Euphorbia monteiri*



*Euphorbia mosaica*



*Euphorbia mossambicensis*



*Euphorbia mossamedensis*

## EUPHORBIA

**E. mossambicensis** (Klotzsch & Garcke) Boiss. (non Pax), incl. var. *nyasica* N. E. Br.

bas.: *Anisophyllum mossambicensis* Klotzsch & Garcke

syn.: *Chamaesyce mossambicensis* (Klotzsch & Garcke) Koutnik

Much-branched prostrate annual herb, with branches to 35 cm long; leaves obovate, to 14 × 8 mm, base very obliquely rounded; not spiny.

Sandy, gritty soils in open woodland, bushland and grassland; 60-1830 m alt.

Botswana.

**E. mossamedensis** N. E. Br.

Erect, 10-20 cm tall annual herb dichotomously branching from the cotyledon-node upwards; stem below the cotyledon-node less than 0,22 cm thick; branches slender; leaves opposite, oblong, 0,44-1,32 cm × 0,22-0,55 cm.

Dry ground in open forest.

Only known from the 2 syntypes.

**E. multiclava** Bally & S. Carter; Euphorbia J. 7: 153, 1991; 6: 148, 1990 sub nom. *E. ponderosa* nom. prov. (non dichotomous form); A. Pritchard, Introduction Euphorbiaceae: 35, 2003.

Succulent perennial to 30 cm tall and 40 cm wide, with compact usually dichotomous branching; branches terete, 2-3,5 cm thick, 2-7 cm long, 10-16-angled; angles separate by distinct grooves, sinuately toothed, with teeth 5-10 mm apart; spiny; capsule and seeds unknown. – Forming large clumps.

Open gypseous limestone plain; 1200-1500 m alt.

Still uncommon in cultivation (for the advanced collector).

Near *E. phillipsiae*.

**E. mwinilungensis** L. C. Leach; Aloe 38: 67, 69, 2001.

Dwarf perennial shrub with numerous, crowded succulent spiny branches arising from thick, much branched, woody, underground stems, forming large clumps to nearly 1 m Ø with a tuberous rather woody and massively developed taproot; branches simple, slender, erect, 8-11,5 cm long, terete low down ± 2 mm Ø, becoming 3-angled, 3-4 mm thick above, with the angles sinuate tuberculate with tubercle teeth 1-2 mm high, 8-25 mm apart along the angles, more widely spaced below, becoming gradually closer together towards the apex of the branches: leaves fleshy, ± ovate, to 2,25 × 1 mm; spines widely spreading with inflated bases; capsule and seeds unknown. – Very distinctive plant.

Deep white sand and cracks among granite rocks; within the highest rainfall zone in Zambia; 1290-1400 m alt.

Near *E. brevis*.

**E. myrioclada** S. Carter

Succulent perennial to 30 cm tall and 50 cm Ø, with a thick fleshy root; stem ± 5 cm high, 2 cm thick, soon obscured by densely tufted branches to 25 cm long, terete, 6-8 mm thick, with very shallow tubercles 5-10 mm apart in 5 loosely spiral series; spiny.

Stony gravelly soils with sparse xerophytic scrub; 520-610 m alt.

Near *E. triaculeata*.

## EUPHORBIA

**E. nebrownii** Merr.

syn.: *E. nodosa* N. E. Br., nom. illegit., non Hoult.

Leafless tree 3-7,5 m, with erect trunk 2,5-12,5 cm Ø; branches virgate, but erect, 0,44-0,66 cm thick, tuberculate with prominent flowering cushions 0,22-0,44 cm Ø, and marked with crescent-shaped scars of fallen leaves.

Along river; abundant.

**E. negromontana** N. E. Br.

Subsucculent pulvinate dwarf shrub 35-45(-60) cm in height (exceptionally female specimens with unusually long internodes reaching 90-120 cm), ± 40 cm Ø, leafless and spineless, dichotomously or trichotomously much-branched from the base, fleshy, glaucous, dioecious; branches and branchlets opposite, widely spreading, terete, fragile and easily broken at the articulation; fully developed capsule and seeds unknown.

Probably relatively short-lived and possibly monocarpic; in small colonies very localized; apparently rare. Calcareous saline interior declivities of mountain; also between river mouths (sandy and stony soil).

Near *E. chersina* N. E. Br. from Namibia, S. Africa.

**E. neopolycnemoides** Pax & K. Hoffm.; Kew Bull. 45: 327, 1990.

syn.: *Chamaesyce neopolycnemoides* (Pax & K. Hoffm.) Koutnik; *Euphorbia arabica* Anderson var. *latiappendiculata* Pax

Annual, or perhaps sometimes perennial herb, 5-25 cm tall, divided at the base into 2 (or occasionally more) main branches, which are 1-6 times forked, erect, rather slender, laxly leafy; leaves all opposite, spreading, linear, obliquely subcordate at the base, with the margins narrowly revolute, 1,2-2,8 × 0,11-0,33 cm; not spiny.

Stony ground amongst grass in mopane woodland; 300-1460 m alt.

S. Africa, Botswana.

Near *E. polycnemoides*, *E. eylesii*.

**E. nigrispina** N. E. Br.; Collect. Bot. Barcelona 21: 72, 1992.

Shrub with many slender erect stems to 1,5(-2) m tall; stems 9-10(-14) mm wide; spiny.

Limestone slopes; 1200 m alt.

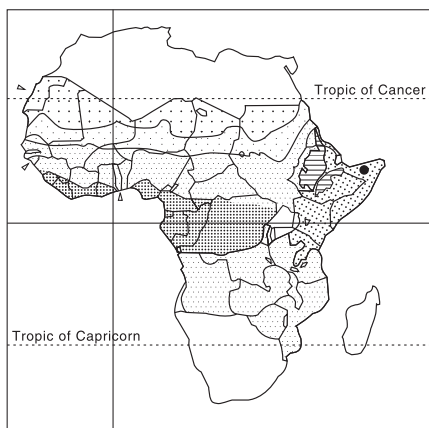
Infrequently encountered in cultivation; needing no unusual cultural requirements.

**E. nigrispinoides** M. G. Gilbert; Euphorbia J. 10: 206, 1996.

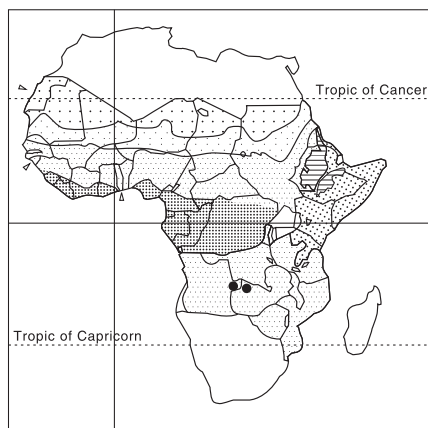
Shrub or tree with well-defined trunk, reaching ± 3 m height; crown rounded, relatively open; branches spreading ascending, eventually deciduous to leave clean bole; stems (3-)4-5-angled, 12-17(-20) mm thick, usually only obscurely segmented; angles straight or only slightly toothed; spiny.

Relatively recent flows of spongy basalt and volcanic ash with a sparse cover of deciduous woodland with *Pistacia falcata*, *Terminalia brownii*, *Steganotaenia araliacea*, etc.; 1000-1450-1770 m alt. Locally rather common.

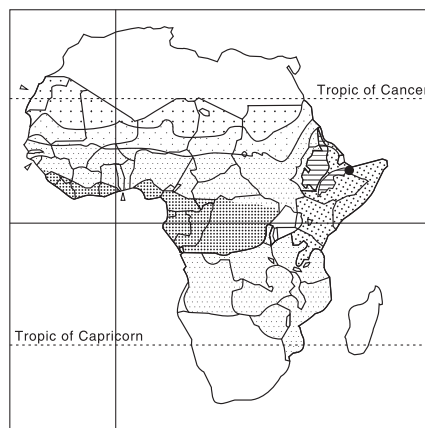
Near *E. polyacantha*, *E. nigrispina*.



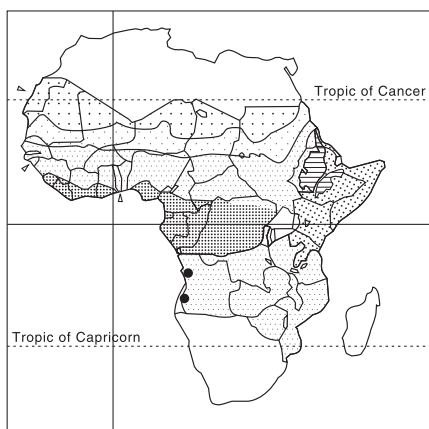
*Euphorbia multiclava*



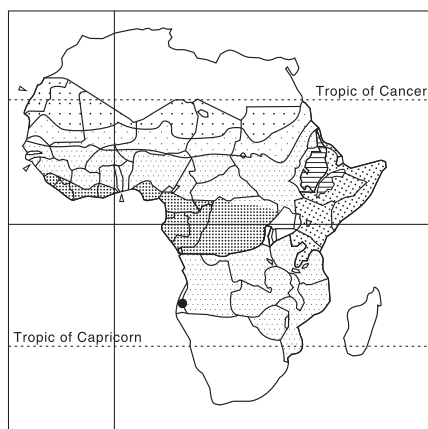
*Euphorbia mwinilungensis*



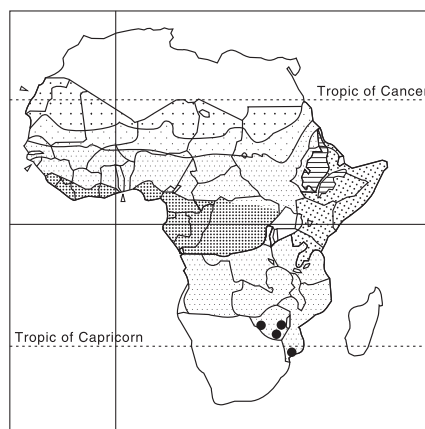
*Euphorbia myrioclada*



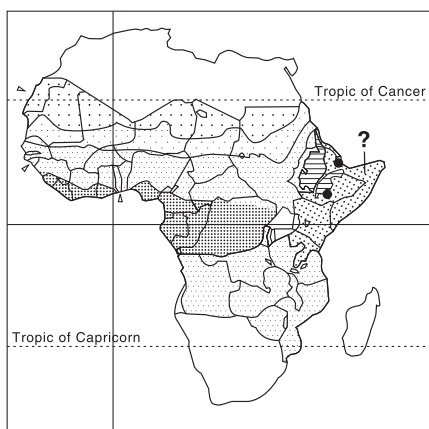
*Euphorbia nebrownii*



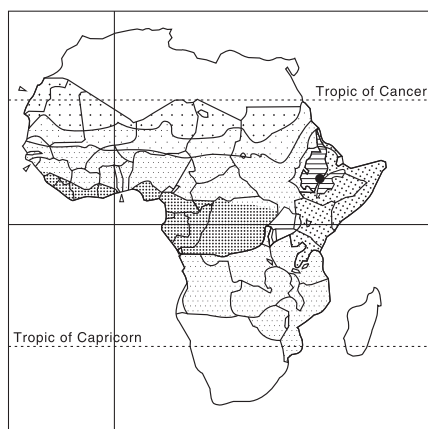
*Euphorbia negromontana*



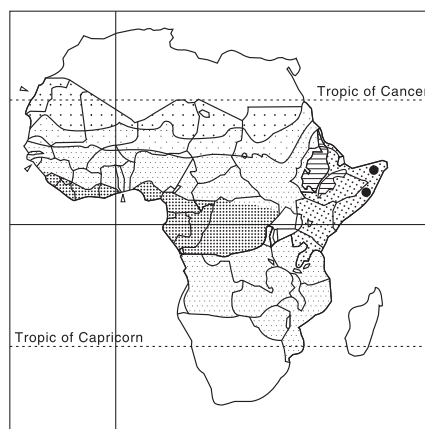
*Euphorbia neopolycnemoides*



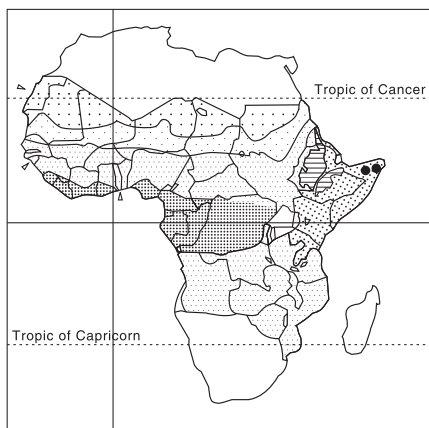
*Euphorbia nigrispina*



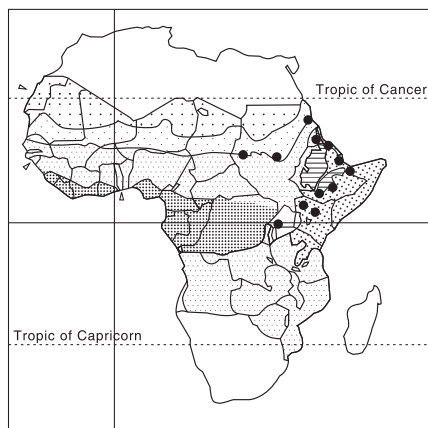
*Euphorbia nigrispinoides*



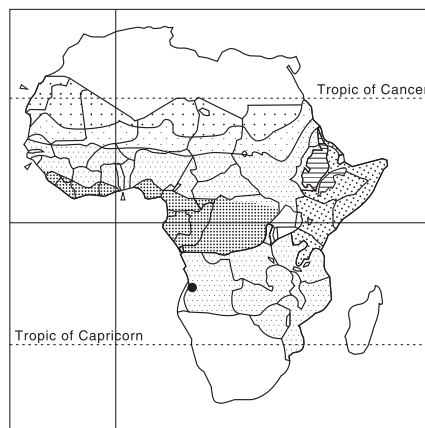
*Euphorbia nogalensis*



*Euphorbia noxia*



*Euphorbia nubica*



*Euphorbia nubigena*

## EUPHORBIA

**E. nogalensis** (Hässler) S. Carter; *Euphorbia* J. 7: 154, 1991; 9: 114, 1994.

Shrub 1-2,5 m tall; branches subfleshy, spreading widely from the base, with branchlets 3-4 cm long arising at right-angles from the branches; leaves crowded at the branch apices, obovate, 1,5-4 × 1-2,5 cm; not spiny.

Rocky gypsum and limestone area with open *Acacia-Commiphora* scrub; white diatomite soil; cliffs with thin stony soil over limestone; 210-735 m alt.

Quite rare in cultivation.

**E. noxia** Pax; *Euphorbia* J. 9: 106, 1994.

Laxly branched tree 2-6 m tall with softly woody or rather fleshy branches covered with horizontally elongated leaf-scars; leaves crowded at the branch apices, linear-lanceolate to lanceolate-obovate, 5-15 × 1-4 cm; not spiny.

Rocky limestone soils with sparse bushland; 350-1500 m alt.

Near *E. meuleniana* Schwartz from S. Arabia, *E. ogadensis*.

**E. nubica** N. E. Br.; *Collect. Bot. Barcelona* 21: 60, 1992; *Euphorbia* J. 8: 145, 1992; 9: 87, 1994.

syn.: *E. consobrina* N. E. Br.

Sprawling or scrambling perennial shrub forming tangled masses 0,5-4(-5) m tall, densely branched with branchlets ± 0,5-1 cm thick, with leaf-scars made prominent by the formation of a dark brown callus; leaves lanceolate 10-18 × 3-5 mm, becoming reflexed; not spiny.

Wide range of habitats from very open *Acacia* bushland on rocky slopes to fairly dense *Acacia tortilis* subsp. *spirocarpa* woodland and margins of *Juniperus* forest; alluvial limestone with open *Acacia* bushland; north-facing mist covered limestone scarp with *Buxus* scrub; 365-1900 m alt.

Very variable.

Seldom encountered in cultivation but presenting no difficulties.

Near *E. schimperi* from Arabia and approaches *E. gossypina*.

**E. nubigena** L. C. Leach

Rather weakly suberect, somewhat straggly succulent spinulose shrublet, generally ± 20-40(-90) cm tall, with a somewhat rhizomatous root system; branches simple, soft and rather fragile, but the core eventually becoming rather woody, sometimes ± decumbent, usually drying out, 4-angled, with the sides ± flat between the angles, becoming concave from shrinkage, not usually constricted into segments, 5-8,5(-15) mm thick; angles lightly crenulate with the crenulations rounded at the apex, sloping gradually down to the flowering eye below; spiny.

Abundant in scanty soil in rock crevices; granite hill in association with *Euphorbia atrocarmesina*, *Sarcostemma* sp. etc.; also with this *Euphorbia* and *Kalanchoe* sp., etc.; also with this *Euphorbia* and *Xerophyta* sp.; with *Aloe andongensis*, *Kalanchoe* sp. etc.; 1200-1300 m alt.

Comprises 2 vars.

No unusual problems are encountered in cultivation; plant suitable for the beginner. Especially attractive with its yellowish (var. **nubigena**) or red and yellow flowers (var. **rutilans** L. C. Leach).

## EUPHORBIA

**E. nyassae** Pax; *Kew Bull.* 42: 383, 1987, excl. var. *mentiens* S. Carter (= *E. whellanii* p.p., *E. perplexa* p.p.).

Shrubby or semi-prostrate succulent perennial 25-100 cm tall with branching stems sometimes trailing; branches 4-5-angled, 1-1,5 cm thick; angles shallowly to prominently toothed, with rounded teeth 1-1,5 cm apart; spiny.

Between stones on a rough plateau; 1500 m alt.

Only known from the type collected in 1899.

**E. nyikae** Pax

Tree to 7 m, with branches persistent from ground-level upwards, or to 15(-20) m, with the trunk naked below; trunk to 30(-50) cm Ø, marked by 4-6 vertical rows of spines and pit-scars resulting from whorls of fallen branches; seedlings 2-angled; branches to 3,5 m long, 2-5-angled, rebranching and curving upwards to form a loose ± ovate crown; terminal branchlets fleshy, 2-3(-4)-angled, 3-15 cm wide, very deeply and thinly winged, constricted at irregular intervals into ± subcircular, obconic or oblong segments 5-20 cm long; angles ± straight or sinuately toothed with teeth ± regularly or irregularly spaced 0,5-5 cm apart.

Sandy soils with fairly dense or open deciduous woodland; on cliffs and sand-dunes along the sea-shore; 2-700 m alt.

Comprises 2 vars: – var. **nyikae**; – var. **neovolkensii** (Pax) S. Carter [syn.: *E. crispata* Lem.; *E. fimbriata* Boiss.; *E. lemaireana* Boiss.].

**E. oatesii** Rolfe; *Desert Pl.* 17(2): 23, 2001.

syn.: *E. verdickii* De Wild.

Perennial with large tuberous rootstock; stem ± fleshy, dividing at ground level into 2-3 erect or ascending ± fleshy branches 1,25-30 cm long; leaves alternate or at the inflorescences opposite or subopposite, of rather thick texture, lamina to 70 × 9 mm, linear; not spiny.

Sandy soil in grassland and open *Brachystegia* woodland; 850-1370 m alt.

Near *E. bongensis*.

[**E. obtusifolia** Poiret]; Molero & Rovira, *Taxon* 47: 321-332, 1998, and 49: 800-801, 2000; *Bot. Macaronés.* 24: 143-147, 2003; subsp. **regis-jubae** (Webb) Maire – Uncertain in Western Sahara (indicated by Guinea without source); vide Dobignard & al., *Candollea* 47: 418, 1992); confusion with *E. balsamifera* var. *rogeri*? – S. Carter in *Cactus Succ. J. (U.S.)* 76: 37, 2004.

**E. odontophora** S. Carter

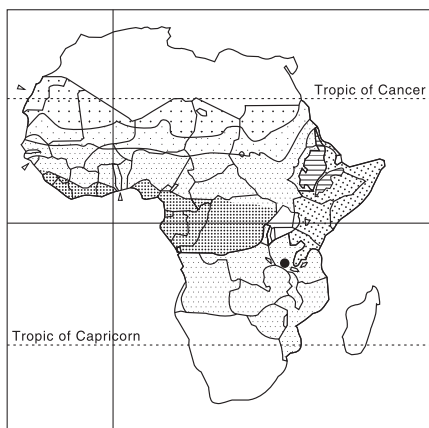
Succulent perennial with a fleshy root and spreading tangled branches to 40 cm tall; branches 4-angled, to ± 1 cm thick; angles with prominent teeth ± 1,5 cm apart; spiny.

Quartzite sandstone hill quarried for rock metal; very rich *Acacia-Commiphora* woodland, ground flora rich in herbs, not many grasses, sandstone ridge with much bare rock; 450-500 m alt. Affinities with *E. glochidiata*.

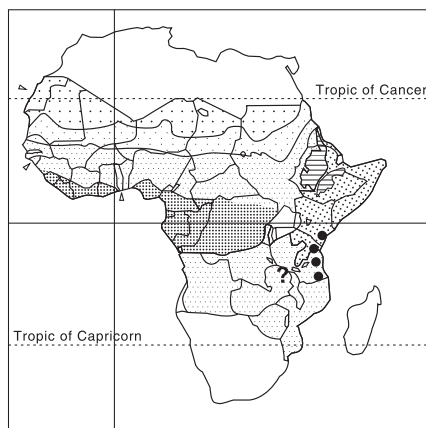
**E. officinarum** L., non DC. subsp. **echinus** (Coss. & Hook. f.) Vindt; *Feddes Repert.* 106: 215-229, 1995; S. Carter in *Cactus Succ. J. (U.S.)* 76: 34-37, 2004 (photos).

syn.: *E. hernandez-pachecoi* Caball.; *E. officinarum* var. *hernandez-pachecoi* (Caball.) Oudejans; *E. echinus* Hook. f. & Coss. fa. *macracantha* Maire and var. *hernandez-pachecoi* (Caball.) Maire

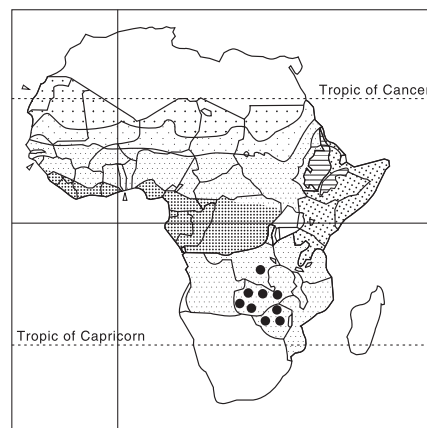




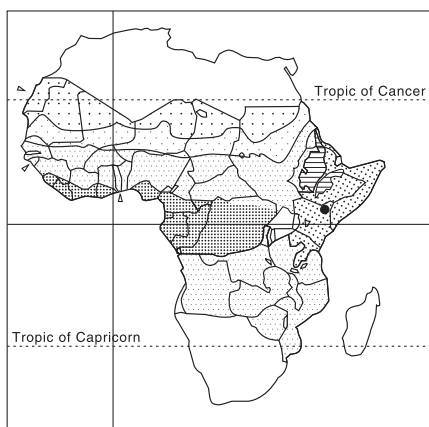
*Euphorbia nyassae*



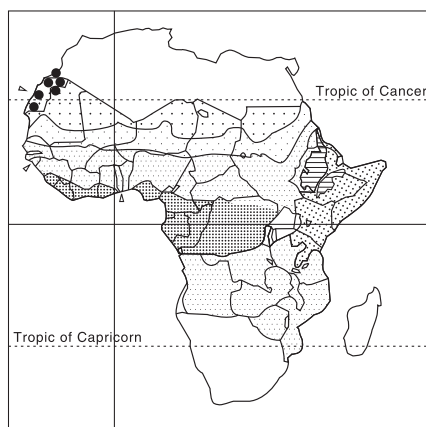
*Euphorbia nyikae*



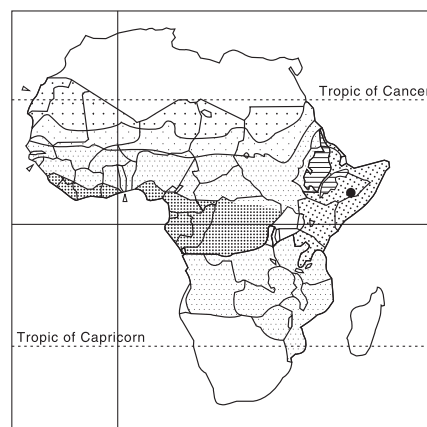
*Euphorbia oatesii*



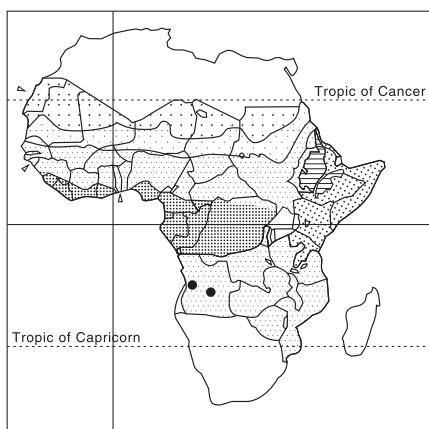
*Euphorbia odontophora*



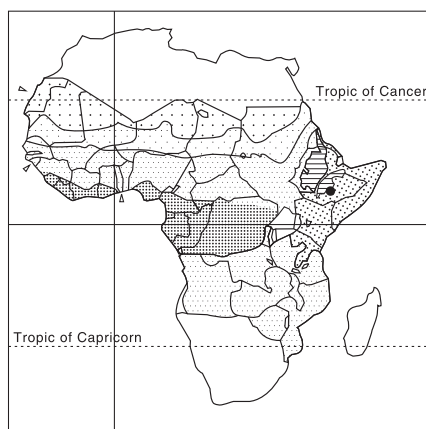
*Euphorbia officinarum*



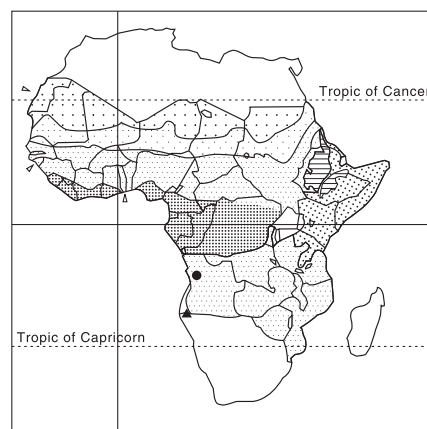
*Euphorbia ogadenensis*



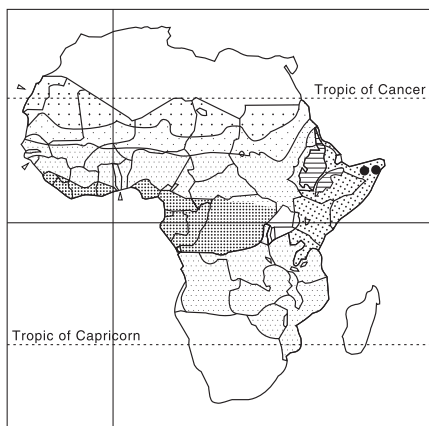
*Euphorbia oligoclada*



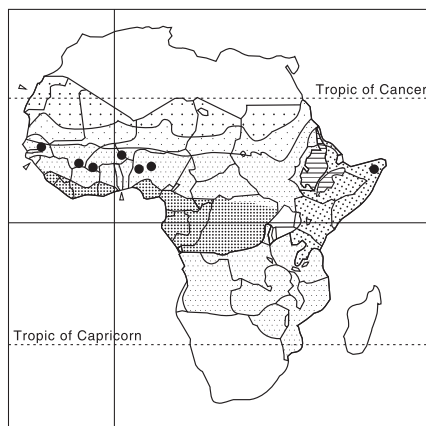
*Euphorbia omariana*



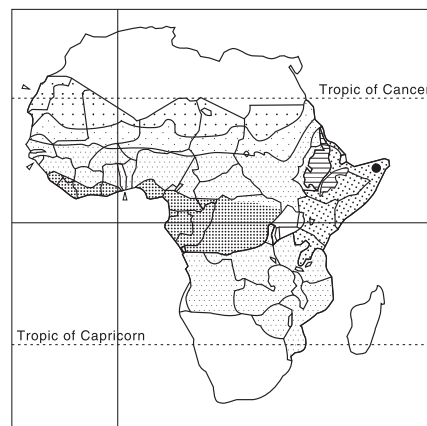
*Euphorbia opuntiooides* ●  
(*Euphorbia otjipembana*) ▲



*Euphorbia pachyclada*



*Euphorbia paganorum*



*Euphorbia papilionum*

## EUPHORBIA OFFICINARUM

Bushy subshrub 10-100 cm tall forming dense clumps becoming hemispheric with close stems ramose upwards, generally 5-8-angled with the sides slightly concave; spiny.

Rocky soils on galb and kedia; wadis; clayey graras; sandstone outcrops; near sea-level to  $\pm$  1900 m alt. (Morocco).

Morocco.

Endangered.

**E. ogadenensis** Bally & S. Carter

Shrub or tree 1,5-3,5 m tall; leaves oblanceolate to  $9 \times 4,5$  cm; not spiny.

Gravel and limestone or sanstone hills with sparse bushland; 300-450 m alt.

Related to *E. noxia* and *E. friesiorum*.

**E. oligoclada** L. C. Leach

Dwarf perennial with an irregularly shaped rather woody tuberous root and 1-3 succulent, spiny branches arising from eyes at or near its apex or from a much reduced subterranean stem; branches rather hard and woody, usually simple, erect, to 25(-40) cm long, 5-10 mm thick, at first terete below, obtusely 3-(4)-angled above, eventually becoming prominently 3-ribbed (almost winged), sometimes slightly spirally twisted, sinuate tuberculate with the tubercle teeth usually somewhat truncate on the upper slope, 3-5 mm high, generally  $\pm$  4(-6,5) cm apart along the angles towards the base of mature branches, becoming gradually closer towards the apex; spiny; leaves thick and fleshy, suborbicular to  $\pm$  elliptic to  $3,5 \times 2,5$  cm, deciduous.

Crevices on granite slopes; *Brachystegia*, *Pterolepis*, *Afzelia* woodland?;  $\pm$  1100-1500 m alt.

**E. omariana** M. G. Gilbert

Herbaceous perennial; rootstock with large fusiform roots; stems usually solitary, occasionally to 5, erect, to 80 cm tall, usually less, mostly dying back after flowering, occasionally producing a single new shoot from immediately below the inflorescence so that growth is sympodial; leaves spiral, broadly oblanceolate to  $7-13 \times 2-5$  cm.

In shade of bushes in dense *Commiphora* woodland with *Kirkia*, *Boswellia* on limestone; 1350-1400 ? or 1550 m alt.

Closely related to *E. macrophylla*. A West African flora element; presence of such elements reaching Ethiopia is well documented; see list of species cited under *Bridelia scleroneura* p. 34.

The type locality, Sof Omar, "Cave of Omar", is named after a striking series of limestone caves several km long through which flows the Web River. This is a place of pilgrimage for Muslims, local legend claiming that the Holy Man, Omar, dug out the cave system overnight! (fide Gilbert).

**E. opuntioides** Welw. ex Hiern; Cact. Succ. J. (U.S.) 72: 196, 2000.

Spiny, succulent, clump-forming dwarf 15-20(-30) cm tall, with branches erect, erectly spreading or occasionally decumbent with the apex ascending, arising from a crown or group of crowns at ground-level; branches initially 2-angled, tapering into a subwoody stalk-like base, often developing a 3rd angle, deeply constricted into segments, generally about 10-15(-22,5-60) cm long; segments subcircular, elliptic or ovate, generally 2,5-3,5 cm wide, sometimes to  $\pm$  5 cm, 2-5 cm long (rarely to 12,5) with a continuous very narrow horny margin, shallowly or deeply sinuate or crenate-toothed.

## EUPHORBIA OPUNTIROIDES

By rocks in black sandy schist, close to the banks of river; not uncommon but rather sparse; scanty soil in 1,5 cm thick peaty slabs of *Selaginella dregei* and scanty grasses on a flat plain of flaking and decomposing conglomerate rocks, or in overlying shallow sandy soil at the margin of the *Brachystegia* woodland which borders the plain; often in association with *Aloe littoralis* fa.

Easily grown.

First collected in 1857, the second in 1967.

**[E. otjipembana** L. C. Leach] – Icon: Dinteria 12: 31, 1976 (photos).

Succulent spiny subshrub to 40 cm tall, branched from the base; stems stout, angular, 2-3 cm  $\emptyset$ , sometimes with short branchlets towards branch tips; branches constricted at base, usually constricted into segments 2-5 cm long, 4-6-angled, angles compressed, sometimes wing-like; spines paired, with horned spine shields.

Stony, E-facing slopes in dwarf mopane woodland, with *Cyphostemma* spp.; c. 1330 m alt.

NW Namibia, on the border to Angola.

Rare; not collected for 27 years (fide S. Loots, Red Data Book Namibian Pl.: 55, 2005).

Similar to *E. kaokoensis* but spines different, and to *E. subsalsa* subsp. *fluvialis* but smaller in size, and leaves different (in *E. otjipembana* leaves shorter and wider).

**E. pachyclada** S. Carter; Collect. Bot. Barcelona 21: 60 fig. 2 a sub nom. *E. consobrina* fa., 1992; Euphorbia J. 9: 103, 110, 1994.

Shrub 1-1,5 m tall, with erect compact branching; branches succulent, 1-1,5 cm thick, sparsely covered with callose brown leaf-scars, ultimate branchlets 3-10 mm long; leaves unknown; not spiny.

Rocky limestone slopes with very sparse scrub vegetation; 100-1100 m alt.

Near *E. nubica* (member of a distinct group characterized by cylindric succulent green branches from which the leaves are quickly deciduous leaving callose scars, and by simple pseudo-umbellate cymes: subgen. *Tirucalli* with *E. tirucalli*, *E. calamiformis*, *E. nubica*, *E. gossypina*, etc.).

**E. paganorum** A. Chev.; Rev. Int. Bot. Appl. Agric. Trop. 28: 349, 351, 1948.

Fleshy candelabra-like shrub, 1-1,5 m tall; branches verticillate 2-6 together on the main stem; the upper verticil with 5 branches; the latter rebranched with growing-branches verticils; flowering branches very fleshy, cylindric, 2-5 cm  $\emptyset$ ; tubercles ovoid, weakly salient, spirally disposed; spiny; deciduous leaves, at the apices, ovate-triangular  $6-7 \times 6$  cm, truncate at the apex or emarginate; leaf-scars elliptic.

Exposed sandstone rocks; 350-550 m alt.

**E. papilionum** S. Carter

Compact densely branched shrub 0,5-1 m tall; branches succulent,  $\pm$  5 mm thick, marked with callose leaf-scars; leaves ovate-lanceolate,  $8-12 \times 3-4$  mm; capsule and seeds unknown; not spiny.

Stony limestone slope; 1300 m alt.

Near *E. cameranii*.

Pollinator unusual for a *Euphorbia*: butterfly *Junonia limnoria limnoria* (Klug).

Only known from the type collected in 1986.

## EUPHORBIA

**E. papillicapsa** L. C. Leach

Perennial herb, erect, to 16 cm tall, with one to several, subwoody stems to 4 mm thick at their base and freely rebranched from low down; flowering branches few with several, more slender, more leafy, sterile branches from near their base or sometimes from the stem below, subequalling or sometimes exceeding the flowering branch; root almost certainly tuberous; branches herbaceous, slender, distinctly ribbed, to 12 cm long, usually rather freely rebranched from low down; leaves alternate, subopposite or randomly more crowded above; the lowest elliptic acute,  $\pm 5 \times 2$  mm, becoming larger, to  $18 \times 6-8$  mm (occasionally only 3-5 mm wide).

Woodland in white sand; sand among flat laterite rocks; roadside in *Brachystegia* woodland; 1200-1500 m alt.

Near *E. radiifera*

**E. paralias** L.; Euphorbia J. 10: 50, 1996. – Sea Spurge.

syn.: *Tithymalus paralias* (L.) Hill; *Esula paralias* (L.) Fourr.; *Tithymalus maritimus* Lam.; *Euphorbia malacitana* Pau

Glaucous, fleshy, caespitose perennial to 50(-70) cm tall; stems numerous, erect, usually simple, often reddish at the base, densely leafy; leaves alternate, sessile; cauline 5-20  $\times$  2-10 mm, the lower oblong-obovate to elliptic-oblong, the uppermost ovate; not spiny.

Coastal sands and dunes.

Madeira, Canary Islands; W & S Europe; N Africa, Middle-East; introduced in SE Australia (Cunninghamia 7: 563-578, 2002).

**E. parifolia** N. E. Br.

Rootstock an elongated tuber, producing 1 or more annual stems branching into a 2-3-rayed umbel at the top and with 1 or 2 pairs of branches or sometimes a solitary branch below the umbel, 10-22,5 cm high; leaves and bracts all opposite or with a whorl at the base of the umbel, spreading, subcoriaceous or subfleshy 0,7-3,75  $\times$  0,44-1,5 cm, with the basal pairs very much reduced; seeds unknown; not spiny.

Sandy plain; 1680 m alt.

Only known from the type Antunes 1047 !

**E. parva** N. E. Br.

Annual herb, 3,7-6,3 cm tall; stem simple or forking at the base into 2-3 branches, slender, erect; leaves opposite 1,25-1,6  $\times$  0,22-0,44 cm, lanceolate, very oblique at the base, thinly ciliate; capsule and seeds unknown; not spiny.

Ecology unknown (plateau).

Only known from the type.

**E. parviceps** L. C. Leach

Succulent, spiny tree to  $\pm 15$  m, with a stout cylindrical nude trunk to  $\pm 30$  cm  $\emptyset$  (seedlings initially 3-angled, soon becoming 4-angled), usually with few to many trunk-like branches to  $\pm 10$  cm  $\emptyset$  from near the base and above, often densely branched and rebranched, very rarely with a simple trunk; the latter often clad with lichens and epiphytic orchids, each crowned with a relatively small pseudo-whorl of rather weak, spiny flowering branches; flowering branches initially spreading, soon becoming drooping, eventually falling, simple, to 90 cm long, but usually much less ( $\pm 45$  cm), 2,5-4 cm  $\emptyset$ , tapering into a stalk-like base and constricted into 1-4 (usually 2-3) segments; the latter very variable in length, to  $\pm 40$  cm,  $\pm$  parallel sided or very narrowly elliptic, with a very small central core and 3-5 thin wing-like angles; margins sinuate-dentate or crenate.

## EUPHORBIA PARVICEPS

Steep hillside near river mouth; rocky escarpment; sulphur pan.

Habit and stature very variable.

Rare in collections but presents no unusual cultural problems.

Near *E. candelabrum*.

**E. patentispina** S. Carter; Nord. J. Bot. 21: 567, 2002.

syn.: "Possibly distinct species" cited under *E. xylacantha* in Fl. Somalia 1: 330, 1993.

Succulent perennial, densely branched, forming tufted cushions c. 25 cm tall and 30 cm  $\emptyset$ ; branches terete, 5-8 mm  $\emptyset$ , with shallow tubercle-teeth 5-10 mm apart; leaves fleshy, 1  $\times$  1 mm, soon deciduous; spine shields 2-4  $\times$  2,5 mm, decurrent to halfway to lower flowering eye; spines single, slender, spreading outwards, 7-25 mm long; prickles 1-4 mm long, becoming curved.

In mountains on open, usually denuded, stony soils and rocky slopes; 730-850 m alt.

Similar to *E. xylacantha* but more slender; closely related to *E. myrioclada*.

Only three collections known.

**E. peplus** L.; Thulin, Fl. Somal. 4: 279, 1995.

Slender annual herb to 30 cm tall, glabrous, branched from near the base; leaves on the stem entire, 5-20  $\times$  3-12 mm,  $\pm$  ovate; ray-leaves similar, but with shorter petioles; raylet-leaves smaller; rays 3, dichotomous; not spiny.

Shady places among rocks in evergreen bushland; winter rainfall area of escarpment (Eritrea); 1150-1300 m alt.

Cosmopolitan weed, perhaps of Mediterranean origin.

**E. perangustifolia** S. Carter

Annual herb  $\pm 30$  cm tall, with spreading branches; stem and branches longitudinally grooved; leaves linear to 30  $\times$  3 mm; not spiny.

*Commiphora*, *Boswellia*, *Acacia* bushland on stony soil over limestone, roadsides; 480-1250 m alt.

Near *A. acalyphoides*.

**E. perarmata** S. Carter; Collect. Bot. Barcelona 21: 65, 1992; Euphorbia J. 9: 90, 97, 236, 1994.

Succulent perennial 10-25 cm tall and in  $\emptyset$ , branching from a stem  $\pm 5$  cm high; branches terete, 1-1,5 cm thick, 2-15 cm long, with very shallow rounded tubercles  $\pm 1$  cm apart in 5 spiral series; spiny; capsule and seeds unknown.

Limestone and gypseous stony soils, with scattered *Acacia-Commiphora* bushland; 270 (or 315?)-510 m alt.

Infrequently encountered in cultivation.

Near *E. multiclava*, one of a group of species occurring in NE Somalia and adapted to combat water-loss in an aride environment: *E. horwoodii*, *E. turbiniformis*, *E. ponderosa*, *E. umbonata*, *E. atrox*.

**E. perplexa** L. C. Leach

Erect or semiprostrate shrublet to 0,75 m tall; branches 4-angled, 10-15 mm  $\emptyset$ , angles prominently crenate-toothed, compressed and often wing-like, sometimes to 1 m long, then becoming procumbent; spiny.

Exposed granite rocks and laterite; also sandy soils; 1740-2067 m alt.

Comprises 2 vars.

Near *E. tetracanthoides* and *E. cataractarum*.



## EUPHORBIA

**E. persistentifolia** L. C. Leach; *Euphorbia* J. 7: 134, 1991; *Cact. Succ. J. (U.S.)* 72: 184, 2000; *Desert Pl.* 17(2): 19, 2001.

Spiny succulent shrub or tree, usually a shrub  $\pm$  2 m tall with a stout, angled central stem and ascending erect whorled branches, sometimes a shrub  $\pm$  1 m tall with divaricately branched and rebranched spreading branches, or more rarely a tree to  $\pm$  3,5 m tall, with a stout cylindrical trunk and a crown of spreading branches; branches 2-5 cm  $\varnothing$ , 4-5-angled (usually 4), with the sides flat or concave, seldom sufficiently so as to be described as winged, constricted into long segments to 40 cm long with the sides almost parallel, very slightly tapering upwards, generally somewhat sparingly branched and rebranched,  $\pm$  whorled from shortly above the constrictions; the angles sinuate-tuberculate, often not very prominently so, sometimes almost even, with a conspicuous horny margin; leaves  $10 \times 2,5$  cm (generally  $\pm 6 \times 1,6$ ) persisting to 9 months.

Steep rocky slope; sandstone hill; river banks;  $\pm$  leafless when flowering; 690-1170 m alt.

Variable species.

**E. pervittata** S. Carter; *Cact. Succ. J. (U.S.)* 72: 193, 192, 2000.

syn.: *E. vittata* sensu S. Carter, *Hook. Ic. Pl.* 39: tab. 3858, 1982 and *Fl. Trop. E. Africa*, *Euphorb.* 2: 517, 1988 **excl.** specim. Adamson 135 in Bally 3980, Mathew 6660, Hepper & Jaeger 6996, non *E. vittata* S. Carter sensu stricto.

Densely tufted succulent perennial with a large tuberous root; branches to 30 cm long, spreading or prostrate and trailing, obtusely 4-angled, 1 cm  $\varnothing$ ; angles with very prominent tubercle teeth to 2 cm apart; spiny.

Among rocks in stony soils in open bushland; 500-1100 m alt.

Near *E. vittata*.

**E. petitiana** A. Rich.

syn.: *E. cerebrina* Hochst. ex Boiss.; *E. pseudofalcata* Chiov. ex Chiarugi; *Tithymalus petitianus* (A. Rich.) Klotzsch & Garcke; *T. cerebrinus* (Hochst. ex Boiss.) Schweinf.

Herbaceous perennial with several ascending stems from a woody rootstock, to 40 cm tall; leaves oblanceolate  $1,8-3,2 \times 0,5-0,7$  cm.

Open grassland or evergreen bushland; 2550-3650 m alt.

Arabia (Yemen).

**E. petraea** S. Carter; *Euphorbia* J. 7: 128, 1991.

Decumbent spreading succulent shrub, densely branched from the base, sparsely branched above, to 60 cm tall; branches 4(-5)-angled, 1-2 cm thick; angles sinuately toothed, with teeth 8-15 mm apart; spiny.

Exposed rocks and boulders, in sparse deciduous bushland; 950-1850 m alt.

Cultivated by collectors.

Near *E. heterochroma*.

**E. petricola** Bally & S. Carter; *Euphorbia* J. 8: 68, 1992.

Succulent perennial with densely tufted stems, sparsely branched, subcylindrical, to 30(-75) cm long and 8 mm thick; branches with  $\pm$  shallow teeth to 2 cm apart in 4 longitudinal series; spiny; leaves deltoid  $\pm 0,75 \times 0,75$  mm.

## EUPHORBIA PETRICOLA

In crevices of rocky outcrops with *Xerophyta* and grass tufts; bright orange-red gritty loam; common on rocks, exposed and sheltered; 500-1000 m alt.

Of easy culture.

Near *E. uhligiana* (cf. under this species).

**E. pfeilii** Pax

syn.: *E. glauccella* Pax; *E. anomala* Pax 1908, non Boiss. 1862; *E. kwebensis* N. E. Br.

Annual or short-lived perennial herb to 60 cm tall, with a main stem to 15 cm high, woody-based; branches with prominent calloused scars from fallen leaves and cyathia; leaves with lamina to  $5,5 \times 1$  cm, linear.

Hot dry areas in exposed gravelly sandy soils and rocky slopes;  $\pm$  500-1000 m alt.

Botswana, S. Africa.

*Euphorbia glanduligera* Pax from Namibia is a different species.

**E. phillipsiae** N. E. Br.; *Euphorbia* J. 10: 91, 92, 1996; S. Carter in L. Russo, *Succ. Pl. E. Africa*: 129 (photo.), 2004.

syn.: *E. golisana* N. E. Br.

Succulent perennial to 25 cm tall and in  $\varnothing$ , with compact branching forming rounded cushions; branches terete, 1,5-2 cm thick, 7-9-angled; angles separated by deep grooves, sinuately toothed, with teeth 3-6 mm apart; spiny; capsule and seeds unknown.

Rocky north-facing slopes of limestone escarpment with *Buxus hildebrandtii* and deciduous shrubs;  $\pm$  1500 m alt.

S. Arabia?

Uncommon in collections (in 1983).

**E. phillipsioides** S. Carter; *Euphorbia* J. 9: 237, 1994.

Succulent perennial 5-15 cm tall, branching mostly from near the base, forming clumps to 10 cm  $\varnothing$ ; branches terete, 1-2,5 cm thick, 10-14-angled; angles separated by distinct grooves, sinuately toothed, with teeth 2-4 mm apart; spiny.

Stony, rocky limestone plains, with very sparse *Acacia* bushland; 1300-1500 m alt.

Widespread in cultivation.

Near *E. phillipsiae*.

**E. pilosissima** S. Carter

Annual erect herb to 45 cm tall; pilose with long spreading white hairs  $\pm$  1 mm long; leaves obovate, to  $18 \times 8$  mm, base very obliquely rounded, margin deeply serrate with teeth 0,5 mm long; not spiny.

Sandy soil of causeway in valley of impeded drainage with *Hyparrhenia*, *Setaria*, *Cephalocroton*, *Vernonia*, *Senecio*; 1310 m alt.; common.

Related to *E. kilwana*.

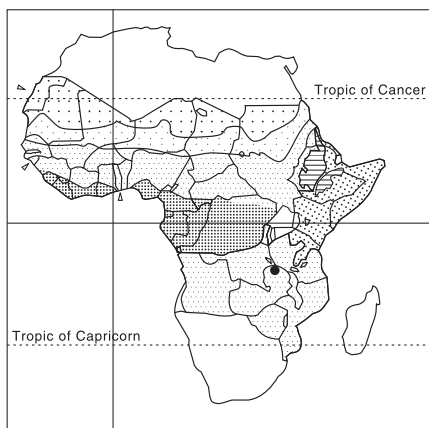
Only known from the type collected in 1964.

**E. pirottae** Terracc.; *Euphorbia* J. 9: 146, 1994.

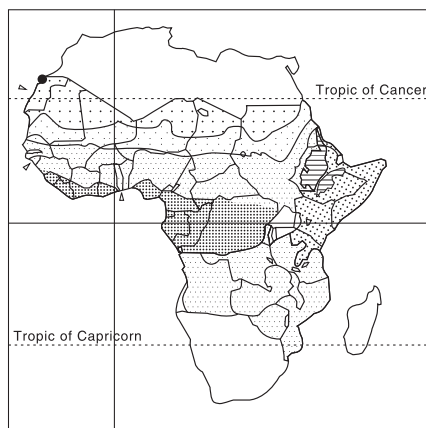
syn.: *E. gorinii* Chiov.

Sparingly branched annual herb to 30 cm tall; stem slightly swollen at the base and semi-succulent to 1 cm thick; leaves ovate-lanceolate to linear-lanceolate, to  $8 \times 1$  cm, base cuneate, apex rounded.

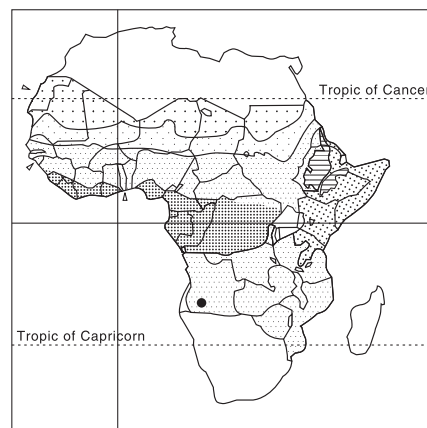




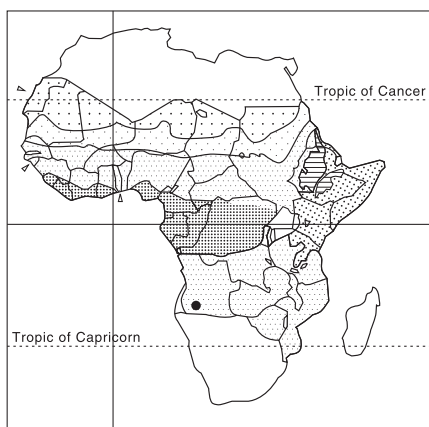
*Euphorbia papilloscapsa*



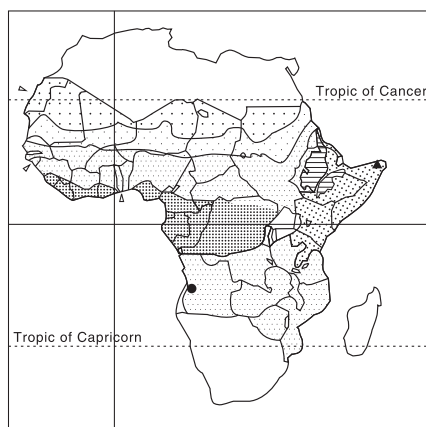
*Euphorbia paralias*



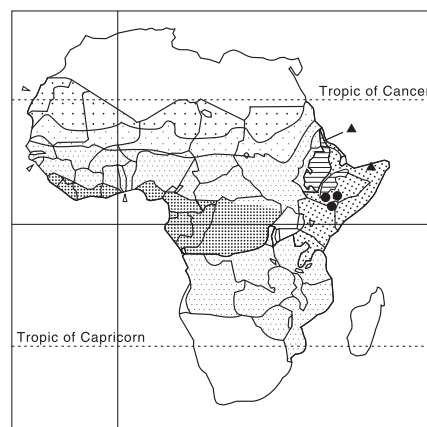
*Euphorbia parifolia*



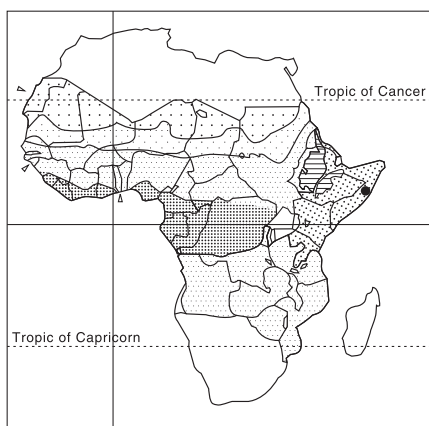
*Euphorbia parva*



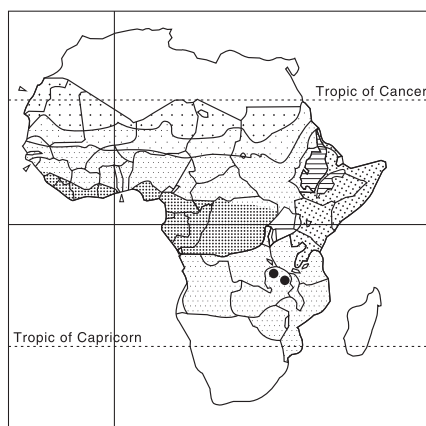
*Euphorbia parviceps* ●  
*Euphorbia patentispina* ▲



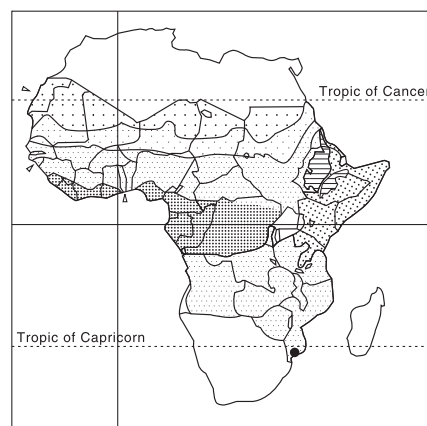
*Euphorbia peplus* ▲  
*Euphorbia perangustifolia* ●



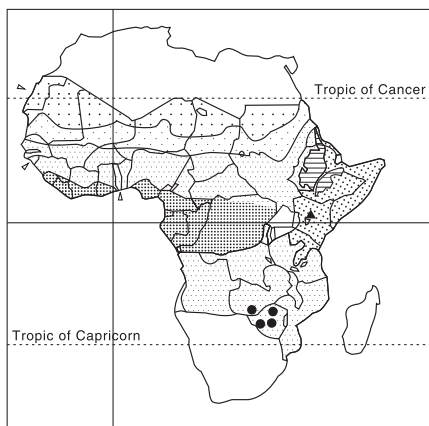
*Euphorbia perarmata*



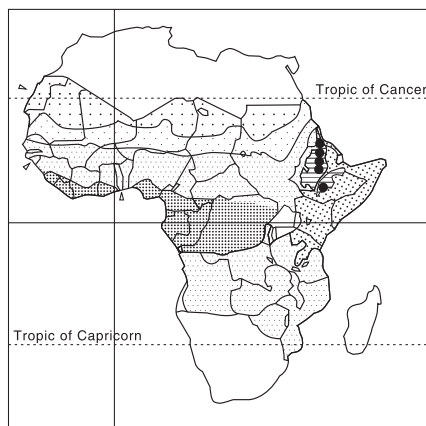
*Euphorbia perplexa*



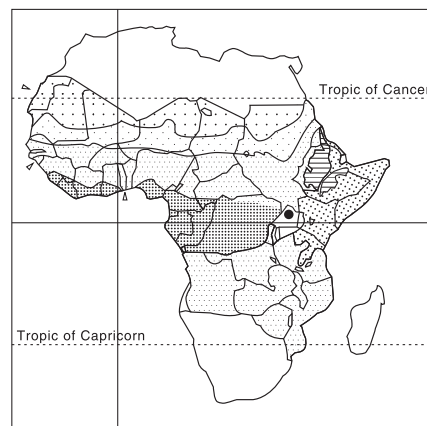
*Euphorbia persists*  
(= *Euphorbia clavigera*)



*Euphorbia persistentifolia* ●  
*Euphorbia pervittata* ▲



*Euphorbia petitiana*



*Euphorbia petraea*

## EUPHORBIA PIROTTAE

Sandy soils and limestone in open bushland, with *Acacia*, *Commiphora*; near sea level-1650 m alt.

SW Saudi Arabia (one collection; 15,5 m alt.; endangered fide M. A. Rahman & al. in Bangladesh J. Pl. Taxon. 9/1: 37, 2002).

**E. piscidermis** M. G. Gilbert; A. Pritchard, Introduction Euphorbiaceae: 33-34, 2003; P. Bisseret in L. Russo, Succ. Pl. E. Africa: 72-74 (photos), 2004.

Succulent with simple subglobose-cylindrical stem to 11 × 7,5 cm, usually less, covered by spirally arranged close-packed truncate tubercles with the upper margins produced upwards so that the stem looks as if it is covered with off-white to pale buff fish scales; leaves absent; seedlings produce two spines.

The scales on the stem are in fact highly modified tubercles; the only other plant with comparable tubercles is the Mexican cactus *Pelecypora strobiliformis* (Werderm.) Frič & Schelle ex Kreuzinger (vide Anderson, E. F. & al., Threatened Cacti of Mexico: pl. 19, 1994, and Euphorbia J. 1: 44, 1983; 5: 15-17, 1988); Anderson, E. F., The Cactus Family: 561, 2001.

Very open deciduous bushland with main cover of small shrublets belonging to the *Acanthaceae* and *Labiatae* on low, probably gypsum-bearing, ridges (or limestone?); 1000-1050 m alt.

The plant is restricted to two very local patches (each not more than 30 m across, found about 100 m apart) on the lower slopes of the ridge; within these areas it was frequent, almost abundant. Still quite rare in cultivation.

A highly specialized succulent whose affinities are uncertain (*E. turbiniformis*, *E. horwoodii*). The nearest is *E. gymnocalycioides*.

**E. platycephala** Pax; Euphorbia J. 9: 183, 1994; Cact. Succ. J. (U.S.) 72: 252-254, 2000; Desert Pl. 17(2): 23, 2001.

Perennial herb with a fleshy cylindrical rootstock 20-30 × 2,4 cm and ± fleshy annual stems to 35 cm tall; leaves ± fleshy, obovate 6-12 × 1,5-4 cm, darker green on the upper side, paler green on the lower side, with a prominent white middle-nerve, often with a narrow, red, entire margin; not spiny.

Amongst grass of seasonally wet areas in dry sandy soils, amongst rocks and hard sunbaked black cotton pans; 480-1300 m alt.

Extremely difficult to cultivate; extremely sensitive to excess moisture in the dormancy period (A. Pritchard, Introduction Euphorbiaceae: 40, 2003).

Very close to *E. speckii*, *E. maritae*.

**E. platyrrhiza** L. C. Leach

Dwarf perennial herb with numerous succulent, spiny branches arising from much reduced subterranean stems or eyes arranged ± around the margin of a flattish, relatively shallow, irregularly shaped, rather woody tuber (the largest: ± 25 × 30 cm, ± 5 cm thick); branches usually branched at or near the base (rarely above), slender, relatively soft and flaccid, somewhat flexuous, terete, rather stalk-like below, becoming 3-angled above and sinuate-dentate along the angles, to 22 cm long, 3-5 mm thick excluding the tubercle teeth; these ones spirally arranged, sharply or obliquely truncate on the upper slope, 2-5 mm high, (2) 3-4,5 cm apart along the angles low down, becoming somewhat less widely spaced above; leaves fleshy, flaccid, narrowly elliptic or narrowly obovate, 15-25(-55) × 5-15 mm, eventually deciduous; capsule and seeds unknown.

Margins of a large tree-free, grassy, seasonal pan on Kalahari sand; rare; ± 800 m alt.

Near *E. oligoclada*.

## EUPHORBIA

**E. plenispina** S. Carter, Kew Bull. 54: 964, 963, 1999.

Dwarf succulent perennial, branching from a thickened fleshy root; branches sparsely rebranched, spreading, succulent, to 8 cm long, ± 5 mm Ø, 4-angled; angles shallowly sinuate with tubercle-teeth 5-10 mm apart; spiny; female flowers, capsules and seeds unknown.

Among lichens on exposed rocks; ± 75-250 m alt.

Near *E. whellanii*.

Only known from the type collected in 1968.

**E. poissonii** Pax; Cactus File 1(3): 2, 1991; Rev. Bot. Appl. Agric. Trop. 13: 549, 1933; Euphorbia J. 8: 36, 37, 119, 120, 1992; 10: 94, 1996; Cact. Succ. J. (U.S.) 72: 329, 2000; A. Pritchard, Introduction Euphorbiaceae: 32, 2003.

Erect, candelabriform, branching shrub 1,2->2 m tall; branches cylindrical, 3-3,5 cm thick, leafless or with 5-6 deciduous leaves at the apex; not spiny or sometimes with rudimentary spines, or spines only on young plants; leaves obovate, retuse at the apex, 2-14 × 4-6 cm, thick, fleshy, deciduous.

Rocks, stony soils; open *Monotes* woodland with grass; ± 400-700 m alt. Also planted.

Not in Ivory Coast and Niger.

**E. polyacantha** Boiss.; Collect. Bot. Barcelona 21: 71, 1992, incl. var. *subinarticulata* Schweinf.; Euphorbia J. 7: 155, 1991.

syn.: *E. thi* Schweinf. and var. *subinarticulata* (Schweinf.) N. E. Br.; *E. infausta* N. E. Br.; *E. tetragona* A. Rich. 1851, non Haw. 1826, nom. illegit.

Candelabra-like shrub to 1,5(-2) m tall, broader than high, with densely erect, mostly basal, branches; stems 4-7-angled, 12-30 mm wide, shallowly segmented; spiny; leafless; angles with continuous narrow horny border.

Rocky slopes and outcrops with open *Acacia* or evergreen bushland to lower margins of *Juniperus* forest; dry hilly savanna of the Red Sea Hills; (800-)1200-2000(-2250) m alt.

Comprises 2 subspp.?

Confused with *E. nigrispina* (Somalia) and *A. cactus*.

A hybrid between *E. polyacantha* and *E. abyssinica* is known (Burger 3276).

**E. polyantha** Pax

Perennial shrubby herb (<0,5-)1,2(-3) m tall, with woody stem and branches; leaves obovate, 5-40 × 3-35 mm; not spiny.

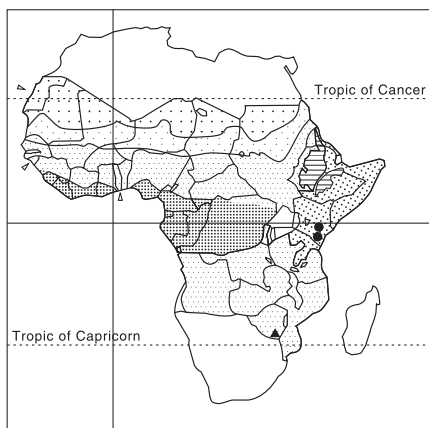
Sandy stony soils in dry deciduous bushland; limestone and gypseous soils with *Acacia-Commiphora* bushland; 160-1400 m alt.

Very variable habit (subscandent or very dense rounded bushes or rather slender erect).

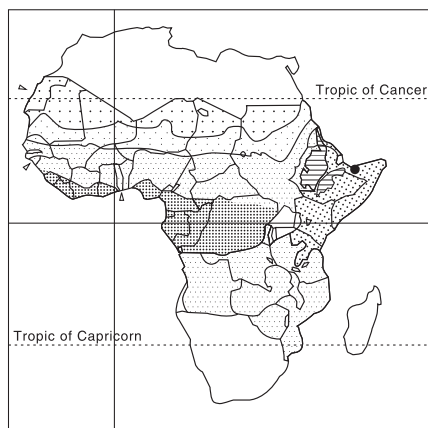
**E. polycnemoides** Hochst. ex Boiss.

syn.: *Anisophyllum polycnemoides* (Hochst. ex Boiss.) Klotzsch & Garcke; *Chamaesyce polycnemoides* (Hochst. ex Boiss.) Soják

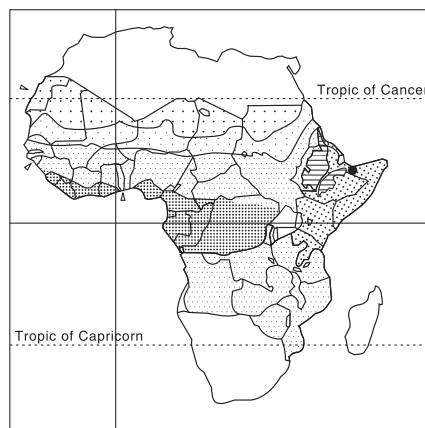
Annual or short-lived perennial with branching erect stems to 35 cm tall; the whole plant often tinged red; leaves lanceolate 6,5-15(-18) × 2-5(-6) mm, base obliquely rounded to subcordate; not spiny.



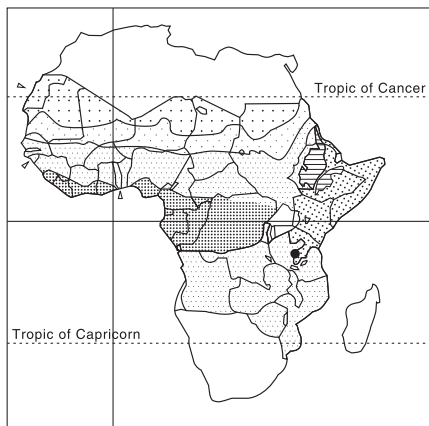
*Euphorbia petricola* ●  
*Euphorbia pfeilii* ▲



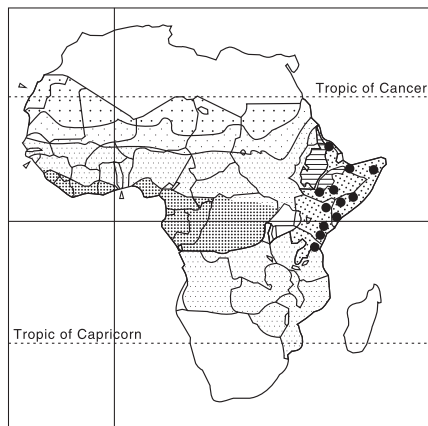
*Euphorbia phillipsiae*



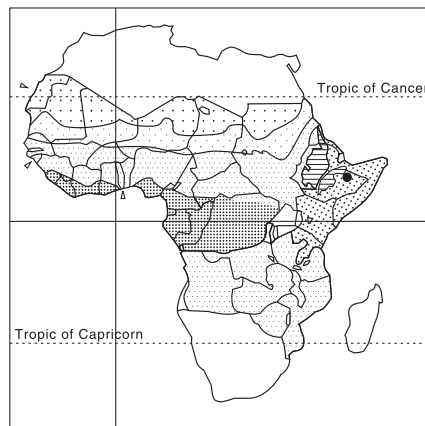
*Euphorbia phillipsioides*



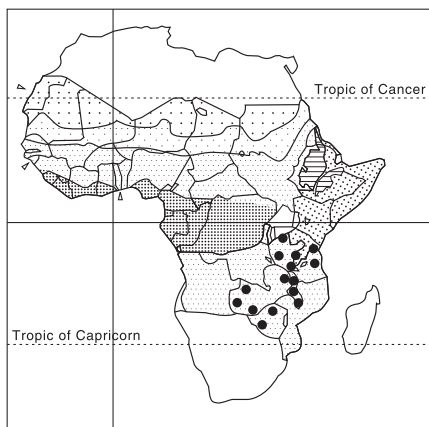
*Euphorbia pilosissima*



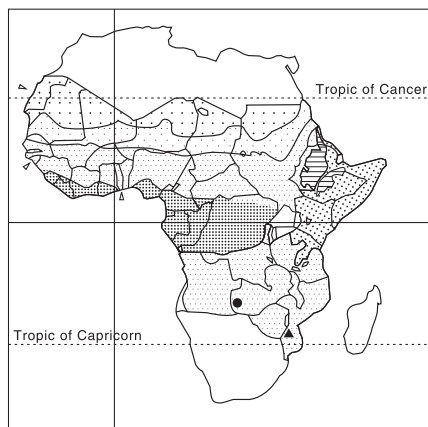
*Euphorbia pirottiae*



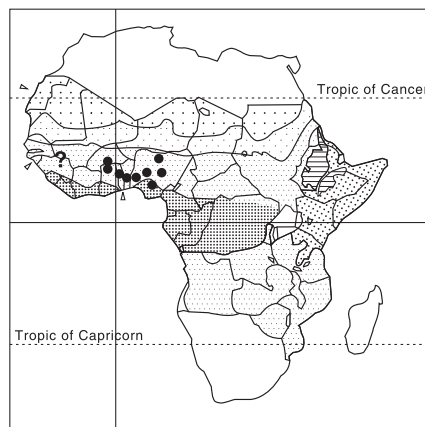
*Euphorbia piscidermis*



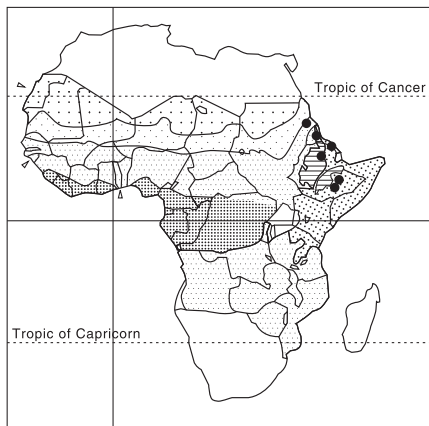
*Euphorbia platycephala*



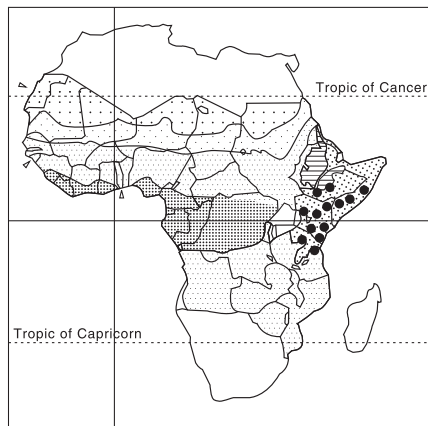
*Euphorbia platyrrhiza* ●  
*Euphorbia plenispina* ▲



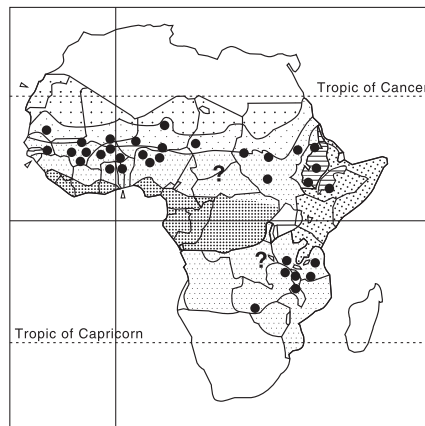
*Euphorbia poissonii*



*Euphorbia polyacantha*



*Euphorbia polyantha*



*Euphorbia polycnemoides*

## EUPHORBIA POLYCNEMOIDES

Wooded grassland; disturbed areas, often on rocky slopes in areas of open deciduous woodland; dunes and fixed sands; screes; humid places; laterite flags; *Brachystegia* woodland; 275-2000 m alt.

Not in Somalia (= *E. arabica*).

**E. ponderosa** S. Carter; Collect. Bot. Barcelona 21: 65, 1992; *Euphorbia* J. 9: 90, 120, 238, 1994; 10: 198, 1996.

Succulent perennial to 30 cm tall and in Ø, densely branching from a short 7-angled stem to form a compact rounded cushion; branches terete, 1-2,5 cm thick, with prominent tubercles 4-8 mm apart in 5-8 tightly spiralled series; spiny; capsule and seeds unknown.

Rocky gypseous hill slopes, with very scattered *Commiphora* and other xerophytic shrubs; 600-750 m alt.

Rare, slow growing and a bit tricky in cultivation.

Near *E. multiclava*.

**E. proballyana** L. C. Leach; *Euphorbia* J. 7: 53, 1991; 10: 215, 1996.

Compact densely branching succulent, rather flat-topped, shrub <1-1,3(-2) m tall and 1,5 m or more Ø: branches and branchlets divaricately, ± verticillately branched and rebranched from the margins from near the base of the segments, 4-angled, not much constricted, often pseudo-articulate; segments 6-20 cm long, 1-3 cm thick, ± parallel sided, with the lateral face ± flat and the margins sinuate-toothed, the teeth 1-1,5 cm high.

Rocky slopes with sandy soil and open *Acacia* woodland; xerophytic vegetation with *Adansonia digitata*, *Euphorbia quadrilata*, *E. candelabrum*, *Monadenium spinescens*, *Caralluma schweinfurthii*, etc.; 500-750 m alt.

Comprises 2 vars.: – var. **proballyana**; – var. **multangula** S. Carter, Cact. Succ. J. (U.S.) 72: 190, 2000.

Near *E. quadrangularis*.

**E. prona** S. Carter; *Euphorbia* J. 9: 104, 239, 1994.

Semi-prostrate succulent perennial, with sprawling stem to 75 cm long, sparsely branched; stem and branches terete, 1,5-2 cm thick, with prominent tubercles 7-10 mm apart in 5 loosely spiral series separated by deep grooves; spiny; inflorescences unknown.

East facing rocky mountain slopes, amongst very sparse *Commiphora* scrub; ± 300 m alt.

Still extremely rare and seldom encountered in cultivation.

Near *E. inaequispina*, *E. dasyacantha*.

**E. pseudoburuana** Bally & S. Carter; *Euphorbia* J. 8: 62, 1992.

Succulent perennial with a large tuberous root and a reduced underground stem producing numerous erect branches to 50 cm tall, or weaker branches spreading; branches rebranching above, (3-4)-5-angled, 1,5-5 cm wide, constricted at irregular intervals into ± obovate segments 2 cm or more long; angles compressed, sinuately toothed, with teeth irregularly spaced 0,5-3,5 cm apart; spiny.

Amongst grasses, often on rocky slopes, with open *Acacia-Commiphora* bushland; thorn scrub near river bed with *Acacia mellifera*, *Kalanchoe* sp.; association with *Euphorbia graciliramea*; red laterite clayey soil; 1200-1800 m alt.

Presents no unusual problems in cultivation; popular among collectors.

Near *E. buruana*.

## EUPHORBIA

**E. pseudograntii** Pax

Shrub 1-2 m tall with ± woody branches; leaves obovate to lanceolate, to 30 × 5,5 cm; not spiny.

Rocky slopes with open woodland; 500-1800 m alt.

Not in Kenya (= **E. friesiorum**). Only from a very restricted area of Tanzania.

**E. pteroclada** L. C. Leach

Dwarf perennial herb with subsucculent, spiny, winged branches arising from an apparently tuberous root; branches simple, erect, with a slender, terete, stalk-like base ± 3 mm Ø, becoming 3-winged above, 8-9 mm broad excluding the tubercle teeth, with the wings extremely thin, shallowly sinuate-dentate along the margins, the teeth 2-3 mm high, to 16 mm apart low down, becoming less widely spaced above; leaves and seeds unknown.

Exposed rocks.

Near *E. oligoclada*.

**E. quadrangularis** Pax

Very sparsely branched erect to subsucculent perennial 2-3,5 m tall, or sometimes with the stem apex damaged producing a more densely branched habit to ± 1 m tall; stem and branches 4-angled, stem to 5 cm thick near the base, branches 1-2 cm thick; angles straight to shallowly toothed, with teeth 1-3 cm apart; spiny; leaves ovate, ± 7 × 2,5 mm.

Sandy rocky soils with dry grass and deciduous woodland; 500-1750 m alt.

Often difficult in cultivation; uncommon.

**E. quadrialata** Pax

Tree to 15(-20) m; trunk simple or with a few ascending branches, to 30 cm Ø, with 6-8 vertical lines of pits, being the scars of fallen branches; the latter terminating in small fairly dense clusters of secondary branches 1-3 m long, each with further whorls of branchlets; terminal branchlets fleshy, 3-4-angled, 1,5-3,5 cm wide, deeply winged, slightly constricted at irregular intervals of 10-30 cm; angles straight to sinuately toothed, with teeth 1-1,5 cm apart; spiny.

Rocky slopes and gneiss outcrops with open deciduous bushland; 400-1300 m alt.

**E. quadrilatera** L. C. Leach, *excl. specim.* Perdue & Kibuwa 11046.

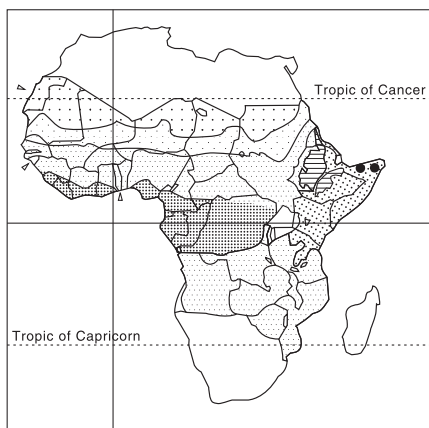
Succulent, spiny shrub, to 2 m or more tall, with a square-sectioned, erect main stem to 40 mm thick towards the base, sometimes becoming subcylindric with age, often simple to ± 0,6 m high, usually rather sparingly branched and rebranched above, occasionally when damaged forming a quite large, densely branched shrub; branches erectly spreading to spreading and the branchlets more widely spreading, 10-25 mm thick, strictly square-sectioned; stem and branches acutely 4-angled with the sides slightly concave and the angles sinuately tubercle-toothed, the teeth 2-5 mm high, 10-25 mm apart along the angles.

Among rocks in *Brachystegia* woodland; 1500-2100 m alt.

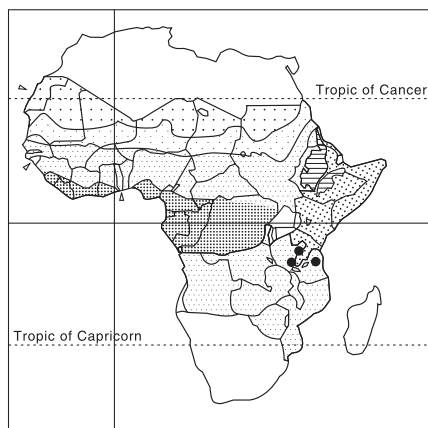
Relatively easy to cultivate.

Near *E. quadrangularis*.

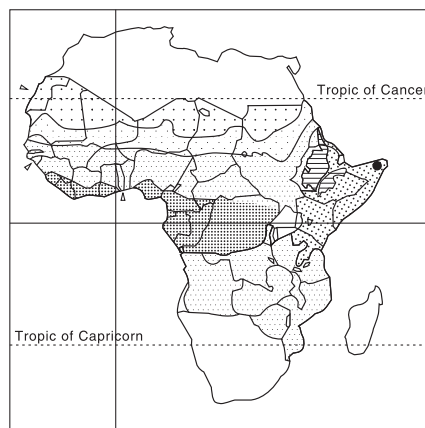




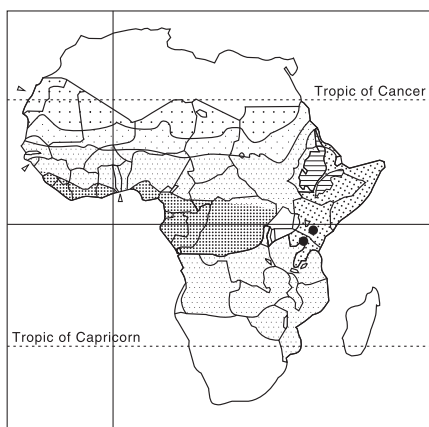
*Euphorbia ponderosa*



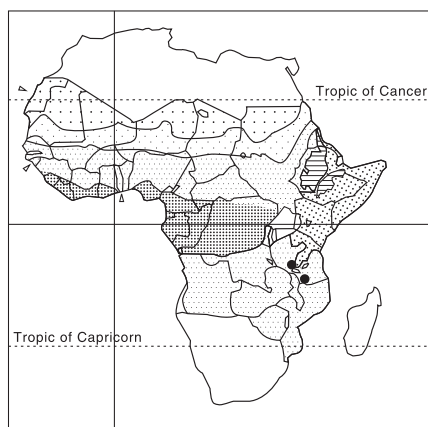
*Euphorbia proballyana*



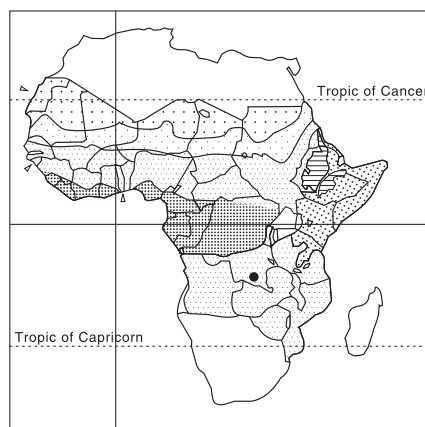
*Euphorbia prona*



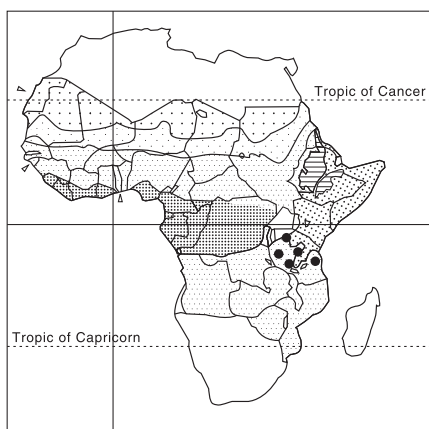
*Euphorbia pseudoburuana*



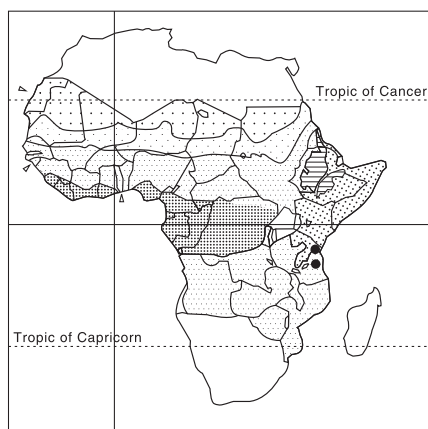
*Euphorbia pseudogranti*



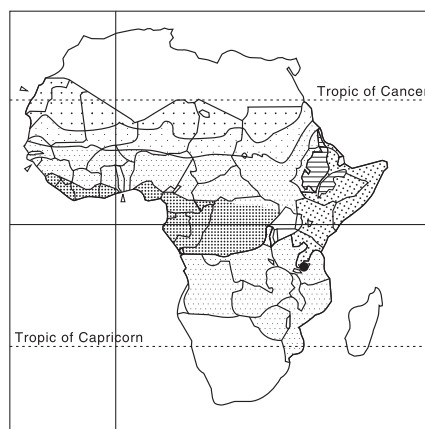
*Euphorbia pteroclada*



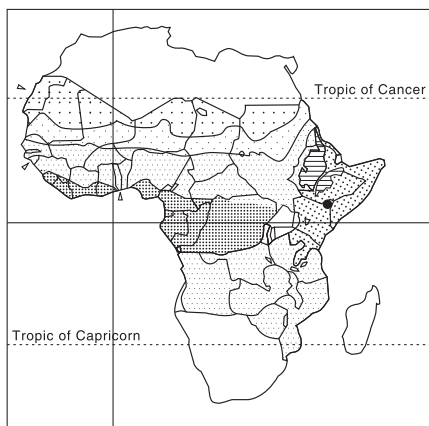
*Euphorbia quadrangularis*



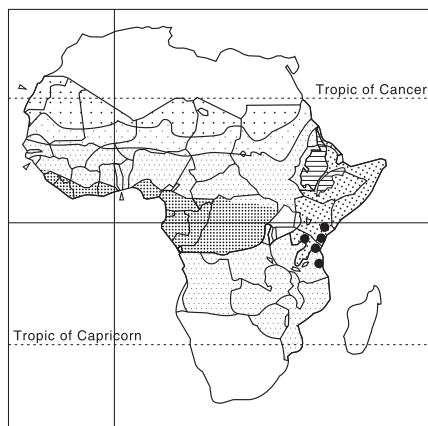
*Euphorbia quadrialata*



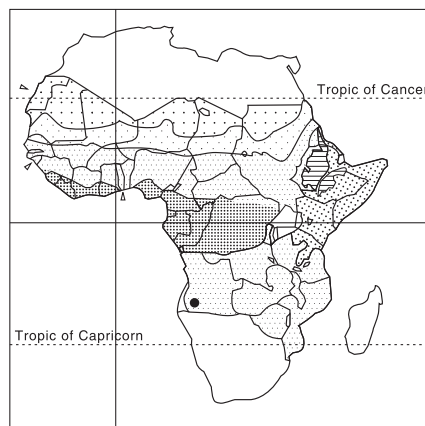
*Euphorbia quadrilatera*



*Euphorbia quadrispina*



*Euphorbia quinquecostata*



*Euphorbia radiifera*

## EUPHORBIA

**E. quadrispina** S. Carter

Densely branched succulent perennial, spreading to form tangled masses  $\pm$  10 cm high and 30 cm  $\varnothing$ ; branches cylindrical, to 20 cm long and 9 mm thick, obscurely toothed with teeth 5-10 mm apart in 5 loosely spiralled series; spiny; capsule and seeds unknown.

Rocky limestone slopes with *Acacia-Commiphora* bushland; 400-450 m alt. Only one very limited area.

Near *E. ellenbeckii*.

**E. quinquecostata** Volkens; vide *E. sumati*.

Tree to 10(-15) m, with a simple or sometimes branching trunk, to 50 cm  $\varnothing$ , marked with  $\pm$  loosely spiralled rows of persistent spines and deep pits resulting from the scars of fallen branches; branching dense to form a rounded slightly flattened crown; primary branches 2-4 m long, spreading outwards and upwards, with whorls of secondary branches which occasionally branch again on larger trees, the lower ones deciduous; terminal branchlets fleshy, (3-)5(-6)-angled, 2-4(-7) cm thick,  $\pm$  constricted at intervals of 5-15 cm; angles straight to sinuately toothed, with teeth 5-15 mm apart.

Rocky hillsides, usually the dominant tree in mixed deciduous woodland; 600-1220 m alt.

**E. radiifera** L. C. Leach

syn.: *E. verticillata* Pax quoad specim. Antunes 889, nom. illegit.

Near *E. parifolia* but ? some leaves obscurely 3-5-nerved from the base; ?branches and rays of the umbel 6,2-3,7 cm long; fruiting characters unknown; the distinctness of the two species needs further studies.

Sandy plains near river; 1800 m alt.

Very rare; not collected since 1898 (Antunes or Dekindt 889, Antunes & Dekindt 3088).

**E. ramulosa** L. C. Leach

Spiny, succulent, ramulose, pulvinate dwarf shrub, usually less than 15 cm tall; branches and branchlets erect, rigid, crowded, quadrangular with the angles moderately compressed above and the sides only slightly concave below, tuberculate dentate,  $\pm$  1 cm thick towards the truncate apices with the tubercle teeth  $\pm$  deltate, truncate or subtruncate, to 2,5 mm high, 8-12 mm apart along the angles; main branches to 17 cm long with the subterete basal portion to 2 cm  $\varnothing$ , tapering gradually towards the apex, not constricted into segments but the seasonal growth usually marked by curious fold-like divisions; spiny.

Large, isolated granite hill: in crevices on the steep slopes, with *Aloe mawii*, *Selaginella njamnjamensis*, *Xerophyta* spp., *Euphorbia* sp. aff. *E. graniticola*; 395-950 m alt.

Difficult to cultivate.

Near *E. schinzii*, *E. tetraanthoides*.

**E. reclinata** Bally & S. Carter; Euphorbia J. 8: 70, 71, 1992; S. Carter in L. Russo, Succ. Pl. E. Africa: 123 (photo), 2004.

Procumbent, occasionally scandent succulent perennial, much branched from the base; branches sparsely rebranched, 4-angled, to 1 m long and 1 cm thick; angles shallowly toothed, with teeth to 1,5 cm apart; spiny.

## EUPHORBIA RECLINATA

Exposed rocks in *Acacia*, *Cordyla*, *Commiphora* bushland; 850-1100 m alt.; very locally common.

Near *E. proballyana*; resembles *E. tetraanthoides*.

**E. repetita** Hochst. ex A. Rich.

syn.: *Tithymalus repetitus* (Hochst. ex A. Rich.) Klotzsch & Garcke

Shrubby herb to 2 m tall (basal parts unknown); leaves narrow-lanceolate to oblanceolate, 4-8  $\times$  0,4-0,9 cm; not spiny.

Along streams in disturbed forest; 2160-2700 m alt.

Near *E. brevicornu*.

**E. reptans** Bally & S. Carter; Cact. Succ. J. (U.S.) 49: 181, 1977.

Succulent perennial with trailing branches, often forming rhizome, and sparsely branched; branches cylindrical, to 1 cm thick and 50 cm long, possibly more, with obscure tubercles marked by spine-shields  $\pm$  1,5 cm apart in 3 loose spiral series; capsule and seeds unknown.

Rocky slopes, in crevices; 1400 m alt.

Near *E. tetraanthoides*.

Only known from the type collected in 1956.

**E. retusa** Forssk.

syn.: *E. kahirensis* Raeusch., nom. illegit.; *E. cornuta* Pers., nom. illegit.. *E. linearis* Schrank, nom. illegit.

Glaucous perennial 20-60 cm tall, sometimes flowering the first year; stems erect, many from a woody base; leaves 1-3,5(-5)  $\times$  0,3-0,6 cm, oblong-linear, alternate, margin acutely serrate; not spiny.

Wadi gravels.

N Africa; Syria, Palestine, Jordan, Arabia, Iraq, Pakistan.

**E. richardsiae** L. C. Leach; Euphorbia J. 7: 142, 1991; 9: 184, 1994; Aloe 41: 63, 2004.

Much branched, pulvinate, spiny, succulent, dwarf shrublets to 15 cm (or to 1,25 m) tall; branches 4-5-winged,  $\pm$  2 cm thick, including the wings, with the main branches usually 5-winged and the branchlets more often 4-winged; wings prominently crenate-toothed, 2-3 mm thick at their margin and the tubercle teeth obtuse, truncate on the upper slope, 4-5 mm high, 8-15 mm apart along the winged margins.

Granite outcrop hills in *Brachystegia* woodland;  $\pm$  1200-2100 m alt.

Comprises 2 subspp.

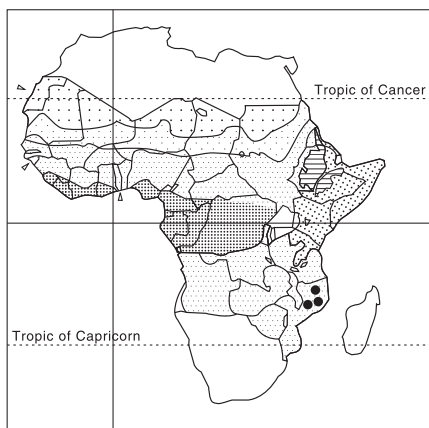
**E. rivae** Pax

Perennial herb with a thick tuberous rootstock to  $\pm$  12  $\times$  4 cm giving rise to several woody underground stems to  $\pm$  5 cm long, which branch at ground-level; branches prostrate and leafy to 15 cm long, or occasionally more floriferous and erect to 5 cm high; leaves broadly ovate to subcircular, to 17  $\times$  13 mm; not spiny.

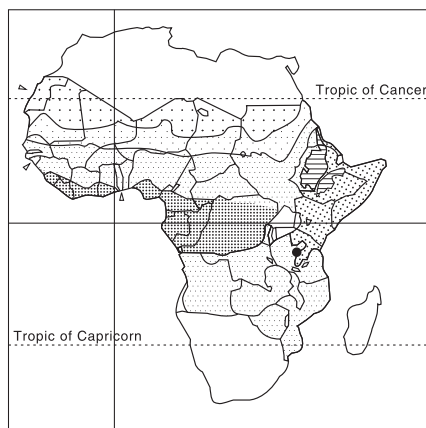
Amongst grass in poor, often-water-logged soil (black cotton or sandy); wooded grassland subject to burning; 725-1850 m alt.

**E. robecchii** Pax; Euphorbia J. 9: 84, 112, 1994; S. Carter in L. Russo, Succ. Pl. E. Africa: 122 (photo), 2004.

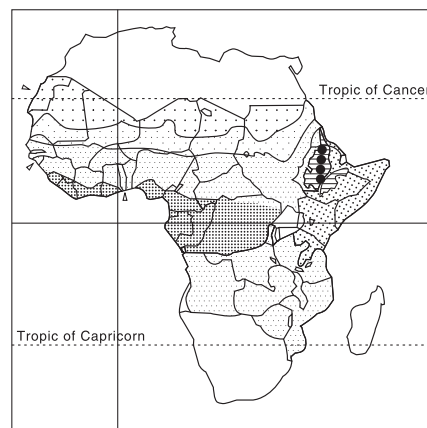
*Seedlings* to  $\pm$  1 m tall, with unbranched fleshy stem 4(-5)-angled, 3-4 cm thick; angles  $\pm$  straight, with spine-shields forming a continuous horny margin  $\pm$  2 mm wide.



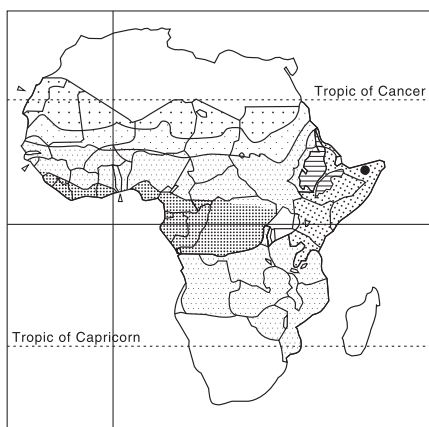
*Euphorbia ramulosa*



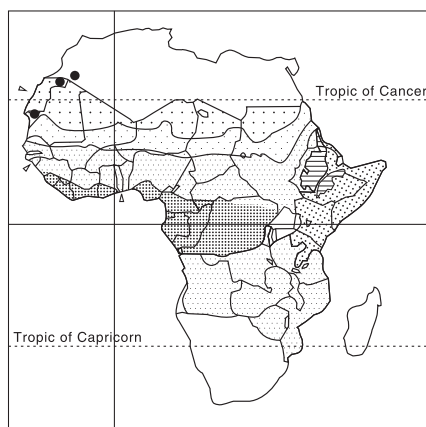
*Euphorbia reclinata*



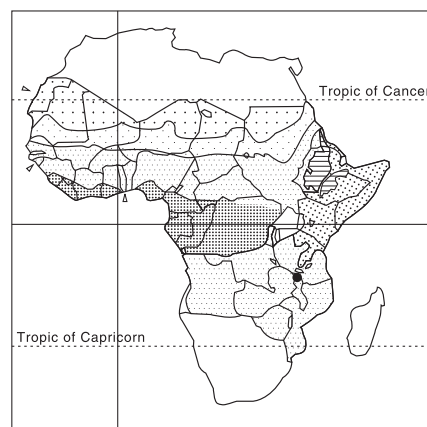
*Euphorbia repetita*



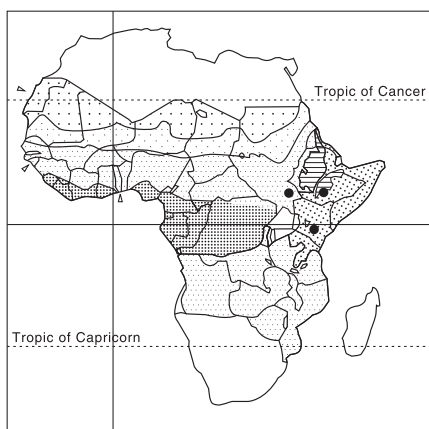
*Euphorbia reptans*



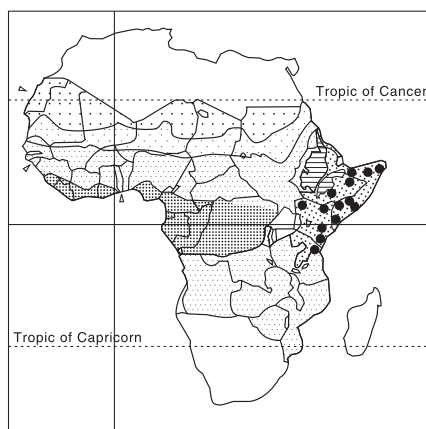
*Euphorbia retusa*



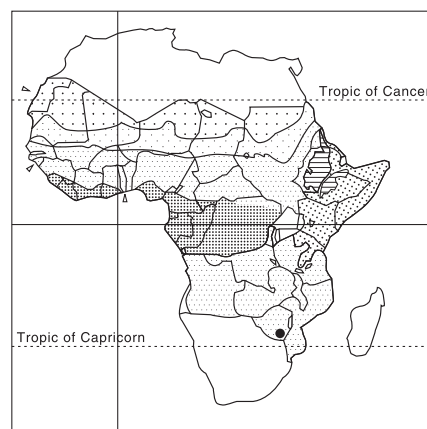
*Euphorbia richardsiae*



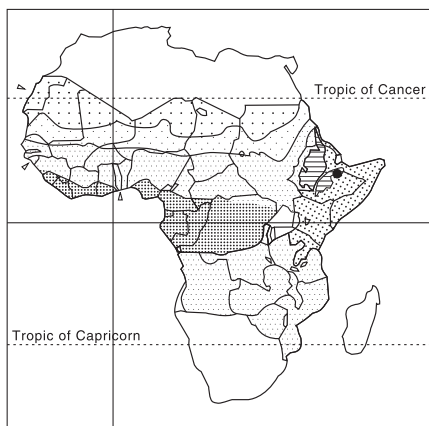
*Euphorbia rivae*



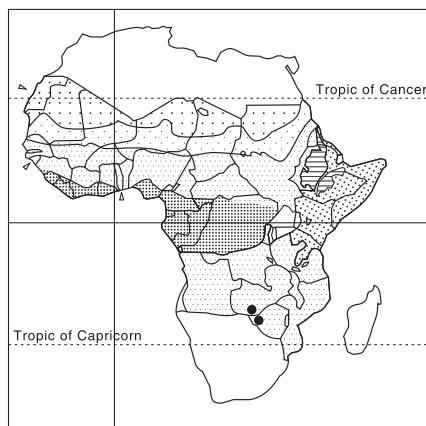
*Euphorbia robecchii*



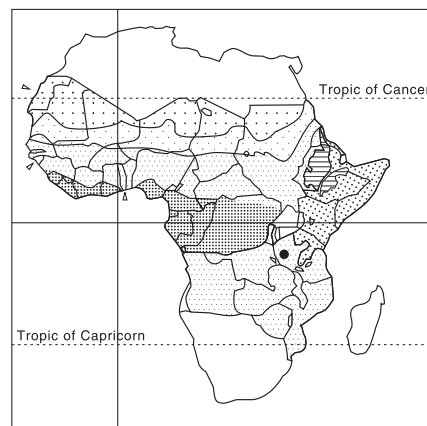
*Euphorbia rowlandii*



*Euphorbia rubella*



*Euphorbia rubriflora*



*Euphorbia rubrispinosa*

## EUPHORBIA ROBECCHII

*Young plants* to  $\pm 3$  m tall, branching and rebranching irregularly; branches at first ascending then drooping, obtusely 3-4 angled, 1-1,5 cm thick, distinctly toothed, with teeth 3-5 cm apart. *Mature tree* 3-10(-15) m tall; trunk simple, to 40 cm  $\varnothing$ , with a few pit-scars resulting from fallen branches visible at higher levels; branches to 5 m long, at first ascending, finally the lower ones spreading horizontally to form a rounded flat-based crown; secondary branches crowded at the apices, densely and irregularly rebranching; terminal branchlets obscurely 3-angled to cylindrical, marked with calloused obtusely triangular leaf-scars  $\pm 2,5 \times 2,5$  mm and 1-3 cm apart immediately below the flowering eyes, rarely with a pair of minute spines on lower branches; leaves deltoid,  $\pm 5 \times 3$  mm.

Red sandy soils with fairly open *Acacia-Commiphora* bushland; red sand overlying limestone, often forming groves in wadis; very common in certain areas such as the coastal region of S Somalia; often dominant in large stands (ante 1965); with *Terminalia*, *Grewia*, *Sansevieria*, *Caralluma retrospiciens*, *C. speciosa*; 30-1200 m alt.

Of easy culture.

**E. rowlandii** R. A. Dyer

Succulent shrub 1-2 m tall and about the same width, with a suppressed main trunk rising only very shortly above ground and producing many spreading-erect branches; branches 5-7-angled, very rarely rebranched, constricted into segments 7-15 cm long; segments 3-5 cm broad near their base and narrowed gradually upwards to the base of the segment above, with the constriction about 2 cm broad; angles acute, winglike, with a narrow continuous horny margin, paired spines and rudimentary leaves.

Hot dry areas on cliffs and sandstone ridges; 300 m alt.

S. Africa.

Near *E. confinalis*, and with a close superficial resemblance to *E. waterbergensis*.

**E. rubella** Pax excl. var. *brunellii* (Chiov.) Bally, but incl. var. "*exigua*" Bally (vide Candollea 24: 22, 1969); Euphorbia J. 8: 53, 1992; Pritchard, Introduction Euphorbiaceae: 36, 2003.

Root a subglobose tuber sometimes elongated when growing in rock crevices, abruptly delineated from stem by constriction; stem usually unbranched, completely below ground, to  $\pm 3 \times 0,7$  cm, covered by spirally arranged tubercles; leaves long petiolate, usually with only the blade above ground where they form a rosette flat on ground, blade broadly elliptic, base rounded to subcordate; not spiny.

Dark soil in limestone crevices on open grassy slope with patches of evergreen bushland; 1850-1950 m alt.

Extremely rare in collections (a species from a very hot, arid and bright area).

Not in Uganda, Kenya, Sudan (= *E. brunellii*).

**E. rubriflora** N. E. Br.

Annual or short-lived perennial herb with prostrate stems, radiating from the crown of the root, 2,5-25 cm long, simple or branched; leaves opposite,  $13 \times 8$  mm,  $\pm$  oblong, unequal at the rounded base; not spiny.

Dry exposed often stony soils, in sparse grassland; 700-1000 m alt.

Botswana.

## EUPHORBIA

**E. rubrispinosa** S. Carter

Densely branching succulent perennial; branches decumbent forming tangled mats to 1 m  $\varnothing$  and 30 cm high, 4-angled,  $\pm 1$  cm thick; angles with shallow rounded teeth to 1 cm apart; spiny.

Rocky outcrop in *Brachystegia* woodland; abundant with *Vellozia*; sandstone with *E. cooperi* var. *ussanguensis*; 1370-1730 m alt.

No unusual problems in cultivation.

Near *E. angustiflora*. Limited to an extremely small area.

**E. rubromarginata** L. E. Newton

Much branched shrub, forming a dense clump 0,5-1 m tall, to 1 m  $\varnothing$ ; stems succulent, quadrangular, 7-10 mm  $\varnothing$ , older stems becoming almost terete at base, to 20 mm  $\varnothing$ ; spiny.

*Acacia-Commiphora-Delonix* woodland, on basement-complex outcrop in deep shade; rocks on grassy slope with scattered shrubs; 1060-1370 m alt. – Cultivated.

Near *E. gemma*, *E. saxorum*.

**E. ruficeps** S. Carter

Perennial herb, with a woody tuberous rootstock, producing a few short stems annually, to 45(-60) cm tall; leaves deflexed, narrowly lanceolate, to  $12(-17) \times 1(-1,3)$  cm; not spiny.

Dry sandy soil in *Brachystegia* woodland; 1035-1550 m alt.

Near *E. arrecta*.

**E. rugosiflora** L. C. Leach; Euphorbia J. 9: 240, 1994.

Densely branched, spiny succulent shrub with rhizomatous roots, branching freely from the base, forming dense clumps to 1 m  $\varnothing$ , 0,4 m high; branches erect or sometimes those towards the circumference becoming arcuate-ascending, almost always simple, constricted at intervals, forming segments of varying lengths, 10-15 mm thick, of  $\pm$  even thickness throughout, initially 3-4-angled, usually becoming 5-angled with age; angles prominently sinuate-tuberculate.

In scanty soil with roots tightly wedged in crevices of vertically faulted sandstone rock outcrops;  $\pm 1400$  m alt.

Known in cultivation since 1989.

Near *E. griseola*, *E. richardsiae*; known since 1950, but good flowering and fruiting material only available in 1988.

**E. salsicola** S. Carter

Annual herb, with prostrate branches to 15 cm long; leaves oblong-ovate,  $1,5-6 \times 0,75-2$  mm; not spiny.

Saline soils usually dominated by *Limonium* and *Suaeda*; 1-200 m alt. (from near the coast to open gypseous plains further inland).

Near *E. inaequilatera*.

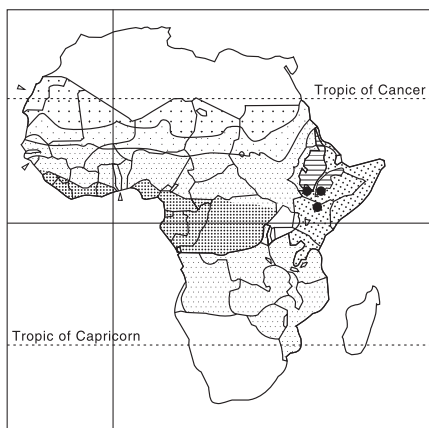
**E. samburuensis** Bally & S. Carter; Euphorbia J. 8: 63, 1992; 10: 90, 1996; S. Carter in L. Russo, Succ. Pl. E. Africa: 124 (photo), 2004.

Loosely tufted succulent perennial with a thick fleshy root; stems sparsely branched, to 90 cm long, 1-2 cm thick, subquadrangular; angles with  $\pm$  prominent teeth 1-2,5 cm apart; spiny.

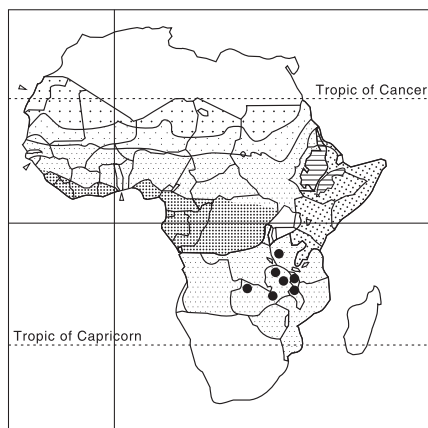
Rocky, sandy, stony and black cotton soils with low deciduous bushland; 1200-1710 m alt.

Near *E. septentrionalis*.

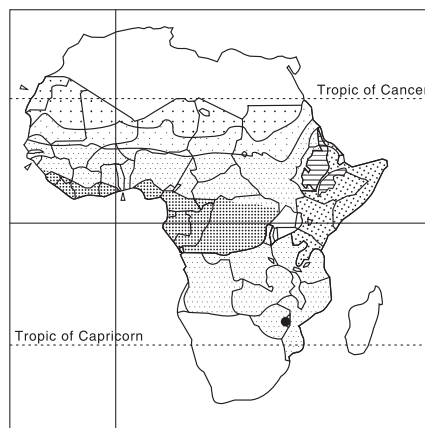




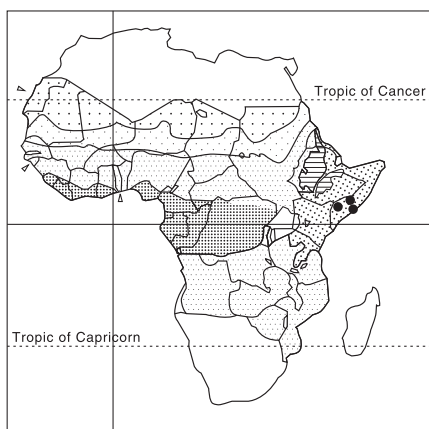
*Euphorbia rubromarginata*



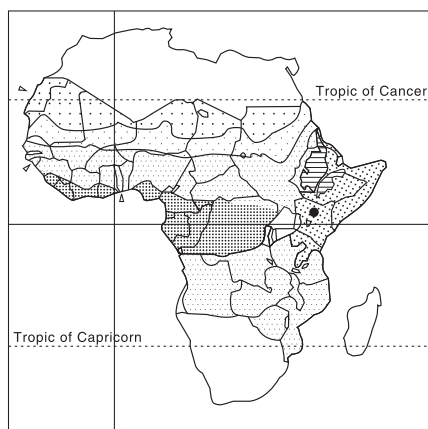
*Euphorbia ruficeps*



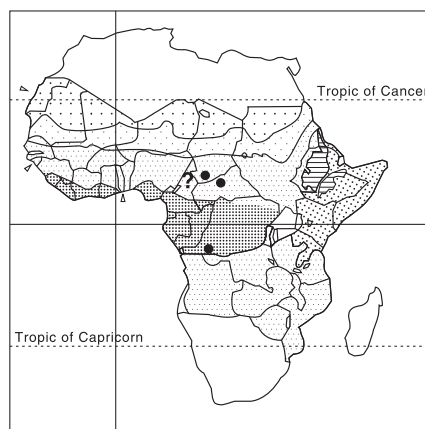
*Euphorbia rugosiflora*



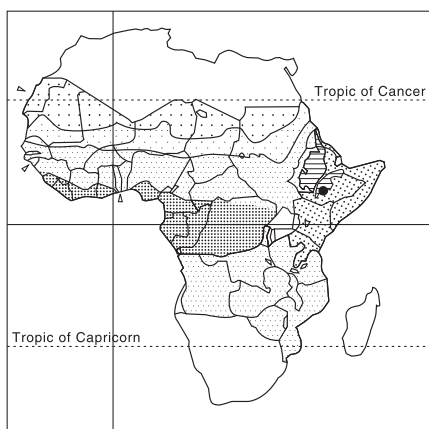
*Euphorbia salsicola*



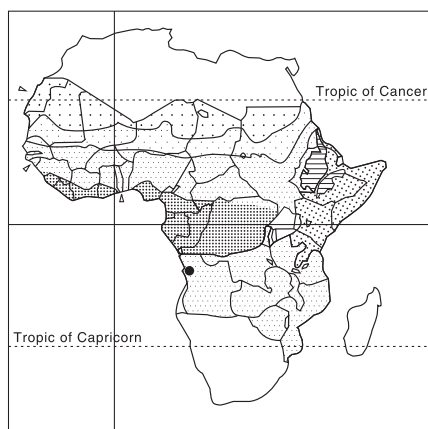
*Euphorbia samburuensis*



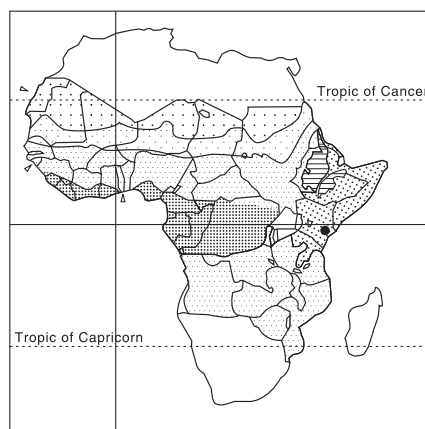
*Euphorbia sapinii*



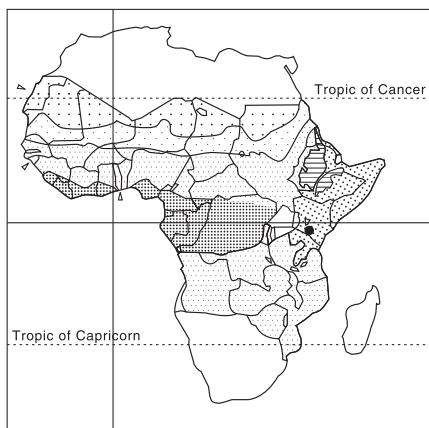
*Euphorbia sareciana*



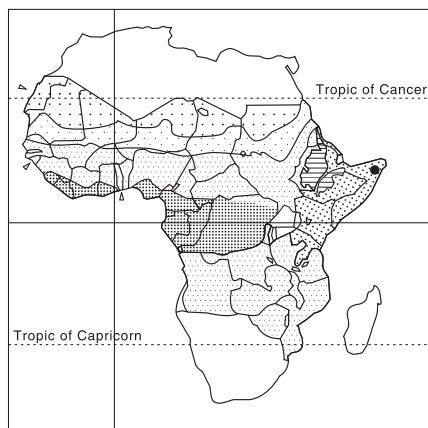
*Euphorbia sarmentosa*



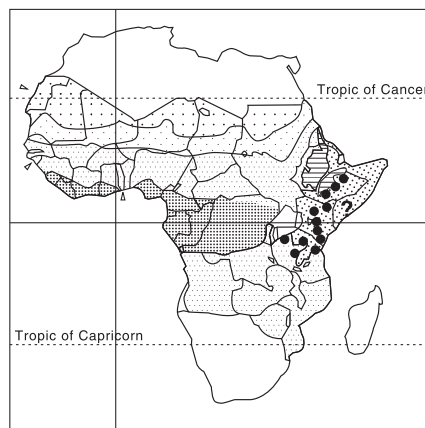
*Euphorbia saxorum*



*Euphorbia scarlatina*



*Euphorbia scatorhiza*



*Euphorbia scheffleri*

## EUPHORBIA

**E. sapinii** De Wild.; Rev. Bot. Appl. Agric. Trop. 13: 552, 1933.  
Succulent 40-120 cm tall, with several branches from the base; main stem to 15 cm thick; branches 5-10 cm thick, naked or leafy at the apex only, cylindrical, with crowded spirals of slightly prominent diamond-shaped tubercles, each marked with a large leaf-scar and bearing a single flattened deflexed spine; leaves 8-15 in a terminal tuft, recurved-spreading, 10-30 × 0,5-3 cm, strap-shaped or broadly linear.

Dry and arid places in savanna; ferruginous plateau.

**E. sareciana** M. G. Gilbert

Erect perennial herb ± 1 m tall, branching from the base; leaves elliptic to oblanceolate, 4,5-6 × 1,1-1,5 cm; capsule unknown; not spiny.

Open area in mosaic of *Combretum*, *Terminalia* woodland and *Podocarpus*, *Warburgia*, *Filicium* forest; ± 1500 m alt.

Near *E. depauperata*.

The species is named after the Swedish Agency for Research Cooperation with developing countries (SAREC) which provides the basic funding for the Flora of Ethiopia project.

**E. sarmentosa** Welw. ex Pax

Somewhat shrubby perennial, ± scrambling when adult, woody 1,25-1,6 cm thick at the base; stems suberect, much-branched or forked; branches spreading, tortuous, with recurved spreading branchlets; leaves apparently soon falling off, alternate on the branches, opposite on the flowering branchlets, somewhat fleshy, 1,8-8,75 × 0,17-1,10 cm linear-lanceolate; not spiny.

Dry bushy, hilly places on sandy clay; hilly rather elevated places among tall grasses; mountain thickets.

The species has much the aspect of *E. systyla*; the flowering branches resemble those of *E. systyloides*.

**E. saxorum** Bally & S. Carter, *excl. specim.* Gillett 12633 (as 13633) = *E. gemmea*; Euphorbia J. 7: 56, 1991.

Succulent perennial, with numerous semi-prostrate and stoloniferous stems to 45 cm long, sparsely branching; stems and branches sharply 4-angled, 5-8 mm thick; angles with shallow teeth to 1,3 cm apart; spiny.

Exposed places in rocky clefts with very shallow soil; 1200 m alt. Near *E. elegantissima*.

**E. scarlatina** S. Carter; Euphorbia J. 7: 122, 1991.

Much-branched succulent erect shrub to 3 m tall; branches (4-)5-6-angled, 1,5-2,5 cm thick, ± constricted at intervals of 10-30 cm; angles straight to sinuately toothed, with teeth 1-2(-3) cm apart; spiny.

Rocky slopes and lava ridges with open deciduous bushland; 600-2000 m alt.

Near *E. tescorum*.

**E. scatorhiza** S. Carter; Euphorbia J. 9: 115, 242, 1994.

Stiffly woody much-branched shrublet 5-10 cm tall, 25-30 cm Ø; roots nodular, producing 1 to several woody oval tubers 2 cm long resembling goat droppings, 10 cm or more below ground-level; branches spreading horizontally; leaves obovate, 8-12 × 6-9 mm, margin undulate.

Stony limestone plain with very sparse low bushland and woody herbs; 305 m alt.

Very rare in cultivation.

Near *E. polyantha*.

## EUPHORBIA

**E. scheffleri** Pax

Spreading densely branching shrub or tree 1-6 m tall with semi-succulent branches; leaves ± fleshy, clustered at the ends of the branchlets, obovate to 10 × 7 cm; not spiny.

Well drained sandy, stony rocky soils in open *Acacia-Commiphora* bushland; rocky sites or on dark clays; 300-1600 m alt. Variable.

Seeds are rather reminiscent of those of *Adenia* (*Passifloraceae*). Of rather easy culture.

**E. schimperiana** Scheele (1843).

syn.: *Tithymalus schimperianus* (Scheele) Klotzsch & Garcke; *Euphorbia schimperiana* Hochst. ex A. Rich. (1850).

Much branched annual or short-lived perennial herb, erect, to 2 m tall, the stem or occasionally the whole plant sometimes tinged reddish purple; leaves ± ovate-lanceolate, to 15 × 2 cm; not spiny.

Grassland, forest edges, clearings; weed of land cleared for cultivation; very open forest, near water, swampy ground; *Loude-tia arundinacea* grassland with scattered trees; *Podocarpus latifolius-Dombeya torrida* forest; evergreen rain-forest edges; 650-3350 m alt.

Arabia, Yemen, Madagascar.

Very variable: comprises 3 vars.

**E. schinzii** Pax; cf. Fl. Zambes. 9(5): 427, 2001. – Icon: A. White & al., the Succulent Euphorbiaceae (Southern Africa) 2: 744-750, 1941.

Dwarf spiny leafless succulent, forming a compact clump of branches at ground level; branches 10-15 cm long, 8-10 mm Ø, usually 4-angled, angles with opposite tubercles, the latter tipped with a minute caducous leaf and a pair of spines; spine shields narrow, extending some way below the spines but not forming a continuous horny margin; other such clumps arise at intervals from the rhizomes; main root slightly thickened, forming a subterranean body producing underground rhizomes and some tuberous roots.

Rocky hillsides, among rocks in stony ground.

Variable in growth-form.

S. Africa. – Malawi ?

**E. schizacantha** Pax; Cactus File 10(1): cover page, 1993; Euphorbia J. 9: 119, 143, 1994; 10: 96, 1996.

Densely branched succulent perennial 30-60 cm tall, with a main stem to 50 cm high and 6 cm thick; branches to 40 cm long, erect at first then drooping and trailing, usually unbranched, cylindrical, to 12 mm thick; teeth very shallow, to 1, 5 cm apart in 3-5 ± spirally arranged series; spiny; mature seeds unknown.

Stony soils in *Acacia-Commiphora* bushland; on a variety of soil types including gypsum; 200-750 m alt.

Closely related to *E. actinoclada*; confused with *E. glochidiata* (also with forked spines).

**E. schlechteri** Pax

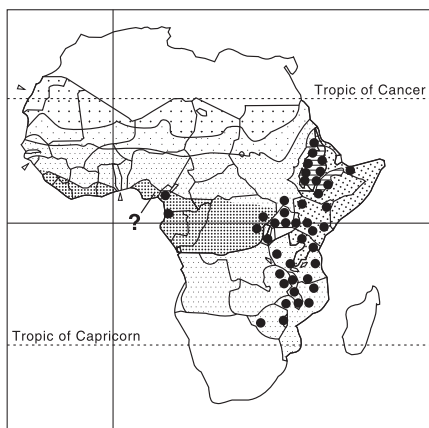
syn.: *Chamaesyce schlechteri* (Pax) Koutnik

Many-stemmed erect herb to 20 cm tall with opposite unequal, slightly serrulate leaves, 12 × 6 mm, cordate at the base, acute at the apex.

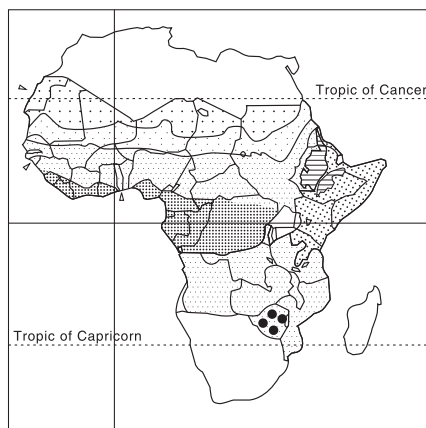
Hills; ± 300 m alt.

Near *E. indica* Lam.

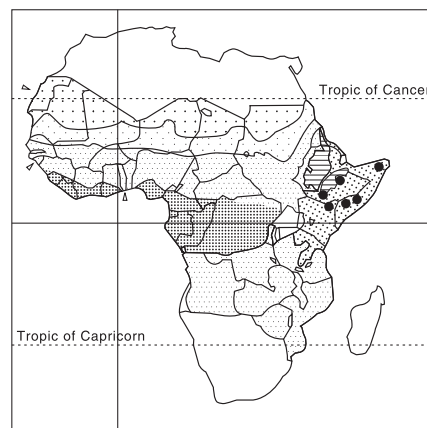
Only known from the type collected in 1897.



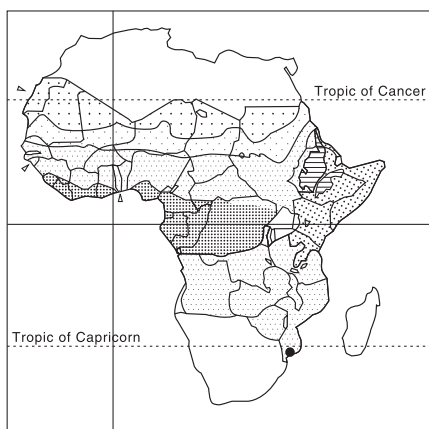
*Euphorbia schimperiana*



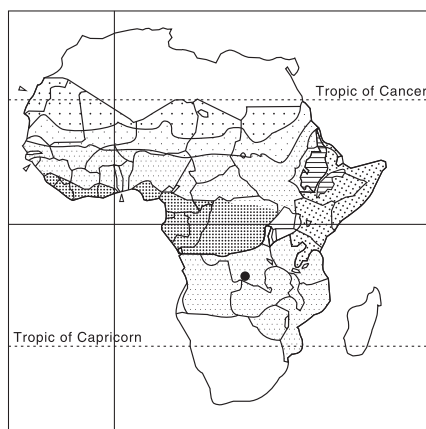
*Euphorbia schinzii*



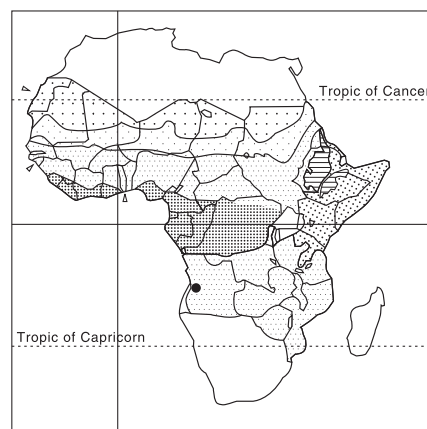
*Euphorbia schizacantha*



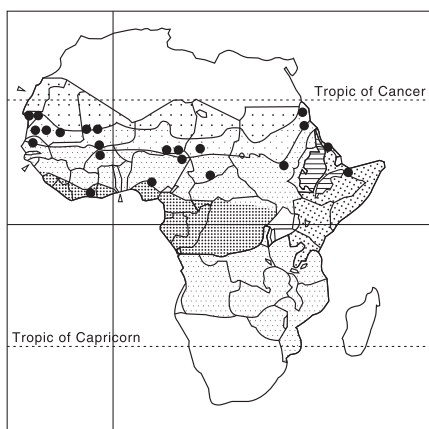
*Euphorbia schlechteri*



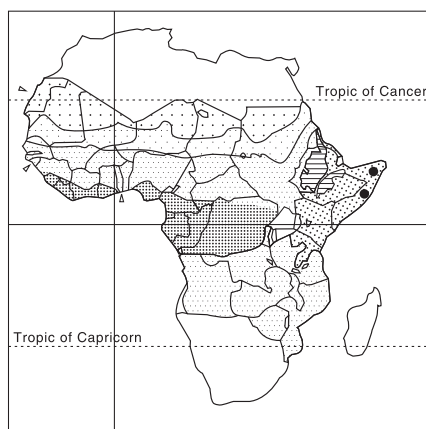
*Euphorbia schmitzii*



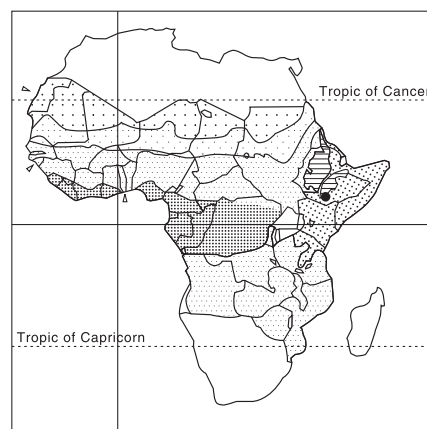
*Euphorbia scitula*



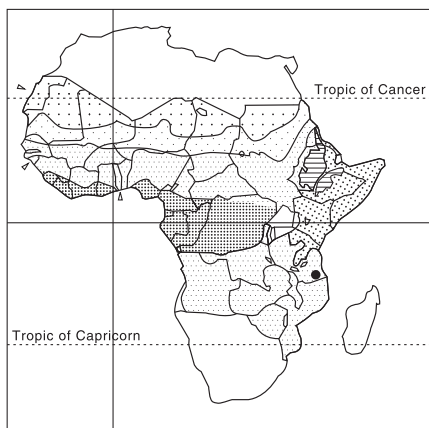
*Euphorbia scordiifolia*



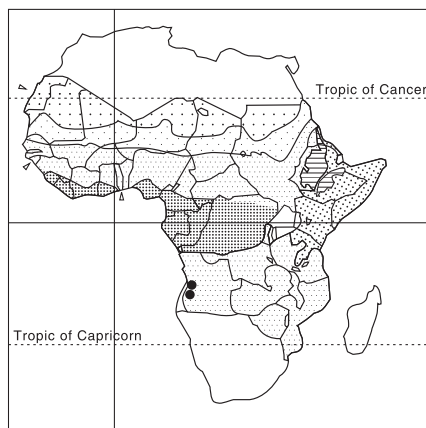
*Euphorbia scyphadena*



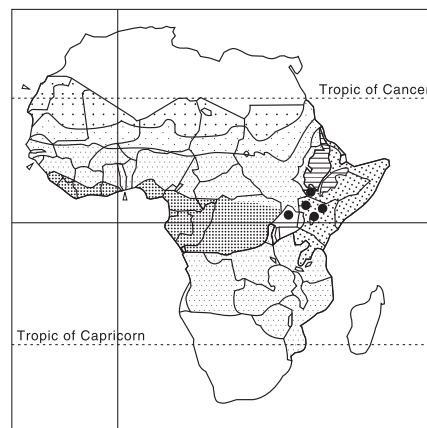
*Euphorbia sebsebei*



*Euphorbia selousiana*



*Euphorbia semperflorens*



*Euphorbia septentrionalis*

## EUPHORBIA

**E. schmitzii** L. C. Leach

Dwarf perennial, with numerous short, succulent, spiny branches arising from an irregularly shaped, rather woody tuber with a long tapering taproot; branches erect, slender, terete at the base becoming 3-angled above, 3-5 mm thick, to 10 cm long, usually branched from near the base, with the angles lightly sinuate-dentate with the tubercle teeth  $\pm 1$  mm high and 8-14 mm apart along the angles.

On the top of rocky, wooded hill; recorded as being abundant.

Only known from the type collected in 1958.

Member of the *E. brevis-imitata-decidua* complex.

**E. scitula** L. C. Leach; Euphorbia J. 10: 96, 1996.

Spiny succulent with one to several branches arising from the apex of a rather woody tuberous root; branches usually simple, rarely few-branched from near the base, erect, usually  $\pm$  straight or sometimes becoming bent or occasionally subprocumbent, subacutely 4-angled,  $\pm$  parallel sided or slightly tapering towards the apex, with the sides flat or occasionally slightly convex, 6,5-10 mm thick, to 50 cm long, sinuate-crenulate along the angles with the apices of the crenulations 4-10 mm apart.

Stony maritime hills with scattered *E. carunculifera* subsp. *subfastigiata*.

Most closely related to *E. subsalsa*.

**E. scordiifolia** Jacq.

syn.: *Chamaesyce scordiifolia* (Jacq.) Croizat; *E. zeylana* N. E. Br.; *Anisophyllum scordiifolium* (Jacq.) Klotzsch & Garcke; *Euphorbia thymifolia* Forssk.; *E. tomentosa* Pers.

Prostrate annual or perennial 10-40 cm tall with stems branched, striate; leaves 0,4-1,7  $\times$  0,3-1 cm, opposite, obliquely ovate-oblong, the margin serrate-spinulate; petiole 0,5-1,5 mm; not spiny. Densely tomentose on all parts.

Weed; sandy soil of dunes and coastal plain; sandy soils of interior country; 0-330 m alt.

Cape Verde Islands; Egypt; Arabia. – Zaire? (Bull. Soc. Bot. Belgique 84: 49, 1951).

**E. scyphadena** S. Carter

Perennial with an underground tuberculate stem to 2,5 cm thick branching at ground-level; branches erect, to 3 cm long, 5 mm thick, rebranching to 10 cm high, with spirally arranged prominent tubercles 1,5-5 mm long; leaves arising from the tubercle apices, ovate, to 12  $\times$  4 mm, margins undulate; petiole 2-5 mm long; roots unknown.

Gypsum in exposed stony soils, with very sparse *Commiphora* scrub; 150-550 m alt.

Near *E. longituberculosa*.

**E. sebsebei** M. G. Gilbert

Seedlings succulent with a well developed tuberous root, soon spreading extensively by slender white rhizomes; stems solitary or in clumps, to 30 cm long,  $\pm 7$  mm thick, sharply 4-sided with obscure tubercles; spiny; fruits and seeds unknown.

In crevices and grass tussocks on massive granitic inselbergs; within areas of *Acacia-Commiphora* bushland; 1300-1450 m alt.

Near *E. gemmea*, *E. taruensis*.

## EUPHORBIA

**E. selsousiana** S. Carter

Perennial, probably with a thick woody rootstock, giving rise to woody persistent underground stems to  $\pm 5$  cm long which branch at ground-level; branches procumbent to  $\pm 25$  cm long; leaves broadly ovate to  $\pm 8 \times 7$  mm; not spiny.

Deciduous woodland; 300-320 m alt.

Near *E. rivae*.

**E. semperflorens** L. C. Leach

Succulent, spiny, erect, ramose shrub, branched from the base,  $\pm 1$  m tall; branches rigid, constricted into segments with 3-4 winged angles, often with several, usually 3-winged branchlets from towards their apex; segments somewhat variably shaped, mostly  $\pm$  trullate, 4-10 cm long, 4-7,5 cm wide, with a hard, horny, continuous, usually strongly flexuously undulate margin; leaves scale-like, rigid,  $\pm$  broadly ovate, to 5  $\times$  5 mm, very quickly caducous.

Arid stony hills with cf. *E. subsalsa*, *Pachypodium lealii*, *Acacia* spp.; open woodland savanna in tall grass and with *E. conspicua*.

Very rare in collections; but seems to present no unusual cultural problem.

Near *E. atrocarmesina*; also reminiscent of *E. grandicornis*.

**[E. sennii** Chiov.]

Based on a flowering leafless specimen, and cited with *E. grosseri* in Fl. Somalia 1: 316, 1993, with which it cannot be positively identified (or with any other species of the area) until plants with leaves from the same locality are available.

**E. septentrionalis** Bally & S. Carter; Euphorbia J. 7: 55, 1991; Collect. Bot. Barcelona 21: 73, 1993; A. Pritchard, Introduction Euphorbiaceae: 37-38, 2003.

Densely tufted succulent perennial with a thick fleshy root; stems densely branching from the base, sparsely so above, erect to 15 cm or decumbent and occasionally stoloniferous, to 50(-100) cm long, 5-8 mm thick, cylindrical; branches with shallow teeth 1-2 cm apart in 4 longitudinal series; spiny.

Sandy rocky soils with *Acacia* bushland, usually in the open; *Acacia-Commiphora-Entada* woodland or bushland in crevices of basement complex rocks near to seasonal river;  $\pm 1050-1850$  m alt.

Comprises 2 subsp.: – subsp. **septentrionalis** and – subsp. **gamugofana** M. G. Gilbert

Near *E. schinzii*.

**E. sepulta** Bally & S. Carter; Aloe 30: 98, 1993; Euphorbia J. 8: 53, 1992; 10: 207, 1996; A. Pritchard, Introduction Euphorbiaceae: 35, 2003.

Succulent perennial to  $\pm 3$  cm tall and 30 cm  $\varnothing$ , with very compact branching mostly below ground-level from the apex of a very thick fleshy root; branches terete, 1-1,5 cm thick, 1-5 cm long, 9-17-angled; angles separated by distinct grooves, very shallowly toothed, with teeth 2-4 mm apart; spiny; capsule and seeds unknown.

Flat stony ground with very open *Juniperus-Buxus* forest; gypseous hill; 1640-2000 m alt.

Near *E. multiclava*.



## EUPHORBIA

**E. serendipita** L. E. Newton

Much branched stem-succulent shrub to 2 m tall, to 2 m wide; stem quadrangular, 9-12 mm thick, erect; spiny.

Rocky slopes; 1470 m alt.; abundant; eventually endangered by rock extraction to make gravel.

Near *E. elegantissima*.

**E. seretii** De Wild.

Spiny candelabriform plant, ± 1,5 m tall or succulent shrub to 3 m, branching from the base or tree-like with a short, stout, gnarled cylindrical trunk to 22,5 cm thick, exceptionally to 1,3 m high; branches erect or arcuate-erect, mostly simple, to 1,6 m long, 3-6-winged, constricted into segments, mostly subcircular, generally 5-7 cm wide and long, with a continuous crenulate horny margin; the segments very frequently separated by angular, scarcely winged constricted portions less than 2 cm Ø and to 10 cm long; secondary branches and branchlets, when present, arising from the margins at the widest part of the wings, initially 3-angled, soon developing a fourth and sometimes a fifth angle; terminal branchlets usually 3-angled.

Rocks in *Brachystegia* woodland; rocky gorge; 1000-1200 m alt. – Disjunct area.

Comprises 2 vars.; – var. **variantissima** L. C. Leach very variable.

Near *E. faucicola*.

Isolated populations appear to be particularly subject to attack by caterpillars, with the result that few cyathia reach maturity.

**E. serratifolia** S. Carter

Annual herb, with spreading suberect branches to 25 cm high; the whole plant often tinged red; leaves ovate to 18 × 12 mm, base very obliquely subcordate, margin distinctly toothed, with the teeth apparently gland-tipped; not spiny.

Open *Brachystegia* woodland on sandy stony soil; red soil, rocky hillside with scattered *Acacia*, *Combretum*, *Ficus*, *Terminalia*; 600-1400 m alt.

Near *E. inaequilatera*, *E. polycnemoides*.

**E. setispina** S. Carter; *Euphorbia* J. 9: 92, 102, 243, 1994.

Succulent herb ± 50 cm tall, densely branched from the base, sparsely rebranched above; branches erect, acutely 4-angled, 1-2 cm thick; angles straight with spine-pairs.

Steep rocky slopes, with very sparse xerophytic bushland; ± 1200 m alt.

Known in cultivation.

Near *E. inculta*.

Just one of a high proportion of endemic species from the fascinating northeast corner of Somalia.

Only known from the type collected in 1986 in Bari Region; but reported from the hills near Tohen fide Lavranos (Somalia).

**E. similiramea** S. Carter

Loosely tufted succulent perennial to 30 cm tall and ± 50 cm Ø, branching densely at the base from a thick fleshy root; branches to 30 cm long, 1,5 cm thick, cylindrical, sparsely rebranched, with usually prominent teeth, ± 2 cm apart, in 4-5 longitudinal ± spiral series; spiny; mature seeds unknown.

Rocky usually volcanic soils in wooded grassland; 1200-1780 m alt.

Near *E. graciliramea*.

## EUPHORBIA

[**E. somalensis** Pax] (emend. Hässler), *excl.* var. *nogalensis* Hässler, *excl.* specim. Ruspoli & Riva 1075(325) 972 (= *E. scheffleri*). – Type: Ruspoli & Riva 345(210) 333.

Habit probably similar to that of *E. scheffleri*; capsule and seeds unknown.

Presumably in *Acacia-Commiphora* bushland on red sandy soil; ± 1100 m alt.

Very poorly known; the type is made of fragments. The specimen Ruspoli & Riva 832(623) 756 cited by Pax lacks leaves and inflorescences, and could be any species of sect. *Somalica*. The other specimen cited by Pax, Ruspoli & Riva 1075(325) 972 is *E. scheffleri*. New collections from N Ogaden (Ethiopia) are needed to clarify the identity of this species.

**E. songweana** S. Carter, *Cact. Succ. J. (U.S.)* 72: 191, 2000.

syn.: *E. discrepans* sensu S. Carter, *Fl. Trop. E. Africa*, *Euphorb.* 2: 513, 1988, quoad specim. Leedal 3872, non S. Carter sensu stricto.

Sparsely branched shrub to 3 m tall, with a main stem ± 30 cm Ø; branches fleshy, 12-20 mm Ø, 4-angled; angles acute, shallowly sinuate, with tubercle-teeth 5-10 mm apart; spiny.

Pure limestone rocks in open deciduous woodland. Plants grow quite close to hot sulphurous water bubbling up; 1200 m alt.

Near *E. quadrangularis*.

**E. speciosa** L. C. Leach; *Aloe* 37: 54, 2000.

Stout spiny shrublet ± 30(-90) cm tall, sparingly rebranched from a stout main stem, 20-25 mm thick towards the somewhat bulbous base; branches 10-15 mm thick, 4(-5)-angled, sides slightly concave to flat, crenate-toothed along the angles, crenations ± 4 mm high.

Cracks in rock pavement; ± 1450 m alt.

Related to *E. luapulana*, *E. inundaticola*.

**E. specksii** Rauh; *Cact. Succ. J. (U.S.)* 72: 247-252, 2000.

Perennial undershrub ± 30 cm in height, rarely to 100 cm, with tuberous, ramifying, brownish, corky roots and thin, grey-barked, upright shoots, 2-3 mm thick, basally to 5 mm thick, with elongated internodes, branching basally and apically; leaves caducous, on new shoots becoming larger towards apex, variably shaped, subsessile with a short, broad, white petiole; leaf-blade roundish-ovate, very shortly apiculate, basally narrowing, to 7 × 3-3,5 cm, surface dull dark green with prominent white nerves, underside light green; stipules almost invisible, forming minute purple bumps; not spiny.

Humus-riche lateritic soil of the miombo-forest, with *Raphionacme madiensis*, *Dorstenia cuspidata*.

Very close to *E. platycephala*.

Only known from the type collected in 1999.

**E. spissiflora** S. Carter

Annual erect herb to 50 cm tall; branches spreading, woody at the base, somewhat longitudinally ridged towards the apex; leaves opposite with lamina linear-lanceolate to 40 × 5 mm, base obliquely rounded, margin denticulate; not spiny.

Grassland on stony clay soils; ± 850-1200 m alt.

Botswana.

Near *E. polycnemoides*.

## EUPHORBIA

**E. stapfii** A. Berger (*not* syn. of *E. heterochroma*).

Much-branched succulent shrub to 4 m tall; branches 5-angled,  $\pm 1,5$  cm thick; angles straight to shallowly undulate; spiny; capsules and seeds not seen.

Cultivated as hedges;  $\pm 1200$  m alt.

Poorly known; authentic wild material needed.

**E. strangulata** N. E. Br.

Succulent spiny shrub, to  $\pm 60$  cm tall, with a much reduced main stem and spreading (often sprawling) ascending, simple, segmented branches; the latter 4-6-winged (initially 3-4-angled with  $\pm$  oblong segments), constricted into segments which are very variable in both shape and size, mostly subcircular or ovate, only occasionally strangulated, to  $7,5 \times 5$  cm; with a continuous horny brown (becoming grey), crenate margin.

Flat rock slopes; in peaty masses of grass and debris with *Aloe andongensis*, unidentified shrubby Orchid sp. on almost bare, enormous conglomerate rock formation;  $\pm 1000$  m alt.

Extremely variable.

Very rare in cultivation but presents no unusual difficulties.

Near *E. opuntioides*; similar in growth form and floral habit to *E. barnardii* A. C. White & al. from S. Africa.

**E. subsalsa** Hiern, *excl.* var. *kaokoensis* A. C. White, R. A. Dyer & B. Sloane; Euphorbia J. 9: 160, 161, 1994.

Succulent leafless spiny shrub 0,6(-1,5) m tall, generally rather few-branched from the base and sparingly rebranched above (or densely branched and rebranched of more robust habit, with the stout central stem to 5 cm thick in subsp. **fluviatilis**); branches 4-angled, 0,8-1,2 cm thick and sinuately tubercled at 0,8-2,2 cm intervals; angles somewhat compressed with interrupted or occasionally subcontinuous horny margins, from the long-decurrent narrow spine-shields.

Rocks; at thicket margins; rocky maritime hills near mouth of river; mopane woodland; also rocky sites on banks of river, especially in the vicinity of falls and rapids; not far from a salt spring. Namibia.

Comprises 2 subsp.: – subsp. **subsalsa**; syn.: *E. heteracantha* Pax; – subsp. **fluviatilis** L. C. Leach

Very rare in cultivation but rather easily grown.

**E. subscandens** Bally & S. Carter; Euphorbia J. 8: 69, 1992.

Rhizomatous succulent perennial with a thickened rootstock; stems branching densely from the base, erect to  $\pm 15$  cm, or to 1 m long and arching over, sprawling and rooting to form new plants; branches 7-10 mm thick, subcylindrical, sparsely rebranched; branches with teeth absent or very shallow and 1-2 cm apart in 4 longitudinal series; spiny.

Rocks with low vegetation and very open deciduous bushland; side of hill with shallow soil crevices and flushes; sometimes in deep shade; 750-1350 m alt.

Presents no unusual problems in cultivation.

Near *E. septentrionalis*.

**E. subterminalis** N. E. Br.

Perennial? Stems to 15 cm long, perhaps prostrate, angular, woody at the base; leaves opposite,  $0,22-0,55 \times 0,15-0,20$  cm, oblong to obliquely elliptic, oblique at the base, thick and coriaceous or perhaps fleshy; not spiny.

Ecology unknown (by river).

Near *E. glanduligera*, *E. inaequilatera*.

## EUPHORBIA

**E. sudanica** A. Chev.; Euphorbia J. 8: figs. opposite to p. 113 and p. 120, 121, 1992.

syn.: *E. tellieri* A. Chev.

Spiny, fleshy shrub, woody at the base, 1-2 m tall with a main stem and numerous spreading-erect, subcylindrical branches with spirally arranged tubercles 5-10 mm apart; leaves spatulate to triangular-obovate, dentate to lacerate at apex,  $2-5 \times 1,5-2$  cm; flowering branchlets 1-1,5 cm  $\emptyset$ .

Sandstone rocks, laterite.

Confused with *E. paganorum*; from Togo only sterile material known.

**E. sumati** S. Carter, Cact. Succ. J. (U.S.) 72: 185, 186, 2000.

syn.: Note under *E. wakefeldii* sensu S. Carter, Fl. Trop. E. Africa, Euphorb. 2: 498, ref. photo by Powys, 1988; note under *E. quinquecostata* sensu S. Carter, o.c.: 501.

Tree to 12 m, with trunk to  $\pm 40$  cm  $\emptyset$ , 6-angled when young, usually with 2-3 primary branches, each rebranching profusely to form separate crowns; branches  $\pm 1,5$  m long, terminal branches curving upwards, fleshy, 3-5-angled,  $\pm 2$  cm  $\emptyset$ , angles very prominent and  $\pm$  winged, shallowly sinuate, with teeth 10-15 mm apart; spiny.

Rocky slopes and sheltered valleys; 1050-1825 m alt.

Near *E. quinquecostata*.

**E. systyla** Edgew.

Annual herb to 50 cm tall, with spreading branches, woody towards the base; leaves linear-lanceolate, to  $55 \times 6$  mm, base rounded.

Sandy rocky soils, often in dry watercourses; 0-730 m alt.

Yemen.

**E. systyloides** Pax, *excl.* vars. *pedunculata* N. E. Br. and *lata* N. E. Br. (= *E. lophiosperma*).

Annual herb to 1,5 m tall; stem often woody at the base; leaves lanceolate to ovate-lanceolate, lamina  $13 \times 3,5$  cm, margin serrate with small gland-tipped teeth; petiole to 2,5 cm long.

Sandy soils amongst grass in open woodland and disturbed ground; open woodland, often near streams; 0-1525 m alt.

Comprises 2 vars.

**E. taboraensis** A. Hässl.

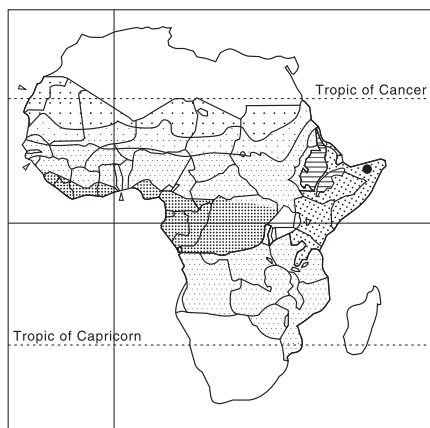
Perennial herb, with a fleshy cylindrical rootstock to  $20 \times 1-2$  cm and annual stems to 30 cm high; leaves linear-lanceolate to  $12 \times 1,8$  cm.

Amongst grass, usually in marshy ground; 1000-1500 m alt.

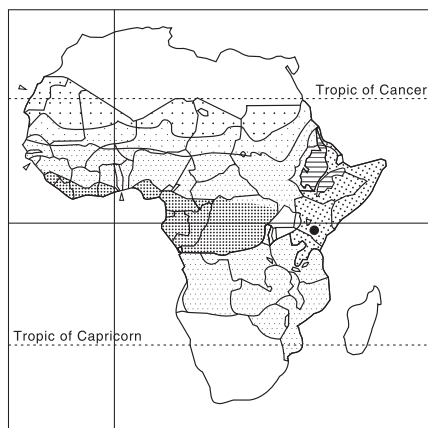
**E. tanaensis** Bally

Tree 12->30 m; trunk simple 10-30 m long,  $\pm 40$  cm  $\emptyset$ , 6-angled above, terminating in a rounded crown of horizontally spreading branches, occasionally with 2 or 3 crowns one above the other; branches rebranching, to 3 m long; terminal branchlets fleshy, 4-6-angled, 5-10 cm wide, deeply winged, constricted at intervals of 10-35 cm; angles straight to shallowly toothed, with teeth 1,5-2,5 cm apart; spiny; mature capsule and seeds unknown.

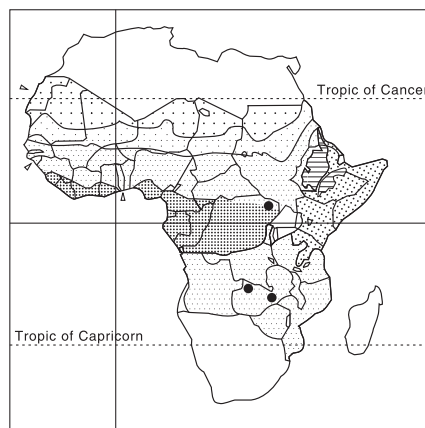
Semi-deciduous swamp forest with *Terminalia hildebrandtii*, *Combretum schumannii*, *Gyrocarpus*, *Antiaris*, *Chlorophora*, *Azzeria quanzensis*, *Erythrophleum guineense*, *Ficus* spp., *Manilkara*; 15 m alt.



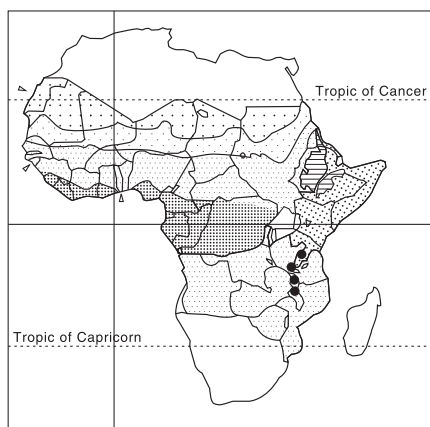
*Euphorbia sepulta*



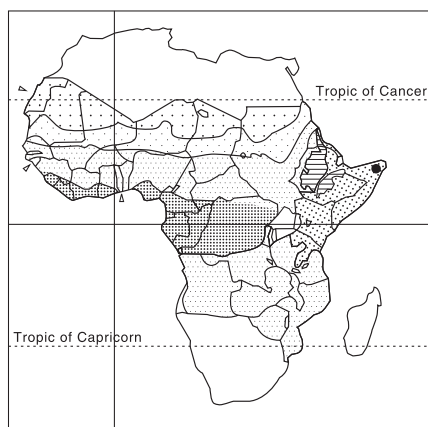
*Euphorbia serendipita*



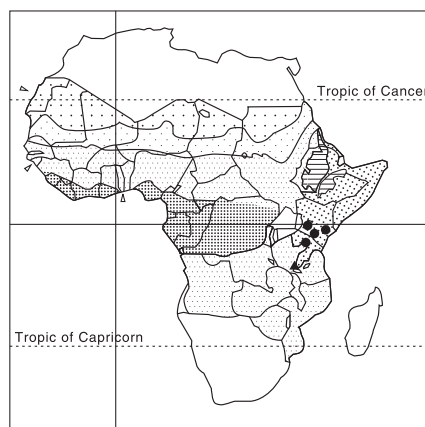
*Euphorbia seretii*



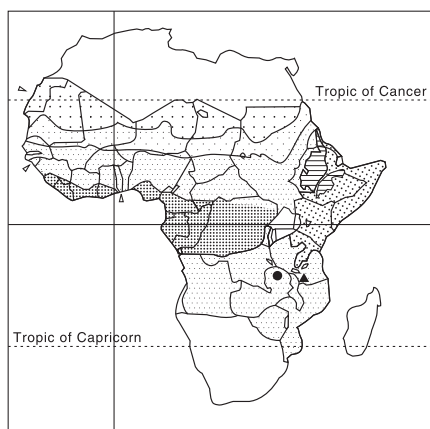
*Euphorbia serratifolia*



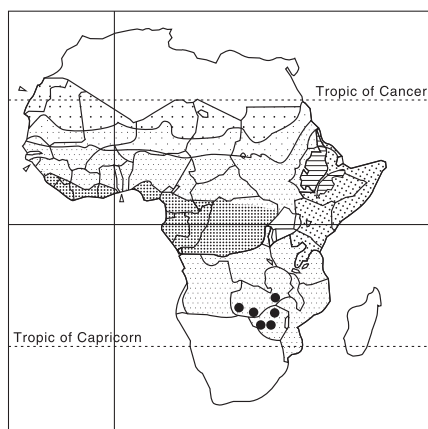
*Euphorbia setispina*



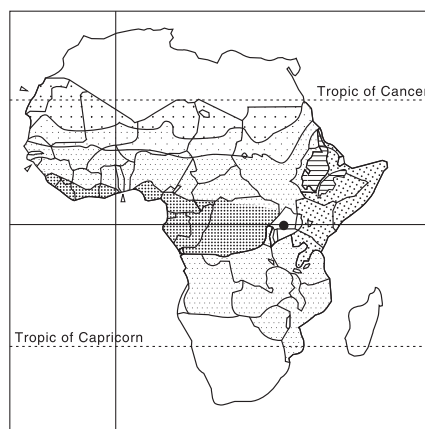
*Euphorbia similiramea* ●  
*Euphorbia songweana* ▲



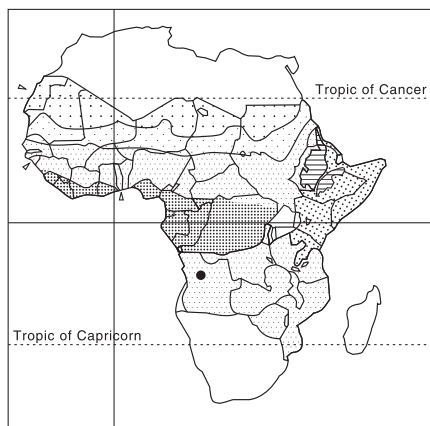
*Euphorbia speciosa* ●  
*Euphorbia specksii* ▲



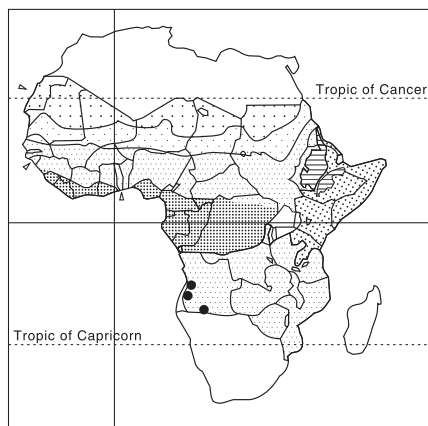
*Euphorbia spissiflora*



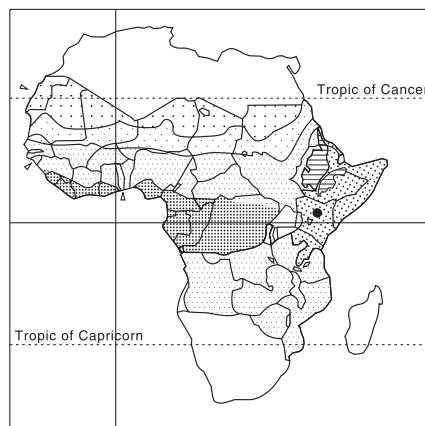
*Euphorbia stapfii*



*Euphorbia strangulata*



*Euphorbia subsalsa*



*Euphorbia subscandens*



## EUPHORBIA TANAENSIS

Threatened by extinction through habitat loss and degradation, fide C. Hankamer & al., Capacity building for plant conservation in East Africa: a case study of the National Museums of Kenya-Darwin Plant Conservation Techniques Course, in: M. Maunder & al., Eds. (2002) Plant Conservation in the Tropics: Perspectives and Practice: 269-295. Royal Botanic Gardens, Kew.

**E. taruensis** S. Carter; Euphorbia J. 10: 86, 1996.

Scandent succulent perennial with rhizomatous stems becoming erect to 30(-45) cm high, branched only from the base; branches sharply 4-angled, 5-8 mm thick; angles straight, without teeth; spiny; mature female flower, capsule and seeds unknown.

Leaf-litter amongst rocks beneath trees; at the description not collected in the wild but seen only as cultivated material; 150-480 m alt.

In cultivation.

Near *E. tenuispinosa*.

A photograph of the plant taken in 1996 at the last known site for the species in S Kenya figures in M. Maunder & C. Clubbe (2002) "Section Overview: Species conservation issues in the tropics", in: M. Maunder & al., Eds., Plant Conservation in the Tropics: Perspectives and Practice: p. 303. This site has since been destroyed, and the plant is thought to be extinct in the wild.

**E. teixeirae** L. C. Leach

Succulent spiny tree to ± 10 m, with a stout, initially angular, eventually cylindrical trunk, branched at or near the base, or rarely simple, to ± 30 cm Ø, with simple or rebranched trunk-like branches to ± 10 cm Ø; trunk and branches cylindrical, nude or sometimes prickly from old, persistent spines; each with a relatively small crown of angular or somewhat winged, spiny, flowering branches subverticillately crowded at its apex; flowering branches simple or very rarely 1-2-branched, initially ± straight and rigid, suberectly spreading, eventually, with age, becoming drooping and finally falling; averaging about 80 cm in length and 2-2,5(-3,5) cm Ø, tapering into a stalk-like base and constricted into 1-6, usually 4, ± parallel-sided segments, variable in length to ± 37 cm; with 3-5, usually 4, compressed or somewhat wing-like angles with ± even or slightly sinuate-dentate margins.

Rock slopes in river bank; well wooded rocky hillside; at base of enormous steep rock slope; enormous boulders.

Still rare in cultivation but presents no unusual cultural problems.

Near *E. candelabrum*.

**E. teke** Schweinf. ex Pax; Desert Pl. Life 9(6): 66, 1937; Rev. Bot. Appl. Agric. Trop. 13: 562, 1933.

syn.: *E. laurentii* De Wild.

Laxly branched shrubby tree 3-6(-10) m; trunk to 10 cm Ø; branches fleshy, obtusely 4-angled, 1-1,5 cm thick; angles with small teeth 2-5 cm apart; spiny; leaves persistent at the branch apices, fleshy, obovate, 10-35 × 4-10 cm, petiole 2-4 cm long.

Heavy clay soil with swamp forest or closed forest near swampy area; riverine forest; 900-1200 m alt.

Attractive species that grows well in cultivation.

Confused with *Elaeophorbia drupifera*.

[**E. tenuirama** Schweinf. ex A. Berger]

Ethiopia? [not in Flora Eth. Eritr. 2(2), 1995]; Arabia? (not in Handbook of the Yemen Flora, 1997).

Cited by G. Govaerts & al., World Checklist, Euphorbiaceae 2: 846, 2000, from Ethiopia.

## EUPHORBIA

**E. tenuispinosa** Gilli; Euphorbia J. 8: 71, 1992.

Tuberous-rooted shrubby succulent perennial, erect to 1 m tall or subscaudent to 1,8 m; branches 4-angled, 5-10(-25) mm thick; angles with very shallow to prominent teeth 1-2,5(-3) cm apart; spiny.

Amongst grass usually in *Acacia-Commiphora* bushland, occasionally in open evergreen forest; rocky sandy soils in dry deciduous bushland; 150-1100 m alt.

Comprises 2 vars.

Of fairly easy culture.

**E. tescorum** S. Carter; Euphorbia J. 7: 124-126, 1991; Carter in L. Russo, Succ. Pl. E. Africa: 127 (photo), 2004.

Sturdy succulent shrub forming large clumps 2-3 m across, with numerous branches spreading upwards from the base, sparsely rebranched above to 1,5(-2) m high; branches (4-)5-6(-8)-angled, 4-8 cm thick, ± constricted at intervals of 10-30 cm; angles usually distinctly toothed, with teeth to 1,8 cm apart; spiny.

Rocky ground, often on lava, with very open *Acacia-Commiphora* bushland; plain of lava boulders with soft damp mud beneath; 400-1500 m alt. Often locally abundant.

In cultivation.

Near *E. heterochroma*.

**E. tetracantha** Rendle, non Pax

Densely tufted subshrub <15 cm tall with many erect branches from an ill-defined short primary stem ± 1 cm thick; stems 4-angled, ± 5 mm thick, angles distinctly toothed; spiny; fertile complete cyathium unknown.

Ecology unknown.

Only known from the type collected in 1894.

Very distinct species perhaps near the *E. uhligiana* group (spine-shields with 2 widely diverging arms).

**E. tetracanthoides** Pax; Excelsa 15: 8, 1992.

Densely branching succulent perennial forming tangled masses 20-30 cm high and to 1,5 m Ø; branches trailing, sometimes erect, to 30 cm long, 1-1,7 cm thick, 4-angled; angles ± distinctly toothed, with rounded teeth 1-1,5 cm apart; branches constricted, or more rarely, jointed into segments of varying length, to 30 cm or more long with branchlets randomly developed in all directions; spiny.

Amongst rocks usually on steep slopes with scattered deciduous woodland; 1750-2200 m alt.

**E. tettensis** Klotzsch

syn.: *Chamaesyce tettensis* (Klotzsch) Koutnik; *Anisophyllum tettense* Klotzsch & Garcke, nom. nud.

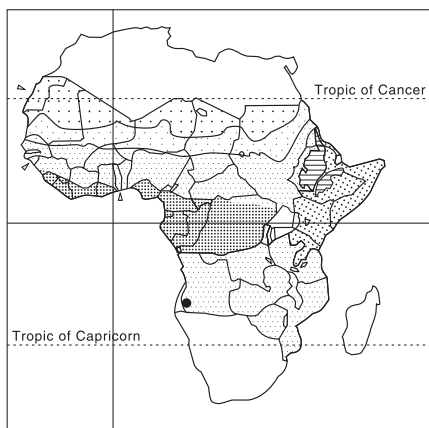
Annual with stems solitary or many from the crown of the root, erect, decumbent or prostrate, simple or sparingly branched, 5-45 cm long, woolly-tomentose to puberulous; leaves opposite, 0,8-2,5 × 0,44-1,1 cm, ovate-lanceolate or ovate, cordate at the base; leaf-shape very variable; not spiny.

The two large wing-like gland-appendages are directed over the back of the recurved ovary or capsule and always towards the apex of the branches, in such a way as to produce an extraordinary resemblance to a white-winged fly.

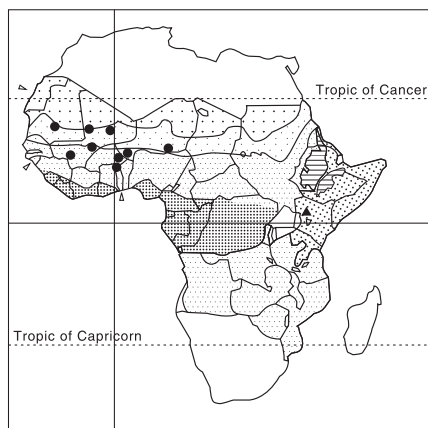
Sandy soils in open deciduous woodland; 50-1550 m alt.

S. Africa.

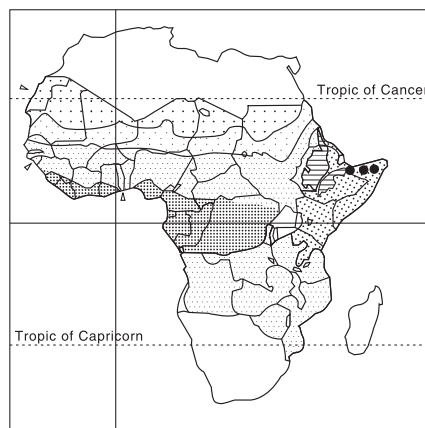




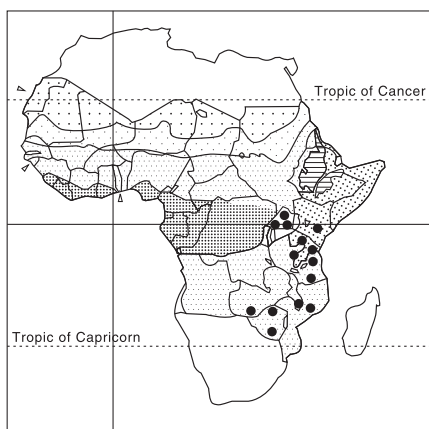
*Euphorbia subterminalis*



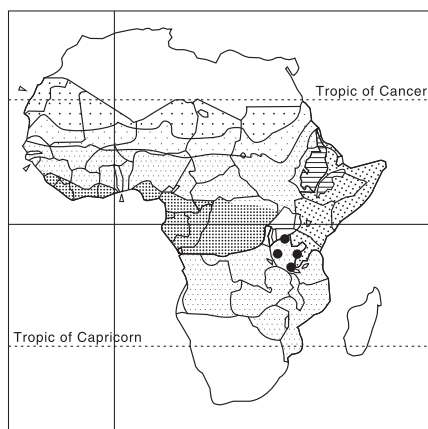
*Euphorbia sudanica* ●  
*Euphorbia sumati* ▲



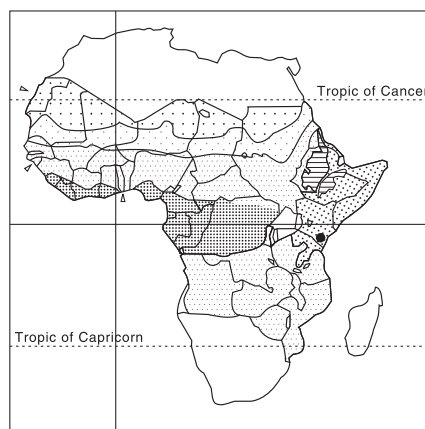
*Euphorbia systyla*



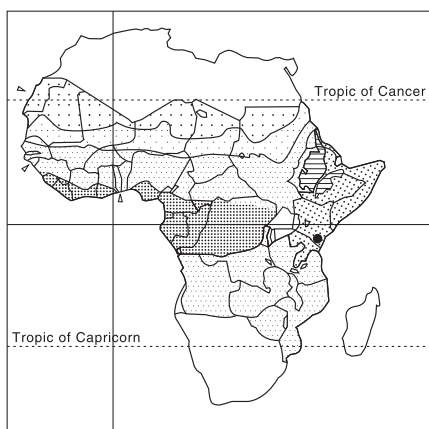
*Euphorbia systyloides*



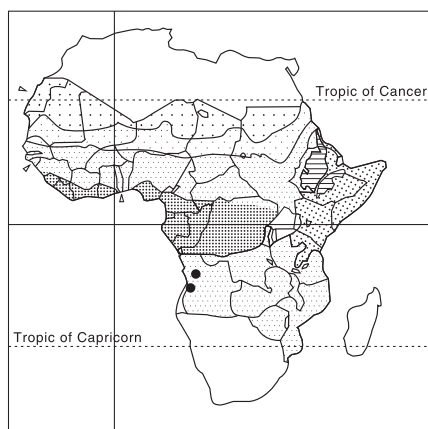
*Euphorbia taboraensis*



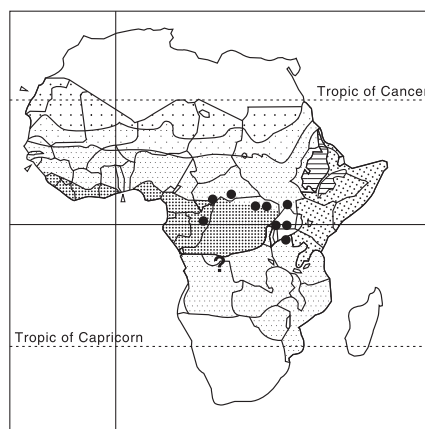
*Euphorbia tanaensis*



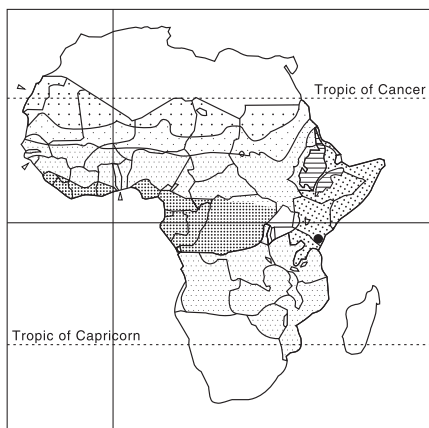
*Euphorbia taruensis*



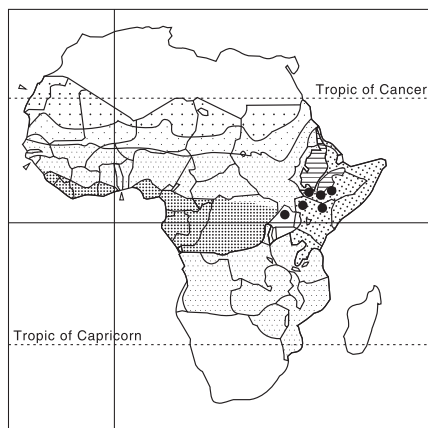
*Euphorbia teixeirae*



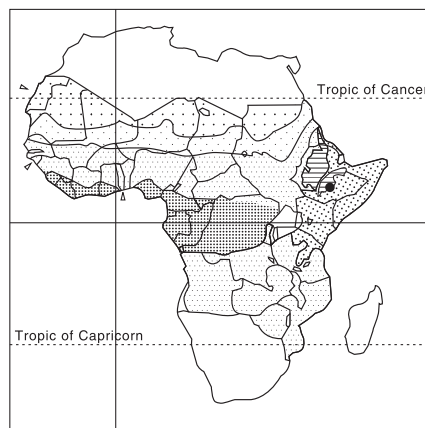
*Euphorbia teke*



*Euphorbia tenuispinosa*



*Euphorbia tesorum*



*Euphorbia tetraacantha*

## EUPHORBIA

**E. tholicola** L. C. Leach

Perennial shrublet, succulent, spiny, somewhat broadly cushion forming, densely tufted, to 15 cm tall, densely branched from the base, sparsely randomly branched above; branches erect or suberect,  $\pm$  6-10 mm thick, 4-angled; often almost 4-ribbed, crenulate-toothed or  $\pm$  sinuate, teeth  $\pm$  2-2,5 mm high,  $\pm$  14 mm apart along the angles.

Rocks; 1100-1600 m alt.

Near *E. dedzana*.

**E. thulinii** S. Carter

Tree 3 m, with softly woody branches covered in horizontally elongated leaf-scars; leaves sessile, linear-lanceolate,  $4 \times 0,8$  cm; female flower, capsule and seeds unknown.

Limestone escarpment with sparse low bushes;  $\pm$  800 m alt.

Near *E. noxia*.

Extremely limited distribution.

**E. tirucalli** L.; Bradleya 11: 86-90, 1993; Euphorbia J. 8: 50, 1992; 9: 185, 1994; Cactus Succ. J. (U. S.) 75: 75, 2003.

Densely branched often apparently dioecious shrub to 4 m or tree to 12(-15) m tall, with brittle succulent branchlets  $\pm$  7 mm thick often produced in whorls, longitudinally finely striated; leaves few, fleshy, linear-lanceolate, to  $15 \times 2$  mm, present only at the tips of young branchlets and very quickly deciduous; not spiny.

Grassland and thin woodland; forming thickets in gullies; woodland in black clay soils; 0-2000 m alt.

Native of E and South. tropical Africa; widely used throughout the tropics as a hedge-plant.

**E. tisserantii** A. Chev. & Sillans

Fleshy,  $\pm$  sarmentous, probably dioecious shrub, to 4-5(-6-8?) m tall; stems 4-angled, 10-15 mm thick; leaves present only at the tips of branchlets, alternate, oblong, rounded or sometimes emarginate-retuse at the top, wedge-shaped, decurrent on the petiole,  $7-12 \times 3-5$  cm.

Forest.

**E. torta** Pax & K. Hoffm.

Cushion-forming succulent perennial  $\pm$  15 cm tall, with a thick woody rhizomatous rootstock and stems branching densely from the base; branches to 15(-25) cm long, 4-angled, 4-5 mm thick; angles usually prominently toothed, with teeth to 1,5 cm apart; spiny; capsule and seeds unknown.

*Brachystegia* woodland; 800-1600 m alt.

Small plant perhaps more common than it appears.

**E. tortirama** Dyer

Caespitose dwarf spiny perennial succulent, with a large elongated tuberous root merging into a short underground stem to form a body to  $30 \times 15$  cm; branches numerous and densely clustered, 6-30 cm long, 2-4,5 cm wide, obviously (2-)3-angled when young but becoming twisted in a tight spiral, obscurely constricted into segments 1,5-2 cm long; angles with irregular prominent tubercles 5-18 mm apart along the margins.

Mopane woodland;  $\pm$  100-200 m alt.

S. Africa.

## EUPHORBIA

**E. tortistyla** N. E. Br.

Spiny succulent dwarf shrublet to 15 cm tall, with densely tufted, stoloniferous branches, forming compact clumps to 50 cm  $\varnothing$ ; branches 5-8 mm  $\varnothing$ , very obtusely 4-angled; angles shallowly sinuate with tubercles 6-10 mm apart along the margins.

Exposed granite slabs and domes, in rock crevices and outcrop margins in decomposed granite; 1100-1400 m alt.

**E. transvaalensis** Schlechter; Euphorbia J. 8: 50, 1992; 9: 184, 1994; Desert Pl. 17(2): 23, 2001.

syn.: *E. ciliolata* Pax; *E. galpinii* Pax

Shrub 0,6-1,8 m tall, usually with forked branches; young branches herbaceous, 6-11 cm long, 4-5 mm thick, becoming woody, terete, hollow; leaves 2-3, alternate on the basal part of each new branch, with a whorl-like cluster apparently at its middle, at its apex or at the base of the peduncle and another whorl of 3-4 under the umbel; blade  $3-11 \times 1,8-5$  cm, oblong-lanceolate, elliptic or elliptic-ovate, cuneately narrowed into the petiole.

Deciduous woodlands, in sandy soils often in rocky places and escarpments; 90-1400 m alt.

Namibia, Caprivi Strip, Botswana, S. Africa; not in East Africa (= *E. goetzei*).

**E. triaculeata** Forssk., incl. var. *triacantha* (Ehrenb. ex Boiss.) N. E. Br.; Euphorbia J. 10: 95, 1996; Cactus Succ. J. (U.S.) 75: 76, 2003.

syn.: *E. infesta* Pax; *E. faurotii* Franchet

Irregular leafless shrub to 1,2 m tall, sometimes with a relatively slender central stem usually not medusoid; stems ascending, 5-10 mm thick with 3 or 5 spiral ranks of tubercles; spiny.

Stony slopes with very sparse vegetation; near sea-level-700 m alt. SW Saudi Arabia, Yemen.

**E. triangularis** Desf. ex A. Berger; Euphorbia J. 9: 81, 1994.

Succulent spiny tree 4-8(-10) m; main stem round, slightly angled, branching; branchlets curving upwards, forming a number of small crowns (1,5-2 m  $\varnothing$ ), 3-5-angled, divided into segments,  $7,5-30 \times 4-9$  cm  $\varnothing$ , with a continuous hard ridge along the margins.

Open dry woodland on rocky slopes and coastal dunes, in sandy soils; 15-600 m alt.

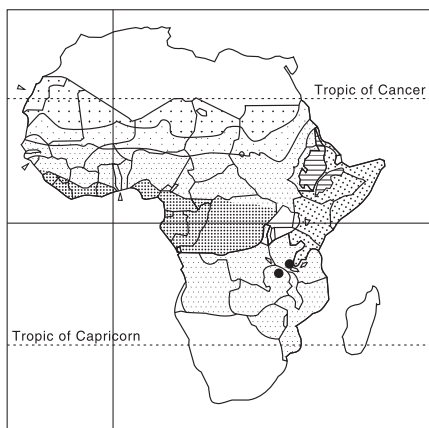
S. Africa.

**E. trichadenia** Pax; Desert J. 17(2): 23, 2001.

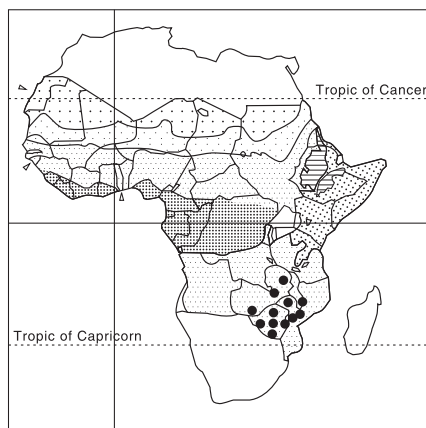
syn.: *E. benguelensis* Pax; *E. subfalcata* Hiern; *E. gossweileri* Pax

Rootstock a cork-like barked succulent caudex 12 cm long and  $6 \rightarrow 20$  cm  $\varnothing$ , producing annual thin herbaceous or woody prostrate or erect stems 3,75-12 cm high, branching from the base; leaves slender, opposite at the forking of the stems and the flowering nodes, linear-lanceolate, alternate elsewhere, thinly coriaceous or perhaps slightly fleshy, 1-8-6,4  $\times$  0,10-0,55 cm, the lower and sometimes those under the involucre smaller and lanceolate or scale-like, acute, usually slightly curved, often longitudinally folded with narrow cartilaginous margins; not spiny.

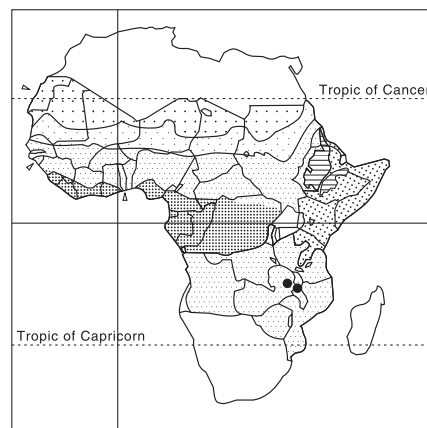
Open thickets near river; common in reed-beds along river banks; dry hills; river mouth; elevated hilly place; on sand mixed with a rich soil, with *Ascolepis*; flooded ground; grassland; 1300-1760 m alt.



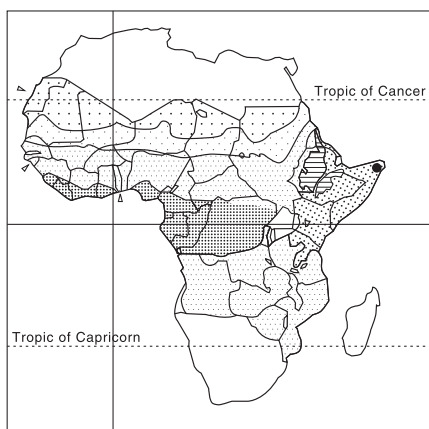
*Euphorbia tetraanthoides*



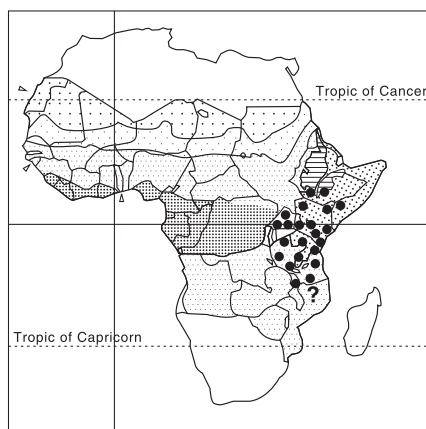
*Euphorbia tettensis*



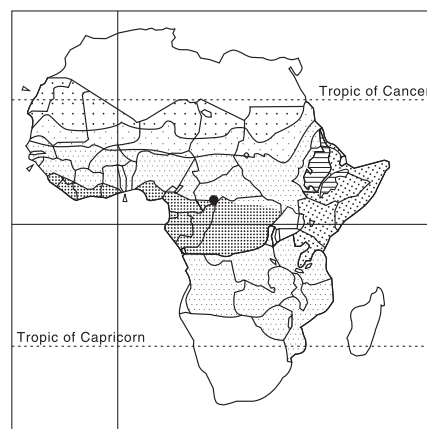
*Euphorbia tholicola*



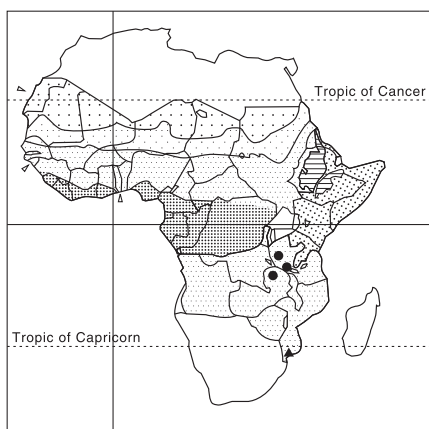
*Euphorbia thulinii*



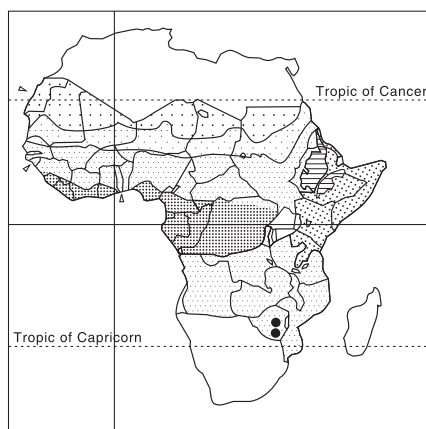
*Euphorbia tirucalli* (spontané)



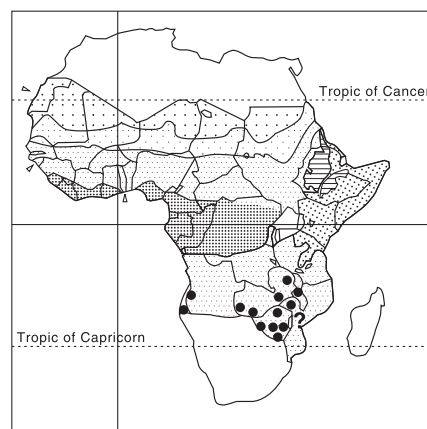
*Euphorbia tisserantii*



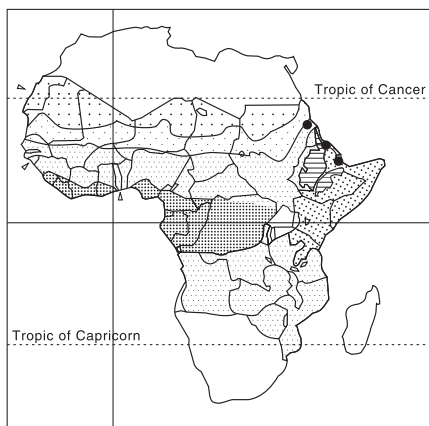
*Euphorbia torta* ●  
*Euphorbia tortirama* ▲



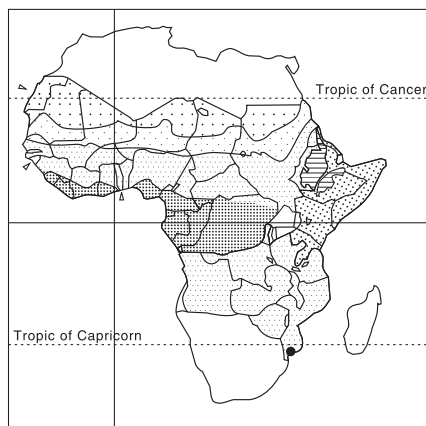
*Euphorbia tortistyla*



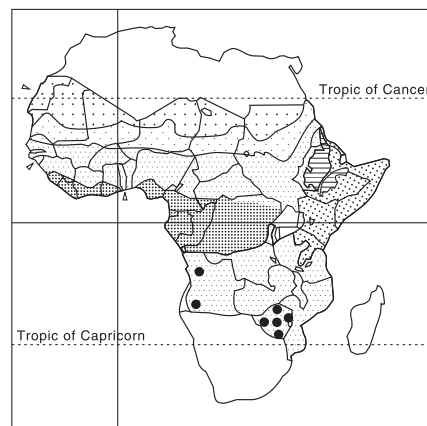
*Euphorbia transvaalensis*



*Euphorbia triaculeata*



*Euphorbia triangularis*



*Euphorbia trichadenia*

## EUPHORBIA TRICHADENIA

S. Africa, Botswana, Namibia.

Comprises 2 vars.

In var. **gibbsiae** N. E. Br. the plant varies much in appearance, as the stems which spring up after the fires are shorter, stouter and less leafy.

A most desirable species cultivated without difficulty.

**E. trichiocyma** S. Carter

Shrubby, probably short-lived perennial herb to 75 cm tall, woody at the base; leaves ovate to 8 × 4 cm, base cuneate, petiole 8 mm; not spiny.

Deciduous bushland with *Commiphora*, *Cordyla*, *Strophanthus*; common; 792 m alt.

Only known from the type collected in 1933.

Near *E. agowensis*.

**E. trinervia** Schumach. & Thonn.

syn.: *E. glaucophylla* Poir.; *Anisophyllum glaucophyllum* (Poir.) Klotzsch & Garcke; *Chamaesyce glaucophylla* (Poir.) Croizat

Perennial herb with several or many woody stems, dark purplish, slender, 7,5-40 cm long, prostrate, with short internodes (1-2,5 cm long); leaves opposite, glaucous, oblong-elliptic, cordate on one side at base, 5-20 × 3,5-10 mm; not spiny.

Just above the high-water mark on sandy seashores; sandy sparingly herbaceous places.

Cape Verde Islands; Madagascar.

**E. tripartita** S. Carter

Densely branched woody shrub 1-1,5 m tall; branching regularly trichotomous, with ultimate branchlets spine-tipped; leaves clustered on much-abbreviated shoots, obovate, spatulate or panduriform, 3-8 × 2-5 mm, apex often emarginate; capsule and seeds unknown.

Rocky limestone with thin sand covering, in open *Acacia-Commiphora* bushland; 140-300 m alt.

Near *E. matabelensis*.

**E. tuberifera** N. E. Br.

Perennial herb 45 cm or more tall, with fibrous roots, some of which end in elongated fleshy tubers; stem terete, sparingly branched, herbaceous, with internodes 4-7,5 cm long, striate; leaves alternate, spreading, apparently soon falling from the lower part of the branches; blade 4-7 × 2,4-4 cm, somewhat rhomboid-elliptic.

On hills, under the shade of trees.

Only known from the type.

**E. tumbaensis** De Wild.

Stems cylindrical, striate, glabrous, greyish-brown, with alternate leaves 5-8 × 2,5-4 cm, obovate or oblong, those towards the apex of the stem passing into bracts; fruit and seeds unknown.

Ecology unknown.

Near *E. cervicornu*.

## EUPHORBIA

**E. turbiniformis** Chiov., *excl.* syntype Ruspoli & Riva 225 [966]385 (= *E. gymnocalycoides*); type: Stefanini & Puccioni 701(755); *Kakteen & Sukk.* 49: 9-10, 1998; *Euphorbia J.* 8: 52, 1992; 9: 93, 115, 1994; *Aloe* 30: 107, 1993; A. Pritchard, *Introduction Euphorbiaceae*: 33-34, 2003.; P. Bisseret in L. Russo, *Succ. Pl. E. Africa*: 75-76 (photos), 2004.

Succulent perennial, with a globose body to 4 cm Ø, partially buried, usually slightly depressed, mature plant very occasionally dichotomously dividing (*Aloe* 30: 98, fig. 2, 1993); body with tessellated markings ± 5 mm Ø in 14-20 longitudinal rows; spine-shields reduced to minute scales at the centre of the tessellations; spines and prickles *completely absent*; capsule and seeds unknown.

Stony limestone coastal plateau, very exposed, with low woody herbs; ± 300 m alt.; abundant.

Still rare in collections; cultivation proved rather difficult but a wellgrown specimen took the award for Best Grafted Plant at the 1993 CSSA Show [*Cact. Succ. J. (U.S.)* 67: 175, 1995].

**E. turkanensis** S. Carter; Carter in L. Russo, *Succ. Pl. E. Africa*: 125 (photo), 2004.

Succulent clump-forming perennial, spreading-erect plant, to 45 cm tall and 1,25 m Ø; stems crowded, sparsely branching, to 1,5 cm thick, 4-angled; angles with prominent teeth 1-3 cm apart; spiny.

Gravelly soils and crevices of lava rocks with very open deciduous bushland; quartzite hill with gravelly rocky slopes; 550-800 m alt. Limited to a small area.

Near *E. uhligiana*.

**E. ugandensis** Pax

Perennial shrubby herb 1-3 m tall, woody at the base; branches in whorls of ± 5, often tinged red; leaves subsessile, lanceolate, to 11 × 3 cm, tapering into a very short flattened petiole; not spiny.

Forest clearings, often in damp situations; bamboo zone; 1980-3350 m alt.

**E. uhligiana** Pax, *excl.* specim. Scott-Elliot 6271 (= *E. petricola*); *Euphorbia J.* 10: 96, 300, 1996.

Succulent perennial with densely tufted stems from a thick fleshy root, branching from the base, to 30(-100) cm long, 4-angled, ± 1 cm thick; angles with prominent sharply pointed teeth to 7 mm long and to 1,5 cm apart; spiny.

Stony sandy soils in open deciduous bushland, usually on exposed slopes; 435-1550 m alt.

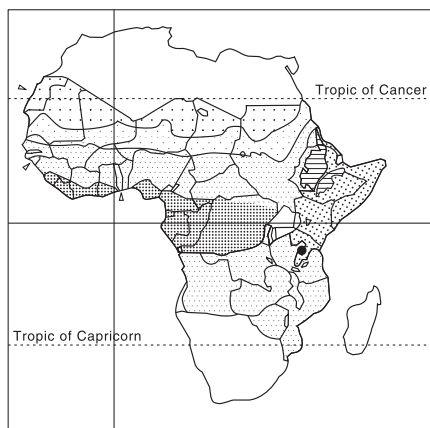
**E. umbonata** S. Carter; *Euphorbia J.* 9: 90, 100, 108, 1994.

Succulent perennial to 35 cm tall and Ø, much-branched from a short stem to form a rounded cushion; branches terete, 1-1,5 cm thick, with very shallow rounded tubercles ± 1 cm apart in 5 longitudinal or scarcely spiralled series; spiny; capsule and seeds unknown.

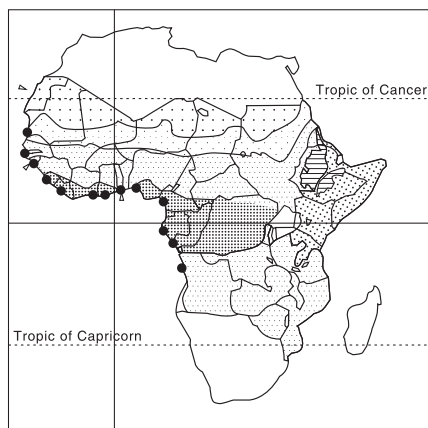
Stony limestone and gypseous soils with very scattered *Acacia-Commiphora* bushland; 250-900 m alt.

Near *E. multiclava*, *E. perarmata*; possibly 2 taxa may be involved under the name *E. umbonata*.

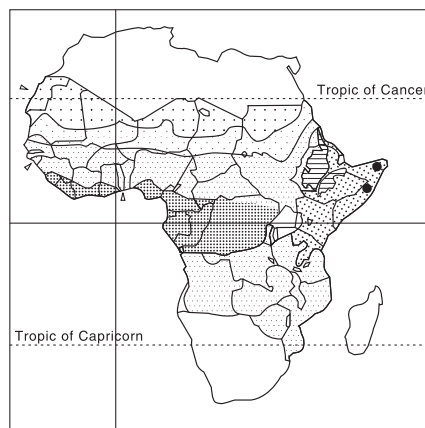




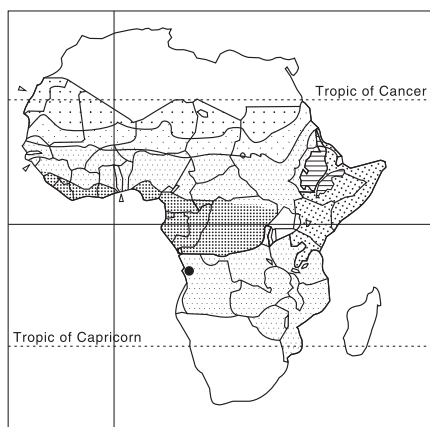
*Euphorbia trichiocyma*



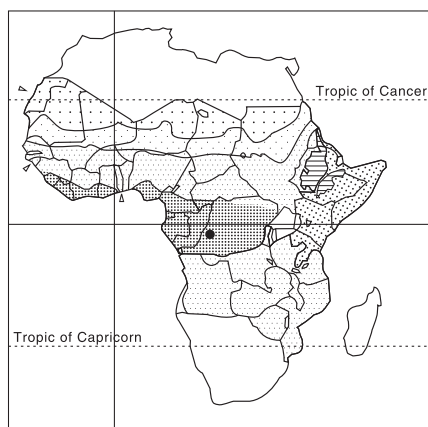
*Euphorbia trinervia*



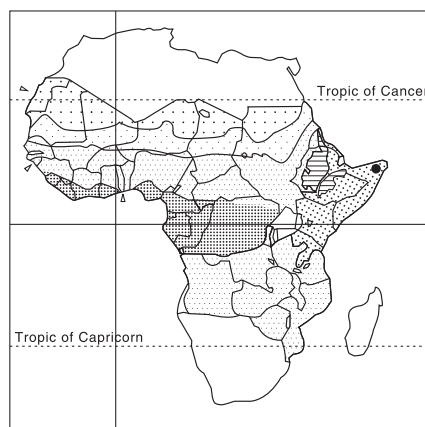
*Euphorbia tripartita*



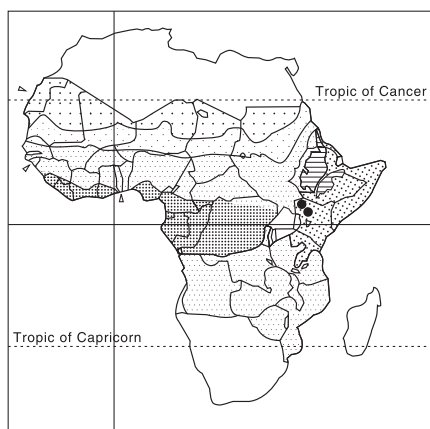
*Euphorbia tuberifera*



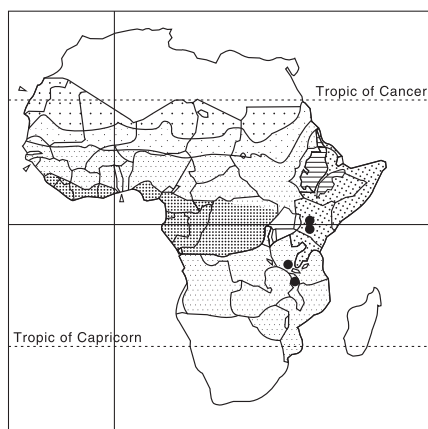
*Euphorbia tumbaensis*



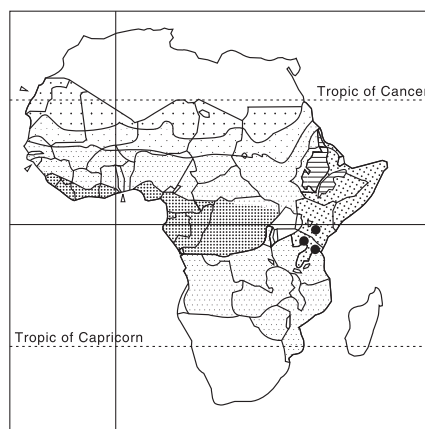
*Euphorbia turbiniformis*



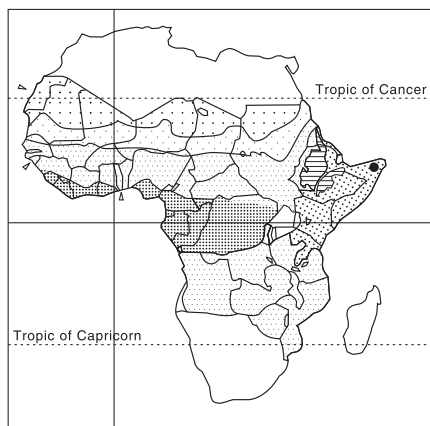
*Euphorbia turkanensis*



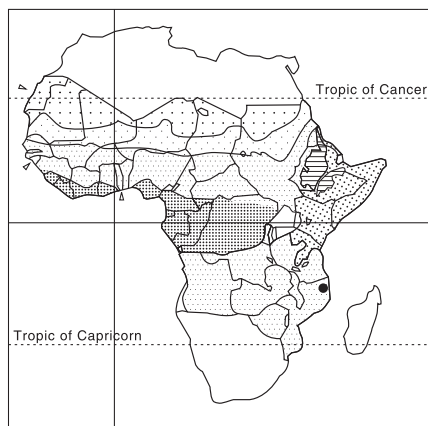
*Euphorbia ugandensis*



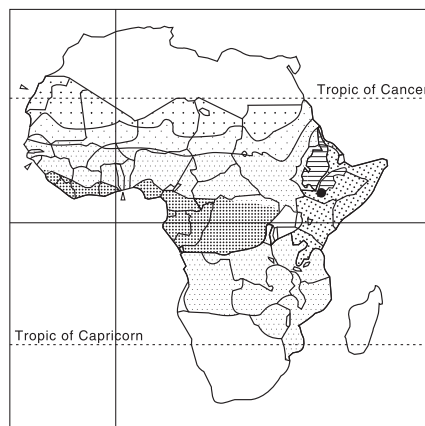
*Euphorbia uhligiana*



*Euphorbia umbonata*



*Euphorbia unicornis*



*Euphorbia uniglans*

## EUPHORBIA

**E. unicornis** R. A. Dyer

Succulent, spinescent shrublet, branched from the base, to  $\pm$  30 cm tall; branches subcylindric, about 1 cm thick, not perceptibly constricted at intervals, possibly commonly with two lateral branches arising from the same level, indistinctly 6-7-angled or subcylindric with 6-7 grooves about 1 mm broad at the base, tubercled along the angles and with rudimentary leaves on young growth; tubercles slightly prominent and cushion-like, almost completely covered by a horny shield; capsule and seeds unknown.

Rocky outcrops; 450-740 m alt.

Near *E. corniculata*.

Only known from the type collected in 1949.

**E. uniglans** M. G. Gilbert

Shrub or tree to 8(-10) m tall; stems dark reddish brown, glabrous; leaves alternate with petiole narrowly winged, to 7 mm long; blade variable in shape, obovate-cuneate to oblong-spathulate, 6-9,3  $\times$  1,7-5,2 cm; juvenile leaves linear-oblong, 8,5  $\times$  0,7 cm, base attenuating into the petiole, tip broadly rounded to almost truncate; fruit and seeds unknown.

Limestone slope in broad-leaved deciduous woodland mixed with evergreen scrub: *Combretum*, *Terminalia*, *Commiphora* spp., *Lannea schweinfurthii*, *Kirkia*, *Dalbergia microphylla*, etc., understory with *Grewia* spp. and *Euclea*; 1400-1450 m alt.

Near *E. betulicortex*.

**E. unispina** N. E. Br.; Euphorbia J. 8: 122, 1992; Cact. Succ. J. (U.S.) 71: 45, 1999; A. Pritchard, Introduction Euphorbiaceae: 33, 2003.

Stout succulent bush to 3-4 m tall, leafy at the tips of the branches, naked below, or perhaps sometimes entirely leafless, spiny; branches 1,6-2,5 cm thick, cylindrical; leaf 6-12 cm long, 1,8-5 cm broad at the apex, cuneate or linear-cuneate, broadly rounded to rather deeply 2-lobed at the  $\pm$  dilated apex, thence gradually tapering to the sessile base, fleshy.

Rocky hill in savanna; 800 m alt.

Extremely rare in collections, actively sought by collectors; difficult to maintain by a neophyte.

Near *E. poissonii*.

Not in Sudan [Cact. Succ. J. (U.S.) 71: 261, 1999].

**E. usambarica** Pax

Shrub 3-4,5 m tall with long thin often subpendent branches, rebranching mostly dichotomously; leaves subsessile or shortly petiolate, oblanceolate or obovate, to 12  $\times$  3 cm, base cuneate tapering gradually to the base of the petiole, apex acute or markedly apiculate.

Understorey of fairly open forest; riverine forest at lower altitudes; (45-)1000-2400 m alt.

Comprises 2 subspp.

**E. vallis** L. C. Leach

Succulent spiny tree to  $\pm$  12 m, with a stout, cylindrical trunk, sometimes somewhat sparingly branched near the base, usually freely branched above; branches trunk-like, usually simple, each with a relatively small crown of spiny flowering branches, subverticillately arranged at its apex; flowering branches usually simple, initially straight and rigid, suberect, eventually with age

## EUPHORBIA VALLARIS

becoming drooping and finally falling; averaging about 90 cm in length, 2,5-5,5 cm  $\emptyset$ , including the prominent tubercles, tapering into a rather stout, stalk-like base and constricted into segments of somewhat variable shape and length (generally  $\pm$  35 cm), with 3(-4) stout wing-like angles, with prominently crenate-toothed margins.

Cliffs of escarpment. Very limited distribution.

Extremely rare in collections. Easily propagated vegetatively.

Near *E. teixeirae*; also evident relationship with *E. parviceps*.

**E. venenifica** Trem. ex Kotschy; Euphorbia J. 7: 156, 1991 (? confusion with *E. unispina*); A. Pritchard, Introduction Euphorbiaceae: 33, 2003.

Stout shrub 2-6 m tall with 1-several stems from ground-level,  $\pm$  sparsely branched and rebranched; branches spreading-ascending, fleshy, cylindrical, 3,5 cm thick; leaves terminally crowded, sessile, fleshy, variable in size and shape from lanceolate to obovate, 4-22  $\times$  1-4 cm, apex variable; margin often minutely crisped; spiny.

Stony slopes in dry grassland with scattered trees; locally abundant; arid hills; open rocky hillsides with *Combretum*; <1200-1220 m alt.

Near *E. poissonii*; also related to *E. unispina*, *E. sudanica*, *E. desmondii*, *E. nivulia* Buch.-Ham. (India), *E. neriifolia* L. (India), *E. qarad* Defl. (Arabia), *E. amicorum*, *E. decidua*, *E. imitata*, *E. brevis*. Plant difficult to place in a sequence of E. African species.

**E. viduiflora** L. C. Leach

Tree-like shrub usually  $\pm$  2,3(-3) m tall and often almost as much  $\emptyset$ , with a short stout cylindrical trunk and a densely branched, compact, rounded head of angular spiny branches; the latter strictly erect, with 3-4 compressed wing-like angles, slightly constricted at intervals into segments of varying length; segments  $\pm$  oblong-elliptic or oblong, with  $\pm$  parallel sides, to  $\pm$  20 cm long, 3-6 cm  $\emptyset$ ; margins sinuate-dentate, sometimes only slightly so, with the teeth 5-15 mm apart along the angles; spiny; flowers and fruits unknown (all the plants seen appearing to be sterile with the flowering eye either abortive or producing a vegetative shoot).

Rare in cultivation, but presents no unusual difficulties.

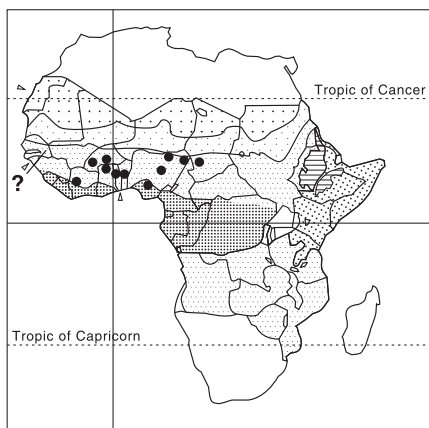
Utilized to mark the boundaries of cotton fields around Catete. Origin is something of a mystery; the plants are, as far as known, all grown from cuttings and all from one sterile clone; has not been found in the wild. No sign of flowering on cultivated specimens in Salisbury or elsewhere in Africa. Possibly a hybrid and a recent introduction.

Near *E. ingens* complex.

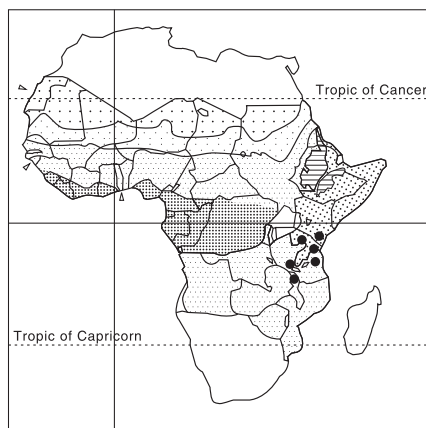
[**E. viridiflora** "Leach" error for Waldst. & Kit. = *E. dulcis* L. from Europe].

**E. virosa** Willd.; Euphorbia J. 9: 159, 1994; 10: 131, 132, 1996.

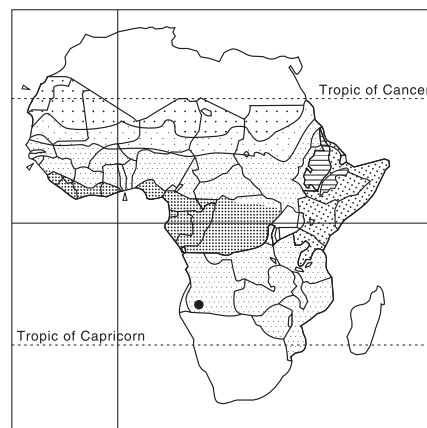
Succulent leafless spiny bowl-shaped bush with a short main stem and a large number of stout branches arising in close proximity to each other at the surface of the ground or more usually a few cm higher up, which at first spread at right angles and then assume a vertical position, all ending  $\pm$  in the same plane at a height of 1,2-1,8(-2,5) m; the bushes are generally 1,2-1,5(-3) m  $\emptyset$ ; the main stem is either entirely buried in the ground or protruding up to  $\pm$  30 cm above it; the ridges on the stem running in a gentle spiral mostly to the left, but in a few cases going to the right; on the branches arising from the main stem or the branches themselves the ridges are nearly always in straight lines; primary branches



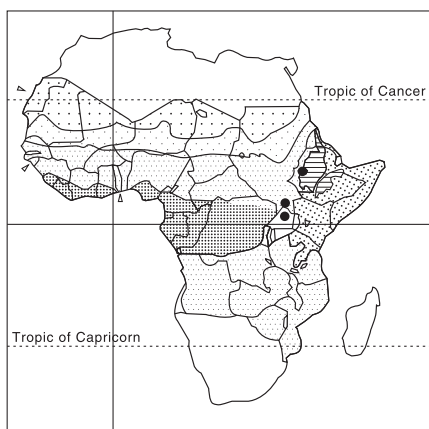
*Euphorbia unispina*



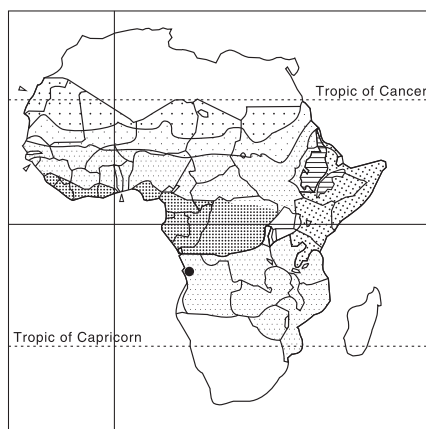
*Euphorbia usambarica*



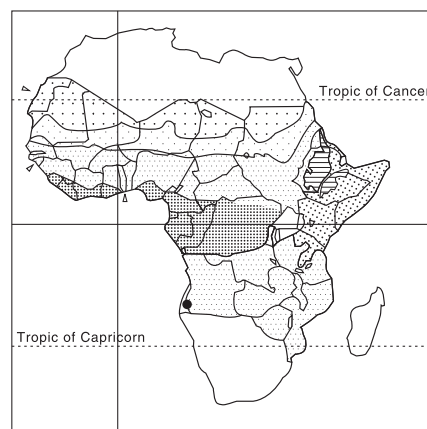
*Euphorbia vallis*



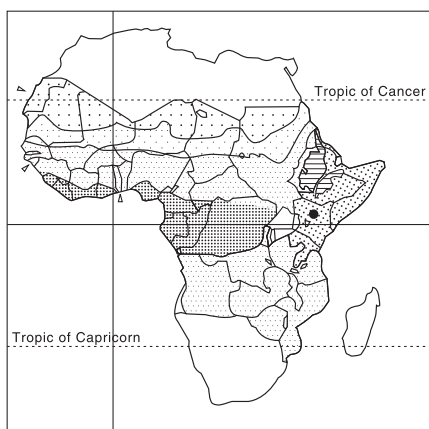
*Euphorbia venenifera*



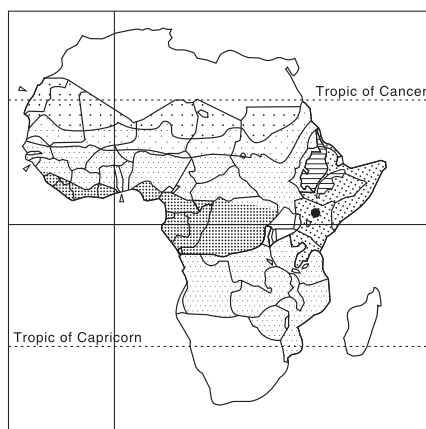
*Euphorbia viduiflora*



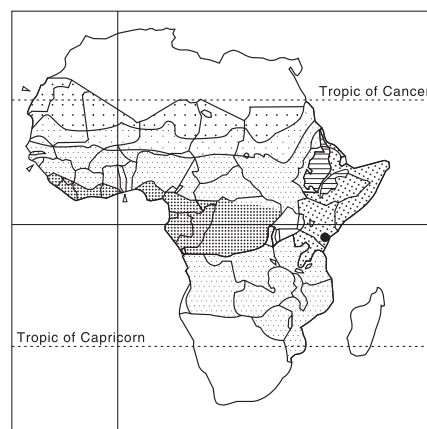
*Euphorbia virosa*



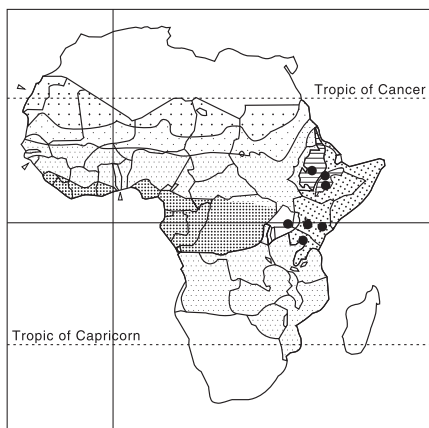
*Euphorbia vittata*



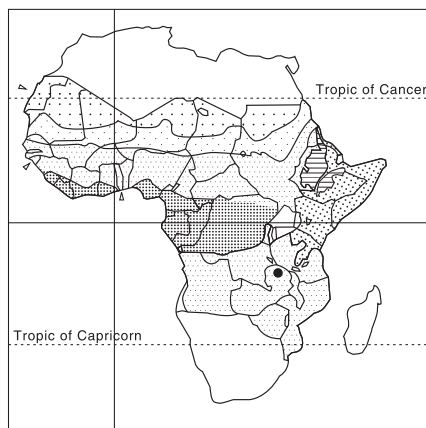
*Euphorbia vulcanorum*



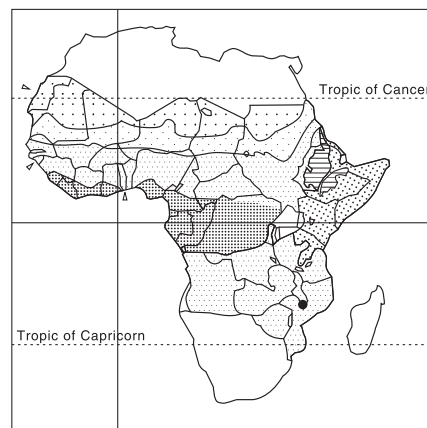
*Euphorbia wakefieldii*



*Euphorbia wellbyi*



*Euphorbia whellanii*



*Euphorbia whyteana*

## EUPHORBIA VIROSA

are (-6)-7(-8)-angled; the ridges divided by sharp-angled grooves to 10 mm deep; the branches, so-called stems constricted at short but irregular intervals, thus consist of a series of joints 50-80 mm long and 50-70 mm Ø, the edge bearing a continuous hornband and a pair of spines on the summit of each lobe.

Rocky hills and outcrops, often with *Welwitschia*, while scattered colonies occur on stony maritime hills and occasionally in more sandy situations (subsp. **virosa**); low altitude sandy coastal desert (subsp. **arenicola**).

Namibia, S. Africa.

Comprises 2 subsp.: – subsp. **virosa** (syn.:? *E. bellica* Hiern): stout shrub ± 1,7- ±3 m tall; – subsp. **arenicola** L. C. Leach: spreading shrub with a Ø much exceeding its height which seldom exceeds 1 m and averages ± 0,5 m and having ± horizontally spreading branches which become erect only towards the apex and are more freely rebranched.

Near *E. coerulescens* Haw. from S. Africa.

**E. vittata** S. Carter, Hook. Ic. Pl. 39: tab. 3858, 1982; Fl. Trop. E. Africa, Euphorb. 2: 517, 1988 quoad specim. Mathew 6660, Hepper & Jaeger 6996; Euphorbia J. 9: 213, 1994; 10: 137, 1996; Cact. Succ. J. (U.S.) 72: 193, 2000.

Tufted succulent perennial with a thick tuberous root; branches spreading, sparsely rebranching, 10-30 cm long, to 2 cm Ø, 5-angled; angles with prominent tubercle-teeth 1-1,5 cm apart; spiny.

Rocky lava slopes; 800-1200 m alt.

Of fairly easy culture.

Near *E. uhligiana*, *E. pervittata*.

**E. vulcanorum** S. Carter; Euphorbia J. 7: 127-128, 1991; 10: 86, 1996.

Densely branching succulent shrub to 1 m tall and 1,2 m Ø; branches to 30 cm long, (4-)5-angled, 1-2 cm thick; angles very shallowly toothed, with teeth 5-15 mm apart; spiny.

Lava-strewn rocky slopes with sparse deciduous bushland; 1000-1200 m alt.

An attractive and easily grown species, although infrequently encountered in cultivation.

Near *E. heterochroma*.

**E. wakefieldii** N. E. Br.

*Seedlings* and *young* plants from ± 30 cm height producing branches to 1 m or more long which trail on the ground, take root and produce new plants, eventually forming dense stands of trees. *Mature* tree palm-like to 7(-15?) m tall; trunk simple or with a few short side-branches, to 15 cm Ø; bark with rings of ± 6 pitscans resulting from fallen branches at intervals of ± 15 cm; trunk terminating in a small rounded crown of loosely clustered radiating branches to 1,5 m long, each with a few whorls of branchlets to ± 15 cm long, seldom rebranching; terminal branchlets fleshy, 3(-4)-angled, 1-2 cm wide, deeply winged, not noticeably constricted; angles distinctly sinuately toothed, with teeth ± 1 cm apart; spiny.

Limestone outcrops with dense xerophytic bushland and forest remnants; 50-275 m alt.

Known in cultivation.

An **endangered species**, at great risk from the felling of coastal forest for charcoal burning.

## EUPHORBIA

**E. wellbyi** N. E. Br.

Annual or probably short-lived perennial herb with a woody rootstock; plant branching from near the base, 30-60(-100) cm tall; the whole plant sometimes tinged red; leaves densely crowded, sessile, oblanceolate, to 25 × 7 mm, apex rounded; not spiny.

Amongst grass in heathland above the forest line; clearings at the forest edge; moorland; usually in swampy ground; 2375-4000 m alt.

Comprises 2 vars.

Near *E. schimperiana* or just an ecotype of that species.

**E. whellanii** L. C. Leach

Succulent, spiny, dwarf shrublet, generally ± 10 cm tall, densely branched from the base, with the branches usually simple; branches subcylindric tuberculate, to 17 cm long, 0,35-0,8 cm Ø; tubercles to 1 mm high, arranged 3-5 mm apart in 5-7(8) vertical ranks; leaves minute, soon deciduous, leaving a ± broadly obovate scar directly between the upper pair of spines.

Granite slope crevices with good humus, with *Aloe mzimbana*, in rather damp situations and in partial shade; ± 1700 m alt.

Easily propagated by cuttings.

Near *E. isacantha*.

**E. whyteana** Bak. f.

Perennial herb 30,5-45,5 cm tall with a woody rootstock; stems woody, 0,22-0,44 thick at the base, straight, simple or branched, very leafy, becoming naked and somewhat rough with prominent leaf-scars at the base, reddish-brown; leaves alternate, ascending or spreading, linear to oblong-linear, obtuse, minutely apiculate, shortly cuneate at the base, with revolute margins; not spiny; capsule unknown.

Locally common in tussock grassland; 1830-2290 m alt.

**E. wildii** L. C. Leach, Kirkia 6:139, 1968!; 10: 293, 1975; Euphorbia J. 10: 213, 216, 1996; A. Pritchard, Introduction Euphorbiaceae: 41, 2003.

Unarmed succulent stout shrub, eventually becoming arborescent, to 3 m tall; root fleshy, thickened or occasionally sub-tuberous; trunk cylindrical, 7,5(-10) cm Ø randomly sparingly branched; trunk and branches tuberculate, with the tubercles crowded in a close spiral, becoming ± nude; branches ± spreading ascending, trunk-like, usually ± 5 mm Ø, with the dry remains of the old peduncles persisting towards the apex and with a crown of spreading leaves; the latter narrowly elliptic or narrowly obovate, entire, acute apiculate at the apex, cuneate at the base, to 12 × 4 cm; blade usually somewhat folded (green during the rainy season – November to April – and reddish during dry winter – May to August).

Strictly serpentinicolous (hydrous magnesium silicate); stony slopes of the rugged hills in savanna grassland with *Aloe ortholopha*, *Euphorbia nemoralis*, *Aloe cryptopoda*, *Euphorbia griseola*, *E. schinzii*, *Crassula argyrophylla*; 1480-1700 m alt. Not often seen in collections but grows relatively well.

Near *E. monteiri* and with a remarkable morphological uniformity.

Nickel and chrome accumulator [Cact. Succ. J. (U.S.) 59: 95, 1987; Taxon 33: 395, 1984].

Two plants have the same distribution: *Euphorbia nemoralis*, *Aloe ortholopha* and, the same uniformity.

Specially protected in Zimbabwe.



## EUPHORBIA

**E. williamsonii** L. C. Leach; Aloe 37: 54, 2000; 41: 63, 2004.

Spiny succulent shrub to 1 m tall, acaulescent with numerous branches arising at random from an irregularly shaped, partially exposed, somewhat tuberous caudex bearing a congested mass of hard fibrous roots; branches erect, 3-angled, generally simple, slightly constricted into somewhat variably shaped segments; the latter ± oblong, subcircular or somewhat obtrullate, about 2,5-5,25 cm wide across the face, 2,5-5 cm long, with the faces flat or slightly concave; branchlets seldom present, then very short, produced from the margins of the segments towards the apex of the branches.

Savanna by waterfalls; in fibrous mats on rocky quartzite outcrops; 1150 m alt.

Presents no unusual difficulties in cultivation, but uncommon. Near *E. atrocarmesina*; superficially resembling *E. buruana*.

**E. xylacantha** Pax; Collect. Bot. Barcelona 21: 64, 1992; Euphorbia J. 9: 90, 96, 97, 110, 111, 244, 1994.

Succulent perennial 15-35 cm tall, spreading to 50 cm or more in Ø, with a central stem to 20 cm high, 3 cm thick; branches numerous, to 40 cm long, sparsely rebranched, 8-15 cm thick, with shallow tubercles 6-10 mm apart in 5 loosely spiral series; spiny.

Rocky limestone, sometimes gypseous, with scattered *Acacia* scrub; 300-1300 m alt.

Uncommon in cultivation often under the names: *E. monacantha* or *E. aff. monacantha*.

Not in Ethiopia (= *E. monacantha*).

**E. zambesiana** Benth.

syn.: *Chamaesyce zambesiana* (Benth.) Koutnik

Perennial herb with a woody twisted root 1 cm thick and to 25 cm or more long, producing several woody underground stems to 3 cm long, which branch profusely at ground-level; branches densely rebranching, leafy and prostrate to ± 10(-25) cm long or more, floriferous and erect to ± 5 cm high, often tinged red; leaves lanceolate to ovate to 16 × 9 mm, base obliquely subcordate; not spiny.

Open wooded grassland; open miombo; sandy soil in grass and open bush; in hot places at the outskirts of the forest, among sparse herbage; in pastures among low bushes; often on laterite; 400-2750 m alt. – Appears after burning.

Comprises 2 vars.

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**Euphorbia venterii** L. C. Leach ex R. H. Archer & S. Carter, Fl. Pl. Africa 57: 86 and pl. 2176, 2001, a spiny herb near to *E. schinzii* with many succulent stems growing in clumps 10-15 cm tall, is recorded from E Botswana near to the border of Zimbabwe.

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## EUPHORBIA

SYNONYMS (see also Enum. 1: 224-225, 1991):

*Anisophyllum aegyptiacum* (Boiss.) Schweinf. = **Euphorbia forskalii**

*arabicum* (Anderson) Schweinf. = **E. arabica**

*convolvuloides* (Hochst. ex Benth.) Klotzsch & Garcke = **E. convolvuloides**

*forskalii* (J. Gay) Klotzsch & Garcke = **E. forskalii**

*glaucophyllum* (Poir.) Klotzsch & Garcke = **E. trinervia**

*mossambicense* Klotzsch & Garcke = **E. mossambicensis**

*polycnemoides* (Hochst. ex Boiss.) Klotzsch & Garcke = **E. polycnemoides**

*scordiifolium* (Jacq.) Klotzsch & Garcke = **E. scordiifolia**

*tettense* Klotzsch & Garcke = **E. tettense**

*Chamaesyce arabica* (Anderson) Soják = **E. arabica**

*eylesii* (Rendle) Koutnik = **E. eylesii**

*glaucophylla* (Poir.) Croizat = **E. trinervia**

*mossambicensis* (Klotzsch & Garcke) Koutnik = **E. mossambicensis**

*neopolycnemoides* (Pax & K. Hoffm.) Koutnik = **E. neopolycnemoides**

*polycnemoides* (Hochst. ex Boiss.) Soják = **E. polycnemoides**

*prieuriana* (Baill.) Soják = **E. convolvuloides**

*schlechteri* (Pax) Koutnik = **E. schlechteri**

*scordiifolia* (Jacq.) Croizat = **E. scordiifolia**

*tettensis* (Klotzsch) Koutnik = **E. tettensis**

*wightiana* V. S. Raju & P. N. Rao = **E. agowensis**

*zambesiana* (Benth.) Koutnik = **E. zambesiana**

*Commiphora reghinii* Chiov. (*Burseraceae*) = **E. jatrophioides**

*Esula paralias* (L.) Fourr. = **E. paralias**

*Euphorbia abyssinica* J. F. Gmel. var. *mozambicensis* Boiss. = **E. angularis**

*aerurensis* N. E. Br. = **E. abyssinica**

*anomala* Pax = **E. pfeilii**

*arabica* var. *latiappendiculata* Pax = **E. neopolycnemoides**

*arborescens* Salm-Dyck = **E. grandidens**

*austroroccidentalis* Thell. = **E. forskalii**

*balsamifera* subsp. *eu-balsamifera* Maire var. *rogeri* (N. E. Br.) Maire = **E. balsamifera**

*balsamifera* subsp. *sepium* (N. E. Br.) Maire = **E. balsamifera**

*barteri* N. E. Br. = **E. kamerunica**

*baumii* Pax = ?**E. monteiri**

*bellica* Hiern = ?**E. virosa**

*benguuelensis* Pax = **E. trichadenia**

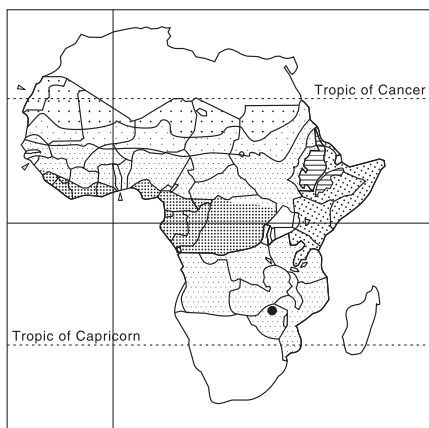
*bergeriana* Dinter = **E. gariepina**

## EUPHORBIA

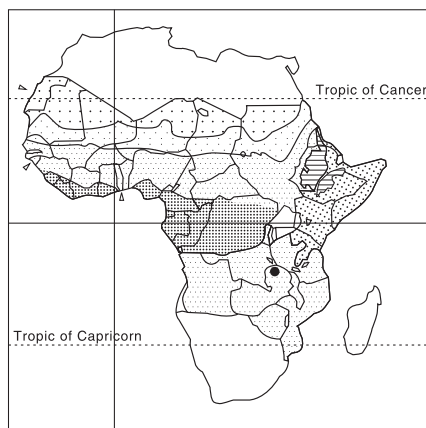
*burmanniana* J. Gay = **E. forskalii**  
*calabarica* Burkill = **E. cervicornu**  
*calendulifolia* Del. = **E. arguta**  
*calva* N. E. Br. = **E. ledermanniana**  
*canariensis* sensu Trémaux = **E. candelabrum**  
*candelabrum* Welw. and Welw. ex Hiern = **E. conspicua**  
*candelabrum* Kotschy var. *erythraeae* Berger = **E. abyssinica**  
*capazii* Caballero = **E. balsamifera**  
*cerebrina* Boiss. = **E. petitiانا**  
*ciliolata* Pax = **E. transvaalensis**  
*commiphoroides* Dinter = **E. guerichiana**  
*consobrina* N. E. Br. = **E. nubica**  
*consobrina* fa. = **E. pachyclada**  
*controversa* N. E. Br. = **E. abyssinica**  
*cornuta* Pers. = **E. retusa**  
*crispata* Lem. = **E. nyikae**  
*cryptocaulis* M. G. Gilbert p.p. = **E. charleswilsoniana**  
*disclusa* N. E. Br. = **E. abyssinica**  
*dispersa* sensu L. C. Leach = **E. atrocarmesina** subsp.  
**arborea**  
*dranunculoides* Lam. var. *africana* Rikli & Schröt. = **E. dracunculoides**  
*echinus* Hook. f. & Coss. var. *hernandez-pachecoi* (Caballero) Maire = **E. officinarum**  
*echinus* fa. *macracantha* Maire = **E. officinarum**  
*effusa* Ehrenb. ex Boiss. = **E. agowensis**  
*faurotii* Franchet = **E. triaculeata**  
*fimbriata* Boiss. = **E. nyikae**  
*flamandii* Batt. = **E. dracunculoides**  
*frutescens* N. E. Br. = **E. guerichiana**  
*galpinii* Pax = **E. transvaalensis**  
*garuana* N. E. Br. = **E. kamerunica**  
*glaucella* Pax = **E. pfeilii**  
*glaucophylla* Poir. = **E. trinervia**  
*golisana* N. E. Br. = **E. phillipsiae**  
*gorinii* Chiov. = **E. pirottae**  
*gossweileri* Pax = **E. trichadenia**  
*grandis* Lem. = **E. abyssinica**  
*halleri* Dinter ex Frick = **E. gariépina**  
*hararensis* Pax = **E. abyssinica**  
*hernandez-pachecoi* Caballero = **E. officinarum**  
*heteropoda* Pax = **Monadenium heteropodum**  
*infausta* N. E. Br. = **Euphorbia polyacantha**  
*infesta* Pax = **E. triaculeata**  
*involutrata* (Klotzsch & Garcke) Boiss. = **E. epicyparissias**  
*kahirensis* Raesch. = **E. retusa**  
*kwebensis* N. E. Br. = **E. pfeilii**  
*lanceolata* Spreng. = **E. dracunculoides**  
*laurentii* De Wild. = **E. teke**  
*lemaireana* Boiss. = **E. nyikae**  
*linearis* Schrank = **E. retusa**  
*longibracteata* Pax = **E. monteiri**  
*magnidens* Haw. ex Salm-Dyck = **E. grandidens**  
*malacitana* Pau = **E. paralias**

## EUPHORBIA

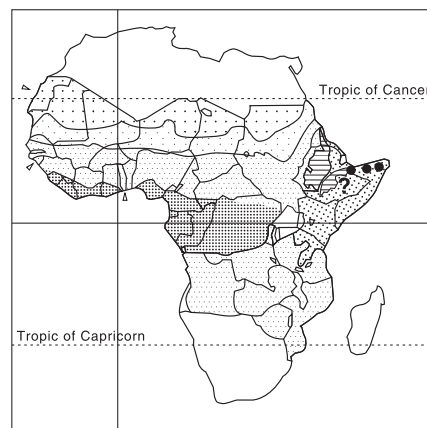
*marlothii* Pax = **E. monteiri**  
*menelikii* Pax = **E. ampliphylla**  
*nenensis* Hiern = **E. macra**  
*neutra* A. Berger = **E. abyssinica**  
*nodosa* N. E. Br. = **E. nebrownii**  
*officinarum* L. var. *hernandez-pachecoi* (Caballero) Oudejans = **E. officinarum**  
*officinarum* L. var. *kolquall* Willd. = **E. abyssinica**  
*pereskiifolia* Baill. = **Synadenium pereskiifolium**  
*platypoda* Pax = **Euphorbia lophiosperma**  
*prieuriana* Baill. = **E. convolvuloides**  
*propinqua* N. E. Br. = **E. arabica**  
*pseudofalcata* Chiov. ex Chiarugi = **E. petitiانا**  
*quintasii* Pax = **E. cervicornu**  
*reghini* (Chiov.) Vollesen = **E. jatrophioides**  
*richardiana* Baill. = **E. abyssinica**  
*rogeri* N. E. Br. = **E. balsamifera**  
*sancta* Pax = **E. ampliphylla**  
*schubei* Pax = **Monadenium schubei**  
*seclusa* N. E. Br. = **Euphorbia arabica**  
*sepium* N. E. Br. = **E. balsamifera**  
*subfalcata* Hiern = **E. trichadenia**  
*tellieri* A. Chev. = **E. sudanica**  
*tenella* Pax = **E. macra**  
*tetragona* A. Rich. = **E. polyacantha**  
*thelesperma* Hochst. ex Boiss. = **E. acalyphoides**  
*thi* Schweinf. and var. *subinarticulata* (Schweinf.) N. E. Br. = **E. polyacantha**  
*thymifolia* Forssk. = **E. scordiifolia**  
*tomentosa* Pers. = **E. scordiifolia**  
*verdickii* De Wild. = **E. oatesii**  
*verticillata* Pax quoad Antunes 889 = **E. radiifera**  
*wahlbergii* Boiss. = **E. epicyparissias**  
*wilsonii* Vlk = **E. charleswilsoniana**  
*zenkeri* Pax = ? **E. cervicornu**  
*zylana* N. E. Br. = **E. scordiifolia**  
*Phyllanthus forskalii* Lepr. ex Baill. = **E. forskalii**  
*Tithymalus agowensis* (Hochst. ex Boiss.) Schweinf. = **E. agowensis**  
*argutus* (Banks & Soland.) Soják = **E. arguta**  
*calendulifolius* (Del.) Raf. = **E. arguta**  
*calyptratus* (Coss. & Kralik) Soják = **E. calyptrata**  
*cerebrinus* (Hochst. ex Boiss.) Schweinf. = **E. petitiانا**  
*confertus* Klotzsch & Garcke = **E. ericoides**  
*dracunculoides* subsp. *flamandii* (Batt.) Soják = **E. dracunculoides**  
*epicyparissias* Klotzsch & Garcke = *Euphorbia involutrata* Klotzsch & Garcke = **E. epicyparissias**  
*maritimus* Lam. = **E. paralias**  
*paralias* (L.) Hill = **E. paralias**  
*petitianus* (A. Rich.) Klotzsch & Garcke = **E. petitiانا**  
*repetitus* (Hochst. ex A. Rich.) Klotzsch & Garcke = **E. repetita**  
*schimperianus* (Scheele) Klotzsch & Garcke = **E. schimperiana**



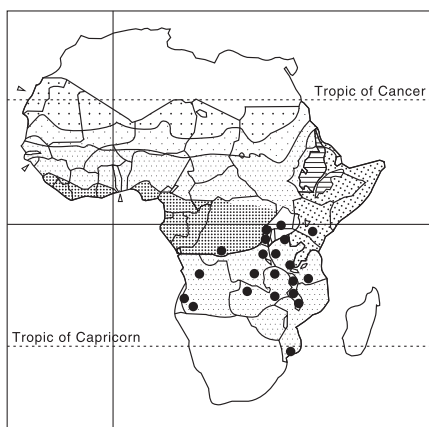
*Euphorbia wildii*



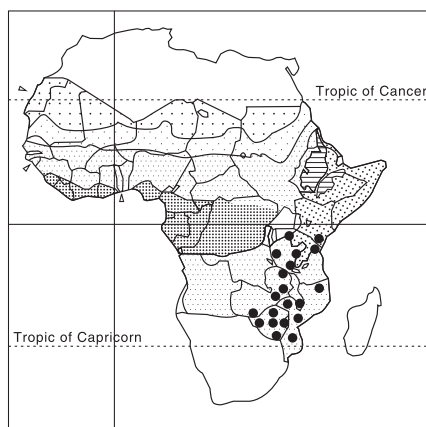
*Euphorbia williamsonii*



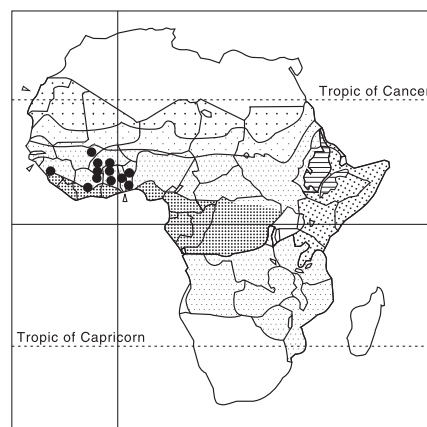
*Euphorbia xylacantha*



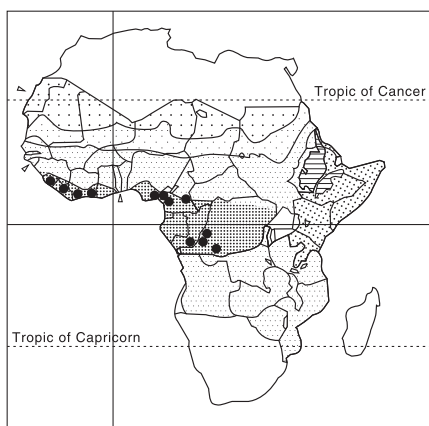
*Euphorbia zambesiana*



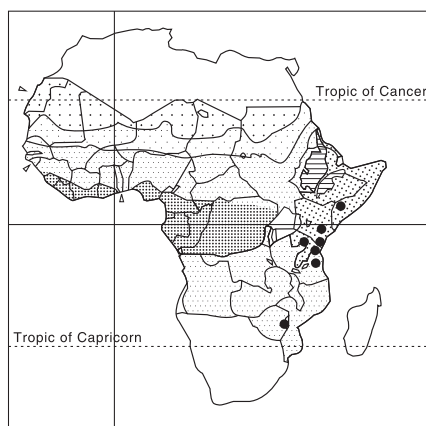
*Excoecaria bussei*



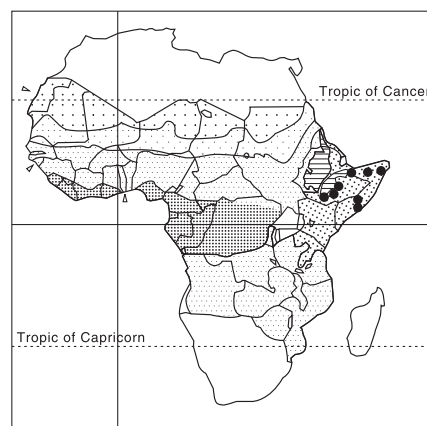
*Excoecaria grahamii*



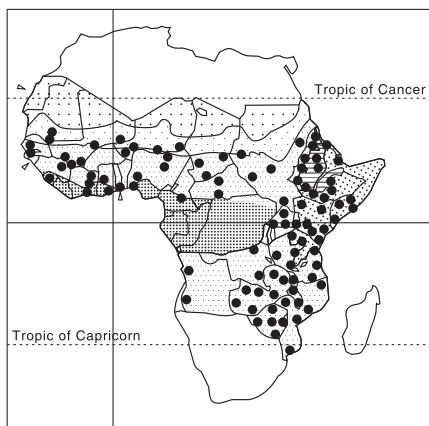
*Excoecaria guineensis*



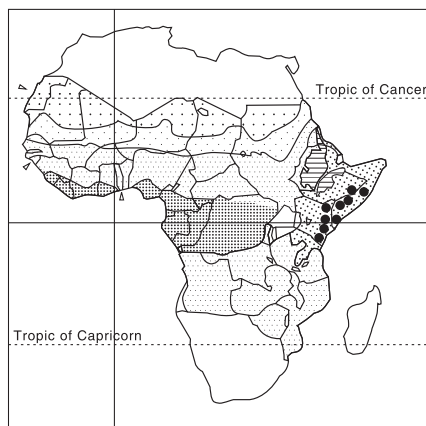
*Excoecaria madagascariensis*



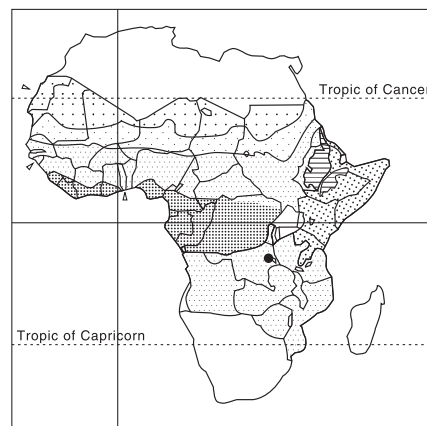
*Flueggea leucopyrus*



*Flueggea virosa*



*Givotia gosai*



*Grossera glomeratospicata*

## EXCOECARIA / 4

**Excoecaria bussei** (Pax) Pax

bas.: *Sapium bussei* Pax

syn.: *Excoecaria sambesica* Pax & K. Hoffm.

Deciduous, monoecious shrub or tree (1,5-)2,5-6(-13) m tall, sometimes multistemmed, with spreading branches and a dense, rounded crown; twigs fairly stout.

Deciduous woodland, bushland, wooded grassland; sometimes riverine or along rocky scarps; thicket; banks of seasonal watercourses in *Baikiaea mutemwa*; coastal dune forest and thicket; locally common; 0-300-1300 m alt.

Caprivi Strip, Botswana.

**E. grahamii** Stapf

Rootstock deeply buried, creeping and giving off erect underground shoots 45 cm high at intervals of 20-25 cm; stems herbaceous or half-woody, several from the crown of each erect subterranean shoot, simple 15-60 cm high, perulate at and above the base.

Cultivations on deep soil; road sides; low ground; clayey sand; savanna; damp sandy area; fringing forests.

**E. guineensis** (Benth.) Müll. Arg.; *Adansonia*, Sér. 2, 3: 70, 1963.

bas.: *Stillingia guineensis* Benth.

syn.: *Sapium guineense* (Benth.) Kuntze

Monoecious shrub 0,5-4 m tall; stems 3 cm Ø, with smooth young branchlets.

Rain-forests with *Scorodophloeus zenkeri*; swampy valley slope with *Lophira alata*, *Sacoglottis gabonensis*; forest with *Celtis*, *Sterculiaceae*.

Principe.

**E. madagascariensis** (Baill.) Müll. Arg.

bas.: *Stillingia madagascariensis* Baill.

syn.: *Spirostachys madagascariensis* Baill.; *Excoecaria sylvestris* S. Moore; *Sapium madagascariensis* (Baill.) Prain, non Müll. Arg. 1863, nec Pax 1890.

Monoecious shrub or tree (1,5-)2-3(-7) m.

Forest; thicket; commonly along rivers; evergreen rain-forest; woodland on granitic outcrop; dry evergreen forest on a valley floor near river (SE Zimbabwe); 50-1830 m alt.

Swaziland; Madagascar.

Disjunct species in continental Africa (700 km distance; Bothalia 33: 155, 2003).

\* \* \*

**Excoecaria simii** (Kuntze) Pax occurs only in S. Africa.

SYNONYMS:

*Excoecaria africana* (Sond.) Müll. Arg. = **Spirostachys africana**

*glomeriflora* Pax = **S. venenifera**

*magenjensis* Sim = **Maprounea africana**

*sylvestris* S. Moore = **Excoecaria madagascariensis**

*synandra* Pax = **Spirostachys africana**

## FLUEGGEE / 2

**Flueggea leucopyrus** Willd.

syn.: *Securinega leucopyrus* (Willd.) Müll. Arg.

Bushy shrub 0,5-3(-4) m tall; branches stout, long, straggling; twigs divaricate, rigid, terminally spinose; bark white or grey, markedly lenticellate; leaves chartaceous to coriaceous, 0,75-2,5(-3) × 0,75-1,75(-2,5) cm, obovate, obcordate or rotundate, entire, at times narrowly revolute, often emarginate.

Open deciduous woodland/bushland on limestone or granite; 85-1800 m alt.

Socotra, tropical Arabia, S. India, Sri Lanka.

Closely related to *F. virosa*.

It is possible that some reports of *F. leucopyrus* refer to heavily browsed plants of *F. virosa* growing in exposed situations.

**F. virosa** (Roxb. ex Willd.) Voigt subsp. **virosa**

syn.: *Phyllanthus hamrur* Forssk.; *Xylophylla obovata* Willd.; *Securinega obovata* (Willd.) Müll. Arg.; *Flueggea microcarpa* Blume

Deciduous unarmed sometimes scandent shrub or tree 1-4,5(-6) m tall; bark grey-brown, smooth, fissuring or roughened; branches erect or arching; twigs virgate, slender.

Open *Acacia-Combretum* woodland; riverine forest on alluvial flats; black cotton soil and well-drained rocky slopes; forest edges and associated bushland, thickets; along watercourses into drier areas; sometimes on termite mounds; disturbed places; miombo woodlands; dambo margins; old cultivations; sand alluvial soils; rocky outcrops; locally common in a wide variety of associations; 0-2300 m alt.

Caprivi Strip, Namibia, Botswana, S. Africa (Natal); S. Arabia, Socotra; Madagascar; Pakistan to Japan, Celebes, Timor; – subsp. **melanthesoides** (F. Müller) G. L. Webster in New Guinea and Australia.

SYNONYMS:

*Flueggea bailloniana* (Müll. Arg.) Pax = **Margaritaria discoidea** var. **triplosphaera**

*obovata* Baill. = **M. discoidea** var. **triplosphaera**

## GIVOTIA / 1

**Givotia gosai** Radcl.-Sm.

Shrub or tree, much branched, *Sterculia*- or *Lansea*-like, 2-5-5 m tall, 4,5-7,7 m across; main branches procumbent or arched; branchlets at first erect; twigs fairly thick; axillary shoots often very short.

Red sandy soil over limestone chiefly in *Acacia*, *Commiphora* open bushland; reddish-brown sandy loam with *Lansea alata*, *Commiphora*, *Strychnos*, *Vangueria*, *Cissus rotundifolia*, *Rhoicissus*, *Mundulea sericea*, *Cynometra*; 50-600 m alt.

Easily mistaken for a *Sterculia* or *Solanum jubae*.



## GROSSERA / 6

Female flower and fruit unknown in one species.

**Grossera glomeratospicata** J. Léonard

Shrub 3 m tall; female flower and fruit unknown.  
Riverine forests.

**G. macrantha** Pax

Tree to 6-8-20 m tall; stem 10-35 cm Ø, fluted.  
Rain-forest with *Gilbertiodendron dewevrei*; flooded forests with *Guibourtia demeusei*; 350 m alt. (Cameroon).

**G. major** Pax

Tree 10-20 m.  
Rain-forest, rocky slope.  
Near *G. paniculata*.

**G. multinervis** J. Léonard

Tree (3-)6-20 m; stem 15-40 cm Ø.  
Rain-forest; extremely common; 700-1350 m alt.

**G. paniculata** Pax

(Shrub or) tree 1-20 m tall.  
Rain-forest; 930-1040 m alt. (Cameroon).

**G. vignei** Hoyle

Dioecious shrub or tree 1,5-15 m tall.  
Deciduous forest.

GYMNANTHES – see DUVIGNEAUDIA

## HAMILCOA / 1

**Hamilcoa zenkeri** (Pax) Prain

bas.: *Plukenetia zenkeri* Pax (type: Zenker 2865 in Madrid, MA, fide R. Gamarra, Anal. Jard. Bot. Madrid 57: 192, 1999)

Scandent shrub with stems 6-8 m tall, or tree to 14 m.  
Rain-forest, evergreen and semi-deciduous; 250-400 m alt.  
A certain resemblance to *Plagiostyles africana* and a *Cola*.

## HEYWOODIA / 1

**Heywoodia lucens** Sim; Kew Bull. 50: 812, 1995.

Much-branched tree to 30 m; young shoots 4-angled at first, soon becoming terete.

Dominant or often forming pure stands in moist evergreen forest on south-facing scree-slopes of ravine; semi-swamp forest; on or near termitaria; young trees common in the deep shade of the adult trees; 1150-1770 m alt.

S. Africa.

Disjunct area between NE Tanzania and Mozambique (2840 km).

## HYMENOCARDIA / 5

**Hymenocardia acida** Tul.

Shrub or tree to 10 m tall; often straggling or untidy; branches spreading, lower branches drooping; bole 15-30(-60) cm Ø at breast height, often stunted or contorted; bark flaking off to leave a powdery rufous or fulvous underbark.

Deciduous woodland with *Brachystegia* or *Cryptosepalum*, watershed grasslands and dambos on Kalahari Sand; lakeshore sand dunes; in high rainfall miombo; mixed deciduous woodland; riverine fringes and mushitu margins; wooded grassland exposed to periodical fires; on all types of soil but prefers sandy or sandy-muddy soils; *Combretum*, *Terminalia-Protea* woodland; rocky places; rather open woods with *Dodonaea viscosa*; 15-1740 m alt.

Comprises 2 vars.: – var. **acida** [syn.: *H. mollis* Pax var. *glabra* Pax; *Carpodiptera minor* Sim; *Hymenocardia obovata* Beille; *H. granulata* Beille; *H. lanceolata* Beille]; – var. **mollis** (Pax) Radcl.-Sm. [syn.: *H. lasiophylla* Pax; *H. mollis* var. *lasiophylla* (Pax) Pax].

**H. heudelotii** Müll. Arg.

syn.: *H. guineensis* Beille

Shrub or tree 5-10 m tall.

Riverine forest; locally abundant; periodically flooded valley.

Comprises 2 vars.

Not in Zaire (= *H. ripicola*).

**H. lyrata** Tul.

syn.: *H. beillei* A. Chev. ex Hutch. & Dalziel; *Thouinia* ? *dicarpa* Turcz.

Shrub or tree 10-15 m tall; trunk 1,5 m in girth.

Often in riverine forest, humid forest; sandy soil.

**H. ripicola** J. Léonard

Shrub or tree 2-15 m tall, with very ramose trunk 10-40 cm Ø.

Riverine periodically flooded rain-forest (*Uapacion*, *Uapacetum heudelotii*); periodically flooded forest with *Guibourtia demeusei* (immediately behind the *Uapacion*).

**H. ulmoides** Oliv., incl. var. *capensis* Pax and var. *longistyla* De Wild.

syn.: *H. poggei* Pax; *H. capensis* (Pax) Hutch.

Tree or occasionally scandent shrub, or branched from the base, 2-30 m tall, with bole (5-)20-60(-75) cm Ø.

Often in sandy soil in riverine vegetation; *Androstachys* thickets and lake-shore dunes and thickets (vide *Tragia micromeres*); high rainfall woodland; gully forests on rocky outcrops; mushitu margins; coastal forest and dunes; regrowth (bushy form); wooded grassland; disturbed places; 0-1550 m alt.

S. Africa.

## JATROPHA / 57

Female flowers are lacking for 2 species ( $\geq 3\%$ ), the fruit is unknown in 1 species and in another species the *ripe* fruit is unknown; seeds have not been seen in 2 species and only unripe seeds in further 5 species (= together = c. 12%); the ecology is not recorded for 2 species ( $\geq 3\%$ ); three species (= c. 5%) are known only from the type.

DEHGAN, B. (1982). Comparative anatomy of the petiole and infrageneric relationships in *Jatropha* (Euphorbiaceae). *Amer. J. Bot.* 69: 1283-1295.

DEHGAN, B. (1984). Phylogenetic significance of interspecific hybridization in *Jatropha* (Euphorbiaceae). *Syst. Bot.* 9: 467-478.

***Jatropha aceroides*** (Pax & K. Hoffm.) Hutch.

bas.: *J. lobata* Müll. Arg. subsp. *aceroides* Pax & K. Hoffm.

Shrub branched from the base with spreading branches, longitudinally wrinkled when dry, to 1 m tall.

Barren rocky slopes; sandy wadis; to 700 m alt.

***J. aethiopica*** Müll. Arg.

Stems stout, herbaceous, little-branched, to 1 m tall, with tuberous roots; all parts brownish-tomentose.

Deciduous woodland with *Pterocarpus*, *Terminalia*, *Borassus*, etc.; 900 (and less?)-1050 m alt.

***J. afrotuberosa*** Radcl.-Sm. & Govaerts

Perennial herb with simple, erect stems to 75 cm tall arising from a woody, napiform tuberous rootstock 3-4 cm Ø; plant drying blackish brown; stems quite leafless in the lower half-two-thirds, or beset only with readily caducous scales.

Wooded grassland; 1150 m alt. (and less?).

***J. aspleniifolia*** Pax

Shrub to 2 m tall with woody branches.

Rocky ground; 0-? m alt.

***J. atacorensis*** A. Chev.

A single, simple, erect, slender stem, herbaceous or subwoody, rounded, slender, 20-40 cm tall, arising annually from a woody oblong rootstock, lengthily attenuate at the apex, 15-25 cm long, 3-4 cm Ø; stem leafless in the lower half.

Rocky ground; 400-500 m alt.

***J. baumii*** Pax

An erect, simple stem, sulcate, to 20 cm tall, arising from a globose tuber just below or to 8 cm below ground level,  $\pm 6$  cm Ø. Sandy soils; 800-1100 m alt.

Near *J. afrotuberosa*, *J. latifolia*.

***J. campestris*** S. Moore

Slightly succulent, glaucous, shrubby perennial herb to 50 cm tall; stems arising from a rootstock, densely leafy.

Mopane woodland on sand or in black soil depressions; basaltic black clay; sandveld; 335-1220 m alt.

***J. chevalieri*** Beille

Shrub to 1 m tall, with striate branches.

Sand dunes near the sea; sandy and sandy-clayey area; cliff summit; stony plateau overlaid by sand.

## JATROPHA

***J. collina*** Thulin

Shrublet to  $\pm 20$  cm tall, spreading; seeds unknown.

Rocky ground on hills;  $\pm 1530$  m alt.

Only known from the type collected in 1956.

Near *J. nogalensis*, *J. spinosissima*.

***J. confusa*** Hutch.

Erect, branched, fleshy shrub 1.5-1.8 m tall; branches thick,  $\pm 0.6$  cm Ø 15 cm from the apex, terete.

By fences around cotton plantations, half wild and in thickets at the edges of manioc fields near the mouth of the river Bero; perhaps formerly introduced.

Only known from the type.

***J. crinita*** Müll. Arg.; Euphorbia J. 8: 147, 1992.

syn.: *J. marginata* Chiov.

Decumbent shrublet to  $\pm 20$  cm tall; branches somewhat fleshy, from a tuberous root.

Coastal dunes; 5-40 m alt.

Probably not in Zanzibar.

Seldom found in cultivation.

***J. dichtar*** J. F. Macbr., incl. var. *gracilior* Radcl.-Sm.

syn.: *J. rosea* Radcl.-Sm.

Much-branched shrub 1-3 m tall, with stiffly erect branches arising from near ground-level; bark peeling, brown, papery, green beneath; twigs purplish brown to almost black; short shoots densely fulvous tomentose.

Lava rocks; locally subdominant in open *Acacia*, *Commiphora* bushland on red sandy soil; 50-900 m alt.

***J. ellenbeckii*** Pax; Ballya 3: 75-76, 1996.

syn.: *J. tetracantha* Chiov.

Shrub somewhat succulent, sparingly branching with age, 0, 1-1(-2,5) m tall; stems thick.

Rock crevices, lava slopes, stony and sandy soil over basement complex, in *Acacia*, *Commiphora* bushland; riverine woodland and disturbed places; usually found in the shade of shrubs; 90-1050 m alt.

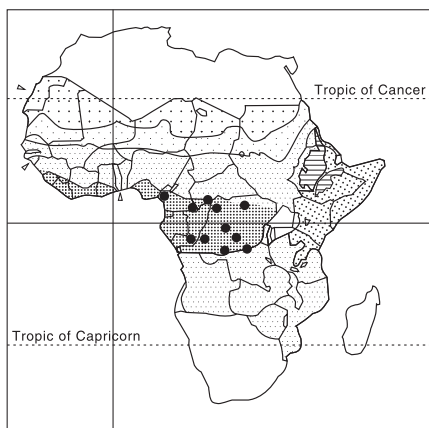
In cultivation it grows quite well in the open. Easily grown into an attractive plant.

***J. erythropoda*** Pax & K. Hoffm.

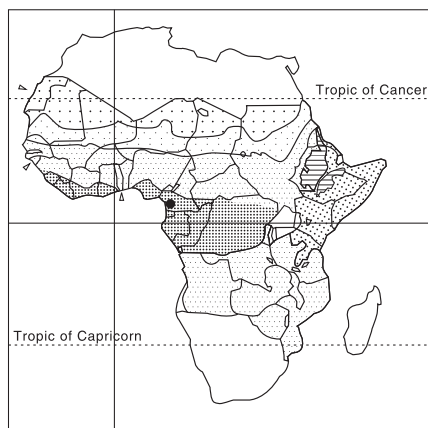
Erect several-stemmed somewhat fleshy perennial herb to 30 cm tall; tuber to 16  $\times$  3.5 cm, elongate or ellipsoid, smooth, red, lying some 15 cm below ground-level; stems arising at ground-level from one or more small underground stems (caudiculi) produced from the tuber.

Sandveld grassland; shallow pan margins; wooded grassland with *Acacia* and *Combretum*; 900-1400 m alt.

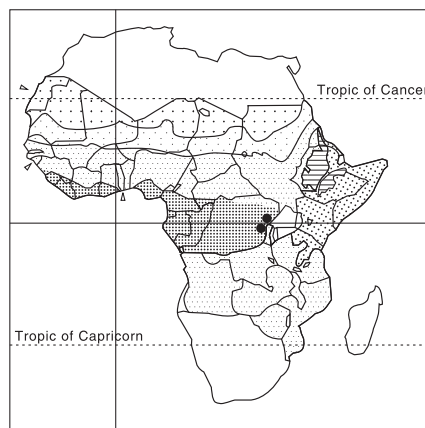
Botswana, Namibia, S. Africa.



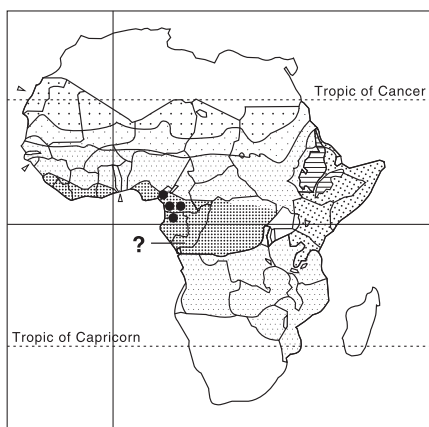
*Grossera macrantha*



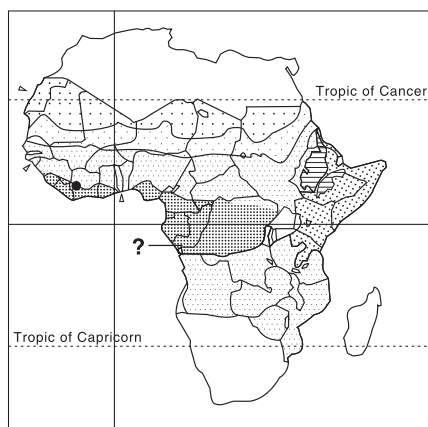
*Grossera major*



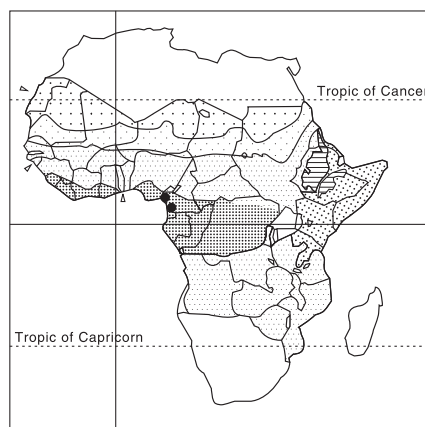
*Grossera multinervis*



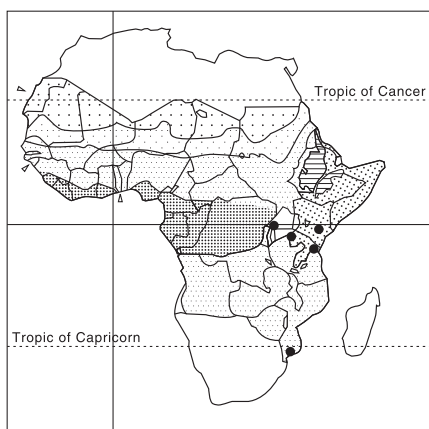
*Grossera paniculata*



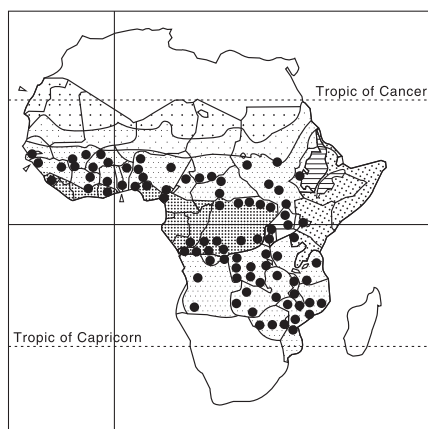
*Grossera vignei*



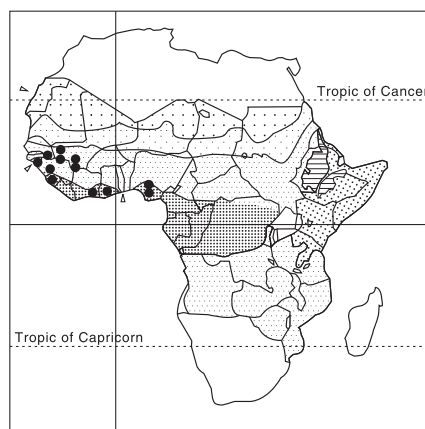
*Hamilcoa zenkeri*



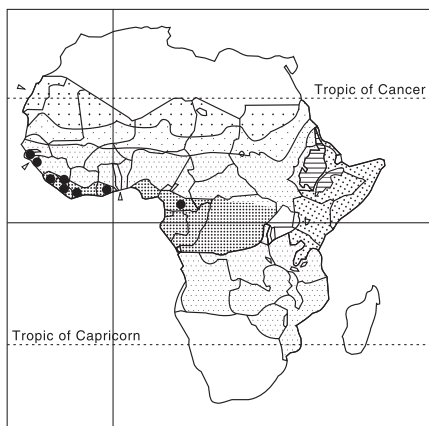
*Heywoodia lucens*



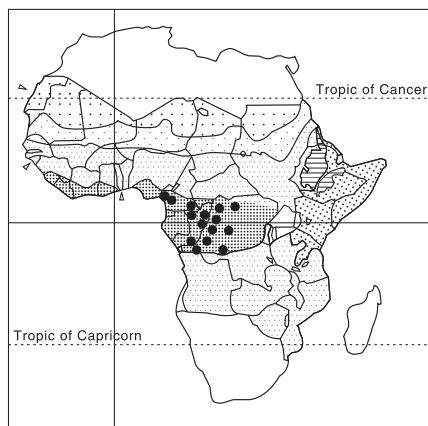
*Hymenocardia acida*



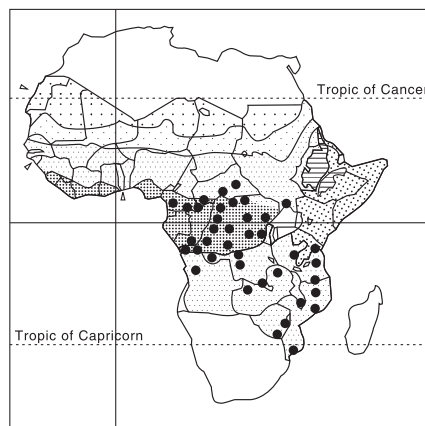
*Hymenocardia heudelotii*



*Hymenocardia lyrata*



*Hymenocardia ripicola*



*Hymenocardia ulmoides*

## JATROPHA

**J. euarguta** M. G. Gilbert & Thulin

Rather untidy shrub to 2 m tall; bark purplish grey; twigs brownish or purplish-brown.

Fairly dense deciduous bushland on limestone slopes; 400-450 m alt.

Very near *J. rivae*.

May well occur also in Somalia and Ethiopia.

**J. gallabatensis** Schweinf.

Stems leafy from the base, subsimple, terete, subtrichotomously branched at the apex, erect, to 1 m high, arising from a branched tuber or thick woody rhizome dividing into long branches spreading horizontally.

Dry savanna; ± 1000 m alt.

Similar to *J. aethiopica*.

**J. glauca** Vahl var. **glauca**; icon.: Euphorbia J. 7: 157, 1991.

syn.: *J. ricinifolia* Fenzl ex Baill.; *J. lobata* Müll. Arg. var. *richardiana* Müll. Arg.; *J. palmatifida* Bak.; *J. phillipsiae* Rendle; *J. brockmannii* Hutch. (excl. var. *leiosepala* Chiov. = *J. spicata*).

Shrublet 15-40(-100) cm tall; stem thick-based, little branched.

Very open *Acacia* bushland, extending into semi-desert conditions, on lava and limestone; depression on plateau and flooded plains; rocky ground in dry short grass savanna of hills; *Acacia-Commiphora* bushland; 0-1000 m alt.

Egypt; Yemen, Saudi Arabia.

Little-known in cultivation.

**J. hildebrandtii** Pax

Shrub to 3,5 m tall, but commonly not exceeding 2 m, sometimes shrublet 45-60 cm; stem somewhat fleshy.

Dry sand; established dunes in open coastal bushland; rocky slopes and rock outcrops in deciduous bushland; 0-440 m alt.

Comoro Islands.

Comprises 2 vars: – var. **hildebrandtii** (syn.: *J. pseudoglandulifera* Pax var. *zanguebarica* Hutch.); – var. **torrentis-lugardi** Radcl.-Sm.

**J. hirsuta** Hochst. ex Krauss var. **hirsuta**

Perennial herb to 30 cm tall with usually simple stems, arising from a stout woody rootstock.

Fallow land.

S. Africa.

**J. horizontalis** M. G. Gilbert

Semi-prostrate shrublet up to 10(-15) cm tall and to 100 cm wide with a very deep taproot.

Open low *Acacia-Commiphora-Harmsia* bushland on thin soil overlying limestone; 1250-1500 m alt.

**J. humifusa** Thulin

Prostrate shrublet forming clumps to ± 30 cm Ø.

Dunes and coastal plains on sand with *J. hypogyna*, *J. pelargonifolia*, *Justicia ornatopila*, *Cordia somaliensis*; 20-150 m alt.

## JATROPHA

**J. hypogyna** Radcl.-Sm. & Thulin

Shrublet to 40 cm tall.

Undulating white sand dunes with *Cordia somaliensis*; 10-40 m alt.

**J. inaequispina** Thulin

Shrublet to 25 cm tall; only one fruit known.

Open low *Acacia-Commiphora* bushland on limestone with pockets of sand; 20-210 m alt.

**J. kamerunica** Pax & K. Hoffm.

Erect herb, sometimes monoecious, with herbaceous subsimple stem 30-100 cm tall and a large carrot-like rhizome, 15-20 cm long, 5 cm Ø.

Wooded sandy savanna; 300-350 m alt.

Comprises 3 vars.

**J. latifolia** Pax var. **subeglandulosa** Radcl.-Sm.

Perennial herb to 1 m tall with usually simple stems arising from a stout woody rootstock.

Wooded grassland.

S. Africa.

**J. loristipula** Radcl.-Sm.

Erect branched perennial herb to 30 cm tall, perhaps arising from a tuberous rootstock; mature seed unknown.

*Colophospermum mopane-Combretum* woodland; 305 m alt.

**J. macrophylla** Pax & K. Hoffm.

Erect, perennial herb to 1 m tall, arising from a massive reddish rootstock ± 30 cm long.

Dry river valleys in mopane woodland; dry lake shore vegetation; hillside mixed deciduous woodland; 110-1067 m alt.

**J. marmorata** Thulin; Nord. J. Bot. 22: 429, 2003.

Shrublet with slender ascending stems 30 cm tall; young stems pale brown, sulcate, glabrous except for woolly growth points and with numerous dot-like incrustations; older ones whitish, lenticellate; leaves mostly clustered on short shoots.

Open plain with low bushland on shallow soil over limestone; 150 m alt.

Know only from the type (Thulin & al. 10530) collected in 2001. – A sterile collection (Gillett & Beckett 23554) from Nugaal Region at 930 m alt. could represent this species.

Resembling *J. nogalensis* and *J. inaequispina* (*J. marmorata* would key out here in Fl. Somal. 1: 292-301, 1993) from the same area.

**J. melanosperma** Pax

Monoecious herb with stem ± 45 cm tall.

Ecology unknown.

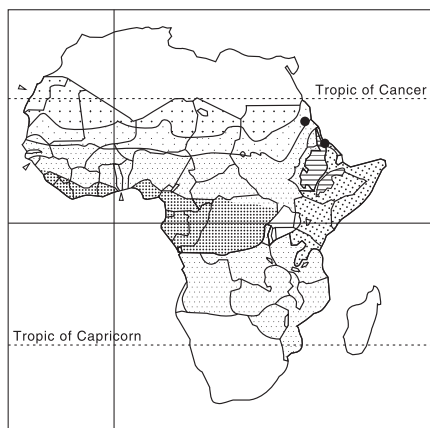
**J. microdonta** Radcl.-Sm.

Shrub to 60 cm tall.

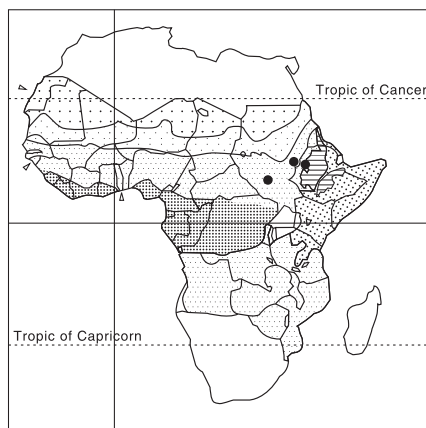
On rocky basement complex; dry, shallow stony soil amongst grass in dense *Acacia* and mixed deciduous bushland; 1220-1550 m alt.

Near *J. setifera* Hutch. and *J. zeyheri* Sond., both from S. Africa.

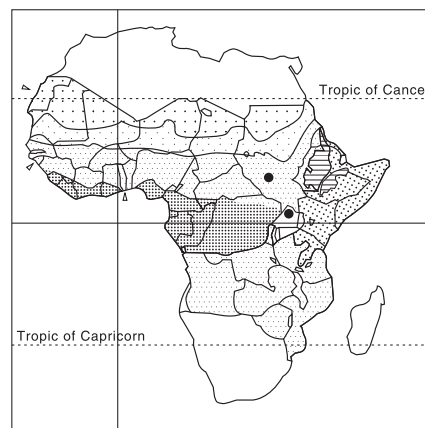




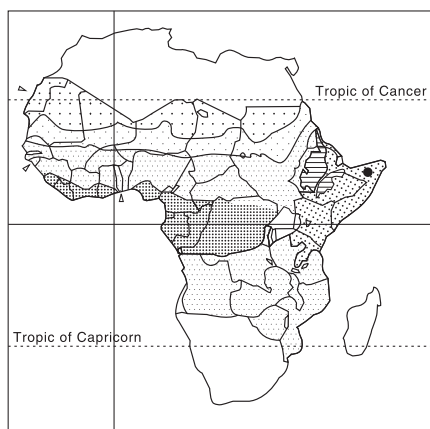
*Jatropha aceroides*



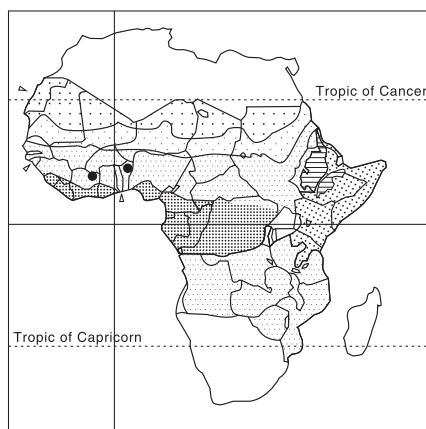
*Jatropha aethiopica*



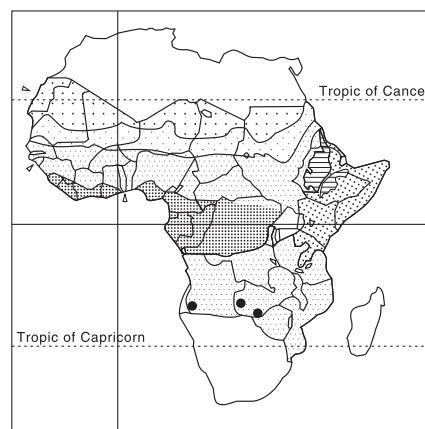
*Jatropha afrotuberosa*



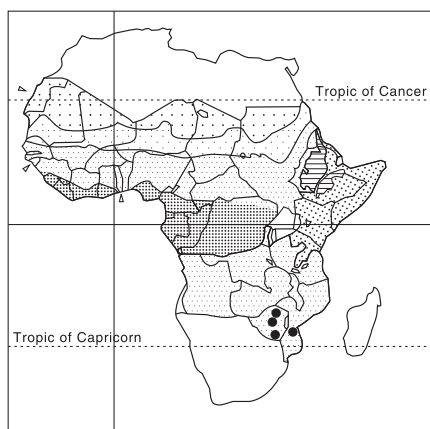
*Jatropha aspleniifolia*



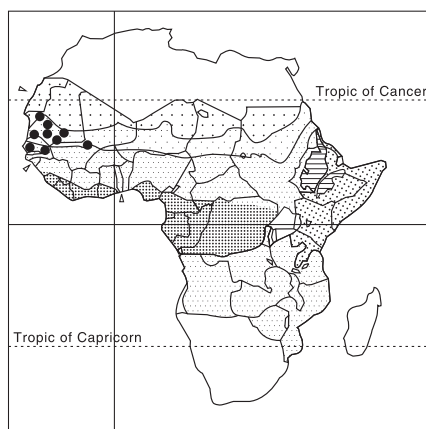
*Jatropha atacorensis*



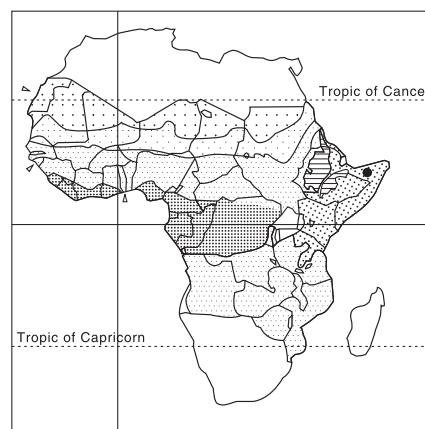
*Jatropha baumii*



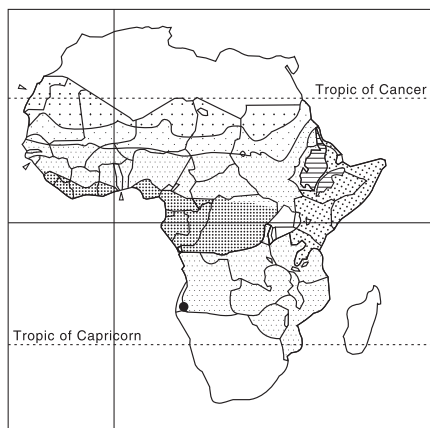
*Jatropha campestris*



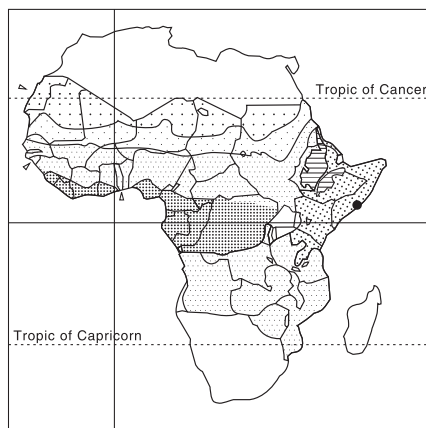
*Jatropha chevalieri*



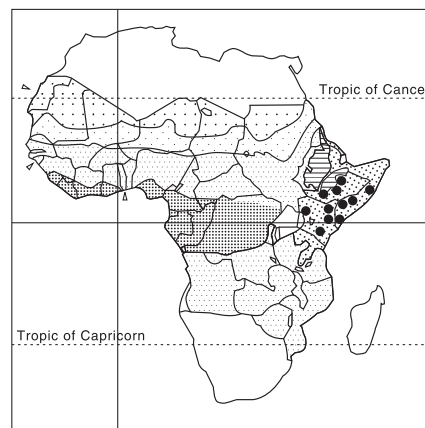
*Jatropha collina*



*Jatropha confusa*



*Jatropha crinita*



*Jatropha dichtar*

## JATROPHA

**J. miskatensis** Thulin; Nord. J. Bot. 22: 427, 2003; icon.: o.c.: 428.

Shrublet with decumbent or ascending, slender stems to c. 40 cm long, pale brown or purplish when young, older ones with greyish bark, lenticellate; leaves sometimes clustered on short shoots.

Open limestone slopes, locally common; 1340-1620 m alt.

Closely related to *J. spinosa*.

**J. mollis** Pax

Shrub with rather whip-like slightly fleshy branches to 1 m tall. Sandy soil near watercourses in *Acacia-Commiphora* bushland; 90 m alt.

**J. monroi** S. Moore

Sparingly branched, erect, perennial herb to 10 cm tall, probably arising from a tuberous rootstock; mature fruit and seeds unknown.

Ecology unknown.

**J. neriifolia** Müll. Arg.

Stem ± 30 cm tall arising from a woody base.

Laterite.

**J. nogalensis** Chiov.

Shrublet to 20 cm tall.

Semi-desert plains or hillsides, usually on gypsum; 360-950 m alt.

**J. obbiadensis** Chiov.

Shrublet to 40 cm tall; stems arising from a tuberous rootstock.

Coastal dunes; 10-70 m alt.

**J. oblanceolata** Radcl.-Sm.

Shrub to 1,2 m tall with long and short shoots; mature seed unknown.

Light sandy soil in *Acacia-Commiphora* bushland; 290 m alt.

**J. pachyrrhiza** Radcl.-Sm.

Erect perennial herb to 20 cm tall with stems arising from a tuber to 10 × 3 cm.

Dry sandy *Azelia*, *Brachystegia* bush; 1067 m alt.

**J. paradoxa** (Chiov.) Chiov.

Spreading shrublet to 30 cm tall from a tuberous rootstock.

*Acacia-Commiphora* bushland, usually on sand; 100-180 m alt.

**J. pelargoniifolia** Courbon; Euphorbia J. 7: 157, 158, 1991.

syn.: *Croton villosus* Forssk. (syn. of var. **pelargoniifolia**).

Shrub or shrublet ± 0,2-2 m tall.

*Acacia-Commiphora* bushland in sandy or rocky places; also on dunes; stony soils; red sand; gritty basement complex soil in clearings in dense mixed thickets; sandy soil on weathered sandstone in *Euphorbia*, *Commiphora* dwarf bushland; dry hilly savanna; 0-770 m alt.

Yemen, Dhofar; not in Egypt.

Comprises 3 vars.

## JATROPHA

**J. prunifolia** Pax

Woody herb or subshrub with usually simple, erect stems to 1 m tall, arising from a tuberous woody rootstock; older stems somewhat fleshy.

Dry coastal forest, thicket, bushland; rock outcrops; seasonally damp sandy places; occasional among limestone rubble; stony hill in miombo woodland; (20-)60-350(-1050) m alt.

**J. rivae** Pax

Densely branched shrub to 2 m tall, with usually ± purplish-brown young twigs.

Locally codominant in *Acacia-Commiphora* bushland on alluvial soils and deep sands; gypsaceous soils; stony places on limestone; *Acacia-Commiphora-Boswellia* bushland; 0-1150 m alt.

Comprises 3 subspp.

**J. robecchii** Pax

Shrub to ± 1,5 m tall, sometimes flowering when leafless.

Semi-desert bushland on limestone or gypsum; 50-1200 m alt.

**J. scaposa** Radcl.-Sm.

Erect scapose perennial herb to 36 cm tall; leafy stems and flowering scapes usually arising separately from a stout woody rootstock; mature seeds unknown.

Coastal plain in *Brachystegia*, *Isobertinia*, *Combretum*, *Pterocarpus* woodland in orange sandy soil; roadsides.

**J. schlechteri** Pax

Semi-succulent perennial herb to 40 cm tall; stems simple or sparingly branched, arising from a stout rootstock with red flesh.

Hard packed dark brown soil in heavily grazed grassland; after burning in *Themeda* grassland; dry scrub; *Acacia*, *Combretum* woodland; dry sandveld with *Colophospermum mopane*, *Grewia*, *Terminalia*, *Commiphora*; seasonal pans in deep black basalt soils; 565 m alt.

S. Africa; perhaps in Botswana.

Comprises 2 subspp.

**J. schweinfurthii** Pax

Somewhat fleshy perennial herb with simple or slightly branched stems to 60 cm tall arising from a large tuberous woody rootstock; stems somewhat scaly at the base, decumbent or erect.

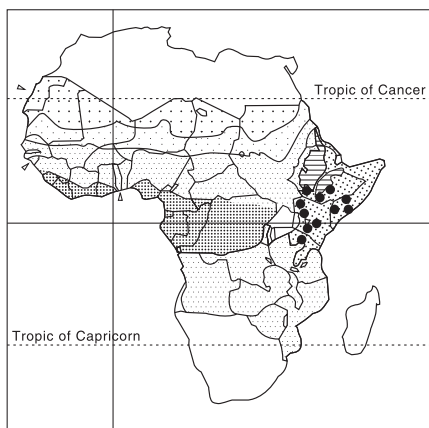
Wooded grassland; old cultivations; dry, stony soil on hilltops, in savanna; *Combretum apiculatum* bushland; *Brachystegia boehmii* escarpment woodland; soils with high copper oxide value; locally frequent in shallow damp soil over limestone in *Acacia*, *Combretum ghasalense* woodlands; 800-1600 m alt.

Comprises 3 subspp.

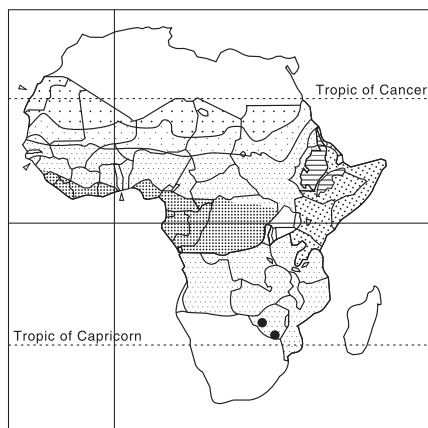
**J. seineri** Pax

syn.: *J. humilis* N. E. Br.

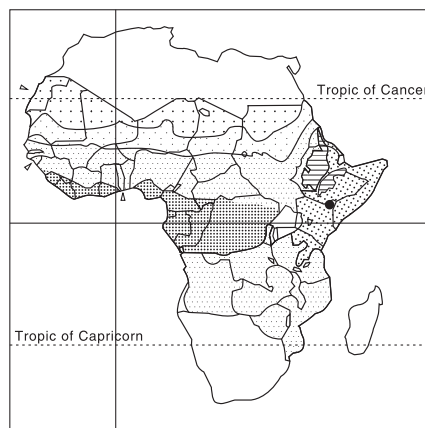
Multistemmed suffrutex with prostrate or straggling stems 12-42 cm long, branching from a scaly underground stem which arises from a tuber; tuber to 10 cm Ø and resembling a coconut in shape and size, lying 15-70 cm below ground level, with red flesh.



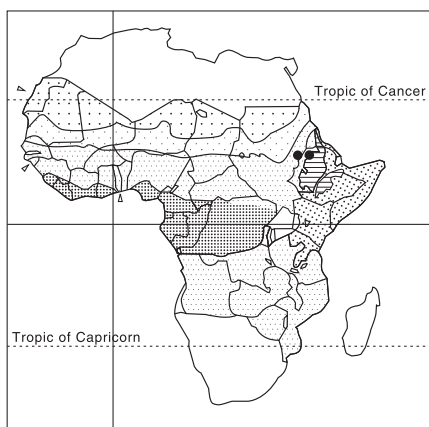
*Jatropha ellenbeckii*



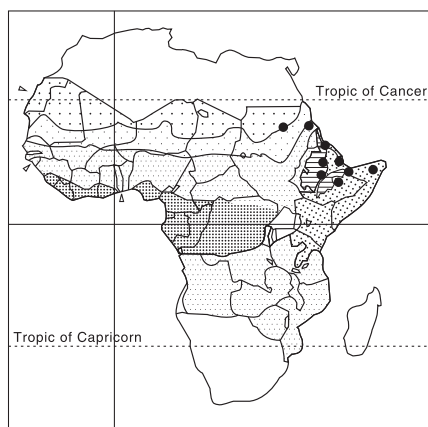
*Jatropha erythropoda*



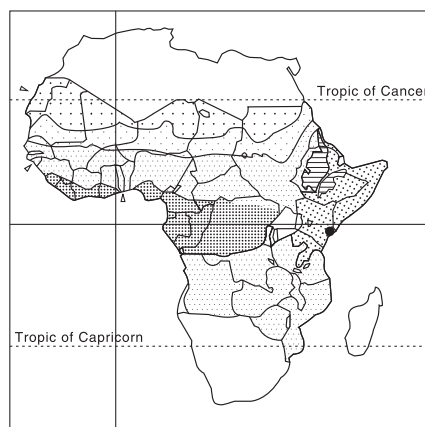
*Jatropha euarguta*



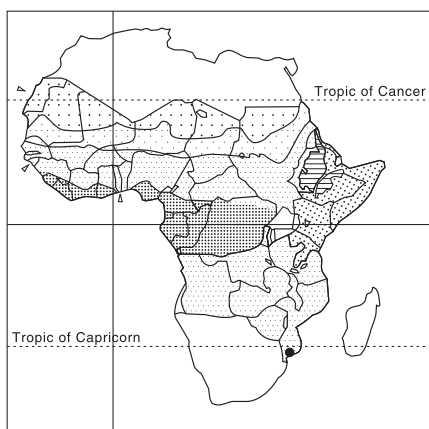
*Jatropha gallabatensis*



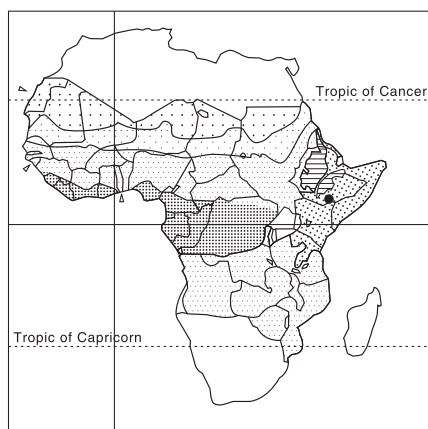
*Jatropha glauca*



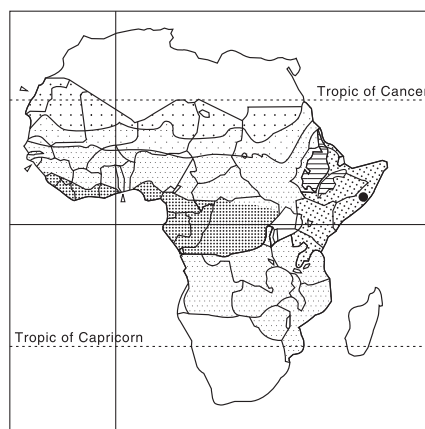
*Jatropha hildebrandtii*



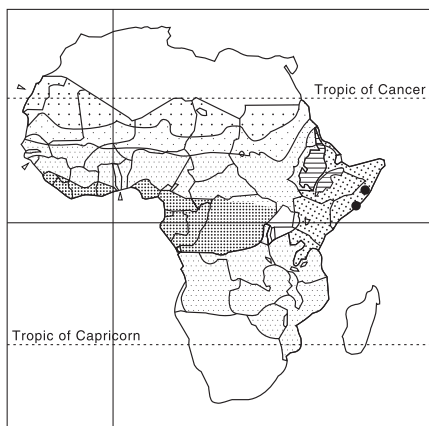
*Jatropha hirsuta*



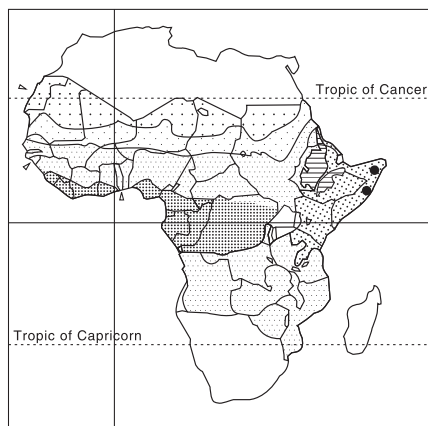
*Jatropha horizontalis*



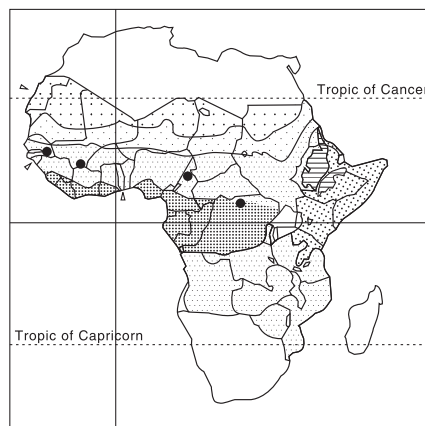
*Jatropha humifusa*



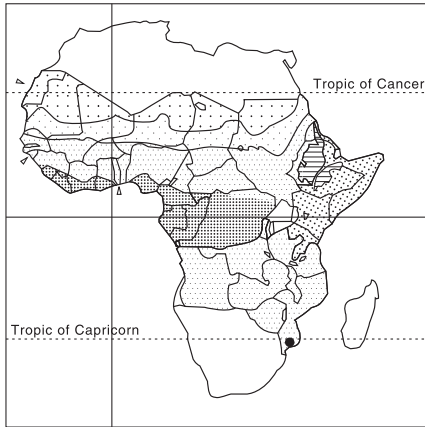
*Jatropha hypogyna*



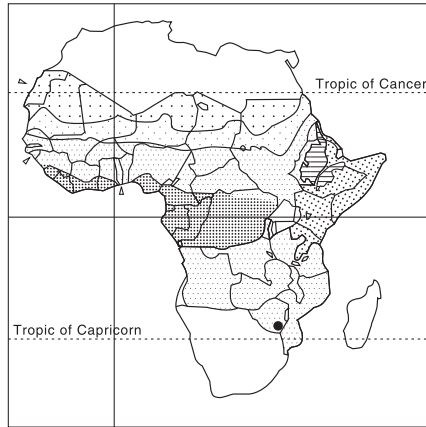
*Jatropha inaequispina*



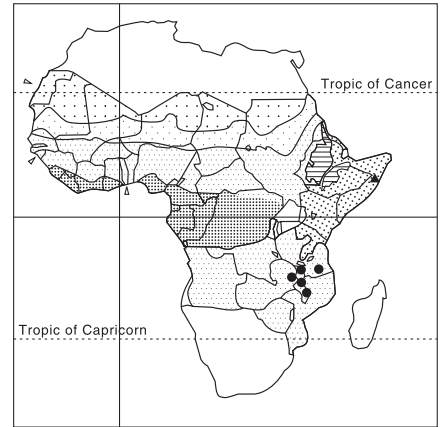
*Jatropha kamerunica*



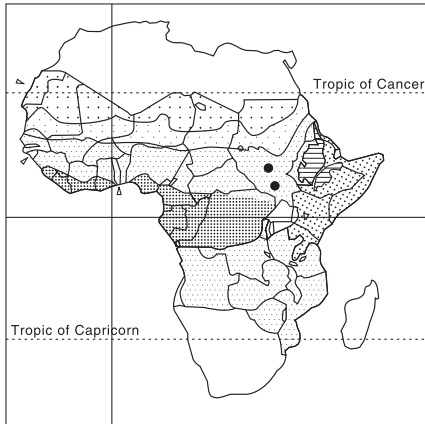
*Jatropha latifolia*



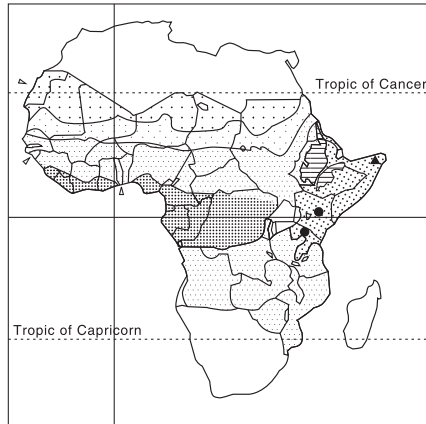
*Jatropha loristipula*



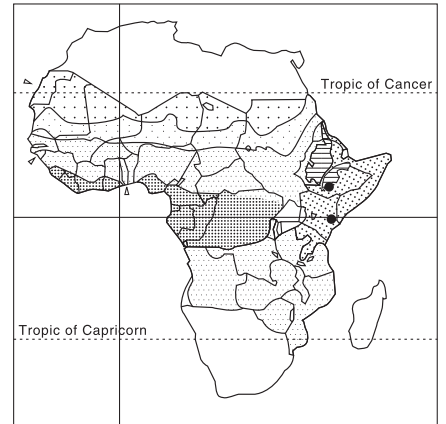
*Jatropha macrophylla* ●  
*Jatropha marmorata* ▲



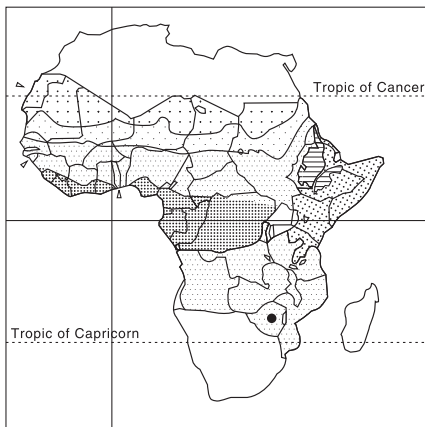
*Jatropha melanosperma*



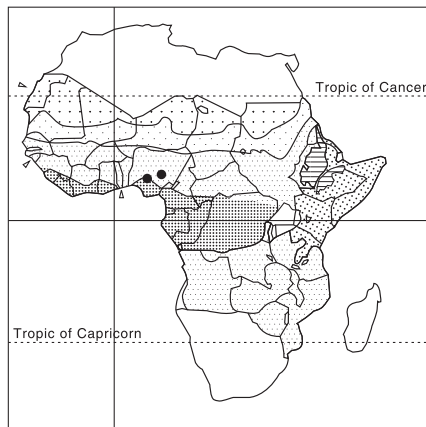
*Jatropha microdonta* ●  
*Jatropha miscatensis* ▲



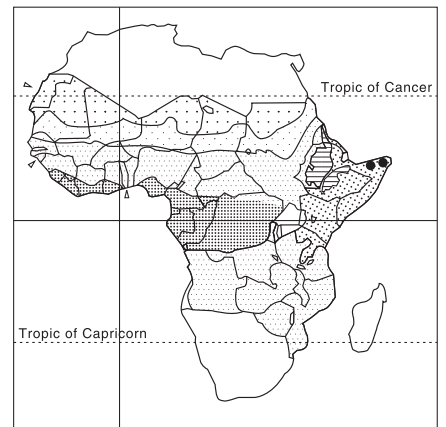
*Jatropha mollis*



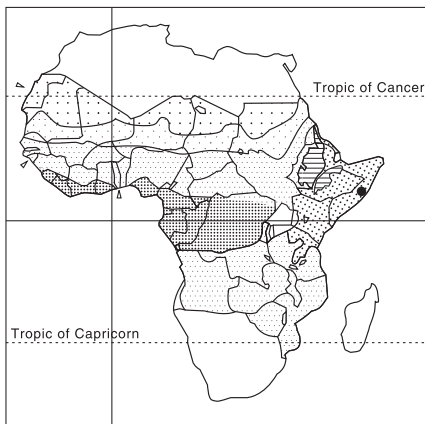
*Jatropha monroi*



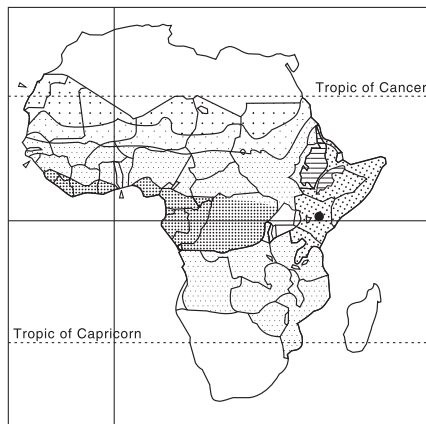
*Jatropha neriifolia*



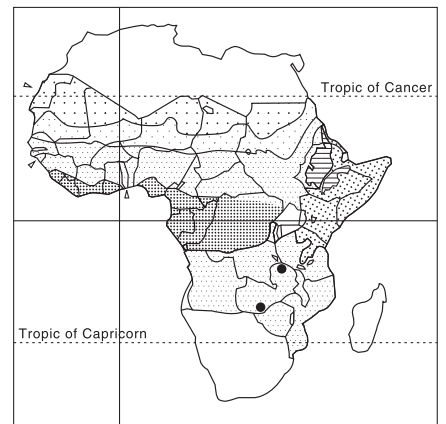
*Jatropha nogalensis*



*Jatropha obbiadensis*

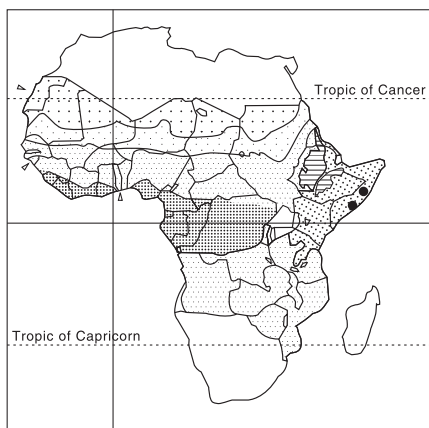


*Jatropha oblanceolata*

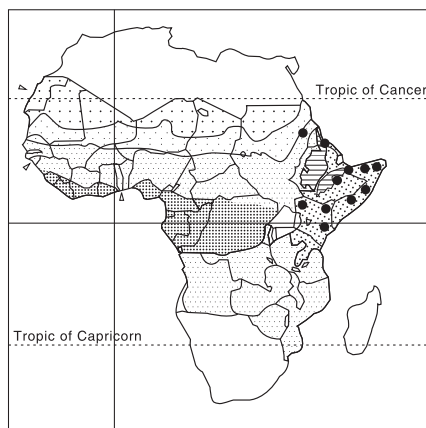


*Jatropha pachyrrhiza*

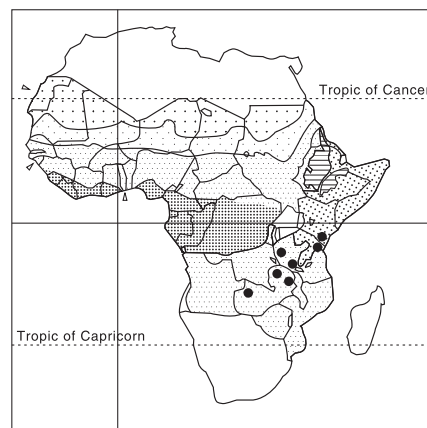




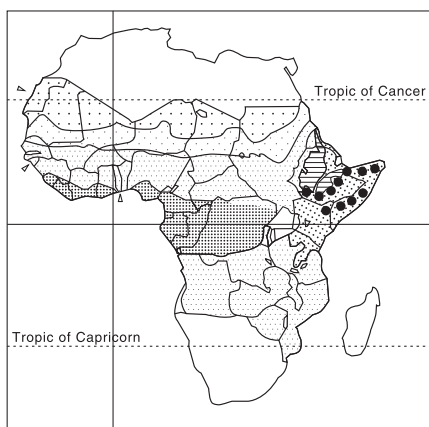
*Jatropha paradoxa*



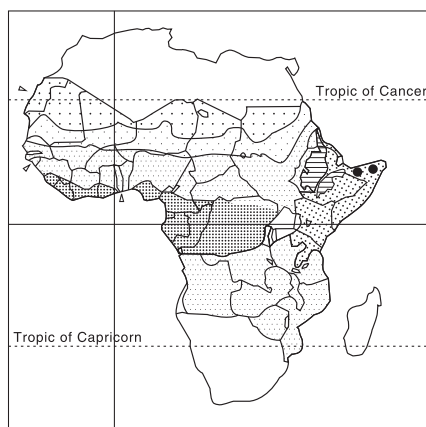
*Jatropha pelargoniifolia*



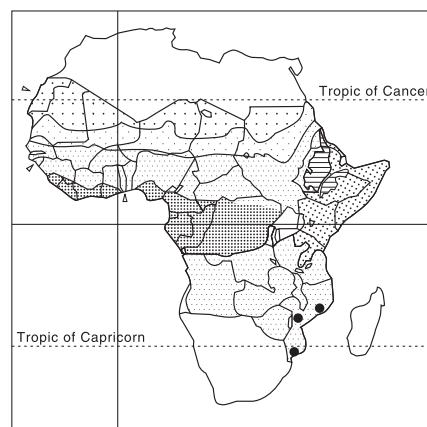
*Jatropha prunifolia*



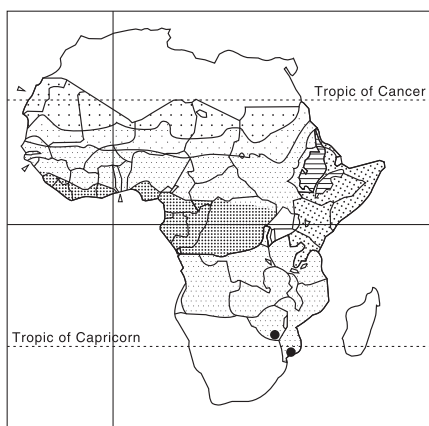
*Jatropha rivae*



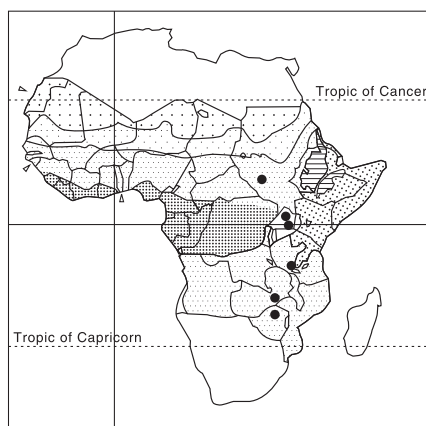
*Jatropha robecchii*



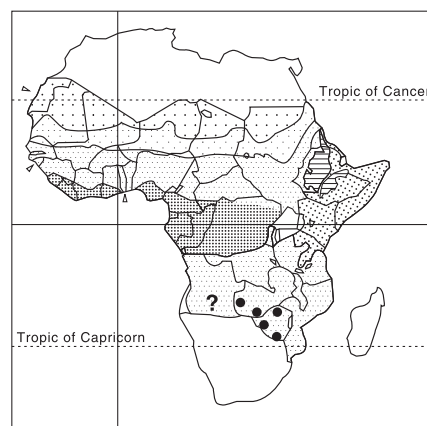
*Jatropha scaposa*



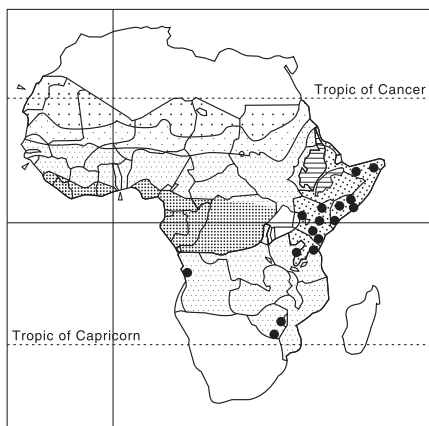
*Jatropha schlechteri*



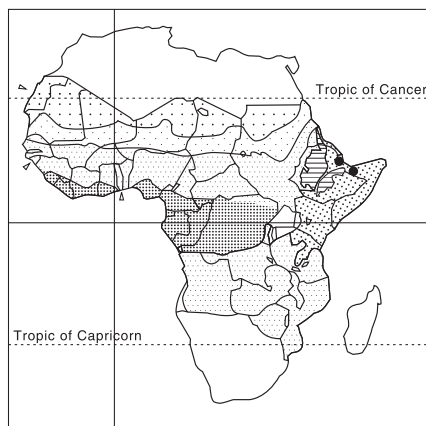
*Jatropha schweinfurthii*



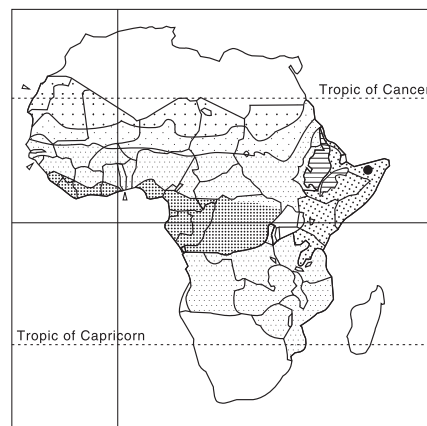
*Jatropha seineri*



*Jatropha spicata*



*Jatropha spinosa*



*Jatropha spinosissima*

## JATROPHA SEINERI

Kalahari sand woodland; grassland with *Lonchocarpus*, *Grewia* shrubs and scattered trees on Kalahari sand; basaltic soil and clayey loam; heavy red soil in wooded grassland; 915-1002 m alt. – Occurs in a fragmented and extremely arable habitat (var. **tomentella**).

Caprivi Strip; Botswana; Namibia.

Comprises 2 vars.: – var. **seineri**; – var. **tomentella** Radcl.-Sm. (syn.: ? *J. decumbens* Pax & K. Hoffm.).

**J. spicata** Pax; Euphorbia J. 8: 148, 1992.

syn.: ? *J. somalensis* Pax (type destroyed in which flowers were lacking); *J. brockmanii* Hutch. var. *lejosepala* Chiov.; *J. trifida* Chiov.

Shrublet or subshrub 0,5-2 m tall; stems arising from a rather swollen almost tuberous base.

Bushland, in rocky places or on clay or silt; shallow soil on basement complex rocky hillsides; red sandy soil in deciduous bushland and thicket; poorly drained alkaline sandy clay in seasonally wet grassland; hot, dry river valleys; rocky basaltic hills; shallow gravelly soils in sparse mopane; *Terminalia*, *Commiphora*, *Kirkia* woodland or scrub; riverine mopane; *Acacia* woodlands on sand; in shade in *Acacia-Commiphora* bushland; 10-1200 m alt.

Considerable variation in the foliage.

S. Africa; Ethiopia?

Very close to *J. glandulifera* Roxb. from S India and Sri Lanka.

**J. spinosa** Vahl; Euphorbia J. 7: 159, 1991.

syn.: *Croton spinosus* sensu Forssk. 1775, non L. 1753; *Jatropha aculeata* F. G. Dietr.

Shrub or shrublet 0,3-2 m tall.

Open bushland, on rocky slopes; 480-930 m alt.

S Arabia.

Comprises 2 vars.: – var. **spinosa**; – var. **somalensis** Pax [syn.: *J. sp. nov. aff. J. rivae* Pax and *J. ferox* Pax in Ann. Ist. Bot. Roma 6(3): 185, 1897].

**J. spinosissima** Thulin

Shrublet ± 30 cm tall; female flowers and fruits unknown.

Rocky hillslope in broken country of gypseous limestone; ± 1300 m alt.; *Reseda sessilifolia*, another local endemic, occurs in the same locality.

**J. stuhlmannii** Pax

Perennial herb or subshrub, slender and sparsely branched, to -1-2 m in height; stems arising from an underground rhizome ± 3 cm Ø.

Sandy soil and black clay soil in grassland; open coastal bushland; open dunes; sand; rocky places; 0-270 m alt.

Comprises 2 subspp.

**J. subaequiloba** Radcl.-Sm.

Shrub to 4 m tall; female flowers unknown.

Coastal dune forest in sandy soil and clay loam; also freshwater marshland; 0-5 m alt.

## JATROPHA

**J. tenuicaulis** Thulin

Shrublet with ascending slender stems, to 0,4 m long.

*Acacia-Commiphora* bushland on limestone with *Bottegoa insignis*, *Dalbergia microphylla*, *Hildegardia gillettii*, *Sterculia rynchocarpa*, *Delonix elata*; 260-290 m alt.

**J. tropaeolifolia** Pax

Erect succulent shrub or subshrub 0,6-3 m tall; stem simple, ± 2,5 cm Ø, arising from tuberous roots; ripe seeds unknown.

*Acacia-Commiphora* bushland on gravelly soil; 90-750 m alt.

**J. variabilis** Radcl.-Sm.

Shrublet or subshrub to 0,5 m tall; stems arising from a thick rootstock; ripe seeds unknown.

Semi-evergreen bushland on limestone rock slopes with *Buxus hildebrandtii*, *Tarchonanthus camphoratus*; (400-)915-1585 m alt.

**J. variifolia** Pax – Icon.: Fl. Zambes. 9(4): 263, 1996.

syn.: *J. heterophylla* Pax 1899, non Steud. 1840, nec Heyne ex Hook. f. 1887.

A 1-2-stemmed, sparingly branched, somewhat succulent shrub or subshrub to 2 m tall, with a thickened rootstock.

Dense mixed dry deciduous woodland and thicket; wooded grassland on dry stony soils.

S. Africa (± 1000 m alt. Transvaal).

**J. velutina** Pax & K. Hoffm.

Perennial herb or subshrub to 1,3 m tall; stems somewhat succulent, swollen at the base.

Mixed thicket; *Acacia-Commiphora* bushland; 300-350 m alt.

## SYNONYMS:

*Jatropha aculeata* F. G. Dietr. = **Jatropha spinosa**

*brockmanii* Hutch. = **J. glauca**

*brockmanii* var. *lejosepala* Chiov. = **J. spicata**

*carpinifolia* Pax = **Mildbraedia**

*decumbens* Pax & K. Hoffm. = **Jatropha ? seineri** var. **tomentella**

*fallax* Pax = **Mildbraedia carpinifolia**

*heterophylla* Pax 1899 = **Jatropha variifolia**

*humilis* N. E. Br. = **J. seineri**

*lobata* Müll. Arg. subsp. *aceroides* Pax & K. Hoffm. = **J. aceroides**

*lobata* Müll. Arg. var. *richardiana* Müll. Arg. = **J. glauca**

*marginata* Chiov. = **J. crinita**

*palmatifida* Bak. = **J. glauca**

*phillipsiae* Rendle = **J. glauca**

*pseudoglandulifera* Pax var. *zanguebarica* Hutch. = **J. hildebrandtii** var. **hildebrandtii**

*pungens* Forssk. = **Tragia**

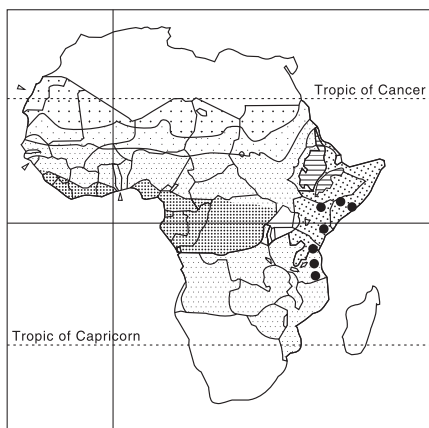
*ricinifolia* Fenzl ex Baill. = **Jatropha glauca**

*rosea* Radcl.-Sm. = **J. dichter**

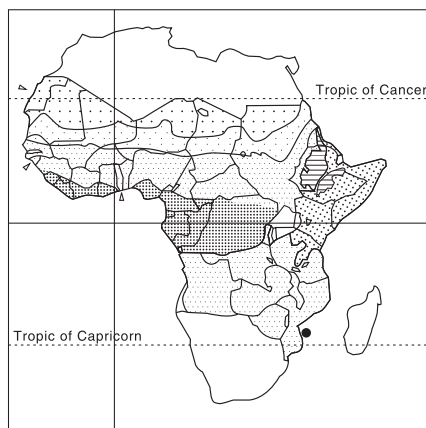
*somalensis* Pax = **J. spicata**

*tetracantha* Chiov. = **J. ellenbeckii**

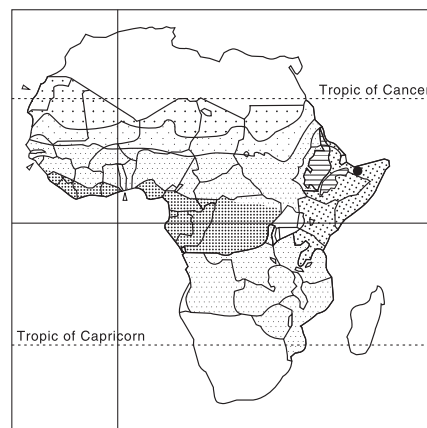
*trifida* Chiov. = **J. spicata**



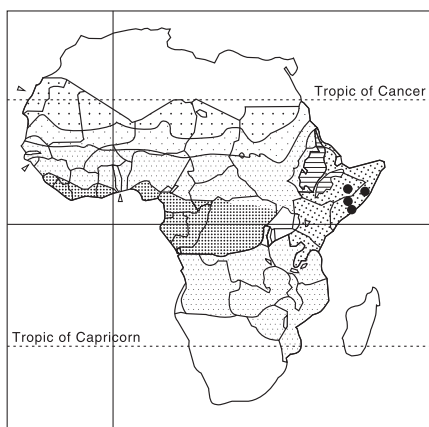
*Jatropha stuhlmannii*



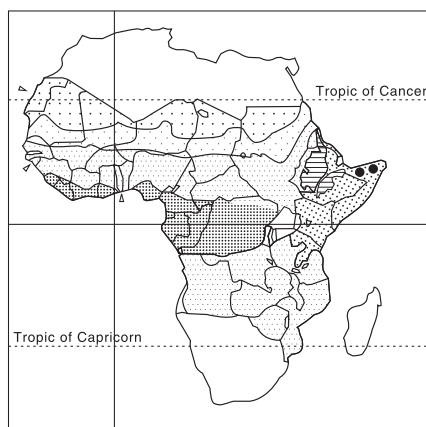
*Jatropha subaequiloba*



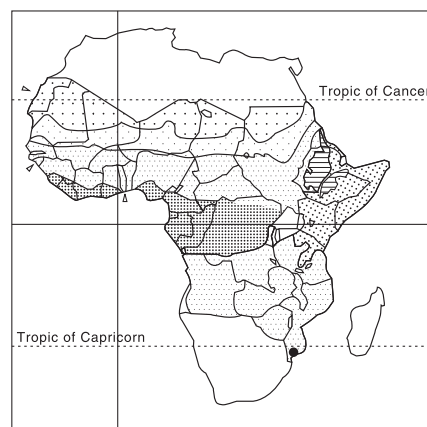
*Jatropha tenuicaulis*



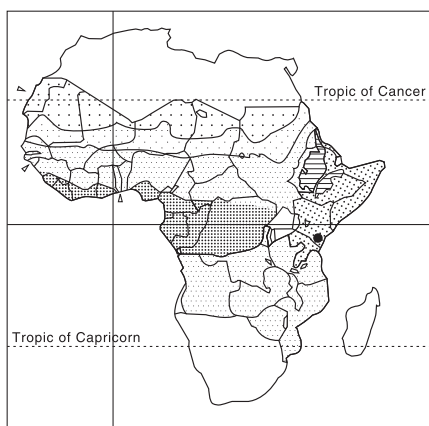
*Jatropha tropaeolifolia*



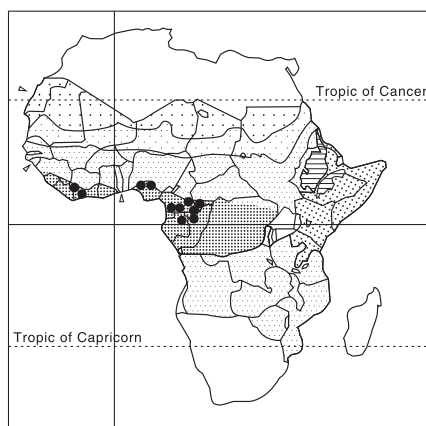
*Jatropha variabilis*



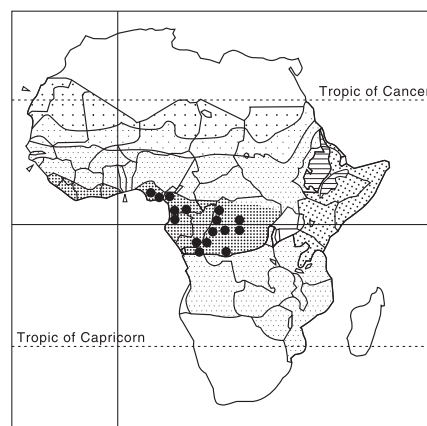
*Jatropha variifolia*



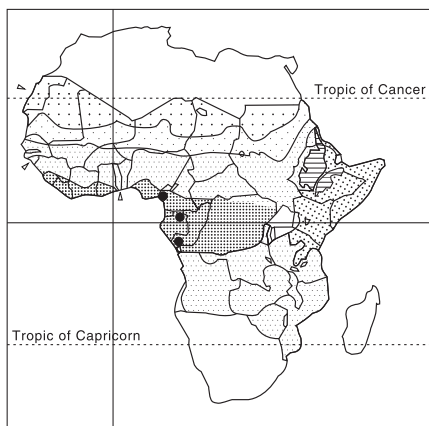
*Jatropha velutina*



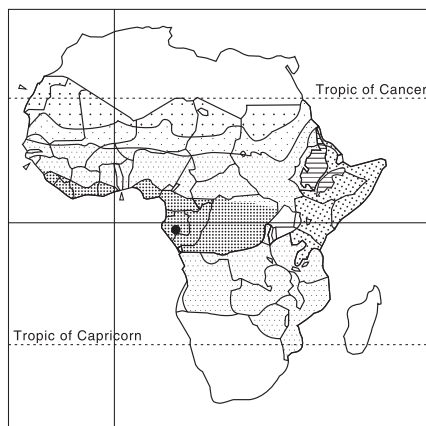
*Keayodendron bridelioides*



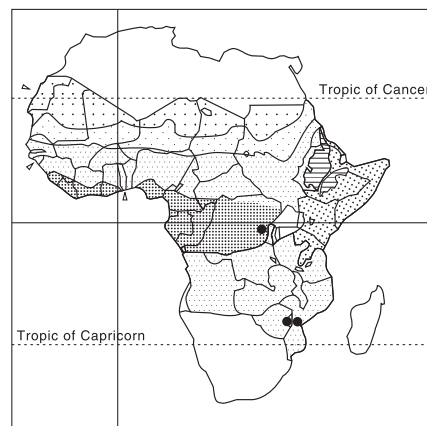
*Klaineanthus gaboniae*



*Leeuwenbergia africana*



*Leeuwenbergia letestui*



*Leidesia procumbens*

**KEAYODENDRON / 1**

(In Enumération 1: 124, 1991, under *Flacourtiaceae*).

**Keayodendron bridelioides** Léandri, *excl.* specim. Zenker 4834 (= ? *Cleistanthus*).

Tree to 40 m in height and 3 m in girth; bole very straight and cylindrical, with the first drooping branches  $\pm$  20 m from the ground.

Prefers the drier zones, i.e. the semi-deciduous parts of the lowland rain-forest.

The illustration in Hawthorne, Field Guide Forest Trees Ghana: 84, fig. 374, 1990, must be regarded as excluding the fruits.

Collected in 3 well separated areas.

**KLAINANTHUS / 1**

**Klaineanthus gaboniae** Pierre [non ex Prain, *K. gabonii*, fide Breteler in Adansonia, Sér. 3, 27: 329, 2005]; icon.: Breteler o.c.: 330.

Tree 5-25 m; bole 15-55(-75-120?) cm  $\emptyset$ , sometimes grooved or with buttresses at the base or with stilt-roots.

Swampy rain-forest or periodically flooded; riverine or gallery forest.

São Tomé.

**LEEUVENBERGIA / 2**

Male flowers unknown in 1 species.

**Leeuwenbergia africana** Letouzey & N. Hallé

Tree to 40 m, with cylindrical bole  $\pm$ 80 cm  $\emptyset$ , dilated only at the base, furrowed, transversely grooved; main branches subverticillate, widely spreading; crown densely leafy; male flowers unknown.

Forest; 50-800 m alt.

**L. letestui** Letouzey & N. Hallé

Tree (or shrub?); fruit unknown?

Forest.

**LEIDESIA / 1**

**Leidesia procumbens** (L.) Prain; Icon.: Fl. Zambes. 9(4): 160, 1996.

bas.: *Mercurialis procumbens* L.

syn.: *M. capensis* Spreng. ex Eckl. & Zeyh., nom. tantum; *Leidesia capensis* Müll. Arg. *excl.* syn. *Urtica capensis* L. f.

Weak, rather soft diffusely branched annual herb; stems to 30 cm tall or in extent.

Evergreen forest, on damp floor; 1830-1980 m alt.

S. Africa.

**LINGELSHEIMIA / 2**

One species only known from the type.

**Lingelsheimia frutescens** Pax; Bull. Soc. Roy. Bot. Belgique 84: 49, 1951.

Shrub  $\pm$  2-3 m tall with slightly angular branches; flowering branchlets spreading; monoecious; stipules peltate,  $\pm$  0,2 cm, glandulous on the outer face; fruit a dehiscent capsule.

Forest, gallery.

**L. sylvestris** (Radcl.-Sm.) Radcl.- Sm.

bas.: *Aerisilvaea sylvestris* Radcl.-Sm.

Tree to 4 m, with angular branches; monoecious.

Forest with *Drypetes*, *Diospyros*, *Cola*, *Uvariadendron*, *Inhambanella*, *Pandanus*; 450 m alt.

Only known from the type collected in 1987.

## SYNONYMS:

*Aerisilva serrata* Radcl.-Sm. = **Maytenus undata** (*Celastraceae*)

*Lingelsheimia capillipes* Pax = **Drypetes**

*gilgiana* (Pax) Hutch. = **Drypetes**

*longipedicellata* J. Léonard = **Phyllanthus diandrus**

*parvifolia* (Müll. Arg.) Hutch. = **Drypetes**

*tessmanniana* (Pax) Hutch. = **Drypetes**

**MACARANGA / 29**

Often with very large leaves: i.e. petiole  $\pm$  30 cm long and lamina  $\pm$  30  $\times$  30 cm; bole sometimes with very long spines to 20 cm.

Several species insufficiently known. No male flowers known in 3 species (= c. 10%) and no female flowers in 6 (+1?) species (= c. 20%); fruit unknown in 4 species (= c. 14%), no ecology recorded for 5 species (= c. 17%); four species are known only from the type (= c.14%) and another one only from the syntypes.

**Macaranga angolensis** (Müll. Arg.) Müll. Arg., incl. var. *mollis* (Pax) Prain

bas.: *Mappa angolensis* Müll. Arg.

syn.: *Macaranga mollis* Pax; *M. guignardii* Beille; *M. mildbraediana* Pax, non Pax & K. Hoffm.

Climbing shrub or tree to 6(-9) m tall, rarely more, with trunk 2,5-3,7 cm  $\emptyset$ ; trunk and branches beset with blunt spines; plant sometimes quite erect with habit of *Jateorhiza strigosa*.

Forest along lake-shores; dense wooded thickets close to streams; avoiding places once cultivated and afterwards in secondary woods; gallery; 700-1220 m alt.

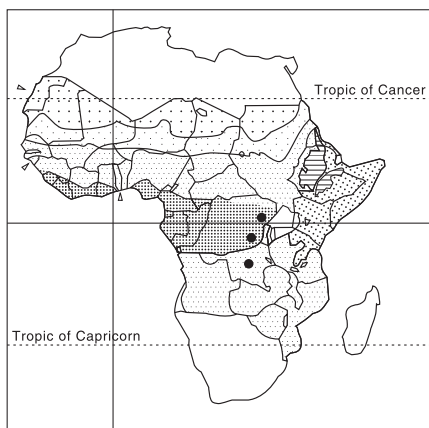
**M. assas** Amougou

Tree to 25-30 m, dioecious; bole 40-60 cm  $\emptyset$  with pneumatophores and ramose stilt-roots to 1 m long; trunk with rather dense spines becoming more and more far apart to the ultimate ramifications.

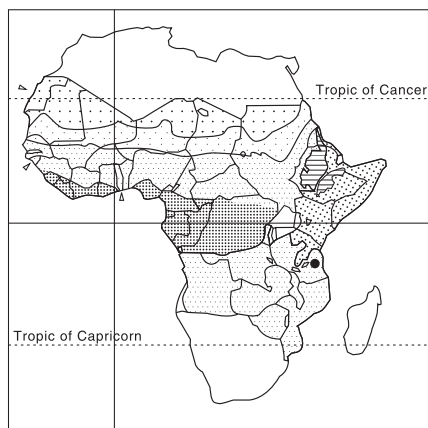
Flooded valley; stream banks; swamp; lake; plant of secondary forest.

In Cameroon (Bindanang, Upper Nyong Valley) the area is the same as that of *Sterculia subviolacea*.

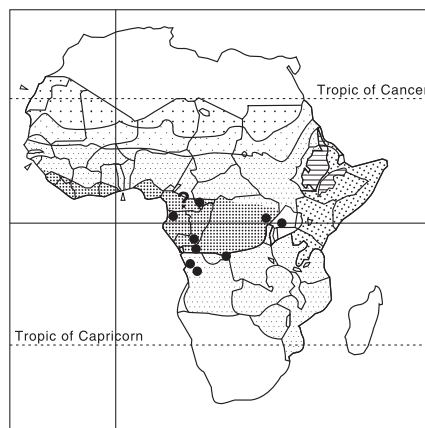




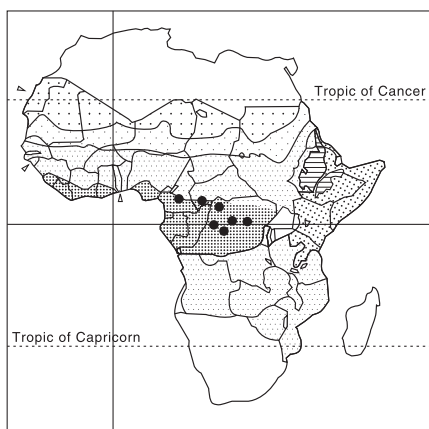
*Lingelsheimia frutescens*



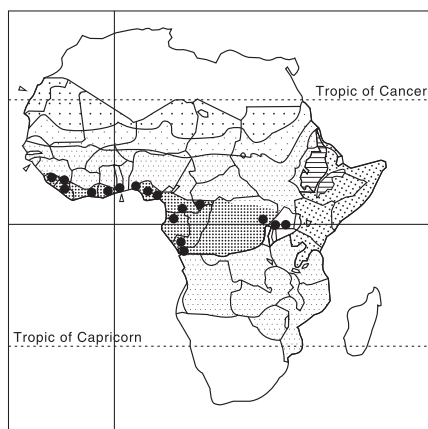
*Lingelsheimia sylvestris*



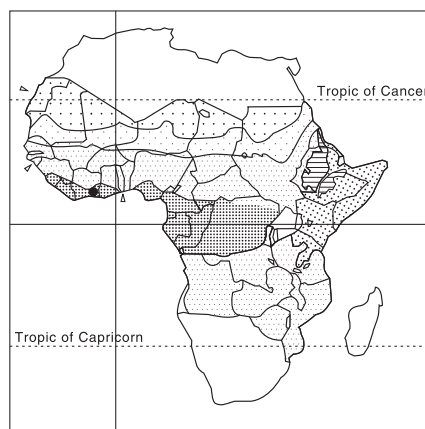
*Macaranga angolensis*



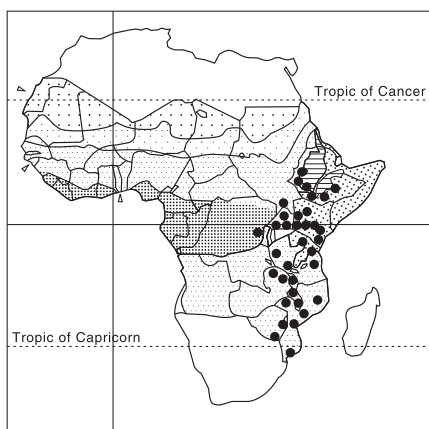
*Macaranga assas*



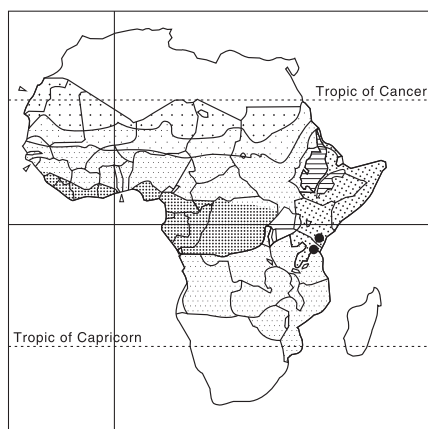
*Macaranga barteri*



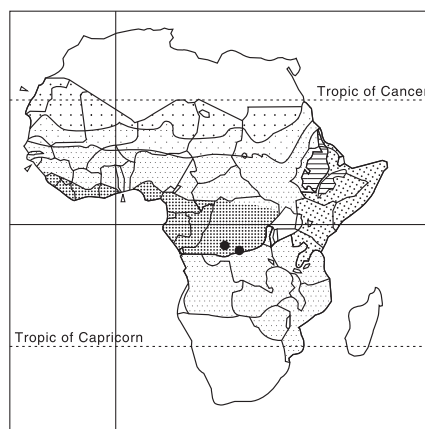
*Macaranga beillei*



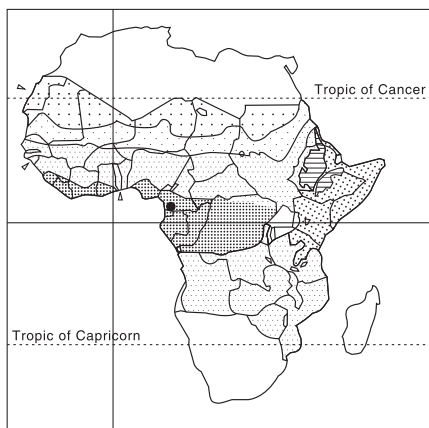
*Macaranga capensis*



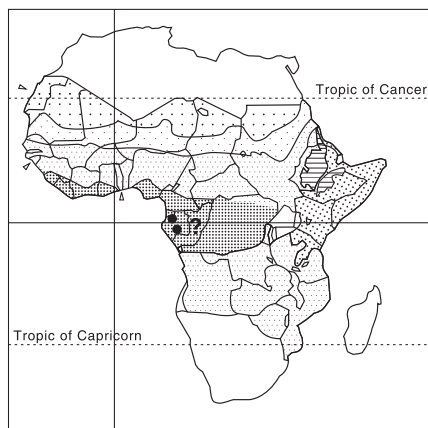
*Macaranga conglomerata*



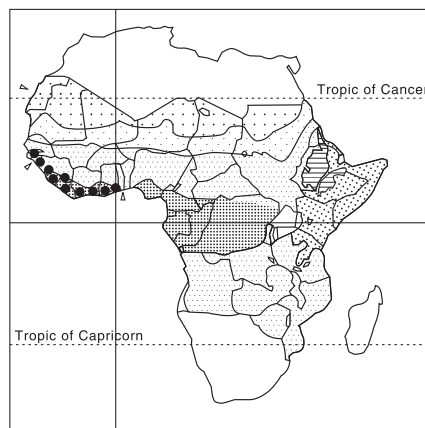
*Macaranga dibeelensis*



*Macaranga ebolwana*



*Macaranga gabunica*



*Macaranga heterophylla*

## MACARANGA

**M. barteri** Müll. Arg.

syn.: *M. heudelotii* Baill. var. *nitida* Beille; *M. rowlandii* Prain

Much-branched evergreen tree 15-37 m, with an open crown; bole  $\pm$  1,5 m in girth, fluted; main branches spreading, ultimate branchlets drooping; twigs not spiny (F.T.E.A.), branchlets armed with spines (F.W.T.A.).

Rain-forest; lakeside forest; secondary regrowth forest; locally common and sometimes dominant.

**M. beillei** Prain

Shrub or tree 3-4,5 m tall.

Forest.

Not in Congo-Brazzaville (= *M. monandra*).

**M. capensis** (Baill.) Sim var. **kilimandscharica** (Pax) Friis & M. G. Gilbert

bas.: *Mappa capensis* Baill.

syn.: *M. nyassae* Pax & K. Hoffm.; *M. mildbraediana* Pax & K. Hoffm., non Pax; *Mallotus capensis* (Baill.) Müll. Arg.; *Macaranga ruwenzorica* Pax; *M. inopinata* Prain; *M. multiglandulosa* Pax & K. Hoffm.; *M. usambarica* Pax & K. Hoffm.

Tree 4,5-18-27 m, often with a pyramidal crown, much branched, the branches ascending, or with a broad, spreading crown; stem  $\pm$  buttressed; trunk and branches with short spines.

Evergreen forest; forest patches in grassland; secondary or disturbed forests; forest margins; riverine and gully forests; woodland on mountain slopes; swamp forest (mushitu) margins; locally common to dominant; regenerating profusely in clear-felled areas; 305-3000 m alt.

**M. conglomerata** Brenan

Tree to 32 m, with a slender trunk  $\pm$  2 m in circumference and a spreading crown, branching from a low level or from up to 9 m.

Evergreen forest; locally common; 1400-2000 m alt.

Local offshoot of the *M. capensis* complex.

**M. dibeelensis** De Wild.

Tree with branches often armed with spines 12-13 mm long; female flowers and fruits unknown.

Ecology unknown.

**M. ebolowana** Pax & K. Hoffm.

Shrub or tree with spiny branches; male flowers unknown.

Ecology unknown.

Near *M. spinosa*.

**M. gabunica** Prain; White & Abernethy, Guide végétation Réserve Lopé: 56, 1996.

Climbing shrub with long, spreading or pendulous branches, unarmed.

Old-road sides in forest.

## MACARANGA

**M. heterophylla** (Müll. Arg.) Müll. Arg.

bas.: *Mappa heterophylla* Müll. Arg.

syn.: *Macaranga quinquelobata* Beille

Shrub or tree, ramose from the base, 3-9 m tall; branches spiny, sometimes sarmentous.

Swampy places; humid secondary formations; mountain ridges or slopes; secondary regrowths; beside rivers; to 1200 m alt.

**M. heudelotii** Baill.

Half-scrambling shrub or tree 5-7,5(-12) m tall with spiny bole and spreading spiny branches.

Humid or swampy secondary regrowths; river banks in rain-forest; marshes.

**M. hurifolia** Beille

syn.: *M. togoensis* Pax

Half-climbing shrub or tree to 9-12 m tall; trunk 60 cm in girth, shortly stilt-rooted at base when old; trunk and branchlets spiny; inflorescences mostly borne on leafless branches.

Secondary forests and other secondary formations.

**M. klaineana** Pierre ex Prain

Climbing shrub; branches sparingly armed with minute spines.

Ecology unknown.

**M. letestui** Pellegr.

Shrub with slender, soft, pendulous branches; female flowers and fruits unknown.

Forest.

Near *M. monandra*, *M. paxii*.

Only known from the type collected in 1908.

**M. longipetiolata** De Wild.

Subshrub? with  $\pm$  spiny branches, with spines to 1 cm long; male flowers unknown.

Ecology unknown.

Near *M. mellifera*, *M. gabunica*.

Only known from the type collected in 1919.

**M. magnistipulosa** Pax

Probably a liane; female flowers and fruit unknown.

Ecology unknown; 450 m alt.

Near *M. angolensis*.

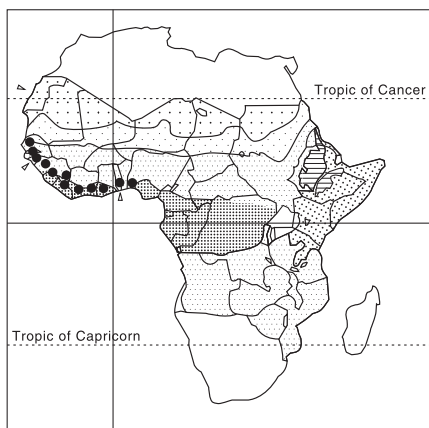
Only known from the type collected in 1908.

**M. mellifera** Prain

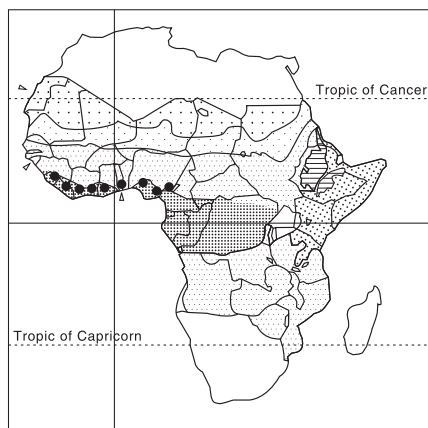
Tree to 18(-30) m, with ascending or spreading branches and a compact crown.

Evergreen rain-forest; forest margins; kloof and gully forest; on granite outcrops; occasionally subdominant; 1100-1890 m alt.

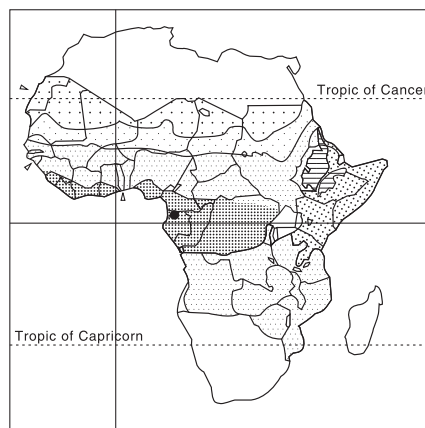
Distribution parallels that of *Hibiscus burtt-davyi*.



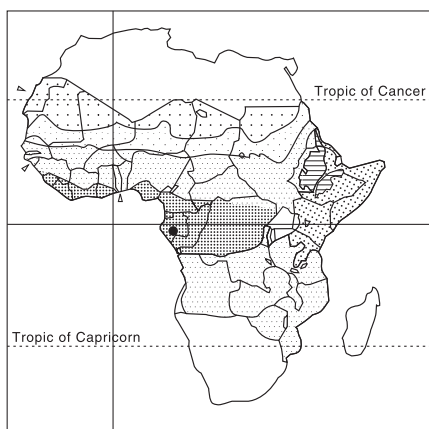
*Macaranga heudelotii*



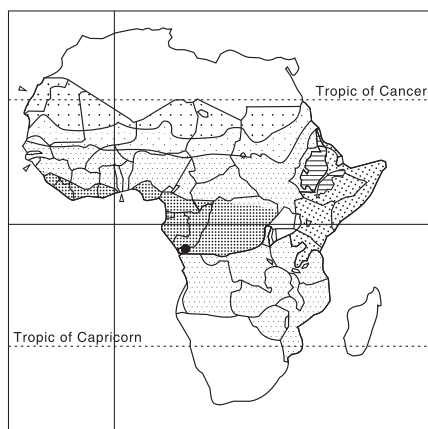
*Macaranga hurifolia*



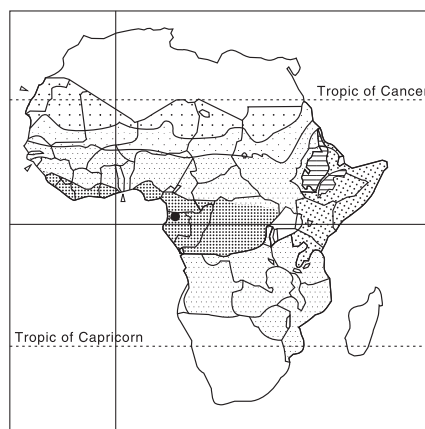
*Macaranga klaineana*



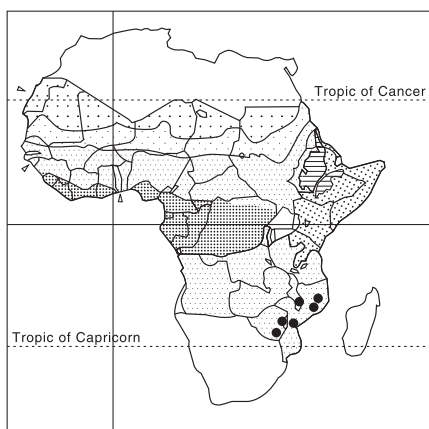
*Macaranga letestui*



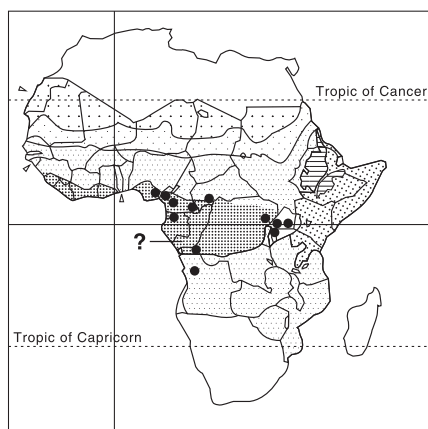
*Macaranga longipetiolata*



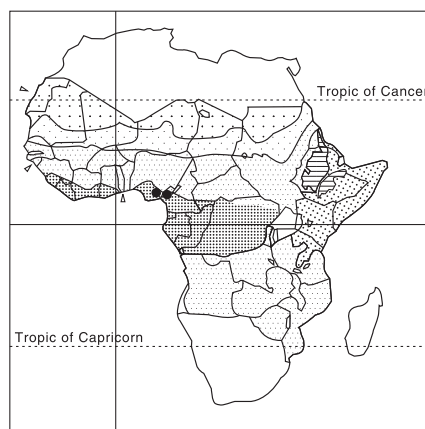
*Macaranga magnistipulosa*



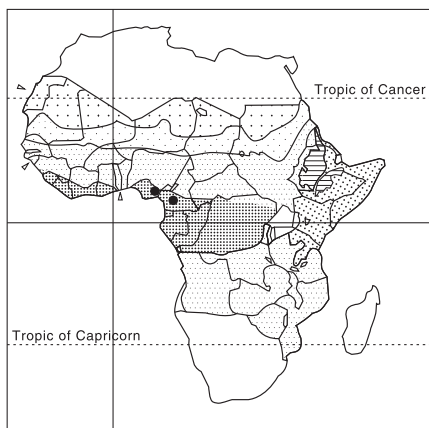
*Macaranga mellifera*



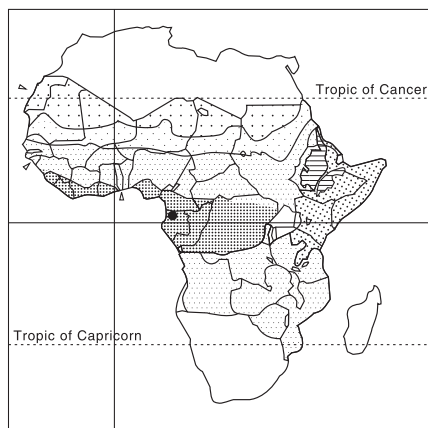
*Macaranga monandra*



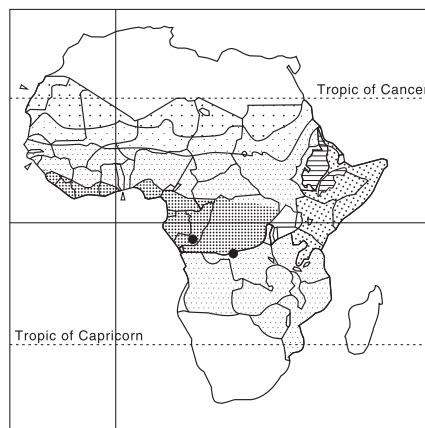
*Macaranga occidentalis*



*Macaranga paxii*



*Macaranga pierreana*



*Macaranga poggei*

## MACARANGA

**M. monandra** Müll. Arg.syn.: *M. zenkeri* Pax

Much branched evergreen tree 6-25 m tall, often with a spiny trunk and a bushy crown; trunk spines sparse, blunt, to 7,5 cm long.

Groundwater secondary forests; common in riverine, lakeside and swamp-edge forests; dense primitive forest (Angola); humus on laterite (probably) in half-shade; 350-1525 m alt. Sometimes in large stands.

**M. occidentalis** (Müll. Arg.) Müll. Arg.bas.: *Mappa occidentalis* Müll. Arg.syn.: *Macaranga preussii* Pax

Tree 9-25 m; trunk and branches often with spines.

Margins of forest; 200-1450 m alt.

Bioko/Fernando Poo.

**M. paxii** Prain

Shrub or tree to 9 m tall; branches armed with patent white spines.

Forests; rare.

**M. pierreana** Prain

Shrub or tree.

Ecology unknown.

**M. poggei** Pax

Shrub or tree.

River banks.

Comprises 2 vars.: – var. **poggei** (syn.: *M. gilletii* De Wild., *M. laurentii* De Wild.); – var. **chevalieri** (Beille) Prain (bas.: *M. chevalieri* Beille).**M. saccifera** Pax, incl. var. *dentifera* Pax & K. Hoffm. and var. *genuina* Pax & K. Hoffm.

Shrub or tree; branches armed with spines; female flowers unknown?

Rain-forest; river banks.

**M. schweinfurthii** Paxsyn.: *M. rosea* Pax; *M. lecomtei* Beille; *M. calophylla* Pax

Shrub with many erect stems and branches, slightly sarmentous; or spreading tree to 10-12 m tall; or tree 18-40 m with a long straight clear bole to 12 m height and a flat crown; trunk and branches with spiny outgrowths to 6 cm long.

Groundwater and swamp forests (mushitu); by lakes and swamps; gallery with *Maesopsis*, *Erythrophleum*; 900-1280 m alt. (and less?).**M. spinosa** Müll. Arg.syn.: *M. ledermanniana* Pax

Rambling shrub or tree 5-10 m, or larger tree to 18 m tall, with a spiny trunk; spines 10-20 cm long, downwardly directed, simple or forked, woody; bole straight, fluted or stilt-rooted at base; twigs often spiny; branches long spreading or drooping, conspicuously armed.

Edges of groundwater- and rain-forest; near sea-level-1220 m alt.

## MACARANGA

**M. staudtii** Pax

Tree to 15 m.

Swamp forest; sunny swamp.

**M. tchibangensis** Pellegr.

Shrub or tree with ± spiny branches; female flowers and fruit unknown.

Forest.

Near *M. pierreana*.

Only known from the type collected in 1908.

**M. vanderystii** De Wild.

Shrub or tree with spiny branches; spines 4-6 mm long; female flowers unknown.

Forest on plateau.

Near *M. poggei* (or syn.?).

Only known from the syntypes collected in 1913 and 1922.

**M. vermoesenii** De Wild.

Tree with trunk to 50 cm Ø; male flowers unknown.

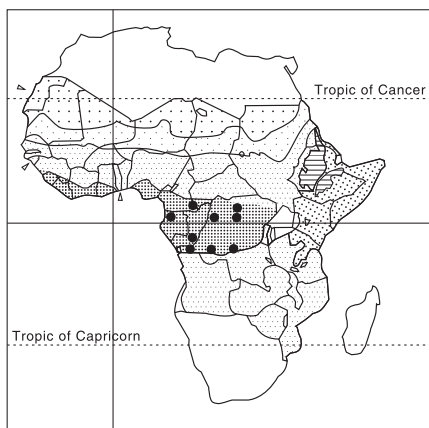
Forest; dry, sandy ground.

Near *M. monandra*.

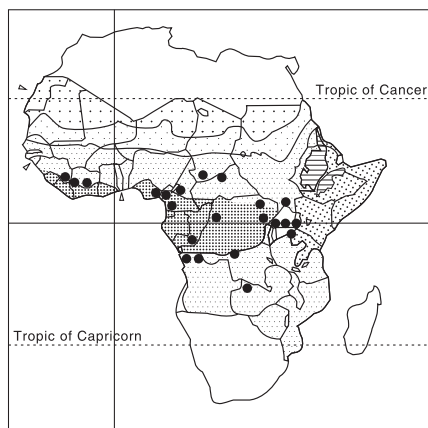
## SYNONYMS:

*Macaranga calophylla* Pax = **Macaranga schweinfurthii***chevalieri* Beille = **M. poggei** var.*gilletii* De Wild. = **M. poggei***guignardii* Beille = **M. angolensis***heudelotii* Baill. var. *nitida* Beille = **M. barteri***inopinata* Prain = **M. capensis***kilimandscharica* Pax = **M. capensis** var. **kilimandscharica***lancifolia* Pax = **M. barteri***laurentii* De Wild. = **M. poggei***lecomtei* Beille = **M. schweinfurthii***ledermanniana* Pax = **M. spinosa***lophostigma* Chiov. = **M. capensis** var. **kilimandscharica***mildbraediana* Pax = **M. angolensis***mildbraediana* Pax & K. Hoffm. = **M. capensis** var. **kilimandscharica***mollis* Pax = **M. angolensis***multiglandulosa* Pax & K. Hoffm. = **M. capensis***neomildbraediana* Lebrun = **M. capensis***nyassae* Pax & K. Hoffm. = **M. capensis** var. **kilimandscharica***preussii* Pax = **M. occidentalis***pynaertii* De Wild. = **M. spinosa***quinquelobata* Beille = **M. heterophylla***rosea* Pax = **M. schweinfurthii***rowlandii* Prain = **M. barteri***ruwenzorica* Pax = **M. capensis***togoensis* Pax = **M. hurifolia***usambarica* Pax & K. Hoffm. = **M. capensis***zenkeri* Pax = **M. monandra**

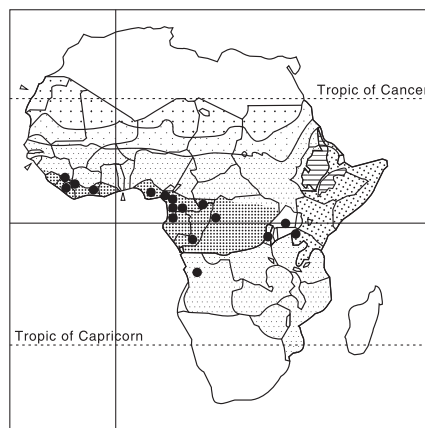




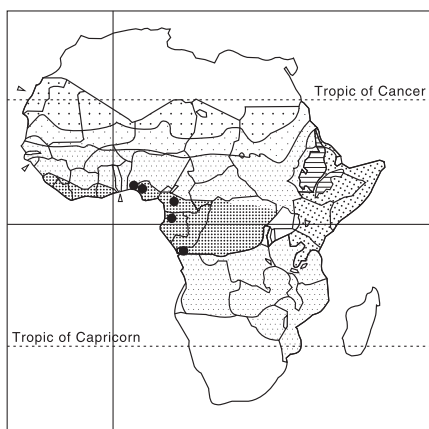
*Macaranga saccifera*



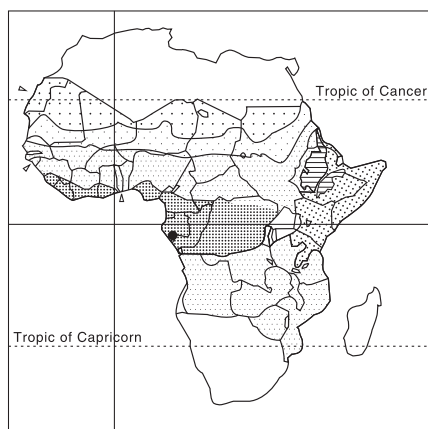
*Macaranga schweinfurthii*



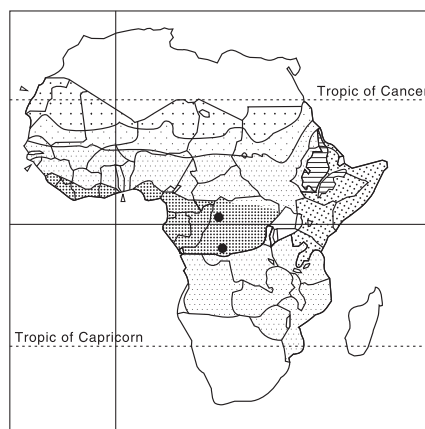
*Macaranga spinosa*



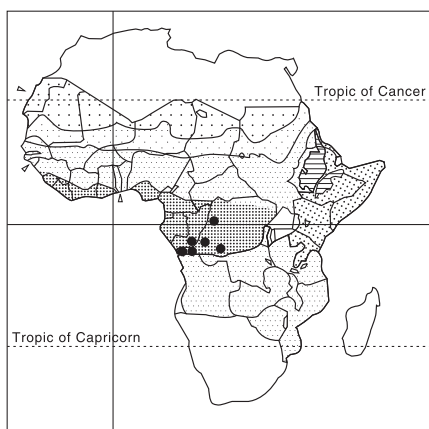
*Macaranga staudtii*



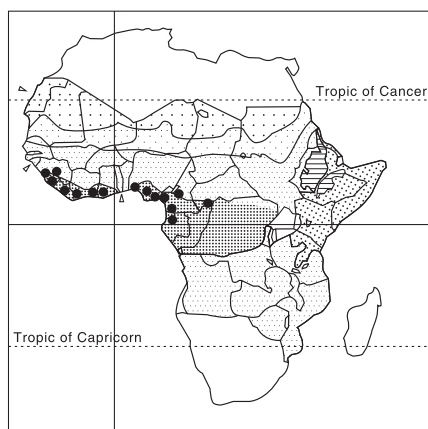
*Macaranga tchibangensis*



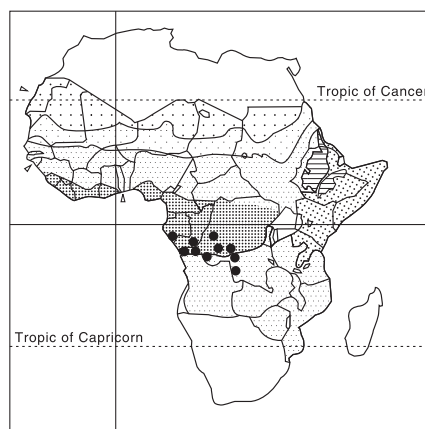
*Macaranga vanderystii*



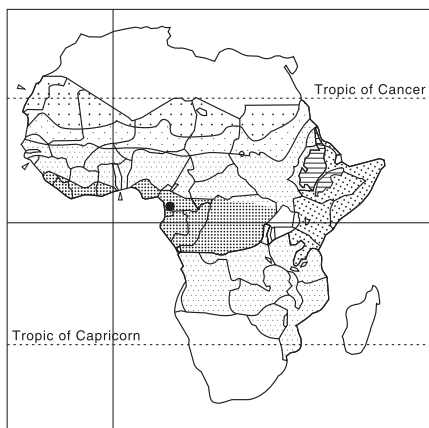
*Macaranga vermoesenii*



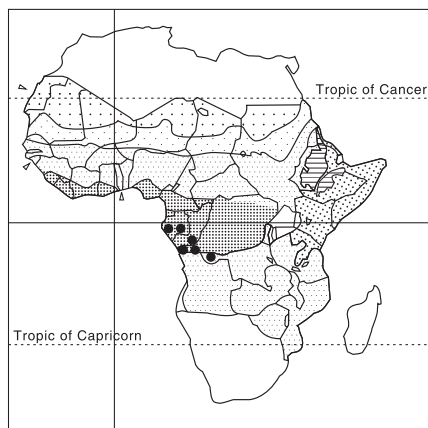
*Maesobotrya barteri*



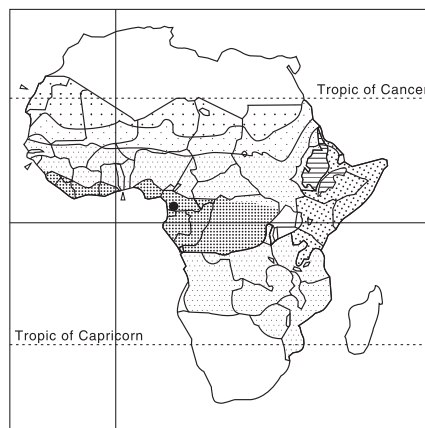
*Maesobotrya bertramiana*



*Maesobotrya bipindensis*



*Maesobotrya cordulata*



*Maesobotrya fallax*

## MACARANGA

- Mallotus capensis* (Baill.) Müll. Arg. = **Macaranga**  
*Mappa angolensis* (Müll. Arg.) Müll. Arg. = **Macaranga**  
*capensis* Baill. = **Macaranga**  
*heterophylla* Müll. Arg. = **Macaranga**  
*occidentalis* Müll. Arg. = **Macaranga**

## MAESOBOTRYA / 16

The male flower is unknown in 1 species, the fruit in another species for which seeds are also lacking; no ecology is recorded for 2 species. One species is known only from the type.

**Maesobotrya barteri** (Baill.) Hutch.

bas.: *Pierardia barteri* Baill.

syn.: *Maesobotrya brevispicata* Pax; *M. dissitiflora* Pax

Tree with crooked bole, to 10 m tall; usually with the habit of a shrub and branching low down.

Rain-forest.

Comprises 2 vars.: – var. **barteri**; – var. **sparsiflora** (Scott-Elliot) Keay [bas.: *Baccaurea sparsiflora* Scott-Elliot; syn.: *Maesobotrya sparsiflora* (Scott-Elliot) Hutch.; *M. floribunda* Benth. var. *sparsiflora* (Scott-Elliot) Pax & K. Hoffm.; *M. edulis* Hutch. & Dalziel; *Baccaurea edulis* A. Chev., nom.; *Maesobotrya rufinervis* Pierre ex Pax & K. Hoffm.; *Baccaurea bonnetii* Beille; *B. caillei* Beille; *B. gagnepainii* Beille; *B. glaziovii* Beille; *B. longispicata* Beille; *B. poissonii* Beille; *B. cavalliensis* Beille].

**M. bertramiana** Büttner

syn.: *Staphysora sapinii* De Wild.

Shrub or tree 2-10 m tall.

Dry forest on plateau; gallery and secondary forests; forest patches in savanna.

**M. bipindensis** (Pax) Hutch.

bas.: *Baccaurea bipindensis* Pax

Shrub 3,5-5 m tall with terete branches; inflorescences on the trunk or the branches.

Rain-forest.

Not in Zaire (= *M. bertramiana*).

**M. cordulata** J. Léonard

Shrub or tree 1,5-12 m tall; trunk 10-30 cm Ø; inflorescences on the trunk or the branches.

Rain-forest; to 400-600 m alt.

**M. fallax** Pax & K. Hoffm.

Shrub 2-7 m tall, or tree, with subangular branches.

Ecology unknown.

Intermediate between *M. barteri* and *M. staudtii*.

**M. floribunda** Benth., incl. var. *schweinfurthii* (Pax) Pax & K. Hoffm. and var. *hirtella* (Pax) Pax & K. Hoffm.; but *excl.* var. *villosa* J. Léonard, var. *vermeulenii* (De Wild.) J. Léonard and var. *sparsiflora* (Scott-Elliot) Pax & K. Hoffm.

syn.: *Antidesma schweinfurthii* Pax

## MAESOBOTRYA FLORIBUNDA

Bushy shrub 1,5-6 m tall, sometimes tree 7-12(-20) m; stock with suckers; trunk ramose from the base, 3-16(-25) cm Ø; some inflorescences on the old wood but not on the trunk; young shoots 3-4-angular; branches drooping.

Rain-forest; riverine and swampy forests; secondary wooded formations; gallery; *Newtonia*, etc. rain-forest on steep rocky slopes; 330-1520 m alt.

Comprises 2 vars.: – var. **floribunda**; – var. **hirtella** (Pax) Pax & K. Hoffm. (bas.: *M. hirtella* Pax; not in synonymy: *M. purse-glovei* Verdc.).

**M. griffoniana** (Baill.) Hutch.

bas.: *Pierardia griffoniana* Baill.

syn.: *Baccaurea griffoniana* (Baill.) Müll. Arg.

Shrub or tree 2,75-6 m tall; inflorescences arising from the old wood.

Ecology unknown.

**M. klaineana** (Pierre) J. Léonard; Breteler in *Adansonia*, Sér. 3, 27: 328, 2005.

syn.: *M. dusenii* (Pax) Hutch.; *Staphysora dusenii* Pax

Tree (4-)7-10(-15) m; trunk fluted at the base, 15-20(-30) cm Ø; inflorescences on the old wood.

Regrowths; gallery; rain-forest; 150-350 m alt.

Bioko/Fernando Poo.

**M. longipes** Hutch., incl. var. *lancifolia* Pax & K. Hoffm. and var. *albida* Pax & K. Hoffm.

syn.: *Staphysora albida* Pierre ex Pax, nom. nud.

Shrub or tree (1,5-)2-8(-15) m tall, branched from the base; trunk 7-12 cm Ø.

Rain-forest with *Scorodophloeus zenkeri*; secondary forests; under *Musanga*; 350-1000 m alt.

**M. pauciflora** Pax

Shrub ± 1 m tall with slender branches; fruit and seeds unknown.

Rain-forest; open forest; 400-500 m alt.

Not in Zaire (= cf. *M. bertramiana*).

**M. pierlotii** J. Léonard

Tree 14 m tall with bole 10 m high, 10 cm Ø; male flowers unknown.

Dry forest with *Melchiora schliebenii* var. *intermedia*, *Ficalhoa laurifolia*; ± 2200 m alt.

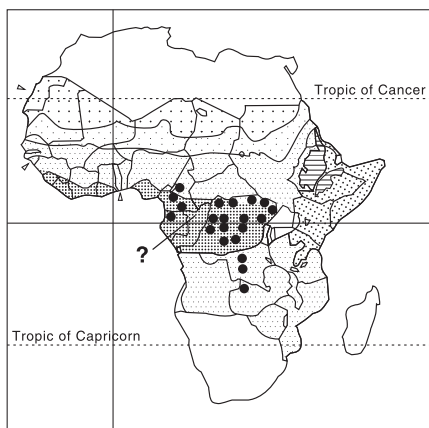
Only known from the type collected in 1958.

**M. purse-glovei** Verdc.

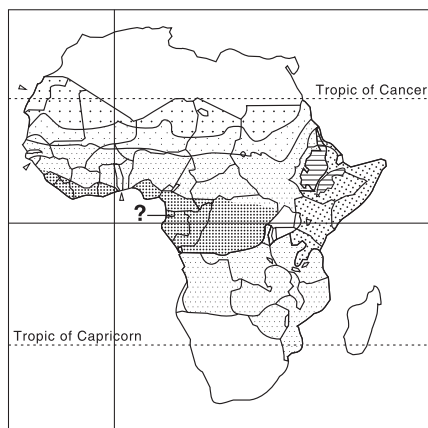
Shrub 3-6 m tall or tree 7-12(-18) m, with bole 3-5 m high, 7-20 (-40) cm Ø; inflorescences rarely on the old wood, never on the trunk.

Evergreen rain-forests with *Cynometra alexandri*, *Gilbertiodendron dewevrei*, *Grossera multinervis*; or with *Michelsonia microphylla*; secondary forest with *Pycnanthus*, *Canarium*, *Treculia*, *Pseudospondias*; or with *Musanga*, *Polyscias*, *Pentadesma*; (700-)850-1700(-1950) m alt.

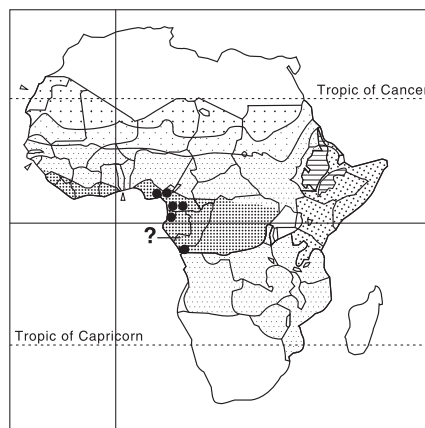
Near *M. floribunda*.



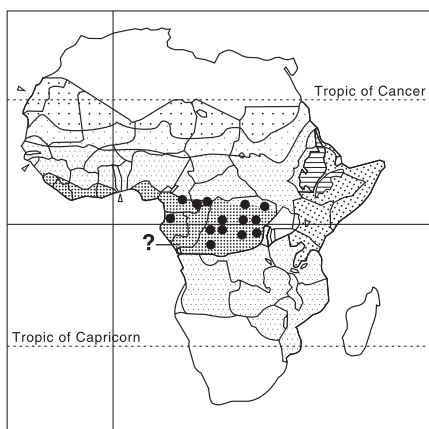
*Maesobotrya floribunda*



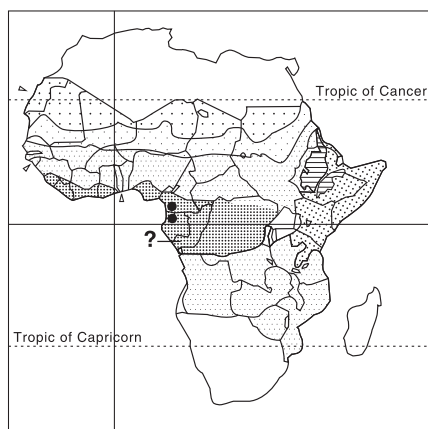
*Maesobotrya griffoniana*



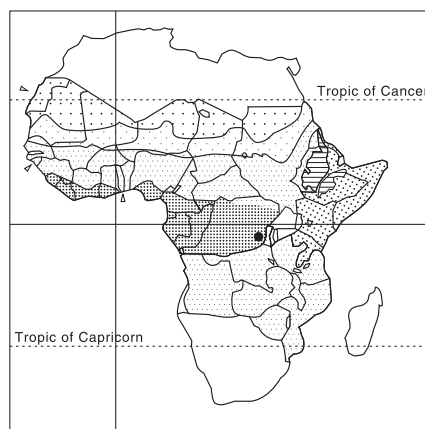
*Maesobotrya klaineana*



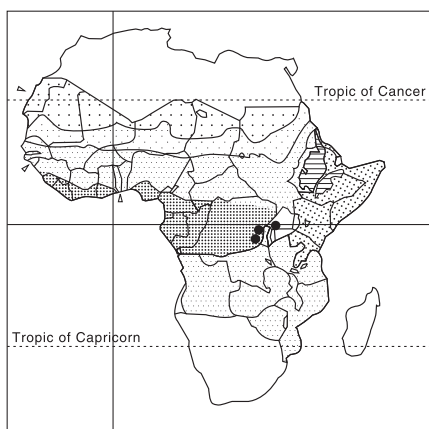
*Maesobotrya longipes*



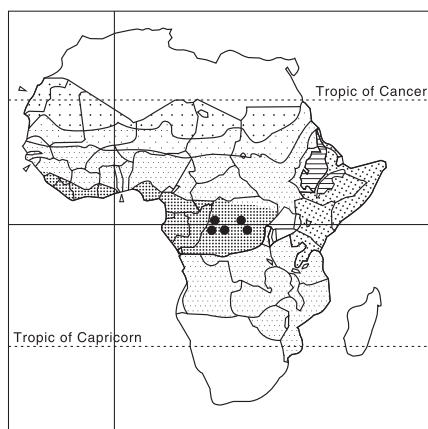
*Maesobotrya pauciflora*



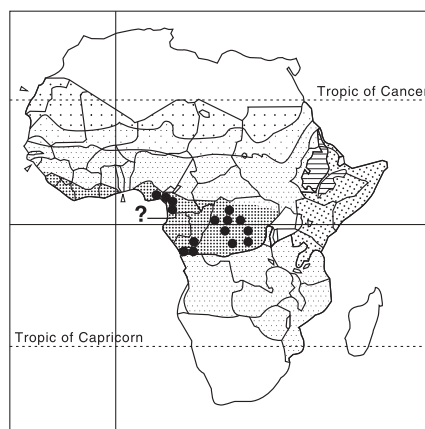
*Maesobotrya pierlotii*



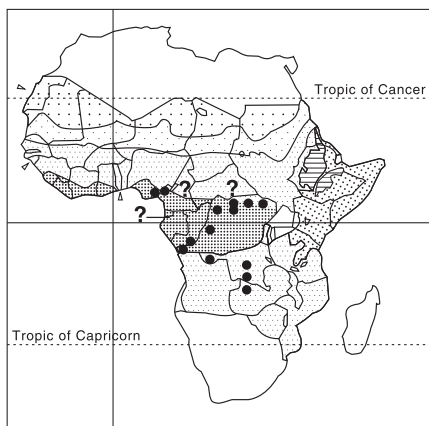
*Maesobotrya purselovei*



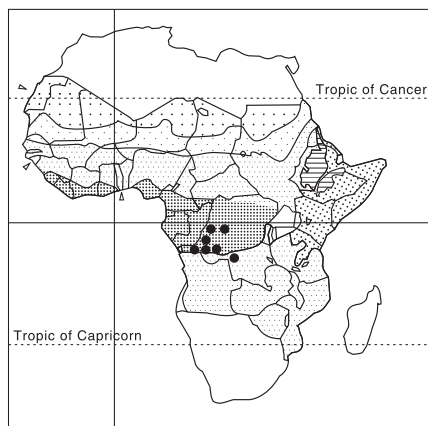
*Maesobotrya pynaertii*



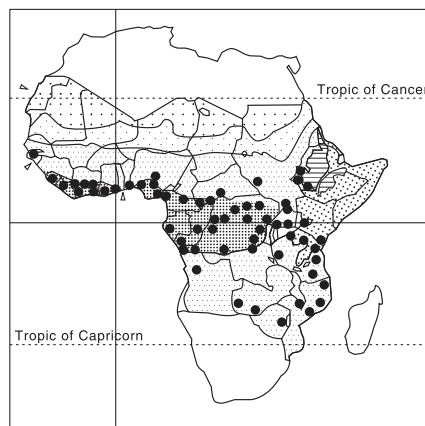
*Maesobotrya staudtii*



*Maesobotrya vermeulenii*



*Maesobotrya villosa*



*Mallotus oppositifolius*

## MAESOBOTRYA

**M. pynaertii** (De Wild.) Pax & K. Hoffm.

bas.: *Baccaurea pynaertii* De Wild.

Tree (5-)8-20 m, with a rounded bole, slightly lobed at the base, 6-8 m tall, 15-50 cm Ø; inflorescences on the trunk, on old branches or at the base of the leafy branches.

Riverine, periodically flooded forests with *Baphia dewevrei*, *Hymenocardia ripicola*, *Uapaca heudelotii*, *Irvingia smithii*; also in swampy forest with *Guibourtia demeusei*.

**M. staudtii** (Pax) Hutch.

bas.: *Baccaurea staudtii* Pax

Shrub or tree 2-6(-12-15) m tall; trunk 4-10(-25) cm Ø, rarely more; inflorescences on trunk, old branches, but also axillary.

Rain-forest with *Gilbertiodendron dewevrei*; or with *Scorodophloeus zenkeri*; or with *Cynometra alexandri*; disturbed forests in valley.

**M. vermeulenii** (De Wild.) J. Léonard

Shrub (1-)2-6 m tall, sometimes creeping; inflorescences never on the trunk.

Gallery; regrowths; forest remains.

**M. villosa** (J. Léonard) J. Léonard

Shrub 2-5 m tall; inflorescences never on the trunk.

Gallery; regrowths; esobe *Hyparrhenia*; swampy forests; riverine; half-deciduous forests.

## SYNONYMS:

*Baccaurea bipindensis* Pax = **Maesobotrya bipindensis**

*bonnetii* Beille = **M. barteri** var. **sparsiflora**

*caillei* Beille = **M. barteri** var. **sparsiflora**

*cavalliensis* Beille = **M. barteri** var. **sparsiflora**

*edulis* A. Chev., nom. = **M. barteri** var. **sparsiflora**

*gagnepainii* Beille = **M. barteri** var. **sparsiflora**

*glaziovii* Beille = **M. barteri** var. **sparsiflora**

*griffoniana* (Baill.) Müll. Arg. = **M. griffoniana**

*longispicata* Beille = **M. barteri** var. **sparsiflora**

*poissonii* Beille = **M. barteri** var. **sparsiflora**

*pynaertii* (De Wild.) Pax & K. Hoffm. = **M. pynaertii**

*sparsiflora* Scott-Elliot = **M. barteri** var.

*staudtii* (Pax) Hutch. = **M. staudtii**

*Maesobotrya brevispicata* Pax = **M. barteri** var. **barteri**

*dissitiflora* Pax = **M. barteri** var. **barteri**

*dusenii* (Pax) Hutch. = **M. klaineana**

*edulis* Hutch. & Dalz. = **M. barteri** var. **sparsiflora**

*floribunda* Benth. var. *sparsiflora* (Scott-Elliot) Pax & K. Hoffm. = **M. barteri** var.

var. *vermeulenii* (De wild.) J. Léonard = **M. vermeulenii**

var. *villosa* J. Léonard = **M. villosa**

*rufinervis* Pierre ex Pax & K. Hoffm. = **M. barteri** var. **sparsiflora**

*sparsiflora* (Scott-Elliot) Hutch. = **M. barteri** var.

*Staphysora albida* Pierre ex Pax, nom. nud. = **Maesobotrya longipes**

*sapinii* = **M. bertramiana**

## MALLOWUS / 2

**Mallotus oppositifolius** (Geiseler) Müll. Arg.; *Adansonia*, Sér. 2, 3: 72, 1963.

bas.: *Croton oppositifolius* Geiseler

Open dioecious shrub branching low down, subsucculent, or tree 2-12 m tall, but more commonly not exceeding 5 m; trunk 10 cm Ø; branches elongated, variously curved, pendulous or ascending.

Pioneer species on old farms in secondary (closed) forest and thickets; forest, edges and associated bushland or thickets; riverine with *Uapaca* and *Manilkara*; groundwater forest; secondary associations; roadsides; savanna near forest on black clay soil; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Pari-nari excelsa*, *Milicia excelsa*; ± 0-1800 m alt.

Madagascar.

Comprises 2 vars.: – var. **oppositifolius** with the following forms: – fa. **oppositifolius** [syn.: *Acalypha* ? *dentata* Schumach. & Thonn.; *Mallotus oppositifolius* α *genuinus* Müll. Arg. p.p. quoad specim. Inert, Barter 1702, 1742, 3381; *M. oppositifolius* fa. *dentatus* (Schumach. & Thonn.) Pax & K. Hoffm. and fa. *pubescens* (Pax) Pax]; – fa. **glabratus** (Müll. Arg.) Pax [syn.: *Claoxylon cordifolium* Benth.; *Mallotus oppositifolius* α *genuinus* Müll. Arg. p.p. quoad specim. Vogel, Barter 3368, Welwitsch 342, and β *glabratus* Müll. Arg.]; – var. **lindicus** (Radcl.-Sm.) Radcl.-Sm.

**M. subulatus** Müll. Arg.

Deciduous shrub or tree 1-5 m tall, stellate-pubescent.

Forest; waste lands.

Bioko/Fernando Poo.

## MANNIOPHYTON / 1

**Manniophyton fulvum** Müll. Arg.

syn.: *M. africanum* Müll. Arg., incl. var. *fulvum* (Müll. Arg.) Hutch., var. *rufum* Pax & K. Hoffm., var. *longipilosum* Pax & K. Hoffm., and var. *chevalieri* (Beille) Pax & K. Hoffm.; *M. chevalieri* Beille; *M. wildemanii* Beille

Woody liane to 20-30(-40) m long; stem 10-12 cm Ø, very ramose; sometimes straggly bush, 3,5-6 m long.

Rain-forests; gallery; mixed deciduous forest; regrowths. Common.

São Tomé; Príncipe.

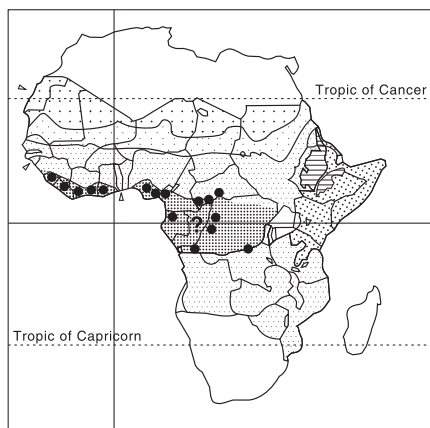
## SYNONYM:

*Manniophyton angustifolium* Baill. = *Crotonogyne angustifolia* (Baill.) Prain, non Pax = **C. parvifolia** Prain

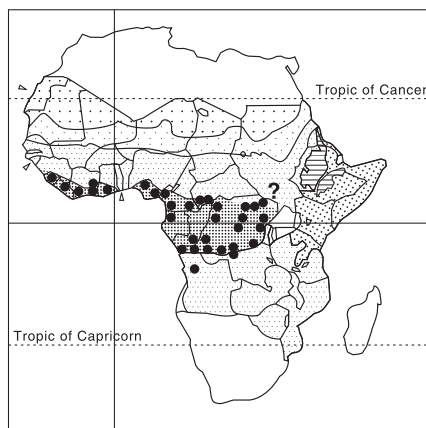
## MAPROUNEA / 2

**Maprounea africana** Müll. Arg., incl. var. *benguensis* Pax & K. Hoffm., var. *obtusata* (Pax) Pax, var. *gracilis* Pax & K. Hoffm., var. *orientalis* Pax & K. Hoffm., var. *cinnamomea* Pax & K. Hoffm., var. *leucosperma* Pax & K. Hoffm., and var. *orientalis* Pax & K. Hoffm.; *Adansonia*, Sér. 2, 3: 72, 1963.

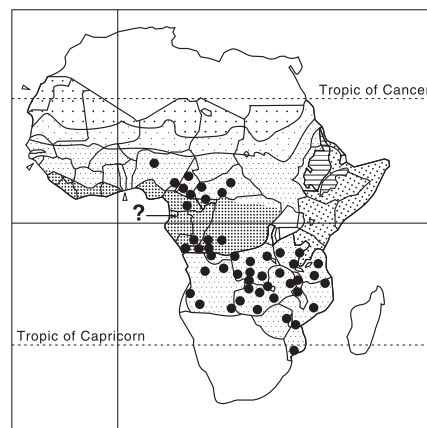




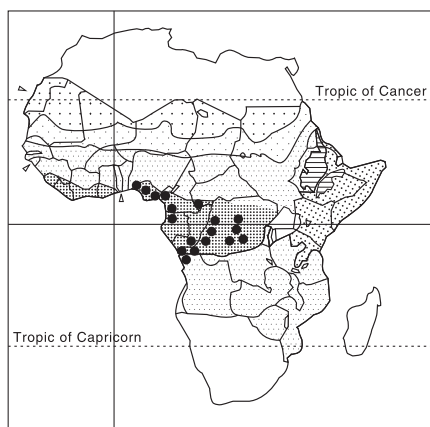
*Mallotus subulatus*



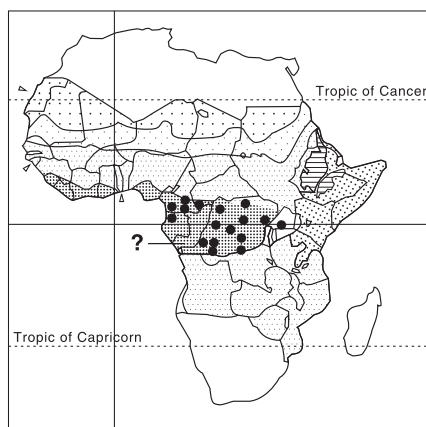
*Manniophyton fulvum*



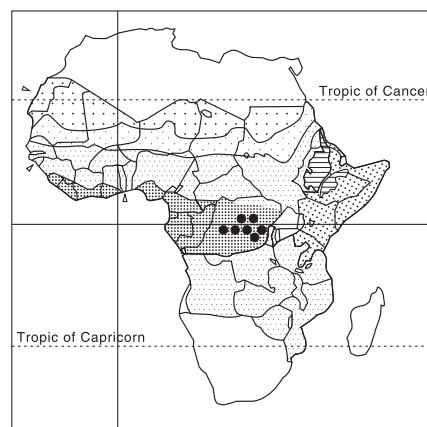
*Maprounea africana*



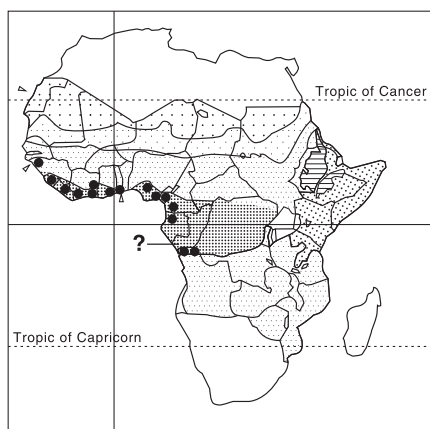
*Maprounea membranacea*



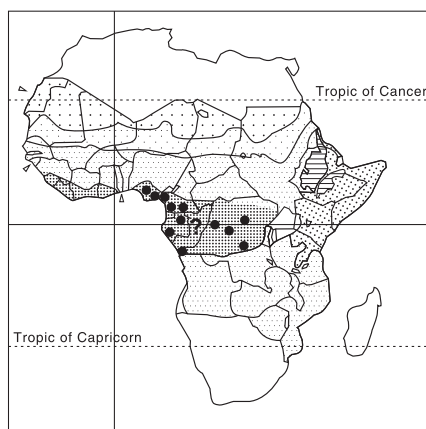
*Mareya brevipes*



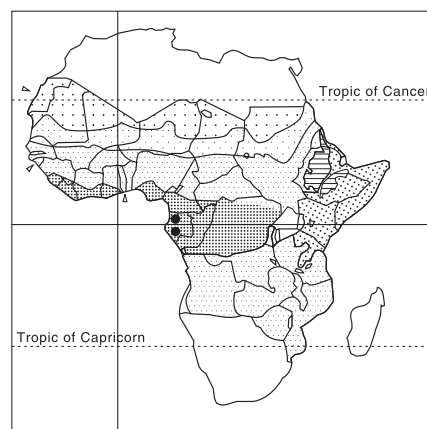
*Mareya congolensis*



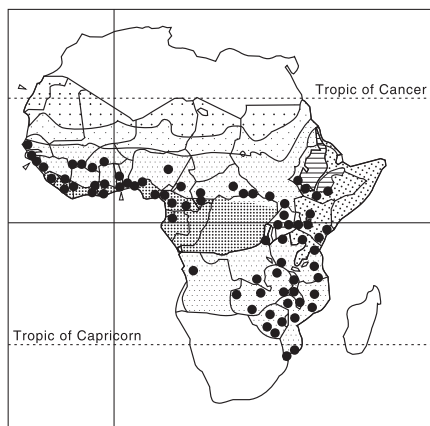
*Mareya micrantha*



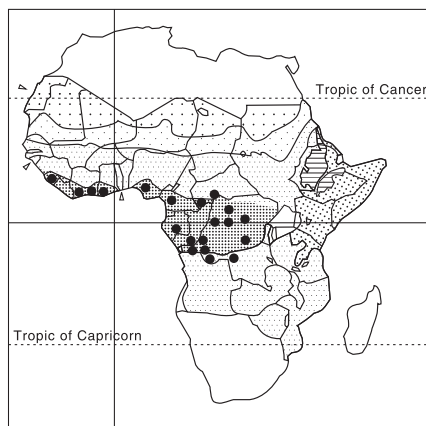
*Mareyopsis longifolia*



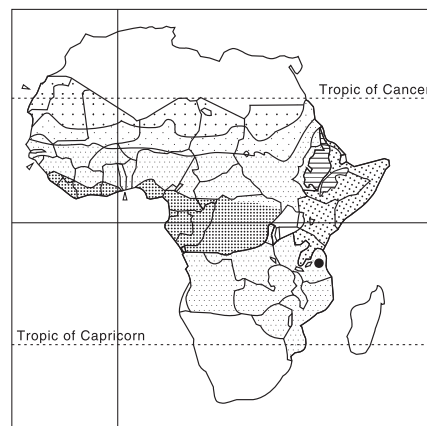
*Mareyopsis oligogyna*



*Margaritaria discoidea*



*Martretia quadricornis*



*Meineckia acuminata*

## MAPROUNEA AFRICANA

syn.: *M. gracilis* Dewèvre ex De Wild., nom.; *M. gracilis* (Pax & K. Hoffm.) Dewèvre ex Prain; *Excoecaria magenjen-sis* Sim; *M. obtusa* Pax

Much or sparingly branched shrub or tree, 1-8(-10) m tall with pendant branches; deciduous, monoecious; bark corky; habit almost of a *Pyrus*.

Deciduous woodlands (including miombo, *Baikiaea*, *Burkea*, *Uapaca*) and bushlands; well drained soils; dry sandy soil, Kalahari sand, lakeshore and coastal dunes; escarpments, rocky hillsides, outcrops; wooded grassland and floodplain grassland; wooded savanna with *Hymenocardia acida*; locally common; forest; 5-1600 m alt.

Caprivi Strip, Namibia.

**M. membranacea** Pax & K. Hoffm.; *Adansonia*, Sér. 2, 3: 73, 1963.

syn.: *M. bridelioides* Pierre ex Prain, nom. illegit.

Monoecious or only male tree, (2-)5-25 m; bole to 11 m tall, 15-30(-50) cm Ø.

Periodically flooded rain-forest; swampy forest; secondary formations.

## SYNONYM:

*Maprounea africana* Müll. Arg. = **Spirostachys**

## MAREYA / 3

Habitus like *Alchornea floribunda*, *A. hirtella*. Leaves with translucent dots.

BRETELER, F. J. & al. (1997). Novitates gabonenses (29) A new species in *Mareyopsis* Pax & K. Hoffm. (Euphorbiaceae) from Gabon with notes on the taxonomic position of the genus. *Bull. Jard. Bot. Natl. Belgique* 66: 131-148.

MENNEGA, A. M. W. (1997). Wood structure of *Mareya* and *Mareyopsis*. Vide Breteler & al., o.c.: 139-142.

PUNT, W. (1997). Pollen morphology of the genera *Mareya* and *Mareyopsis*. Vide Breteler & al., o.c.: 142-147.

**Mareya brevipes** Pax; *Adansonia*, Sér. 2, 3: 73, 1963.

Monoecious shrub (1-)2-6 m tall; stem 3-13 cm Ø, sometimes sarmentous.

Riverine and secondary forest; periodically flooded forest; forest with *Gilbertiodendron dewevrei* or *Scorodophloeus zenkeri*, or *Cynometra*, *Khaya*; gallery; forest patches; savanna near forest on clayey soil; 1200-1500 m alt. and certainly less.

**M. congolensis** (J. Léonard) J. Léonard

Monoecious shrub or tree 1,5-15(-30) m tall; trunk 15-25 cm Ø. Forest; regrowth; river sides; to 700 m alt.

**M. micrantha** (Benth.) Müll. Arg., excl. subsp. *congolensis* J. Léonard

Monoecious tree, or erect, sometimes sarmentous shrub, to 6-8-10-15(-20) m tall; trunk 10-20 cm Ø and more?

Secondary and riverine forest; rain-forest; 220-300 m alt.

Bioko/Fernando Poo.

Resembling *Alchornea hirtella*.

## SYNONYM:

*Mareya acuminata* Prain = **Necepsia afzelii**

## MAREYOPSIS / 2

BRETELER, F. J. & al. (1997). Vide *Mareya*.

MENNEGA, A. M. W. (1997). Vide *Mareya*.

PUNT, W. (1997). Vide *Mareya*.

**Mareyopsis longifolia** (Pax) Pax & K. Hoffm.

Dioecious shrub or tree 2-6(-10) m tall; stem 5-14 cm Ø, erect or ± sarmentous.

Riverine, swampy or periodically flooded forests; also forest with *Gilbertiodendron dewevrei*; 300-900 m alt.

**M. oligogyna** Breteler

Dioecious shrub or tree to 12 m tall; stem 10 cm dbh.

Rain-forest.

## IN NEED OF FURTHER STUDIES:

*Mareyopsis* sp. – Breteler & al., o.c.: 136 (Wilks 1233, WAG).

## MARGARITARIA / 1

**Margaritaria discoidea** (Baill.) G. L. Webster; *Kew Bull.* 50: 813, 1995.

bas.: *Cicca discoidea* Baill.

Dioecious many-stemmed, densely branched spreading to somewhat sarmentose, deciduous shrub 1-5 m tall or tree to 30 m with trunk to 30 cm dbh; branches usually pendulous; often with a flattened crown.

Mixed evergreen forest; dense rain-forest; mixed dry deciduous woodland; *Uapaca* and miombo woodlands; mutemwa thicket on Kalahari sand; rocky outcrops, hillsides; forest margins; riverine vegetation; dambo margins; littoral scrub and coastal thicket; forest patches; old cultivations; sand and sandy soil; disturbed places; dry evergreen forest; *Brachystegia* woodland; open secondary woodland or edge of *Celtis*, *Aningeria altissima*, *Trilepisium* forest; forest with *Podocarpus*, *Polyscias* etc.; 0-2200 m alt.

S. Africa, Botswana, Caprivi Strip.

Comprises 4 vars.: – var. **discoidea**; – var. **fagifolia** (Pax) Radcl.-Sm.; – var. **nitida** (Pax) Radcl.-Sm. (syn.: *Phyllanthus flacourtioides* Hutch.); and – var. **triplophaera** Radcl.-Sm. [syn.: *Flueggea obovata* Baill., non *Xylophylla obovata* Willd.; *Securinega bailloniana* Müll. Arg.; *Flueggea bailloniana* (Müll. Arg.) Pax].

## MARTRETIA / 1

**Martretia quadricornis** Beille

Shrub or tree 2,5-9 m tall, sometimes 10-20 m with a bole 7-25 (-30-40) cm Ø; dioecious, sometimes monoecious.

Riverine, periodically flooded forest with *Baphia dewevrei*, *Hymenocardia ripicola*, *Uapaca heudelotii*, *Irvingia smithii*; swampy forest; gallery; sometimes common; forests with *Symphonia globulifera* at lagoons and swamps.

**MEINECKIA / 10**

The male flower is unknown in 1 species, the fruit in 2 species which also lack seeds, and ripe seeds are unknown in another species (together = 3 species).

**Meineckia acuminata** (Verdc.) J. F. Brunel ex Radcl.-Sm.

Monoecious or apparently occasionally dioecious shrub 1-4 m tall.

Shrub-layer of rain-forest; locally very common; 1340-1800 m alt.

**M. fruticans** (Pax) G. L. Webster

Slender shrub to 3 m tall, but more commonly 1-2 m; branches often pendulous; twigs subterete.

Limestone and coral outcrops, rocky sometimes riverine places in forest and coastal bushland and in wet evergreen and riparian forest; 6-1000 m alt.

Comprises 2 vars.

**M. grandiflora** (Verdc.) J. F. Brunel ex Radcl.-Sm.

syn.: *Zimmermannia* sp. nov. Verdc., Kew Bull. 9: 40, 1954.

Monoecious shrub 2-4 m tall; fruit and seeds unknown.

Streamsides in mist-forest and in riverine forest; frequent; 1000-1125 m alt.

**M. nguruensis** (Radcl.-Sm.) J. F. Brunel ex Radcl.-Sm.

Small, ? monoecious tree; male flower unknown.

Steep forested ravine with *Podocarpus* and *Marattia*; 1750 m alt.

**M. ovata** (E. A. Bruce) J. F. Brunel ex Radcl.-Sm.

Slender monoecious shrub or tree to 5 m tall.

Evergreen mist-forest; very rare; 1220-1800 m alt.

**M. paxii** J. F. Brunel ex Radcl.-Sm.

Monoecious or apparently occasionally dioecious shrub to much branched evergreen tree 7,5 m tall; ripe seeds unknown.

Rain-forest; 900-1100 m alt.

**M. phyllanthoides** Baill.

Shrub or woody herb to 1,5 m tall; young shoots usually strongly angled and channelled, sometimes slightly scabrous on the angles; older twigs subterete.

Forest; deciduous bushland on sand, clay, lava; rocky places; disturbed bushland, often with *Acacia mellifera* on black soil; sand dunes, alluvial soil; dry sparingly herbaceous mountain slopes; 40-1850 m alt.

Arabia (subsp. **phyllanthoides**); disjunct area.

Comprises 3 subspp. which are very close to each other.

**M. stipularis** (Radcl.-Sm.) J. F. Brunel ex Radcl.-Sm.

syn.: *Zimmermannia* sp. nov. Verdc., Kew Bull. 9: 39, 1954.

Monoecious shrub to 3 m tall; fruit and seeds unknown.

Edges of thickets and forest-patches; locally common; 1830-1920 m alt.

## MEINECKIA

**M. uzungwaensis** (Radcl.-Sm.) Radcl.-Sm.

Shrub to 2 m tall.

Isolated patches of closed-canopy high forest with *Anthocleista zambesiaca*, *Aphloia theiformis*, *Bersama abyssinica*, *Cassipourea gummiflua* etc. (fide Kew Bull. 45: 154, 1990); 1450-1500 m alt.

**M. vestita** G. L. Webster

Laxly branched subshrub 50-90 cm tall; twigs angled at first, later subterete.

Rocky hills and scarps in *Brachystegia* woodland; riverine fringes; 850-1400 m alt.

**MICROCOCCA / 5**

Seeds unknown in 1 species.

**Micrococca capensis** (Baill.) Prain

Shrub or tree to 5 m tall.

Ecology unknown in Mozambique (moist forests in Natal and Transkei).

S. Africa.

Literature records only for Mozambique (not cited in M. Calane da Silva & al., A preliminary checklist vascular pl. Mozambique, Sabonet Rep. 30, 2004).

**M. holstii** (Pax) Prain

bas.: *Claoxylon holstii* Pax

Unbranched or few-branched shrub to 3 m tall; seeds unknown.

Wetter evergreen forest; 1000-2400 m alt.

**M. mercurialis** (L.) Benth.

bas.: *Tragia mercurialis* L.

syn.: *Claoxylon mercurialis* (L.) Thwaites; *Mercurialis alternifolia* Lam.

Annual herb 25-60 cm tall; stem white-puberulent on one side.

Open places in woodland and bushland; along rivers and shores; commonly ruderal and a weed in places; stony hills; seasonally waterlogged floodplain clay and alluvium; mopane woodland and scrub; dense sand; termite mounds; sandy-muddy soil; ? near sea level to 1600 m alt.

Botswana; Madagascar; India, Sri Lanka, Malaya, Singapore; N. Australia.

**M. scariosa** Prain

Shrub or tree 1,5-3,5(-7,5) m tall.

Forest and associated thickets on limestone; primeval forest; 10-170 m alt.

**M. volkensis** (Pax) Prain

bas.: *Claoxylon volkensis* Pax

Erect or spreading woody herb or shrub to 2 m tall.

Evergreen forest; 1150-2520 m alt.

## MILDBRAEDIA / 3

*Plesiatropha* Pierre has priority over *Mildbraedia*, fide Breteler in *Adansonia*, Sér. 3, 27: 329, 2005.

**Mildbraedia carpinifolia** (Pax) Hutch.

bas.: *Jatropha carpinifolia* Pax

syn.: *J. fallax* Pax; *Neojatropha carpinifolia* (Pax) Pax; *N. fallax* (Pax) Pax; *Mildbraedia fallax* (Pax) Hutch.

Straggly or semi-scandent much-branched evergreen shrub ± 2-5 m tall or tree to 9 m; dioecious.

Mixed evergreen forest; forest clearings; forest-woodland mixture; often on sandy soil; wooded grassland; streamsides; coastal woodland; 0-1675 m alt.

Comprises 2 vars.

The correct name should be ***Plesiatropha carpinifolia*** (Pax) Breteler, with 2 vars.: – var. ***carpinifolia***; – var. ***strigosa*** (A. R. Sm.) Breteler, l.c. (bas.: *Mildbraedia carpinifolia* var. *strigosa*).

**M. klaineana** Hutch; icon.: Breteler o.c.: 331.

Shrub 0,5-3 m tall; dioecious.

Secondary rain-forest in valleys; formations with *Terminalia superba*; gully.

The correct name should be ***Plesiatropha klaineana*** Pierre.

**M. paniculata** Pax; *Adansonia*, Sér 2, 3: 74, 1963; *Bull. Jard. Bot. Etat., Bruxelles* 31: 64-67, 1961.

Shrub 1,25-8 m tall; stem 6-22 cm Ø; dioecious.

Half-deciduous rain-forest; swampy forests; gallery; montane forest; zone with savanna near forest on lateritic soil; scrub after cultivation.

Comprises 2 subsp.

The correct name should be ***Plesiatropha paniculata*** (Pax) Breteler, l.c., with 2 subsp.: – subsp. ***paniculata***; – subsp. ***occidentalis*** (J. Léonard) Breteler, o.c.: 332 (bas.: *Mildbraedia paniculata* subsp. *occidentalis* J. Léonard).

## MONADENIUM / 70

The leaves are unknown in 1 species, fully developed leaves in another species, the leaves on the vegetative stems in 2 species, and the vegetative stage of the plant in 1 species (*M. simplex*). Fruits are unknown in 2 species (≤ 3 %) and seeds in 6 species (c. 8 %). The ecology is not recorded for 3 species (= c. 4 %). Nine species (<13%) are known only from the type, one of which (*M. letestuanum*) only from the 2 varietal types.

CARTER, S. (2000). Taxonomic changes in *Monadenium* and *Synadenium* (Euphorbiaceae) for Flora Zambesiaca. *Kew Bull.* 55: 435-442.

FORSTER, P. I. (1996). A checklist of the genus *Monadenium* (Euphorbiaceae). *Euphorbia J.* 10: 142-161.

**Monadenium angolense** Bally

Geophytic, hysteroanthous succulent with a tuberous root; stems to 2,5-4 cm high of which 2 cm or less are above the ground, erect, fleshy, to 1 cm thick; leaves produced during the vegetative period unknown; leaves of the flowering growths scale-like, overlapping, sessile, fleshy, orbicular to ovate, acute, mucronate, with a sharp keel down the middle, 8-11 × 4-6,5 mm at the base.

## MONADENIUM ANGOLENSE

Ecology unknown; 2610 m alt. (Mt. Moco summit).

Only known from the type collected in 1957.

Near *M. simplex*.

**M. arborescens** Bally; *Euphorbia J.* 8: 15, 19, 1992; 1: 123, 1983.

Succulent sparsely branched shrub, erect 3,5-4,25 m tall; stem 8-10 cm thick; obtusely 5-angled, with scattered shallow projections along the angles occasionally crowned by a minute reddish brown spine; leaves sessile, fleshy, obovate, to ± 25 × 15 cm.

Scattered in red sandy soil among the dominant trees of *Euphorbia cooperi* var. *ussanguensis*; *Adenium obesum* and woody shrubs and herbs typical of xerophytic vegetation; very local; 900 m alt.

Collected in 1943 and 1986.

Now well known in collections; of easy culture.

Near *M. coccineum*.

**M. cannellii** L. C. Leach; *Euphorbia J.* 2: 144, 1984.

Succulent spiny shrub with a single stout stem to ± 1,5 m high; stem simple ± 3 cm Ø near the base, becoming woody, expanded below ground into a woody “bulb”; leaves deciduous, fleshy, pendulous, slightly folded, sessile, elliptic or somewhat obovate, to 12 × 5 cm, margin irregularly serrulate.

Amongst large rocks in dense *Adansonia* bush.

In cultivation.

Near *M. spinescens*, *M. torrei*.

**M. capitatum** Bally; *Kew Bull.* 55: 436, 2000.

syn.: *M. fanshawei* Bally

Erect, slightly fleshy herb 30-60 cm tall with a tuberous root to 16 × 6 cm; stems solitary or few, cylindrical 2-4 mm thick or more; leaves alternate, spirally disposed, 12-16 mm apart, oblanceolate, mucronate, shortly petiolate, to 4-8 × 1-2,4 cm; midrib prominent, sometimes keeled below; margin with a few serrate teeth near the base or minutely denticulate.

Grassland; open deciduous woodland, with gritty sandy soil; hill; anthill between rocks; edge of road near woodland; granite outcrops usually in shade of evergreen thickets; miombo; 1200-2200 m alt.

Near *M. crispum*, *M. orobanchoides*.

**M. catenatum** S. Carter; cf. under *M. chevalieri* below.

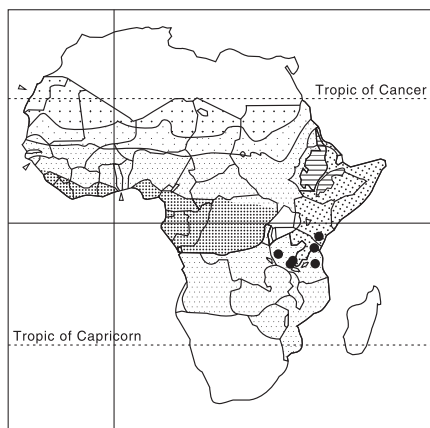
Perennial herb, with tuberous cylindrical or subspherical roots to 2 cm Ø, produced in chains; annual stems 1-2, to 20 cm high, produced from ± 4 cm below ground; leaves subsessile, lanceolate, to 5 × 1,5 cm, apex acute, margin minutely toothed.

*Brachystegia* woodland on sand; 450-830 m alt.

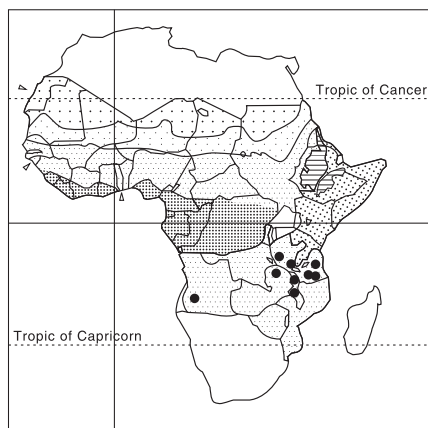
Known only from 2 collections. Near *M. nervosum*, *M. pedunculatum*.

**M. chevalieri** N. E. Br.; *excl. fig. 3* in *Cact. Succ. J. (U.S.)* 55: 129, 1983; *excl. var. spathulatum* Bally (= *M. orobanchoides*) and var. *filiforme* Bally (= *M. filiforme*); *excl. fig. p. 31* in Bally, *The genus Monadenium* (= *M. pedunculatum*), *excl. specim. Milne Redhead & Taylor 7833* (= *M. catenatum*).

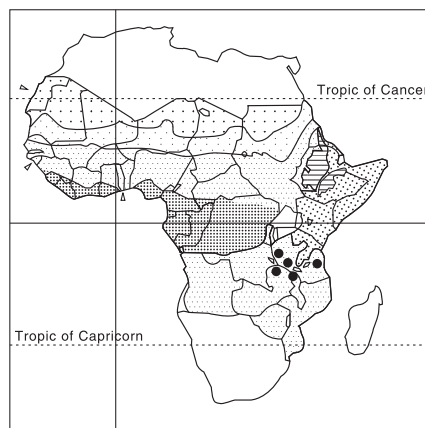




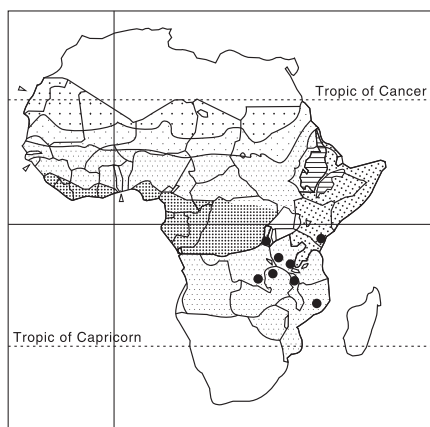
*Meineckia fruticans*



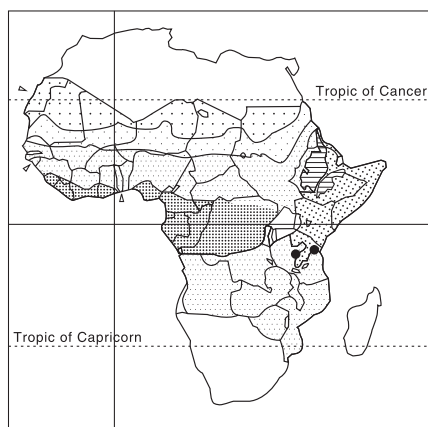
*Meineckia grandiflora*



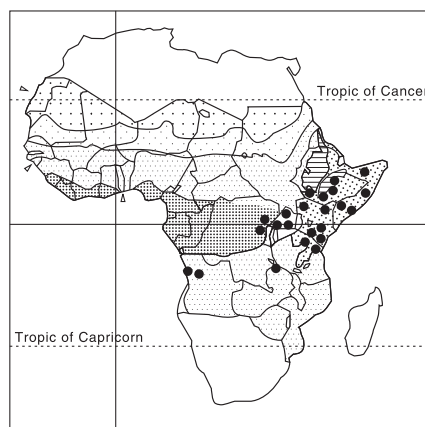
*Meineckia nguruensis*



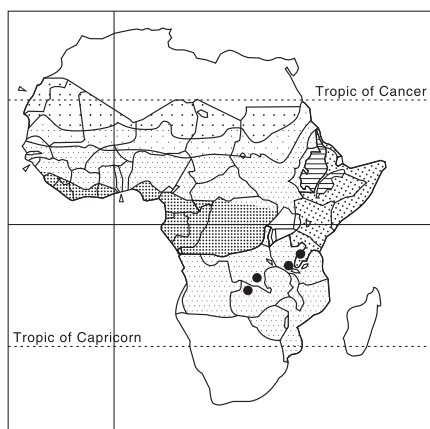
*Meineckia ovata*



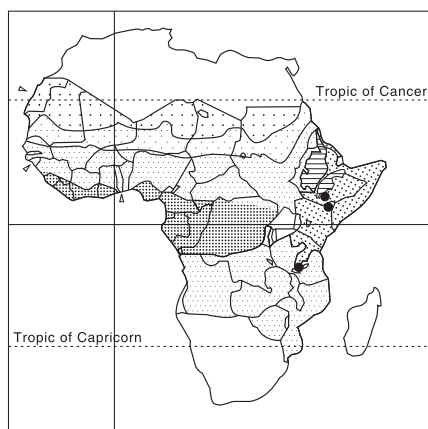
*Meineckia paxii*



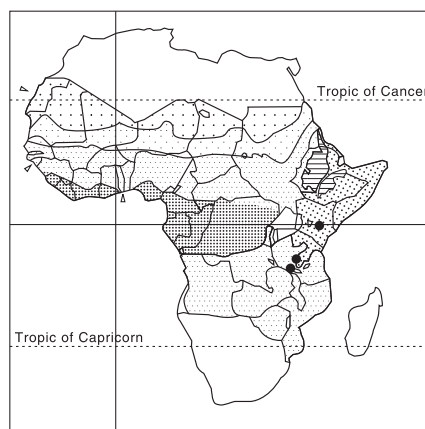
*Meineckia phyllanthoides*



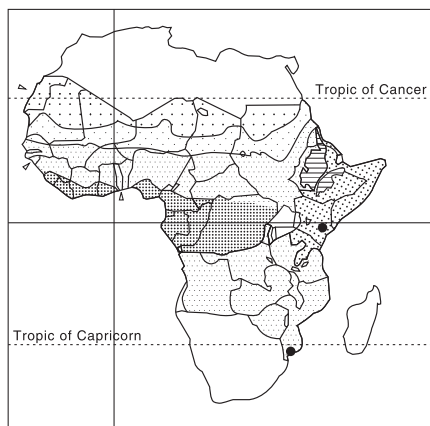
*Meineckia stipularis*



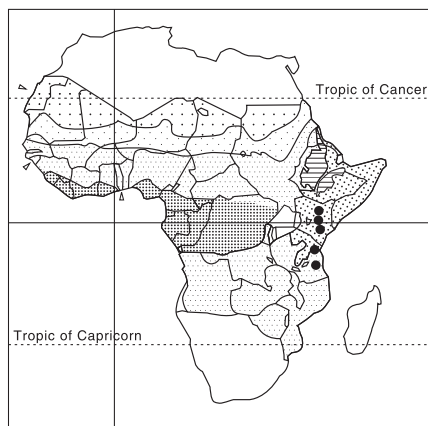
*Meineckia uzungwaensis*



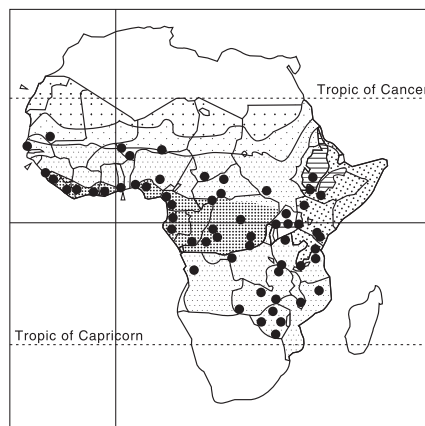
*Meineckia vestita*



*Micrococca capensis*



*Micrococca holstii*



*Micrococca mercurialis*

## MONADENIUM CHEVALIERI

Semi-succulent herb with a tuberous root; perennial with annual stems one to several, 5-24 cm high, 1,5-3 mm thick, herbaceous; leaves alternate, 18-25 mm long, 3-7 mm wide, linear to narrowly elliptic, acute, narrowing towards the base, enveloping the peduncle, longitudinally folded.

Ecology unknown; 600-850 m alt.

Near *M. crispum*.

Not in Zaire and Zambia (= *M. pedunculatum*, *M. orobanchoides*, *M. catenatum*, *M. filiforme*).

**M. clarae** Malaisse & Lecron

Perennial, erect, fleshy, hysteroanthous plant with a tuberous, napiiform root to 4 cm Ø and 5 cm high; perennial stems 1-2, erect, rounded, almost subterranean, 5 cm high and 1,2 cm Ø; annual stems 1-5, erect, fleshy, rounded, 3-8 cm long and 4-5 mm Ø; basal leaves squamose, cauline leaves 4-6, 5,5 × 1,8 cm; elliptic to oboval, apiculate at apex, densely crowded at the stem apex.

Wooded savanna patches in open forest; ± deep soil on laterite, temporarily flooded; 1350 m alt.

Near *M. trinerve*.

**M. coccineum** Pax; Kakteen Sukk. 46(3): insert 09, 1995; Ballya 2: 45, 1995; Euphorbia J. 1: 123, 1983.

Succulent perennial herb, with a large fleshy tuberous root; stems 1-4, erect or subsucculent to 1,3 m high, 1-1,5 cm thick, with 5 longitudinal ridges, leaf-scars becoming calloused and prominent; leaves sessile, fleshy, obovate, to 8,5 × 3,5 cm, apex obtuse, margins with fleshy teeth to 1,5 mm long, occasionally dentate.

Sandy rocky soil in *Brachystegia* woodland and deciduous bushland; 1165-1550 m alt.

Of easy culture (brilliant red inflorescence).

**M. crenatum** N. E. Br.

Fleshy herb with cylindrical stems 7-12 cm high, 6-7 mm thick when dried; leaves alternate, 40-60 × 6-9 mm, linear-lanceolate or narrowly lanceolate, acute, crisped and wavy along the margins, midrib prominent below.

Hills; 330 (or 304?) m alt.

Only known from the type collected in 1898.

**M. crispum** N. E. Br.

Perennial sparsely-branched herb to 75 cm tall, with a tuberous root ± 4 cm Ø; stems subfleshy, with obscure longitudinal ridges, often procumbent and rooting; leaves obovate to oblanceolate, to 8(-10) × 3(-4) cm, base tapering to a petiole to 1 cm long, apex obtuse, margin crisped or denticulate with rounded teeth.

Rocky slopes in forest; 30-700 m alt.

**M. cupricola** Malaisse & Lecron

Perennial, erect, fleshy herb; rootstock tuberous, cylindrical to napiiform, tapering at the apex to a slender pseudo-stem, 2-4 cm long, 0,4 cm Ø; stems 1-2(-3) annual, erect, rounded, grooved, fleshy, 10-30 cm high, 5 mm Ø; leaves 5-10, alternate, spirally disposed, 3 × 2 cm at the base of the stem, ovate; the others linear, to 11 × 0,8 cm.

Grassy savanna on copper-cobalt hill slopes with ± deep, rocky soils; siliceous cellular rock outcrops; 1200-1275 m alt. Hyperaccumulator: 20-52 µg.g.<sup>-1</sup> (Cu) and 76-1234 µg.g.<sup>-1</sup> (Co) (vide Bull. Soc. Roy. Bot. Belgique 119: 179-191, 1987); see also for

## MONADENIUM CUPRICOLA

the vegetation: Oikos 33: 472-478, 1979); for the phenology see: Bull. Mus. Natl. Hist. Nat., Paris, Sér. 4, Sect. B, Adansonia 11: 340, (1989) 1990.

Near *M. pedunculatum*.

**M. descampsii** Pax

Fleshy, erect herb, probably with a tuberous root; stems unbranched, ± 25 cm high, cylindrical; leaves sessile, alternate, ± 2,5 cm apart, very fleshy, linear-lanceolate, slightly wavy towards the apex, ± 3 × 0,5 cm; seeds unknown.

Ecology unknown.

Only known from the fragmentary type collected in 1896.

**M. discoideum** Bally

Fleshy herb to 25 cm tall, with a tuberous, perennial root to ± 7 × 5 cm; stems erect, unbranched, cylindrical; leaves sessile, scale-like at the base of the stem, getting shortly petiolate, elliptic, cuneate, acute, to 6,5-2,5 cm towards the tip of the stem, margin slightly undulate.

*Brachystegia* woodland; ± 1300 m alt.

Near *M. hirsutum*.

**M. echinulatum** Stapf; Euphorbia J. 5: 151, 1988.

syn.: *M. aculeolatum* Pax; *M. asperrimum* Pax

Fleshy perennial herb, with a large woody tuberous rootstock; stems 1-3 unbranched, to 30(-50) cm high; leaves obovate, to 12 × 6,5 cm, base tapering to a winged petiole to 5 mm long, apex apiculate, midrib keeled beneath.

Sandy soils amongst grass in open deciduous bushland or *Brachystegia* woodland; 300-1825 m alt.

One of the most widespread and variable species.

Of easy culture.

**M. elegans** S. Carter; Piante Grasse 13(4): insert Euphorbiaceae (2 pp.) 1993.

Few-stemmed shrub to 3,5 m tall, or tree, sparsely branched; branches eventually pendulous, 7-15 mm thick, with groups of 3 slender spines below the leaf-scars in 3-5 longitudinal series, the central spine to 18 mm long, the lateral ones to 10 mm long; leaves ± fleshy, spatulate, to ± 4 × 3 cm, tapering abruptly below the middle, apex rounded, margin toothed and undulate, midrib sharply keeled and prominently toothed on the lower surface.

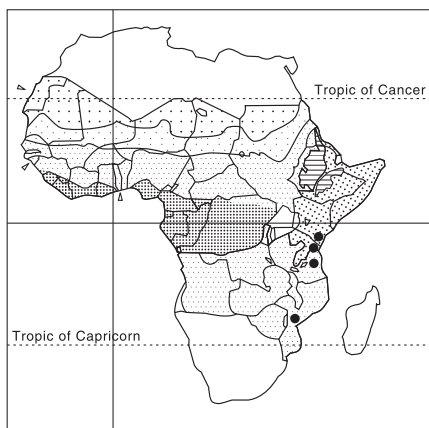
Sandy soils; rocky slopes with dry mixed deciduous woodland; 650-875 m alt. (near Great Ruaha River Gorge).

Near *M. spinescens*.

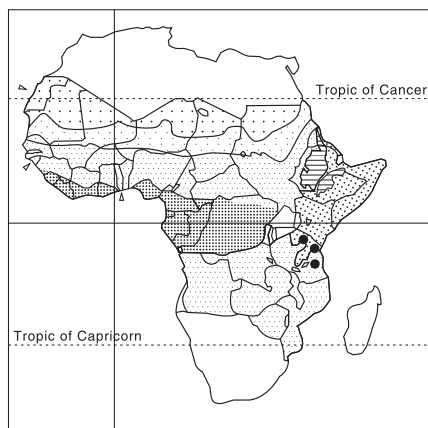
**M. ellenbeckii** N. E. Br.; Euphorbia J. 2: 144, 1984; 1: 124, 1983.

syn.: *M. zavattarii* Chiov. (under fa. *caulopodium* Bally).

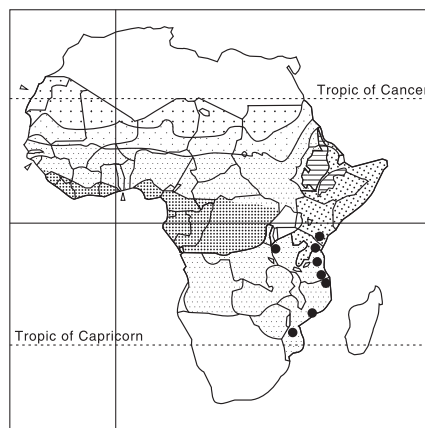
Succulent perennial herb, with a thick fleshy rhizomatous rootstock; stems several, erect 0,5-0,8-1,5 m, sparsely branched, cylindrical, 10-15 mm thick, with 4 longitudinal grooves below each of the numerous spirally arranged leaf-scars; leaves sessile, broadly ovate, to 10 × 8 mm, thick and fleshy, quickly deciduous.



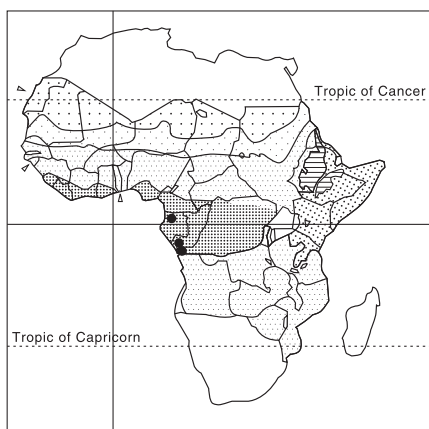
*Micrococca scariosa*



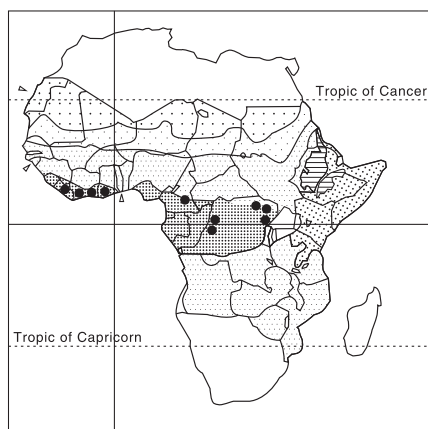
*Micrococca volkensis*



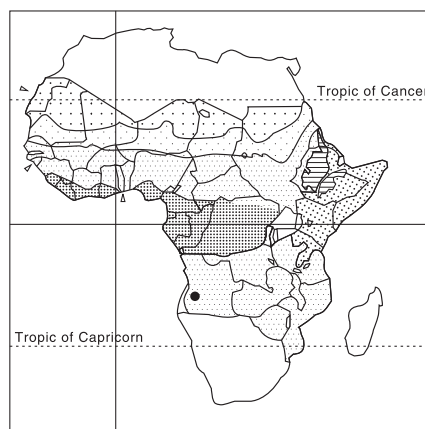
*Mildbraedia (Plesiatropha) carpinifolia*



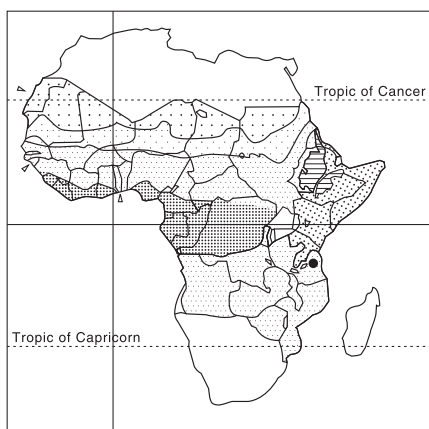
*Mildbraedia (Plesiatropha) klaineana*



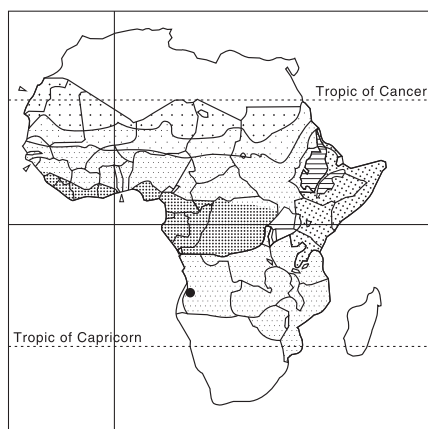
*Mildbraedia (Plesiatropha) paniculata*



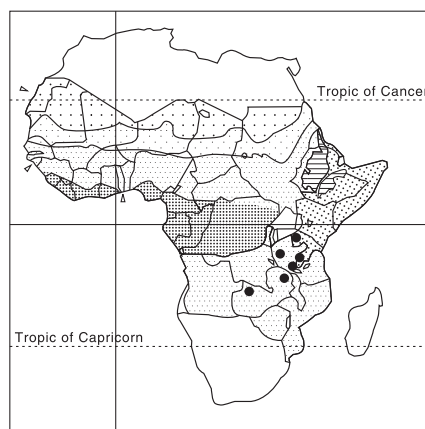
*Monadenium angolense*



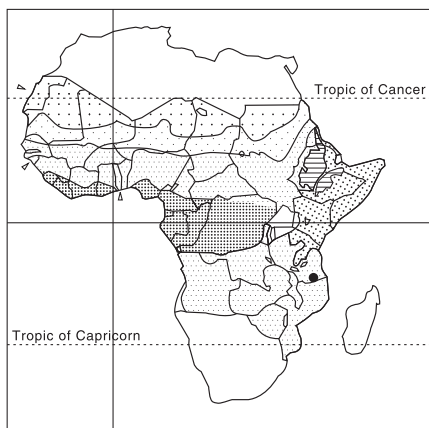
*Monadenium arborescens*



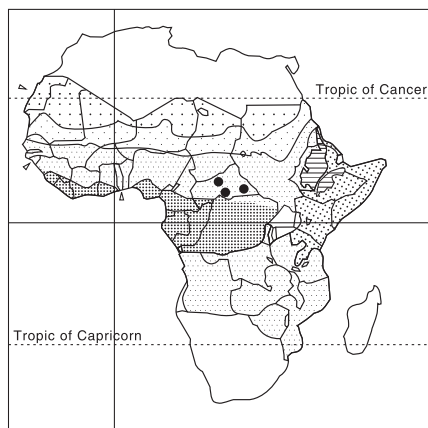
*Monadenium cannellii*



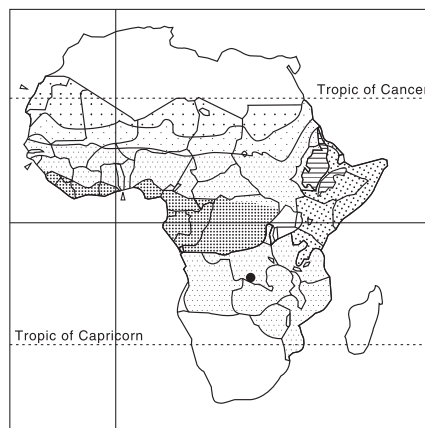
*Monadenium capitatum*



*Monadenium catenatum*



*Monadenium chevalieri*



*Monadenium clarae*

## MONADENIUM ELLENBECKII

Rocky slopes with low open scrub and succulent species; grassland on hardpan soils; *Acacia-Commiphora* bushland; sandy soils; 50-1735 m alt.

Comprises 2 forms.

Generally of easy culture.

**M. erubescens** (Rendle) N. E. Br.; *Bradleya* 8: 47, 1990; *Euphorbia* J. 6: 143, 1989; 2: 147, 1984.

bas.: *Lortia erubescens* Rendle

syn.: *Lortia major* Pax; *Monadenium majus* (Pax) N. E. Br., incl. fa. *floribunda* Bally; *M. pulchrum* Bally, nom. nud.

Perennial herb from a massive tuberous rootstock; stems 1 to many, usually unbranched, 5-60 cm high, 8-10 mm thick; leaves laxly alternate, spreading, rigid, flat, fleshy, subsessile, orbiculate-rhomboid, 2-6 × 1,5-4 cm, acute to acuminate at the apex, wedge-shaped at the base; margins crisped or serrulate.

Grasslands, both on shallow dark soils overlying limestone and in areas of clay soils overlying basalts; gravelly limestone with open *Acacia* bushland; 1300-2100 m alt.

Very variable.

Possibly the most beautiful *Monadenium* with bracts deep pink to pure white.

Of relatively easy culture.

**M. filiforme** (Bally) S. Carter

bas.: *M. chevalieri* N. E. Br. var. *filiforme* Bally

Semi-succulent plant; root tuberous ± 2 cm long and Ø; stem solitary, 3-4 cm long, cylindrical, fleshy, 3-3,5 mm thick; leaves on lower portion of stem scale-like to narrowly lanceolate, 3-16 × 2-2,5 mm; apical leaves crowded, erect, 3-7,5 × 3 mm in the dried specimen, filiform, acute, margins entire, revolute.

Miombo woodland and wooded grassland, by falls; savanna; ± 1400 m alt.

Only known from 2 collections.

**M. friesii** N. E. Br.

Perennial herb, with a subglobose tuberous root to ± 5 cm Ø; stems to 45 cm high, unbranched; leaves to 9 × 6 cm, suborbicular to ovate, sometimes reddened, margin tightly crisped, with petiole ± 6 mm long.

Rocks and rocky hillsides in *Brachystegia* woodland; 375-1210 m alt.

Not in Tanzania (= *M. echinulatum*).

**M. fwambense** N. E. Br.

Root tuberous to ± 8 cm Ø; stems usually solitary, to 20 cm high, erect, cylindrical; leaves alternate, ascending, to 12 × 0,6 cm, narrowly lanceolate or obovate to 4 × 1,5 cm, acute, subsessile, widest about the middle, with an acute, crest-like keel beneath.

Rock-crevices on granite hills; steep stony laterite hillsides among rocks; 1500-2150 m alt.

Near *M. crenatum*.

**M. gillettii** S. Carter

Succulent scrambling perennial to 1 m high, sparsely branching, with short branchlets 5-10 cm long easily breaking off and rooting in leaf-litter; branches terete, 5-8 mm thick, longitudinally grooved with 4 grooves emerging from below each of the numer-

## MONADENIUM GILLETTII

ous spirally arranged leaf-scars; leaves sessile, obovate, ± 6 × 5 mm, fleshy, quickly deciduous; capsule and seeds unknown.

Steep sides of limestone gorge in the shade of *Acacia-Commiphora* bushland; 300-360 m alt.

Near *M. ellenbeckii*.

**M. gladiatum** (Bally) S. Carter

Succulent perennial herb, with a large fleshy branching rootstock; stems numerous, clustered, branching from the base, erect to 15 cm high or decumbent to 25 cm long, to 1,5 cm thick, tessellated, with elongated, upwards and outwards curving tubercles (0,5-)1,4 cm apart in 3-5 loosely spiralled series bearing the leaves at the apices; leaves sessile, obovate, to 5 × 1,5 cm, base tapering gradually, apex obtuse, apiculate, margin crenulate or irregularly toothed, midrib rounded, crenulate or occasionally toothed beneath.

Grassland on dark clay soil; 1500-2000 m alt.

**M. globosum** Bally & S. Carter

Perennial herb, with a tuberous root ± 4 cm Ø, producing 1-2 woody subterranean stems 2 cm long; annual stems fleshy, to 8 cm high; leaves subsessile, forming rosettes at the stem apices, obovate, to 6 × 3 cm, apex rounded.

Flat rocks with gritty black soil; 1950-2500 m alt.

Near *M. pedunculatum*, *M. pseudoracemosum*, *M. capitatum* (closest relative).

**M. goetzei** Pax

Fleshy perennial herb, with a large woody rootstock; stems unbranched, to 75 cm tall, occasionally with a few small scattered spines; leaves ± fleshy, broadly ovate, to 17 × 9 cm, base tapering sharply to a winged petiole to 1 cm long, apex apiculate, margin with large bristly teeth to 2 mm long especially towards the base, midrib keeled beneath.

*Brachystegia* woodland, usually amongst rocks in sandy soil; 1175-1500 m alt.

**M. gracile** Bally

Perennial herb, with an elongated tuberous root producing a woody subterranean stem to 2 cm long; annual stems 1-3, to 5 cm high, with to 4 branches; leaves sessile, linear, to 15 × 3 mm.

Grassland with hardpan soils; 1200 m alt.

Only known from the type collected in 1931.

Near *M. herbaceum*.

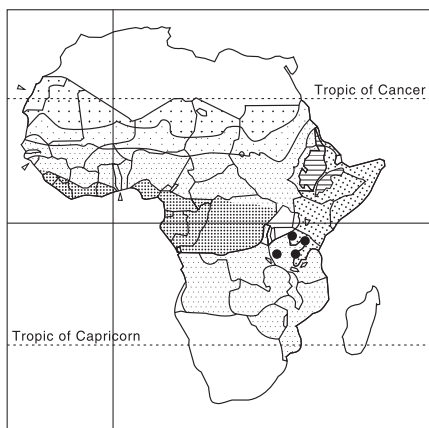
**M. guentheri** Pax

Succulent perennial herb, with a thick fleshy rootstock; stems numerous, branching from the base, erect to ± 15 cm tall, or decumbent to 90 cm long, 1,5-2 cm thick, tessellated with prominent slightly upwards pointing conical tubercles to 7 × 7 mm at the base and ± 5 mm high, bearing the leaves in usually 8 tightly spiralled series; leaves obovate, to 3 × 1,8 cm, apex obtuse, apiculate, margin ± crisped.

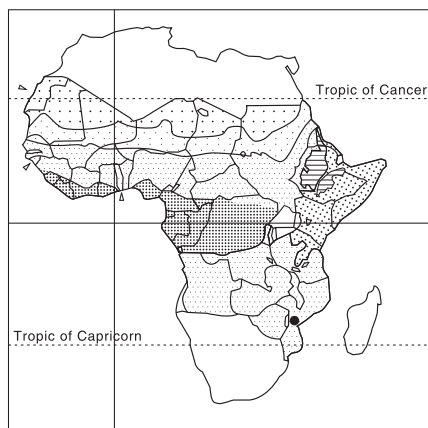
Amongst grasses in open scrubland; 900-1000 m alt.

In cultivation.

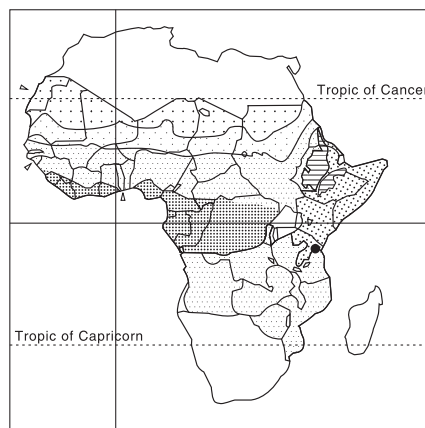




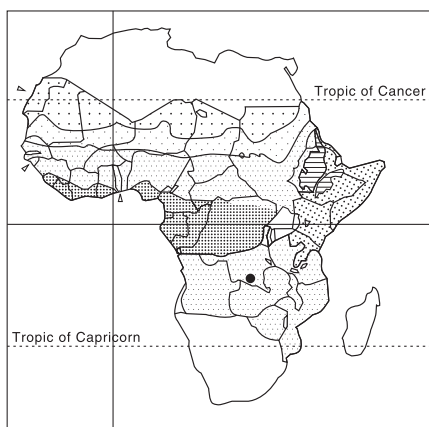
*Monadenium coccineum*



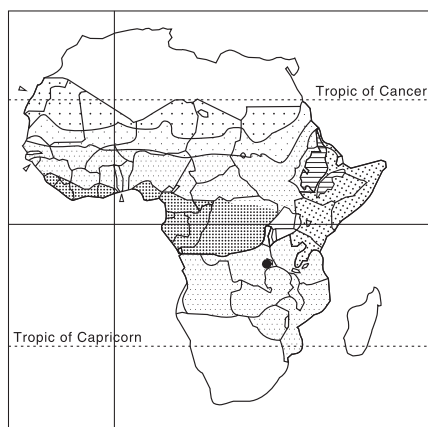
*Monadenium crenatum*



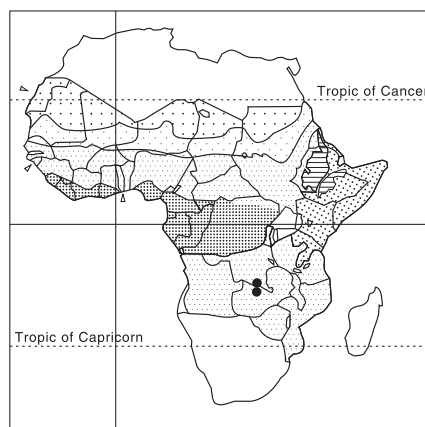
*Monadenium crispum*



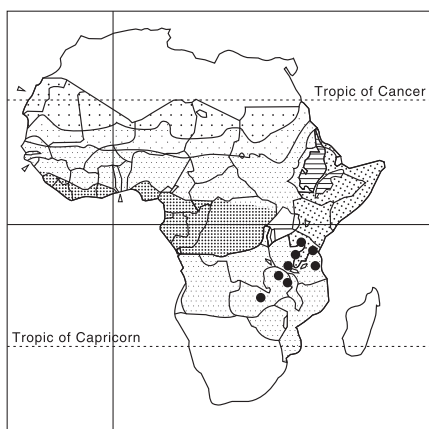
*Monadenium cupricola*



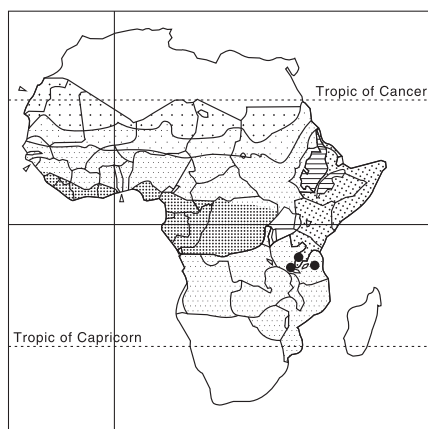
*Monadenium descampsii*



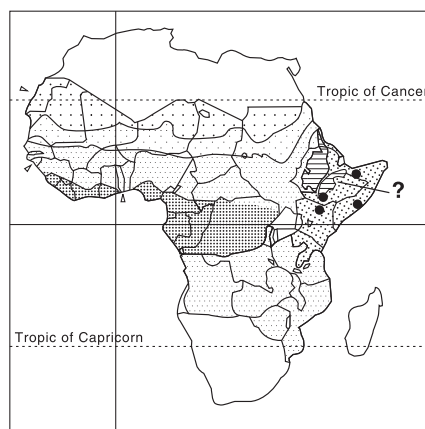
*Monadenium discoideum*



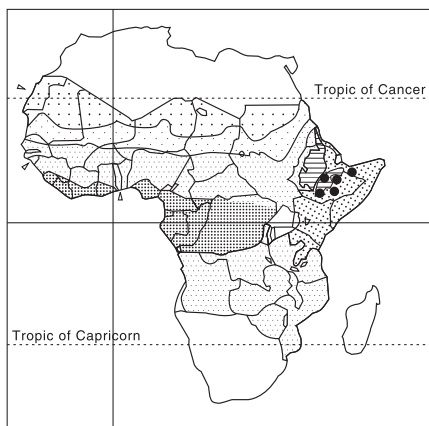
*Monadenium echinulatum*



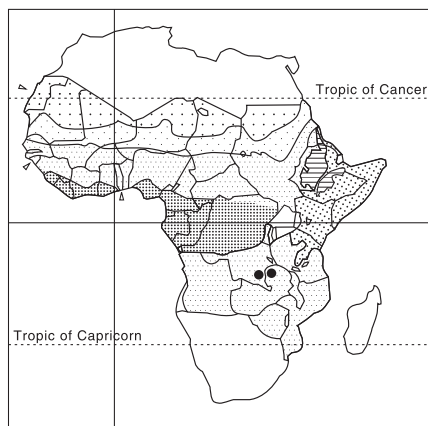
*Monadenium elegans*



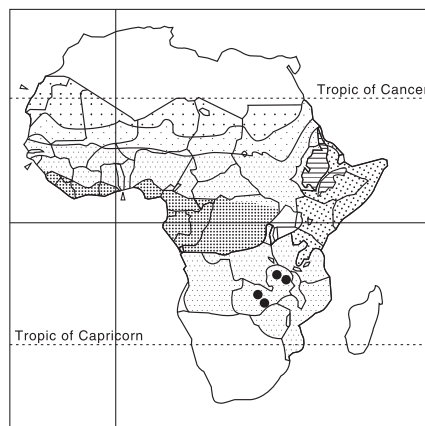
*Monadenium ellenbeckii*



*Monadenium erubescens*



*Monadenium filiforme*



*Monadenium friesii*

## MONADENIUM

**M. hedigerianum** Malaisse

Perennial, fleshy herb, ± 40-50 cm tall, with fleshy, horizontally sprawling roots to 80 cm long, 2,5 cm Ø; annual stems 5-20, cylindrical, 5-7 mm Ø; leaves deciduous, alternate, fleshy, to 10 × 4 cm with petiole 4-8 mm long, ovate, with irregularly crenate margin.

Open forest on rocky slope; ± 1100 m alt.

Near *M. discoideum*.

A remarkable *Monadenium* with infundibular glands (not fleshy and sometimes entire) of the secondary cyathia.

**M. herbaceum** Pax

Erect herb with a tuberous root 2-6 × 2,5-8 cm; stems 25-40 cm high, slender, unbranched; leaves alternate; oblong or lanceolate, becoming linear-lanceolate and smaller towards the apex, acute, mucronate, tapering below the middle towards the subsessile base, coriaceous, with midrib sharply keeled below; seeds unknown.

Swamp; sandy soil in open *Brachystegia* woodland; ± 1035 m alt.

**M. heteropodum** (Pax) N. E. Br.

bas.: *Euphorbia heteropoda* Pax

Succulent perennial herb, with a thick fleshy rootstock; stems numerous, branching from the base, erect or decumbent to ± 50 cm long, 2-4,5 cm thick, tessellated, with prominent conical tubercles to 1,5 × 1,3 mm at the base and to 7 mm high, bearing the leaves in 5 or 8 tightly spiralled series; leaves obovate to oblanceolate, to 6 × 2,5 cm, base tapering gradually, apex obtuse and apiculate, margin crisped on young leaves.

Amongst grass on lightly wooded rocky slopes; steep rocky slopes with open scrub; 850-1300 m alt.

Naturalized in India (J. Bombay Nat. Hist. Soc. 87: 168, 1990).

Comprises 2 vars.

Of easy culture but not commonly encountered in collections.

**M. hirsutum** Bally

Erect, succulent herb 5-25 cm tall; root tuberous ± 4 × 3,5 cm; stems one or several, unbranched, cylindrical; leaves alternate, lanceolate or narrowly elliptic, to 8 cm × 1,5 cm, acute, tapering towards the subpetiolate base; margin sometimes crisped; midrib and main veins prominent beneath.

Rock crevices amongst short grasses and *Brachystegia mimosifolia*; 900-1820 m alt.

Not East of Lusaka in Zambia.

Near *M. fwambense*.

**M. invenustum** N. E. Br.; Euphorbia J. 2: 145, 1984; 10: 150-151, 1996.

Very sparsely branched perennial herb, with a fleshy tuberous rootstock; stems 1-2, fleshy, to 8 mm thick, erect or subscentent to 80 cm tall; leaves ovate to subcircular or lanceolate, fleshy, apex apiculate, base tapering, margin often minutely sinuate, midrib prominent beneath.

Red sandy soil in deciduous woodland and thicket or in open bushland; 60-1000 m alt.

Comprises 2 vars.

One of the most common *Monadenium* in cultivation.

## MONADENIUM

**M. kaessneri** N. E. Br.

Root tuberous; stem erect, herbaceous, 54 cm tall, simple; leaves slightly fleshy, elliptic, lanceolate, obtuse or subacute, apiculate, narrowing to a subsessile base, 7,5-11,5 × 2,5-5 cm; midrib prominent below, keeled.

In the shelter of trees; 580 m alt.

Only known from the type collected in 1908.

Near *M. herbaceum*.

**M. kimberleyanum** G. Williamson

Succulent to 50(-70) cm high growing in dense clumps; branches showing incremental growth segments, tending to be clavate apically, ± 50 mm Ø towards the apices but thinning down to 25 mm towards the base, covered with ± flattish, rhombic tubercles, with a centrally situated, raised leaf-scar, to 5 × 4 mm and projecting 1 mm outwards horizontally, the upper margin with two low, raised, stipular prickles and a central lower prickle; leaves to 17, tufted in a spreading rosette at the apex of the branches, to 90 × 43 mm, obovate, with a petiole channelled on upper surface, to 25 mm long; margin thickened, minutely crenulate.

Sandveld in thicket periphery, with *Aloe suffulta* and close by *Euphorbia halipedicola*, *E. lividiflora*; 1200 m alt.

Near *M. lugardiae*.

**M. kundelunguense** Malaisse

Geophytic, hysteroanthous herb; root perennial, tuberous, 3-5 cm long, 2,5-4 cm Ø; stem reduced at the apex of the root, 8-12 mm long, 6-7 mm thick, succulent, erect, unbranched, cylindrical; leaves at base of the stem sessile, scale-like; leaves 6-15, crowded towards the apex, deciduous, disposed in a flat rosette, fleshy, subsessile, elliptic, obtuse, tapering towards the cuneate, subpetiolate base; blade 2,2-3,7 × 1,5-2,2 cm, margin entire or 1-2-toothed; capsule and seeds unknown.

Shrubby steppe with *Oldfieldia dactylophylla*, on Kalahari sands.

Near *M. simplex* var. *pudibundum*.

**M. laeve** Stapf, *excl. fa. depauperata* Bally (= **M. parviflorum**); Euphorbia J. 1: 124, 1983.

Perennial herb, with a thick woody rootstock ± 1,5 cm Ø; stems simple or sparsely branched, 80-100 cm tall, or procumbent and rooting, to 1,5 m long; leaves obovate, to 15 × 7 cm, base tapering to a winged petiole to ± 1 cm long, apex acute, midrib sharply keeled beneath.

Rocky hillsides in *Brachystegia* woodland; 800-1500 m alt.

In cultivation.

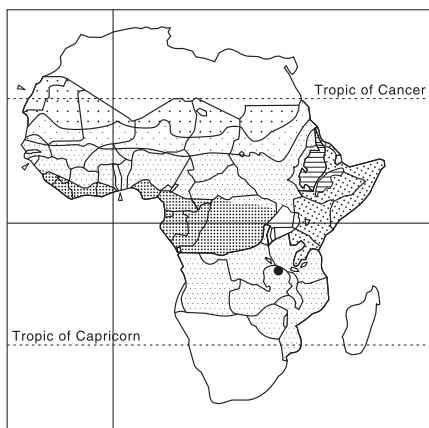
**M. letestuanum** Denis

Root perennial, tuberous; stems 1-2, annual or seasonal, erect, cylindrical, 2-3 cm long; leaves 4-8, crowded at the apex, coriaceous, lanceolate or oblanceolate, mucronate, margin occasionally undulate and ± revolute; petiole 3-5 mm long; blade 2-4 × 1-1,5 cm; leaves sometimes broadly spathulate, obtuse.

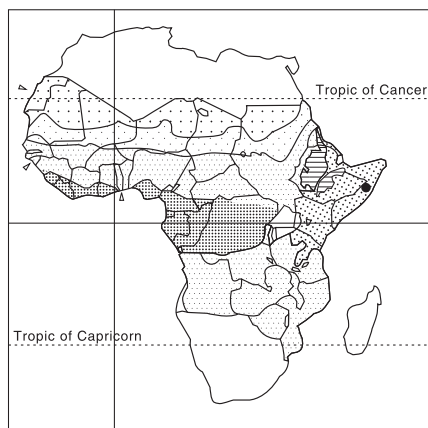
Stony, humid savanna covered with *Gramineae* and scattered trees which become sparser towards the North: *Khaya senegalensis*, *Pseudocedrela kotschy*, *Parinarium* spp., etc.; fairly flat country with scattered rocky outcrops, often of considerable height. This *Monadenium* grows in damp places, waterlogged during the rains, on laterite and gravelly soil; 100-712 m alt.

Comprises 2 vars.

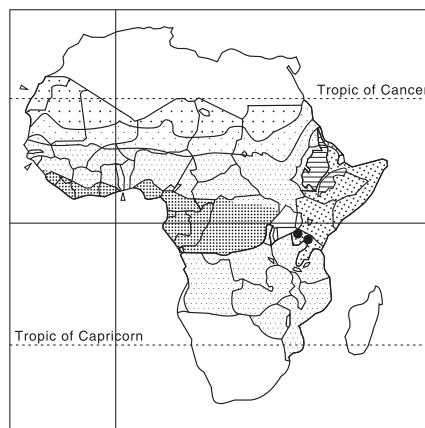
Only known from the two varietal types collected in 1921 and 1922, respectively.



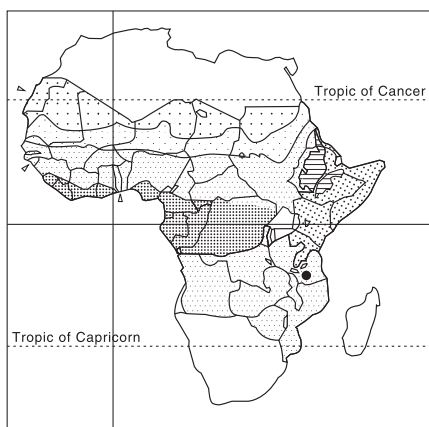
*Monadenium fwambense*



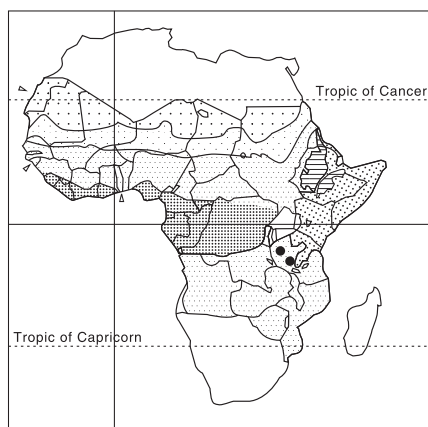
*Monadenium gillettii*



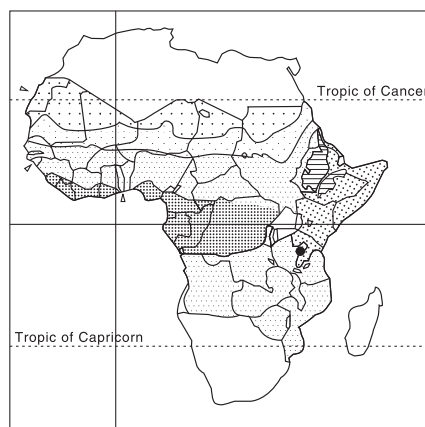
*Monadenium gladiatum*



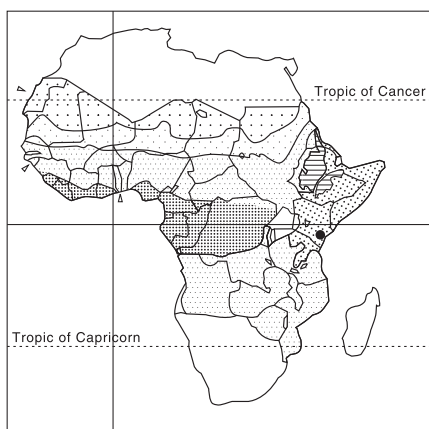
*Monadenium globosum*



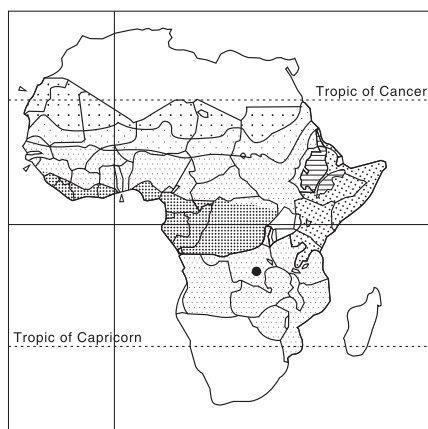
*Monadenium goetzei*



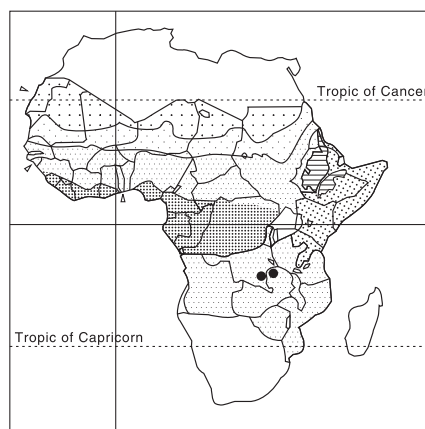
*Monadenium gracile*



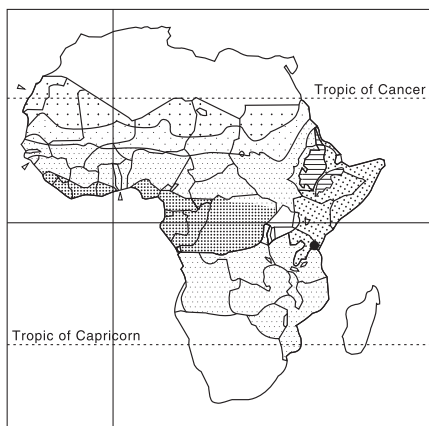
*Monadenium guentheri*



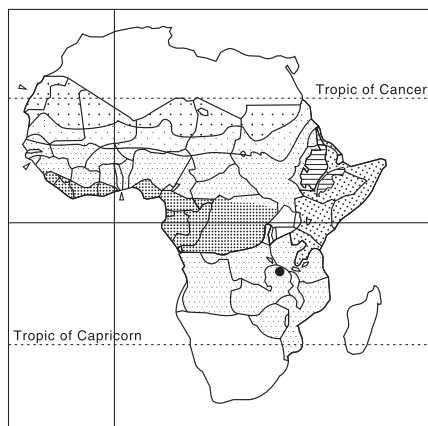
*Monadenium hedigerianum*



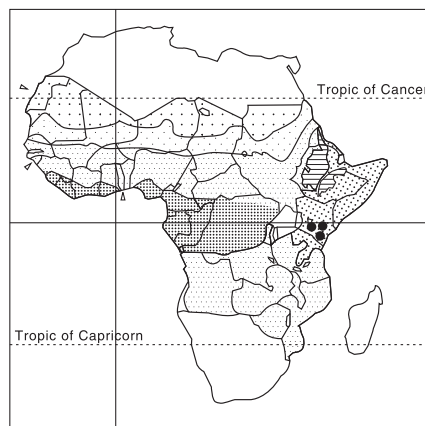
*Monadenium herbaceum*



*Monadenium heteropodum*



*Monadenium hirsutum*



*Monadenium invenustum*

## MONADENIUM

**M. letouzeyanum** Malaisse

Perennial herb, stemless, hysteroanthous with a tuberous, napiiform root, 18-42 mm Ø and 16-55 mm high; perennial stems 1-2, erect, cylindrical, subterranean, 4-15 mm high and 5-9 mm Ø; annual stem 1, nearly subterranean, erect, fleshy, cylindrical, 11-18 mm long and 4-5 mm Ø; primary leaves squamose, slightly fleshy, emarginate at apex,  $3 \times 1,5-2$  mm; secondary leaves (3-)4(-6), in rosette at the base, herbaceous, deciduous, elliptic, petiolate, obtuse at the apex, cuneate at the base, blade  $26 \times 22$  mm.

Open forest with *Brachystegia utilis*, *B. boehmii*, *Julbernardia paniculata*; open forest with *Julbernardia globiflora*, *Marquesia macrourea*; 1208-1350 m alt.

Near *M. simplex*.

**M. lindenbergii** S. Carter

Succulent perennial to 30 cm tall and 40 cm Ø, shortly rhizomatous, densely tufted and rebranching; branches terete, 3-6 mm thick, somewhat woody, with branchlets tapering to 1 mm thick; leaves deltoid,  $\pm 1 \times 1$  mm, fleshy, quickly deciduous.

Rocky flat-topped limestone and gypsum hills with very sparse *Acacia* bushland; 425-730 m alt.

Near *M. virgatum*.

**M. lugardiae** N. E. Br.; Euphorbia J. 2: 146, 1984.

*Euphorbia*-like fleshy plant with tuberous roots; stems one to several, 10-60 cm long, 1,5-3 cm thick, perennial, fleshy, cylindrical, with rather large, scarcely projecting, pentagonal or hexagonal tessellations; leaves spaced in the upper portion of the stems, or in a terminal tuft,  $1,5-9 \times 0,5-4$  cm, obovate, obtuse or subacute, tapering into a very short broad petiole, margin crisped-crenulate or serrulate especially towards the tip, very fleshy.

Granite outcrops; in sandy soil among rocks in open *Brachystegia* woodland and wooded grasslands; in shade on termite mounds; often in colonies; 115-1100 m alt.

Botswana; S. Africa.

One of the more common *Monadenium* in cultivation.

**M. mafingensis** Hargr.; Euphorbia J. 7: 161, 1991.

Geophyte with a tuberous rootstock, to  $\pm 10 \times 5$  cm, producing  $\pm 4$  stems to 5 cm long, 4 mm wide, spreading at ground level; leaves clustered at the branch ends, sessile, ovate to oval, acute  $3,5 \times 2,5$  cm.

Crevice in faces of rock outcrops, in montane grassland; 1800-2250 m alt.

A "beautiful jewel", little known in cultivation.

**M. magnificum** E. A. Bruce; Euphorbia J. 8: 16-17, 1992; 1: 125, 1983; Cactus File 9(1): 7-10, 1993; Bally, The genus *Monadenium*: 76, 1961, *excl. specim.* Pole-Evans 811 (= *M. spectabile*); Kakteen Sukk. 52/9: XXXV, 2001.

Succulent shrub, with a tuberous root (>10 cm Ø); stems 1 to several, spreading or weakly erect to 1,5-2(-3,5) m high, sparsely branched, to 4 cm thick at the base,  $\pm 2$  cm thick above, 4-5-angled, with irregularly grouped ridges of closely spaced reddish brown spiny often branching teeth to 5 mm long along the angles; leaves sessile, reflexed, fleshy, obovate to  $15 \times 10$  cm, apex obtuse, margin toothed, midrib sharply keeled and toothed beneath; leaf-scars to  $\pm 6$  mm wide flanked by branching stipular spines  $\pm 1,5$  mm long.

## MONADENIUM MAGNIFICUM

Red soil in open *Commiphora* bushland; dry deciduous woodland with *Acacia*, *Commiphora*; 825-1005 m alt. Distribution more than extremely limited. In lightly shaded conditions. Populations no more than 40-50 individuals at each locality.

Easy to cultivate but slow growing; large bright red inflorescence.

**M. montanum** Bally, *excl. var. rubellum* Bally (= *M. rubellum*).

Perennial herb with a tuberous rootstock to 2 cm thick; stems 1-3, fleshy, rarely branching, erect to 15 cm high or occasionally decumbent, to 5 mm thick; leaves obovate to  $4,5 \times 2,5$  cm, apex acute.

Grassland with scattered *Acacia* bushland; 1000-1500 m alt.

Near *M. invenustum*.

**M. nervosum** Bally; The genus *Monad.*: 23, 1961, *excl. specim.* Milne-Redhead & Taylor 8341 (= *M. orobanchoides*).

Geophytic perennial herb with a napoid tuberous root to 7 cm Ø, producing 1-3 subterranean stems 1-3 cm long; annual stems 2-6 cm high; leaves in rosettes at the apices of the stems, obovate, to  $\pm 9 \times 4,5$  cm, apex rounded, midrib prominent beneath; petioles to 1 cm long.

Sandy soil amongst rocks and deciduous woodland; *Brachystegia* woodland on stony hillsides and lateritic rocky places; in gritty soils with short grass; 750-1500 m alt.

Possibly in SE Zaire.

Near *M. letestuanum*.

**M. nudicaule** Bally

Hysteroanthous geophyte, with a tuberous root  $\pm 4,5$  cm Ø, producing a woody subterranean stem  $\pm 2$  cm long; flowering stems 1-2,  $\pm 8$  cm tall,  $\pm$  fleshy, with several scale-like ovate leaves  $\pm 5 \times 2$  mm (fully developed leaves unknown).

Open dry deciduous woodland on hard-pan soil; 1300 m alt.

Near *M. coccineum*.

Only known with certainty from the type (Bally E 133, not E 135!).

**M. orobanchoides** Bally

Hysteroanthous geophyte, with a fleshy tuberous root to  $\pm 5$  cm Ø producing 1-4 subterranean stems 2-4 cm long; annual stems 2-6 cm tall; flowering stems 1-4, fleshy, with numerous scale-like oblong leaves to  $\pm 10 \times 5$  mm, crowded at the base, sometimes developing normally at the stem apices; leaves in rosettes at the apices of the stems, sessile, obovate, to  $\pm 6 \times 2,5$  cm, apex obtuse to rounded, midrib prominent beneath.

Grassland, wooded grassland, often amongst rocks; appearing after burning; 1020-2400 m alt.

Comprises 2 vars.: – var. **orobanchoides** (syn.: *M. chevalieri* N. E. Br. var. *chevalieri* sensu Bally, Genus *Monad.*: 32, 1961 quoad specim. Richards 3480; *M. chevalieri* var. *spathulatum* Bally; *M. nervosum* Bally, l.c.: 23 quoad specim. Milne-Redhead & Taylor 8341 and plate II); – var. **calycinum** Bally.

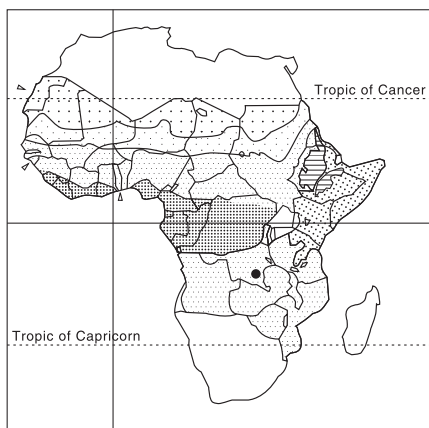
Near *M. chevalieri*.

**M. parviflorum** N. E. Br.

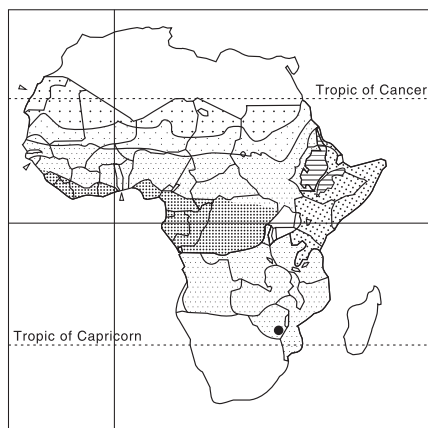
syn.: *M. laeve* Stapf fa. *depauperatum* Bally; *M. depauperatum* (Bally) S. Carter

Perennial herb to 30-50-100 cm tall, with a thick woody rootstock to  $\pm 3$  cm Ø; stems several, simple or few-branched; leaves ovate,  $5,5-10 \times 1-5$  cm, base tapering into a winged petiole  $\pm 1$  cm long, apex acute, midrib sharply keeled on the lower surface.

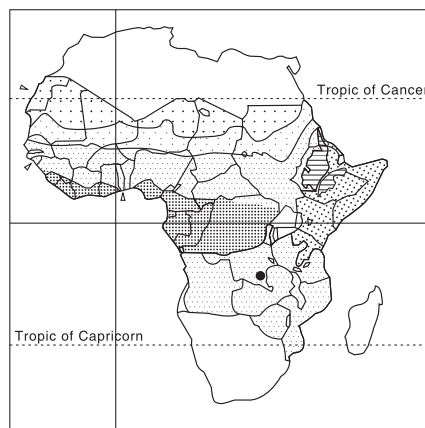




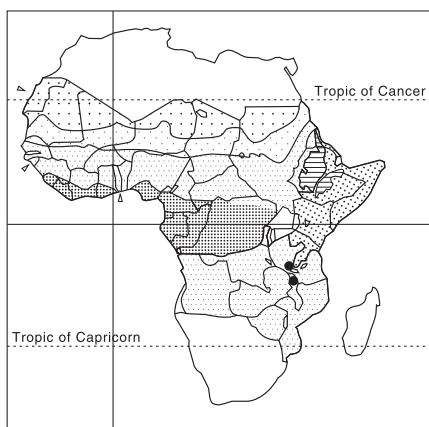
*Monadenium kaessneri*



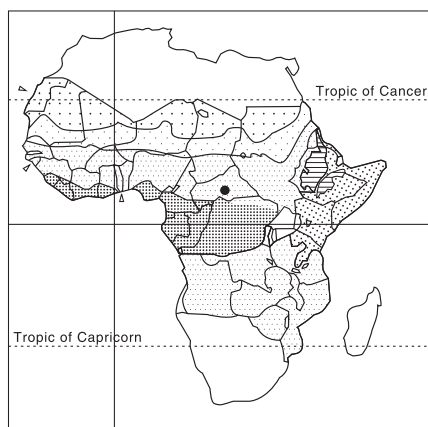
*Monadenium kimberleyanum*



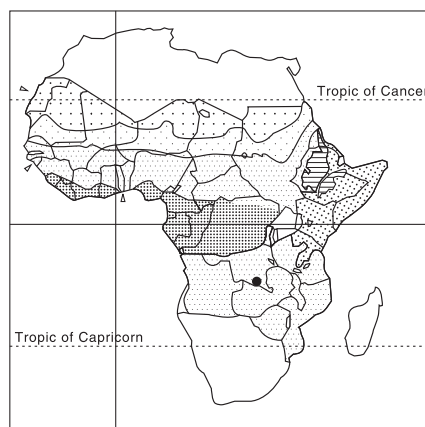
*Monadenium kundelungense*



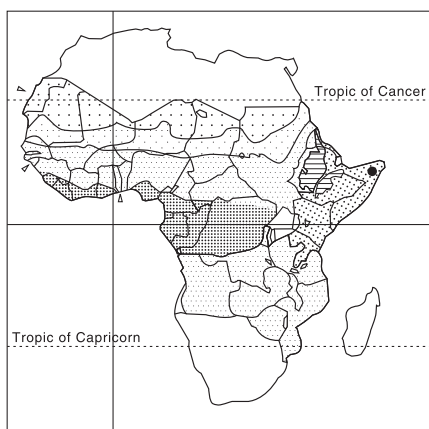
*Monadenium laeve*



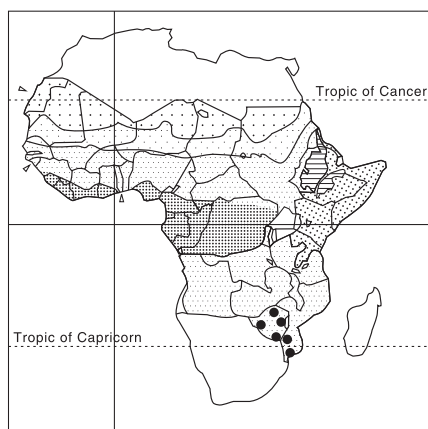
*Monadenium letestuanum*



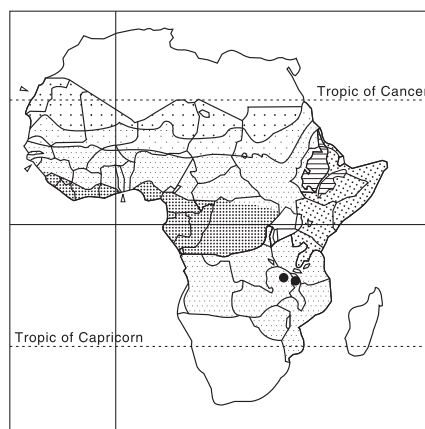
*Monadenium letouzeyanum*



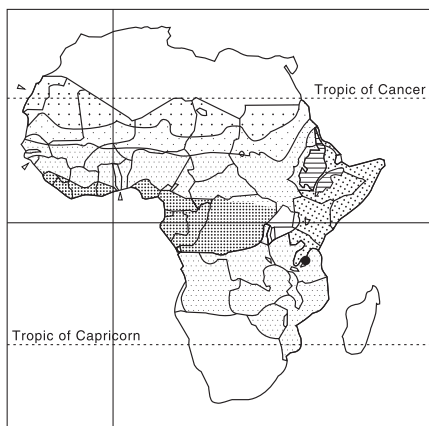
*Monadenium lindenii*



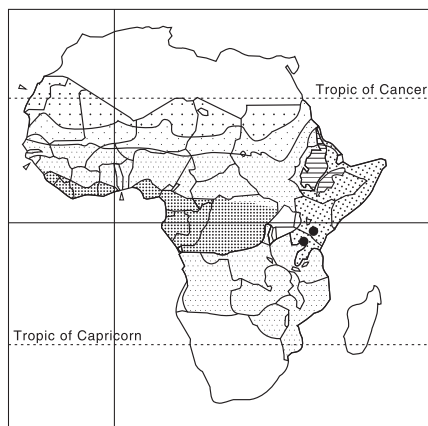
*Monadenium lugardiae*



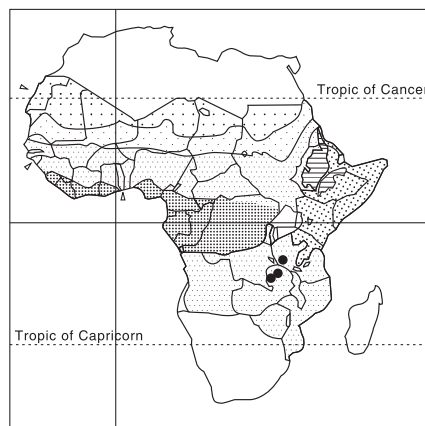
*Monadenium mafingense*



*Monadenium magnificum*



*Monadenium montanum*



*Monadenium nervosum*

## MONADENIUM PARVIFLORUM

In grass in *Brachystegia* woodland on sandy soil amongst rocks; rock crevices and on decomposing granite in *Brachystegia* woodland and thickets, on hillsides and on termitaria; 548-2100 m alt.

**M. pedunculatum** S. Carter

Perennial herb, with a napoid tuberous root to 6 cm Ø, producing 1-2 subterranean woody stems to 6 cm long; annual stems 1-4, rarely branching, 2-15(-20) cm high, longitudinally ridged; leaves sessile, linear, to 9 × 0,5 cm, or lanceolate, to 6 × 1,5 cm, rarely obovate, to 4 × 2 cm, midrib ± prominent beneath.

Wooded grassland or open *Brachystegia* woodland with sandy or clayey soils; 450-1525 m alt.

Near *M. nervosum*.

**M. petiolatum** Bally

Perennial unbranched herb ± 25 cm tall, with a tuberous root; leaves obovate, to 8 × 3 cm, base tapering to a petiole 1-2 cm long, apex acute.

Closed bushland on sandy soil; 1280-1325 m alt.

Near *M. crispum*.

**M. pseudoracemosum** Bally

Perennial herb, with a cylindrical tuberous root to 10 × 1,5 cm producing a woody subterranean stem to 6 cm long; annual stems to 7 cm tall; leaves subsessile, obovate, to 7,5 × 6 cm or oblanceolate, to 11 × 2 cm, apex rounded, margin entire or crisped, midrib ± keeled beneath.

Stony ground amongst grass in open woodland; lake shore, on steep slopes in dry rocky soil; 770-1650 m alt.

Comprises 2 vars.

Near *M. fwambense*.

**M. pudibundum** Bally; Bull. Séances Acad. Roy. Sci. Outre-Mer 40: 400, fig. 14 and pl. 8, 1995; Kew Bull. 55: 435-436, 2000; Cact. Succ. J. (U.S.) 59: 204, 1987.

Geophytic hysteroanthous herb; root perennial, tuberous, 5-6 × 2-3 cm; with stems, or stems reduced to mere growing points at the apex of the root, 2-10 mm long, 3-4 mm thick, erect, usually remaining beneath the surface; leaves 4-7, disposed in a prostrate or erect-spreading rosette, slightly fleshy, obovate, orbicular or spatulate, emarginate, apiculate with a crisped, serrulate margin, ± 3,2-5 × 1,5-5 cm.

Hard, bare, grey soil, in open; among rocks in gritty soil; shallow soil over laterite, in open woodland; 1200-1350 m alt.

Comprises 3 vars: – var. **pudibundum** [syn.: *M. simplex* Pax var. *pudibundum* (Bally) Bally]; – var. **rotundifolium** Malaisse & Lecron; – var. **lanatum** S. Carter

**M. reflexum** Chiov.; Euphorbia J. 1: 126, 1983.

Succulent perennial herb, with a relatively small fleshy rootstock; stem simple or rarely few-branched, erect, to 75 cm, cylindrical to 6 cm thick, tessellated, with 10-15 spirally arranged series of closely set reflexed tapering elongated tubercles, each 5-20 mm long, with a groove on the upper side and bearing a leaf at the tip; leaves obovate, to 2,5 × 1,2 mm, apex obtuse.

Sandy soil on rocky slopes near river or dry stream beds with sparse *Acacia-Commiphora* bushland; dark or red soils; 600-1200 m alt.

Slow growing, but easily grown.

## MONADENIUM

**M. renneyi** S. Carter

Succulent perennial herb, with fleshy roots; stems slender, subscandent, to 50 cm long, and ± 2 cm thick, sparsely branching, with the branches easily breaking off and then quickly rooting, tessellated, with very prominent cylindrical tubercles to 1,5 × 1,5 cm at the rounded flattened base and to 7 mm high in usually 5 fairly loosely spiralled series and bearing the leaves at the apices; leaves broadly obovate, to 7 × 4,5 cm, base tapering to a winged petiole to 1 cm long, apex obtuse-apiculate, margin crisped.

Rocky slopes near river in *Acacia-Commiphora* bushland; 400 m alt.

Of easy culture.

Near *M. schubei*.

**M. rhizophorum** Bally; Euphorbia J. 1: 126, 1983, *excl. var. stoloniferum* Bally (= **M. stoloniferum**).

Succulent perennial herb, with a fleshy rhizomatous rootstock ± 1 cm thick; stems unbranched, erect, to 10 cm tall, ± 7 cm thick; leaves sessile on slightly projecting spirally arranged tubercles 5-15 mm apart, obovate, to 4 × 2,2 cm, apex obtuse, margin crisped; seeds unknown.

Grassland, with black rock-strewn soil; 1650 m alt.

Easily grown.

Only known from the type collected in 1940 but known in cultivation from this collection.

Near *M. stapelioides*.

**M. ritchiei** Bally

Succulent perennial herb, with a thick fleshy rootstock; stems erect, decumbent or rhizomatous, to 40 cm long, 1,5-3 cm thick, tessellated, with prominent conical tubercles bearing the leaves in usually 5 spiralled series; leaves sessile, broadly obovate, to 3 × 2,5 cm, apex obtuse, apiculate, margin minutely crisped.

Steep stony slopes; tussock grassland on rocky slopes; slopes of volcanic crater amongst lava rocks; ± 1150-1300 m alt.

Comprises 3 subspp.

Of fairly easy culture.

Near *M. guentheri*.

**M. rubellum** (Bally) S. Carter; Euphorbia J. 1: 125, 1983.

Perennial herb, with a fleshy rootstock forming clusters of rounded tubers 1,5-3 cm thick; stems fleshy, 1-3 from each tuber, rarely branching, erect, to ± 5 cm or decumbent to ± 25 cm long, 4-5 mm thick.

Amongst rocks, with *Xerophyta*; 1520 m alt.

In cultivation.

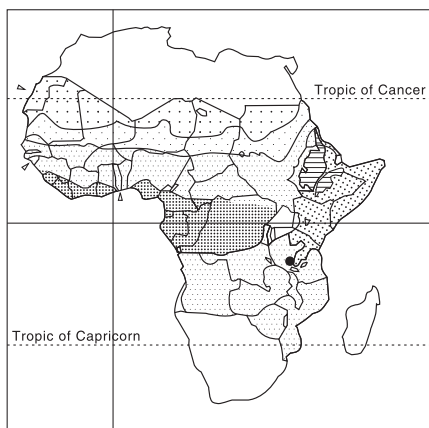
Near *M. stoloniferum*, *M. montanum*.

**M. rugosum** S. Carter; icon.: Kew Bull. 55: 438, 2000.

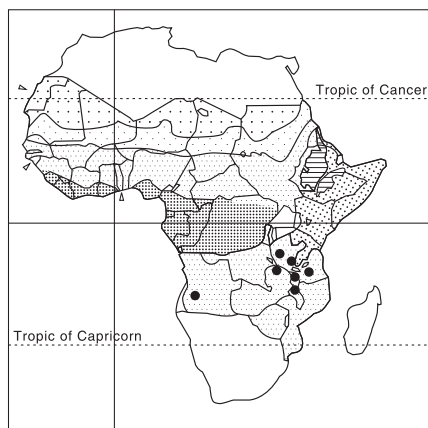
Fleshy herb, with shortly rhizomatous, tuberous roots; stem to ± 50 cm tall, unbranched ± 8 mm Ø; leaves fleshy, broadly obovate, to 10 × 7 cm, tapering into a winged petiole 5-10 mm long, margins toothed, upper surface distinctly roughened, midrib keeled beneath.

*Brachystegia* woodland; 250-500 m alt.

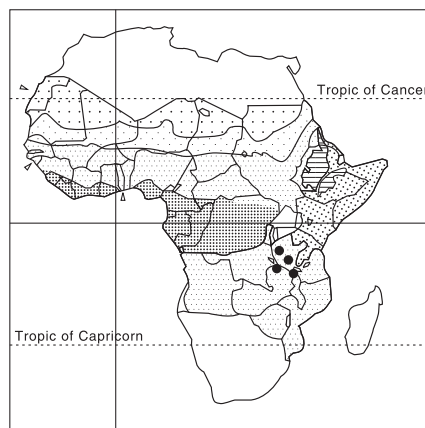
Near *M. capitatum*.



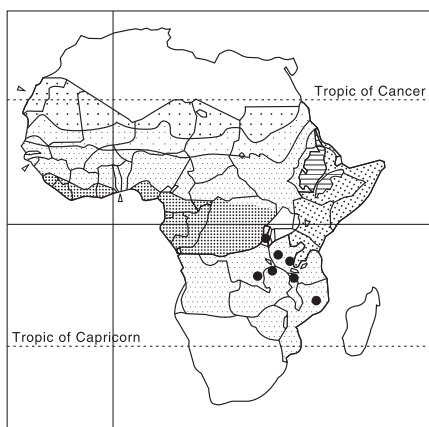
*Monadenium nudicaule*



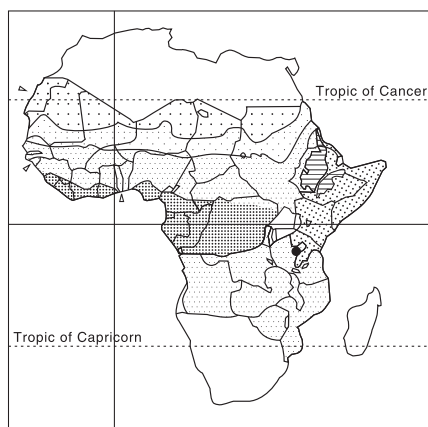
*Monadenium orobanchoides*



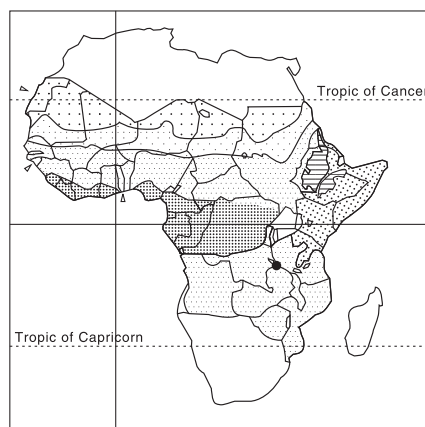
*Monadenium parviflorum*



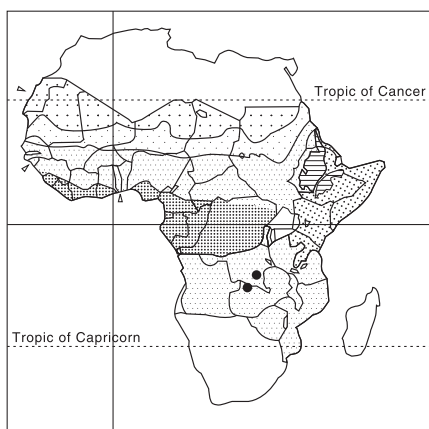
*Monadenium pedunculatum*



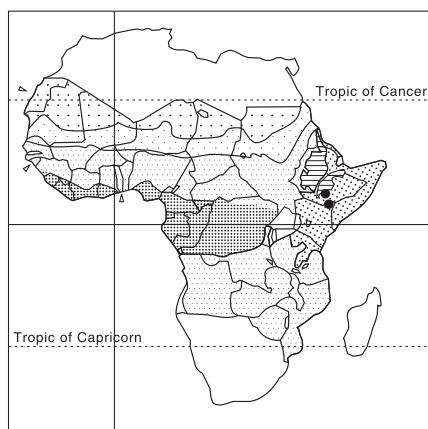
*Monadenium petiolatum*



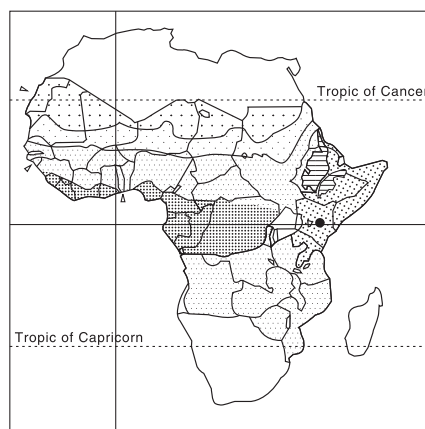
*Monadenium pseudoracemosum*



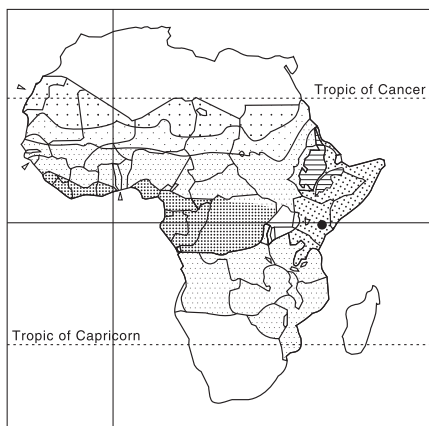
*Monadenium pudibundum*



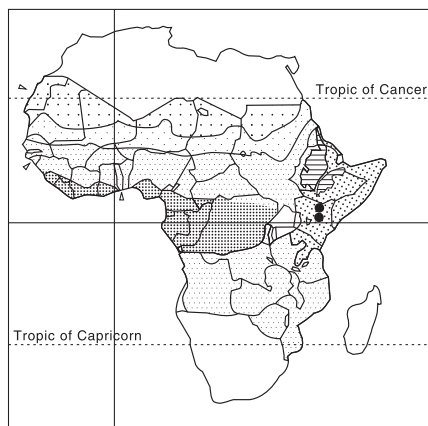
*Monadenium reflexum*



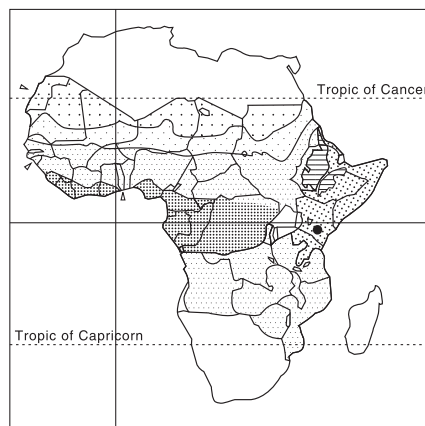
*Monadenium renneyi*



*Monadenium rhizophorum*



*Monadenium ritchiei*



*Monadenium rubellum*

## MONADENIUM

**M. schaijesii** Malaisse

Perennial herb with a tuberous root; stem 1, erect, cylindrical, simple, fleshy, 2-5 mm high, subterranean; leaves 5-10, deciduous, in rosette at the base, slightly fleshy, sessile, elliptic, acute at the apex, cuneate at the base, 2-4 × 1,5-3 cm.

Clearing in steppe savanna on rocky slope surrounded by open forest; 1050-1190 m alt.

Near *M. angolense*.

**M. schubei** (Pax) N. E. Br.; Bally, Genus Monad.: 64, 1961, *excl. var. formosum* Bally and specim. from Usambara (= *M. heteropodum*), and *excl.* population from NE Zimbabwe (near *M. lugardiae*).

bas.: *Euphorbia schubei* Pax

Succulent perennial herb, with fleshy roots; stems stout, branching mostly from the base, erect to 90 cm or decumbent to 1,25 m long and 3-5 cm thick, tessellated, with very prominent cylindrical-conical tubercles bearing the leaves, to 1,5 × 1,5 cm at the base and to 1 cm high, in usually 8 tightly spiralled series; leaves obovate, to 8 × 5 cm, usually much less, base tapering to a winged petiole to 1,5 cm long, apex obtuse and apiculate, margin crisped on young leaves.

Amongst rocks in grassland with open deciduous woodland; 800-1500 m alt.

**M. shebeliense** M. G. Gilbert

Erect shrub to 1,75 m tall; main stem thick and rather woody at base, branches few and spreading; stems deeply longitudinally grooved, prominently patent-tuberculate in young plants, upper branches ± prominently tuberculate; leaves unknown.

Along top of limestone escarpment with very sparse *Acacia-Commiphora* bushland; ±300 m alt.

Near *M. stellatum*, *M. ellenbeckii*.

Only known from the type collected in 1971.

**M. simplex** Pax; Hargreaves, Cact. Succ. J. (U.S.) suppl. to 47: *excl. fig. 28, 29, 1975*; *excl.* Cact. Succ. J. (U.S.) 59: 204, 1987 (= *M. pudibundum*).

Dwarf, hysteranthous geophyte; root tuberous, napoid, ± 3 long, 2,5 cm Ø; vegetative stage and leaves unknown; stem of flowering growth reduced to a subterranean axis few mm long, with few, scale-like, lanceolate, acute, membranous leaves, 3,5 × 1,5 mm.

Sandy plains; wooded savanna dominated by *Isoberlinia angolensis*.

**M. spectabile** S. Carter; Euphorbia J. 8: 18-19, 1992; 7: 161, 1991; cf. under *M. magnificum* above.

Succulent shrub, with an unbranched or few-branched stem, erect, to 3,5 m high; stem 3-8 cm thick, obscurely 5-angled, with scattered spirally arranged projections or tubercles crowned by clusters of reddish brown usually branching spines 2-6 mm long; leaves sessile, fleshy, obovate, to 33 × 23 cm, apex rounded, margin entire or with a few teeth towards the base, midrib keeled with scattered spines beneath; leaf-scars to 1 cm wide, flanked by triangular spines to 0,8 mm long.

Sandy soil on rocky slopes in dense deciduous mixed woodland; 800-1065 m alt. Extremely limited distribution.

Fairly easy cultivation.

Intermediate between *M. magnificum* and *M. arborescens*.

## MONADENIUM

**M. spinescens** (Pax) Bally; Euphorbia J. 2: 148, 1984 (? incl. specim. St Clair-Thompson).

Tree to 6 m; stem ± 15 cm Ø, sparsely-branched, with peeling yellowish brown papery bark; branches 12-25 mm thick, with groups of 3 stout spines below the leaf-scars in 5 longitudinal series, the central spine to 14 mm long, slightly recurved, the lateral ones to 7 mm long; leaves ± fleshy, obovate, to 17 × 6 cm, apex acute, margin toothed and undulate, midrib keeled and toothed beneath.

Slopes strewn with gneiss rocks, with *Pterocarpus*, *Bauhinia*, *Combretum*, *Jatropha*, *Euphorbia grantii*, *E. ussanguensis*; 1200-1500 m alt.

Still uncommon in cultivation, but presents no unusual cultural difficulties.

**M. spinulosum** S. Carter

Perennial with thick, fleshy roots; stems succulent, sparingly branched, erect, to ± 45 cm high or decumbent to 80 cm long and rooting, to 3 cm Ø, cylindrical, covered with tubercles to 5 mm high from ± diamond-shaped tessellations ± 10 × 8 mm; tubercles crowned with circular leaf-scars 3 mm Ø; leaves subsessile, crowded towards stem apices, to 10 × 4,5 cm, obovate, tapering to a narrow base, fleshy, margins crisped, midrib prominent beneath.

Granite outcrops and amongst rocks on hillsides in shade, in *Brachystegia* woodland; 65-1200 m alt.

**M. stapelioides** Pax; Kakten & Sukk. 56: 111, 2005 (photo).

Succulent perennial herb with a large fleshy rootstock; stems numerous, branching mostly from the base to form a domed cushion to 60 cm Ø, erect or decumbent to 30 cm long, 1-2 cm thick, tessellated with ± prominent upward pointing tubercles, 3-10 × 5-8 mm at the base, bearing the leaves at the apices 1-4 mm from the axils, in 5 or 8 tightly to ± loosely spiralled series; leaves very fleshy, obovate to oblanceolate, to 5 × 1,5 cm, apex acute, apiculate, margin entire or minutely crenulate.

Amongst grass on rocky ground with open *Acacia* bushland; 1425-2500 m alt.

Variable species.

Comprises 2 vars: – var. **stapelioides** (syn.: *M. succulentum* Schweick.); – var. **congestum** (Bally) S. Carter.

**M. stellatum** Bally; Euphorbia J. 1: 127, 1983.

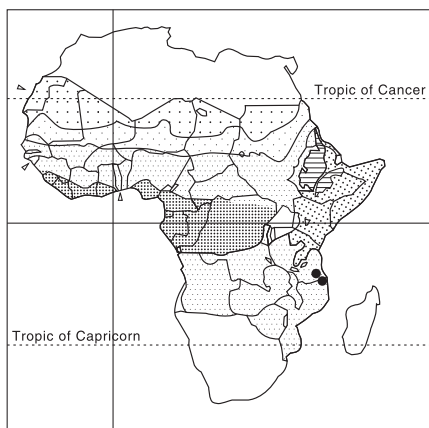
Succulent shrub to 3 m tall, with fibrous roots; stem to 5 cm thick, with fairly sparse irregular branching; branches terete, 1-3 cm thick, longitudinally grooved with 4 grooves emerging below each of the numerous tubercles; tubercles in 5-8 spirals, very prominent on lower growth, cylindrical, 5-10 mm long and 5-10 mm apart, more distant to 2 cm and less than 5 mm long on upper growth; leaves arising from the tubercle apices, sessile, obovate with acute apex, to 18 × 10 mm, fleshy, quickly deciduous; stipules as a pair of horny pads flanking the leaf-scar, each producing 4-5 sharp spines 1-2 mm long.

Stony limestone slopes, with *Acacia-Commiphora* bushland; 160-500 m alt.

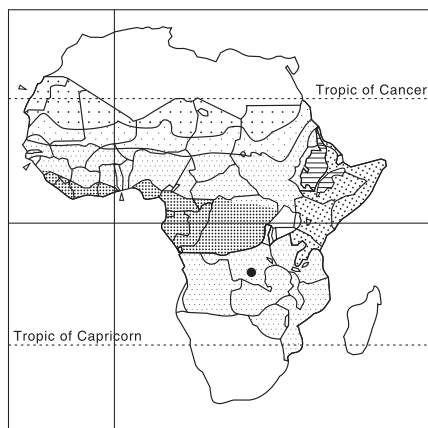
Still rare in collections.

Near *M. reflexum*.

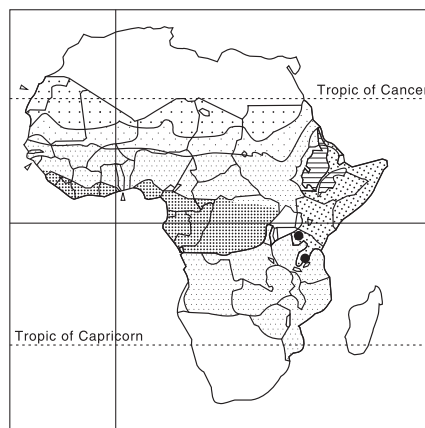




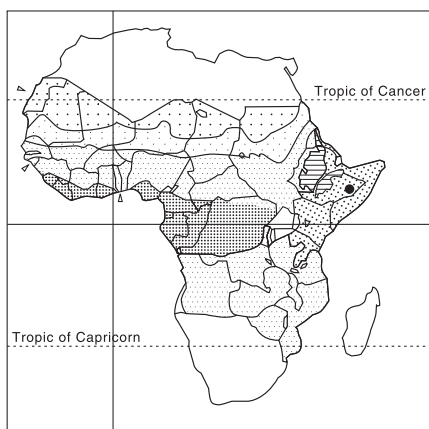
*Monadenium rugosum*



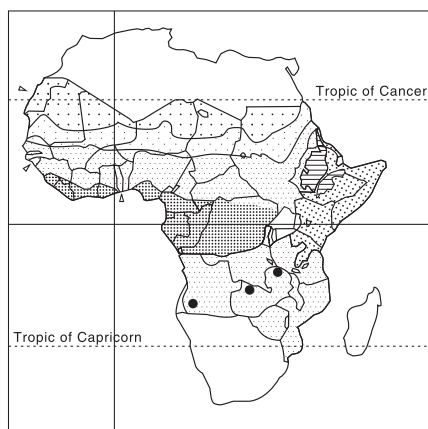
*Monadenium schajjesii*



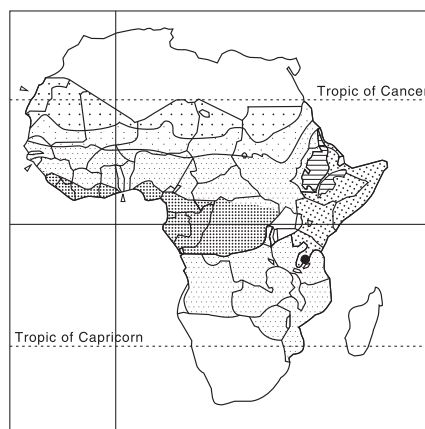
*Monadenium schubei*



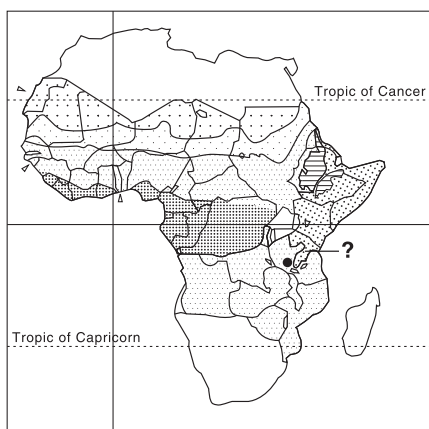
*Monadenium shebeliense*



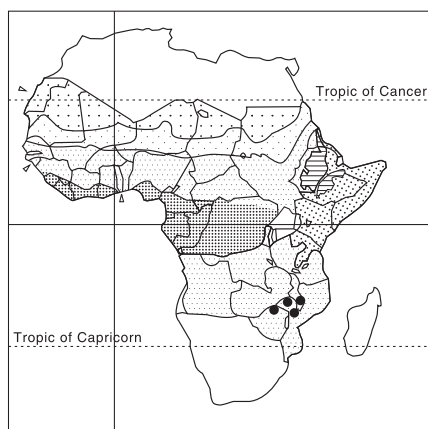
*Monadenium simplex*



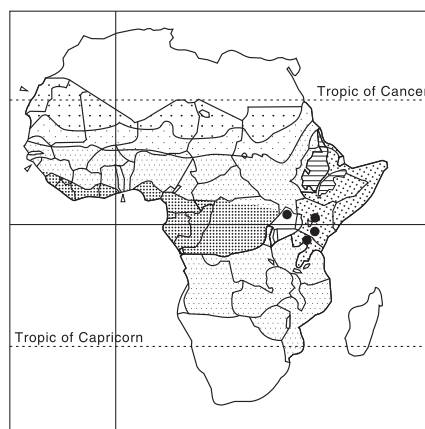
*Monadenium spectabile*



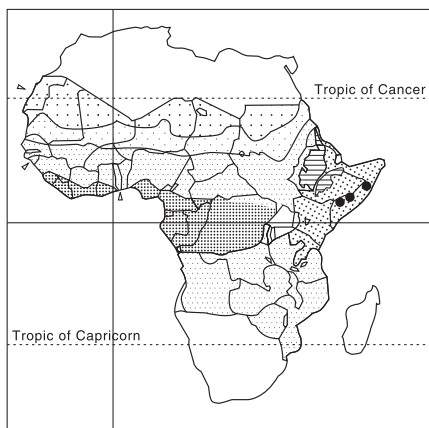
*Monadenium spinescens*



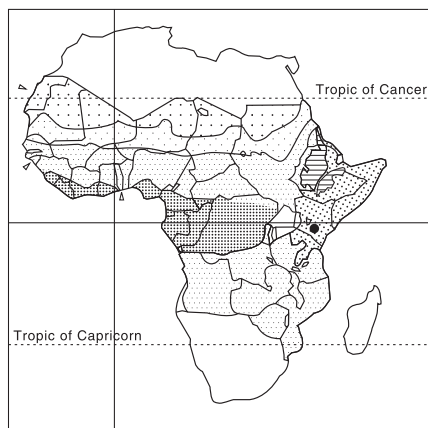
*Monadenium spinulosum*



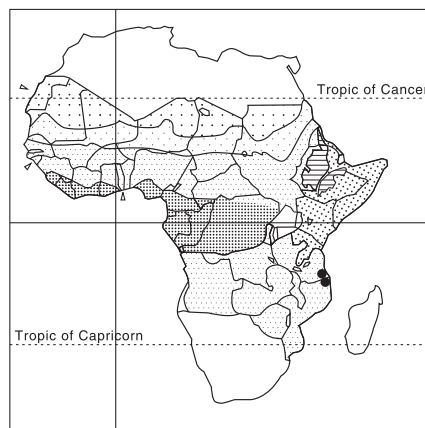
*Monadenium stapelioides*



*Monadenium stellatum*



*Monadenium stoloniferum*



*Monadenium torrei*

## MONADENIUM

**M. stoloniferum** (Bally) S. Carter

Perennial herb, with fleshy rounded tuberous roots 2 mm thick; stems fleshy, 1-3 from each tuber,  $\pm$  4 mm thick, rarely branching, erect, to 4 cm high or decumbent to 15 cm long, rooting and forming further tubers; leaves ovate, to  $5 \times 2,5$  cm, base tapering abruptly, apex acute; seeds unknown.

Grassland with scattered *Acacia drepanolobium*; 1900 m alt.

Near *M. rhizophorum*.

**M. torrei** L. C. Leach; Euphorbia J. 3: 139, 1985.

Succulent shrub, erect, to 3 m tall, with sparsely branched stem branches  $\pm$  1,5 cm thick, with shallow tubercles immediately beneath the leaf-scars in  $\pm$  5 longitudinal series, prominent on young growth, less so with age, each crowned by a stout curved spine to 8 mm long; leaves sessile, obovate to oblanceolate, to  $12 \times 3,5$  cm, apex obtuse, margin prominently and irregularly toothed, midrib keeled beneath.

Granite, with deciduous woodland; 300-560 m alt.

Of rather easy culture.

Near *M. spinescens*.

**M. trinerve** Bally

Perennial herb with a tuberous root  $\pm$  5 cm thick; stems 1-2, fleshy, erect, to 15 cm high,  $\pm$  7 mm thick; leaves very fleshy, obovate, to  $6 \times 2,5$  cm, apex acute, margin often undulate.

Wooded grassland; 1150-1400 m alt.

Near *M. montanum*.

**M. virgatum** Bally, incl. var. *gladiatum* Bally; Euphorbia J. 6: 144, 1989.

Succulent perennial herb, with a thick fleshy rhizomatous rootstock; stems numerous, erect, to 40 cm high or scandent to 1,8 m, rarely branched, cylindrical, to 7 mm thick, with 3 longitudinal ridges below each leaf-scar; leaves sessile, fleshy, obovate, to  $3 \times 1,3$  cm, midrib keeled beneath.

Fairly dense bushland, with *Lamprothamnus*, *Haplocoelum*, *Diospyros*, *Carissa*, *Sansevieria*, *Cassine*, *Gymnosporia*; yellow, sandy clay loam; sandy, black soil, with *Ceropegia* spp., *Aloe lateritia*; 50-200(330?) m alt.

Fairly rare in cultivation.

Isolated species without relationships.

**M. yattanum** Bally

Succulent perennial herb, with a fleshy tuberous rootstock  $\pm$  5 cm thick; stems numerous, clustered, rarely branched, erect, to 10 cm high or decumbent to 15 cm long, 1-1,5 cm thick, tessellated with scarcely projecting elongated tubercles 5-25 mm apart in 3 loosely spiralled series bearing the leaves at the apices; leaves sessile, oblanceolate, to  $8 \times 2,5$  cm, apex obtuse and apiculate, margin crisped towards the apex.

Lightly wooded grassland among rocks in black cotton soil; 1175-1200 m alt.

Near *M. stapelioides*.

SYNONYMS (see also under the species listed in Enum. 1: 230-231, 1991):

*Lortia erubescens* Rendle = **Monadenium erubescens**

*major* Pax = **M. erubescens**

*Monadenium aculeolatum* Pax = **M. echinulatum**

## MONADENIUM

*asperrimum* Pax = **M. echinulatum**

*chevalieri* N. E. Br. var. *filiforme* Bally = **M. filiforme**

var. *spathulatum* Bally = **M. orobanchoides**

*depauperatum* (Bally) S. Carter = **M. parviflorum**

*fanshawei* Bally = **M. capitatum**

*laeve* Stapf fa. *depauperatum* Bally = **M. parviflorum**

*lunulatum* Chiov. = **Kleinia lunulata** (Chiov.) Thulin (*Asteraceae*), Nord. J. Bot. 22: 425, 2003

*majus* (Pax) N. E. Br. = **Monadenium erubescens**

*pulchrum* Bally = **M. erubescens**

*simplex* Pax var. *pudibundum* (Bally) Bally = **M. pudibundum** var.

*succulentum* Schweick. = **M. stapelioides**

*zavattarii* Chiov. = **M. ellenbeckii** fa. **caulopodium**

## NECEPSIA / 3

**Necepsia afzelii** Prain; Bull. Jard. Bot. Natl. Belgique 66: 139, 1997.

syn.: *Mareya acuminata* Prain

Shrub or tree 1-12(-15) m tall; stem to 20-30 cm  $\varnothing$ .

Rain- and secondary forests; riverine forest.

Comprises 2 subspp.

**N. castaneifolia** (Baill.) Bouchat & J. Léonard

syn.: *Alchornea castaneifolia* (Baill.) Müll. Arg., non A. Juss.; *A. madagascariensis* Müll. Arg.; *Neopalissyia castaneifolia* (Baill.) Pax

Tree to 12 m.

Rain-forest on dolomitic marble; evergreen forest; 300-1160 m alt.

Madagascar.

Comprises 2 subspp.

**N. zairensis** Bouchat & J. Léonard

Shrub or tree 4-8 m tall.

Rain-forest with *Gilbertiodendron dewevrei* or with *Scorodophloeus zenkeri*; rarely *Gilbertiodendron* together with *Dacryodes pubescens* and *Paramacrolobium coeruleum* (along rivers).

Comprises 2 vars.

## NEOBOUTONIA / 3

**Neoboutonia macrocalyx** Pax

Slender open-crowned tree to 25 m, but more commonly 10-15 m, with straight clear bole; branches brittle.

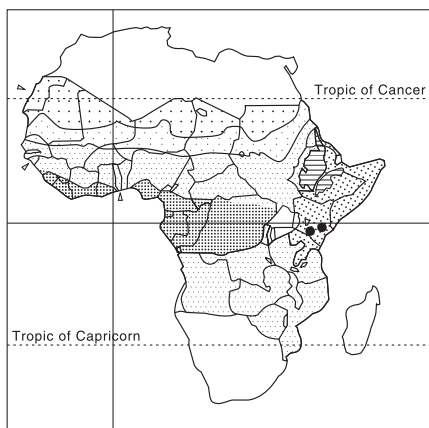
Forest edges, openings, regrowth; characteristic pioneer of all wetter upland forests; locally common; 600-2700 m alt.

**N. manni** Benth.

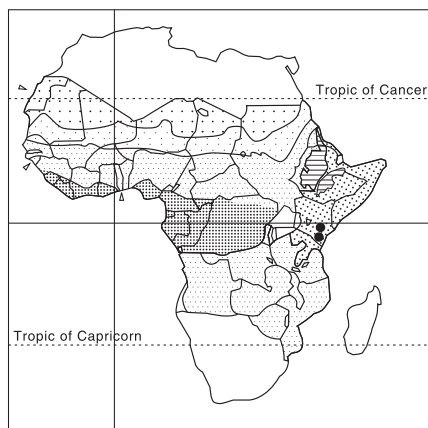
Shrub 3,5-4,5 m tall or tree 6-15-24 m.

Secondary forest regrowth; open spaces in forest; streamside forest, forest edge; farmbrush; 200-1900 m alt.

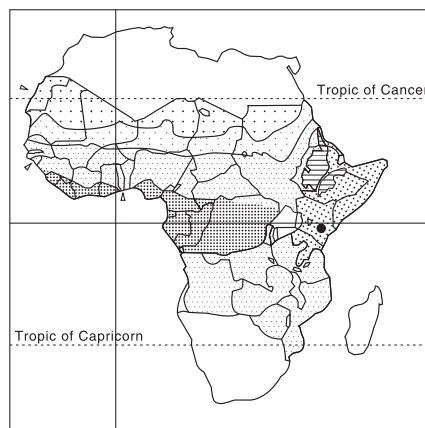
Bioko/Fernando Poo.



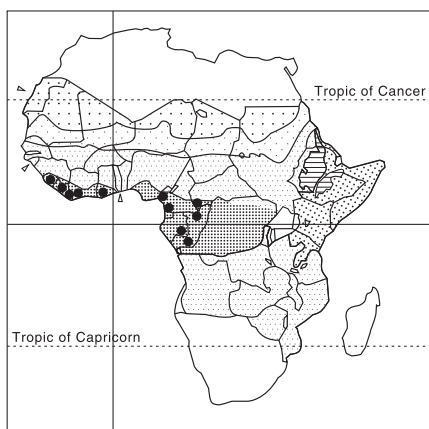
*Monadenium trinerve*



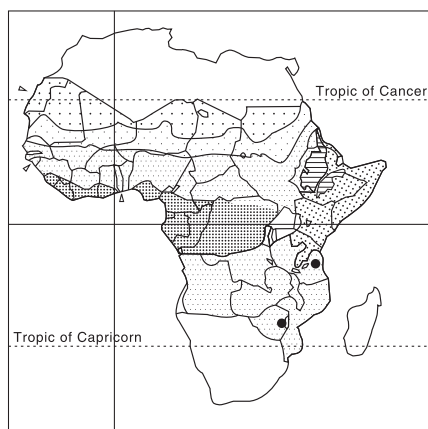
*Monadenium virgatum*



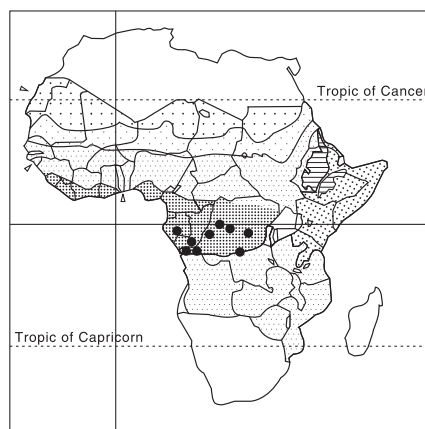
*Monadenium yattanum*



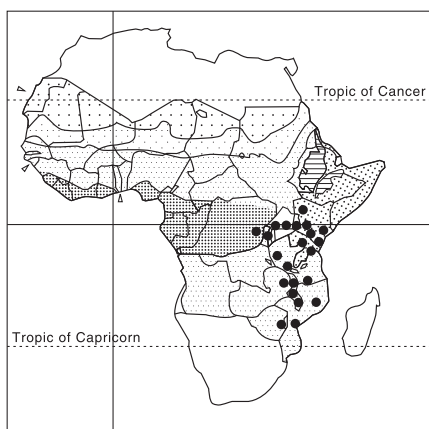
*Necepsia afzelii*



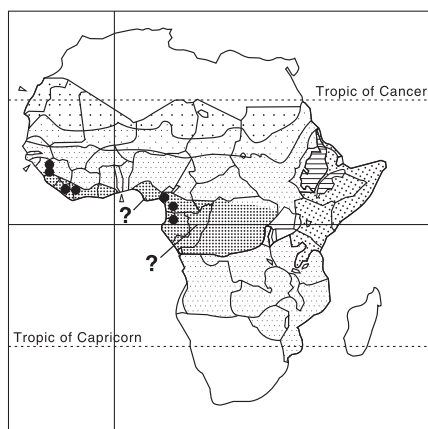
*Necepsia castaneifolia*



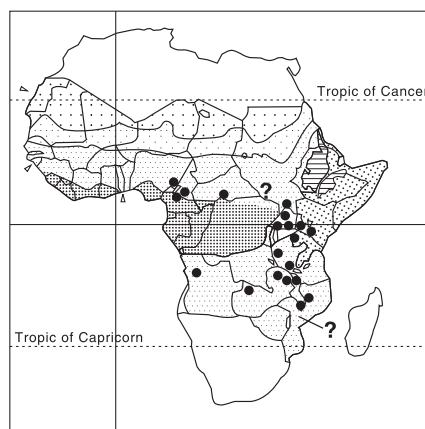
*Necepsia zairensis*



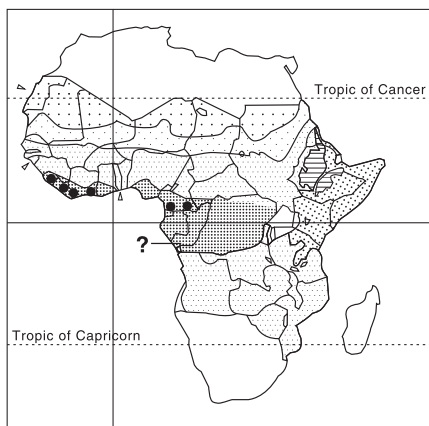
*Neoboutonia macrocalyx*



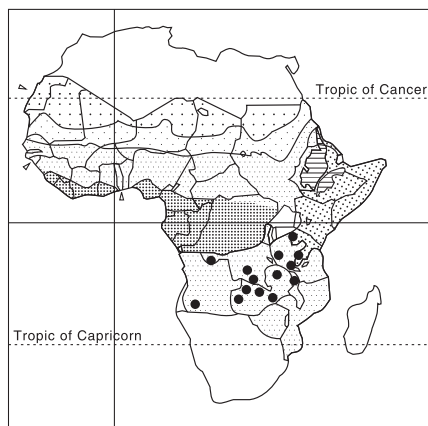
*Neoboutonia mannii*



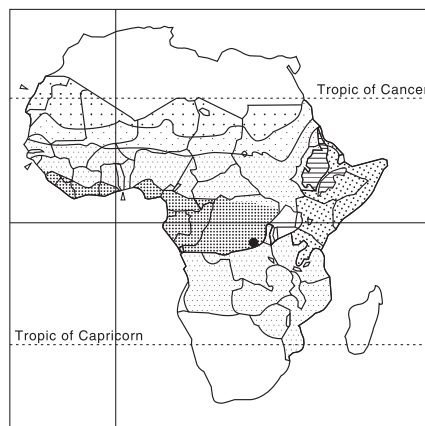
*Neoboutonia melleri*



*Oldfieldia africana*



*Oldfieldia dactylophylla*



*Oldfieldia macrocarpa*

## NEOBOUTONIA MANNII

Cheek & al. Pl. Kupe..., Cameroon: 291, 2004, maintain that there are two varieties: – var. *mannii*, a taller tree with long soft-hairy lower leaf surface: – var. *glabrescens* (Prain) Pax & K. Hoffm., a smaller tree with white hair-clusters on lower leaf surface. It is not for certain that the var. combination was ever validly published.

**N. melleri** (Müll. Arg.) Prain

bas.: *Mallotus melleri* Müll. Arg.

Spreading tree 6-8(-15) m.

Groundwater forest, generally along rivers or around lakes and swamps; riverine woodland; evergreen swamp forest (mushitu); 600-1850 m alt.

## NEOHOLSTIA = TANNODIA

## OLDFIELDIA / 4

The male inflorescence and male flower unknown in 1 species, and the female flower in 2 species.

**Oldfieldia africana** Benth. & Hook. f.

Dioecious tree to 36 m or more, with straight bole 20 m high and 4,8 m in girth, 1,2 m Ø; base with heavy root swellings or swollen root spurs, extending in spreading surface roots; thick heavy buttresses to 1 m high are only occasionally found; female flowers unknown.

Evergreen- and moist semi-deciduous forest; occasionally in secondary forest; scattered or in small groups.

One of the first trees from the African coast to have been exploited (logging, 18th century). – African Oak, African Teak.

Confusion possible with *Vitex* (*Verbenaceae/Lamiaceae*) or *Ricinus odendron* (*Euphorbiaceae*).

Cameroon?

**O. dactylophylla** (Welw. ex Oliv.) J. Léonard

Much branched tree to 10 m, with a short straight bole ± 25 cm Ø and somewhat ascending branches; crown narrow, bushy; twigs thick, with the leaf-scar margins raised to form tubercles, which are often closely packed.

*Brachystegia* and related woodlands; often on sandy soils, Kalahari sand, rocky hills, dambo margins; locally common; 1035-1830 m alt.

**O. macrocarpa** J. Léonard

Dioecious tree 35-40 m, with bole 12-28 m, 85-100 cm Ø, straight, sometimes slightly lobed at the base; branches with many prominent leaf-scars; male inflorescences and flowers unknown; female flowers unknown.

Rain-forest; sandy soil; 440-500 m alt.

**O. somalensis** (Chiov.) Milne-Redh.

Much-branched evergreen tree 4-20 m, with widely-spreading branches; twigs relatively slender, with leaf-scar margins not or scarcely raised.

Dry evergreen and semi-deciduous forest; rocky inselbergs in *Brachystegia* woodland; dense mixed coastal forest with abundant lianes, on dunes and sandy soil, with *Brachystegia*, *Cynometra*, *Trachylobium*, *Albizia*, *Craibia*, *Mimusops*; ± 20-500 m alt.

## OMPHALEA / 1

**Omphalea mansfeldiana** Mildbr.

High climbing liane to 5-10 m long with soft, fragile stems; twigs 7-10 mm thick, cicatricose (leaves falling before flowering); fruit and seeds known (Op. Bot. 59: 38-39, 1980).

Climbing over shrubs and trees in thickets on rocky slopes; riverine thickets; fringing forest on lakeshores; 125-210 m alt.

Nearest taxonomical affinities with a group of species in West Indies and tropical America.

Species unique in the family in being a woody climber with tendrils; very conspicuous; normally occurring in large quantities.

## PARANECEPSIA / 1

**Paranecepsia alchorneifolia** Radcl.-Sm.

Much-branched shrub or tree to 7-12 m tall, with a *Terminalia*-like habit.

Riverine forest and thickets fringing seasonal watercourses; 15-450 m alt.

Possible confusion with certain *Alchornea*.

## PENTABRACHION / 1

**Pentabrachion reticulatum** Müll. Arg.

syn.: *Cleistanthus holtzii* sensu Pellegrin, Mém. Soc. Linn. Normandie, N.S., Bot. 1(3) [Fl. Mayombe 2]: 60, 1928, non Pax (= *C. schlechteri*); *Amanoa laurifolia* Pax; *Actephila africana* Pax

Shrub or tree 1-10 m tall.

Rain-forest; 150-400 m alt.

## PETALODISCUS / 1

Mature seeds unknown in the single species.

**Petalodiscus fadenii** (Radcl.-Sm.) Radcl.-Sm.

Monoecious densely leafy shrub or tree to 4 m tall; twigs slender; mature seeds unknown.

Evergreen forest patches on limestone; 220 m alt.

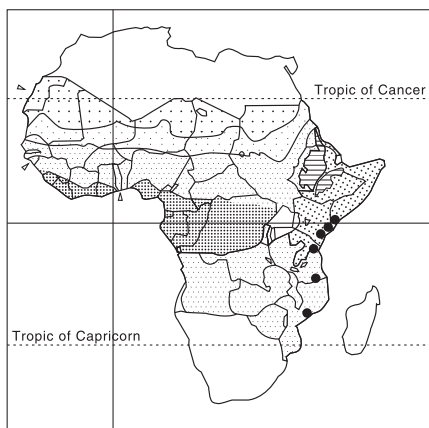
## PHYLLANTHUS / 132

Recently placed in *Phyllanthaceae*.

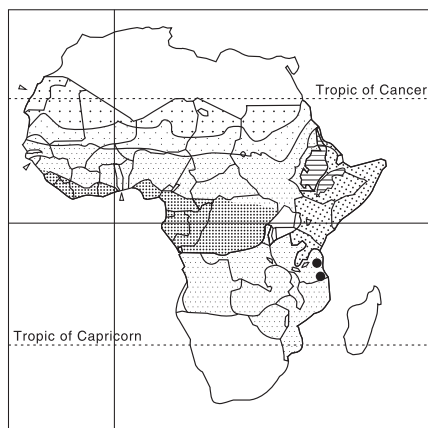
A large genus of ± 833 species in tropical and subtropical regions. In tropical Africa two species are aquatic: *P. irriguus*, *P. leonardianus*. A diagram showing phyllanthoid branching pattern is presented in Fl. Trop. E. Africa, Euphorbiaceae 1: 11, 1987.

Rootstock unknown in 1 species (*P. vanderystii*); male flower not seen in 4 species; female flower unknown in 4 species; fruit not seen in 5 species, and only unripe fruit known in further 2 species; seeds unknown in 5 species, and no ripe seeds known in further 2 species. No ecology recorded for 5 (+1?) species. Eleven (+2?) species (= c. 9%) are known only from the type.

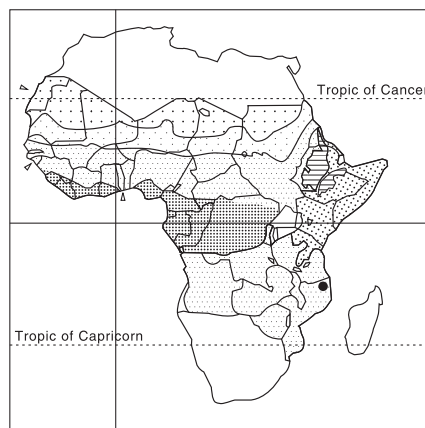




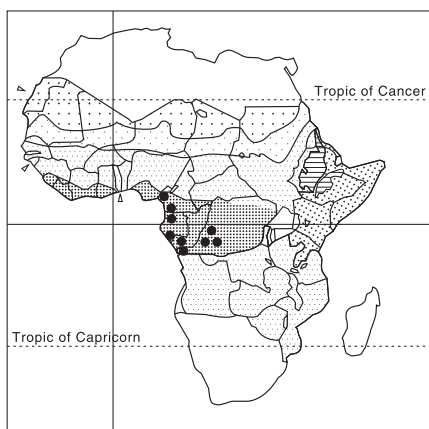
*Oldfieldia somalensis*



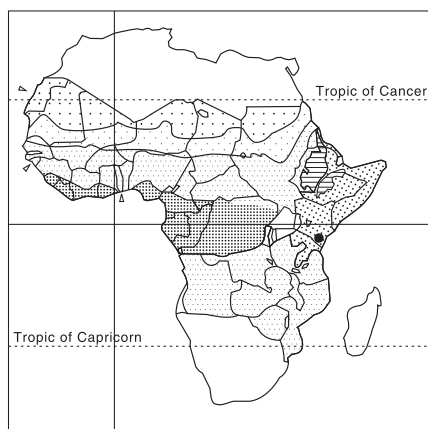
*Omphalea mansfeldiana*



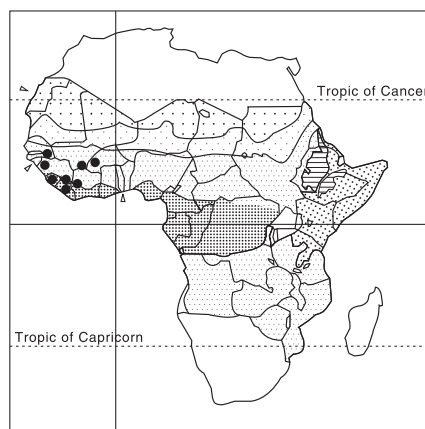
*Paranecepsia alchorneifolia*



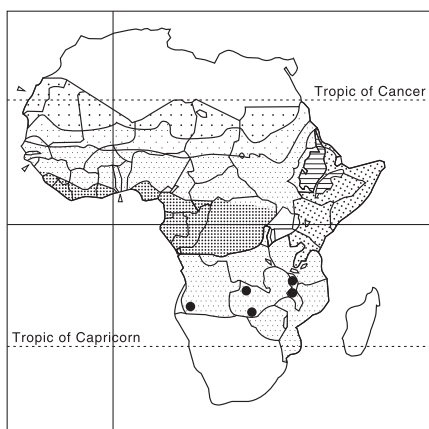
*Pentabrachion reticulatum*



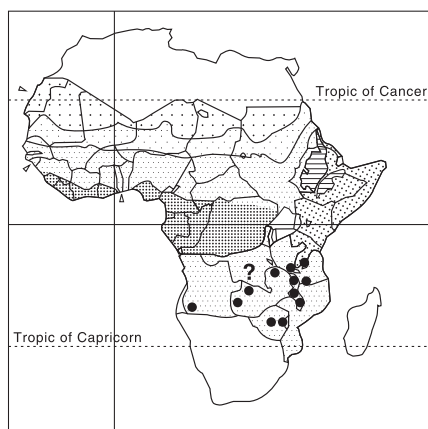
*Petalodiscus fadenii*



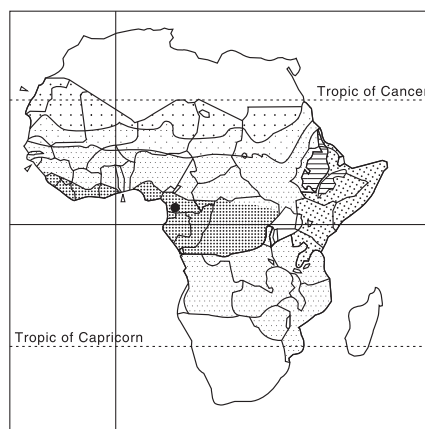
*Phyllanthus alpestris*



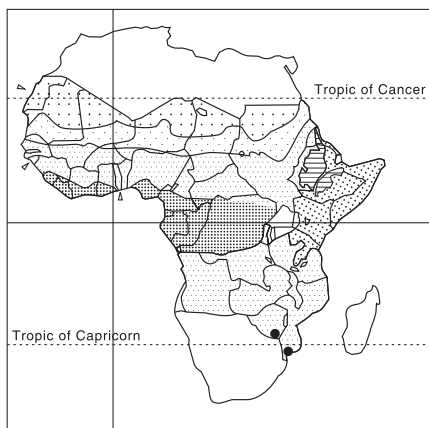
*Phyllanthus angolensis*



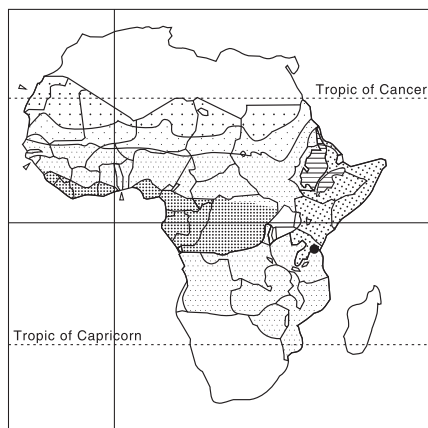
*Phyllanthus arvensis*



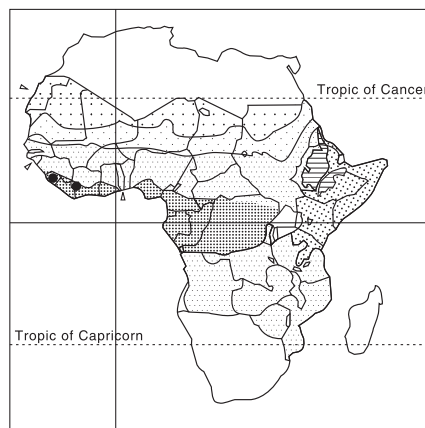
*Phyllanthus aspersus*



*Phyllanthus asperulatus*



*Phyllanthus austroparensis*



*Phyllanthus bancilhonae*

## PHYLLANTHUS

**Phyllanthus alpestris** Beille

syn.: *P. monticola* Hutch. & Dalziel; *P. leonensis* Hutch.

Dioecious undershrub 10-20-45 cm tall or shrub 1,2-1,8 m; stems woody arising from a thick woody rhizome; branches erect or sometimes half-scrambling, slightly striate, flowering ones compressed.

Grassy meadows on schist or ferruginous outcrops; 500-1600 m alt.

Near *P. glaucophyllus*.

**[P. amarus** Schumach. & Thonn.]

Annual herb to 75 cm tall a widespread weed of American origin. Not mapped. Cf. Fl. Zambes. 9/4: 65-66, 1996.

**P. angolensis** Müll. Arg.; Kew Bull. 47: 679, 1992; 50: 814, 1995.

Monoecious erect or procumbent annual or perennial herb or subshrub to 60 cm tall, later developing a vertical woody rootstock; lead shoots somewhat subterete; lateral shoots to 8 cm long, terete.

Laterite outcrops; sandy soil amongst sparse grasses; wooded grassland; miombo; *Uapaca kirkiana* woodlands; pastures rather dry but seasonally flooded among low bushes; hot wooded places; 1370 m alt.

Not in E. Africa (= *P. loandensis*); Kew Bull. 50: 814, 1995.

**P. arvensis** Müll. Arg.

Dioecious erect, procumbent or prostrate node-rooting, mat-forming, woody perennial herb 50-75 cm tall or subshrub to 2 m; orthotropic stems subterete; plagiotropic shoots  $\pm$  4-7 cm long, the older ones co-axillary with secondary orthotropic shoots.

Wet places in grassland; *Brachystegia* woodland; peaty soil beside stream, swamps; seepage areas sometimes on granite outcrops; moist watershed dambos; Kalahari sand dambos; stream sides; cultivated fields; 1080-2400 m alt.

**P. aspersus** Jean F. Brunel & J. P. Roux

Undershrub or herb  $\pm$  30-50 cm tall, woody at the base, with angular stems; plagiotropic shoots keeled, 20-30 cm long; female flower, fruit and seed unknown.

Humid rocks at the base of a water fall.

**P. asperulatus** Hutch.

Very similar to *P. gillettianus*, but lateral shoots distinctly scabrid; female disk more like those of *P. leucanthus* and *P. pseudoniruri*.

Mopane woodland; dry short grassland; colonizing bare ground in irrigation areas; 560-1067 m alt.

Specim. Torre 7429 from Mozambique varies somewhat in the direction of *P. gillettianus*.

S. Africa; Botswana.

**P. austroparensis** Radcl.-Sm.

Monoecious woody herb or shrub to 1,5 m tall; plagiotropic shoots angular to 20 cm long; mature seed unknown.

Forest; 1560 m alt.

Only known from the type collected in 1988.

## PHYLLANTHUS

**P. bancilhonae** Jean F. Brunel & J. P. Roux

Ramose herb 0,8-1,2 m tall, woody at the base; shoots erect, slightly winged.

Edge of gallery forest; meadow; river side; 1600-1700 m alt.

Near *P. mannianus*.

**P. beillei** Hutch.; Willdenowia 15: 243, 1985.

syn.: See Enum. 4: 613, 1997.

Similar to *P. welwitschianus*, but a much-branched dense twiggy virgate shrub 0,5-4,5 m tall and 2,5 m  $\varnothing$ ; always dioecious, etc.

Usually in sand; often locally frequent in shade of streamside and riverbank vegetation; riverine forest; mushitu margins; miombo; *Androstachys* forest; semi-evergreen forest; mixed evergreen forest; locally common in coastal bushland; dry forest; *Brachystegia* and mixed woodlands; disturbed places; 600-1460 m alt.

Disjunct outliers in Thailand and Cambodia.

Some specimens are intermediate between *P. beillei* and *P. welwitschianus*.

**P. benguelensis** Müll. Arg.

Annual, erect, very slender herb  $\pm$  22 cm tall; stem terete, branched in the upper part, branches terete.

Sandy bushy places at river banks; fields with *Arachis*.

**P. bernierianus** Baill. ex Müll. Arg. var. **glaber** Radcl.-Sm.

syn.: *Phyllanthus* sp. no. 1 sensu Drummond, Kirkia 10: 251, 1975.

Erect twiggy bush to 90 cm tall with lateral shoots 5-10 cm long, often borne close together towards the top of the lead shoots.

Mountain slopes, beside river and at forest edges; also with shrubs in grassland and amongst rocks beside streams; (430-)915-1525 m alt.

Madagascar (typical var.).

**P. boehmii** Pax; Kew Bull. 50: 814, 1995.

syn.: *P. paivanus* Jean F. Brunel, Phyllanthus Afr. Intertrop. Mad.: 353, 1987, unpublished thesis.

Monoecious or sometimes dioecious erect annual herb to 40 cm tall, sometimes becoming woody at the base and then reaching 2 m in height or else a procumbent perennial; orthotropic shoots  $\pm$  angular; plagiotropic shoots to 8 cm long, slender,  $\pm$  angular.

Damp or wet places in forest, grassland, woodland, moor; occasionally a weed; 1050-3250 m alt.

Comprises 2 vars. (intermediates occur).

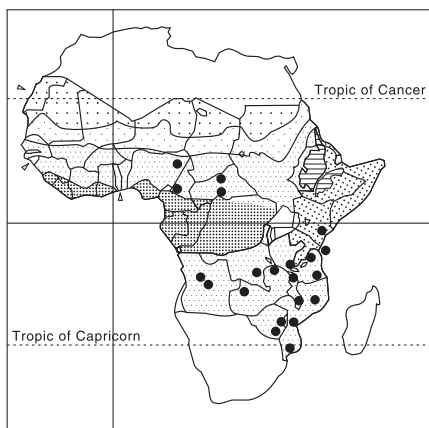
Very similar to *P. arvensis*.

**P. borenensis** M. G. Gilbert

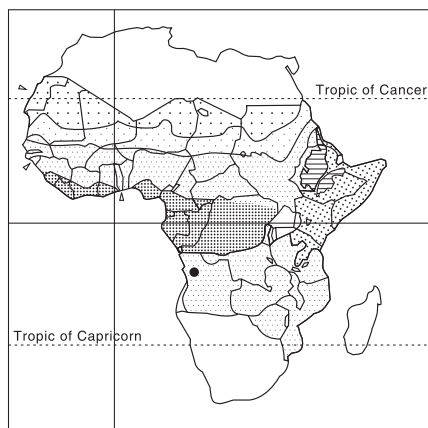
Closely related to *P. sepialis*, differing by the female flowers; male flowers unknown [vide Fl. Ethiopia & Eritrea 2(2): 278-279, 1995].

Bushland-woodland with *Acacia*, *Commiphora*, *Euphorbia schefleri* on flat dark soil in an area with apparently impeded drainage; 1100 m alt.

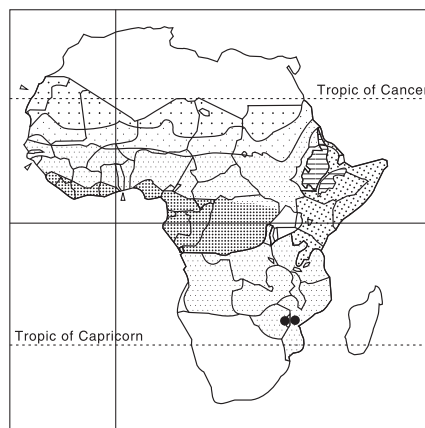
Only known from the type collected in 1983.



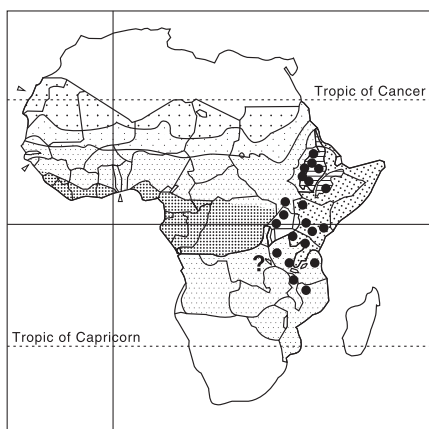
*Phyllanthus beillei*



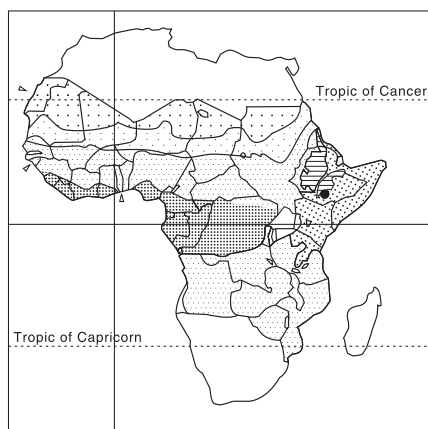
*Phyllanthus benguelensis*



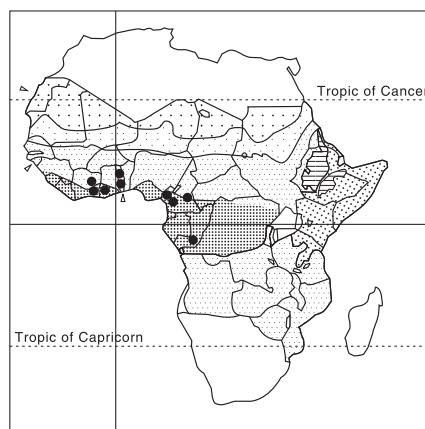
*Phyllanthus bernierianus*



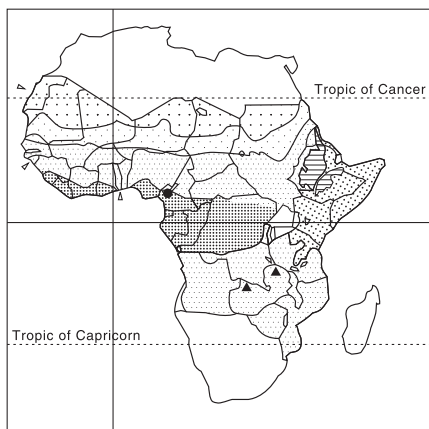
*Phyllanthus boehmii*



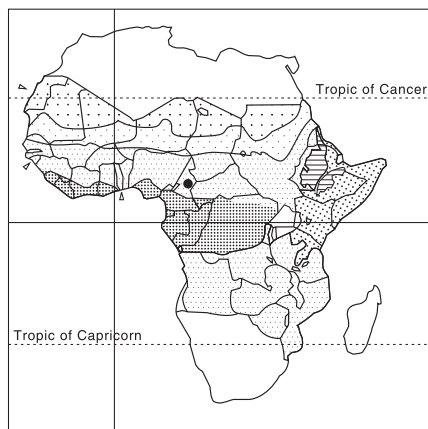
*Phyllanthus borensis*



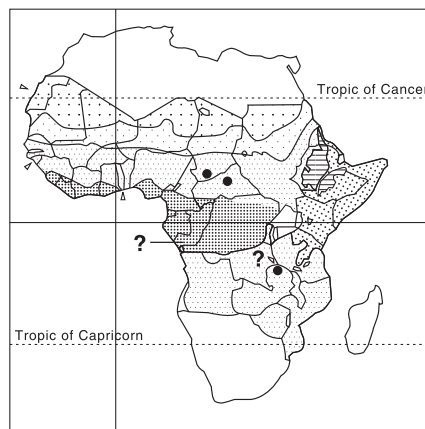
*Phyllanthus braunii*



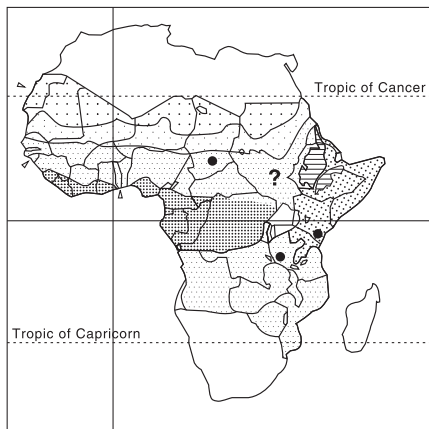
*Phyllanthus caesiifolius* ●  
*Phyllanthus caespitosus* ▲



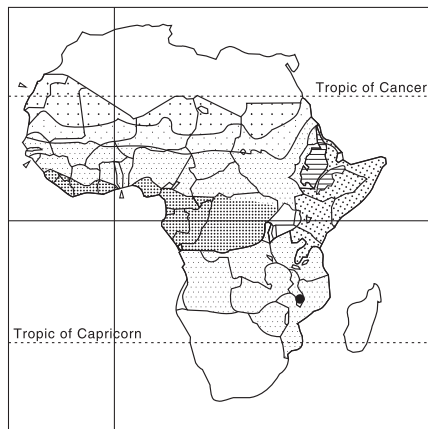
*Phyllanthus caligatus*



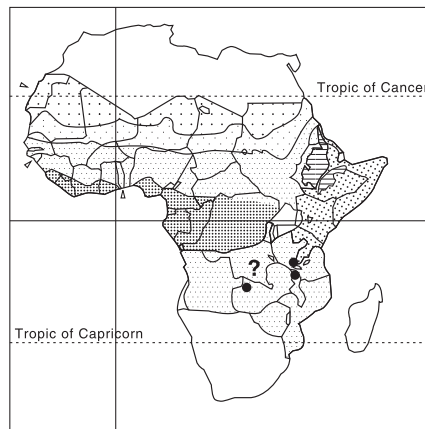
*Phyllanthus ceratostemon*



*Phyllanthus chevalieri*



*Phyllanthus confusus*



*Phyllanthus crassinervius*

## PHYLLANTHUS

**P. braunii** Pax; Willdenowia 11: 81, 1981.

Annual herb to 50 cm tall with stem, branches and often lateral orthotropic shoots easily node-rooting; plagiotropic branches 4-20 cm long.

Forest.

Very close to *P. odontadenius* but smaller.

**P. caesiifolius** Petra Hoffm. & Cheek, Kew Bull. 58: 439, 2003; icon.: o.c.: 441.

Shrublet 20-40 cm tall, monopodial, sparsely branched, with stoloniferous erect stems connected by a horizontal rhizome; orthotropic shoots terete, striate, smooth; branching phyllanthoid; plagiotropic branchlets 8-16 cm long, slightly flattened, glabrous; leaves bicoloured.

Submontane forest with *Gymnosiphon* sp., *Xylophia africana*, *Oncoba ovalis*, *Dielsantha galeopsoides*, *Pentaloncha* sp., *Rauwolfia* sp., *Pentadesma grandiflora*, in understory; 700-1275 m alt.

Resembling *P. nigericus* and *P. sublanatus* (keying out close to these in Fl. W. Trop. Afr., ed. 2, 1/2: 384, 1958).

Known only from the type (Cheek 10376) collected in 1999, and the paratype (Cheek 9636) collected in 1998. – Seems critically endangered because of low number of individuals; threat from forest clearance for agriculture. – Cheek & al., Pl. Kupe..., Cameroon: 157, 158, 291, 2004.

**P. caespitosus** Brenan

Very close to *P. paxii* [vide Fl. Zambesiaca 9(4): 77, 1996].

Pyrophyte of plateau miombo woodlands; 500-1000 m alt.

**P. caligatus** Jean F. Brunel & J. P. Roux

Herb or subshrub 30-150 cm tall, ramose, radicate with rather flexuous orthotropic stem and plagiotropic shoots.

Forest patch on river; fall in the mist zone of the river.

[**P. camerunensis** Jean F. Brunel] 1987, unpublished thesis.

**P. ceratostemon** Brenan; Kew Bull. 44: 452, 1989.

Slender annual herb to 45 cm tall, suberect, unbranched at the base, monoecious; lead shoot usually leafy; lateral shoots 2-5 (-8) cm long.

Shallow soil amongst flat ironstone rocks; temporarily flooded area; waterlogged soil with *Fimbristylis*, *Digitaria*, *Sporobolus*; 300-1050 m alt.

Outstanding among the annual species of *Phyllanthus* in tropical Africa with its striking heterophylly and the extraordinary horn-like projection from the connective of each anther.

Near *P. goniostemon*.

Disjunct area.

**P. chevalieri** Beille, non (Gagnep.) G. L. Webster (= *P. arachnoides* Govaerts & Radcl.-Sm. from Cambodia); Kew Bull. 35: 766, 1981.

Erect monoecious annual herb 4-20-90 cm tall; orthotropic stem angular; plagiotropic shoots to 16 cm long, angular, the older ones co-axillary with weak secondary orthotropic shoots.

Black clay soil, in grassland, flood-plain grassland and *Acacia* woodland; 15-940 m alt. Very scattered localities.

## PHYLLANTHUS

**P. confusus** Brenan

syn.: *P. brenanianus* Jean F. Brunel, Phyllanthus Afr. Intertrop. Mad.: 392, 1987, unpublished thesis.

Very similar to *P. hutchinsonianus* [vide Fl. Zambes. 9(4): 78, 1996]; subshrub or shrub.

Locally abundant on and amongst rocks, rocky slopes, seepage slopes; grassland with scattered shrubs; stream and forest margins; river beds; *Pinus patula* plantations; pathsides; 1200-2750 m alt.

**P. crassinervius** Radcl.-Sm.

Perennial herb or suffrutex to 40 cm tall; stem branched from near the base, the leafy lead shoots arising from a stout cylindrical woody rootstock; lateral shoots (2-)5-10 cm long.

Chipya woodland, grassland; usually after annual fire; moist dambos; ± 1600-1740 m alt.

Intermediate forms between this species and *P. caespitosus* are recorded.

**P. delagoensis** Hutch.

Semiprostrate annual to perennial herb to 60 cm tall, but often much less, monoecious; lead shoots angular; lateral shoots 2-8 cm long.

Sandy soil; coastal scrub; grassland and swampy places; locally common; also in moist sand and amongst rocks on river banks and as a ruderal weed; 30-250 m alt.

S. Africa.

**P. dewildeorum** M. G. Gilbert

Annual or short lived perennial herb to 70 cm tall; orthotropic shoots ascending, slightly woody at base; plagiotropic shoots to 5-8,5 cm long.

Open woodland or wooded grassland; 1400-1800 m alt.

Most closely related to *P. trichotepalus*.

A member of the group of endemics from the Western slopes of the Ethiopian plateau, such as *Acalypha marissima*.

**P. diandrus** Pax; icon.: Bull. Mus. Natl. Hist. Nat. (Paris), Sér. 4, Sect. B, Adansonia 12: 294, 1991.

syn.: *Lingelsheimia longipedicellata* J. Léonard

Shrub 1-4 m tall, monoecious; young branchlets narrowly winged; flowers known!

Ecology unknown.

**P. dictyophlebs** Radcl.-Sm. (“dictyophlebs”).

Monoecious shrub 3 m tall with rounded branches; plagiotropic shoots to 8 cm long; mature fruit and seeds unknown.

Steep slope in lowland to intermediate forest with *Sorindeia*, *Scorodophloeus*, *Cynometra*; 260 m alt.

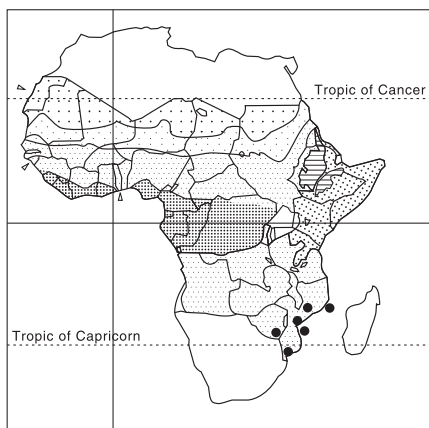
Only known from the type collected in 1986.

**P. dinklagei** Pax

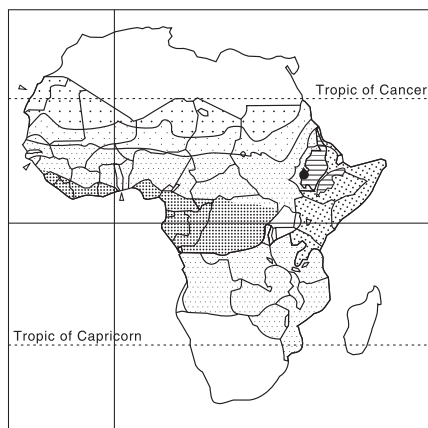
Sarmentous shrub with spiny branches, angular or subterete; flowering branchlets spreading, slender, 5-8,5 cm long, rather sharply angular.

Along paths.

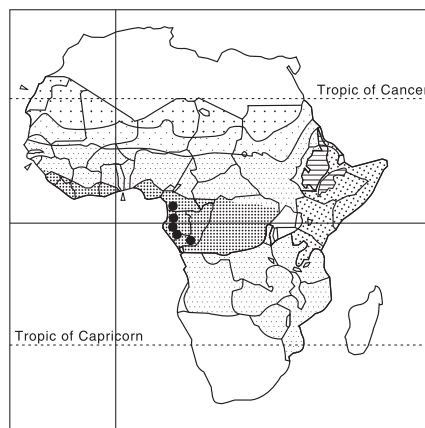




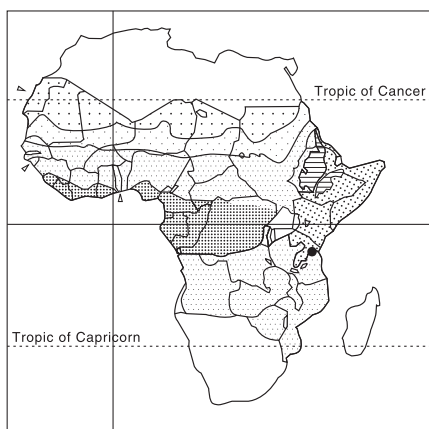
*Phyllanthus delagoensis*



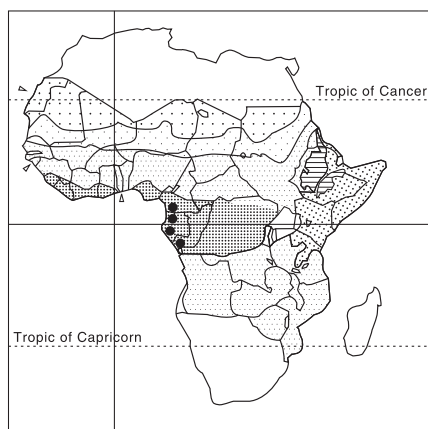
*Phyllanthus dewildeorum*



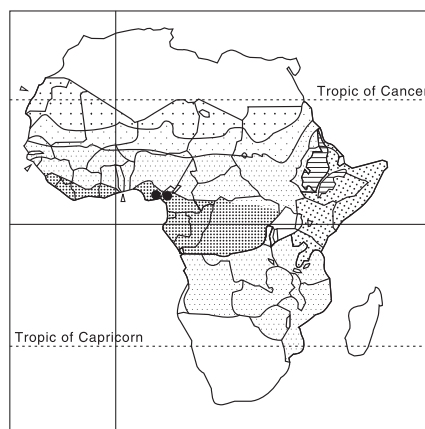
*Phyllanthus diandrus*



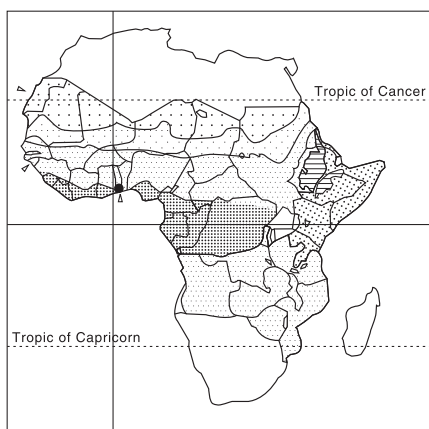
*Phyllanthus dictyophlebs*



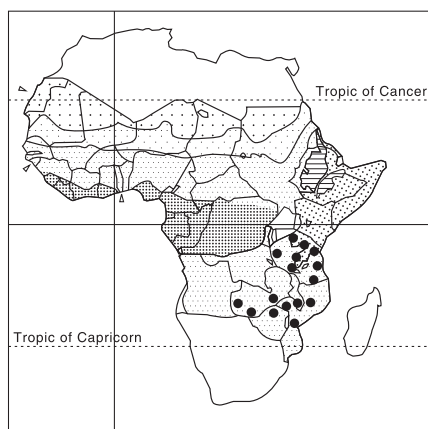
*Phyllanthus dinklagei*



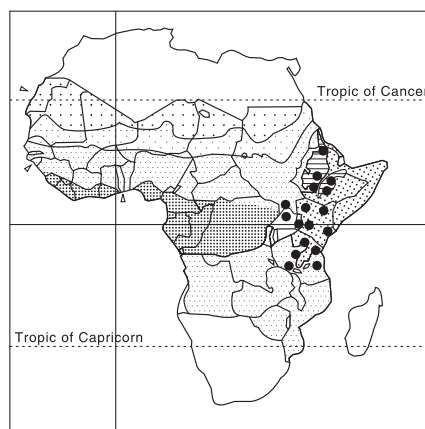
*Phyllanthus dusenii*



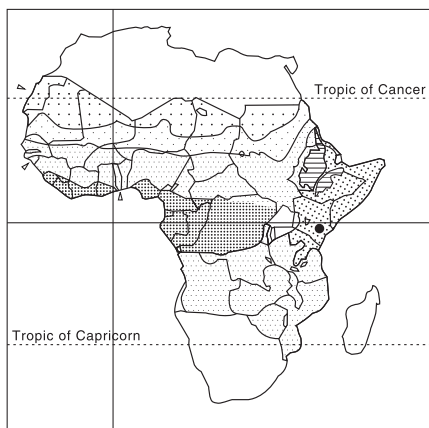
*Phyllanthus eliae*



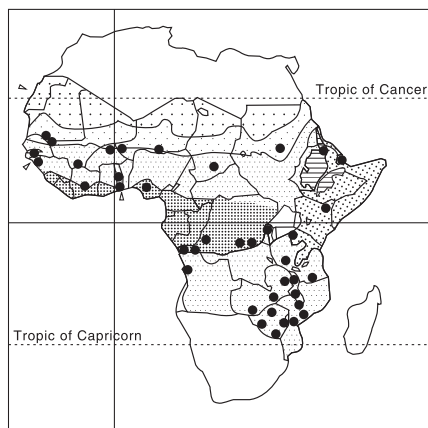
*Phyllanthus engleri*



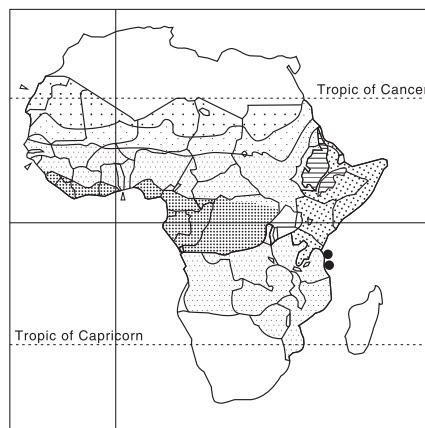
*Phyllanthus fischeri*



*Phyllanthus fluminis-athi*



*Phyllanthus fraternus*



*Phyllanthus frazieri*

## PHYLLANTHUS

**P. dusenii** Hutch.

Shrub to 1,5 m tall with erect flexuous stems woody at base, arising from a stout woody root; plagiotropic shoots keeled and crowded towards the top; fruits and seeds known!

On rocks in river and river banks.

**P. eliae** (Jean F. Brunel & J. P. Roux) Jean F. Brunel ex Govaerts & Radcl.-Sm.; icon.: Bull. Soc. Bot. France 123: 370, 372, 1976. – P. Hoffmann & Cheeck, Kew Bull. 58: 437, 2003.

Annual, ramose herb, ± prostrate, with slender plagiotropic shoots.

Lakeshore.

**P. engleri** Pax

Dioecious spreading sparsely- to much-branched thorny shrub or tree usually 1-4,5-8 m tall, rarely attaining 15 m; bole commonly to 15 cm Ø; orthotropic shoots usually robust; plagiotropic shoots to 30 cm long; female flower unknown; spiny.

Deciduous woodland, bushland; rarely in evergreen forest; mixed dry deciduous woodland; mopane and *Acacia* woodlands; less often in miombo woodlands; *Baikiaea* forest; Kalahari sand dambos; alluvial flats; often on termitaria; locally common and scattered; 320-1830 m alt.

**P. fischeri** Pax

syn.: *P. callidiscus* Jean F. Brunel; *P. punctulatus* Jean F. Brunel

Prostrate, procumbent, scandent or erect annual or perennial ± woody herb or slender many-stemmed subshrub to 1 m tall (3 m when supported); stems coarsely ridged or wrinkled, arching; orthotropic shoots ± quadrangular; plagiotropic shoots 5-10(-23) cm long, angular.

Forest and bushland or riverine; (900-)1500-3000 m alt. Often forming dense pure stands (e.g.: Mt. Kilimanjaro).

**P. fluminis-athi** Radcl.-Sm.

Monoecious rather weak shrub to 2,5 m tall; orthotropic stems angular when young, later becoming subterete; plagiotropic shoots seldom exceeding 10 cm in length, angular.

Riverine; 900-1530 m alt.

**P. fraternus** G. L. Webster, incl. subsp. *togoensis* Jean F. Brunel

Monoecious slender erect annual herb 10-45 cm tall; orthotropic shoots angular; plagiotropic shoots 5-7 cm long, angular, the older ones co-axillary with secondary orthotropic shoots.

Broadleaved deciduous woodland with *Adansonia*, *Anogeissus*, *Boswellia papyrifera*; edges of flood-plains, on mud-flats and shady damp ground in bushland; sandy-clayey hollow; sandy soils; gravelly plateau with muddy soil; often abundant in mopane and mixed *Acacia* woodland; edge of dry seasonal pans; termitaria; tall grassland; on rocks; also as a weed of cultivated ground; 90-1830 m alt.

Botswana, Namibia. – Though reputedly native only in Pakistan and NW India, it occurs in Ethiopia and Kenya in within little-disturbed natural vegetation. Yemen, Dhofar. Cape Verde Islands. Introduced in West Indies.

## PHYLLANTHUS

**P. frazieri** Radcl.-Sm.

Monoecious, erect, annual herb to 40 cm tall; orthotropic stems terete; plagiotropic shoots to 11 cm long, the older ones usually co-axillary with secondary orthotropic shoots.

Locally abundant in shallow calcareous sandy soil in grassland and in clearings in mixed woodland dominated by *Casuarina*; sea-level.

**P. friesii** Hutch.

syn.: *P. angustatus* Hutch.

Dioecious, erect, caespitose, scapiform perennial herb to 60 cm tall with several wiry stems arising from a stout woody stock; orthotropic stems subterete, longitudinally ridged when dry; plagiotropic shoots 6-12 cm long, the older ones sometimes co-axillary with secondary orthotropic shoots.

*Brachystegia* woodland; of scattered occurrence on Kalahari sands and dry sandy soils in watershed grasslands, wooded grasslands and dambos; also on termite mounds; swampy grassland; rocky outcrops; 1200-1350 m alt.

**P. gagnioevae** Jean F. Brunel & J. P. Roux

Herb woody at base, perennial, ramose, to 1,5 m tall; orthotropic stem with plagiotropic shoots 10-25 cm long.

Scattered in meadow; rocky meadow with *Memecylon fasciculare*, *Clematis grandiflora*, *Poaceae* etc.; to 1600 m alt.

**P. gillettianus** Jean F. Brunel ex Radcl.-Sm., non *P. gillettii* De Wild. (= *P. macranthus* var. *gillettii*).

Monoecious erect annual herb to 75 cm tall with angular stems; lateral shoots to 10 cm long.

Heavy black clay in floodplain grasslands; hot dry deciduous woodlands with short grasses on sandy granitic soils; sandy soils by streamsides; roadsides; cultivations; 14-625 m alt.

Botswana.

Superficial similarity to *P. pseudoniruri*, *P. fraternus*.

**P. glaucophyllus** Sond., incl. var. *major* Müll. Arg. and var. *suborbicularis* Hutch.

Decumbent, ascending or erect somewhat caespitose perennial herb or suffrutex to 35 cm tall, with several simple or very sparingly branched stems arising from a woody rootstock; stems monomorphic, indefinite, flattened, slightly winged.

Locally common in wooded grassland and bushland, grassland subject to fire; secondary *Brachystegia* woodland; disturbed places; plateau and submontane miombo; *Uapaca* woodland; dambos; stream sides; 250-2438 m alt.

S. Africa.

Near *P. alpestris* (vide Fl. Trop. E. Afr., Euphorb. 1: 20, 1987).

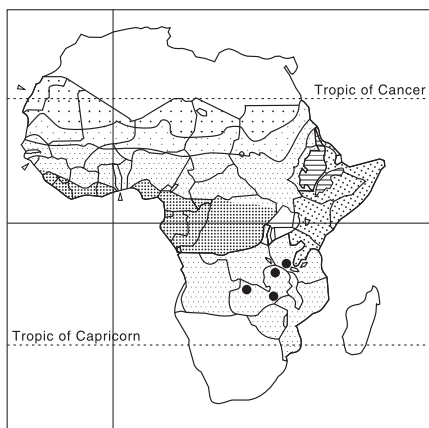
**P. goniostemon** Radcl.-Sm.

syn.: *P. amarus* in Fl. Trop. E. Afr., Euphorb. 1: 59, 1987 quoad specim. Lye 4555, non Schumach. & Thonn.

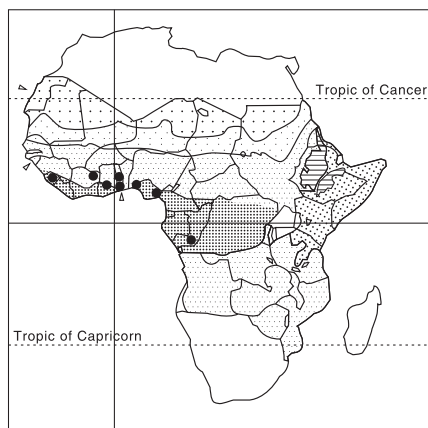
Delicate little-branched monoecious annual herb to 20 cm tall; lateral shoots 2-3 cm long.

Lakeshore rocks; 1300 m alt.

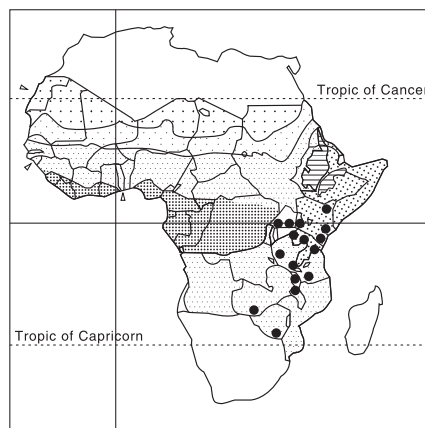
Near *P. ceratostemon*.



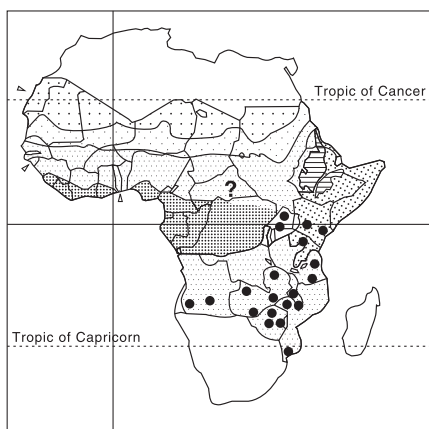
*Phyllanthus friesii*



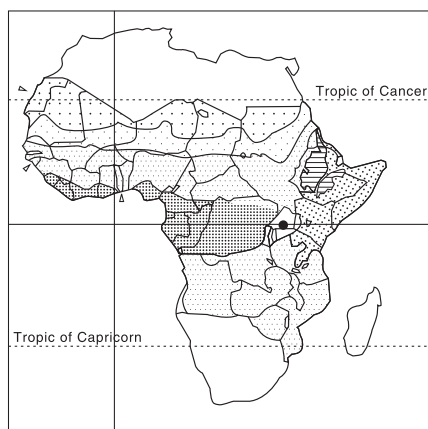
*Phyllanthus gagnioevae*



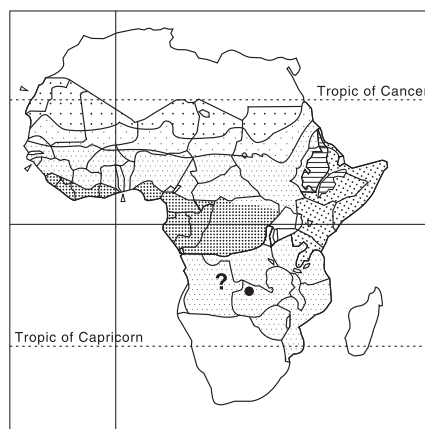
*Phyllanthus gillettianus*



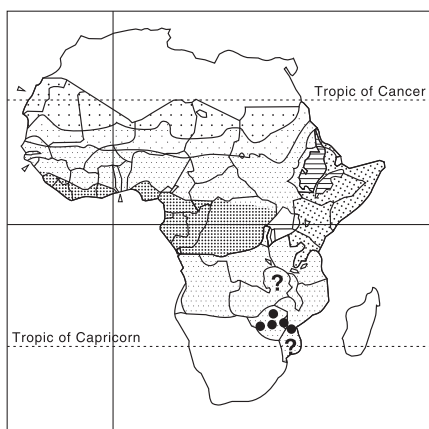
*Phyllanthus glaucophyllus*



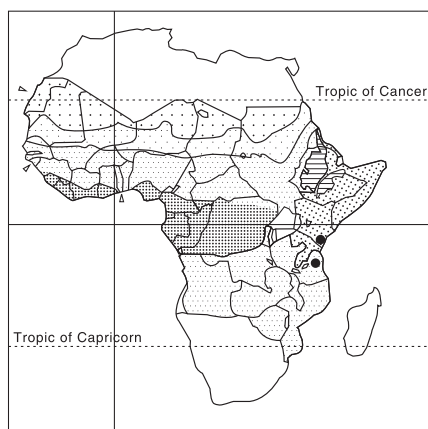
*Phyllanthus goniostemon*



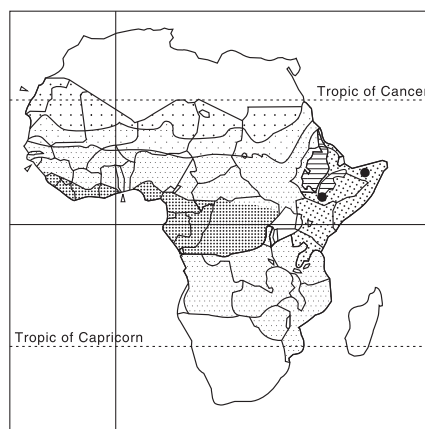
*Phyllanthus gossweilerii*



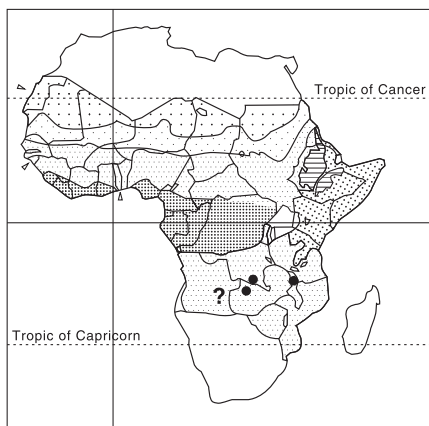
*Phyllanthus graminicola*



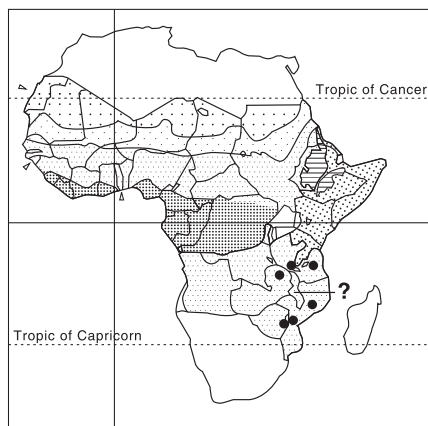
*Phyllanthus harrisii*



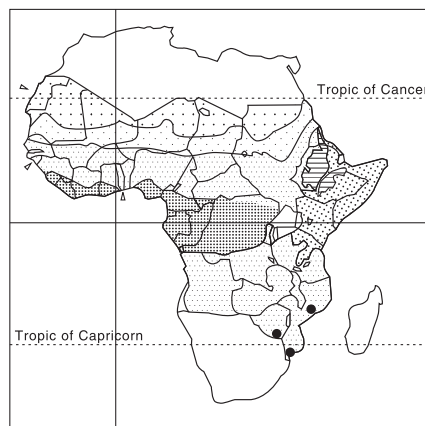
*Phyllanthus hildebrandtii*



*Phyllanthus holostylus*



*Phyllanthus hutchinsonianus*



*Phyllanthus incurvus*

## PHYLLANTHUS

**P. gossweileri** Hutch.

Slender erect annual herb to ± 30 cm tall, monoecious; lead shoots terete; lateral shoots few, erect, to 25 cm long.

Dry, barren watershed grassland; here and there in open thickets; 1400 m alt.

**P. graminicola** Hutch. in S. Moore

syn.: *P. rogersii* Hutch.; *P. sofalaensis* Jean F. Brunel in sched.

Perennial herb to 35 cm tall with several, clustered stems, arising from a vertical thickened woody rootstock; lead shoot and lateral shoots terete; the latter 4-12(-20) cm long, usually subtended by foliage leaves, ± vertically oriented.

Plateau and wooded grasslands; submontane grassland and mist forest boundaries; rare in *Hymenocardia* chipya, often appearing after fire; (40-)1150-2100 m alt.

S. Africa.

**P. harrisii** Radcl.-Sm.

Monoecious herb, rigid, erect, to 1,5 m tall; lead stem slightly sulcate; lateral shoots to 22 cm long, slender, not fasciculate.

Depressions and rather wet waste ground, swamps, ricefields, dry stream beds, riverine forest, old cultivations; 0-150 m alt.

Near *P. chevalieri*.

**P. hildebrandtii** Pax

Shrub 2 m tall with old stems terete; leafy shoots produced from very well-defined short shoots, to 16(-20) mm long; female material not known from Somalia.

Rocky slopes; ± 1200 m alt.

Very closely related to and perhaps not distinct from *P. sepialis*.

**P. holostylus** Milne-Redh.

syn.: *P. oxycoccifolius* sensu Fl. Trop. E. Afr., Euphorb. 1: 23, 1987, quoad specim. zambicum, non Hutch.

Erect, usually tufted perennial herb to 15 cm tall, sometimes a suffrutex to 50 cm, dioecious; stems several arising at intervals from a woody rhizome; lead shoots mostly leafy; lateral shoots to 10 cm long, vertically disposed.

Pyrophyte of watershed grassland and dambos; miombo woodland and chipya; 1510-1960 m alt.

**P. hutchinsonianus** S. Moore; Kew Bull. 50: 814, 1995.

Virgate, erect much-branched monoecious subshrub 0,5-2,5 m tall; orthotropic shoots angular; plagiotropic shoots (2-)5-10 cm long, often borne close together at the top of the lead shoots.

*Beilschmiedia*, *Berlinia*, *Parinari* forest; grassland usually in shelter of rocks; rocky slopes and beside streams; evergreen forest margin; edge of kloof forest; gallery; 1200-2500 m alt.

**P. incurvus** Thunb.

syn.: *P. capensis* Spreng. ex Sond.

Woody undershrub with whip-like branches arising from a rhizome; branches somewhat flattened, obtusely angular; very similar to *P. maderaspatanus* but habit caespitose etc. [Fl. Zambes. 9(4): 60, 1996].

## PHYLLANTHUS INCURVUS

Usually on black basaltic and sandy clay soils of river valleys, on river banks; dry river beds; amongst rocks; also on limestone pavement; serpentine hills; open *Brachystegia* woodland; 15-930 m alt.

Botswana, S. Africa, Namibia.

**P. inflatus** Hutch.

Monoecious much branched shrub or spreading spiny tree to 12 m tall, with ± horizontal branches; orthotropic shoots robust, subterete; leafy plagiotropic shoots (produced in the new season's growth) 15-40(-45) cm long.

Riverine forest; rain-, gully- and swamp-forest; 750-1830 m alt.

**P. irriguus** Radcl.-Sm.

Erect monoecious annual aquatic herb to 60 cm tall with long, white roots; orthotropic stem with plagiotropic shoots to 10 cm long, the older ones subtending secondary orthotropic shoots.

Flooded laterite pans in ± 20 cm of water; 1020 m alt.

**P. jaegeri** Jean F. Brunel & J. P. Roux

Annual or perennial herb with ramose orthotropic stem to 40 cm tall; plagiotropic shoots to 4 cm.

Rocks with *Brachycorythis pauciflora*, *Osbeckia porteresi*, *Mesanthemum prescottianum*; ± 1600 m alt.

Only known from the type probably from Mt. Nimba (Guinea) rather than Mt. Loma (Sierra Leone) as quoted by Brunel & Roux (Willdenowia 11: 84, 1981); collected in 1954.

**P. kaessneri** Hutch.

Subshrub, shrub or tree 2,5-4,5 m tall; stems several from the base, wiry and often with scandent branches; lead shoots slender with lateral leafy shoots 2-8 cm long, angular.

Coastal bushland; *Brachystegia* woodland and shady or fringing evergreen forest; disturbed places; dense evergreen thicket around granite boulders; dry evergreen forest and bushland; rocky hill-tops under *Euphorbia nyikae*; light forest; along forest cuttings; mushitu; 0-840 m alt.

Comprises 2 vars.

**P. kerstingii** Jean F. Brunel

Ramose shrub to 1,5 m tall.

Gallery forest.

**P. lebrunii** Robyns & Lawalrée

Monoecious shrub, bushy, diffuse ± 1 m tall, with stem to 16 mm Ø at the base, with woody rhizome.

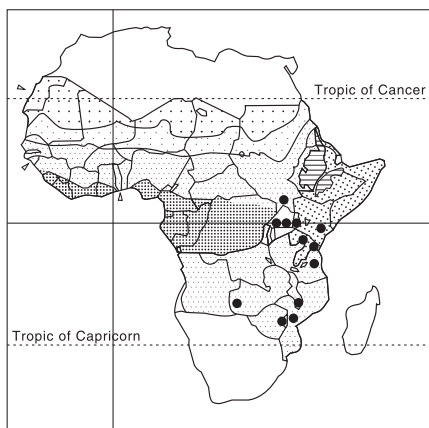
Xerophilous thicket; ± 1000 m alt.

Near *P. leucanthus*.

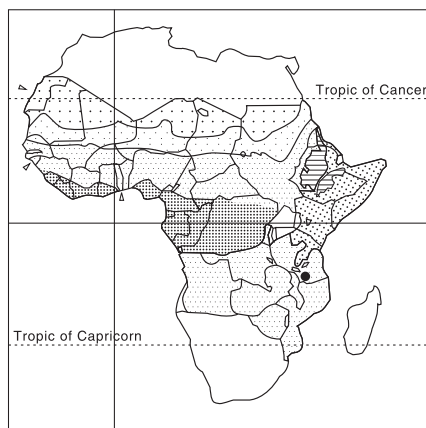
**P. leonardianus** Lisowski, Malaisse & Symoens; icon.: Aqua-Planta 27: 47, 2002.

Aquatic herb, annual, monoecious with main root ± 4 cm long, 1 mm Ø; stem pink to pale salmon coloured, flexuous, to 80 cm long, 1,5 mm Ø, with numerous, very ramose adventitious roots on the last lower 20 cm; branches 6-14, to 3 cm long, disposed on the 3-5(-10) upper cm.

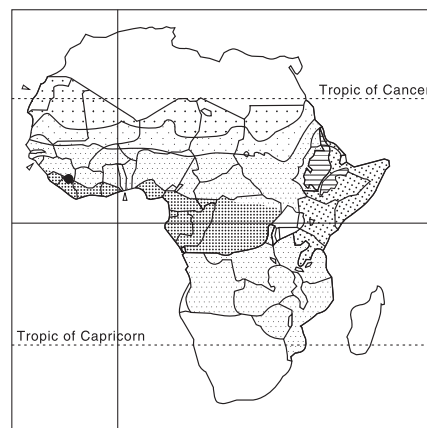




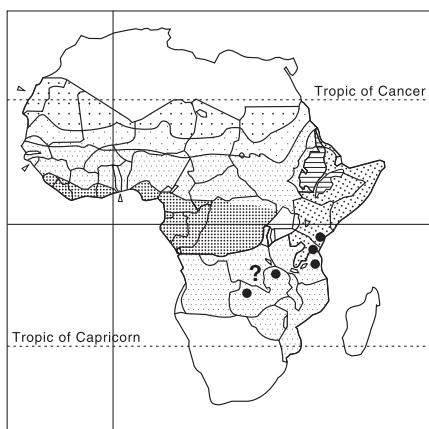
*Phyllanthus inflatus*



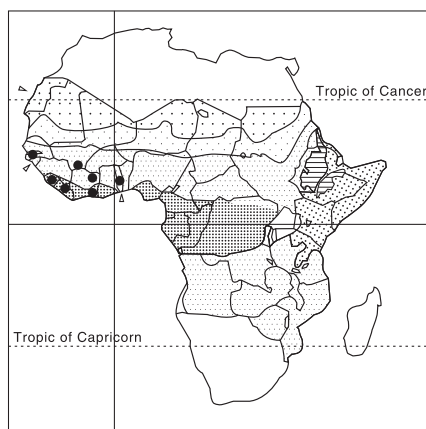
*Phyllanthus irriguus*



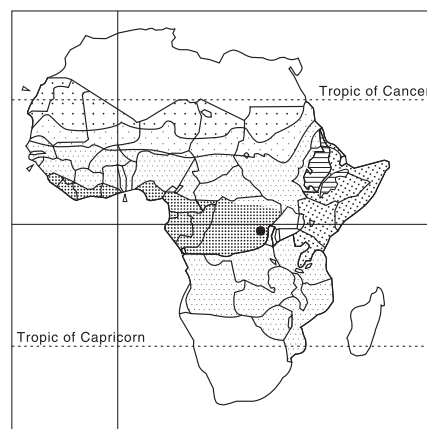
*Phyllanthus jaegeri*



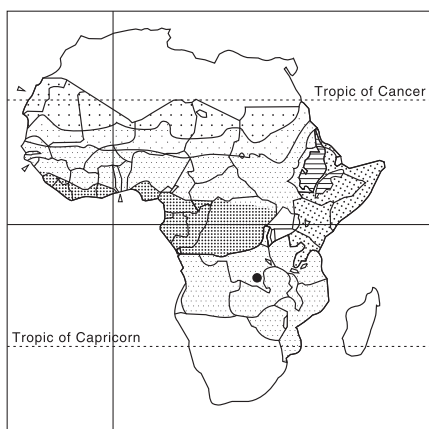
*Phyllanthus kaessneri*



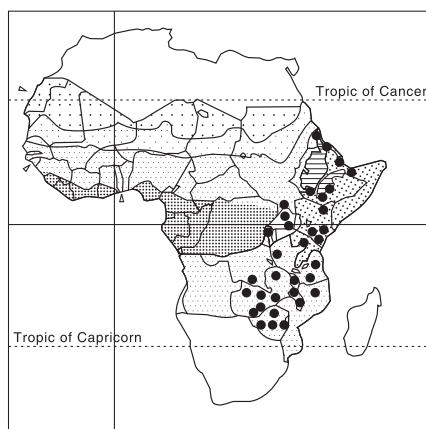
*Phyllanthus kerstingii*



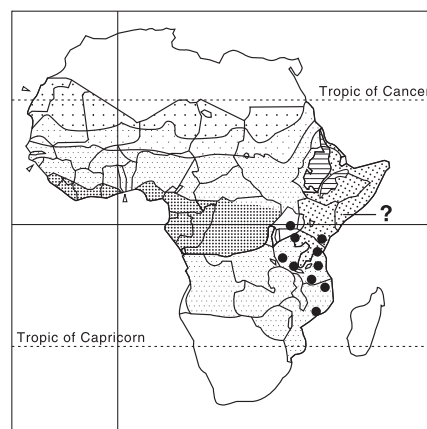
*Phyllanthus lebrunii*



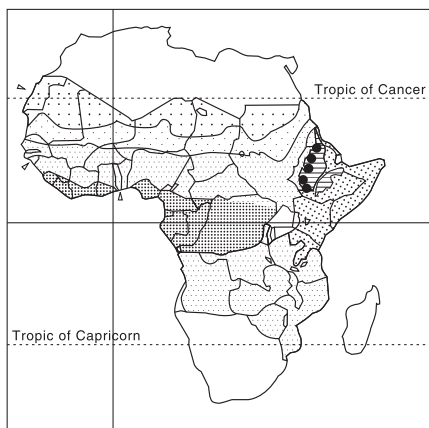
*Phyllanthus leonardianus*



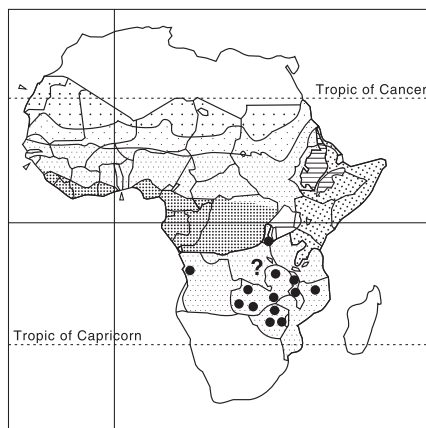
*Phyllanthus leucanthus*



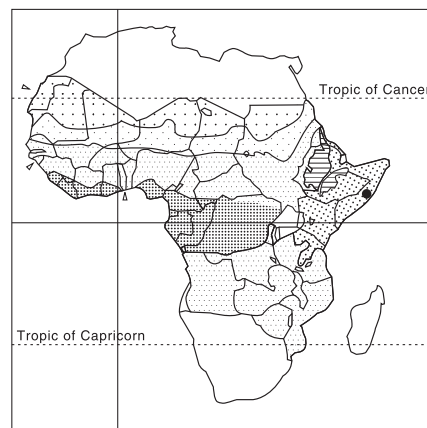
*Phyllanthus leucocalyx*



*Phyllanthus limmuensis*



*Phyllanthus loandensis*



*Phyllanthus lunifolius*

## PHYLLANTHUS LEONARDIANUS

Acid, seasonal pools with *Hydrothauma manicatum*, *Eriocaulon bifistulosum*; 1650-1680 m alt.

The only known true aquatic *Phyllanthus* with *P. irriguus* (tropical Africa) and *P. fluitans* (tropical America).

**P. leucanthus** Pax

syn.: *P. rivae* Pax; *P. eylesii* S. Moore; *P. merripaensis* Jean F. Brunel 1987, unpublished thesis.

Erect annual or perennial herb to 90 cm tall, usually much less (less often a ± shrubby perennial); monoecious or rarely dioecious; stems reddish or purplish later becoming wiry; lead shoots angular; lateral shoots to 15 cm long, narrowly 2-winged, the older ones often co-axillary with secondary shoots; short shoots sometimes developing.

Forest edges; open and wooded grassland, woodland (incl. miombo), bushland; often rocky places; ruderal; damper shaded sites with deciduous woodland with *Acacia*, *Commiphora*, *Adansonia*, *Sclerocarya*, *Cussonia* etc.; dense riverine and lakeshore vegetation; dambos; cultivated ground; patches of evergreen scrub; 520-1950 m alt.

Closely related to *P. pseudoniruri*; confused with *P. suffrutescens*.

**P. leucocalyx** Hutch.

syn.: *P. rotundifolius* Klein ex Willd. var. *leucocalyx* Müll. Arg. in DC., Prodr. 15(2): 406, 1866, p.p. quoad specim. Kirk, non Müll. Arg., Linnaea 32: 43, 1863; *P. milanjensis* Hutch., verosimiliter nom.

Monoecious, erect annual or short-lived perennial herb, commonly 15-45 cm, but occasionally to 1 m tall, woody at the base; orthotropic stems ± terete; plagiotropic shoots to 14 cm long, more often not exceeding 11 cm, the older ones usually co-axillary, with secondary orthotropic shoots.

Open or rocky generally damp places in a variety of associations; disturbed places; sandy soil, in herbaceous savanna; with grasses and sedges in pools; 0-1000 m alt.

Not in Somalia?

**P. limmuensis** Cufod.

Scandent shrub 3-4(-5) m tall; branches of up to 4 types in male plants: main stems with non-spiny scale-leaves; leafy shoots to 30 cm long and often, short shoots bearing flowering shoots without foliage leaves; female plants with leafy shoots only.

Forest often near streams; 1050-2200 m alt.

Confused with *P. sepialis*.

**P. loandensis** Welw. ex Müll. Arg.

syn.: *P. angolensis* sensu Radcl.-Sm. in Fl. Trop. E. Afr., Euphorb. 1: 30, 1987, non Müll. Arg.

Erect, much-branched annual or perennial herb, subshrub or shrub to 90 cm tall, monoecious or dioecious; stems and branches strict, tough wiry; lead shoots and lateral shoots angular; lateral shoots 1-7(-10) cm long, divaricate, usually subtended by foliage leaves on the young lead shoots, but densely fasciculate on the shoots of older plants, subtended by scale-leaves.

Riverine vegetation amongst rocks; dry rocky hills and eroded slopes in *Brachystegia* (miombo) woodland; short grassland; *Cryptosepalum* woodland on Kalahari sand; red sandy loam in dry grassland; persisting in disturbed places; hilly bushy places on clay soil; 900-1870 m alt.

Namibia, S. Africa.

## PHYLLANTHUS

**P. lunifolius** M. G. Gilbert & Thulin

Shrub completely flat on the ground, densely and irregularly branched; branches not or scarcely spine-tipped; most leaves clustered on short-shoots; male flowers unknown.

Coastal plain; on flat, open limestone rocks; 20-50 m alt.

In the same area as other endemics, all of which are prostrate or cushion-forming dwarf shrubs (wind-swept rocks): *Polygala argentea*, *Lochia parvibractea*, *Polycarpaea clavifolia*.

Related to *P. spinosus*, *P. maderaspatensis*.

**P. macranthus** Pax

Monoecious or sometimes dioecious, compact much-branched deciduous shrub or subshrub 0,5-1,5 m tall; orthotropic shoots subterete; plagiotropic shoots (1-)2-6(-10) cm long, angular; brachyblasts present, co-axillary with the primary plagiotropic shoots and later themselves each giving rise to fascicles of 2-4 secondary plagiotropic shoots.

*Brachystegia* woodland; sandy soils; often on rocky outcrops with *Brachystegia glaucescens*; dry mixed deciduous woodland on sand; cashew plantation; 30-1067 m alt.

Comprises 2 vars.

**P. maderaspatensis** L., incl. var. *thonningii* (Schumach. & Thonn.) Müll. Arg.

syn.: *P. thonningii* Schumach. & Thonn.; *P. venosus* A. Rich.; *P. magudensis* Jean F. Brunel, unpubl. thesis 1987; *P. vaccinioides* Klotzsch; *P. gueinzii* Müll. Arg.; *P. paxianus* Dinter

Monoecious spreading or stiffly erect unbranched or much branched woody perennial (or annual) herb 15-90(-120) cm tall; shoots monomorphic, indefinite, angular, often reddish or brownish tinged.

Deciduous woodland, bushland on a wide variety of soils (usually heavy clay or alluvial); frequently a weed, particularly of cotton; wooded or short grassland; stream-sides; edges of other wet places (floodplains, seasonally flooded dambos and pans); mopane; *Acacia* woodlands; *Brachystegia allenii* and miombo woodlands; dry deciduous woodlands and scrub on sandy soils; sand dunes; screes; disturbed places; ± 0-1900 m alt.

Extremely variable in habit and leaf-shape.

Botswana, Namibia, S. Africa; Old World tropics and subtropics (common and widespread).

Comprises 2 vars.

**P. mafingensis** Radcl.-Sm.

Monoecious much-branched procumbent suffrutex or woody perennial herb; lateral leafy shoots 2-2,5 cm long.

Rock outcrops in summit grassland; 2340 m alt.

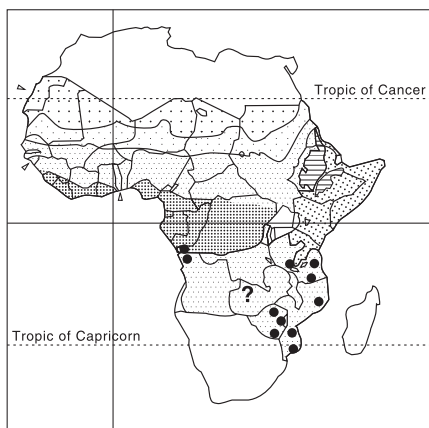
Only known from the type collected in 1982.

**P. magnificens** Jean F. Brunel & J. P. Roux; icon.: Willdenowia 11: 70, 73, 75, 76, 1981.

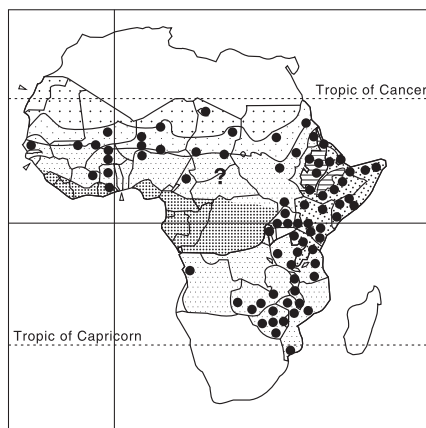
Herb to 80 cm tall, ramose and woody at base; plagiotropic shoots to 6-15 cm long.

Scarp; plateau; waterfall.

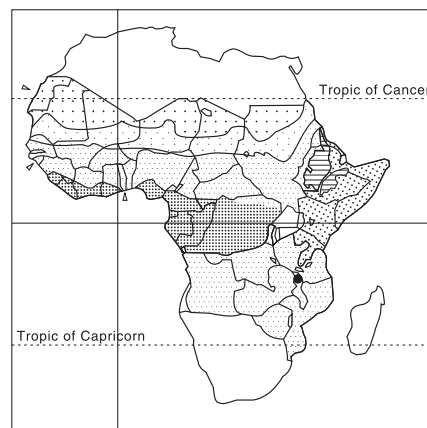
Near *P. odontadenius*, *P. braunii*.



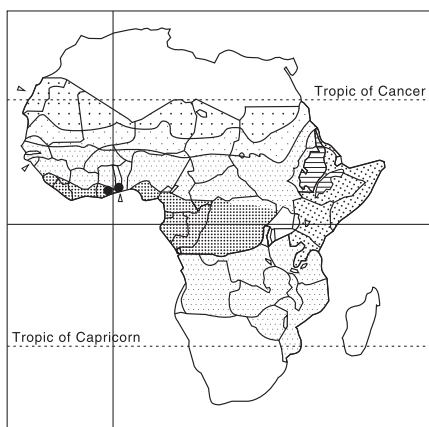
*Phyllanthus macranthus*



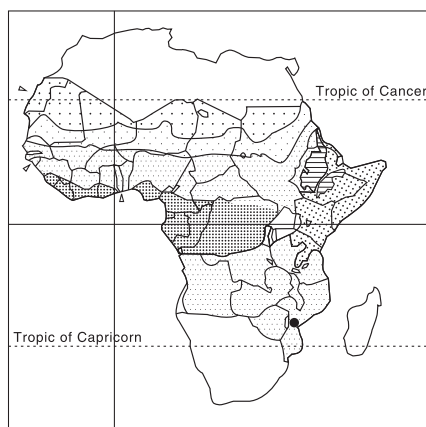
*Phyllanthus maderaspatensis*



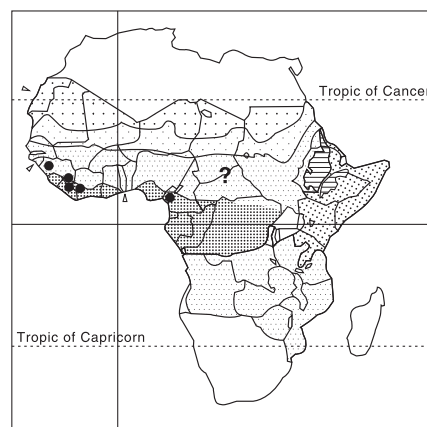
*Phyllanthus mafingensis*



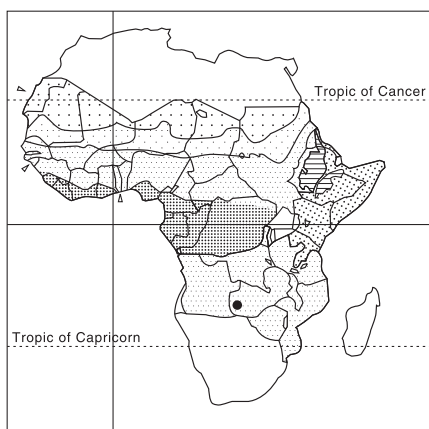
*Phyllanthus magnificens*



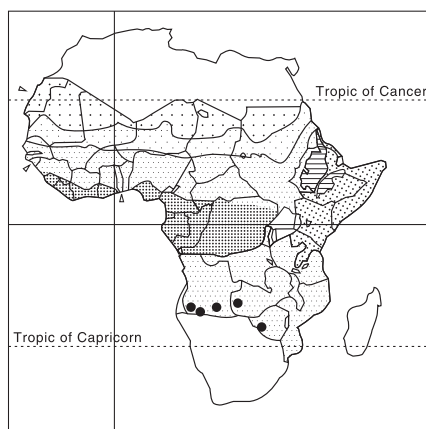
*Phyllanthus manicaensis*



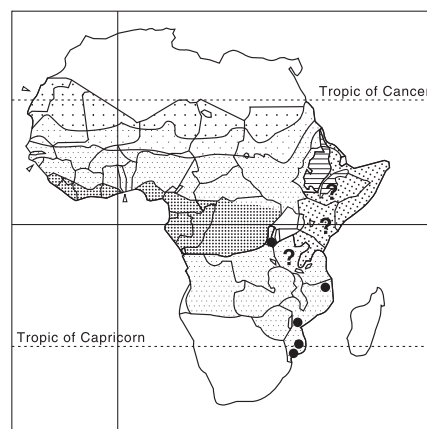
*Phyllanthus mannianus*



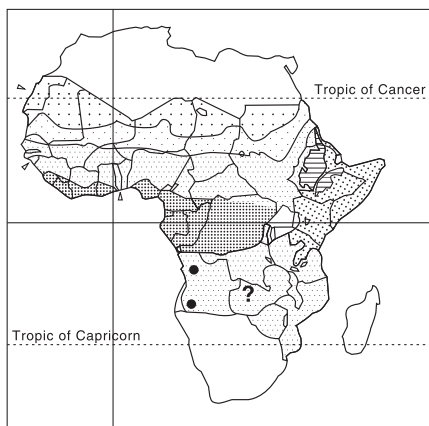
*Phyllanthus martinii*



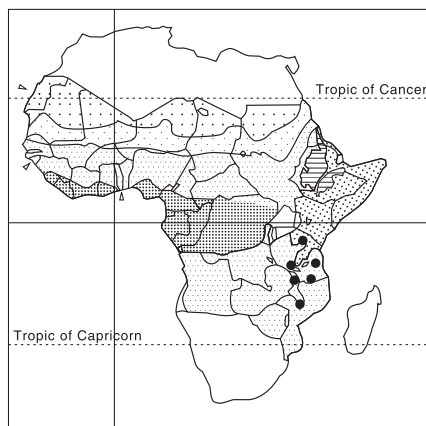
*Phyllanthus mendesii*



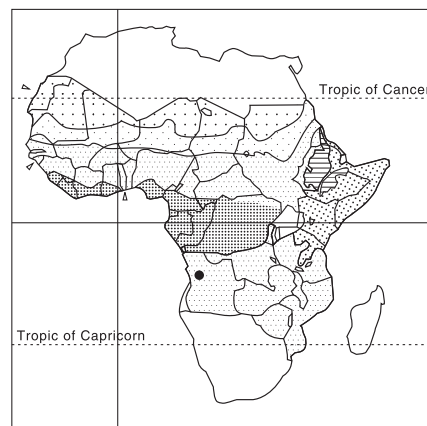
*Phyllanthus mendoncae*



*Phyllanthus microdendron*



*Phyllanthus micromeris*



*Phyllanthus microphyllinus*

## PHYLLANTHUS

**P. manicaensis** Jean F. Brunel ex Radcl.-Sm.

Monoecious erect suffrutex to 30 cm tall with lateral shoots 3-10 cm long.

Rocks in mist-forest with *Aphloia*, *Rapanea*, *Curtisia*, *Podocarpus*; 1940-2100 m alt.

**P. mannianus** Müll. Arg.

syn.: *P. pseudoreticulatus* Pax & K. Hoffm.

Perennial herb or undershrub 1-2 m tall; plagiotropic shoots 3-7 cm long, erect, cylindrical.

Forest, woodland, grassland; waterfalls; on rocks or earthy-gravelly carapace soil; 525-2400 m alt.

**P. martinii** Radcl.-Sm.

Erect annual herb to ± 30 cm tall, monoecious; lead shoots with lateral shoots to 11 cm long, later co-axillary with secondary lead shoots.

Understorey thicket in *Baikiaea* forest on Kalahari sand (mutemwa) especially on old lines.

Only known from the type collected in 1933.

**P. mendesii** Jean F. Brunel ex Radcl.-Sm.

Erect annual or subperennial herb to ± 80 cm tall, but more often 20-40 cm, monoecious.

Kalahari sand habitats including short grassland, mutemwa thicket *Baikiaea* forest and open woodlands; often here as a weed of cultivated and disturbed ground; 914-1066 m alt.

Caprivi Strip, Botswana, Namibia.

**P. mendoncae** Jean F. Brunel ex Radcl.-Sm.

Monoecious erect perennial herb or subshrub to 45 cm tall with angular uniform shoots.

Sandy clay and black basaltic soils in open woodland and wooded grassy floodplains; 100 m alt.

Intermediates occur between this species and *P. maderaspatensis*.

**P. microdendron** Welw. ex Müll. Arg.

syn.: *P. antunesii* Pax

Much-branched annual or perennial herb or subshrub to 60 cm tall, monoecious; lead shoots with lateral shoots 2-7 cm long.

Miombo woodland; *Guibourtia*, *Baikiaea* woodland on Kalahari sand; moist hilly places among low bushes; ?1000-1250 m alt.

Comprises 2 vars.

**P. micromeris** Radcl.-Sm.; Kew Bull. 50: 814, 1995.

Monoecious slender erect or ascending annual herb 10-30(-70) cm tall; orthotropic shoots subangular; plagiotropic shoots 2-5 (-7) cm long, ± terete.

Forest edges; grassland; generally in damp, sometimes rocky places, stream valley; also disturbed places; low scrub; pathside in moist evergreen forest on steep slopes; mango woodland; 475-2300 m alt.

Comprises 3 vars.

## PHYLLANTHUS

**P. microphyllinus** Müll. Arg.

Stem very slender, elongated, probably arising from a rhizome, ± 90 cm tall, terete, closely longitudinally sulcate; lateral branches to 3,75 cm long, terete.

Mountainous cultivated places.

**P. mieschii** Jean F. Brunel & J. P. Roux

Slightly ramose herb to 30-60 cm tall; plagiotropic shoots to 8-13 cm long.

Stream banks.

Near *P. odontadenius*.

[**P. mindouliensis** Jean F. Brunel], unpubl. thesis, 1987.

**P. mittenianus** Hutch.

Stems terete or slightly angular with horizontally spreading branches, slightly zigzag, narrowly winged on each side, tinged with red in a fresh state.

Rain-forest; 900-1900 m alt.

**P. moeroensis** De Wild., incl. var. *ringoetii* De Wild.

syn.: *P. ringoetii* De Wild.

Erect herb with several erect branches 30 cm long arising from a woody, thickened, irregularly ramose rootstock; with some compressed branches; male flower unknown.

Dry wooded savanna.

**P. mooneyi** M. G. Gilbert

Perennial herb or subshrub 0,2-1(-1,8) m tall, soboliferous, stem bases ± woody and rooting adventitiously; orthotropic main stems angular; plagiotropic lateral shoots 4-7 cm, 2-winged.

Disturbed areas at the margins of forest or in wooded grassland, on well-drained slopes; less often along swampy river banks, both in sun and shade; 525-2100 m alt.

Combining floral characters of *P. leucanthus* and *P. odontadenius*.

**P. muellerianus** (Kuntze) Exell

bas.: *Diasperus muellerianus* Kuntze

syn.: *Kirganelia floribunda* Baill., non Spreng.; *Phyllanthus floribundus* (Baill.) Müll. Arg., non Kunth.

Evergreen monoecious, spiny, straggly or climbing shrub with numerous stems from the base, 2,5-12 m tall, with spreading or pendulous branches; orthotropic shoots angular, reddish tinged; leafy plagiotropic shoots 15-20(-25) cm long; with several sub-fasciculate secondary floriferous plagiotropic shoots to ± 10 cm long, arising from brachyblasts; cataphylls becoming spinescent, purplish brown.

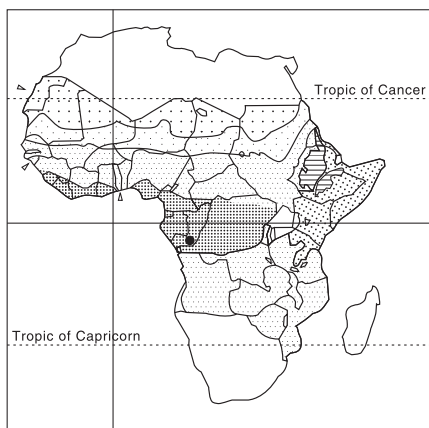
Wooded grassland; *Combretum*, *Terminalia* woodland; riverine forest; swamp forest (mushitu); moist thickets, laterite tall grassland; dambo edges; 250-1750 m alt.

**P. myrtaceus** Sond.

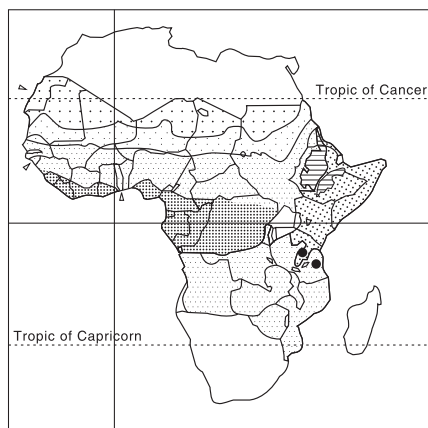
syn.: *P. revolutus* E. Mey. ex Sond.; *P. bachmannii* Pax

Erect woody shrub to 1,2 m tall with flattened and slightly winged branches; flowering branchlets flexuous, compressed; bark reddish.

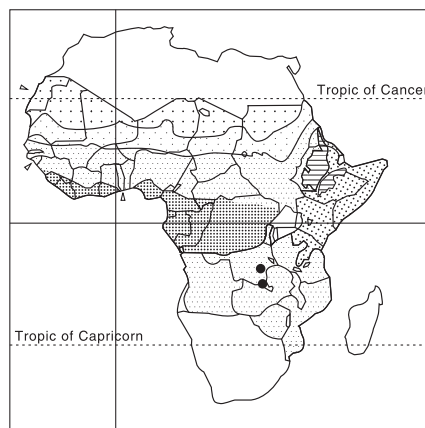




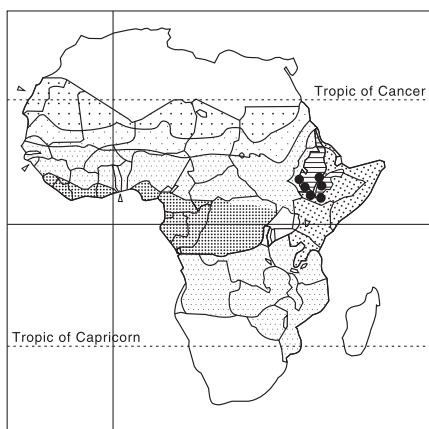
*Phyllanthus mieschii*



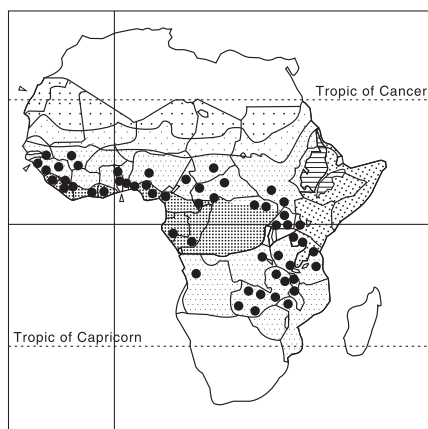
*Phyllanthus mittenianus*



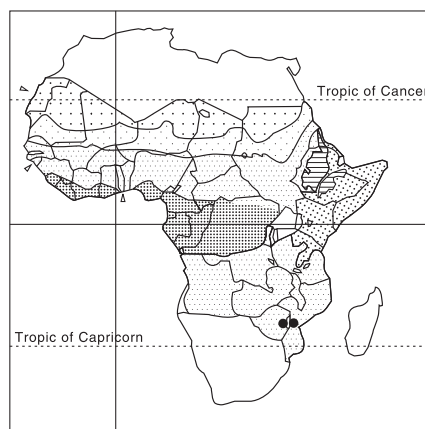
*Phyllanthus moeroensis*



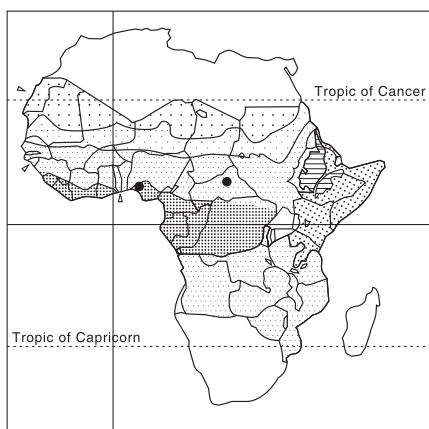
*Phyllanthus mooneyi*



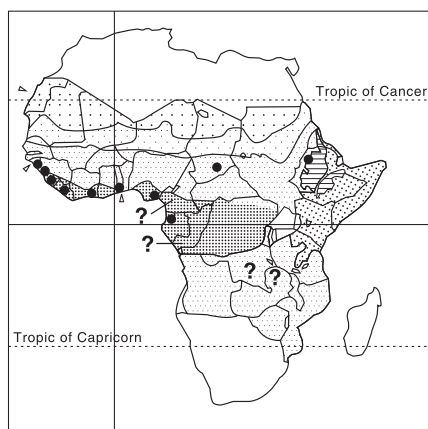
*Phyllanthus muellerianus*



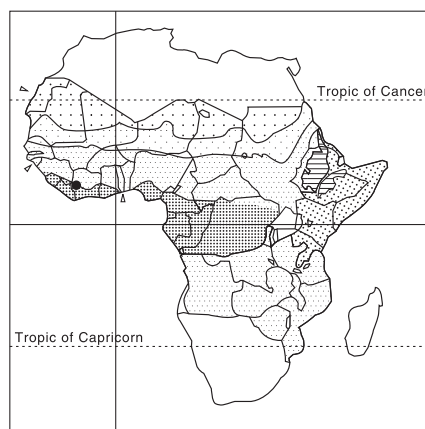
*Phyllanthus myrtaceus*



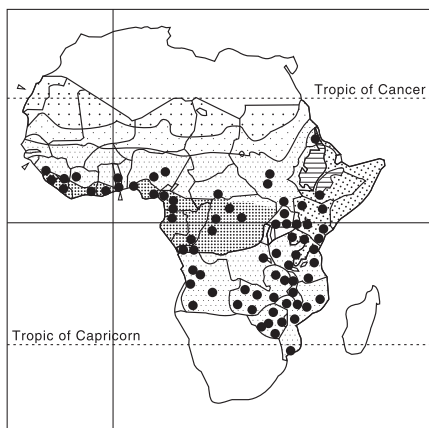
*Phyllanthus nigericus*



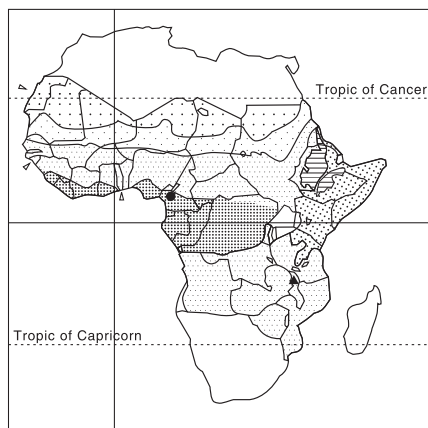
*Phyllanthus niruroides*



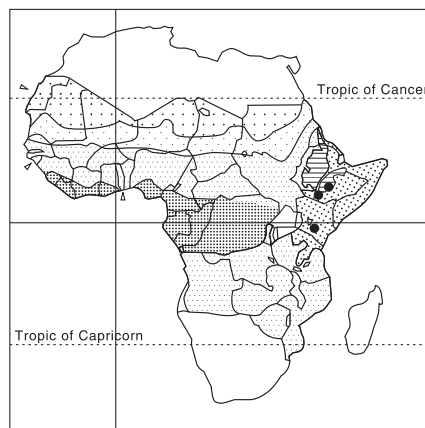
*Phyllanthus nozeranianus*



*Phyllanthus nummularifolius*



*Phyllanthus nyale* ●  
*Phyllanthus nyikae* ▲



*Phyllanthus oblongiglans*

## PHYLLANTHUS MYRTACEUS

Grassland often at streamsides; forest margins; *Brachystegia* woodland; 305-2250 m alt.

S. Africa.

Intermediates between this species and *P. hutchinsonianus* are known.

**P. nigericus** Brenan

Probably annual herb, with slender stems decumbent at base, subterete, purplish above,  $\pm 1$  mm  $\varnothing$ ; secondary shoots spreading 1,5-6 cm long.

Wet flush with short vegetation;  $\pm 490$  m alt.

Bioko/Fernando Poo.

**P. niruroides** Müll. Arg.

Monoecious, erect herb 10-25 cm tall, rarely more; orthotropic stems terete, reddish; plagiotropic shoots to 8 cm long, the older ones usually co-axillary with secondary orthotropic shoots.

Wet grassland in deciduous woodland; disturbed places; locally a frequent weed of *Sorghum* on dark brown clay soil; waste ground; 930-1540(-2320) m alt.

Comprises 2 subspp.

Not in Uganda, Tanzania, Zimbabwe, Zambia (= *P. taylorianus*).

Metallophyte: Zaire (Fungurume); cobalt: 526  $\mu\text{g/g}$  dry weight; copper: 179.

**P. nozeranianus** Jean F. Brunel & J. P. Roux (non *P. nozeranii* Rossignol & Haicour = *P. urinaria*).

Very ramose undershrub with woody base, to 40 cm tall; orthotropic stems with plagiotropic keeled shoots, slightly denticulate at the angles.

Mountain savanna.

Near *P. bancilhonae*.

**P. nummulariifolius** Poir.

syn.: *P. capillaris* Schumach. & Thonn. var. *stuhlmannii* (Pax) Hutch.; *P. tanzaniensis* Jean F. Brunel, unpubl. thesis 1987.

Monoecious or dioecious graceful semi-prostrate, decumbent, subsucculent or  $\pm$  erect woody herb 20-50 cm tall or shrub to 4,5 m high but commonly much less; orthotropic shoots subterete; plagiotropic shoots (5-)10-20(-40) cm long, angular-subterete, simple or branched.

Woodland; wooded grassland; forest edges; often in seasonally wet and disturbed places; grassland and open grassy places; shallow soil pocket on granite inselberg within *Acacia-Commiphora* bushland; evergreen rain-forest floor; dense riverine forest; miombo usually on hillsides; rocky slopes in woodland; marshy ground beside streams; clearings; often appearing after fire; 0-2450 m alt.

Bioko/Fernando Poo; S. Africa; Madagascar, Mascarenes, Seychelles.

Comprises 2 vars.

**P. nyale** Petra Hoffm. & Cheek, Kew Bull. 58: 442, 2003; icon.: o.c.: 444.

Shrublet 20-35 cm tall, monopodial, sparsely branched; orthotropic shoots terete or flattened at apex, striate, sometimes lenticellate; branching phyllanthoid; plagiotropic branchlets 6-11 cm long, distinctly winged; leaves with unequal base; seeds unknown.

## PHYLLANTHUS NYALE

Submontane evergreen forest with *Oncoba*, *Cola verticillata*, *Loesenera talbotii*, in understory; 1000 m alt.

Resembling *P. nigericus* and *P. sublanatus* (keying out close the these in Fl. W. Trop. Afr., ed. 2, 1/2: 384, 1958).

Known only from the type (Etuge 4453) and the paratype (Cheek 9679), both collected in 1998. – Forest clearance for agriculture is a threat for the species.

**P. nyikae** Radcl.-Sm.

Monoecious or dioecious moderately-branched erect virgate woody perennial herb or subshrub 20-100 cm tall; lateral shoots 1-4 cm long.

Grassland; grassy edges of forest; 2030-2340 m alt.

**P. oblongiglans** M. G. Gilbert

Much-branched ephemeral herb with orthotropic stems erect or sprawling to 7 cm long, deep red, sometimes white and spongy at base if growing in water; leafy plagiotropic shoots to 3 cm, unwinged.

Shallow pool in grassland; gravel overlying black soil; loose soil around ? mole-rat burrows in raised area within grassland on black cotton soil; a weed; 2400-2900 m alt.

A high-altitude vicariat of *P. amarus*.

**P. odontadenius** Müll. Arg., excl. var. *braunii* (Pax) Hutch. (= *P. braunii*).

syn.: *P. bequaertii* Robyns & Lawalrée; *P. santhomensis* Beille

Monoecious or sometimes dioecious procumbent, ascending, ramose, scrambling or  $\pm$  erect annual or perennial herb or shrub, usually 20-90 cm but occasionally to 2 m tall, with reddish stems; orthotropic shoots subterete or angular; plagiotropic shoots to 17 cm long, flattened, narrowly 2-winged, the older ones sometimes co-axillary with secondary orthotropic shoots.

Forest and associated grassland and bushland; riverine and other damp places; disturbed ground; *Brachystegia-Uapaca* miombo woodlands; evergreen forest shade; damp sandy places; also ruderal; 700-2380 m alt.

São Tomé, Bioko/Fernando Poo.

*P. odontadenius* var. *micranthus* Pax and var. *chariensis* Beille are in need of further studies for evaluation.

**P. omahakensis** Dinter & Pax

Erect to procumbent or semi-prostrate annual herb 8-30 cm tall or 60 cm across, monoecious; stems often much-branched from the base; lowest nodes of the lead shoots bearing leaves and secondary lead shoots, the upper bearing scale leaves 1 mm long and lateral shoots 2-8 cm long.

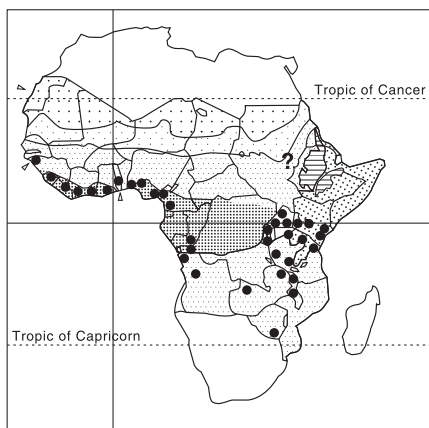
Kalahari sand in woodland and mutemwa thickets; sandy soil in seasonally wet grassland; well drained woodland; sand veld; 975-1035 m alt.

Botswana, Namibia.

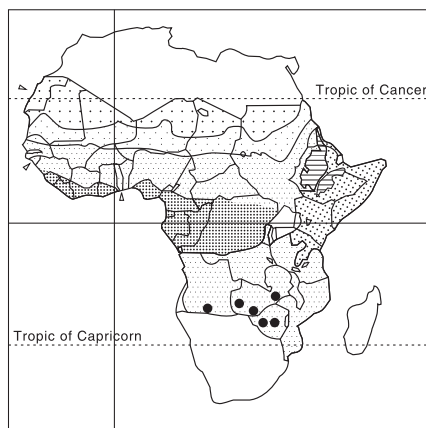
**P. ovalifolius** Forssk.; Kew Bull. 50: 814, 1995.

syn.: *P. ugandensis* Rendle; *P. guineensis* Pax

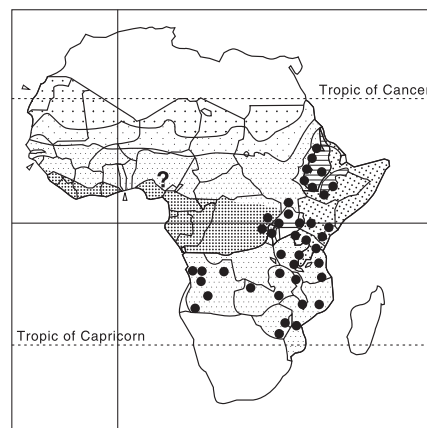
Monoecious or rarely dioecious open spreading or straggling bush or woody liane or tree to 9 m in height, but not commonly exceeding 5 m, with stiff, slender, straight or occasionally pendent branches; bark papery, peeling; twigs dark brown or reddish; orthotropic shoots angular; plagiotropic shoots leafy, floriferous or both,  $\pm 12$ -15 cm long.



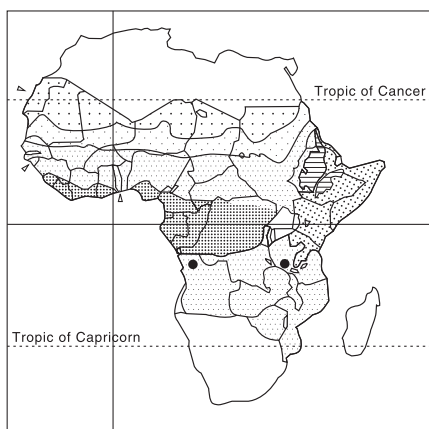
*Phyllanthus odontadenius*



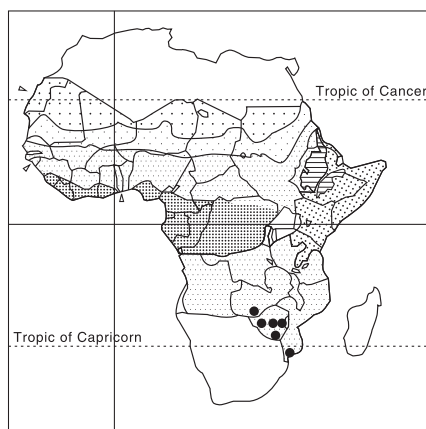
*Phyllanthus omahakensis*



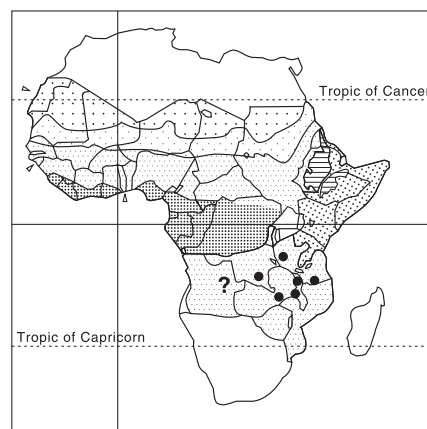
*Phyllanthus ovalifolius*



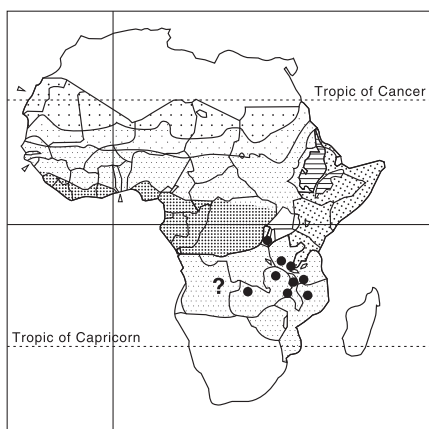
*Phyllanthus oxycoccifolius*



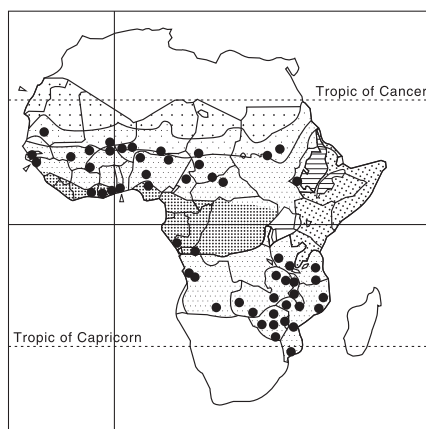
*Phyllanthus parvulus*



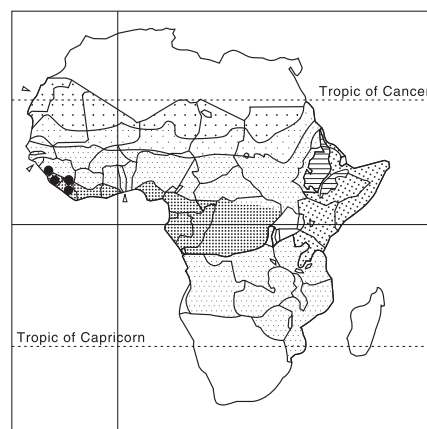
*Phyllanthus parvus*



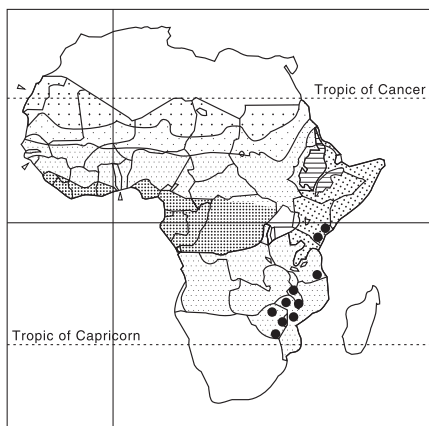
*Phyllanthus paxii*



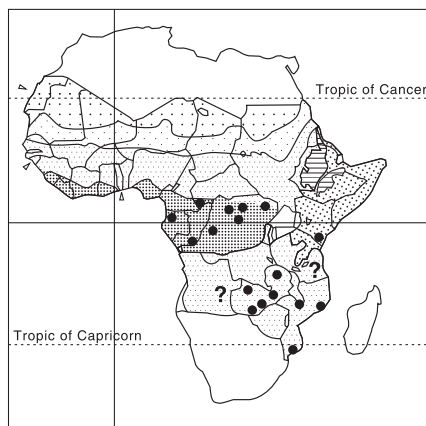
*Phyllanthus pentandrus*



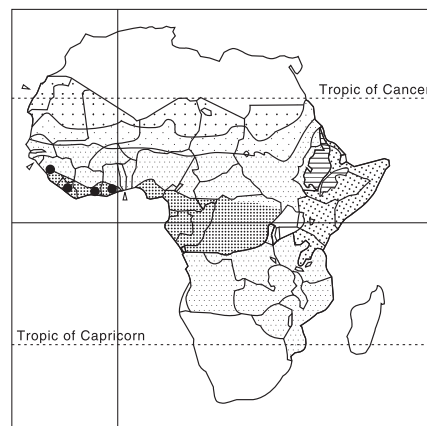
*Phyllanthus petraeus*



*Phyllanthus pinnatus*



*Phyllanthus polyanthus*



*Phyllanthus profusus*

## PHYLLANTHUS OVALIFOLIUS

Forest edges; riverine places and thickets (often on termite mounds); persisting in disturbed places; deciduous woodlands, chipya woodland; evergreen rain-forest; gully forest; mushitu; well-wooded rocky outcrops; 350-2750 m alt.

Yemen.

**P. oxycoccifolius** Hutch.

Dioecious perennial cushion-forming herb with flowering stem to 10 cm tall arising from caudicles borne on a stout woody stock; stems monomorphic, definite, slightly flattened.

Grassland subject to burning, often in rocky places; 1670-2440 m alt.

Angolan material sometimes exhibits dimorphic stems.

Not in Zambia (= *P. holostylus*).

**P. parvulus** Sond.

Erect, often much-branched, annual to subperennial herb to ± 50 cm tall, monoecious; lead shoots with lateral leafy shoots to 27 cm long, but most often ± 5-10 cm long.

Kalahari sands in dry deciduous woodlands and short grasslands with scattered trees and shrubs; mopane woodlands on sand; in pans on dry sandy river banks amongst stones; limestone outcrops; hot dry scrubland; *Themeda triandra* grassland with scattered trees; fixed coastal sand dunes; 0-1525 m alt.

Namibia, S. Africa, Botswana.

Comprises 2 vars.: – var. **parvulus** [syn.: *P. tenellus* Roxb. var. *scabrifolius* Müll. Arg. and var. *parvulus* (Sond.) Müll. Arg.; *P. seydelii* Jean F. Brunel 1987, unpublished thesis]; – var. **garipensis** (Müll. Arg.) Radcl.-Sm. [syn.: *P. garipensis* E. Mey. in Drège, nom. nud.; *P. tenellus* var. *natalensis* Müll. Arg.; *P. burchellii* Müll. Arg.].

**P. parvus** Hutch.

Monoecious, erect annual herb 10-20 cm tall; orthotropic stems terete, reddish at the base, green above; plagiotropic shoots to 9 cm long, more usually 2-5 cm, subterete.

In pockets of humus amongst rock outcrops; grassland; *Brachystegia* and *Uapaca* woodlands on steep slopes; beside waterfalls; also as a roadside weed; 1200-2340 m alt.

**P. paxii** Hutch.

Monoecious, stiffly erect sometimes tufted perennial herb or subshrub 75-150 cm tall, usually unbranched at base; stems dark purplish grey; orthotropic shoots terete, pale green, reddish tinged; plagiotropic shoots 4-10(-18) cm long, remote, slender, subterete.

Grassland; *Brachystegia* woodland; on sandy soil and rocky hill-sides in *Brachystegia-Uapaca* woodlands; miombo and chipya woodlands; in shade in riverine forests and lakeshore vegetation; submontane wooded grassland on slopes; 520-1950 m alt.

**P. pentandrus** Schumach. & Thonn.

syn.: *P. scoparius* Welw.; *P. deflexus* Klotzsch; *P. dilatatus* Klotzsch

Delicate, erect or decumbent annual or subperennial herb 20-60 cm tall, monoecious; stem little-branched at first but later becoming much-branched and woody at base; lead shoots terete, zigzag; lateral leafy and flowering shoots 5-20 cm long.

## PHYLLANTHUS PENTANDRUS

Sandy localities; sometimes amongst stones and rocks; sandy banks of rivers and dams; dry river beds and lakeside dunes; *Brachystegia* and mopane woodlands on Kalahari sand; mutemwa; miombo woodlands on rocky slopes and dry deciduous sandy woodlands; sandy grasslands and dambos; often as a weed of cultivated and disturbed ground; usually in well drained soil; 15-1463 m alt.

Namibia, S. Africa, Botswana.

**P. petraeus** A. Chev. & Beille ex Beille

Shrub 90-210 cm tall, with slightly sulcate erect numerous branches with a broad line of short crisped hairs up each side when young, at length nearly glabrous; dioecious.

Moist places by streams; edges of gallery forest; wooded savanna.

**P. pinnatus** (Wight) G. L. Webster

bas.: *Chorisandra pinnata* Wight

syn.: *Phyllanthus wightianus* Müll. Arg.; *P. senensis* Müll. Arg.; *Cluytiandra schinzii* Pax; *Chorizonema pinnata* (Wight) Jean F. Brunel 1987, unpubl. thesis.

Often spindly, unbranched, sometimes decumbent dioecious several-stemmed shrub with ascending branches 1-3-4,5 cm tall; orthotropic shoots robust, angular; leafy plagiotropic shoots 6-12 cm long, sometimes floriferous at the base.

Coastal and lowland mixed bushland and wooded grassland; sometimes riverine or along coastal shores; hot dry deciduous and mopane woodlands; sometimes among rocks; along banks of seasonal streams and rivers sometimes with *Androstachys johnsonii*; 0-625 m alt.

S. Africa; India, Sri Lanka.

Very distinctive species with dense male inflorescences, annular male disk and seeds with deep, dark hilar excavation.

**P. polyanthus** Pax; Bull. Soc. Roy. Bot. Belg. 84: 50, 1951.

syn.: *P. pynaertii* De Wild.; *P. klainei* Hutch.

Shrub 2-4,5 m tall or tree 6- ± 30 m with stem 25-60 cm Ø, deciduous, dioecious; leafy branchlets from scaly cushions; scales becoming spiny; young flowering branchlets fasciculate with numerous coriaceous ovate-triangular scales at base of each cluster, spreading, to 15 cm long.

Edges of forests; evergreen forest; *Cryptosepalum* evergreen thicket (mavunda) on Kalahari sand; chipya woodland; often beside perennial rivers; rocky streamsides and lakeside sand dunes (vide *Tragia micromeres*); also in littoral scrub; coastal forest patches on deep white sand; gallery and secondary forests; forest with *Scorodophloeus zenkeri*; rain-forest sometimes flooded; 20-1200 m alt.

S. Africa; São Tomé.

Very similar to *P. engleri*.

**P. profusus** N. E. Br.

syn.: *P. wildemanii* Beille

Shrub or straggly tree, with brittle wood; branches subterete, woody; flowering branchlets produced in fascicles in the axils of a sterile branchlet, to 20 cm long, slightly flattened; flowers dioecious.

Forest on sand.



## PHYLLANTHUS

**P. prostratus** Welw. ex Müll. Arg.

Perennial herb or shrub with a thick rootstock; stems and branches numerous, prostrate or ascending, with the habit of some species of *Polygonum*, often rooting at the nodes; flowering branches to 4,3 cm long, subterete; flowers monoecious.

Pasture on sandy clay; hilly sandy places; open sandveld; 1500-1585 m alt.

**P. pseudocarunculatus** Radcl.-Sm.

Annual herb with an erect terminal lead shoot to 10 cm tall and several decumbent or semi-prostrate secondary lead shoots arising from near the base and spreading to 15-20 cm, monoecious; stems red; lateral leafy shoots 2-10 cm long.

Lakeshores, in deep dry sand; sand dunes; locally common; sandy waste ground; 800-1070 m alt.

**P. pseudoniruri** Müll. Arg.

syn.: *P. odontadenioides* Jean F. Brunel 1987, unpubl. thesis; *P. sanenei* Jean F. Brunel, op. cit.

Usually ephemeral herb to 60 cm tall, rarely to 2 m and  $\pm$  woody at base; main stems erect; leafy shoots horizontal, 2-winged, to 17 cm long.

Wet or disturbed sites in or near moist forest; sometimes a weed of irrigated areas; black clay; sandy soils; red soil and dark grey alluvial clay or silt; bare ground; grassland beside rivers, streams and lakes; forest clearings and regrowth; swamp forest; old cultivations; roadsides; moist dambos; riverine forest; 60-2560 m alt.

Confused with *P. odontadenius*, *P. mooneyi*, *P. fraternus*, *P. leucanthus* (they can only be reliably separated by microscopic examination of female flowers).

**P. purpureus** Müll. Arg.; Kew Bull. 51: 319, 1996.

Shrub 1-1,8 m tall, with bright purple stems and branches; stems numerous, straight; branchlets slender.

Gravelly places and in bed of river.

Namibia.

This extremely distinctive species is only known by 2 gatherings from 1859 and 1976, respectively.

**P. raynalii** Jean F. Brunel & J. P. Roux

Erect, perennial, bushy shrub to 3 m tall; orthotropic stems with plagiotropic shoots 8-10 cm long, angular-keeled.

Ecology unknown.

Near *P. gagnioevae*.

**P. reticulatus** Poir.

Much-branched, usually laxly virgate or semiscandent shrub 0,5-4,5 m tall, or tree 5-18 m; stem 25 cm  $\varnothing$ ; plants coppicing, deciduous, monoecious; branches spreading arcuate, almost reaching the ground; lateral shoots to 25 cm long, floriferous, leafy or both; short shoots often bearing fascicles of lateral shoots.

Often forming thickets; floodplain grassland; sand dune scrub; littoral scrub and dune forest; rain-forest; mixed deciduous woodlands and scrub; occasionally on termitaria; miombo woodlands; often beside seasonal rivers and streams; dense coastal woodland; edges of swamps and lakes; 0-1500 m alt.

Old World tropics; introduced into the West Indies.

## PHYLLANTHUS RETICULATUS

Comprises 3 vars.: – var. **reticulatus**; – var. **glaber** (Baill.) Müll. Arg. [bas.: *Kirganelia prieuriana* var. *glaber* Baill.; syn.: *Phyllanthus polyspermus* Schumach. & Thonn.; *P. prieurianus* var. *glaber* (Baill.) Müll. Arg.; *Kirganelia multiflora* var. *glabra* Thwaites]; – var. **orae-solis** Radcl.-Sm.

Confused with the very different *P. muellerianus*.

**P. retinervis** Hutch.

Stems slender, woody,  $\pm$  15 cm long, arising from a woody rootstock, subterete; flowering branchlets 2,5-3,7 cm long, slightly angular.

Sometimes in water; often in peaty soil; swamp forest margins (mushitu); permanently wet watershed grassland dambos; marshy ground in long grass at edge of evergreen riverine vegetation and dambo; amongst spray drenched rocks beside waterfalls; 460-1740 m alt.

**P. rhizomatosus** Radcl.-Sm.

Monoecious, erect, perennial herb 20 cm tall, with orthotropic stems arising caespitously at intervals from a thick woody creeping rhizome; orthotropic stems angular, with leaves or cataphylls; plagiotropic shoots to 6 cm long.

Cleared woodland; 680 m alt.

Only known from the type collected in 1955.

**P. rotundifolius** Klein ex Willd.; icon.: J. Econ. Taxon. Bot. 26: 487, 2002; J. Bombay Nat. Hist. Soc. 99: 563, 2002.

syn.: *P. dinteri* Pax; *Andrachne gruelii* Daveau; *P. scabri-folius* Hook. f.

Monoecious often stout or wiry-stemmed annual or perennial herb 10-45 cm tall; orthotropic stems angular; plagiotropic shoots to 8 cm long, angular, the older ones co-axillary with one or more secondary orthotropic shoots.

Local and occasional in grassland; coastal and deciduous bushland; often in places where perennial grasses are inhibited by rocks, sand or volcanic soils; becoming a weed in cultivated areas; sand and sandy or alluvial soils; open *Acacia-Commiphora* bushland; dunes; 0-1900 m alt.

Cape Verde Is.; Egypt; Socotra, Arabia, Pakistan, India (very rare in certain areas, and partly rediscovered after 101 years; See J. Bombay Nat. Hist. Soc. 99: 562-564, 2002), Sri Lanka. – Not in Malawi (= *P. confusus*).

For *P. rotundifolius* var. *leucocalyx* Müll. Arg. in DC. p.p., vide *P. leucocalyx*.

Confused with *Andrachne* spp.

**P. rouxii** Jean F. Brunel

Perennial herb 40-50 cm tall; stems arising from a rootstock with a tuberous root to 3 cm  $\varnothing$ ; orthotropic stems much coloured by anthocyanin.

Wooded savanna subject to fire.

Near *P. sublanatus*.

**P. saclexii** Radcl.-Sm.

Monoecious shrub to 2,5 m tall; orthotropic stems angular or subterete; plagiotropic shoots to 30 cm long, somewhat 2-winged. Evergreen forest; often in rocky places; riverine situations; 305-1200 m alt.

## PHYLLANTHUS

[**P. schaulsii** Jean F. Brunel] 1987, unpublished thesis.

**P. schliebenii** Mansf. ex Radcl.-Sm.

Monoecious shrub 2-3 m tall; orthotropic shoots terete; plagiotropic shoots 20 cm long, terete; female flowers, fruits and seeds unknown.

Ecology unknown; 160-240 m alt.

**P. sepialis** Müll. Arg.

syn.: *P. conradii* Pax

Dioecious or rarely casually monoecious open-branched shrub 1-3.5 m tall, but more commonly  $\pm 1.5$  m; orthotropic stems fairly robust, angular; plagiotropic shoots (3-)15-11 cm long, angular-subterete, caducous.

Forest margins; bushland; extending into drier areas mainly along rivers; deciduous woodland, usually with *Acacia*; in well drained soils; *Combretum* woodland in gully; eroded hillside with *Terminalia brownii* woodland; sometimes used as a hedge plant; 420-2600 m alt.

**P. serpentinicola** Radcl.-Sm.

Monoecious erect or ascending many-stemmed suffrutex to  $\pm 40$  cm tall with monomorphic stems.

Serpentine dyke slopes with chrome seams;  $\pm 1200$  m alt.

**P. somalensis** Hutch.

Monoecious shrub  $\pm 1-2(-3)$  m tall, with flexuous branches; orthotropic shoots subterete; plagiotropic shoots to 17 cm long, more usually  $\pm 10$  cm long, angular, persistent.

Sandy soil in *Acacia*, *Commiphora* bushland; margins of and thickets in pans; edges of temporary pools and swampy areas; often locally dominant in areas of impeded drainage; invading disturbed areas; 30-570 m alt.

**P. spinosus** Chiov.

Woody based herb, to 0.6(-0.9) m tall; most leaves on  $\pm$  hemispherical short-shoots; dioecious; branches erect or ascending.

Open bushland, often with *Acacia*, *Commiphora*, on orange or red sand overlying limestone; 150-600 m alt.

Very distinct endemic.

**P. sublanatus** Schumach. & Thonn.

Annual herb with a terete subwoody stem 30-60 cm tall; branches slender, spreading, slightly angular, 3-6 cm long.

Forest gallery; also a weed of cultivation.

Comprises 2 subspp.: – subsp. **sublanatus** and – subsp. **eyadema** Jean F. Brunel 1987, unpubl. thesis.

**P. suffrutescens** Pax

syn.: *P. myrtilloides* Chiov.

Dioecious erect or suberect perennial herb  $\pm 20-40$  cm tall, usually with several stems arising from a woody stock; orthotropic stems strongly longitudinally 6-ridged; plagiotropic shoots 2.5-10(-30) cm long, the older ones occasionally co-axillary with secondary orthotropic shoots, remote, angular.

## PHYLLANTHUS SUFFRUTESCENS

Grassland and open bushland subject to burning; often in rocky places; 100-2450 m alt.

Rather variable in habit and leaf-shape; some forms approach *P. friesii* and *P. leucanthus*.

**P. taylorianus** Jean F. Brunel ex Radcl.-Sm.

Monoecious erect annual herb 10-25(-45) cm tall with terete stems; lateral shoots to 8 cm long.

Sandy or loamy soil; rocky ground in savanna and *Brachystegia* woodland; also as a weed of cultivation; 600-1520 m alt.

**P. tener** Radcl.-Sm.

Monoecious erect or ascending many-stemmed perennial herb to  $\pm 30$  cm tall, with branching but  $\pm$  monomorphic stems; mature seeds unknown.

Mopane woodland (on river valley floor or roadside?).

Only known from the type collected in 1958.

**P. tenuis** Radcl.-Sm.

Delicate monoecious erect annual herb to 20 cm tall, usually branched from about half-way up, with reddish stems; lead-shoots slender, terete; lateral shoots to 7 cm long, capillary, sometimes co-axillary with secondary lead-shoots.

Sandy soil, in woodland on slopes, amongst rocks with *Xerophyta*; wet flush grassland with scattered trees and shrubs including *Hymenocardia acida* on top of escarpment; 1800 m alt.

At first sight this plant appears indistinguishable from *P. parvus*.

**P. tessmannii** Hutch.

syn.: *P. gracilipes* Pax 1990, non (Miq.) Müll. Arg. 1863.

Shrub or tree with subterete branches; dioecious; leafy shoots subherbaceous, rather deeply grooved or angular; female flowers and fruit unknown.

Ecology unknown.

São Tomé.

**P. thulinii** Radcl.-Sm.

Dioecious subshrub to 90 cm tall; stems reddish brown; orthotropic shoots terete; plagiotropic shoots 2-6 cm long, subterete; male flowers unknown.

Steep rocky slopes with *Hypericum revolutum* and *Philippia* sp.; 1525-2000 m alt.

**P. trichotepalus** Brenan

Erect monoecious apparently annual herb 40-90 cm tall; orthotropic stem subterete; plagiotropic shoots to 15 cm long, often somewhat 2-winged, the older ones co-axillary with secondary orthotropic shoots.

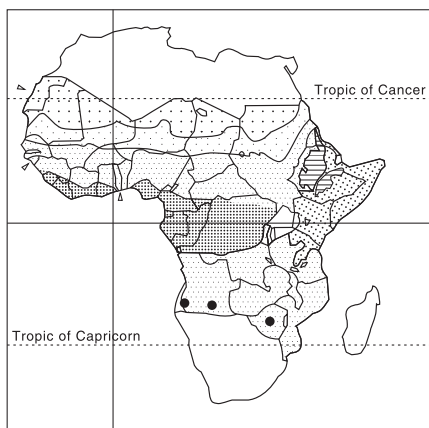
Forest and forest edges; swampy areas; disturbed places; roadsides; 1190-1370 m alt.

**P. tsetserrae** Jean F. Brunel ex Radcl.-Sm.

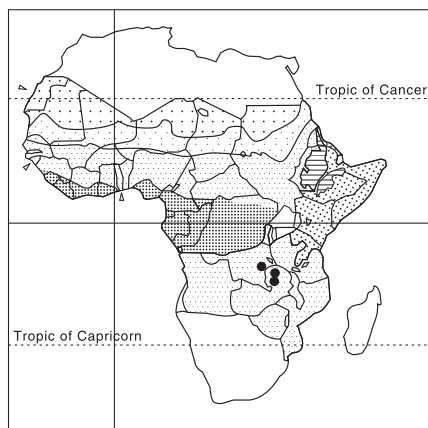
Monoecious erect caespitose perennial herb to 40 cm tall; lateral shoots to 15 cm long; mature fruit and seed unknown.

Grassland; 1830 m alt.

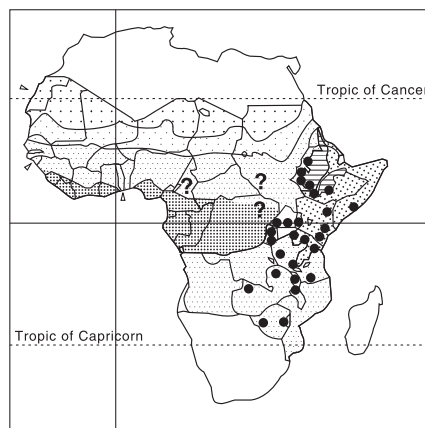
Only known from the type collected in 1955.



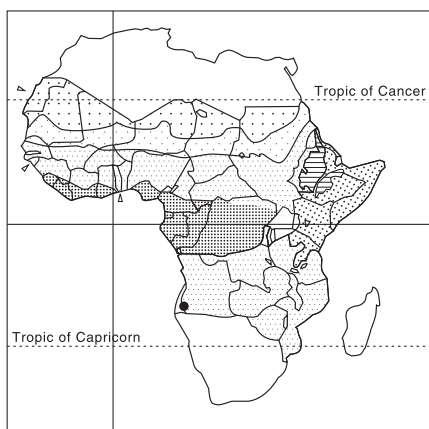
*Phyllanthus prostratus*



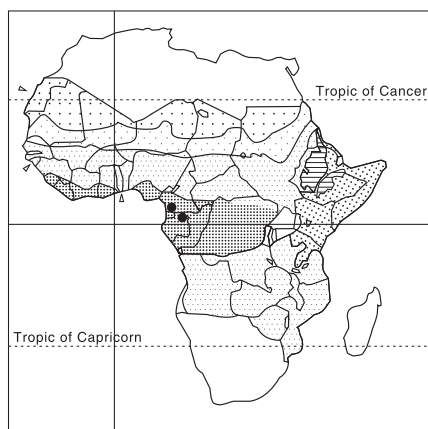
*Phyllanthus pseudocarunculatus*



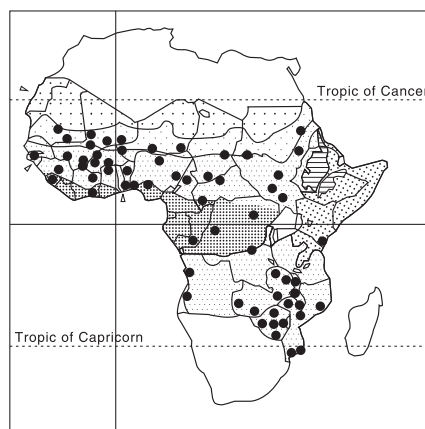
*Phyllanthus pseudoniruri*



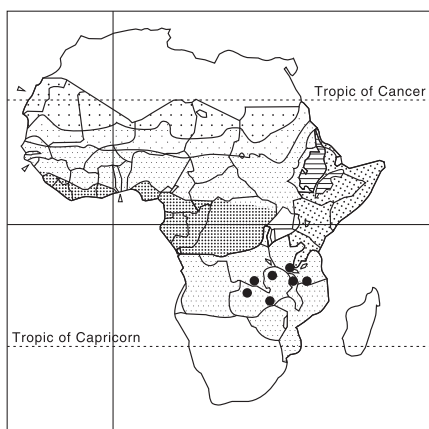
*Phyllanthus purpureus*



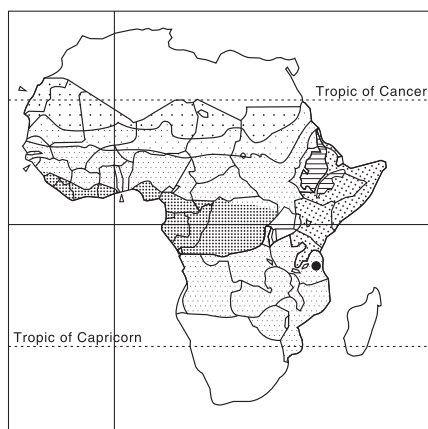
*Phyllanthus raynalianii*



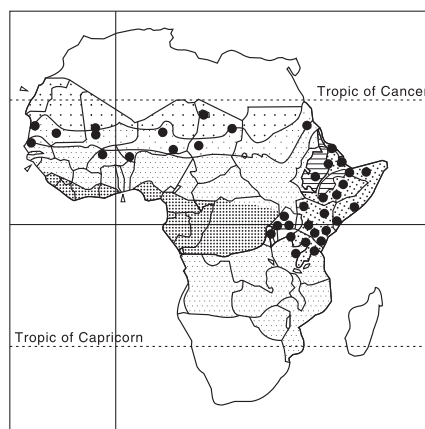
*Phyllanthus reticulatus*



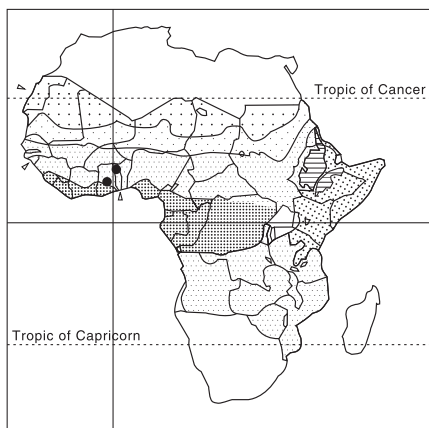
*Phyllanthus retinervis*



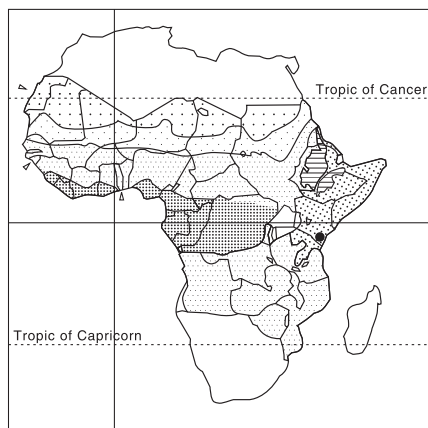
*Phyllanthus rhizomatosus*



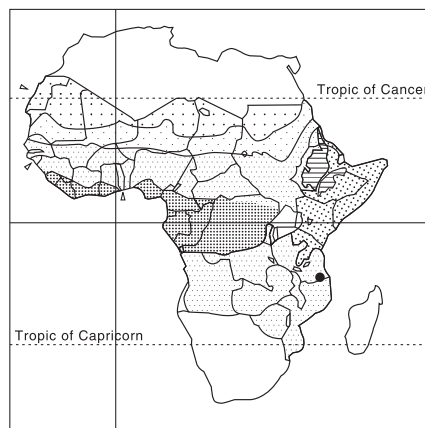
*Phyllanthus rotundifolius*



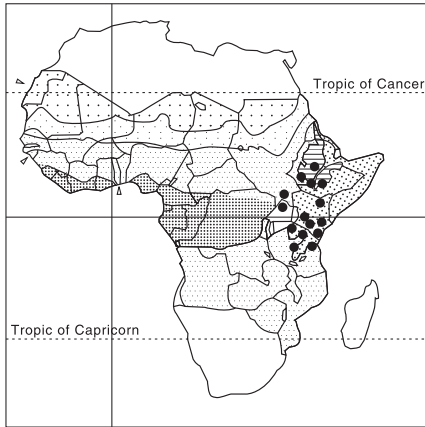
*Phyllanthus rouxii*



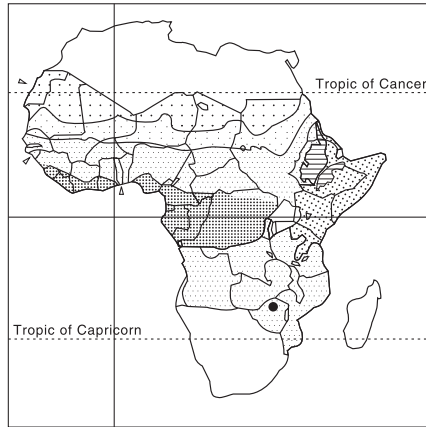
*Phyllanthus saclexii*



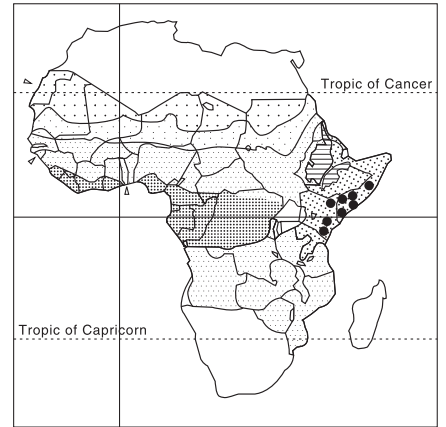
*Phyllanthus schliebenii*



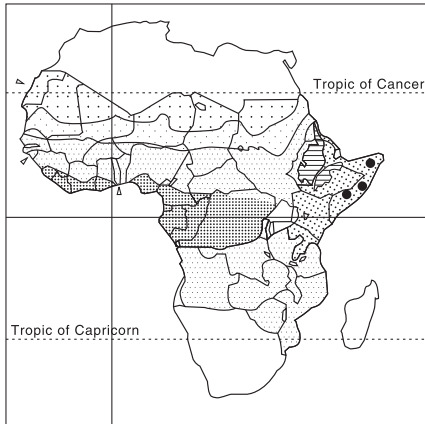
*Phyllanthus sepialis*



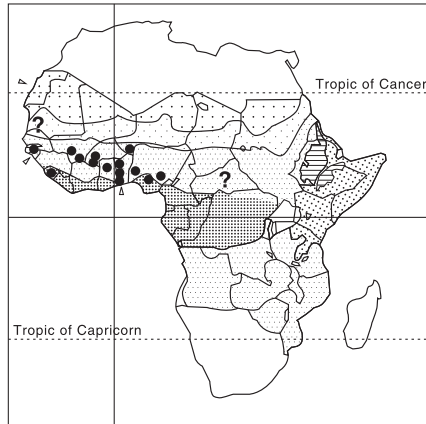
*Phyllanthus serpentinicola*



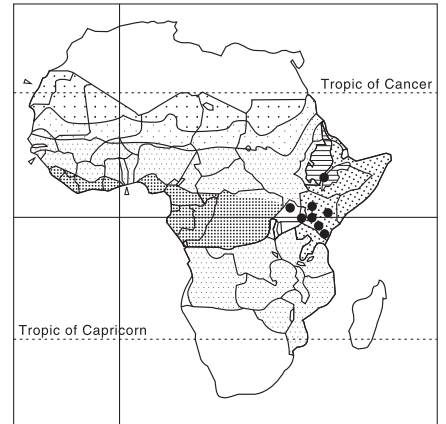
*Phyllanthus somalensis*



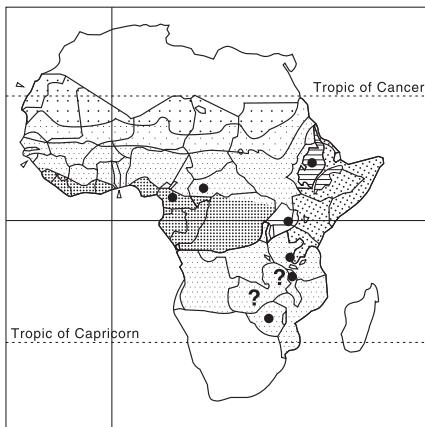
*Phyllanthus spinosus*



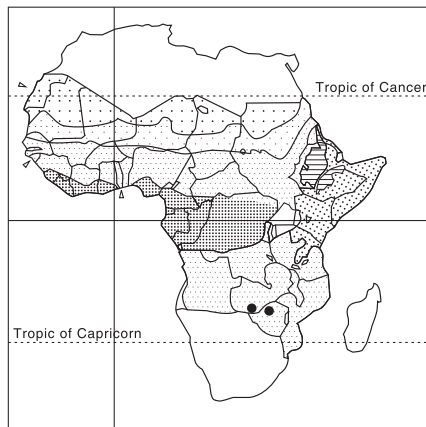
*Phyllanthus sublanatus*



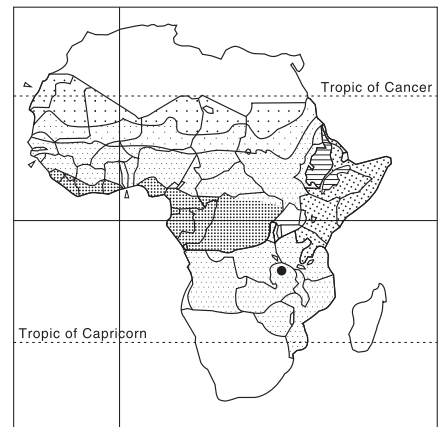
*Phyllanthus suffrutescens*



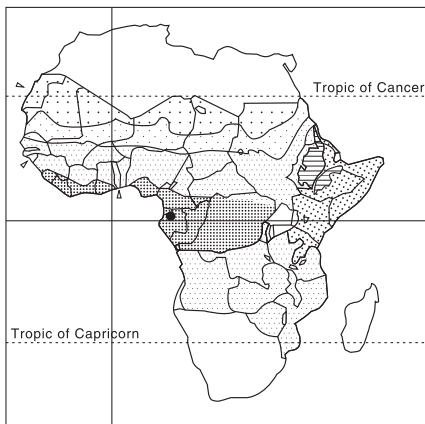
*Phyllanthus taylorianus*



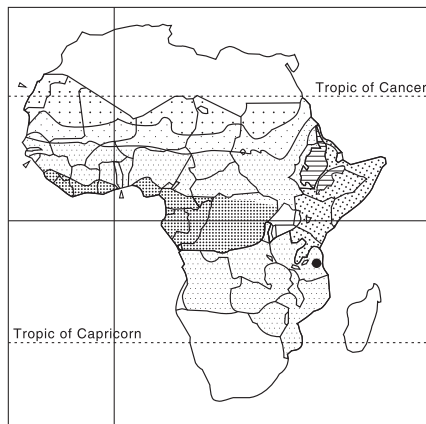
*Phyllanthus tener*



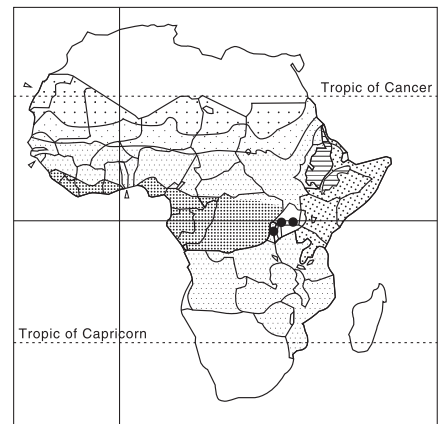
*Phyllanthus tenuis*



*Phyllanthus tessmannii*

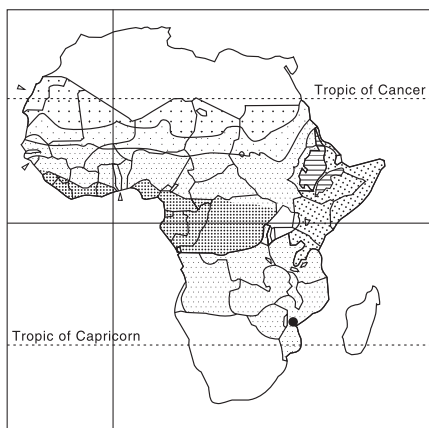


*Phyllanthus thulinii*

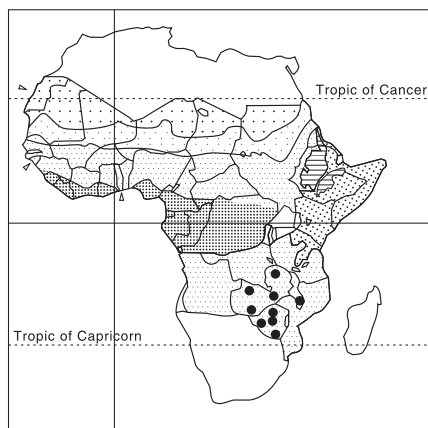


*Phyllanthus trichotepalus*

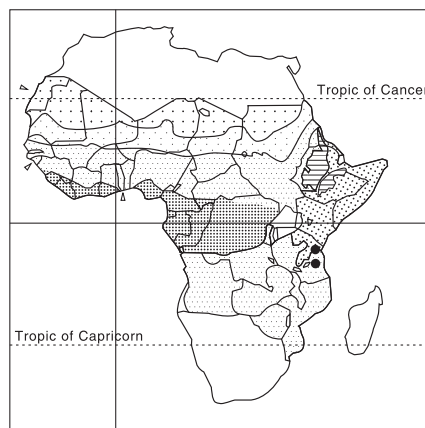




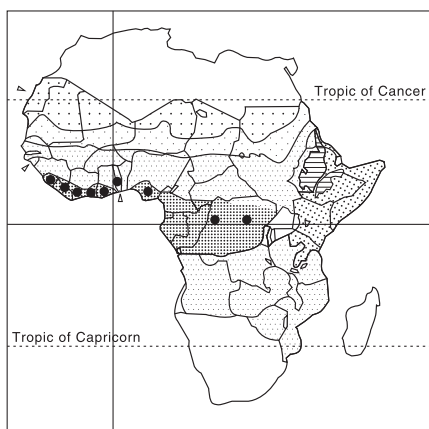
*Phyllanthus tsetserrae*



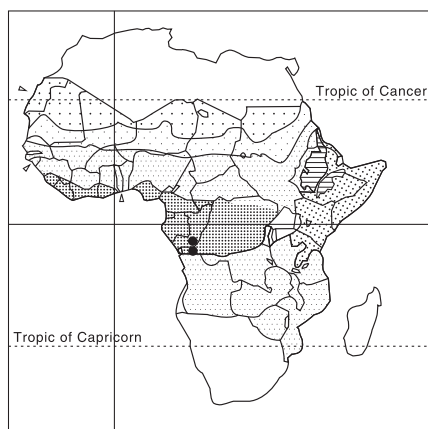
*Phyllanthus udricola*



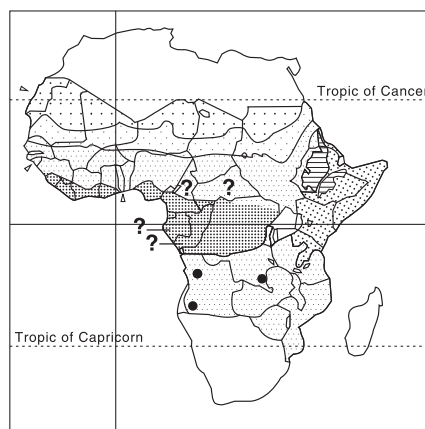
*Phyllanthus ukagurensis*



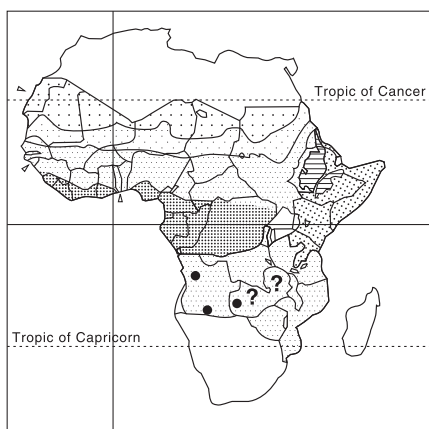
*Phyllanthus urinaria*



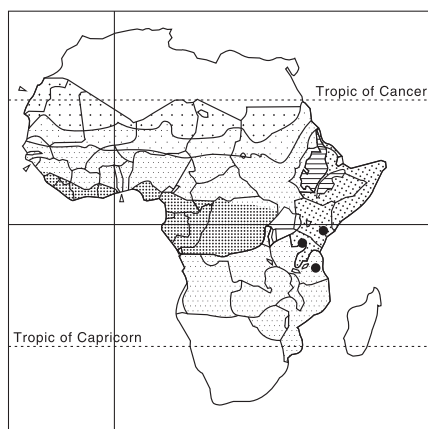
*Phyllanthus vanderystii*



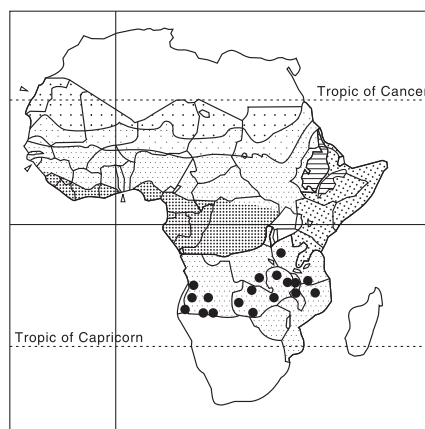
*Phyllanthus verdickii*



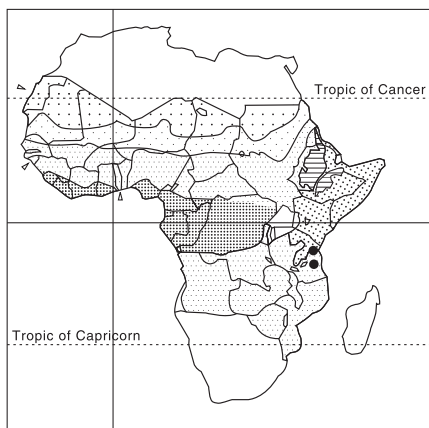
*Phyllanthus virgatus*



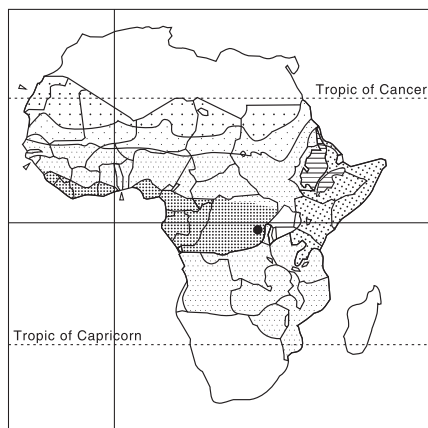
*Phyllanthus volkensii*



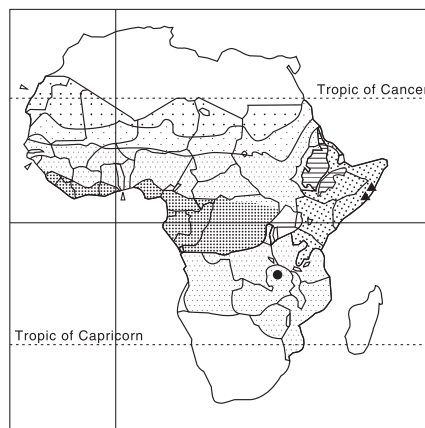
*Phyllanthus welwitschianus*



*Phyllanthus wingfieldii*



*Phyllanthus wittei*



*Phyllanthus xiphephorus* ●  
*Phyllanthus xylorrhizus* ▲

## PHYLLANTHUS

**P. udoricola** Radcl.-Sm.

Monoecious erect, slender annual hygrophilous herb with reddish stems to 45 cm tall; lead-shoots angular; lateral shoots to 6 cm long.

Shallow water in laterite pans; wet peaty ditches in dambos and amongst robust grasses; 1220-1555 m alt.

Confused with *P. amarus* Schumach. & Thonn., a widespread weed in tropical Africa (native to America, but now pantropical).

**P. ukagurensis** Radcl.-Sm.; Kew Bull. 50: 815, 1995.

Dioecious or sometimes monoecious delicate, weakly and sparingly branched, brittle shrub 1-1,5 m tall; stems greenish; orthotropic shoots angular; plagiotropic shoots (10-)15-30 (-45) cm long, angular.

Evergreen forest, rocky places; 1600-1950 m alt.

**P. urinaria** L. subsp. **urinaria**; Bull. Soc. Roy. Bot. Belg. 84: 51, 1951.

Annual or sometimes perennial herb, monoecious, erect or procumbent, 50-100 cm tall; main stems slender, subwoody with deciduous branchlets 3-10 cm long, flattened and winged.

Open places on augite rocks (Sierra Leone); gravelly pan in savanna; meadows; waysides, as a weed.

Tropical weed but apparently rare in Africa.

**P. vanderystii** Hutch. & De Wild.

Subwoody herb with angular stem to 30 cm long; shoots erect, ramose; rootstock and fruit unknown.

Ecology unknown.

Only known from the type collected in 1915?

**P. verdickii** De Wild.

syn.: *P. dekindtii* Hutch.

Annual, ± branched herb to 30 cm tall, with stem and flowering branches terete, or undershrub with ± compressed branches.

Ecology?

**P. virgulatus** Müll. Arg.

Dioecious undershrub with elongated stems, woody, finely longitudinally sulcate; flowering branches slender, spreading, to 12,5 cm long, subterete.

Kalahari sand in miombo woodland with long grass; thickets on sandy clay soil.

**P. volkensii** Engl.

Monoecious erect subshrub, shrub, or rarely a herb 40-100 cm tall; stems reddish brown or purplish; orthotropic shoots angular; plagiotropic shoots (3-)7-15(-20) cm long, frequently crowded towards the apices of the main shoots, sharply angular.

Frequent amongst rocks; also in bushland by streamsides; moist ravines in forest; 1500-1750 m alt.

**P. welwitschianus** Müll. Arg., excl. var. *beillei* (Hutch.) Radcl.-Sm. (= *P. beillei*); Willdenowia 15: 246, 247, 1985.

Erect or ascending perennial herb or subshrub to 90 cm tall, many-stemmed from a woody rootstock, monomorphic, simple or branched, reddish-brown; dioecious or occasionally monoecious.

## PHYLLANTHUS WELWITSCHIANUS

*Brachystegia* woodland; sometimes by streams; bushy pastures on clay subsoil; rocky places; sandy soils and Kalahari sands, usually in miombo; also in mixed deciduous woodland and wooded grassland; sandy watershed dambos; 800-1550 m alt.

See also under *P. beillei*.

**P. wingfieldii** Radcl.-Sm.

Monoecious shrub to 3 m tall; orthotropic stems slender, angular; plagiotropic shoots 5-8 cm long, angular, caducous; brachyblasts present, co-axillary with the plagiotropic shoots, later themselves each giving rise to a lateral orthotropic shoot and/or one or more secondary plagiotropic shoots.

Forest at watercourses in gullies; abandoned cultivations; 65 m alt.

**P. wittei** Robyns & Lawalrée

Monoecious shrub with solitary, rounded branches, angular when young, to 3 mm Ø; flowering shoots 3-7 cm long; fruit unknown.

Forest; ± 2200 m alt.

Near *P. beillei*.

Only known from the type collected in 1934?

**P. xiphophorus** Jean F. Brunel ex Radcl.-Sm.

Monoecious erect, annual herb to 45 cm tall; lead-shoots angular; lateral shoots to 15 cm long, sharply angular but scarcely winged.

Farmyard in rich soil amongst other plants and grass; 1463 m alt.

**P. xylorrhizus** Thulin, Nord. J. Bot. 23: 285, 2005; icon.: o.c.: 386.

Perennial glaucous dioecious herb with ascending to erect angular, glabrous to papillate stems 2-14 cm long, not spine-tipped; base of plant thick, woody with brown to greyish-white cracking bark; no additional scale-leaves.

Limestone rocks near the coast, in holes of the rocks (the woody bases of the plant filling the holes), in open wind-swept areas with very low-growing vegetation; the most common species over vast areas (7°30'-8°45'N), along with *Spermacoce brachyantha*, *Euphorbia adenochila*, *E. bariensis* (woody cushions); 30-200 m alt.

Probably most closely related to the Somalian endemics *P. luniifolius* and *P. spinosus*. In habit also similar to *P. rotundifolius* (widespread, usually annual), but monoecious and with additional scale-leaves.

One female plant grown from one seed at Uppsala Univ. Bot. Garden.

**P. zambicus** Radcl.-Sm.

Monoecious erect annual herb to 75 cm tall with angular stems; lateral shoots to 15 cm long, angular.

Savanna with *Setaria*, *Brachiaria*, *Chloris* spp.; mopane on clay; ± 600 m alt.

**P. zornioides** Radcl.-Sm.

Monoecious erect, annual herb to 65 cm tall, sometimes much-branched; lead-shoots angular; lateral shoots to 20 cm long.

Red sandy soils derived from sandstones in short grassland, miombo woodland, cultivations and by roadsides; 860-1280 m alt.

## PHYLLANTHUS

SYNONYMS (see also Enum. 1: 235, 1991, and 4: 614-615, 1997):

- Andrachne gruevelii* Daveau = **Phyllanthus rotundifolius**  
*Chorisandra pinnata* Wight = **P. pinnatus**  
*Chorizonama pinnata* (Wight) Jean F. Brunel = **P. pinnatus**  
*Cluytiandra schinzii* Pax = **P. pinnatus**  
*Diasperus muellerianus* Kuntze = **P. muellerianus**  
*Kirganelia floribunda* Baill. = **P. muellerianus**  
*multiflora* var. *glabra* Thwaites = **P. reticulatus** var.  
*prieuriana* var. *glaber* Baill. = **P. reticulatus** var.  
*Phyllanthus amarus* specim. Lye 4555 in F.T.E.A. = **P. goniostemon**  
*angolensis* sensu F.T.E.A. = **P. loandensis**  
*angustatus* Hutch. = **P. friesii**  
*antunesii* Pax = **P. microdendron**  
*bachmannii* Pax = **P. myrtaceus**  
*bequaertii* Robyns & Lawalrée = **P. odontadenius**  
*brenanianus* Jean F. Brunel = **P. confusus**  
*burchellii* Müll. Arg. = **P. parvulus** var. **garipensis**  
*callidiscus* Jean F. Brunel = **P. fischeri**  
*capensis* Spreng. ex Sond. = **P. incurvus**  
*capillaris* Schumach. & Thonn. var. *stuhlmannii* (Pax) Hutch.  
= **P. nummulariifolius**  
*conradii* Pax = **P. sepialis**  
*deflexus* Klotzsch = **P. pentandrus**  
*dekindtii* Hutch. = **P. verdickii**  
*delpyanus* Hutch. = **P. polyanthus**  
*dilatatus* Klotzsch = **P. pentandrus**  
*dinteri* Pax = **P. rotundifolius**  
*eyesii* S. Moore = **P. leucanthus**  
*floribundus* (Baill.) Müll. Arg. = **P. muellerianus**  
*garipensis* E. Mey. in Drège = **P. parvulus** var.  
*gracilipes* Pax = **P. tessmannii**  
*gueinzii* Müll. Arg. = **P. maderaspatensis**  
*guineensis* Pax = **P. ovalifolius**  
*klainei* Hutch. = **P. polyanthus**  
*leonensis* Hutch. = **P. alpestris**  
*magudenis* Jean F. Brunel = **P. maderaspatensis**  
*merripaensis* Jean F. Brunel = **P. leucanthus**  
*milanjensis* Hutch. = **P. leucocalyx**  
*monticola* Hutch. & Dalziel = **P. alpestris**  
*myrtilloides* Chiov. = **P. suffrutescens**  
*odontadenoides* Jean F. Brunel = **P. pseudoniruri**  
*odontadenius* Müll. Arg. var. *braunii* (Pax) Hutch.  
= **P. braunii**  
*oxycoccifolius* sensu F.T.E.A. p.p. = **P. holostylus**  
*paivanus* Jean F. Brunel = **P. boehmii**  
*paxianus* Dinter = **P. maderaspatensis**  
*polyspermus* Schumach. & Thonn. = **P. reticulatus** var.  
**glaber**  
*prieurianus* var. *glaber* (Baill.) Müll. Arg. = **P. reticulatus**  
var. **glaber**  
*pseudoreticulatus* Pax & K. Hoffm. = **P. mannianus**  
*punctulatus* Jean F. Brunel = **P. fischeri**

## PHYLLANTHUS

- pynaertii* De Wild. = **P. polyanthus**  
*revolutus* E. Mey. = **P. myrtaceus**  
*ringoetii* De Wild. = **P. moeroensis**  
*rivae* Pax = **P. leucanthus**  
*rogersii* Hutch. = **P. graminicola**  
*rotundifolius* Klein ex Willd. var. *leucocalyx* Müll. Arg. p.p.  
= **P. leucocalyx**  
*sananei* Jean F. Brunel = **P. pseudoniruri**  
*santhomensis* Beille = **P. odontadenius**  
*scabrifolius* Hook. f. = **P. rotundifolius**  
*scoparius* Welw. = **P. pentandrus**  
*seydelii* Jean F. Brunel = **P. parvulus** var. **parvulus**  
*senensis* Müll. Arg. = **P. pinnatus**  
*sofalaensis* Jean F. Brunel = **P. graminicola**  
sp. n° 1 sensu Drummond = **P. bernierianus**  
*tanzaniensis* Jean F. Brunel = **P. nummulariifolius**  
*tenellus* Roxb. var. *natalensis* Müll. Arg. = **P. parvulus** var.  
**garipensis**  
var. *parvulus* (Sond.) Müll. Arg. and var. *scabrifolius*  
Müll. Arg. = **P. parvulus** var. **parvulus**  
*thonningii* Schumach. & Thonn. = **P. maderaspatensis**  
*ugandensis* Rendle = **P. ovalifolius**  
*vaccinioides* Klotzsch = **P. maderaspatensis**  
*venosus* A. Rich. = **P. maderaspatensis**  
*welwitschianus* Müll. Arg. var. *beillei* (Hutch.) Radcl.-Sm.  
= **P. beillei**  
*wightianus* Müll. Arg. = **P. pinnatus**  
*wildemanii* Beille = **P. profusus**

## PLAGIOSTYLES / 1

**Plagiostyles africana** (Müll. Arg.) Prain; *Adansonia*, Sér. 2, 3: 74, 1963.

bas.: *Daphniphyllum africanum* Müll. Arg.

syn.: *Plagiostyles klaineana* Pierre

Dioecious shrub or tree 3-25 m tall with clear bole to 12 m height, 15-80 cm Ø; branches several, very ramose with drooping twigs.

Old disturbed rain-forests, valley-forests, rain-forests with *Gilbertiodendron dewevrei*; secondary formations; rather frequent; 230-500 m alt.

Probably not in Zambia.

*PLESIATROPHA* Pierre – see **MILBRAEDIA**

*PLUKENETIA* = **TETRACARPIDIUM**

## POGONOPHORA / 1

Fruit unknown in the single African species.

**Pogonophora letouzeyi** Feuillet

Shrub 2 m tall or small tree, apparently dioecious; fruit unknown.

Secondary bush; sandy beach on river side; ± 100 m alt.

One or 2 other species of the genus occur in NE South America (Guyana, Brazil, Colombia).

## PROTOMEGABARIA / 3

syn.: *Megabaria* Pierre in sched., sensu Pierre, nom. invalid.

Seeds unknown in 1 species.

**Protomegabaria macrophylla** Hutch.

syn.: *Baccaurea macrophylla* Pax 1899, non Müll. Arg. 1866, nom. illegit.; *Megabaria klaineana* Pierre [ex Hutch.], nom. invalid.

Tree ± 15 m, with stout branchlets.

Moist forest.

**P. meiocarpa** J. Léonard

Tree 8-18 m; seeds unknown.

Transition forests with *Staudtia* and *Cynometra*, or with *Cleistanthus* or *Michelsonia*; 930-1200 m alt.

**P. stapfiana** (Beille) Hutch.

bas.: *Maesobotrya stapfiana* Beille

syn.: *Megabaria obovata* Pierre [ex Hutch.], nom. invalid.

Tree to 20 m; stem 50 cm Ø with very expanded buttresses; branchlets stout; dioecious.

Evergreen rain-forest; often abundant; humid hollows; 1-600 m alt.

## PSEUDAGROSTISTACHYS / 2

**Pseudagrostistachys africana** (Müll. Arg.) Pax & K. Hoffm.

bas.: *Agrostistachys africana* Müll. Arg.

Tree 8-20 m; stem ± 20 cm Ø; dioecious.

Forest; river sides; 500-2000 m alt.

São Tomé, Bioko/Fernando Poo.

Comprises 2 subspp.

**P. ugandensis** (Hutch.) Pax & K. Hoffm.

bas.: *Agrostistachys ugandensis* Hutch.

Tree 4-10(-15) m; stem 13-20 cm Ø, with straggling branches; dioecious.

Swampy, flooded or riverine forests; more rarely in firm ground forest; lake-level swamp-forest; 1130-1150 m alt.

## PSEUDOLACHNOSTYLIS / 1

**Pseudolachnostylis maprouneifolia** Pax

Much-branched deciduous tree 3-10-18 m, with stem usually unbranched to 3,5 m height, to 25 cm Ø.

Deciduous woodland and bushland, commonly along edges of drainage systems; termitaria; *Brachystegia* and related woodland; riverine forest; mixed open woodland, bushland and disturbed places; wooded grassland, sandveld; rocky outcrops; stony ridges; sandy soil; mopane and miombo woodland; dry evergreen thickets; 175-1615 m alt.

Botswana, Namibia, Caprivi Strip, S. Africa.

Comprises 4 vars.: – var. **maprouneifolia**; – var. **dekindtii** (Pax) Radcl.-Sm.; – var. **polygyna** (Pax & K. Hoffm.) Radcl.-Sm.; – var. **glabra** (Pax) Brenan [syn.: *Cleistanthus glaucus* Hiern; *Pseudolachnostylis verdickii* De Wild.; *P. bussei* Hutch.].

## PTEROCOCCUS / 1

**Pterococcus africanus** (Sond.) Pax & K. Hoffm.

Trailing or climbing perennial herb or suffrutex; stems from a woody rootstock, several, to 80 cm long, prostrate, decumbent or ascending.

Deciduous woodlands on sand, including miombo and Kalahari sand woodlands; wooded grassland on dry sandy soils; 130-1100 m alt.

Caprivi Strip, Namibia, Botswana, S. Africa; ? Angola.

## PYCNOCOMA / 17

Fruit unknown in 4 species (= 24%); no ecology recorded for 1 species. Two species (≥ 11%) are known only from the type.

**Pycnocomma angustifolia** Prain

syn.: *P. beillei* A. Chev., nom. ex Hutch. & Dalz., nom. illegit.

Shrub, monocaulous; branches rather slender, woody; leaves clustered towards the ends of the branchlets; inflorescences axillary.

Rain-forest.

**P. bampsiana** J. Léonard

Shrub 1,5 m tall; fruit unknown.

Forest with *Gilbertiodendron dewevrei*; ± 750 m alt.

Only known from the type collected in 1959.

**P. chevalieri** Beille

Shrub 1-3 m tall; leaves crowded towards the ends of the branches.

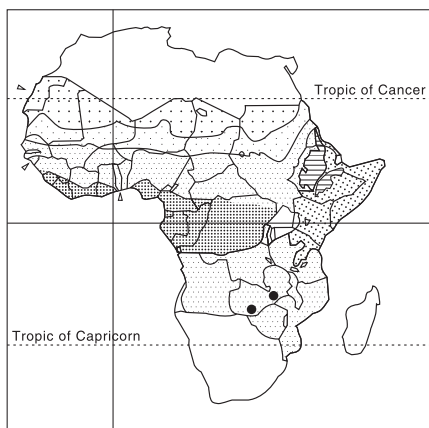
Forest; ± 1000 m alt.

**P. cornuta** Müll. Arg.

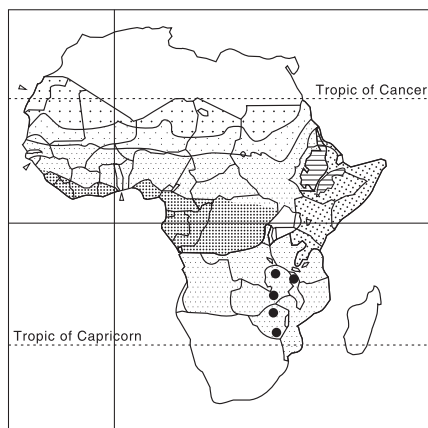
Stout erect shrub to 4,5 m tall, with stem 2,5 cm Ø; leaves clustered at the ends of the twigs.

Gregarious in deciduous forest; common in open high forest; on rather dry soil; rocky places; 250 m alt.

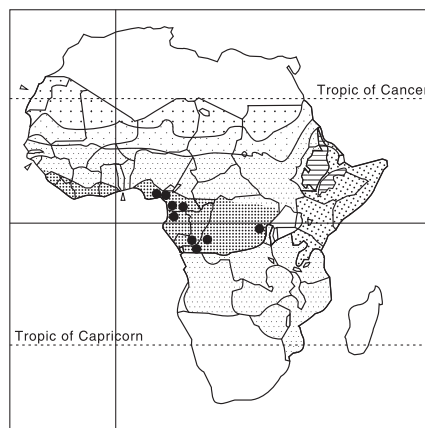




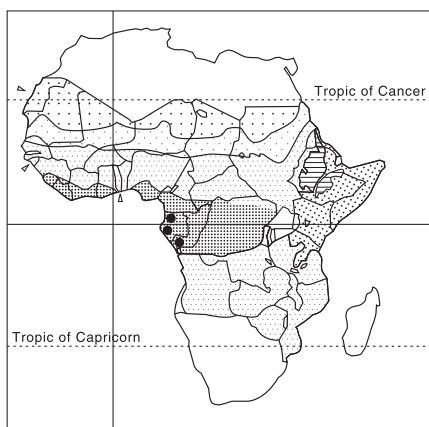
*Phyllanthus zambicus*



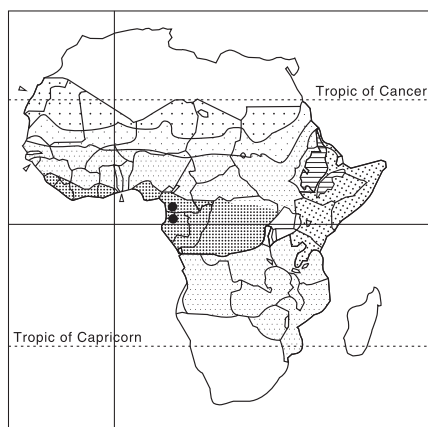
*Phyllanthus zornioides*



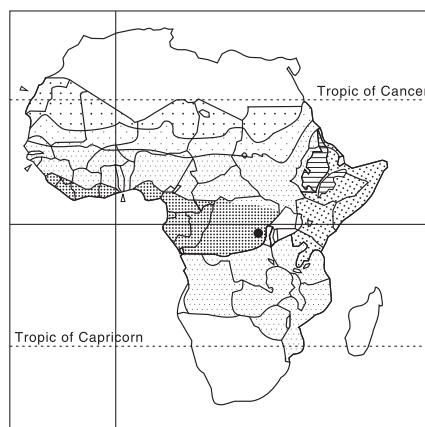
*Plagiostyles africana*



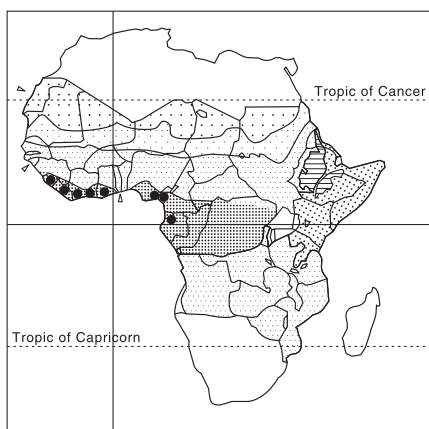
*Pogonophora letouzeyi*



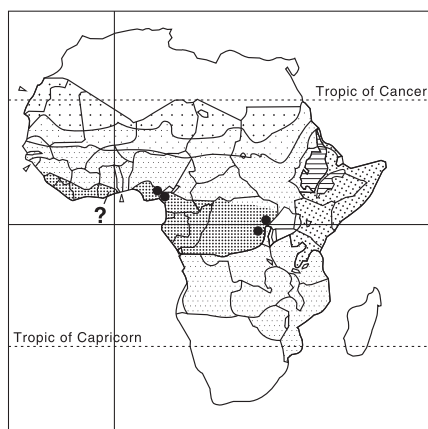
*Protomegalaria macrophylla*



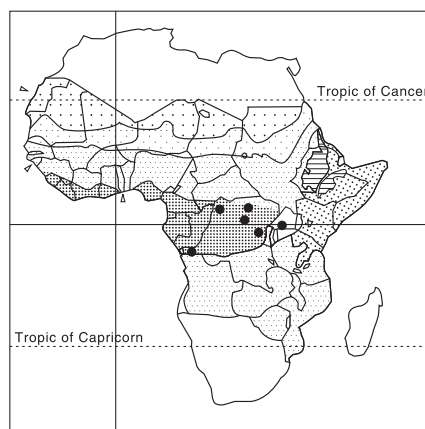
*Protomegalaria meiocarpa*



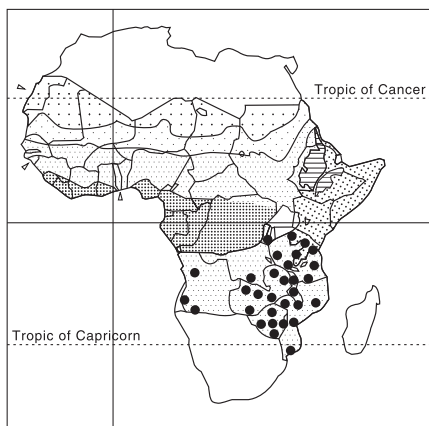
*Protomegalaria stapfiana*



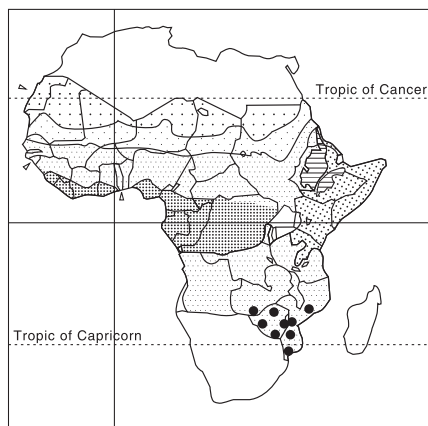
*Pseudagrostistachys africana*



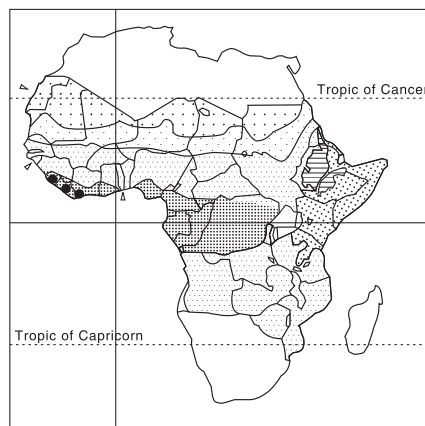
*Pseudagrostistachys ugandensis*



*Pseudolachnostylis maprouneifolia*



*Pterococcus africanus*



*Pycnocomma angustifolia*

## PYCNOCOMA

**P. dentata** Hiern

Tree 1-4 m, with trunk ramose from the base and habitus like *Aucuba japonica*; branches subrounded, divaricate, patently ascending, leafy towards and especially at the rather thick apex; capsule known!

Under *Colophospermum mopane*; 30-50 m alt.

**P. devredii** J. Léonard

Shrub 2,5 m tall; capsule unknown.

*Brachystegia* forest; 700-750 m alt.

Only known from the type collected in 1956.

**P. elua** J. Léonard; icon.: Fl. Afr. Centr., Euphorbiaceae 3: 44, 1996.

Erect shrub 1,5 m tall, or liane 7-8 m long.

Firm ground forest with *Schefflerodendron gilbertianum*; ± 350 m alt.

**P. insularum** J. Léonard

Shrub 1-2,5 m tall with stem 2-3 cm Ø.

Riverine forests; periodically flooded forests on large islands in the river Zaire.

**P. littoralis** Pax

Sparingly branched or single-stemmed shrub or tree 3-6-10 m tall; leaves crowded towards the ends of the branches, sometimes pseudoverticillate.

Coastal forest near the sea, or by water inland; often on coral; 0-90 m alt.

**P. louisii** J. Léonard

Shrub 1,5-3 m tall.

Firm ground rain-forests with *Cynometra alexandri* or with *Gilbertiodendron dewevrei* or with *Cynometra alexandri*, *Gilbertiodendron dewevrei*, *Uapaca*; half-deciduous forests; Musanga formations; 500-700 m alt.

**P. macrantha** Pax

Little-branched shrub or tree 1,5-4(-10) m tall; leaves crowded towards the end of the branches.

Rain-forest; locally common; 770-1030 m alt.

**P. macrophylla** Benth., incl. vars.

syn.: *P. zenkeri* Pax; *P. brachystachya* Pax

Erect shrub 2-3 m tall with stout branches; stems often single, later dividing into 3-4 branches; leaves clustered at the ends of the twigs.

Gallery and plateau forests; gregarious in high forest; said to be sign of poor soil; locally common (Zaire: Kikwit region); 1-1000 m alt.

Bioko/Fernando Poo.

**P. minor** Müll. Arg.

syn.: *P. petiolaris* Pierre ex Prain

Shrub 30-100 cm tall with slender, woody branches; leaves clustered towards the ends of the twigs.

Ecology unknown.

## PYCNOCOMA

**P. reygaerthii** De Wild.

Shrub or tree to 8 m tall with stem 7 cm Ø.

Riverine- and swampy- forests; abundant here and there; >500 m alt.

**P. subflava** J. Léonard

Shrub or tree 4-6 m tall; capsule unknown.

Rain-forest; ± 860 m alt.

**P. thollonii** Prain

Shrub with slender, woody branches; leaves clustered at the ends of the twigs; capsule unknown.

By river.

Near *P. macrophylla* but bracts different.

**P. thonneri** Pax

Shrub 1-5 m tall with stem 2-10 cm Ø; leaves clustered at the ends of the twigs.

Rain- and secondary- forests on firm ground with *Scorodophloeus zenkeri* or with *Gilbertiodendron dewevrei*; rarely in riverine or swampy forests; 350-500 m alt.

## RICINODENDRON / I

MPECK, M. L. N. & al. (2003). Strategies for the domestication of *Ricinodendron heudelotii*: evaluation of variability in natural populations from Cameroon. *J. Food, Agricult. & Environment* 1: 257-262.

**Ricinodendron heudelotii** (Baill.) Pierre ex Heckel

Deciduous tree (4-)10-40 m, with clear bole 4-25 m and (12-)30-130(-150) cm Ø; twigs to 1 cm Ø.

Evergreen forest and secondary associations; semi-deciduous and dry evergreen forest; sometimes on limestone or in other rocky or riverine sites; fringing forest; old fallow land; open woodland; old cashew plantations; open *Parinari* woodland; dark grey sandy clay soils or red clay soil; 80-1300 m alt.

Bioko/Fernando Poo.

Comprises 2 subspp., of which – subsp. **africanum** (Mull. Arg.) J. Léonard with 2 vars.

A fruit tree with high potential for improving nutrition and income of rural poor in Cameroon (fruit kernels traded).

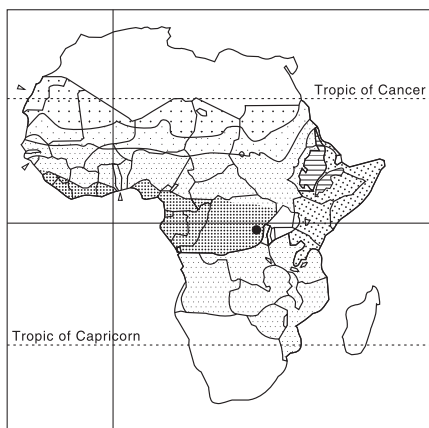
## RICINUS / I

**Ricinus communis** L.

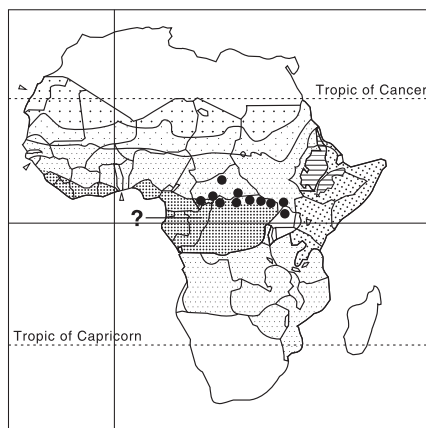
Varying from ephemeral less than 1 m tall to tree-like herb 5-7 (-10) m, with trunk 10-15 cm Ø; stems hollow.

In Somalia and Ethiopia common along seasonally dry rivers; also a widespread ruderal, often in urban areas; 0-2500 m alt.

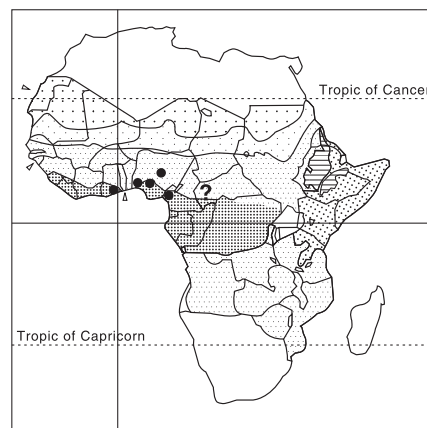
As many as 100 infraspecific taxa have been recognized but they are too illdefined. – Three varieties are recognized in Fl. Zambes. 9/4: 157-159, 1996.



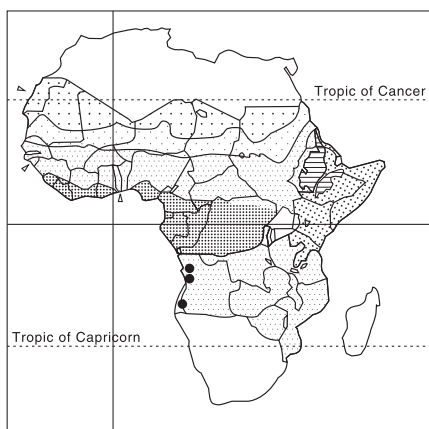
*Pycnocomma bampsiana*



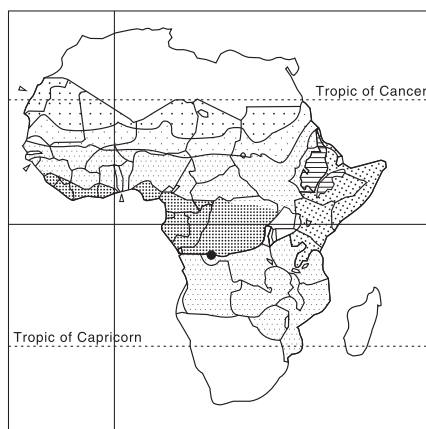
*Pycnocomma chevalieri*



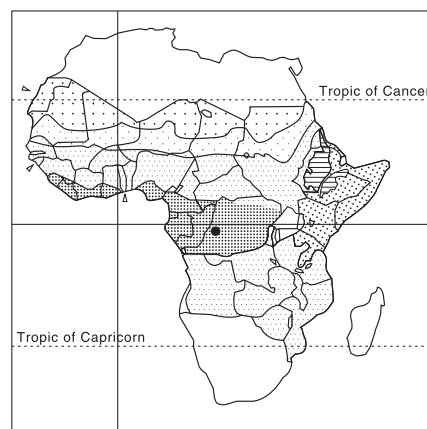
*Pycnocomma cornuta*



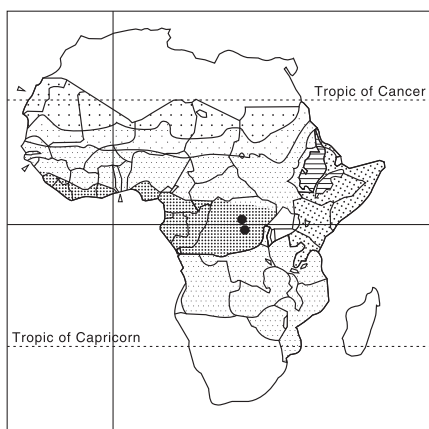
*Pycnocomma dentata*



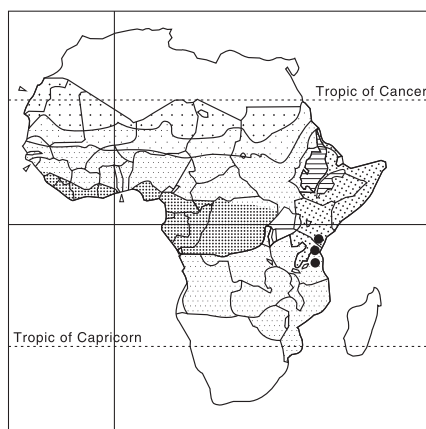
*Pycnocomma devredii*



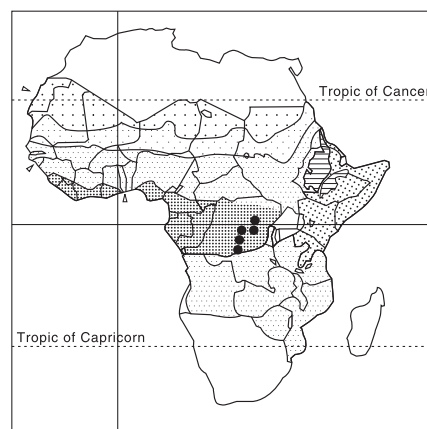
*Pycnocomma elua*



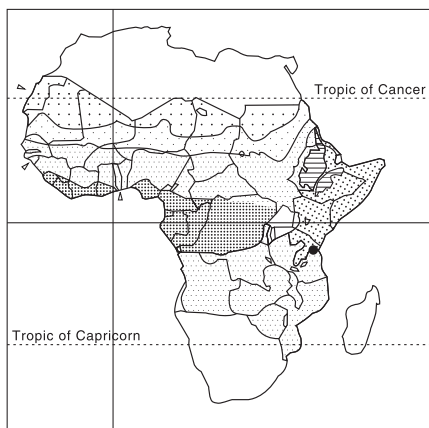
*Pycnocomma insularum*



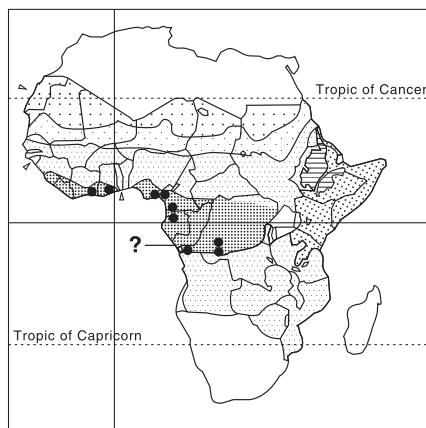
*Pycnocomma littoralis*



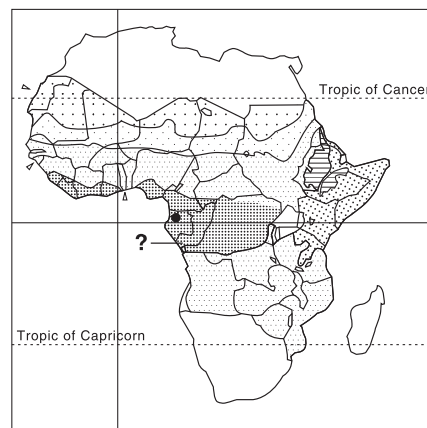
*Pycnocomma louisii*



*Pycnocomma macrantha*



*Pycnocomma macrophylla*



*Pycnocomma minor*

## RICINUS COMMUNIS

Fossil evidence has shown this species to be native in NE Africa; now cultivated and escaped throughout the tropics and warm temperate regions.

The plant contains a *very dangerous* toxin.

Not mapped.

## SAPIUM

For synonyms, see Enum. 4: 616, 1997.

## SCHINZIOPHYTON / 1

**Schinziophyton rautanenii** (Schinz) Radcl.-Sm.; S. Afric. J. Bot. 67: 69-70, 2001.

Shrub or tree to 25 m tall with a trunk to 7 m tall and 1 m Ø; twigs to 5 mm Ø, exuding white gum. Somewhat resembling a large *Carica papaya*.

Sandy soil; in well developed deciduous (mopane) woodland on Kalahari sand with *Baikiaea*, *Guibourtia*, *Azelia*, *Brachystegia*; short grassland with scattered trees of *Combretum*, *Terminalia*, *Burkea*, *Pterocarpus*; wooded hills; sand dunes; sandy alluvium beside rivers; sometimes forming pure stands; 50-1220 m alt.

Namibia, Caprivi Strip, Botswana, S. Africa.

## SCLEROCROTON / 5

**Sclerocroton carterianus** (J. Léonard) Kruijt & Roebers

syn.: *Sapium cornutum* auct.: Hutch. & Dalz., Fl. W. Trop. Afr., Ed. 2, 1(2): 415, 1958, non Pax

Shrub 1-3 m tall.

Forest.

**S. cornutus** (Pax) Kruijt & Roebers; Adansonia, Sér. 2, 3: 75, 1963.

syn.: *Sapium poggei* Pax; *S. cornutum* Pax var. *poggei* (Pax) Pax and var. *africanum* nom. and var. *coriaceum* Pax

Sarmentous shrub or tree 1.5-12 m tall, monoecious; stems 8-30 cm Ø, arising from a rootstock; rarely tree 15-20 m.

Forests and gallery forest edges; secondary formations; wooded savanna; essentially on sand; on Kalahari sand in thickets in open woodland; Kalahari sand mixed woodland with *Brachystegia*, *Colophospermum*, *Pterocarpus*, *Cryptosepalum*, also on rocky hill slopes.

**S. integerrimus** Hochst.

syn.: *Sapium armatum* Pax & K. Hoffm.

Shrub or tree 2-8 m tall with pendulous branches.

Open *Uapaca* woodland; wooded grassland with *Brachystegia*, *Sterculia*, *Adansonia*; often dry forest and associated thicket or wooded grassland; sometimes riverine; 100-910 m alt.

S. Africa; ? Guinea, Zaire.

**S. oblongifolius** (Müll. Arg.) Kruijt & Roebers

Subshrub, monoecious, with one or more stems, erect, 20-30 (-70) cm tall, simple or sparingly-branched, arising from a fairly slender horizontal woody rootstock.

## SCLEROCROTON OBLONGIFOLIUS

Kalahari sand in ground layer of miombo and mixed deciduous woodlands; dambo margins under *Parinari*, *Isobertinia*, *Julbernardia*, *Brachystegia*; open forests with *Brachystegia* subject to burning; sandy thickets; wooded bushy places; thickets by roadsides; 1000-1600 m alt.

Not in Malawi.

**S. schmitzii** (J. Léonard) Kruijt & Roebers

Shrub or tree, monoecious, 4-10 m tall; evergreen.

Edges of closed forest formations like "muhulu"; near streams in grassy plains not too humid (dembo); sclerophyllous bush on granit; Kalahari sand in dry evergreen thicket dominated by *Cryptosepalum pseudotaxus* with *Isobertinia paniculata*; escarpment and plateau woodland; evergreen forest margins; 1500-1800 m alt.

Very close to *S. integerrimus*.

? Rwanda-Burundi.

## SEBASTIANIA / 3

**Sebastiania acetosella** (Milne-Redh.) Kruijt

syn.: *Microstachys acetosella* (Milne-Redh.) Esser

Perennial herb, monoecious, forming patches 30 cm Ø; stems several, erect, to 15 cm tall, simple or basally-branched, arising seasonally from a thick, apically much-branched woody rootstock; pyrophyte. Inflorescence resembling that of *Rumex acetosella*.

Sandy watershed plains, usually in dambos or dambo margins in short grassland, often seasonally flooded; sandy dambos or grassland with scattered *Protea* and *Terminalia*; 1000-1500 m alt.

Comprises 3 vars.: – var. **acetosella**; – var. **elatius** (Radcl.-Sm.) J.-P. Lebrun & Stork **comb. nov.** (bas.: *Sapium acetosella* Milne-Redh. var. *elatius* Radcl.-Sm., Kew Bull. 39: 794, 1984); – var. **lineare** (J. Léonard) J.-P. Lebrun & Stork **comb. nov.** (bas.: *Sapium acetosella* Milne-Redh. var. *lineare* J. Léonard, Bull. Jard. Bot. Etat 31: 405, 1961).

**S. chamaelea** (L.) Müll. Arg., incl. var. *africana* Pax & K. Hoffm. and var. *chariensis* Beille

bas.: *Tragia chamaelea* L.

More or less woody herb, annual (or perennial?) with stem 30-50 cm tall (rarely more), ramose, with acute-angular branches.

Weed in *Pennisetum*, *Sorghum* cultivations on sand.

Widely spread throughout SE Asia to N Australia.

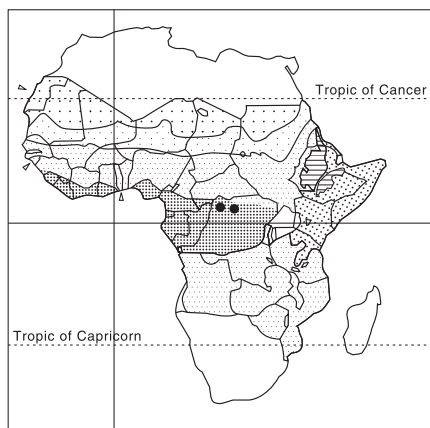
**S. faradianense** (Beille) Kruijt

syn.: ? *Microstachys dalzielii* (Hutch.) Esser (very similar to *S. chamaelea*).

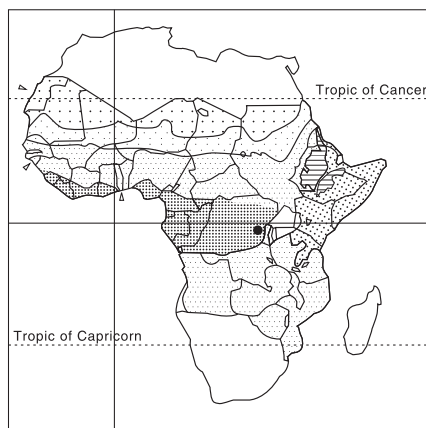
Suffrutex with slender woody stem and branches, ± numerous, simple or slightly ramose upwards.

Along footpaths; flooded places.

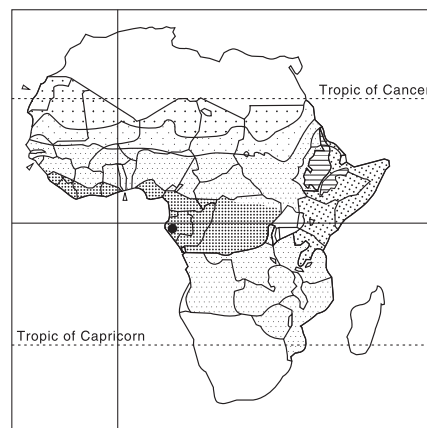




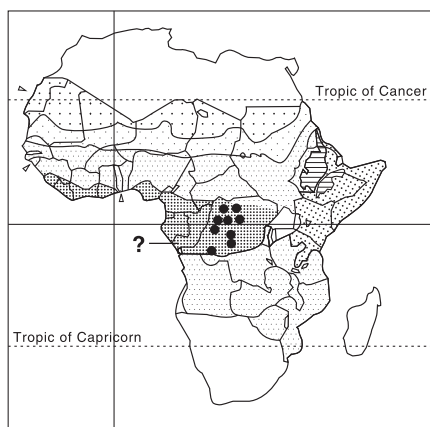
*Pycnocomma reygaehtii*



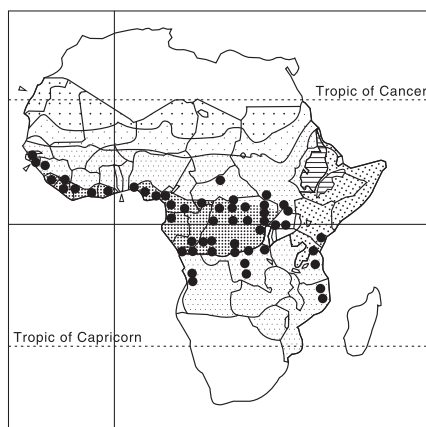
*Pycnocomma subflava*



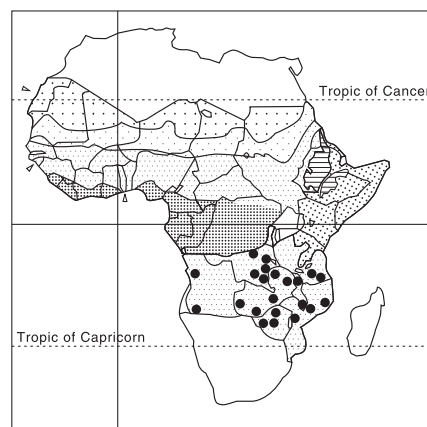
*Pycnocomma thollonii*



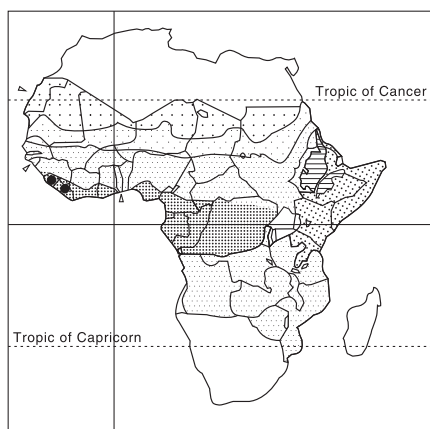
*Pycnocomma thonneri*



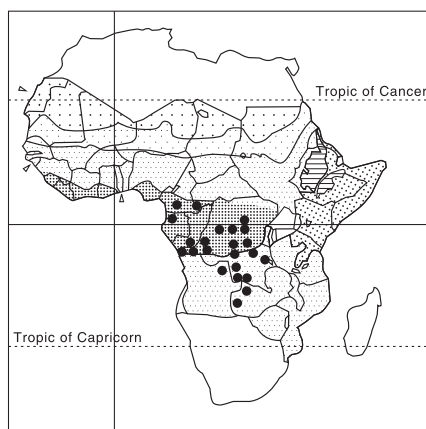
*Ricinodendron heudelotii*



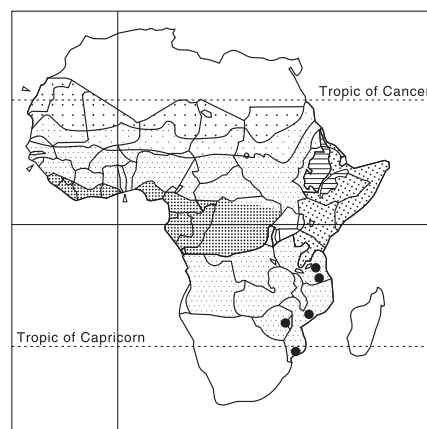
*Schinziophyton rautanenii*



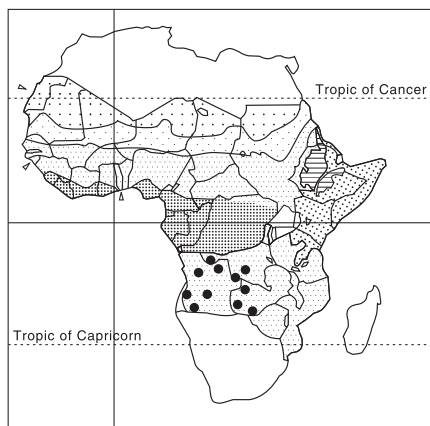
*Sclerocroton carterianus*



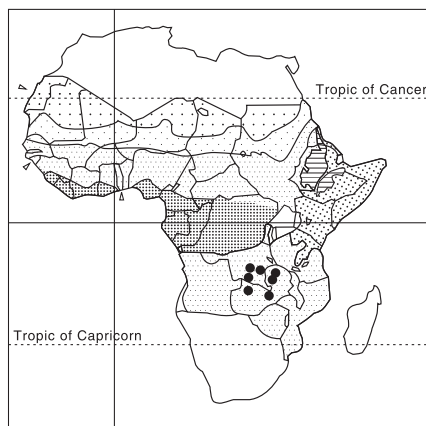
*Sclerocroton cornutus*



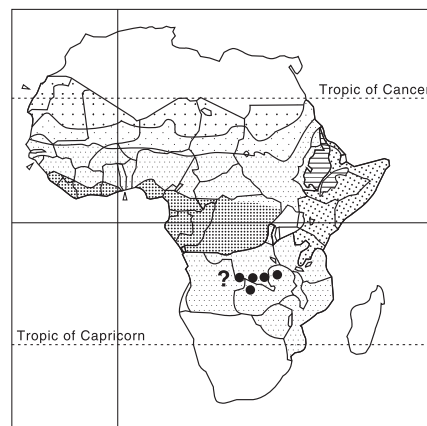
*Sclerocroton integerrimus*



*Sclerocroton oblongifolius*



*Sclerocroton schmitzii*



*Sebastiania acetosella*

**SHIRAKIA = SHIRAKIOPSIS**

(cf. Enum. 4: 616, 1997).

**SHIRAKIOPSIS / 3**

Described by H.-J. Esser in *Blumea* 44: 184, 1999; formerly the major part of *Sapium* sect. *Parasapium*. R. C. Kruijt (Biblioth. Bot. 146: 91-93, 1996) transferred a number of species to *Shirakia* Hurus. (1954), non S. Kawasaki (1934; a fern fossil), nom. illegit. For nomenclatural reasons *Shirakia* was replaced by *Neoshirakia* Esser in *Blumea* 43: 129, 1998, a monotypic genus: *Neoshirakia japonica* (Siebold & Zucc.) Esser l.c.

*Shirakiopsis* has an African-Asian distribution; it comprises 6 species (cf. R. Govaerts & al., World Checklist... Euphorbiaceae 4: 1470, 2000).

**Shirakiopsis aubrevillei** (Léandri) H.-J. Esser, *Kew Bull.* 56: 1018, 2001.

bas.: *Sapium aubrevillei* Léandri

syn.: *Shirakia aubrevillei* (Léandri) Kruijt

Deciduous tree; big specimens buttressed; bole to 1,2 m Ø.

Forest.

**S. elliptica** (Hochst.) H.-J. Esser, l.c.; *Adansonia*, Sér. 2, 3: 75, 1963.

bas.: *Sclerocroton ellipticus* Hochst.

syn.: *Sapium ellipticum* (Hochst.) Pax; *Shirakia elliptica* (Hochst.) Kruijt

Deciduous or evergreen shrub, or tree branched from the base, with bushy crown and drooping branches, 2-50 m tall; monoecious; bole clear to 12 m, 7-100 cm Ø.

Savanna; streamside forest in both guinean savanna and forest regions; margins of moist montane forest; occasionally an important forest component; rough hilly places among tall bushes on river bank; rain-forest periodically flooded or on firm ground; evergreen mixed *Newtonia* forest; kloofs and grassy hillsides; coastal forests; forest with *Albizia gummifera*; secondary transitional forest with much *Harungana madagascariensis*; 150-2400 m alt.

S. Africa; São Tomé, Bioko/Fernando Poo.

**S. trilocularis** (Pax & K. Hoffm.) H.-J. Esser, l.c.

bas.: *Sapium triloculare* Pax & K. Hoffm.

syn.: *Shirakia trilocularis* (Pax & K. Hoffm.) Kruijt

Tree 5,5-7,5 m, with slender twigs.

Coastal forest and woodland; to 600 m alt.

Similar to *S. elliptica*.

**SIBANGEA / 3**

**Sibangea arborescens** Oliv.

Tree 3,3-4 m.

Alluvial forest (probably riverine).

**S. pleioneura** Radcl.-Sm.

Tree 21 m; bole straight, 90 cm in girth.

Evergreen forest, sometimes riverine; 950-1220 m alt.

## SIBANGEA

**S. similis** (Hutch.) Radcl.-Sm.

(Shrub or) tree to 8 m tall.

Riverine forest; evergreen forest; 200-300 m alt.

**SPIROSTACHYS / 2**

**Spirostachys africana** Sond.

syn.: *Stillingia africana* (Sond.) Baill.; *Excoecaria africana* (Sond.) Müll. Arg.; *Maprounea africana* Müll. Arg.; *Excoecaria synandra* Pax; *Excoecariopsis synandra* (Pax) Pax; *Spirostachys synandra* (Pax) Pax; *Myrica holtzii* Engl. & Brehmer (*Myricaceae*).

Dioecious or monoecious several-stemmed, much-branched deciduous shrub or tree with a rounded crown (2,5-)4-9(-16) m tall, often with drooping stems; wood fragrant.

Deciduous woodland, bushland; wooded grassland; *Colophospermum mopane* or mixed (*Combretum*, *Acacia*, *Brachystegia*) woodlands; sometimes in thickets; locally common and usually gregarious; the largest trees occur near streams and seasonal watercourses; often also on termitaria and stony slopes; 15-1350 m alt.

Botswana, Namibia, S. Africa.

**S. venenifera** (Pax) Pax

bas.: *Excoecaria venenifera* Pax

syn.: *E. glomeriflora* Pax; *Spirostachys glomeriflora* (Pax) Pax; *Aporosa somalensis* Mattei

Dioecious or rarely monoecious protandrous much-branched deciduous shrub with erect stems, or tree with a spreading crown 4,5-12(-15) m tall, with pendent slender branches.

Generally along rivers in deciduous and coastal bushland; ground water woodland; 30-1450 m alt.

**SPONDIANTHUS / 1**

syn.: *Megabaria* Pierre in sched., sensu Hutch., nom. invalid.

**Spondianthus preussii** Engl.; *Adansonia*, Sér. 2, 3: 75-76, 1963.

syn.: *S. ugandensis* (Hutch.) Hutch.; *Thecacoris trillesii* Beille

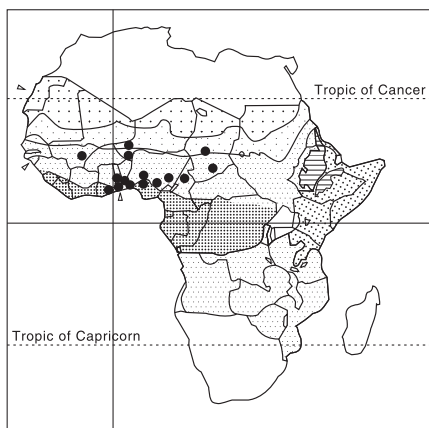
Densely crowned tree 4,5-10-28 m tall with clear bole 4-12 m and 20-150 cm Ø, irregularly fluted or with rounded buttresses 2-3 m high; supported or not by stilt-roots.

Swamp forest; less often in drier forest; locally frequent; gallery with *Hallea stipulosa*, *Spondianthus preussii* (vide W. Mullenders, La végétation de Kaniama, Publ. Inst. Natl. Etude Agron. Congo Belge, Sér. Sci. 61: 380-389, 1954); places with *Uapaca* or with *Raphia*; 150-1220 m alt.

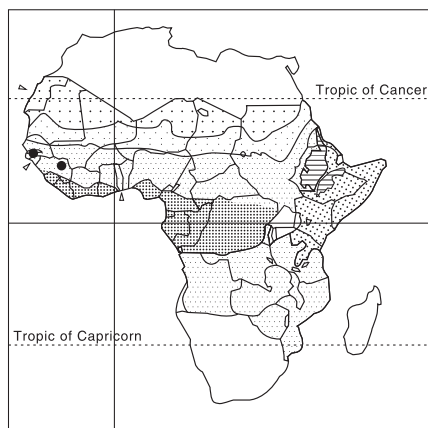
Bioko/Fernando Poo.

Comprises 2 subspp.

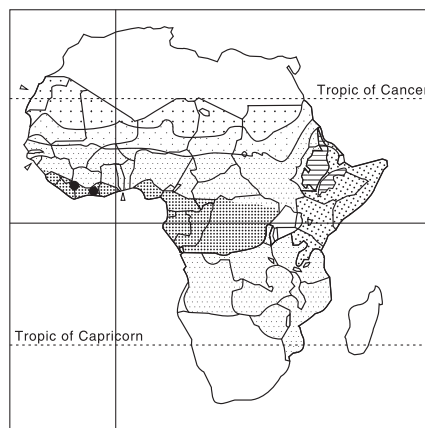
Zenker specim. of *Megabaria trillesii* Pierre ex De Wild., a synonym under **S. preussii** subsp. **preussii** in Madrid, MA, fide R. Gamarra, *Anal. Jard. Bot. Madrid* 57: 192, 1999.



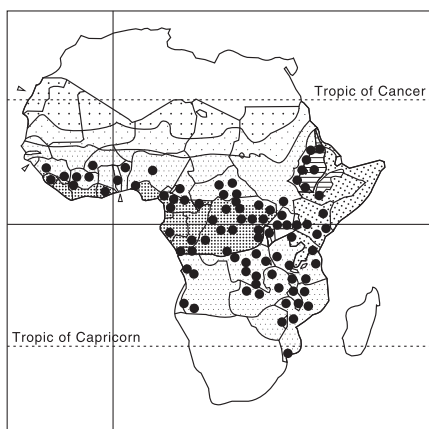
*Sebastiania chamaelea*



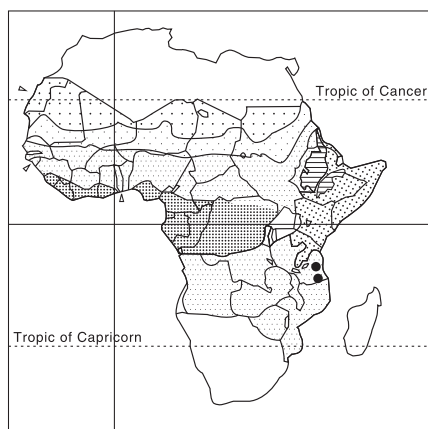
*Sebastiania faradianense*



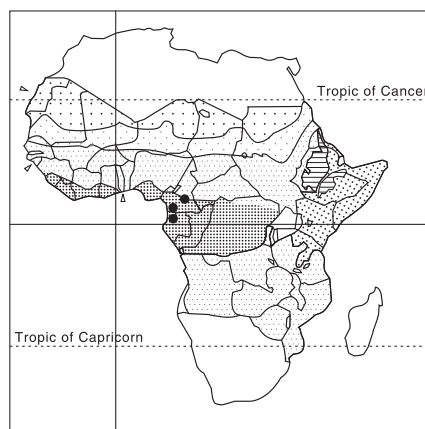
*Shirakiopsis aubrevillei*



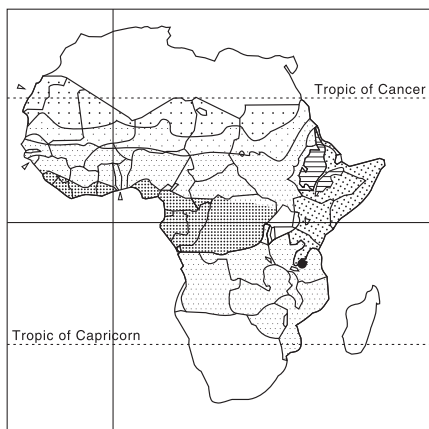
*Shirakiopsis elliptica*



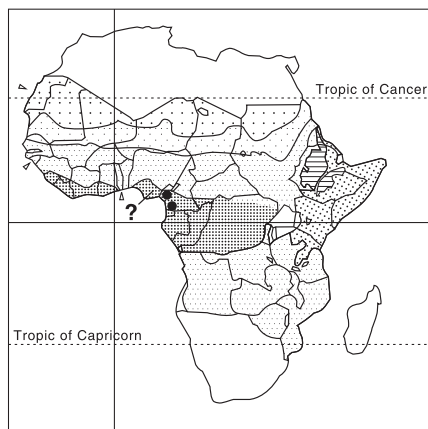
*Shirakiopsis trilocularis*



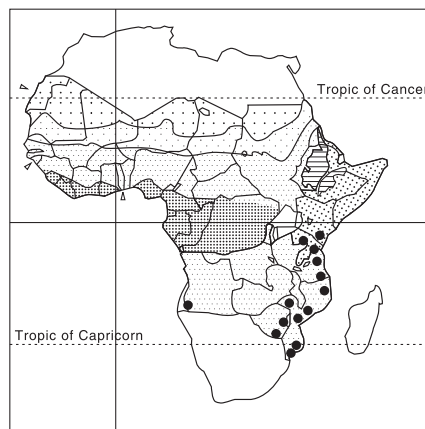
*Sibangea arborescens*



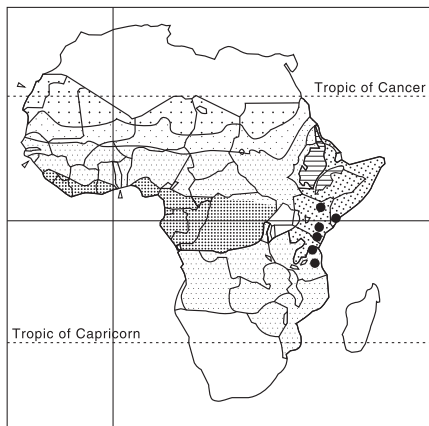
*Sibangea pleioneura*



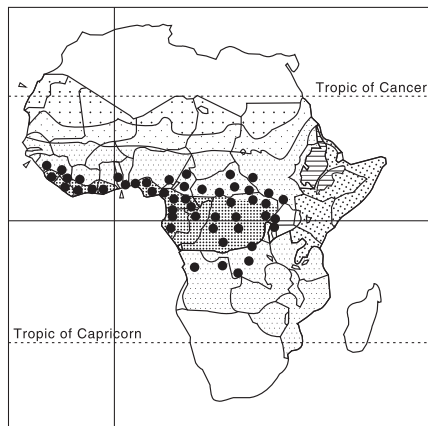
*Sibangea similis*



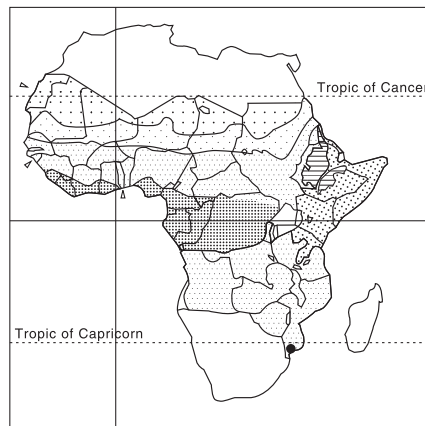
*Spirostachys africana*



*Spirostachys venenifera*



*Spondianthus preussii*



*Suregada africana*

## SUREGADA / 8

Male flower unknown in 1 species and female flower in another species. Fruit not seen in these 2 species, and one of them known only from the type.

**Suregada africana** (Sond.) Kuntze

bas.: *Ceratophorus africanus* Sond.

syn.: *Suregada ceratophora* Baill.; *Gelonium africanum* (Sond.) Müll. Arg.

Shrub or slender lax tree to 3 m tall, dioecious.

Coastal evergreen forest; riverine forest; mixed deciduous woodlands; near sea-level to 300 m alt.

S. Africa.

**S. croizatiana** J. Léonard

Shrub, dioecious; male flower and fruit unknown.

Rain-forest.

Only known from the type collected in 1932.

**S. gossweileri** (S. Moore) Croizat

bas.: *Gelonium gossweileri* S. Moore

Shrub 2 m tall, dioecious.

Rain-forest on firm ground.

**S. ivorensis** (Aubrév. & Pellegr.) J. Léonard

Tree to 25 m; stem 40 cm Ø with slender, sulcate branchlets.

Rain-forest.

**S. lithoxyla** (Pax & K. Hoffm.) Croizat

bas.: *Gelonium lithoxylon* Pax & K. Hoffm. [excl. var. *procerum* (Prain) Pax = *S. procera*].

Shrub or tree; female flowers and fruit unknown.

Evergreen forest; sometimes in rocky places; locally fairly common; 914-1600 m alt.

Very similar to *S. procera*.

**S. occidentalis** (Hoyle) Croizat

bas.: *Gelonium occidentale* Hoyle

Shrub or treelet to 3 m tall with flexuous branchlets, angular when young.

Rain-forest; common.

**S. procera** (Prain) Croizat; Kew Bull. 50: 815, 1995.

bas.: *Gelonium procerum* Prain

syn.: *G. lithoxylon* Pax & K. Hoffm. var. *procerum* (Prain) Pax  
Generally dioecious, sparingly branched evergreen shrub 2-7,5 m tall, or a straggling to large, much-branched tree with a crooked bole and a heavy spreading crown, to 24 m tall; stems angular, zigzag.

Forest; sometimes at edges or in secondary associations, riverine and by swamps; also characteristic of dry evergreen forests (C Kenya, N Tanzania); montane forest with *Podocarpus gracilior*, *Aningeria* (= *Pouteria*) *adolphi-friedericii*, *Warburgia*;

## SUREGADA

upland rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; mixed evergreen forest; gully forest; mushitu; locally common; 300-2133 m alt.

S. Africa; not in Somalia (= *S. zanzibariensis*).

**S. zanzibariensis** Baill.

syn.: *Gelonium zanzibariense* (Baill.) Müll. Arg.

Low-branched compact pyramidal, generally monoecious, evergreen shrub with suberect branches, 0,5-3 m tall, or a much-branched tree to 9 m tall.

Riverine forest; often associated with rock outcrops; common in places; *Brachystegia* and closed *Androstachys* woodlands on sandy soil; coastal plain mixed evergreen forest; coastal mixed deciduous woodland with *Spirostachys*, *Hymenocardia*, *Uapaca*; dense *Millettia* thickets; also in salt-marshes; 0-1600 m alt.

S. Africa; Madagascar; probably not in Angola.

## SYNADENIUM / 13

Fruit and seeds unknown in 1 species. One species known only from the type.

**Synadenium angolense** N. E. Br.

Shrub to 3 m or tree to 6 m tall with fleshy branches and stems; leaves to 12,5-17 × 6,5 cm, oblanceolate to obovate with a very prominent midrib rounded below.

Mixed deciduous woodland and dense thickets; also planted near native habitations; 550-1400 m alt.

**S. calycinum** S. Carter

Tree to 8 m; leaves sessile, obovate, to 20 × 7 cm.

Deciduous woodland; 600 m alt.

**S. cameronii** N. E. Br.

Shrub to 3 m or tree to 5 m tall, with fleshy branches and stems; leaves to ± 18 × 8 cm, oblanceolate, midrib beneath with a sharp keel to 1 mm wide.

Rocky outcrops and exposed granite slopes; often also beside rivers; mixed deciduous woodland; 100-1400 m alt.

**S. compactum** N. E. Br.

Much-branched bush, or shrubby tree to 7 m tall; leaves sessile, obovate, to ± 18 × 9 cm, midrib acutely prominent to keeled beneath.

Sandy, gritty soils often on rocky slopes with ± open deciduous bushland; 760-1830 m alt.

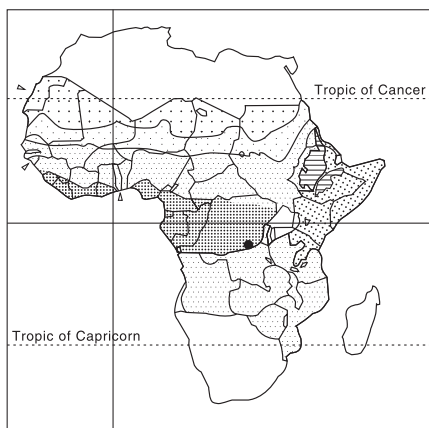
Comprises 2 vars. (– var. **rubrum** S. Carter is possibly wild in Kenya around Embu, otherwise naturalised in some places near habitations).

**S. cymosum** N. E. Br.

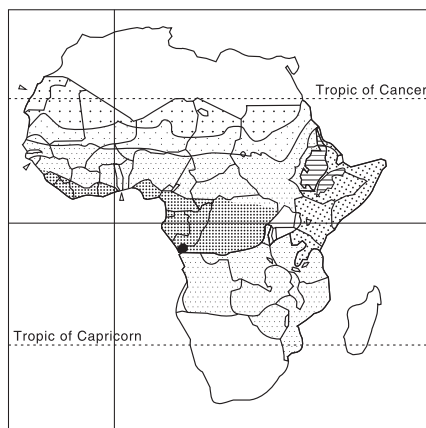
Much branched shrub to ± 4,5 m tall; leaves oblanceolate, to ± 16 × 5 cm with the midrib acutely prominent; capsule and seeds unknown.

Dry plains and rocky slopes with deciduous woodland; 670-1675 m alt.

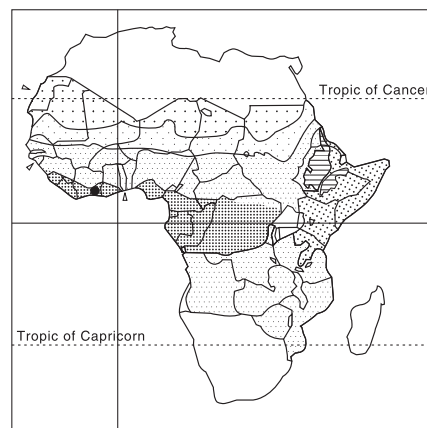




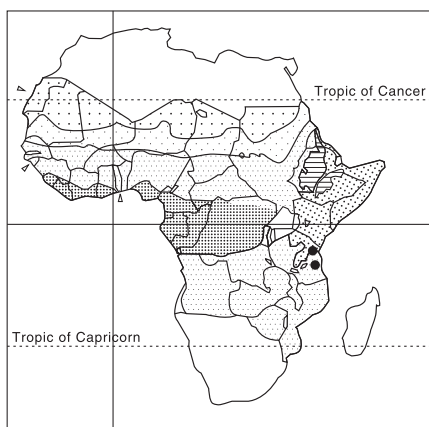
*Suregada croizatiana*



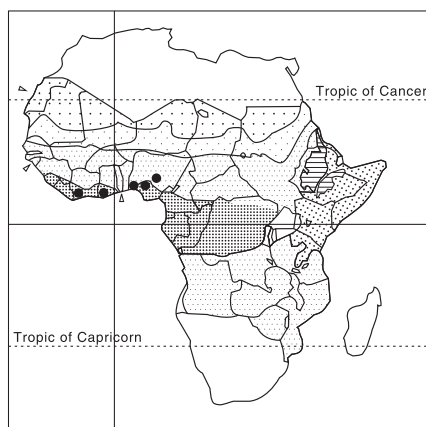
*Suregada gossweileri*



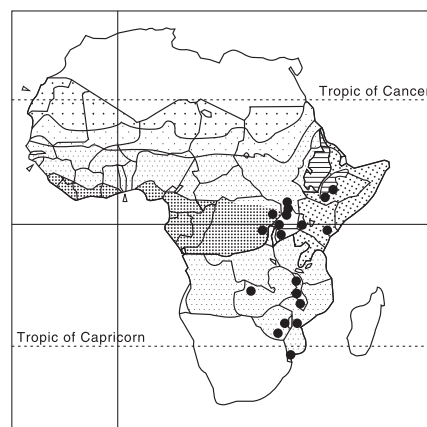
*Suregada ivorensis*



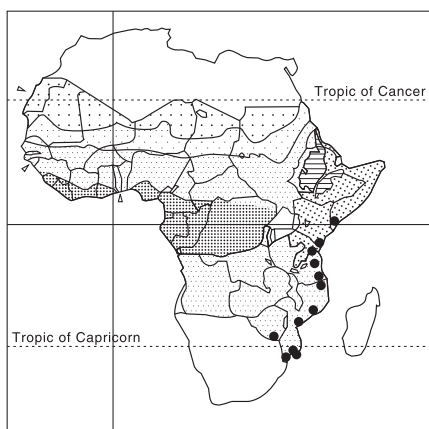
*Suregada lithoxyla*



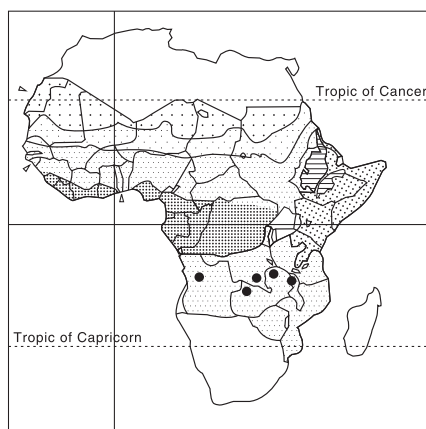
*Suregada occidentalis*



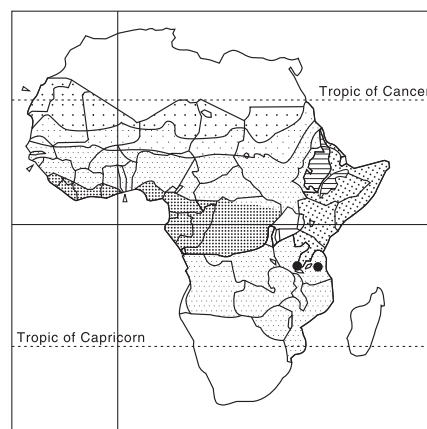
*Suregada procera*



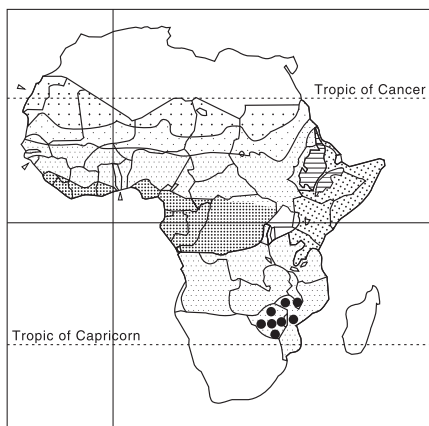
*Suregada zanzibariensis*



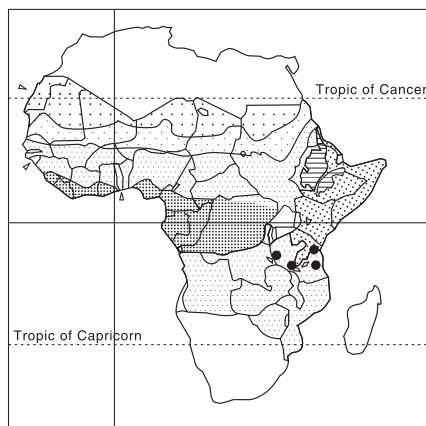
*Synadenium angolense*



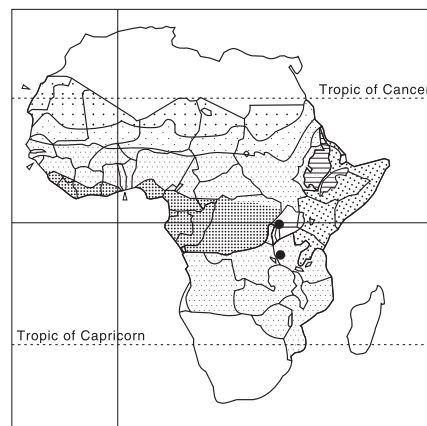
*Synadenium calycinum*



*Synadenium camerunii*



*Synadenium compactum*



*Synadenium cymosum*

## SYNADENIUM

**S. glabratum** S. Carter

Shrub to ± 1,5 m tall; leaves linear-lanceolate to oblanceolate, to ± 15 × 5 cm; midrib acutely prominent beneath.

In sand and pebbles on rocks on the shoreline and wooded slopes of islands; 775-780 m alt.

**S. glaucescens** Pax, incl. var. *brevipes* N. E. Br.

Bush or shrubby tree to 9 m tall; leaves oblanceolate to obovate, to ± 18 × 9 cm.

Sandy stony soils and rocky slopes with dry deciduous woodland; 300-1800 m alt.

**S. grantii** Hook. f.

Bush or shrubby tree 3-10 m tall, ramose from the base; leaves obovate, 7-16 × 2,5-7 cm.

Rocky slopes with dry open woodland or forests; often cultivated (incl. cv. *atropurpurea*); 950-2100 m alt.

**S. halipedicola** L. C. Leach

Shrub to 3 m tall, with fleshy branches and stems; leaves to 15,5 × 7 cm, obovate; midrib sharply prominent.

Mixed deciduous woodland; ± 75 m alt.

Only known from the type collected in 1975.

**S. kirkii** N. E. Br.; Kew Bull. 55: 441, 2000.

syn.: *S. gazense* N. E. Br.

Shrub 2-3 m tall, or tree to ± 4 m, with fleshy branches and stems; leaves to 11-18 × 5-8 cm, obovate to broadly obovate.

Rocky outcrops, rocky slopes of escarpments and gorges; open mixed deciduous woodland; 45-1000 m alt.

**S. molle** Pax

Much-branched bush or shrubby tree to 9 m tall; leaves obovate, to ± 17 × 7 cm.

Sandy soils and slopes with open deciduous woodland; 600-1550 m alt.

**S. pereskiifolium** (Baill.) Guillaumin

bas.: *Euphorbia pereskiifolia* Baill.

syn.: *Synadenium piscatorium* Pax

Sparsely branching shrub to 5 m tall; leaves obovate, to ± 19 × 10 cm.

Sandy soil or on rocks in coastal or riverine woodland; 0-250 m alt.

**S. volkensis** Pax

Tree to 18 m; leaves obovate, to ± 16 × 8 cm; midrib prominent and rounded beneath, or ± acute towards the apex.

Deciduous thicket; 1000-1700 m alt.

## TANNODIA / 3

syn.: *Tandonia* Baill. 1860, non Moq. 1849; *Neoholstia* Rauschert; *Holstia* Pax 1909, non Hagström 1906; *Tannodia* sect. *Holstia* (Pax) Prain; *Domohinea* Léandri

Mature female flower unknown in 1 species.

RADCLIFFE-SMITH, A. (1998). A synopsis of *Tannodia* Baill. (Crotonoideae-Aleuritideae-Grosserinae) with especial reference to Madagascar, and the subsumption of *Domohinea* Léandri. *Kew Bull.* 53: 173-186.

**Tannodia congolensis** J. Léonard

Diocious shrub; mature female flower unknown.

Rain-forest on firm ground.

**T. swynnertonii** (S. Moore) Prain

bas.: *Croton swynnertonii* S. Moore

Tree to 12-30 m; trunk buttressed, or slightly fluted at the base.

Mixed evergreen rain-forest; low altitude evergreen forest; bank of mountain river in *Parinari*, *Newtonia* forest; 300-1220 m alt.

**T. tenuifolia** (Pax) Prain

bas.: *Holstia tenuifolia* Pax

syn.: *Neoholstia tenuifolia* (Pax) Rauschert

Many-stemmed scrambling shrub or liane to 3-4 m in height, with pendent branches.

Valley floor and lake side vegetation, often in riverine thickets (jesse bush); riverine mixed deciduous woodland with *Combretum*, *Xylia*, *Entandophragma*, *Pteleopsis* spp.; sandy soil and black clay floodplain alluvium; rocky slopes above lake and river side with *Adansonia*, *Sterculia*, *Acacia* spp.; sometimes on limestone.

Comprises 2 vars.: – var. **tenuifolia**; – var. **glabrata** Prain! [vide Kew Bull. 50: 813, 1995; bas.: *Neoholstia! tenuifolia* (Pax) Rauschert var. *glabrata* (Prain) Radcl.-Sm.; syn.: *Holstia tenuifolia* var. *glabrata* (Prain) Pax; *Tannodia sessiliflora* (Pax) Prain].

Var. **glabrata** does not occur in Mozambique.

## TETRACARPIDIUM / 1

**Tetracarpidium conophorum** (Müll. Arg.) Hutch. & Dalziel

bas.: *Plukenetia conophora* Müll. Arg.

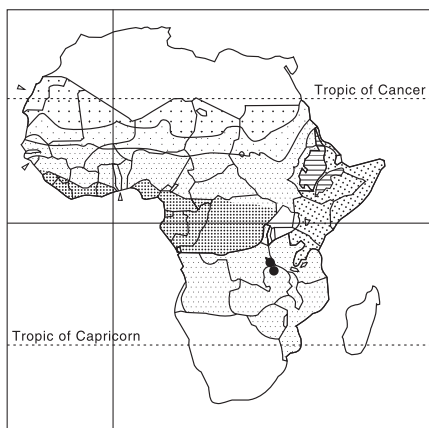
syn.: *Angostyloidium conophorum* (Müll. Arg.) Pax & K. Hoffm.; *Cleidion preussii* (Pax) Bak.; *Mallotus preussii* Pax; *Cleidion mannii* Bak.; *Tetracarpidium staudtii* (Pax) Pax

Climbing shrub or liane 3-15 m long.

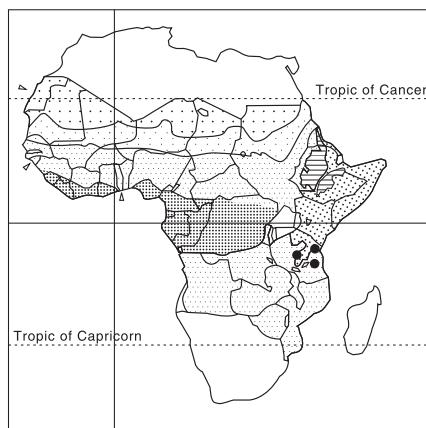
Rain-forest hedge in half-shady places; low bush; secondary forest; plantations; 250-1400 m alt.

Bioko/Fernando Poo. – Apparently not indigenous in Sierra Leone.

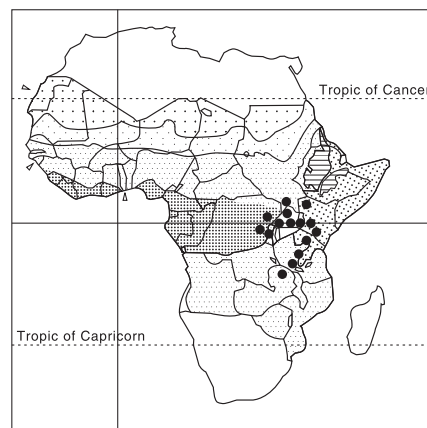
Cultivated for its oil-rich fruits.



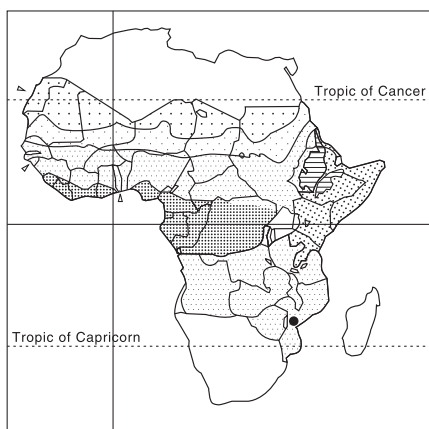
*Synadenium glabratum*



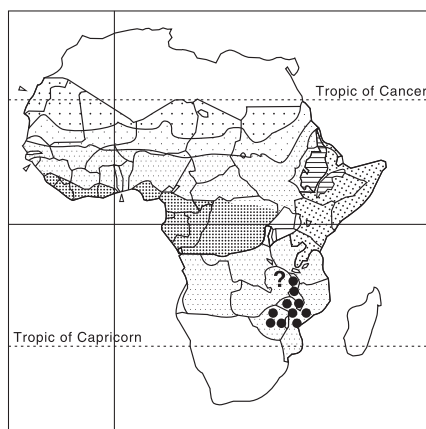
*Synadenium glaucescens*



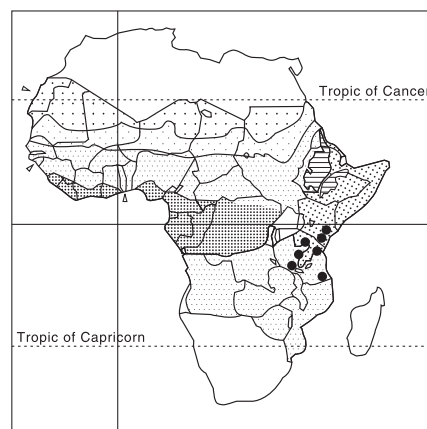
*Synadenium grantii*



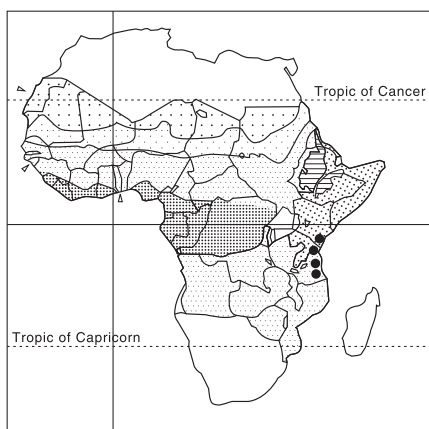
*Synadenium halipedicola*



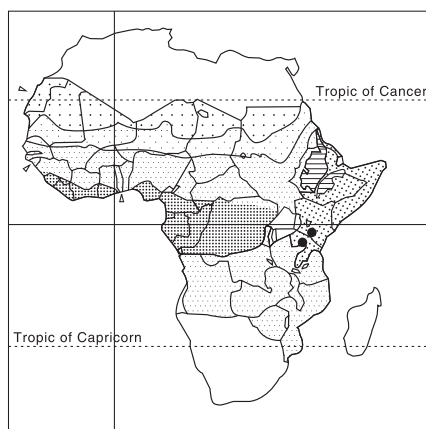
*Synadenium kirkii*



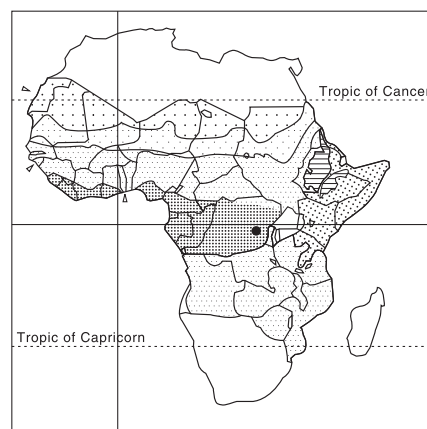
*Synadenium molle*



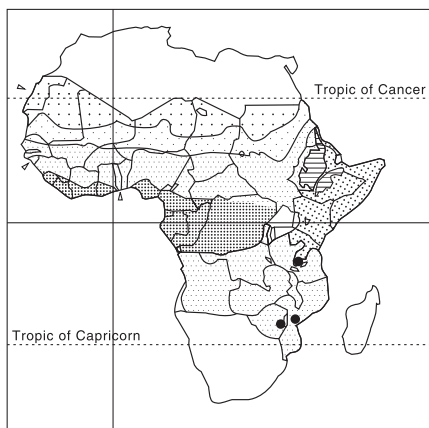
*Synadenium pereskiifolium*



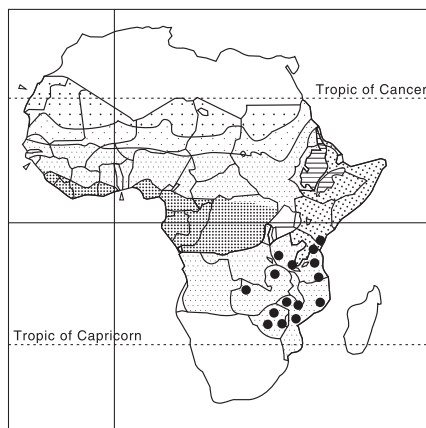
*Synadenium volkensii*



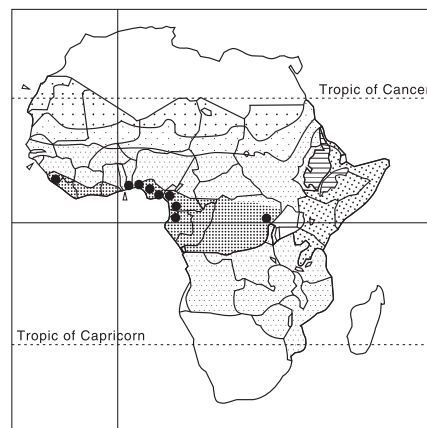
*Tannodia congolensis*



*Tannodia swynnertonii*



*Tannodia tenuifolia*



*Tetracarpidium conophorum*

## TETTORCHIDIUM / 5

Female inflorescence, female flowers and fruit unknown in 1 species.

**Tetrorchidium congolense** J. Léonard; Adansonia, Sér. 3, 21: 97-105, 1999.

syn.: *Hasskarlia didymostemon* Baill. var. *dentata* De Wild. and fa. *variabilis* De Wild.

Shrub, dioecious or monoecious, 0,6-5 m tall.

Rain-forest and secondary rain-forest on firm ground with *Gilbertiodendron dewevrei*; riverine forests with *Guibourtia demeusei*; sandy, humid savannas.

Comprises 2 vars.

**T. didymostemon** (Baill.) Pax & K. Hoffm.; Adansonia, Sér. 2, 3: 76, 1963.

bas.: *Hasskarlia didymostemon* Baill.

syn.: *Tetrorchidium minus* (Prain) Pax & K. Hoffm.; *Hasskarlia minor* Prain; *Gelonium angolense* Prain; *Tetrorchidiopsis didymostemon* (Baill.) Rauschert

(Shrub or) tree, dioecious, (2-)4-25 m tall with bole 10-60(-100) cm Ø.

Regrowth and secondary formations from rain-forests on firm ground; gallery edges; secondary formations from transitional rain-forests; swamps; lakesides; scrub on lateritic and stony soil; savanna on clayey soil; sometimes very common in places; 350-1686 m alt.

Bioko/Fernando Poo, São Tomé.

**T. gabonense** Breteler

Shrub to 2 m tall.

Rain-forest; ± 600 m alt.

**T. oppositifolium** (Pax) Pax & K. Hoffm.

bas.: *Hasskarlia oppositifolia* Pax

syn.: *Tetrorchidium tenuifolium* (Pax & K. Hoffm.) Pax & K. Hoffm.; *Hasskarlia tenuifolia* Pax & K. Hoffm.

Shrub to 2,7 m tall.

Forest.

**T. ulugurense** Verdc.

Dioecious shrub or tree; female inflorescences, flowers, and fruit unknown.

Forest; locally common; 550-600 m alt.

Known localities are nearer the Nguru Mts. than the Uluguru Mts.

## THECACORIS / 10

In one species (*T. batesii*) only young flowers known. Female flower unknown in 3 species (= c. 33%) and fruit in 2 species (= c. 22%). The ecology is not recorded for 1 species. One species is known only from the type.

**Thecacoris annobonae** Pax & K. Hoffm.

syn.: *T. cf. annobonae* Pax & K. Hoffm. of F.W.T.A.

Tree 3-10 m.

Forest; 300-600 m alt.

The syntypes from Annobon are not available (Mildbraed 6499, 6554, 6557).

**T. batesii** Hutch.

syn.: *T. gymnogyne* Pax var. *reticulata* Pax

Shrub 0,6-2 m tall; only young flower known.

Swampy places in alluvial forest; bush along path.

Doubtfully distinct from the rather variable *T. stenopetala*.

**T. glabroglandulosa** (J. Léonard) J. Léonard

Shrub 1-1,5 m tall; female flowers unknown.

Mixed valley forests; forests with *Scorodophloeus zenkeri*; secondary forests with *Terminalia superba*.

**T. lancifolia** Pax & K. Hoffm.

Shrub 0,5-1 m tall with slender branches; female flowers and fruit unknown.

Ecology unknown.

Type specimen (Escherich 257) lost?

**T. latistipula** J. Léonard

Shrub; female flower and fruit unknown.

Rain-forest.

Only known from the type collected in 1915.

**T. leptobotrya** (Müll. Arg.) Brenan

syn.: *Tapura* sp. (*Dichapetalaceae*), Fl. Gabon 32: 214, 1991; *Thecacoris gymnogyne* Pax var. *gymnogyne* (excl. var. *reticulata* Pax = *T. batesii*); *T. klainei* Pierre in sched.; *T. talbotae* Hutch. excl. specim. Chevalier 19502.

Shrub or tree 2-10 m tall.

Swampy places in alluvial forest; rain-forest; brook sides; 1-350 m alt.

**T. lucida** (Pax) Hutch.; Kew Bull. 50: 815-816, 1995.

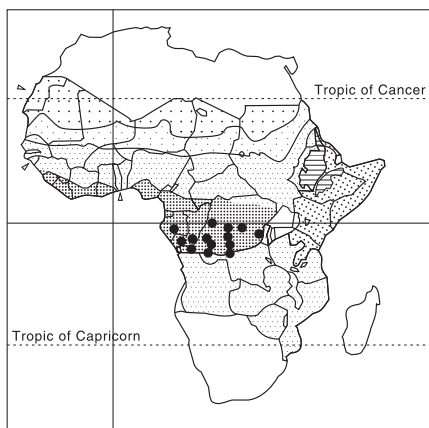
bas.: *Baccaureopsis lucida* Pax

syn.: *Opilia mildbraedii* Engl. (*Opiliaceae*).

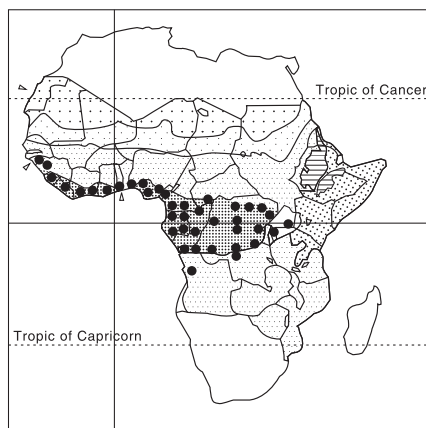
Shrub or tree (1-)2-8(-10-16) m tall.

Dry forest formations on plateau with *Thecacoris trichogyne*; dry forests with *Gilbertiodendron kisantuense*; rain-forests with *Cynometra alexandri*, or with *Gilbertiodendron dewevrei*, or with *Julbernardia seretii*, and *Staudtia stipitata*, or with *Staudtia stipitata* and *Grossera multinervis*; transitional forests in Eastern Zaire; rarely in riverine forests with *Guibourtia demeusei* or in gallery; *Khaya*, *Alstonia*, *Lovoa*, *Celtis*, etc. forest; *Cynometra* forest; locally common and often dominant; 700-1300 m alt.

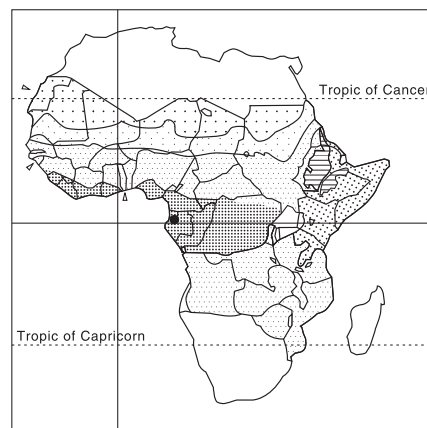




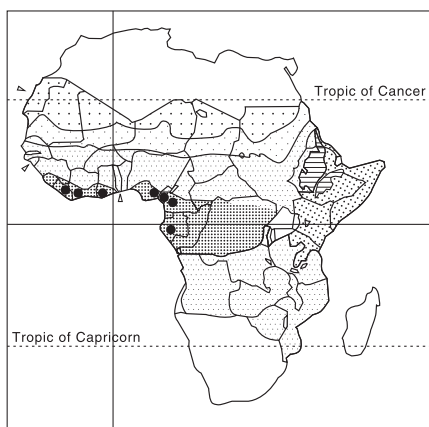
*Tetrorchidium congolense*



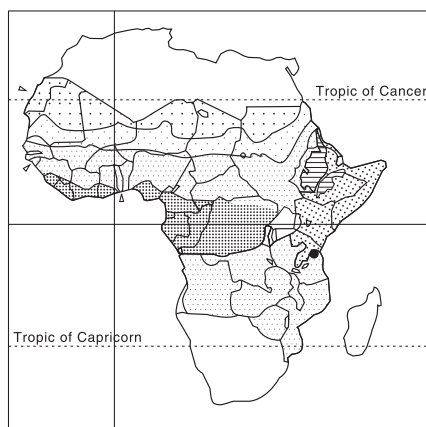
*Tetrorchidium didymostemon*



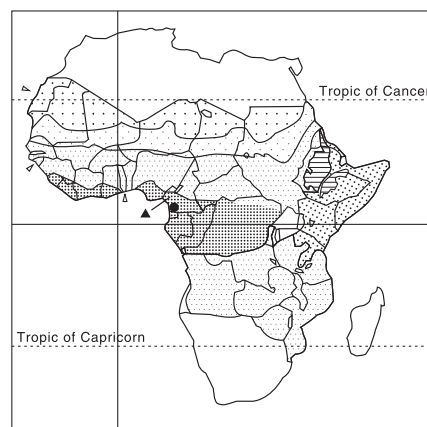
*Tetrorchidium gabonense*



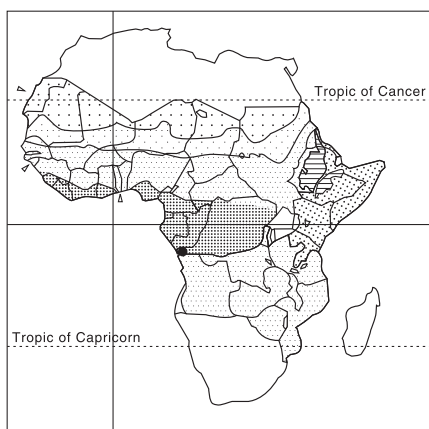
*Tetrorchidium oppositifolium*



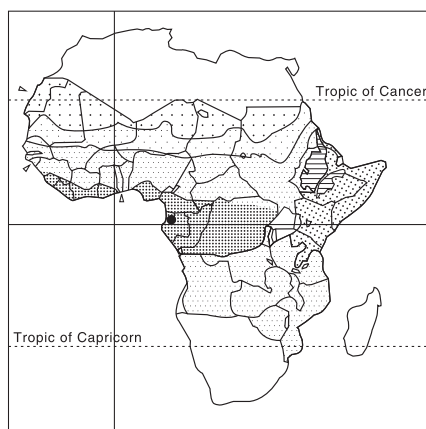
*Tetrorchidium ulugurense*



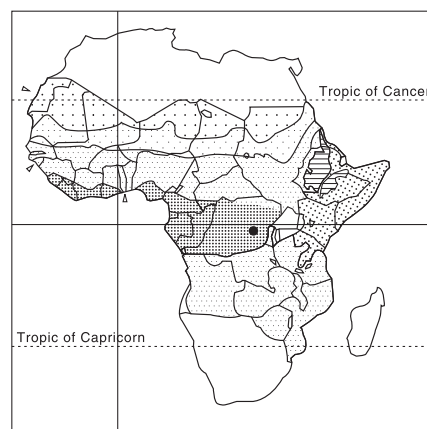
*Thecacoris annobonae* ▲  
*Thecacoris batesii* ●



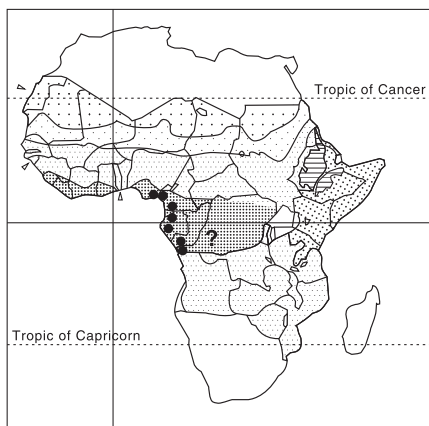
*Thecacoris glabroglandulosa*



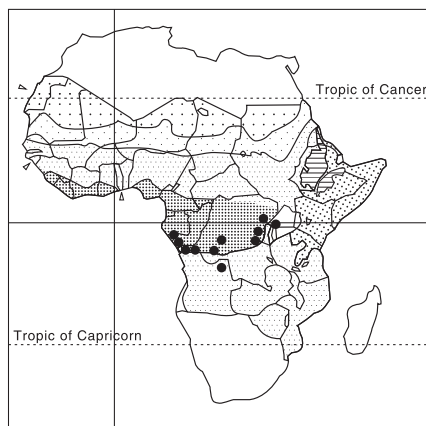
*Thecacoris lancifolia*



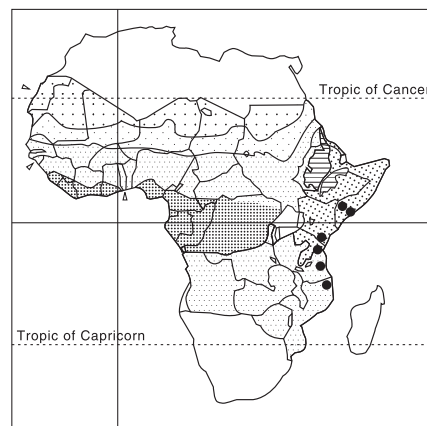
*Thecacoris latistipula*



*Thecacoris leptobotrya*



*Thecacoris lucida*



*Thecacoris spathulifolia*

## THECACORIS

**T. spathulifolia** (Pax) Léandri

Dioecious shrub 0,2-1-2 m tall; branches straight, often ± fastigiate.

Sandy hills; dry evergreen forest; *Brachystegia* and related woodlands, associated wooded grassland and thickets; *Acacia-Commiphora* bushland; 15-700 m alt.

Madagascar.

**T. stenopetala** (Müll. Arg.) Müll. Arg.

bas.: *Antidesma stenopetalum* Müll. Arg.

syn.: *Thecacoris chevalieri* Beille

Shrub 1,5-4 m tall.

Forest; riversides; dense bush; fairly common; 1-300 m alt.

Principe, São Tomé, Bioko/Fernando Poo.

**T. trichogyne** Müll. Arg.; icon.: Bull. Jard. Bot. Etat, Brux. 17: 255 !, 257, 1945.

Several-stemmed scrambling shrub or slender tree 0,6-6 m tall, sometimes liane-like.

Riverine and swamp forest (mushitu) understorey and margins; in sand of lakeshore fixed dunes (vide *Tragia micromeres*); sclerophyllous scrub; secondary forests; rain-forest with *Gilbertiodendron dewevrei* or with *Scorodophloeus zenkeri*; gallery; periodically flooded forests; >500-1000 m alt.

Possibly not specifically distinct from *T. annobonae* Pax & K. Hoffm.

Some other species are recorded from the Guinean Gulf islands:

**Thecacoris manniana** (Müll. Arg.) Müll. Arg., **T. membranacea** Pax

\* \* \*

## SYNONYMS:

*Thecacoris chevalieri* Beille = **Thecacoris stenopetala**

*gymnogyne* Pax var. *glabroglandulosa* J. Léonard = **T. glabroglandulosa**

var. *gymnogyne* = **T. leptobotrya**

var. *reticulata* Pax = **T. batesii**

*klainei* Pierre in sched. = **T. leptobotrya**

*talbotae* Hutch. p. maj. p. = **T. leptobotrya**

*trillesii* Beille = **Spondianthus preussii** var. **glaber**

## TRAGIA / 63

“The genus as a whole in Africa presents a mixture of very distinct, often rather rare, and sometimes extremely local species and other groups of specimens that are not totally satisfactorily separated from each other” (M. G. Gilbert, Nord. J. Bot. 12: 389, 1992).

Female inflorescence unknown in 1 species; flowers incompletely known in 1 species; female flower unknown in 2 species (= c. 3%); fruit unknown in 4 species (= c. 6%) and mature fruit lacking in another 2 species; seeds not seen in 3 species (= c. 4%), and ripe seeds lacking in further 3 species and intact ripe seeds in further species. The ecology is not recorded for 9 (+1?) species (= c. 14%). Eight species (= c. 12%) are known only from the type.

## TRAGIA

**Tragia abortiva** M. G. Gilbert

Dioecious, many-stemmed shrub to 1,2 m tall; stems stiffly erect, usually twining only slightly at the tip (only with fully twining stems when growing in deep shade), base woody to 1 cm thick; galled male flowers present.

On the top of basement complex ridges with mostly broadleaved deciduous woodland with *Combretum molle*, *Bridelia scleroneura*, *Acacia hockii*, *Ozoroa insignis*, etc.; open areas with low *Hyparrhenia-Enteropogon* grassland; locally abundant; 1550-1800 m alt.

Possibly closest to *T. doryoides*.

**T. acalphyoides** Radcl.-Sm.

Perennial, monoecious climbing herb to 3 m tall.

Riverine forest; disturbed places; 120-150 m alt.

**T. adenanthera** Baill.

Perennial, monoecious climbing herb 60-150 cm tall, often with several stems arising from a single root.

Woodland, wooded and open grassland, locally common; spreading into disturbed places; 0-700(-1200) m alt.

**T. angolensis** Müll. Arg.

Stems slender, branched from the base, several from a woody rootstock, erect or suberect, 20-45 cm tall or occasionally ± twining above, then 60-75 cm long, very sparingly branched.

Pastures by hills among low bushes, in company with several species of *Gnidia* and many *Irideae*, on a schistose sandy soil; dry thickets; ± 1800 m alt.

Variable in habit.

**T. ashiae** M. G. Gilbert

Semi-erect or somewhat climbing herb to 60 cm long; fully mature fruits unknown.

Rough grassland and thicket margins, often on black soils; 2200-2400 m alt.

Related to *T. mitis*, *T. triumfettoides*.

**T. ballyi** Radcl.-Sm.

Perennial, monoecious, stinging erect herb to 35 cm tall, somewhat woody at base; mature seeds unknown.

Grassland on black cotton soil; 1160 m alt.

Only known from the type collected in 1952.

Near to *T. meyeriana* Müll. Arg. from S. Africa.

**T. benthamii** Bak.

syn.: *T. cordifolia* Benth. 1849, non Vahl 1790; *T. kassiliensis* Beille; *T. mitis* Hochst. ex A. Rich. emend. Müll. Arg. var. *kirkii* Müll. Arg.

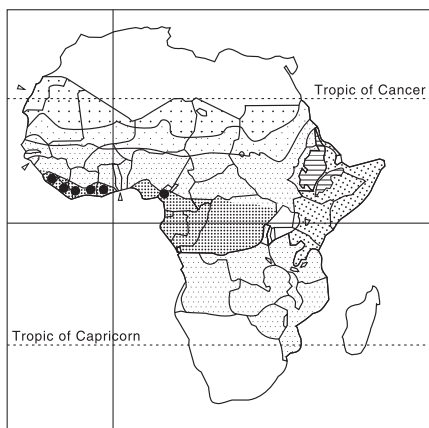
syn. event.: *T. keniensis* Rendle

Herbaceous climber or trailer; stems long, slender, twining, perennial, monoecious, 3 m long.

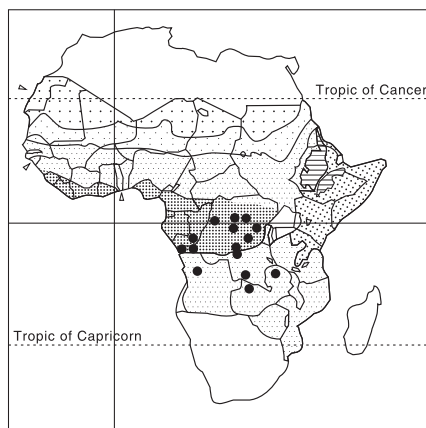
Forest edges; clearings; grassland; secondary scrub; floodplain thickets and termitaria in floodplain grassland; rocky outcrops and pan margins in mopane woodland; common by places; near sea-level to 1975 m alt.

Botswana. – Occurs perhaps in SW Ethiopia.

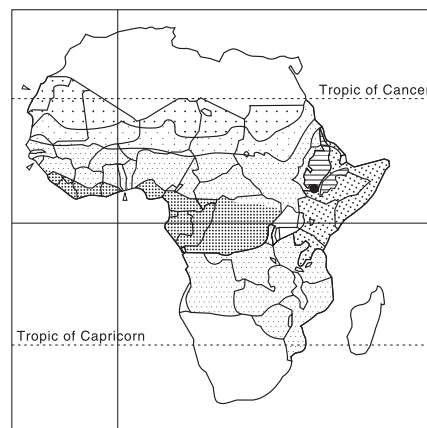
Very similar to *T. brevipes*.



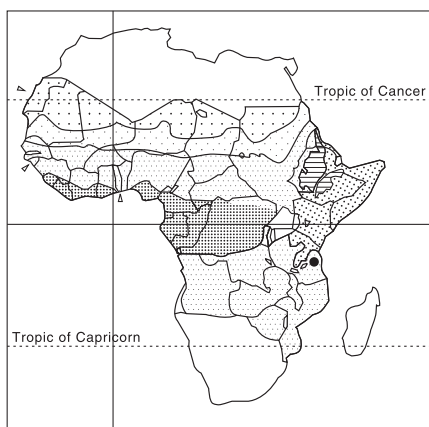
*Thecacoris stenopetala*



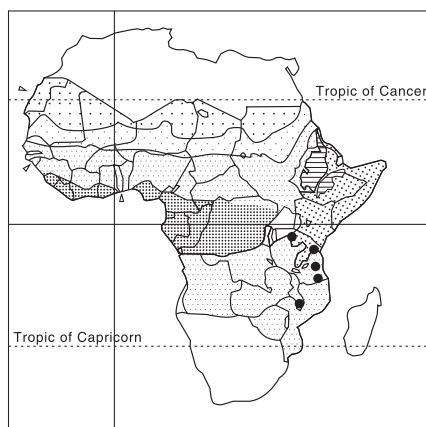
*Thecacoris trichogyne*



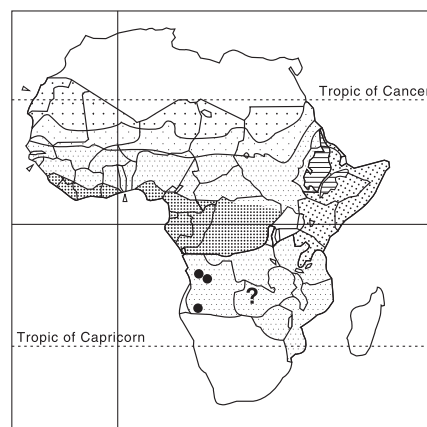
*Tragia abortiva*



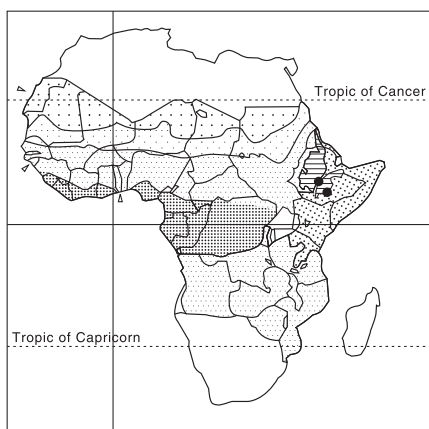
*Tragia acalyphoides*



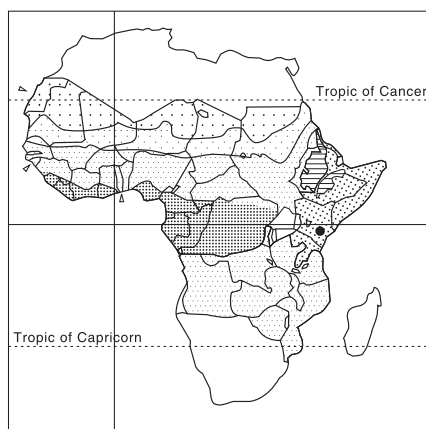
*Tragia adenanthera*



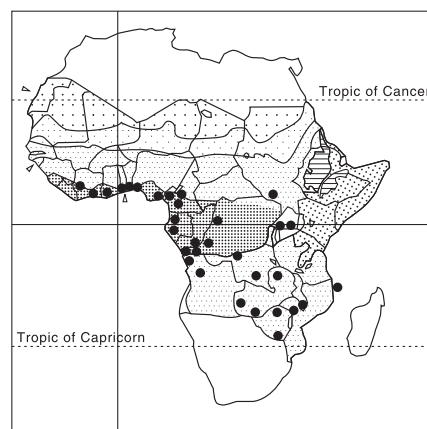
*Tragia angolensis*



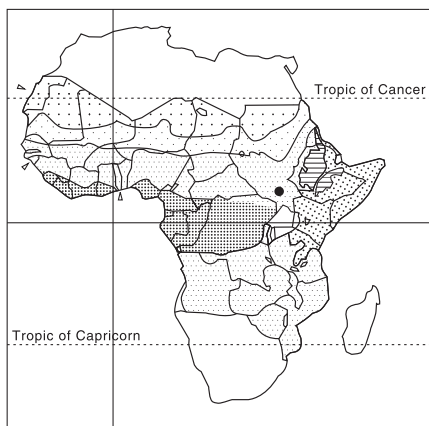
*Tragia ashiae*



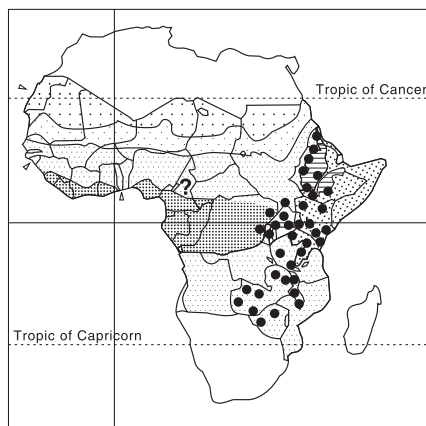
*Tragia ballyi*



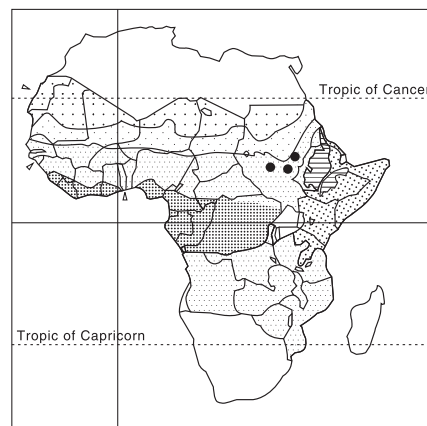
*Tragia benthamii*



*Tragia bongolana*



*Tragia brevipes*



*Tragia brouniana*

## TRAGIA

**T. bongolana** Prain

Slender climber; stems rather long, twining; dioecious; female flowers and capsules unknown.

Ecology unknown.

Near *T. mitis*, *T. prostrata*.

**T. brevipes** Pax

syn.: *T. velutina* Pax; *T. volkensis* Pax

Perennial, monoecious herb, sometimes erect but usually straggling or twining and scandent, or shrub to 4,5 m but more often  $\pm 1$  m high; stems arising from a woody stock and twining anticlockwise.

Common in forest edges, thickets, lakeside and riverine associations, wooded grassland; spreading into disturbed places; thickets on Kalahari sand (mutemwa); evergreen forest margins and miombo; climbing in *Albizia zygia* woodland; rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*, climber along trail; often in rather humid sites; rain-forest with *Albizia*, *Macaranga*, *Croton*, *Ocotea*; 90-2150 m alt.

Not in Somalia (= *T. mixta*).

Very similar to *T. okanyua*.

**T. brouniana** Prain

syn.: *T. cannabina* L. f. var. *brouniana* (Prain) Prain; *T. hildebrandtii* Müll. Arg. var. *brouniana* (Prain) Cufod.

Perennial herb 10-15 cm tall; stems dwarf, erect.

Ecology unknown.

**T. ceanothifolia** Radcl.-Sm.

Erect monoecious perennial herb to 50 cm tall; fruit and seeds unknown.

Black cotton soil, presumably in wooded grassland;  $\pm 1800$  m alt.

In vegetative features, strongly reminiscent of the New Jersey Tea, Redroot, *Ceanothus americanus* L. (*Rhamnaceae*).

Near *T. impedita*, *T. lasiophylla*.

[**T. chevalieri** Beille], doubtfully a good species, from Ivory Coast, Nigeria. Not mapped.

**T. cinerea** (Pax) M. G. Gilbert & Radcl.-Sm.; Nord. J. Bot. 12: 391, 1992.

syn.: *T. pungens* (Forssk.) Müll. Arg. var. *cinerea* (Pax) Pax

Perennial, monoecious twining herb.

Riverine thicket and scrub; rocky slopes with rough grassland; deciduous woodland; open *Juniperus* forest; riverine forest margins; 1200-2300 m alt.

**T. crenata** M. G. Gilbert

Herb with twining stems to 0,8 m tall; monoecious.

Disturbed area of *Combretum-Terminalia* woodland on sticky brown soil near the boundary of basement complex rocks and overlying basalt; 1300 m alt.

Only known from the type collected in 1988.

Near *T. brevipes*, *T. petiolaris*.

## TRAGIA

**T. descampsii** De Wild.

Erect, simple-stemmed or sparingly branched dioecious perennial herb to 55 cm tall with a woody rootstock.

Edge of *Brachystegia* woodland subject to burning; amongst grasses of open deciduous woodland, with *Julbernardia*, *Ochna*, *Ricinodendron*; 900-1560 m alt.

Near *T. lukafuensis*.

**T. dioica** Sond., incl. var. *lobata* (Müll. Arg.) Pax & K. Hoffm. and var. *schinzii* (Pax) Pax

syn.: *T. rupestris* Sond. var. *lobata* Müll. Arg.; *T. schinzii* Pax; *T. recta* Dinter ex Pax & K. Hoffm.

Erect or suberect perennial herb to 60 cm tall, usually much less, monoecious or polygamo-dioecious; stems several from a woody rootstock.

Hot dry country in scrub mopane and calcrete pans;  $\pm 950$  m alt.

Botswana, Namibia, S. Africa.

Confused with *T. okanyua*.

**T. doryodes** M. G. Gilbert

Vigorous twiner, mostly dioecious, sometimes monoecious.

Rough grassland; open bushland; along paths; 1300-2000 m alt.

Near *T. mitis*; monoecious forms show a strong similarity to *T. cinerea*.

**T. fasciculata** Beille

Stems numerous, short, subtriquetrous, slender, wiry, tufted from a cylindrical woody horizontal rootstock, c. 1 cm thick, erect, sparingly branched, the axillary branches all leafy, ascending and virgate.

Ecology unknown.

In some cases stamens are replaced by solitary imperfect capsules in the flowers of the lowest cymules.

Only known from the type collected in 1903.

Very distinct, not readily comparable with any other known African *Tragia*; according to Beille near *T. spathulata*.

**T. furialis** Bojer, incl. var. *scheffleri* (Bak.) Pax & K. Hoffm.

syn.: *T. angustifolia* Benth. var. *furialis* (Bojer) Müll. Arg.

Perennial, monoecious, usually sparingly branched herb, erect at first, or less often procumbent, later scandent or twining, to 3 m tall, though more commonly  $\pm 60$  cm, with many stems arising from a single root.

Forest and secondary associations; often on coral, limestone or rock outcrops; spreading into disturbed places; *Newtonia* evergreen forest; riparian forest and thickets; 0-250(-900) m alt.

Madagascar, Comoro Is.

**T. gardneri** Prain

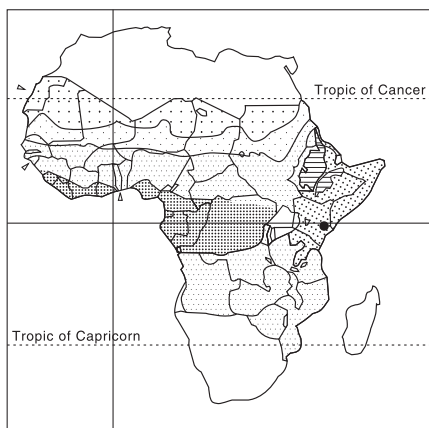
Erect, branched perennial herb to 50 cm tall, monoecious; stems several from a woody rootstock.

Dambo and vlei grassland in sand and black clay soils; sometimes on termitaria;  $\pm 1500$  m alt.

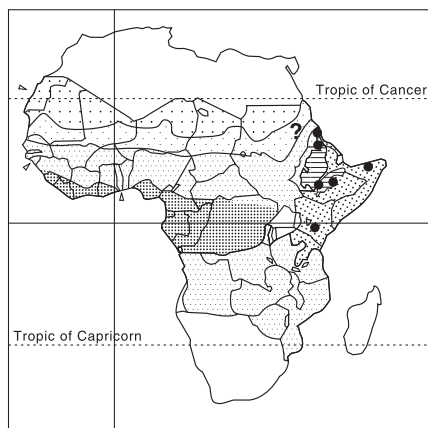
Botswana.

Very distinct, only distantly related to *T. dioica*.

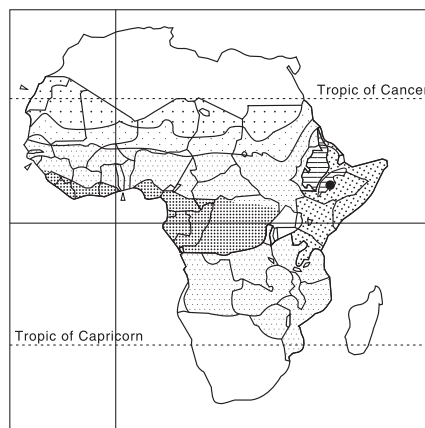




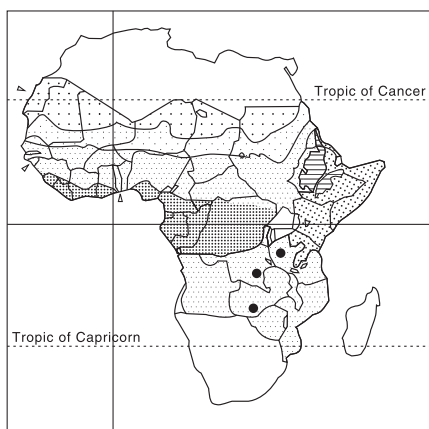
*Tragia ceanothifolia*



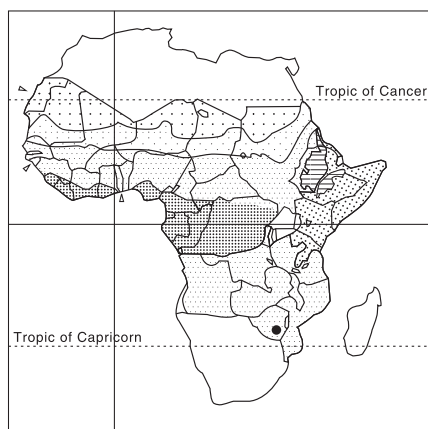
*Tragia cinerea*



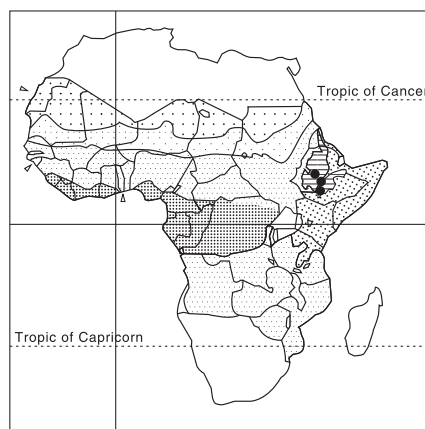
*Tragia crenata*



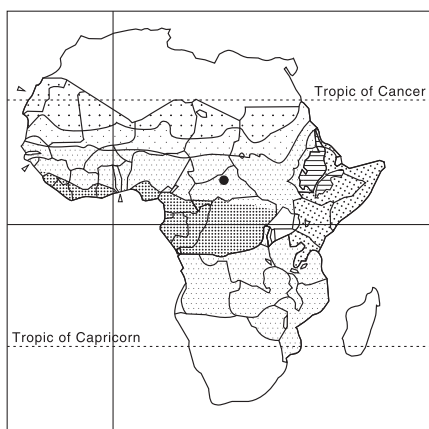
*Tragia descampsii*



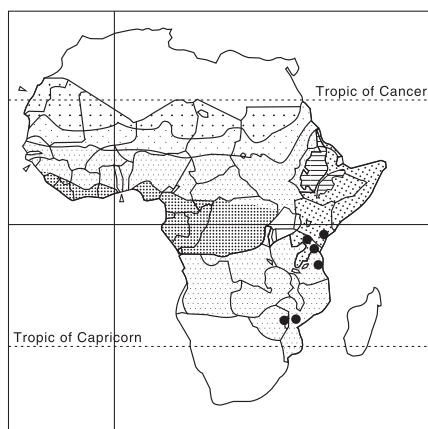
*Tragia dioica*



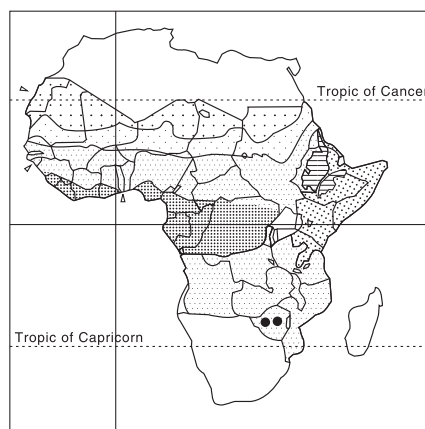
*Tragia doryodes*



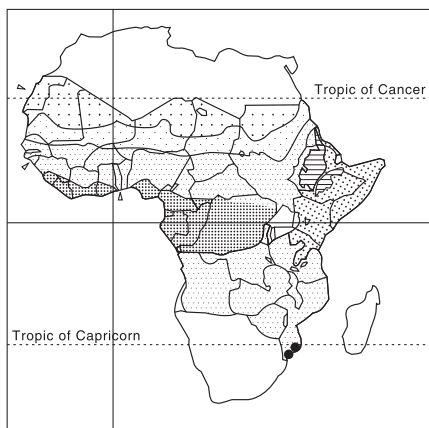
*Tragia fasciculata*



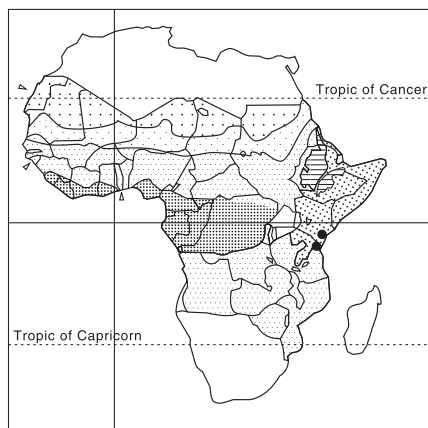
*Tragia furialis*



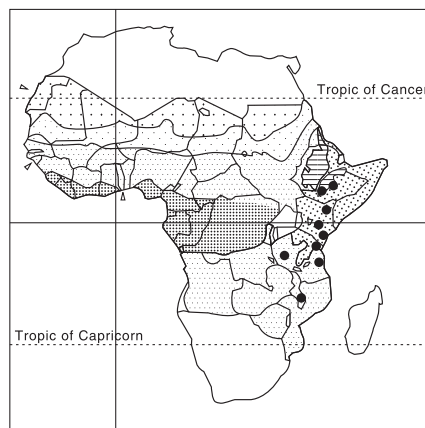
*Tragia gardneri*



*Tragia glabrata*



*Tragia glabrescens*



*Tragia hildebrandtii*

## TRAGIA

**T. glabrata** (Müll. Arg.) Pax & K. Hoffm.

syn.: *T. capensis* E. Mey. in Drège 1843, ex Sond. 1850, non Thunb. 1794; *T. meyeriana* Müll. Arg. var. *glabrata* Müll. Arg.; *T. durbanensis* Kuntze.

Much-branched climbing perennial herb, monoecious; stems from a woody rootstock, to 2,5 m long, twining.

Dune forest on sand; dry open bushland; sea-level to 10 m alt.

S. Africa.

Comprises 2 vars.

**T. glabrescens** Pax

Perennial, monoecious twining herb to ± 1,5 m tall with several stems arising from a woody stock.

Coastal bushland and thickets; spreading into disturbed places; 170-365 m alt.

**T. hildebrandtii** Müll. Arg., incl. subsp. *glaucescens* Pax

syn.: *T. cannabina* L. f. var. *hildebrandtii* (Müll. Arg.) Pax & K. Hoffm.; *T. mombassana* Vatke ex Prain

Stems erect 60-90 cm tall, arising from a woody base, sometimes themselves firm and woody, 0,6 cm Ø, copiously virgately branched.

Open sites in *Acacia* bushland on black cotton soil; riverine, floodplains or other seasonally damp places, generally on clay soils; spreading into disturbed places; floodplain grassland on alluvial soils; 15-860-1300 m alt.

Closely related to *T. plukenetii*; similar to *T. lasiophylla*.

**T. impedita** Prain

Monoecious, erect or suberect shrub or woody herb 40-60- ± 1 m tall.

Riverine, rocky or disturbed places in deciduous bushland and wooded grassland; 400-2000 m alt.

**T. incisifolia** Prain; icon.: Engler, Pflanzenr. IV, 147, IX-XI: 85, 1919.

Erect sparingly branched perennial herb to ± 30(-40) cm tall, monoecious; stems few from a slender woody rootstock.

Grassland; open *Acacia* woodland; often on river banks and amongst basalt rocks; 350-560 m alt.

S. Africa.

**T. insuavis** Prain

Twining perennial herb.

Deciduous bushland and thicket; sometimes by lakes or rivers, and in disturbed places; locally frequent; 490-1330 m alt.

Leaves like those of *T. benthamii*; in floral characters closely approaches *T. impedita*.

**T. kirkiana** Müll. Arg.

syn.: *T. angustifolia* Benth. 1849, non Nutt. 1837, var. *hastata* Müll. Arg.

Perennial, monoecious, sometimes erect, often trailing or climbing herb 60-150 cm tall, often with several stems arising from a single root.

## TRAGIA KIRKIANA

Wooded and open grassland, sometimes in seasonally wet places; spreading into disturbed areas; riverine forest and thicket; gully forest; plateau; miombo; rocky outcrops; 180-1280 m alt.

S. Africa.

**T. laminularis** Müll. Arg.

Stem long, slender, woody, erect below, twining above.

Ecology unknown.

Near *T. chevalieri*.

**T. lasiophylla** Pax & K. Hoffm.

Erect, sparingly or moderately branched, monoecious, perennial herb 30-80 cm tall, with a woody rootstock.

*Brachystegia* woodland, often along grassy edges subject to burning; sometimes in disturbed places; Kalahari sand woodland; grassland in open woodland; usually in sandy soil; 800-1525 m alt.

In habit this species also links other *Tragia* species with *Tragiella* via *Tragiella friesiana* from Zambia.

**T. lippifolia** Radcl.-Sm.

Erect monoecious little-branched subshrub to 25 cm tall.

Black cotton mbunga vertisols in valley grassland; 1524 m alt.

There is a rather striking similarity between the habit and foliage of this species and *Lippia carvioidora* (*Verbenaceae*) from East Africa.

Only known from the type collected in 1977.

Near *T. ceanothifolia*.

**T. lukafuensis** De Wild.

Erect sparingly-branched perennial herb to 45 cm tall, dioecious or monoecious; stems few from a small woody rootstock.

Mixed deciduous woodland on stony hill slopes; waste places.

Closely related to the following species.

**T. mazoensis** Radcl.-Sm.; icon.: Fl. Zambes. 9(4): 221, 1996.

Erect, leafy perennial herb to 40 cm tall, dioecious; stems several from a woody rootstock, branched; mature seeds unknown.

Open treeless grassy hillsides of serpentine dyke, often on termite mounds.

Closely related to *T. lukafuensis*.

**T. micromeres** Radcl.-Sm.

Scrambling, weak perennial herb, monoecious.

On fixed dunes with *Alchornea yambuyaensis*, *Phyllanthus polyanthus*, *Croton polytrichus* subsp. *brachystachyus*, *Hymenocardia ulmoides*, *Thecacoris trichogyne*, *Bridelia duvigneaudii*; 1067 m alt.

Near *T. brevipes*.

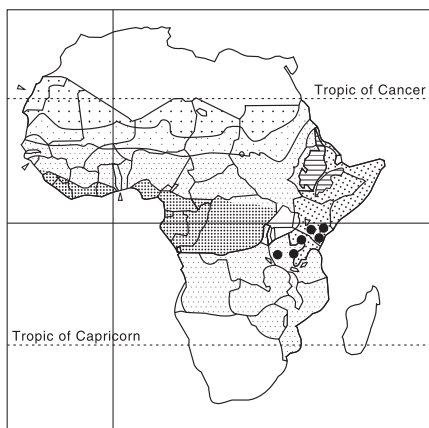
**T. mildbraediana** Pax & K. Hoffm.; icon.: Engler, Pflanzenr. IV, 147, IX-XI: 97, 1919.

Twining herb with ramose stems; seeds unknown.

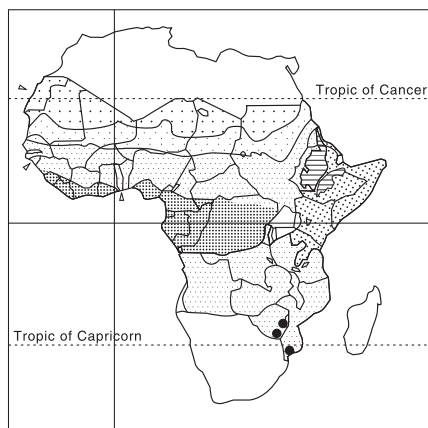
Forest?

Intermediate between *T. laminularis* and *T. tenuifolia*.

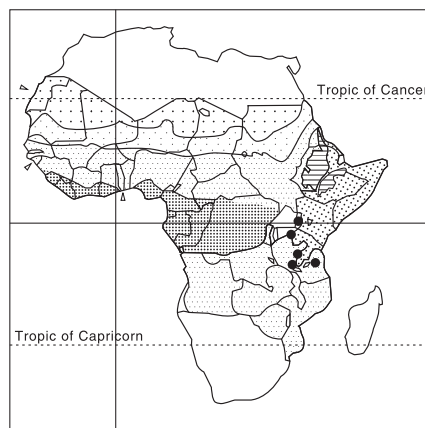
Only known from the type (Mildbraed 3899); destroyed?



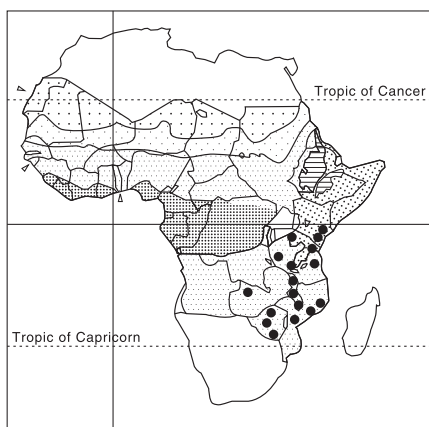
*Tragia impedita*



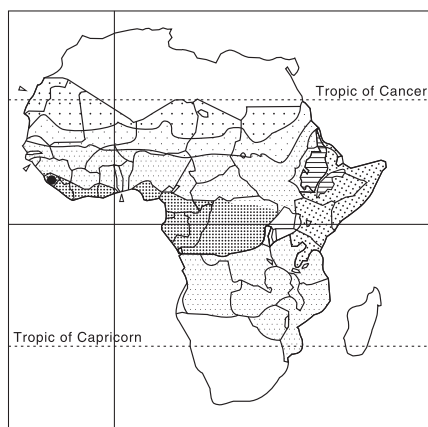
*Tragia incisifolia*



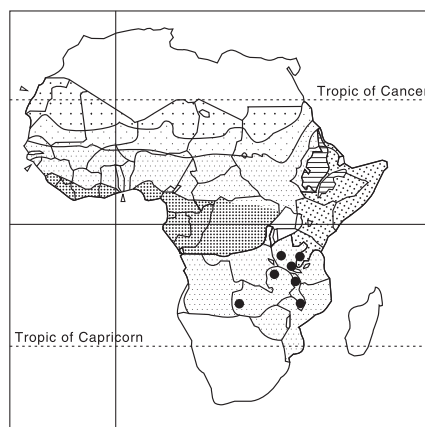
*Tragia insuavis*



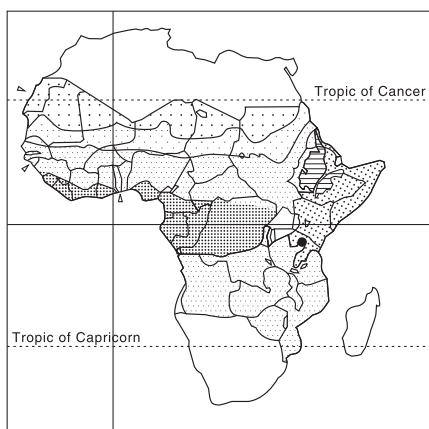
*Tragia kirkiana*



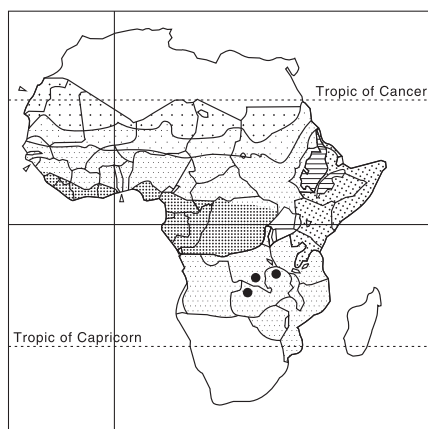
*Tragia laminularis*



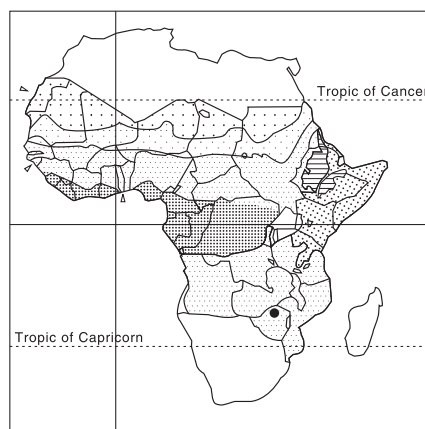
*Tragia lasiophylla*



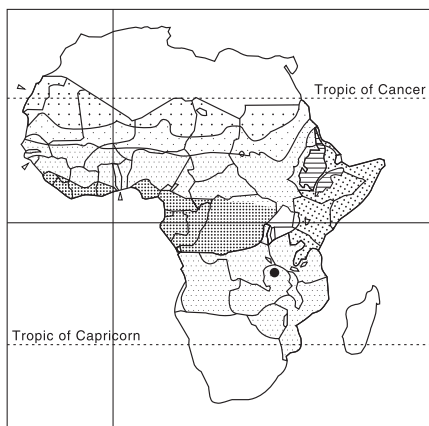
*Tragia lippifolia*



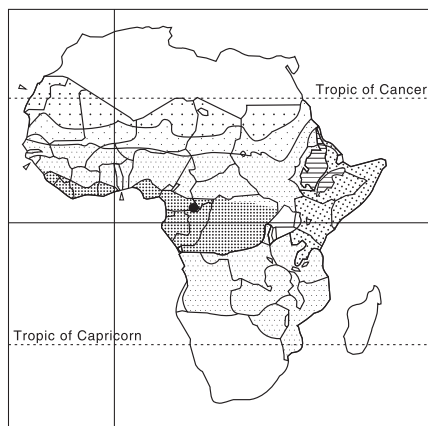
*Tragia lukafuensis*



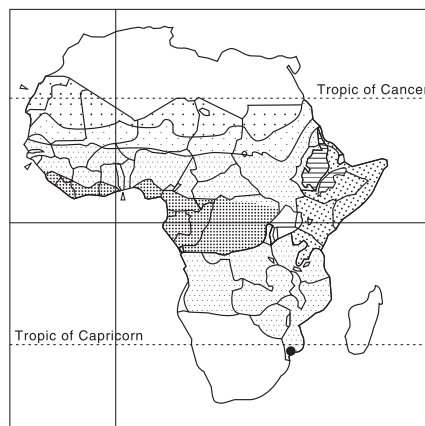
*Tragia mazoensis*



*Tragia micromeres*



*Tragia mildbraediana*



*Tragia minor*

## TRAGIA

**T. minor** Sond.

Erect perennial herb to 50 cm tall, monoecious; stems 1-2, arising from a woody rootstock, subsimple or basally sparingly branched.

On stony rhyolitic soils in grassland and grassy bushland.

S. Africa.

**T. mitis** Hochst. ex A. Rich. emend. Müll. Arg., incl. var. *genuina* Müll. Arg., nom. invalid., but excl. var. *kirkii* Müll. Arg. (= *T. benthamii*) and var. *oblongifolia* Müll. Arg. (= *Tragiella natalensis*); icon.: Fl. Ethiopia Eritr. 2(2): 311, 1995.

syn.: *T. cordata* A. Rich., non Willd. (= *T. pungens*).

Twining herb; intact mature seeds unknown.

Evergreen bushland; 1500-1900 m alt.

Not in the F.T.E.A. area (= *T. brevipes*).

**T. mixta** M. G. Gilbert

Twining subshrub 0,7-1 m tall; flowers incompletely known; fruit unknown but seeds known.

Dense *Acacia-Commiphora* bushland on limestone or basement complex rocks; less often deciduous woodland with *Lannea rivae* on basement or volcanic rocks; *Acacia-Euphorbia* thickets on alluvium and over limestone; abandoned cultivated place in valley bottom on limestone; 300-1600 m alt.

Confused with several species: *T. benthamii*, *T. brevipes*, *T. impedita*, *T. insuavis*.

**T. negeliensis** M. G. Gilbert

Densely branched twining subshrub to 1,5 m tall, sometimes ± free standing; monoecious.

Grassland on dark brown to black clay soils overlying limestone with *Acacia drepanolobium* or scattered thickets with *Juniperus*, *Olea*, *Cussonia*, *Pistacia* etc.; 1300-1600 m alt.

Near *T. brevipes*.

**T. okanyua** Pax

syn.: *T. madandensis* S. Moore

Stems long, slender, twining, to 3 m long, sparingly branched, less often suberect below and rather freely branching from a woody base, twining only above; monoecious.

Along rivers; termite mounds; secondary scrub in *Brachystegia* woodland; spreading into disturbed places; rocky outcrops; mopane woodland; deciduous woodland on Kalahari sand; plateau woodland and lakeshore thicket; sea-level to 1350 m alt.

Namibia, S. Africa, Botswana.

**T. petiolaris** Radcl.-Sm.

Annual or perennial, monoecious, unbranched or scarcely branched urticating herb, erect at first, later twining, to 80 cm tall when supported.

Shady deciduous thickets; the same formation on Kalahari sand (mutemwa); dry evergreen thicket (mateshi) in plateau woodland; 780-1500 m alt.

Closest relative: *T. montana* (Thwaites) Müll. Arg. from Sri Lanka.

## TRAGIA

**T. platycalyx** Radcl.-Sm.

Erect, monoecious, branched subshrub to 30 cm tall.

Sandy soil under trees; 1524 m alt.

Only known from the type collected in 1959.

Very distinctive species on account of the bipartite lobules of the female calyx-lobes.

Near *T. senegalensis*, *T. meyeriana* Müll. Arg. (S. Africa), *T. acalyphoides*.

**T. plukenetii** Radcl.-Sm.; icon.: Engler, Pflanzenr, IV, 147, IX-XI: 85, 1919.

syn.: *T. involucrata* L. var. *intermedia* Müll. Arg. and var. *cannabina* (L. f.) Müll. Arg.; *T. gallabatensis* Prain (extreme variant); *T. tripartita* Beille 1908, and Schweinf. 1868 nom. ex Prain 1913; *T. cannabina* L. f. nom. illegit. var. *intermedia* (Müll. Arg.) Prain and var. *hastata* (L.) Pax & K. Hoffm.

Erect or suberect annual or subperennial herb commonly to 0,9-1,5 m tall, rarely to 4,5 m; stems sometimes twining at their apices.

Riverine; flood-plains; valley grassland; often on black-cotton or other clay soils; sometimes in disturbed places; often a weed of irrigated fields; open situations, mostly on alluvial soils, less often on sand; bushland or woodland; 0-1330 m alt.

India, Sri Lanka.

Very similar to *T. hildebrandtii*.

**T. pogostemonoides** Radcl.-Sm.

Erect or ascending monoecious somewhat branched subshrub perhaps not exceeding 20 cm in height; mature seeds unknown.

Ecology unknown.

Confused with *T. furialis*, *T. kirkiana*.

The overall habit is reminiscent of that of certain *Pogostemon* (*Lamiaceae*).

Only known from the type collected perhaps in 1937 or before.

**T. polygonoides** Prain

Slender twiner with long stems.

Ecology unknown.

Only collected twice: in 1906 or 1907 and 1965, respectively.

**T. preussii** Pax

syn.: *T. winkleri* Pax

Herbaceous climber with slender, ramose stem, to 6 m long.

Scrub; evergreen rain-forest; 1-960 m alt.

**T. prionoides** Radcl.-Sm.; icon.: Fl. Zambes. 9(4): 231, 1996.

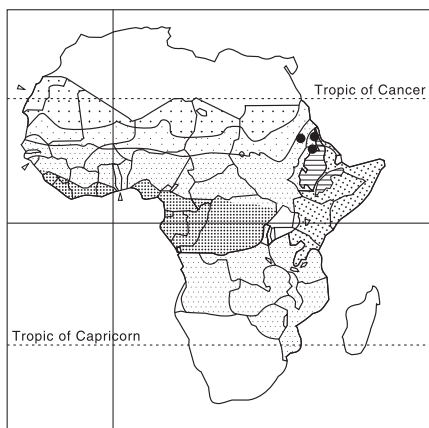
Climbing branched perennial herb or shrub, to 9 m tall when supported, monoecious.

North-facing hot sunny kloofs; wooded cliffs among granite boulders; fringing forest; 1000-1500 m alt.

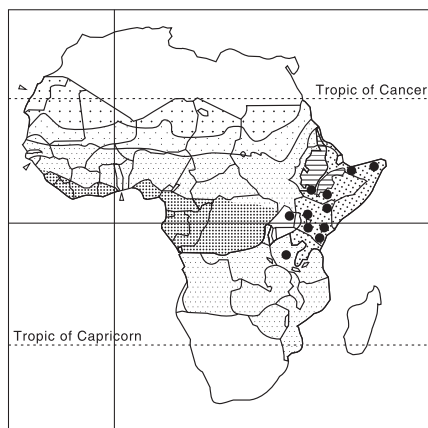
S. Africa.

Confused with members of the *T. okanyua* – *brevipes* – *benthamii* complex.

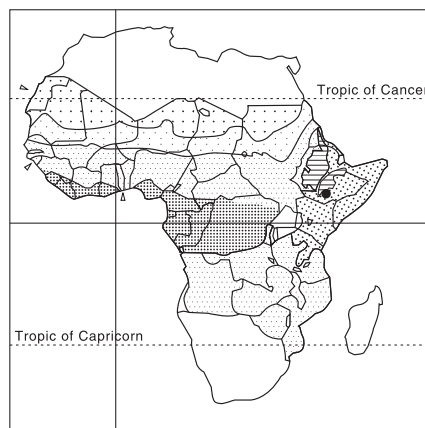




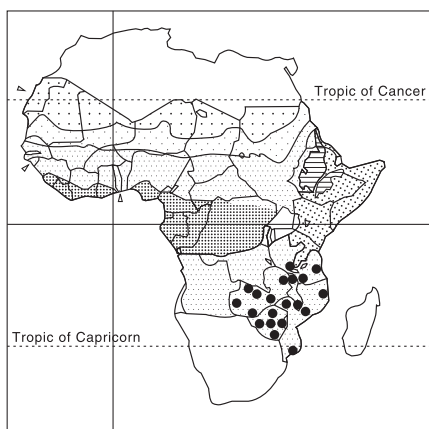
*Tragia mitis*



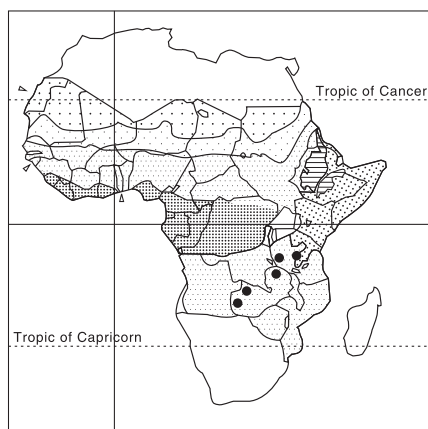
*Tragia mixta*



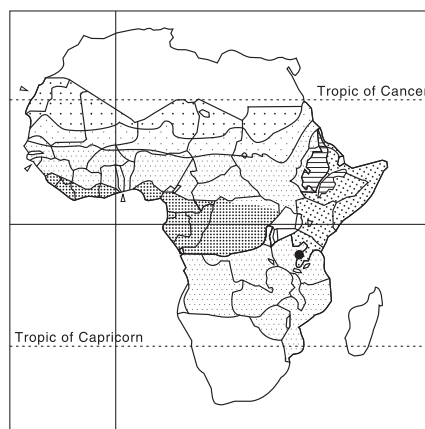
*Tragia negeliensis*



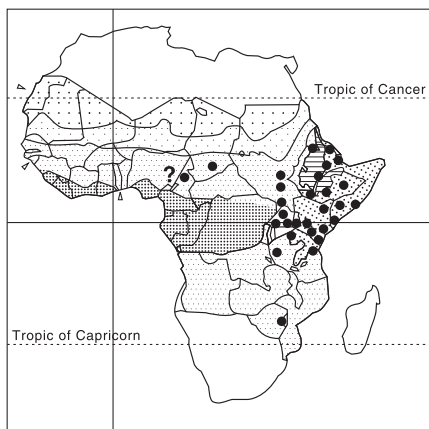
*Tragia okanyua*



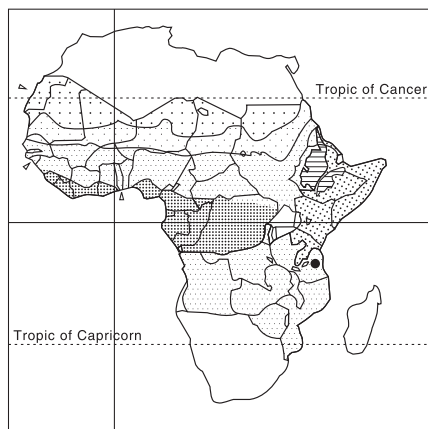
*Tragia petiolaris*



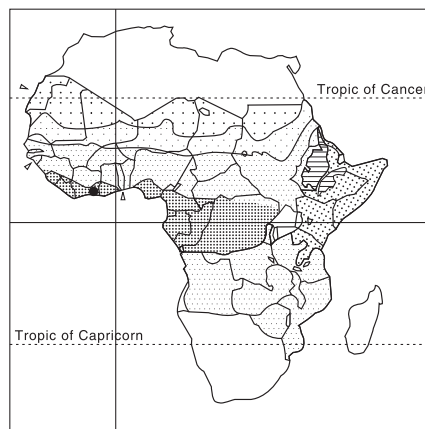
*Tragia platycalyx*



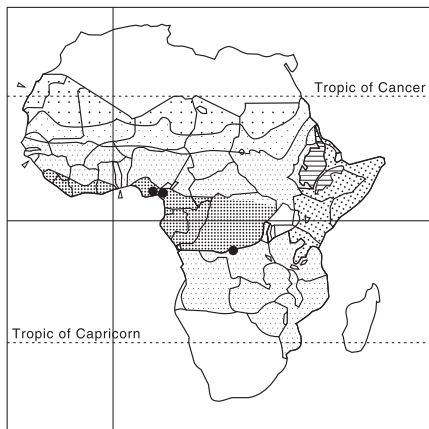
*Tragia plukenetii*



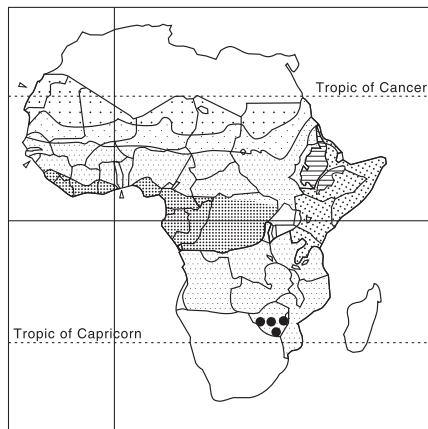
*Tragia pogostemonoides*



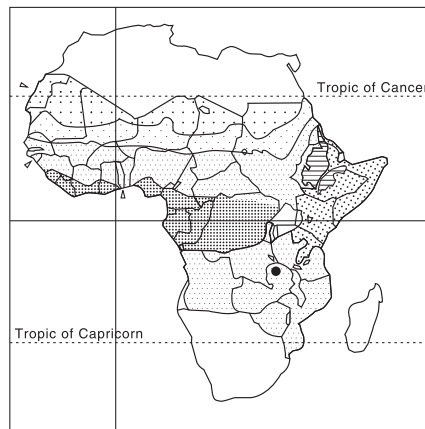
*Tragia polygonoides*



*Tragia preussii*



*Tragia prionoides*



*Tragia prostrata*

## TRAGIA

**T. prostrata** Radcl.-Sm.; icon.: Fl. Zambes. 9(4): 219, 1996.

Prostrate, sparingly-branched perennial herb, dioecious; stem to 50 cm long arising from a woody rootstock; female inflorescence, flowers, fruit, seeds unknown.

Miombo and chipya woodland; tall grassland with scattered trees; ± 1000 m alt.

Near *T. bongolana*.

**T. pungens** (Forssk.) Müll. Arg., excl. var. *cinerea* (Pax) Pax (= *T. cinerea*); icon.: Fl. Ethiopia Erit. 2(2): 309, 1995 (morphol. details).

bas.: *Jatropha pungens* Forssk.

syn.: *T. cordata* Willd., nom. illegit. superfl., non A. Rich.; *T. moamarensis* Baill.; *T. parvifolia* Pax; *T. arabica* Baill. var. *parvifolia* (Pax) Prain

Sprawling or twining subshrub to 2 m long, occasionally erect; monoecious, sometimes dioecious in Somalia.

Among rocks in open deciduous woodland or bushland; 910-2000 m alt.

Arabia.

**T. rhodesiae** Pax

Erect perennial herb to 75 cm tall, monoecious; stems few, branched, arising from a woody rootstock.

Chipya woodlands; plateau mixed deciduous woodlands; wooded grassland; 1160-1500 m alt.

**T. rhoicifolia** Chiov.; icon.: Thulin, Fl. Somalia 1: 288, 1993.

Densely branched lianescent shrub; older stems longitudinally striate; usually dioecious.

Gravel at bottom of tug; ± 280 m alt.

Confused with *Dalechampia pavoniifolia*.

**T. rupestris** Sond., incl. var. *glabrata* Sond.

Herb with a woody base and slender stems 60-90 cm long, erect and much virgately branched below, weakly twining upwards; sometimes dioecious.

Coastal dry open woodland and thickets on sand flats; near sea-level to 50 m alt.

S. Africa.

Similar to *T. glabrata*.

**T. schweinfurthii** Bak.

Dioecious herb; stems erect from a woody base, 8-20 cm tall, much-branched; deciduous.

Ecology unknown (river?).

Near *T. wildemanii*.

**T. senegalensis** Müll. Arg.; icon.: Berhaut, Fl. Sénégal 3: 600, 1975.

Woody plant with generally a perennial rootstock and commonly herbaceous, annual, twining stems.

Savanna; 300 m alt.

Not in Nigeria and Cameroon (= *T. vogelii*).

## TRAGIA

**T. shirensis** Prain

Erect, branched perennial herb to 60 cm tall, dioecious or sometimes monoecious; stems several from a woody rootstock.

Open *Brachystegia* woodland; wooded grassland; sandy soil; dry bushland; 40-200 m alt.

Comprises 2 vars.

Near *T. rogersii* Prain from S. Africa (SE Transvaal).

**T. spathulata** Benth.; icon.: Engler, Pflanzenr. IV, 147, IX-XI: 97, 1919.

Stems long, slender, twining.

Shady virgin-forest.

**T. stipularis** Radcl.-Sm.

Perennial, monoecious, moderately branched procumbent or ascending, weak herb or suberect at first, later twining, 75-90 cm tall, monoecious.

Valley grassland with impeded drainage; *Colophospermum mopane* woodland; black clay basalt derived soil; often on termitaria; 975-1310 m alt.

**T. subsessilis** Pax

Perennial, monoecious, moderately branched erect herb to 50 cm tall, somewhat woody at the base, rarely twining at the apex.

Grassland on black cotton and other clay soils; becoming a weed; 500-1330 m alt.

**T. tenuifolia** Benth.

syn.: *T. manniana* Müll. Arg.; *T. klingii* Pax; *T. zenkeri* Pax; *T. calvescens* Pax

Creeping or scandent perennial, weak herb to 3 m tall when supported, otherwise shorter; monoecious.

Forest edges; clearings and undergrowth; trail; evergreen rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa*; 950-1220 m alt.

São Tomé.

**T. triumfettoides** M. G. Gilbert

Erect or climbing herb to 60 cm tall; mature fruit unknown; dioecious.

Rough grassland subject to burning; 1900-1950 m alt.

**T. ukambensis** Pax

Woody low herb; stems erect, sparingly branched; branches slender, straight, twining only at the apex.

Wooded grassland (sometimes overgrazed) and bushland; disturbed places; 400-1770 m alt.

Comprises 2 vars.

Close to *T. impedita*.

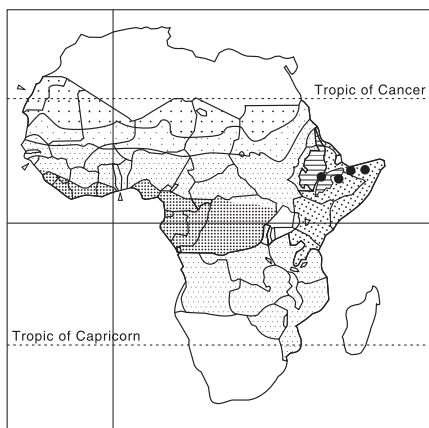
**T. uncinata** M. G. Gilbert

Slender climber of unknown stature; monoecious.

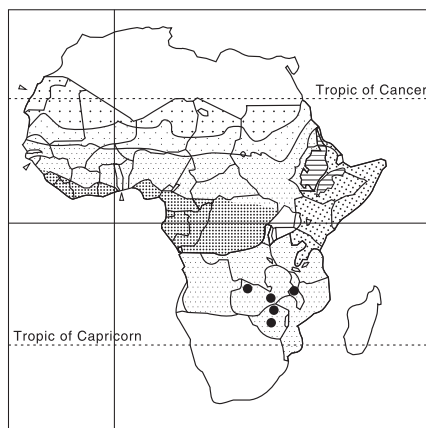
Ecology unknown.

Only known from the type (annotated *T. benedetti* Chiov.) collected in 1939.

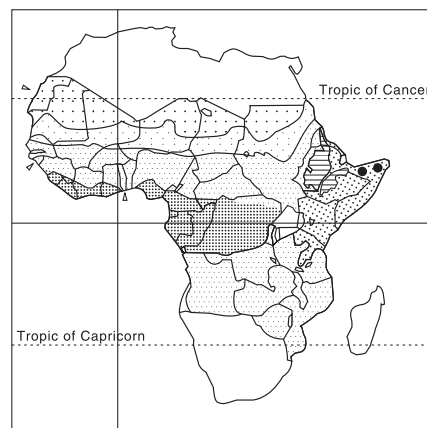
Near *T. brevipes*.



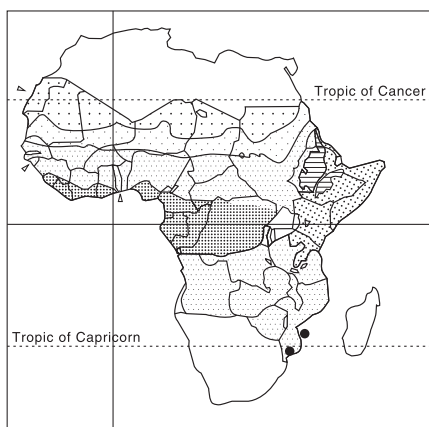
*Tragia pungens*



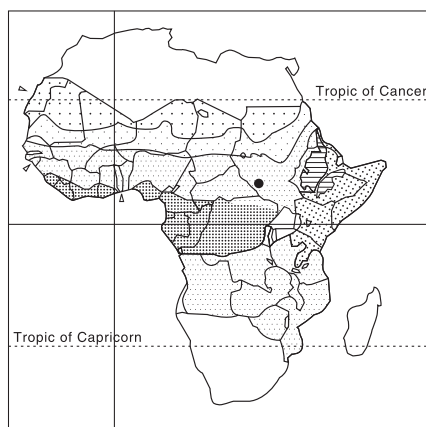
*Tragia rhodesiae*



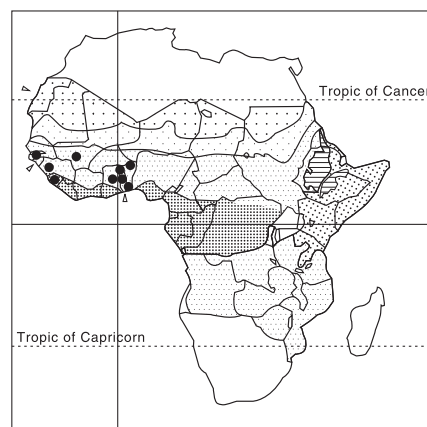
*Tragia rhoicifolia*



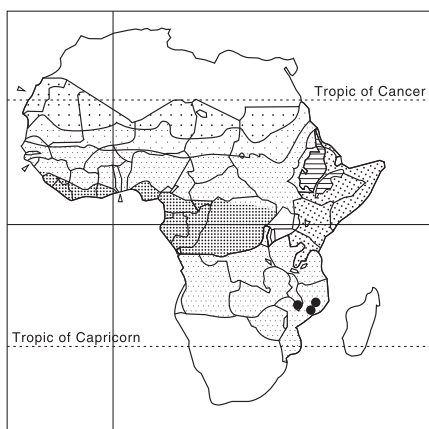
*Tragia rupestris*



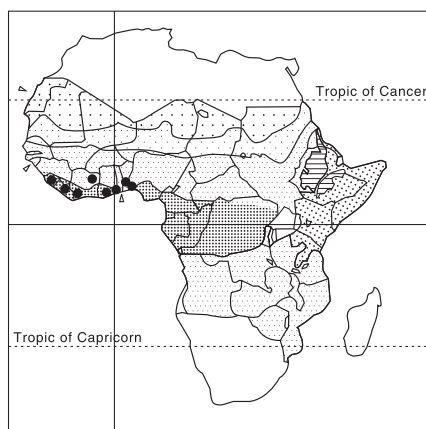
*Tragia schweinfurthii*



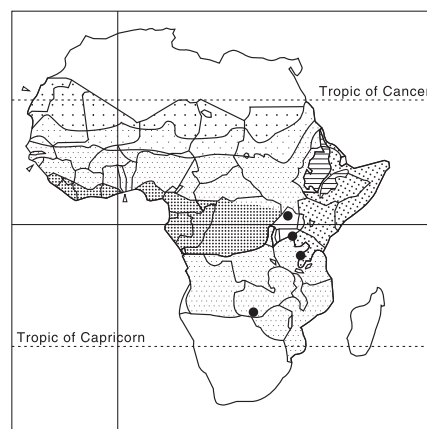
*Tragia senegalensis*



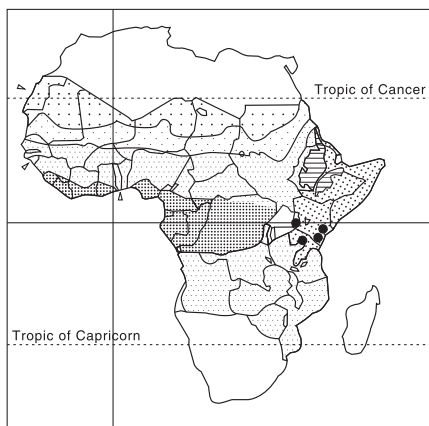
*Tragia shirensis*



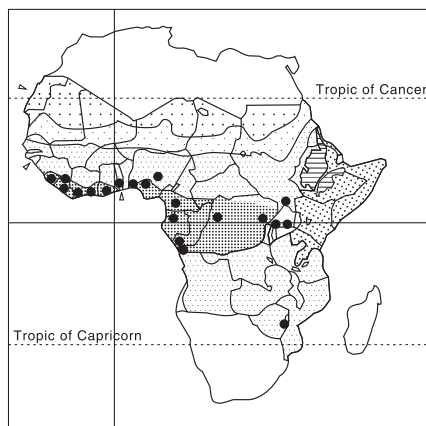
*Tragia spathulata*



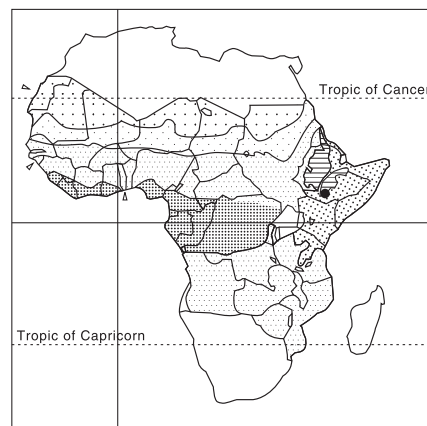
*Tragia stipularis*



*Tragia subsessilis*



*Tragia tenuifolia*



*Tragia triumfettoides*

## TRAGIA

**T. vogelii** Keay

syn.: *T. angustifolia* Benth. 1849, non Nutt. 1837.

Perennial monoecious herb, erect at first, later scrambling or twining, with several stems 30-60- ± 2 m, arising from a woody stock.

Hillside grassland and scrub; uncommon; savanna, especially on rocky hillsides; 300-1585 m alt.

**T. wahlbergiana** Prain

syn.: *T. rupestris* Sond. var. *glabrata* Sond.

Herb with woody base; stems slender, prostrate or twining, 60-90 cm long, much branched; branches slender.

Ecology unknown for Flora Zambesiaca area.

S. Africa.

Very close to *T. rupestris*, *T. glabrata*.

**T. wildemanii** Beille

syn.: *T. akwapimensis* Prain

Stems erect or suberect from a woody base, 30-60 cm tall, sparingly or much branched.

Savanna without tall grasses on ferruginous ground.

\* \* \*

**Tragia volubilis** L.

A scandent urticating perennial herb to 2 m tall, is widespread in tropical America from whence it has probably been introduced to Africa.

\* \* \*

## TAXON IN NEED OF FURTHER STUDY:

*Tragia* aff. *furialis* Bojer; Bull. Soc. Roy. Bot. Belgique 84: 52, 1951 (Zaire).

## SYNONYMS (See also Enum. 1: 239, 1991):

*Tragia akwapimensis* Prain = **Tragia wildemanii**

*ambigua* S. Moore, incl. var. *urticans* S. Moore = **Tragiella natalensis**

*angustifolia* Benth. = **Tragia vogelii**

var. *furialis* (Bojer) Müll. Arg. = **T. furialis**

var. *hastata* Müll. Arg. = **T. kirkiana**

*arabica* Baill. var. *parvifolia* (Pax) Prain = **T. pungens**

*calvescens* Pax = **T. tenuifolia**

*cannabina* L. f. var. *brouniana* (Prain) Prain = **T. brouniana**

var. *hastata* (L.) Pax & K. Hoffm. = **T. plukenetii**

var. *hildebrandtii* (Müll. Arg.) Pax & K. Hoffm. =

**T. hildebrandtii**

var. *intermedia* (Müll. Arg.) Prain = **T. plukenetii**

*capensis* E. Mey. ex Sond. = **T. glabrata**

*cordata* A. Rich. = **T. mitis**

*cordata* Willd. = **T. pungens**

*cordifolia* Benth. = **T. benthamii**

*durbanensis* Kuntze = **T. glabrata**

*gallabatensis* Prain = **T. plukenetii**

*hildebrandtii* Müll. Arg. var. *brouniana* (Prain) Cufod. = **T. brouniana**

## TRAGIA

*involutrata* L. var. *cannabina* (L. f.) Müll. Arg. = **T. plukenetii**

var. *intermedia* Müll. Arg. = **T. plukenetii**

*kassiliensis* Beille = **T. benthamii**

*keniensis* Rendle = ? **T. benthamii**

*klingsii* Pax = **T. tenuifolia**

*madandensis* S. Moore = **T. okanyua**

*manniana* Müll. Arg. = **T. tenuifolia**

*meyeriana* Müll. Arg. var. *glabrata* Müll. Arg. = **T. glabrata**

*mitis* Hochst. ex A. Rich. emend. Müll. Arg. var. *kirkii* Müll.

Arg. = **T. benthamii**

var. *oblongifolia* Müll. Arg. = **Tragiella natalensis**

*moamarensis* Baill. = **Tragia pungens**

*mombassana* Vatke ex Prain = **T. hildebrandtii**

*natalensis* Sond. = **Tragiella**

*parvifolia* Pax = **Tragia pungens**

*pungens* (Forssk.) Müll. Arg. var. *cinerea* (Pax) Pax

= **T. cinerea**

*recta* Dinter ex Pax & K. Hoffm. = **T. dioica**

*rupestris* Sond. var. *glabrata* Sond. = **T. wahlbergiana**

var. *lobata* Müll. Arg. = **T. dioica**

*schinzii* Pax = **T. dioica**

*tripartita* Beille 1908, and Schweinf. 1868 ex Prain 1913

= **T. plukenetii**

*velutina* Pax = **T. brevipes**

*volkensii* Pax = **T. brevipes**

*winkleri* Pax = **T. prussii**

*zenkeri* Pax = **T. tenuifolia**

## TRAGIELLA / 4

Ripe seeds unknown in 1 species.

**Tragiella anomala** (Prain) Pax & K. Hoffm.

Herb with long, slender, twining stems extending to 6 m in length, monoecious.

Climber in montane forest and mist-forest; locally common; 900-2200 m alt.

**T. friesiana** (Prain) Pax & K. Hoffm.

syn.: *Sphaerostylis friesiana* (Prain) Croizat

Erect, weak, branched perennial herb to 50 cm tall, monoecious; stems one or more arising from a woody rootstock.

Miombo woodland ground cover, appearing after early season fires; 1500-1525 m alt.

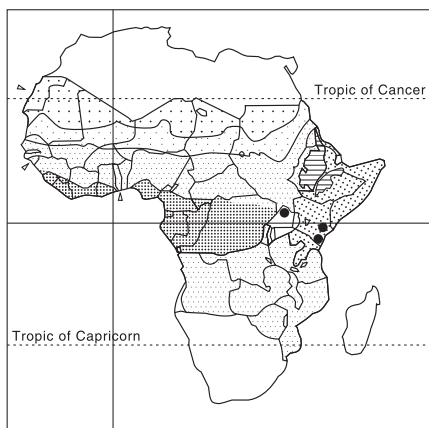
Resembling in many vegetative respects *Tragia lasiophylla*.

**T. natalensis** (Sond.) Pax & K. Hoffm.; Kew Bull. 50: 816, 1995.

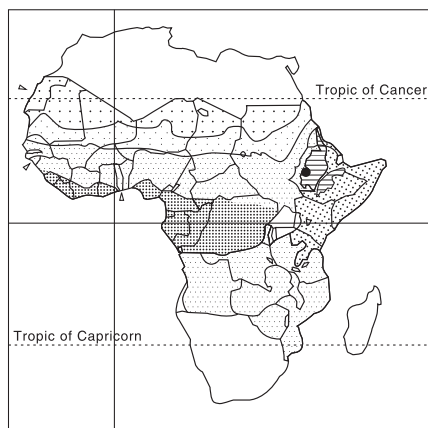
bas.: *Tragia natalensis* Sond.

syn.: *Tragia mitis* Hochst. ex A. Rich. emend. Müll. Arg. var. *oblongifolia* Müll. Arg.; *T. ambigua* S. Moore, incl. var. *urticans* S. Moore; *Sphaerostylis natalensis* (Sond.) Croizat

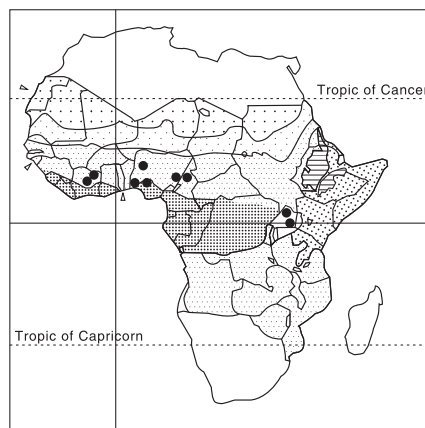




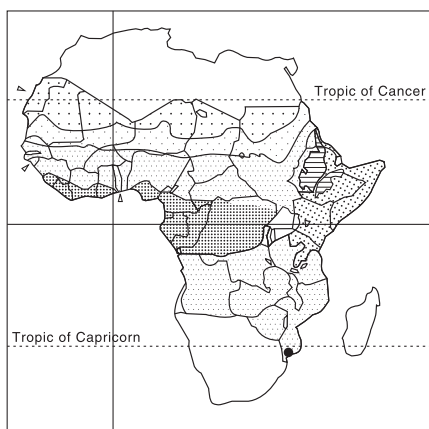
*Tragia ukambensis*



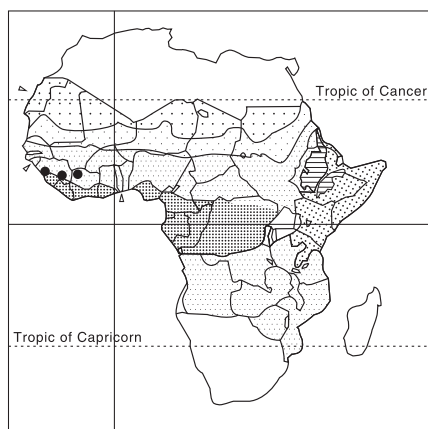
*Tragia uncinata*



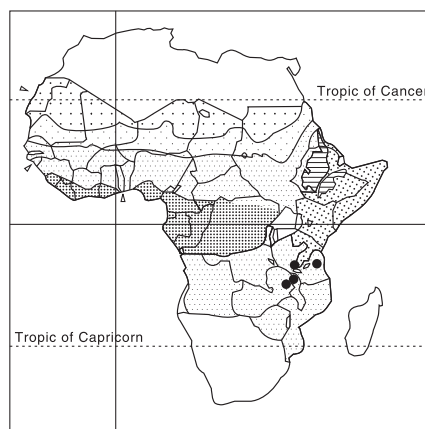
*Tragia vogelii*



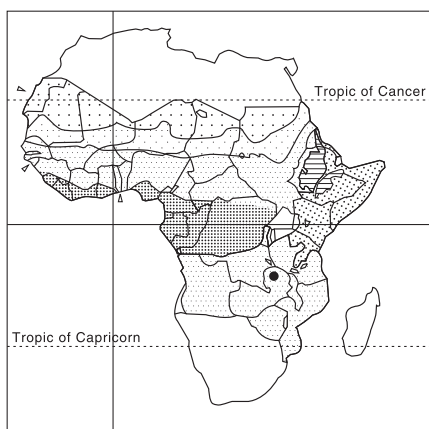
*Tragia wahlbergiana*



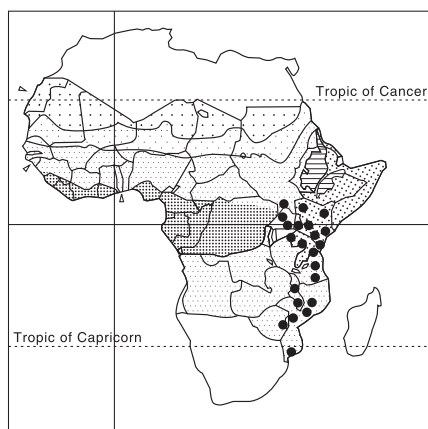
*Tragia wildemanii*



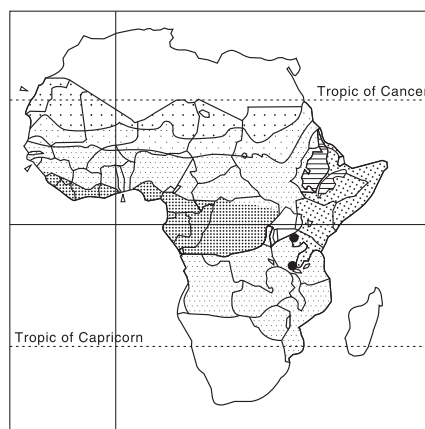
*Tragiella anomala*



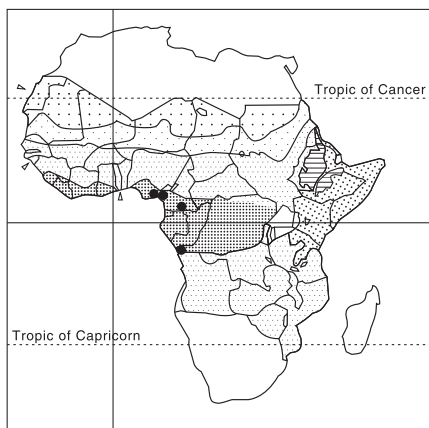
*Tragiella friesiana*



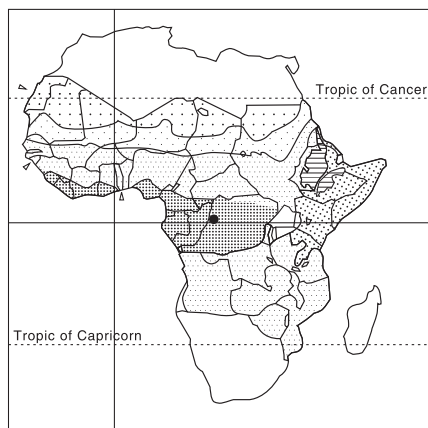
*Tragiella natalensis*



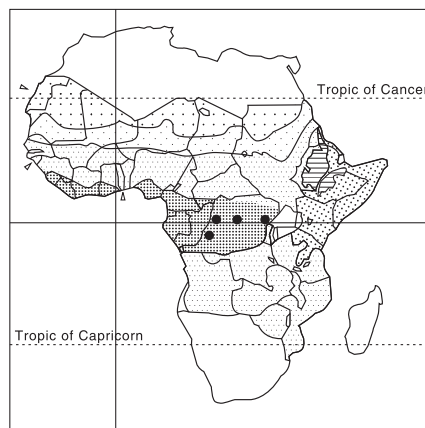
*Tragiella pyxostigma*



*Uapaca acuminata*



*Uapaca angustipyrena*



*Uapaca bossenge*

## TRAGIELLA NATALENSIS

Twining or scrambling, perennial herb, monoecious; stems to 3 m long when supported, commonly shorter.

Evergreen rain-forest and margins; riverine forest; evergreen bushland; lakesides often in disturbed places; 80-2300 m alt.

S. Africa.

**T. pyxostigma** Radcl.-Sm.

Scandent monoecious shrub; ripe seeds unknown.

In crevices on hilltops among large granite boulders; 1220-1500 m alt.

## UAPACA / 39?

Genus in need of a full revision, and also in particular for Zaire. Many type specimens are incomplete.

Male flower unknown in 15 species (+ 1 incompletely known; = c. 40%), and female flower in 16 species (+ 2 incompletely known; = c. 40%); fruit not seen in 8 species (= c. 20%); seeds not known in 1 species. No ecology recorded for 10 species ( $\geq 25\%$ ). Twelve species ( $\geq 33\%$ ) are known only from the type.

LAWTON, R. M. (1998). The ecology of the wetter Miombo woodlands of north-eastern Zambia and a review of the Ndola demonstration plots, Zambia. In: HUXLEY, C. R. & al., Eds., *Chorology, Taxonomy and Ecology of the Floras of Africa and Madagascar*: 191-205. Royal Botanic Gardens, Kew [*Uapaca kirkiana*, *U. sansibarica*].

**Uapaca acuminata** (Hutch.) Pax & K. Hoffm.

bas.: *U. heudelotii* Baill. var. *acuminata* Hutch. excl. specim. Preuss 8 (= *U. heudelotii*).

Tree 15-24 m, with slender branches.

Rain-forest; 1-200 m alt.

**U. angustipyrena** De Wild.

Tree with stiltroots; terminal branchlets to 7-8 mm  $\emptyset$ ; fructiferous branches only known (male and female flowers unknown).

Ecology unknown.

Only known from the type collected in 1927.

**U. bossenge** De Wild.; icon.: Ann. Mus. Congo Belge, Bot. 5(2): pl. 70, 1908 (Études Fl. Bas-Moyen-Congo); Govaerts & al., World checklist Euphorbiaceae 4: 1577, 2000.

Very ramose tree 15-35 m, with buttresses; trunk to 80 cm  $\emptyset$ ; stiltroots; dioecious.

Flooded forest; riverine vegetation; locally abundant or very common.

**U. brevipedunculata** De Wild.

Tree with ultimate branchlets to  $\pm 5$  mm  $\emptyset$ ; female and male flowers unknown.

Ecology unknown (valley).

Only known from the type collected in 1902.

## UAPACA

**U. brieyi** De Wild.

Tree to 35 m, with straight bole 20 cm  $\emptyset$ , fluted at the base; aerial roots to 2 m from the ground,  $\pm$  regularly bifurcate and penetrating into the ground at 1-2 m from the trunk; secondary branches very ramose; male flowers, fruits and seeds unknown.

Ecology unknown.

Only known from the type collected in 1911.

Perhaps identical with *U. vanhouttei*.

**U. casteelsii** De Wild.

Tree with stiltroots; ultimate branches to 4,5 mm  $\emptyset$ ; male and female flowers unknown.

Ecology unknown.

**U. chevalieri** Beille

Tree 15-20 m tall and less, with some stiltroots.

Forests on mountain slopes; gully forest; gallery; usually in wet places near streams but also on dry soils; 700-1400 m alt.

**U. corbisieri** De Wild.

Tree with stiltroots; male and female flowers unknown.

More or less swampy forests; rather common.

Only known from the type collected in 1926 in the botanic garden Eala (Zaire).

Perhaps conspecific with *U. esculenta*.

**U. ealensis** De Wild.; icon.: Ann. Mus. Congo Belge, Bot. 5(2): pl. 70, 1908 (Études Fl. Bas-Moyen-Congo); Govaerts & al., World checklist Euphorbiaceae 4: 1577, 2000; De Wildeman, Contrib. Et. espèces genre Uapaca: 112, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

Tree; female flowers and fruits unknown; cauliflorous.

Swampy ground and forest; plateau, swamp.

**U. esculenta** A. Chev. ex Aubrév. & Léandri; icon.: Mém. Mus. Natl. Hist. Nat., Paris, Sér. B, Bot. 20: 517, 1971.

Tree to 25 m, with stiltroots; bole 1,8 m in girth, 60 cm  $\emptyset$ .

Rain-forest; on very humid or dry ground; sometimes with *U. guineensis*; ferruginous hard pan; 525 m alt.

**U. ferrarii** De Wild.

Tree with stiltroots; ultimate branches  $\pm$  very ramose, to 4 mm thick; male and female flowers unknown.

Ecology unknown.

Only known from the type collected in 1910.

**U. goossensii** De Wild.

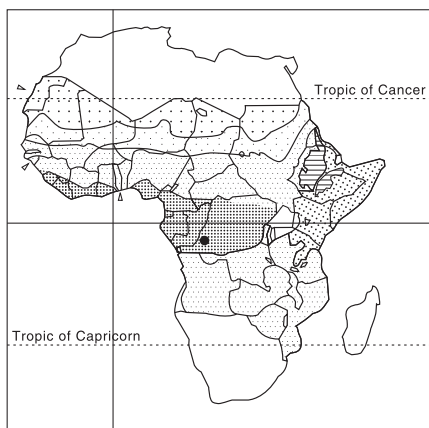
Tree with stiltroots; male and female flowers unknown.

Dry forest.

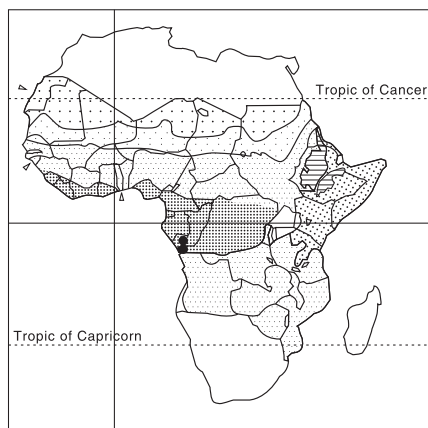
**U. gossweileri** Hutch.

syn.: *U. benguelensis* Müll. Arg. (specimen with sessile leaves).

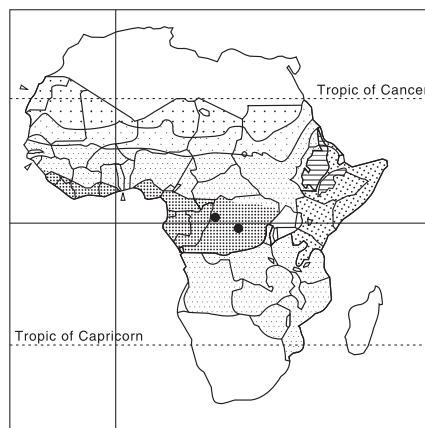
Tree 4-9 m tall or more with erect trunk 25-45 cm  $\emptyset$  at the base; habit of *Hallea stipulosa* (Rubiaceae) or of *Anthocleista vogelii* (Loganiaceae); branches spreading, whitish, as well as the branchlets marked with scars and longitudinal cracks.



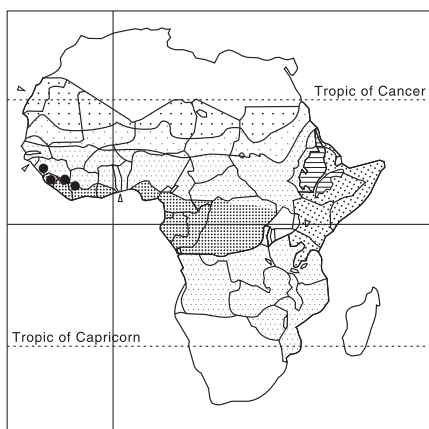
*Uapaca brevipedunculata*



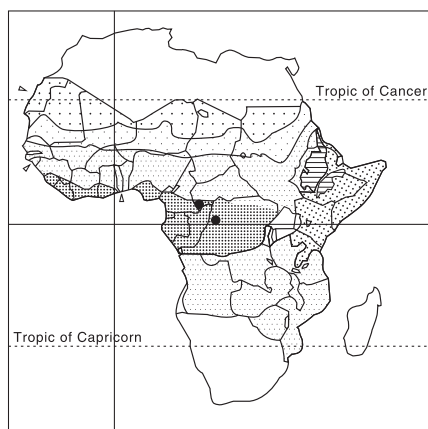
*Uapaca brevii*



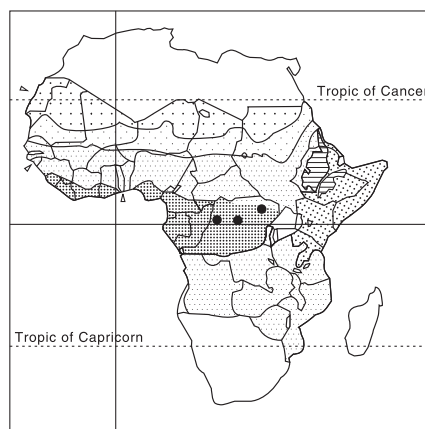
*Uapaca casteelsii*



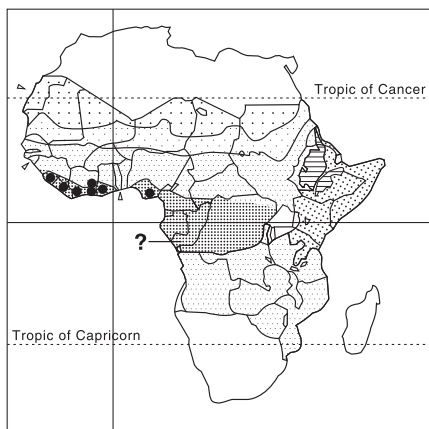
*Uapaca chevalieri*



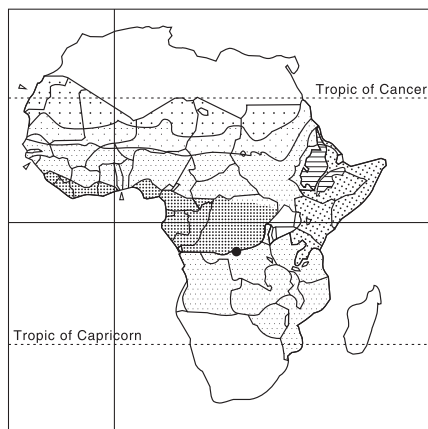
*Uapaca corbisieri*



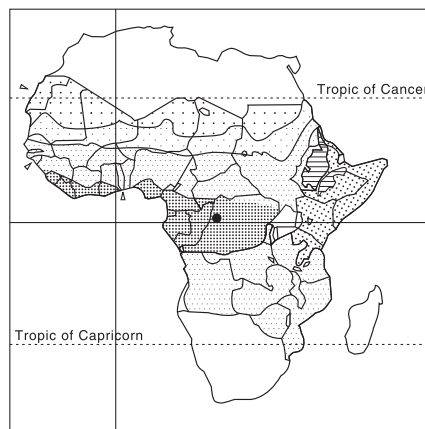
*Uapaca ealensis*



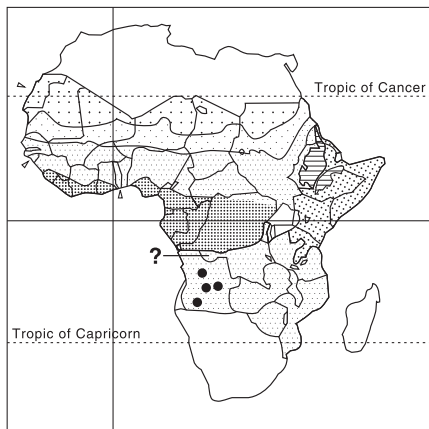
*Uapaca esculenta*



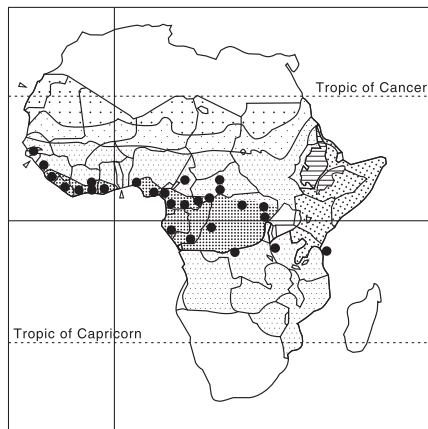
*Uapaca ferrarii*



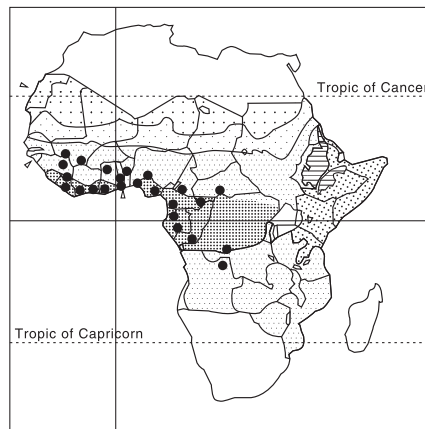
*Uapaca goossensii*



*Uapaca gosseileri*



*Uapaca guineensis*



*Uapaca heudelotii*

## UAPACA GOSSWEILERI

Rather dry forests, sporadic and rather rare with *Combretaceae*, *Leucadendron*; also with *Acacia*, *Combretaceae*, *Myrtaceae*, *Proteaceae*; 1500-1680 m alt.

**U. guineensis** Müll. Arg., incl. var. *sudanica* (Beille) Hutch. and var. *bingervillensis* (Beille) A. Chev.; icon.: Ann. Mus. Congo Belge, Bot. 5(2): pl. 69, 72, 1908 (Etudes Fl. Bas-Moyen-Congo); De Wildeman, Contrib. Etudes. espèces genre Uapaca: 120, 137, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

syn.: *U. mole* Pax; *U. laurentii* De Wild.; *U. bingervillensis* Beille; *U. perrotii* Beille; *Antidesma guineensis* G. Don ex Hook.; *Uapaca gabonensis* Pierre in sched.; *U. guignardii* A. Chev. ex Beille var. *sudanica* Beille; *U. seretii* De Wild.

Much-branched tree 7-30 m; trunk 1,8 m in girth, 80 cm Ø, straight with conspicuous, arching stiltroots (except in savanna regions); trunk ± fluted, warty, with longitudinal cracks; branches spreading, erect at the apex.

Wet places in rain-forest (common along river banks); sometimes in pure stands; bushland on steep slopes; mixed evergreen forest (common); 1-1060 m alt.

Bioko/Fernando Poo.

Not in the Flora Zambesiaca area (= *U. lissopyrena*).

**U. heudelotii** Baill.

syn.: *U. marquesii* Pax

Shrubby tree 7-25 m tall; trunk 20-90 cm Ø, 2,75 m in girth, with many stiltroots to 3 m long, branched from the base; clean bole 4-10 m; sometimes with numerous red aerial roots.

Always near water in forest areas and fringing forest in savanna regions; *Uapacetum heudelotii*; also in swamps or on dry ground in forest; sometimes abundant; 700 m alt. (Angola).

**U. katentaniensis** De Wild.

Tree with ultimate branches to 12 mm Ø with close leaf scars; male flowers and fruit unknown.

? Wooded savanna.

Only known from the type collected in 1912.

**U. kibuati** De Wild.

Tree with ultimate branches to ± 6-7 mm Ø; female flowers and fruit unknown.

Only known from the type collected in 1909.

**U. kirkiana** Müll. Arg., incl. var. *goetzei* (Pax) Pax and var. *dubia* (De Wild.) P. A. Duvign.; Agroforest. Aujourd'hui 7(3-4): 15-16, 1995; J. Trop. Ecology 14: 743-760, 1998.

syn.: *U. benguelensis* Müll. Arg., excl. specimen with sessile leaves (= *U. gossweileri*); *U. goetzei* Pax; *U. greenwayi* Suess.; *U. angolensis* Hutch. ex Pax & K. Hoffm.; *U. benguelensis* fa. *glabra* P. A. Duvign., fa. *pedunculata* P. A. Duvign. and fa. *pilosa* P. A. Duvign.; *U. teuszii* Pax

Much-branched evergreen tree to 12 m tall with short clear bole (usually to ± 1-2 m) to ± 30 cm d.b.h.; young twigs 0,4-1 cm Ø, fairly stout; dioecious.

Plateau woodlands on well drained soils; often in *Brachystegia* woodlands; sometimes locally dominant on gravelly soils, or co-dominant in *Brachystegia-Uapaca* woodland, or with *Marquesia*, *Isobertinia* or *Brachystegia taxifolia*-*B. spiciformis* woodlands;

## UAPACA KIRKIANA

often on rocky escarpment and hillsides, and among granite boulders; clayey lateritic grey-yellowish soil; sandy soil; dambo margins; 30-1830 m alt.

Comprises 4 vars.

NGULUBE, M. R. & al. (1997). Fruit, seed and seedling variation in *Uapaca kirkiana* from natural populations in Malawi. *Forest Ecol. Management* 98: 209-219 (*Seed Abstr.* 21: n° 2456, 1998).

**U. lebrunii** De Wild.; icon.: De Wildeman, Contrib. Et. espèces genre Uapaca: 138, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

Tree with stiltroots at the base of the trunk; ultimate twigs 6 mm Ø at the apex; crown spreading and ± drooping; female flowers and fruits unknown.

Secondary forest; very common.

Only known from the type collected in 1930.

**U. letestuana** A. Chev.

Tree 12 m with arched aerial roots.

Ecology unknown (probably riverine).

**U. lissopyrena** Radcl.-Sm.

Evergreen tree to 30 m with an open spreading crown; stem to ± 1 m Ø, unbranched to 8 m, with stiltroots to 2,5 m.

Dense evergreen swamp forest (mushitu); wet plateau riverine forest and fringing woodland; swampy ground in evergreen forest; less often in drier *Brachystegia-Uapaca* woodland; 400-1650 m alt.

**U. macrostipulata** De Wild.

Tree with stiltroots; flowers and fruits unknown.

Dry forest.

Only known from the type collected in 1925.

**U. multinervata** De Wild.

Tree with stiltroots; young twigs 5-7 mm Ø; male flowers unknown, female flowers incompletely known.

Dry ground near swamps; humid ground; swamps.

**U. nitida** Müll. Arg., excl. var. *rufopilosa* De Wild. (= *U. rufopilosa*); icon.: De Wildeman, Contrib. Etudes espèces genre Uapaca: 157, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

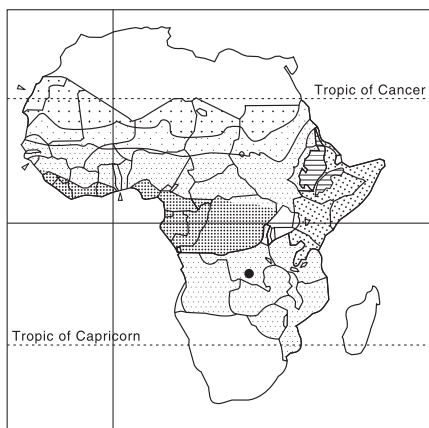
syn.: *U. microphylla* Pax and var. *hendrickxii* De Wild.

Evergreen shrub or tree to 12-20 m tall, branching from ± 0,5 m above the base, with a slender trunk and rounded crown; branchlets fairly slender; bole usually less than 1 m Ø, ± irregular.

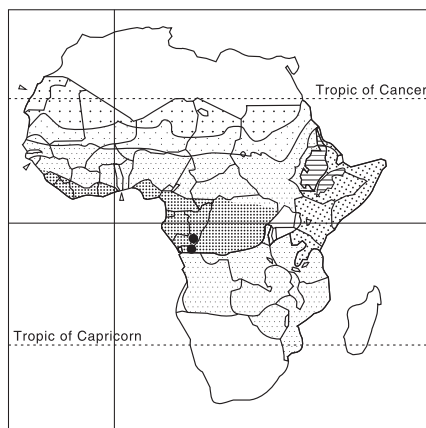
*Brachystegia* woodland and associated wooded grassland; very common; escarpment miombo; often with *Brachystegia boehmii*, *Uapaca kirkiana* on rocky hillsides; *Parinari-Terminalia sericea* and *Monotes-Syzygium* savanna; sometimes on dambo margins and in mushitu; 40-1830 m alt.

Comprises 6 vars, of which, – var. **longifolia** (P. A. Duvign.) Radcl.-Sm. [syn.: *U. nitida* var. *sokolobe* P. A. Duvign. fa. *longifolia* P. A. Duvign.].

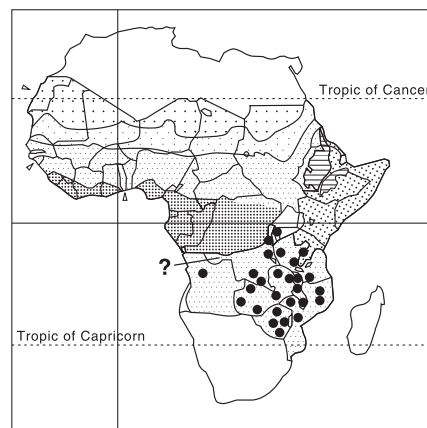




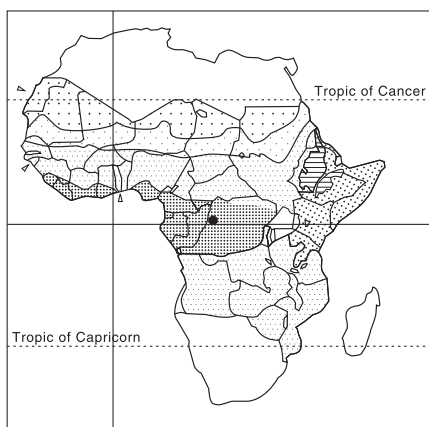
*Uapaca katentaniensis*



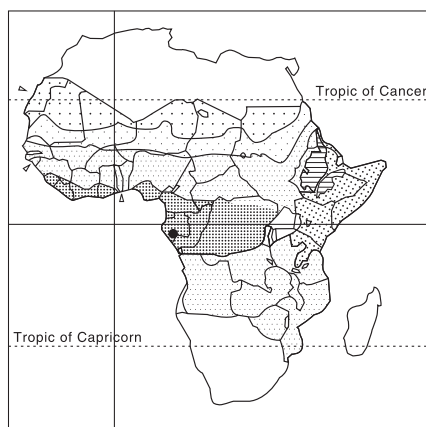
*Uapaca kibuati*



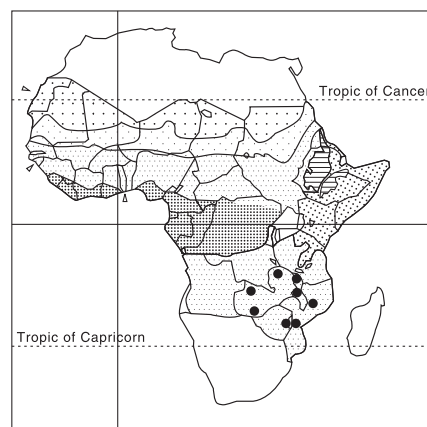
*Uapaca kirkiana*



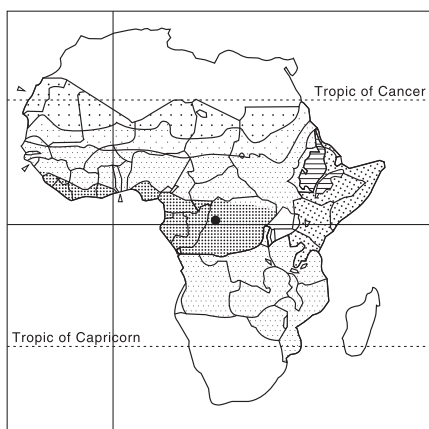
*Uapaca lebrunii*



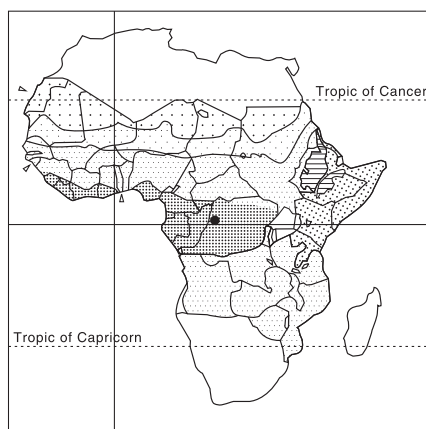
*Uapaca letestuana*



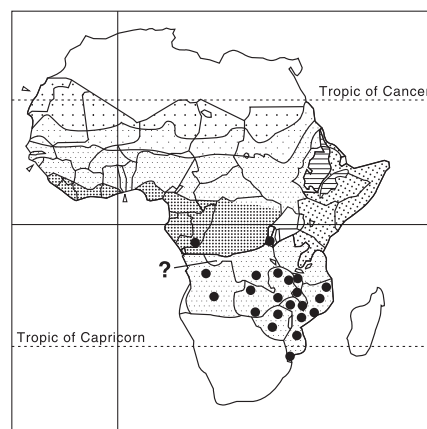
*Uapaca lissopyrena*



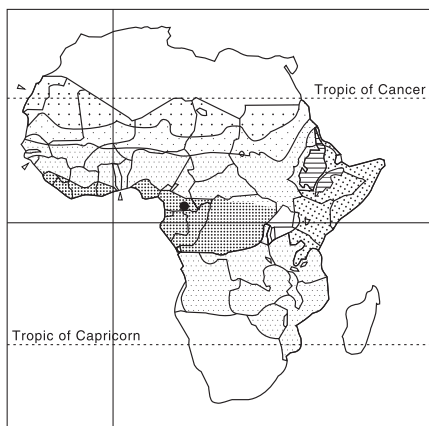
*Uapaca macrostipulata*



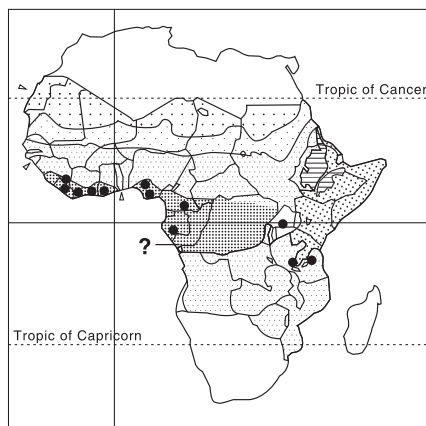
*Uapaca multinervata*



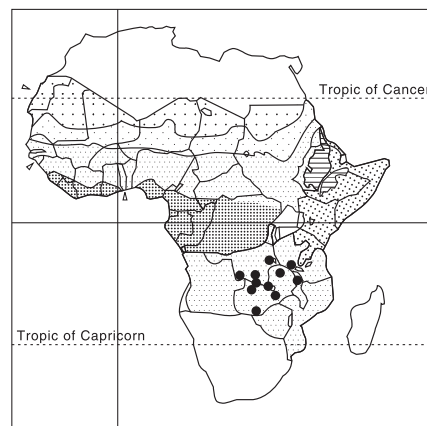
*Uapaca nitida*



*Uapaca nymphaeantha*



*Uapaca paludosa*



*Uapaca pilosa*

## UAPACA

**U. nymphaeantha** Pax & K. Hoffm.

Tree 10-15 m; female flowers and fruit unknown.

Rain-forest on clayey-sandy soil.

**U. paludosa** Aubrév. & Léandri

Much-branched deciduous tree with a spreading habit 15-40 m, supported on stiltroots which may be produced from 4 m above ground-level, often branching near the base; branchlets fairly robust.

Swamp and lakeside forests, fringing forest; dominant; also in rain-forest; slopes, crests, well drained valley bottoms; soils of granitic origin; 600-1400 m alt. (and less ?).

**U. pilosa** Hutch.; icon.: De Wildeman, Contr. Etudes espèces genre Uapaca: 142, 143, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

Shrub or short-trunked spreading tree with an open crown, 2-3,5 m tall; branches gnarled, brittle; branchlets stout.

*Brachystegia* woodland; fringing forest; miombo and mixed deciduous woodlands with *Bauhinia*, *Combretum*, other *Uapaca* spp., *Burkea*, *Erythrophleum*, *Parinari*, *Maprounea*, *Diplorrhynchus*; sometimes in pure stands on Kalahari sands; also with *Diplorrhynchus*, *Swartzia*, *Vitex*, *Vangueriopsis*, *Burkea*, *Monotes*, *Marquesia*; 1000-1700 m alt.

Comprises 2 vars.: – var. **pilosa** (syn.: *U. masuku* De Wild.); – var. **petiolata** P. A. Duvign. (syn.: *U. macrocephala* Pax & K. Hoffm.).

**U. prominenticarinata** De Wild.

Tree with young twigs to 4 mm Ø; male and female flowers unknown.

Ecology unknown.

Only known from the type collected in 1902.

Near *U. bossenge*, *U. heudelotii*.

**U. pynaertii** De Wild.; icon.: Ann. Mus. Congo Belge, Bot. 5(2): pl. 71, 1908 (Etudes Fl. Bas-Moyen-Congo); De Wildeman, Contrib. Etudes espèces genre Uapaca: 167, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

Tree with stiltroots and young twigs to 8 mm Ø; female flowers and fruits unknown.

Forest.

Near *U. corbisieri*, *U. goossensii*.

**U. robynsii** De Wild.; icon.: De Wildeman, Contrib. Etudes espèces genre Uapaca: 168, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

Shrub to 1-1,5 m tall with brittle branches with close leaf scars. Wooded, very scraggy savanna at the periphery of copper deposit (Zaire: Fungurume; cobalt: 136-153 µg/g dry weight; copper: 15-38); ± 1400 m alt.

Near *U. kirkiiana*.

**U. rufopilosa** (De Wild.) P. A. Duvign.

Deciduous tree to 7,5 m; twigs somewhat thickened; thick ferruginous felt present especially at the bases of the long (2-7 cm) petioles.

Miombo and Isenga woodlands, often on rocky hillsides; ± 1370 m alt.

## UAPACA

**U. samfii** De Wild.

Tree to 30 m; trunk 50-80 cm Ø with stiltroots to 2 m high; crown rounded with many large, straight, ascendent branches very ramose at the apex; male and female flowers unknown.

Depression.

**U. sansibarica** Pax, incl. var. *cuneata* Pax

Evergreen tree 4-25 m, with divaricate branches, a dense rounded crown and a clear bole to 6 m; stiltroots rarely produced.

Deciduous and coastal woodland and associated wooded grassland; also in evergreen bushland, riverine forest and woodland; common and locally co-dominant; miombo and *Brachystegia-Uapaca* woodlands; *Marquesia-Uapaca* and plateau woodlands; mushitu margins; sparsely wooded dambos; scrub on steep lower mountain or valley slopes; near streams with *Lophira alata* on rocky ground; 10-1850 m alt.

[**U. similis** Pax & K. Hoffm.] = **U. nitida** with large leaves.

**U. staudtii** Pax

Tree 7,5-30 m; bole often short and rather crooked, 1-1,5 m in girth; stiltroots well developed; crown dense, with young twigs to 0,6 cm Ø near the apex; resembling *U. guineensis*, but stipules persistent.

Swamp forest; 1-710 m alt.

Bioko/Fernando Poo.

**U. stipularis** Pax & K. Hoffm.

Tree; female and male flowers incompletely known; fruit unknown.

Ecology unknown.

Very near *U. paludosa*.

**U. togoensis** Pax, *excl.* specim. Scott Elliot 4828.

Tree 10-20 m, with straight bole, cylindrical, 1 m in girth, branching to form a dense widely-spreading crown; commonly without buttresses and stiltroots (very rarely aerial roots); sometimes male and female flowers on the same tree.

Wooded savanna; sometimes on dry ground: lateritic hardpan or fine gravel; gregarious in moist places in long grass savanna, especially in fringing forest; secondary forest; 520 m alt. (Cameroon).

**U. vanderystii** De Wild.

Tree with young twigs to ± 6 mm Ø near the apex; male and female flowers unknown.

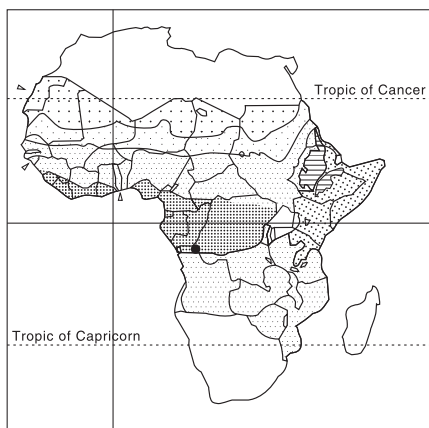
Ecology unknown.

Only known from the type collected in 1922.

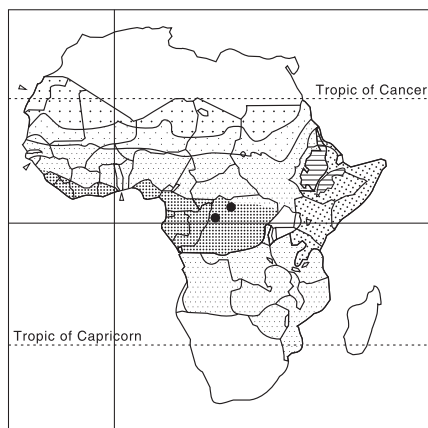
**U. vanhouttei** De Wild.; icon.: Contrib. Etudes espèces genre Uapaca: 186, 1936 (Mém. in-8° Inst. Roy. Colon. Belge, Sect. Sci. Nat. Méd. 4).

Tree to 40 m; distinctive on account of the very hairy leaves (golden-pilose midrib); male flowers unknown.

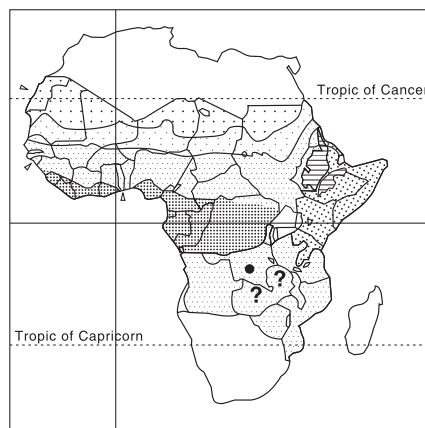
Rain-forest; evergreen forest; 450-710 m alt.



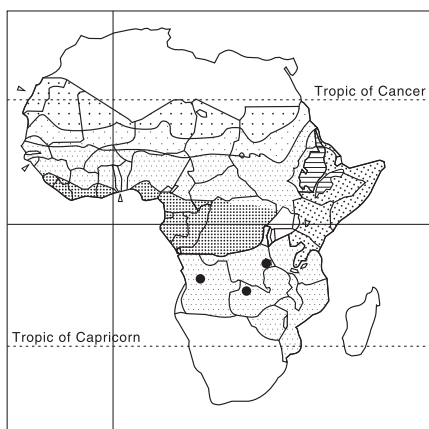
*Uapaca prominenticarinata*



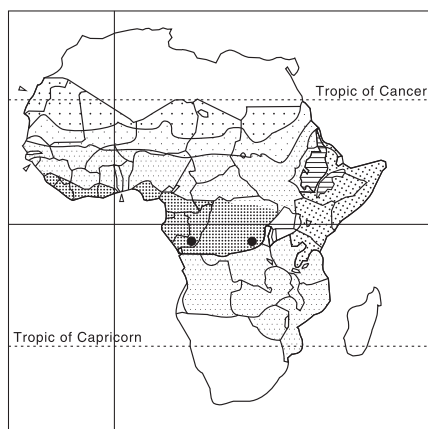
*Uapaca pynaertii*



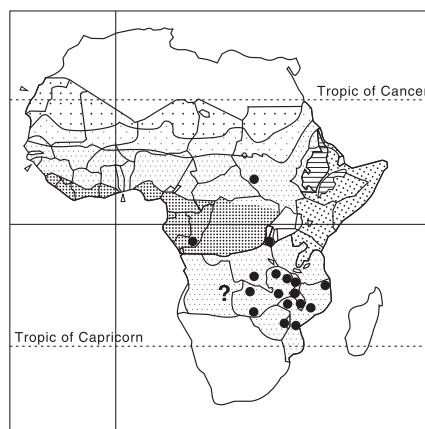
*Uapaca robynsii*



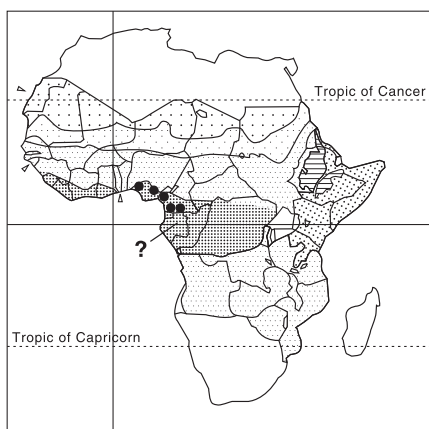
*Uapaca rufopilosa*



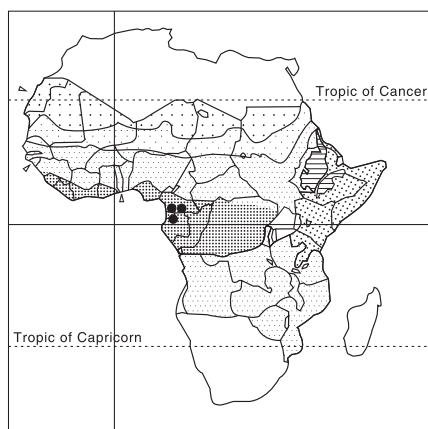
*Uapaca samfii*



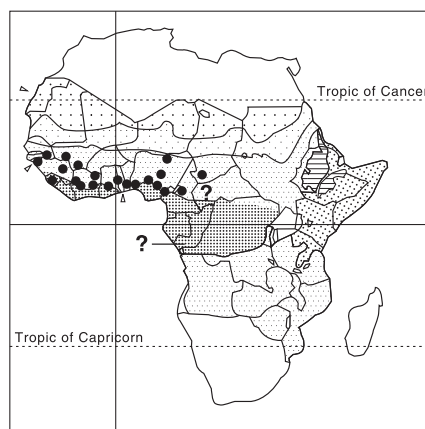
*Uapaca sansibarica*



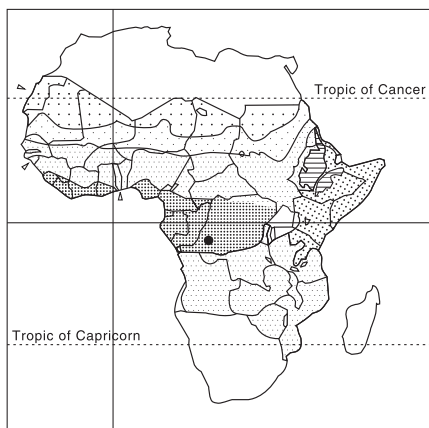
*Uapaca staudtii*



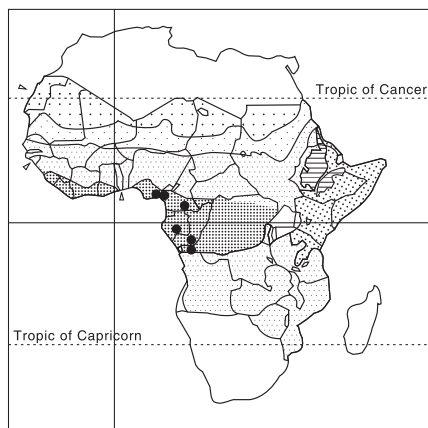
*Uapaca stipularis*



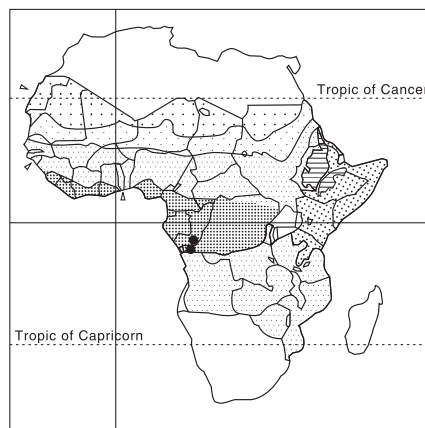
*Uapaca togoensis*



*Uapaca vanderystii*



*Uapaca vanhouttei*



*Uapaca verruculosa*

## UAPACA

**U. verruculosa** De Wild.

Tree with bole to 10 m tall with stiltroots; young twigs to ± 5-6 mm thick; male and female flowers unknown.

Ecology unknown.

Only known from the type collected before 1933.

## SYNONYMS:

*Uapaca albida* De Wild. = **Uapaca kirkiana**

*angolensis* Hutch. ex Pax & K. Hoffm. = **U. kirkiana**

*benguelensis* Müll. Arg. = **U. gossweileri**

*excl.* specimen with sessile leaves = **U. kirkiana**

*fa. glabra* P. A. Duvign., *fa. pedunculata* P. A. Duvign.  
and *fa. pilosa* P. A. Duvign. = **U. kirkiana**

*bingervillensis* Beille = **U. guineensis**

*dubia* De Wild. = **U. kirkiana** var.

*gabonensis* Pierre in sched. = **U. guineensis**

*goetzei* Pax = **U. kirkiana**

*greenwayi* Suess. = **U. kirkiana**

*guignardii* A. Chev. ex Beille var. *sudanica* Beille =  
**U. guineensis**

*heudelotii* Baill. var. *acuminata* Hutch. = **U. acuminata**

*homblei* De Wild. = **U. kirkiana**

*laurentii* De Wild. = **U. guineensis**

*macrocephala* Pax & K. Hoffm. = **U. pilosa** var. **petiolata**

*marquesii* Pax = **U. heudelotii**

*masuku* De Wild. = **U. pilosa** var. **pilosa**

*microphylla* Pax and var. *hendrickxii* De Wild. = **U. nitida**

*mole* Pax = **U. guineensis**

*munamensis* De Wild. = **U. kirkiana** var. **dubia**

*neomasuku* De Wild. = **U. kirkiana** var. **sessilifolia**

*nitida* Müll. Arg. var. *rufopilosa* De Wild. = **U. rufopilosa**  
var. *sokolobe* P. A. Duvign. *fa. longifolia* P. A. Duvign. =  
**U. nitida** var. **longifolia**

*perrotii* Beille = **U. guineensis**

*sapinii* De Wild. = **U. pilosa** var. **petiolata**

*seretii* De Wild. = **U. guineensis**

*somon* Aubrév. & Léandri = **U. togoensis**

*teuschii* Pax = **U. kirkiana**

**ZIMMERMANNIA = MEINECKIA**  
(cf. Enum. 4: 617, 1997)

**ZIMMERMANNIOPSIS = MEINECKIA**  
(cf. Enum. 4: 618, 1997)

**PANDACEAE** / 2 g. / 10 spp.

*CENTROPLACUS* – see under **EUPHORBIACEAE**, p. 36

**MICRODESMIS** / 9**Microdesmis afrodecandra** Floret, A. M. Louis & J. M. Reitsma

Dioecious tree to 23 m; bole straight, slender, 23 cm Ø, clear to 12 m height; weak tenoning at the base; main branches ± perpendicular to the trunk, loosely branched; plagiotropic shoots decumbent at the apex; male flower with 10 stamens.

Forest; forest with *Aucoumea*; old secondary forest on clayey soil; 200-610 m alt.

**M. camerunensis** J. Léonard

Shrub, dioecious, to 3 m tall; twigs glabrous when young.

Forest; 200-400 m alt. (Mt. Cameroon).

**M. haumaniana** J. Léonard

Shrub or tree 2-6 m tall, dioecious, very ramose, with stem 6-8 cm Ø; young twigs glabrescent, soon glabrous (cf. *M. puberula*), drooping or pendulous; sometimes climbing.

Dense wet forest on firm ground in understory; sometimes along rivers or in forest gallery; mixed forest; young secondary forest with *Gossweilerodendron balsamifera*; old forest with *Chlorophora excelsa* and *Piptadeniastrum africanum*; forest with *Terminalia superba*; along forest roads; semi-deciduous forest; sandy soils; 1-500 m alt.

**M. kasaiensis** J. Léonard

Dioecious tree 5-12,5 m; trunk to 20 cm Ø and 60 cm in girth; twigs pubescent.

Dense semi-deciduous valley forests in understory; rather dry forest; sandy soils; to 700(-950) m alt.

**M. keayana** J. Léonard

syn.: *M. puberula* Hook. f. ex Planch. var. *chevalieri* Beille

Shrub, dioecious, 1-6 m tall; inflorescences often diseased and then distorted (“witches’ broom” effect).

Rain-forest on firm ground in understory, especially in thickets and scrub of damp secondary forest; (very) common.

**M. klainei** J. Léonard

syn.: *M. macrocarpa* Pierre in sched. (Paris)

Shrub 4-5 m tall, or tree to 15 m, dioecious; trunk 10-15 cm Ø; twigs pubescent.

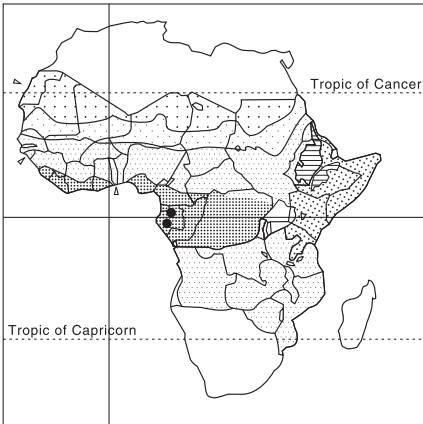
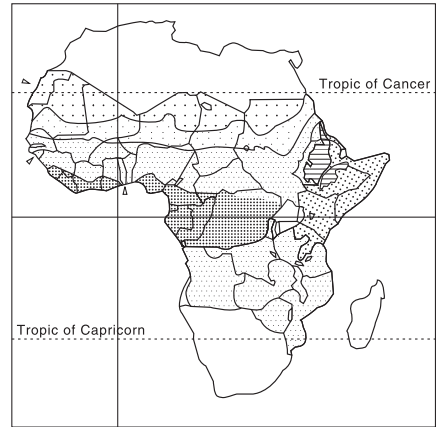
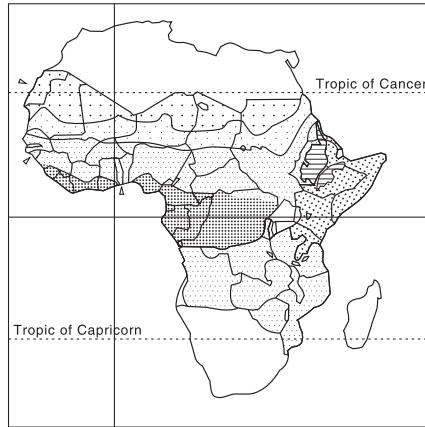
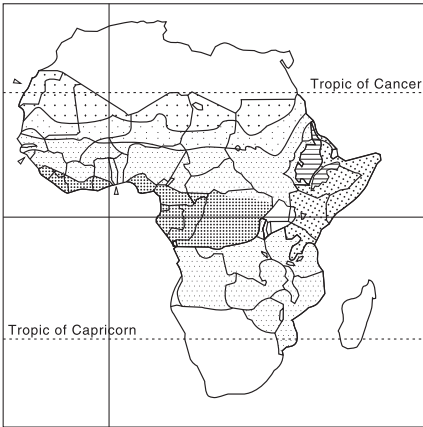
Forest in understory; along river; common.

**M. pierlotiana** J. Léonard

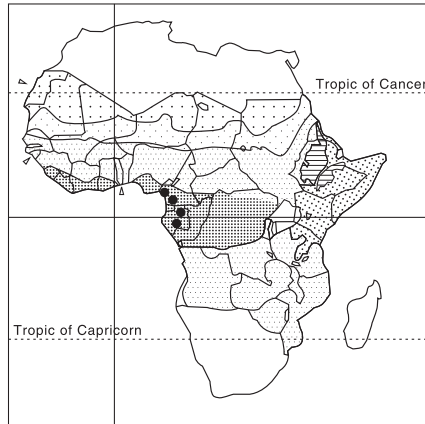
Tree 2-14 m, with trunk 4-30 cm Ø, dioecious; twigs puberulous to pubescent; stumps throwing out new shoots.

Rain-forest dominated by *Staudtia stipitata*, *Grossera multinervis*, *Julbernardia seretii*, *Gilbertiodendron dewevrei*, in understory; sometimes in understory of new growth of *Polyscias* and *Musanga leo-errerae*; locally common; (650-)800-1300(-1400) m alt.

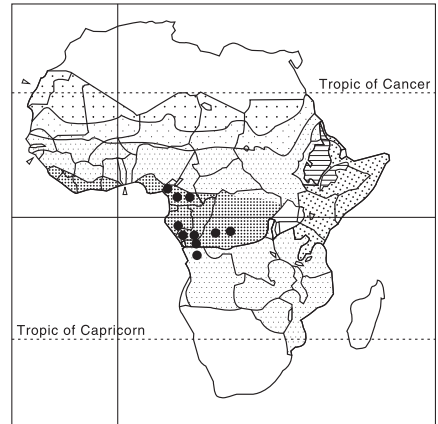




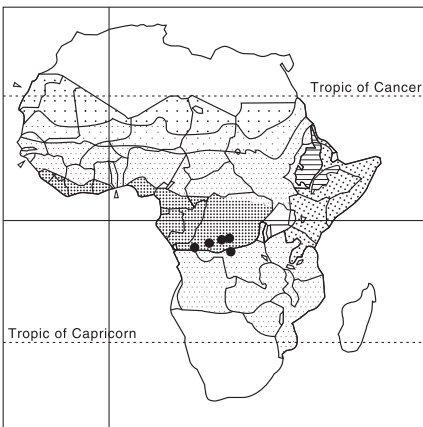
*Microdesmis afrodecandra*



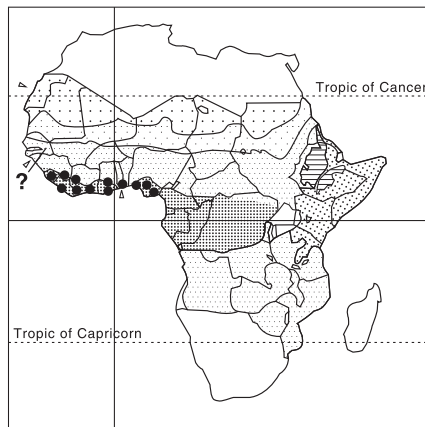
*Microdesmis camerunensis*



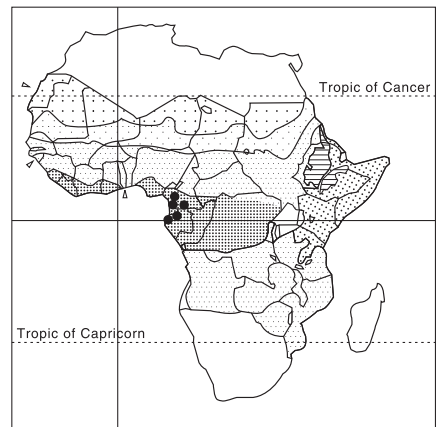
*Microdesmis haumaniana*



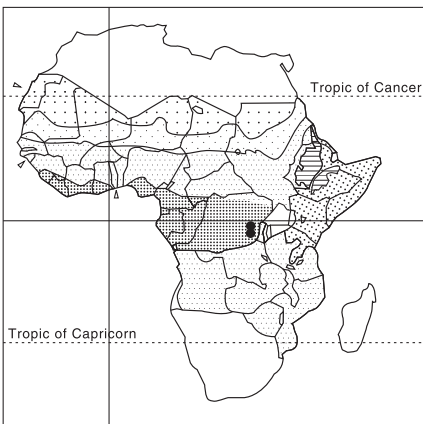
*Microdesmis kasaiensis*



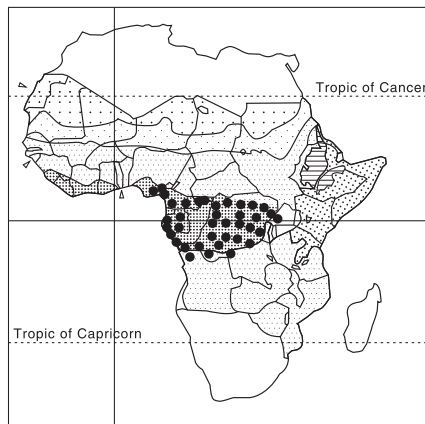
*Microdesmis keayana*



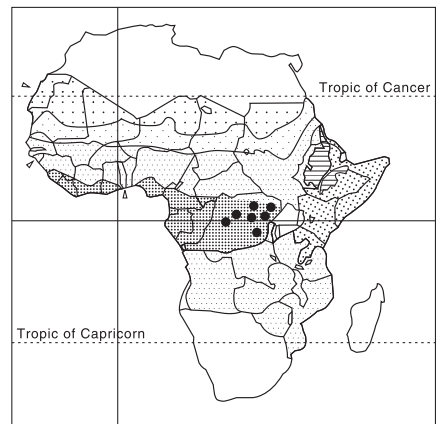
*Microdesmis klainei*



*Microdesmis pierlotiana*



*Microdesmis puberula*



*Microdesmis yafungana*

## MICRODESMIS

**M. puberula** Hook. f. ex Planch., excl. var. *chevalieri* Beille (= **M. keayana**) and ? var. *macrocarpa* Pax & K. Hoffm. (= ?). Shrub (1-)2-6 m tall, or tree to 15 m with trunk 3-8 cm Ø, dioecious; twigs densely pubescent (but pubescence variable), slightly flexuous, often galled (“witches’ broom” effect).

Closed forest, rain-forest in understorey; common in fallow land, regrowth, old secondary vegetation; 1-1000(-1200) m alt.

Bioko/Fernando Poo.

**M. yafungana** J. Léonard

Dioecious tree (or shrub) 2-20 m with trunk 8-60 cm Ø, to 2,8 m circumference; twigs finely puberulous, sometimes glabrescent.

Firm ground rain-forest, in particular with *Gilbertiodendron dewevrei* in understorey; semi-deciduous forest with *Scorodophleus zenkeri*; forest gallery; dry (plateau) forest; to 800(-1000) m alt.

## SYNONYM:

*Microdesmis paniculata* Pax = **Centroplacus glaucinus** (*Euphorbiaceae*)

## PANDA / 1

**Panda oleosa** Pierre

syn.: *Porphyranthus zenkeri* Engl.; *Sorindeia rubriflora* Engl. (*Anacardiaceae*)

Dioecious tree 10-20(-35) m; bole 0,4-1 m Ø and 2 m in girth, clear to 8 m, irregular, in large trees somewhat fluted at base, sometimes with short narrow buttresses 1 m high; crown dense, evergreen; inflorescences axillary or ramiflorous.

Primary forest, sometimes riverine or seasonally flooded, evergreen or deciduous; understorey of high forest; common; 1-400 m alt. (Mt. Cameroon).

**CHRYSOBALANACEAE** / 9 g. / 61 spp.

(formerly included in *Rosaceae*: subfam. *Chrysobalanoideae*).

Evergreen woody plants; in Africa mostly trees, sometimes shrubs (also scandent), rarely a rhizomatous geoxylic suffrutex (*Magnistipula sapinii*, *Parinari capensis*). The genus *Dactyladenia*, in particular, poorly known. For 9 species (= 11 %) no fruit is recorded and for one species only the unripe fruit, and for 2 species ( $\geq 3\%$ ) the ecology is not known; 2 species ( $\geq 3\%$ ) are known only from the type, and another species only from the type locality. Some other species have been collected only a few times.

CHAPPILL, J. A. (1992). Cladistics and the Chrysobalanaceae. *Taxon* 41: 211-223.

PRANCE, G. T. (2005). Ethnobotany of the family Chrysobalanaceae. *Ethnobot.* 17: 13-19.

PRANCE, G. T. & C. A. SOTHERS (2003). Chrysobalanaceae 1: Chrysobalanus to Parinari. *Species Plantarum: Flora of the World* 9: 1-319. Australian Biological Resources Study, Canberra.

PRANCE, G. T. & C. A. SOTHERS (2003). Chrysobalanaceae 2: Acioa to Magnistipula. *Species Plantarum: Flora of the World* 10: 1-268. Australian Biological Resources Study, Canberra.

YAKANDAWALA, D. M. D. & al. (2001). A phylogenetic study of the Chrysobalanaceae using morphological data. *Ceylon J. Sci. (Biol. Sci.)* 28: 1-17.

**AFROLICANIA** / 1

syn.: *Licania* Aublet subgen. *Afrolicania* (Mildbr.) F. White & Prance

YAKANDAWALA, D. M. D. & al. (2001). See above.

**A. elaeosperma** Mildbr. – Mahogany Nuts, Nico, Nikko.

syn.: *Licania elaeosperma* (Mildbr.) Prance & F. White; *Parinarium glabrum* auct., non Oliv.: Hutch. & Dalz., Fl. W. Trop. Afr., Ed. 1, 1: 317, 1928, p.p. quoad specim. Chipp 299 tantum.

Tree to 17 m, dioecious; trunk crooked, irregular, buttressed, 20-50 cm Ø and to 1,3 m in girth; buttresses 1-2 m high; bark smooth grey, slash deep red; branches and foliage drooping; branchlets soon glabrous and purplish; young leaves densely white-tomentose, later glabrous; flowers polygamous andro-dioecious, without petals; fruit verruculose. – Sometimes flowering as a shrub only 4 m tall.

Coastal forest, in particular on landward side of mangrove swamps; coastal bush; further inland in periodically flooded riverine forest (in rain-forest region).

**BAFODEYA** / 1**Bafodeya benna** (Scott-Elliot) Prance

syn.: Enum. 2: 13, 1992; and *Parinari* (“Parinarium”) *mobola* Oliv. of A. Chevalier, Explor. Bot. Afr. Occid. Franç. 1: 251, 1920, excl. specim. cit. Kaichinger (Senegal).

Tree (or shrub) to 10 m; branches terete, black, and like the inflorescences brown velvety-hairy when young; inside of fruit endocarp with *straight*, hollow, needle-shaped “spines” protruding into the cavity (cottony substance in *Parinari*).

Savanna, on laterite plateau of hills; in derived savanna (*Parinari excelsa* remnants), on well-drained moderate-depth hill soil, rainfall 75 inch p.a., dry seasons 5 months; wooded savanna on skeleton soil and sandstone outcrops; bush; 900-1160 m alt. – Said to be locally common, but little is known of its ecology.

A specimen exists without locality from Mali (Vuillet s.n.) where its presence needs confirmation.

Similar distributions: *Fleurydora felicis* (*Ochnaceae*) and *Diospyros feliciana* (*Ebenaceae*).

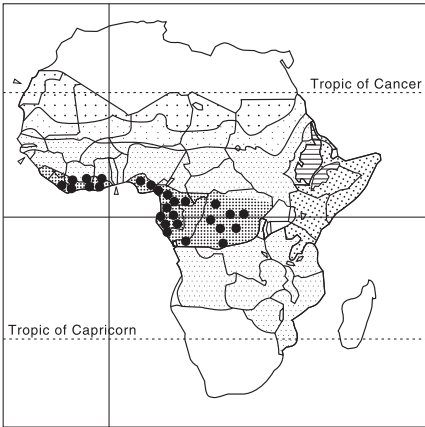
**CHRYSOBALANUS** / 1

Three species in tropical and subtropical America, one in Africa and in coastal regions of tropical America (map in Prance, *Flora Neotropica* 95: p. 127, 1989).

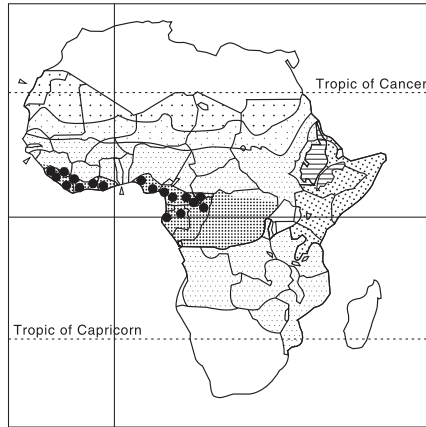
**Chrysobalanus icaco** L. – Coco(a) Plum.

syn.: Enum. 2: 13, 1992; *Prunus icaco* Labat, nom. inval.; *Chrysobalanus purpureus* Miller; *C. icaco* var. *pellocarpus* (G. F. W. Mey.) Hook. f., and var. *ellipticus* (Soland. ex Sabine) Hook. f., and var. *genuinus* Stehlé, nom. illegit.; *C. icaco* subsp. *ellipticus* (Soland. ex Sabine) Souza; *C. pellocarpus* G. F. W. Mey.; *C. savannarum* Britton; *C. guianensis* Klotzsch, nom. nud.; *C. interior* Small – All of subsp. **icaco**.

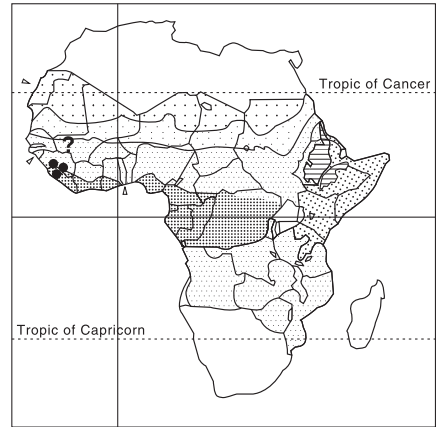
Evergreen (straggling) shrub to 3-4 m tall, or tree to 12 m [subsp. **icaco**], or 30 m with bole 35 cm Ø [subsp. **atacorensis** (A. Chev.) F. White], much branched, branching low down; trunk short, sometimes with buttresses; bark dark with thin fissures,



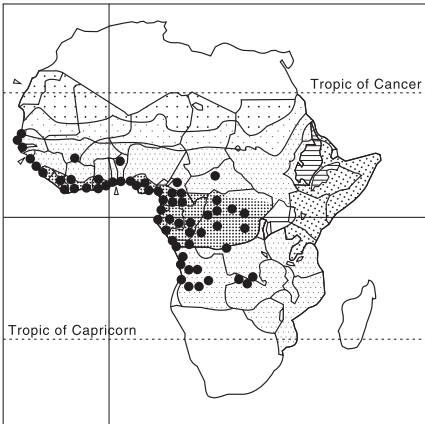
*Panda oleosa*



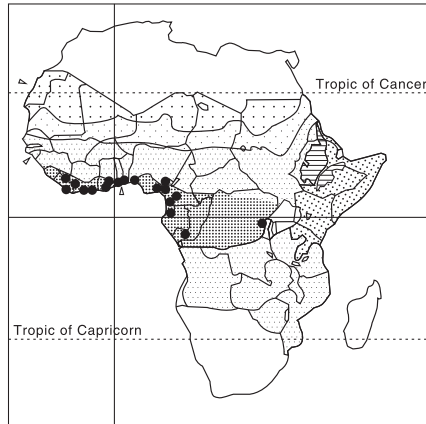
*Afrolicania elaeosperma*



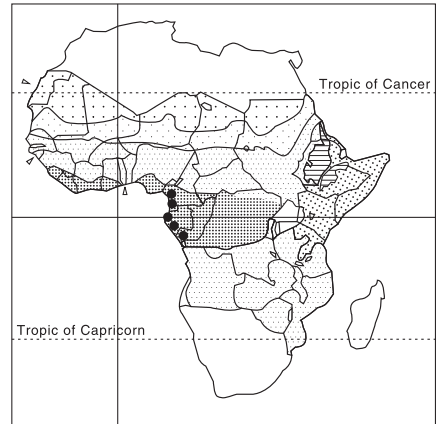
*Bafodeya benna*



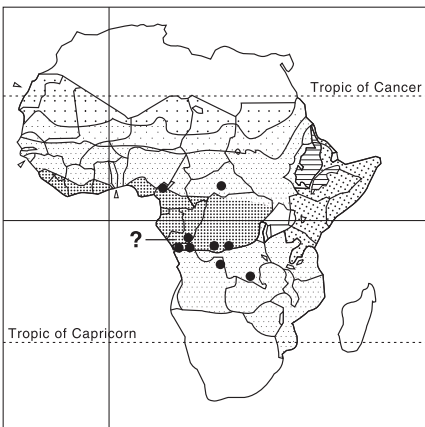
*Chrysobalanus icaco*



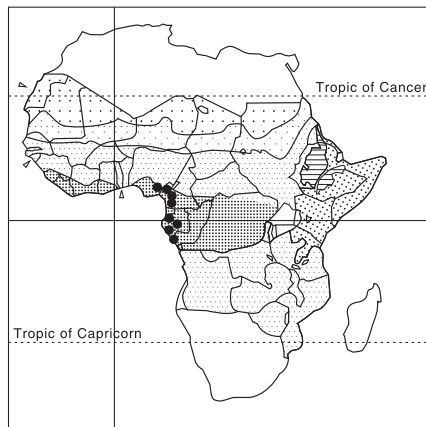
*Dactyladenia barteri*



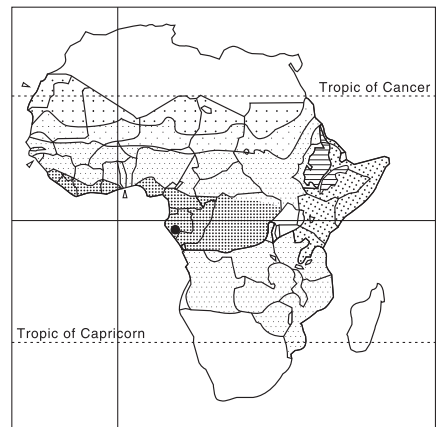
*Dactyladenia bellayana*



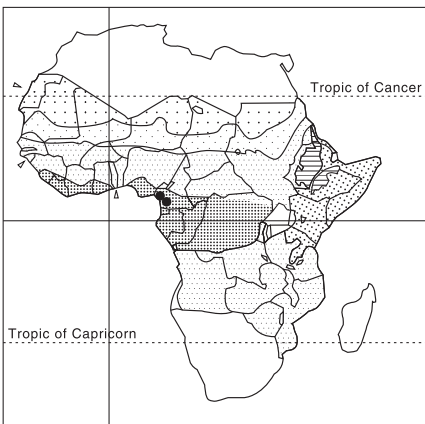
*Dactyladenia buchneri*



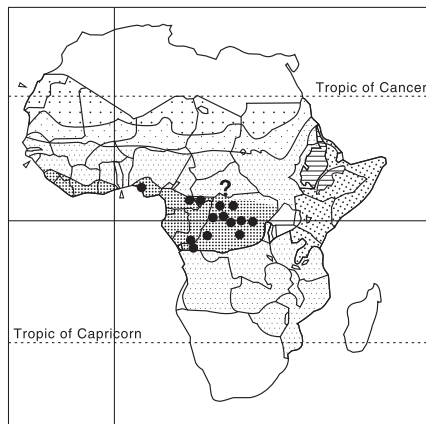
*Dactyladenia campestris*



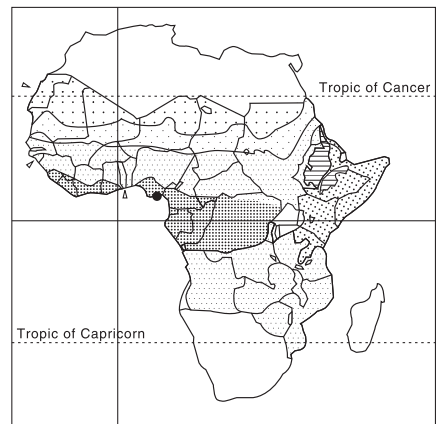
*Dactyladenia chevalieri*



*Dactyladenia cinerea*



*Dactyladenia dewevrei*



*Dactyladenia dichotoma*

## CHRYSOBALANUS ICACO

pinkish-white; wood hard, durable, red-brown; branchlets thin, straight, often with conspicuous lenticels; leaves in 2 rows, fruit plum-like (drupe), purplish-black, edible.

In Africa, 2 subspp.:

– Subsp. **icaco**:

Swamp forest, usually coastal, in understory; a characteristic member of coastal thicket, frequently associated with *Dalbergia ecastaphyllum*, *Drepanocarpus lunatus*, *Ximenia americana*; or with naturalized *Calophyllum inophyllum* (Cameroon); littoral thicket with *Neocarya macrophylla*, *Lepisanthes senegalensis* (Senegal), or with *Diospyros tricolor*, *Eugenia coronata*, *Fagara xanthoxyloides* in wind-trimmed coastal thicket (Ghana); on landward side of mangrove swamps abundant in *Oxystigma mannii* forest fringing *Rhizophora racemosa* community and on banks of the lower courses of rivers (Cameroon); along fresh water lagoons; coastal dunes, sometimes forming pure thickets above the beach. – Occurs inland only in a few places; in Nigeria ascending the Niger River 200 km from the sea, in Gabon 100 km inland on shores of lake Oghémoué; 0-1500 m alt.

Widely planted in the tropics (edible fruit); naturalized in E Africa, coast of Tanzania near Dar-es-Salaam, in the Seychelles, Fiji, Vietnam.

Bioko/Fernando Poo; coastal regions of tropical and subtropical America from Florida to S Brazil.

– Subsp. **atacorensis** (A. Chev.) F. White: (always) in gallery forest or periodically flooded primary forest, swamp forest, on islands and sandy riversides; 50-1500 m alt. (Angola). Intermediates (from Liberia to Angola) between the 2 subspp. exist.

Subsp. **icaco** is very variable in leaf-shape, branching of inflorescence, and in fruit shape, size and colour.

Differences between the West Indian **C. cuspidatus** Griseb. and **C. icaco** are slight, but no intermediates are known between them.

\* \* \*

The identity of **Chrysobalanus stuhlmannii** Engl. (holotype Stuhlmann 430, B, lost; the only gathering), described from Tanzania (Chaya Lake) is not known (Graham in Fl. Trop. E. Afr. Rosaceae: 47-48, 1960); it is probably not a *Chrysobalanaceae*. Another gathering (Stolz 2276), from Malawi (P), is *Magnistipula butayei* subsp. *bangweolensis*.

### DACTYLADENIA / 30

Tropical African genus confined to the Guineo-Congolian region.

**Dactyladenia barteri** (Hook. f. ex Oliv.) Prance & F. White; icon.: D. O. Lapido & B. T. Kang, *Dactyladenia barteri*..., in L. P. A. Oyen & R. H. M. J. Lemmens, Eds., *Ressources végétales de l'Afrique tropicale*. Précurseur: 73. Programme PROTA, Wageningen, 2002.

syn.: *Acioa barteri* (Hook. f. ex Oliv.) Engl.; *A. tenuiflora* Dinkl. & Engl.; *A. trillesiana* Pierre ex De Wild., nom. illegit.

Scandent shrub or tree to 12 m tall with trunk 25-40 cm Ø, branched low down; trunk somewhat fluted; wood hard, dark red; branches slender, ± climbing; branchlets hispidulous, soon glabrescent; flowers greenish-white, fragrant.

## DACTYLADENIA BARTERI

Rain-forest, river banks, sometimes behind the mangrove.

Sometimes planted for coppice growth (firewood)

Closely related to *D. scabrifolia* (drupe similar).

Introduced into Sierra Leone (Makeni) from Nigeria in 1938.

**D. bellayana** (Baill.) Prance & F. White

syn.: *Griffonia bellayana* (Baill.) Oliv., Fl. Trop. Afr. 2: 371, 1871, p.p. quoad specimen gabonicum.

Climbing shrub 5-6 m tall; branchlets densely yellow-rusty hairy (hispid).

Brushwood; lowland forest; savanna (? Zaire).

Closely related to *D. campestris*, *D. floribunda*, *D. icondere*.

**D. buchneri** (Engl.) Prance & Sothers, Kew Bull. 57: 995, 2002.

bas.: *Acioa buchneri* Engl.

syn.: *Acioa lujae* De Wild.; *Dactyladenia lujae* (De Wild.) Prance & F. White; *Acioa gossweileri* Cavaco

Tree c. 8 m, or shrub to 6 m with straggling branches; trunk to 30 cm Ø with greyish-green bark, slash red; branchlets pubescent.

Primary and managed forests, gallery forest on river banks, secondary forest, regrowth.

Near *D. pallescens*.

**D. campestris** (Engl.) Prance & F. White

syn.: Enum. 2: 13, 1992; *Acioa bellayana* auct., non Baill.: Engl. in Bot. Jahrb. 26: 380, 1899, p.p., quoad specim. Preuss 263 and Soyaux 111.

Shrub to 5 m tall with sprawling or drooping branches; shoots when young with whitish, cobwebby indumentum; branchlets brownish-hispid, soon glabrous; bracteoles 5-palmipartite.

Wooded savanna; degraded and disturbed forests, secondary thickets; forest regrowth; riverine forest; seldom in periodically flooded swampy forest.

Near *D. bellayana*, *D. icondere*, and sometimes confused with them.

**D. chevalieri** (De Wild.) Prance & F. White

Tree to 30-35 m, or sometimes shrub a few m tall; trunk to 80-90 cm Ø above the thick basal part; bark dark grey, rugose, very thin (1-2 mm thick), flaking off in small scales; branchlets and lower leaf surface with pink to grey, slowly deciduous, cobwebby indumentum.

Margins of lakes (only known from lakes on the lower Ogooué River, Gabon).

Can be confused with *D. pierrei*. Closely related to *D. cinerea*.

**D. cinerea** (Engl. ex De Wild.) Prance & F. White

Shrub to 15 m tall; branchlets and inflorescence with whitish cobwebby indumentum, slowly caducous; infructescence and fruit unknown.

Ecology not recorded.

Known from the type locality near Bipindi, Cameroon (Zenker 2903, collected in 1904) and from Mt. Cameroon (Mokoko).

Near *D. chevalieri*.



## DACTYLADENIA

**D. dewevrei** (De Wild. & T. Durand) Prance & F. White  
syn.: Enum. 2: 13, 1992; *Acioa vanhouttei* De Wild.; *A. reygaertii* De Wild.; *A. seretii* De Wild.

Shrub, sometimes scandent, to 5 m tall, or tree to 15 m with drooping branches; branchlets densely yellowish-villous, glabrescent; bracteoles palmatisect; racemes c. 12 cm long with numerous small flowers crowded near the apex.

Groundwater forest; swampy and riverine forests; to 750 m alt. Sometimes confused with *D. smeathmannii* (syn.: *D. unwinii* from Sierra Leone).

**D. dichotoma** (De Wild.) Prance & F. White

Shrub or tree ?; branchlets tomentose, glabrescent; inflorescence dichotomously branched, covered with greyish tomentum, fruit unknown.

Along rivers.

Only known from the type collected in 1912 (Talbot 3048).

**D. dinklagei** (Engl.) Prance & F. White

Tall shrub or spreading tree to 9 m tall, with drooping tomentose branchlets; racemes greyish-hoary with strongly fragrant hairy flowers.

River banks; in bushy places of sandy embankment; low alt.

Resembling *D. dichotoma*, *D. pierrei*.

**D. eketensis** (De Wild.) Prance & F. White

Shrub or tree to 20 m tall, with glabrous brownish branchlets; fruit unknown.

Ecology not recorded.

Known from only 3 collections (Talbot. s.n. + 3239 from 1912-1913, and Chevalier 27127).

Somewhat resembling *D. chevalieri*.

**D. floretii** Breteler, Adansonia, Sér. 3, 22: 117-119, 2000; icon.: l.c.

Shrub, scandent shrub, or liane; main stem to 8 cm Ø; branches with hispid hairs mixed with short erect hairs, or rarely only hispid; stipules and leaf petiole hairy like the branchlets; branchlets transformed into pouches inhabited by small ants (myrmecophytic); bracteoles deeply 3-palmatilobate, lobes gland-tipped.

Rain-forest; forest edge near savanna area; coastal thicket; secondary formations.

Resembling *D. bellayana*, *D. campestris*, *D. icondere* and *D. jongkindii* (all with deeply lobed bracteoles).

**D. floribunda** Welw.

syn.: Enum. 2: 14, 1992; *Griffonia bellayana* Oliver, Fl. Trop. Afr. 2: 371, 1871, p.p. quoad specim. angol.; *Acioa icondere* Baill. var. *welwitschii* De Wild.; *Acioa bellayana* var. *pilosa* Engl. ms. in sched.

Shrub, sometime scandent, or tree, 20 m tall; stem to 20 cm Ø, somewhat fluted at base; bark smooth, brownish grey; branchlets with dense persistent golden indumentum; stipules and leaf petiole equally densely hairy; racemes short, congested; bracteoles 5-palmatilobed to palmatipartite, glandular.

Wet primary forest in hilly inland areas (coastal = *D. icondere*).

Closely related to *D. icondere*.

## DACTYLADENIA

**D. gillettii** (De Wild.) Prance & F. White

Tree 6-15 m, with trunk to 25 cm Ø; bark bright grey; branches drooping; branchlets hispid, glabrescent; racemes very short, glabrous; bracteoles palmatisect, glandular.

Flooded primary forest with *Symphonia*; margins of swamps, fringing forest; wooded ravine side; 600-800 m alt. (Mt. Cameroon).

Bioko/Fernando Poo. – Also in Central African Republic fide S. Cable & M. Cheek, Pl. Mt. Cameroon; 31, 1998.

Resembling *D. dewevrei* (3-lobed bracteoles).

**D. hirsuta** (A. Chev. ex De Wild.) Prance & F. White

Tree or shrub ? with hirsute branchlets; racemes short with hispidulous axis; bracteoles 0,15 cm long with 3-5 triangular, glandular teeth; fruit unknown.

In understory of the forest zone.

Only in Ivory Coast.

**D. icondere** (Baill.) Prance & F. White, excl. var. *welwitschii* De Wild. (= *D. floribunda*).

syn.: *Griffonia icondere* (Baill.) Oliv.

Shrub scandent to lianescent, 5-8 m tall; young shoots with dense, cobwebby golden indumentum, glabrescent; bracteoles 5-palmatipartite to palmatisect, glandular.

Coastal thicket; thicket on cleared forest floor.

Closely related to *D. floribunda* (inland species).

**D. johnstonei** (Hoyle) Prance & F. White; icon.: Prance & Sothers, Chrysobalan. 2: 94, 2003; Cheek & al. Pl. Kupe..., Cameroon: 152, 2004.

Bushy shrub to 3 m tall, or small tree with trunk to 25 cm Ø, low branching; branches long, arching; branchlets and all other parts of plant hispid with 2-3 mm long hairs; edges of bracteoles with 5-7 stipitate glands.

Edges of upland forest; stream banks in forest or savanna; forested valley slopes; 950-1600 m alt.

**D. jongkindii** Breteler, Adansonia, Sér. 3, 22: 118-121, 2000; icon.: l.c.

Shrub or treelet 3-6 m tall; branches hispid mixed with puberulous indumentum, glabrescent; same type of indumentum on stipules and petioles, sometimes cobwebby when young; stipules saccate inhabited by small ants (myrmecophytic like *D. floretii*); bracteoles 5-palmatilobate, lobes gland-tipped; fruit unknown.

Coastal and riverine rain-forest.

Related to *D. bellayana*, *D. campestris*, *D. icondere* and *D. floretii*.

**D. laevis** (Pierre ex De Wild.) Prance & F. White

Shrub, or tree 15-20 m tall; branchlets with whitish, cobwebby, caducous indumentum; inflorescence glabrous; bracteoles *subreniform*.

Forest ?

Only known from the Libreville region (Gabon). Specimen cited from Congo-Brazzaville (Bouquet 872) belongs to *A. gillettii*.

Near *D. scabrifolia*.

## DACTYLADENIA

**D. lehmbachii** (Engl.) Prance & F. White

syn.: Enum. 2: 14, 1992; *Acioa gilletii* De Wild. in Bull. Jard. Bot. Etat, Bruxelles 7: 199, 1920, quoad specim. Bates 855 tantum.

Tree with pyramidal crown, to 20 m; trunk to 30 cm Ø, sometimes branched from the base; branches arched; branchlets with golden-brown pubescence; bracteoles palmatifid to palmatifid-partite, with 5-7 glands.

Forest, at the upper end of ravine with waterfall; forest regrowth; valley forest with *Erythrophleum suaveolens*, *Maranthes kerstin-gii* etc. Also forest with *D. letestui*.

Closely related to *D. gilletii*.

**D. letestui** (Letouzey) Prance & F. White

Tree to 25 m; bole short (to 6 m), to 60 cm Ø, somewhat fluted at base, bark reddish grey, flaking off in thin longitudinal scales; crown dense, rounded; branchlets glabrous, so also the many-flowered inflorescence; fruit globose, surface warty, wrinkled. Swamp forest; forest with *Dactyladenia lehmbachii*; riverine forest on forest-savanna limit.

Closely related to *D. barteri*, *D. scabrifolia* (with ovoid fruit; globose in *D. letestui*); also resembling *D. lehmbachii*.

**D. librevillensis** (Letouzey) Prance & F. White

Tree with ± scandent branches; branchlets sparsely hispidulous, glabrescent; stipules 5-palmatifid to palmatifid-partite, with 5 stipitate glands; flowers small; fruit known!

Rain-forest.

Very close to *A. gilletii* (with larger flowers and more numerous stamens).

**D. mannii** (Oliv.) Prance & F. White

Climbing shrub 4-6 m tall; branchlets with whitish, cobwebby, caducous indumentum; fruit known!

Secondary forest; edge of lake in sunny places; 1-800 m alt.

Bioko/Fernando Poo (perhaps extinct). Only known from 5 collections; threatened by forest clearance for housing, timber and agriculture (fide S. Cable & M. Cheek, Pl. Mt. Cameroon: XLIX, 1998).

**D. ndjoleensis** Breteler, Syst. Geogr. Pl. 69: 111-114, 1999; icon.: l.c.

Tree 8-12 m; trunk d.b.h. 15 cm; branchlets (and leaves ?) puberulous to tomentellous, with early caducous cobwebby indumentum; inflorescence densely flowered, puberulous; bracteoles glabrous.

Rain-forest.

Related to *D. letestui*.

**D. pallescens** (Baill.) Prance & F. White; icon.: R. W. J. Keay, Trees of Nigeria: 188, 1989; Prance & Sothers, Chrysobalan. 2: 88, 2003.

syn.: Enum. 2: 14, 1992; *Griffonia pallescens* (Baill.) Oliv., incl. var. *scandens* Oliv. and var. *arborescens* Oliv.

Tree to 14 m, but often a ± scrambling or climbing shrub, multi-stemmed, 5-8 m tall; branchlets long, slender, densely short-hairy; inflorescence often terminal, shortly and densely velvety-hairy; flowers conspicuous, white, short silky-hairy; fruit brown with long hairs and a dense under-coat.

Riverine forest, temporarily flooded forest; sometimes forest thickets (secondary forests); coastal regions.

## DACTYLADENIA PALLESCENS

Bioko/Fernando Poo.

Closely related to *D. buchneri*, *D. sapinii*.

**D. pierrei** (De Wild.) Prance & F. White

bas.: *Acioa pierrei* De Wild.

Shrub to 8 m tall; branchlets with dense, silvery, long-persistent, cobwebby indumentum; inflorescence long, lax, greyish-hairy; fruits large (7.5 cm long × 4 cm thick), almond-like, warty, tomentellous.

Ecology unknown.

Confusion possible with *D. chevalieri*.

Known only from old collections (Klaine, 1895; Pierre, 1900; Le Testu, 1907, 1914, 1915/16).

**D. sapinii** (De Wild.) Prance & F. White

Tree (height ?); young shoots with dense, short, long-persistent, brownish indumentum; fruit unknown.

Forest, riverine forest.

Closely related to *D. pallescens*.

Only known from the type collected in 1907 (Sapin, s.n.).

**D. scabrifolia** (Hua) Prance & F. White

Tree to 20 m, with trunk 1.7 m in girth, or shrub; branchlets glabrous; leaves scabrid above; flowers (white to) pink.

Riverine and hill forest; in understory of high closed rain-forest; forest regrowth; sometimes as a relic in farmlands; swamp edges; in managed forestry considered as a weed; locally abundant.

Closely related to *D. barteri*.

**D. staudtii** (Engl.) Prance & F. White

Low shrub or small tree to 15 m tall; branchlets densely yellowish to grey tomentose; inflorescence brownish velvety, few-flowered; fruit known!

Primary forest; river banks; to ± 200 m alt.

Similar to *D. dinklagei*.

**D. smeathmannii** (Baill.) Prance & F. White

Shrub with hispid branchlets; inflorescence hispidulous, simple; bracteoles palmatisect with 5-7 stipitate glands.

Old secondary forest; almost bare rocks.

Resembling *D. johnstonei*.

**D. whytei** (Stapf) Prance & F. White

Shrub or tree to 5(-10) m tall; branchlets slender, long, pendulous, ± hispid; inflorescence short, congested, subcapitate with hispid axis and *foliaceous bracts* concealing the pedicels.

Riverine forest; forest regrowth.

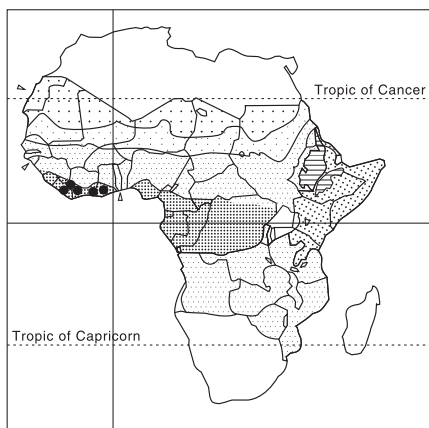
## SYNONYMS:

*Acioa barteri* (Hook. f. ex Oliv.) Engl. = **Dactyladenia barteri**  
*bellayana* auct., non Baill. = **D. campestris** and **D. floribunda**

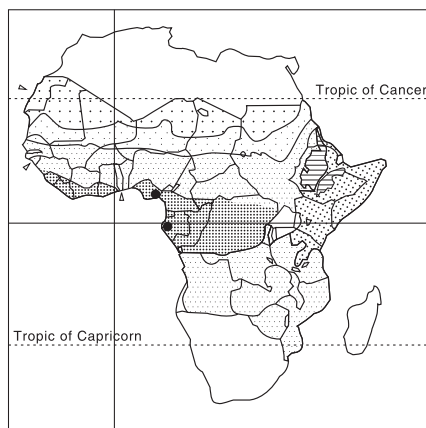
var. *pilosa* Engl. ms. = **D. floribunda**

*brazzae* De Wild. = **D. dewevrei**

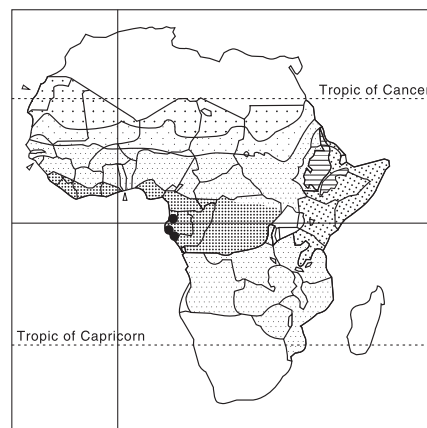
*buchneri* Engl. = **D. buchneri**



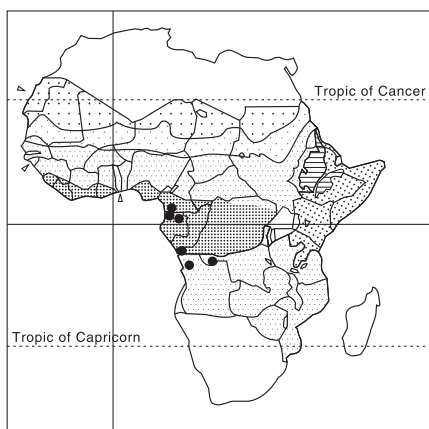
*Dactyladenia dinklagei*



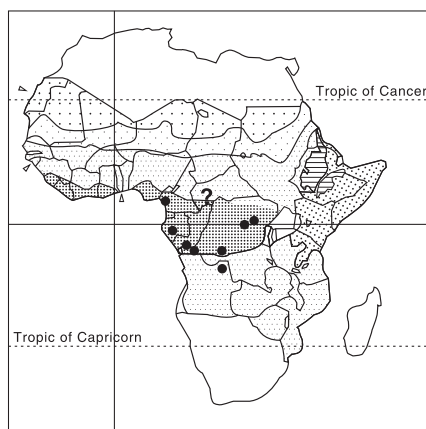
*Dactyladenia eketensis*



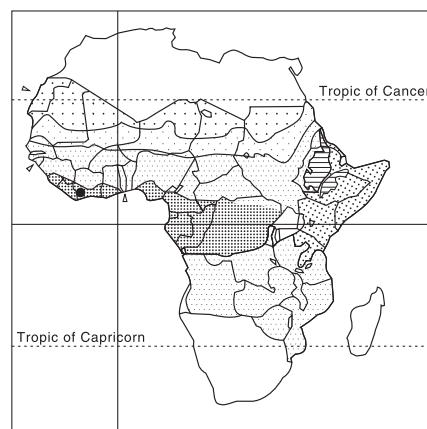
*Dactyladenia floretii*



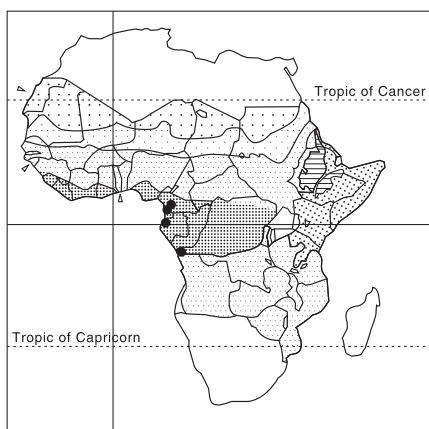
*Dactyladenia floribunda*



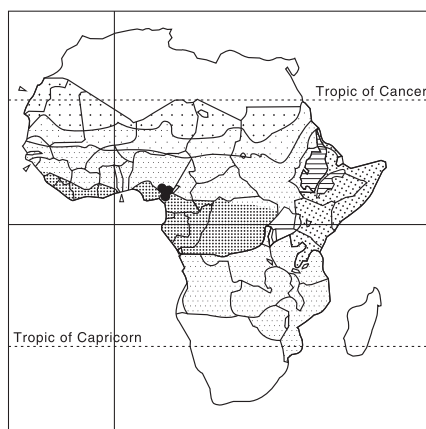
*Dactyladenia gillettii*



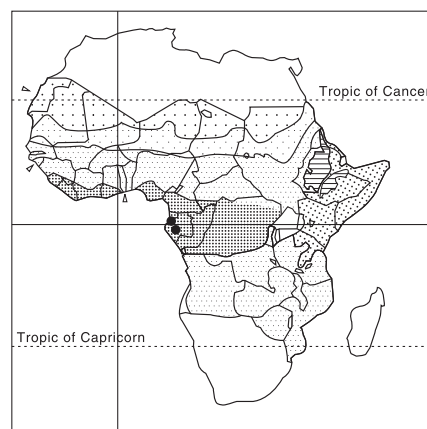
*Dactyladenia hirsuta*



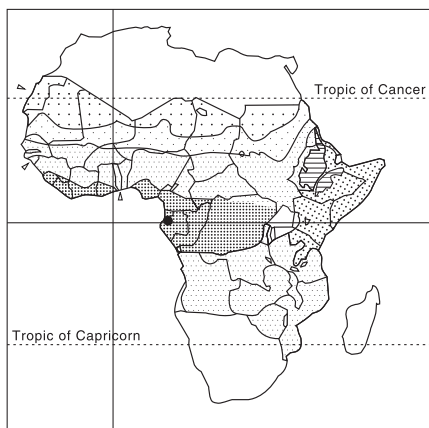
*Dactyladenia icondere*



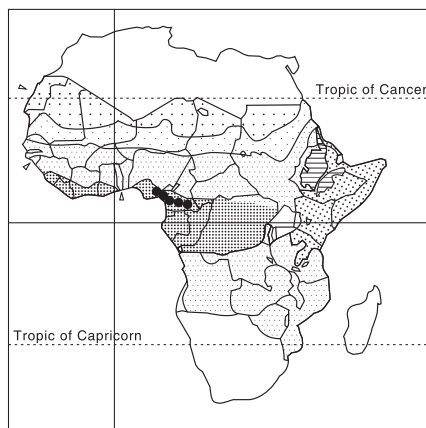
*Dactyladenia johnstonei*



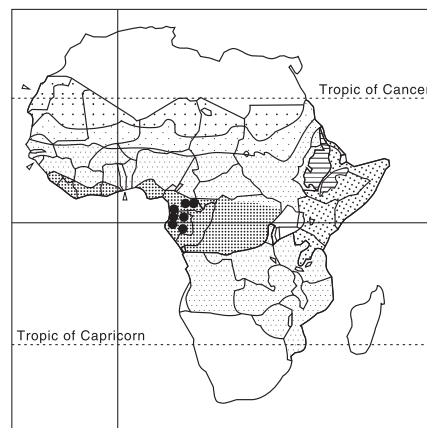
*Dactyladenia jongkindii*



*Dactyladenia laevis*



*Dactyladenia lehmbachii*



*Dactyladenia letestui*

## DACTYLADENIA

- Acioa campestris* Engl. = **D. campestris**  
*chevalieri* De Wild. = **D. chevalieri**  
*cinerea* Engl. ex De Wild. = **D. cinerea**  
*dawei* Mendes = **D. campestris**  
*dewevrei* De Wild. & T. Durand = **D. dewevrei**  
*dichotoma* De Wild. = **D. dichotoma**  
*dinklagei* Engl. = **D. dinklagei**  
*eketensis* De Wild. = **D. eketensis**  
*floribunda* (Welw.) Exell = **D. floribunda**  
*gilletii* De Wild. = **D. gilletii**  
*goetzeana* Engl. = **Hirtella zanzibarica** subsp. **zanzibarica**  
*gossweileri* Cavaco = **Dactyladenia buchneri**  
*hirsuta* A. Chev. ex De Wild. = **D. hirsuta**  
*icondere* Baill. = **D. icondere**  
 var. *welwitschii* De Wild. = **D. floribunda**  
*johnstonei* Hoyle = **D. johnstonei**  
*klaineana* Pierre ex De Wild. = **D. campestris**  
*laevis* Pierre ex De Wild. = **D. laevis**  
*lanceolata* Engl. = **D. barteri**  
*lehmbachii* Engl. = **D. lehmbachii**  
*letestui* Letouzey = **D. letestui**  
*librevillensis* Letouzey = **D. librevillensis**  
*lujae* De Wild. = **D. buchneri**  
*mannii* (Oliv.) Engl. = **D. mannii**  
*palescens* Baill. = **D. palescens**  
*parvifolia* Engl. = **D. smeathmannii**  
*pierrei* De Wild. = **D. pierrei**  
*rudatisii* Engl. ex De Wild. = **D. lehmbachii**  
*sapinii* De Wild. = **D. sapinii**  
*scabrifolia* Hua = **D. scabrifolia**  
*scabrifolia* auct., non Hua = **D. letestui**  
*seretii* De Wild. = **D. dewevrei**  
*smeathmannii* Baill. = **D. smeathmannii**  
*staudtii* Engl. = **D. staudtii**  
*talbotii* Bak. f. = **D. staudtii**  
*tenuiflora* Dinkl. & Engl. = **D. barteri**  
*tessmannii* Engl., nom. nud. = **D. letestui**  
*thollonii* De Wild. = **D. palescens**  
*trillesiana* Pierre ex De Wild. = **D. barteri**  
*unwinii* De Wild. = **D. smeathmannii**  
*unwinii* auct., non De Wild. = **D. dewevrei**  
*vanhouttei* De Wild. = **D. dewevrei**  
*whytei* Stapf = **D. whytei**  
*Dactyladenia lujae* (De Wild.) Prance & F. White = **D. buchneri**  
*Griffonia barteri* Hook. f. ex Oliv. = **Dactyladenia barteri**  
*bellayana* Oliv. p. p. = **D. bellayana** and **D. floribunda**  
*icondere* (Baill.) Oliv. = **D. icondere**  
*mannii* Oliv. = **D. mannii**  
*palescens* (Baill.) Oliv., incl. var. *arborescens* Oliv. and var. *scandens* Oliv. = **D. palescens**

## HIRTELLA / 1

Essentially a tropical American genus (105 spp. out of 107 species). One in East Africa and one in Madagascar (*H. thouarsiana* Baill. ex Laness.). Map of the genus in America in G. T. Prance, *Flora Neotropica Monograph 95, Chrysobalanaceae*: 226, 1989.

PRANCE, G. T. (2002). New combinations in African Chrysobalanaceae. *Kew Bull.* 57: 993-995.

**H. zanzibarica** Oliv., excl. subsp. *thouarsiana* (Baill. ex Laness.) F. White, subsp. *abrupte-acuminata* F. White, subsp. *obtusifolia* F. White, and subsp. *parvifolia* F. White (all considered as subsp. of *H. thouarsiana*, Madagascar); icon.: Prance & Sothers, *Chrysobalan.* 2: 160, 2003.

syn.: *Acioa goetzeana* Engl.; *Hirtella zanzibarica* var. *cryptadenia* Brenan – Both of **H. zanzibarica** subsp. **zanzibarica**

Evergreen tree 6-25 m, buttressed at base; sometimes flowering as a shrub 1-5 m tall; bark blackish, smooth; leaves shiny, glabrous; fruit edible.

Rain-forest; fringing forest and various types of coastal forest; forest in lower slopes of mountains; "in Mozambique one of the most characteristic and abundant trees in dense semi-deciduous forest at low altitudes dominated by *Pteleopsis myrtifolia* and *Erythrophleum suaveolens*, especially in wetter areas"; 0-900 (-1350) m alt. (subsp. **zanzibarica**). – Upland rain-forest; 1350-1950 m alt. (subsp. **megacarpa**).

Comprises 2 subsp.: – subsp. **zanzibarica**; – subsp. **megacarpa** (R. A. Graham) Prance in *Kew Bull.* 57: 994, 2002 (bas.: *Hirtella megacarpa* R. A. Graham).

## SYNONYMS:

*Hirtella glaberrima* (Engl.) A. Chev. = **Magnistipula glaberrima**  
*sapinii* (De Wild.) A. Chev. excl. var. *greenwayi* Brenan = **M. sapinii**

*sapinii* (De Wild.) A. Chev. var. *greenwayi* Brenan = **M. butayei** subsp. **bangweolensis**

*zenkeri* (Engl.) A. Chev. = **M. zenkeri**

## LICANIA – see AFROLICANIA

## MAGNISTIPULA / 10

An African genus with two species in Madagascar. Formerly united with *Hirtella*. – Trees of the rain-forest; one species (*M. butayei*) with wide distribution, and also in savanna; and another one (*M. sapinii*) a rhizomatous geoxylic suffrutex of Kalahari sands.

**Magnistipula bimarsupiata** Letouzey

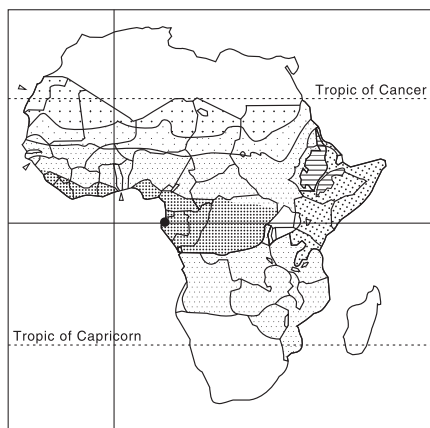
Tree; young shoots with sparse hispid hairs 2 mm long; *internodes hollow, swollen* with a perforation towards the base; 2 swollen pouches at base of leaf blade; probably myrmecophytic.

Rain-forest (at Port Gentil, Gabon).

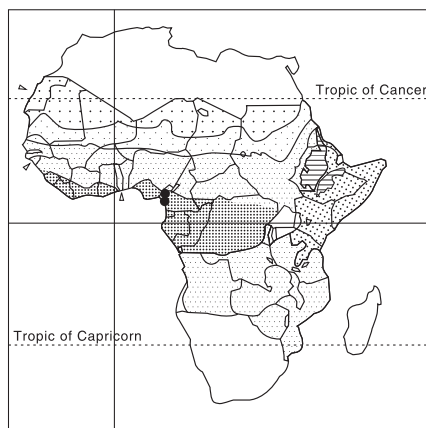
Only known from three collections (type locality and its vicinity).

Closely related to *M. glaberrima*.

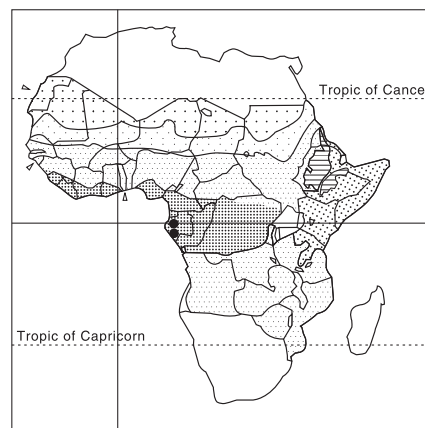




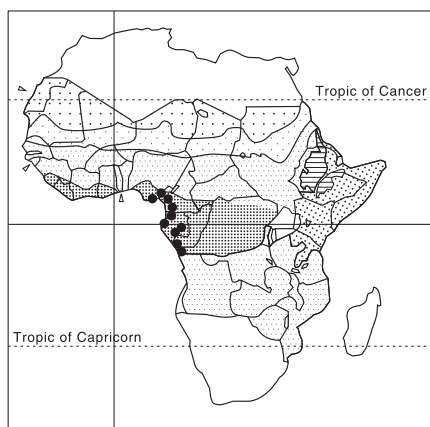
*Dactyladenia librevillensis*



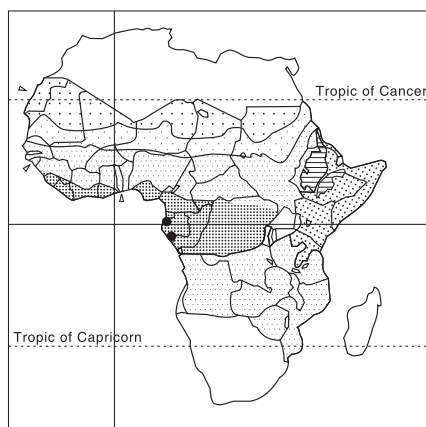
*Dactyladenia mannii*



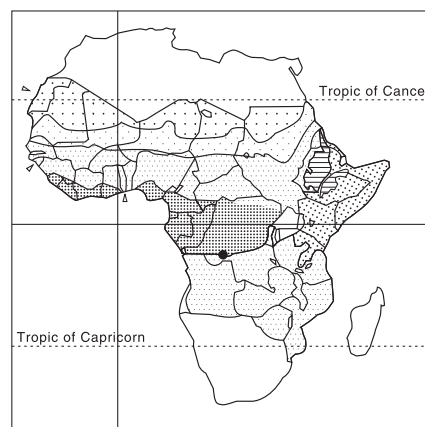
*Dactyladenia ndjoleensis*



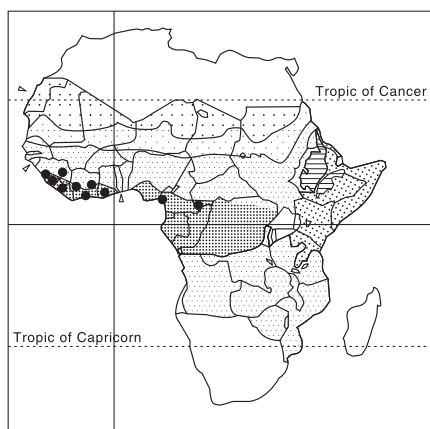
*Dactyladenia pallescens*



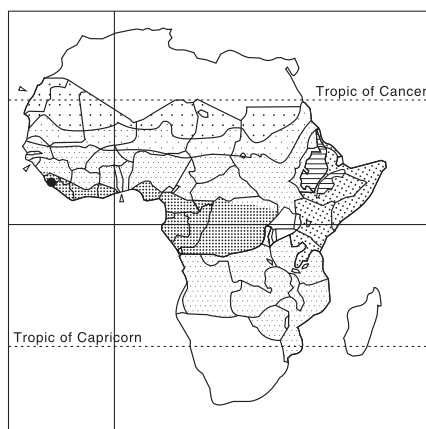
*Dactyladenia pierrei*



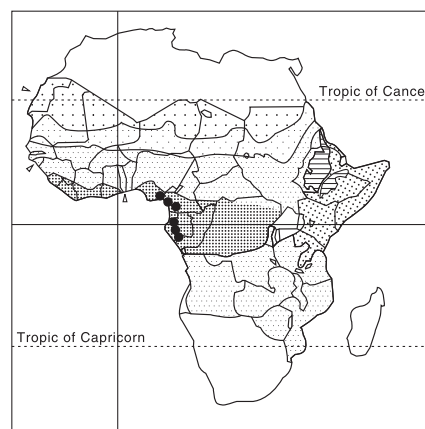
*Dactyladenia sapinii*



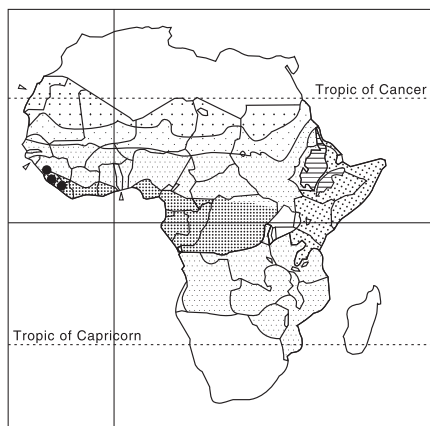
*Dactyladenia scabrifolia*



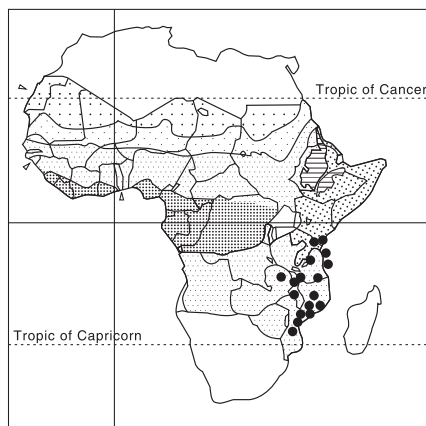
*Dactyladenia smeathmannii*



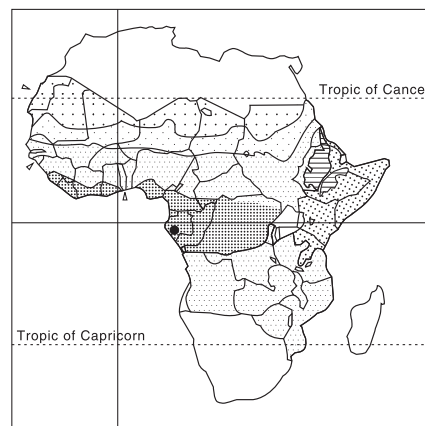
*Dactyladenia staudtii*



*Dactyladenia whytei*



*Hirtella zanzibarica*



*Magnistipula bimarsupiata*

## MAGNISTIPULA

**M. butayei** De Wild.

Bas. and syn. of subspecies: Enum. 2: 15, 1992.

Evergreen tree to 15-30(-45 ?) m; bole free to 15 m and 1 m Ø at base, fluted, irregular, gnarled; crown rounded, densely branched; outer bark coarsely reticulate, flaking off in large patches; inner bark smooth, thin with pinkish veins, smelling of cane sugar; young branches velutinous, olive-golden hairy, later glabrescent, grey.

“One of the very few larger woody African species that occur both in the rainforests of the Guineo-Congolian region and in woodland and wooded grassland of the Sudanian and Zambezian regions” (G. T. Prance & F. White, The genera of Chrysobalanaceae... in Philos. Transact. Roy. Soc. London, B, 320/1197: 160, 1988): Rain-forest on steep slopes; periodically flooded wet rain-forest; river banks; swamp forest; sometimes secondary forest; <400-1800 m alt. (most subspp.; subsp. **butayei** up to 450 m). – Mountain forest on damp sandy soil; pastures derived from such forest; riverine forest; rarely in wooded savanna; 1450-3000 m alt. most abundant around 2500 m [subsp. **montana** (Hauman) F. White]. – Deciduous woodland; wooded savanna between valley savanna with *Acacia* and open forest with *Brachystegia*, on grey sand; wetter *Brachystegia*, *Julbernardia*, *Isoberlinia* woodlands, especially on damp sandy soil; sometimes in floodplain grassland; fixed sand-hills; termite mounds; 480-1800 m alt. [subsp. **bangweolensis** (R. E. Fr.) F. White].

Variable in leaf shape and type of indumentum on leaves and inflorescences.

Comprises 10 subspp., based by F. White on chorological, ecological and vegetative morphological characteristics (cf. D. Champluvier in Bull. Jard. Bot. Belgique 60: 393-403, 1990).

– Subsp. **balingembaensis** Sothers, Prance & B. J. Pollard in Y. Harvey & al., Pl. Bali Ngemba F. R. Cameroon: 51-53, 2004; icon.: *ibid.* p. 50. Submontane forest understorey, riverine forest; 1310-1950 m alt.

**M. conrauana** Engl.; Cheek & al., Pl. Kupe, Cameroon: 153, 2004.

Tree to 12 m, or shrub to 5 m tall, often suckering; branches glabrous, with spots of irregular corky lenticels; stipules asymmetric, 3-4 cm long; inflorescence conical, glabrous, 30 cm long, 35 cm wide.

Rain-forest in mountains; on the limit between grassland and forest; 900-1500 m alt.

Sometimes cultivated as a hedge for enclosures.

**M. cuneatifolia** Hauman

Large tree with irregular bole to 80 cm Ø at base, fluted, and branched from c. 8 m height; large branches twisted; crown round, spreading, leafy; bark yellowish-green with irregular ridges and flaking scales; inflorescences tomentellous, golden-brown; infrutescence and fruit unknown.

Evergreen rain-forest; low alt.

Only known from 3 sites; seems extremely rare though rather widespread; threatened by forest clearance for timber and agriculture (fide S. Cable & M. Cheek, Pl. Mt. Cameroon: XLIX, 1998).

**M. cupheiflora** Mildbr.

Tree to 10 m; bole rough, fluted, crooked; branches erect, twisted; crown leafy; bark irregular; young branchlets appressed-puberulous; inflorescence small, 2-3(-8) cm long, few-flowered.

Evergreen lowland rain-forest.

Comprises 2 subspp. (– subsp. **leonensis** F. White in Sierra Leone).

## MAGNISTIPULA

**M. devriesii** Breteler, Bull. Jard. Bot. Natl. Belgique 64: 193, 1995.

Shrub or small tree 6 m tall with glabrous branches and branchlets; inflorescence slender, to 20 cm long, many-flowered; *ripe* fruit unknown.

Rain-forest, primary and secondary; to 150 m alt.

Resembling *M. zenkeri*, but has a combination of characters representing different subdivisions of the genus.

Only known from the type locality (2 collections F. J. & B. J. M. Breteler 12995 and 13132 (dating from the 1990s, 1994 ?)).

**M. glaberrima** Engl.

syn.: *Hirtella glaberrima* (Engl.) A. Chev.

Tree 10-15 m with irregular, crooked, gnarled, slightly fluted bole; branches crooked, spreading, with dense foliage; (outer) bark yellowish-green, mossy; inner bark thin, brittle, smelling of cane sugar; young branchlets glabrous; stipules cordate, 1.5-1.8 cm long; inflorescence glabrous, short; fruit unknown.

Coastal forest with *Caesalpiniaceae* (Cameroon); evergreen rain-forest; 200-400 m alt. (Mt. Cameroon).

**M. sapinii** De Wild.

syn.: Enum. 2: 15, 1992; *Hirtella sapinii* (De Wild.) A. Chev., excl. var. *greenwayi* Brenan (= *M. butayei* subsp. *bangweolensis*).

Rhizomatous geoxylic suffrutex to 1 m tall, but more often <20 cm; rootstock 10-12 mm Ø; aerial stems erect, densely brownish pubescent (like the young branchlets, petioles and inflorescence axes), often occurring in tufts; inflorescence narrow, contracted.

Open woodland, savanna on plateau, wooded savanna, grassland, on Kalahari sands, in seasonally waterlogged sites, e.g. edges of dambos, watershed plains (in the Upper Zambesi basin).

Resembling *M. butayei* subsp. *glabriuscula* and subsp. *youngii*.

Initially described as a small tree; this has not been subsequently confirmed.

**M. tessmannii** (Engl.) Prance

syn.: *Parinari ingangensis* Pellegr.; *P. sp.* of Saint-Aubin, Forêt Gabon: 169, 1963; *P. nyangensis* sphalm. Pellegr. in Exell, J. Bot. 1928, suppl. 1: 161.

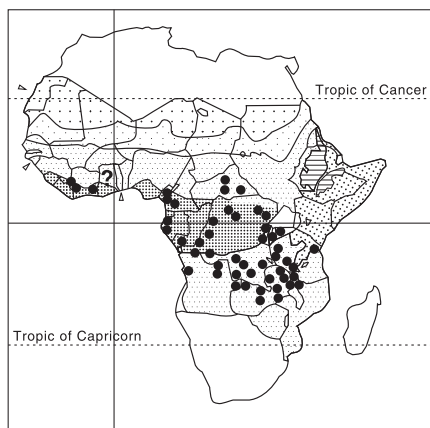
Tree to 40 m; bole short, fluted, irregular, 1-1.2 m Ø at base; branches oblique, very ramose, leafy; bark grey yellowish-green, smooth, with large lenticels (5 mm) in vertical rows; inner bark smelling of cane sugar; young branchlets puberulous-hispidulous; stipules, bracts, bracteoles and flowers soon caducous; fruit edible.

Evergreen primary rain-forest, often on steep hillsides, rarely along watercourses; semi-deciduous forest with *Sterculiaceae* and *Ulmaceae*; 1-700 m alt.

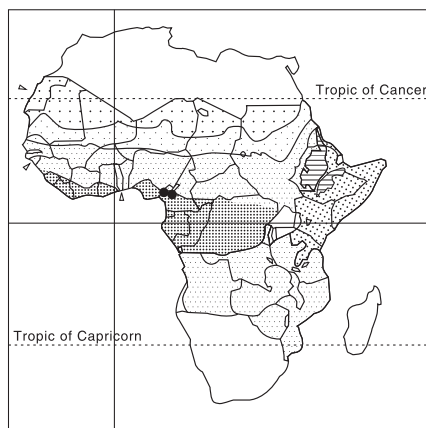
**M. zenkeri** Engl.

syn.: *Parinari versicolor* Engl.; *P. fleuryana* (A. Chev.) Aubrév.; *Hirtella zenkeri* (Engl.) A. Chev.; *Magnistipula pallidiflora* Engl.

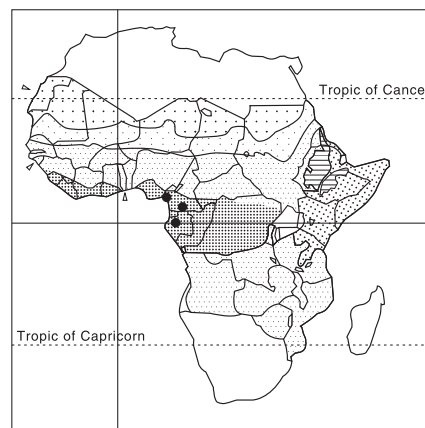
Tree to 30(-35) m with bole 0.8-1 m Ø; sometimes flowering as a shrub 5-6 m tall; bark greenish-orange with small lenticels; inner bark brittle, smelling of cane sugar; branches spreading,



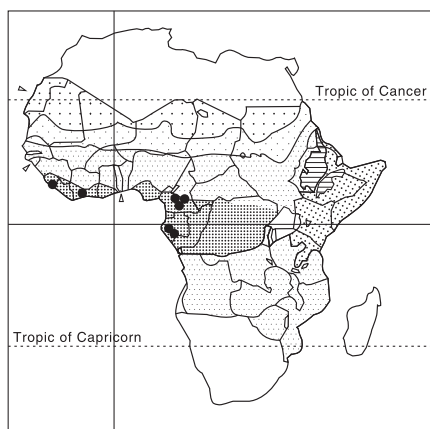
*Magnistipula butayei*



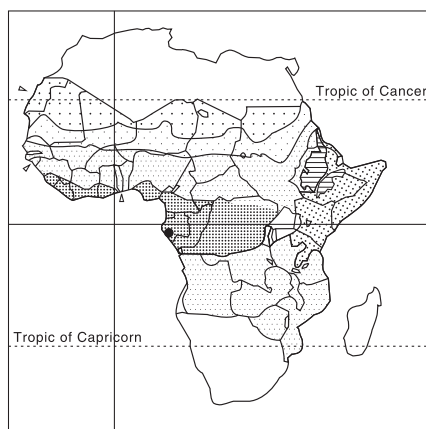
*Magnistipula conrauana*



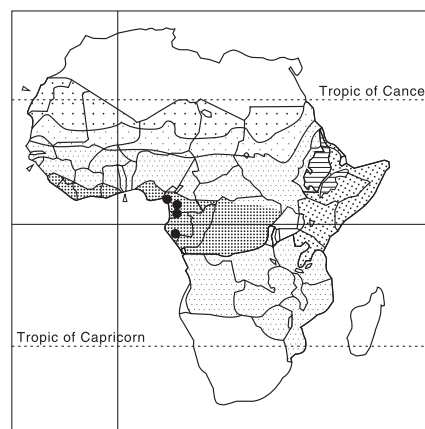
*Magnistipula cuneatifolia*



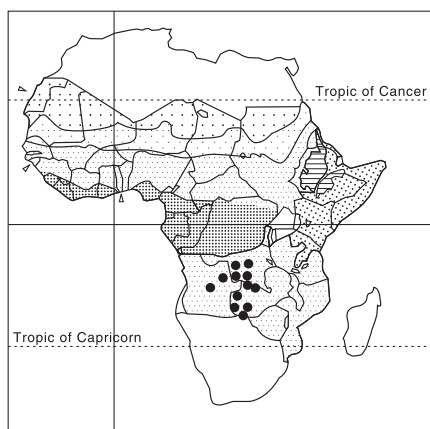
*Magnistipula cupheiflora*



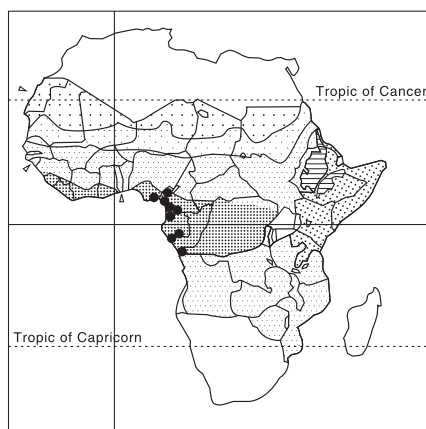
*Magnistipula devriesii*



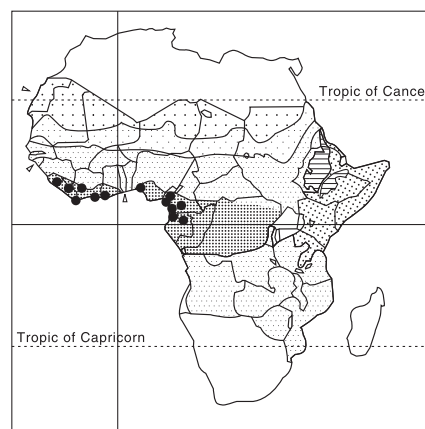
*Magnistipula glaberrima*



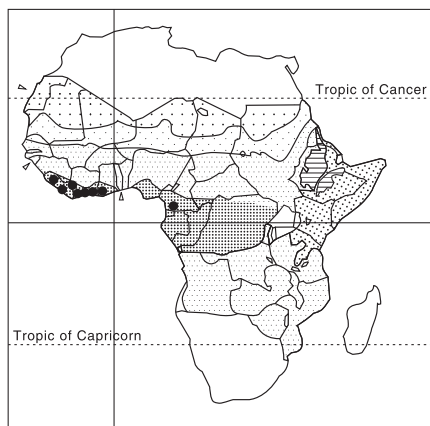
*Magnistipula saponii*



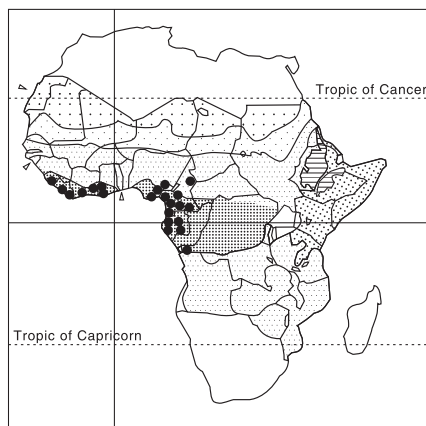
*Magnistipula tessmannii*



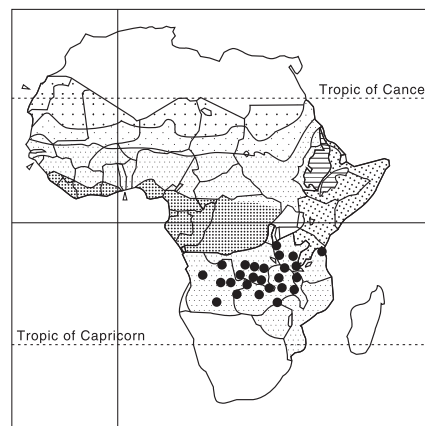
*Magnistipula zenkeri*



*Maranthes aubrevillei*



*Maranthes chrysophylla*



*Maranthes floribunda*



## MAGNISTIPULA ZENKERI

drooping; young branchlets puberulous, soon glabrescent; stipules asymmetric, 1,5 cm long, sometimes inflated and surrounding the internodes (ant shelters ?) inflorescence golden-brown hairy; flowers with glands secreting honey that attracts ants.

Evergreen rain-forest, especially along watercourses and in swampy places.

Interval between the two main areas of distribution c. 1600 km.

## MARANTHES / 10

Mainly an African genus, but one species in tropical America [*Maranthes panamensis* (Standl.) Prance & F. White] and one in tropical Asia-Australia [*M. corymbosa* Blume].

Leaves with a pair of glands at the junction of the lamina and glandular petiole.

**Maranthes aubrevillei** (Pellegr.) Prance & F. White

Tree to 30 m; bole to 80 cm Ø, straight, cylindrical, eventually somewhat fluted at base; bark marbled white, grey, black, green, irregularly scaly; branchlets and inflorescences hirsute; leaves persistently grey-arachnoid-tomentellous underneath and with toothed margin up to the apex of the acumen; bracts and bracteoles late-caducous; leaves of juvenile plants have 8-12 conspicuous glandular teeth on each margin.

Evergreen rain-forest; edge of canyon.

**M. chrysophylla** (Oliv.) Prance

Evergreen tree to 30 m; bole straight, 0,8-1,2 m Ø, slightly fluted at the base; bark smooth, marbled reddish towards the base, flaking off in small scales thus leaving greyish spots, *poisonous*; leaves large (25 × 13,5 cm) with rusty brown felt beneath (or silvery when old in subsp. **coriacea**); inflorescence fulvous-tomentellous; bracts and bracteoles soon caducous; fruit inedible.

Evergreen rain-forest, coastal, with *Caesalpinaceae* (subsp. **chrysophylla**); 200-400 m alt. (Mt. Cameroon); semi-deciduous forest with *Sterculiaceae* and *Ulmaceae* in inland areas (subsp. **coriacea**); forest patches with *Caesalpinaceae* and *Gilbertiodendron dewevrei*; 800 m alt. (Cameroon).

Variable in form, hairiness and consistency of the leaves: chartaceous and gradually narrowed lamina (subsp. **chrysophylla**) or coriaceous lamina with suddenly contracted apex (subsp. **coriacea**).

Comprises 2 subsp.: – subsp. **chrysophylla** occurs in an interrupted coastal band from Sierra Leone to Gabon; – subsp. **coriacea** F. White further inland from Cameroon to SW Zaire.

Easily confused with *M. excelsa* which has however edible fruits.

**M. floribunda** (Bak.) F. White

Evergreen tree (4-)6-10 m (or shrub 3-4 m) tall with a dense, dark green, rounded crown; trunk free to 3 m height, 30-40 cm Ø; bark grey, finely reticulate ± smooth; lower surface of leaf blade densely arachnoid-tomentose at first, glabrescent, though some hairs persisting; inflorescences often, shortly grey-velutinous tomentellous, rarely glabrous.

Woodland in higher-rainfall areas with *Brachystegia*, *Julbernardia*, *Isobertinia*; on termite-mounds and in rocky places; upland bushland; scattered tree grassland; sometimes left standing in villages as a shade tree; 1000-1700 m alt.

Variable in indumentum of leaves and inflorescences.

With *D. polyandra* the only woodland species in the genus; the latter of the Sudanian region, *D. floribunda* of the Zambezan region. They are separated by an interval of 1000 km.

## MARANTHES

**M. gabunensis** (Engl.) Prance

syn.: *Parinari gabunensis* (“*Parinarium gabunense*”) Engl. var. *mayumbensis* De Wild.; *P.* (“*Parinarium*”) *klaine-anum* Pierre in A. Chev., nom. inval.

Tree to 20 m with straight bole to 60-80 cm Ø, tapering at base; sometimes flowering as a shrub 6-8 m tall; crown irregular, with 2-3 main branches, secondary branches long, drooping; bark marbled grey-brown-green-red, exuding a red juice when cut; branches bearing leaves and inflorescences purple; leaf blade large (26 × 12 cm), with glabrous lower surface, cuneate at base and long acuminate at apex (c. 2 cm long); inflorescences few-flowered.

Evergreen rain-forest, coastal (but sometimes further inland); forest with *Terminalia* or managed forest (Mayombe); 1-200 m alt. (Mt Cameroon).

Very characteristic species with a truly hollow receptacle; distinguished from *M. aubrevillei* in form of leaf blade.

**M. glabra** (Oliv.) Prance, incl. var. *gilletii* (De Wild.) Mendes

syn.: Bas. and syn.: Enum. 2: 15, 1992; *Parinari montana* Engl. 1911, nom. superfl. illegit., non Aubl. 1775; *P. gilletii* De Wild.; *P. tibatisensis* Engl.; *P. vassonii* A. Chev., nom. nud.; *P. gigantea* A. Chev., ms. in sched.; *P. kerstingii* sensu Aubréville in Fl. Forest. Côte Ivoire, Ed. 1, 1: 148, pl. 51, 1936, non Engl.; *P. glaberrimum* Engl., sphalm. [All described under “*Parinarium*”.]

Tree 20-40 m with cylindric bole free to 15 m height, 0,7-1(-1,5) m Ø and 4 m in girth; buttresses small, blunt; crown dense, wide-spreading; sometimes flowering when only 5 m tall; bark peeling off in large scales leaving yellowish-pink spots, and exuding a honey-coloured juice when cut, turning red later; leaves deep green glossy, usually glabrous beneath, rarely with sparse, caducous, whitish cobwebby indumentum; fruit edible, oily.

Evergreen and semi-evergreen rain-forest, riverine forest, mostly on dry land; rare in the wettest types of forest, and absent only from the dryer types; 1-1900 m alt.

Distribution very similar to that of *Petersianthus marccarpus* (*Melastomataceae*).

**M. goetzeniana** (Engl.) Prance

bas.: *Parinari goetzeniana* (“*Parinarium goetzenianum*”) Engl. (*P. goetzeana* Engl. sphalm.).

syn.: See Flora Zambes. 4: 43, 1978.

Evergreen tree (12-)20-35 m, with a wide rounded crown; bark ± smooth, grey, grey-black or reddish brown; leaves coriaceous, with apex suddenly and acutely acuminate, shining, glabrous matt beneath; inflorescence much branched, greyish.

Moist evergreen rain-forest, often associated with *Khaya nyasica* and *Newtonia buchananii*; fringing forest with *Adina microcephala*, *Erythrophleum suaveolens*, *Treulia africana*; windward slopes of mountains; transitional rain-forest; 300-1500 m alt.

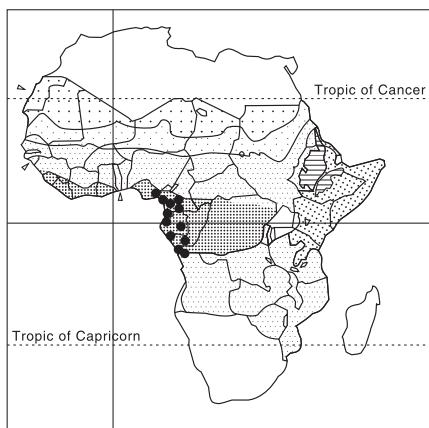
One of the most characteristic species of moist evergreen forest at low and medium altitude.

Close to the W African *M. glabra* and *M. robusta*.

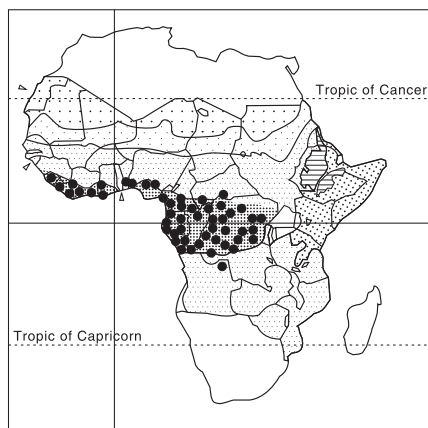
**M. kerstingii** (Engl.) Prance

Evergreen tree to 20(-30) m; bole straight, to 80 cm Ø and 1,5 m in girth; bark grey, rough, flaking off in grey and red patches, slash dark red; leaf blade (7-)14 × 6 cm, long-acuminate, leathery, dark green, glossy, glabrous beneath; flowers whitish-tomentellous, in flattened glabrous terminal inflorescences.

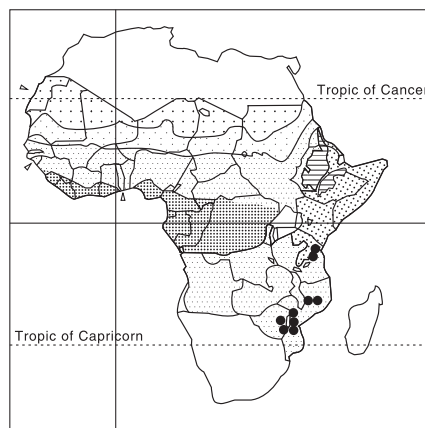




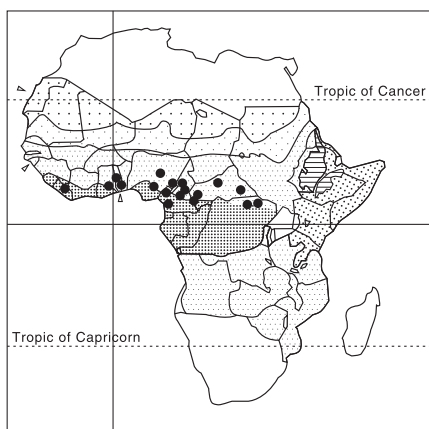
*Maranthes gabunensis*



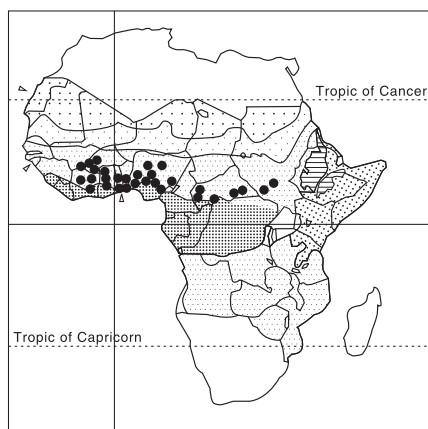
*Maranthes glabra*



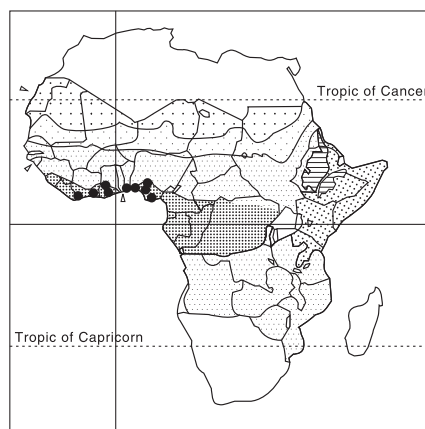
*Maranthes goetzeniana*



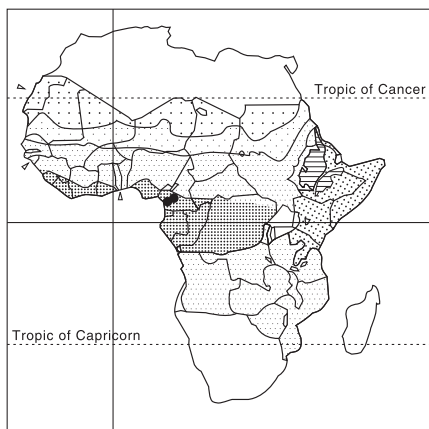
*Maranthes kerstingii*



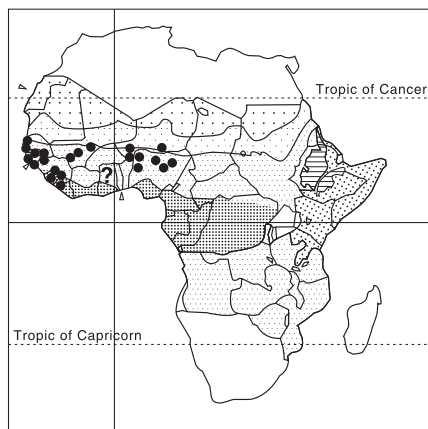
*Maranthes polyandra*



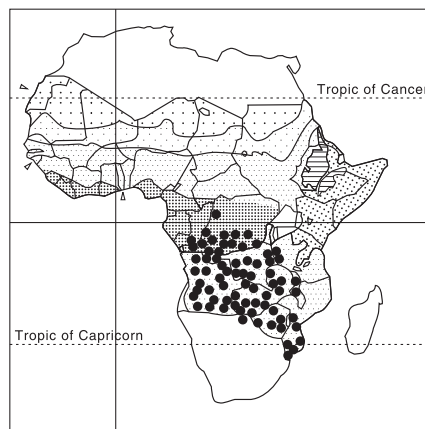
*Maranthes robusta*



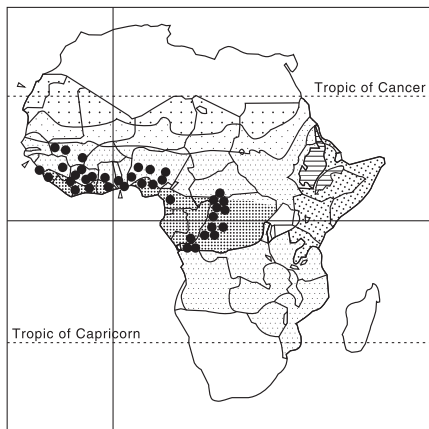
*Maranthes sanagensis*



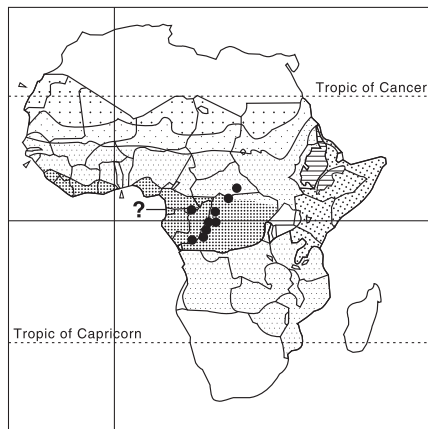
*Neocarya macrophylla*



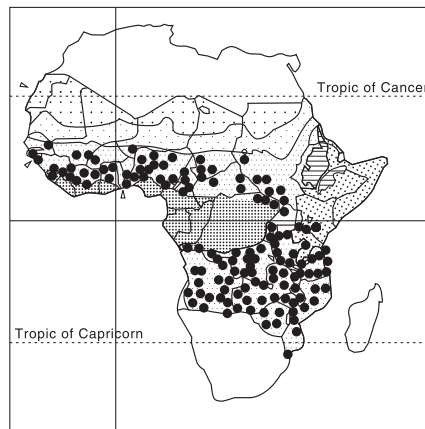
*Parinari capensis*



*Parinari congensis*



*Parinari congolana*



*Parinari curatellifolia*

## MARANTHES KERSTINGII

Fringing forest in wetter, upland savanna areas; associated (in Cameroon) with *Aubrevillea kerstingii*, *Beilschmiedia ngriki*, *Canarium schweinfurthii*, *Eriocoelum kerstingii*, *Erythrophleum suaveolens*, *Khaya grandifoliola*, *Vitex doniana*; sometimes as an isolated tree in savanna cleared for cultivation; 300-1100 m alt.

Intermediates between *M. kerstingii* and *M. glabra* are recorded from Centr. Afr. Rep. and Zaire.

Very similar to *M. glabra*.

**M. polyandra** (Benth.) Prance, p.p. excl. subsp. *floribunda* (Bak.) Prance (= *M. floribunda*).

Bas. and syn.: Enum. 2: 16, 1992; *Parinari polyandra* Benth. var. *pleiocarpa* Engl., var. *cinerea* Engl., var. *villosa* Aubrév. nom. inval., var. *argentea* Aubrév. nom. inval.; *P. baoulensis* A. Chev., nom. nud.

Tree to 8 m, often deformed by fire, with a gnarled, twisted bole; or shrub to 5 m tall with twisted branches; crown spreading; leaves leathery, glossy, either persistent grey-tomentellous or glabrous; flowers numerous, very conspicuous, white or pinkish, in dense, flattened panicles at the ends of branches.

Wooded grassland, woodland; forest in open country; secondary grassland derived from forest in transition zone; brushwood; 300-400-? m alt. – Widespread.

Variable in the indumentum of lower leaf surface.

In W Africa its northern limit coincides ± with those of *Isobertia doka* and *I. tomentosa*.

Tolerant to repeated fierce fires. The only species in the genus studied for its reproductive biology (pollination; flowering extending over ± 2 weeks; night flowering, visited by bats, and also hawkmoths *Sphingidae*; fide Prance & F. White in Philosoph. Transact. Roy. Soc. London, B, Biol. Sci. 320: 122-123, 1998).

**M. robusta** (Oliv.) Prance

syn.: *Parinari robusta* Oliv., incl. var. *glabrifolia* Hauman, but excl. var. *klainei* Aubrév. ex Pellegr. (= *M. glabra*)

Deciduous tree to 12 m, low branching with semi-circular crown; bole cylindrical to 1,7 m in girth; bark with knots, grey or yellowish brown peeling off in small scales, slash red, granular, exuding a little reddish gum; leaves shortly acuminate, persistently pale-fulvous arachnoid-tomentellous beneath; inflorescences densely hairy.

Swamp forest in coastal areas, sometimes forming pure stands; riversides; also in dryer types of semi-evergreen rain-forest, with *Brachystegia eurycoma*, *Irvingia gabonensis*, *Triplochiton scleroxylon*; abundant in savanna (Ivory Coast: Bingerville); edge of savanna.

Often confused with *M. glabra*.

**M. sanagensis** F. White

Tree 6-8 m with short bole to 1 m Ø, often twisted and prostrate; crown rounded; leaf blade abruptly cuspidate at apex, lower surface glabrous; inflorescence few-flowered with very large greenish-white flowers, sepals 1 cm long, filaments to 6 cm long.

Riverbanks (the middle part of the Sanaga River and the lower courses of its tributaries), on sandy alluvium and among blocks of gneiss; in time of flood liable to be submerged to a depth of 2-3 m; gallery forest; 400-500 m alt.

Resembling *M. gabunensis* in its larger flowers.

## MARANTHES

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**Parinari poggei** Engl. described from Zaire, Kasai, Kwango, Mukenge (Pogge 914) as near *P. polyandrum* is poorly defined and has not been found again. It is probably a **Maranthes** (fide Prance & Sothers, Chrysobalan. 2: 66, 2003).

## NEOCARYA / 1

One species in W Africa.

**Neocarya macrophylla** (Sabine) Prance – Gingerbread Plum, “Pomme du Cayor” (Senegal).

bas.: *Parinari macrophylla* Sabine 1824, non Teijsm. & Binn. 1867

Small bushy tree to ± 10 m, often less, with a gnarled bole, rounded bushy crown and densely tomentose branchlets; leaves broad, strongly nerved, tomentose below; inflorescences golden-brown hairy; fruit rough-skinned, mealy-fleshy, edible, containing a yellow oil.

Sandy beaches in coastal areas, in a strip up to 300 km wide; also inland (700-100 km from the coast) in the driest savanna regions, on banks of sandy seasonal watercourses and on sandstone cliffs; common in wadi beds (Niger-Nigeria).

Doubtfully recorded from S. Tomé.

Semi-cultivated for its fruits.

Appears to survive annual fires in savanna.

## PARINARI / 6

Pantropical genus of 44 species, most of which in tropical America and tropical Asia – the Pacific region. Leaves with 2 circular glands on upper surface of petiole.

**Parinari capensis** Harv., incl. fa. *obtusifolia* Cavaco, Bull. Mus. Natl. Hist. Nat. Paris, Sér. 2, 26: 639, 1954.

syn.: and subsp.: Enum. 2: 16, 1992; *P. capensis* var. *latifolia* Oliv.; *P. curatellifolia* Planch. ex Benth. var. *fruticulosa* R. E. Fr.; *P. latifolia* (Oliv.) Exell 1928, non M. R. Henderson 1933. – All of subsp. **capensis**.

Rhizomatous geoxylic suffrutex with very long branched rhizomes 4-8 mm Ø; aerial stems caespitose, erect, 5-30 cm tall, sometimes to 1-2(-5) m (subsp. **incohata** F. White), covered with yellow or silvery hairs, glabrescent; the stems burn back to ground-level by fire each year, unburnt shoots seem to die back; leaves glabrous, green above, white tomentose beneath, ± oblanceolate; inflorescences whitish-tomentose; fruit yellow, black when dried, edible.

Edges of dambos, on sandy, especially seasonally waterlogged oligotrophic soils and on Kalahari sands, where trees are absent, forming large patches not touched by cattle; secondary grassland following destruction of woodland by fire and cultivation; coastal plains; absent from the southernmost low-lying river valleys; (0-300-)900-1800 m alt.

Very variable in leaf shape: from very narrow to very broad; in general vigour and in position of inflorescence.

Namibia, Botswana, S. Africa (Transvaal, Natal, Swaziland).

Comprises 2 subsp. (– subsp. **incohata** in the coastal plain of SE part of range with *Diospyros lycioides*, *D. galpinii*, *Hyphaene natalensis*, *Syzygium cordatum*, *Garcinia livingstonei*, at 0-100 m alt.). Seems to be the most abundant and most widely distributed species among the geoxylic suffrutices.

## PARINARI CAPENSIS

Closely related to the sympatric *P. curatellifolia* (a woodland species) but true intermediates do not seem to occur.

**P. congensis** F. Didr., non *Parinari congoensis* Engl. (= *P. congolana* Th. & H. Durand); icon.: Prance & Sothers, *Chrysobalan.* 1: 220, 2003.

syn.: *P. subcordata* Oliv.; *P. martretii* A. Chev., ms. in sched.; *Ferolia subcordata* (Oliv.) Kuntze

Evergreen tree to 20-30 m with dense, wide-spreading rounded crown; bole short tortuous, irregular, slightly buttressed at base, 0,8-1 m Ø and 2 m in girth, buttresses to 1m high (to 5 m in flooded forest in Zaire), sometimes with much branched adventitious roots at about 2 m from the base, functioning as pneumatophores; trunk branched low down, with brown, longitudinally wrinkled bark, large branches with bark marbled white-grey-black; leaves coriaceous, cordate at base, distichous; inflorescence silky-white; flowers white tinged pink, fragrant; fruit edible.

Characteristic species of swamp forest and flooded forest occurring on sandy river banks (water level variations from 2-5 m), lake sides always near water; fringing forest in savanna areas (Sudanian region) in association with *Cynometra vogelii*, *Manilkara obovata*, *Morelia senegalensis*, *Pterocarpus santalinoides*, *Syzygium guineense*; in periodically inundated forest with *Didelotia unifoliolata*, *Guibourtia demeusii*, *Monopetalanthus pteridophyllus*, *Oubanguia africana*, *Scytopetalum pierreanum*; also codominant with *Uapaca heudelotii* in *Oubanguia africana* and *Guibourtia demeusii* forest; abundant on the banks of the River Zaire and around Lake Ossa (Cameroon).

Not yet recorded from Gabon. – Also in Equatorial Guinea? (station cited under “*P. congoense* Engl.” in C. Aedo & al., Bases document. *Flora de Guinea Ecuatorial*: 169, 1999, fide Guinea, 1946: 141).

An interval of 900 km separates the two main areas of distribution.

Resembling *P. congolana* and also *P. excelsa* (a tall tree of the rain-forest!).

**P. congolana** Th. & H. Durand, non *P. congensis* F. Didr.

syn.: *P. congoensis* (“*Parinarium congoense*”) Engl.

Evergreen tree to 20 m, sometimes branched from the base; young branchlets rusty-hairy; roots forming a dense network at ground level; leaves small distichous, coriaceous, not cordate at base (cf. *P. congensis*), 2-5 cm long × 1-1,5 cm wide, lower surface ferruginous; inflorescences rusty-hairy; flowers creamy white; fruit unknown.

On sandy banks of the River Zaire and the lower courses of its tributaries.

Resembling *P. congensis* (with larger leaves, 3-13 cm long × 1,5-7 cm wide, less coriaceous).

Perhaps also in Cameroon? (River Sangha). For Equatorial Guinea cf. under *P. congensis*.

**P. curatellifolia** Planch. ex Benth., excl. var. *fruticulosa* R. E. Fr. (= *P. capensis* subsp. *capensis*), but incl. subsp. *mobola* (Oliv.) R. A. Graham (cf. under *Bafodeya benna* above).

syn.: Enum. 2: 16, 1992; *P. chapelieri* Baill.; *P. gardineri* Hemsl.

Evergreen tree (3-)5-12(-20) m, with dense, rounded, umbrella-shaped crown casting heavy shade; bole to 40 cm Ø, seldom >1 m in girth, with grey-black, rough, deeply and closely rectangularly fissured bark, slash dark red; sometimes a shrub or a fire-trimmed distorted tree; branchlets with conspicuous

## PARINARI CURATELLIFOLIA

lenticels, twigs finely hairy; leaves ± elliptic, variable, densely and finely silvery or yellowish hairy beneath, glossy above; inflorescences ferruginous- (or whitish-) tomentose; flowers white or pale pink, fragrant; fruit red-brown, warty, edible.

In a wide variety of woodland types, often a conspicuous feature in the landscape; on steep rocky hills with *Isoberlinia dalzielii*; in open woodland dominated by *Terminalia laxiflora*, *Syzygium guineense*, on flat interfluvies with impeded drainage; miombo woodland (Zambeian region) dominated by *Brachystegia*, *Julbernardia* and *Isoberlinia* spp.; a characteristic tree of wooded grassland on waterlogged soils (but not dambos); on low ridges with better drained soil; frequent in fire-maintained secondary grassland, in association with *Annona senegalensis*, *Azelia africana*, *Bridelia ferruginea*, *Burkea africana*, *Butyrospermum paradoxum*, *Combretum collinum*, *Crossopteryx febrifuga*, *Cussonia kirkii*, *Entada abyssinica* etc.; coastal savanna on copper-bearing soils in stunted woodland (Katanga) on rocky hills in association with *Pterocarpus angolensis*, *Erythrophleum africanum*, *Hymenocardia acida*, *Maprounea africana*, *Burkea africana*, *Psorospermum febrifugum*; 0-50 m alt. (coast); -480-1900 m alt. – Absent from the drier fringes of the Sudanian and Zambeian regions, and from hot low-lying river valleys.

Variable in shape and size of leaves, in the colour and nature of the indumentum.

S. Africa (Transvaal, Natal), Botswana, Namibia; Madagascar; probably naturalized in the Seychelles.

Distribution gap of 500 km between Mayumbe (Luki) and nearest station in the east.

Can tolerate small concentrations of copper in the soil.

Resembling hairy forms of *Maranthes polyandra* (but whose leaves have fewer lateral nerves); leaves (but tomentum of leaves different) and habit like *Pappea capensis* (*Sapindaceae*).

The fruit pulp has a pleasant flavour; sometimes considered as one of the best of African wild fruits.

**P. excelsa** Sabine, incl. var. *fulvescens* Engl. and subsp. *holstii* (Engl.) R. A. Graham – Guinea Plum.

syn.: Enum. 2: 16, 1992; *Petrocarya excelsa* (Sabine) Steudel, non *P. excelsa* Jack.; *Ferolia excelsa* (Sabine) Kuntze; *Parinari salicifolia* Engl. 1895, non (Presl) Miq. 1885, nom. illegit.; *Parinari mildbraedii* Engl.; *P. elliotii* Engl.; *P. tenuifolia* A. Chev.; *P. riparia* R. E. Fr.; *P. nalaensis* De Wild. (sometimes mis-spelled “*ealaensis*”); *P. holstii* Engl., incl. var. *longifolia* Engl. ex De Wild. nom. nud. and var. *whytei* Engl.; *P. caillei* A. Chev., ms. in sched.; *P. brachystachya* Benth.; *P. laxiflora* Ducke, incl. var. *lata* Ducke; *P. glazioviana* Warm.; *P. sylvestris* M. Kuhlmann; *Ferolia amazonica* (Mart. ex Hook. f.) Kuntze, nom. inval.; *Parinari amazonica* Mart. ex Hook. f., nom. inval.

Large evergreen tree to 45(-50) m but under limiting conditions to 8 m tall with bole 0,4-0,5 m Ø; crown thick, rounded or flatly spreading; bole to 4 m in girth and 1-1,2(-1,5) m Ø above the 5-6 buttresses which can reach 3-4 m in height and 10 cm thick, sometimes not buttressed; bark grey-brown, rough, finely and often long-fissured, flaking off in irregular patches c. 10 cm large; leaves with acute or obtuse apex, with 24-30 “pairs” of lateral nerves very prominent below, dark green ± shining above, with appressed silvery (W Africa) or fulvous (E Africa, described as *P. holstii* Engl.) indumentum below; inflorescences thickly hairy to shaggy; flowers numerous, conspicuous, white, sweet-scented, melliferous; fruit with warty surface, edible.



## PARINARI EXCELSA

Rain-forest but for the wetter parts (non-flooded); coastal forest, swamp forest and in swampy depressions in rice fields together with *Pseudospondias microcarpa*, *Ceiba pentandra* (Senegal); dominant in better drained forest (Basse Casamance), in association with *Erythrophleum suaveolens*, *Detarium senegalense*, *Azelia africana*, *Khaya senegalensis* but more rarely with *Albizia adianthifolia*, *A. ferruginea*, *A. zygia*, *Chlorophora regia*, *Cola cordifolia*, *Dialium guineense*, *Morus mesozygia*, *Sterculia tragacantha* etc.; in W Africa most abundant tree in forest above c. 1000 m alt. and in remnants of burnt upland forest in ravines (W and SW slopes); in Central and E Africa extensively distributed in upland areas in various types of montane forest, and in forest transitional to lowland rain-forest; and in riverine forest in *Brachystegia* woodland; (750-)900-2400 m alt.; at the higher altitudes sometimes associated with *Podocarpus falcatus*, and forming gallery forests in deep ravines whose slopes are covered with *Arundinaria alpina*; co-dominant or dominant in dry evergreen forest or fringing forest (Angola, Zambia).

Variable in shape, size and texture of leaves, in type of indumentum (cf. above), in form of inflorescence, and in size of flowers.

S. America from Colombia to E Venezuela and EC Brazil (map in G. T. Prance, *Flora Neotropica Monogr.* 9S: 196, 1989).

In W Africa, replaced on river banks by *Parinari congensis*.

One of the most widespread and abundant forest trees in Africa, mostly with a scattered distribution, but can be dominant or co-dominant (cf. above).

Does not resist fire.

Mixed populations of *P. excelsa* and *P. curatellifolia* can occur (however rarely) in secondary grassland or woodland on sites formerly occupied by forest. Intermediates seem to be very rare, reported from Zambia (1220 m), Mozambique (900 m) and Angola (1760 m). Intermediates between *P. excelsa* and *P. congensis* are reported from Nigeria.

***P. hypochrysea*** Mildbr. ex Letouzey & F. White ("*Parinarium hypochryseum*" Mildbr.).

Large evergreen tree to 20-30(-40) m, buttressed at base and with a rounded, somewhat flattened crown; young shoots with golden-fulvous indumentum; leaves 10-28 × 5-11 cm with obtuse apex and (20-)25(-30) pairs of lateral nerves; inflorescences ± leafy, ± densely villous.

Hygrophilous coastal evergreen rain-forest with *Caesalpinaceae* locally abundant; further inland (to c. 30 km) in populations of *Gilbertiodendron dewevrei*; roadside (Ivory Coast). – Further inland replaced by *P. excelsa*.

Similar to *P. excelsa* with which it has been confused. Their leaves are similar but the flowers different.

A collection from Liberia uncertain; but reported by L. Aké Assi from Ivory Coast where it is extremely rare and threatened by extinction (Boissiera 57: 184, 2001).

## SYNONYMS:

*Parinari (Parinarium) aubrevillei* Pellegr. = **Maranthes aubrevillei**

*bangweolensis* R. E. Fries = **Magnistipula butayei**

*baoulensis* A. Chev., nom. nud. = **Maranthes polyandra**

*benna* Scott Elliot = **Bafodeya benna**

*bequaertii* De Wild. = **Maranthes chrysophylla**

*caillei* A. Chev., ms. = **Parinari excelsa**

*chapelieri* Baill. = **P. curatellifolia**

*chrysophylla* Oliv. = **Maranthes chrysophylla**

## PARINARI

*curatellifolia* Planch. ex Benth. var. *fruticulosa* R. E. Fr. =

**Parinari capensis** subsp. **capensis**

*ealensis* De Wild., sphalm. = **P. excelsa**

*elliottii* Engl. = **P. excelsa**

*fleuryana* (A. Chev.) Aubrév. = **Magnistipula zenkeri**

*floribunda* Bak. = **Maranthes floribunda**

*gabunensis* Engl., incl. var. *mayumbensis* De Wild. =

**Maranthes gabunensis**

*gardineri* Hemsley = **Parinari curatellifolia**

*gigantea* A. Chev., ms. = **Maranthes glabra**

*gilletii* De Wild. = **M. glabra**

*glaberrimum* Oliv. in Engl., sphalm. = **M. glabra**

*glabra* Oliv., incl. var. *gilletii* (De Wild.) Hauman =

**M. glabra**

*glabra* auct., non Oliv., p.p. = **Afrolicania elaeosperma**

*goetzeana* Engl., sphalm. = **Maranthes goetzeniana**

*goetzeniana* Engl. = **M. goetzeniana**

*holstii* Engl., incl. var. *longifolia* Engl. ex De Wild. and var.

*whytei* Engl. = **Parinari excelsa**

*ingangensis* Pellegr. = **Magnistipula tessmannii**

*iodocalyx* Mildbr. = ?**Maranthes chrysophylla** subsp. **coriacea**

*kerstingii* Engl. = **M. kerstingii**

*kerstingii* sensu Aubrév., Fl. Forest. Côte d'Iv., Ed. 1 =

**M. glabra**

*klaineana* Pierre in A. Chev. = **M. gabunensis**

*klainei* Aubrév. = **M. glabra**

*latifolia* (Oliv.) Exell = **Parinari capensis** subsp. **capensis**

*macrophylla* Sabine = **Neocarya macrophylla**

*martretii* A. Chev., ms. = **Parinari congensis**

*mildbraedii* Engl. = **P. excelsa**

*mobola* Oliv. p.p. = **P. curatellifolia** and **Bafodeya benna**

*montana* Engl. 1911 = **Maranthes glabra**

*nalaensis* De Wild. = **Parinari excelsa**

*nyangensis* Pellegr., sphalm. = **Magnistipula tessmannii**

*poggei* Engl. = **Maranthes** sp.

*polyandra* Benth., incl. var. *pleiocarpa* Engl. = **Maranthes polyandra**

subsp. *floribunda* (Bak.) R. A. Graham = **M. floribunda**

var. *argentea* Aubrév. = **M. polyandra**

var. *cinerea* Engl. = **M. polyandra**

var. *villosa* Aubrév. = **M. polyandra**

*pumila* Mildbr. = **Parinari capensis**

*riparia* R. E. Fr. = **P. excelsa**

*robusta* Oliv. = **Maranthes robusta**

var. *klainei* Aubrév. ex Pellegr. = **M. glabra**

*salicifolia* Engl. 1895 = **Parinari excelsa**

*sargosii* Pellegr. = **Magnistipula butayei**

sp. of Saint-Aubin, Forêt Gabon, 1963 = **M. tessmannii**

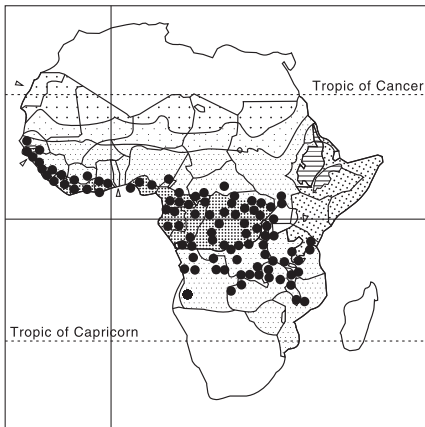
*subcordata* Oliv. = **Parinari congensis**

*tenuifolia* A. Chev. = **P. excelsa**

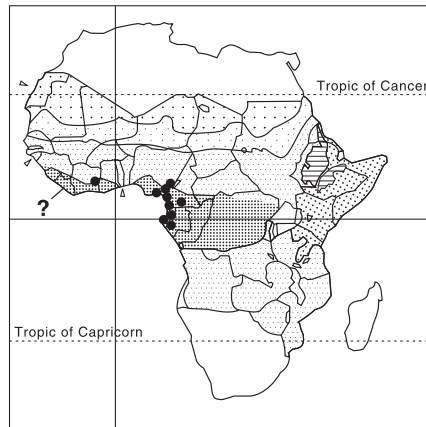
*tessmannii* Engl. = **Magnistipula tessmannii**

*tibatensis* Engl. = **Maranthes glabra**

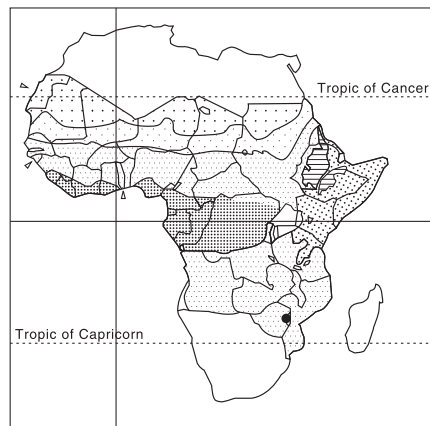
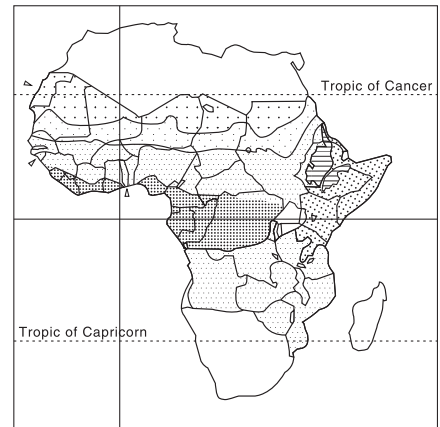




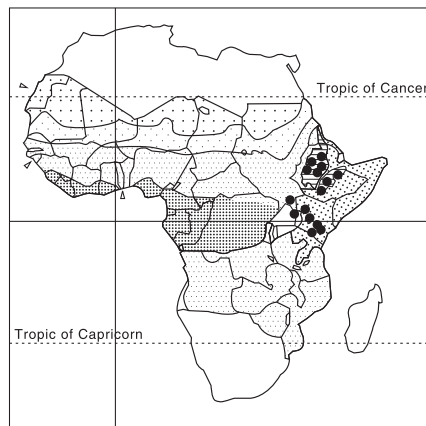
*Parinari excelsa*



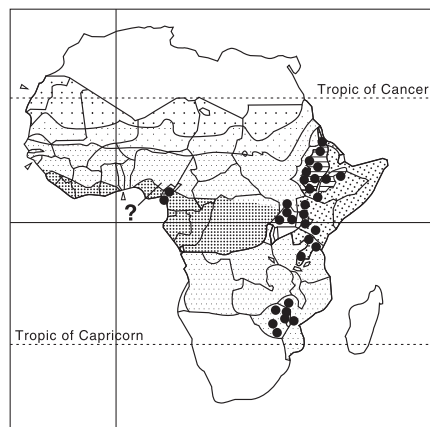
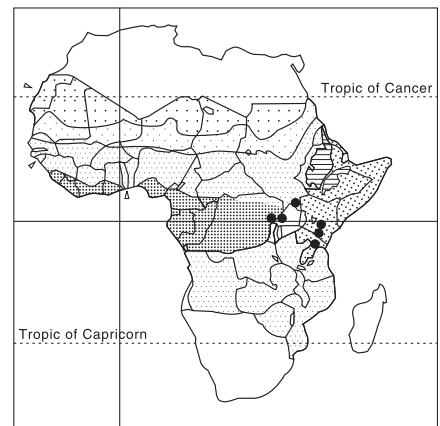
*Parinari hypochrysea*



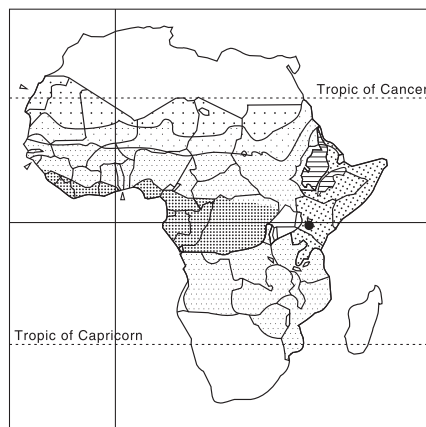
*Agrimonia bracteata*



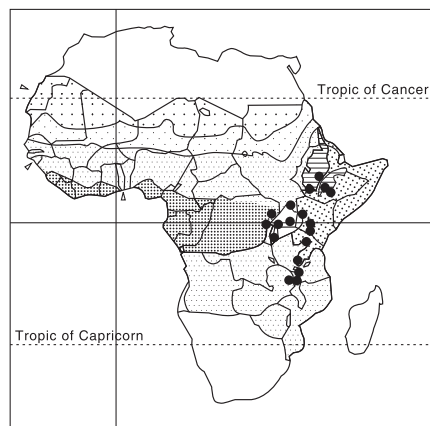
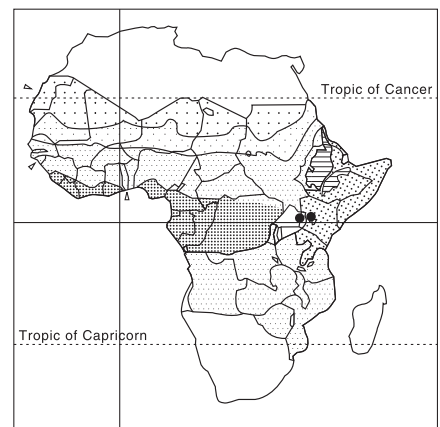
*Alchemilla abyssinica*



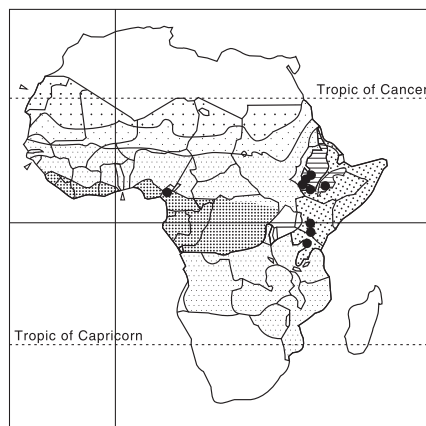
*Alchemilla cryptantha*



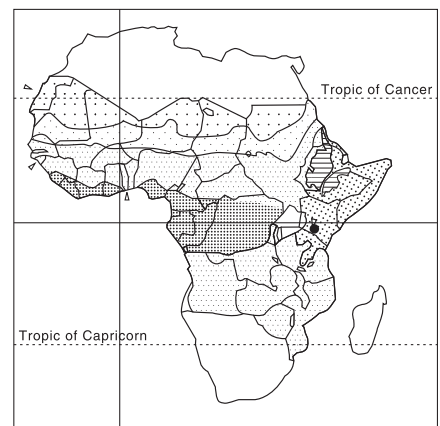
*Alchemilla dewildemanii*



*Alchemilla ellenbeckii*



*Alchemilla fischeri*



*Alchemilla hageniae*

## PARINARI

*tisserantii* Aubrév. & Pellegr. = **Magnistipula butayei**  
*vassonii* A. Chev., nom. nud. = **Maranthes glabra**  
*verdickii* De Wild. = **Parinari excelsa**  
*versicolor* Engl. = **Magnistipula zenkeri**  
*whytei* Engl. = **Parinari excelsa**

**ROSACEAE / 11 g. / 52 spp.**

Several *Alchemilla* species are endemic to a few mountain areas and some are known from very few collections (*A. dewildemania*, *A. hendrickxii*). The genus *Rubus* is particularly difficult, and in certain cases undercollected and insufficiently known (*R. adenocomus*, *R. aethiopicus*). Two species are known only from the type collections (*R. erlangeri*, *R. iringanus*), and for one taxon the habit is not recorded (*R. transvaaliensis* var. *kyimbilense*).

KUBITZKI, K., Ed. (2004). *The Families and Genera of Vascular Plants 6. Flowering Plants – Dicotyledons: Celastrales, Oxalidales, Rosales, Cornales, Ericales*. Springer Verlag, Berlin etc. XII + 294 pp. + numerous colour plates [p. 343-386].

**AGRIMONIA / 1**

**Agrimonia bracteata** E. Mey. ex C. A. Mey.

syn.: *A. caffra* E. Mey. ex C. A. Mey.; *A. bracteosa* E. Mey. ex Drège, nom. nud.; *A. eupatoria* L. var. *capensis* Harv.; *A. eupatoria* var. *bracteata* (E. Mey. ex C. A. Mey.) Asch. & Graebn.; *A. odorata* auctt. & collectt. afric. plur., non Mill., e.g.: Weimarck in Bot. Not. 1932: 20, 1932; *A. eupatoria*, *A. nepalensis* and *A. repens* sensu collectt. afric.

Perennial herb, rhizomatous, with an ephemeral basal rosette of leaves; flowering stems leafy, to 1m tall.

Grasslands; underwoods; riversides; 1700-2000 m alt.

S. Africa (Natal, Cape Prov.).

**ALCHEMILLA / 19**

NOTOV, A. A. & T. V. KUSNETZOVA (2004). Architectural units, axiality and their taxonomic implications in Alchemillinae. *Wulfenia* 11: 85-130.

**Alchemilla abyssinica** Fresen., excl. var. *schimperii* Engl. and fa. *muscoidea* Hauman & Balle (both = *A. microbetula*).

syn.: *A. steudneri* Th. C. E. Fries; *A. sattimae* Th. C. E. Fries; *A. cyclophylla* Th. C. E. Fries; *A. abyssinica* subsp. *cyclophylla* (Th. C. E. Fries) Kalheber; *A. rothii* Oliv.

Stout prostrate, suffrutescent herb with basal leaf rosette and long creeping stolons often rooting at the nodes developing leaf rosettes.

Mountain moor-grassland at the upper edge of upland rain-forest and moist bamboo thicket; glades in bamboo forest; grassland in *Philippia* region on dry hill slope; grassland amongst *Erica arborea*; shady gorges; rocky and moist situations along tracks, footpaths, in clearings, disturbed ground; clearing in *Cupressus lusitanica* plantation with regrowth of *Albizia-Croton-Macaranga* forest (Sudan, Imatong Mts.); often common, forming dense low carpets; 2000-4300 m alt.

Variable species in hairiness of the calyx.

## ALCHEMILLA

**A. argyrophylla** Oliv.; excl. subsp. *trifolioidea* Hauman & Balle (= *A. triphylla*).

syn.: *A. keniensis* Bak. f.; *A. robertii* Th. C. E. Fries; *A. ram-mellii* Th. C. E. Fries; *A. argyrophylla* subsp. *euargyrophylla* Hauman & Balle var. *typica* Hauman & Balle, var. *thorei* Hauman & Balle, and var. *robertii* (Th. C. E. Fries) Hauman & Balle; *A. argyrophylla* subsp. *keniensis* (Bak. f.) Hauman & Balle – All of subsp. **argyrophylla**.

Shrub to 1,2(-2,5) m tall, with much-branched ascending stems covered in silvery hairs; branchlets 2-10(-15) cm long.

Montane evergreen bushland, such as ericaceous scrub, from the montane forest belt into the alpine belt; rocky mountain summit areas with grassland, scrub, low subshrubs and herbs, and in rock crevices; damp places in moor and moor-grassland; sloping ground often near running water and not too wet; below-steep rocks, along stream banks, open places in forest; also on dry rocky ground; often dominant; 2250-4650 m alt.

Comprises 2 subsp.: – subsp. **argyrophylla**; – subsp. **argyrophyloides** (Bak. f.) Rothm. [bas.: *A. argyrophyloides* Bak. f.; syn.: *A. emarginata* De Wild.; *A. argyrophylla* subsp. *euargyrophyloides* Hauman & Balle var. *argyrophyloides* (Bak. f.) Hauman & Balle, and subsp. *argyrophyloides* (Bak. f.) Rothm. fa. *bakeri* Rothm. and fa. *tometosa* Rothm.].

**A. cryptantha** Steud. ex A. Rich.

syn.: *A. tenuicaulis* Hook. f.; *A. cryptantha* var. *tenuicaulis* (Hook. f.) Engl.; *A. holstii* Engl.; *A. madagascariensis* K. Hoffm.; *A. potentilloides* Hils. & Bojer ex Baill.; *A. pauciflora* Hochst. ex Chiov. ex Cortesi; *A. rehmannii* Engl.; *A. chevalieri* De Wild.; *A. subreniformis* De Wild.; *A. inyangensis* Weim.; *A. kiwuensis* Engl. subsp. *rhodesica* Hauman & Balle; ? *A. platystigma* Rothm.; ? *A. mildbraedii* Engl. var. *mauensis* Hauman & Balle

Weak creeping hairy herb with short-lived leaf rosette producing slender stolons or prostrate furrowed green stems rooting at the lower nodes.

Moor, moor-grassland, grassland, moist bamboo thicket, often near streams; moist shaded ground in montane rain-forest; forest edges; by streams; sometimes as a weed in lawns; widely spread and locally common; 1700-1975 m alt. (Cameroon).

All transitions between plants with a leaf rosette and stolons and plants with creeping stems without rosettes are known.

S. Africa (Transvaal); Bioko/Fernando Poo, São Tomé; Madagascar; tropical Arabia.

Close to *A. kiwuensis*; distinction between the taxa not sharp, and intermediates are known.

**A. dewildemanii** Th. C. E. Fries

Shrub, much branched, with decumbent stems and ascending branches; flowers unknown.

Upland moor; rocky sloping ground; growing between *A. argyrophylla* subsp. *argyrophylla* and *A. johnstonii*; 3200-3850 m alt.

Only known from 2 collections (Mt. Kenya).

Seems to be a hybrid (or hybrid offspring) of the two taxa mentioned above; fide Hedberg in Symbol. Bot. Upsal. 15(1): 117, 291-292, 1957.

Resembling *A. stuhlmanni*.

## ALCHEMILLA

**A. elgonensis** Mildbr.

Shrub much-branched, spreading, with erect or ascending stems, 15-120 cm tall; lateral branchlets 1,5-12 cm long.

Moist, often rocky ground in moorland, in both wet and dry places; moist bamboo thickets; forming dense stands; from the upper part of the montane forest to the alpine belt; 2700-4350 m alt.

Similar to *A. argyrophylla*; intermediates between *A. elgonensis* and *A. subnivalis* are known, as well as possible hybrids with *A. johnstonii*, resembling *A. roccatii*.

**A. ellenbeckii** Engl.

syn.: *A. gracilis* Pax 1907, nom. illegit., non Opiz 1836 nec Buser 1895; *A. mildbraedii* Engl., incl. var. *villosa* Hauman & Balle, but ? excl. var. *mauensis* Hauman & Balle (= ? *A. crypantha*); *A. brownii* De Wild.; *A. pickwellii* Th. C. E. Fries; *A. hillii* Th. C. E. Fries; *A. palustris* Th. C. E. Fries; *A. granvikii* Th. C. E. Fries; *A. linderi* Mildbr.; *A. ellenbeckii* var. *hillii* (Th. C. E. Fries) Hauman & Balle, var. *palustris* (Th. C. E. Fries) Hauman & Balle, and var. *granvikii* (Th. C. E. Fries) Hauman & Balle; *A. gracilis* Pax var. *hillii*, var. *palustris* (Th. C. E. Fries) Hauman & Balle, and var. *granvikii* (Th. C. E. Fries) Hauman & Balle; *A. ellenbeckii* subsp. *granvikii* (Th. C. E. Fries) Hedb.; *A. scaettae* Staner nomen. – All of subsp. **ellenbeckii**.

Creeping or erect, much-branched, perennial herb without leaf rosette, sometimes forming dense clumps to 1 m tall; stems slender, terete, purplish, ± branched, ascending.

Moist ground in bogs, along small streams, at forest margins, especially in the ericaceous belt; upland moor and grassland; moist bamboo thickets; *Phragmites* swamps; wet mineral soils; scrambling over stones and logs; 1470-4250 m alt.

Comprises 2 subspp.

**A. fischeri** Engl.

syn.: *A. bambuseti* Th. C. E. Fries; *A. volkensii* Engl. var. *penicellata* De Wild.; *A. penicellata* (De Wild.) Hauman & Balle; *A. erlangeriana* Engl. – All of subsp. **fischeri**.

Robust, trailing herb, silvery hairy, soft to the touch, with often branched stem to 1,2 m long and 0,9 cm Ø, sometimes with leaf rosettes.

Upland rain-forest and evergreen bushland; moist ground in swamps; along brooks in montane forest; moist bamboo thicket; sometimes fallow land; 1600-3400 m alt.

Resembling *A. crypantha*.

Comprises 2 subspp.: subsp. **camerunensis** Letouzey (summit of Mt Oku, Cameroon) Red Data Listed, fide M. Cheek & al., Pl. Mt Oku: 156, 2000.

**A. hageniae** Th. C. E. Fries

Large herb, or shrub, silky-hairy, with trailing wiry stems to 1 m long.

*Erica* woodland; moist bamboo thicket; evergreen bushland; along streams; 3000-3600 m alt.

Endemic in the Aberdare Mts.

## ALCHEMILLA

**A. haumanii** Rothm.

syn.: *A. geranioides* Rolfe subsp. *chillaloensis* Hauman & Balle; *A. chillaloensis* (Hauman & Balle) Hauman & Balle, nom. illegit.

Small shrub with woody much branched stems, sometimes rooting at the upper nodes when touching the ground; roots thick, succulent!

Moist moorland in the ericaceous and alpine belts; 3000-4250 m alt.

Variable in leaf form and pubescence.

Eventual hybridization with *A. pedata* recorded.

Confused with *A. johnstonii* (vicarious species in E Africa).

**A. hendrickxii** Hauman & Balle

Subshrub, densely hairy; stems first prostrate, then erect, to 60 cm long and 6 mm Ø; developing axillary shoots at the base to 70 cm long, not rooting at nodes.

Summit grassland with *Deschampsia flexuosa*, *Helichrysum* sp., *Kniphofia thomsonii*; forming carpeting masses; 3100-3470 m alt.

Only known from 2 mountain sites (Hendrickx 5426, and 6308 type) where also *A. johnstonii* with a similar habit occurs.

**A. johnstonii** Oliv., incl. var. *crenato-stipulata* De Wild. and var. *lindblomiana* Mildbr.

syn.: *A. cinerea* Engl., incl. var. *uhligii* Engl., var. *geranioides* (Rolfe) Robyns and fa. *major* (De Wild.) Hauman; *A. uluguruensis* Engl.; *A. geranioides* Rolfe var. *aberdarensis* (De Wild.) Hauman & Balle, var. *major* De Wild., var. *pentagona* (Th. C. E. Fries) Hauman & Balle, var. *typica* Hauman & Balle, and var. *uhligii* (Engl.) Hauman & Balle; *A. geranioides* subsp. *alluaudii* (De Wild.) Hauman & Balle, subsp. *eugeranioides* Hauman & Balle, and subsp. *pseudopecten* Hauman & Balle (cf. Fl. Trop. E. Afr., Rosaceae: 11-12, 1960); *A. ducis-aprutii* Cortesi; *A. jaegeri* Engl.; *A. aberdarensis* De Wild.; *A. alluaudii* De Wild.; *A. lindblomiana* (Mildbr.) Th. C. E. Fries; *A. pseudomildbraedii* Th. C. E. Fries; *A. pentagona* Th. C. E. Fries

Low much-branched straggling shrub, hairy, to 1,2 m tall; stem woody, prostrate; with ascending branches sometimes rooting at the nodes.

Moist bamboo thicket; moor, moor-grassland, on damp ground, often in bogs; wet peaty alpine soils; moist *Dendrosenecio* forest; along streams; forming carpeting masses, often dominant; one of the most important plants of the ericaceous and alpine belts; 2400-4350(-4500 ?) m alt.

Very variable species.

**A. kiwuensis** Engl., incl. var. *kandiana* Engl., but excl. subsp. *rhodesica* Hauman & Balle (= *A. crypantha*).

syn.: *A. adolfi-friederici* Engl.; *A. mukuluensis* De Wild.

Perennial low weak herb, white-hairy, usually with basal leaf rosettes with or without stolons 50 cm long, sometimes rooting at nodes.

Upland wet grassland and edges of montane forest; open spaces in moist bamboo thicket and rain-forest; track sides, often near streams; moist black volcanic clay soils; locally common in highland grass, or as a weed (Kenya); in a sunlit cave moistened by a nearby waterfall (Cameroon); 1200-3300 m alt.



## ALCHEMILLA KIWUENSIS

Bioko/Fernando Poo.

Has been misidentified in Ethiopia and there taken for *A. pedata*.

Resembling *A. cryptantha* with which the distinction is not sharp.

**A. microbetula** Th. C. E. Fries

syn.: *A. sessiliflora* Hochst. ex Rothm.; *A. commutata* Rothm. with fa. *muscoidea* (Hauman & Balle) Rothm.; *A. abyssinica* fa. *muscoidea* Hauman & Balle; *A. abyssinica* var. *schimperii* Engl.; *A. abyssinica* auctt. non Fresen. (see H. Kalheber in Senckenberg. Biol. 61: 136, 138, 1980).

Dwarf prostrate herb with basal leaf rosettes producing stolons, herbaceous or suffrutescent, rooting at nodes.

Moist gravelly or rocky ground, in ± open vegetation, sometimes in *Dendrosenecio* forest; moist disturbed ground (solifluction, erosion, grazing, road building), sometimes on thin soil over rocks; in the ericaceous and alpine belts; 3200-4400(-4620) m alt.

Variable in habit: from a dwarf woody plant to a slender, long creeping herb.

Rare alpine plant, but probably overlooked by its inconspicuousness.

**A. pedata** Hochst. ex A. Rich., incl. var. *argentea* Chiov. ex Fiori, var. *gracilipes* Engl., and var. *lovenii* Th. C. E. Fries

syn.: *A. gracilipes* (Engl.) Engl.; *A. lovenii* (Th. C. E. Fries) Th. C. E. Fries

Stoloniferous, silky-white herb with primary leaf rosette and long stolons rooting at nodes and producing secondary rosettes; side roots thick and furrowed.

Upland grassland, hillsides, river-banks, locally common; moist ground in grazed montane grassland; drier mountain areas, particularly in damp places; 1800-4000 m alt.

Very variable in leaf dissection and pubescence.

**A. roccatii** Cortesi

Much branched dwarf shrub, yellowish-hairy; main branches to 10 cm long, prostrate or ascending, with very short lateral branchlets sometimes producing runners.

Open soil on moraines; upland moor (*Caricetum*), abundant; 3600-4500 m alt.

Probably of hybrid origin resulting from (a) cross(es) between *A. argyrophylla* subsp. *argyrophylla* and *A. johnstonii*. – Somewhat resembling *A. dewildemanii*.

Only known from Ruwenzori.

**A. stuhlmannii** Engl., incl. var. *butaguensis* (De Wild.) Hauman & Balle

syn.: *A. ruwenzoriensis* Rolfe; *A. affinis* De Wild.; *A. butaguensis* De Wild.; *A. dubia* De Wild.

Much branched subshrub to 1,5 m tall, long-white-hairy; with decumbent-ascending stems 4 mm Ø.

Moist and mossy ground; upland moor; often forming dense pure stands over rocks and mossy banks, in valleys and on slopes; 2800-4000(-4350) m alt.

Intermediates with *A. subnivalis* are known (putative hybrids).

Endemic on Ruwenzori.

## ALCHEMILLA

**A. subnivalis** Bak. f., incl. fa. *nana* Hauman & Balle, var. *glabrescens* Hauman & Balle incl. fa. *perpusilla* Hauman & Balle  
syn.: *A. tridentata* Cortesi; *A. bequaertii* De Wild.; *A. microphylla* De Wild.

Dwarf much-branched subshrub to 1 m tall; main branches prostrate or ascending to 35 cm long with internodes 4-5 mm long; lateral branches short, 4-5(-10) cm long.

Moraines, rocky places, bare patches, moist ground with sparse vegetation; found as isolated specimens or often mat-forming; 3600-4750 m alt.

Similar to *A. elgonensis*.

Endemic on Ruwenzori (cf. *A. stuhlmannii*).

**A. triphylla** Rothm.

syn.: *A. argyrophylla* Oliv. subsp. *trifolioidea* Hauman & Balle; *A. trifolioidea* (Hauman & Balle) Hauman

Much-branched shrub to 60-120 cm tall with decumbent-ascending stems green towards the apices; pubescence thick, silvery-creamy.

Moist and sloping ground, upland moor, often scrambling over rocks; often forming dense stands in valleys and at edges of *Dendrosenecio* forest; 3150-4200 m alt.

Habit like *A. stuhlmannii*.

Endemic on Ruwenzori.

**A. volkensis** Engl., incl. var. *bracteata* De Wild., but excl. var. *penicellata* De Wild. (= *A. fischeri*).

Herb with central leaf rosette and creeping, slender, reddish stolons rooting at nodes and producing tufts of leaves and erect flowering stems.

Upland rain-forest and evergreen bushland; moist bamboo thicket; often covering the ground in damp places; 1500-2900 m alt.

## SYNONYMS:

*Alchemilla aberdarensis* De Wild. = **Alchemilla johnstonii**

*abyssinica* auctt. non Fresen. = **A. microbetula**

fa. *muscoidea* Hauman & Balle and var. *schimperii* Engl.  
= **A. microbetula**

*adolphi-friederici* Engl. = **A. kiwuensis**

*affinis* De Wild. = **A. stuhlmannii**

*alluaudii* De Wild. = **A. johnstonii**

*argyrophylla* Oliv. subsp. *trifolioidea* Hauman & Balle  
= **A. triphylla**

*argyrophyloides* Bak. f. = **A. argyrophylla** subsp.

*arvensis* Scop. fa. *alpina* Engl. = **Aphanes bachiti**

*bachiti* Hauman & Balle = **Aphanes**

*bambuseti* Th. C. E. Fries = **Alchemilla fischeri**

*bequaertii* De Wild. = **A. subnivalis**

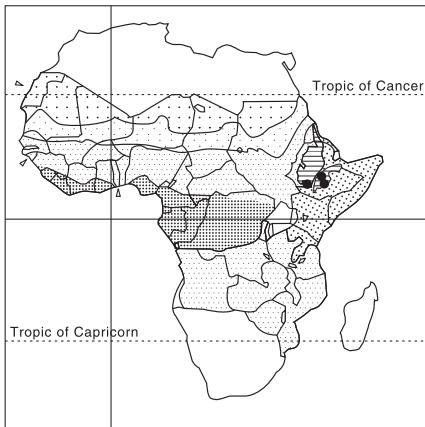
*brownei* De Wild. = **A. ellenbeckii**

*butaguensis* De Wild. = **A. stuhlmannii**

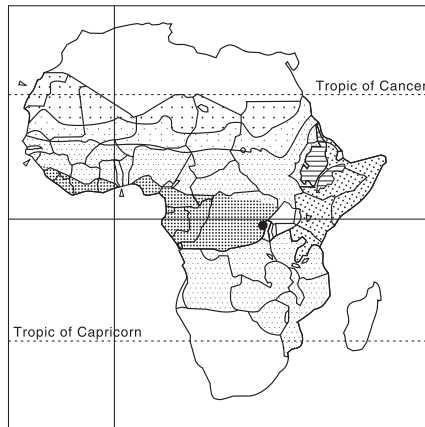
*chevalieri* De Wild. = **A. cryptantha**

*chillaloensis* (Hauman & Balle) Hauman & Balle = **A. haumanii**

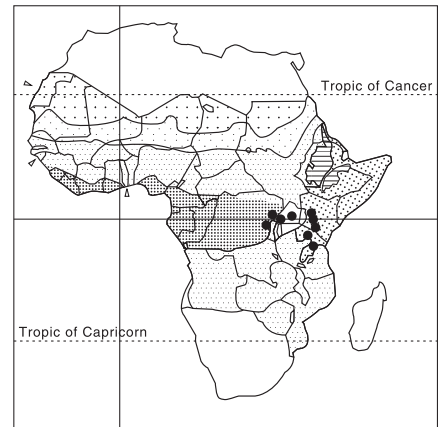




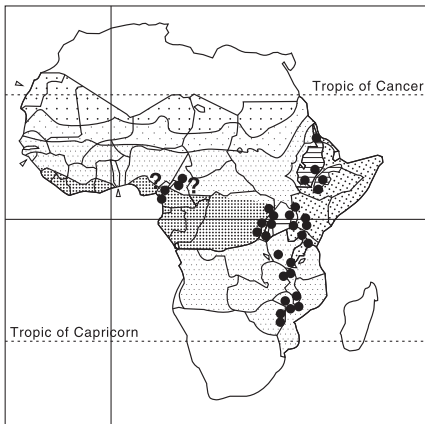
*Alchemilla haumanii*



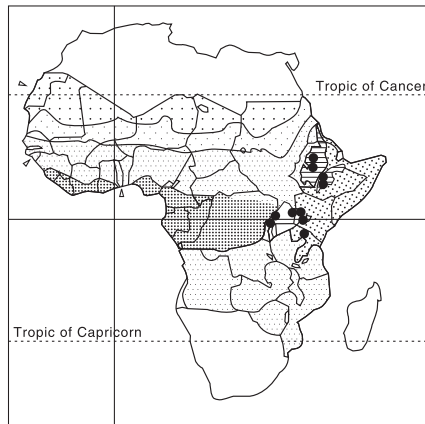
*Alchemilla hendrickxii*



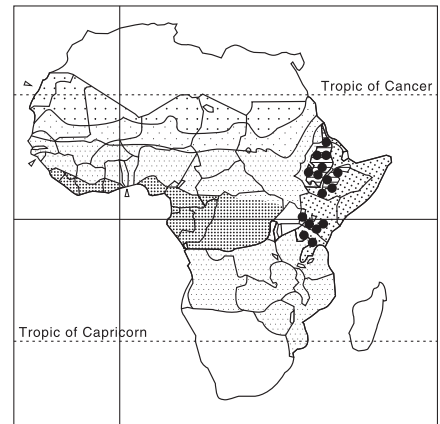
*Alchemilla johnstonii*



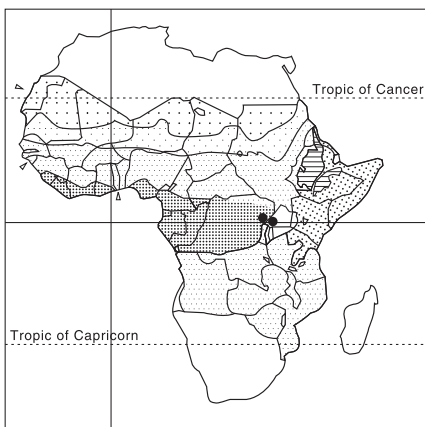
*Alchemilla kiwuensis*



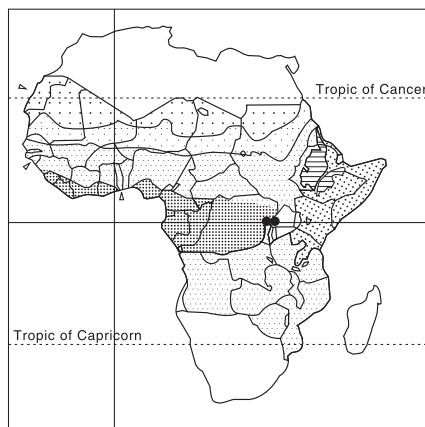
*Alchemilla microbetula*



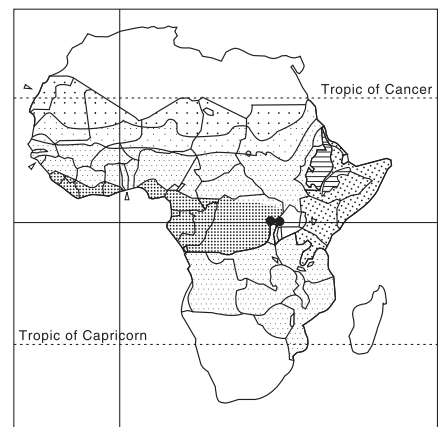
*Alchemilla pedata*



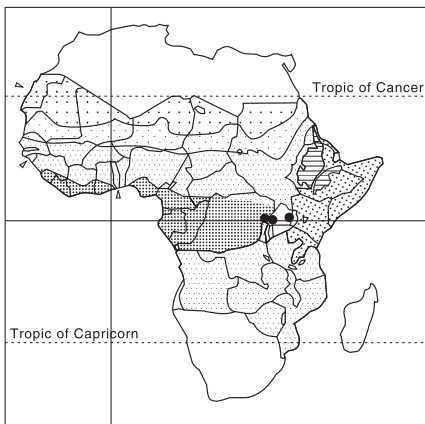
*Alchemilla roccatii*



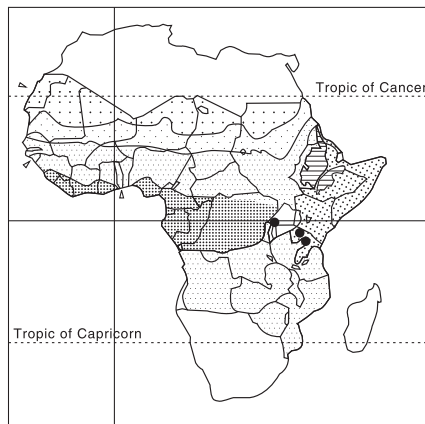
*Alchemilla stuhlmannii*



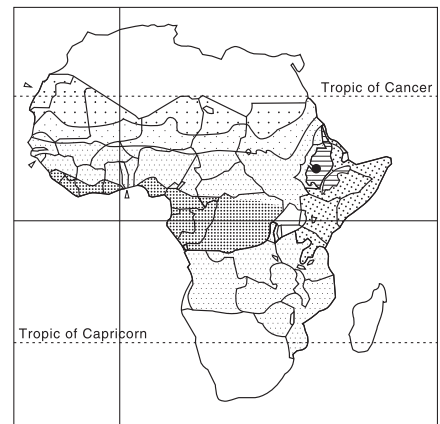
*Alchemilla subnivalis*



*Alchemilla triphylla*



*Alchemilla volkensis*



*Aphanes bachiti*

## ALCHEMILLA

- cinerea* Engl. = **A. johnstonii**  
 var. *geranioides* (Rolfe) Robyns = **A. johnstonii**  
 fa. *major* (De Wild.) Hauman = **A. johnstonii**  
 var. *uhligii* Engl. = **A. johnstonii**  
*commutata* Rothm. with fa. *muscoidea* (Hauman & Balle)  
 Rothm. = **A. microbetula**  
*cyclophylla* Th. C. E. Fries = **A. abyssinica**  
*dubia* De Wild. = **A. stuhlmannii**  
*ducis-aprutii* Cortesi = **A. johnstonii**  
*emarginata* De Wild. = **A. argyrophylla** subsp. **argyrophyloides**  
*erlangeriana* Engl. = **A. fischeri** subsp. **fischeri**  
*geranioides* Rolfe  
 var. *aberdarensis* (De Wild.) Hauman & Balle = **A. johnstonii**  
 subsp. *alluauudii* (De Wild.) Hauman & Balle = **A. johnstonii**  
 subsp. *chillaloensis* Hauman & Balle = **A. haumanii**  
 fa. *congesta* Hauman & Balle = **A. johnstonii**  
 var. *ducis-aprutii* (Cortesi) Hauman & Balle = **A. johnstonii**  
 fa. *elongata* Hauman & Balle = **A. johnstonii**  
 subsp. *eugeranioides* Hauman & Balle = **A. johnstonii**  
 fa. *major* (De Wild.) Hauman & Balle = **A. johnstonii**  
 var. *major* De Wild. = **A. johnstonii**  
 var. *pentagona* (Th. C. E. Fries) Hauman & Balle = **A. johnstonii**  
 subsp. *pseudopecten* Hauman & Balle = **A. johnstonii**  
 var. *typica* Hauman & Balle = **A. johnstonii**  
 var. *uhligii* (Engl.) Hauman & Balle = **A. johnstonii**  
*gracilipes* (Engl.) Engl. = **A. pedata**  
*gracilis* Pax with subsp. and vars. = **A. ellenbeckii**  
*granvikii* Th. C. E. Fries = **A. ellenbeckii**  
*gunae* Schweinf. = **A. abyssinica**  
*hillii* Th. C. E. Fries = **A. ellenbeckii**  
*holstii* Engl. = **A. cryptantha**  
*inyangensis* Weim. = **A. cryptantha**  
*jaegeri* Engl. = **A. johnstonii**  
*keniensis* Bak. f. = **A. argyrophylla**  
*kiwuensis* Engl. subsp. *rhodesica* Hauman & Balle = **A. cryptantha**  
*lindblomiana* (Mildbr.) Th. C. E. Fries = **A. johnstonii**  
*linderi* Mildbr. = **A. ellenbeckii**  
*lovenii* (Th. C. E. Fries) Th. C. E. Fries = **A. pedata**  
*madagascariensis* K. Hoffm. = **A. cryptantha**  
*microphylla* De Wild. = **A. subnivalis**  
*mildbraedii* Engl. sens. str. = **A. ellenbeckii**  
 var. *mauensis* Hauman & Balle = ? **A. cryptantha**  
 var. *villosa* Hauman & Balle = **A. ellenbeckii**  
*mukuluensis* De Wild. = **A. kiwuensis**  
*nyikensis* De Wild. = **A. ellenbeckii** subsp.  
*palustris* Th. C. E. Fries = **A. ellenbeckii**  
*pauciflora* Hochst. ex Chiov. ex Cortesi = **A. cryptantha**  
*penicellata* (De Wild.) Hauman & Balle = **A. fischeri**

## ALCHEMILLA

- pentagona* Th. C. E. Fries = **A. johnstonii**  
*pickwellii* Th. C. E. Fries = **A. ellenbeckii**  
*platystigma* Rothm. = ? **A. cryptantha**  
*potentilloides* Hils. & Bojer ex Baill. = **A. cryptantha**  
*pseudomildbraedii* Th. C. E. Fries = **A. johnstonii**  
*rammellii* Th. C. E. Fries = **A. argyrophylla**  
*rehmannii* Engl. = **A. cryptantha**  
*robertii* Th. C. E. Fries = **A. argyrophylla**  
*rothii* Oliv. = **A. abyssinica**  
*ruwenzoriensis* Rolfe = **A. stuhlmannii**  
*scaettae* Staner = **A. ellenbeckii** subsp. **ellenbeckii**  
*sattimae* Th. C. E. Fries = **A. abyssinica**  
*sessiliflora* Rothm. = **A. microbetula**  
*steudneri* Th. C. E. Fries = **A. abyssinica**  
*subreniformis* De Wild. = **A. cryptantha**  
*tenuicaulis* Hook. f. = **A. cryptantha**  
*tridentata* Cortesi = **A. subnivalis**  
*trifolioidea* (Hauman & Balle) Hauman = **A. triphylla**  
*uluguruensis* Engl. = **A. johnstonii**  
*volkensii* Engl. var. *penicellata* De Wild. = **A. fischeri**

## APHANES / 1

NOTOV, A. A. & T. V. KUSNETZOVA (2004). See above under *Alchemilla*.

**Aphanes bachiti** (Hauman & Balle) Rothm.

bas.: *Alchemilla bachiti* Hauman & Balle 1936

syn.: *Alchemilla bachiti* Hochst. ex Schweinf. 1867, nomen;  
*Alchemilla arvensis* Scop. fa. *alpina* Engl. 1892

Dwarf herb, 1-3 cm tall.

Tussock grassland on bare patches in the upper part of the ericaceous belt; c. 3700 m alt.

## CLIFFORTIA / 3

A genus of 119 species of woody evergreen plants 80% of which endemic to the Fynbos Biome of the Cape Floristic Region.

FELLINGHAM, A. C. & H. P. LINDER (2003). Inflorescences of *Cliffortia* L. (Rosaceae) and related vegetative branching patterns. *Bothalia* 33: 173-193.

WHITEHOUSE, C. (2001). Climbers' friends and relatives. *Veld & Flora* 87: 112-115.

WHITEHOUSE, C. M. (2004). The genus *Cliffortia* (Rosaceae) in Kwazulu-Natal. *Bothalia* 34: 1-10.

**Cliffortia linearifolia** Eckl. & Zeyh., excl. var. *nitidula* Engl. (= **C. nitidula**).

syn.: *C. ericifolia* L. f. var. *acutistipula* Kuntze

Ericoid erect, virgate shrub to 2 m tall, dioecious; branches rigid, erect.

Mountain river banks; 1500-2100 m alt.

S. Africa. North to Zambia.

Near *C. serpyllifolia*.

## CLIFFORTIA

**C. nitidula** (Engl.) R. E. Fries & Th. C. E. Fries subsp. **nitidula** bas.: *C. linearifolia* Eckl. & Zeyh. var. *nitidula* Engl.

syn.: *C. linearifolia* sensu Oliver, Fl. Trop. Afr. 2: 379, 1871, non Eckl. & Zeyh.; *C. nitidula* subsp. *angolensis* Weim.; *C. nitidula* var. *angolensis* (Weim.) Brenan and var. *aequatorialis* (R. E. & Th. C. E. Fries) Brenan; *C. aequatorialis* R. E. & Th. C. E. Fries; *C. tychonis* Weim.

Ericoid much branched, erect shrub 2-5 m tall, dioecious or monoecious; branches rigid, erect; marked dimorphism between juvenile and mature leaves.

Upland grassland along streambanks; rocky slopes in *Wid-dringtonia* forest and in mushitu; moist bamboo thicket and in glades; upland moorland, sometimes forming pure stands; 1250-3490 m alt.

S. Africa.

Subsp. **pilosa** Weim. in S. Africa.

May form hybrids with *C. linearifolia*.

**C. serpyllifolia** Cham. & Schlechtend. [incl. var. *angustifolia* Drège and var. *polyphylla* (Eckl. & Zeyh.) Harv. in S. Africa, but excl. var. *chamissonis* Harv. var. *obovata* Kuntze and var. *penninervis* Harv. in S. Africa].

Erect, much branched, densely bushy shrub to 1,8-2 m tall; branches flexible, widely spreading.

By streams, often in shade of forest trees; 1700-2100 m alt.

S. Africa, Swaziland. North to Zambia.

Close to *C. linearifolia*. In S part of range easily confused with **C. browniana** Burt Davy from S. Africa.

## SYNONYM:

*Cliffortia flabellifolia* Sond. = **Myrothamnus flabellifolius** Welw. (*Myrothamnaceae*)

## COTONEASTER / 1

**Cotoneaster nummularia** Fischer & C. A. Mey.

Erect deciduous shrub to 2,5 m tall, sometimes low and spreading.

Mountain scrub; 2500-2600 m alt.

Crete, Cyprus, Turkey, Syria, Lebanon, N Iraq, W Iran, Caucasia.

## HAGENIA / 1

syn.: *Banksia* (*Bankesia*) Bruce non L. f., nom. illegit.

LANGE, S. & al. (1997). Stand Structure and Regeneration of the Subalpine Hagenia abyssinica Forests of Mt. Kenya. *Bot. Acta* 110: 473-480.

**Hagenia abyssinica** (Bruce) J. F. Gmel., incl. var. *viridifolia* Hauman; icon.: P. C. M. Jansen & Getachew Aweke in L. P. A. Oyen & R. H. M. J. Lemmens, Eds. (2002) Ressources végétales de l'Afrique tropicale. Précurseur: 105. Programme PROTA, Wageningen.

bas.: *Banksia abyssinica* Bruce

syn.: *Brayera anthelmintica* Kunth, incl. var. *psilantha* Bitter and var. *epirhagadotricha* Bitter; *Hagenia* "anthelmintica" (Bruce) J. F. Gmel."

## HAGENIA ABYSSINICA

Rather slender tree, dioecious (or polygamous) 5-25 m; bole often crooked with bark peeling in strips, sometimes very thick on old stems; crown open, globose or umbrella-shaped; young twigs densely villous; flowers small in conspicuous drooping panicles 60 cm long, 30 cm wide.

Open grassland; montane forest; ravine forest with *Gnidia glauca*, *Hypericum revolutum*, *Podocarpus latifolius*; dominant in the woodland zone just above bamboo and also in moist forest below bamboo (Kenya); often forming the upper forest boundary; common (but in Ethiopia only scattered trees remain); upland evergreen bushland; 1800-3600 m alt.

## LEUCOSIDEA / 1

**Leucosidea sericea** Eckl. & Zeyh.

Much branched, very leafy shrub to 3 m tall, sometimes tree to 10 m; stems 8-30(-60) cm Ø with loose, exfoliating bark; branches flexuous, usually crooked; branchlets grey, shaggy when young. – Bushes burn like rotting wood.

Mountain grassland slopes, in particular along streams and riverbanks; locally common; 1350-2200 m alt.

S. Africa (where it is an aggressive invader of over-grazed and disturbed areas, but also forming extensive precursor communities to forest).

**NEURADA** – see **NEURADACEAE**, p. 282

## POTENTILLA / 3

**Potentilla dentata** Forssk.

syn.: *P. pennsylvanica* auctt. non L. (e. g. sensu Agnew & Agnew, Upl. Kenya Wild Fl., Ed. 2: 113, 1994; Maire, Fl. Afr. N. 15: 174-177, 1980, p.p.); *P. hispanica* auctt. non Zimmet.

Perennial herb with branched rhizomes; flowering stalks to 40 cm tall arising from leaf rosettes.

Montane bushland (Kenya); moist stony ground along streambanks in valley bottoms (Ethiopia); 2550-3900 m alt.

Yemen.

**P. reptans** L., incl. var. and fa. *anomala* (Ledeb.) Lehm. forma b Lehm. (Rev. Potentill. Icon. Ill.: 184, 1856).

syn.: *P. abyssinica* A. Rich.; *P. anomala* Ledeb.; *P. reptans*  $\delta$  *anomala* Lehm.

Perennial herb with stout rhizome; leaf rosette persistent, giving rise to procumbent stems to 1 m long, rooting at nodes and producing leaves and flowers.

Moist grassy places along streambanks and in forest remnants; 2000-2500 m alt.

N Africa; Macaronesia; Europe (except extreme N); from Asia Minor and the Orient to E Asia; introduced into N America, Chile, S Australia and New Zealand.

## POTENTILLA

**P. supina** L.

Annual (or short-lived perennial) herb with flowering stems 10-35 cm tall; stems decumbent or ascending, much branched from the base.

Moist habitats in desert, semi-desert and savanna (fodder plant); (Nile and canal banks in Egypt).

S. Africa and Namibia (considered indigenous, syn.: *P. gariепенsis* E. Mey. ex Harv.); N Africa to Egypt; C and S Europe, W Asia to China; SW Australia (introduced).

**PRUNUS / 2**

ACWORTH, J. & B. N. EWUSI (1999). Prunus africana: Striving for sustainable and equitable resource management in Cameroon. *Medicin. Pl. Conservat.* 5: 15-18.

ANONYMOUS (2000). Plant poachers. *New Sci.* 2236: 6-7.

ANONYMOUS (2001). Future harvest & ICRAF: working to preserve Prunus africana. *Afric. Bot. Gard. Network Bull.* 2: 2.

AVANA, M.-L. & al. (2004). Diversité génétique du Prunus africana (Hook. f.) Kalkman au Cameroun. *Bois Forêts Trop.* 282 (4): 41-49.

BOMBARDELLI, E. & P. MORAZZONI (1997). Prunus africana (Hook. f.) Kalkm. *Fitoterapia* 68 (3): 205-218.

CUNNINGHAM, A. B. & al. (2002). *An economic evaluation of medicinal tree cultivation: Prunus africana in Cameroon.* (People and Plants Working Paper 10) Division of Ecological Sciences, UNESCO, Paris. 35 pp.

CUNNINGHAM, M. & al. (1997). *Trade in Prunus africana and the implementation of CITES: Results of the R + D-Project 808 05 080.* German Federal Agency for Nature Conservation [Bonn]. 52 pp.

FASHING, P. J. (2004). Mortality trends in the African cherry (Prunus africana) and the implications for colobus monkeys (Colobus guereza) in Kakamega Forest, Kenya. *Biol. Conserv.* 120: 449-459.

JAENICKE, H. & al. (2002). Propagation techniques for the conservation of an endangered medicinal tree in Africa: Prunus africana (Hook. f.) Kalkman. In: MAUNDER, M. & al., Eds., *Plant Conservation in the Tropics: Perspectives and Practice*: 383-394. The Royal Botanic Gardens, Kew.

LIERSCH, R. & al. (2002). Prunus africana – Porträt einer Arzneipflanze. *Z. Phytotherapie* 23: 144-150.

POMATTO, V. (2001). Gestion durable et industries pharmaceutiques, le cas du prunier africain. *Garance Voyageuse* 56: 22-32.

SIMIYU, S. & M. MAUNDER (1998). Ten plants: portraits from the edge. *World Conservat.* 1998/2: 11-12.

STEWART, K. M. (2003). The African cherry (Prunus africana): Can lessons be learned from an over-exploited medicinal tree? *J. Ethnopharmacol.* 89: 3-13.

STEWART, K. M. (2003). The African cherry (Prunus africana): From hoe-handles to the international herb market. *Econ. Bot.* 57: 559-569.

**Prunus africana** (Hook. f.) Kalkm. – Red Stinkwood, African Almond or Cherry.

Evergreen tree, much branched, entirely glabrous except for the flowers, 6-40 m tall with bole to 1 m Ø and clear to 10 m height, or rarely a shrub 3-5 m tall (in lava forest; Kenya); branches somewhat pendulous; bark grey-black, longitudinally fissured or scaly.

Upland rain-forest, montane and riverine forests; moist evergreen forest; on termitaria in *Brachystegia* woodland; edge of dry gallery forest; mixed *Podocarpus latifolius* forest with *Olea capensis* subsp. *hochstetteri*, *Syzygium guineense* subsp. *afromontanum*, *Maytenus undata*, *Vepris nobilis*; *Podocarpus latifolius*-*Olea* forest; *Podocarpus latifolius*-*Syzygium* forest; *Albizia* forest; lava forest; sub-montane forest with *Albizia gummifera*,

## PRUNUS AFRICANA

*Carapa grandiflora*, *Olea hochstetteri*; *Polyscias fulva*, and montane forest with *Nuxia congesta*, *Podocarpus milanjanus*, *Rapanea neurophylla*, *Schefflera abyssinica*, etc. (Cameroon); forest-grassland transition; (600-)900-3000 m alt.

Bioko/Fernando Poo, S. Tomé; S. Africa. *P. africana* reported from Grand Comoro and Madagascar may be specifically distinct, fide F. White & al., Evergreen Forest Fl. Malawi: 452, 2001.

Red Data Listed in Cameroon: M. Cheek & al., Pl. Mt. Oku: 157, 2000. – “Lower Risk near threatened on Mt. Cameroon fide S. Cable & M. Cheek, Pl. Mt. Cameroon: LIX, 1998.

Superficially similar to *Ilex mitis* (*Aquifoliaceae*).

**P. crassifolia** (Hauman) Kalkm.

Tree 5-7(-18) m with ragged bark, thick branchlets 3-4 mm Ø and coriaceous fleshy leaves (difference with *P. africana*).

Mountain forest; 2800-3000 m alt.

Perhaps only an extreme form (in leaf fleshiness) of *P. africana*? Further material needed (Lanuri Valley, Ruwenzori; 2 original collections by Bequaert in 1912 and 1914).

**Prunus dulcis** (Mill.) D. A. Webb, **P. xdomestica** L., and **P. persica** (L.) Batsch. are cultivated in highland areas.

SYNONYM:

*Prunus icaco* Labat = **Chrysobalanus** (*Chrysobalanaceae*)

**ROSA / 2**

**Rosa abyssinica** R. Br. in Salt ex Lindl., incl. var. *microphylla* Crépin

syn.: *R. moschata* Herrm. var. *abyssinica* (Lindl.) Crépin; *R. schimperiana* Hochst.; *R. schweinfurthii* Bouleng.

Creeping or climbing evergreen shrub, sometimes a small tree (when standing alone) 0,5-7 m tall.

Upland dry evergreen forest or bushland, forming thickets; forest margins and clearings; *Juniperus* forest; dry grassland or riverine situations; rocky places; man-made habitats; 1900-3300 m alt.

Yemen.

HAYWARD, M. (2000). *Rosa abyssinica*. *The Rose* 94(1): 12-13 [map and photographs].

Sudan ?

**R. xrichardii** Rehd.

syn.: *R. sancta* A. Rich. non Andrews; *R. centifolia* L. var. *sancta* (A. Rich.) Zab.

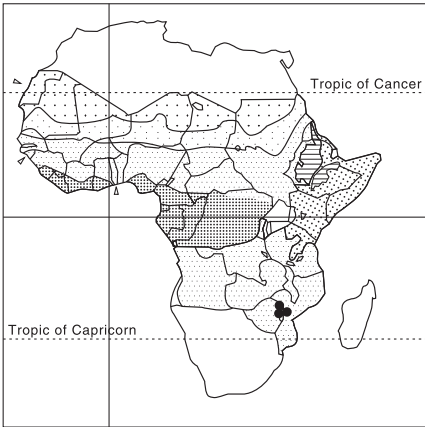
Erect, open bush, deciduous, to 2 m tall.

Not known in the wild state; around churches, in graveyards and courtyards of monasteries; sometimes escaped into dry forest, around villages and on way-sides; 1000-2100 m alt.

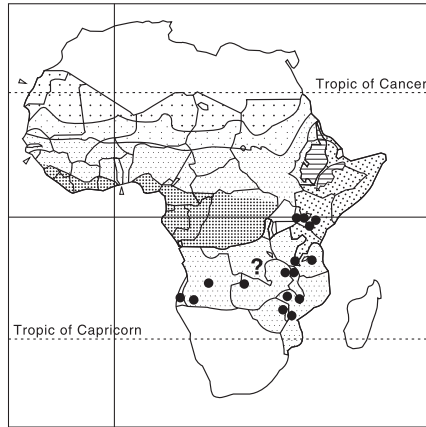
Egypt (known from graves, as funerary chaplets of mummies, of the Roman Imperial period; cultivated early in the Christian era in the Fayyum oasis near Cairo).

Origin unknown, but probably the hybrid *R. gallica* L. x *R. phoenicia* Boiss.

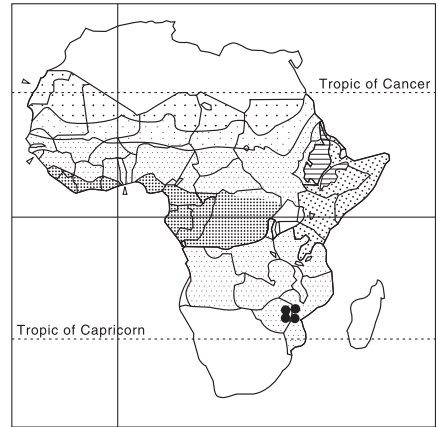




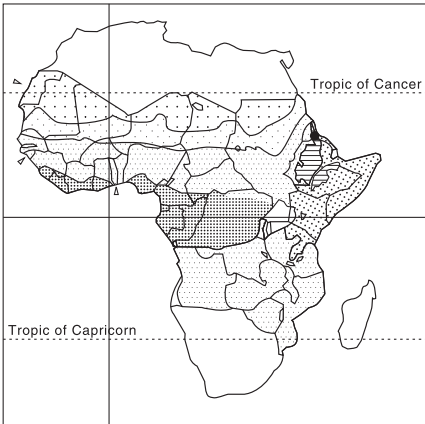
*Cliffortia linearifolia*



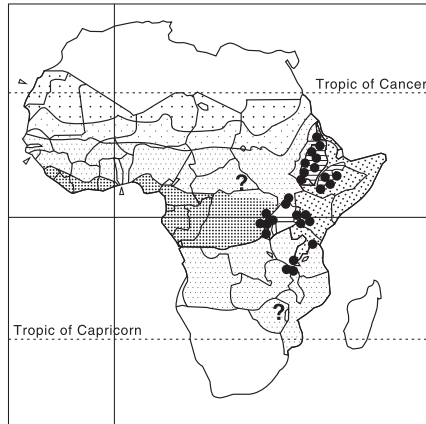
*Cliffortia nitidula*



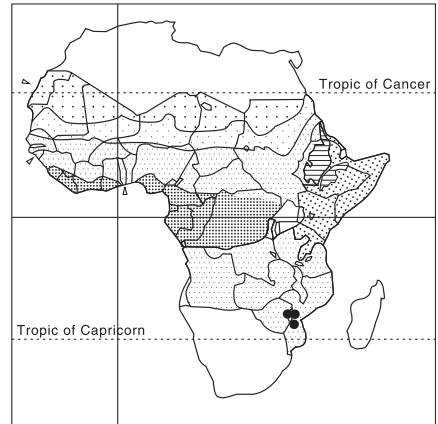
*Cliffortia serpyllifolia*



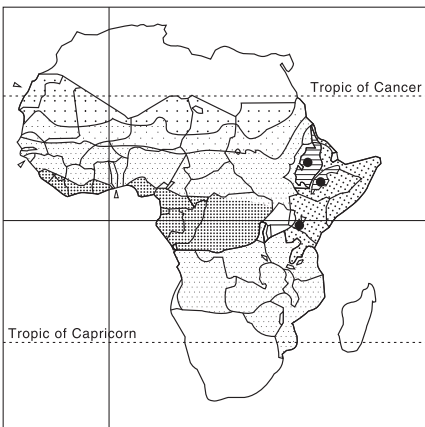
*Cotoneaster nummularia*



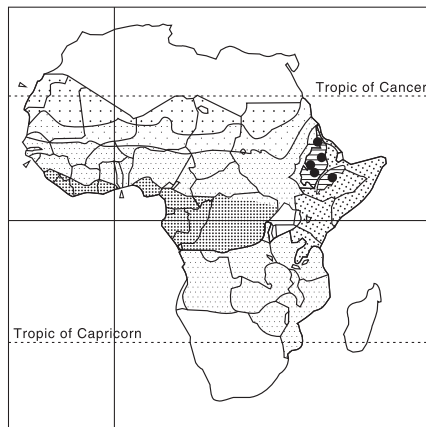
*Hagenia abyssinica*



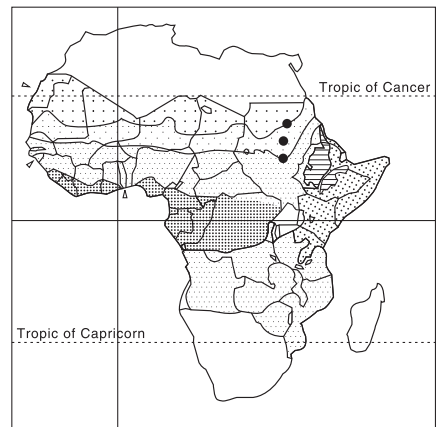
*Leucosidea sericea*



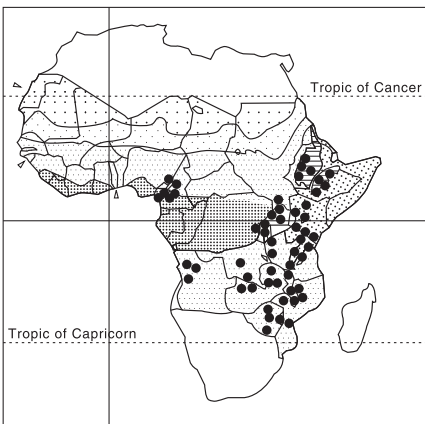
*Potentilla dentata*



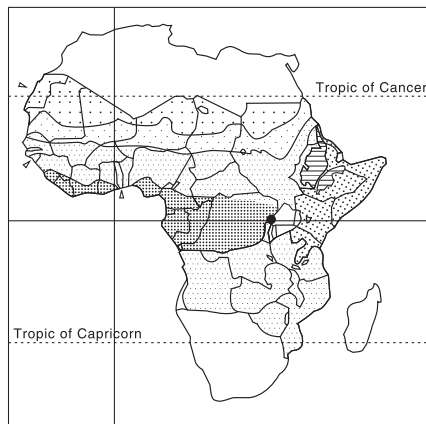
*Potentilla reptans*



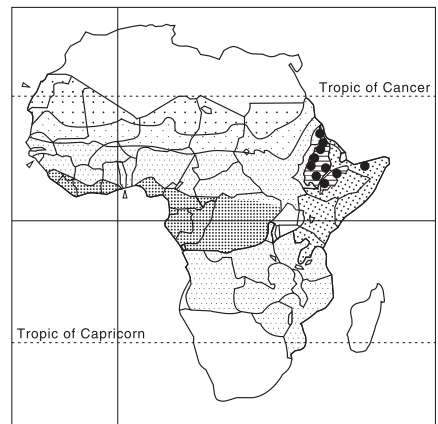
*Potentilla supina*



*Prunus africana*



*Prunus crassifolia*



*Rosa abyssinica*

## RUBUS / 18

**Rubus adenocomus** (Focke) C. E. Gust.

syn.: *R. dictyophyllus* Oliv. fa. *glanduliferus* Engl.

Scandent shrub with strong glabrous turions 1 cm Ø and glandular inflorescences.

Mountain forest; associations with *Pteridium*; rare; 1800-2400 m alt.

Insufficiently known.

**R. aethiopicus** R. A. Grah.

Erect shrub, not climbing, to 2 m tall; stems with few prickles.

*Juniperus* forest, scrub, sometimes on moist ground; 2600-3000 m alt.

Only known from 4 collections.

**R. apetalus** Poir., incl. fa. *pyramidalis* C. E. Gust. and var. *grossoseratus* Hauman, but excl. var. *roseus* C. E. Gust. (= *R. porotoensis*).

syn.: Enum. 2: 19, 1992; *R. adolfi-friederici* Engl., incl. var. *rubristylus* C. E. Gust.; *R. exsuccus* Steud. ex A. Rich.; *R. ecklonii* Focke; *R. inedulis* Rolfe; *R. pinnatiformis* C. E. Gust.; *R. mundtii* Cham. & Schlechtend.; *R. atroceruleus* C. E. Gust.; *R. chrysocarpus* Mundt; *R. discolor* E. Mey.; *R. intercurrentis* var. *confluens* C. E. Gust.; *R. rigidus* Sm. var. *buchananii* Focke, var. *chrysocarpus* (Mundt) Focke, var. *incisus* C. E. Gust., var. *mundtii* (Cham. & Schlechtend.) Focke, var. *discolor* ("concolor") Hauman, and var. *camerunensis* Letouzey, and fa. *lachnocarpus* C. E. Gust.; *R. interjungens* C. E. Gust. p.p. (cf. *R. fellatae*); ? *R. huillensis* Welw. ex Oliv.; ? *R. rigidus* var. *huillensis* (Welw. ex Oliv.) Focke; ? *R. varisectilis* C. E. Gust.

Scrambling spiny shrub, very variable, 1-3,5 m tall; flowering shoots densely pubescent or glabrescent; flowers with or without petals; fruits sometimes galled (Fl. Zambes.-area, frequently).

Savanna; clearings and edges of montane forest or swamp forest; riverine forest; lava forest; secondary scrub, thickets, roadsides, stream banks; acid soils in drier montane forest and upland evergreen bushland; thicket with *Harungana madagascariensis*; grazed secondary-growth grassland; 1000-3000 m alt.

Very variable and not always easily separated from *R. pinnatus*.

Bioko/Fernando Poo; Mascarene Isl.; S. Africa, Botswana; Madagascar; tropical Arabia ?

HAMILL, F. A. & al. (2003). Traditional herbal drugs of southern Uganda Part III: Isolation and methods for physical characterization of bioactive alkanols from *Rubus apetalus*. *J. Ethnopharmacol.* 87: 15-19.

**R. chapmanianus** Kupicha

Scrambling or climbing shrub to 3,5 m tall with very large stipules; flowering shoots densely villous; petals inconspicuous or absent.

Dense deciduous woodland; moist valleys near streams; path sides in Cedar forest; 1900-2300 m alt.

Closely related to *R. apetalus*; but also resembling *R. runssoensis*.

**R. erlangeri** Engl.

Shrub to 2 m tall, sticky-hairy; flowers white, decorative.

Open places in *Hypericum* forest; 3600 m alt.

Only known from the 2 type collections (Ellenbeck 1857, B, lost, from 1901); more material needed.

## RUBUS

**R. fellatae** A. Chev.

syn.: *R. interjungens* C. E. Gust. p.p. (cf. *R. apetalus*); *R. occidentalis* A. Chev. in sched. (P), non L.

Scrambling tomentose bush; fruit raspberry-like, orange-red, 1,5 cm long.

Forest edges, mountain slopes; 800-1500 m alt.

Similar to *R. pinnatus*, and confusions possible.

**R. friesiorum** C. E. Gust.

Scrambling or suberect, very handsome shrub with red turions and tomentose flowering shoots; with (subsp. **elgonensis**) or without (subsp. **friesiorum**) glands.

Bamboo-*Hagenia* or ericaceous belts; clearings in upland rain-forest; moist bamboo thicket; moor-grassland; evergreen bushland; 3000-3400 m alt.

Comprises 2 subspp.: – subsp. **friesiorum**, incl. var. **hageniae** C. E. Gust. with fa. **albiflorus** C. E. Gust.; – subsp. **elgonensis** (C. E. Gust.) R. A. Graham (bas.: *R. friesiorum* C. E. Gust. var. *elgonensis* C. E. Gust.).

**R. iringanus** C. E. Gust.

Dwarf shrub; flowering shoots thickly covered with ochreous, spreading hairs.

Upland rain-forest; ± 1800-2350 m alt.

Only known from the type collected in 1934.

Near *R. kirungensis*.

**R. keniensis** Standl.

Stout scrambling shrub 1-2,5 m tall; stems reddish, long-hairy; fruits very large, to 2,5 cm Ø, hairy, usually galled.

Wet montane forest edges; secondary forest; river banks; "locally common", fide Agnew & Agnew, Upl. Kenya Wild Fl., Ed. 2: 113, 1994; stated "rare" by Beentje, Kenya Trees, Shrubs & Lianas: 229, 1994; 1950-2800 m alt.

**R. kirungensis** Engl., incl. var. *glabrescens* (Engl.) C. E. Gust., but excl. *pilosior* C. E. Gust. (= *R. scheffleri*).

syn.: *R. goetzenii* Engl. var. *glabrescens* Engl.

Straggling or climbing shrub, mostly glabrous but very prickly, to 2 m tall; petals white or pink; fruit black.

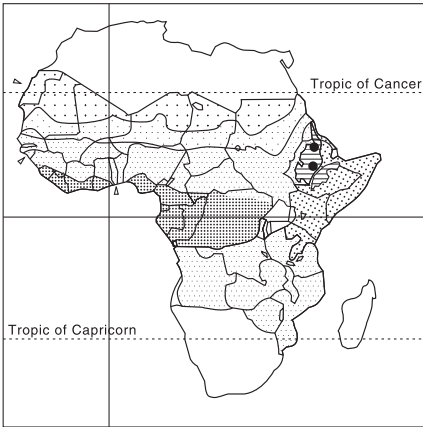
Grassland; moist bamboo thicket; exposed lava outcrops; secondary montane forest by stream; evergreen bushland; 1640-3360 m alt.

**R. pinnatus** Willd.

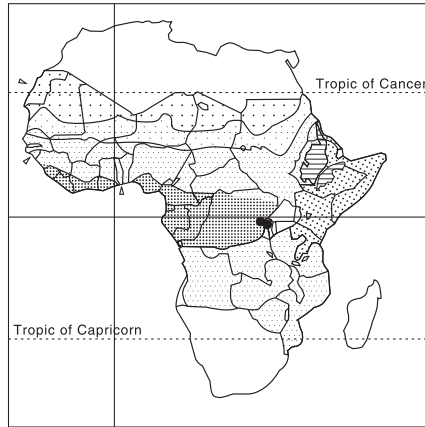
Scrambling or scandent (or erect) shrub 1,5-6(-10) m tall; stems very variable: ± glabrous to tomentose, ± prickly, glandular or eglandular, sometimes blue-green bloomed; inflorescences in long panicles to 35 cm long, slender to pyramidal; petals inconspicuous or absent.

Edges of upland rain-forest; swamp forest, moist bamboo thicket or forest gallery; clearings in forests by streams; secondary moist forests; sclerophyllous forest; secondary bushland; riverbanks in upland grassland; beside streams, waterfalls or swamps in upland locations; (500-)800-3000 m alt.

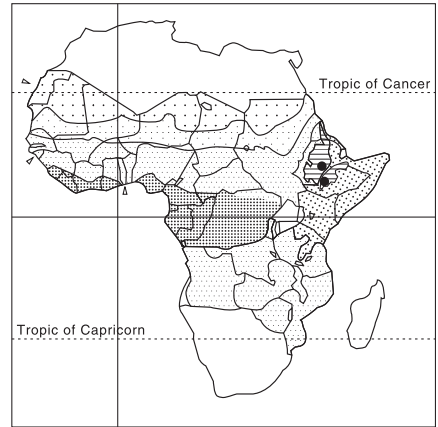
Extremely variable plant (cf. above), and the varieties described not always clearly distinguishable (inflorescence best for distinction). S. Africa; Bioko/Fernando Poo, S. Tomé, Annobon; St Helena and Ascension Isl. (naturalized).



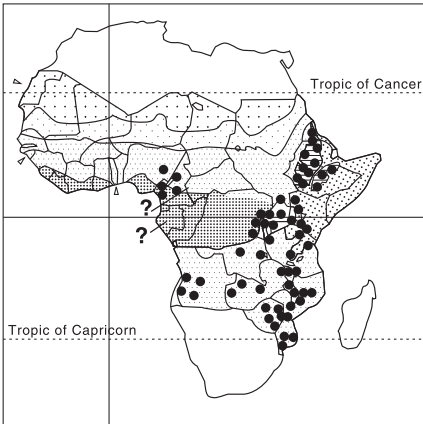
*Rosa xrichardii*



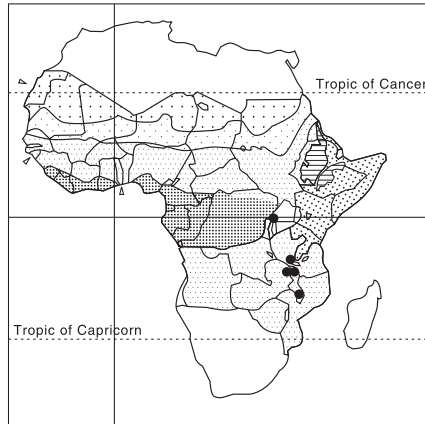
*Rubus adenocomus*



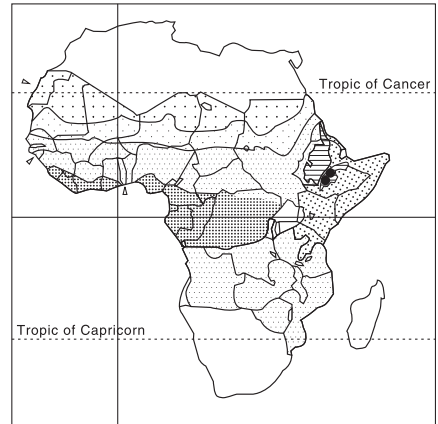
*Rubus aethiopicus*



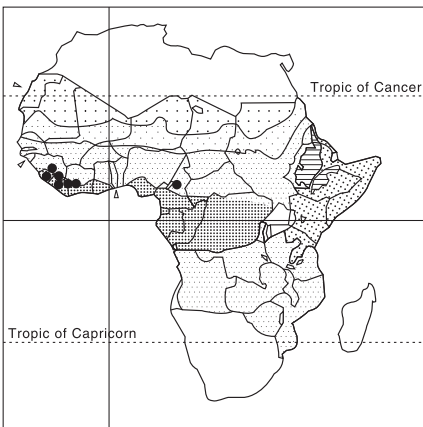
*Rubus apetalus*



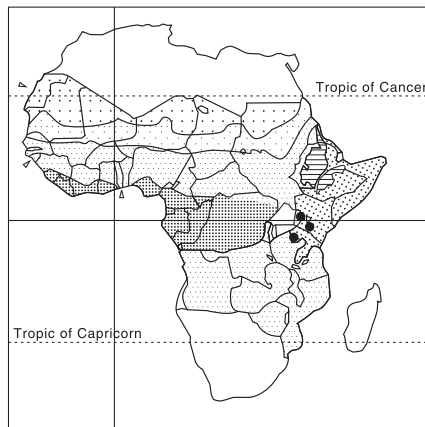
*Rubus chapmanianus*



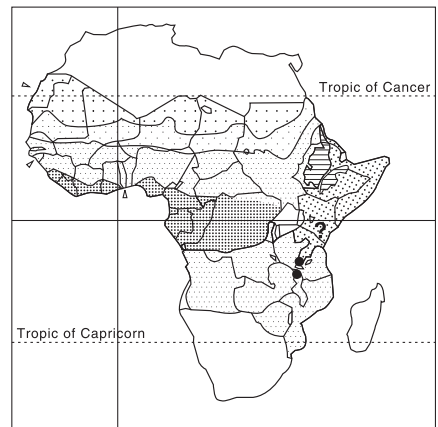
*Rubus erlangeri*



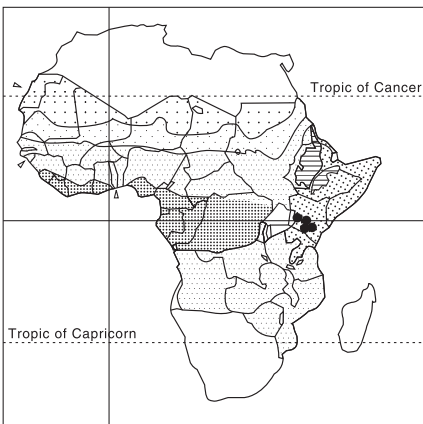
*Rubus fellatae*



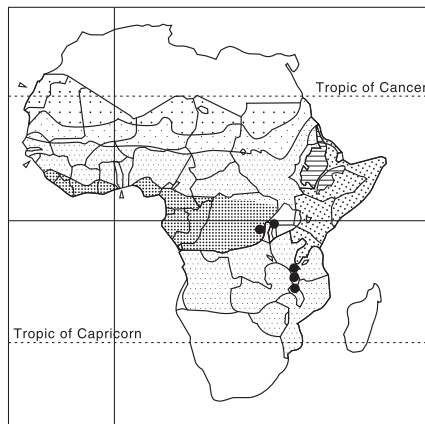
*Rubus friesiorum*



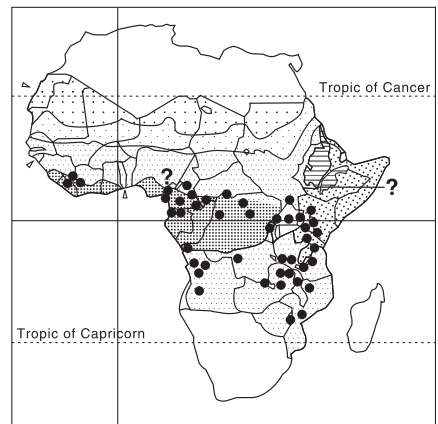
*Rubus iringanus*



*Rubus keniensis*



*Rubus kirungensis*



*Rubus pinnatus*

## RUBUS PINNATUS

Comprises 2 vars.: – var. **pinnatus** [syn.: *R. kingaensis* Engl., excl. var. *pubescens* C. E. Gust. (= *R. scheffleri*); ? *R. rungwensis* Engl.]; – var. **afrotropicus** (Engl.) C. E. Gust., incl. fa. *lobatus* C. E. Gust. and subvar. *discolor* Hauman [bas.: *R. pinnatus* subsp. *afrotropicus* Engl.; syn.: *R. pinnatus* var. *defensus* C. E. Gust.; *R. lobayensis* A. Chev. p.p. excl. F.W.T.A., Ed. 2, 1(2): 426, 1958; *R. subulatus* Welw. in sched.; *R. ledermannii* Engl., incl. var. *serrulatus* C. E. Gust.; *R. pinnatus* fa. *subglandulosus* C. E. Gust.; *R. pinnatus* var. *subglandulosus* (C. E. Gust.) R. A. Grah.; *R. rigidus* sensu Gossweiler & Mendonça, Cart. Fitogeogr. Angola: 67, 1939].

? S Ethiopia: specimens here difficult to differentiate from *R. apetalus*; further collecting needed.

**R. porotoensis** R. A. Grah.

syn.: *R. apetalus* Poir. var. *roseus* C. E. Gust.

Scrambling shrub; flowering stems tomentose; inflorescence a ± leafless pyramidal panicle 30 cm long; petals present, rose. Edges of upland rain-forest; 2100-2340 m alt.

**R. runssorensis** Engl.

Scrambling shrub to 6 m tall with long hanging branches; flowering stems tomentose or glabrescent, pruinose; stipules large; petals showy white to pale rose.

Edges of upland rain-forest and moor; evergreen bushland; formations with *Hagenia* and *Erica*; uncommon, shrubs growing isolated; 2400-3750 m alt.

Comprises 2 vars.: – var. **runssorensis** (syn.: *R. kiwuensis* Focke); – var. **umbrosus** (C. E. Gust.) Hauman (syn.: *R. doggettii* C. H. Wright).

**R. scheffleri** Engl.

syn.: *R. kirungensis* Engl. var. *pilosior* C. E. Gust.; ?*R. stuhlmannii* Engl. var. *stuhlmannii*; *R. stuhlmannii* var. *aberdarensis* C. E. Gust.; *R. kingaensis* Engl. var. *pubescens* C. E. Gust.

Scrambling shrub 1,5-3 m tall, or climbing to 12 m; stems prickly; flowering shoots tomentose to glabrescent, often with whitish bloom; petals white, pink or purple; fruit black, tomentose.

Upland rain-forest margins and glades; moist bamboo thicket; evergreen bushland; 1600-3150 m alt.

Difficult to separate from *R. kirungensis* var. *glabrescens*; and closely allied to *R. pinnatus*. “Seems to lie midway between the latter and *R. runssorensis* var. *umbrosus*.”

**R. steudneri** Schweinf.

syn.: *R. rigidus* auct. non Sm.: Robyns, Fl. Spermat. Parc Natl. Albert 1: 242, 1948, p.p.

Scrambling or scandent, hairy (sometimes glabrous) shrub 1-4 m tall; stems deeply furrowed; leaflets hairy or not; flowers with large pink petals; fruit glabrous.

Moist bamboo thicket; edges and clearings in upland rain-forest; secondary bushland and scrub; forest with *Podocarpus latifolius*, *Olea capensis* subsp. *hochstetteri*, *Syzygium guineense* subsp. *afromontanum*; ravines with *Podocarpus latifolius*; mountain ridges at upper edge of *Erica arborea* scrub; 1830-3480 m alt.

Comprises 4 vars.: – var. **steudneri** [syn.: *R. scioanus* Chiov.; *R. ulugurensis* Engl. var. *goetzeanus* Engl. and var. *adenophloeus* Focke; *R. adenophloeus* (Focke) C. E. Gust.]; – var. **aberensis** C. E. Gust. [syn.: *R. ulugurensis* Engl. var. *ulugurensis* and var. *apricus* C. E. Gust.; *R. rigidus* auct., non Sm.: Robyns, Fl. Spermat.

## RUBUS STEUDNERI

Parc Natl. Albert 1: 242, 1948, p.p.]; – var. **dictyophyllus** (Oliv.) R. A. Grah. [syn.: *R. keniicola* Focke; *R. rooseveltii* Standl.; *R. myrianthus* Bak. var. *ellipticifolius* C. E. Gust.]; – var. **sidamensis** C. E. Gust.

**R. subspicatus** Hauman

Straggling shrub with furrowed glabrous stems; petals small.

On volcanic ashes; ± 1500 m alt.

Very near *R. apetalus* (syn.: *R. interjungens* C. E. Gust.).

**R. transvaaliensis** C. E. Gust. var. **kyimbilensis** C. E. Gust.

Habit not known; flowering shoots stout, tomentose, glandular, prickly; petals present; carpels tomentose.

Moist bamboo thicket; ± 1500 m alt.

S. Africa (Transvaal; var. **transvaaliensis**).

Only known from the type (incomplete specimen) collected in 1913 (Stolz 2286).

Similar to *R. adenocomus*. A form of *R. apetalus* ?

**R. volkensii** Engl.

syn.: *R. mauensis* Engl. 1911 or Focke 1911; *R. mearnsii* Standl. 1917, non Elmer 1908, nom. illegit.; *R. chiesae* Chiov.

Handsome, erect shrub, 1,5-4 m tall with reddish, glandular-viscid and hairy stems; petals large, yellowish; ripe fruit viscid.

Edges and clearings in upland rain-forest; moist bamboo thicket; montane forest and pastures, often along streams; *Hagenia-Hypericum* woodland; secondary bushland; common in clearings in upper forest and bamboo zones; 2100-3450(-4100) m alt.

Widely cultivated (attractive appearance).

\* \* \*

Introduced, and escapes from cultivation, sometimes naturalized in scattered localities (regenerated forest and forest edges, scrub, grassy clearings) throughout highlands of tropical Africa:

**Rubus ellipticus** J. E. Sm., Himalayan raspberry, a robust scrambling shrub to 6 m tall with very stout canes; petals large, yellow; fruit yellow, enclosed in persistent calyx. Native of India and Sri Lanka.

**R. niveus** Thunb., an erect bushy shrub to 2 m tall; petals small, white to pinkish; fruit purplish. Native of India and Malaya.

**R. rosifolius** (rosaefolius) J. E. Sm., a handsome scrambling shrub to 2,5 m tall with erect or arching white-hairy stems; flowers solitary with small white petals; fruit scarlet to black, to 2 cm long (carpels very numerous). Native of India, Sri Lanka.

## SYNONYMS:

*Rubus adenophloeus* (Focke) C. E. Gust. = **R. steudneri** var. **steudneri**

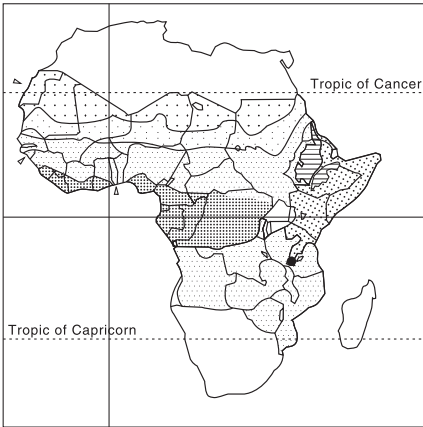
*adolphi-friederici* Engl. incl. var. *rubristylus* C. E. Gust. = **R. apetalus**

*apetalus* Poir. var. *roseus* C. E. Gust. = **R. porotoensis**

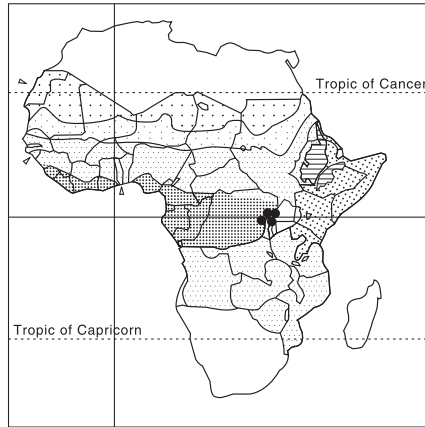
*assaortinus* (Chiov.) incl. var. *erythraeus* (Fiori) C. E. Gust. = **R. apetalus**

*atrocaeruleus* C. E. Gust. = **R. apetalus**

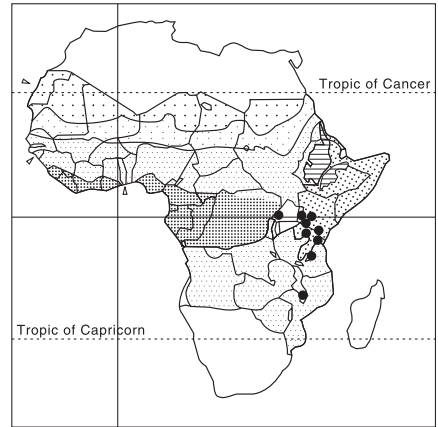




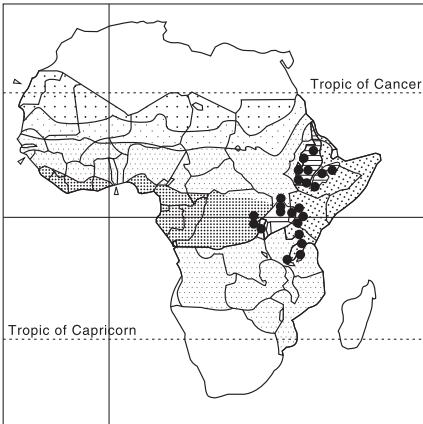
*Rubus porotoensis*



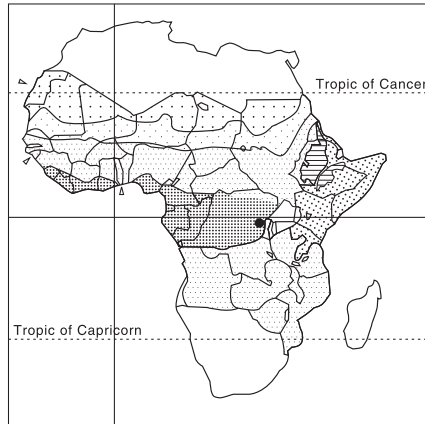
*Rubus runssorensis*



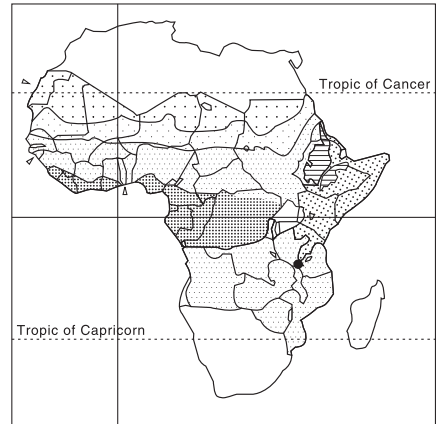
*Rubus scheffleri*



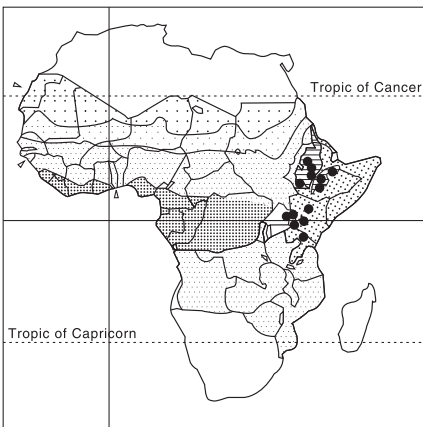
*Rubus steudneri*



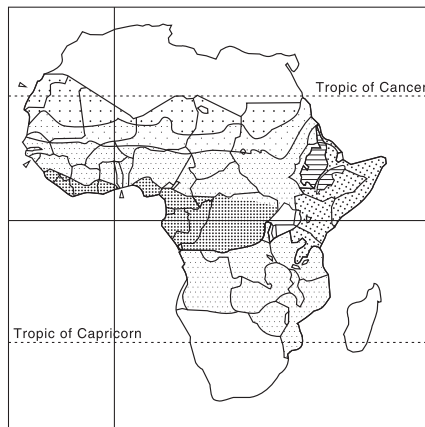
*Rubus subspicatus*



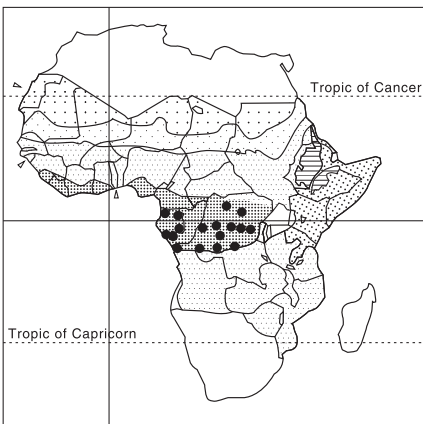
*Rubus transvaaliensis*



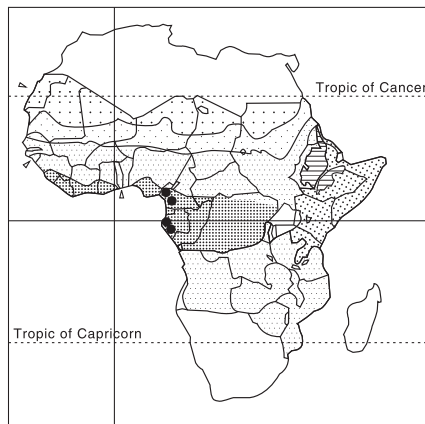
*Rubus volkensis*



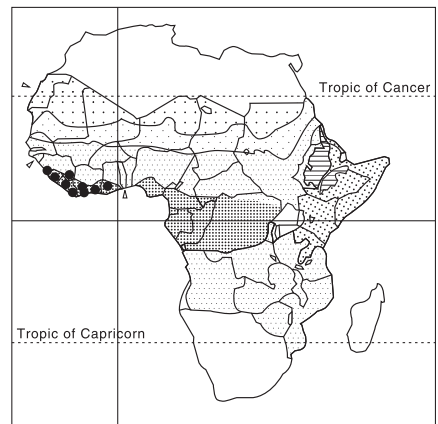
*Neurada procumbens*



*Dichapetalum acuminatum*



*Dichapetalum affine*



*Dichapetalum albidum*

## RUBUS

- chiesae* Chiov. = **R. volkensis**  
*chiovendae* C. E. Gust. = **R. apetalus**  
*chrysocarpus* Mundt = **R. apetalus**  
*dictyophyllus* Oliv. fa. *glanduliferus* Engl. = **R. adenocomus**  
*discolor* E. Mey. = **R. apetalus**  
*doggettii* C. H. Wright = **R. runssorensis**  
*ecklonii* Focke = **R. apetalus**  
*exsuccus* Steud. ex A. Rich. = **R. apetalus**  
*goetzenii* Engl. var. *glabrescens* Engl. = **R. kirungensis**  
*gortani* Chiov. = **R. apetalus**  
*huillensis* Welw. ex Oliv. = ? **R. apetalus**  
*inedulis* Rolfe = **R. apetalus**  
*intercurrens* var. *confluens* C. E. Gust. = **R. apetalus** var.  
**confluens**  
*interjungens* C. E. Gust. = **R. apetalus** and **R. fellatae**  
*keniicola* Focke = **R. steudneri** var. **dictyophyllus**  
*kingaensis* Engl. = **R. pinnatus**  
var. *pubescens* C. E. Gust. = **R. scheffleri**  
*kirungensis* Engl. var. *pilosior* C. E. Gust. = **R. scheffleri**  
*kiwuensis* Focke = **R. runssorensis**  
*ledermannii* (Engl.) Engl. incl. var. *serrulatus* C. E. Gust.  
= **R. pinnatus**  
*lobayensis* A. Chev. p.p. = **R. pinnatus**  
*mauensis* Engl. or Focke = **R. volkensis**  
*mearnsii* Standl. non Elmer = **R. volkensis**  
*mundtii* Cham. & Schlechtend. = **R. apetalus**  
*myrianthus* Bak. var. *ellipticifolius* C. E. Gust. = **R. steudneri**  
var. **dictyophyllus**  
*occidentalis* A. Chev. in sched. = **R. fellatae**  
*petalabigens* C. E. Gust. = **R. apetalus**  
*petitianus* A. Rich. = **R. apetalus**  
*pinnatiformis* C. E. Gust. = **R. apetalus**  
*quartinianus* A. Rich. and var. *pappianus* C. E. Gust.  
= **R. apetalus**  
*rigidus* Sm. and numerous vars. = **R. apetalus**  
*rigidus* auctt. non Sm. = **R. pinnatus** var. **afrotropicus** and  
var. of **R. steudneri**  
*rooseveltii* Standl. = **R. steudneri** var. **dictyophyllus**  
*rungwensis* Engl. = ? **R. pinnatus**  
*scioanus* Chiov. = **R. steudneri**  
*stuhlmannii* Engl. var. *aberdarensis* C. E. Gust. = **R. scheffleri**  
**fleri**  
var. *stuhlmannii* = ? **R. scheffleri**  
*subulatus* Welw. in sched. = **R. pinnatus**  
*ulugurensis* Engl. var. *adenophloeus* Focke = **R. steudneri**  
var. **steudneri**  
var. *apricus* C. E. Gust. = **R. steudneri** var. **aberenis**  
var. *goetzeanus* Engl. = **R. steudneri** var. **steudneri**  
var. *ulugurensis* = **R. steudneri** var. **aberenis**  
*variesectilis* C. E. Gust. = ? **R. apetalus**

## NEURADACEAE / 1 g. / 1 sp.

## NEURADA / 1

(Under *Rosaceae* in Enum. 2: 18, 1992)

Fruit diskoidal, spiny.

BORZATTI DE LOEWENSTERN, A. & F. GARBARI (2002). Karyological aspects of the genus *Neurada* L. (Neuradaceae J. G. Agardh). *Caryologia* 55: 361-365. (Also in *Acta Horti Pisani* 23, Nr. 9, 2003).

**Neurada procumbens** L., incl. var. *orbicularis* Del., var. *pentagona* Del. and var. *stellata* M. & D. Zohary; icon.: Q. Marwat & M. A. Siddiqui, Flora of Pakistan (Eds. S. J. Ali & M. Qaiser) No. 198, Neuradaceae: 3, 1997.

Prostrate annual, densely grey-tomentose herb to ± 14 cm tall; fruit discoid with straight spines.

Coastal plain (Ethiopia); fixed sand dunes in desert; sandy depression with *Acacia ehrenbergiana* and *Panicum turgidum* (Mauritania); to. c. 2100 m alt. (mountains of N Africa).

Shape and size of fruit polymorphic (but constant for each variety recognized by Borzatti de Loewenstern & Garbari, o.c.).

Saharo-Sindian region from W Africa to Pakistan and India (Rajasthan); N Africa; Cyprus; introduced into the Canary Isl. and S. Africa.

Sometimes confused with *Coldenia procumbens* L. (*Boraginaceae*).

## DICHAPETALACEAE / 2 g. / 98 spp.

(syn.: *Chailletiaceae*)

The treatment of this family is based on the revisions published by F. J. Breteler (see Enum. 2: 19, 1992) and on his contributions to different floras and check lists of continental Africa.

Family with (in Africa) mostly lianes (small to very large) or scandent shrubs (*Dichapetalum*), or sometimes (small) trees (*Tapura*, a few *Dichapetalum* species), of low-altitude rain-forest. Two species of savanna (*D. cymosum*, *D. rhodesicum*) are low shrubs with a woody rootstock. Some taxa are very poisonous to livestock.

Most species have restricted areas of distribution, only one (*D. madagascariense*) has a very wide area.

Many species are undercollected, and thus little known. Fruits are unknown for 16 species (= c. 16%), ripe fruits for another 4 species. About 11 species are only known from the type, and further 8 species are known from only very few collections.

## DICHAPETALUM / 89 spp.

Syn.: *Leucosia* Thouars; *Chailletia* DC.; *Stephanella* Tiegh.; *Icacinosia* Roberty

**Dichapetalum acuminatum** De Wild., incl. var. *laurentii* De Wild.; Breteler in Fl. Cameroun 37: 10-12, 2001.

syn.: *D. claessensii* De Wild.; *D. tessmannii* Engl.

Liane or lianescent shrub reaching the top of the forest canopy; stems to 6(-12) cm Ø; old branches with narrow pith, ± glabrous, with scattered, inconspicuous lenticels; stipules early caducous; leaves long- and abruptly acuminate, with midrib raised above; fruit with irritating hairs; cf. *D. pedicellatum*.

## DICHAPETALUM ACUMINATUM

Primary and secondary evergreen, wet rain-forest; gallery forest; easily flooded islands in river; to 1500 m alt. (E part of area).

Near *D. altescandens*.

Perhaps also in Cameroon.

**D. affine** (Planch. ex Benth.) Breteler

syn.: *D. dusenii* Engl.; *D. fallax* Ruhland

Liane or scandent shrub, sometimes a shrub; branches with a few inconspicuous lenticels or without; branchlets glabrous, often green; peduncle adnate to petiole (6-)11-17(-26) mm long; fruit glabrous (cf. *D. toxicarium*).

Wet rain-forest; 1-200 m alt. (Mt. Cameroon).

Bioko/Fernando Poo.

Has been treated as a synonym under *D. toxicarium*.

**D. albidum** A. Chev. ex Pellegr.

syn.: *D. pallidum* sensu Keay in Fl. W. Trop. Afr., Ed. 2: 436, 1958, p.p., non (Oliv.) Engl.

Liane to 20 m long with stem 5 cm Ø, or shrub or scandent shrub; branches shallowly grooved or slightly angular, with 5 rows of lenticels (within the grooves); leaves with a close-felted whitish (or brownish) indumentum beneath; fruit with brown, dense, barbed, irritating hairs.

Rain-forest; semi-deciduous forest; high forest of mountain summit; ?-1200-1750 m alt. (Mts. Nimba, Liberia).

Closely related to *D. pallidum* (with shorter pedicels, and hispid ovary, and larger fruits) with which it has been confused.

**D. altescandens** Engl.; Breteler in Fl. Cameroun 37: 12-14, 2001.

Vigorous liane reaching the top of high forest canopy, or scandent shrub, with dark brownish black stems and branchlets without prominent lenticels; stipules early caducous; fruit with a dense short-hairy indumentum mixed with 1 mm long irritating hairs.

Wet rain-forest at low altitudes.

Near *D. acuminatum*, with similar hairs (long, white, hispid) on young parts. Also near *D. beilschmiedioides*.

**D. angolense** Chodat, incl. var. *leucanthum* Pellegr. p.p. and var. *glabriusculum* Hauman; Breteler in Fl. Cameroun 37: 14-17, 2001.

syn.: *Chailletia angolensis* (Chodat) Barth; *Dichapetalum ferrugineo-tomentosum* Engl. (also as "rufotomentosum" Engl.); *D. petersianum* Dinklage & Engl.; *D. reygartii* De Wild.; *D. mayumbense* Exell

Vigorous liane reaching the top of high forest canopy, scandent shrub, or shrub; stem to 10 cm Ø; branches and branchlets hollow, densely tomentose, with 5 rows of conspicuous lenticels; stipules, petioles, and inflorescences, and fruit densely tomentose.

Rain-forest, sometimes flooded; riverine forest; on islands in river; in overgrown abandoned plantation; "in the primitive woods of the mountains... in company with *Napoleona* and *Tetracera alnifolia*" (Welwitsch, Angola); sunny thickets; abundant in dense short woods; 0-1600 m alt.

Very close to *D. bocageanum* and perhaps conspecific. Some specimens from Gabon cited by Breteler (1973) belong to *D. mathisii* (see under this species).

## DICHAPETALUM

**D. arachnoideum** Breteler; Breteler in Fl. Cameroun 37: 17-20, 2001.

Liane reaching the top of the tall trees, climbing shrub, or shrub; main trunk usually 5-lobed; branches shallowly 5-grooved, with prominent lenticels in each groove; branchlets with rusty-brown, dense indumentum; leaf-blade with midrib and main lateral nerves impressed above and white-hairy-webbed beneath (in the very similar *D. librevillense* young parts brownish- to dark red-hairy and leaf blade with raised nerves above and web of white hairs beneath absent).

Wet rain-forest, riverine forest.

Perhaps also in Congo-Brazzaville.

Easily confused with *D. librevillense* (cf. above).

**D. arenarium** Breteler

Liane to 20 m tall, climbing shrub, or shrub with ± glabrous branches, lenticels minute, dispersed; branchlets densely tomentose.

Dense forest or dense bush, on sandy soils; evergreen forest and remnants or edges thereof; 1-450 m alt. (Kenya).

Has been confused with the more southern *D. deflexum* (with peduncle adnate to the petiole; free in *D. arenarium*). – Related to *D. barbosa* (Mozambique) with completely glabrous leaf blade beneath, very short peduncles and larger petals.

**D. bangii** (F. Didr.) Engl.; Breteler in Fl. Cameroun 37: 20-22, 2001.

bas.: *Chailletia bangii* F. Didr.

syn.: Enum. 2: 20, 1992; and *Chailletia rufipilis* Turcz.

Liane reaching the top of tall trees, scandent shrub or erect shrub to 4 m tall; main trunk to >6 cm Ø with grey smooth bark; branches furrowed with 5 rows of conspicuous lenticels; branchlets with dense spreading rust-brown hairs; inflorescences congested.

Gallery forest; wet rain-forest; forest regrowth; evergreen thickets; hot and dry situations near river; to 1500 m alt.

Similar to *D. lujae* which has arachnoid white indumentum on upper surface of young leaves and on branchlets, and much longer petals.

May occur in W part of Fl. Trop. E. Afr. -area.

**D. barbatum** Breteler; Breteler in Fl. Cameroun 37: 23-24, 2001.

Liane, (scandent) shrub or treelet; main trunk with whitish bark peeling off rather soon; young branchlets and leaves with hirsute indumentum intermixed with a tomentose cover; fruits not known.

Rain-forest.

Similar to *D. dewevrei* in the same area with shorter bracts and bracteoles, filiform pedicels, and spreading petals.

**D. barbosa** Torre

syn.: *D. zambesianum* Torre

Liane, scandent or erect shrub, or treelet ?; branches and branchlets terete, pubescent; bark longitudinally striate, with small dispersed lenticels; stipules early caducous; inflorescences congested.

Dry bush; river margins; deciduous and secondary woodland.

Closely allied to *D. arenarium* (cf. under this species).

## DICHAPETALUM

**D. barteri** Engl.; Breteler in Fl. Cameroun 37: 24-26, 2001.

Shrub to tree to 13(-17) m tall with dense bushy crown; branches glabrous, densely lenticellate; branchlets densely brownish puberulous; fruits strongly tuberculate.

Coastal (secondary) scrub (Ghana); undergrowth in gallery forest; drier parts of evergreen rain-forest.

Not yet reported from Cameroon (Zenker 1682 = *D. crassifolium*).

**D. beilschmiediioides** Breteler

Liane with hollow, glabrous branches; branchlets glabrescent, hollow; lenticels sparse; ovary lanate; fruits unknown.

Rain-forest at low altitude.

Known only from 4 collections (near Lastoursville, Gabon).

Closely related to *D. altescandens* whose branches are not hollow and whose leaves are short-petioled and smaller.

Can be confused with *D. mathisii*.

**D. bellum** Breteler

Slender liane, nearly almost glabrous in all parts; fruits beaked, glabrous.

Rain- and riverine forest.

Closely related to *D. mundense*, different in floral characters (staminodes with 2 filiform branches in *D. bellum*, not so in *D. mundense*).

**D. berendinae** Breteler, Novon 13: 5, 2003; icon: *ibid.*: 6.

Slender liane reaching the forest canopy, or lianescent shrub; branchlets, stipules, leaves and inflorescences with  $\pm$  persistent brown indumentum; leaf blade papery to coriaceous, usually obliquely cordate at base, with 10-16 pairs of secondary nerves.

Rain-forest; to c. 600 m alt.

Sterile specimens (Breteler 6304, 6399, 6438, 6606) cited by Breteler as *D. heudelotii* (Meded. Landbouwhoges. Wag. 79-16, 1979) most probably belong here.

Allied to *D. heudelotii* var. *heudelotii*.

[**D. bocageanum** (Henr.) Engl.]

bas.: *Chailletia bocageana* Henr.

syn.: *D. angolense* Chodat var. *leucanthum* Pellegr. p. p. (cf. *D. angolense* above).

A tree?, with hollow branches and branchlets, has been collected once on S. Tomé (Quintas 1077), once on Principe (Mann s.n.); is closely related to or conspecific with *D. angolense*; cf. under this species above.

**D. bodyi** De Wild.

Liane or shrub with  $\pm$  glabrous branches and branchlets; stipules of same node very unequal in size; fruit unknown.

Forest, forest edges.

Closely related to *D. cymulosum*, *D. dictyospermum* and *D. filicaule*.

## DICHAPETALUM

**D. braunii** Engl. & K. Krause

Shrub, scandent shrub, or liane, with  $\pm$  glabrous branches, dark brown, with numerous minute lenticels; young branchlets golden-brown-hirsute; fruit glabrous.

Forest edges, thickets, wooded grassland; 100-500 m alt.

Sometimes confused with *D. stuhlmannii* (fruit velutinous-tomentose).

**D. chalogii** Pellegr., incl. var. *tholloniana* Pellegr.

syn.: *D. sapinii* De Wild.; *D. chalogii* Pellegr. var. "thollonii" De Wild.

Liane (medium-sized), scandent shrub, or shrub to 4 m tall, with 5-lobed main trunk scattered with minute lenticels; branches and branchlets hollow, slightly lobed, covered with dense brown hairs when young like the stipules and the fruits.

Forests with *Terminalia* in understory; forest plantations; rain-forest; gallery forest; thickets.

**D. choristilum** Engl.; Breteler in Fl. Cameroun 37: 26-28, 2001.

syn.: *D. mortehanii* De Wild.; *D. costatum* Breteler ex Punt, nom. nud. (both of var. **choristilum**).

Large liane, scandent shrub, or shrub; main trunk to 11 cm  $\emptyset$  deeply 5-lobed, with 5 rows of  $\pm$  insignificant lenticels; branches with dark brown to blackish bark; branchlets densely rusty-hairy when young; stipules long persistent; inflorescence sessile; fruit orange.

Evergreen and semi-deciduous rain-forests; riverine forest; 0-1600 m alt.

Comprises 2 vars. (var. **louisii** Breteler with smaller flowers in Gabon and Congo).

**D. congoense** Engl. & Ruhl.; Breteler in Fl. Cameroun 37: 28-31, 2001.

syn.: *D. mekametane* Engl.

Large liane, scandent shrub, shrub, or ? tree; main trunk to 5(-9) cm  $\emptyset$  with yellowish-green bark, later longitudinally fissured and then flaking off in fine scales; lenticels conspicuous, blackish; xylem strongly lobed; young branchlets yellowish- or greyish-tomentose; inflorescences with up to 100 flowers.

Evergreen rain-forest; forest along watercourses.

Cultivated in greenhouse at Wageningen (Netherlands).

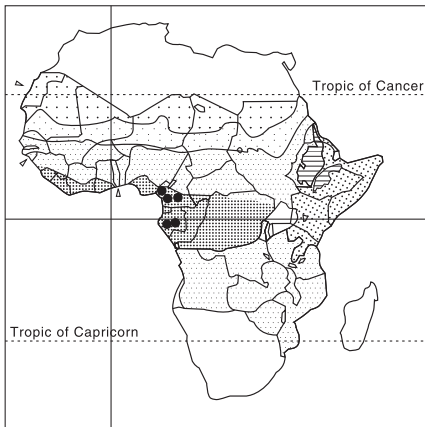
Can be confused with *D. integripetalum*, but is more closely related to *D. unguiculatum*.

**D. crassifolium** Chodat; Breteler in Fl. Cameroun 37: 31-34, 2001.

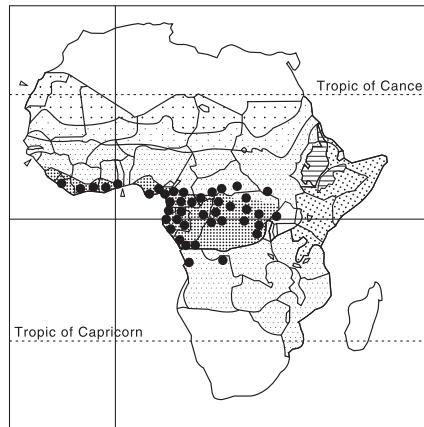
syn.: *Chailletia crassifolia* (Chodat) Barth; *Dichapetalum holopetalum* Ruhl. 1902, non Merrill 1921; *D. brachysepalum* Engl. ("brachystachyum" sphalm.); *D. spathulatum* Engl. var. *spathulatum*; *D. malembense* Pellegr.; *D. palustre* Louis ex Hauman, incl. var. *polyanthum* Hauman – All of var. **crassifolium**.

Liane up to >40 m long reaching the top of the tallest trees; main trunk 5(-8) cm  $\emptyset$  at base; or scandent shrub, or shrub to 1.5 m tall, stems trailing on the soil sometimes rooting; stem and branches with conspicuous large lenticels; inner bark and intruding phloem exuding when cut a reddish sour, sticky slime turning black in drying; branchlets rusty puberulous; stipules early deciduous.

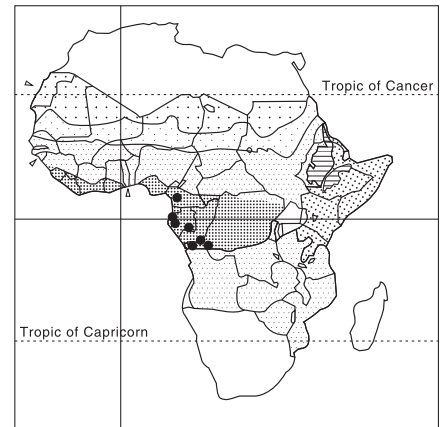




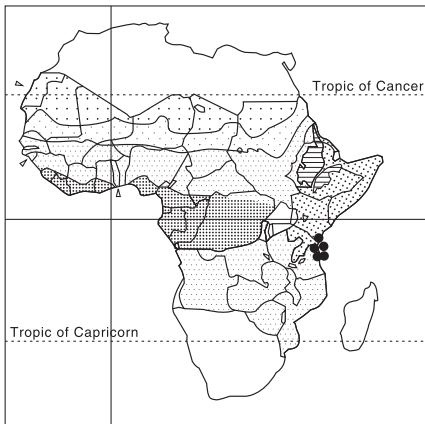
*Dichapetalum altescandens*



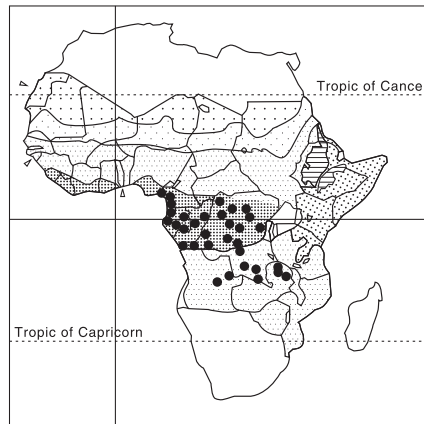
*Dichapetalum angolense*



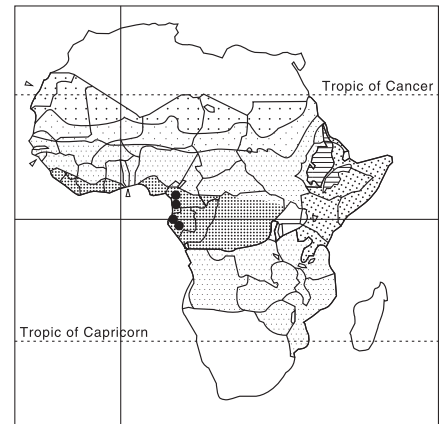
*Dichapetalum arachnoideum*



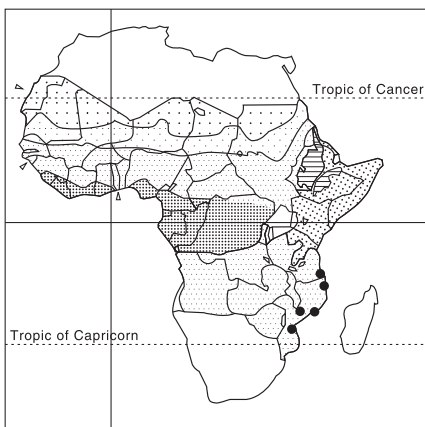
*Dichapetalum arenarium*



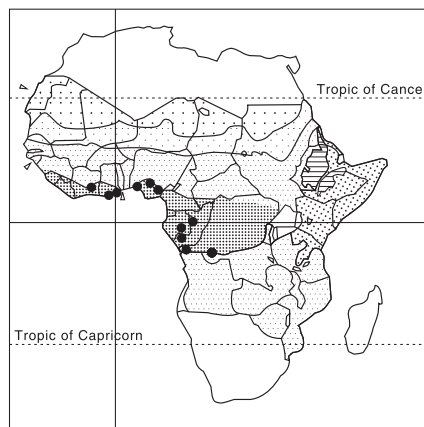
*Dichapetalum bangii*



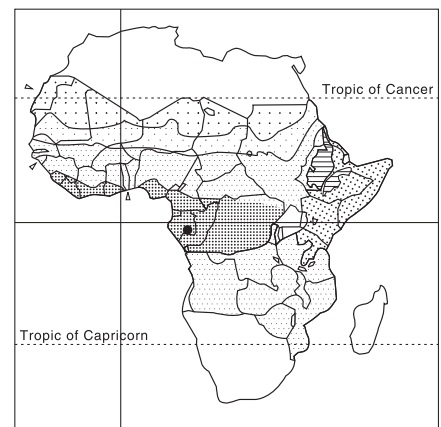
*Dichapetalum barbatum*



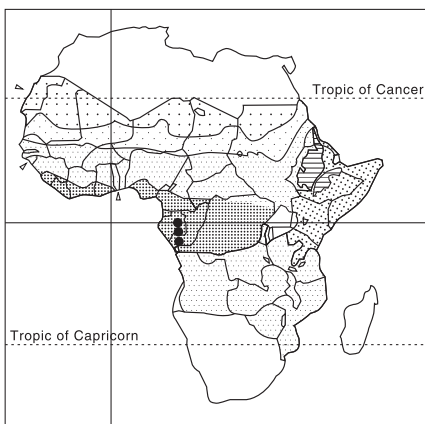
*Dichapetalum barbosae*



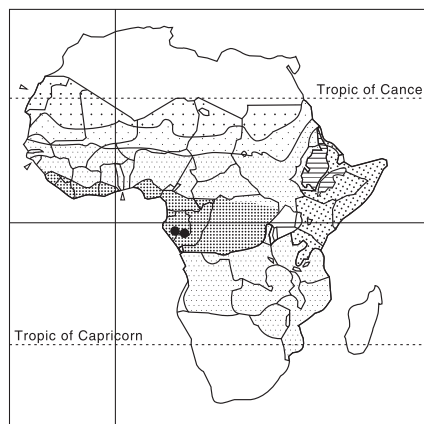
*Dichapetalum barteri*



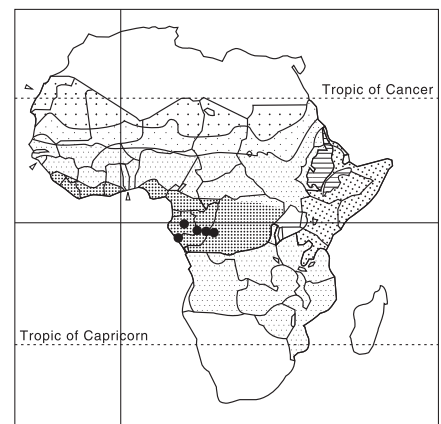
*Dichapetalum beilschmiedioides*



*Dichapetalum bellum*



*Dichapetalum berendinae*



*Dichapetalum bodyi*

## DICHAPETALUM CRASSIFOLIUM

Evergreen rain-forest; riverine and swamp forest; along water-courses; in shady places among rocks by thickets within a fortress (Angola); 0-1700 m alt.

Comprises 2 vars. [var. **integrum** (Pierre) Breteler; syn.: *D. spatulatum* Engl. var. *integrum* (Pierre) Pellegr., with smaller flowers, in Cameroon and Gabon].

Cultivated in greenhouse at Wageningen (Netherlands; var. **crassifolium**.)

**D. cymosum** (Hook.) Engl.

bas.: *Chailletia cymosa* Hook.

Shrublet to 40 cm tall; stems red, many, erect, virgate, ± glabrous from a creeping woody rootstock; leaves ± sessile, narrowly oblanceolate, glabrous.

Plateau woodland; tree and shrub savanna; open grassy vegetation; in rocky and sandy soils; gregarious; to 1200 m alt.

Variable in shape of leaves (from ± linear to obovate).

S. Africa (Transvaal, Natal), Namibia, Botswana.

Leaves and seeds extremely poisonous to cattle (alkaloids).

**D. cymulosum** (Oliv.) Engl.; Breteler in Fl. Cameroun 37: 34-36, 2001.

bas.: *Chailletia cymulosa* Oliv.

syn.: *D. riparium* Engl.; *D. subuncinatum* Engl.; *D. chartaceum* (Wright) De Wild.

Liane reaching tall trees, scandent shrub, or shrub; stem and branches hollow, with small but conspicuous lenticels often in rows; bark brown to blackish, smooth, longitudinally fissured; wood hard, slightly lobed or not; branchlets pubescent; stipules often early caducous.

Rain-forest, often on roadsides, or in anthropogenous savanna.

A specimen cultivated in greenhouse at Wageningen (Netherlands) has flowers that are fragrant early in the morning, perhaps also in the night; leaves supporting flower branches have nectar producing glands, those without flowers at the axil have no such glands (fide Breteler l.c.).

**D. deflexum** (Klotzsch) Engl.

bas.: *Chailletia deflexa* Klotzsch ("reflexa" sphalm. in FT.A. 1: 343, 1868).

syn.: *D. mendoncae* Torre

Liane, scandent shrub, or rhizomatous shrublet; branchlets with a short rusty or cinnamon tomentum; peduncle of inflorescence adnate to leaf.

Bush, mixed woodland; perhaps also in grassy vegetation.

Sometimes confused with *D. arenarium* and quoted from Tanzania where *D. deflexum* does not occur.

**D. dewevrei** De Wild. & T. Durand; Breteler in Fl. Cameroun 37: 37-40, 2001.

syn.: *D. dewevrei* var. *donisii* Hauman; *D. obliquifolium* Engl. quoad var. *obliquifolium*, and var. *mayumbense* Pellegr.; *D. micranthum* Hauman. – All of var. **dewevrei**.

Medium-sized liane, scandent shrub or shrub to 4 m tall; main stems and branches with thick lenticels; branchlets (densely) grey-hispid, hirsute to tomentose, with short and long hairs intermixed, also present on stipules and petioles; inflorescences glomerules.

## DICHAPETALUM DEWEVREI

Rain-forest; gallery forest; managed forests; in dark understorey.

Comprises 2 vars.

Related to *D. barbatum*.

**D. dewildei** Breteler; Breteler in Fl. Cameroun 37: 40-42, 2001.

Liane to 60 m long; branches and branchlets dark brown to black, ± glabrous; lenticels small, inconspicuous; stipules early caducous; leaves black when dry; inflorescences small (5-25 flowers); flowers fragrant.

Rain-forest.

Can be confused with *D. choristilum* (dried leaves black). Closely related to *D. madagascariense*.

Not yet recorded from Gabon.

**D. dictyospermum** Breteler

Liane, scandent shrub or shrub; branches solid, terete, glabrous, brown to black, with scattered lenticels; stipules unequal.

Rain-forest.

Cultivated in greenhouse at Wageningen (Netherlands).

Near *D. bodyi*.

**D. edule** Engl.

Liane, scandent shrub, or shrub to 2 m tall; stem and branches glabrous, with small lenticels; branchlets, stipules and petioles densely golden-brown velutinous or hispidulous; stipules rather long-persistent.

Evergreen or deciduous bush and thickets on sandy red loam; 50-800 m alt.

Some specimens from SE Tanzania, Kilwa District, share features with *D. deflexum* (fide Breteler in Fl. Trop. E. Afr., Dichapet.: 7, 1988).

**D. eickii** Ruhl.

Liane to 30 m long, or (scrambling) shrub; stem and branches glabrous, with small lenticels in rows; branchlets ± densely puberulous-tomentellous, soon glabrescent; same type of indumentum on stipules and petioles; stipules soon deciduous; fruit densely rusty-brown tomentellous.

Upland, moist evergreen forest, mist forest, heath vegetation; 1050-2200 m alt.

Resembling *D. choristilum*.

**D. fadenii** Breteler

Liane of unknown size; branches dark-brown to black, lenticellate; branchlets tomentellous, glabrescent; stipules long-persistent, hairy; mature fruit unknown, but young fruit tomentose.

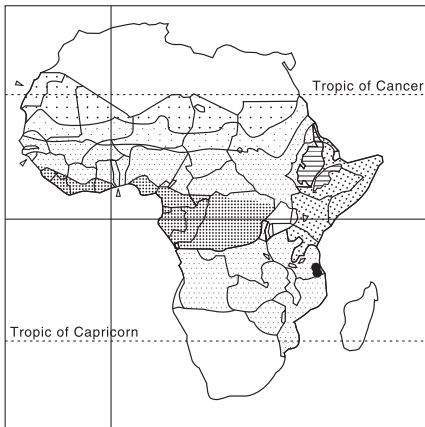
Forest on limestone outcrops; 200-250 m alt.

Only known from Chasimba (type collection) and Mangea (both Kilifi district, Kenya); endangered; fide H. Beentje, Kenya trees, shrubs and lianas: 232, 1994.

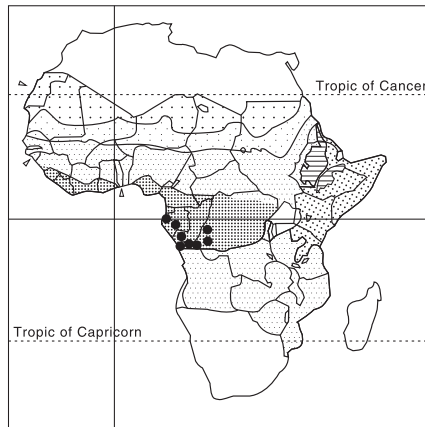
**D. filicaule** Breteler

Liane with thin stems to 1 cm Ø, climbing shrub or shrublet; branches terete, dark-brown to black; ± glabrous; bark lenticellate, smooth, later fissuring with curled flakes; young terminal shoots very slender; stipules unequal.

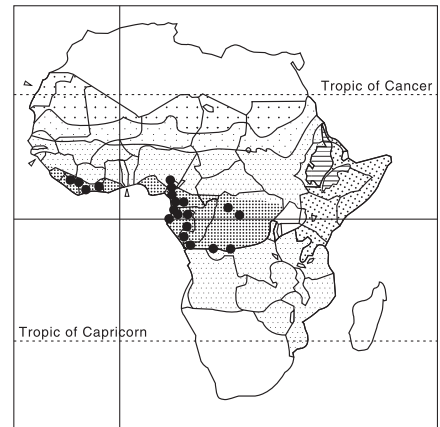
Rain-forest area in forest and on roadsides; very common near Abidjan (Ivory Coast).



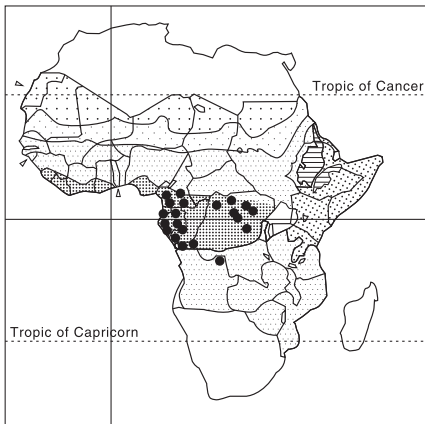
*Dichapetalum braunii*



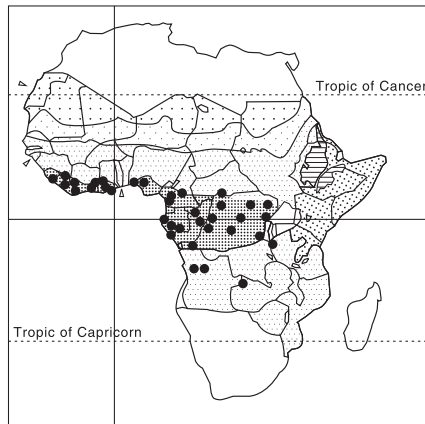
*Dichapetalum chaloitii*



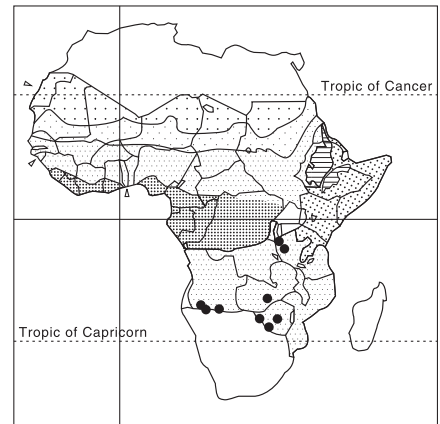
*Dichapetalum choristilum*



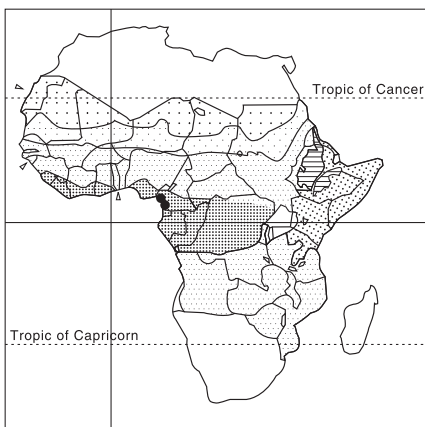
*Dichapetalum congoense*



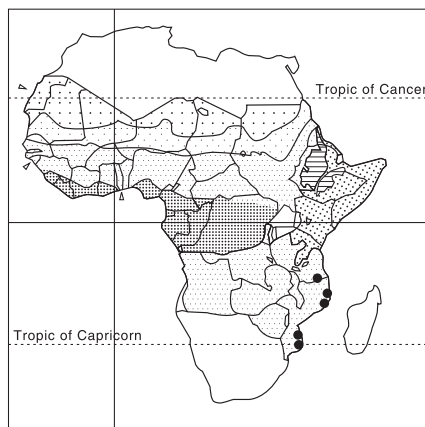
*Dichapetalum crassifolium*



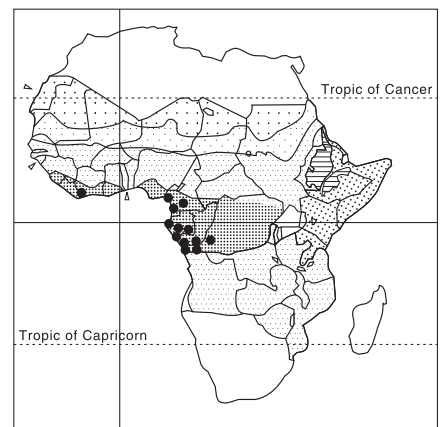
*Dichapetalum cymosum*



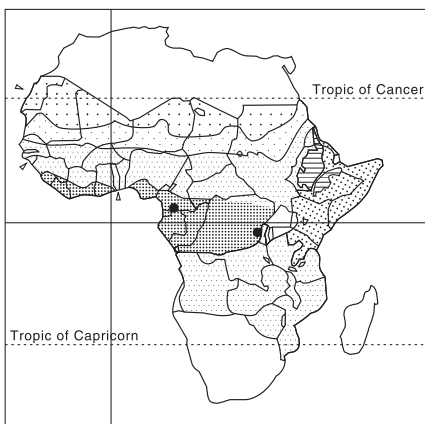
*Dichapetalum cymulosum*



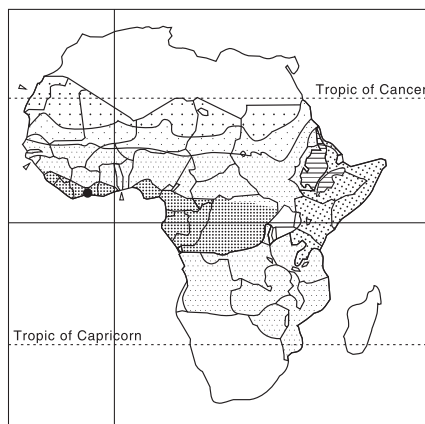
*Dichapetalum deflexum*



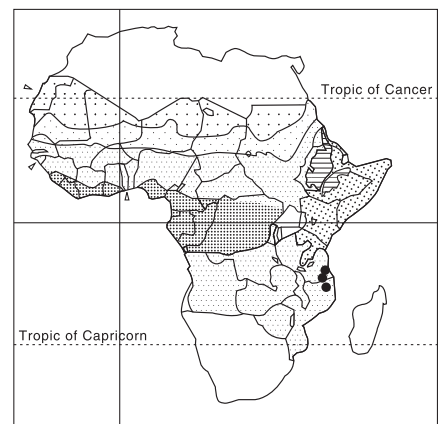
*Dichapetalum dewevrei*



*Dichapetalum dewildei*



*Dichapetalum dictyospermum*



*Dichapetalum edule*

## DICHAPETALUM FILICAULE

Similar to *D. cymulosum*, and closely related to *D. dictyospermum*. Has been confused with *D. unguiculatum* (fide Breteler, Meded. Landbouwhogeschool Wageningen 82-8: 70, 1982).

**D. findouense** Breteler, Novon 13: 7, 2003; icon.: *ibid.*: 8.

Lianescent shrub or liane with hollow orthotropic shoots, plagiotropic ones hollow or not; branchlets ± strigose, glabrescent; leaf blade papery, obovate, acuminate at apex, with 5-7 pairs of secondary nerves; petals, stamens and pistil unequal in length. Rain-forest; 0-100 m alt.

Only known from 2 localities in Gabon.

**D. fructuosum** Hiern; Breteler in Fl. Cameroun 37: 42-43, 2001. syn.: *D. oddonii* De Wild. p.p. quoad typum; *D. cinnamomeum* Hauman

Liane, scandent shrub, shrub or ? tree; branches ± glabrous, brown to black, with small sparse lenticels; branchlets densely to sparsely brown-hairy; stipules usually early caducous.

Evergreen or semi-deciduous rain-forest, coastal and riverine; edges of moist lowland forest; in primitive woods in company with *Clematis pseudograndiflora* and *Coffea* (Angola); ± 200-450 m alt.

Closely related to *D. arachnoideum*; similar to *D. librevillense*, but not exuding a slime when freshly cut.

Not yet recorded from Cameroon or Congo-Brazzaville.

**D. gabonense** Engl.; Breteler in Fl. Cameroun 37: 43-45, 2001.

syn.: Enum. 2: 20, 1992; and *D. fraternum* Pierre, nomen in sched.

Liane, scandent shrub, or shrub to 5 m tall, glabrous to sparsely appressed-puberulous in all vegetative parts; branches and branchlets hollow, but woodcylinder entire in shrubby specimens; stipules early caducous; leaves papery with small glands and domatia beneath.

Evergreen and semi-deciduous rain-forest; secondary bush; riverine forest, river banks; 1-800 m alt.

Closely related to *D. thollonii* (sympatric) whose leaves are however coriaceous and lacking domatia, and with longer petals.

**D. gassitae** Breteler

Slender liane; stem lenticellate, with intruding phloem; branches and branchlets with long hispid hairs mixed with short curled ones; inflorescences compact, subsessile; fruit unknown.

Rain-forest.

Only known from the type collection.

**D. geminostellatum** Breteler

Liane or scandent shrub; branches and branchlets with long hispid hairs mixed with short ones; also such indumentum on stipules and leaves (beneath and midrib above); fruit unknown.

Rain-forest.

Similar to *D. heudelotii* var. *hispidum*, but inflorescences few-flowered (1-2 flowers) and different in shape of petals.

**D. germainii** Hauman

Treelet or shrub to 8 m tall, scandent shrub, or liane; main stem 2,5 cm Ø; branches ± glabrous, with green bark; branchlets densely villous to velutinous; such indumentum also on stipules, petioles and leaves; stipules ± long persistent.

Rain-forest; on islands in river.

## DICHAPETALUM

**D. gillettii** De Wild.

Liane to 3-4 m long, or scandent shrub; branches ± glabrous, without or with inconspicuous lenticels; branchlets densely tomentose-hirsute, hairs reddish to pale brown; stipules insignificant, early caducous; inflorescence a stalked subglobose head; fruit with erect, acicular irritating hairs.

Evergreen and semi-deciduous forests; gallery forest; wooded savanna.

Very variable in leaf shape and flower dimensions, and some specimens similar to *D. tomentosum*; e. g.: the drawing in Flore Congo Belge, Rwanda-Urundi 7: 313, 1958, is a mixture of both species, fide Breteler in Meded. Landbouwhogeschool Wageningen 79-16: 16-17, 1979. But leaf indumentum distinct: hirsute in *D. gillettii*; tomentose in *D. tomentosum*; flowers are also different but both have globular inflorescences.

**D. glomeratum** Engl.; Breteler in Fl. Cameroun 37: 46-48, 2001.

syn.: *D. baturense* K. Krause; Enum. 2: 20, 1992.

Liane, scandent shrub, shrub, or treelet to 9 m tall; main stem to 80 cm Ø; bark pale coloured, with 5 rows of large lenticels; branches glabrous to villous tomentose, becoming lenticellate; branchlets, stipules and leaves densely white to brown villous-tomentose; inflorescences few-flowered, glomerate, sessile; flowers sessile, persistent (the only species in the genus).

Rain-forest; semi-deciduous forest; secondary and gallery forests; rocky hills.

Sterile specimens can be confused with *D. heudelotii* but indumentum of branchlets and leaves different.

**D. heudelotii** (Planch. ex Oliv.) Baill.; Breteler in Fl. Cameroun 37: 48-57, 2001.

bas.: *Chailletia heudelotii* Planch. ex Oliv.

syn.: and vars.: Enum. 2: 20-21, 1992; and *Chailletia subauriculata* Oliv.; *Dichapetalum acutisepalum* Engl.; *D. cuneifolium* Engl.; *D. ferrugineum* Engl.; *D. adolfifriederici* Engl. – All of var. **heudelotii**.

Liane, scandent shrub, shrub or treelet, evergreen, 4-10 m tall or long; main stem to 10 cm Ø; bark rather smooth with small inconspicuous lenticels; woodcylinder entire or ± deeply lobed; branchlets and leaves hispid, hirsute, tomentose or villous, rapidly glabrescent; inflorescences glomerate, sessile.

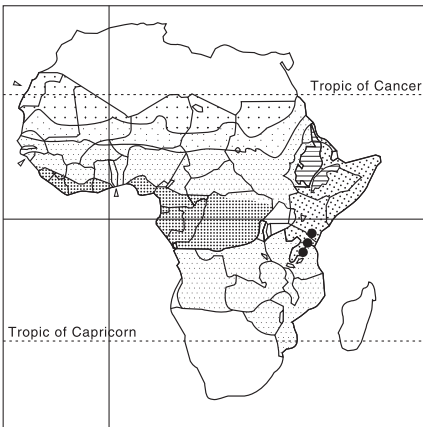
Primary and secondary, evergreen and semi-deciduous forests, sometimes flooded; shady forest or river banks; riverine forest; regrowth; transitional dry forest; in very dense more elevated primitive woods (Angola; var. **hispidum**); 1-800 m alt.

Very variable species, especially in leafsize and indumentum of vegetative parts, and in shape and indumentum of fruits.

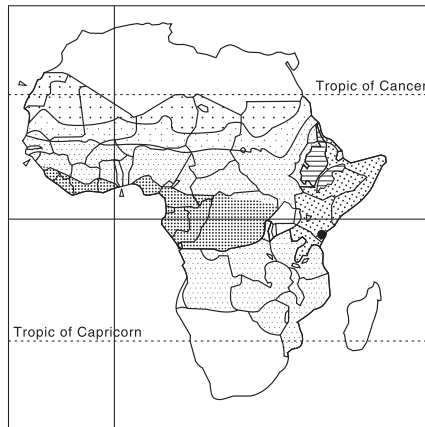
Bioko/Fernando Poo.

Comprises 4 vars. principally based on vegetative characters. Sometimes doubtful to place a specimen into a defined variety. – Var. **heudelotii** – See above; – Var. **hispidum** (Oliv.) Breteler [bas. and syn.: Enum. 2: 20, 1992; and *D. longipilosum* Engl., nomen in herb. Zenker (n° 1064) and sensu De Wild. 1919 (B45 = Zenker n° 311); *Chailletia subsessilifolia* Chodat ex Barth]; – Var. **longitubulosum** (Engl.) Breteler [bas. and syn.: Enum. l.c.; and *D. aurantiacum* Engl.; *D. batesii* Engl.]; – Var. **andongense** (Engl.) Breteler [bas. and syn.: Enum. 2: 21, 1992; and *D. sankuruense* De Wild.; *D. martineai* Aubrév. & Pellegr.; *D. actidalum* Engl., nomen in Herb. Zenker (n° 355)].

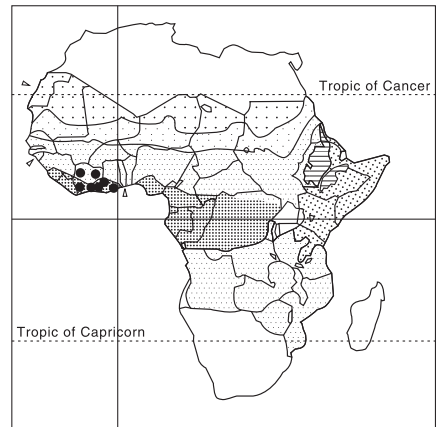




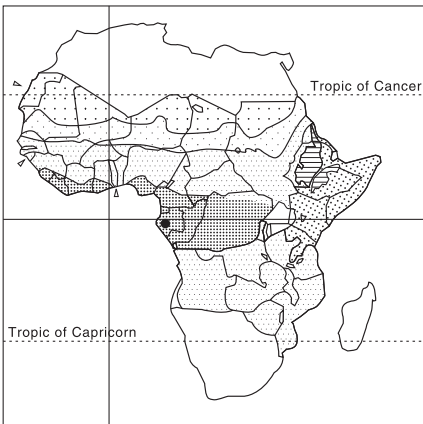
*Dichapetalum eickii*



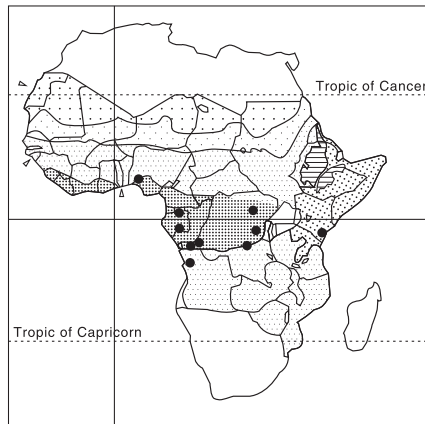
*Dichapetalum fadenii*



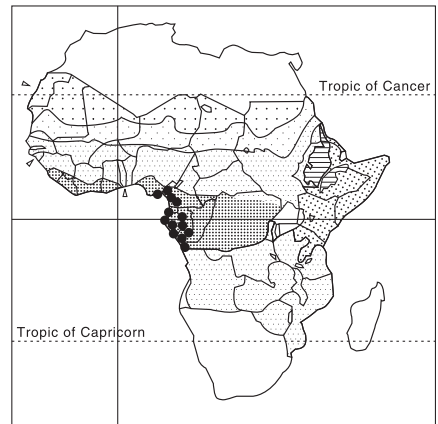
*Dichapetalum filicaule*



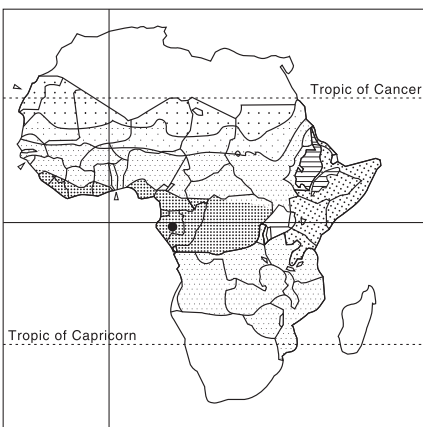
*Dichapetalum findouense*



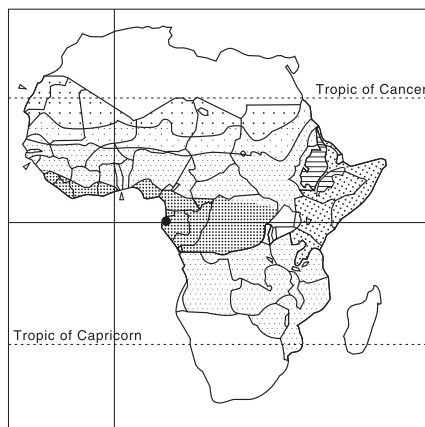
*Dichapetalum fructuosum*



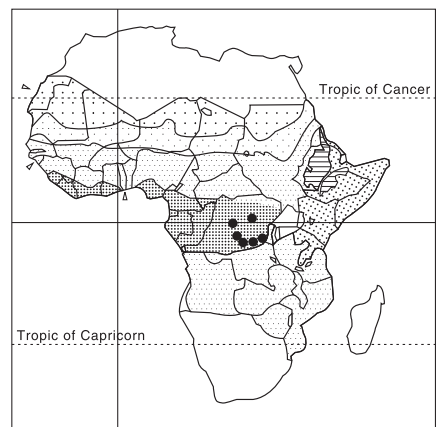
*Dichapetalum gabonense*



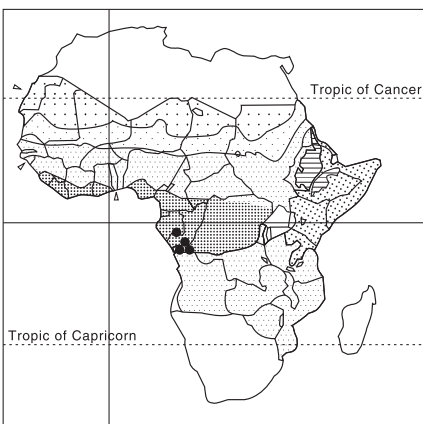
*Dichapetalum gassitae*



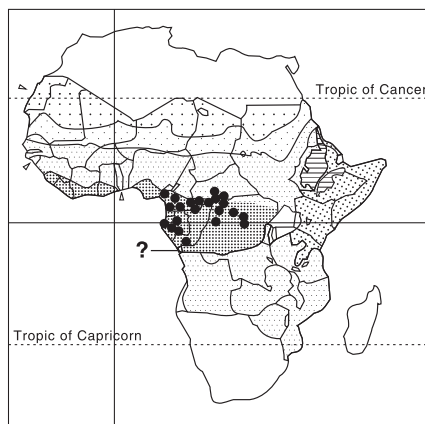
*Dichapetalum geminostellatum*



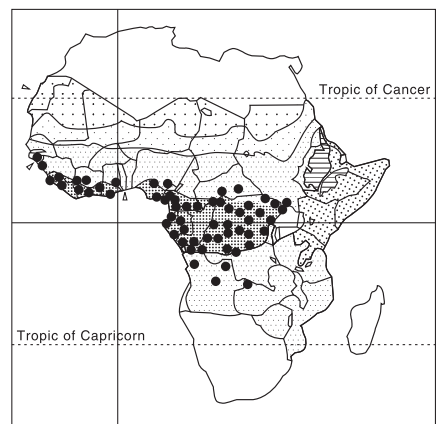
*Dichapetalum germainii*



*Dichapetalum gillettii*



*Dichapetalum glomeratum*



*Dichapetalum heudelotii*

## DICHAPETALUM HEUDELOTII

Very similar to the *D. staudtii* complex distinguished by clear vegetative characters (Breteler in Meded. Landbouwhogeschool Wageningen 79-16: 26, 1979).

Sterile specimens cited by Breteler (1979) from C & SE Gabon belong to *D. berendinae* (see under this species).

**D. inaequale** Breteler, Novon 13: 9, 2003; icon.: *ibid.*: 10.

Medium-sized liane with brown, lenticellate ± glabrous branches; leaf blade rounded to cuneate, ± asymmetrical, hairy on entire surface when young, acuminate at apex, with 5-6(-7) pairs of secondary nerves; fruit unknown.

Rain-forest; c. 300 m alt.

Resembling *D. crassifolium*.

Only 2 collections known.

**D. insigne** Engl.; Breteler in Fl. Cameroun 37: 57-59, 2001.

Liane, shrub, scandent shrub or treelet; main stem at base to 4 cm Ø; bark shallowly fissured or ± smooth, with small lenticels; branches and branchlets densely villous-tomentose, indumentum long-persistent; young short-noded branchlets with large overlapping stipules looking like catkins; stipules long-persistent; inflorescences glomerate, sessile, partly hidden by the stipules with flowers in 2 rows.

Evergreen and semi-deciduous rain-forest and forests; 1-200 m alt. (Mt. Cameroon).

**D. integripetalum** Engl.; Breteler in Fl. Cameroun 37: 60-62, 2001.

Liane to 15 m tall, scandent shrub, or shrub; main stem to 7 cm Ø; branches and branchlets ± glabrous with dense minute lenticels giving a pustular aspect, bark becoming transversely fissured when older.

Rain-forest; evergreen and semi-deciduous forests; forming coppice in cassava fields; rather common throughout Gabon.

Can be confused with *D. barteri* (leaves and flowers similar but inflorescences and habit different).

**D. korupinum** Breteler; Breteler in Fl. Cameroun 37: 62, 64, 2001.

Scandent shrub with ± glabrous branches; branchlets densely tomentose; stipules early caducous; fruit unknown.

Forest ? (Korup National Park, Cameroon).

Near *D. montanum* and also similar to *D. insigne* (indumentum of branchlets). Only known from the type collection.

**D. letouzeyi** Breteler; Breteler in Fl. Cameroun 37: 62-63, 66, 2001.

Large liane with ± glabrous branches, lenticellate or not; branchlets, stipules and petioles covered by a dense brown short indumentum; such hairs also on the main leaf nerve above and below; fruit unknown.

Forest ? (Korup National Park, Cameroon).

Near *D. fructuosum* (not present in Cameroon).

Only known from the type collected in 1985.

**D. leucocarpum** Breteler, Adansonia, Sér. 3, 25: 223, 2003; icon.: *ibid.* p. 224 (Planch. ex Oliv.) Baill. in Breteler, Afric. Dichapetal. 5: 42, 1979, and under *D. heudelotii* var. *heudelotii* (Louis & al. 703, 743) in Breteler, Afric. Dichapetal. 9: 38, 1986).

## DICHAPETALUM LEUCOCARPUM

syn.: Sterile material (Breteler 5685, 6548, 6689) cited under *D. heudelotii*.

Shrub, lianescent or not, liane; main orthotropic stem lobed in transverse section; lower leaf surface with glands along midrib; sepals tomentose; fruit white-tomentose, tuberculate.

Rain-forest; to c. 300 m alt.

Related to *D. heudelotii* (and keying out like this one). Differs from *D. madagascariense* in having lower part of style glabrous.

**D. librevillense** Pellegr.; Breteler in Fl. Cameroun 37: 63, 65, 67, 2001.

syn.: Enum. 2: 21, 1992; and *D. divaricatum* De Wild.

Liane, scandent shrub, or shrub; main stem >5 cm Ø at base; branches often ± angular, with inconspicuous lenticels; freshly cut bark of branches and branchlets exuding a reddish, sour, sticky slime, turning brown when dry; branchlets, stipules, and inflorescences with appressed short, red hairs; leaves glandular beneath.

Evergreen rain-forest; semi-deciduous forests; gallery forests.

**D. lindicum** Breteler

Liane 2-3 cm tall; branches reddish brown, ± glabrous; branchlets, stipules, and inflorescences densely golden-brown hairy; leaves pale-brown- to silvery soft-hairy above and beneath.

Ecology not given by Breteler in Kew Bull. 45: 721-723, 1990.

**D. lofense** Breteler

syn.: *D. lofaense* Breteler ex Punt, nomen.

Liane or scandent shrub; main stem with bark peeling off in small, thin flakes; branches ± glabrous; branchlets densely velutinous to tomentose; stipules caducous; inflorescences glomerate, sessile, hirsute-tomentose.

Rain-forest.

Related to *D. reticulatum* and *D. umbellatum*.

**D. lujae** De Wild. & T. Durand ("lujaei"); Breteler in Fl. Cameroun 37: 68-70, 2001.

Liane, scandent shrub or shrub to 3 m tall; woodcylinder 5-lobed to 5-partite; branches and branchlets hollow or not; branchlets hispid mixed with velutinous indumentum, or covered by a deciduous white web sometimes mixed with brown erect hairs; stipules, petioles, leaves and inflorescences with white-web-indumentum; stipules palmately divided.

Evergreen and semi-deciduous forests; riverine forest; on islands in river; in understory of primary and secondary forests; forest edges; regrowth; wooded savanna.

Comprises 3 vars.

Similar to *D. bangii*.

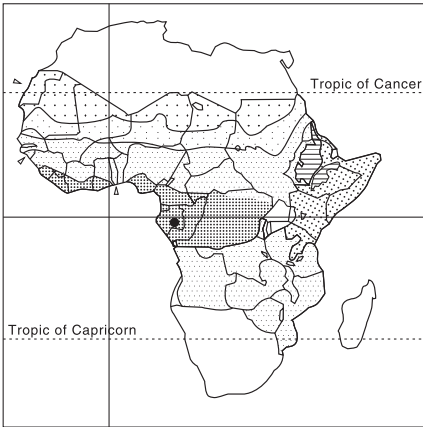
**D. macrocarpum** Engl. ex K. Krause (type Busse 2879; not 2878 = *D. mossambicense*).

syn.: *D. macrocarpum* Engl. ex K. Krause fa. *angustifolium*, nomen on specim. Schlieben 5832.

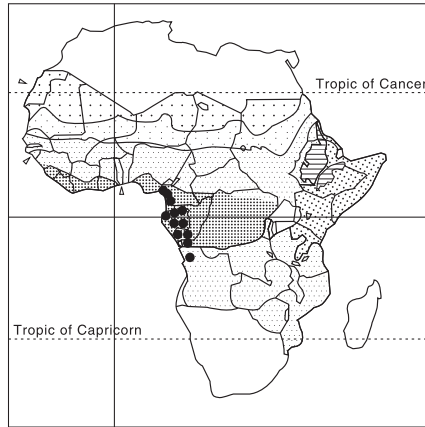
Shrub with ± glabrous branches and villous-sericeous branchlets; stipules rather long persistent; inflorescences glomerate, shortly stalked, 5-flowered; flowers sweetly scented.

*Brachystegia* woodland on sandy soil forming dense thickets in sunny situations; deciduous thicket; secondary bushland; 250-650 m alt.

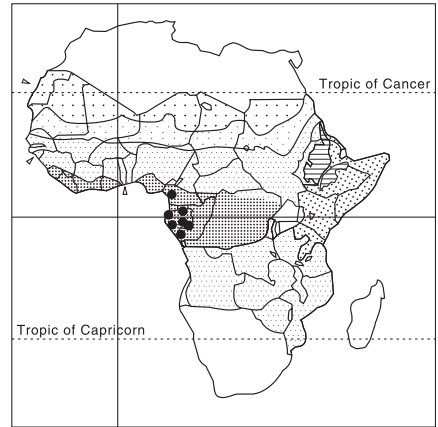
Fruits (or at least seeds) poisonous.



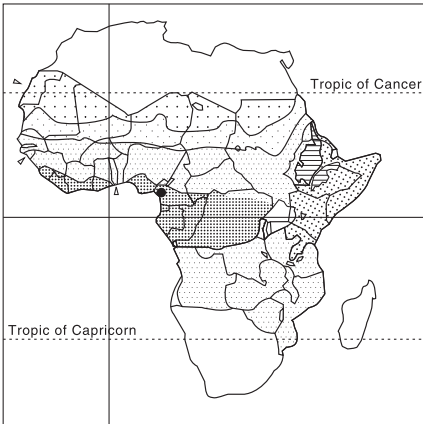
*Dichapetalum inaequale*



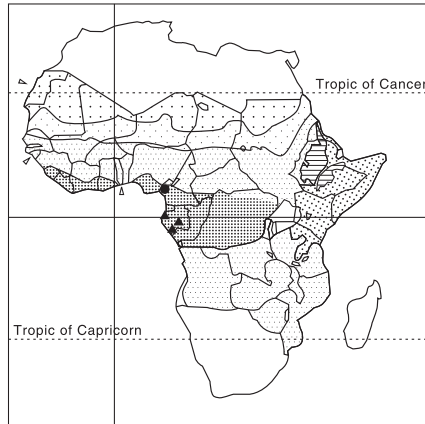
*Dichapetalum insigne*



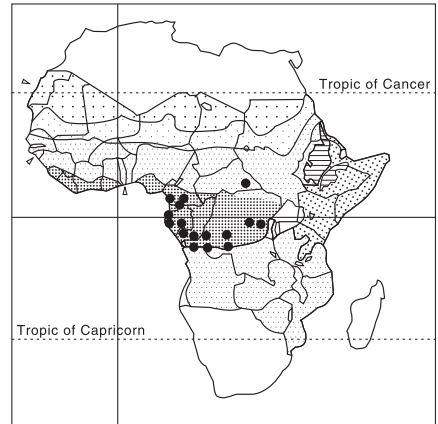
*Dichapetalum integripetalum*



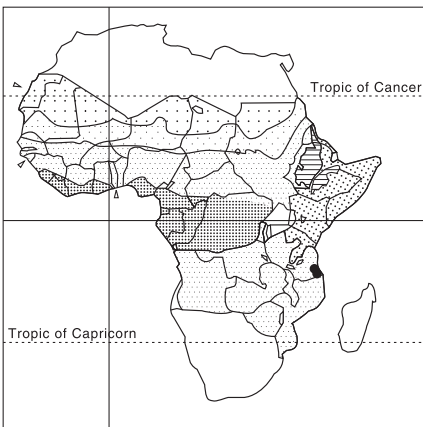
*Dichapetalum korupinum*



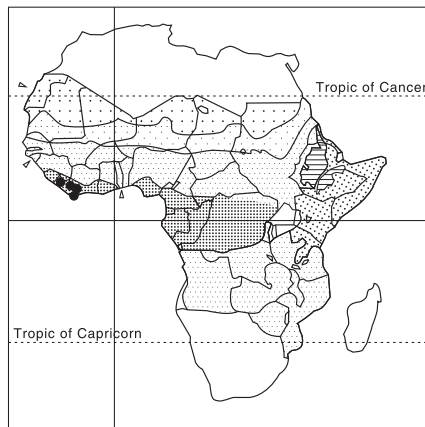
*Dichapetalum letouzeyi* ●  
*Dichapetalum leucocarpum* ▲



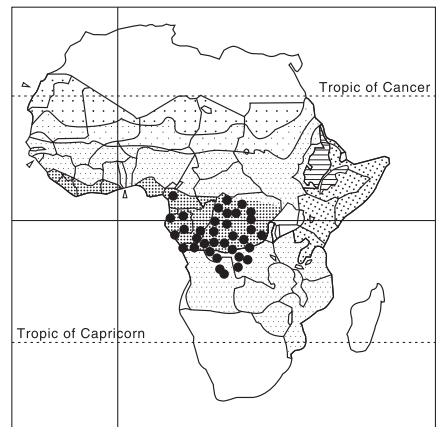
*Dichapetalum librevillense*



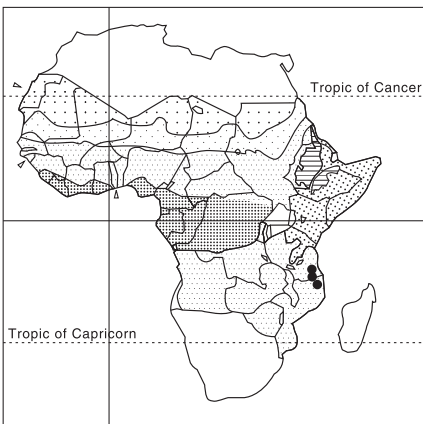
*Dichapetalum lindicum*



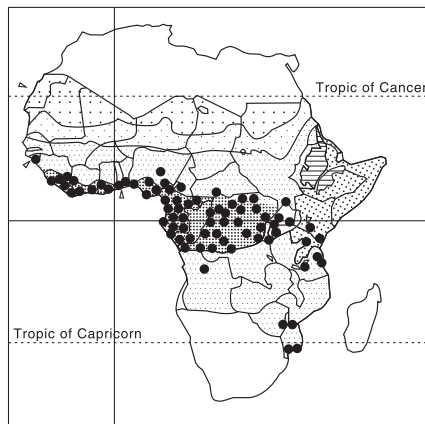
*Dichapetalum lofense*



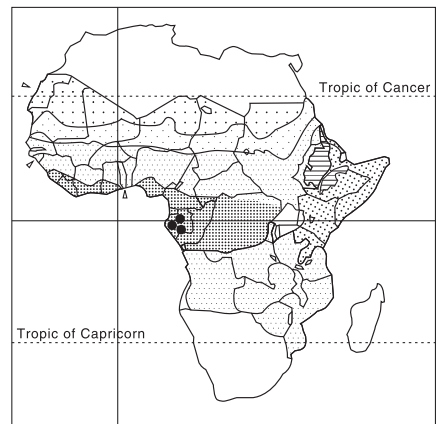
*Dichapetalum lujae*



*Dichapetalum macrocarpum*



*Dichapetalum madagascariense*



*Dichapetalum mathisii*

## DICHAPETALUM

**D. madagascariense** Poir.; Breteler in Fl. Cameroun 37: 70-73, 2001.

syn.: Enum. 2: 21, 1992; and *D. paniculatum* (Thonn. ex Schumach.) De Wild. (bas.: *Rhamnus paniculatus* Thonn. ex Schumach.); *Chailletia paniculata* (Thonn. ex Schumach.) Benth.; *Dichapetalum floribundum* (Planch.) Engl., incl. var. *preussii* Engl.; *Chailletia subcordata* Hook. f. ex Benth.; *Dichapetalum benthamii* (F. Didr.) Engl.; *D. flexuosum* (Oliv.) Engl.; *Chailletia thomsonii* Oliv.; *D. brownii* Baill.; *D. batanganum* Engl. & Ruhl.; *D. buvumense* Bak. f.; *D. brevitybulosum* Engl.; *D. cicinnatum* Engl.; *D. dodoense* Engl.; *D. flavovirens* Engl.; *D. gossweileri* Engl.; *D. subcoriaceum* Engl.; *D. aruwimense* Engl.; *D. beniense* Engl.; *D. flaviflorum* Engl.; *D. abrupti-acuminatum* De Wild.; *D. dundusanense* De Wild.; *D. fulvialabastrum* De Wild.; *D. glandulosum* De Wild., incl. var. *fulvialabastrum* (De Wild.) Hauman; *D. bakerianum* Exell; *D. chrysobalanooides* Hutch. & Dalziel; *D. humbertii* Desc.; *D. microphyllum* Desc.; *D. multiflorum* (Tul.) Desc.; *Chailletia dichapetalum* DC. fa. *macrophylla* Tul. and fa. *multiflora* Tul.; *Chailletia fasciculata* Sprengel – All of var. **madagascariense**.

Medium-sized liane, scandent shrub, shrub, or small tree to 10 m tall; main trunk to 30 cm Ø and 1,7 m in girth; woodcylinder entire to shallowly (or rarely deeply) lobed; bark pale grey to blackish, rather smooth, distinctly lenticellate or not; when slashed the bark exudes a little brownish gum; branches and branchlets hollow or not; branchlets glabrous to tomentose, indumentum silverish to ferruginous; stipules early caducous or not.

The ecology covers a wide range of habitats; rain-forest, riverine forest and associated bushland; deciduous woodland; savanna; 0-1700 m alt. (var. **madagascariense**); upland evergreen, moist forest; 1500-2400 m alt. (var. **brevistylum** Breteler).

Extremely variable in habit (the most variable species in the genus) and in inflorescences. "A division ... into ... 5-10 varieties could easily be framed and would accommodate 50-60 % of the available material, but the remainder would not fit in" (Breteler in Meded. Landbouwhogeschool Wageningen 81-10: 12, 1981).

Bioko/Fernando Poo; Comores; Madagascar.

Comprises 2 vars.

Cultivated with success in greenhouses at Wageningen (Netherlands).

Pulp of fruit and seeds edible, fide H. M. Burkill, Useful Pl. W. Trop. Afr. 1: 647-648, 1985.

**D. mathisii** Breteler, Novon 13: 11, 2003; icon.: *ibid.*: 12.

Liane to 50 m long, with main stem to 12 cm Ø, or lianescent shrub; branches grey-tomentellous, hollow; branchlets hollow, brown-tomentellous like stipules, petioles and inflorescences; leaf blade firmly papery to coriaceous, obovate, obtuse at apex, with 8-10 pairs of secondary nerves.

Rain-forest; to 600 m alt.

Some specimens formerly cited under *D. angolense* (Breteler 6447; Le Testu 7652, 7745) belong here. *D. mathisii* is resembling the latter, but can be distinguished by its entire stipules and distinctly ridged fruits (*D. angolense* with pinnatifid-pinnatisect stipules and fruits not ridged). – Also resembling *D. beilschmiediioides*.

## DICHAPETALUM

**D. melanocladum** Breteler; Breteler in Fl. Cameroun 37: 73-75, 2001.

Small to medium-sized liane, scandent shrub or shrub; woodcylinder of stem and branches 5-lobed, their bark dark grey to black; branchlets tomentose, bark grey to black; stipules early caducous; leaves glandular; inflorescences glomerate, sessile, with small sessile flowers.

Evergreen rain-forest.

In vegetative characters easily confused with *D. madagascariense* var. *madagascariense*; inflorescence characters similar to those of *D. insigne* and *D. montanum*.

**D. minutiflorum** Engl. & Ruhl.; Breteler in Fl. Cameroun 37: 75-79, 2001.

Liane; main stem to 3 cm Ø, like the branches distinctly lenticellate; woodcylinder 5-lobed; branchlets glabrous to ± puberulous; stipules soon deciduous; inflorescences ± sessile; fruits glabrous, only immature ones seen.

Evergreen rain-forest; dry scrub.

Very similar to *D. staudtii* but also resembling *D. minutiflorum* and *D. montanum*.

**D. mombuttense** Engl.; Breteler in Fl. Cameroun 37: 77-81, 2001; non "mombuttense" in Exell & Mendonça, Cons. Fl. Angol. 1/2: 329, 1931.

syn.: *D. adnatiflorum* Engl.; *Chailletia mombuttensis* (Engl.) A. Chev.

Rather small, slender liane 3-20 m tall, scandent shrub, or shrub with 5-lobed woodcylinder and yellow wood; bark dark grey-brown, finely fissured; branchlets soon glabrous, stipules inconspicuous; leaves papery, becoming stiff and brittle with age; inflorescences subumbellate with peduncle adnate to petiole; flowers producing abundant nectar; fruits glabrous, beaked.

Evergreen rain-forest; semi-deciduous forests; forest edges; gallery forest; palm-plantations, fallow land, termitaria (Zaire). Cultivated in greenhouse at Wageningen (Netherlands).

Some herbarium material of *D. thollonii* from Zaire has been misidentified as belonging to *D. mombuttense*. They share the peduncle adnate to the petiole, but *D. thollonii* has hollow stems. – Similar to *D. montanum*.

**D. montanum** Breteler; Breteler in Fl. Cameroun 37: 80-82, 2001.

Slender liane, scandent shrub, or shrub; branches glabrous, distinctly lenticellate; branchlets soon glabrescent; stipules narrow, early caducous; inflorescences glomerate, sessile, with minute flowers; fruits glabrous, beaked.

Evergreen rain-forest; 800-1500 m alt.

Similar to *D. minutiflorum*.

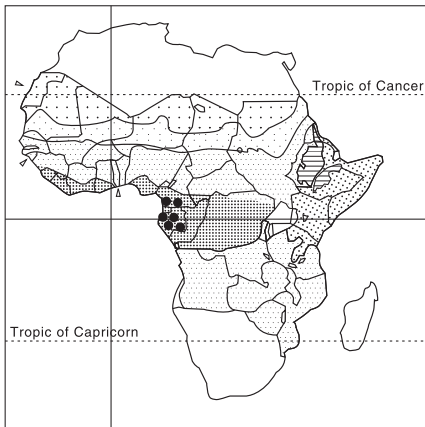
**D. mossambicense** (Klotzsch) Engl., incl. var. *busseanum* Engl., nomen.

bas.: *Chailletia mossambicensis* Klotzsch

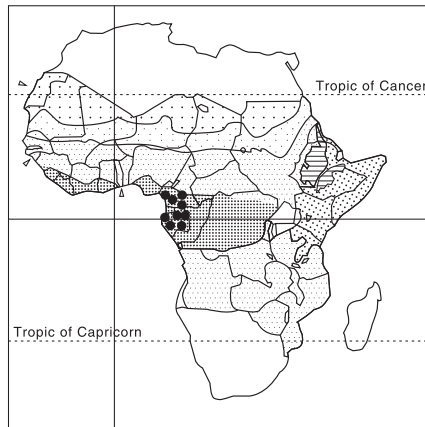
syn.: *Dichapetalum aureonitens* Engl.

Liane to 6 m tall, scandent shrub, or shrub to 3 m tall; branches brown to black; branchlets tomentose to hispid, or with mixture of short and long hairs; stipules palmately to pinnately lobed, ± long persistent; petals white turning black, in inflorescences with up to 100 flowers.

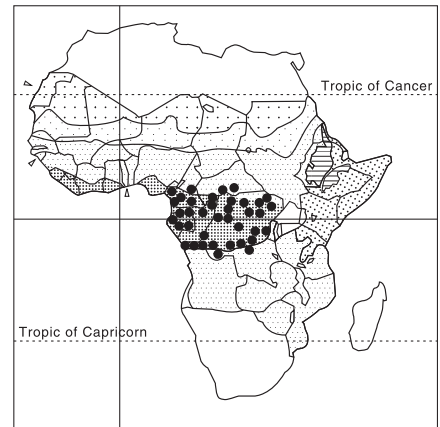




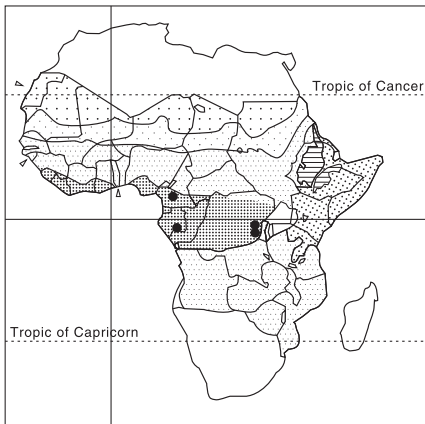
*Dichapetalum melanocladum*



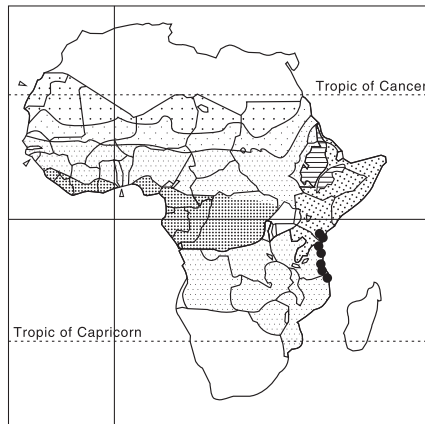
*Dichapetalum minutiflorum*



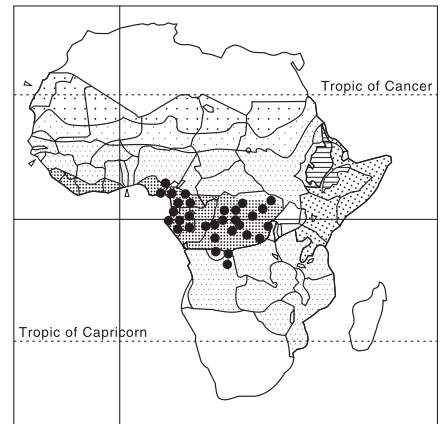
*Dichapetalum mombuttense*



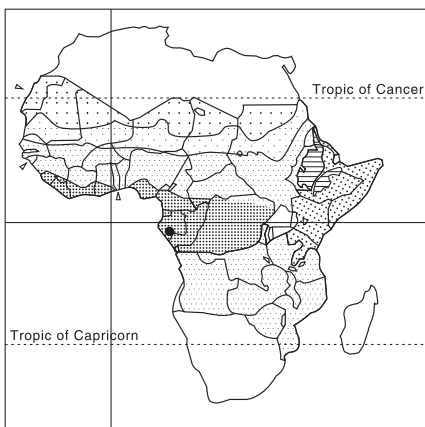
*Dichapetalum montanum*



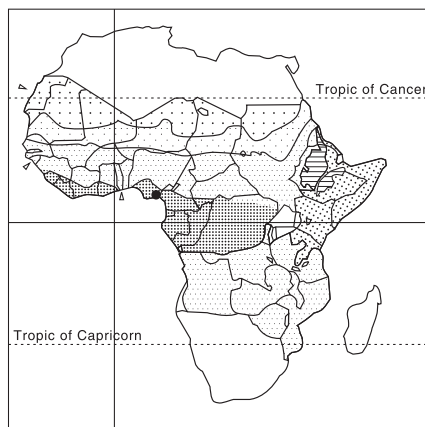
*Dichapetalum mossambicense*



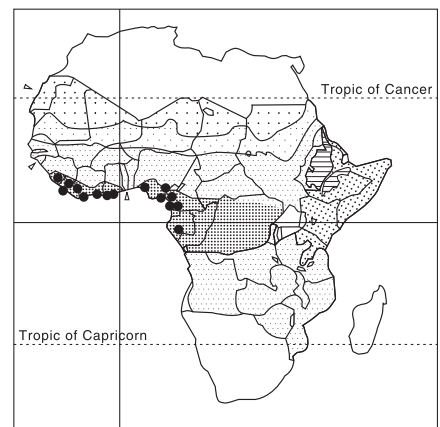
*Dichapetalum mundense*



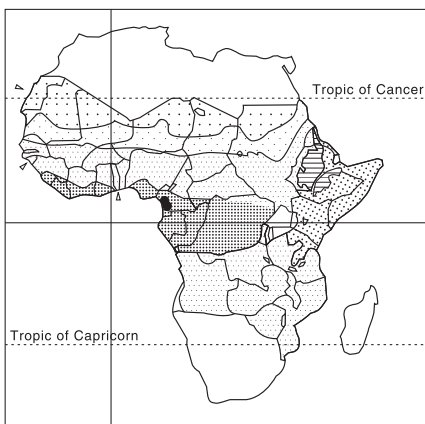
*Dichapetalum nyangense*



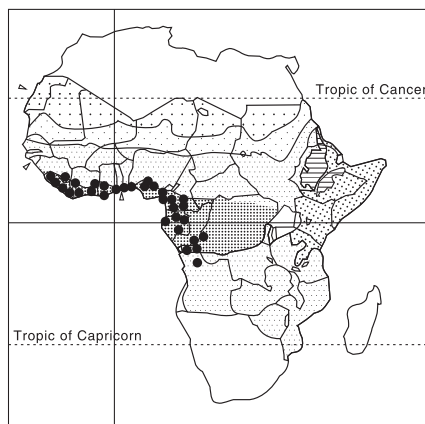
*Dichapetalum obanense*



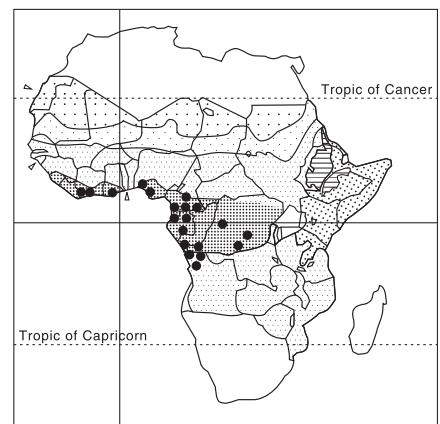
*Dichapetalum oblongum*



*Dichapetalum oliganthum*



*Dichapetalum pallidum*



*Dichapetalum parvifolium*

## DICHAPETALUM MOSSAMBICENSE

Coastal forest, forest edges; secondary bushland; evergreen coastal bush; shrub and tree savanna; dry forest; on sandy loam; 1-520 m alt.

Seeds toxic, but fruit pulp probably edible, fide Breteler in Meded. Landbouwhogeschool Wageningen 81-10: 46, 1981.

**D. mundense** Engl., incl. var. *seretii* (De Wild.) Hauman; Breteler in Fl. Cameroun 37: 82-84, 2001.

Liane sometimes reaching the top of trees with main stem 10 cm Ø, scandent shrub, or sometimes a small shrub with main stem 3 cm Ø; woodcylinder ± 12-lobed; young branches pustular-rugose; branchlets ± glabrous; inflorescences glabrous, branched, with up to 50 flowers.

Evergreen and semi-deciduous forest; rain-forest; river sides; to 1470 m alt. (Zaire).

Some differences have been observed between western and eastern populations (fruit characters), fide Breteler Meded. Landbouwhogeschool Wageningen 81-10: 50, 1981.

Closely related to *D. bellum* (cf. under this species).

Not yet reported from Congo-Brazzaville nor from Cabinda (Angola) and adjacent Zaire.

**D. nyangense** Pellegr.

Liane with 5-lobed woodcylinder; branches and branchlets densely rusty-hairy; stipules palmately divided; leaves with arachnoid indumentum on both sides; fruit unknown.

Semi-deciduous forest.

Only known from the type collection of 1915 (Le Testu 2121, Tchibanga, Gabon).

Is perhaps a hybrid between *D. lujae* and *D. arachnoideum*, both growing in the same area.

**D. obanense** (Bak. f.) Bak. f. ex Hutch. & Dalziel; Breteler in Fl. Cameroun 37: 85, 2001.

bas.: *D. thomsonii* (Oliv.) Engl. var. *obanense* Bak. f.

Shrub (or small tree ?), with glabrous branches, bark greyish; branchlets with appressed hairs; flowers glomerate, pedicellate; fruit unknown.

Evergreen rain-forest.

Only known from the type collected between 1909 and 1912 (Talbot 1627, Oban, SE Nigeria); but should be sought after in nearby Cameroon.

Seems closely related to *D. madagascariense* and perhaps con-specific.

**D. oblongum** (Hook. f. ex Benth.) Engl., incl. var. *angustifolium* A. Chev. p.p. (Chevalier 19794, lectotype; Chevalier 17488 is a sterile specimen and not a *Dichapetalum*); Breteler in Fl. Cameroun 37: 85-89, 2001.

bas.: *Chailletia oblonga* Hook. f. ex Benth.

syn.: *Dichapetalum kamerunense* Engl.; *D. "kanseremense"* Engl., sphalm. in Hauman, Fl. Congo Belge... Ruanda-Urundi 7: 297, 1958.

Liane, ± scandent shrub or treelet to 5 m tall; main trunk to 4 cm Ø; bark distinctly lenticellate (in 5 rows), dark greyish-brown; stipules small, early caducous; flowers white, producing nectar, ?fragrant; fruits scabrid, wrinkled.

## DICHAPETALUM OBLONGUM

Evergreen rain-forest; semi-deciduous forest; 1-1000 m alt. (Mt. Cameroon).

Bioko/Fernando Poo.

Cultivated in greenhouse at Wageningen (Netherlands).

**D. oliganthum** Breteler; Breteler in Fl. Cameroun 37: 89-91, 2001.

Slender liane or scandent shrub with glabrous, distinctly prominently lenticellate branches which are 5-lobed; branchlets appressed-hairy; stipules small, long-persistent; inflorescences few-flowered.

Evergreen rain-forest area; often in coastal anthropogenous savanna.

Related to *D. heudelotii* and *D. staudtii*; and can be confused with these vegetatively.

**D. pallidum** (Oliv.) Engl.; Breteler in Fl. Cameroun 37: 91-93, 2001.

bas.: *Chailletia pallida* Oliv.

syn.: Enum. 2: 21, 1992; and *D. cinereum* Engl.; *D. griseo-viride* Ruhl.; *D. liberiae* Engl. & Dinkl.; *Chailletia whytei* Stapf 1906, nom. illegit.; *Dichapetalum hypoleucum* Hiern; *D. bussei* Engl.; *D. silvicola* Ruhl., nomen in herb. Zenker 2451.

Small or large liane, scandent shrub, or (small) shrub; main stem to 12 cm Ø; woodcylinder deeply lobed; branches dark brown to black with 5 rows of pale lenticels; branchlets with close-felted, whitish to pale-brown indumentum; stipules long-persistent; inflorescences pedunculate, cymose, with a close-felted indumentum.

Evergreen rain-forest, in swampy sites; semi-deciduous forests; regrowth; as a weed in cotton plantation; 1-200 m alt. (Mt. Cameroon).

A characteristic species, but variable in fruit characters: surface strongly tuberculate (mainly in Liberia and Gabon) to smooth-skinned; indumentum consisting of easily caducous stinging hairs on dehiscent fruits; indumentum shortly velutinous (to tomentelous) but lacking stinging hairs on non-dehiscent fruits (forms named *D. murinum*).

Cultivated at Adiopodoumé (Ivory Coast) and in greenhouse at Wageningen (Netherlands).

Confused with *D. albidum* with which it shares a close-felted, persistent, pallid indumentum on lower leaf surface. Also confused with *D. madagascariense* (with pallid lower surface of leaves).

**D. parvifolium** Engl.; Breteler in Fl. Cameroun 37: 94-96, 2001.

syn.: Enum. 2: 21, 1992; and *Chailletia ciliata* Chodat ex Barth, nomen.

Liane to 5 m long, with main stem to 4 cm Ø, scandent shrub or shrub; evergreen; stems and branches twisted with distinct large lenticels in 5 rows; woodcylinder lobed; branchlets villous-tomentose to puberulous; stipules long-persistent; inflorescences subglobose, ± sessile; fruits beaked.

Evergreen rain-forest; semi-deciduous forests; on islands in river; sparingly in (very) dense woods, intermixed with other shrubs, in mountains (Angola); to 1150 m alt. (Zaire).

## DICHAPETALUM

**D. pedicellatum** K. Krause

syn.: *D. longipedicellatum* De Wild.

Liane, scandent shrub, shrub, or treelet; branches ± glabrous, dark brown to black, lenticellate when old; branchlets densely rusty puberulous, sometimes hollow; stipules early caducous; inflorescences subumbellate, rusty puberulous, pedunculate; fruits warty, rusty-hairy.

Understorey in dry forests; thickets in savanna; semi-deciduous forest; gallery forest.

Closely related to *D. acuminatum*.

**D. petaloideum** Breteler, Adansonia, Sér. 3, 27: 231, 2005; icon.: o.c. 232.

Liane to >12 m long; branches, branchlets, leaves and inflorescences with a pale grey powdery indumentum, glabrescent with age; stipules early caducous; inflorescence sometimes on short, leafless axillary shoots; different from other *Dichapetalum* by its *thick, entire, hairy petals*, functioning like true petals (although of staminodial nature).

Rain-forest.

Only known from the type collected in 1994.

In pollen features similar to the *D. heudelotii*-group. Exudate as seen in *D. crassifolium*.

**D. pierrei** Pellegr.

Liane, scandent shrub, or shrub; branches glabrous, with numerous small lenticels; branchlets sparsely hairy, soon glabrous; stipules early caducous; inflorescences subumbellate, tomentellous, grouped on short axillary shoots; fruits beaked.

Rain-forest.

Cultivated in greenhouse at Wageningen (Netherlands).

**D. potamophilum** Breteler; Breteler in Fl. Cameroun 37: 96-98, 2001.

Liane; stems with deeply lobed woodcylinder, and with distinct lenticels in 5 rows; old branches greyish-pale brown; branchlets rusty to pale brown short-hairy; inflorescences rusty-brown-hairy, ± sessile, branched; *ripe* fruits unknown.

Riverine forest, periodically inundated.

Related to *D. choristilum* (differs in leaf shape).

**D. pulchrum** Breteler; Breteler in Fl. Cameroun 37: 98-100, 2001.

Large liane, shrub, or treelet with top of scandent branches; woodcylinder entire, wood dense and hard; bark of stem and branches smooth, whitish, thin, corky; branchlets with long-persistent indumentum of dense short brown hairs, also such on stipules and petioles; inflorescences glomerulate, villous-velvety, near sessile; flowers long-persistent.

Rain-forest.

Closely related to *D. glomeratum*.

**D. rabiense** Breteler

Liane or scandent shrub; branches and branchlets villous-tomentose, glabrescent and lenticellate with age; leaves papery, completely villous to tomentose when young, glandular beneath along midrib; inflorescences compact, sessile, whitish-hairy, with sessile flowers; pistils 4-5-merous (the only species in the genus); fruit unknown.

Coastal (or nearly so) forest.

Resembling *D. glomeratum*.

## DICHAPETALUM

**D. reticulatum** Engl.; Breteler in Fl. Cameroun 37: 100-102, 2001.

syn.: *D. cordifolium* Hutch. & Dalziel

Liane or scandent shrub; branchlets, leaves and inflorescences densely villous-tomentose to velutinous; stipules early caducous; inflorescences subumbellate, shortly pedunculate; *ripe* fruit not known.

Evergreen rain-forest.

Close affinities to *D. umbellatum* (but flowers different), *D. ruficeps*, *D. trichocephalum* (stipules different), and also *D. lofense*. – Zenker collections (353, 4351) of *D. heudelotii* have been wrongly attributed to *D. reticulatum*.

**D. rhodesicum** Sprague & Hutch.

Shrub to 1,2 m tall, with underground stems; branchlets, petioles, stipules, and inflorescences densely pubescent-tomentose; stipules early caducous or not; fruits densely tomentose, red, edible.

Grassland with trees, together with *Burkea*, *Combretum* etc.; mixed woodland; tree and shrub savannas; to 1000 m alt.

Namibia, Botswana.

**D. rudatisii** Engl.; Breteler in Fl. Cameroun 37: 101, 103-105, 2001.

syn.: Enum. 2: 21, 1992; and *D. ledermannii* Engl.

Liane with main stem to 5 cm Ø, scandent shrub or shrub; branches brown to black, glabrous, with thin bark; branchlets, stipules and petioles rusty-brown short-hairy, powdery; inflorescences subumbellate, puberulous, with peduncle adnate to petiole; flowers nectar-producing; fruits wrinkled, beaked.

Evergreen rain-forest; bush forest on sandy soil; 1-400 m alt. (Mt. Cameroon).

Cultivated in greenhouse at Wageningen (Netherlands).

Closely related to *D. mombuttense*.

**D. ruficeps** Breteler

Liane or scandent shrub; old branches dark brown to black, with sparse, large lenticels; branchlets densely brown-villous; inflorescences globose, rusty-villous, shortly pedunculate, on lateral shoots; *ripe* fruits unknown.

Evergreen rain-forest; semi-deciduous forest.

Resembling *D. reticulatum* from Nigeria-Cameroon, but inflorescences different.

Known from 2 collections.

**D. ruhlandii** Engl.

Liane or scandent shrub to 10 m tall; branches densely, ± pustular lenticellate; branchlets subappressed puberulous, soon glabrescent and provided with small pale lenticels; stipules usually early caducous; fruits obovoid, brown-velutinous, to 30 by 20 mm.

Evergreen forest and associated woodland; secondary bushland; 50-1800 m alt.

Very poisonous to cattle, especially the young shoots.

**D. staminellatum** Breteler

Shrub; branches and branchlets densely velutinous to tomentose; stipules caducous; inflorescences sessile, glomerate; fruit unknown.

Semi-deciduous forest.

## DICHAPETALUM STAMINELLATUM

Resembling *D. geminostellatum*.

Known from the type (central Zaire) and a sterile specimen (SW Gabon) probably representing this species.

**D. staudtii** Engl.; Breteler in Fl. Cameroun 37: 105-107, 2001.

syn.: *D. sulcatum* Engl.; *D. mombongense* De Wild., incl. var. *luteiflorum* (De Wild.) Hauman, var. *breviflorum* Hauman and var. *orientale* Hauman; *D. cinereo-viride* Engl.; *D. contractum* Engl.; *D. luteiflorum* De Wild.; *D. echinulatum* Exell

Liane to 10(-20) m tall with main stem to 12 cm Ø, scandent shrub, shrub, or sometimes a tree to 10 m tall; woodcylinder lobed; bark smooth, pale, sometimes whitish, distinctly lenticellate; branchlets pubescent to hispidulous; stipules early caducous; inflorescences to 50-flowered, knoblike, ± sessile.

Swampy and riverine forests; river banks; primary forest; forest clearings; to 1700 m alt.

Variable, especially in size and reticulum of the leaves.

Related to *D. heudelotii*.

**D. stuhlmannii** Engl.

Much branched shrub or tree to 12(-24) m tall; trunk to 50 cm Ø; branches minutely lenticellate; branchlets and young leaves tomentose to velutinous; stipules early caducous; flowers (to 40) white to yellow in subglobose, shortly pedunculate heads.

Gallery in savanna, to 1615 m alt; in montane forest very frequent at 1800-2000 m alt. (E Zaire). – Lowland forest, secondary bushland, thickets near sand (E and SE Africa).

Poisonous to livestock, especially the young shoots.

Closely related to *D. barteri*. Similar to *D. ruhlandii* and difficult to distinguish from it (but fruits very different).

**D. sumbense** Breteler

Shrublet with brown bark, ± distinctly lenticellate; branchlets, stipules and petioles densely appressed-short-hairy; stipules rather long-persistent; inflorescences subsessile, rather compact; fruits shortly brown-velutinous, sandpapery to the touch.

Semi-deciduous forest; gallery forest.

2 collections known (Gossweiler 8528 and 8986).

**D. tetrastachyum** Breteler; Breteler in Fl. Cameroun 37: 108-109, 2001.

Liane to >50 m tall; main trunk ± 10 cm Ø; woodcylinder entire; bark to ± 5 mm thick, often with numerous large lenticels; young branchlets, stipules, petioles, leaf nerves and inflorescences densely puberulous-tomentellous; inflorescences with 4(-6) divisions, each part with 2 rows of ± sessile flowers.

Evergreen rain-forest; 500-800 m alt.

Congo-Brazzaville ?

**D. thollonii** Pellegr.

Liane, scandent shrub, or shrub; stem with numerous small and few distinct long narrow transverse lenticels; branchlets hollow, smooth or with inconspicuous pustular lenticels, sparsely hairy, soon glabrescent; stipules caducous; inflorescences subumbellate with peduncle adnate to petiole; fruits 4-6 cm long by 2-3 cm Ø, puberulous-tomentose.

Evergreen rain-forest; semi-deciduous forest.

## DICHAPETALUM

**D. tomentosum** Engl.; Breteler in Fl. Cameroun 37: 110-112, 2001.

syn.: *D. acutifolium* Engl.; *D. barensense* Engl.; *D. kribense* Engl.; *D. subtruncatum* Engl. nomen in herb. Zenker 2372.

Small liane or scandent shrub; stems distinctly lenticellate, bark longitudinally fissured, scaly with age; woodcylinder lobed; branchlets and leaves densely rusty-hairy; inflorescence a subglobose head, 70-flowered, pedunculate, tomentose like the fruits.

Evergreen rain-forest; semi-deciduous forest; gallery forest; 1-200 m alt. (Mt. Cameroon).

Bioko/Fernando Poo.

Resembling *D. unguiculatum*, but inflorescences different.

**D. toxicarium** (G. Don) Baill., incl. var. *ellipticum* (Oliv.) De Wild.

syn.: *D. suboblongum* Engl. p.p. quoad specim. Scott-Elliott 5601 a (cf. under *D. rudatisii*); *Chailletia toxicaria* G. Don var. *compressa* G. Don and var. *elliptica* Oliv.; *C. erecta* G. Don

Liane up to >60 m tall with main stem ± 12 cm Ø, scandent shrub, shrub, or treelet to 16 m tall; climbing stems with 5-lobed woodcylinder and obscurely fissured lenticellate bark ± 5 mm thick; glabrous except for the puberulous branchlets, inflorescences and fruits; inflorescences subumbellate, stalked, often on leafless axillary shoots, or single with peduncle adnate to petiole; flowers sweet smelling, especially in the morning.

Evergreen rain-forest; riverine forest; semi-deciduous forests.

Often confused with the related *D. affine*.

Sprouts are very poisonous to livestock; kernels are used to poison rats (thence "Ratbane" or "Brokeback"). The fruit-pulp surrounding the seeds edible, fide H. M. Burkill, Useful Pl. W. Trop. Afr., Ed. 2, 1: 648-649, 1985.

**D. trichocephalum** Breteler

Liane ?, with densely brown-velutinous branches (when young) and branchlets; so also the long-persistent pinnately-palmately divided stipules, leaves and inflorescences; the latter stalked, subglobose with 8-15 sessile flowers; fruit unknown.

Evergreen rain-forest.

Only known from the type collection of Oct.-Nov. 1930 (Le Testu 8779).

Resembling *D. reticulatum* but stipules and pedicels different.

**D. ugandense** M. B. Moss

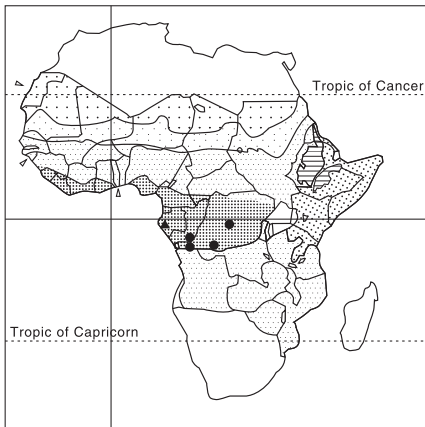
Small to medium-sized, often twining liane, scandent shrub, or treelet (to 10 m tall ?); branches pale brown to whitish, often grooved lengthwise, shortly appressed-hairy; stipules often long-persistent; inflorescence subumbellate, ± pedunculate, free or adnate to petiole with thread-like pedicels; fruits small, tomentose.

Primary forest along stream; lowland and medium-altitude rain-forest to semi-deciduous forest; ?-1000-1500 m alt.

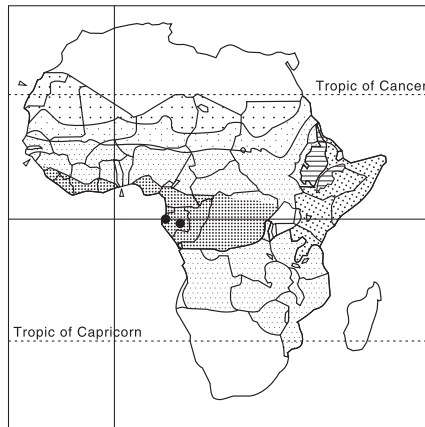
**D. umbellatum** Chodat p.p., excl. specim. Welwitsch 4668 (= *D. insigne*); Breteler in Fl. Cameroun 37: 112-114, 2001.

Large liane to 30 m tall with main stem to 4 cm Ø or "a tall and widely climbing shrub with very long rambling branches, gracefully pendulous from lofty trees"; woodcylinder entire;

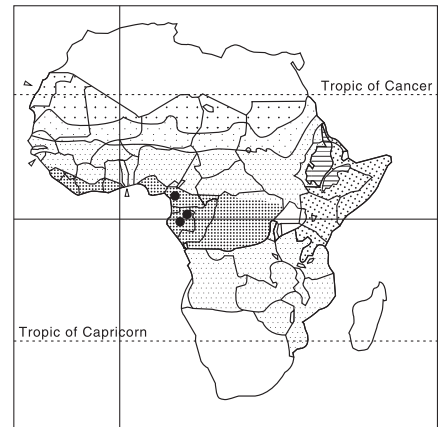




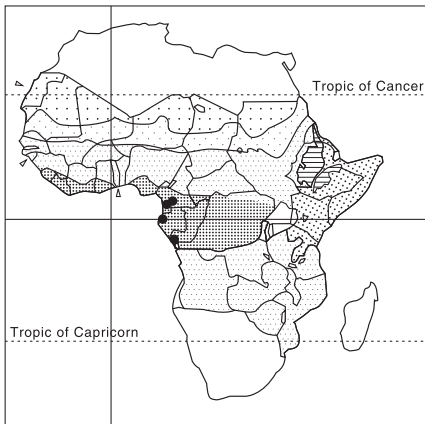
*Dichapetalum pedicellatum* ●  
*Dichapetalum petaloideum* ▲



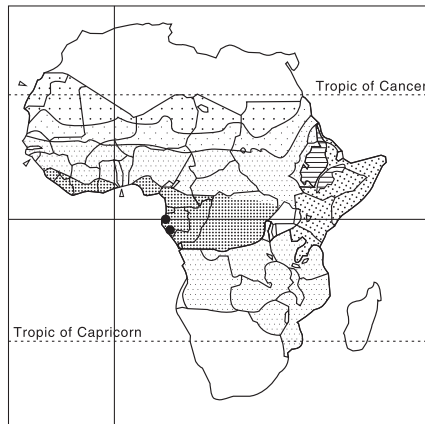
*Dichapetalum pierrei*



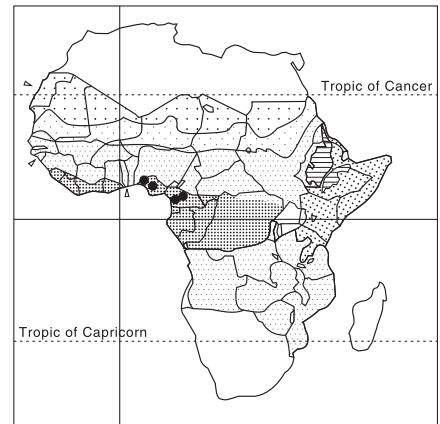
*Dichapetalum potamophilum*



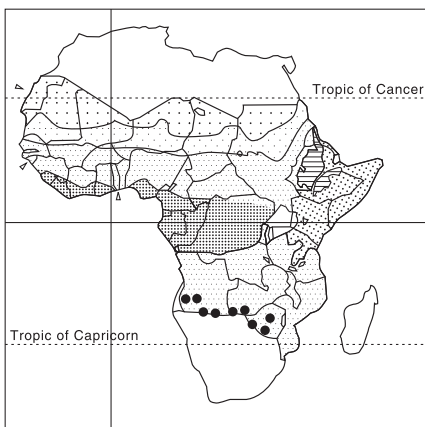
*Dichapetalum pulchrum*



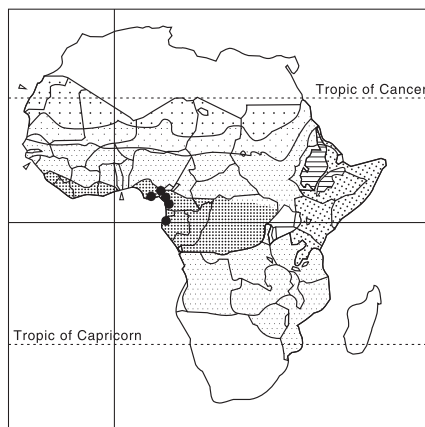
*Dichapetalum rabiense*



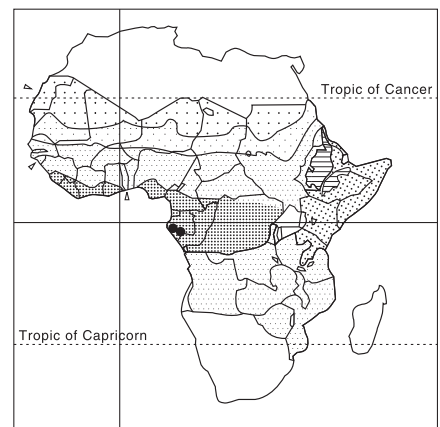
*Dichapetalum reticulatum*



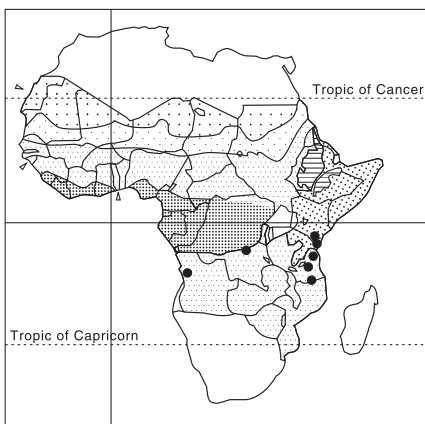
*Dichapetalum rhodesicum*



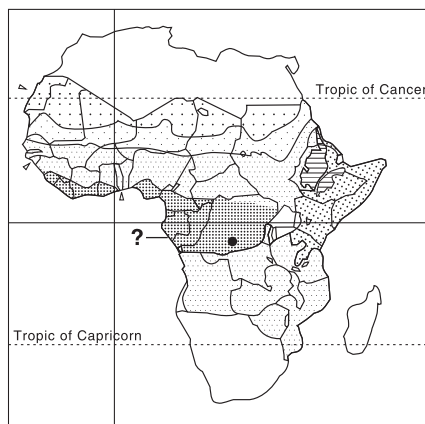
*Dichapetalum rudatisii*



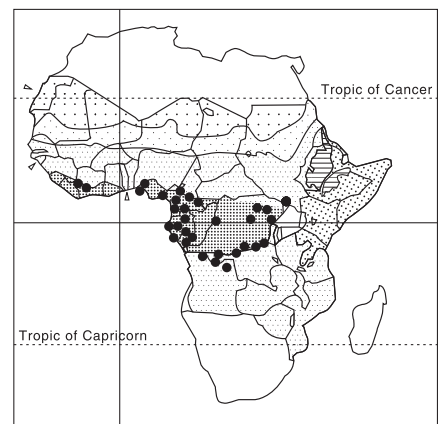
*Dichapetalum ruficeps*



*Dichapetalum ruhlandii*



*Dichapetalum staminellatum*



*Dichapetalum staudtii*

## DICHAPETALUM UMBELLATUM

branchlets patent, covered with a short velvety ferruginous tomentum; inflorescences subglobose, tomentose-velutinous, pedunculate; fruit ± globose, velutinous.

Rain-forest; semi-deciduous forest; forest edges and lake shores (Zaire); in the more elevated woods, frequent (Angola).

Similar to *D. reticulatum*.

**D. unguiculatum** Engl.; Breteler in Fl. Cameroun 37: 114-117, 2001.

syn.: *D. griseisepalum* De Wild.; *D. corrugatum* Exell

Small to large liane much and divaricately branched, with main trunk to >14 cm Ø, twining or not; or scandent shrub; wood-cylinder deeply divided; branches minutely lenticellate; branchlets subappressed-hairy; stipules appressed-pubescent, early caducous; inflorescences cymose, 2-4 times distinctly branched.

Evergreen rain-forest; shady moist forest; semi-deciduous forest; gallery forest.

Bioko/Fernando Poo.

Very similar to *D. tomentosum* but inflorescence different.

**D. witianum** Breteler; Breteler in Fl. Cameroun 37: 117-119, 2001.

Liane with main-stems 5-lobed; orthotropic shoots with short hook-like branchlets; branches ± glabrous, sparsely lenticellate; branchlets sparsely puberulous, soon glabrescent; stipules soon caducous; inflorescences pedunculate, distinctly branched.

Evergreen rain-forest.

**D. zenkeri** Engl., incl. var. *strigillosum* De Wild. and var. *lokundjensis* Engl. nomen in herb. Zenker 466, 4179; Breteler in Fl. Cameroon 37: 119-122, 2001.

syn.: *Pittosporum bicrurium* Schinz & T. Durand; *Dichapetalum molundense* K. Krause; *D. wildemanianum* Exell; *D. dewildemanianum* in Breteler, l.c.; *D. keniense* Hutch. & E. A. Bruce; *D. pallidinervum* De Wild. nomen in herb. BR.

Small to medium-sized liane to 15 m tall with main stem to 15 (-22) cm Ø, scandent shrub 2-5 m tall, shrub 1-3 m tall, or treelet to (9-)15 m; stem whitish to pale brown with 5 rows of lenticels; woodcylinder entire; branchlets (densely) appressed-puberulous; stipules early caducous; inflorescences cymose, pedunculate, branched; flowers fragrant.

Evergreen rain-forest; primary and managed forest; shady moist forests; gallery forest, forest edges, water sides or in water, on islands in river; to 1500 m alt. (W and C Africa); lowland mostly dry evergreen or semi-deciduous forest; 50-700 m alt. (Kenya).

Not very variable, but specimens from E Africa differ by usually smaller leaves and inflorescences.

SYNONYMS:

*Chailletia affinis* Planch. ex Benth. = **Dichapetalum affine**

*angolensis* Chodat ex Barth = **D. angolense**

*bangii* F. Didr. = **D. bangii**

*benthamii* F. Didr. = **D. madagascariense**

*bocageana* Henr. = **D. bocageanum**

*chartacea* Wright = **D. cymulosum**

*ciliata* Chodat ex Barth, nomen = **D. parvifolium**

*crassifolia* (Chodat) Barth = **D. crassifolium** var. **crassifolium**

## DICHAPETALUM

*Chailletia cymosa* Hook. = **D. cymosum**

*cymulosa* Oliv. = **D. cymulosum**

*deflexa* auct. non Klotzsch = **D. arenarium**

*deflexa* Klotzsch = **D. deflexum**

*dichapetalum* R. Br. ex DC. fa. *macrophylla* Tul. and fa. *multiflora* Tul. = **D. madagascariense**

*erecta* G. Don = **D. toxicarium**

*fasiculata* Spreng. = **D. madagascariense**

*flexuosa* Oliv. = **D. madagascariense**

*floribunda* Planch. = **D. madagascariense**

*floribunda* Planch. var. *y* Oliv. = **D. bocageanum**

*heudelotii* Planch. ex Oliv. = **D. heudelotii**

*hispida* Oliv. = **D. heudelotii** var. **hispidum**

*macrophylla* Oliv. = **D. heudelotii** var. **hispidum**

*mombuttensis* (Engl.) A. Chev. = **D. mombuttense**

*mossambicensis* Klotzsch = **D. mossambicense**

*oblonga* Hook. f. ex Benth. = **D. oblongum**

*pallida* Oliv. = **D. pallidum**

*paniculata* (Thonn. ex Schumach.) Benth. = **D. madagascariense**

“*reflexa*” Oliv., sphalm. = **D. deflexum**

*rufipilis* Turcz. = **D. bangii**

*subauriculata* Oliv. = **D. heudelotii** var. **heudelotii**

*subcordata* Hook. f. ex Benth. = **D. madagascariense**

*subsessilifolia* Chodat ex Barth = **D. heudelotii** var. **hispidum**

*thomsonii* Oliv. = **D. madagascariense**

*toxicaria* G. Don incl. var. *compressa* G. Don and var. *elliptica* Oliv. = **D. toxicarium**

*whytei* Stapf = **D. pallidum**

*Dichapetalum abrupti-acuminatum* De Wild. = **D. madagascariense**

*actidatum* Engl., nomen = **D. heudelotii** var. **ndongense**

*acutifolium* Engl. = **D. tomentosum**

*acutisepalum* Engl. = **D. heudelotii** var. **heudelotii**

*adnatiflorum* Engl. = **D. mombuttense**

*adolphi-friederici* Engl. = **D. heudelotii** var. **heudelotii**

*angolense* Chod. var. *leucanthum* Pellegr. = **D. angolense** and **D. bocageanum**

*angustisquamulosum* Engl. & Ruhl. = **D. heudelotii** var. **heudelotii**

*argenteum* Engl. = **D. bangii**

*aruwimense* Engl. = **D. madagascariense**

*aurantiacum* Engl. = **D. heudelotii** var. **longitubulosum**

*aureonitens* Engl. = **D. mossambicense**

*bakerianum* Exell = **D. madagascariense**

*barense* Engl. = **D. tomentosum**

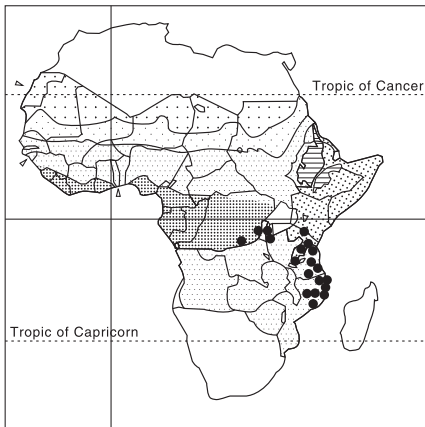
*batanganum* Engl. & Ruhl. = **D. madagascariense**

*batesii* Engl. = **D. heudelotii** var. **longitubulosum**

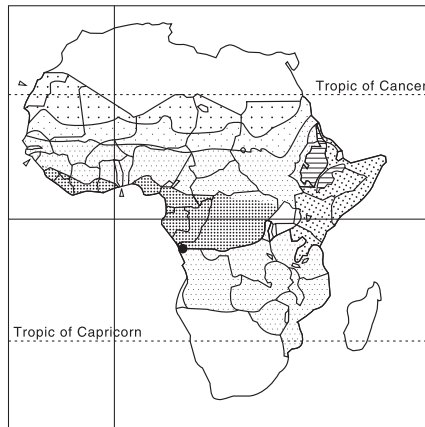
*baturense* K. Krause = **D. glomeratum**

*beniense* Engl. = **D. madagascariense**

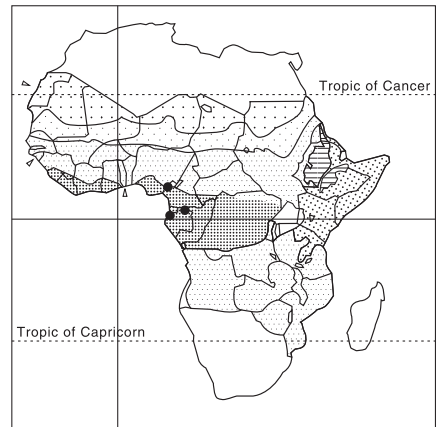
“*benthamianum*” (F. Didr.) Engl., non (Turcz.) Engl. = **D. madagascariense**



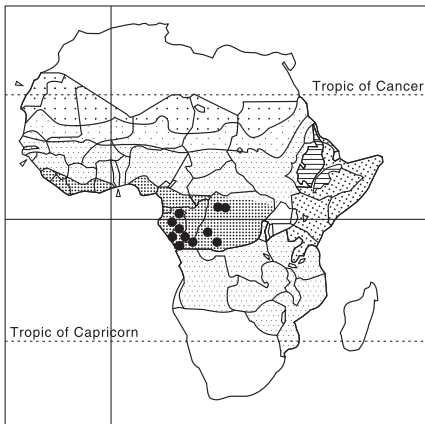
*Dichapetalum stuhlmannii*



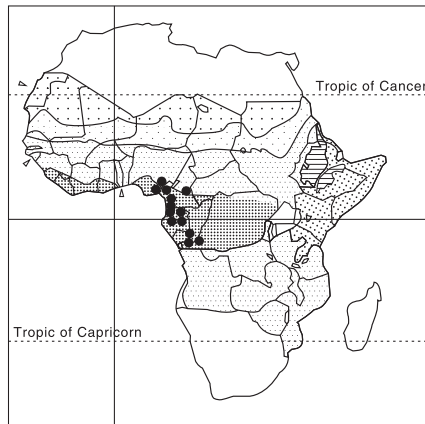
*Dichapetalum sumbense*



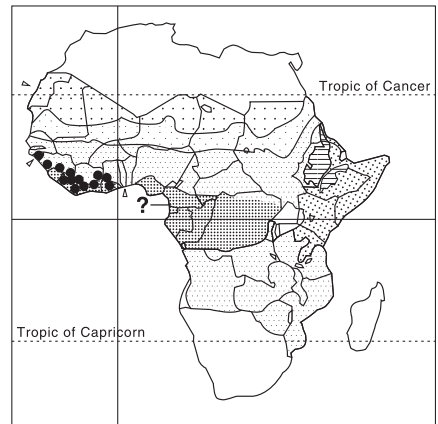
*Dichapetalum tetrastachyum*



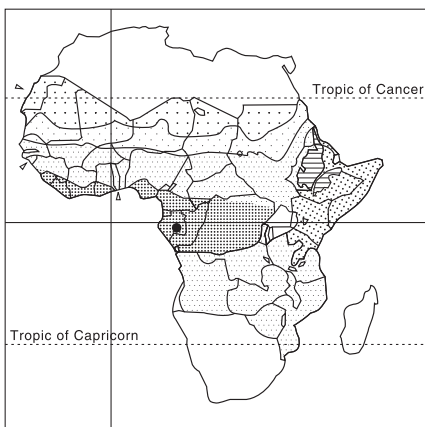
*Dichapetalum thollonii*



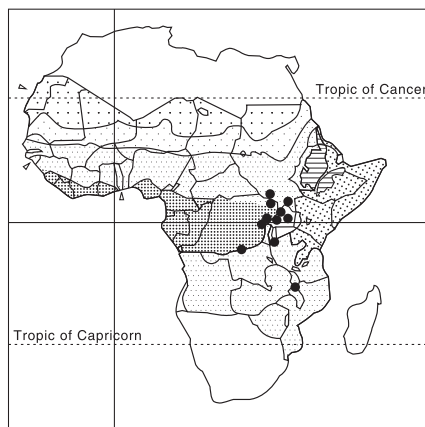
*Dichapetalum tomentosum*



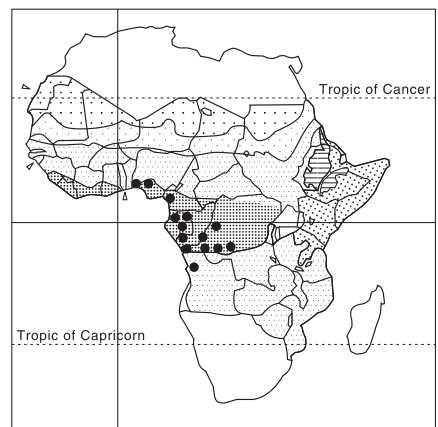
*Dichapetalum toxicarium*



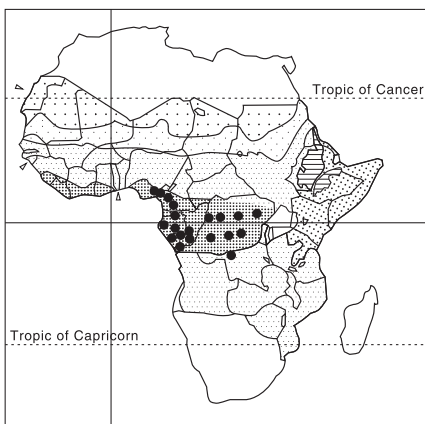
*Dichapetalum trichocephalum*



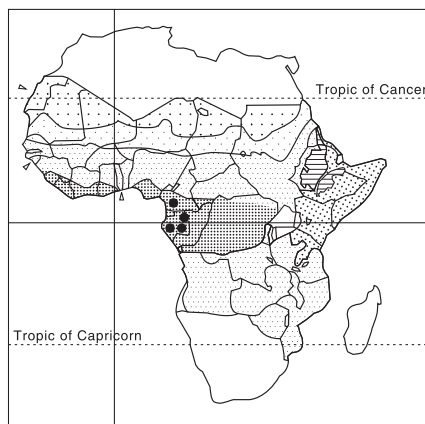
*Dichapetalum ugandense*



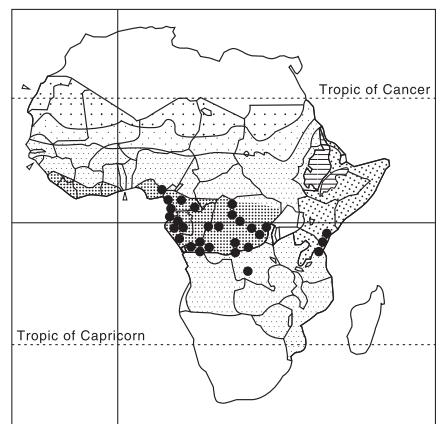
*Dichapetalum umbellatum*



*Dichapetalum unguiculatum*



*Dichapetalum witianum*



*Dichapetalum zenkeri*

## DICHAPETALUM

*benthamii* (F. Didr.) Engl. = **D. madagascariense**  
*brachysepalum* Engl. = **D. crassifolium** var. **crassifolium**  
*“brachystachyum”* Engl., sphalm. = **D. crassifolium** var. **crassifolium**  
*brazzae* Pellegr., incl. var. *purpurascens* Hauman = **D. librevillense**  
*brevitubulosum* Engl. = **D. madagascariense**  
*brownii* Baill. = **D. madagascariense**  
*bullockii* Hauman = **D. cymosum**  
*bussei* Engl. = **D. pallidum**  
*butayei* De Wild. = **D. librevillense**  
*buvumense* Bak. f. = **D. madagascariense**  
*cazenoense* Exell & Mendonça = **D. ruhlandii**  
*chalotii* Pellegr. var. *“thollonii”* De Wild. = **D. chalotii** var. **tholloniana**  
*chartaceum* (Wright) De Wild. = **D. cymulosum**  
*chrysoalanoides* Hutch. & Dalziel = **D. madagascariense**  
*cicinnatum* Engl. = **D. madagascariense**  
*cinerascens* Engl. = **D. pallidum**  
*cinereo-viride* Engl. = **D. staudtii**  
*cinereum* Engl. = **D. pallidum**  
*cinnamomeum* Hauman = **D. fructuosum**  
*claessensii* De Wild. = **D. acuminatum**  
*confertum* anonym., nom. nud. = **D. madagascariense**  
*conrauanum* Engl. & Ruhl. = **D. heudelotii** var. **heudelotii**  
*contractum* Engl. = **D. staudtii**  
*cordifolium* Hutch. & Dalziel = **D. reticulatum**  
*corradii* Chiov. = **Tapura fischeri**  
*corrugatum* Exell = **Dichapetalum unguiculatum**  
*costatum* Bret. ex Punt, nom. nud. = **D. choristilum** var. **choristilum**  
*cuneifolium* Engl. = **D. heudelotii** var. **heudelotii**  
*deflexum* auct. non (Klotzsch) Engl. = **D. arenarium**  
*dewevrei* De Wild. & T. Durand var. *donisii* Hauman = **D. dewevrei** var. **dewevrei**  
*“dewildemanianum* Exell” = **D. zenkeri**  
*divaricatum* De Wild. = **D. librevillense**  
*dodoense* Engl. = **D. madagascariense**  
*dummeri* M. B. Moss = **Tapura fischeri**  
*dundusanense* De Wild. = **Dichapetalum madagascariense**  
*dusenii* Engl. = **D. affine**  
*echinulatum* Exell = **D. staudtii**  
*ellipticum* R. E. Fries = **D. bangii**  
*fallax* Ruhl. = **D. affine**  
*ferrugineo-tomentosum* Engl. = **D. angolense**  
*ferrugineum* Engl. = **D. heudelotii** var. **heudelotii**  
*filamentosum* Winkl. & Rapaios, nom. nud. = **D. madagascariense**  
*flabellatiflorum* Hauman = **D. madagascariense**  
*flaviflorum* Engl. = **D. madagascariense**  
*flavovirens* Engl. = **D. madagascariense**  
*flexuosum* (Oliv.) Engl. = **D. madagascariense**  
*floribundum* (Planch.) Engl., incl. var. *preussii* Engl. = **D. madagascariense**

## DICHAPETALUM

*fraternum* Pierre, nomen = **D. gabonense**  
*fulvialabastrum* De Wild. = **D. madagascariense**  
*fuscescens* Engl. = **D. heudelotii** var. **heudelotii**  
*gillardinii* Hauman = **D. lujae** var.  
*glandulosum* De Wild., incl. var. *fulvialabastrum* (De Wild.) Hauman = **D. madagascariense**  
*glaucosepalum* Ruhl. = **D. lujae** var. **lujae**  
*gossweileri* Engl. = **D. madagascariense**  
*gracile* Exell = **D. heudelotii** var. **ndongense**  
*griseisepalum* De Wild. = **D. unguiculatum**  
*griseo-viride* Ruhl. = **D. pallidum**  
*guineense* (DC.) Keay = **D. madagascariense**  
*hispidum* (Oliv.) Baill. = **D. heudelotii** var. **hispidum**  
*holopetalum* Merrill = **D. crassifolium** var. **crassifolium**  
*holopetalum* Ruhl. = **D. crassifolium** var. **crassifolium**  
*humbertii* Desc. = **D. madagascariense**  
*hypoleucum* Hiern = **D. pallidum**  
*integrum* Pierre = **D. crassifolium**  
var. *jabassense* Engl. = **D. heudelotii** var. **heudelotii**  
*johnstonii* Engl. = **D. heudelotii** var. **heudelotii**  
*kamerunense* Engl. = **D. oblongum**  
*“kanseremense”* Engl., sphalm. in Fl. Congo belge... = **D. oblongum**  
*keniense* Hutch. & E. A. Bruce = **D. zenkeri**  
*klaineanum* Pierre = **D. dewevrei** var. **klaineanum**  
*klainei* Pellegr. = **D. glomeratum**  
*kribense* Engl. = **D. tomentosum**  
*kumasiense* Hoyle = **D. heudelotii** var. **heudelotii**  
*lebrunii* Hauman = **D. stuhlmannii**  
*ledermannii* Engl. = **D. rudatisii**  
*lescrauwaetii* De Wild. = **D. heudelotii** var. **heudelotii**  
*letestui* Pellegr. = **D. lujae**  
var. *leucanthum* Pierre = **D. angolense**  
*leucosepalum* Ruhl. = **D. lujae** var. **lujae**  
*liberiae* Engl. & Dinkl. = **D. pallidum**  
*linderi* Hutch. & Dalziel = **D. heudelotii** var. **heudelotii**  
*lofaense* Breteler ex Punt, nomen = **D. lofense**  
*lokanduense* De Wild. = **D. heudelotii** var. **heudelotii**  
*lolo* De Wild. & T. Durand = **D. heudelotii** var. **heudelotii**  
*longifolium* De Wild. & T. Durand = **D. heudelotii** var. **heudelotii**  
*longipedicellatum* De Wild. = **D. pedicellatum**  
*longipilosum* Engl., nomen = **D. heudelotii** var. **hispidum**  
*longitubulosum* Engl. = **D. heudelotii** var. **longitubulosum**  
*lujae* De Wild. & T. Durand var. *brevipile* Hauman = **D. lujae** var. **lujae**  
var. *leucosepalum* (Ruhl.) Hauman = **D. lujae** var. **lujae**  
*lujaei* De Wild. & T. Durand = **D. lujae**  
*luki* Breteler ex Punt, nomen = **D. barteri**  
*lukolelaense* De Wild. = **D. heudelotii** var. **ndongense**  
*luteiflorum* De Wild. = **D. staudtii**  
*macrophyllum* (Oliv.) Engl. = **D. heudelotii** var. **hispidum**



## DICHAPETALUM

*madagascariense* Poir. var. *beniense* (Engl.) Bret. = **D. madagascariense** var. **madagascariense**  
*malchairii* De Wild. = **D. glomeratum**  
*malembense* Pellegr. = **D. crassifolium** var. **crassifolium**  
*mangenotii* anonym., nomen = **D. filicaule**  
*martineaui* Aubrév. & Pellegr. = **D. heudelotii** var. **ndongense**  
*mayumbense* Exell = **D. angolense**  
*mekametane* Engl. = **D. congoense**  
*mendoncae* Torre = **D. deflexum**  
*michelsonii* Hauman = **D. stuhlmannii**  
*micranthum* Hauman = **D. dewevrei** var. **dewevrei**  
*micropetalum* Engl. = **D. gabonense**  
*microphyllum* Desc. = **D. madagascariense**  
*mildbraedianum* Exell = **D. heudelotii** var. **ndongense**  
*molundense* K. Krause = **D. zenkeri**  
*mombongense* De Wild., incl. vars. = **D. staudtii**  
“*mombuttense*” De Wild., sphalm. = **D. mombuttense**  
“*monbuttense*” De Wild., sphalm. = **D. mombuttense**  
*montanum* Breteler ex Punt, nomen = **D. montanum**  
*mortehanii* De Wild. = **D. choristilum** var. **choristilum**  
*mucronulatum* Engl. = **D. parvifolium**  
*multiflorum* (Tul.) Desc. = **D. madagascariense**  
“*mumbuttense*” De Wild., sphalm. = **D. mombuttense**  
*murinum* Breteler ex Den Outer = **D. pallidum**  
*ndongense* Engl. = **D. heudelotii** var. **ndongense**  
*nitidulum* Engl. & Ruhl. = **D. gabonense**  
*obliquifolium* Engl. var. *klaineanum* Pellegr. = **D. dewevrei** var. **klaineanum**  
var. *mayumbensis* Pellegr. = **D. dewevrei** var. **dewevrei**  
var. *obliquifolium* = **D. dewevrei** var. **dewevrei**  
*oddonii* De Wild. = **D. fruticosum**  
*oliganthum* Breteler ex Punt, nomen = **D. oliganthum**  
*ombrophilum* K. Krause = **D. madagascariense**  
*pallidinervum* De Wild., nomen = **D. zenkeri**  
*pallidum* sensu Fl. W. Tr. Afr., Ed. 2 = **D. albidum** p.p.  
*palustre* Louis ex Hauman, incl. var. *polyanthum* Hauman = **D. crassifolium** var. **crassifolium**  
*paniculatum* (Thonn. ex Schumach.) De Wild. = **D. madagascariense**  
*patenti-hirsutum* Ruhl., incl. var. *longibracteolatum* Hauman = **D. bangii**  
*petersianum* Dinkl. & Engl. = **D. angolense**  
*poggei* Engl. = **D. heudelotii** var. **heudelotii**  
*pulchrum* Breteler ex Punt, nomen = **D. pulchrum**  
*pynaertii* De Wild. = **D. madagascariense**  
*rapaiosii* Winkler, nomen = **Tapura africana**  
“*reflexum*” De Wild., sphalm. = **Dichapetalum deflexum**  
*retroversum* Hiern = **D. parvifolium**  
*reygaerti* De Wild. = **D. angolense**  
*riparium* Engl. = **D. cymulosum**  
*rowlandii* Hutch. & Dalziel = **D. madagascariense**

## DICHAPETALUM

*rufipile* (Turcz.) Engl. = **D. bangii**  
“*rufotomentosum*” Engl. = **D. angolense**  
*salicifolium* Engl. & Ruhl. = **D. heudelotii** var. **hispidum**  
*sankuruense* De Wild. = **D. heudelotii** var. **ndongense**  
*sapinii* De Wild. = **D. chalotii**  
*scabrum* Engl. = **D. heudelotii** var. **longitubulosum**  
*schliebenii* Mildbr. = **D. stuhlmannii**  
*schweinfurthii* Engl., incl. var. *lolo* (De Wild. & T. Durand) Hauman = **D. heudelotii** var. **heudelotii**  
*seretii* De Wild. = **D. mundense**  
*silvicola* Ruhl., nomen = **D. pallidum**  
*soyauxii* Engl. = **D. gabonense**  
*spathulatum* Engl. var. *spathulatum* = **D. crassifolium** var. **crassifolium**  
var. *integrum* (Pierre) Pellegr. = **D. crassifolium** var. **integrum**  
*stenophyllum* K. Krause = **D. gillettii**  
*stuhlmannii* auct. non Engl. = **D. braunii**  
*subauriculatum* (Oliv.) Engl. = **D. heudelotii** var. **heudelotii**  
*subauriculatum* Engl., nom. nud. = **D. heudelotii** var. **heudelotii**  
*subcordatum* (Hook. f. ex Benth.) Engl. = **D. madagascariense**  
*subcoriaceum* Engl. = **D. madagascariense**  
*subfalcatum* Engl. = **D. gabonense**  
*suboblongum* Engl. = **D. rudatisii** and **D. toxicarium**  
*subsessilifolium* Chodat = **D. heudelotii** var. **hispidum**  
*subtruncatum* Engl., nomen = **D. tomentosum**  
*subuncinatum* Engl. = **D. cymulosum**  
*sulcatum* Engl. = **D. staudtii**  
*tessmannii* Engl. = **D. acuminatum**  
*thomsonii* (Oliv.) Engl. s. str. = **D. madagascariense**  
*thomsonii* var. *obanense* Bak. f. = **D. obanense**  
*thonneri* De Wild. incl. var. *ellipticum* (R. E. Fries) Hauman, var. *longistipulatum* Hauman and var. *polyneuron* Hauman = **D. bangii**  
*thouarsianum* Roem. & Schultes, incl. var. *macrophyllum* (Tul.) Desc. and var. *pubescens* Desc. = **D. madagascariense**  
*ubangiense* De Wild. = **D. madagascariense**  
*varians* Pellegr. = **D. heudelotii** var. **heudelotii**  
*venenatum* Engl. & Gilg = **D. cymosum**  
“*verrucosulum*” Engl., sphalm. = **D. gabonense**  
*verruculosum* Engl. = **D. gabonense**  
*warneckeii* Engl. = **D. pallidum**  
*welwitschii* Engl., nomen = **D. crassifolium** var. **crassifolium**  
*whitei* Torre = **D. heudelotii** var. **heudelotii**  
*whytei* (Stapf) Keay = **D. pallidum**  
*wildemanianum* Exell = **D. zenkeri**  
*zambesianum* Torre = **D. barbosae**  
*Dichopetalum moçambicensis* (Klotzsch) P. Lima = **Dichopetalum mossambicense**  
*Icacinopsis annonoides* Roberly (*Icacinaceae*) = **Dichopetalum barteri**

## TAPURA / 9

**Tapura africana** Oliv.; Breteler in Fl. Cameroun 37: 123-125, 2001.

Tree to 25 m; bole fluted,  $\pm$  irregular, often lowly densely-branched to  $\pm$  1 m  $\varnothing$ ; bark smooth; branches glabrous; branchlets, leaf petioles and inflorescences appressed-short-hairy; inflorescence a dense small glomerule, with peduncle adnate to petiole.

Evergreen rain-forest; forest, farmbush; 1-400 m alt. (Mt. Cameroon).

Bioko/Fernando Poo.

**T. arachnoidea** Breteler

Shrub or treelet to 2,5 m tall; branches when young, branchlets, stipules, leaf petioles and inflorescences subappressed-greyish-short-hairy; leaf blade glabrous above but arachnoid-hairy beneath; inflorescence a subglose head at the end of leafy shoot.

Evergreen rain-forest.

Related to *T. neglecta* lacking arachnoid leaf indumentum.

Known from 2 collections made at the same locality (Gabon) in 1992.

**T. bouquetiana** N. Hallé & Heine

Shrub or treelet to 10 m tall; stem 10 cm  $\varnothing$ ; branches glabrous, greyish-brown; branchlets glabrous; stipules minute, with nectar glands; leaves papery; inflorescence a slender, stalked (1-4 cm long) few-flowered head.

Evergreen rain-forest; semi-deciduous forest.

**T. carinata** Breteler

Shrub or tree to 20 m tall; branchlets and inflorescences subappressed short-hairy; leaves papery, sparsely hairy when young; inflorescence a globose head, with peduncle adnate to petiole; flowers 2-lipped; sepals keeled; fruit unknown.

Rain-forest, in understory.

Known from very few collections.

**T. fischeri** Engl., incl. var. *pubescens* Verdc. & Torre; Breteler in Fl. Cameroun 37: 125-128, 2001.

syn.: *T. lujae* ("lujai") De Wild.; *Dichapetalum dummeri* M. B. Moss; *D. corradii* Chiov.

Shrub or much-branched tree (12-)20(-24) m tall, branching low down, with a widely spreading crown; bole to 45 cm  $\varnothing$ ; wood hard, tough; bark grey-brown, flaking in small patches; branches horizontal to drooping; branchlets appressed-hairy, soon glabrescent; inflorescence a pseudumbel with peduncle  $\pm$  adnate to petiole.

Semi-deciduous and deciduous forests in understory; fresh-water swamp and riverine forest; forest edges and fallow land in forest; forest with *Terminalia*; lowland rain-forest with *Chrysophyllum albidum*, *Cola gigantea*, *Erythrophleum suaveolens*, *Alstonia boonei*, *Parinari excelsa*, *Milicia excelsa* in understory; wooded savanna; thickets; woodland with some evergreen trees; 1-1300 m alt.

Variable in pubescence of ovary and fruit, from glabrous to tomentose.

S. Africa (Natal).

Not yet recorded from Centr. Afr. Rep., Gabon, Angola and Zambia.

## TAPURA

**T. ivorensis** Breteler

Shrub or treelet to 6 m tall; branches brown,  $\pm$  glabrous; branchlets and inflorescences appressed-puberulous, glabrescent; leaf petiole canaliculate; inflorescence glomerulous, with peduncle adnate to petiole.

Rain-forest.

Only very few collections known.

Most closely related to *T. africana* and similar to the American species *T. guianensis* Aubl.

**T. letestui** Pellegr. ("Le Testui").

Tree with trunk to  $>40$  cm  $\varnothing$ ; branches glabrous; branchlets and inflorescences subappressed-brown-hairy; the latter glomerulous with peduncle adnate to petiole; fruit unknown.

Semi-deciduous forest.

Known from the type collection of May 1914 (Le Testu 1742), and from the single sterile specimen from Congo-Brazzaville (determination uncertain; Groulez-Morel, Service forestier du Moyen Congo, 34, herb. P).

**T. neglecta** N. Hallé & Heine

Shrub (or treelet ?), much branched; branchlets brownish, appressed-short-hairy, soon glabrescent; leaf petiole canaliculate; inflorescences compact subglobose, axillary,  $\pm$  sessile; fruit unknown.

Rain-forest.

Only known from the type collection of Sept. 1926 (Le Testu 6090).

Related to the American *T. guianensis* Aubl.

**T. tchoutoi** Breteler, Adansonia, Sér. 3, 24: 267, 2002.

Small tree; branches, stipules and leaf blade nerves appressed-pubescent, glabrescent with age; leaves papery, with glands beneath; inflorescence axillary, compact,  $\pm$  sessile; *ripe* fruit unknown.

Rain-forest with *Caesalpinaceae*; to 100 m alt.

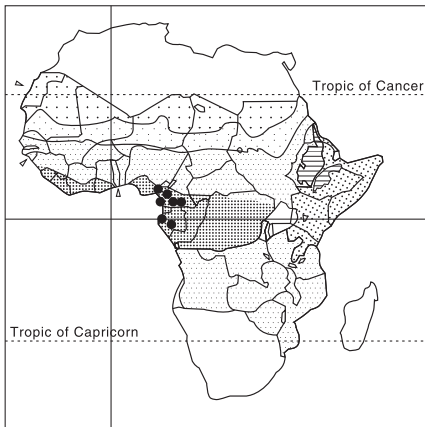
Most closely related to *T. neglecta* from Gabon (with smaller, coriaceous leaves, and smaller stipules and flowers).

Known from 2 collections in the same area (type collected in 2001, the other one in 2000).

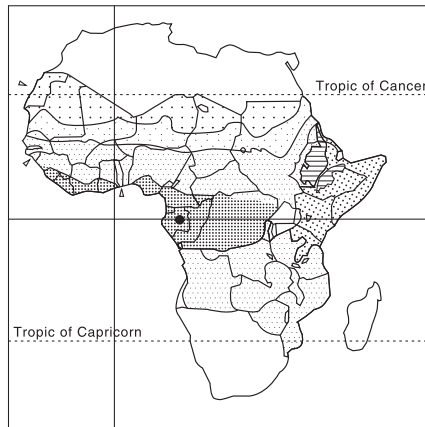
## SYNONYMS:

*Tapura lujae* De Wild. = **Tapura fischeri**

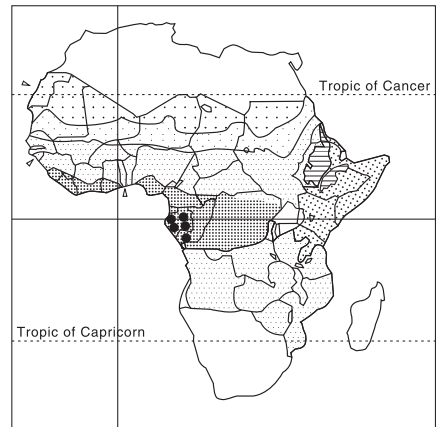
sp. in Fl. Gabon 32: 214, 1991 = **Thecacoris leptobotrya** (Müll. Arg.) Brenan (*Euphorbiaceae*)



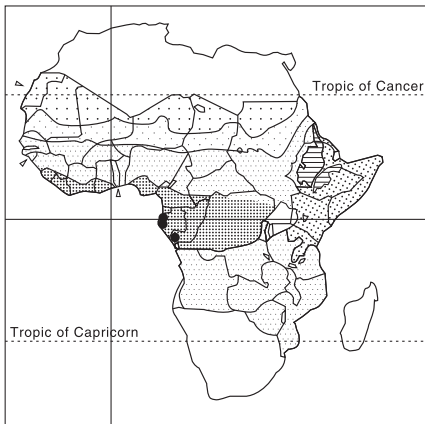
*Tapura africana*



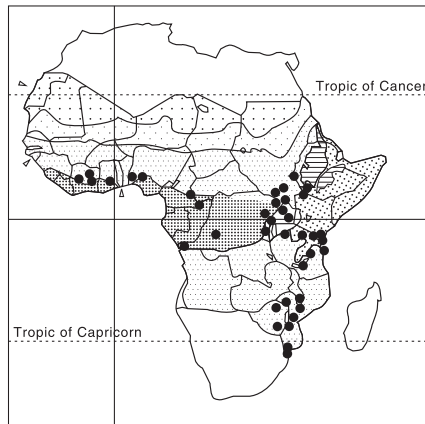
*Tapura arachnoidea*



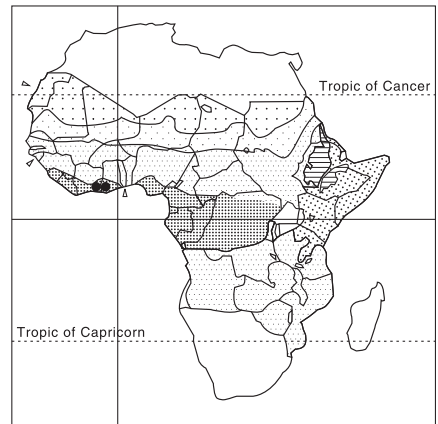
*Tapura bouquetiana*



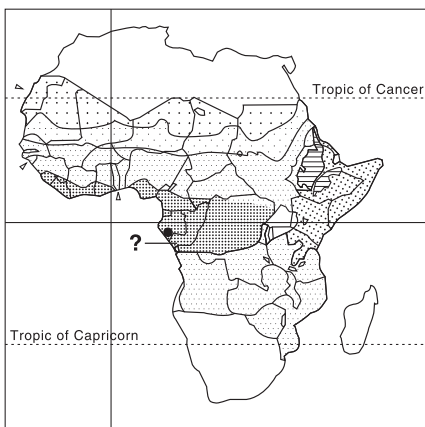
*Tapura carinata*



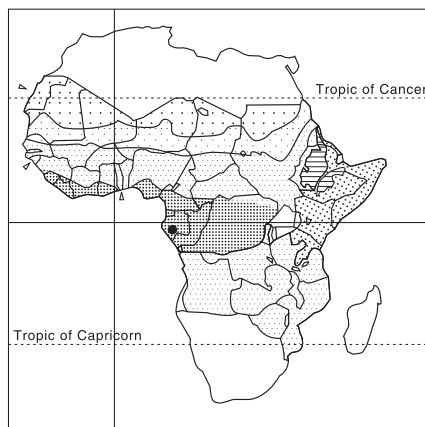
*Tapura fischeri*



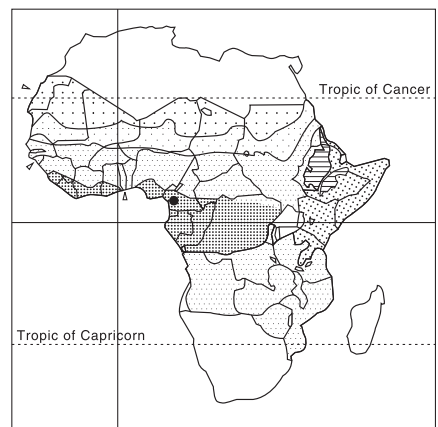
*Tapura ivorensis*



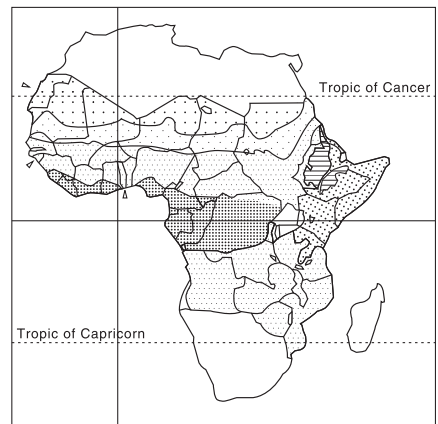
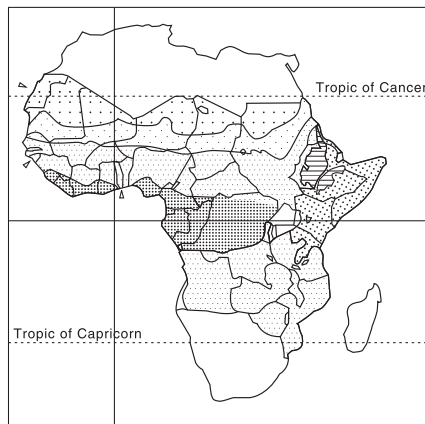
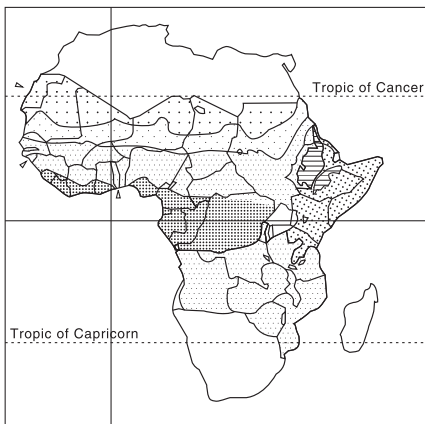
*Tapura letestui*



*Tapura neglecta*



*Tapura tchoutoi*







## 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 not cited.

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.

ACALYPHA .....	17	DISCOCLAOXYLON .....	58
ADENOCLINE .....	26	DISCOGLYPREMNA .....	58
AFROLICANIA .....	254	DRYPETES .....	58
AFROTREWIA .....	26	DUVIGNEAUDIA .....	68
AGRIMONIA .....	270	ELAEOPHORBIA .....	68
ALCHEMILLA .....	270	ENDADENIUM .....	68
ALCHORNEA .....	26	ERYTHROCOCCA .....	68
AMANOA .....	28	EUPHORBIA .....	74
ANDRACHNE .....	28	<b>EUPHORBIACEAE .....</b>	<b>16</b>
ANDROSTACHYS .....	28	EXCOECARIA .....	156
ANTHOSTEMA .....	28	FLUEGGEA .....	156
ANTIDESMA .....	30	GIVOTIA .....	156
APHANES .....	274	GROSSERA .....	157
APODISCUS .....	30	HAGENIA .....	275
ARGOMUELLERA .....	30	HAMILCOA .....	157
ARISTOGEITONIA .....	32	HEYWOODIA .....	157
BAFODEYA .....	254	HIRTELLA .....	260
BRIDELIA .....	32	HYMENOCARDIA .....	157
CAPERONIA .....	36	JATROPHA .....	158
CAVACOA .....	36	KEAYODENDRON .....	168
CENTROPLACUS .....	36	KLAINETHUS .....	168
CEPHALOCROTON .....	37	LEEUWENBERGIA .....	168
CHAETOCARPUS .....	37	LEIDESIA .....	168
CHLAMYDOJATROPHA .....	37	LEUCOSIDEA .....	275
CHROZOPHORA .....	37	LINGELSHEIMIA .....	168
<b>CHRYSOBALANACEAE .....</b>	<b>254</b>	MACARANGA .....	168
CHRYSOBALANUS .....	254	MAESOBOTRYA .....	174
CLEIDION .....	38	MAGNISTIPULA .....	260
CLEISTANTHUS .....	38	MALLOTUS .....	176
CLIFFORTIA .....	274	MANNIOPHYTON .....	176
CLUTIA .....	40	MAPROUNEA .....	176
CONCEVEIBA .....	44	MARANTHES .....	264
COTONEASTER .....	275	MAREYA .....	178
CROTON .....	44	MAREYOPSIS .....	178
CROTONOGYNE .....	54	MARGARITARIA .....	178
CROTONOGYNOPSIS .....	56	MARTRETIA .....	178
CYATHOGYNE .....	56	MEINECKIA .....	179
CYRTOGONONE .....	57	MICROCOCCA .....	179
CYTTARANTHUS .....	57	MICRODESMIS .....	252
DACTYLADENIA .....	256	MILDBRAEDIA .....	180
DALECHAMPIA .....	57	MONADENIUM .....	180
<b>DICHAPETALACEAE .....</b>	<b>282</b>	NECEPSIA .....	194
DICHAPETALUM .....	282	NEOBOUTONIA .....	194
DICHOSTEMMA .....	57	NEOCARYA .....	266
		NEURADA .....	282

NEURADACEAE .....	282	ROSACEAE .....	270
OLDFIELDIA .....	196	RUBUS .....	278
OMPHALEA .....	196	SCHINZIOPHYTON .....	224
PANDA .....	254	SCLEROCROTON .....	224
<b>PANDACEAE .....</b>	<b>252</b>	SEBASTIANIA .....	224
PARANECEPSIA .....	196	SHIRAKIOPSIS .....	226
PARINARI .....	266	SIBANGEA .....	226
PENTABRACHION .....	196	SPIROSTACHYS .....	226
PETALODISCUS .....	196	SPONDIANTHUS .....	226
PHYLLANTHUS .....	196	SUREGADA .....	228
PLAGIOSTYLES .....	219	SYNADENIUM .....	228
POGONOPHORA .....	220	TANNODIA .....	230
POTENTILLA .....	275	TAPURA .....	302
PROTOMEGABARIA .....	220	TETRACARPIDIUM .....	230
PRUNUS .....	276	TETROCHIDIUM .....	232
PSEUDAGROSTISTACHYS .....	220	THECACORIS .....	232
PSEUDOLACHNOSTYLIS .....	220	TRAGIA .....	234
PTEROCOCCUS .....	220	TRAGIELLA .....	244
PYCNOCOMA .....	220	UAPACA .....	246
RICINODENDRON .....	222		
RICINUS .....	222		
ROSA .....	276		

TAB. IX.



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