

## A revision of *Cryptocarya* (Lauraceae) from Thailand and Indochina

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**ABSTRACT.** A revision of the species of *Cryptocarya* R.Br. (Lauraceae) from Thailand and Indochina (Laos, Cambodia and Vietnam) is presented, comprising a key to species, full descriptions, distribution maps, provisional IUCN conservation assessments, ecological information and ethno-botanical notes where appropriate. In this treatment, 16 species are recognised, one species name is validated (*Cryptocarya globularia* Kosterm. ex de Kok), nineteen names are lectotypified and nine names are placed into synonymy for the first time. Using standard IUCN criteria, most species are considered to be Least Concern, one is assessed as Data Deficient (*C. globularia*), and six are Endangered (*Cryptocarya chanthaburiensis* Kosterm., *Cryptocarya hainanensis* Merr., *Cryptocarya laotica* (Gagnep.) Kosterm., *Cryptocarya pallens* Kosterm., *Cryptocarya pustulata* Kosterm. and *Cryptocarya sublanuginosa* Kosterm.).

**Keywords.** Cambodia, *Cryptocarya*, Laos, taxonomy, Thailand, Vietnam

### Introduction

*Cryptocarya* R.Br. occurs throughout the tropics (with the exception of central Africa) and has its centre of diversity in Southeast Asia. The total number of species is estimated to be between 200 and 250. The classification of the genera within the Lauraceae has always been problematic. The general framework of characters which have been employed by most authors was first established by Nees von Esenbeck (1836) in his classification of the family. However, the outcomes of such a classification can vary greatly, depending upon the weightage given to each particular character. Recently, with the help of molecular data, some taxonomic relationships are becoming clearer (Rohwer et al., 2014). *Cryptocarya* is now placed in the *Cryptocarya* group together with *Beilschmiedia* Nees and *Endiandra* R.Br. as one of the early divergent clades within the family (Rohwer, 2000; Rohwer et al., 2014). The genus has never been revised in full, but a number of important modern regional treatments exist. The Australian taxa were revised by Hyland (Hyland, 1989; Le Cussan & Hyland, 2007), who recognised 47 species, of which 38–39 (80–82%) were considered to be endemic to Australia. The Chinese taxa have been revised by Li Xiwen et al. (2008), who recognised 21 species, of which 15 (71%) are endemic to China. In Brazil, 13 species are recognised, of which 11 (85%) are endemic (De Moraes, 2007), and amongst the 17 taxa currently recognised from Peninsular Malaysia, only three (c. 18 %) are

endemic (De Kok, in press). The genus has never previously been revised for Thailand and is not even mentioned for Thailand by Suvatti (1978). In his *Flore Générale de L'Indo-Chine*, Lecomte (1914) only recognised five species (*Cryptocarya caesia* Blume (now *Cryptocarya ferrea* Blume), *C. lenticellata* Lecomte (now *C. concinna* Hance), *C. ferrea*, *C. oblongifolia* Blume and *C. ochracea* Lecomte (both now *C. ferrea*)), although 17 were recorded in the most recent checklist for Vietnam (Lê, 2003: 82–85). In this account, 16 species are recognised from Thailand and Indochina (Laos, Cambodia and Vietnam), with 13 recorded from Thailand, 10 from Vietnam, 8 from Laos and 5 from Cambodia. The numbers of endemic taxa per country are very low, only two from Thailand and one from Vietnam. The number of endemic species for the region as a whole is six, which is c. 37 % of the total.

### Distribution within Thailand and Indochina

The species distribution patterns within Thailand and Indochina are interesting. A distinct set of species (*Cryptocarya kurzii* Hook.f., *C. nitens* (Blume) Koord. & Valetton and *C. rugulosa* Hook.f.) occurs only in Peninsular Thailand but are then also found in Peninsular Malaysia. Some of them are common in Peninsular Malaysia but are represented by only a few specimens in Thailand: for instance *Cryptocarya rugulosa* is only known from one specimen, while *C. nitens* is known from just two. A different set of species occurs in northern Thailand, northern Vietnam and northern Laos and then usually also in southern China (*Cryptocarya concinna* and *C. hainanensis* Merr.). In contrast, a few taxa (*Cryptocarya amygdalina* Nees, *C. densiflora* Blume, *C. impressa* Miq. and, to some extent, *C. diversifolia* Blume and *C. ferrea*) bridge the gap between, on the one hand, northern Thailand and northern Indochina, and on the other, Peninsular Thailand and Malaysia. These species tend to be very widespread and in one case occurs all the way to Australia (*Cryptocarya densiflora*).

A small group of species are endemic to the region (*Cryptocarya chanthaburiensis* Kosterm., *C. globularia* Kosterm. ex de Kok, *C. laotica* (Gagnep.) Kosterm., *C. pallens* Kosterm., *C. pustulata* Kosterm. and *C. sublanuginosa* Kosterm.). Most occur in eastern Thailand, Cambodia, southern Laos and southern Vietnam, which together form an area that is considered to be under-collected (Parnell et al., 2003; Marsh et al., 2009), while the others occur either in northern Vietnam (*Cryptocarya globularia*) or northern and central Thailand (*C. pallens*). Most of these taxa are represented in herbaria by very few specimens, which has made revising their taxonomy and the production of an identification key very difficult. This applies in particular to those taxa for which flowers (*Cryptocarya globularia*) or fruits (*C. pustulata*) are lacking in the herbaria consulted. This small number of collections also means that based on the area of occupancy alone, all these endemic taxa have been assessed as Endangered according to IUCN standards (IUCN, 2012; see <http://geocat.kew.org>).

A distinct group of species, characterised by markedly long bracteoles, is common in Peninsular Malaysia (see discussion of morphology in De Kok (in press)) but is almost entirely absent from the present study area. The only exception is

*Cryptocarya rugulosa*, which is mainly a species from the Sunda Plateau that only just gets across the border into Peninsular Thailand.

In conclusion, the *Cryptocarya* flora of the region studied here is dominated in the south by species which are common in Peninsular Malaysia and other areas of the Sunda Plateau, while in the north it is dominated by species that also occur in southern China. Very little overlap occurs between these two groups. A significant number of endemic species is found only in the region comprising southern Laos, eastern Thailand, Cambodia and southern Vietnam.

### Material and Methods

This study is based mainly on observations of specimens from the following herbaria: A, BISH, BKF, BM, BO, C, CAS, E, GH, IBK, K, KEP, L, MEL, MO, MPU, NY, P, PE, RUPP and SING.

In the descriptions that follow:

- i) All characters and measurements are from mature material, unless indicated otherwise;
- ii) All collections of *Cryptocarya* from Indochina and Thailand seen by the author are cited;
- iii) Selected specimens of Indo-Chinese and Thai taxa from outside the present area are cited only when this material contributed to the taxonomic descriptions, except for material cited in De Kok (in press);
- iv) All synonyms of *Cryptocarya* taxa from Indochina and Thailand are included. Synonyms from outside the area are included only in those cases where type material has been seen by the author;
- v) In the descriptions the indumentum is characterised as: ‘glabrous’ when the underlying surface is without any hairs or with just a few occasional hairs; ‘sparsely hairy’ when it is showing more underlying surface than hairs; ‘densely hairy’ when showing less underlying surface than hairs; and ‘velutinous’ when the underlying surface is completely covered with hairs;
- vi) Petioles and fruit stalks are sometimes described as swollen. This means not that they are necessarily thicker, but that over the length of the structure from the base the width increases and then decreases near the apex, giving the whole structure a swollen appearance;
- vii) Scans of type material, where seen, were accessed at <http://plants.jstor.org> on 20 October 2014;
- viii) For the provisional IUCN conservation assessments, all Extents of Occurrence (EOO) and Areas of Occupancy (AOO) were calculated using <http://geocat.kew.org> on 21 October 2014.

### Taxonomic treatment

*Cryptocarya* R.Br., Prod. Fl. Holl. 402 (1810), **nom. cons.**; Gamble, J. Asiatic Soc. Bengal. 75: 37–51 (1912); Ridl., Fl. Malay Pen. 3: 76–82 (1924); H.Liou, Laurac. Chine & Indo-Chine 95–102 (1932); Kosterm., Meded. Bot. Herb. Utrecht 42: 557 (1937); Kosterm., Reinwardtia 4: 243–244 (1957); Kosterm., Reinwardtia 8: 21–196 (1970); Kochummen, Tree Fl. Malaya 4: 132–138 (1989); B.Hyland, Austral. Syst. Bot. 2: 162–213 (1989); Rohwer, Fam. Gen. Vasc. Pl. 2: 366–391 (1993); van der Werff & H.G.Richt., Ann. Miss. Bot. Gard. 83: 409–418 (1996); van der Werff, Blumea 46: 134 (2001); Le Cussan & B.Hyland, Fl. Austral. 2: 140–178 (2007); P.L.R.de Moraes, ABC Taxa 3: 1–191 (2007). – TYPE SPECIES: *Cryptocarya glaucescens* R.Br. (lectotypified by Kostermans, Notul. Syst. (Paris) 8: 112 (1939)).

*Caryodaphne* Blume ex Nees, Syst. Laurac. 225 (1836). – TYPE SPECIES: *Caryodaphne laevigata* (Blume) Nees, Syst. Laurac. 227 (1836) (= *Cryptocarya laevigata* Blume) (lectotypified by Kostermans, J. Sci. Res. (Jakarta) 1: 122 (1952)).

*Pseudocryptocarya* Teschn., Bot. Jahrb. Syst. 58: 411–413 (1923). – TYPE SPECIES: *Pseudocryptocarya pauciflora* (K.Schum. & Lauterb.) Teschn., Bot. Jahrb. Syst. 58: 411–413 (1923) (= *Cryptocarya laevigata* Blume).

*Kerrdora* Gagnep., Notul. Syst. (Paris) 14: 31 (1950). – TYPE SPECIES: *Kerrdora laotica* Gagnep., Notul. Syst. (Paris) 14: 31 (1950). (= *Cryptocarya laotica* (Gagnep.) Kosterm.).

**Shrubs to trees**, evergreen. **Bud** scales few. **Leaves** alternate or rarely (sub)opposite (not in this region), pinnately veined, rarely triplinerved. **Inflorescence** type 3 (using terminology of Van der Werff, 2001), axillary, involucre bracts absent, bracteoles triangular, linear to elliptic or orbicular, usually caducous during flowering. **Flowers** bisexual, small; perianth lobes 6, isomorphic, caducous, tube turbinate or ovoid, persistent, constricted at top after flowering. **Stamens** 9, inserted on throat of perianth tube, in 1st and 2nd rows introrse, glandless; in 3rd row extrorse, with glands at base; anthers 2-locular; staminodes 3, shortly stalked, glandless; ovary sessile, free during flowering, enveloped by perianth tube; style linear; stigma small or inconspicuous. **Fruit** drupe-like, wholly enveloped by fleshy or hard, dilated perianth tube, but leaving a ring like aperture at apex. **Stalk** sometimes swollen when mature.

**Distribution.** About 200–250 species, pan-tropical except for central Africa. In this revision 16 species are recorded from Thailand and Indochina.

**Use.** The wood of many species is used as a light hardwood.

## Key to the species

(This key works best for young flowering material, fruiting material is often difficult to name with any degree of certainty)

- 1a. Leaves triplinerved ..... *C. densiflora*  
 1b. Leaves pinnately veined ..... 2
- 2a. Mature lower leaf surface glabrous, except on veins ..... 3  
 2b. Mature lower leaf surface sparsely hairy to velutinous ..... 8
- 3a. Young twigs with dark brown hairs; mature fruit globose, smooth or faintly ridged, sparsely hairy (occurring in Peninsular Thailand only) ..... *C. nitens*  
 3b. Young twigs with whitish to yellowish brown hairs; mature fruit narrowly ellipsoid, ellipsoid or ovoid, smooth to ribbed, glabrous or sometimes with a few hairs at apex (occurring throughout the region) ..... 4
- 4a. Leaves papery ..... 5  
 4b. Leaves leathery ..... 6
- 5a. Twigs densely tomentose; upper surface of leaves sparsely hairy, midrib more densely hairy; bracteoles  $\leq 0.5$  mm long, caducous; mature fruit (dried) obovoid, 12-ribbed ..... *C. concinna*  
 5b. Twigs sparsely hairy; upper surface of leaves glabrous with a few hairs on the midrib; bracteoles  $\geq 4$  mm long, persistent; mature fruit (dried) ellipsoid, smooth ..... *C. laotica*
- 6a. Tertiary veins scalariform; petiole 6–20 mm long, slender to swollen when mature; mature fruits smooth, stalk strongly swollen (currently only known from Thailand) ..... *C. amygdalina*  
 6b. Tertiary veins reticulate to scalariform; petiole 5–15 mm long, slender or only slightly swollen when mature; mature fruits smooth or ridged, stalk slender to only slightly swollen (known from Cambodia, Laos, Vietnam and southeastern Thailand) ..... 7
- 7a. Tertiary veins scalariform on lower surface; petiole 5–8 mm long; mature fruits (dried) globose, smooth with some faint ridges ..... *C. hainanensis*  
 7b. Tertiary veins reticulate to scalariform on lower surface; petiole 8–15 mm long; mature fruit (dried) ellipsoid, smooth ..... *C. sublanuginosa*
- 8a. Midrib raised or flattened at base on upper leaf surface ..... 9  
 8b. Midrib sunken at base on upper leaf surface ..... 10
- 9a. Upper leaf surface bullate, apex emarginate to acuminate; mature fruit with pronounced or faint ridges ..... *C. diversifolia*

- 9b. Upper leaf surface slightly bullate, apex long acuminate; mature fruit smooth ....  
..... *C. impressa*
- 10a. Perianth lobes velutinous to densely hairy (hairiness of perianth tube and petals lobes similar); twigs and inflorescences with yellowish to brown hairs; bracteoles elliptical, < 1 mm long, seldom persistent; fruit (dried) ovoid to ellipsoid, sometimes obovoid, stalks swollen when mature ..... *C. ferrea*
- 10b. Perianth lobes sparsely hairy (clear difference in hairiness between the perianth tube and the petals lobes) or specimens in fruit ..... 11
- 11a. Bracteoles 1–3.5 mm long ..... 12
- 11b. Bracteoles < 1 mm long ..... 15
- 12a. Mature fruit globose, 17–18 mm diameter, finely and sparsely hairy at apex, stalk not or hardly swollen when mature ..... *C. globularia*
- 12b. Mature fruit ellipsoid, < 13 mm diameter, glabrous, stalk not swollen to swollen when mature ..... 13
- 13a. Leaves leathery; bracteoles elliptic to lanceolate, (1.5–)2–3.5 mm long; perianth tube 1.2–2 mm long; fruit stalk swollen when mature (occurring in Peninsular Thailand) ..... *C. rugulosa*
- 13b. Leaves thinly leathery; bracteoles linear, 1–2.5 mm long; perianth tube 0.8–1.5 mm long; stalk sometimes swollen when mature ..... 14
- 14a. Leaf base asymmetric in more than 50% of mature leaves; fruit 11–15 mm long, stalk not or slightly swollen when mature (occurring in east Thailand and southern Indochina) ..... *C. chanthaburiensis*
- 14b. Leaf base symmetric in most mature leaves (> 75%); fruit 18–21 mm long, stalk swollen when mature (occurring in Peninsular Thailand) ..... *C. kurzii*
- 15a. Leaves with tertiary veins irregularly reticulate; bracteoles triangular .....  
..... *C. concinna*
- 15b. Leaves with tertiary veins scalariform; bracteoles round or elliptic to linear .....  
..... 16
- 16a. Petiole channelled, velutinous; perianth lobes velutinous outside, lobes 1–1.6 mm wide ..... *C. ferrea*
- 16b. Petiole half-terete, glabrous to velutinous; perianth lobes sparsely hairy outside; lobes 0.6–1.5 mm wide ..... 17
- 17a. Twigs and petioles with dark brown hairs; bracteoles round, caducous; perianth lobes 0.8–0.9 mm wide ..... *C. pallens*
- 17b. Twigs and petioles with yellowish hairs; bracteoles elliptic to linear, often persistent; perianth lobes 0.6–1.5 mm wide ..... *C. pustulata*

1. *Cryptocarya amygdalina* Nees in Wallich, Pl. Asiatic Rar. 2: 69 (1831); Kosterm., Bibliogr. Laurac. 384 (1964); H.W.Li et al., Fl. China 7: 250–251 (2008). – *Laurus amygdalina* Buch.-Ham. ex Wall., Numer. List 2585 (1830), nom. nud. – TYPE: [India?] Datgong, 26 March 1809, [*Herb. Hamilton, Wallich Cat. 2585*] (lectotype K-W [K001116509], designated here; isolectotype E [E00393147]). (Fig. 1)

**Trees** 4.5–25 m tall, dbh 10–30 cm. **Bark** smooth to rough, reddish or pale or greyish brown; wood brownish to yellow, sometimes smelling of lavender. **Twigs** smooth to slightly longitudinally ridged, glabrous but sparsely hairy when young, hairs whitish to reddish or yellowish. **Leaf lamina** leathery, lanceolate to elliptic, 4–21 × (1.7–)2.5–11 cm, apex emarginate to acuminate, base cuneate to almost rounded, slightly asymmetric; pinnately veined, secondary veins 5–10 pairs, straight but curved near margin, tertiary veins scalariform; upper surface glabrous with few hairs on major veins, midrib sunken, secondary veins sunken, tertiary veins faint to inconspicuous, bright to deep green, shiny; lower surface glabrous with few hairs on midrib and major veins, midrib raised, secondary veins raised, tertiary veins distinct, glaucous, grey-brown. **Petiole** 6–20 mm long, slender to swollen, half-terete, glabrous to sparsely hairy, hairs yellowish to reddish. **Inflorescences** 5–14 cm long, densely to sparsely hairy, hairs yellowish to reddish; bracteoles triangular to round, 0.5–1.7 mm long, caducous. **Flowers** scented, hairs yellow; perianth tube 1–1.3 mm long, velutinous to sparsely hairy; perianth lobes narrowly ovate to elliptic, 1.3–2 × 0.8–1.2 mm, apex round to acute, sparsely hairy, pale green to light yellow. **Stamens** 0.4–0.5 mm long, hairy, cream, anthers yellow. **Ovary** 1–1.1 × c. 0.6 mm, glabrous or sparsely hairy at apex; style c. 1 mm long, glabrous, stigma inconspicuous. **Fruit** (dried) ellipsoid or narrowly ellipsoid, 19–40 × 9–15 mm, glabrous, smooth, yellow-red to black when mature. **Stalk** red, strongly swollen when mature.

**Distribution.** Southern China, northeastern India and the Andaman Islands, Bhutan, Myanmar, Thailand, Peninsular Malaysia, Indonesia (Sumatra) (see Fig. 1).

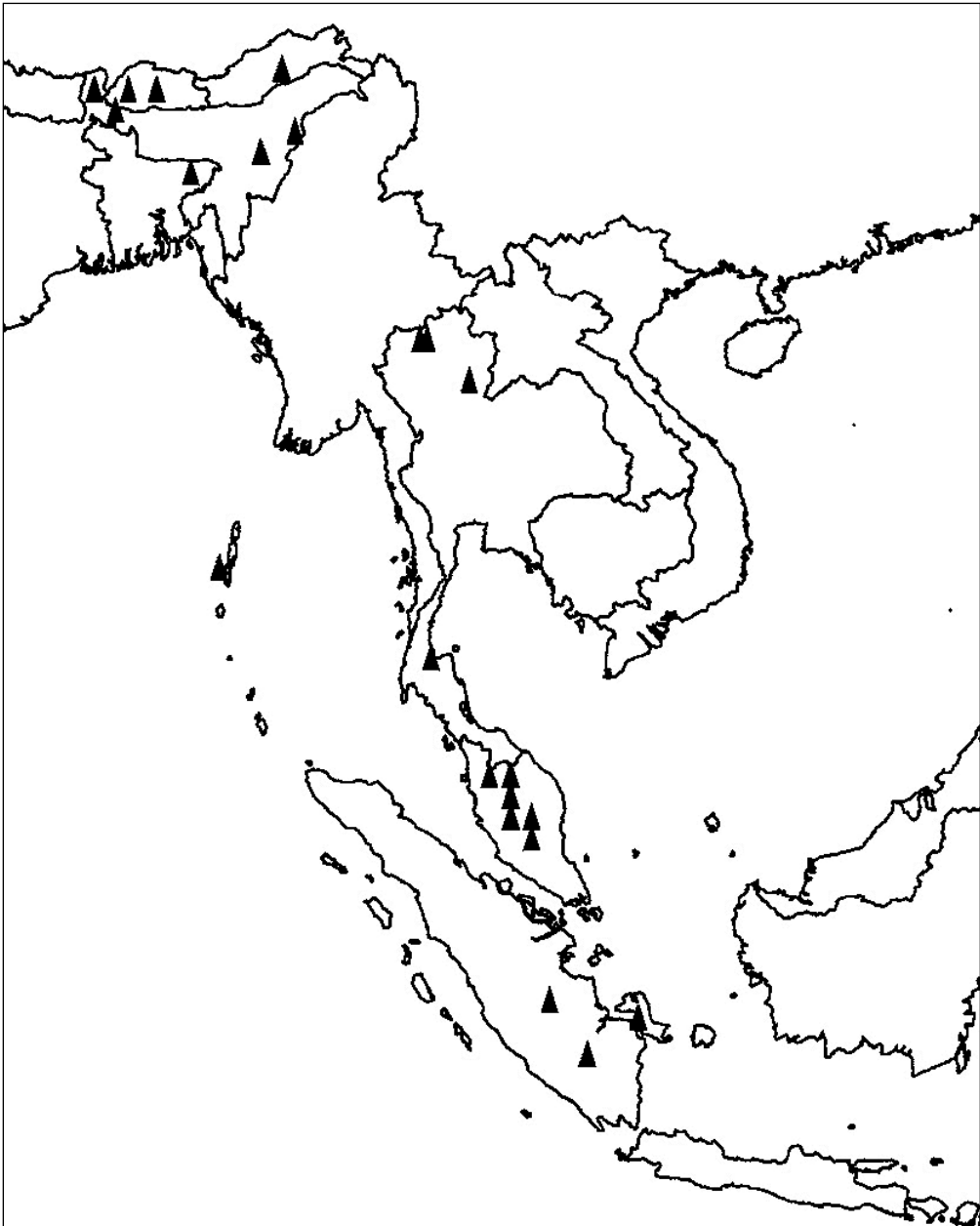
**Ecology.** Growing in primary and secondary evergreen broad-leaved or mixed deciduous lowland to hill forests, sometimes along rivers, at 50–1525 m altitude.

**Phenology.** Flowering from February to July (October); fruiting from March to November (December).

**Provisional IUCN conservation assessment.** Least Concern.

**Selected additional specimens examined.** THAILAND: **Chiang Mai:** Doi Suthep, 26 Apr 1958, *Sorensen et al. 3048* (K [2 sheets]). **Phrae:** between Ban Nam Krai and Pha Tuem, 16 Apr 1970, *Smitinand & Cheke 10817* [*BKF 46511*] (K, P). **Surat Thani:** Phanom district, Khlong Phanom National Park, Khao Sok River, 23 Mar 2005, *Gardner et al. ST 1718* (KEP).

**Notes.** In the original description of this species only one collection was cited (Nees von Esenbeck, 1831: 69) of which there are two specimens available for lectotypification,



**Fig. 1.** Distribution of *Cryptocarya amygdalina* Nees (▲).

one at E and one in K-W. The specimen in the Wallich herbarium at K-W is selected here as the lectotype.

**2. *Cryptocarya chanthaburiensis*** Kosterm., Nat. Hist. Bull. Siam Soc. 25: 33 (1975[‘1974’]). – TYPE: Thailand, ‘Chanthaburi’ [now in Trat], Khao Kuap, 27



December 1929, *Kerr 17846* (holotype K [K000734460]; isotypes BK [BK257960], BM [BM001124606], C [C10013568]). (Fig. 2)

*Cryptocarya ferrea* var. *grandiflora* Lecomte, Fl. Indo-Chine 5: 148 (1914); Kosterm., Bibliogr. Laurac. 399 (1964); T.C.Lê, Checklist Pl. Sp. Vietnam 85 (2003). – TYPE: [Laos] Mekong, Paklai, 1866–1868, *Thorel* s.n. (lectotype P [P02010425], designated here; isolectotypes K [K000734461], P [P02010426, P02010428]).

*Cryptocarya oblongifolia* auct. non Blume: Lecomte., Fl. Indo-Chine 5: 146 (1914); H.Liou, Laurac. Chine & Indo-Chine 101 (1932); Kosterm., Bibliogr. Laurac. 423 (1964); T.C.Lê, Checklist Pl. Sp. Vietnam 85 (2003).

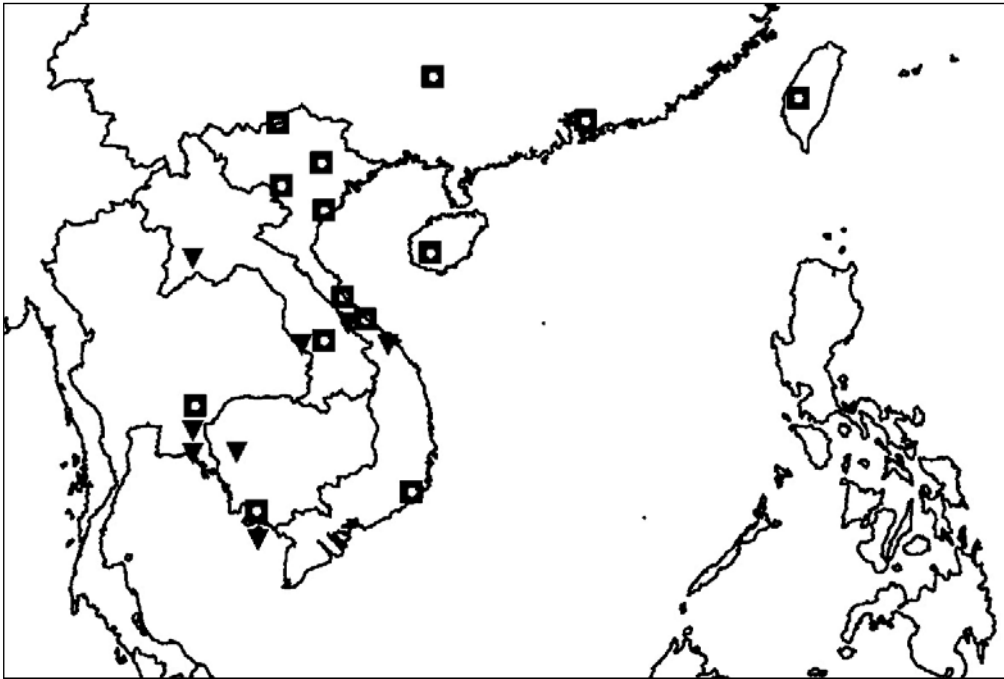
**Tree or shrub** 2–13 m tall, dbh up to 15 cm. **Twigs** velutinous when young, becoming almost glabrous later, hairs yellow. **Leaf lamina** (thinly) leathery, elliptic to lanceolate, 5.5–19 × 2.6–4.6 cm, apex round to acuminate, base cuneate or rounded, symmetric to asymmetric; pinnately veined, secondary veins 5–9 pairs, tertiary veins scalariform; upper surface glabrous to very sparsely hairy, midrib sunken at base, hairy, secondary veins sunken, tertiary veins inconspicuous, dull or shiny; lower surface sparsely hairy, midrib raised, secondary veins raised, tertiary veins distinct, hairs yellow. **Petiole** 8–15 mm long, slightly swollen or not, half-terete, velutinous, hairs yellowish, appressed. **Inflorescences** 6.5–9 cm long, velutinous; bracteoles linear 1–2.5 mm long. **Flowers** with yellowish hairs; perianth tube 1–1.5 mm long, velutinous; perianth lobes elliptic, 1.2–1.8 × 0.6–1.1 mm, sparsely hairy, apex rounded to acute. **Stamens** 1.5–2 mm long, densely hairy at base. **Ovary** clavate, c. 2 mm long; style c. 0.5 mm long, linear; stigma inconspicuous. **Fruit** (dried) ovoid to ellipsoid, 11–15 × 8–10 mm, smooth, glabrous, black when mature. **Stalk** not or only slightly swollen when mature.

**Distribution.** Southeastern Thailand, Laos, Cambodia, southern and central Vietnam, including the island of Phú Quốc (see Fig. 2).

**Ecology.** Along margins of evergreen forests or in bamboo thickets, 250–600 m altitude.

**Phenology.** Flowering from December to February; fruiting from November to February.

**Provisional IUCN conservation assessment.** Endangered (EN B2ab(ii,iii)). This species is known from a small number of collections from Indochina and Thailand. An analysis of the Extent of Occurrence (EOO) gives a conservation assessment of Least Concern, but an analysis of the Area of Occupancy (AOO) gives the assessment of Endangered. Given the small area of occupancy and the intensive logging and landscape modification that has occurred in the last 50 years, it must be considered to be endangered.



**Fig. 2.** Distribution of *Cryptocarya chanthaburiensis* Kosterm. (▼) and *Cryptocarya concinna* Hance (■).

*Additional specimens examined.* VIETNAM: **An Giang:** Arboretum de Trambom, 11 Nov 1922, *Poilane* 164 (P). **Đà Nẵng:** Ba Na, 3 Dec 1923, *Poilane* 9034 (K, P [2 sheets]); Ba Na, 21 Jul 1930, *Poilane* 17927 (P). **Kiên Giang:** Phú Quốc, Feb 1874, *Li Pi [Pierre]* 1432 (BM [2 sheets], BO [10 sheets], K [3 sheets], P [2 sheets]). **Quảng Trị:** Làng Khoai, 10 Jan 1932, *Poilane* 19930 (P). CAMBODIA: **Pursat:** Veal Veng District, some 250 m east of military headquarters, 16 Feb 2000, *Eanghourt* 46 (K, RUPP). **Unknown province:** Expedition du Mekong, Lacoine, 1866–1868, *Thorel* s.n. (P [2 sheets]); Expedition du Mekong, 1866–1868, *Thorel* s.n. (P [2 sheets]). LAOS: **Savannakhet:** près de Bauthat, 12 km de Savannakhet, 26 Jun 1929, *Poilane* 16328 (P). THAILAND: **Chanthaburi:** Krat district, Khao Kuap, 23 Dec 1929, *Kerr* 17712 (BM, K, P). **Chon Buri:** Si Racha, Nong Nam Khio, 10 Nov 1926, *Collins* 1421 (K).

*Notes.* Kostermans wrote the name ‘*Cryptocarya petelotii*’ on a herbarium sheet (*Poilane* 19930) of this species but the name was never published. This invalid name was taken up in *An Illustrated Flora of Vietnam* (Hô, 1999: 380) and in the *Checklist of Plant Species of Vietnam* (Lê, 2003: 85), again without the name being validly published.

In the original description of *Cryptocarya ferrea* var. *grandiflora*, Lecomte (1914: 148) only cites one collection for which there are three P and one K specimens available for lectotypification. The specimen P02010425 is selected here as the lectotype.

This species is morphologically very similar to *Cryptocarya ferrea*, from which it differs in having longer (> 1 mm long) and linear bracteoles, whereas the bracteoles of *C. ferrea* are shorter (< 1 mm) and elliptical. In addition, the fruits stalks are not or only slightly swollen when mature in *Cryptocarya chanthaburiensis*, whereas they are swollen when mature in *C. ferrea*.

**3. *Cryptocarya concinna*** Hance, J. Bot. 20: 79 (1882); H.Liou, Laurac. Chine & Indo-Chine 101 (1932); P.H.Hồ, Ill. Fl. Vietnam 1: 376 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 82 (2003); H.W.Li et al., Fl. China 7: 252 (2008). – TYPE: [China] Hong-Kong, Wong-Nei-Chung, 23 August 1880, *Ford 21748* (holotype BM [BM000950881]; isotypes A [A00041350], K [K000763886, K000768389]). (Fig. 2)

*Cryptocarya lenticellata* Lecomte, Notul. Syst. (Paris) 2: 333 (1913); H.Liou, Laurac. Chine & Indo-Chine 99–100 (1932); T.C.Lê, Checklist Pl. Sp. Vietnam 83 (2003); H.W.Li et al., Fl. China 7: 252 (2008). – TYPE: [Vietnam] Tonkin, Forêts du Mont Bavi, August 1887, *Balansa 2412* (lectotype P [P02010201], designated here; isolectotypes BO [2 sheets], K [K000734468], P [P02010199, P02010200]).

*Cryptocarya microcarpa* F.N.Wei, Guihaia 15: 210 (1995); H.W.Li et al., Fl. China 7: 252 (2008). – TYPE: China, Guangxi, Huanjiang County, Mulun Village, Hong Tong Valley, 14 August 1994, *Mulun exped. M 0193* (holotype IBK [IBK00190178]).

**Tree** 4–25 m tall, dbh 10–40 cm. **Bark** grey or brownish, wood brown. **Twigs** grey-brown, finely striate, densely tomentose, hairs yellowish brown. **Leaf lamina** papery, elliptic-oblong or oblong, (3–)5–13 × (1.5–)2–3(–6) cm, apex obtuse, acute or shortly acuminate, base cuneate, often unequal; pinnately veined, secondary veins 4–7 pairs, tertiary veins irregularly reticulate; upper surface sparsely hairy, more densely so on midrib, midrib sunken at base, secondary veins sunken, tertiary veins conspicuous, green-yellow in young leaves, shiny; lower surface glabrous to sparsely hairy, midrib raised, secondary veins raised, tertiary veins conspicuous. **Petiole** 4–10 mm long, slender to slightly swollen, half-terete, sparsely hairy, wrinkled. Inflorescences 2–12 cm long, sparsely hairy to velutinous, indumentum often very patchy; bracteoles triangular, 0.2–0.5 mm long, caducous. **Flowers** green to yellow or white, fragrant, hairs yellowish; perianth tube 1–1.5 mm, velutinous; perianth lobes oblong, 1.2–2 × 1–1.5 mm, apex round to acute, sparsely hairy. **Stamens** 1–1.5 mm long, hairy at base; anthers oblong, 0.8–1 mm. **Ovary** clavate; style c. 0.5 mm long; stigma inconspicuous. **Fruit** obovoid, 15–22 × 5–11.5 mm, glabrous, 12-ribbed, black or blue-black when mature. **Fruit stalk** not swollen when mature.

**Distribution.** Southern China, eastern Thailand, Laos, Cambodia, Vietnam (see Fig. 2).

**Ecology.** Evergreen broad-leaved forests, from 550–1200 m altitude.

*Phenology.* Flowering from March to August; fruiting from June to December.

*Vernacular names.* *Cay Mot*, *Re Dâp* or *Co San Coc* (Vietnamese); *Co puin linh* (Muong); *Ko mi ham* (Laotian).

*Provisional IUCN Conservation Assessment.* Least Concern.

*Use.* The wood is finely grained, heavy and durable, and is used for furniture or house construction.

*Selected additional specimens examined.* CHINA: **Hainan:** 17 Oct 1933, *Liang 63456* (K, P); Ching Mai District, Mei Maan, 25 Sep 1932, *Lei 17* (K, P); Hung Mo Shan, 12 Aug 1929, *Tsang & Fung (688) 18222* (P). **Guangdong:** Tinghushan, 1978, *Chow 78133* (K); Tinghushan, 1978, *Chow 78130* (K). **Fujian:** Yeuping Cave, 12 Aug 1924, *Chung 2994* (K). TAIWAN: **Locality unknown:** 26 Nov 1918, *Wilson 11115* (K).

VIETNAM: **Hà Tây:** Massif du Tam Dao, Aug 1931, *Pételot 5360* (P); Massif du Tam Dao, Aug 1931, *Pételot 5361* (P); Bavi, Vallée de Lankok, Massif du Tam Dao, 2 Dec 1888, *Balansa 2397* (P). **Lào Cai:** Cha-pa [Sa Pa], Massif de Nui Bien, 7 Sep 1926, *Poilane 13181* (K, P [2 sheets]). **Nghê An:** De Vinh, Ké Nhe, Sep 1917, *Chevalier 38162* (P [2 sheets]). **Nha Trang:** Massif du Hôn Bâ, 22 Sep 1918, *Chevalier 38680* (P [5 sheets]). **Hòa Bình:** *Service forestier du Tonkin* s.n. (P). **Quảng Trị:** Massif du Doug, 5 Jul 1924, *Poilane 11203* (P [2 sheets]). **Locality unknown:** Forest de Vien-yen, Dec 1918, *Chevalier 39613* (P [2 sheets]); Hâu Phuc, 20 Jan 1923, *Butreau 53* (P).

LAOS: **Savannakhet:** 20 km de la route de Savannakhet à Quảng Trị, 28 Jan 1925, *Poilane 11665* (P). **Locality unknown:** Fau Meia, Nea Hani Firo, 15 Sep 1920, *Poilane 1865* (P [2 sheets]).

CAMBODIA: **Kampot:** Mont de l'Éléphant, 1 Aug 1919, *Chevalier 349* (P [2 sheets]).

THAILAND: **Nakhon Ratchasima:** National Park, 20 Dec 1962, *Phengkhlai 598* (K).

INDOCHINA: **Locality unknown:** *Schmid 1808* (P).

*Notes.* In the original description of *Cryptocarya lenticellata* Lecomte (1913: 333), only one collection is cited for which there are three P, two BO and one K specimen available for lectotypification. The specimen P02010201 is selected here as the lectotype.

**4. *Cryptocarya densiflora*** Blume, Bijdr. 556 (1856[‘1852’]); Gamble, J. Asiatic Soc. Bengal. 75: 39–40 (1912); Ridl., Fl. Malay Pen. 3: 77 (1924); H.Liou, Laurac. Chine & Indo-Chine 98 (1932); Kosterm., Bibliogr. Laurac. 395–396 (1964); Kochummen, Tree Fl. Mal. 4: 134 (1989); P.H.Hồ, Ill. Fl. Vietnam 1: 377 (1999); H.W.Li et al., Fl. China 7: 248–249 (2008); Le Cussan & B.Hyland, Fl. Austral. 2: 157 (2007). – *Caryodaphne densiflora* (Blume) Nees, Syst. Laurac. 228–230 (1836). – TYPE: [Indonesia, Java] Mt. Salak, *Blume* s.n. (lectotype L [L0036111], designated here; isolectotypes L [L0036101, L0036102, L0036103, L0036104, L0036105, L0036107, L0036112], U [U0002692], NY [NY00355062, NY00355063, NY00355064]). (Fig. 3)

*Cryptocarya fleuryi* A.Chev. ex H.Liou, Laurac. Chine & Indo-Chine 98 (1932); Kosterm., Bull. Bot. Surv. India 10: 287 (1968); T.C.Lê, Checklist Pl. Sp. Vietnam 83 (2003). – TYPE: [Vietnam] Sud Annam, Nha Trang Prov., Massif du Hôn Bâ, 28–31 August 1918, *Chevalier* 38863 (lectotype P [P02009912], designated here; isolectotypes P [P02009911], MO [MO1295102]), **synon. nov.**

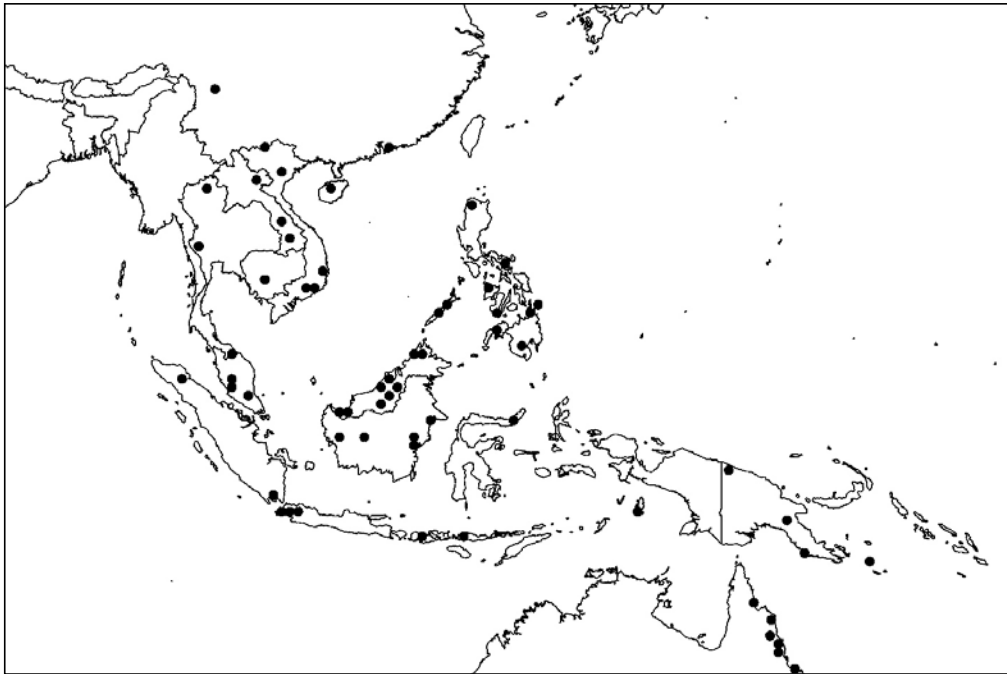
*Cryptocarya annamensis* C.K.Allen, J. Arnold Arbor. 23: 459–460 (1942); P.H.Hồ, Ill. Fl. Vietnam 1: 376 (1999). – TYPE: [Vietnam] French Indochina, Annam, Station Agricole de Blao Prov., de Haut Donaï, *Poilane* 22294 (holotype P [P00745435]; isotypes A [A00041362, A0041363, A00041364], BM [BM000950884], K [K000734455], L [L0036060], P [P00745436], US [US00099476]), **synon. nov.**

*Cryptocarya oligoneura* Kosterm., Nat. Hist. Bull. Siam Soc. 25: 34 (1975[‘1974’]). – TYPE: Peninsular Thailand, Nakhon Si Thammarat, 4 May 1955, *Thaworn* 258 (holotype C [C10011742]), **synon. nov.**

**Tree**, rarely a shrub, 3–20 m tall, dbh 5–35 cm. **Bark** (dark) grey to (reddish) brown or black, smooth or dippled, aromatic when crushed, wood (pale) yellow to white. Twigs sparsely hairy, longitudinally ridged. **Leaf lamina** leathery, elliptic to oblong, 7–21 × 3.2–14 cm, apex long-acuminate, base rounded to cuneate; triplinerved; secondary veins 2–3 pairs, pinnate, running up to  $\frac{3}{4}$  of leaf length towards the apex, tertiary veins scalariform; upper surface glabrous, midrib and secondary veins sunken, tertiary veins faint or inconspicuous, dark to yellowish green, young leaves white-green, crushed leaves aromatic; lower surface glabrous to sparsely hairy, midrib and secondary venation raised, reticulations distinctly visible, usually glaucous. **Petiole** slender, 10–16 mm long, channelled, glabrous to sparsely hairy. **Inflorescences** 2.5–8 cm long, densely hairy, hairs brown to pale yellow; bracteoles triangular, 0.5–1 mm long, caducous. **Flowers** white to (creamy-greenish) yellow to brownish; perianth tube 1.2–1.6 mm long, densely hairy; perianth lobes elliptic, 2–3 × 1–1.4 mm, apex acute, densely hairy. **Stamens** 1.4–2.8 mm long. **Ovary** clavate, c. 2 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) (depressed) globose to ellipsoid, 12–20 × 16–20 mm, glabrous, smooth or with 12 shallow longitudinal ridges and/or warty, dark purplish or (bluish) black when mature. **Stalk** slender to only slightly swollen when mature.

**Distribution.** Southern China, Laos, Cambodia, Vietnam, Thailand, Malaysia (including Sarawak and Sabah), Brunei, Indonesia (Kalimantan, Sumatra, Java, Sulawesi, Lesser Sunda Islands (Flores and Sumbawa), the Moluccas (Aru Islands) and Papua), Philippines, Papua New Guinea, northeastern Australia (see Fig. 3).

**Ecology.** Common in primary and secondary forests, sometimes along rivers, in peat swamps or *kerangas* forest. Soil: limestone, sandstone, granite or ultra-basic rock derived soils or sandy loam or clay soils, at 0–1600 m altitude.



**Fig. 3.** Distribution of *Cryptocarya densiflora* Blume (●).

*Phenology.* Flowering in January to July (October); fruiting in April to November.

*Vernacular names.* Cà đuối hoa (Vietnamese); Cây com (Muong); Kokhé (Laotian).

*Provisional IUCN conservation assessment.* Least Concern.

*Use.* The wood is used for house construction and furniture making in China and for boats in Indochina.

*Selected additional specimens examined.* VIETNAM: **Hòa Bình:** Lũng Vân, Tân Lạc, 27 Jan 1931, *Poilane 18951* (P [2 sheets]). **Lào Cai:** Cha-pa, Cho-bo, 14 Aug 1926, *Poilane 12934* (P [3 sheets]); 31 Jan 1943, *Pételot 8579* (P); Feb 1931, *Pételot 5358* (P [4 sheets]); Aug 1935, *Pételot 5445* (P [2 sheets]). **Lâm Đồng:** Bảo Lộc, Haut Donai, 22 Jan 1933, *Poilane 21763* (P, SING); Haut Donai, 3 Feb 1933, *Poilane 21809* (P [2 sheets]); Haut Donai, Station Agricole de Blao, 11 May 1933, *Poilane 22483* (P [2 sheets]); Blao, Sam Dong, 5 Apr 1953, *Schmid s.n.* (P). **Locality unknown:** Tonkin et Annam, 26 Jan 1931, *Poilane 18917* (K, P). LAOS: **Champassack:** Plateau des Bolovens, près de la Station Agricole, 20 Nov 1938, *Poilane 28489* (P [2 sheets]); Plateau des Bolovens, entre Muong Bok Kao et Phong Thani, 5 Oct 1928, *Poilane 15845* (P [3 sheets]). **Huaphan:** Sam Neua, 9 Oct 1920, *Poilane 2026* (K, P [2 sheets]). **Saravane:** Sommet du Pou Set, 24 Oct 1928, *Poilane 16128* (P [2 sheets]). CAMBODIA: **Kampong Cham:** 23 Jan 1939, *Poilane 28804* (P [4 sheets]). THAILAND: **Chiang Mai:** Chieng Saen, 25 Mar 1921, *Kerr 5133* (BM, K); Fang, 21 Feb 1969, *Van Beusekom & Phengkklai 2661* (K, P). **Narathiwat:** Sungei Kolok, Nikom Waeng, 25

Feb 1974, *Larsen & Larsen 32603* (K). **Kanchanaburi:** Kao Ri Yai, 2 Feb 1933, *Kerr 10409* (BM, K); Thong Pha Phum, Pilok, 25 Jan 2009, *Middleton et al. 4785* (K).  
INDOCHINA: **Locality unknown:** north du Tonkin et du Laos, 10 Dec 1925, *Poilane 25054* (K, P).

*Notes.* The oldest name of this species is *Laurus triplinervia* Reinw. ex Blume, but a combination in *Cryptocarya* would be too similar to the well-known *Cryptocarya triplinervis* R.Br. In line with the ICN (McNeill et al., 2012), and in particular article 53.3, example 11, I am retaining the second oldest name.

The name *Cryptocarya densiflora* is based on two gatherings, each with several duplicates (Mt. Salak, *Blume* s.n. L0036101, L0036102, L0036103, L0036104, L0036105, L0036107, L0036111, L0036112, U0002692, NY00355062, NY00355063, NY00355064) and on the collection: ‘*Ki-tjetja*’ *Reinward* s.n. (BO, L0036108, L0036109, L0036110). The duplicate in L of Mt. Salak, *Blume* s.n. (L0036111) is selected here as the lectotype.

In the original description of *Cryptocarya fleuryi* A.Chev. ex H.Liou (1932: 98) only one collection is cited for which there are two P and one MO specimens available for lectotypification. The specimen P02009912 is selected here as lectotype.

This is one of a very few species of *Cryptocarya* which can easily be identified without using a key. The combination of triplinerved leaves, with the major veins not joining at apex and which dry pale yellowish/reddish brown with a clearly paler under surface, is a unique combination of characters for this species in Thailand and Indochina.

**5. *Cryptocarya diversifolia*** Blume, *Mus. Bot.* 1 (1851). – TYPE: [Indonesia] Insulae Sumatra, in Provincia Palembang, 1834, *Pretorius* s.n. (lectotype K [K000768453], designated here; isoelectotypes NY [NY00581223], U [U0002715, U0002716]). (Fig. 4)

*Cryptocarya crassinervia* Miq., *Fl. Ned. Ind.* 1: 924 (1858); Gamble, *J. Asiatic Soc. Bengal.* 75: 41–42 (1912); Ridl., *Fl. Malay Pen.* 3: 78 (1924); Kochummen, *Tree Fl. Mal.* 4: 133–134 (1989). – *Cryptocarya griffithiana* var. *crassinervia* (Miq.) Ng, *Gard. Bull. Singapore* 57: 67 (2005). – TYPE: [Indonesia] Sumatra, Fort de Kock, *Teysmann* s.n. [1007 HB] (lectotype L [L0036097], designated here; isoelectotypes BO, L [L0036098]), **synon. nov.**

*Cryptocarya infectoria* (Blume) Miq., *Fl. Ned. Ind.* 1: 924 (1858); Kochummen, *Tree Fl. Mal.* 4: 135 (1989); P.H.Hồ, *Ill. Fl. Vietnam* 1: 378 (1999); T.C.Lê, *Checklist Pl. Sp. Vietnam* 84 (2003). – *Cylicodaphne infectoria* Blume, *Mus. Bot.* 2: 11 (1856 [‘1852’]). – TYPE: [Indonesia] Archipelago Indico, *Waitz* s.n. (lectotype L [L0036159], designated here; isoelectotypes L [L0036157, L0036158]).

*Cryptocarya obtusifolia* Merr., *Philipp. J. Sci.* 21: 344 (1922), *nom. illeg.* (non *Cryptocarya obtusifolia* Meisn., *Prodr.* 15: 508 (1864)); Kosterm., *Reinwardtia* 7:

312 (1968); P.H.Hồ, Ill. Fl. Vietnam 1: 379 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 84 (2003); H.W.Li et al., Fl. China 7: 253 (2008). – *Cryptocarya impressinervia* H.W.Li, Acta Phytotax. Sin. 17: 70 (1979); H.W.Li et al., Fl. China 7: 253 (2008). – TYPE: China, Hainan, Ng Chi Leng, 21 December 1921, *McClure 8581* (lectotype CAS [CAS0033144], designated here; isolectotypes A [A00041359, A00041360], K [K000768393], MO [MO1889406], NY [NY00581220, NY00581221], P [P02010336]), **synon. nov.**

*Cryptocarya lecomtei* Kosterm., Nat. Hist. Bull. Siam Soc. 25: 34 (1975 [‘1974’]). – TYPE: Thailand, Chanthaburi [now in Chon Buri], Si Racha, 17 January 1946, *Nakkarn 206* (holotype C [C10011743]), **synon. nov.**

**Trees** 3–23(–33) m tall, dbh 5–40 cm. **Bark** scaly to smooth, brownish to black, inner bark reddish brown; wood pale yellow, aromatic. **Twigs** stout, longitudinally ridged, velutinous, hairs yellowish to reddish brown. **Leaf lamina** thickly leathery, elliptic to lanceolate, 6–32 × (4.5–)8–15 cm, apex emarginate to rounded or acuminate, base cuneate to rounded, clearly to slightly asymmetric; pinnately veined, secondary veins 5–12 pairs, tertiary veins scalariform; upper surface bullate, glabrous except for velvet midrib and secondary veins, midrib raised at base, secondary veins sunken, curving and joining near margin, tertiary veins clear to inconspicuous, dark green, metallicly shiny; lower surface velutinous, midrib raised, secondary veins raised, tertiary veins distinct, sparsely to densely hairy, bluish green to silvery grey, glaucous. **Petiole** 7–27 mm long, swollen, velutinous, half-terete or shallowly channelled, longitudinally ridged. Inflorescences 4–16 cm long, longitudinally ridged, velutinous, hairs yellowish to reddish; bracteoles triangular to linear, 1–3 mm long, caducous. **Flowers** greenish white to (yellowish) brown; perianth tube velutinous, 2–2.4 mm long; perianth lobes elliptic to lanceolate, 3.7–4.4 × 1.5–1.8 mm, apex acute, densely hairy, greenish. **Stamens** 2.6–3.2 mm long, hairy. **Fruit** (dried) globose to ellipsoid, 20–27 × 13–16 mm, distinct to faintly ridged, sparsely hairy to glabrous, black when mature, smelling of resin. **Stalk** slender when mature.

**Distribution.** India (Andaman Islands), China (Hainan), Vietnam, Thailand, Malaysia (including Sarawak and Sabah), Brunei, Indonesia (Kalimantan and Sumatra) (see Fig. 4).

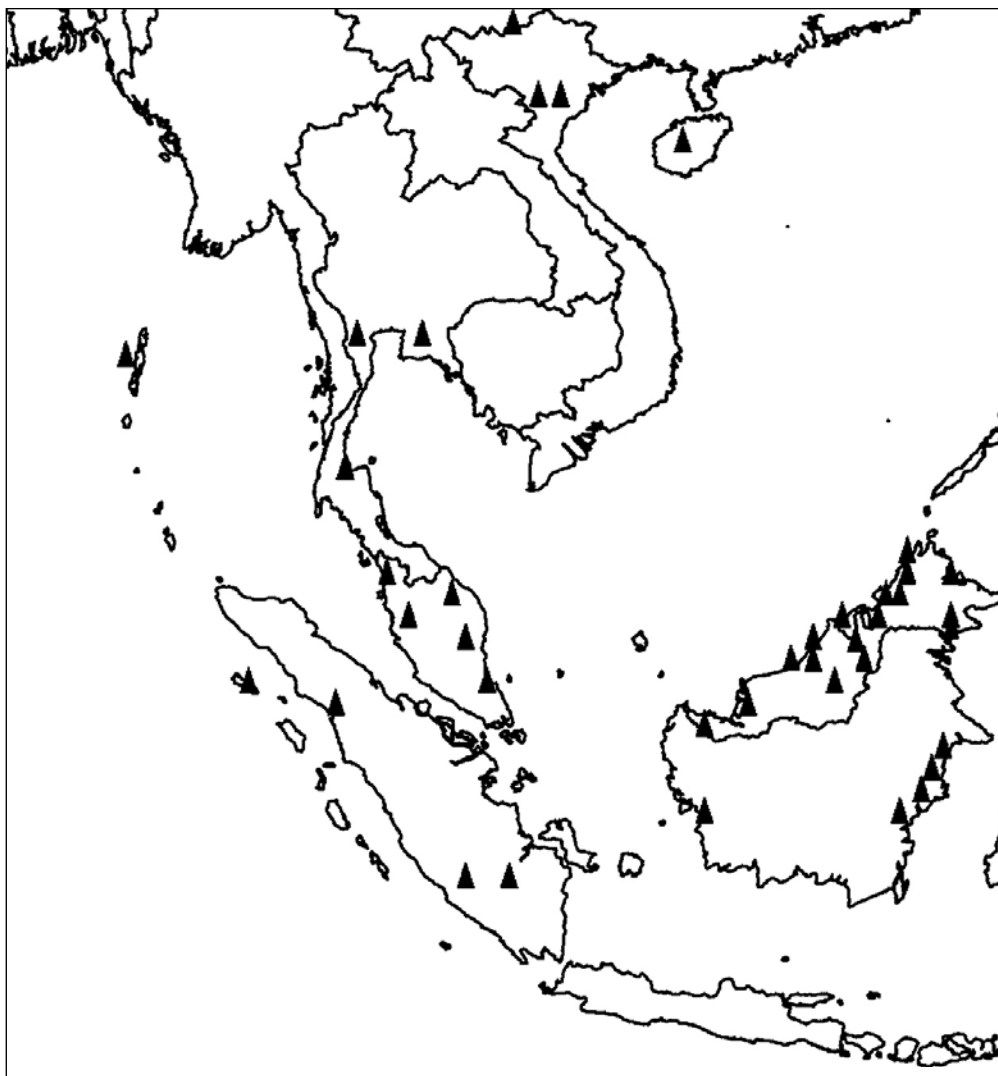
**Ecology.** Primary and secondary forest, sometimes in swamps, at 0–1000 m altitude.

**Phenology.** Flowering in (May) July to November; fruiting from January to August.

**Provisional IUCN conservation assessment.** Least Concern.

**Selected additional specimens examined.** VIETNAM: **Biên Hòa:** 18 Oct 1931, *Poilane 19972* (K). **Hà Tây:** Mont Bavi, 1888, *Balansa 2396* (P [2 sheets]). THAILAND: **Phetchaburi:** Kaeng Krachan National Park, near top of Khao Panoen Thung,





**Fig. 4.** Distribution of *Cryptocarya diversifolia* Blume (▲).

26 Jan 2005, *Williams 1101* (K, KEP). **Surat Thani:** Phanom district, Khlong Phanom National Park, 8 May 2006, *Gardner & Sidisunthorn ST 2698* (KEP).

*Notes.* Four specimens are available for lectotypification of this name (two at L (formerly U), one at K, and one at NY). The specimen at K has flowers and bracteoles attached to the inflorescence and is therefore selected here as the lectotype.

In the original description of *Cryptocarya crassinervia* Miq. (Miquel, 1858: 924), he only cites one collection for which there are two L and one BO specimens available for lectotypification. The specimen L0036097 is selected here as lectotype.

In the original description of *Cylicodaphne infectoria* Blume (Blume, 1856:

11), he only cites one collection for which there are three L specimens available for lectotypification. The specimen L0036159 is selected here as lectotype.

As the original type material in Manila was destroyed at the end of the Second World War, a lectotype needs to be selected for *Cryptocarya obtusifolia* Merr. In the original description of *Cryptocarya obtusifolia*, Merrill (1922: 344) cites one collection for which there are numerous specimens available for lectotypification. The specimen in CAS0033144 was verified by himself, so it is selected here as the lectotype.

This species is recognised as a variety of *Cryptocarya griffithiana* by Ng (2005: 67–68). In the present work, *Cryptocarya diversifolia* and *C. griffithiana* are recognised as separate species, as they differ with regard to inflorescence bract length ( $\leq 4$  mm long as opposed to  $\geq 5$  mm long), mature fruit surface texture and the amount of swelling of the fruit stalk.

**6. *Cryptocarya ferrea*** Blume, Bijdr. 557 (['1852'] 1856); Gamble, J. Asiatic Soc. Bengal. 75: 45–46 (1912); Ridl., Fl. Malay Pen. 3: 79 (1924); H.Liou, Laurac. Chine & Indo-Chine 101 (1932); Kosterm., Bibliogr. Laurac. 399 (1964); Kochummen, Tree Fl. Mal. 4: 134 (1989); P.H.Hô, Ill. Fl. Vietnam 1: 377 (1999); Ng, Gard. Bull. Singapore 57: 64–67 (2005). – TYPE: [Indonesia, Java] Cheribon Province, Mt. Tjerimai, October, *Blume* s.n. (lectotype L [L0036127], designated here; isolectotypes BO, L [L0036128]). (Fig. 5)

*Cryptocarya oblongifolia* Blume, Bijdr. 557 (1856['1852']); Kosterm. Bibliogr. Laurac. 423 (1964); P.H.Hô, Ill. Fl. Vietnam 1: 379 (1999). – *Cryptocarya ferrea* var. *oblongifolia* (Blume) Meisn., Prodr. 15: 70 (1864). – TYPE: [Indonesia, Java] Buitenzorg Prov., Bantam, Tjanjor, October–December, *Blume* s.n. (lectotype L [L0036137], designated here; isolectotypes BO, GH [GH00041376], K [K000768429], L [L0036131, L0036132, L0036133, L0036134, L0036135, L0036136], NY [NY00355071, NY00355072, NY00355073], U [U0002707]).

*Cryptocarya ochracea* Lecomte, Notul. Syst. (Paris) 2: 333–334 (1913); Lecomte, Fl. Indo-Chine 5: 145 (1914); Kosterm., Bibliogr. Laurac. 425 (1964); P.H.Hô, Ill. Fl. Vietnam 1: 379 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 85 (2003). – TYPE: [Vietnam] Cochinchine, Bien Hòa Prov. Song-Lu, February 1877, *Pierre 1620* (lectotype P [P00745428], designated here; isolectotypes A [A00041365], BM [BM001124604], K [2 sheets], MPU [MPU018667], P [P00745427, P00745429, P00745430]).

*Cryptocarya caesia* auct. non Blume: Lecomte, Fl. Indo-Chine 5: 146 (1914); Kosterm., Bibliogr. Laurac. 390 (1964); T.C.Lê, Checklist Pl. Sp. Vietnam 82 (2003).

*Cryptocarya albiramea* Kosterm., Nat. Hist. Bull. Siam Soc. 25: 33 (1975 ['1974']). – TYPE: Peninsular Thailand, Krabi, Tambon Khao Phanom, 2 April 1930, *Kerr 18815* (holotype K; isotypes BM, BO), **synon. nov.**

**Shrubs or trees** (2–)8–22 m tall, dbh 5–40 cm. **Bark** grey to reddish brown, smooth to finely scaled, wood white to yellowish. **Twigs** smooth to angular, velutinous when young, almost glabrous when mature; hairs yellowish to brown, appressed. **Leaf lamina** leathery, narrowly elliptic to oblong or lanceolate, 6–20 × 2–9 cm, apex blunt to acuminate, base cuneate to rounded, sometimes slightly oblique; pinnately veined, secondary veins 4–14 pairs, tertiary veins scalariform; upper surface glabrous with sparsely to densely hairy midrib and major veins, midrib and secondary veins sunken, tertiary veins sunken to inconspicuous, light to dark green, young leaf red, glossy; lower surface sparsely hairy with denser patches along and on veins, hairs yellowish to brown, midrib and secondary veins raised, tertiary veins inconspicuous to distinct, glaucous, grey-green. **Petiole** 6–20 mm long, slender to slightly swollen, half-terete to channelled, velutinous; hairs yellowish, appressed. **Inflorescences** 1.5–20 cm long, velutinous when flowering to almost glabrous when in fruit, greenish yellow to cream; bracteoles elliptical, < 1 mm long, seldom persistent. **Flowers** pale green to pale yellow, hairs yellowish; perianth tube 0.9–1.6 mm long, velutinous; perianth lobes elliptic, 1.5–2.5 × 1–1.6 mm, apex round to acute, velutinous to sparsely hairy. Stamens 1.3–1.7 mm long, densely hairy. **Ovary** clavate, c. 0.6 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) ovoid to ellipsoid, sometime obovoid, 11–28(–35) × 7–17.5 mm, glabrous, smooth to obscurely ridged, apex with a narrow ring like aperture, black when mature. **Stalks** swollen when mature.

**Distribution.** Southern Vietnam, Cambodia, Laos, Thailand, Malaysia (including Sabah but not yet recorded from Sarawak), Singapore, Philippines, Indonesia (Kalimantan, Sulawesi, Sumatra and Java) (see Fig. 5).

**Ecology.** Growing in rainforest, sometimes in peat swamps or bamboo forests, from 30–1200 m altitude.

**Phenology.** Flowering from December to September; fruiting from (December) January to April.

**Vernacular names.** *Cou Kirp* (Vietnamese); *Kril dam* or *Sma Krâbei* (Khmer); *May ky guan* (Laotian).

**Provisional IUCN conservation assessment.** Least Concern.

**Selected additional specimens examined.** VIETNAM: **Biên Hòa:** Định Quán, 47 km de la route nr 20, 20 Nov 1932, *Poilane 21401* (P). **Kiên Giang:** Phú Quốc, 30 Dec 1919, *Poilane 878* (P [3 sheets]).

LAOS: **Savannakhet:** Bassin du Sè-Moun, 1875–1877, *Voyage du Harmand, no. 76* (P [3 sheets]).

CAMBODIA: **Kampong Cham:** 18 Jul 1930, *Béjaud 823* (P [2 sheets]). **Kampot:** Sihanoukville, 24 Jan 1966, *Vidal 5042* (P); Nord du Kampot, 3 Feb 1928, *Poilane 14615* (BM, P [2 sheets], SING). **Locality unknown:** 1877, *Harmand (Pierre) 3179* (P [3 sheets]). THAILAND: **Chumphon:** Lang Suan District, Pang Wan, 15 Feb 1927, *Kerr 11955* (BM,

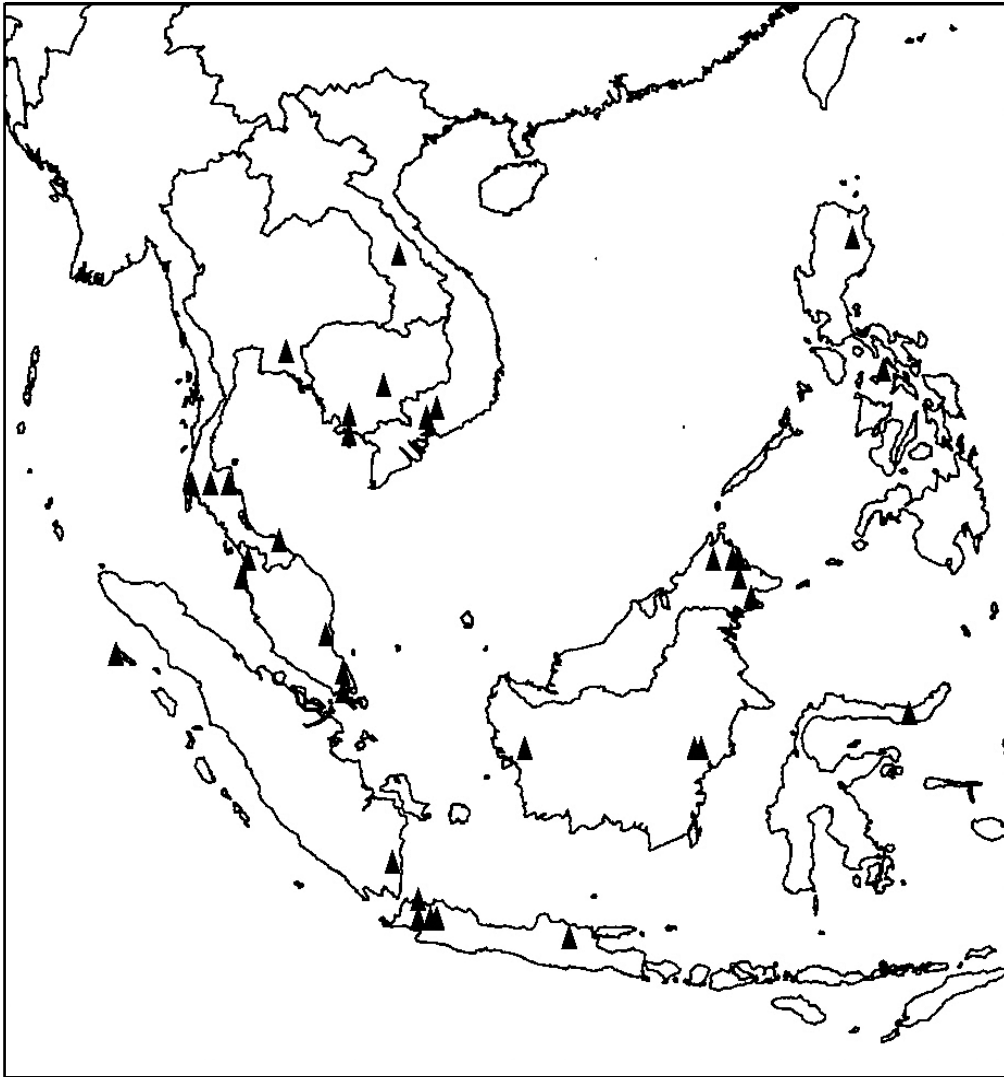


Fig. 5. Distribution of *Cryptocarya ferrea* Blume (▲).

K). **Pattani:** Bukit Pattani, 25 Jan 1931, *Put* 3632 (BM, BO, K, P). **Prachuap Khiri Khan:** Khao Tao near Hua Him, 18 Sep 1918, *Kerr* 16020 (BM, K). **Surat Thani:** Phanom District, Khao Sok National Park, 2006, *Middleton* 3993 (K); Phanom District, Khao Sok National Park, nature trail north of headquarters, 24 Mar 2005, *Gardner et al.* *ST* 1733 (K, KEP). INDOCHINA: **Locality unknown:** *Voyage du Harmand* s.n. (P).

*Notes.* There are several Blume gatherings available at L and BO for the lectotypification of *Cryptocarya ferrea* Blume. The L0036127 specimen, clearly mentioning the original collection site and including two inflorescences with mature flowers, is selected as a lectotype here.

In the original description of *Cryptocarya oblongifolia* Blume (Blume, 1856: 557), only one collection is cited for which there are numerous specimens available for lectotypification. The specimen L0036137 is selected here as lectotype.

In the original description of *Cryptocarya ochracea* Lecomte (Lecomte, 1913: 333), only one collection is cited. For the lectotypification of this name there are four specimens available at P, two at K and one each at A, BM and MPU. The specimen P00745428 is selected here as the lectotype.

This species is often difficult to distinguish from *Cryptocarya kurzii* and *C. rugulosa* when specimens are in fruit. Table 1 sets out the differences between their flowers and vegetative characters.

### 7. *Cryptocarya globularia* Kosterm. ex de Kok, sp. nov.

*Cryptocarya globularia* differs from the closely related *Cryptocarya chanthaburiensis* in having mature fruit which are globose rather than ovoid to ellipsoid and which are also much larger (17–19 × 16.5–18.7 mm, rather than 11–15 × 8–10 mm in *C. chanthaburiensis*) and which are sparsely hairy rather than glabrous. – TYPE: [Vietnam] Tonkin, May 1887, Environs de Tu-Phap, *Balansa* 2413 (holotype P [P02010448]; isotype K (photograph at BO)). (Fig. 6, 7)

**Tree** 5–6 m tall, dbh 12–20 cm. **Twigs** in cross-section angular and velutinous when young, smooth and glabrescent when old; hairs yellow, erect. **Leaf lamina** leathery, elliptic to oblong, 7.6–12 × 4–6.7 cm, apex slightly emarginate to short acuminate, base cuneate to rounded, symmetric to asymmetric; pinnately veined, secondary veins 7–9 pairs, tertiary veins scalariform; upper surface glabrous except for the midrib, secondary veins sunken, tertiary veins and reticulations sunken; lower surface sparsely hairy, midrib and secondary veins strongly raised, tertiary veins and reticulations strongly raised, glaucous. **Petiole** 8–12 mm long, slender, half-terete, glabrous to velutinous; hairs yellow, short. **Inflorescences** 6–10 cm long, glabrous to velutinous; bracteoles linear, 1–2.5 mm long. **Flowers** unknown. **Fruit** (dried) globose, 17–19 × 16.5–18.7 mm, sparsely hairy, smooth, shiny, black when mature. **Stalk** not or hardly swollen when mature.

**Distribution.** Northern Vietnam (see Fig. 7). Only known from the type.

**Ecology.** Lowland.

**Phenology.** Flowering unknown; fruiting in May.

**Provisional IUCN conservation assessment:** Data Deficient (DD). This species is only known from one collection which was collected in 1887 in a part of Vietnam which has seen significant reductions in forest cover. More fieldwork is needed to establish the extent of the remaining population(s) and their current threats. This species is therefore classified as Data Deficient.

**Table 1.** Morphological differences between *Cryptocarya ferrea* Blume, *C. kurzii* Hook.f. and *C. rugulosa* Hook.f. Fruiting specimens of these species are often impossible to name satisfactorily.

	<i>C. ferrea</i>	<i>C. kurzii</i>	<i>C. rugulosa</i>
<b>Petiole when young</b>	Channelled, velutinous	Half-terete, glabrous to velutinous	Half-terete, velutinous
<b>Bracteoles</b>	Elliptical, < 1 mm long	Linear, 1.1–1.8 mm long	Elliptic to lanceolate, (1.5–)2–3.5 mm long
<b>Outer surface of flowers</b>	Velutinous	Sparsely hairy	Sparsely hairy

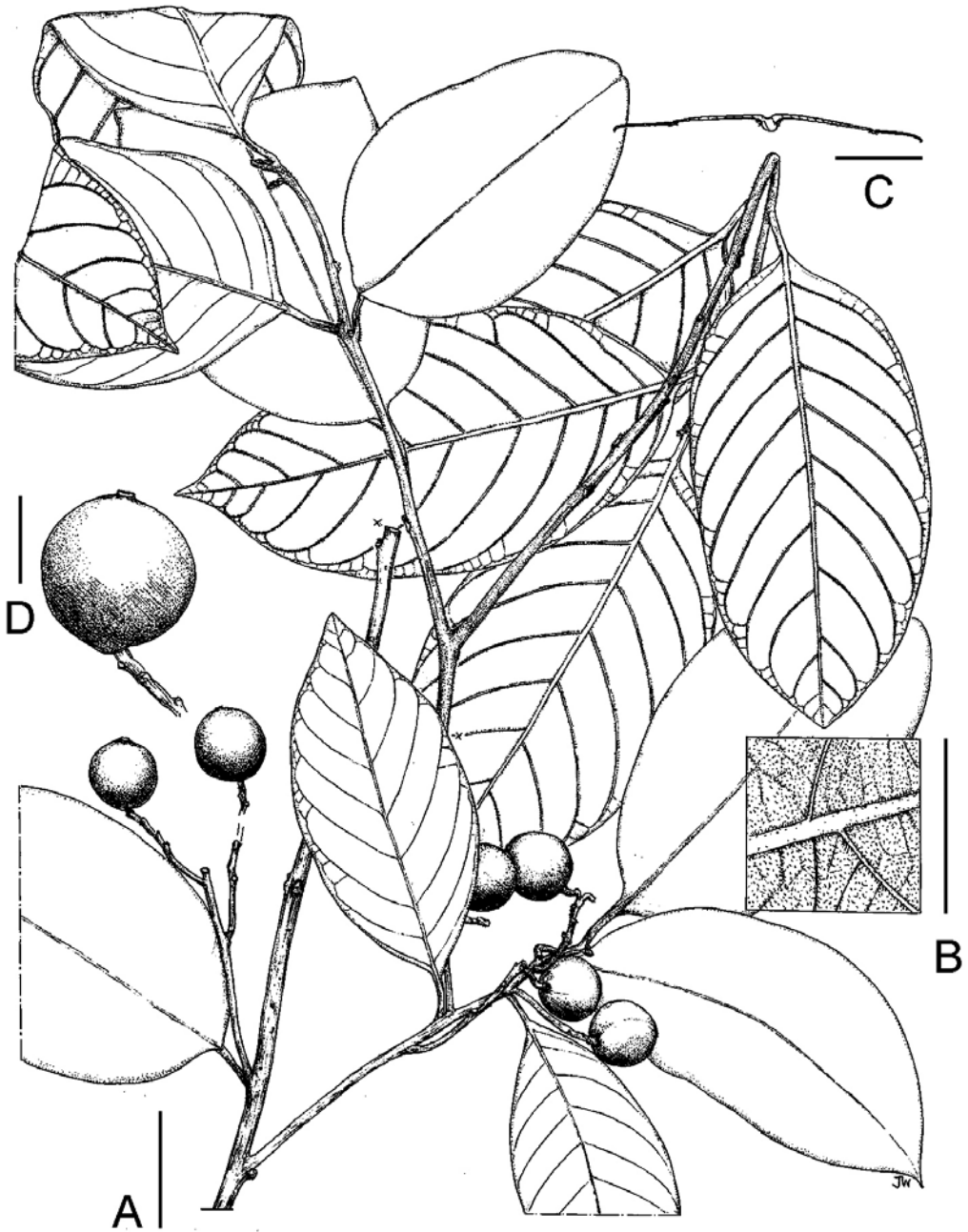
*Notes.* The name of this species has not previously been validly published. Kostermans wrote the name on two duplicates, one at P and one at K. The name has not subsequently been used by other authors. The fruits are reported to be eaten by birds.

**8. *Cryptocarya hainanensis*** Merr., Philipp. J. Sci. 21: 343–344 (1922); H.Liou, Laurac. Chine & Indo-Chine 100–101 (1932); Kosterm., Bibliogr. Laurac. 405–406 (1964); P.H.Hô, Ill. Fl. Vietnam 1: 377 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 83 (2003); H.W.Li et al. Fl. China 7: 251 (2008). – TYPE: China, Hainan, Five Finger Mountain, Ng Chi Leng, 20 December 1921, *McClure 8707* (lectotype CAS [CAS0033142], designated here; isolectotypes A [A00041352], BISH [BISH1006120], K, MO [MO1889407], P [P02010435]). (Fig. 7)

*Cryptocarya rolletii* H.Wang & H.Zhu, Guihaia 19: 197 (1999); H.W.Li et al., Fl. China 7: 251 (2008). – TYPE: China, Yunnan, Jingong, Mengsoon, 16 April 1997, *Wang et al. MS 125* (holotype HITBC (not seen); isotype IBK [IBK00190189]).

*Cryptocarya hainanensis* forma *grandifolia* H.Liou, Laurac. Chine & Indo-Chine 100–101 (1932); T.C.Lê, Checklist Pl. Sp. Vietnam 83 (2003). – TYPE: [Vietnam] Annam, Thanh Hóa Prov., Phong Y, 15 July 1920, *Poilane 1632* (holotype P [P02010434]; isotypes P [P02010436, P02010435], SING [SING0209180]).

**Tree** 7–20 m tall, dbh 25–35 cm. **Bark** smooth, brownish, wood yellow. **Twigs** smooth to slightly longitudinally ridged, sparsely hairy to glabrous, hairs whitish. **Leaf lamina** leathery, lanceolate to oblong-lanceolate, 8.5–18.5 × 2.5–7 cm, apex acuminate to long acuminate, base cuneate, slightly asymmetric; pinnately veined, secondary veins 5–7 pairs, tertiary veins reticulate; upper surface glabrous with few hairs on main secondary veins, midrib sunken at base, secondary veins sunken, tertiary veins inconspicuous, greenish, shiny; lower surface glabrous with few hairs on midrib and



**Fig. 6.** *Cryptocarya globularia* Kosterm. ex de Kok. **A.** Habit. **B.** Detail of indumentum on lower leaf surface. **C.** Cross-section of leaf showing elevation of veins. **D.** Fruit and stalk. Scale bars A = 3 cm; B, C, D = 1 cm. Drawn by Juliet Beentje from *Balansa* 2413.



**Fig. 7.** Distribution of *Cryptocarya laotica* (Gagnep.) Kosterm. (▲), *C. hainanensis* Merr. (◆), *C. pallens* Kosterm. (▼) and *C. globularia* Kosterm. ex de Kok (●).

main secondary veins, midrib raised, secondary veins raised, tertiary veins distinct. **Petiole** 5–8 mm long, slender to slightly swollen, half-terete, glabrous to very sparsely hairy, hairs yellowish to reddish. **Inflorescences** 3–10 cm long, densely hairy, hairs yellowish brown; bracteoles lanceolate-linear, c. 1 mm long. **Flowers** with perianth tube c. 1 mm long, velutinous; perianth lobes broadly ovate, c. 1 mm long, apex acute, velutinous. **Stamens** < 1 mm long, hairy at base. **Ovary** ovoid, c. 0.7 mm, style c. 0.7 mm long, stigma capitate. **Fruit** globose, 14–30 × 13–21 mm, smooth with some faint ridges, glabrous or sometimes with a few hairs at apex, shiny, black or blackish blue when mature. **Stalk** slightly swollen when mature.

**Distribution.** Southern China, Laos, Vietnam (see Fig. 7).

**Ecology.** Evergreen broad-leaved forests; 470–1600 m altitude, sometimes on limestone.



*Phenology.* Flowering from January to April; fruiting from April to November.

*Vernacular name.* *Cay gin* (Vietnamese).

*Provisional IUCN Conservation Assessment.* Endangered (EN B2ab(ii,iii)). This species is known from a small number of collections from China and Indochina. An analysis of the Extent of Occurrence (EOO) gives a conservation assessment of Least Concern, but an analysis of the Area of Occupancy (AOO) gives an assessment of Endangered. Given the small area of occupancy and the fact that intensive logging and landscape modification have occurred since some of these collections were made, this species must be considered to be endangered.

*Selected additional specimens examined.* VIETNAM: **Lạng Sơn:** Entre Dong Mô et Van-Linh, 16 Dec 1940, *Pételot 6692* (P [2 sheets]). **Ninh Bình:** Cúc Phương National Park, 15 Mar 2000, *Loc et al. P 10021* (P); Cúc Phương National Park, 20 Nov 2000, *Cuong et al. NMC 1267* (P). **Quảng Bình:** Ban Kil, 80 km de la route col 7, Vallée du Sông Gá, 27 Jan 1932, *Poilane 19953* (P). **Đà Nẵng:** Liên Chiểu près de Tourane, 17 Aug 1923, *Poilane 7583* (K, P [2 sheets]).

LAOS: **Champasak:** Phou, 3 Mar 1922, *Poilane 20310* (P). **Vientiane:** Pu Tat, Viengchan, 21 Apr 1932, *Kerr 21183* (BM, K [2 sheets], P).

INDOCHINA: **Locality unknown:** *Schmid 1821* (P).

*Notes.* As the original type material in Manila was destroyed at the end of the second world war, a lectotype needs to be selected. In the original description of *Cryptocarya hainanensis* Merr., Merrill (1922: 343) cites only one collection for which there are numerous specimens available for lectotypification. The specimen in CAS (CAS0033142) was verified by himself, so it is selected here as the lectotype.

This species is very similar to *Cryptocarya impressa* from which it differs mainly in having a bigger fruit, a lower leaf surface that is glabrous (apart from a few hairs on the veins), and a midrib that is sunken at base on the upper surface of the leaves. It is also similar to *Cryptocarya globularia*, from which it differs in having leaves that are glabrous (apart from a few hairs on the veins) and mainly glabrous fruits (see Table 2).

**9. *Cryptocarya impressa*** Miq., Fl. Ned. Ind. 1: 923–924 (1858); Gamble, J. Asiatic Soc. Bengal. 75: 42–43 (1912); Ridl., Fl. Malay Pen. 3: 78 (1924); Kochummen, Tree Fl. Mal. 4: 135 (1989). – TYPE: [Indonesia] Sumatra, Payo Kombo, '*Mohdang apie ape*' *Teysmann 1005* (lectotype U [U0002696], designated here; isolectotype BO). (Fig. 8)

*Cryptocarya impressa* var. *tonkinensis* Lecomte ex H.Liou, Laurac. Chine & Indo-Chine 99 (1932); P.H.Hộ, Ill. Fl. Vietnam 1: 377 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 83–84 (2003). – TYPE: [Vietnam] Tonkin, Prov. De Phú Cho, reserve forestiere de Chân-Mong, 21–22 April 1914, *Fleury 30111* (lectotype P [P02010233], designated here; isolectotype P [P02010089]), **synon. nov.**

**Trees** 10–33 m tall, dbh 25–45 cm. **Bark** smooth to finely fissured, grey to reddish brown. **Twigs** velutinous; hairs erect, rusty brown. **Leaf lamina** leathery, elliptic to narrowly obovate, 6–19 × 3–8 cm, apex long-acuminate, base cuneate; pinnately veined, secondary veins 5–9 pairs, tertiary veins scalariform; hairs erect, dark brown; upper surface slightly bullate, glabrous to sparsely hairy, veins velutinous, midrib slightly raised at base, secondary veins sunken, tertiary veins sunken, dark green; lower surface densely hairy, veins velutinous, midrib and secondary veins raised, tertiary veins and reticulations prominently raised, bluish grey, glaucous. **Petiole** slender, 5–15 mm long, velutinous, half-terete to shallowly channelled, smooth. Inflorescences 3–13 cm long, velutinous, hairs light rusty brown; bracteoles linear, 2.5–3.8 mm long, velutinous, caducous. **Flowers** yellow, hairs reddish; perianth tube 0.7–1.4 mm long, velutinous to sparsely hairy; perianth lobes elliptic, 1.2–2 × 0.9–1.2 mm, apex acute, velutinous. **Stamens** 1.1–1.5 mm long, densely hairy. **Ovary** clavate, c. 2 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) globose to ovoid, 15–16 × 10–15 mm, glabrous, smooth, blue when mature. **Stalk** slender when mature.

**Distribution.** Vietnam, Laos, Peninsular Malaysia and Sarawak, Singapore, Indonesia (Sumatra) (see Fig. 8).

**Ecology.** Forest and swamps at 150–900 m altitude. Sometimes over shale.

**Phenology.** Flowering from May to September; fruiting from April to July.

**Vernacular name.** *Cay hoang mang* (Vietnamese).

**Provisional IUCN conservation assessment.** Least Concern.

**Use.** The timber is used in road construction.

**Selected additional specimens examined.** VIETNAM: **Hà Tây:** Col d'Chilao, Massif du Lam Dao, 8 Aug 1933, *Poilane 22834* (P [2 sheets]). **Ninh Bình:** Cúc Phương National Park, 27 Oct 2000, *Cuong et al. NMC 1202* (K, P). **Đà Nẵng:** Col du Nuages, près Tourane, 28 Aug 1923, *Poilane 7784* (P).

LAOS: **Luangprabang:** Phou Phung, 1 Mar 1932, *Poilane 20241* (BM, K, P, SING). INDOCHINA: **Locality unknown:** *Chevalier* s.n. (P).

**Notes.** Two different Teysmann gatherings are mentioned in the original description of *Cryptocarya impressa* (Miquel, 1858). Of those, only one has a collection number and of this collection there are specimens at U, now L, and BO respectively which are available for lectotypification. As Miquel was based at U, the specimen U0002696 is selected here as the lectotype.

After studying the type material of *Cryptocarya impressa* var. *tonkinensis* Lecomte ex H.Liou at P, and given the information from the original description (as the P material no longer has any fruits), it appears that this is a small-leaved version

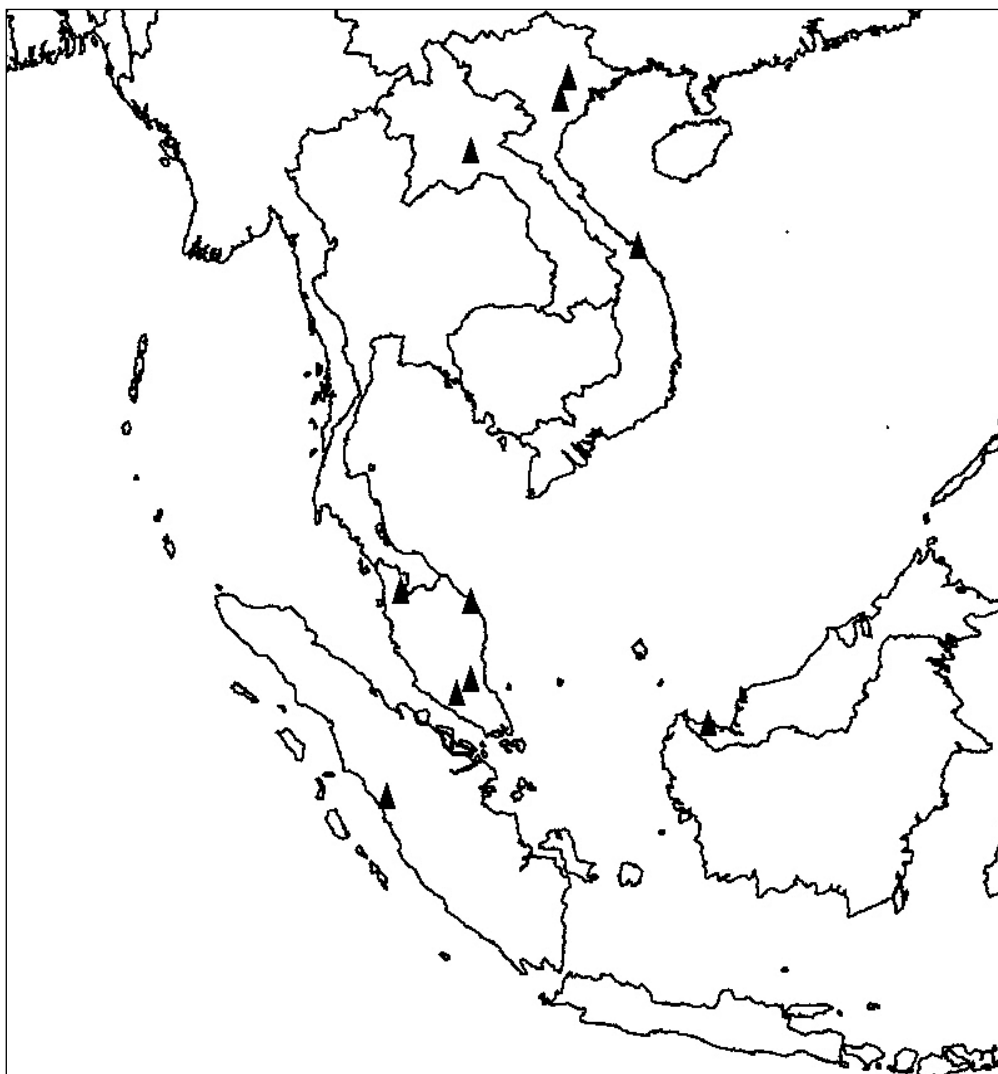


Fig. 8. Distribution of *Cryptocarya impressa* Miq. (▲).

of *C. impressa* with a young fruit. In the original description of this name, Liou Ho (1932: 99) cites only one collection. For the lectotypification of this name there are two specimens available at P. The specimen P02010233 is selected here as the lectotype.

This species seems to be absent from Thailand, southern Vietnam and Cambodia, although it is common in Peninsular Malaysia, Laos and northern Vietnam. This may be a result of the undercollection of this genus in the region.

**10. *Cryptocarya kurzii*** Hook.f., Fl. Brit. India 5: 119 (1886); Gamble, J. Asiatic Soc. Bengal. 75: 48–49 (1912); Ridl., Fl. Malay Pen. 3: 80 (1924); Kochummen, Tree Fl.

**Table 2.** Differences between *Cryptocarya chanthaburiensis* Kosterm., *C. hainanensis* Merr., *C. impressa* Miq. and *C. globularia* Kosterm. ex de Kok.

	<i>C. chanthaburiensis</i>	<i>C. hainanensis</i>	<i>C. impressa</i>	<i>C. globularia</i>
<b>Under surface of leaf</b>	Sparsely hairy to almost glabrous	Glabrous	Densely hairy	Sparsely hairy
<b>Midrib at base on the upper surface</b>	Sunken	Sunken	Raised or flattened	Sunken
<b>Indumentum on fruit</b>	Glabrous	Glabrous or sometimes with a few hairs at apex	Glabrous	Sparsely hairy
<b>Fruit shape and size (in mm)</b>	Ovoid to ellipsoid, 11–15 × 8–10	Globose, 14–30 × 13–21	Globose to ovoid, 15–16 × 10–15	Globose, 17–19 × 16.5–18

Mal. 4: 135 – 136 (1989); Ng, Gard. Bull. Singapore 57: 64–67 (2005). – *Cryptocarya wightiana* var. *griffithii* Meisn., Prodr. 15: 70 (1864). – TYPE: [Myanmar] Tenasserim, Mergui, *Griffith 1142* [*Kew Distribution 4274*] (lectotype K [K000768400], designated here). (Fig. 9)

**Shrubs or trees** 2.5–30 m tall, dbh 10–25 cm. **Bark** smooth to slightly scaly, grey-black to reddish brown, wood yellow to pinkish white. **Twigs** velutinous when young, becoming more glabrous when older, hairs yellow to brown. **Leaf lamina** thinly leathery, elliptic to lanceolate, 5–18 × 2.2–6.5 cm, apex round to acuminate, base cuneate or rounded, symmetrical; pinnately veined, secondary veins 4–9 pairs, tertiary veins scalariform; upper surface glabrous, except hairs on midrib, midrib sunken, secondary veins sunken, tertiary veins inconspicuous, bright to darkish green, young leaves salmon pink, dull or shiny; lower surface sparsely hairy to almost glabrous, hairs yellow, midrib and secondary veins raised, tertiary veins faint below, silvery to greenish grey or bluish. **Petiole** slender to slightly swollen, 10–13 mm long, half-terete, glabrous to velutinous, hairs yellowish, appressed. **Inflorescences** 3–12 cm long, velutinous to sparsely hairy, greenish yellow; bracteoles linear 1.4–1.8 mm long, caducous. **Flowers** pale yellow to yellowish brown or pale greenish yellow, hairs yellowish; perianth tube 0.8–1.2 mm long, velutinous to sparsely hairy; perianth lobes elliptic, 1.6–1.8 × 0.8–1.3 mm, apex round to acute, sparsely hairy. **Stamens** 1.2–1.4 mm long, densely hairy. **Ovary** clavate, c. 0.6 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) ovoid to ellipsoid, 18–21 × 10–15 mm, smooth, glabrous

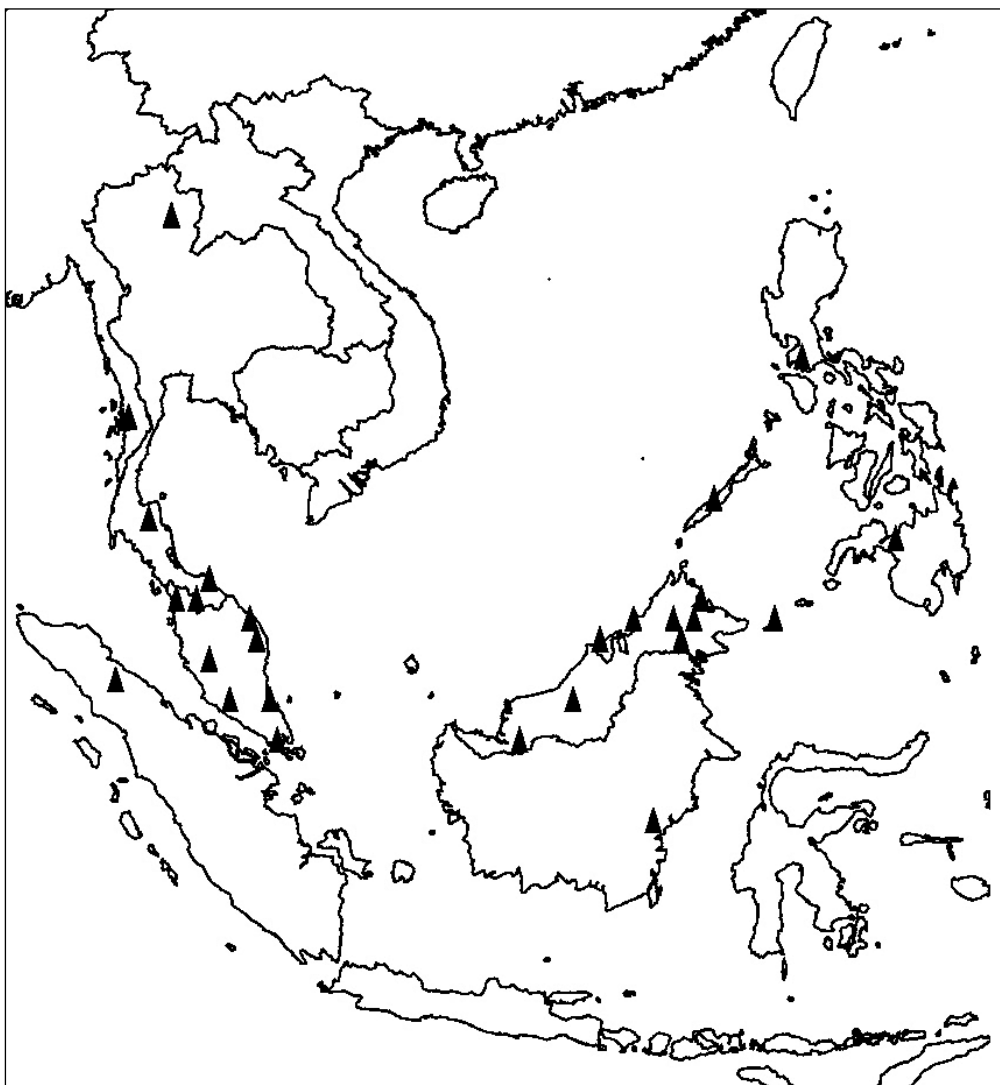


Fig. 9. Distribution of *Cryptocarya kurzii* Hook.f. (▲).

when mature, sparsely hairy when young, apex with a wide ring-like aperture, purple blue or black when mature. Stalk swollen when mature, up to 3.3 mm in diameter.

*Distribution.* Southern Myanmar, Thailand, Malaysia (including Sabah and Sarawak), Singapore, Brunei, Indonesia (Kalimantan and Sumatra), Philippines (see Fig. 9).

*Ecology.* Growing in primary to secondary forests, often in wet localities, at 0–610 m altitude. Sometimes over granite.

*Phenology.* Flowering from August to May; fruiting from July to May.

*Vernacular name.* *Hu ban bai leg* (Thai).

*Provisional IUCN conservation assessment.* Least Concern.

*Selected additional specimens examined.* THAILAND: **Phangnga:** Nai Chong, 11 May 1973, *Geesink & Santisuk 5356* (K). **Nan:** Pua, Doi Phu Kha National Park, 14 Nov 2001, *Srisanga 2245* (SING). **Narathiwat:** Kok Dan Peat Swamp Forest, 17 Feb 1984, *Niyomdham 786* (K). **Satun:** La-ngu District, Tarutao National Park, 18 Feb 2005, *Gardner et al. ST 1556* (K, KEP). **Trang:** Khao Chong, 15 Apr 1969, *Phusomsaeng 154* (K, P). **Yala:** Than To, Ban Chulaphon Phatthana, 13 Feb 2004, *Middleton 3046* (K).

*Notes.* Hooker (1886: 119) bases this name on the description of *Cryptocarya wightiana* var. *griffithii* Meisn. (Meissner, 1864: 70). In this earlier description two specimens are cited: Tenasserim, Mergui, *Griffith 1142 [Kew Distribution 4274]* and Canarâ, *Stocks* s.n. (v.s. in Hooker herbarium). Meissner (1864: 70) states that he had not seen the later specimen, and Hooker himself does not mention it in his description. I could not find the *Stocks* specimen in K under the obvious names. Given that a lectotype should be chosen, I select the *Griffith 1142 [Kew Distribution 4274]* here as the lectotype as it is the only one that I know still to be extant.

**11. *Cryptocarya laotica*** (Gagnep.) Kosterm., Bull. Bot. Surv. India 10: 287 (1968); P.H.Hô, Ill. Fl. Vietnam 1: 378 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 84 (2003). – *Kerrdora laotica* Gagnep., Notul. Syst. (Paris) 14: 31 (1950). – TYPE: Laos, Muang-awn, Chieng-kwang, 6 April 1932, *Kerr 20939* (lectotype P [P00745432], designated here; isolectotypes BM [BM000950885], K [2 sheets]). (Fig. 7)

**Tree** 1.8–9 m tall, dbh up to 30 cm. **Twigs** angular, finely striate, sparsely hairy, hairs yellowish brown. **Leaf lamina** papery, elliptic to (narrowly) lanceolate, 7–18 × 1.2–6 cm, apex obtuse to acuminate, base cuneate, rarely asymmetric; pinnately veined, secondary veins 6–8 pairs, tertiary veins reticulate; upper surface glabrous except for a few hairs on the midrib and main secondary veins, midrib sunken at base, secondary veins sunken or rarely raised, tertiary veins faint; lower surface glabrous, midrib raised, secondary veins raised, tertiary veins conspicuous. **Petiole** 3–10 mm, wrinkled, slender to slightly swollen, half-terete, sparsely hairy, hairs yellowish. **Inflorescences** 1.5–6 cm long, densely hairy to velutinous; bracteoles triangular, 4–7.5 mm long, persistent. **Flowers** with yellowish hairs; perianth tube 0.5–1.5 mm long, velutinous; perianth lobes elliptic, 1.8–2 × 1–1.1 mm, apex acute, sparsely hairy. **Stamens** 1–1.5 mm long, densely hairy. **Ovary** clavate, c. 1.5 mm long; style c. 1 mm long; stigma inconspicuous. **Fruit** (dried) ellipsoid, 13–17 × 7–10 mm, smooth, glabrous. **Stalk** not or slightly swollen when mature.

*Distribution.* Laos, central Thailand, northern and central Vietnam (see Fig. 7).

*Ecology.* Evergreen broad-leaved forests over granite-derived soils, at about 900–2000 m altitude.

*Phenology.* Flowering from November to April; fruiting from December to May.

*Provisional IUCN conservation assessment.* Endangered (EN B2ab(ii,iii)). This species is known from a small number of collections from Indochina. An analysis of the Extent of Occurrence (EOO) give a conservation assessment of Least Concern, but an analysis of the Area of Occupancy (AOO) gives an assessment of Endangered. Given its small area of occupancy and that intensive logging and landscape modification has occurred since most of the collections were made, it must be considered endangered.

*Additional specimens studied.* VIETNAM: **Bắc Giang:** Route du Hanoi à Lang Son, Mar 1933, *Pételot 5245* (P [2 sheets]); ibidem, 10 Dec 1946, *Poilane 32686* (P). **Kon Tum:** Massif du Ngok Guga, près de Đắk Tô, 27 Nov 1946, *Poilane 35663* (P).

THAILAND: **Tak:** Muang sub district, Taksin Maharat National Park, *Pooma et al. 3941* (KEP).

*Notes.* This species is distinctive by having reticulate tertiary venation which is prominent on the glabrous underside of the leaves. In Indochina and Thailand, it shares this character only with *Cryptocarya concinna* and some specimens of *C. sublanuginosa*, although the character is more common in Peninsular Malaysia (De Kok, in press).

**12. *Cryptocarya nitens*** (Blume) Koord. & Valeton, Meded. Lands Plantentuin 68: 220–223 (1904); Kochummen, Tree Fl. Mal. 4: 136 (1989). – *Tetranthera nitens* Blume, Mus. Bot. 1: 375 (1851). – TYPE: [Indonesia] Java, *Blume* s.n. (lectotype L [L0036214], designated by De Kok (2015); isolectotype L [L0036213]). (Fig. 10)

*Trees* 8–30 m tall, dbh 15–30 cm. *Bark* smooth or scaly, grey-brown, inner bark brownish, wood cream coloured with spicy odour. *Twigs* strongly angular when young, velutinous, hairs brown. *Leaf lamina* leathery, elliptic to lanceolate, ovate to obovate (6–)7.5–23 × (2.2–)3.5–10.5 cm, apex acute to acuminate, base cuneate or rounded, slightly unequal; pinnately veined, secondary veins 5–10 pairs, tertiary veins scalariform; upper surface glabrous sometimes with hairs on midrib and secondary veins, midrib sunken, secondary veins sunken, tertiary veins faint, shiny, (light to yellow) green, drying greenish brown; lower surface glabrous sometimes with hairs on midrib and secondary veins, midrib and secondary veins raised, tertiary veins faint, pale green, glaucous. *Petiole* slender, 10–30 mm long, velutinous. *Inflorescences* 10–15 mm long, velutinous, greenish white; bracteoles triangular 0.5–0.6 mm long, caducous. *Flowers* pale green to yellow or white, hairs yellowish; perianth tube 1.2–1.6 mm long, velutinous; perianth lobes elliptic to lanceolate, 1.3–1.8 × 0.8–1 mm, apex acute, velutinous, greenish white. *Stamens* 1.2–1.6 mm long, hairy, dull greenish yellow, anther bright yellow orange. *Ovary* clavate, 1–1.2 mm, glabrous; style 1.2–1.6 mm long, linear; stigma inconspicuous. *Fruit* (dried) globose, 8–16 mm diameter, shallowly ridged, sparsely hairy, black when mature. *Stalk* slender when mature.



**Fig. 10.** Distribution of *Cryptocarya nitens* (Blume) Koord. & Valetton (●) and *C. rugulosa* Hook.f. (▲).

*Distribution.* Peninsular Thailand, Malaysia, Singapore, Indonesia (Sumatra and Java), Australia (Christmas Island) (see Fig. 10).



*Ecology.* Riversides in open mixed (including bamboo) hill to lowland forest, growing on limestone, sandstone and granite, at 0–250 m altitude.

*Phenology.* Flowering from March to October; fruiting from January to November.

*Provisional IUCN conservation assessment.* Least Concern.

*Selected additional specimens examined.* THAILAND: **Nakhon Si Thammarat:** Tha Sala, Khao Luang National Park, *Gardner & Tippayasri ST 1660* (KEP). **Ranong:** Muang Len, 13 Jan 1966, *Hansen & Smitinand 11941* (K). **Yala:** Than To, Ban Chulaphon Phatthana, 9 Feb 2004, *Middleton 2875* (K).

*Notes.* See De Kok (2015) for additional information on this species.

**13. *Cryptocarya pallens*** Kosterm., Nat. Hist. Bull. Siam Soc. 25: 34–35 (1975 [‘1974’]). – TYPE: Northern Thailand, Chiang Mai, Doi Angka [Doi Inthanon], Mae Ka Pak drainage, 24 April 1931, *Put 3767* (holotype K; isotypes BM [BM001124603], BO, P [P00745426]). (Fig. 7)

*Cryptocarya shoreifolia* Kosterm., Nat. Hist. Bull. Siam Soc. 25: 36 (1975 [‘1974’]), as ‘*shoreaefolia*’. – TYPE: Thailand, Phitsanulok, Tung Salaeng Luang, 15 February 1964, *Hansen et al. 11178* (holotype BKF (not seen); isotypes C [C10013574, C10013575], K, L), **synon. nov.**

**Tree** 7–20 m tall. **Twigs** striate, dark brown, covered with short, erect hairs. **Leaf lamina** leathery, lanceolate to elliptic, 6–16(–24) × 2.2–5.8(–8) cm, apex emarginate to acuminate, base cuneate, symmetric to slightly asymmetric; pinnately veined, secondary veins 5–8(–14) pairs, tertiary veins scalariform; upper surface glabrous except for a few erect hairs on midrib, midrib sunken at base, secondary veins sunken, tertiary veins and reticulations sunken or inconspicuous; lower surface sparsely hairy with hairs erect, midrib raised, secondary veins raised, tertiary veins and reticulations prominently raised, glaucous. **Petiole** 9–15 mm long, slender or only slightly swollen, smooth, half-terete to channelled, sparsely to densely hairy, hairs rusty brown to pale yellowish. **Inflorescences** 3–8 cm long, velutinous to sparsely hairy, hairs yellow; bracteoles round, 0.1–0.2 mm long, caducous. **Flowers** with perianth tube 0.9–1.3 mm long, velutinous; perianth lobes lanceolate, 1.1–1.7 × 0.8–0.9 mm, apex acute, sparsely hairy, sometimes velutinous. **Stamens** 1–1.5 mm long, hairy at base. **Ovary** clavate, c. 1 mm long; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) ellipsoid, 13.5–22 × 6.7–13 mm, smooth or with faint ridges, glabrous, deep violet when mature. **Stalk** not or slightly swollen when mature.

*Distribution.* Northern to central Thailand (see Fig. 7).

*Ecology.* Evergreen forest, between 200–1350 m altitude.

*Phenology.* Flowering from January to April; fruiting from January to June.

*Vernacular names.* *Māk Ki Ai* or *Salawt* (Thai).

*Provisional IUCN conservation assessment.* Endangered (EN B2ab(ii,iii)). This species is known from a small number of collections from Thailand. An analysis of the Extent of Occurrence (EOO) give a conservation assessment of Least Concern, but an analysis of the Area of Occupancy (AOO) gives an assessment of Endangered. Given the small area of occupancy and that intensive logging and landscape modification has occurred since the collections were made, it must be considered to be endangered.

*Additional specimens examined.* THAILAND: **Chanthaburi:** Kao Sabap, 5 Jan 1930, *Kerr 17963* (BM, K). **Chiang Mai:** Mē Kā Pak drainage, 9 Jun 1939, *Garrett 1146* (K [2 sheets], P); Pang Tawn, 29 Apr 1931, *Put 3814* (BM, K [2 sheets], P). **Lampang:** Chē Saun, 1921, *Kerr 4747* (BM, K), 31 Jan 1921, *Kerr 4746* (BM, K). **Nakhon Ratchasima:** Pak Thong Chai, 26 Apr 1968, *Phengnaren & Smitinand 647* (K). **Petchabun:** Kao Keo Kang, Dan Sai, 10 Apr 1922, *Kerr 5791* (BM, K [2 sheets], P) and *5791A* (BM, K).

**14. *Cryptocarya pustulata*** Kosterm., Nat. Hist. Bull. Siam Soc. 25: 35 (1975 [‘1974’]). – TYPE: Thailand, Chanthaburi, 27 February 1956, *Sangkha Chand 615* (lectotype C [C10013570], designated here; isolectotype C [C10013569]). (Fig. 11)

**Tree** 1.6–15 m tall, dbh 15–20 cm. **Twigs** smooth to slightly longitudinally ridged, velutinous when young, sparsely hairy to glabrous when mature, hairs yellowish. **Leaf lamina** leathery to membranous, lanceolate, sometimes obovate, 9–23 × 2–7.5 cm, apex round to acuminate, base rounded to slightly cuneate, slightly asymmetric; pinnately veined, secondary veins 6–10 pairs, tertiary veins scalariform; upper surface glabrous with few hairs on midrib and main secondary veins, midrib and main secondary veins sunken, tertiary veins visible; lower surface sparsely hairy, midrib raised, secondary veins curving and raised, tertiary veins visible, glaucous. **Petiole** 6–13 mm long, slightly swollen, half-terete to channelled, velutinous to glabrous when more mature, hairs yellowish. Inflorescences 1.8–12 cm long, velutinous to sparsely hairy; bracteoles elliptic to linear, < 1 mm long, often persistent. **Flowers** yellow, scented, hairs yellowish; perianth tube 0.3–2 mm long, velutinous; perianth lobes elliptic, 0.6–1.3 × 0.6–1.5 mm, densely to sparsely hairy, apex acute. **Stamens** 1–1.3 mm long, hairy. **Ovary** clavate, glabrous; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried young fruits only) ellipsoid when very young, becoming more globose when older, smooth, hairy, glabrescent when older. **Stalk** in mature state unknown.

*Distribution.* Southeastern and northern Peninsular Thailand (see Fig. 11).



Fig. 11. Distribution of *Cryptocarya pustulata* Kosterm. (●) and *C. sublanuginosa* Kosterm. (▲).

*Ecology.* Growing in evergreen lowland forest or in bamboo forest, sometimes along river banks, at 150–1300 m altitude.

*Phenology.* Flowering from February to March; fruiting starting in April.

*Vernacular name.* Mang Kat (Thai).

*Provisional IUCN conservation assessment:* Endangered (EN B2ab(ii,iii)). This species is only known from seven collections, made between 1926 and 1956. An analysis of the Extent of Occurrence (EOO) give a conservation assessment of Near

Threatened, but an analysis of the Area of Occupancy (AOO) gives the assessment of Endangered. As this part of Thailand has seen significant reduction in forest cover, and given the small area of occupancy, this species must be considered to be endangered.

*Additional specimens examined.* THAILAND: **Surat Thani:** Pak Sai, 31 Mar 1927, *Kerr 12496* (BM, K, P); Kaw Zao, 15 Apr 1927, *Kerr 12749* (BM [2 sheets]), *Kerr 12744* (BM [2 sheets]); ibidem, 18 Apr 1927, *Kerr* s.n. (BM); ibidem, 31 Dec 1926, *Kerr 11200* (BM [2 sheets], SING). **Chumphon:** Pato District, Lars Quan, 27 Feb 1927, *Kerr 12144* (BO, BM, K, P).

*Notes.* The fruits are only known from very immature collections. They are hairy and ellipsoid at first but very soon become glabrous and globose. They have no ridges during this process and the stalk is not swollen when young.

In the original description, Kostermans (1975: 35) did not distinguish which of the two sheets at C is the holotype of this name. I have therefore selected the specimen C10013570 as the lectotype.

**15. *Cryptocarya rugulosa*** Hook.f., Fl. Brit. India 5: 118 (1886); Gamble, J. Asiatic Soc. Bengal. 75: 43–44 (1912); Ridl., Fl. Malay Pen. 3: 78–79 (1924); Kochummen, Tree Fl. Mal., 4: 136 (1989). – TYPE: [Malaysia] Malacca, 26 June 1867, *Maingay 1262* (lectotype K [K001084564], designated here; isolectotypes GH [GH00041377], K [K001084565]). (Fig. 10)

**Trees** (3–)12–40 m tall, dbh 25–35 cm. **Bark** smooth to dippled and/or scaly, reddish-brown; wood (pale) yellow white to brown, aromatic. **Twigs** round in cross-section or slightly angular, velutinous when young, flaking off in patches when old, hairs yellowish. **Leaf lamina** leathery, elliptic to lanceolate or ovate, 4–14(–20) × 2–5(–6.5) cm, apex round to (long) acuminate, base cuneate, even to slightly oblique; pinnately veined, secondary veins 3–13 pairs, tertiary veins scalariform; upper surface glabrous with sparsely to densely hairy midrib, hairs yellowish, midrib sunken, secondary veins sunken, tertiary veins sunken or inconspicuous, glossy, dark green, young leaves red; lower surface sparsely hairy, veins densely hairy, hairs yellowish-reddish, secondary and tertiary veins raised, grey green, faintly glaucous. **Petiole** slender to slightly swollen, 7–15 mm long, half-terete, velutinous, hairs yellowish. **Inflorescences** 1.5–10 cm long, velutinous to densely hairy, hairs brown to yellowish; bracteoles elliptic to lanceolate, (1.5–)2–3.5 mm long, persistent. **Flowers** yellowish brown to pale yellow; perianth tube 1.2–2 mm long, velutinous; perianth lobes elliptic, 1.2–2 × 1–1.3 mm, sparsely hairy, apex acute. **Stamens** 1.2–1.5 mm long. **Ovary** clavate, 1–1.2 mm; style 1–1.2 mm long. **Fruit** (dried) ellipsoid to obovoid or ovoid, 17–26 × 9.5–15.5 mm, smooth or with faint ridges, glabrous with sometimes some hairs at apex, apex with a wide ring-like aperture, purple to black when mature. **Stalk** swollen when mature.

*Distribution.* Peninsular Thailand, Malaysia (including Sabah and Sarawak), Indonesia (Sumatra) (see Fig. 10).

*Ecology.* Growing in primary or secondary forests, often in peat swamps or in sandy soil, sometimes over shale, ultrabasic or granite, at 15–650 m altitude,

*Phenology.* Flowering from January to March (July); fruiting all year around.

*Provisional IUCN conservation assessment.* Least Concern.

*Selected additional specimens examined.* THAILAND: **Narathiwat:** freshwater swamp-forest south of Narathiwat, 9 Mar 1974, *Larsen & Larsen 33126* (K).

*Notes.* The type material ‘*Malacca, 26 June 1867, Maingay 1262*’ at Kew contains two sheets. The specimen on the first sheet has both flowers and fruits, whereas the specimen on the second sheet does not have flowers and only one immature fruit. The specimen on the first sheet (K001084564) is selected here as the lectotype.

**16. *Cryptocarya sublanuginosa*** Kosterm., Nat. Hist. Bull. Siam Soc. 25 (1975[‘1974’]) 36. – TYPE: Laos, Viengchan [Vientiane], Muang Ban, 28 April 1932, *Kerr 21285* (holotype K; isotypes BM [BM001124602], BO, P [P02010455]). (Fig. 11)

**Tree** 8–15 m tall, dbh 10–20 cm. **Bark** brown. **Twigs** striate, densely hairy when young, glabrous when mature; hairs erect, yellowish. **Leaf lamina** leathery, lanceolate to rarely elliptic or ovate, 5–20 × 1.4–6.6 cm, apex acute to shortly acuminate, base cuneate, symmetric to asymmetric; pinnately veined, secondary veins 6–10 pairs, straight but curved near margin, tertiary veins scalariform to reticulate; upper surface glabrous with a few hairs on midrib, midrib sunken at base, secondary veins sunken or inconspicuous, tertiary veins faint to inconspicuous; lower surface glabrous except for occasional hairs along major veins, midrib and secondary veins with a few hairs, midrib and secondary veins raised, tertiary veins distinct, glaucous. **Petiole** 8–15 mm long, slender to slightly swollen, half-terete, densely hairy to sparsely hairy. **Inflorescences** 6–14 cm long, velutinous to sparsely hairy; bracteoles linear, 1–2.5 mm long. **Flowers** with white to yellowish hairs; perianth tube 0.8–1 mm long, velutinous to sparsely hairy; perianth lobes elliptic, 1.8–2 × 0.8–1 mm, apex acute, velutinous to sparsely hairy. **Stamens** 1.2–2 mm long, densely hairy. **Ovary** clavate, c. 1.5 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) ellipsoid, 8.5–18 × 6.4–10.5 mm, smooth, glabrous, black when mature. **Stalk** not swollen when mature.

*Distribution.* Southeastern Thailand, Cambodia, Laos, Vietnam (see Fig. 11).

*Ecology.* Growing in forest on clay soil at 25–200(–1000) m altitude.

*Phenology.* Flowering from January to April; fruiting from November to January.

*Vernacular names.* *Cây bông gà* (Vietnamese); *Mbây Ky Quan* (Laotian).

*Provisional IUCN Conservation Assessment.* Endangered (EN B2ab(ii,iii)). This species is known from a small number of collections from Indochina. An analysis of the Extent of Occurrence (EOO) give a conservation assessment of Least Concern, but an analysis of the Area of Occupancy (AOO) gives an assessment of Endangered. Given the small area of occupancy and that intensive logging and landscape modification has occurred since the collections were made, it must be considered to be endangered.

*Additional specimens examined.* VIETNAM: **Bà Rịa-Vũng Tàu:** Montibus ad Baria Galicea, 1867, *Pierre 3598* (BO, BM, K, P). **An Giang:** Arboretum de Trambom, 9 Dec 1922, *Poilane 174* (P); ibidem, 18 Mar 1931, *Poilane 19139* (P [5 sheets]). **Quảng Trị:** Massif de Đông Ché, 21 May 1924, *Poilane 10503* (P [2 sheets]).

CAMBODIA: **Kampot:** Mont de l'Éléphant, 16 Aug 1919, *Poilane 377* (K, P). **Locality unknown:** Mulu Prey, Jan 1876, *Harmand 268* [*Pierre 3178*] (BM, K).

LAOS: **Attapeu:** Bassin d'Attapeu, 1875-1877, *Harmand 1287* (BO, P [2 sheets]). **Savannakhet:** 20 km de la route de Savannakhet à Quâug Tri, 21 Jan 1925, *Poilane 11714* (P); 28 Jan 1925, *Poilane 11797* (BO, P); Bassin du Sè-Moun, 1875-1877, *Harmand 268* (P [3 sheets]).

THAILAND: **Chon Buri:** Sriracha Forest, 6 Apr 1923, *Collins 865* (K); ibidem, 23 Nov 1927, *Collins 1975* (BM, K).

### Dubious names

#### *Cryptocarya godefroyana*

On the sheet of *Godefroy-Lebeuf 287* (Cambodia, 'Sud Ouest du Grand Lac') housed at Kew, Kostermans attached an identification slip in 1972 with the name '*Cryptocarya godefroyana*'. As far as I have been able to determine, this name has never been validly published. This is not unknown for unpublished names to be found on Kostermans's identification slips. The specimen is sterile and does not resemble any known *Cryptocarya* from the region. One other suggestion written on the specimen, in an older hand than Kostermans's, is *Roydsia* Roxb., now a synonym of *Stixis* Lour. After checking specimens in Kew's herbarium, this identification was also rejected. I do not believe that this specimen represents a *Cryptocarya* and it most likely belongs to a different genus in the Lauraceae.

### Excluded names

*Cryptocarya chinensis* (Hance) Hemsl., J. Linn. Soc., Bot. 26: 370 (1891); P.H.Hô, Ill. Fl. Vietnam 1: 376 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 82 (2003); H.W.Li et al. Fl. China 7: 249 (2008). – *Beilschmiedia chinensis* Hance, J. Bot. 20: 79–80 (1882).[China] Hong-Kong, Valle Su-kun-pu, May 1881, *Ford (Herb. Propr.) 21705* (holotype BM (not seen); isotype MO [MO1889412]).

This species is endemic to southern China (Guangdong, Guangxi, Hainan, Sichuan and Taiwan). It was also reported to occur in Vietnam (Hộ, 1999: 376; Lê, 2003: 82), but I could not find any specimens to support this claim. The species is morphologically very close to *Cryptocarya densiflora*, from which it differs in having a smaller fruit that is clearly 12–15 ribbed, a leaf blade that is smaller and narrower, and glabrous twigs and petioles.

*Cryptocarya chingii* W.C.Cheng, Contr. Biol. Lab. Sci. Soc. China., Bot. Ser. 10: 111–113 (1936); P.H.Hộ, Ill. Fl. Vietnam 1: 376 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 82 (2003). – TYPE: [China] Cherriang, Shunshi, south of Ping Yang, 10 July 1924, *Ching 2055* (holotype PE; isotypes BO, E [E00386424], P [P02010170], US [US00099482]).

This species has been recorded for Vietnam (Hộ, 1999: 376; Lê, 2003: 82). However, I have not seen any material from Vietnam to support this, although, given its distribution in southern China, it may occur in northern Vietnam.

*Cryptocarya cuneata* Blume, Bijdr. 558 (1826); T.C.Lê, Checklist Pl. Sp. Vietnam 85 (2003). = ***Dehaasia cuneata*** (Blume) Blume, Rumphia 1: 164, t. 46 (1837). – TYPE: [Indonesia, Java] Nusae Kambaugae, November, *Blume s.n.* (type L (**L0036313**)).

*Cryptocarya maclurei* Merr., Philipp. J. Sci. 21: 344 (1922); H.Liou, Laurac. Chine & Indo-Chine 99 (1932); P.H.Hộ, Ill. Fl. Vietnam 1: 378 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 84 (2003). – TYPE: China, Hainan, Ng Chi Leng, 22 Dec 1921, *McClure 8508* (holotype PNH (not seen, presumably destroyed); isotypes A [A00041357, A00041358], BISH [BISH1006122], K [K000768391], MO [MO1889405], NY [NY00355052], P [P02010366]).

This species has been recorded from Vietnam (Liou Ho, 1932: 99; Hộ, 1999: 378; Lê, 2003: 84). However, I have compared the Vietnamese material supposedly belonging to this species with Chinese specimens of *Cryptocarya maclurei*, including the type material, and I have come to the conclusion that the Vietnamese specimens are better placed in *Cryptocarya sublanuginosa*.

*Cryptocarya metcalfeana* C.K.Allen, J. Arnold Arbor. 23: 457–458 (1942); P.H.Hộ Ill. Fl. Vietnam 1: 378 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 84 (2003). – TYPE: [China] Hainan, Chim Shan, Fan Maan, Ts'uen & vicinity, Ling Shui (ling-tui) District, 3–20 May 1932, *Fung 20087* (holotype NY [NY00581230]; isotypes A [A00041356], E [E00386408], BO, K [K000768392], MO [MO1889403], P [P02010176], US [US00956269, US00099512]).

In the past, this species was considered to be endemic to Hainan Island in southern China. More recently it has also been reported from Vietnam (Lê, 2003: 84). However, I could not find any specimens supporting this claim. *Cryptocarya metcalfiana* is morphological very close to *C. concinna*, but differs from it in having a longer inflorescence (> 10 cm long versus < 8 cm long) and glabrous leaves (versus leaves sparsely hairy in *C. concinna*).

*Cryptocarya merrilliana* C.K.Allen, J. Arnold Arbor. 23: 456–457 (1942); T.C.Lê, Checklist Pl. Sp. Vietnam 82 (2003); H.W.Li et al., Fl. China 7: 253 (2008). – TYPE: [China] Hainan, Kumyum, *Lau 27635* (holotype A (not seen); isotypes IBK, MO [MO255232]).

This species has been recorded for Vietnam (Lê, 2003: 82). However, I have not seen any material from Vietnam to support this, although, given its distribution in southern China, it may occur in northern Vietnam.

*Cryptocarya obovata* R.Br., Prod. Fl. Holl. 402 (1810); P.H.Hộ, Ill. Fl. Vietnam 1: 379 (1999); T.C.Lê, Checklist Pl. Sp. Vietnam 85 (2003). – TYPE: [Australia] New South Wales, Port Jackson–Hunter River, *Brown 3016* (holotype BM [BM000838232]).

This species is endemic to Queensland and New South Wales in Australia (Le Cussan & Hyland, 2007: 170). It was reported to occur in Vietnam by Lê (2003: 84) but I could not find any specimens supporting this claim.

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