BLUMEA 50: 221 – 248
Published on 14 July 2005 http://dx.doi.org/10.3767/000651905X622978

A TAXONOMIC REVISION OF MALLOTUS SECTION PHILIPPINENSES (FORMER SECTION ROTTLERA – EUPHORBIACEAE) IN MALESIA AND THAILAND

S.E.C. SIERRA, P.C. VAN WELZEN & J.W.F. SLIK

Nationaal Herbarium Nederland, Universiteit Leiden branch,
P.O. Box 9514, 2300 RA Leiden, The Netherlands

SUMMARY

A revision of *Mallotus* section *Philippinenses* (former section *Rottlera*) in Malesia and Thailand is given. Descriptions, distribution maps, habit drawings, and a key to the species are provided. The diagnostic characters for the section are briefly discussed. Five species (*M. kongkandae, M. leptostachyus*, *M. pallidus*, *M. philippensis*, and *M. repandus*) are recognised. *Mallotus chromocarpus* is excluded from the section because it has more shared characters with the monospecific genus *Octospermum*, like the presence of indehiscent fruits, absence of stipules, marginal extrafloral nectaries on the upper side of the leaf blade, broad connectives (shaped umbrella-like), and its occurrence in New Guinea, and is therefore probably closely related to it.

Key words: Euphorbiaceae, Rottlerinae, *Mallotus*, *Philippinenses*, *Rottlera*, *Octospermum*, Malesia, taxonomy.

INTRODUCTION

Mallotus Lour. is a genus of shrubs, trees, and climbers, with c. 150 species. It is classified in the subfamily Acalyphoideae, subtribe Rottlerinae (Euphorbiaceae s.s.), together with six other genera: *Avellanita*, *Cordemoya*, *Neotrewia*, *Octospermum*, *Rockinghamia*, and *Trewia* (Radcliffe-Smith, 2001). *Mallotus* is mainly found in (sub)tropical Asia, Australia, and the Pacific, with only a few species in tropical Africa and Madagascar (Webster, 1994).

The genus *Mallotus* was first described by De Loureiro (1790). He included only one species (*Mallotus cochinchinensis*), which is a synonym of *Mallotus paniculatus* (Lam.) Müll. Arg. Morphologically *Mallotus* can be recognised by the presence of stellate hairs (often in combination with simple hairs), coloured glandular hairs, extrafloral nectaries on the leaves, leaves that are alternate or opposite (then unequal in size), a lack of petals, undivided stigmas, and capsules (often armed with spines). The large number of species in *Mallotus* together with variable morphology has resulted in three main subgeneric classifications. The first was proposed by Müller Argoviensis (1865, 1866), recognising a total of five sections. However, he classified some species in different sections, which are now considered to be synonyms. This shows the large morphological variability within some of the species and also his unclear sectional delimitations. Pax & Hoffmann (1914) proposed a new subdivision into ten sections, which was later refined by Airy Shaw (1968). Airy Shaw subdivided the genus into

© 2005 Nationaal Herbarium Nederland, Leiden University branch

eight sections, *Axenfeldia*, *Hancea*, *Mallotus*, *Oliganthae*, *Polyadenii*, *Rottlera*, *Rottleropsis*, and *Stylanthus*.

A taxonomic revision of Malesian species of the separate sections *Hancea*, *Polyadenii*, and *Stylanthus* has been published by Bollendorff et al. (2000) and Slik & Van Welzen (2001a). Phylogenetic studies of *Mallotus* based on morphology have also been performed by the latter two authors (Slik & Van Welzen, 2001b). Their results show that sections *Hancea*, *Oliganthae*, *Polyadenii*, and possibly *Mallotus* are monophyletic, and that all the other sections are either paraphyletic (*Rottlera*, *Stylanthus*) or polyphyletic (*Axenfeldia*, *Rottleropsis*). However, their phylogenetic hypotheses are not stable, because of weak support for most branches and incomplete taxon sampling: only the sections that had previously been taxonomically revised include all the representative species, while the remaining sections include few taxa.

Although the sectional delimitations based on morphological characters are unsatisfactory, we will follow the traditional generic delimitation as circumscribed by Airy Shaw (1968) until the phylogenetic studies of the sections of *Mallotus* based on molecular and morphological data are completed.

Nomenclature follows the rules as accepted by the Botanical Congress of St. Louis (Greuter et al., 1999).

MALLOTUS SECTION PHILIPPINENSES VERSUS ROTTLERA

The section *Philippinenses* was previously named *Rottlera*. However, nomenclatural problems with this name prohibit its further use and the younger name *Philippinenses* Pax & K. Hoffm. should be preferred.

The name *Rottlera* was first used by Willdenow (1798) when he described the species *Rottlera indica* Willd. However, this combination is superfluous: Willdenow cited the validly published name *Tetragastris ossea* Gaertn. (Gaertner, 1790) in the synonymy, meaning, that he should have made the combination *Rottlera ossea*. Therefore, *Rottlera* is a homotypic synonym of *Tetragastris*, which belongs to Burseraceae. Willdenow also mentioned that *M. cochinchinensis* might belong to the same genus, but this does not imply that he should have referred his plant to the genus *Mallotus*, as Airy Shaw (1968) suggested.

Soon after, Roxburgh (1802) described another species: *Rottlera tinctoria* Roxb. In 1806 Willdenow synonymised *Rottlera* (incl. *Tetragastris*!) with *Trewia* and erroneously thought that the name became available again for a different use. Under modern rules this is not allowed and he is considered to have created an illegitimate, later heterotypic homonym. He attributed the authorship to Roxburgh (1802), which is also incorrect, as Roxburgh merely added a species to the first species of *Rottlera*.

Rottlera Roxb. ex Willd. was subdivided into three sections by Reichenbach & Zollinger (1857). Of these, *Rottlera* sect. *Pseudorottlera* and sect. *Stylanthus* are valid, but *Eurottlera* is invalid (Art. 21.3).

Shortly afterwards, Müller Argoviensis (1865) reduced *Rottlera* Roxb. ex Willd. to *Mallotus*, and included *R. tinctoria* in *Mallotus philippensis* (Lam.) Müll.Arg., in sect. *Eumallotus* (also an invalid name).

Later, Pax & Hoffmann (1914: 147, 178) published the new sectional name *Philippinenses* for the group of species centring around *M. philippensis*.

Finally, Airy Shaw (1968) proposed a new sectional subdivision of *Mallotus*. He discussed the nomenclatural relationships between sect. *Philippinenses* and *Rottlera*, rejecting the first name because it would be an erroneous spelling, and because of the earlier *Eurottlera* Rchb.f. & Zoll. (Airy Shaw, 1968; 391, 392). He, therefore, erroneously proposed sect. *Rottlera* "((Willd.) Rchb.f. & Zoll., corr.) Airy Shaw". He did not realize that the first argument cannot be sustained because a sectional name can be spelled in any way that the authors please, and the presence of a '*philippensis*' does not require one to call the section '*philippenses*'. Furthermore, under the present code illegitimate names do not automatically generate autonyms (Art. 22.5). Therefore, sect. *Rottlera* Airy Shaw is a superfluous name for sect. *Philippinenses*.

In this revision we provisionally accept the sectional composition as circumscribed by Airy Shaw and recognise five taxa in Malesia and Thailand: *Mallotus leptostachyus* Hook.f., *M. pallidus* (Airy Shaw) Airy Shaw, *M. philippensis* (Lam.) Müll. Arg., and *M. repandus* (Willd.) Müll. Arg. *Mallotus kongkandae* Welzen & Phattar., belongs to this section as well (Van Welzen & Phattarahirankanok, 2001), while *M. chromocarpus* Airy Shaw is excluded (see under Excluded Species). The section *Philippinenses* can be distinguished by a combination of characters such as the presence of stellate and/or simple hairs, and sessile, globular to disc-shaped, light yellow to red glandular hairs on most parts; alternate leaves, blade not peltate, with two basal or several marginal extrafloral nectaries on the upper surface, 3-nerved; unisexual inflorescences; and a dense layer of glandular hairs on the fruits, which lack spines.

The studies of Slik & Van Welzen concerning the phylogeny of *Mallotus* based on morphology suggested that section *Philippinenses* (*Rottlera*) is paraphyletic and that *M. tiliifolius* (Blume) Müll. Arg. (now *M. papillaris* (Blanco) Merr.) should be included, because it shares some derived characters such as the loss of the fenugreek odour, the densely stellate indumentum, and the sessile stigmas (Slik & Van Welzen, 2001b). However, *M. tiliifolius* differs from section *Philippinenses* in the presence of opposite leaves and fruits with spines. Until more taxa have been added to this study and molecular data have been included in the analyses, it remains unclear whether or not *M. tiliifolius* should be included in section *Philippinenses*.

MALLOTUS section PHILIPPINENSES

Mallotus Lour. sect. *Philippinenses*: Pax & K. Hoffm. (1914) 178. — Type: *Mallotus philippensis* (Lam.) Müll. Arg.

Rottlera Roxb. ex Willd. (1806) 641, 832, non Willd. (1798). — *Rottlera* Roxb. ex Willd. sect. *Eurottlera* Rchb.f. & Zoll. (1857) 314, nom. inval. — *Mallotus* sect. *Eumallotus* Müll. Arg. (1865) 186, nom. inval. — *Mallotus* sect. *Rottlera* ((Willd.) Rchb.f. & Zoll., corr.) Airy Shaw (1968) 392, nom. superfl. — Type: *Rottlera tinctoria* Roxb. [= *Mallotus philippensis* (Lam.) Müll. Arg.].

Woody climbers or small trees, dioecious; branches glabrescent. *Indumentum* composed of stellate, and/or simple hairs, and sessile, globular to disc-shaped, light yellow to red glandular hairs (sometimes drying greenish). *Stipules*: margin entire, apex acuminate. *Leaves* alternate to apically subopposite, simple; petiole basally and apically pulvinate or not; blade not peltate, upper surface glabrous except on midrib and nerves (to rarely hairy all over), extrafloral nectaries basally or marginally, orbicular to elliptic, midrib, nerves and veins occasionally with glandular hairs, prominent, 3-nerved, nerves looping to ending in the margin, veins scalariform, veinlets reticulate. *Inflorescences* panicles or

racemes, the latter axillary (1 or 2 together) or terminally grouped (1 to several), erect, unisexual; bracts 1 per node; bracteoles present or absent, both triangular, margin entire, apex acute to acuminate. *Flowers* actinomorphic, not exceeding 1 cm diam.; pedicels hairy; sepals persistent, valvate, densely hairy outside, subglabrous to sparsely hairy inside, with glandular hairs on both sides, margin entire, apex acute; petals and disc absent. *Staminate inflorescences* with several flowers per bract. S*taminate flowers*: sepals 3–5, ovate to elliptic, free, reflexed; stamens 18–75, glabrous to hairy, anthers basifixed, thecae 2, separate from each other, ovoid to ellipsoid, opening extrorse and lengthwise, sometimes the apex with glandular hairs, connective widened or not, papillose; pistillode present or absent. *Pistillate inflorescences* with one flower per bract. *Pistillate flowers*: sepals 3–6, ovate or narrowly triangular, free, reflexed or erect, persistent in fruits; ovary with glandular hairs, locules 2 or 3, 1 ovule per locule; stigmas sessile or not, narrowly triangular, plumose, densely covered with papillae above, outer surface hairy and with glandular hairs; staminodes absent. *Fruits* dehiscent capsules, surface with glandular hairs; wall glabrous to sparsely hairy inside. *Seeds* globose, somewhat trigonous in transverse section; caruncle or aril absent.

Distribution — From Pakistan to South China and South Japan, throughout Southeast Asia and Malesia to East Australia and New Caledonia.

KEY TO THE SPECIES

1a. Shrubs or small trees. Upper leaf surface with usually 2 basal extrafloral nectaries. Fruits (2- or) 3-locular 2
b. Climbers. Upper leaf surface with more than 2 marginal extrafloral nectaries. Fruits (1- or) 2- or 3-locular . . . . . **5. M. repandus**
2a. Extrafloral nectaries next to the basal nerves on the upper leaf surface, lower surface not glabrescent. Fruits opening loculicidally-septicidally 3
b. Extrafloral nectaries on the basal nerves on the upper leaf surface, lower surface glabrescent. Fruits opening septicidally-loculicidally 4
3a. Glandular hairs mostly red, conspicuous. Fruit wall less than 1 mm thick . . . . . **4. M. philippensis**
b. Glandular hairs yellowish orange, inconspicuous. Fruit wall 2–3 mm thick . . . . . **1. M. kongkandae**
4a. Leaf blade 16–26 by 6–11.5 cm. Stipules 1.3–1.7 mm long. Glandular hairs orange to light-red. Lower leaf surface indumentum sparse, composed of simple and stellate hairs. Inflorescences more than 13 cm long . . . . . **2. M. leptostachyus**
b. Leaf blade 7–14.5 by 2.2–5.2 cm. Stipules 3–6 mm long. Glandular hairs light yellow. Lower leaf surface indumentum tomentose, composed of stellate hairs. Inflorescences up to 13 cm long . . . . . **3. M. pallidus**

1. Mallotus kongkandae Welzen & Phattar. — Fig. 1; Map 1

Mallotus kongkandae Welzen & Phattar. (2001) 67. — Type: *Chayamarit et al. 1551* (holo L; iso AAU, BKF, K), Thailand, Northern, Kamphaeng Phet Prov., Mae Wong National Park, Chong Yen.

Small trees up to 8 m high. *Indumentum* tomentose, composed of stellate hairs, and sessile, globular to disc-shaped, orange glandular hairs. *Stipules* triangular, 0.8–1.5 by

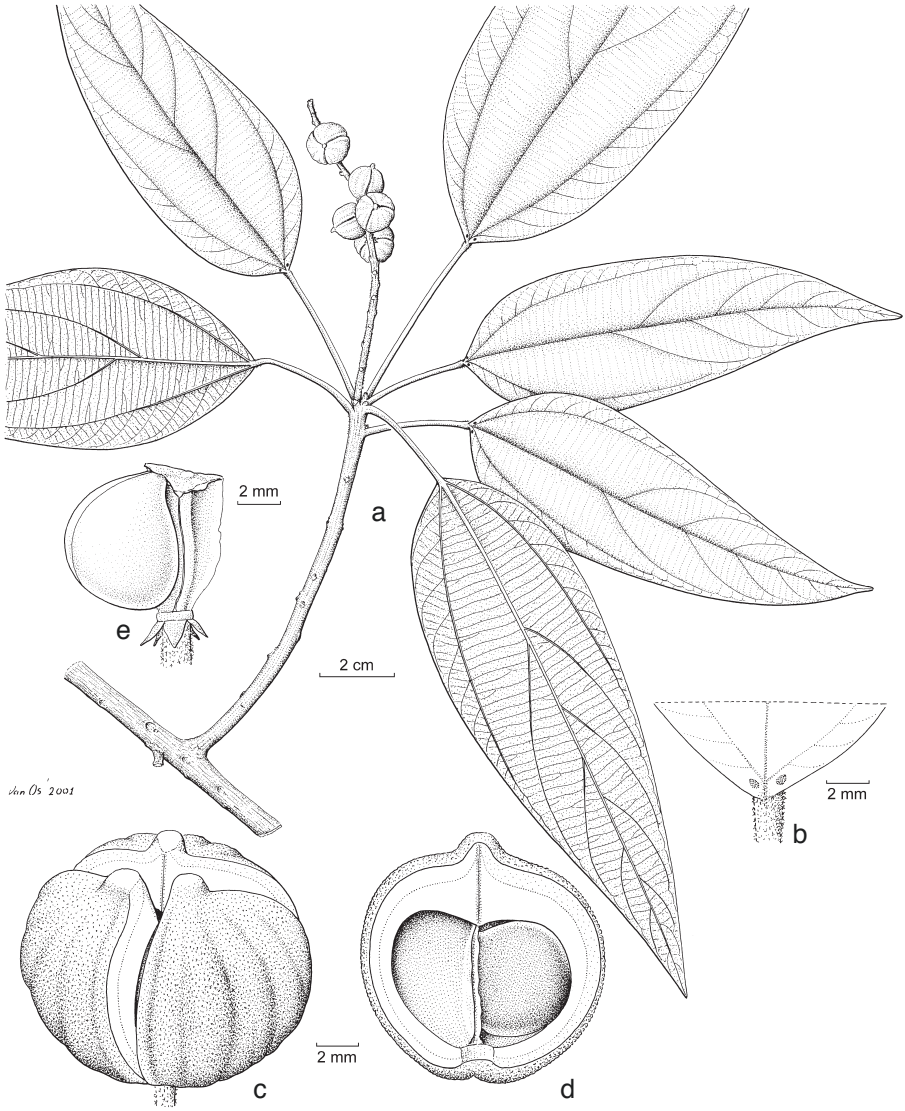


Fig. 1. *Mallotus kongkandae* Welzen & Phattar. a. Habit; b. base of leaf upper surface with extrafloral nectaries; c. fruit; d. section through fruit showing thick wall; e. column with one attached seed (all: *Chayamarit et al. 1551*, L).

0.5–0.7 mm, caducous to persistent. *Leaves*: petiole 15–53 by 1–1.5 mm, basally and apically pulvinate; blade ovate to narrowly ovate, 8–18 by 3.4–6.2 cm, length/width ratio 2.3–3.6, coriaceous, base obtuse, margin entire, sinuate, apex acute to caudate, upper surface dark green, basally with 2 extrafloral nectaries on the blade, orbicular to elliptic, 1–1.2 by 0.7–0.8 mm, lower surface greenish grey, not glabrescent, domatia absent, nerves 9 or 10 per side, looping. *Staminate inflorescences* and *flowers* unknown.

Pistillate inflorescences and *flowers* unknown. *Infructescences* racemes, up to 8 cm long; bracts c. 1 by 0.8 mm, persistent, hairy outside, glabrous to subglabrous inside. *Fruits* 10–14 by 10–14 mm, opening loculicidally-septicidally, orange (green when dry); wall 2–3 mm thick; column 6–7.5 by 3–3.7 mm; pedicels 2.5–3 mm long. *Seeds* ± globose, 4.5–5 by 4.2–4.8 by 3–4 mm, surface irregular, dull, dark brown; hilum 1.8–2 by 1.3–1.5 mm.

Distribution — Endemic to Thailand (Northern, Kamphaeng Phet). Only known from the type specimen.

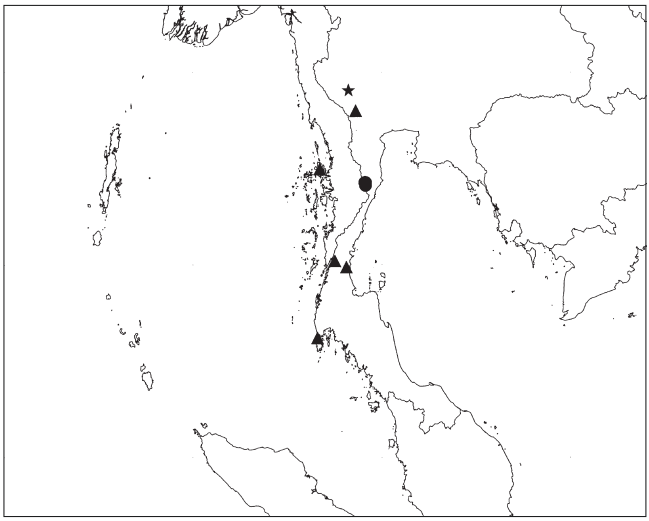
Habitat & Ecology — Altitude c. 1340 m. Fruiting in July.

Vernacular name — Pra kai saet (Thai), Smitinand (2001).

2. Mallotus leptostachyus Hook.f. — Fig. 2; Map 1

Mallotus leptostachyus Hook.f. (1887) 435; Pax & K. Hoffm. (1914) 183; Airy Shaw (1972) 300; Van Welzen, Slik & Bollendorff in Van Welzen et al. (2000) 101. — Type: *Helfer* (*Kew Distrib.*) *4729* (holo K; iso A, K), Myanmar, Tenasserim, King's Island, Mergui Archipelago.

Small trees up to 10 m high, dbh up to 9 cm. *Outer bark* smooth. *Indumentum* sparse, composed of stellate and simple hairs, and sessile, globular to disc-shaped, light red glandular hairs. *Stipules* narrowly triangular, 1.3–1.7 by 0.3–0.4 mm, caducous to persistent. *Leaves*: petiole 20–55 by 1–1.5 mm, basally and apically pulvinate; blade elliptic to obovate, 16–26 by 6–11.5 cm, length/width ratio 2–3, chartaceous, base obtuse, margin with glandular teeth, sparsely hairy, apex caudate, upper surface dull green, basally with 2 extrafloral nectaries on the nerves near the petiole insertion, elliptic, 0.8–2 by 0.3–0.4 mm, lower surface brownish green, glabrescent, domatia absent, nerves 8–10 per side, looping. *Inflorescences* racemes, axes basally 1–1.5 mm thick; bracts persistent, hairy outside, glabrous to subglabrous inside. *Flowers*: sepals 3,



Map 1. Distribution of *Mallotus kongkandae* Welzen & Phattar. (★), *M. leptostachyus* Hook.f. (▲), and *M. pallidus* (Airy Shaw) Airy Shaw (●).

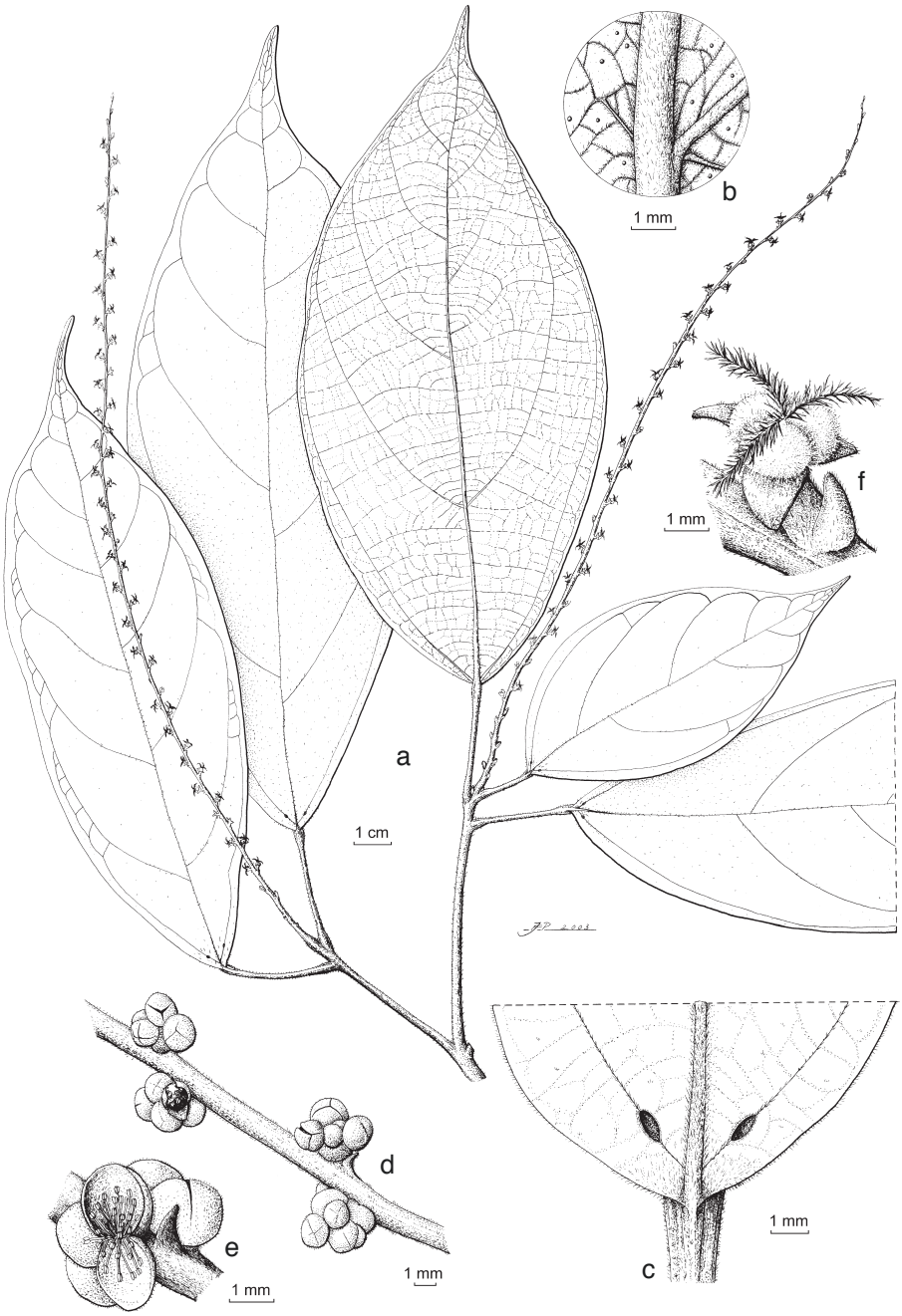


Fig. 2. *Mallotus leptostachyus* Hook.f. a. Habit with flowers; b. detail of leaf lower surface with glandular hairs and domatia; c. base of leaf upper surface with extrafloral nectaries; d. staminate inflorescence in bud; e. immature staminate flower; f. pistillate flower (a: *Kerr 12097*, BM, L; b, c: *Kerr 16442*, BM; d: *Helfer* (*Kew Distrib.*) *4729*, K; e: *Kerr 12097A*, BM; f. *Kerr 12097*, L).

ovate. *Staminate inflorescences* up to 25 cm long, flowers 3–5 per node, nodes up to 65; bracts 0.5–1.5 by 0.2–0.4 mm. *Staminate flowers* 4–5 mm diam.; pedicels 1–1.5 mm long; sepals 1.7–2.5 by 1.2–1.8 mm, pale light green; stamens 40–60, filaments 0.7–2.5 mm long, glabrous, very pale light yellowish whitish, anthers ovoid, 0.1 by 0.2 mm, glabrous to sparsely hairy, light yellow, connective broad; pistillode pyramidal, c. 0.3 mm long, consisting of 1 or 2 adnate, glabrous to subglabrous appendices. *Pistillate inflorescences* up to 20 cm long, nodes up to 31; bracts 0.7–0.9 by 0.2–0.4 mm. *Pistillate flowers* 3.2–4 mm diam.; pedicels 0.5–0.8 mm long; sepals 1.8–2 by 0.8–1.2 mm, erect; ovary 3-locular, 1–1.2 by 1.5–2 mm; stigmas sessile, 2–2.5 mm long. *Fruits* 8–8.2 by 10–12 mm, opening septicidally-loculicidally, dull light green; wall 0.5 mm thick; column 2.8–3 by 3.1–3.3 mm. *Seeds* ± globose, 5–5.2 by 4–5 by 4–4.7 mm, surface smooth, glossy, brown; hilum 1.3–1.6 by 1.5–2 mm.

Distribution — Myanmar and Thailand.

Habitat & Ecology — Locally in understorey of evergreen forest, on hills and by streams, on shale soil. Altitude up to 400 m. Flowering: December to March.

3. Mallotus pallidus (Airy Shaw) Airy Shaw — Fig. 3; Map 1

Mallotus pallidus (Airy Shaw) Airy Shaw (1977) 78. — *Mallotus philippensis* (Lam.) Müll.Arg. var. *pallidus* Airy Shaw (1972) 300 ('*pallida*'). — Type: *Put 2489* (holo K; iso BK, BM, C, L), Thailand, Prachuap Khiri Khan, Sam Roi Yot.

Shrubs up to 6 m high. *Indumentum* tomentose, composed of stellate hairs, and sessile, globular to disc-shaped, light yellow glandular hairs. *Stipules* linear-triangular, 3–6 by 0.4–0.7 mm, early caducous. *Leaves*: petiole 8–33 by 0.5–1 mm, basally and apically pulvinate; blade elliptic to narrowly elliptic, 7–14.5 by 2.2–5.2 cm, length/width ratio 2.4–4.1, subchartaceous, base rounded to obtuse, margin entire, apex acute to acuminate, upper surface dull green, basally with 2 (rarely 4) extrafloral nectaries on the nerves near the petiole insertion, elliptic, 0.6–1.2 by 0.3–0.6 mm, lower surface greenish grey, glabrescent, domatia absent, nerves 8–10 per side, looping. *Inflorescences* racemes, axes basally 0.5 mm thick; bracts caducous, hairy on both sides. *Staminate inflorescences* up to 12.5 cm long, flowers 1–4 per node, nodes up to 70; bracts 2.5–4.2 by 1.2–1.4 mm. *Staminate flowers* 4–5 mm diam.; pedicels 2.3–5.2 mm long; sepals 3 or 4, ovate to elliptic, 2.3–2.8 by 1–1.7 mm; stamens 50–70, filaments 0.6–3 mm long, glabrous, anthers ovoid, 0.2 by 0.3 mm, sparsely hairy, connective broad; pistillode flattened, c. 0.1 mm long, consisting of 3 connate, glabrous to subglabrous appendices. *Pistillate inflorescences* up to 12 cm long, nodes up to 9; bracts 2.5–4.3 by 1.2–1.4 mm. *Pistillate flowers* 2.5–4.2 mm diam.; pedicels 1–4 mm long; sepals 4 or 5, narrowly triangular, 2–4 by 0.9–1.2 mm, erect; ovary 3-locular, 2–3 by 1.8–2.2 mm; stigmas sessile, 2–3 mm long. *Fruits* 7.3–7.8 by 11.5–12 mm, opening septicidally-loculicidally, yellowish; wall 0.6–0.8 mm thick; column 3–4 by 3–3.5 mm. *Seeds* ± globose, 5–5.2 by 4–5 by 4–4.7 mm, surface smooth, glossy, ochre; hilum 1–1.5 by 2–2.5 mm.

Distribution — Endemic to Thailand (Prachuap Khiri Khan, Amphoe Pran Buri, Khao Sam Roi Yot Nat. Park). See note 2.

Habitat & Ecology — Locally in secondary, open, dry deciduous scrub forest, on rocky limestone soil. Altitude up to 300 m. Flowering and fruiting: May to November.

Vernacular name — Kra duk kai khao.

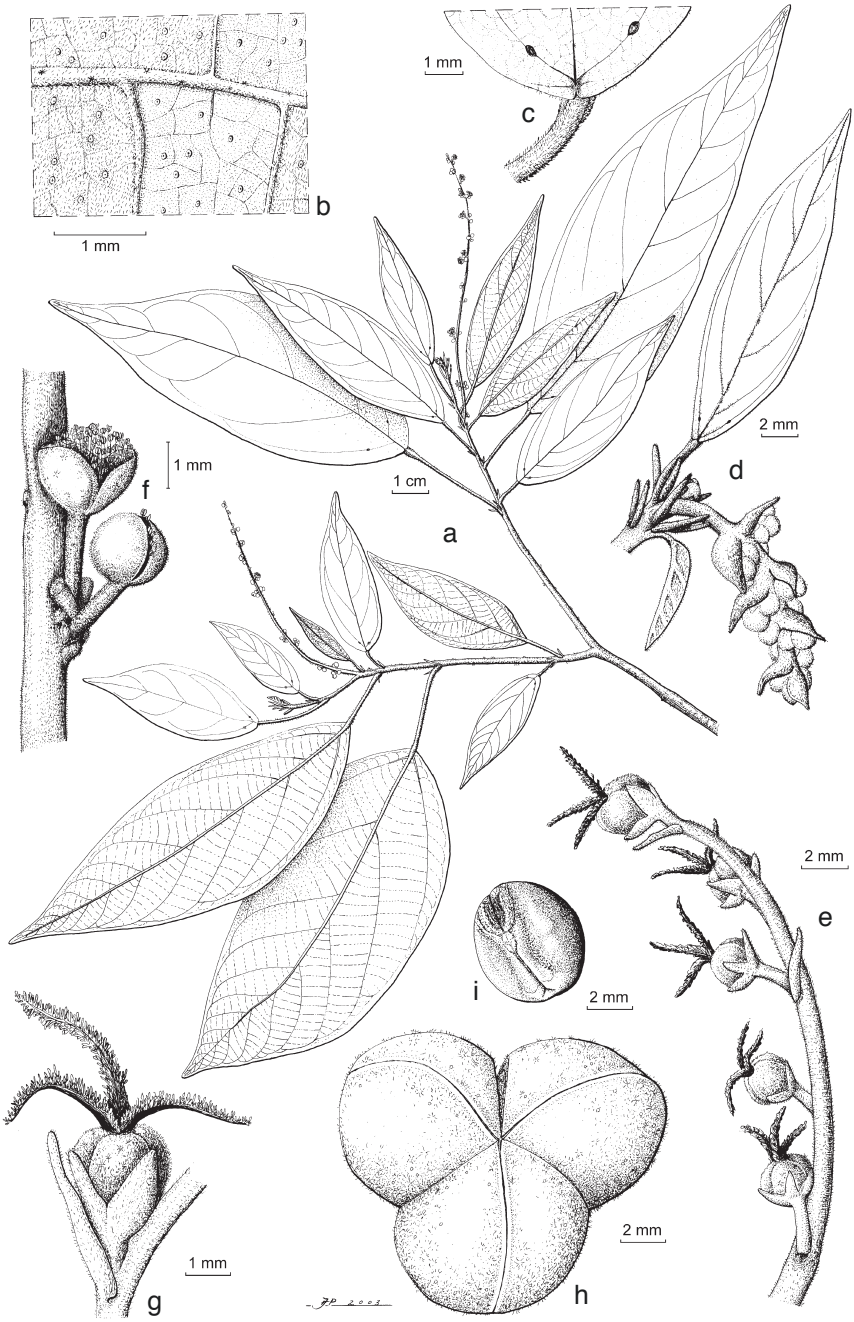


Fig. 3. *Mallotus pallidus* (Airy Shaw) Airy Shaw. a. Habit; b. detail of leaf lower surface with glandular hairs; c. base of leaf upper surface with extrafloral nectaries; d. immature staminate inflorescence; e. pistillate inflorescence; f. staminate flower; g. pistillate flower; h. fruit; i. seed (a, h, i: *Middleton et al. 1136*, L; b–d, f: *Newman et al. 1140*, A; e, g: *Larsen et al. 1179*, AAU).

Notes — 1. *Mallotus rhamnifolius* (Willd.) Müll. Arg. can easily be confused with *M. pallidus*, in particular because of the fruits. The main differences are found in the domatia and general measurements: domatia always present (absent in *M. pallidus*), stipules caducous and long (early caducous and shorter in *M. pallidus*), dried hairs on staminate inflorescences usually darker brown (usually not so brown in *M. pallidus*), staminate bracts short (long in *M. pallidus*), bracts caducous (early caducous in *M. pallidus*), male flowers: sepals and filaments short (long in *M. pallidus*), female flowers with short, narrow stigmas with long papillae (longer, broader stigmas with shorter papillae in *M. pallidus*), fruits small (bigger in *M. pallidus*). If the two species would be united a very strange disjunct distribution would result (Sri Lanka and Sam Roi Yot in Thailand). Seemingly, the two entities are good species, because, besides differences in morphology, they also differ in habitat preferences and in dispersal ability. *Mallotus rhamnifolius* is only found in Sri Lanka and seems indifferent to a certain habitat, while *M. pallidus* is restricted to a single locality in Thailand (Sam Roi Yot) and only occurs on limestone in an open shrubby habitat (so far, it did not disperse to other limestone areas).

2. Based on the presence of yellow glandular hairs, Kiu (1993) published a new synonym for *M. pallidus*: *M. philippensis* (Lam.) Müll. Arg. var. *mengliangensis* C. Y. Wu ex S. M. Hwang, from China. But Hwang (1996) recognised it again as a variety of *M. philippensis* and included *M. pallidus* under the list of doubtful taxa for the Flora of China. *Mallotus philippensis* var. *mengliangensis* also remains doubtful for us, because we have not seen the type material, but based on its distribution (Yunnan) and altitude (1300–1400 m above sea level) we agree with Hwang that it does not represent *M. pallidus*.

4. **Mallotus philippensis** (Lam.) Müll. Arg. — Fig. 4; Map 2

Mallotus philippensis (Lam.) Müll. Arg. (1865) 196 ('*philippinensis*'); Backer & Bakh. f. (1964) 483; Airy Shaw (1972) 300; Whitmore (1973) 115; Airy Shaw (1975) 168; (1980) 170; (1981) 328; (1982) 29; (1983) 37; Philcox (1997) 158; P.I. Forst. (1999) 480; Welzen et al. (2000) 105; Keßler (2002) 50; W.J. Kress et al. (2003) 232. — *Croton philippense* Lam. (1786) 206. — [*Croton coccineus* Vahl var. γ Geiseler (1807) 33]. — *Rottlera philippensis* (Lam.) A. Juss. ex Spreng. (1826) 877; Scheff. (1869) 124 ('*philippinensis*': isonym). — *Echinus philippensis* (Lam.) Baill. (1866) 314 ('*philippinensis*'). — Type: *Sonnerat s.n.* (holo P barcode P00279571), Philippines, see note 1.

Croton punctatus Retz. (1789) 30 ('*punctatum*'), non Jacq. (1787). — [*Croton coccineus* Vahl var. ß Geiseler (1807) 33]. — Type: *J. König s.n.* (holo LD; iso C), Sri Lanka, see note 2.

Croton coccineus Vahl (1791) 97. — Lectotype (selected here): *J. König s.n.* (holo C; iso C, LD), Sri Lanka, see note 2.

Rottlera tinctoria Roxb. (1802) 36, t. 168. — Lectotype (selected here): *Wallich Numer. List 7832A* (holo K (photo in L); iso K (photo in L), Icon Ined. 106 (CAL, K)), India.

Croton montanus Willd. (1805) 547. — Type: *Klein s.n.* (holo *Herb. Willd. 17874*, (IDC microfiche no. 1261), B), India.

Rottlera aurantiaca Hook. & Arn. (1838) 270. — Type: *Unknown s.n.* (holo K barcode K000185510), China, Fujian, Loo Choo.

Rottlera tinctoria Roxb. var. *monstruosa* Ham. ex Dillwyn (1839) 22; Mabb. (1977) 532; Nicolson, Suresh & Manilal (1988) 112; Manilal (2003) 87. — Type: Van Rheede tot Draakestein & Munnicks, Hort. Malab. 5 (1685), t. 24 (holo), India.

Rottlera affinis Hassk. (1842) 41. — Type: *Unknown s.n.* (holo BO? n.v.), Indonesia, W Java.

Mappa stricta Rchb.f. & Zoll. (1856) 31; (1857) 310; Miq. (1859) 402. — *Macaranga stricta* (Rchb.f. & Zoll.) Müll. Arg. (1866) 1004. — Type: *Korthals s.n.* (holo BO? n.v.), Indonesia, Sumatra, Prov. Padang, Prope Lubu alang (= Lubukalung), Mantjiro inc. 24 April 1834.

Aconceveibum trinerve Miq. (1859) 389. — Type: *Zollinger 1101* (holo U), Myanmar.

Mallotus reticulatus Dunn (1908) 365. — *Mallotus philippensis* (Lam.) Müll. Arg. var. *reticulatus* (Dunn) F.P. Metcalf (1941) 207. — Type: *Hongkong Herb. 3429* (holo HK; iso K), China.

Euonymus hypoleucus H. Lév. (1914) 260. — Type: *Cavalerie 2733* (holo E; iso E, K), China, Kweichow, Lo-fou, 4 April 1906.

Mallotus philippensis (Lam.) Müll. Arg. var. *tomentosa* Gamble (1925) 1322. — Lectotype (selected here): *Gamble 14368* (K), India, Connoon Ghat.

Mallotus bicarpellatus T. Kuros. (2004) 31. — Type: *Nicolson 2282* (holo TI; iso BM, KATH, L), Nepal, Bagmati Zone, Bhaktapur District.

Shrubs to small trees up to 25 m high, dbh up to 48 cm; bole up to 15 m high; crown up to 18 m long. *Outer bark* smooth to shallowly fissured, up to 8 mm thick, grey with patches of brown, on cross section reddish brown; sapwood cream, heartwood pink to brown-coloured. *Indumentum* tomentose, often villous, composed of stellate and/or simple hairs, and sessile, globular to disc-shaped, red (sometimes dull yellow to orange, rarely black) glandular hairs. *Stipules* triangular, 1–1.5 by 0.4–0.7 mm, caducous to persistent. *Leaves*: petiole 15–130 by 0.8–2 mm, basally and apically pulvinate; blade ovate to elliptic, sometimes obovate, 4–25 by 2–13 cm, length/width ratio 1.2–5.2, coriaceous, base truncate to cuneate, margin entire, rarely dentate to serrate (with glandular teeth), slightly sinuate, apex obtuse to acuminate, upper surface dull green, basally with 2 (or 4) extrafloral nectaries on the blade (0–3 mm from petiole insertion), orbicular to elliptic, (0.4–)1–3 by (0.3–)0.8–1.2 mm, lower surface greenish grey to brown, not glabrescent, domatia rarely present, nerves 6–11 per side, looping. *Inflorescences* racemes, axes brownish, basally 1–2 mm thick; bracts persistent, hairy outside, glabrous to subglabrous inside. *Staminate inflorescences* up to 17 cm long, flowers 1–3(–4) per node, nodes up to 45; bracts 0.5–0.8 by 0.6–1.2 mm. *Staminate flowers* 3–5 mm diam.; pedicels 1.8–3.5 mm long; sepals 3 or 4, ovate to elliptic, 2–3 by 0.7–2.5 mm; stamens 18–33, filaments 0.5–4 mm long, glabrous, anthers ellipsoid, 0.5–0.8 by 0.3–0.4 mm, glabrous to sparsely hairy, light yellow, connective not broad; pistillode absent. *Pistillate inflorescences* up to 21 cm long, nodes up to 40; bracts 0.7–1.5 by 0.6–1.2 mm. *Pistillate flowers* 4–7 mm diam., pedicels 0.5–2 mm long; sepals (3 or) 4 or 5, narrowly triangular, 1–2 by 0.7–1.8 mm, reflexed; ovary (2- or) 3-locular, 1–1.5 by 1–1.8 mm; style up to 1 mm long; stigmas 2–7 mm long. *Fruits* 4–12 by 4.5–11 mm, opening loculicidally-septicidally, red; wall 0.3–0.5 mm thick; column 3–7 by 2–4 mm. *Seeds* ± globose, 3–5.5 by 3–5.5 by 2.5–5.2 mm, surface smooth, glossy, black; hilum 1–2.5 by 1–2 mm.

Distribution — From Pakistan to South China and South Japan, throughout Southeast Asia and Malesia to East Australia and West Pacific (Solomon Islands).

Habitat & Ecology — Locally common in understorey of primary to secondary forests, scrub, mostly found on disturbed sites; on ridges, forest edges, road and river sides, steep slopes, marshy and savannah areas; in wet (riverine, swampy) to well-drained terrains; on a large variety of soil types, like granite, limestone, sandstone, sandy clay, sandy loam soil, volcanic rock, gravel, quartz, shale, and rock. Also cultivated (Hawaii and Miami, USA). Altitude: sea level up to 1600 m. Flowering and fruiting the whole year through.

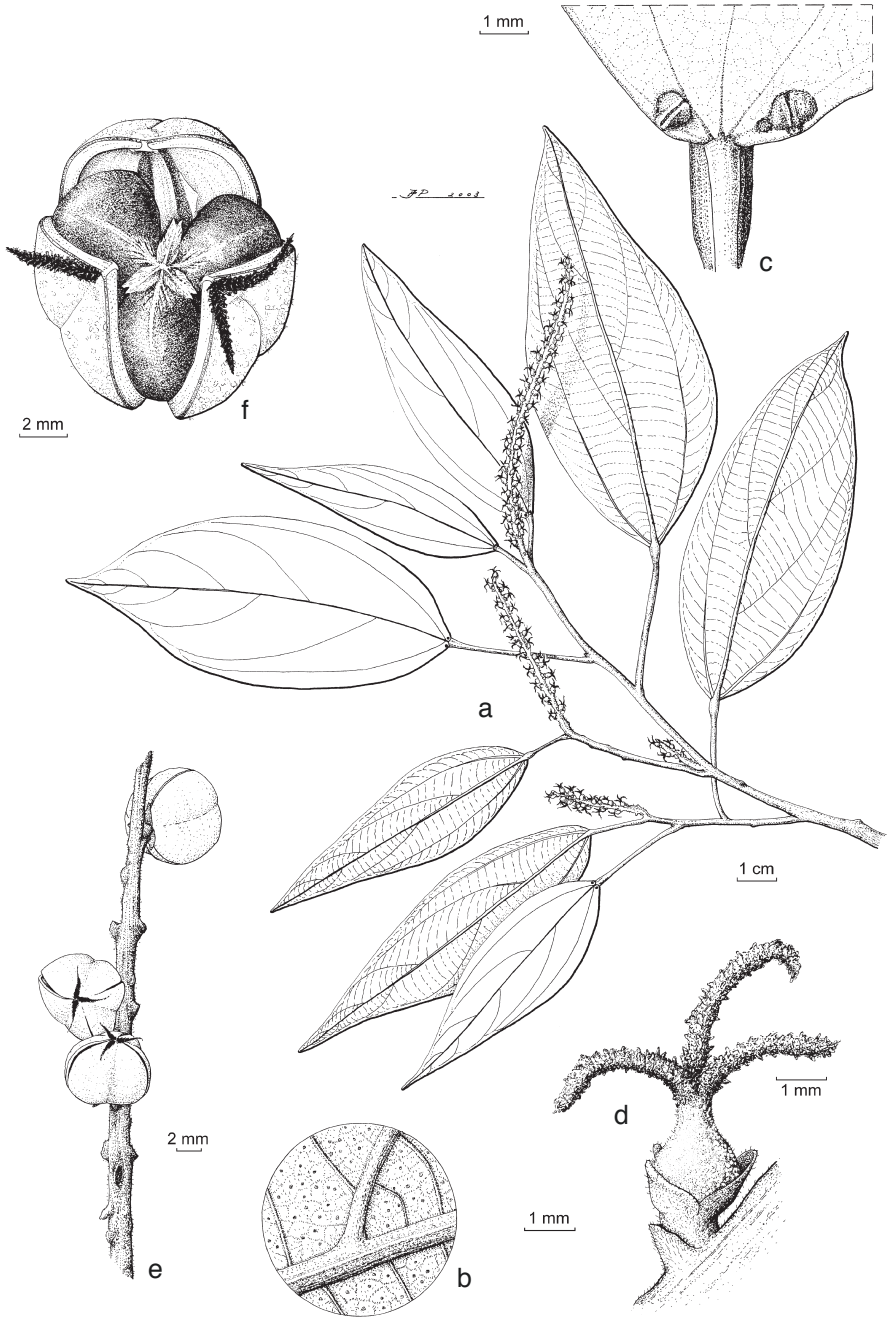
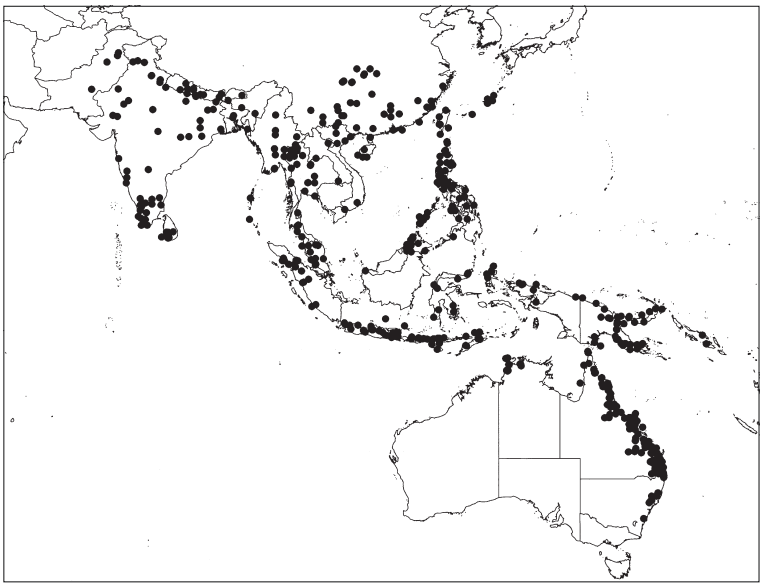


Fig. 4. *Mallotus philippensis* (Lam.) Müll. Arg. a. Habit; b. detail of leaf lower surface with glandular hairs; c. base of leaf upper surface with extrafloral nectaries; d. pistillate flower; e. fruits; f. dehisced fruit showing the seeds and apex of the column (a–d: *Maxwell 97-1483*; e, f: *Murata et al. T-16429*; all L).



Map 2. Distribution of *Mallotus philippensis* (Lam.) Müll. Arg.

Uses — Ornamental (red fruits). The wood is used for rafters, tool handles, matchboxes, and house-posts. The fruits and bark are used as an antihelminthic, to relieve constipation, and against cutaneous affections. The fruits and leaves are used against colds and to cure stings and bites of snakes and other poisonous animals. The leaves are used as a fodder. The glands of the fruits are used as a red dye. The roots are used for dissolving coagulated blood and contusions. The oil of the seeds is used as a substitute for tung oil (*Vernicia* Lour., Euphorbiaceae) in the formulation of rapid-drying paints, varnishes, hair fixers and ointments. Partly after Ambasta (1986) and Manilal (2003).

Vernacular names — India: Jorat, losan (Assam); kamala, rohni, sindur (Hindi); kameela (Bengali) ; kapilo (Guj.); kunkumadamara (Canara); kuramadakku, manjana, ponnagam, ponnakam, pee-ponnagam, tsjerou-ponnagamchendiramu vusuntagundha, wasuntagundha; puroakung (Lepcha); shendri (Marhatta); kapilogundi, kunkumo (Oriya); sinduri (Oriya and Telunga); kapli, kungumam, kurangumanjanatti (Tamel); kunkuma (Telunga); kukum shull, thingkhei, thirisalukkai maram. Nepal: Rohni, ruinii, sidhure, sindure (Nepali). Bangladesh: Sindur. Myanmar: Hpadawng, hpawng-awn, indian kamala, mai-hpawng-tun, palannwe, po-thi-din, taw-thi-din. Thailand: Monkey-faced tree (English); mah gai, sa-bo-se (Karen); cha tri khao, kai khat hin, kham daeng, kham saet, khang poi, khi nuea, khi tao, lai tua phu, makai khat, ma khai, mna peu nah, phla kwang bai yai, plapphla khi tao, plappla kitas, saet, sak kabuea lawa, sat pa, thaeng thuai, thong khao, thong thuai, ton kanam (Thai). Japan: Kusunoha-akamegasiwa, kusu-noha-gashiwa. Malaya: Min-ya-ma-ya, mue-ra-kae-pu-te (Malay); balik angin, mingak madia, kasiran. Sumatra: Kajoe poetat, madang mansiro, masiho, moacho, toeba sira, tumbasira. Java: Kangke djuan (Mad.); kaju tike, kapasan, kemesoe, palan, papasan, tal

tidang, talaman, tapèn, tekeg-tekegan. Borneo: Sabah: Ayagkun (Bajau Tuaran); asin asin, mata kunau (Dusun), bai bai (Dusun Tampoluri); magundasing (Murut Tenom); balinasi (Kwijau). Philippines: Dalunis (Ibanág); banáto (Ibanág, Igorot, Tagálog); anangkuli, buas. Sulawesi: Paedje-paedje. Lesser Sunda Islands: Hotel ewi (Bunag); biofluke, bnafo (Dawan); hadju puser, kaika, kajoe tapis, poeser, pudjar, pure, puser. Moluccas: Galoega foeroe (Ternate), intiboro. New Guinea: Papua (former Irian Jaya): Kikindam (Kotte); maile (Kulumo); poiro (Matapaili), nakokupote (Minu); ugo (Musa, Safia); gamete (Naukwate, Onjob); matsiuna (Roro); iruda, mamada, nakunmenia. New Guinea: Damon (Andjai), rah (Gab Gab); dammoen, dammonnie, domoni (Kebar); sies (Manikiong); andeh, haha, sebijreraka, nokloe. Solomon Islands: Aingwasa (Kwara'ae), sokori. Australia: Op auaum. Partly after Salvosa (1963), Nicolson et al. (1988), Smitinand (2001), and Kress et al. (2003).

Notes — 1. Forster (1999) mentioned as the holotype of *M. philippensis* the sheet *P 16581*, but this number refers to a *Commerson s.n.* collection of *M. papillaris*.

2. *Croton punctatus* and *C. coccineus* were based on different specimens in different herbaria, both with the same annotations of J. König. The name *C. coccineus*, being based on a different specimen, is not superfluous.

3. Under the number *Wallich Numer. List 7772A* there are two very distinct species as can be seen on the IDC microfiche nr. 7394 of the Wallich herbarium in K. The specimen found on the left hand base corner is *M. philippensis*. The one found on the right hand base corner is *M. distans* as it is generally known based on Müller Argoviense's description of the fruits (densely hairy mixed with punctuate glandular hairs).

4. The collections *Ludwigs 247* and *465* (M) have on the label as locality 'Kamerun: Victoria', but it is likely that this is a mistake.

5. The sheets *Dickason 6641*, *Unknown s.n.* (L 0436439) and *Zollinger 3873*, have aberrant staminate and pistillate inflorescences, respectively; and *Kukkonen 6791* has aberrant stems; all of them are probably infected by a virus (these sheets look the same as *Rottlera tinctoria* Roxb. var. *monstruosa* Ham. ex Dillwyn).

5. Mallotus repandus (Rottler) Müll.Arg. — Fig. 5; Map 3

Mallotus repandus (Rottler) Müll.Arg. (1865) 197; Gagnep. (1925) 365; Backer & Bakh.f. (1964) 483; Airy Shaw (1972) 301; Whitmore (1973) 114; Airy Shaw (1980) 170; (1981) 328; (1982) 29; (1983) 37; McPherson & Tirel (1987) 106, pl. 20; Philcox (1997) 165; P.I. Forst. (1999) 484; Welzen et al. (2000) 107; Keßler (2002) 50; W.J. Kress et al. (2003) 232. — *Croton repandus* Rottler (1803) 206 ('*repandum*'). — *Mallotus repandus* (Rottler) Müll.Arg. var. *genuinus* Müll.Arg. (1865) 197, nom. inval. — *Rottlera repanda* (Rottler) Scheff. (1869) 124. — Lectotype (selected here): *Rottler s.n.* = *Wall. Numer. List 7774*, fide specim. in Herb. Wall. (IDC microfiche no. 7394) (holo LIV; iso K-W, L s.n. barcode L0436491 ex. CAL), India, Marmelon.

Croton rhombifolius Willd. (1805) 555. — *Rottlera rhombifolia* (Willd.) Thwaites (1861) 272. — Type: *Roloff s.n.* (holo B, *Herb. Willd. 17900*, (IDC microfiche no. 1261)), Sri Lanka.

Helwingia populifolia Spreng. (1815) 89; Airy Shaw (1962) 419. — Type: *Unknown s.n.* (holo B†), India, Bengalia.

Rottlera scabrifolia A. Juss. (1824) 111, t. 9, f. 29B. — *Mallotus repandus* (Rottler) Müll.Arg. var. *scabrifolia* (A. Juss.) Müll.Arg. (1865) 197. — Type: *Unknown s.n.* (*Herb. A. Juss. 16583*, (IDC microfiche no. 6206), P), Indonesia, Timor.

Rottlera viscida Blume (1826) 608. — Lectotype (selected here): *Blume 1716* (holo L barcode L0436521; iso L barcodes L0436522, L0436536), Indonesia, Java, Nusa Kambanga.

Rottlera scandens Span. (1841) 348. — *Mallotus scandens* (Span.) Müll.Arg. (1866) 982. — Type: *Spanoghe s.n.* (holo L barcode L 0293546), Indonesia, Lesser Sunda Islands, Timor.

Croton volubilis Llanos (1856) 503. — Neotype (selected here): *Merrill Species blancoanae 842* (holo US; iso L, P), Philippines, Luzon, Rizal.

Rottlera? cordifolia Benth. (1861) 307. — Type: *Wright s.n.* (holo K barcode K000185495; iso NY barcode NY00273207, US barcode 00096200), Hongkong.

Mallotus contubernalis Hance (1882) 293. — Lectotype (selected here): *Sampson & Hance 17694* (K), China, Guandong, West River, Ting-ü-shan.

Mallotus chrysocarpus Pamp. (1910) 413. — *Mallotus contubernalis* Hance var. *chrysocarpus* (Pamp.) Hand.-Mazz. (1931) 214. — *Mallotus repandus* (Rottler) Müll.Arg. var. *chrysocarpus* (Pamp.) S.M. Hwang (1985) 297. — Type: *Silvestri 1290* (holo FI), China, Hubei, 'Monte Triora'.

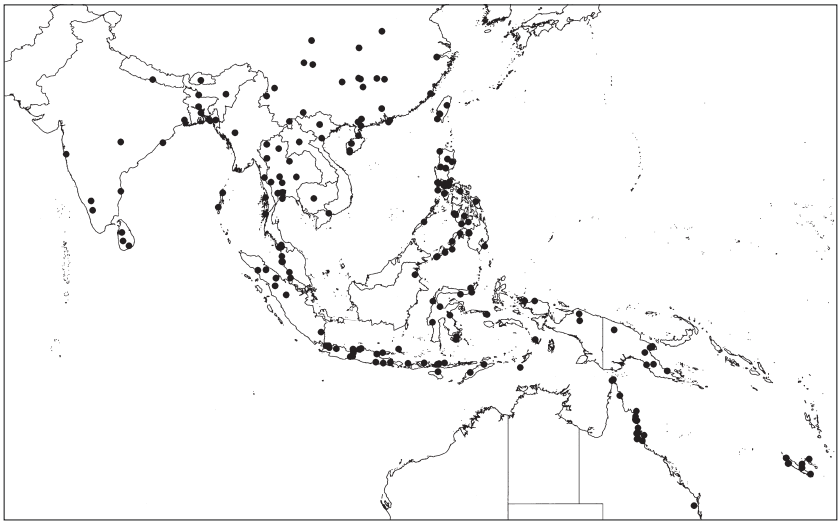
Mallotus contubernalis auct. non Hance: Pax & K. Hoffm. (1914) 180. — *Mallotus illudens* Croizat (1938) 146. — Lectotype (selected here): *Wang 239* (holo A; iso NY), China, Jiangxi.

Mallotus repandus (Rottler) Müll.Arg. var. *megaphyllus* Croizat (1938) 146. — Type: *Kingdon Ward 8922* (holo A; iso NY), Laos, Mong Hsing.

Rottlera dicocca auct non. Roxb.: Roxb. ((1814) 73, nom. nud.), (1832) 829, pro specim.; Baill. (1858) 423 ('*dioica*' Roxb.). — Vouchers: *Roxburgh s.n.* (BM barcode BM00813956; BR barcode 849411; Icon Ined. 480 (K, CAL)), India.

Trewia nudiflora auct non. Willd: Hance (1878) 14. — Voucher: *Sampson 9420* (K), China, Guandong.

Woody climber up to 10 m high. *Outer bark* dark brownish grey. *Indumentum* sparse, composed of stellate and/or simple hairs, and sessile, globular to disc-shaped, light yellow to orange glandular hairs. *Stipules* triangular, 0.5–0.6 by 0.3–0.6 mm, persistent to caducous. *Leaves*: petiole (10–)24–64 by 0.8–2 mm, basally and apically not pulvinate; blade broadly ovate to elliptic, 4–19 by 3–13.5 cm, length/width ratio 1.1–2.2, chartaceous, base cordate to cuneate, margin with glandular teeth, apex acute to caudate, upper surface dull dark green, glabrescent, rarely densely hairy, marginally with 2–4(–10) extrafloral nectaries per side, orbicular to elliptic, 0.3–1 by 0.2–0.4 mm, lower surface light green, glabrescent, domatia present or absent, nerves 4–6 per side, ending in the margin. *Inflorescences* racemes or panicles, axes basally 1–1.5 mm thick; bracts persistent, hairy outside, glabrous to subglabrous inside. *Staminate inflorescences*



Map 3. Distribution of *Mallotus repandus* (Rottler) Müll.Arg.

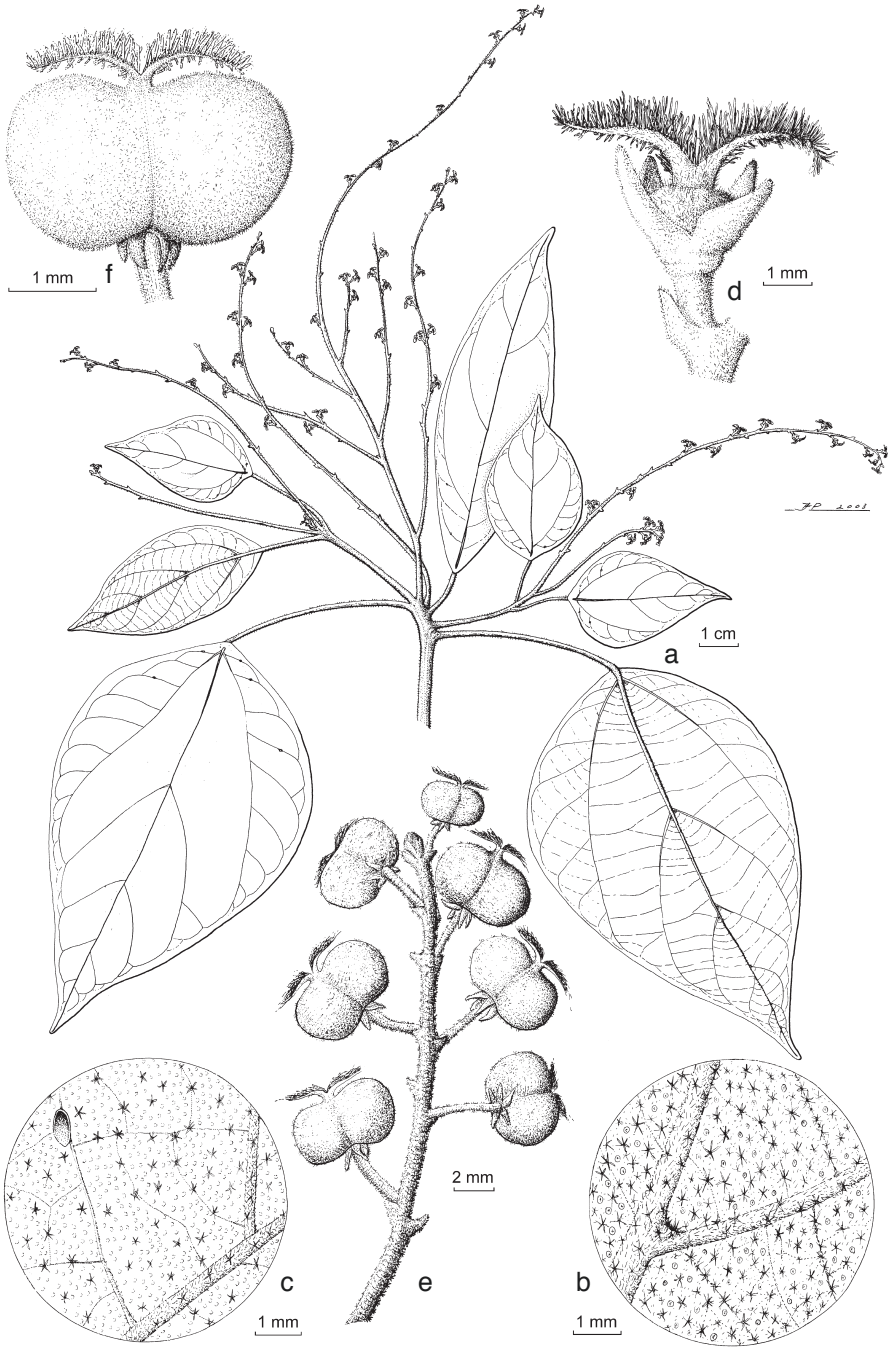


Fig. 5. *Mallotus repandus* (Rottler) Müll. Arg. a. Habit; b. detail of leaf lower surface with glandular hairs; c. detail of leaf upper surface with extrafloral nectaries; d. pistillate flower; e, f. fruit (a–d: *Bunchuai 1325*; e, f: *Van Balgooy 2980*; all L).

up to 15 cm long, flowers 1–3 per node, nodes up to 28; bracts 0.8–1.5 by 0.4–1 mm. *Staminate flowers* 4–5 mm diam.; pedicels 1.8–5.2 mm long; sepals 3 or 4, ovate to elliptic, 2.5–3.5 by 1.2–2.3 mm; stamens 30–75, glabrous to sparsely hairy, filaments 1–2 mm long, anthers ellipsoid, 0.5–0.8 by 0.3–0.4 mm, light yellow, connective not broad; pistillode absent. *Pistillate inflorescences* up to 13 cm long, nodes up to 20; bracts 1–2 by 0.5–0.8 mm. *Pistillate flowers* 2.5–3 mm diam., pedicels 1–4 mm long; sepals 4 or 5, narrowly triangular, 1.8–2.2 by 0.6–0.8 mm, reflexed; ovary (1- or) 2- or 3-locular, 1–1.2 by 1.2–1.3 mm; style up to 1.5 mm long; stigmas 1.5–2.5 mm long. *Fruits* 5–11 by 7–13 mm, opening loculicidally-septicidally, yellowish brown; wall 0.5–1 mm thick, outside grooved or not, shallowly depressed above the septa or not, hairs smooth to slightly rough; column 3–7.5 by 1–2.5 mm. *Seeds* ± globose, 4–6 by 4–6.2 by 3.5–4.5 mm, surface smooth, glossy, black; hilum 1.5–2 by 1–1.5 mm.

Distribution — From Nepal to South China and Taiwan, throughout Southeast Asia and Malesia to East Australia and New Caledonia.

Habitat & Ecology — Locally scattered in the understorey of primary to secondary forests, scrub and disturbed sites; on ridges, forest edges, mangrove swamp edges, road and river sides, steep slopes and dry ground; on various soil types: limestone, granite, sandy loam, and rock. Altitude: sea level up to 1500 m. Flowering and fruiting the whole year through.

Vernacular names — India: Akoos (Hindi), kanda-veltoo (Teling), watta-tali. Myanmar: Ngahlaing-bo, taw-thidin-nww. Laos: Ma-pawp-kua (Lao). Thailand: Kurapia, makai khruea, makai kûae, mapop khruea, naeo nam, pho khan, yiao maeo, yiao maeo thao (Thai). Cambodia: Champou prei, mtehs barang. Malai Peninsula: Ku-ko-mu-ya (Malay). Java: Katjoe-kilang, merangan, sindukan, toekal takal. Philippines: Panuálan (Tagálog); adgao, ambao, tagbanua, tapin. Lesser Sunda Islands: Nono nuifmetan (Dawan); keterakaba, ikur wase, rowe. New Guinea: Papua (former Irian Jaya): Toho (Wagu); wananugapok (Waskuk); Ngontoen. New Caledonia: Waithied (Lifou). Partly after Roxburgh (1832), Salvosa (1963), Nicolson et al. (1988), Smitinand (2001), and Kress et al. (2003).

Notes — 1. The vegetative and reproductive characters of *M. repandus* in Malesia are quite constant, but in the northern part of the distribution area of this species (Indochina and China) specimens are variable: elliptic to obovate leaves (broadly obovate in Malesia), fruits globose or heart shaped, 2- or 3-locular, grooved or not, hairs smooth to slightly rough (heart shaped, (1- or) 2-locular, grooved, hairs smooth in Malesia). It is difficult to distinguish clear groups based on morphology alone, because there are many intermediates. Therefore, we consider this to be a variable species, but without gaps in the morphology on which infraspecific entities could be based.

2. Furthermore, vegetatively, the Chinese material of *M. repandus* can be easily confused with *M. millieitii* H. Lév., also from China. Distinctive characters of *M. millietti* are found on the fruits: 3-locular, globose, 12–15 by 12–15 mm, column 7–13 mm long, wall c. 2 mm thick, with a thick and rough layer of glandular hairs; seeds 6.5–7 by 6.5–7 by 3.8–4 mm. Specimens studied of *M. millieitii* (Yunnan: *Henry 10669*, *10700*, *10700A*, *13696*. Guizhou: *Cavalerie 3967*, *Esquirol 45*, *Teng 90329*, *Tsiang 4633*, *4218*. Guangxi: *Ching 6396*, *Steward & Cheo 602*, *387*). Ecology of *M. millieitii*: In ravines, valleys, thickets, open hill sides; soil: rocky. Altitude 1150 m. Flowering: October to February, May; fruiting: June, July, October.

EXCLUDED SPECIES

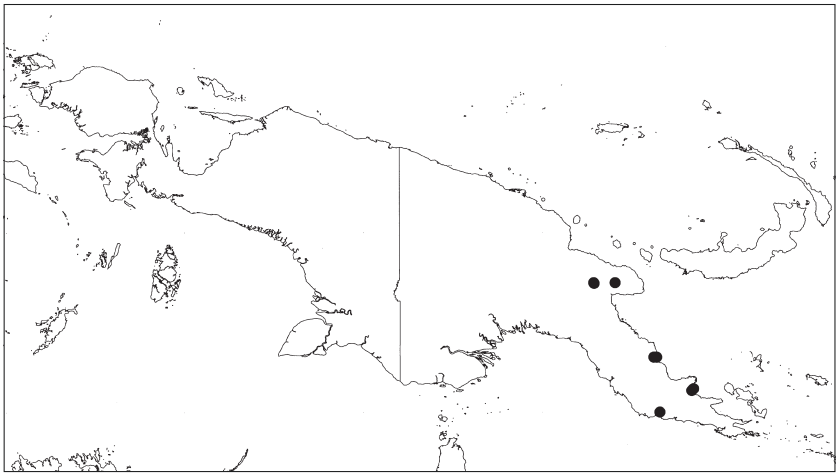
Mallotus chromocarpus Airy Shaw is excluded from section *Philippinenses*. It was placed there (sub. *Rottlera*) by Airy Shaw (1978a) because of the presence of alternate leaves and unarmed fruits, but it has more characters in common with the monospecific genus *Octospermum*, like the presence of indehiscent fruits, absence of stipules, marginal extrafloral nectaries on the upper side of the leaf blade, broad connectives (shaped umbrella-like), and its occurrence in New Guinea. It primarily differs in the number of locules (3–5 in *M. chromocarpus* and 7–9 in *O. pleiogynum*).

The phylogenetic relationships of the sections of *Mallotus* with other genera of the subtribe Rottlerinae are not exactly known. Until phylogenetic analyses are performed it is not clear whether *Mallotus chromocarpus* and *Octospermum pleigynum* should be placed in a section of *Mallotus*, or in a genus of their own: *Octospermum*.

Mallotus chromocarpus Airy Shaw — Fig. 6; Map 4

Mallotus chromocarpus Airy Shaw (1978a) 403; (1978b) 64; (1980) 164, 225. — Type: *NGF* (*McDonald*) *8204* (holo K; iso A, BRI, L), Papua New Guinea, Central Province, Mori River.
Mallotus discolor auct. non (F. Muell.) F. Muell. ex Benth.: Airy Shaw (1966) 44.

Trees up to 30.5 m high, dbh up to 40 cm; bole up to 18 m high; crown up to 9.5 m long; branchlets glabrescent. *Outer bark* rough, long and transversely fissured to smooth, up to 19 mm thick, greyish with patches of brown, on cross section reddish; sapwood cream; heartwood straw-coloured. *Indumentum* tomentose, composed of stellate hairs, and sessile, globular to disc-shaped, orange glandular hairs. *Stipules* absent. *Leaves* alternate, simple, symmetric; petiole 25–80 by 1–2 mm, glabrescent; blade ovate to elliptic, 6–18 by 5.3–14 cm, length/width ratio 1.3–1.8, coriaceous, base rounded to cuneate, peltate for 3 mm, margin entire, apex caudate, upper surface dull green, glabrous, basally with 2 (or 4) extrafloral nectaries on the nerves near the petiole insertion,



Map 4. Distribution of *Mallotus chromocarpus* Airy Shaw.

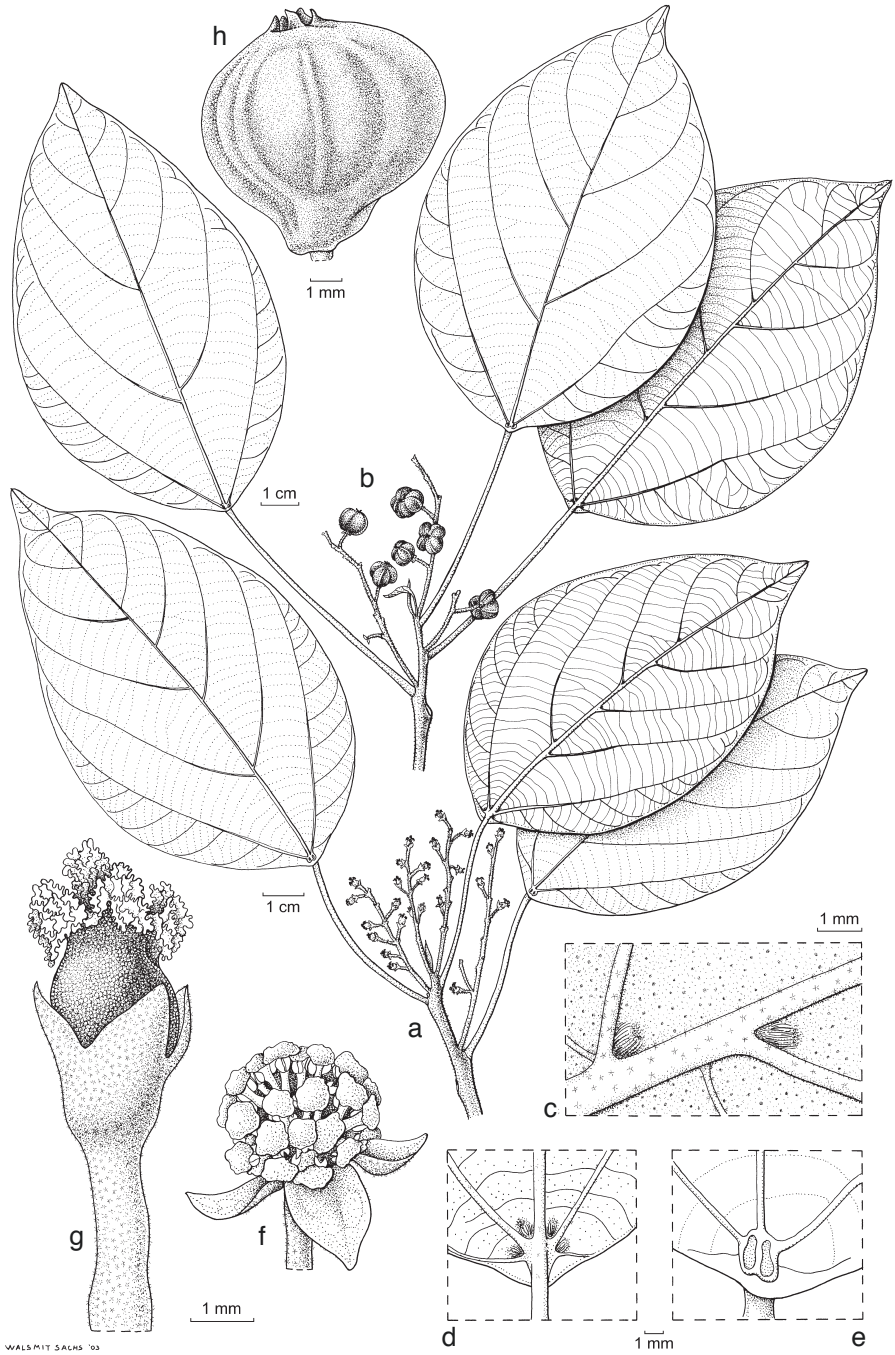


Fig. 6. *Mallotus chromocarpus* Airy Shaw. a. Habit with flowers; b. habit with fruits; c, d. detail of leaf lower surface with glandular hairs and domatia; e. base of leaf upper surface with extrafloral nectaries; f. staminate flower; g. pistillate flower; h. fruit (a–e, g, h: *Brass 24245*; f: *NGF 27832*; all L).

elliptic, 2–3 by 0.7–1 mm, marginal nectaries 0–6 per side, elliptic, 0.5–1 by 0.3–0.5 mm, lower surface greenish grey to brownish grey, not glabrescent, domatia present, woolly, venation prominent, 3-nerved, nerves 4–6 per side, looping, veinlets reticulate. *Inflorescences* racemes, axillary (1–3 together) or terminally grouped, erect, unisexual, axes basally 1 mm thick; bracts triangular, persistent, margin entire, hairy on both sides; buds light green. *Flowers* actinomorphic, not exceeding 1 cm diam.; pedicels hairy; sepals persistent, valvate, densely hairy outside, subglabrous to sparsely hairy inside, with glandular hairs on both sides, ovate, margin entire, apex acute; petals and disc absent. *Staminate inflorescences* up to 15.5 cm long, flowers 3–5 per node, nodes up to 40; bracts 0.6–0.7 by 0.3–0.5 mm, apex acuminate. *Staminate flowers* 2.8–3.5 mm diam.; pedicels 1.5–2 mm long; sepals (2 or) 3, 1.8–2.2 by 1.7–2 mm, free; stamens 30–36, glabrous, filaments 0.6–1 mm long, free (to basally connate), anthers ovoid, basifixed, 0.5–0.6 by 0.5–0.6 mm, often at the apex with glandular hairs, light yellow, connective broad (umbrella-like); pistillode absent. *Pistillate inflorescences* up to 10.5 cm long, flowers 1 per node, nodes up to 13; bracts 0.6–0.8 by 0.4–0.6 mm, apex acute. *Pistillate flowers* 2–2.5 mm diam., pedicels 2–4 mm long, hairy, gland dotted; sepals (3 or) 4 (or 5), 1.5–2 by 1–1.2 mm, slightly connate at base; ovary (3- or) 4- or (5-)locular, 1.5–1.8 by 1.8–2 mm, with glandular hairs; stigmas sessile, plumose, 1–1.2 mm long, densely covered with papillae above, outer surface hairy and with glandular hairs. *Fruits* indehiscent drupes, 5–8 by 8–10 mm, with (3 or) 4 (or 5) distinctly long ridges, orange, sparsely warted and hairy, densely gland-dotted; wall c. 0.5 mm thick, glabrous to sparsely hairy inside; column 4–4.2 by 1.2–1.3 mm. *Seeds* ± globose, 4–4.2 by 3.7–4 by 3.6–3.8 mm, glossy, brown; hilum 3.5–3.8 by c. 1 mm.

Distribution — Endemic to New Guinea.

Habitat & Ecology — Locally common in the canopy of young to old secondary forest, or on the grassland-edge of swamp-forest. Altitude: sea level up to 150 m. Flowering and fruiting: March to October.

Vernacular name — New Guinea: Osari (Orokaiva-Mumuni).

DOUBTFUL NAMES

Mallotus philippensis (Lam.) Müll.Arg. var. *mengliangensis* C.Y. Wu ex S.M. Hwang (1985) 294. — Type: *Li 3543* (holo SCBI n.v.), China, Yunnan, Xishuangbanna. = cf. **Mallotus philippensis** (Lam.) Müll.Arg.

ACKNOWLEDGEMENTS

The directors of the following institutes are thanked for lending their material: A, AAU, B, BM, BP, BR, BRI, C, CAL, CANB, CGE, DBN, DD, DPU, DS, E, F, FH, FI, G, GJO, H, HAL, HK, IBSC, JE, K, KEP, KIEL, L, LD, LE, LIV, M, MA, MANCH, MEL, MICH, MO, NSW, NY, OXF, P, PDA, PH, S, SAN, SBT, SING, SYS, TCD, TI, TU, U, UC, US, W, WRSL. Special thanks are due to J.F. Veldkamp for his valuable help concerning nomenclatural problems; J. Porck, A. Walsmit Sachs, and J. van Os for the drawings; B. Vrijbloed and G. Thijsse for the administration of the collections, L. Frankova and D.N.F. Kiehl for help with the literature; Ding Hou for help with the Chinese translations; J.M. de Wolf, B.J. van Heuven for technical support; J.B. Mols and K. Kulju for their comments on the manuscript. This study was financially supported by the Alberta Mennega Stichting, Stichting Hugo de Vries, Stichting Leids Universiteits Fonds (LUF), and the Society for the Advancement of Research in the Tropics (TREUB).

REFERENCES

Airy Shaw, H.K. 1962. On the identity of Helwingia populifolia Spreng. Kew Bull. 15: 419.

Airy Shaw, H.K. 1966. Notes on Malaysian Euphorbiaceae. Kew Bull. 20: 38–45.

Airy Shaw, H.K. 1968. Malesian and other Asiatic Euphorbiaceae. Kew Bull. 21: 379–400.

Airy Shaw, H.K. 1972. The Euphorbiaceae of Siam. Kew Bull. 26: 292–308.

Airy Shaw, H.K. 1975. The Euphorbiaceae of Borneo. Kew Bull., Addit. Ser. 4: 160–174.

Airy Shaw, H.K. 1977. Additions and corrections to the Euphorbiaceae of Siam. Kew Bull. 32: 69–83.

Airy Shaw, H.K. 1978a. Notes on Malesian and other Asiatic Euphorbiaceae. Kew Bull. 32: 403–405.

Airy Shaw, H.K. 1978b. Notes on Malesian and other Asiatic Euphorbiaceae. Kew Bull. 33: 64–66.

Airy Shaw, H.K. 1980. The Euphorbiaceae of New Guinea. Kew Bull., Addit. Ser. 8: 162–172, 225.

Airy Shaw, H.K. 1981. The Euphorbiaceae of Sumatra. Kew Bull. 36: 323–330.

Airy Shaw, H.K. 1982. The Euphorbiaceae of Central Malesia (Celebes, Moluccas, Lesser Sunda Is.). Kew Bull. 37: 28–30.

Airy Shaw, H.K. 1983. An alphabetical enumeration of the Euphorbiaceae of the Philippine islands. Royal Botanic Gardens Publication, Kew.

Ambasta, S.P. 1986. The useful plants of India. Council of Scientific and Industrial Research (CSIR), New Delhi.

Backer, C.A. & R.C. Bakhuizen van den Brink Jr. 1964. Flora of Java 1. Noordhoff, Groningen.

Baillon, H.E. 1858. Étude générale du groupe des Euphorbiacées. Masson, Paris.

Baillon, H.E. 1866. Species Euphorbiacearum Euphorbiacées Australiennes. Adansonia 6: 313–317.

Bentham, G. 1861. Flora Hongkongensis. Reeve & Co., London.

Bentham, G. 1873. Flora Australiensis: a description of the plants of the Australian territory 6. Reeve & Co., London.

Blume, C.L. 1826. Bijdragen tot de flora van Nederlandsch-Indië 11: 485–730. Lands Drukkerij, Batavia.

Bollendorff, S.M., P.C. van Welzen & J.W.F. Slik. 2000. A taxonomic revision of Mallotus section Polyadenii (Euphorbiaceae). Blumea 45: 319–340.

Croizat, L.C.M. 1938. Notes on Chinese Euphorbiaceae. J. Arnold Arbor. 19: 134–148.

De Jussieu, A.H.L. 1824. De Euphorbiacearum generibus. Didot Jr., Paris.

De Lamarck, J.B.A.P. 1786. Encyclopédie méthodique. Botanique. 2. Panckoucke, Paris. Plumteux, Liège.

De Loureiro, J. 1790. Flora Cochinchinensis 1. De Loureiro, Ulyssipone (Lisboa).

Dillwyn, L.W. 1839. A review of the references to the Hortus malabaricus of Henry van Rheede van Draakenstein 5. Murray & Rees, Sansea.

Dunn, S.T. 1908. A botanical expedition to Central Fokien. J. Linn. Soc., Bot. 38: 365.

Forman, L.L. 1997. Notes concerning the typification of William Roxburgh's species of Phanerogams. Kew Bull. 52: 513–534.

Forster, P.I. 1999. A taxonomic revision of Mallotus Lour. (Euphorbiaceae) in Australia. Austrobaileya 5, 3: 457–497.

Gaertner, J. 1790. De fructibus et seminibus plantarum 2. Schramm, Tübingen.

Gagnepain, F. 1925. Euphorbiaceae. In: M.H. Lecomte, Flore générale de l'Indo-Chine 5: 229–673. Masson & Cie, Paris.

Gamble, J.S. 1925. Flora of the presidency of Madras 2, 7: 1319–1323. West Newman & Co., Adlard & Son, London.

Geiseler, E.F. 1807. Crotonis monographiam, speciminis loco inauguralis, ut doctoris medici gradum in alma fridericiana adipiscatur. Grunert, Halle.

Greuter, W., J. McNeill, R. Barrie, H.-M. Burdet, V. Demoulin, T.S. Filguerias, D.H. Nicolson, P.C. Silva, J.E. Skog, P. Trehane, N.J. Turland & D.L. Hawksworth (editors & compilers). 1999. International Code of Botanical Nomenclature (St Louis Code). Regnum Veg. 138.

Hance, H.F. 1878. Spicilegia florae sinensis: diagnoses of new, and habitats of rare or hitherto unrecorded, Chinese plants. J. Bot. 16: 6–15.
Hance, H.F. 1882. Spicilegia florae sinensis: diagnoses of new, and habitats of rare or hitherto unrecorded, Chinese plants. J. Bot. 20: 289–296.
Handel-Mazzetti, H. 1931. Symbolae Sinicae. Springer, Vienna.
Hasskarl, J.C. 1842. Plantarum genera et species novae aut reformatae javenses. Flora 25: 1–114.
Hooker, J.D. 1887. Flora of British India 5. Reeve & Co., London.
Hooker, W.J. & G.A.W. Arnott. 1838. The botany of Captain Beechey's Voyage 6: 270–271. Bohn, London.
Hwang, S.M. 1985. New material of Mallotus L. from China. Acta Phytotax. Sin. 23: 293–301.
Hwang, S.M. 1996. Mallotus. In: H.S. Kiu, Fl. Reipubl. Popularis Sin. 44, 2: 13–45. Science Press, Peking.
Jacquin, N.J. 1787. Collectanea 1. Wapplerian, Vindobonae (Wien).
Keßler, P.J.A. 2002. Checklist of woody plants of Sulawesi, Indonesia. Blumea Suppl. 14: 49–50.
Kiu, H.S. 1993. Additions and corrections to the Euphorbiaceae of Yunnan province. J. S.W. Forest. Coll. 13: 73–78.
Kress, W.J., R.A. DeFilipps, E. Farr & D. Yin Yin Kyi. 2003. A checklist of the trees, shrubs, herbs, and climbers of Myanmar (rev. ed. 4). National Museum of Natural History, Washington, D.C.
Kurosawa, T. 2004. New species in Mallotus and Croton (Euphorbiaceae) from Nepal. Edinburgh J. Bot. 61: 31–39.
Léveillé, A.A.H. 1914. Decades plantarum novarum. CXXXVI–CXL. Repert. Spec. Nov. Regni Veg. 13: 257–266.
Llanos, A. 1856. Nuevo apéndice ó suplemento a la flora de Filipinas del P. Fr. Manuel Blanco. Mem. Real Acad. Ci. Exact. Madrid 4: 495–509.
Mabberley, D.J. 1977. Francis Hamilton's commentaries with particular reference to Meliaceae. Taxon 26: 523–540.
Manilal, K.S. 2003. Van Rheede's Hortus Malabaricus 5: 79–89. University of Kerala, Thiruvananthapuram.
McPherson, G.D. & C. Tirel. 1987. Euphorbiaceae I. In: A. Aubréville (ed.), Flore de la Nouvelle-Calédonie et dépendances 14: 102–107. Muséum national d'Histoire naturelle, Paris.
Metcalf, F.P. 1941. New species of Mallotus. J. Arnold Arbor. 22: 204–208.
Miquel, F.A.W. 1859. Flora van Nederlandsch Indië 1, 2. Fleischer, Leipzig.
Müller Argoviensis, J. 1865. Euphorbiaceae. Linnaea 34: 184–197.
Müller Argoviensis, J. 1866. Euphorbiaceae tribus Acalypheae. In: A. de Candolle, Prodr. 15, 2: 956–1015. Masson & Fili, Paris.
Nicolson, D.H., C.R. Suresh & K.S. Manilal. 1988. An interpretation of Van Rheede's Hortus Malabaricus: 112–114. Koeltz Scientific Books, Königstein.
Pampanini, R. 1910. Le piante vascolari raccolte dal Rev. P.C. Silvestri nell' Hu-peh durante gli anni 1904–1907. Nuovo Giorn. Bot. Ital. 17: 413–415.
Pax, F. & K. Hoffmann. 1914. Euphorbiaceae–Acalyphae–Mercurialinae. In: A. Engler (ed.), Pflanzenreich IV.147.vii: 145–212, 394–397. Engelmann, Leipzig.
Philcox, D. 1997. Euphorbiaceae. In: M.D. Dassanayake & W.D. Clayton (eds.), A revised handbook to the Flora of Ceylon 11: 80–166. Balkema, Rotterdam.
Radcliffe-Smith, A. 2001. Genera Euphorbiacearum. Royal Botanic Gardens, Kew.
Reichenbach, H.G. & H. Zollinger. 1856. Over soorten van Rottlera. Acta Soc. Regiae Sci. Indo-Neerl. 1: 19–31.
Reichenbach, H.G. & H. Zollinger. 1857. Ueber die Rottlera-Arten. Linnaea 28: 299–332.
Retzius, A.J. 1789. Observationes botanicae 5. Crusium, Leipzig.
Rottler, J.P. 1803. Botanische Bemerkungen auf der Hin- und Rückreise von Trankenbar nach Madras. Ges. Naturf. Freunde Berlin Neue Schriften 4: 180–224, pl. 3–5.
Roxburgh, W. 1802. Plants of the coast of Coromandel 2, 3. Bulmer & Co., London.
Roxburgh, W. 1814. Hortus bengalensis. Mission Press, Serampore.
Roxburgh, W. 1832. Flora Indica 3. Thacker & Co., Calcutta; Parbury; Allen & Co., London.
Salvosa, F.M. 1963. Lexicon of Philippine trees. Forest Products Research Institute, Laguna.

Scheffer, R.H.C.C. 1869. Observationes de Quibusdam Euphorbiaceis Archipelagi Indici. In: F.A.W. Miquel, Annales musei botanici lugduno-batavi 4: 119–127.
Slik, J.W.F. & P.C. van Welzen. 2001a. A taxonomic revision of Mallotus sections Hancea and Stylanthus (Euphorbiaceae). Blumea 46: 3–66.
Slik, J.W.F. & P.C. van Welzen. 2001b. A phylogeny of Mallotus (Euphorbiaceae) based on morphology: Indications for a pioneer origin of Macaranga. Syst. Bot. 26: 786–796.
Smitinand, T. 2001. Thai plant names. Revised edition. Royal Forest Department. Bangkok.
Spanoghe, J.B. 1841. Prodromus Florae Timorensis. Linnaea 15: 348.
Sprengel, C. 1815. Plantarum minus cognitarum pugillus. Kümmelium, Halae (Halle).
Sprengel, C. 1826. Systema vegetabilium 3. Librariae Dieterichianae, Göttingen.
Thwaites, G.H.K. 1861. Enumeratio plantarum zeylaniae. Dulau & Co.
Vahl, M. 1791. Symbolae botanicae 2. Möller & filius, Copenhagen.
Van Rheede tot Draakestein, H.A. & J. Munnicks. 1685. Hortus indicus malabaricus 5. Widow of J. van Someren, heirs of J. Van Dyck & Henricus & widow of T. Boom, Amsterdam.
Van Welzen, P.C., R.M.A.P. Haegens, J.W.F. Slik, S.M. Bollendorff, S. Dressler & H.-J. Esser. 2000. Checklist of the genera of Thai Euphorbiaceae. Thai Forest Bull., Bot. 28: 93–111.
Van Welzen, P.C & K. Phattarahirankanok. 2001. Mallotus kongkandae (Euphorbiaceae), a new species from Thailand. Blumea 46: 67–69.
Webster, G.L. 1994. Synopsis of the genera and suprageneric taxa of Euphorbiaceae. Ann. Missouri Bot. Gard. 81: 33–144.
Whitmore, T.C. 1973. Tree Flora of Malaya 2. Longman, London.
Willdenow, C.L. 1798. Schradera et Rottlera, bina nova plantarum genera. Gött. J. Naturwiss. 1: 1–9.
Willdenow, C.L. 1805. Species Plantarum, ed. 4, 1. Nauk, Berlin.
Willdenow, C.L. 1806. Species Plantarum, ed. 4, 2. Nauk, Berlin.

IDENTIFICATION LIST

The numbers behind the collector numbers refer to the following taxa:

1 = *Mallotus chromocarpus* Airy Shaw
2 = *Mallotus kongkandae* Welzen & Phattar.
3 = *Mallotus leptostachyus* Hook.f.
4 = *Mallotus pallidus* (Airy Shaw) Airy Shaw
5 = *Mallotus philippensis* (Lam.) Müll.Arg.
6 = *Mallotus repandus* (Willd.) Müll.Arg.

A series 1260: 5; 1268: 5; 3178: 5 — Adduru 248: 5 — Ahern's collector 23: 5 — Alston 14527: 5 — Altmann 579: 5 — Alvins 2066: 6 — Angian 10308: 5 —Annable & Schafer 3547: 5 — Argent 9905: 5 — Atmodjo 437: 5.

Backer 3998: 6; 15504: 6; 16561: 6; 27009: 5; 27394: 5; 28941: 5 — Bakhuizen van den Brink Jr. 3482: 6 — Balakrishnan 655: 6; 684: 6 — Balansa 194: 6; 686: 5; 3217: 5; 3219: 5; 3254: 6; 3255: 6; 3256: 6; 4791: 6 — Bancroft 80: 5 — Banks & Solander 88: 5; 1770: 5 — Barber 1193: 5; 5043: 5; 5926: 5; 7441: 5 — Barnes 612: 5 — Bartlett 6853: 5; 8286: 6; 14710: 6; 15047: 5 — Bartlett & La Rue16: 5 — Batianoff 12223: 6 —Batianoff & Dalliston 3706: 5 — Batianoff & Dillewaard 9403333: 5; 9403406: 5 — Batianoff & Fiff 940405: 5 — Batianoff & Krieger 6302: 5 — Batianoff & McDonald 146: 5; 594: 5 — Batianoff & Ryan 9805138: 5 — Batianoff et al. 11325: 5 — bb series 5753: 5; 6494: 5; 11569: 5; 14357: 5; 18420: 5; 21766: 5; 27134: 5; 27293: 5; 33337: 5; 33533: 5; 33637: 5; 33773: 5 — Bean 8527: 5 — Beccari 3049: 5 — Beckler 1884: 5 — Beddome 7347: 6 — Beesley 106: 5; 420: 5 — Beesley & Ollerenshaw 827: 5 — Béguin 1679: 5; 1709: 5 — Bell 603: 5 — Bernardi 14226: 6; 14229: 6 — Beumée 5156 : 6 — Bhargava 1882: 5; 2823: 5 — Biswas 1524: 5 — Bjørnland & Schumacher 348: 5; 534: 5 — Black 178: 5 — Bloembergen 4396: 6 — Blume 1716: 6 — Bogor Botanical Garden 547: 5; III.E.8: 5; IX.A.27: 5; IX.A.120: 5; IX.C.19: 5; IX.C.110: 5; XV.C.20: 6 —Bonati 722: 6; 3065: 6 — Boonkrong

47: 3 — Bourdillon 419: 5 — Bourne 3666: 5 — Brass 731: 6; 814: 5; 1946: 5; 3646: 5; 6265: 5; 21898: 5; 24144: 1; 24145: 1; 24383: 5 — BRIU 3914: 5 — Brown 3552: 5 — Bruhl et al. 1147: 5 — BS series 110: 6; 132: 5; 268: 5; 359: 6; 951: 6; 1249: 5; 1700: 5; 1712: 6; 1892: 5; 7596: 6; 9416: 6; 9748: 5; 11080: 6; 16297: 6; 16514: 5; 16873: 6; 17274: 5; 17278: 5; 17442: 6; 17830: 6; 17988: 5; 18313: 6; 18958: 5; 19162: 5; 20152: 5; 22523: 5; 23074: 5; 27558: 6; 27659: 5; 28155: 5; 29501: 5; 42700: 6; 43556: 5; 44026: 6; 46817: 5; 47018: 5; 47065: 6; 49120: 6; 49924: 5; 75417: 5; 75418: 5; 79331: 5 — BSIP series 1835: 5; 2548: 5; 4429: 5; 4990: 5; 8035: 5 — Bullock 896: 5; 937: 5 — Bunchuai 12: 6; 1325: 6; 1422: 5; 40283: 6 — Burkill & Haniff 13567: 5 — Burma Forest School Herb. 3: 5; 27: 5; 34: 5; 48: 5; 79: 5 — Buwalda 3112: 5; 3126: 5; 7264: 5 — BW series 4631: 5; 7222: 5; 7789: 5; 7854: 5; 7910: 5; 12047: 6.

Calléry 46: 5 — Canton Christian College 8988: 5; 12192: 5; 12196: 6; 12600: 5; 12890: 5 — Carr 11052: 6; 16175: 6 — Carroll & Telford 17394: 5; 17395: 5; 17397: 5 — Cavalerie 7949: 5; 7953: 5 — CBG series 7702539: 5; 8002595: 5; 8300790: 5; 8309238: 5 —Chayamarit et al. 1551: 2; 1845: 4; 1862: 4; 1867: 4 — Chen 2043: 6; 3416: 5 — Cheng 1032: 5; 2936: 6 — Chiao 14811: 5 — Chin 830: 5 — Chinese collector 471: 6 — Ching 1993: 5; 3086: 6; 3138: 5; 5297: 5; 6351: 5; 8271: 5 — Chow 699: 5; 942: 5; 1690: 5; 1989: 5 — Chun & Tso 44648: 5 — Chung 2726: 5; 3222: 5 — Cinatti 367: 6 — Clark et al. 1659: 5 — Clarke 10868B: 5; 14092C: 5; 17199B: 5; 34762A: 5; 36691A: 5 — Clarkson & McDonald 6726: 5 — J. Clemens & M.S. Clemens 1031: 5 — M.S. Clemens 89: 6; 629: 5; 968: 5; 5342: 6; 7986: 5; 8260a: 5; 8568a: 5; 17892: 6; 41453: 5 — Coert 1217: 5 — Colfs 232: 5 — Collett 845: 5 — Collins B129: 5; 191: 5; 1783: 6 — Constable 22247: 5 — Coode & Lamb 7162: 5 — Cooke 463: 5 — Cooper 1419: 6 — Cuming 512: 5; 1090: 6; 1098: 6; 1318: 5; 1546: 5 — Cunningham 19: 5; 143: 5 — Cuong et al. 790: 5.

Dalliston 169: 5 — Dames 40: 5 — Däniker 2262: 6 — Dar et al. 5: 5 — Darbyshire 594: 5; 1203: 5 — De Vogel 3020: 5; 3453: 5; 5669: 5 — De Voogd 2368: 5 — De Wilde & De Wilde-Duyfjes 12208: 5; 12740: 5; 14816: 6; 14864: 5; 14869: 5; 18110: 5; 19640: 5; 20871: 5 — Dickason 6600: 5; 6641: 5; 6744: 5; 6938: 5; 7139: 5 — Didrichsen 3234: 5 — Dietrich 256: 5; 2674: 5 — Dobremez 642: 5 — Dockrill 547: 6; 1302: 6 — Docters van Leeuwen 588: 5; 589: 5; 591: 6; 1407: 5; 9632: 6; 10014: 6; 11207: 6 — Dorgelo 925: 6; 3127: 6 — Dovey 556: 5 — Downling & Stephens DIN 3: 5 — Ducloux 214: 6 — Dunlop 3106: 5; 34143: 5 — Durrington 141: 5.

Ebalo 602: 6 — Eden 27: 5 — Edgeworth 133: 5 — Edwards 3: 5 — Elbert 649: 5; 649a: 5; 2089: 6; 2442: 5; 2692: 6; 2720: 6; 2911: 5; 3547: 5; 3646: 6; 3868: 5; 4084: 6; 4358: 5; 4393: 5; 4452: 5; 4646: 5 — Elmer 1698: 5; 6420: 5; 6749: 6; 8131: 6; 10292: 6; 10300: 5; 12657: 5; 13049: 5; 15232: 5; 17285: 5; 17712: 5 — Elsor & Sattler 460: 5 — Emanuelson 2024: 5 — En 2199: 5 — Erlanson 5244: 5; 5420: 5 — Everist 2961: 5; 7130: 5 — Eyma 3501: 6.

Fan & Li 149: 6 — Fang 1431: 6; 6230: 5 — Farges 827: 6 — Faurie 401: 6; 418: 5; 419: 5 — FB series 224: 5; 1486: 5; 1919: 5; 2726: 5; 3598: 5; 4493: 5; 9722: 5; 10055: 5; 10470: 5; 12777: 5; 13118: 5; 13834: 6; 14816: 5; 15040: 5; 15778: 6; 17033: 5; 18456: 5; 18460: 5; 18620: 5; 22823: 5; 23760: 6; 24549: 5; 24563: 5; 26761: 6; 26815: 5 — Fell & Stanton 2745: 5; 2790: 5; 2860: 6 — Fensham 23: 5 — Fernandes 27: 5; 1059: 5; 1747: 5; 2106: 5 — Flecker 3942: 6 — Forbes 3766: 5 — Ford 471: 6 — Ford & Holmes 2567: 6 — Forrest 9478: 5; 10704: 5; 15948: 5; 24300: 6 — Forsten 314: 6; 363: 5; 442: 6 — P.I. Forster & Bean 9467: 5; 12759: 5; 13091: 6; 13095: 6 — P.I. Forster & Booth 23770: 5 — P.I. Forster & McDonald 8316: 5 — P.I. Forster & Sharpa 6451: 5; 7529: 5; 9297: 5; 9467: 5; 9520: 5; 12439: 5; 13976: 5; 18208: 5; 20143: 5; 28028: 5 — P.I. Forster & Spokes 18069: 6; 18211: 6 — P.I. Forster & Tucker 15340: 6 — P.I. Forster et al. 5868: 5; 9947: 5; 12913: 5; 13581: 6; 26079: 5; 27662: 5; 29147: 5 — Fosberg 37536: 5; 38351: 5; 41553: 5 — Franc 3065: 6 — Fraser 18: 5; 19: 5; 65: 5; 70: 5 — FRDU & Van Welzen 100: 5 — Friedberg 95: 5; 298: 5 — Furuse 4: 5; 2909: 5; 5426: 5.

Galathea Expeditionen 1690: 6 — Gamble 2794A: 6; 2802A: 5; 5995A: 5; 8933: 5; 8945: 5; 13996: 6 — N. Gibson TOI 490: 5; 555: 5 — Gillis 9282: 5 — Goy & Smith 609: 5 — Gray 4438: 5; 5098: 6; 7386: 6 — Gressitt 26: 5; 62: 5; 496: 6 — Grierson & Long 3181: 5 — Griffith KD 2517: 6; 4760: 6; 4766: 5 — Grimshaw 20: 5; 158: 5.

Haenke 587: 5 — Haines 52: 5; 2398: 6; 5041: 6 — Halford Q839: 5; Q892: 5; Q939: 5 — Hallier 4102b: 5 — Hance 811: 5 — Handel-Mazzetti 87: 5; 5305: 5; 6313: 5; 10406: 5 — Hannif 10324: 6 — B. Hansen et al. 11335: 5 — Hara et al. 4251: 5 — Hardial 611: 5 — Hartley 10179: 1; 10213:

5; 10920: 5; 12222: 5; 12348: 6 — Hashim 691: 5 — Hatusima & Sako 21390: 5 — Helfer KD 4729: 3 — Hennelly 243: 5 — Henry 473: 5; 714: 6; 714c: 6; 828: 5; 1587: 5; 7988: 5; 7991: 6; 8038: 6; 8319: 6; 10714: 5; 10714A: 5; 11252: 5; 11990A: 6; 12455: 5; 12455c: 5; 13696: 6 — Hertel 23239: 6 — Heyligers 1194: 5 — Hobbard 4175: 5; 5271: 5 — Hoffmannsegg 98: 6 — Hohenacker 1558: 5 — Hong Kong Herb. 3428: 5; 3429: 5; 10647: 6 — Hoogerwerf 320: 5 — Hoogland 3255: 1; 4146: 1; 4744: 5; 9015: 6 — Hoogland & Craven 10488: 6 — Hooker f. & Thomson 232: 6; 8031: 6 — Hopkins 1711: 5; 2028: 5 — Horsfield 146: 5 — How 70643: 5; 70845: 6; 73362: 5 — Hu 5227: 6; 11707: 6 — Huang 4547: 6 — Hubbard 3740: 5; 5383: 5 — Hudson 84: 5 — Huk 68: 5 — Hunter 1676: 6; 3305: 5 — A.M. Huq & A.I. Huq 10460: 5 — Hyland 3116: 5; 5735: 6; 9632: 6.

Iboet 196: 5; 325: 6 — Inayat 22513: 5 — Irvine 508: 5.

Ja series 2045: 5; 2284: 5; 3062: 5; 3295: 5; 4311: 5; 4902: 5 — Jaag 938: 5 — Jacobs 4911: 5 — Jacobson 2026: 5 — Jago 82: 5 — Jansen 4675a: 5 — Jayasuriya 2052: 6 — Jayasuriya et al. 1408 : 6; 2846: 5 — Jeng 960: 5 — Jensen 407: 6 — Jessup 54: 5 — Johns et al. 7653: 5 — J.W. Jones SN 3484: 5; 5547: 5; 5556: 5.

Kajewski 1176: 5; 1583: 5 — Kalshoven 50: 5 — Kameswara 34: 5 — Kanai 11188: 5 — Kanehira 1838A: 5; 4074: 5 — Kanis 1256: 5 — Karsten 77: 6 — Keng 1163: 6 — KEP series 94707: 5; 97712: 6 — KEP FRI series 116: 5; 15669: 5; 17400: 5; 21894: 5; 25735: 5 — Kere 4990: 5 — Kerr 288: 6; 1624: 5; 1672: 6; 2162: 5; 2282: 5; 3026: 5; 4793: 5; 4842: 6; 5943: 5; 9771: 6; 9870: 6; 10923: 4; 12097: 3; 12097A: 3; 12098: 3; 12705: 5; 12992: 5; 16442: 3; 18270: 6; 20248: 5; 20541: 5 — Khant 1052: 5 — Khit 59: 5 — King's collector 70: 5; 80: 6; 81: 5; 252: 6; 266: 5; 315: 5; 330: 5; 635: 5; 645: 6; 5741: 6; 7424: 5; 8353: 6 — Kingdon Ward 8922: 6 — Kjellberg 570: 5; 1401: 5 — KL series 2849: 5 — Klein 329: 5; 371: 5 — Kloss 6778: 3 — Ko 52118: 5; 55912: 5 — Koelz 1529: 5; 1715: 5; 3210: 5; 8297: 5; 8801: 5; 10352: 5; 19248: 5; 19550: 5; 19834: 5; 25093: 6; 27317: 6 — Koop 126: 5 — Koorders 2458: 5; 2459: 5; 2460: 5; 2461: 5; 2463: 5; 2464: 5; 2465: 5; 2466: 5; 2467: 5; 2468: 5; 2471: 5; 2472: 5; 2473: 5; 2476: 5; 2485: 5; 2486: 5; 2487: 5; 2488: 5; 2489: 5; 2490: 5; 2491: 5; 2492: 5; 2493: 5; 2494: 5; 2496: 5; 2500: 5; 2566: 5; 11443: 5; 11444: 5; 11464: 5; 11752: 5; 11878: 5; 12761: 5; 12923: 5; 13432: 5; 14445: 5; 16915: 5; 20068: 5; 20495: 5; 24739: 5; 25084: 5; 25109: 5; 25511: 5; 26894: 5; 27225: 5; 27376: 6; 27377: 5; 28537: 5; 28910: 5; 28915: 5; 28922: 5; 28923: 5; 28931: 6; 29919: 5; 30204: 5; 33214: 5; 33713: 5; 36917: 5; 36982: 5 — Kooy 273: 5; 527: 5; 1338: 6 — Kostermans 1255: 5; 1417: 5; 1544: 5; 2617: 6; 2938: 5; 18049: 5; 18070: 5; 18082: 5; 19194: 5; 24034: 5 — Kostermans & Wirawan 147: 5; 645: 6; 713: 5 — Koyama et al. 33739: 3 — Krishna 1824: 5 — Krukoff 340: 5 — Kukkonen 6791: 5; 11076: 5 — Kurata & Nakaike 1601: 5.

Lace 8: 5; 3106: 5; 4394: 5 — LAE series 66550: 5 — Lahaie 1797: 5; 1956: 6; 2261: 5 — Lam 7343: 5 — Langley 14120: 5 — K. Larsen 8427: 6 — K. Larsen et al. 1177: 4; 1179: 4; 32200: 5; 33625: 4; 33633: 4; 33690: 4; 41973: 5; 45075: 5; 45519: 5 — Lau 15: 6; 121: 5; 1283: 5; 1657: 5; 1730: 5; 3314: 5; 3540: 5; 4602: 5; 5011: 5; 27457: 6 — Law 476: 6; 707: 6 — Lawrie 2: 5 — Le Cussan 458: 6 — Leavasa 17: 5— Lei 766: 5 — Leschenault de la Tour 24: 6; 16583: 6 — Leu et al. 1488: 5 — Li 128: 5 — Liang 61986: 5; 64143: 5; 65161: 5; 65321: 5; 66079: 5 — Liao & Kuo 1676: 5 — Loc et al. 1636: 6 — Loeters 2053: 5; 2112: 6; 2221: 6 — Loher 4793: 5; 4809: 5; 4814: 6; 4815: 6; 4816: 6; 4817: 6; 4818: 6; 4819: 6; 6888: 6; 6889: 5 — Longxishan Exp. 2032: 5 — Lörzing 7674: 5; 11470: 5; 14955: 6 — Ludlow et al. 6289: 5 — Ludwigs 247: 5; 465: 5 — Luo 107: 6.

Maheswari 5415: 5 — Main 558: 6 — Marcan 551: 6; 739: 5; 1141: 6 — Matthew 16374: 5 — Maxwell 71-174: 6; 71-346: 5; 72-12: 6; 72-124: 5; 73-585: 6; 74-592: 5; 75-35: 5; 88-241: 6; 88-304: 5; 88-1290: 5; 89-97: 5; 89-262: 5; 89-1510: 5; 89-1566: 5; 93-1547: 5; 94-149: 5; 94-1242: 5; 95-6: 5; 95-1197: 5; 95-1289: 5; 97-859: 5; 97-1483: 5; 97-1490: 5; 98-287: 3; 98-315: 3; 98-1066: 5; 00-174: 5; 01-89: 5; 02-111: 5; 03-5: 5 — Maxwell & Jayasuriya 891: 5 — McCleary 1: 5 — McDonald & Sunaryo 4529: 5 — McKee 7969: 6; 25984: 6; 27342: 6; 27464: 6; 33694: 6; 33726: 6; 34345: 6; 36521: 6; 40873: 6 — Meebold 2420: 5; 2421: 5; 7622: 5; 7946: 6 — Meijer 3559: 5; 134565: 5 — Meijer & Muchtar 10808A: 6 — Meijer & Noerta 10236: 5 — Melville et al. 3295: 5 — Merrill 23: 5; 842: 6; 1197: 6; 1698: 5; 2551: 5; 2554: 5; 2556: 5; 2653: 5; 2869: 5; 2998: 5; 3362: 6 — Metzner 71: 5; 105: 5; 117: 5; 191B: 5 — Meyer

1496: 6 — Michael 416: 5; 1068: 5 — Middleton et al. 1131: 4; 1136: 4; 1323: 5; 1345: 5; 1502: 5 — Mikage et al. 9550593: 5; 9611839: 6 — Miyagi 9478: 5 — Moi 27: 5 — Mooney 1563: 5; 3713: 5; 3897: 5 — Moran 5075: 5; 5079: 5 — Morci 1073.1: 5 — Moriarty 56: 5 — Morley 16: 5 — Morse 534: 6 — Mukerjee 3984: 5 — Murata et al. T-14863: 6; T-16429: 5; T-16430: 5 — Murray et al. 78: 5; 81: 5.

Nair 2613: 5; 3583: 6; 4825: 6 — Newman et al. 1134: 4; 1140: 4 — NGF series 261: 5; 2058: 1; 3581: 5; 8204: 1; 9106: 5; 9110: 5; 12341: 5; 13302: 5; 14867: 5; 15076: 5; 15388: 5; 18985: 5; 20595: 5; 21051: 5; 26350: 5; 26372: 5; 26863: 5; 27276: 5; 27832: 1; 30376: 5; 30412: 5; 37483: 1; 38582: 5; 39400: 6; 41413: 5; 42351: 5; 43990: 6; 45422: 5; 46050: 5 — Nicolson 2282: 5; 3144: 5 — Niyomdham 55: 5; 2963: 4 — Niyomdham et al. 125: 5 — Noe 110: 5 — Noerkas 94a: 5; 268: 5 — Nooteboom 3073: 5; 3360: 5.

O'Keeffe 88: 5 — O'Reilly 178: 5; 456: 5 — Oldham 476: 5; 478: 6.

Panigrahi 10516: 5; 20949: 5 — Parry 613: 5 — Peal 359: 5 — Pételot 6206: 5; 6572: 6 — Phengnaren 509: 5 — Phusomsaeng 8: 5; 130: 5; 193: 5; 345: 5 — Phusomsaeng et al. 1599: 5 — Pierre 5379: 6; 6261: 6 — Playfair 70: 6 — PNH series 25: 5; 1597: 5; 4155: 6; 4306: 6; 8300: 5; 9027: 5; 11298: 6; 11757: 6; 17689: 5; 33512: 5; 34217: 5; 34239: 5; 34294: 5; 35258: 5; 35459: 5; 35460: 5; 35787: 5; 38971: 6; 40315: 5; 41642: 6; 78124: 5; 91592: 6 — Poilane 6098: 5; 6748: 5; 14105: 6; 19629: 5 — Polunin et al. 1329: 5; 3720: 5 — PPI series 1536: 5; 5576: 6; 5620: 5; 5635: 6; 6025: 5; 7650: 6; 7712: 6; 7743: 6; 7911: 6; 8907: 5; 9890: 5; 10330: 5; 10342: 5; 11772: 6; 11780: 6; 12656: 5; 15222: 6; 15325: 5; 17183: 5; 17277: 5; 17888: 5; 20272: 6; 21005: 5; 21712: 5; 21726: 5; 21834: 5; 22112: 5; 22210: 6; 23739: 5; 23864: 5; 23965: 5; 24494: 5; 25195: 6; 29129: 5; 29298: 5; 37128: 5; 37378: 5; 38859: 5 — Prain's collector 923: 5 — Prasad 19: 5 — Price 1402: 5 — Pullen 3595: 5; 6570: 5 — Put 1407: 6; 2051: 5; 2386: 6; 2489: 4; 2666: 6; 3530: 5; 4509: 5.

Qaiser 220: 5.

Rabil 221: 5 — Rahmat si Boeea (= Rahmat si Toroes) 1445: 5; 3342: 6; 3784: 5; 3797: 6; 5640: 5; 6606: 5 — Ramlan 46: 5 — Rammido 1070: 5 — Ramos 1892: 5 — RHT series 1294 : 6; 6107: 6; 14085: 5; 41818: 5; 50862: 5 — Rice 5: 5 — Rich 78: 5 — Richards 21335: 5 — Ridley 13092: 6; 14934: 5; 14936: 6 — Ridsdale 416: 5; 472: 5; 1896: 5 — Ritchie 1351: 5 — Roach 10: 5 — Robbins 1715: 5; 2091: 5 — Rock 1963: 6; 2343: 5; 6980: 5 — Rodenburg 300: 5 — Rottler 309: 6 — Rundi 43185: 5 — Russell-Smith & Lucas 5990: 5; 6391: 5.

S series 41808: 5 — Saito 126: 6; 3296: 6; 7704: 5; 7705: 5 — Salasoo 2592: 5; 2606: 5 — Saldanha 15651: 5 — Sampson 611: 5; 9420: 6 — Sampson & Hance 17694: 6 — Samsuri & Mahmud 584: 5 — SAN series 2644: 5; 15303: 5; 25772: 5; 27276: 5; 31900: 5; 33072: 5; 33655: 5; 35052: 5; 40485: 5; 43185: 5; 47532: 5; 51716: 5; 64307: 5; 64429: 5; 65921: 5; 73452: 5; 75332: 5; 77326: 5; 77610: 5; 90799: 5; 96349: 5; 110975: 5; 111732: 5; 114373: 5; 118142: 5; 123133: 5; 134565: 5; 138904: 5; 138918: 5 — B. Sangkhachand 1491: 5; 3022: 5; — P. Sangkhachand 1850: 5; 1881: 5; 2007: 5 — Santijan 35: 5 — Saran & Party 29866: 5 — Sarip 11: 5 — Sasaki 21472: 5 — Sauliere 476: 5 — Saunders 157: 5 — Scanlan 3C: 5 — Scarth-Johnson 551A: 5 — Schiefenhövel 37: 5 — Schlechter 17872: 5 — Schmutz 331: 5; 816: 6; 1757: 6; 2771: 6; 2951: 6 — Schodde 5112: 5 — SF series 12420: 5; 13567: 5; 15593: 5; 35423: 5 — Shah & Ali 2909: 6 — Shah & Kadim 587: 6 — Sharpe 4632: 6 — Sharpe & Durrington 862: 5 — Sharpe & Hockings 623: 5 — Sharpe & Perry 4059: 5 — Shirley 2: 5 — Silvestri 1290: 5; 1295: 5; 1296: 5; 1297: 5 — Sinclair & Edaño 9751: 5; 9770: 5 — Singh 10: 5; 16632: 5 — Sinh 31: 5 — Sino-American Botanical Expedition (1986) 207: 5; 448: 6; 1282: 5 — L.S. Smith 53: 5; 3169: 5; 4122: 5; 4410: 5; 4411: 5; 11845: 5; 13704: 5 — Soejarto 8292: 5; 8497: 5 — Soejarto & Cuong 10594: 5 — Soejarto & Madulid 6230: 5 — Soejarto & Sydara 10861: 5 — Soejarto et al. 6615: 5; 6978: 5; 8927: 5; 11030: 5 — Sørensen et al. 6881: 5 — Spanoghe 250: 6 — Speck 4610: 5 — Squires 890: 5 — Stainton et al. 2550: 5; 8761: 5 — Steiner 1878: 6 — Steward & Cheo 346: 5; 585: 5; 729: 5 — Steward et al. 169: 6; 183: 5 — Stewart 864: 5; 904: 5; 4149: 5; 14664B: 5; 16285: 5 — Stoddart 4519: 6 — Story 7147: 5; 7345: 5; 7353: 5 — Subramanian 1333: 5 — Sumithraarachchi et al. 15: 6 — Sykes & Ralph 1315: 5 — Symington 30793: 6; 32654: 6.

Taam 2185: 5 — Takeuchi 4568: 5 — Takeuchi et al. 4221: 5 — Tam 95384: 6 — Tanaka & Shimada 11043: 5; 11173: 6 — Tang 1295: 6; 1584: 5 — Tanthana & Chomchin 23 : 5 — Telford 20029:

5; 28600: 5; 28601: 5; 28606: 5; 29712: 5 — Teng 90329: 6 — Teruya 5: 5 — Teijsmann HB 10745: 5; 10763: 6 — Thaworn 181 : 5 — Thompson & Dillewaard 296: 5 — Thomson 59: 5; 71: 5; 107: 5 — Thorenaar 174: 5 — Thorne 20033a: 5 — Thorne & Jones 20841: 5 — Thwaites CP 2103: 5; 2115 : 6 — Ting & Shih 1521: 5 — Tirtoatmodjo D142: 5 — Tirvengadum et al. 231: 5 — To 12192: 5 — Townsend 73335: 5 — Tsai 56955: 5 — Tsang 1: 6; 124: 6; 141: 5; 503: 5; 12600: 5; 21783: 5; 23690: 5 — Tsiang 678: 5; 900: 6; 2374: 6; 5676: 5; 9298: 5; 10220: 5 — Tso 20938: 5; 21503: 6 — Tsui 331: 6; 399: 5; 454: 5.

Van Balgooy 2980: 6 — Van Beusekom & Phengklai 171: 5; 424: 5; 2982: 5 — Van Beusekom et al. 2654: 5; 4355: 5 — Van Borssum Waalkes 3198: 6 — Van der Bult 655: 5 — Van der Werff et al. 17479: 6 — Van Royen 2190: 5; 3814: 6; 3821: 5; 4985: 5; 5071: 5 — Van Royen & Sleumer 6811: 5; 8240: 5 — Van Schaik & Van Noordwijk 131: 6; 284: 5; 315: 5; 332: 5; 336: 5 — Van Steenis 3301: 6; 3502: 6; 10334: 6; 12877: 5 — Verheijen 759: 5; 825: 6; 1143: 5; 1144: 5; 1145: 5; 2291: 5; 2376: 6; 2807: 5; 3119: 5; 3188: 5 — Vidal y Soler 327: 5; 548: 5; 581: 5; 583: 5; 585: 5; 883: 5; 1769: 6; 1772: 5; 3730: 6; 3731: 6; 4674: 6 — Vieillard 1207: 6 — Vinas & Kairo 217: 5.

Waas 204: 5; 744: 5; 758: 5; 1078: 5; 1731: 5 — Wai-Tak 16750: 6 — Wallich 50: 6; 74: 6; 1688: 5; 7723A: 5; 7772A p.p.: 5; 7774: 6; 7818D parte (K mixed): 6; 7826B: 6; 7826C: 6; 7826D: 6; 7826F: 6; 7827B: 6; 7832A: 5; 7832B: 5; 7832C: 5; 7832E: 5; 7832F: 5; 7832G: 5; 7832H: 5; 7833B: 5 — Wang 45: 6; 224: 5; 239: 6; 780: 6; 997: 6; 2894: 5; 32931: 5; 35108: 5 — Warburg 12307: 6; 20634: 5 — Waterhouse 273: 5; 384B: 5; 855: 5; 27584: 5 — Webb SN 5121: 5; 5347: 5 — Webb & Tracey 1962: 5; 6936: 6; 7161: 6; 7733: 6; 7879: 5; 8882: 5; 9024: 5; 9042: 6; 9376: 5; 9459: 5; 9903: 5; 11561: 5; 12071: 5; 12622: 5; 12870: 5; 12871: 5; 12872: 5 — Wedd 60: 5 — Whalen & Mackay 706: 5 — C.T. White 162: 5; 1176: 5; 7261: 5 — Whitford 67: 5; 911: 5 — Whitmee 36: 6 — Whitmore 4429: 5 — Whitmore & Sidiyasa 3303: 6 — Widjaja 1378: 5 — Widjaja & Hamzah 2962: 5 — Wiecek et al. 516: 5 — Wight KD 2620: 6; KD 2628 (L, M mixed): 5; KD 2630: 6 — Wightman & Dunlop 309: 5 — Wilson 389: 6; 801: 5; 3294: 5; 3542: 6; 8155: 5 — Winterbottom 1039: 5 — Worthington 3248: 5 — Wray 3330: 6 — Wrigley & Telford 47390: 5 — Wurdack 78: 6.

Yao 9170: 5; 10424: 6 — Yates 893: 5; 1219: 5; 1398: 5; 1478: 6; 1925: 6; 2646: 6 — Yeshoda 262: 5 — Yin Yin Kyi 602: 5 — Yip 158: 6 — Yoa 10325: 5.

Zollinger 934: 6; 1101: 5; 1835: 5; 3347: 6; 3763: 5; 3873: 5.

INDEX TO NAMES

The numbers behind the names refer to the numbered species in this revision. Accepted names are in roman type; synonyms, excluded, and doubtful names in *italics*. excl. = excluded; dbt. = doubtful.

Aconceveibum trinerve Miq. 4
Croton coccineus Vahl 4
var. ß Geiseler 4
var. γ Geiseler 4
montanus Willd. 4
philippense Lam. 4
punctatus Retz. 4
repandus Rottler 5
rhombifolius Willd. 5
volubilis Llanos 5
Echinus philippensis (Lam.) Baill. 4
Euonymus hypoleucus H. Lév. 4
Helwingia populifolia Spreng. 5
Macaranga stricta (Rchb.f. & Zoll.) Müll.Arg. 4
Mallotus Lour.
sect. *Eumallotus* Müll.Arg. [p. 223]
sect. Philippinenses Pax & K. Hoffm. [p. 223]
sect. *Rottlera* ((Willd.) Rchb.f. & Zoll., corr.) Airy Shaw [p. 223]
bicarpellatus T. Kuros. 4
chromocarpus Airy Shaw excl.
chrysocarpus Pamp. 5
contubernalis Hance 5
var. *chrysocarpus* (Pamp.) Hand.-Mazz. 5
contubernalis auct. 5
discolor auct. excl.
illudens Croizat 5
kongkandae Welzen & Phattar. 1

(Mallotus)
leptostachyus Hook.f. 2
pallidus (Airy Shaw) Airy Shaw 3
philippensis (Lam.) Müll.Arg. 4, dbt.
var. *mengliangensis* C.Y. Wu ex S.M. Hwang dbt.
var. *pallidus* Airy Shaw 3
var. *reticulatus* (Dunn) F.P. Metcalf 4
var. *tomentosa* Gamble 4
repandus (Rottler) Müll.Arg. 5
var. *chrysocarpus* (Pamp.) S.M. Hwang 5
var. *genuinus* Müll.Arg. 5
var. *megaphyllus* Croizat 5
var. *scabrifolia* (A. Juss.) Müll.Arg. 5
reticulatus Dunn 4
scandens (Span.) Müll.Arg. 5
Mappa stricta Rchb.f. & Zoll. 4
Rottlera Roxb. ex Willd. [p. 223]
sect. *Eurottlera* Rchb.f. & Zoll. [p. 223]
affinis Hassk. 4
aurantiaca Hook. & Arn. 4
cordifolia Benth. 5
dicocca auct. 5
philippensis (Lam.) A. Juss. ex Spreng. 4
repanda (Rottler) Scheff. 5
rhombifolia (Willd.) Thwaites 5
scabrifolia A. Juss. 5
scandens Span. 5
tinctoria Roxb. 4
var. *monstruosa* Ham. ex Dillwyn 4
viscida Blume 5
Trewia nudiflora auct. 5