



# The species of *Alangium* section *Rhytidandra* (Alangiaceae)

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## Key words

Alangiaceae  
*Alangium* sect. *Rhytidandra*  
Australia  
new species  
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taxonomy

**Abstract** *Alangium* sect. *Rhytidandra* is confined to SE Asia, the Pacific and East Australia, and contains 13 species. Five species, viz. *Alangium brassii*, *A. glabrum*, *A. gracile*, *A. guadalcanalense*, and *A. velutinum* are described as new, whereas *A. villosum* subsp. *solomonense* is raised to specific rank: *A. solomonense*. Subspecies *tomentosum* formerly in *A. villosum* is transferred to another species and has become *A. polyosmoides* subsp. *tomentosum*. Finally *Iodes ferruginea*, described in *Icacinaceae* appeared to belong in *Alangiaceae*, and as the name *ferruginea* was occupied in *Alangium* it is changed into *A. strigosum*, nom. nov. A key to the species is presented, and the concerned taxa are enumerated, referenced, described, and two are figured.

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## INTRODUCTION

There are four sections in the genus *Alangium* and the number of species occurring in Malesia is estimated at c. 38 (but there are some collections which cannot be placed, and wait for additional material to be described). The sections are: sect. *Alangium* (see De Wilde & Duyfjes in press) with four species in Malesia, sect. *Conostigma* (see De Wilde & Duyfjes 2017) with 19 species in Malesia, sect. *Marlea* (Roxb.) Baill. with five species in Malesia, and according to the present revision, sect. *Rhytidandra* with 10 species in Malesia.

*Alangium* sect. *Rhytidandra* was established by Bloembergen (1939). The section comprises the group of species with stamens equal in number to petals and is furthermore defined by a deeply 2-lobed stigma and petals generally more or less connate at base. The section is distributed from Java eastwards into East Malesia, the Pacific and East Australia.

After deliberate consideration Bloembergen (1939: 201) decided to accept for the section only one single species, *Alangium villosum* Blume, with ten geographically separated subspecies and an eleventh undescribed subspecies of which at the time only sterile material was at hand. The present authors reconsidered the matter and, with much more material available than in 1939, accept thirteen species with one including two subspecies. Five species are here described as new, whereas one species needed a new name, *A. strigosum* (for *Iodes ferruginea*). Some of Bloembergen's subspecies are re-instated as species and one is raised to specific rank: *Alangium solomonense*. The above-mentioned 11th subspecies seen by Bloembergen (1939: 210) appeared, with the aid of subsequently collected fertile material, to belong to sect. *Conostigma* Bloemb. (see De Wilde & Duyfjes 2017) and has been recognised as a new variety of *Alangium maliliense* Bloemb.

The mode of venation, used as a character for species distinction, viz. lamina at base palminerved (or 3-plinerved) vs lamina entirely pinninerved is not always very clear. Leaves with weak basal veins may pass for entirely pinninerved.

The species of sect. *Rhytidandra* generally have domatia in (part of) the axils of the lateral nerves, or sometimes just glands close to the nerve axils. They seem to be absent in, for example, *A. guadalcanalense* and *A. villosum*. Some species in sect. *Alangium* also have domatia.

The basically cymose inflorescences in sect. *Rhytidandra* are here described as 'simple' or 'compound'. It denotes, as far as the limited material seen allows, a distinction which may be helpful in the definition of species. In a 'compound' cyme the peduncle continues above the (sub)opposite first lateral branches not with a single flower but reiterates in a more complex several-flowered central branch. This situation is prevalent also in, for example, *A. griffithii* of sect. *Marlea*.

In the present paper, all species of *Alangium* sect. *Rhytidandra* are enumerated, referenced and briefly annotated where appropriate.

## *Alangium* Lam. sect. *Rhytidandra* (A.Gray) Baill.

*Alangium* Lam. sect. *Rhytidandra* (A.Gray) Baill. (1864–1865) 193; (1876) 270; Bloemb. (1939) 197. — *Rhytidandra* A.Gray (1854) 302, t. 28. — Type: *Rhytidandra vitiense* A.Gray (= *Alangium vitiense* (A.Gray) Baill.).

Shrubs or trees. *Inflorescences* a single peduncled cyme. *Flowers*: *petals* free or connate at base; *stamens* as many as petals; *filament* longer or shorter than anther; *stigma* 2-armed, stigmatic on the inside. *Fruit* several per infructescence, ellipsoid or ovoid, more or less flattened. *Endosperm* smooth, radicle shorter than half the length of the cotyledons.

*Distribution* — Java east into the Pacific, Fiji, New Caledonia, E Australia.

Thirteen species are recognised.

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## KEY TO THE SPECIES OF ALANGIUM SECTION RHYTIDANDRA

The key presented here is largely based on flowering specimens. Although construction of a dichotomous key is impractical for fruiting specimens, most can nevertheless be identified with the help of fruit size and provenance, as follows:

- |                   |   |
|-------------------|---|
| Fruit length (mm) | species   |
| 8–12              | <i>pilosum</i> (Philippines, Lesser Sunda Is.)  |
| 10–15             | <i>villosum</i> (Java)  |
| 12–15             | <i>strigosum</i> (Papua New Guinea: Madang, Sepik)  |
| 13–15             | <i>brassii</i> (Papua New Guinea: Milne Bay)  |
| 15                | <i>polyosmoides</i> (E Australia),<br><i>velutinum</i> (Papua New Guinea)                         |
| 15–20             | <i>gracile</i> (Papua New Guinea)   |
| 15–22             | <i>warburgianum</i> (Moluccas: Bacan)   |
| 17–22             | <i>solomonense</i> (Solomon Is., Bougainville),<br><i>vitiense</i> (Fiji, Vanuatu, New Caledonia) |
| (25–)30           | <i>glabrum</i> (Papua New Guinea)   |
| 30–35             | <i>ferrugineum</i> (Moluccas, New Guinea)   |
| unknown           | <i>guadalcanalense</i> (Solomon Is.)  |
1. Flowers larger; corolla in bud 9 mm long or more . . . . . 2
  1. Flowers smaller; corolla in bud 8 mm long or less . . . 10
  2. Calyx lobes long-triangular, c. 1.5 mm long. — Bacan Isl. . . . . 13. *A. warburgianum*
  2. Calyx lobes ± triangular, c. 0.5 mm long or lobes almost absent . . . . . 3
  3. Ovary and calyx in bud reddish brown-hairy. Leaves drying reddish brown. — New Guinea . . . . . 4
  3. Ovary and calyx in bud greyish brown or yellowish brown-hairy. Leaves drying greenish. — New Guinea, Australia, Solomon Isl. . . . . 6
  4. Corolla in bud slender, c. 1 mm diam. Peduncle c. 0.5 mm diam. Style glabrous. Fruit 15–20 mm long . . . 4. *A. gracile*
  4. Corolla in bud thickish, c. 1.5 mm diam. Peduncle 1–2 mm diam. Style (sparingly) hairy or glabrous. Fruit 15–35 mm long . . . . . 5
  5. Lower lamina surface densely hairy but not velutinous. Style (sparingly) hairy. Fruit longly narrowed towards apex, 30–35 mm long. — Lowland forest . . . 2. *A. ferrugineum*
  5. Lower lamina surface velutinous. Style glabrous. Fruit not longly narrowed towards apex, c. 15 mm long. — Montane forest, 1400–2600 m altitude . . . . . 10. *A. velutinum*
  6. New Guinea. Style glabrous . . . . . 7
  6. Australia or Solomon Isl. Style hairy . . . . . 9
  7. Calyx lobes shorter than limb, in fruit hardly visible (rim of calyx almost straight), and not connivent . . . 1. *A. brassii*
  7. Calyx lobes about as long as or longer than limb, in fruit connivent . . . . . 8
  8. Twig towards apex brown-hairy, hairs 0.5(–1) mm long. Fruit c. 15 mm long . . . . . 9. *A. strigosum*
  8. Twig glabrescent (hairs less than 0.5 mm long). Fruit (25–)30 mm long . . . . . 3. *A. glabrum*
  9. Filaments completely fused with the tube of the corolla. — Solomon Isl. (Guadalcanal Isl.) . . . 5. *A. guadalcanalense*
  9. Filaments largely free. — East Australia . . . . . 7. *A. polyosmoides* (2 subsp.)
  10. Corolla in bud 4–6(–7) mm long. — Philippines, Lesser Sunda Isl. (Moluccas) . . . . . 6. *A. pilosum*
  10. Corolla in bud (6–)7–8 mm long . . . . . 11
  11. Twig towards apex, leaves, inflorescences and flowers densely hairy. — Java . . . . . 11. *A. villosum*

11. Twig towards apex, leaves, inflorescences and flowers (sub)glabrous. — Pacific area . . . . . 12
12. Style glabrous or sparingly hairy. — Fiji, Vanuatu, New Caledonia . . . . . 12. *A. vitiense*
12. Style hairy. — Solomon Isl. . . . . 8. *A. solomonense*

### 1. *Alangium brassii* W.J.de Wilde & Duyfjes, *sp. nov.*

Resembling *Alangium glabrum* W.J.de Wilde & Duyfjes but differing in its conspicuous golden or greyish brown indument and small fruit c. 15 mm long (whole plant glabrescent and fruit c. 30 mm long in *A. glabrum*). — Type: Brass 22578 (holo L L2498023), Papua New Guinea, Milne Bay Province, North slopes of Mt Dayman, Maneau Range, 2000 m alt., 27 May 1953, fl., fr.

*Etymology.* The species is named after its collector L.J. Brass.

Slender treelet 1–5 m tall; *twigs* 1.5–2.5(–4) mm diam, dark brown, at apex and leaf bud(s) with (dense) golden or greyish brown hairs 0.1–0.3 mm long. *Leaves:* *petiole* 0.4–0.6 cm long, late glabrescent; *lamina* subcoriaceous, drying greenish, glabrescent (except midrib at base below), elliptic, 7–12 by 2.5–5 cm, base asymmetric, attenuate, apex acute-acuminate; veins 4 or 5 at each side, tertiary venation reticulate, ultimate areoles small, distinct. *Inflorescences* hairy as the twigs, glabrescent, simple, 2–5-flowered, peduncle 5–10 mm long. *Flowers* minutely (pale) greyish brown-hairy, hairs c. 0.1 mm long; pedicel 2–3 mm long; *corolla in bud* 10–12 mm long, c. 1.5 mm diam, base not swollen, apex obtuse; *ovary and calyx* c. 2.5 mm long, not ribbed, greyish or yellowish brown-hairy, *limb* c. 1 mm long, at margin c. 2 mm wide, unlobed (straight) or faintly lobed, not spreading; *petals* 4, inside glabrous, except minutely hairy at base, connate into a tube 0.5–1 mm long; *stamens* 4, filament c. 5 mm long, minutely hairy, anther c. 5 mm long, thecae slightly sagittate at base, connective glabrous; *style* glabrous. *Fruit* 1–3 per infructescence, ripening colour unknown, glabrous, obovoid-ellipsoid, 13–15 by 6–7 mm, finely 8–10-ribbed, base ± narrowed, apex nearly rounded; *calyx remnant* minute.

*Distribution* — Papua New Guinea (Milne Bay Prov., North slopes of Mt Dayman).

*Habitat & Ecology* — Abundant in undergrowth in dryish forest of slopes, occasional in mossy forest; 2000–2230 m altitude; flowering and fruiting in May and June.

*Field-note* — Flowers yellow.

*Notes* — 1. *Alangium brassii* is known from two collections, both from about the same locality, viz. the type, Brass 22578 ‘abundant in undergrowth, dryish forest of slopes’ at 2000 m alt. and Brass 22698 (L) ‘occasional in mossy forest undergrowth’ at 2230 m alt.

2. As common in species of sect. *Rhytidandra* domatia are present in the axils of the lateral veins. In *A. brassii*, however, there are no real domatia but rather distinct round glands at some distance from the vein axils.

### 2. *Alangium ferrugineum* C.T.White — Fig. 1

*Alangium ferrugineum* C.T.White (1929) 248; Bloemb. (1935) 272, f. 3g, h. — *Alangium villosum* (Blume) Wangerin subsp. *ferrugineum* (C.T.White) Bloemb. (1939) 206, f. 6f, 7m, n. — Type: Brass 1066 (holo BRI BRI AQ0382983; iso L L0009829, P P04552634), Papua New Guinea, Gulf Province, Aroara, Vailala River, 60 m alt., 25 Feb. 1926.

Shrub or tree 5–10 m tall; *twigs* brown, 2–3 mm diam, yellowish, ferruginous, or rusty hairy, hairs c. 0.5 mm long. *Leaves:* *petiole* 0.5–1.5 cm long, hairy; *lamina* drying reddish brown, densely hairy, (ovate-)elliptic, 11–18 by 5–8.5 cm, base asymmetric, rounded or (short) cuneate, apex acute-acuminate; veins pinnate, 5–8 at each side, tertiary venation thin, (sub)scalariform. *Inflorescences* hairy as the twigs, simple, 2–8-flowered, *peduncle* 5–15 mm long, 1–1.5 mm diam. *Flowers* densely hairy; pedicel c. 3 mm long; *corolla in bud* c. 12 mm long (c. 15 mm

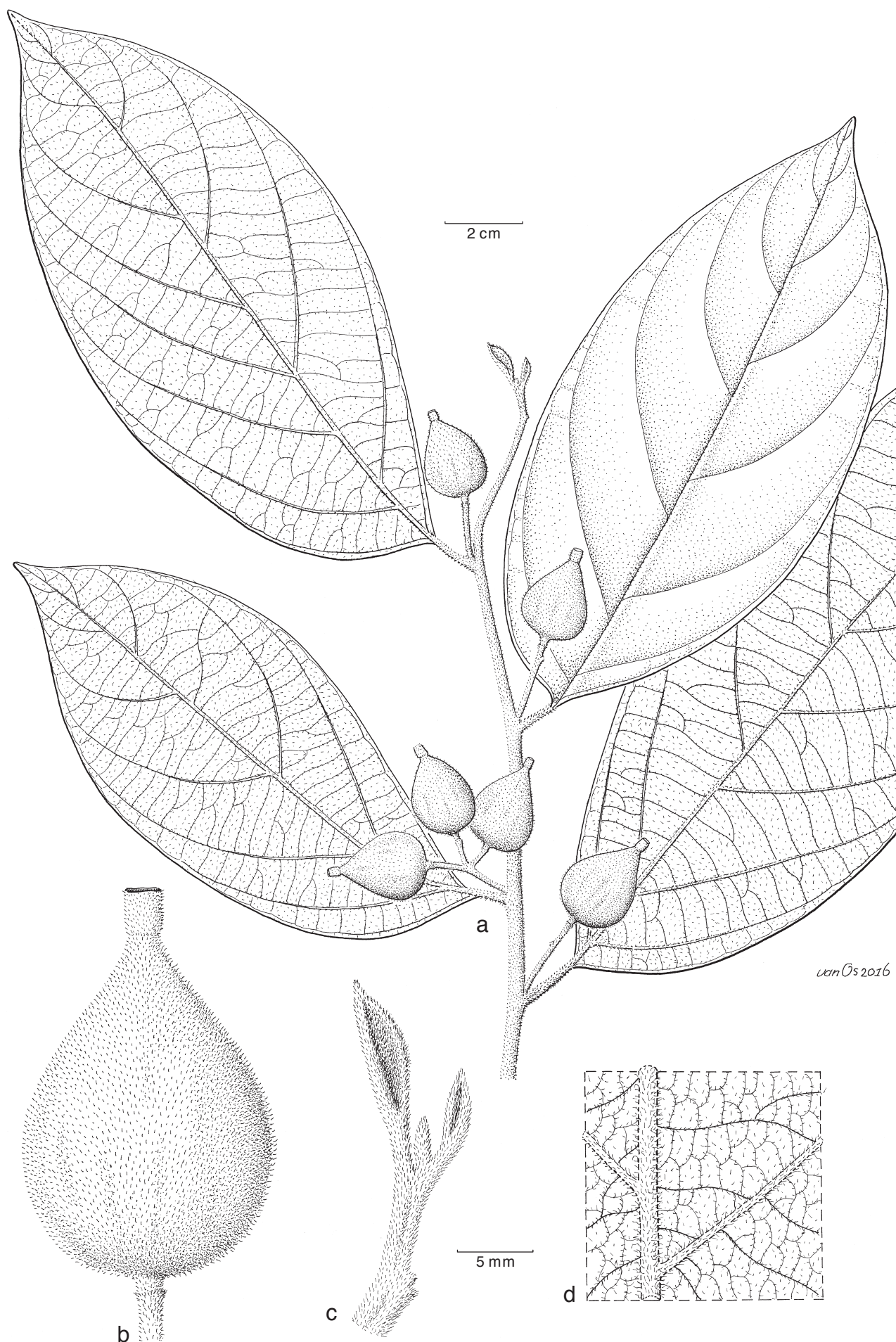


Fig. 1 *Alangium ferrugineum* C.T.White. a. Fruiting twig; b. fruit; c. twig apex; d. detail of lower lamina surface (all: Nooteboom 5773, L). — Drawn by Jan van Os.



long when fresh), c. 1.5 mm diam, base not swollen, apex subobtusely; *ovary and calyx* c. 2.5 mm long, not constricted below the limb, not ribbed, reddish brown-hairy; *limb* c. 1 mm long, not spreading, with 5 obtuse lobes c. 0.5 mm long; *petals* 5, inside glabrous, c. 12 mm long, connate at base into a tube c. 2 mm long; *stamens* 5, filament 3–5 mm long, hairy, anther 8(–10) mm long, connective glabrous; *style* 6–10 mm long, (sparingly) hairy, stigma lobes curved, c. 3 mm long. *Fruit* 1 or 2 (or 3?) per infructescence, ripening yellow (?), densely brown-hairy, ovoid and longly narrowed towards apex, 30–35 mm long, (10–)15–20 mm broad, not ribbed; *calyx remnant* small, narrow, subtruncate.

Distribution — Moluccas (Aru Isl. (Pulau Kobroor)), Papua; Papua New Guinea (Madang & Gulf Provinces).

Habitat & Ecology — Alluvial forest, foothill forest, secondary forest, clayey soil, coral stone; sea level to 400 m altitude; flowering in February and August; fruiting in February and July to November.

Field-notes — Handsome tree; flowers white; fruit yellow.

Vernacular name — Ala po'u (Aru Isl.).

*Additional specimens studied.* MOLUCCAS, *Nooteboom* 5773, Aru Isl. (P. Kobroor), 0–50 m alt., 27 Apr. 1993, fr. — PAPUA, *Aet* (exp. Lundquist) 558, South New Guinea, Patawai near Oeta, 21 July 1941, fr.; *Versteegh* BW 4850, near Wage, Div. South New Guinea, along River Digoel, 5 m alt., 16 Sept. 1957, fr. — PAPUA NEW GUINEA, Madang Prov., Josephstaal area, *Takeuchi et al.* 13103, 424 m alt., fr.; *Takeuchi et al.* 13674, 160 m alt., 1 Dec. 1999, fr.; *Takeuchi et al.* 13828, 80 m alt., 9 Aug. 1999, fl.; *Brass* 1066 (type), Gulf Prov., Aroara, Vailala River, 60 m alt., 25 Feb. 1926.

### 3. *Alangium glabrum* W.J.de Wilde & Duyfjes, *sp. nov.*

Resembling *Alangium strigosum* W.J.de Wilde & Duyfjes but differing in whole plant glabrescent from minute hairs 0.1 mm long, lamina 8–11 cm long, and fruit c. 30 mm long (twigs densely rusty or golden brown-hairy, hairs 0.5–1 mm long, lamina 13–19 cm long, and fruit 12–15 mm long in *A. strigosum*). — Type: *Womersley & Woolliams* NGF 37092 (holo L2500143; iso A, BO, BRI, CANB, K, LAE, SING, SYD, all n.v.), Papua New Guinea, Southern Highlands Province, Sawmill at Ialibu, 2000 m alt., 14 Sept. 1967, fl., fr.

*Etymology.* The specific epithet '*glabrum*' refers to the overall glabrous aspect of the plant.

Tree c. 12 m tall; *twigs* brown, 1–2.5 mm diam, whole plant glabrescent from minute greyish brown hairs c. 0.1 mm long. *Leaves:* *petiole* 0.6–0.8 cm long; *lamina* drying brownish green, elliptic, 8–11 by 3.5–5 cm, base (slightly) asymmetric, rounded or broadly short-cuneate, apex long acute-acuminate; veins (3 or) 4 or 5 at each side, tertiary venation reticulate. *Inflorescences* minutely hairy as the twigs, glabrescent, simple, 2- or 3-flowered, *peduncle* (5–)10 mm long. *Flowers* densely minutely brown-hairy, hairs c. 0.1 mm long; pedicel c. 2 mm long; *corolla in bud* (only seen in immature pedicels) presumably 8–10 mm long, 1(–1.5) mm diam, base not swollen, apex narrowly obtuse; *ovary and calyx* c. 3.5 mm long, coarsely 4–8-ribbed, minutely greyish brown-hairy; *limb* c. 1.5 mm long, including 4 triangular lobes 0.7–1 mm long, somewhat spreading; *petals* 4, inside thinly hairy towards base; *stamens* 4, mature filaments and anther not known; immature filament sparingly hairy, connective glabrous; *style* glabrous. *Fruit* 1–3 per infructescence, ripening green (?), glabrescent (except at very apex), narrowly ellipsoid, broadest slightly below the middle and pointed (narrowed) at both ends, (25–)30 mm long, 10–11 mm diam, (when dry) shallowly 4- (or 8-)grooved and irregularly dimpled; *calyx remnant* small, narrow, with the 4 calyx lobes connivent.

Distribution — The species is only known from the type.

Habitat & Ecology — In *Nothofagus* dominated rain forest; c. 2000 m altitude; flowering and fruiting in September.

Field-note — Fruit green.

Note — The fruiting pedicel is remarkably long, 5–7 mm.

### 4. *Alangium gracile* W.J.de Wilde & Duyfjes, *sp. nov.*

Resembling *Alangium ferrugineum* C.T.White but differing in its slender and long peduncle, 8–40 mm long, c. 0.5 mm diam, and fruit glabrescent, 15–20 mm long (peduncle 5–15 mm long, 1–1.5 mm diam, and fruit densely hairy, 30–35 mm long in *A. ferrugineum*). — Type: *Forman et al.* LAE 52499 (holo L2500089; iso A, BRI, CANB, K, LAE, all n.v.), Papua New Guinea, ridge SW of Efogi Village, Central Province, Port Moresby Subdistrict, S9°10' E147°39', 1370 m alt., 25 Sept. 1973, fl.

*Etymology.* The species epithet '*gracile*' refers to its slender peduncle and corolla in bud.

Shrub or tree 3–7(–15) m tall; *twigs* (dark) brown, 1.5–3(–5) mm diam, ferruginous or rufous-hairy, hairs 0.2–0.5 mm long. *Leaves:* *petiole* 0.5–1 cm long, hairy; *lamina* drying reddish brown, hairy or late glabrescent, elliptic, 7–15(–17) by 3–6(–8) cm, base hardly asymmetric, cuneate, apex acute-acuminate; veins pinnate, 5–8 at each side, tertiary venation (reticulate and) scalariform. *Inflorescences* hairy as the twigs, simple, 3–10-flowered, *peduncle* slender, 8–40 mm long, c. 0.5 mm diam. *Flowers* densely hairy, hairs rufous, 0.3–0.5 mm long; pedicel 1–3 mm long; *corolla in bud* c. 10 mm long, slender, c. 1 mm diam, base not swollen, apex subacute; *ovary and calyx* densely coarsely rufous-hairy, c. 2.5 mm long, constricted below the limb, not ribbed; *limb* 0.5–1 mm long, spreading, with 5 low, obtuse lobes less than 0.5 mm long; *petals* 5, inside glabrous (or hairs extremely minute), c. 10 mm long, connate at base into a tube 1–1.5 mm long; *stamens* 5, c. 10 mm long, filament c. 6 mm long, anther 3(–4) mm long, connective glabrous; *style* c. 8 mm long, glabrous, stigma lobes c. 1 mm long. *Fruit* 1(–3) per infructescence, ellipsoid-fusiform, 15–20 mm long, early glabrescent, smooth or finely 5-ribbed; *calyx remnant* small, spreading, like calyx limb in flower, hairy or late glabrescent.

Distribution — Papua New Guinea (Eastern Highlands and Central Provinces).

Habitat & Ecology — Montane forest, stream side, scattered in forest; 1060–2600 m altitude; flowering from September to December; fruiting from September to November.

Field-notes — Fruit ochre suffused red; fruit red.

*Additional specimens studied.* PAPUA NEW GUINEA, Central Prov., Boridi, *Carr* 13273, 1525 m alt., 20 Sept. 1935, fr.; *Carr* 14214, 1460 m alt., 27 Sept. 1935, fl.; *Carr* 14486, 1370 m alt., 9 Oct. 1935, fr.; *Carr* 14684, 1066 m alt., 22 Oct. 1935, fl.; *Foreman & Vinas* LAE 60189, S9°05' E147°38', 1370 m alt., 30 Sept. 1973, fl.; Central Prov., Lala River (most likely Laila River), *Carr* 14095, 1830 m alt., 30 Dec. 1935, fl.; Central Prov., Efogi, *Croft & Vinas* NGF 34867, 1400 m alt., 21 Sept. 1973, fr.; *Forman et al.* LAE 52499 (type), S9°10' E147°39', 1370 m alt., 25 Sept. 1973, fl.; *Stevens* LAE 50424, S9°10' E147°35', 1110 m alt., 5 Sept. 1970, fl., fr.; Eastern Highlands Prov., *Stevens* LAE 50498, Marafunga, S6°05' E145°15', 2600 m alt., fl., fr.

Notes — 1. *Alangium gracile* is vegetatively similar to *A. ferrugineum*, but differs in having inflorescence and flowers more coarsely hairy, peduncle more slender, and fruit smaller; ovary and calyx limb differ also considerably, not constricted below the limb in *A. ferrugineum*. In *A. gracile* ovary and limb are reminiscent of those of *A. pilosum*, but these are much less conspicuously hairy.

2. Like in *A. ferrugineum*, also in *A. gracile* the leaves have the lateral veins frequently tending to be 3-plinerved at base.

### 5. *Alangium guadalcanalense* W.J.de Wilde & Duyfjes, *sp. nov.*

Resembling *Alangium polyosmoides* (F.Muell.) Baill. subsp. *tomentosum* (F.Muell.) W.J.de Wilde & Duyfjes but differing in its filaments completely fused with the 3 mm long basal corolla tube (base of filaments slightly adnate to petals in *A. polyosmoides* subsp. *tomentosum*). — Type: *Gafui & collectors* BSIP (holo L.2183210; iso BSIP n.v.), Solomon Isl., West coast of Guadalcanal Isl., Kambi Hill, 600 m alt., 14 June 1968, fl.

*Etymology.* The specific epithet '*guadalcanalense*' refers to the collection locality, Guadalcanal Isl.

Tree c. 6 m tall; *twigs* greyish brown, 2–4 mm diam, densely greyish brown-hairy, hairs 0.5(–1) mm long. *Leaves*: *petiole* 0.5–0.7 cm long; *lamina* drying brownish green, hairy at both sides (upper side partly late glabrescent), ovate(–elliptic), 10–12 by 4.5–6.5 cm, base strongly asymmetric, rounded to short acuminate, apex acute-acuminate; veins 5–7 at each side, tertiary venation reticulate or faintly scalariform, domatia absent. *Inflorescences* densely hairy, solitary peduncled (compound) cymes, 4–7-flowered; *peduncle* 6–7 mm long. *Flowers* densely hairy as the twigs; *pedicel* 1–2 mm long; *corolla in bud* 9–10 mm long, base not swollen, apex narrowly obtuse; *ovary and calyx* 3–4 mm long, not ribbed, greyish brown-hairy; *limb* 1.5–2 mm long, not spreading, at margin 2–2.5 mm wide, with 5 small lobes; *petals* 5, inside hairy, 9–12 mm long, at base for 3–4 mm connate into a tube; *stamens* 5; filament (3–)4 mm long, completely adnate to the hairy tube of the corolla, anther c. 6 mm long, inserted in the calyx at apex of tube, connective glabrous; *style* 6–7 mm long, hairy, stigma lobes c. 1.5 mm long. *Fruit* not known.

**Distribution** — Solomon Isl. (Guadalcanal Isl.), known only from the type.

**Habitat & Ecology** — Well drained primary forest, ridge top; c. 600 m altitude; flowering in June.

**Field-notes** — Bole straight but leaning; bark surface grey, smooth.

**Note** — In general appearance reminiscent of *A. polyosmoides* subsp. *tomentosum* from Australia but markedly different in the filaments completely fused with the corolla tube, rendering the thecae sessile in the tube.

## 6. *Alangium pilosum* Merr. — Fig. 2

*Alangium pilosum* Merr. (1922) 417; (1923) 241. — *Alangium villosum* (Blume) Wangerin subsp. *pilosum* (Merr.) Bloemb. (1939) 205, f. 6d, 7h–i. — Type: *Ahern's collector* FB 3307 (holo PNH†, lectotype here designated: US US00127564; iso K n.v.), Luzon, Rizal Prov., Sept. 1905.

*Alangium pilosum* Merr. var. *subglabrum* Merr. (1922) 418; (1923) 241. — Type: *Contreras* FB 23399 (holo PNH†, lectotype here designated: US US00127565; iso K K000704822.), Negros, 300 m alt., 14 July 1914, fl.

*Alangium villosum* (Blume) Wangerin var. *parviflorum* Bloemb. (1935) 272. — *Alangium villosum* (Blume) Wangerin subsp. *parviflorum* (Bloemb.) Bloemb. (1939) 206. — Type: *Boschproefstation* bb 11370 (holo BO; iso L L0986670), Flores, Boehe Soge (Maoemere), 250 m alt., 7 Feb. 1927, fl.

Shrub or tree 4–20 m tall; *twigs* brown, 1.5–3(–4) mm diam, grey or pale brown-hairy, hairs 0.1–0.3 mm long. *Leaves*: *petiole* 0.5–1 cm long, minutely hairy; *lamina* drying (greenish) brown, minutely hairy mainly on veins below, narrowly or broadly elliptic, 6–13 by 2–4.5(–5) cm, base (strongly) asymmetric, cuneate, apex acute-acuminate; veins pinnate, 4–7 at each side, tertiary venation reticulate (or partly scalariform). *Inflorescences* hairy (hairs 0.1–0.3 mm long), a single peduncled compound cyme, (3–)5–20-flowered; *peduncle* slender, 10–25 mm long. *Flowers* (densely) hairy, hairs 0.1–0.2 mm long; *pedicel* 2–5 mm long; *corolla in bud* 4–6(–7) mm long, base not swollen, apex subobtuse; *ovary and calyx* 2(–2.5) mm long, not ribbed; *limb* narrowly cup-shaped, little spreading, 0.5(–1) mm long, c. 1.5 mm wide, margin subentire or with 5 short lobes; *petals* (4–)5(–7), inside glabrous, connate at base for c. 0.5 mm, 5–7(–8) mm long; *stamens* 5, at base slightly connate to petals, filament c. 2.5 mm long, hairy, anther 4–5 mm long, connective glabrous; *style* c. 5 mm long, glabrous, stigma lobes 1–2 mm long. *Fruit* 1–8 per infructescence, yellowish green, ripening black, glabrous, broadly ovoid-ellipsoid, 8–12 mm long, smooth or faintly narrowly 5–10-ribbed; *calyx remnant* minute.

**Distribution** — Philippines (Luzon, Leyte, Negros, Samar); Lesser Sunda Isl. (Lombok, Sumbawa, Flores, Timor).

**Habitat & Ecology** — (Primary) forest; 15–900 m altitude; flowering all year round but mostly in February; fruiting mostly in April and May.

**Field-notes** — Bark greyish; fruit green, ripe fruit black.

**Notes** — 1. Plants from the Philippines are generally more densely and longer hairy (hairs 0.2–0.3 mm long) as compared with those of Lesser Sunda Isl., with hairs c. 0.1 mm long or plant occasionally subglabrous.

2. Two collections in L, from N Moluccas, Halmahera, viz. *De Vogel* 4419 (fl.) & 4452 (fr.) may represent a new species. They key out on *A. pilosum*, but they look quite different by having broader more densely hairy leaves. The specimens are stored under *Alangium* aff. *pilosum*. An eventual description should wait for additional fruiting material.

## 7. *Alangium polyosmoides* (F.Muell.) Baill.

*Alangium polyosmoides* (F.Muell.) Baill. (1864) 195; Hewson (1984) 11, f. 3. — *Pseudalangium polyosmoides* F.Muell. (1860) 84. — *Rhytidandra polyosmoides* (F.Muell.) F.Muell. (1864) 172. — Type: *Beckler s.n.* (holo MEL MEL607318), Australia, New South Wales, Clarence River, fl.

Tree 4–20 m tall; *twigs* (blackish) brown, 1.5–3 mm diam, glabrous or (conspicuously) hairy. *Leaves*: *petiole* (0.5–)1(–1.5) cm long; *lamina* drying brownish green, glabrous or hairy, ovate or elliptic, 6–12 by 2.5–4 cm, base (strongly) asymmetric, (sub)-rounded or cuneate, apex acute-acuminate; veins pinnate, 4–6 at each side, tertiary venation faint or distinct, (reticulate or) scalariform. *Inflorescences* solitary peduncled compound cymes, glabrous or hairy, 2–10-flowered; *peduncle* 5–15 mm long. *Flowers* variously appressed (grey-)hairy; *pedicel* 1.5–4 mm long; *corolla in bud* (8–)10–15 mm long, base not swollen, apex (sub)obtuse or rounded; *ovary and calyx* ± narrow, 2.5–3 mm long, not ribbed, greyish brown-hairy; *limb* (0.5–)1 mm long, not spreading, 1.5–2 mm wide at margin, with 5 low lobes; *petals* (4–)5–8, inside hairy or sparingly hairy, 8–15 mm long, somewhat coherent at base; *stamens* 5, (8–)10–14 mm long, at base slightly adnate to petals, filament 5–9 mm long, hairy in the middle, anther 3–5 mm long, the thecae usually slightly sagittate at base, connective glabrous; *style* 5–8 mm long, hairy, stigma lobes c. 1 mm long. *Fruit* 1–6(–8?) per infructescence, ripening glossy black (always?), early glabrescent, ovoid-ellipsoid, c. 15 mm long; *calyx remnant* small.

**Distribution** — East Australia (Queensland to New South Wales).

**Note** — *Alangium polyosmoides* is a variable species, in which two taxa, apparently with some intermediates, can be recognised; we follow Bloembergen (1939) and Hewson (1984) in ranking them as subspecies.

### Key to the subspecies

1. Indument composed of hairs 0.1–0.5 mm long, plant early glabrescent. Internodes glabrous a. subsp. *polyosmoides*
1. Indument of hairs (0.3–)0.5 mm long, persistent. Internodes hairy . . . . . b. subsp. *tomentosum*

### a. subsp. *polyosmoides*

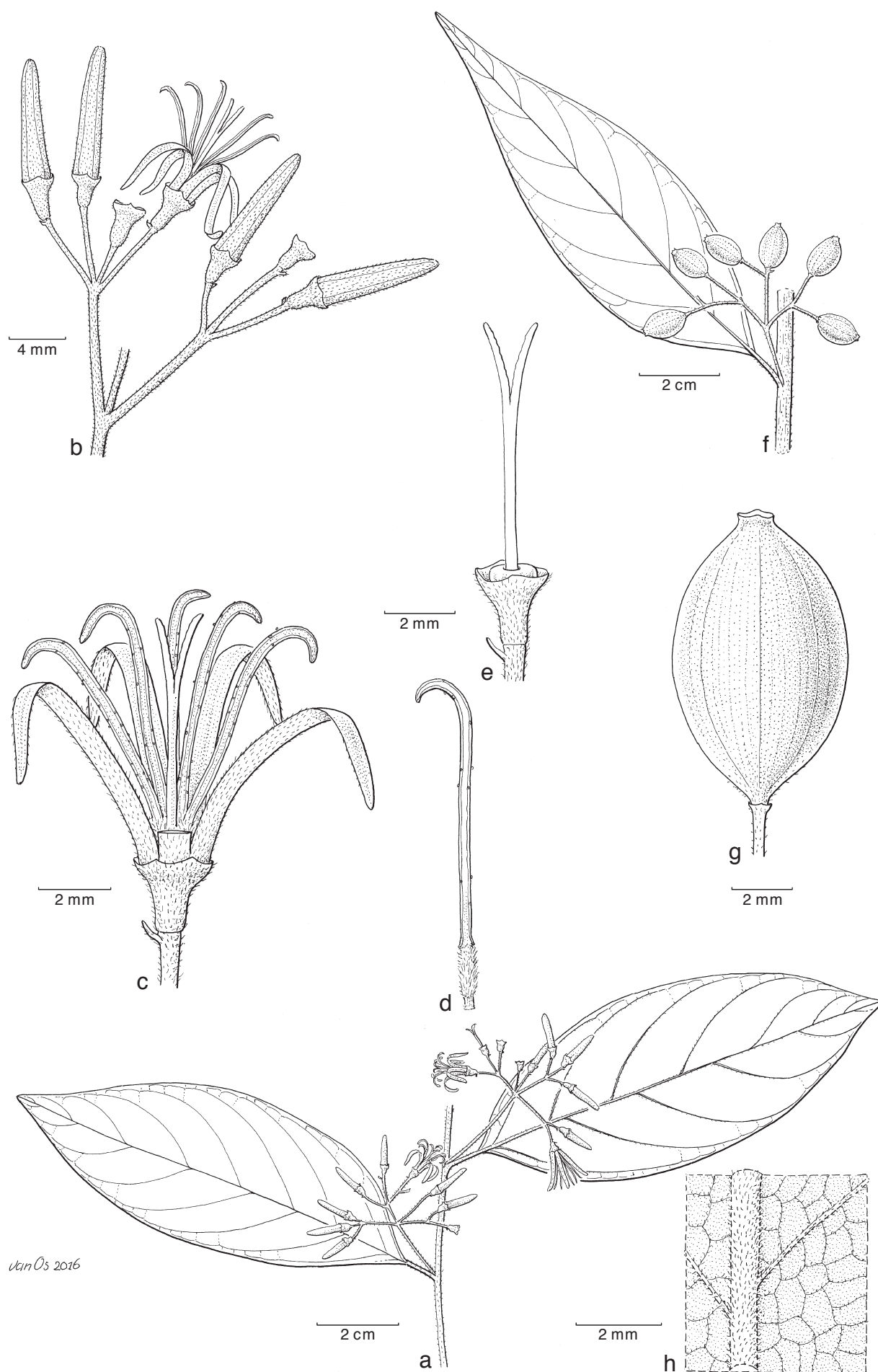
*Alangium villosum* (Blume) Wangerin subsp. *polyosmoides* (F.Muell.) Bloemb. (1939) 209, f. 6j, 7t–u; Hewson (1984) 11, f. 3, map 13.

*Twigs* glabrous or glabrescent. *Lamina* glabrous, (narrowly) elliptic, base asymmetric, long-cuneate. *Flowers* short-hairy, *corolla in bud* 8–15 mm long; *style* sparingly hairy.

**Distribution** — Australia, Queensland (Cape York Peninsula) to New South Wales.

**Habitat & Ecology** — Rain forest.

**Note** — The collection *Ford* 04301 (QRS n.v.; L) from Hutton Drive, Tonga, Claudie River area, cultivated, germinated from Starling poo, has exceedingly small flowers, the corolla in bud estimated c. 8 mm long.



**Fig. 2** *Alangium pilosum* Merr. a. Inflorescences; b. apical part of inflorescence; c. flower; d. stamen; e. ovary, disc and style (petals removed), (note stigma deeply 2-lobed); f. infructescence; g. fruit; h. lower lamina surface (a–e, h: *Verheijen 1843* (Flores); f, g: *Kostermans & Wirawan 122* (Flores); all L). — Drawn by Jan van Os.



**b. subsp. *tomentosum* (F.Muell.) W.J.de Wilde & Duyfjes, comb. nov.**

*Pseudalangium polyosmoides* (F.Muell.) Baill. var. *tomentosum* ('*tomentosum*') F.Muell. (1860) 85. — *Marlea vitiense* (A.Gray) Benth. var. *tomentosa* (F.Muell.) Benth. (1867) 386. — *Alangium vitiense* (A.Gray) Benth. var. *tomentosum* (F.Muell.) Wangerin (1906) 63. — *Alangium villosum* (Blume) Wangerin var. *tomentosum* (F.Muell.) Bloemb. (1935) 271, p.p. [for the type only]. — *Alangium villosum* (Blume) Wangerin subsp. *tomentosum* (F.Muell.) Bloemb. (1939) 203, f. 6b–b'; Hewson (1984) 13, map 14. — *Alangium villosum* (Blume) Wangerin subsp. *tomentosum* (F.Muell.) Bloemb. var. *australe* Bloemb. (1939) 204, f. 6b', 7g, nom. illeg. (cited material includes the type of var. *tomentosum* F.Muell.) — Lectotype here designated: Hill s.n. (K 000704818; iso MEL n.v.), Australia, Brisbane River.

Twigs conspicuously hairy, hairs c. 0.5 mm long. *Lamina* hairy, (broadly) elliptic or ovate-elliptic, base strongly asymmetric, broadly rounded to short-cuneate. *Flowers* conspicuously hairy, *corolla in bud* 8–14 mm long; *style* densely hairy.

Distribution — Australia, Queensland (Atherton Tableland) to north coast of New South Wales.

Habitat & Ecology — Rain forest.

Note — The specimen McDonald & Stainton 2305 (BRI n.v., L), Queensland, from andesite base rock, has exceedingly small flowers, *corolla in bud* estimated as c. 6 mm long only. Apparently in both subspecies the flower size is quite variable.

**8. *Alangium solomonense* (Bloemb.) W.J.de Wilde & Duyfjes, comb. & stat. nov.**

*Alangium villosum* (Blume) Wangerin subsp. *solomonense* Bloemb. (1939) 207, f. 6g, 7o–p. — Lectotype here designated: Brass 3463 (BO; iso A n.v., BISH BISH 1000643, L 2 sheets L.2500050, L.2500051), Solomon Islands, Santa Ysabel Isl., Sigana, 12 Jan. 1933, fl., fr.

Tree 7–17 m tall; *twigs* blackish brown, 1.5–3 mm diam, (greyish) brown-hairy in the youngest part, hairs c. 0.1 mm long. *Leaves*: *petiole* (0.5–)0.8–1 cm long, hairy as the twigs; *lamina* drying greenish brown, early glabrescent from minute hairs less than 0.1 mm long, (ovate-)elliptic, 6–13 by 2–5 cm, base asymmetric, cuneate, apex acute-acuminate; veins pinnate, 4–6 at each side, tertiary venation thin, reticulate. *Inflorescences* minutely hairy (hairs ± sparse, less than 0.1 mm long), a single long peduncled compound cyme, 5–15-flowered; *peduncle* 5–12 mm long. *Flowers* densely pale brown-hairy, hairs c. 0.1 mm long; *pedicel* 3–7 mm long; *corolla in bud* (5–)6–8 mm long, base not swollen, apex (sub)obtusate; *ovary and calyx* (1.5–)2 mm long, not ribbed; *limb* narrowly cup-shaped, spreading, c. 0.5 mm long, c. 1 mm wide at margin, lobes 5 (or 6), c. 0.5 mm long; *petals* 5 or 6, inside glabrous, 7–8 mm long, at base (less than) 1 mm connate; *stamens* 5 (or 6), filament c. 2.5 mm long, hairy, anther 4–5 mm long, connective glabrous; *style* 4–6 mm long, hairy, stigma lobes 1–1.5 mm long. *Fruit* (1–)2–5 per infructescence, ripening yellowish green?, glabrescent, ovoid-ellipsoid, much narrowed towards apex, 17–22 mm long, faintly narrowly ribbed; *calyx remnant* narrow, small.

Distribution — Solomon Isl., widespread; in *Malesia*: Papua New Guinea, Bougainville, where only known from Volk & Robinson NGF 590 (L).

Habitat & Ecology — Well drained primary rain forest, on flat plain, ridge side and ridge top; brown sandy loam and coral; from sea level to 300 m altitude; flowering and fruiting all year round.

Field-notes — Common in lowland rain forest; buttresses mostly absent.

Notes — 1. *Alangium solomonense* resembles *A. pilosum*, the latter differs in a slightly smaller *corolla*, a glabrous *style*, and smaller fruit.

2. The fruiting pedicel of *A. solomonense* is 5–10(–20) mm long, longer than generally in the other species of the section.

**9. *Alangium strigosum* W.J.de Wilde & Duyfjes, nom. nov.**

*lodes ferruginea* Lauterb. & K.Schum. in Schumann & Lauterbach (1900) 418 (see note 1). — Type: Lauterbach 2387 (see note 2) (holo B†, lectotype here designated: WRSL; iso G-BOISS n.v., K 000704816, L 0009827), Papua New Guinea, Kaiser Wilhelmsland, Schumann Fluss, Lager II, 250 m alt., 20 June 1896, fr.

Tree c. 10 m tall; *twigs* brown, 2–3.5(–6) mm diam, densely rusty or golden brown-hairy, hairs 0.5–1 mm long. *Leaves*: *petiole* 0.5–1 cm long, hairy; *lamina* drying greenish, soft pale hairy below (glabrescent above), hairs 0.1–0.5 mm long, elliptic, 13–19 by 4–9 cm, base asymmetric, cuneate, apex acute-acuminate; veins pinnate, 4–5(–7) at each side, tertiary venation wide-reticulate. *Inflorescences* hairy (hairs less than 0.5 mm long), simple, 5–10-flowered, *peduncle* 8–10 mm long. *Flowers* (only immature buds known) densely golden or greyish brown-hairy; *pedicel* c. 2 mm long; *corolla in bud* presumably c. 10 mm long, c. 1.5 mm diam, base not swollen, apex obtuse; *ovary and calyx limb* c. 4 mm long, not ribbed, yellowish or greyish brown-hairy, *limb* c. 1 mm long, with lobes nearly 1 mm long, not spreading; *petals* 5, inside glabrous; *stamens* 5, filament c. 2 mm long, thinly hairy, anther c. 3 mm long, connective glabrous; *style* glabrous but hairy towards and on stigma lobes. *Fruit* c. 2 per infructescence, ripening red, glabrescent, ellipsoid, 12–15 by c. 10 mm, not ribbed, apex not narrowed; *calyx remnant* small, narrow, consisting of 4 (or 5) strigose connivent lobes c. 1 mm long.

Distribution — Papua New Guinea (Madang and Sepik Provinces).

Habitat & Ecology — Rain forest, low hilly terrain; clay and marl; 50–250 m altitude; flowering in October; fruiting in June.

Notes — 1. *Alangium strigosum* needed a new name, because it was previously described as *lodes ferruginea* (in *Icacinaeae*) which cannot be combined in *Alangium* because of *A. ferrugineum*.

2. The lectotype, in WRSL, bears the number Lauterbach 387, but in the protologue the number is changed into Lauterbach 2387, presumably the number 2 is added to indicate that the collection was from 'Lager' = camp 2.

3. *Alangium strigosum* resembles *A. velutinum*, the latter is a montane species distinct in conspicuous dense red-brown indument.

4. The species is known from two collections: the type and Pullen 1810 (L), from Sepik Prov., Wewak-Angoram Area, c. 50 m alt., 1 Oct. 1959, fl.

**10. *Alangium velutinum* W.J.de Wilde & Duyfjes, sp. nov.**

Resembling *Alangium ferrugineum* C.T.White but differing in its velutinous surface of the lamina below, and c. 15 mm long fruit with acute apex (lamina less densely hairy below, fruit c. 35 mm long and longly narrowed towards apex in *A. ferrugineum*). — Type: Grubb & Edwards 79 (holo L 2500083; iso CANB n.v.), Papua New Guinea, Eastern Highlands Province, W of Fatima River, Marafunga Mill, Goroka Sub-Dist., S6°05' E145°15', 2600 m alt., 30 Nov. 1970, fl., fr.

*Etymology*. The specific epithet '*velutinum*' refers to the velvety surface of the lamina below.

Tree 5–13 m tall; *twigs* brown, 2–4 mm diam, reddish brown or rusty brown-hairy, hairs 0.3–0.5 mm long. *Leaves*: *petiole* 0.6–1 cm long, hairy; *lamina* drying reddish brown, glabrescent above, velutinous below all over, hairs c. 0.5 mm long, (obovate-)elliptic, 6–15 by 2.5–7 cm, base distinctly or indistinctly asymmetric, cuneate, apex acute-acuminate; veins pinnate, 4 or 5 at each side, tertiary venation reticulate-scalariform. *Inflorescences* hairy as the twigs, simple, 4–10-flowered; *peduncle* 5–10 mm long, 1–2 mm diam. *Flowers* densely hairy; *pedicel* 2–5 mm long; *corolla in bud* (fully mature bud not seen) 9–10 mm long, c. 1.5 mm diam, base not swollen, apex obtuse; *ovary*

and calyx 3–4.5 mm long, not ribbed, reddish brown-hairy; limb c. 1 mm long, not spreading, with subacute lobes 0.5–1 mm long; petals 5, inside glabrous but somewhat hairy at very base, c. 9 mm long, connate at base into a tube c. 3 mm long; stamens 5, filament c. 4 mm long, hairy, anther c. 5 mm long, connective glabrous; style c. 4 mm long, glabrous, stigma lobes 1.5–2 mm long. Fruit 2–6 per infructescence, ripening red, glabrescent, ellipsoid, c. 15 mm long, apex acute, not narrowed; calyx remnant narrow, not spreading.

Distribution — Papua New Guinea (Eastern Highlands Prov., and Morobe Prov. (doubtful)).

Habitat & Ecology — Primary montane forest, low forest on creek bank; 1400–2600 m altitude; flowering in June and November; fruiting in April, September and November.

Field-notes — Leaves redly tomentose on reverse; flowers cream or white; fruit red; seed dark greyish brown with whitish spots; Womersley & Sleumer NGF 14006: 'overall in mountain forest'.

Vernacular name — Monr (Marfunga Mill).

*Additional specimens studied.* PAPUA NEW GUINEA, Eastern Highlands Prov., Goroka Subdistrict, W of Fatima River, Marafunga Mill: Grubb & Edwards 11, S6°05' E145°15', 2600 m alt., 10 Nov. 1970, fl.; Grubb & Edwards 193, S6°05' E145°11', 2600 m alt., 26 Apr. 1971, fr.; Millar NGF 40781, slopes of Kerigomna, S6°05' E145°15', 2450 m alt., 14 Nov. 1968, fl.; Womersley & Sleumer NGF 14006, Marafunga logging area, upper Asaro Valley, S6°05' E145°15', 2450 m alt., Sept. 1961, fl. Morobe Prov.: Hoogland 9183, E slope of Mt Rawlinson, Huon Peninsula, c. 1400 m alt., 16 June 1964 (somewhat doubtful, immature buds only).

Note — *Alangium velutinum* also resembles *A. strigosum*, the latter differs in the lamina which are green on drying and much less conspicuous soft hairy below.

### 11. *Alangium villosum* (Blume) Wangerin

*Alangium villosum* (Blume) Wangerin (1906) 61; Bloemb. (1935) 269, f. 3a, f.; (1939) 198. — *Marlea villosum* (Blume) Kurz (1871) 61. — *Styrax villosum* Blume (1826) 671. — Lectotype here designated: Blume s.n. (L 0009830; iso L 3 sheets L0614166, L0614168, L0614169), Java.

*Alangium villosum* (Blume) Wangerin subsp. *salaccense* (Koord. & Valeton) Bloemb. (1935) 271, nom. illeg. — *Alangium villosum* (Blume) Wangerin subsp. *salaccense* (Koord. & Valeton) Bloemb. (1939) 202, nom. illeg. — *Marlea vitiensis* (A. Gray) Benth. var. *tomentosa* (F. Muell.) Benth. forma *salaccensis* Koord. & Valeton (1900) 75, nom. illeg.

*Alangium villosum* (Blume) Wangerin subsp. *tomentosum* (F. Muell.) Bloemb. var. *javanum* Bloemb. (1939) 204, f. 6b, 7a, f. — Lectotype here designated: Koorders 38191 (L 2500069; iso BO n.v.), Java, Pasoeroean, Mt Ardoeno, 1400 m alt., 10 Nov. 1899, fl.

*Alangium zollingeri* Baill. (1864) 195. — Type: Zollinger 785Z (holo P 04552612), Java.

*Alangium villosum* (Blume) Wangerin var. *tomentosum* auct. non (F. Muell.) Bloemb.: Bloemb. (1935) 271, f. 3a, f.

Tree presumably of low stature (but Backer (1965) says 10–20 m tall); twigs (1.5–)2–4 mm diam, (greyish) brown-hairy, hairs 0.2–0.5(–1) mm long. Leaves: petiole 0.3–1(–1.2) cm long, hairy; lamina drying brown, hairy like the twigs, glabrescent above, ovate-elliptic or (narrowly) elliptic, 6–14(–19) by 2–5(–7) cm, base little or strongly asymmetric, rounded or short- or long-cuneate, apex acute-acuminate; veins pinnate, 5 or 6 at each side, tertiary venation reticulate, sometimes ± scalariform, domatia absent. Inflorescences solitary peduncled simple or compound cymes, hairy as the twigs, (2–)5–30-flowered; peduncle (3–)5–15 mm long. Flowers densely hairy like the twigs; pedicel 2–4 mm long; corolla in bud (6–)7–8 mm long, base not or little swollen, apex (sub)obtusate; ovary and calyx c. 2 mm long, not ribbed; limb c. 0.5 mm long, at margin c. 2 mm wide, with 5 low triangular lobes c. 0.5 mm long; petals (4–)5(–7), inside (sparingly or towards base strongly) hairy, not

connate at base, c. 8 mm long; stamens 5, not adnate to petals, filament c. 3 mm long, hairy, anthers c. 4 mm long, connective glabrous; style 5–6 mm long, glabrous, stigma lobes c. 1 mm long. Fruit 2–7 per infructescence, ripening dark red (Backer 1965), glabrescent, ovoid or broadly ellipsoid, (8–)10–15 mm long, smooth or inconspicuously ribbed; calyx remnant minute.

Distribution — West and East Java.

Habitat & Ecology — Montane and lower montane forest; (from lowland to) 700–1800 m altitude; flowering from August to December.

Notes — 1. Specimens from West Java (incl. the type) are rare and scanty and apparently more slender of stature (leaves narrower, inflorescences poorer flowered) as compared with those from East Java. Recent collections are not known.

2. According to Koorders & Valeton (1900) the bark and leaves are very bitter.

### 12. *Alangium vitiense* (A. Gray) Baill.

*Alangium vitiense* (A. Gray) Baill. (1864) 195. — *Alangium villosum* (Blume) Wangerin subsp. *vitiense* (A. Gray) Bloemb. (1939) 208, f. 6i, 7r–s. — *Rhytidandra vitiensis* A. Gray (1854) 303, t. 28. — Lectotype here designated: Unknown s.n. (US US 00127567; iso US US 00127568), Fiji Isl. ('Feejee'). *Alangium bussyannum* (Baill.) Harms (1898) 262. — *Alangium villosum* (Blume) Wangerin subsp. *bussyannum* (Baill.) Bloemb. (1939) 207, f. 6h, 7q. — *Marlea bussyana* Baill. (1872) 183. — Type: Pancher s.n. (holo P 00522317), New Caledonia fl.

(Shrub or) tree, 3–20 m tall; twigs usually blackish, sometimes conspicuously lenticellate, (1–)2–4 mm diam, glabrous (early glabrescent from grey appressed hairs 0.1 mm long or less). Leaves: petiole (0.5–)1–1.5 cm long, glabrous; lamina drying blackish or brown, membranous or subcoriaceous, ovate-elliptic, 8–16 by 3.5–9 cm, base strongly asymmetric, (broadly) rounded or cuneate, apex acute-acuminate; veins pinnate, 5–7 on each side, tertiary venation finely or coarsely (sub)scalariform. Inflorescences glabrous, solitary peduncled compound cymes, (2–)5–10-flowered; peduncle 5–25(–40) mm long. Flowers densely minutely grey-hairy; pedicel 2–7 mm long; corolla in bud 7–8 mm long, base not swollen, apex (sub)obtusate; ovary and calyx 2–3.5 mm long, not ribbed; limb spreading, 1–1.5 mm long, 2–3(–4) mm wide at margin, shallowly lobed, lobes c. 0.5 mm long; petals 4–6, inside glabrous or sparingly hairy, 7–9 mm long, connate at base for c. 1 mm; stamens 5, at base slightly adnate to petals, 8–10 mm long, filament 3–4 mm long, hairy in the middle, anthers 5–6 mm long, connective glabrous; style 5–7 mm long, glabrous or sparingly hairy (New Caledonia), stigma lobes c. 1.5 mm long. Fruit (1–)2–7 per infructescence, ripening purple to black, glabrous, ovoid-ellipsoid, 17–22 by 8–11 mm, smooth; calyx remnant cup-shaped, ± spreading, c. 2 mm wide at apex.

Distribution — Fiji Isl., Vanuatu, New Caledonia.

Habitat & Ecology — Lowland rain forest, scrub-land, coral-line terrace (New Caledonia); brown-red soil; 100–700 m altitude; flowering from March to August; fruiting from March to December.

Field-notes — Chew Wee-Lek RSNM 60: 'Very common as 'poles' in Kauri forest' (Vanuatu); fruit becoming purple to black.

Note — Specimens from New Caledonia generally have been collected from shrubs and have smaller, somewhat less unequal laminas and shorter peduncles (5 mm long) as compared with specimens from Fiji and Vanuatu. In New Caledonia the flowers are comparatively small (corolla c. 7 mm long) and, once seen in Guillaumin et al. 11832, the petals inside and the style are sparingly hairy.



### 13. *Alangium warburgianum* Wangerin

*Alangium warburgianum* Wangerin (1910) 18. — *Alangium villosum* subsp. *warburgianum* (Wangerin) Bloemb. (1935) 273, f. 3i–l; (1939) 205, f. 6e, 7j–l. — Type: *Warburg 18116* (holo B†, lectotype here designated: A, A00054249), Moluccas, Bacan Isl., Sibella, 750–1200 m altitude.

Shrub or treelet, 1.5–5 m high; *twigs* dark brown, 1.5–3 mm diam, glabrescent, at very apex with dense appressed rusty hairs (0.1–)0.2 mm long; *leaf bud* densely rusty hairy. *Leaves*: *petiole* 0.7–1.5 cm long, hairy like twig apex; *lamina* drying brown, early glabrescent, (narrowly) elliptic, 9–16 by 3–4 cm, base slightly asymmetric, cuneate, apex (long) acute-acuminate; veins pinnate, 5–7 on each side, tertiary venation reticulate. *Inflorescences* sub-persistently hairy like twig apex, simple, 2–5-flowered, *peduncle* 5–10 mm long. *Flowers* densely rufous-hairy, hairs 0.2–0.3 mm long; pedicel 2–3 mm long; *corolla in bud* 9–10 mm long, base not swollen, apex narrow, subobtuse; *ovary and calyx* densely hairy, c. 2.5 mm long, not ribbed; *limb* 1.5 mm long, mainly consisting of 5 long-triangular lobes c. 1.5 mm long, not spreading; *petals* (4 or) 5, inside glabrous, 8–10 mm long; *stamens* 5, c. 9 mm long, filament 2–3 mm long, hairy inside, anther 5–6 mm long, connective glabrous; *style* 5–6 mm long, (sparingly) hairy, stigma lobes c. 2 mm long. *Fruit* 1–3 per infructescence, ripening red, glabrescent, ovoid-ellipsoid or ellipsoid, narrowed at base and apex (longest at apex), 15–22 mm long, finely 5-ribbed or smooth; *calyx remnant* minute, the lobes ± connivent.

Distribution — Moluccas (endemic to Bacan Isl.).

Habitat & Ecology — Dense primary forest 20–35 m high, hill ridge; clayey soil, bedrock grey schists; 900–1250 m altitude; flowering and fruiting in October.

Field-notes — Fruit red, whitish hyaline pulp.

Notes — 1. *Alangium warburgianum* is known from four collections, all from Bacan Isl., Gunung Sibela: *Boschproefstation b.b. 23243* (BO), 1000 m alt.; *De Vogel 3583* (L), 1250 m alt., 23 Oct. 1974, fl. & fr.; *De Vogel 3644* (L), 900 m alt., 24 Oct. 1974, fr.; *De Vogel 3662* (L), 1000 m alt., 25 Oct. 1974, fl. & fr.

2. The peduncle is remarkably slender, comparable with the slender peduncle of *A. gracile* and *A. pilosum*.

### DOUBTFUL COLLECTIONS

Five mutually different collections (all in L), one with fruit and 4 with flowers, obviously belong to the group of species around *A. ferrugineum*, but we cannot satisfactorily link them up with any of the accepted species. They cannot be described adequately as new species either by lack of flowers or of fruit, and one should wait for additional materials to be collected. The three first listed possibly belong closer together and are near *A. glabrum*.

The five specimens now labelled as *Alangium* sp. sect. *Rhytidandra* are the following:

PAPUA, *Van Royen & Sleumer 8126*, Vogelkop Peninsula, Nettoti range, 1550 m alt., 4 Dec. 1961, fl. (distinct in hairy filaments, which are for over halfway adnate to the tubular connate base of the petals). — PAPUA NEW GUINEA, Morobe Prov.: *Craven & Schodde 1470*, near Wengia, Aseki Patrol Area, 1100 m alt., 28 Apr. 1966, fl.; *Kairo 779*, Gumi Divide, 25 km W of Bulolo, S7°13' E146°25', 1800 m alt., fl.; Central Prov.: *Carr 14510*, Boridi, 1370 m alt., 10 Nov. 1935, fl.; Northern Prov.: *James et al. 1075*, Sibium Mts, S9°30' E148°29', 1315 m alt., fl., fr.

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