

A REVISION OF *PARSONSIA* R. BR. (APOCYNACEAE) IN MALESIA

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SUMMARY

The genus *Parsonsia* is revised in the Malesian region. *Lyonsia*, *Helygia*, *Cudicia*, *Chaetosus*, *Delphyodon*, and *Grisseea* are included in synonymy and 27 species are recognised, one of which has 7 varieties. There are 9 new species, 4 new varieties, 2 new combinations and 2 new statuses, one of which is also a new combination.

INTRODUCTION

Parsonsia was first described by Robert Brown in his seminal work on the genera of the Apocynaceae and Asclepiadaceae (1810). The name commemorates Dr James Parsons. He also described *Lyonsia*, a genus whose status as distinct from *Parsonsia* has often been disputed. It is now generally accepted that *Lyonsia* is not distinct from *Parsonsia* and the separation of the two was originally based on a misinterpretation of some characters (see Markgraf, 1927: 213). Blume (1826) described a species under the genus *Helygia* and two species in *Parsonsia*. These latter two species have now been removed from *Parsonsia* to *Parameria* and *Urceola*. *Helygia* was subsequently misspelled as *Heligme* and several more species added, particularly by Miquel (1857). This genus has no basis at all and must now be included in synonymy despite an attempt to revive it due to the competing claims for the name *Parsonsia*. *Parsonsia* in the Apocynaceae has been conserved against *Parsonsia* in the Lythraceae.

Grisseea was described with a single species by Bakhuizen van den Brink (1950) after his earlier Dutch language description (in Backer, 1948). The combination of characters he used to distinguish the genus from *Parsonsia* are found in many *Parsonsia* species. These included the dense tuft of hairs at the throat, the insertion of the filament near the base of the corolla tube and the fact that the filaments are not strongly twisted, a suite of characters which, far from excluding the species from *Parsonsia*, place it squarely in section *Gastranthus*.

Delphyodon was described with a single species by Schumann (1898). He compared his new genus to *Epigynum* and *Aganosma* from which it differed in the four points on top of the ovary, the shape of the disc, the form of the colleters and the syncarpous ovary. He did not compare it to *Parsonsia* which has all these features to varying degrees. The only unique character in the single species described, *Delphyodon oliganthus*, is the very unusual fruit which has large irregular spine-like outgrowths all over it. This single character, however, is not enough to maintain the entire genus and *Delphyodon oliganthus* shows a remarkable similarity to *Parsonsia flavescens* in its other features.

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The number of species in the genus varies considerably between authors. Pichon (1950), in a review of the genus, suggested 83 species whilst two recent authorities give widely different assessments of 50 species (Leeuwenberg, 1994) and 130 species (Williams, 1996). Williams' higher figure is partly based on his recent work for the genus in Australia which includes 19 new taxa. All but 2 of the 35 species in Australia are endemic. My belief, however, is that the correct figure is closest to that of Pichon. This genus proved to be an exception amongst the recently revised Malesian genera of Apocynaceae as in these there has largely been a reduction in the number of species recognised and very few new species described (Middleton, 1996a, 1996b). The relatively high number of new species in *Parsonsia* may be due to the fact that the Malesian element of *Parsonsia* appears to be centred more in New Guinea which has been relatively poorly collected, particularly in Irian Jaya.

Pichon (1950a) removed *Parsonsia penangiana* from this genus and placed it in *Artia* and made a new section *Oppositae* to contain it and *Artia balansae* from New Caledonia. This seems most curious as *P. penangiana* is undoubtedly close to *P. alboflavescens* (to the extent that it has recently been treated as a variety of this species) and it bears little resemblance to the other species of *Artia*. It would seem sensible to typify *Artia* sect. *Oppositae* with *A. balansae* so that the section does not become a synonym of *Parsonsia*. The status of the whole genus *Artia*, not found in Malesia once *P. penangiana* is removed, needs to be clarified in relation to *Parsonsia*. *Parsonsia penangiana* is in sect. *Helygia*.

Pichon (1950a) suggested a subclassification of the genus based on the 43 species he had represented in the Paris Museum and descriptions of the other species. He divided the genus into 8 sections of which the Malesian species fall into his sections *Gastranthus* and *Helygia*. In addition to these sections the genus *Delphyodon* would form a distinct section within *Parsonsia* with two species, *P. oligantha* and *P. flavescens*. Pichon's scheme is limited by the scope of his work which is concentrated on the New Caledonian species. Many of the Malesian species were not examined and it seems to me that proper allocation of each species in Pichon's scheme is not possible without a thorough review of the entire genus. My own cursory observations in the genus outside Malesia and continental Asia leads me to question Pichon's distinction between the sections and series found in New Caledonia and those found elsewhere.

There are a number of problematic areas in Malesian *Parsonsia*. In this revision I have treated *P. alboflavescens* broadly as there appear to be no discontinuities where boundaries could be clearly drawn. This has led, however, to an extremely variable species. On the other hand *P. sanguinea* from New Guinea shows a number of local varieties which are distinct enough to be recognised at varietal level, with only one of the varieties, *P. sanguinea* var. *brassii*, being other than locally restricted. This, of course, will need to be reviewed when far more collections are available from New Guinea, particularly from Irian Jaya.

Pichon (1950b) placed *Parsonsia* in the tribe Parsonieae, subtribe Parsonsiinae along with *Thenardia* from Mexico and *Artia* from New Caledonia (although he also suggested this genus may be in Asia which is unlikely). Leeuwenberg (1994) placed the genus in tribe Echiteae, subtribe Parsonsiinae with *Dewevrella*, *Thenardia*, *Pottisia* and *Isonema*.

MATERIALS AND METHODS

Herbarium material was studied from the following herbaria: A, AAU, ABD, B, BK, BKF, BM, BO, BR, BRI, C, CANB, CGE, E, G, GH, H, K, KEP, KLU, K-W, L, LAE, NSW, NY, M, MEL, MO, P, S, SING, SINU, TCD, TI, U, UC, UPS, US, W, WRSL, Z (Holmgren et al., 1990). All specimens cited have been seen unless otherwise stated.

The dimensions given in the descriptions are for dried material except for the gynoecium and androecium characters which are for flowers rehydrated with water.

PARSONSIA

Parsonsia R.Br., Asclepiadeae (1810) 53, nom. cons. non P. Brown (1756). — Type species: *Parsonsia capsularis* (G. Forst.) R.Br.

Lyonsia R.Br., Asclep. (1810) 55. — Type species: *Lyonsia straminea* R.Br. [= *Parsonsia straminea* (R.Br.) F. Muell.].

Helygia Blume, Bijdr. (1826) 1043. — *Heligme* Miq., Fl. Ind. Bat. 2 (1857) 429, sphalm. — Type species: *Helygia javanica* Blume [= *Parsonsia alboflavescens* (Dennst.) Mabb.].

Cudicia Buch.-Ham. [ex G. Don, Gen. Syst. 4 (1837) 80, nom. illeg. (in syn.)] ex Dillwyn, Index Hort. Malab. (1839) 41. — Type species: *Cudicia trichotoma* Buch.-Ham. ex Dillwyn [= *Parsonsia alboflavescens* (Dennst.) Mabb.].

Chaetosus Benth., Hook. Lond. J. Bot. 2 (1843) 226. — Type species: *Chaetosus volubilis* Benth. [= *Parsonsia alboflavescens* (Dennst.) Mabb.].

Delphyodon K. Schum., Bot. Jahrb. 24 (1898) Beibl. 59: 31. — Type species: *Delphyodon oliganthus* K. Schum. [= *Parsonsia oligantha* (K. Schum.) D.J. Middleton].

Grisseea Bakh. f., [in Backer, Beknopte Fl. Java, Afl. 7, Fam. 172 (1948) 49, nom. inval. (no Latin description)] Blumea 6 (1950) 392. — Type species: *Grisseea apiculata* Bakh. f. [= *Parsonsia apiculata* (Bakh. f.) D.J. Middleton].

Climbing shrubs; bark variable. Branches with or without lenticels; branchlets glabrous, puberulent or tomentose. Leaves opposite or in whorls of 3 or more, those of a pair equal, entire; colleters in the axils and frequently in a ring around the stem. Inflorescence axillary or terminal, corymbose, pedunculate and several times branched or with flowers clustered at the inflorescence ends, few- to many-flowered. Bracts small, linear or ovate. Flowers 5-merous. Sepals connate at the very base, erect or reflexed, ovate to linear, with colleters inside. Corolla actinomorphic; lobes overlapping to right in bud, often so very slightly as to appear valvate; tube cylindrical or somewhat inflated; lobes reflexed, spreading or erect; outside and inside pubescent or glabrous. Stamens exerted, inserted anywhere on the corolla tube from the base to near the throat; filaments straight, bent or strongly twisted, most often pubescent; anthers usually narrowly triangular, sometimes oblong, apex acuminate, base sagittate, sterile at base and apex, adnate to the head of the pistil. Disc of 5 lobes, sometimes fused into an annular ring, often with complex development of teeth at the apex. Pistil glabrous. Ovary ovoid, of 2 connate carpels, often 4-toothed at apex. Style narrow; pistil head ovoid. Ovules many. Fruit of one follicle clearly composed of two locules; linear to fusiform. Seeds roughly triangular in cross section, long and narrow, bearing a coma at the end towards the apex of the fruit.

Distribution — Circa 82 species from India and Sri Lanka to China, southwards through Indochina and Malesia to the western Pacific Islands, Australia and New Zealand; 27 species in Malesia.

KEY TO THE SPECIES

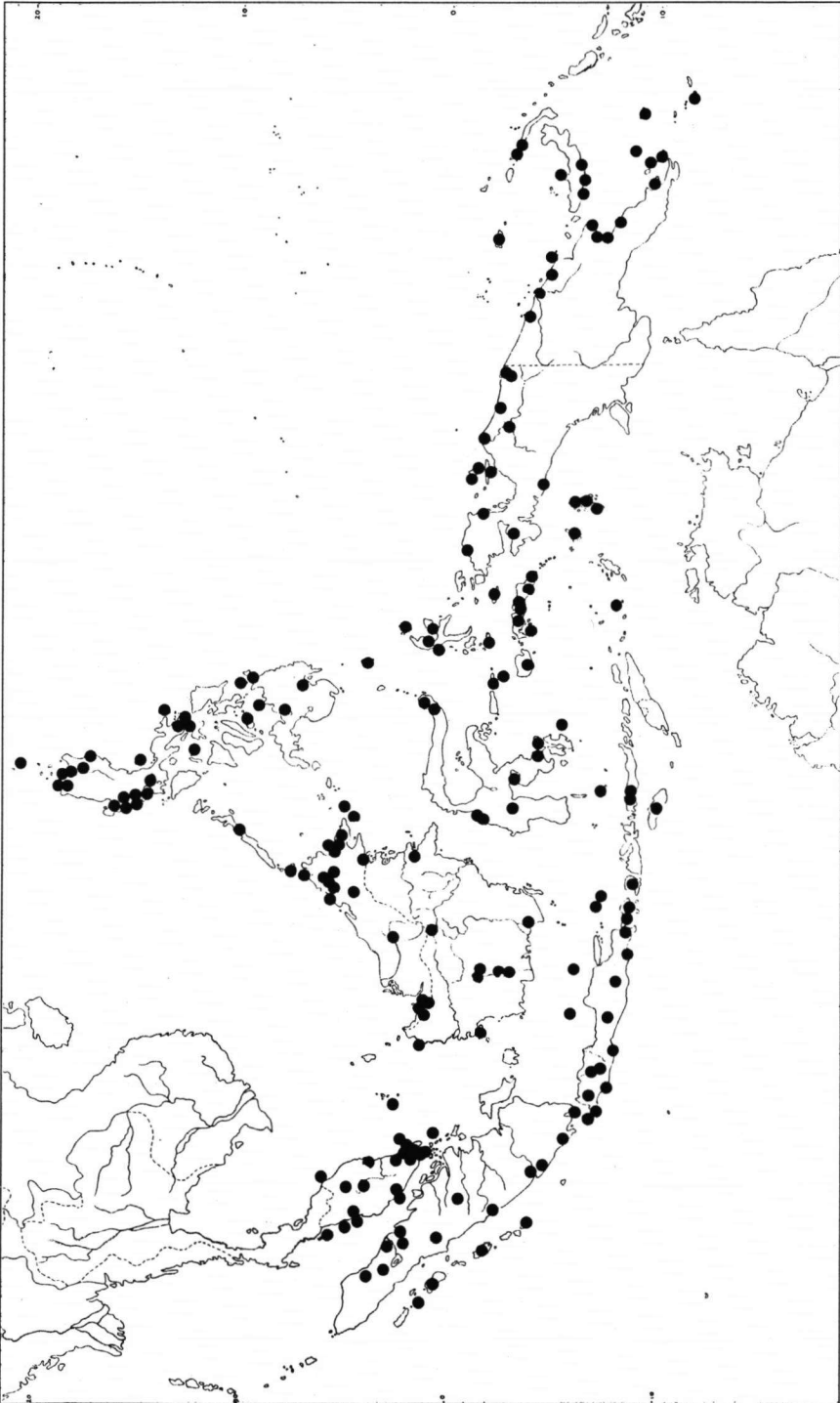
- 1a. Leaves in whorls of 3 or more **7. *P. curvisepala***
 b. Leaves opposite 2
 2a. Leaves densely pubescent all over beneath 3
 b. Leaves glabrous or only pubescent on midrib and nerves beneath 14
 3a. Corolla tube ≥ 10 mm long **10. *P. grandiflora***
 b. Corolla tube < 8 mm long 4
 4a. Corolla tube pubescent in throat 5
 b. Corolla tube glabrous in throat **15. *P. novoguineensis***
 5a. Corolla campanulate **26. *P. velutina***
 b. Corolla subcylindrical, salverform, rotate or urceolate 6
 6a. Hairs on corolla tube dense rufous brown 8
 b. Hairs on corolla tube very short and cream coloured or pale fawn, or corolla tube glabrous outside 7
 7a. Corolla tube glabrous outside, lobes $3.9-5.6 \times$ as long as tube, strongly reflexed when mature. Lesser Sunda Islands **23. *P. sundensis***
 b. Corolla tube puberulent or glabrous outside, lobes $0.7-2.2 \times$ as long as tube, erect or spreading when mature; widespread ***P. 1. alboflavescens***
 8a. Tips of corolla lobes glabrous outside; flowers densely clustered at inflorescence ends **8. *P. densiflora***
 b. Tips of corolla lobes pubescent outside; flowers laxly arranged or clustered 9
 9a. Corolla tube ≥ 5.4 mm long; not in New Guinea **5. *P. celebica***
 b. Corolla tube < 6 mm long, those > 3 mm long only in New Guinea 10
 10a. Corolla tube somewhat inflated, wider than head in bud; anthers with large boss on the back **22. *P. schoddei***
 b. Corolla tube not inflated, narrower or same width as head in bud; no large boss on anthers 11
 11a. Hairs on inflorescence spreading 12
 b. Hairs on inflorescence appressed 13
 12a. Leaf base cuneate to obtuse **7. *P. curvisepala***
 b. Leaf base cordate **12. *P. lata***
 13a. Inflorescence 14–20 cm long; mature corolla tube c. 2 mm wide **3. *P. appressa***
 b. Inflorescence 3.5–13 cm long; mature corolla tube 3–4 mm wide **27. *P. warenensis***
 14a. Stamens sessile or with very short filaments 15
 b. Stamens with well developed filaments 17
 15a. Leaves without prominent venation; disc lobes free **21. *P. sanguinea***
 b. Leaves with prominent venation above; disc lobes fused 16
 16a. Corolla pinkish or reddish, with a rounded or apiculate head in bud; fruit spiny **16. *P. oligantha***
 b. Corolla yellow, with an acuminate head in bud; fruit smooth **9. *P. flavescens***
 17a. Filaments twisted around the style **1. *P. alboflavescens***
 b. Filaments straight or, if bent, not twisted around the style 18

- 18a. Flowers hourglass-shaped (see Fig. 2); corolla tube > 7 mm long **6. *P. constricta***
 b. Flowers not hourglass-shaped; corolla tube < 6 mm long 19
- 19a. Flowers fleshy, corolla lobes strongly overlapping in bud; sepal lobes rounded to obtuse **19. *P. philippinensis***
 b. Flowers not fleshy, corolla lobes only slightly overlapping or appearing valvate in bud; sepals acuminate to obtuse 20
- 20a. Anthers exerted completely beyond mouth of corolla tube; lobes 2.4–5.6 × as long as tube 21
 b. Anthers partially included in corolla tube or located at mouth of corolla tube; lobes 0.4–3.1 × as long as corolla tube 22
- 21a. Inflorescence delicate, with flowers clustered at inflorescence branch ends forming rounded heads; fruits fusiform, ≤ 12 cm long. Lesser Sunda Islands **23. *P. sundensis***
 b. Inflorescence more robust, flowers not forming rounded heads; fruits linear, ≥ 15 cm long. Moluccas, New Guinea **4. *P. buruensis***
- 22a. Filaments with large projections on the sides; dried leaves usually somewhat glaucous abaxially **20. *P. rubra***
 b. Filaments without large projections on the sides; dried leaves not glaucous 23
- 23a. Corolla bearded in throat with brown hairs, usually densely brown pubescent outside, rarely glabrous 24
 b. Corolla glabrous or pale-coloured pubescent in throat and glabrous, brown papillose or shortly puberulent outside 27
- 24a. Sepals erect or only slightly spreading at apex; corolla tube 4.2–5.4 mm long **27. *P. warensis***
 b. Sepals strongly reflexed; corolla tube 1.9–4.5 mm long 25
- 25a. Leaf base cuneate, rarely to obtuse; leaves 1.8–4.8 × as long as wide **7. *P. curvisepala***
 b. Leaf base cordate to rounded; leaves 1.1–2 × as long as wide 26
- 26a. Inflorescence 2.7–6.7 cm long; corolla tube 1.9–2.2 mm long. Java to Flores **2. *P. apiculata***
 b. Inflorescence 7–18.5 cm long; corolla tube 2.9–3.2 mm long. Bismarck Archipelago **17. *P. pedunculata***
- 27a. Corolla with downward pointing hairs in throat 30
 b. Corolla glabrous or with upward pointing hairs in throat 28
- 28a. Buds ovoid in shape; often papillose outside; disc entire **18. *P. penangiana***
 b. Buds cylindrical or club-shaped; not papillose outside; disc usually of 5 separate lobes 29
- 29a. Inflorescence 3–21 cm long, flowers not forming a dense rounded cluster at ends **1. *P. alboflavescens***
 b. Inflorescence 1.1–4 cm long, flowers forming a dense rounded cluster at ends **24. *P. tenuiflora***
- 30a. Open corolla campanulate or subcampanulate 31
 b. Open corolla salverform or with narrow tube and erect lobes 33
- 31a. Tertiary venation densely reticulate 32
 b. Tertiary venation largely obscure, occasionally slightly prominent 34

- 32a. Corolla lobes 1.8–3.1 × as long as tube **13. P. longiloba**
 b. Corolla lobes 0.7–1.3 × as long as tube **11. P. hebetica**
 33a. Corolla tube 1.3–2 mm long; leaves 1–4.4 cm long **25. P. vaccinioides**
 b. Corolla tube 2.1–3.4 mm long; leaves 2.1–10.8 cm long . **14. P. marginata**
 34a. Corolla tube much narrower than corolla bud head; inflorescence short and delicate **24. P. tenuiflora**
 b. Corolla tube wider than to more or less same width as corolla bud head ... **35**
 35a. Leaves drying dull ochre adaxially, 2.1–3.2 × as long as wide (infrequent) ...
 **11. P. hebetica**
 b. Leaves not drying dull ochre adaxially, 1.7–18 × as long as wide
 **21. P. sanguinea**

1. *Parsonsia alboflavescens* (Dennst.) Mabb. — Map 1

- Periploca alboflavescens* Dennst., Schlüssel (1818) 12, 23, 35. — *Echites laevigata* Moon, Cat. (1824) 20, nom. illeg. — *Parsonsia laevigata* (Moon) Alston, Ann. Roy. Bot. Gard. Peradeniya 11 (1929) 203, nom. illeg. — *Cudicia gyandra* Buch.-Ham. ex Dillwyn, Index Hort. Malab. (1839) 41, nom. illeg. — *Parsonsia alboflavescens* (Dennst.) Mabb., Taxon 26 (1977) 532; Williams in P.I. Forst. & J.B. Williams, Fl. Australia 28 (1996) 188. — Type: Illustration in Rheede, Hort. Mal. 9: t. 9.
- Apocynum vincifolium* Burm. f., Fl. Ind. (1768) 71. — Type: *Garcin* in Herb. Burman (G holo), nom. prop. rej.
- Helygia javanica* Blume, Bijdr. (1826) 1043. — *Heligme javanica* Miq., Fl. Ind. Bat. 2 (1857) 429, sphalm. — *Parsonsia javanica* (Blume) K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. 4, 2 (1895) 184, nom. illeg. — Type: *Blume s.n.* (L lecto, sh. 898.111-191, designated here).
- Parsonsia acuminata* Wall., Num. List (1829) n. 1634, nom. nud. — Type: *Wallich 1634* (K-W).
- Parsonsia pauciflora* Wall., Num. List 1635 (1829) 1635, nom. nud. — Type: *Wallich 1635* (K-W).
- Parsonsia spiralis* Wall. ex G. Don, Gen. Syst. 4 (1837) 80; S. Vidal, Sin. Gen. Pl. Leños. Filip. (1883) t. 66; Warb., Bot. Jahrb. 13 (1890) 406; King & Gamble, J. As. Soc. Beng. 74 (1907) 456; Ridl., Fl. Malay Penins. 2 (1923) 350. — *Heligme spiralis* (Wall. ex G. Don) Thwaites, Enum. Pl. Zeyl. (1860) 193. — Type: *Wallich 1631* (K-W lecto; K iso).
- Parsonsia oblonga* Wall. ex G. Don, Gen. Syst. 4 (1837) 80; Bakh. f. Blumea 6 (1950) 392. — Type: *Wallich 1632* (K-W lecto [as 1632.2]).
- Parsonsia helicandra* Hook. & Arn., Bot. Beech. Voy. (1837) 197; Peekel, Fl. Bismarck Archip. (1984) 451; Kaneh. & Hatus., Bot. Mag. Tokyo 55 (1941) 498; Merr. & Perry, J. Arnold Arbor. 24 (1943) 216. — Type: not traced.
- Cudicia trichotoma* Buch.-Ham ex Dillwyn, Index Hort. Malab. (1839) 41. — *Heligme rheedei* Wight, Ic. 4 (1848) t. 1303, nom. illeg.; Naves in Blanco, Fl. Filip. ed. 3, 1 (1877) t. 310. — *Parsonsia rheedei* Fern.-Vill., Novis. App. (1880) 130, nom. illeg. — Type: Illustration in Rheede, Hort. Mal. 9: t. 10.
- Chaetosus volubilis* Benth., Hook. Lond. J. Bot. 2 (1843) 226. — Type: *Hinds 1841* (K holo), Papua New Guinea.
- Parsonsia cumingiana* A. DC., Prodr. 8 (1844) 402; Merr., Fl. Manila (1912) 374. — Type: *Cuming 1490* (G-DC holo; K, P, W iso).
- Echites spiralis* Blanco, Fl. Filip. ed. 1 (1837) 110. — *Parsonsia confusa* Merr., Philipp. J. Sci. 1, Suppl. (1906) 118. — Type: Blanco types unknown. Neotype: *Merrill Sp. Blanc. 1014* (A neo; BM, BO, GH, K, L, MO, NY, P, US, W isoneo).
- Aganosma concanensis* Hook., Ic. Pl. 5 (1851) t. 841. — Type: *Dalzell s.n.* (lecto K, designated here; iso K).
- Heligme korthalsiana* Miq., Fl. Ind. Bat. 2 (1857) 429. — *Parsonsia korthalsiana* (Miq.) Boerl., Handl. Fl. Ned. Ind. 2, 2 (1899) 397. — Type: *Korthals s.n.* (L lecto, sh. 898.111-175, designated here; A iso, fragment).



Map 1. *Parsonsia alboflavescens* (Dennst.) Mabb.

- Heligme minahassae* Teijsm. & Binn., Nat. Tijds. Ned.-Ind. 25 (1863) 404. — *Parsonsia minahassae* (Teijsm. & Binn.) Koord., Meded. 's Lands Plantent. 19 (1898) 531. — Type: *Binnendijk s.n.* (BO lecto, designated here; K iso).
- Heligme rheedei* Wight var. *macrocarpa* Teijsm. & Binn., Cat. Hort. Bot. Bog. (1866) 127, nom. nud.
- Lyonsia viridiflora* F.M. Bailey, Queensland Agric. J. 3 (1898) 156. — Type: *F. M. Bailey s.n.* (BRI holo; K iso).
- Parsonsia kunstleri* King & Gamble, J. As. Soc. Beng. 74 (1907) 457; Ridl., Fl. Malay Penins. 2 (1923) 350. — Type: *King's Coll. 1824* (K lecto, designated here).
- Parsonsia oblancifolia* Merr., Philipp. J. Sci., Bot. 7 (1912) 335. — Type: *Ramos 4723* (K lecto, designated here).
- Parsonsia magnifolia* Elmer, Leaf. Philipp. Bot. 8 (1919) 3071. — Type: *Elmer 17867* (NY lecto, designated here).
- Lyonsia sumatrana* Ridl., Kew Bull. 1925 (1925) 84. — Type: *Brooks 7100* (K lecto, designated here).
- Parsonsia oblongifolia* Merr., Philipp. J. Sci. 27 (1925) 50. — Type: *Loher 13477* (PNH holo, destroyed; UC lecto, designated here; M, UC iso).
- Parsonsia longipedunculata* Merr., Pl. Elmer. Born. (1929) 255. — Type: *Elmer 20552* (PNH holo, destroyed; K lecto, designated here; L, M, SING iso).
- Parsonsia aterinervia* [Elmer ex Merr., Enum. Philipp. Flow. Pl. 3 (1923) 338, in obs.] Elmer ex Merr., Leaf. Philipp. Bot. 10 (1939) 3695. — Type: *Elmer 15707* (untraced). This species is synonymised based on Elmer's description.
- Parsonsia panniculata* Pichon, Not. Syst., ed. Humbert 14 (1950) 16. — Type: *Zollinger 537* (P holo).

Branches lenticellate or not; branchlets glabrous or sparsely to densely minutely puberulent. Leaves opposite; petioles 0.7–4.7 cm long; blade papery to thickly coriaceous when dried, elliptic, ovate or, rarely, obovate or oblong, apex acuminate, rarely to obtuse, base cuneate to cordate, 3.5–23 × 0.8–21 cm, 1.2–4.4 × as long as wide; 5–10 pairs of lateral nerves, ascending; tertiary venation laxly reticulate to scalariform, rarely obscure; glabrous, sparsely puberulent on petiole or sparsely to extensively puberulent abaxially. Inflorescence of axillary and, more rarely, terminal cymes, 3–21 cm long; sparsely to densely shortly pale puberulent; peduncles 1.2–13.5 cm long; pedicels 2.2–8.5 mm long. Sepals ovate, sometimes somewhat saccate at base of each lobe, apex acute to obtuse, 1.2–2.8 × 0.9–2.1 mm, 1–2.2 × as long as wide, glabrous to puberulent outside. Corolla yellowish to greenish, occasionally with some red inside; bud cylindrical or wider around the middle with a rounded to acute head, lobes slightly overlapping; open corolla with erect to only slightly spreading lobes; tube 1.6–4.5 mm long, 1.1–2.7 × as long as sepals; lobes oblong to narrowly triangular, apex rounded to acute, 2.1–5.8 mm long, 0.7–1.5 mm wide, 0.7–2.2 × as long as tube; glabrous to shortly puberulent outside and glabrous, puberulent in throat or sparsely puberulent down tube inside. Stamens inserted at 0.9–2.5 mm from corolla base, which is 0.2–0.7 of tube length; filaments most commonly strongly twisted around the style, more rarely less strongly twisted to straight, 1.1–4.3 mm long; anthers 2.6–4.2 × 0.5–0.8 mm, 4.3–8 × as long as wide. Disc of 5 separate lobes, ovate to triangular, apex rounded to acute or irregularly toothed, 0.5–1.2 mm long. Ovary 0.7–1.5 mm long; style 1.5–4.6 mm long; pistil head 0.7–1.3 mm long. Fruit linear to fusiform, apex tapered, thin walled, smooth, glabrous to sparsely puberulent; 5.2–21 cm long, 0.7–1.4 cm wide. Seed grain 9.5–24 × 1.2–3 mm; coma 1.8–4.6 cm long.

Distribution — From southern China and Taiwan to India and Sri Lanka and eastwards to Indochina and southwards through Indonesia to Papua New Guinea, northern Australia and the Solomon Islands.

Habitat — This species grows in a wide variety of habitats from beaches to swampy ground or dried up mangroves to secondary or primary forest. It occurs up to 1500 m but has most frequently been collected in coastal vegetation.

Notes — This is a most perplexing species with the widest variation of any species in the genus. On the face of it the glabrous forms with filaments wrapped strongly around the style seem to be very distinct from the pubescent forms with straight filaments. There is, however, no point at which a satisfactory division between recognisable taxa could be drawn at this stage. There are indistinct groups such as the “*P. longipedunculata*” group with straight filaments and pubescent stems and flowers. This group is most common in Borneo but plants with these characteristics are also known from New Guinea. The “*P. korthalsiana*” group has more scalariform venation on the leaves but otherwise resembles continental Asian forms with laxly reticulate venation of the leaves. The filaments can be strongly wrapped around the style to straight but intermediates do occur with long twisted filaments not wound round the style found particularly in Java and New Guinea. There are very few specimens of the “*P. minahassae*” group, found mainly in Sulawesi but also in Sumatra, which are characterised solely by the thickness of the leaves and the indistinctness of any tertiary venation. Whilst all these variations are recognisable they merge into each other and have little geographical distinction.

Apocynum vincifolium Burm. f. is the oldest name for this species but an application for conservation of the name *Parsonsia alboflavescens* has been made for the sake of nomenclatural stability.

Hooker & Arnott (Bot. Beechey Voy. 1837, 197) suggested that *Apocynum reticulatum* Lour. (Fl. Cochinch. 1, 1790, 208) might also be a synonym of this species, another name which would displace *Parsonsia alboflavescens*. Loureiro’s name, however, is a mere re-use of *Apocynum reticulatum* L. (Sp. Pl. 1753, 214). Following this, Woodson (Ann. Missouri Bot. Gard. 17, 1930, 147) made the combination *P. reticulata* (L.) Woodson which, irrespective of its (doubtful) identity, is a later homonym of *Parsonsia reticulata* (F. Muell.) F. Muell. and hence illegitimate.

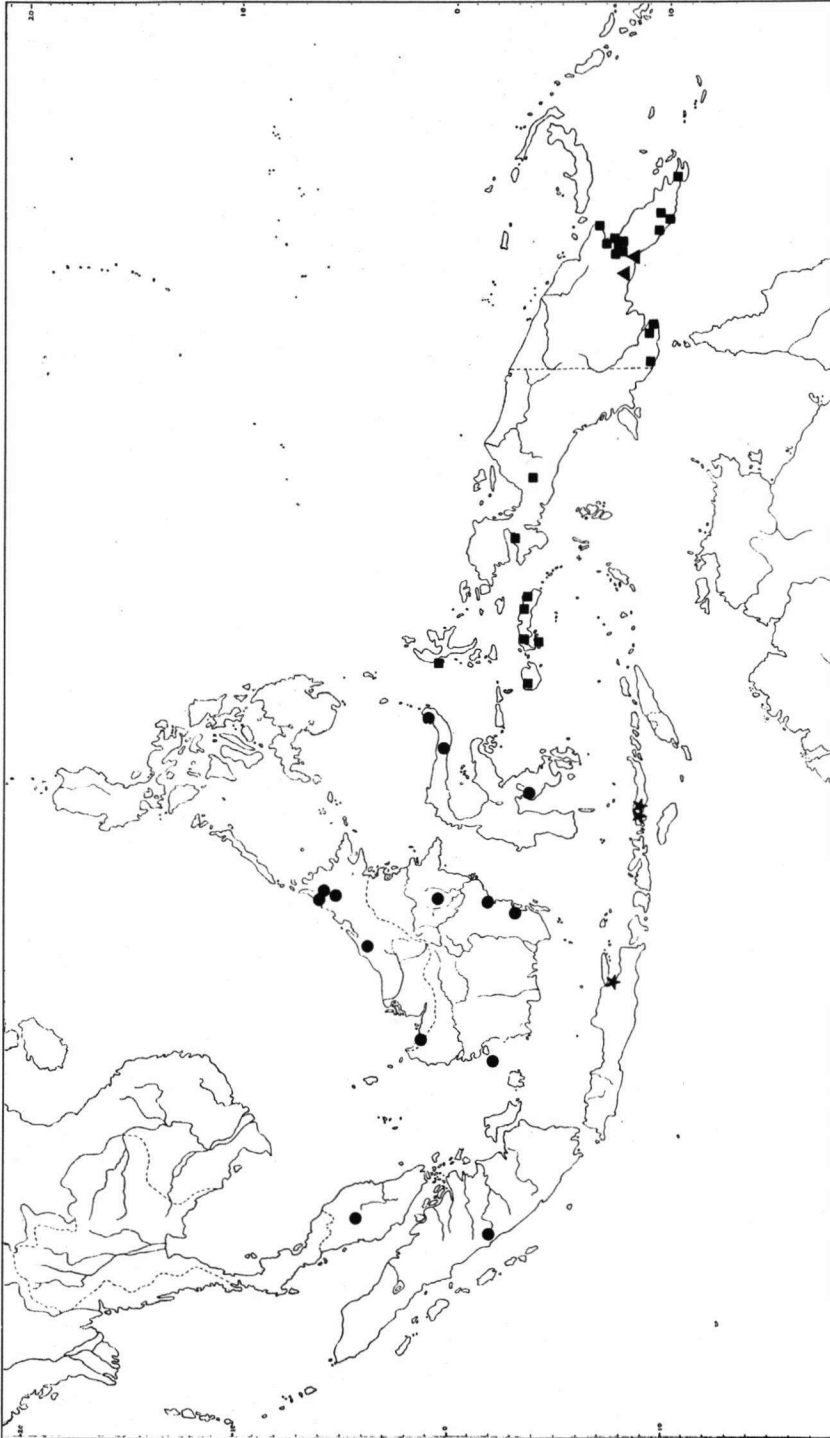
Almeida & Almeida (1993) suggested that the correct name of this species should be *Parsonsia inodora* (Lour.) Almeida & Almeida. This seems to have been based on a great confusion caused by Decaisne’s citation of *Cynanchum inodora* Lour. and *Ganosma inodora* Lour. (a name not actually used by Loureiro) under *Bidaria inodora* (Lour.) Decne. (in A. DC., Prodr. 8, 1844, 624). It is true that the description of *Bidaria inodora* given could be of *Parsonsia alboflavescens* as Almeida & Almeida suggested but in the description of *Cynanchum inodorum* Lour., the basionym of this species, the fruit is clearly described as being of 2 follicles which rules out *P. alboflavescens* with its syncarpous fruit.

Selection of the 370 collections studied. — INDONESIA. Sumatera Utara: Asahan, near Lumban Ria, *Rahmat Si Boeea* 7899 (A). — Sumatera Lampung: Tarabangie Agong, *Teijsmann HB* 4512 (BO). — Sumatera Riau: Kep. Riau, Pulau Toedjoeh, Sg. Oeloe, *Bünnemeijer* 6040 (BO). — Sumatera Aceh: Trumon, *Asdat* 131 (A, BO, K, L, NY). — Sumatera Barat: Lembah Anai, *Rahayu & Maskuri* 483 (BO, L). — Sumatera Bengkulu: Lubok Tandai, *Brooks* 7100 (K). — Kalimantan Barat:

Bukit Raya, *Nooteboom* 4677 (A, BO, BRI, L). — Kalimantan Tengah: Kab. Kotawaringin Timur, km 92 from Sangai, *Djuda* 94233 (E). — Kalimantan Timur: Berow, foot of Mt Ilas Bungan, *Kostermans* 13748 (K). — Anambas Islands: Pulau Jemaja, *Henderson* 20479 (BO, K, SING). — Java Barat: Peutjang Island, Ujung Kulon Reserve, *Wirawan* 358 (A, BISH, BO, K, L, P, SING). — Java Timur: Kediri, Prigi, *Backer* 11778 (BO); Kangean Islands: Pulau Sepanjang, *Backer* 28935 (BO). — Bali: Jembrana, *van Steenis* 1938 (L). — Nusa Tenggara Barat: Lombok: Sepi Berg, *Elbert* 2462 (BO, L, SING). — Nusa Tenggara Timur: Sumba: Labundung forest, Waidingir, Maumaru, *Darnaedi* D 719 (BO, K). — Flores: Mbengan, *Kostermans* 21133 (BO, K, L). — Maluku: Sula Islands: Pulau Mangole, Lampaoe, *Bloembergen* 4710 (BO). Kai Islands: Pulau Kai, Banda Elat, *Jensen* 149 (BO, C, L). Seram: Hatiling, Wahai, *Kornassi* 439 (BO, K, L, U). Ambon: Kotta, *Kornassi* 1136 (BO, U). Aru Islands: Pulau Trangan, Meme, *van Balgooy & Mamesah* 6289 (L). Buru: Leksoela, *Toxopeus* 42 (BO, L, U). Halmahera: Galela, *Beguín* 1771 (BO). — Irian Jaya: Mamberamo, *Janowsky* 446 (A, BO, L). — MALAYSIA. Johor: Tanjong Penawa, Kota Tinggi Dist., *Maxwell* 78-345 (AAU, L, SINU). — Kedah: Pulau Langkawi, *Curtis* 2107 (SING). — Kelantan: Gua Panjong at Gua Nimik, *Henderson* 19551 (SING). — Malacca: Between Rellau & Chaban, *Ridley s.n.* (SING). — Pahang: Rompin River mouth, *Evans s.n.* (K); Pulau Tioman, Air Surin, *Henderson* 21723 (SING). — Penang: Panaru Bukit, *Curtis s.n.* (SING). — Perak: Larut, *King's Coll.* 5650 (K, SING). — Sabah: Mt Kinabalu, Bembangan Camp, *Chew & Corner* 4572 (K); Sandakan District, Kampong Wonod, Telupid, *Aban & Saikher* SAN 79308 (K); Beluran District, Sungei Sasau, Labuk Sugut, *Amin & Martin* SAN 67090 (K); Ranau District, Mesilau Trail, *Meijer* 42843 (K). — Sarawak: Kuching, *Haviland* 1666 (K); 7th Division, Sungei Sepaku, Belaga, *Othman et al.* S 43837 (K, L); 1st Division, Kuching, Bako National Park, Telok Kruim, *Yii Puan Ching* S 42294 (K, L). — PHILIPPINES. Babuyan: Dalupiri Island, *Bartlett* 15073 (A). — Batan Island: Mahataw, *Ramos* 80398 (A). — Dinagat Island: *Ramos & Pascasio* 35236 (BM, BO, L). — Luzon: Albay: Matnog, *Vidal* 3310 (K); Apayao: Mt Duraragan, *Edaño* 19858 (K, L); Bataan: Lamao River, Mt Mariveles, *Williams* 243 (A, K, US); Batangas: *Sulit* 29040 (A, US); Cagayan: Bagio Cove, *Allen* 34-81 (BISH); Ilocos Norte: Bangui, *McGregor* 43601 (A); Laguna: Mt Makiling, *Sulit* 8446 (A, BRI); Nueva Ecije: Mt Umingan, *Ramos & Edaño* 26358 (K, NY); Quezon: Baler, *Quisumbing* 2462 (A); Rizal: Mt Lumutan, *Ramos & Edaño* 29673 (A, K, US); Sorsogon: *Ramos* 23517 (A); Tayabas: Mt Tulaog, *Ramos & Edaño* 29135 (BO); Zambales: Candelaria, *Ramos* 4723 (K). — Mindanao: Davao: Mati, *Ramos & Edaño* 49603 (BM, BO, NY, SING, W); Lanao: Patpangkat Mt, *Ebalo* 1157 (A). — Mindoro Occidental: Abra de Ilog, *Sulit* 13790 (A, BO, L, US); Mindoro Oriental: Puerto Galera, *Legraen et al.* 220 (L). — Palawan: Talimbobog, *Edaño* 77866 (A). — Panay: Capiz, *Ramos & Edaño* 31482 (BRI, NY, SING). — Sulu Archipelago: Sibutu Islands, Sitankai-Tumindao, *Herre* 1225 (NY). — PAPUA NEW GUINEA. Admiralty Islands: *Moseley s.n.* (K). — East New Britain: Pomio, Schirlitz Peninsula, Fulleborn Harbour, *Croft & Katik* NGF 15535 (A, BRI, CANB, E, K, L). — East Sepik: near Wewak, *Gilli* 610 (W). — Eastern: Waikaiuna Bay, Normanby Island, *Womersley* NGF 8620 (A, BRI, K, L). — Madang: Hansa Bay, near Bogia, Laing Island, *Goetghebeur* 3280 (L). — Milne Bay: Menapi, Cape Vogel Peninsula, *Brass* 21759 (A); Normanby Island, Miadeka, *Streimann & Lelean* LAE 52600 (A, BRI, CANB, K, L); Kiriwina Island, Kaibola, *Frodin* UPNG 2031 (K, L); Woodlark Island, *Kairo* 165 (L). — Morobe: Lae, Lasanga Island, *Streimann* NGF 44268 (A, BRI, CANB, K, L); Finschhafen, NW of Sialum, *Pajmans* 1627 (CANB). — New Ireland: Namirna, *Coode* NGF 40498 (L). — West New Britain: between Wogonokai village & Mt Wangore, *Barker & Vinas* LAE 66753 (A, BRI, E, K, L, M). — Western: Tarara, Wassi Kussa River, *Brass* 8723 (A, BM, BO, BRI, L).

2. *Parsonsia apiculata* (Bakh. f.) D.J. Middleton, *comb. nov.* — Map 2

Grisseea apiculata Bakh. f., [in *Backer, Beknopte Fl. Java, Afl. 7, Fam. 172* (1948) 49, nom. inval. (no Latin description)] *Blumea* 6 (1950) 392. — Type: *Dorgelo* 2022 (BO holo, not found; L lecto, designated here; L iso). Bakhuisen van den Brink designated the Bogor specimen as the holotype. However, I did not find this specimen in Herbarium Bogoriense and, therefore, designate one of the two isotypes in Leiden as a lectotype.



Map 2. *Parsonsia apiculata* (Bakh. f.) D. J. Middleton (★), *P. appressa* D. J. Middleton (▲), *P. buruensis* (Teijsm. & Binn.) Boerl. (■), *P. celebica* (Oliv.) Sleesen (●).

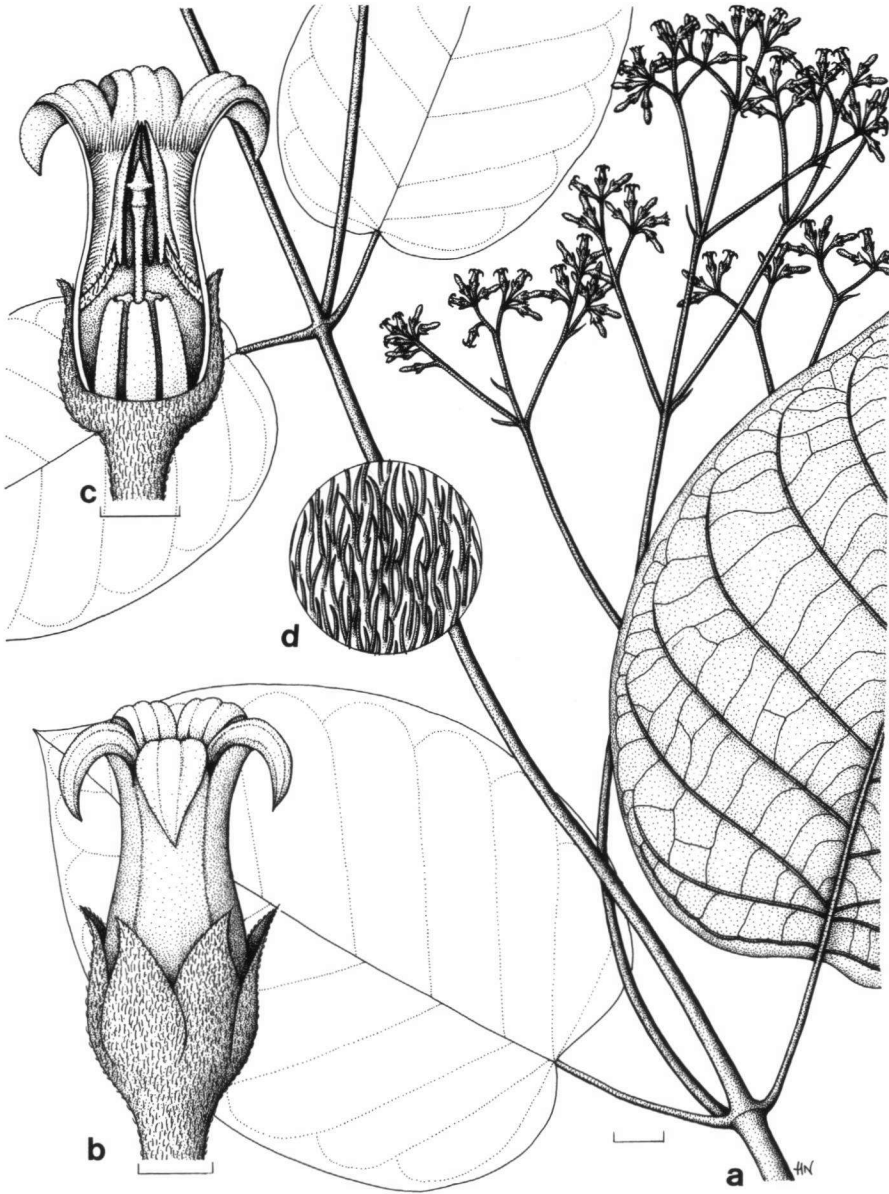


Fig. 1. *Parsonsia appressa* D.J. Middleton (Craven & Schodde 880, L). a. Habit; b. flower; c. flower dissection; d close-up of appressed hairs on stems and leaves. — Scale bars: a = 1 cm; b, c = 1 mm.

Branches lenticellate; branchlets sparsely tomentose. Leaves opposite; petiole 1–2.9 cm long; blade papery, elliptic to ovate, apex acuminate, base rounded, $4.5\text{--}12 \times 2.3\text{--}7.5$ cm, $1.4\text{--}2 \times$ as long as wide; 5–7 pairs of lateral nerves, slightly ascending; tertiary venation laxly reticulate to scalariform, sometimes somewhat obscure; sparse-

ly puberulent on midrib adaxially, sparsely puberulent all over abaxially. Inflorescence of congested axillary and terminal cymes, 2.7–6.7 cm long; covered in dense spreading hairs; peduncles 1.6–4.1 cm long; pedicels 1.6–2.2 mm long. Sepals linear, reflexed, apex acuminate to acute, 1.3–2 × 0.6–1 mm, 1.6–3.3 × as long as wide, brown velutinous. Corolla yellow; bud cylindrical, apiculate, the lobes only slightly overlapping; open corolla salverform or with erect lobes; tube 1.9–2.2 mm long, 1–2.5 × as long as calyx; lobes triangular, apex acuminate, 1.5–2.2 mm long, 0.9–1 mm wide, 0.8–1.1 × as long as tube; brown velutinous all over or on lobes and upper two thirds of tube outside, densely pubescent in throat and upper half of tube inside. Stamens inserted at 0.4–0.7 mm from corolla base, which is 0.2–0.3 of the tube length; filaments slightly curved, puberulent, c. 0.5 mm long; anthers oblong, tails rounded, flattened, 1.9–2.1 × 0.4 mm, 4.8–5.3 × as long as wide. Disc of 5 separate lobes, oblong, bifid or 3-dentate on top, c. 0.7 mm long. Ovary 0.6–0.7 mm long; style c. 0.7 mm long; pistil head c. 0.5 mm long. Fruit unknown.

Distribution — Indonesia (Java and Flores). It may also be found in the islands between but no specimens have been seen.

Habitat — The only information available is that one specimen was collected at 400 m altitude.

Note — This species appears to be close to *Parsonsia lata* from which it is distinguished by its smaller, more condensed inflorescences. It is also geographically quite far from the range of *P. lata*.

Collections studied. INDONESIA. Nusa Tenggara Timur: Flores: *Saakov 116* (BO); near Naga, *Schmutz 1721* (L). — Java Timur: Surabaya, Grisee village, *Dorgelo 2022* (L, type).

3. *Parsonsia appressa* D.J. Middleton, *spec. nov.* — Fig. 1; Map 2

Frutex scandens ramulis dense fusco-tomentellis, foliis late ellipticis vel ovatis, acuminatis, basi cordatis, utrinque hirtello-pubescentibus, paniculis axillaribus vel terminalibus, floribus appresse velutinis. — Typus: *Craven & Schodde 880* (L holotype; A, CANB, L iso).

Branchlets tomentose. Leaves opposite; petioles 1.3–2.8 cm long; blade subcoriaceous to coriaceous, ovate to elliptic, apex acuminate, base cordate, 4.7–15.2 × 3.1–12.1 cm, 1.2–1.6 × as long as wide; 6–9 pairs of lateral nerves; tertiary venation reticulate; densely brown velutinous abaxially, more sparsely so adaxially. Inflorescence of axillary and terminal cymes forming a large panicle, 12–20 cm long; appressed brown velutinous; peduncles 6–7.5 cm long; pedicels 2.3–4.5 mm long. Sepals ovate, apex acute, 1.7–2.8 × 0.9–1.3 mm, 1.8–2.2 × as long as wide; appressed velutinous. Corolla cream coloured; buds cylindrical with an acuminate head, lobes slightly overlapping; open corolla salverform; tube 3–4 mm long, 1.4–2.1 × as long as sepals; lobes triangular, acuminate, papillose inside, 1.9–2.6 mm long, c. 1.1 mm wide, 0.5–0.7 × as long as tube; velutinous outside on upper two thirds, bearded in throat and in 5 rows down tube inside. Stamens inserted at c. 2 mm from the corolla base, which is 0.4–0.5 of tube length; filaments straight or slightly curved, c. 0.7 mm long, pubescent; anthers narrowly triangular, tails narrow, 2.2–2.4 × 0.5–0.6 mm, 3.7–4.8 × as long as wide. Disc of 5 separate oblong lobes, 3 notched at apex, 1.5–1.8 mm long. Ovary c. 0.6 mm long; style 2.2–2.6 mm long; pistil head c. 0.7 mm long. Fruit unknown.

Distribution — New Guinea.

Habitat — Recorded, only twice, from swamp forest near sea level.

Note — Close to *P. lata* and *P. pedunculata*. It differs from the former in its appressed hairs and generally larger and looser panicles and from the latter in its larger flowers, erect sepals and more densely pubescent leaves.

Collections studied. PAPUA NEW GUINEA. Gulf: near Ravikivau, Purari delta, *Craven & Schodde 836* (A, BO, BRI, CANB, K, L); near Malalaua, *Craven & Schodde 880* (A, CANB, L, type).

4. *Parsonsia buruensis* (Teijsm. & Binn.) Boerl. — Map 2

Heligme buruensis Teijsm. & Binn., Nat. Tijds. Ned.-Ind. 25 (1863) 405. — *Parsonsia buruensis* (Teijsm. & Binn.) Boerl., Handl. Fl. Ned. Ind. 2, 2 (1899) 397. — Type: Binnendijk s.n. (BO lecto, designated here; BO iso; L photo).

Branchlets glabrous to sparsely and minutely puberulent. Leaves opposite; petioles 1.5–4.8 cm long; blade papery to subcoriaceous, ovate to elliptic, apex acuminate, base rounded to cuneate, 6.8–24 × 2.4–12 cm, 1.7–3.1 × as long as wide; 6–8 pairs of lateral nerves, ascending; tertiary venation densely reticulate; glabrous or with a few hairs on petiole. Inflorescence axillary and terminal usually forming a large terminal panicle, 8–9.4 cm long; shortly brown puberulent; peduncle 3.5–4.8 cm long; pedicels 2.8–5 mm long. Sepals ovate, apex acute, rarely acuminate, 1.1–1.8 × 0.6–1.1 mm, 1.5–2.3 × as long as wide, brown puberulent outside. Corolla white to greenish white; buds narrow cylindrical, apex acuminate, very slightly overlapping; open corolla with long strongly reflexed lobes; tube 1.1–1.9 mm long, 0.8–1.5 × as long as sepals; lobes linear, 4–5.2 mm long, 0.5–0.8 mm wide, 2.4–3.9 × as long as tube; glabrous to sparsely puberulent outside, densely pubescent at base of lobes and top of tube inside. Stamens inserted at 0.7–0.9 mm from corolla base, which is 0.4–0.5 of tube length; filaments straight, connate, pubescent, 3.5–3.8 mm long; anthers oblong with incurving tails, 3–3.2 × 0.6 mm, 5–5.3 × as long as wide, exerted completely beyond mouth of corolla. Disc of 5 separate lobes, oblong to elliptic, acuminate to apiculate, 1.3–1.7 mm long. Ovary 0.7–0.9 mm long; style 3.7–4.2 mm long; pistil head 0.6–0.7 mm long. Fruit linear, apex acute to obtuse, thick-walled; minutely puberulent; 15–26.5 cm long, 1–1.3 cm wide. Seed grain 16.8–18.6 × 2.8 mm; coma 5.5–6.2 cm long.

Distribution — Indonesia (Moluccas and Irian Jaya), Papua New Guinea.

Habitat — This species has been collected from 0–1500 m in primary and secondary forest and in savannah.

Note — This species was described from a plant grown in the Botanic Gardens in Bogor but was allegedly originally collected in Buru, hence the name. In the sterile state it is easily confused with *P. rubra*.

Selection of the 150 collections studied. INDONESIA. Maluku: Ambon: Batoe Gadjah, *Boerlage 245* (BO). Aru Islands: Pulau Trangan, Kampong Sia, *van Balgooy & Mamesah 6310 A* (L). Babar: Letwurung, *van Borssum Waalkes 3095* (A, BO, BRI, K, L, SING). Buru: SE of Bara, Waeduna R., *van Balgooy 5079* (A, L, MO). Seram: Riring, *Rutten 1730* (BO). Tanimber Islands: Pulau Jamdena, Otimmer, *Buwalda 4450* (A, BO, BRI, K, L, SING). — Ternate: Taramadiahi, *Beguín 1318* (BO). — Irian Jaya: Nassauleb, *Docters van Leeuwen 10590* (BO). — PAPUA NEW GUINEA. Central: Port Moresby, *Frodin & Yauiab UPNG 616* (L, NSW). — Milne Bay: Baniara, SE of Opanabu along path

to Etau, *Kanis 1255* (A, L). – Morobe: Markham Point, *Henty NGF 11963* (A, BO, BRI, CANB, K, L, MEL, SING); Bulolo, *Streimann & Kairo NGF 27567* (A, BO, BRI, CANB, K, L, SING); below Sattelberg, *Clemens & Clemens 479* (L, Z). – Western: Daru Isl., *Brass 6434* (A, BM, BO, BRI, L).

5. *Parsonsia celebica* (Oliv.) Sleesen — Map 2

Lyonsia celebica Oliv., J. Linn. Soc. 15 (1876) 99. — *Parsonsia celebica* (Oliv.) Sleesen, Nova Guinea n. s. 9 (1958) 341. — Type: *Riedel s. n.* (K lecto, designated here; BO iso).

Branchlets densely short tomentose. Leaves opposite; petioles 1.9–3.5 cm long; blade papery to subcoriaceous, ovate, elliptic or obovate, apex acuminate, base rounded to cordate, 6.2–23.2 × 3.8–14.1 cm, 1.5–1.8 × as long as wide; 5–8 pairs of lateral nerves, ascending; the tertiary venation laxly reticulate; brown velutinous abaxially, sparser adaxially. Inflorescence of axillary cymes, 3.3–15 cm long; densely brown appressed velutinous; peduncles 1.6–7.5 cm long; pedicels 1.5–7 mm long. Sepals narrow ovate, erect to reflexed at apex, apex acute to acuminate, 1.8–2.9 × 1–1.4 mm, 1.7–2.9 × as long as wide, densely brown appressed velutinous. Corolla brownish violet and white; buds cylindrical with an acuminate head, lobes slightly overlapping; tube 5.4–7.5 mm long, 2.2–3.3 × as long as sepals; lobes triangular, apex acute, papillate inside, 2–3.5 mm long, 1–1.2 mm wide, 0.3–0.5 × as long as tube; densely brown velutinous on lobes and upper half of tube outside, bearded in throat, densely pubescent in 5 rows down tube inside. Stamens inserted at 3.2–4.8 mm from corolla base, which is 0.4–0.5 of tube length; filaments straight or slightly curved, 0.5–1.2 mm long, pubescent; anthers narrowly triangular with broad flat tails, 3.1–3.4 × 0.6–0.7 mm, 4.4–5.7 × as long as wide. Disc of 5 separate lobes, oblong, notched or flat at top, 1.7–2.2 mm long. Ovary 0.6–0.7 mm long; style 3.4–4.5 mm long; pistil head 1–1.3 mm long. Fruit fusiform, brown pubescent, c. 13.5 cm long, c. 3 cm wide. Seed grain 13–14 × 2.5–2.6 mm; coma 1.4–2.7 cm long.

Distribution — Malay Peninsula, Borneo, Sulawesi.

Habitat — This species has been collected in primary and secondary forest, sometimes on limestone, up to 1200 m.

Note — Van der Sleesen (1958) listed the differences between *P. lata* and this species. Although her conclusion, that these two species should be kept separate, is valid some of the differences she listed do not hold up to close scrutiny. She suggested the corolla lobes were papillose in *P. lata* and not in *P. celebica*. To varying degrees they are papillose in both. She also suggested that the corolla lobes were erect in *P. celebica* and reflexed in *P. lata*. This character is difficult to observe accurately in herbarium material but there is certainly a lot of material of *P. celebica* where the corolla lobes are also reflexed.

Selection of the 21 collections studied. INDONESIA. Kalimantan Timur: West Kutei, *Endert 2424* (BO, L); Kenangan, Balikpapan, *Dransfield 4397* (BO, K, L). — Kalimantan Utara: Gorontalo, *Riedel s. n.* (BO, K). — Sulawesi Utara: Minahassa, Menado, *Koorders 16070* (BO, L), *16071* (BO), *16075* (BO, L), *19524* (BO, L). — Sumatera Bengkulu: Muarasakai *TFB 575* (L). — MALAYSIA. Pahang: Boh Plantation, Cameron Highlands, *Nur SF 32598* (L, SING). — Sabah: foothills of Mt Kinabalu, Dallas, *Clemens & Clemens 26383* (BM), *26629* (BM, BO), *26826* (BM, BO); Keningau Dist., Mile 8, Crocker Range Forest Reserve, *Bidin SAN 84832* (K); Ranau District, Ranau, *Meijer 48140* (K, L). — Sarawak: s. l., *Haviland 1710* (K); Bukit Regu near Kampong Wah, Padawan, *Chai S 37363* (K, L); Baram District, Ulu Sungei Melinau Paku, Tutoh, *Anderson 4052* (K, L, SING).

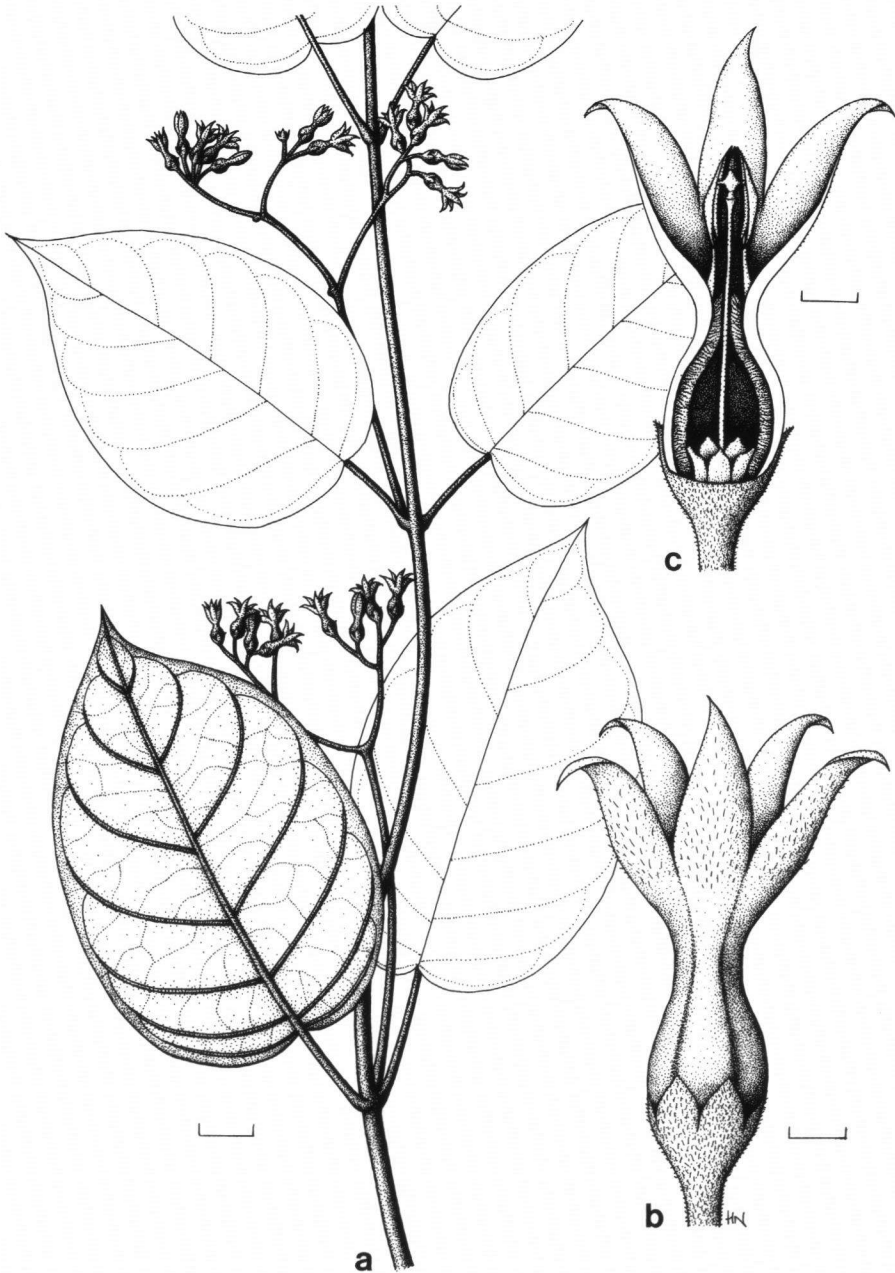


Fig. 2. *Parsonsia constricta* D.J. Middleton (Kostermans 2696, L). a. Habit; b. flower; c. flower dissection. — Scale bars: a = 1 cm; b, c = 1 mm.

6. *Parsonsia constricta* D.J. Middleton, *spec. nov.* — Fig. 2

Frutex scandens, ramulis dense fusco-tomentellis, foliis ovatis, acuminatis, basi cordatis, corolla medio constricta, intus fauce glabra. — Typus: *Kostermans 2696* (L. holo; BO iso).

Branchlets tomentose, becoming sparsely so with age. Leaves opposite; petioles 1.8–2.2 cm long; blade subcoriaceous, ovate, apex acuminate, base cordate, 6.7–10.3 × 3.6–7.4 cm, 1.4–1.9 × as long as wide; 6–7 pairs of lateral nerves, ascending, prominent abaxially; tertiary venation reticulate; brown pubescent on midrib and nerves abaxially and adaxially, otherwise glabrous. Inflorescence of axillary cymes, 8.5–10.6 cm long; brown velutinous; peduncles 4.5–6.5 cm long; pedicels 3.5–4.7 mm long. Sepals ovate, apex acute, 2.5–2.7 × 1.2–1.5 mm, 1–1.1 × as long as wide, densely brown appressed velutinous. Corolla bright yellow; buds strongly constricted in middle, lobes slightly overlapping; open corolla strongly constricted in the middle with erect lobes; tube 7.1–7.6 mm long, 3.6–4.2 × as long as sepals; lobes ovate, apex acuminate, 4.5–4.7 mm long, c. 2.4 mm wide, c. 0.5 × as long as tube; sparsely pubescent on lobes and upper part of tube outside, densely pubescent below anthers and glabrous in upper part inside. Stamens inserted at c. 6.2 mm from corolla base, which is c. 0.7 of tube length; filaments straight, pubescent, c. 1.3 mm long; anthers with narrow tails, c. 4.3 × 0.8 mm, c. 5.4 × as long as wide. Disc lobes fused at base, oblong, flat topped, c. 1.9 mm long. Ovary c. 1 mm long; style c. 7.3 mm long; pistil head c. 1.1 mm long. Fruit unknown.

Distribution — Known from only one collection from the Vogelkop Peninsula in Irian Jaya, Indonesia.

Habitat — In dense forest at low altitude.

Note — This new species appears to be most closely related to another new species, *P. novoguineensis*, from which it is distinguished by its less pubescent leaves, larger, less pubescent, flowers and the stronger constriction in the middle of the corolla tube. From *P. celebica* it can be distinguished by the less pubescent flowers and glabrous corolla throat.

Collection studied. INDONESIA. Irian Jaya: Momi, S of Manokwari, *Kostermans 2696* (BO, L, type).

7. *Parsonsia curvisepala* K. Schum. — Map 3

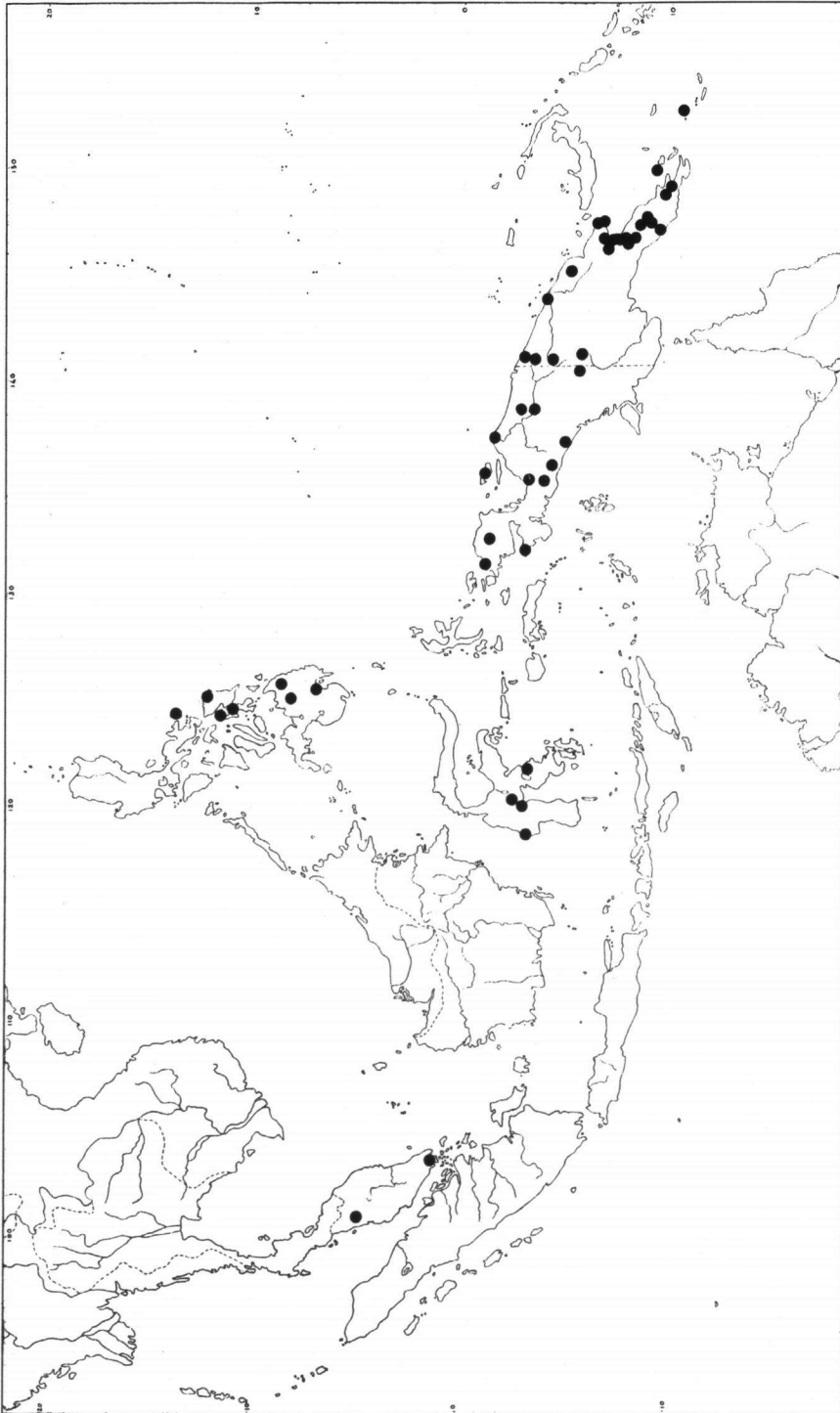
Parsonsia curvisepala K. Schum., Bot. Jahrb. 9 (1888) 215; Merr. & Perry, J. Arnold Arbor. 24 (1943) 215. — Type: *Hollrung 96* (K lecto), Papua New Guinea.

Parsonsia verticillata K. Schum. in K. Schum. & Lauterb., Nachtr. Fl. Deutsch. Schutzgeb. Südsee (1905) 351. — Type: *Nyman 856* (untraced). Although no type material of this species has been seen it is clear from the description that it is a synonym of *P. curvisepala*.

Parsonsia stenocarpa King & Gamble, J. As. Soc. Beng. 74 (1907) 458; Ridl., Fl. Malay Penins. 2 (1923) 351. — Type: *Wray 3263* (K lecto; SING iso), Malaysia, Perak.

Aganosma apoensis Elmer, Leafl. Philipp. Bot. 4 (1912) 1445. — *Parsonsia apoensis* (Elmer) Merr., Philipp. J. Sci., Bot. 9 (1914) 384. — Type: *Elmer 10540* (K lecto, designated here; A, BM, BO, E, G, GH, L, MO, NY, P, U, US, W, WRSL, Z iso). Elmer published two collections in his original description, *Elmer 11719* and *12540*. This latter is undoubtedly a publication error for *Elmer 10540*.

Lyonsia mollissima Wernham, Trans. Linn. Soc., Bot. 9 (1916) 109. — *Parsonsia mollissima* (Wernham) Markgr., Bot. Jahrb. 61 (1927) 220; Merr. & Perry, J. Arnold Arbor. 24 (1943) 216. — Type: *Kloss s.n.*, Dec. 1912–Jan. 1913 (BM lecto, designated here).



Map 3. *Parsonsia curvisepala* K. Schum.

Parsonsia cyathocalyx Markgr., Bot. Jahrb. 61 (1927) 220. — Type: *Ledermann 13037* (untraced — probably destroyed in B). Neotype: *Ledermann 12585* (L. neo). The neotype is the only one of Markgraf's paratypes which could be traced.

Parsonsia urdanetensis Elmer ex Merr., [Enum. Philipp. Flow. Pl. 3 (1923) 338, nom. nud.] Leaflet. Philipp. Bot. 10 (1939) 3696, nom. inval. (no Latin description). — Type: *Elmer 13836* (K lecto, designated here; A, BM, BO, GH, MO, NY, US, W), Philippines, Mindanao, Agusan Prov., Mt Urdaneta.

Parsonsia dallmannensis Kaneh. & Hatus., Bot. Mag., Tokyo 55 (1941) 498. — Type: *Kanehira & Hatusima 12065* (TI lecto, n.v.; A, BO iso).

Branchlets short to long brown tomentose. Leaves 3–4 verticillate, more rarely opposite; petiole 0.5–2.6 cm long; blade papery to subcoriaceous, elliptic to obovate, apex acuminate to rounded, sometimes apiculate, base cuneate to obtuse, 1.5–13.5 × 0.6–5.8 cm, 1.8–4.8 × as long as wide; 4–8 pairs of lateral nerves; tertiary venation reticulate, sometimes prominent abaxially; densely brown velutinous abaxially and adaxially to pubescent only on midrib. Inflorescence of axillary cymes, frequently umbelliform with the flowers clustered at the ends, 2–10.5 cm long; densely brown velutinous; peduncles 0.9–7.5 cm long; pedicels 2–6.1 mm long. Sepals linear, strongly reflexed, more rarely erect and/or broader obovate, 2–4.5 × 0.5–1.4(–2.2) mm, (1.7–)1.9–7 × as long as wide, tomentose. Corolla yellowish; buds cylindrical, head acute to acuminate, lobes slightly overlapping; open corolla salverform; tube 2.1–4.5 mm long, 0.8–1.8 × as long as sepals; lobes triangular, apex acute to acuminate, 1.3–2.6 mm long, 0.6–1.2 mm wide, 0.4–1 × as long as tube; sparsely to densely brown pubescent or, rarely, glabrous outside, pubescent in upper tube inside. Stamens inserted at 0.5–0.8 mm from corolla base, which is 0.1–0.2 of tube length; filaments straight, narrow, pubescent, 1.1–2 mm long; anthers narrowly triangular, tails squared, flattened, 2.4–3.5 × 0.5–0.6 mm, 4.8–7 × as long as wide. Disc of 5 separate lobes, elliptic, acute to notched at apex, 0.7–1.1 mm long. Ovary 0.7–1 mm long; style 1.1–2.1 mm long; pistil head 0.6–1 mm long. Fruit linear, minutely puberulent; 2.2–39 cm long, 3.2–5.3 mm wide. Seed grain 7–17 × 0.4–2 mm; coma yellowish, 1.3–4.7 cm long.

Distribution — Malay Peninsula, Sulawesi, Philippines, New Guinea, Solomon Islands.

Habitat — This species has been collected from low altitude to 1800 m in primary and secondary lowland forest and in lower montane forest, sometimes on limestone.

Notes — Markgraf (1927) mentioned a plant collected by Schlechter which he compared to *P. mollissima* except that it had larger leaves, to 15 cm long and 6 cm broad. Unfortunately, he only had sterile material, probably destroyed in the Berlin herbarium. I have seen no specimens with leaves as large as this except one approaching it from the Philippines.

There are some specimens which have opposite leaves, frequently identified as *P. cyathocalyx*. These specimens differ from the more usual forms in this character and also, for some specimens, a more delicate habit. *Eyma 5331* (BO) has both opposite and 3-verticillate leaves showing that this character cannot be used to definitively distinguish between the two. *Parsonsia cyathocalyx* is reputed to differ from *P. curvisepala* in the opposite leaves, glabrous corolla tube and broader erect sepals. All these characters can be found in *P. curvisepala* although not usually in this combination.

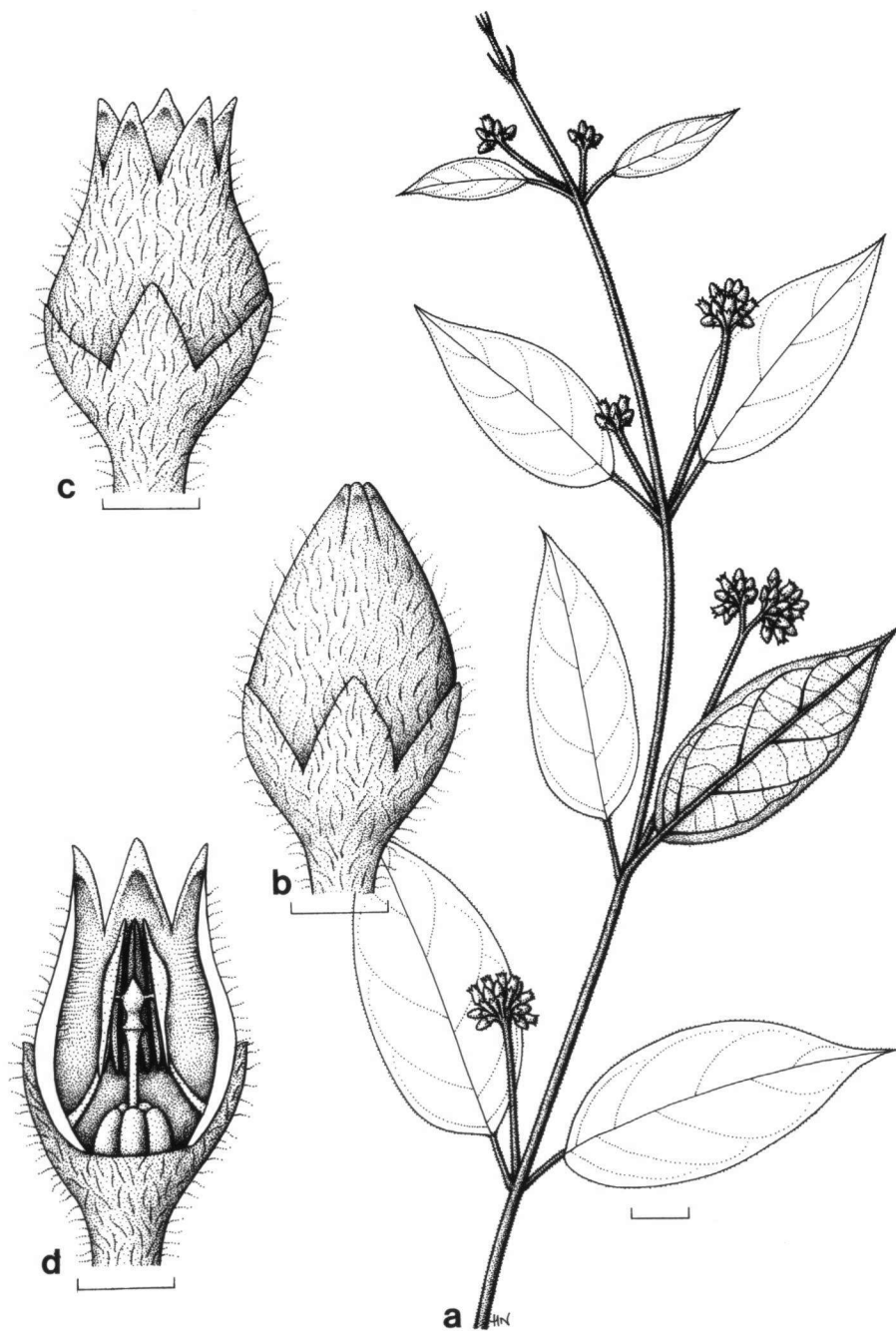


Fig. 3. *Parsonsia densiflora* D.J. Middleton (*Womersley NGF11028*, L). a. Habit; b. flower bud; c. open flower; d. flower dissection. — Scale bars: a = 1 cm; b, c, d = 1 mm.

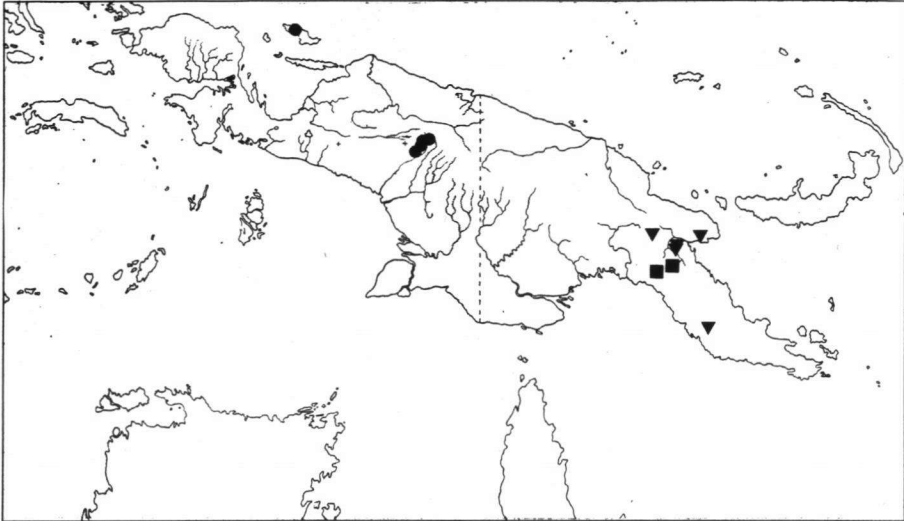
Even those specimens with opposite leaves are quite variable, particularly in indumentum. This species is second only to *P. alboflavescens* in its variability and geographic distribution.

Selection of the 102 collections studied. INDONESIA. Sulawesi Selatan: Tojambu, *Kjellberg 1913* (BO, S). — Irian Jaya: Dalman, Nabire, *Kanehira & Hatusima 12065* (A, type of *Parsonsia dallmanensis*); Star Mts, Sibil Valley, *Kalkman 4247* (A, CANB, L); Utakwa River to Mt Carstenz, *Kloss s. n.* (BM, type of *Lyonsia mollissima*); Wissel Lake Region, Kebonbivak Rivier, *Eyma 5331* (BO); Mamberamo, *Lam 1483* (BO); Fakfak, Mimika Timur, Timika-Tembaga Pura, *Widjaja 2759* (BO); Biak, Geelvink Bay, *Schram BW 9341* (L). — MALAYSIA. Perak: s.l., *Wray 3263* (K, SING, type of *Parsonsia stenophylla*); Larut, *King's Coll. 6062* (BM, K, SING). — PHILIPPINES. Biliran Island: Mt Suiro, northern slope, *Sulit 21674* (L). — Catanduanes: *Ramos 30273* (BM, K, P, US). — Leyte: *Wenzel 1170* (A, BM, MO). — Mindanao: Agusan, Cabadbaran, Mt Urdaneta, *Elmer 13836* (A, BM, BO, GH, K, MO, NSW, NY, US, W, type of *Parsonsia urdanetensis*); Bukidnon, Katan-glad, *Sulit 9959* (A, L); Davao, Todaya, Mt Apo, *Elmer 10540* (A, BM, BO, E, G, GH, K, L, MO, NY, P, U, US, W, WRSL, Z, type of *Aganosma apoensis*). — Samar: Mt Cansayao, Catarman, *Sulit 14593* (A). — PAPUA NEW GUINEA. Central: Mafulu, *Brass 5141* (A, BM, BO, BRI, NY, US); Sogeri, *Forbes 865* (BM, E, K, L, MEL, MO); road to Musgrave River near Awarere plantation, *Naoni s. n.* (K). — East Sepik: Hunstein Range (Mt Samsai), *Takeuchi 5097* (A). — Madang: Josephstal, *White NGF 10318* (A, BRI, CANB, K, L). — Milne Bay: Northern slopes of Mt Dayman, Maneau Range, *Brass 23416* (A, CANB, K, L); Goodenough Island, east slopes, *Brass 24791* (A, CANB, K, L, US); Misima Island, foot of Mt Oeatau, *Damas & Gideon 74606* (CANB, K, L). — Morobe: Sattelberg, *Clemens 5214a* (A, B); Bulolo Valley, *Floyd NGF 7513* (A, BO, BRI, CANB, K, L); Lae, *Henty NGF 10507* (A, BO, BRI, CANB, K, L); Markham Road, 15 miles from Lae, *Millar NGF 23234* (BO, BRI, CANB, K, L, SING); Below Sattelberg, *Clemens & Clemens 849* (BR); Butaweng Sawmill, *Clemens & Clemens 2098* (BR, Z); Lae, Markham Point, *van Royen NGF 20138* (BRI, L); Wareo, *Clemens 1487* (L). — Southern Highlands: South of Ubogo, *Takeuchi 9211* (A). — West Sepik: Carpentaria Exploration Base Camp, Ekwaii River, *Hoover 456* (A); Amanab Subprov., West of Kikifas, *Foreman & Kumul NGF 48340* (BRI, L). — Western: Palmer River 2 miles below junction with Black River, *Brass 7089* (A). — Western Highlands: 3 miles from Lake Kopiago, *Galore & Vandenberg NGF 41025* (A, BRI, CANB, K, L, SING). — SINGAPORE. Mee Soon, *Maxwell 80-208* (L, SING, SINU).

8. *Parsonsia densiflora* D.J. Middleton, *spec. nov.* — Fig. 3; Map 4

Frutex scandens, ramulis dense fusco-tomentellis, foliis ellipticis vel oblongis, acuminatis, basi rotundatis vel obtusis, utrinque hirtello-pubescentibus, inflorescentia densiflora, corolla extus hirsuta, apicibus loborum glabris, intus fauce setosi. — Typus: *Womersley NGF 11028* (L holotype; A, BO, BRI, CANB, K, SING iso).

Branchlets densely brown velutinous. Leaves opposite; petioles 0.6–1.7 cm long; blade subcoriaceous, elliptic to oblong, apex acuminate, base obtuse to rounded, 4.7–10.5 × 1.4–4.3 cm, 2.4–3 × as long as wide; 4–5 pairs of lateral nerves, arcuate ascending; tertiary venation reticulate; densely brown velutinous abaxially, slightly less densely so adaxially. Inflorescence of axillary cymes with flowers clustered at tips, 3.2–4.8 cm long; velutinous; peduncles 2.2–4.7 cm long; pedicels 2.3–3.5 mm long. Sepals ovate, apex acuminate, 1.6–2.8 × 0.9–1.6 mm, 1.4–2.2 × as long as wide; densely brown velutinous. Corolla cream coloured or yellowish green; buds ovoid, apex acuminate, lobes slightly overlapping; open corolla with erect lobes; tube 1.6–2.2 mm long, 0.7–1 × as long as sepals; lobes triangular, apex acuminate, 1–1.5 mm long, c. 0.7 mm wide, 0.5–0.8 × as long as tube; densely pubescent on tube and



Map 4. *Parsonsia densiflora* D.J. Middleton (■), *P. flavescens* Merr. & L.M. Perry (●), *P. hebetica* Markgr. (▼).

base of lobes outside with glabrous lobe tips, densely pubescent on inside of lobes and in throat. Stamens inserted at c. 0.7 mm from the corolla base, which is c. 0.2 of tube length; filament curved, pubescent, 0.8–1 mm long; anthers with broad tails, c. 2.7 × 0.5 mm, c. 5.4 × as long as wide. Disc of 5 separate lobes, thick, flat topped, 0.5–0.7 mm long. Ovary 0.5–0.7; style c. 1.3 mm long; pistil head c. 0.8 mm long. Fruit unknown.

Distribution — New Guinea.

Habitat — Collected on road banks at 1500–1890 m altitude.

Note — This is quite a distinctive new species with its densely clustered flowers and glabrous corolla lobe tips. It would probably belong to section *Gastranthus* in Pichon's scheme but more work needs to be done defining the sections in *Parsonsia* before slightly unusual species such as *P. densiflora* can be placed with certainty.

Collections studied. PAPUA NEW GUINEA. Morobe: Edie Creek, *Womersley NGF 11028* (A, BO, BRI, CANB, K, L, type of *Parsonsia densiflora*); Wau-Edie Creek Road, *Brass 29134* (L, US).

9. *Parsonsia flavescens* Merr. & L.M. Perry — Map 4

Parsonsia flavescens Merr. & L.M. Perry, *J. Arnold Arbor.* 24 (1943) 216. — Type: *Brass 11647* (A holo; BM, BO, BRI, K iso; L photo), Indonesia, Irian Jaya, Balim River.

Branches lenticellate or not; branchlets glabrous to minutely and sparsely puberulent. Leaves opposite; petioles 3–12 mm long; blade coriaceous, ovate to broad elliptic, apex acuminate, base rounded, 2.3–9 × 1.3–5.5 cm, 1.3–4.1 × as long as wide; 5–8 pairs of lateral nerves, not particularly distinct from tertiary venation; tertiary venation prominent above; glabrous, sometimes with few hairs on petiole. Inflorescence of axillary cymes, 2–4 cm long, minutely and sparsely puberulent; peduncles 0.6–2 cm

long; petioles 3–5.8 mm long. Sepals ovate, imbricate, apex acute to obtuse, 1.7–2.1 × 0.8–1.2 mm, 1.4–2.3 × as long as wide, glabrous except for ciliate margin. Corolla yellow; buds with an acuminate head, lobes clearly overlapping; open corolla salverform; tube 2.9–4.1 mm long, 1.4–2.3 × as long as sepals; lobes ovate to oblong, apex rounded to obtuse, 2.2–3.3 mm long, 1.5–1.8 mm long, 0.7–1 × as long as tube; glabrous outside, densely pubescent at top of tube and behind anthers inside. Stamens inserted at 1.9–2.2 mm from corolla base, which is 0.5–0.6 of tube length; filaments geniculate, 0.2–0.4 mm long; anthers narrowly triangular, tails narrow, 3.5–4.1 × 0.6–0.7 mm, 5–6.8 × as long as wide. Disc annular, surrounding ovary, 5-crenate, 0.8–1 mm long. Ovary 0.6–0.7 mm long; style 2–3.1 mm long; pistil head 0.9–1.1 mm long. Fruit (immature) fusiform, smooth.

Distribution — New Guinea.

Habitat — In forest, 1600–2350 m altitude.

Note — This species is closely related to *Parsonsia oligantha*, a relationship which was previously obscured as the latter species was in a separate genus, *Delphyodon*, now included in synonymy of *Parsonsia*.

Collections studied. INDONESIA. Irian Jaya: Balim River, *Brass 11647* (A, BM, BO, BRI, K, type); Baliem Valley above Wellesley, *Kostermans & Soegeng 564* (A, BO, CANB, K, L); Baliem Valley, Jiwika, *Mangen M 353* (L); Bele River, 18 km NE of Lake Habbema, *Brass 11573* (A, BO, L); Central Highlands, Ibele Village, *Mendum & Argent 92807* (E); Biak, near Parieri, *Kostermans & Soegeng 989* (L); Wamena, *Raynal 16920* (L).

10. *Parsonsia grandiflora* D.J. Middleton, *spec. nov.* — Fig. 4

Frutex scandens, ramulis dense fusco-tomentellis, foliis ellipticis vel ovatis, acuminatis, basi rotundatis vel obtusis, utrinque hirtello-pubescentibus, tubus corollae cylindraceus, 10–10.5 mm longus. — Typus: *de Vogel 3650* (L holo; BO, CANB, K, MO iso).

Branchlets densely velutinous. Leaves opposite; blade subcoriaceous, ovate to elliptic, apex acuminate, base rounded to obtuse, 8–17.5 × 4.6–14 cm, 1.6–2 × as long as wide; 7–8 pairs of lateral nerves, ascending, prominent abaxially; tertiary venation laxly reticulate; brown velutinous abaxially and adaxially. Inflorescence of axillary cymes, 6.5–8 cm long; densely brown velutinous; peduncles 4–4.3 cm long; pedicels 7.8–8.2 mm long. Sepals ovate, apex acute, 2.5–2.7 × 1.2–1.5 mm, 1.8–2.1 × as long as wide, densely brown velutinous. Corolla yellow; buds cylindrical, apex acute, lobes slightly overlapping; open corolla cylindrical with lobes strongly reflexed; tube 10–10.5 mm long, 3.7–4.2 × as long as sepals; lobes ovate, 4.5–4.7 mm long, c. 2.5 mm wide, 0.4–0.5 × as long as tube; brown pubescent outside except at base of tube, sparsely pubescent all over inside and bearded at throat. Stamens inserted at c. 2.5 mm from corolla base, which is c. 0.3 of tube length; filaments straight, sparsely shortly pubescent, c. 3.5 mm long; anthers narrowly triangular, tails narrow, with a boss on the back at the base, c. 5 × 1.1 mm, c. 4.5 × as long as wide. Disc of 5 fused lobes, each lobe with 3 small teeth, 3 mm long. Ovary c. 0.7 mm long; style c. 6.6 mm long; pistil head c. 2 mm long. Fruit unknown.

Distribution: Indonesia (Bacan Island in the Moluccas).

Habitat: Collected only once in dense primary forest at 1000 m.



Fig. 4. *Parsonsia grandiflora* D.J. Middleton (*de Vogel 3650*, L, CANB). a. Habit; b. flower; c. flower dissection. — Scale bars: a = 1 cm; b, c = 1 mm.

Note — This species is characterised by its very large flowers, the largest for the genus in Malasia. It would appear to be most closely related to *Parsonsia celebica*. *Nedi 49* is also from Bacan Island but has only very immature flowers. It may also be a specimen of this species.

Collection studied. INDONESIA. Maluku: Bacan Island, Gunung Sibela near Waiaua, *de Vogel 3650* (BO, CANB, K, L, MO, type).

11. *Parsonsia hebetica* Markgr. — Map 4

Parsonsia hebetica Markgr., Bot. Jahrb. 61 (1927) 215. — Type: *Schlechter 19770* (K lecto).

Branchlets glabrous to puberulent. Leaves opposite; petioles 1.4–3.6 cm long; blade coriaceous to subcoriaceous, elliptic, apex caudate to acuminate, base obtuse, 4.9–13.3 × 1.5–6.6 cm, 2.1–3.2 × as long as wide; 7–10 pairs of lateral nerves, ascending; tertiary venation reticulate and often dark; glabrous to minutely and sparsely puberulent. Inflorescence of axillary and terminal cymes, 4.2–6.2 cm long, brown pubescent; peduncle 2–3.5 cm long; pedicels 3.3–5 mm long. Sepals ovate, apex acuminate to acute, 0.9–1.3 × 0.6–0.8 mm, 1.3–1.8 × as long as wide, puberulent. Corolla yellowish or purplish; buds with slightly wider head, lobes slightly overlapping; open corolla with erect to spreading lobes; tube 3–4.4 mm long, 3–3.3 × as long as sepals; lobes linear, 3.2–3.5 mm long, 0.6–0.7 mm wide, 0.7–1.2 × as long as tube; sparsely puberulent outside, densely puberulent in throat with downward pointing hairs. Stamens inserted at 0.7 mm from corolla base, which is 0.2–0.3 of tube length; filaments straight, puberulent, 1.7–2.7 mm long; anthers narrowly triangular, tails curving in to each other, 2.9–3.6 × 0.6 mm, 4.8–6 × as long as wide. Disc of 5 separate lobes, triangular, apex acuminate, 0.7–1.1 mm long. Ovary 0.7–1 mm long; style 2.1–3.1 mm long; pistil head 0.8–1 mm long. Fruit linear, puberulent, 6.9–12.9 cm long, 2.8–3.2 mm wide. Seed grain 4.5–4.6 × 0.9–1 mm, coma 11.5–12 mm long.

Distribution — New Guinea.

Habitat — In forest or scrub from 1200–2100 m.

Collections studied. PAPUA NEW GUINEA. s.l., *Schlechter 19770* (K, type). Eastern Highlands: Noreikora Valley, *Wheeler ANU 6306* (CANB). — Morobe: Ogerammang, *Clemens 5372* (A); Mt Kaindi, *Rau 268* (A, CANB, K, L); Manki Trig, Bulolo, Wau Subprov., *Streimann NGF 30960* (L). — Central: Boridi, *Carr 13074* (A, BM, L), *13430* (A, BM, CANB, K, L, SING), *14552* (A, BM, CANB, K, L, SING).

12. *Parsonsia lata* Markgr. — Map 5

Parsonsia lata Markgr., Bot. Jahrb. 61 (1927) 221; Merr. & Perry, J. Arnold Arbor. 24 (1943) 216. — *Lyonsia mollis* Warb., Bot. Jahrb. 13 (1891) 406. — Type: *Warburg 21301* (untraced, probably destroyed in Berlin). Neotype: *Ledermann 10095* (L neo).

Branchlets densely brown velutinous. Leaves opposite; petioles 1.7–6.5 cm long; blade papery to coriaceous, ovate, rarely elliptic or obovate, apex acuminate, base cordate, 7–26 × 3.6–19.3 cm, 1.2–1.9 × as long as wide; 6–9 pairs of lateral nerves; tertiary venation reticulate; densely velutinous abaxially and adaxially. Inflorescence



Map 5. *Parsonsia lata* Markgr.

of axillary and, sometimes, terminal cymes, 6.8–19.5 cm long, densely velutinous; peduncles 2.7–13.5 cm long; pedicels 1.5–4 mm long. Sepals ovate, apex acute to obtuse, erect to reflexed, 1.7–3.9 × 0.8–1.5 mm, 1.4–3.8 × as long as wide, densely velutinous. Corolla cream or yellowish; buds cylindrical with an acuminate head, lobes slightly overlapping; open corolla salverform; tube 2.8–5.7 mm long, 1–2.4 × as long as sepals; lobes triangular, apex acuminate, papillose inside, 1.8–3 mm long, 0.9–1.2 mm wide, 0.4–0.9 × as long as tube; pubescent outside on tube and lobes, bearded in throat and in 5 rows down tube. Stamens inserted at 1.5–2.9 mm from corolla base, which is 0.4–0.5 of tube length; filaments straight to curved, 0.5–0.7 mm long; anthers narrowly triangular, tails squared, 2.2–3 × 0.4–0.6 mm, 4.2–6 × as long as wide. Disc of 5 separate lobes, oblong, apex notched or 3-dentate, 0.9–2 mm long. Ovary 0.6–0.8 mm long; 1.7–3 mm long; pistil head 0.7–1 mm long. Fruit broad fusiform, densely brown pubescent; 7.8–12 cm long, 1.5–2.3 cm wide. Seed grain 11.3–13 × 1.9–2.4 mm, coma 3–3.9 cm long.

Distribution — New Guinea to the Solomon Islands.

Habitat — This species has been collected in primary and secondary forest and in scrub from low altitude to 1600 m.

Note — *Parsonis lata* is closely related to *P. pedunculata* and *P. appressa* from which it can be distinguished by its spreading hairs also found on the leaves.

Selection of the 37 collections studied. INDONESIA. Maluku: Aru: *Riedel s.n.* (K); Buru: *Riedel s.n.* (K). — Irian Jaya: 4 km SW of Bernhard Camp, Idenburg River, *Brass 13267* (A, BM, BO, BRI, L); Mamberamo, Albatros Bivak, *Docters van Leeuwen 11270* (BO, K, L, U). — PAPUA NEW GUINEA. Central: Kubuna, *Brass 5646* (A, BM, BRI, NY); Mori River, Abau, *Henty & Lelean NGF 41818* (A, BRI, K, L); Kairuku Subprov., near Maipa airstrip, *Darbyshire 982* (CANB, L). — Eastern Highlands: Arau, *Brass 32104* (K, L, NY, US). — Morobe: Kalapit, Umi River, *Millar & van Royen NGF 15655* (A, BO, BRI, CANB, K, L); Dengalu village above Bulolo, *Millar NGF 18899* (A, BO, BRI, CANB, K, L); Kulolo River, Wau, *Streimann & Kairo NGF 26022* (A, BO, BRI,

CANB, K, L, M, SING, US); Mumin Creek, *Henty NGF 13633* (A, BO, BRI, CANB, K, L, SING); Bulolo, *Wells NGF 7563* (A, BRI, CANB, K, L); Lac, *White et al. NGF 1687* (A, BRI, CANB, K, L); Sattelberg, *Clemens 165* (A, Z); Finschhafen, *Clemens 4268* (A, Z); Edie Creek, Mt Kaindi, Wau, *Kerenga & Katik LAE 77671* (CANB, K, L); Wareo, *Clemens & Clemens 1464* (L); 6.4 km from Bulolo to Wau, *Winters & Higgins 16* (L). — West Sepik: Bewani Subprov., 1–3 km W of Bewani, *Wiakabu LAE 73783* (BRI).

13. *Parsonsia longiloba* D.J. Middleton, *spec. nov.*

Frutex scandens, ramulis glabriis, foliis ellipticis, acuminatis, basi obtusis, lobis corollae tubum 1.8–3.1 plo longioribus. — Typus: *Frodin UPNG 4165* (K holotype; A isotype).

Branchlets glabrous. Leaves opposite; petioles 1.4–2.1 cm long; blade subcoriaceous, elliptic, apex acuminate, base obtuse, 5.2–9.4 × 1.6–3 cm, 2.8–3.4 × as long as wide; 7 or 8 pairs of lateral nerves; tertiary venation reticulate; glabrous. Inflorescence of axillary cymes, c. 10 cm long; covered with appressed brown hairs; peduncle c. 5.3 cm long; pedicels 4–4.5 mm long. Sepals ovate, apex acuminate, 1.2–1.7 × 0.7–1.2 mm, 1.4–1.7 × as long as wide, puberulent. Corolla cream coloured; buds cylindrical, lobes slightly overlapping; open corolla subcampanulate; tube 1.3–2.2 mm long, 1.1–1.3 × as long as sepals; lobes linear, c. 4 mm long, c. 1.3 mm wide, 1.8–3.1 × as long as tube; sparsely puberulent outside, sparsely puberulent at base of lobes and in throat, pointing downwards, inside. Stamens inserted at c. 1.6 mm from corolla base, which is c. 0.6 of tube length; filaments straight, c. 2 mm long; anthers narrowly triangular, tails curved inwards, c. 2.9 × 0.6 mm, c. 4.8 × as long as wide. Disc of 5 separate lobes, triangular, c. 1 mm long. Ovary c. 0.7 mm long; style c. 2.6 mm long; pistil head c. 0.9 mm long. Fruit unknown.

Distribution — New Guinea (New Ireland).

Habitat — Known only from disturbed forest at 1000 m.

Note — This species is close to *P. hebetica* from which it differs in its very long corolla lobes compared to the length of the corolla tube. In this relationship it parallels the situation with *P. lata*/*P. pedunculata* where a species pair occurs on the island of New Guinea and in the Bismarck Archipelago.

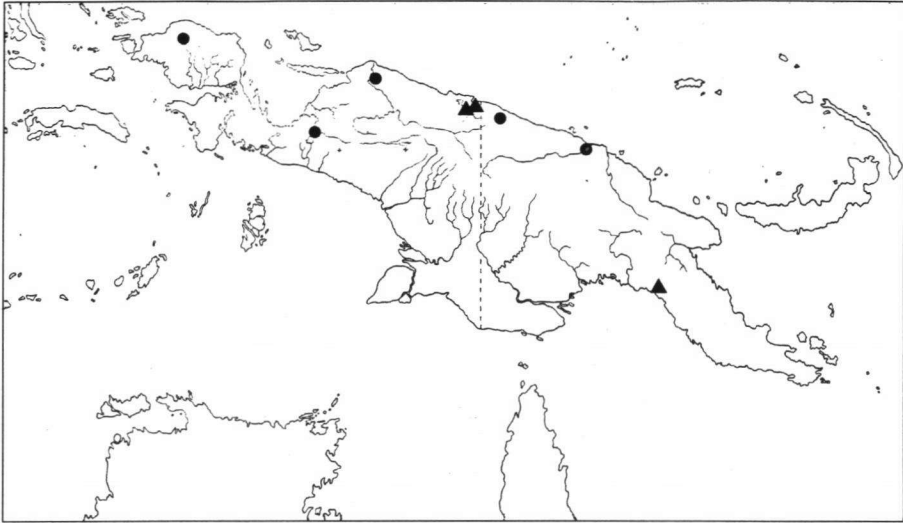
Collection studied. PAPUA NEW GUINEA. New Ireland: near Lemkamin Aid Post, Lelat Plateau, *Frodin UPNG 4165* (A, K, type).

14. *Parsonsia marginata* Markgr. — Map 6

Parsonsia marginata Markgr., Bot. Jahrb. 61 (1927) 215. — Type: *Schlechter 20105* (not traced, probably destroyed in B). Neotype: *Ledermann 9329* (L neo). This neotype has been chosen as it was the only other specimen listed by Markgraf in his original publication.

Parsonsia laevis Kaneh. & Hatus., Bot. Mag., Tokyo 55 (1941) 498, non (A. Gray) Markgr., nom illeg. — Type: *Kanehira & Hatusima 12710* (TI lecto, n.v.; BO iso).

Branchlets glabrous, rarely with the occasional minute hair. Leaves opposite; petioles 0.7–1.5 cm long; blade coriaceous, elliptic with a slightly inrolled margin, apex acuminate, base obtuse to weakly cordate, 2.1–10.8 × 0.8–4.1 cm, 2–3.7 × as long as wide; 4–9 pairs of lateral nerves, ascending; tertiary venation of an intramarginal nerve and then reticulate; glabrous or with few hairs on petiole and sometimes on abaxial midrib. Inflorescence of robust axillary cymes, 1.9–4.6 cm long; sparsely



Map 6. *Parsonsia marginata* Markgr. (●), *P. novoguineensis* D.J. Middleton (▲).

puberulent on upper parts; peduncles 0.8–1.7 cm long; pedicels 3–5.5 mm long. Sepals ovate, connate at base, apex acuminate to obtuse, 1.1–1.8 × 0.8–1.2 mm, 1.2–1.6 × as long as wide, sparsely puberulent. Corolla buds with acuminate head, lobes slightly overlapping; open corolla subcampanulate, lobes erect; tube 2.1–3.4 mm long, 1.6–3.1 × as long as sepals; lobes narrowly triangular, 2.9–3.7 mm long, 1.1–1.5 mm wide, 1–1.7 × as long as tube; puberulent outside, especially on upper tube and lobes, pubescent in throat and top of tube with downward pointing hairs. Stamens inserted at 0.7–0.9 mm from corolla base, which is c. 0.3 of tube length; filaments straight, connate, puberulent, 1.6–3.1 mm long; anthers with incurving tails, 2.6–3.6 × 0.5–0.7 mm, 3.7–6.2 × as long as wide. Disc of 5 separate lobes, oblong to narrowly triangular, apex rounded to acuminate, 0.6–1 mm long. Ovary 0.9–1.1 mm long; style 1.5–3.3 mm long; pistil head 0.6–0.8 mm long. Fruit unknown.

Distribution — New Guinea.

Habitat — In forest, 300–1750 m altitude.

Collections studied. INDONESIA. Irian Jaya: Van Rees area, Van Gelder R., *Docters van Leeuwen* 9223 (A, BO, L); Boemi, 40 km inland of Nabire, *Kanehira & Hatusima* 12710 (BO, type of *Parsonsia laevis*); Vogelkop, South slope of Mt Nettoti, path Andjai-Wekari River, *van Royen & Sleumer* 7423 (L). — PAPUA NEW GUINEA. Sepik: s.l., *Ledermann* 9329 (L, neotype). — West Sepik: Carpentaria Exploration Base Camp, *Hoover* 905 (A).

15. *Parsonsia novoguineensis* D.J. Middleton, *spec. nov.* — Fig. 5; Map 6

Frutex scandens, ramulis dense fusco-tomentellis, foliis ovatis, acuminatis, basi cordatis, utrinque hirtello-pubescentibus, cymae umbelliformibus, corolla intus fauce glabra. — Typus: *Schodde & Craven* 4637 (L holo; BRI, K iso).

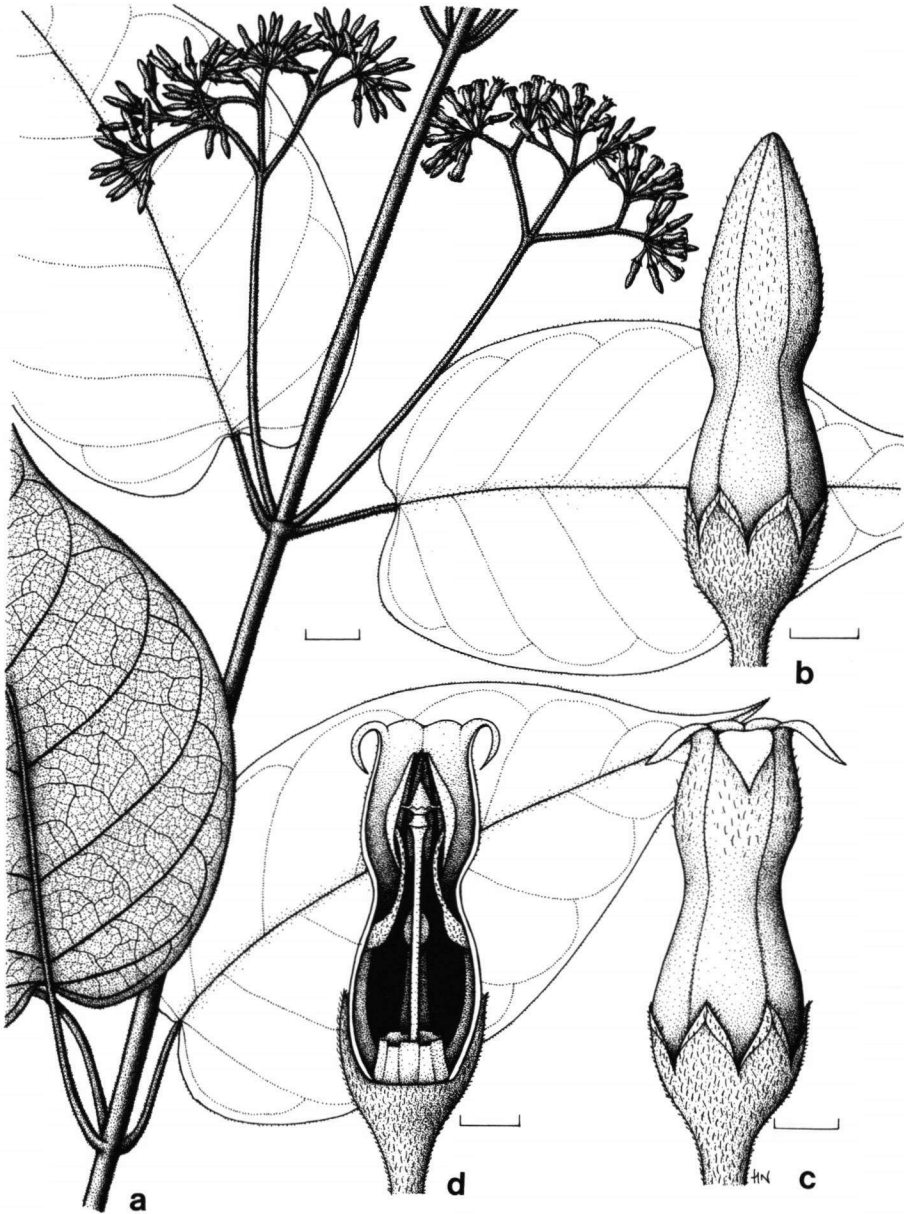


Fig. 5. *Parsonsia novoguineensis* D.J. Middleton (*Schodde & Craven 4637, L.*). a. Habit; b. flower bud; c. open flower; d. flower dissection. — Scale bars: a = 1 cm; b, c, d = 1 mm.

Branchlets brown tomentose. Leaves opposite; petioles 0.7–3.2 cm long; blade papery to coriaceous, ovate, apex acuminate, base cordate, 3.9–14.3 × 1.9–7.8 cm, 1.5–2.1 × as long as wide; 5–8 pairs of lateral nerves, ascending; tertiary venation

laxly reticulate; densely brown velutinous abaxially, more sparsely so adaxially. Inflorescence of axillary umbelliform cymes, 2.5–8.5 cm long; appressed brown velutinous; peduncles 1.2–6 cm long; pedicels 2–4.7 mm long. Sepals ovate, apex acuminate, 1.6–2.2 × 1–1.2 mm, 1.5–2 × as long as wide, densely brown velutinous. Corolla yellow; buds slightly constricted around the middle, lobes overlapping slightly; open corolla with reflexed lobes; the tube 4.5–7 mm long, 2.3–3.7 × as long as sepals; lobes triangular, apex acute to acuminate, 1.5–1.9 mm long, 0.9–1.1 mm wide, 0.2–0.4 × as long as tube; sparsely pubescent on tube above constriction and on lobes outside, glabrous in throat, sparsely pubescent below anthers inside. Stamens inserted at 2–3.2 mm from corolla base, which is 0.4–0.5 of tube length; filaments narrow, straight, pubescent, 1.5–2 mm long; anthers narrowly triangular, with narrow tails, 2.8–3.1 × 0.6 mm, 4.7–5.2 × as long as wide. Disc either of 5 separate lobes or with lobes partly fused at base, flat, acuminate and/or notched at apex, 1.4–1.5 mm long. Ovary 0.7–1 mm long; style 2.9–4 mm long; pistil head 0.8–1 mm long. Fruit unknown.

Distribution — New Guinea.

Habitat — In forest to 250 m altitude.

Note — The type material was originally identified as Rubiaceae. I came across the material from BRI, K and L because Rubiaceae workers had reidentified the material correctly as Apocynaceae. On these sheets it is suggested that more duplicates can be found in A, CANB, LAE and US although I have no confirmation of this.

Collections studied. INDONESIA. Irian Jaya: Jayapura, Polimac way, *van der Sijde BW 4135* (A, CANB, L); Jayapura District, Lake Sentani, *Mehlbaum 4* (CANB, L). — PAPUA NEW GUINEA. Gulf: hill on SW junction of Kapau and Tauri Rivers, *Schodde & Craven 4637* (BRI, K, L, type).

16. *Parsonsia oligantha* (K. Schum.) D.J. Middleton, *comb. nov.* — Map 7

Delphyodon oliganthus K. Schum., Bot. Jahrb. 24 (1898) Beibl. 59: 31. — Type: *Lauterbach 772* (not traced, probably destroyed in B). Neotype: *Hartley 10001* (CANB neo; A, BRI, K, L iso-neo).

Neuburgia musculiformis auct. non Miq.: F.M. Bailey, Queensl. Agric. J. 3 (1898) 202.

Branchlets glabrous. Leaves: petioles 3.5–24 mm long; blade subcoriaceous, elliptic, apex acuminate, base acute to rounded, 3.6–14.1 × 1.8–6.3 cm, 1.2–5.2 × as long as wide; 6–12 pairs of lateral nerves, slightly ascending; tertiary venation reticulate and somewhat prominent adaxially; glabrous or with few hairs on petiole. Inflorescence a lax axillary cyme, 4–11 cm long, minutely puberulent on upper parts; pedicels 4.2–8.5 mm long. Sepals ovate, apex obtuse to acuminate, 2.1–4 × 1.2–2.9 mm, 1.2–1.9 × as long as wide, sparsely shortly puberulent outside. Corolla pink, sometimes to reddish or purplish; in bud with a rounded, rarely apiculate, head, lobes clearly overlapping; tube 3.4–5.2 mm long, 1.1–2.2 × as long as sepals; lobes ovate to oblong, apex obtuse, 2.4–4 mm long, 1.8–3 mm wide, 0.5–1.1 × as long as tube; glabrous outside, densely puberulent in upper part of the tube and on the front of filaments. Stamens inserted at 2.7 mm from corolla base, which is 0.5 of the tube length; filaments slightly curved, 0.2–0.5 mm long; anthers 3.4–4.3 × 0.7–0.8 mm, 4.8–5.4 × as long as wide. Disc annular, 5-dentate, enclosing ovary, 1.2–1.7 mm long. Ovary 1–1.7 mm long; style 2.2–3 mm long; pistil head 1.2–1.5 mm long.

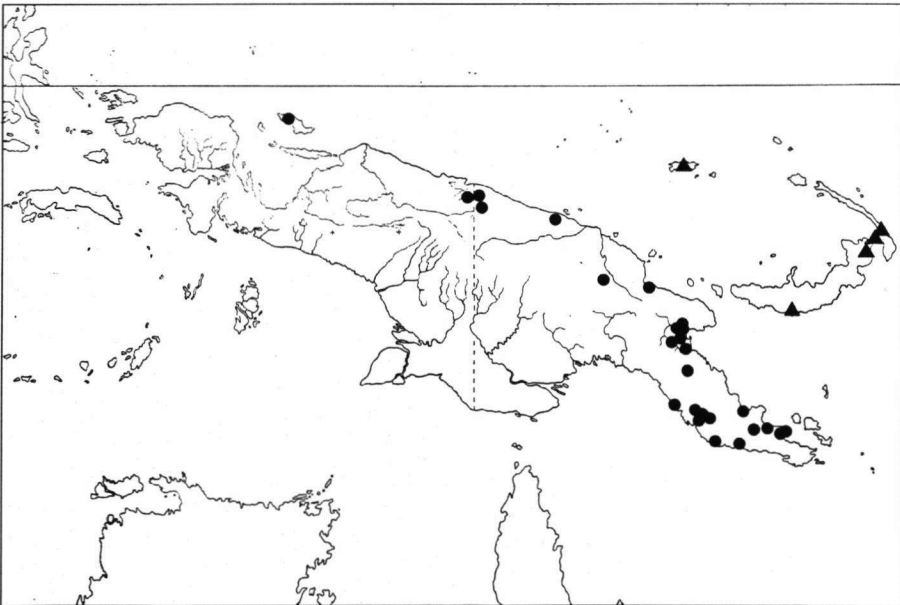
Fruit fusiform, with long irregular spine-like outgrowths of the fruit wall; 6.2–11 × 1.8–2.9 cm. Seed grain 8.7–15.2 × 2–4 mm; coma 1.8–3.4 mm long.

Distribution — New Guinea.

Habitat — From sea level to over 900 m in a range of forest types.

Note — This species is closest to *P. flavescens* from which it differs in the rounder head of the corolla bud and the spines on the fruit. It has been reported as being used as a treatment for diarrhoea.

Collections studied. INDONESIA. Irian Jaya: North coast near Sawia, *Gjellerup 601* (L); Biak Island, near Parieri, *Kostermans & Soengeng 989* (L). — PAPUA NEW GUINEA. Central: near Karema, Brown River, *Schodde 2521* (A, BO, BRI, CANB, L); U-ume River, *Brass 1515* (A, BRI); Rona, Laloki River, *Brass 3608* (BRI, NY); near Sogeri, *Dockrill NGF 34013* (L); Mori River, Abau Subprov., *Henty & Lelean NGF 41816* (L); Kubuna, *Brass 5607* (NY). — East Sepik: Maprik Subprov., 2 km along Abanens River from Brikitti, *Wiakabu LAE 73633* (A, BRI, K, L). — Madang: Ramu Subprov., Dumbu, *Gozapao 10* (CANB). — Milne Bay: Biniguni Camp, Gwariu River, *Brass 23809* (A); Baiawa, Moi Biri Bay, *Brass 24329* (A, CANB, K, L, US); Menapi, Cape Vogel Peninsula, *Brass 21949* (A, CANB, L). — Morobe: Kajabit, Markham Valley, *Clemens 10486* (A); Umi River, Markham Valley, *Brass 32516* (A, BO, CANB, K, L); near Garagos Creek, on Bulolo Road, *Floyd 7247* (A, BRI); Oomsis Creek, c. 18 miles W of Lae, *Hartley 10001* (A, BRI, CANB, K, L neotype); Taun Creek logging area, Bulolo, *Streimann & Kairo NGF 21184* (A, BISH, BRI, CANB, K, L, M, NSW, SING, US); Munum, *Millar NGF 9713* (BO, CANB, K); near Gabensis, c. 60 km SW of Lae, *Fallen et al. 352* (L, MO); Sangkwep, 24 km SW of Lae, *Fallen et al. 321* (MO, Z). — Northern: Amboga River Popondetta, *Womersley 4753* (A, BRI, CANB, K, L, SING); near Koreaf village, Tufi Subprov., *Hoogland 4841* (A, CANB, L); Idua-Haijo logging area, 3 km NE of Hohota village, *Wiakabu & Kairo LAE 70282* (BRI, L). — West Sepik: North of Kilifas village, Amanab Subprov., *Foreman & Kumul NGF 48273* (BRI, CANB, K, L).



Map 7. *Parsonsia oligantha* (K. Schum.) D.J. Middleton (●), *P. pedunculata* (Warb.) Markgr. (▲).

17. *Parsonsia pedunculata* (Warb.) Markgr. — Map 7

Lyonsia pedunculata Warb., Bot. Jahrb. 13 (1891) 406. — *Parsonsia pedunculata* (Warb.) Markgr., Bot. Jahrb. 61 (1927) 221; Peekel, Fl. Bismarck Arch. (1984) 451. — Type: *Warburg 21300* (untraced, probably destroyed in Berlin). Neotype: *Peekel 8* (BO). This specimen has been chosen as a neotype because it is one of the three specimens listed by Markgraf (1927) who had the opportunity to compare them directly with the type.

Branchlets tomentose. Leaves opposite; petioles 1.6–3 cm long; blade ovate, apex acuminate, base cordate, 6.5–13.5 × 3.6–11.2 cm, 1.1–1.8 × as long as wide; 4–9 pairs of lateral nerves; tertiary venation laxly reticulate; sparsely puberulent on midrib and nerves. Inflorescence of lax axillary cymes, 7–18.5 cm long; brown appressed velutinous; peduncles 2.8–8 cm long; pedicels 1.7–4.5 mm long. Sepals narrow ovate, reflexed, apex acuminate, 1.9–2.9 × 1–1.3 mm, 1.7–2.4 × as long as wide, appressed velutinous. Corolla cream coloured to yellow; buds with an acuminate head, lobes slightly overlapping; open corolla salverform with reflexed lobes; tube 2.9–3.2 mm long, 1–1.5 × as long as sepals; lobes triangular, apex acuminate, 1.3–2.1 long, 0.8–0.9 mm long, 0.4–0.7 × as long as tube; pubescent on upper tube and lobes outside, bearded in throat, pubescent in 5 rows down tube inside. Stamens inserted at 1.8 mm from corolla base, which is 0.5 of tube length; filaments curved, puberulent, 0.5–0.7 mm long; anthers narrowly triangular, tails broad, flattened, 2.1–2.3 × 0.4 mm, 5.3–5.8 × as long as wide. Disc of 5 separate lobes, oblong, flat topped or notched, 1–1.2 mm long. Ovary c. 0.9 mm long; style 1.7–1.9 mm long; pistil head 0.6–0.7 mm long. Fruit (immature) linear, sparsely pubescent.

Distribution — Bismarck Archipelago.

Habitat — In forest at low altitude.

Note — This species is close to *P. lata* from which it differs in its less pubescent leaves, more delicate inflorescence and thinner, less pubescent fruit. The character used to distinguish the two by Markgraf (1927), recurved sepals only in *P. pedunculata*, does not work as recurved sepals are also relatively common in *P. lata*.

Collections studied. PAPUA NEW GUINEA. East New Britain: Pomio, Tomo, near Fullerton Harbour, *Croft et al. NGF 12315* (A, BRI, CANB, E, K, L, NSW); Duke of York Islands, *Bradlike 341* (A, BRI); Matupi, *Betche 85* (MEL). — New Ireland: Namatanai, *Coode et al. NGF 29782* (A, BO, BRI, CANB, E, K, L, SING), *Peekel 8* (BO, neotype). — Manus: near Kari village, 5 km inland from North coast, *Sands et al. 2697* (K).

18. *Parsonsia penangiana* King & Gamble

Parsonsia penangiana King & Gamble, J. As. Soc. Beng. 74 (1907) 458; Ridl, Fl. Malay Penins. 2 (1923) 351. — *Artia penangiana* (King & Gamble) Pichon, Not. Syst., ed. Humbert 14 (1950) 19. — *Parsonsia alboflavescens* var. *penangiana* (King & Gamble) M.G. Gangop. & Chakrab., J. Econ. Taxon. Bot. 16 (1992) 50. — Type: *Curtis s.n.* (K lecto).

Branchlets sparsely puberulent to glabrous. Leaves opposite; petiole 1.6–4 cm long; blade papery to coriaceous, ovate to elliptic, apex acuminate, base rounded, 9–18.2 × 4.2–8.3 cm, 1.8–2.2 × as long as wide; 6 or 7 pairs of lateral nerves; glabrous or sparsely puberulent abaxially. Inflorescence an axillary cyme, 6.8–8 cm long, puberulent on upper parts; pedicels 6–9.6 mm long. Sepals ovate, apex acute to acuminate, 1.5–2.4 × 1.1–1.5 mm, 1.3–1.7 × as long as wide, puberulent. Corolla white,

greenish or yellowish; buds ovoid, lobes slightly overlapping; open corolla campanulate; tube 2.7–3.8 mm long, 1.6–1.8 × as long as sepals; lobes ovate, apex acute, 3.6–3.8 mm long, 0.5–0.7 × as long as tube; puberulent and papillose on lobes outside, densely long pubescent inside. Stamens inserted at c. 1.8 mm from corolla base, which is c. 0.5 of tube length; filaments strongly bent, 3.5–4 mm long; anthers narrowly triangular with incurving tails, 4.9–5 × 0.9–1 mm, 5–5.4 × as long as wide. Disc annular, 5 crenate, 1.1–1.4 mm long. Ovary 1–1.1 mm long; style c. 2.8 mm long; pistil head c. 0.7 mm long. Fruit linear, 14.7–15.1 cm long, 8–9 mm wide. Seeds 11.2–14.2 × 1.9–2.2 mm; coma 2.1–4.5 cm long.

Distribution — Southern Thailand, Malay Peninsula. One collection was examined (plus several from Thailand).

Habitat — In evergreen forest.

Note — The above description includes some dimensions from plants from southern Thailand as it is known in Malesia only from one specimen. It is closely related to *P. alboflavescens* but is easily distinguished by its ovoid buds which are usually somewhat papillose outside.

Malesian collection studied. MALAYSIA. Penang: s.l., *Curtis s.n.* (K, type).

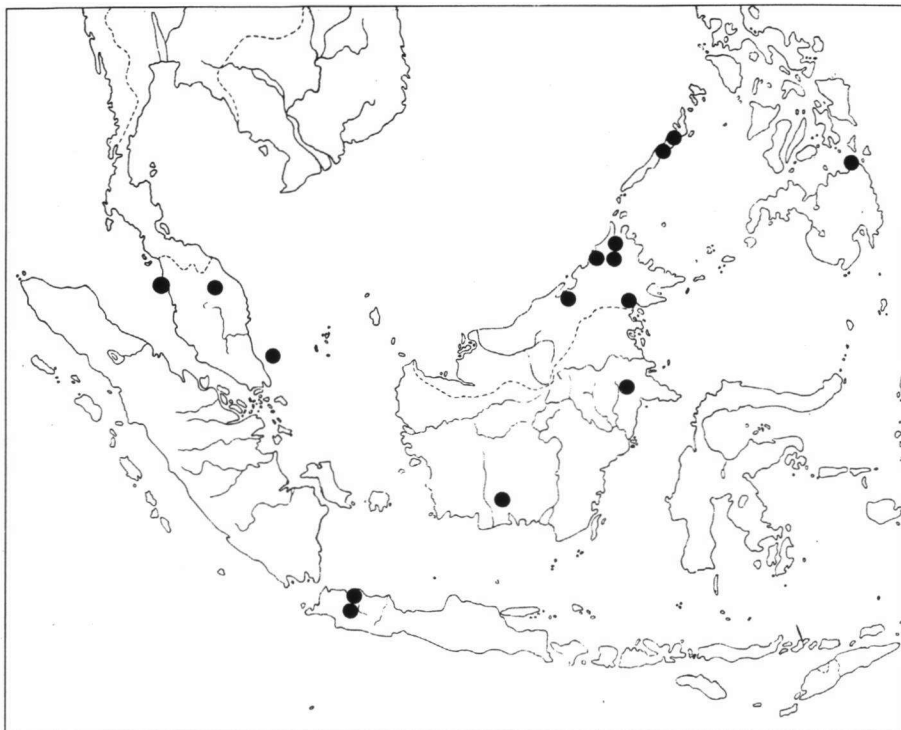
19. *Parsonsia philippinensis* Merr. — Map 8

Parsonsia philippinensis Merr., Philipp. J. Sci. 17 (1920) 310. — Type: *Ramos & Pascasio 34585* (K lecto, designated here; P, US iso).

Parsonsia siamensis Kerr, Kew Bull. (1937) 89; Fl. Siam. En. 2 (1939) 453. — Type: *Kerr 18496* (K lecto; A, ABD, BK, E, K, L, TCD iso).

Parsonsia paniculiformis Bakh. f. in Backer, Beknopte Fl. Java, Afl. 7, Fam. 172 (1948) 47, nom illeg. [no Latin description] based on *Bakhuizen van den Brink 1103*.

Branchlets minutely puberulent. Leaves opposite; petioles 0.7–2.5 cm long; blade papery to coriaceous, elliptic, apex acuminate, base rounded to cuneate, 3.9–15.7 × 0.9–7.9 cm, 2–4.1 × as long as wide; 5–8 pairs of lateral nerves, ascending; tertiary venation obscure or laxly reticulate; sparsely puberulent on petiole and often also on abaxial midrib. Inflorescence of axillary and, often, terminal cymes, robust, 3.3–10 cm long; puberulent; peduncles 1.1–3.3 cm long; pedicels 3–4.5 mm long. Sepals ovate to oblong, apex rounded to obtuse, 1.6–2.7 × 1.3–1.7 mm, 1–2.1 × as long as wide, puberulent. Corolla white to reddish, fleshy; buds cylindrical, head rounded, lobes strongly overlapping to the right; open corolla with erect lobes; tube 2.8–3.7 mm long, 1.3–2.3 × as long as sepals; lobes oblong, apex rounded to obtuse, 2.5–4.2 mm long, 0.9–1.1 mm wide, 0.7–1.1 × as long as tube; glabrous to puberulent outside, glabrous inside except on filaments. Stamens inserted at 0.9–2.1 mm from corolla base, which is 0.2–0.6 of tube length; filaments strongly twisted but not wound around style, puberulent, 1.8–3.5 mm long; anthers narrowly triangular, tails broad to narrow, 3–3.9 × 0.5–0.7 mm, 4.9–7.2 × as long as wide. Disc of 5 separate lobes, occasionally fused at base, oblong to narrowly triangular, apex acute, flat-topped or notched, 0.6–1 mm long. Ovary 0.8–1.6 mm long; style 2.1–3.6 mm long; pistil head 0.7–1.2 mm long. Fruit fusiform, thick-walled, glabrous, 8–13.3 cm long, 1–1.4 cm wide. Seeds not seen.



Map 8. *Parsonsia philippinensis* Merr.

Distribution — Thailand, Malay Peninsula, Java, Borneo, southern Philippines.

Habitat — In forest, frequently reported as growing on limestone, to 1500 m.

Note — This species is close to *Parsonsia alboflavescens* and specimens were often identified as such. The enormous variability of *P. alboflavescens* obscured the distinctness of this species as many of the characters which are constant in *P. philippinensis* are variable in *P. alboflavescens*. Two characters which can easily distinguish the two species are the very fleshy flowers and the large overlap of the corolla lobes in *P. philippinensis*.

Selection of the 20 collections studied. INDONESIA. Java Barat: near Jakarta, West of Paerwasida, *van Steenis* 2713 (A, BO, L); Cibodas, Ciamped, *Bakhuizen van den Brink* 1103 (BO, L). — Kalimantan Timur: Sangkulirang Subdiv., along Mentubar River, *Kostermans* 5432 (BO, L); Gunung Buntung, c. 70 km S of Tanjung Redeb, Berau, Kato, *Okamoto & Ueda* B 11831 (L). — MALAYSIA. Kelantan: Bukit Baka Forest Reserve, *Stone et al.* 15231 (KLU, L). — Pahang: Pulau Tioman, Sedagong, *Nur* 18846 (K, SING). — Penang: *Curtis* 450 (K, SING), 1707 (K). — Sabah: Ranau District, Lohan Ulu, *Amin & Suin* SAN 123271 (E, KEP); Sandakan District, Gumantong, *Meijer* SAN 20341 (K); Lahad Datu District, Ulu Sungei Danum, *Cockburn* SAN 85104 (K, L). — Sarawak: Baram Dist., Lobang Rusa, near Sungei Melinau Paku, *Chew* CWL 1027 (A, K, L, SING). — PHILIPPINES. Mindanao: Surigao, *Ramos & Pascasio* 34585 (K, P, US, type). — Palawan: Panacan, Aborlan, Victoria Mountains, *Sulit* 12340 (A, L); Puerto Princesa Municipality, Mt Beaufort, Western spur, *Ridsdale* SMHI 266 (K).

20. *Parsonsia rubra* Kaneh. & Hatus. — Map 9

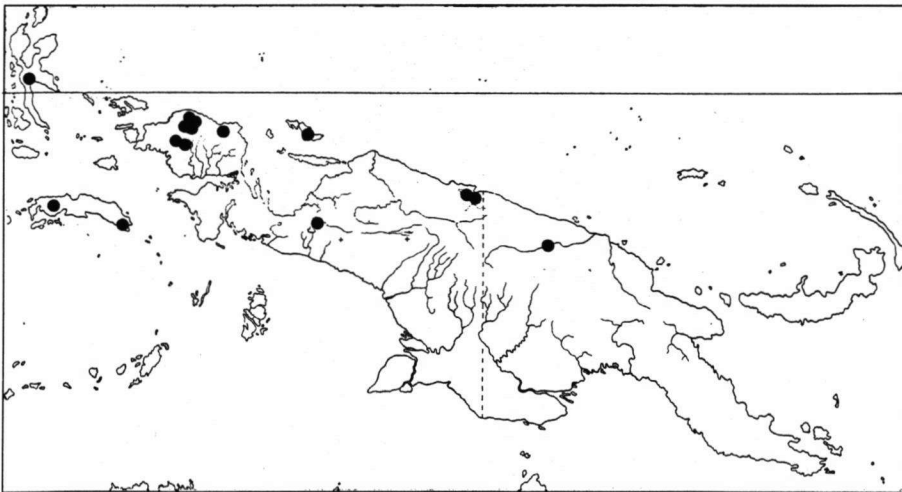
Parsonsia rubra Kaneh. & Hatus., Bot. Mag., Tokyo 55 (1941) 500; Merr. & Perry, J. Arnold Arb. bor. 24 (1943) 217. — Type: *Kanehira & Hatusima 12220* (TI lecto, n.v.; A, BO iso).

Branchlets sparsely puberulent. Leaves opposite; petioles 1.2–3.5 cm long; blade coriaceous to subcoriaceous, elliptic, apex acuminate, base cordate to acute, 7.1–15 × 1.8–8.7 cm, 1.7–4.2 × as long as wide; 7–10 pairs of lateral nerves, ascending; tertiary venation densely reticulate; glabrous or sparsely and minutely puberulent abaxially, usually glaucous. Inflorescence of axillary and/or pseudoterminal cymes, 5.5–13 cm long; puberulent; peduncles 3.4–8 cm long; pedicels 4–7 mm long. Sepals ovate, apex acuminate to obtuse, 1–1.9 × 0.7–1.6 mm, 0.9–1.9 × as long as wide, sparsely puberulent. Corolla red; buds cylindrical with a slightly wider head, lobes slightly overlapping; open corolla with erect lobes; tube 1.8–3.8 mm long, 1.2–3.5 × as long as sepals; lobes narrowly triangular, 3.8–6.5 mm long, 0.9–1.8 mm wide, 1.1–2.3 × as long as tube; glabrous to sparsely puberulent outside, densely pubescent in throat with downward pointing hairs. Stamens inserted at 0.8–1.3 mm from corolla base, which is 0.2–0.4 of tube length; filaments straight, pubescent, with two large projections on either side, 2.3–4.7 mm long; anthers with incurving tails, 3–4.4 × 0.5–0.8 mm, 4.8–6 × as long as wide. Disc oblong to narrowly triangular, occasionally fused at base, apex acute to rounded, 0.9–1.5 mm long. Ovary 0.8–1.4 mm long; style 2.3–4.9 mm long; pistil head 0.9–1.4 mm long. Fruit linear, glabrous, 9.5–14.2 cm long, 8–9 mm wide. Seed grain 11–11.5 × 2.4–2.6 mm; coma 2.4–2.5 cm long.

Distribution — New Guinea, Halmahera, Seram.

Habitat — In forest to 1400 m altitude.

Note — This species is easily distinguished from all others by the large projections on the sides of the filament. Hoogland & Craven 10407 has some flowers where the style and pistil head are not developed and, therefore, the anthers are free. Sterile



Map. 9. *Parsonsia rubra* Kaneh. & Hatus.

specimens are easily mistaken for the more common *P. buruensis* although they are not particularly closely related. Distinguishing them can be difficult but *P. rubra* tends to have thicker, more glaucous leaves.

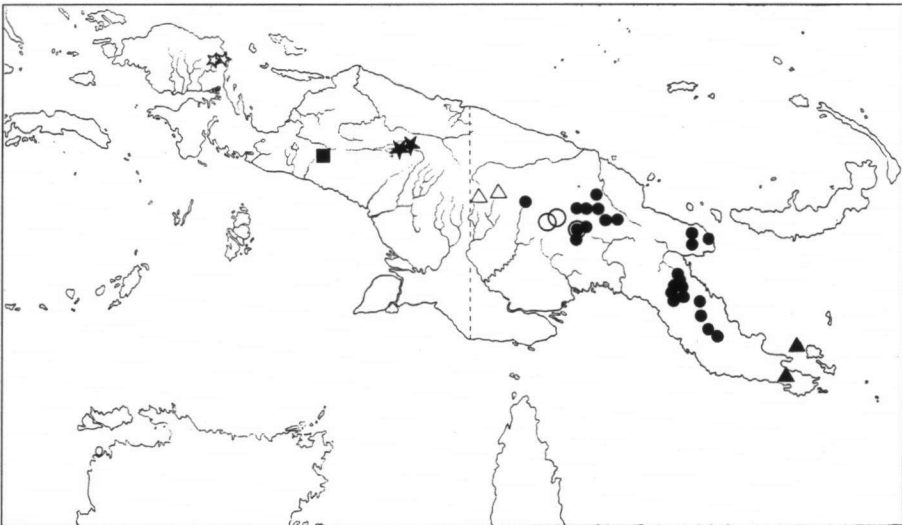
Selection of the 16 collections studied. INDONESIA. Maluku: Seram: Wae Bekai-Seakasale, *Eyma* 2533 (BO, K, L); South-eastern, s.l., *Kornassi* 914 (BO, L, U). Halmahera: 20 km SE of Dodinga, Tapayo, *Sidiyasa & Whitmore* TCW 3647 (K, L). — Irian Jaya: Jayapura, *Brass* 8991 (A, BM, BO, BRI, L); Dalman, 45 km inland of Nabire, *Kanehira & Hatusima* 12220 (A, BO, type); Kep. Baik, near Parieri, *Kostermans & Soengeng* 928 (A, BO, CANB, K, L); Ajamaru, Vogelkop, *Vink* BW 15259 (A, BO, L); Sidai, W of Manokwari, *Koster* 6836 (CANB, L); Vogelkop, Ije River valley, Bamfot village, *van Royen & Sleumer* 7623 (L); Kebar Valley, half way between Manokwari & Sorong, SW slope of Sobeto Hill, *van Royen* 4954 (L); Vogelkop, Aifat River valley, Eastern part of Tohkiri Range, Sururem-Chaquai, *van Royen & Sleumer* 7078 (L). — PAPUA NEW GUINEA. Sepik: Near Wagu, Ambunti, *Hoogland & Craven* 10407 (A, BRI, CANB, K, L).

21. *Parsonsia sanguinea* (Wernham) Markgr. — Map 10

Lyonsia sanguinea Wernham, Trans. Linn. Soc., Bot. 9 (1916) 109. — *Parsonsia sanguinea* (Wernham) Markgr., Bot. Jahrb. 61 (1927) 215. — Type: *Kloss s.n.* (BM holo).

Lyonsia wollastonii Wernham, Trans. Linn. Soc., Bot. 9 (1916) 109. — *Parsonsia wollastonii* (Wernham) Markgr., Bot. Jahrb. 61 (1927) 216. — Type: *Kloss s.n.* (BM lecto).

Parsonsia sanguinea proved to be one of the most problematic species in the genus due to its wide variation. Initially I was inclined to recognise most of the species already described and describe several new species. However, this would obscure the close relationships between the taxa and present a scenario where the overall variation within all seven species together would still be less than within a single species like *P. alboflavescens*. Recognising these clear entities as varieties would appear to



Map 10. *Parsonsia sanguinea* (Wernham) Markgr. var. *sanguinea* (■); var. *albiflora* (Gibbs) D.J. Middleton (☆); var. *brassii* (Markgr.) D.J. Middleton (●); var. *cruttwellii* D.J. Middleton (▲); var. *millikenii* D.J. Middleton (★); var. *sepikensis* D.J. Middleton (△); var. *vinkii* D.J. Middleton (○).

be the most practical solution. *Parsonsia sanguinea* var. *brassii* is by far the most common variety although more collecting is needed in Irian Jaya where some of the varieties are known from very few specimens. *Parsonsia sanguinea* is most closely related to *P. tenuiflora*, *P. marginata*, *P. vaccinioides*, *P. longiloba* and *P. hebetica* in Malesia and *P. lilacina* in Australia. There seems to be a wide variation in leaf shape in this species and it would be interesting to have more developmental information to see if this species (or indeed any other in *Parsonsia*) has different juvenile leaf shape forms as is found in Australia and New Zealand. Melville (1976) has suggested that neoteny followed by natural selection may lead onto speciation and adaptive radiation in Australian *Parsonsia* species. It could be possible that a similar process is happening here but further collecting and field studies are needed to ascertain this.

KEY TO THE VARIETIES

- 1a. Inflorescence ≤ 5 cm long 2
- b. Inflorescence > 5 cm long 3
- 2a. Leaves narrow ovate, apex long acuminate to caudate, $2.5-4.3 \times$ as long as wide.
 Milne Bay District **d. var. cruttwellii**
- b. Leaves elliptic to oblong, apex shortly acuminate, $1.7-2.7(-3.8) \times$ as long as wide. Irian Jaya **e. var. millikenii**
- 3a. Corolla tube wider than head in bud; leaves broad ovate or elliptic 4
- b. Corolla tube more or less same width as head in bud; leaves variable 5
- 4a. Stamens inserted at or above middle of corolla tube; filaments 0.6–0.7 mm long; corolla tube 2.7–3.2 mm long **a. var. sanguinea**
- b. Stamens inserted below middle of corolla tube; filaments 1.5–2.4 mm long; corolla tube 1.9–2.7 mm long **c. var. albiflora**
- 5a. Flowers densely clustered at inflorescence tips **f. var. vinkii**
- b. Flowers not densely clustered at inflorescence tips 6
- 6a. Anther base of broad inward curving tails; leaves elliptic to obovate, $2.7-5.3 \times$ as long as wide **g. var. sepikensis**
- b. Anther base of long, thin outward curving tails; leaves usually narrowly linear or elliptic, $2.3-18 \times$ as long as wide **b. var. brassii**

a. var. sanguinea

Branchlets glabrous to very sparsely puberulent. Leaves opposite; petioles 1.1–2.2 cm long; blade subcoriaceous, margin inrolled, elliptic, apex acuminate, base cuneate to obtuse, $3.9-10 \times 2.2-4$ cm, $2.5-3.2 \times$ as long as wide; 6–9 pairs of lateral nerves, not particularly distinct from tertiary venation; tertiary venation laxly reticulate; glabrous. Inflorescence of axillary cymes, 8.5–10 cm long; sparsely puberulent on upper parts; peduncles 4–6.2 cm long; pedicels 4–4.5 mm long. Sepals ovate, apex acuminate, $1-1.3 \times 0.6-0.7$ mm, $1.4-2.2 \times$ as long as wide, sparsely puberulent. Corolla mauve; buds narrowly ovoid, lobes slightly overlapping; open corolla with erect lobes; tube 2.7–3.2 mm long, $2.3-2.9 \times$ as long as sepals; lobes oblong, apex acute to obtuse, 2.5–2.9 mm long, 0.8–1.1 mm wide, $0.8-1 \times$ as long as tube; glabrous to very sparsely puberulent outside, pubescent in throat to stamen insertion

with downward pointing hairs. Stamens inserted at 1.9–2.3 mm from corolla base, which is 0.5–0.7 of tube length; filament curved, pubescent, 0.6–0.7 mm long; anthers with spreading tails, 2.8–3.8 × 0.6–0.7 mm, 4.7–5.4 × as long as wide. Disc of 5 separate lobes, oblong, apex abruptly acuminate, 0.9–1.2 mm long. Ovary 0.7–1.1 mm long; style 2.3–2.5 mm long; pistil head 1.1–1.2 mm long. Fruit unknown.

Distribution — New Guinea (only known from Utakwa River to Mt Carstensz in Irian Jaya).

Collections studied. INDONESIA. Irian Jaya: Utakwa River to Mt Carstensz, *Kloss s.n.* (BM, type of *Parsonsia sanguinea*), *Kloss s.n.* (BM, syntype of *Parsonsia wollastonii*), *Kloss s.n.* (BM, syntype of *Parsonsia wollastonii*).

b. var. brassii (Markgr.) D.J. Middleton, *stat. nov.*

Parsonsia brassii Markgr., *Brittonia* 2 (1936) 139. — Type: *Brass 4921* (NY holo; BM, BO, BRI, GH, K, US iso).

Parsonsia elegans Gilli, *Ann. Naturhist. Mus. Wien* 83 (1980) 420. — Type: *Gilli 474* (W holo).

Branchlets glabrous to sparsely puberulent. Leaves opposite; petioles 0.2–1.5 mm long; blade papery to coriaceous, linear or, more rarely, elliptic or ovate, sometimes somewhat constricted near the base, the apex acuminate to caudate, base cuneate to rounded; 1.6–8.6 × 0.2–3.2 cm, 2.3–18 × as long as wide; 7–12 pairs of lateral nerves; tertiary venation obscure; glabrous or with few hairs on petiole and leaf margin. Inflorescence of delicate, axillary cymes, 3.5–14 cm long; sparsely puberulent especially on upper parts; peduncles 1.4–7.1 cm long; pedicels 3.5–8.5 mm long. Sepals ovate, apex acuminate, 0.8–1.5 × 0.7–1 mm, 0.9–2.1 × as long as wide, glabrous to sparsely puberulent. Corolla yellowish to reddish; buds cylindrical, lobes slightly overlapping; open corolla salverform; tube 2.1–4.5 mm long, 1.4–4.1 × as long as sepals; lobes linear, 3–4.5 mm long, 0.7–1.3 mm wide, 0.7–1.5 × as long as tube; sparsely shortly puberulent outside, pubescent in throat and top of tube inside with downward pointing hairs. Stamens inserted at 0.9–2.1 mm from corolla base, which is 0.2–0.5 of tube length; filaments straight, coherent to each other, pubescent, 2.8–4 mm long; anthers narrowly triangular, tails pointed to obtuse, 3.6–4.8 × 0.6–0.7 mm, 5.4–7.2 × as long as wide. Disc of 5 separate lobes, oblong to triangular, apex acuminate, 0.7–1.1 mm long. Ovary 0.9–1.5 mm long; style 3.5–5.2 mm long; pistil head 0.9–1.2 mm long. Fruit linear, thin-walled, very sparsely puberulent to glabrous, 3.3–6 cm long, 4–6 mm wide. Seed grain 4.9–5.5 × 1–1.3 mm, coma 1–1.3 cm long.

Distribution — New Guinea.

Habitat — In forest, scrub or roadside, 1600–3000 m altitude.

Notes — Leaf shape is quite variable in this variety although linear leaves are the most common. Extensive field work would be needed to really understand what factors affect the shape of the leaves but it should be borne in mind that heterophylly is known elsewhere in the family and even elsewhere in the genus (e.g. *Parsonsia heterophylla* from New Zealand).

Bergman 108 from Swart Valley in Irian Jaya has affinities to both var. *brassii* and var. *vinkii* but is an incomplete specimen. It differs from both varieties in anther shape and may need to be described as a new variety after further collecting.

Selection of the 48 collections studied. PAPUA NEW GUINEA. Central: Mt Tafa, *Brass 4921* (BM, BO, BRI, GH, K, NY, US, type); West of Kerau mission, *Froding UPNG 775* (L). – Chimbu: Gembogl, Daga Mambuno, *Sterly 80-363* (A, L); Dirua mongomugl, *Sterly 80-48* (L). – Morobe: Sattelberg, *Clemens 5214* (A); Matap, *Clemens 41047* (A); Ogeramngang, *Clemens 4489* (A); A-Mieng on Yaneng River, trib. of Buso River, above mouth of Tosapik Creek, *Clemens 2362* (A); Kuper Range along track to Biaru, *Takeuchi 4044* (A); Edie Creek near Wau, *Hartley 11663* (A, BRI, C, CANB, L); above Bakaia, 15 miles SE of Garaina, *Hartley 12877* (A, BRI, CANB, K, L); Mt Kaindi, *Sayers 21240* (A, BRI, L); between Ekuti & Kupar Ranges, near Biaru, *Takeuchi 4510* (A, MO); Angabena Ridge near Hauninga village, Askei area, *Schodde & Craven 4733* (CANB, L); Bulolo-Aseki road, *Verdcourt 5126* (K). – Southern Highlands: near Ebenda, Anga Valley, *Schodde 1490* (A, CANB, K); western slope of Mt Giluwe above Klareg, *Schodde 2077* (CANB); Wari, Lake Kutubu, Mendi Subdistrict, *Conn 69109* (NSW). – West Sepik: Telefomin Subprov., Oksapmin, *Henty et al. NGF 41775* (BRI, CANB, L). – Western Highlands: Mur Mur Pass, Mt Hagen subdist., *Vandenberg, Katik & Kairo NGF 39905* (A, BO, BRI, K, L); Laiagam Subprov., near Kepilam village, Lagaip Valley, *Hoogland & Schodde 7267* (CANB); Hagen Subprov., eastern slopes of Mt Hagen, *Robbins 187* (CANB); near Tomba village, S of Mt Hagen Range, *Hoogland & Pullen 6089* (CANB, L).

c. var. albiflora (Gibbs) D.J. Middleton, *comb. & stat. nov.*

Lyonsia albiflora Gibbs, *Phytogeogr. & Fl. Arfak Mts* (1917) 177. — Type: *Gibbs 5532* (BM holo).

Branchlets glabrous or very sparsely puberulent when young. Leaves opposite; petioles 5–14 mm long; blade papery to coriaceous, elliptic, with an inrolled margin, apex acuminate, base rounded to obtuse, 2.1–7.1 × 0.8–3.1 cm, 1.8–3.2 × as long as wide; 4–7 pairs of lateral nerves; tertiary venation obscure; glabrous or with a few hairs on the petiole. Inflorescence of lax axillary cymes, 5.5–14.7 cm long; sparsely puberulent especially on the upper parts; peduncles 2–6.7 cm long; pedicels 3.6–6.3 mm long. Sepals ovate, apex acute, obtuse or abruptly acuminate, 0.9–1.2 × 0.6–1 mm, 1–1.8 × as long as wide, sparsely puberulent. Corolla whitish or purplish; buds with tube wider than head, lobes slightly overlapping; open corolla salverform; tube 1.9–2.7 mm long, 1.7–2.7 × as long as sepals; lobes oblong, apex acute to acuminate, 2.5–3.1 mm long, 0.7–0.8 mm wide, 1–1.4 × as long as tube; sparsely puberulent outside, pubescent at base of lobes and throat with hairs pointing downwards inside. Stamens inserted at 0.5–0.7 mm from corolla base, which is 0.2–0.3 of tube length; filaments straight to geniculate, pubescent, 1.5–2.4 mm long; anthers narrowly triangular, tails obtuse to rounded, 2.4–3.6 × 0.4–0.6 mm, 4–9 × as long as wide. Disc of 5 separate lobes, oblong to triangular, apex acuminate to caudate, 1–1.1 mm long. Ovary 0.8–1.1 mm long; style 1.8–2.4 mm long; pistil head 0.9–1 mm long. Fruit linear, very sparsely puberulent, c. 6.5 cm long, c. 4 mm wide. Seeds not seen.

Distribution — New Guinea (Vogelkop Peninsula).

Habitat — In forest, 1700–2500 m altitude.

Note — Markgraf (1927) included *Lyonsia albiflora*, the basionym for this variety, in synonymy of *P. vaccinioides*. The epithet *albiflora* is older but the combination *P. albiflora* was not possible as it would have been a later homonym. However, the two taxa are undoubtedly separate and easily distinguished. *Parsonsia vaccinioides* is maintained as a species and *Lyonsia albiflora* is reduced to a variety of *Parsonsia sanguinea*.

Collections studied. INDONESIA. Irian Jaya: Arfak Mts, Anggi, *Gibbs 5532* (BM, type of *Lyonisia albiflora*); Manokwari, Arfak, Augi Gita lake, *Kostermans 2216* (BO), *2436* (BO, L); Mt. Kobreimot (Koëbré) above Testega, Anggi Lakes, *Sleumer & Vink BW 14153* (BO, CANB, L, Z).

d. var. *cruttwellii* D.J. Middleton, var. nov.

Foliis anguste ovatis, acuminatis vel caudatis, 2.5–4.3plo longioribus quam latioribus. Inflorescentiis brevibus. — Typus: *Cruttwell 894* (K holo).

Branchlets glabrous to sparsely puberulent. Leaves opposite; petioles 0.4–1.4 cm long; blade papery to coriaceous, narrow ovate, apex acuminate to caudate, base rounded to obtuse, 2.8–9.1 × 0.7–2.9 cm, 2.5–4.3 × as long as wide; 5–8 pairs of lateral nerves, forming into an intramarginal nerve; tertiary venation obscure or laxly reticulate; glabrous or sparsely puberulent on petiole and abaxial midrib. Inflorescence of short axillary cymes, 1.5–5 cm long; sparsely brown puberulent; peduncles 0.6–2.9 cm long; pedicels 3.7–10 mm long. Sepals ovate, apex acuminate to acute, 1.2–1.6 × 0.7–1.1 mm, 1.2–2 × as long as wide, sparsely puberulent. Corolla pink or lilac; buds with tube slightly wider than head, lobes slightly overlapping; open corolla salverform or with erect lobes; tube 2–3.9 mm long; 1.7–2.8 × as long as sepals; lobes narrowly triangular, 1.6–2.8 mm long, 0.7–0.9 mm wide, 0.4–1 × as long as tube; sparsely puberulent to glabrous outside, pubescent in throat with downward pointing hairs inside. Stamens inserted at 0.6–0.8 mm from the corolla base, which is 0.2–0.3 of tube length; filaments straight, pubescent, 1.6–2.3 mm long; anthers with broad tails curved in towards each other, 2.6–3.4 × 0.5–0.6 mm, 5.2–5.7 × as long as wide. Disc of 5 separate lobes, oblong to narrowly triangular, 0.8–1 mm long. Ovary 0.7–1 mm long; style 1.8–2.4 mm long; pistil head 0.7–1 mm long. Fruit unknown.

Distribution — New Guinea (Milne Bay Province).

Habitat — Collected at 1600–1850 m altitude.

Note — The description includes the dimensions for a plant from Goodenough Island which is clearly of this variety but for which there is no reliable collector or collection number. It is on a sheet labelled *Brass 24880* which is a mixed collection also containing a specimen of Asclepiadaceae. The label seems to apply to this Asclepiadaceae rather than the *Parsonsia*.

Collections studied. PAPUA NEW GUINEA. Milne Bay: Rabaraba Subprov., Daga, Mt Simpson, *Woods et al. 2316* (E, L); Mt Mon, *Cruttwell 894* (K, type); Goodenough Island, *Unknown s.n.* (A).

e. var. *millikenii* D.J. Middleton, var. nov.

Foliis ellipticis, acuminatis, 1.7–2.7plo longioribus quam latioribus. Inflorescentiis brevibus. — Typus: *Milliken 1361* (A holo; K iso).

Branchlets with only the occasional small hair. Leaves opposite; petioles 0.8–1.4 cm long; blade coriaceous, elliptic to oblong, apex acuminate, base rounded to obtuse, 2.3–8.5 × 0.8–3.7 cm, 1.7–2.7(–3.8) × as long as wide; 7–9 pairs of lateral nerve; tertiary venation obscure; glabrous. Inflorescence of delicate axillary cymes, 2.2–3.5 cm long; glabrous; peduncles 1.1–2.5 cm long; the pedicels 5–7.7 mm long. Sepals

ovate, apex acuminate, 1.1–1.3 × 0.8–0.9 mm, 1.2–1.4 × as long as wide, glabrous. Corolla white to pale green with mauve lobes; buds ovoid, lobes slightly overlapping; open corolla salverform; tube 2.2–3.2 mm long, 1.7–2.9 × as long as sepals; lobes elliptic, 2–2.8 mm long, 1–1.1 mm wide, 0.6–1.3 × as long as tube; glabrous outside, densely pubescent in throat with downward pointing hairs. Stamens inserted at c. 0.5 mm from corolla base, which is c. 0.2 of tube length; filaments straight, pubescent, c. 2.5 mm long; anthers with rounded tails, c. 3.7 × 0.5 mm, c. 7.4 × as long as wide. Disc of 5 separate lobes, oblong, apex acuminate, c. 1 mm long. Ovary c. 1 mm long; style c. 2.6 mm long; pistil head c. 0.7 mm long. Fruit unknown.

Distribution — New Guinea (Snow Mountains of Irian Jaya).

Habitat — Collected in forest at 1700–3100 m altitude.

Collections studied. INDONESIA. Irian Jaya: Snow Mountains region, East of Baliem Valley, Kab. Jayawijaya, Kec. Kurima, *Milliken 1361* (A, K, type); Honopa Camp, above Pabilylo, Jayawijaya, Kec. Wamena, *Argent 92446* (BO).

f. var. *vinkii* D.J. Middleton, *var. nov.* — Fig. 6

Foliis ellipticis vel anguste ovatis, 2.2–4.4plo longioribus quam latioribus. Inflorescentiis plus quam 5 cm; floribus dense aggregatis. — Typus: *Vink 17474* (L holo; A, CANB, K, P iso).

Branchlets glabrous or with the occasional hair. Leaves opposite; petioles 0.8–1.4 cm long; blade papery to subcoriaceous, elliptic to narrowly ovate, apex acuminate, base rounded to obtuse, 2.9–7.8 × 0.8–3.6 cm, 2.2–4.4 × as long as wide; 6–8 pairs of lateral nerves; tertiary venation largely obscure or laxly reticulate; glabrous or with few hairs on petiole. Inflorescence of axillary cymes with flowers clustered at ends, 10–17 cm long; brown puberulent; peduncles 7.5–10.5 cm long; pedicels 3.5–5 mm long. Sepals ovate, apex acuminate, 1.3–1.7 × 0.7–0.9 mm, 1.4–2.3 × as long as wide, brown puberulent. Corolla pinkish or lilac; buds cylindrical, lobes slightly overlapping; open corolla salverform; tube 2.6–4.4 mm long, 1.5–2.9 × as long as sepals; lobes linear, 2.8–3.6 mm long, 0.6–0.8 mm wide, 0.6–1.4 × as long as tube; pubescent on tube and lobes outside, pubescent on base of lobes, throat and top of tube inside with downward pointing hairs. Stamens inserted at 1.7–2.5 mm from corolla base, which is 0.3–0.7 of tube length; filaments straight, glabrous or shortly pubescent, 1.6–3.7 mm long; anthers with narrow curved tails, 3.6–4.3 × 0.5–0.6 mm, 6–8.6 × as long as wide. Disc of 5 separate lobes, narrowly triangular, apex acuminate, sometimes slightly 3-dentate, 0.7–1 mm long. Ovary 0.8–1 mm long; style 3.8–5.2 mm long; pistil head 0.7–1 mm long. Fruit linear, thin-walled, glabrous, 6.3–7.7 cm long, 6.3–6.7 mm wide. Seed grain 7–7.5 × 1.5–1.6 mm; 13.3–17 mm long.

Distribution — New Guinea (Southern Highlands Province of Papua New Guinea).

Habitat — In submontane forest, 2200–2800 m altitude.

Collections studied. PAPUA NEW GUINEA. Southern Highlands: Tari, Lei River, SE foot of Mt Ambua, *Vink 17474* (A, CANB, K, L, P, Z, type); Ialibu Subprov., SE slopes of Mt Giluwe, *Croft LAE 65309* (BRI, L); near Lei camp on track Ibiwara, *Frodin NGF 28357* (BRI, L); Mendi, Mt Giluwe foothills, Kaguba, *Coode & Katik NGF 40037* (K, L).

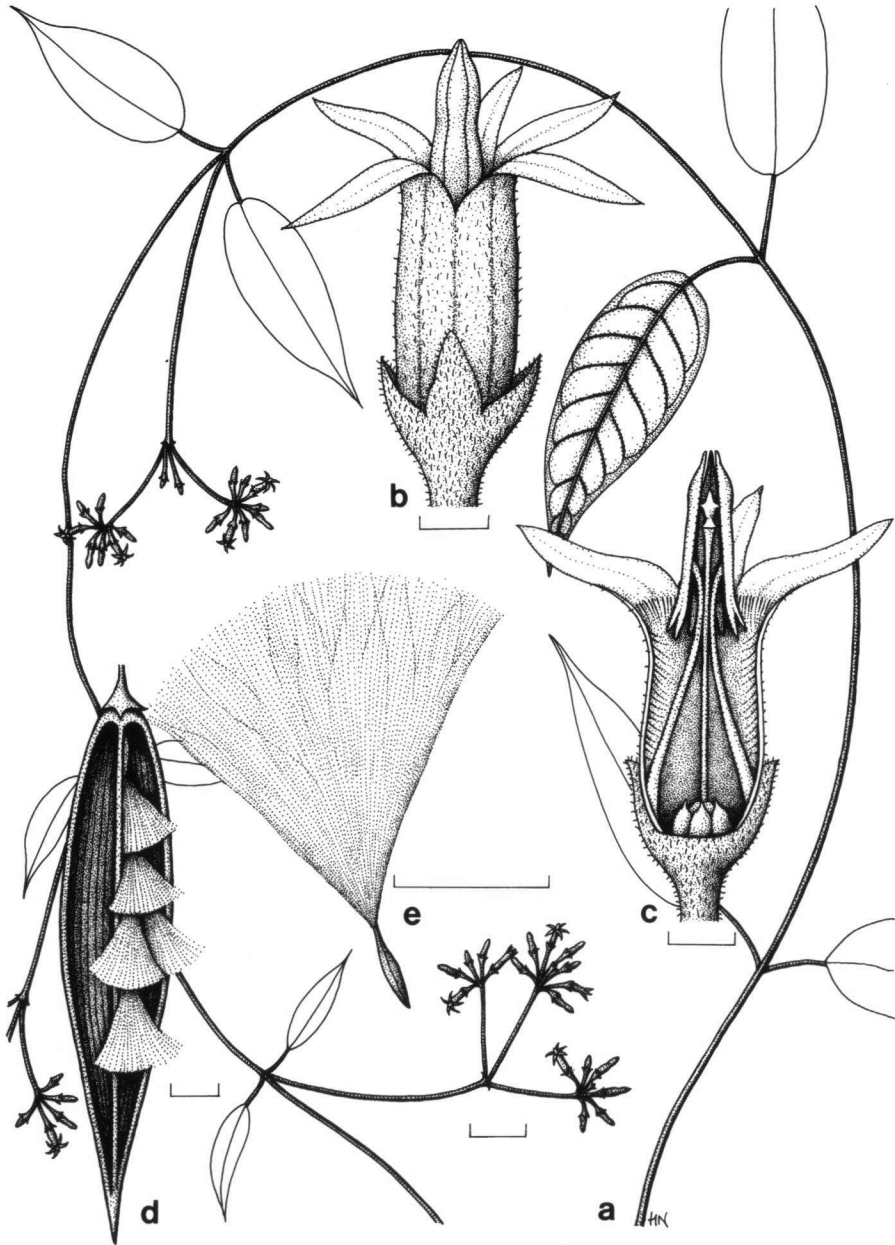


Fig. 6. *Parsonsia sanguinea* (Wernham) Markgr. var. *vinkii* D. J. Middleton (*Vink 17474*, L). a. Habit; b. flower; c. flower dissection; d. fruit; e. seed. — Scale bars: a, d, e = 1 cm; b, c = 1 mm.

g. var. *sepikensis* D.J. Middleton, var. nov.

Foliis ellipticis vel obovatis, 2.7–5.3plo longioribus quam latoribus. Inflorescentiis plus quam 5 cm, laxis; corollae tubis extus sparse puberulis. — Typus: *Veldkamp 6745* (L holo; CANB iso).

Branchlets sparsely puberulent. Leaves opposite; petioles 0.6–1.4 cm long; blade subcoriaceous to coriaceous, elliptic to obovate, apex acuminate to caudate, base cuneate to abruptly rounded, 3.1–9.1 × 0.7–3.1 cm, 2.7–5.3 × as long as wide; 5–9 pairs of lateral nerves; tertiary venation largely obscure; sparsely puberulent on petiole. Inflorescence of axillary cymes, 6.1–16 cm long; puberulent, denser on upper parts; peduncles 2.7–10 cm long; pedicels 4.5–9 mm long. Sepals ovate, apex acuminate to acute; 1.2–1.5 × 0.8–0.9 mm, 1.3–1.9 × as long as wide; sparsely puberulent. Corolla reddish to purplish with a white or yellowish tube; buds cylindrical, lobes slightly overlapping; open corolla with erect lobes; tube 3–5 mm long, 2.1–3.3 × as long as sepals; lobes narrowly triangular, acute, 2.8–3.2 mm long, 0.9–1 mm wide, 0.6–1 × as long as tube; puberulent outside, sometimes sparsely so, densely pubescent in throat and top of tube inside. Stamens inserted at 0.7–0.8 mm from corolla base, which is 0.1–0.3 of tube length; filaments straight, pubescent, 1.7–2.1 mm long; anthers with broadish tails curved in towards each other, 3.5–4.1 × 0.5 mm, 7–8.2 × as long as wide. Disc of 5 separate lobes, narrowly triangular, apex acuminate, 0.8–1 mm long. Ovary 0.8–1 mm long; style 2.2–3.1 mm long; pistil head 0.8–0.9 mm long. Fruit unknown.

Distribution — New Guinea (West Sepik Province of Papua New Guinea).

Habitat — In forest, 2200–2300 m altitude.

Collections studied. PAPUA NEW GUINEA. West Sepik: Telefomin Subprov., hill slopes above Telefomin, *Womersley & Umba NGF 48739* (BRI, CANB, L); Star Mts, Fologonom, *Veldkamp 6745* (CANB, L, type), *Vinas & Wiakabu LAE 59545* (L).

22. *Parsonsia schoddei* D.J. Middleton, spec. nov. — Fig. 7; Map 11

Frutex scandens, ramulis dense fusco-tomentellis, foliis ovatis vel ellipticis, acuminatis, basi cordatis vel obtusis, inflorescentiis 1.4–3.8 mm longis; corollae tubis et lobis extus puberulis, fauce hirsutis, antheris umbonatis. — Typus: *Schodde 2515* (L holo; A, BO, BRI, CANB, K).

Branchlets sparsely to densely brown velutinous. Leaves opposite; petioles 0.8–4.8 cm long; blade subcoriaceous, ovate to elliptic, margin inrolled or not, apex acuminate, base cordate to obtuse, 4.3–17 × 2.1–10.3 cm, 1.5–2.4 × as long as wide; 6–8 pairs of lateral nerves, prominent abaxially; tertiary venation reticulate; densely brown velutinous. Inflorescence of condensed axillary cymes, 1.4–3.8 cm long; densely pubescent; peduncles 0.5–2.3 cm long; pedicels 1.4–4.3 mm long. Sepals ovate, apex acuminate, 1.4–2.1 × 1.1–1.5 mm, 1–1.6 × as long as wide, densely velutinous. Corolla whitish to greenish; buds with a wider tube than acute head, lobes slightly overlapping; open corolla with erect or inflexed corolla lobes; tube 2.5–3.8 mm long, 1.4–2.1 × as long as sepals; lobes triangular, 2–2.6 mm long, 1.2 mm wide, 0.6–0.9 × as long as tube; densely pubescent on upper tube and lobes outside, densely pubescent in throat and in upper half of tube. Stamens inserted at 1.6–1.8 mm from

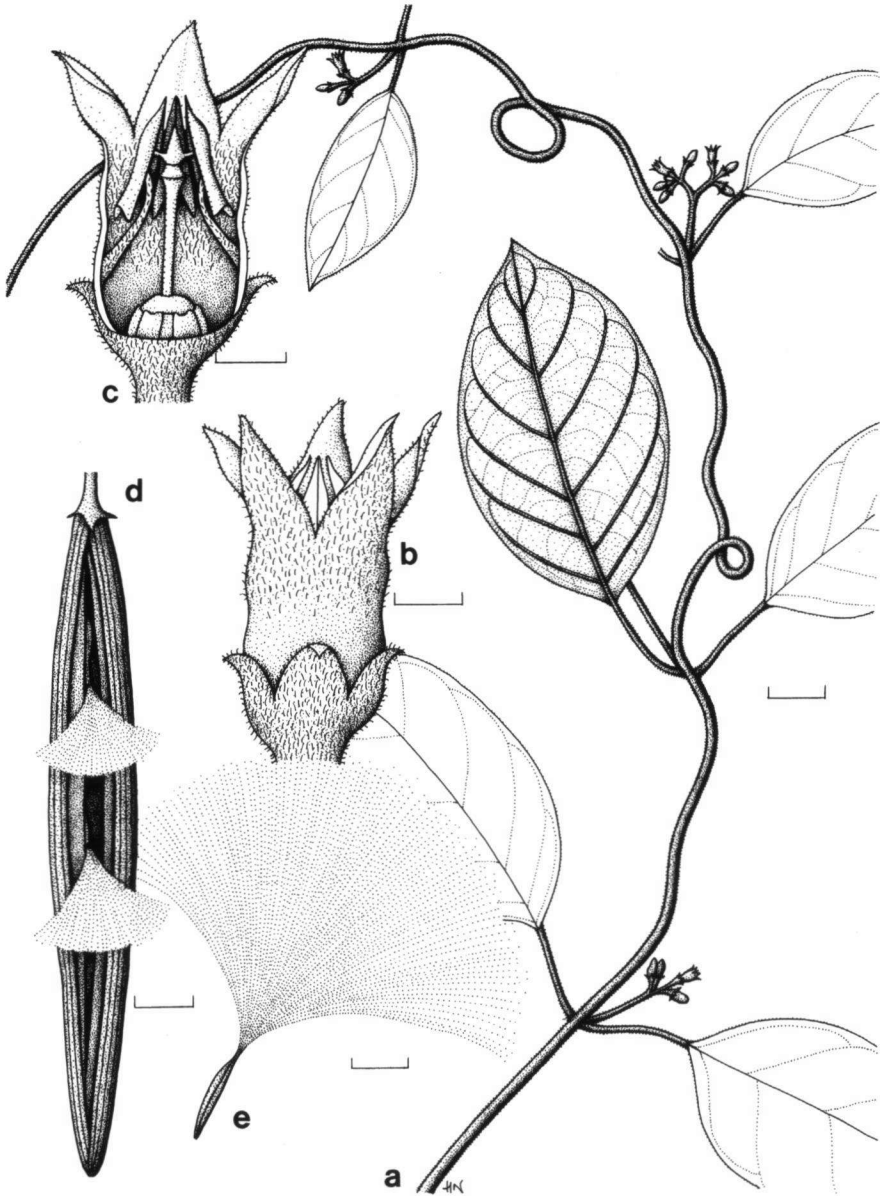


Fig. 7. *Parsonsia schoddei* D.J. Middleton (*Schodde 2801*, CANB). a. Habit; b. flower; c. flower dissection; d. fruit; e. seed. — Scale bars: a, d, e = 1 cm; b, c = 1 mm.

corolla base which is 0.4–0.5 of tube length; filaments straight, pubescent, 1.1–1.4 mm long; anthers flattened at base, squared, pointed at one corner, with a boss on the back at the top, 2.8–3.4 × 0.7 mm, 4–4.9 × as long as wide. Disc of 5 separate lobes, oblong, flat topped or notched, c. 0.7 mm long. Ovary 0.7–1 mm long; style 2–2.6

mm long; pistil head 1–1.1 mm long. Fruit linear, sparsely pubescent, 11.6–16.2 cm long, 6.5–8.5 mm long. Seed grain 10.1–12.1 × 1.4–1.8 mm, coma 2.2–2.6 cm long.

Distribution — New Guinea.

Habitat — Known from secondary growth and plantation at low altitude.

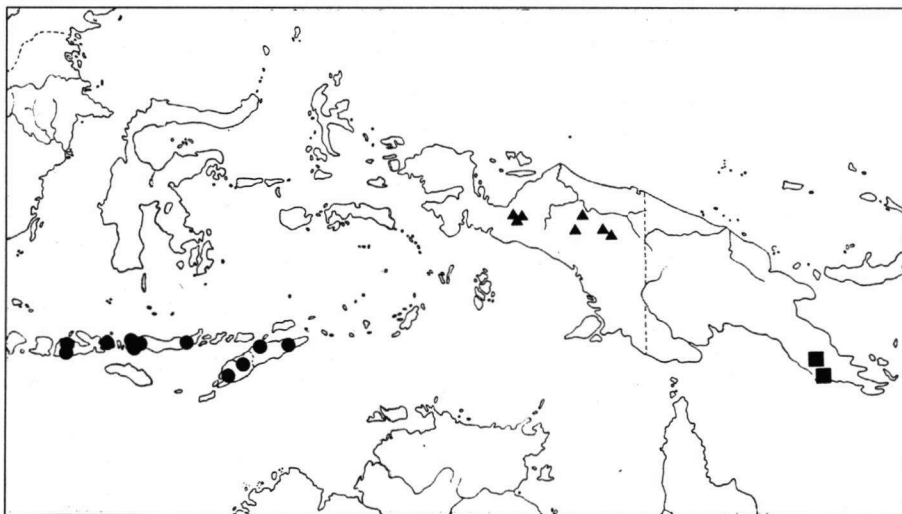
Collections studied. PAPUA NEW GUINEA. s.l., *Hartmann s.n.* (MEL). — Central: near Karema, Brown River, *Schodde 2515* (A, BO, BRI, CANB, K, L, type); Port Moresby subdist., Hohora L.A. Brown River, *Kairo NGF 30838* (A, BO, BRI, CANB, K, L, SING); Rigo, near Saroa, *Schodde 2801* (CANB, L).

23. *Parsonsia sundensis* D.J. Middleton, *spec. nov.* — Fig. 8; Map 11

Frutex scandens, ramulis puberulis vel glabris, foliis ellipticis vel obovatis, venis dense reticulatis, floribus dense aggregatis; lobis corollae tubum 3.9–5.6plo longioribus, reflexis.

— *Typus: van Steenis 18306* (A holo; BM, BO, CANB, L).

Branchlets puberulent when very young, becoming rapidly glabrous. Leaves opposite; petioles 0.9–2.4 cm long; blade subcoriaceous to coriaceous, elliptic, oblong or obovate, apex acuminate or rounded apiculate, base cuneate to obtuse, 3.1–9.6 × 0.8–3.7 cm, 2.3–6.4 × as long as wide; 5–9 pairs of lateral nerves, strongly ascending; tertiary venation densely reticulate; minutely puberulent abaxially when young, more sparsely so adaxially; leaves drying dull ochre colour abaxially. Inflorescence of axillary and terminal cymes forming a panicle, flowers clustered at ends, 5–10 cm long; brown pubescent; peduncles 1.7–3.5 cm long; pedicels 4–5.5 mm long. Sepals ovate, apex acute to acuminate, 0.9–1.6 × 0.6–1 mm, 1.2–2.3 × as long as wide, brown puberulent. Corolla white or creamy; buds long and narrow, lobes slightly



Map 11. *Parsonsia schoddei* D.J. Middleton (■), *P. sundensis* D.J. Middleton (●), *P. tenuiflora* D.J. Middleton (▲).

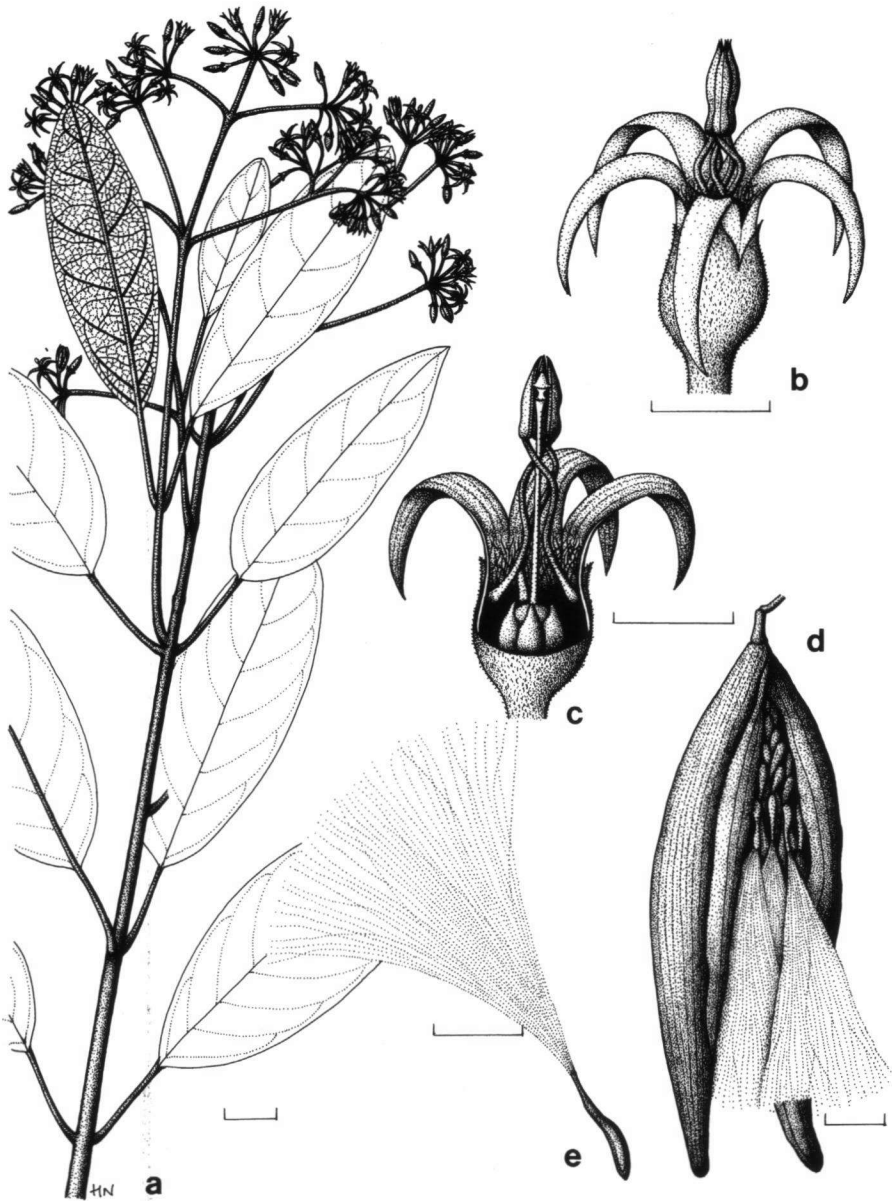


Fig. 8. *Parsonsia sundensis* D.J. Middleton (fr. *Kostermans 18836*, L; fl. *Schmutz 1979*, L). a. Habit; b. flower; c. flower dissection; d. fruit; e. seed. — Scale bars: a, d, e = 1 cm; b, c = 1 mm.

overlapping; open corolla with strongly reflexed lobes; tube 0.9–1.3 mm long, 0.6–1 × as long as sepals; lobes linear, 4.2–6.2 mm long, 0.6–0.8 mm wide, 3.9–5.6 × as long as tube; glabrous to sparsely puberulent on top of lobes outside, densely pubes-

cent at base of lobes and top of tube inside. Stamens inserted at 0.6–0.8 mm from corolla base, which is 0.7–0.9 of tube length; filaments somewhat twisted, connate, pubescent, 3.5–4.5 mm long; anthers narrowly triangular with incurved tails, 2.5–2.8 × 0.6 mm, 4.2–4.7 × as long as wide, exerted completely beyond mouth of corolla. Disc of 5 lobes fused at base, acuminate to acute, 0.8–1 mm long. Ovary 0.5–0.7 mm long; style 4–5.1 mm long; pistil head 0.7–1 mm long. Fruit fusiform, minutely and sparsely puberulent, 7.1–12 cm long, 1.2–1.7 cm wide. Seed grain 10–14 × 2.2–3.2 mm, coma 2.8–3.7 cm long.

Distribution — Indonesia (Flores and Sumbawa), East Timor.

Habitat — In forest or more open areas to 1700 m altitude.

Note — Specimens of this new species have often been identified as *Parsonsia straminea* R.Br., a species found only in Australia. It is quite puzzling how this habit emerged as the two species are quite unlike and geographically wide apart.

Collections studied. EAST TIMOR. Mt Perdido (ascent of Ossu), *van Steenis 18306* (A, BM, BO, CANB, L, type); road between Kapon & Fatumenasi, *Darnaedi D. 615* (BO, K, L). — INDONESIA. Nusa Tenggara Barat: Sumbawa: Mt Batulanteh, trail from Batudulang to Pusu, *Kostermans 18351* (A, BO, C, K, L); Mt Batulante, NW slope, *Kostermans 19166* (BO, K, L); Mt Batulante, Brang bossang, *Kostermans 18836* (L); Mt Batulante, Sampar Olat ridge, N of Batulante, *Kostermans 18861* (L); Semongkat Atas, Olat Sekampil, *Kuswata 184* (BO, L), *185* (A, BO, K, L); Maria, *de Voogd 2225* (BO). — Nusa Tenggara Timur: Flores: Mt Mendosama, *Kostermans & Wirawan 741* (BO, L); trail Ruteng-Pongkor, Potjo Likang, *Kostermans & Wirawan 890* (BO, L); Ruteng, Potjo Ri'i-Potjo Ngando Napu, *Schmutz 1782* (L); Potjo Kasreno, *Schmutz 1979* (L); near Nisar, *Schmutz 1904* (L); Lema, Golo Ponto, *Schmutz 2984* (L); Ngolong-Tene (Ruteng), *Verheijen 2939* (L); Manggarai, Ruteng, *Verheijen 806* (L); Tekaq Kudang to Gunung Aub, *Verheijen 5273* (L). — Timor: Mac-tis, *de Voogd 2267* (BO); Kampong Bioba, G.Timaoe, *Bloembergen 3373* (BO, L).

24. *Parsonsia tenuiflora* D.J. Middleton, *spec. nov.* — Fig. 9; Map 11

Frutex scandens, ramulis puberulis vel glabris, foliis ellipticis vel ovatis, inflorescentiis 1.1–4 cm longis, floribus dense aggregatis, tubo corollae angustatis. — Typus: *Kostermans & Soegeng 631* (L holo; BO, K, L iso).

Branches corky lenticellate; branchlets glabrous to sparsely puberulent. Leaves opposite; petioles 0.4–1.3 cm long; blade subcoriaceous to coriaceous, ovate to elliptic, apex acuminate, base rounded to weakly cordate, 1.4–7.9 × 0.6–4 cm, 1.6–4.1 × as long as wide; 4–11 pairs of lateral nerves; tertiary venation obscure or laxly reticulate; glabrous to sparsely puberulent on petioles, midrib and secondary veins. Inflorescence of axillary cymes with flowers clustered at ends, 1.1–4 cm long; puberulent; peduncles 0.3–3 cm long; pedicels 1.2–3 mm long. Sepals ovate, apex acute to acuminate, 0.9–1.4 × 0.4–0.8 mm, 1.4–2.4 × as long as wide, sparsely puberulent. Corolla greenish, yellowish or white; buds with narrow tube and wider head, lobes slightly overlapping; open corolla with reflexed lobes; tube 1.7–2.5 mm long, 1.4–2.5 × as long as sepals; lobes narrow elliptic, 2.3–3.8 mm long, 0.6–0.7 mm wide, 1–1.7 × as long as tube; glabrous or with occasional hairs outside, pubescent with downward pointing hairs in throat and top of tube or, rarely, glabrous inside. Stamens inserted at 1.2–1.9 mm from corolla base, which is 0.5–0.7 of tube length; filaments narrow, straight, pubescent, connate, 1.3–1.9 mm long; anthers with narrow incurved

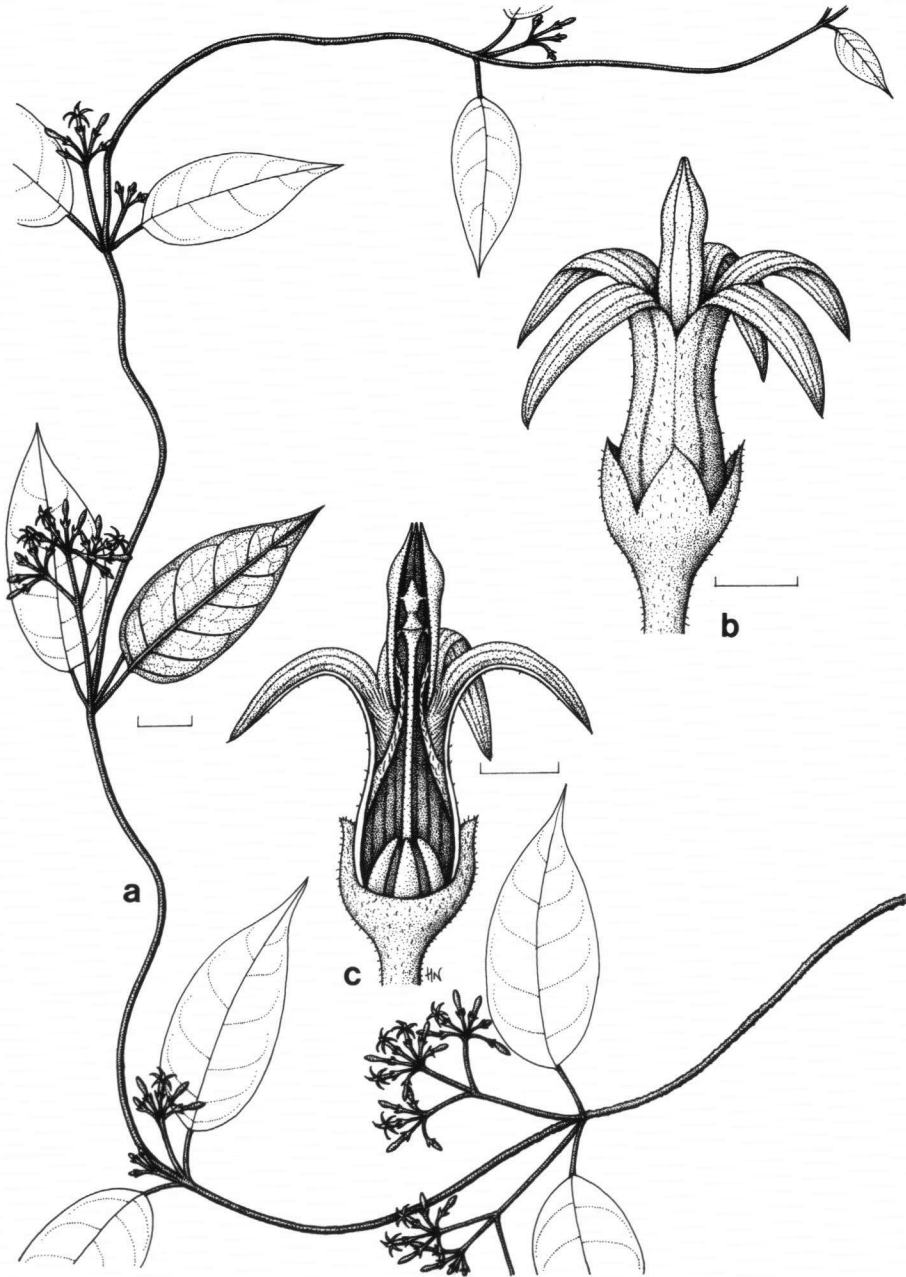


Fig. 9. *Parsonsia tenuiflora* D.J. Middleton (Kostermans & Soegeng 631, L). a. Habit; b. flower; c. flower dissection. — Scale bars: a = 1 cm; b, c = 1 mm.

tails, $2.6-3 \times 0.4-0.5$ mm, $5.4-6.8 \times$ as long as wide. Disc of 5 separate lobes, triangular, apex acute, $0.7-1.2$ mm long. Ovary $0.6-1.1$ mm long; style $3-3.2$ mm long; pistil head $0.5-0.8$ mm long. Fruit unknown.

Distribution — New Guinea.

Habitat — In open areas, 1750–2500 m altitude.

Notes — *Kostermans & Anta 709*, collected in Irian Jaya, has extremely small flowers (tube $0.5-0.8$ mm long, lobes $1.4-1.7$ mm long) but otherwise looks like *P. tenuiflora*. In this specimen the anthers are empty and misshapen. It would appear to be a sterile form of this species. The description given does not include the dimensions for this specimen.

Parsonsia tenuiflora is close to *P. hebetica* and *P. sanguinea* from which it is distinguished by its shorter, more delicate inflorescences and very narrow corolla tubes.

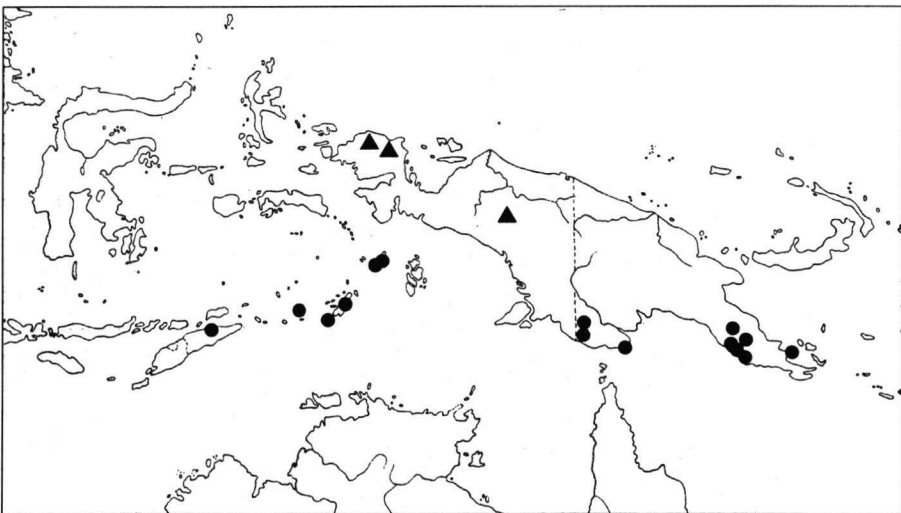
Collections studied. INDONESIA. Irian Jaya: Wissel Lake region, Maiaril island in Paniaimeer, *Eyma 4513* (A, BO, K, L, SING); Wissel Lake region, Kaegala-Enaratali, *Eyma 4550* (BO, L); Wissel Lake region, Biv. voet–Biv. Moele, *Eyma 5050* (BO, L); Baliem Valley, N of km 39 on Wamena-Pass Valley Road, *Burley & Ismail 4557* (A, BO, SING); Baliem Valley, near Wellesey, *Kostermans & Soegeng 631* (BO, K, L, type), *709* (BO, L); Mt Trikora, *Mangén 337* (L).

25. *Parsonsia vaccinioides* (Markgr.) Markgr. — Map 12

Lyonsia vaccinioides Markgr., Nova Guinea 14 (1927) 290. — *Parsonsia vaccinioides* (Markgr.)

Markgr., Bot. Jahrb. 61 (1927) 216; Kaneh. & Hatus., Bot. Mag., Tokyo 55 (1941) 502. — Type: *Gjellerup 1207* (U holo; BO, L iso).

Branchlets glabrous to sparsely puberulent. Leaves opposite; petioles 2–10 mm long; blade ovate, margin inrolled, apex acuminate, base rounded, $1-4.4 \times 0.5-2.4$ cm, $1.4-3 \times$ as long as wide; 3–6 pairs of lateral nerves; tertiary venation obscure; puber-



Map 12. *Parsonsia vaccinioides* (Markgr.) Markgr. (▲), *P. velutina* R.Br. (●).

ulent on petiole, sometimes also on abaxial midrib. Inflorescence of axillary cymes, flowers clustered, 1.5–3 cm long, short brown pubescent; peduncles 0.8–2.1 cm long; pedicels 2.1–4 mm long. Sepals ovate, apex acuminate to obtuse, 1–1.4 × 0.5–0.9 mm, 1.3–2.2 × as long as wide, puberulent. Corolla purplish brown to cream; buds ovoid, apex acute, lobes slightly overlapping; open corolla campanulate to subcampanulate; tube 1.3–2 mm long, 1.2–1.8 × as long as sepals; lobes triangular to linear, 2.1–3.2 mm long, 0.9–1.3 mm wide, 1.2–2.3 × as long as tube; sparsely and shortly pubescent outside, pubescent in throat with downward pointing hairs. Stamens inserted at 0.5–0.7 mm from corolla base, which is 0.4–0.5 of tube length; filaments straight or curved, somewhat wider at base, 0.9–1.9 mm long; anthers oblong, tails curved in towards each other, 2.4–3.2 × 0.5–0.6 mm, 4.7–6.4 × as long as wide. Disc of 5 separate lobes, oblong, apex acuminate, 0.9–1.2 mm long. Ovary 0.4–1 mm long; style 1.5–2.3 mm long; pistil head 0.5–0.9 mm long. Fruits linear, minutely and very sparsely puberulent, 7–10.8 cm long. Seed grains 5–6.5 × 1.5–2 mm; coma 0.7–1.6 cm long.

Distribution — New Guinea.

Habitat — In open forest or forest margin, 2000–3250 m altitude.

Note — This species is easily recognised by the small, ovate leaves with an inrolled margin and the short, clustered, few-flowered inflorescences.

Collections studied. INDONESIA. Irian Jaya: Anggi, Arfak Mts, *Kanehira & Hatusima 13656* (A, BO), *13460* (BO), *Gjellerup 1207* (BO, L, type); Lake Habbema, *Brass 9306* (A, BO, L); Ditschi (Arfak), *Mayr 46* (BO); Mt Kobreimot (Koëbré) above Testega, Anggi Lakes, *Sleumer & Vink BW 14151* (BO, CANB, L, Z); Mt Sensenemes, Anggi Gigi Lake, *Sleumer & Vink BW 14187* (BO, CANB, L, Z); Nettoti Range, Kebar Valley, c. 100 km W of Manokwari, *van Royen 3875* (L).

26. *Parsonsia velutina* R.Br. — Map 12

Parsonsia velutina R.Br., Prodr. (1810) 466; Williams in P.I. Forst. & J.B. Williams, Fl. Australia 28 (1996) 181. — Type: *Brown 2864* (BM holo) from Australia.

Parsonsia quinquebullata Sleesen, Nova Guinea n. s. 9 (1958) 342. — Type: *Brass 6280* (L holo; A, BM, BO, BRI iso).

Branchlets sparsely brown tomentose. Leaves opposite; petioles 1.1–3.5 cm long; blade papery to subcoriaceous, ovate to elliptic, apex acuminate, base rounded to cordate, 5–12.7 × 2.7–7.8 cm, 1.3–2.2 × as long as wide; 5–9 pairs of lateral nerves, strongly ascending; tertiary venation reticulate; velutinous abaxially, pubescent on midrib to all over adaxially. Inflorescence of axillary cymes, flowers clustered at tips, 3.6–14 cm long; brown appressed velutinous; peduncles 2.2–11.3 cm long; pedicels 1.7–2.5 mm long. Sepals linear, reflexed, 2–3 × 0.6–1 mm, 2–4.8 × as long as wide, brown appressed velutinous. Corolla yellowish green; buds ovoid, lobes slightly overlapping; open corolla campanulate; tube 1.5–2.3 mm long, 0.6–0.9 × as long as sepals; lobes triangular, apex acute, 1.4–2.4 mm long, 1.1–1.3 mm wide, 0.8–1.1 × as long as tube; pubescent on lobes except on margin and upper part of tube outside, bearded in throat and in 5 rows down tube inside. Stamens inserted at 0.4–0.6 mm from corolla base, which is 0.2–0.3 of tube length; anthers oblong, tails acute to obtuse, 1.5–2.6 × 0.5–0.6 mm, 3–4.8 × as long as wide. Disc of 5 separate lobes, oblong, each lobe deeply bifid and then each half bifid or 3 dentate again, 0.8–1 mm

long. Ovary 0.8–0.9 mm long; style 1.1–1.4 mm long; pistil head 0.7–0.8 mm long. Fruit linear, densely brown pubescent, 8.2–15 cm long, 0.5–1 cm wide. Seed grain 8.8–14.3 × 1.6–2.4 mm; coma 2.3–3.4 cm long.

Distribution — Timor, Kai Is., Tanimber I., Babar, New Guinea, Australia.

Habitat — In a wide range of primary, secondary, plantation and mangrove forests to 130 m altitude.

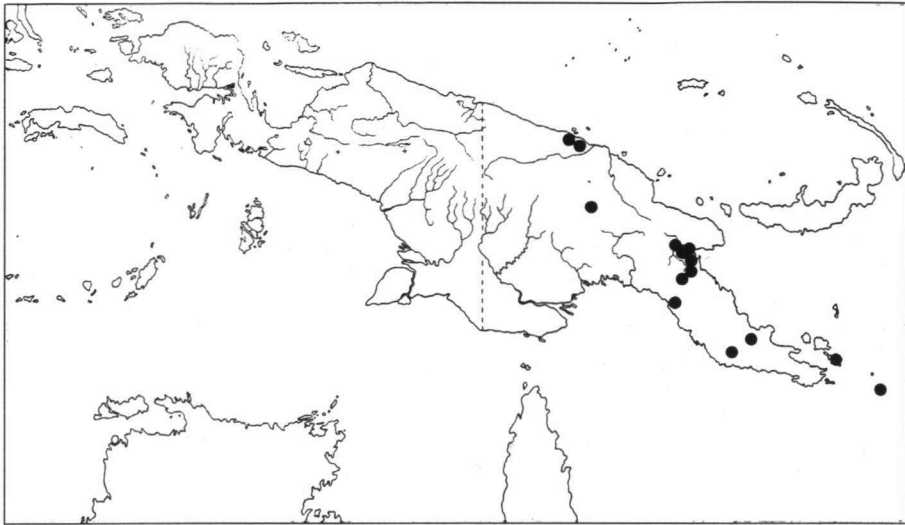
Collections studied. INDONESIA. Maluku: Kai Islands: *Jaheri 16* (BO), *Jensen 362* (BO, C, L), 26 (C). Babar: Letwuring, *van Borssum Waalkes 3216* (BO, K, L). Tanimber Islands: Pulau Selaru, Adaut, *van Borssum Waalkes 3136* (A, K, L, SING); Namtabung, *van Borssum Waalkes 3192* (BO, L). Pulau Jamdena, between Kampong Ilgnei & Otimmer, *Buwalda 4320* (A, BO, BRI, K, L, SING); 15 km ENE of Otimmer, *Buwalda 4604* (BO, K, L), 4441 (BO, L). Timor, *Meyer s.n.* (K). — PAPUA NEW GUINEA. Central: Kanosia, *Carr 11089* (A, BM, CANB, K, L, NY); Tavai Creek area, c. 43 miles SE of Port Moresby, *Pullen 6884* (A, BRI, CANB, L); Rigo, *Lister Turner s.n.* (BRI); between Rigo and Saroa, *Frodin UPNG 1962* (A, L); Tavai Creek, *Gillison NGF 22107* (BRI, CANB, L); Goragatabu Creek area, 16 miles N of Port Moresby, *Pullen 6784* (CANB); Motupore Isl., *Hopkins 1029* (BRI); Motupore Island, Bootless inlet, *Frodin 4275* (K, L), *Frodin s.n.* (L), *Tippett 827* (L); Port Moresby Subprov., Brown River road, *Streimann NGF 39494* (K, L); off Brown River road opp. Mt Lawes, *Frodin & Millar UPNG 565* (L); Port Moresby, *Jeswiet 75* (L, S), *White 107* (A, BRI), *Carr 11860* (A, BM, CANB, K, L, SING). — Milne Bay: Neara Point, Cape Vogel Peninsula, *Brass 21849* (A, CANB, K, L, US). — Western: Daru Isl., *Brass 6280* (A, BM, BO, BRI, L, type of *Parsonsia quinquebullata*); near Weam, *Ridsdale NGF 33662* (A, BO, BRI, CANB, K, L, SING), *Ridsdale NGF 33660* (BO); behind Bensbach Lodge towards airstrip, *Leach UPNG 3826* (K, L).

27. *Parsonsia warenensis* Kaneh. & Hatus. — Map 13

Parsonsia warenensis Kaneh. & Hatus., Bot. Mag., Tokyo 55 (1941) 502. — Type: *Kanehira & Hatusima 13125* (TI lecto, n.v.).

Parsonsia langiana auct. non F. Muell.: Markgraf, Bot. Jahrb. 61 (1927) 219.

Branchlets densely to sparsely brown tomentose, rarely glabrous. Leaves opposite; petioles 0.8–2.7 cm long; blade papery to coriaceous, ovate to elliptic, apex acuminate, base cordate to rounded, 3.1–15 × 1.5–8.8 cm, 1.7–2.7 × as long as wide; 5–8 pairs of lateral nerves; tertiary venation reticulate or scalariform; sparsely pubescent on midrib only to densely brown pubescent abaxially and adaxially. Inflorescence of lax axillary cymes, 3.5–13 cm long; brown velutinous; peduncles 1.8–8.6 cm long; pedicels 4–14 mm long. Sepals ovate, apex acute to acuminate, 2.2–3.1 × 1.1–1.9 mm, 1.2–2.4 × as long as wide, brown velutinous. Corolla yellowish green with orangish tube; buds ovoid, lobes slightly overlapping; open corolla salverform or with erect lobes; tube 4.2–5.4 mm long, 1.6–2.1 × as long as sepals; lobes triangular, apex acuminate, 1.2–2.7 mm long, 1.2–1.5 mm wide, 0.2–0.6 × as long as tube; densely pubescent on upper part of tube and lobes outside, pubescent in throat and tube inside. Stamens inserted at 2–2.8 mm from corolla base, which is 0.5–0.6 of tube length; filaments curved or straight, pubescent, 1–1.1 mm long; anthers narrowly triangular, tails narrow, 2.9–3.1 × 0.6–0.8 mm, 3.9–5.2 × as long as wide. Disc of 5 separate lobes or fused at base, rounded or notched at apex, 1.6–1.9 mm long. Ovary 0.7–0.9 mm long; style 3–3.4 mm long; pistil head 0.9–1.3 mm long. Fruit fusiform, glabrous or sparsely pubescent, 7.8–13.7 cm long, 1.3–2 cm wide. Seed grain 10–14 × 1.5–3 mm, coma 1.5–3 cm long.



Map 13. *Parsonsia warensis* Kaneh. & Hatus.

Distribution — New Guinea.

Habitat — In forest to 1600 m altitude.

Notes — I have been unable to get any type material of this species although I have confirmation that the collection is in the herbarium in Tokyo. I have used the name though as this species is quite distinct and the original description has a clear illustration matching the material I have of this species.

The specimens from higher altitude tend to be the ones with the much more densely pubescent branchlets and leaves.

Selection of the 22 collections studied. PAPUA NEW GUINEA. Central: Kanosia, Carr 11543 (A, BM, CANB, K, L, SING). — East Sepik: Passam, Hawkeswood AQ 470251 (BRI). — Milne Bay: Panaeati Island, Deboyne group, Streimann & Lelean LAE 52713 (A, BO, BRI, CANB, K, L, SING); Esa'ala Subprov., Normanby Island, NE of Bwasiaiai, Croft & Marsh LAE 71211 (L). — Morobe: 5 miles S of Wau, Hartley 11508 (A, BRI, CANB, K, L); 18 miles W of Lae at Oomsis Creek, Hartley 10478 (A, CANB, K, L). — Western Highlands: Komun-Pin divide, E of Korn, Upper Wahgi Valley, Hoogland & Pullen 6269 (A, BRI, CANB, L).

SPECIES EXCLUSAE

Parsonsia barbata Blume, Bijdr. (1826) 1042 = *Parameria laevigata* (Juss.) Moldenke.

Parsonsia bulusanensis Elmer ex Merr., Enum. Philip. Flow. Pl. 3 (1923) 333, in obs. = *Anodendron paniculatum* A. DC.

Parsonsia javanica Blume, Bijdr. (1826) 1041 = *Urceola javanica* (Blume) Boerl.

Parsonsia ovata Wall. ex G. Don, Gen. Syst. 4 (1837) 80 = *Pottsia laxiflora* (Blume) O. Kuntze.

INSUFFICIENTLY KNOWN SPECIES

Lyonsia diversifolia Warb., Bot. Jahrb. 18 (1894) 204. — Markgraf (1927) noted that this species resembled the Australian *Lyonsia brownii* (= *P. brownii*) but there is no material to compare them.

Parsonsia diversifolia (Warb.) Markgr., Bot. Jahrb. 61 (1927) 215.

Parsonsia momiensis Kaneh. & Hatus., Bot. Mag., Tokyo 55 (1941) 500. — This is probably a synonym of *P. alboflavescens* but impossible to say with certainty without the type material.

Parsonsia subalpina Markgr., Bot. Jahrb. 61 (1927) 217. — Markgraf compares his new species to *P. wollastonii* which is now a synonym of *P. sanguinea*. It may be that this species is also a synonym of *P. sanguinea* and may be synonymous with var. *sepikensis* but without the type material or any other material identified by Markgraf its determination cannot be guaranteed.

In all these cases I have been unable to locate or obtain the type material and the descriptions are not enough to indicate whether they could be included in synonymy of other species.

ACKNOWLEDGEMENTS

I would like to thank John Parnell for providing the opportunity to work in Trinity College, Dublin; Marcella Campbell for help with the curation of material and Holly Nixon for the illustrations. This work was carried out as part of the Plant Biodiversity in the Indo-Pacific Region network funded by the European Union Human Capital and Mobility Programme.

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INDEX OF EXSICCATAE

The letters in brackets refer to the first three letters of the species to which the specimen belongs except for (ssa) = *P. sanguinea* var. *sanguinea*, (sbr) = var. *brassii*, (sal) = var. *albiflora*, (scr) = var. *cruttwellii*, (smi) = var. *millikenii*, (svi) = var. *vinkii* and (sse) = var. *sepikensis*. Only those specimens with a clearly identified collector and collection number are listed.

- Aban SAN 55390 (alb) — Aban & Saikah SAN 79308 (alb) — Aet 177, 400, 530 (alb), 700 (bur) — Aet & Idjan 247 (alb) — Ahmad SA 290 (alb) — Alegaen et al. 220 (alb) — Allen 34-81, 150197 (alb) — Alston 13324, 16120 (alb) — Amin & Martin SAN 67090 (alb) — Amin & Suin SAN 123271 (phi) — Anderson 4052 (cel), 8441 (alb) — Argent 92446 (smi) — Asdat 131 (alb).
- Backer 10451, 11778, 11970, 17511, 28270, 28935 (alb) — Bakhuizen van den Brink 1103 (phi), 1140 (alb), 6511 (phi) — van Balgooy 5079 (bur) — van Balgooy & Mamesah 6289 (alb), 6310A, 6464 (bur) — Barclay 3523 (alb) — Barker & Vinas LAE 66753 (alb) — Bartlett 15073 (alb) — Beaman et al. 9738 (alb) — Beccari 2496 (alb) — Beguin 1318 (bur), 1442, 1771 (alb) — Bergman 108 (san) — Besoe 6 (alb) — Betsche 60 (alb), 85 (ped) — Beumée 5366, 6796, 6807, 8617 (alb) — Bidin SAN 84832 (cel) — Bloembergen 3373 (sun), 4384, 4710 (alb) — Blume 155, 2202 (alb) — Boerlage 245, 509 (bur) — Borden 1784 (alb) — Borgmann 350 (sbr) — van Borssum-Waalkes 3136 (vel), 541, 644 (alb), 3095 (bur), 3192, 3216 (vel), 3295 (bur) — Bradtke 341 (ped) — Brass 692 (cur), 760, 840, 848 (oli), 1218 (lat), 1515 (oli), 2653 (cur), 3608 (oli), 4921 (sbr), 5141, 5254 (cur), 5607 (oli), 5646 (lat), 5944 (bur), 6280 (vel), 6434 (bur), 7089 (cur), 8723 (alb), 8991 (rub), 9306 (vac), 11573, 11647 (fla), 12358 (cur), 13267 (lat), 21759, 21775 (alb), 21849 (vel), 21949 (oli), 23416 (cur), 23809, 24329 (oli), 24489, 24627, 24791 (cur), 25363 (alb), 27241 (cur), 27338 (alb), 27421, 27437 (cur), 27635, 28034 (alb), 28874 (oli), 28893 (lat), 29101 (cur), 29134 (den), 29147, 29440 (cur), 29643 (sbr), 32104 (lat), 32516 (oli) — Britton & Winder 64 (alb) — Brooks 1003, 7100, 7104, 13548 (alb) — Bünnemeijer 3481, 6040 (alb) — Burkill 256, 963 (alb) — Burkill & Haniff 17313 (alb) — Burkill & Shah HMB 221 (alb) — Burley & Ismail 4557 (ten) — Buwalda 4320, 4441 (vel), 4450 (bur), 4604 (vel), 4667 (bur), 4950, 6042 (alb).
- Canicosa 413, 438 (alb) — Carr 11058 (oli), 11089 (vel), 11280 (oli), 11543 (war), 11596 (bur), 11860 (vel), 11939 (bur), 12450 (oli), 12844 (bur), 13000 (war), 13074, 13430 (heb), 13711, 13763 (sbr), 13919 (cur), 14552 (heb), 15460 (war), 15735, 16362 (lat) — Castro & Melegrito 1430 (alb) — Chai S 37363 (cel) — Chew CWL 489 (alb), CWL 1027 (phi) — Chew & Corner 4572 (alb) — Church et al. 211 (alb) — Clemens 47, 165 (lat), 479 (bur), 531, 849 (cur), 1464 (lat), 1487, 1547, 2098 (cur), 2163 (bur), 3202b, 4052 (cur), 4789 (sbr), 5214a (cur), 5214 (sbr), 8272A (oli), 18166 (alb), 26383, 26629, 26826 (cel), 4489 (sbr), 5372 (heb), 10486 (oli), 12362 (sbr), 40846 (oli), 41047 (sbr), 4268 (lat) — Co 3306 (alb) — Cockburn SAN 85104 (phi) — Collenette 19 (alb) — Conklin 17547 (alb) — Conn 1598, 69109 (sbr) — Conn & Vinas 1528 (sbr) — Coode 3647 (war), NGF 40498 (alb) — Coode & Henty NGF 32581 (oli) — Coode & Katik NGF 29849, NGF 32747 (alb), NGF 32868 (sbr), NGF 40037 (svi) — Coode & Steven NGF 40187 (oli) — Coode et al. NGF 29782 (ped) — Corner 29774 (alb) — Craven & Schodde 836, 880 (app) — Croft et al. NGF 12315 (ped), NGF 15535 (alb), LAE 65309 (svi), LAE 71211 (war) — Cruttwell 31 (alb), 894 (scr) — Cuming 1065, 1490 (alb) — Cunan 7232 (alb) — Curtis 450, 1707 (phi), 2107, 2109 (alb).

- Damas & Gideon 74606 (cur) — Darbyshire 982 (lat) — Darnaedi D 615 (sun), D 719 (alb) — Djamhari 370 (alb) — Djuda 94233 (alb) — Dockrill NGF 34013 (oli) — Docters van Leeuwen 1515 (alb), 9223 (mar), 10383 (alb), 10590 (bur), 10998 (cur), 11270 (lat), 1563 (alb) — Doleschall 366 (bur) — Dorgelo 2022 (api) — Dransfield 4012 (alb), 4397 (cel).
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- Fallen et al. 321, 352 (oli), 393 (sbr) — Fedilis & Sumbing SAN 88967 (alb) — Fenix 3626 (alb) — Feuilletau de Bruyn 347 (alb) — Floyd NGF 5278 (lat), NGF 7247 (oli), NGF 7513 (cur) — Floyd & Havel NGF 5300 (cur), NGF 7537 (lat) — Forbes 851, 865 (cur) — Foreman & Kumul NGF 48273 (oli), NGF 48340 (cur) — Foreman & Vinas LAE 60110 (war) — Forster & Liddle PIF 11072 (oli) — Fox 9083 (alb) — Fraser 44 (alb) — Frodin 582 (oli), UPNG 775 (sbr), UPNG 1962 (vel), UPNG 2031 (alb), UPNG 4165 (lon), 4275 (vel), UPNG 4451 (sbr), NGF 26606 (alb), NGF 28357 (svi) — Frodin & Millar UPNG 565 (vel) — Frodin & Yaueib UPNG 616 (bur) — Fryar 3985 (lat).
- Galore & Vandenburg NGF 41025 (cur) — Gibbs 5532 (sal) — Gilli 474 (sbr), 610 (alb) — Gillison NGF 22107 (vel), 22414 (alb) — Gillison et al. NGF 25672 (cur) — Gjellerup 334, 366 (cur), 601 (oli), 895 (cur), 962 (alb), 1207 (vac) — Goetghebeur 3280, 3794 (alb) — Gozapao 10 (oli).
- Hallier 284 (alb) — Hartley 9821 (oli), 9895 (cur), 10001, 10001A (oli), 10339 (bur), 10478 (war), 10655 (oli), 10683 (bur), 11508 (war), 11663 (sbr), 12254 (cur), 12877 (sbr) — Haviland 1666 (alb), 1710 (cel), 1813, 2306 (alb) — Hawkeswood AQ 470251, AQ 470254 (war) — Henderson 19442, 19551, 20479, 21723, 22740 (alb) — Henty NGF 10507 (cur), NGF 10577 (lat), NGF 11963 (bur), NGF 13633 (lat), NGF 14383, 16731 (war) — Henty et al. NGF 41775 (sbr) — Henty & Lelean NGF 41816 (oli), NGF 41818 (lat), LAE 72414 (oli) — Herre 1225, 1229 (alb) — Hollrung 96 (cur), 163 (alb) — Hoogerwerf 11, 17, 31, 259 (alb) — Hoogland 4841 (oli) — Hoogland & Craven 10407 (rub) — Hoogland & Pullen 6089 (sbr), 6269 (war) — Hoogland & Schodde 7267, 7706 (sbr) — Hoover 456 (cur), 905 (mar) — Hopkins 1029 (vel) — Hulstijn 203 (alb).
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- Jacobs 4752 (alb), 9364 (rub), 9662 (bur) — Jaheri 16 (vel) — Janowsky 446, 563 (alb) — Jensen 26 (vel), 149, 225 (alb), 362 (vel), 373 (alb) — Jeswiet 75 (vel) — Junguhn 128 (alb).
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- Lam 405, 1483 (cur), 2489, 3340 (alb) — Larivita & Maru LAE 70615 (cur) — Lassar SAN 92068 (phi) — Lauterbach 496 (cur) — Lavarack & Ridsdale NGF 31471 (cur) — Leach UPNG 3826 (vel), UPNG 3869 (bur) — Ledermann 9329 (mar), 10095 (lat), 12585 (cur) — Lee S 41958 (alb) — Leiberger 6146 (alb) — Lister-Turner 15, 19 (oli) — Loher 4035, 13477 (alb) — Lörzing 11607 (alb).

- Main & Aden s.n. (alb) — Maingay 1064 (1951) (alb) — Mangen 337 (ten), M 353 (fla) — Maxwell 77-377, 77-387, 78-345 (alb), 80-208 (cur), 80-26 (alb) — Mayr 46 (vac) — McGregor 10653, 43601 (alb) — McIntosh 3579 (lat) — Mehlbaum 4 (nov) — Meijer SAN 20341 (phi), 42843 (alb), 48140 (cel) — Meijer Drees 168 (rub), 433 (lat) — Mendoza 42181 (cur) — Mendum & Argent 92807 (fla) — Mente 7 (oli) — Merrill Sp. Blanc. 1014, 2238, 3141, 5263 (alb) — Millar GH 89 (cur), GH 91, NGF 9713 (oli), NGF 9771, 9906 (cur), NGF 12098 (alb), NGF 14499, 14545, 18770 (bur), NGF 18899 (lat), NGF 22927 (bur), NGF 23069 (lat), NGF 23234 (cur), NGF 23621 (sbr), NGF 38472 (oli) — Millar & Holtum NGF 15779 (sbr) — Millar & van Royen NGF 15655 (lat) — Milliken 1361 (smi) — Mondri 100 (alb) — Motley 1257 (alb).
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- Saakov 116 (api) — Sands et al. 2697 (ped) — Santos 4758 (alb) — Sayers NGF 13271 (oli), 21240 (sbr), NGF 21708 (alb) — Schlaginhaufen 36 (cur) — Schlechter 18455 (oli), 18638, 19569 (war), 19770 (heb), 19828 (cur) — Schmutz 1721 (api), 1782, 1904, 1979 (sun), 2180 (alb), 2984 (sun) — Schodde 1490, 2077 (sbr), 2515 (sch), 2521 (oli), 2801 (sch), 2952 (bur) — Schodde & Craven 4637 (nov), 4733 (sbr) — Schram BW 9341 (cur) — Shah & Noor MS 805 (alb) — Shah SFN 40976 (alb) — Shea & Aban SAN 76962 (phi) — Sidiyasa & Whitmore TCW 3647 (rub) — van der Sijde BW 4135 (nov) — Sinclair 4893, 5927, 10174 (alb) — Sleumer & Vink BW 14151 (vac), BW 14153 (sal), BW 14187 (vac) — van Slooten 2225 (cel) — Soepadmo 320 (alb) — van Steenis 1938 (alb), 2713 (phi), 3138, 11394 (alb), 18306 (sun) — Sterly 80-363, 80-48 (sbr) — Steup 48 (alb) — Stone 12311 (alb), LAE 53041 (lat) — Stone et al. 15231 (phi) — Streimann NGF 30960 (heb), NGF 39494 (vel), NGF 44268 (alb), NGF 45128 (cur), NGF 47915 (oli) — Streimann & Kairo NGF 21153 (bur), NGF 21184 (oli), NGF 21185 (cur), NGF 27567 (bur), NGF 26022 (lat), NGF 47567 (war) — Streimann & Lelean LAE 52600 (alb), LAE 52713 (war) — Streimann & Martin LAE 52843 (cur) — Streimann et al. NGF 45041 (bur) — Sulit 8446 (alb), 9861, 9959, 10090 (cur), 12340 (phi), 13790 (alb), 14593, 21674 (cur), 29040, 32814 (alb) — Sulit & Conklin 17669 (alb).
- Takeuchi 4044 (sbr), 4434 (oli), 4501 (sbr), 5097, 9211 (cur) — Taylor 2312C (alb) — Teruya 1171 (alb) — Teijsmann HB 1933, HB 4512, 11345 (alb), 11580 (cel) — TFB 575 (cel) — Tippet 827 (vel) — Toxopeus 42 (alb).
- van Valkenburg 130, 771, 830, 872 (sbr) — Vandenberg et al. NGF 39905 (sbr) — Veldkamp 6745 (sse) — Veldkamp & Stevens 5807 (cur) — Verdcourt 5126 (sbr) — Verheijen 806, 2939 (sun), 3223 (alb), 5273 (sun) — Versteegh BW 4719 (alb), BW 7354 (rub) — Vidal 1597, 3310 (alb) — Vinas & Laravi LAE 62238 (war) — Vinas & Nagari UPNG 4846 (oli) — Vinas & Wiakabu LAE 59545 (sse) — Vink BW 12013 (alb), BW 15259 (rub), 17474 (svi) — de Vogel 3650 (gra), 4215 (alb) — de Voogd 2225, 2267 (sun), 2778 (alb) — de Vriese 51 (alb).

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The number after each name refers to the species under which the name is included. (gen) = refer to the list of names under the genus; (x) = excluded species; (ik) = insufficiently known. Roman = accepted name; italics = synonym; bold = new.

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