

## REVISION OF *LECANANTHUS* (RUBIACEAE–SCHRADEREAE)

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### SUMMARY

A taxonomic revision of *Lecananthus* Jack, a genus of three species occurring in Sumatra, the Peninsular Malaysia, and Borneo, is presented. A new species, *L. peduncularis* Puff, endemic to Sarawak, is described, and a new combination, *L. pentander* (Merr.) Puff (syn. *Lucinaea pentandra* Merr.), is published.

### INTRODUCTION

A study of the herbarium material of *Schradera* (syn. *Lucinaea*) for a revision of the Asiatic (Malesian) taxa of that genus (Puff et al., 1998) revealed that in many cases specimens originally identified as '*Lucinaea*' belong to the genus *Lecananthus*. Apart from material which turned out to be the well-known species *L. erubescens*, some '*Lucinaea*' collections proved to be a new species of *Lecananthus*, and one '*Lucinaea*' species needed to be transferred to *Lecananthus*. In order to provide a thorough overview of *Lecananthus*, a revision of the genus is presented here.

### MATERIAL AND METHODS

Herbarium material from the following institutions was investigated: AAU, BM, BRUN, GH, HBG, K\*, KEP\*, L, SAN, SING, W (abbreviations according to Holmgren et al., 1990). Selected specimens of the herbaria marked with an asterisk are on loan to Mr. C. Tange (AAU) and could, therefore, not be studied. Although Mr. Tange provided a list of the borrowed collections, we decided against including them in our specimen and distribution listings.

For comments regarding the computer-drawn maps see Puff et al. (1998).

### LECANANTHUS

*Lecananthus* Jack, Mal. Misc. 2 (1822) 83; Roxb., Fl. Ind. (ed. Carey & Wall.) 2 (1824) 319; DC., Prodr. 4 (1830) 620; A. Rich., Mém. (1830) 213; Korth., Nederl. Kruidk. Arch. 2 (1851) 167; Miq., Fl. Ind. Bat. 2 (1857) 153, 199; Ann. Mus. Bot. Lugd.-Bat. 4 (1869) 132; Hook. in Benth. & Hook., Gen. Pl. 2 (1873) 73; Fl. Brit. India 3 (1880) 100; Baill., Hist. Pl. 7 (1880) 454; K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. 4, 4 (1891) 69; King & Gamble [Mat. Fl. Malay Penins. 14] in J. As. Soc. Bengal 72 (1903) 179; Ridl., Fl. Malay Penins. 2 (1923) 57; M.R. Hend., Malayan Nat. J. 6, sect. 1 (1950) 210 [repr. 1974 as Malayan Wild Flow.].

*Woody climbers*, usually epiphytic on tree trunks, with adventitious roots in the internodal and sometimes also nodal regions (not developed on free, aerial shoots); seldom terrestrial. Younger *stems* with 4 distinct, often  $\pm$  wing-like longitudinal ridges. *Leaves* opposite, petiolate, blades  $\pm$  membranaceous (never distinctly leathery), glabrous or variously hairy. *Stipules* interpetiolar, fused below to form a basal sheath and free above or entirely free, (broadly) ovate to broadly triangular, entire or occasionally bifid (sometimes with up to 5 fimbriae) at the tip, basally with colleters on the adaxial side. *Inflorescences* on short, often recurved or elongated, straight peduncles,  $\pm$  globose-capitate to ovoid or elongated-cylindrical; terminal but often seemingly axillary (because the inflorescences are pushed aside by sylleptically growing renewal shoots; sympodial-monochasial branching); many-flowered; subtended by a  $\pm$  dish- to cup-shaped involucre, the latter conspicuous in very young inflorescences (partially enclosing the flower buds) but often hardly discernible at late flowering and fruiting stage (pushed downwards by the ovaries or fruits). *Flowers* heterodistylous. Calyx with a basal tubular part and with indistinct lobes above (often 2 irregular and unequal lobes) or 2 lips of unequal size and shape. Corolla 5- (or 6-)merous, funnel-shaped, the tube usually somewhat longer than the spreading to recurved lobes; outside of corolla glabrous, inside with straight to  $\pm$  curly hairs at or  $\pm$  below the insertion point of the filaments and around the throat, sometimes also short,  $\pm$  curled hairs at the base of the lobes and along the lobe's midrib; lobe apices  $\pm$  hood-like. Stamens 5 (or 6), anthers  $\pm$  linear and  $\pm$  sagittate at base, dorsimedifixed, filaments filiform, short (anthers entirely included in the tube in long-styled morphs) or relatively long (anthers mostly fully exerted in short-styled morphs). Gynoecium bicarpellate, with a common style, densely beset with long ascending hairs, and a bilobed stigma beset with longish papillae; stigma lobes included in the tube in short-styled,  $\pm$  exerted to distinctly exerted in long-styled morphs; ovary bilocular, multiovulate, placentas large, attached to middle of septum. Roof of the ovary with a ring-like, conspicuous, persistent disk. *Fruits* crowned by persistent calyx and disk, baccate, fruit wall soft, parenchymatic, with numerous raphide-containing idioblasts. *Seeds* numerous, small ( $< 1$  mm), laterally compressed,  $\pm$  irregularly shaped (variously angular to suborbicular); exotesta cells rectangular to polygonal, with thickened radial walls; embryos small, embedded in copious endosperm.

Pollen — Small, 20–25  $\mu\text{m}$  (acetolyzed), spheroidal, 3-porate to -brevicolporate, exine microreticulate to perforate, heterobrochate (lumina smaller towards the aperture), without supratectal elements (long-styled morphs) or with supratectal scabrae (short-styled morphs); pollenkitt present. — See Puff & Buchner (1998) for details.

Distribution — Sumatra, Peninsular Malaysia, and Borneo.

#### KEY TO THE SPECIES

- 1a. Inflorescences borne on straight or  $\pm$  straight peduncles, (15–)40–75(–90) mm long; leaves large, (135–)150–235  $\times$  50–80 mm, glabrous . **3. L. peduncularis**
- b. Inflorescences borne on often recurved, short peduncles, (0–)3–9 mm; the leaves variable in size, but usually smaller, 50–175(–200)  $\times$  20–80 mm, glabrous or hairy . . . . . 2

2a. Leaves 50–90 × 20–40 mm; inflorescences ± capitate, 12–13 mm in diam.

..... **2. L. pentander**

b. Leaves (65–)130–175(–200) × (25–)35–80 mm; inflorescences ± capitate to somewhat elongated-cylindrical or ovoid, (10–)15–26(–45) × (10–)15–22 mm

..... **1. L. erubescens**

### 1. *Lecananthus erubescens* Jack — Fig. 1, 2D

*Lecananthus erubescens* Jack, Mal. Misc. 2 (1822) 83; Roxb., Fl. Ind. (ed. Carey & Wall.) 2 (1824) 319; DC., Prodr. 4 (1830) 620; Korth., Nederl. Kruidk. Arch. 2 (1851) 168; Griff., Notul. 4 (1854) 272; Miq., Fl. Ind. Bat. 2 (1857) 153, 199; Ann. Mus. Bot. Lugd.-Bat. 4 (1869) 132; Hook., Fl. Brit. India 3 (1880) 100; King & Gamble [Mat. Fl. Malay Penins. 14] in J. As. Soc. Bengal 72 (1903) 179; Ridl., Fl. Malay Penins. 2 (1923) 57; M.R. Hend., Malayan Nat. J. 6, sect. 1 (1950) 211 & fig. 189 [repr. 1974 as Malayan Wild Flow.]. — Type: ‘found in the interior of Bencoolen’ (ubi?, ?CAL, n.v.).

*Lecananthus fuscescens* Valetton [in Hub. Winkler, Beitr. Kenntn. Fl. Pflanzengeo. Borneo], Bot. Jahrb. Syst. 44 (1910) 552. — Type: ‘SO.-Borneo’ [Kalimantan Tengah], ‘Heidewald vor Djihl’, Winkler [Hubert] 3269 (holo BRSL). — See Critical remarks.

?*Lucinaea sumatrana* Boerfl. & Koord. in Koord.-Schum., Syst. Verz. 2 (1911) 55. — Type: Sumatra, nr Pangkala-dule, 25 m, 26.3.1891, Koorders 22387 (ubi?). — See Critical remarks.

*Woody climbers*, mostly epiphytic on tree trunks (seldom on the ground); *stems* to 4 m (or more?) long, glabrous or occasionally with short, ± straight or curly hairs on younger shoots (old shoots becoming glabrescent). Younger internodes with 4 prominent, longitudinal, often almost wing-like ridges. *Leaves* elliptic-lanceolate to (broadly) ovate, (65–)128–175(–200) × (23–)36–80 mm, ± membranaceous, glabrous or occasionally midrib or entire lower surface (but especially the veins) beset with short, ± straight or curly hairs, venation ± brochidodromous, inconspicuous above, prominent below, with 7–10 pairs of primary lateral veins; petioles 6–13(–15) mm long, glabrous or beset with short hairs. *Stipules* fused below to form a basal sheath and free above, entire or occasionally tips shortly bifid, ovate to broadly triangular, 8–15(–19) × 4–5 mm, glabrous or hairy on the outside; soon deciduous (only present on the youngest shoot portions). *Inflorescences* terminal or pseudo-axillary (pushed aside by sylleptically growing renewal shoots), usually solitary on ultimate branch portions, but occasionally up to 3 (then 1 usually terminal and 2 pseudo-axillary), on short peduncles; ± capitate to cylindrical-elongated, (10–)15–26(–45) × (10–)15–22 mm, many-flowered, subtended by a ± irregular, glabrous or (rarely) hairy involucre, not exceeding in width the diameter of the inflorescence; peduncles 3–8 mm long, typically distinctly recurved (only ± straight in young developmental stages), ± ridged, beset with very short hairs. *Flowers* heterodistylous. Calyx greenish, light lilac-red, (light) violet or purple, tubular below and indistinctly 2-lobed to distinctly 2-lipped (then strongly zygomorphic) above, rather thick to thinnish, ± glabrous or in- and outside sparsely (seldom densely) covered with short hairs; basal tubular part 3–5 mm high, lobes or lips often unequal in size and shape, 1–4 mm long. Corolla white, whitish, or creamy white (pink-lilac tinged in bud), (light) pink or purplish-blue, 5-merous, funnel-shaped; tube 4–5 mm long, lobes lanceolate, 3–4 × 1–2 mm, lobe apices hooded (corollas of long- and short-styled morphs not markedly different in size). Stamens 5, anthers linear, 2 × 1 mm and exerted in short-styled morphs (filaments to 2 mm long), 1.5 × 0.5 mm and included in long-styled morphs (filaments to 1 mm

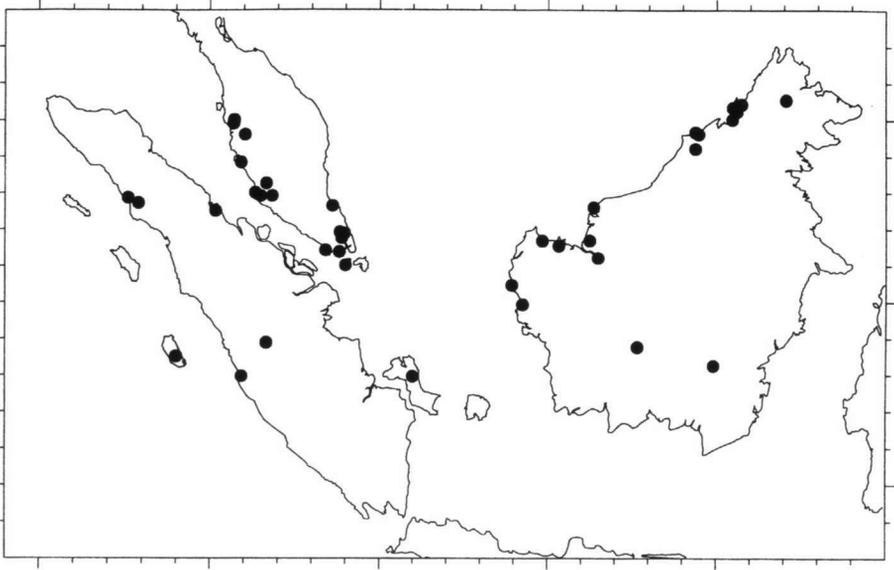


Fig. 1. Distribution of *Lecananthus erubescens* Jack.

long). Style and stigma included in short-styled and exerted in long-styled morphs (c. [1.5] 2 + 1 mm long in the former and c. 6 + 0.5 mm in the latter); style densely beset with long, ascending hairs, stigma lobes with long papillae. Ovary  $\pm$  globose, c. 2–3 mm in diam., glabrous. *Fruits* whitish(-green) when fully mature, crowned by persistent calyx and disk,  $\pm$  globose to ovoidal, 3–4  $\times$  4–5 mm. – See Puff & Buchner (1998: f. 3, 4A, B).

**Pollen** — Small, 20–25  $\mu$ m (acetolyzed), spheroidal, 3-porate to -brevicolporate, exine microreticulate to perforate, heterobrochate, in long-styled morphs without any suprategal elements, sometimes lumina  $\pm$  absent, and in short-styled morphs with  $\pm$  inconspicuous scabrae; pollenkitt present. – See Puff & Buchner (1998: f. 5F, G, H).

**Distribution** — Peninsular Malaysia (Johore, Malacca, Negri Sembilan, Selangor, Perak, Penang), Singapore, Sumatra (plus Siberut and Bangka Is.), and Borneo (Malaysian Borneo: Sarawak and Sabah; Brunei; Indonesian Borneo: Kalimantan Barat and Kalimantan Tengah). Fig. 1.

**Habitat & Ecology** — Apparently confined to swamp forest, peat swamp forest or freshwater swamps; altitude 0–200 m (usually < 100 m). Flowering and fruiting all year round.

**Critical remarks** — The actual type specimen of *L. fuscescens* could not be studied, but Mr. C. Tange of Aarhus University kindly provided a series of colour slides showing details of the holotype collection. It is clear to us, both from the photographs and the original description, that the species cannot be upheld but needs to be included in the variable *L. erubescens* (see also Geographical differentiation and variation, below).

The rather detailed description of '*Lucinaea sumatrana*' seems to indicate that this species is to be included in *L. erubescens*. By and large, the morphological data given 'fit'. The habit description ("erect shrub, 2 m tall"), however, is odd, although

*L. erubescens* may sometimes be terrestrial rather than (typically) epiphytic. With regard to the solitary capitula, the description “[in] pedunculi axillares” is likely to refer to the frequently met pseudo-axillary position of the inflorescences. Stipules bifid at the tip and violet flowers, too, match much better *L. erubescens* than *Schradera* (*Lucinaea*). Finally, also the habitat of ‘*Lucinaea sumatrana*’ (swamp forest, altitude 25 m) is in full agreement with the habitats of *L. erubescens*. As the type specimen was not seen [neither amongst the ‘*Lucinaea*’ (*Schradera*) nor the *Lecananthus* material sent on loan from L] there is, however, still some doubt.

Geographical differentiation and variation — Collections from Peninsular Malaysia often tend to have more reddish leaves than Bornean material; moreover, the leaf blades are frequently relatively broader than in specimens from Borneo (length to width ratio 2:1 vs. 3–4:1). Also involucre and calyx are frequently reddish. ‘Hairy forms’, with indumentum on the (young) shoots, leaves, and sometimes also in the inflorescence region (calyx, seldom also involucre) are known from both Sumatra and Indonesian Borneo (‘*L. fuscescens*’ belongs here).

Calyces are rather variable in shape, size, and indumentum throughout the species’ range (cf. Puff & Buchner (1998: f. 3B, C, E, F, G). They also vary within individual inflorescences, however.

Descriptions of the plant’s habit such as ‘treelet to 4.5 m’ or ‘straggling shrub’, as found on some herbarium labels, are most probably incorrect or misleading although not all collections show adventitious climbing roots on the shoots and the plants are not always epiphytic.

*Specimens studied:*

**MALAYSIA. Peninsular:** Penang: no locality given, *Curtis 1643* (K). — Perak: Hutan Melintang F.R., *Ng FRI 5683* (KEP, L); Bota Kiri F.R., Ipoh, *Shah & Kadim 305* (SING); Assam Kumbong, *Wray 1936* (SING); Pondok Tanjong [F.R.], *Burkill 13241* (SING), *Spare SFN 36223* (GH, K, KEP, SING). — Selangor: Telok F.R., *Kochummen FRI 29026* (K, KEP, L, SING); Bangi Res., *Ahmad, G. 5198* (K, SING); Klang, Bt. Changgang, *Nur SFN 33981* (SING); Kuala Langat, W Klang, *SFN 4111* (SING); Sungai Buloh, Ulu Selangor, *Hardial & Sidek 392* (SING). — Negri Sembilan: Bukit Kandang, *Alvins 7100* (SING). — Malacca (Melaka): no locality given, *Alvins 769* (SING), *Griffith 2784* (W). — Johore: S Sedili, swamp forest, *Corner s.n.* (SING); Pengkalan Raja, Pontian, *Ngadiman SFN 36654* (SING); Kuala Sedili New Road, *Chew 290* (K, SING), *Kadim & Noor 126* (GH, K, L, SING); –, Kota Tinggi, *Shah & Noor 853* (GH, K, L, SING); Mawai–Kuala Sedili New Road, *Sinclair 10554* (SING); Sungai Kayu, *Kiah SFN 31966* (SING); Kg. Hubong, Endau, *Kadim & Noor 318* (SING); Alor Bukit, *Hardial 527* (K, L, SING). — **Borneo:** Sarawak: 1st Div., Kuching, *Brooke 8209* (BM, L), *8635, 9711* (both L); –, Sepatok, *Purseglove & Shah, M. 4392* (K, L, SING); Lundu Distr., S Pirian, *Chai S 18524* (K, L, SAN). 2nd Div., Betong Distr., Saribas F.R., *Anderson S 8523* (K, L, SING); Simanggang, *Brooke 10770* (BM, L); –, Sabu, *Ilias, Munting & Manggi S 51558* (KEP). 4th Div., Baram Distr., Marudi F.R., *Chew 996* (AAU, SING); Batang Baram, *Anderson S 2869* (KEP, SING). 6th Div., Binatang Distr., Sg. Kelepu, Pulau Bruit, *Anderson S 8016* (L); Kelepu, *Brooke 8772* (BM, L, SING). — Sabah: Beaufort Distr., Banting, Hindian F.R., *Karim SAN 80327* (SAN); –, Lumaat, *Amin & Sigin SAN 102757* (SAN); Kuala Penyu Distr., Kawasan Hutan Kepayan, *Sigin SAN 86331* (SAN); Sipitang Distr., Mengalong, Merintaman F.R., *Dewol & Karim SAN 77644* (K, L, SAN); Labuk & Sugut Distr., Telupid, *Kokawa & Hotta 331* (L).

**SINGAPORE.** C. C. Kang, *Woodford s.n.* (W).

**INDONESIA. Sumatra:** Atjeh, Troemon [= Trumon], *Asdat 93* (K, L, SING); –, P.T. Hargas logging concession, S of Sibulussalam-Gelombang rd., *de Wilde & de Wilde-Duyffes 20535* (L); Bila, Labuan-bilik [= Labuhanbilik], Bila R., *Lörzing 14309* (L); Indragiri, Sg. Gareng, Panglong,

*Polak 542* (L); —, Uplands, Retch R., *Buwalda 6984* (K, L, SING); —, Uplands, Kota Baru, *Buwalda 7002, 7003* (both K, L); Riouw, B. Rangat, *Polak 610* (L); 'East Coast', *de Haan 46* (GH, SING); Mentawai Isls., Siberut Isl., *Boden Kloss 14620* (K, SING). — **Bangka:** Sungai Lalang Petaling, *T F B 341* (L). — **Borneo:** Kalimantan Barat: Pasir Pandjang, N of Mempawa, *Polak 713* (L); Pontianak, Poenggoer, Parit Sidik, *Enoh 312* (K, L). — Kalimantan Tengah: upper Katingan R., c. 50–100 km WNW of Tumbang Samba, *Mogea 4188* (L); nr. Djihi [E of Buntok], *Winkler [Hubert] 3269* (BRSL).

BRUNEI. Belait Distr., Badas swamps, *Sinclair & Kadim bin Tassim 10469* (K, L, SING), *Wong 17* (BRUN); —, Seria, *Smythies et al. 5849* (KEP, SING).

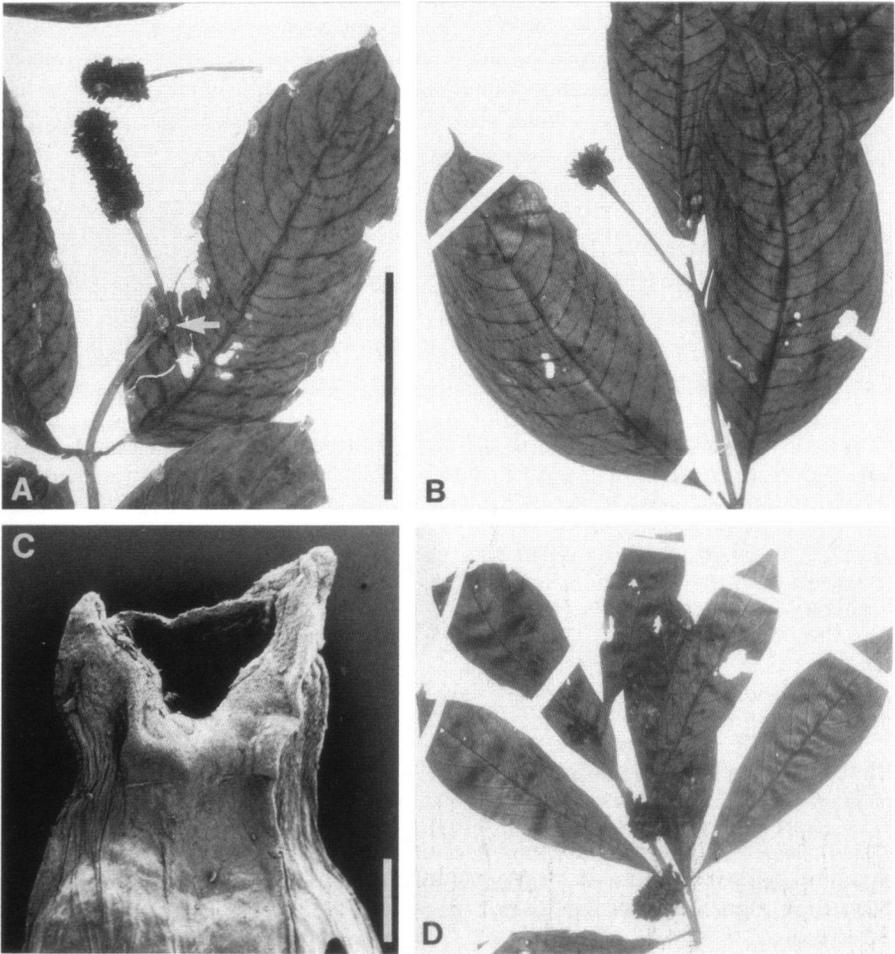


Fig. 2A–C. *Lecananthus peduncularis* Puff (*Sibat ak Luang S 21846*). A & B. Variation in inflorescence shape; in A, the arrow points to the scars of the uppermost leaf pair which has been removed (the peduncle starts above this point); C, SEM of calyx and upper part of ovary. — Fig. 2D. *L. erubescens* Jack (*de Wilde & de Wilde-Duyffes 20535*) showing terminal inflorescence and two inflorescences in a seemingly axillary position due to sympodial-monochasial growth. — Scale bars: 10 cm (A = B = D); 1 mm (C).

## 2. *Lecananthus pentander* (Merr.) Puff, *comb. nov.* — Fig. 3

*Lucinaea pentandra* Merr., Mitt. Inst. Allg. Bot. Hamburg 7 (1937) 286. — Type: 'West Borneo' [Kalimantan Barat], Sungai Bika, 50 m, Jan. 5, 1925, in swamp forest, [Hans] Winkler 1431 (holo HBG; iso HBG).

*Climbing shrubs*, probably epiphytic on tree trunks, with adventitious roots in the internodal and nodal region; *stems* of unknown length, branched, shiny red-brown, glabrous; younger shoots distinctly 4-angled (-ridged). *Leaves* oblong to  $\pm$  elliptic, gradually narrowed to the base and acuminate at the apex, 50–90  $\times$  20–40 mm,  $\pm$  membranaceous, glabrous, venation brochidodromous, inconspicuous above, prominent below, with 6–8 pairs of primary lateral veins; petioles 6–10 mm long, glabrous. *Stipules* fused below to form a basal sheath and free above, tips shortly bifid or with up to 5 fimbriae, ovate to broadly triangular ( $\pm$  deltoid), 4–6  $\times$  4–5 mm, glabrous; soon deciduous (only present on the youngest shoot portions). *Inflorescences* terminal, solitary, subsessile or on short peduncles,  $\pm$  capitate, 12–13 mm in diam., many-flowered, subtended by a  $\pm$  irregular, hairy involucre, not exceeding in width the diameter of the inflorescence; peduncles (0–)5–9 mm long, slightly curved, sparsely beset with short hairs. *Flowers* presumably heterodistylous (only long-styled morph known). Calyx tubular below and 2-lipped above, 4–5 mm high; upper lip with 3, lower with 2 dentate lobes, hairy at their margins. Corolla light pink, 5-merous, funnel-shaped; tube 5 mm long, lobes lanceolate, 3  $\times$  1 mm, lobe apices hooded. Stamens 5, anthers  $\pm$  linear, 2  $\times$  1 mm, included. Stigma lobes spreading, densely beset with long papillae. Ovary  $\pm$  globose, c. 1.5–2 mm in diam., glabrous. Young *fruits* with persistent calyx; fully mature fruits unknown.

Distribution — Indonesian Borneo (Kalimantan Barat); only known from the type. Fig. 3.

Habitat & Ecology — Swamp forest; altitude 50 m. Flowers and young fruits in January.

Critical remark — The species seems to be rather close to the widely distributed and variable *L. erubescens*. More material would be needed to get greater clarity on its status.

## 3. *Lecananthus peduncularis* Puff, *spec. nov.* — Fig. 2A–C, 3

A *Lecanantho erubescens*, inter alia, pedunculis longioribus differt. — Typus: Borneo, Sarawak, Ulu Mayeng, Kakus, basalt hillside, mixed dipterocarp forest, c. 200 m, Aug. 1, 1964, Sibat ak Luang S 21846 (holo K; iso L, SAN).

*Woody climbers*, epiphytic on tree trunks; *stems* of unknown length, glabrous, with corky bark. Young internodes with longitudinal,  $\pm$  wing-like ridges (typically 4; 2 from the bases of opposite petioles, 2 from the median between the petiole bases). *Leaves*  $\pm$  elliptic to ovate or obovate, (135–)150–235  $\times$  50–80 mm,  $\pm$  membranaceous, glabrous, venation eucamptodromous, inconspicuous above, prominent below, with 10 or 11 pairs of primary lateral veins; petioles 6–11(–16) mm long, glabrous. *Stipules* entirely free (not fused below to form a basal sheath), entire at the tip, broadly ovate, 15  $\times$  8 mm, glabrous; caducous (only present on the youngest shoot portions). *Inflorescences* terminal, solitary, long-pedunculate,  $\pm$  cylindrical-elongated or  $\pm$  capitate, (13–)15–28 mm long and (10–)15–18 mm in diameter, many-flowered, subtended

by a small  $\pm$  irregular involucre, not exceeding in width the diameter of the inflorescence; peduncles (15–)40–75(–90) mm long,  $\pm$  straight (sometimes slightly curved, but never distinctly recurved),  $\pm$  ridged, sparsely hairy with very short hairs. *Flowers* heterodistylous. Calyx green to pinkish, tubular below,  $\pm$  distinctly 2-lobed ( $\pm$  zygomorphic) above, 3–4 mm high, rather thick, glabrous. Corolla pale green to pinkish green, 5- (or 6-)merous, funnel-shaped; tube 5–7(–8) mm long, lobes lanceolate, 4–6  $\times$  1–2 mm, lobe apices hooded (corollas of short-styled morphs somewhat larger than those of long-styled morphs). Stamens 5 (or 6), anthers linear, 4–5  $\times$  1 mm and exserted in short-styled morphs (filaments to 4 mm long), 2–3  $\times$  0.5–1 mm and included in long-styled morphs (filaments to 1 mm long). Style and stigma included in short-styled and exserted in long-styled morphs (c. 3 + 3 mm long in the former and c. 6 + 2–3 mm in the latter); style densely beset with long ascending hairs, stigma lobes with relatively long papillae. Ovary  $\pm$  globose, c. 3 mm in diam., glabrous. Young *fruits* with persistent calyx and prominent annular disk; fully mature fruits unknown. – Puff & Buchner (1998: f. 4C).

Pollen — Small, 20–22  $\mu$ m (acetolyzed), spheroidal, 3-porate to -brevicolporate, exine microreticulate, heterobrochate, with supratectal scabrae (c. 0.2  $\mu$ m in diam.); pollenkitt present. Short-styled morph; long-styled morph unknown. – Puff & Buchner (1998: f. 5C, D, E).

Distribution — Only known from Sarawak (4th and 7th Div.). Fig. 3.

Habitat & Ecology — In mixed dipterocarp forest, often near streams or on stream banks; 200–350(–780) m. Flowering and fruiting specimens known from March and July–September.

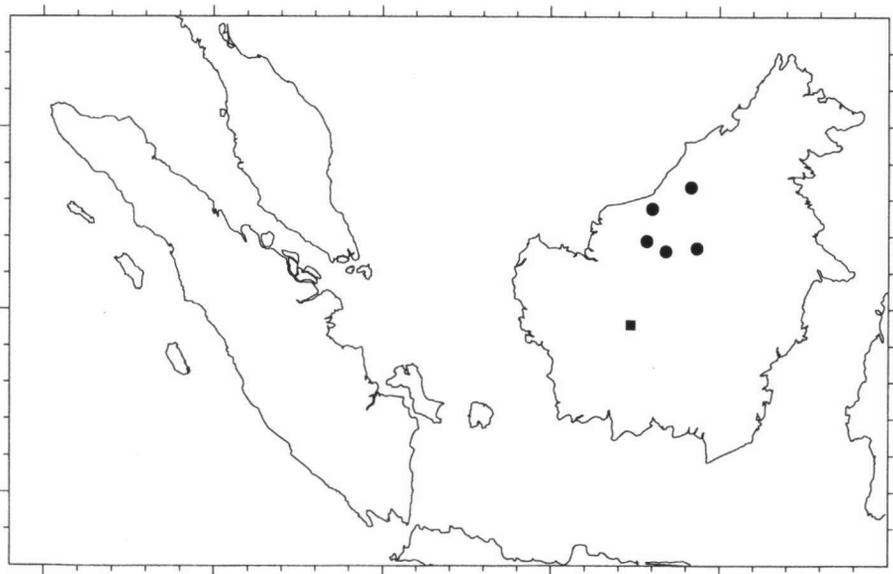


Fig. 3. Distribution of *Lecananthus peduncularis* Puff (dots) and *L. pentander* (Merr.) Puff (square).

**Critical remarks** — A very distinct new species with large leaves and long-pedunculate, typically elongated-cylindrical inflorescences (although inflorescence shape varies; compare Fig. 2A and B). Collections of *L. peduncularis* were discovered amongst unidentified material of Asiatic *Schradera* (syn. *Lucinaea*).

As opposed to the other two species of *Lecananthus*, it does not occur in swamp or peat swamp forest habitats and is recorded from higher altitudes; it may, thus, also be distinct ecologically.

Unlike in the other species of *Lecananthus* (and for that matter, also in the other two genera of the Schradereae, viz. *Schradera* and *Leucocodon*), none of the herbarium specimens investigated show adventitious roots in the internodal region. This, however, may find its explanation in the fact that the collections seen invariably are inflorescence-bearing terminal portions of shoots with few nodes. Typically, adventitious roots are only produced where the epiphyte's shoots are in direct contact with the host tree (i.e., normally on older, vegetative parts of the plants). It seems quite safe to presume that they are also present in *L. peduncularis*.

*Specimens studied:*

**MALAYSIA. Borneo:** Sarawak: 4th Div., Dulit Range, Ulu Tinjar, nr. Long Kapa, *Richards 1171* (K); –, Ulu Mayeng, Kakus [River], *Sibat ak Luang S 21846* (K, L, SAN). 7th Div., Kapit Distr., Bt. Bakak [Bakar?], Ulu Sg. Apah, Sg. Sut, *Chai S 36245* (K, KEP, L); –, Btg. Baleh, Ulu Sg. Entulu, Sg. Mengiong, *B. Lee S 54743* (K), *S 54787* (K, KEP); –, Sg. Penuan, Batang Balui, *Ching [Yii Puan Ching] S 53555* (K, KEP).

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- Puff, C. & R. Buchner. 1998. *Lecananthus* and *Leucocodon*, two genera to be added to the tribe Schradereae (Rubiaceae). *Blumea* 43: 265–286.
- Puff, C., J. Greimler & R. Buchner. 1998. Revision of *Schradera* (Rubiaceae–Schradereae) in Malesia. *Blumea* 43: 287–335.

#### LIST OF COLLECTIONS

(Numbers between brackets refer to the numbers of the accepted species)

- Ahmad 5198 (1) — Alvins 769, 7100 (1) — Amin & Sigin SAN 102757 (1) — Anderson S 1955, S 3016, S 8523 (1) — Asdat 93 (1).
- Boden Kloss 14620 (1) — Brooke 8209, 8635, 8772, 9711, 10770 (1) — Burkill 13241 (1) — Buwalda 6984, 7002, 7003 (1).
- Chai S 18524 (1), S 36245 (2) — Chew 290, 996 (1) — Ching S 53555 (2) — Corner s.n., 28 Aug. 1932 (1).
- Dewol & Karim SAN 77644 (1).
- Enoh 312 (1).
- de Haan 46 (1) — Hardial 527 (1) — Hardial & Sidek 392 (1).
- Ilias, Munting & Manggi S 51558 (1).

- Kadim & Noor 126, 318 (1) — Karim SAN 80327 (1) — Kiah SFN 31966 (1) — Kochummen FRI 29026 (1) — Kokawa & Hotta 331 (1).  
Lee S 54743, S 54787 (2) — Lörzing 14309 (1).  
Mogea 4188 (1).  
Ng FRI 5683 (1) — Ngadiman SFN 36654 (1) — Nur SFN 33981 (1).  
Polak 542, 610, 713 (1) — Purseglove & Shah 4392 (1).  
Richards 1171 (2).  
Shah & Kadim 305 (1) — Shah & Noor 853 (1) — Sibat ak Luang S 21846 (2) — Sigin SAN 86331 (1) — Sinclair 10554 (1) — Sinclair & Kadim bin Tassim 10469 (1) — Smythies et al. 5849 (1) — Spare SFN 36223 (1).  
'T F B' 341 (1).  
de Wilde & de Wilde-Duyfjes 20535 (1) — Winkler [Hans] 1431 (2) — Woodford s.n., 31 May 1894 (1) — Wray 1936 (1).