
New Taxa and Combinations in Moraceae and Cecropiaceae from Central and South America

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ABSTRACT. Taxonomic studies of Moraceae and Cecropiaceae of Central America and the Andean region led to establishment of the following new taxa and combinations in Moraceae: *Brosimum multinervium* C. C. Berg, *Ficus carchiana* C. C. Berg, *F. cotinifolia* Kunth var. *hondurensis* (Standley & L. O. Williams) C. C. Berg, *F. osensis* C. C. Berg, *F. rieberiana* C. C. Berg, *Maquira guianensis* Aublet subsp. *costaricana* (Standley) C. C. Berg, *Naucleopsis capirensis* C. C. Berg, *N. herrerensis* C. C. Berg, *N. humilis* C. C. Berg, *N. naga* Pittier subsp. *meridionalis* C. C. Berg, *N. straminea* C. C. Berg, *N. ulei* (Warburg) Ducke subsp. *puberula* C. C. Berg, *N. velutina* C. C. Berg, *Pseudolmedia glabrata* (Liebmann) C. C. Berg, *Sorocea jaramilloi* C. C. Berg, *S. pubivena* Hemsley subsp. *oligotricha* (Akkermans & C. C. Berg) C. C. Berg, *S. pubivena* Hemsley subsp. *hirtella* (Mildbraed) C. C. Berg, *S. ruminata* C. C. Berg, *S. sprucei* (Baillon) Macbride subsp. *subumbellata* C. C. Berg; and in Cecropiaceae: *Cecropia annulata* C. C. Berg & P. Franco, *C. heterochroma* C. C. Berg & P. Franco, *C. puberula* C. C. Berg & P. Franco, *C. tacuna* C. C. Berg & P. Franco, *Coussapoa david-smithii* C. C. Berg, and *C. villosa* Poeppig & Endlicher subsp. *polycephala* C. C. Berg. For *Ficus intramarginalis* (Liebmann) Miquel a lectotype is designated.

In connection with floristic treatments (*Flora Mesoamericana* and the *Flora of Ecuador*), a revision of the genus *Cecropia*, and less specific studies on Moraceae and Cecropiaceae of the Andean region, several new taxa have been found in the material studied. Some new combinations have to be made in addition to those of *Cecropia*, *Coussapoa*, and *Pourouma* recently published in the *Flora of Ecuador* (Berg & Franco, 1993).

MORACEAE

1. ***Brosimum multinervium*** C. C. Berg, sp. nov.
TYPE: Ecuador. Pastaza: road Coca–Auca, ca.

115 km S of Coca, 4–6 km S of Río Tigüino, 22–28 Feb. 1989 (infl.), Zak 3955 (holotype, QCNE; isotype, BG). Figure 1.

Brosimo parinarioidi et *B. utili* affinis, divergens ab utraque venis lateralibus magis numerosis.

Tree up to 40 m tall. Leafy twigs 3–5 mm thick, sparsely to rather densely brown-puberulous to whitish-pubescent. Lamina coriaceous, elliptic to oblong to (sub)ovate, 12–30 × 6–19 cm, apex shortly and abruptly acuminate, base cordate to truncate (to obtuse), margin entire, often ± revolute; upper surface puberulous on the midrib, lower surface densely brown-puberulous to -subvelutinous on the veins; lateral veins (30–)40–50 pairs, often some of them furcate, tertiary venation for the greater part scalariform; petiole 0.5–1.5 cm long, densely brown-puberulous, epidermis flaking off; stipules 4.5–9 cm long, densely brown-puberulous to brown- to whitish-pubescent. Inflorescences solitary in the leaf axils, initially deflexed; peduncle 2–6.5 cm long, the lower part sparsely puberulous, the upper part densely minutely puberulous and with a few bracts, the uppermost part broadened; staminate inflorescences discoid to subturbinate, ca. 1 cm diam.; perianth lacking (?); stamen 1, filament ca. 0.5 mm long, anther ca. 0.2 mm long; pistillate inflorescences subglobose to subturbinate, 0.8–1.2 cm diam., with a single pistillate flower in the center; stigmas 1–2 mm long; bracts ca. 1 mm diam., minutely puberulous.

This new species is related to *Brosimum parinarioides* Ducke and *B. utile* (HBK) Pittier. It can be easily recognized by the great number of lateral veins ((30–)40–50 pairs). In the two related species the number of lateral veins varies between 12 and 32.

Paratypes. ECUADOR. **Pastaza:** as the type locality, 7–9 Jan. 1989 (♀), *Hurtado et al.* 1300 (BG, MO, QCNE),

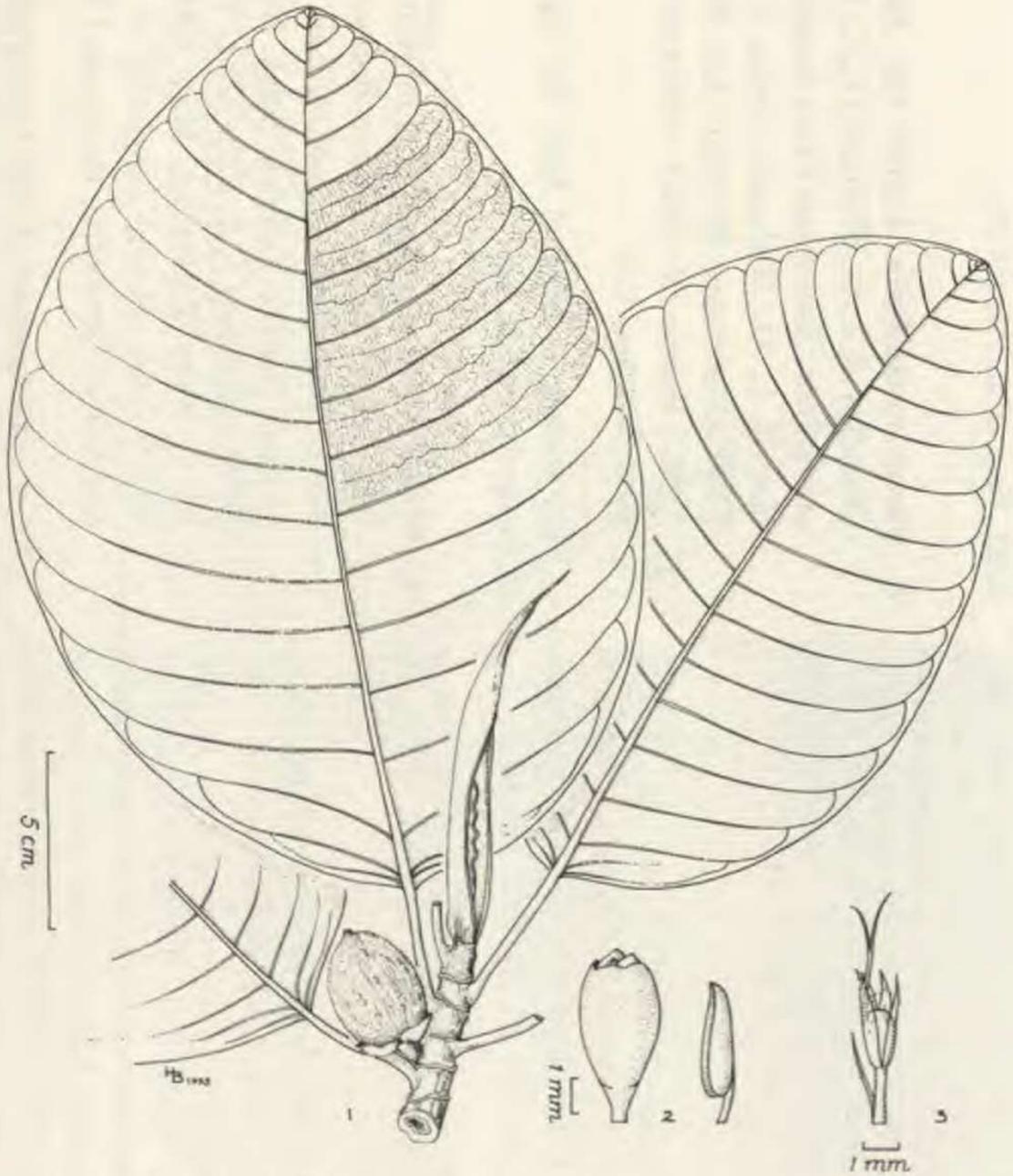
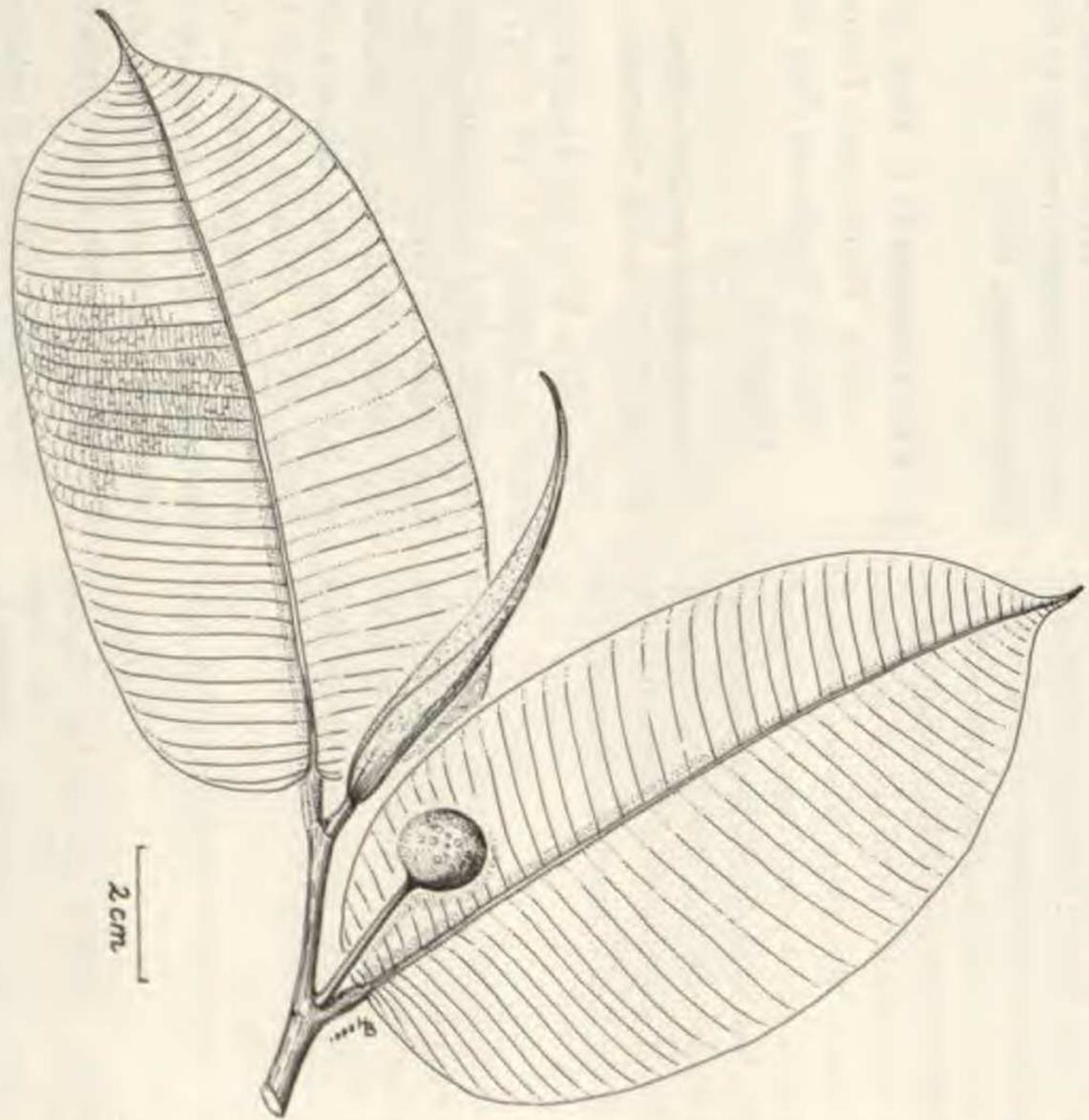


Figure 1 (left). *Brosimum multinervium* C. C. Berg. Leafy twig with inflorescence (Hurtado et al. 1300). Figure 2 (right). *Ficus carchiana* C. C. Berg. —1. Leafy twig with inflorescence (Rubio et al. 661). —2. Staminate flower and stamen (Pennington et al. 10501). —3. Long-styled pistillate flower and interfloral bract (Pennington et al. 10501).

26–31 Jan. 1989 (st), *Neill et al.* 8789 (BG, QCNE), 24 May 1989 (♀), *Rubio* 131 (BG, QCNE), 22–28 Feb. 1989 (♀), *Zak* 3976 (QCNE) and 4005 (QCNE), 1–9 Apr. 1989 (♀), *Zak & Rubio* 4244 (BG, QCNE) and 4349 (BG, QCNE); road Coca–Auca, same but 120 km S of Coca, 17 July 1989 (♂), *Gudiño* 62 (BG, QCNE). **Sucumbios:** Durano, 30 Apr. 1986 (st), *Cerón* 286 (BG, QAME). **PERU.** **Ucayali:** prov. Coronel Portillo, San Alejandro, 6 Dec. 1973 (st), *Ceijos Bellido* 1a (BG); prov. Coronel Portillo, Carretera Marginal, 22 km S of km 86, 11 Feb. 1981 (♀), *Gentry et al.* 31198 (U).

2. *Ficus carchiana* C. C. Berg, sp. nov. TYPE: Ecuador. Carchi: below Maldonado, 1300 m, 9 Oct. 1982, *Pennington et al.* 10501 (holotype, QCA; isotypes, BG, K, QCNE). Figure 2.

Ceteris speciebus consubgeneribus cum stipulis longis (ca. 10 cm) distinguenda, paginis latioribus et bracteis basalibus grandibus.

Tree up to 25 m tall. Leafy twigs 8–10 mm thick, glabrous. Lamina coriaceous, elliptic to ovate, 18–30 × 11–21 cm, apex obtuse to subacute to subacuminate, base rounded to subcord(ul)ate; upper surface glabrous, lower surface with sparse brown elongate pluricellular hairs on (the lower parts of the) main veins, white capitate pluricellular hairs in the areoles; lateral veins 14–20 pairs, tertiary venation reticulate; petiole 3–4.5 cm long, glabrous; stipules 10–11 cm long, glabrous, drying dark brown. Figs solitary in the leaf axils, subsessile; basal bracts 3, ca. 10–12 mm long; receptacle ellipsoid to subglobose, when dry ca. 3.5–4 × 2–3 cm, in fruit up to 5 × 4.5 cm (when fresh 6.5 × 5.5 cm), puberulous to subhispidulous; wall rather thick; ostiole ca. 1 mm diam. in plane or apiculate apex of the receptacle. Staminate flowers pedicellate; perianth tubular, ca. 3.5 mm long, 3–4-lobed, glabrous. Pistillate flowers pedicellate or sessile; tepals 4, free, lanceolate, ca. 2.5 mm long, sparsely minutely puberulous; stigmas 2. Interfloral bracts numerous, lanceolate, 2–2.5 mm long, sparsely minutely puberulous.

Ficus carchiana belongs to subgenus *Pharmacosycea*. It can be distinguished from other species of this subgenus by the broad and thickly coriaceous leaves and the long stipules, both drying brownish instead of greenish, as often occurs in subgenus *Pharmacosycea*.

The species is apparently a component of submontane wet forest.

Paratypes. PANAMA. **Darién:** Serranía del Darién, trail Cerro Mali–Río Pucuro, ca. 1200 m, 20 July 1976 (st), *Gentry et al.* 16833A (MO). COLOMBIA. **Nariño:** La Planada Reserve, 7 km from Chucunes, 1800 m, 22 Dec. 1987, *Gentry et al.* 59733 (MO). ECUADOR. **Carchi:** trail Chical–Maldonado, 1250–1400 m, 26 Sep. 1979, *Gentry*

et al. 26618 (BG, QCA). **Esmeraldas:** cantón Esmeraldas, 10 km SW of Lita, 800 m, 10 Sep. 1990, *Rubio et al.* 661 (BG, MO, QCNE); Alto Tambo, near Lita, 13 Apr. 1992, *Tipaz et al.* 788 (QCNE).

3. *Ficus cotinifolia* Kunth var. ***hondurensis*** (Standley & L. O. Williams) C. C. Berg, comb. et stat. nov. Basionym: *Ficus hondurensis* Standley & L. O. Williams, *Ceiba* 1: 78. 1950. TYPE: Honduras. Morazán: Las Mesas, 1 Jan. 1946, *Valerio R.* 3674 (holotype, EAP not seen; isotype, US).

This variety is distinct from the typical variety in the pedunculate figs.

4. *Ficus intramarginalis* (Liebmann) Miquel, *Ann. Mus. Bot. Lugduno-Batavum* 3: 297. 1867. *Urostigma intramarginale* Liebmann, *Kongel. Danske Vidensk. Selsk. Naturvidensk. Math. Aft., Ser. 5, 2: 320.* 1851. TYPE: Costa Rica. Near Turrialba, May 1847, *Oersted* 14317—the element consisting of a leafy twig and leaves (lectotype, designated here, C).

As a consequence of the lectotypification, the name will be transferred into the synonymy of *Coussapoa villosa* Poeppig & Endlicher, in accordance with the suggestion by Standley (1937). The other part of the type collection, a leafless twig with some figs, probably belongs to *Ficus turrialbana* W. Burger (Burger, 1977).

5. *Ficus osensis* C. C. Berg, sp. nov. TYPE: Costa Rica. Puntarenas: Punta Banco, 22 Aug. 1988 (fl), *Chavarría Díaz* 307 (holotype, MO). Figure 3.

Fico americanae probaliter affinis, a qua differt stipulis satis longioribus et ficis subsessilis.

Tree up to 30 m tall. Leafy twigs 1.5–3 mm thick, glabrous. Lamina 6.5–12 × 1.7–4.2 cm, oblong to lanceolate, apex acuminate, base obtuse; both surfaces glabrous; lateral veins 10–16 pairs, the basal pair unbranched, tertiary venation reticulate; petiole 0.4–1.8 cm long; stipules 0.9–2 cm long, glabrous, drying blackish to dark brown. Figs in the leaf axils; peduncle up to ca. 0.2 mm long; basal bracts 2, 1.5–2 mm; receptacle 0.6–0.7 cm diam. (when dry), globose, glabrous, at maturity green (?); ostiole ca. 1.5 mm diam., umbonate.

Ficus osensis belongs to subgenus *Urostigma* and is probably related to *F. americana* Aublet, from which it differs in its leaf venation, the relatively long stipules, and the subsessile figs.

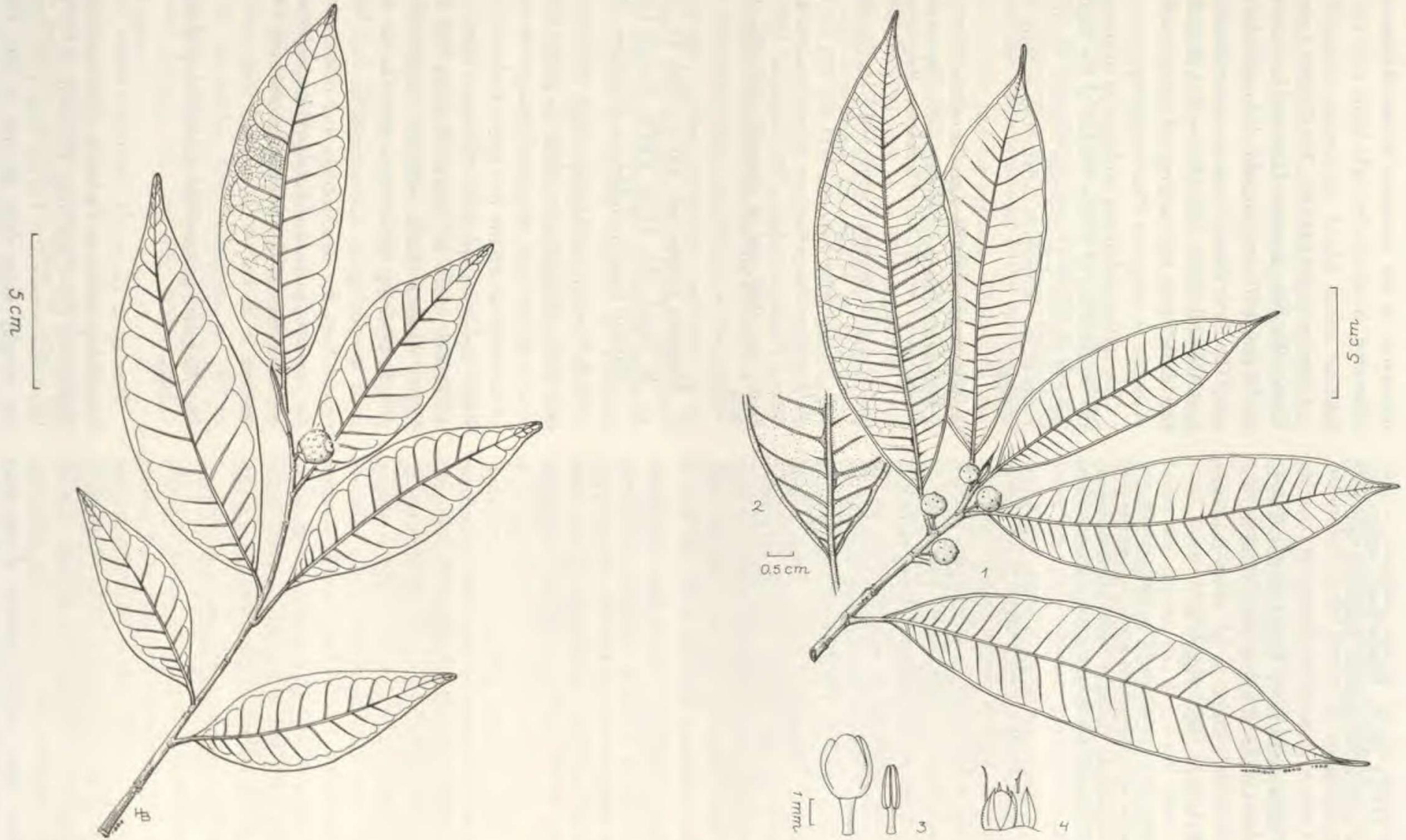


Figure 3 (left). *Ficus osensis* C. C. Berg. Leafy twig with inflorescence (Harmon 148). Figure 4 (right). *Ficus rieberiana* C. C. Berg. —1. Leafy twig with inflorescences (Rubio et al. 1068). —2. Glandular spots (Rubio et al. 1068). —3. Staminate flower and stamen (Rubio et al. 1068). —4. Long-styled pistillate flower, interfloral bract, style, and stigma of short-styled pistillate flower (Rubio et al. 1068).

The state of the type specimen did not allow dissection of the fig to describe the floral structures.

Paratype. COSTA RICA. **Puntarenas:** cantón Osa, Campanario o Playa San Josecito, Sierpe, 13 Oct. 1990 (st), *Harmon 148* (MO).

6. *Ficus rieberiana* C. C. Berg, sp. nov. TYPE: Ecuador. Carchi: Reserva Awa, 1500 m, 16–30 Nov. 1990, *Rubio et al. 1068* (holotype, QCNE; isotype, BG). Figure 4.

Ceteris speciebus consubgeneribus distinguenda, paginis chartaceis vel subcoriaceis subter indumentis densis; vena submarginali distincta venas laterales connectenti; maculis glandulosis ceraceis irregulariter formatis et/vel locatis.

Tree up to 25 m tall. Leafy twigs 2–4 mm thick, white hirtellous. Lamina chartaceous to subcoriaceous, oblong to lanceolate to subobovate, 6–24 × 2–9 cm, acuminate to subcaudate, base acute to subobtuse; upper surface glabrous, lower surface ± densely white hirtellous to subtomentose on the veins, ± sunken capitate pluricellular hairs in the areoles; lateral veins ca. 15–25 pairs, connected by rather distinct submarginal veins, lower lateral veins rather weak and usually running perpendicular to the midrib, tertiary venation reticulate; waxy glandular spots irregularly extended along the midrib, or (also) additional spots up to the 5th pair of lateral veins; petiole 0.7–2.5 cm long, hirtellous; stipules 1–2.5(–4) cm long, sparsely or densely hairy. Figs solitary or in pairs in the leaf axils; peduncle 0.3–0.6 cm long, sparsely puberulous; basal bracts 3, ca. 1–1.5 mm long, glabrous; receptacle when dry ca. 0.8–1.2 cm diam., often very short (= ca. 1 mm long) stipitate, puberulous to subhirtellous, maculate; ostiole 0.5–1 mm diam. in the apiculate apex of the receptacle. Staminate flowers pedicellate; tepals 4, ca. 2.5 mm long, basally connate, glabrous; stamens 2, anthers lanceolate to oblong, ca. 1.8 mm long. Pistillate flowers pedunculate or sessile; tepals 4, ca. 1.5 mm long, basally connate, glabrous; stigma 1, or in short-styled flowers sometimes a very short second stigmatic branch. Interfloral bracts few, oblong to lanceolate, ca. 1.5 mm long, glabrous.

Ficus rieberiana belongs to subgenus *Pharmacosycea*. It can be distinguished from other species of this subgenus by the rather dense indumentum on the veins of the lower surface of the chartaceous to subcoriaceous lamina and the distinct submarginal veins connecting the lateral veins, and irregular number, shape and/or position of the waxy glandular spots along the midrib beneath. Species of subgenus *Pharmacosycea* normally have two sim-

ilar glandular spots at the base of the midrib beneath. A characteristic feature of subgenus *Pharmacosycea* is the presence of two stigmas; in *F. rieberiana*, however, the style bears only one stigma.

Gentry et al. 24343 (BG, HUA) [from Colombia. Chocó: Río Yuto, between Lloró and La Vuelta, 100 m, 18 Jan. 1979 (st)] probably belongs to this species. The lower lateral veins are somewhat different from the collections listed below and, according to the label, it has figs turning red, an unusual phenomenon in subgenus *Pharmacosycea*.

The epithet *rieberiana* is chosen to commemorate the contribution of Bjarne Rieber to the establishment of university greenhouse research facilities for *Ficus* at the Norwegian Arboretum at Store Milde, Norway.

Paratypes. ECUADOR. **Carchi:** cantón Tulcan, Tobar Donoso, 650–1000 m, 19–28 June 1992, *Tipaz et al. 1358* (QCNE) and *1546* (QCNE). **Pichincha:** Maquipucuna, 5 km E of Nanegal, 1550 m, 11 Feb. 1991 (st), *Gentry et al. 73216* (MO); Reserva Forestal ENDESA, Río Silanche, 10 km N of km 113 on road Quito–Puerto Quito, 650–700 m, 7 Dec. 1984, *Jaramillo 7411* (GB, MO, NY, QCA); old road Quito–Santo Domingo de los Colorados, km 59, Reserva Florística-Ecológica “Río Guajalito,” 1800–2000 m, 24 Sep. 1988, *Zak & Jaramillo 3829* (BG, JUAM, MO).

7. *Maquira guianensis* Aublet, Hist. Pl. Guiane 2, Suppl.: 36. 1775. TYPE: French Guiana. Without locality, *Aublet s.n.* (holotype, BM).

In the revision of *Maquira* (Berg, 1972) five species were distinguished within the genus. The two closely related taxa, *M. guianensis* and *M. costaricana*, could be readily told apart, both morphologically and geographically. However, more recent collections made in western Ecuador and in the Upper Amazon Basin reduced considerably the geographical gap between the two taxa, as well as their morphological distinctness, as can be perceived from the descriptions and distributions of the two taxa presented below. These aspects support treatment of the two taxa at the rank of subspecies.

7a. *Maquira guianensis* Aublet subsp. **guianensis**

Tree up to 25 m tall. Involucral bracts densely brownish puberulous. Peduncle of the staminate inflorescence 0.5–2 cm long. Peduncle of the pistillate inflorescence 0.5–1.6 cm long; pistillate flowers usually more than 20 (up to 50). Fruiting perianth subobovoid, often ± distinctly ribbed, brown velutinous, with a ± truncate apex.

Distribution. Guianas, eastern Venezuela (Bolívar), and Amazonian Brazil (Amapá, Pará, Mato Grosso, and Roraima).

7b. *Maquira guianensis* Aublet subsp. *costaricana* (Standley) C. C. Berg, comb. et stat. nov.
Basionym: *Perebea costaricana* Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 18: 390. 1937.
Maquira costaricana (Standley) C. C. Berg, Acta Bot. Neerl. 18: 463. 1969. TYPE: Costa Rica. Limón: near Guápiles, *Standley 37037* (holotype, US).

Tree up to 15(-30) m. Involucral bracts (rather) sparsely whitish puberulous. Peduncle of the staminate inflorescence 0.2-0.8 cm long. Peduncle of the pistillate inflorescence up to 0.8 cm long; flowers ca. 10-35; fruiting perianth ellipsoid to obovoid, not or hardly ribbed, (sub)glabrous or sparsely to densely yellowish puberulous, with an obtuse to rounded apex.

Distribution. Nicaragua through western Colombia to western Ecuador, and in the Upper Amazon Basin, extending to eastern Venezuela (Bolívar).

In western Ecuador the fruiting perianth of *Maquira guianensis* subsp. *costaricana* is often sparsely to densely yellow puberulous, and some of the specimens from this area (Río Palenque Biological Station) have been distributed under the name *M. grandis* Gentry. In Central America the pistillate inflorescences often contain more than 20 flowers, while in western Ecuador and east of the Andes the inflorescences usually contain less than 20.

In Central America and western Colombia, the trees appear to start flowering when small, a feature shared with some other species of the same tribe, e.g., *Helicostylis tomentosa* (Poeppig & Endlicher) Rusby and *Perebea angustifolia* (Poeppig & Endlicher) C. C. Berg.

8. *Naucleopsis capirensis* C. C. Berg, sp. nov.
TYPE: Panama. Panamá: W of Interamerican Hwy., near Capira, ca. 60 km W of Panama City, on road to Cerro Campana, ca. 800 m, 21 Mar. 1985 (♂), *McPherson 6913* (holotype, MO; isotypes, BG, BM, CR, MEXU, PMA). Figure 5.

Naucleopsis nagae affinis, a qua differt e.g. absentia bractearum in pedunculis staminarum inflorescentiarum, sepalis brevioribus pistillatorum florum et stipulis brevioribus.

Tree up to 15 m tall. Leafy twigs 2-3 mm thick, (sparsely) puberulous, periderm flaking off. Lamina

oblong, (5-)8-15(-21) × (1.7-)3-5.5(-7.5) cm, coriaceous, apex acuminate to subcaudate, base obtuse to rounded, margin (in dry material) often ± revolute; upper surface glabrous (or sparsely puberulous at the base of the midrib), lower surface glabrous or sparsely puberulous on (the base of) the midrib; lateral veins 10-16 pairs, tertiary venation reticulate; petiole 0.2-0.8 cm long, epidermis flaking off; stipules 0.3-1 cm long, puberulous, caducous. Staminate inflorescences in the leaf axils and below the leaves, ca. 1-1.5 cm diam.; peduncle 0.2-0.3 mm long, not bracteate; involucral bracts in 4-5 series, broadly ovate to semicircular to suborbicular, the outer ones minutely puberulous, the inner ones only ciliolate; perianth ca. 2 mm long, tepals 2-7, often ± cucullate, minutely puberulous in the upper part; stamens 3-5, filaments 0.6-0.8 mm long, anthers oblong to elliptic, 0.7-1 × 0.3-0.4 mm. Pistillate inflorescences 1.5-3 cm, in fruit (3-)5.5-9 cm diam., sessile or peduncle up to 0.6 cm long; involucral bracts in 6-8 series, broadly to narrowly ovate, minutely puberulous to submuriculate, the inner ones up to 1.5 cm long; flowers numerous; free parts of the tepals spinelike to pyramidal, minutely puberulous to submuriculate; style 2-5 mm long, stigmas filiform, 4-7 mm long. Infructescences 4-7(-10) cm diam., free parts of the tepals up to 1 cm long.

Paratypes. COSTA RICA. **Alajuela:** Reserva de Arenal, Río Peñas Blancas, Quebrada Aguagata, Finca "Villalobos," 1000 m, 20 Apr. 1990 (st), *Bello et al. 2218* (MO); Reserva Forestal San Ramón, Campamento Río Lorencito, 900-1000 m, 2 Sep. 1989 (st), *Gómez-Laurito 11828* (F); San Carlos, Peñas Blancas, 10 July 1985 (♀ fl-fr), *Haber & Bello C. 1960* (BG, MO); Reserva Biológica Monteverde, Río Peñas Blancas, 15 May 1987 (♀ fl), *Haber & Bello 7033* (BG), 13 June 1987 (♀ fr), *Haber & Cruz 7221* (MO); Reserva Biológica Monteverde, Finca "Novo," 23 July 1987 (♀ fr), *Haber & Bello 7339* (BG); Reserva Biológica Monteverde, Brillante, 1500 m, 8 Sep. 1987 (♀ fr), *Haber & Lawton 7507* (MO); Upala, Bijagua El Pilón, Cerro La Carmela, 700 m, 8 July 1988 (♀ fl-fr), *Herrera 2018* (BG, F, MO, TEX). **Heredia:** Parque Nacional Braulio Carillo, Estación Magsay, 16 June 1991 (st), *Aguilar 167* (MO). **Guanacaste:** Parque Nacional Guanacaste, Estación Mengo, Volcán Cacao, 1400 m, 14 July 1989 (♀ fr), *II INBIO 176* (BG, MO). **Puntarenas:** 1 mi. due S of San Vito de Java, ca. 1150 m, 18 Aug. 1967 (♂), *Raven 21897* (BG, F, MO, PMA). PANAMA. **Darién:** trail from Cana to Colombian border, Río Setigandí, 19 Apr. 1980 (st), *Gentry et al. 28590* (MO); Cerro Campamiento, E of Tres Bocas, Cuasi-Cana trail, 29 Apr. 1968 (♀ fl-fr), *Kirkbride & Duke 1226* (MO, NY). **Panamá:** trail Zamora-Campana National Park, 14 May 1992 (♀ fl-fr), *Correa 8911* (SCZ); Cerro Campana, above Su-Lin Hotel, 16 Sep. 1971 (♀ fr), *Gentry 1854* (MO).

The cited collections from Costa Rica and Panama are quite uniform. Several specimens from Co-

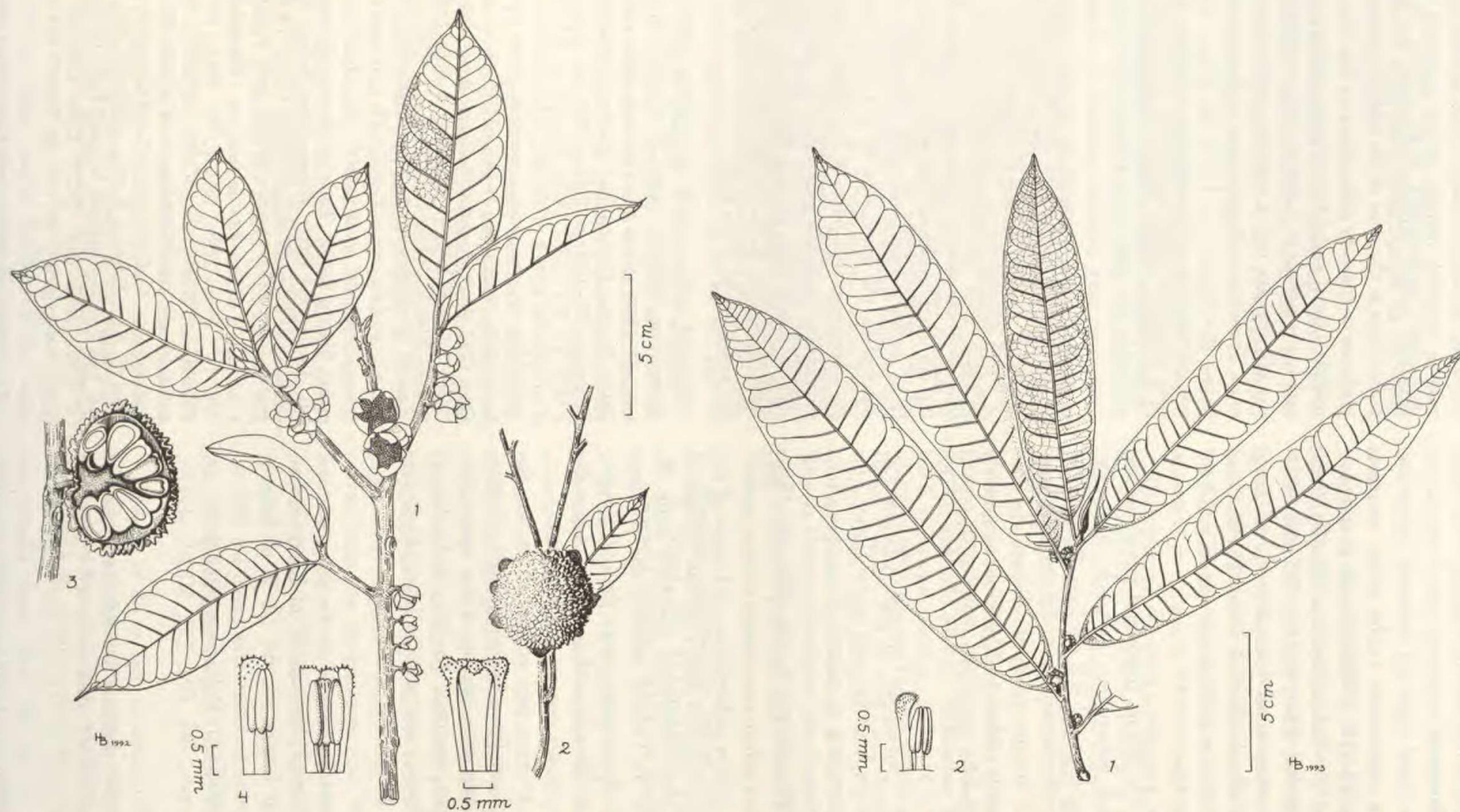


Figure 5 (left). *Naucleopsis capirensis* C. C. Berg. —1. Leafy twig with staminate inflorescences (McPherson 6913). —2. Leafy twig with pistillate inflorescence (Haber et al. 1960). —3. Infructescence (Haber et al. 1960). —4. Staminate flower and stamens (McPherson 6913). Figure 6 (right). *Naucleopsis herrerensis* C. C. Berg. —1. Leafy twig with staminate inflorescences (Bernardi 16201). —2. Tepal and stamen (Bernardi 16201).

lombia and Ecuador probably belong to this species and may represent two subspecies:

COLOMBIA. **Antioquia:** mun. Frontino, cgto. Nutibara, Río Cuevas, 1800–2000 m, 17 Mar. 1984 (♂), *D. Sánchez et al.* 60 (BG, MEDEL), 1700 m, 18 Mar. 1985 (♀ fr), *D. Sánchez et al.* 166 (BG, MEDEL); mun. Frontino, vrda. Venados, Parque Nacional Natural "Las Orquideas," 880 m, June 1988 (♂ juv.), *H. Triana et al.* 56 (COL). These specimens differ from the Central American ones in: (1) the trees becoming up to ca. 35 m tall, (2) the fully mature infructescences becoming probably about 10 cm diam., with the free parts of tepals becoming up to 2.5 cm long, and (3) the fruits ca. 2.5 × 1.5 cm. The stigmas are conical and similar to those found in the collections cited below. The petiole can be up to 1.5 cm long. The staminate inflorescences are subsessile.

COLOMBIA. **Nariño:** mun. Barbacoas, cgto. Altaquer, vrda. El Barro, Reserva Natural Río Nambí, 1325 m, 5 Dec. 1993 (st), *Betancur et al.* 4631 (COL). **Valle:** Alto Río Anchicayá, Yatacué, 17 July 1984 (♀ fl), *Gentry & Monsalve* 48260 (BG, JUAM, MO). ECUADOR. **Carchi:** Awá Reserve, Gualpí Chico area, 1330 m, 20 Jan. 1988 (♀ fl-fr), *Hoover et al.* 2827 (BG, QCA); cantón Tulcan, Gualpí Alto, 1800 m, 15–28 June 1991 (♂), *Rubio et al.* 1723 (QCNE), (♀ fl-fr), *Rubio et al.* 1746 (QCNE); cantón Tulcan, Reserva Indígena Awá, Gualpí Medio, 900 m, 21 May 1992 (♀), *Quelal et al.* 576 (QCNE); cantón Tulcan, Tobar Donoso, 650–1000 m, 19–28 June 1992 (♂), *Tipaz et al.* 1309 (QCNE), (♀ fr), *Tipaz et al.* 1362 (QCNE). **Carchi/Esmeraldas:** near Lita, 20 May 1987 (♀ fl-fr), *van der Werff* 9525 (BG, MO, QAME) and 9527 (AAU, BG). **Esmeraldas:** cantón San Lorenzo, Reserva Indígena Awá, Río Mira, 10 km W of Alto Tambo, 16–26 Mar. 1991 (♂), *Rubio et al.* 1268 (BG, QCNE); cantón San Lorenzo, Reserva Indígena Awá, Ricaurte, Balsareño, Río Palabí, 15–29 Apr. 1992 (st), *Rubio et al.* 1409 (BG). These specimens differ from the Central American ones in: (1) the free parts of the tepals being distinctly broadened at the base, (2) the conical stigmas, (3) the narrower lamina (lanceolate to oblong), and (4) longer petioles. In addition, the inflorescences and infructescences appear to be smaller, down to 0.5 cm and ca. 2.5 cm in diameter.

Further exploration may provide material eliminating the morphological discontinuities between the groups of specimens cited above.

Naucleopsis capirensis is related to *N. naga*, from which it differs, e.g., in the absence of bracts on the peduncle of the staminate inflorescences, the shorter tepals of the pistillate flowers, and the shorter stipules.

9. ***Naucleopsis herrerensis*** C. C. Berg, sp. nov.
TYPE: Peru. Loreto: prov. Requena, Jenaro Herrera, arboretum (tree 7/65), Aug.–Sep. 1976 (♂), *Bernardi* 16201 (holotype, G; isotype, BG). Figure 6.

Folia margine in parte plus minusve revoluta, involuto basi versus; venae laterales 12–26 binatae; stipulae 1–1.8 cm longae.

Tree up to ca. 25 m. Leafy twigs 1.5–3.5 mm

thick, sparsely to densely appressed-puberulous, periderm (in older parts) flaking off. Lamina lanceolate, 6.5–24 × 1.3–6 cm, coriaceous, apex acuminate to subacute, acumen often acute, base acute to obtuse, margin partly ± revolute, but always at the base involute; both surfaces glabrous; lateral veins 12–26 pairs, tertiary venation reticulate or partly scalariform; petiole 0.5–1.8 cm long, appressed-puberulous, epidermis often ± flaking off; stipules 1–1.5 cm long, (brownish) appressed-puberulous. Staminate inflorescences on distinct spurs in the leaf axils, up to 6 together, ca. 1 cm diam.; peduncle 0.2–0.3 cm long; involucre bracts in ca. 5 series, broadly ovate to semicircular to suborbicular, appressed-puberulous; perianth 1.5–2 mm long, tepals 4–5, free or basally connate; stamens 3–4, filaments 0.3–0.4 mm long, anthers oblong to elliptic, 0.6–0.8 × 0.3–0.4 mm. Pistillate inflorescences (juvenile!) below the leaves. Infructescences (immature!) ca. 6 cm diam., sessile; involucre bracts in ca. 6 series, broadly to narrowly ovate, puberulous; flowers numerous; free parts of the tepals aculeate to subulate, up to 1 cm long, minutely puberulous to subhispidulous; style 5–6 mm long, stigmas subulate, 2–3 mm long.

Naucleopsis herrerensis can be recognized by the relatively narrow leaves with the margin (partly) more or less revolute, but toward the base distinctly involute. It is possibly related to *N. ulei* (Warburg) Ducke, resembling in vegetative parts the small-leaved form of this species occurring in the Middle and Lower Amazon Basin (see below). However, it is clearly different in the shape and size of the staminate inflorescences, the absence of very short internodes, and the distinctly loop-connected lower lateral veins of the lamina.

Paratypes. COLOMBIA. **Caquetá:** Morelia, 4 Nov. 1941 (♀ juv.), *Sneidern* A. 1283 (NY). ECUADOR. **Napo:** Parque Nacional Yasuní, "Maxus" road, km 40, 10 Sep. 1994 (♀ juv.), *Aulestia* 2754 (QCNE), 14 Sep. 1994 (st), *Aulestia et al.* 2772 (QCNE), km 52.5–52.7, 5 Sep. 1993 (st), *Dik* 262 (QCNE), km 53–60, 6 Oct. 1993 (st), *Dik* 595 (QCNE); Parque Nacional Yasuní, Pozo petrolero "Daimi 2," 26 May–8 June 1988 (♂), *Cerón et al.* 4135 (QCNE); cantón Archidona, road Hollín–Loreto, Río Huataraco, 800–1000 m, 23–30 Aug. 1989 (st), *Cerón et al.* 7485 (QCNE); Parque Nacional Yasuní, Pozo petrolero "Amo 2," 9–19 Jan. 1988 (♀ fl-fr), *Neill et al.* 8335 (BG, QAME, QCNE); Reserva Florística "El Chunchu," 5 km N of Coca, 23 May 1993 (♂), *Palacios* 10791 (QCNE). **Pastaza:** Mission Shandia, Jatun Yaku River, 17 Aug. 1957 (♀ fl), *Barclay* 4982 (COL). **Sucumbios:** Reserva Faunística Cuyabeno, near Laguna Grande, 19–21 Mar. 1991 (st), *Berg s.n.* (BG). PERU. **Loreto:** prov. Requena, dtto. Sapuena, Jenaro Herrera, 1971 (st), *Flores* 1a (BG); prov. Maynas, Río Nanay, Mishana, 28 Feb. 1979 (st), *Gentry et al.* 25244 (MO), 6 Jan. 1983 (st), *Gentry et al.* 39201 (BG); prov. Requena, Jenaro Herrera, 23 Feb. 1987

(st), *Gentry et al.* 56423 (MO), 25 Aug. 1976 (♂), *Revilla* 1185 (MO).

10. *Naucleopsis humilis* C. C. Berg, sp. nov.
TYPE: Ecuador. Pastaza: Río Curaray, near Laguna Garzayacu, 20–26 Aug. 1985 (♂), *Neill et al.* 6663 (holotype, QCNE; isotypes, BG, MO, QAME). Figure 7.

Naucleopsis ulei similis, a qua differt, e.g. statura parva arborum, stipulis inflorescentisque minoribus.

Treelet up to 3 m tall. Leafy twigs 3–5 mm thick, appressed-puberulous, periderm flaking off. Lamina coriaceous, subobovate to oblanceolate, (9.5–)20–45 × (2–)5–10 cm, apex subcaudate to acuminate, base subacute to obtuse (to rounded), margin entire; upper surface glabrous, lower surface puberulous on the base of the midrib; lateral veins ca. (15–)25–30 pairs, tertiary venation largely scalariform to largely reticulate; petiole 1–2.5 cm long, minutely puberulous; stipules 0.5–1.5 cm long, striate, yellowish appressed-puberulous, subpersistent or caducous. Staminate inflorescences on up to 0.4-cm-long spurs, ca. 0.2–0.3 cm diam.; peduncle ca. 0.2 cm long, bracteate; involucre bracts in ca. 5 series, broadly ovate to oblong, the inner ones glabrous; flowers 4–6; perianth 2–2.5 mm long, tepals 3–5, basally connate, glabrous; stamens 1 or 2, filaments 3–3.5 mm long, thick, anthers elliptic, 0.5–0.6 × 0.3–0.4 mm. Pistillate inflorescences solitary in the leaf axils, ca. 1 cm diam., sessile; involucre bracts in ca. 6 series, broadly ovate, minutely puberulous; flowers few; free parts of the tepals subulate to aculeate, 0.3–0.6 cm long, minutely puberulous; stigmas vittiform, ca. 3 mm long. Infructescences subglobose, 2–3 cm diam., at maturity yellow; free parts of the tepals 0.5–0.7 cm long; fruits 3–6, ca. 0.6–0.7 cm long.

Naucleopsis humilis is apparently an element of periodically inundated riverine forest. It is closely related to *N. ulei* (Warburg) Ducke, from which it differs in the small size of the trees, the smaller stipules, and the smaller inflorescences.

Paratypes. COLOMBIA. **Caquetá:** near Araracuara, 20 Nov. 1991 (st), *Duivenvoorden et al.* 1207 (BG), 5 Dec. 1991 (st), *Duivenvoorden et al.* 2319 (BG), 8 Dec. 1991 (st), *Duivenvoorden et al.* 2449 (BG, MO); Río Caquetá, 1 km above the mouth of Río Caguán, 29 Apr. 1953 (♂), *Romero-Castañeda* 4151 (COL), (♀ fl-fr), *Romero-Castañeda* 4152 (COL). ECUADOR. **Napo:** Parque Nacional Yasuní, Lagunas de Garza Cocha, 22 Sep. 1988 (♀ fr), *Cerón et al.* 5098 (AAU, MO, QAME, QCNE); Río Yasuní, 80 km upriver from Nuevo Rocafuerte, 17 Sep. 1977 (♀ fl-fr), *Foster* 3714 (QAME, QCA, S). **Pastaza:** Lorocachi, 31 May 1980 (♂), *Jaramillo et al.* 31580 (AAU). PERU. **Loreto:** prov. Maynas, Varadero de Mazoan, from Río Amazonas to Río Napo, 22 Aug. 1972 (♂), *Croat* 19523

(MO); prov. Maynas, Caserío Mishana, 30 km SW of Iquitos, 16 Aug. 1980 (♀ fl-fr), *Foster* 4341 (BG); prov. Maynas, Quebrada Yanamono, Explorama tourist camp, 5 Nov. 1979 (♀ fr), *Gentry et al.* 27483 (BG, MO), 13 Nov. 1979 (st), *Gentry et al.* 27962 (MO), 27 July 1980 (♂), *Gentry et al.* 29149 (MO), 18 Feb. 1981 (♀ fr), *Gentry et al.* 31402 (MO), 4 July 1983 (♂), *Gentry et al.* 42552 (MO), 8 July 1983 (♀ fl), *Gentry et al.* 42798 (BG); prov. Maynas, 1 km S of Indiana, 17 June 1987 (♂), *Gentry et al.* 54637 (MO); prov. Maynas, Río Amazonas, ca. 2 km W of Indiana, Explorama Inn, 12 Feb. 1987 (♀ fr), *Gentry et al.* 55731 (BG, MO), 18 Feb. 1988 (♀ fl-fr), *Gentry et al.* 61645 (MO), 20 Feb. 1988 (♂), *Gentry et al.* 61767 (BG, MO); prov. Maynas, Río Amazonas, near Indiana, 15 Feb. 1989 (♂), *Gentry et al.* 65793 (BG, MO); prov. Maynas, Caserío Gamitana, Reserva del Río Mazán, 21 June 1990 (♂), *Grández et al.* 1608 (BG, MO); prov. Maynas, Río Amazonas, Yanamono, 26 June 1984 (♀ fr), *R. Vásquez et al.* 5173 (MO); prov. Maynas, Quistococha, 27 Sep. 1984 (♀ fr), *Vásquez et al.* 5601 (BG, MO); prov. Maynas, Indiana, 15 May 1989 (♀ fl-fr), *Vásquez et al.* 12138 (BG, MO); prov. Maynas, Santa María de Nanay, Quebrada Yarina, 22 May 1989 (♀ fl-fr), *Vásquez et al.* 12236 (BG, MO); prov. Maynas, Indiana, 23 Mar. 1990 (♂), *Vásquez et al.* 13634 (BG, MO), 11 July 1990 (st), *R. Vásquez et al.* 14085 (MO).

11. *Naucleopsis naga* Pittier, Contr. U.S. Natl. Herb. 13: 440. 1912. TYPE: Costa Rica. Plains of Santa Clara, "La Colombiana," (♀), *Pittier* (IFCR) 13444 (holotype, US).

Two subspecies can be recognized:

11a. *Naucleopsis naga* Pittier subsp. **naga**

Lamina at the lower surface glabrous and the smaller veins plane; stipules up to 3.5 cm long.

Distribution. Honduras to Colombia: Antioquia, Chocó, and Valle.

11b. *Naucleopsis naga* Pittier subsp. **meridionalis** C. C. Berg, subsp. nov. TYPE: Colombia. Nariño: La Planada Reserve, near Ricaurte, 21 Dec. 1987 (♀ fr), *Gentry et al.* 59669 (holotype, PSO; isotypes, BG, COL, MO, SI).

Pagina inferna folii puberula vel subhispidula (tum scabridula); venae parviores plus minusve prominentes; stipulae usque ad 1.5 cm longae.

Lamina at the lower surface puberulous or subhispidulous (and then scabridulous) and the smaller veins ± prominent; stipules up to 1.5 cm long.

Paratypes. COLOMBIA. **Antioquia:** mun. Frontino, cgto. Nutibarra, source of Río Cuevas, 1700–2000 m, 18 July 1987 (♀ fl-fr), *D. Sánchez et al.* 1479 (MEDEL). **Nariño:** La Planada Reserve, near Ricaurte, 1800 m, 25 July 1986 (st), *Gentry et al.* 55101 (BG), 15 Nov. 1987 (♀ fl-fr), *Restrepo & Mondragón* 409 (MO). ECUADOR. **Carchi:** cantón Mira, El Carmen, road to Chical, 1600–1800 m, 10 Feb. 1992 (♂), *Palacios et al.* 9674 (QCNE), 2000–

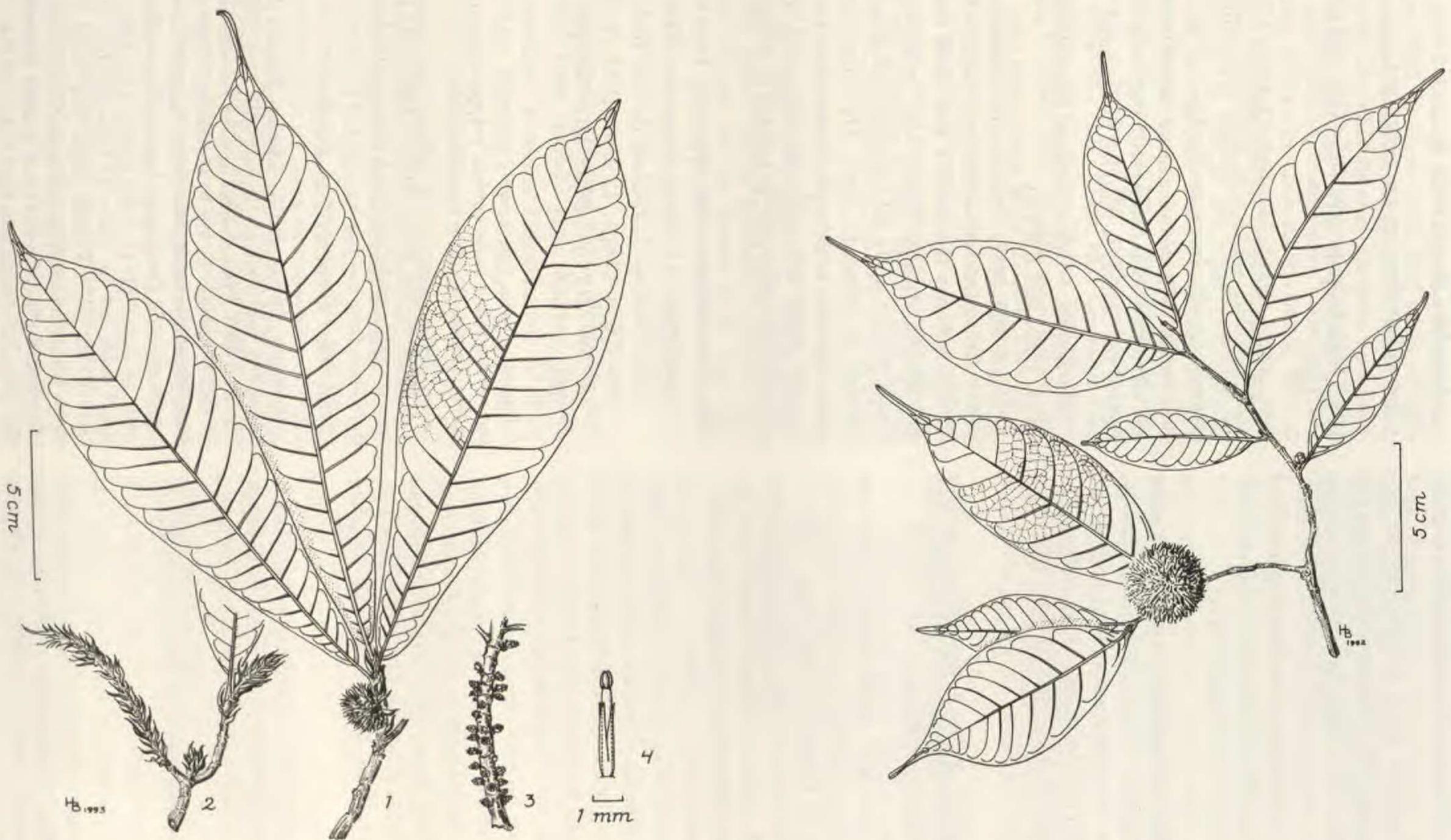


Figure 7 (left). *Naucleopsis humilis* C. C. Berg. —1. Leafy twig with pistillate inflorescence (Gentry et al. 61645). —2. Parts of twigs with stipules only (Vásquez et al. 5173). —3. Leafless twig with staminate inflorescences (Neill et al. 6663). —4. Staminate flower (Neill et al. 6663). Figure 8 (right). *Naucleopsis straminea* C. C. Berg. Leafy twig with fruiting pistillate inflorescence (Gentry et al. 36924).

2200 m, *Palacios et al.* 9691 (QCNE). **Cotopaxi:** road Quevedo–Latacunga, 3 km E of El Palmar, 800 m, 5 Apr. 1980 (♂), *Dodson & Gentry* 10240 (BG, MO, QCNE). **Esmeraldas:** Río Lita, 4.5 km WNW of Lita, 600 m, 8 May 1987 (♂), *Daly & Acevedo* R. 5150 (BG, MO, NY, QCA).

The two subspecies occur sympatrically in Ecuador and Colombia. The differentiation into an entity with glabrous leaves and one with leaves being hairy beneath is similar to the situation found in *N. ulei*. However, in *N. naga* the two morphological entities are more different than in *N. ulei*, and may prove to be distinct at the species level.

12. *Naucleopsis straminea* C. C. Berg, sp. nov. TYPE: Colombia. Chocó: 31 km E of Quibdó, ca. 14 km E of Tutunendo, 300–450 m, 14 June 1982 (♀ fl-fr), *Gentry et al.* 36924 (holotype, COL; isotypes, BG, JUAM, MO). Figure 8.

Naucleopsi krukovii affinis, a qua differt in numero parviore venarum lateralium et partibus longioribus liberalis tepalorum florum pistillorum.

Tree up to 15 m tall. Leafy twigs 1.5–2.5 mm thick, puberulous to hirtellous, periderm flaking off. Lamina elliptic to oblong to subobovate, 6–15 × 1.8–5 cm, subcoriaceous, apex (sub)caudate, base (sub)acute; both surfaces glabrous; lateral veins 8–13 pairs, tertiary venation reticulate; petiole 0.3–0.8 cm long, puberulous, epidermis ± flaking off; stipules 0.5–1 cm long, sparsely puberulous, subpersistent or caducous. Pistillate inflorescences in the leaf axils or just below the leaves, 1.2–2 cm diam., subsessile; involucre with broadly ovate to oblong bracts in ca. 5 rows, the inner ones ± scarious and subglabrous (and straw-colored when dry); flowers ca. 5–10; free parts of the tepals subulate, sparsely minutely puberulous, ca. 0.3–0.6 cm long (and straw-colored when dry); stigmas ca. 2 mm long. Infructescences subglobose, 2.5–4 cm diam.; free parts of the tepals up to 1 cm long, subulate (to aculeate).

Naucleopsis straminea is related to the Amazonian *N. krukovii* (Standley) C. C. Berg, from which it differs in the smaller number of lateral veins (8–13 vs. 15–23 pairs) and the longer and more slender free parts of the tepals of the pistillate flower (up to at least 1 cm and subulate vs. up to 0.7 cm and conical).

Paratypes. PANAMA. **Darién:** between Cana and Altos de Nique, trail Río Setegantí–Río Alto Tuirá, 19 Apr. 1992 (st), *Foster* 14254 (SCZ). COLOMBIA. **Antioquia:** mun. Mutatá, road to Pavarandogrande, 3 km beyond Río Sucio, 8 Dec. 1982 (♀ fr), *Bernal et al.* 436 (COL); between Villa Arteaga and Chirorodó, El Tigre, 1 Oct. 1961 (♀ fl-fr), *Cuatrecasas et al.* 26142 (COL).

13. *Naucleopsis ulei* (Warburg) Ducke, Arch. Jard. Bot. Rio de Janeiro 3: 38. 1922. TYPE: Peru. Loreto: Iquitos, *Ule* 6257 (lectotype, selected by Berg (1972), B).

Two subspecies can be recognized.

13a. *Naucleopsis ulei* (Warburg) Ducke subsp. **ulei**

Lamina at the lower surface glabrous (except for the minute brown or whitish pluricellular trichomes) or only hairy at the base of the midrib; base cordate to subacute; lower lateral veins often not distinctly loop-connected, particularly if the base of the lamina is rounded to subacute.

Distribution. Upper Amazon Basin (Brazil, Ecuador, Peru, and Bolivia).

This taxon may include *Naucleopsis amara* Ducke (recognized as a distinct species by Berg (1972)) and may represent a form from the Lower and Middle Amazon Basin with relatively small leaves (mostly up to 30 cm long) and often with a rounded to subacute base. This form gradually passes into the more typical form from the Upper Amazon Basin with larger leaves (mostly up to 50 cm long) and often with a rounded to cordate base.

13b. *Naucleopsis ulei* (Warburg) Ducke subsp. **puberula** C. C. Berg, subsp. nov. TYPE: Panama. Panamá: Cordillera de San Blas, ca. 20 km NE of Chepo, 12 Dec. 1973 (♀ fl), *Berg & Nee* 313 (holotype, MO; isotypes, AAU, BG).

Pagina inferna folii veneris puberulis vel hispidulis (tum scabridulis); basis cordata vel rotundata; venae laterales infernae distincte brochidodromae.

Lamina at the lower surface (sparsely) puberulous or subhispidulous (and then scabridulous) on the veins; base cordate to rounded (to obtuse); lower lateral veins distinctly loop-connected.

Paratypes. COSTA RICA. **Limón:** Reserva Indígena Talamanca, road Amburi–Cachabri, 27 June 1989 (♀ fl), *Chacón* 8 (BG). **Puntarenas:** Reserva Forestal Golfo Dulce, Osa Península, 15 km W of Rincón, 3 June 1988 (♀ fl-fr), *Hammel et al.* 16990 (MO); Parque Nacional Corcovado, Gira de Corcovado, Arco de Piedras–Río Corcovado, 16 June 1989 (♀ fl-fr), *Kernan* 1150 (BG). PANAMA. **Coeló:** 9.4 km above El Cope, 20 Jan. 1978 (st), *Croat* 44752 (MO). **Colón:** Santa Rita Ridge road, between Transisthmian Hwy. and Agua Clara, 11 Dec. 1973 (♂), *Berg & Nee* 301 (AAU, BG), *Berg & Dressler* 307 (BG, MO, NY); Santa Rita East Ridge, 23 Mar. 1968 (♀ fl), *Correa & Dressler* 891 (MO); Santa Rita Ridge, 20.7 km from Transisthmian Hwy., 22 Mar. 1992 (st), *Foster* 14079 (SCZ); Santa Rita Ridge road, 4 mi. from Transisthmian Hwy., 11 Dec. 1973 (♂), *Gentry et al.* 8825 (MO);

Santa Rita Ridge, 11 Jan. 1987 (♀ fl), *McPherson 10262* (MO). **Panamá:** Cerro Jefe, Altos de Pacora, 18.2 km E of Cerro Azul (village), 5 Jan. 1975 (♀ fl), *Gentry & Mori 13416* (MO); 10 km NE of Altos de Pacora, 6 Mar. 1975 (♀ fl-fr), *Mori & Kallunki 4946* (MO). **San Blas:** Cangandi, 16 Dec. 1985, *de Nevers et al. 6516* (MO). **COLOMBIA. Antioquia:** near Villa Arteaga, 6 Dec. 1948 (♀ fl-fr), *F. López et al. 31* (MEDEL); mun. Zaragoza, cgto. Providencia, 11 Feb. 1971 (♀ fl), *Soejarto et al. 2760* (COL). **Chocó:** mun. Riosucio, Urabá region, Cerros del Cuchillo, 13 Aug. 1987 (♀ fr), *Cárdenas 286* (JUAM, MO), 11 Sep. 1987 (♀ fl-fr), *Cárdenas 445* (JUAM), 16 Nov. 1987 (st), *Cárdenas 867* (JUAM, MO), 15 Jan. 1988 (♀ fr), *Cárdenas 1032* (JUAM, MO), 23 Mar. 1988 (♀ fl), *Cárdenas 1459* (JUAM, MO), 30 June 1988 (♀ fl-fr), *Cárdenas 2287* (JUAM); rd. Quibdó-Tutunendo, 3 km W of Tutunendo, 8 Jan. 1981 (st), *Gentry et al. 30334* (JUAM); Río Mecana, ca. 10 km E of Mecana, 7 Mar. 1983 (♀ fl), *Gentry & Juncosa 41060* (BG, COL, JUAM, MO). **Córdoba:** junction of Río Tigre and Río Manos, 28 July 1988 (st), *Gentry & Cuadros V. 63892* (MO). **Nariño:** near Tumaco, Río Rosario, 5 km above Santa María, 21 June 1955 (♀ fl), *Romero-Castañeda 5194* (COL). **ECUADOR. Esmeraldas:** cantón San Lorenzo, Reserva Etnica Awá, Centro Guadualito, 20–29 July 1992 (♀ fl-fr), *Aulestia et al. 43* (QCNE); cantón San Lorenzo, Reserva Etnica Awá, Ricaurte, Centro Pambilar, 21 Jan. 1993 (♀ fl-fr), *Aulestia et al. 1009* (QCNE); Mataje, 6 Sep. 1991 (♂), *Jaramillo et al. 13819* (QCA); Eloy Alfaro, Charco Vicente, Río San Miguel de Cayapas, 20–27 Mar. 1993 (♀ fl-fr), *Mendéz et al. 157* (QCNE); cantón Eloy Alfaro, San Miguel, Río Cayapas, 3–5 Sep. 1993 (st), *Palacios et al. 11145* (QCNE); cantón Eloy Alfaro, Reserva Ecológica Cotacachi-Cayapas, Charco Vicente, Río San Miguel, 20–31 Sep. 1993 (♀ fl), *Tirado et al. 450* (QCNE); cantón Eloy Alfaro, Reserva Ecológica Cotacachi-Cayapas, Luis Vargas Torres, 23–27 Oct. 1993 (♀ fl-fr), *Tirado et al. 514* (QCNE).

14. *Naucleopsis velutina* C. C. Berg, sp. nov.
TYPE: Peru. Loreto: prov. Maynas, Iquitos, Allpahuayo, Estación Experimental de IIAP, 23 Aug. 1990 (♂), *R. Vásquez et al. 14263* (holotype, MO).

Naucleopsis macrophyllae et *N. ripariae* affinis, divergens ab utraque stipulis petiolisque brevibus; inflorescentiis pistillatis partibus liberis tepalorum dispersis.

Tree up to 25 m tall. Leafy twigs 3–4 mm thick, brown (sub)velutinous. Lamina coriaceous, oblong, 22–40 × 8–14 cm, apex acuminate, base obtuse to rounded; upper surface sparsely puberulous on the midrib, lower surface brownish (sub)velutinous on the veins; lateral veins 18–26 pairs, tertiary venation largely scalariform; petiole 0.5–1 cm long, brown velutinous; stipules 0.5–1 cm long, densely brownish to whitish hirtellous to subvelutinous. Staminate inflorescences 2–5 together in the leaf axils and below the leaves, 0.8–1.3 cm diam.; peduncle 0.3–0.5 cm long, bracteate; involucre bracts in ca. 7 series, broadly ovate to semicircular, densely yellowish to brownish puberulous to subvelutinous; perianth ca. 2.5–3 mm long, tepals 4–6, basally

connate (or free), ± densely yellow hairy. Infructescences 6–8 cm diam., (sub)sessile; involucre bracts in 6–8 series, ovate to lanceolate, yellow strigose to subsericeous, the inner ones up to 2 cm long; flowers/fruits numerous; free parts of the tepals dispersed, aculeate, yellow strigose to subsericeous; style ca. 4 mm long, stigmas 2–3 mm long, long-tongue-shaped.

Naucleopsis velutina is related to *N. macrophylla* Miquel and *N. riparia* C. C. Berg. It differs from both in the short stipules and petioles. The pistillate inflorescences are clearly different in the absence of distinct perianths, the slender aculeate, yellow subsericeous, loosely arranged free parts of the tepals, and the short stigmas.

Paratype. PERU. Loreto: prov. Maynas, Quebrada Yanomono, Río Amazonas, above mouth of Río Napo, 5 Nov. 1979 (♀ fr), *Gentry et al. 27466* (BG, MO).

15. *Pseudolmedia glabrata* (Liebmann) C. C. Berg, comb. nov. Basionym: *Trophis glabrata* Liebmann, Kongel. Danske Vidensk. Selsk. Naturvidensk. Math. Afh., Ser. 5, 2: 314. 1851. TYPE: Mexico. Palenque: near Misantla, Mar. 1841, *Liebmann 14274* (lectotype, designated here, C).

The description of *Trophis glabrata* is based on two sterile collections (*Liebmann 14274* and *14276*), both belonging to the *Pseudolmedia* species treated as *Pseudolmedia oxyphyllaria* Donnell Smith in Berg (1972: 31).

16. *Sorocea jaramilloi* C. C. Berg, sp. nov.
TYPE: Ecuador. Pichincha: road Quito–Puerto Quito, km 113, 10 km N of road, Reserva Forestal ENDESA, 22 Aug. 1984 (♀ fl-fr), *Jaramillo 7055* (holotype, QCA; isotypes, AAU, GB, MO, QCA). Figure 9.

Laminis grandibus, inaequilateralibus et inflorescentiis pistillatis longis distincta.

Tree up to 20 m tall. Leafy twigs 2–5 m thick, minutely puberulous, the older parts conspicuously lenticellate. Lamina elliptic, (5–)10–35 × (3–)7–17 cm, ± inequilateral, (sub)coriaceous, apex ± abruptly acuminate, base rounded to obtuse at the broad side, acute to obtuse at the narrow side, margin entire; upper surface minutely puberulous, ± densely so on the main veins, lower surface minutely puberulous on the (main) veins; lateral veins 8–10 pairs, tertiary venation reticulate or partly scalariform; petiole (1.5–)2.5–3.5(–5) cm long, minutely puberulous; stipules 0.3–0.8 cm long, puberulous. Staminate inflorescences in the leaf axils,

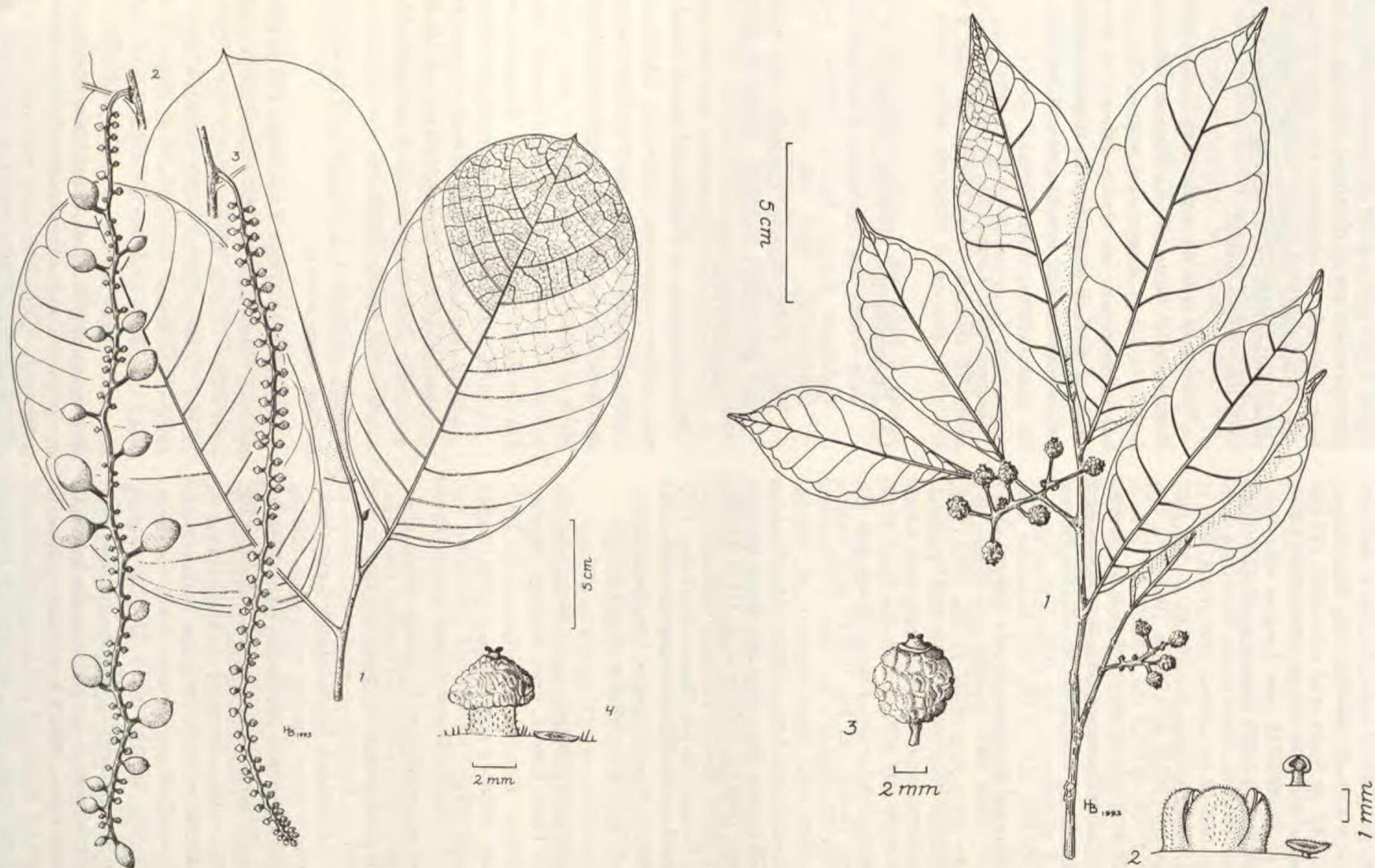


Figure 9 (left). *Sorocea jaramilloi* C. C. Berg. —1. Leafy twig (Jaramillo 7055). —2. Pistillate inflorescence (Jaramillo 7055). —3. Pistillate inflorescence (Jaramillo 6791). —4. Pistillate flower and bract (Jaramillo 7055). Figure 10 (right). *Sorocea ruminata* C. C. Berg. —1. Leafy twig with pistillate inflorescences (Herrera et al. 975). —2. Staminate flower, stamen, and bract (Gentry 6554). —3. Fruiting pistillate flower (Herrera et al. 975).

pendulous, ca. 15–45 cm long, including a 0.5–1.8-cm-long, sparsely puberulous peduncle; rachis sparsely puberulous; flowers \pm spaced, broadly sessile; perianth 4-parted, 2.5–3 mm high, sparsely ciliolate; stamens 4, isomorphic or anisomorphic, at anthesis straight or slightly incurved, filaments 0.2–0.6 mm long, anthers 0.8–1.2 \times 0.7–1.2 mm, connective broad, not apiculate. Pistillate inflorescences in the leaf axils or below the leaves, pendulous, ca. 6–17 cm, in fruit up to 40 cm long; peduncle 0.5–3 cm long, minutely puberulous; rachis minutely yellowish puberulous; flowers ca. 20–60; pedicel 0.1–0.2 cm, in fruit up to 1.5 cm long, yellowish puberulous; perianth 2–2.5 mm high, minutely puberulous, in the upper part \pm ruminant; stigmas ovate, ca. 0.5 mm long. Fruiting perianth ellipsoid to globose, 2–2.5 cm long, black.

Paratypes. COLOMBIA. **Valle:** ca. 16 km NW of Buenaventura, 28 May 1987 (st), *Faber-Langendoen et al.* 751 (BG); mun. Buenaventura, Bajo Anchicayá, 19 Oct. 1989 (st), *Gentry et al.* 68492 (COL). ECUADOR. **Carchi:** Gualpí Alto, 18–25 May 1985 (δ), *Thomsen* 58829 (QCA, QCNE); cantón Tulcan, Reserva Indígena Awá, Gualpí Medio, 23–27 May 1992 (δ fl-fr), *Tipaz et al.* 1041 (QCNE), (δ), *Tipaz et al.* 1044 (QCNE). **Esmeraldas:** cantón Eloy Alfaro, Reserva Ecológica Cotacachi-Cajapas, Charco Vicente, Río San Miguel, 20–27 Mar. 1993 (st), *Méndez et al.* 116 (QCNE), 6–9 Sep. 1993 (δ fr), *Palacios et al.* 11356 (QCNE); Alto Tambo, 13 May 1992 (δ fl-fr), *Quelal et al.* 521 (QCNE). **Los Ríos/Pichincha:** El Centinela, Montañas de Ila, road Patricia Pilar–24 Mayo, km 12, 6 Apr. 1980 (δ), *Dodson et al.* 10278 (MO), 23 May 1983 (st), *Dodson et al.* 13806 (MO). **Pichincha:** road Quito–Puerto Quito, km 113, 10 km N of road, Reserva Forestal ENDESA, Río Silanchi, 26 May 1984 (δ fl-fr), *Jaramillo* 6597 (QCA, mixed with *Naucleopsis chiguila* Benoist), 10 July 1984 (δ fl-fr), *Jaramillo* 6791 (AAU, GB, MO, NY, QCA).

17. *Sorocea pubivena* Hemsley, Biol. Centr. Amer. Bot. 3: 150. 1883. TYPE: “Guatemala,” (δ), *Friedrichsthal* s.n. (holotype, K).

Some species of *Sorocea* (*S. cufodontisii* W. Burger, *S. faustiana* Cuatrecasas, *S. hirtella* Mildbraed, and *S. pubivena* Hemsley) that have been treated as distinct previously (Berg & Akkermans, 1985), have proven to belong to a single taxonomical entity with at least three subdivisions.

17a. *Sorocea pubivena* Hemsley subsp. **pubivena**

Sorocea cufodontisii W. Burger, Acta Bot. Neerl. 11: 447. 1962, as *S. cufodontii*. Syn. nov. TYPE: Costa Rica. Puntarenas: Puerto Jiménez, 4 Apr. 1930 (δ), *Cufodontis* 200 (holotype, F).

Leafy twigs puberulous to hirtellous. Lamina subcoriaceous to chartaceous, margin \pm distinctly

dentate to denticulate or (especially if the lower lamina surface is sparsely puberulous) entire; upper surface minutely puberulous on the midrib, lower surface hirtellous or densely to sparsely patent-puberulous. Pistillate inflorescences in fruit up to 20 cm long; flowers ca. 15–60(–100). Fruiting perianth ellipsoid to (sub)ovoid to subglobose, 1–1.4 \times 0.8–1.2 cm, (partly) \pm densely puberulous, distinctly pedicellate.

Distribution. Nicaragua to western Panama.

17b. *Sorocea pubivena* Hemsley subsp. **oligotricha** (Akkermans & C. C. Berg) C. C. Berg, comb. nov. Basionym: *Sorocea hirtella* Mildbraed subsp. *oligotricha* Akkermans & C. C. Berg, Proc. Kon. Ned. Akad. Wetensch., C, Biol. 88: 383. 1985. TYPE: Brazil. Amazonas: mun. São Paulo de Olivença, Palmares, 11 Sep.–26 Oct. 1936 (δ fl-fr), *Krukoff* 8157 (holotype, U; isotypes, BM, F, G, GH, K, LE, MICH, MO, NY, US).

Sorocea faustiana Cuatrecasas, Ciencia (Mexico) 24(5/6): 185. 1966. Syn. nov. TYPE: Colombia. Valle: Río Anchicayá, El Prado, 4 Aug. 1943 (δ fl-fr), *Cuatrecasas* 14836 (holotype, F).

Leafy twigs sparsely appressed- (to patent-)puberulous. Lamina subcoriaceous to coriaceous, margin usually entire; upper surface minutely puberulous on the midrib or entirely glabrous, lower surface sparsely appressed- (or patent-)puberulous on the main veins. Pistillate inflorescence in fruit up to 10 cm long; flowers ca. 5–25; fruiting perianth (sub)globose, 1–2.5 \times 1–2 cm, subglabrous, mostly distinctly pedicellate.

Distribution. Upper Amazon Basin, Guyana, eastern and northern Venezuela, northern and western Colombia, eastern Panama, and northwestern Ecuador.

The material from Guyana, eastern Venezuela, and the adjacent parts of Brazil has laminae completely glabrous above. The fruiting perianth tends to be somewhat smaller than elsewhere in the range of distribution.

17c. *Sorocea pubivena* Hemsley subsp. **hirtella** (Mildbraed) C. C. Berg, comb. et stat. nov. Basionym: *Sorocea hirtella* Mildbraed, Notizbl. Bot. Gart. Berlin-Dahlem 10: 183. 1927. TYPE: Peru. Loreto: Pongo de Manseriche, (δ), *Tessmann* 4016 (holotype, B; isotypes, F, G, NY, US).

Sorocea opima Macbride, Publ. Field Mus. Nat. Hist., Bot. Ser. 11: 64. 1931. TYPE: Peru. Loreto: Caballo-Co-

cha, Aug. 1929 (♀ fr), *Ll. Williams* 2337 (holotype, F; isotype, US).

Leafy twigs whitish to brownish subhirsute to hirtellous. Lamina chartaceous to subcoriaceous (or coriaceous), margin entire (or obscurely) dentate to denticulate; upper surface minutely puberulous on the midrib; lower surface (rather) densely hirtellous to puberulous on the veins or at least on the midrib; lateral veins often connected with a slightly arcuate submarginal vein. Pistillate inflorescences in fruit up to 10 cm long; flowers 3–15(–25). Fruiting perianth usually subglobose, sometimes ovoid, subcylindrical or oblate, 1–2(–2.5) × 1–2(–2.5) cm, puberulous to hirtellous, sometimes sessile.

Distribution. Upper Amazon Basin: Peru, Ecuador, Colombia, Venezuela, and adjacent parts of Amazonian Brazil.

Taking into account the total morphological variation within subspecies *hirtella* and subspecies *oligotricha*, the differences between the two taxa seem to be quite small. It is, therefore, noteworthy that in a locality in Ecuador (Río Cuyabeno, Laguna Grande) the two taxa occurred side by side and were in flower simultaneously, yet intermediates were lacking. Another difference between the two taxa in that locality could be that the subspecies *hirtella* starts flowering earlier, as much smaller trees, than subspecies *oligotricha*. Whether this species-like behavior can also be found in other regions where the ranges of the two taxa overlap is not known, nor whether this might represent a case (in Moraceae and other families) in which (intraspecific) entities are morphologically clearly distinct in one area, but intergrade in another.

18. *Sorocea ruminata* C. C. Berg, sp. nov.

TYPE: Panama. Darién: Parque Nacional Darién, between Campamento Casa Vieja and Cerro Sapo, 22 May 1991 (♀ fl-fr), *Herrera et al.* 975 (holotype, MO; isotypes, BG, BM, CR, MEXU, PMA). Figure 10.

Soroceae affini affinis, a qua differt, e.g. marginibus folii semper integris, floribus sessilibus sub anthesi et perianthio statu fructifero ruminato glabratoque.

Shrubs or trees up to 12(–20) m tall. Leafy twigs 1–2.5 mm thick, sparsely minutely puberulous. Lamina oblong to elliptic (to lanceolate), 3.5–17 × 1.5–6.5 cm, broadest at or above the middle, ± inequilateral, coriaceous, apex acuminate, base acute to rounded, margin entire; upper surface minutely puberulous on midrib, lower surface sparsely, minutely puberulous on the (base of the) midrib; venation (almost) plane above, prominent beneath; lateral veins 8–12 pairs, tertiary venation reticulate

(or tending to scalariform); petiole 0.3–0.8 cm long, 1–2 mm thick, (minutely) puberulous; stipules 0.3–0.5 mm long, (minutely) puberulous, caducous. Staminate inflorescences patent (?), 0.8–4.5 cm long, including the 0.1–0.2-cm-long, puberulous peduncle; flowers rather crowded to disperse, narrowly to broadly sessile; perianth 4-parted, 1–1.5 mm high, ciliolate, outside sparsely minutely puberulous; stamens (3–)4, straight, isomorphic, filaments 0.5–1.2 mm long, anthers ca. 0.3–0.7 × 0.4–0.7 mm, connective broad, apiculate. Pistillate inflorescences patent (?), 0.5–3 cm, in fruit up to 5 cm long, including the 0.1–0.8-cm-long, puberulous peduncle; rachis sparsely, minutely puberulous; flowers 3–12, (sub)sessile, in fruit up to 1 cm long, pedicellate, pedicel (very) sparsely hispidulous to minutely puberulous; perianth ca. 2 mm high, glabrous, the upper part hemispherical to broadly ovoid; stigmas tongue-shaped, ca. 1 mm long, coarsely papillate. Fruiting perianth subglobose, ca. 1–1.5 × 1–1.5 cm, with the apical part ± discoid and the lower part with a ruminant, almost glabrous surface.

Sorocea ruminata differs from *S. affinis* Hemsley in the consistently entire leaf margins, the flowers being sessile at anthesis, and the ruminant and glabrous fruiting perianth. The inflorescences are more compact and the lamina more coriaceous than in *S. affinis*. The fruiting perianth is sometimes covered by white mycelium, as found in several other *Sorocea* species.

Most of the material referred to this new species has been initially identified (Berg & Akkermans, 1985) as *S. faustiana* Cuatrecasas, which proved to be a synonym of *Sorocea pubivena* subsp. *oligotricha* (Akkermans & C. C. Berg) C. C. Berg (see above).

Paratypes. PANAMA. **Canal Zone:** Barro Colorado Island, 1960 (♂), *Ebinger* 161 (MO). **Coelá:** road to Celesito, 12 mi. from Llano Grande, 16 Dec. 1983 (♂), *Churchill et al.* 4117 (MO). **Colón:** Santa Rita Ridge road, between Transisthmian Hwy. and Agua Clara, 11 Dec. 1973 (st), *Berg et al.* 302 (U) and 309 (BG, U); Santa Rita Ridge, E of Transisthmian Hwy., 16 Dec. 1972 (♂), *Gentry* 6554 (NY); Santa Rita Ridge, E of Panamá-Colón Hwy., 13 May 1986 (♀ fl-fr), *McPherson* 9166 (BG, MO). **Darién:** Cerro Pirre, 4 Aug. 1967 (♀ fr), *Bristan* 1231 (MO, US); Manene, mouth of Río Cuasi, 28 Apr. 1968 (♀ fl), *Kirkbride et al.* 1393 (MO, NY); Cerro Pirre, above Renare camp, 28 July 1988 (♀ fl-fr), *McPherson* 12640 (BG, BM); Río Tuquesa, lower Tuquesa mining camp "Charco Chiva," 5 July 1975 (♀ fl-fr), *Mori* 6984 (BG, MO, U); Río Tuquesa, middle Tuquesa mining camp "Charco Peje," 8 July 1975 (♀ fr), *Mori* 7033 (MO, PMA); near Cana, 23 June 1959 (♀ fr), *Stern et al.* 662 (MO, US). **Panamá:** ca. 20 km NE of Chepo, 12 Dec. 1973 (st), *Berg et al.* 336 (BG, U); El Llano-Carti road, km 8.7, 3 Sep. 1977 (st), *Berg et al.* 403 (BG) and 405 (BG); Cerro Campana, 22 June 1972 (♂), *Croat* 17191 (MO); Cerro Jefe, La

Eneida, 25 Mar. 1968 (♀ fl), *Dressler 3461* (MO); El Llano-Carti road, km 12-16, 5 May 1973 (♀ fl-fr), *Kennedy et al. 3158* (MO, NY); foothills of Serranía de Majé, Río Piratí, 16 May 1982 (st), *Knapp et al. 5142* (MO); El Llano-Carti road, 8.2 mi. from Pan-American Hwy., 6 Jan. 1982 (♀ fr), *Knapp 5902* (MO, PMA, U); Cerro Jefe, road Alto Pacora-Cerro Brewster, km 4.5-5, 19 June 1988 (♀ fl-fr), *McPherson 12597* (BG, MO). **San Blas:** Cangandí, 19 May 1985 (♀ fl-fr), *de Nevers et al. 5772* (BG, MO, NY, PMA), 27 Mar. 1986 (st), *de Nevers et al. 7455* (MO) and 7527 (MO, PMA). **COLOMBIA. Chocó:** mun. Riosucio, Urabá region, Cerros del Cuchillo, 19 Apr. 1988 (♂), *Cárdenas 1727* (JAUM), 20 May 1989 (♀ fl-fr), *Cárdenas 2008* (JUAM), 24 June 1988 (♀ fl-fr), *Cárdenas 2121* (JAUM); trail Alto Curiche-Camp Curiche, E of Boca Curiche, 20 May 1967 (♀ fl-fr), *Duke et al. 11301* (NY, US); Upper Río Baudó, Resguardo Indígena Emberá, Quebrada de Condoto, 3 June 1985 (st), *La Rotta et al. 680* (COL).

19. ***Sorocea sprucei*** (Baillon) Macbride, Publ. Field Mus. Nat. Hist., Bot. Ser. 11: 16. 1931. TYPE: Peru. San Martín: near Tarapoto, (♀), *Spruce 4483* (holotype, P; isotypes, B, BM, C, F, G, K, LE, NY).

In addition to the typical subspecies, ranging from Venezuela to northern Brazil and Colombia and occurring disjunctly in Peru (San Martín), and subspecies *saxicola* (Hassler) C. C. Berg, ranging from Bolivia to Argentina (cf. Berg & Akkermans, 1985), a third subspecies from drier parts of western Ecuador and the adjacent part of Peru, can be recognized.

- 19a. ***Sorocea sprucei*** (Baillon) Macbride subsp. ***subumbellata*** C. C. Berg, subsp. nov. TYPE: Ecuador. Guayas: road Guayaquil-Nobol, km 14, 21 Jan. 1985 (♀ fl-fr), *Harling et al. 21069* (holotype, GB; isotypes, BG, QCA).

Inflorescentiis pistillatis subumbellatis cum pedicellis in fructu usque ad 3.5 cm longis distincta.

Shrub or treelet up to 8 m tall, sometimes lianescent. Lamina oblong to elliptic to (sub)obovate, 3-11 × 1.5-5.5 cm, apex acuminate to subacute, base rounded (to obtuse), margin faintly to distinctly (serrate-)dentate; venation ± impressed above, prominent beneath. Pistillate inflorescences subumbellate; peduncle 0.3-1, in fruit up to 3.5 cm long; flowers 3-12(-18); pedicels 1-1.8 cm, in fruit up to 3.5 cm long; pedicels and immature fruiting perianths (brownish) red.

An illustration of a leafy twig with pistillate inflorescences can be found in Berg and Akkermans (1985: 388, fig. 4, 2). Staminate material of this taxon has not yet been collected.

Paratypes. ECUADOR. **El Oro:** Santa Rosa, 17 Mar. 1955 (♀ fl-fr), *Asplund 15775* (S); 60 km SE of Arenillas,

on road to Loja, ca. 400 m, 13 Nov. 1982 (♀ fl-fr), *Pennington et al. 10720* (QCA, QCNE, U); cantón Arenillas, road Arenillas-Piedras, 16 Feb. 1976 (♀ fl-fr), *Plowman 5471* (GH, S, U); road Guayaquil-Salinas, km 7, 18 Mar. 1980 (♀ fl-fr), *Dodson et al. 9601* (F, MO, U). **Guayas:** Chongón, 4 Feb. 1955 (♀ fl-fr), *Asplund 15330* (S); Cerro Azul, W of Guayaquil, 8 Feb. 1955 (♀ fl-fr), *Asplund 15361* (S), 10 Feb. 1955 (♀ fl-fr), *Asplund 15389* (S); road Guayaquil-Daule, km 21, Capeira, 23 Sep. 1981 (st), *Dodson et al. 11454* (F). **Loja:** Puento Chico, 12 km N of Alamor, 760 m, 9 Aug. 1975 (st), *Samaniego et al. 50* (LOJA, QAME, US). **PERU. Tumbes:** prov. Tumbes, Pampas de Hospital, El Caucho, 22 Jan. 1989 (♀ fl), *Díaz et al. 3224* (BG, MO).

CECROPIACEAE

1. ***Cecropia annulata*** C. C. Berg & P. Franco, sp. nov. TYPE: Bolivia. La Paz: near Sapecho, 1 Mar. 1994 (♀ fl-fr), *Berg 1704* (holotype, LPB; isotypes, BG, COL, MO, NY).

Cecropiae englerianae et *C. polystachyae* similis; a *C. engleriana* e.g. *stigmatibus comosis* vel *subpeltatis*, a *C. polystachya* e.g. *venis lateralis marginalis brochidodromis* differt.

Tree up to 25 m tall; trunk with prominent (annular) scars of the stipules. Leafy twigs 2-4.5 cm thick, (dark) green, hispidulous with curved to uncinuate hairs. Lamina subcoriaceous to coriaceous, ca. 30 × 30-75 × 75 cm, segments 8-10, free parts of the upper segments obovate to elliptic, the upper ones sometimes slightly lobate, incisions $\frac{9}{10}$ - $\frac{10}{10}$ (- $\frac{9}{10}$) the distance to the petiole, apices obtuse; upper surface smooth to scabridulous, sparsely to rather densely minutely puberulous to strigillose on the (main) veins, initially sparse arachnoid indumentum, lower surface sparsely puberulous to strigillose with straight or uncinuate hairs on the (main) veins, arachnoid indumentum (almost) confined to the areoles or almost absent; lateral veins 11-16 (-20) pairs, marginally loop-connected, the lower ones branched; petiole ca. 25-70 cm long, sparsely (minutely) puberulous and also with sparse arachnoid indumentum; trichilia fused, the brown indumentum intermixed with (rather) short white hairs; stipules 12-20(-28) cm long, orange-red to pinkish or partly whitish, caducous, outside (appressed-)puberulous to hirtellous, or on the ribs to subhirsute, also with dense arachnoid indumentum and rather dense brown pluricellular hairs, inside ± densely hairy. Staminate inflorescences solitary or in pairs, peduncle patent, spikes ± spreading to pendulous; peduncle 9-13 cm long, with sparse arachnoid indumentum and brown pluricellular hairs; spathe 12-15 cm long, white, outside with dense arachnoid indumentum and sparse brown pluricellular hairs, inside glabrous or sparsely hairy; spikes

ca. 10–25, 6–17 × ca. 0.3 cm (yellow to pale orange), stipes 0.8–1.3 cm long, sparsely puberulous in the upper part; rachis hairy; perianth tubular, 1–1.5 mm long, glabrous; anthers ca. 0.5 mm long, detached at anthesis. Pistillate inflorescences solitary or in pairs, pendulous; peduncle 9.5–19 cm long, sparsely puberulous to hirtellous (to subhispid); spathe not seen; spikes 4–5(–6), 9–17 × (0.5–) 0.7–0.8 cm, sessile or with up to 0.5-cm-long, minutely puberulous stipes; rachis hairy; perianth 1.5–2 mm long, apex convex, punctate to muriculate, arachnoid hairs below the apex or also on the margin of the apex; stigma comose to subpeltate. Fruit ellipsoid, ca. 1.8 mm long, smooth.

Cecropia annulata is apparently closely related to *C. polystachya* Trécul. It differs from the latter in the marginally loop-connected lateral veins in the free part of the midsegment, in the (very) sparse arachnoid indumentum on the petiole, in the short or rather short white (unicellular) hairs in the trichilia, and in the midsegment being not (or rarely slightly) lobate. However, *C. annulata* also resembles *C. engleriana* Sneath, from which it differs in the less deeply incised lamina, in the smaller number of lateral veins in the free part of the midsegment, and in the non-peltate stigmas. The characters of this species look like a mixture of the two species named above and could indicate an origin by hybridization. The species is relatively rare in secondary growth. In the field it can be easily recognized by the orange to pinkish young leaves.

Paratypes. BOLIVIA. **Beni:** prov. Ballivián, Serranía del Pilón, 8–10 km from, Yucumo, 19 May 1989 (♀ fl-fr), *D. N. Smith et al.* 13264 (BG, LPB). **La Paz:** prov. Sud Yungas, near Sapecho, 26–28 Feb. 1994 (st), *Berg* 1698A (BG), (♂), *Berg* 1699 (AAU, BG, LPB, MO), (♂), *Berg* 1701 (BG, COL, LPB); near Tucupi (= Tullupi), ca. 30 km SE of Palos Blanco, near Río Beni, 5 Mar. 1994 (♀), *Berg* 1717 (AAU, BG, LPB, MO, NY).

2. *Cecropia heterochroma* C. C. Berg & P. Franco, sp. nov. TYPE: Panama. Veraguas: road Escuela Agrícola Alto Piedra–Río Dos Bocas, km 10, 26 July 1974 (♀ fl), *Croat* 25880 (holotype, MO; isotype, BG). Figure 11.

Lamina cum incisuris paucis subtus indumento arachnoideo sparsissimo. Inflorescentiae pistillatae patentis 2–4 spicis, 3–10 cm longis.

Tree up to 8 m tall. Leafy twigs 2–5 cm thick, green or purplish, densely hirtellous with uncinat hairs. Lamina chartaceous, ca. 35 × 35–75 × 75 cm, green or purplish beneath, segments 6–8, incisions $\frac{3}{10}$ – $\frac{5}{10}$ the distance to the petiole, apices subacuminate to rounded; upper surface minutely

hispidulous, scabridulous, lower surface minutely puberulous with curved hairs on the veins, arachnoid indumentum very sparse, soon disappearing; lateral veins in the free part of the midsegment ca. 10–12 pairs, submarginally loop-connected, some of them branched; petiole 30–55 cm long, green or purplish, puberulous, partly hirtellous to subhispid with uncinat hairs; trichilia fused, brown indumentum intermixed with short white hairs; stipules 5–10 cm long, green or reddish, outside subhirtellous to subhispid with uncinat hairs, inside glabrous. Staminate inflorescences in pairs, patent; peduncle 3–6.5 cm long, reddish or purplish, hirtellous to subhirsute to subhispid; spathe 8–14 cm long, reddish, purplish, or greenish, outside sparsely hirtellous and often with dense brown pluricellular trichomes, inside glabrous; spikes 4–5, 3–6.5 × 0.3–0.4 cm, stipes up to 0.5 cm long; rachis glabrous; perianth 1.5–2 mm long, glabrous; anthers 0.6–0.8 mm long, oblong to lanceolate in outline, not detached at anthesis. Pistillate inflorescences solitary, patent; peduncle 8–12 cm, red to purplish, puberulous to hirtellous; spathe ca. 10–15 cm, color and indumentum as in the staminate ones; spikes (1–)2–4, 3–10 × 0.4–0.6 cm, in fruit up to 15 × ca. 1 cm, (sub)sessile; rachis glabrous; perianth 1.5–2 mm long, arachnoid hairs below the apex, apex convex, glabrous; stigmas penicellate. Fruit ellipsoid, 2.5–3 mm long, smooth, brown.

Cecropia heterochroma has a form with the lamina purplish underneath, occurring side by side with a form with the lamina pale green underneath.

Paratypes. PANAMA. **Bocas del Toro:** Isla Bastimentos, 22 Mar. 1993 (♀ fl-fr), *Foster et al.* 14728 (SCZ). **Colón:** Santa Rita Ridge road, between Transisthmian Hwy. and Agua Clara, 11 Dec. 1973 (♀ fl), *Berg* 299 (BG); Santa Rita Ridge, 1 Mar. 1971 (♀ fl), *Croat* 13887 (BG, MO); Santa Rita Ridge road, 4–6 km from Transisthmian Hwy., 13 Apr. 1976 (♂), *Croat* 34288 (MO); Santa Rita Ridge, 20 Sep. 1972 (♂), *Gentry* 6109 (BG, MO); Santa Rita Ridge road, 21–26 km from Transisthmian Hwy., 4 July 1982 (♀ fr), *Knapp* 5844 (BG, MO). **Darién:** Parque Nacional Darién, Cruce de Mono, 5 Nov. 1989 (st), *Fisher* 52 (BG). **Panamá:** Cerro Jefe, 30 Aug. 1977 (♀ fl-fr), *Berg et al.* 393 (BG), (♂), *Berg et al.* 394 (BG); El Llano–Carti road, km 7, 3 Sep. 1977 (♂), *Berg et al.* 401 (BG); Cerro Jefe, 27 Jan. 1966 (♂), *Blum et al.* 2097 (MO), 12 Feb. 1966 (♂), *Blum et al.* 2205 (MO), (♀ fl), *Blum et al.* 2206 (MO); Campo Tres, 5 km NE of Altos de Pacora, 9 Mar. 1973 (♂), *Busey* 822 (BG, MO); Cerro Jefe, 1000 m, *Carrasquilla* 2177 (MO, PMA); Cerro Jefe, 25 Aug. 1972 (♀ fr), *Correa et al.* 1806 (MO, PMA); 3 mi. N of Cerro Azul, 26 July 1970 (♀ fl-fr), *Croat* 11587 (BG, MO); Cerro Jefe, 23 June 1972 (♀ fl), *Croat* 17338 (MO); El Llano–Carti road, km 12, 1 Aug. 1974 (♀ fl), *Croat* 26079 (MO), 6 Apr. 1973 (♀ fr), *Dressler* 4326 (PMA); 3 mi. N of Cerro Azul, 1 Jan. 1972 (♀ fl), *Dwyer et al.* 3447 (US); Cerro Jefe, 19 Aug. 1989 (♀ fl), *Fisher* 23 and 31 (BG); El

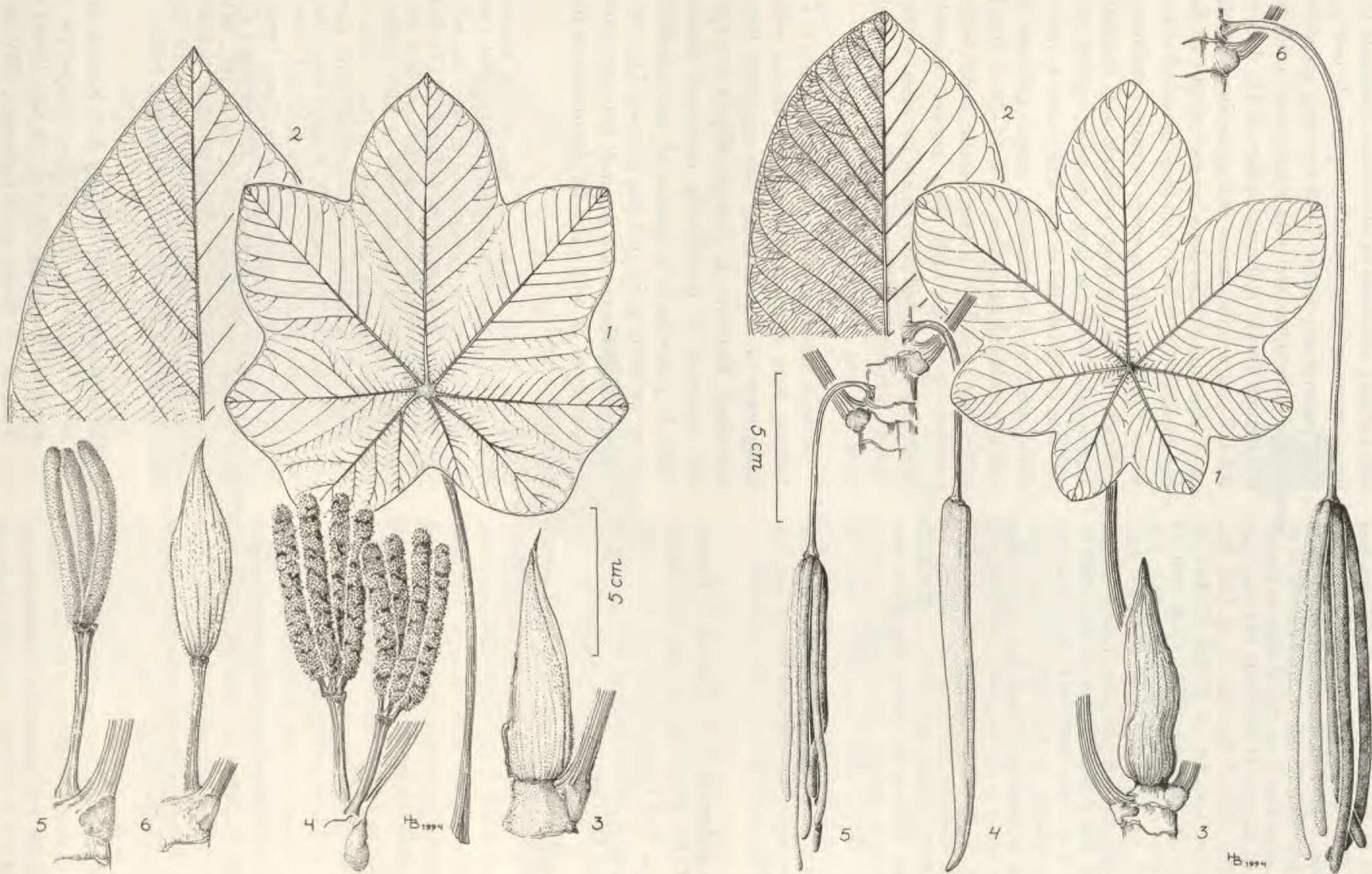


Figure 11 (left). *Cecropia heterochroma* C. C. Berg & P. Franco. —1. Lamina shape, reduced (*de Nevers 4953*). —2. Leaf venation (*de Nevers 4953*). —3. Stipules (*Berg 299*). —4. Staminate inflorescences (*de Nevers 3752*). —5. Pistillate inflorescence (*de Nevers 4953*). —6. Pistillate inflorescence with spathe (*de Nevers 4953*). Figure 12 (right). *Cecropia puberula* C. C. Berg & P. Franco. —1. Lamina shape, reduced (*Berg et al. 1639*). —2. Leaf venation (*Berg et al. 1639*). —3. Stipules (*Berg et al. 1640*). —4. Staminate inflorescence with spathe (*Berg et al. 1639*). —5. Staminate inflorescence (*Berg et al. 1639*). —6. Pistillate inflorescence (*Berg et al. 1640*).

Llano-Carti road, km 8.7, 31 Oct. 1977 (♀ fl), *Folsom et al.* 6161 (BG, MO); Cerro Jefe, 13 Sep. 1970 (♀ fl-fr), *Foster et al.* 1896 (PMA, US), 1 Jan. 1972 (♀ fl-fr), *Gentry et al.* 3447 (NY), 1 Apr. 1972 (♀ fl), *Gentry* 4895 (MO); Cerro Jefe, Altos de Pacora, 18.2 km E of Cerro Azul village, 5 Jan. 1975 (st), *Gentry et al.* 13422 (F, MO); Cerro Jefe, 15 Aug. 1982 (♀ fl), *Hamilton et al.* 616 (MO); Cerro Jefe, 29 July 1967 (♀ fl-fr + ♂), *Kirkbride et al.* 21 (MO, NY); Campo Tres, 3 mi. NE of Altos de Pacora, 10 Mar. 1973 (♂), *Liesner* 517 (BG, MO); El Llano-Carti road, km 18, 2 Mar. 1975 (♀ fl-fr), *Mori et al.* 5122 (BG, MO); El Llano-Carti road, km 14, 28 Mar. 1974 (♀ fl), *Nee et al.* 11004 (BG, MO, NY, PMA); Cerro Azul, 24 Mar. 1969 (♀ fl-fr), *Porter et al.* 4068 (BG, MO). **San Blas:** Nusagandi, 16 Aug. 1989 (♀ fl), *Fisher* 19 (BG), (♂), *Fisher* 20 (BG), 18 Aug. 1989 (st), *Fisher* 29 and 30 (BG); Nusagandi, NW of Punta Mamá, 13 Aug. 1984 (♀ fl-fr), *de Nevers et al.* 3731 (MO, PMA); El Llano-Carti road, Continental Divide, 25 Aug. 1984 (♂), *de Nevers* 3752 (BG, MO); El Llano-Carti road, km. 19.1, 4 Mar. 1985 (♀ fl), *de Nevers et al.* 4953 (BG, MO, PMA); El Llano-Carti road, 13 Mar. 1986 (♀), *de Nevers et al.* 7378 (BG, MO, PMA); Nusagandi, El Llano-Carti road, ca. km 20, 29 Apr. 1992 (♂), *Paredes* 680 (SCZ), (♀ fl), *Paredes* 681 (SCZ), 1 May 1992 (♀ fl), *Paredes* 924 (SCZ). **Veraguas:** road Escuela Agrícola Alto Piedra-Calovebora, km 11, 30 Aug. 1974 (♀ fl-fr), *Croat* 27567 (MO); Río Dos Bocas, 15.6 km NW of Santa Fé, 31 Aug. 1974 (♂), *Croat* 27627 (MO). **COLOMBIA. Valle:** mun. Buenaventura, Bajo Calima region, road Buenaventura-Malaga, km. 51.3, 9 Feb. 1990 (♂), *Croat et al.* 70406 (BG, MO).

3. *Cecropia puberula* C. C. Berg & P. Franco, sp. nov. TYPE: Peru. Ucayali: near San Miquel de Semuya, S of Campo Verde, 12 Aug. 1988 (♂), *Berg et al.* 1639 (holotype, MOL; isotypes, AAU, BG COL, MO, NY, U). Figure 12.

Cecropiae latilobae affinis, a qua differt venis lateralis submarginale brochidodromis.

Tree up to 15 m tall. Leafy twigs 1.5–5 cm thick, green or slightly bluish, puberulous to subhispidulous (with curved to uncinat hairs) and also with dense brown pluricellular hairs, sometimes young parts bluish due to a waxy layer; internodes 0.5–1 cm long. Lamina chartaceous to subcoriaceous, ca. (10 × 10–)25 × 25–60 × 60 cm, segments (5–)9–11, free part of upper segments ovate to elliptic, incisions $\frac{5}{10}$ – $\frac{7}{10}$ the distance to the petiole, apices short-acuminate to obtuse to rounded; upper surface scabrous, (rather sparsely) hispidulous; lower surface rather densely minutely puberulous on the veins and (especially on the smaller veins) also sparse much longer (uncinate to straight) hairs, arachnoid indument in the areoles and on the smaller veins or almost confined to the leaf margin; lateral veins in the free part of the midsegment ca. 11–16 pairs, 0.5–1.5 cm from each other, submarginally (to almost marginally) loop-connected, most of them branched; petiole ca. 15–40 cm, long, minutely puberulous; trichilia fused, only with brown

indument (of pluricellular hairs); stipules 5–12 cm long, green, red(dish) or red-brown to brown, subpersistent, outside puberulous (to subhirtellous), inside densely sericeous to subvillous. Staminate inflorescences in pairs, pendulous; peduncle 6–9 cm long, puberulous; spathe 7–18 cm long, greenish, outside puberulous and with sparse arachnoid indumentum, inside glabrous; spikes 8–15, 4–8 × 0.2–0.3 cm, sessile, rachis (sub)glabrous; perianth ca. 1 mm high, puberulous on the margin of the apex; anthers ca. 0.3–0.5 mm long, detached at anthesis. Pistillate inflorescences in pairs, pendulous; peduncle 15–25 cm long, puberulous to hispidulous; spathe 9–16 cm long, greenish, outside puberulous (to hirtellous) or also with sparse to rather dense arachnoid indumentum, inside glabrous or sparsely puberulous; spikes 4–5, 12–20 × 0.8–1 cm, in fruit up to 35 × 1.2 cm, sessile; rachis hairy; perianth ca. 2 mm high, apex convex, sparsely muriculate, arachnoid hairs below the apex; stigma comose-penicillate. Fruit oblongoid to subobovoid, ca. 2 mm long, smooth.

Cecropia puberula shows strong similarities to *C. latiloba*, from which it differs in the lateral veins being more or less distinctly submarginally loop-connected. Moreover, *C. latiloba* Miquel is a species occurring in periodically inundated places, while *C. puberula* is a species of non-inundated places, probably a tree-fall-gap pioneer. The morphological differences are so small that one could consider them as only valid for distinction at the subspecific level.

Paratypes. PERU. **Cuzco:** prov. Paucartambo, between Pilcopata and Atalaya, 29 July 1988 (♀), *Berg et al.* 1604 (BG, COL, USM); prov. Paucartambo, between San Jorge and Salazar, Río Tono, ca. 600 m, 1 Aug. 1988 (♀), *Berg et al.* 1623 (BG, USM). **Huánuco:** prov. Puerto Inca, dtto. Llullapichis, DANTAS, 18 July 1989 (♀ fl-fr), *Kröll* S. 508 (BG); prov. Pachitea, ca. 26 km S of Puerto Inca, 21 Sep. 1988 (♀), *Morawetz et al.* 15–21988 (BG); prov. Leoncio Prado, dtto. Rupa Rupa, E of Tingo María, near Cerro Quemado, 10 Apr. 1978 (♀ fl-fr), *Schunke* V. 10593 (BG). **Madre de Dios:** prov. Tambopata, Cuzco Amazónico, 14 July 1991 (♀ fl-fr), *Fisher* 210 (BG) and 211 (BG), 13 Dec. 1989 (st), *Gentry et al.* 68643 (BG, MO), 14 June 1989 (♀), *Núñez et al.* 10727 (BG). **Uyacali:** near San Miquel de Semuya, S of Campo Verde, 12 Aug. 1988 (♀), *Berg et al.* 1640 (BG, COL, K, MO, MOL).

4. *Cecropia tacuna* C. C. Berg & P. Franco, sp. nov. TYPE: Peru. Pasco: prov. Oxapampa, 5 km E of Oxapampa, 1850 m, 23 May 1983 (♀ fl-fr), *D. N. Smith* 4179 (holotype, MO; isotypes, BG, K). Figure 13.

Indumento villosa in diversis partibus et foliis grandibus cum incisuris numerosis distincta.

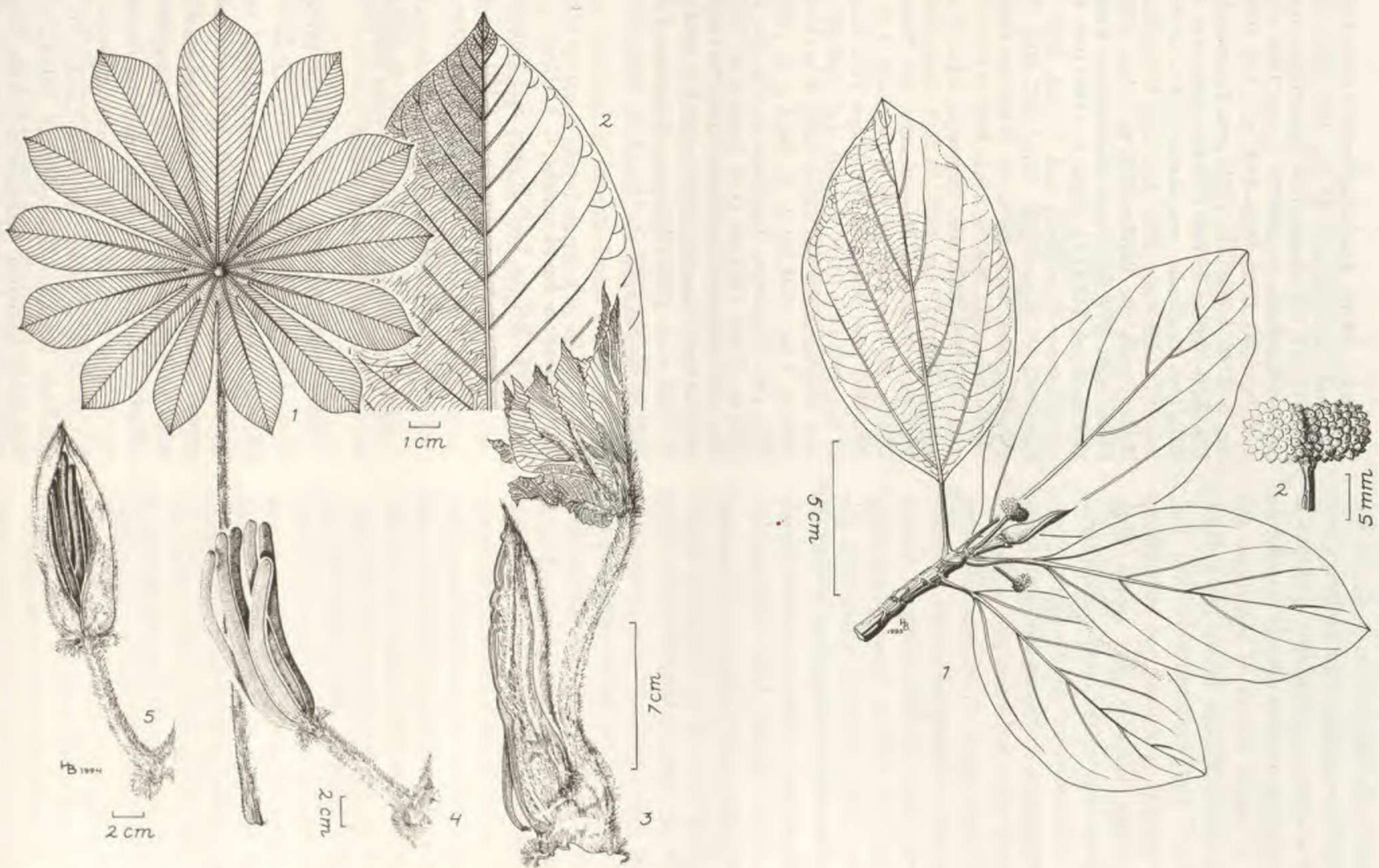


Figure 13 (left). *Cecropia tacuna* C. C. Berg & P. Franco. —1. Lamina shape, reduced (Berg et al. 1635). —2. Leaf venation (Berg et al. 1635). —3. Stipules and young leaf (Berg et al. 1635). —4. Staminate inflorescence and spathe (Berg et al. 1634). —5. Pistillate inflorescence (Berg et al. 1635). Figure 14 (right). *Coussapoa david-smithii* C. C. Berg. —1. Leafy twig with pistillate inflorescences (D. N. Smith 13919). —2. Fruiting pistillate inflorescence (D. N. Smith 13919).

Tree up to ca. 30 m tall. Leafy twigs 4–8 cm thick, green, densely villous and with filiform brown pluricellular hairs. Lamina (sub)coriaceous, ca. 50 × 50–100 × 100 cm, segments 13–18 (on new shoots down to 8), incisions ca. $\frac{7}{10}$ – $\frac{8}{10}$ the distance to the petiole, segments oblanceolate, apices subacuminate to acute; upper surface scabrous to scabridulous, sparsely to rather densely hispidulous to subhispid or largely hirsute to subvillous and with sparse to dense filiform, brown pluricellular hairs, “umbilicus” very prominent and villous, lower surface ± sparsely subvillous and with filiform brown pluricellular hairs or also sparse white arachnoid indumentum on the main veins, varying to pilose (to subtomentose) on the lesser veins, arachnoid indumentum in the areoles and on the reticulum; lateral veins in the free part of the mid-segment 30–35 pairs, up to 1.3 cm from each other, mostly unbranched, submarginally (and ± faintly) loop-connected; petiole 40–80 cm long, ± densely (sub)villous and with filiform brown pluricellular hairs and sparse white arachnoid indumentum, glabrescent; trichilia absent or sometimes present (?); stipules 15–30 cm long, caducous, outside densely white villous, inside sparsely hairy. Staminate inflorescences in pairs, patent with the spikes curved upwards, subtended by up to 13-cm-long bracts; peduncle 5–12 cm long, ± densely white villous (at least in the upper part) and also or only with filiform brown pluricellular hairs, often also with sparse white arachnoid indumentum; spathe 14–20 cm long, green, with dense filiform brown pluricellular hairs and sparsely villous, glabrescent; spikes ca. 10–20, 12–19 × 0.3–0.5 cm, with 0.5–1-cm-long stipules; perianth ca. 1.2 mm long, apex plane, sparsely to densely muriculate, below the apex short arachnoid indumentum; anthers ca. 0.5 mm long, detached at anthesis, thecae appendiculate. Pistillate inflorescences in pairs, patent with the spikes curved upward, subtended by up to 13-cm-long bracts; peduncle 5–9 cm long, with indumentum similar to the staminate inflorescence; spathe 9–14 cm long, green, with dense filiform brown pluricellular hairs and sparsely villous; spikes 3–7, (sub)sessile, 6–13 × ca. 0.5 cm, in fruit up to 21 × 1.5 cm; perianth ca. 1.5 mm long; apex plane, muriculate, long white arachnoid indumentum below the apex; stigma small, comose. Fruit narrowly ellipsoid, ca. 1.5 mm long, finely tuberculate.

Cecropia tacuna is the montane species in the southern Andean part of Peru and is easily recognizable by the villous indumentum on various young plant parts and the large leaves with numer-

ous segments. It seems to be related to the Bolivian montane species *C. elongata* Rusby.

The epithet chosen is the local name often cited on the labels of the collections of this species.

Paratypes. PERU. **Ayacucho:** between Huanta and Río Apurimac, 750–1000 m, 7–17 Nov. 1929 (juv.), Killip et al. 23117 (NY, US). **Cuzco:** prov. Paucartambo, road Pilocopata–Paucartambo, ca. 2000 m, 2 Aug. 1988 (♂), Berg et al. 1634 (BG, USM), 2200–2300 m, 2 Aug. 1988 (♀), Berg et al. 1635 (BG, COL, USM); prov. Paucartambo, km 132, 2260–2290 m, 27 June 1978 (st), Gentry et al. 23564 (BG); prov. Urubamba, near Machu Picchu, 2000 m, 4 July 1972 (♂), Muller 2861 (LZ); prov. Urubamba, near Machu Picchu, Río Mandor, 2055 m, 2 June 1982 (♂), Peyton et al. 374 (MO); prov. Paucartambo, Kosñipata, 2700 m, 4 July 1972 (♂), Vargas C. 15490 (US). **Huánuco:** Huánuco–Tingo Maria road, Carpish, 2400 m, 10 Mar. 1982 (♂), Gentry et al. 36153 (BG, MO). **Pasco:** prov. Oxapampa, Río Boqueria, ca. 26 km from Oxapampa via Río Yamaquizu, 2040 m, 3 June 1982 (♂), D. N. Smith et al. 1832 (BG, MO); prov. Oxapampa, 5 km SE of Oxapampa, 1850 m, 9 Apr. 1983 (♂), D. N. Smith 3663 (BG, MO); prov. Oxapampa, Huancabamba, Río Yanachaga, 2280 m, 26 May 1983 (♀ fl), D. N. Smith et al. 4196 (BG, MO); prov. Oxapampa, Oxapampa–Villa Rica road, 29 Sep. 1983 (♀ fl-fr), D. N. Smith et al. 5340 (BG, MO); prov. Oxapampa, Río San Albert valley, E of Oxapampa, 2300 m, 4 July 1984 (st), D. N. Smith et al. 7608 (BG, MO); prov. Oxapampa, Yonachaga via Río San Daniel, 2500 m, 17 July 1984 (st), D. N. Smith et al. 7848 (BG, MO); prov. Oxapampa, Río Alberto valley, E of Oxapampa, slopes of Cord. Yonachaga, 2400 m, 23 July 1984 (st), D. N. Smith et al. 7974 (MO); prov. Oxapampa, Palmazú, 2100 m, 28 Sep. 1984 (♀ fl-fr), D. N. Smith 8555 (BG, MO).

5. *Coussapoa david-smithii* C. C. Berg, sp. nov.
TYPE: Bolivia. La Paz: prov. Sud Yungas, road Huancané–San Isidro, km 7, 2300 m, 13 Dec. 1989 (♀ fr), D. N. Smith 13919 (holotype, MO; isotypes, BG, LPB). Figure 14.

Coussapoe jatun-sachensi similis, a qua differt e.g. stipulis glabratibus ramunculisque foliatis.

Tree 13 m tall. Leafy twigs 4–8 mm thick, glabrous. Lamina oblong to subobovate, 11–22 × 4.5–12 cm, coriaceous, apex short-acuminate to subacute, base (sub)acute; both surfaces glabrous; lateral veins 4–5 pairs, basal pair (and mostly also other pairs) branched, usually departing from the midrib well above the base, reaching the margin above or at the middle of the lamina; petiole 2.5–6.5 cm long, glabrous; stipules 1.2–2.5 cm long, glabrous. Pistillate inflorescences unbranched (or branched); (common) peduncle 1.5–3 cm long, glabrous; head(s) 1 (or 2), hemispherical to subglobose, 0.8–1.2 cm diam. (in fruit); perianth (sub)glabrous. Interfloral bracts absent.

This montane species resembles the lowland Ec-

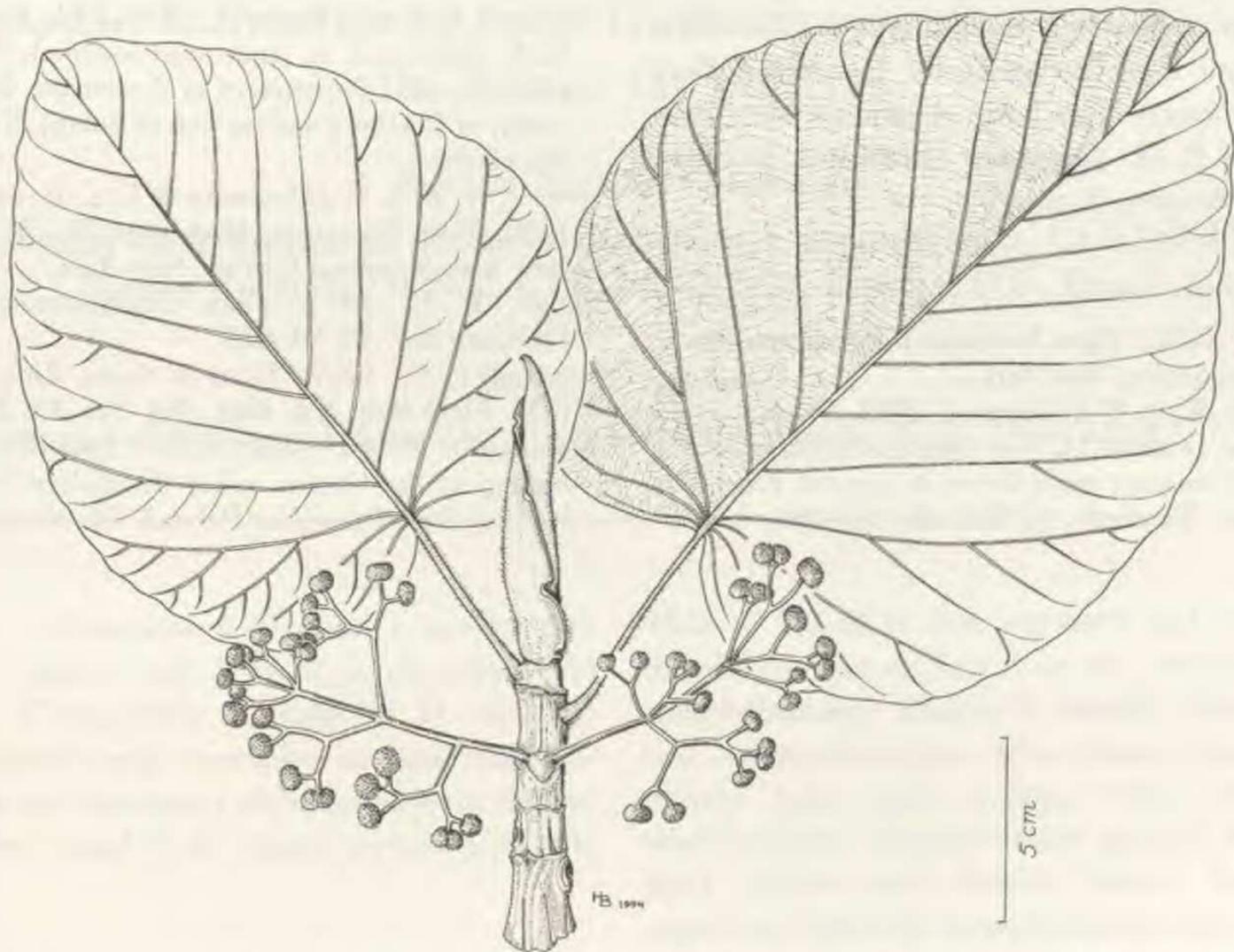


Figure 15. *Coussapoa villosa* subsp. *polycephala* C. C. Berg. Leafy twig with pistillate inflorescences (Uribe-Uribe 364).

uadorian species *Coussapoa jatun-sachensis* C. C. Berg (Berg & Franco, 1993). Montane taxa are rare in the genus (cf. Berg et al., 1990).

The epithet is chosen to commemorate the collecting activities of the late David N. Smith, who provided so much useful material to science.

6. *Coussapoa villosa* Poeppig & Endlicher subsp. *polycephala* C. C. Berg, subsp. nov.
TYPE: Colombia. Cundinamarca: mun. Tena, Laguna Pedro Palo, 2000–2100 m, 7 Mar. 1988 (♀ fl-fr), *Franco et al.* 2422 (holotype, COL; isotype, BG). Figure 15.

Plurimis venis lateralibus ramosis et usque ad viginti capitulis in inflorescentia pistillata distincta.

Most lateral veins branched (furcate). Pistillate inflorescences with 10–20 flower heads, in fruit up to ca. 1 cm in diameter; common peduncle 3–6 cm long. Peduncle of staminate inflorescences 1.2–4 cm long.

In most of the collections of *Coussapoa villosa* the lateral veins are usually unbranched, except for the basal pair, and the pistillate inflorescences are unicapitate. However, in some lowland collections from Central America the pistillate inflorescences may have more than one flower head, occasionally up to four heads. The combination of multicapitate pistillate inflorescences and the commonly branched lat-

eral veins, as found in the material listed above, justifies recognition of a distinct subspecies, apparently confined to a small area and occurring at altitudes between 1600 and 2200 m. This subspecies appears to be identical to the Late Pliocene leaf material from the Guasca Valley in Colombia, described and discussed by Wijninga and Kuhry (1993).

Recognition of subspecies *polycephala* may lead to reconsidering the rank of *C. duquei* Standley (Berg et al., 1990), and possibly reducing it to another (sub)montane subspecies of *C. villosa*.

Paratypes. COLOMBIA. **Cundinamarca:** mun. Tena, 2200 m, 14 May 1983 (♂), *Barrera et al.* 62 (COL); between El Salto and El Colegio, 1470 m, 10 Mar. 1940 (♂), *Cuatrecasas* 8291 (COL); near Albán, Aug. 1962 (♂ fl-fr), *Fernández-Pérez F-3* (COL); mun. Tena, near Laguna Pedro Palo, 3 km N of Tena, 2080 m, 19 May 1952 (♂), *Fernández-Pérez et al.* 1458 (COL); Tena, Río Bogotá, below Santandercito, 1650 m, 15 Mar. 1986 (♂), *Franco et al.* 2410 (COL); mun. Tena, Laguna Pedro Palo, 2000–2100 m, 7 Mar. 1988 (♂), *Franco et al.* 2422A (BG, COL); Río Bogotá, 1600 m, 1939 (♂), *Uribe-Uribe* 364 (COL). **Tolima:** near Juntas, (♂), *Saavedra s.n.* (COL).

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