

FLORA OF THE VENEZUELAN GUAYANA—III¹

JULIAN A. STEYERMARK²

ABSTRACT

Continued studies of various families of the flora of the Venezuelan Guayana have resulted in the following new taxa: *Stegolepis albiflora*, *S. huberi*, *S. humilis* (Rapateaceae); *Panopsis cuaensis*, *P. parimensis*, *Roupala paruiensis* (Proteaceae); *Guapira amacurensis*, *G. ayacuchae*, *G. bolivarensis*, *G. davidsei*, *G. glabriflora*, *G. marcano-bertii*, *G. sancarlosiana*, *G. sipapoana*, *Neea amaruyensis*, *N. bernardii*, *N. bracteosa*, *N. brevipedunculata*, *N. cedenensis*, *N. clarkii*, *N. davidsei*, *N. guaiquinimae*, *N. huachamacarae*, *N. ignicola*, *N. liesneri*, *N. mapourioides*, *N. marahuacae*, *N. parimensis*, *N. robusta*, *N. sebastianii*, *N. subglabrata*, *N. tepuiensis* (Nyctaginaceae); *Brunellia neblinensis* (Brunelliaceae); *Matayba ptariana* subsp. *guaiquinimae* (Sapindaceae); *Catostemma clarkii*, *C. ebracteolata*, *C. hirsutula*, *C. marahuacensis*, *C. pubistyla*, *C. sancarlosiana*, *Scleronema neblinensis* (Bombacaceae); *Bonnetia bolivarensis*, *B. euryanthera*, *B. guaiquinimae*, *B. ptariensis*, *B. tristyla* subsp. *nervosa*, *Laplacea fruticosa* var. *chimantae* (Theaceae); *Daphnopsis guaiquinimae*, *D. nevligniana*, *Schoenobiblus amazonica* (Thymeleaceae); *Symplocos acananensis* (Symplocaceae); *Chomelia glabricalyx*, *Coccocypselum huberi*, and *Perama dichotoma* var. *monocephala* (Rubiaceae), a total of 50 species, 3 subspecies, and 1 variety. Keys are provided for the Venezuelan Guayanian species of Proteaceae, *Guapira*, *Neea*, *Catostemma*, *Symplocos*, and newly described taxa of *Bonnetia*.

RAPATEACEAE

STEGOLEPIS

Stegolepis albiflora Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Meseta de Jaua; Cerro Sarisariñama, northeastern part, 4°41'40"N, 64°13'20"W, 1,410 m, 10 Feb. 1974, *Steyermark et al.* 108873 (holotype, VEN; isotype, NY).

Herbae perennes usque 1.5 m; vaginis prope apicem manifeste tenuiterque multinervatis eligulatis; pedunculis 7–18 axillaribus 4.5–7 dm longis 0.8–1.5 mm diam.; capitulis globosis 1.8–2.5 cm diam., spiculis 6–14 maturis lanceolatis acutis 7–10 mm longis 2–3 mm latis; petalis albidis.

Herbaceous perennials up to 1.5 m tall. Sheaths eligulate, finely and many-nerved near the apex or along one side, 20–25 cm long, 4–6 cm wide. Leaf blades rich green both sides, 58–70 cm long, 3.5–5 cm wide, the nerves and midrib on lower side somewhat more prominent than on upper side. Peduncles numerous, 7–18, 45–70 cm long, 0.8–1.5 mm diam., many-sulcate. Heads globose, tan or tawny, 1.8–2.5 cm diam. Spikelets spreading in various directions, lanceolate, acute, 7–10 mm long, 2–3 mm wide. Bracteoles 14–15, graduate, the lower outer ones ovate-suborbicular, 2–2.5 × 2–2.5 mm, the middle ones obtuse, the upper ovate-lanceolate, obtuse to subacute, 7 × 4 mm. Sepals lanceolate, subacute, 6–7 mm long, 2.5–3 mm wide. Petals white, oblanceolate or lanceolate, acute, recurved, 5.5–7 mm long,

1.5–2 mm wide toward the middle. Anthers linear, 3.5 × 0.4 mm. Ovary depressed-globose, 1 mm high. Style 1 mm long. Seeds buff, barrel-shaped, rounded at both ends, 1.5 × 1 mm.

Paratypes. VENEZUELA. BOLÍVAR: Cerro Sarisariñama, summit, W-central part, 4°45'N, 64°26'W, 1,922–2,100 m, 22–27 Feb. 1967, *Steyermark* 97839 (VEN); Meseta de Jaua, Cerro Jaua, summit, SW part, gallery forest, tributary of Río Marajano 4°48'50"N, 64°34'10"W, 1,750–1,800 m, 22–28 Feb. 1974, *Steyermark, Carreño & Brewer-Carias* 109391 (VEN); Meseta de Jaua, Cerro Jaua, summit, SW part, 4°47'22"N, 64°33'35"W, 2,228–2,250 m, 27 Feb. 1974, *Steyermark, Carreño & Brewer-Carias* 109581 (VEN); Meseta de Jaua, Cerro Jaua, summit, E-central part, 4°35'N, 64°15'W, 14 Feb. 1981, *Steyermark, Brewer-Carias & Liesner* 124320 (VEN), 124321 (VEN); trail to Sima menor, Cerro Sarisariñama, *Ravelo* 17 (MY).

This species is remarkable for having white petals and is the only white-flowered member of the otherwise yellow-petaled genus *Stegolepis*. Maguire (1976) identified all the collections from the Meseta Jaua (Cerro Jaua and Cerro Sarisariñama) as *S. choripetala*, a species originally described from Cerro Sipapo and not known elsewhere. The new taxon differs from *S. choripetala* not only in the white petals, but also in the smaller mature spikes, the greater number of more slender, shorter peduncles, and in the finely nerved sheath in the apical portion.

The collections cited were obtained from various parts of the huge Meseta de Jaua, indicating that the species is well distributed over the whole

¹ Flora of the Venezuelan Guayana was carried out under National Science Foundation Grant (BSR) 85152085.

² Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

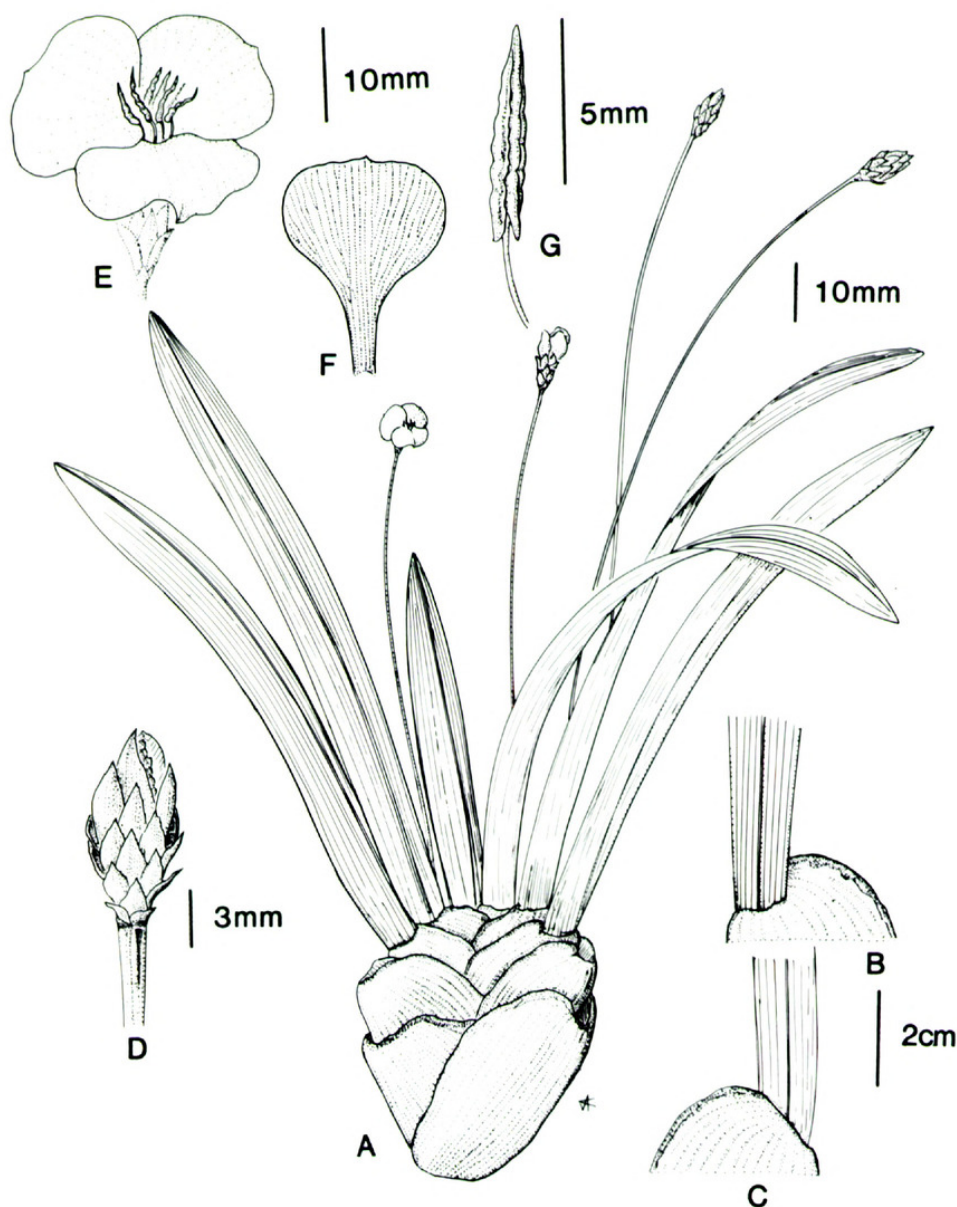


FIGURE 1. *Stegolepis humilis*. —A. Habit. —B, C. Base of leaf with auricle of sheath. —D. Spikelet. —E. Flower, natural position. —F. Petal. —G. Stamen. Based on holotype.

summit and is autochthonous to that table mountain.

Stegolepis huberi Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Kukenán tepui, 5°16'N, 60°48'W, 2,500 m, 28 Apr. 1984, *Otto Huber* 9467 (holotype, VEN; isotype, MO).

Herbae perennes humiles 23–35 cm; vaginis 7–10 cm longis 3–3.5 cm latis omnino nervatis ligulatis, auriculis apice rotundatis 10–15 mm longis 17–22 mm latis; laminis coriaceis ligulato-lanceolatis acutis 15–20 cm longis 1.8–2.5 cm latis, costa media haud manifesta subtus tenuiter multinervatis supra nervis obsolete; pedunculis 17–25 cm longis 2–3.5 mm latis infra capitulum 4–7 mm dilatatis; capitulis compressis 4–6-floris 2–3.5 cm latis; spiculis elliptico-lanceolatis

sub fructu 15–18 mm longis; bracteolis oblongo-lanceolatis vel lanceolatis acutis vel acuminatis 4–10 mm longis 1.1–3 mm latis; petalis flabellato-rhomboides 10 mm longis 7–8 mm latis.

Dwarf perennials 23–35 cm tall. Sheaths membranous, subscarios, 7–10 cm long, 3–3.5 cm wide, venose throughout, the auricles rounded at apex, 10–15 mm long, 17–22 mm wide. Leaf blades coriaceous, ligulate-lanceolate, 15–20 cm long, 1.8–2.5 cm wide, acute, finely nerved on lower side, obsolete nerved on upper side, the midrib obsolete on both sides. Peduncles compressed, somewhat alate, 3–6-costate, 17–25 cm long, 2–3.5 mm wide except 4–7 mm where dilated below inflorescence. Heads compressed, 4–

6-flowered, 2–3.5 cm wide, 1–1.7 cm high. Spikelets (in fruit) elliptic-lanceolate, 15–18 mm long, 5-seriate. Bracteoles 18–24, oblong-lanceolate or lanceolate, acute to acuminate, lower ones 4–5 mm long, 1.1–1.2 mm wide, the others 7–10 mm long, 2–3 mm wide. Sepals (in fruit) oblanceolate, acute, 13 mm long, 5 mm wide. Petals flabellate-rhomboid, 10 mm long, 7–8 mm wide.

This species is the shortest known in the genus. All the plants seen (Huber, pers. comm.) in a large colony were similarly small. The member of the genus to which it shows closest affinity is *S. ptaritepuiensis* Steyermark, from which it differs in the shorter peduncles and leaves, membranous, striate-nerved sheaths, smaller heads with shorter spikelets, less numerous spikelets, midrib not perceptible on either side, and a longer auricle of the sheath.

***Stegolepis humilis* Steyermark, sp. nov.** TYPE: Venezuela. Bolívar: Camarcaibarai tepui, SW-facing shoulder, 5°52'N, 62°1'W, 1,800–1,825 m, 22–24 May 1986, *Julian A. Steyermark, R. Liesner & B. Holst 132006* (holotype, MO; isotype, VEN). Figure 1.

Herbae perennes humiles 27–52 cm, vaginis manifeste nervatis 12 cm longis ligulatis, auriculis apice rotundatis 5–7 mm longis; laminis linearibus apice acutis 27–45 cm longis 1.3–2.5 cm latis, costa media subtus prominenti, nervis subtus prominentibus supra subtiliter prominentibus; pedunculis 2–3, 5-costatis, 27–52 cm longis, 1–1.5 mm diam. infra capitulum compressis 4–5 mm latis dilatatis; capitulis plerumque 1-floris, interdum 2-floris, compressis; spiculis lanceolatis 15–18 mm longis 7–9 mm latis; bracteolis castaneis infimis suborbiculari-ovatis late acutis 4.5–6 mm longis basi 4–5 mm latis, superioribus lanceolatis acuminatis 12 mm longis basi 5 mm latis; sepalis late lanceolatis acutis 15 mm longis 5–6 mm latis; petalis late flabellatis apice subtruncato-rotundatis 12–13 mm longis 18 mm latis.

Dwarf perennials 27–52 cm tall, the caudex flattened, 11–12 cm long, 7–9 cm wide. Leaf sheaths conduplicate, firmly membranous, conspicuously nerved, 12 cm long, 7 cm wide, ligulate, the auricles rounded, these 5–7 mm long,

12–13 mm wide. Leaf blades silvery green below, linear, symmetrical to slightly subfalcate at the acute apex, 27–45 cm long, 1.3–2.5 cm wide, finely nerved above, prominently nerved below, midrib prominent below, 1 mm wide. Peduncles 2–3, 5-costate with rounded ribs, 27–52 cm long, 1–1.5 mm diam. except below the inflorescence where flattened and dilated to 4–5 mm wide. Heads mainly 1, sometimes 2, compressed. Spikelets lanceolate, fusiform, 15–18 mm long, 7–9 mm wide. Bracteoles dark mahogany or chestnut brown, indurated, 19–21, the lowest suborbicular-ovate, broadly acute, 4.5–6 mm long, 4–5 mm wide at base, the upper ones lanceolate, acuminate, 12 mm long, 5 mm wide at base. Sepals broadly lanceolate, indurated above the middle, sharply slenderly acute, 15 mm long, 5–6 mm wide. Petals with a broadly rhombic-flabellate blade, broadly subtruncate-rounded at apex with a mucronate center, 12–13 mm long, 18 mm wide, unguiculate 11 mm. Anthers 10 mm long; filaments 9.5 mm long. Style subulate, 12 mm long.

Paratypes. VENEZUELA. BOLÍVAR: Murisipán tepui, summit, 5°52'N, 62°3'W, 2,350 m, 26 May 1986, *Holst, Steyermark & Liesner 2921* (MO, VEN); Tereke-yurén tepui, summit, west edge, 5°52'N, 62°2'W, 2,135 m, 26 May 1986, *Liesner, Steyermark & Holst 21075* (MO, VEN).

This taxon is related to *Stegolepis terramarensis* Steyermark from Cerro Marahuaca, from which it differs in the solitary, or rarely two spikes, acute leaf apex, fewer and more slender peduncles, smaller size, shorter auricles of the nerved, nonindurated ligulate sheath, and more conspicuous midrib and secondary nerves. It differs from the other species with one to few spikelets in size and details of spikelets, bracteoles, leaf nervation, and peduncle.

LITERATURE CITED

- MAGUIRE, B. 1976. Rapateaceae. In J. A. Steyermark & C. Brewer-Carias, La Vegetación de la Cima del Macizo de Jaua. Bol. Soc. Venez. Ci. Nat. 32(132–133): 279.

PROTEACEAE

PANOPSIS

KEY TO THE SPECIES OF PANOPSIS

- 1a. Leaves sessile or subsessile; reticulation coarsely areolate with areoles 1–5 mm diam.; leaves crowded on the stem, pseudovercillate; fruit subglobose, 4–5 cm diam. *P. sessilifolia*
- 1b. Leaves petiolate; reticulation generally more minutely areolate with areoles 0.5–1 mm diam.; leaves

- scattered on the stem, not pseudoverticillate; fruit fusiform or longer than broad or less than 4 cm in diam. 2
- 2a. Stems, leaf blades, and petioles glabrous or essentially so 3
- 3a. Leaves abruptly acuminate-cuspidate at apex, 8.5–11.5 cm long; reticulation minute and impressed on both sides; inflorescence 15–17 cm long with axes 0.7–1 cm; below 150 m elev., Terr. Fed. Amazonas *P. cuaensis*
- 3b. Leaves rounded at apex, 3.5–6 cm long; reticulation elevated and manifest on both sides; inflorescence with a maximum length of 6.5 cm with axes 2–3 cm long; plants at elev. of 1,400–1,600 m, Gran Sabana, Edo. Bolívar *P. ptariana*
- 2b. Young stems, portions of the leaf blades, and petioles pubescent 4
- 4a. Leaves mainly 8–20 cm long, 3–7 cm wide; inflorescence 15–20 cm long; plants of 125–450 m elev. *P. rubescens*
- 4b. Leaves 2–15 cm long, 2.5–4 cm wide; inflorescence 5–8 cm long; plants of 1,150–2,250 m elev. 5
- 5a. Trees 19–22 m tall; leaves 8–15 cm long *P. tepuiana*
- 5b. Small shrubs 1–1.5 m tall; leaves 2–9 cm long 6
- 6a. Flowers sessile to 2 mm pedicellate; style glabrous; reticulation of lower leaf surface with larger areoles than on upper surface, subelevated on upper surface; leaves 4.5–9 cm long; plants of the Sierra Parima, Terr. Fed. Amazonas *P. parimensis*
- 6b. Flowers on pedicels 2.5–7 mm long; style strigillose below the middle and toward the base; reticulation subelevated on lower surface, scarcely evident or obscure on upper surface; leaves 2–7 cm long; plants of sandstone table mountains of eastern Edo. Bolívar *P. ornatinervia*

Panopsis cuaensis Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Río Cuao, Río Orinoco, 125 m, 17 Jan. 1949. *Bassett Maguire & Louis Politi 28409* (holotype, NY).

Arbuscula, ramis glabris; foliis petiolatis, petiolis 5–8 mm longis glabris, laminis discoloribus subtus maronino-brunneis oblongo-ellipticis apice acuminatis vel subcuspidatis basi subacutis vel subobtusis 8.5–11.5 cm longis 3–4 cm latis ubique glabris, nervis lateralibus vix manifestis utroque latere 9, venulis tertiariis ubique tenuiter minuteque subimpresso-reticulatis; floribus non visis; infructescentiae rhachidi terminali 15–17 cm longa adpresso-pubescenti pilis pallidis instructa, axibus tribus vel quattuor 7–10 mm longis; fructu fusiformi extremitatibus rotundatis 2.2–2.5 cm longo 1 cm lato dense brunneo-velutino.

Small tree with glabrous branches. Petioles 5–8 mm long; leaf blades discolored, dull olive green above, maroon brown beneath, oblong-elliptic, abruptly acuminate or subcuspidate at apex, subacute to subobtuse at base, 8.5–11.5 cm long, 3–4 cm wide, glabrous both sides; lateral nerves scarcely evident, ca. 9 each side, divaricate at approximately 10–15°, these and tertiary venation immersed, the tertiary venation finely and minutely reticulate-subimpressed, the midrib elevated below, shallowly depressed above. Flowers not seen. Fruiting rachis terminal, 15–17 cm long, the 3–4 lateral axes 7–10 mm long, the rachis and axes pale appressed-pubescent. Fruit fusiform, rounded at both ends, 2.2–2.5 cm long, 1 cm wide, densely brown velutinous.

This species differs from *Panopsis rubescens*

(Pohl) Pittier in its completely glabrous leaves which terminate abruptly in a shortly acuminate or cuspidate apex, fewer and less distinct lateral foliar nerves, glabrous stems, and smaller, shorter fruits rounded at each end.

Panopsis parimensis Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Departamento Atabapo, helechales y formaciones secundarias en la Sierra Parima, 25 km NNE de Parima “B,” cabeceras del Río Ocamo, 3°3′N, 64°13′W, 1,150 m, 12 Jun. 1981, *Otto Huber 6136* (holotype, VEN; isotypes, MO, NY).

Frutex 1.5 m, ramis novellis dense ferrugineo-tomentellis; foliis petiolatis, petiolis 2–8 mm longis ferrugineo-tomentellis; foliorum laminis elliptico-obovatis vel elliptico-oblongis apice subacute obtusis basi subacutis vel acutis 4.5–9 cm longis 2–4 cm latis supra minute strigosis costa media dense strigillosa, subtus magis dense pubescentibus praesertim costa media pilis adpressis ferrugineis minutis, nervis lateralibus supra manifestis, venulis tertiariis supra subelevatis tenuiter minuteque reticulatis subtus impressis inflorescentia paniculatim ramosa 4–8 cm longa, ramis dense ferrugineo-tomentosis; floribus sessilibus vel pedicellatis usque 2 mm longis; perianthio 4–4.5 mm longo, tepalis extus dense pubescentibus pilis adpressis instructis; stylo 2.3 mm longo glabro.

Shrub, 1.5 m tall; young leafy stems densely ferruginous tomentose; mature branches dark gray, glabrous. Petioles 2–8 mm long, ferruginous tomentose; leaf blades elliptic-obovate or elliptic-oblong, subacute-obtuse at apex, subacute to acute at base, 4.5–9 cm long, 2–4 cm

wide, finely strigose above with pale hairs, more densely strigose along upper midrib, more densely appressed below, especially along the midrib, with shorter ferruginous hairs; lateral nerves ca. 9 each side, not prominent but more manifest than the tertiary venation; tertiary venation of upper surface minutely and finely reticulate, subelevated, impressed on lower surface. Inflorescences terminal, paniculate, densely ferruginous tomentose, 4–8 cm long (including the peduncle), 5–7 cm wide, with 4 divaricately spreading branches up to 4 cm long, and 1 mm diam. Peduncle 8 mm long. Bracts subtending the branches of the inflorescence subulate, 4 mm long, densely ferruginous tomentose. Flowers irregularly crowded on the axes, solitary or 2–3-fasciculate, sessile to 2 mm pedicellate. Perianth 4–4.5 mm long, the segments densely appressed

pubescent without. Hypogynous disk slightly angulate. Ovary ferruginous setose. Style 2–3 mm long, glabrous.

This species differs from *Panopsis ornatinervia* Steyermark of eastern Venezuelan Guayana in the upper leaf surface having a minute subelevated reticulation and the lower surface a larger areolation of impressed veinlets. In *P. ornatinervia*, the upper surface has a pebbly rugulose, but not reticulate, pattern, whereas the lower surface has a subelevated and finer reticulation. Moreover, in *P. ornatinervia* the leaves are rounded at the apex, whereas those of *P. parimensis* are subacutely obtuse and usually larger. Finally, the flowers of *P. parimensis* have shorter pedicels than those of *P. ornatinervia* and have a glabrous style.

ROUPALA

KEY TO SPECIES OF RROUPALA

- 1a. Dwarf shrub less than 2 m tall; leaves 1.3–3 cm long, 0.7–2.5 cm wide; petioles 1–2 mm long; ovary glabrous *R. minima*
- 1b. Shrub or tree 3–20 m tall; leaves 3.5–17 cm long, (2–)2.5–10 cm wide; petioles 10–50 mm long; ovary pubescent 2
- 2a. Leaves rounded or obtuse at apex 3
- 3a. Pedicels and rachis of inflorescence glabrous; leaves glabrous below 4
- 4a. Petioles 3–5 mm long; leaf blades 3.5–7.5 cm long, obtuse at base *R. paruensis*
- 4b. Petioles 12–15(–30) mm long; leaf blades (5–)7–11(–17) cm long, acute at base *R. obtusata*
- 3b. Pedicels tomentose or furfuraceous-puberulent; rachis minutely ferruginous puberulent or castaneous-furfuraceous or puberulent; leaves minutely puberulent or furfuraceous 5
- 5a. Perianth 7–9 mm long; ovary hirsutulous; leaf blades elliptic or ovate-oblong, obtuse at the base, 2.5–7 cm wide *R. sororopana*
- 5b. Perianth 12–13 mm long; ovary shortly appressed-pubescent; leaf blades ovate to suborbicular-ovate, truncate or broadly rounded at base, 7.5–10 cm wide *R. chimantensis*
- 2b. Leaves acute to acuminate at apex 6
- 6a. Stems, petioles, and lower surface of leaf blades glabrous or glabrescent; perianth strigillose to glabrescent toward apex *R. montana*
- 6b. Stems, petioles, and lower surface of leaf blades manifestly pubescent; perianth tomentellose to villous 7
- 7a. Perianth densely pale brown and villous with spreading hairs; rachis of inflorescence brown tomentose; fruit minutely tomentose *R. griotii*
- 7b. Perianth tomentose; rachis of inflorescence yellow tomentose; fruit glabrous *R. suaveolens*

Roupala paruensis Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Cerro Parú, cumbre, south to southeast to edge descent to tributary of Caño Asisa, rocky sabanita, open Río Ventuari, 2,000 m, 10 Feb. 1951, R. S. Cowan & John J. Wurdack 31378 (holotype, NY).

Arbor 7 m, ramis glabris; foliis petiolatis, petiolis 3–5 mm longis glabris, laminis ovato-oblongis apice obtusis vel rotundatis basi obtusis 3.5–7.5 cm longis 2–3.8(–4) cm latis ubique glabris; nervis lateralibus supra haud manifestis vel obsoletis subtus subimpressis vel

subelevatis utroque latere 4–5; floribus non visis; infructescentia 18 cm longa glabra, pedicellis fructiferis 2–4 mm longis glabris; fructu oblique obovoideo 1.5–2.5 cm longo 1–1.2 cm lato glabro; seminibus ovatis extremitatibus rotundatis 1.2–1.4 cm longis 0.8–1 cm latis.

Tree 7 m, with glabrous branches. Petioles 3–5 mm long, glabrous; leaf blades alternate, coriaceous, ovate-oblong, obtuse or rounded at apex, obtuse at base, 3.5–7.5 cm long, 2–3.8(–4) cm wide, glabrous both sides, narrowly subrevolute, lateral nerves 4–5 each side, obscure or

obsolete above, subimpressed or subelevated below. Inflorescence 18 cm long, rachis glabrous; pedicels 2–4 mm long, glabrous. Fruit obliquely obovoid, 1.5–2.5 cm long, 1–1.2 cm wide, glabrous; seeds brown, ovate, rounded at each end, 1.2–1.4 cm long, 0.8–1 cm wide.

This species is readily distinguished from *Roupala obtusata* Kl., its closest relative, by the smaller, basally obtuse leaf blades with shorter petioles.

NYCTAGINACEAE

The genera *Guapira* and *Neea* are represented in the Venezuelan Guayana by a large number of taxa. Schmidt (1872) treated the known species of these genera at that time as they occurred in Brazil, *Guapira* then included within the genus *Pisonia*. Later, Heimerl (1896) published additions for an account of the West Indian taxa and (1897, 1914, 1932) described various new species from tropical America. Huber (1909) also described several species of these genera from Amazonian Brazil. Standley (1931) took up the family for northwestern South America, recognizing the genus *Torrubia* of Vellozo with a dozen species previously assigned to *Pisonia*. Lundell (1968) transferred the taxa formerly assigned to *Tor-*

rubia, as well as some others which had been placed under *Pisonia*, to the genus *Guapira* Aublet (1775), an earlier legitimate name. Little (1968) transferred eight additional species from *Torrubia* to *Guapira*.

Unfortunately, there has been no recent study published for the taxa occurring in the Venezuelan Guayana. During the many years that have elapsed since the publication of works by Schmidt, Heimerl, and Standley, many unnamed or misidentified collections have accumulated in herbaria. A large number of the taxa represented by these collections are readily separated, while others appear to be closely related and differentiated on characters relating to indument, peduncles, leaf shape, size, venation, branching of inflorescence, and cauliflory. In some cases it is difficult to be certain of the generic distinction where only pistillate flowers are present. In general, however, *Guapira* and *Neea* may be separated using staminate material. Yet Burger (1983) suggested that the two genera may have to be united under *Guapira*. Further studies will be necessary to judge the merits of generic separation.

The present study of the taxa of the Venezuelan Guayana has resulted in the following 26 new taxa, with keys provided for the species of *Guapira* and *Neea*.

GUAPIRA

KEY TO THE SPECIES OF *GUAPIRA* OF THE VENEZUELAN GUAYANA

- 1a. Leaves 1–4 cm long, 0.8–1.8 cm wide, rounded or manifestly obtuse at apex *G. microphylla*
- 1b. Leaves larger than 4 cm long and 1.8 cm wide, mainly acute to acuminate at apex, or, if rounded or obtuse, the leaves larger 2
- 2a. Leaves 25–30 cm long, 15 cm wide *G. sipapoana*
- 2b. Leaves 5–15 cm long, 2–15 cm wide 3
- 3a. Lower and/or upper surface of leaves, or lower midrib, pilosulous with lax, spreading, or divaricate hairs 4
- 4a. Upper leaf surface glabrous and shining; inflorescence subglobose or subhemispheric, densely flowered and congested *G. davidsei*
- 4b. Upper leaf surface, or at least upper midrib, pubescent, and not shining; inflorescence cymosely or widely spreading 5
- 5a. Petiole 0.5 cm or less long; peduncle 1.5–2.5 cm long *G. pubescens*
- 5b. Petiole 1–2 cm long; peduncle (1–)3–9.5 cm long 6
- 6a. Peduncle 7–9.5 cm long; petiole densely pubescent with spreading hairs 0.2–0.5 mm long; young stems densely pubescent with spreading hairs 0.2–0.5 mm long *G. marcano-bertii*
- 6b. Peduncle (1–)3.5–5 cm long; petiole and young stems with hairs less than 0.1 mm long *G. rusbyana*
- 3b. Lower surface of leaves, including midrib, glabrous or pubescent, but the indument not spreading or divaricate 7
- 7a. Lower surface of leaves glabrous or essentially so, the midrib or nerves with scattered microscopic tomentum 8
- 8a. Peduncle and petiole densely ferruginous tomentose *G. amacurensis*
- 8b. Peduncle and petiole glabrous or sparsely pubescent 9
- 9a. Peduncle and/or axes of inflorescence sparsely to moderately puberulent 10
- 10a. Leaves often broadest above the middle, conspicuously venose; lateral

- nerves conspicuous, 9–11 each side, subelevated or impressed on both sides, conspicuously anastomosing with the tertiary veinlets, ascending at an angle of 45° or more; tertiary veinlets forming a prominent network *G. fragrans*
- 10b. Leaves often broadest near the middle, not venose, opaque; lateral nerves inconspicuous, 5–6 each side, impressed, divaricately spreading at an angle of 15–30°; tertiary veinlets obsolete or inconspicuous *G. guianensis*
- 9b. Peduncle and/or axes of inflorescence glabrous 11
- 11a. Tertiary veinlets prominent and finely reticulate on both sides of leaf blades; eastern Edo. Bolívar *G. bolivarensis*
- 11b. Tertiary veinlets, if present, inconspicuous and subreticulate; southwestern Terr. Fed. Amazonas 12
- 12a. Leaves oblanceolate to elliptic-lanceolate; staminate perianth cylindrical-tubular, 1.8–2 mm wide; stamens 8 *G. glabriflora*
- 12b. Leaves ovate or elliptic-ovate; staminate perianth subinfundibuliform, 3.2 mm wide; stamens 10 *G. neblinensis*
- 7b. Lower surface of leaves, midrib, or nerves with a minute tomentum of nonspreading hairs 13
- 13a. Tertiary venation on upper and lower leaf surface very conspicuous or elevated *G. sancarlosiana*
- 13b. Tertiary venation either not evident, inconspicuous, or not elevated 14
- 14a. Principal lateral nerves 8–10 each side; lower leaf surface usually with a persistent rufous tomentum; leaves on fertile branches generally cuspidate at apex; dry fruit 6–7.5 mm long, 3–4 mm wide *G. cuspidata*
- 14b. Principal lateral nerves 6–7 each side; lower leaf surface glabrous except for the sparsely rufous midrib and sometimes sparsely tomentose or glabrescent secondary nerves; leaves on fertile branches rounded, subtruncate, or abruptly shortly acute at apex; dry fruit 8–9 mm long, 5–5.5 mm wide *G. ayacuchae*

Guapira amacurensis Steyermark, sp. nov. TYPE: Venezuela. Bolívar: bosque pluvial, E of Río Grande, ENE of El Palmar, near limits of Territorio Federal Delta Amacuro, 12 Jan. 1965, *Luis Marcano-Berti 551* (holotype, VEN; isotypes, MO, NY).

Arbor 15–25 m, ramulis dense-ferrugineo-tomentosis; foliis ovatis, elliptico-ovatis vel lanceolato-ellipticis apice acutis vel acuminatis vel obtuse acutis basi cuneatis plerumque inaequilateralibus 6.5–14 cm longis 3–6.3 cm latis in sicco nigrescentibus vel fuscis, costa media subtus sparsim rufo-tomentello, aliter ubique glabris; inflorescentiis dense ferrugineo-tomentellis, pedunculis ferrugineo-tomentosis pilis 0.2–0.5 mm longis laxis munitis; perianthio masculino infundibuliformi 7 mm longo extus dense ferrugineo-tomentoso; staminibus 7, perianthio foemineo tubuloso extus dense ferrugineo-tomentoso.

Tree 15–25 m tall, the younger branches densely ferruginous tomentose. Petioles 1–3.5 cm long, densely ferruginous tomentose; leaf blades turning black or dark brown, coriaceous, elliptic-ovate, lance-elliptic, or ovate, acute, obtusely acute to acuminate at the apex, acute to cuneate at the generally inequilateral base, 6.5–14 cm long, 3–6.3 cm wide, glabrous both sides except the midrib on lower side sparsely rufous tomentellous or glabrous; lateral nerves 6–11 each side, obsolescent above, slightly more evident below. Inflorescence of staminate plant 2–3 cm high, 4–5 cm wide, ferruginous tomentose; peduncle 1.7–

4 cm long, 1–1.5 mm wide, not enlarged at junction with the lowest inflorescence axes, the ferruginous hairs somewhat lax. Staminate flowers sessile to 1 mm pedicellate; bracts 0.5–1 mm long, densely ferruginous tomentose. Staminate perianth infundibuliform, 7 mm long, 3 mm wide above; stamens 7, the filaments exerted 3–5 mm beyond the orifice. Pistillate perianth tubular, up to 7 mm long, densely ferruginous tomentellous without.

Paratype. VENEZUELA. BOLÍVAR: Represa Guri, 55 km NE of Ciudad Piar, 7°35'N, 63°7'W, 200–300 m, 4–5 Apr. 1981, *Liesner & Gonzalez 11174*.

This species differs from *Guapira bolivarensis*, described below, in the larger staminate perianth, generally inequilateral leaf base, and the dark brown to blackish leaves upon drying.

Guapira ayacuchae Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Tobogán de la Selva, 35 km S of Puerto Ayacucho, 85 m, 4 May 1977, *Julian A. Steyermark & Otto Huber 113856* (holotype, VEN; isotype, MO).

Arbuscula 3–4 m, foliis late ovatis ramulorum fertiliis apice late rotundatis subtruncatis vel breviter abrupteque acutis basi rotundatis truncatis vel cuneatis 5–15 cm longis 4–9 cm latis, supra costa media nervis lateralibusque ferrugineo-pubescentibus aliter glabris vel glabrescentibus subtus costa nervis lateralibusque

minus ferrugineo-pubescentibus inter nervos magis glabrescentibus; nervis lateralibus utroque latere 6–7; inflorescentiis arcte rufo-ferrugineo-tomentellis, pedunculo foemineo 5 cm longo masculo 2 cm longo; perianthio masculo infundibuliformi 3.5–4 mm longo extus modice rufo-ferrugineo-tomentello, perianthio foemineo tubuloso 2.5–3 mm longo extus ferrugineo-tomentello; staminibus 5; fructibus in sicco ellipsoideo-oblongis 8–9 × 5–5.5 mm in vivo ovoideis 10 × 9 mm; pedicellis fructiferis 4–5 mm longis.

Small tree 3–4 m tall. Petioles 1–2 cm long; leaf blades membranous, broadly ovate, on the fertile branches broadly rounded or subtruncate to shortly and abruptly acute at apex, rounded, truncate, or cuneate at base, 5–15 cm long, 4–9 cm wide, the upper surface glabrescent or remotely and minutely puberulent, the midrib and lateral nerves rather densely rufous-ferruginous tomentose, the lower surface more glabrescent, here the midrib less densely rufous tomentose and the secondary nerves only sparsely tomentose to glabrescent; lateral nerves 6–7 each side, impressed and inconspicuous above, scarcely elevated below. Staminate inflorescence umbellately 4-branched, the 4 primary axes 8 mm long; peduncle 2 cm long, 0.9–1 mm wide, this and axes of the inflorescence minutely densely rufous-ferruginous tomentellose. Flowers on pedicels 1–1.8 mm long. Staminate perianth infundibuliform, 3.5–4 mm long, 2–3 mm wide at summit, moderately rufous-ferruginous without. Stamens 5, filaments 6–7 mm long, exerted 2–3 mm. Pistillate inflorescence umbellately 4-branched, the primary axes 10–12 mm long, 1 mm wide; peduncle 5 cm long, this and the axes of the inflorescence closely rufous-ferruginous tomentellose. Flowers on pedicels 1–2 mm long, 4–5 mm long in fruit. Pistillate perianth tubular, 2.5–3 mm long, 1–1.5 mm wide, ferruginous tomentellous without. Fruiting primary axes 1–2.5 cm long, 1–1.5 mm wide, the secondary axes 8–17 mm long. Anthocarp black, broadly ellipsoid-oblong in dried state, ovoid in living state, subsulcate, glabrous, 8–9 mm long, 5–5.5 mm broad in dried state, when fresh 10 mm long, 9 mm wide.

Paratypes. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: alrededores del aeropuerto Puerto Ayacucho, 120 m, *Morillo 3142* (VEN); Tobogán de la Selva, 5°22'N, 67°33'W, 150 m, 14 May 1980, *Steyermark, Davidse & Guanchez 122545* (MO, VEN); 6 km N of Puerto Ayacucho toward El Burro, *Plowman 13752* (F, MO); Estación de Piscicultura, Puerto Ayacucho, 5°37'N, 67°36'W, 75 m, *Huber 618, 662* (VEN); Oripopos, 7 km N of Puerto Ayacucho, *Miller 1618* (MO, VEN). COLOMBIA. DEPARTAMENTO VICHADA: Casuarito,

across from Puerto Ayacucho, 5°40'N, 67°40'W, 100 m, *Gentry & Stein 46330* (MO, VEN).

This species has been confused with *Guapira cuspidata* (Heim.) Lundell of northeastern Venezuela. It differs from that species in the larger, glabrous fruit with longer pedicels, 5 instead of 7 stamens in the staminate flowers, generally rounded to subtruncate or abruptly shortly acute apex of the leaves on the fertile branches, fewer and more distantly separated pairs of lateral nerves on the leaf blades, glabrous or glabrescent lower surface of the leaves between the lateral nerves, more sparsely puberulent upper leaf surface with more conspicuously rufous puberulent midrib and lateral nerves, and fewer ultimate axes of the pistillate infructescences.

Guapira bolivarensis Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Departamento Piar, summit of Amaruay-tepui, south side, eastern half, 5°55'N, 62°13'W, 950–1,100 m, 11 May 1986, *Ronald Liesner & Bruce Holst 20800* (holotype, MO; isotype, VEN).

Arbor 6 m, ramulis sparsim puberulis pilis ferrugineo-glanduliferis munitis; foliis ellipticis vel ovatis apice acutis vel acuminatis basi acutis 6–17 cm longis 3–8 cm latis utrinque glabris, nervis lateralibus utroque 8–10 subhorizontalibus vel ad angulum 10–25° ascendentibus, venulis tertiariis utroque reticulatis; inflorescentia masculina 2–2.5 cm longa 2.5–4 cm lata; pedunculo 4–7.8 cm longo glabro; perianthio masculino anguste infundibuliformi 4 mm longo superne 1.5 mm lato extus quasi glabro; staminibus 10; inflorescentiae foemineae pedunculo 1.8–3.3 cm longo; perianthio foemineo cylindrico 3–3.5 mm longo superne 1.1 mm lato extus glabro.

Tree 6 m tall, the young branches sparsely puberulent with appressed-ascending, ferruginous-glandular trichomes. Leaves alternate or opposite. Petiole 0.7–2 cm long, glabrous to sparsely puberulent; leaf blades elliptic to ovate, acute to acuminate at apex, acute at base, minutely dark-dotted beneath, 6–17 cm long, 3–8 cm wide, glabrous both sides; principal lateral nerves 8–10 each side, irregularly spaced, subhorizontal or ascending at an angle of 10–25°; tertiary venation finely reticulate both sides, the veinlets prominent. Staminate inflorescence somewhat broader than long, 4-flowered, 2–2.5 cm high, 2.5–4 cm wide, subumbellate to broadly paniculate with 3–8 axes, the lower axes larger, glabrate or sparsely puberulent near the apices; peduncle 4–7.8 cm long, 1–1.3 mm broad, glabrous. Staminate perianth narrowly infundibuliform, 4 mm long, 1.5 mm wide at summit, glabrous

without except for a few minute hairs at base. Stamens 10, the filaments unequally exerted up to 4 mm above orifice. Pistillate inflorescence terminal, 3–5 × 3.5 cm, sparsely 3–5-flowered, the 2–3 axes sparsely puberulent; peduncle in anthesis 1.8–3.3 cm long, sparsely puberulent. Pistillate perianth tubular-cylindric, 3–3.5 mm long, 1.1 mm near orifice, glabrous without. Fruiting axes 2.5–5 mm long. Young fruit narrowly fusiform, 11–12 mm long, 3 mm wide at middle.

Paratype. VENEZUELA. BOLÍVAR: Amaruay-tepui, steep slopes on W side, 5°55'N, 62°15'W, 550–800 m, 20 May 1986, *Liesner & Holst 20932* (MO, VEN).

This taxon resembles *Guapira glabra* (Heimerl) Steyermark, comb. nov. (*Pisonia glabra* Heimerl, Kew Bull. 1932: 220. 1932) in the glabry of the leaves and floral parts, prominently reticulate tertiary venation on both leaf surfaces, and subhorizontal to shallowly ascending lateral nerves but differs in having 10 instead of 8 (rarely 9) stamens, short and narrower staminate perianth, and shorter staminate inflorescence with shorter axes.

***Guapira davidsei* Steyermark, sp. nov. TYPE:** Venezuela. Territorio Federal Delta Amacuro: Departamento Tucupita, 5–14 km ESE of Los Castillos de Guayana, 8°28–31'N, 62°17–22'W, 50–200 m, 28 Mar.–2 Apr. 1979, *Gerrit Davidse & Angel González 16382* (holotype, VEN; isotype, MO).

Arbor 8 m, foliis oppositis vel ternatis lanceolato-vel oblongo-ellipticis apice basique acutis 6–12 cm longis 2–5 cm latis supra lucidis glabrisque subadpresso-puberulis costa media pilis patentibus 0.1 mm longis munitis, nervis lateralibus utroque latere 7–9; inflorescentia mascula terminali glomerulata vel subhemisphaerica 8–14 mm alta, 10–14 mm lata, pedunculo 1–2.5 cm longo dense ferrugineo-adpresso-pubescenti; floribus 10–35 sessilibus; perianthio masculino infundibuliformi 4–4.5 mm longo supra medium 2.5–2.7 mm lato extus adpresso-pubescenti pilis glanduliferis mixtis munito.

Tree 8 m tall, the younger branches appressed puberulent, the older ones sparsely so. Leaves opposite or 3 at a node. Petioles 3–10 mm long, densely appressed pale puberulent; leaf blades lance-elliptic or oblong-elliptic, acute at apex, acute at base, 6–12 cm long, 2–5 cm wide, glabrous and shining above, minutely subappressed puberulent below with pale hairs 0.1 mm long, the midrib below elevated, with minute, spreading, slightly rigid hairs; lateral nerves 7–9 each

side, inconspicuous, impressed. Staminate inflorescence terminal, densely congested, globose or subhemispheric, 8–14 mm high, 10–14 mm broad, the primary axes suppressed. Peduncles 1–3, 1–2.5 cm long, with densely ferruginous, subappressed hairs. Flowers 10–35, sessile. Bracts lanceolate-oblong, subobtusate or rounded, 1 mm long, densely ferruginous pubescent without. Staminate perianth infundibuliform, 4–4.5 mm long, 2.5–2.7 mm above middle, densely ferruginous appressed-pubescent without, mixed with glandular hairs. Stamens 7–8, exerted 2–2.2 mm beyond orifice.

Guapira davidsei is well marked by the congested globose inflorescence with dense ferruginous pubescence. From *G. ferruginea* (Klotzsch ex Choisy) Lundell it is distinguished by having much larger, acutely pointed leaves and numerous glandular hairs intermixed with the pubescence on the outer surface of the staminate perianth.

***Guapira glabriflora* Steyermark, sp. nov. TYPE:** Venezuela. Territorio Federal Amazonas: between San Carlos and El Solano, Departamento Río Negro, 11–17 Mar. 1979, *Luis Marcano-Berti & P. Salcedo 54-979* (holotype, MER).

Arbuscula, ramulis glabris; petiolis 6–10 mm longis; laminis elliptico-lanceolatis vel oblanceolatis apice obtuse acutis basi cuneatim acutis 6.5–12.5 cm longis 2.5–4.7 cm latis utrinque glabris; nervis lateralibus utroque latere 6–9; inflorescentia mascula 10–15-flora, axibus primariis 2–3, 3–15 mm longis sparsim minuteque ferrugineo-puberulis; pedunculo 1.5–4.5 cm longo glabro vel sparsim ferrugineo-puberulo; floribus sessilibus, perianthio tubuloso-subinfundibuliformi 4.5–5 mm longo (in sicco 2.2 mm) apicem versus 1.8–2 mm lato extus prope basim sparsim ferrugineo-puberulo pilis glanduliferis atque apice dense papillato-puberulo aliter glabro; staminibus 8.

Small tree. Petioles 6–10 mm long, glabrous; leaves opposite, the blades drying fuscous, elliptic-lanceolate to oblanceolate, obtusely acute at apex, cuneately acute at base, 6.5–12.5 cm long, 2.5–4.7 cm wide, glabrous both sides, the lateral nerves 6–9 each side, inconspicuous, impressed. Staminate inflorescence 10–15-flowered, the primary axes 2–3, 3–15 mm long, bearing the flowers directly or with short secondary axes up to 5 mm long bearing a few sessile flowers, the axes minutely and sparsely ferruginous puberulent. Peduncle 1.5–4.5 cm long, glabrous or glabrescent or with sparse ferruginous glandular or non-

glandular hairs. Bracts minute, ovate-deltoid, subacute, 0.3–0.4 mm long, puberulent. Perianth tubular, slightly and inconspicuously enlarged above the middle, 4.5–5 mm long (2.2 mm dried), 1.8–2 mm wide at summit, 1 mm wide (0.6 mm dried) in lower $\frac{1}{3}$, nearly glabrous without except for a few sparse, ferruginous papillate hairs in basal 1 mm and densely papillate-puberulent apically bordering and between lobes. Stamens 8, the filaments exerted 4 mm beyond orifice.

This species is distinguished by its glabrous leaves and nearly glabrous peduncle and staminate perianth. It differs from *Guapira neblinensis* Mag. & Steyermark in the narrower oblanceolate to elliptic-lanceolate leaves and narrower staminate perianth.

***Guapira marcano-bertii* Steyermark, sp. nov.**

TYPE: Venezuela. Territorio Federal Delta Amacuro: east of Río Grande, ENE of El Palmar, near limits of Estado Bolívar, 26 May 1964, *Luis Marcano-Berti* 209 (holotype, VEN; isotype, MO).

Arbor, ramulis juvenilibus dense pubescentibus pilis patentibus ferrugineis 0.2–0.5 mm longis munitis; petiolis 1–2 cm longis dense pubescentibus pilis patentibus instructis; laminis late elliptico-ovatis apice breviter abrupteque acutis vel acuminatis 7–12.5 cm longis 3–7 cm latis supra costa media incluso villosis pilis patentibus 0.5–0.7 mm longis instructis subtus dense villosis, nervis lateralibus utroque latere 5–8 inconspicuis; infructescencia subumbellata vel subpaniculata, axibus principalibus 2–4, 12–20 mm longis 1.5 mm diam.; pedunculo fructifero 7–9.5 cm longo 2–2.5 mm lato dense tomentoso pilis patentibus 0.2–0.4 mm longis munito; anthocarpio anguste ellipsoideo 9–10 mm longo 3.5–4 mm lato sparsim puberulo 10-costato.

Tree with young stems densely villosulous with spreading ferruginous hairs 0.2–0.5 mm long. Petiole 1–2 cm long, densely ferruginous villosulous with spreading hairs 0.2–0.5 mm long; leaf blades membranous, broadly elliptic-ovate, shortly and abruptly acute to short acuminate at apex, obtuse to acute at base, 7–12.5 cm long, 3–7 cm wide, the midrib above with spreading villous hairs 0.5–0.7 mm long, the upper surface elsewhere with shorter and longer pale hairs 0.5–0.7 mm long, the lower surface densely soft-villosulous with crisp hairs 0.5 mm or more long, the midrib with divaricate hairs up to 1 mm long. Infructescence subumbellate to irregularly paniculately branched, the 2–4 primary axes 12–20 mm long, 1.5 mm diam., densely ferruginous villosulous with spreading hairs to 0.2 mm long. Fruiting peduncle 7–9.5 cm long, 2–2.5 mm

diam., densely villosulous with spreading hairs 0.2–0.4 mm long. Fruiting bracts lanceolate, subacute or obtuse, densely tomentose without. Fruiting pedicels 1–3 mm long. Anthocarps narrowly ellipsoid, 9–10 mm long, 3.5–4 mm wide, sparsely puberulent, longitudinally 10-costate.

This taxon differs from *Guapira pubescens* (HBK) Lundell in the much longer petioles and the longer and more abundant pubescence on all parts. From *G. cuspidata* (Heim.) Lundell it differs in the longer peduncles, longer fruits, and the longer spreading pubescence throughout.

***Guapira sancarlosiana* Steyermark, sp. nov. TYPE:**

Venezuela. Territorio Federal Amazonas: 4.3 km NNE from San Carlos on Solano Road, IVIC study site, 1°56'N, 67°3'W, 119 m, 8 Jan. 1981, *H. L. Clark & Pedro Maquirino* 7794 (holotype, MO). Figure 2.

Arbor 7–12 m, ramulis juvenilibus dense adpresque rufo-ferrugineo-tomentosis; foliorum laminis coriaceis supra glaucis glabrisque vel modice strigillosis subtus arcte rufo-tomentosis pilis dense adpressis omnino obtectis ovato-ellipticis vel sublanceolato-ellipticis apice breviter abrupteque acutis vel breviter acuminatis interdum rotundatis basi cuneatim acutis 7.5–14.5 cm longis 4.5–7.5 cm latis; nervis lateralibus utroque latere 9–11 subtus elevatis, venulis tertiariis supra subtiliter conspicueque elevatis reticulatis subtus magis grosse reticulatis; petiolis 1.5–3.5 cm longis dense adpresso-rufo-tomentosis; inflorescentia mascula paniculata multiflora 1.5–3.5 cm alta 3–7 cm lata, ramosissima, axibus primariis 0.8–3 cm longis; pedunculo terminali 0.2–3 cm longo 1.5–2 mm diam. dense adpresso-rufo-tomentoso; floribus sessilibus; perianthio breviter infundibuliformi vel subcampanulato 4–4.8 mm longo supra medium 3.8–4 mm lato extus dense rufo-tomentoso; staminibus 5–6.

Tree 7–12 m tall, the young stems densely appressed rufous-ferruginous tomentose. Petiole 1.5–3.5 cm long, densely and minutely appressed rufous tomentose; leaf blades coriaceous, glaucous above, ovate- to sublanceolate-elliptic, shortly abruptly acute to shortly acuminate at apex, sometimes rounded, cuneately acute and often asymmetric at base, 7.5–14.5 cm long, 4.5–7.5 cm wide, glabrous or moderately strigillose above, the lower surface completely covered by a dense, appressed rufous tomentum of short hairs; principal lateral nerves 9–11 each side, subsulcate above, elevated below; tertiary venation above with finely and conspicuously subelevated reticulation, below more coarsely reticulate and elevated. Staminate inflorescence many and closely flowered, much branched, 1.5–3.5 cm high, 3–7 cm wide, the primary axes 0.8–3 cm

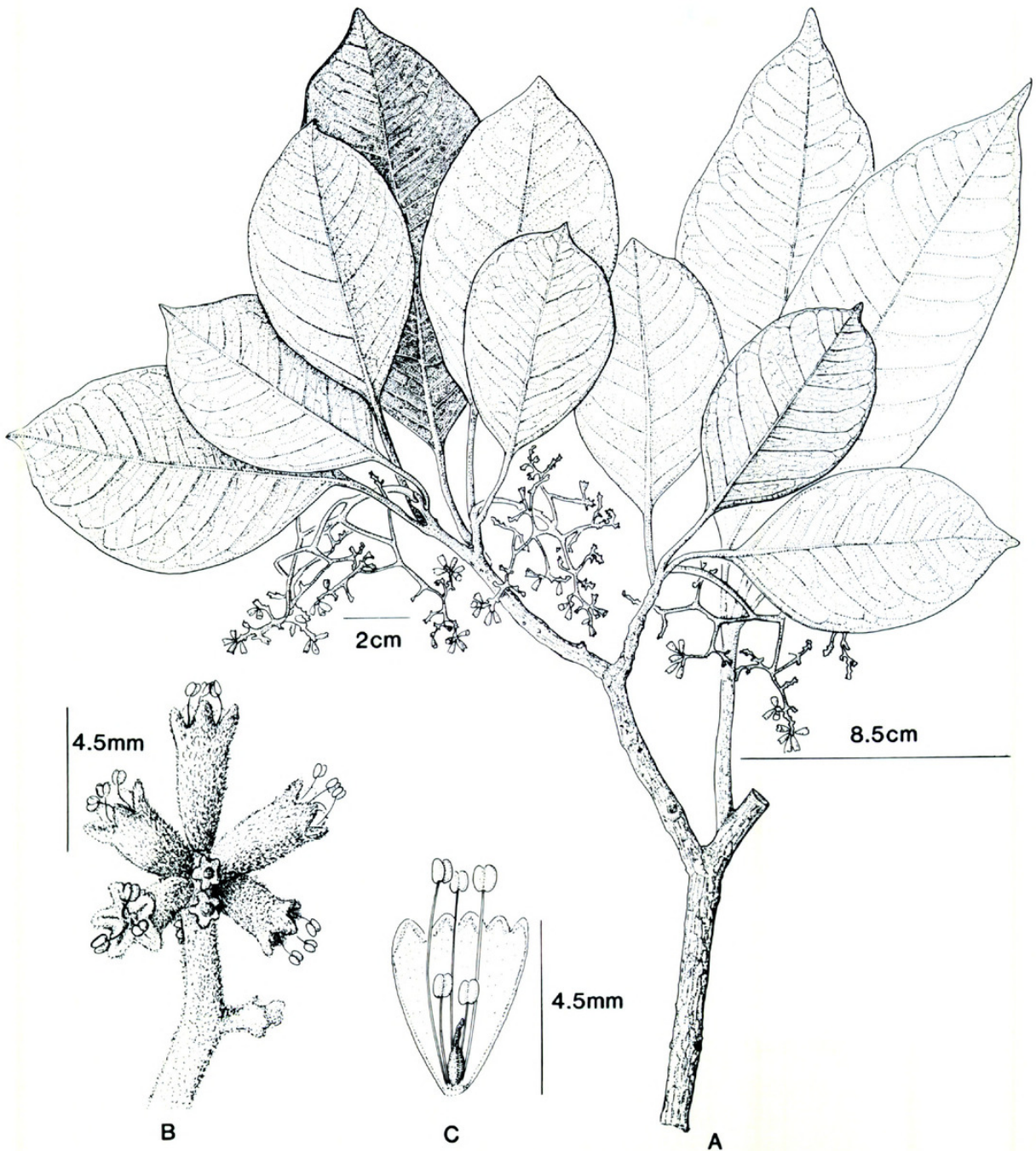


FIGURE 2. *Guapira sancarlosiana*.—A. Flowering branch, staminate plant.—B. Portion of staminate inflorescence.—C. Staminate flower opened. Based on holotype.

long, paniculately branched with 5–6 short axes, bearing small clusters of scattered flowers along the length of the axes. Flowers sessile. Perianth shortly infundibuliform to subcampanulate, 4–4.8 mm long, 3.8–4 mm above middle, densely rufous tomentose without. Stamens 5–6, 3 of the filaments exserted 2.2 mm beyond the perianth.

Paratypes. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: same data as type, 6909 (NY), 7031 (NY), Clark 7251 (MO); Clark & Maquirino 7776 (MO); between San Carlos and Solano, Marciano-Berti & Sal-

cedo 126-979 (MER); supra ostium fluminis Casiquiare, 1854, Spruce 3751 (NY).

This species is well characterized by the coriaceous leaves which are glaucous above and bear densely appressed rufous puberulence beneath, by the upper and lower leaf surfaces with elevated reticulate tertiary venation, and by the densely branched staminate inflorescences bearing numerous flowers with five stamens, of which three are exserted. Spruce 3751 was labeled as

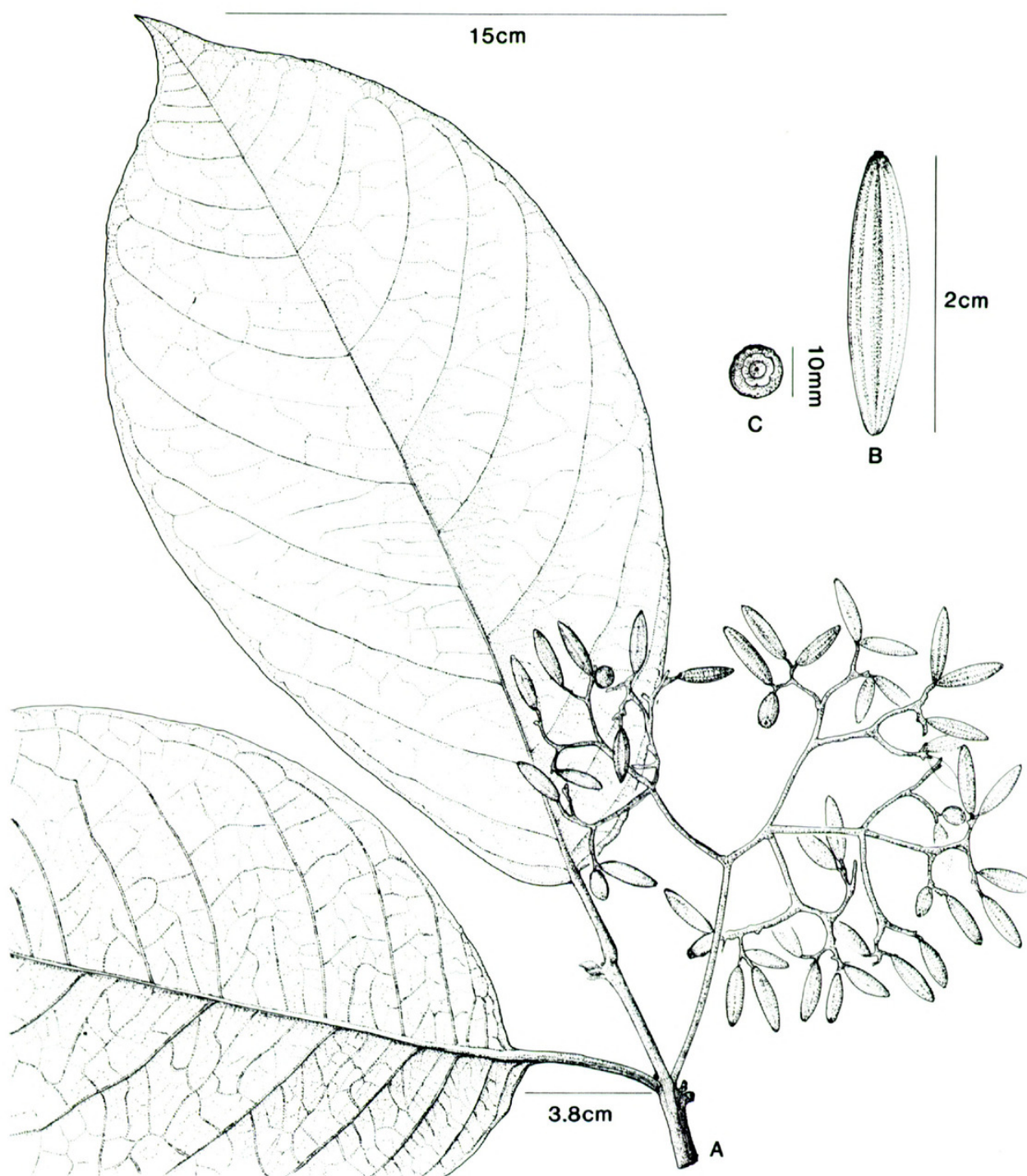


FIGURE 3. *Guapira sipapoana*.—A. Fruiting branch.—B. Fruit.—C. Apical end of fruit. Based on holotype.

an unpublished new species doubtfully referred to *Neea* (as "*Neea? rubiginosa*").

Guapira sipapoana Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Reserva Forestal Sipapo, left margin of Río Sipapo, Bloque 1, May 1971, *Carlos Blanco 1158* (holotype, VEN). Figure 3.

Arbuscula, ramulis juvenilibus dense rufo-tomentosis; foliis elliptico-ovatis apice acuminatis basi rotundatis vel obtusis inaequaliter 25–29 cm longis 14.5–15 cm latis supra costa media puberula aliter glabris subtus puberulis pilis erectis 0.1–0.2 mm longis praeditis, venulis tertiariis reticulatis subtus prominenter reticulatis; infructescencia axillari, axibus primariis 1.5–2 cm longis; pedunculo 3.8 cm longo 3 mm lato dense rufo-tomentoso; anthocarpio lineari-ellip-

soideo 1.5–2 cm longo 4–5 mm lato rufo-tomentoso conspicue 10-costato.

Small tree with young branches densely rufous tomentose. Petiole 3.8 cm long, 3 mm wide, densely rufous tomentose; leaf blades very large, elliptic-ovate, shortly acuminate at apex, rounded or obtuse at the unequal base, 25–29 cm long, 14.5–15 cm wide, upper surface glabrous except for the puberulous midrib; lower surface, including midrib, lateral nerves, and tertiary veinlets, puberulous with erect, slender hairs 0.1–0.2 mm long; tertiary veinlets reticulate, promi-

nently so with large areoles on lower surface. Infructescence in the upper axil, the primary axes 1.5–2 cm long, the secondary axes subumbellate, 2.5–3 cm long, branched above into shorter axes 1.5–2 cm long. Anthocarp linear-ellipsoid, 1.5–2 cm long, 4–5 mm wide, rufous tomentose, 10-costate.

This taxon is distinctive in having very large, prominently reticulate leaves with loose pubescence on the lower surface and in having long, pubescent fruits.

NEEA

KEY TO THE SPECIES OF NEEA

- 1a. Leaves sessile or nearly so, usually obtuse at base, the petiole to 1 mm long; young stem and petiole hirtellous with subspreading rufous-brown hairs; inflorescence both axillary and terminal on the stem *N. ignicola*
- 1b. Leaves petiolate, generally acute to acuminate at base, the petiole 2–35 mm long; young stem and petiole glabrous or pubescent with appressed hairs; inflorescence either cauliflorous on the old stem or terminal on the branches 2
 - 2a. Inflorescence cauliflorous on the old stem 3
 - 3a. Leaves oblanceolate-elliptic or lance-elliptic, 8–12.5(–15) cm long, 2.5–4.5(–5.5) cm wide *N. clarkii*
 - 3b. Leaves mainly obovate, oblong, or oblong-ovate, 10–30 cm long, 5–16 cm wide 4
 - 4a. Principal secondary leaf nerves 6–8 each side, slightly elevated on lower surface *N. brevipedunculata*
 - 4b. Principal secondary leaf nerves 8–12 each side, conspicuously elevated on lower surface 5
 - 5a. Lower leaf surface and nerves completely glabrous; fruiting peduncle 1–3.5 cm long; flowers sessile; inflorescence dichotomous or with short axes on an elongated rachis *N. davidsei*
 - 5b. Lower leaf surface glabrous, but midrib and secondary nerves with minute spreading hairs; flowering peduncle 0.5–0.6 cm long; flowers with pedicels 2–2.5 mm long; inflorescence much branched divaricately *N. liesneri*
- 2b. Inflorescence terminating the stem or its branches 6
 - 6a. Leaves broadly rounded at the apex, obovate or elliptic-obovate *N. obovata*
 - 6b. Leaves mainly acute to acuminate at the apex, of other shapes than above 7
 - 7a. Main secondary nerves of leaf blades 15–25 each side, subhorizontal or ascending at an angle less than 20°, relatively close together, 3–4 mm apart *N. ovalifolia*
 - 7b. Main secondary nerves of leaf blades generally fewer than 12 each side (fainter intermediate nerves may be present), ascending at an angle usually greater than 30°, or if more than 12 nerves or at a smaller angle, then the nerves more than 4 mm apart 8
 - 8a. Peduncle 6–11 cm long 9
 - 9a. Stem, peduncle, and axes of inflorescence densely ferruginous tomentose; perianth 3 × 1.5 mm, densely ferruginous tomentose *N. bernardii*
 - 9b. Stem glabrous; peduncle and axes of inflorescence minutely puberulous or glabrescent; perianth 8–9 × 3 mm, glabrous *N. grandis*
 - 8b. Peduncle 1–5 cm long 10
 - 10a. Peduncle and axes of inflorescence glabrous throughout or essentially so 11
 - 11a. Staminate perianth slightly or moderately ferruginous pubescent toward base *N. clarkii*
 - 11b. Staminate perianth glabrous or sometimes sparsely puberulous near base, or minutely papillate apically 12
 - 12a. Staminate perianth 6–6.5 × 3.5–4 mm; inflorescence paniculately and irregularly branched, large and conspicuous with elongated rachis and axes, 6–15 cm long, 5–10 cm wide; peduncle 3–5 mm in diameter; principal secondary nerves 9–12 each side; tertiary veinlets conspicuously reticulate and subelevated on upper leaf surface *N. robusta*

- 12b. Staminate perianth 2×0.8 mm; inflorescence umbellately or trichotomously branched, 1–2 cm long (or high), 2.5–4 cm wide; peduncle 0.8–1.5 mm in diameter; principal secondary nerves 5–7 each side; tertiary veinlets obsolete on upper surface 13
- 13a. Upper leaf surface lustrous; lower leaf surface with subelevated, subreticulate tertiary venation more or less manifest; leaves obtuse or rarely rounded at apex; peduncle (pistillate) 1–1.5 mm in diameter; leaves ovate to subovate *N. tepuiensis*
- 13b. Upper leaf surface dull; lower leaf surface with obsolescent tertiary venation; leaves obtusely acute to acute at apex; peduncle (staminate) 0.8–1 mm in diameter; leaves oblanceolate *N. subglabrata*
- 10b. Peduncle and axes of inflorescence sparsely to densely ferruginous or puberulent, sometimes with glandular trichomes 14
- 14a. Junction of lowest axes of inflorescence with summit of peduncle not manifestly enlarged, 0.8–2 mm wide 15
- 15a. Peduncle usually with paired ferruginous bracts 16
- 16a. Primary axes of inflorescence 4–7, umbellate; pistillate perianth ferruginous tomentose; main lateral nerves of leaf blades sharply ascending at $50\text{--}60^\circ$ *N. bracteosa*
- 16b. Primary axes of inflorescence 3, not umbellate; staminate perianth glabrous except for papillate exterior of lobes; main lateral nerves of leaf blades shallowly ascending at $15\text{--}25^\circ$.
..... *N. amaruyensis*
- 15b. Peduncle ebracteate 17
- 17a. Perianth glabrous or glabrescent; bracts mainly glabrous except for the puberulent margins *N. marahuacae*
- 17b. Perianth variously pubescent; bracts ferruginous dorsally and on margins 18
- 18a. Ultimate axes of inflorescence racemose with alternately arranged flowers; upper and lower midribs of the leaf blade with minute, ferruginous indument 19
- 19a. Lower leaf surface covered with an appressed dense indument; perianth (staminate) broadly urceolate; inflorescence much-branched; perianth and inflorescence axes densely ferruginous tomentose with some glandular hairs; peduncle to 1.2 cm long *N. parimensis*
- 19b. Lower leaf surface glabrous or glabrescent; perianth (pistillate) subinfundibuliform; inflorescence sparsely branched; perianth and inflorescence axes rather sparsely ferruginous tomentose without glandular hairs; peduncle 2–4 cm long *N. tristis*
- 18b. Ultimate axes of inflorescence cymose or corymbiform, or with fasciculately arranged flowers; upper midrib of leaf blades glabrous, the lower midrib glabrous or the basal part sparsely puberulent 20
- 20a. Petiole and upper part of stem with pale, minute, spreading papillalike trichomes; perianth with vermiform, short, appressed hairs; lower leaf surface not densely dark-punctate *N. cedenensis*
- 20b. Petiole glabrous or sometimes minutely glandular; stem glabrous; perianth either minutely appressed puberulent or densely glandular; lower leaf surface densely dark-punctate 21
- 21a. Tertiary venation scarcely evident on any part of the leaves; axes and peduncle of inflorescence densely ferruginous pubescent; fruit 3.5–5 mm wide *N. clarkii*
- 21b. Tertiary venation grossly reticulate, subelevated and manifest on both sides of leaves; axes and peduncle of inflorescence sparsely to moderately glandular-pubescent; anthocarp 6–7 mm wide *N. guaiquinimae*
- 14b. Junction of lowest axes of inflorescences with summit of peduncle enlarged, 2.5–4 mm wide 24

- 22a. Perianth 3–4.5 mm long, 1.5 mm wide; petiole and young stem sparsely puberulent *N. sebastianii*
- 22b. Perianth 6–8 mm long, 2–3.5 mm wide; petiole and young stem glabrous or glabrescent 23
- 23a. Tertiary venation manifest, elevated on lower surface, impressed on upper surface; flowers in small clusters at or near the end of the ultimate axes *N. neblinensis*
- 23b. Tertiary venation obsolete or scarcely manifest; flowers, if clustered, mainly scattered along the length of the ultimate axes 24
- 24a. Pistillate perianth glabrous without; leaves drying blackish; principal secondary nerves 9–12 on each side *N. huachamacarae*
- 24b. Staminate perianth with minute, sparse to moderate ferruginous indument; leaves drying fuscous brown; principal secondary nerves 6–8 on each side *N. mapourioides*

Neea amaruyensis Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Amaruay-tepui, west side, steep slopes, 5°55'N, 62°15'W, 500–740 m, 2 May 1986, *Ronald Liesner & Bruce Holst 20514* (holotype, MO; isotype, VEN).

Frutex vel arbor 2.5–5 m; foliis elliptico-ovatis vel lanceolato-ellipticis apice breviter obtuse acutis 6.5–15 cm longis (2.5–)3.5–7.5 cm latis utroque glabris; nervis lateralibus principalibus utroque 8–10 ad angulum 15–25° adscendentibus, venulis tertiariis reticulatis pagina superiore magis prominulis; inflorescentia masculina 12–21-flora 0.9–1.4 cm longa 1.3–2 cm lata, axibus principalibus tribus 5–8 mm longis 0.5 mm latis sparsim minute ferrugineo-puberulis inaequaliter insertis; pedunculo 1–3 cm longo sparsim vel modice ferrugineo-puberulo pilis subadpressis munito, bibracteato, bracteis oppositis oblongo-ovatis vel oblongis-obtusis 1–2 × 1 mm dense ferrugineo-puberulis 4 mm supra basim dispositis; perianthio masculino cylindrico-subinfundibuliformi 3–3.5 mm longo medio 1.5 mm lato extus glabra; staminibus 8 inclusis.

Shrub or tree 2.5–5 m tall. Leaves mainly opposite; petiole 7–20 mm long, glabrous; leaf blades elliptic-ovate, oblong- or lanceolate-elliptic, abruptly shortly and often subobliquely and obtusely acute, 6.5–15 cm long, (2.5–)3.5–7.5 cm wide, with dark dots beneath, glabrous both sides; principal lateral nerves 8–10 each side with additional shorter intermediate ones, anastomosing 2–5 mm from margin; tertiary venation reticulate, more conspicuous on upper than lower side. Staminate inflorescence relatively small, 0.9–1.4 cm long, 1.3–2 cm wide, 12–21-flowered, the axes unequally inserted, the 3 main ones 5–8 mm long, 0.5 mm wide, sparsely minutely ferruginous puberulent, each axis terminating in 3 shorter axes 0.7–2 mm long, these each supporting 2–3 sessile flowers. Peduncle 1–3 cm long, sparsely to moderately ferruginous puberulent, bibracteate with a pair of oblong-ovate or ob-

long, obtuse, densely ferruginous bracts 1–2 mm long and 1 mm wide situated 4 mm above base. Staminate perianth subinfundibuliform-cylindric, 3–3.5 mm long, 1.5 mm wide at middle, 1–1.2 mm wide at summit, glabrous without. Stamens 8, included; filaments 0.5–1.5 mm long; anthers suborbicular, 0.6–7 mm long, 0.5–0.6 mm wide.

Paratype. VENEZUELA. BOLÍVAR: Amaruay-tepui, southwest slope, 750–900 m, 24 Apr. 1986, *Holst & Liesner 2702* (MO, VEN).

This taxon possesses paired bracts on the peduncle, as in *Neea bracteata* Steyermark, but differs in the perianth of the staminate flower being completely glabrous except for the papillate margins and exterior surface of the shallow perianth lobes. It differs further in the longer petioles, the unequally inserted lower nonumbellate axes of the staminate inflorescences, and the shallowly ascending lateral nerves of the leaves at an angle of 15–25° instead of the sharply ascending ones of *N. bracteata* arising at 50–60°.

Neea bernardii Steyermark, sp. nov. TYPE: Venezuela. Bolívar: de Santa Elena de Uairen al sur-este, 800–900 m, 23 Apr. 1957, *L. Bernardi 6746* (holotype, MER; isotypes, MO, NY).

Arbuscula vel arbor, ramis dense ferrugineo-tomentosis; foliis in sicco brunneis oppositis late ovatis elliptico-ovatis vel oblanceolato-ellipticis apice obtuse acutis vel breviter acuminatis basi cuneatim acutis 5.5–11.5 cm longis (2.7–)3–6.5 cm latis subtus costa media strigillosa aliter glabris, nervis lateralibus utroque latere 6–10 inconspicuis; petiolis (0.8–)1.5–3 cm longis adpresso-ferrugineo-tomentellis; inflorescentia mascula subcorymbosa 1.5–5 cm alta 2.5–10 cm lata dichotome ramosa dense rufo-ferruginea; axibus primariis duobus, (0.4–)1–3 cm longis 1.5 mm diam. dense

adpresso-ferrugineo-tomentosis; pedunculo (2.5–)8–10 cm longo 1.5–2 mm diam. dense adpresso-ferrugineo-tomentoso apice haud manifeste dilatato; perianthio masculino late cylindrico 3–4 mm longo 1.5 mm lato extus dense ferrugineo tomentoso; staminibus 8.

Small or large tree to 40 m tall, with densely ferruginous tomentose branchlets. Leaves opposite; petiole (0.8–)1.5–3 cm long, appressed-ferruginous tomentose; leaf blades drying dull brown to rufous-brown, broadly ovate, elliptic-ovate, or oblanceolate-elliptic, obtusely acute to shortly acuminate at apex, cuneately acute at base, 5.5–11.5 cm long, (2.7–)3–6.5 cm wide, glabrous on both sides except strigose beneath on midrib; lateral nerves 6–10 each side, impressed and inconspicuous above, faintly manifest below; tertiary venation scarcely manifest above, inconspicuously finely reticulate beneath. Staminate inflorescence terminal, subcorymbose, 1.5–5 cm high, 2.5–10 cm broad, dichotomously branched with 2 primary axes (0.4–)1–3 cm long, 1.5 mm diam., these branched into 3 subfasciculate secondary axes (3–)12–16 mm long, each with 2 branches bearing 3–7 clusters of sessile or subsessile flowers, the axes with densely appressed ferruginous tomentum. Peduncle (2.5–)8–10 cm long, 1.5–2 mm diam., densely appressed ferruginous tomentose, its summit 2–3 mm broad, not enlarged at junction with lowest areas. Bracts ovate, acute, 1 mm long, densely ferruginous tomentose. Perianth broadly cylindric or tubular-subinfundibuliform, 3–4 mm long, 1.5 mm wide, densely ferruginous tomentose. Stamens 8, occupying $\frac{2}{3}$ of the length of the tube. Fruit oblong, 14 mm long, 7 mm wide, glabrous.

Paratypes. VENEZUELA. BOLÍVAR: El Palmar, forest on margin of Río Grande, 300 m, 20 Feb. 1959, *Bernardi* 7156 (VEN); 40 km SE of Tumeremo, near Río Botanamo, 100 m, 7 May 1960, *Little* 17597 (US, VEN).

Neea bernardii is distinguished by the greatly elongated peduncle.

Neea bracteosa Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Represa Guri, 55 km NE of Ciudad Piar, 7°35'N, 63°7'W, 250–300 m, 4–5 Apr. 1981, *R. Liesner & A. González* 11277 (holotype, VEN; isotype, MO).

Arbor 8 m, ramis juvenilibus ferrugineo-pubescentibus; petiolis 3–10 mm longis; foliorum laminis oppositis vel ad nodos superiores ternatis coriaceis ellipticis vel lanceolato-elliptico apice acutis vel obtuse acutis basi cuneatim acutis 6–9 cm longis 2–3.5 cm latis, nervis lateralibus utroque latere 8–10 inconspicuis; inflorescentia foeminea umbellatim ramosa 1.5–2 cm alta

2–3.5 cm lata, axibus principalibus 4–7 tenuissimis 6–11 mm longis 0.5 mm latis. Pedunculo tenui 1.5–3.2 cm longo modice ferrugineo-hirtello pilis laxis subpatentibus praedito, apice haud dilatato, conspicue bibracteato, bracteis oppositis inaequalibus 2–4 mm longis ferrugineo-pubescentibus; floribus (immaturo) congestis; perianthio (immaturo) modice vel sparsim ferrugineo-adpresso tomentoso.

Tree 8 m with young branchlets ferruginous pubescent. Leaves opposite or sometimes ternate at the upper nodes; petiole 3–10 mm long, glabrous or moderately to sparsely ferruginous pubescent at the base; leaf blades coriaceous, dull brown upon drying, elliptic or lance-elliptic, acute to obtusely acute at apex, cuneately acute at the mainly equilateral base, 6–9 cm long, 2–3.5 cm wide; lateral nerves 8–10, fine and slightly evident below, scarcely evident above, arising at an angle of 50–60°. Pistillate inflorescence 1.5–2 cm high, 2–3.5 cm broad, with 4–7 umbellately branched very slender axes 6–11 mm long, 0.5 mm wide, moderately ferruginous pubescent with lax subspreading hairs 0.1–0.2 mm long; secondary axes 2–5, also umbellate, 3–5 mm long, bearing several clustered flowers at the apices. Peduncle slender, 1.5–3.2 cm long, 1 mm diam., moderately ferruginous with lax subspreading hairs 0.1–0.2 mm long, bibracteate, not enlarged at junction of summit of peduncle with lowest inflorescence axes. Bracts of peduncle paired, unequal, 2–4 mm long, ferruginous pubescent, usually present between $\frac{1}{4}$ – $\frac{1}{2}$ the length of the peduncle. Flowers (immature) congested, 85–100. Perianth sparsely to moderately ferruginous pubescent.

This taxon may be differentiated by the bibracteate, very slender peduncles with slender umbellate axes.

Neea brevipedunculata Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: between Paso El Diablo and Caño de Culebra, 25–30 km SE of Puerto Ayacucho, 100 m, 12 May 1980, *Julian A. Steyermark, Gerrit Davidse & Francisco Guanchez* 122366 (holotype, pistillate plant, VEN; isotype, MO). Figure 4.

Arbor 6–20 m, ramis glabris, foliis coriaceis opacis obovatis late oblanceolatis vel elliptico-oblongis apice plerumque abrupte obtuseque acutis basi acutis vel obtusis 10–22 cm longis 5–12.5 cm latis omnino glabris, nervis lateralibus utroque latere 6–8; petiolis 1–2.5 cm longis glabris; inflorescentia foeminea multiflora cauliflora 1.5–2 cm alta 2–4 cm lata, ad nodos incrassatos 1–5 inflorescentiis pedunculatis praedita; pedunculis brevibus 1–1.5 cm longis minute puberulis,

omnibus ramosis cum 3–4 axibus divaricatis subfasciculatis vel subumbellatis 9–20 mm longis minute adpressoque puberulis; perianthio foemineo infundibuliformi 3.5 mm longo superne 2.5 mm lato extus minute puberulo; perianthio masculo tubuloso 3.7 mm longo 1.5 mm lato extus glabro; staminibus 7 inclusis.

Tree 6–20 m tall, with glabrous branchlets. Petioles 1–2.5 cm long, glabrous; leaf blades coriaceous, opaque, obovate, broadly oblanceolate, or elliptic-oblong, abruptly and obtusely acute to rarely rounded at apex, cuneately acute to obtuse at base, 10–22 cm long, 5–12.5 cm wide; lateral nerves 6–8 each side, slightly elevated below, obsolescent above; tertiary veinlets obscure above, slightly evident below, forming large areoles. Pistillate inflorescence cauliflorous, 1.5–2 cm high, 2–4 cm wide, with 1–5 short, many-flowered, pedunculate inflorescences arising from the old wood at the usually thickened nodes. Peduncles 1–1.5 cm long, minutely puberulent, each branched into 3–4 widely divaricate, subfasciculate or subumbellate primary axes 9–20 mm long, these branched above into short, alternate secondary axes 2–7 mm long bearing the flowers, minutely appressed pale tomentellose. Pistillate perianth infundibuliform, 3.5 mm long, 2.5 mm wide, externally minutely puberulent; pistil 3 mm long (ovary 1 mm long; style 1 mm long with prominently penicillate stigmas 1 mm long); sterile filaments 0.5–1.5 mm long. Staminate flowers in sessile alternately arranged clusters along the short axes of the inflorescence. Staminate perianth tubular, somewhat narrowed at base, 3.7 mm long, 1.5 mm wide, glabrous. Stamens 7, included within perianth; filaments 0.5–2 mm long.

Paratype. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: 3 km NE of San Carlos on Solano Road, at edge of bana (lower Amazon caatinga), 1°56'N, 67°3'W, 119 m, *H. Clark* 6605 (staminate plant, MO).

This taxon has been confused with *Neea floribunda* Poeppig & Endl. but differs in the shorter peduncles with more closely crowded, smaller flowers of a different form and in the glabrous staminate perianth.

Neea cedenensis Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Departamento Cedeño: bosque de galería del Caño Chaviripa del drenaje del Escudo Guayanes, carretera Caicara–El Burro, 16 Apr. 1984, *B. Stergios, D. Tephorn, L. Nico & C. Gilbert* 8611 (holotype, MO; isotype, PORT).

Frutex, ramulis modice puberulis trichomatibus

brevibus patentibus instructis; laminarum foliis lanceolatis vel lanceolato-ellipticis apice anguste subobtusis basi acutis 8.5–11.5 cm longis 2.2–3.5 cm latis utrinque glabris costa media inferiore prope basem trichomatibus ferrugineis praedita excepta, nervis lateralibus utroque ca. 10 inconspicuis, venatione tertiaria inconspicue reticulata; inflorescentia masculina subumbellata ca. 27-flora inaequaliter ramosa, axibus quinque dense ferrugineo-tomentellis; pedunculo 12 mm longo dense ferrugineo-puberulo; perianthio masculino subinfundibuliformi-cylindrico 3–4 mm longo superne 1–1.2 mm lato indumento ferrugineo pilis vermiformibus munito; staminibus 8.

Shrub having stems moderately puberulent with pale, short, spreading trichomes 0.05–0.1 mm long. Petiole with minute, spreading, short papillalike trichomes; leaf blades mainly opposite, lanceolate or lance-elliptic, narrowed to a subobtuse apex, acute at base, 8.5–11.5 cm long, 2.2–3.5 cm wide, 3–3½ times longer than broad, glabrous on both sides except for scattered pale-ferruginous trichomes at base of lower midrib, the upper surface punctate; lateral nerves about 10 and inconspicuous both sides; tertiary venation inconspicuously reticulate. Staminate inflorescence terminal, 0.8 cm long, 2 cm wide, ca. 27-flowered, subumbellate with 5 main axes unequally branched 1–2.5 mm above the base, densely ferruginous puberulent, each axis unequally divided into 4 branches 1.5–2 mm long, these 1–2-flowered. Flowers sessile. Bracts subtending flowers lanceolate, acute, 0.8–1 mm long, unequal, densely ferruginous puberulent. Staminate perianth cylindric-subinfundibuliform, 3–4 mm long, 1–1.2 mm wide at summit, abundantly streaked with appressed, ferruginous, vermiform indument without. Stamens 8; filaments 1.5–2 mm long; anthers suborbicular, 0.6 mm long, 0.8 mm wide.

This taxon is characterized by short, spreading trichomes on stems and petioles, vermiform ferruginous indument on the staminate perianth, small inflorescences, and inconspicuous tertiary venation.

Neea clarkii Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: 4.3 km NNE on Solano Road, 1°56'N, 67°3'W, 119 m, *Howard L. Clark* 6980 (holotype, NY).

Frutex 3 m, ramulis glabris; petiolis 8–15 mm longis glabris; foliorum laminis coriaceis lanceolato-ellipticis vel oblanceolato-ellipticis apice acutis vel acuminatis basi cuneatim acutis 8–12.5(–15) cm longis 2.5–4.5 (–5.5) cm latis ubique glabris subtus interdum arcte punctulatis; inflorescentia mascula terminali vel axillari trichotome ramosa, axibus dense ferrugineo to-

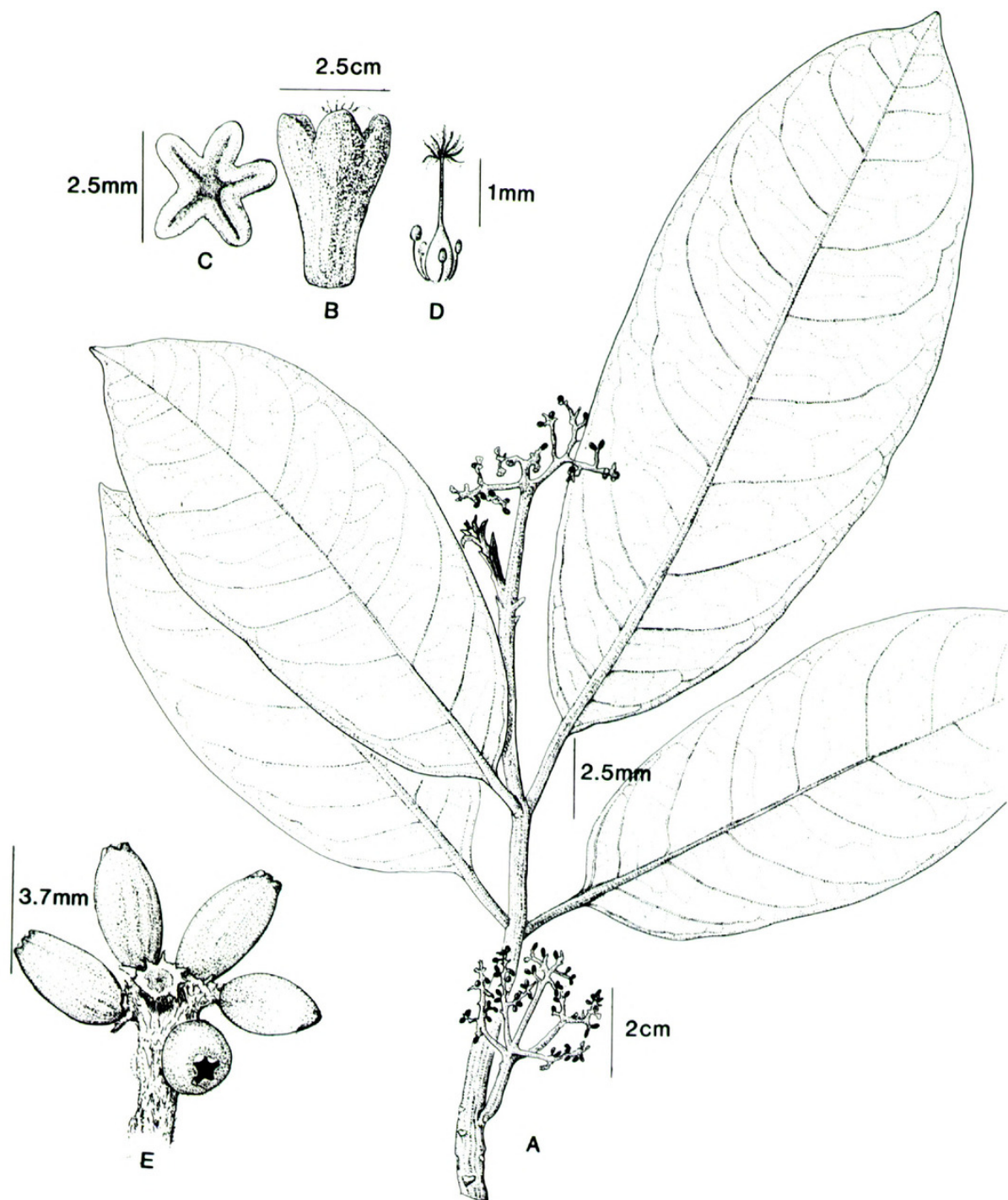


FIGURE 4. *Neea brevipedunculata*.—A. Flowering branch, pistillate plant.—B. Pistillate perianth, exterior view.—C. Pistillate perianth, apical view showing thickened perianth lobes.—D. Pistil with rudiments of stamens.—E. Portion of staminate inflorescence. Based on holotype.

mentosis; pedunculo ferrugineo-tomentoso apice haud dilatato; perianthio masculino subinfundibuliformi 4 mm longo supra medium 1.5 mm lato extus minute sparsimque adpresso-puberulo pilis pallidis munito; staminibus 8, anthocarpio ellipsoideo 8.5–10 mm longo, 3.5–5 mm lato glabro.

Shrub 3 m tall with grayish-white, glabrous branches. Petioles 8–15 mm long, glabrous; leaf blades coriaceous, fuscous, lanceolate-elliptic or

oblanceolate-elliptic, acute to shortly acuminate at apex, cuneately acute at the equilateral base, 8–12.5(–15) cm long, 2.5–5.5 cm wide; glabrous both sides, densely dark punctate below; lateral nerves 8–11 each side, finely impressed or obsolescent above, faint or finely elevated below; tertiary venation inconspicuous. Staminate inflorescence terminal or axillary (immature?), trichotomously branched, 10 mm high, 12 mm

wide, shortly pedunculate; 3 primary axes 2 mm long (immature), ferruginous tomentose, terminating in groups of 3 or more sessile flowers. Bracts ovate-deltoid, subacute, 0.3–0.4 mm long, densely ferruginous tomentose. Peduncle 4–15 (–30) mm long, 1–1.5 mm wide, ferruginous tomentose, not enlarged at junction of peduncle with lowest axes of inflorescence. Staminate perianth subinfundibuliform, 4 mm long, 1.5 mm wide above the middle, minutely sparsely pubescent with pale hairs without. Stamens 8, included, unequal; filaments 1.3–2.2 mm long. Fruit ellipsoid, 8.5–10 mm long, 3.5–5 mm wide, glabrous.

Paratypes. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: San Carlos, 21 Mar.–17 Apr. 1981, *Delascio, Christensen & Broome* 9496 (VEN); 4 km NE of San Carlos, *Liesner* 6422 (MO, VEN); prope San Carlos and Río Negro, 1853, *Spruce* 3766 (NY); San Carlos de Río Negro, 16 Feb. 1981, *Otto Huber* 6067 (VEN).

This species is related to *Neea guaiquinimae*, from which it differs in the absence of glandularity on the peduncles and axes of the inflorescence, the lack of tertiary reticulation on the leaves, and in a denser indument on the peduncle and inflorescence axes.

Huber's specimen matches the photographs of two unpublished names by Heimerl of a *Spruce* 3766 collection from "prope San Carlos, ad Río Negro." The photograph from the Vienna herbarium has a note by Heimerl pertaining to a pistillate plant, "Insbesondere durch die Kräftig berandeten Blätter u. wahrscheinlich auch durch Cauliflori ausgezeichnet." This photo shows a cauliflorous, dense, short inflorescence only 10 mm high and 8 mm broad. The other photo from the Berlin herbarium does not show any inflorescence. The specimen of *Huber* 6067 also shows a small inflorescence 10 mm high and 8–12 mm broad. Of the three small inflorescences present, one appears at the apex of a leafless short branch, whereas the other two originate 5 mm below the apex of a leafless stem.

The lower leaf surface of the *Huber* 6067 collection is densely punctate, but the other collections assigned to *Neea clarkii* do not show punctation.

Neea davidsei Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amacuro: Departamento Tucupita, mountain area, ca. 13 km by road ESE of town of Sierra Imata, 8°23'N, 62°23'W, 400 m, 4–6 Apr. 1979, *Gerrit Da-*

vidse & A. González 16558 (holotype, VEN; isotype, VEN).

Arbor 8 m, ramulis glabris; petiolis 1–2 cm longis glabris; foliorum laminis oppositis late obovatis vel late oblongo-ellipticis apice subacute obtusis vel acutis basi cuneatim acutis 11–24(–30) cm longis 6.5–11(–16) cm latis omnino glabris, nervis lateralibus utroque latere 8–10; inflorescentia foeminea cauliflora pedunculata vel epedunculata, axibus minute sparsimque puberulis pilis adpressis fulvis munitis, primariis 3 cm longis superne ramosis usque 5 mm longis; pedunculo vetere fructifero 1–3.5 cm longo 3 mm diam.; bracteis ovatis subacutis 0.5 mm longis extus sparsim adpresso puberulis; floribus sessilibus; anthocarpio 1.2 cm longo 0.8–1 cm lato haud costato.

Tree 8 m, the branches glabrous. Leaves opposite; petiole 1–2 cm long, glabrous; leaf blades broadly obovate or broadly oblong-elliptic, narrowed to a subacutely obtuse or acute apex, cuneately acute at base, 11–24(–30) cm long, 6.5–11(–16) cm wide, wholly glabrous; lateral nerves 8–10 each side, ascending at an angle of 35–45°, indistinctly anastomosing 10–15 mm from margins, elevated and somewhat prominent below, obsolescent or faintly impressed above; tertiary veinlets inconspicuous, grossly reticulate below, obsolescent above. Pistillate inflorescence axillary, cauliflorous on the old wood, pedunculate or epedunculate. Flowers sessile. Old fruiting peduncle 1–3.5 cm long, 3 mm diam. Primary axis on old inflorescence 3 cm long, branched in upper 1/3 with alternate short axes 5 mm long, all axes minutely and sparsely puberulent with pale appressed hairs. Anthocarp 1.2 cm long, 0.8–1 cm wide, not ribbed.

Paratypes. VENEZUELA. BOLÍVAR: between km 11 and 18.5, south of El Dorado, 215 m, 23 July 1960, *Steyermark* 86585 (NY, VEN). TERRITORIO FEDERAL DELTA AMACURO: Orocoima, Río Toro, *Bernardi* 7573, *Buza* 3734 (NY).

The axillary, cauliflorous infructescence relates this species to *Neea liesneri* of Cerro de La Neblina, but the former differs in the longer, stouter peduncle, sessile flowers, and completely glabrous lower leaf surface.

The fruiting paratype has the leaves broadly oblong-elliptic and acute, whereas in the holotype the leaf blades are broadly obovate narrowed to a subacutely obtuse apex.

Neea guaiquinimae Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Cerro Guaiquinima, summit, NE sector, 6°00'N, 63°28'W, 1,650 m, 9 Apr. 1979, *Julian A. Steyermark, G.*

C. K. & E. Dunsterville 117971 (holotype, VEN; isotype, MO).

Arbuscula vel frutex 2–3 m, ramis glabris; petiolis 5–20 mm longis minute glanduliferis vel glabris; foliorum laminis elliptico-ovatis apice obtuse acutis basi subacutis vel acutis 5–12.5 cm longis 2–6 cm latis supra glabris subtus glanduloso-punctatis, nervis lateralibus utroque latere venulis tertiariis ubique manifeste grosseque reticulatis; inflorescentia foeminea trichotome ramosa 1 cm alta 1.8 cm lata, axibus principalibus quattuor 4–5 mm longis 0.8 mm diam., modice glanduliferis; pedunculo sub anthesi 2.5 cm longo 1 mm diam. sub fructu 5–7 cm longo 1.5–2 mm lato, sparsim glandulifero; perianthio tubuloso 4 mm longo 1.2 mm lato extus dense glandulifero. Anthocarpio oblongo-ellipsoideo vel ovato-oblongo 12–13 mm longo 6–7 mm lato obtuse 10-costato glabro.

Small tree or shrub 2–3 m tall, the branchlets glabrous. Petioles 5–20 mm long, glanduliferous or the glands deciduous; leaf blades coriaceous, elliptic-ovate, obtusely acute at apex, subacute to cuneately acute at base, 5–12.5 cm long, 2–6 cm wide, glabrous above, densely dark gland-dotted below, slightly revolute on margins; lateral nerves 6–10 each side, slightly impressed or obsolescent above, slightly elevated below; tertiary venation on both sides subelevated, grossly reticulate. Pistillate inflorescence trichotomously branched, 1 cm high, 1.8 cm broad, with 4 primary axes 4–5 mm long, 0.8 mm diam., moderately glanduliferous, the primary axes shortly branched into 4 shorter, moderately glanduliferous secondary axes 1–2 mm long terminating in shortly pedicellate extensions, each bearing 2–3 sessile flowers. Peduncle in anthesis 2.5 cm long, 1 mm diam., sparsely glanduliferous in fruit, 5–7 cm long, 1.5–2 mm wide and glabrous, pendent in fruit, the junction of peduncle with lowest axes not conspicuously enlarged. Bracts narrowly lanceolate, 1 mm long, densely glanduliferous. Pistillate perianth tubular, 4 mm long, 1.2 mm wide, densely glandular without; ovary ellipsoid, 1.3 mm long, sessile; style 1 mm long; stigmas 0.4 mm long, fimbriate. Anthocarp oblong-ellipsoid to ovate-oblong, 12–13 mm long, 6–7 mm wide, obtusely 10-costate.

Paratype. VENEZUELA. BOLÍVAR: Cerro Guaiquini-ma, W sector near forested border, 5°45'N, 63°43'W, 1,540 m, *Steyermark, Berry, G. C. K. & E. Dunsterville 117499* (MO, VEN).

This species is distinguished by the sparsely to moderately glandular pubescence of the peduncle and inflorescence axes and by the manifestly sub-elevated, grossly reticulate tertiary venation on both leaf surfaces.

Neea huachamacaræ Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Río Cunucunuma, base of trail to Cerro Huachamacari, 3°39'N, 65°41'W, 220 m, 7 Mar. 1985, *Ronald Liesner 18403* (holotype VEN; isotype, MO).

Arbor 10 m, ramis glabris; petiolis 1–2.5 cm longis glabris; foliorum laminis oppositis oblanceolatis vel oblongo-ellipticis apice acutis obtusis vel rotundatis basi cuneatim acutis 6–15.5 cm longis 3–5.5 cm latis glabris; nervis lateralibus utroque latere 9–12 inconspicuis; inflorescentia foeminea terminali, axibus dense ferrugineo-adpresso-pubescentibus, pedunculo 1–2.5 cm longo 2 mm lato autem 3–4 mm lato ad pedunculi cum apice axibus infimis juncturam inserto; floribus secus longitudinem axis insertis; perianthio subpandurato-tubuloso 7.5–8 mm longo 3–3.5 mm lato extus glabro.

Tree 10 m tall with glabrous branches. Leaves opposite; petiole 1–2.5 cm long, glabrous; leaf blades opaque, drying blackish, oblanceolate or oblong-elliptic, shortly acute, obtuse, or rounded at apex, cuneately acute at base, 6–15.5 cm long, 3–5.5 cm wide; lateral nerves 9–12 each side, not elevated, inconspicuous; tertiary venation inconspicuous. Pistillate inflorescence terminal, the usually 4 primary axes 5–13 mm long, branched into 10–15 secondary axes, the solitary flowers or groups of flowers borne along the length of the axes, not congested in groups at the ends of the axes, the axes densely ferruginous appressed-pubescent. Peduncle 1–2.5 cm long, 2 mm wide except at the junction of the lowest axes of the inflorescence with the top of the peduncle where enlarged to 3–4 mm wide. Perianth subpandurate-tubular, 7.5–8 mm long, 3–3.5 mm wide, glabrous without. Ovary 2–3 mm long; style 5–6 mm long, exerted 2 mm; sterile stamens 6 with filaments 3 mm long.

This species is characterized by having the flowers inserted along the length of the axes of the inflorescence rather than in congested groups at the ends of pedicellate branches. In this respect it resembles *Neea mapouriioides* but differs in the glabrous pistillate perianth and the greater number of principal secondary nerves of the leaf blades.

Neea ignicola Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: 11 km N of Puerto Ayacucho toward El Burro, 5°44'N, 67°30'W, 90 m, 26 Jan. 1978, *Otto Huber & Julio Cerda 1456* (holotype, VEN).

Frutex 2–3 m, ramulis dense hirtellis pilis patentibus

rufo-brunneis munitis; petiolo vix evoluto usque 1 mm pilis patentibus rufo-brunneis munito; foliorum laminis membranaceis subsessilibus ovato-lanceolatis apice plerumque acuminatis basi obtusis vel rotundatis 3.5–6 cm longis 1.3–2.5 cm latis ubique glabris; nervis lateralibus utroque latere ca. 10; venulis tertiariis ubique conspicue reticulatis; inflorescentia mascula terminali axillarique 5–13 mm alta 7–10 mm lata (immatura?), axibus primariis quattuor alternatim ramosis cum floribus racemose alternatis secus longitudinem insertis autem floribus terminalibus aggregatis; bracteis sub axibus lanceolatis 1–1.5 mm longis; pedunculo filiformi 8–14 mm longo 0.4–0.5 mm lato hirtello pilis rufo-brunneis patentibus munito; perianthio masculino (immature) tubuloso extus sparsim hirtello pilis ferrugineis munito; staminibus 6–7.

Shrub 2–3 m tall; branches slender, 1–1.5 mm diam., densely reddish-brown hirtellous with spreading hairs 0.5 mm long. Petiole scarcely developed, up to 1 mm long, hirtellous with lax, subspreading hairs; leaf blades subsessile, membranous, ovate-lanceolate, usually narrowed to an acuminate apex, obtuse or rarely rounded at base, 3.5–6 cm long, 1.3–2.5 cm wide, glabrous both sides; principal lateral nerves 10 or sometimes more on both sides, elevated above, less conspicuous beneath; tertiary venation reticulate both sides, less so beneath. Staminate inflorescence axillary and terminal, 5–13 mm high, 7–10 mm broad, densely hirtellous with rufous-brown spreading hairs; the 4 primary axes alternately and racemosely branched with flowers solitary along the length of the axes, but with terminal flowers in 2s or 3s, the secondary axes scarcely or not developed. Peduncle filiform, 8–14 mm long, 0.4–0.5 mm diam., hirtellous with rufous-brown spreading hairs, not enlarged at apex where joining the lowest axes of the inflorescence. Bracts subtending base of primary axes lanceolate, subacute, 1–1.5 mm long. Staminate perianth (immature) tubular, sparsely hirtellous with ferruginous hairs. Stamens 6–7.

This taxon is readily differentiated by its sessile or subsessile leaves and spreading pubescence.

Neea liesneri Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Departamento Río Negro: Cerro de La Neblina, 0.4 km W of base camp on Río Mawarimuma, 0°50'N, 66°10'W, 140 m, 9 Mar. 1984, *Liesner 16502* (holotype, VEN; isotype, MO). Figure 5.

Arbor 5 m; petiolis 1–2 cm longis; foliorum laminis late obovatis vel lato oblongo-ovatis apice subacutis obtusis vel rotundatis basi acutis majoribus asymmetricis 16–30 cm longis 9–16 cm latis supra glabris sub-

tus costa media nervis lateralibusque elevatis prominentibusque minute puberulis pilis patentibus munitis aliter glabris, nervis lateralibus 9–12 utroque latere distantibus 12–27 mm subtus conspicue elevatis; inflorescentia mascula cauliflora multiramosa multiflora 2.5 cm longa 5 cm lata; axibus dense puberulis pilis adpressis munitis; pedunculo 5–6 mm longo dense puberulo pilis adpressis munito; floribus pedicellatis, pedicellis 2–2.5 mm longis dense puberulis pilis adpressis obtectis; perianthio urceolato 6 mm longo basi 4 mm lato apicem versus 1.5–2 mm lato extus dense puberulo pilis adpressis oblecto; staminibus 7–9; anthocarpio oblongo-ellipsoideo 20 mm longo 8 mm lato minute pubescenti pilis subferrugineis adpressis oblecto.

Tree 5 m tall. Petioles 1–2 cm long; leaf blades broadly obovate or broadly oblong-ovate, subacute to obtuse or rounded at apex, acute at base, the larger leaves conspicuously asymmetrical, the smaller leaves nearly symmetrical, 16–30 cm long, 9–16 cm wide, glabrous above, the midrib and lateral nerves beneath prominent and elevated with minute spreading pubescence, elsewhere glabrous; lateral nerves 9–12 each side, ascending at an angle of 35–45°, anastomosing 5–13 mm from the margin, regularly 12–27 mm equidistant or irregularly spaced, conspicuously elevated below, inconspicuously impressed above; intermediate and tertiary venation below inconspicuously grossly reticulate, inconspicuous above. Staminate inflorescences cauliflorous on the old wood, broader than high, 2.5 cm long, 5 cm broad, much branched, many-flowered, the lateral primary axes divaricate, 1–2 cm long, all parts densely puberulent with pale-fulvous, appressed hairs. Peduncle 5–6 mm long. Staminate flowers on pedicels 2–2.5 mm long and covered with a pale-fulvous, appressed puberulence. Staminate perianth urceolate, 6 mm long, 4 mm wide at base, 1.5–2 mm wide near summit, densely puberulent with pale-fulvous, appressed hairs. Stamens 7–9, the anthers 1.3–2 mm long, apiculate or exapiculate, the shorter filaments 1–2 mm long, the longer ones 3–4 mm long; pistillode 4–5 mm long. Anthocarp oblong-ellipsoid, 20 mm long, 8 mm wide, minutely pubescent with appressed, subferruginous hairs.

Paratype. BRAZIL. AMAZONAS: Between Maloca and Rio Cauaburi, south of Cerro de La Neblina, 50–100 m, *Nilo T. Silva & Umbelino Brazão 60782* (MO, NY).

This remarkably distinct species is characterized by the cauliflorous, many-branched, cymose inflorescence developed on the old wood; large, obovate, conspicuously nerved leaves; and large, pedicellate, urceolate staminate flowers with strongly developed asymmetrical bases.

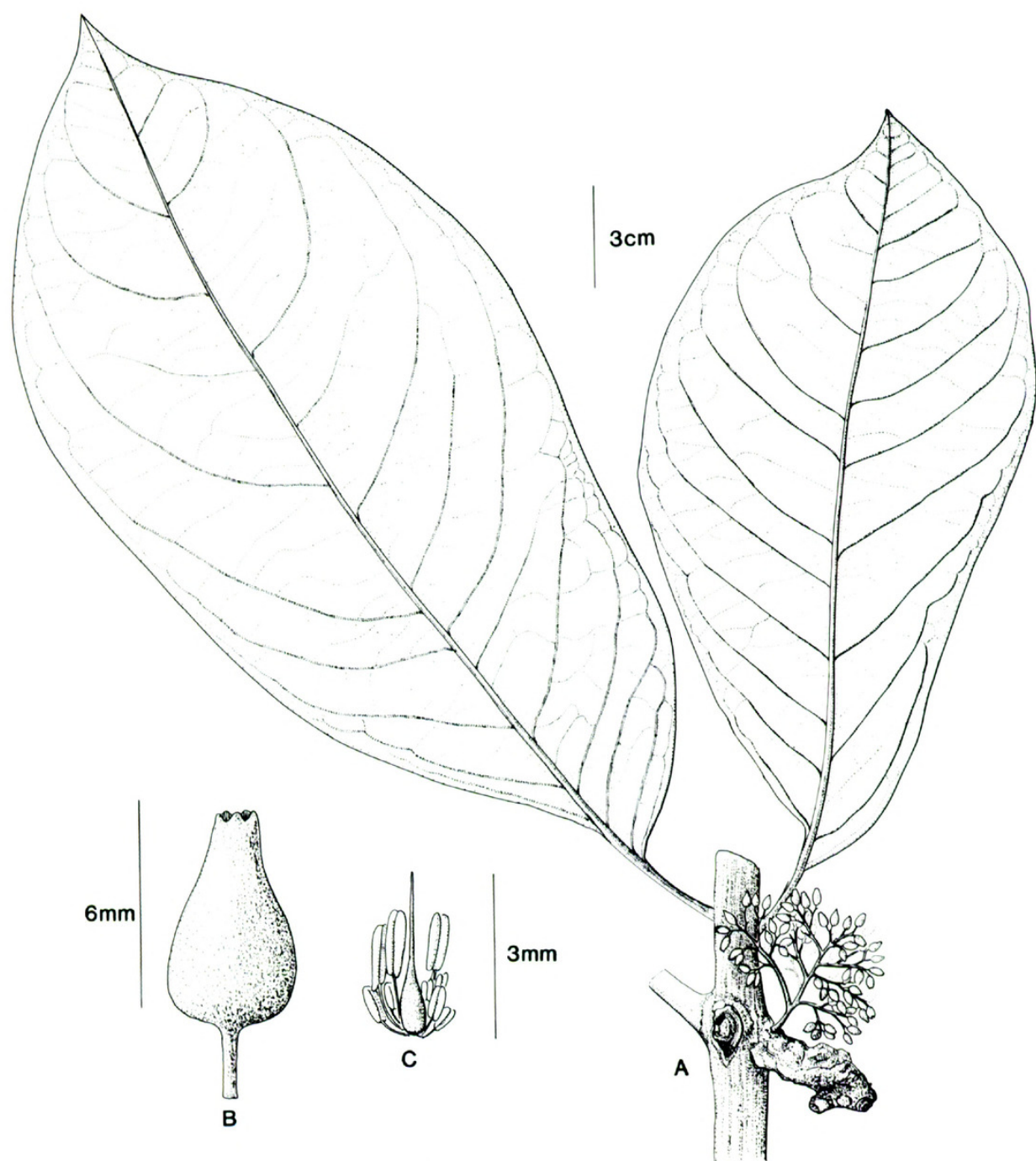


FIGURE 5. *Neea liesneri*.—A. Portion of flowering branch of staminate plant.—B. Staminate flower.—C. Pistillodium with stamens. Based on holotype.

Neea mapourioides Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: 0.5–1.5 km east of San Carlos, 1°55'N, 67°5'W, 120 m, 1 Dec. 1977, *Ronald Liesner* 4096 (holotype, VEN; isotype, MO).

Frutex 3 m, ramulis glabris; petiolis 5–15 mm longis glabris; foliorum laminis oppositis elliptico-obovatis apice abrupte acuminatis basi cuneatim acuminatis 5.5–17.5 cm longis 4–7 cm latis ubique glabris; nervis lateralibus principalibus utroque latere 6–8; inflorescentia mascula terminali 2.5–4.5 cm alta 3.5–7 cm lata,

axibus late divaricatis, axibus primariis 3–4, dense ferrugineo-tomentosis, axium ultimorum floribus alternatim dispositis. Pedunculo 1.5–2.5 cm longo 1.5–2 mm lato paullo dilatato usque 2.5 mm lato ad pedunculi cum axibus infimia juncturam inserto minute ferrugineo-tomentoso; bracteis sub floribus ovato-deltoides subacutis 0.5–0.8 mm longis ferrugineo-tomentosis; perianthio masculino ellipsoideo minute ferrugineo-puberulo 6.5–7 mm longo 2.8–3 mm lato apice angustato; staminibus 7 inaequalibus.

Shrub 3 m tall; branches glabrous. Leaves opposite; petiole 5–15 mm long, glabrous; leaf blades

coriaceous, opaque, fuscous, elliptic-obovate, abruptly acuminate at apex, cuneately acuminate at base, 5.5–17.5 cm long, 4–7 cm wide; lateral nerves 6–8 each side, anastomosing 4–6 mm from margin, impressed and slightly manifest below, but essentially obsolescent; tertiary venation obsolete above, scarcely impressed beneath. Staminate inflorescence terminal, 2.5–4.5 cm high, 3.5–7 cm wide, the axes widely spreading, densely ferruginous tomentose, the 3–4 primary axes 1.5–3.5 cm long with the branched part bearing flowers, the ultimate branches bearing sessile flower clusters scattered alternately along the length; peduncle 1.5–2.5 cm long, 1.5–2 mm wide, but at the summit with the lowest axes of the inflorescence enlarged to 2.5 mm wide, sparsely to moderately minutely brown puberulent. Bracts of base of primary axes 1–1.5 mm long, ferruginous tomentose, those subtending the flowers ovate-deltoid, subacute, 0.5–0.8 mm long, ferruginous tomentose. Staminate perianth narrowly ellipsoid, 6.5–7 mm long, 2.8–3 mm wide, narrower at summit, sparsely to moderately minutely ferruginous puberulent. Stamens 7, included within the lower $\frac{1}{3}$ – $\frac{1}{2}$ of the perianth tube, unequal; anthers 1.5×0.5 –1 mm; filaments 1–3 mm long. Stylopodium 4 mm long.

This species possesses alternately arranged flowers on the axes of the inflorescence as in *Neea huachamacaræ* but differs in the fewer lateral nerves, the fuscous-brown instead of blackish leaves when dried, and in having pubescence on the staminate perianth, as opposed to the glabrous pistillate perianth in *N. huachamacaræ*.

Neea marahuacæ Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Cerro Marahuaca, forested slopes 1–2 km N of Sima Camp, 3°43'N, 65°31'W, 1,100 m, 8–9 Mar. 1985, *Ronald Liesner 18428* (holotype, VEN; isotype, MO).

Frutex 2 m, ramulis glabris; petiolis 7–20 mm longis; foliorum laminis elliptico-oblancoelatis apice acuminatis basi acutis vel acuminatis 7.5–10.5 cm longis 2.5–4.5 cm latis glabris, nervis lateralibus utroque latere 6–8; inflorescentia mascula terminali subumbellatim 5-ramosa 5–8 mm alta 10–15 mm lata, sparsim rufo-ferrugineo pubescenti; pedunculo tenui 1.5–2 cm longo 0.5–0.7 mm diam. sparsim puberulo pilis adpressis munito; perianthio masculino tubuloso 1.5 mm longo 0.7 mm lato extus glabro vel glabrescenti; staminibus 5–6 inaequalibus inclusis.

Shrub 2 m. Young stems glabrous. Petioles 7–20 mm long; leaf blades opaque, elliptic-oblan-

coelate, acuminate at apex, acute to acuminate at base, 7.5–10.5 cm long, 2.5–4.5 cm wide, glabrous; lateral nerves 6–8 each side, inconspicuous; tertiary venation obsolete or inconspicuous. Peduncle slender, 1.5–2 cm long, 0.5–0.7 mm diam., simple or forked near base, sparsely appressed-pubescent with reddish-brown pubescence, not enlarged at junction of summit with lowest axes of inflorescence. Staminate inflorescence terminal, subumbellately 5-branched, 5–8 mm high, 10–15 mm wide, sparsely rufous-brown appressed-puberulent; primary axes 2–3 mm long; secondary axes 0.5–1 mm long, each terminating in branched congested clusters, each of these bearing 4–5 flowers. Bracts at base of flower clusters ligulate-lanceolate, acute, 1.2 mm long, 0.3–0.4 mm wide, glabrous except for the minutely puberulous margins near the apex. Staminate perianth tubular, 1.5 mm long, 0.7 mm wide, glabrous or glabrescent without. Stamens 5–6, unequal, included; anthers suborbicular, 0.1 mm long (immature).

Paratype. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Cerro Marahuaca, Sima Camp, S-Central portion of forested slopes along east branch of Caño Negro, 3°43'N, 65°31'W, 1,140 m, 21–22, 24 Feb. 1985, *Steyermark & Holst 130545* (MO).

This montane species of Cerro Marahuaca differs from related species in the glabrous or glabrescent staminate perianth and in the mainly glabrous bracts, except for the apical margins.

The paratype differs from the type collection in having ovate-elliptic to elliptic-obovate leaves, which are larger, indistinctly nerved, and subacutely obtuse at the apex.

Neea parimensis Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Sierra Parima, Simarawochi, Río Matakuni, 3°49'N, 64°36'W, 6–7 km west of Venezuelan-Brazilian frontier, 795–830 m, 18–23 Apr. 1973, *Julian A. Steyermark 106982* (holotype, VEN; isotype, NY).

Arbor 10 m, ramulis dense adpresso-pubescentibus; petiolis 5–8 mm longis dense adpresso-pubescentibus; foliorum laminis membranaceis oblanceolatis apice acutis basi acute attenuatis 4–7 cm longis 1.5–2.5 cm latis supra glabris subtus minute adpresso-puberulis, nervis lateralibus utroque latere ca. 8 vix manifestis; inflorescentia mascula terminali 4 cm alta 5 cm lata multiramosa axibus principalibus 4–8 floribus secus longitudinem alternatim dispositis, axibus dense ferrugineo-tomentosis cum pilis glandulosis interspersis; pedunculo usque 12 mm longis vel nullo dense ferrugineo-tomentoso cum pilis glandulosis interspersis;

bracteis sub floribus quattuor cupulam facientibus late ovatis 0.7 mm longis extus dense ferrugineo-tomentosis; perianthio masculino urceolato 4 mm longo 2.5 mm lato extus dense ferrugineo cum pilis glandulosis interspersis; staminibus 7 inclusis, filamentis 1.2 mm longis.

Tree 10 m tall with densely appressed-pubescent stems. Petioles 5–8 mm long, densely appressed-pubescent; leaf blades membranous, oblanceolate, acute at apex, narrowed to an acute base, 4–7 cm long, 1.5–2.5 cm wide, the upper surface glabrous, the lower surface densely appressed-puberulent with minute scalelike hairs; lateral nerves about 8 each side, scarcely evident. Staminate inflorescence terminal, 4 cm high, 5 cm broad, much branched, the flowers alternately arranged on the numerous axes, the 4–8 principal axes unbranched in the basal 8–13 mm, then forked into alternately or fasciculately disposed secondary axes, densely ferruginous tomentose mixed with glandular hairs. Peduncle none or up to 12 mm long, densely ferruginous tomentose with intermixed glandular hairs. Bracts at base of flowers 4, forming a cupule, broadly ovate, subacute, 0.7 mm long, densely ferruginous tomentose without. Staminate perianth urceolate, 4 mm long, 2.5 mm wide at the middle, constricted below the summit, densely ferruginous tomentose without, mixed with short glandular hairs. Stamens 7, included within the lower half of the perianth tube; filaments 1.2 mm long.

This species is characterized by having a broadly urceolate staminate perianth, much-branched inflorescence, lower leaf surface with a dense appressed indument, and a short peduncle. Glandular hairs are scattered on the perianth, peduncle, and axes of the inflorescence.

Neea robusta Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: third savanna at western base of Cerro Yapacana, 3°40'N, 66°50'W, 100 m, 14–28 Feb. 1978, *Otto Huber 1693* (holotype, VEN).

Arbor 3 m, ramulis glabris; petiolis 1–3.5 cm longis glabris; foliorum laminis obovatis elliptico-lanceolatis elliptico-oblongis vel oblongo-ellipticis apice plerumque breviter obtuseque acutis vel obtusis vel rotundatis basi cuneatim acutis 8–24 cm longis 4.5–9.5 cm latis ubique glabris, nervis lateralibus utroque latere 9–12 supra venulis tertiariis conspicue reticulatis; inflorescentia mascula subpyramidalis paniculata ramosa 6–15 cm longa 5–10 cm lata axe superiore magis longiore quam axibus inferioribus, axibus lateralibus 4–8 divaricatis 2–3 mm diam. superioribus brevioribus plerumque alternis, inferioribus longioribus plerumque oppositis vel alternis, axis parte apicali minute ad-

presso-ferrugineo puberula axibus aliter glabris, floribus sessilibus; perianthio mascula suburceolato 6–6.5 mm longo 3.5–4 mm lato ad apicem magis angustato extus glabro; staminibus 9–10 inclusis; pistillodio 3 mm longo; infructescentia 6–15 cm longo 7–15 cm lato; pedunculo fructifero 1–6 cm longo 3–5 mm lato ad apicem dilatato; anthocarpio in sicco 1.2 × 0.5 cm in vivo 2 × 1 cm.

Tree 3 m tall, the branches glabrous. Petioles 1–3.5 cm long, glabrous; leaf blades coriaceous, obovate, elliptic-lanceolate, elliptic-oblong, or oblong-elliptic, mainly shortly and obtusely acute or obtuse at apex, sometimes rounded, cuneately acute at the base, 8–24 cm long, 4.5–9.5 cm wide, glabrous both sides; lateral nerves 9–12 each side, slightly elevated on upper surface, less conspicuous and impressed on lower surface, anastomosing 5–10 mm from the margin; tertiary venation subelevated and conspicuously reticulate on upper surface, less conspicuously reticulate on lower surface. Staminate inflorescence elongated, subpyramidal, paniculately branched, 6–15 cm long, 5–10 cm wide, the upper axis longer than the lateral ones, 6–9 cm long, 6 mm diam., the 4–8 lateral axes divaricately spreading, 0.3–2 cm long, 2–3 mm diam., the upper ones generally shorter and alternate, the lower axes longer, opposite or alternate, glabrous except minutely appressed ferruginous puberulent apically. Peduncles in anthesis 1–1.2 cm long, in fruiting stage 1–6 cm long, 3–5 mm diam. Flowers sessile and scattered but more congested apically. Bracts subtending flowers deltoid, obtuse, 0.2 mm long. Staminate perianth carnosae, suburceolate, narrowed and contracted below summit, rounded at base, 6–6.5 mm long, 3.5–4 mm wide, narrower at summit. Stamens 9–10, included, unequal; anthers broadly rhomboid; filaments 2–4.5 mm long. Pistillode 3 mm long. Infructescence 6–15 cm long, 7–15 cm wide. Anthocarp 1.2 × 0.5 cm in dried state, 2 × 1 cm fresh.

Paratypes. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Caño Yagua at Cucurital de Yagua, 3°36'N, 66°34'W, 120 m, *Davidse et al. 17362* (MO, VEN); Caño Yagua, Chipital, 3°29'N, 66°41'W, 120 m, *Davidse et al. 17320* (MO, VEN); Cucurital de Caname, Caño Caname, 3°40'N, 67°22'W, 100 m, *Davidse et al. 16880* (MO, VEN); 1–2 km SE and E of San Carlos de Río Negro, 1°56'N, 67°3'W, 120 m, *Liesner 6868* (MO, VEN); 10.8 km NE of San Carlos on Solano Road, *Clark 7108* (MO, NY, VEN); 4.3 km NE of San Carlos on Solano Road, *Clark 7038, 7164* (NY); S and SW of San Carlos de Río Negro, *Liesner 6732* (MO, VEN); between San Carlos de Río Negro and El Solano, *Marcano-Berti & Salcedo 131-979* (MER); Caño Yagua N and NE of Cerro Cucurito, 3°36'N, 66°34'W, 120 m, *Huber et al. 3774* (VEN); NE and E base of Cerro

Cucurito, 120 m, *Huber & Tillett 2973* (VEN); 12–15 km NE of San Carlos de Río Negro, road to Solano, 100 m, *Morillo et al. 4170* (VEN). BRAZIL. AMAZONAS: Serra de Neblina, between Maloca and Rio Cauaburi, 50–100 m, *Silva & Brazão 60765* (MO, NY).

This species is characterized by the large, urceolate, glabrous staminate perianth, the irregularly paniculately branched, large inflorescence and general glabry of parts. The more numerous secondary nerves, thick peduncle, and conspicuously reticulate tertiary venation of the upper leaf surface distinguish it from related species of the Venezuelan Guayana.

Neea sebastianii Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas: high rebalsa (seasonally flooded forest), Isla Sebastian, Río Casiquiare above Chapezón, between Boca and Solano, 1°58'N, 67°3'W, 120 m, 31 Jan. 1980, *Ronald Liesner & Howard Clark 8959* (holotype, VEN; isotype, MO).

Arbor 8 m, ramulis juvenilibus dense minitque adpresso-puberulis pilis ferrugineis munitis; petiolis 3–15 mm longis sparsim puberulis; foliorum laminis ovato-ellipticis apice obtuse acutis vel rotundatis basi cuneatim acutis 7.5–14 cm longis 3.5–6.5 cm latis supra glabris subtus praesertim costa media nervisque minute puberulis aliter pagina inferiore minute puncticulatis atque glandulis sessilibus obiectis; nervis lateralibus utroque latere 10–12; inflorescentia mascula 1–2.5 cm alta 2–2.5 cm lata, axibus 4–5 dense breviter ferrugineo-tomentosis 3–5 mm longis; pedunculo 1.5–2.5 cm longo 1–2 mm diam. ad apicem 2.5–4 mm dilatato dense ferrugineo-tomentoso; perianthio mascula suburceolata 3–4.5 mm longo 1.5 mm lato (immature) dense ferrugineo-tomentoso; staminibus 6–8 inclusis.

Tree 8 m, the younger stems with a dense, minutely appressed ferruginous puberulence. Petiole 3–15 mm long, sparsely puberulent; leaf blades subcoriaceous, ovate-elliptic, obtusely acute, or rarely obtuse or rounded at apex, cuneately acute at the slightly asymmetric base, 7.5–14 cm long, 3.5–6.5 cm wide, glabrous above, below minutely puberulent, especially the midrib and nerves, with erect hairs and also with sparse sessile glands on the leaf surface; lateral nerves 10–12 each side, impressed below. Staminate inflorescence terminal, 1–2.5 cm long, 2–2.5 cm wide with 4–5 axes 3–5 mm long, densely ferruginous tomentellose. Bracts subtending flowers ovate, 0.5–1 mm long, densely ferruginous tomentose. Peduncle 1.5–2.5 cm long, 1–2 mm diam., enlarged to 2.5–4 mm wide at the junction above with the lowest primary axes. Perianth

suburceolate, 3–4.5 mm long, 1.5 mm wide (immature), densely ferruginous tomentose. Stamens 6–8, included; anthers rhomboid, 0.8–1 mm long.

This species is related to the other newly described species, *Neea neblinensis* Maguire & Steyermark, *N. huachamacaruae* Steyermark, and *N. mapourioides* Steyermark, but has smaller perianths and has sparsely puberulent petioles and young stems.

Neea subglabrata Steyermark, sp. nov. TYPE: Venezuela. Bolívar: between Betania and Santa Elena de Uairen, 40 km west of Santa Elena, 4°35'N, 61°28'W, 900 m, 15 Dec. 1978, *Julian A. Steyermark et al. 117615* (holotype, VEN; isotype, NY).

Arbor 15 m, ramulis juvenilibus superne sparsim puberulis pilis laxis 0.1 mm praeditis; petiolis 3–15 mm longis glabris vel sparse puberulis; foliorum laminis oblanceolatis apice acutis vel obtuse acutis basi cuneatim angustatis 4–9.5 cm longis 2.5–4 cm latis ubique glabris, nervis lateralibus utroque latere 6–7 obsolescentibus, venulis tertiariis inconspicuis; inflorescentia mascula subhemisphaerica 1.5–2 cm alta ca. 3 cm lata, axibus primariis 4–6 umbellatim dispositis 5–17 mm longis glabris vel sparsim puberulis, axibus secundariis 2–5 filiformibus umbellatim dispositis 3–5 mm longis plerumque glabris, hic ramosis 1–3 flores ferentibus; pedunculo tenui 2–3.8 cm longo 0.8–1 mm lato apice haud dilatato; bracteis sub floribus lanceolatis 0.8–1.2 mm longis extus parce puberulo-ciliatis; perianthio mascula infundibuliformi 3–3.5 mm longo superne 1–1.6 mm lato basi 0.3 mm lato extus inferne pilis laxis paucis praeditis atque loborum marginibus papillatis aliter glabris; staminibus 6 inclusis.

Tree 15 m, the young branches near tip sparsely laxly pubescent, elsewhere glabrous. Petioles 3–15 mm long, glabrous or with a few sparse, lax hairs; leaf blades opaque, drying dull brown, oblanceolate, acute or abruptly obtusely acute at apex, cuneately narrowed at the equal to slightly asymmetric base, 4–9.5 cm long, 2.5–4 cm wide, glabrous both sides; lateral nerves 6–7 each side, anastomosing 6–8 mm from the margin, the tertiary venation inconspicuous. Staminate inflorescence subhemispherical, 1.5–2 cm high, ca. 3 cm wide, with 4–6 umbellately disposed primary axes 5–17 mm long, glabrous or sparsely laxly pubescent; secondary axes 2–5, filiform, umbellately disposed, 3–5 mm long, glabrous or laxly sparsely pubescent, these branched into pedicellate axes 0.5–2 mm long, each bearing 1–3 flowers subtended by lanceolate, acute bracts 0.8–1.2 mm long, sparsely ciliate-puberulent. Peduncle slender, 2–3.8 cm long, 0.8–1 mm wide, gla-

brous, not manifestly enlarged at its junction, 1.5 mm wide where united with the lowest primary axes of the inflorescence. Staminate perianth infundibuliform, 3–3.5 mm long, 1–1.6 mm wide at summit, 0.3 mm wide at base, glabrous except for a few sparse hairs near base and papillate-margined lobes. Stamens 6, included; anthers broadly rhomboid, 0.6×0.3 mm; filaments 1.5–2 mm long.

Paratype. VENEZUELA. BOLÍVAR: Río Aponguao 2, 151–152 km S of El Dorado, *Gentry et al.* 10524 (NY, VEN); Uei-tepui, between Lucpa and Cerro Venamo, 1,100–1,300 m, *Steyermark & Nilsson* 318 (NY, VEN).

Neea tepuiensis Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Chimantá Massif, Torono tepui, summit, south-facing forested slopes above valley of South Caño, 1,955–2,090 m, 23 Feb. 1955, *Julian A. Steyermark & John Wurdack* 1104 (holotype, VEN; isotypes, F, MO, NY).

Arbor 4–5 m praeter gemmas terminales ferrugineas omnino glaberrima; petiolis 2–10 mm longis; foliorum laminis oppositis vel suboppositis plerumque elliptico-ovatis vel obovato-ellipticis vel foliis parvis interdum suborbicularibus apice anguste obtusis vel rotundatis basi praeter folia parva rotundata vulgo subacutis vel anguste acutis (2.7–4.3) 7–9.5 cm longis (1.5–3) 3.5–5.5 cm latis, nervis lateralibus principalibus utroque latere 5–6; inflorescentia foeminea 1 cm alta 1.7 cm lata (immatura?), axibus primariis quattuor 6–7 mm longis quattuor ramulos parviores 2–3 mm longis gerentibus; perianthio mascula 2 mm longo 0.8 mm lato; infructescentia: axibus primariis 3–4 axes secundarios quattuor subumbellatos 4–7 mm longos gerentibus; pedunculo fructifero terminali 4 cm longo 1–1.5 mm diam. apice haud manifeste dilatato; anthocarpio anguste ellipsoideo-oblongo 9 mm longo 4 mm lato glabro.

Tree 4–5 m tall, glabrous throughout, only the terminal bud glandular-ferruginous pubescent. Leaves opposite or subopposite; petiole 2–10 mm long; leaf blades shining above, elliptic-ovate to obovate-elliptic, or some of the smaller leaves suborbicular, obtuse to rounded at apex, mainly subacute to acutely narrowed at base, or some of the smaller leaves rounded at base, the small leaves 2.7–4.3 cm long and 1.5–4.5 cm wide, but leaves mostly 7–9.5 cm long and 3.5–5.5 cm wide, finely impressed-nerved above, finely and slightly elevated-nerved below, secondary nerves 5–6 each side, faintly anastomosing 5–13 mm from margin, ascending to an angle of 15–20°; tertiary venation slightly evident and reticulate beneath. Pistillate inflorescence 1 cm high, 1.7 cm wide (immature?) with 4 primary axes 6–7 mm long, 0.6 mm wide, each branched into 4 smaller sec-

ondary axes 2–3 mm long ending in 3 axes bearing the flowers. Flowers sessile. Pistillate perianth 6 mm long, 2 mm wide. Staminate perianth tubular, glabrous except for the papillate-puberulent lobes at the summit, 2 mm long, 0.8 mm wide. Bracts subtending perianth lanceolate, subacute, 0.8–1 mm long, glandular-pubescent. Infructescence terminal, bearing 3–4 main axes 7–11 mm long and 1 mm wide, these branching into 4 secondary, subumbellate axes 4–7 mm long, these eventually terminating in 4 simple or slightly branched pedicels 1.5–2 mm long bearing the fruits. Anthocarp narrowly ellipsoid-oblong, 9 mm long, 4 mm wide, glabrous, slightly striate.

Paratype. VENEZUELA. BOLÍVAR: Chimantá Massif, Agparamán tepui, forested middle slopes near Río Tirica, 1,365 m, 5 Mar. 1955, *Steyermark & Wurdack* 1255 (F, NY, VEN).

This species attains the highest altitude on the sandstone tabular mountains of the Venezuelan Guayana, where it grows at an altitude of 1,365–2,090 m. It is characterized by the glabry of all parts and is distinguished from *N. robusta* Steyer. by its smaller flowers and inflorescences and by the obsolete venation of the tertiary veinlets. From *N. subglabrata* Steyer. it differs in leaf shape, greater diameter of the peduncle, usually subobtusate to rounded leaf apices, lustrous upper surface of leaves, and subelevated, subreticulate tertiary venation of the lower leaf surface.

LITERATURE CITED

- BURGER, W. 1983. Nyctaginaceae. In *Flora Costaricensis*. Fieldiana, Bot. N.S. 13: 190–191, 193–196.
- HEIMERL, A. 1896. Additamenta ad cognitionem florum Indiae occidentalis. III. Bot. Jahrb. Syst. 21: 615–636.
- . 1897. Beiträge zur Systematik der Nyctaginaceen. Jahresber. Staats-Oberreal. Wien XXIII. 33–39.
- . 1914. Nyctaginaceae. In R. Pilger (editor), *Plantae Uleanae novae vel minus cognitae*. Notizbl. Königl. Bot. Gart. Berlin 6: 126–132.
- . 1932. Nyctaginaceae. In N. Y. Sandwith (editor), *Contr. to the Flora of Tropical Am.* XII. Kew Bull. 1932: 220–221.
- HUBER, H. 1909. Materiaes para a Flora Amazonica. VII. Plantae Duckeanae austro-guyanenses. Bol. Belém Mus. Paran. Emilio Goeldi 5: 347–351.
- LITTLE, E. L. 1968. Transfers to *Guapira* from *Torrubia* (Nyctaginaceae). Phytologia 17: 367–368.
- LUNDELL, C. L. 1968. Studies of tropical American plants—V. *Wrightia* 4: 72–84.
- SCHMIDT, J. A. 1872. Nyctagineae. In Martius, *Flora Brasiliensis* 14(2): 351–369.

STANDLEY, P. C. 1931. The Nyctaginaceae of North-western South America. Field Mus. Nat. Hist., Bot. Ser. 11: 73–90.

BRUNELLIACEAE

BRUNELLIA

Brunellia neblinensis Steyermark & Cuatrecasas, sp. nov. TYPE: Venezuela—Brazil border. Cerro de La Neblina, en bosque alto, 1,500 m, 29 Apr. 1964, *J. Ewel 209* (holotype, NY).

Arbor, foliis oppositis imparipinnatis 6-jugatis; foliolorum laminis haud discoloribus chartaceis elliptico-oblongis apice acutis basi acutis vel subobtusis 15–18.5 cm longis 4.5–6 cm latis crenato-serratis, pagina superiore glabra pagina inferiore praeter costam mediam nervosque minute puberulis, pilis patulis munitis, venulis tertiariis subtus impressis prominulis; nervis lateralibus 16–17 utroque latere distantibus 8–12 mm; foliolis inferioribus 1–2 mm petiolatis; infructescentia dense minuteque tomentosa, calyce 4–5 lobato 3.5–4.2 mm longo, dense tomentoso, lobis triangulari-lanceolatis acutis 1.5–1.8 mm longis 1–1.2 mm latis; folliculis subrotundatis 3 mm longis 2.5 mm latis dense hirtellis basi pilis hispidis munitis; seminibus obconico-subglobose subcompressis 3 mm longis 2.5 mm latis.

Tree with opposite imparipinnate leaves. Leaf rachis minutely puberulent. Leaflets in 6 pairs, not discolored, chartaceous, elliptic-oblong, acute at apex, asymmetrically acute to subobtusate at base, 15–18.5 cm long, 4.5–6 cm wide, crenate-serrate, the upper leaflets sessile, the lower ones 1–2 mm, shortly petiolate; lower surface glabrous, except minutely puberulent with short spreading hairs on midrib, lateral nerves, and tertiary veinlets; upper surface glabrous. Infructescence densely tomentellose, the branches 1 mm diam. Calyx 4–5-lobed, 3.5–4.2 mm in fruit, densely hirtellous, the lobes triangular-lanceolate, acute, 1.5–1.8 mm long, 1–1.2 mm wide. Follicles subrotund, 3 mm long, 2.5 mm wide, densely hirtellous with additional hispid hairs at base. Seeds shining, obconic-subglobose, narrowed toward one end, 3 mm long, 2.5 mm wide.

This taxon differs from *Brunellia comocladifolia* Humb. & Bonpl. and especially the subsp. *ptariana* (Steyerm.) Cuatrec. in the smaller follicles, shorter calyx with slightly narrower calyx lobes, larger seeds, and the glabrous lower leaf surfaces, except for the minutely tomentellose nerves. From *B. hygrophorica* Cuatrec. it may be distinguished by the concolorous leaves with glabrous lower leaf surface, more numerous pairs

of lateral nerves, more depressed and less conspicuous serrations, and shorter calyx. From *B. gentryi* Cuatrec. it is differentiated by the slightly larger calyx diameter, larger calyx lobes, longer and numerous hispid hairs of the follicles, and concolorous leaves not silvery green beneath.

SAPINDACEAE

MATAYBA

Matayba ptariana Steyermark subsp. *guaiquinimae* Steyermark, subsp. nov. TYPE: Venezuela. Bolívar: Departamento Heres, Meseta de Guaiquinima, sector NE de la meseta, cerca de la cumbre, 5°58'N, 63°29'W, 1,400 m, 27 Mar. 1985, *Otto Huber 10388* (holotype, MO; isotypes, NY, VEN).

A subsp. *ptariana* foliolis minoribus apice rotundatis, venulis tertiariis haud elevatis, calycis lobis suborbicularibus dense adpresso-pubescentibus, petalorum squamis interioribus longitudinem petali aequantibus recedit.

Shrub, 2–3 m tall. Leaves bifoliate, glabrous, the leaflets oblong, rounded at the apex, subobtusate or subacute at the base, 2–4 cm long, 1–2.2 cm wide. Inflorescence axillary, 4.5 cm long, the flowering part 2.5 cm long, 6–7 mm wide, subracemose, 23-flowered. Peduncle 2 cm long, 1 mm wide, solitary, minutely appressed-pubescent; bracts ovate-oblong, subacute, 0.7–1 mm long, 0.5 mm wide. Pedicels 2 mm long, densely pubescent with ascending, appressed, pale hairs. Calyx lobes 5, broadly suborbicular-ovate, rounded to obtuse, appressed pubescent without, 1 × 1 mm, sericeous within. Petals pilose-ciliate, suborbicular, broadly rounded above, abruptly short-unguiculate at base, 1.3 mm long, 1.6 mm broad; 2 inner segments oblong, rounded, 1 mm long, 0.8 mm wide, densely pilose both sides. Stamens 8, exserted; anthers suborbicular, 0.8 mm long; filaments 1.7–1.8 mm long, pilose below, glabrous above the middle; disk cupulate, glabrous, 0.5 mm high.

At first, this collection appeared to be distinct from *Matayba ptariana*. However, a second collection (*Huber 10339*), assigned to subsp. *ptariana*, in fruit from a lower altitude at 480 m (“Río Trueno, 35 km west of caserio of Chiguao”), although showing the rounded leaf apices together with inconspicuous impressed veinlets on the lower surface of the new subspecies, has much larger leaflets and longer petioles similar

to typical *M. ptariana* subsp. *ptariana*. Until additional material is forthcoming, it seems best to retain a subspecific rank for the Huber collection of the higher altitude.

BOMBACACEAE

NOTES ON *CATOSTEMMA* AND *SCLERONEMA*
(BOMBACACEAE)

In the course of preparation of the genus *Catostemma* for the *Flora of the Venezuelan Guayana*, it was found that all the Venezuelan material had been identified either as *C. commune* Sandw. or had remained unidentified. An examination of available material in the herbaria of F, K, MO, NY, US, and VEN indicated that more than one species of *Catostemma* was represented in Venezuela and revealed further the presence of the genus *Scleronema*. The present study includes an attempt to delimit the genus *Catostemma* in Venezuela, together with a description of a new species in *Scleronema*.

Publications by Sandwith (1931, 1948), Ducke (1937), and Paula (1969) have greatly enhanced our knowledge of both genera with the result that the characters differentiating *Catostemma* from *Scleronema* can now be more clearly defined, involving chiefly stamen differences. In *Scleronema* the filaments are dilated and thickened apically with the small, strongly sessile anther appressed across the summit of the filament, whereas in *Catostemma* the uniformly slender filaments bear a larger incumbent anther folded inward over the summit. Additional differences

are the longer and more numerous filaments and longer style branches in *Catostemma*, also from available fruiting material, the elongated, ellipsoid, oblong, or obovoid, tardily dehiscent fruit of *Catostemma* as opposed to the globose or subglobose, indehiscent fruit of *Scleronema*.

Sandwith (1931) was able to differentiate two species of *Catostemma* from Guyana, *C. commune* Sandw. and *C. fragrans* Benth., on the basis of vegetative characters found in the seedling leaves and in the venation, especially of the lower leaf surface. In the present study vegetative differences have been noted and employed to distinguish several taxa. Unfortunately, leaves of seedling plants are still unknown from most of the taxa recognized. In addition to the type of tertiary venation of the lower leaf surface, useful characters have been found in the glabritiy or stellate tomentum of the buds and petioles. Moreover, the absence or presence of stellate tomentum and its distribution on the style and style branches, and the presence of bracteoles and their position on the pedicels serve to delimit various taxa within the complex. Much of the material in herbaria is sterile or lacks flowers, and this has made delimitation of the taxa difficult.

The author wishes to acknowledge to the curators of F, K, MO, NY, US, and VEN his great appreciation for the loan of herbarium material. Based on the material examined, a description is provided for the taxa of *Catostemma*, together with a citation of specimens, followed by a key to the species.

CATOSTEMMA

KEY TO THE SPECIES OF *CATOSTEMMA*

- 1a. Adult leaves compound *C. digitatum*
- 1b. Adult leaves simple 2
- 2a. Petioles and young stems hirsutulous with spreading to ascending stiffish hairs 0.2–0.4 mm long *C. hirsutulum*
- 2b. Petioles and young stems glabrous or with minute or closely appressed tomentum 3
- 3a. Petioles and young stems stellate-tomentose 4
- 4a. Petioles and young stems covered with a minute, gray, stellate tomentum; tertiary venation of lower leaf surface irregular or scarcely evident; lower leaf surface glabrous; bracteoles absent from pedicels; lateral nerves of leaf blades 5–6 each side; style and style branches sparsely stellate-pubescent *C. clarkii*
- 4b. Petioles and young stems stellate-tomentose with larger, less crowded tomentum; tertiary venation of lower leaf surface more or less regular, subparallel and subhorizontal; lower leaf surface minutely stellate-pubescent to glabrous; bracteoles present on pedicels; lateral nerves of leaf blades 8–12 each side; style glabrous except at base *C. fragrans*
- 3b. Petioles and young stems glabrous 5
- 5a. Tertiary veins of lower leaf surface in more or less subparallel lines obliquely connecting the lateral nerves *C. marahuacense*

- 5b. Tertiary veins of lower leaf surface irregularly reticulate and anastomosing, not regularly obliquely parallel 6
- 6a. Style stellate-pubescent throughout; styler branches stellate-pubescent; bud scales with minute, appressed, stellate pubescence *C. pubistylum*
- 6b. Style glabrous except at base or lowest $\frac{1}{3}$; styler branches glabrous; bud scales glabrous or the innermost ones pilose 7
- 7a. Bracteoles absent from pedicels; calyx lobes densely strigose within; innermost bud scales pilose apically *C. ebracteolatum*
- 7b. Bracteoles present, either on the pedicels or immediately subtending the base of the calyx; calyx lobes glabrous within or partly strigose near apex; bud scales glabrous 8
- 8a. Bracteoles either immediately subtending the calyx or on the uppermost 1–6 mm of the pedicel; leaves without revolute margins 9
- 9a. Pedicels with congested stellate tomentum, the scales more or less contiguous or overlapping with numerous, relatively elongated rays; leaf base mainly acute to cuneate, more rarely obtuse *C. commune*
- 9b. Pedicels with moderately stellate tomentum, the scales minute, scattered and more separated with fewer and shorter rays; leaf base mainly rounded, or sometimes subcordate *C. sclerophyllum*
- 8b. Bracteoles, at least some of them, toward or below the middle of the pedicel; leaves usually with revolute margins 10
- 10a. Pedicels 4–10 cm long; principal lateral nerves of the leaves 8–12 each side; leaf blades up to 30 cm long and 11.5 cm wide; petals 17–23 mm long; tree 10–45 m tall *C. altsonii*
- 10b. Pedicels 2.5–3 cm long; principal lateral nerves of the leaves 4–6 each side; leaf blades up to 15 cm long and 4.5 cm wide; petals 15 mm long; shrub 2–4 m tall *C. sancarlosiana*

Catostemma altsonii Sandw., Kew Bull. 1928: 366. 1928. TYPE: Guyana. Macreba Falls, Kurupung River, Sept. 1925, *Altson 391* (holotype, K). Figure 6A, a.

Tree, 10–45 m tall, the branchlets glabrous; bud scales glabrous. Seedling leaves 3-foliate. Mature leaves with petioles 0.8–6 cm long, glabrous; leaf blades thick-coriaceous, elliptic-oblong to cuneate-obovate, broadly obtuse or rounded and mucronate at apex, narrowed to a cuneate or obtuse base, 8–30 cm long, 3–11.5 cm wide, glabrous, the margins revolute; primary lateral nerves 8–12 each side, impressed above, slightly elevated below, at irregular angles and not uniformly ascending, branching or anastomosing before reaching the margins, 7–25 mm apart; tertiary venation of the lower leaf surface irregularly reticulate, usually prominulous, usually impressed above on sterile branchlets. Pedicels in anthesis 4–10 cm long, densely stellate-tomentose with brown or pale hairs, with 2–3 bracteoles, these squamiform, 0.5–2 mm long, 1–2 mm wide, ovate, subacute, situated alternately and usually distantly below and above the middle. Calyx densely stellate-tomentose without, 13–15 mm long, the tube 3–5 mm long, the lobes ovate-oblong, obtuse, 10 mm long, glabrous within. Petals obovate-oblong, rounded,

17–23 mm long, 7–8 mm wide. Stamens ca. 35–40; filaments 10–14 mm long; anthers 1–1.3 mm long. Style 10 mm long, glabrous except in lowermost 4–6 mm, there stellulate; style branches 2–3.5 mm long, glabrous. Mature fruit ellipsoid, 15–20 cm long, 3–5 cm diam.; immature fruit obovoid-oblong, ca. 5 cm long, 2 cm diam., minutely ferruginous furfuraceous, fruiting pedicel 5.5–7 cm long.

Distribution. Wallaba forest at 50–125 m elevation; known only from Guyana.

Additional specimens examined. GUYANA: Macreba Falls, Kurupung River, Mazaruni tributary, *Altson 391* (K, type); Essequibo-Mazaruni Divide, about 25 mi. south of Bartica, *Forest Dept. Record No. 2316 (Field No. D323)* (K); Membaru creek, upper Mazaruni River, *Forest Dept. Record No. P71 (Field No. 2843)* (K); 107 m Bartica–Potaro road, *Forest Dept. Record No. F1520 (Field No. 4256)* (K); $1\frac{1}{2}$ mi. Bartica–Potaro road, *Forest Dept. Record No. 6906 (Field No. CAP149)* (K); near 14th milepost, Bartica–Potaro road, *Sandwith 1124* (K, NY, US); Essequibo-Mazaruni Divide, ca. 25 mi. S of Bartica, *Davis 2315* (K); same locality, *Forest Dept. Record No. 2315 (Field No. D372)* (K); Potaro River below Tukeit, *Maguire & Fanshawe 23486* (NY); Bartica–Potaro road, 24 mi. south of Bartica at Forest Service's "24 mile Camp," 50–125 m, *Mori et al. 8902* (NY); Membaru Creek, Upper Mazaruni River, *Pinkus 238* (F, NY, US); Bartica–Potaro road, *Forest Dept. No. 107 (Field No. F 1520, Record No. 4256)* (NY).

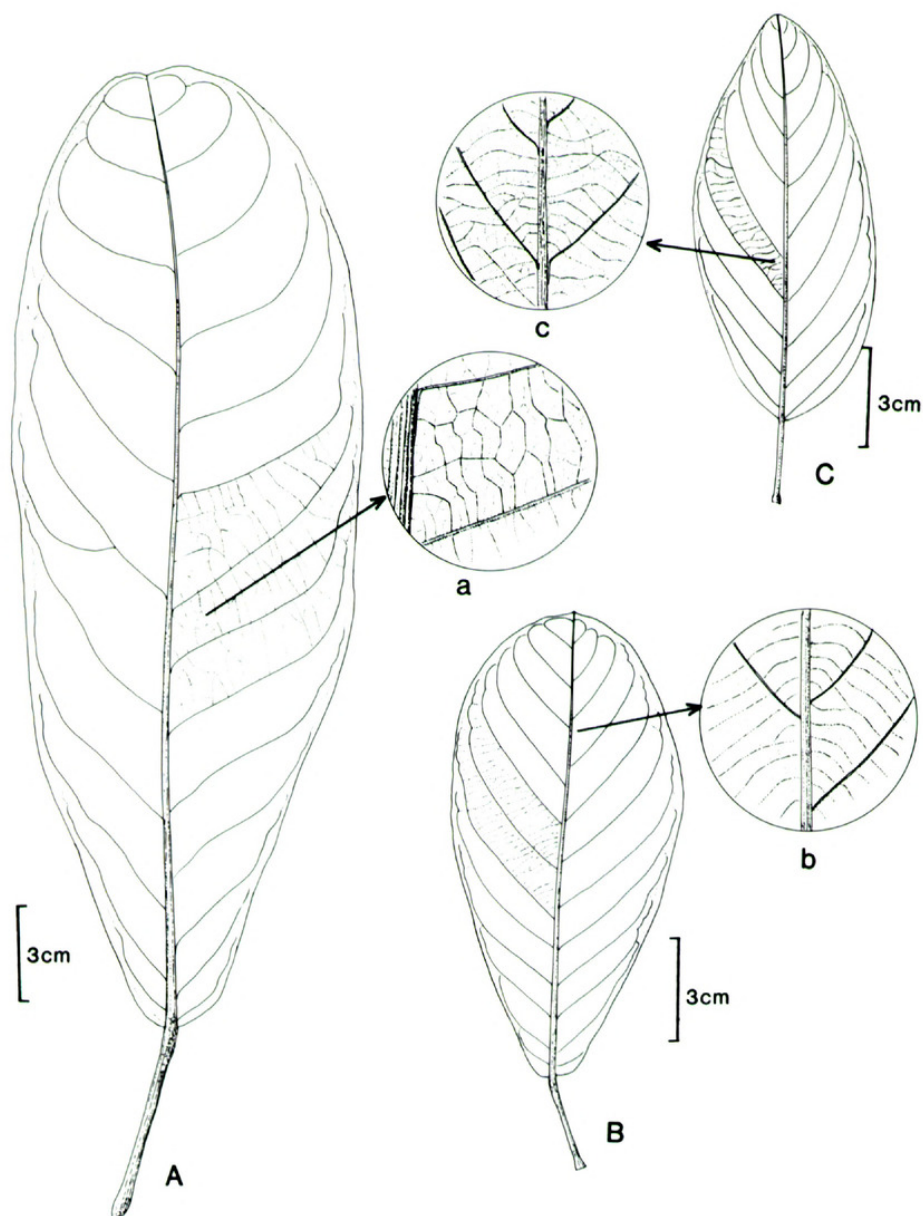


FIGURE 6.—A. *Catostemma altsonii*, leaf. a. Detail of lower leaf surface showing irregularly reticulate tertiary venation.—B. *Catostemma fragrans*, leaf. b. Detail of lower leaf surface showing subparallel, subhorizontal tertiary venation.—C. *Catostemma marahuacense*, leaf. c. Detail of lower leaf surface showing subparallel, subhorizontal tertiary venation. Based on holotype.

Two other species of *Catostemma* are known from Guyana. The present taxon may be distinguished from *C. fragrans* Benth. by the glabrous buds, petioles, and young stems, by the irregularly reticulate tertiary venation on the lower leaf surface, and by the irregular branching of the main lateral nerves. From *C. commune* it can be differentiated by the completely glabrous style and style branches, much smaller bracteoles, longer pedicels, longer petals and calyx lobes, and proportionately longer leaf blades.

Catostemma clarkii Steyermark, sp. nov. TYPE: Venezuela. Territorio Federal Amazonas:

Mari's bana (low Amazon caatinga), 10.8 km NE of San Carlos on road to Solano, 1°56'N, 67°03'W, 119 m, 19 Aug. 1981, Howard L. Clark 8126 (holotype, MO).

Arbucula vel frutex; gemmis ramulis juvenilibusque minute confertimque cano-stellato-tomentellis; petiolis minute cano-stellatis; foliorum laminis subtus praeter costam mediam minute stellatam laminarum juvenilium glabris anguste obovatis, nervis lateralibus utroque latere 5–6; pedicellis minute confertimque cano-stellatis; bracteolis desunt; calyce extus dense stellato-tomentello intus lobis glabris; petalis 20–22 mm longis; stylo sparsim stellato-tomentello ramis 4–5 mm longis leviter stellatis.

Shrub or small tree to 12 m; young stems densely and minutely gray stellate-tomentellose; older branches glabrous. Petioles 4–25 mm long, minutely and densely gray stellate-tomentellose on young leaves, minutely gray stellate to glabrescent on mature leaves; leaf blades narrowly obovate, rounded or retuse at apex, mucronulate in the sinus, narrowed to a rounded or subcordate base; mature leaf blades rigid-coriaceous, 4.5–10.5 cm long, 2–4.5 cm wide, glabrous throughout except for the sparsely stellate basal portion of the lower midrib; young leaves minutely gray stellate-tomentellose on the lower midrib; main lateral nerves 5–6 each side, scarcely manifest, lightly impressed on the upper side, branching before reaching the margins, 8–15 mm distant; tertiary venation beneath inconspicuously anastomosing. Pedicels ebracteolate, ca. 3.2 cm long, densely and minutely gray stellate-tomentellose. Petals ligulate-oblong to subspatulate, 20–22 mm long, 6–9 mm wide. Calyx densely stellate without, the tube campanulate, 4 mm long, the lobes ovate, obtuse, 11 mm long, glabrous within. Stamens numerous, about 40; filaments 12–13 mm long; anthers 0.8–1 mm long. Ovary conic, 7 mm long, 3 mm diam., tapering to an elongate beak 2.7 mm long. Style 9 mm long, sparsely stellate-pubescent from base to apex, the branches 4–5 mm long, lightly stellate-pubescent. Fruit ellipsoid, 6–6.5 cm long, 4.5 cm diam., fruiting pedicel 4.5 cm long.

Paratype. VENEZUELA. Same locality as type, 1 Jan. 1979, Clark 6919 (MO).

This species is characterized by the minute, pale gray, closely stellate tomentum of the vegetative buds, young petioles, and lower midrib of the early leaves, by the sparsely stellate pubescence on style and branches, and by the scarcely manifest tertiary venation of the lower leaf surface. The stellate tomentum of this species is the most minute of the genus.

Catostemma commune Sandw., Kew Bull. 1931: 51. 1931; Oliver in Hook. Icon. Pl. 1986. 1891, as to flowers and leaf, but not to fruit. TYPE: Guyana. Moraballi Creek, Essequibo River, Aug. 1929, *Sandwith* 435 (holotype, K).

Tree to 45 m. Young branches and stems and bud scales glabrous. Seedling leaves usually 3-foliate (rarely 2- or 4–5-foliate), the leaflets oblanceolate, obliquely acuminate at the apex, the acumen triangular-lanceolate, 1–1.8 cm long, 3–

6 mm wide above the middle, obtuse, but the midrib excurrent, cuneately attenuate at base except for the rounded lower side of the outer leaflets, 9–32 cm long, 3–8 cm wide, glabrous both sides. Mature leaves with petioles 1–9 cm long, glabrous. Mature leaf blades stiffly chartaceous or subcoriaceous, elliptic or obovate, rounded or retuse at apex, mucronulate with excurrent costa, cuneate to rarely obtuse at base, 4–19 cm long, 2–9 cm wide, glabrous on both sides; main lateral nerves 8–12 each side, impressed above, slightly elevated below, ascending at an angle of 40–50°, branching and anastomosing just before reaching the margins, 8–15 mm distant; tertiary venation faintly impressed-reticulate above, irregularly reticulate with slightly elevated veins below. Pedicels 0.5–2 or 3 cm long, densely stellate-tomentose, bracteolate. Bracteoles paired, approximate, overlapping, alternate, squamiform or rarely conspicuous, situated in the upper part of the pedicel or immediately subtending the calyx, ovate or suborbicular, obtuse to subacute, 1.5–2.8(–6) mm long, 1–1.5(–4.5) mm wide. Calyx densely stellate-tomentose without, the tube campanulate, 4 mm long, 3–4 mm wide; lobes ovate, 7 mm long, 6 mm wide. Petals oblong-spatulate, obtuse, 12 mm long, 4–5 mm wide. Stamens numerous, 40–50; filaments 8–10 mm long; anthers 0.8–0.9 mm long. Style 13 mm long, stellate-tomentose in lower $\frac{1}{3}$, elsewhere glabrous; style branches 0.75–1.5 mm long. Fruit oblong-ellipsoid, 7–10 cm long, 3–4 cm diam., densely ferruginous tomentellous.

Common names. Baromalli, common baromalli (Guyana), baramán (Venezuela).

Distribution. In mixed tall forest of greenheart, mora, and morakubea of Guyana, principally in the Essequibo and Cuyuni river basins, and in evergreen mixed forests, often with *Eperua*, in Estado Bolívar and Territorio Federal Delta Amacuro of eastern Venezuelan Guayana, at altitudes of 80–850 m.

Additional specimens examined. WEST INDIES: cultivated in Old Botanic Gardens, St. Vincent, April 1891, H. Powell (K). GUYANA: Moraballi Creek, Essequibo River, near Bartica, near sea level, *Sandwith* 116 (holotype, K; isotype, NY), 435 (seedling leaves, K, NY); Mazaruni Station, *Forest Dept. Record No. 2398 (Field No. D402)* (K); Upper Mazaruni River, *Leng* 416 (seedling leaves, NY); Matthews Ridge, Barima River, Northwest Territory, 80 m, *Cowan* 39361 (F, NY), 39361-A (fruit, NY); Puruni, 35 m, *Field No. JB 28, Forest Dept. Record No. 7712* (K, NY); Cuyuni River, *Tutin* 338 (K, US). VENEZUELA: TERRITORIO FEDERAL DELTA AMACURO: este de Río Grande, este-noreste de

El Palmar cerca de los límites del Estado Bolívar, Nov. 1965, *Carlos Blanco* 495 (MO, US, VEN); La Paloma, Río Cuyubini, Sierra Imataca, 100–200 m, *Steyermark* 87583 (F, MO, NY, US, VEN); El Morro, Atabuina, Caño Arature, base of Sierra Imataca, 750 m, *Bernardi* 7529 (K, NY, VEN); same locality and date, *Buza* 329 (K, NY, VEN); near Río Grande, east of Upata, border between Estado Bolívar and Territorio Federal Delta Amacuro, 8°14'N, 61°4'W, 300 m, *de Bruijn* 1631 (F, K, MO, NY, US, VEN), 1677 (US, VEN), 1623 (F, MO, NY, US, VEN); same locality, *Breteler* 3841 (seedling leaves, NY, US), 4958 (NY, US), 4972 (NY); ENE de El Palmar, cerca de los límites del Estado Bolívar, *Zabala* 96 (VEN), 163 (VEN). BOLÍVAR: base of Cerro Pauji, Quebrada 94, km 94 south of El Dorado, 250 m, *Steyermark* 86711 (NY, US, VEN), 86712 (VEN), 86715 (F, US, VEN); La Isabel a Río Grande, El Palmar, *Conejos* 36 (MO, VEN); Cerro La Reforma, above junction of Río Reforma with Río Toro (Río Grande), Sierra Imataca, 200–250 m, *Steyermark* 88113 (NY, VEN); Pica La Lira trail, km 27 S of El Dorado, 220 m, *Steyermark* 86640 (K, US, VEN); 5–7 km E of El Cruzero, ESE of Villa Lola, Altiplanicie de Nuria, 315 m, *Steyermark* 86049 (seedling leaves, NY, VEN); Río Chirca, *Bernardi* 898 (3-foliolate leaves, NY); east of El Palmar, *Marcano-Berti* 319 (VEN); Río Caroni, between mouth of Río Aparurén and Urimán, 400 m, *Steyermark* 76077 (F, VEN); región de las cabeceras del Río Hacha, 450–850 m, *Bernardi* 2897 (NY); Río Caura, arriba del Salto Para, 2–3 km arriba del campamento "Las Pavas," 250–300 m, *J. Steyermark*, *G. C. K. & E. Dunsterville* 112934 (MO, VEN); same locality, *Morillo & Liesner* 8944 (MO, VEN); 30 km S of El Dorado, 140 m, *Bernardi* 2097 (NY, VEN); Río Venamo, afluente del Ikabarú, *Cardona* 1706 (VEN); Río Curutú, upper Paragua, 550 m, *Cardona* 2484 (VEN); Salto Ichun, Río Ichun, tributary of Río Paragua, 4°46'N, 63°18'W, 500 m, *Steyermark* 90371 (VEN); El Abismo, Río Samay, 4°27'N, 61°34'W, 550–600 m, *Holst & Liesner* 2422 (MO, VEN).

In Sandwith's excellent discussion of the baromallis (*Catostemma*) of Guyana (1931), a number of characters were noted by which *C. commune* Sandw., or common baromalli, could be distinguished from *C. fragrans* Benth., or sand baromalli, the latter being the type species of the genus based on a collection by *Robert Schomburgk* 280 in 1837 from Berbice, Guyana. One of the differentiating characters mentioned by Sandwith to distinguish *C. commune* was the "large and conspicuous" bracteoles. Sandwith described these as 5–6 mm long and to 4.5 mm wide and noted that they were illustrated in Oliver's figure under the erroneous epithet of *C. fragrans* (plate 1986 of Hook. Icon. Pl., 1891). Bracts conforming to these dimensions are evidenced by a specimen at K which had been sent from the Old Botanic Garden of St. Vincent, collected by H. Powell in April 1891, where it had been cultivated for many years. This specimen was cited by Sandwith as a paratype. However, the

actual type specimen at K (*Sandwith* 116) does not have either large or conspicuous bracts. Thus, the only flowering material available to Sandwith was his own collection (the type) and that of Powell from a cultivated specimen.

Three subsequently collected specimens from the wild state show small squamiform bracts only, which do not exceed 2.8 mm in length and 1.5 mm in width. These bracts or bracteoles subtend the very base of the bud, as in *Tutin* 338 and *Forest Dept. Record No. 7712* (both at K), or occur on the uppermost 1–6 mm of the pedicel below the base of the calyx, as in *Forest Dept. Record No. 2398*, *Davis* 402 (K). All these specimens were annotated by Sandwith as *C. commune* Sandw. Similarly, flowering collections of this species from adjacent eastern Venezuela show only squamiform bracts situated on the uppermost 1–6 mm of the pedicel.

Thus, the description of the bracts in *C. commune* should be emended as follows: "bracteis squamiformibus late ovatis vel suborbicularibus obtusis vel subacutis 1.5–2.8(5–6) mm longis 1–1.5(–4.5) mm latis binis vel arcte alternantibus."

Catostemma digitatum Shepherd & Alverson, *Brittonia* 33: 587, fig. 1. 1981. TYPE: Colombia. Antioquia: confluence of Quebrada La Tirana and Río Anori, 3 km upriver (SW) from Planta Providencia, ca. 28 km SW of Zaragota, 7°13'N, 75°3'W, 500 m, 9 Apr. 1977, *W. S. Alverson, S. White & E. J. D. Shepherd* 397 (holotype, COL).

Tree to 30 m; young branches or stems glabrous. Buds sericeous-tomentose. Mature leaves 3–5-palmately compound. Petioles 6–21 cm long, glabrous. Leaf blades chartaceous, lanceolate, long-caudate in seedling leaves, subacute or obtuse and mucronulate in mature leaflets, acute at base, mainly glabrous; principal lateral nerves 10–16 each side, arcuately ascending near the margins; tertiary venation below irregularly laxly reticulate, scarcely prominulous. Flowers unknown. Fruit obovoid, 9–12 cm long, 5.5–6 cm diam.; seed 5–7 cm long, 2–4 cm wide.

Distribution. Known only from the departments of Antioquia and Santander, Colombia.

Additional specimens examined. COLOMBIA. ANTIOQUIA: confluence of Quebrada La Tirana and Río Anori, 28 km SW of Zaragota, 7°13'N, 75°3'W, 500 m, *Alverson, White & Shepherd* 397 (holotype, COL; isotypes, HUA, MO, NY, WIS); slope facing Río Anori, near Planta Providencia, *Denslow* 1404 (seedling, COL, HUA, MO, NY, WIS); confluence of Quebrada

La Tirana and Río Anori, 3 km upriver (SW) from Planta Providencia, ca. 28 km SW of Zaragota, 7°13'N, 75°3'W, 500 m, 9 Apr. 1977, *W. S. Alverson, S. White, & E. J. D. Shepherd* 397 (holotype, COL). SANTANDER: Magdalena Valley, Campo 30 km E of Carare, 300 m, *Gentry & Renteria* 20065 (COL, MO, UIS), 20106 (COL, MO, UIS).

This is the only species thus far known in the genus with the mature leaves compound.

***Catostemma ebracteolatum* Steyermark, sp. nov.**

TYPE: Venezuela. Territorio Federal Amazonas: Cerro Sipapo (Paráque), water course above Intermediate Camp, 2 Feb. 1949, *Bassett Maguire & Louis Politi* 28741 (holotype, MO; isotype, NY).

Arbor 15–30 m, ramulis juvenilibus glabris; gemmae squamis intimis acuminatis pilosis extimis caudatis; petiolis 3–35 mm longis glabris; foliorum laminis obovatis apice rotundatis retusisque mucronulatis basi acutis vel cuneatis majoribus 6–10 cm longis 2.5–6.5 cm latis ubique glabris, nervis lateralibus utroque latere 7–9 supra impressis subtus leviter elevatis, venatione tertiaria subtus leviter irregulariterque reticulatis; pedicellis 1.5–4 cm longis pilis dimorphis munitis, pilis brunneis minoribus stellato-tomentosis et pallidis longioribus patulis plus minusve serialibus alternantibus ebracteolatis; calyce extus stellato-tomentoso, tubo 4 mm longo, lobis suborbiculari-ovatis obtusis 7–8 mm longis intus dense strigosis; petalis ligulato-oblongis 15 mm longis; filamentis ad 9 mm longis; stylo parte inferiore $\frac{1}{3}$ usque $\frac{1}{2}$ stellato-tomentoso ceterum glabro, ramis ad 4 mm longis glabris.

Tree 15–30 m tall, the young stems glabrous; innermost bud scales acuminate, pilosulous, the others glabrous, the outermost caudate. Seedling leaves trifoliate. Petioles 3–35 mm long, glabrous; leaf blades coriaceous, rich green above, paler below, obovate, rounded and retuse at apex, mucronulate, narrowed to an acute or cuneate base, 6–10 cm long, 2.5–6.5 cm wide, glabrous; lateral nerves 7–9 each side, spreading at first from an angle of 10–20°, then ascending, branching before reaching the margins, impressed above, lightly and narrowly elevated on the lower side; tertiary venation irregularly and inconspicuously reticulate below. Pedicels costate, especially toward apex, 1.5–4 cm long, ebracteolate, with 2-tiered pubescence, the shorter brownish, appressed, stellate-tomentose hairs between paler longer hairs $\pm$ prominently spreading from pseudovertical rows. Calyx in pre-anthesis 12.5 mm long, split above the side from one portion, densely stellate without, 4 mm long, 3–5 mm wide above; lobes longer than the tube, 7–8 mm long, suborbicular-ovate, obtuse, densely strigose within. Petals ligulate-oblong, rounded, 15

mm long, 5–6 mm wide. Stamens 25–30; filaments up to 9 mm long; anthers 0.8–0.9 mm long. Style pubescent for 2.5–4.5 mm from the base up to $\frac{1}{3}$ – $\frac{1}{2}$ of the length, glabrous above; style branches up to 4 mm long, glabrous. Fruit orange, rounded at apex, manifestly narrowed to the base, obtusely 3-costate, 7 cm long, 4 cm diam., minutely tomentellose; fruiting pedicel 4 cm long, 5 cm diam.

Paratypes. VENEZUELA. BOLÍVAR: Sierra Ichún, cercanías del Salto María Espuma (Salto Ichún), base of la Sierra Ichún, tributary of Río Paragua, 4°46'N, 68°18'W, 500 m, 28 Dec. 1961, *Steyermark* 90371 (F, NY, US, VEN). TERRITORIO FEDERAL AMAZONAS: 4.3 km NNE of San Carlos on Solano road, 1°56'N, 67°3'W, 119 m, *Clark & Maquirino* 8081 (MO); Río Cataniapo, 44–45 km SE of Puerto Ayacucho, 5°35'N, 67°15'W, 100–300 m, *Steyermark, Davidse & Guanchez* 122136 (MO, VEN), 112386 (MO, VEN), 122402 (MO, VEN); Sierra Parima, headwaters of Río Siapa and Río Padauri, 1°22'N, 64°38'W, 1,260 m, *Cardona* 1507 (US, VEN); Yavita, *Lizot* 1972-4 (US, VEN).

This taxon differs from other members of the genus in its two-tiered pubescence on the pedicel, with longer, pale, spreading hairs in more or less separate vertical rows or lines rather prominently differentiated from the more abundant, smaller, brownish, more appressed stellate tomentum in between. In the other species of the genus the stellate tomentum is more uniformly appressed, pale to dark brown, and uninterrupted by longer hairs.

***Catostemma fragrans* Benth.** in Hook. London J. Bot. 2: 365. 1843; Baker in Hook. Icon. Pl. 1793. 1888; Oliver in Hook. Icon. Pl. 1986. 1891, as to fruit. TYPE: Guyana: Berbice, 1837, *Rob. Schomburgk* 280 (holotype, K). Figure 6B, b.

Guenetia macrosperma Sagot ex Benoist, Bull. Mus. Hist. Nat. (Paris) 25: 387. 1919. TYPE: French Guiana: Acarouany, *Sagot s.n.* (holotype, P).

Tree (4–)15–30 m tall. Young branches or stem stellate-tomentose. Buds stellate-tomentose. Seedling leaves simple, 12–38 cm long, 3–7 cm wide, obovate-oblong or obovate-elliptic, narrowly elongated, cuspidate at apex, the cuspidate portion linear-subulate, this 1–5 cm long, 0.7–2.5 mm wide, narrowed to a subobtusate to subrotundate base. Mature leaves with petioles 0.5–5 cm long, stellate-tomentose; mature leaf blades coriaceous or subcoriaceous, obovate-oblong, obovate-elliptic, or oblong-elliptic, rounded or retuse, sometimes cuspidate at apex, rounded at base, the larger ones 17–22 cm long, 3–8 cm

wide, glabrous above, glabrous to sparsely stellate-puberulent below, sparsely to moderately stellate-pubescent on the lower midrib and main lateral nerves; lateral nerves commonly 8–12 each side, impressed above, elevated below, $\pm$ regularly ascending at an angle of 45–60° and subparallel nearly to the margins, 5–20 mm distant; tertiary venation inconspicuous above, below conspicuous and elevated with the veins subparallel and subhorizontal. Pedicels 1.5–4 cm long, densely stellate-tomentose, bracteolate. Bracteoles 2 or 3, situated near the middle or in the lower or upper part of the pedicels, sometimes only 2–3 mm below the base of calyx, paired or usually proximate alternately, ovate, obtuse, 1–2.5 mm long, 1 mm wide. Calyx densely stellate-tomentose without, the tube 3–4 mm long, 4–5 mm wide, the lobes broadly ovate or ovate-oblong, obtuse, 9 mm long, 4–7 mm wide, glabrous within. Petals spatulate-oblong, obtuse, 13–15 mm long, 4–7 mm wide. Stamens about 35–40; filaments 7–8 mm long; anthers 1–1.2 mm long. Style 11–15 mm long, glabrous except stellulate at the very base, the style branches 1.5–2 mm long, glabrous. Fruit oblong-ellipsoid, 4–8 cm long, 3–3.5 cm diam., densely and minutely ferruginous tomentellous; fruiting pedicel 2 cm long.

Common names. Sand baromalli, baromalli or wallaba; baromalli (Guyana); kajoewaballi barmani (Suriname).

Distribution. Sandy soils of wallaba forests at low elevations in Guyana, Suriname, and French Guiana.

Additional specimens examined. GUYANA: near Bartica, Moraballi Creek, Essequibo River, near sea level, *Sandwith* 485 (K, NY); Coverden, *Persaud* 134 (F, NY); basin of Essequibo River, near mouth of Onoro Creek, 1°35'N, *A. C. Smith* 2739 (F, MO, NY, US); Barima River, Northwest District, 8°20'N, 59°50'W, *de la Cruz* 3348 (MO, NY, US); Bartica–Potaro road, 24 mi. from Bartica, *Mori et al.* 8115 (NY); Bamboo Creek, Rewa River, 35 mi. SSE of mouth, *Forest Dept. Record No. 2087 (Field No. D96)* (K); lower Demarara River, *Jenman* 4336 (K); Mora-mora-bisi Creek, Mapenna River, Corentyne River, *Hohenkerk in Forestry Dept. Record No. 794* (K); Kamwatta Creek, Koirimap River, Pomeroon River, *Hohenkerk in Forest Dept. Record No. 704-A* (K); Santa, Pokoraro Creek, Kamuni River, Demarara River, *Hohenkerk 704-C* (K). SURINAME: km 6, Wijneweg, “*B.B.S. 174*” (K, MO); Wayombo, *Wood Herbarium* 352 (K, NY); Maratakka River, Snake Creek, *Maas* 10799 (K, NY, U); Corantynes *B.B.S. 901* (K); Tafelberg, *Maguire* 25069; Foengoe Island, Nat. Park Raleigh Falls, *Roberts* 14764 (NY); Christianburg, Demarara River, *Anderson* 271 (K); Wilhelmmina Gebergte, 2 km below affluence of Oost River, 225 m, *Maguire et al.* 54098 (MO, NY).

FRENCH GUIANA: south of Crique Gregoire, Sinnamary River, *Oldeman* 1600 (NY); *Sagot & Melinon* (photo of *Guenetia macrosperma*, F, MO); Godebert, *Wachenheim s.n.* (K) (as *Guenetia macrosperma*).

This species is the most widely distributed of the species of *Catostemma*, being found in all the Guianas, where it is common, especially in the wallaba forests of Guyana. It differs from the common taller forest species *C. commune* Sandw. in its stellate-pubescent bud scales, petioles, and young stems; simple, long-cuspidate seedling leaves; completely different venation of the lower surface of both seedlings and mature leaves; style glabrous throughout, except at very base; and somewhat shorter, usually alternately arranged bracteoles on the pedicels.

***Catostemma hirsutulum* Steyermark, sp. nov.**

TYPE: Venezuela. Bolívar: Chimantá Massif, rich rain forest on northwestern slopes of Abácapa-tepui, vicinity of camp 1 along Río Abácapa, 420 m, 30–31 Mar. 1953, *Julian A. Steyermark* 74781 (holotype, MO; isotypes, F, MO, VEN).

Arbor 20–25 m; gemmis petiolis ramulis juvenilibusque dense hirsutulis pilis patulo-adscendentibus munitis; petiolis 3–9 mm longis; foliorum laminis oblongo-obovatis basi subacutis vel subobtusis 3–5(–11) cm longis 0.9–3(–6) cm latis subtus praeter costam mediam hirsutam prope basin glabris; nervis laterali-bus utroque 5–7 subtus leviter elevatis; venatione tertiaria leviter irregulariterque reticulata; floribus non visis; fructu obovoideo-oblongo 8–9 cm longo 4 cm lato.

Tree 20–25 m tall. Vegetative buds, petioles, and young stems densely hirsute with spreading-ascending hairs 0.2–0.4 mm long. Petioles 3–9 mm long (on young shoots 35 mm); leaf blades crowded, becoming subverticillate at the ends of branches, 3–5 cm long, 0.9–3 cm wide, coriaceous, shining and deep green above, paler green below, oblong-obovate, rounded and minutely mucronulate at the retuse apex, narrowed to a subacute to subobtuse base, on sterile shoots to 10–11 $\times$ 3–6 cm; lateral nerves 5–7 each side, ascending at an angle of 50–60°, branching before reaching the margins, the principal lateral nerves faintly impressed above, slightly elevated below, 2–6 mm distant or on sterile shoots 10–12 mm; tertiary venation beneath faintly to moderately prominent with an irregularly reticulate pattern. Fruit pendent, olive-green, obovoid-oblong, 8–9 cm long, 4 cm diam., minutely stellulate-velutinous.

Paratypes. VENEZUELA. BOLÍVAR: Quebrada Los Brásileros, 4.5 km al SW de Icabarú, 4°20'N, 61°48'W, 480 m, 16 Dec. 1978, *Steyermark, Carreño Espinosa & Dunsterville 117778* (MO, VEN). TERRITORIO FEDERAL AMAZONAS: Cerro Neblina, south of Base Camp, Río Mawarinuma, 0°50'N, 66°11'W, 150–350 m, *Gentry & Stein 47115* (MO).

This taxon differs from other species of the genus in having the pubescence of the buds, petioles, and young stems of elongate, spreading-ascending stiffish, hirsutulous hairs rather than the densely appressed, short-stellate tomentum or glabry of the other members of the genus. The paratypes differ from the type collection in having larger leaves widest near, instead of above, the middle, but possesses identical elongated, hirsute pubescence.

***Catostemma marahuacense* Steyermark, sp. nov.**

TYPE: Venezuela. Territorio Federal Amazonas: Departamento Atabapo, Cerro Marahuaca, "Sima Camp," south-central portion of forested slopes along eastern branch of Caño Negro, 3°43'N, 65°31'W, 1,140 m, 28 Feb.–1 Mar. 1985, *Julian A. Steyermark & Bruce Holst 130878* (holotype, MO). Figure 6C, c.

Arbor 20–30 m, ramulis juvenilibus glabris; gemmis glabris; petiolis 0.7–3.2 cm longis glabris; foliorum laminis elliptico-ovatis vel lanceolato-ellipticis ad medium latioribus apice rotundatis obtusis vel subacutis interdum mucronulatis basi obtusis vel subrotundatis 8–14 cm longis 3.5–8 cm latis utrinque glabris, nervis lateralibus utroque latere 9–12 plus minusve fere ad margines uniformiter ascendentes subparallelisque; venulis tertiariis subtus tenuibus nec elevatis plus minusve subparallelis atque subhorizontalibus; floribus non visis; fructu maturo ellipsoideo 2–3-obtusely costato vel subangulato uniloculare monospermo (raro 2-spermo fide Holst & Liesner) 8–9 cm longo 4–4.5 cm diam. (fructu immaturo magis elongato angustiorique striatulo indumento minute olivaceo-tomentello munito).

Tree 20–30 m tall, the branches glabrous. Bud scales glabrous. Petiole 0.7–3.2 cm long, glabrous; leaf blades chartaceous or subcoriaceous, brittle, elliptic-ovate, oblong- or lanceolate-elliptic, widest at the middle, rounded, obtuse or subacute at the sometimes mucronulate apex, obtuse or subrounded at the base, 8–14 cm long, 3.5–8 cm wide, glabrous both sides, the midrib impressed above, subelevated below; lateral nerves slender, 9–12 each side, impressed above, uniformly ascending at an angle of 45–50°, subparallel and unbranched nearly to the margins, 3–15 mm distant; tertiary venation subimpressed above, faintly subimpressed below and rather in-

conspicuous, not elevated, forming a $\pm$ subparallel and subhorizontal pattern of veinlets. Mature fruit ellipsoid, 2–3-obtusely costate or subangled, unilocular, 1–(2-testa Holst & Liesner)-seeded, 8–9 cm long, 4–4.5 cm diam. (immature fruit longer and narrower after shrinking), striatulate with minute olivaceous indument.

Paratype. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Cerro Marahuaca, same locality as type, 25 Feb. 1985, *Steyermark & Holst 130709* (MO).

The venation of the lower surface in this species resembles that found in *Catostemma fragrans* Benth. of Guyana, but *C. marahuacense* differs in having glabrous bud scales and less prominent tertiary venation on the lower leaf surface. The tertiary veinlets resemble those found in some species of *Scleronema*, such as *S. neblinense*, but *C. marahuacense* differs in its elongate ellipsoid, instead of globose, fruit.

***Catostemma pubistylum* Steyermark, sp. nov.**

TYPE: Venezuela. Territorio Federal Amazonas: IVIC main study site, 4.3 km NE of San Carlos de Río Negro, 1°56'N, 67°03'W, 119 m, 3 Aug. 1978, *Howard L. Clark & P. Maquirino 6742* (holotype, NY).

Arbor 4–5.5(–8) m; gemmis minute adpresso stellato-tomentosis; ramulis juvenilibus glabris; petiolis (5–)12–15 mm longis glabris; foliorum laminis obovato-oblongis apice rotundatis retusisque basi rotundatis vel leviter subcordatis majoribus 9–16 cm longis 4.5–6.8 cm latis ubique glabris; nervis lateralibus utroque latere 5–6 subtus elevatis, venatione tertiaria irregulariter reticulatis; pedicellis 2–2.5 cm longis minute sparsimque adpresso-stellato-tomentoso ebracteolatis; calyce extus stellato-tomentoso intus parte apicali strigosa ceterum glabro; stylo 6 mm longo omnino stellato-tomentello, ramis 4 mm longis stellatis.

Tree, 4–5.5(–8) m tall; buds minutely appressed stellate-tomentose; young branchlets glabrous. Petioles (5–)12–15 mm long, glabrous; leaf blades thick-coriaceous with revolute margins, shining above, oblong-obovate, rounded, retuse and mucronulate at apex, narrowed to a rounded or slightly subcordate base, the larger ones 9–16 cm long and 4.5–6.8 cm wide, glabrous both sides; lateral nerves 5–6 each side, ascending at an angle of 30–45°, prominently elevated below, 10–25 mm distant on the larger leaves, branching before reaching the margins, faintly impressed above; tertiary venation irregularly reticulate below with slightly prominent veinlets. Pedicels 2–2.5 cm long, minutely stellate-tomentose, ebracteolate. Calyx densely stellate-tomentose without,

the tube 4 mm long, 4–5 mm above, the lobes ovate, obtuse, or rounded, 6 mm long, 3.5–4 mm wide, glabrous within except for the strigose apical portion. Petals ligulate-oblong, rounded at apex, 16 mm long, 6.5 mm wide. Stamens 45–55; filaments up to 9 mm long; anthers 0.5–1 mm long. Ovary suborbicular-ovoid, 3 mm long, 3 mm broad at base. Style 6 mm long, stellate-tomentellose throughout; style branches 4 mm long, stellate-pubescent; fruit unknown.

Paratype. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: same locality as type collection, *Clark & Maquirino 8115* (MO).

This species is characterized by a combination of completely stellate style and styler branches; minutely appressed-stellate bud scales; glabrous petioles, stems, and leaf blades, the latter strongly revolute; and strigose apical inner portion of the calyx lobes.

***Catostemma sancarlosianum* Steyermark, sp. nov.**

TYPE: Venezuela. Territorio Federal Amazonas: Mari's bana (low Amazon caatinga), 10.8 km NE of San Carlos on Solano Road, 1°56'N, 67°03'W, 119 m, 16 Aug. 1981, *H. L. & K. Clark 8117* (holotype, MO).

Frutex 2–4 m, ramulis praecipue glabris vel partim microscopico stellato-puberulis; gemmis praecipue glabris vel a exudato microscopico interdum munitis; petiolis 2–15 mm longis plerumque glabris vel partim microscopico stellato-puberulis; foliorum laminis maturis supra nitidis crasso-rigido-coriaceis valde revolutis obovatis apice rotundatis retusis breviter mucronulatis basi obtusis rotundatis vel subcordatis 4.5–15 cm longis 2–4.5 cm latis utrinque glabris, nervis lateralibus utroque latere 4–6 supra leviter impressis vel sulcatis subtus praecipue elevatis conspicuisque fere ad margines adscendentibus, venatione tertiaria supra tenuiter impresso-reticulato subtus reticulata venulis tenuiter impressis nonnullis magis oblique transversalibus impressisque; floribus paucis (1–)2–7-fasciculatis; pedicellis 2.5–3 cm longis dense stellato-tomentosis bracteolatis, bracteolis deltoideo-ovatis obtusis 0.8–1 mm longis ad medium vel in dimidio inferiore dispositis; calyce extus dense stellato-tomentoso, tubo 3 mm longo 4 mm lato, lobis late ovato-oblongis obtuse acutis 10–12 mm longis 5–6 mm latis intus glabris; petalis 15 mm longis 6–8 mm latis; stylo 9–11 mm longo glabro, ramis 2 mm longis glabris vel pilis stellatis minutis munitis.

Shrub 2–4 m tall, the branches mainly glabrous or partly stellulate-puberulent with microscopic indument. Buds mainly glabrous or sometimes furnished with a microscopic pale exudate. Petioles 2–15 mm long, mainly glabrous or partly stellate-puberulent with microscopic indument; mature leaves thick, rigid, coriaceous, strongly

revolute, obovate, rounded and retuse at the usually mucronulate apex, 4.5–15 cm long, 2–4.5 cm wide, glabrous both sides; main lateral nerves 4–6 each side, scarcely evident and impressed or subsulcate above, usually elevated and conspicuous below, 5–20 mm distant; tertiary venation above with a minutely cellular impressed reticulum surrounded by a slightly more impressed network, reticulate below with mainly finely impressed veinlets, some of these obliquely transverse between the main lateral nerves. Flowers few, (1–)2–7-fasciculate; pedicels 2.5–3 cm long, densely stellate-tomentose, bracteolate, the 2 bracteoles alternately situated at or below the middle, deltoid-ovate, obtuse, 0.8–1 mm long. Calyx densely stellate-tomentose without, 3 mm long, 4 mm wide above, the lobes broadly ovate-oblong, obtusely acute, 10–12 mm long, 5–6 mm wide, glabrous within. Petals ligulate-oblong or ligulate-spatulate, rounded, 15 mm long, 6–8 mm wide. Stamens 35–40; filaments 9–12 mm long; anthers 0.8–0.9 mm long. Style 9–11 mm long, glabrous except stellate in basal 1.5 mm, glabrous or partly minutely stellulate, with style branches 2 mm long.

This species differs from *Catostemma altsonii* in its shrubby habit and low stature and in its thick coriaceous and strongly revolute leaf blades with only 4–6 main lateral nerves on each side.

***Catostemma sclerophyllum* Ducke, Trop. Woods 50: 39. 1937.** TYPE: Brazil. Amazonas: near Manáos, 20 May 1936, *A. Ducke* (holotype, RB no. 29040).

Medium-sized tree. Bud scales and branches glabrous. Petioles 2–5 cm long, glabrous; leaf blades congested at the apex of the branches, oblong-elliptic, rounded and retuse at apex, subcordate or rounded at the base, 6–10 cm long, 4–7.5 cm wide, glabrous both sides, the main lateral nerves 6–10 each side, branching before reaching the margins; tertiary venation irregularly reticulate between the main secondary lateral nerves, less conspicuously elevated below than the main lateral nerves. Pedicels 2.5–5 cm long, moderately stellate-tomentose, bracteolate; bracteoles alternate, immediately subtending the calyx, 1–1.5 mm long, 1 mm wide, broadly ovate, obtuse. Calyx stellate-tomentose without, 10–12 mm long, the tube 4–5 mm long, the lobes 5–6 mm long, glabrous within. Petals obovate-oblong, 12–15 mm long. Stamens 30–35; filaments 7–9 mm long; anthers 0.5–0.7 mm long. Style 6–7 mm long, glabrous except stellate-tomentose

in the basal 2 mm portion; style branches 2–2.5 mm long, glabrous. Fruit ellipsoid, 6–7 cm long.

Distribution. Amazonian Brazil.

Additional specimens examined. BRAZIL. AMAZONAS: circa Manáos, *Ducke* 20-5-1936, Herb. Jard. Bot. Rio de Janeiro 29040 (holotype, RB; isotype, MO); Manáos, Estrada do Aleixo, *Ducke* 490 (F, US); Manáos, cataractam altam fluminis Tarumá, *Ducke* 749 (F, US); Manáos, Rio Tarumá, *Ducke* 1469 (F); same locality, *Steward et al.* (NY). Seen also near Santa Izabel on Rio Negro by *Ducke*.

This species resembles *C. commune* but differs in having the bracteoles on the pedicels immediately subtending the calyx and alternately arranged; longer, less stellate-tomentose pedicels; somewhat longer petals; and more rigid and thicker leaves, subcordate to rounded at the base. From *C. fragrans* it may be distinguished by having glabrous buds and young stems and by having completely different venation of the lower leaf surface.

SCLERONEMA

The genus *Scleronema* has hitherto been known only from Brazil and Guyana, the most recently described species being *S. guianense* Sandw. (1948). The following species is newly described as the first one known from Venezuela.

***Scleronema neblinense* Steyermark, sp. nov. TYPE:**

Brazil. Amazonas: Serra de Neblina, vicinity of Base Camp, Caño Tucano, Rio Cauburí, 100 m, 15 Nov. 1965, *Bassett Maguire, Julian A. Steyermark & Celia K. Maguire* 60181 (holotype, MO; isotype, flowers, NY).

Arbor 20–40 m, ramulis juvenilibus stellato-tomentosis; gemmis dense stellato-tomentosis; petiolis 1–4 cm longis stellato-tomentosis; foliorum laminis planarum incipientium simplicibus, elliptico-oblongis subito longicuspatis, cuspidate 1.5–3 cm longo, 14–24 cm longis, 5.5–7.5 cm latis utrinque glabris; foliorum laminis maturis late oblongis vel obovatis apice rotundatis basi rotundatis vel subacutis 5.5–14 cm longis, 3.5–7.5 cm latis subtus praeter costam mediam nervis lateralibusque sparsim stellatis glabris, nervis lateralibus utroque latere 7–13 subtus prominentibus elevatis plus minusve fere ad margines uniformiter adscendentibus subparallelisque; venulis tertiariis subtus prominentibus elevatis subparallelis atque subhorizontalibus; pedicellis (1.3–)1.8–2.5 cm longis stellato-tomentosis; calyce extus dense stellato-tomentoso lobis tribus intus moderatim pubescentibus pilis hirsutulostrigosis praeditis; staminibus 14–16, filamentis apice dilatatis 7–8 mm longis, antheris sessilibus 0.2–0.3 mm longis; stylo 13.5 mm longo, parte basali 4 mm longa

stellata, ceterum glabro; fructu globoso 7 × 7 cm subruguloso subglabrescente.

Tree 20–40 m tall, the young branches stellate-tomentose. Buds densely stellate-tomentose. Seedling leaves simple, elliptic-oblong, abruptly long cuspidate, 14–24 cm long, 5.5–7.5 cm wide, the cuspid part 1.5–3 cm long, glabrous both sides. Petioles 1–4 cm long, stellate-tomentose; mature leaf blades chartaceous, oblong or obovate, rounded and sometimes mucronate at apex, rounded to subacute at base, 5.5–14 cm long, 3.5–7.5 cm wide, glabrous above (a few stellate hairs sometimes on midrib), the lower surface glabrous; lateral nerves 7–13 each side, impressed above, prominently elevated below, 5–15 mm distant, ± uniformly ascending at an angle of 45–55°, ± subparallel and unbranched nearly to the margins; tertiary venation prominent and elevated below with the veins ± regularly subparallel and subhorizontal. Pedicels (1.3–)1.8–2.5 cm long, ebracteolate, densely stellate-tomentose with shorter and longer hairs intermixed, the shorter brownish hairs predominating. Calyx minutely densely stellate-tomentose without, tube campanulate, 4 mm long, 4 mm broad at summit, the 3 lobes 4.5 mm long, 4 mm wide, moderately hirsute-strigose within with hairs 1 mm long. Petals lance-oblong, obtuse, 13 mm long, 4 mm wide. Stamens 14–16; filaments 7–8 mm long; anthers 0.2–0.3 mm long. Style 13.5 mm long, stellate-tomentose in the basal 4 mm. Fruit globose, 7 × 7 cm, faintly rugulose, subglabrescent.

Paratype. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Cerro Neblina, Base Camp, Río Mawarinuma, 0°50'N, 66°11'W, 140 m, 4 May 1984, *Gentry & Stein* 47148 (fruiting material with one flower present, MO), 47152 (seedling leaves, MO); same locality, 11 Mar. 1984, *Liesner* 16539 (MO).

This taxon possesses small sessile anthers terminating the relatively few dilated filaments and indehiscent, globose fruits. The morphologies of the anthers and the dilated filaments are typical of *Scleronema*, and globose fruits are known from other species of the genus, in contrast to the more elongated ellipsoid or oblong fruits of *Catostemma*. Others features of *S. neblinense* shared by the known species of the genus are the relatively few stamens, the relatively few flowers of each axillary fascicle, and the more or less characteristic tertiary venation and subparallel lateral nerves. While the calyx lobes of *Catostemma* are regularly three, those of *Scleronema* vary from three to five. The three calyx lobes of *S. nebli-*

nense are also found in *S. micranthum* Ducke, to which it is most closely related. The former differs in the rounded apex of the perfectly globose fruit and in the greater number of lateral nerves of the leaf blades.

LITERATURE CITED

- BAKER, J. G. 1888. *Catostemma fragrans* Benth. Hooker's Icon. Pl., pl. 1793.
- BENTHAM, G. 1843. Contributions toward a flora of South America—enumeration of plants collected by Mr. Schomburgk, in British Guiana. London J. Bot. 2: 365.
- DUCKE, A. 1930. Plantes nouvelles ou peu connues de la region amazonienne. Arch. Jard. Bot. Rio de Janeiro 5: 163–165.
- . 1937. New forest trees of the Brazilian Amazon. Trop. Woods 50: 37–39.
- OLIVER, O. 1891. *Catostemma fragrans*. Hooker's Icon. Pl., pl. 1986.
- PAULA, J. E. 1969. Estudios sobre Bombacaceae—I. Ci. e Cultura 21: 697–719.
- SANDWICH, N. 1928. New species from British Guiana. Bull. Misc. Inform. 1928, no. 9: 365–379.
- . 1931. Contributions to the flora of Tropical America. IV and V. The baromallis of British Guiana. Kew Bull. 1931: 46–54.
- . 1948. Contributions to the flora of Tropical America. XLVIII. Kew Bull. 1948: 304–306.
- SHEPHERD, J. D. & W. S. ALVERSON. 1981. A new *Catostemma* (Bombacaceae) from Colombia. Brittonia 33: 588–590.

THEACEAE

BONNETIA

KEY TO RECENTLY DESCRIBED TAXA OF *BONNETIA*

- 1a. Anthers broader than long or as broad as long, subreniform; ovary incompletely trilocular *B. euryanthera*
- 1b. Anthers longer than broad, oblong or suborbicular; ovary completely trilocular 2
- 2a. Style undivided 3
- 3a. Lateral nerves elevated on upper surface, impressed on lower surface; leaf blades $2-4 \times 1.5-2.5$ cm *B. tepuiensis* subsp. *tepuiensis*
- 3b. Lateral nerves faintly impressed on upper surface, mainly not evident on lower surface; leaf blades $1-2 \times 0.8-1.4$ cm *B. tepuiensis* subsp. *minor*
- 2b. Style divided nearly or all its length into 3 branches, or merely shallowly 3-lobed at the apex 4
- 4a. Style shallowly 3-lobed *B. guaiquinimae*
- 4b. Style deeply parted into 3 branches, divided nearly all the way to the base or at least $\frac{1}{3}$ from the top 5
- 5a. Petals white or pink 6
- 6a. Upper leaf surface enervate; sepals subacute or obtusely acute; styles divided $\frac{2}{3}$ of their length or 3-parted to the base 7
- 7a. Petals $9-9.5 \times 4-6$ mm; leaves $1.2-2.7 \times 0.5-0.8$ cm; sepals $9-9.5$ mm long *B. chimantensis*
- 7b. Petals $21-22 \times 14-16$ mm at the summit; leaves $(2-)2.5-5 \times 0.8-1.7$ cm; sepals $11-12.5$ mm long *B. bolivarensis*
- 6b. Upper leaf surface with impressed nerves above; sepals obtuse or rounded at apex; styles 3-parted $\frac{1}{3}$ distance from the top *B. toroniensis*
- 5b. Petals yellow 8
- 8a. Peduncle elongate, $3-6.5$ cm long, often surpassing the leaves, ebracteolate 9
- 9a. Petals $3.5-4.2$ cm long, $2.7-3$ cm wide; lateral nerves of both surfaces of the leaves scarcely elevated *B. tristyla* subsp. *tristyla*
- 9b. Petals smaller; lateral nerves of both leaf surfaces prominently elevated *B. tristyla* subsp. *nervosa*
- 8b. Peduncle lacking or at most 1.6 cm long, usually concealed by and much shorter than the leaves, verticillate-bracteate 10
- 10a. Leaves linear-ob lanceolate, $2.5-7$ mm wide; petals 8 mm long; peduncles $8-16$ mm long *B. huberiana*
- 10b. Leaves broadly lanceolate, obovate, or oblong-lanceolate, $4-15$ mm wide (leaves on vegetative shoots often wider); petals $9-16$ mm long; peduncles $3-16$ mm long 11
- 11a. Leaves lanceolate, acute at the apex, only slightly narrowed at the base, nearly the same width for most of length, $3.5-4.5 \times 1-1.5$ cm, finely impressed-nerved beneath, not pale punctate there, the stomata not manifest; sepals $12-13$ mm long *B. ptariensis*
- 11b. Leaves oblanceolate or obovate, obtuse, rounded to subacute at the apex, conspicuously narrowed to the base, broadest above the middle, $1-3.5 \times 0.4-1(-1.5)$ cm, mainly enervate beneath, pale punctate there, the stomata manifest; sepals $9-10$ mm long *B. wurdackii*

In the first installment of the *Flora of the Venezuelan Guayana* (Steyermark, 1984), four new taxa of *Bonnetia* were described. Continued exploration of the summit floras of the Guayana Highland has yielded the following five new *Bonnetias*.

***Bonnetia bolivarensis* Steyermark, sp. nov.** TYPE: Venezuela. Bolívar; Ptari-tepui, cumbre, 5°47'N, 61°47'W, 2,400 m, 19 Nov. 1984, *Otto Huber 9818* (holotype, VEN; isotype, MO).

Frutex 1 m; foliorum laminis dense rosulatis subsessilibus oblongo-lanceolatis apice obtuse acutis basi obtusis (2–)2.5–5 × 0.8–1.7 cm; sepalis 11–12.5 × 4–5 mm; petalis 21–22 × 14–16 mm; stylis tribus 3–3.5 mm longis fere usque ad basem divisis.

Shrub 1 m tall. Leaves crowded at summit of branches, oblong-lanceolate, subsessile, narrowed to an obtusely acute apex, obtuse at base, (2–)2.5–5 × 0.8–1.7 cm, faintly impressed-nerved both sides (the midrib slightly elevated below) or the lateral nerves not evident. Flowers solitary, sessile or subsessile; bracts immediately subtending flower oblong-lanceolate, acute to obtuse, 11–12 × 4.5 mm, dorsally carinate, setulose marginally with dark setae 1 mm long. Sepals lance-oblong, subacute, 11–12.5 × 4.5 mm, obtusely dorsally keeled basally and apically; petals white, subcuneately obovate, subtruncate apically with unequally rounded sides, narrowed to the base, 21–22 mm long, 14–16 mm wide at summit, 4 mm wide at base. Stamens numerous, multiseriate; filaments 5 mm or less long; anthers 0.5–0.8 × 0.6 mm. Pistil 9 mm long, the styles 3, 3–3.5 mm long, divided about 2/3 of their length.

The larger flowers and larger subacute leaves differentiate this taxon from *B. chimantensis* Steyermark, *B. tepuiensis* Kobuski & Steyermark, and *B. toronoensis* Steyermark. In its deeply 3-parted style it further differs from *B. tepuiensis*.

***Bonnetia euryanthera* Steyermark, sp. nov.** TYPE: Venezuela. Bolívar: meseta de Jaua, cumbre, sección oriental-central, afloramientos de piedra arenisca en sitios expuestos con vegetación herbácea y arbustos achaparrados, 4°35'N, 64°15'W, 2,020 m, 14 Feb. 1981, *Julian A. Steyermark, Charles Brewer-Carias & Ron Liesner 124311* (holotype, NY; isotypes, MO, VEN). Figure 7.

Subfrutex 1 m, ramulis parum ramosis; cicatricibus

valde confertis; foliis alternis ad apicem confertis oblongis vel obovato-oblongis apice rotundatis vel obtusis sessilibus vel subsessilibus 3–4.5 cm longis 1–2 cm latis, nervis lateralibus vix manifestis; inflorescentia terminali conferta dense cymosa, 12–15 floris, axibus duobus vel tribus 3–5 mm longis; bracteolis sub floribus oblongo-ligulatis vel obovato-oblongis rotundatis 3–4.5 mm longis 1.5–2 mm latis marginibus versus basem praesertim minute setosis; floribus sessilibus vel subsessilibus; sepalis 5, inaequalibus exterioribus ovalibus vel suboblongis rotundatis 5–6 mm longis 3–4 mm latis, interioribus majoribus ovatis obtusis 6–7 mm longis 4 mm latis dorsalibus carinatis; petalis 5 suborbiculari-obovatis apice rotundato-subtruncatis 10–11 mm longis apicem versus 6–8 mm latis; filamentis numerosis 2-seriatis; antheris subreniformibus latioribus quam longioribus 0.5 mm altis 0.6–0.7 mm latis 4-theatis; ovario uniloculari imperfecte 3-loculari placentatione parietali placentis valde intrusis; stylis trifidis, ramis 1–1.25 mm longis.

Dwarf shrub 1 m tall, sparsely branched with the leaf scars closely crowded, about 2 mm distant. Leaves alternate, closely crowded near the summit, coriaceous, oblong to obovate-oblong, rounded or obtuse at apex, sessile or subsessile, 3–4.5 cm long, 1–2 cm wide; lateral nerves scarcely evident on either side. Inflorescence terminal, compact, densely cymosely subpaniculate, 2 cm high, 2.5 cm wide with 2–3 short axes 3–5 mm long, 1.5 mm wide, 12–15-flowered, on a short peduncle 2 mm long, 1.5 mm wide. Bracteoles ligulate-oblong, rounded, 3–4.5 mm long 1.5–2 mm wide, with minutely setulose margins especially manifest in lower half. Flowers sessile, crowded. Sepals 5, unequal, the outer oval or oblong, rounded, 5–6 mm long, 3–4 mm wide, the inner larger, ovate, obtuse, 6–7 mm long, 4 mm wide, dorsally carinate. Petals 5, pink, rose and white, suborbicular-obovate, subtruncate-rounded at apex, 10–11 mm long, 6–8 mm wide near apex, 2 mm wide at base. Stamens numerous; filaments filiform, 3–5 mm long, 2-seriate, attached at base to a thickened tissue; anthers 4-celled, subreniform, broader than long, 0.5 mm high, 0.6–0.7 mm wide, the thecae oblong or subelliptic. Pistil 5.5 mm long; ovary 3.5 mm long, 1-celled (incompletely 3-celled), the placentae parietal and conspicuously intruding toward center; ovules numerous. Style 1 mm long, trifid, the style branches 1–1.25 mm long; stigmas terminal.

Paratype. VENEZUELA. Same locality and date as type, Steyermark, Brewer-Carias & Liesner 124322 (NY, VEN).

This species is remarkably distinct in the shape of the anthers, which are broader than long or

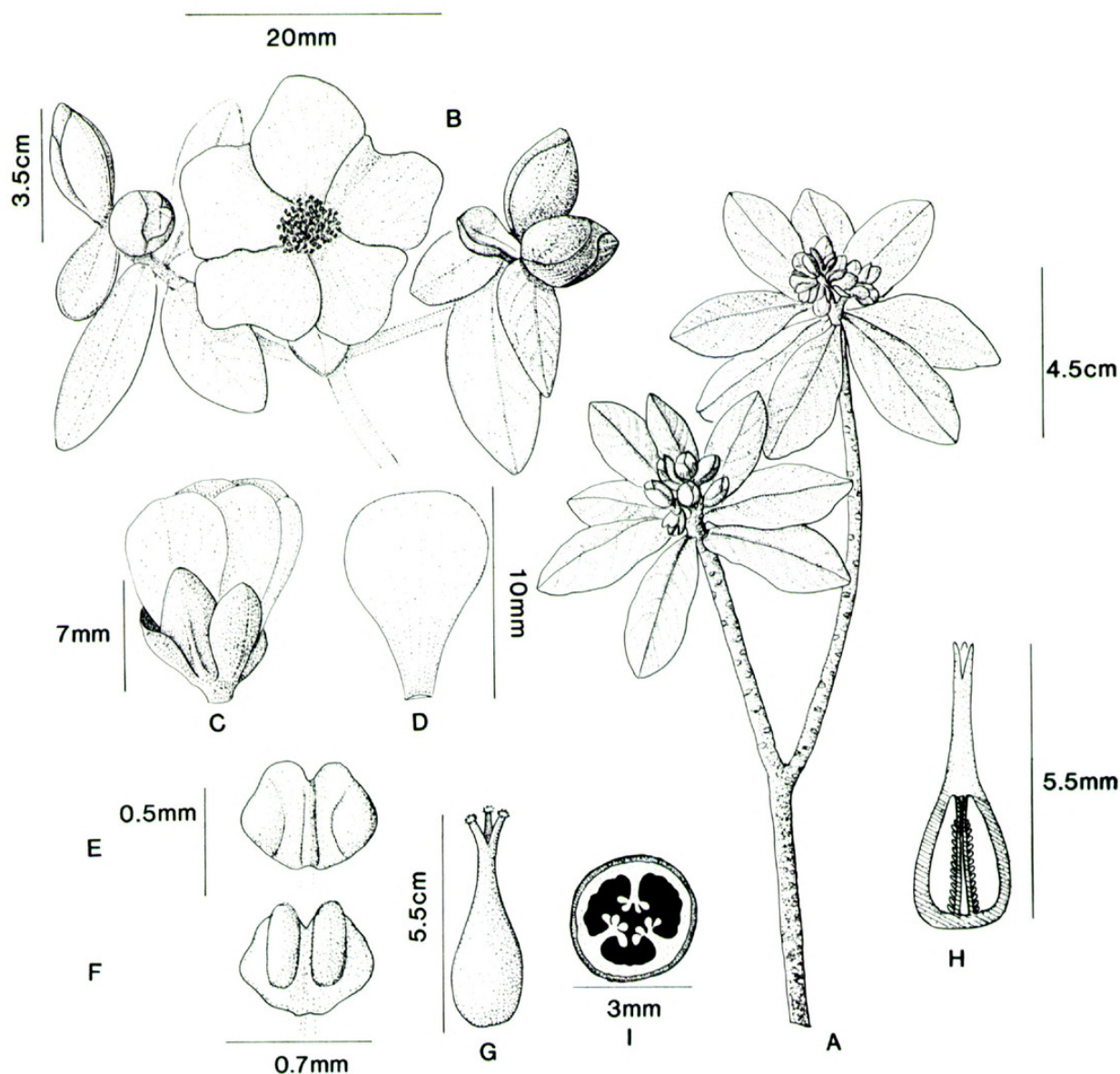


FIGURE 7. *Bonnetia euryanthera*. —A. Fertile branch in bud stage. —B. Portion of flowering branch enlarged. —C. Flower, lateral view. —D. Petal. —E. Anther, ventral view. —F. Anther, dorsal view. —G. Pistil. —H. Longitudinal section through pistil showing placenta and ovules. —I. Cross section through ovary showing single locule occupied by intruding parietal placenta with ovules. Based on holotype.

as broad as long and subreniform to suborbicular. Other distinctive features are found in the incompletely trilocular ovary with parietal placenta extending toward and almost fusing at the center, their ovules crowded and touching the ends of the placenta dissepiment, in this respect simulating the drawing of the ovary of *Bonnetia celiae* Maguire (Maguire, 1972, fig. 22k), which is quite different from the completely trilocular ovary of *B. neblinae* Maguire (Maguire, 1972, fig. 23g). Several dissections of the ovary verify observations which were also confirmed by botanical colleagues at the Missouri Botanical Garden. A longitudinal section of the ovary shows that the placental partitions are not united. They

nearly come together, but a slight space develops between them without tearing any vascular tissue. The broad anthers are more nearly like those shown in figure 19 (Maguire, 1972) for *Archytaea angustifolia* Maguire (A, b-c), *Ploiariium alternifolium* (B, b-c), *Bonnetia neblinensis* Maguire (D, b-c), and *B. steyermarkii* Kobuski (F, b-c). In this respect they differ from the linear-oblong anthers of *Bonnetia jauaensis* Maguire (Maguire, 1976) collected on another part of the summit of Cerro Jaua of the Meseta de Jaua.

Cronquist (1981) stated that the gynoecium of all four subfamilies of the Theaceae has axile placentation, "(2-)3-5(-10) carpels," and forms a compound ovary with equal ovule and carpel

number, except for *Piquetia*, which has the carpels united only at the base. In his treatment of the Bonnetiaceae, Maguire (1972) stated that the ovary is "5–3-locular" and that the placentation is "axial or a permutation thereof." In our species, it would be more accurate to state that the ovary is incompletely trilobular, or actually unilobular with three parietal placentae extending inward but not fusing or united.

Bonnetia guaiquinimae Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Cerro Guaiquinima, cumbre, sector SE, 5°40'N, 63°26'W, 1,250 m, 26 May 1978, *Julian A. Steyermark, Paul Berry, G. C. K. & E. Dunsterville 117421* (holotype, MO).

Frutex 1.5 m; foliorum laminis subpetiolatis oblongo-lanceolatis vel oblanceolatis apice acutis basi subacutis vel subobtusis 5–6.5 × 1.3–1.6 cm subtus enervatis integerrimis; sepalis minute mucronatis 10–12 × 6–8 mm; petalis 20 × 15–20 mm; filamentis 3.5–7 mm longis; stylo subulato apice leviter 3-lobato.

Shrub 1.5 m tall. Petiole 1–2 mm long; leaves coriaceous, entire, oblong-lanceolate to oblanceolate, acute at apex, gradually narrowed to a subacute or subobtuse base, 5–6.5 × 1.3–1.6 cm, enervate below, the midrib subimpressed below, the lateral nerves elevated above. Sepals coriaceous, suborbicular-obovate, rounded at a shortly cuspidate apex, 10–12 mm long, 6–8 mm wide above the middle, 3–4 mm wide at base. Petals white, obovate, narrowed to a subunguiculate base, 20 mm long, 15–20 mm wide at the summit, 2–3 mm wide at base. Filaments distinct, 3.5–7 mm long; anthers 1.5–1.8 × 0.7 mm. Pistil 9 mm long; style united, merely 3-lobed at apex.

This taxon is characterized by the shallowly 3-lobed style and the entire, oblong-lanceolate, acute leaves, which are enervate beneath. It may be distinguished from *B. chimantensis* Steyermark by the larger petals, shallowly trilobed style, and larger leaves enervate beneath. It differs from *B. toronoensis* Steyermark in the larger sepals and petals, and larger, entire leaves enervate below, while it is differentiated from *B. tepuiensis* and subsp. *minor* Steyermark by the larger, minutely mucronate sepals, longer filaments, and completely entire leaves.

Bonnetia ptariensis Steyermark, sp. nov. TYPE: Venezuela. Bolívar: Ptari-tepui, cumbre, 5°45'N, 61°45'W, 2,360–2,420 m, 23 Feb. 1978, *Julian Steyermark, V. Carreño E., R.*

McDiarmid & C. Brewer-Carias 115645 (holotype, MO).

Frutex 2.5 m; foliis sessilibus lanceolatis apice acutis majoribus 3.5–4.5 × 1–1.5 cm minute obscureque serrulatis; floribus solitariis minute breviter pedunculatis, pedunculis teretibus vel subteretibus 4–6 cm longis; sepalis lanceolatis vel suboblanceolatis acutis 12–13 × 3–5 mm; petalis luteis obovatis apice rotundatis 16–18 × 12 mm; antheris 0.8 × 0.7 mm; stylis tribus 6 mm longis fere usque ad basim divisis.

Subshrubs 2.5 m tall. Leaves coriaceous, lanceolate, acute at apex, slightly narrowed to the base, the larger ones 3.5–4.5 × 1–1.5 cm and obsoletely pinnately nerved, the midrib slightly elevated below, microscopically and obscurely serrulate. Flowers solitary on (sub-)terete peduncle 4–6 mm long; bracts immediately subtending flower narrowly oblanceolate, acute, 12–13 × 3–4 mm. Sepals subconvex, lanceolate or suboblanceolate, acute, 12–13 × 3–5 mm, 10-striate, minutely ciliolate, obtusely carinate; petals yellow, obovate, rounded above, 16–18 mm long (pre-anthesis), 12 mm wide near apex, 2 mm wide at base; filaments 1.5–3.5 mm long (pre-anthesis); anthers 0.8 × 0.7 mm long. Pistil 10 mm long; styles 3, 6 mm long, free nearly to the base.

This species differs from the yellow-flowered *B. wurdackii* Maguire in the larger, lanceolate, and acute leaves, longer sepals, larger petals (even in bud), longer filaments, and longer style branches. Furthermore, the leaves do not show the pale-punctate stomata, which are clearly visible in *B. wurdackii*. It is easily distinguished from *B. tristyla* by the short pedicels, smaller floral parts, and smaller leaves, and is well differentiated from *B. huberiana* by the larger lanceolate leaves, shorter pedicels, and larger floral parts.

Bonnetia tristyla Gleason subsp. *nervosa* Steyermark subsp. nov. TYPE: Venezuela. Territorio Federal Amazonas: Cerro Yapacana, 2 Jan. 1951, *Maguire, Cowan & Wurdack 30632* (holotype, VEN; isotype, NY).

A subsp. *B. tristyla* foliis supra costa media necnon nervis lateralibus nonnullis (6–8) conspicue manifesteque elevatis, nervis lateralibus supra inaequaliter prominentibus; petalis minoribus 25–38 mm longis recedit.

Petiole absent or 1–2 mm long. Leaves suboblong, oblong-oblanceolate, or oblong-obovate, obtuse to rounded at apex, narrowed to a subobtusate or subacute base, 4–8 cm long, 1.5–3.5 cm wide, the midrib on upper surface and 6–8

pairs of lateral nerves conspicuous and elevated, the other intermediate pairs of lateral nerves less conspicuously and lightly impressed, nerves on lower surface subequal and lightly impressed. Peduncle 3–4.5(–6.5) cm long. Sepals 12–20 mm long, the outer 12–15 mm long, the inner ones 15–20 mm long. Petals 25–38 × 15–22 mm.

Paratypes. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Cerro Avispa, Río Siapa, summit, 1°30'N, 65°51'W, 1,510 m, *Dunsterville* (G. C. K. & E.); Yapacana, summit, 3°45'N, 66°45'W, 1,000–2,000 m, *Steyermark & Bunting 103103*; Yapacana, 1,200 m, *Maguire et al. 30665*; Cerro Avispa, Río Siapa, summit, 1°30'N, 65°51'W, 1,510 m, *Cardona 3098*; Neblina, summit, Cañon Grande slopes E of summit camp, "1,200–2,200" m, *Maguire et al. 42179*; Neblina, Cañon Grande SSW of summit camp, 1,050–1,100 m, *Maguire et al. 42498*; Yapacana, *Maguire et al. 30632*; Neblina, Cañon Grande, slopes E of summit camp, 1,200–1,300 m, *Maguire et al. 42235*; vicinity of Cerro Vinilla, 30 km SSW of Ocamo, caños affluent to Río Orinoco, 2°31'N, 65°23'W, 440–600 m, *Steyermark et al. 130405*; Serranía del Vinilla, 20 km SW of Ocamo, 2°20'N, 65°22'W, 760 m, *Huber 6168*; altiplanicie de arenisca, E side of Río Siapa or Matapire, slightly above leaving the Macizo of Aracumuni, 1°36'N, 65°41'W, 600 m, *Huber 6006*.

This taxon differs from typical *Bonnetia tristyla* in having smaller petals, prominently elevated upper midrib, and unequally prominent lateral nerves on the upper surface of the leaf, with 6–8 conspicuously elevated pairs alternating with fine, lightly impressed alternate nerves. There is also a tendency for the base of the leaf blade in subsp. *tristyla* to be cuneately narrowed, whereas in subsp. *nervosa*, the base of the leaf blade is usually slightly obtusely curved or rounded above its junction with the petiole.

LITERATURE CITED

- CRONQUIST, A. 1981. An Integrated System of the Classification of Flowering Plants. Columbia Univ. Press, New York.
- MAGUIRE, B. 1972. The botany of the Guayana Highland—Bonnetiaceae. Mem. New York Bot. Gard. 23: 132, fig. 19A, b–c; B, b–c; D, b–c; F, b–c; 142, fig. 22k; 149, fig. 23g.
- . 1976. Theaceae. In J. A. Steyermark & C. Brewer-Carias (editors), La Vegetación de la Cima del Macizo de Jaua. Bol. Soc. Venez. Ci. Nat. 32(132–133): 358.
- STEYERMARK, J. A. 1984. Flora of the Venezuelan Guayana—I. Ann. Missouri Bot. Gard. 71: 326–327.

NOTES ON LAPLACEA

The last revision of the genus *Laplacea*, by Kobuski (1950), recognized nine species. Two of

these, *L. acutifolia* (Wawra) Kobuski and *L. obovata* (Wawra) Kobuski, were considered by Wawra (1886) as varieties of *Laplacea semiserrata*, or of *Wikstroemia fruticosa* by Blake (1918).

Kobuski noted that great variation existed in size of the flowers and fruits, even within a single species, and that the keys to the species had been "based almost entirely on leaf characters and pubescence."

The species of *Laplacea* can be divided into two groups, those with asymmetrical leaves and those with symmetrical leaves, both of which occur in the Venezuelan Guayana, the common asymmetrical type represented by *L. fruticosa* (Schrader) Kobuski, the symmetrical type by *L. pubescens* Planchon & Linden. Variations occur in each species (Fig. 8B, b, 8C, c). Specimens from the Territorio Federal Amazonas (Maroa, Duida, Huachamacari, Yutaje, and Cerro de La Neblina), as well as a specimen from Cerro Sarsariñama of the state of Bolívar (*Cardona 380*) (Fig. 8A, a) may be referred to typical *L. fruticosa*. However, two specimens from the summit of the Chimantá Massif (*Steyermark & Wurdack 879* and *1126*) (Fig. 8D, d) from the state of Bolívar, differ conspicuously from other Guayanian material, as well as from specimens outside the Venezuelan Guayana conforming to *L. fruticosa*. These specimens have stouter branches with larger leaf scars; thicker, larger leaves, enervate beneath, broader at the sessile base as to appear nonpetiolate; rather conspicuous hairy tufts along the leaf margins in the sinuses of the marginal teeth; longer, stouter pedicels; and larger sepals and petals. The isolation of the Chimantá specimens from the upper slopes of this sandstone mountain, well known for its endemic flora, may help explain the evolutionary trend here noted toward the segregation of morphological characters at variance from typical *L. fruticosa*. A specific or subspecific category for this population might be envisioned. However, in view of the degree of variation shown by other taxa of this species, varietal rank is here proposed.

***Laplacea fruticosa* (Schrader) Kobuski var. *chimantae* Steyermark, var. nov.** TYPE: Venezuela. Bolívar: Chimantá Massif, central section, along west branch of headwaters of Río Tirica above Upper Falls, 2,090 m, 17 Feb. 1955, *Julian A. Steyermark & John J. Wurdack 879* (holotype, VEN; isotypes, F, NY). Figure 8D, d.

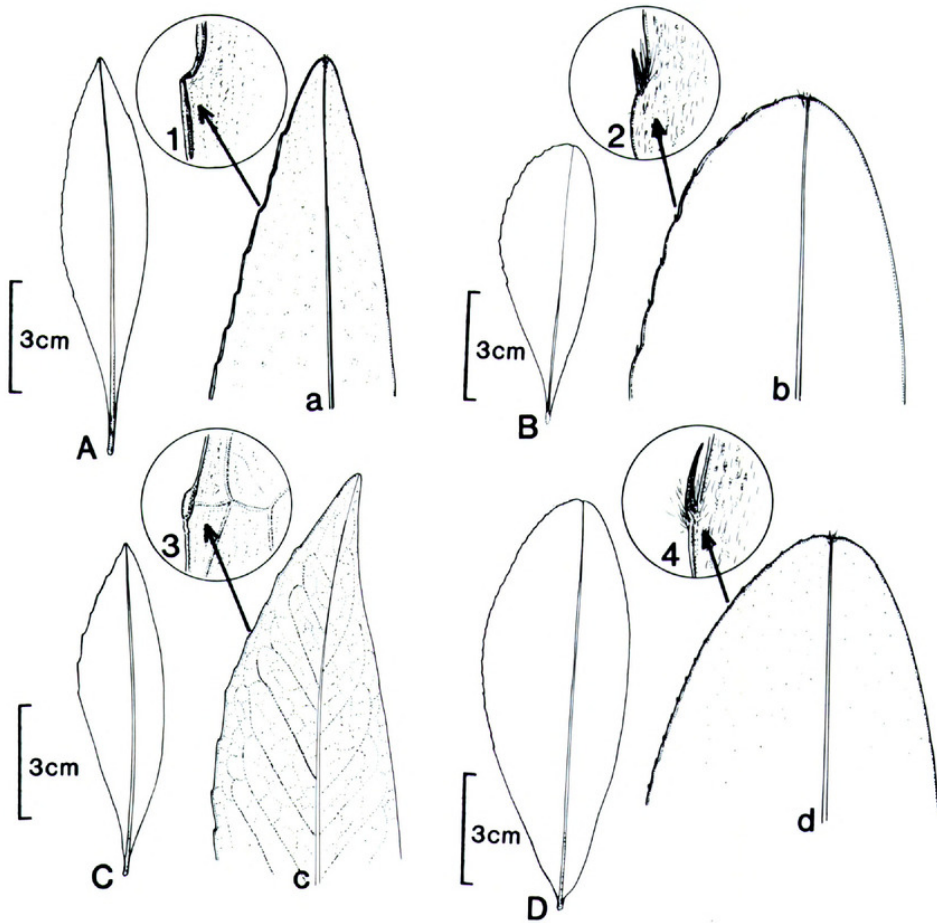


FIGURE 8. A–C. *Laplacea fruticosa* var. *fruticosa*.—A. Leaf of Cardona 380. a. portion of margin with detail of a sinus (1).—B. Leaf of Maguire et al. 37153. b. portion of margin with detail of a sinus (2).—C. Leaf of Steyermark et al. 120086. c. portion of margin with detail of a sinus (3).—D. *Laplacea fruticosa* var. *chimantae*, leaf of Steyermark & Wurdack 879. d. portion of margin with detail of a sinus showing tufts of hairs (4).

A var. *fruticosa* foliis sessilibus vel subsessilibus apice late rotundatis in petiolum nihil angustatis basi 5–9 mm latis, dentibus marginalibus pilis caespitosis gentibus, pedunculis robustis 2–3 cm longis 2.5–3 mm crassis, sepalis petalisque majoribus recedit.

Tree 5–20 m tall, the leafy branches 5–10 mm thick, the leaf scars conspicuous, orbicular, 2.5–4 mm wide. Leaves sessile to subsessile, abruptly contracted into a petiolar portion 1–2 mm long; leaf blades thick-subcoriaceous, asymmetric, oblanceolate-oblong, rounded at the slightly emarginate apex, gradually narrowed to a broad base, 9.5–12.5 cm long, 3–4.8 cm wide, 5–7 mm wide at base, the midrib bordered on one side by foliar tissue 3–4 mm wide, on other side 2–3 mm wide, the lower surface enervate, mainly glabrous but with scattered, pale, minute, appressed, simple hairs over a pustulate surface, inconspicuously appressed-suberrulate from about $\frac{3}{8}$ distance from base to apex with dark acicular teeth 1 mm long, these bearing at their base a tuft of silky hairs 1 mm long (seen best from lower margin);

upper surface enervate, glabrous. Peduncle 2–3 cm long, 2.5–3 mm thick, glabrous. Flower bud just before anthesis 2–2.5 cm long, 1.5–2.5 cm wide. Sepals broadly suborbicular, the two outermost 20 mm long, 15 mm wide, the others 17–25 mm long, 13–22 mm wide, minutely gray sericeous most of the length without, glabrous within. Petals broadly oblong-obovate, broadly rounded and emarginate at apex, 25 mm long, 15–22 mm wide, minutely gray sericeous without in the central 5–9 mm portion, glabrous on the marginal 4–5 mm, glabrous within. Filaments 5–6 mm long, glabrous; anthers broadly oblong, broadly rounded at the extremities, 2.5 mm long, 1.5 mm wide. Ovary barrel-shaped, 8 mm long, 5 mm wide, densely sericeous.

Paratype. VENEZUELA. BOLÍVAR: Chimantá Massif, Agparamán tepui, southeast-facing forested slopes below escarpment, 1,880–1,955 m, 26 Feb. 1955, Steyermark & Wurdack 1126 (F, NY, VEN).

The broad, nonpetiolate leaf bases of var. *chi-*

mantae differ markedly from the generally narrowed, subpetiolar ones of typical *Laplacea fruticosa*, in which the leaf base is conspicuously narrowed toward the base into a subpetiolar portion 5–8 mm long and 1–2 mm wide with the midrib bordered on either side by a very narrow strip of tissue only 0.5–1 mm wide on each side. In *L. fruticosa* var. *pulcherrima* (Melchior) Kobuski, the leaf base is broader than in typical *L. fruticosa*, but the apex is gradually obtusely narrowed and is not broadly rounded as in var. *chimantae*. The tufts of hairs at the base of the marginal teeth are absent from most specimens examined but are present to a lesser degree in *Dusen 15451* from Brazil and *Maguire et al. 37259* from Cerro de La Neblina in Venezuela. The enervate lower leaf surface may also occur in other specimens of *L. fruticosa*, but more frequently the lower surface shows venation.

The second species of *Laplacea* in the Guayana Highland, *L. pubescens* Planchon & Linden ex Triana & Planchon, is represented by two collections, *Maguire, Wurdack & Bunting 37272* from the summit of Cerro de La Neblina, and *Maguire, Cowan & Wurdack 30285* from the summit of Cerro Huachamacari, both from Territorio Federal Amazonas. Elsewhere, the species ranges in the Andes from Venezuela south to Peru and Bolivia. On Cerro de La Neblina it varies slightly from typical *L. pubescens* of the Andes, whereas on Cerro Huachamacari it has developed more reduced leaves, and in both Guayanian collections the lower surface of the leaves is enervate, as contrasted with the more evident venation shown in most of the specimens of *L. pubescens*. *Laplacea fruticosa*, the more common species, also occurs on Cerro Huachamacari, but at a lower altitude of 1,100 m of forested talus slopes, as well as on Cerro de La Neblina.

Laplacea pubescens Planchon & Linden ex Triana & Planchon var. *minor* Steyermark, var. nov.
 TYPE: Venezuela. Territorio Federal Amazonas: between Summit Camp and Southwest Escarpment, Cerro Huachamacari, 1,850 m, 17 Dec. 1959, *Bassett Maguire, R. Cowan & J. Wurdack 30285* (holotype, NY).

A var. *pubescens* foliorum laminis minoribus recedit; laminis symmetricis oblanceolatis apice anguste obtusis basi valde angustatis supra medium conferte crenulatis 2.5–4.5(–9) cm longis 1–2(–3) cm latis subtus enervatis; pedicellis 6–8 mm longis; sepalis 5–11 mm longis; petalis cuneiformi-obovatis 16–21 mm longis supra medium 14–15 mm latis.

Leaf blades symmetrical, oblanceolate, narrowly obtuse at the apex, strongly narrowed at the base, 2.5–4.5(–9) cm long, 1–2(–3) cm wide, closely crenulate above the middle, enervate beneath. Pedicels 6–8 mm long. Sepals 5–11 mm long. Petals cuneiform-obovate, 16–21 mm long, 14–15 mm wide above the middle.

Paratype. VENEZUELA. TERRITORIO FEDERAL AMAZONAS: Cerro de La Neblina, savanna edge, 3 km N of Cumbre Camp, 1,800 m, 12 Jan. 1953, *Maguire, Wurdack & Bunting 37272* (NY).

Both collections have the leaf surface enervate beneath. However, the paratype (*Maguire et al. 37272*) has the larger leaves typical of *L. pubescens* var. *pubescens*. In both collections the indument of the lower surface is sparse compared with specimens from the Andean portion of the range of the species.

LITERATURE CITED

- BLAKE, S. F. 1918. New spermatophytes collected in Venezuela and Curacao by Messrs. Curran and Haman. *Contr. Gray Herb.* n.s. 53: 39.
 KOBUSKI, C. E. 1950. Studies in the Theaceae, XX. Notes on the South and Central American species of *Laplacea*. *J. Arnold Arb.* 32: 405–429.
 SPRAGUE, T. A. 1926. Linden and Planchon's *Plantae Columbianae*. *Kew Bull. Misc. Information* 1926: 43–44.
 WAWRA, H. 1886. Ternstroemiaceae. In C. F. Martius, *Flora Brasiliensis* 12(1): 289.

THYMELEACEAE

DAPHNOPSIS

Daphnopsis guaiquinimae Steyermark, sp. nov.

TYPE: Venezuela. Bolívar: Cerro Guaiquinima, cumbre, la extensión más septentrional del cerro en el sector noreste, la parte pedregosa, abierta y plana con vegetación baja, 6°0'N, 63°28'W, 1,650 m, 9 Apr. 1979, *Julian A. Steyermark, G. C. K. & E. Duns-terville 117977* (holotype, VEN; isotype, MO). Figure 9.

Frutex 1.5 m; ramulis juvenilibus sericeo-strigosis; foliorum laminis elliptico-oblongis vel lanceolato-ellipticis apice plerumque obtusis vel rotundatis basi obtusis vel subacutis 3–6 cm longis 1–3 cm latis supra glabris subtus minute strigillosis costa media subtus dense strigillosis venulis tertiariis pagina superiori irregulariter contortis; pedunculis filiformibus 10–20 mm longis sericeo-strigillosis; calyce 7 mm longo supra medium 2 mm lato extus antrorse sericeo, lobis ligulato-oblongis subobtusis utrinque sericeo-hirtellis, orificio glabro; staminibus 8, 2-seriatis; squamis hypogynis 7–8 subulatis glabris fere liberis 1.7–2 mm longis.

Shrub 1.5 m tall; juvenile stems 2–3 mm diam., sericeous-strigose. Petiole 2–3 mm long, strigillose, leaf blades subcoriaceous, gray-white below, elliptic-oblong or lance-elliptic, mostly obtuse to rounded at apex, rarely subacute, obtuse to subacute at base, 3–6 cm long, 1–3 cm wide, glabrous above, minutely strigillose below, slightly more densely on the lower midrib; principal lateral nerves 7–10 each side; tertiary venation above irregularly contorted and twisted, below more regularly reticulate. Inflorescence terminal or axillary, the peduncles filiform, 10–20 mm long, 0.5 mm wide, sericeous-strigillose. Calyx subcylindric-obovoid, 7 mm long, 2 mm wide at and above middle, 1 mm wide at base, antrorsely sericeous without, densely antrorsely sericeous within in the lower 4 mm; lobes 4, unequal, the outer ligulate-oblong, obtuse, $1.2-1.5 \times 0.5$ mm, the inner 1×0.08 mm, sericeous-hirtellous on both surfaces, the orifice glabrous. Stamens 8 in 2 series; anthers sessile, suborbicular-oblong, 0.6 mm long, the upper 4 opposite the calyx lobes, the lower 4 alternate with the calyx lobes; style terminal, 0.3 mm long; stigma clavate, 0.3 mm long. Hypogynous scales 7–8, subulate, glabrous, 1.7–2 mm long, cleft nearly or all the way to the base, free or nearly so.

The type and only specimen of this species was indicated by Nevling (1967) as a new species of *Daphnopsis* related to *D. longipedunculata* Gilg ex Domke, described originally from Mount Roraima. The chief differences possessed by the new taxon are the greater number of hypogynous scales (8 vs. 4 as in the Roraima specimen), peduncles 1–2 cm long contrasted with 2.5–9 cm on the Roraima specimen, and the shorter style. Domke (1935) stated that the umbels in *D. longipedunculata* were on axillary peduncles but added (“atque terminali?”), apparently suspecting that they may also be terminal, as is the case in the Guaiquinima specimens. He also stated that staminate as well as pistillate flowers occur. This indicates that the specimen *Ule* 8739 from Roraima studied by Domke was monoecious. In the Guaiquinima specimens, there is also an indication of monoecism, since the anthers are well developed and suborbicular-oblong on some flowers but poorly developed and linear-oblong on others, even on the same plant.

The hypogynous scales in the Guaiquinima plant are regularly disposed as eight filiform appendages. Although they appear to be free, as in *Funifera utilis* Leandro, they are connected at their very base by a slight membrane on the disk,

which appears to be adnate to the actual base of the calyx tube, thus showing the relationship with *Daphnopsis*. Conversely, they could be interpreted as completely free as in the genus *Funifera*. Nevling (1967) at first interpreted the style to be lateral (eccentric) in *Daphnopsis longipedunculata*, but later (pers. comm., 1986) confirmed my observation that the style is terminal.

***Daphnopsis nevlingiana* Steyermark, sp. nov.**

TYPE: Venezuela. Bolívar: Cerro Sarisariñama, Meseta de Jáua, summit, $4^{\circ}41'40''\text{N}$, $64^{\circ}13'20''\text{W}$, 1,400 m, 16–18 Feb. 1974, Julian A. Steyermark, V. Carreño E. & Charles Brewer-Carias 109199 (holotype, VEN; isotype, MO).

A Daphnopsis longipedunculata Gilg ex Domke foliorum paginis superioribus venatione tertiaria irregulariter contorta, perianthio rubescenti cum apice albo, calycis tubo intus praeter infra medium sparse pubescentem glabro, squamis hypogynis quattuor incrassatis prope apice obtusum lutescentibus rubescentibusque recedit.

Slender tree 3 m tall with bark difficult to tear, the young branches strigose. Petiole 3–4 mm long, moderately strigose. Leaf blades elliptic-oblong or ovate-oblong, rounded at apex, acute at base, 4–7.5 cm long, 2–4.5 cm wide; upper surface mainly glabrous except strigose along the depressed midrib; lower surface uniformly short-strigose with the lower midrib more densely strigose with longer hairs; lateral nerves 7–9 each side, faint above, slender and slightly manifest below; tertiary veins of upper surface irregularly contorted, loosely and inconspicuously reticulate. Pistillate calyx dull red with whitish tips, cylindric, 5 mm long, 4-lobed; lobes unequal, puberulous in upper half, glabrous below, the larger ones 1 mm long, 0.8 mm wide, pubescent over a larger area with longer hairs toward the base; the smaller lobes 0.7 mm long, 0.7 mm wide, ovate-oblong; calyx tube glabrous within except for small sericeous patches below the middle. Hypogynous scales 4, linear-lanceolate, 1.5–2 mm long, 0.2 mm wide in lower part, dull yellow, dull reddish near the tip. Pistil 4 mm long; ovary ellipsoid, 2.4 mm long, densely sericeous; style 1.5 mm long, glabrous; stigma subglobose, 0.5 mm long.

This species differs from *Daphnopsis longipedunculata* Gilg ex Domke by having peculiarly contorted, irregular tertiary venation on the upper leaf surface; the calyx reddish white with white tips and with glabrous interior except for sparse

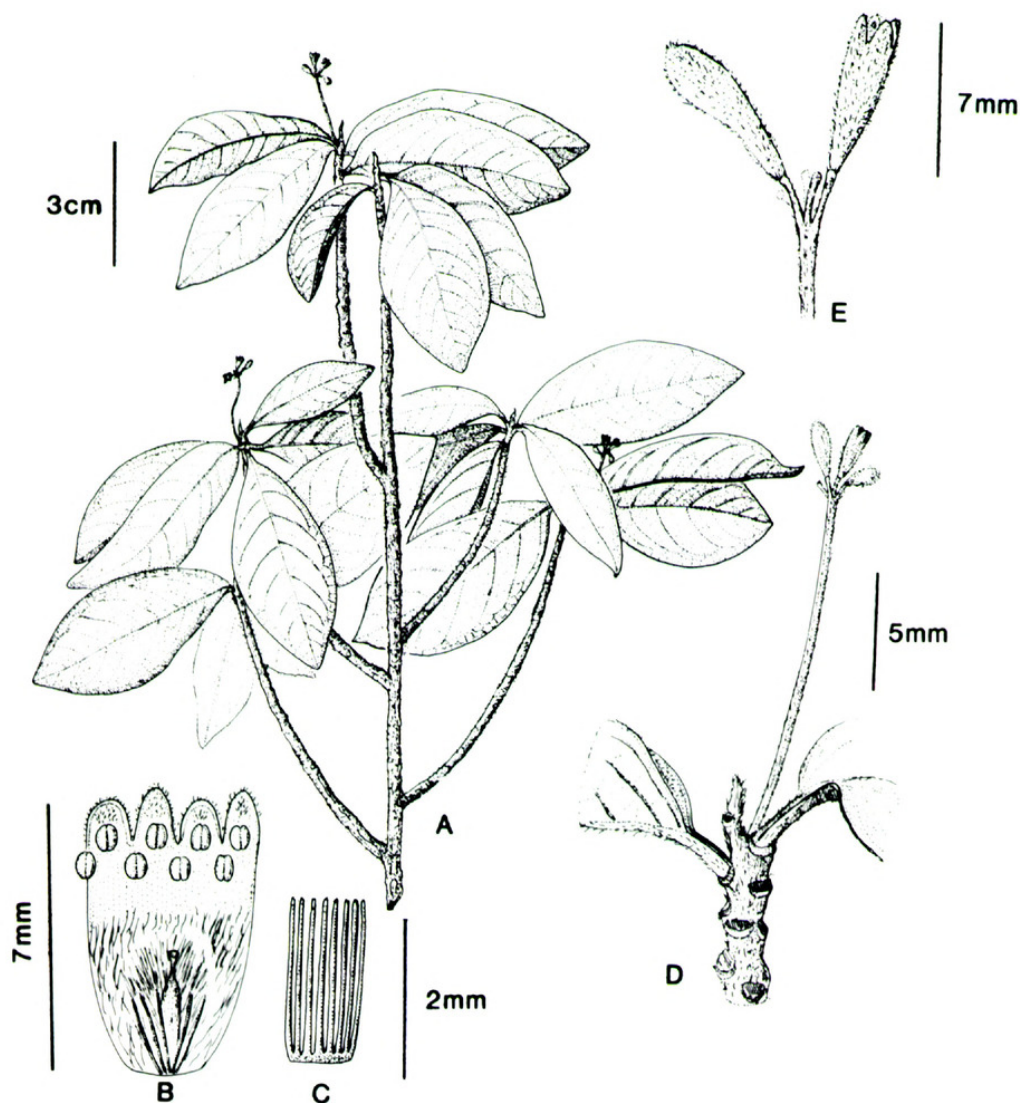


FIGURE 9. *Daphnopsis guaiquinimae*.—A. Flowering branch.—B. Flower, interior view.—C. Hypogynous scales.—D. Peduncle with flowers.—E. Group of flowers.

pubescence below the middle; and hypogynous scales thickened and dull yellow with reddish near the obtuse tips.

SCHOENOBIBLUS

Schoenobiblus amazonicus Steyermark, sp. nov.

TYPE: Venezuela. Territorio Federal Amazonas: 25 km S of Puerto Ayacucho, 5°30'N, 67°35'W, 5 Aug. 1967, Wessels-Boer 1953 (holotype, MER; isotype, MY). Figure 10.

Arbor 6 m; foliorum laminis oblanceolato-obovatis apice acuminatis base acutis 36 cm longis 12.5–14 cm latis subtus praesertim costa media necnon nervis lateralibus puberulis; petiolis subtus dense strigillosis; pedunculo principali 5.5–11.5 cm longo; inflorescentia umbellata, 10–20-flora; pedicellis 10–18 mm longis; calycis tubo lineari 17–18 mm longo 0.6–0.8 mm lato extus sericeo intus supra medium retrorse sparsimque strigoso ceterum glabro, lobis quattuor linearibus apice

rotundatis 6 mm longis 1.5 mm latis extus sericeo-lanuginosis intus villosis; stylo filiformi 18 mm longo.

Tree 6 m tall; buds fusiform, subobtuse, 6.5 mm long, 2.5 mm wide. Petiole 6–9 mm long, 2.5–3 mm wide, strigillose beneath; leaf blades oblanceolate-obovate, acutely acuminate at apex, acute at base, 36 cm long, 12.5–14 cm wide, glabrous above, moderately strigillose on midrib and lateral nerves below, these sparsely puberulous on leaf surface, with the midrib elevated, this impressed above; main lateral nerves 8–12 each side, anastomosing near margin; tertiary veinlets reticulate with large areoles. Main peduncle(s) solitary or 2, terminal or axillary, branching at the summit into 2 secondary sericeous axes, one of them solitary, the other forking into 2–3 shorter secondary axes 2–4 cm long. Flowers 10–20-umbellate; pedicels 10–18 mm

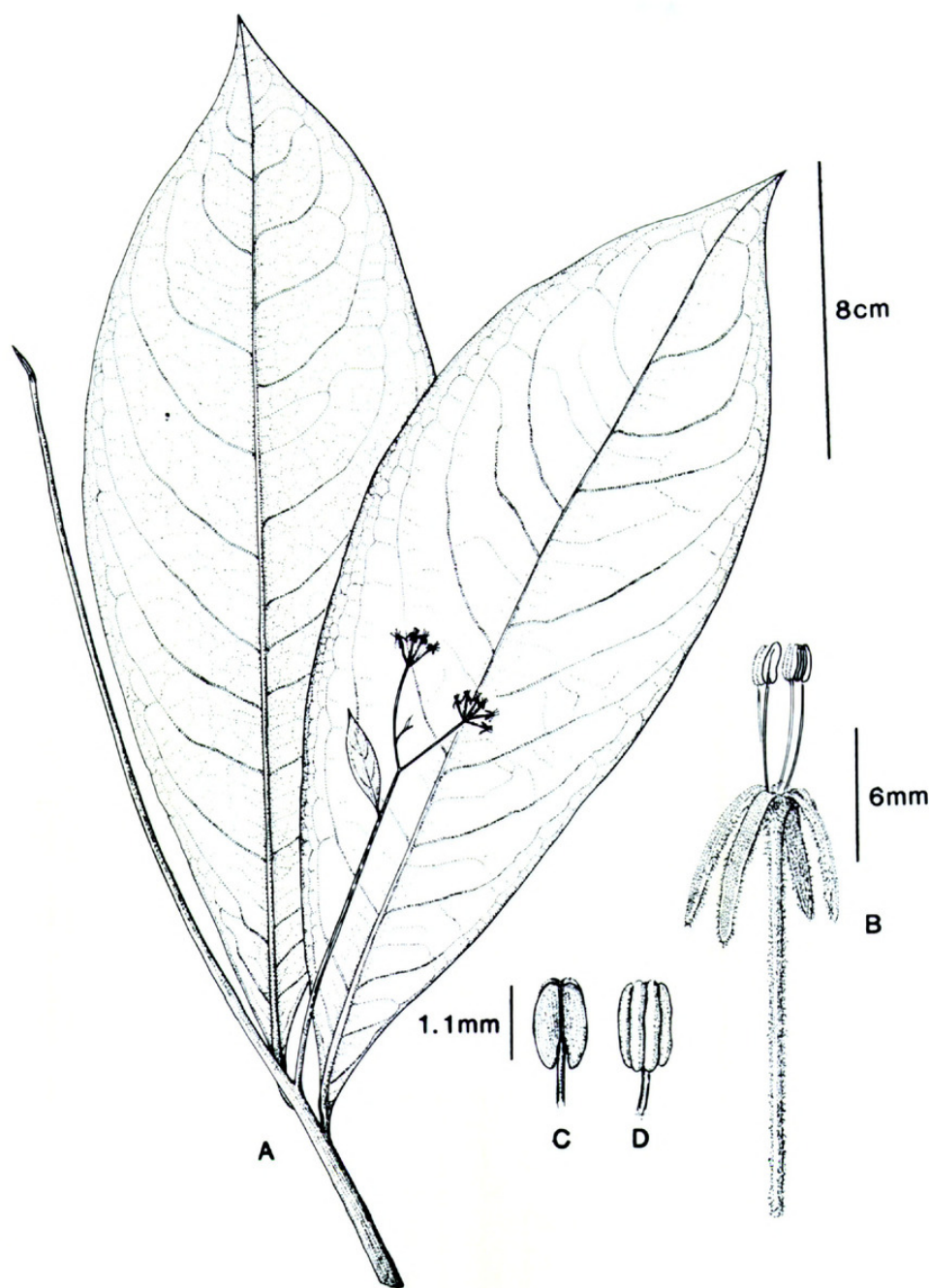


FIGURE 10. *Schoenobiblus amazonicus*.—A. Flowering branch.—B. Flower.—C. Stamen, dorsal view.—D. Stamen, ventral view.

long. Calyx tube linear, 17–18 mm long, 0.6–0.8 mm wide, short-sericeous without, retrorsely sparsely strigose within in the upper half, glabrous in the lower half; lobes 4, spreading, revolute at margins and at apex, linear, rounded at apex, 6 mm long, 1.5 mm wide, sericeous-lanuginose without, villousulous within. Stamens 4; anthers suborbicular or broadly oblong, 1.1 mm long, 0.7–0.9 mm broad; filaments long exserted, erect-ascending, 5–5.5 mm long, glabrous. Style filiform, 18 mm long, glabrous, attaining the orifice; stigma ellipsoid, 1.2 mm long.

The new taxon differs from *Schoenobiblus daphnoides* Martius of Brazil in the much broader leaves and less-branched inflorescence, while from other Venezuelan material identified as *S. daphnoides* it is differentiated by the longer, more slender calyx tube, narrower calyx lobes with shorter, gray sericeous pubescence, and much longer peduncle.

LITERATURE CITED

- DOMKE, W. 1935. Neue Arten und Varietäten der Gattungen en *Daphnopsis* Mart. et Zucc. und *Fu-*

nifera (Leandro ex) C. A. Mey. aus Mittel- und Südamerika. Notizbl. Bot. Gart. Berlin-Dahlem 12: 723-724.

MEISNER, C. F. 1855. Thymeleaceae. In C. F. Martius, Flora Brasiliensis 5(1): 65. t. 28 (1).

NEVLING, L. 1959. Revision of the genus *Daphnopsis*. Ann. Missouri Bot. Gard. 46: 352.

———. 1967. Thymeleaceae. In J. A. Steyermark & B. Maguire (editors), Botany of the Chimantá Massif. II. Mem. New York Bot. Gard. 17: 454.

SYMPLOCACEAE

SYMPLOCOS

KEY TO THE SPECIES OF SYMPLOCOS OF THE VENEZUELAN GUAYANA

- 1a. Ovary 4-celled; pubescence of lax or spreading hairs at least on the upper part of the branchlets, petioles, and lower leaf surface, and/or on the lower nerves *S. ulei* 2
- 1b. Ovary 3- or 5-celled; pubescence absent or of appressed or sericeous hairs 2
- 2a. Calyx lobes acute to acuminate at apex; style pubescent 3
- 3a. Inflorescence shorter than the petiole, sessile or nearly so, 2-3-flowered; calyx lobes 1.8-2 mm long; corolla 7 mm long; leaves minutely and distantly crenulate *S. acananensis*
- 3b. Inflorescence equaling or longer than the petiole, shortly pedunculate, 5-8-flowered; calyx lobes 2.5-3 mm long; corolla 8-9 mm long; leaves entire to subentire *S. schomburgkii*
- 2b. Calyx lobes obtuse to rounded at apex; style glabrous 4
- 4a. Ovary 5-celled 5
- 5a. Leaves glabrous beneath, acuminate at apex, acute at base; petiole glabrous throughout *S. martinicensis*
- 5b. Leaves sparsely pubescent beneath on the nerves, obtuse at apex, rounded or obtuse at base; petiole strigillose adaxially *S. chimantensis*
- 4b. Ovary 3-celled 6
- 6a. Calyx glabrous without, except for the ciliate lobes; filaments not connate, free or nearly so to the base; leaves completely glabrous beneath; petioles glabrous *S. pycnophylla*
- 6b. Calyx appressed-pubescent, strigillose, or sericeous without, at least on the lobes; filaments free above, connate below; leaves with at least the lower midrib appressed-pubescent; petioles appressed-pubescent or sericeous 7
- 7a. Calyx lobes longer than the calyx tube; leaves rounded to obtuse at apex, rounded or obtuse at base, 3.5-6 cm long *S. jauensis*
- 7b. Calyx lobes shorter than or equaling the calyx tube; leaves acuminate at apex, acute at base, 7-10 cm long 8
- 8a. Fruit densely strigillose, 5 mm long; stamens 25-40; lower leaf surface sparsely appressed-pubescent to glabrescent; bracts suborbicular, rounded or obtuse; corolla 3 mm long *S. yapacanensis*
- 8b. Fruit glabrate, 6-8 mm long; stamens 20-25; lower leaf surface glabrous; bracts acute; corolla 4-4.5 mm long *S. neblinae*

Symplocos acananensis Steyermark, sp. nov.

TYPE: Venezuela. Bolívar: gallery forest bordering savanna, vicinity of Guadequen, Río Acanán, affluent of Río Carrao, west of Cerro Las Hermanas, 5°56'N, 62°17'W, 470 m, 1-3, 20 May 1986, Julian A. Steyermark, R. Liesner & B. Holst 131868 (holotype, VEN; isotype, MO).

Frutex 1.5 m, ramis plerumque glabris; foliis petiolatis, petiolis 1.2-5 mm longis glabris; foliorum laminis elliptico-oblongis apice breviter acuminatis basi obtusis vel parum rotundatis 4.5-8 cm longis 2.5-3.5 cm latis glabris, marginibus minute obtuseque serrulatis, nervis lateralibus utroque latere 4-5; inflorescentiis axillaribus sessilibus vel fere 2-3 floris; bracteis sub floribus extus adpresso-pubescentibus arcte ciliatis; calycis tubo cupulato 1.2-1.5 mm longo glabro, lobis 5 late lanceolatis acuminatis 2 mm longis 0.8-0.9 mm latis praeter margines ciliatos glabris; corolla 7 mm longo, tubo 2.5 mm longo, lobis 5 oblongis apice rotundatis 4.5 mm longis; staminibus ca. 20, filamentis

superne libris inferne in tubum 3.5 mm longum coalescentibus glabris 1.5-3.5 mm longis; stylo 5 mm longo in dimidio inferiore piloso.

Shrub 1.5 m tall with mainly glabrous branches. Petioles 1.2-5 mm long, glabrous; leaf blades chartaceous, elliptic-oblong, abruptly short-acuminate at apex, obtuse to slightly rounded at base, 4.5-8 cm long, 2.5-3.5 cm wide, glabrous both sides, appearing subentire but the margins with microscopically obtuse serrulations 0.1-0.2 mm long, 2-4 of these dispersed in 1 cm of margin; lateral nerves 4-5 each side, faintly anastomosing with the tertiary veinlets 4-8 mm from the margin, obsolete above, slightly manifest below; tertiary veinlets slightly reticulate below, scarcely or not manifest above. Inflorescence axillary, 2-3-flowered, sessile or nearly so, shorter than the petioles; flowers fasciculate, sessile. Bracts subtending flowers lanceolate, subacute, 1 × 1 mm, pubescent without, strongly ciliate,

with caducous black glands. Corolla 7 mm long, the tube 2.5 mm long, 1.5 mm wide; lobes 5, oblong, rounded at summit, 4.5 mm long, 2.1 mm wide. Calyx tube cupulate, 1.2–1.5 mm long, 1.5–2 mm wide above, glabrous; calyx lobes 5, broadly lanceolate, acuminate, 2 mm long, 0.8–0.9 mm wide, glabrous except for the ciliate margins. Corolla 7 mm long, the tube 2.5 mm long, the 5 lobes oblong, rounded at the apex, 4.5 mm long. Stamens about 20, ca. 4-seriate; filaments free above, forming a tube 3.5 mm long, the longer filaments 1.5–3.5 mm long, the shorter ones 1 mm long, all glabrous; anthers broadly oblong, 0.2 mm long. Style 5 mm long, pilose in the lower half. Fruit not seen.

This species is closely related to the group of *Symplocos schomburgkii* Klotzsch ex Schomb., *S. guianensis* (Aublet) Gürke, and *S. pilosiuscula* Brand. It is distinguished from *S. guianensis* by the glabrous branches, from *S. schomburgkii* by the sessile or nearly sessile inflorescence which is fewer-flowered and shorter than the petiole, the shorter corolla and calyx lobes, and minutely crenulate leaf margins. The new species differs from *S. pilosiuscula* in the acute to acuminate calyx lobes.

RUBIACEAE

***Chomelia glabricalyx* Steyermark, sp. nov. TYPE:**

Venezuela. Bolívar: primary forest and river edge, Río Caura, 5–10 km S of Las Pavas (Salto Para), 6°12'N, 64°28'W, 240 m, May 1982, *Gilberto Morillo 6811* (holotype, VEN).

Frutex 1 m, ramis glabris spinosis; foliorum laminis ovato- vel lanceolato-ellipticis apice acutis vel subacuminatis basi cuneatim acutis 4.5–9.5 cm longis 1.5–4 cm latis praeter axillas inferiores barbellatas nervorum atque interdum folia basi sparsim ciliatis aliter glabris; inflorescentia 6-flora, pedunculo filiformi 14–20 mm longo glabro; floribus sub anthesi sessilibus sub fructu 0.5–1 mm pedicellatis basi sine involucrio; calyce hypanthioque glabro, hypanthio 1.5 mm longo 1 mm lato, lobis inaequalibus ligulato-oblongis obtusis 0.5–1 mm longis glabris; corolla 4 mm longa tubo extus glabro, lobis subtus glabris apicem versus sparsim strigillosis; fructu anguste cylindrico 10 mm longo 3.5 mm lato 0.5–1 mm pedicellato.

Shrub 1 m tall; branches glabrous, spinose. Leaves petiolate, petioles 2–5 mm long, ciliate on upper margins; leaf blades ovate to lanceolate-elliptic, acute to subacuminate at apex, cuneately acute at base, 4.5–9.5 cm long, 1.5–4 cm wide, glabrous both sides except for barbellate lower

axils of the lateral nerves and sometimes with few sparse ciliate hairs at the base; lateral nerves 5–6 each side, scarcely evident above, slightly impressed below. Stipules subulate, projecting 0.5 mm long. Inflorescence 6-flowered; peduncle filiform, 14–20 mm long, glabrous; flowers not involucriate at base, sessile, or in fruit 0.5–1 mm pedicellate. Calyx and hypanthium glabrous; hypanthium tubular, 1.5 mm long, 1 mm wide, glabrous; calyx lobes unequal, ligulate-oblong, obtuse, 0.5–1 mm long, 0.5–0.7 mm wide, glabrous. Corolla subcylindric, 4 mm long, 1.2 mm wide; tube 2.5–3 mm long, glabrous without; lobes oblong, obtuse, 1.5 mm long, glabrous below, sparsely strigillose upward. Fruit narrow-cylindric, 10 mm long, 3.5 mm wide, 0.5–1 mm long pedicellate.

This taxon is related to the recently described *Chomelia delascioi* Steyermark and *C. stergiosii* Steyermark. The present taxon differs from *C. delascioi* in the larger, barbellate leaves, shorter corollas, and more numerous flowered inflorescence, and from *C. stergiosii* in the shorter corolla and calyx lobes and the completely glabrous hypanthium and calyx lobes.

***Coccocypselum huberi* Steyermark, sp. nov. TYPE:**

Venezuela. Bolívar: Distrito Roscio, Serranía del Caco, 25 km NW of San Ignacio de Yuruani, 2.5 km ESE of Wanarú, 5°12'N, 61°15'W, 1,150–1,200 m, 1 Mar. 1984, *Otto Huber 9123* (holotype, VEN; isotype, MO).

Herba radicans, caulibus repentibus 0.8–1 mm diam. modice strigillosis; stipulis lineari-setaceis 1.2 mm longis sparsim strigillosis; foliis petiolatis, petiolis 3–13 mm longis dense strigosis; foliorum laminis ellipticis anguste oblongo-ovatis vel elliptico-ovatis apice subacutis vel subobtusis basi acutis vel obtusis 2–2.8 cm longis 1–1.5 cm latis utrinque breviter strigillosis, nervis lateralibus utroque latere 5–7; inflorescentia 1-flora, pedunculo sub anthesi 1.5 mm longo sub fructu 4–5 mm longo dense strigilloso; hypanthio dense strigoso; calycis lobis inaequalibus lanceolatis acutis 1.8–2.5 mm longis 0.4–0.5 mm latis ubique sparsim strigillosis ad basim inter lobos glandula solitaria interposita munitis; corolla albida 4.8–5 mm longo extus sparsim strigillosa; bacca (immatura) in statu vivo 1–1.5 cm diam., in sicco 5 mm longo 4.5 mm lato modice strigilloso.

Creeping herb with moderately strigillose stems 0.8–1 mm diam.; stipules linear-setaceous, 1.2 mm long, sparsely strigillose. Petioles of the larger leaves 10–13 mm long, of the smaller ones 3–5 mm long, densely strigose; leaf blades elliptic, narrowly oblong-ovate, or elliptic-ovate, subacute to subobtuse at apex, acute to obtuse at

base, moderately short-strigillose both sides, more abundantly on nerves beneath, 2–2.8 cm long, 1–1.5 cm wide; lateral nerves 5–7 each side, faint on lower side. Flowers solitary, the peduncle 1.5 mm long in anthesis, 4–5 mm long in fruit, densely strigillose. Calyx 3.5 mm long, the tube subglobose, 1.3×1.3 mm, densely strigose, the lobes unequal, lanceolate, acute, 1.8–2.5 mm long, 0.4–0.5 mm wide, sparsely strigillose on both sides, at base within setose with erect hairs, each sinus at the base furnished with 1 squamella. Corolla white, infundibuliform, 4.8–5 mm long, sparsely strigillose without, the tube 2.8–3 mm long, the lobes broadly lanceolate, 2 mm long, 0.8 mm wide. Stamens not exerted, attached $\frac{1}{2}$ distance of the tube length; anthers oblong, obtuse, 1.1 mm long. Style 3 mm long, glabrous. Immature fruit urceolate-globose, 5 mm long, 4.5 mm wide (dried), 1–1.5 cm diam. (living).

The present taxon approaches the endemic Jamaican species, *Coccocypselum pseudotontanea* Griseb. Both possess white corollas and small leaf blades, but the Venezuelan species differs in having shorter stipules, shorter calyx lobes and corolla, shorter and 1-flowered peduncles, one squamella at the base of each side of the inner part of the calyx lobe, larger fruits with appressed pubescence, and the freely rooting habit.

***Perama dichotoma* Poepp. & Endl. var. *monocephala* Steyererm., var. nov.** TYPE: Venezuela. Territorio Federal Amazonas: Departamento Atabapo, Cerro Huachamacari, ladera sur-este 175–180 m, 12–14 Oct. 1984, *Francisco Delascio* 12358; hierba pilosa; hojas arrosadas verde oscura por el haz, verde pálido por el envés; pedúnculo floral erecto, violáceo-morado en su base; flores blancas con el apice de los pétalos lila) (holotype, VEN; isotype, MO).

A *P. dichotoma* var. *dichotoma* et var. *scaposa* caulibus simplicibus monocephalis recedit; capitulis solitariis depressis 2–4 mm altis 5–6 mm latis.

Herb, 4–5 cm tall. Leaves rosulate, ovate or elliptic, 7–10 mm long, 3–6 mm wide, densely pilose above, pilose on main nerves below. Heads solitary, ca. 10-flowered, depressed-hemispheric, 2–4 mm high, 5–6 mm wide. Corolla lavender.

Perama dichotoma has the inflorescence usually consisting of several to numerous heads on filiform forking branches. The new variety has only a solitary head of flowers terminating a simple peduncle.



Steyermark, Julian A. 1987. "Flora of the Venezuelan Guayana-III." *Annals of the Missouri Botanical Garden* 74, 609–658. <https://doi.org/10.2307/2399329>.

View This Item Online: <https://www.biodiversitylibrary.org/item/87376>

DOI: <https://doi.org/10.2307/2399329>

Permalink: <https://www.biodiversitylibrary.org/partpdf/272708>

Holding Institution

Missouri Botanical Garden, Peter H. Raven Library

Sponsored by

Missouri Botanical Garden

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.