

Excerpt from:

Anderson, W. R. 1981. Malpighiaceae in The botany of the Guayana Highland, Part XI. Mem. New York Bot. Gard. 32: 21–305.

8. *Burdachia* Adr. Jussieu in Endlicher, Gen. Pl. 1064. April 1840.

Tetrapodenia Gleason, Bull. Torrey Bot. Club 53: 289. 1926.

Shrubs or trees with coriaceous leaves bearing abaxial glands; stipules intra- and epipetiole, completely connate, coriaceous, persistent on the petiole. Inflorescence terminal, single or 2–3 together, each usually divided near the base into 3(–5) axes, each axis 4–20 cm long, a raceme of short cincinni, the bracts and bracteoles persistent, the lowest bracteole and alternate subsequent bracteoles bearing a large eccentric abaxial gland. Flower buds circinate, spheroid, the outermost petal completely covering the others. Sepals appressed in anthesis, all biglandular, the glands obovate, compressed. Petals glabrous, pink or white, strongly dimorphic, the lateral 4 with an eglandular limb borne on a slender, strongly recurved claw, the posterior with the limb at least basally glandular and borne on a thick, erect claw. Receptacle glabrous on both sides of the stamens. Filaments opposite the sepals slightly longer than those opposite the petals, glabrous, connate at the base; all 10 anthers fertile, subsimilar, glabrous, the locules linear, quite distinct, rounded at the apex, often exceeded at the apex by the thick, fleshy connective. Ovary of 3 completely connate carpels, 1 \pm anterior and 2 \pm posterior, 3-locular but 1 of the posterior locules empty and smaller; styles 3, apical, imbricate in bud, \pm straightening in anthesis, slender and subulate, that of the sterile carpel slightly shorter than the other 2, the stigma slightly internal and decurrent. Fruit an indehiscent fibrous or aerenchymatous nut, dry at maturity and without a stone, usually containing only 1 locule completely filled by 1 seed (through abortion of the other ovule and collapse of its locule and the sterile locule); seed spheroid, the cotyledons thick, 1 folded back lengthwise, the other embracing it.

Type. *Burdachia prismatocarpa* Adr. Jussieu.

Burdachia comprises four species of Amazonia and Guyana, all of which are treated below. They are usually found by rivers or in low, periodically inundated places (“igapós”), and it seems probable that the indehiscent fruits, which are dry and buoyant at maturity, are adapted to dispersal by water.

Key to the Species of *Burdachia*

1. Fruit conoid to spheroid, round in cross section, the walls smooth; leaves and vegetative stems glabrous; stipules abaxially glabrous; peduncle glabrous or with a few hairs in a line; ovary depressed-globose.

1. *B. sphaerocarpa*.

1. Fruit pyramidal, bearing 8–9 longitudinal ribs, these extended at the base into knobs or spurs; leaves minutely sericeous or tomentose below to glabrate, some hairs usually persisting on the midrib; vegetative stems sericeous to glabrate; stipules abaxially sericeous to glabrate; peduncle sparsely to densely sericeous; ovary conoid.
2. Largest leaves mostly wider than 6 cm, up to 14 cm; stipules 6–10 mm long; fruits 14–20 mm long. 2. *B. prismatocarpa*.
2. Largest leaves mostly less than 6 cm wide; stipules 3–5 mm long; fruits up to 12 mm long.
3. Hairs on lamina sessile, straight, strongly appressed, \pm persistent; pedicel proper (i e beyond the joint) glabrous; ovary and fruit glabrous. 3. *B. williamsii*.
3. Hairs on lamina short-stalked, \pm serpentine, loose, deciduous, the mature lamina often glabrate except for midrib; pedicel loosely sericeous to glabrate; ovary densely tomentose; fruit tomentose to glabrate. 4. *B. duckei*.

1. *Burdachia sphaerocarpa* Adr. Jussieu, Ann. Sci. Nat. 2° Sér. Bot. 13: 330. 1840.

Small trees 3–8 m tall, the younger vegetative stems strongly flattened and glabrous, becoming terete in age. Lamina of the larger leaves (8–)10–23 cm long, 5–10(–11.5) cm wide, ovate, elliptical, or obovate, cuneate, rounded, or slightly cordate at the base, thickened and revolute at the margin, acute or short-acuminate to rounded and often apiculate at the apex, glabrous, usually bearing 2 large glands below at base by midrib and many scattered tiny impressed glands distally, the lateral veins and often a coarse reticulum prominent below, prominent or obscure above; petiole 9–25 mm long, thick, glabrous, eglandular (except for the pair of glands at juncture of lamina and petiole); stipule-pair 5–9(–11) mm long, ovate, auriculate at the base, acuminate at the apex, coriaceous, abaxially glabrous, adaxially densely orange-hirsute. Inflorescence tomentose-sericeous to glabrate, erect or pendent in fruit, single or double, simple or divided at the base into 3(–5) axes, each cincinnus of 1–2(–6) flowers, the bract and bracteoles 1–2.5 mm long, broadly ovate or triangular, concave, abaxially glabrous, adaxially hirsute at the base; peduncle of the cincinnus glabrous or with a few hairs in a line. Pedicel 5–11(–13) mm long, glabrous, thickened in fruit. Sepals 1.5–2 mm long beyond the glands, 1.7–2.5 mm wide, broadly obtuse or rounded, membranous at the margin, glabrous, the glands 2–3 mm long. Lateral petals with the claw 4–6 mm long, the limb 6.5–9.5 mm long, 7–11 mm wide, deeply concave (outermost) to nearly flat, orbicular, deeply cordate at the base, entire or slightly erose; posterior petal with the claw 4 mm long, the limb 4–5 mm long, 3 mm wide, flat or distally reflexed, ovate or oblong, bearing 2–4 large stalked pendent glands on each side at the base and several sessile glands distally, these continuous over the apex or not. Filaments 1.5–2.2 mm long; anthers 2–4 mm long, variable in the same flower but generally longer opposite the sepals, the connective equalling the locules at the apex or extended up to 1 mm in an obtuse or rounded, erect or reflexed projection. Ovary depressed-globose, 1–1.5 mm high, glabrous; styles 4–6 mm long, glabrous. Fruit 15–28 mm long, 11–17 (–19) mm in diameter, spheroid to conoid, rounded at the base, smooth-sided and round in cross section, usually \pm rostrate at the apex, “green” drying brown, glabrous, with a thick fibrous husk, 1-seeded.

Type. *Martius*, Barra do Rio Negro [Manaus], Amazonas, Brazil (P, M).

Collected in flower and fruit in diverse months, especially from March to June and September to December.

This species has populations in two disjunct areas, in both of which occur similar variations in size and shape of leaves and fruits. However, plants of the two areas do seem to differ consistently in the color of their petals, insofar as it has been noted by collectors, and that may represent a significant adaptation to different pollinators. I am recognizing two varieties on the basis of that difference, with the special purpose of emphasizing the peculiar distribution of the species. More complete collection may eventually erode the bases for recognizing these varieties.

The collections cited by Cuatrecasas (1958, p 636) as *Burdachia sphaerocarpa* are treated here as *B. prismatocarpa* var *loretoënsis*.

Key to the Varieties of *Burdachia sphaerocarpa*

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| 1. Petals pink; westernmost Pará and Amazonas, Brazil. | 1a. var <i>sphaerocarpa</i> . |
| 1. Petals white; northern Guyana. | 1b. var <i>glandifera</i> . |

1a. *Burdachia sphaerocarpa* Adr. Jussieu var *sphaerocarpa*

Burdachia atractoides Niedenzu, Arb. Bot. Inst. Ak. Braunsberg 5: 59. 1914. Syntypes. Amazonas, Brazil, *Glaziou* 13592; Manaus, *Schwacke* III 266 (RB!).

Distribution. VENEZUELA. Amazonas: 0–0.5 km NE of San Carlos de Río Negro, secondary forest and open areas, elev 120 m, *Liesner* 3685 (MICH). BRAZIL. Amazonas: terra firme, capoeira, Igarapé de S. Raimundo, Manaus, *Almeida* [INPA 3103] (INPA); primary forest, terra firme, 5 km upstream from junction of Rios Cuieiras and Branquinho, *Campbell et al* P21924 (MICH); Barcelos, Rio Domani, *Duarte* 7159 (INPA); Parintins, *Ducke* 142 (A); *Ducke* 142a (NY); igapó, Borba, Rio Madeira, *Ducke* 461 [RB 34636] (A, MO, NY, RB, US); margem, Igarapé da Cachoeira Grande, *Ducke* 780 (INPA, MO, NY, RB, US) & 793 (MO, NY, US); terra firme, margem do Rio Içana, *Fróes* 21413 (IAN, NY, US); W bank of Rio Negro, N of Manaus, *Gentry & Ramos* 12891 (MICH); praia alagavel do rio, Maués, *Pires* 37 (NY); forest on terra firme, Rio Cuieiras just below mouth of Rio Brancinho, *Prance et al* 14996 (MICH, NY); high muddy river bank, Rio Negro between mouth of Rio Caurés and Barcelos, *Prance et al* 15138 (MICH, NY); Rio Cuieiras above mouth of Rio Brancinho, flooded river bank, *Prance et al* 17728 (MICH); margem do Rio Purus, Cachoeira de Lindóia, *Rodrigues* 308 (INPA); carrasco arenoso, Manaus, *Rodrigues* 984 (INPA, US); Ponta Negra, Manaus, *Rodrigues & Coelho* 2087 (INPA); Porto de Manaus, baixo Rio Negro, região de Cacau-Pirera, *Rodrigues & Jaccoud* 8886 (INPA); Manaus, *Schwacke* III 266 (RB). Pará: praia do Lago de Faro, *Ducke* [RB 14189] (RB).

The collection from Rio Içana, *Fróes* 21413, has unusually wide leaves and 2–6 flowers in each cincinnus instead of the 1–2 found in most plants of *Burdachia sphaerocarpa*. Perhaps it deserves recognition as a variety, but that would best await further collection, especially of material with flowers.

1b. *Burdachia sphaerocarpa* var *glandifera* (Gleason) Anderson, comb et stat nov

Tetrapodenia glandifera Gleason, Bull. Torrey Bot. Club 53: 289. 1926.

Type. *De La Cruz* 3515, Amakura River, Northwest District, 8°10'N, 60°W, British Guiana [Guyana] (holotype NY! isotypes F! MO!).

Distribution. GUYANA. Overhanging Francois Creek, Mahaicony River, *Davis* 177 (NY); upper Mazaruni River, ca 60°10'W, *De La Cruz* 2043 (F, MO, NY, US) & 2176 (F, MO, NY, US); Kamakusa, upper Mazaruni River, ca 59°50'W, *De La Cruz* 2869 (F, MO, NY); type, q v; overhanging water, just below mouth of Tipuru inlet, Essequibo River, *Forest Dept.* 6110 (NY, US); Lama (?) Creek, *Jenman* 3779 (NY); *Jenman* 6413 (E, NY); riverside, sandy soil, Bootooba, Demerara River, *Persaud* 31 (F); *Persaud* 53 (F); riverside, Mallali, *Persaud* 177 (F, NY).

2. *Burdachia prismatocarpa* Adr. Jussieu, *Ann. Sci. Nat.* 2° Sér. Bot. 13: 330. 1840.

Key to the Varieties of *Burdachia prismatocarpa*

1. Ovary densely tomentose or sericeous; fruit tomentose or sericeous to glabrate; connectives of most anthers much exceeding the locules, the projection reflexed; fruit with very pronounced longitudinal ribs or winglets and basal projections. 2a. var *prismatocarpa*.
1. Ovary and fruit glabrous or at most sparsely sericeous; connectives of most anthers about as long as the locules; fruit with low, rounded ridges and short basal projections. 2b. var *loretoënsis*.

2a. *Burdachia prismatocarpa* Adr. Jussieu var *prismatocarpa*

Fig 29a–d.

Burdachia prismatocarpa var *pyramidata* Niedenzu, *Arb. Bot. Inst. Ak. Braunsberg* 5: 60. 1914.

Burdachia prismatocarpa var *argutivenosa* Cuatrecasas, *Webbia* 13: 636. 1958. Type *Cuatrecasas* 7248, Mitú, Río Vaupés, Colombia (holotype US! isotypes COL, F! NY!).

Shrubs or trees 2–15 m tall, the vegetative stems sericeous to glabrate. Lamina of the larger leaves 11–21 cm long, 6–12(–14) cm wide, ovate or elliptical, mostly rounded or cordate at the base, flat or slightly revolute at the margin, mostly obtuse or rounded at the apex, often emarginate and then sometimes apiculate, glabrate above, sparsely but \pm persistently sericeous below, the hairs short, fine, sessile, bearing 2 large glands below at the base on the midrib and few to many tiny impressed glands distally scattered or concentrated along the midrib, the lateral veins strongly parallel and prominent below, the reticulum prominulous on both sides; petiole 10–25 mm long, thick, sericeous to glabrescent, eglandular; stipule-pair 6–10 mm long, ovate or triangular, acuminate to broadly rounded at the apex, concave to flat or slightly revolute and often thin at the margin, abaxially sericeous to glabrate, adaxially densely orange-hirsute in the proximal half, hirsute or glabrous distally. Inflorescence tomentose-sericeous, each cincinnus of 1–2 (–3) flowers, the bract and bracteoles 1–3 mm long, ovate, membranous at the margin, glabrous or sparsely sericeous, the bracteoles usually borne near the base of the peduncle; peduncle of the cincinnus often sericeous, especially distally. Pedicel 6–10(–12) mm long, glabrous, lengthened and thickened in fruit. Sepals 1.5–2 mm long beyond the glands, 1.5–2 mm wide, broadly obtuse, membranous at the margin, glabrous, the glands pink, 2.5–3 mm long. Petals pink or white, the lateral 4 with the claw 3–4 mm long, the limb 5–7.5 mm long, 5–8 mm wide, orbicular, deeply to shallowly concave, cordate, erose; posterior petal with the claw 2.5–3.5 mm long, the limb 3–4 mm long, 3–4 mm wide, flat or distally reflexed, ovate, bearing large, usually stalked glands at the base and smaller,

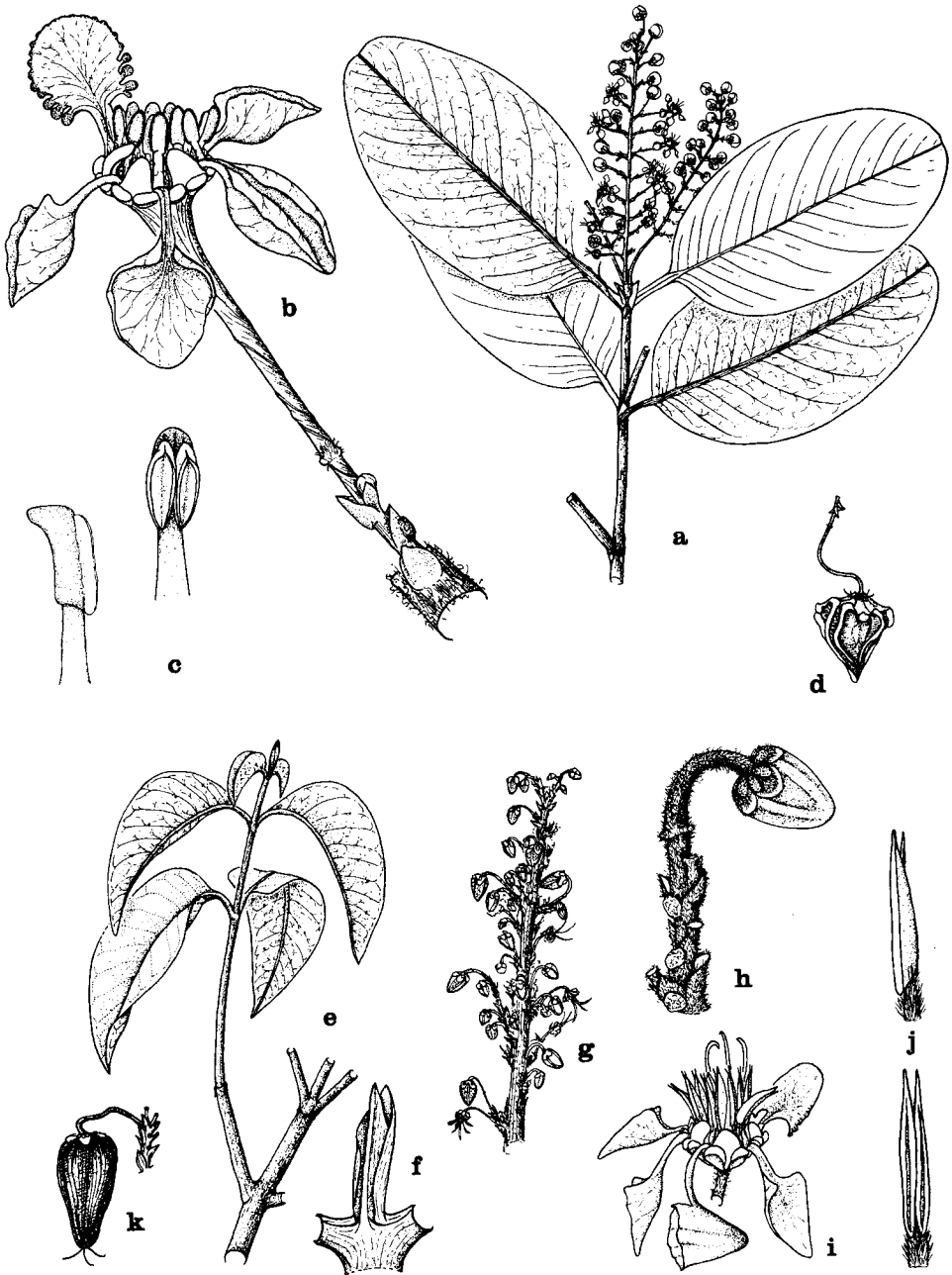


Fig 29. *Burdachia prismatocarpa* and *Glandonia williamsii*. a-d, *Burdachia prismatocarpa* var *prismatocarpa*: a) Flowering branch, $\times 0.3$; b) flower, $\times 3.6$; c) stamens, $\times 5$; d) fruit, $\times 0.6$. e-k, *Glandonia williamsii*: e) Leafy branch, $\times 0.3$; f) stipules, $\times 1.2$; g) inflorescence, $\times 0.6$; h) cincinnus with bud, $\times 3$; i) flower, $\times 2$; j) stamens, $\times 5$; k) fruit, $\times 0.6$. Drawn by Melissa Marshall, a-c from Maguire et al 31025, d from Wurdack & Monachino 39778, e-f from Williams 14154, g-j from Maguire et al 36493, k from Maguire et al 37554.

sessile glands distally, the glands usually continuous over the apex. Filaments 1.3–2 mm long; anthers 2–3 mm long, variable in the same flower, the connective projecting beyond the locules up to 1 mm, the projection obtuse or rounded, usually reflexed. Ovary conoid, ribbed, ca 1.5 mm high, densely sericeous or tomentose; styles 3–4.5 mm long, sericeous at the base. Fruit 14–20 mm long, 10–18 mm in diameter, pyramidal, bearing 8–9 longitudinal aerenchymatous ribs or winglets (3 per carpel), these usually extended as spurs and often interconnected at the base, rostrate at the apex, green drying brown, tomentose to glabrate, the wall composed of much aerenchyma reinforced by fibers, containing 1 seed (rarely 2).

Type. *Martius*, Tefé, Brazil (M?).

Distribution. Along rivers in Amazonian Brazil and Colombia and middle to upper Orinoco, Venezuela. BRAZIL. Pará: Rio Cupari, Curuçá, *Black 48–2261* (IAN); Fordlândia, Tabocal, *Black 48–2321* (IAN); Rio Trombetas, near cachoeira Porteira, *Campbell et al P22339* (MICH); Tapajos, Boa Vista, *Capucho 581* (F); vic. Obidos, *Spruce 246* in Dec 1849 (NY). Amazonas: Maués, *Campbell et al P22009* (MICH); Manaus, Rio Negro, *Cavalcante 1780* (NY); Manacapurú, *Cavalcante 1807* (NY); Igarapé da Cachoeira Grande, Manaus, *Ducke 1225* (MO, NY, US); Mercês, Rio Negro, *Fróes 21095* (NY); Taraquá, Rio Uaupés, *Pires 969* (IAN); Ega [Tefé], *Poeppig 2911* (F, NY, US); Mauá Road, Manaus, *Prance et al 11548* (MICH, NY); Taracuá, Rio Tikié, *Schultes & López 9684* (GH, US); São Gabriel da Cachoeira, *Spruce 2092* in Jan–Aug 1852 (GH, MG, NY). VENEZUELA. Amazonas: Sipapo R. near confluence with Orinoco R., *Breteler 4840* (US, VEN, WAG); in caño along stream at Moriche camp, Cerro Moriche, Río Ventuari, *Maguire et al 31025* (MICH, NY, US, VEN); Caño Atabapure, elev 175 m, *Maguire & Maguire 35522* (MICH, NY, US, VEN); Cerro Moriche, Serranía Yutaje, elev 150 m, *Maguire & Maguire 35536* (MICH, NY, US, VEN). Bolívar: Río Pargueni 1–10 km above mouth, elev 90 m, *Wurdack & Monachino 39778* (MICH, NY, US, VEN); drowned forests of Río Horeda 1–4 km above mouth, elev 90 m, *Wurdack & Monachino 39899* (MICH, NY, US, VEN); central western lobe of Cerro Marimarota (with laguna at base of mountain), elev 100–200 m, *Wurdack & Monachino 41109* (MICH, NY, US, VEN). COLOMBIA. Vaupés: Bacuraba Cachoeira, *Allen 3317* (US); Bocas del Carurú, elev 230 m, *Cuatrecasas 7066* (US); Río Vaupés, cerca de Mitú, elev 200 m, *Cuatrecasas 7248* (F, NY, US); Alto Vaupés, Lagos de Pasos y alrededores, *Gutierrez & Schultes 846* (GH, NY); Río Karurú, *Schultes & Cabrera 19198* (NY, US); inundated stream across from Mitú, *Zarucchi 1629* (MICH); Río Vaupés 1 km below Urania, *Zarucchi 2237* (MICH). Amazonas-Vaupés, Río Apaporis: Lagunas del Churuco, elev 280 m, *García-Barriga 13659* (NY, US); entre los ríos Kananarí y Pacoa, elev 250 m, *García-Barriga 14020* (COL, US); Soratama, elev 250 m, *García-Barriga 14082* (US); Soratama, *Schultes & Cabrera 12622* (GH, NY, US) & *13736* (GH, NY, US); Raudal de Jirijirimo (below mouth of Río Kananarí), *Schultes & Cabrera 14543* (US).

Collected in flower mostly from August to March (especially October to December) and in fruit from November to June (especially February to May).

Fruits that seem to be adapted for dispersal by water have evolved in many Malpighiaceae that grow in the Amazon region, but none is more impressive in

that respect than the fruit of *Burdachia prismatocarpa*. Its wall produces a number of ribs or winglets that are composed mostly of aerenchyma, so that the mature fruit is dry, light, and very buoyant. It is worth noting that these ribs are developed in positions that correspond to the lateral and dorsal wings in mas-cagnoid genera. If the structures are homologous, *Burdachia* might constitute an intriguing link between the byrsonimoid genera and the wing-fruited genera.

2b. *Burdachia prismatocarpa* var *loretoënsis* Anderson, var nov

Differt a *Burdachia prismatocarpa* var *prismatocarpa* limbo petali postici in dimidio proximali utrinque ca 9 glandulis parvis instructo, distaliter eglanduloso, connectivis antherarum loculos apice aequantibus vel paulo superantibus, ovario fructuque glabro vel sparsim sericeo, et fructu cristis longitudinalibus humilibus rotundatisque et umbonibus basalibus brevioribus.

Type. *Woytkowski 5146*, banks of Río Nanay, elev 100 m, Dept. Loreto, Peru, 8 Dec 1958 flr/imm frt (holotype US, isotypes F, MO).

Distribution. Western Amazonia. BRAZIL. Amazonas: Tonantins, Rio Solimões, Feb frt, *Mori et al 9053* (MICH). COLOMBIA. Amazonas: Loretoyacu River, elev 100 m, Oct flr, *Schultes & Black 8400b* (GH, US) & 8523 (COL, GH, NY, US). PERU. Loreto: Mishuyacu, near Iquitos, elev 100 m, Oct–Nov flr, *Klug 429* (F, NY, US); Río Ambiyacu, Mar frt, *Mori et al 9231* (MICH); Maynas, Yarina cocha, Nov flr, *Torres M. 484* (ECON): type, q v.

This is the plant that Cuatrecasas called *Burdachia sphaerocarpa* in his *Prima Flora Colombiana*.

3. *Burdachia williamsii* Steyermark, Fieldiana Bot. 28: 285. 1952.

Burdachia prismatocarpa var *sphaerocarpa* Niedenzu, Arb. Bot. Inst. Ak. Braunsberg 5: 60. 1914. Lectotype. *Spruce 3425*, ad flumina Casiquiari, Vasiva et Pacimoni, Amazonas, Venezuela (GH!).

This plant has the small leaves, stipules, and fruits of *B. duckei*, the ovary glabrous, the inflorescence usually pendent (?), and otherwise resembles *B. prismatocarpa* var *prismatocarpa*. It occurs between San Fernando de Atabapo and Cucui, an area from which *B. prismatocarpa* is not known although it occurs north and south of there. Near San Fernando two collections have been made which suggest that *B. williamsii* and *B. prismatocarpa* may hybridize (*Gentry 10967* and *Level L-100*). *Burdachia williamsii* is a rather weak segregate and might be better treated as a variety of *B. prismatocarpa*.

Type. *Ll. Williams 14321*, Maroa, Río Guainía, Amazonas, Venezuela, 13 Feb 1942 (holotype F! isotypes A! US!).

Distribution. VENEZUELA. Amazonas: E-W caño north of Cerro Yapacana, from gold mine trail to Río Orinoco, elev 130 m, *Maguire et al 30775* (MICH, NY, US, VEN) & 30792 (NY); Caño Arapacua, Río Pacimoni, elev 120 m, *Maguire & Wurdack 34888* (MICH, NY, US, VEN); Casiquiari, Vasiva, and Pacimoni Rivers, *Spruce [3425]* (GH); Río Temi, Yavita, *Steyermark & Bunting 102966* (NY, VEN); Maroa, Guainía, Alto Río Negro, *Ll. Williams 14320* (VEN), type q v, 14447 (F, MO, US, VEN), 14806 (US, VEN).

Collected in flower from January to April, in fruit in March and April.

4. *Burdachia duckei* Steyermark, Fieldiana Bot. 28: 283. 1952.

Burdachia prismatocarpa β *spruceana* Grisebach in Martius, Fl. Bras. 12(1): 23. 1858. Type. *Spruce* 1659, prope Barra [Manaus], Rio Negro, Amazonas, Brazil, Jul 1851 (holotype GOET? isotypes GH! NY!).

Lamina of larger leaves 6–13 cm long, 3–6 cm wide, revolute at the margin, loosely sericeous or tomentose to glabrescent with short-stalked, \pm serpentine hairs, bearing 2 small glands below at base and no to relatively few tiny distal glands, mostly near the midrib; stipules 3–5 mm long, strongly concave. Inflorescence often pendent. Pedicel loosely sericeous to glabrate. Petals pink. Ovary densely tomentose. Fruit 9–11 mm long, 8–9 mm in diameter, the ribs only moderately developed (not extended into corky winglets), tomentose to glabrate. Otherwise similar to *B. prismatocarpa* var *prismatocarpa* and *B. williamsii*.

This species has the smallest leaves and fruits of any *Burdachia*. It is closely related to *B. prismatocarpa*, the two apparently occurring together near Manaus without hybridizing. Perhaps where populations are sympatric their flowering is allochronic; also, *B. duckei* seems to grow more often in igapós than along permanent streams.

Grisebach's epithet *spruceana* was presumably assigned the rank of forma by Niedenzu, Arb. Bot. Inst. Ak. Braunsberg 5: 60. 1914. I have not seen that publication.

Type. *Ducke* 522, Igarapé da Cachoeira Grande, Manaus, Amazonas, Brazil, 14 Jul 1937 (holotype F! isotypes MO! NY!).

Distribution. By streams and in igapós above and below Manaus, between Barcelos and Rio Urubú. BRAZIL. Amazonas: Barcelos, *Duarte* 7161 (INPA); type, q v; Rio Cuieiras, 50 km upstream, *Kubitzki et al* P21729 (MICH); Manaus, igarapé do Tarumã, *Mello* 4029; Rio Urubú, *Prance et al* 3680 (MICH, NY) & 4735 (MICH, NY); Rio Cuieiras just below mouth of Rio Brancinho, *Prance et al* 14893 (MICH, NY); Rio Brancinho, Rio Cuieiras, *Prance et al* 17867 (MICH); Manaus, Rio Tarumãzinho, *Prance & Lleras* 23741 (MICH); Rio Cuieiras, *Rodrigues* 6727 (INPA); Manaus, Cachoeira Baixa do Tarumã, *Rodrigues s n* [INPA 1177] (INPA); Manaus, Cachoeira Alta do Tarumã, *Rodrigues & Lima* 2254 (INPA); Rio Negro, Ilha Gavião near mouth of Rio Branco, *Schultes* 24531 (INPA); near Manaus, *Spruce* [1659] (GH, NY); Manaus, Cachoeira Grande, *Ule* 8880 (MG). Terr. Roraima: R. Xeriuini, *Pires et al* 13921 (MICH).

Collected in flower most often from May to September, but in fruit in March, April, September, and December, which suggests some flowering in January and February.