A Synopsis of the Genus *Prestonia* (Apocynaceae) Section *Tomentosae* in Mesoamerica

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ABSTRACT. The species of *Prestonia* (Apocynaceae) sect. *Tomentosae* in Central America are treated in a brief synopsis: new synonymies are provided and three new species, *Prestonia clandestina*, *P. hammelii*, and *P. riverae*, are described. In addition, *Prestonia seemannii* Miers is removed from synonymy of *P. ipomaefolia*.

The genus *Prestonia* R. Brown contains about 60 species, ranging from Mexico to Argentina, with the center of distribution in the tropics and adjacent areas (Woodson, 1936). The genus is defined by the presence of epistaminal appendages within the corolla tube, in conjunction with an annular callus around the mouth of the tube and calyx lobes with entire or lacerate squamellae. Though closely related to *Rhodocalyx* and *Laubertia*, *Prestonia* can be distinguished from the former by its habit (vine or liana) and the usually axillary inflorescence, and from the latter by its glandular calyx.

Section *Tomentosae* is characterized by the pubescent corolla and leaves. The pubescence of the leaves exhibits great intraspecific variation. The annular callus may be reduced, absent, or 5-lobed, and the epistaminal appendages may be absent or reduced to linear, usually inconspicuous, callus ridges. The great intraspecific variation in this group makes it one of the most taxonomically difficult sections in the genus.

Since Woodson's (1936) monograph, no other treatments of the Mesoamerican species of *Prestonia* sect. *Tomentosae* have been published, with the exception of Woodson's (1938) treatment for the North American Flora, which basically included the same species. Subsequently, more species have been described and Woodson's treatments have become obsolete.

During preparation of the treatments of Apocynaceae for the *Manual de las Plantas de Costa Rica* and *Flora Mesoamericana* all available herbarium material of *Prestonia* sect. *Tomentosae* from the Mesoamerican area was examined. This study revealed the inconsistency of such characters as the form and degree of laceration of the squamellae, which are correlated with the stage of floral development: at anthesis, the squamellae are generally entire or scarcely lacerate, but later exhibit many different kinds of laceration. Sometimes a squamella, when deeply lacerated, may be mistaken for many separate squamellae. Since many ostensibly distinct species have been based on such orthogenetic differences, it has become necessary to synonymize many names.

Furthermore, examination of type collections and representative specimens from different sites within the range of some species (i.e., *Prestonia mexicana* A. DC.) shows that variation in the length and degree of lobulation of the nectary is considerable, even in specimens from the same locality, and hence these characters cannot be used to separate species.

Examination of the type specimen and several collections of *Prestonia ipomaeifolia* A. DC. from South America has convinced me to reinstate the Panamanian *Prestonia seemannii* Miers, which had been placed in synonymy of the former by Hemsley (1881). In addition, three new species were encountered.

KEY TO THE SPECIES OF *PRESTONIA* SECT. *TOMENTOSAE* IN MESOMERICA

1a. Corolla infundibuliform.
  2a. Lower part of corolla tube less than 4 mm long, upper part 4–6 mm long, lobes 29–36 mm long; pedicels usually less 4 mm; leaves usually glabrate and shiny at maturity, subcoriaceous . . . . . *P. clandestina* J. F. Morales
  2b. Lower part of corolla tube 12–19 mm long, upper part 10–12 mm long, lobes 20–25 mm long; pedicels 9–17 mm; leaves puberulent (rarely glabrate) and opaque, membranaceous . . . . . *P. speciosa* Donnell Smith
1b. Corolla salverform.
  3a. Epistaminal appendages absent or reduced to inconspicuous callus ridges; lower part of corolla tube 18(usually 20)–36 mm long.
    4a. Leaves and inflorescence very sparsely pubescent; corolla and calyx with a few scattered hairs *P. hammelii* J. F. Morales
    4b. Leaves, inflorescence, corolla, and calyx densely pubescent.
      5a. Flowers sessile or with the pedicels

less than 3 mm; anthers 10–12 mm; fruits falcate and curved . . . . . *P. riverae* J. F. Morales

5b. Flowers with the pedicels 5–32 mm; anthers 6–7 mm; fruits napiform and straight (or nearly so) . . . . . *P. mexicana* A. DC.

3b. Epistaminal appendages present; lower part of corolla tube 5–15 mm long.

6a. Leaves, calyx, and corolla sparsely hispid to hispidulous beneath, sometimes glabrate at maturity; plants from the Darién and northern South America . . . . . *P. ipomaeifolia* A. DC.

6b. Leaves, calyx, and corolla pubescent, tomentose to velutinous beneath, never glabrate at maturity; plants from central Panama.

7a. Lower part of corolla tube 5–6 mm long, the lobes 4–5 mm; sepals less 6 mm long; leaves coriaceous . . . . . *P. tysonii* A. H. Gentry

7b. Lower part of corolla tube 10–13 mm long, the lobes 9–15 mm; sepals 9–11 mm long; leaves membranaceous . . . . . *P. seemannii* Miers

Prestonia clandestina J. F. Morales, sp. nov. TYPE: Mexico. Veracruz: Mpio. San Andres Tuxtla, Estación de Biología Tropical Las Tuxtlas, 200 m, 13 July 1984 (fl, fr), *Ibarra & Sinaca 1893* (holotype, INB; isotypes, MO, NY).

Foliorum lamina subcoriacea. Pars basalis tubi corollae multo brevior et lobi longiores quam partes comparabiles *Prestoniae speciosae.*

Liana, branchlets velutinous-pilose to glabrate. Leaf blades 12–24 × 5.5–14 cm, subcoriaceous, obovate to elliptic, obtuse, acute to long-acuminate at the apex, cuneate at the base, shiny and sparsely puberulent to glabrate above, densely tomentose to velutinous-tomentose beneath, indument yellow-brownish, eglandular, petiole 0.5–1.5 cm, glandular in the axils, stipules almost linear, 6–9 mm. Inflorescence subumbelliform, rather densely agglomerate, peduncle 1.4–2.6 cm thick, pedicels 1–4 mm, both hirsute-velutinous, bracts 4–14 × 1–2.5 mm wide basally, ovate to very narrowly elliptic; sepals 1.6–2.3 cm × 3–7 mm, narrowly ovate, acute to acuminate, velutinous-adpressed, squamellae ca. 3 mm long, pubescent, apex scarcely fimbriate; corolla infundibuliform, yellow to cream, densely puberulent, lower part 3–4 × 5 mm, upper part 4–6 × 6–10 mm diam. at the orifice, infundibuliform, epistaminal appendages absent, callus scarcely visible, lobes 2.9–3.6 × 1.4–1.7 cm obovate to narrowly obovate; stamens included sometimes somewhat exserted, filaments ca. 2.5 mm, glabrous, anthers 7–8 mm, glabrous, ovary ca. 1 mm, glabrous, style 5–6 mm; disk ca. 1.5 mm long, annular, scarcely lobed. Follicles 9.5–12 × 1.8–2.2 cm, divaricate to somewhat falciform, velutinous-tomentose; seeds 1.1–1.6 cm × 3–4 mm, rugose, coma 3.5–3.8 cm, cream.

Distribution and habitat. *Prestonia clandestina* is known only from a few collections from Mexico, where it occurs in secondary and disturbed forest and open areas, from 20 to 900 m.

Phenology. Flowers May to July; fruits in February.

All the collections examined were previously identified as *Prestonia mexicana,* but the new species is more similar to *P. speciosa* Donnell Smith in its infundibuliform corolla. It differs most strikingly from the latter species in its short corolla tube and larger corolla lobes. Also, the leaves are generally somewhat shiny, glabrate, and subcoriaceous at maturity in *P. clandestina,* versus membranaceous, puberulent, and opaque in *P. speciosa.* These are the only two species in the genus with an infundibuliform corolla.

Paratypes. MEXICO. **Chiapas:** Chitallin, Mpcio. Yajalon, 10 Feb. 1984, *Mendez 7230* (MEXU, NY). **Oaxaca:** Tuxtepec, Chiltepec and vicinity, 20 m, July 1940, *Martinez 57* (AA, US). **Veracruz:** Cerro Cintepec, Este de Zapoapan, Catemaco, 800 m, 8 Feb. 1972, *Beaman 5614* (F, US); Estación de Biología Tropical Las Tuxtlas, San Andres de Tuxtla, 150 m, 7 May 1972, *Calzada 834* (F, MEXU, MO).

Prestonia hammelii J. F. Morales, sp. nov. TYPE: Costa Rica. Puntarenas: Reserva Forestal Golfo Dulce, Osa Peninsula, Rancho Quemado, ca. 15 km W of Rincón, in bottom of valley along Río Riyito near bridge and in forest along road on ridge above valley, 250–350 m, 31 May 1988 (fl), *Hammel et al. 16918* (holotype, INB; isotype, MO).

Prestoniae ipomaeifoliae affinis, a qua imprimis differt inflorescentia laxa, magnitude floris, tubi corollae appendicibus stamineis nullis.

Liana, branchlets sparsely puberulent to glabrate. Leaf blades 11–24 × 4.8–13.5 cm, membranaceous to subcoriaceous, elliptic to narrowly elliptic, long acuminate in the apex, obtuse basally, sparsely hirsutulous on both surfaces, indument brown, eglandular, petioles 0.7–2 cm, glandular in the axils, stipules absent. Inflorescence racemose to subumbelliform, lax, peduncle 3.5–4 cm, thin and woody, pedicels 6–11 mm, both hirsutulous, bracts 2–6 mm × 1–1.5 mm, linear or nearly so; sepals 1–1.5 cm × 3 mm, very narrowly ovate, acuminate, sparsely hirsutulous, squamellae ca. 2 mm,

fimbriate; corolla salverform, yellow, sparsely hirsute, tube 2.1–2.3 cm × 3 mm, epistaminal appendages absent or reduced to callus ridges near the base of the stamens, callus short and reduced, inconspicuous, lobes 1.4–1.6 × 0.8–0.9 cm, obovate; stamens included, filaments 3.5–4 mm, anthers 9–10 mm, glabrous, ovary less than 0.8 mm long, glabrous, style 11–14 mm; disk ca. 1 mm long, annular, scarcely 5-lobed. Follicles unknown.

Distribution. Tropical wet forest in southwestern Costa Rica, at elevations of 200–600 m.

Phenology. Flowers March to May.

The pubescence of the leaves and the inflorescence (corolla, calyx, bracts) is highly variable within most of the species of section *Tomentosae* (including those known from the South American continent). Sometimes the leaves may be glabrate at maturity, but those of the younger stems are always pubescent. *Prestonia hammelii* is one of the few species with leaves almost glabrate at all stages; the only other one occurring in Mesoamerica is *P. ipomaeifolia*, but *P. hammelii* differs clearly from this species in its larger flowers, lax inflorescences, and in the absence of epistaminal appendages.

Prestonia hammelii is named after Barry Hammel of the Missouri Botanical Garden in recognition of his extensive work in Costa Rica and especially for his friendship and personal support of my studies on Apocynaceae.

Paratypes. COSTA RICA. **Puntarenas:** Fila Costeña, S of San Isidro del General, in the Cabeza de Mono, 12 km S of Tumbas, 400–600 m, 6 Mar. 1985, *Taylor et al. 4871* (DUKE).

Prestonia ipomaeifolia A. DC., Prodr. 8: 429. 1844. TYPE: French Guiana: Cayenne, date lacking, *le Blond s.n.* (holotype, G-DC not seen; photo, INB ex G).

Liana, branchlets sparsely hirsute to hirsutulous, rugose. Leaf blades 14–30 × 8.5–18 cm, coriaceous to subcoriaceous, elliptic to narrowly elliptic, long acuminate in the apex, obtuse, rounded to scarcely cordate basally, sparsely hirsutulous to hirsute on both surfaces, sometimes glabrate above, indument yellow, eglandular, veinlets conspicuously reticulated, petiole 1–2.5 cm, glandular in the axils, stipules absent. Inflorescence subumbelliform to somewhat racemose, agglomerate, peduncle 1.5–3(–4.5) cm, thick and somewhat woody, pedicels 3–8(–14) mm, both sparsely hirsute, indument yellow, bracts 6–17 × 1–2.5 mm, very narrowly elliptic to ovate; sepals 0.7–1.1 cm × 2.5–6 mm, ovate to narrowly elliptic, acute to short-acuminate, sparsely hirsutulous, squamellae ca. 3 mm long, apex somewhat fimbriate; corolla salverform, yellow to cream, hirsutulous, tube 1.2–1.5 cm × 3 mm, epistaminal appendages ca. 2 mm, apex exserted, callus scarcely visible, lobes 0.8–1.2 × 0.6–0.7 cm, obovate; stamens included, filaments 1.5–2 mm, glabrous, anthers ca. 6 mm, glabrous, ovary ca. 1 mm long, glabrous, style 8–10 mm; disk 2–3 mm, annular, entire to scarcely 5-lobed. Follicles unknown.

Distribution. Tropical wet forest from the Darién Province, Panama, to Colombia, Ecuador, Peru, and the Guianas, at elevations below 500 m.

Phenology. Flowers May to July; fruits mainly in July.

This species is known from only a few collections. Material from central Panama with pubescent leaves and epistaminal appendages has been erroneously included under this name, due to the fact that Hemsley (1881) relegated *P. seemanii* (to which most of the Panamanian material belongs), to synonymy under *P. ipomaeifolia*. However, *P. ipomaeifolia* differs from *P. seemannii* in its larger and coriaceous leaves, with smaller flowers.

Specimens examined. PANAMA. **Darién:** near the mouth of Río Yape, 12 July 1937, *Allen 366* (MO); vicinity of El Real, Río Tuira, 1 July 1959, *Stern et al. 778* (MO, US).

Prestonia mexicana A. DC., Prodr. 8: 429. 1844. TYPE: Mexico. San Bartolo, in ditione de Oaxaca, Aug. 1834, *Andrieux 251* (holotype, G not seen; photo, F, INB, MO, NY, US ex G).

Echites conglobata Sessé & Moçiño, Fl. Mexic. 45. 1893. Syn. nov. TYPE: Mexico, *Sessé et al. 5082* (holotype, MA not seen; fragment, F).

Prestonia isthmica Woodson, Ann. Missouri Bot. Gard. 18: 555. 1931. Syn. nov. TYPE: Costa Rica. Between Aserri and Tarbaca, 6 Dec. 1925, *Standley 41332* (holotype, US).

Prestonia amanuensis Woodson, Ann. Missouri Bot. Gard. 23: 359. 1936. Syn. nov. TYPE: British Honduras. 6 mi. S. Railway, Aug. 1929, *Schipp S-7* (holotype, B destroyed; lectotype, designated here, NY; isolectotypes, F, GH).

Prestonia remediorum Woodson, Ann. Missouri Bot. Gard. 26: 299. 1939. Syn. nov. TYPE: Panama. Chiriquí: Rio Chiriquí to Remedios, 11 July 1938, *Woodson et al. 1180* (holotype, MO).

Prestonia allenii Woodson, Ann. Missouri Bot. Gard. 27: 332. 1940. Syn. nov. TYPE: Panama. Coclé: N rim of El Valle, 4 June 1939, *Allen 1855* (holotype, MO; isotypes, F, NY, US).

Prestonia wedelii Woodson, Ann. Missouri Bot. Gard. 29: 365. 1942. Syn. nov. TYPE: Panama. Bocas del Toro: Water Valley, 26 Oct. 1940, *von Wedel 1353* (holotype, MO; isotype, US).

Liana, branchlets variously pubescent, turning glabrate at maturity. Leaf blades 8–27 × 5–16 cm,

membranaceous to subcoriaceous, orbicular, elliptic to narrowly elliptic, acute, long acuminate to obtuse in the apex, cuneate to obtuse basally, puberulent above, variously tomentose beneath, indument yellow-brownish to somewhat ferrugineous, petiole 0.5–2.2 cm, glandular in the axils, stipules absent. Inflorescence umbelliform or subumbelliform to racemose, rather densely agglomerate, peduncle 0.9–4.4 cm, thick and woody, pedicels 5–32 mm, both pilose to pubescent, bracts 0.3–1.2 cm × 1–2.5 mm, very narrowly ovate, pubescent, foliaceous to somewhat scarious; sepals 1.4–3 cm × 4–12 mm, ovate to very narrowly so, acute to long acuminate, pubescent to tomentose, squamellae 1–3 mm long, entire to variously fimbriate; corolla salverform, cream to green-yellow, puberulent to sparsely pubescent, tube 2.4–3.6 cm × 4–5 mm, straight, sometimes gradually expanded to the orifice, epistaminal appendages absent or reduced to callus ridges, callus entire to deeply 5-lobed, lobes 1.2–1.6 × 0.9–1.1 cm, obovate; stamens included or with the apex exserted, filaments ca. 2 mm, glabrous, anthers 6–7 mm, glabrous, ovary 1–1.5 mm, glabrate to pubescent, style 20–30 mm; disk 1–2 mm, annular, entire or 5-lobed to variously lacerate. Follicles 5.5–11 × 1–2 cm, divaricate, napiform and straight (or nearly so), densely pilose, calyx sometimes persistent; seeds 1.1–1.5 cm × 2–3 mm, rugose, coma 3.5–4 cm, cream.

Distribution. Mexico to Panama, in primary and secondary forest and disturbed areas, where sometimes common, at 0–1800 m.

Phenology. Flowers January to October; fruits all year.

Prestonia mexicana is among the most variable and widespread species in the genus.

The characters used to separate *P. allenii*, *P. wedelii*, and *P. remediorum*, such as the form and degree of laceration of the squamellae and the lobulation of the annulus, do not appear to vary in a manner consistent with the specific entities envisioned by Woodson. More recent collections show many intermediate states of variation in these characters.

Prestonia isthmica, from the Central Valley of Costa Rica around San José, is characterized by a long (3–4 mm) nectary, longer than the ovary, but all the other characters of the plant correspond to *P. mexicana* and there seems no valid reason to maintain *P. isthmica* as a different species or even variety.

Prestonia amanuensis, described from British Honduras (now Belize), differs in its short corolla, but corolla length is a highly variable character in *Prestonia* and some other genera of Apocynaceae (Morales, 1995). Also, the length of the calyx lobes is very variable in *Prestonia mexicana*, even among specimens from the same locality.

Fruiting collections of *P. mexicana* are difficult to separate from those of *P. speciosa*, which has similar leaves. However, the sepals of *P. mexicana* are larger and mostly persistent. Only a selection of specimens examined are cited for each country, but a list of all the specimens examined is available on request.

Specimens examined. MEXICO. **Campeche:** 5 km E of Santa Maria, Xcabacab, 7 Mar. 1982, *Cabrera et al. 2075* (MEXU, MO). **Chiapas:** 32 km NW of Ocozonoautla, 27 Aug. 1972, *Breedlove 27485* (MO); W of Las Cruces, along road to La Mina microwave station, 19 Sep. 1981, *Breedlove 52929* (NY). **Guerrero:** Cañon de la Mano Negra, 4–8 km N of Iguala, 15 Feb. 1970, *Anderson et al. 5779* (DUKE); Vallecitos, Montes de Oca, 9 June 1937, *Hinton 11365* (F, MO, NY, US). **Jalisco:** Estación Biológica Chamela, 24 Sep. 1981, *Lott 567* (MEXU, MO); La Huerta, Norte de La Chamela, 25 Sep. 1981, *Lott 585* (MEXU, NY). **Michoacán:** Cruz de Campos, 2 Sep. 1980, *Soto et al. 2614* (MEXU, MO). **Morelos:** Barranca near Cuernavaca, June 1896, *Pringle 6341* (F, MO, NY, US). **Oaxaca:** Río El Aguacate, 25 July 1982, *Cadillo et al. 1685* (MO). **Quintana Roo:** NW of Puerto Felipe, Carrillo, 4 Aug. 1972, *Webster et al. 17666* (MO). **Tabasco:** Tenosique, 11 Mar. 1976, *Calzada et al. 2224* (MEXU, MO). **Veracruz:** 3 km NW of Cuitlahuac, 3 July 1980, *Hansen et al. 7571* (F, USF); Laguna Tamiahua, 3 May 1939, *LeSuer 355* (F, TEX); San Antonio Paso del Toro, Naolinco, 14 Jan. 1984, *Nee et al. 28771* (NY, XAL). **Yucatán:** Chichen Itza, July 1938, *Lundell et al. 7460* (MO). GUATEMALA. **Alta Verapaz:** Cubilquitz, Aug. 1903, *Tuerckheim 8539* (US). **Baja Verapaz:** San Jeronimo, 24 July 1988, *Tenorio et al. 14791* (MO). **Jutiapa:** vicinity of Jutiapa, 24 Oct. 1940, *Standley 75305* (MO). **Petén:** Tikal National Park, bajo Santa Fe, 16 Feb. 1959, *Lundell 15573* (MO, NY, TEX). **Santa Rosa:** Sta. Rosa, May 1892, *Heyde & Lux 3161* (US). BELIZE. **Cayo:** N of Blancameaux Lodge, Mount Pine ridge, 12 July 1973, *Dwyer 11632* (F, NY); S of El Millionario, 29 May 1973, *Gentry 7660* (F, MO); Cohune Ridge, Aug. 1936, *Lundell 6462* (MICH, MO, NY, US). **Toledo:** Acahual, near Orange Point, 29 Sep. 1951, *Gentle 7452* (NY). HONDURAS. **Cortés:** Potrerillos, Aldea El Olivo, 13 Apr. 1975, *Erazo 65* (MO). **Francisco Morazán:** Quebrada Suyapa, NE of Tegucigalpa, 10 Aug. 1949, *Molina 2569* (EAP, US). **Yoro:** Cordillera Nombre de Dios, hills S of San José de Texiguat, 17 May 1991, *Davidse et al. 34506* (INB, MO). EL SALVADOR. **Ahuachapán:** Parque Nacional El Imposible, *Sermeño 30* (LAGU, MO); vicinity of Ahuachapán, 9 Jan. 1922, *Standley 19913* (NY). NICARAGUA. **Boaco:** Piedra Sembrada al N de Camoapa, 29 Aug 1991, *Moreno 10596* (MO). **Chinandega:** Volcán San Cristobal, 3 Aug. 1984, *Hernandez et al. 584* (MO). **Estelí:** near of Entrance of Estelí, 30 Dec. 1977, *Stevens 5780* (MO). **Granada:** Volcán Mombacho, 300 m, 19 Sep. 1976, *Neill 776* (MO). **Matagalpa:** El Barro, 18 Nov. 1984, *Moreno 25056* (MO). **Nueva Segovia:** Quebrada El Nancital, 7 Aug. 1977, *Stevens 3007* (MO). **Zelaya:** near Zelaya, 6 Jan. 1982, *Ortiz 553* (MO). COSTA RICA. **Alajuela:** Los Angeles de San Ramon, 21 Dec. 1936, *Solis 478* (MO). **Cartago:** Forest of Tuis, Nov. 1897, *Tonduz 11553* (US). **Guanacaste:** Parque Nacional Santa Rosa, 17 June 1979, *Janzen 11694* (MO); collines de Nicoya, May 1900, *Ton-*

duz 13945 (US). **Heredia:** Santo Domingo, 31 Oct. 1993, *Hammel et al. 19106* (CR, INB, MO). **Limón:** Talamanca, Rio Barbilla y Quebrada Cañabral, 20 Oct. 1988, *Herrera et al. 2224* (F, INB, MO). **Puntarenas:** Reserva Forestal Golfo Dulce, Rancho Quemado, 17 Aug. 1992, *Aguilar et al. 1249* (INB); Rio Ceibo, pres Buenos Aires, Feb. 1892, *Tonduz 6692* (US). **San José:** Cerros de Escazu, Rio Saurez, *Morales et al. 2278* (CR, INB, F, MO); vicinity of San José, Feb. 1924, *Standley 34797* (US). PANAMA. **Bocas del Toro:** Water Valley, 31 Oct. 1940, *von Wedel 1452* (MO). **Chiriquí:** vicinity of Chiriquí Lagoon, 13 Nov. 1941, *von Wedel 1611* (US). **Coclé:** El Valle de Anton, July 1935, *Siebert 493* (MO). **Colón:** Santa Rita ridge, Jan. 1968, *Dwyer et al. 9025* (MO). **Panamá:** El Llano–Carti road, 28 Mar. 1974, *Nee et al. 10963* (MO).

Prestonia riverae J. F. Morales, sp. nov. TYPE: Costa Rica. Guanacaste: Parque Nacional Rincón de la Vieja, Sector El Canal, 900 m, 2 Apr. 1991 (fl, fr), *Rivera 1211* (holotype, INB; isotypes, CR, MO). Figure 1.

Prestoniae mexicanae affinis, a qua imprimis differt foliis infra dense tomentosis, floribus quasi sessilibus, antheris longissimis.

Liana, young branchlets hirsute-velutinous, ferrugineous, becoming sparsely puberulent at maturity. Leaf blades 9–23 × 5.5–13 cm, membranaceous to subcoriaceous, narrowly elliptic to orbicular, acute to short acuminate in the apex, obtuse to rounded basally, sparsely puberulent above, velutinous-tomentose beneath, indument ferrugineous, eglandular, petiole 0.6–1.8 cm, glandular in the axils, stipules absent. Inflorescence umbelliform, agglomerate, peduncle 0.8–2.3 cm, pedicels less 3 mm, usually absent, both velutinous-tomentose, bracts 6–8 × 2 mm, narrowly elliptic; sepals 1.5–2.4 cm × 4–6.5 mm, narrowly ovate to narrowly elliptic, acute to acuminate, pubescent, squamellae ca. 3 mm, usually entire to somewhat fimbriate, pubescent; corolla salverform, yellow, strigose-tomentose, tube (1.8–)2–2.3 cm × 3 mm, epistaminal appendages absent, callus short and inconspicuous, lobes 0.9–1.2 cm × 8–9 mm, obovate; stamens inserted, filaments ca. 2 mm, glabrous, anthers 10–12 mm, glabrous, ovary ca. 1 mm, glabrous, style 10–11 mm long; disk ca. 1 mm, annular, scarcely lobed. Follicles 15–20 × 1.2–2 cm, falcate, long acuminate, usually curved, ferrugineous-hirsute; seeds 1–1.2 cm, rugose, coma 4.5–5 cm, tan.

Distribution. Restricted to Costa Rica, where it occurs on the slopes of the Cordillera de Guanacaste and in the Sarapiquí region, in forest and disturbed areas, at 100–900 m.

Phenology. Flowers April to August; fruits August to October.

This species is unusual in having the largest anthers of the genus. It is related to *P. mexicana*, which is widespread in Central America, but differs by the larger anthers, obsolete or very reduced (less than 3 mm long) pedicels, and long falcate fruits.

Prestonia riverae is named after Gerardo "El Indio" Rivera, who collected this and many other interesting plants in Rincón de la Vieja National Park, Costa Rica.

Paratypes. COSTA RICA. **Alajuela:** Buena Vista de San Carlos, 2 May 1964, *Jimenez 1952* (CR, MO, NY). **Guanacaste:** Parque Nacional Rincón de la Vieja, Hacienda Santa Maria, 17 Aug. 1987, *Herrera 736* (CR, F, MO); Rincón de la Vieja, Finca Los Mora, 12 Oct. 1990, *Rivera 728* (INB, MO). **Heredia:** Finca La Selva, Puerto Viejo de Sarapiquí, 24 July 1979, *Grayum 2027* (DUKE); Sarapiquí, 4 June 1980, *Hammel 8921* (DUKE, INB); Finca La Selva, Sarapiquí, 26 July 1984, *Jacobs 2977* (DUKE, INB), 28 May 1985, *Jacobs 3190* (DUKE, INB), 28 Sep. 1981, *Smith 304* (DUKE, INB).

Prestonia seemannii Miers, Apocyn. S. Amer. 146. 1878. TYPE: Panama: near the town of Panamá, *Seemann 159* (holotype, BM; photo, INB ex BM).

Liana or vine, branchlets sparsely hispid to glabrate. Leaf blades 6–21(–26) × 3–12 cm, membranaceous, narrowly elliptic to obovate, acute to long acuminate in the apex, obtuse to rounded basally, hispid-velutinous above, velutinous to velutinous-tomentose beneath, indument yellow-tannish, eglandular, petiole 0.2–1 cm, glandular in the axils, stipules absent. Inflorescence subumbelliform, densely agglomerate, peduncle 1–2.6 cm, thick, pedicels 3–10 mm, both densely to sparsely ferrugineous-hispid, bracts 5–9 × 1–2 mm, narrowly elliptic; sepals 0.9–1.1 cm × 3–4 mm, ovate to narrowly elliptic, acute to short-acuminate, hispid-velutinous, squamellae 2–3 mm long, apex scarcely fimbriate; corolla salverform, yellow to cream, hispid, tube 1–1.3 cm × 3–4 mm, epistaminal appendages 1–1.5 mm, the apex exserted, callus ca. 1 mm long, conspicuous, lobes 0.9–1.5 × 0.4–0.6 cm, obovate; stamens exserted, filaments ca. 1 mm long, glabrous, anthers 5–6 mm, glabrous, ovary ca. 1 mm long, puberulent to glabrate, style 6–10 mm; disk 1.5–1.8 mm long, annular to variously 3-lobed. Follicles 10–13 × 1–1.4 cm, divaricate to somewhat divergent, hispid; seeds 1.1–1.4 cm × 2 mm, rugose, coma 2.7–3.2 cm, cream.

Distribution. Restricted to Panama, in open areas and disturbed forest, mainly in the central part of the country (Province of Panamá).

Phenology. Flowers May to November; fruits October to February.

Prestonia seemannii was regarded as a synonym of *P. ipomaeifolia* by Hemsley (1881), but is here reinstated as a valid species. The characters that

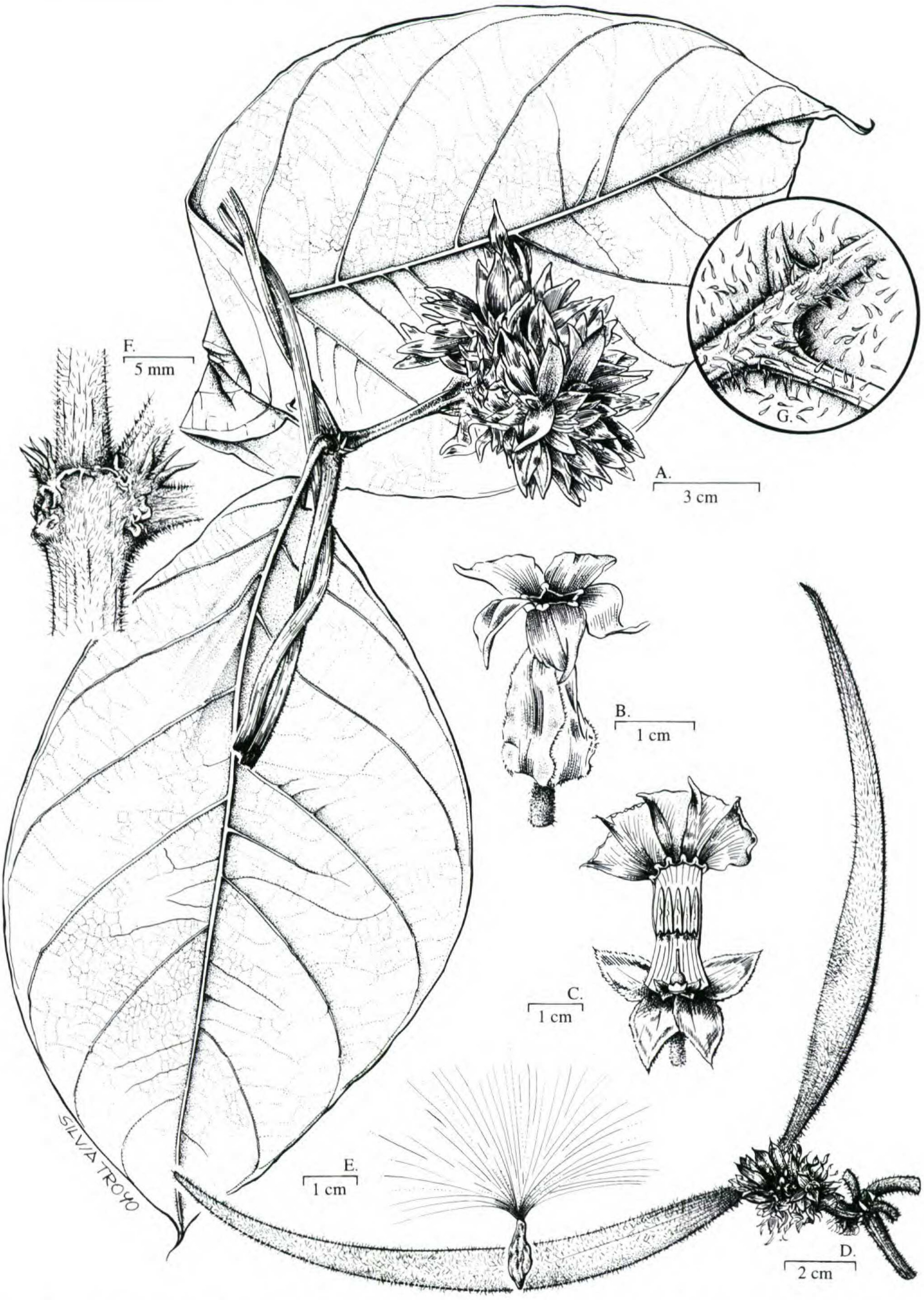

Figure 1. A–G. *Prestonia riverae* J. F. Morales (*Rivera 1211*). —A. Habit. —B. Calyx and Corolla. —C. Corolla expanded, annular callus, stamens, ovary, disk, and squamellae. —D. Fruit. —E. Seed. —F. Internodal appendages. —G. Pubescence of the leaves (beneath).

distinguish the former are its smaller and more membranaceous leaves, with yellow pubescence.

Specimens examined. PANAMA. **Coclé:** near Rio Grande, 24 May 1970, *Rosario 43* (MO). **Darién:** Pigonana from El Real, 15 July 1971, *Croat et al. 15555* (MO); vicinity of La Palma, southern Darién, Jan. 1912, *Pittier 5494* (US). **Los Santos:** Managre Beach, 29 July 1963, *Dwyer 4171* (MO). **Panamá:** vicinity of Bejuco, 18 Oct. 1938, *Allen 980* (MO); Perlas Islands, 5 July 1941, *Allen 2590* (MO); Cerro Jefe, 6 Jan. 1971, *Croat 13060* (MO); Cerro San Francisco, 16 Apr. 1986, *Correa et al. 4683* (MO); Canal Zone, Madden Dam Bridge, 12 Oct. 1967, *Correa 359* (F, MO); Canal Zone, Ancon Hill, 10 Oct. 1961, *Duke 4583* (MO); Paraiso, 29 Nov. 1966, *Dwyer 7144* (MO); Taboga Island, 15 Aug. 1972, *Gentry 5727* (MO); Tocumen, 22 Sep. 1975, *Gonzalez 30* (MO); Bellavista, 25 Feb. 1923, *Macbride s.n.* (F, US); near Tapia River, 1 June 1923, *Maxon et al. 6735* (US); La Chorrera, 27 Nov. 1975, *Medina 32* (MO, PMA); Punta Paitilla, 22 Feb. 1923, *Piper 5428* (US); near Chepo, Oct. 1911, *Pittier 4700* (US); Tumba Muerto road, 6 Jan. 1924, *Standley 29757* (US); E of Canita, 30 May 1966, *Tyson et al. 4161* (DUKE, MO); thickets near Capira, 12 July 1938, *Woodson et al. 1230* (MO).

Prestonia speciosa Donnell Smith, Bot. Gaz. (Crawfordsville) 27: 435. 1899. TYPE: Guatemala. Santa Rosa: Buena Vista, Apr. 1893, *Heyde & Lux 4497* (holotype, US; isotypes, US 3 sheets).

Prestonia grandiflora L. O. Williams, Fieldiana, Bot. 31: 402. 1968. Syn. nov. TYPE: Mexico. Chiapas: La Grandeza, 19 May 1945, *Matuda 15570* (holotype, F; isotypes, F, MO 2 sheets, TEX not seen).

Liana, branchlets pubescent to glabrate. Leaf blades 8–26 × 6–13.5 cm, membranaceous, obovate to orbicular, acuminate to caudate-acuminate in the apex, cuneate, obtuse to rounded basally, sparsely puberulent to glabrate above, tomentose beneath, eglandular, petiole 0.4–1.1 cm, glandular in the axils, stipules absent. Inflorescence corymbose to subcorymbose, peduncle 0.4–2.2 cm, pedicels 9–17 mm, both pubescent, bracts 3–8 × 1 mm, very narrowly ovate, sepals 0.9–1.7 cm × 4–6 mm, ovate to narrowly elliptic, acute to acuminate, squamellae ca. 1 mm long, apex scarcely fimbriate; corolla infundibuliform, yellow, sparsely pubescent, lower part of tube 1.2–1.9 cm × 3–4 mm, upper part 1–1.2 × 1–1.2 cm diam. at the orifice, conic-campanulate, epistaminal appendages absent, rarely reduced to inconspicuous callus ridges, callus entire to scarcely lobed, lobes 2–2.5 cm × 1.1–1.4 cm, obovate; stamens included, filaments ca. 1.5 mm long, glabrate, anthers 8–9 mm, glabrous, ovary ca. 1 mm, glabrous, style 17–18 mm long; disk 3 mm long, annular, deeply lacerate. Follicles 7–9 × 1.8–2.7 cm, divaricate, densely sericeous; seeds unknown.

Distribution. Mexico to Nicaragua, where it occurs mostly in secondary forest and in open areas, at elevations of 500–1500 m.

Phenology. Flowers March to June.

Prestonia grandiflora was separated from *P. speciosa* based solely on its longer corolla (Williams, 1968). However, the types of the two species are similar, except that the type of *Prestonia speciosa* has the corolla lobes reflexed due to the capriciousness of the drying process, while the former species has the lobes spreading.

Prestonia speciosa is characterized by its clearly infundibuliform corolla, the largest in the genus. Fruiting specimens are difficult to separate from *P. mexicana.* Only one collection (*Standley 20091,* US) with old fruits is known.

Specimens examined. MEXICO. **Chiapas:** Siltepec, 23 June 1941, *Matuda 4681* (F, MEXU, MICH, MO, NY); along the river E of Bochil, 27 June 1967, *Shilom 2597* (NY). GUATEMALA. **Quezaltenango:** Montaña Chicharro, S of Sta. Maria de Jesus, *Steyermark 34139* (F). **Zacatepequez:** Alotenango, *Donnell Smith 1448* (US). EL SALVADOR. **Ahuachapán:** El Imposible, San Benito, 16 Mar. 1992, *Sandoval et al. 311* (LAGU, MO); Sierra de Apaneca, Finca Colima, 17 Jan. 1922, *Standley 20091* (US). **La Libertad:** Puerta de La Laguna, 27 Apr. 1922, *Standley 23673* (US). **Sonsonate:** Laguna de Las Ninfas, 1829 m, 4 Mar. 1991, *Villacorta et al. 742* (LAGU, MO). HONDURAS. **Copán:** 10 mi. W of Copán, 1 Aug. 1977, *Croat 45520* (MO). NICARAGUA. **Granada:** Volcán Mombacho, 19 Apr. 1982, *Moreno 16125* (MO). **Jinotega:** Sta. Lastenia, 5 June 1982, *Stevens 21536* (MO).

Prestonia tysonii A. H. Gentry, Ann. Missouri Bot. Gard. 61: 895. 1974. TYPE: Panama. Panamá: Cerro Jefe, in Clusia forest, 27 Jan. 1966, *Tyson et al. 3214* (holotype, MO).

Liana, branchlets densely tomentose, turning puberulent at maturity. Leaf blades 8–13.5 × 4–10 cm, coriaceous to subcoriaceous, broadly to narrowly ovate, acute to acuminate in the apex, obtuse to rounded basally, glabrate above, densely velutinous-tomentose beneath, indument ferrugineous, eglandular, petiole 4–11 mm, glandular in the axils, stipules absent. Inflorescence umbelliform to subumbelliform, dense, peduncle 1–2 cm, pedicels 2–4 mm, both ferrugineous-tomentose, bracts 2–3 × 1.5 mm, ovate or narrowly so; sepals 0.4–0.6 cm × 2–3 mm, ovate, acute, appressed-tomentose, squamellae ca. 1 mm long, fimbriate at the apex; corolla salverform, cream, strigose-velutinous, tube 5–6 × 1.5–2 mm diam. at the orifice, epistaminal appendages 1.8–2 mm, exserted, glabrous, callus conspicuous, lobes 4–5 × 3 mm, obovate; stamens exserted, filaments ca. 1.5 mm, glabrous, anthers 4 mm, glabrous, ovary ca. 1.5 mm, glabrous, style 4–5 mm; disk of separated glands, deltoid, ca. 1 mm.

Follicles 28–31 cm × 4–5 mm, linear, velutinous-tomentose; immature seeds 2.2–2.4 × 1.5 cm, rugose, coma 2–2.4 cm, tan.

Distribution. Known only from the type, collected in central Panama.

Phenology. Flowers and fruits are borne in January.

This species is easy to distinguish by its short flowers, with reduced pedicels and well-developed epistaminal appendages.

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