

# New Species and Combinations in Rubiaceae from Costa Rica and Panama

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**ABSTRACT.** The new combinations *Psychotria nebulosa* (Dwyer) C. M. Taylor and *P. roseocrema* (Dwyer) C. M. Taylor are made, and the following new species are described: *Chiococca caputensis* D. H. Lorence & C. M. Taylor, *Manettia longipedicellata* C. M. Taylor, *Pentagonia lobata* C. M. Taylor, *Psychotria burgeri* C. M. Taylor, *Psychotria saltatrix* C. M. Taylor, and *Rudgea laevis* C. M. Taylor.

During review of Rubiaceae materials for preparation of the *Manual to the Plants of Costa Rica*, the following new species and taxonomic problems were discovered. These comments supplement the treatment by Burger & Taylor (1993).

***Chiococca caputensis*** D. H. Lorence & C. M. Taylor, sp. nov. TYPE: Panama. Panamá: Cerro Jefe, NE of Panama City, 9°15'N, 79°30'W, 12 July 1986, G. McPherson 9744 (holotype, MO 3624428; isotype, PMA not seen). Figure 1B, C.

*Chiococca belizensi* Lundell similis, sed ab ea corollis albis etiam nervis secundariis brochidodromis semel arcuatis differt.

Glabrous low shrubs or usually woody vines. Leaves 2–8 cm long, 1.2–4 cm wide, elliptic, at apex acute to slightly acuminate or sometimes obtuse, at base cuneate, coriaceous; secondary veins 3–5 pairs, brochidodromous, looping once to interconnect, above and below plane, with the costa plane or prominulous on both surfaces; petioles 4–10 mm long; stipules interpetiolar, triangular, 2–3 mm long, acuminate to usually apiculate. Inflorescences axillary, 1 per axil, racemose to sometimes 1–2 times branched, 3–6 cm long; peduncles 5–15 mm long; bracts subtending pedicels deltoid to narrowly triangular, 0.5–1.5 mm long; pedicels 1–4 mm long; calyx glabrous, green, with hypanthium ellipsoid, somewhat flattened laterally, 2–2.5 mm long, limb 1–1.3 mm long, divided for ca. ½ its length, lobes deltoid, entire to ciliate; corolla glabrous throughout, white becoming cream to pale yellow, funnel-form, tube 6.5–7 mm long, ca. 1 mm diam. at base and 4–5 mm diam. at apex, lobes narrowly trian-

gular, 3–4 mm long, acute; stamens included, filaments ca. 1 mm long, pilose, anthers very narrowly oblong, 3.5–4 mm long; style 11–11.5 mm long, twisted, white, papillose throughout, at apex clavate. Fruit ellipsoid, strongly laterally compressed, 8–12 mm diam., white, fleshy.

**Habitat and phenology.** Known only from wet forest on the upper slopes and summit of Cerro Jefe in central Panama, at 550–1000 m. Collected in flower in July, in mature fruit September through February.

*Chiococca caputensis* is similar in its included stamens and climbing habit to *C. alba* (L.) A. S. Hitchcock, which can be distinguished by its papyraceous leaf blades and usually smaller mature fruits, 4–8 mm in diameter. This new species has also been confused with *C. belizensis* Lundell, which has coriaceous leaves, included stamens, and fruit size similar to that of *C. caputensis*, but which can be distinguished from *C. caputensis* by its lemon yellow corollas and secondary leaf veins connected by one to three additional smaller loops outside the principal loops. Additionally, *C. belizensis* is found from sea level to 1500 m but has been collected predominantly below 400 m elevation.

*Chiococca caputensis* has been confused with *C. durifolia* Dwyer, a synonym of *C. belizensis*, and also with *C. jefensis* Dwyer, which is a synonym of *Elaeagia nitidifolia* Dwyer. The specific epithet refers to the type locality, Cerro Jefe, which translated from the Spanish means “chief” mountain. Several other species of Rubiaceae, for example, *Palicourea tubuliflora* Dwyer and *Psychotria olgae* Dwyer & M. V. Hayden, appear to be endemic to this mountain, and *C. caputensis* may be a similar local endemic.

**Paratypes.** PANAMA. Panamá: beyond Goofy Lake on road to Cerro Jefe, Correa & Dressler 467 (MO), Croat 15235 (MO); Cerro Jefe, NE of Panama City, Correa et al. 4576 (MO, PMA), Croat 35865, D'Arcy 12192 (MO), Elias & Hayden 1799 (MO), Folsom & Harp 1373 (MO), Folsom 3854 (MO), Gentry 2878 (MO), Gentry & Dwyer 5540 (MO), Gentry 6133 (MO), Kirkbride & Crobbs 9 (MO), McDonagh et al. 47 (BM, MO), McPherson 9733 (MO, PMA), 10012 (MO, PMA), 10032 (MO, PMA, PTBG), 15855 (MO, PMA), Mori

6527 (MO), 7994 (MO), *Sytsma* 1490 (MO), *Tyson et al.* 3207 (MO), *Tyson* 3374 (MO), *Witherspoon* 8554 (MO).

***Manettia longipedicellata* C. M. Taylor, sp. nov.**

TYPE: Costa Rica. Limón: Cantón de Matina, Cordillera Talamanca, 200 m aguas abajo de la confluencia de la quebrada Cañabral con el río Barbilla, 10°00'10"N, 83°25'30"W, 5 Nov. 1988, *G. Herrera* 2290 (holotype, CR; isotype, MO 3649361). Figure 1A.

Flores in cymas paucifloras pedunculis 1–2.5 cm longis insidentes aggregati, pedicellis 1–2.5 cm longis; lobis calycinis 4, 2 mm longis; corolla viridula ad rosea, tubo 6–10 mm longo, lobis 4, 3–4 mm longis.

Glabrescent to retrorsely hispidulous, extensively twining, herbaceous to suffrutescent vines. *Leaves* elliptic to ovate or broadly lanceolate, 3–12 cm long, 1.5–5 cm wide, acuminate at apex, cuneate to truncate at base, membranaceous; secondary veins 4–6 pairs; petioles 5–15 mm long; stipules interpetiolar, triangular, 1 mm long, with 4–8 cartilaginous teeth or triangular appendages, these often caducous and the stipules appearing truncate. *Inflorescences* axillary and terminal, cymose, with 1–4 flowers; peduncles 1–2.5 cm long; bracts triangular, to 2.5 mm long, scarious; pedicels 1–2.5 cm long, often thickened near apex and flowers and fruits appearing stipitate; calyx glabrescent, limb 2–4 mm long, divided to base, lobes 4, narrowly triangular, acute, reflexed; corolla tubular, externally glabrous, internally pilose, green to white or usually pink with exserted yellow trichomes in throat, tube 6–10 mm long, lobes ovate, 3–4 mm long, acute. *Capsules* obconic, 5–9 mm long, frequently somewhat dicocous, compressed laterally; seeds orbicular to somewhat irregular, ca. 2 mm diam.

*Habitat and phenology.* Wet Caribbean slopes of Nicaragua and Costa Rica at 100–1100 m, most frequently collected as a vine climbing on thickets along streams below 300 m elevation. Collected in flower and fruit usually concurrently, February to May and in December.

This new species is similar to *Manettia reclinata* L., which can be distinguished in southern Central America by its six to eight calyx lobes 4–7 mm long, dark red corollas, and pedicels usually 1 cm long or shorter, in contrast to four calyx lobes 2–4 mm long, green to white or pink corollas, and pedicels 1–2.5 cm long in *M. longipedicellata*. Plants of *M. reclinata* from Mexico and northern Central America may have peduncles and pedicels to 4 cm long, but differ in the other characters.

*Paratypes.* COSTA RICA. **Alajuela:** Piedades de San Ramón, *Brenes* 4555 (CR). **Cartago:** Florencia Norte, CATIE, Turrialba, *Poveda* 3109 (CR). **Heredia:** Finca La Selva, the OTS field station near Puerto Viejo de Sarapiquí, near the junction of the Ríos Puerto Viejo and Sarapiquí, *Almeda & Anderson* 5130 (F), *Folsom* 8851 (DUKE), 10032 (DUKE), *Grayum* 1144 (DUKE), 2711 (DUKE), *Hammel* 8099 (DUKE), 11752 (DUKE), *Opler* 1645 (CR), *Wilbur* 28181 (DUKE), 28308 (DUKE), 38626 (DUKE), 39485 (DUKE). **Limón:** Cantón de Pococí, along road between Mata de Limón (on quadrangle map as "Milloncito") and Millón, 10°24'30"N, 83°37'W, *Grayum & Hammel* 8407 (CR, MO). NICARAGUA. **Zelaya:** Caño Monte Cristo, "Las Faldas," 11°36'N, 83°51'W, *Moreno* 14776 (MO); Montecristo, al N de Barra Punta Gorda, 11°34'N, 83°48'W, *Sandino* 2232 (MO); Caño Costa Riquita, ca. 1.8 km SW of Colonia Naciones Unidas, above road between there and Colonia Nueva León, 11°43'N, 83°18'W, *Stevens* 4942 (MO).

***Pentagonia lobata* C. M. Taylor, sp. nov.** TYPE:

Costa Rica. Puntarenas: Cantón de Golfito, Reserva Natural de Vida Silvestre Golfito, final del camino hacia las torres, 8°39'52"N, 83°10'00"W, 7 Dec. 1992, *B. Hammel* 18619 (holotype, MO 4355639; isotypes, CR, F, MO 4355638). Figure 1D.

A speciebus ceteris *Pentagoniae* Bentham foliis pinatifidis etiam calyce spathaceo differt.

Monocaulous shrub or small tree to 7 m tall; stems lenticellate. *Leaves* 62–99 cm long, 60–90 cm wide, deeply pinnatifid, with sinuses extending to within 3–5 cm of costa, with lobes 4–6 on each side, these acute to somewhat acuminate, 7–14 cm wide, the basalmost lobes usually ca. ½ as long and wide, the entire blade chartaceous to subcoriaceous, glabrous and smooth adaxially, abaxially glabrescent to usually spreading-puberulous or shortly pilosulous on principal veins and sometimes also on lamina, abaxially lamina also finely striate, costa and longer secondary veins prominent above and below, shorter secondary veins slightly thickened, minor venation not visible; *petioles* 12–22 cm long; *stipules* ligulate, 6–8 cm long, 2.5–3.5 cm wide, coriaceous, acute, with costa thickened near base, finely appressed-puberulous to sericeous. *Flowers* hermaphroditic, glomerulate in groups of ca. 12–20 in leaf axils, each inflorescence enclosed by 1 bract resembling a stipule, these bracts 8–9 cm long, 3–7 cm wide, each flower with a stipe 1–3 mm long and subtended by 1 floral bract, these floral bracts 15–25 mm long, 6–12 mm wide, ovate, acute; hypanthium glabrous, cylindrical to ellipsoid, 3–5 mm long, 2–3 mm diam.; *calyx* limb red, coriaceous, glabrous, 2.5–4 cm long, spathaceous, splitting for ca. ⅓ of its length, acute at apex; *corolla* green to cream, funnelform, carnosous, fibrous, glabrous

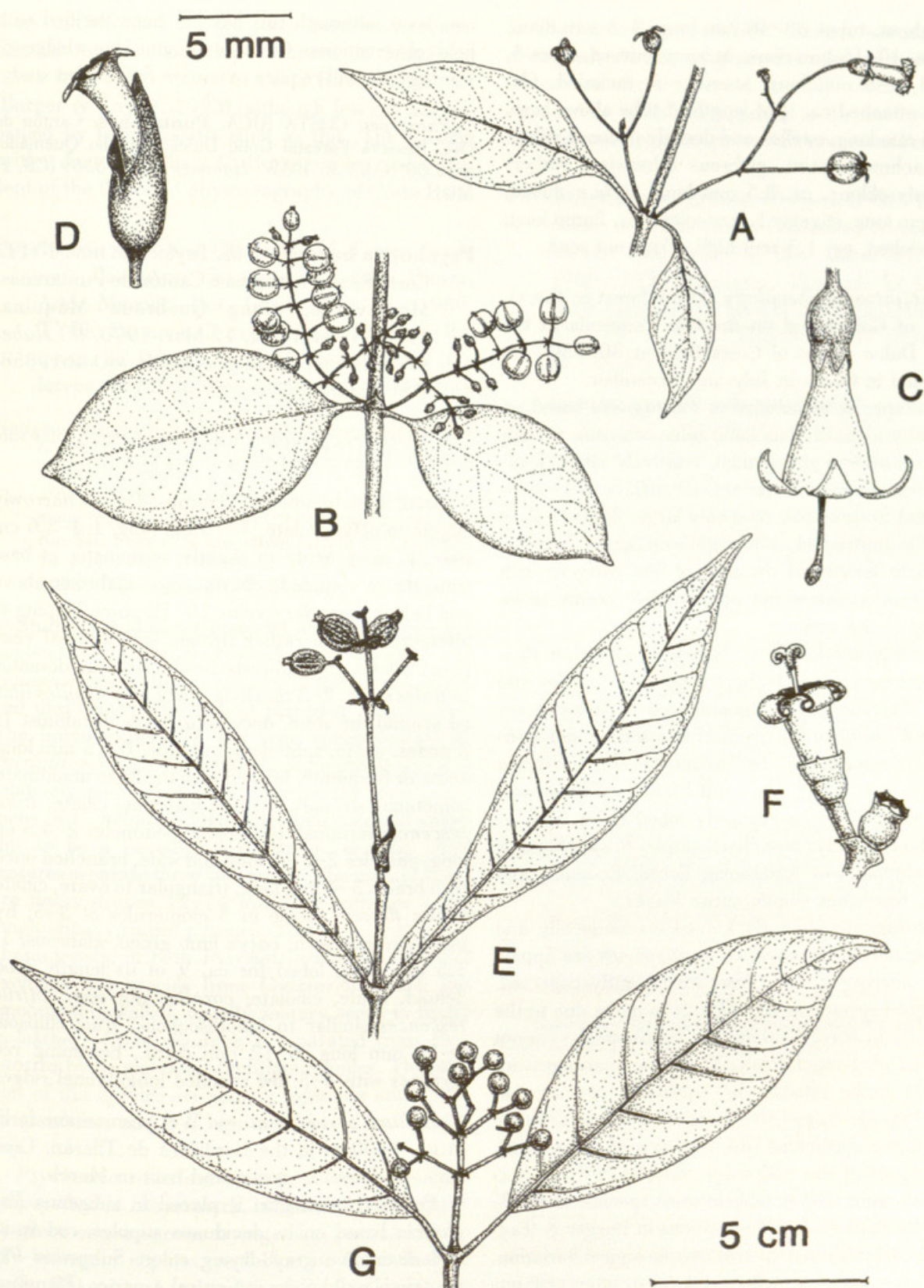


Figure 1. —A. *Manettia longipedicellata* C. M. Taylor (from Grayum 1144, DUKE), habit. B, C. *Chiococca caputensis* C. M. Taylor & D. H. Lorence. —B. Habit (from McPherson 10012, MO). —C. Flower (from McPherson 9744, MO). —D. *Pentagonia lobata* C. M. Taylor, flower (from Hammel 18619, MO). —E. *Psychotria burgeri* C. M. Taylor, habit (from Haber 9778, F). F, G. *Rudgea laevis* C. M. Taylor. —F. Flower (from Haber 452, MO). —G. Habit (from Haber 1070, MO). A, B, D, E, G to 5-cm scale; C, F to 5-mm scale.

throughout, tubes 38–46 mm long, 3–5 mm diam. at base, 10–15 mm diam. at apex, curved, lobes 5, deltoid, 4–8 mm long; *stamens* 5, included, filaments attached ca.  $\frac{1}{3}$  of length of tube above base, ca. 15 mm long, swollen and densely pilose to villous at attachment point, glabrous otherwise, anthers narrowly oblong, ca. 3.5 mm long; *style* included, ca. 2 cm long, stigmas 1, lanceolate, ca. 2 mm long; disk bilobed, ca. 1.5 mm high. *Fruit* not seen.

*Habitat and phenology.* Moist forest in the vicinity of Golfito and on the Osa Peninsula in the Golfo Dulce region of Costa Rica at 300–500 m. Collected in flower in July and December.

This species is included in *Pentagonia* based on its fleshy monocaulous habit (characteristic though not exclusive in this genus), relatively large, firm-textured leaves with the abaxial surface finely striate, and five-merous, relatively large, fleshy flowers borne in contracted axillary inflorescences. The finely striate texture of the abaxial leaf surfaces with the minor venation not at all visible seems to be unique to this genus.

*Pentagonia lobata* is distinguished within *Pentagonia* by its combination of pinnatifid leaves and a spathaceous calyx. Pinnatifid leaves also characterize *P. tinajita* Seemann of Costa Rica and Panama (here circumscribed to include *P. alfaroana* Standley and *P. gymnopoda* Standley), which can be separated by its regularly lobed calyx limb. A spathaceous calyx also characterizes *P. spathocalyx* K. Schumann of Amazonian Brazil, Ecuador, and Peru, which has elliptic entire leaves.

*Pentagonia* is poorly known taxonomically and ecologically. Individuals of most species are apparently infrequent, or at least infrequently collected, and good specimens are difficult to make due to the large fleshy leaves and flowers. Some species cannot be separated vegetatively. Flowering characteristics appear to be reliable for separating species, but flowering specimens are sometimes difficult to relate to fruiting specimens (the majority of collections). The range of size and shape variation seen in herbarium material is notable in some species, to 100% in some features (see descriptions in Burger & Taylor, 1993): this may be real morphological variation, or it may reflect variable shrinkage or other artifacts of the preparation of dried specimens. Some species of *Pentagonia* were originally separated based on details of leaf shape such as acute versus rounded leaf bases, but with more material available these conditions often show continuous variation and are not adequate to distinguish species. The deeply pinnatifid leaves found in some *Pentagonia* species are here regarded as a consistent character at the spe-

cies level, although this has not been verified with field observations. Good taxonomic knowledge of *Pentagonia* will require extensive field-based study.

*Paratypes.* COSTA RICA. **Puntarenas:** Cantón de Osa, Reserva Forestal Golfo Dulce, Rancho Quemado, 8°42'00"N, 83°35'40"W, Hammel et al. 18309 (CR, F, MO).

**Psychotria burgeri** C. M. Taylor, sp. nov. TYPE: Costa Rica. Puntarenas: Cantón de Puntarenas, Monteverde, along Quebrada Máquina, 10°18'N, 84°48'W, 12 Mar. 1990, W. Haber 9778 (holotype, CR; isotypes, F, MO 4619858, US). Figure 1E.

A *Psychotria pleuropoda* J. Donnell Smith foliis subsessilibus basim rotundatis ad truncatis differt.

Small trees to 3 m tall, glabrous. *Leaves* narrowly elliptic to oblanceolate, 7–13 cm long, 1.4–3.6 cm wide, at apex acute to slightly acuminate, at base truncate to rounded, chartaceous, glabrous above and below; secondary veins 10–12 pairs, looping to interconnect in a rather straight submarginal vein, plane above, prominulous below, without domatia; *petioles* stout, 2–3 mm long, glabrous; *stipules* united around the stem, deciduous below distalmost 1–3 nodes, ovate, split along one side, 6–15 mm long, acute or frequently bilobed with the lobes acuminate, sometimes strongly costate, glabrous, ciliate. *Inflorescences* terminal, pyramidal; peduncles 2–4.5 cm long; panicles 2–3 cm long and wide, branched once, with bracts 3–4 mm long, triangular to ovate, ciliate, acute; *flowers* sessile in 3 glomerules of 3–5; hypanthium not seen; *calyx* limb green, glabrous, 1–1.5 mm long, lobed for ca.  $\frac{1}{3}$  of its length, lobes deltoid, acute, ciliate; *corollas* not seen. *Infructescences* similar to inflorescences; *fruit* ellipsoid, 8–11 mm long, 6–12 mm diam., becoming red; *pyrenes* with 4–5 low rounded longitudinal ridges.

*Habitat and phenology.* Wet premontane forest at ca. 1400 m in the Cordillera de Tilarán, Costa Rica. Collected in flower and fruit in March.

*Psychotria burgeri* is placed in subgenus *Psychotria* based on its deciduous stipules, red fruits, and distinctive gray drying color. Subgenus *Psychotria* is well known in Central America (Hamilton, 1989), and even though its flowers have not been seen, this new species is clearly undescribed. It is similar to *P. pleuropoda* J. Donnell Smith of northern Central America, which can be separated by its leaves with acute to tapered bases and secondary veins 15–18 pairs, petioles 2–10 mm long, and elevational range of 50–500 m; *P. pleuropoda* is so far not known from Costa Rica. Range disjunc-

tions and disjunct species pairs between northern Central America and the Cordillera de Tilarán in Costa Rica are frequent in Costa Rican Rubiaceae (Burger & Taylor, 1993), although few are accompanied by habitat shifts such as this. The specific epithet honors William C. Burger, a long-time student of the flora and phytogeography of Costa Rica.

***Psychotria nebulosa*** (Dwyer) C. M. Taylor, comb. nov. Basionym: *Coussarea nebulosa* Dwyer, Ann. Missouri Bot. Gard. 67: 131. 1980. TYPE: Panama. Chiriquí: Monte Rey near Boquete, 20 July 1971, T. B. Croat 15868 (holotype, MO 2162999; isotype, MO 4043108).

*Rudgea chiriquiensis* Dwyer, Ann. Missouri Bot. Gard. 67: 476. 1980. Syn. nov. Not *Psychotria chiriquiensis* (Standley) C. M. Taylor & W. C. Burger, 1993. TYPE: Panama. Chiriquí: Cerro Colorado, along road above San Félix 29 km above bridge over Río San Félix (7.9 km above turnoff to Escopeta), 14 July 1976, T. B. Croat 37071 (holotype, MO 2798805; isotype, MO 2389189).

Study of additional material available since the publication of *Coussarea nebulosa* and *Rudgea chiriquiensis* shows that they refer to the same species, and that this species is best placed in *Psychotria*. The inflorescences on the type specimens of *R. chiriquiensis* are older and consequently larger and relatively more open than those on the type specimens of *C. nebulosa*, but additional material shows this to be a developmental series, and no other features separate these specimens. The mature fruits are fleshy drupes 12–14 mm long with two hard, longitudinally ridged pyrenes. This fruit structure is characteristic of both *Psychotria* and *Rudgea* but excludes this species from *Coussarea*, which has smooth, thin-walled, usually solitary seeds in fleshy to leathery fruits. *Rudgea* is separated from *Psychotria* by its glandular-fimbriate stipules. The stipules of this species are shortly bidentate and not at all glandular, and it is here transferred to *Psychotria*.

*Psychotria nebulosa* belongs to subgenus *Heteropsychotria* Steyermark, which is characterized by green or gray-green drying color, persistent usually bidentate stipules, and blue or black mature fruits. The mature fruit color of *P. nebulosa* is not known. Based on inflorescence, stipule, and fruit morphology it seems closely related to *P. eurycarpa* Standley, which can be separated by its smaller leaves that are usually shiny on the adaxial surfaces and pyrenes that are longitudinally angled rather than ridged, and to *P. umbelliformis* Dwyer & M. V. Hayden, which is densely pilosulous throughout. *Psychotria nebulosa* is also similar in general aspect

to *Coussarea austin-smithii* Standley, which can be distinguished by its subglobose to ellipsoid fruits with smooth to slightly angled, usually solitary seeds. *Psychotria nebulosa* appears to be restricted to Chiriquí and Veraguas provinces in western Panama.

***Psychotria roseocrema*** (Dwyer) C. M. Taylor, comb. nov. Basionym: *Coussarea roseocrema* Dwyer, Ann. Missouri Bot. Gard. 67: 133. 1980. TYPE: Panama. Panamá: El Llano-Cartí highway, 6–10 km N of El Llano, 13 Apr. 1973, R. L. Dressler 4334 (holotype, MO 2126258).

Additional material collected since the publication of this name shows that the fruits of this species are fleshy and blue-black at maturity with two hard, longitudinally ridged pyrenes. As discussed above, this fruit structure is characteristic of *Psychotria* but is not found in *Coussarea*, and accordingly this species is here transferred to *Psychotria*. *Psychotria roseocrema* belongs to subgenus *Heteropsychotria*.

*Psychotria roseocrema* is similar in general aspect to *P. umbelliformis*, which can be distinguished by its pilosulous pubescence throughout, and to *P. eurycarpa* and *Coussarea austin-smithii*, both of which lack the strong looping submarginal leaf veins found in *P. roseocrema*.

***Psychotria saltatrix*** C. M. Taylor, sp. nov. TYPE: Costa Rica. Cartago: Refugio Nacional Tapantí, por la orilla del Río Grande de Orosi, 9°45'N, 83°47'W, 14 Aug. 1991, B. Hammel et al. 18328 (holotype, CR; isotypes, F, MO 4619859). Figure 2.

A speciebus ceteris *Psychotriae* L. subg. *Psychotriae* foliis stipulis bracteis calycibusque majoribus etiam infructescentiis ut videtur axillaris differt.

Soft shrubs to 2 m tall; stems puberulous to hirtellous becoming glabrescent with age. Leaves elliptic, 18–32 cm long, 6.5–13.5 cm wide, at apex acute to acuminate with the tip ca. 1 cm long, at base acute to usually tapered, drying membranaceous, above glabrous, below glabrous on lamina but moderately to usually densely puberulous to pilosulous on veins; secondary veins 18–24 pairs, diverging from costa at 80–90° or more, usually looping to interconnect in an undulating to rather straight submarginal vein, with 1–2 secondary loops as well, plane above, prominulous below, without domatia; petioles 1.5–8 cm long; stipules interpetiolar, deciduous after 1–2 distal nodes, obovate, 25–35 mm long, 12–16 mm wide, acute, basal and central

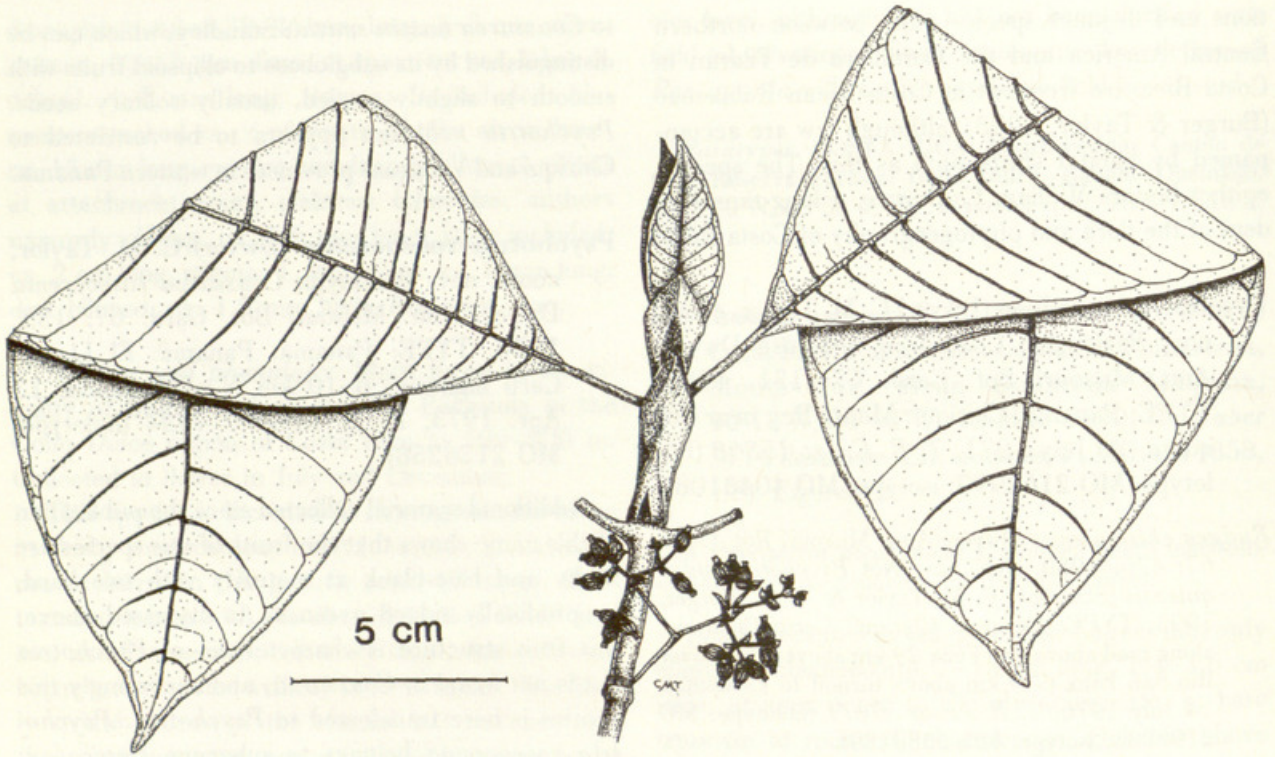


Figure 2. *Psychotria saltatrix* C. M. Taylor (from Hammel 18030, MO).

portion chartaceous to subcoriaceous and smooth, marginal portions membranaceous and with fine parallel veining, both portions puberulous or pilosulous becoming glabrescent. *Inflorescences* terminal, pyramidal; peduncles 3–60 mm; panicles 2–10 cm long, 4–12 cm wide, with branches spreading at ca. 80–90° or occasionally more, with 2 branches at the basalmost nodes or on larger inflorescences frequently 4 branches and then these generally similar in size but 2 spreading and 2 reflexed, puberulous to hirtellous, with bracts lanceolate, membranaceous, puberulous to glabrescent, ciliolate, acute, 2–10 mm long, those subtending primary branches 8–10 mm long and those subtending flowers 2–4 mm long; *flowers* sessile or very shortly stipitate in glomerules of 3–5, each subtended by 1–3 bracts; hypanthium turbinate, 1–1.2 mm long, glabrescent to puberulous; *calyx* limb green, glabrous to puberulous, 1.5–2 mm long, divided for ca.  $\frac{1}{3}$ – $\frac{1}{2}$  its length, lobes 5, deltoid to ovate, ciliolate, acute; *corolla* salverform, white, externally glabrous or usually densely puberulous at top of tube, internally glabrous except densely pilose in 10 tufts at stamen attachment, tubes 2–3 mm long, 1–1.2 mm diam., lobes 5, ligulate, 2–3 mm long, somewhat thickened at apex in bud, becoming acute at anthesis; *stamens* 5, exserted, attached just below top of corolla tube, filaments 0.5–0.8 mm long, anthers oblong, ca. 1 mm long; *style* exserted, 3.5–4.5 mm long, stigma lobes 2, linear, ca. 0.5 mm long; disk annular, smooth, ca. 0.3–0.5 mm long. *Infructescences* overtopped by sympodial stem growth and appearing

pseudoaxillary, as fruit matures usually displaced to 3rd or 4th node below apex, more expanded than inflorescences, to 12.5 cm long and 16 cm wide, bracts often deciduous; *fruit* with stipe ca. 0.5 mm long, obovoid, 6–6.5 mm long, 4–4.5 mm wide, puberulous to glabrescent, becoming orange to red; *pyrenes* with 4–5 rather sharp longitudinal ridges.

*Habitat and phenology.* Costa Rica to Colombia, in wet premontane and montane forest at 1250–2100 m. Collected in flower in May and August, in fruit January, July, September, and October.

*Psychotria saltatrix* is placed in subgenus *Psychotria* (Hamilton, 1989) based on its deciduous interpetiolar stipules, orange to red mature fruits, and distinctive gray-green to brown drying color. Within this subgenus it is distinguished by its apparently pseudoaxillary inflorescences, relatively large leaves and stipules, secondary veins that often diverge from the costa at more than a 90° angle and usually form a distinct submarginal vein, well-developed inflorescence bracts, relatively long calyx limbs, obovoid fruits, and very wet premontane or montane habitats. The inflorescences are terminal in position but the infructescences are typically overtopped by sympodial growth from one axil. This growth pattern is seen in other species of subgenus *Psychotria*, but is rarely as strongly or consistently developed as in this new species. Relatively few other species of subgenus *Psychotria* inhabit wet premontane or montane forest. In the two flowering collections seen, both the stamens and the style are

exserted in all of the flowers, and *P. saltatrix* may be homostylous. This condition (if actually present) would be highly unusual in the subgenus. The specific epithet refers to the occurrence of this species in widely separated wet cool sites in the Andean Cordillera, western Panama, and Costa Rica.

Three fruiting specimens from similar habitats in southern Colombia and Ecuador, *de Benavides* 9292 (MO), *Sparre* 17686 (S), and *Hoover* 1993 (MO), are similar to *P. saltatrix* but can be separated by their shorter calyx limbs and bracts subtending the flowers, both ca. 1 mm long, secondary leaf veins 14–15 pairs, and stipules 5.5–6 cm long. These specimens may represent a separate, apparently unnamed taxon, or they may reflect clinal variation in *P. saltatrix*; no conclusion can be made without flowering material.

**Paratypes.** COLOMBIA. **Antioquia:** municipio de Valdivia, vereda San Fermín, sitio "Alto de Ventanas," 2 km al NE de la vía Medellín–Valdivia en la vía que conduce al municipio de Briceño, 7°50'N, 75°32'W, *Callejas et al.* 10735 (F, HUA, MO); municipio de Valdivia, vereda San Fermín, cerca 120 km NE de Medellín, en la vía a Briceño, finca de Los Restrepo, 07°06'N, 07°32'W, *Callejas & Gómez* 10913 (HUA, MO); municipio de Urrao, Parque Nacional Natural "Las Orquideas," camino de Calles hacia Venados arriba, Sector Bellavista, *Cogollo et al.* 5028 (JAUM, MO). **Nariño:** municipio Ricaurte, Reserva Natural La Planada, *Restrepo* 637 (MO). COSTA RICA. **Cartago:** Tapantí, *I. Chacón et al.* 1432 (CR, MO). **San José:** Parque Nacional Braulio Carrillo, Estación Zurquí, 10°03'30"N, 84°01'W, *Hammel et al.* 18030 (CR, F, MO). PANAMA. **Chiriquí:** Cerro Colorado Mine, *Antonio* 4878 (MO). **Darién:** Cerro Pirre, valley between Pirre and next most southerly peak, *Folsom* 4441 (MO); Cerro Pirre, top of mountain and ridge just S of Pirre, *Folsom* 4521 (MO).

***Rudgea laevis*** C. M. Taylor, sp. nov. TYPE: Costa Rica. Puntarenas: Monteverde, Bajos de La Lindora, río Guacimal, 10°18'N, 84°48'W, 19 Feb. 1988, *W. Haber & E. Bello* 8271 (holotype, CR; isotype, MO 3646480). Figure 1F, G.

A *Rudgea laurifolia* (Kunth) Steyermark venulis paucioribus calycibus corollisque minoribus differt.

Shrubs or small trees to 6 m tall; stems to 15 cm DBH, glabrous. *Leaves* elliptic, 5.5–12 cm long, 1.8–5.5 cm wide, at apex acute, at base cuneate to obtuse, drying chartaceous, glabrous above and below; secondary veins 4–7 pairs, not looping to interconnect, above plane to somewhat sulcate, below prominulous, usually with foveolae in axils; *petioles* glabrous, 4–12 mm long; *stipules* glabrous, united around stem into a persistent continuous truncate sheath 1.5–2 mm long bearing on each side 1 caducous deltoid gland ca. 1 mm long and wide. *Inflorescences* terminal, pyramidal to somewhat

rounded, green, pilosulous to glabrescent; peduncles 1.5–3 cm long; panicles 2.5–3 cm long, 4–8 cm wide, with bracts 0.5–1 mm long, deltoid, obtuse; *flowers* sessile in dichasial cymes of 5–9, with hypanthium turbinate, ca. 1 mm long, glabrous; *calyx* limb green, glabrous, 0.3–0.5 mm long, subtruncate to 5-denticulate; *corolla* salverform, white, glabrous externally and internally except barbate in throat; tube 3–4 mm long, 1–2 mm diam.; lobes 5, ligulate, 3–4 mm long, acute, unappendaged; *stamens* 5, exserted, attached just below top of corolla tube, filaments 0.8–1 mm long, anthers ca. 2 mm long, narrowly oblong; *style* exserted, 6–6.5 mm long, puberulous in distal portion, stigma lobes 2, linear, ca. 1 mm long; disk annular, smooth, ca. 0.5 mm high. *Infructescences* similar in size, proportion, and color to inflorescences; *fruit* globose, 6–10 mm diam., glabrous, white; *pyrenes* smooth.

**Habitat and phenology.** Costa Rica, in wet premontane and lower montane forest of Cordillera de Tilarán at 1000–1400 m. Collected in flower in February and April, in fruit June, September, and November.

This new species is similar in aspect to *Rudgea laurifolia* (Kunth) Steyermark, which can be distinguished from *R. laevis* by its several to numerous acicular stipular glands, more numerous secondary leaf veins (9–11 pairs), longer calyx limb (2.5–2.7 mm long), longer corolla tube (ca. 7.5 mm long), shortly appendaged corolla lobes, and lowland wet forest habitat. *Rudgea laurifolia* is known only from the basins of the Ríos Negro and Orinoco in South America.

**Paratypes.** COSTA RICA. **Alajuela:** Reserva Biológica Monteverde, Finca Ston's, 10°19'N, 84°43'W, *Obando* 140 (CR, MO). **Puntarenas:** Monteverde comunidad, 10°18'N, 84°48'W, *Bello* 4 (CR), *Haber* 452 (MO), 1070 (MO).

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