

NEW SPECIES AND COMBINATIONS IN MESOAMERICAN PSYCHOTRIA SUBGENUS
PSYCHOTRIA (RUBIACEAE)

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A revision of Mesoamerican Psychotria subgenus Psychotria (Hamilton, 1985 and in prep.) revealed the need to recognize 15 new species, 2 new varieties, and 5 new combinations in the group. Complete keys and discussions of relationships will follow in the revision. Publication of these new names is necessary now so that they may be validly referred to in a study of evolution of reproductive biology of the group (Hamilton, submitted for publication). In the floral descriptions, "pin" refers to the long-style morph and "thrum" to the short-style morph in the distylous floral dimorphism common in the family. Note that John D. Dwyer, of St. Louis University and the Missouri Botanical Garden, is co-author of 4 of the new species.

1. Psychotria balancanensis Hamilton, sp. nov. Type. Mexico. Tabasco: Balancán, La Palma, 1-6 Jun 1939 (fl), Matuda 3286 (holotype, F; isotypes, A, MEXU, NY).

Nervatura P. costivenia simili, praecipue differt foliis latioribus et inflorescentiis parvioribus axibus secundariis paucioribus bifariis non quadrifariis.

Shrub ca. 2.5 m tall; young stems glabrous, the bark smooth, sometimes with shallow fissures; stipules ovate-triangular, 6.5-7.5 x 3-4 mm, fringed, glabrous, caducous. Leaves petiolate; petioles 0.9-2 cm long, glabrous; blades membranous, elliptical to slightly obovate, the apex acuminate, the base attenuate, (6-)7-11(-13) x (2-)3-6 cm, glabrous above and below, drying dull green; secondary veins 8-10 pairs, diverging 65°-75°, eucamptodromous to brochidodromous, constantly arcuate, elevated below, glabrous, the axils lacking domatia and hairs; tertiary veins evident, orthogonal reticulate to percurrent. Inflorescences terminal, panicles of cymes; panicle branched to 3-4 degrees; main axis 3.5-9 cm long, the peduncle 2.5-7 cm long; secondary axes in 2 ranks, the first rank axes 2-4, the longer pair 0.8-1.2 cm long, the shorter pair 0.2-0.8 cm long, the second rank axes 4, equal, 0.3-0.7 cm long; cymes branched to 1-2 degrees; bracts and bracteoles irregular triangular, 0.7 x 0.8 mm, puberulent, fringed. Flowers pedicellate; pedicels 0.7-1 mm long; calyx cup-shaped, the tube 0.3-0.5 mm, the lobes 5, broadly triangular to barely evident, 0.2-0.3 x 0.5 mm, fringed; corolla white, the tube cylindrical, 2.5-3 x 1.2 mm, white pubescent in throat, the lobes 5(-6), triangular, spreading, 1.5 x 1 mm;

stamens 5(-6), the filaments 2.5-3 mm long in pins, not seen in thrums, the anthers 1 mm long; style 4.5 mm long in pins, not seen in thrums, the branches linear. Fruit not seen.

Distribution. Known only from the type collection from eastern Balancán, Tabasco in a region of evergreen forest and savanna with equatorial (tropical) climate.

Psychotria balancanensis may be recognized by its moderate-sized (1=7-11 cm) broad-elliptic leaves drying dull green to green-brown with conspicuous intersecondary veins and by its inflorescence with the secondary axes in 2 ranks near the apex of the peduncle. Only one flower morph has been seen; additional collections will reveal whether this species is indeed distylous. It differs from P. costivenia in having broader-elliptic leaves and smaller inflorescences with fewer (2 versus 4) ranks of secondary axes.

2. Psychotria cascajalensis Hamilton, sp. nov. Type. Panama. Coclé: N of Penonomé, between Llano Grande and Cascajal, rd. to Coclesito, 480 m, 2 May 1979 (fl), Hammel 7227 (holotype, MO-2901097; isotypes, ENCB, MO).

Foliis coriaceis nervis secundariis paucis et inflorescentiis P. olgae similibus, praecipue differt foliis multo parvioribus.

Tree 10 m tall; young stems glabrous to sparsely puberulent, the bark smooth; stipules oval, rounded, 6-7 x 3-3.5 mm, fringed, glabrous, caducous. Leaves petiolate; petioles 2-4 mm long, glabrous; flat above; blades coriaceous, elliptical, the apex acute, the base attenuate, 3.5-6(-7) x (1.5-)2-2.7 cm, glabrous above and below, drying dull red-brown to green-brown; secondary veins 4-6 pairs, diverging 55°-65°, brochidodromous with secondary loops inconspicuous, straight then arcuate near margin, not elevated below, glabrous, the axils lacking domatia or hairs; tertiary veins inconspicuous. Inflorescences terminal, panicles of cymes or glomerules; panicle branched to 3 degrees; main axis 6 cm long, the peduncle 2-3.5 cm long; secondary axes in 3 ranks, the first rank axes 2 or 4, the longer pair 1-2 cm long, the shorter pair 0.4-1.2 cm long, the second rank axes 2, 0.5-0.8 cm long, the third rank axes 2, 0.1-0.3 cm long; cymes branched to 1-2 degrees; bracts and bracteoles broad triangular, 1-2 mm long, red-brown pubescent. Flowers subsessile, the pedicels 0.5 mm long; calyx cup-shaped, the tube 0.8 mm long, the lobes 5, triangular to barely evident, to 0.3 x 0.8 mm, puberulent, fringed; corolla green-white, the tube cylindrical, 1.5 x 1.5 mm, thick white pubescent in throat, the lobes 5, triangular, 1.5 x 1 mm; stamens 5, the filaments not seen in pins, 1.5 mm long in thrums, the anthers 1 mm long; style not seen in pins, 1 mm long in thrums, the branches linear. Fruit not seen.

Distribution. Known only from the type collection from the foothills south of the divide in Coclé, Panama, at 480 m in a region of tropical moist to premontane wet forest with equatorial (mountainous) climate.

Psychotria cascajalensis may be recognized by its small (3.5-6 x 2-2.7 cm), coriaceous, elliptical leaves and robust pedunculate inflorescences with secondary axes 2(-4) per rank in three ranks. Only one flower morph was seen, with the stamens slightly longer than the style; the length difference is so slight as to suggest that there may indeed be only one morph in this species. *Psychotria cascajalensis* resembles most closely, in its coriaceous leaves, few secondary veins, and inflorescence form, *P. olgae*; the two may share a common ancestor.

3. *Psychotria chitariana* Dwyer & Hamilton, sp. nov. Type. Costa Rica. Cartago: 13 km E of Turrialba, hwy. to Limón, canyon of Río Chitarfa, 9°55'N, 83°36'W, 750-800 m, 10 May 1983 (fl), Liesner et al. 15400 (holotype, MO).

Differt a speciebus subgeneris *Psychotria* in Mesoamerica foliis grandibus obovatis apicibus rotundis vel obtusis et inflorescentiae axibus secundariis unifariis fasciculatisque terminaliter.

Shrub 1 m tall; young stems glabrous, the bark irregularly furrowed, with organic material accumulated in leaf axils; stipules not seen. Leaves petiolate; petioles ca. 1.5 cm long, glabrous, winged; blades membranous to chartaceous, obovate, the apex rounded to obtuse, the base attenuate, 28-33 x 13-15 cm, glabrous above and below, drying pale brown to greenish red-brown; secondary veins 16-19 pairs, diverging (50°-)60°-65°(-70°), brochidodromous, straight to arcuate near margin, elevated below, glabrous, the axils lacking domatia or hairs; tertiary veins evident, orthogonal reticulate, the intersecondaries conspicuous. Inflorescences terminal, dense globose panicles of cymes; panicle branched to 3 degrees; main axis 7.5 cm long, the peduncle 4.5 cm long; secondary axes in 1 rank plus terminal cluster, the first rank axes 2, 1 cm long, the clustered axes ca. 8, equal, 0.7-1 cm long; cymes branched to 1-2 degrees; bracts linear to triangular, 5 x 2.5 mm, glabrous. Flowers pedicellate, the pedicels 3-5 mm long; calyx cup-shaped, the tube 1 mm long, the lobes 5, barely evident, glabrous; corolla greenish white, the tube cylindrical, 4.5-5 x 1.5 mm, white pubescent in throat, the lobes 5, triangular, 2.3 x 1.5 mm; stamens 5, the filaments 4.5 mm long in pins, not seen in thrums, the anthers 1.5 mm long; style 7 mm long in pins, not seen in thrums, the branches minute. Fruit not seen.

Distribution. Known only from the type collection from Cartago, Costa Rica, at 750-800 m in an area of premontane to lower montane rain forest with equatorial (mountainous) climate.

Psychotria chitariana may be recognized by its large (28-33 x 13-15 cm) obovate leaves with rounded to obtuse apex and its inflorescence secondary axes in one rank plus a terminal cluster. Only the long-style flower morph has been collected, but it appears perfectly normal; further collections are needed to confirm or deny the existence of distyly in this species. Its low habit with organic material accumulated in leaf axils and reduced globose inflorescences suggest that it is related to P. calophylla Standley and its allies.

4. Psychotria cocosensis Hamilton, sp. nov. Type. Costa Rica. Cocos Island, 18 Jun 1898 (fr), Pittier 12375 (holotype, US).

Differt a P. panamensis foliis coriaceis et fructibus grandibus globosis vel ellipsoideis calycibus persistentibus cupulatis coriaceis.

Shrub; young stems glabrous, the bark furrowed longitudinally; stipules lanceolate, 12-35 x 2-5 mm, glabrous, caducous. Leaves petiolate; petioles 7-14 mm long, glabrous; blades membranous to coriaceous, elliptical, the apex acuminate to subcaudate, the base attenuate, (12-)14-17 x 5.5-7 cm, glabrous above and below, drying red-brown to green-brown; secondary veins (9-)10-12 pairs, diverging 45°-50°, eucamptodromous to brochidodromous, straight then arcuate near margin, elevated below in less coriaceous leaves, the axils with small domatia below; tertiary veins inconspicuous to evident, percurrent to reticulate. Inflorescences terminal, panicles of cymes; panicle branched to 2-3 degrees; main axis 1 cm long, the peduncle lacking; secondary axes in 2 ranks, the first rank axes 2, 0.6 cm long, the second rank axes 2, reduced; cymes branched to 1 degree; bracts triangular, 0.7-1.5 mm long, glabrous. Flowers pedicellate, the pedicels 2-3 mm long; calyx cup-shaped, the tube 1 mm long, the lobes 5, broadly triangular to barely evident, glabrous; corolla color unknown, the tube cylindrical, 3 x 3 mm, white pubescent in throat, the lobes 5, linear, 4 x 2 mm; stamens 5, the filaments 7 mm long, the anthers 2 mm long; style 9-10 mm long, the branches minute, linear. Fruit when dry spherical to ellipsoidal, 6 mm long, 5.5-6 mm in diameter, drying dark red-brown; persistent calyx cuplike, coriaceous, 1.5 mm long; seeds 2, the dorsal surface with 4 shallow irregular longitudinal furrows, the ventral surface with 2 deep irregular longitudinal furrows.

Distribution. Known only from Cocos Island at 50 m elevation in premontane rain forest. It has been collected in fruit in January and June.

Additional specimens examined. COSTA RICA. Cocos Island: La vallée de Chatham, 50 m, Jan 1902 (fl, fr), Pittier 16279 (GH, US).

Psychotria cocosensis may be recognized by its close resemblance to P. panamensis and by its coriaceous leaves and large (6 x 5.5-6 mm)

spherical to ellipsoidal fruit with persistent calyx a coriaceous cup ca. 1.5 mm long. Only one morph has been seen; perhaps it is a long-style morph, but both stamens and style are exerted, with the latter only slightly longer, suggesting the possibility of breakdown of distyly in this island endemic. *Psychotria cocosensis* may have diverged from *P. panamensis* stock on Cocos Island and differs from its supposed progenitor in the characters mentioned above.

5. *Psychotria costivenia* Grisebach var. *altorum* (Standley & Steyermark) Hamilton, comb. nov. --*Psychotria altorum* Standley & Steyermark, Publ. Field Mus. Nat. Hist., Bot. Ser. 23: 86. 1944. Type. Guatemala. Quezaltenango: Montaña Chicharro, on lower SE-facing slopes of Volcán Sta. María, 2-4 mi S of Sta. María de Jesús, 1400-1500 m, 17 Jan 1940 (fl), Steyermark 34302 (holotype, F).

6. *Psychotria dressleri* (Dwyer) Hamilton, comb. nov. --*Cephaelis dressleri* Dwyer, Ann. Missouri Bot. Gard. 67(1): 68, fig. 15. 1980. Type. Panama. San Blas: SE of Puerto Obaldía, 18 Aug 1971 (fl), Croat 16801 (holotype, MO).

7. *Psychotria dwyeri* Hamilton, sp. nov. Type. Mexico. Oaxaca: Dto. Choápam (Santiago Choapan), Sta. María, Montaña Sta. María, 1500 m, 7 Apr 1938 (fr), Mexia 9265 (holotype, NY; isotypes, B, F, GH, MO, US).

Inflorescentiis et characteribus vegetativis *P. panamensis* similibus, praecipue differt fructibus parvis globosis.

Shrub or small tree, 3-6 m tall; young stems glabrous, the bark smooth; stipules sheathing, triangular, 8-13 x 3-5 mm, glabrous, caducous. Leaves petiolate; petioles (5-)15-40(-45) mm long, glabrous; blades membranous, elliptical, the apex cuspidate, the base cuneate to attenuate, (12-)15-23 x 5-10 cm, glabrous above, glabrous to minute white puberulent below, drying green-brown, paler below; secondary veins (12-)15-18, diverging 55°-70°(-80°), eucamptodromous, straight to slightly arcuate, elevated below, often white puberulent below, the axils lacking domatia or hairs; tertiary veins evident, orthogonal reticulate, the loops near margin evident. Inflorescences terminal, panicles of cymes; panicle branched to 4 degrees; main axis 5.5-10.5 cm long, the peduncle lacking or to 2 cm long; secondary axes in 4-5(-6) ranks, the first rank axes 2, (2.5-)7-9 cm long, the second rank axes 2(or 4), (2-)3-5.5 cm long, the third rank axes 2, (0.5-)1.5-4 cm long, the fourth rank axes 2(or 4), (0.5-)1-2 cm long, the fifth rank axes 2, 0.6-0.8 cm long, the sixth rank axes 2, 0.3 cm long; cymes branched to 1-2 degrees; bracts inconspicuous. Flowers pedicellate, the pedicels 0.5-1.5 mm long; calyx cup-shaped, the tube 0.5 mm long, the lobes 5, broad

triangular, minute, glabrous to minutely fringed; corolla white, the tube cylindrical, 2-2.5 x 2 mm, white pubescent in throat, the lobes 5, triangular, 1.5-2 x 1 mm; stamens 5, the filaments 2-2.5 mm long in pins, 2.5-3 mm long in thrums, the anthers 1 mm long; style 4-4.5 mm long in pins, 1.5-2 mm long in thrums, the branches linear in pins, clublike in thrums. Fruit when dry spherical, 4.5-5 mm long, 4.5-5 mm in diameter, maturing red, drying deep red-brown; calyx persistent as a beak, to 0.8 mm long; seeds 2, the dorsal surface with 4 irregular longitudinal furrows, the ventral surface with 2 deep longitudinal furrows.

Distribution. Known from Veracruz and Oaxaca, Mexico, at elevations of 50-1500 m in a region of subevergreen forest with tropical to tropical (mountainous) climate. It has been collected in flower in April and May and in fruit April, June, and December.

Additional specimens examined. MEXICO. Oaxaca: Ubero, 30-90 m, Jun 1937 (fr), Ll. Williams 9475 (F). Veracruz: San Lorenzo Tenochtitlan, 9 Dec 1967 (st), Chavelas et al. ES-2832 (MEXU); 9 Dec 1967 (fr), Chavelas et al. ES-2843 (MEXU); El Mirador, 1853 (fl), F. Muller 424 (NY); Apr 1932 (fl), Purpus 14124 (A, F); Zacuapan, 1915 (fl), Purpus 7525 (MO, US); May 1926 (fl), Purpus 10705 (US); Jalapa, 1200-1350 m, 1894 (fl), C. Smith 1844 (F, US).

Psychotria dwyeri resembles, in inflorescence and vegetative characters, P. panamensis and is distinguished from it most easily in fruit. Psychotria dwyeri has spherical (versus ellipsoidal to obovoid) fruit 4-5.5 mm (versus 4.5-8 mm) long.

Psychotria dwyeri is named for Dr. John D. Dwyer, who has contributed extensively to our understanding of Rubiaceae in Central America and who provided invaluable assistance to the author during his doctoral study.

8. Psychotria fosteri Hamilton, sp. nov. Type. Panama. Veraguas: Playa Rosario, northern tip of Coiba Island, 26 Aug 1970 (fl, fr), Foster 1605 (holotype, DUKE; isotypes, F, GH, MO).

Inflorescentiis et fructibus P. chagensis similibus, praecipue differt foliis grandioribus et stipulis longioribus.

Shrub ca. 1 m high; young stems glabrous, the bark slightly furrowed longitudinally; stipules sheathing, narrow, with 2 triangular lobes, the sheath 8-12 x 1-3 mm, the lobes 2-3 mm long, fringed, with darker red-brown midrib leading to apex of each lobe, caducous. Leaves petiolate; petioles 5-10 mm, glabrous; blades membranous, elliptic-obovate, the apex acuminate to mucronate, the base attenuate, (6-)8-12 x (2-)3-5 cm, glabrous above and below, drying green-brown above, deep red-brown below; secondary veins 11-14 pairs, diverging 70°-80°, brochidodromous, slightly arcuate,

prominulous below, glabrous, drying deeper red-brown than blade, the axils lacking domatia or hairs; tertiary veins inconspicuous, reticulate. Inflorescences terminal, fascicles of several flowers, ca. 8 mm long, 10 mm across; peduncles lacking; bracts broadly triangular, irregularly cleft, ca. 5 x ca. 5 mm, fringed. Flowers sessile; calyx cup-shaped, the tube 1.5 mm long, the lobes 5, triangular, 0.5-1 x 0.5 mm, slightly fringed; corolla white, the tube cylindrical, 3.5 x 0.8 mm, white pubescent in throat, the lobes 5, triangular, 2 x 0.7 mm; stamens 5, the filaments 3 mm long in pins, not seen in thrums, the anthers 0.5 mm long; style 4-4.5 mm long in pins, not seen in thrums, the branches linear. Fruit when dry ellipsoidal, 5-6 mm long, 2.5-3 mm in diameter, maturing orange, drying dark red-brown; calyx persistent, the tube 1-1.5 mm long, the lobes ca. 1 mm long; seeds 2, the dorsal surface with 5 longitudinal furrows, the ventral surface with 2 longitudinal furrows.

Distribution. Known only from the type collection from Coiba Island, Panama, in tropical moist forest with tropical (equatorial) climate.

Psychotria fosteri may be recognized as a magnified version of P. chagrensis, having an inflorescence consisting of a fascicle of flowers and fruit ellipsoidal with a conspicuous persistent calyx. Only the long-style flower morph has been seen and much more flowering material needs to be collected. Psychotria fosteri may have diverged from P. chagrensis on Coiba Island. Psychotria fosteri differs from its supposed progenitor in having larger (sheath 1=8-12 versus 4-7 mm) biaristate (versus aristate) stipules, larger mature leaves (8-12 x 3-5 versus 4-7.5 x 1.5-2.5 cm), shorter calyx lobes (0.5-1 mm versus 2-2.5 mm), and much shorter corolla tubes (3.5 versus 6-7 mm).

Psychotria fosteri is named for Dr. Robin Foster, whose floristic knowledge of the neotropics is well known and who provided valuable help to the author during his fieldwork in Panama.

9. Psychotria hornitensis Dwyer & Hamilton, sp. nov. Type. Panama. Chiriquí: Ridge and summit of Cerro Hornito, above Los Planes de Hornito, 8°42'N, 82°06'W, 2100 m, 14 Mar 1982 (fl, early fr), Knapp et al. 4198 (holotype, MO).

Differt a speciebus subgenus Psychotria in Mesoamerica foliis parvis angustis et inflorescentiis parvis floribus paucis.

Shrub 2 m tall; young stems glabrous, the bark deeply furrowed longitudinally; stipules sheathing, ovate to lanceolate, 3-4 x 1-1.5 mm, glabrous, caducous. Leaves subsessile; petioles to 2 mm long, glabrous; blades membranous, narrow elliptic, the apex long acuminate, the base attenuate, 2.5-3.5 x 0.5-0.7 cm, glabrous above and below, drying dull green-brown above, dull green below;

secondary veins 5-6 pairs, diverging ca. 50°, eucamptodromous, constantly arcuate, not evident above, barely evident below, glabrous, the axils lacking domatia or hairs; tertiary veins inconspicuous. Inflorescences terminal, panicles of 3-5 individual flowers or cymes; panicle branched to 2 degrees; main axis 2.5-3 cm long, the peduncle 1.5-2 cm long; secondary axes in 1-2 ranks, the first rank axes 1-2, 0.3-0.4 cm long, the second rank axes 1-2, 0.1 cm long; cymes branched to 1 degree; bracts and bracteoles linear, 1.5-2 x 0.7 mm, glabrous to puberulent within near base. Flowers sessile to pedicellate, the pedicels to 1 mm long; calyx cup-shaped, the tube ca. 1 mm long, the lobes 5, triangular, 0.8-1 x 0.8 mm, glabrous; corolla white, the tube cylindrical, 3.5-4 x 1.5 mm, white pubescent in throat, the lobes 5, ovate, 1-1.5 x 0.8 mm; stamens 5, 3-4 mm long, the anthers 1 mm long; style 4-6 mm long, the branches short, linear. Fruit not seen in mature state.

Distribution. Known only from the type locality, Cerro Hornito, Chiriquí, Panama, at ca. 2000 m elevation in low montane rain forest with equatorial (mountainous) climate. It has been collected in flower in February and March and with immature fruit in March.

Additional specimen examined. PANAMA. Chiriquí: Ridge nr. top of Cerro Hornito, 1950 m, 15 Feb 1979 (fl), Hammel 6189 (MO).

Psychotria hornitensis may be recognized readily by its small narrow (2.5-3.5 x 0.5-0.7 cm) leaves and small (l=2.5-3 cm) few-flowered inflorescences. The one flower morph found does not show significant differentiation in length between the style and stamens; perhaps distyly has broken down in this species. Psychotria hornitensis appears most similar to P. chiriquina.

10. Psychotria insueta (Dwyer) Hamilton, comb. nov. --Cephaëlis insueta Dwyer, Ann. Missouri Bot. Gard. 67(1): 73. 1980. Type. Panama. Veraguas: 11 km from Escuela Agrícola Alto de Piedra, along Río Dos Bocas, Atlantic slope, 15 Nov 1974 (early fr), Mori & Kallunki 3108 (holotype, MO).

11. Psychotria jinotegensis Nelson, Molina, and Standley var. morazanensis Hamilton, var. nov. Type. El Salvador. Morazán: Easternmost peak, Montes de Cacaguatique, nr. summit on N side, 13°46'N, 88°13'W, 1500 m, 25 Dec 1941 (fr), Tucker 610 (holotype, US; isotypes, F, NY).

Differt a P. jinotegensis var. jinotegensis aspectu glabro.

Shrub: young stems very sparsely tomentose. Leaves: petioles glabrous; blades glabrous above and below, drying grey-green to pale red-brown; secondary veins 9-11 pairs, glabrous, the axils with tufts of whitish hairs below. Fruit when dry glabrous.

Distribution. Known only from the type collection from eastern El Salvador, at ca. 1500 m.

12. *Psychotria lamarinensis* Hamilton, sp. nov. Type. Costa Rica. Alajuela: E of Río San Rafael, W of La Marina, 10°23'N, 84°23'W, 500 m, 19 May 1968 (fl), Burger & Stolze 5062 (holotype, NY; isotype, MO).

Nervatura et inflorescentiis *P. quinqueradiata* similibus, praecipue differt foliis longioribus et corollae tubis brevioribus.

Shrub 1.8-2 m tall; young stems glabrous, the bark pale, smooth; stipules ovate, 12 x 8 mm, glabrous, caducous. Leaves petiolate; petioles 5-7 mm long, glabrous; blades membranous, elliptic, the apex acuminate, the base attenuate to attenuate-truncate, (13-)16-20 x (5-)7.5-9.5 cm, glabrous above and below, drying green-brown above, red-brown below; secondary veins 9-11 pairs, diverging 70°-85°, eucamptodromous, constantly arcuate, elevated below, glabrous, the axils lacking domatia or hairs; tertiary veins evident, orthogonal reticulate. Inflorescences terminal, condensed globose panicles of cymes; panicle branched to 3 degrees; main axis 1.5-2 cm long, the peduncle lacking; secondary axes in 2-3 ranks, the first rank axes 4, subequal, 0.5-1.5 cm long, the second rank axes 4, subequal, 0.4-0.7 cm long, the third rank axes 4, subequal, 0.2 cm long; cymes branched to 1-2 degrees; bracts triangular, 2 mm long, glabrous; bracteoles not evident. Flowers pedicellate, the pedicels 0.5-1.5 mm long; calyx cup-shaped, 0.5 mm long, the lobes not evident to barely evident, glabrous; corolla white, the tube cylindrical, 3 x 1 mm, white pubescent in throat, the lobes 5, linear with 1.5 mm linear extension from near apex, 2 x 1 mm; stamens 5, the filaments not seen in pins, 3.5-4 mm long in thrums, the anthers 0.7 mm long; style not seen in pins, 2-2.5 mm long in thrums, the branches linear. Fruit not seen.

Distribution. Known only from the type locality near La Marina, Alajuela, Costa Rica, at ca. 500 m elevation in a region of tropical wet to premontane wet forest with equatorial (mountainous) climate. It was collected in flower on May 19.

Additional specimens examined. COSTA RICA. Alajuela: E of Río San Rafael, W of La Marina, 10°23'N, 84°23'W, 500 m, 19 May 1968 (fl), Burger & Stolze 5069 (MO, NY).

Psychotria lamarinensis may be recognized by its large, broad-elliptical leaves with the base narrowly subcordate, its reduced globose inflorescence drying red-brown, and its broad-ovate stipules. Only a short-style flower morph has been seen of this little-collected species. *Psychotria lamarinensis* may be a local derivative from *P. quinqueradiata*, from which it differs in having much larger leaves with secondary veins diverging 70°-85° instead of 45°-60° and shorter (3 mm versus 4-5 mm) corolla tubes.

13. Psychotria laselvensis Hamilton, sp. nov. Type. Costa Rica. Heredia: Finca La Selva, OTS field station, Río Puerto Viejo just E of its junction with Río Sarapiquí, ca. 100 m, 19 May 1980 (fl), Hammel 8706 (holotype, DUKE).

Differt a P. graciliflora et P. orosiana foliis grandioribus nervis secundariis pluribus inflorescentiis grandioribus.

Shrub 1.5-4 m tall; young stems glabrous, the bark smooth; stipules triangular, 3-4 x 3 mm, glabrous, caducous. Leaves subsessile to petiolate; petioles 1-7 mm long, glabrous; blades membranous to chartaceous, elliptical, the apex acuminate, the base attenuate to caudate to subcordate, (5-)7.5-13(-16) x (1.5-)2.5-5 cm, glabrous above and below, drying red-black; secondary veins (8-)10-13 pairs, diverging (65°-)80°-85°, brochidodromous, constantly arcuate, prominulous below, glabrous, the axils often with domatia below; tertiary veins evident, reticulate. Inflorescences terminal, spreading panicles of cymes; panicle branched to 4 degrees; main axis 6.5-15 cm long, the peduncle 4-9 cm long; secondary axes in 4-5 ranks, the first rank axes 2 or 4, the longer pair 1.8-4.2 cm long, the shorter pair if present 0.5-0.7 cm long, the second rank axes 2 or 4, the longer pair 0.6-1.8 cm long, the shorter pair when present 0.2 cm long, the third rank axes 2, 0.3-0.9 cm long, the fourth rank axes 2, 0.1-0.4 cm long, the fifth rank axes 2, 0.2 cm long; cymes branched to 1 degree; bracts lanceolate to triangular, 2-3 mm long, glabrous; bracteoles lanceolate, 0.5-1 mm long, glabrous. Flowers pedicellate, the pedicels ca. 0.5 mm long; calyx cup-shaped, the tube 0.3 mm long, the lobes 5, triangular, barely evident, minutely ciliate; corolla white, the tube cylindrical, 2.5-3 x 1.2 mm, white pubescent in throat, the lobes 5, lanceolate, 2 x 1 mm; stamens 5, the filaments 2 mm long in pins, 3-3.5 mm long in thrums, the anthers 1-1.2 mm long; style 5-5.5 mm long in pins, 2.5-3 mm long in thrums, the branches linear, recurved. Fruit not seen.

Distribution. Known only from the type locality, the Organization for Tropical Studies field station at Finca La Selva, Río Puerto Viejo, Heredia, Costa Rica, at ca. 100 m elevation in tropical wet forest with equatorial climate. It has been collected in flower February-May and with immature fruit in July.

Additional specimens examined. COSTA RICA. Heredia: Finca La Selva, OTS field station, Río Puerto Viejo, 100 m, 1 May 1981 (fl), Folsom 9958 (DUKE); 4 May 1981 (fl), Folsom 10004 (DUKE); 18 Feb 1980 (fl), Hammel 7778 (DUKE); 1 Jul 1981 (early fr), Hammel 10938 (DUKE); 27 Mar 1982 (fl), Hammel 11491 (DUKE).

Psychotria laselvensis may be recognized by its resemblance to P. graciliflora and P. orosiana and its generally larger inflorescences and leaves. It differs from P. orosiana in having leaf blades to 13(-16) cm (versus 10.5 cm) long, more secondary veins (10-13 versus 7-9), inflorescence secondary axes commonly 4 (versus 2) in the

first rank, and usually shorter corolla tubes (2.5-3 versus 2.5-5 mm). These three closely related species--*P. graciliflora*, *P. orosiana*, and *P. laselvensis*--form a continuum with regard to many quantitative characters, but their recognition as species is straightforward.

14. *Psychotria mirandae* Hamilton, sp. nov. Type. Mexico. Chiapas: Berriozabal a Las Vistas, 17 Jul 1949 (fl), Miranda 5395 (holotype, US; isotype, MEXU).

Foliis et inflorescentiis *P. nervosa* similibus, praecipue differt fructibus latioribus et calycibus persistentibus conspicuis tubiformibus.

Shrub ca. 1 m tall; young stems red-brown tomentose, the bark pale, smooth; stipules sheathing, rounded at apex, 4-8 x 3-4 mm, red-brown tomentose outside, caducous. Leaves subsessile to petiolate; petioles 1-4 mm long, red-brown tomentose; blades membranous, narrowly obovate, the apex caudate, the base attenuate, 6-12 x 2-4 cm, glabrous above and below, drying dull red-brown; secondary veins 7-10 pairs, diverging 48°-55°, eucamptodromous, slightly arcuate, prominent below, red-brown sparsely tomentose below, the axils with small tufts of hair below; tertiary veins evident, reticulate to slightly percurrent. Inflorescences terminal, fascicles of flowers or with several short axes, 1-1.5 cm long, 1-2.5 cm across; peduncle lacking; bracts triangular, 0.5 x 0.5 mm, glabrous to sparsely tomentose. Flowers subsessile, the pedicels 1-2 mm long; calyx cylindrical, the tube 2-2.5 mm long, the lobes 5, linear, 2-3 x 1.2 mm, sparsely ciliate on margin; corolla white(?), the tube cylindrical, 3 x 1 mm, white pubescent in throat, the lobes 5, linear, 1.5-2 x 0.5 mm; stamens 5, the filaments not seen in pins, 4 mm long in thrums, the anthers 0.8 mm long; style not seen in pins, 2.5-3 mm long in thrums, the branches club-shaped. Fruit when dry ellipsoidal, 5-7 mm long, 4-5 mm in diameter, maturing red, drying red-brown, red-brown tomentose; calyx persistent, the tube 2-2.5 mm long, the lobes ca. 2 mm long; seeds 2, the dorsal surface with 5 longitudinal furrows, the ventral surface with 2 longitudinal furrows.

Distribution. Limited to eastern Veracruz and northwestern Chiapas, Mexico, at 700-1000 m elevation in evergreen forest with equatorial (tropical) to tropical climate. It has been collected in flower in March and May-July and in fruit in August and December.

Additional specimens examined. MEXICO. Chiapas: Mpio. Berriozabal, 13 km N or Berriozabal nr. Pozo Turipache and Finca El Suspiro, 900 m, 15 May 1973 (fl), Breedlove 35316 (MEXU); Cerro de San Martín, Mar 1845 (fl), Galeotti 2684 (F-3 sheets, US); Berriozabal a Las Vistas, 4 Dec 1949 (fr), Miranda 5834 (MEXU, US); San Fernando, Predio del Rosario, 21 Jun 1951 (fl), Miranda 7216

(MEXU). Veracruz: Mpio. Catemaco, cerro entre Zapoapan y San Juan Seco al SW de Lago Catemaco, 700 m, 7 Jun 1972 (fl), Beaman 6094 (F, MEXU-2 sheets); region of San Andres Tuxtla, nr. Zapoapan, SE of Catemaco, 17 Aug 1953 (fr), Dressler & Jones 93 (GH, NY, US); Catemaco, 25 Mar 1956 (fl), Paray 1946 (ENCB); km 156.5 of Veracruz-Coatzacoalcos rd., 13 Jul 1974 (fl), Sohmer 9409 (MEXU).

Psychotria mirandae may be recognized first by its marked resemblance to *P. nervosa* and second by its contracted, sometimes fasciculate, inflorescences and wider ($d=4-5$ mm versus 2.5-3 mm in *P. nervosa*) fruit with persistent calyx a conspicuous tube and lobes ca. 4 mm long. Only the short-style flower morph has been seen in this little-collected species. *Psychotria mirandae* is named for Dr. Faustino Miranda, eminent Mexican botanist and prolific collector.

15. *Psychotria monteverdensis* Dwyer & Hamilton, sp. nov. Type. Costa Rica. Guanacaste-Puntarenas: Al oeste de Reserva de Monteverde, 1520-1590 m, 24 Jun 1977 (fl), Dryer 1531 (holotype, MO).

Differt a *P. psychotriifolia* et speciebus affinis inflorescentiae axibus secundariis bifariis axibus distalibus sessilibus et corollis coriaceis.

Shrub 2.5 m tall; young stems glabrous, the bark irregularly furrowed longitudinally; stipules sheathing, truncate with 2 aristate appendages from apical corners, 7-8 x 4 mm, the extensions 2 mm long, glabrous, caducous. Leaves sessile to petiolate; petioles to 0.5 cm long, glabrous; blades subcoriaceous, elliptic, the apex acuminate, the base cuneate, (9-)13-15 x (2-)3-4.5 cm, glabrous above and below, drying pale green-brown; secondary veins 9-11 pairs, diverging 45°-60°, brochidodromous with collector vein undulating near margin, constantly arcuate, prominent below, glabrous, the axils lacking domatia or hairs; tertiary veins inconspicuous, orthogonal reticulate. Inflorescences terminal, few-branched panicles of glomerules; panicle branched to 2 degrees; main axis 3.6 cm long, peduncle 2.4 cm long; secondary axes in 2 ranks, the first rank axes 2, 0.6-0.7 cm long, the second rank axes 2, reduced; bracts linear, 8 mm long, ciliate; bracteoles ovate, 3-4 mm long, ciliate. Flowers sessile to pedicellate, the pedicels to 1.5 mm long; calyx cup-shaped, the tube ca. 1 mm long, the lobes 5, triangular to lanceolate, to 1 mm long, ciliate; corolla green-yellow, leathery, the tube cylindrical, 3 x 2 mm, pubescent in throat, the lobes 5, triangular with robust keel-like appendages, 2 x 1 mm; stamens 5, the filaments 2.5 mm long, the anthers 1.2 mm long; style 4 mm long, the branches clublike. Fruit not seen.

Distribution. Known only from the type collection from near the Monteverde Reserve near the Guanacaste-Puntarenas border, Costa Rica, at ca. 1550 m elevation in low montane wet forest with equatorial (mountainous) climate.

Psychotria monteverdensis may be recognized by its subcoriaceous medium-sized (13-15 x 3-4.5 cm) leaves with collector vein, its small (l=3.6 cm) inflorescences with secondary axes 2 per rank in 2 ranks, those of the second rank sessile, and its leathery greenish corollas with keel-like abaxial appendages on the lobes. Only one flower was dissected, but the minute separation (0.3 mm) between stigma and anthers suggest breakdown of distyly in this species. Its sheathing biaristate stipules, collector vein, inflorescence form, and appendaged corolla lobes places P. monteverdensis among P. calophylla and its allies.

16. Psychotria neillii Hamilton & Dwyer, sp. nov. Type. Nicaragua. Río San Juan: Río Sábalo, 2 km al O de Sta. Eduvigis, 11°03'N, 84°29'W, 80 m, 18 Feb 1984 (fl,fr), P.P. Moreno 23060 (holotype, MO).

Differt a P. micrantha foliis parvioribus nervis secundariis paucioribus et inflorescentiae axibus tenuibus et fructibus grandioribus.

Shrub or small tree, 1-4 m tall; young stems ferrugineous, the bark smooth; stipules sheathing, lanceolate, biacuminate, 10-14 x 3-5 mm, ferrugineous, ciliate, caducous. Leaves petiolate; petioles 4-8 mm long, ferrugineous; blades membranous, oblanceolate, the apex acuminate, the base cordate, 10-18 x 4-7.5 cm, glabrous above, the midvein basally ferrugineous, sparsely ferrugineous below, drying green-brown to red-brown; secondary veins 12-15 pairs, diverging (60°-65°-75°, brochidodromous, constantly arcuate, elevated below, ferrugineous below, the axils lacking domatia or hairs; tertiary veins evident to conspicuous, percurrent, the quaternaries orthogonal reticulate. Inflorescences terminal or pseudoaxillary, panicles of cymes; panicle branched to 3-4 degrees, the axes delicate; main axis (6-)9-15 cm long, the peduncle (3.5-)6-8 cm long; secondary axes in 3 ranks, the first rank axes 4, the longer pair (1.5-)3-6 cm long, the shorter pair (0.8-)1-3.5 cm long, the second rank axes 2 or 4, (0.8-)1.4-3.2 cm long, the shorter pair when present ca. 1.5 cm long, the third rank axes 2, 0.6-1.4 cm long; cymes branched 2-3 degrees; bracts triangular, 4 mm long, ferrugineous; bracteoles linear, 0.5 mm long, ferrugineous. Flowers sessile to pedicellate, the pedicels to 1 mm long; calyx cup-shaped, the tube 0.3 mm long, the lobes 5, triangular, 0.2 mm long, ferrugineous; corolla cream, the tube cylindrical, 1.5-2 x 1 mm, white pubescent in throat, red-brown pubescent without, the lobes 5, triangular, 1 x 0.8 mm; stamens 5, the filaments not seen in pins, 2.5 mm long in thrums, the anthers 0.8 mm long; style not seen in pins, 2 mm long in thrums, the branches linear. Fruit when dry ellipsoidal to obovoid, 5-7 mm long, 3-3.5 mm in diameter, maturing red, drying dark red-brown, sometimes puberulent; persistent calyx inconspicuous or a minute beak; seeds 2, the dorsal surface with 3 deep longitudinal furrows, the ventral surface with 2 shallow longitudinal furrows.

Distribution. Known from Caribbean coastal Costa Rica and just north into Nicaragua, at 80-400 m elevation in tropical moist to wet forest with equatorial climate. It has been collected in flower in January, February, and April and in fruit in February and May.

Additional specimens examined. NICARAGUA. Río San Juan: Nr. Caño Chontaleño, 20 km NE of El Castillo, 200 m, 18-21 Apr 1978 (fl), Neill & Vincelli 3503 (MO). COSTA RICA. Heredia: Magsasay, entre el campamento Canta Rana y Río Peje, 400 m, 14 Jan 1983 (fl), Chacón 76 (MO). Limón: 7 km SW of Bribri, 100-250 m, 4 May 1983 (early fr), L.D. Gómez et al. 20357 (MO-2 sheets).

Psychotria neillii may be recognized by its great resemblance to P. micrantha and its delicate ferruginous inflorescence axes. Only the short-style flower morph has been seen in this seldom-collected species. Psychotria neillii differs from P. micrantha in having smaller (1-10-18 versus 20-32 cm) mature leaves with fewer (12-15 versus 20-26) secondary veins, delicate inflorescence axes, and larger (1=5-7 mm versus 4 mm) fruit.

Psychotria neillii is named for Dr. David Neill, whose recent collections from Nicaragua have proven extremely valuable.

17. Psychotria pacorensis Hamilton, sp. nov. Type. Panama. Panama: Vic. Cerro Jefe, Altos de Pacora, 720 m, 18 Dec 1980 (early fr), Antonio 3241 (holotype, MO; isotype, ENCB).

Nervatura et fructibus P. psychotriifolia et speciebus affinibus similibus, praecipue differt foliis nervis tertiariis conspicuis arcibus multis prope marginem folii.

Shrub 2-3 m tall; young stems minute red-brown puberulent, the bark longitudinally grooved and fluted; stipules ovate, 10 x 4 mm, glabrous, caducous. Leaves petiolate; petioles 5-13 mm long, glabrous; blades membranous, elliptic to obovate, the apex acute to caudate, the base cuneate, (13-)16-25 x (4-)5-10 cm, glabrous above, glabrous below except on veins, drying red-brown, paler below; secondary veins 12-14 pairs, diverging 70°-80°, eucamptodromous to brochidodromous, constantly arcuate, elevated below, minutely puberulent below, the axils lacking domatia or hairs; tertiary veins conspicuous, orthogonal reticulate, the percurrent tertiaries especially conspicuous, the tertiary arches near margin numerous. Inflorescences terminal, panicles of cymes; panicle branched to 3 degrees; main axis 4.5 cm long, the peduncle 3.5 cm long; secondary axes in 3 ranks, the first rank axes 4, the longer pair 0.5-0.6 cm long, the shorter pair 0.3 cm long, the second rank axes 4, the longer pair 0.2-0.3 cm long, the shorter pair reduced, the third rank axes 2, 0.2 cm long; cymes branched to 1-2 degrees; bracts and bracteoles broad, to 1 mm long, fringed. Flowers sessile to pedicellate, the pedicels to 2 mm long; mature flowers not seen.

Fruit when dry ellipsoidal, 5.5-7 mm long, 3.5-5 mm in diameter, maturing purple, drying red-brown; persistent calyx cup ca. 0.5 mm long; seeds 2, the dorsal surface with 4-5 deep longitudinal furrows, the ventral surface with 2 shallow longitudinal furrows.

Distribution. Known only from the Altos de Pacora region near Cerro Azul and Cerro Jefe, eastern Panama province, Panama, at ca. 750 m elevation in premontane wet forest with tropical (equatorial) climate. It has been collected with immature fruit in December and in fruit in February.

Additional specimens examined. PANAMA. Panama: Cerro Jefe, 6 mi past Cerro Azul on rd. to Altos de Pacora, 780 m, 19 Feb 1981 (fr), Sytsma & D'Arcy 3689 (MO-2 sheets).

Psychotria pacorensis may be recognized by its large (16-25 x 5-10 cm) leaves drying red-brown and with brochidodromous veins with secondary loops (not marginal collector vein) and conspicuous tertiary veins including numerous arches between the secondaries and the margin. Its brochidodromous venation and ellipsoidal fruit with persistent calyx cup recommend its placement in the "calophylla" group, within which its inflorescence is unique in having 4, not 2, secondary axes in the first rank.

18. *Psychotria panamensis* Standley var. *compressicaulis* (K. Krause) Hamilton, comb. nov. --*Psychotria compressicaulis* K. Krause, Bot. Jahrb. Syst. 54: Beibl. 119: 44. 1916. Type. Costa Rica. Cartago: Tuis, 600 m, Jul 1898 (fl), Pittier 12412 (holotype, B, destroyed, photo, GH; isotype, US).

19. *Psychotria panamensis* Standley var. *ixtlanensis* Hamilton, var. nov. Type. Mexico. Oaxaca: Dto. de Ixtlán, 21.4 km al S de Valle Nacional, 17°41'N, 96°18'W, 1140 m, 28 Nov 1979 (fr), Wendt et al. 2258 (holotype, MEXU-317322; isotype, ENCB).

Differt a varietatibus ceteris *P. panamensis* inflorescentiae axe primario brevi axibus secundariis paucioribus et fructibus obovoideis.

Shrub 2-4 m tall; stipules lanceolate-acuminate, (10-)30-60 x (2.5-)5-7 mm, minutely puberulent. Leaves: blades membranous, the base cuneate to attenuate, (9-)16-21 x (3-)5-7.5 cm, drying green-brown; secondary veins 12-17 pairs, the axils lacking domatia or hairs; tertiary veins inconspicuous, orthogonal reticulate. Inflorescences: panicle branched to 3-4 degrees; main axis 1.5-3 cm long, the peduncle lacking; secondary axes in 3(-4) ranks, the first rank axes 4 (or 2), subequal, 0.8-2.2 cm long, the second rank axes 2, 0.4-1.0 cm long, the third rank axes 2, 0.2-0.6 cm long, the fourth rank axes 2, 0.2 cm long; cymes branched to 1-2 degrees.

Flowers: corolla cream, the tube 3 x 1.5 mm, the lobes triangular, 1.5 x 1 mm; stamens 5, the filaments 2-2.5 mm long in pins, not seen in thrums; style 4 mm long in pins, not seen in thrums, the branches short, clublike. Fruit when dry obovoid, 5-6 mm long, 4-4.5 mm in diameter, drying dark red-brown to red-black; persistent calyx inconspicuous or a minute beak to 0.5 mm long; seeds 2, the dorsal surface with 4 deep irregular longitudinal furrows, the ventral surface with 2 incompletely divided central plus 2 deep lateral longitudinal furrows.

Distribution. Known only from type region of Ixtlán, Oaxaca, Mexico, at ca. 900-1140 m elevation in a region of evergreen to subevergreen forest with tropical (mountainous) climate. It has been collected in flower April-June and in fruit September, November, and April.

Representative specimens examined. MEXICO. Oaxaca: Dto. de Ixtlán, Sierra de Juárez, a 2.5 km al NE de Puerto Eligio, 900 m, 2 Jun 1983 (fl), Cedillo & Lorence 2397 (MEXU); entre Vista Hermosa y Comaltepec, a 1.5 km al S de Vista Hermosa, Sierra Juárez, 16 Sep 1965 (fr), G. Martínez C. 296 (ENCB, MO); Dto. de Ixtlán, 5.3 km al N de Vista Hermosa, carr. a Oaxaca-Tuxtepec, 27 Sep 1982 (fr), Torres & Cedillo 1461 (ENCB, MEXU).

This variety of P. panamensis differs from all others in having a short (1.5-3 versus 5-12 cm) inflorescence main axis, secondary axes in 3-4 (as opposed to 5-7) ranks, and obovoid (as opposed to ellipsoid) fruit.

20. Psychotria panamensis Standley var. magna (Standley) Hamilton, comb. nov. --Psychotria magna Standley, Contr. U.S. Natl. Herb. 18: 131. 1916. Type. Panama. Colón: Loma de la Gloria, nr. Fato (Nombre de Dios), 10-104 m, Aug 1911 (fl), Pittier 4092 (holotype, US-679188; isotype, US-693188).

21. Psychotria sixaolensis Hamilton, sp. nov. Type. Costa Rica. Limón: Rd. between Limón and Shiroles, Río Sixaola, 0.9 mi SW of Bambu, 6.5 mi SW of Bribri, 0-50 m, 12 Aug 1977 (fr), Croat 43303 (holotype, MO).

Habitu et stipulis et nervatura et fructibus P. psychotriifolia et speciebus affinis similibus, praecipue differt inflorescentiae pedunculis longis bracteis grandibus.

Shrub or subshrub, to 1.5 m tall; young stems ferrugineous; stipules sheathing, ovate, 10 x 6 mm, ferrugineous, caducous. Leaves petiolate; petioles 1-3.5 cm long, red-brown puberulent; blades membranous, elliptic to obovate, the apex acuminate, the base attenuate, (14-)16-30 x (5.5-)8-13 cm, glabrous above, sparsely

red-brown tomentose below, the midvein more densely tomentose, drying red-brown; secondary veins (20-)25-35 pairs, diverging 75°-80°, brochidodromous with collector vein near margin, constantly arcuate, elevated below, red-brown tomentose below, the axils lacking domatia or hairs; tertiary veins inconspicuous, orthogonal reticulate. Inflorescences terminal or pseudoaxillary, panicles of glomerules; panicle branched to 2-3 degrees; main axis in fruit 9.5-15 cm long, the peduncle in fruit 7.5-13.5 cm long; secondary axes in 2 ranks, the first rank axes 2, 1.5-2 cm long, the second rank axes 2, 0.5 cm long; bracts and bracteoles ovate, 7 x 6 mm, ferruginous. Flowers sessile; calyx cup-shaped, the tube 1-2 mm long, the lobes 5, linear, 2-3 x 0.8 mm, ferruginous; corolla white, cylindrical, 4 x 2.5 mm, white pubescent in throat, the lobes 5, ovate with blunt robust protruberance from near apex, 3 x 1.5 mm; stamens 5, the filaments 3 mm long in pins, not seen in thrums, the anthers 1.3 mm long; style ca. 6 mm long in pins, not seen in thrums, the branches linear. Fruit when dry ellipsoidal, 7-9 mm long, 5 mm in diameter, drying red-brown; persistent calyx 2-3 mm long; seeds 2, the dorsal surface with 4 deep longitudinal furrows, the ventral surface with 2 shallow longitudinal furrows.

Distribution. Known from southeastern Limón, Costa Rica, and Bocas del Toro, Panama, at 0-50 m elevation in tropical moist forest with equatorial (tropical) climate. It has been collected in fruit in August.

Additional specimens examined. COSTA RICA. Limón: Nr. Río Sixaola, ca. 0.5 mi Sw of Bambú, ca. 3 mi NE of Bratsí, 15 m, 12 Aug 1977 (early fr), Croat 43250 (MO). PANAMA. Bocas del Toro: Río Teribe between Qda. Treglo and Puerto Palenque, 2 Apr 1968 (early fr), Kirkbride & Duke 536 (MO-2 sheets).

Psychotria sixaolensis may be recognized by its ferruginous aspect, its large (16-30 x 8-13 cm) leaves with 25-35 secondary veins and a collector vein, and its long-pedunculate panicles of glomerules with large (7 x 6 mm) ovate bracts. Only the long-style form has been collected for this species. Its low habit, pubescence, long sheathing stipules, brochidodromous secondary venation, inflorescence form, corolla lobes with apical protruberances, and ellipsoidal fruit with conspicuous persistent calyx place P. sixaolensis in the "calophylla" group.

22. *Psychotria stockwellii* Hamilton, sp. nov. Type. Costa Rica. Alajuela: Region of Zarcero, 1800 m, 18 Oct 1937 (fl, early fr), A. Smith 543 (holotype, US; isotype, F).

Cortice et stipulis et corolla P. chiriquina et speciebus affinis similibus, praecipue differt inflorescentiae axibus secundariis divergentibus obtuse.

Tree or shrub, (1-)2-10 m tall; young stems puberulent, the bark pale, ridged longitudinally; stipules sheathing, ovate, 9-15 x 3.5-9 mm, glabrous, caducous. Leaves petiolate; petioles 0.5-2(-2.5) cm long, glabrous; blades membranous, obovate or elliptical, the apex acuminate, the base attenuate, (8.5-)9-19 x (2-)3-7 cm, glabrous above and below, the midvein sometimes minute puberulent below, drying dark brown above, slate brown or pale brown below; secondary veins (11-)14-17 pairs, diverging 60°-75°(-80°), eucamptodromous to sometimes brochidodromous, constantly arcuate, prominulous below, glabrous or minute puberulent below, the axils lacking domatia or hairs; tertiary veins conspicuous to evident, orthogonal reticulate. Inflorescences terminal or pseudoaxillary, spreading panicles of cymes; panicle branched to 3-4 degrees; main axis (7-)9-12 cm long, the peduncle (4-)5-9 cm long; secondary axes in 4-5 ranks, usually diverging over 90°, the first rank axes 2, 1.8-5 cm long, the second rank axes 2 or rarely 4, 1-2.5 cm long, the shorter pair when present 0.4 cm long, the third rank axes 2, 0.7-1.5 cm long, the fourth rank axes 2, 0.4-0.6 cm long, the fifth rank axes 2, 0.3 cm long; cymes branched to 1-2 degrees; bracts and bracteoles triangular, 0.5-2 mm long, ciliate. Flowers pedicellate, the pedicels 0.5-1.5 mm long; calyx cup-shaped, the tube 0.8 mm long, the lobes 5, triangular, often reflexed, 0.7 mm long, puberulent; corolla cream, the tube cylindrical, 4-5 x 1.5-2 mm, white pubescent in throat, minute puberulent without, the lobes 5, ovate, 2 x 1 mm; stamens 5, the filaments 3.5-4 mm long in pins, 4.5-5.5 mm long in thrums, the anthers 1-1.2 mm long; style 6-7 mm long in pins, 3-4 mm long in thrums, the branches clublike or linear. Fruit when dry ellipsoidal, 5-6 mm long, 4.5-5 mm in diameter, maturing red, drying dark red-brown; persistent calyx not evident or a beak or ring drying pale brown; seeds 2, the dorsal surface with 6-10 irregular longitudinal furrows, the ventral surface with 2 deep plus sometimes several irregular longitudinal furrows.

Distribution. Known from Alajuela, Costa Rica, and western Chiriquí, Panama, at 1000-2200 m elevation in regions of low montane rain forest with equatorial (mountainous) climate. It has been collected in flower January-October, primarily January-March, with immature fruit July-October, and in fruit January-March.

Additional specimens examined. COSTA RICA. Alajuela: Region of Zarcero, 1800 m, 18 Jan 1937 (fl), A. Smith 165 (F, MO). PANAMA. Chiriquí: Las Nubes, ca. 2000 m, 7 Aug 1974 (fl, early fr), Croat 26450 (MO); Bajo Chorro, 1800 m, 22 Jan 1938 (fl), Davidson 172 (F, MO); 2 Mar 1938 (fl, fr), M. Davidson 363 (A, F, MO); end of rd. to Bajo Mono, 21 Mar 1977 (fl), Folsom et al. 2250 (MO); E slopes of Cerro Pando, 8°55'N, 82°44'W, 2000-2300 m, 15 Oct 1981 (fr), Knapp 1646 (MO); vic. Las Nubes, 2.7 mi NW of Río Chiriquí Viejo W of Cerro Punta, 2200 m, 27 Feb 1973 (fl, fr), Liesner 293 (F, MO-2 sheets, NY); Las Nubes, 5 km NW of Cerro Punta, 1800-1950 m, 19 Jul 1975 (early fr), Mori & Bolten 7240 (MO-2 sheets); Cerro Pando, nr. Panama-Costa Rica border, 2000-2482 m, 21 Jul 1975 (fl, early fr),

Mori & Bolten 7328 (MO, US); NW side of Cerro Punta beyond Las Nubes, 2250 m, 15 Jan 1971 (fl, fr), Wilbur et al. 13211 (DUKE-2 sheets, MO); above San Ramón nr. Bajo Mono, 4 mi NW of Boquete, 1800 m, 22 Jan 1971 (fl, fr), Wilbur et al. 13544 (DUKE).

Psychotria stockwellii may be recognized readily by its inflorescence, whose secondary axes diverge over 90° from the main axis and whose tertiary axes diverge likewise from the secondary axes, and so forth, a character state unique in the subgenus. In addition, *P. stockwellii* differs from *P. panamensis* in having a larger corolla tube (1=4-5 versus 2-3 mm), long-pedunculate inflorescences, and conspicuous to evident (versus inconspicuous) tertiary veins. It is most closely allied to the *P. chiriquina* complex in the "trichotoma" group, sharing with those species the long corolla, the usually pedunculate inflorescences, the sheathing and ovate stipules, and the pale, cracked, and longitudinally fissured bark. Members of the *P. chiriquina* complex -- *P. lundellii*, *P. chiriquina*, and *P. hornitensis* -- all have smaller leaves than does *P. stockwellii*.

Psychotria stockwellii is named for Dr. Henry Stockwell, pediatrician and amateur natural biologist whose enthusiasm and knowledge of the insects, birds, and plants of Panama (as well as Baroque music) were tremendous resources to the author during fieldwork in that country.

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