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# A New Species of *Psychotria* subg. *Psychotria* (Rubiaceae, Psychotrieae) from West-Central Mexico

Charlotte M. Taylor

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299 U.S.A.  
charlotte.taylor@mobot.org

Eduardo Domínguez-Licona and Helga Ochoterena

Instituto de Biología, Universidad Nacional Autónoma de México, Apdo. Postal 70-367,  
México D.F. 04510, México

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**ABSTRACT.** *Psychotria chamelaensis* C. M. Taylor & E. Domínguez-Licona was previously confused with *P. erythrocarpa* Schlechtendal, but this new species can be recognized by its longer narrow calyx lobes and moderate to dense, usually appressed pubescence. It is well documented by specimens from the Chamela Biological Station in Jalisco, Mexico, and is so far known only from at or near that site.

**RESUMEN.** *Psychotria chamelaensis* C. M. Taylor & E. Domínguez-Licona había sido confundida con *P. erythrocarpa* Schlechtendal, pero esta nueva especie puede ser reconocida por sus lóbulos del cáliz más largos y angostos y por la pubescencia moderada a densa y usualmente adpresa. La especie está bien respaldada con ejemplares de la Estación de Biología de Chamela (IBUNAM) en Jalisco, México y hasta ahora sólo se conoce de ese sitio y sus alrededores.

**Key words:** Mexico, *Psychotria*, Rubiaceae.

*Psychotria* L. (Psychotrieae) in its broad sense comprises approximately 1000 species of mostly shrubs and small trees found throughout the tropics. This genus is characterized by its usually woody habit; its relatively small, entomophilous, usually white or cream-colored flowers that are typically distylous; its valvate corolla lobe aestivation; its inferior ovary with usually two locules, each with one basal ovule; and its drupaceous fruits with usually two planoconvex pyrenes (Hamilton, 1989). As summarized by Taylor (2002), systematic studies using both morphological and molecular characters have indicated that Neotropical *Psychotria* as it is currently circumscribed is systematically complex (Taylor, 1996; Nepokroeff et al., 1999; Andersson & Rova, 1999; Piesschaert, 2001; Andersson, 2002). All of these studies have agreed, though, that *Psychotria* subg. *Psychotria* is supported as a generally monophyletic group.

*Psychotria* subg. *Psychotria* is a pantropical group characterized by the distinctive brown to gray or cinnamon color of its dried specimens; stipules of varied form that are nearly always caducous exposing a ring of well-developed infrastipular colleters (i.e., glandular trichomes) that usually persist on the stem (Fig. 1D); white corollas with tubes generally 1–8 mm long that are pubescent in the throat and/or at the point of stamen insertion; and orange to red fruits that bear two planoconvex, usually longitudinally ridged pyrenes. The pyrenes are characterized by an alcohol-soluble reddish pigment and a lack of preformed germination slits (Petit, 1964; Nepokroeff et al., 1999; Piesschaert, 2001). In Mexico *Psychotria* in its broad sense comprises two groups; the other group, *Psychotria* subg. *Heteropsychotria* Steyermark, is wholly Neotropical and can be distinguished from subgenus *Psychotria* by its dried specimens with a generally green color; its stipules also of various forms but nearly always persistent; its fruits that are white, blue, or purple at maturity; and its pyrenes lacking alcohol-soluble red pigments and bearing preformed germination slits.

The species we describe below was discovered during study of the Rubiaceae for the Flora of Chamela project. Specimens of this new species were previously included by Hamilton (1989) in *Psychotria erythrocarpa* Schlechtendal, a widespread and frequently collected species that is found in moist, often seasonal vegetation from central Mexico through Guatemala. *Psychotria erythrocarpa* and *P. chamelaensis* are quite similar in general aspect and share leaves of generally similar size and shape, calyptate stipules of similar size that split along one side and become papery before falling off, inflorescences of similar size and arrangement, and corollas and fruits of similar size and shape. However, this new species differs from *P. erythrocarpa* in its strigillose or short-hirtellous pubescence of the leaves and stems (vs. pilosulous, hirtellous, or velutinous in *P. erythro-*





Figure 1. *Psychotria chamelaensis* C. M. Taylor & E. Domínguez-Licona. —a. Flowering branches. —b. Detail of leaf showing the adaxial pubescence. —c. Portion of stem showing old stipules. —d. Portion of stem from which stipules have fallen. —e. Inflorescence. —f. Portion of inflorescence with several flower buds, two short-styled flowers at anthesis, and one old flower from which the corolla has fallen. —g. Portion of inflorescence with several flowers in bud and one old flower from which the corolla has fallen. —h. Short-styled flower at anthesis. —i. Corolla of a short-styled flower at anthesis, partially dissected. —j. Portion of a short-styled flower at anthesis, partially dissected, showing calyx, disk, style, and stigmas. —k. Fruit. a–j based on Domínguez-Licona 1544 (MEXU); k based on Domínguez-Licona 1732 (MEXU).



*carpa*); its deeply lobed calyx limbs 0.8–1.5 mm long, with the lobes relatively narrow, usually unequal in length on an individual flower, and typically spreading (vs. calyx limbs 0.3–0.5 mm long and undulate to only shallowly lobed with the lobes generally uniform and ascending in *P. erythrocarpa*); and its habitat in dry seasonal forests of the Pacific coast of Mexico (vs. *P. erythrocarpa*'s range in moist seasonal forests on the Caribbean and southern Pacific slopes of Mexico and Guatemala). This new species has also been confused (in herb., MEXU) with *P. mexiae* Standley, which is widespread in Mexico; *P. mexiae* can be separated very easily from *P. chamelaensis* by its leaves with 10 to 13 pairs of secondary veins (vs. 5 to 8 pairs in *P. chamelaensis*), its petioles 3–25 mm long (vs. 1–5 mm long in *P. chamelaensis*), its glabrous stipules 10–40 mm long (vs. hirtellous or strigillose to glabrescent and 4.5–8 mm long in *P. chamelaensis*), its subtruncate calyx limb ca. 0.3 mm long (vs. deeply lobed and 0.8–1.5 mm long in *P. chamelaensis*), and its habitat in wet and premontane forests at 400–1800 m.

The Chamela Biological Station of the Institute of Biology of the National Autonomous University of Mexico (UNAM) was established in 1971 to promote scientific research on the flora, fauna, and ecosystems of the Pacific coast in Mexico (Hernández, 2002) and the conservation of one of the country's most important ecosystems, seasonally dry tropical forest (Trejo & Dirzo, 2000). It comprises 3200 ha and is one of the four core areas of the Chamela-Cuixmala Biosphere Reserve, which was established in 1993 (Noguera et al., 2002). A large amount of research has been conducted at this Biological Station, making it one of the better-studied ecosystems in the Neotropics (Noguera et al., 2002), but floristic treatments are limited to checklists available for the Chamela Biological Station (Lott, 1985), Chamela Bay (Lott, 1993), and the Chamela-Cuixmala Biosphere Reserve (Lott, 2002).

The new species described below was discovered during ongoing floristic study of the Chamela Biological Station by the second and third authors. This work has been focused on the Rubiaceae as a pilot project for the preparation of a complete modern flora of this station, including conventional and electronic formats. The bark description below follows Junikka (1994).

***Psychotria chamelaensis*** C. M. Taylor & E. Domínguez-Licona, sp. nov. TYPE: Mexico. Jalisco: Mpio. La Huerta, Chamela Biological Station, cañada del arroyo "El Zarco," en la vereda Chachalaca a 920 m, 19°30'N, 105°03'W, 40 m, 20 July 2003, E. Domínguez-Licona 1544 (holotype, MEXU; isotypes, BR, CBG, IBUG, K, MO, PRE). Figures 1, 2.

Haec species a *Psychotria erythrocarpa* foliorum cauliumque pubescentia plerumque adpressa atque limbi calycini longioris lobulis angustis bene evolutis distinguitur.

Shrubs flowering at 1.5 m tall, to 3 m tall, DBH to 2–8 cm; stems glabrous. *Bark* soft, heterogeneous to mosaic-mottled with red and green, with fissures less than half as deep as total bark thickness, "V-shaped" to flattened or rounded, less than 15 cm long, parallel to irregularly reticulated, without intermediate crests, with scales thin, adherent, irregularly clumped, less than 7.5 cm long, irregularly shaped or infrequently rectangular, with lenticels rounded, up to 3 mm diam., sparse to solitary, soft, dry to the touch. *Leaves* elliptic to elliptic-oblong, oblanceolate, or obovate, 3.5–11 × 1.2–4.5 cm, at apex obtuse to acute or a little acuminate with the tips to 3 mm long, at base cuneate to acute, drying membranaceous, on both surfaces evenly and moderately to densely strigillose or short-hirtellous; secondary veins 5 to 8 pairs, not looping to interconnect, in most abaxial axils with hirtellous domatia, adaxially venation plane or costa and secondary veins thickened, abaxially costa prominent, secondary veins prominulous, and remaining venation thickened and sparsely visible; margins entire to ciliolate; *petioles* 1–5 mm, hirtellous; *stipules* calyptrate, caducous after apical 1 to 3 nodes, usually splitting along 1 side and shortly persistent as a spathaceous papery structure, 4.5–8 mm long, sparsely to moderately strigillose or hirtellous to glabrescent, at apex very shortly apiculate, the apiculum 0.1–0.2 mm. *Inflorescences* terminal, paniculate, hirtellous; peduncle 1.2–3.5 cm, slender; branched portion pyramidal to rounded-corymbiform, 1–3 × 2.5–5 cm; secondary axes 2 to 3 pairs, sometimes closely grouped to subverticillate; axes rather slender, those of the highest order to 2 mm; bracts triangular to narrowly so or linear, acute, those subtending secondary axes 0.3–1 mm, those subtending flowers or pedicels up to 0.5 mm or frequently these structures ebracteate; pedicels 0–0.5 mm. *Flowers* distylous, sessile and pedicellate in dichasial cymes of 3 to 7; hypanthium cylindrical to turbinate, ca. 0.8 mm, hirtellous; *calyx limb* 0.8–1.5 mm, hirtellous, lobed for 1/2 to almost completely, the lobes 5, linear, sometimes unequal by as much as 50% on an individual flower, often spreading; *corolla* funnelform, white, externally glabrous, internally glabrous except densely pilose at stamen insertion (i.e., in upper part of tube and extending into throat), tube 2–2.5 mm, lobes 5, triangular, ca. 2 mm, acute, abaxially with a low rounded thickening ca. 0.1 mm high; *anthers* in long-styled form ca. 1 mm, partially exerted, in short-styled form ca. 1 mm, exerted on filaments ca. 2 mm, these inserted in upper part of corolla tube; *stigmas* 2, in long-styled form ellipsoid,



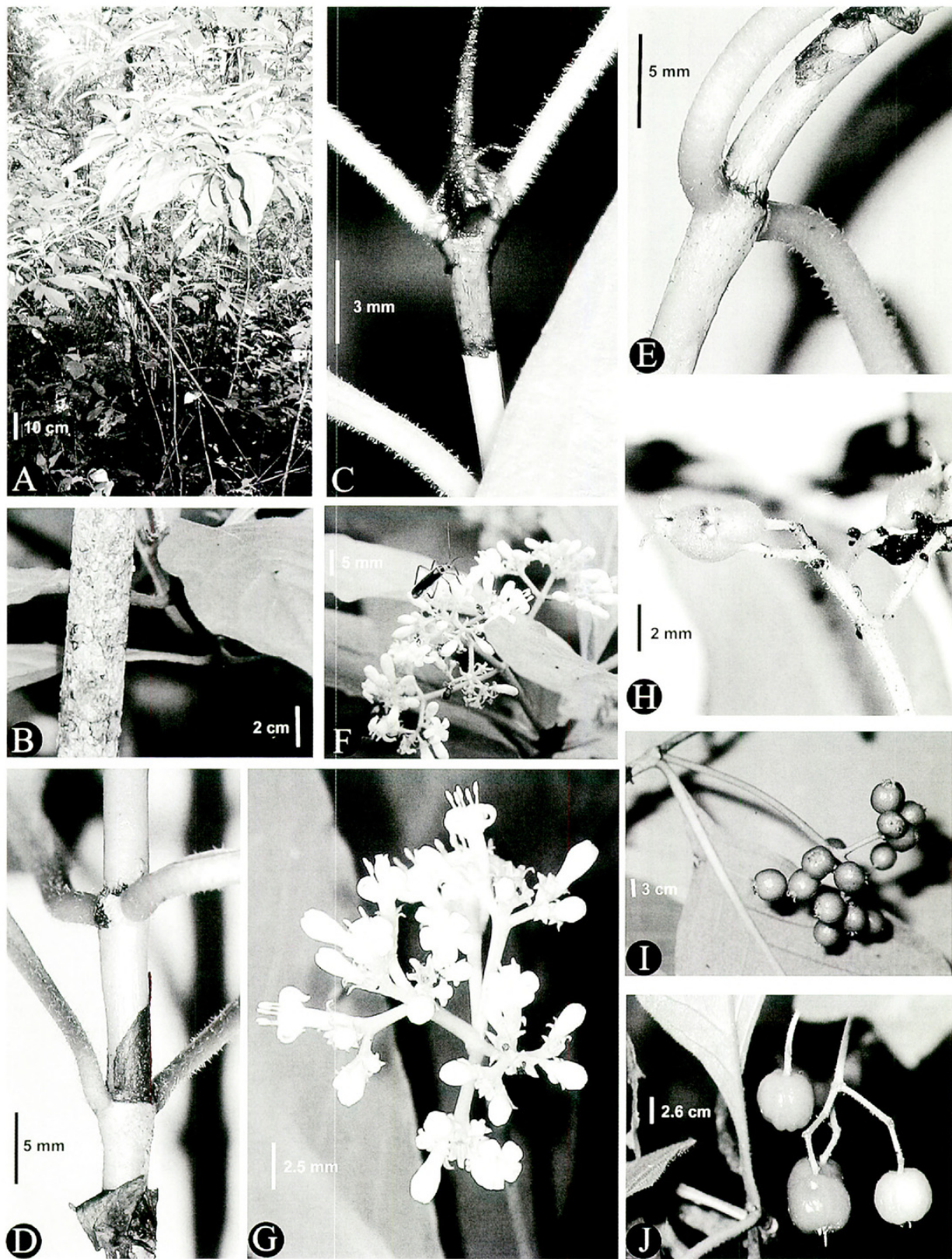


Figure 2. *Psychotria chamelaensis* C. M. Taylor & E. Domínguez-Licona. —A. Habit. —B. Detail of bark. —C. Stem apex showing young stipule. —D. Portion of stem showing two nodes with old stipules and one node (upper) from which stipule has fallen. —E. Portion of stem showing a node from which stipule has fallen and fragments of old stipule adhering to internode in upper part of photo. —F. Inflorescence. —G. Close-up of inflorescence. —H. Immature developing fruits. —I. Inflorescence. —J. Mature fruits. A–E, H based on Domínguez-Licona 1622 (MEXU); F, G based on Domínguez-Licona 1544 (MEXU); I based on Domínguez-Licona 1698 (MEXU); J based on Domínguez-Licona 1732 (MEXU).



ca. 0.3 mm long, exerted on a style ca. 3.5 mm, in short-styled form linear, 0.5–0.8 mm, included, situated near or just above middle of corolla tube; disk annular, ca. 0.5 mm high. *Infructescences* similar to inflorescences or spreading to pendulous, peduncles to 4 cm long (whether these elongate in fruit or they were originally longer on the plants collected in fruit than on flowering plants is unknown); *fruit* ellipsoid, 4–5 × 4–4.5 mm, glabrous, red, juicy; pyrenes 2, planoconvex, dorsally with 4 to 5 low rather flattened ridges, ventrally plane with a shallow central longitudinal sulcus, this a rather straight-sided excavation.

*Distribution, habitat, and phenology.* Central-western Mexico, in seasonal dry forests, riparian vegetation and *Quercus* woodlands at 30–500 m; collected in flower in July and August, in fruit August to October.

The species epithet refers to the Chamela Biological Station, where this species has been frequently collected.

*Paratypes.* MEXICO. **Jalisco:** Mpio. La Huerta, 5 km al S de la Huerta, *J. Rzedowski* 14693 (MEXU); Chamela Biological Station, without detailed location, *J. A. S. Magallanes* 3078 (MEXU), *J. A. S. Magallanes* 3115 (MEXU), *L. A. Pérez J.* 144 (MEXU), 16 Aug. 2003, *T. Valdivia s.n.* (MEXU); cruce del sendero Tejón con Camino Antiguo Norte, *A. Domínguez M.* 318A (MEXU); intersección del Eje Central y el sendero Calandria, *A. Domínguez M.* 445 (MEXU); Camino Antiguo Sur a 760 m, cerca del afluente principal del arroyo “El Zarco,” *E. Domínguez-Licona & C. Skov* 1529 (MEXU); a ca. 330 m hacia el N de las instalaciones de la Cañada 2, ladera E, *E. Domínguez-Licona et al.* 1547 (MEXU); vereda Calandria a 40 m, *E. Domínguez-Licona et al.* 1569 (MEXU); vereda Ardilla a 1200 m, *E. Domínguez-Licona* 1575 (MEXU); Camino Antiguo Norte a 250 m, *E. Domínguez-Licona et al.* 1622 (MEXU); vereda Tejón a ca. 980 m, *E. Domínguez-Licona* 1627 (MEXU); instalaciones de la Cuenca 3 a ca. 320 m al E del cruce de Chachalaca y el arroyo “Zarco,” *E. Domínguez-Licona & E. Pascual* 1650 (MEXU); a 300 m al NW de la parte alta de la Cuenca 2 ca. 300 m al NE de Chachalaca a 1000 m, *E. Domínguez-Licona et al.* 1677 (MEXU); final del Camino Antiguo Sur, ca. 140 m al E por el cauce del arroyo “El Zarco,” *E. Domínguez-Licona & V. Hernández* 1698 (MEXU); a ca. 4.7 km de la unión de los ríos Colorado y Hornitos caminando por el lecho del primero, *E. Domínguez-Licona & M. Becerril* 1730 (MEXU); Camino Antiguo Norte a ca. 490 m, *E. Domínguez-Licona* 1732 (MEXU); vereda Chachalaca a 200 m, *J. A. S. Magallanes* 4257 (MEXU); ca. del arroyo Paillés, *L. A. Pérez J.* 279 (MEXU); Cuenca 2, 22 Aug. 2003, *C. Skov s.n.* (MEXU); Chachalaca y Tejón, *T. Valdivia* 1 (MEXU).

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