

Rubiacearum Americanarum Magna Hama Pars XXI. A New Species of *Palicourea* (Psychotrieae) from Costa Rica

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ABSTRACT. A new species of *Palicourea* Aublet (Rubiaceae, Psychotrieae) is described and illustrated: *P. palustris* A. C. Gilman & C. M. Taylor from montane Costa Rica. This species differs from *P. salicifolia* Standley by its large stipules that have well-developed lobes and are persistent with age, and by its larger corollas with relatively longer lobes.

Key words: Costa Rica, IUCN Red List, *Palicourea*, Psychotrieae, Rubiaceae.

As circumscribed by Taylor (1997), *Palicourea* Aublet (Psychotrieae) is distinguished within the Rubiaceae by its persistent stipules that are interpetiolar to usually united around the stems into a continuous sheath, and usually bilobed in their interpetiolar portions; generally brightly colored inflorescences—blue, purple, red, orange, or yellow—with the flowers usually pedicellate; corollas that are usually similarly brightly colored, five-lobed, and with well-developed tubes that are somewhat swollen at the base and glabrous internally except for a dense ring of pubescence just above this basal swelling; and drupaceous fruits with usually two pyrenes. This Neotropical genus includes about 200 species of shrubs and small trees found from sea level to montane forests (Taylor, 1997), with about 31 species in Costa Rica (Taylor, 1989). The species are typically distylous and generally pollinated by hummingbirds, and the fruits are apparently dispersed by birds (Taylor, 1997).

Palicourea palustris A. C. Gilman & C. M. Taylor, sp. nov. TYPE: Costa Rica. Heredia: Parque Nac. Braulio Carrillo, Atlantic slope of V. Barva, from Finca Gouradian (1700 m) walk 4 hr. to tent refugia at 1740 m then ca. 1.5 hr. hike S on main transect trail, 10°11'29"N, 84°06'12"W, 1860 m, 31 Mar. 2005, A. C. Gilman 420 (holotype, INB; isotype, MO 04796838). Figure 1.

Haec species a *Palicourea salicifolia* Standley stipulis majoribus in vetustate persistentibus, foliis longioribus nervis secundariis multioribus munitis atque corollae longioris lobulis proportionem longioribus ac fauce latiore differt.

Shrub or small tree, flowering at 1.5 m, to 5 m tall; stems glabrous. *Leaves* paired; blades elliptic-oblong to narrowly elliptic or oblanceolate, 5.5–15 × 1.5–3.5 cm, at apex acute to usually acuminate with tips 1–1.5 cm, at base acute to usually attenuate, drying papyraceous, glabrous on both surfaces; secondary veins 18 to 24 pairs, looping weakly to interconnect near margins, with 1 developed and 2 weak intersecondary veins usually present between pairs of secondary veins, adaxially costa prominent, secondary and intersecondary veins prominulous and remaining venation plane and invisible, abaxially costa prominent, secondary and intersecondary veins prominulous and tertiary venation visible but plane; *petioles* 7–32 mm, glabrous; *stipules* laminar, glabrous, membranaceous becoming brown and indurated with age, persistent after leaves fall, ligulate to ovate, (5)6–8(10) mm, bilobed, lobes ligulate to lanceolate-oblong, 4–5 × 2–3(4) mm, acute on some sterile branchlets to usually obtuse to rounded, sinus truncate. *Inflorescences* terminal and in uppermost leaf axils (alternatively, sessile and trichotomous), rounded-corymbiform to broadly pyramidal, ca. 5 × 6 cm (not including corollas); peduncles 2.5–3 cm; secondary axes 1 or 2 pairs; bracts narrowly triangular, acute, those subtending secondary axes 3–5 mm, those subtending pedicels 2–3 mm; pedicels 1–4 mm; peduncle, axes, bracts, and pedicels green. *Flowers* pedicellate in cymes of 3 to 5; hypanthium cylindrical, ca. 1 mm, glabrous; calyx limbs glabrous, 1.2–1.5 mm, green, membranaceous, lobed to base, lobes 5, ligulate to ovate, obtuse; *corolla* funnelform, white except yellow in throat and inside tube, strongly bent (to 90°) and gibbous at base, bent again (to 90°) just above basal swelling, curved in tube, externally glabrous, internally glabrous except with a sparsely



Figure 1. *Palicourea palustris* A. C. Gilman & C. M. Taylor. —A. Corolla of living plant. —B. Flowering branch of living plant. —C. Flowering branch of dried specimen. A and B are photos of *Gilman 420* at the type locality in the Parque Nacional Braulio Carrillo, Costa Rica; C is from the type specimen *Gilman 420* (INB).

hirtellous ring ca. 1 mm wide just above basal swelling, with tube 7–8 × 3–5 mm wide across throat, lobes 5, ligulate to triangular, 4–5 mm, acute with a deflexed apical filamentous appendage 0.5–1 mm;

anthers included, situated in tube, ca. 3.5 mm; stigmas 2, ca. 0.3 mm, exserted. *Infructescences* similar to inflorescences, green; fruit ellipsoid, ca. 5 × 5 mm, laterally somewhat flattened, glabrous, blue-

black; pyrenes 2, hemispherical, dorsally smooth to broadly rounded.

Distribution, habitat, and phenology. Locally common in extremely swampy sites on peaty soil, wet montane primary forest, Atlantic (i.e., Caribbean) slope of Volcán Barva in central Costa Rica, 1600–2000 m. Collected in flower in March, in fruit in January to March and June.

IUCN Red List category. We recommend the listing of this species as Least Concern (LC) according to IUCN Red List criteria (IUCN, 2001). There is at present no evidence of population decline or threat to this species, which is currently located within a nationally protected area. The wet and boggy substrate, believed to be a key habitat factor for this species, is found from 1600–2000 m across the full extent of the Parque Nacional Braulio Carrillo. From this we calculate the potential number of mature individuals in the protected area to exceed 1000, based on estimates of mature individuals per square kilometer calculated from the first author's survey data. We believe the population to be a single continuous population within these elevations in the Parque Nacional Braulio Carrillo, but lack data to assess population status and decline, beyond the observation of several hundred immature individuals across the elevational range.

Discussion. This species is similar to *Palicourea salicifolia*, also of montane Costa Rica, but these differ in both vegetative and reproductive characters as well as habitat. The leaves of *P. salicifolia* are shorter (4–8.5 cm), with only 9 to 13 pairs of secondary veins and usually shorter petioles (3–9 mm), versus 5.5–15 cm, 18 to 24 pairs, and 7–32 mm long, respectively, in *P. palustris*. The stipules of *P. salicifolia* are 2–4 mm long with triangular to linear lobes and are usually deciduous with the leaves, whereas this new species has notably larger stipules (5–10 mm long), with lobes that are more rounded in shape and usually persist longer than the leaves, often becoming indurate. These hardened, enlarged, persisting stipules are unique among Central American species of *Palicourea*. Also, *P. salicifolia* has white corollas often flushed with blue with longer tubes (6–13 mm) but shorter lobes (2–3 mm), versus white and yellow corollas with tubes 7–8 mm and lobes 4–5 mm in *P. palustris*. These two species are also known from different habitats. *Palicourea salicifolia* is found on relatively dry sites in montane forests usually dominated by *Quercus* L., whereas *P. palustris* is apparently restricted to extremely swampy sites in very wet montane forests that are not dominated by *Quercus*. The specific epithet refers to its wet habitat.

The first author initially collected sterile specimens of this species in her ecological transects (with some difficulty, because of the unstable muddy substrates on which it grows), and when the specimens could not be identified she and her field assistant, Felix Corrales, returned several times to search for fertile specimens. The plants apparently flower annually, synchronously, and for a relatively brief period.

The stipules of smaller, nonreproductive plants are sometimes markedly smaller than those of flowering branches, to as short as 5 mm with the lobes acute. Similar variation is found in other species of *Palicourea* (pers. obs., both authors), but is generally not reported because species descriptions are based on flowering or fruiting branches. The common practice of collecting sterile specimens for ecological study has expanded our knowledge of some species, and these sterile measurements are included in the above species description in parentheses. However, comparable information is not available for most *Palicourea* species.

The first author takes great pleasure in dedicating this new species to her grandfather, Peter Medwell (1913–2004), who significantly encouraged and supported her interest and work in ecology and botany.

Paratypes. COSTA RICA. **Heredia:** Parque Nac. Braulio Carrillo, Atlantic slope of V. Barva, along transect trail betw. 10°10'55"N, 84°06'18"W and 10°13'37"N, 84°05'39"W, *B. Boyle & Hibbs* 972 (MO), *A. C. Gilman* 6, 22, 38, 144, 156, 168, 404, 405, 430, 433, 434 (all INB, MO, and CR).

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