

A new species of *Philodendron* subgenus *Philodendron* (Araceae) from Costa Rica

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ABSTRACT

Philodendron florianetlii is published as a new species of series *Macrobelyum* from Puntarenas Province, Costa Rica, and distinguished from *P. sagittifolium* Liebm.

Keywords: Araceae, Costa Rica, new species, *Macrobelyum*, *Philodendron*.

INTRODUCTION

The genus *Philodendron*, with 564 described and accepted species and an estimated total of 1500 species (Boyce & Croat, 2011 onwards), is the second largest genus of Araceae. It ranges from Mexico to Argentina but is absent from Chile. Most species are known only from South America, and while the genus ranges from sea level to at least 2600 m, it is most species-rich at lower elevations. In the most recent revisions of the only two subgenera of *Philodendron* occurring naturally in Central America and Mexico, Croat (1997) reported 95 species of subgenus *Philodendron* and Grayum (1996) reported 21 species of subgenus *Pteromischum* from the same region.

Recently seven new species of *Philodendron* from Panama were recognized as new (Ortiz et al., 2022), and another new species was published from Mexico (Díaz Jiménez et al., 2020). In addition to the species proposed here, four others will soon be published. Thus, the total number of species of the genus *Philodendron* for Mexico and Central America will be 128.

In this paper, we describe and illustrate *Philodendron florianetlii*, a new species of subgenus *Philodendron* series *Macrobelyum* from Province Puntarenas Province in Costa Rica. During

fieldwork on the pollination biology of Araceae at the La Gamba Field Station in the Golfo Dulce area in Puntarenas Province, Austrian botanist Florian Etl conducted ecological studies which involved detailed analyses of scents and the timing of scent production. These studies showed conclusively that the new species described below is distinct from *Philodendron sagittifolium* Liebm., to which it had been previously referred.

Materials and Methods

The species was described from both living and dried material using terminology following Croat (1997), and the IUCN Red Categories and Criteria were consulted for potential Red Book Listing (IUCN, 2020). Ecological characterization was based on the Holdridge Life Zone map (Tosi, 1971).

Philodendron florianetlii Croat & Grayum, **sp. nov.** — Type: COSTA RICA. Puntarenas: Golfo Dulce Region, La Gamba field station next to Esquinas Rainforest Lodge, 08°42'02"N, 83°12'07"W, 77 m, 16 Mar 2019, F. Etl 13 (holotype, WU0120157–59; isotypes, CR, K, MO, US). **Figures 1–9.**

Diagnosis: *Philodendron florianetlii* is distinguished from *P. sagittifolium* Liebm. by the lack of purplish violet blotches on the former's petioles, inflorescences only one per axil, spathes that are orange-red in the tube and only tinged reddish on the medial portion of the blade inside, and a spadix that remains essentially erect (not much protruded forward from the spathe), as well as sap with a different scent, and a unique floral scent at anthesis. In contrast, *Philodendron sagittifolium* has purplish violet blotches on its petioles, inflorescences usually two or three per axil, spathes that are solid dark red to violet-purple inside and heavily suffused onto the blade as a solid color, and spadix that is protruded forward. In addition, *P. florianetlii* differs in having the primary lateral veins paler, rather than darker on the lower surface as is the case with *P. sagittifolium*.

High-climbing robust hemiepiphyte, appressed or loosely attached; roots several per node, becoming very elongate and pendent, extending down in a curtain as much as 10 m from the ground; sap smelling of citrus (grapefruit); internodes 4–6 cm long, 2–5 cm diam., green to medium dark green, matte (or nearly so), soon tan-brown or brown, drying conspicuously and often acutely wrinkled-ridged, medium yellow-brown; cataphylls light green to green, sharply 2-ribbed or -keeled, 35–40 cm long, tinged reddish on margins, deciduous intact. Leaves many; petioles erect-spreading, medium dark green to dark green, terete or subterete, obtusely and weakly flattened adaxially, 39–52 cm long, 1.0–1.7 wide midway, drying 7–10 mm diam. midway, matte; blades mostly pendent, narrowly ovate-cordate-sagittate,

(43.5–)48–77 cm long, (15–)18–36 cm wide, 2.7–3.1 × longer than wide, about at long aspetioles (0.92–1.06 × longer than petioles), broadest (5–)10–20 cm above petiolar plexus, subcordate at base, narrowly long-acuminate at apex, subcoriaceous, weakly bicolorous, dark green and semiglossy above, drying greenish brown and matte to weakly glossy, brownish grey-green and weakly glossy to semiglossy below; margins somewhat undulate; anterior lobe 37.8–48.2 cm long, broadly convex; posterior lobes 5.5–7.1 cm long, sometimes unequal, narrowly rounded; sinus V-shaped, 3.3–5.7 cm deep; basal veins 4 or 5(–6) pairs, 1st & 2nd pair free to the base, 3rd & 4th (5th) fused 5–12 mm; midrib flattened, broadly sulcate to broadly rounded and concolorous or paler above, narrowly rounded and paler, dark short-lineate below, drying broadly rounded, minutely many-ridged, slightly paler above, bluntly acute or narrowly rounded and moderately paler (whitish) below with a blunt medial rib and 5 or 6 smaller acute ridges below; primary lateral veins (8–)10–11 per side, arising at a (50–)65–70° angle, concolorous or slightly paler and quilted-sunken above, narrowly rounded and paler (whitish or cream-colored) below; minor veins moderately obscure to visible, weakly raised above (the larger of these drying weakly undulate), obscure to more clearly distinct but scarcely more raised below; upper surface drying sparsely pale-speckled; lower surface densely pale-speckled; laticifers not apparent. Inflorescence erect, one per axil; peduncle ca. 10 cm long, ca. 2 cm diam., medium green, tinged reddish near apex; spathe ca. 20.3 cm long, medium green, semiglossy, nearly white along the margins of the open edge; tube ca. 9.5 cm long, 4–5 cm diam., orange-red to red or maroon and glossy inside, tinged reddish on the medial portion of the blade inside (mostly owing to the reddish resin canals, these prominent, extending to ca. 5 cm from apex in middle, to ca. 7 cm from apex on sides); blade white to pale green inside, 3.3–3.8 cm wide, ca. 5 mm thick; spadix ca. 20.3 cm long, the axis reddish, remaining within the spathe (not protruded forward); pistillate portion ca. 7 cm long, ca. 3.7 cm long on back side; sterile staminate portion whiter than the fertile spadix, 1 cm long, as wide as apex of pistillate portion; fertile staminate portion creamy white, ca. 12.5 cm long, ca. 2.6 cm diam. at base, ca. 2.2 cm diam. at constricted area, ca. 2.4 cm diam. in middle; female flowers pale green, the pistil ca. 5 mm long; ovary ca. 2 mm long, ca. 1.5 mm diam., constricted slightly to ca. 1.2 mm diam. between ovary and style; locules 6 per ovary, each containing a single transparent basally attached envelope (ca. 0.8 mm long, pointed at apex); ovules 1 or 2 per locule, 0.2–0.3 mm long, with funicles about as long as ovules; style ca. 1 mm long; stigma thickly disc-shaped, ca. 0.6 mm thick, ca. 1.6 mm diam.; male flowers creamy white, drying irregularly prismatic, 4–6-sided, tan, 1.2–2 mm wide in both directions. Infructescence berries becoming whitish.

Distribution and ecology — *Philodendron florianetlii* is endemic to Costa Rica, known only from the type locality in the southwestern part of the country, on the Pacific slope, at 70 – 260 (1200) m elevation in a *Tropical wet forest* life zone, generally in or near the crowns of canopy trees.



Figure 1. *Philodendron forianetlii*. Habit of flowering plant.



Figure 2. *Philodendron florianetlii*. Leaf blade, adaxial surface.



Figure 3. *Philodendron florianetlii*. Leaf blade, abaxial surface.



Figure 4. *Philodendron forianetlii*. Spathe showing resin canals on inner surface and apical portion of spadix.



Figure 5. *Philodendron forianetlii*. Herbarium sheet, sheet 1 of 3. WU0120157.



Figure 6. *Philodendron florianetlii*. Herbarium sheet, sheet 2 of 3. WU0120158.



Figure 7. *Philodendron florianetlii*. Herbarium sheet, sheet 3 of 3. WU0120159.



Figure 8. *Philodendron florianetlii*. Roots forming curtain to the ground.



Figure 9. *Philodendron forianetlii*. Florian Etl in canopy.

Etymology — The species is named in honor of Austrian botanist, Florian Etl, of the University of Vienna, whose work with pollination biology in Costa Rica helped to define and distinguish this species. Florian has made many discoveries such as this during his years of work at the La Gamba Field Station in Puntarenas Province.

Comments — The new species is a member of *Philodendron* subgenus *Philodendron* section *Macrobelyium* subsection *Macrobelyium* series *Macrobelyium* and is characterized by its hemiepiphytic habit, numerous pendent roots, short internodes, subterete petioles about as long as the blades, and oblong-elliptic, subcordate-sagittate, narrowly long-acuminate leaf-blades with a V-shaped sinus, usually four or five basal veins, two of which are free to the base, and pale-speckled surfaces, as well as by its solitary moderately short-pedunculate inflorescences with a pale green spathe that is orange-red on the tube inside with similarly colored resin canals extending far up the interior surface of the blade.

The species has been associated with *Philodendron sagittifolium* and, indeed, was included provisionally in that species by both Croat (1997) and Grayum (2003). Each author discussed material here included in *Philodendron florianetlii* as aberrant within *P. sagittifolium* and possibly representing a distinct species. Note that in the case of both the upper and lower leaf blade surfaces of dried specimens, the pale speckling appears to be owing to minute, presumably crystalline cellular inclusions.

The Redbook status for this species is LC (Least Concern) since the species is known from only from a number of well-preserved areas (IUCN, 2020).

Paratypes: COSTA RICA. **Puntarenas**: Cantón of Coto Brus, Las Cruces Tropical Botanical Garden, 6 km SW of San Vito de Java, 8°49'N, 82°58'W, 1200 m, Accession #65–215, 6–7 Mar. 1984 (st), collected originally in Costa Rica, Puntarenas, vicinity of Golfito near TV transmission tower, 2000 ft., T. B. Croat 57243 (MO-932385–88); Along road from Pan-American Hwy. at Piedras Blancas to Rincón (on Osa Peninsula), 3.7 mi W of Panamerican Hwy., 8°46'N, 83°18'W, 90–195 m, 16 Sep. 1987 (fl), T. B. Croat 67697 (CR; MO-9322379–83); Golfito Canton, R. N. Fauna Silv. Golfito Cantón, along crest of Fila Gamba to ca. 0.7 km N, 8°40'12"N, 83°12'00"W, 160–260 m, 27 Jan. 1992 (fr), M. H. Grayum & B. Hammel 10066 (CR, MO-932384).

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