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Philodendron guadarramanum (Araceae), a new species from Tabasco, Mexico

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Abstract

We describe and illustrate *Philodendron guadarramanum*, a new species of Araceae from Tabasco, Mexico. This species grows in montane cloud forest and evergreen tropical rainforest at elevations between 700 and 1100 m. It is similar to *Philodendron purulhense*, but differs from that species by having petioles broadly and sharply sulcate adaxially, with an acute medial rib, leaf blades with more basal veins and more primary lateral veins per side, and inflorescences more numerous per axil.

Keywords: Araceae, endemic, Mexico, *Philodendron*, Tabasco

Introduction

Philodendron Schott (1829: 780) is the second largest genus in the Araceae, with an estimated 1000 species (Boyce & Croat 2018). It is a genus of herbs, mostly climbing epiphytes or hemiepiphytes, exclusive to the Neotropics (Croat 1997, Mayo *et al.* 1997). It is distributed from Mexico to Argentina (except Chile and Uruguay), including the Antilles, usually in tropical humid forest, from sea level to over 2000 m (Croat 1997). The largest number of species is found in South America, while in Central America 127 have been registered (Croat *et al.*, unpubl. data).

The genus in Mexico is represented by 31 taxa (22 species and nine infraspecific taxa) distributed in two subgenera, *Philodendron* and *Pteromischum* (Schott 1856: 77, Mayo 1989, Croat *et al.*, unpubl. data). The largest number of species (18 species and five infraspecific taxa) belong to *Philodendron* subg. *Philodendron*, while only eight taxa (four species and four infraspecific taxa) are within the subg. *Pteromischum* (Grayum 1996, Croat 1997, Croat & Acebey 2015, Díaz Jiménez *et al.* 2015, Croat *et al.*, unpubl. data). Eight species are endemic to Mexico (Croat 1997, Croat & Acebey 2015, Díaz Jiménez *et al.* 2015). After Chiapas (24 taxa), Tabasco and Veracruz are the states with the highest number of taxa, with 17 and 18, respectively (Pérez-Farrera 2005, Croat & Acebey 2015, Díaz Jiménez *et al.* 2015).

Material and methods

During a floristic study on the Araceae family in the state of Tabasco between 2009 and 2010, and as result of field-work carried out during a project about bat-pollination in Mexican bromeliads (2018) in the Cerro de las Flores (Villa Guadalupe, Huimanguillo), Tabasco (Fig. 1), we found a *Philodendron* species that had not been previously described. The review of specimens led us to conclude that it was a new species. In this paper, we describe and illustrate *Philodendron guadarramanum*, a new species of *Philodendron* subgenus *Philodendron* from the state of Tabasco, Mexico. The specimens collected were examined and compared. We describe fertile, living, and dry material using terminology following Croat (1997).

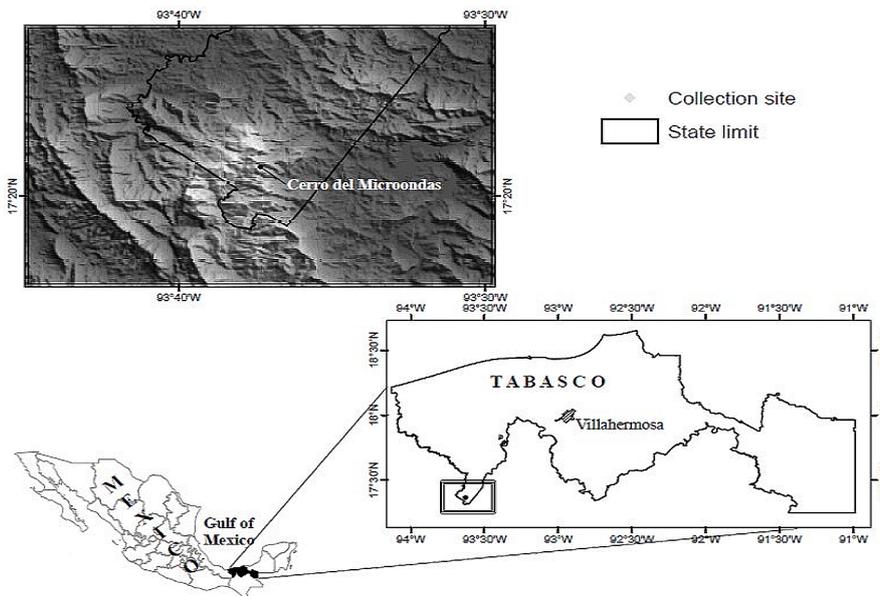


FIGURE 1. Map showing the collection site of *Philodendron guadarramanum* in Tabasco, Mexico (taken from Aguilar-Rodríguez *et al.* 2020).

The GeoCAT program, an open source tool to assess rapid geospatial analysis for potential Red Listing data, was used to determine the extent of occurrence, area of occupancy and conservation status of the species (Bachman *et al.* 2011, Royal Botanical Gardens Kew 2020), and the IUCN Red List Categories and Criteria was consulted (IUCN 2012).

Taxonomy

Philodendron guadarramanum Díaz Jim., Croat & Aguilar-Rodr., *sp. nov.* (Fig. 2)

Philodendron guadarramanum differs from *Philodendron purulhense* Croat (1997: 504) in having petioles broadly and sharply adaxially sulcate, with an acute medial rib, leaf blades with a greater number of basal lateral veins (6–10, vs. 4–8) and a greater number of primary lateral veins per side (7 or 8, vs. 3–6), and inflorescences more numerous per axil (up to 4, vs. 1).

Type:—MEXICO. Tabasco: Municipio Huimanguillo, Villa Guadalupe, Bosque mesófilo de montaña, 17°21'N, 93°37'W, 1028 m, 07 Mayo, 2018, Pedro Díaz Jiménez, P. Adrián Aguilar Rodríguez, M. Cristina MacSwiney G. & Z. Vallado Negroe 1368 (holotype UJAT!, isotypes HEM!) (Fig. 1).

Hemiepiphytic (usually with many individuals climbing on trees and crawling over the ground in the understory), growing 3–8 m high in trees; **stem** appressed-climbing; internodes 5–11 cm long, 3–5 cm diam., semiglossy, dark green, the epidermis brown, semiglossy; roots moderately dense, brown, semiglossy, drying dark brown, cataphylls dark brown, 2-ribbed, persisting with fibers at upper nodes. **Leaves** with petioles 45–87 cm long, mostly firm, subterete, broadly and sharply sulcate adaxially with and acute medial rib, shallowly sulcate between the medial and lateral margins, matte-green, usually drying light brown-matte; **blades** ovate to ovate-cordate, thin and subcoriaceous,



FIGURE 2. **A.** Stem with old remains of cataphylls, closed inflorescences, a partial portion of the petiole, and the partial adaxial surface of a new blade; **B.** Stem covered with old cataphylls degrading and persisting as fiber masses; **C.** Inflorescence in post-anthesis with a longitudinal cut of the spathe showing the reddish purple inner surface of the spathe tube, and (from bottom-up) pistillate, sterile, and staminate portions of the spadix; **D.** Partial portion of the spadix showing pistillate portion (bottom) with the styles rounded at the apex, and the portion sterile (up) broader than pistillate portion; **E.** Partial view of leaves, showing the adaxial surface of a petiole (note the acute medial rib) and adaxial and partial abaxial surfaces of leaf blades. Scale bars: A = 10 cm; B = 3 cm; C = 5 cm; D = 1.5 cm.

green and matte on the upper surface and bright green on the underside, cordate at base, acute to acuminate at apex, 50–75 × 30–55 cm, about equal in length to petiole, drying dark brown to greenish on the upper surface, light brownish green on the lower surface; anterior lobe 38–49 × 18–25 cm; posterior lobes rounded, 14–19 × 16–26 cm; sinus usually spatulate or obovate, 14–17 cm deep; midrib flat, yellowish-green above, light green below, 1.0–1.3 cm wide; basal veins 6–10 per side, with 1–3 pairs free to base, the fourth to last coalesced between 2–10 cm; posterior ribs naked up to 2 cm; primary lateral veins 7 or 8 per side, departing midrib at 60–70°, more or less straight to the margins, yellowish green above, light green below. INFLORESCENCES 1–4 per axil; **peduncle** weakly to strongly curved, 9.0–10.5 cm long, 8–10 mm diam., whitish-streaked, paler (more whitish) toward the base; **spathe** 10.0–18.3 × 4.2–5.6 cm, constricted slightly above the tube, more or less ellipsoid; spathe light green-matte on the outside, whitish-streaked outside, glossy reddish-purple throughout inside; spathe tube 5–10 cm long; **spadix** sessile, clavate to cylindrical, bluntly pointed at apex; 13.5–15.5 cm long; pistillate portion 2–4 cm long, 2.0–2.4 cm diam. at the middle; **staminate** portion 5–9 cm long, 2.0–2.8 cm diam. at the base, **fertile staminate portion** tapered or clavate toward the apex, 10–15 mm diam. at the base, 9.0–12.5 mm diam. at the middle, 7–10 mm diam. at the apex; **sterile staminate portion** 1–2 × 2.5–3.0 cm, usually broader than pistillate portion at anthesis; **pistils** up to 1 mm long, 1.4–3.0 mm diam.; style 0.5–1.0 mm long, ca. 6 mm diam., more or less rounded at the apex; stigma oblong, ca. 0.1–0.2 mm diam. Infertescence not known.

Distribution, habitat and conservation status:—*Philodendron guadarramanum* is apparently endemic to Mexico, known only from the Cerro de las Flores (locally known as “Cerro del Microondas”; Fig. 1), Villa Guadalupe, south of the municipality of Huimanguillo, Tabasco. The Cerro de las Flores borders the northern highlands of Chiapas, therefore, it is possible that this species is also found in the state of Chiapas. It grows between 700 and 1100 m in relicts of evergreen tropical rainforest and montane cloud forest. Applying the IUCN Red List Categories and Criteria, this species could be considered as Critically Endangered (CR) (IUCN 2012), but further studies are needed. The type locality is highly deforested, and we consider this to be the main threat to this species.

Phenology:—All specimens with inflorescences at anthesis and post-anthesis were collected in April and May.

Eponymy:—The species is named in honor of the Mexican botanist, M.C. María de los Ángeles Guadarrama Olivera, who for many years directed and supported the study of the flora of Tabasco. María de los Ángeles is an expert in Commelinaceae. She was a professor and director of the herbarium (UJAT) of the Universidad Juárez Autónoma de Tabasco and is now retired.

Additional specimens examined (paratypes):—MEXICO. Tabasco: Municipio Huimanguillo, Cerro de las Flores (Cerro del Microondas), Villa de Guadalupe, 17°22′26″N, 93°37′51″W, 750 m, 28 April 2009, *Pedro Díaz Jiménez, T. Magaña R. & A. M. de la Cruz López 776* (UJAT); Cerro de las Flores, Villa de Guadalupe, 17°22′ N, 93°37′ W, 1000 m, 04 May 2010, *Pedro Díaz Jiménez, A. M. de la Cruz López, Artemio Álvaro Torres & R. A. Ovando Rodríguez 1096* (UJAT).

Notes:—*Philodendron guadarramanum* represents the fourth species of *Philodendron* ser. *Fibrosa* in Mexico. The species in this series are mainly characterized by having cataphylls that persist as a mass of fibers on the stem, axile placentation, and many ovules per locule (Croat 1997). Within this series, *P. guadarramanum* is easily confused with *P. purulhense*, but that species differs in having petioles subterete and obtusely flattened adaxially, leaf blades with fewer basal and fewer pairs of primary lateral veins per side, and inflorescences only one per axil (Croat, 1997). Both species have spathe longer than the petioles, green on the outside, purple on the inside of the spathe tube, sessile spadix, and the sterile staminate portion broader than the pistillate portion at anthesis (Croat, 1997).

Philodendron guadarramanum is characterized by its hemiepiphytic habit, petioles broadly and sharply sulcate adaxially, with an acute medial rib, leaf blades ovate to ovate–cordate, with many basal veins and many primary veins per side, and inflorescences 1–4 per axil, with the spathe green-whitish streaked externally and glossy reddish purple inside. It represents the fourth species of *Philodendron* ser. *Fibrosa* in Mexico and the second new species of Araceae recently described for the state of Tabasco, raising the number from 44 to 46 (Croat *et al.* 2019; Díaz Jiménez *et al.* 2015). This indicates the importance of continuing exploration in poorly explored sites of Tabasco, as well as in other poorly explored areas in Mexico.

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