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Taxonomy and systematics

***Anthurium perezfarrerae* (Araceae: sect. *Andiphilum*), a new species from Sierra de Juárez, Oaxaca, Mexico**

Anthurium perezfarrerae* (Araceae: sect. *Andiphilum*), *una especie nueva de la sierra de Juárez, Oaxaca, México

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Abstract

Mexico possesses at least 59 taxa of *Anthurium*, 49 species and 10 infraspecific taxa, 32 of which are found in the State of Oaxaca, Mexico. During fieldwork conducted in 2019 in Sierra de Juárez, northern Oaxaca, we discovered a previously undescribed species of *Anthurium* sect. *Andiphilum* (Schott) Croat. The new species, *Anthurium perezfarrerae* Díaz Jim. & Croat, is described taxonomically and illustrated. It is morphologically similar to *Anthurium andicola* Liebm. that is distributed in the same area, but this species differs in having a shorter geniculum, fewer primary lateral veins per side, tertiary vein prominent above, and a shorter spadix.

Keywords: *Anthurium*; Endemic; Ixtlán de Juárez; Montane Cloud Forest

Resumen

México posee al menos 59 taxones de *Anthurium*, 49 especies y 10 taxones infraespecíficos, 32 de los cuales se encuentran en el estado de Oaxaca, México. Durante trabajo de campo realizado en 2019 en la sierra de Juárez, norte de Oaxaca, descubrimos una especie de *Anthurium* perteneciente a la sección *Andiphilum* (Schott) Croat, no descrita anteriormente. La nueva especie, *Anthurium perezfarrerae* Díaz Jim. et Croat, es descrita taxonómicamente

e ilustrada. Es morfológicamente similar a *Anthurium andicola* Liebm., que se distribuye en la misma área, pero esta especie difiere en tener el genículo más corto, menos venas laterales primarias por lado, venas terciarias prominentes en el haz y el espádice más corto.

Palabras clave: *Anthurium*; Endémica; Ixtlán de Juárez; Bosque Mesófilo de Montaña

Introduction

Araceae (order Alismatales) is a family of herbaceous plants, comprising about 3,600 species and 144 genera (Boyce & Croat, 2018). It is distributed worldwide, but mainly in tropical and subtropical regions in a wide variety of habitats (Bown, 2000). Most species are hemiepiphytes, holo-epiphytes, terrestrials or rupicolous, and few are aquatic (Croat, 1988). In Mexico the family is represented by 13 genera and 109 species, including native and naturalized species (Croat & Acebey, 2015). Chiapas and Oaxaca are the states with the highest number of species, with about 60% of the Araceae known in Mexico (T.B. Croat et al., unpubl. data).

Anthurium Schott, subfamily Pothoideae, is a Neotropical genus (Croat, 1983, 1988) with about 1,600 species, distributed from southern Mexico to northern Argentina and Paraguay, including the West Indies and southern Brazil (Boyce & Croat, 2018; Croat, 1983, 2015). The different species grow in a wide diversity of habitats, from sea level to altitudes of more than 2,000 m. In Mexico, 59 *Anthurium* taxa have been reported, 49 species and 10 infraspecific taxa, of which 33 species and 5 subspecies are regarded as endemic (T.B. Croat et al., unpubl. data), all of them distributed in 10 different sections (*Andiphilum* (Schott) Croat, *Calomystrum* (Schott) Engl., *Cordato-punctatum* Croat & Carlsen, *Dactylophyllum* (Schott) Engl., *Leptanthurium* (Schott) Engl., *Pachyneurium* (Schott) Engl., *Polyphyllum* Engl., *Porphyrochitonium* (Schott) Engl., *Tetraspermium* (Schott) Engl. and *Xialophyllum* (Schott) Engl.) (T.B. Croat et al., unpubl. data). In Oaxaca, the genus is represented by 32 taxa, 26 species and 6 infraspecific taxa, of which 18 species and 2 subspecies belong to the *Andiphilum* section.

Andiphilum is a section recently resurrected by Croat and Hormell (2017), and represents the section with the highest number of species in Mexico, with more than 90%. It occurs mainly in Mexico and Guatemala and only 4 species are distributed in Honduras, 2 of which also occur in El Salvador. It is characterized by species with D-shaped to conspicuously and broadly sulcate petioles and mostly orange berries that have a pasty rather than a juicy gelatinous mesocarp, and especially large seeds (Carlsen & Croat, 2019; Croat & Hormell, 2017).

Materials and methods

During fieldwork, as part of a Cycad project in 2019 in the Ejido La Luz (17°30'59" N, 96°22'46" W; 1,830 m asl), Ixtlán de Juárez, Oaxaca (Fig. 1), we collected many *Anthurium* specimens, including a species of *Anthurium* sect. *Andiphilum* that did not correspond to any previously described species. At the collection site, the vegetation corresponds to montane cloud forest, and the climate in the region, approximately between 1,800-2,600 m is temperate subhumid with summer rains (Aquino-Vásquez et al., 2012). The new species is described and illustrated, using fertile, living, and dry material. The taxonomic description was prepared following the methodology by Croat and Bunting (1979) and Croat (1983).

Description

Anthurium perezfarrerae Díaz Jim. & Croat, *sp. nov.* Type: Mexico. Oaxaca: municipio de Ixtlán de Juárez, Ejido La Luz, Bosque mesófilo (17°30'59" N, 96°22'46" W), 1,830 m, 07 November 2019, Pedro Díaz Jiménez, M. Á. Pérez-Farrera & H. Gómez-Domínguez 1449 (holotype: HEM!). (Figs. 2, 3).

Anthurium perezfarrerae is morphologically similar to *A. andicola* Liebm., but differs from that species in having a shorter geniculum (1.5-2 cm long vs. 2.5-3 cm), broadly ovate-deltoid blades (vs. ovate to broadly ovate), fewer primary lateral veins per side (3-5 vs. 5-9), tertiary vein prominulous above and its inflorescence with a spathe (5.5-7.5 cm vs. up to 11.5 cm) and shorter spadix (4-10.5 cm vs. up to 15 cm long). The new species could also be confused with *Anthurium umbrosum* Liebm., but that species differs in having a much shorter geniculum (0.7-1.1 cm long), gradually long-acuminate at apex (vs. acute at apex) of the blade and inflorescences usually longer than leaves (vs. similar lengths between both structures in *A. perezfarrerae*).

Terrestrial; stem thick, to 20 cm long, 2.1 cm diam.; leaf scars 1.2-1.9 cm wide; roots thick, 1-5.2 mm diam., whitish; cataphylls subcoriaceous, to 11 cm long, light green, the apex acute or rounded, drying brown, weathering to fibrous network at the base, persisting. Leaves erect-spreading, 4-5; petioles erect to spreading, 37-46.5 cm

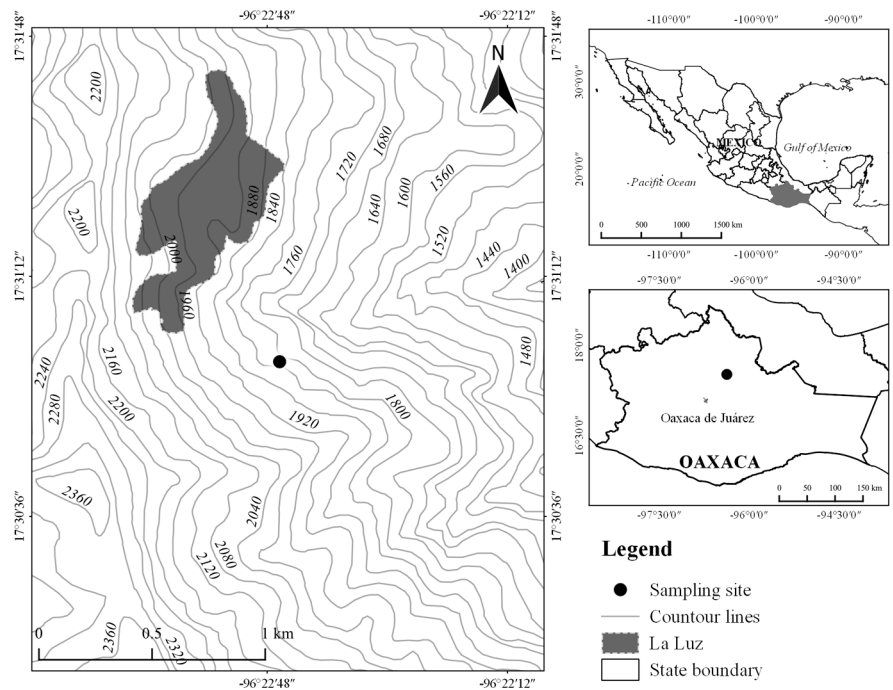


Figure 1. Map showing the type locality of *Anthurium perezfarrerae* Díaz Jim. & Croat in Oaxaca, Mexico.

long, 5-6.2 mm diam., sulcate or flat adaxially with acute margins, yellowish-green; geniculum 2.5-3 cm long, 6-7 mm diam., smooth; blades ovate to broadly ovate, 26.5-31 cm long, 16-22.5 cm wide, broadest at point of petiole attachment, acute at apex, broadly lobed at base, thinly coriaceous; anterior lobe 18.5-25 cm long, the margins broadly rounded; posterior lobes 8-9 cm long, 9.5-12 cm wide, rounded at apex; sinus parabolic, spatulate or hippocrepiform, rounded at apex; upper surface dark green glossy, lower surface light green, matte; midrib raised above, diminished and flat at apex, raised below, dark greenish-yellow above and light green below; basal veins 4-5 pairs, the first pair free to base, second to the third coalesced 1.5 cm, third to the fifth of 2.5-3.5 cm; posterior rib naked; primary lateral veins 5-9 per side, departing midrib at 40-65° angle, sunken above, raised below, interprimary veins sunken above, raised below, sometimes midrib, basal, and primary lateral veins tinged red-violet on lower surface; collective veins arising from the first to third pairs of basal veins, sunken above, raised below, 0.3-1 cm from margin. Inflorescence erect, ± equal to leaves; peduncle to 46 cm long, 6 mm diam., terete, yellowish-green, apically tinged red-violet; spathe lanceolate, erect-spreading, to 11.5 cm long, 2.6 cm wide, subcoriaceous, yellowish-green, faintly tinged purple at

margins, with midrib tinged purple and visible dark green veins, acuminate to caudate at apex, rounded to obtuse at base, inserted at up to a 70° angle on peduncle; spadix sessile, light purple, to 15 cm long, 9.4 mm diam. at base, 6.2 mm diam. near apex; flowers rhombic 2-4.1 mm wide, 1.9-2.5 mm long, sides weakly sigmoid to straight, olive-green; 6-7 visible in principal spiral, 5-6 flowers visible in alternate spiral; tepals purple-spotted with olive-green, papillate minutely, lateral tepals 0.9-1.5 mm wide, inner margin rounded; pistils weakly emergent, densely purple spotted, stigma linear or oblong, 0.2-0.3 mm long; stamens held at the level of tepals; anthers orange, thecae broadly ellipsoid, scarcely divaricate; pollen whitish. Infructescence not known.

Taxonomic summary

Distribution and habitat: *Anthurium perezfarrerae* is so far endemic to the municipality of Ixtlán de Juárez, Oaxaca, Mexico, at 1,830 m in montane cloud forest (Fig. 1). Some of the arboreal species registered for this type of vegetation in the area where the type locality is located, the ejido La Luz, are *Carpinus caroliniana* Walter, *Clethra mexicana* DC., *Liquidambar styraciflua* L., *Oreopanax xalapensis* (Kunth) Decne. & Planch., *Quercus acutifolia* Née, *Q. germana* Schltdl. & Cham. and *Turpinia insignis*

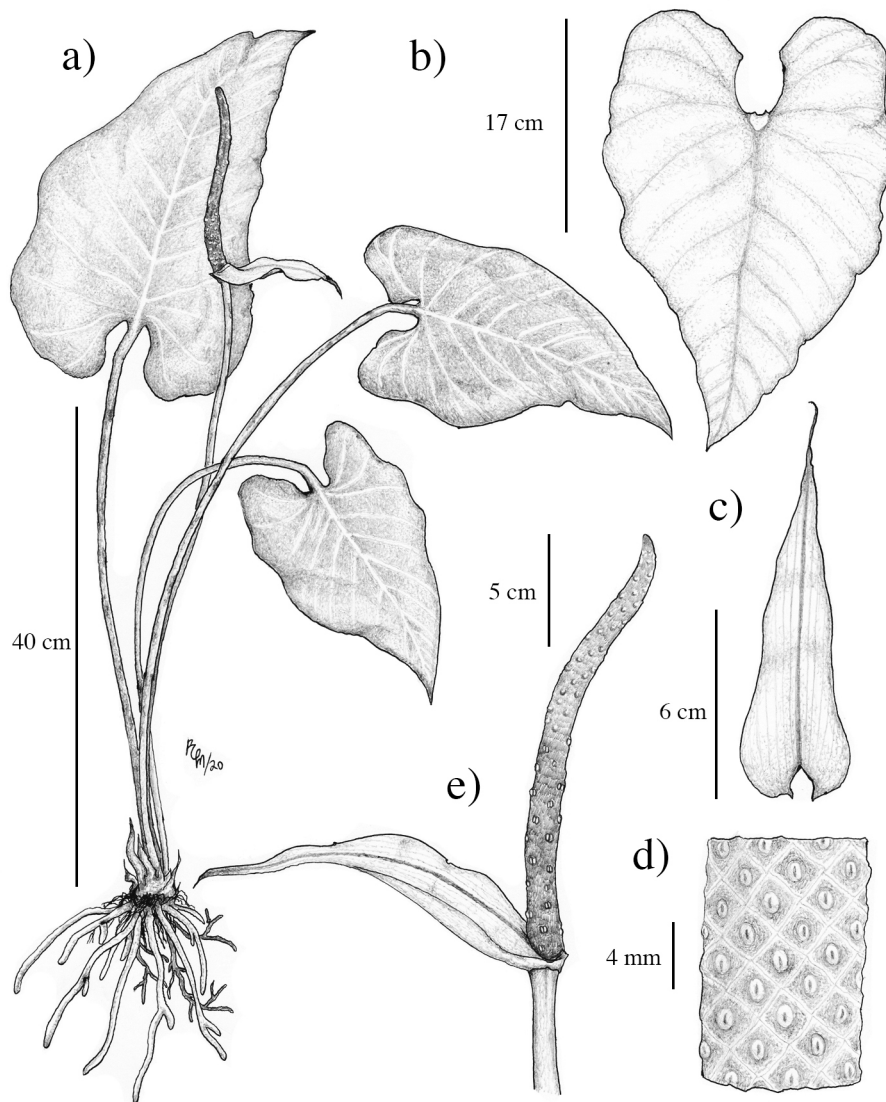


Figure 2. *Anthurium perezfarrerae* Díaz Jim. & Croat. a, Adult plant, note the inflorescence length, almost as long as the leaves; b, adaxial view of the leaf blade; c, spathe; d, a portion of the spadix in female phase showing the rhombic flowers and linear stigma; e, inflorescence in the male phase showing the emergence of the anthers at the base of the spadix. Drawings by Roberto García Martínez using photos of living material and the holotype (P. Díaz Jiménez et al., 1449 (HEM)).

(Kunth) Tul. (Ruiz-Jiménez et al., 2012). In the area and the surroundings, there are also cleared areas of forest used for agriculture. *Anthurium perezfarrerae* grows sympatric with other Araceae such as *Anthurium subovatum* Matuda and *Monstera deliciosa* var. *sierrana* G.S. Bunting, both endemic to Sierra de Juárez.

Etymology: it is named in honor of the Mexican botanist, Dr. Miguel Ángel Pérez Farrera, who helped to collect the type specimen. He is currently a professor and director

of the Herbarium “Eizi Matuda” (HEM), Universidad de Ciencias y Artes de Chiapas, Mexico. Miguel is an expert on Zamaceae but also works with many other families, including Araceae and Arecaceae.

Remarks

Anthurium perezfarrerae is a member of section *Andiphilum* and is characterized by its long stem, sulcate to adaxially flattened petioles with acute margins, long

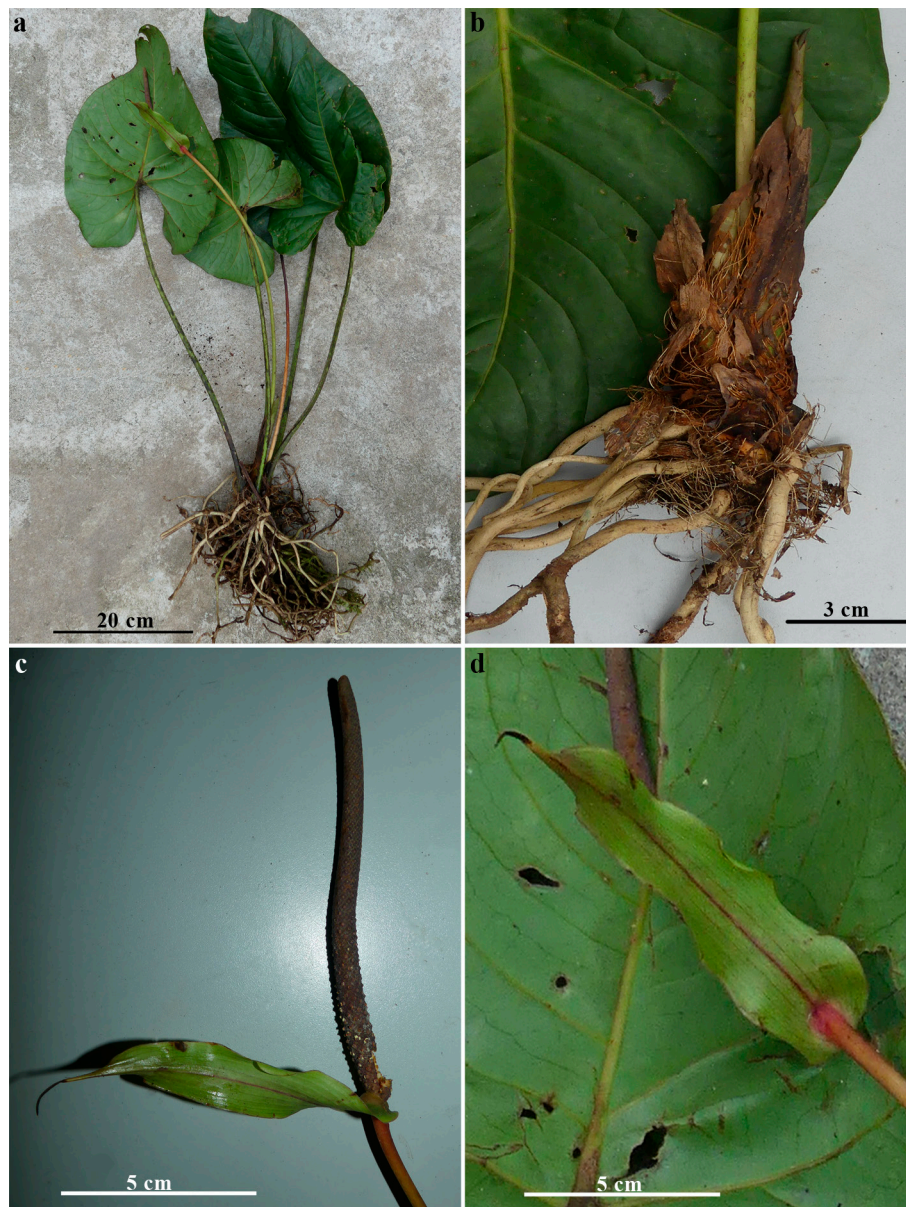


Figure 3. *Anthurium perezfarrerae* Díaz Jim. & Croat. A, Adult plant; b, roots, and persistent cataphylls showing its weathering to a fibrous network at the base; c, spathe and the light-purple sessile spadix; d, spathe showing the tinged-purple midrib. Photos by Pedro Díaz Jiménez.

geniculum, more or less ovate blades with midrib, basal, and primary lateral veins sometimes tinged red-violet on lower surface as well as a sessile light purple spadix and tepals purple spotted with olive-green. It is morphologically similar to *A. andicola* Liebm., but this species is epiphytic or epipetric and differs in having petioles sharply sulcate, a shorter geniculum (1.5-2 cm long), blades broadly ovate-deltoid, 3-5 primary lateral

veins per side, tertiary vein prominulous above and shorter spathe (5.5-7.5 cm long) and spadix (4-10.5 cm long). It can also be confused with *Anthurium umbrosum* Liebm., an endemic species to Mexico that is distributed in the same region, but the geniculum in that species is shorter (0.7-1.1 cm long), its blade is gradually long-acuminate at apex and its inflorescence is usually longer than the leaves.

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