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Monstera cedenoi (Araceae: Monsteroideae), a new glaucous species with pinkish spathes endemic to Costa Rica (Central America)

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Abstract. *Monstera cedenoi,* endemic to eastern Costa Rica, is described and illustrated. Based on its pinkish spathes, the taxonomic novelty belongs to the *Monstera oreophila* complex, which also includes *M. gentryi*, *M. mittermeieri*, and *M. oreophila*. Detailed comparisons between the new proposed taxon and its morphological relatives are included.

Keywords: Araceae, Central America, endemism, taxonomy.

INTRODUCTION

Monstera Adanson is a Neotropical genus of Araceae comprising about 80 published species, which are generally found in humid tropical forested regions at low to mid elevations, particularly in Central America with more than 50 species (Croat et al. 2024). This genus was revised in its entirety by Madison (1977), but recently Cedeño-Fonseca et al. (2022) and Croat et al. (2024) published comprehensive taxonomic revisions for Costa Rica and Central America, respectively. Despite being a relatively well-known genus in the latter region, new species have been discovered in recent years (Zuluaga and Cameron 2018; Cedeño-Fonseca et al. 2018, 2020a, 2020b, 2020c, 2021a, 2021b), mainly from poorly explored areas of Costa Rica and Panama.

Recently, during a scientific expedition carried out in the Pérez Zeledón Cantón, a plant was encountered which presented a particular combination of morphological characters (especially the glaucous petioles and pinkish spathes), which seemingly allied it to seven species mainly restricted to Costa Rica and/or Panama (except *M. glaucescens* Croat & Grayum, which occurs from Nicaragua to Colombia): *M. bocatorensis* Croat & M.Cedeño, *M.*

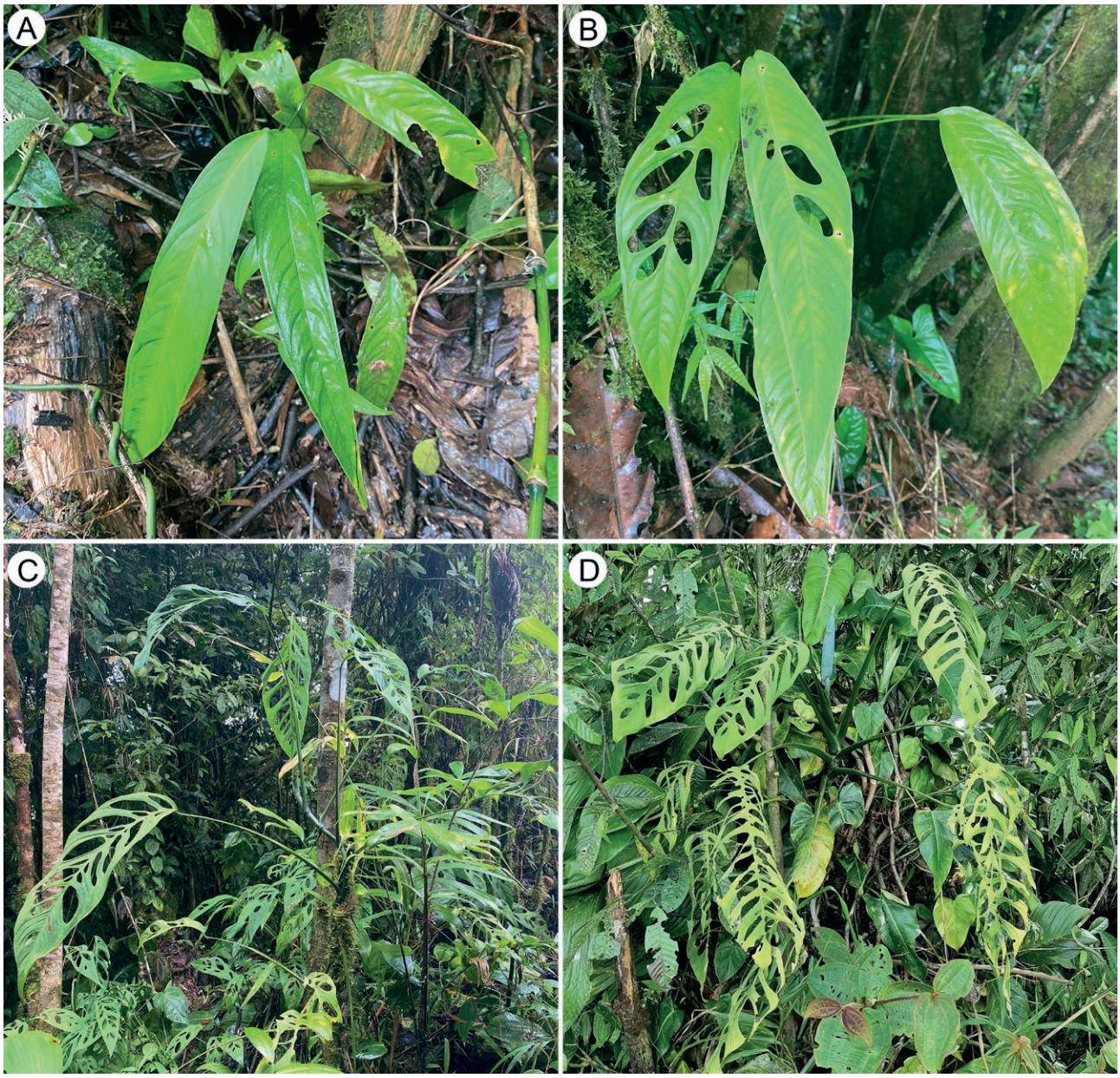

Figure 1. *Monstera cedenoi in situ*. A. Juvenile plant with entire blades. B. Juvenile plant with fenestrated blades. C. Pre-adult plant. D. Adult plant with an inflorescence. Photos by Orlando O. Ortiz.

croatii M.Cedeño & A.Hay, *M. epipremnoides* Engl., *M. gentryi* Croat, M.Cedeño & O.Ortiz, *M. glaucescens*, *M. mittermeieri* M. Cedeño, and *M. oreophila* Madison. In this article, *M. cedenoi* is described and proposed as a species new to science, which so far is restricted to eastern Costa Rica. Detailed comparisons between the taxonomic novelty and its morphological relatives, and field photographs, are included.

TAXONOMY

Monstera cedenoi O. Ortiz, Croat & J. Hughes **sp. nov.**

Type: Costa Rica. San José: Cantón Pérez Zeledón, 1000 m, 7 de Oct. 2022, *M. Cedeño, O. Ortiz, J. M. Hughes 2515* (holotype USJ [2 sheets]; isotypes B, MO, PMA).

Diagnosis

Monstera cedenoi differs from *M. bocatorensis, M. croatii, M. epipremnoides, M. gentryi, M. glaucescens, M. mittermeieri* and *M. oreophila* by the combination of the following morphological characters: leaves with glaucous-pruinose, terete, petioles with persistent petiolar sheaths that reach up to 1/2 of its length, entire (but sometimes torn), extensive fenestrated blades, inflorescences with pinkish (externally) and orange-yellow (internally) spathes, pale-orange spadices, and flowers with a rectangular ovary and a linear stigma.

Description

Nomadic vine, terrestrial or appressed-climbing habit. Seedlings bearing foliage leaves. Juvenile plants: root climbers; terrestrial; stems dark or light green, smooth, cylindrical, 0.2–0.5 cm diam.; internodes 1–2 cm long; cataphylls unknown; petiole distinct, dark or light green, smooth, 13–30 cm long, sheathed half or 4–10 cm below base of the geniculum; petiole sheath persistent; unsheathed portion terete or slightly ribbed; geniculum almost terete, 0.3–0.5 cm long; blades lanceolate, attenuate at base, acuminate, thinly coriaceous, 12–25 × 2–7.5 cm, not appressed to the phorophyte; fenestrations present or absent, completely fenestrated or generally one fenestrated side. Adult plants: root climbers; stems green or dark green, cylindrical, internodes 0.5–7 cm long, 1.5–2 cm diam.; anchor and feeder root black or light brown, glaucous; petioles light green or dark green in the base, smooth and glaucous, 40–75 cm long; petiole sheath persistent and involute, up to 1/2 of the petiole length; unsheathed portion terete and slightly ribbed near geniculum; geniculum almost terete, sulcate adaxially, 1–2.5 cm long; blades narrowly ovate, asymmetrically rounded at base, sometimes obtuse in one side and rounded in the other, acuminate at apex, subcoriaceous, drying yellowish-brown, 40–53 × 11.5–21 cm, not decurrent onto the geniculum; ribbed adaxially, convex abaxially; primary lateral veins 8–15 per side, departing midrib at 75–85°, strongly sunken adaxially, prominent abaxially, irregularly sinuous to the margin; secondary veins parallel; collective veins visible on the margins of each lobe; fenestrations present, those located along each side of the midrib larger oblong elliptical, those located near the midrib usually comprising small sub-circular holes 0.3–2 cm diam., with filamentous strands connecting between the perforations, the larger perforations often tearing through to the margins, the spaces between perforations 0.3–2.5 cm wide, often with a primary lateral vein; margins entire or pinnatilobed due to tearing of the fenestrations that extend to the margin, the sinuses reaching halfway or all the way to the midrib. Inflorescences on ascending stems, solitary; peduncle smooth, 24 cm long; spathe naviculiform, acuminate to long-acuminate, glaucous-green externally during development, glaucous-green and pinkish externally and light orange-yellow internally at anthesis, becoming torn at base as it fully opens, deciduous soon after anthesis, 12–17 × 10–14 cm, up to 6 cm longer than the spadix; spadix during development unknown, pale-orange at anthesis, 8–11 cm long, 2–2.5 cm diam., sterile zone basal, 2.5 cm long; sterile flowers 3–5 mm long, with a transparent secretion; fertile flowers 5–6 mm long; ovary rectangular in longitudinal section; style hexagonal; stigma linear; stamens with laminar filaments, 1.5–6 mm long; anthers 1.5–3 mm long; berries unknown; seeds unknown.

Eponymy

Monstera cedenoi is dedicated to Marco Vinicio Cedeño Fonseca, specialist in Neotropical Araceae and especially in the genus *Monstera*.

Phenology

Flowering in October.

Distribution and habitat

Monstera cedenoi is endemic to Costa Rica, only known from the south on the Pacific side in the region of Pérez Zeledón at ca. 1000 m. It occurs in the *Tropical moist forest* life zone, in primary and secondary forest, and open areas.

DISCUSSION

The species is a member of sect. *Monstera* (*sensu* Madison 1977) and is characterized by its long, glaucous-pruinose petioles, extensively fenestrated, narrowly ovate, asymmetrically rounded blades and acuminate apex, primary lateral veins strongly sunken adaxially, and inflorescences with spathes glaucous-green externally during development, glaucous-green and pinkish externally and pale orange yellow internally at anthesis, as well as by its pale orange spadices at anthesis.

Taking into account the pink spathes (internally), *Monstera cedenoi* belongs to the *Monstera oreophila* complex (Cedeño-Fonseca et al. 2021), which includes *M. gentryi*, *M. mittermeieri*, and *M. oreophila*. However, *M. cedenoi* differs from the aforementioned taxa in having pruinose-glaucous petioles with the petiolar sheaths reaching up to half their length (vs. up to the geniculum or very close to it) and the free portion completely terete (vs. sulcate, flat or absent). Additionally, *M. gentryi* has orange spathes externally and *M. mittermeieri* greenish, whereas *M. cedenoi* is consistently pinkish.

Figure 2. Some diagnostic characters of *Monstera cedenoi*. A. Adult plant with a glaucous-green spathe externally. B. Inflorescence at pre-anthesis. C. Inflorescence at male anthesis with the orange-yellow spathe (internally) and the pale-orange spadix. D. Inflorescence at male anthesis with a glaucous-green and pinkish (externally) spathe. Photos by Jason M. Hughes, all from *M. cedeño et al. 2515* (USJ)

Table 1. Morphological comparison of *M. cedenoi* and its relatives.

	M. cedenoi	*M. bocatorensis*	*M. croatii*	*M. epipremnoides*	*M. gentryi*	*M. glaucescens*	*M. mittermeieri*	*M. oreophila*
Petiole pruinose	Present	Present	Present	No	No	Present	No	No
Petiolar sheath length	1/2 of the petiole	1/2 of the petiole	1/2 of the petiole	5 cm of the geniculum	5 cm of the geniculum	1/2 of the petiole	up to the geniculum	up to the geniculum
Petiolar sheath	Persistent	Persistent	Persistent	Persistent	Persistent	Persistent	Persistent	Deciduous
Free portion of the petiole (adaxially)	Terete	Terete	Terete	Sulcate or flat	Sulcate or flat	Sulcate or flat	Absent	Absent
Leaf blade shape	Entire (but sometimes torn)	Entire or pinnatilobed or pinnatifid	Pinnatilobed or pinnatifid	Pinnatilobed or pinnatifid	Entire	Pinnatilobed or pinnatifid	Pinnatilobed or pinnatifid	Entire or pinnatilobed or pinnatifid
Fenestrations	Present	Absent	Absent	Present	Present	Present	Present	Present
Spathe colour (externally)	Pinkish	Creamy-white	Creamy-white	Greenish	Orange	Creamy-white	Greenish	Pinkish
Spathe colour (internally)	Orange-yellow	Creamy-white	Creamy-white	Creamy-white	Pinkish-salmon	Creamy-white	Pinkish-salmon	Pinkish-salmon
Ovary shape	Rectangular	Square	Square	Rectangular	Rectangular	Square	Rectangular	Rectangular
Stigma shape	Linear	Linear	Linear	Circular	Linear	Linear	Linear	Linear

Considering the glaucous petioles and the persistent petiolar sheaths, *M. cedenoi* is similar to *M. bocatorensis*, *M. croatii* and *M. glaucescens*, but these taxa differ in having leaf blades without fenestrations, as well as creamy-white spathes (vs. pinkish or pinkish-salmon), and square-shape ovaries (vs. rectangular).

According to the leaf blade shape and the presence of extensive fenestrations, *M. cedenoi* resembles *M. epipremnoides*, but the latter differs by its petioles never pruinose and sulcate or flat (vs. terete) in the free portion (at apex) and its sheaths that reach almost to the geniculum (vs. up to 1/2 of the petiole length), as well as by its greenish or creamy-white spathes (vs. pinkish), and circular stigmas (vs. linear).

All differences among *M. cedenoi* and its relatives are summarized in Table 1.

Additional specimens examined (paratypes)

COSTA RICA. **San José**: Cantón Pérez Zeledón, 1000 m, 7 Oct. 2022, *M. Cedeño & al. 2516* (USJ); Cantón Pérez Zeledón, 1000 m, 7 Oct. 2022, *M. Cedeño & al. 2517* (USJ).

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