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Monstera florescanoana (Araceae), a new species from central Veracruz, Mexico

Monstera florescanoana (Araceae), una especie nueva de la región central de Veracruz, México

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Abstract. *Monstera florescanoana* (Araceae), a new species in section *Monstera*, endemic to central Veracruz, Mexico, is described and illustrated. This species appears to be most closely related to *Monstera siltepecana* Matuda and *Monstera dubia* (Kunth) Engl. et K. Krause.

Key words: Araceae, aroids, humid montane forest, Mexico, *Monstera*, Veracruz.

Resumen. Se describe e ilustra *Monstera florescanoana* (Araceae), una nueva especie de la sección *Monstera*, endémica de la región central del estado de Veracruz, México. Esta especie parece estar más cercanamente relacionada a los taxones *Monstera siltepecana* Matuda y *Monstera dubia* (Kunth) Engl. et K. Krause.

Palabras clave: Araceae, aráceas, bosque húmedo montano, México, *Monstera*, Veracruz.

Introduction

The family of plants Araceae is mainly tropical with its highest diversity of species in Asia and tropical America (Croat, 1998). In Mexico 109 species and 13 genera have been recorded, with *Anthurium*, *Philodendron* and *Monstera* being the most speciose genera (Croat and Carlsen, 2003). The majority of the species are concentrated in the tropical zones of the states of Chiapas, Oaxaca and Veracruz, the latter harboring about 50% of the total Mexican species, of which about 65% occur in the southeastern region of Los Tuxtlas (Sosa and Gómez-Pompa, 1994; Acebey and Krömer, 2008). Veracruz still presents several botanically little explored areas, especially at the southern border with the states of Oaxaca and Chiapas, and therefore it was expected that its number of aroid species will increase.

Monstera is a genus of about 40 species of climbing hemiepiphytes ranging from Mexico to Brazil and Bolivia, where these occur in tropical moist and humid forest, as well as in cloud forest (Mayo et al., 1997). Leaf development is heteroblastic with markedly different leaf forms, depending on the stage of development. The genus is divided into four sections: *Tornelia* and *Echinospadix,* each with a single species; and *Monstera* and *Marcgraviopsis*, the former having juvenile leaves free and exerted, and tightly appressed in the latter (Madison, 1977, Mayo et al., 1997). The Latin word *monstrum* (monster) refers to the peculiar perforations (fenestrae) of the leaves of many species.

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During field work for a project involving investigation and education on endemic and notable plants of Veracruz, T. Krömer and collaborators from the Centro de Investigaciones Tropicales (CITRO), Universidad Veracruzana in Xalapa, state of Veracruz, Mexico made a collection of *Monstera* in a cloud forest fragment in the Atzalan municipio, located in the central region of Veracruz. This material could not be assigned to any known species.

Description

Monstera florescanoana Croat, T. Krömer et A. Acebey, *sp. nov. Type*: Mexico. Veracruz: Comunidad Cruz Gorda, Congregación San Salvador, 990 m, 19°52'30"N, 97°12'43"W, 17 June, 2008, *T. Krömer, J. Viccon-Esquivel, N. Martínez-Correa* and *J. R. Fernández-Contreras 3334* (holotype, MO-6065968; isotypes B, K, MEXU, US, XAL). Figs. 1-2, table 1.

Planta hemiepiphytica; internodia 1.8–3(6) cm longa, (4)5–10 mm diametro in sicco, laevia; petiolus 17–24

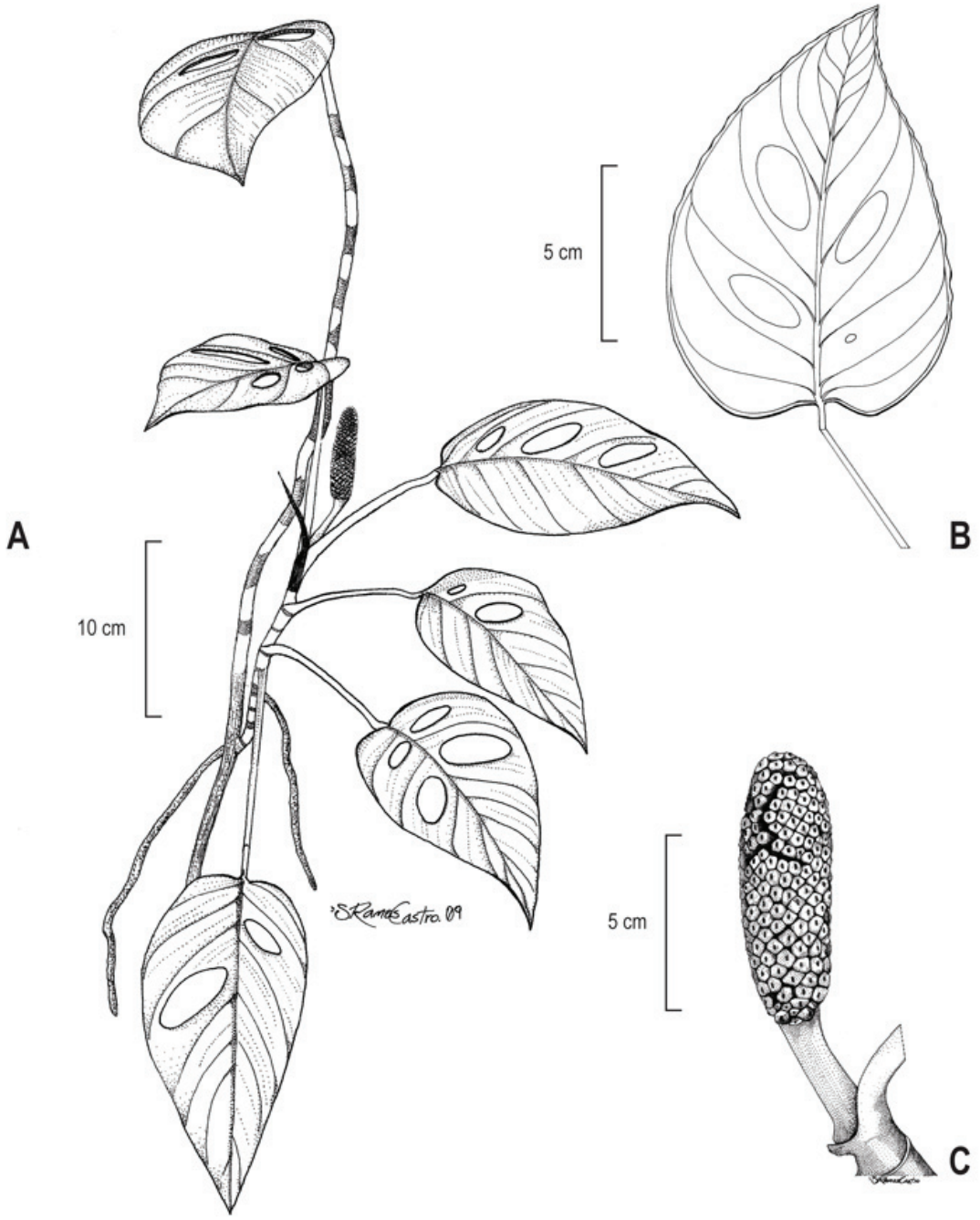

Figure 1. *Monstera florescanoana*. A, habit, showing the disposition of leaf blades and a single inflorescence; B. leaf blade showing the distribution of the fenestrae; C, close-up of a portion of stem showing a single spadix in post-anthesis condition. Drawn by S. E. Ramos-Castro from *T. Krömer et al. 3334*.

cm longus, subteres; lamina 14.3–34 cm longa, 5.2–20.5 cm lata, infra glauca; utroque costae latere 3-6 nervis primariis, 2–4(6) fenestris in serie unica, raro biseriatis in laminis adultis majoribus; pedunculus 2–5.7 cm longus; spadix sessilis vel stipitata ad 10 mm, 6.7–9.5 cm longa, ad 6.2 cm diametro, 2.3–3 cm lata in sicco.

Hemiepiphyte to 3-5 m. Juvenile plants: terrestrial creeper,

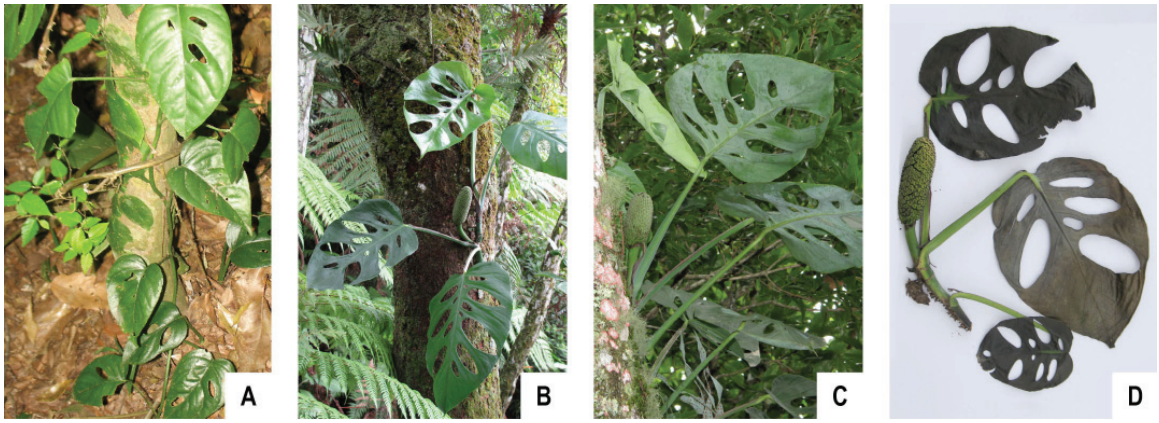

Figure 2. A, habit of juvenile live plant (front) of *Monstera florescanoana*, the tightly appressed leaves on the trunk belong to *Monstera punctulata*; B, habit of adult live plant in fertile condition; C, adult leaf blades showing their glaucous underside; D, photograph of an herbarium specimen showing both upper and lower leaf blade surfaces and a single post-anthesis inflorescence. Photographs by A. Acebey and T. Krömer.

leaves free and exserted, lamina ovate to ovate-lanceolate, cordate at the base, without or with few fenestrae. Adult plants: internodes 1.8–3(6)cm long, drying (4)5–10 mm in diameter dark brownish black, matte, appearing smooth to the naked eye, finely and closely ridged on magnification; **petioles** smooth, 17–24 cm long, subterete, drying sharply and narrowly sulcate throughout, especially toward apex, sheathed to 2/3 or sometimes to within less than 1 cm from blade, the sheath inconspicuous, inrolled and persistent intact; geniculum 1.5 cm long, slightly darker than the remainder of the petiole; **blades** ovate 14.3–34 cm long, 5.2–20.5 cm wide, averaging 27.7 x 16 cm, 1.2–1.5 times longer than wide, inequilateral, one side 0.7–2 cm wider, gradually long-acuminate on larger leaves, abruptly acuminate on smaller, more rounded blades at apex, rounded to weakly subcordate at base, dark green and subcoriaceous, weakly bicolorous, semiglossy on both surfaces, drying thinly coriaceous, grayish black, matte above, matte to weakly glossy, glaucous below in living plants, sometimes semiglossy on younger blades; sinus arcuate, 0.5–1 cm deep; midrib obtusely sunken and concolorous above, narrowly rounded and concolorous to slightly darker on drying below; **primary lateral veins** 3–6 pairs, arising at a steep angle then spreading at 45–55° angle; fenestrate usually on both sides, sometimes lacking fenestrae on one side mostly on young or preadult leaves, the fenestrae to within 0.5–1.1 mm from the midrib, usually with 2–4 in 1 series per side, rarely on the largest adult leaves in 2 series per side, (0)2–4 on the narrow side, 2-4(6) on the broader side, 1.5-9.5 cm long, 0.7–4.8 cm wide, ellipsoid to ovate; reticulate veins moderately obscure but moderately interconnected near the margins. **Inflorescence:** peduncle 2–5.7 cm long; spadix sessile or stipitate to 10 mm (stipe drying 3 mm in diameter), 6.7–9.5 cm long; 2.3–3 cm wide, stigma dark brown, matte, deeply sunken medially on drying, drying black with a medium brown margin.

Remarks

The species is a member of section *Monstera* because its juvenile leaves are free and exserted (Fig. 2A), and thus similar to the juveniles of *Monstera egregia* Schott, a known species in section *Monstera*. The species is closely related to *Monstera siltepecana* Matuda, from which it differs in having smaller petioles and geniculum, and blades that are glaucous below on living plants, fewer perforations that are only in 1 (rarely 2) series of each side and fewer primary lateral veins, a frequently persistent petiole sheath and a smaller inflorescence (peduncle and spadix) but shares with *M. siltepecana* the same drying color and texture, even the same venation (Table 1).

Monstera florescanoana may also be confused with *Monstera dubia* (Kunth) Engl. et K. Krause, and would key to that species in Madison's revision of *Monstera* (Madison, 1977). That species ranges from Mexico (Chiapas) to the Amazon basin in South America (Table 1). *Monstera dubia* differs from *M. florescanoana* in having typically thicker stems which are usually densely tuberculate, leaf blades thicker with more conspicuous tertiary venation, larger petioles, geniculum and leaves, as well as a larger inflorescence, and furthermore, it belongs to section *Marcgraviopsis*.

Table 1. Comparison of morphology and distribution of *Monstera florescanoana* with similar species *M. siltepecana* and *M. dubia*. Data taken from Madison (1977) and Tropicos.org (2009)

	M. florescanoana Croat, T. Krömer et A. Acebey	*M. siltepecana* Matuda	*M. dubia* (Kunth) Engl. et K. Krause
Section	*Monstera*	*Monstera*	*Marcgraviopsis*
Petioles	17-24 cm long	30-45 cm long	20-55 cm long
Geniculum	1.5 cm long	3-4.5 cm long	4-7 cm long
Juvenile leaves	free and exserted	free and exserted	tightly appressed
Blades	14.3-34 cm long; 5.2-20.5 cm wide; 1.2-1.5 times longer than wide; glaucous below on living plants	30-60 cm long; 20-35 cm wide; 1.3-2.4 times longer than wide; dark green, not glaucous below	20-100 cm long; 13-50 cm wide; 1.5-2 times longer than wide; pale green, not glaucous below
Primary lateral veins	3-6 pairs	8-12 pairs	9-18 pairs
Perforations	usually few; in 1(-2) series on each side of midvein, sometimes lacking	mostly numerous; in 2-4 series on each side of midvein	absent or numerous; in 1-3 series on each side of midvein or pinnatifid
Peduncle	2-5.7 cm long	5-12 cm long	5-9 cm long
Spadix	6.7-9.5 cm long	12-17 cm long	7-14 cm long
Distribution	Mexico (Veracruz)	Mexico (Chiapas, Hidalgo, Oaxaca, Quintana Roo, Veracruz) to Colombia	Mexico (Chiapas) to the Amazon basin

Etymology. The species is named in honor of the distinguished Mexican historian Dr. Enrique Florescano-Mayet for his determined and enthusiastic support for the research and education project on endemic, rare and notable plant species of Veracruz in the light of the celebration to honor Mexico's 100-year anniversary of the revolution and 200 years of independence. This project has promoted a major plant exploration effort in the State of Veracruz in search for endemic and rare taxa in the few sites known to have vegetation patches with little disturbance and high plant diversity.

Distribution and habitat. Monstera florescanoana is endemic to Mexico, known only from the humid montane forests (bosque mesófilo de montaña, *sensu* Rzedowski, 1978) of the central region of Veracruz, a biogeographic area that harbors several locally endemic species, as e.g. *Begonia multistaminea* Burt-Utley (Begoniaceae), *Pitcairnia densiflora* Brongn. ex Lem. and *Pitcairnia schiedeana* Baker (Bromeliaceae). These forests, however, due to the ongoing conversion to plantations, pastures and secondary vegetation are one of the most threatened habitats in Mexico. In spite of their reduced surface area, these areas are extremely rich in plant species and represent ca. 10% of the flora of Mexico, making it the most diverse vegetation type by area unit (Rzedowski, 1991). At Atzalan municipio the humid montane forests are dominated by canopy trees of *Matudaea trinervia* Lundell (Hamamelidaceae), as well as *Clethra mexicana* DC. (Clethraceae), *Quercus corrugata* Hook. (Fagaceae) and *Liquidambar styraciflua* L. (Hamamelidaceae).

The new species is a locally common hemiepiphytic herb in the shady understory of the humid montane forests of the Atzalan municipio between 990 and 1430 m, where it co-occurs with other aroids, such as *Anthurium scandens* (Aubl.) Engl., *Monstera egregia* Schott, *Philodendron sagittifolium* Liebm., and *Syngonium neglectum* Schott. In this area, the natural forest vegetation in general is mostly fragmented and highly threatened by the transformation into pastures and plantations; thus, we believe that the populations of *Monstera florescanoana* do suffer severe anthropogenic pressures. However, the new species is probably not in danger of extinction, as we have observed some individuals growing in secondary vegetation close to a bridge along a roadside. In any case, the discovery of this new species demonstrates that more floristic inventories in remote and inaccessible areas are badly needed to complete our knowledge of the flora of Veracruz and along to take the necessary conservation measures for the remaining areas of high diversity and endemism.

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