

REDISCOVERY OF *CROTON JOSEPHINUS* (EUPHORBIACEAE) IN MINAS GERAIS, BRAZIL

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Croton josephinus Müll.Arg., a member of *Croton* sect. *Medea* (Klotzsch) Baill. (Euphorbiaceae), has not been recollected since 1824, nor mentioned in the literature since its original publication in 1873. This species has recently been rediscovered in a *campo rupestre* area at the ‘Pico 1430 m’ of the Serra de São José, Minas Gerais, after 20 years of field work in the area. In the protologue *Croton josephinus* was cited as having been collected from São Paulo State. This is likely to have been a simple misattribution of the area where it occurs. Based on the new material collected, a detailed description and an illustration of the species are provided. A lectotype and an isolectotype are designated.

Keywords. *Campo rupestre*, *Croton josephinus*, *Croton* sect. *Medea*, Minas Gerais, rediscovery.

INTRODUCTION

As noted by Secco (2001), despite all the multidisciplinary research being carried out in the Euphorbiaceae, there are still a number of taxonomic gaps in the family. *Croton* L. is a very large genus and is of considerable phylogenetic interest (Berry *et al.*, 2005) due to its controversial infrageneric classification. *Croton* sampling in herbarium collections is not homogeneous and some Brazilian species are not represented at all in the Brazilian herbaria. This includes some species of *Croton* sect. *Medea* (Klotzsch) Baill. *sensu* Webster (1993), to which *Croton josephinus* Müll.Arg. belongs (according to the key provided by Webster, 1993).

Croton sect. *Medea* consists exclusively of South American shrubs and subshrubs. Relevant taxonomic characters within the section are lacinate or glandular stipules, stellate-porrect indumentum, contracted inflorescences, distribution of glands at the margins of either lacinate or entire sepals in pistillate flowers, and multifid styles.

From the lack of bibliographic citations and determinations of any herbarium material it would appear that *Croton josephinus* has not been recollected since the collection of the type specimen. *Croton josephinus* was described in *Flora Brasiliensis* (Müller Argoviensis, 1873) with an incorrect type locality citation and no botanical illustration.

MATERIAL AND METHODS

Field work was conducted from 2000 to 2006, with an intense search for samples of *Croton* sect. *Medea* in at least 30 *campo rupestre* localities in the State of Minas Gerais. Digital images of the type material of *Croton josephinus* (LE, P) and general material of *Croton* from the following herbaria were examined: BHCB, C, CESJ, ESAL, FCAB, G, GUA, HB, HXBH, K, M, OUPR, P, R, RB, SP and SPF (cited according to Holmgren *et al.*, 1990). The trichome terminology follows Webster *et al.* (1996).

RESULTS AND DISCUSSION

Croton josephinus was found in the Environmental Protection Area of the Serra de São José (21°3–7'S, 44°6–13'W) located north of Tiradentes in Minas Gerais State. This mountain range has been under floristic study for the last 20 years (Alves & Kolbek, 2009) and the sampling effort for *Croton* species was intensified from 2000 as part of the Flora of Serra de São José Project (Medeiros *et al.*, 2008, 2009). The occurrence of *Croton josephinus* seems to be restricted to the highest peak of the Serra, a *campo rupestre* area which has no particular name but has been designated by its altitude as 'Pico 1430 m' (21°3.892'S, 44°7.839'W). However, the species does not occur on the second highest peak of the range, only 5 m lower than the first one and with a very similar *campo rupestre* habitat, nor in any other known spot of the Serra. The isolation, small population size and difficult access have probably delayed the rediscovery of the species. Due to the silvery leaf indumentum, *Croton josephinus* is an eye-catching species when compared with its most similar and sympatric species, such as *C. arlineae* D.Medeiros *et al.*, *C. gnidiaceus* Baill., *C. pradensis* D.Medeiros *et al.* and *C. vestitus* Spreng. The most similar taxon to *Croton josephinus*, as Müller Argoviensis (1873) suggested, is *C. vestitus* in that both species are similar in habit and leaf size and shape, and they have sepals of the pistillate flowers with lacinate-glandular margins. However, *Croton josephinus* differs from *C. vestitus* by its entire leaf margin, penninerved lamina, smaller stipules (up to 3 mm long) and filaments and anthers entirely pilose (Table 1). In the diagnosis in *Flora Brasiliensis* (Müller Argoviensis, 1873), the Serra de São José was cited as being in São Paulo instead of Minas Gerais State. The same mistake, placing the Serra de São José in São Paulo,

TABLE 1. Taxonomic characters distinguishing *Croton josephinus* from *C. vestitus*

Character	<i>Croton josephinus</i>	<i>Croton vestitus</i>
Leaf margin	Entire, eglandular, flat	With stipitate glands, involute
Venation	Pinnately veined	Palmately veined
Stipules	Up to 3 mm long	Longer than 4 mm
Filaments	Densely pilose throughout	Pilose only at the base
Anthers	Densely pilose	Glabrous

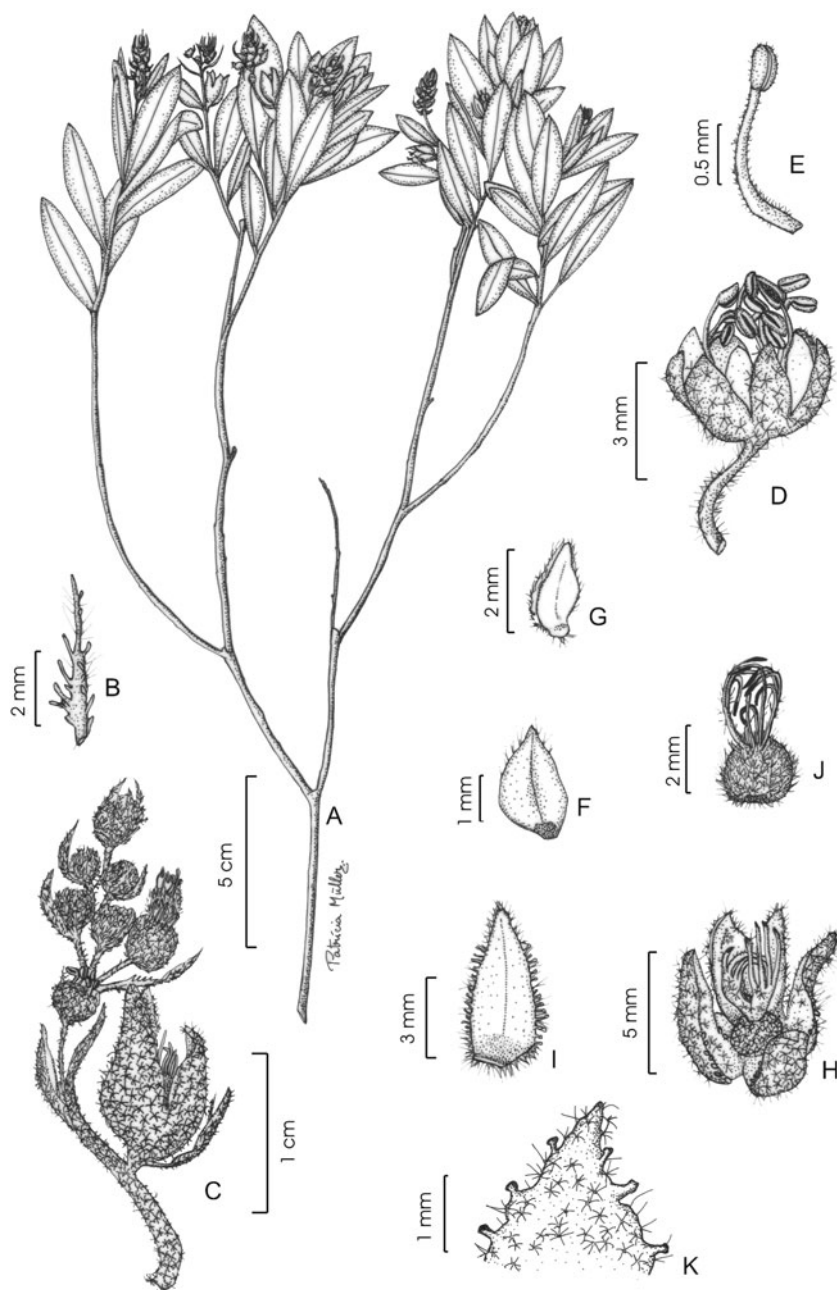


FIG. 1. *Croton josephinus* Müll.Arg. A, branch; B, stipule; C, inflorescence; D, staminate flower; E, stamen; F, sepal of the staminate flower; G, petal of the staminate flower; H, pistillate flower; I, sepal of the pistillate flower; J, gynoecium; K, detail of the sepal of the pistillate flower (adaxial side) showing its stipitate-glandular margin. Drawn from R.A.R. Drummond 169 (R).

also happened with two species of *Stachytarpheta* (Verbenaceae), *S. sellowiana* Schauer and *S. ajugaefolia* Schauer, which were rediscovered there after a century (Atkins *et al.*, 1996; Atkins, 2005).

A more detailed description of *Croton josephinus*, based on our recent collections, is provided below.

Croton josephinus Müll.Arg., Fl. Bras. 11(2): 195 (1873). – Type: Brazil, ‘In montis St. José, Jun. 1824’, Riedel 246 (lecto LE, designated here; isolecto LE [Riedel, ex Herbarium Fischer, no number]). **Fig. 1.**

Monoecious subshrubs 50–100 cm tall, branching dichotomous, branches terete, indumentum stellate-porrect, 8–10 radiate, silvery-grey. *Leaves* subsessile, pinnately veined, densely congested at the branch apices, lacking basal glands, trichomes stellate-porrect, 8–10 radiate and dense on both surfaces, silvery-grey; lamina elliptic-lanceolate, 21–40 mm long, 6–12 mm wide, apex acute, base acute, margin entire, eglandular, flat; petiole 2–3 mm long; stipules lanceolate, laciniate-glandular, stellate trichomes on the adaxial surface, glabrous on the abaxial side, caducous, 2–3 mm long. *Inflorescences* congested, few-flowered racemes, 2.5–3 cm long, with a distinct naked sterile zone separating basal pistillate flowers from the apical staminate ones; bracts lanceolate, laciniate-glandular like the stipules, 7 mm long below the staminate flowers and 6–7 mm long below the pistillate flowers, stellate trichomes on the adaxial side, glabrous on the abaxial side. *Staminate flowers* 7–10 per raceme, 1 per bract; pedicels 3 mm long; sepals 5, ovate-lanceolate, 2 × 1.2 mm wide, margin entire, sparsely stellate on the adaxial surface, glabrous on the abaxial surface; petals 5, ovate-lanceolate, 1.8 × 0.8 mm, membranous and translucent, margin entire, ciliate, otherwise glabrous; disc with 5 truncated segments; stamens 10–14, filaments 1–1.5 mm long, densely pilose throughout, anthers ovate, 0.7 × 0.4 mm, pilose throughout. *Pistillate flowers* basal, 1–2 per raceme, sessile; sepals 5, triangular-lanceolate, frequently unequal, 7–10 × 3–3.8 mm wide, margins stipitate-glandular, stellate trichomes on both sides; petals 5, diminutive, glanduliform, sessile, 0.2 mm long; disc with 5 truncated segments; ovary depressed ovoid, 1.5 × 1.8 mm, whitish-stellate, styles 3, 2–4-branched, 1.5–2 mm long, fused at the base, stellate trichomes present almost to the apex. *Fruit* a globose, stellate capsule, 4.5 mm in diameter; seeds 3, ellipsoid, 2–3 × 2 mm, testa smooth, caruncle translucent, well developed.

Distribution. *Croton josephinus* is narrowly endemic. The only known population is restricted to the outcrop fissures of the tallest peak in the Serra de São José, Minas Gerais State, at 1430 m above sea level. The summit covers an area of 200 square metres and is distinct from the surrounding *campo rupestre* due to the presence of a nearly constant orographic cloud leading to a more humid microclimate. An unidentified species of *Trimezia* (Iridaceae) and several other as yet unidentified plant species in the Serra seem to be restricted to the same microlocality. Seasonal fires have repeatedly been registered on the summit, but the large lignotubers of *Croton josephinus* shield them from this threat.

Conservation status. Critically Endangered (CR D1) as the number of mature individuals is fewer than 50 (IUCN Standards and Petitions Subcommittee, 2010).

Additional specimens examined. BRAZIL. Minas Gerais: Tiradentes, Serra de São José, 'Pico 1430 m', 21°3.892'S, 44°7.839'W, 13 i 2004 (fl. fr.), R.A.R. Drummond 169 (R, RB); *ibid.*, 18 x 2004 (fl. fr.), R.V. Alves 8345 (R, RB).

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