Recognition of Croton Multicostatus Müll. Arg. (Euphorbiaceae) as Native to Madagascar

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Introduction

Croton L. *(Euphorbiaceae)* is one of the largest and most complex genera of angiosperms on Madagascar, with up to 150 species considered to be endemic there (SCHATZ, 2001). As part of an ongoing revision of the species of *Croton* from Madagascar and nearby islands, we identify *C. multicostatus* Müll. Arg. as an earlier name for the Malagasy species that was treated by LEANDRI (1939) as *C. vernicosus* Baker. In his protologue, MÜLLER (1865) treated *C. multicostatus* as being native to the Caribbean, due to a confusing label on the holotype that referred to both Santo Domingo (Hispaniola) and Fort Dauphin (Madagascar). We determine here that *C. multicostatus* comes from Madagascar, and establish its priority over two later-described species.

Croton multicostatus Müll. Arg. in Linnaea 34: 79. 1865.

Typus: MADAGASCAR: [Fort Dauphin], *Commerson s.n.* (holo-: P-JU 16338!; iso-: P-LA [P00382066]!).

= *Croton vernicosus* Baker in J. Linn. Soc., Bot. 22: 519. 1887. **Typus: MADAGASCAR:** *Baron 4935* (holo-: K [K000347500]!; iso-: K [K000347498]!).

= *Croton sclerodorus* Baill. in Bull. Mens. Soc. Linn. Paris 2: 968. 1891. **Typus: MADAGASCAR:** *Baron 4735* (holo-: P [P00133318]!).

Additional specimens examined. – **MADAGASCAR. Prov. Toliara:** Mahialambo, Fort Dauphin, 22.III.1972, *Boiteau 2557* (P); route Evatra, Fort Dauphin, 19.II.1972, *Debray 1754* (P); environs de Fort Dauphin, 19.X.1970, *Keraudren-Aymonin & Aymonin 25002* (P), *25014* (P); Cap Itapemina, près de Fort Dauphin, 9.XII.1960, *Leandri & Saboureau 4367* (P); forêt de Manantantely, 50-250 m, 9.XI.1990, *Rabevohitra 2428* (K, MO, P); forêt de Manantantely 3 km N de la route Fort Dauphin–Soanierana, 24°59'12"S 46°55'36"E, 29.XI.2002, *Randrianaivo & al. 855* (MO); Lokaro, N de Fort Dauphin, XII.1969, *Morat 3434* (P); Fort Dauphin, V.1889, *Scott Elliot 2619* (K); Emanara, 16.XI.1964, *Service Forestier 21972* (P: 3 sheets); domes granitiques entre Mandromondromotra et Lokaro, N de Fort Dauphin, 9.XII.1968, *Service Forestier 28649* (K, MO, P); beach of Lokaro, 2.VI.1968, *Seligson 641* (MO); road from Fort Dauphin to Sainte Luce, 24º55.787'S 46º59.941'E, 15 m, 17.II.2009, *van Ee & al. 924* (MICH, TAN). **Prov. Fianarantsoa:** Farafangana Distr., entre Vondrozo et Ivohibe, 18.IX.1926, *Decary 5435* (G, K, P). **Uncertain Prov.:** recd. 1905, *Baron* 6876 (K).

Observations. – The holotype of *C. multicostatus* at P-JU, which MÜLLER (1865) cited and annotated, bears a label in the middle that led Müller to confusion about its provenance (Fig. 1). At the top of the label is an annotation of *"Croton citrifolium Lam.",* and below that in another script is "Sauge en arbre [de St. Domingue, selon M. De Beauvoir] quartier du Fort Dauphin." Further below in the same script appears "St. Domingue. Tiré d'un ancien herbier donné? par M. Thuillier." In P-LA, there is a second specimen that ostensibly came from the same gathering as the holotype but bears a different label, "no. 39, de Madagascar, j. maut." We located a specimen of *C. trichotomus* Geisel. in P-LA that has a similar label to this in the same script, labeled as "no. 38, de Madagascar, j. maut.", and which LEANDRI (1939) attributed to the collector Philibert Commerson. Based on this information and comparison with contemporary specimens from Madagascar, we conclude that the holotype of *C. multicostatus* came from the Fort Dauphin area of southeastern Madagascar, where Commerson collected in late 1770 (DORR, 1997). There are four other species of *Croton* from southeastern Madagascar that are typified by Commerson collections at P-LA, namely, *C. bracteatus* Lam., *C. cassinoides* Lam., *C. farinosus* Lam., and C. *trichotomus* Geisel.

When LEANDRI (1972) treated *C. sclerodorus* as a synonym of *C. vernicosus*, he considered that the types, *Baron 4735* and *4935,* may have come from the same collection, and that either the *7* or the *9* was transliterated on one of them. Although we cannot determine if this is correct, both collections closely match the type of *C. multicostatus*, and these species are therefore treated here as synonyms.

As delimited here, *C. multicostatus* is a distinctive small tree species that is largely confined to a small area north of the city of Fort Dauphin. It appears to grow mostly in cracks of granitic

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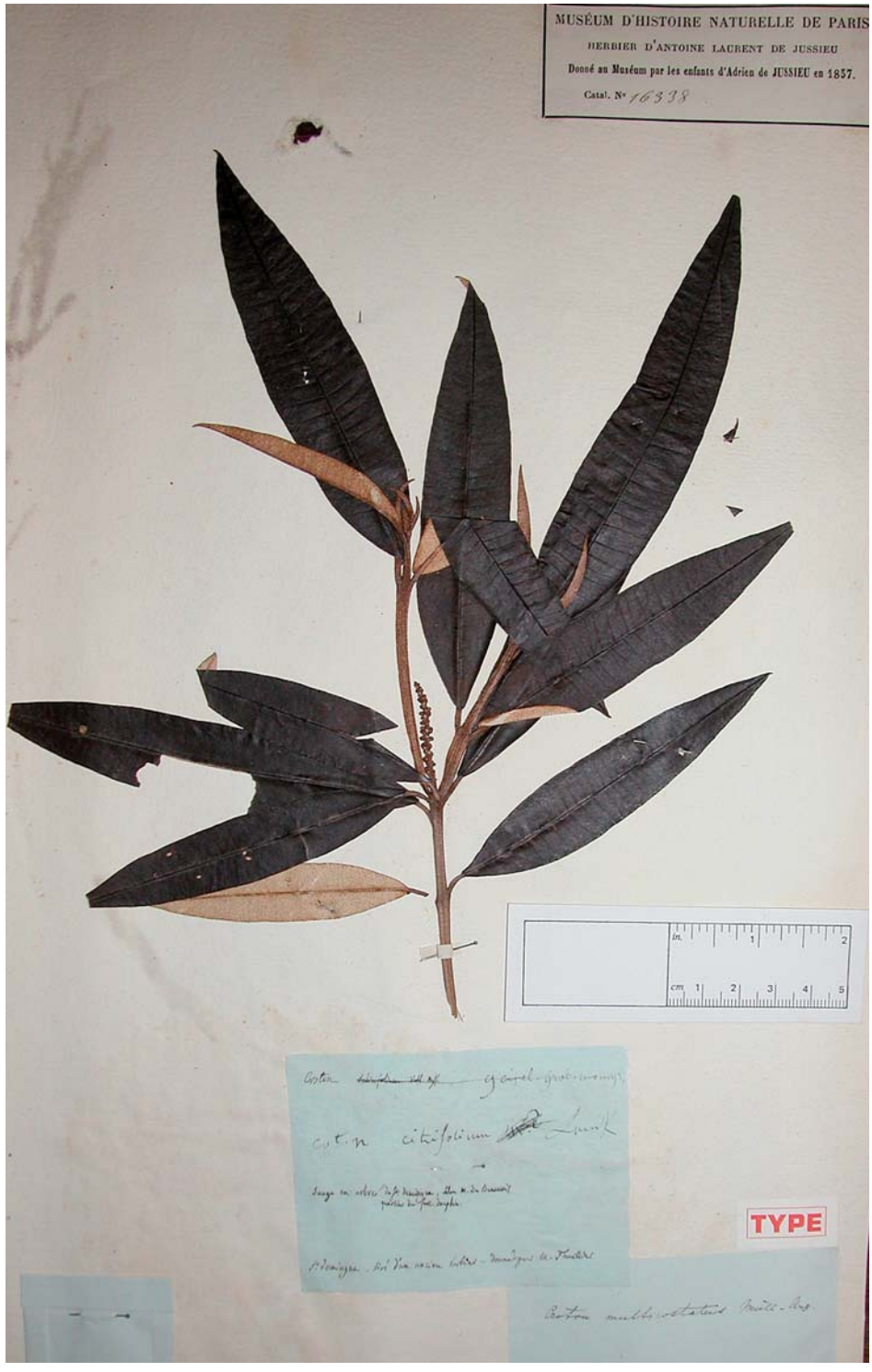

Fig. 1. – Holotype of *Croton multicostatus* Müll. Arg. at P-JU.

rock outcrops, among the inland domes and coastal outcrops that occur between Fort Dauphin and Lokaro. *Croton multicostatus* is unique among the lepidote-leaved Malagasy Crotons in having large, narrowly elliptic leaves with narrowly acute tips and bases and over 20 secondary veins that branch from the midvein at a nearly 90 degree angle and are visible on both surfaces of the leaves (Fig. 1, 2). The leaves are subopposite, and the young stems are flattened and somewhat ridged. In most other lepidote species on the island, there are fewer secondary veins with a more acute angle to the midvein, and these are usually not visible on the lower surface of the leaf, or else the leaves are proportionately wider. Florally, the species is also distinctive among lepidote *Croton* in having well-developed petals in the pistillate flowers (Fig. 2). Mature fruits are close to 1 cm in diameter (Fig. 2), with seeds measuring 5-6 × 3-4 mm. The main species in southeastern Madagascar with which *C. multicostatus* might be confused is *C. nobilis* Baill., but that species has wider leaves with fewer veins, much larger fruits and seeds, and pistillate flowers that lack petals. It also occurs farther inland at higher elevations and in moister forests. The single collection of *C. multicostatus* cited from Fianarantsoa Province, *Decary 5435,* is well out of range compared to the others, and it should be verified by additional flowering collections. The only common name reported for the species is "Fotsiavadika" *(Service Forestier 21972)*.

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Fig. 2. – Leaves of *Croton multicostatus* Müll. Arg. from north of Fort Dauphin *(van Ee & al. 924)*, with closeups of fruit (lower left) and pistillate floral remains after capsule dehiscence, showing the columella and dried petals (upper right).

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