

## **Two new species of Apocynaceae, Asclepiadoideae from Mayotte**

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# Two new species of Apocynaceae, Asclepiadoideae from Mayotte

W. Douglas Stevens, Jean-Noël Labat<sup>†</sup> & Fabien Barthelat

## Abstract

STEVENS, W.D., J.-N. LABAT & F. BARTHELAT (2016). Two new species of Apocynaceae, Asclepiadoideae from Mayotte. *Candollea* 71: 127-134. In English, English and French abstracts. DOI: <http://dx.doi.org/10.15553/c2016v711a15>

Two new species endemic to Mayotte are described and illustrated: *Marsdenia mayottae* W.D. Stevens, Labat & Barthelat and *Tylophora mayottae* W.D. Stevens, Labat & Barthelat (Apocynaceae, Asclepiadoideae). *Marsdenia mayottae* is similar to *Marsdenia vohiborensis* Choux from Madagascar but differs by its very small or sometimes absent corona. *Tylophora mayottae* is morphologically close to *Tylophora coriacea* Marais but differs by its much smaller flowers. These two new species, discovered in during recent inventories, are assessed as threaten following the Categories and the Criteria of the IUCN Red List.

## Résumé

STEVENS, W.D., J.-N. LABAT & F. BARTHELAT (2016). Deux nouvelles espèces d'Apocynaceae, Asclepiadoideae de Mayotte. *Candollea* 71: 127-134. En anglais, résumés anglais et français. DOI: <http://dx.doi.org/10.15553/c2016v711a15>

Deux nouvelles espèces endémiques de Mayotte, *Marsdenia mayottae* W.D. Stevens, Labat & Barthelat et *Tylophora mayottae* W.D. Stevens, Labat & Barthelat (Apocynaceae, Asclepiadoideae), sont décrites et illustrées. *Marsdenia mayottae* est similaire à *Marsdenia vohiborensis* Choux mais en diffère par sa couronne très réduite, parfois absente. *Tylophora mayottae* est morphologiquement proche de *Tylophora coriacea* Marais dont il se distingue par des fleurs beaucoup plus petites. Ces deux nouvelles espèces, découvertes à la suite d'inventaires récents, sont évaluées comme menacée selon les Catégories et les Critères de la Liste rouge de l'UICN.

## Keywords

APOCYNACEAE – ASCLEPIADOIDEAE – *Marsdenia* – *Tylophora* – Comoros – Mayotte

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## Introduction

Between 1995 and 1998, an intensive inventory of the plants of Mayotte (a French territory in the Comoro Archipelago), concentrated mainly on trees and shrubs, was conducted by the Service de l'Environnement et de la Forêt de Mayotte (SEF), in collaboration with the Herbarium of the Muséum national d'Histoire naturelle in Paris (MNHN). This initial inventory was followed in 2000 by a three-year multidisciplinary project "Interactions entre espèces à Mayotte, variations de la biodiversité et des valeurs patrimoniales perçues", which was funded by the French "Ministère de l'Ecologie et du Développement Durable" as part of its "Programme Ecosystèmes Tropicaux". One of the objectives of this project was to complete an inventory of the flowering plants of the island, which was carried out by MNHN and SEF. Following these projects, a permanent inventory programme was developed by SEF and initiated in 2007 by the Conservatoire Botanique National de Mascarin. Together, these efforts have substantially increased the number of specimens available from the island, whose flora was previously known almost entirely from material gathered in the XIXth century (for details of collectors who worked in Mayotte and elsewhere in the Comoros, see DORR, 1997).

Mayotte, like the other islands of the Comoro Archipelago, is characterized by a high level of modification of the natural vegetation. On Mayotte, little-disturbed primary forest occupies no more than 18.48 km<sup>2</sup> representing only about 5% of the 354 km<sup>2</sup> of the main island (PASCAL et al., 2001; PASCAL, 2002). Recent collections include many species never before recorded from the island, some of which are not known from elsewhere in the Comoros. More than 20 new species have been described to date, based primarily on the material generated by the recent inventory efforts, including in the following families and genera: *Acanthaceae* (*Anisotes* Nees – DANIEL, 2014), *Achariaceae* (*Erythrospermum* Lam. – HUL et al., 1999), *Araliaceae* (*Polyscias* J.R. Forst. & G. Forst. – LOWRY et al., 1999), *Asteraceae* (*Psiadia* Jacq. ex Willd. – LABAT & BEENTJE, 2004), *Boraginaceae* (*Hilsenbergia* Tausch ex Meisn. – MILLER, 2003), *Dioscoreaceae* (*Dioscorea* L. – WILKIN et al., 2007), *Fabaceae-Caesalpinioideae* (*Cynometra* L. – LABAT & PASCAL, 1999), *Lecythidaceae* (*Foetidia* Comm. ex Lam. – LABAT et al., 2011), *Malvaceae* (*Nesogordonia* Baill.; LABAT et al., 2001), *Melastomataceae* (*Memecylon* L. – STONE, 2006), *Myrtaceae* (*Eugenia* L. and *Syzygium* Gaertn. – BYNG et al., 2016), *Olacaceae* (*Olax* L. – ROGERS et al., 2006), *Oleaceae* (*Noronhia* Thouars and *Chionanthus* L. – LABAT et al., 1999), *Passifloraceae* (*Adenia* Forssk. – PIGNAL et al., 2013), *Putranjivaceae* (*Drypetes* Vahl. – MCPHERSON, 2000), *Rutaceae* (*Ivodea* Capuron and *Vepriis* Comm. ex A. Juss. – LABAT et al., 2005; RABARIMANARIVO et al.,

2015), *Salicaceae* (*Scolopia* Schreb. – HUL et al., 1999) and *Sapotaceae* (*Labramia* A. DC. – LABAT et al., 1997). Study of the material of *Apocynaceae* revealed two new species that are described here, both are *Asclepiadoideae*, one a *Marsdenia* R. Br. and the other a *Tylophora* R. Br. Both of the new species are provided with line drawings, discussions of their morphology and preliminary risk of extinction assessments following IUCN Red List Categories and Criteria (IUCN, 2012).

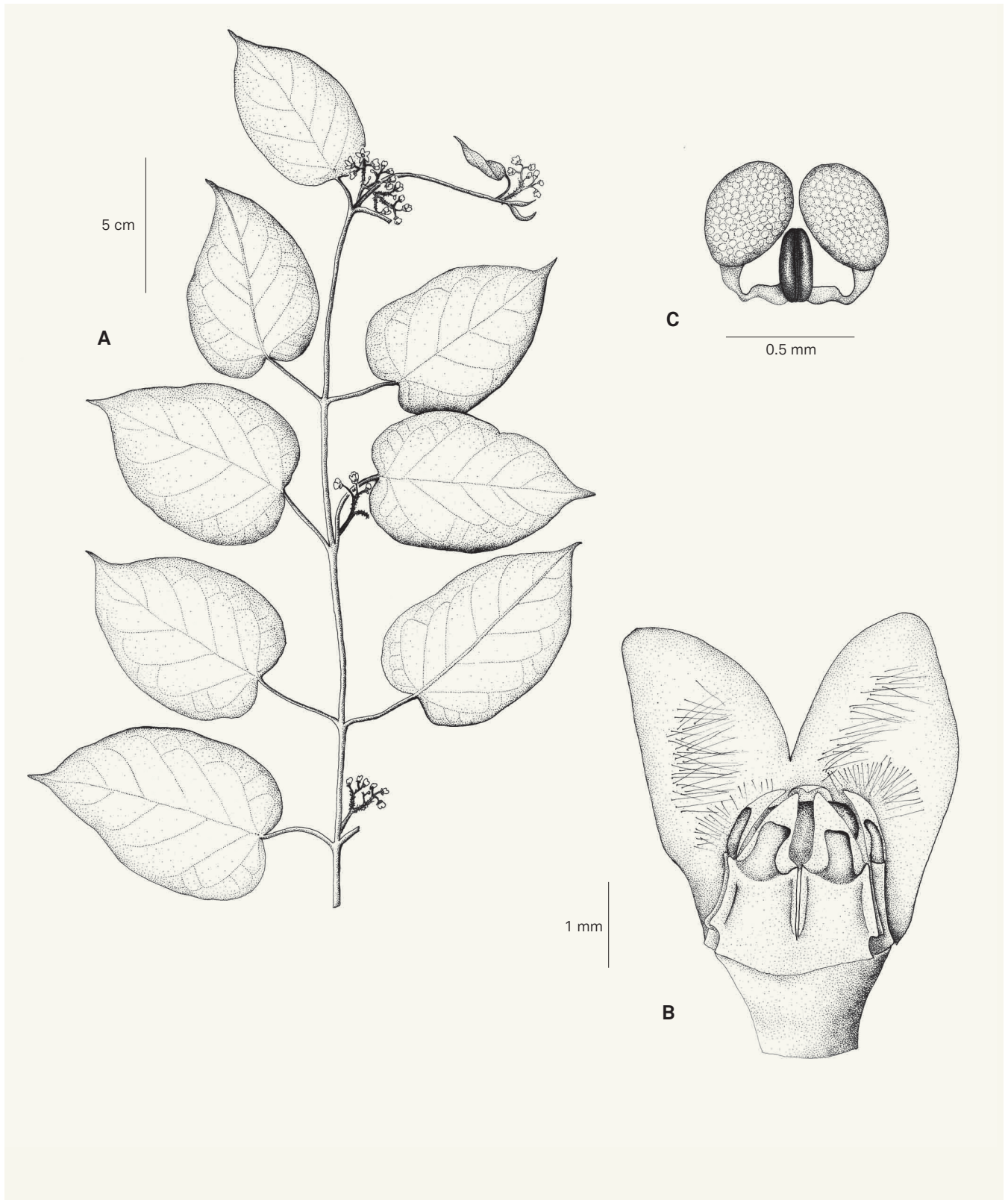
## Taxonomy

*Marsdenia mayottae* W.D. Stevens, Labat & Barthelat, **spec. nova** (Fig. 1, 2).

**Typus** : MAYOTTE : Grande Terre, Bandrélé, Rassi Abambo, 9.II.2001, Barthelat, M'Changama & Ali Sifari 295 (holo: P [P00229277]!; iso: G!, K!, MAO!, MO!, P [P00282507]!).

*Marsdenia mayottae* W.D. Stevens, Labat & Barthelat is most similar to *M. vohiborensis* Choux, but differs from this species by its umbonate style apex completely covered by the terminal anther appendages and the absence or near absence of a corona.

*Shrub* or twining vine, woody but apparently not corky, underground parts unknown, stems densely appressed-puberulent, sparsely lenticellate, internodes 1-6 cm; latex white. *Leaves* opposite; blades 6.5-11.1 × 4-9.2 cm, ovate to elliptic, glabrous or puberulent on veins below; apex acuminate to attenuate; base truncate to shallowly lobate, its sinus up to 5 mm deep, lateral veins 4 to 6, colleters 10 to 24; petiole 2.4-5.5 cm, sparsely puberulent. *Inflorescences* solitary, paniculate with 2 to 6 congested-racemose, appressed-puberulent branches; peduncle (3) 10-48 mm; fertile axes up to 3 cm long, more or less covered with pedicel scars. *Flowers* borne on pedicels 4-9 mm long; bracts numerous and conspicuous, 1.5-10 × 0.6-4 mm, elliptic to spatulate, sometimes leaf-like; calyx with 1 colleter below each sinus within, lobes elliptic to ovate with round tips, unequal, 3-4 × 1.7-2 mm, sparsely puberulent along axis abaxially, not ciliate, green; corolla shallowly campanulate, dull yellow, without calli, barbate in distal half of tube and proximal half or more of each lobe adaxially, glabrous abaxially, tube 1.7-2.3 mm, lobes elliptic with tip rounded, 2.2-3 × 1.6-1.7 mm, patent; corona lobes absent or if present reduced to a fleshy tooth adnate to base of anther, deltate, up to 0.4 mm long, 0.2 mm wide at base; gynostegium nearly sessile, guide rails 0.7 mm long, slightly salient at base; anthers trapezoidal, nearly rectangular, 0.8-1 × 0.8-1 mm, terminal appendages 0.6 × 0.6 mm, elliptic to ovate, translucent, corpusculum ellipsoid to subsagittoid, 0.19-0.28 × 0.08-0.13 mm, translators flat, 0.19-0.25 × ca. 0.05 mm, pollinia ellipsoid to obovoid, 0.39-0.43 × 0.24-0.3 mm;



**Fig. 1.** – *Marsdenia mayottae* W.D. Stevens, Labat & Barthelat. **A.** Habit; **B.** Gynostegium; **C.** Pollinarium. [Barthelat et al. 295, P] [Drawing: A. Arbeláez]



Fig. 2. – Field pictures of the new species *Marsdenia mayottae* W.D. Stevens, Labat & Barthelat. [Photos: F. Barthelat]

style apex umbonate, 1.4-1.5 mm wide at base. *Follicles* narrowly ovoid with asymmetrical base, 7.5-9.5 × 2.5-3.5 cm, smooth, glabrous, follicle wall 5-7 mm thick; seeds elliptic, 8-11 × 5-7 mm, dark grey-brown with red-brown mottling, margin 0.6-0.7 mm wide, distally entire or inconspicuously crenulate, surface smooth, coma 3.5-4 cm long, white.

*Distribution, habitat and phenology.* – *Marsdenia mayottae* is only known from Mayotte, where it can be found at low elevations (less than 10 m a.s.l.) in littoral forest growing with *Thespesia populnea* (L.) Sol. ex Corrêa, *Xylocarpus granatum* Koenig, *Mimusops comorensis* Engl., *Maytenus undata* (Thunb.) Blakelock and *Calophyllum inophyllum* L. It is also found on coastal skeletal soils on basaltic rock or in dry littoral scrubland with *Grewia picta* Baill., *G. triflora* (Bojer) Walp., *Guettarda speciosa* L. and *Maytenus undata*.

In addition, it can be found also on calcareous sand soil with *Talipariti tiliaceum* (L.) Fryxell. The new species is very rarely present also in dry lowland forest on other substrates at up to 100 m.

*Marsdenia mayottae* has been recorded in flower from November to January and in fruit in May and June.

*Vernacular names and local use.* – The following vernacular names in Shibushi have been recorded for *M. mayottae* by BARTHELAT & BOULLET (2005) or on herbarium labels: “Pamba suisui be” or “Pamba suisui famakitranò”, “Macaranga vahi”, “Vahy rotono”, “Vahy maro” and “Kidoro voalavo”. The plants are used in the preparation of magic potions known as “grigris” (M. M’changama, pers. comm.).



**Fig. 3.** – Field pictures of the new species *Tylophora mayottae* W.D. Stevens, Labat & Barthelat.  
[Photos: F. Barthelat]

*Conservation status.* – *Marsdenia mayottae* is only known from highly threatened littoral and lowland dry forests on Mayotte, and its population, as currently known, is highly fragmented. It is only known from five locations despite intensive inventories in the last decades. Thus, its preliminary risk of extinction can be assessed as “Endangered” [EN B2ab(iii)] following the IUCN Red List Categories and Criteria (IUCN, 2012).

*Notes.* – This species shares a dense, bracteate inflorescence with *M. vohiborensis* Choux from the central plateau of Madagascar. However, *M. vohiborensis* has a long-exserted style apex while *M. mayottae* has an umbonate style apex completely covered by the terminal anther appendages. The absence or near absence of a corona in *M. mayottae* is unique among the species of *Marsdenia* of Madagascar and the Comoros, and rare in the genus.

*Paratypes.* – MAYOTTE: Grande Terre, Saziley, 17.I.2001, Barthelat & Ali Sifari 233 (G, K, MAO, MO, P); Petite Terre, Labattoir, Plage de Moya, 15.I.2002, Barthelat & Ali Sifari 694 (K, MAO, MO, P); *ibid. loc.*, 15.I.2002, Barthelat & Ali Sifari 699 (MAO, MO, P); Grande Terre, Mliha, Mtsumbatsu, 20.XII.2001, Barthelat *et al.* 625 (MAO, MO, P); sommet du Bouzi, X.1850, Boivin *s.n.* (P); Rassi Maoussi, 17.V.1999, Mas 176 (P); Sohoa, 28.VI.1997, Pascal 942 (G, MO, P).

***Tylophora mayottae* W.D. Stevens, Labat & Barthelat, *spec. nova* (Fig. 3, 4).**

**Typus:** MAYOTTE: Grande Terre, Mamoudzou, réserve forestière de Majimbini, La Convalescence, 5.IX.2001, Barthelat *et al.* 483 (holo-: P [P00229464]! iso-: BR!, K!, MAO!, MO!).

*Tylophora mayottae* W.D. Stevens, Labat & Barthelat is similar to *T. coriacea* Marais, but with smaller flowers which are rotate and a shorter corolla tube (0.2–0.5 mm) and with guide rails which are shorter (0.15–0.2 mm).

Twining and trailing *vine* with white latex. *Stems* rooting at nodes, woody and corky below, with hirsutulous indument present at the nodes and sometimes extending in a continuous line along the internodes; internodes 3–14 cm long. *Leaves* opposite; blades 6.7–13.5 × 4–8.8 cm, ovate to elliptic, apex acute to acuminate, base obtuse to truncate or shallowly lobed with a sinus up to 7 mm deep, both surfaces glabrous, glossy, succulent, margin thickened, lateral veins 4 to 6, colleter 2 to 10, sometimes raised on a fleshy pad; petioles 0.7–3.4 cm, glabrous or hirsutulous on the upper side. *Inflorescence* 4.5–6.0 cm long, with hispidulous indument forming a continuous line on the axis; peduncle 1.7–2.2 cm when in flower, up to 5.3 cm long when in fruit. *Flowers* borne on pedicels 0.5–0.6 cm long; bracts 2.2 × 0.3 mm, linear to lanceolate; calyx apparently without colleters, lobes 1.3–1.3 × 0.5 mm, lanceolate, apex acute, glabrous or with a few hairs on midrib and margin; corolla pale pink, glabrous outside, densely white-hispid inside with hairs 0.15 mm long, tube 0.2–0.5 mm, lobes 2–2.5 × 1–1.2 mm, lanceolate with acute apex; corona pale yellow 1.0 mm high, 1.5–1.6 mm in diam., 5-lobed; lobes free, erect, more or less reaching to the base of anthers, apices rounded; corpusculum narrowly ellipsoid, 0.2–0.22 × 0.07–0.08 mm, translators 0.09 mm long, pollinia ellipsoid, 0.18–0.2 × 0.14–0.16 mm; ovaries glabrous. *Follicles* 8.2 × 1.1 cm, narrowly fusiform, glabrous, smooth, green; seeds 10–11 × 5.5–6.5 mm, dark brown, margin 0.8 mm wide, irregularly toothed on distal third, surface smooth, finely hispidulose on both sides; coma 2–2.5 cm long, white.

*Distribution, habitat and phenology.* – *Tylophora mayottae* is only known from Mayotte, it has been recorded in sub-humid to humid forest between 200 to 400 m in the Majimbini and Combani forest reserves on Grande Terre and in the coastal forests at Saziley on Grande Terre and at Moya on Petite Terre. It has been recorded in flower in October and November, and in mature fruit in September, but flowering and fruiting probably spans at least from August to December.

*Vernacular names and local use.* – The new species is known from data recorded by BARTHELAT & BOULLET (2005) or on herbarium labels as “Vahy rountou”, “Vahy rotono be” or “Pamba suisui be” in Shibushi dialect, and “Ouvamba suisui bole” in Shimaore dialect. The plant is used in the preparation of magic potions known as “grigris” (M. M’changama pers. comm.).

*Conservation status.* – *Tylophora mayottae* is rare and clearly has a restricted distribution. It is known from only three recent collections from three separate protected areas, and three collections from the XIXth century, two of which

have no locality details other than “Mayotte”. The preliminary risk of extinction of *Tylophora mayottae* is therefore assessed as “Vulnerable” [VU D2] following the IUCN Red List Categories and Criteria (IUCN, 2012). Further information on the extant population is needed to be able to provide a more reliable assessment of the conservation status of the new species.

*Notes.* – *Tylophora mayottae* is vegetatively similar to *T. coriacea*, which is restricted to Mauritius, Reunion and the Seychelles, but differs from it by its smaller flowers which are rotate (vs. subcampanulate), with a shorter corolla tube (0.2–0.5 vs. 1.7–2 mm) and shorter guide rails (0.15–0.2 vs. 0.6–0.8 mm).

In a recent molecular study (LIEDE-SCHUMANN et al., 2012), *Tylophora* and a variety of other tropical genera were placed in synonymy with the north-temperate genus *Vincetoxicum* Wolf. However the authors are not convinced of the merits of this view, and prefer to maintain the genus *Tylophora* as distinct until more compelling evidence is available.

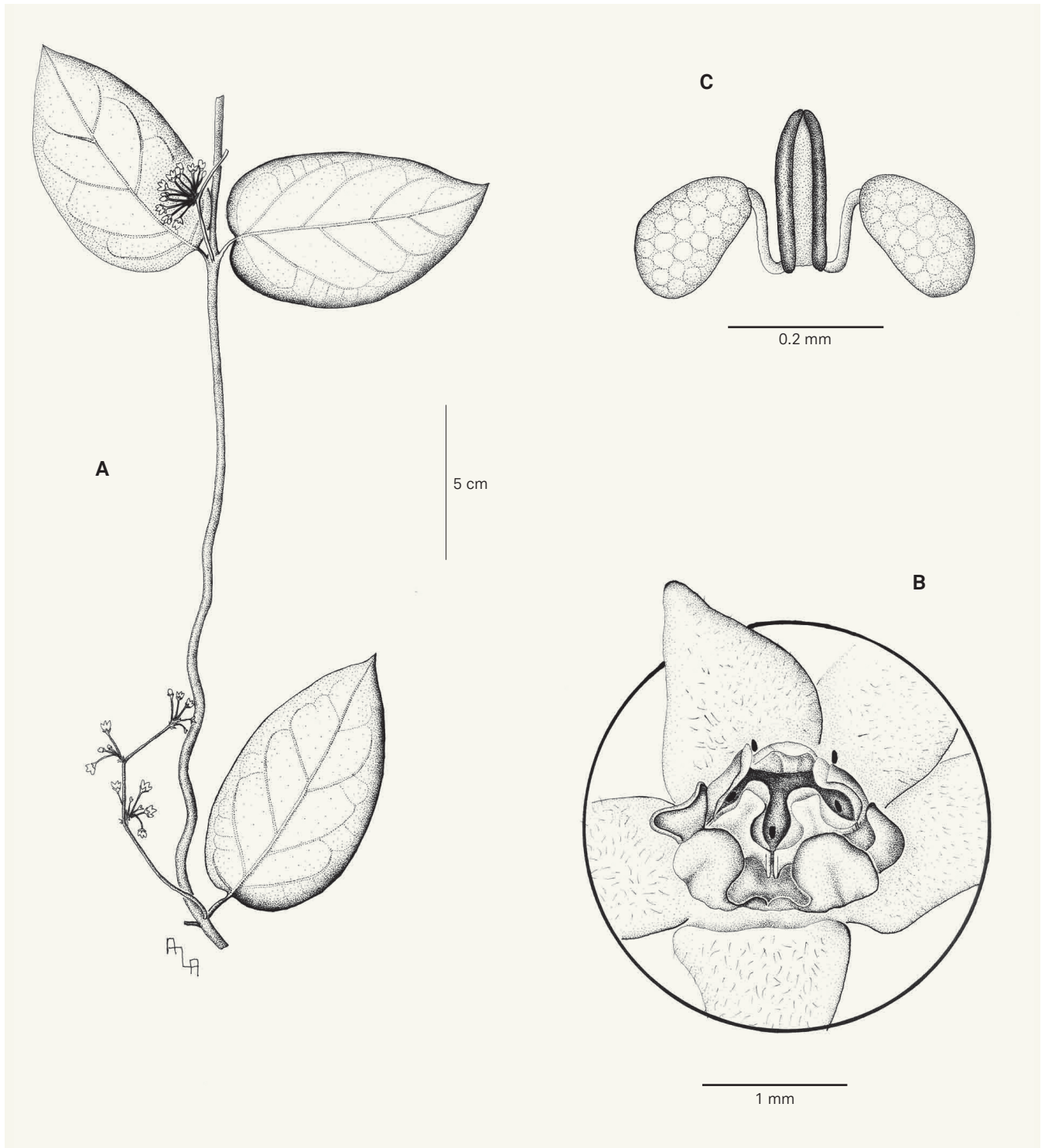
*Paratypes.* – MAYOTTE: *sine loc.*, XI.1850, Boivin 3210 (K, P); *sine loc.*, Boivin s.n. (P); forêt de Combani, 21.X.1884, Humblot 1336 (K, P); Grande Terre, Bandré, Saziley, La Convalescence, 30.IX.2003, Barthelat et al. 1242 (P); Grande Terre, Bandré, Saziley, La Convalescence, 29.XI.2005, Barthelat et al. 1526 (P).

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**Fig. 4.** – *Tylophora mayottae* W.D. Stevens, Labat & Barthelat **A.** Habit; **B.** Gynostegium; **C.** Pollinarium.  
[Boivin 3210, P] [Drawing: A. Arbeláez]



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