



## ***Mucuna jaroche* (Leguminosae-Papilionoideae-Phaseoleae), a new species from Mexico**

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### **Abstract**

*Mucuna jaroche*, a new species of *Mucuna* endemic to Mexico, is here described and illustrated. It is similar to *M. holtonii*, but the wing petals are shorter than the standard in *M. holtonii* and longer than the standard in this new species.

**Key words:** Biodiversity, Fabaceae, Mesoamerica, Neotropics, New World, taxonomy

### **Introduction**

*Mucuna* Adanson (1763: 579), Leguminosae-Papilionoideae-Phaseoleae, is a pantropical genus of about 105 species (Schrire 2005). Within the tribe Phaseoleae, *Mucuna* is distinguished by the following combination of characters: plants unarmed, usually lianas; leaves pinnately trifoliolate; stipules not extended below the point/their points of attachement; abaxial surface of leaflets and calyces lacking yellow or orange gland dots; bracteoles frequently present; standard usually much shorter than keel petals; keel prominently beaked, the keel petals usually hardened and thickened at apex; anthers dimorphic, with 5 larger and (sub-)basifixed ones, and 5 smaller and versatile or dorsifixed ones; pods usually covered with bristly irritant trichomes; seeds usually large, globose, oblong or discoid.

There are 24 species of *Mucuna* occurring in the Neotropics, eleven of them being new to science (Moura, unpublished data) and five recently described (Moura *et al.* 2012, Moura *et al.* in press a, b). The centre of both diversity and endemism of *Mucuna* in the New World is tropical South America (Argentina, Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru and Venezuela) with 19 species, of which 12 are endemic. However, the Mesoamerican region presents a secondary centre of diversity, with 12 species, of which five are endemic.

Standley (1922) in a previous study reported only *Mucuna argyrophylla* Standley (1922: 509) as an endemic Mesoamerican species; Zamora (2010), in his treatment of plants from Costa Rica, suggested three new species from Costa Rica, two of them being endemic to Central America. One of them was described as *Mucuna monticola* Zamora, Moura & Azevedo (in Moura *et al.* 2012: 2), occurring in Costa Rica and Panama; a second one was described as *Mucuna globulifera* Moura, Zamora & Azevedo (in Moura *et al.* in press b), occurring in Costa Rica, Panama and Colombia. A third one, designated by Zamora (2010) as “species A”, endemic from Costa Rica, is still waiting for description. During a survey of the genus *Mucuna* from the Neotropics by the first author of the present paper, a new species endemic to Veracruz, Mexico, was detected. This new species is here described and illustrated, and a geographical distribution map is presented.

***Mucuna jarocha*** T. M. Moura, Mansano, Gereau & A. M. G. Azevedo , sp. nov. (Fig. 1)

*Haec species Mucunae holtonii (Kuntze) Moldenke similis, sed ab ea corolla alis 4–4.4 cm (vs. 2–2.3 cm) longis quam vexillo longioribus praecipue differt.*

This new species is similar to *Mucuna holtonii* (Kuntze) Moldenke, but it differs principally by the length of the wing petals; in *M. holtonii* the wings are shorter than the standard (2–2.3 cm long) and in *M. jarocha* the wings are longer than the standard (4–4.4 cm long).

Type:—MEXICO. Veracruz: municipio Tlalnelhuayocan, Barranca del Pixquiac, entre Rancho Viejo y La Vega, 1550 m, 02 August 1986 (fl, fr), *M. Charazo & J. Caramillo* 3386-b (holotype XAL!).

Lianas; young branches pubescent. Leaves with stipules ca. 8 × 1 mm, triangular, sericeous; pulvinus cylindrical, 0.9–1.2 × ca. 0.4 cm, pubescent; petiole 9–11 cm long, pubescent; rachis 1.5–2 cm long, pubescent; stipels linear, ca. 0.7 cm long, sericeous; petiolules ca. 0.7 cm long, pubescent; blades ovate to elliptic, that of apical leaflet 11.5–14 × 8.5–11.5 cm, obtuse to rounded at base, those of lateral leaflets 10.5–15 × 8.5–10.5 cm, asymmetrical, rounded to cordate at base, all blades acuminate at apex (acumen 1–1.5 cm long), adaxially with both erect and adpressed trichomes, densely sericeous abaxially, venation eucamptodromous, secondary veins in 7 to 9 pairs. Inflorescence axillary, pseudoracemose, pendent, with 20 to 30 flowers; peduncle 0.2–1 m long, pubescent; axis 3–5.5 cm long, densely pubescent, the secondary axes nodose, the nodes spirally arranged, the internodes 0.5–1 cm long; bracts caducous; pedicels 3–4.5 cm long, 3-fasciculate at each node, densely pubescent; bracteoles 2–2.8 × 0.8–1.5 cm, densely sericeous on both surfaces. Flower 4–5 cm long; calyx campanulate, with long appressed trichomes on both surfaces, 1.7–2 cm long, lobes 4, the adaxial lobe 0.2–0.3 × 0.6–0.8 cm, formed by two entirely connate sepals, apex obtuse, the lateral lobes 0.4–0.5 × ca. 0.3 cm, rounded apically, the abaxial lobe 0.8–0.9 × ca. 0.5 cm, rounded apically; corolla pentamerous, reportedly cream (*M. Charazo & J. Camarillo* 3886, XAL), pinkish (*M. Charazo* 2698, XAL) or white (*M. Rosas* 388, BM); standard ca. 3.5 × 2.5 cm, broadly elliptic, basally attenuate, apically rounded, the claw ca. 0.1 cm long, glabrous; wing petals 4–4.4 × 1–1.3 cm, oblong-obovate, basally attenuate, apically obtuse to rounded, pubescent at base, the claw ca. 0.3–0.4 cm; keel petals 4.2–4.4 × ca. 1 cm, oblong, attenuate at base, obtuse at apex, pubescent at base, the claw ca. 0.1 cm; nine stamens fused for basal 65–70% of filament length, one free; filaments ca. 3.7 cm long, glabrous; only basifixated anthers observed, these 0.2–0.4 cm long; gynoecium 4.5–5 cm long; ovary sessile, oblong in outline, ca. 1 × 0.2 cm, densely sericeous, 2- to 5-ovulate; style 3.3–4 cm long, sericeous, glabrescent at apex; stigma not seen. Fruit indehiscent, woody, stipitate, conspicuously hispid-pubescent, with long golden brown trichomes; stipe ca. 2 cm long; body ca. 12 × 2.5 cm, oblong in outline, laterally compressed, attenuate at base, acute at apex, the surface not ornamented by lamellae, not constricted between the seeds (only young fruit seen); seeds not seen.

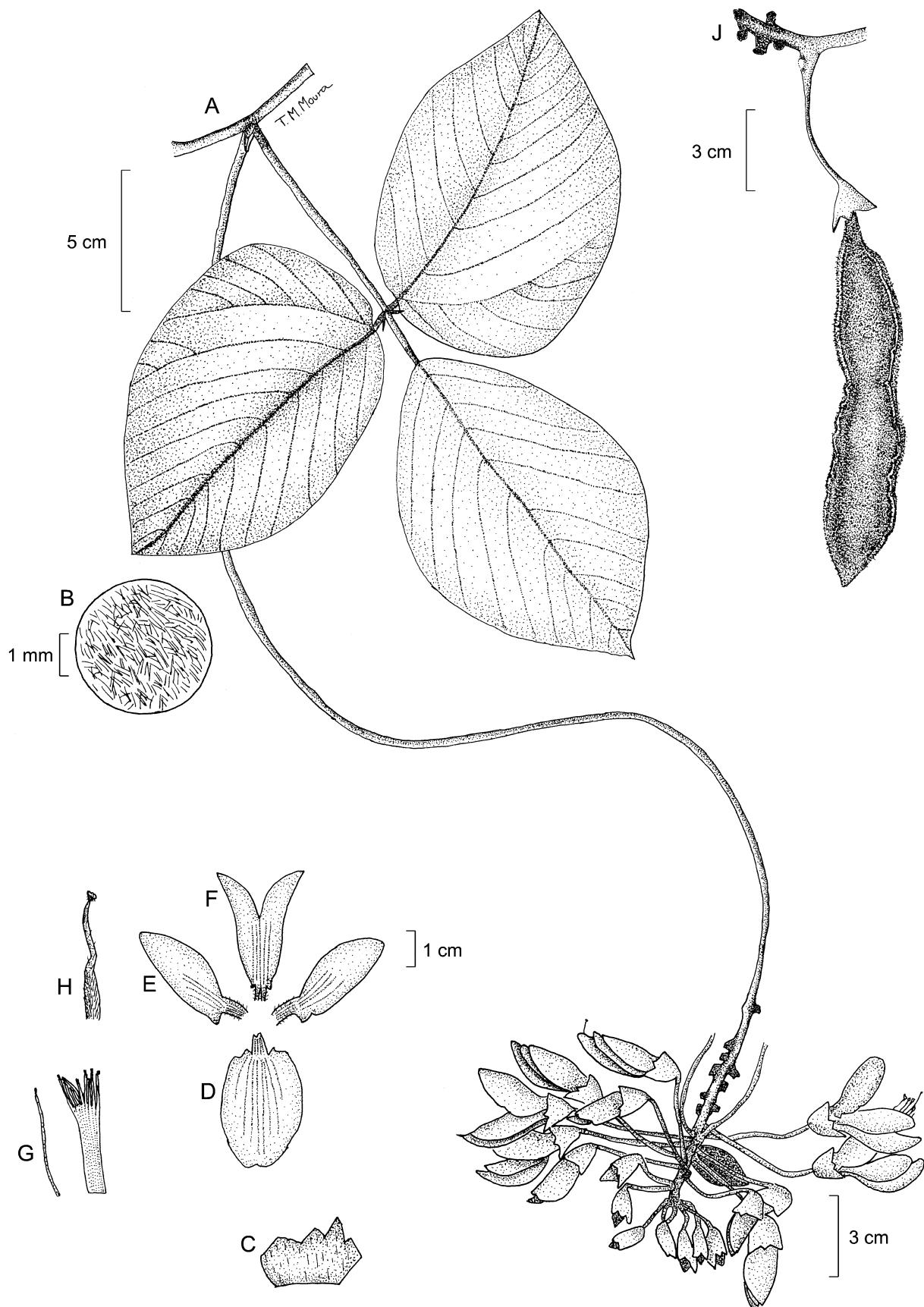
**Distribution and ecology:**—Only a few specimens of *Mucuna jarocha* were found after a comprehensive analysis of specimens from several herbaria with rich collections from South, Central and North America. It seems be an endemic species to Veracruz, Mexico (Fig. 2), occurring at elevations above 1300 m.

**Phenology:**—Flowering May to August and fruiting in August.

**Etymology:**—The species is named in honor of the residents of Veracruz, known as “Jarochos/as”. The specific epithet is intended as a noun in apposition.

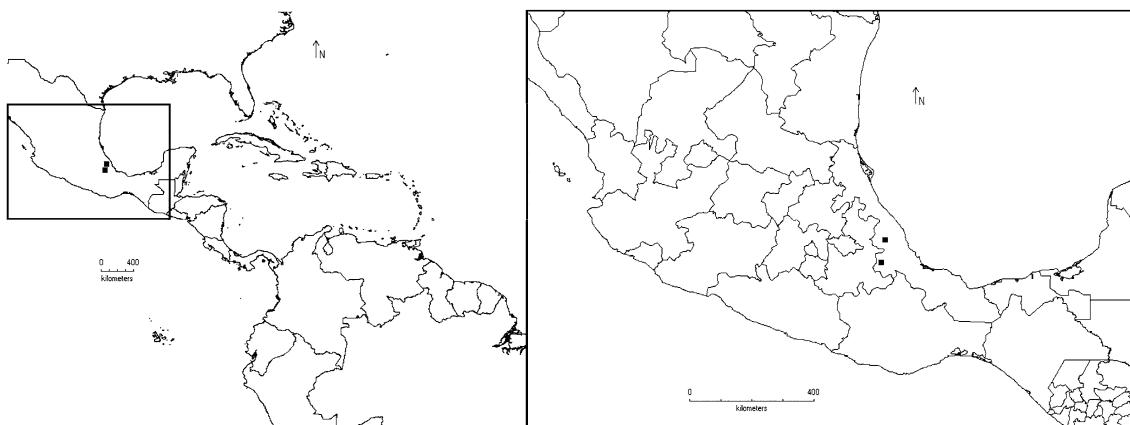
**Conservation status:**—According to the IUCN criteria (IUCN 2001), we consider this species as Data Deficient (DD), because we do not have adequate information to make the conservation assessment of *Mucuna jarocha*.

**Additional specimens examined (paratypes):**—MEXICO. Veracruz: Camino de Rincón Grande-Atzacan 51-B-1, 1350 m, 15 May 1967 (fl), *M. Rosas* 388 (BM, P); Tlalnelhuayocan, Barranca del Pixquiac, entre Rancho Viejo y La Vega, 1550 m, 2 August 1986 (fl), *M. Charazo & J. Caramillo* 3886-a (XAL); 5 May 1983 (fl), *M. Charazo* 2698 (XAL).



**FIGURE 1.** *Mucuna jarocha*. A: Branch with a leaf and an inflorescence; B: detail of abaxial leaflet surface; C: outer face of the opened calyx; D: standard petal; E: wing petals; F: keel petals; G: androecium (9+1 filaments); H: gynoecium; J: immature fruit. Drawn by Tânia Maria de Moura. Voucher: M. Chazaro & J. Caramillo 3386-b (XAL).

**Discussion:**—*Mucuna jarocha* is commonly determined as *M. holtonii*. The confusion might be due to the fact that both species have leaflets with their abaxial surface densely pubescent and long peduncles with nodose secondary inflorescence axes. However, these two species are different, principally because in *M. holtonii* the wing petals are shorter than the standard (2–2.3 cm long), whilst in *M. jarocha* the wings petals are longer than the standard (4–4.4 cm long).



**FIGURE 2.** Geographical distribution map of *Mucuna jarocha*. Created using BRAHMS 6.9 via Diva GIS.

## Acknowledgments

Funding for this study was provided by the 2012 Shirley A. Graham Fellowship in Systematic Botany and Biogeography of the Missouri Botanical Garden, CAPES (process 4627-11-3), FAPESP (process 2012/04635-8), the CNPq-REFLORA Project (process 563550/2010-4), CNPq (grant to VFM; process 312766/2009-2) and FAPERJ (grant to VFM; process number E-26/110.331/2012). We thank CAPES for the Ph.D. grant to the first author, Alba Arbelaez for giving assistance to the first author with the illustration, Rafael Barron for help in choosing the name of species, and the curators and staff of the following 55 herbaria for allowing us to access their collections: A, AAU, ALCB, ANDES, B, BM, BR, CEN, CEPEC, CFJP, CGMS, COAH, COL, CUVC, ESA, F, FHO, FMB, GB, GH, HEPH, HST, HUA, HUEFS, IAC, IBGE, INPA, IPA, JAUM, K, LP, LPB, LPC, MA, MEDEL, MIRR, MO, NY, OXF, P, PEUFR, R, RB, SI, SP, TCD, UB, UDBC, UEC, UFG, UFJF, UFP, UFRR, W, XAL. We also thank Phytotaxa editor Hans-Joachim Esser and two anonymous reviewers for their help and patience in dealing with our manuscript.

## References

- Adanson, M. (1763) *Familles des Plantes* 2. Vincent, Paris, 640 pp.  
<http://dx.doi.org/10.5962/bhl.title.271>
- IUCN (2001) *IUCN Red list categories and criteria: version 3.1*. IUCN Species Survival Commission, Gland, Switzerland and Cambridge, United Kingdom, 30 pp.
- Moura, T.M., Lewis, G.P., Mansano, V.F. & Tozzi, A.M.G.A. (in press a) Three new species of *Mucuna* (Leguminosae: Papilionoideae: Phaseoleae) from South America. *Kew Bulletin* 68: 1–8.
- Moura, T.M., Zamora, N.A., Lewis, G.P., Mansano, V.F. & Tozzi, A.M.G.A. (in press b) *Mucuna globulifera* (Leguminosae: Papilionoideae), a new species from Costa Rica, Panama and Colombia. *Kew Bulletin*.
- Moura, T.M., Zamora, N.A., Torke, B.M., Mansano, V.F. & Tozzi, A.M.G.A. (2012) A new species of *Mucuna* (Leguminosae-Papilionoideae-Phaseoleae) from Costa Rica and Panama. *Phytotaxa* 60: 1–8.
- Schrire, B.D. (2005) Tribe Phaseoleae. In: Lewis, G., Schrire, B.D., Mackinder, B. & Lock, M. *Legumes of the World*. Royal Botanic Gardens, Kew, pp. 393–431.
- Standley, P.C. (1922) Trees and Shrubs of Mexico 2. *Contributions from the United States National Herbarium* 23: 171–515.
- Zamora, N. (2010) Fabaceae. In: Hammel, B.E., Grayum, M.H., Herrera, C. & Zamora, N. (eds.) *Manual de plantas de Costa Rica 5. Dicotiledóneas (Clusiaceae–Gunneraceae)*. *Monographs in Systematic Botany from the Missouri Botanical Garden* 119: 395–775.