

Mucuna globulifera (Leguminosae: Papilionoideae), a new species from Costa Rica, Panama and Colombia

Tânia Maria de Moura¹, Nelson A. Zamora², Gwilym P. Lewis³, Vidal de Freitas Mansano⁴ & Ana Maria G. A. Tozzi⁵

Summary. A new species of *Mucuna* (Leguminosae) from Costa Rica, Panama and Colombia is described and illustrated. Although the species is morphologically grouped with a number of species from Central and South America that have the primary axis of their inflorescences condensed, *M. globulifera* is distinguished by a suite of characters, including a condensed primary inflorescence axis (very reduced internodes, the nodes up to approximately 1 mm apart from the one above), an extremely long peduncle, secondary bracts surrounding a large and conspicuous globose structure when the inflorescence is young, flowers usually pale salmon in colour, fruits softly villous and lacking urticating trichomes, and the presence of very sparse appressed hairs on the leaflet surfaces, or the leaflets almost glabrous.

Key Words. Fabaceae, Neotropics, Phaseoleae, taxonomy.

Introduction

Most species of *Mucuna* are lianas or have a scandent habit, have uniformly trifoliolate leaves, umbelliform or pseudoracemose inflorescences that are usually pendent on a long peduncle, and showy, resupinate papilionaceous flowers with a campanulate calyx. The fruits are frequently large woody pods, covered with urticating trichomes. There are approximately 100 species of *Mucuna* distributed pantropically. The genus displays much morphological diversity and a number of pollination syndromes (Helvesen & Helvesen 1999; Agostini 2008).

Ruiz (2009) published a synopsis of the Colombian species of *Mucuna* and commented that 17 species were recorded for the Neotropics. This number is considered by us to be an under-estimate and we recognize 24 neotropical species, which together display the morphological variation of the whole genus throughout its pantropical range (T. M. Moura, unpublished data). Most *Mucuna* species occurring in Tropical America have a condensed primary axis of the inflorescence, a character exclusive to neotropical

species. Due to the lack of a complete taxonomic survey of the genus, the discovery of one more new species in the Neotropics is not surprising (Tozzi *et al.* 2005; Ruiz 2009; Zamora 2010; Moura *et al.* 2012).

During a detailed study of *Mucuna* specimens from several herbaria (in Europe, and North, Central and South America) a new species from Costa Rica, Panama and Colombia was discovered. Below we present a description, an illustration and a distribution map of this new species.

Taxonomy

Mucuna globulifera T. M. Moura, N. Zamora & A. M. G. Azevedo **sp. nov.** Type: Panama, Darién, *McDonagh, Lewis, Gumpel & Pumptre* 514 (holotype BM!; isotype MO!).

<http://www.ipni.org/urn:lsid:ipni.org:names:77123385-1>

Liana with stems sparsely sericeous. *Leaves* alternate, 3-foliolate; stipules caducous; petiole 8 – 15 cm long,

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¹ Programa de Pós-graduação em Biologia Vegetal, Instituto de Biologia, Universidade Estadual de Campinas, Rua Monteiro Lobato, 255, Cidade Universitária Zeferino Vaz, Barão Geraldo, Campinas, SP 13083-862, Brazil. e-mail: tmariamoura@gmail.com

² Instituto Nacional de Biodiversidad (INBio), Apdo, 22-3100, Santo Domingo-Heredia, Costa Rica. e-mail: nzamora@inbio.ac.cr

³ Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, UK. e-mail: G.Lewis@kew.org

⁴ Instituto de Pesquisas do Jardim Botânico do Rio de Janeiro, DIPEQ. Rua Pacheco Leão, 915, Jardim Botânico, Rio de Janeiro, RJ 22460-030, Brazil. e-mail: vidalmansano@gmail.com

⁵ Departamento de Biologia Vegetal, Instituto de Biologia, Universidade Estadual de Campinas, Rua Monteiro Lobato, 255, Cidade Universitária Zeferino Vaz, Barão Geraldo, Campinas, SP 13083-862, Brazil. e-mail: anatozzi@unicamp.br

cylindrical, sparsely sericeous; pulvinus cylindrical, 10×3 mm; rachis 2.5 – 3.5 cm long, angular, the hairs as on the petiole; stipels absent; petiolules 8 – 10 mm long, with erect hairs, these denser than on the petiole and rachis; leaflet blades ovate to elliptic, that of the apical leaflet $9.5 - 18.5 \times 5.7 - 10$ cm, those of the lateral leaflets $11.5 - 13.5 \times 6 - 7$ cm and asymmetrical, all blades obtuse or rounded at base, cuspidate at apex, the hairs appressed and sparse on both surfaces, the venation eucamptodromous, with 4 – 5 pairs of secondary veins per leaflet. *Inflorescence* a terminal axillary, pendent pseudoraceme; peduncle 1 – 3 m long, with sparse appressed hairs; rachis condensed, 1 – 2.5 cm long, spirally arranged pedicels with one pedicel c. 1 mm apart from the one above; bracts 2 at the base of the primary axis of the inflorescence, caducous; secondary bracts (at the base of each node) persistent, $3 - 5 \times 2.5 - 3$ cm, ovate and concave (primary and secondary bracts enveloping the early inflorescence to form a globose structure); pedicels 4 – 6 cm long, 2 – 3-fasciculate on each node, sericeous. *Flowers* 4 – 4.5 cm long. *Calyx* bright golden-sericeous (when fresh), campanulate, with long, appressed hairs on outer and inner surfaces, 1.5 – 2 cm long; lobes 4, the adaxial one formed by two connate sepals, the abaxial one 5 – 7 mm long, the apex obtuse, the other two lobes 3 – 4 mm long, the apex acute or rounded. *Corolla* generally pale salmon to whitish, whitish green (when fully mature), but also reported as cream (*Gentry & Aguirre* 15218, COL), or creamish yellow (*Duke & Elias* 13877, COL); standard $3.3 - 3.7 \times 2$ cm, lanceolate with an acute to retuse apex and cordate-sagittate base, the claw c. 3 – 4 mm long, glabrous; wing petals $2.7 - 3.7 \times 1$ cm, oblong, basally attenuate, apically rounded, pubescent at base, the claw c. 1 mm long; keel petals $4 - 4.5 \times 0.7 - 1$ cm, oblong, attenuate at base, obtuse at apex, pubescent at base, the claw c. 1 mm long. *Stamens* 10, diadelphous, with nine stamens fused, one free; filaments 4 cm long, glabrous; anthers ovate to oblong-elliptic, basifixed, 2 – 4 mm long. *Gynoecium* 4 – 4.5 cm long; ovary sessile, oblong, 8×2 mm, densely sericeous, 4 – 5-ovulate; style 3 – 4 cm long, densely sericeous, glabrescent at apex, the stigma peltate. *Fruit* oblong, laterally compressed, (1 –) 2 – 3-seeded, $10.5 - 18.2 \times 4.5 - 5.5$ cm, the margin undulate between the seeds, softly villous and lacking urticating hairs; seeds discoid, black, $3 - 3.3 \times 2.7 - 3.4$ cm. Figs 1 and 2.

RECOGNITION. *Mucuna globulifera* is diagnosed by its 1 – 3 m long peduncle; a condensed primary axis of the inflorescence; bracts and bracteoles $3 - 5 \times 2.5 - 3$ cm; pedicels 4 – 6 cm long; flowers 4 – 4.5 cm long; corolla usually pale salmon coloured but also reported as cream or creamish yellow; wing petals shorter than keel petals; fruits densely villous, with a smooth surface (no ornamentation present). The most morphologi-

cally similar species to *M. globulifera* is *M. mollis*, which also has the internodes of the inflorescence strongly reduced (the nodes c. 1 mm apart from the one above) but *M. mollis* has a denser indumentum of erect hairs on the leaflet abaxial surfaces, whilst in *M. globulifera* the trichomes on the abaxial surface of the leaflets are appressed and sparse or the leaflets are almost glabrous.

DISTRIBUTION. *Mucuna globulifera* is known from SW Costa Rica, Panamá (Chiriquí, Coclé and Darién provinces) and Colombia (Antioquia, Chocó and Santander departments) (Map 1).

SPECIMENS EXAMINED. COSTA RICA. Puntarenas: Cantón de Osa, Fila Costeña, Río Piedras Blancas, 2 km al N alrededores de Cerro Anguciana, $08^{\circ}49'30''N$, $83^{\circ}11'45''W$, 900 m, 28 July 1993 (fl., fr.), *Aguilar et al.* 2041 (CR, INB); Along Río Java S of San Vito de Coto Brus, $08^{\circ}47'N$, $82^{\circ}58'W$, 1150 m, 1 July 1984 (fl.), *Grayum* 3349 (MO); Jardín Botánico Wilson, Las Cruces, San Vito de Coto Brus, sobre el Sendero Este hacia Río Java, $08^{\circ}47'30''N$, $82^{\circ}58'00''W$, 1100 m, 3 Sept. 1993 (fr.), *Rivera et al.* 2141 (CR, K); San Vito de Coto Brus, Estación Biológica Las Cruces, OET, orillas del camino que lleva al río Java, $08^{\circ}78'41.1''N$, $82^{\circ}96'050''W$, 1200 m, 12 June 2011 (fl.), *Santamaría & Lagomarsino* 8864 (INB); Finca Las Cruces, S of San Vito, $08^{\circ}47'5''N$, $82^{\circ}57'W$, 3700 – 3800 ft, 28 July 1977 (imm. fr., fl.), *Webster* 22107 (MO). PANAMA. Chiriquí: 1 km del Hato del Volcán en la carretera que va a Concepción, 24 April 1969 (fl.), *Correa & Lazor* 1439 (MO; PMA); along Río Colorado, $08^{\circ}50'N$, $82^{\circ}43'W$, 1200 – 1400 m, 17 March 1983 (fr.), *Hamilton & Stockwell* 3468 (MO); along Río Colorado, $08^{\circ}50'N$, $82^{\circ}43'W$, 1200 – 1400 m, 11 July 1983 (fl.), *Hamilton & Krager* 3758; Canal Area, Lake Madden, c. 100 m, 29 Aug. 1982 (fl.), *Hamilton & Stockwell* 1112 (MO); Bocas del Toro. Changuinola, Parque Internacional La Amistad, Rancho Santín, bosque secundario debajo de la casa, $09^{\circ}06'48.7''N$, $82^{\circ}39'44.3''W$, 1175 m, 29 July 2008 (fl.), *Monro et al.* 6088 (PMA); Changuinola, faldas del Falso Fábrega, punto de maestro # 9, 3 Aug. 2008 (fl.), *Santamaría et al.* 7696 (PMA). Coclé: Region N of El Valle de Antón, 1000 m, 21 Aug. 1946 (fl.), *Allen* 3640 (NY; MO); Forest in hills above road 18 km past Sardinilla on way to Nombre de Dios (road not finished), 150 – 300 m, 2 Aug. 1974 (fl./fr.), *Croat* 26088 (MO); Valle de Antón and vicinity, 500 – 700 m, 23 – 27 July 1935 (fl.), *Seideht* 434 (K). Colon: Foresta round Limon, 5 h walk N of Alto Calvario (N of El Cope) tall forest, 800 – 1000 m, 10 Oct. 1977 (fr.), *Folson* 5848 (M); trail from head waters of Río Boqueron back to fork with Río Escandaloso, (fl.), *Hammel* 4007 (MO); Along Quebrada Bonita, 13 km NE of Buena Vista, 3 km NW of Salamanca, 28 Oct. 1973 (fr.), *Nee* 7632 (MO); along dirty trail, 4 km NW of Salamanca, 13 km NE of Buenos Aires, 340 – 410 m, 30 Dec. 1973 (fr.), *Nee* 7075 (MO). Darién: trail to Cerro Pirre, Rancho Frío, 6

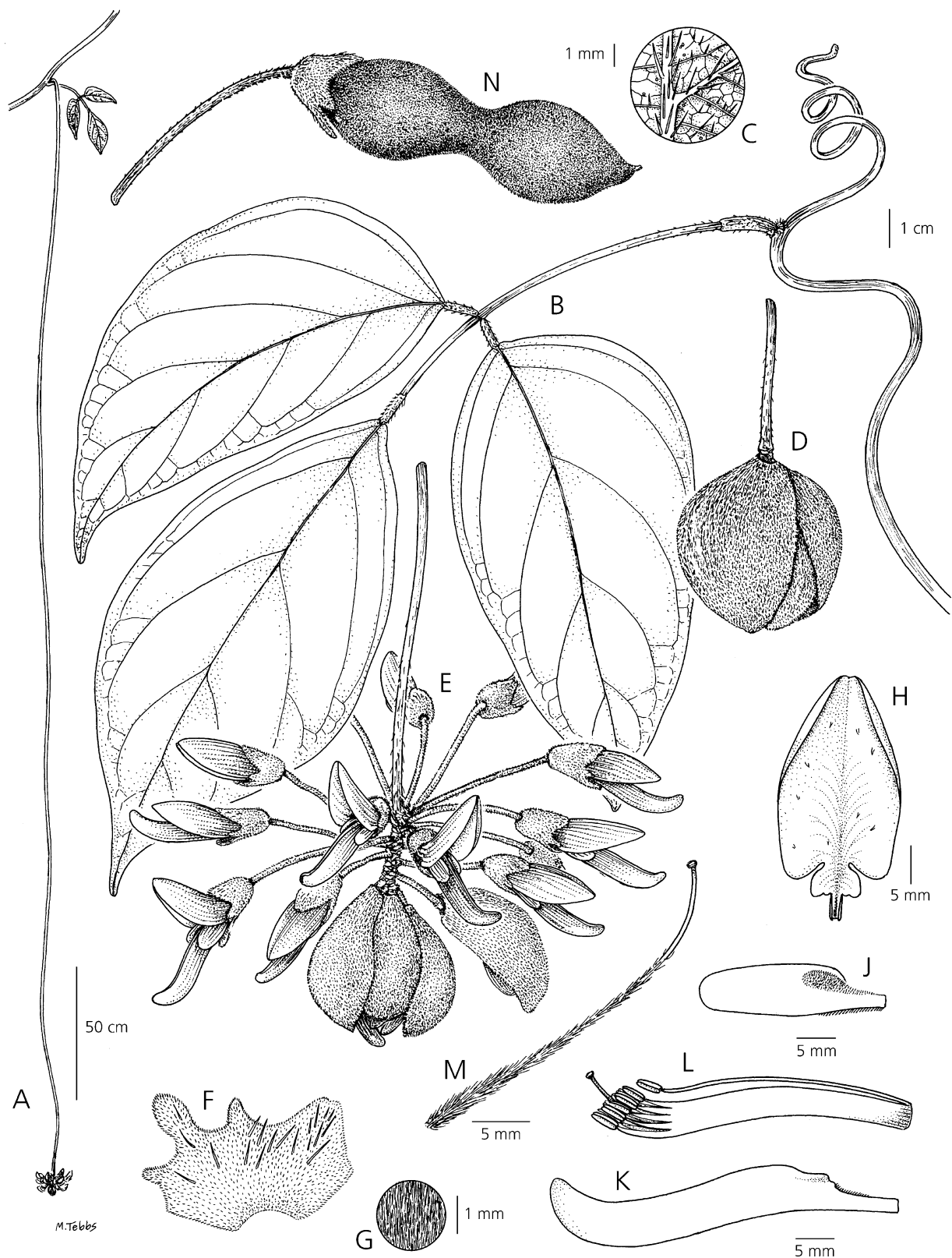


Fig. 1. *Mucuna globulifera*. A leaf and inflorescence, emphasising peduncle length; B leaf; C indumentum on leaflet abaxial surface; D young inflorescence; E open inflorescence; F calyx opened out — outer surface; G indumentum on the calyx outer surface; H standard petal inner surface; J wing petal; K keel petal; L androecium (9+1) and gynoecium apex; M gynoecium; N immature fruit. B & F – M from Duke & Elias 13877 (K); A, C – E & N from McDonagh et al. 514 (BM). DRAWN BY MARGARET TEBBS.

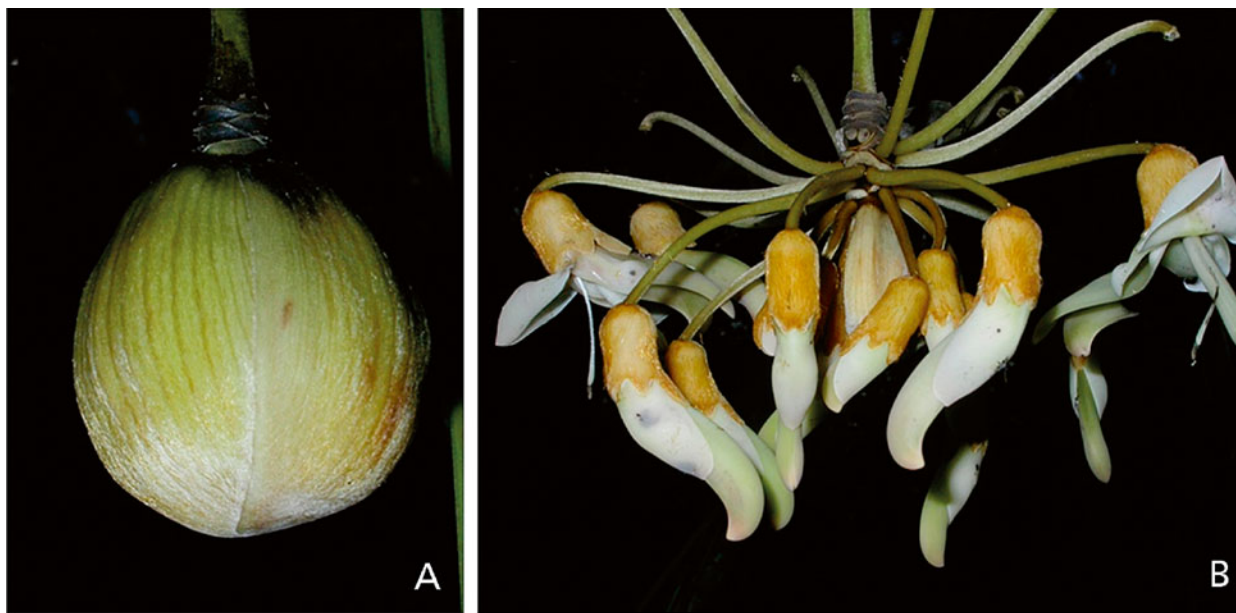


Fig. 2. *Mucuna globulifera*. A globose inflorescence prior to opening; B open inflorescence. PHOTOS: D. SOLANO.

Aug. 1986 (fl., fr.), *McDonagh, Lewis, Gumpel & Pumtre* 514 (holotype: BM; isotype MO). 10 Aug. 1967 (fl.), *Duke & Elias* 13877 (COL, K, DUKE [photo], MO; UC

[photo]); ascent of Cerro Pirro from Rio Pirro, S of El Real, 11 Aug. 1962 (fl.), *Duke* 5286 (MO); Cocalito, 13 Aug. 1963 (fl.), *Dwyer* 2750 (MO); trail



Map 1. Geographical distribution of *Mucuna globulifera* in Central America and NW South America.

and river bank between Manene and Rio Coasi, 22 Dec. 1980 (fr.), *Hartman* 12126 (MO); western slope of Cerro Pirre, above Renare camp and park shelter, 08°00'N, 77°45'W, 550 – 775 m, 28 July 1988 (buds), *MacPherson* 12649 (MO). **COLOMBIA.** Antioquia: Hoya del Rio León o Bacubá, from Villa Arteaga to Chigorodó, Río Porroso, La Pedrera, about 90 m, 3 Oct. 1961 (fl.), *Cuatrecasas & Willard* 26200 (US). Chocó: Trail from Unguia along Río Tigre toward base of Serranía del Darién, 200 – 300 m, 16 July 1975 (fl.), *Gentry & Aguirre* 15218 (COL, MO, NY). Santander: San Juan Valley, vicinity of Puerto Berrío, between Carare and Magdalena Rivers, 100 – 700 m, 16 June 1935 (fl.), *Haught* 1797 (US).

HABITAT. *Mucuna globulifera* occurs at an altitude of 100 – 1400 m. The species is quite common at middle elevations (c. 1200 m) of the Changuinola watershed in Parque Internacional La Amistad (Panama) and Jardín Botánico Las Cruces, San Vito (Costa Rica), but is apparently rare elsewhere, although quite possibly common in areas that have yet to be explored botanically. The species colonises sunny, disturbed open areas, such as forest gaps and margins.

CONSERVATION STATUS. According to IUCN (2001) *Mucuna globulifera* is an Endangered (EN) species. Although it occurs in three countries, it has an EOO of 376,970 km², and AOO of 56 km².

PHENOLOGY. Flowering June – Aug.; fruiting March, and July – Sept.

ETYMOLOGY. The specific epithet refers to the shape of the large and distinctly globose young inflorescences.

NOTES. *Mucuna globulifera* is morphologically related to other species from Central and South America that have a condensed primary axis of the inflorescence, such as: *M. argyrophylla* Standl. (Standley 1922: 504), *M. holtonii* (Kuntze) Moldenke (1933: 7) and *M. mollis* (Kunth) DC. (De Candolle 1825: 406). It is most similar to *M. mollis* based on inflorescence structure, with the internodes greatly reduced and the nodes about 1 mm apart from the one above. Nevertheless, *M. globulifera* has a pale salmon to cream or creamish yellow coloured corolla, leaflets with sparsely appressed hairs to almost glabrous on both surfaces, and persistent secondary bracts, these 3 – 5 × 2.5 – 3 cm in size; whereas, *M. mollis* has a yellow corolla, leaflets with dense, erect hairs, and 2 – 3 × 2 – 2.5 cm caducous bracts (these only seen on young inflorescences, and not when the flowers are open). *M. globulifera* is characterised by the extremely long peduncle and conspicuous large globose young inflorescence, with several, large and ovate-concave overlapping secondary bracts.

Mucuna globulifera is equivalent to *Mucuna* sp. B of Zamora in the *Manual de Plantas de Costa Rica* (Zamora 2010).

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