



Mucuna chiapaneca (Leguminosae—Papilionoideae) a new species from Mexico

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Mucuna chiapaneca a new species from Chiapas, Mexico is here described, and illustrated. Six species of *Mucuna* occur in Mexico, two of them are endemic. A table is provided giving the diagnostic characteristics among the six species.

Key Words: Fabaceae; Mesoamerican Flora; new taxon; systematics

Twenty four species of *Mucuna* Adanson (1763: 579) are currently reported to occur in the Neotropics (Moura 2013), representing ca. 25% of the species diversity of the genus. Six species occur in Mexico and are distinguished by their lianescent habit; leaves pinnately trifoliolate; stipels persistent; inflorescences pendent; calyx campanulate; a usually resupinate corolla; the standard petal shorter than the keel ones; anthers dimorphic; pods, in some species, covered with bristly irritant trichomes; seeds either large, globose and hard, with a hilum that surrounds more than 70% of the seed circumference (*M. subg. Mucuna*), or reniform with hilum surrounding less than 20% of the seed circumference (*M. subg. Stizolobium*).

Recently published studies have advanced our knowledge about the neotropical species of *Mucuna*. For example, Ruiz (2009) published an account of the 16 species of *Mucuna* that she considered to occur in the Neotropics (including four species recorded for Mexico). Four new species from Mesoamerica have been described in the past three years, three from Costa Rica and Panama (Moura *et al.* 2012, 2013a; Zamora & Moura 2014), and one endemic to Mexico (Moura *et al.* 2013b).

In this paper we present an account for the Mexican species of *Mucuna*, including a table of diagnostic characteristics of each species, with the description of a new species, *M. chiapaneca*, containing an illustration and distribution map. According to our results the following species are recorded for Mexico: *M. argyrophylla* Standley (1922: 504), *M. holtonii* (Kuntze 1891: 207–208) Moldenke (1933: 7), *M. pruriens* (Linnaeus 1724: 23) De Candolle (1825: 405), *M. sloanei* Fawcett & Rendle (1917: 36) and two endemic species to this country *M. jarocho* Moura *et al.* (2013b: 44–46) and the new species *M. chiapaneca* described here.

Mucuna chiapaneca M. Sousa & T.M. Moura, *sp. nov.* (Fig. 1)

M. tapantianae N. Zamora et T. M. Moura *affinis a qua differt stipellis aliquot persistentibus (versus absentes), inflorescentia rachidi secundaria sine nodulis, recta et rachidi pedicellis distichis sine spatiis inter paria (versus nodulos manifestos et rhachim pedicellis distichis cum spatiis sinuosis inter paria), fructibus cum partibus floralibus persistentibus (versus partes florales cito caducas).*

Habitat in sylvis borealibus caducifoliis.

Type:—MEXICO. Chiapas: Jitotol, along the Rio Hondo 6.5 km North of Jitotol along road to Pichucalco, 1700 m, 27 October 1971 (fl.), D.E. Breedlove & R.F. Thorne 21422 (holotype: MEXU!, isotype: DS!).

Liana. Leaf-bearing portion of stems with sparse, adpressed hairs; stipules lanceolate, caducous. Leaves alternate, trifoliolate, 22 × 13–14 cm; pulvinus 5–8 × 2–3 mm; petiole 7–10 cm long, with sparse, erect hairs (sometimes glabrous); stipels persistent, acicular, ca. 2 mm long; rachis 2.5–3.5 cm long, with sparse, erect hairs; petiolule 1 cm long, with sparse, erect hairs; leaflet blades glabrous on both surfaces; lateral leaflets 9–10 × 4.5–5 cm, asymmetric at base, cuspidate at apex; terminal leaflets elliptic to obovate, 9.5–10 × 4.5–8.5 cm, acute at base, cuspidate at apex. Inflorescence an axillary, pendent pseudoraceme, peduncle reported as up to 2.5 m long, with a sparse indumentum of short, adpressed hairs; bracts caducous; rachis ca. 5 cm long, secondary axis neither nodose nor evident, pedicels 5–6.5 cm long. Flowers 4.5–5 cm long; calyx 1.5

cm long, sericeous; 4-lobed, the adaxial lobe formed by two connate sepals, 5×7 mm, retuse at apex, lateral lobes 5×2 mm, acute at apex, abaxial lobe 8×3 mm, acute at apex; corolla reported as cream or greenish-yellow; standard 4×3 cm, oval, truncate at base, 2 auricles 2 mm long, claw 8 mm long; the wings 3×1 cm, obovate, auriculate at base (auricle 1 mm long), claw 9 mm long; keel petals 4×1.5 cm, oblong, auriculate at base, acute at apex, claw 1 mm long; wing and keel petals pubescent at base, stamen diadelphous, filaments 4–4.8 cm long, glabrous; anthers dimorphic, either basifixed, oblong, ca. 4 mm long, or sub-basifixed, subglobose, ca. 2 mm long, gynoecium ca. 4.3 cm long, style 3.8 cm long, sericeous, the hairs becoming sparse at apex; ovary 1.2×0.3 cm, with a dense indumentum; stigma peltate, villous. Fruits legume, opening along one suture, 1–(2–3)-seeded, when 1-seeded, ovate-oblique, long attenuate at base, $7\text{--}8 \times 5$ cm, rostrate at the apex, when 2–3-seeded, oblong, $11.5\text{--}14.5 \times 3.6\text{--}5$ cm, short attenuated at base, short rostrate, constricted between the seeds, laterally compressed, covered with dark brown (umber) pilose long ascending soft non irritant trichomes. Seeds (immature) 1–3 per fruit, 2.7×2.3 cm, globose, laterally compressed, black; hilum circling almost all the seed circumference.



FIGURE 1. *Mucuna chiapaneca*. A. Leaf and the pendent inflorescence; B. calyx; C. standard petal; D. wing petal; E. keel petal; F. androecium; G. gynoecium; H. pendent inflorescence with flowers on the floral rachis; I. branch bearing 2–3-seeded fruits, including persistent flower part remains at their base; J. fruit margin showing the pilose ascending trichomes; K. stipule; L. stipels. Flowering material, stipels and stipule from the type *Breedlove & Thorne 21422* (MEXU); gynoecium from *Thorne & Lathrop 40252* (DS). DRAWN BY RAMIRO CRUZ.

Etymology:—The species name remarks the state of Chiapas, Mexico in which this species grows.

Phenology:—Flowering in June to October and fruiting in August.

Distribution and ecology:—Species endemic to Chiapas, Mexico, on the Jitotol, Ridge in the Northern Highlands of Chiapas (Fig. 2); in two different forests, one the Montane Rain Forest, and the other in Pine-Oak-Liquidambar forest, both forests are close each other. *Mucuna chiapaneca* was determined in the study by Zuill & Lathrop (1975) as *M. argyrophylla*. The new species is present at elevations between 1700 and 1920 m.

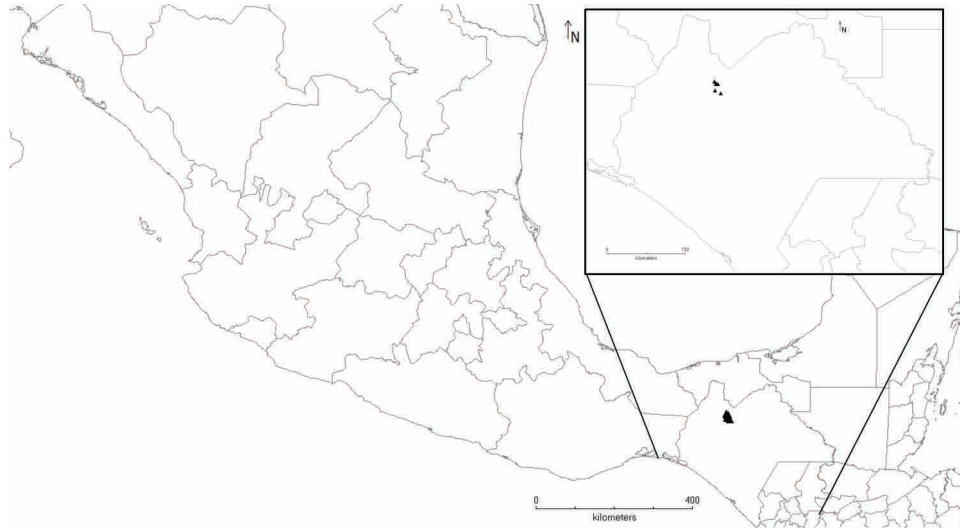


FIGURE 2. Geographical distribution map of *Mucuna chiapaneca*. Created using Diva GIS.

Conservation Status:—*Mucuna chiapaneca* has a restricted extent of occurrence (EOO= 57,000 km², CR) and area of occupancy (AOO= 24,000 km², EN). Moreover, this species is reported to few localities to Chiapas, Mexico. Although there are native forests in this area, none specimen of *M. chiapaneca* was registered to a protected area and the environment, where this species occurs, is disturbed as a whole due to the presence of roads, and agricultural spots. Therefore, according to IUCN criteria (2014) *M. chiapaneca* is assessed as endangered [(EN B1B2ab(iii))].

Additional specimens examined (Paratypes):—MEXICO. Chiapas: Pueblo Nuevo Solistahuacán, Rincón Chamula, Slopes with *Pinus* and *Quercus*, 20 August 1969 (fl., fr.) O.F. Clarke 298 (DS, ENCB, MEXU); Selva Negra, ca. 3 mi N of Pueblo Nuevo Solistahuacán, 3 June 1970 (fl.) R.F. Thorne & E. Lathrop 40252 (DS, ENCB); vicinity of Pueblo Nuevo Solistahuacán, 125 km NE of Tuxtla Gutiérrez, 22–30 June 1963 (fl.), S.S. Tillet 636–67 (US); above Pueblo Nuevo Solistahuacán, 15 August 1967 (fl.) A.S. Ton 2833 (DS, MEXU); on slopes 3 km northwest of Pueblo Nuevo Solistahuacán, 22 August 1970 (fl.) H. Zuill 276 (DS).

Discussion:—A very distinguished characteristic for *M. chiapaneca* is the persistent floral parts at the base of the fruits; not noticed for the other species of this genus. *Mucuna chiapaneca* is similar to *M. tapantiana* and slight similar to *M. argyrophylla*, especially in the colour of the corolla and the short wing petals (these are usually shorter than the standard petal but including the claw they are almost of the same length). Both *M. tapantiana* and *M. argyrophylla*, however, have a nodose secondary inflorescence axis (whilst *M. chiapaneca* does not), and peduncle up to 1 m long (whilst in *M. chiapaneca* it is up to 2.5 m long). *Mucuna chiapaneca* has stipels whilst *M. tapantiana* has not. The flowers in *M. tapantiana* are slightly shorter (4–4.5 cm long) than in *M. chiapaneca* (4.5–5 cm long); and the fruits in *M. tapantiana* are ornamented by discrete lamellae (versus no ornamented in *M. chiapaneca*). Among the species occurring in Mexico, *M. chiapaneca* is easily distinguished from *M. argyrophylla* by a dense sericeous, argenteus indumentum on the abaxial surface of its leaflets (versus glabrous leaflets in *M. chiapaneca*).

An account of the accepted names of *Mucuna* occurring in Mexico, including some diagnostic characters, is presented in the Table 1.

Although we presented here six species occurring in Mexico, a special attention to the representatives of *M.* subg. *Stizolobium* occurring in this Country is still necessary. Moreover, Ruiz (2009) commented the possibility of *M. holtonii* becomes a synonym of *M. mollis*; however, observations of these species *in loco* are necessary for unveiling it.

TABLE 1. *Mucuna* species occurring in México (+ presence; - absence).

Character/species	<i>M. argyrophylla</i>	<i>M. chiapaneca</i>	<i>M. holtonii</i>	<i>M. jarochoa</i>	<i>M. pruriens</i>	<i>M. sloanei</i>
Hairs on the leaflets abaxial surface	dense	glabrous	dense	dense	sparse	dense
Peduncle < 20 cm long	-	-	-	-	+	+
Secondary axis of inflorescence nodose	+	-	+	+	-	-
Corolla	cream-white; greenish-white; yellowish	cream; greenish yellow	cream; greenish yellow	cream; pinkish; white	purple; rarely white	yellow
Wings petals length in comparison to standard	shorter	shorter	shorter	longer	longer	longer
Pod surface ornamented by lamellae	-	-	-	-	-	+
Seeds shape	globose	globose	globose	globose	reniform	globose
Hilum circling more than 50% of the seed circumference	+	+	+	+	-	+

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