

A revision of *Mucuna* (*Leguminosae*–*Phaseoleae*) in the Philippines

C. M. WILMOT-DEAR

Summary. An account of the 13 species of *Mucuna* Adans. found in the Philippine Islands is offered, with keys and distribution maps. One new species, *M. diplax* Wilmot-Dea, is described; one former species, *M. sericophylla* Perk., is reduced to a variety of *M. pruriens* (L.) DC.

***Mucuna* Adans.**, Fam. Pl. 2: 325 (1763); Prain, Journ. As. Soc. Bengal 66: 404 (1897), *nom. conserv.*

For synonymy and generic description see Wilmot-Dea (1984: 23).

The thirteen species found in the region, including one considered new, are described below. Of these, nine and var. *sericophylla* (Perk.) Wilmot-Dea of *Mucuna pruriens* (L.) DC. are endemic, five apparently restricted to one island each, four of these to small areas. Of the remaining four, *M. reticulata* Burck occurs also in Sulawesi, *M. hainanensis* Hayata subsp. *multilamellata* Wilmot-Dea in the Indian subcontinent, *M. gigantea* (Willd.) DC. subsp. *plurisemina* Verdc. in Papua New Guinea and Australia, and two, *M. pruriens* (L.) DC. var. *pruriens* and *M. gigantea* (Willd.) DC. subsp. *gigantea*, are extremely widespread. The cultivated variety *M. pruriens* (L.) DC. var. *utilis* (Wall. ex Wight) Bak. ex Burck is also mentioned and included in the key.

The region is poorly collected, several of the endemic taxa being known from very few collections or only one; the distribution of these in particular may therefore be incompletely represented. I suspect, however, that further collecting would still find them to be of very restricted distribution since they have not been found in areas on other islands (or even on the same one) which do seem to be fairly well-collected and which have yielded species of apparently similar habitat requirements.

Although comprising rather few species in this area, *Mucuna* shows some of the distribution characteristics commonly found in genera in the Philippines, as discussed by Merrill (1909), with a very high percentage of endemics and (leaving aside the two species which are very widespread indeed) having other taxa in common with Sulawesi, Himalayas or Papua New Guinea and Australia. Several of the endemics described here seem strikingly distinct, in both fruit and leaf characters, from species in even adjacent regions.

All specimens cited have been seen.

KEYS TO SPECIES OF *MUCUNA* IN THE PHILIPPINES

A. Flowering material.

1. Leaves very large with terminal leaflet *c.* 15 × 14 cm, almost as broad as long; leaflets with dense pale stiff-velvety pubescence both sides (flowers unknown)..... **3. pachycarpa**

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- Leaves either relatively narrower with terminal leaflet at least $1\frac{1}{2} \times$ as long as broad or else less than 9 cm long; leaflets glabrous or pubescence either not pale or not stiff-velvety. 2
2. Leaflets fairly large, terminal one 12–20 cm long, *c.* $1\frac{1}{2} \times$ as long as broad, \pm glabrous above but with abundant or dense pale pubescence below, this semi-adpressed or spreading but hairs rather weak and woolly, not stiff or straight (flowers unknown). **12. platyplekta**
 Leaflets without above combination of characters: either considerably smaller or relatively narrower or pubescence very strongly-coloured 3
3. Flowers over 5.5 cm long, rarely only 5 cm and then leaves usually densely spreading-red-brown pubescent. 4
 Flowers less than 4.2(–4.5) cm long; leaves, if pubescent, not as above 11
4. Keel 6.5–7 cm long; corolla dark purple; flower-bearing sidebranches reduced to knobs. **10. samarensis**
 Either keel smaller up to 6 cm long, or flowers white with lengthened sidebranches. 5
5. Flower-bearing sidebranches reduced to knobs up to 3 mm long; inflorescence-axis branched or not; flowers (where colour known) purple or red, 5–6 cm long. 6
 Flower-bearing sidebranches distinctly lengthened, even in bud stage 5–15 mm long; inflorescence-axis branched; flowers white, 6–8 cm long 8
6. Leaves with dense, rather spreading and woolly, dark red-brown pubescence beneath; mature flowers 5 cm long; inflorescence-axis unbranched. **7. aurea**
 Leaves glabrous or with very sparse adpressed pale hairs beneath; mature flowers usually 5.5–6 cm long (see note on p. 00); inflorescence-axis often branched once to three times. 7
7. Standard with large patch of adpressed fine hairs in basal $\frac{1}{3}$ of dorsal surface clearly visible extending beyond calyx; bracteoles 7–9 mm long, shorter than calyx. **11. diplax**
 Standard not pubescent or pubescence restricted to claw region and not visible beyond calyx; bracteoles 12–18 mm, longer than calyx. **9. hainanensis** subsp. **multilamellata**
8. Calyx-lobes large and distinct, lowest 8–10 mm, laterals 5–7 mm long 10
 Calyx-lobes short and broad, lowest 4.5 mm long, laterals 2–4 mm long or indistinct. 9
9. Bracts and bracteoles persistent, large, (10–)15–20 \times 5–10 mm; pubescence on inflorescence-axis adpressed, 0.3–0.4 mm in length, whitish, not dense. **4. longipedunculata**
 Bracts and bracteoles early-deciduous, small, 5 \times 2–3 mm; pubescence on inflorescence-axis spreading, very short, 0.1–0.2 mm, light brown, dense. **5. macmillanii**
10. Leaflets broadly ovate or elliptic, $1\frac{1}{2} \times$ as long as wide; pedicels 1.5–2 cm long; bracts large, \pm 20 \times 10 mm, fairly long-persistent **6. reticulata**
 Leaflets narrow elliptic, more than twice as long as wide; pedicels usually longer, 2–3 cm; bracts smaller, up to 15 \times 7 mm, early deciduous **8. curranii**

11. Inflorescence distinctly pseudumbellate with sidebranches and pedicels of very varying lengths, even in young bud state; sidebranches few, up to 7; calyx lobes short, never over 3 mm long; flowers white or greenish 12
 Inflorescence never pseudumbellate, sidebranches and pedicels all of fairly uniform length; (sidebranch number, calyx-lobe size and flower colour various)..... 13
12. Flowers with keel up to 3.5 cm long; calyx tube up to 1 cm long 1. **gigantea** subsp. **gigantea**
 Flowers with keel up to 4 cm long; calyx tube somewhat larger, up to 1.2 cm long (not satisfactorily distinguishable without fruit).....
 1. **gigantea** subsp. **plurisemina**
13. Calyx lobes very short, lowest up to 1 mm or indistinct, laterals always indistinct; flower-bearing sidebranches usually slender, (2-)5-10 × 1-2 mm, few (up to 7) all in apical 2-3 cm of inflorescence-axis... ..2. **mindorensis**
 Calyx lobes distinct, lowest 5-10 mm, laterals 2-5 mm long; flower-bearing sidebranches reduced to minute or thick knobs, often 15 or more, less crowded..... 14
14. Bracts fairly long-persistent, short and often nearly as broad as long with apex not or scarcely acuminate, 4-6 × ± 3 mm; most parts of plant with abundant to dense short fine pale ± adpressed pubescence; leaves and leaflets small, leaves up to 12(-19) cm, terminal leaflet short and very broad indeed, usually broader than long, 3-7 × 3.5-9.5 cm with broadly rounded or ± apiculate apex.....
13. **pruriens** var. **sericophylla**
 Bracts very early deciduous from young bud stage, relatively narrower with distinct acumen often half total length, 6-10(-15) × 2-3(-6) mm; stems and leaves glabrous or sparsely fine-hairy (rarely hairs dense on leaflet undersides); leaves and leaflets very variable but generally larger, leaves up to 46 cm long, terminal leaflet relatively narrower (8-)14-16 × (4-)8-10 cm with acute or shortly acuminate apex... ..
13. **pruriens** var. **pruriens** & var. **utilis**
- B. Fruiting material (excluding *M. macmillanii* for which no fruit known)
1. Fruit fleshy, small, narrowly linear-oblong, 5-9 × 0.8-1.5 cm (sometimes very misshapen, up to 2 cm broad in places), surface hairy with 1-2 longitudinal ridges running whole pod length (often invisible if hair-covering dense) but otherwise unornamented, margin unwinged 2
 Fruit coriaceous and larger (shape various); surface ornamented or not, margin winged or not..... 4
2. Pod completely lacking irritant red-brown bristles and with surface ridge clearly visible beneath dense or sparse adpressed silky pubescence; often misshapen in outline..... 13. **pruriens** var. **utilis**
 Pod with dense indumentum of irritant reddish or brown deciduous bristles concealing surface; not misshapen.....3
3. Stems and leaves with abundant to dense short fine pale ± adpressed pubescence; leaves and leaflets small, leaves up to 12(-19) cm, terminal leaflet short and very broad indeed, usually broader than

- long, 3-7 × 3.5-9.5 cm with broadly rounded or ± apiculate apex; pod often up to 1.5 cm broad. . . . **13. pruriens** var. **sericophylla**
 Stems and leaves glabrous or sparsely fine-hairy (rarely hairs dense on leaflet-undersides); leaves and leaflets very variable but generally larger, leaves up to 46 cm long, terminal leaflet relatively narrower (8-)14-16 × (4-)8-10 cm with acute or shortly acuminate apex; pod up to 1 cm broad. **13. pruriens** var. **pruriens**
4. Fruit without marginal wings or surface lamellae, surface unornamented except for shallow, wide, irregular and rather indistinct ridges and wrinkles giving a rugose appearance. 5
 Fruit margin distinctly winged, surface ornamented or distinctly patterned. 6
5. Pod very large and broad, 24-26 × 5 cm, relatively flattened ± 2 cm in thickness, not swollen around seeds and margin outline completely straight; terminal leaflet very large, almost as broad as long, 15 × 14 cm, densely velvety-pubescent both sides. **3. pachycarpa**
 Pod never over 4 cm wide, often thicker, faces and margins swollen around seeds; terminal leaflet relatively narrower, glabrous or sparsely adpressed-pubescent. **4. longipedunculata**
6. Surface of fruit without raised lamellae but with fine or coarse reticulate pattern of raised vein-lines. 7
 Surface of fruit with lamellae raised as flaps from surface. 9
7. Patterning on fruit surface open and coarsely reticulate; irritant bristles absent from plant. **2. mindorensis**
 Patterning on fruit surface so fine and close as to give almost hexagonally-pitted appearance; irritant bristles often present on calyx and fruit 8
8. Seeds 2-3(-4) in each fruit; marginal wings (5-)7-10 mm wide.
 **1. gigantea** subsp. **gigantea**
 Seeds 5-6 in each fruit; marginal wings not over 5 mm wide.
 **1. gigantea** subsp. **plurisemina**
9. Fruit-surface lamellae each a simple raised flap. 10
 Fruit surface lamellae each bifurcating to give "T" shape in cross-section. 14
10. Lamellae on fruit running in many directions and joining and branching along middle 1/3 of fruit to give reticulate pattern. **6. reticulata**
 Lamellae all running more or less in same direction. 11
11. Leaflets beneath, young stems and petioles with dense somewhat curly fine spreading dark red-brown pubescence; infrutescence short, up to 13 cm, robust and unbranched; fruit-lamellae fairly broad ± 5 mm, and all interrupted at mid-point to give line running down middle of pod. **7. aurea**
 Leaflets beneath glabrous or with abundant fine adpressed silvery hairs; infrutescence axis various; fruit not as above. 12
12. Fruit lamellae of irregular height (i.e. width) throughout their length, up to only 1-2 mm; marginal wing 1-3 mm wide; leaflets usually abundantly silvery-hairy beneath. **8. curranii**
 Fruit lamellae often of irregular height but along at least parts of their length reaching 4-5 mm; marginal wing 7-10 mm wide; leaflets glabrous or very sparsely hairy. 13
13. Lamellae running ± straight and parallel across pod, of fairly uniform

- height up to 5 mm **9. hainanensis** subsp. **multilamellata**
 Lamellae rather twisting in their course and/or of somewhat irregular
 height (often up to 1 cm) such that they appear undulate or \pm dentate
 **10. samarensis**
14. Leaflets thickly chartaceous beneath with abundant or very dense rather
 spreading pale pubescence; terminal leaflet large and broad, 12–30 cm
 long, $\pm 1\frac{1}{2} \times$ as long as wide **12 platyplekta**
 Leaflets thinner, often membranous, glabrous or sparsely and very
 finely red-setulose, smaller and relatively narrower, terminal usually
 twice as long as wide **11. diplax**

A. Subgenus MUCUNA

Woody; seeds discoid, large and fairly flat with hilum extending around $\frac{3}{4}$ of the circumference.

1. Mucuna gigantea (Willd.) DC., Prod. 2: 405 (1825); Vidal & Soler, Phaner. Cuming. Philipp.: 108 (1885); Vidal, Revis. Pl. Vasc. Filip.: 109 (1886); Perkins, Frag. Fl. Philipp.: 86 (1904); Merrill in Philipp. Journ. Sci. 5: 116 (1910) & Enum. Philipp. Fl. Pl. 2: 308 (1923); Hillebrand Forestry A.B., Palawan Bot. Exped.: Final Report: 68 (1985). Type: Rheede, Hort. Malab. 8: 63 t. 36 (1688).

For more detailed description and synonymy see Wilmot-Dear (1984: 56).

Large sprawling climber. *Leaves* up to 27 cm long; terminal leaflet elliptic-ovate, less often elliptic, rhombic or ovate, 7–13 \times 4–8.5 cm, apex shortly acuminate; lateral veins thinly prominent both sides, curving sharply and becoming indistinct near margin; thinly chartaceous, glabrous or with sparse pale fine adpressed hairs both sides. *Inflorescence* 8–25 cm long, branched or not at apex and with flower-bearing sidebranches few, up to 6, all crowded at apex, these and pedicels of varying lengths 3–10 mm and 10–20 mm respectively, such that inflorescence forms a corymb or ‘pseudumbel’, this shape usually visible even in very young bud-stage; bracts deciduous, 3–5 mm long, lanceolate or elliptic, bracteoles more persistent (deciduous in well-developed bud stage) 16–18 \times 5–7 mm, ovate-lanceolate. *Calyx* with dense pubescence of very short fine brown adpressed hairs and fairly abundant red irritant bristles; tube 8–12 \times 11–15 mm, lobes broad and shallow, lowest (1–)2–3 mm, laterals 1–2 mm long, upper lip indistinct or equalling laterals. *Flowers* odourless; corolla white, tinged yellow, green or pink; standard relatively large, 2.5–3(–3.8) cm, wings and keel 2.8–4.0 cm long. *Fruit* leathery, (1–)3(–6)-seeded, asymmetrically elliptic-oblong or linear-oblong with \pm convex margins greatly or hardly swollen around each seed and acute sometimes shortly acuminate apex, 7–15(–18) \times 4–5.5(–6) cm, markedly laterally flattened but surface swollen around seeds, 0.5 cm in thickness; surface sparsely fine-pubescent and usually with scattered red coarse irritant bristles, but glabrescent with age, also ornamented with a pattern of raised veins so close and fine as to give surface almost a hexagonally pitted appearance; margins with a pair of conspicuous wings 5–10 mm wide. *Seeds* dark red-brown or blackish, reniform or discoid in outline, 2–3 \times 1.8–2.5 cm, flattened but faces convex, 8–10 mm in thickness.

subsp. **gigantea**; Ohashi & Tateishi in Journ. Jap. Bot. 51(6): 164, fig. 2 (1976); Verdcourt, Man. New Guinea Leg.: 443 & fig. 106 f (1979).

Mucuna gigantea (Willd.) DC. subsp. *quadrialata* (Bak.) Verdc. in Kew Bull. 24: 287 (1970), **synon. nov.**

Calyx tube up to 10 mm long. Flowers with wings and keel up to 3.5 cm long. Fruit 2-3(-4)-seeded, (7-)10-15(-18) × (3.5)4-5.5(-6) cm with marginal wings (5-)7-10 mm wide. Fig. 1L; Map 1.

LUZON. Ilocos Norte: Burgos, Feb.-March 1917, *Ramos* BS 27247 (BM, NY). Cagayan: Baguio Cove, 20 March 1981, *Allen* 29/81 (BISH, PNH); Gonzaga, Oct, 1929, *Edaño* BS 78278 (K, NY). Zambales: Anuling, 3 Dec. 1924, *Ramos & Edaño* BS 44639 (NY, UC). Bataan: 1 Jan. 1907, *Curran* 5976 (US). Alabat I: 17 Oct. 1926, *Ramos & Edaño* BS 48285 (BM, UC). Albay: *Cuming* 1187 (K).

BABUYAN. Camiguin I., Menabel R., April 1930, *Edaño* 3137 BS 79346 (NY).

POLILLO. Aug. 1909, *Robinson* BS 9260 (E). NE. Karlagan, 19 Nov. 1943, *Fox* 43 (PNH 8973) (A).

MINDORO. E: Mansalay, 29 Dec. 1952, *Sulit* 4959 (PNH 17150) (A, L, PNH).

PALAWAN. Literature references only: Merrill (1923), (no locality) & Hillebrand (1985), St. Paul's Bay; no specimens seen.

PANAY. Capiz, Feb. 1915, *Hirro* FB 23949 (US).

MINDANAO. Surigao: Cateel, 5 Oct. 1906, *Merrill* 5438 (L, NY, US). Davao: Todaya, Mt Apo, Oct. 1909, *Elmer* 11993 (BM, E, L, NY, US); Santa Cruz, 29 April 1905, *Williams* 3082 (NY); Darong, 2 March 1905, *Williams* 2698 (NY).

EXTERNAL DISTRIBUTION. Japan; India; Burma; Indochina; Malay Peninsula and Islands; Papua New Guinea; Australia; Pacific Is.; Africa (excl. W. Africa).

HABITAT. Forests, thickets, usually near or on seashore; low altitude.

The coastal distribution here, as elsewhere, of this species illustrates the fact that it is dispersed by sea.

The African subspecies *quadrialata* can no longer be maintained since examination of a greater amount of material than was then available shows that the large flowers mentioned (Verdcourt 1970, above) as distinctive in Africa do occur also in other parts of its range.

subsp. **plurisemina** Verdc. in Kew Bull. 33: 126 (1979) & in Man. New Guinea Leg.: 444 & fig. 107 (1979). Type: Papua New Guinea: 11 May 1971, *Streimann & Kairo* in LAE 51631 (holotype LAE; isotypes A, BO, BRI, CANB, L, K!, NSW, SING).

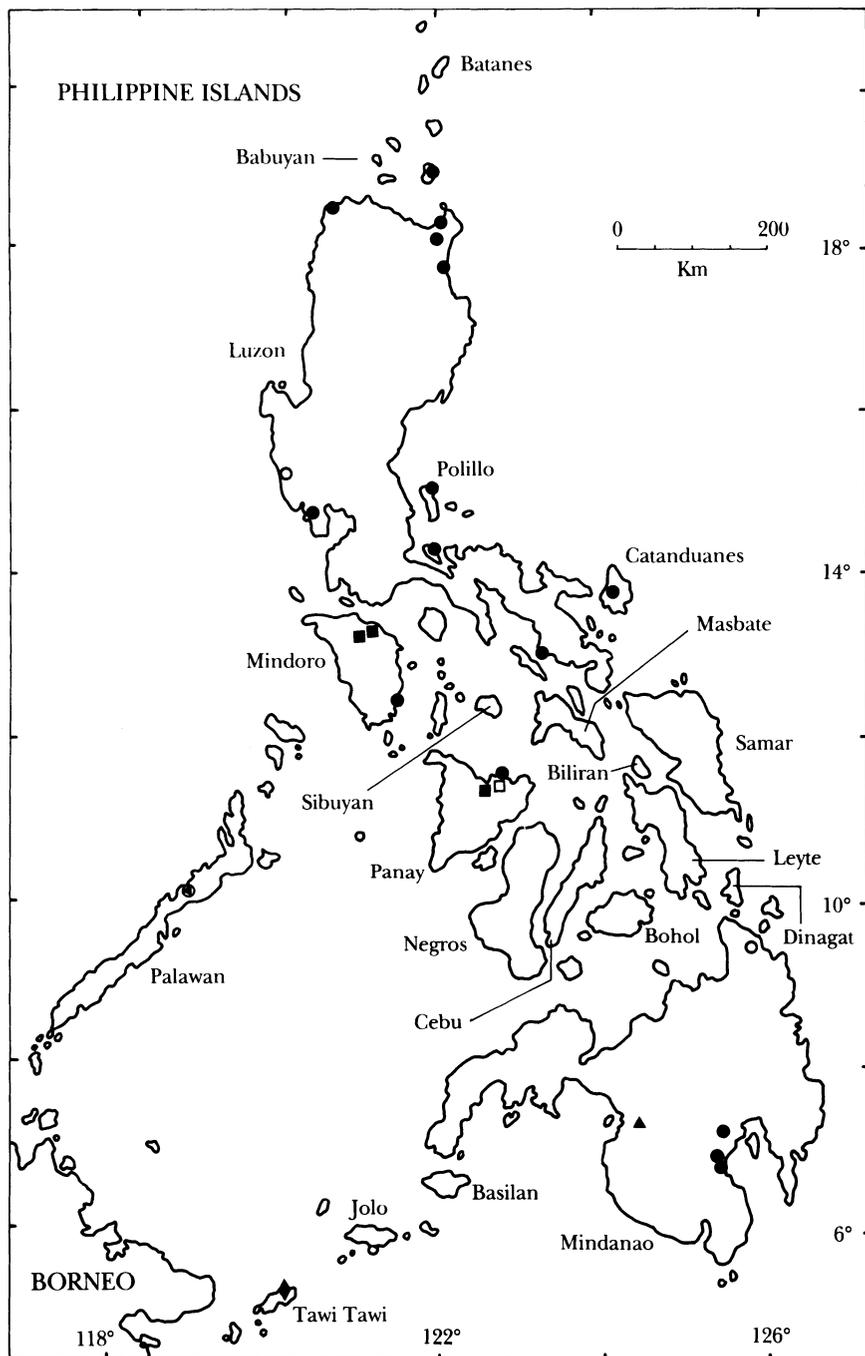
Calyx tube up to 12 mm long. Flowers with wings and keel up to 4 cm long. Fruit 5-6-seeded, 14-15.5 × 3.5-4 cm with marginal wings no more than 5 mm wide. Map 1.

TAWITAWI. 31 July 1924 *Ramos & Edaño* BS 43960 (L, NY, PDA, UC).

EXTERNAL DISTRIBUTION. Papua New Guinea; Australia.

HABITAT. As for subsp. *gigantea*.

The geographical distribution of this taxon appears not to show quite so distinct a pattern as originally supposed; it may therefore warrant reduction to varietal status.



MAP 1. Distribution of *M. gigantea* subsp. *gigantea* ● & in literature ◐ and subsp. *plurisemina* ◆ in the Philippines, and of *M. mindorensis* ■ & *M. pachycarpa* ▲. (○ □ indicate exact locality uncertain).

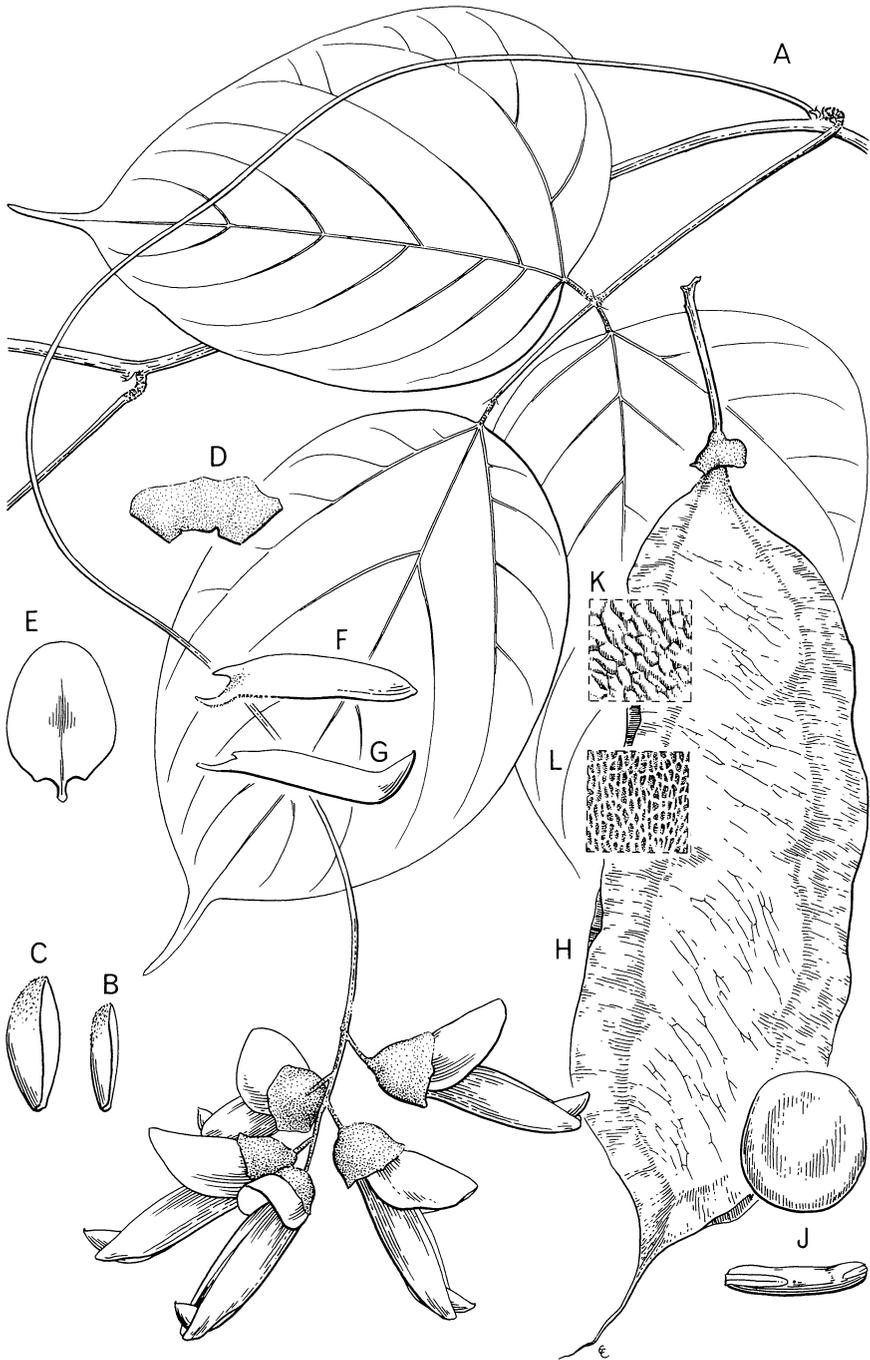


FIG. 1. A-K *Mucuna mindorensis*; A leaf & inflorescence; B bract; C bracteole; D calyx; E standard; F wing; G keel; H fruit; J seed; K detail of fruit surface. L *M. gigantea*, detail of fruit surface. A, D-H from Merrill 4069; B, C, from Ramos & Edaño BS 40562; J from Edaño BS 46091; K from Ramos & Edaño BS 31023; L from Sulit 17150. A, D-J $\times \frac{2}{3}$, B, C, K, L $\times 1$. Drawn by Eleanor Catherine.

2. *Mucuna mindorensis* Merr. in Philipp. Journ. Sci. 3: 231 (1908) & 5: 116 (1910) & Enum. Philipp. Fl. Pl. 2: 309 (1923). Type: Mindoro, Baco R., Merrill 4069 (holotype PNH; isotypes K!, L!, NY!, US!).

M. acuminata Merr. in Philipp. Journ. Sci. 1, Suppl.: 196 (1906) non Grah. ex J.G. Bak.

Climber very similar to *M. gigantea* differing as follows. *Leaflets* usually rather larger, (terminal 11–15(–20) × 7–9 cm), abruptly long-acuminate with acumen 1·5–2 cm long; lateral veins rather more prominent especially beneath. *Inflorescence* not pseudumbellate, flower bearing sidebranches all ± same length 5–10(–20) × 1–2 mm and less crowded although in apical 2–3 cm of inflorescence; bracteoles slightly smaller than in *M. gigantea*, up to 15 × 5 mm, early-deciduous. *Calyx* lacking irritant bristles; lobes very shallow, lowest rarely up to 2 mm long, laterals and upper lip distinct. *Corolla* often larger, keel 3·5–3·8 cm. *Fruit* with at least 4 seeds, often 6; apex very long-acuminate; surface ornamented with much more open reticulation of raised veins giving a coarse net-pattern rather than a pitted appearance; irritant bristles apparently lacking, but somewhat finer fairly long pale hairs present. *Seeds* discoid in outline, 2–2·8 × 2–2·5 cm, markedly flattened with faces not or hardly convex, 3–8 mm in thickness. Fig. 1 A–K.

Endemic to Philippines. Map 1.

MINDORO. Baco R: March 1905, Merrill 4069 (K, L, NY, US, isotypes) & June 1905, McGregor 336 (K, NY). Mt Halcon, March 1922, Ramos & Edaña BS 40562 (US, L).

PANAY. Capiz: Agravay, 7 Nov. 1925, Edaña BS 46091 (NY, UC) & April–May 1918, Jamindan, Ramos & Edaña BS 31023 (NY).

HABITAT. Forest; along rivers; low altitude.

Note. Two collections from Luzon cited under this name by Merrill (1910, above) belong to *M. longipedunculata*.

3. *Mucuna pachycarpa* Parreno ex Wiriadinata in Journ. Jap. Bot. (in press 1990). Type: Mindanao: Cotabato Prov., Nupol, 18 April 1932, Ramos & Edaña 557 BS 84971 (holotype A!).

Climber; young stems with abundant light yellowish fine spreading hairs. *Leaves* 32 cm long; petioles 12 cm, pubescent like the stem; leaflets very large and broad, terminal 15 × 14 cm, broadly rhombic-ovate almost as wide as long with apex shortly acuminate and base rounded, laterals with abaxial half 1½–2 × as wide as adaxial; lateral veins 6–7 pairs, curving slightly throughout length and running right into margin, thinly prominent above, thickly so beneath, reticulation prominent beneath; thickly chartaceous, drying light brownish-green, with hairs like the stem abundant above and extremely dense and velvety below; stipels robust, terete, pubescent, 3–4 mm long. *Inflorescence* not seen. *Infructescence* at least 36 cm long. *Fruit* leathery or possibly ± woody, said to be green, 6-seeded, linear-oblong and straight with straight margin and broad, acute-tipped apex, 24–26 × 5 cm, markedly laterally-flattened and not swollen around seeds, 1·5–2 cm in thickness; surface with shallow wide ± longitudinal irregular and indistinct ridges giving a shallowly rugose appearance, also pubescent like the stem but more densely velvety; margins with thick rounded raised ridge each side of suture. *Seeds*

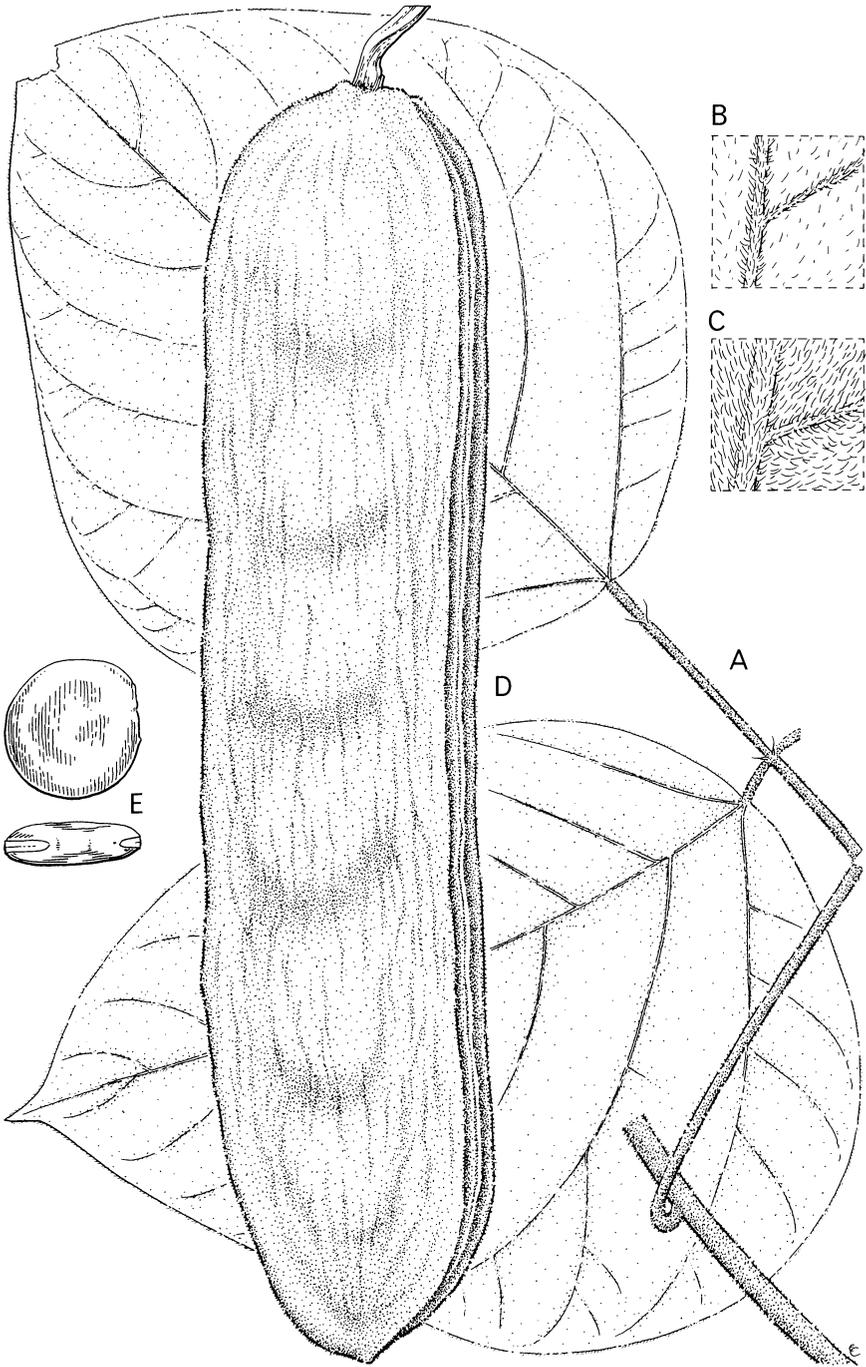


FIG. 2. *Mucuna pachycarpa*. A leaf (one leaflet removed); B, C details of leaflet surface: B upper, C lower; D fruit; E seed. All from Ramos & Edaño BS 84971. A, D, E $\times \frac{1}{3}$, B, C $\times 6$. Drawn by Eleanor Catherine.

black with minutely rugose surface, large, $2.8 \times 2.6 \times 0.8$ cm, discoid; hilum grey, encompassing $\frac{3}{4}$ of the circumference. Fig. 2.

Endemic to Mindanao. Map 1.

MINDANAO. Cotabato: Nupol [Nutol on typed label], 18 April 1932, Ramos & Edaña 557 BS 84971 (holotype A).

A species very distinct in having, large and extremely broad, thick and velvety leaflets and large straight-margined linear-oblong fruit which is flat-faced and rugose but otherwise unornamented.

E. P. Parreno first described the species while revising the Philippine species of *Mucuna* for an M.Sc. thesis at the University of Kentucky, but his manuscript was never published. H. Wiriadinata obtained a copy and, from this and Parreno's photograph of the type, was able adequately to describe this unusual plant without having seen the actual specimen.

4. *Mucuna longipedunculata* Merr. in Philipp. Gov., Lab. Bur. Bull. 29: 18 (1905) & in Philipp. Journ. Sci. 5: 117 (1910) & Enum. Philipp. Fl. Pl. 2: 308 (1923). Type: Luzon: Benguet: Sablan, May 1904, *Elmer* 6233 (holotype PNH†; isotypes K!. NY!).

Climber, often high into trees; young stems with sparse to abundant short fine pale or brownish \pm adpressed hairs. *Leaves* usually 20–27 cm long; petioles 6–8(–13) cm. hairy like the stem; leaflets of very varying size, terminal 7–15(–19) \times 5–9(–10) cm, elliptic-ovate to very broadly elliptic with apex shortly acuminate and base rounded, laterals with abaxial half \pm twice as wide as adaxial; lateral veins 5–6 pairs, slightly curved but near margin sharply curved and either becoming indistinct or looping and joining, thinly prominent above, more thickly so beneath, reticulation inconspicuous; fairly thickly chartaceous, drying brownish black, glabrous or sparsely hairy as stem but young leaves abundantly silky-hairy; stipels filiform 3–5 mm long. *Inflorescences* extremely long, 1–3(–7 in literature) m, pendulous over streams; axis rather thin but more robust at apex where it branches, often several times, and bears 15–40 flower-bearing sidebranches each up to 5–10 mm long, usually pubescent like the stem at least near apex but hairs shorter (0.3–0.4 mm), finer, less adpressed; pedicels 1.5–3 cm long; bracts and bracteoles large and persistent, broadly ovate, 15–20 \times 10 mm (some outer bracts linear-oblong 5 mm wide) rounded at apex, cuneate at base, abundantly fine-pubescent but with surface clearly visible under pubescence. *Calyx* pubescent like the axis; tube fairly broadly cup-shaped, \pm 15 \times 20 mm; lobes short, broadly triangular, lowest 4–5 mm, laterals 3–4 mm long, upper lip \pm equalling laterals. *Corolla* whitish; standard 4–5 \times 2.5–3 cm; wings narrow, 7–7.5(–8) \times 1–1.5 cm with narrowly rounded slightly upcurved apex; keel slightly longer, 8–8.3 cm, straight for most of length and markedly upcurved at apex. *Fruit* brown, similar to that of *M. pachycarpa* but slightly or markedly curved throughout length and with margins and faces swollen around each seed, 4–9-seeded, 13–26 \times 4 cm, 2.5 cm in thickness, with more acute apex; pubescence dense but adpressed, almost silky and chestnut brown; surface wrinkles more marked; margin neither ridged nor winged. *Seeds* black, large 2.5–3 \times 2–2.2.8 \times 1.2–1.8 cm, \pm ellipsoid but very misshapen in dry state (? soft in living state), hilum encompassing \pm $\frac{3}{4}$ of the circumference. Fig. 3 A–H, 4.

Endemic to Philippines. Map 2.

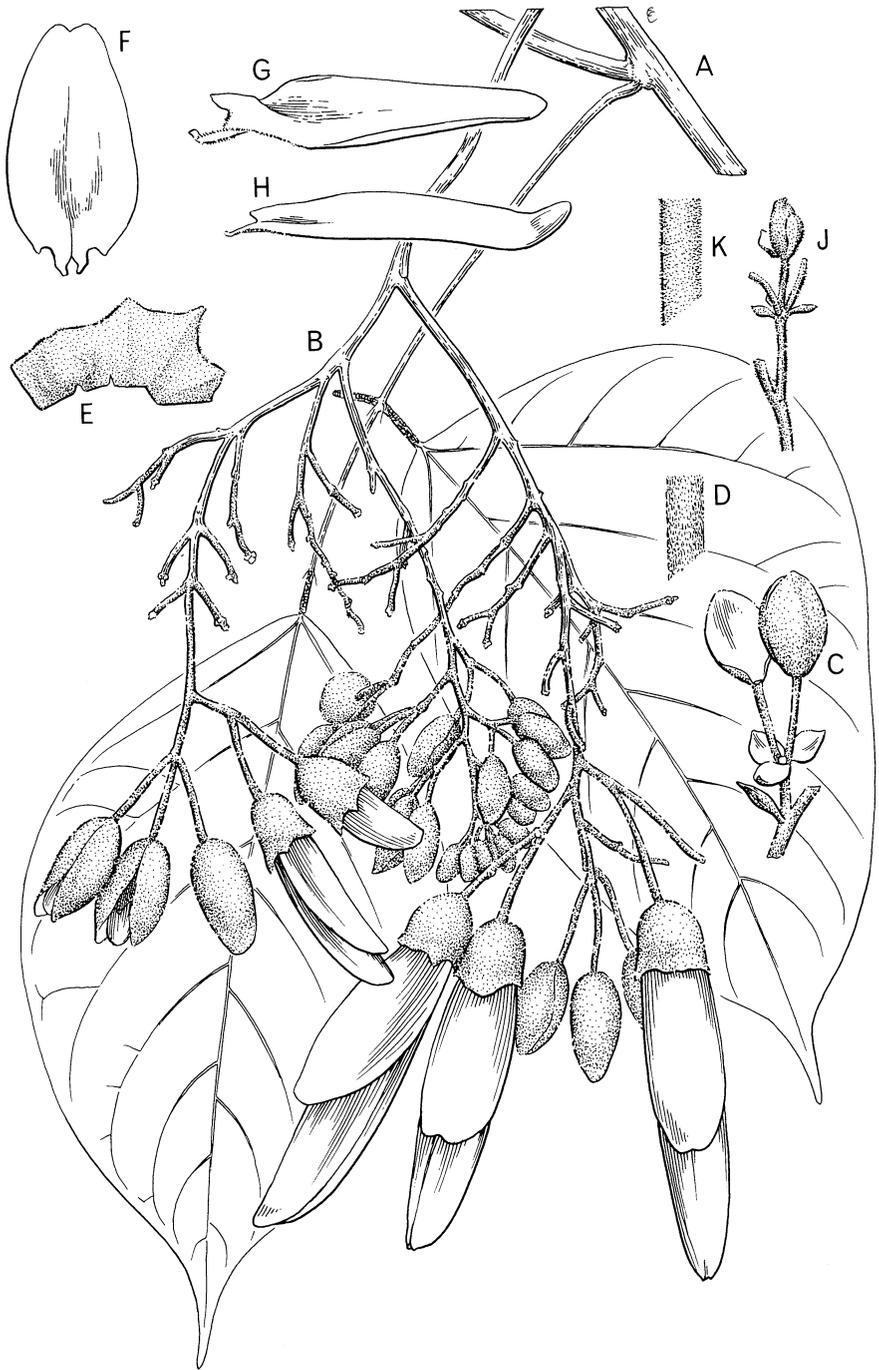


FIG. 3. A-H *Mucuna longipedunculata*: A leaf & base of inflorescence; B apex of inflorescence; C bud with bracts & bracteoles; D portion of peduncle; E calyx; F standard; G wing; H keel. J-K *M. macmillanii*: J bud with bracts and bracteoles; K portion of peduncle. A, B from Ramos & Edaño BS 45519; C, D from Ramos & Edaño BS 28601; E-H from Elmer 6233; J, K from Elmer 13594. D, K $\times 5$, rest $\times \frac{2}{3}$. Drawn by Eleanor Catherine.

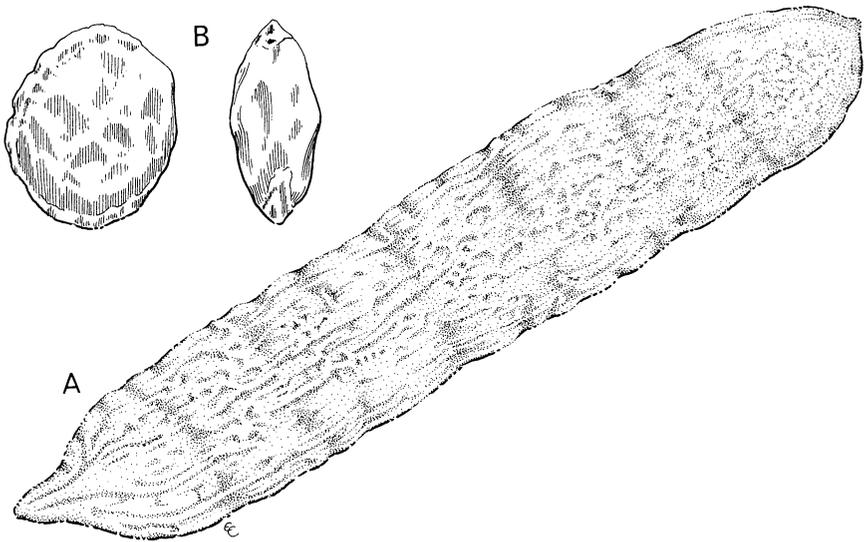


FIG. 4. *Mucuna longipedunculata*; A fruit; B seed. from Merrill 1375. A $\times \frac{2}{3}$. B $\times 1$. Drawn by Eleanor Catherine.

LUZON. Cagayan: Peñablanca, Ramos BS 76874 (K). Isabela: Clemens 16731 (UC). Benguet: Merrill 1735 (A, BM, L, MO, NY, UC); Elmer 8949a (A, F, E, K, L, US); Sablan, Elmer 6233 (isotypes K, NY, US). Aurora: Casiguran, Ramos & Edaño BS 45519 (NY, US). Rizal: Montalban, Loher 5894, 5946 & 2321 (K); Malacassing-Montalban, Manila, Loher 2323 (K); Paningtingan, Loher 13483 (A, P, UC); Ahern's collector FB 2955 (K, NY, US). Quezon: Dibutanan, Fox 40 (PNH 5024) (A); Gulnayanga, Hinabaan, 16 June 1965, Mendoza PNH 97911 (a) (PNH) (see note below). Laguna: Calauan, 1910, McGregor BS 12393 (BM); Los Baños, Elmer 17498 (A, BM, BISH, F, K, L, NEB, NY, US). Tayabas: Elmer 9338 (K); Curran FB 10289 (NY, US); Mt. Binuang, Ramos & Edaño 28601 (K, US). C. Luzon: Vidal 1089 (K).

POLILLO. Robinson 6868 (L).

CATANDUANES. Mt Nagpakdit, Ramos & Edaño BS 75432 (NY).

HABITAT. Ravines, forests, near streams, low and medium altitude up to 500 m.

Four collections lacking bracts are referable to either this species or *M. macmillanii* but cannot be identified for certain, as follows: Luzon: Isabela, Clemens 16906 (UC). Biliran: McGregor BS 18651 (US). Mindanao: Davao, Mt Apo, Clemens 2023a & BS 1904 (UC). In view of the geographical distribution of these two closely-related species I suspect that the first collection belongs to *M. longipedunculata*, and the last two to *M. macmillanii* but that from Biliran, midway between the known ranges of the two, must remain uncertain.

Mendoza PNH 97911 comprises two sheets which are clearly separate collections with partially different data on their typed labels and which must have been stamped in error with the same PNH number. This sheet has flowers while the other sheet bearing this number is a fruiting specimen of *M. reticulata*. The date on the flowering sheet has been altered by hand (?wrongly) from 12 June. I have added the suffix "a" or "b" to distinguish the two.

The extremely long inflorescences, pendulous over water and with numerous white flowers, suggest bat-pollination.

5. *Mucuna macmillanii* *Elmer* in *Leafl. Philipp. Bot.* 8: 2736 (1915). Type: Mindanao: Agusan, Cabadbaran, Mt Urdaneta, Aug. 1912, *Elmer* 13594 (holotype PNH†; isotypes A!, BISH!, E!, F!, K!, L!, MO!, NEB!, NY!, UC!, US!).

M. longipedunculata sensu Merrill in *Enum. Philipp. Fl. Pl.* 2: 308 (1923) p.p., non Merrill sensu stricto.

Climber very similar to *M. longipedunculata*, differing as follows. *Stems* and petioles usually glabrous. *Leaves* usually larger, (8-)13-18 × (4-)6.5-10 cm, lateral veins up to 7 pairs. *Inflorescence* axis and pedicels with extremely short (0.1-0.2 mm) spreading almost velvety pubescence; bracts and bracteoles small and early deciduous, linear-oblong to narrowly ovate or obovate, 4-5 × 2-3 mm, pubescent like the axis. *Calyx* lobes often very broadly triangular or very short and indistinct. *Corolla* of shorter size-range; standard 3-4.5 cm, wing and keel 6-7 cm long. *Ovary* 2 × 0.2 cm, densely hairy, but fruit unknown. Fig. 3 J, K.

Endemic to Mindanao. Map. 2.

MINDANAO. Surigao: 27 Aug. 1927, *Wenzel* 3148 (A, K, MO, NY, UC). Agusan: Cabadbaran, Mt Urdaneta, Aug. 1912; *Elmer* 13594 (isotypes A, BISH, BM, E, F, K, L, MO, NEB, NY, UC, US). Bukidnon: Mahulicot R., *Ramos & Edaño* BS 38707 (K, L, US). Davao: Mt Apo, June 1924, *Clemens* BS 15586 (NY, US), Misamis Occidental: Mt Malindang, *Mears & Hutchinson* FB 4736 (US).

HABITAT. Humid forests near water; low altitude.

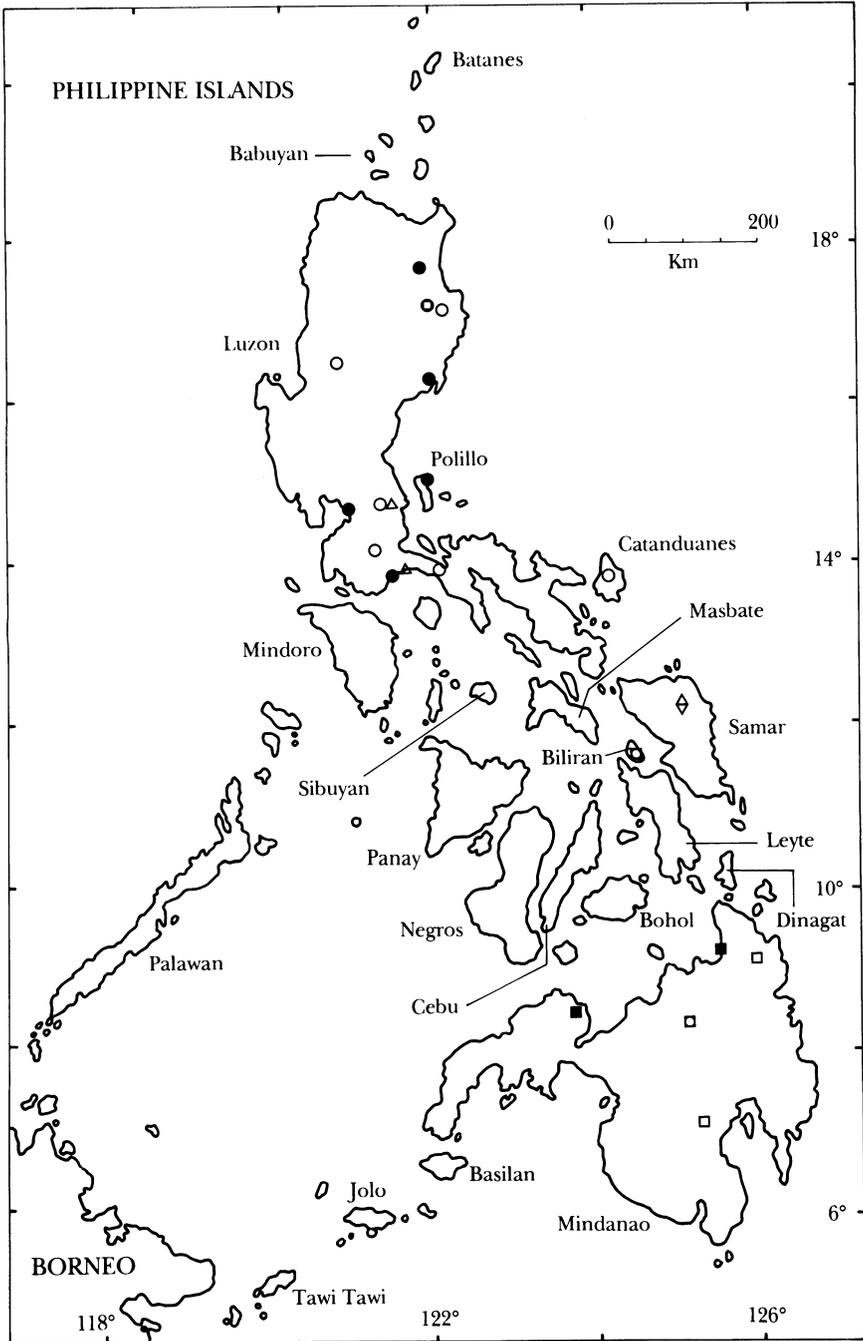
See note under *M. longipedunculata* (above) on indeterminate specimens from Luzon, Mindanao and Biliran.

This species has generally gone unrecognised, included under *M. longipedunculata* in the literature, but is distinct in both morphology and geographical distribution.

6. *Mucuna reticulata* *Burck* in *Ann. Jard. Bot. Buitenzorg* 11: 183 (1893). Type: Sulawesi: Buleh Angin, *Teijsmann* 12465 (holotype BO).

M. foveolata Merr. in *Philipp. Journ. Sci.* 20: 389 (1922) & *Enum. Philipp. Fl. Pl.*: 308 (1923). Type: Luzon: Tayabas, *Mabesa* FB 28379 (holotype PNH†; isotypes K!, US!).

Slender climber to 6 m; stems glabrous with sparse fine pale gold ± adpressed hairs. *Leaves* rather resembling those of preceding 2 species, up to 24 cm long, petioles up to 9 cm; leaflets usually fairly large, terminal (7-)9-15 × 5-9 cm, broadly ovate or broadly elliptic, shortly acuminate; lateral veins 5 pairs, thinly prominent, almost straight but near margin sharply curving and becoming indistinct, membranous or thinly chartaceous with abundant but scattered fine straight golden adpressed hairs both sides. *Inflorescences* long, pendulous, arising from older axils, 0.3-1.5 m, axis slender, branching 1-3 times at apex where it bears ± 15 flower-bearing sidebranches each 0.5-1 cm long and a spreading, somewhat curly, fine dark-brown pubescence; pedicels



MAP 2. Distribution of *M. longipedunculata* ● & *M. macmillanii* ■ (○ □ = identification uncertain) & of *M. reticulata* △ (exact locality uncertain) (◇ = literature reference), in the Philippines. (○ □ indicate exact locality within province uncertain and may represent more than one locality).

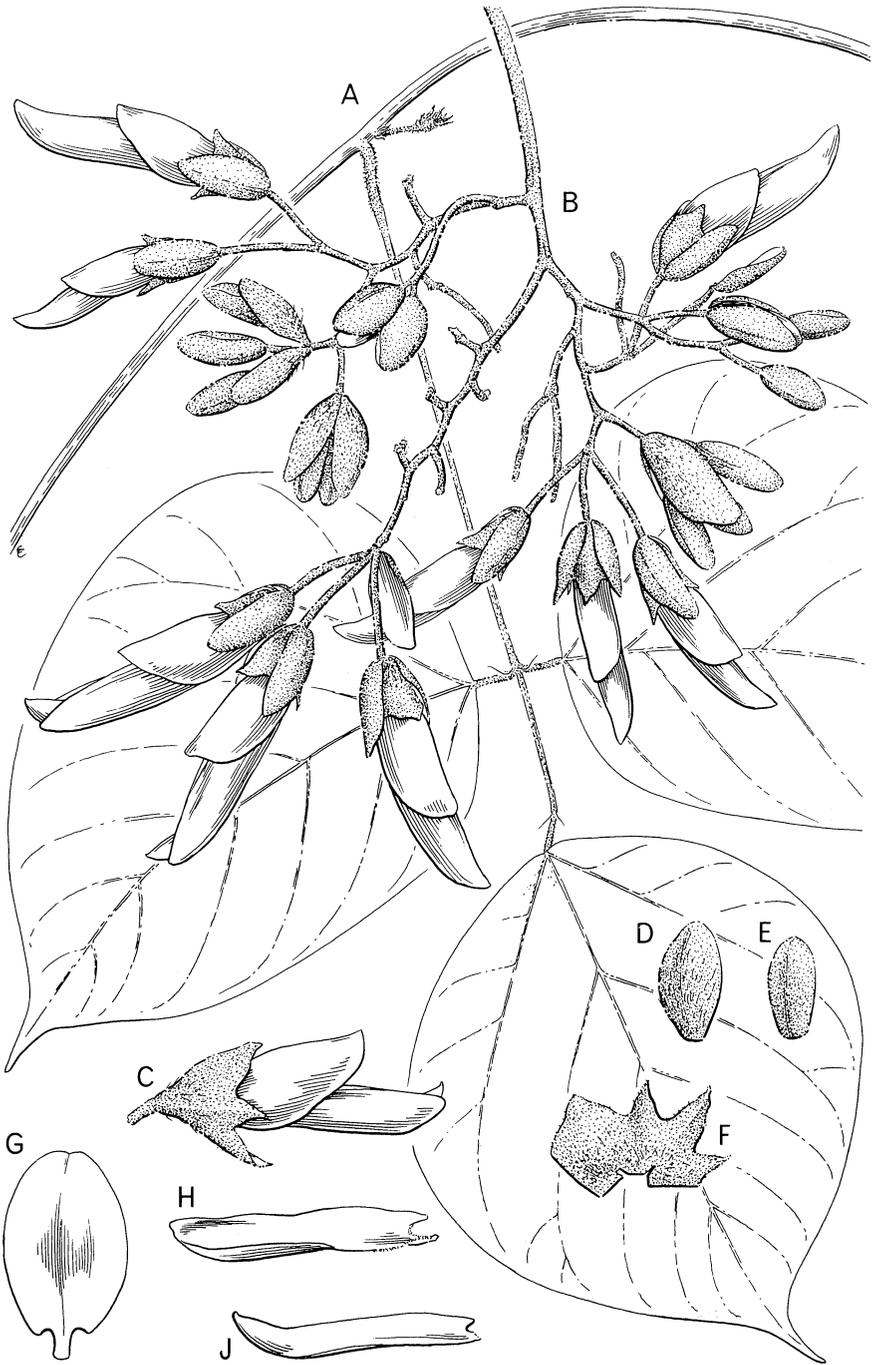


FIG. 5. *Mucuna reticulata*. A leaf; B inflorescence; C flower; D bract; E bracteole; F calyx; G standard; H wing; J keel. All $\times \frac{1}{3}$. A from Mendoza 97911; B from Forman 195; C-J from Koorders 17644. Drawn by Eleanor Catherine.

1.5–2 cm long; bracts early-deciduous but bracteoles more persistent, both similar, large, ovate or obovate $\pm 20 \times 10$ mm, rounded at apex, cuneate at base, densely pubescent like the axis with surface invisible beneath pubescence. *Calyx* densely pubescent like the axis and with coarser brown bristles (said to be yellowish with red hairs in living state); tube narrowly cup-shaped, $\pm 8 \times 11$ mm; lobes large and broad tapering to acuminate apex, lowest 8–10 $\times 4$ mm, laterals 5–7 $\times 3$ –4 mm, upper lip well-marked \pm equalling laterals. *Corolla* white, said to have purple markings; standard $\pm 3.8 \times 2$ cm; wings narrowly oblong 6(–6.5) $\times 1.5$ cm with narrowly rounded very slightly up-curved apex; keel slightly exceeding wing or up to 7 cm, only slightly upcurved at apex. *Fruit* leathery, 6–7-seeded, bright green, drying black, linear and slightly curved, with margin not swollen around seeds and apex acute, (17–)20–24 $\times 4$ –5 cm, markedly laterally flattened and faces not or hardly swollen over seeds, 1.2–1.5 cm in thickness; surface sparsely pubescent like the axis, also with many (over 30) raised lamellae up to 5 mm high running transversely inwards from each margin but branching in middle $\frac{1}{3}$ of pod in all directions to give a crowded network; margins with pair of wings up to 6 mm wide. *Seed* black $\pm 2.1 \times 1.9 \times 0.7$ cm oblong-discoid in outline, flattened with faces not very convex; hilum encompassing $\frac{3}{4}$ circumference. Fig 5, 9 D–E; Map. 2.

LUZON. Quezon: Guinayanga, Hinabaan, 16 June 1965, *Mendoza* PNH 97911(b) (L, K); Tayabas: Kobibiha, June 1918, Mabesa FB 28379 (isotype of *M. foveolata*, K, US).

Said to occur also in Samar (Merrill 1923).

EXTERNAL DISTRIBUTION. Sulawesi.

HABITAT. Along streams and forest borders or in secondary forest; low altitude.

See note above (p. 225) concerning *Mendoza* PNH 97911.

A species very distinct in its fruit ornamentation; said to be bat-pollinated.

7. *Mucuna aurea* C.B. Rob. in Philipp. Journ. Sci. 3: 183 (1908); Merrill in Philipp. Journ. Sci. 5: 118 (1910) & Enum. Philipp. Fl. Pl. 2: 307 (1923). Type: Luzon: Benguet, Baguio, 13 July 1904, *Williams* 1292 (holotype NY!; isotypes K!, PNH!, US!).

Climber to 15 m; young stems (often also old thick stems) with dense short fine spreading rather woolly red pubescence and sparse coarser adpressed red bristles. *Leaves* 15–24 cm long, petiole 3–6 cm, pubescent like the stem but more densely; leaflets of moderate size, terminal 7.5–14 $\times 3.5$ –7 cm, elliptic or rhombic-elliptic with short acumen and narrowly-rounded base, laterals with abaxial half $1\frac{1}{2}$ –2 \times as wide as adaxial; lateral veins 6–7 pairs, straight throughout most of length, abruptly looping near margin, thinly prominent on both sides; reticulation inconspicuous; thickly chartaceous, drying dull brown, finely pubescent like the stem very sparsely above, very densely below especially on veins; stipels filiform, 2–3 mm long. *Inflorescences* short and robust, 11–13 cm long, unbranched, with 8–15 flower-bearing sidebranches scattered throughout length and reduced to thick knobs up to 3 mm long; pedicels 1.5 cm long, these and axis pubescent like the stem but paler; bracteoles (only one seen) early deciduous, linear-oblong, 10 $\times 2$ mm, pubescent like the axis. *Calyx* pubescent like the axis and with coarse bristles; tube cup-shaped, not very broad, 10 $\times 12$ mm; lobes narrowly to broadly

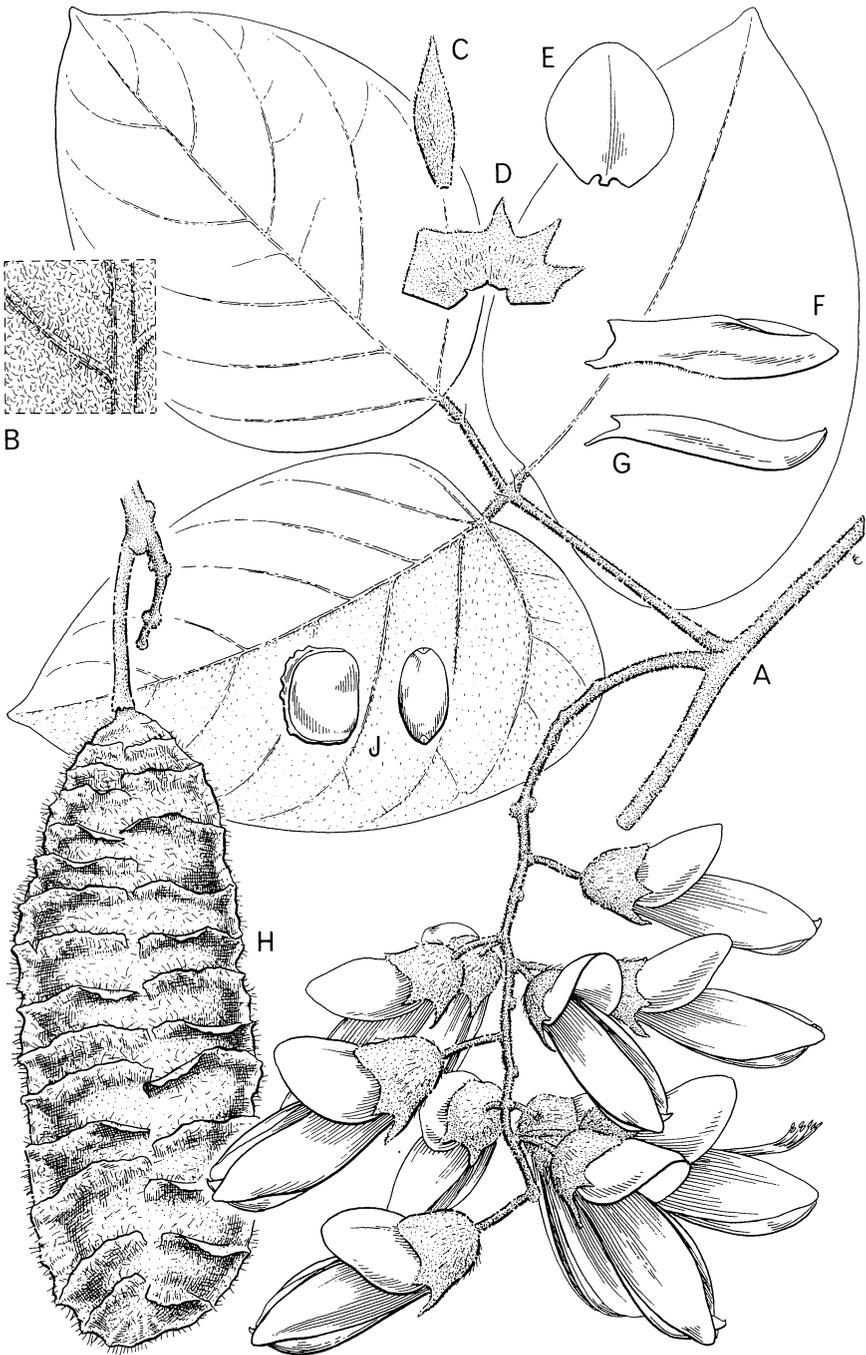


FIG. 6. *Mucuna aurea*. A leaf & inflorescence; B leaflet, lower surface; C bracteole; D calyx; E standard; F wing; G keel; H fruit; J seed. A-G from Williams 1292; H, J from Conklin & Buwaya 1-1059. B $\times 6$, C $\times 2$, A, D-J $\times \frac{1}{2}$. Drawn by Eleanor Catherine.

triangular, lowest 8–10 mm, laterals 5–7 mm, upper lip fairly well-marked. Flowers said to be red (none present on collection thus labelled); standard 3 × 2 cm; wing fairly wide, 5 × 1.5 cm, apex acute ± acuminate not or hardly up-curved; keel ± equalling wing, apex upcurved. *Fruit* leathery, red-brown, 4-seeded, narrowly oblong and not or hardly down-curved, with margins ± parallel not swollen around seeds and apex broadly acute, 10–13 × 4–5 cm, markedly laterally-flattened with faces not or hardly swollen over each seed, 1.2–1.5 cm in thickness; surface densely pubescent like the axis and with abundant coarser irritant bristles, also with ± 15 slightly obliquely transverse lamellae all interrupted along the mid-line of pod and of fairly uniform height of ± 5 mm; margin with pair of wings 5–8 mm wide, ends of lamellae running into wing. *Seeds* black but red-tinged, 1.8–2 × 1.5 × 0.9 cm, discoid but with very convex faces; hilum encompassing $\frac{2}{3}$ – $\frac{3}{4}$ of the circumference. Fig. 6.

Endemic to Luzon. Map. 3.

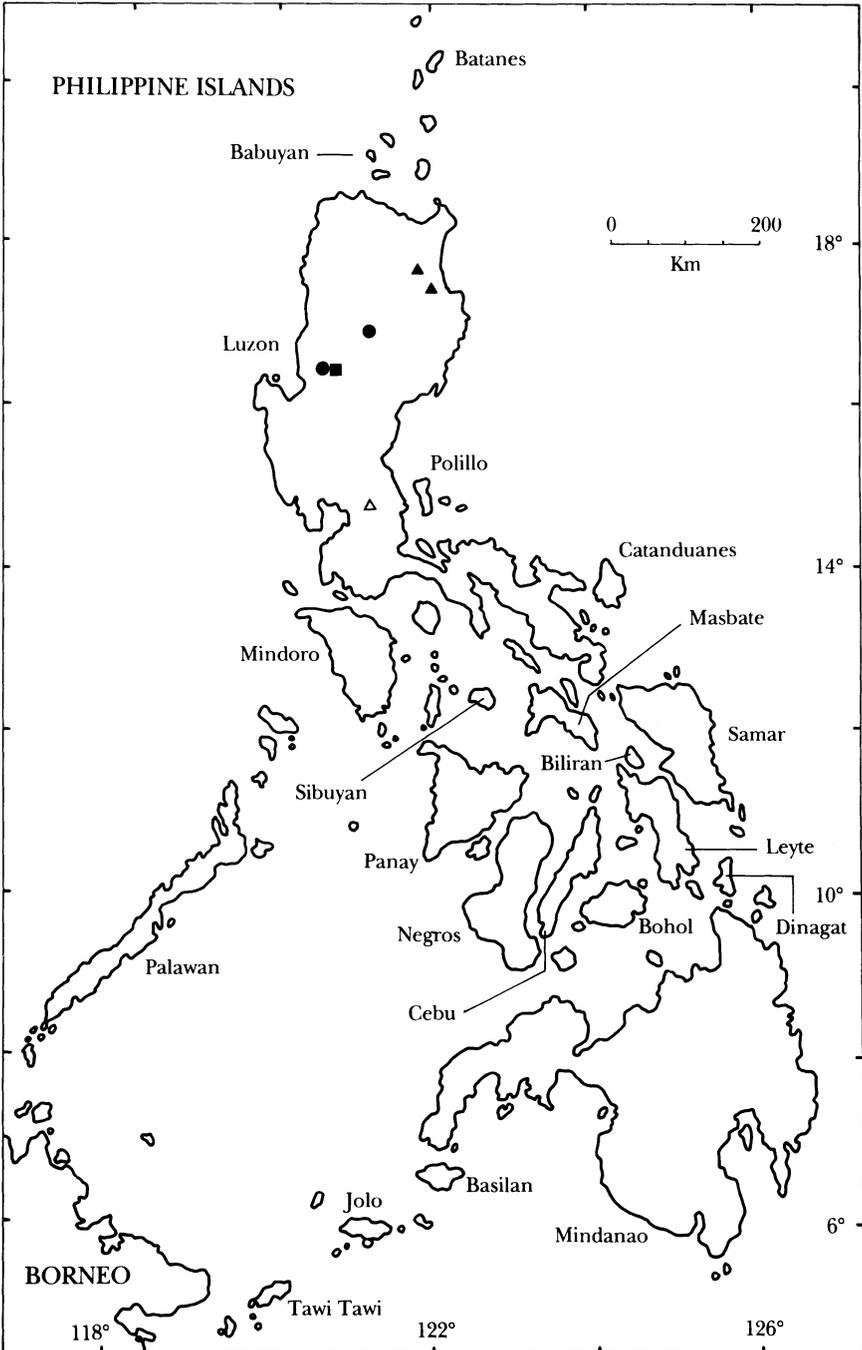
LUZON. Benguet: Baguio: 13 July 1904, *Williams* 1292 (holotype NY; isotypes K, PNH, US), & Sablan, Nov.-Dec. 1910, *Fenix* BS 12647 (BM, K). Ifugao: Bayninan, *Conklin & Buwaya* 1–1059 (PNH 79648) (A, L, K, PNH).

HABITAT. Forests and thickets; medium altitude, up to 1700 m.

A species rather distinct in both red pubescence and fruit ornamentation of simple but interrupted lamellae.

8. *Mucuna curranii* *Elm.* in *Leafl. Philipp. Bot.* 1: 230 (1907); Merr. in *Philipp. Journ. Sci.* 5: 116 (1910) & *Enum. Philipp. Fl. Pl.* 1: 308 (1923). Type: Luzon: Benguet, Baguio, *Elmer* 8442 (holotype PNH†; isotypes A!, BO, F!, K!, L!, NY!).

Climber, rather slender; stems glabrous. *Leaves* up to 20 cm long, petioles 6 cm, glabrous; leaflets generally small, terminal 6–9(–12) × 2.5–4(–5.5) cm, rather narrowly elliptic with short or longer (to 1 cm) acumen and narrowly rounded base, laterals not markedly asymmetrical, with abaxial half only 1½ as wide as abaxial; lateral veins 4–5 pairs, ± straight for most of length, sharply curving and becoming indistinct near margin, very thin but prominent both sides; reticulation inconspicuous; thinly chartaceous, in live state dull dark green above, paler beneath, glabrous above with sparse to abundant fine adpressed silvery pubescence beneath, stipels filiform or more robust, 3 mm. *Inflorescence* long, axis 27–140 cm, very slender but thickening at apex where it branches up to twice and bears 7–20 flower-bearing sidebranches 1–1.5 cm long; pedicels 2–3 cm, these and axis with very dense short adpressed ± silky brown pubescence; bracts early-deciduous, narrowly ovate or elliptic, 15 × 5–7 mm, pubescent like the axis so densely as to conceal surface. *Calyx* pubescent like the axis and with scattered bristles; tube 12 × 14 mm, lobes broadly triangular, lowest 6–9 mm, laterals 5–6 mm long, upper lip fairly distinct sometimes equalling laterals. *Flowers* white; standard 4–5 × 3–3.5 cm; wing 6–6.5 × 1 cm, rather narrowly oblong, apex narrowly rounded or ± acute, sometimes upcurved; keel 6.5–7 cm, apex moderately upcurved. *Fruit* leathery, 4–5-seeded, narrowly oblong with margins parallel in outline or one somewhat convex, but both slightly or not at all swollen around seeds, 12–18 × 3–3.5 cm, laterally flattened but faces much swollen over each seed, ± 1.5 cm in thickness; surface with sparse to dense spreading very fine dark brown hairs, also with 15 or more obliquely



MAP 3. Distribution of *M. aurea* ●, *M. curranii* ■ & *M. platyplekta* ▲. (△ indicates exact locality uncertain).

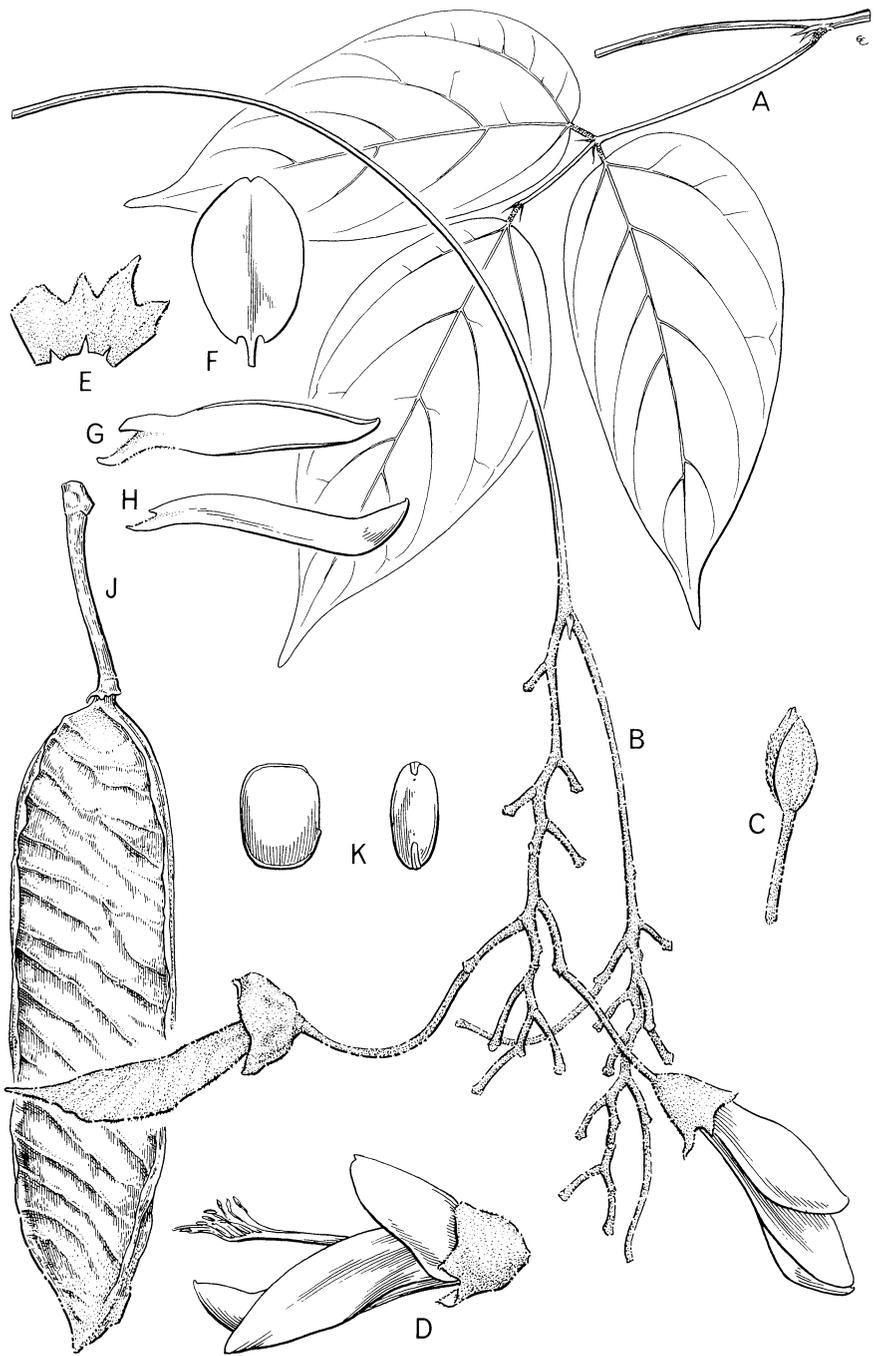


FIG. 7. *Mucuna curranii*. A leaf; B inflorescence; C bud with bracteole; D flower; E calyx; F standard; G wing; H keel; J fruit; K seed. A, C, D from *Fénix* BS 12896; B, E-H from *Elmer* 8442; J, K from *Santos* BS 31946. C $\times 1$, rest $\times \frac{2}{3}$. Drawn by Eleanor Catherine.

transverse lamellae, these always narrow but of irregular height (width) throughout their length, up to 2 mm but often completely interrupted in places; margins with pair of wings 1–3 mm wide, ends of lamellae running into wing. *Seeds* black, shiny, similar to those of *M. aurea*, 1.7–2 × 1.5–1.6 × 0.5–1 cm, discoid but faces convex; hilum encompassing $\frac{2}{3}$ –8 circumference. Fig. 7.

Endemic to Luzon; known only from 1 province. Map 3.

LUZON. Benguet: Dec. 1926, *Clemens* 17163 (NY); Baguio: *Elmer* 8442 (A, F, L, K, NY isotypes) & *Sinclair & Edaña* 9799 (E, L) & *Williams* 1996 (NY); Mt Santo Tomas, *Williams* 1424 (K, NY); Pauai, *Santos* BS 31946 (K, US); *Merrill* 7716 & 9692 (K, L); *Fenix* BS 12896 (L); Mt Tonglon, *Merrill* 4818 (K, NY, US).

HABITAT. Limestone cliffs and ravines, thickets; 1300–2200 m.

9. *Mucuna hainanensis* *Hayata*, Ic. Pl. Formosa 3: 72 (1913); Wilmot-Dear in Kew Bull. 46:205 (1991). Type: Hainan, 1910, *Katsumada* s.n. (holotype TI; ?isotype HK!).

subsp. **multilamellata** Wilmot-Dear in Kew Bull. 46:000 (1991). Type: Hort. Kew, July 1879, ex Calcutta, *King* s.n. (holotype & isotype K!).

Mucuna nigricans sensu auctt.; *Merrill* in Philipp. Journ. Sci. 5: 116 (1910) p.p. & Sp. Blanco.: 187 (1918) p.p. & Enum. Philipp. Fl. Pl. 2; 309 (1923); *Mendoza & Santos* in Pl. Philipp: 236 (1971); *Tateishi & Ohashi* in Bot. Mag. Tokyo 94: 100 (1981); Wilmot-Dear in Kew Bull. 39: 43 & 45 (1984) & 42: 30 (1987); *non* (Lour.) Steud.

?*Negretia urens* Blanco, Fl. Filip. ed. 1: 586 (1837), ed 2: 409 (1845) & ed. 3, 2: 387 (1879) ?p.p., *non* Tussac (see note below, p. 244).

For further synonymy and slightly more detailed description see Wilmot-Dear (1987: 30–33) although further study of this and species with which it has frequently been confused has made it necessary to modify some details given therein. See Wilmot-Dear (Kew Bull. 46:000 (1991)) for further details.

A very variable plant somewhat resembling *M. aurea* and *M. curranii* but with smaller flowers and rather different fruit. *Stems* and leaves glabrous or sparsely fine-addressed-hairy. *Leaves* up to 32 cm long; leaflets very variable in size and relative proportions, terminal 8–17 × 4–10.5 cm, not more than twice as long as wide, elliptic or elliptic-ovate with short or long (to 1 cm) acumen; lateral veins (4–)5–7 pairs, slightly curved, but near margin sharply curved and becoming indistinct, thinly prominent; membranous or thinly chartaceous. *Inflorescences* very variable in length, 12–40 cm long, often branched once or twice, flower-bearing sidebranches up to 10, usually all in upper $\frac{2}{3}$ of axis, knob-like; pedicels 1–1.5(–2.5) cm, these and axis with sparse to dense addressed fine pale hairs and scattered red bristles; bracts and bracteoles fairly persistent, a few sometimes present with mature flowers, lower bracts (from flowerless part of axis), broadly ovate, long-acuminate, 20–25(–30) × 10–15(–30) mm, upper bracts of similar size but obovate, rounded and hooded at apex, bracteoles usually slightly longer than calyx, linear-lanceolate, oblanceolate or obovate, acute, (8–)12–18 × 2.5–7 mm, pubescent like the axis but sparsely. *Calyx* with dense very short addressed

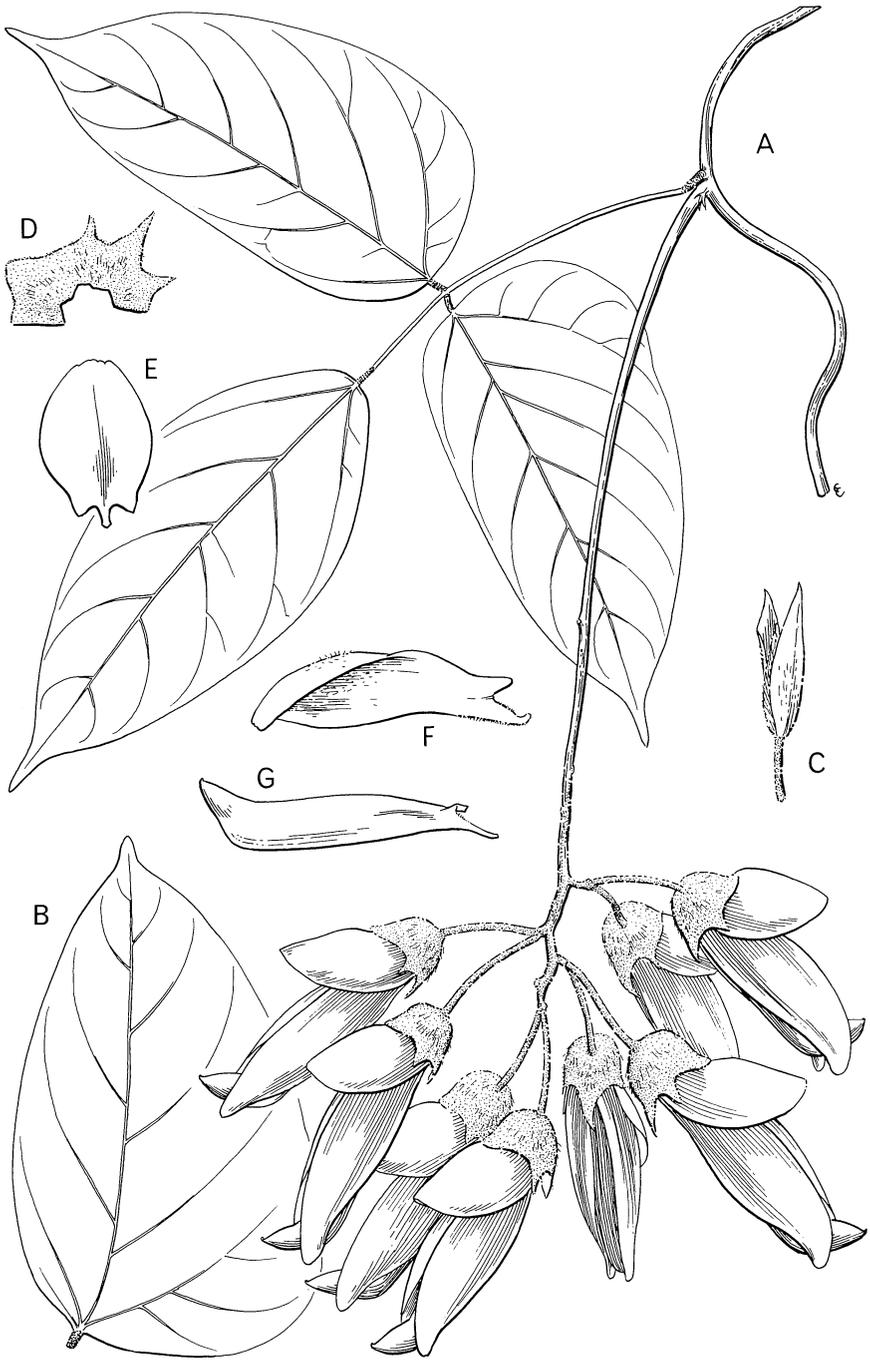


FIG. 8. *Mucuna hainanensis* subsp. *multilamellata*. A leaf & inflorescence; B lateral leaflet; C bud with bracteoles; D calyx; E standard; F wing; G keel. A, C from *Frake* 396; rest from *Elmer* 7138. C $\times 1$, rest $\times \frac{2}{3}$. Drawn by Eleanor Catherine.

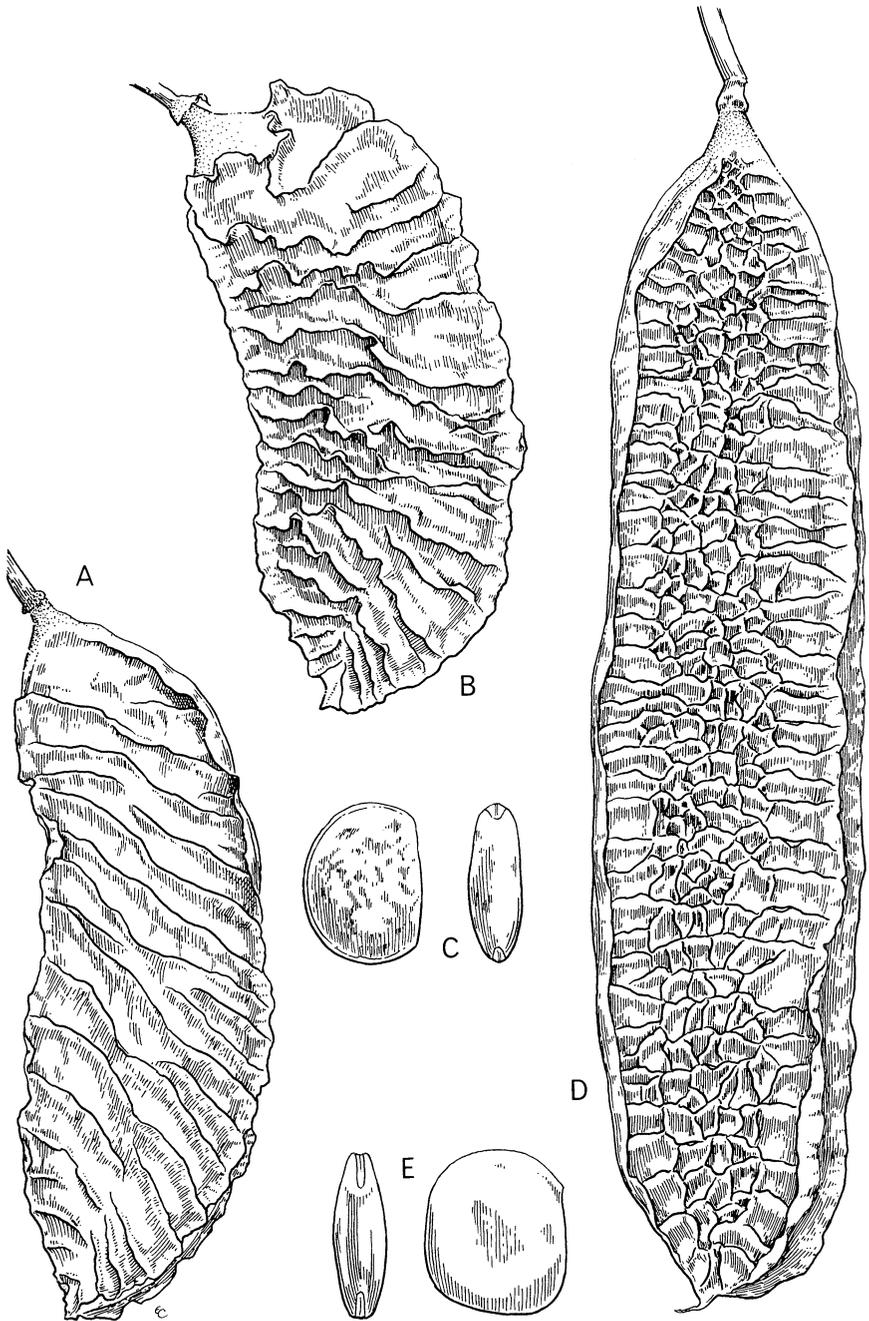


FIG. 9. *Mucuna* fruits and seeds. A *M. hainanensis* subsp. *multilamellata*. B, C *M. samarensis*. D, E *M. reticulata*. A from Elmer 11244; B, C, from Madulid *et al.* 1526; D from Mendoza PNH 97911; E from Landbouw s.n. (1938). A, B, D $\times \frac{2}{3}$, C, E $\times 1$. Drawn by Eleanor Catherine.

pale pubescence; tube 10 × 10–16 mm; lobes long, lowest 10–14 mm, laterals 6–10 mm long, all 3–6 mm wide; upper lip often exceeding laterals and acute at apex. *Corolla* dark purple, parts very variable in size (but see note below); standard 3–3·6 cm long, just over ½ keel-length; wings (5–)5·5–6 × 1–1·5 cm, keel equalling or slightly exceeding wing. *Fruit* (2–) 3–4-seeded, linear-oblong with acute downcurved apex, whole pod often somewhat downcurved with margins not or hardly swollen around each seed and parallel or lower one ± straight, 3–4 × as long as wide, 13–15 × 3·5–5·3 cm, markedly laterally flattened ± 1·5 cm in thickness; surface with abundant red bristles and short fine red-gold pubescence, sometimes glabrescent; also with 20–24 slightly obliquely transverse lamellae, some interrupted near mid-line, ± parallel, usually robust but in the Philippines often thinner, of fairly uniform height up to 5 mm; each margin with a pair of wings of uniform or slightly varying width 7–10 mm wide, into which lamellae continue. *Seeds* black, oblong, 1·7–2(–2·5) × 1·5–2 cm, 5–7(–10) mm in thickness. Fig. 8, 9 A. Map 4.

LUZON. Zambales: Mt Tapulao, 28 Nov. 1924, *Ramos & Edaña* in BS 44713 (BM, K, NY, UC). Pampanga; Mt Arayat, Oct. 1904, *Merrill* 3914 (NY, US). Quezon: Mt San Cristobal, 31 May 1913, *Sulit* 6492 (NY).

GUIMARAS IS. Beunavista, 31 May 1913, *Sulit* PNH 11761 (A, L).

LEYTE. Palo, Jan. 1906, *Elmer* 7138 (A, E, F, NY).

MINDANAO. Zamboanga del Norte: 1911, *Merrill* 8235 (L); Muyu, 30 Dec. 1957, *Frake* 396 (PNH 38009) & *Frake* 396A (PNH 38010) (A). Davao: Mt Apo, July 1909, *Elmer* 11244 (A, BISH, BM, E, F, K, L, MO, NEB, NY, US).

EXTERNAL DISTRIBUTION. (of the subspecies). N & NE Indian Subcontinent, Burma.

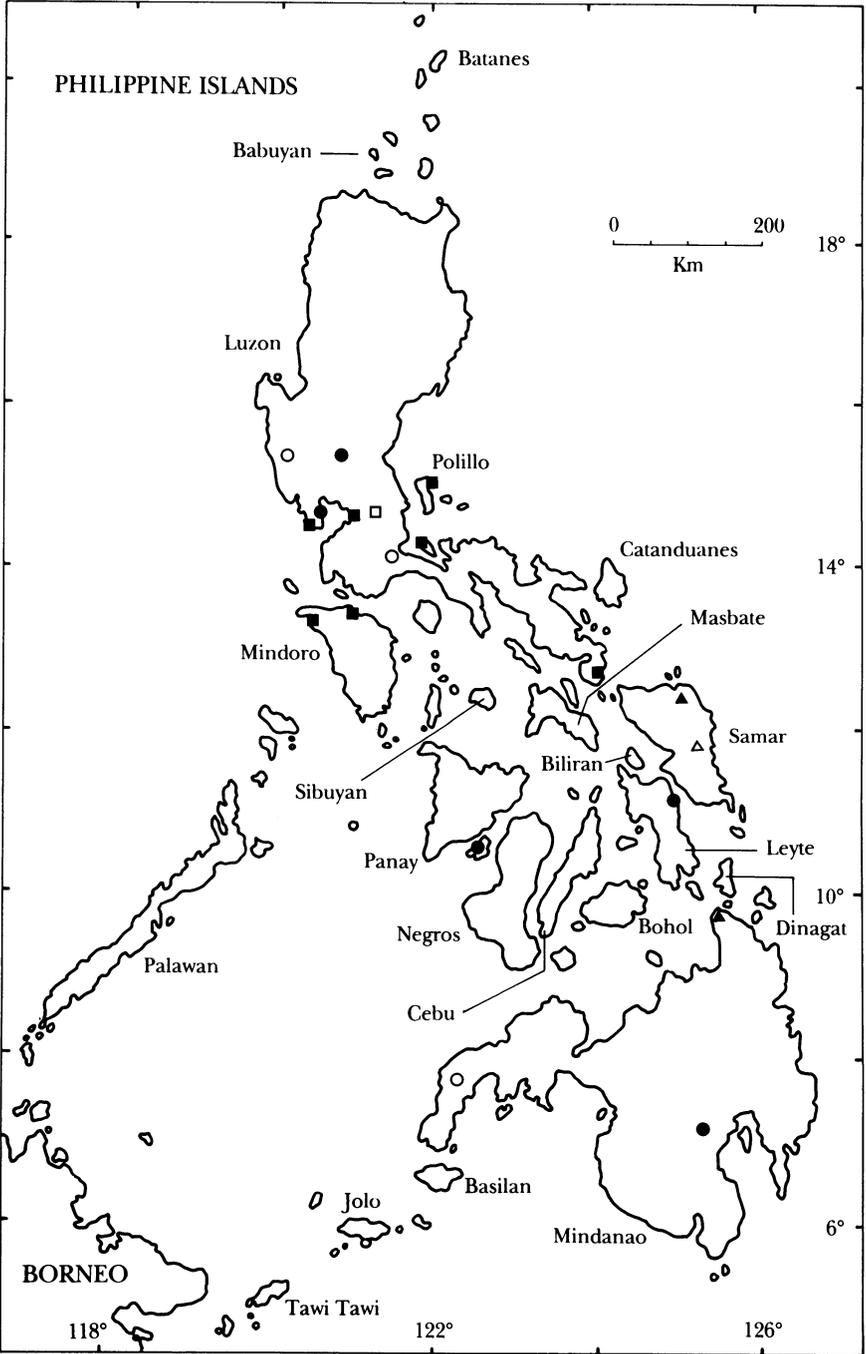
HABITAT. Secondary forest, thickets or open country, often near water; sea level to low or medium altitude.

The species as a whole is rather oddly distributed, subsp. *hainanensis* being found in the gap (Indochina, China), between the Eastern and Western parts of the distribution of this subspecies.

This species apparently shows great variation in flowers. However, flowers of herbarium specimens of this species can be misleading. It would appear that young flowers when pressed, unlike those of most other species, can be mistaken for mature ones. This has only become apparent after examination of several collections pressed by chance at a stage such as to show a whole range of sizes (notably *Merrill* 3914 where flowers are still attached and therefore indubitably all from the same specimen) where those only 3·5 cm long could, on their own, be mistaken for mature ones. (The same appears to be true for *M. diplax*). I suspect that the true size range would be found to be no more than 5·5–6 cm if a study of living plants were undertaken.

10. *Mucuna samarensis* Merr. in Philipp. Journ. Sci. 20: 390 (1922) & Enum. Philipp. Fl. Pl. 2: 309 (1923). Type: Samar: Catubig R., *Ramos* BS 24341 (holotype PNH†; isotypes K!, NY!, US!).

Plant very closely resembling *M. hainanensis* subsp. *multilamellata*, differing markedly only in size and relative proportions of some floral parts, and in fruit-ornamentation; differences as follows. *Leaflets* often relatively narrower, terminal often 2½ times as long as wide, up to 14 × 5·5(–6) cm; often very



MAP 4. Distribution of *M. hainanensis* subsp. *multilamellata* ● in the Philippines and of *M. samarensis* ▲ & *M. diplax* ■. (○ □ △ indicate exact locality uncertain).



FIG. 10. *Mucuna samarensis*. A leaf; B bud; C bracteole; D flower; E calyx; F standard; G wing; H keel; J pistil. All from Ramos BS 24341. B, C, $\times 1$, rest $\times \frac{2}{3}$. Drawn by Eleanor Catherine.

thinly membranous. *Inflorescence* not seen (only infructescence seen and only detached flowers present on extant isotypes), axis at least 15 cm but said to be up to 40 cm long with a few branches 20–22 cm long \pm 16 cm from its base; sidebranches reduced to knobs; pedicels very long, 3 cm; these and axis with dense fine spreading golden-brown indumentum; bracts, from description, similar in texture and indumentum to those of *M. hainanensis* subsp. *multilamellata* but large, 30 \times 12 mm; bracteoles said to be large, 25 \times 8 mm although the only one seen is little over half this size. *Calyx* tube of similar length to that of *M. hainanensis* subsp. *multilamellata* but markedly wider, 10 \times 20 mm; teeth of similar size, lowest \pm 12 mm, laterals 5–6 mm long. *Corolla* purple with all parts of similar proportion to *M. hainanensis* subsp. *multilamellata* but much larger, standard 3.5–4.3 cm, wings and keel 6.5–7

cm long. *Fruit* of similar size but often more broadly oblong up to 6 cm wide, only twice as long as wide with both margins convex; lamellae thin in texture, twisting in their course across the fruit-face and of very irregular height with undulate or almost dentate margins, widening to almost 1 cm in places; marginal wings also of more irregular width and often appearing almost dentate. *Seeds* of similar colour, shape and size-range. Fig. 9 B-C, 10.

Endemic to Philippines. Map 4.

SAMAR. Catubig R., Feb. 1916, *Ramos* BS 24341 (isotypes K, NY, US); E., Balangiga, May 1971, *Madulid et al.* 1526 (PNH 118484) (L).

MINDANAO. Surigao: Surigao, 25 April 1906, *Bolster* 314 (MO).

HABITAT. Damp forests along margins of old clearings; low altitude.

It is unfortunate that the holotype, with (from Merrill's ample description) apparently a much more complete inflorescence, has been lost. It is also most unsatisfactory that, in the absence of any collections with both fruit and flowers it is only an assumption that the two fruiting specimens belong to this species rather than to *M. hainanensis* subsp. *multilamellata*. The assumption seems reasonable both in that they would be strikingly aberrant for the latter and in that their geographical closeness fits well, only one (flowering) collection of the latter being found similarly close (Leyte) to the type locality.

11. *M. diplax* *Wilmot-Dear* sp. nov. *M. hainanensi* subsp. *multilamellatae* foliis floribusque persimilis sed vexillo in tertio basali dorsi valde pubescenti, bracteolis etiam brevioribus usque 9 mm longis quam calyci brevioribus differt. *M. platyplektae* fructu seminibusque similis sed apicibus bifurcatis lamellarum fructus uniformiter 1-2 mm latis nec inter 2 et 5-8 mm irregulariter variantibus differt. Typus Luzon: Bataan, *Williams* 231 (holotype (fr.) NY; isotypes (fl.) A, K, NY, US).

?*Negretia urens* Blanco, Fl. Filip. ed. 1: 586 (1837), ed 2: 409 (1845) & ed 3, 2: 387 (1879) ?pp., non Tussac, (but see note below, p. 244).

Mucuna imbricata sensu Merrill in Bur. Gov. Lab. Philipp. Bull. 27: 38 (1905) & in Philipp. Journ. Sci. 1, suppl. 1: 67 (1906), non Bak. sensu stricto (but see note under unplaced specimens below, p. 250).

M. nigricans sensu Merrill in Phil. Journ. Sci. 5: 116 (1910) pp. & Sp. Blanco.: 187 (1918), non (Lour.) Steud.

Climber very closely resembling *M. hainanensis* subsp. *multilamellata* in all except fruit. *Stems* glabrous, old ones with numerous conspicuous small dark lenticels. *Leaves* 10-30 cm long; petiole 5-9 cm, glabrous; leaflets medium or large, terminal 8-14 × 4.5-9 cm, narrowly elliptic, elliptic or elliptic-ovate with gradual or abrupt acumen and rounded base, laterals with abaxial half twice as wide as adaxial; lateral veins 4-6 pairs, almost straight for most of length, thinly prominent; reticulation inconspicuous; membranous or thinly chartaceous, glabrous above with scattered very short fine adpressed pale hairs beneath; stipels filiform, 2-5 mm long. *Inflorescence* axis robust or very slender, very variable in length up to 30 cm long, branched 0-3 times, each branch with up to 18 flower-bearing sidebranches reduced to robust knobs up to 2 × 3 mm; pedicels 2-3 cm long, these and axis pubescent like the leaves but more abundantly; bracts (fragments only seen) apparently small, linear-lanceolate up to 7 mm long; bracteoles narrowly ovate to linear-lanceolate,



FIG. 11. *Mucuna diplax*. A leaf; B inflorescence; C bud with bract & bracteoles; D calyx; E standard; F wing; G keel; H, J fruits; K seed. C from Fox 216; J from Ridsdale 904; rest from Williams 231. C $\times 2$, rest $\times \frac{2}{3}$. Drawn by Eleanor Catherine.

shorter than calyx, 7–9 × ± 3 mm, sparsely pubescent like the axis. *Calyx* very like that of *M. hainanensis* but pubescence (like that of axis) often rather sparse; tube ± 10 × 10 mm, lowest lobe 7–9 mm, laterals 6–7 mm long, all triangular 2–3 mm wide, upper lip often exceeding laterals. *Corolla* only distinguishable from that of *M. hainanensis* subsp. *multilamellata* by large patch of dense adpressed fine pubescence on dorsal surface of basal $\frac{1}{3}$ of standard, clearly extending beyond calyx; standard 3–3.5 cm long, auricles 2 mm long; wings 5.3–5.8 × 1–1.5 cm, claw 9 mm and auricles 3–4 mm long; keel equalling or slightly exceeding wings, claw 8–9 mm, auricles 3–4 mm long. *Fruit* rather similar to that of *M. platyplekta*, leathery, 2–3-seeded, linear-oblong or broadly oblong, not or hardly downcurved with both margins slightly convex or lower one almost straight and neither swollen around seeds, narrowing to broadly acute apex, twice to almost 3 × as long as wide, 8–13 × ± 4–6 cm, markedly laterally flattened but with faces somewhat convex around each seed, 1.3–1.8 cm in thickness; surface with abundant short fine spreading red-gold hairs and irritant red bristles, also with 12–18 slightly obliquely transverse lamellae, these thin but robust and nearly all interrupted near middle of fruit, 1.5–3 mm high and bifurcating at apex to give ‘‘T’’-shape in cross-section, each half very narrow 1–2 mm wide; margins with pair of robust wings of irregular width 0.5–3(–4) mm wide into which lamellae run. *Seeds* marbled in red-brown and black, shiny, rather large for size of pod, oblong-reniform or discoid in outline, 2–3 × ± 2 cm, laterally flattened but faces slightly convex, ± 1 cm in thickness; hilum black, very broad ± 5 mm, encompassing two-thirds of the circumference. Fig. 11.

Endemic to Philippines; known only from S and C Luzon, Polillo and N Mindoro. Map. 4.

LUZON. Bataan: Dec. 1906, *Foxworthy* BS 1885 (US); Pilar, 3 Jan. 1954, *Banzon* 63 (L); Mt Mariveles, Lamao R., 23 Nov. 1903, *Williams* 231 (holotype NY; isotypes A, K, NY, US) & Dec. 1904, *Whitford* 1028 (K, NY); Lamao R[?Mt Mariveles], 16 Dec. 1947, *Edaño* 377 (PNH 4139) (A). Rizal: Manila, 1836–37, *Gaudichaud* s.n. (P); San Mateo, Jan. 1915, *Merrill* 779 (A, BM, K, L, MO, NY, US). Alabat I., 21–30 Dec. 1916, *Merrill* 10507 (K, NY, US). Sorsogon: Irosin, Mt Bulusan, Dec. 1915, *Elmer* 15294 (A, BM, F, K, L, MO, NEB, NY, UC, US). Unlocalised: 1841, *Cuming* 688 (K); C., *Loher* 2322 (K).

POLILLO. NE, Karlagan, 5 Jan. 1949, *Fox* 216 (PNH 9120) (A, L, PNH).

MINDORO. N coast: Subaan R., San Teodoro, 21 April 1986, *Coode* 5451 (K, L) & same locality, 18 Feb. 1985, *Ridsdale* 904 (L); Paluan, April 1921, *Ramos* BS 39645 (A, K).

HABITAT. Low alt, 70 m. No other data but I suspect riverine forest.

Immature flowers can be mistaken for mature ones as in *M. hainanensis* subsp. *multilamellata*: see note above (p. 237).

Only two collections with both fruit and flowers (the type & *Merrill* 779) have been seen, the three other fruiting collections (all from Mindoro) lacking flowers. It is most unsatisfactory that most of the numerous flowering collections of both this and the variable *M. hainanensis* subsp. *multilamellata* cannot be correlated with fruit. The assumption is here made that all those with a pronounced dorsal pubescent patch on the standard belong to *M. diplax* and are not merely variants of *M. hainanensis* subsp. *multilamellata*, and that *M. diplax* never lacks this large patch.

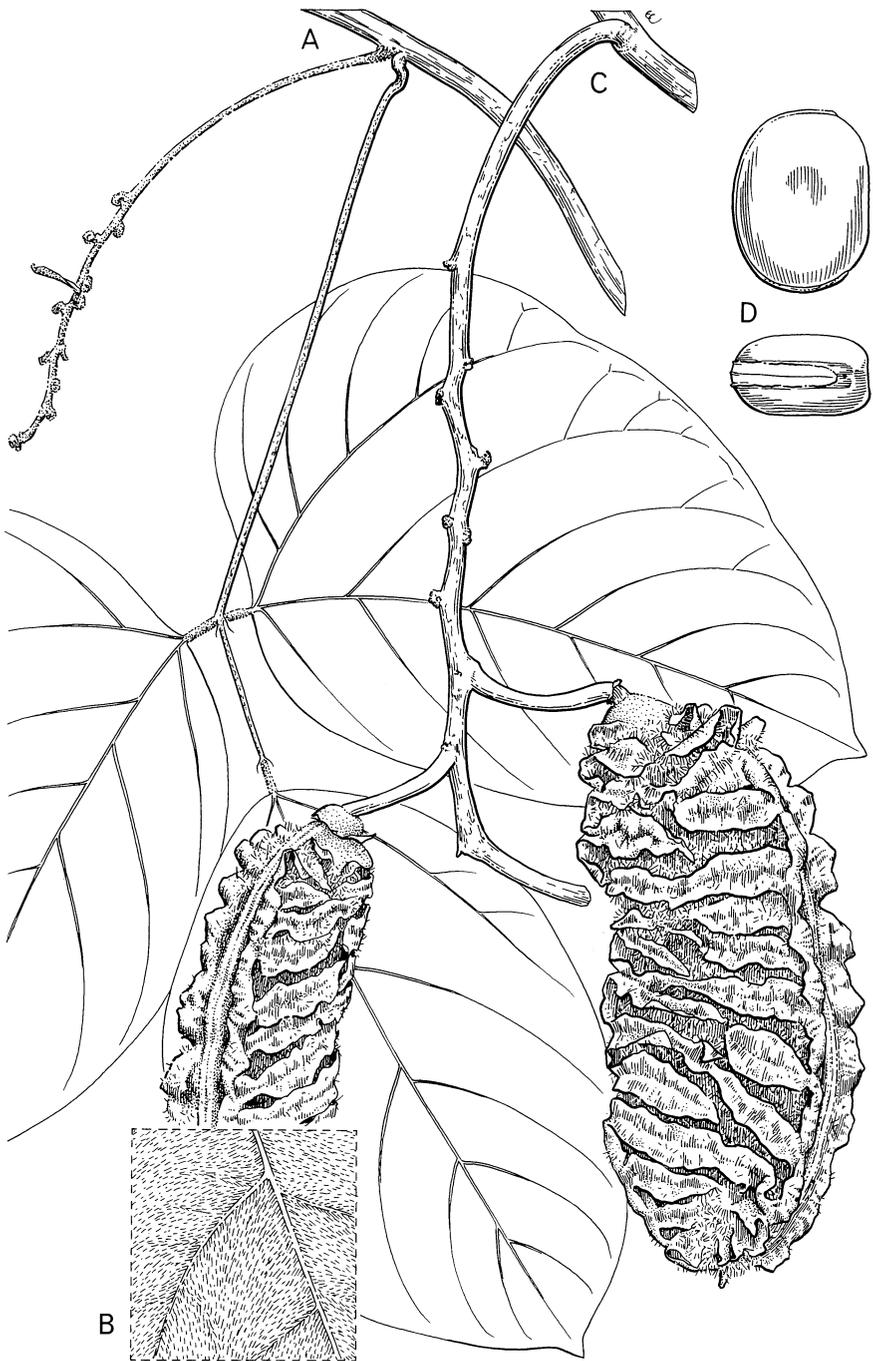


FIG. 12. *Mucuna platyplekta*. A leaf & inflorescence; B leaflet, lower surface; C infructescence; D seed; C from Ramos BS 76700; rest from Ramos & Edaña BS 47232. A, C $\times \frac{1}{4}$, B $\times 2$, D $\times 1$. Drawn by Eleanor Catherine.

Merrill's illustrative specimen for *Negretia urens* Blanco non Tussac (referred by Merrill to *M. imbricata*) is Merrill 779 and is *M. diplax*; it is not clear from Blanco's fruit description which species was intended or whether (as did Merrill apparently) he merely failed to distinguish between the two.

The name has been chosen to indicate the possession of bifurcating lamellae, the main character separating it from *M. hainanensis*.

12. *Mucuna platyplekta* *Quisumb. & Merr.* in Philipp. Journ. Sci. 37:152 (1928). Type: Luzon: Isabela, San Mariano, *Ramos & Edaño* BS 47232 (holotype PNH†; isotypes NY!, UC!).

Climber to 30 m, slender; young stems finely pubescent. *Leaves* large, up to 26 cm long, petioles 10–11.5 cm long with sparse or abundant very fine pale \pm spreading hairs, these longer and rather woolly on petiolules; leaflets large and broad, terminal 12–19 \times 8–14 cm, broadly elliptic or elliptic-ovate with short blunt acumen and rounded to broadly cuneate base, laterals markedly asymmetrical with abaxial half twice as wide as adaxial; lateral veins 6–7 pairs, gently curved but near margin sharply curved or becoming indistinct, prominent; reticulation inconspicuous; fairly thickly chartaceous, with dense adpressed to somewhat spreading very fine pale pubescence beneath, \pm glabrous above; stipels robust, 3 mm long. *Inflorescence* axis slender, fairly short \pm 14 cm long, unbranched and with \pm 10 flower-bearing sidebranches in upper half all reduced to knobs, abundantly pubescent with hairs shorter, finer and more spreading than those on leaves; bracts and bracteoles not seen. *Calyx* in complete state not seen, densely pubescent like the axis; tube said to be broadly cup-shaped, 10 \times 15 mm; lobes small, lowest up to 5 mm, linear, laterals very short, broadly triangular, upper lip not well-marked. *Flowers* unknown. *Fruits* green (drying brownish), leathery, oblong with convex or straight margins not swollen around each seed, 2–3-seeded with obtuse apex, 8–12 \times 5–6 cm, somewhat laterally flattened but faces convex, \pm 2.5 cm in thickness; surface densely pubescent like the calyx and with abundant irritant red bristles, also with 12–15 slightly obliquely transverse lamellae, these thick and robust and many interrupted near middle of fruit, up to 3(–5) mm high and bifurcating at apex as in *M. diplax* but each half of very irregular width varying between 2 and 5–8 mm; margins each with a pair of wings, these irregular and indistinct, formed mainly from overlapping ends of lamella-apices, giving each wing therefore an almost dentate outline, up to \pm 8 mm wide in places. *Seeds* dark red-brown, sometimes darkly mottled, 2.5–2.8 \times 2.1 \times 1 cm, ellipsoid; hilum black, very broad \pm 4 mm, encompassing \pm $\frac{3}{4}$ of the circumference. Fig 12.

Endemic to Luzon. Map 3.

LUZON. Cagayan: Peñablanca: 8 July 1904, *Bolster* 126 (MO) & March–May 1924, *Ramos* 117 (BS 76700) (NY). Isabela: 16 Feb. 1926, *Ramos & Edaño* BS 47232 (NY, UC, isotypes); San Mariano, April 1926, *Clemens* 17050 (NY, UC). Rizal: Manila, Mt Igarrotes, Feb. 1840, *Callery* s.n. (P).

HABITAT. Dry open forests or along streams; low altitude.

A plant which in fruit-ornamentation somewhat resembles *M. diplax* but much more closely resembles the Malaysian species *M. buplicata* Teysm. & Binn. ex Kurz, although it is very distinct vegetatively from these and other species in adjacent areas. It is a pity that flowers are unknown.

B. Subgenus STIZOLOBIUM (P.Br.) Prain

Annual or short-lived perennial; pods sometimes longitudinally ribbed; seeds compressed, oblong-ovoid, with a very short hilum surrounded by a conspicuous rim-aril.

13. *Mucuna pruriens* (L.) DC., Prodr. 2: 405 (1825). Perkins, Frag. Fl. Philipp.: 86 (1904); Merrill in Philipp. Journ. Sci. 1; suppl. 1:67 (1906) & 5: 117 (1910) & Fl. Manila; 259 (1912) & Sp. Blanco: 188 (1918) & Enum. Philipp. Fl. Pl. 2: 309 (1923). Type: Indonesia, Amboina, Rumphius, Herb. Amb. 5, t. 142 (1750).

Negretia pruriens Blanco, Fl. Filip. ed. 2: 411 (1845).

For detailed description and synonymy see Wilmot-Dear in Kew Bull. 39: 61 (1984) & 42: 40 (1987).

Climber, slender, long; stems glabrous or sparsely fine-hairy. *Leaves* and leaflets very variable in size in some varieties; lateral veins gently curved (rarely straight) throughout length and running right into margin. *Inflorescences* usually long, up to 40 cm, unbranched, flower-bearing sidebranches (few-)10–20, reduced to knobs and usually all in upper half of axis. *Calyx* with dense adpressed silvery to brownish pubescence and often also irritant bristles; small, tube $\pm 5 \times 10$ mm. *Flowers* purple (rarely whitish), small, 3–4 cm long. *Fruit* fleshy, small, with 3–6 seeds, narrowly linear-oblong but swollen around each seed, sometimes misshapen, usually with 1–2 longitudinal ridges running whole length. *Seeds* ellipsoid, small, $1.1-1.7(-2) \times 0.7-1.3$ cm, 4–10 mm in thickness; hilum occupying $\pm \frac{1}{8}$ of the circumference.

var. **pruriens**

Stems and petioles glabrous or with occasional sparse fine adpressed or somewhat spreading pale hairs, often also irritant bristles. *Leaves* up to 46 cm long; leaflets of very varying sizes, membraneous with fairly prominent veins, terminal (8-)14–16 \times (4-)8–10 cm, elliptic or rhombic-ovate with acute or shortly acuminate apex; lateral veins curved, rarely completely glabrous, more usually sparsely pubescent (rarely densely so beneath), hairs short, fine, pale, spreading or \pm adpressed. *Inflorescences* often many-flowered but not appearing crowded except when in full flower, because bracts and bracteoles very early deciduous seen only in very young bud stage; bracts ovate or lanceolate with distinct acumen often half total length of bract, 6–10 \times 2–3 mm (up to 15 \times 6 mm in Africa and America), bracteoles narrower, linear-lanceolate. *Calyx* with lowest lobe narrow and acuminate, 6–10 \times 2–3 mm, laterals relatively broader, 2–4 \times 1.5–3(–3.5) mm, upper lip equalling laterals. *Corolla* purple; keel up to 4.2(–4.5) mm long. *Fruit* narrowly linear-oblong with margins parallel but often \pm swollen around seeds, usually whole fruit distinctly curved often into “S”-shape with hooked apex, 5–9 \times 0.8–1 cm, somewhat laterally flattened, ± 5 mm in thickness, dense indumentum of red-gold or red-brown readily deciduous, unbelievably irritant windborne bristles completely concealing surface and its 1–2 longitudinal ridges. *Seeds* fawnish-brown, or blackish, hilum ± 6 mm long, aril orange. Fig. 13; Map 5.

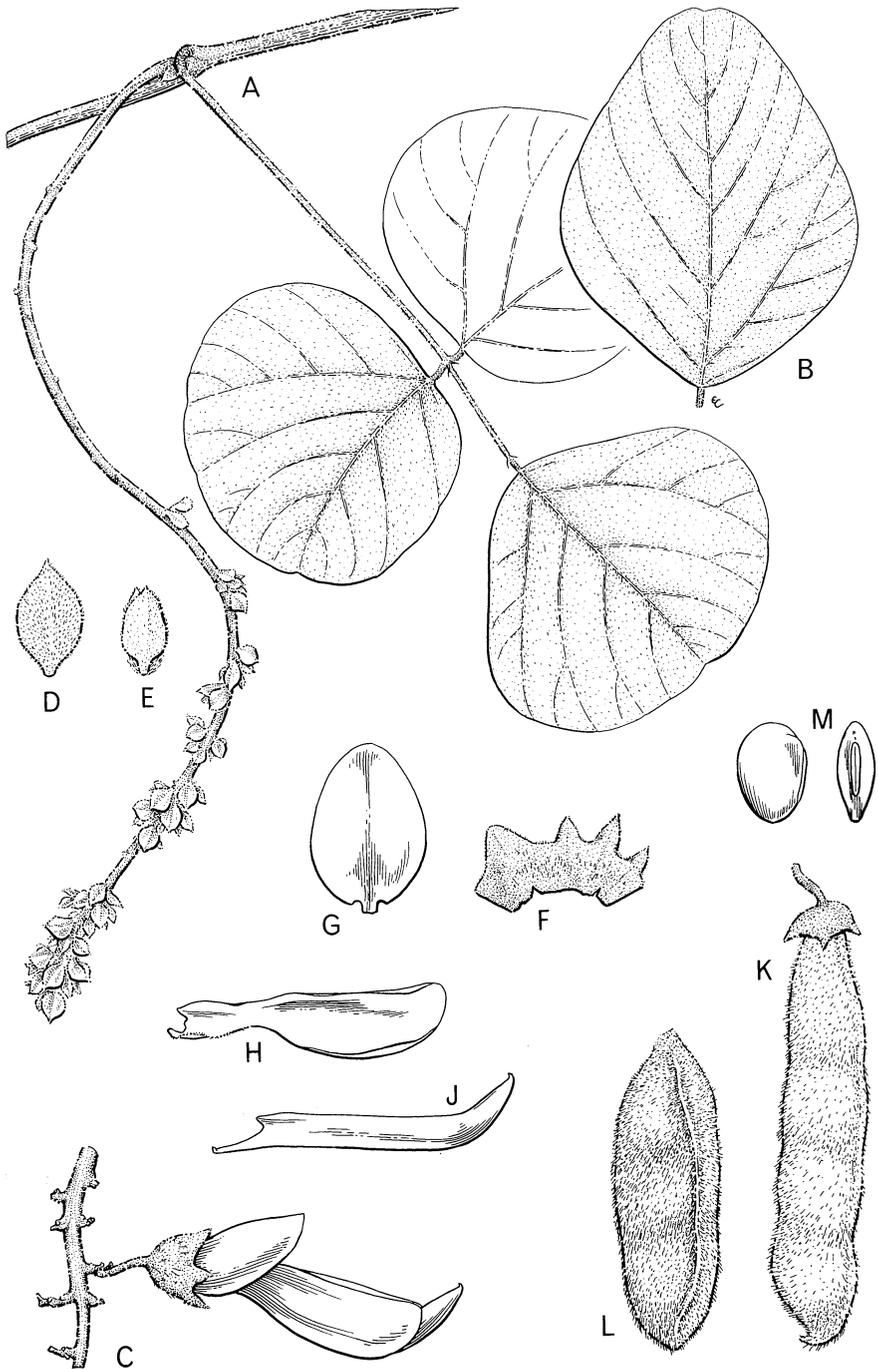


FIG. 13. *Mucuna pruriens* var. *sericophylla*. A leaf & young inflorescence; B terminal leaflet; C flower; D bract; E bud with bracteoles; F calyx; G standard; H wing; J keel; K, L, fruits; M seed. A, D, E from Ramos 7046; B, K, M from Conklin 89; C, F-J from Bernhardt s.n. L from Elmer 5599. A, B, K, L $\times \frac{2}{3}$. C, F-J, M $\times 1$, D, E $\times 2$. Drawn by Eleanor Catherine.

LUZON. Ilocos Norte: Currimaao, *Bartlett* 14839 (NY, UC). Cagayan: Callao Caves, Jan. 1924, *Clemens* s.n. (UC). Isabela: San Mariano, *Clemens* 17051 (UC). Ifugao: Banaue, *Conklin & Buwaya* 1-805 (PNH 78641) (A, L). Benguet: Itogon, *Williams* 1423 (A, K, NY, US). Bulacan: Polo, *Mendoza* PNH 3801 (MO). Rizal: Pasig, *Mendoza* 3804 (MO); Ft McKinley, *Merrill* 645 (A, BM, K, L, NY, US); *Merrill* 645a (A, MO) & 6348 (K, L); Manila, *Merrill* 7349 (K, NY); Nov. 1907, *McGregor* s.n. (US); Montalban, *Robinson* 9648 (L). Laguna: Los Baños, *Hallier* 4005 (L). Albay: *Cuming* 954 (K). Unloc.: C., San Francisco, *Loher* 2324 (K).

MINDANAO. Lanao: Lake Lanao, *Clemens* 882 & 355 (NEB).

JOLO: comm. *Vidal* 2627 (K).

EXTERNAL DISTRIBUTION. Widely distributed: tropical Africa, Madagascar, Asia, tropical America; probably an introduction in some areas but certainly native to Africa and parts of Asia.

HABITAT. Dry thickets and secondary forests; riversides; low to medium altitude.

Although possessed of such obnoxious irritant hairs, this plant has probably been deliberately introduced to some areas. It is nowhere stated to be of use, but may in its younger, less hairy, stage be (or have originally been) used as is the cultivar var. *utilis* which must have been derived from it.

var. **sericophylla** (*Perk.*) *Wilmot-Dear* stat. nov.

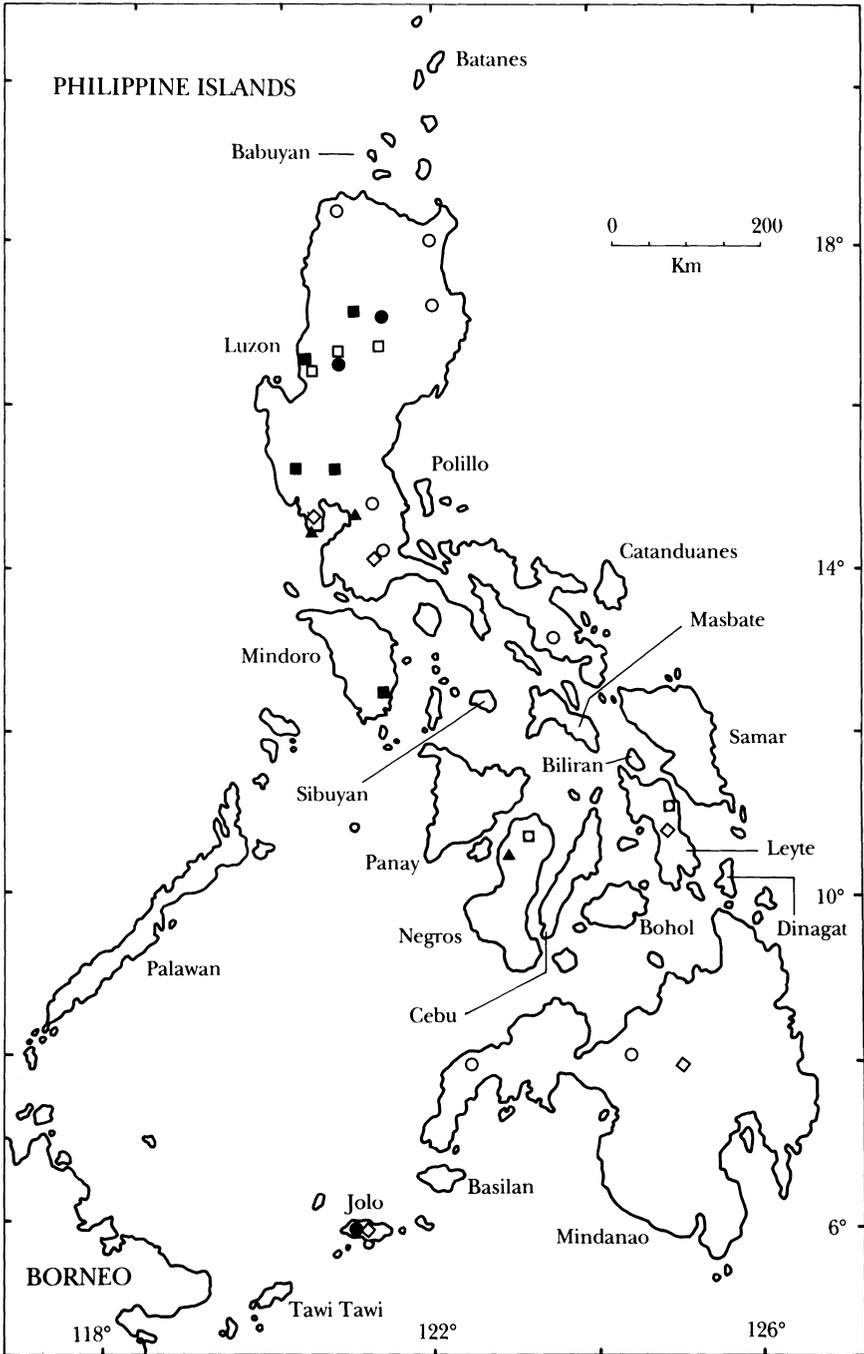
Mucuna sericophylla Perk., Frag. Fl. Philipp. 1:86 (1904); Merrill in Philipp. Journ. Sci. 5: 117 (1910) & Enum. Philipp. Fl. Pl. 2: 310 (1923). Type: Luzon: Cagayan, *Warburg* 12438 (holotype B†).

M. luzoniensis Merr. in Philipp. Journ. Sci. 1, suppl.: 196 (1906). Type: Luzon: La Union, *Elmer* 5599 (holotype PNH†; isotypes NY!, US!).

Climber closely resembling var. *pruriens* but differing markedly in floral bracts and with rather distinct indumentum, leaves and fruits. *Stems*, petioles, leaflets beneath (often also above but then spreading), inflorescence axis, bracts and calyx with abundant to dense short fine pale \pm adpressed hairs. *Leaves* tending to be small, up to 12(-19) cm, leaflets small and very broad, rather thickly chartaceous, terminal broadly rhombic or elliptic, usually broader than long (rarely slightly longer than broad), 3-7 \times 3.5-9.5 cm with broadly rounded apex and abrupt apiculus or even emarginate tip. *Inflorescence* appearing more crowded even in late bud stage due to fairly long-persistent bracts and bracteoles present almost up to mature flower stage, these very densely silky hairy, short and broad, often almost as broad as long, 4-6 \times 3 mm with apex acute but not or scarcely acuminate. *Calyx* lobes tending to be shorter and relatively broader than in var. *pruriens*, lowest 5-7 mm, laterals 3 mm long and almost as broad, upper lip very well-marked. *Fruit* with the same irritant bristles as in var. *pruriens* but often straight and up to 1.5 cm wide. (Fig. 13).

Endemic to Philippines. (Map 5).

LUZON. Abra: Bucay, 3 Feb. 1923, *Bernhardt* s.n. (UC). Pampanga: Arayat, *Loher* 2325 (K). La Union: Bauang, *Elmer* 5599 (NY, US, isotypes of *M. luzoniensis*); Damortis, *Madulid & Hamay* PNH 108589 (PNH). Benguet: Lepanto, Jan. 1909, *Ramos* 7046 (L). Zambales: Mt Pinatubo, Nov. 1947, *Fox*



MAP 5. Distribution of *M. pruriens* in the Philippines: var. *pruriens* ●, var. *sericophylla* ■ (□ indicates exact locality uncertain, ◇ = in literature only) & intermediates ▲

182 (PNH 4890) (A). Stated also (Merrill 1923) to occur in Bataan and Laguna Provs.

MINDORO. E, Mt Yagaw, Mansalay, 16 March 1953, *Conklin* 89 (PNH 17444) (A).

Stated also (Merrill 1923) to occur on Leyte, Mindanao and Jolo.

HABITAT. Dry thickets; low-medium altitude.

The only character providing a good distinction between this and var. *pruriens* is the size, shape and persistence of bracts and bracteoles, although the whole plant, especially in its leaflets, presents a generally rather different appearance; however, three collections, the only ones seen from Negros, *Piper* 22 & 68 (US) and Leyte, *Elmer* 7247, (A, E, F, K, NY) lack bracts and present generally so intermediate an appearance as to be impossible to assign to either taxon. This variant perhaps represents the true local race to the Philippines, var. *pruriens* being possibly a later introduction. There is considerable overlap in geographical distribution and for this reason, as well as the presence of intermediates, the taxon is considered worthy of recognition only at varietal level.

var. *utilis* (*Wall. ex Wight*) *Bak. ex Burck* in *Ann. Jard. Buitenzorg* 11: 187 (1893); *Wilmot-Dear* in *Kew Bull.* 39: 63 (1984) & 42: 45 (1987) q.v. for extensive list of synonyms. Referred to in Philippine literature under these synonyms as follows: *Merrill* in *Philipp. Journ. Sci* 5: 118 (1910) (as *M. deeringiana*) & *Sp. Blanco.*: 188 (1918) (as *M. nivea*) & *Enum. Philipp. Fl. Pl.* 2: 307 (as *M. cochinchinensis*) & 308 (as *M. deeringiana*) (1923).

M. lyonii *Merr.* in *Philipp. Journ. Sci.* 1; suppl. 1: 197 (1906) & *Fl. Manila*: 259 (1912). Type: Cult. Manila by *Lyon* (Bureau of Agric.), seeds from Luzon, Pampanga (holotype PNH†; isotypes K!, US!).

Negretia mitis *Blanco*, *Fl. Filip.* ed. 1: 588 (1837), ed. 2: 410 (1845) & ed. 3, 2: 388 t. 405 bis (1879), *non* *Ruiz & Pav.*

(See *Wilmot-Dear* in *Kew Bull.* 39: 63 (1984) & 42: 45 (1987) for more complete description.)

Plant in most characters identical to var. *pruriens* but lacking irritant bristles. Lateral leaflets often markedly larger than terminal. Fruits often misshapen due to irregular sizes of swelling around seeds, often up to 2 cm broad in places; surface usually clearly visible beneath dense or sparse short fine pubescence. Seeds white, fawn, orange or black, sometimes marbled or streaked, up to 2 cm long. (Map 5).

LUZON. Bataan: Mt Mariveles, *Borden* FB 1817 (E, K, NY, US). Rizal: Manila: *Mendoza* PNH 39924 (L), *Merrill* 863 (A, BM, K, MO, NY, US), & 11206 (A, BM, K, NY) & June 1906, *Lyon* s.n. (K, US, isotypes of *M. lyonii*). Unloc. C.: *Loher* 2277 (K, US).

NEGROS. *Curran* FB 17374 (K). La Carlotta, *Coffman* FB 26226 (K, NY, P) & 26225 (US).

MINDANAO. Zamboanga del Norte: *Muyu*, *Frake* 394 (PNH 38007) (A, BM, K, L).

EXTERNAL DISTRIBUTION. Cultivated widely in the Tropics.

HABITAT. A cultivated variety grown widely for fodder and green manure.

This variety is not absolutely distinguishable from var. *pruriens* without fruit.

UNPLACED SPECIMENS

LUZON. Bataan: Lamao R., 1 Jan. 1904, *Merrill* 3783 (BM (fr); BM, K, NY, P (fl)).

Stem, leaves and inflorescence-axis indistinguishable from those of *M. diplax*. Flowers (detached in all duplicates) of 2 sizes: some 5 cm long and identical with those of *M. diplax*, others very much smaller, ± 3.5 cm long but (see note on p. 237) probably immature (standard distinctly pubescent as in *M. diplax*). Fruit and seeds as in *M. platyplekta*.

I suspect that this collection is a mix-up of two or three separate numbers and taxa, for the following reasons. Firstly, in at least one, perhaps two, duplicates, there appears to have been mixture with a separate, numbered, collection. Secondly, the sheet bearing fruit has no other parts and even the collector's label is lacking, replaced by a later (very recent) handwritten note giving collector and number. The duplicates are as follows: BM: 2 sheets: firstly loose fruit and seeds only with no original label; secondly, stems and inflorescence with detached flowers (5 cm long). P: detached leaves, flowers (3.5 cm long) and original label as cited and described above. K: stems, leaves and detached flowers (3.5 cm), mounted on right-hand half of a sheet whose left-hand half bears a separate, clearly-labelled collection, *Whitford* 1028 (from same locality but with additional detail of Mt Mariveles) similar in all respects except for larger flowers (all, unfortunately, also detached) 5 cm long and matching those of mature *M. diplax*, one of which appears to have been mounted with the *Merrill* collection. NY: ostensibly a single collection but with flowers (all loose in capsule) all 3.5 cm long except for two 5 cm long: these latter may have been incorporated from the duplicate with mature flowers (BM) or possibly from the *Whitford* collection mentioned above before dispatch to NY.

I suspect that the fruit has nothing to do with this collection and is just part of a gathering of *M. platyplekta* which has later (probably recently since the writing is in ball-point pen) been thought to belong here. Without it, the material could simply be considered as a gathering of *M. diplax* with some inflorescences bearing immature flowers, others bearing mature flowers, possibly partially mixed with a mature-flowered collection of the same species.

Note: *Merrill* 3783 is cited alone by Merrill (1905), and together with *Whitford* 1028 by him (1906), under the name *M. imbricata*.

ACKNOWLEDGEMENTS

I would like to thank the directors of the following herbaria for the loan of specimens: A, BISH, BM, E, F, L, MO, NEB, NY, P, PNH, UC, US. I would also like to thank Dr B. Verdcourt for his comments and advice.

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