

AN ACCOUNT OF THE GENUS *MUCUNA* ADANS.  
FOR THE FLORA ZAMBESIACA AREA

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SUMMARY

An account of the 7 species of *Mucuna* Adans. found in the Flora Zambesiaca area is offered, with a key and full descriptions.

KEY WORDS: Flora Zambesiaca—Leguminosae—*Mucuna*—Papilionoideae—taxonomy.

INTRODUCTION

In 1974 (*Kirkia* 9(2): 359-556) I gave an account of the tribe *Hedysareae* (sensu lato) for Flora Zambesiaca. The account of the Leguminosae-Papilionoideae for this flora is still hardly begun and this present contribution deals with only 7 species. It is also a contribution towards a world monograph of the genus *Mucuna* being undertaken by B. Verdcourt and M. Thomas (née Wilmot-Dear) of Kew and Harry Wiriadinata of Bogor.

MUCUNA Adans.

*Mucuna* Adans., *Fam. Pl.* 2: 325 (1763). —Prain, *J. As. Soc. Bengal* 66: 404 (1897).  
—Verdc. in *Kew Bull.* 24: 286-293 (1970) and *F.T.E.A., Leguminosae-Papilionoideae:*  
561-571 (1971), nom. conserv.

*Stizolobium* P. Br., *Hist. Jamaica:* 290 (1756).

Climbing herbs, woody lianes or rarely erect shrubs. Leaves pinnately 3-foliolate; stipules deciduous; stipels often present. Inflorescences axillary, subumbellate, falsely racemose or condensed paniculate; bracts and bracteoles deciduous. Flowers showy, white, purple, red or greenish-yellow to golden yellow or almost black. Calyx 4-5-lobed, 2-lipped, the upper pair of lobes connate to form an entire or bifid lip. Standard rounded, with inflexed auricles at the base, usually much shorter than the other petals; keel-petals usually horny at the apex. Vexillary stamen free; 5 larger anthers subbasifixed, alternating with 5 shorter versatile or dorsifixed anthers, often barbate. Ovary few-ovuled; style long, filiform, sometimes pubescent but not bearded, bent; stigma small and terminal. Pods or fruits ovoid, oblong or linear, the valves thick, often ribbed, frequently covered with irritant bristles, septate or filled between the seeds, mostly dehiscent but sometimes not opening. Seeds either globose or oblong, with a short or linear hilum and conspicuous rim-aril, or larger, discoid, with an elongated hilum occupying over half the circumference and no aril present.

A rather large genus of about 100 species in the tropics and subtropics of both hemispheres.

There is a good deal of evidence in favour of splitting the genus into several smaller genera, particularly on seed characters, but if *Stizolobium* is split off the result is still heterogeneous with regard to other characters and I am favouring the retention of *Mucuna* in its wide sense, at least until the genus has been revised on a world basis (see also Verdc. in Kew Bull. 24: 286-287 (1970)). The following groups occur in the Flora Zambesiaca area:

### Subgenus *Mucuna*

Sect. *Carpopogon* (Roxb.) Wight & Arn. Woody; pods with wings along the sutures and no transverse lamellae; seeds discoid, large and compressed with hilum extending around about three-quarters of circumference. Species 1.

Subgenus *Stizolobium* (P.Br.) Prain. Annual or somewhat woody; pods sometimes longitudinally ribbed; seeds compressed, oblong-ovoid, with a very short hilum surrounded by a conspicuous rim-aril. Species 2-7.

*M. poggei* Taub. has scarcely dehiscent pods with no wings or lamellae and the seeds have a hilum extending one-third of the way around the seed; it somewhat bridges the two subgenera but should perhaps be considered a separate section within subgenus *Stizolobium*. Further information useful for subdividing this genus could be obtained by studying the germination of the seeds. In *Stizolobium* the first leaves to appear above the cotyledons are opposite, simple and cordate, whereas in *Mucuna* proper the initial leaves are said to be all alternate and scale-like. The dorsifixed anthers in the members of the subgenus *Mucuna* I have examined are barbate, whereas in *Stizolobium* (including *M. poggei*) they are glabrous.

1. Stems climbing ..... 2  
Stems erect ..... 7. *stans*
2. Pod with 2 wings bordering the suture; seeds with hilum extending three-quarters of way around the circumference; flowers  $\pm$  4.5 cm long, greenish-white or pale lilac; dorsifixed anthers barbate ..... 1. *gigantea*  
Pod without sutural wings; seeds with a much shorter hilum; all anthers glabrous (Subgen. *Stizolobium*) ..... 3
3. Fruit not known to be dehiscent, 3.5-4 cm wide, very densely covered with orange-red bristly hairs; seeds with hilum extending one third of way around the circumference; corolla 5-9 cm long, greenish-white; a robust liane ..... 2. *poggei*  
Fruit readily dehiscent (or tardily so in some cultivars without bristly hairs), 1-2.4 cm wide; seeds with a short hilum 4-5 mm long; annuals or weaker climbers ..... 4
4. Fruit 10-13  $\times$  2.1-2.4 cm, covered with orange bristly hairs; seeds 1.35-1.55  $\times$  1.2-1.35  $\times$  0.35-0.45 cm; flowers 5-5.5 cm long (flowers and foliage almost exactly as in *M. poggei* var. *pesa*) ..... 3. *ferox*  
Fruit usually 4-9  $\times$  1-1.5(-2 in cultivated forms) cm; seeds usually 0.8-1.2  $\times$  0.75-0.8  $\times$  0.35-0.5 cm or if larger to 1.9  $\times$  1.3  $\times$  0.65 cm then pod without bristly hairs; flowers usually under 4 cm long ..... 5

5. Leaflets thin, mostly acute, pilose; calyx with silvery indumentum, with or without additional orange bristles; corolla 4 cm long, dark purple or rarely pale; seed-aril white . . . . . 4. *pruriens*  
 Leaflets thicker, mostly obtuse, either velvety, felted or finely pubescent and drying dark; calyx with ferruginous or golden-brown indumentum; corolla 2.5–4 cm long, dark purple; aril black . . . . . 6
6. Wings hairy; flowers  $\pm$  4 cm long; leaflets mostly densely velvety-hairy 5. *coriacea*  
 Wings glabrous; flowers 2.5–3 cm long; leaflets glabrescent or finely pubescent . . . . . 6. *glabrialata*

1. *Mucuna gigantea* (Willd.) DC., Prodr. 2: 405 (1825). —R.A.Dyer in Kew Bull. 1931: 464 (1931). —Verdc. in F.T.E.A., Leguminosae-Papilionoideae: 564 (1971) and Man. New Guinea Legumes: 443, fig. 106F (1979). Type from India (Malabar).

*Dolichos giganteus* Willd., Sp. Pl. 3: 1041 (1802).

*Mucuna quadrialata* Bak. in F.T.A. 2: 186 (1871). —Bak.f., L.T.A.: 379 (1929). —Brenan, T.T.C.L.: 434 (1949). Types: Mozambique, Luabo R. & Muselo (Parker's) Kirk (K, syntypes) and from Zanzibar.

*Mucuna longipedicellata* Hauman in F.C.B. 6: 133 (1954), nomen, and in Bull. Jard. Bot. Brux. 25: 98 (1955). Type from Zaire.

*Mucuna gigantea* (Willd.) DC. subsp. *quadrialata* (Bak.) Verdc. in Kew Bull. 24: 287 (1970) and F.T.E.A., Leguminosae-Papilionoideae: 564, fig. 82/2 (1971).

Large woody liane attaining 8–15 m in length. Stems at first covered with stiff orange-brown hairs, later glabrescent. Leaflets elliptic or ovate, the laterals oblique, 4.2–11.5  $\times$  2.2–7.5 cm, acuminate and markedly apiculate at the apex, rounded at the base, glabrous; petiole 4.7–12 cm long; rhachis 1.8–3.5 cm long; petiolules 5 mm long. Inflorescences mostly from the thick lower stems; rhachis 3–6 cm long; peduncle 4–22 cm long; secondary branches 2–7 mm long, silvery pubescent; pedicels 1–2.5 cm long; bracts oblong, 7  $\times$  2.5 mm; bracteoles deciduous, oblong, 14  $\times$  4 mm. Calyx covered with fine grey pubescence and also long deciduous orange-brown bristles; tube 7–11 mm long; lobes 2–3 mm long, the upper lip scarcely emarginate. Standard pale creamy-green, white or pale lilac, eventually turning black, round, (2–)2.5–3.5  $\times$  (1.6–)2.2–2.6 cm, with very sparse orange bristly hairs, particularly outside at top of claw; wings and keel similarly coloured, (3–)3.7–4.6 cm long. Pods stipitate, oblong or oblong-elliptic, 8–15.3  $\times$  3.5–5(–6.4)  $\times$  1–1.9 cm, margins with 2 wings, densely covered with stiff intensely irritant orange-brown bristles. Seeds brown, densely mottled with black, discoid, the faces convex, smooth, 2.5–2.9  $\times$  2.1–2.5  $\times$  1.2–1.4 cm; hilum extending around the seed-margin for  $\pm$  three-quarters of the circumference.

**Mozambique.** Z: Luabo R., Kirk (K). MS: Muselo (Parker's), 6.vi.1858, Kirk (K). GI: Ponta Barra Falsa, fr. 21.ix.1958, Mogg 28907 (K, PRE, SRGH). M: Incomati R., fl. & fr. 1.vii.1931, Muir 4769 (K).

Essentially littoral throughout the Indian and Pacific Oceans but also known inland. Coastal scrub and river banks; 0–10 m.

This species is so variable throughout its range that it does not seem possible to retain subsp. *quadrialata*; large-flowered specimens occur elsewhere in its range. *Mogg* 28907 is reported to have purple flowers but this is unusual if not unprecedented.

2. *Mucuna poggei* Taub. in Engl., Bot. Jahrb. 23: 194 (1896). —Bak.f., L.T.A.: 380 (1929). —Brenan, T.T.C.L.: 433 (1949), *pro parte*. —Hauman in F.C.B. 6: 134, fig. 3 (1954). —Hepper in Kew Bull. 11: 127 (1956). —F.White, F.F.N.R.: 160 (1962). —Torre in C.F.A. 3: 252 (1966). —Verdc. in F.T.E.A., Leguminosae-Papilionoideae: 565 (1971) and Kew Bull. 35: 743 (1981). Type from Angola.

Large liane, the stems attaining 20 cm in diameter and 10–30 m in height. Stems glabrous or pubescent. Leaflets rhomboid, ovate or obovate, the laterals very asymmetrical, 10–19 × 6–15.5(–19) cm, apiculate or rounded at the apex, rounded to subcordate at the base, sparsely adpressed pubescent above, densely adpressed silvery-grey hairy beneath or in some variants woolly or glabrescent save for hairs on the nerves; petiole 8–16 cm long; rhachis 1.5–3 cm long; petiolules 5–8 mm long; stipules triangular, ± 1 cm long. Inflorescences pendulous, usually with numerous flowers; rhachis 6–32 cm long; peduncle 2–20 cm long, greyish or ferruginous tomentose; several flowers per node, the nodes up to 5 mm long; pedicels 0.8–1 cm long; bracteoles very deciduous, 10–16 × 4–6 mm. Calyx densely velvety and with adpressed orange-red bristly irritant hairs; tube 5–12 mm long, sometimes eventually attaining 2.3 cm in width; lobes oblong to linear, 2–7 mm long or lowest lobe up to 2.2 cm in some West African specimens, upper pair joined to form an obtuse bilobed lip. Standard greenish-white or yellowish, ovate to elliptic, 2.5–5 × 2.1–3.4 cm, more or less glabrous but sometimes with very sparse irritant bristles outside; wings and keel greenish-cream, sometimes with tinge of purple along the edges, 4–9 cm long, apex of the beak curved and horny; staminal tube sometimes crimson. Fruits when 1-seeded almost round, 5 cm long, 4 cm wide, but usually 2–5-seeded and 14–20 × 3.5–4 × 1.8 cm, not winged and probably indehiscent, densely covered with deciduous orange-brown or orange-red bristly very irritant hairs. Seeds purple or pale brown with dense dark brown mottling, irregularly elliptic-oblong, curved, much compressed, 25–26 × 15–20 × 8–9 mm; hilum 15–16 × 3 mm; aril little developed, black.

Var. *poggei* Verdc. in F.T.E.A., Leguminosae-Papilionoideae: 565, fig. 82/6 (1971).

*Mucuna rubro-aurantiaca* De Wild. in Fedde, Repert. 11: 540 (1913).—Bak.f., L.T.A.: 379 (1929). Type from Zaire.

Leaflets densely silvery-grey-hairy beneath. Corolla 6–9 cm long.

**Zambia.** N: Mbala Distr., Kalambo R., Sansia Falls, fl. 28.iii.1957, *Richards* 8929 (K). W: Mwinilunga Distr., Mundwiji R., on Kanyama Road, fl. 25.iii.1975, *Hooper & Townsend* 372 (K).

Also in Zaire, Uganda, Kenya, Tanzania and Angola. Riverine evergreen forest remnants (mushitu); 1020–1400 m.

Var. *pesa* (De Wild.) Verdc. in Kew Bull. 24: 287 (1970) and F.T.E.A., Leguminosae-Papilionoideae: 566 (1971). Type from Zaire.

*Mucuna pesa* De Wild. in Fedde, Repert. 13: 115 (1914).—Bak.f., L.T.A.: 381 (1929).—Hauman in F.C.B. 6: 133 (1954).

Leaflets densely grey-hairy beneath. Corolla  $\pm$  5 cm long.

**Zambia.** N: 4.8 km from Katibunga on Great North Road, fl. 30.iii.1961, *Angus* 2587 (FHO, K).

**Zimbabwe.** E: Nyanga, Nyamquarara Valley, fl. 6.iv.1962, *Wild* 5717 (K, SRGH).

**Malawi.** N: Nkhata Bay Distr., Chinteché Beach, Lakeshore Road, fr. 28.v.1972, *Pawek* 5402 (K). C: Chitedze, fl. 26.iv.1955, *Jackson* 1647 (K, SRGH). S: lower slopes of Zomba Plateau, Mponda Stream, fl. 26.iv.1980, *Brummitt et al.* 15556 (K).

**Mozambique.** N: Alto Molocué to Gurué, fl. 28.v.1937, *Torre* 1481 (LISC). T: Angonia, base of Mt. Dómue, *Torre & Paiva* 11608 (LISC). Z: Zambesiland, fl., *Kirk* (K). MS: Macequece, Zambusi R., fl. 29.v.1950, *Chase* 2263 (BM, K, SRGH).

Also in Zaire, Uganda<sup>1</sup> and Tanzania. *Brachystegia-Uapaca* woodland, edges of evergreen forest remnants, *Phragmites* grassland; 465–1680 m.

It is possible that some of the flowering specimens actually belong to *M. ferox* Verdc. It is essential that pods are collected from all populations and study made in the field for reliable floral distinctions. Both certainly occur in northern Malawi. The similarity between flowering specimens is disturbing and suspicious. There seems no doubt, however, that normal *M. poggei* has contorted indehiscent pods. Many are available from throughout the range. See also note after *M. pruriens*.

3. ***Mucuna ferox*** Verdc. in Kew Bull. 35: 745, figs. 1/J–L, 2 (1981). Type from Tanzania.

Liane with striate blackish stems densely covered with spreading pale hairs. Terminal leaflet ovate, 12  $\times$  11 cm, acuminate, rounded at base, the laterals oblique, 13  $\times$  10.5 cm, all adpressed hairy above with hairs not hiding the surface, beneath densely adpressed silvery-silky-velvety; petiole 5–13 cm long; rachis 1.7–2.5 cm long; stipules very soon deciduous, not seen; stipels linear, 5 mm long. Inflorescences  $\pm$  25 cm long, 50–100-flowered, densely adpressed silvery-hirsute, the fascicles sessile and several-flowered; peduncle 15–18 cm long. Calyx adpressed pubescent and with some golden-brown bristles; tube 8 mm long, 1.5–2 cm wide; lateral lobes narrowly triangular, 3  $\times$  2.5 mm, upper 2 lobes united into an emarginate lip 3  $\times$  8 mm; inferior lobe very narrow, 5  $\times$  3 mm. Corolla greenish-white; standard broadly elliptic,  $\pm$  4  $\times$  3 cm with claw 4  $\times$  5 mm; wings  $\pm$  oblanceolate, 5–5.7  $\times$  1.2–1.5 cm, rounded, claw 9 mm long with appendage 5  $\times$  3 mm; keel 4.8–5.2  $\times$  0.75 cm, curved at right angles near the apex, 1.6–2 cm long, the bent part strongly incrassate; claw 7–9 mm long. Pods  $\pm$  S-shaped when young, curved-oblanceolate when mature, 10–13  $\times$  2.1–2.4 cm, 3–4(–5)-seeded, longitudinally bicostate, very densely covered with golden-brown irritant setae. Seeds dark brown, compressed, ellipsoid, 13.5–15.5  $\times$  12–13.5  $\times$  3.5–4.5 mm, with hilum 4 mm long surrounded by a black aril.

<sup>1</sup> The record from Kenya in F.T.E.A. is erroneous.

**Zimbabwe.** E: Mutare Distr., Mukandi, John Meikle Forest Research Station, fl. & fr. vi.1944, *Barnes* 6/1964 (SRGH).

**Malawi.** N: Chitipa Distr., Mugese (Mughesse), fr. 12.x.1977, *Phillips* 2828 (K, MO).

**Mozambique.** Z: Mts. de Guruè, Rio Malema, Morope, 22 km from Guruè, fr. 1.viii.1979, *de Koning* 750 (LMU) (fruits only, no leaves so identity uncertain).

Also in Tanzania. Rain forest; 1560–1680 m.

*Grosvenor & Renz* 1222 (Chitipa, between Nthalire and Wanga, 1600 m, fl. 4.iv.1977) (K, SRGH) is flowering and almost certainly this taxon, as is *Pawek* 7031 (Misuku Hills, Mugese, 1680 m, fl. 6.vii.1973) (K, MO). *Pawek* 11507 (Nkhata Bay Distr., Viphya Plateau, 54 km S of Mzuzu on Mazamba road, fr. 5.viii.1976) (SRGH) is undoubtedly *M. ferox*. The difficulty of distinguishing flowering material from *Mucuna poggei* var. *pesa* has already been mentioned. The possibility of both occurring in the same area needs study in the field to find floral differences.

4. *Mucuna pruriens* (L.) DC., Prodr. 2: 405 (1825).—Bak. in F.T.A. 2: 187 (1871). —Bak.f., L.T.A.: 380 (1929). —Hauman in F.C.B. 6: 128, fig. 2/A–C (1954). —Hepper in F.W.T.A., ed. 2, 1: 561 (1958). —F. White, F.F.N.R.: 160 (1962). —Verdc. in F.T.E.A., Leguminosae-Papilionoideae: 566 (1971). Type from Indonesia (Amboina).

*Dolichos pruriens* L. in Stickman, Diss. Herb. Amb.: 23 (1754) & Syst. Nat., ed. 10: 1162 (1759).

*Stizolobium pruriens* (L.) Medic. in Vorles. Churpf. Phys. Ges. 2: 399 (1787).

Climbing herb 1–4.5(–6) m long, usually annual or a short-lived perennial but also stated to climb to the tops of tall trees. Stems densely hairy at first, later glabrous. Leaflets rather thin, obovate, elliptic, rhomboid or ovate, the laterals very oblique, 4.8–19 × 3.4–16.8 cm, acute or acuminate or rarely rounded at the apex, rounded at the base, sparsely to densely adpressed grey- or silvery-hairy on both surfaces, not blackening on drying; petiole 2–40 cm long; rhachis 1–5 cm long; petiolules 3–6 mm long. Inflorescences silvery-pubescent; rhachis 2–29 cm long; peduncle 2–18 cm long; flowers 2–3 per node, on pedicels 1.5–6 mm long; bracts 10–15 × 6 mm; bracteoles very deciduous, 10 × 2 mm. Calyx adpressed silvery-pubescent; tube 5–7 mm long; lobes 3–9 mm long, the lower linear-lanceolate to triangular, the upper pair joined to form a triangular lip. Standard blackish-purple to pale lilac or white, ovate, 1.7–2.2 × 1.4–1.5 cm, investing wings and not becoming erect; wings pale lilac to purple, 3–3.5 cm long; keel white, tinged mauve, 3.2–3.7 cm long, apical beak recurved and horny; staminal tube white. Pods oblong, often S-shaped, 4–9 × 1–1.5 cm (sometimes 2 cm in cultivated forms), densely covered with brown or reddish-orange irritant bristly hairs which sometimes appear black in the mass, longitudinally ribbed under the hairs; in some cultivated forms the pods are glabrescent or velvety-hairy but lack the bristles. Seeds pinkish-brown speckled black or almost entirely black (or white to black in cultivars), oblong-ellipsoid, compressed, 10–19 × 7.5–13 × 4–6.5 mm; hilum oblong, ± 4 mm long; rim-aril cream, somewhat wrinkled and with a scale-like extension.

**Var. pruriens** Verdc. in F.T.E.A., Leguminosae-Papilionoideae: 567, fig. 82/7 (1971).

Pods covered with irritant bristly hairs. Seeds 10–12 × 7.5–8 × 4–5 mm. Wild.

**Zambia.** B: Kabompo R. mouth, fr. 26.v.1954, *Gilges* 381 (K). N: near Kapeta, fr. 18.iv.1950, *Bullock* 2874 (K). W: Kitwe, forest nursery, seedling, 14.xii.1957, *Fanshawe*

4135 (K, NDO) (may not be from W?). C: N bank of R.Kafue, near Kafue Town, Iolanda, fl. 14.iii.1965, *Robinson* 6419 (K, SRGH). S: Gwembe, a few km N of Mambo's Village, fl. & fr. 28.iii.1952, *White* 2351 (FHO, K).

**Zimbabwe.** N: Gokwe-Binga road crossing, banks of Tare R., fl. 30.iii.1962, *Bingham* 208 (BM, K, LISC, SRGH). E: Chipinge Distr., Tanganda R., E of New Year's Gift Tea Plantations, fl. 17.v.1962, *Chase* 7735 (K, SRGH).

**Malawi.** N: Nkhata Bay, Chikele Beach, fl. 15.iv.1977, *Pawek* 12582 (K, MAL, MO, SRGH, UC). C: near Kasungu, Lisasadzi, fl. 9.iv.1955, *Jackson* 1625 (K, SRGH). S: Matope-Ntcheu road, between Senzani and Rivi-Rivi R., fr. 22.iv.1970, *Brunmitt* 10028 (K, SRGH).

**Mozambique.** N: Nampula, Campo Expt. CICA, fl. 12.iv.1961, *Balsinhas & Marrime* 381 (BM, K, LMA). Z: near Muemba, fl. 13.iii.1943, *Torre* 4938 (LISC). T: Boroma, Nkanya R., Msusa, fr. 27.vii.1950, *Chase* 2789 (BM, K, LISC, SRGH). MS: Bandula, fl. 30.iii.1952, *Chase* 4446 (BM, K, SRGH). GI: Inhambane, between Vilanculos and Buzi R., fl. 31.v.1941, *Torre* 2835A (LISC).

Throughout West and East Africa, Zaire, Ethiopia, Angola, Mauritius, Madagascar, Asia etc.; also tropical America. *Sterculia-Adansonia* woodland, edges of *Brachystegia* woodland, river banks and lake shores, pan margins, waste places, edges of cultivation, *Acacia* thicket; 200–1140 m.

**Var. utilis** (Wight) Burck in *Ann. Jard. Buitenzorg* 11: 187 (1893).—Verdc. in *F.T.E.A., Leguminosae-Papilionoideae*: 567 (1971) and *Man. New Guinea Legumes*: 451, fig. 104E (1979). Type not indicated, presumably from India.

*Mucuna utilis* Wight, *Icones* 1: t. 280 (1838).

*Mucuna taborensis* Schweinf. ex Piper in *Rhod. Agr. J.* 19: 386 (1922). Types from Ethiopia, Zimbabwe and South Africa, all cultivated.

Pods covered with fine velvety tomentum, glabrous, or with non-irritant black woolly hairs. Seeds 12–19 × 10–13 × 4.5–6.5 mm. Only known cultivated.

**Zambia.** Luangwa Valley, fr. 9.iv.1968, *Phiri* 145 & 145A (K). S: Mazabuka, Kanchombe Agricultural Station, fl. 18.iii.1960, *White* 7799 (FHO, K).

**Zimbabwe.** C: Harare Expt. Station, fr. 8.vi.1949, *Sturgeon* in GHS 23531 (K, SRGH).

**Malawi.** Material from Imperial Institute dated iv.1916 ("Lyon" bean).

**Mozambique.** N: Nampula, fr. 8.viii.1948, *Pedro & Pedrogão* 3207 (EA, LISC).

Doubtless velvet beans are widely cultivated in the area but few specimens have been seen. In the past these have been distributed among 8 or more so-called species of *Stizolobium*. These are essentially, I think, no more than cultivars and can be distinguished by reference to Piper and Tracey (*U.S. Dept. Agr. Bur. Pl. Industry Bull.* 179: 14–20 (1910)). The names *Mucuna deeringiana* (Bort) Small and *Mucuna cochinchinensis* (Lour.) Chev. have been used in our area and possibly several others as well. Piper (loc. cit.) mentions the name "Dedman bean" having been used in Zimbabwe; he gives enough information in the published letter to effect valid publication of the name *Mucuna taborensis*. There are some puzzling specimens from Zimbabwe E (e.g. Chipinge (Chipinga), road from Tanganda Halt to Sabi Experimental Station, fl. 23.iv.1965, *Corby* 1306 (K, SRGH); Pungwe R. Valley, high ridge above river SE of Inyangani, fr. 18.vii.1948, *Chase* 888 (K, SRGH)). The leaves are those of *M. pruriens* and the calyx is also very similar to typical *M.*

*pruriens*. The flowers, however, are wider, with the standard less adpressed, and the fruit is similar to that of *M. ferox*. The degree of dehiscence is not evident from the single specimen seen. The possibility of hybrids between *Mucuna pruriens* and *Mucuna poggei* var. *pesa* needs considering.

5. *Mucuna coriacea* Bak. in F.T.A. 2: 187 (1871). —Bak.f., L.T.A.: 380 (1929). —Brenan, T.T.C.L.: 433 (1949). —Verdc. in Kew Bull. 24: 291 (1970) and F.T.E.A., Leguminosae-Papilionoideae: 567 (1971). Types: Mozambique, Chupanga (Shupanga), Kirk and Malawi, Manganja Hills, Meller (K, syntypes).<sup>2</sup>

*Mucuna rhynchosoides* Taub. in Engl., Bot. Jahrb. 23: 194 (1896). Type: Mozambique, Zambezi (Sambese), Carvalho (B, holotype†).

Climbing or trailing herb or liane 3–4.5 m long. Stems densely to sparsely covered with adpressed or spreading ferruginous hairs. Leaflets usually rather thick, elliptic or obliquely ovate, 3.5–9(–11) × 3–7.5 cm, rounded or slightly emarginate and mucronulate at the apex, rounded or slightly subcordate at the base, velvety with adpressed whitish hairs or adpressed pubescent on both surfaces; petiole 1.5–7 cm long; rhachis 0.4–2 cm long; petiolules 4–5 mm long. Inflorescences 2–many-flowered; rhachis 0.3–14 cm long; peduncle 1.3–10 cm long; flowers 2–3 per node, on pedicels 4–10 mm long; bracts and bracteoles deciduous, 7–10 × 1–3 mm, acute. Calyx covered with adpressed bristly golden hairs or with a finer ferruginous pubescence; tube 5–7.5(–9) mm long; lobes narrowly triangular, 4–9(–12) mm long, the upper lip acute. Standard pale maroon to purple or black, rounded-ovate, 2.5–3.5 cm long and wide, glabrous; wings deep maroon, 3.5–4 cm long, with a zone of golden hairs on the outside; keel deep maroon, sometimes whitish below, 3–4.8 cm long, the beak horny, blackish or brownish. Pods oblong, curved, 5–7(–8) × 1–1.5 cm, densely covered with brownish bristles. Seeds pinkish brown or buff with darker brown mottling, elliptic-oblong, compressed, shiny, 8–9 × 7.5 × 3.5 mm; hilum short with black rim-aril and produced into a scale-like appendage.

Subsp. *coriacea* Verdc. in Kew Bull. 24: 291 (1970) and F.T.E.A., Leguminosae -Papilionoideae: 568, fig. 82/3 (1971).

Stems and leaflets with dense velvety indumentum mostly hiding the leaf-surface. Corolla-size mostly at lower end of range.

**Zambia.** E: Lunkwakwa/Chipata, sterile, 28.ix.1966, *Mutimushi* 1491 (K, NDO).

**Zimbabwe.** E: Chimanimani, Rusitu R., fl. 29.vi.1965, *Plowes* 2697 (K, SRGH) [see note].

**Malawi.** N: without locality, *Whyte* (K). C: Lilongwe, foot of Nkhoma Mt., fl. & y. fr. 24.vi.1970, *Brummitt* 11663 (K, SRGH). S: Mt. Chiradzulu, *Whyte* (K).

**Mozambique.** N: Unango, Lichinga, fr. v, vi & vii.1934, *Torre* 198 (BM, COI, K). Z: Quelimane, fl. 10.viii.1979, *Schäfer* 6982 (K, SGUM) (verging to subsp. *irritans*). MS: near Mazzaro, x.1858, *Kirk* (K). GI: Inhambane, Jangamo, fr. 30.vii.1981, *Marrime & Manhiça*

<sup>2</sup> Also a coloured drawing done by Kirk at Mazzaro, 29.v.1859, is attached to the Shupanga sheet; there is a long description on the back.



24 (LMA). M: Palmeira, towards Manhiça about 12 km from airfield, fl. 15.iv.1975, *Marques* 2730 (LMU).

Also in Tanzania. *Uapaca-Julbernardia* woodland, woodland with scattered trees, edges of coconut plantations; 70–1250 m.

Subsp. *irritans* (Burt Davy) Verdc. in Kew Bull. 24: 292 (1970) and F.T.E.A., Leguminosae-Papilionoideae: 568 (1971). —Linley & Baker, Fl. of the Veld, t. 12, fig. 28 (1972). —Plowes & Drummond, Wild Fl. Rhod., t. 84 (1976). —Tredgold & Biegel, Rhod. Wild Fl.: 29, t. 15/4 (1979). —Onderstall, Transvaal Lowveldt and Escarpment: 116, t. on 117 (1984). Type from South Africa (Transvaal).

*Mucuna irritans* Burt Davy, Man. Fl. Pl. & Ferns Transvaal 2: xxvii, 414 (1932).

*Mucuna coriacea* sensu Hauman in F.C.B. 6: 131 (1954), non Bak. sensu stricto.

Stems and leaflets with dense adpressed fulvous hairs not covering leaf-surface entirely and often appearing glabrous to the naked eye. Corolla-size mostly at upper end of range.

**Zimbabwe.** N: Darwin, Kandeya Communal Land, near Pachanza Store, fl. 7.iv.1965, *Bingham* 1438 (K, LISC, SRGH). C: Goromonzi Distr., Chinamora Communal Land, Ngomakurira, fl. 11.iv.1966, *Wild* 7569 (SRGH). E: Mutare, commonage, fl. 3.v.1953, *Chase* 4955 (BM, K, LISC, SRGH). S: Great Zimbabwe Ruins, fl. v.1920, *Mundy* 2799 (BM, K, SRGH).

**Malawi.** C: Dowa Distr., Kongwe Forest Reserve, bud 24.vi.1964, *Farrell* 453 (SRGH). S: Lower slopes of Zomba Plateau, Mponda Stream, fl. 26.iv.1980, *Brummitt et al.* 15557 (K).

**Mozambique.** N: Massangulo, fl. iv.1935, *Gomes e Sousa* 1404 (K). T: about 40 km from Zóbuê towards Ulongue Moatize, fl. 10.iii.1964, *Correia* 194 (LISC). Z: Lugela-Mocuba, Namagoa Estate, fl. & fr. viii.1946, *Faulkner* PRE 250 (BM, K, PRE). MS: 12.5 km N of Pungwe R. on road to Catandica, fr. 31.v.1935, *Gomes e Sousa* 1404 (K). GI: Inhambane, Massinga, road towards Rios das Pedras, about 4 km, fr. 7.vii.1981, *de Koning et al.* 8908 (LMU, SRGH) (intermediate LMU sheet very near var. *coriacea*). M: Manhiça, fl. & fr. 6.vi.1973, *Marques* 2404 (LMU) (intermediate).

Also in Zaire, Uganda, Tanzania, Swaziland and South Africa (Transvaal). Bushland, thicket, *Brachystegia-Uapaca* woodland, evergreen forest edges etc.; also *Pinus* and sisal plantations; 800–1200 m.

The two subspecies are not well separated and some parts of the distribution are anomalous, e.g. the occurrence of a specimen of undoubted subsp. *coriacea* at Chimanamani. Mostly the two are easily distinguishable save in Mozambique.

6. *Mucuna glabrialata* (Hauman) Verdc. in Kew Bull. 24: 289, fig. 2 (1970) and F.T.E.A., Leguminosae-Papilionoideae 568, fig. 82/4 (1971). Type from Zaire (Shaba).

*Mucuna coriacea* Bak. var. *glabrialata* Hauman in F.C.B. 6: 132 (1954), nomen, and in Bull. Jard. Bot. Brux. 25: 99 (1955).

*Mucuna* sp. 1 sensu F. White, F.F.N.R.: 160 (1962).

Robust climbing herb up to 3 m long. Stems glabrescent or sparsely covered with minute adpressed fulvous hairs, particularly at the nodes. Leaflets rather thick, drying blackish, ovate-rhomboid, the laterals distinctly oblique, 2.6–8.5 × 2–7.5 cm, broadly

rounded or slightly emarginate but mucronulate at the apex, rounded at the base, covered with minute adpressed fulvous hairs; petiole 2.5–18 cm long; rhachis 1–3 cm long; petiolules 2.5–6 mm long; stipules lanceolate or triangular, 4 × 1.5 mm. Inflorescences 5–15 cm long above a peduncle 2–9 cm long; flowers 3 per node, on pedicels 4–5 mm long; bracts deciduous, lanceolate, 10–11 × 4 mm, pilose with fulvous hairs; bracteoles similar, 7–9 × 1.5 mm. Calyx with adpressed fulvous hairs; tube 5 mm long, 1 cm wide; lobes triangular, 4.5–9 mm long. Standard almost black, rounded-ovate, 2.1–2.4 × 2–2.2 cm; wings deep blackish-red or almost black, 2.5–3.2 cm long, hairy only along lower margin at base but not on blade above; keel similarly coloured, 2.5–3 cm long, the tip horny. Pods oblong, elongate-sigmoid, 7–8 × 1.1–1.4 cm, very densely covered with pale yellowish-fulvous, irritant hairs. Seeds olive-brown to black, rounded in outline or oblong, compressed, 8–9.5 × 7–8 × 2.5–4.5 mm; hilum central, 3.5 mm long; rim-aril black.

**Zambia.** N: Mbala Distr., Mpulungu Road, about 8 km from Mpulungu, fl. 20.iv.1952, Richards 1613 (K). W: Kitwe, fl. & fr. 6.vi.1955, Fanshawe 2319 (EA, K, LISC, NDO, SRGH). C: Lusaka to Chipata, km 104, fl. 16.iv.1952, White 2689 (FHO, K). E: Lundazi Distr., 107.2 km N of Rumphu towards Chitipa, fl. & fr. 19.iv.1969, Pawek 2248 (K). S: Kafue National Park, Mumbwa–Kaoma road, 16 km E of Kafue Hook pontoon, fl. 12.vi.1964, Mitchell 25/74 (K).

**Malawi.** N: Mzimba Distr., Mbawa Expt. Station, fl. 6.iv.1955, Jackson 1600 (K, SRGH). S: Liwonde Distr., bud iii.1937, Clements 833 (FHO, K).

Also in Zaire and Tanzania. *Brachystegia-Uapaca* woodland, *Julbernardia* scrub, bushland; 900–1500 m.

7. *Mucuna stans* Welw. ex Bak. in F.T.A. 2: 187 (1871). —Harms in Pflanzenw. Afr. 3(1): 663, t. 309 (1915). —Bak.f., L.T.A.: 381 (1929). —Brenan, T.T.C.L.: 434 (1949) and in Mem. N.Y.Bot. Gard. 8: 409 (1954). —Hauman in F.C.B. 6: 127 (1954). —Hepper in F.W.T.A., ed. 2, 1: 561 (1958). —F.White, F.F.N.R.: 160 (1962). —Torre in C.F.A. 3: 251 (1966). —Verdc. in F.T.E.A., Leguminosae-Papilionoideae: 569, figs. 82/5, 83 (1971). Type from Angola.

*Mucuna erecta* Bak. in Kew Bull. 1895: 65 (1895). —Bak.f., L.T.A.: 381 (1929).

Type: Zambia, Lake Tanganyika, Fwambo, Carson 66 (K, holotype).

*Mucuna homblei* De Wild. in Fedde Rep. 11: 541 (1913). Type from Zaire (Shaba).

Small erect shrub or subshrub 0.9–2.4 m tall from a stout fibrous root-stock. Stems at first golden pubescent or with adpressed ferruginous hairs, later glabrous. Leaflets rather thick, ovate or elliptic, the laterals slightly oblique, 2–8.5 × 1.3–4 cm, obtuse or emarginate at the apex, ± rounded at the base, finely adpressed pubescent with greyish or ferruginous hairs above, more densely so beneath, the margin slightly crenate; petiole 1–6 cm long; rhachis 4–12 mm long; petiolules 3–4 mm long; stipules deciduous, lanceolate, 4 × 1 mm. Inflorescences 2–6 cm long above a peduncle 1.5–2 cm long, the latter often becoming thick and woody; flowers several per node, on pedicels 0.9–1.5 cm long; bracteoles linear-lanceolate, 10 × 3 mm. Calyx with dense adpressed golden or ferruginous pubescence; tube 4–5 mm long; lobes 4–8 mm long. Standard very dark purple or almost black, ovate, 2–2.5 × 1.6 cm; wings dark, 2.5–3 cm long, with adpressed golden pubescence outside; keel dark or white, 2.8–3.5 cm long, the tip horny; staminal tube white, tipped pale red or purplish. Pods oblong, 3.5–6.8 × 0.8–1.4 cm, very densely covered with blackish or golden somewhat irritant bristles. Seeds dark grey-brown, brown or red (fide Hauman), oblong-reniform or

rounded-oblong, 7–8.5 × 4–7 × 3–4 mm; hilum central, 3 mm long; rim-aril black (or white, fide Hauman).

**Zambia.** N: Lunzua Agric. Expt. Station, fl. 1.iii.1950, *Bullock* 2593 (BM, K, SRGH). W: Mwinilunga Distr., Kalenda Ridge, W of Matonchi Farm, fl. 14.ii.1938, *Milne-Redhead* 4561 (BM, K). C: 35.2 km NE of Serenje Corner, 16.vii.1930, *Hutchinson & Gillett* 3722 (BM, K) (woolly variant).

**Malawi.** N: Chitipa Distr., Chisenga, lower slopes of Mafinga Mts., foothills just above village, fl. 12.vii.1970, *Brummitt* 12030 (K, SRGH). C: Nkhotakota Distr., Ntchisi, fl. 1.viii.1946, *Brass* 17079 (BM, K, NY, SRGH).

**Mozambique.** N: Lichinga, fl. ix.1934, *Torre* 255 (BM, COI).

Also in Nigeria, Cameroun, Central African Republic, Zaire, Burundi, Rwanda, Uganda, Kenya, Tanzania and Angola. *Brachystegia* and *Brachystegia-Uapaca-Protea* woodland, mostly in grassy places e.g. *Hyparrhenia* associations; 1290–1800 m.

A distinctive variant with woolly indumentum on the leaves is not infrequent. Apart from the specimen cited above the following have been seen: *Evans* 2965 (between Kasama and Mbala) (K, SRGH), *Clayphan* 6 (Kasama) (K), *Greenway* 8378 (Mbala–Tunduma road) (EA, K), *Fanshawe* 2474 (Mpika) (K) and *Greenway & Trapnell* 5579 (E of Chisoso) (EA, K). It also occurs in Angola. This might be worth a varietal name.

*Accepted for publication September 1988.*