

Taxonomic studies in the *Mucuna poggei* complex (Leguminosae: Papilionoideae)

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Summary. The *Mucuna poggei* complex currently comprises four taxa: *M. poggei* var. *pesa* and *M. poggei* var. *glabrescens* have dehiscent fruits, whilst those of *M. poggei* var. *occidentalis* and *M. poggei* var. *poggei* are indehiscent. We propose here to re-establish the names *M. pesa* (= *M. poggei* var. *pesa*) and *M. pesa* var. *glabrescens* (= *M. poggei* var. *glabrescens*) for the two taxa under consideration with dehiscent fruits. Furthermore, although *M. poggei* var. *poggei* and *M. poggei* var. *occidentalis* have indehiscent fruits, we note that the two taxa show enough morphological differentiation to be considered as separate species. Therefore we propose a new combination, *Mucuna occidentalis*, for the taxon previously known as *M. poggei* var. *occidentalis*. Full taxonomic accounts and an identification key to the four taxa are presented.

Key Words. Africa, Fabaceae, new combination, Paleotropics, taxonomy.

Introduction

The species of *Mucuna* are recognised by a combination of their usually lianescent habit, unarmed stems, trifoliolate leaves, stipules not extended below their point of attachment, calyx campanulate, corolla with the standard petal usually much shorter than the keel petals and the keel prominently beaked and usually hardened and thickened at the apex, stamens 10, diadelphous (9+1), anthers usually dimorphic, with five larger and basifixed and five smaller and versatile or dorsifixed, pods usually covered with bristly irritant trichomes, and the seeds either large, globose with the hilum circling a significant part of the seed circumference in *Mucuna* subg. *Mucuna*, or reniform or discoid with a short hilum that does not encircle the seed circumference in *Mucuna* subg. *Stizolobium*.

Fruits and seeds of *Mucuna* are taxonomically very informative. The wide morphological variation in the fruits provides the most important characters to differentiate the two subgenera of *Mucuna* as well as to distinguish the species. In some taxa the pod surface is ornamented by lamellae that can be transversal, longitudinal or reticulate, in other species the surface is ridged; some taxa have lignified wings along the fruit margins whilst in others these are absent; the fruits can be either stipitate or sessile and are often constricted between the seeds. Most of the

taxa have dehiscent fruits, only two species have indehiscent fruits.

The African *Mucuna poggei* complex (included in *Mucuna* subg. *Stizolobium*) is represented by four taxa, two with indehiscent and two with dehiscent fruits. *M. poggei* Taub. was described by Taubert (1896), and is characterised mainly by the pale coloured flowers, indehiscent fruits and long, adpressed hairs on the abaxial surface of the leaflets. Hepper (1956) described a new variety, *M. poggei* var. *occidentalis* Hepper, which is similar to the typical variety both in its indehiscent fruit and pale coloured flowers, but the length of the stipels, the shape of the basifixed anthers and the indumentum on the abaxial surface of the leaflets are substantially different; in addition, the geographical ranges overlap very little between these two taxa. Verdcourt (1970) presented two new varieties: *M. poggei* var. *pesa* (De Wild.) Verdc. (= *M. pesa* De Wild.) and *M. poggei* var. *glabrescens* (Hauman) Verdc. (= *M. pesa* var. *glabrescens* Hauman). The fruits of both of Verdcourt's varieties are dehiscent and the only superficial similarities of the two taxa to *M. poggei* var. *poggei* are in the indumentum on the abaxial surface of the leaflets and the colour of the corolla.

Contrary to Verdcourt (1970), we here propose to re-establish the name *Mucuna pesa* De Wild. and its variety *M. pesa* var. *glabrescens* Hauman. We also

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propose a new combination *M. occidentalis* for the name *M. poggei* var. *occidentalis*, since this taxon is sufficiently distinct morphologically from *M. poggei* var. *poggei* to be considered a separate species. This study is part of the

first author's ongoing monographic studies of *Mucuna* (Moura 2013; Moura *et al.* 2012a, b; 2013a, b, c, d, e; 2014a, b; Zamora & Moura 2014). A key to the four taxa treated in this account is presented below.

Key to the identification of the *Mucuna poggei* species complex

1. Flowers up to 5.5 cm long, fruits dehiscent, hilum of the seeds up to 5 mm long
 2. Abaxial surface of the leaflets with dense hairs (the reticulate tertiary venation completely obscured by the indumentum) 1a. **M. pesa** var. **pesa**
 2. Abaxial surface of the leaflets with sparse hairs (the reticulate tertiary venation clearly visible with a ×10 lens) 1b. **M. pesa** var. **glabrescens**
1. Flowers 6 cm long or longer, fruits indehiscent, hilum of the seeds 10 mm long or longer
 3. Abaxial surface of the leaflets with dense, long hairs, stipels 5 – 6 mm long, the basifixed anthers oblong 3. **M. poggei**
 3. Abaxial surface of the leaflets with sparse, short hairs, stipels 1 – 4 mm long, the basifixed anthers deltoid 2. **M. occidentalis**

1. **Mucuna pesa** De Wild. (De Wildeman 1914: 115). Type: Democratic Republic of Congo. Katanga: Vallée de Kapiri, Feb. 1913, *Homble* 1162 (lectotype BR! [894584], designated here; isolectotypes BR! [894514, 894554]).

1a. var. *pesa*

Mucuna poggei var. *pesa* (De Wild.) Verdc. (Verdcourt 1970: 287) **synon. nov.**

Lianas with sericeous stems. *Leaves* alternate, 3-foliolate; stipules persistent; petiole 13 – 20 cm long, rachis 3 – 4 cm long; stipels persistent, 7 – 8 mm long, linear; petiolules c. 5 mm long; leaflets obovate to elliptic, the apical leaflet 8 – 15 × 9 – 12 cm, lateral leaflets 10 – 15 × 8 – 11 cm and asymmetrical, obtuse or rounded at base, acute to apiculate at apex, with dense, adpressed hairs on the abaxial surface. *Inflorescence* a pseudoraceme; peduncle 7 – 16 cm long; rachis 23 – 34 cm long; bracts caducous; pedicels c. 5 mm long, 3 flowers per fleshy node. *Flowers* 4 – 5 cm long. *Calyx* sericeous, campanulate, with appressed, c. 1 cm long hairs on outer and inner surfaces; lobes 4, the adaxial one formed by two connate sepals, all of them discrete, c. 1 mm long. *Corolla* white (*A. Angus* 2587, K), cream (*R. D. Barnes* s.n., K), yellowish green (*A. Mouaily* 553, K) or green (*J. Pawek* 5160, K); standard 3 – 3.5 × 2 cm, oblong with a rounded apex and sagittate base, the claw c. 4 mm long, glabrous; wing petals 4 – 4.5 × 1 – 1.5 cm, oblong, basally attenuate, apically rounded, pubescent at base, the claw c. 5 mm long; keel petals 4 – 4.5 × 1 cm, oblong, attenuate at base, acute at apex, pubescent at base, the claw c. 5 – 7 mm long. *Stamens* 10, diadelphous, with nine stamens fused, one free; filaments c. 4 cm long, glabrous; anthers dimorphic, five of them 2 mm long, oblong, basifixed, the other five 1 mm long, globose, dorsifixed. *Gynoecium* c. 4 cm long; ovary

sessile, oblong, 10 × 2 mm, densely sericeous; style 3 cm long, densely sericeous, glabrescent at apex, the stigma peltate. *Fruit* dehiscent, c. 10 × 2 cm, 3 – 5-seeded; *seeds* discoid, 1.5 × 1.5 cm, dark brown; hilum 3 – 5 mm long. Fig. 1A – L.

DISTRIBUTION. *Mucuna pesa* occurs in Ethiopia, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe (Map 1).

SPECIMENS EXAMINED. ETHIOPIA. Nov. 1908 – 1909 (fl.), *Brockman*, D. 210 (K), *Brockman*, D. 221 (K). **Gemu-Goffa.** Jinka, 6 Nov. 1974 (fl.), *Fukui* 767 (K). **Kaffa.** 1 km SW of Sudan, 31 Dec. 1961 (fr.), *Meyer*, F. G. 7867 (K). **MALAWI.** 1981, *Buchanan*, J. 1066 (K). **Blantyre.** 2 March 1971 (fl.), *Mouaily*, A. 553 (K). **Chitipa.** Misuko hills, 6 July 1973 (fl.), *Pawek*, J. 7031 (K); between N Thalive and Wennga, 14 March 1977 (fl.), *Grosvenor*, R. & *Renz*, J. 1222 (K). **Mangochi.** Nyambi, 26 April 1955 (fl.), *Jackson*, G. 1647 (K). **Mulanje.** Southern region, 16 April 1970 (fl.), *Brummitt*, R. K. & *Banda*, E. A. 9899 (K). Lichenya Path, 3 May 1989 (fl.), *Smith*, R. *et al.* 5836 (K). **Rumphu.** Northern Province, 22 April 1972 (fl.), *Pawek*, J. 5160 (K). **Zomba.** 6 March 1984 (fl.), *Kaunda*, K. & *Balaka*, J. L. 6 (K). Southern region, 26 April 1980 (fl.), *Brummitt*, R. K. *et al.* 15556 (K). **MOZAMBIQUE. Manica.** Macequece, 29 May 1950 (fl.), *Chase*, N. C. 2263 (K). **TANZANIA. Iringa.** 50 ml NE of Iringa, 8 March 1962 (fl.), *Polhill*, R. & *Paulo*, S. 1686A (K). **Morogoro.** Kasanga Forest Reserve, 1 Aug. 2000 (fl.), *Mhoro*, B. 208 (K). **Rungwe.** Tukuyu, Kiwera river bridge, Tukuyu-Chimola road, 10 July 1947 (fl.), *Greenway*, P. J. & *Hoyle*, E. A. 8332 (K). **Ulanga.** May, 1960 (fr.), *Haerdi*, F. 383 (K). **ZAMBIA. Mpika.** Katibunga, 30 March 1961 (fl.), *Angus*, A. 2587 (K). **ZIMBABWE. Mutare** (Umtali), June 1964 (fl.), *Barnes*, R. D. s.n. (K). **Nyanga** (Inyanga). 7 May 1965 (fr.), *Corby*, H.

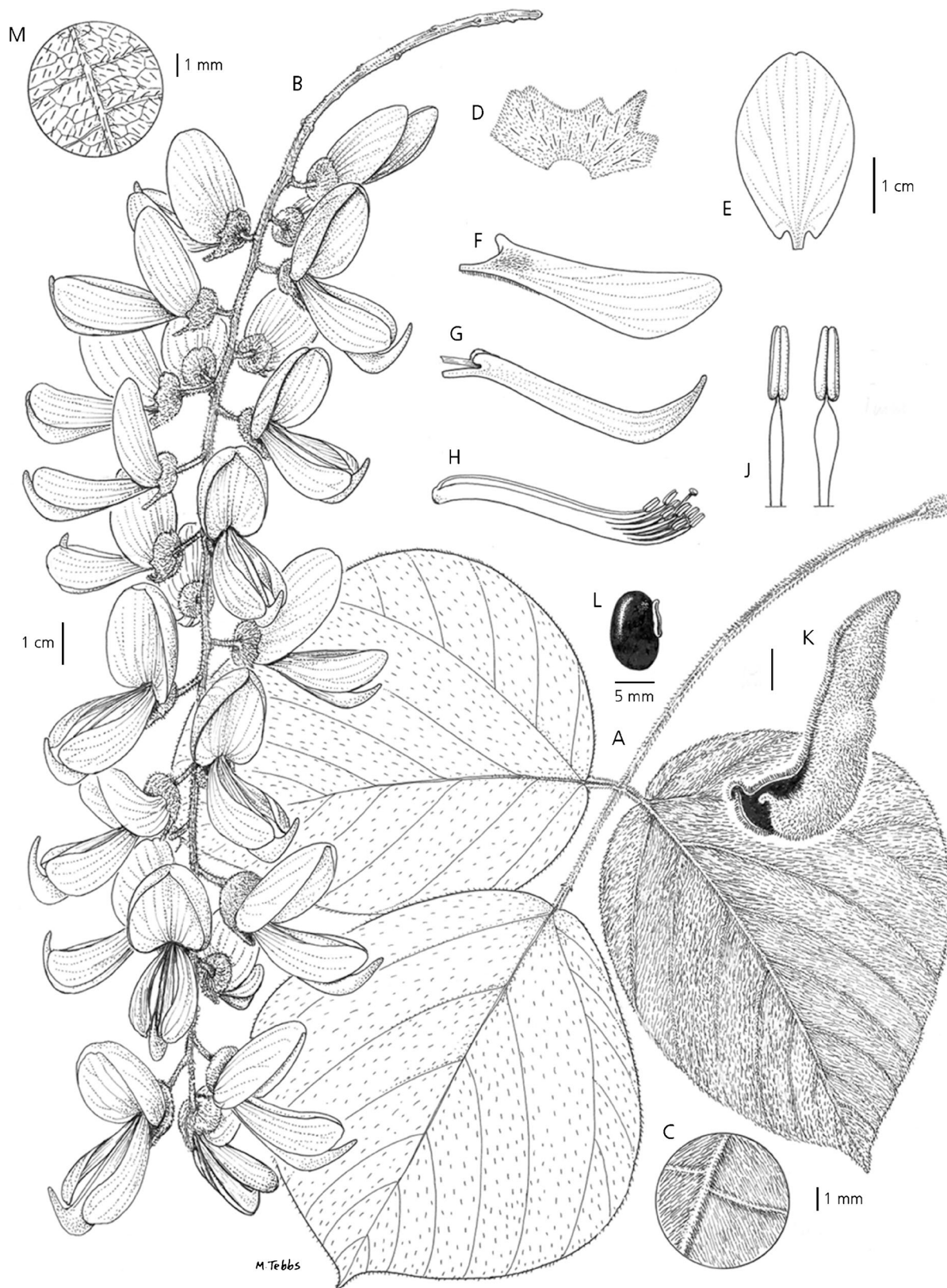
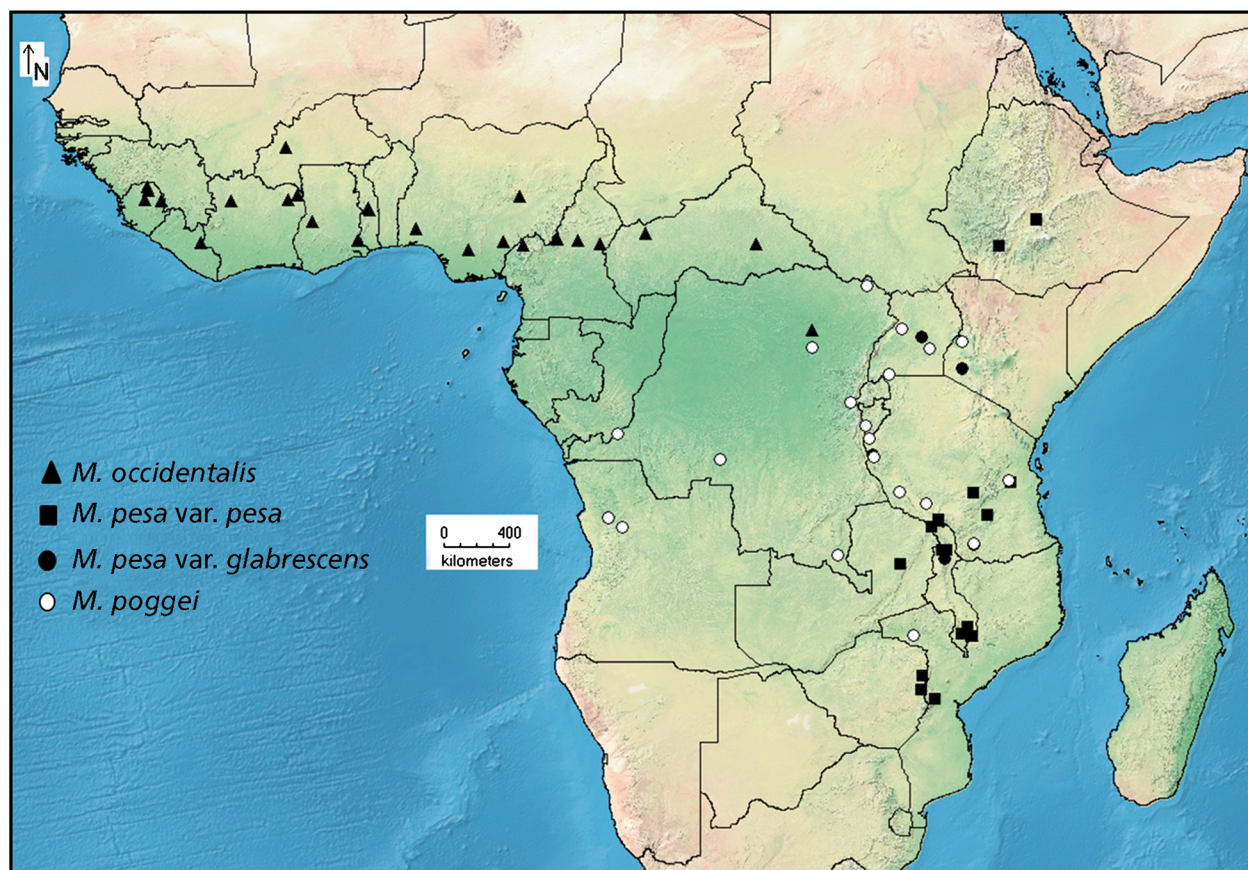


Fig. 1. *Mucuna pesa*. A – L var. *pesa*: A leaf; B inflorescence; C indumentum on the abaxial surface of the leaflets; D calyx opened out; E standard; F wing petal; G keel petals; H androecium (9+1) with style apex and stigma exserted; J anthers; K fruit; L seed. M var. *glabrescens*, detail of the hairs on the abaxial surface of the leaflets. A – J from *Brummitt et al.* 15556 (K); K & L from *Haerdi* 383/0 (K); M from *Haerdi* 5/60 (K). DRAWN BY MARGARET TEBBS.



Map 1. Geographical distribution of the *Mucuna poggei* species complex.

D. L. 1326 (K); 19 April 1957 (fl.), *Chase, N. C.* 6450 (K); Honde Valley, 17 April 1958 (fl.), *Phipps* 1117 (K); Nyumgharara valley, 6 April 1962 (fl.), *Wild, H.* 5717 (K).

HABITAT. The species is reported to grow in rain forest, close to rivers and along margins of evergreen forest.

NOTES. *Mucuna pesa* is similar to *M. poggei* in the type of indumentum on the abaxial surface of the leaflets and the colour of the corolla, but otherwise the two species differ in a number of characters, e.g. the dehiscent fruit of *M. pesa* versus the indehiscent one of *M. poggei*; flower length 4–5 cm long in *M. pesa* and 7.5–8.5 cm long in *M. poggei*. The corollas of both species have been described as pale coloured (white, cream, creamish green, yellowish green, green or greenish yellow). Map 1 shows an apparent geographic disjunction in the distribution of *M. pesa* var. *pesa* between Ethiopia and a group of countries further south, although the distribution gap is filled by the presence of *M. pesa* var. *glabrescens*. Further field study of this link between flower colour and geographical distribution is desirable before deciding if the Ethiopian populations might be recognised as a separate taxon.

Three specimens of *Homblé* 1162 were located in the Meise Herbarium (BR). Two of these, both with

leaves and flowers, have hand written labels (sheets BR 894584 and BR 894552), while the third (sheet BR 894519) only has a general herbarium label attached. Specimen BR 894584 has more flowers and leaflets than BR 894552 and is thus the most informative of the three *Homblé* specimens. We consequently designate BR 894584 as the lectotype of *Mucuna pesa* De Wild. Although Verdcourt (1970) cited *Homblé* 1162 at BR as the holotype of *M. pesa* he did not state which of the three BR specimens was considered to be the holotype, nor did he add a holotype label to any of the three specimens.

1b. ***Mucuna pesa* var. *glabrescens* Hauman (1955: 99).** Type: Democratic Republic of the Congo, Parc National de l'Upemba, Mt Kia to Lake Upemba, *van Meel* in *de Witte* 5704 (holotype BR!).
Mucuna poggei var. *glabrescens* (Hauman) Verdc. (Verdcourt 1970: 288). **syn. nov.**

Lianas with stems sparsely sericeous. *Leaves* alternate, 3-foliolate; stipules persistent; petiole 11–15 cm long, rachis 2–3 cm long; stipules linear, c. 7 mm long, persistent; petiolules c. 5 mm long; the apical leaflet

broadly elliptic, 10 – 13 × 10 – 14.5 cm, obtuse or rounded at base, acute at apex, the lateral leaflets asymmetrical, 11 – 13 × 11 – 12 cm, rounded or truncate at the base, cuspidate at apex, the hairs appressed and sparse on the abaxial surface. *Inflorescence* a pseudoraceme; peduncle 5 – 15 cm long; rachis 15 – 30 cm long; bracts caducous; pedicels c. 5 mm long, 3 flowers per fleshy node. *Flowers* 5 – 5.5 cm long. *Calyx* sericeous, campanulate, with appressed hairs 1.5 – 2 cm long on outer and inner surfaces; lobes 4, the adaxial one formed by two connate sepals, 2 – 5 mm long, the abaxial one 3 – 10 mm long, the other two lobes 1 – 5 mm long. *Corolla* creamish green (*J. Pawek* 1850, K) or pale greenish yellow (*A. A. Bullock* 3747, K); standard petal 3.5 × 2.5 cm, broadly elliptic with a rounded apex and sagittate base, the claw c. 2 – 3 mm long, glabrous; wing petals 4.5 – 5.5 × 1 – 1.5 cm, oblong, basally attenuate, apically rounded, pubescent at base, the claw c. 7 mm long; keel petals 5 – 5.5 × 1 – 1.5 cm, oblong, attenuate at base, acute at apex, pubescent at base, the claw c. 8 mm long. *Stamens* 10, diadelphous, with nine stamens fused, one free; filaments 5 cm long, glabrous; anthers dimorphic, either oblong, 3 mm long, basifixed, or discoid, 1 mm long, dorsifixed. *Gynoecium* 5 – 5.5 cm long; ovary sessile, oblong, 7 – 9 × 1 – 2 mm, densely sericeous; style 4.5 – 5 cm long, densely sericeous, glabrescent at apex, the stigma peltate. *Fruit* dehiscent, c. 10 × 2 cm, 3 – 5-seeded; seeds discoid, 1.5 × 1.5 cm, dark brown; hilum 3 mm long. Fig. 1M.

DISTRIBUTION. *Mucuna pesa* var. *glabrescens* occurs in Kenya, Malawi, Tanzania and Uganda (Map 1).

SPECIMENS EXAMINED. KENYA. Manga, near Kwirowi, May 1960 (fl.), *Haerdi*, F. 534 (K). **MALAWI.** 30 miles SW of Mzuzu, 15 March 1969 (fl.), *Pawek*, J. 1850 (K).

TANZANIA. Mahenge. Sali c. 35 km sudlich Station Mahenge, 30 May 1932 (fl.), *Schlieben*, H. J. 2246 (K).

Buha. 22 Nov. 1962 (fl.), *Verdcourt*, B. 3414A (K).

Mbeya. Igali, 24 March 1932 (fl.), *Thompson* 1041 (K).

Ufipa (Sumbawanga). Namwele-Kisungu, 4 March 1951 (fl.), *Bullock*, A. A. 3747 (K); River near Mukamba village, 11 Feb. 1965 (fl.), *Richards*, M. 19648 (K).

UGANDA. 2 Sept. 1972 (fl.), *Synudt*, T. S. 1246 (K).

HABITAT. The taxon is recorded from savanna and close to rivers although more specimens are needed to provide detailed information about its habitat preference.

NOTES. *Mucuna pesa* var. *glabrescens* is morphologically similar to *M. pesa* var. *pesa*. The two taxa differ mainly in the sparse hairs on the abaxial surface of the leaflets in *M. pesa* var. *glabrescens* versus the dense hairs on the typical variety. In addition, the abaxial calyx lobe in *M. pesa* var. *glabrescens* is usually longer than in *M. pesa* var. *pesa*. We follow *Hauman* (1955) and *Verdcourt* (1970), in considering the two taxa to be morphologically related but recognisably separate.

2. ***Mucuna occidentalis* (Hepper) T. M. Moura & G. P. Lewis comb. nov.**

<http://www.ipni.org/urn:lsid:ipni.org:names:77142850-1>
 Basionym: *Mucuna poggei* var. *occidentalis* Hepper, *Kew Bull.* 11: 127 – 128, f. 6 (1956). Type: Sierra Leone, Musaia, abundant around Kabala, fl., Sept. 1951, *Deighton* 5600 (holotype K!; isotype BR!).

Lianas with short hairs on the stems. *Leaves* alternate, 3-foliolate; stipules caducous; petiole 7.5 – 20 cm long, rachis 2 – 3 cm long; stipels linear, 1 – 4 mm long, persistent; petiolules 7 – 10 mm long; the apical leaflet obovate to elliptic, 7 – 15.5 × 7.5 – 11 cm, obtuse to rounded at base, acute at apex, the lateral leaflets asymmetrical, 10.5 – 16.5 × 8 – 15 cm, obtuse, rounded or slightly subcordate at base (some sinuose along the proximal margin of the base), acute to acuminate at apex, the hairs short and sparse on the abaxial surface of the leaflets. *Inflorescence* a pseudoraceme; peduncle 3 – 12 cm long; rachis 14 – 30 cm long; bracts caducous; pedicels c. 1 cm long, 3 flowers per fleshy node. *Flowers* 6 – 8 cm long. *Calyx* brownish (*R. A. A. Oldeman* 284, K) or greenish brown, reddish brown hairy, with irritating hairs (*W. J. J. O. de Wilde* 789, K), sericeous, campanulate, with appressed hairs 1.9 – 2.5 cm long on outer and inner surfaces; lobes 4, the adaxial one formed by two connate sepals, the abaxial one 7 – 12 mm long, the other two lobes 4 – 5 mm long. *Corolla* white (*R. A. A. Oldeman*, 284 K), whitish, tinged greenish (*W. J. J. O. de Wilde* 789, K) or cream-coloured, slightly tinged green in parts, often with irregular blue-black margins (*F. C. Deighton* 5600, K); standard 4.2 – 4.5 × 3 – 3.7 cm, broadly elliptic to obovate, rounded at apex and sagittate at base, the claw c. 3 – 4 mm long, glabrous; wing petals 6 – 7.5 × 1.5 – 3 cm, oblong to obovate, basally attenuate, apically rounded to obtuse, pubescent at base, the claw c. 4 – 6 mm long; keel petals 6 – 7.5 × 1.5 – 2 cm, oblong, attenuate at base, acute to obtuse at apex, pubescent at base, the claw 6 – 8 mm long. *Stamens* 10, diadelphous, with nine stamens fused, one free; filaments 4.5 – 7 cm long, glabrous; anthers dimorphic, five of them deltoid, 3 mm long, basifixed, the other five globose, 2 mm long, dorsifixed. *Gynoecium* 6 – 7.5 cm long; ovary sessile, oblong, c. 3 × 1 mm, densely sericeous; style 5 – 6.5 cm long, densely sericeous, glabrescent at apex, the stigma peltate. *Fruit* indehiscent, oblong, the surface covered by reddish irritating hairs. *Seeds* circular, and laterally compressed, 1.5 × 1.7 cm, dark brown, hilum brown, 12 mm long. Fig. 2A – M.

DISTRIBUTION. *Mucuna occidentalis* occurs mainly in the West of the African Continent in: Burkina Faso, Ghana, Camerouns, Central African Republic, Togo, Democratic Republic of Congo, Ivory Coast, Liberia, Nigeria and Sierra Leone (Map 1).

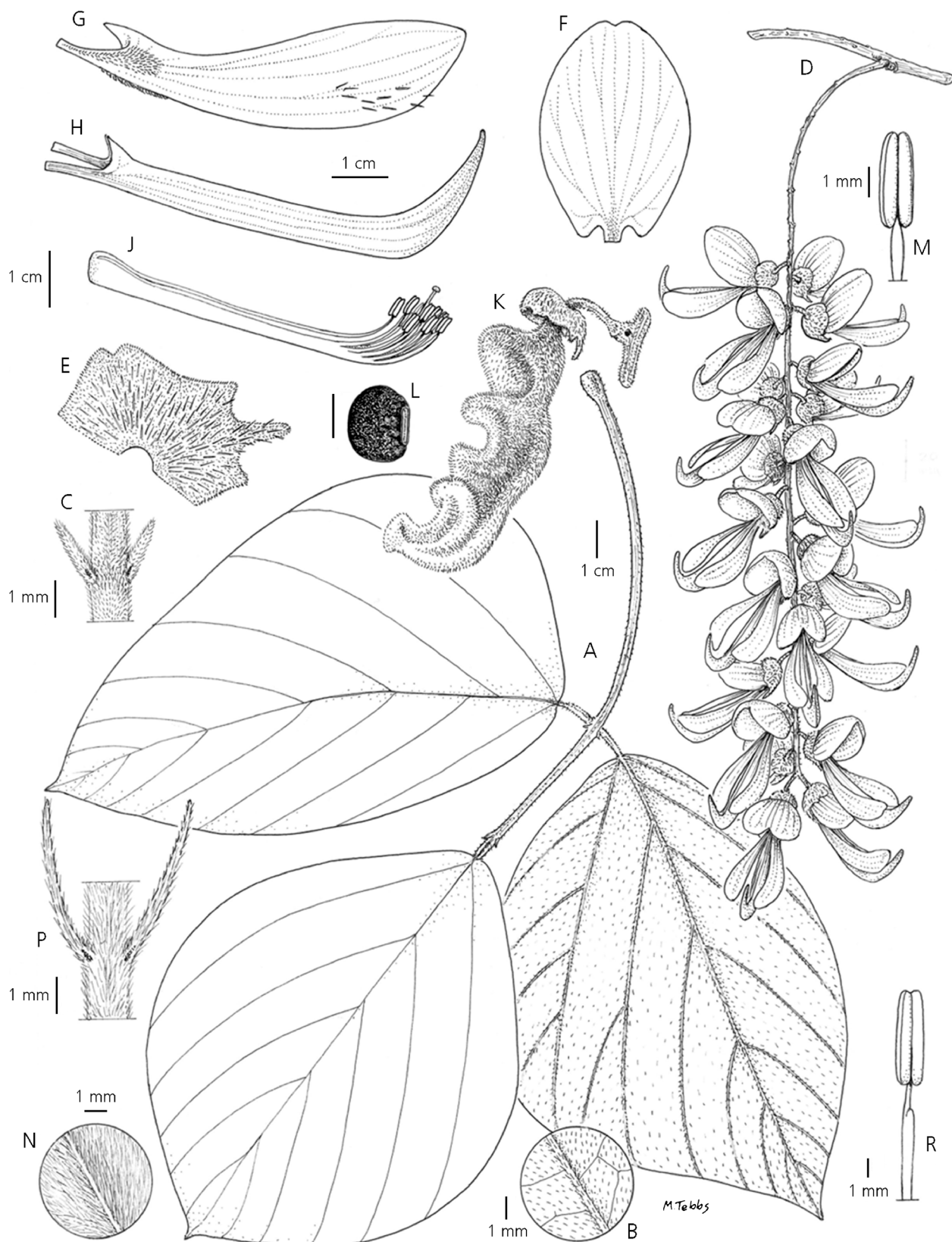


Fig. 2. A – M *Mucuna occidentalis*: A leaf; B detail of the hairs on the abaxial surface of the leaflets; C stipels; D inflorescence; E calyx opened out; F standard; G wing petal; H keel petals; J androecium (9+1) and apex of gynoecium; K fruit; L seed; M anther. N – R *Mucuna poggei*: N detail of the hairs on the abaxial surface of the leaflets; P stipels; R anther. A & B from Oldeman 386 (K); C, E, J & M from Gillett 66 (K); D from Ademes 490 (K); K & L from Feika 45 (K); N & R from Lewalle 6496 (K); P from Lewalle 1578 (K). DRAWN BY MARGARET TEBBS.

SPECIMENS EXAMINED. BURKINA FASO. Comoé. Tourny-Dounaa road, at 7 km S of Douna, 4 Feb. 2002 (fr.), *Sanou, L. & Traore, O.* 62 (K). **CAMEROON. Mildbraed** 10076 (K); 21 July 1975, *Letouzey, R.* 14055 (K). 15 July 1966 (fl.), *Letouzey, R.* 7397 (K). **Adamawa.** 10 km S of Ngaoundre: Tributary of R. Vina, 23 Oct. 1960, *Breteler, F. J.* 557 (K); Banyo. 19 Aug. 1955 (fl.), *Saxer, A.* 334 (K); Meiganga. Valley du Ngou, 15 Sept. 1967 (fl.), *Jacques-Feliz, H.* 8119 (K). **Benakuma.** 5 Aug. 1975 (fl.), *Letouzey, R.* 14184 (K). **CENTRAL AFRICAN REPUBLIC. Ouham-Pende.** Boguila, 1982–1983 (fl.), *Fay, J. M. et al.* 4689 (K). **Haute-Kotto.** Yalinga, Oubangui, 1923–1924 (fl.), *Le Testu, G.* 3165 (K). **DEMOCRATIC REPUBLIC OF CONGO. Orientale.** Parc Natural Albert, Oct. 1954 (fl.), *de Witte* 11030 (K). **GHANA. Brong Ahafo.** Wenchi, 1961 (fl.), *Irvine, F. R.* 4767 (K). **Volta.** Matse. Kabakaba hills, 12 Nov. 1957, *Enti, A. A.* 590 (K). **IVORY COAST. Tehini.** Bouna National Park, 21 Aug. 1963 (fl.), *Oldeman, R. A. A.* 284 (K); N side of Park Nationale de Bouna, c. 40 km E of Ouangofetini, 25 Aug. 1963 (fl.), *Wilde W. J. J. O.* 789 (K). **Valle Du Bandama.** Brobo, c. 25 km ENE of Bouake, 24 Sept. 1963 (fr.), *Oldeman, R. A. A.* 386 (K). **LIBERIA. Yekepa.** 5 Sept. 1964 (fl.), *Adames, P.* 490 (K). **NIGERIA. Akuri-Onitsha Road,** 6 Sept. 1957 (fl.), *Stubbings, H. G.* 28 (K). **Ibadan.** 18 Aug. 1962 (fl.), *Stanfield, D. P.* 45603 (K). **Jos Plateau.** 1946 (fl.), *Batten-Poole, W. H.* 191 (K); 16 Oct. 1957, *Hepper, F. N.* 1039 (K); 1922 (fl.), *Dent Young, J.* 67 (K). **Lapai Emirate.** 18 Aug. 1956 (fl.), *Onoiche, C. F. A.* 35404 (K). **Maigemu.** S of Joro, 23 Aug. 1962 (fl.), *Lawlor, D. W. & Hall, J. B.* 346 (K). **Ogoja.** 1953 (fl.), *Rosevear, D. R.* 71/29 (K); Botum Obudu, 29 Aug. 1955 (fl.), *Stone, R. H.* 57 (K). **Onitsha.** Udi, 24 Sept. 1953 (fl.), *Onoiche, C. F. A.* 34102 (K). **SIERRA LEONE. Bumburra.** 1914 (fl.), *Thomas, N. W.* 3317 (K). **Koinadugu.** Falaba, 28 Sept. 1951 (fl.), *Small, D.* 310 (K). Kabala, 1914 (fl.), *Thomas, N. W.* 2218 (K). **Musaia.** Aug. 1951 (fl./fr.), *Deighton, F. C.* 5580 (K). **Tingi Montains.** 15 April 1964, *Morton & Gledhill* 1974 (K). **Tonkolili.** 29 Nov. 2009, *Feika, A. M. B. et al.* 45 (K). **TOGO.** 7 Aug. 1935 (fl.), *Gillett, D.* 66 (K); 9 Aug. 1979 (fl.), *Scholz, U. et al.* 457 (K); 18 Dec. 1977, *Ern, H.* 2742 (K); 20 Sept. 1976, *Ern, H. et al.* 962 (K).

HABITAT. This species is reported from gallery forest, along river banks, in seasonally inundated grassland and savanna.

NOTES. *Mucuna occidentalis* differs from *M. poggei* mainly in the short sparse hairs on the abaxial surface of the leaflets in *M. occidentalis* vs the long dense hairs in *M. poggei*; in the 1–4 mm long stipels in *M. occidentalis* vs 5–6 mm long in *M. poggei*; the 7–12 mm long abaxial calyx lobe in *M. occidentalis* vs c. 5 mm long in *M. poggei*; and the deltoid basifixed anthers in *M. occidentalis* vs oblong in *M. poggei*. Although the two taxa are morphologically similar in fruit characters, we consider *M. occidentalis* a distinct species based on the differences listed above. In addition, the two taxa only overlap in geographical distribution in the Democratic Republic of Congo — *M. occidentalis* occurs in the west of the African

Continent (Sierra Leone to the north of the Democratic Republic of Congo), whilst *M. poggei* occurs mainly in the east and southeast.

Two type specimens together with a carpological box (*Deighton* 5600) are housed in herbarium K. The two type sheets have Kew barcode numbers K 263326 and K 263327. One of these (K 263327) consists of branches and inflorescence rachises without any leaf or flower, while the other (K 263326) comprises two small packets, one containing flowers and the other leaflets, petioles and petiolules but no stems or inflorescence rachises. It is clear that the packets on sheet K 263326 contain plant fragments fallen from sheet K 263327. The fruits in the carpological collection are also part of the original collection that were too bulky to be mounted on the herbarium sheet. We therefore consider that lectotypification is not necessary because there is no ambiguity about the type collection. We consider *Deighton* 5600 (K) to be the holotype comprising three elements: two herbarium specimens and one carpological box.

3. *Mucuna poggei* *Taub.* (Taubert 1896: 194). Type: Angola. Isolectotype: *Welwitsch* 2241 (BM!), designated by Hepper (1956).

Mucuna rubro-aurantiaca De Wild. (De Wildeman 1913: 540). Type: Ober-Katanga: Elisabethville, May 1912, *Homblé* 664 (holotype BR! [894583]; isotype BR! [894518]).

Lianas with pubescent stems. *Leaves* alternate, 3-foliolate; stipules persistent; petiole 6–17 cm long, rachis 1.5–2 cm long; stipels persistent, linear, 5–6 mm long; petiolules 5–10 mm long; the apical leaflet obovate to elliptic, 8.5–17.5 × 7–13 cm, rounded to obtuse at base, round to mucronulate at apex, the lateral leaflets asymmetrical, 9.5–17.5 × 7.5–14 cm, rounded to slightly subcordate at base, acuminate to mucronulate at apex, long dense hairs on the abaxial surface of the leaflets. *Inflorescence* a pseudoraceme; peduncle 7.5–10 cm long; rachis c. 20 cm long; bracts caducous; bracteoles 5 × 4 mm, sericeous, caducous; pedicels 1–1.5 cm long, 3 flowers per fleshy node. *Flowers* 7.5–8.5 cm long. *Calyx* sericeous, campanulate, with appressed hairs 1.5–1.8 cm long on outer and inner surfaces; lobes 4, the adaxial one formed by two connate sepals, the abaxial one c. 5 mm long, the other two lobes c. 2 mm long. *Corolla* described as greenish white (*J. Lewalle* 1578, K); standard petal 5.5 × 2.5–3 cm, oblong, rounded at apex, sagittate at base, the claw c. 3 mm long, glabrous; wing petals 7.5–8 × 2 cm, lanceolate, basally attenuate, apically rounded to obtuse, pubescent at base, the claw c. 7 mm long; keel petals 7.5–8.5 × 1.5–1.7 cm, oblong, attenuate at base, acute at apex, pubescent at base, the claw c. 1 cm long. *Stamens*

10, diadelphous, with nine stamens fused, one free; filaments 7–8 cm long, glabrous; anthers dimorphic, five of them 2 mm long, oblong, basifixed, the others 1 mm long, globose, dorsifixed. *Gynoecium* c. 8 cm long; ovary sessile, oblong, 5–7 × 2 mm, densely sericeous; style 7.3–7.5 cm long, densely sericeous, glabrescent at apex, the stigma peltate. *Fruit* indehiscent, oblong, the surface covered by reddish irritating hairs. Mature *seeds* circular, 2.7 × 2.2 cm, brown; hilum 14–17 mm long. Fig. 2N–R.

DISTRIBUTION. *Mucuna poggei* occurs in Angola, Burundi, the Democratic Republic of Congo, Kenya, Mozambique, Tanzania and Uganda (Map 1). Hepper (1956) reported this species to occur in Zambia, but we have seen no specimens from that country.

SPECIMENS EXAMINED. ANGOLA. *Gossweiler. J.* 4753 (BM); *Gossweiler. J.* 5035 (BM); **Cuanza Norte.** Golungo Alto, Feb. 1856, *Welwitsch* 2240 (BM). **BURUNDI. Mosso.** Inyakivumu, 4 March 1981 (fl.), *Reekmans, M.* 9745 (K). **Bubanza,** 30 Jan. 1972 (fl.), *Lewalle, J.* 6496 (K); Kiofi, Feb. 1967 (fl.), *Lewalle, J.* 1578 (K). **DEMOCRATIC REPUBLIC OF CONGO. Homblé** 644 (K); *Quarré* 2401 (K); Garamba National Park, near AE-Sudan frontier, *Demonlin* 76 (K). **Orientale.** Dungu, 4 July 1950 (fl.), *Noirfalise, A.* 529 (K). Kaliko, 29 Oct. 1958 (fr.), *Deville, A.* 173 (K). **Katanga.** 18 March 1955 (fl.), *Achmitz, A.* 5172 (K); Lubumbashi [Elisabethville], 9 March 1926 (fl.), *Robyns, W.* 1612 (K). **Kivu.** 18 March 1953 (fr.), *Van der Ben* 249 (K). **KENYA.** Aug. 1959 (fl.), *Tweedie* 1983 (K). **Trans-Nzoia.** Kiminini, July 1966 (fl.), *Tweedie* 3303 (K). **MOZAMBIQUE. Chase,** N.C. 2263 (BM). **TANZANIA. Kigoma.** Gombe, Kakombe valley, E shore Lake Tanganyika, 6 Feb. 1964 (fl.), *Pirozynski, K. A.* 330 (K); Kasye forest, 23 May 1994 (fl.), *Bidgood, S. et al.* 2915 (K). **Morogoro.** Bunduki, 29 March 1969 (fl.), *Battu, M.* 447 (K). **Mpanda.** Sotalike-Sumbawanga Rd., about 30 mi. from Sitalike, 12 Feb. 1962 (fl.), *Richards, H. M.* 16088 (K). **Mwanza.** Lake prov., Chamabanda, Uzuiza, Gerta, 6 July 1953 (fl.), *Tanner, R.* 1568 (K). **Songea.** N of Songea, 2 April 1956 (fl.), *Milne-Redhead, E. & Taylor, P.* 9395 (K); 23 June 1956 (fr.), *Milne-Redhead, E. & Taylor, P.* 9395A (K). **UGANDA. Bunyoro.** 1972 (fl.), *Synnott, T. J.* 1105 (K); Budongo forest, Jujenje, 24 July 1971 (fl.), *Synnott, T. J.* 629 (K). **Kabale.** Buramba, Busaru-Bubande Rd., Oct. 1929, *Liebenberg, L. C. C.* 902 (K). **Kampala.** Mengo, June 1937 (fl.), *Chandler* 1680 (K). **Mbale.** Saza, Tsetse Research Camp, 24 May 1990 (fl.), *Abdallah, C. & Newton* 2435 (K). **West Nile.** Paida, March 1935, *Eggeling, W. J.* 1932 (K).

HABITAT. The species occurs in gallery, riverine, and evergreen forest, on valley slopes and along rivers; one collection from Uganda is reported from grassland.

NOTES. *Mucuna poggei* is easily recognised by the indehiscent fruit, the length of the flowers (7.5–8.5 cm long) and of the stipels (5–6 mm long), and

the long, dense, appressed hairs on the abaxial surface of the leaflets. For differences from the other taxa see comments under *M. pesa* and *M. occidentalis*.

In the protologue of *Mucuna poggei* a number of syntypes are cited: Angola, *Welwitsch* 2240–2241; Malandsche, an einem Bache *Pogge* 831; Oberes Congogebiet, an flusse Luatschim, *Lourenço Marques* 279; Togo, Bismarckburg, am Wege nach Katschenki *Buttner* 4; N'dongo a M'joi, (nach Lourenço Marques). Hepper (1956) commented that *Pogge* 831 and *Buttner* 4 were apparently destroyed at Berlin. He designated the specimen *Welwitsch* 2241 (BM) as an isolectotype of *M. poggei* var. *poggei*, but gave no indication as to the herbarium in which the lectotype is deposited, although *Welwitsch's* top set of specimens is housed in COI and it is likely that the lectotype is deposited there.

In the protologue of *Mucuna rubro-aurantiaca* De Wild. the author did not state the herbarium in which the type material is housed. Nevertheless, in the Meise Herbarium (BR) we located two sheets of *Homblé* 664. On one of these (BR 894583) is written 'holotype' by hand in pencil. We agree with Hepper (1956) who placed *M. rubro-aurantiaca* as a synonym of *M. poggei* Taub.

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