

Harry WIRIADINATA* & Hiroyoshi OHASHI** : **Four new species of *Mucuna* (Leguminosae) of the Lesser Sunda Islands, Indonesia**

H. ビリアディナタ*・大橋広好** : インドネシア, 小スンダ列島のマメ科トビカズラ属の新植物

Nine species of *Mucuna* occur in the Lesser Sunda Islands (Wiriadinata 1989). They are *M. acuminata* Grah. ex Baker, *M. diabolica* Back., *M. gigantea* (Willd.) DC., *M. kawakabuti* (new species), *M. kostermansii* (new species), *M. macrophylla* Miq., *M. pruriens* (L.) DC., *M. schmutzii* (new species), and *M. sumbawaensis* (new species). This paper aims to publish these four new species found in the islands.

Mucuna kawakabuti Wiriadinata, sp. nov. (Fig. 1)

Liana; ramulis glabris; foliolis terminalibus ellipticis, subcoriaceis, acuminatis, supra et subtus glabris. Legumen 24-30 cm longum, ca. 3 cm latum, ligulatum, 5-6 spermum.

Liana, stem glabrous. Petioles 4-6.5 cm long; glabrous, petiolules 3-5 mm long, glabrous. Stipules ca. 3 mm long, acicular. Leaflets 9.5-11 cm long, 3.5-4.5 cm wide, subcoriaceous, both surfaces glabrous, apex gradually acuminate, base acute to truncate, lateral nerves 3-4 pairs, curved ascending near margin; terminal leaflets elliptic, symmetric, lateral leaflets obliquely elliptic with larger basiscopic part. Inflorescences and flowers unknown. Pods strap-shaped, 24-30 cm long, ca. 3 cm wide, swollen around seeds, dark brown with a few irritating bristles, sutures without wing. Seeds 2.2 cm long, 1.7 cm wide, 1.2 cm thick, dark brown, hilum encircles more than three-quarters of the circumference of the margin.

Specimen examined. Sumba: Maumarru. [5 May 1925. Iboet 395 (BO-holotype).

Distribution. Endemic to Sumba island (Fig. 2).

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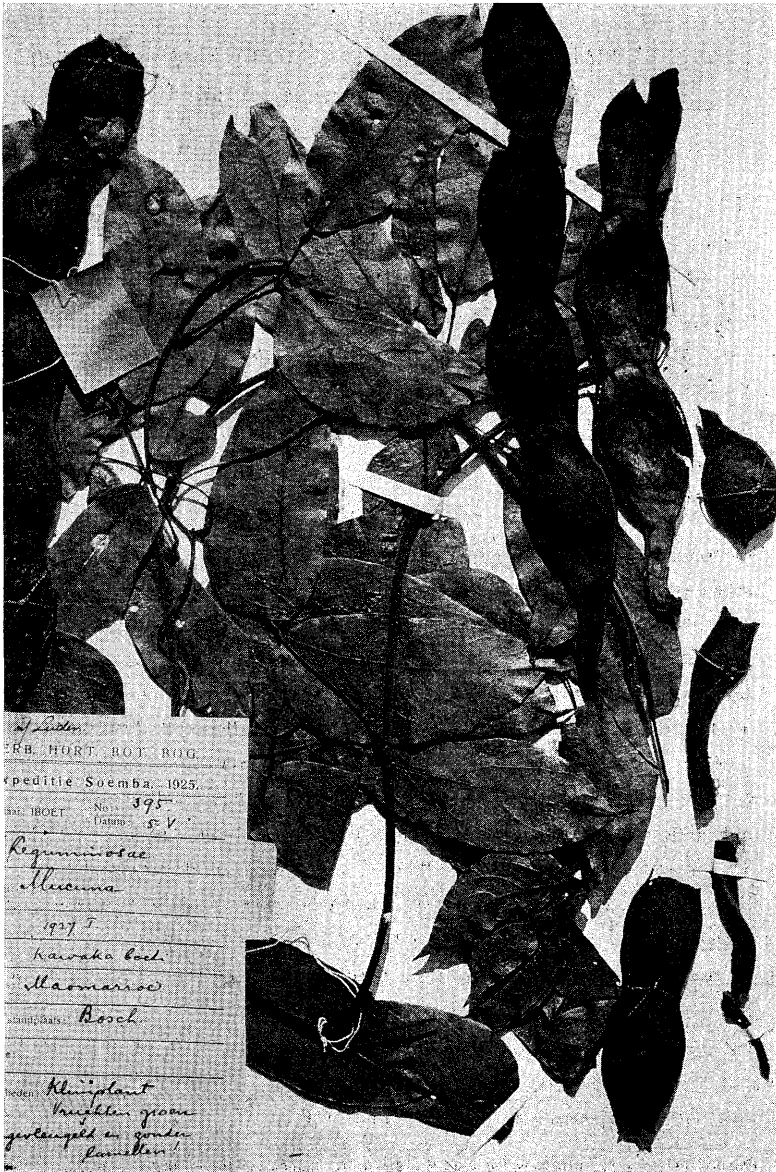


Fig. 1. The holotype of *Mucuna kawakabuti* Wiriadinata (Iboet 395, BO).

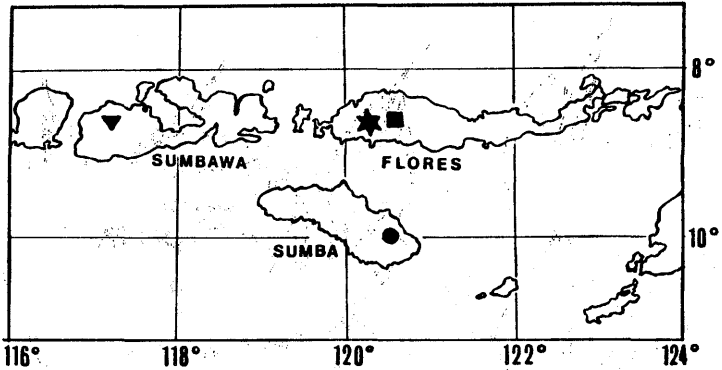


Fig. 2. Distribution map of the new species of *Mucuna* in the Lesser Sunda Islands. *M. kawakabuti* (●), *M. kostermansii* (■), *M. schmutzii* (★), and *M. sumbawaensis* (▼).

Mucuna kawakabuti belongs to the section *Carpopogon* of subgenus *Mucuna* by the seed with a long hilum, and the pod without lamellae. It is characterized by its strap-shaped pod with brownish irritating velutinous hairs, both valves and sutures without lamellae nor wings. Only known from a single collection, Iboet (no. 395), from Maumaru in eastern Sumba Island. The pods of this species resemble those of *Mucuna macrocarpa* Wall. which occurs in the Himalayas, S. E. Asiatic continent, China, Taiwan and Japan (distribution maps: see Ohashi & Tateishi 1976, Wilmot-Dear 1984), but they are smaller and distinct in having thin epicarps and reddish brown hairs.

The epithet of the new species is taken from the local name of this plant "kawaka boeti".

***Mucuna kostermansii* Wiriadinata, sp. nov. (Fig. 3)**

Liana; ramulis glabris; foliis chartaceis, elliptico-ovatis, glabris vel puberulentis, acuminatis. Inflorescentiis pseudoracemosis, 10-20 cm longis; floris viridis, calyce sericeo pubescentio, tubo ca. 7 mm longo, vexillo ca. 1.5 cm longo, alis ca. 1.8 cm longis, carina ca. 1.9 cm longa; legumine ca. 9 cm longo, 4 cm lato, valvis lamellatis, 2 spermo.

A climber with terete branches, often lenticellate. Leaves alternate, pinnately trifoliate. Petioles 5-9 cm long, glabrous or when young sparingly puberulent, basal portion thickened, often twisted, petiolules 4-5 mm long, glabrescent. Stipules ca. 2 mm long, acicular. Leaflets 6-9 cm long, 3-4.5 cm

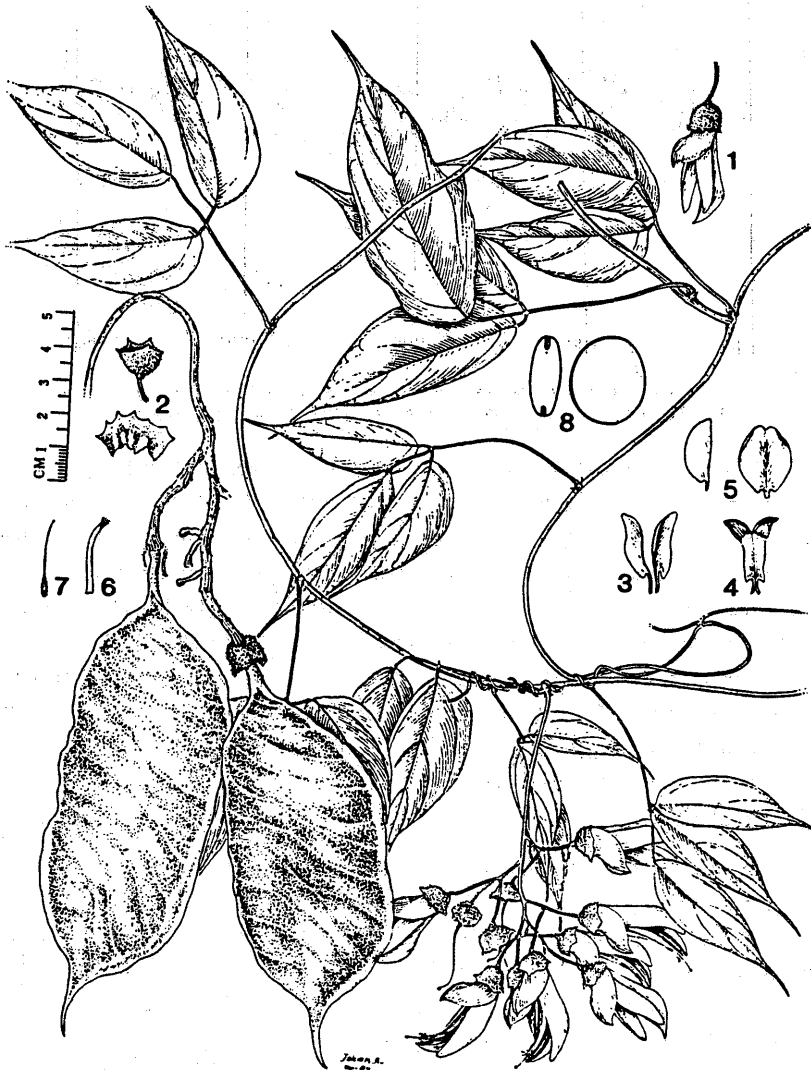


Fig. 3. *Mucuna kostermansii* Wiriadinata (drawn from Wiriadinata 4220, BO). 1 flower; 2 calyx and calyx opened; 3 wings; 4 keel-petals; 5 standard; 6 stamens; 7 pistil; 8 seeds showing a long hilum.

wide, chartaceous, apex acuminate, acumen up to 1.5 cm long, base acute to obtuse, both surfaces glabrous or minutely puberulent, lateral nerves 3-4 pairs, curved, ascending, obscurely anastomosing near margin, terminal leaflets elliptic ovate, symmetric, lateral leaflets obliquely ovate with larger basiscopic part. Inflorescences pseudoracemose, axillary; peduncles 10-20 cm long, finely pubescent, becoming glabrous and lenticellate at maturity; pedicels ca. 1 cm long, appressed ferruginous pubescent to glabrous, borne in triplets from the tip of each nodular brachyblast (brachyblast up to 1 cm long). Calyx campanulate, covered with appressed sericeous hairs, tube ca. 7 mm long, the upper and lateral teeth poorly developed, less than 1 mm long; the lower tooth ca. 2 mm long. Corolla pale green. Standard ca. 1.5 cm long, 1.4 cm wide, broadly ovate to rounded, glabrous, base shallowly cordate, claw ca. 2 mm long. Wings ca. 1.8 cm long, 4-5 mm wide, the upper part cymbiform, apex rounded, finely pubescent on the back near the base, ciliate on the basal margin, claws ca. 6 mm long. Keel-petals ca. 1.9 cm long, 4.5 mm wide, narrowly oblong, straight near the base, curved, falcate, terminated by a smooth hard beak at apex, basal auricles ca. 2 mm long, claws ca. 5 mm long. Stamens ca. 2.2 cm long (sheath ca. 1.8 cm long), the shorter filaments with ca. 1.5 mm long anthers, the longer filaments with ca. 0.5 mm long bearded anthers. Ovary ca. 5 mm long, velutinous, style ca. 1.6 cm long, filiform, ovules two. Pods ca. 9 cm long, 4 cm wide, oblong, flattened, valves with ca. 10-15 narrowly transverse lamellae, densely appressed ferruginous pubescent enriched with a few stiff irritating hairs of ca. 1 mm long, glabrescent at maturity, sutures narrowly winged throughout their length. Seeds ca. 2.5 cm long, 2 cm wide, 4 mm thick, discoid, black, hilum encircles more than three-quarters of the circumference of the margin.

Specimens examined. Flores. Along the road from Bea Laing to Ranamese, Ruteng, alt. 1000 m. A climber with pale green flowers, brown fruits and black seeds. 5 May 1965. Kostermans & Wirawan 775 (BO-holotype; AAU-, K-, L-isotype); *ibid.*, fl. & fr., 1 August 1988, H. Wiriadinata 4220 and 4232 (BO, L).

Habitat. *Mucuna kostermansii* grows in mountain forests at Ranamese near Ruteng at about 1000 m above sea level. It is associated with *Tabernaemontana macrocarpa*, *Schefflera* sp., *Freycinetia* sp., *Elaeocarpus sphaericus*, *Macaranga* sp., *Omalanthus populneus* and others.

Distribution. Endemic in Flores island (Fig. 2).

Mucuna kostermansii belongs to the section *Citta* of subgenus *Mucuna* by the seed with a long hilum, and the pod with lamellae. It is similar to *M. albertisii* F. v. Muell. of Celebes, Moluccas and New Guinea, but it can be distinguished from the latter by its glabrous leaflets and unbranched inflorescence. Also to *M. lamii* Verdcourt and *M. macropoda* Baker f., both endemic to New Guinea, *Mucuna kostermansii* is similar, but differs from them by the pods with transversal lamellae against those with longitudinal lamellae.

We dedicated this new species in honor of Prof. A. J. G. H. Kostermans, who collected specimens of this species for the first time in 1965 and has contributed greatly to studies on the Indonesian flora.

***Mucuna schmutzii* Wiriadinata, sp. nov. (Fig. 4)**

Liana, ramulis ferrugineo-pubescentibus; foliolis terminalis lato ellipticis, chartaceis, apice acutis, basi obtusis, supra et infra tomentosis, nervis lateralibus 4 vel 5 paribus; inflorescentiis pseudoracemosis; calyce adpresse pubescentibus et pilis rigidis instructo, tubo ca. 1 cm longo; vexillo late elliptico, ca. 3 cm longo, alis oblongis, 4.5-5 cm longis, carina anguste oblonga, 5.5-6 cm longa; legumine compresso, oblongo, 8 cm longo, valvis transverse lamellatis.

A slender climber with shortly appressed ferruginous pubescence. Petioles 9-10.5 cm long, with the similar indumentum; petiolules 6 mm long, pubescent. Stipules ca. 3 mm long, acicular. Leaflets 8-10 cm long, 4.5-9 cm wide, chartaceous, apex acute, base obtuse, both surfaces densely pubescent or tomentose at the lower surface, lateral nerves 3-5 pairs, curved, ascending, anastomosing near margin, terminal leaflets broadly elliptic, symmetric, lateral leaflets obliquely elliptic, with larger basisopic part. Inflorescences pseudoracemose, axillary. Peduncles ca. 9 cm long, adpressed ferruginous pubescent; pedicels ca. 1.2 cm long, pubescent, borne in triplets from the tip of each nodular brachyblast (brachyblast ca. 1 cm long). Caducous bracts ca. 1 cm long, 2 mm wide, narrowly lanceolate. Calyx cup-shaped, densely adpressed pubescent intermixed with scattered irritating hairs; the upper and the lateral teeth truncate or poorly developed, the lower tooth up to 1 cm long and triangular. Standard ca. 3 cm long, ca. 2.8 cm wide, broadly elliptic, apex rounded or slightly emarginate, base shallowly cordate, basal auricles ca. 2 mm long, claw ca. 2 mm long. Wings 4.5-5 cm long, 1.2-1.5 cm wide, oblong, straight, subacute at base, finely pubescent on the back near the base, ciliate on the basal margin, basal auricles ca. 2 mm long, claws ca. 5 mm long. Keel-petals 5.5-6 cm long, 2.5 cm wide,



Fig. 4. *Mucuna schmutzii* Wiriadinata (drawn from Schmutz 342 (holotype) and 231).
 1 flower; 2 calyx, 2a calyx opened; 3 wings; 4 keel-petals; 5 standard; 6 stamens;
 7 pistil; 8 inflorescence; 9 leaf. All $\times 1/2$.

narrowly oblong, straight at base, apex slightly falcate, terminated by smooth, hard beak, basal auricles ca. 2 mm long, claws ca. 5 mm long. Stamens ca. 5.5 cm long (sheath ca. 4.5 cm long), the shorter filaments with ca. 2.5 mm long basifix anthers, the longer filaments with ca. 1 mm long, with dorsifix bearded anthers. Ovary ca. 5 mm long, velutinous, style ca. 5-5.5 cm long, filiform, puberulous at the lower part, ovules three. Pods ca. 8 cm long, 4 cm wide, oblong, compressed, appressed pubescent with a few straight irritating longer hairs, the valves with narrowly transverse lamellae, the sutures with wings of ca. 2 mm wide along their length.

Specimens examined. Flores. Dentjang, alt. 300 m. fr. Schmutz 342 (L-holotype); Noa, alt. 400 m. fl., Schmutz 231 (L).

Distribution. Endemic to Flores island (Fig. 2). Vernacular name: Ose.

Ecology. This species grows in very dry areas, or in savannas.

Mucuna schmutzii belongs to the section Citta of subgenus *Mucuna*. It can be distinguished from *M. albertisii* F. v. Muell., by its unbranched inflorescences, almost truncate calyx-teeth and fewer seeds within one pod. From *M. koster-mansii* Wiriadinata, a new species described above, this *M. schmutzii* differs in having larger flowers (more than twice in length) and distinct lower calyx-teeth. Also from such closely related species as *M. discolor* Merr. & Perry of New Guinea, and *M. cyanosperma* K. Schum. of the Moluccas and New Guinea, *M. schmutzii* is distinct by its glabrous or sparsely hairy undersurfaces of the leaflets.

The specific epithet is given in honor of Pater Schmutz, a missionary who spend his free time collecting plants in Flores Island.

Mucuna sumbawaensis Wiriadinata, sp. nov. (Figs. 5 & 6)

Frutex scandens, glaber, foliolis 6.5–11 cm longis, 4.5–6.5 cm latis, chartaceis, acutis, glabris, nervis lateralibus utrinque 5 vel 6 paribus, foliolis terminalis elliptico ovatis, symmetris, lateralibus inaequilateralis. Inflorescentiis 15 cm longis, pseudoracemosis vel pseudoumbellatis, axillaribus, bracteis ca. 1.5 cm longis, floribus viridis, calyce adpresse dense ferrugineo pubescentis, tubo 6–8 mm longo, campanulato, vexillo ca. 3.3 cm longo, 1.5 cm lato, alis ca. 4 cm longis, 1 cm latis, carina ca. 4.5 cm longa, 7 mm lata, legumine ca. 16 cm longo, 5 cm lato, 3-spermo.

A climber with glabrous branches. Petioles 3.5–6 cm long, shallowly grooved on the upper side, sparingly hairy; petiolules 3–5 mm long, with the same indumentum. Stipules ca. 1.5 mm long, acicular. Leaflets 6.5–11 cm long, 4.5–6.5 cm wide, chartaceous, apex acute, base obtuse to truncate, both surfaces glabrous, lateral nerves 5–6 pairs, curved, ascending near margin, terminal leaflets elliptic ovate, symmetrical, lateral leaflets obliquely elliptic with larger basiscopic part. Inflorescences pseudoracemose or pseudoumbellate, axillary. Peduncles at least 15 cm long, glabrous; pedicels ca. 1.5 cm long, appressed pubescent, borne in triplets from the tip of each brachyblast (brachyblast up to 7 mm long). Calyx campanulate with densely appressed pubescence, enriched with scattered irritating hairs, tube 6–8 mm long, the upper teeth not developed or almost truncate, the lateral teeth ca. 1.5 mm long, the lower tooth ca. 2.5 mm long. Corolla green. Standard ca. 3.3 cm long, 1.5 cm wide, oblong, basal auricles ca. 2 mm long, claw

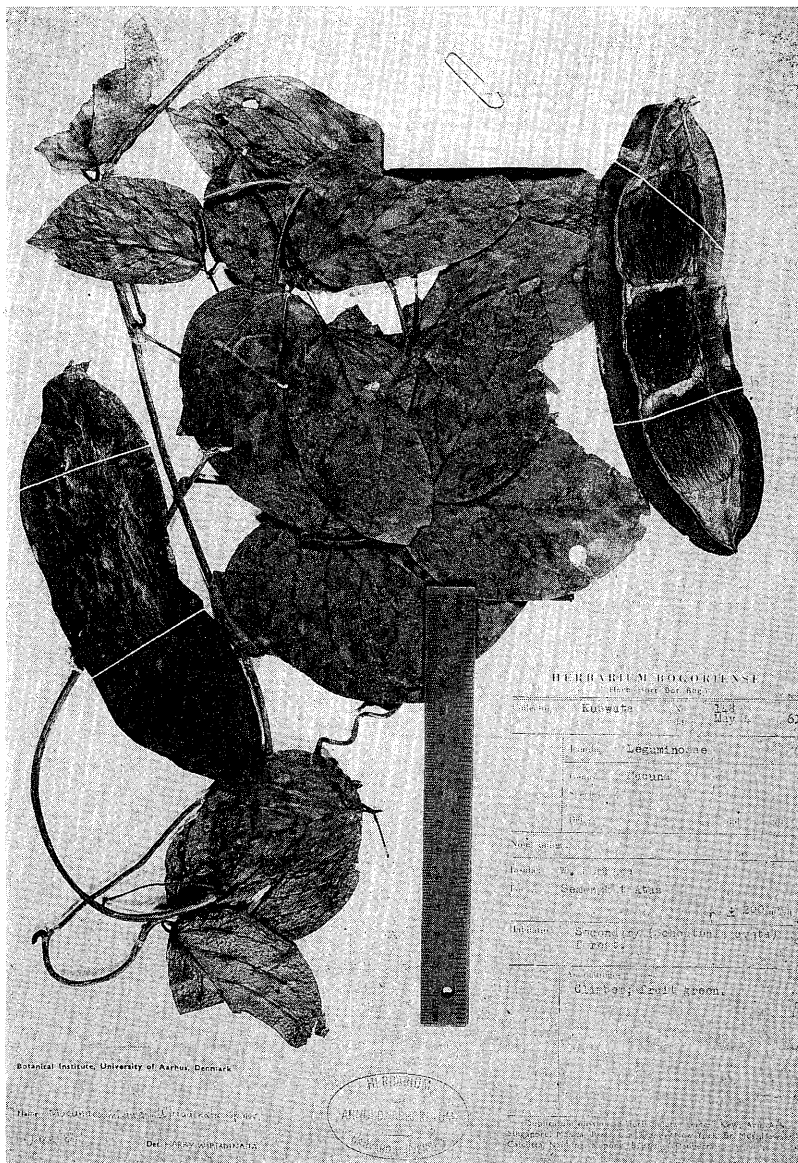


Fig. 5. The isotype of *Mucuna sumbawaensis* Wiradinata (Kuswata 148, A).

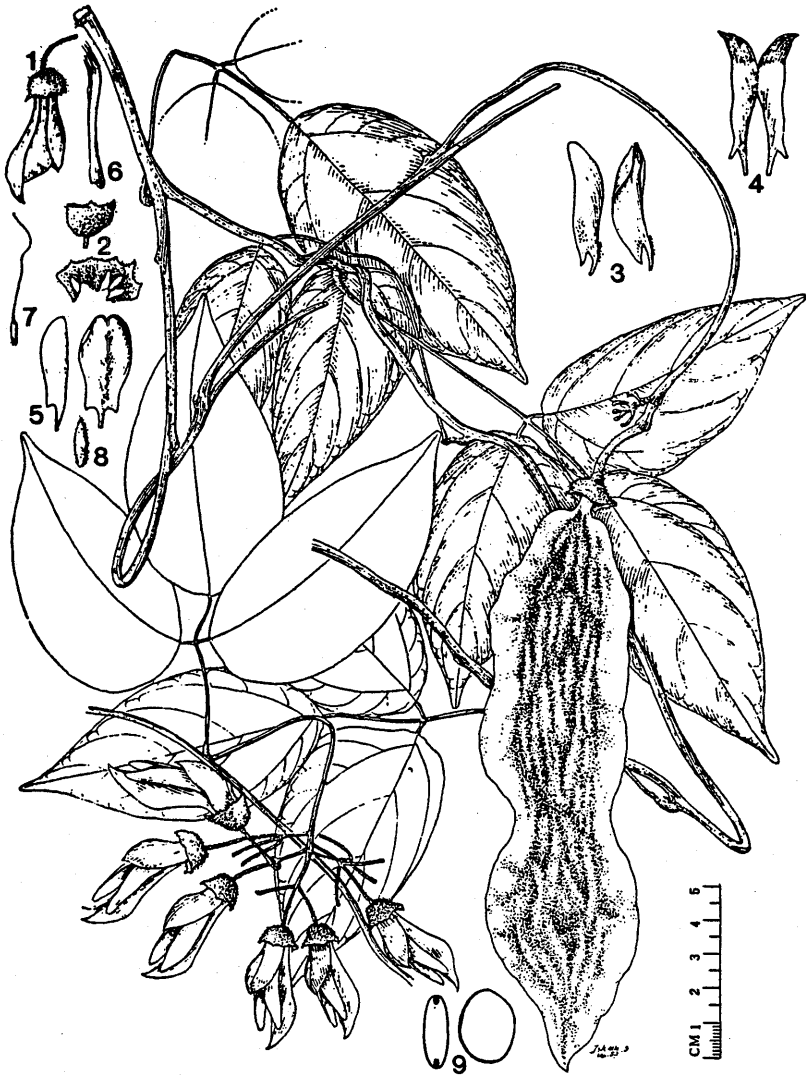


Fig. 6. *Mucuna sumbawaensis* Wiriadinata (drawn from Kuswata 85, BO). 1 flower; 2 calyx and calyx opened; 3 wings; 4 keel-petals; 5 standard; 6 stamens; 7 pistil; 8 bract; 9 seeds with a long hilum.

ca. 4 mm long. Wings ca. 4 cm long, 7 mm wide, finely pubescent on the back from the base up to the middle, ciliate on basal margin, basal auricles ca. 3 mm long, claws ca. 5 mm long. Keel-petals ca. 4.5 cm long, 7 mm wide, straight near the base, falcate, terminated by a smooth hard beak at apex, basal auricles ca. 3.5 mm long, claws ca. 5 mm long. Stamens ca. 4.3 cm long (sheath ca. 3.5 cm long), the shorter filaments with ca. 2.5 mm long anthers, the longer filaments with ca. 1 mm long bearded anthers. Ovary ca. 7 mm long, velutinous, style ca. 4 cm long, hirsute, filiform. Pods ca. 16 cm long, 5 cm wide, oblong, slightly curved, the valves thick and without lamella, but with oblique longitudinal wrinkles, sutures with ca. 1 cm wide and ca. 3 mm thick wings throughout their length, seeds three.

Specimens examined. Sumbawa. Semongkat Atas, alt. 200 m. Climber, fruit green. 4 May 1961. Kuswata 148 (BO-holotype; A-, K-, L-isotype); *ibid.*, Riverside. 1 May 1961. Kuswata 85 (BO); Wawo, alt. 650 m. Riverside. 14 December 1909, Elbert 3789 (L).

Distribution. Endemic to Sumbawa island (Fig. 2).

Mucuna sumbawaensis belongs to the section *Carpopogon* and is close to *M. gigantea* (Willd.) DC. However, both differ in calyx. The former has a distinctly toothed calyx, while the latter has truncate one. The new species is, also, characterized by its wrinkled valves and thick wings of the pods.

Mucuna sumbawaensis was collected from Wawo at 600 m and from Setongkat Atas at 200 m. This species is adapted to very dry areas, but grows near a river bank in *Schoutenia ovata* forest. *Mucuna gigantea* is commonly found in coastal forests in Indonesia and is distributed widely in S. India, S.E. Asia, China (Hainan), Ryukyu, Australia and Pacific islands (distribution map, see Tateishi & Ohashi 1981).

We are grateful to Dr. J.F. Veldkamp for helping to latinize the description of new species, to Prof. Kai Larsen and Dr. Ivan Nielsen who borrowed material from many herbaria for investigations for the first author when he had studied in Aarhus in 1983-1984. We thank the following herbaria for the loan of their *Mucuna* specimens; A, AAU, BISH, BO, C, K, KLU, KYO, L, NY, P, PNH, SAN, SING, TI and TUS. Mr. Iskak Samsudin prepared the illustration to whom we offer our appreciation.

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インドネシア小スンダ列島には9種のトビカズラ属植物が分布することが明らかになり、このうちの4種は新種であった。本論文ではこれら4種を記載し、類似種との相違を述べた。

□小倉洋志ほか：八溝山地の植物相（栃木県立博物館研究報告書第7号）448pp., 8 pl. 1989. 同博物館（宇都宮市陸町 2-2）. 栃木・茨城両県境には、八溝・鷺子・鷄足の3山塊が南北に並んだ八溝山地がある。小倉氏ら12氏が那須町東部・八溝山・花瓶山・雲岩寺・羽黒神社・鷺子山・松倉山・鎌倉山・八幡山・高館山・雨巻山の11地区の植生を調査した結果の報告である。栃木県内が主となり茨城県も入る。維管束植物1706種類の目録には1万数千点の証拠標本（大部分は上記博物館所蔵）が挙がっているが、そのすべてに詳細な産地、同標高、採集年月日、花・果実などの様子、採集者名が記載されている。今回の調査で48種類が栃木県新産となった。各地域個別の植生についての説明のほかに、全体として特記すべき植物73種類、八溝山地の植物相の構成、考察などがある。八溝山地は暖温帯から冷温帯への移行帯になっていて交錯した多様な森林が見られる。暖温帯のスダジイ林は南部の茂木町八幡山まで、カンシは北端の八溝山麓那須町伊王野までそれぞれ分布していて北限になっている。反対に冷温帯のブナ林は益子町や茂木町まで南下している。モミ林は点々と各地にあり、コナラ林・アカマツ林などの二次林や、それらと原生種との混交林も全般にわたって見られる。また日本海要素・満鮮要素などが多く混じっているのも特異なことである。種類の数からいえば、約50%が暖・冷両温帯にわたって分布するもの、20%が暖温帯、30%が冷温帯となっている。

（伊藤 洋）