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# New Species, a New Name, and Lectotypifications in *Indigofera* L. (Leguminosae: Papilionoideae) from Madagascar

*Jean-Noël Labat*

Muséum National d'Histoire Naturelle, Laboratoire de Phanérogamie, UMS826 CNRS-MNHN,  
16 rue Buffon, 75005 Paris, France

*David J. Du Puy*

Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, England

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**ABSTRACT.** Morphological characters support the description of six new species of *Indigofera* from Madagascar: *I. bemarahaensis* Du Puy & Labat from the Bemaraha Massif (western region), and *I. blaiseae* Du Puy & Labat, *I. bosseri* Du Puy & Labat, *I. imerinensis* Du Puy & Labat, *I. itremoensis* Du Puy & Labat, and *I. zornioides* Du Puy & Labat from various localities in the Central Plateaux. In addition, a new name, *I. peltieri* Du Puy & Labat, is given in place of *I. tulearensis* M. Peltier, a later homonym of *I. tulearensis* Baillon ex Drake, and the species *I. ankaratrensis* and *I. mangokyensis* are lectotypified.

**RÉSUMÉ.** L'étude des caractères morphologiques permet la description de six nouvelles espèces d'*Indigofera* de Madagascar: *I. bemarahaensis* Du Puy & Labat du Massif du Bemaraha (region ouest), et *I. blaiseae* Du Puy & Labat, *I. bosseri* Du Puy & Labat, *I. imerinensis* Du Puy & Labat, *I. itremoensis* Du Puy & Labat, et *I. zornioides* Du Puy & Labat de différentes localités du Plateau Central. Egalement, un nouveau nom, *I. peltieri* Du Puy & Labat, est donné en remplacement de *I. tulearensis* M. Peltier, un homonyme plus récent de *I. tulearensis* Baillon ex Drake. Les espèces *I. ankaratrensis* et *I. mangokyensis* sont lectotypifiées.

Prior to completion of an account of the Leguminosae subfamily Papilionoideae in Madagascar, six new species are described and illustrated, and a seventh is renamed; two species are lectotypified.

*Indigofera* L., with about 700 species, is one of the largest genera in the Leguminosae. It is both tropical and subtropical: several species are pantropical or nearly so, and some are widely naturalized as weeds. *Indigofera tinctoria* L., *I. arrecta* Hochstetter ex A. Richard, and some other species yield the traditional dark blue dye indigo. *Indigofera* is

very diverse in Madagascar, with 42 species, of which 21 are endemic. They occur all over the island, but are more common in the drier areas, are often tolerant of poor soils, and are often colonizers of disturbed areas. The most recent taxonomic treatment of this genus for tropical Africa, including a broad examination of the genus in Madagascar, remains the revision by Gillett (1958). The systematic studies in African Indigoferaeae made by Schrire (1991) are also used in this paper for the affinities of the new species described. A recent paper clarified the distinction between the two closely related species *I. spicata* and *I. hendecaphylla*, both of which occur in Madagascar (Du Puy, Labat & Schrire, 1993).

***Indigofera ankaratrensis*** R. Viguier, Not. Syst. (Paris) 13: 366. 1949. TYPE: Central Madagascar. Environs de Vontovoronat à l'est d'Antsirabe, H. Perrier de la Bâthie 4346 (lectotype, selected here, P; isolectotype, P).

The other syntype of *Indigofera ankaratrensis*, H. Perrier de la Bâthie 17915, is treated here as a specimen of *I. imerinensis*.

***Indigofera bemarahaensis*** Du Puy & Labat, sp. nov. TYPE: Western Madagascar. Tsingy de Bemaraha (calcaire de l'Antsingy), E d'Antsalova, vers Bevary, au NE du village, 400–600 m, 4 Fév. 1960 (fr), J. Leandri & P. Saboureaux 2972 (holotype, P; isotypes, K, MO, P). Figure 1.

Frutex deciduus pilis bifidis fuscis albisque immixtis. Folia foliolis alternis 9–11, stipulis ca. 2 mm longis anguste triangularibus; foliola ovata ad elliptica, plerumque 10–40 × 6–20 mm, infra pallidiora. Calyx brevis. Tubus staminum 5–6 mm longus. Legumina saepe solitaria vel pauca, patentia, lineari-oblonga, 40–70 mm longa, crassa et rigida, subangularia, rostrata, 7–11-sperma.



Figure 1. *Indigofera bemarahaensis* Du Puy & Labat (Leandri & Saboureau, 2012, P). —A. Habit. —B & B'. Pod and seed.

A deciduous woody shrub forming distinct, scale-covered dormant buds; stems woody, thinly strigose when young, soon glabrescent, with short zones of scars and remains of bud scales at the base of each annual growth, brachyblasts few. Biramous hairs medifixed, appressed, stiff, both white and brown mixed. Leaves with 9–11 alternate leaflets, sometimes subopposite on some leaves; stipules ca. 2 mm long, narrowly triangular, the margins scarious and glabrous, but fringed with trichomes; stipels absent, the leaflet axils often with tufts of glandular trichomes; leaflets ovate to elliptic, increasing in size toward the leaf tip, mostly 10–40 × 6–20 mm, thinly strigose on both surfaces or glabrous above, paler beneath (especially when dried). Racemes mostly axillary from near the base of new shoots, pedunculate, 25–75 mm long (in fruit); bracts caducous. [Flowers not known.] Calyx short, ca. 1 mm long, less than a quarter as long as the staminal sheath, white strigose; teeth short, triangular, about as long as the tube. Staminal sheath 5–6 mm long. Pods often solitary or few, spreading, linear-oblong, 40–70 mm long, thick and rigid, rather angular, beaked, sparsely strigose, splitting into 2 spiralling valves, with 7–11 seeds. [Mature seeds not known.]

*Affinities.* The woody stems, indumentum of mixed brown and white medifixed hairs, leaves with alternate leaflets, short calyx, relatively long staminal sheath, and similar pods indicate that *I. bemarahaensis* is related to *I. leucoclada* Baker, a distinctive species also endemic to Madagascar.

*Distribution.* Western Madagascar, confined to the Bemaraha Massif.

*Habitat.* In deciduous scrub or open woodland on limestone outcrops or “tsingy.”

*Flowering time.* Not known, but probably prior to November.

The specific epithet refers to the Reserve of the Tsingy of Bemaraha where all four known collections originated.

*Paratypes.* MADAGASCAR. Environs de Tsiandro (Ouest), forêt de Behandrao, 500–600 m, 28 Nov. 1952 (fr), *Leandri, Capuron & Razafindrakoto* 1943 (P); calcaire de l'Antsingy, E d'Antsalova, vers Bevary, sentier vers Tsiandro, 400–600 m, 31 Jan. 1960 (fr), *Leandri & Saboureau* 2887 (NY, P, WAG); Antsalova, 27 Fév. 1960 (fr), *Réserve Naturelle (Botoalina)* 11095-RN (K, MO, P, TEF).

***Indigofera blaiseae*** Du Puy & Labat, sp. nov.

TYPE: South-central Madagascar. Isalo Massif, NW of Ranohira, area of “La Piscine,”

45°21'E, 22°33'S, 850 m, 16 Feb. 1990 (fl, fr), *D. J. & B. P. Du Puy, J.-N. Labat & B. Rakouth* M468 (holotype, K; isotypes, MO, P, TAN). Figure 2.

Frutex parvus tenellus caule singulari erecto basali, saepe apice ramificanti. Ramuli subglabri, rufo-brunnei. Folia glandulis fasciculatis vice stipellorum et proxime stipulorum; foliola elliptica. Inflorescentia longa et gracilis, breviter pedunculata. Flores 8–9 mm longi, cerasini. Calyx parvus, ca. 1.5 mm longus usque ad quartum tubi staminalis attingens. Ovaria et legumina glabra ad sparsim strigosa; legumina (5–)6–9-sperma.

A small, delicate shrub, 20–150 cm tall, often branching from the apex of a single, erect basal stem; stems slender, woody, much branched, somewhat ridged, thinly strigose and soon glabrescent, red-brown. Biramous hairs medifixed or almost so, appressed, stiff, mixed white and brown. Leaves with (9–)11–19 paired leaflets, the leaves subtending the racemes not reduced; stipules minute, less than 1 mm long, accompanied by and sometimes appearing to be replaced by clusters of glandular trichomes; stipels replaced by clusters of sessile glandular trichomes. Leaflets elliptic to narrowly elliptic, 6–12(–14) × 2–5(–6) mm, the apex rounded to obtuse and finely mucronate, glabrous to sparsely strigose above, sparsely white strigose beneath, gray-green above, paler gray beneath. Racemes spreading horizontally to subpendulous, long and slender, 50–200 mm long, much longer than the leaves, laxly many-flowered; peduncle and axis wiry, the peduncle much shorter than the subtending leaves, 7–15 mm long; pedicels long and slender, 4–7 mm long; bracts subulate, less than 1 mm long, caducous. Flowers 8–9 mm long, cerise pink, the standard with a white basal eye and whitish to fulvous behind. Calyx small, ca. 1.5 mm long, up to a quarter as long as the staminal sheath, thinly strigose with fine, brown hairs; teeth short, triangular, shorter than the tube. Standard densely but finely strigose with fulvous hairs behind. Staminal sheath 6–7 mm long. Ovary glabrous to thinly strigose. Pods pendulous, with the pedicels somewhat pointing toward the inflorescence tips, linear-cylindrical, (17–)20–32 mm long, beaked, glabrous or glabrescent if sparsely strigose when immature, chestnut brown, glossy, splitting into 2 spiralling valves, with (5–)6–9 seeds. Seeds barrel-shaped, ca. 1.5–2.5 × 1.2–1.5 mm, finely pitted.

*Affinities.* *Indigofera blaiseae* has previously been confused with *I. pedunculata* Hilsenberg & Bojer ex Baker. It differs in its subglabrous, red-brown twigs, its dense clusters of sessile glandular trichomes which replace the stipels and accompany

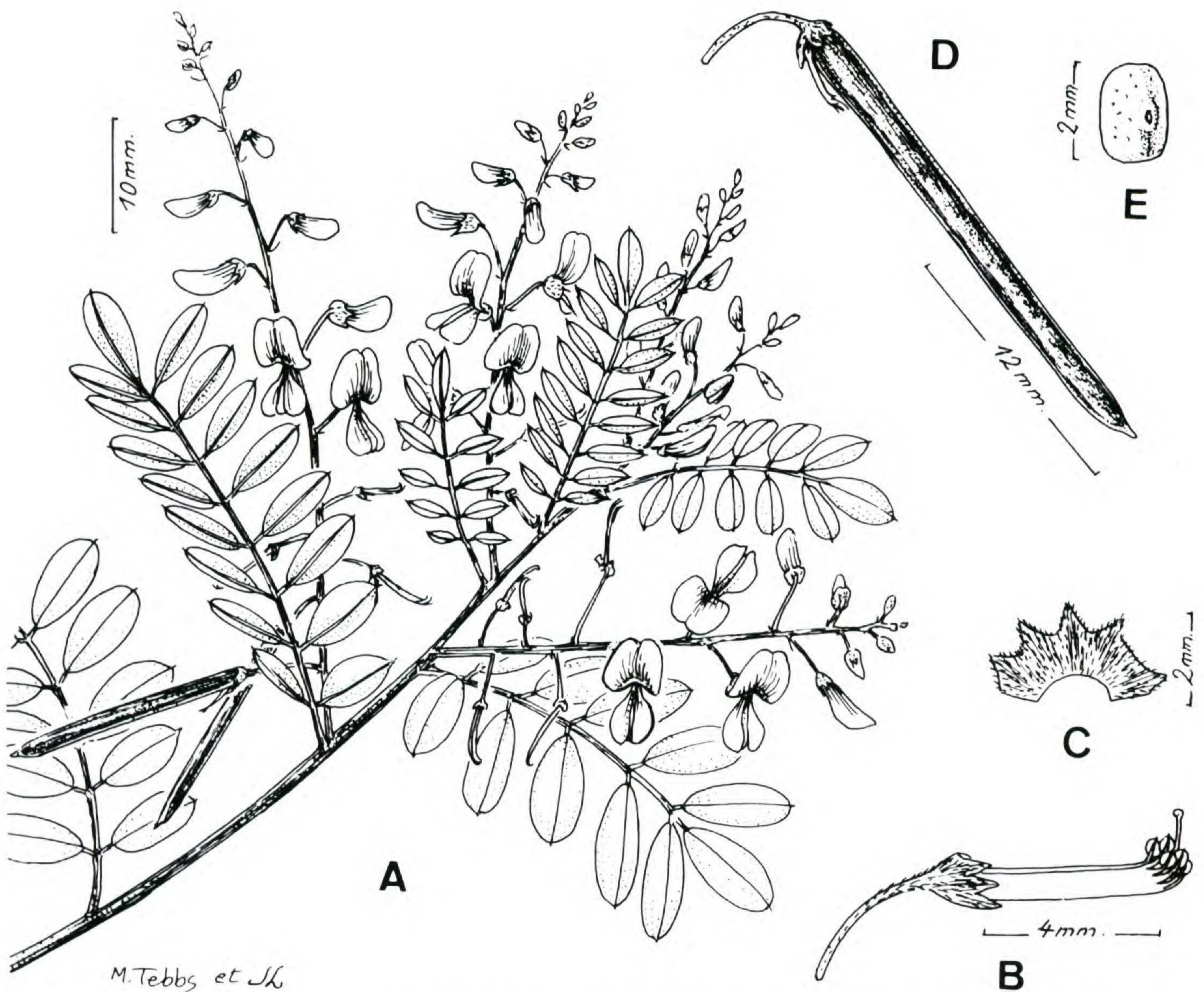


Figure 2. *Indigofera blaiseae* Du Puy & Labat (D. J. & B. P. Du Puy, Labat & Rakouth M468, K). —A. Habit. —B. Calyx and staminal sheath. —C. Calyx. —D. Pod. —E. Seed.

the stipules, its more broadly elliptic leaflets, its short peduncles, its shorter calyx teeth, its glabrous to sparsely strigose ovaries and pods, and its pods with fewer seeds. It also differs in its more branched and woody growth habit, its paler flowers, and its lack of reduced leaves subtending the racemes. These two species occur together in the Isalo Massif, but *I. pedunculata* has a much wider distribution in the Central Plateau. *Indigofera blaiseae* is closely related to *I. dendroides* Jacquin from Africa, differing in its longer staminal sheath (and larger flower size), its racemes with shorter peduncles, and its much less densely strigose pods.

**Distribution.** South-central Madagascar, confined to the Isalo Massif.

**Habitat.** In grassland and open *Uapaca* woodland, on sandstone and sandy soils, at 800–1,100 m altitude.

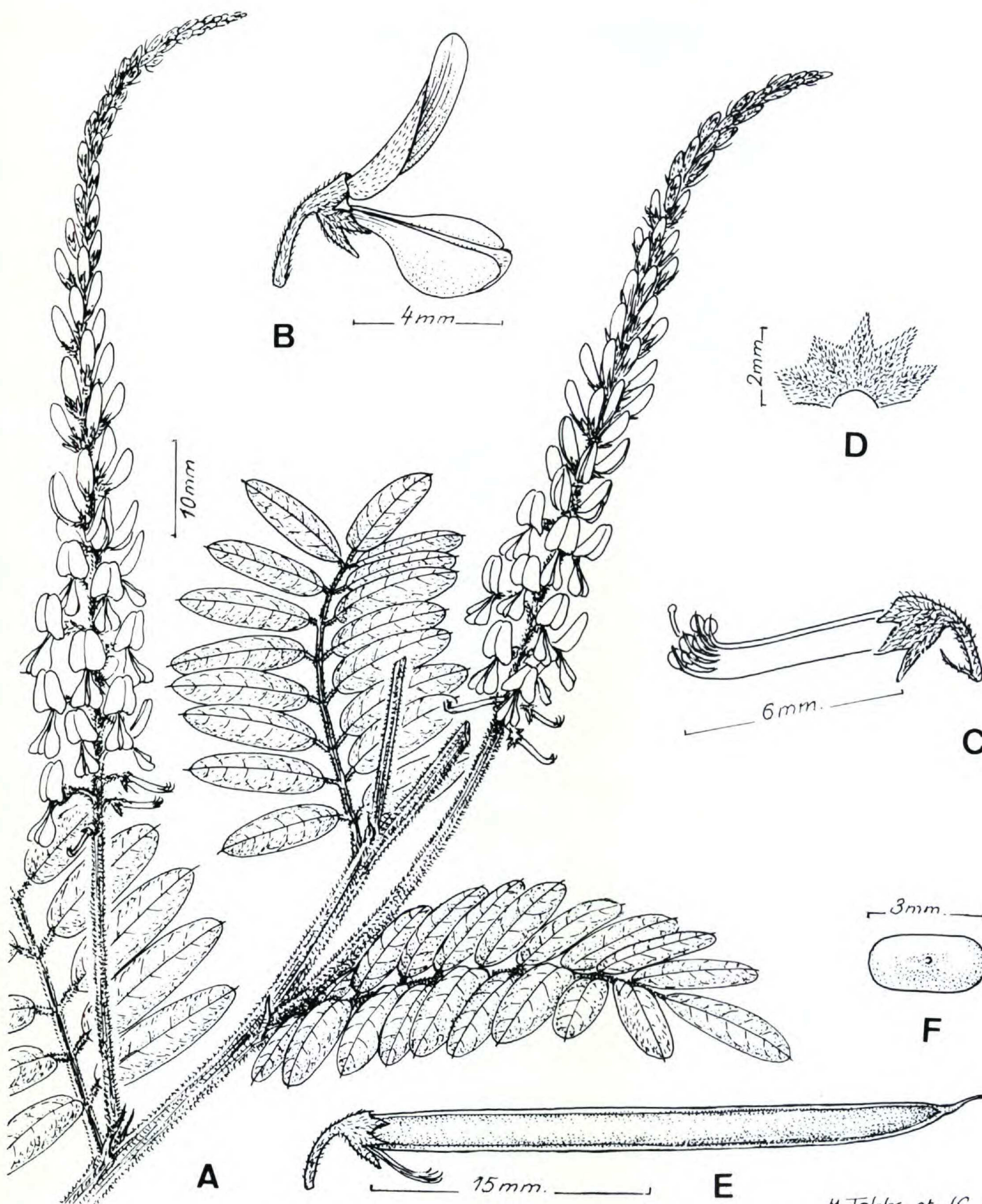
**Flowering time.** (October) January–March.

**Vernacular name.** Kirikisa.

This species is dedicated to Blaise Du Puy, one of the collectors of the type specimen. She has

studied and collected widely in Madagascar, and has worked with enthusiasm for conservation of the Malagasy flora, particularly through the Parc de Tzimbazaza.

**Paratypes.** SOUTH-CENTRAL MADAGASCAR. Isalo, Ranohira, Fév. 1956 (fl), *Bosser* 9147 (P); Isalo, près de Ranohira, Fév. 1963 (fl, jfr), *Bosser* 17402 (P); Isalo, vers le km 710, 800 m, 29 Jan. 1955 (fl, jfr), *Cours* 5025 (MO, P); Isalo, Ranohira, 4 Mar. 1943 (fl, jfr), *Decary* 18939 (K, P); Isalo Massif, valley containing "La Piscine" (Angaraboka), Ampandrabe, 45°21'E, 22°33'S, 850 m, 8 May 1989 (fr), *D. & B. Du Puy*, M221 (K, P, TAN); Plateau de l'Isalo, Col des Tapias au S-W de Ranohira, vers 1,000 m, Oct. 1933 (fl, jfr), *Humbert* 11219 (K, MO, P); Plateaux et vallées de l'Isalo à l'W de Ranohira, 800–1,250 m, 29 Jan.–2 Fév. & 8–10 Avr. 1955 (fl, fr), *Humbert* 28655 (K, MO, P, PRE); Prov. de Fianarantsoa, Massif de l'Isalo, à l'E de Ranohira, près d'Andohakandrareza, S-E de "La Piscine," 22°33'S, 45°21'E, 800–900 m, 14 Fév. 1990 (fl, fr), *Labat, B. & D. Du Puy & Rakouth* 2121 (K, MO, NY, P, TAN); Isalo, Fév. 1967 (fl, fr), *Morat* 2579 (P); Isalo, Mar. 1970 (fl), *Morat* 3468 (P); Isalo, Ilakaka, 21 Fév. 1961 (fl, fr), *Peltier & Peltier* 2989 (K, P); Isalo, 16 Avr. 1965 (fl, fr), *Peltier & Peltier* 5517 (P).



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Figure 3. *Indigofera bosseri* Du Puy & Labat (Labat, B. P. & D. J. Du Puy & Rakouth 2116, P). —A. Habit. —B. Flower. —C. Calyx and staminal sheath. —D. Calyx. —E. Pod. —F. Seed.

***Indigofera bosseri*** Du Puy & Labat, sp. nov.  
TYPE: South-central Madagascar. Prov. Fianarantsoa, Route Nat. 7 entre Sakaraha et Ranohira, 300 m E d'Ilakaka, 22°41'S, 45°14'E, 750 m, 13 Fév. 1990 (fl), J.-N. Labat, B. P. & D. J. Du Puy & B. Rakouth 2116 (holotype, P; isotypes, BR, K, MO, NY, P, PRE, TAN, WAG). Figure 3.

Frutex 1–2.5 m altus. Folia foliolis 17–23. Inflorescentia plerumque 10–20 cm longa, aspectu rvido, gracilis et subtiliter descrescens bracteis alabastra non excedentibus. Flores 8–9 mm longi, profunde rosei. Calyx quartum tubi staminalis non attingens, dentibus brevibus usque ad tubi calycis aequilongus. Tubus staminalis ca. 7 mm longus. Ovaria et legumina glabra.

An evergreen, softly woody shrub 1–2.5 m tall;

twigs densely velvety pubescent, the young tips white to slightly fulvous. Biramous hairs mostly very unequally branched, the long branch suberect and crisped giving a velvety pubescence, mostly white. Leaves with 17–23 paired leaflets; stipules subulate, 5–9 mm long; stipels minute, often hidden among the hairs on the rachis, associated with tufts of trichomes. Leaflets narrowly oblong-elliptic to oblong-ovate, 15–30 × 6–10 mm, with an apical mucro ca. 1 mm long, densely but shortly pubescent above and beneath, gray-green to silvery. Racemes ascending, very long and slender, mostly 10–20 cm long, usually longer than the leaves, the tips white, slender and narrowly tapering; bracts ca. 2–3 mm long, shorter than the buds, not or hardly exerted in the young raceme tips, caducous. Flowers 8–9 mm long, deep pink, the standard crimson with a white basal eye and deep red behind, the wings fuchsia pink, the keel crimson. Calyx ca. 2 mm long, about a quarter as long as the staminal sheath, white hairy; teeth triangular, shorter than to about as long as the tube. Standard densely crisped-pubescent with white to red (not brown or fulvous) hairs behind. Staminal sheath ca. 7 mm long. Ovary glabrous. Pods linear-cylindrical, 30–48 mm long, rigid and beaked, glabrous and glossy, splitting into 2 spiraling valves, with 6 or 7 seeds. Seeds large, oblong-ellipsoidal, ca. 3.5 × 2 mm, finely pitted to smooth.

*Affinities.* *Indigofera bosseri* is related to *I. lyallii* Baker and *I. mangokyensis* R. Viguier, but it can be distinguished by its longer, more slender and more finely tapering inflorescences with bracts that do not exceed the developing buds, its larger flowers with a longer staminal sheath, its smaller calyces less than a quarter as long as the staminal sheath with shorter teeth up to as long as the calyx tube, the grayish appearance of its inflorescences due to white rather than brown hairs on the calyces, bracts, and backs of the standard petals (sometimes similar in *I. mangokyensis*), and by its more slender pods. It further differs from *I. mangokyensis* by its glabrous ovaries and pods.

*Distribution.* South-central and west-central Madagascar, mainly collected in the Isalo Massif, also recorded in the central Mania River basin around the Itremo Massif and the hills west of Antsirabe.

*Habitat.* In grassland, seasonal river gullies, on rocky outcrops and roadsides, on sandstone and granite, at 600–1,000 m altitude.

*Flowering time.* January–March.

This species is dedicated to Jean Bosser, in recognition of his outstanding contributions to Malagasy botany through collection, curation, and research.

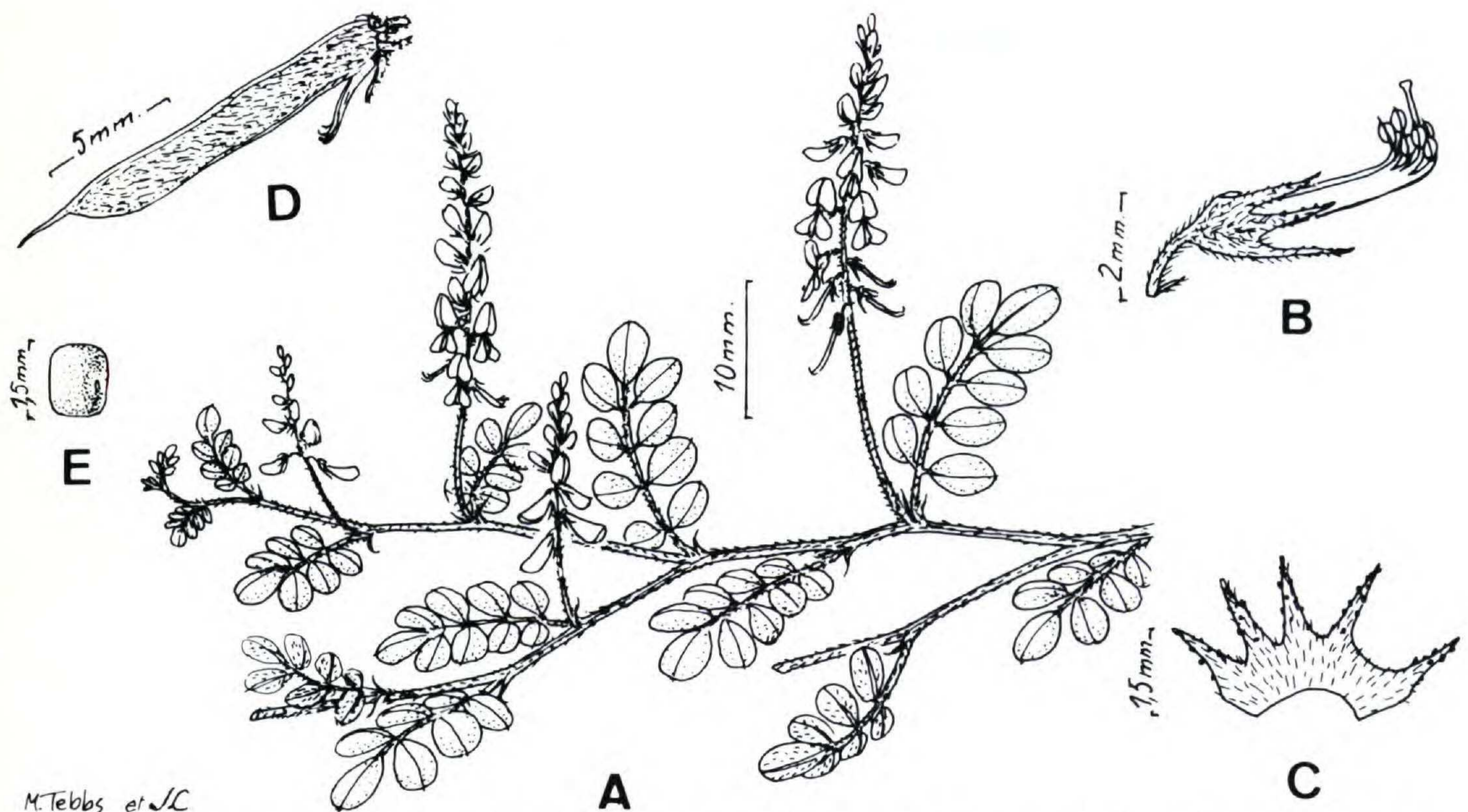
*Paratypes.* SOUTH- AND WEST-CENTRAL MAD-

AGASCAR. Isalo, Ranohira, PK 713, Mar. 1964 (fr), *Bosser 19132* (K, MO, P); Plateaux de l'Isalo, à l'E de Ranohira, 800–1,000 m, 30 Juil. 1928 (fr), *Humbert & Swingle 4983* (K, MO, P); entre Mandrosonavo et Amborompotsy, route de Morondava, Fév. 1973 (fl), *Morat 4177* (P); Prov. of Toliara, along Route Nationale 7, at Isalo, 22°37'S, 45°23'E, 810 m, 23 Mar. 1991 (fl, jfr), *Miller & Randrianasolo 6098* (MO, P, TAN); Route Betafo-Mandato, pont du km 97, 18 Mar. 1960 (fl), *Peltier & Peltier 2049* (K, P); Isalo, 22 Fév. 1961 (fl), *Peltier & Peltier 3005* (K, MO, P); Isalo, bord de la piste partant du km 715 vers l'W, 12 Avr. 1961 (fr), *Peltier, Peltier & Montagnac 3017* (K, P); W de Midongy, 600 m, Fév. 1919 (fl), *Perrier de la Bâthie 12506* (P, one of three syntypes of *I. mangokyensis*); without locality, *Service Forestier 1381-SF*.

***Indigofera imerinensis*** Du Puy & Labat, sp. nov. TYPE: Central Madagascar. Antananarivo Prov., facade E du Massif de l'Ankaratra, village d'Ankaratra à l'E d'Ambatolampy, 19°21'S, 47°20'E, 1,700–2,000 m, 28 Jan. 1990 (fl, fr), *J.-N. Labat, P. Phillipson & P. P. Lowry 2021* (holotype, P; isotypes, K, MO, P, TAN). Figure 4.

Species distincta aspectu longirepentis, prostrato; pilis biramosis omnino albis, pagina superiore foliorum inequali-ramosis; in multis speciminibus praesentia trichomatum brevium glandulosorum; foliolis latis rotundatis; gemmis, floribus et leguminibus parum deflexis; et leguminibus brevibus strigosis.

A perennial, spreading herb; stems prostrate, radiating from a central woody rootstock, strigose and sometimes with dense, short, glandular trichomes. Biramous hairs mostly medifixed, appressed, stiff, white, often mixed with short glandular trichomes. Leaves with (5–)7–9 paired leaflets; petiole 1–3 mm long, the petiole and rachis sometimes densely glandular; stipules subulate, 2–3 mm long, sometimes glandular; stipels minute, associated with or replaced by a few trichomes; leaflets elliptic to obovate, 4–10 × 3–7 mm, rounded at the base and apex, strigose above and beneath, the biramous hairs on the upper surface erect and often with unequal branches. Racemes ascending, 30–60 mm long, many-flowered, the flowers and buds somewhat deflexed; peduncles 10–20 mm long, the pedicels and axis sometimes glandular. Flowers ca. 4 mm long, red, the standard whitish behind, the keel whitish. Calyx 1.5–3 mm long, about half as long as the staminal sheath, with white biramous hairs and often with very dense, short glandular trichomes; teeth slender, subulate, longer than the tube. Standard white strigose behind and usually with short glandular trichomes. Staminal sheath 3–4 mm long. Ovary strigose. Pods somewhat deflexed, cylindrical, 8–14 mm long, white strigose, not glandular, split-



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Figure 4. *Indigofera imerinensis* Du Puy & Labat (Labat, Phillipson & Lowry 2021, P). —A. Habit. —B. Calyx and staminal sheath. —C. Calyx. —D. Pod. —E. Seed.

ting into 2 valves, with 4–6(–8) seeds. Seeds cuboid, ca. 1.1–1.3 × 1 mm, smooth.

**Affinities.** *Indigofera imerinensis* is closely allied to the African species *I. mimosoides* Baker, especially variety *viscidior* Gillett, which it resembles somewhat in its rather short glandular trichomes and perennial growth habit. *Indigofera mimosoides* usually differs in having a more upright and often annual habit, its usually very long glandular trichomes, its longer calyx lobes, and its flowers and pods which are not deflexed; variety *viscidior* differs in its much more dense and strongly glandular trichomes which also occur on the leaflet midvein and margins, its narrower leaflets, and its erect habit. The degree and distribution of glandular trichomes is very variable: the most densely glandular specimens have numerous short, glandular trichomes on the stems, stipules, leaf rachises and petioles, inflorescences, calyxes, and the exterior of the standard petals (this last character is unique in Madagascar); intermediate specimens have the trichomes mainly confined to the calyxes, standard, and stipules; some specimens are almost entirely eglandular. In view of the variation encountered in related species in Africa, this variation in Madagascar is included here within a single species. *Indigofera imerinensis* resembles the sympatric *I. stenosepala* Baker, which can be distinguished by its upright habit, the presence of brown biramous hairs especially on the inflorescence, calyxes, and standard petals, its longer

glandular trichomes which are much less dense on the calyx and never occur on the standard petal or pods, and its equally branched biramous hairs on the upper surface of the leaflets.

**Distribution.** Central Madagascar, on the Central Plateaux from Antananarivo and Lake Itasy to Ambohitra, including Antsirabe and the Ankaratra Massif.

**Habitat.** Disturbed areas such as tracksides and dykes of old rice fields, on lateritic soils, at 1,200–1,800 m altitude.

**Flowering time.** December–March.

The specific epithet refers to the Imerina region of Central Madagascar, where the known collections originated.

**Paratypes.** CENTRAL MADAGASCAR. Ambohimandroso (Ambatolampy), 1,500 m, Déc. 1955 (fl), *Bosser 8811* (P); entre Arivonimamo et Soamananety, 26 Déc. 1959 (fl), *Peltier & Peltier 1668* (P); Faratsiho, 26 Fév. 1960 (fl), *Peltier & Peltier 1952* (K, P); District d'Ampanifotsy, Ilempona, 26 Fév. 1960 (fl), *Peltier & Peltier 1959* (MO, P); District d'Antsirabe, Andranobe, 19 Mar. 1960 (fl), *Peltier & Peltier 2129* (P); Amboasary, R.N. 7, km 36, 28 Déc. 1963 (st), *Peltier & Peltier 4527* (P); R.N. 7, km 127, vers Ambohilany, 17 Fév. 1964 (fl, fr), *Peltier & Peltier 4652* (K, P); Ambalamanakana, R.N. 7, entre Ambohitra et Ambohimehasoa, 18 Fév. 1964 (fl, jfr), *Peltier & Peltier 4665* (P); Antsirabe, 1,600 m, Avr. 1912 (fr), *Perrier de la Bâthie 4156* (P); Antsirabe, 1,500 m, Jan. 1914 (fl), *Perrier de la Bâthie 4802* (P); environs d'Ambatolampy, 1,600 m, Fév. 1927, *Perrier de la Bâthie 17915* (P, one of two syntypes of *I. ankaratrensis*).

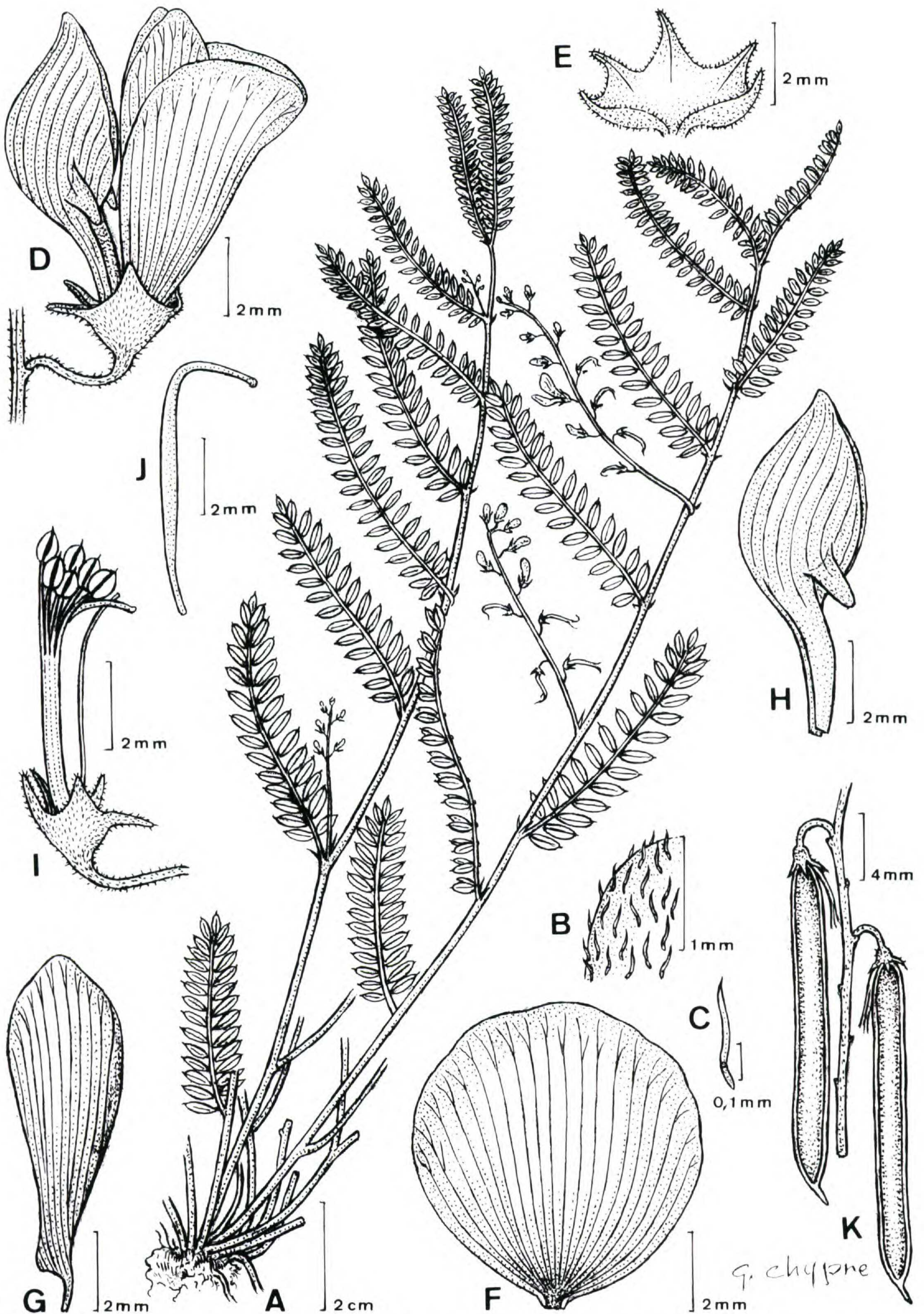


Figure 5. *Indigofera itremoensis* Du Puy & Labat (Perrier de la Bâthie 12401, P). —A. Habit. —B. Leaflet portion with medifixed hairs. —C. Medifixed hair. —D. Flower. —E. Calyx. —F. Standard (exterior). —G. Wing. —H. Keel. —I. Calyx with staminal sheath. —J. Ovary. —K. Pods.



***Indigofera itremoensis*** Du Puy & Labat, sp. nov. TYPE: West-central Madagascar. Ambatofangena [probably Ambatofangehana, E slopes of the Itremo Massif, 47°01'E, 20°30'S], *H. Perrier de la Bâthie* 12401 (holotype, P; isotypes, K, P). Figure 5.

Species distincta aspecto prostrato; foliis foliolis pernumerosis, 15–31; inflorescentiis longis folia excedentibus, 40–160 mm longis; floribus grandibus 7–8 mm longis; ovario et leguminibus glabris.

A perennial, creeping herb; stems prostrate, radiating from a woody rootstock, with sparse biramous hairs. Biramous hairs mostly slightly unequal-branched, stiff, white to yellowish. Leaves with 15–31 paired leaflets; stipules subulate, ca. 3 mm long, often with sparse, minute glands on the margins; stipels absent, replaced by tufts of glandular trichomes; leaflets elliptic, ca. 4–6 × 2–3 mm, glabrous above or with scattered biramous hairs with unequal branches, thinly strigose and paler beneath (on herbarium specimens). Racemes ascending, long and lax, 40–160 mm long, pedunculate, with numerous flowers; peduncles 15–40 mm long; pedicels 2.5–4 mm long, reflexed; bracts 1.5–2 mm long, often with a few minute glands on the margins, caducous. Flowers large, 7–8 mm long, purple-red. Calyx small, 1.5–2 mm long, about a quarter as long as the staminal sheath, strigose; teeth triangular, about as long as the tube. Standard with minute, crisped biramous hairs behind. Staminal sheath 6–7 mm long. Ovary glabrous. Pods deflexed, linear-cylindrical, 15–25 mm long, beaked, glabrous, red-brown, with ca. 4–8 seeds. [Seeds not known.]

*Affinities.* *Indigofera itremoensis* appears to be related to *I. ankaratrensis* R. Viguier and *I. thymoides* Baker, but it may be recognized by its prostrate growth habit, its leaves with very numerous leaflets, its long inflorescences exceeding the leaves, its large flowers, and its glabrous ovary and pods.

*Distribution.* West-central Madagascar, only known from the Itremo Massif and surrounding hills, west of Ambositra.

*Habitat.* Exposed situations among quartzite rocks, at 1,500–2,000 m altitude.

*Flowering time.* January–February.

The specific epithet refers to the Itremo Massif and surrounding hills where the three known collections originated.

*Paratypes.* WEST-CENTRAL MADAGASCAR. Montagnes à l'W d'Itremo, W Betsileo, 1,500–1,700 m, 17–22 Jan. & 18–22 Avr. 1955 (fl), *Humbert* 28234 (K, P); Mont Analamamy, 2,000 m, Fév. 1919 (fl, fr), *Perrier de la Bâthie* 12478 (P).

***Indigofera mangokyensis*** R. Viguier, Not. Syst. (Paris) 13: 364. 1949. TYPE: Madagascar. Central Madagascar, Bassin du Mangoky, Haut Zomandao, *H. Perrier de la Bâthie* 4210 (lectotype, selected here, P; isoelectotype, P).

One of the three syntypes of *Indigofera mangokyensis*, *H. Perrier de la Bâthie* 12506, is considered here to be a specimen of *I. bosseri*, and another, *Humbert* 6560, of *I. lyalli*.

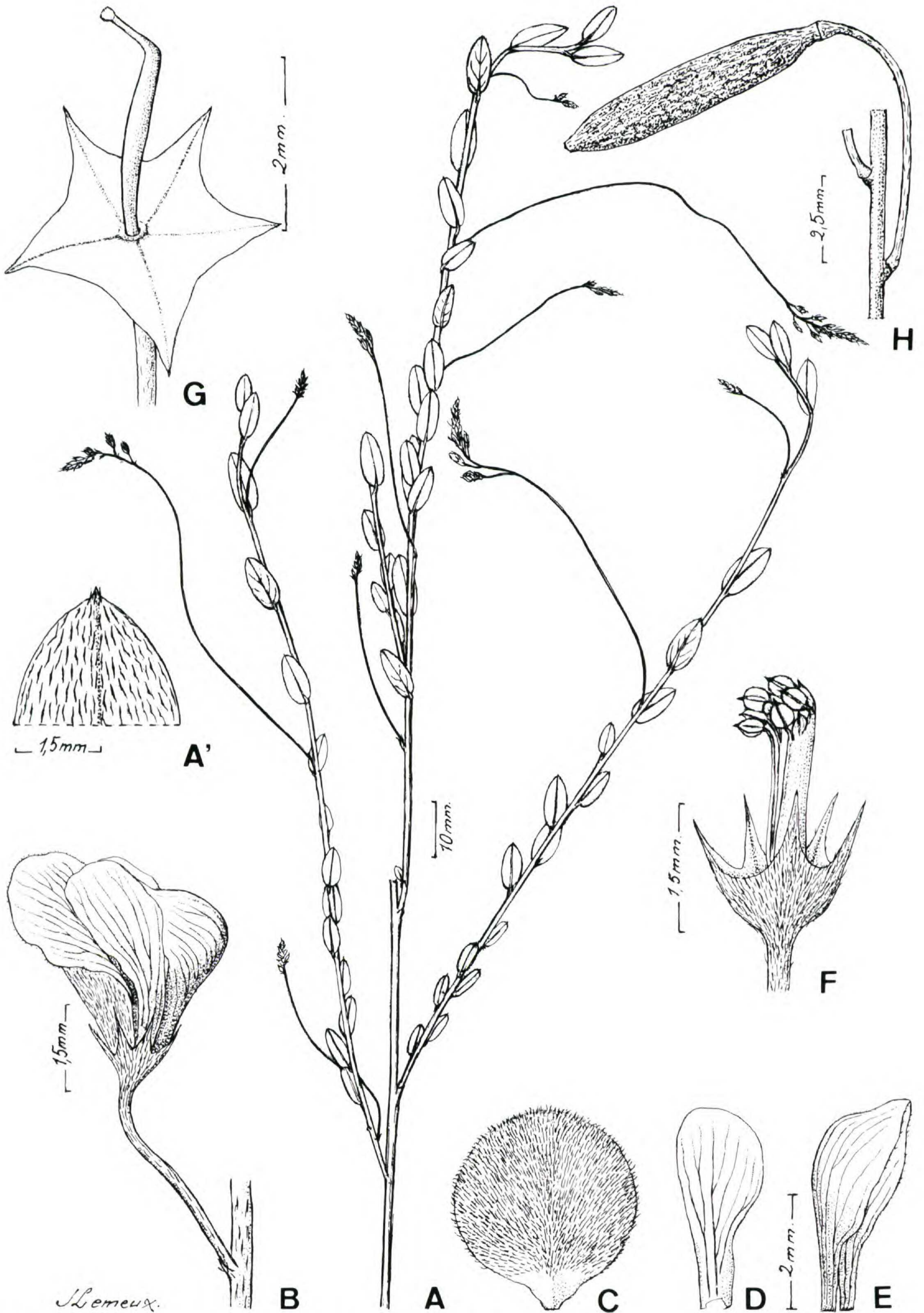
***Indigofera zornioides*** Du Puy & Labat, sp. nov. TYPE: Central Madagascar. Ambohimandroso près d'Ambatolampy, 1,500 m, Dec. 1955 (fl, fr), *J. Bosser* 8814 (holotype, P; isotype, TAN). Figure 6.

Herba prostrata perennis; caules alis angustis membranaceis. Folia simplicia, fere sessilia, 5–14 × 2–4.5 mm. Racemi longi et laxi, plerumque 50–100 mm longi, pedunculo longissimo et gracili. Flores 3.5–4 mm longi, rubentes. Vexillum facie posteriori strigosum; alae carina multo longiores. Legumina patentia, parva, anguste cylindrica.

A prostrate, perennial herb; stems long-creeping and few-branched, slender (ca. 1 mm broad), flattened, with narrow, membranous wings, thinly strigose. Biramous hairs all medifixed, mainly white, stiff. Leaves simple; stipules triangular, 1–1.5 mm long; stipels absent. Leaf lamina almost sessile, narrowly oblong to oblong-ovate, 5–14 × 2–4.5 mm, base rounded, apex obtuse, thinly appressed-strigose above and beneath. Racemes long and lax, mostly 50–100 mm long, the peduncle very long and slender, ca. 30–70 mm long; bracts ca. 1 mm long, caducous; pedicels 3–4 mm long. Flowers 3.5–4 mm long, the wings much longer than the keel, reddish. Calyx ca. 1.5 mm long, about half as long as the staminal sheath, thinly white strigose; teeth narrowly triangular, about as long as the tube. Standard white to yellowish strigose behind. Staminal sheath ca. 2.5 mm long. Ovary strigose. Pods spreading, small, narrowly cylindrical, 5–9 mm long, sparsely white strigose, splitting into 2 spiralling valves, with 4–6 seeds. [Seeds not known.]

*Affinities.* This distinctive species appears to be endemic to Madagascar. It can be easily recognized by its simple, almost sessile leaves, its flattened, creeping stems, and its long, wiry inflorescences. It may be placed in section *Dendroides* due largely to its long, lax racemes with very long, wiry peduncles and its relatively long pedicels. However, the lack of dark brown biramous hairs on the back of the standard is unusual in this group.

*Distribution.* Central Madagascar, only known



Lemeux.

Figure 6. *Indigofera zornioides* Du Puy & Labat (Bossler 8814, P). —A. Habit. —A'. Leaflet apex and medifixed hairs. —B. Flower. —C. Standard (exterior). —D. Wing. —E. Keel. —F. Calyx and staminal sheath. —G. Open calyx and ovary. —H. Pod.

from near Ambatolampy and the Col des Tapias north of Ambositra.

*Habitat.* In grassland or rocky outcrops in grassland, at ca. 1,500 m altitude.

*Flowering time.* December.

The specific epithet refers to the close, alternate arrangement of the leaves along the stem, reminiscent of the bracts in the inflorescences of *Zornia* species.

*Paratype.* CENTRAL MADAGASCAR. Col des Tapias, 45 km avant Ambositra, Déc. 1963 (fl), *Bosser 18612* (P, TAN).

***Indigofera peltieri*** Du Puy & Labat, nom. nov.

Replaced name: *Indigofera tulearensis* M. Peltier, *Adansonia*, sér. 2, 5: 429. 1965, not *Indigofera tulearensis* Baillon ex Drake (1903).  
TYPE: Southern Madagascar. Km 2 d'Ambohimahavelona (Tulear) [Toliara], *J. Peltier & M. Peltier 2951* (holotype, P).

This species is dedicated to Maurice Peltier, in recognition of his contributions to the study of the Papilionoideae of Madagascar.

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