

PROSOPIS INSULARUM (GUILL.) BRET.,
A NEW COMBINATION IN PROSOPIS L. (MIM.)

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(received July 19th, 1960)

A study of the species of *Leucaena* Bth. and their hybrids as cultivated in Netherlands New Guinea, revealed that the systematical status of *Leucaena insularum* (Guill.) Dän. needed to be re-examined. *L. insularum* was first described by GUILLEMIN in 1837 and based on a specimen from Tahiti. He named it *Acacia insularum* Guill. In 1932, DÄNIKER placed *A. insularum* in *Leucaena* and published the combination *Leucaena insularum* (Guill.) Dän. BENTHAM had already placed the same species in *Leucaena* in 1846 and then named it *Leucaena forsteri* Bth.

It appeared that some specimens kept in the Leiden Herbarium, collected in New Guinea, the Solomon Islands, and the Moluccas, which had been identified as *Leucaena* sp., belonged to a taxon that was either identical with, or closely allied to, *Leucaena insularum* (Guill.) Dän. Dr. R. D. HOOGLAND (C.S.I.R.O. Herbarium, Canberra) supplied information which led to the identification of the specimens as *Piptadenia novo-guineensis* Warburg. WARBURG's detailed description made it possible to identify the specimens with certainty.

A wider range of specimens was examined and it finally appeared that both *Leucaena insularum* (Guill.) Dän. and *Piptadenia novo-guineensis* Warb. belonged to the same genus, but neither to *Leucaena* nor to *Piptadenia*.

The anthers in *L. insularum* and in *Piptadenia novo-guineensis* are glanduliferous and the seeds contain endosperm; both these characters are not admissible in either *Leucaena* or *Piptadenia* (according to some authors a trace of endosperm may be seen in the seeds of some species considered to belong to *Piptadenia*). The pods of both taxa have a distinct mesocarp and well-marked septa. They seemed to be indehiscent. WARBURG, however, described (l.c. 336) the pods as dehiscent, but I never found a mature dehiscent pod on any specimen I examined. Young and immature pods, on the other hand, after being dried, sometimes appear to be dehiscent. The pods, apparently, shed the seeds after the margins become detached or split as far as to open the seed-containing loculi (see fig. 2:6). They do not open further and it can be said that the pods are indehiscent, although the gaping margins suggest dehiscence. A similar opening of the pods occurs e.g. in *Cassia alata*. On the strength of these three characters (glanduliferous anthers, indehiscent pods, and albuminous seeds), it seems best to refer both *L. insularum* (Guill.) Dän. and *Piptadenia novo-guineensis* Warb. to the genus *Prosopis* L.

One of the most important differences between these two taxa can be observed in the seeds. The seeds of western specimens (distributional area the Moluccas to the Solomon Islands) are glossy and very often narrow. The seeds are dull and mostly broader in eastern specimens (distributional area the New Hebrides and New Caledonia to Tahiti). Other characters of Western specimens are more seeds to the pod and more jugae to the leaf, but though probably statistically a difference could be shown to exist, these characters are not constant.

These results (small morphological differences combined with geographical segregation) indicate that it is not advisable to maintain WARBURG's taxon as a distinct species. It is a subspecies of GUILLEMIN's species, originally described as *Acacia insularum*.

Mrs. Dr. J. A. FRAHM-LIVELD of the Laboratory of Tropical Agriculture who kindly examined the cytology of young seedlings, found for an eastern specimen chromosome number $2n = 52$ (Tonga Islands, Yuncker 15108), and $2n = 54$ for a western specimen (New Guinea, Lam/Versteegh BW 750).

I am much indebted to the Directors or Keepers of the following Herbaria for the loan of specimens, or for making specimens available for examination, or supplying information: Kew (K); Leiden (L); London (BM); Paris (P); Utrecht (U); Wageningen (WAG); Zürich (Z).

Prosopis insularum (Guill.) Bret. comb. nov.

Acacia insularum Guillemin, Ann. Sc. Nat. Ser. II, 8:360. 1837.

Leucaena insularum (Guillemin) Däniker, Vierteljahrschr. Nat. Ges. Zürich 77 (Beibl. 19):176. 1932; Yuncker, Plants of Tonga, B.P. Bishop Mus. Bull. 220:130. 1959.

Leucaena forsteri Bentham, London Journ. Bot. 5:94.1846.

Mimosa glandulosa Solander ex Forster, Prodr.: 92. 1786; nomen nudum.

———— subsp. ***insularum*** Fig. 1.

A shrub or a small to medium sized tree up to 15 m. high; branches nearly glabrous or woolly pubescent or canescent and then often soon glabrescent. Stipules filiform; sometimes somewhat subulate, broadened at the base, (2)4–8 mm. long. Leaves (5)10–13(17)-jugate, mostly with an ellipsoid, or narrowly cupulate, or umbilicate gland closely below or more or less between the lowest pair and more or less between the upper 1–7 pairs of pinnae; petiole and rachis canaliculate, pubescent or nearly glabrous; small stipellae sometimes present at the lower one or two pairs of pinnae; pinnae pubescent or nearly glabrous; leaflets (15)20–35(55) pairs on a pinna, oblong-ob lanceolate, \pm 3–4 times as long as wide, (3)5–10 mm. long, (1) 1.5–2.5 mm. wide, rounded and unequal-sided at the base, obtuse at the apex, glabrous or glabrescent, margin somewhat ciliate.

Inflorescence capitate, globose, pedunculate, 1–4 together in the leaf-axils towards the top of the branches; peduncle 1–4 cm. long, pubescent or nearly glabrous; involucre mostly distant from the full

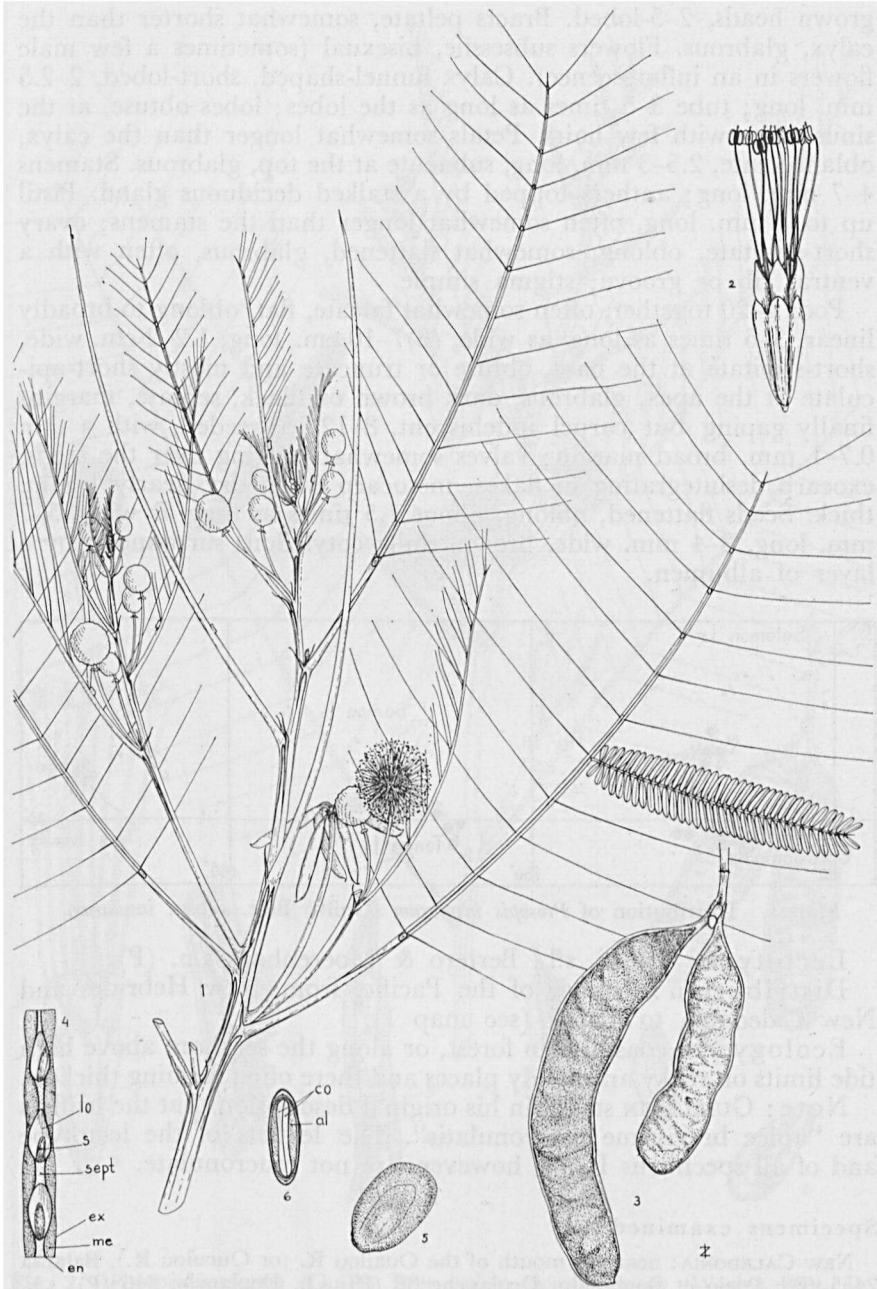
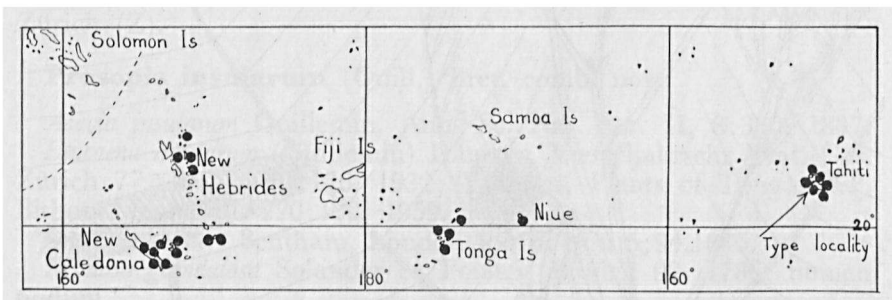


Fig. 1. *Prosopis insularum* (Guill.) Bret. subsp. *insularum*. 1: flowering branch ($\times \frac{1}{2}$); 2: flower ($\times 6$); 3: pods ($\times \frac{1}{2}$); 4: part of longitudinal section of pod with exocarp (ex), mesocarp (me), endocarp (en), loculus (lo), and seed (s) ($\times 2$); 5: seed ($\times 2$); 6: transverse section of seed with albumen (al) and cotyledons (co) ($\times 3$) (1 after Moerenhout s.n.; 2 after Nadeaud 507; 3, 5, and 6 after Yuncker 15108; 4 after Balansa 2455).

grown heads, 2–5-lobed. Bracts peltate, somewhat shorter than the calyx, glabrous. Flowers subsessile, bisexual (sometimes a few male flowers in an inflorescence). Calyx funnel-shaped, short-lobed, 2–2.5 mm. long; tube 3–5 times as long as the lobes; lobes obtuse, at the sinus often with few hairs. Petals somewhat longer than the calyx, oblanceolate, 2.5–3 mm. long, subacute at the top, glabrous. Stamens 4–7 mm. long; anthers topped by a stalked deciduous gland. Pistil up to 7 mm. long, often somewhat longer than the stamens; ovary short-stipitate, oblong, somewhat flattened, glabrous, often with a ventral rib or groove; stigma simple.

Pods 1–20 together, often somewhat falcate, flat, oblong to broadly linear, 3–6 times as long as wide, (6)7–10 cm. long, 1.2–2 cm. wide, short-stipitate at the base, obtuse or truncate and mostly short-apiculate at the apex, glabrous, dark brown or black, septate, margins finally gaping but carpel indehiscent, 8–12(15)-seeded, with a thin 0.7–1 mm. broad margin; valves somewhat bulging over the seeds, exocarp desintegrating in flakes, mesocarp when dry nearly 1 mm. thick. Seeds flattened, oblong, about 1.5 times as long as wide, 5–7 mm. long, 3–4 mm. wide, brown, dull; cotyledons surrounded by a layer of albumen.



Map 1. Distribution of *Prosopis insularum* (Guill.) Bret. subsp. *insularum*.

Lectotype: Tahiti, s.l., Bertero & Moerenhout s.n. (P).

Distribution: Islands of the Pacific, from New Hebrides and New Caledonia to Tahiti (see map 1).

Ecology: In coastal rain forest, or along the seashore above high tide limits on rocky and sandy places and there often forming thickets.

Note: GUILLEMIN stated in his original description that the leaflets are "apice brevissime mucronulatis". The leaflets of the lectotype and of all specimens I saw, however, are not mucronulate.

Specimens examined

NEW CALEDONIA: near the mouth of the Ouailou R. (or Oucoulou R.), Balansa 2455 (P); Poeio et Buobondo, Deplanche 38 (P); s.l., Deplanche 346 (P); s.l., Vieillard & Lancker s.n. (P).

Is. LOYAUTÉ: Lifu, Cape Daussy, Balansa 2455a (P); Lifu, Däniker 1958a (Z); Uvea, Däniker 1958 (Z).

NEW HEBRIDES: Pentecost I., Ilamre, Aubert de la Rüe 380 (L; P); Pentecost I., bet. Metaruk and Sasanadam, Aubert de la Rüe 400 (P); bet. Shaik (?) Bay & Hog Harbour, Baker 166 (BM); Vanua Lava I., Kajewski 438 (P); Aneityum I.,

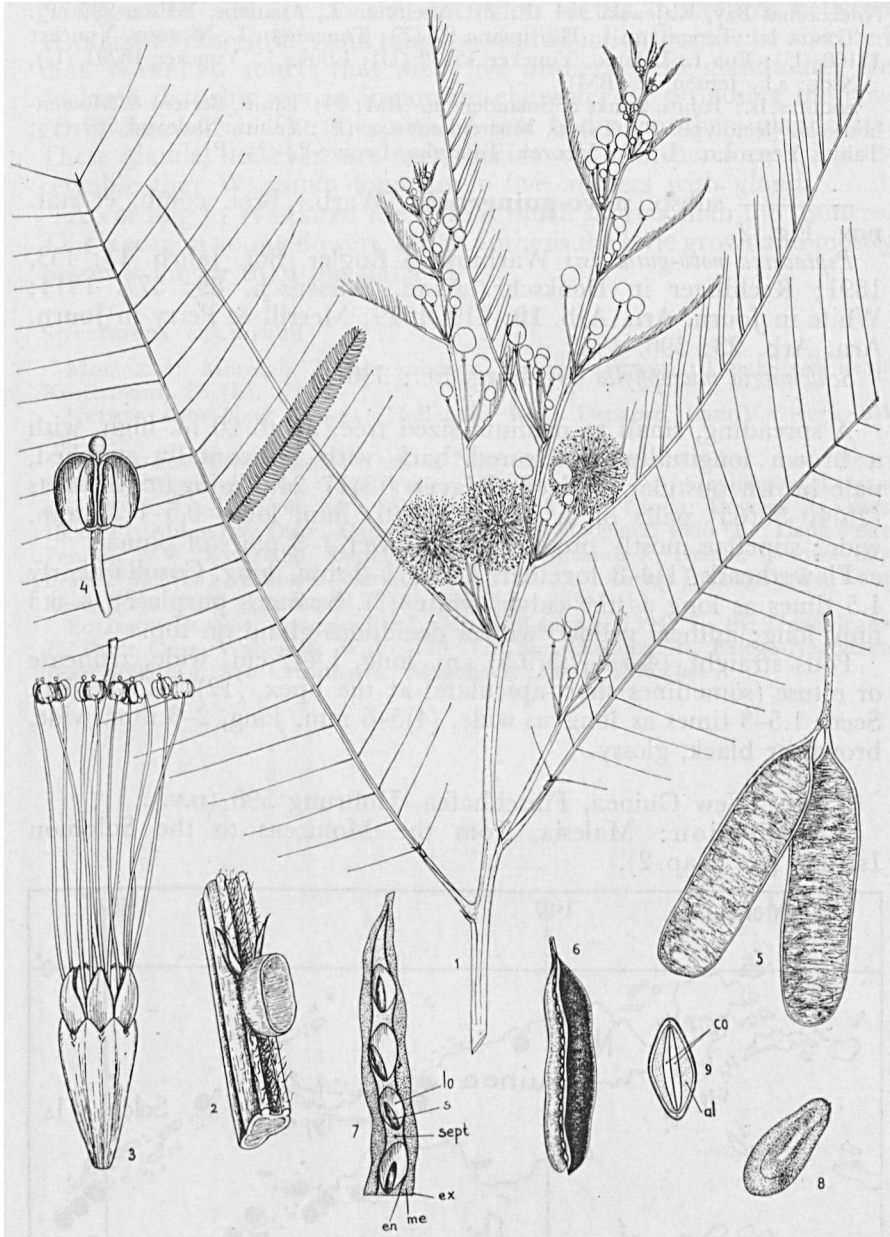


Fig. 2. *Prosopis insularum* (Guill.) Bret. subsp. *novo-guineensis* (Warb.) Bret. 1: flowering branch ($\times \frac{1}{2}$); 2: part of the petiole with gland and stipellae ($\times 5$); 3: flower ($\times 10$); 4: anther with gland ($\times 30$); 5: pods ($\times \frac{1}{2}$); 6: partly dehiscent pod ($\times \frac{1}{2}$); 7: part of longitudinal section of pod with exocarp (ex), mesocarp (me), endocarp (en), sept, loculus (lo) and seed (s) ($\times 3$); 8: seed ($\times 3$); 9: transverse section of seed with albumen (al) and cotyledons (co) ($\times 5$) (1-4 and 6 after Brass 28026; 5 and 7-9 after Henty 9887).

Anelghauhat Bay, Kajewski 944 (P; Z); Aneityum I., Anaunoe, Wilson 993 (P).
 TONGA Is.: Tongatapu I., Hürlimann 92 (Z); Tongatapu I., Niutoua, Yuncker 15108 (U); Eua I., Lokupo, Yuncker 15532 (U); Lifuka I., Yuncker 15791 (U).
 NIUE: s.l., Jensen 12 (BM).

SOCIETY Is.: Tahiti, Banks & Solander s.n. (BM; P); Tahiti, Bertero & Moerenhout s.n. (lectotype: P); Tahiti, Moerenhout s.n. (P); Tahiti, Nadeaud 507 (P); Tahiti, Vesco s.n. (L; P); Moorea, Taiaraba, Lepine 22 (?) (P).

———— subsp. **novo-guineensis** (Warb.) Bret. comb. et stat. nov. Fig. 2.

Piptadenia novo-guineensis Warburg in Engler, Bot. Jahrb. **13**: 453. 1891; Rechinger in Denkschr. Akad. Wissensch. **89**: 577. 1914; White in Journ. Arn. Arb. **10**: 219. 1929; Merrill & Perry in Journ. Arn. Arb. **23**: 396. 1942.

Schleinitzia microphylla Warburg, l.c.: 336.

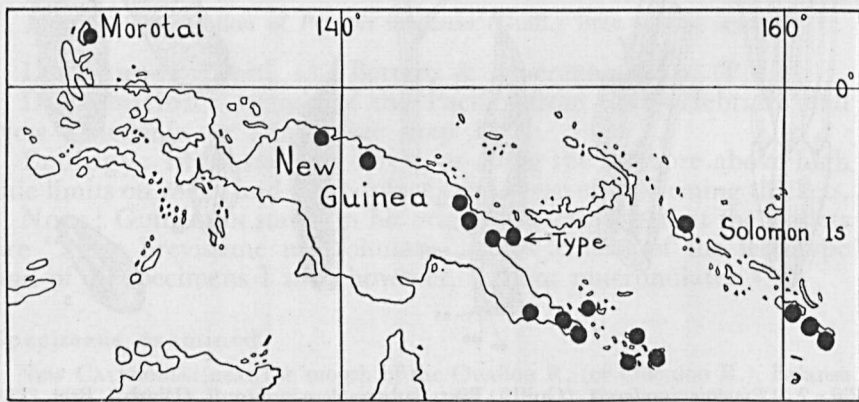
A spreading, small to medium sized tree, up to 20 m. high, with a brown longitudinally fissured bark with horizontally stretched, pale brown pustular lenticels. Leaves (13)17–24(30)-jugate. Leaflets (25)40–50(65) pairs on a pinna, 2–5(6) mm. long, 0.5–1(2) mm. wide; stipellae mostly present at the lower 1–3 pairs of pinnae.

Flowerheads (1)4–8 together. Calyx 1–2 mm. long. Corolla nearly 1.5 times as long as the calyx, white (?). Stamens purple(?), 4–6.5 mm. long; anthers yellow, with a deciduous gland on top.

Pods straight, (4.5)6–7.5(9.5) cm. long, 1.4–2 cm. wide, truncate or retuse (sometimes short-apiculate) at the apex, (12)15–20-seeded. Seeds 1.5–3 times as long as wide, (4)5–6 mm. long, 2–3 mm. wide, brown or black, glossy.

Type: New Guinea, Finschhafen, Hollrung 598 (n.v.).

Distribution: Malesia, from the Moluccas to the Solomon Islands (see map 2).



Map 2. Distribution of *Prosopis insularum* (Guill.) Bret. subsp. *novo-guineensis* (Warb.) Bret.

Ecology: Secondary rain forest at low elevations or in savannah.

Notes: I could not trace the type specimen of *Piptadenia novo-*

guineensis. In addition to the discussion of the differences between WARBURG's description and mine (see introduction) it may be observed that WARBURG stated that only five anthers were glandulate. He declared that this was an important character for proposing the new genus *Schleinitzia*. The specimens I saw had all anthers glandulate. These glands, however, are early deciduous, and therefore it is conceivable that WARBURG found only five anthers with glands.

According to WARBURG the style is much shorter than the stamens. This is seen in young flowers, but at anthesis the style grows and mostly becomes longer than the stamens.

Specimens examined

MOLUCCAS: Morotai, Tobele subdistr., Daigila Penins., Tangkiliaan (exp. Kostermans) 18 (L).

NETHERLANDS NEW GUINEA: Hollandia Res., Depapre, Lam/Versteegh BW 750 (L).

AUSTRALIAN NEW GUINEA: Terr. of New Guinea: Morobe Distr., Lac, Henty 9887 (L); Madang Distr., Gogol Valley, Hoogland 4895 (L); Stephansort, Lewandowsky 29 (L); Toricelli Mt., Schlechter 14598 (P); Papua: Dowara R., Brass 1596 (P); Milne Bay Distr., Cape Vogel Penins., Hoogland 4366 (L); Cape Vogel Penins., N.W. Kwareibo, Saunders 92 (L); Fergusson I., Deidei, Gomwa Bay, Brass 27339 (L); Misima I., Narian, Brass 27569 (L); Sudest I. (Tagula I.), Rambuso, Brass 28026 (L); Rossel I., Abaleti, Brass 28341 (L).

SOLOMON ISLANDS: Bougainville I., Kieta, Kajewski 1594 (L; P); Guadalcanal I., Point Cruz, Walker & White 120 (L); San Cristobal I., Balego-Nagonago, Brass 2698 (L); San Cristobal I., Magoha R., Brass 2736 (L).