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NOTES ON TWO LEGUMINOUS GENERA FROM EASTERN  
INDONESIA

A. J. G. H. KOSTERMANS \*

SUMMARY

1. A new monotypic genus, *Kalappia* Kostermans, is established for a tree of commercial importance from Celebes, *K. celebica* Kostermans. The genus is assigned to Caesalpiniaceae (Tribus Cassiae).

2. The Papilionaceous genus *Desmofischera* Holth. (only species: *D. monosperma* Holth.) is reduced to a synonym of *Monarthrocarpus* Merr. [only species: *M. securiformis* (Benth.) Merr.]. Additional collections, from Morotai, are cited.

1. A NEW GENUS FROM CELEBES

***Kalappia*** Kostermans, *gen. nov.*

Caesalpiniaceae, iribus Cassieae.—Sepala 5, subaequalia, lata, imbricata. Petala 5, unguiculata, erecto-patentia; 2 lateralia (exteriora) maiora. Stamina per duas coronas disposita cum sepalis et petalis alternant; stamen decimum probabiliter inter duo stamonia superiora deest. Stamina fertilia 5, plus minusve bilateraliter-symmetrice serta; staminum fertiliorum 2 sinistra et 2 dextra ab ovario posita, 2 stamina superne posita longiora; stamen infimum brevissimum. Stamonia 4 (interdum 2), 2 maiora inter stamina fertilia lateralia; reliqua 2 (si adsunt) superne. Antherae basifixae, versatiles, poro apicali dehiscentes; apex minute productus. Ovarium sessile, compressum, 3—5-ovulatum; stylus incurvatus, stigmatibus parvo terminali. Legumen elongatum, planum, per suturam ventralem anguste alatum, per suturam dorsalem dehiscentem, valvis tenuibus, interne leve. Semina 1—2 (raro 3), plana, disciformia, funiculo distincto, brevi; testa coriacea; cotyledones planae, latae, leves; radícula brevis, recta. Albumen deest.

Arbores altae, inermes; foliis imparipinnatis, eglandulis et stipulis inconspicuis. Bractae bracteolaeque ephemerae.

TYPE SPECIES.—*Kalappia celebica* Kostermans.

DISTRIBUTION.—Celebes, region around Malili (north of Gulf of Bone),

The polappi, nanakulahi, or kalappi tree, as it is called by the local tribes in the Malili region, is a forest giant yielding a valuable timber. Large-scale cutting has considerably diminished the number of these trees around Malili; in normal times an appreciable quantity of logs was ex-

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ported yearly to Makassar, where it was sawn into boards and stiles. A variety with a beautiful grain pattern was much sought after for cabinet work. It is in high esteem for ship-building and for the construction of bridges.

Although it was known for years that this tree represented an undescribed genus in Leguminosae, no botanical description has been published so far. As sufficient flowering and fruiting material was at my disposal and as I had the opportunity to study the tree in situ, I feel now justified to describe it.

The nearest allies of *Kalappia* are undoubtedly *Cassia* L., *Koompassia* Maingay, and *Uittienia* Steenis, whereas *Dialium* L. is more remotely related. In flower characters it comes very near to *Cassia* in the broader sense and to the genus *Cha/maesenna* Raf., as recognised by Britton & Rose (*in N. Amer. Fl.* 23: 250. 1930). From the former it differs by its oddly pinnate leaves and dehiscent pods; from the latter, moreover, by the number and position of the staminodes and the number of seeds. By the narrow wing, the pod vaguely resembles that of *Pterocassia* Britt. & Rose, and that of *Koompassia*, but in *Kalappia* the wing is unilateral and hardly developed, whereas in the other two genera mentioned, the seed-part of the pod is surrounded by a well-developed wing and, in addition, the pod is indehiscent; the flower of *Koompassia* is quite different as to the shape and size of petals as well as to the number of staminodes. The genus *Uittienia*, although having the same number of sepals and petals, differs by the number of fertile stamens and, moreover, has unifoliolate leaves.

*Storckiella* Seem, from the Fiji Islands and New Caledonia, is related, but has an irregular number of calyx- and corolla-lobes (3—5, as a rule 4); 10 fertile stamens opening by pores contiguous in short slits; and the anthers do not possess an appendage. The fruit shows a striking resemblance but the wing in *Storckiella* is broader.

*Kalappia celebica* Kostermans, *spec. nov.*—Fig. 1.

Folia alternata, plerumque 5-foliolata, imparipinnata. Foliola alternata, lanceolata vel elliptica, chartacea, 4 x 10 cm, breviter acuminata,

EXPLANATION OF FIGURE 1

FIG. 1. *Kalappia celebica* Kosterm.: a, flowering branch, X 0.63; b, fruit, X 0.63; c, flower, x 1.25; d, diagram of flower; e, flower with calyx and corolla removed except for one adaxial sepal, the stamens and staminodes behind the ovary and one stamen at the abaxial end are removed, too (the adaxial fertile stamens are usually smaller than the abaxial one), x 3.75; f, petals, x 1.25; g, sepals, the lower one not drawn, x 1.25; h, top portion of anther showing pores and excrecence (connective), X 12.5; i, ovary, X 3.1. — Drawing after the collection Waturandang 19 (Cel./IV-87).



FIG. 1



basi acuta, utrimque, areolata; supra glabra, nitentia costa canaliculata, nervis primariis 5—8 utrimque, gracillimis, vix elevatis subtus minute pilosa, costa prominente usque ad apicem extremum folioli, nervis primariis paulum elevatis. Petiolus 8—10 mm longus. Petiolus teres, 3—5 cm longus; rachis glabrescens, 4—8 cm longa. Inflorescentiae axillares, 2—3 aggregatae, dense sericeae, pedunculo brevi communi et rhachi 2—6 cm longa ramificationibus distantibus, paucis brevibus, dispositis per paria et quae gerunt vicissim ramulos brevissimos secundarios tertariosque, compositae. Bracteae ovatae, parvae, ephemerae. Pedicelli 4—6 mm longi, dense sericei. Torus brevis, obconicus, sericeus. Sepala 5, subaequalia, elliptica, 5—7 mm longa, sericea. Petala erecta, aurantiaco-flava, lamina elliptica, tenui, venis brunneis, sensim in unguem coriaceum contracta; petalum maximum 8—10 X 4—6 mm. Stamina maximorum filamenta 5 mm longa, glabra crassa, et antherae horizontales. Staminodia lateraliter compressa; staminodia reliqua graciliora et breviora. Ovarium sericeum, lateraliter compressum; stylus glaber, brevis; stigma minutum. Legumen planissimum, glabrum basi excepta, apiculatum, sutura dorsali recta vel paulum concava, sutura ventrali convexa, 2 mm late alata. Semina singula, raro bina vel terna, usque ad 13 X 11 mm, hilo 3 mm longo, gracili. Cotyledones planae, inconspicue venatae; radícula cylindrata, brevissima.

Tree, up to 40 m high with clear bole of up to 20 m high and 90 cm in diameter; buttresses up to 2—3 m high, 20 cm thick, 2 m over the ground. Bark rusty-brown, fissured, rather rough, peeling off in small pieces; dead bark 2 mm thick; living bark 12 mm thick, pinkish red in cross-section, white inside. Sapwood 3—5 cm, light brown, abruptly differentiated from the brown heart wood. Branches terete, brown, lenticellate; branchlets terete, smooth, or slightly furrowed, black when dried, the apical part minutely pilose. Leaves alternate, imparipinnate, as a rule with 5 leaflets (in exceptional cases 6 leaflets), the apical leaves sometimes with only 3 or 2 leaflets. Leaflets alternate, rarely (in apical leaves) subopposite, the terminal leaflet as a rule larger than the other ones, chartaceous, lanceolate to elliptic, the largest elliptic one observed 17 X 9 cm, the largest lanceolate one 11 X 3 cm, usually about 10 x 4 cm; apex shortly acuminate; base acute or subacute, rarely (in the broader leaflets) rounded-subacute; both leaf-surfaces concolorous, yellowish brown when dried, conspicuously (below slightly less) areolate; upper surface glossy, the midrib sunken, the primary nerves (5—8 on each side) very slender, rather patent, curved towards margin, hardly raised, the secondary veins laxly reticulate, hardly distinct from areolation; lower surface dull, minutely adpressedly pilose, finally glabrescent, the midrib very strongly prominent as far as the very tip of the leaflet, the primary nerves very slender, slightly raised, the secondary ones hardly conspicuous. Petiolules 8—10 mm long, minutely pilose, sulcate above, usually compressed laterally. Petiole terete, usually 3—5 cm long (of the higher leaves shorter), slightly thickened at base; rachis usually 4—8 cm long, terete, glabrescent. Stipules not seen. Inflorescences axillary or subapical on the branchlets, densely silky, usually 2—3 per axil, in bud covered by bracts, usually 8—10 cm long, the sub-

apical ones up to 15 cm long; common peduncle usually short, rarely more than 4 cm long, rather thick; primary branchlets distant, usually 2 together, few and short, bearing in turn very short secondary and sometimes tertiary branches; all branchlets more or less ascending, broadened and flattened apically. Branchlets and pedicels subtended by ovate, 1.5—2 mm long bracts which are soon caducous. Bracts concave, silky outside, glabrous inside. Pedicels 4—6 mm long, densely silky, merging into the obconical, 0.5—1 mm long torus. Flowers about 1 cm long and broad. Sepals concave, elliptical, erect-patent, 5—7 mm long, obtusish, densely silky outside, slightly pilose inside, leathery, up to 3 mm wide at base, slightly unequal. Petals erect, orange-yellow, the blade thin and transparent with a darker midrib and rather erect, numerous lateral veins which branch near margin; largest petal with broadly elliptic, 8—10 mm long, 4—6 mm wide blade, merging into a stout, leathery claw; other petals with narrower blade. Largest stamens with about 5 mm long, stout, glabrous filaments; anthers 2 mm, glabrous, almost horizontal in mature flower (erect in bud); apical excrescence horizontal, directed towards lower side of flower. Lateral staminodes stout, slightly shorter than the smaller pairs of 4 lateral fertile stamens; other staminodes shorter and more slender. Ovary densely silky, laterally compressed, with a short, but distinct, glabrous style and minute, pinhead-shaped stigma, hardly exceeding the largest stamens. Pod reddish brown, very flat, glabrous, base excepted, apiculate; dorsal suture almost straight, slightly concave, ventral suture convex, with a 2 mm broad wing; valves thin, smooth inside. Seeds usually 1, rarely 2 or 3, disc-like, slightly concave at one side, up to 13 mm long and 11 mm wide; testa leathery, smooth; hilus slender, about 3 mm long; cotyledons very flat with faint indication of midrib and lateral veins; radicle short and thick, cylindrical.

TYPE.—Riman 1 = bb.33693.

SPECIMENS EXAMINED.—CELEBES. Malili region: near Malili, alt. 25 m, tree of 20 m with 8 m clear bole of 40 cm diam., in bud, April, l.n. polapi wasu (Koronsië' language), *Waturandang* 8 = *Cel.IV-87*, tree of 25 m with 6 m clear bole of 70 cm diam., ster., May, l.n. nanakulahi (Koronsië and Padoë languages), *Waturandang* 38 = *Cel.IV-108*, in bud, May, l.n. polapi wasu (Padoë and Koronsië languages), *Waturandang* 48 = *Cel.IV-87*, fr., Feb., tree of 30 m with 15 m clear bole of 50 cm diam., *Waturandang* 137 = *Cel.IV-132*, tree of 25 m with 10 m clear bole of 43 cm diam., ster., Feb., l.n. polapi wasu (Padoë and Koronsië languages), *Waturandang* 138 = *Cel.IV-183*, flowers yellow, April, l.n. nanakulahi (Padoë language) *Waturandang* 168 = *Cel.IV-108*, ster., Febr., tree of 30 m with 10 m clear bole of 30 cm diam., l.n. polapi wasu (Padoë language), *Reppie* 139 = *Cel.IV-13h*, ster., Feb., tree of 25 m with 10 m clear bole of 30 cm diam., l.n. polapi wasu (Padoë language), *Reppie* HO = *Cel.IV-135*, fl., fr., May, local name nanakulahi (Padoë language), *Reppie* 171 = *Cel.IV-108*; near Usu, alt. 10 m, in bud, Dec, tree of 30 m with 20 m clear bole of 50 cm diam., l.n. polapi puteh (Padoë and Tambee languages), *Waturandang* 109 = *Cel.III-59*, ster., Dec, tree of 30 m with 20 m clear bole of 70 cm diam., l.n. polapi tauro or polapi maeto (Padoë and Tambee languages), *Watu-*



*randang 121* = *Cel.III-67*, flowers orange-yellow, aromatic, Jan., l.n. polapi tauro (Padoë and Koronsië languages), *Waturandang H.5* = *Cel.III-67*, fruits red, March, l.n. polapi tauro (Padoë language), *Reppie S91* = *Cel.III-67*, fr., Dec, *Reppie 389* = *Cel.III-67*; near Lampea, alt. 50 m, ster., April, tree of 23 m with 14 m clear bole of 26 cm diam., *Hoornstra 7* = *bb.13572*; near Matompi, alt. 300 m, ster., Jan., tree of 37 m with 12 m clear bole of 40 cm diam., *Hoornstra 5* = *bb.8557*; near Pasi Manangui, alt. 25m, ster., Sept., l.n. kalapi (in Luwu district), tree of 30m with 25 m clear bole of 40 cm diam., *Burki 10* = *bb.23260*; near Margosuko ster., Sept., tree of 30 m with 15 m clear bole of 65 cm diam., *Reppie 16* = *bb.32Ji.56*; near Kalaena, fl., Dec, tree of 30 m with 12 m clear bole of 53 cm diam., *Riman 1* = *bb.33693* (type).

The commercial timber is generally known as kalapi. The local name polapi is a variant of the same name. The suffix puteh or maëto means white and refers to the colour of the trunk, when the latter is reddish the suffix is wasu. The name nanakulahi is composed of nana and kulahi (kalapi). The tree grows from an area behind the seacoast to rather high up in the hills. The soil is usually rocky and contains iron. The tree was found scattered; the number of seedlings was always small. In this region the kalapi is one of the largest trees. It flowers rather irregularly, flowerless years being common. The crown, which is far from dense in medium-sized trees, is thin in large specimens.

The timber belongs to the durability class 2. Its minimum specific gravity is 0.59, its maximum 0.66, with an average (estimation of 7 samples) of 0.63.

## 2. ON DESMOFISCHERA HOLTH.

The only species of this genus, *D. monosperma* Holth., was described after a specimen, collected by Lam (no. 2637) on Karakelong Island, Talau Islands, East Indonesia. Besides the type, Holthuis enumerated several other specimens from Karakelong, Salebabu, and Morotai.

Comparison of these specimens with *Monarthrocarpus securiformis* (Benth.) Merr. from the Philippines, showed the two to be conspecific. Contrary to Holthuis' material, the specimens collected by myself on the island of Morotai, where the species is common (although scattered) up to 500 m altitude, have always three-foliolate leaves, whereas Holthuis' plants were mostly one-foliolate and consequently belong to variety *monophylla* Merr.

The pod of these plants from Morotai is rather more scabrous-puberulent, as stated by Merrill, than minutely pubescent, as indicated by Holthuis. In other respects the descriptions of Merrill and Holthuis agree closely.

## MONARTHROCARPUS SECURIFORMIS (Benth.) Merr.

*Desmodium securiforme* Benth in Miquel, PL Jungh. 226. 1852; Miquel, Fl. Ind. bat. 1 (1) : 255. 1855; F.-VILL, Nov. App. 62. 1880; Vidal, Phan. Cuming. Philipp. 108. 1885; Rev. PL vase. Filip. 108. 1886. — *Monarthrocarpus securiformis* (Benth.) Merrill in Philipp. J. Sc. Bot. 5: 89. 1910; Enum. Phil. fl. PL 2: 291. 1923.

*Desmofischera monosperma* Holthuis apud Holthuis & Lam in Blumea 5: 189 fig. 5. 1942.

ADDITIONAL SPECIMENS.—MOROTAI I. SW Morotai. Totodoku, 30 m alt., limestone, shrub 1 m, June, fl., flowers white, *Kostermans 1455*, May, fr., *Kostermans s.n.*, May, fl., fr., *Kostermans 761*; Tjao, 30 m alt., limestone, May, fl., *Kostermans 814*. SE Morotai. Mountain slopes along Sangowo R., rocky, 200 m alt., shrub 20 cm, May, fl., flowers white, *Kostermans 900*; along Sangowo R., 500 m alt., shrub 50 cm, May, fl., flowers white, *Kostermans 950*.