

CONTRIBUTIONS TO PAPUASIAN BOTANY I.
A NEW SPECIES OF ENDOSPERMUM (EUPHORBIACEAE)

RICHARD SCHODDE

Division of Land Research, CSIRO, Canberra, Australia

Endospermum labios ¹⁾ Schodde, *sp. nov.* — *Endospermum formicarum* auctt. non Becc.: K. Sch. & Hollr., Fl. Kais. Wilh. Land (1889) 80; Warb., Bot. Jahrb. 13 (1891) 348; K. Sch., Notizbl. Bot. Gart. Mus. Berl. 2 (1898) 129 ²⁾; K. Sch. & Laut., Fl. Deutsch. Schutzgeb. Südsee (1900) 406; Pax, Pflanzenr. 52 (IV.147.iv) (1912) 36, excl. f. 11 ³⁾; H. Lam, Nat. Tijdschr. Ned. Ind. 88 (1928) 211, f. 25 [transl. Sargentia 5 (1945) 56, f. 11] ?p.p. ²⁾; Doct. v. Leeuw., Treubia 10 (1929) 431, pl. XII, XIII ²⁾; L. S. Sm., Proc. Roy. Soc. Queensl. 58 (1947) 58. — Fig. 1.

Species nova *E. formicarum* Becc. affinis, differt ramulis petiolisque plerumque glabrescentibus, foliis glabrescentibus acutioribus nunc bullatis, inflorescentiis ♀ plus spiciformibus interdum flexuosis, bracteis florium (♂ et ♀) longis lanceatis recurvis acutis, floribus ♀ maioribus, stigmatibus saepe concavis et semper late labiosis, et fructibus maioribus.

Typus: L. J. Brass 32607, Umi River, Markham Valley, New Guinea, 19-11-1959. ♀ (fl. and fr.); holotypus: CANB.

Unisexual trees, *ca.* 10-20 (-25) m tall; crown short and rather slender, 3-6 m high, infrequently more, with ± horizontal branching; bole straight, rarely buttressed, *ca.* 15-35 cm diameter breast height. *Bark* thin (± 3 mm thick); outer surface light to brownish grey, smooth to slightly pocked and fluted, rarely flaking; inside cream to yellow straw, usually mottled, marked, or shaded orange-brown, and somewhat granular in structure. *Wood* cream-white, soft. Ultimate *branchlets* thick, with leaves in spirally arranged apical clusters, below marked by leaf and inflorescence scars, glabrescent but often with a fine sparse pubescence of stellate and simple hairs about the apices, hollow with the cavity inhabited by black ants, ⁴⁾ often with a watery milky exudate when cut. *Stipules* scale-like, deltate, acute, *ca.* 1½ × 1½ mm, laterally distant from the petiole base, glabrous, often yellowish, usually early caducous. *Petiole* (6-)10-16 (-25) cm long, contracted at the base, early with a fine, sparse, stellate and simple pubescence, later glabrescent except sometimes near the apices, with a pair of ± depressed cylindrico-turbinate glands at the apices. *Leaf blade* peltate, ovate or sometimes ± circular, acuminate-acute to apiculate, sometimes ± cordate, (10-)14-22(-30) × (8-)12-18 (-22) cm; chartaceous, rarely slightly coriaceous or papyraceous, the margin entire, often slightly thickened; glabrous or (usually) sparingly stellate pubescent, rarely with

¹⁾ The epithet '*labios*' is derived from the latin *labium* for lip and *os* for mouth, in allusion to the characteristic stigma of the species.

²⁾ Authentic specimens not seen. Lam's specimens from Morotai, on which f. 25 appears to be based, could be equally referable to *E. formicarum* Becc. or *E. moluccanum* (Teijsm. & Binnend.) Becc. on grounds of distribution. The illustrations and locality of Docters van Leeuwen's plants indicate *E. labios*.

³⁾ *E. formicarum* Becc., from the illustration accompanying Beccari's description of the species.

⁴⁾ *Camponotus quadriceps* F. Smith, *vide* Docters van Leeuwen (1929).

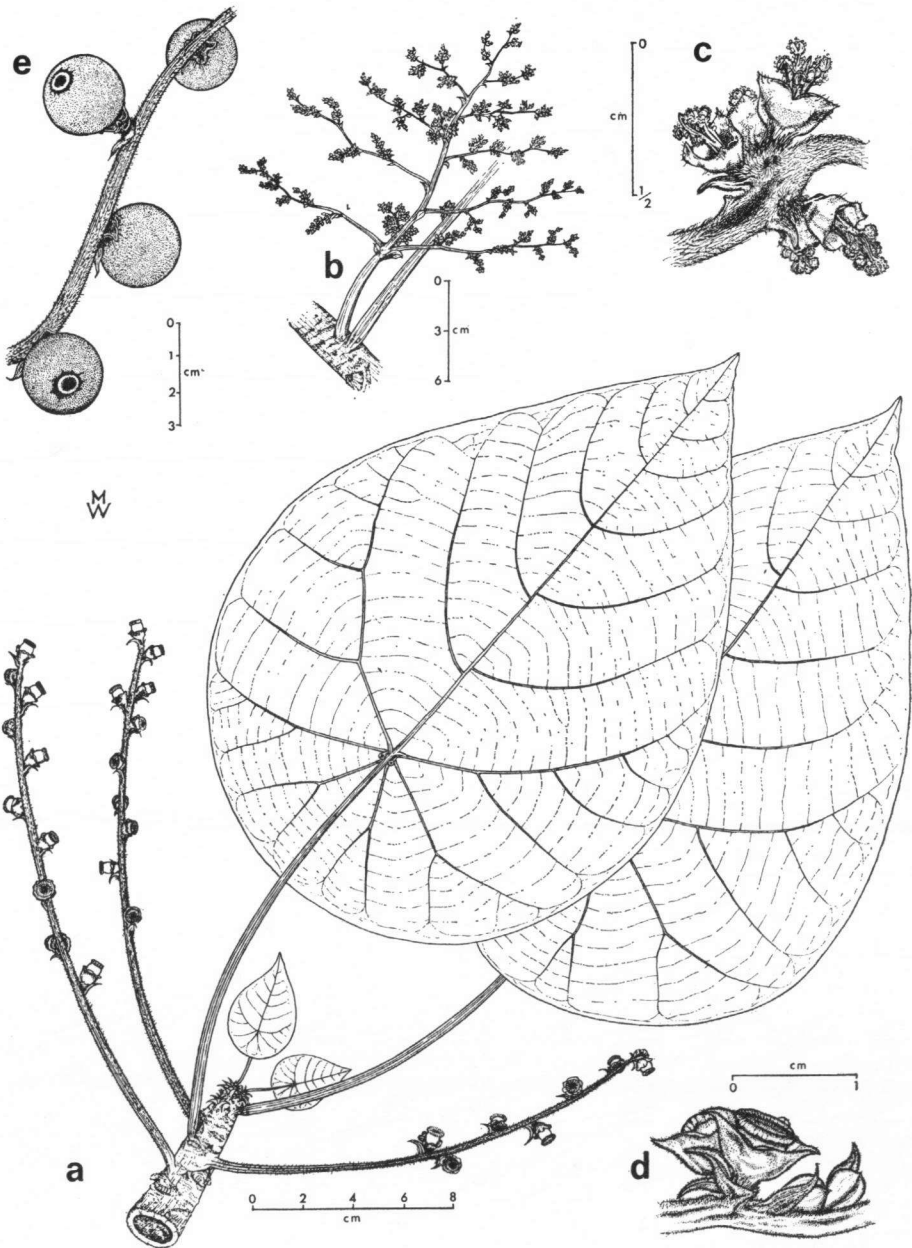


Fig. 1. *Endospermum labios* Schodde subsp. *labios*. a. Ultimate branchlet with female inflorescence; b. male inflorescence; c. male flower clusters; d. female flowers, condensed on young inflorescence; e. section of infructescence. (a, e. Brass 32607, type; b, c. Hoogland 4920; d. Darbyshire and Hoogland 7942).

simple hairs on the underside particularly on nerves toward the base; upperside \pm dark glossy green in life, underside paler; primary nerves 8—10 \pm from the base, the main nerve with 3—6 secondary nerves on each side, all elevated below; veinlet reticulation little prominent; hypophyllous glands only very infrequently present in vein forks near margin. *Inflorescences* in upper leaf axils, densely to sparsely pubescent with simple and stellate hairs, rarely almost glabrous. *Male inflorescence* a \pm open pyramidal panicle *ca.* 15—22 cm long; the axis at the base bare of branches or flowers for (1)2—7 cm, thickened, above bearing 6—8 lateral spirally arranged or sometimes sub-opposite branches, the lower ones 4—9 cm long, each in the axil of an ovate, acute to deltate, \pm amplexicaul, sometimes recurved bract 5—7(—9) mm long. *Flowers* in spicate or almost globular clusters of 2—6 spaced along inflorescence branches, usually reduced to one at the branch ends; each cluster in the axil of a lanceolate to ovate, acute, often recurved bract *ca.* 2—4 mm long. *Perianth* entire, scarious, rather laxly pubescent to almost glabrous, broken at anthesis by the elongating staminal column into a \pm trilobed broad-based cup $1\frac{1}{2}$ —2 mm long. *Staminal column* eventually exerted, 3—5 mm long, glabrous, articulating above half way into 8—12 stamens; the filaments *ca.* $\frac{1}{2}$ mm long, the anthers peltate, usually 4-celled. *Female inflorescence* condensed spiciform becoming elongate spiciform, occasionally flexuose, rarely paniculate, 8—12 cm long, eventually to 30 cm in fruit; the base of the axis bare of flowers for (1—)2—7 cm, eventually to 12 cm in fruit, the secondary branches when present 1—4 cm long. *Flowers* solitary, *ca.* 8—15 \pm spirally arranged on the axis, shortly pedicellate in the axil of an ovate acute to deltate, \pm amplexicaul, basally thickened, recurved bract 2—6(—7) mm long. *Perianth* entire, turbinate apiculate, scarious, shortly grey pubescent, broken by the elongating pistil into a broad sinuate cup *ca.* 3—7 \times 3—7 mm. *Ovary* \pm sessile, \pm depressed turbinate becoming cylindrico-ellipsoid, 3—6 \times 3—5 mm, finely and densely tomentose, (4—)6 celled. *Stigma* sessile, broad disciform, convex to depressed in the centre; margin thick, entire, and overhanging the ovary in a broad lip all way round. *Fruit* drupaceous, \pm globular, 10—18(—25) \times 8—18(—25) mm and wrinkled and warped when dry, $1\frac{1}{2}$ —3 $\frac{1}{2}$ cm in diameter and smooth and pale grey-green in life, glabrescent; the stigma becoming umbilicate and 4—6 mm in diameter; obscurely to distinctly stipitate on a thick carpodium 2—4(—6) \times 3—5 mm to which the perianth is fused and at the apex of which the top of the perianth spreads free to form a broad, sinuate, \pm reflexed cup 5—10 mm wide; pyrenes 4—6, free, *ca.* 5—7 \times 4 mm, compressed ellipsoid, thinly cartilaginous, 1-seeded. *Seeds* 5—7 mm long, blackish when dry, irregularly wrinkled.

Distribution. Salawati Island, New Guinea, New Britain, and the Solomon Islands.

Habitat. Open situations in secondary growth and forest and disturbed and marginal areas of primary forest, whether swampy, alluvial, or hill slope and well-drained sites, and on sandy to clayey soils, whether derived from limestone, sedimentary, or volcanic rocks. Altitudinal range: sea level to near 1000 m.

Occurrence and Flowering. Usually common where found, yet occurs as a rather solitary tree. According to the series of herbarium material seen, it flowers and sets fruit all year round apparently irrespective of the locality or prevailing seasonal conditions.

Variation. Two subspecies are distinguishable:

subsp. **labios.**

Leaves with 8, less often to 10 nerves from the base; male and female inflorescence axes becoming often glabrescent after flower maturity; bracts of $\text{\textcircled{f}}$ inflorescence ovate acute to deltate, 4—6(—7) mm long; stigma concave in flower; ripe infructescence elongate spiciform, occasionally flexuose, (12—)15—30 cm long, the base of the axis

bare of fruit for 4—12 cm; ripe fruit 12—18(—25) × 12—18(—25) mm when dry, shortly stipitate on a squat carpodium 2—4(—6) × 3—5 mm that is often obscured by the reflexed 7—10 mm wide perianth cup.

Distribution. New Guinea where it is apparently common on the north side of the central cordillera and rare on the south side, and the adjacent island Salawati.

NEW GUINEA. *Koster BW 1363*, Salawati; *Schram BW 6004*, Beriat south of Teminaboean; *Vink BW 12117*, Fak-Fak; *Lam 1028*, Prauwen Bivak; *Lam and Versteegh BW 749*, Kuja Bu River, res. Hollandia; *J. S. Womersley NGF 3788*, Sepik River near Hauser River; *J. S. Womersley NGF 3805*, August River; *Bauerlen*, Strickland River, 1885; *Darbyshire and Hoogland 7942*, Siauti near Aitape; *Darbyshire and Hoogland 8024*, Pieni River near Aitape; *Robbins 2434*, Sepik River, Pagwi; *Schodde 2225*, Lake Kutubu; *Hollrung 790*, Augusta Fluss; *Schlechter 16208*, Albo; *Pullen 918*, Ioka Creek east of Aiome; *Hoogland 4920*, Golgol Valley; *Brass 32562, 32607 (type)*, Umi River, Markham Valley; *Millar and van Royen NGF 15654*, Kaiapit; *Hartley 11008*, Patep River; *T. C. Whitmore s.n.*, Busu near Lae, 14-1-1964; *NGF 273*, Yalu; *White, Dadswell, and Smith NGF 1639, 1641*, Yalu; *McVeigh and Ridgwell NGF 7372*, Bulolo; *Havel and Kairo NGF 9200, 15409*, Bulolo.

Vernacular names and uses. *Njebbie* (Salawati), *Sajon* (Tehid language, Teminaboean), *Taingino* (Wapi language, Marok near Aitape), *Kungum* (Orne language, Walwali near Aitape), *Kobaguno* (Fasu language, Kutubu), *Koin* (Yal, Golgol Valley), *Pehpi* (Bembi), *Mawr* (Mawan), *Kidikendi* (Madang), *Poteh* (Rawa), *Munampun* (Kaigorin). The leaves are used locally for the treatment of infections, *vide Hoogland 4920*.

subsp. *gracilipes* Schodde, *subsp. nov.*

Differt a subspecie typi bracteis inflorescentiae femineae minoribus, stigmatibus florum capitatis, et fructibus maturescentibus conspicue stipitatis carpodiis gracilibus 4—5 × 2—3 mm.

Typus: *T. C. Whitmore BSIP 3979*, ridge northeast from harbour at Ruruvai, S.E. Choiseul Island; 26-2-1964, ♀ (fl. and fr.); holotypus: LAE.

Leaves with usually 9—10 nerves from the base; male and female inflorescence axes persistently pubescent; bracts of ♀ inflorescence quite deltate, 2—4(—5) mm long; stigma (seen in type only) ± convex in flower; ripe infructescence spiciform or sometimes slenderly panicleate, 7—15 cm long, the base of the axis bare of fruit for (1—) 2—4 cm; ripe(?) fruit 8—10 × 10—14 mm when dry, stipitate (1—2 mm) on a slender carpodium 4—5 × 2—3 mm that is not obscured by the reflexed 5—7 mm wide perianth cup.

Distribution. Solomon Islands, east at least as far as Santa Ysabel and the New Georgia Group.

SOLOMON ISLANDS. *Craven and Schodde 482*, Aku, south Bougainville; *Whitmore BSIP 4174*, Mono Island, Treasury Group; *Whitmore's collectors BSIP 5843*, northern Shortland Island; *Whitmore BSIP 3979 (type)*, Choiseul Island; *Whitmore BSIP 1503*, Kolombangara Island; *Cowmeadow's collectors BSIP 3299*, New Georgia Island; *Whitmore's collector BSIP 2850*, Baga Island, New Georgia group; *Whitmore BSIP 2348*, Santa Ysabel Island.

Vernacular name. *Ai'aufia* and variations of that name (Kwara'ae language).

The only specimens seen from New Britain — *R. S. Haas NGF 134*, Jacquinot Bay (sterile) and *A. Floyd NGF 3452*, Keravat (♂) — lack the floral parts needed to place them subspecifically with certainty. *NGF 3452* is rather distinctive in its large floral bracts, densely pubescent inflorescence, and base of the inflorescence axis bare of branches or flowers for 1—2 cm only; it may be referable to subsp. *gracilipes*.

In New Guinea, further variation in the species is shown by *Schodde 2225* ♀ (Kutubu, Papua) and *Schram BW 6004* ♀ (Teminaboean, Vogelkop). Both have a close and rather dense stellate tomentum on the undersurface of the leaves, particularly *Schodde 2225*,

and their infructescences comprise a glabrescent peduncle up to 17 cm long terminating in a short 4—6 fruited panicle subtended by rather foliose bracts. That the character of stellate tomentum does not vary geographically is indicated by Bauerlen's specimens from the Strickland River adjacent to Kutubu and between it and the Vogelkop; these have the usual glabrous undersurface to the blade with only sparse stellate hairs about the blade-petiole junction. The infructescence form may well be teratological as, at least in *Schodde 2225*, it appears to have been distorted by insect infestation.

Affinities. This species is closely allied to *E. formicarum* Becc., with which it has been confused by previous authors, and *E. moluccanum* (Teijsm. & Binnend.) Becc.

E. formicarum, as represented by recent collections which agree in all critical characters with Beccari's original description and plate, may be distinguished from *E. labios* by its smaller ♀ flowers borne in clusters of (1—)2—3 and subtended by apiculate depressed obovate bracts $\pm 1\frac{1}{2} \times 2$ mm on a more densely pubescent inflorescence which, though laxly spiciform in flower, soon becomes slenderly racemose; by its apiculate-capitate stigma which becomes slightly umbilicate in fruit but remains smaller (2—3 mm diameter) than in *E. labios*; by its small (3—)4-celled fruits 9—11 mm diameter on an insignificant carpodium $1-2 \times 1-2$ mm that is obscured by the reflexed perianth cup; by its ♂ flower clusters with short, obtuse, densely hairy bracts $1-2 \times 1-2$ mm and perianths with a dense, close, mealy tomentum; and by its \pm coriaceous, sometimes \pm bullate, mostly circular leaves which frequently carry hypophyllous glands and are covered below with a conspicuous pubescence of long simple and occasional short stellate hairs that extends down the petioles and over the stems. *E. formicarum* (type locality: Andai) appears to be confined in New Guinea to the Vogelkop where it is sympatric with *E. labios*. The following collections were examined:

NEW GUINEA. Vogelkop: *Versteegh BW 4624*, Sausapor, Sorong; *van Royen 3930*, Api River, Kebar Valley; *Koster BW 4495*, Sidei, Manokwari; *Schram BW 1734*, Sidei, Manokwari; *Brouwer BW 411* and *Schram BW 474*, Dessa Prafti, Manokwari; *Mangold BW 2145*, Oransbari, Manokwari; *Koster BW 1278*, Meos Waar Island.

The only collection seen that appears referable to *E. moluccanum* is *Kuswata and Soepadmo 10* (Moluccan name: *Kaju radja*) from Kairatu Gomba, W. Ceram. A female specimen, it is identical in leaf form, pubescence, and inflorescence form with the original description and figure of Teijsmann and Binnendijk, but differs in the non-staminiferous female flowers, a character also commented on by Pax (1912, p. 39). Apart from its ramose inflorescence, it is also identical with the above series of specimens of *E. formicarum*, notably in its pubescence (despite the distinctions stated by Beccari, 1884, p. 45), \pm clustered flowers and the small bracts subtending them, and young fruit form. The inflorescence itself (also those described by Teijsmann & Binnendijk and Beccari ?) appears to be teratological in the same way as *Koster BW 1278* may be in *E. formicarum* and *Schram BW 6004* and *Schodde 2225* in *E. labios*. It is possible then that *E. moluccanum* and *E. formicarum* are taxonomic synonyms, in which case *E. moluccanum* is the correct name.

Attention is also drawn to a single specimen from Biak Island (*Vink BW 12061*, ♀) that differs from all taxa of the subgenus *Capellenia* (Teijsm. & Binnend.) Pax in the New Guinea region by its combination of entirely glabrous leaves and inflorescence, acute recurved bracts at flower nodes, small fruits clustered usually in two and threes, and (4—)5—6 celled ovary. It may represent a distinct species but further collections are needed.

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