

**ZOLLINGERIA KURZ (SAPINDACEAE),  
A GENUS NEW TO THE FLORA OF BORNEO**

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SUMMARY

*Zollingeria* Kurz (Sapindaceae), a genus new for the flora of Borneo is described with a new species.

INTRODUCTION

Among the indeterminatae of the Sapindaceae two Elmer specimens (20888, 21128) were found which belong to *Zollingeria*. Lam (1929) originally thought that they belonged to *Triomma* Hook. f. (Burseraceae). However, several years later he changed his mind and wrote: "This species is sapindaceous and might belong to *Zollingeria*." (Lam, 1932: 334). The present author can confirm the latter statements.

*Zollingeria* is a very small genus in the tribe Lepisantheae of the Sapindaceae and is probably closely related to *Lepisanthes*. From that genus it differs mainly in the fruit: in *Zollingeria*: 1-locular, prismatic, winged; in *Lepisanthes* 2- or 3- (rarely 1-) locular, lobed or parted, not winged.

**ZOLLINGERIA**

*Zollingeria* Kurz, J. As. Soc. Beng. 41, 2 (Nat. Hist.) (1872) 303; Radlk., Sitzungsber. Math.-Phys. Kl. Königl. Bayer. Akad. Wiss. Münch. 20 (1890) 293; in Engler, Pflanzenr. 98 (1932) 724, nom. cons. — Type species: *Z. macrocarpa* Kurz.

Trees, monoecious. Indumentum consisting of solitary simple hairs. Twigs terete. *Leaves* spirally arranged, paripinnate, 1-8-jugate; pseudo-stipules absent; neither petiole nor rachis winged. Leaflets opposite to alternate, base (slightly) asymmetric, margin entire. *Inflorescences* axillary, thyrsoid, branched. *Flowers* unisexual, regular (or zygomorphic). *Sepals* 5, free, slightly to distinctly unequal, imbricate or not, not petaloid, outside hairy (or glabrous). *Petals* 5 (or 4), shorter (or longer) than the sepals, with or without scales or auricles. Disc complete or interrupted, glabrous. *Stamens* 8, (slightly) exerted in male flowers, filaments hairy, anthers glabrous. Ovary at the base 3-locular, higher up 1-locular; 1 ovule per locus; style 3-lined or 3-lobed. *Fruit* 1-locular, 3-winged. *Seed* 1 per fruit, without aril.

Distribution — In Burma, Laos and Thailand 3 species; in *Malesia*: 1 species in Borneo (Sabah).

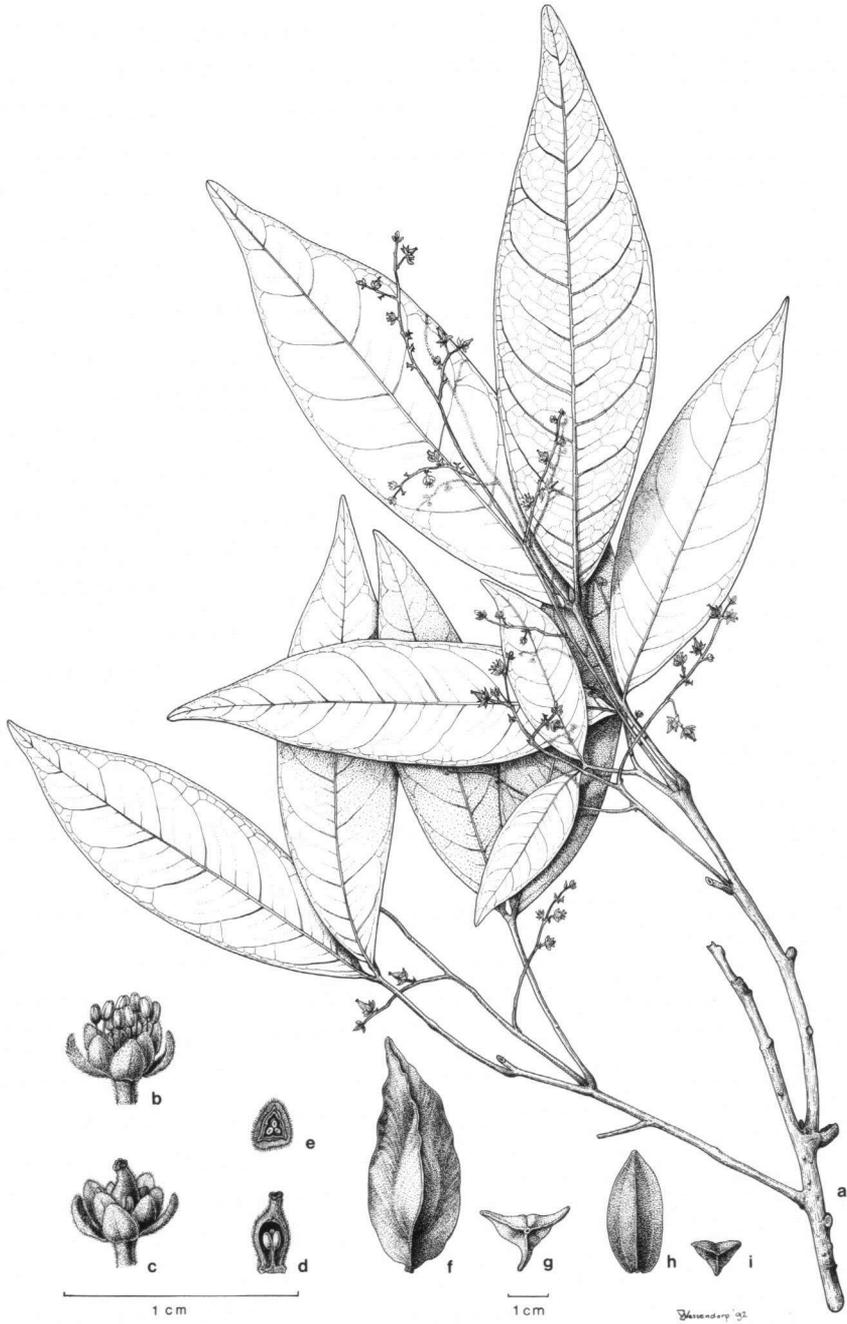


Fig. 1. *Zollingeria borneensis* Adema. a. Habit; b. male flower; c. female flower; d. ovary, longitudinal section; e. ovary, cross section; f. fruit; g. fruit, bottom view; h. seed; i. seed, bottom view (a–l: SAN 90057; f–i: Elmer 20888).

***Zollingeria borneensis* Adema, spec. nov. — Fig. 1**

Arbor 60 m alta; ramulis argentocinereis lenticellis multis. Sepala plus minusve inaequalia. Petala 5 manifeste unguiculata sepalis breviora. Discus completus. Capsulae trialatae. — Typus: *Elmer 20888*, Borneo, Sabah, Elphinstone Prov., Tawao, 1922/23 (L, holo; A, F, iso).

Trees 60 m high, d. b. h. c. 70 cm. Indumentum ferrugineous tomentellous. Twigs 2–3 mm in diameter, striate, silvery-grey, with many small lenticels, soon glabrous. *Leaves* (1-) 2- or 3-jugate; petiole 1–6.5 cm, pulvinate; rachis 1–10.5 cm; both  $\pm$  semiterete, striate, patently short-hairy. Leaflets about elliptic, 9.5–20  $\times$  2–6 cm, index 2.9–3.6, chartaceous, above and below midrib and nerves sparsely to densely short-hairy, base slightly oblique, (broadly) cuneate, apex acuminate, very apex rounded, midrib prominent above, nerves 9–12 per side, 8–28 mm apart, angle to midrib 60–65°; petiolules 1–4 mm, semiterete, short-hairy. *Inflorescences* together pseudoterminal, 6–14 cm; cymes several-flowered. Bracts and bracteoles acicular, 0.6–1.2  $\times$  0.1–0.4 mm, outside and inside hairy. *Buds* about globular, 1.7  $\times$  1.9 mm. Pedicels 1.5–2.5 mm, articulated near the base, angular, hairy. *Male flowers* somewhat smaller than the female ones. *Sepals* triangular to spathulate, not imbricate, thinned towards the margin especially apically, slightly unequal, 1.7–2.6  $\times$  1.2–1.6 mm, apex rounded to retuse, outside and inside appressed-hairy, margin ciliate. *Petals* cuneate to spathulate, distinctly clawed, 1.4–2.4  $\times$  1.2–1.6 mm, claw 0.4–0.7 mm, outside and inside hairy, ciliate, auricles ciliate. Disc complete, annular or saucer-like. *Stamens* slightly exserted in male flowers; filaments 1.5 mm; anthers 0.4 mm; in female flowers 1.2–1.6 mm and 0.5–0.6 mm, respectively. Ovary outside hairy, inside glabrous; style 1 mm, stigma  $\pm$  capitate, 3-lobed; pistillode 3  $\times$  1.9 mm. *Fruit* prismatoid, sharply deltoid in cross section, winged, 6–7  $\times$  2.5–5 cm, wall thin-coriaceous, outside striate, densely velutinous, inside glabrous. *Seed* prismatoid, 33  $\times$  14 mm.

Distribution – *Malesia*: Borneo (Sabah: *Elmer 20888*, *21128*; *SAN 90057*).

Habitat & Ecology – Primary forest; altitude c. 15 m. Flowering: February.

Notes – Field notes: Clear bole 3 m. Bark whitish, inner bark pale yellow, 0.7 cm. Sapwood white. Flowers yellowish to green.

Author's notes: The present species clearly belongs to *Zollingeria* by its typical ovary and fruit. From *Z. macrocarpa* Kurz it differs in the lower number of leaflets (1–3 per side versus 3 or 4) that are elliptic (versus lanceolate to oblong) and have shorter petiolules (1–4 mm versus 4–10 mm), in the auriculate instead of squamate petals, and in the disc that is complete instead of interrupted. From *Z. dongnaiensis* Pierre it differs in the lower number of leaflets (1–3 versus 3–7), the auriculate petals (in *Z. dongnaiensis* without auricles or scales), and the larger fruit (6–7 cm long versus c. 4 cm long). From both it differs in the texture of the fruit wall: coriaceous in *Z. borneensis*; pergamentaceous in *Z. dongnaiensis* and *Z. macrocarpa*.

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## REFERENCES

- Lam, H.J. 1929. Burseraceae. In: E.D. Merrill, *Plantae Elmerianae Borneenses*. Univ. Calif. Publ. Bot. 15: 116–119.
- Lam, H.J. 1932. The Burseraceae of the Malay Archipelago and Peninsula. Bull. Jard. Bot. Buitenzorg ser. 3, 12: 282–559.