

## Lophopyxidaceae (Malpighiales): a new family record for Thailand

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### ABSTRACT

The liana *Lophopyxis maingayi* is recorded from Narathiwat in Peninsular Thailand, representing the first record for this species, the genus *Lophopyxis*, and the family Lophopyxidaceae in Thailand.

KEYWORDS: *Lophopyxis*, Malaysia, liana, climber.

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### INTRODUCTION

During studies of climbing plant genera of Thailand at the Forest Herbarium (BKF), an unusual specimen in ‘Celastraceae unidentified’ was found from Narathiwat Province in Peninsular Thailand. Subsequent research revealed that this species was *Lophopyxis maingayi* Hook.f., representing the first record for the monotypic family Lophopyxidaceae in Thailand, and apparently the only collection as, until now, no specimens of *Lophopyxis* Hook.f. or Lophopyxidaceae were present in BKF (and no records exist from K, L, P and GBIF), and there is no entry for the genus or family in the most recent edition of the comprehensive list of Thai Plant Names (Pooma & Suddee, 2014).

*Lophopyxis* is a distinctive genus on account of the climbing habit with coiled tendrils (usually considered as leaves or bud-bearing branches); conspicuously serrate leaves with pinnate venation; usually lax racemose axillary and terminal inflorescences, with the small, unisexual flowers borne in tight clusters along the inflorescence branches; and the distinctive five-winged fruit with a single seed (Fig. 1).

Its relationships have been queried since it was first described by Hooker (1887) who tentatively placed the genus in the ‘Euphorbiaceae?’ noting ‘I am very doubtful as to the affinities of this curious plant’. The genus has also been placed as its own subfamily

Lophopyridoideae in the Icacinaceae by Engler (1893) and later the Saxifragaceae and Olacaceae (see Sleumer 1968 for full details). A relationship with *Gouania* Jacq. (Rhamnaceae) was suggested by Airy Shaw (1966), no doubt due to the superficial similarity of the coiled tendrils, but the floral morphology and anatomy are entirely different from *Gouania* (see Cahen *et al.*, submitted). Sleumer (1971) was unable to suggest a family placement and decided the best solution was to have it as a monotypic family. Later, it was included in Celastraceae by Cronquist (1981) and Hutchinson (1973), and in Celastrales by Takhtajan (1997). It is now apparent that Hooker’s (1887) initially placement within the Euphorbiaceae was the most logical and the family’s position within the Malpighiales is now well supported by molecular studies. The family forms a well-supported clade with the Putranjivaceae, the ‘putranjivoids’, in an otherwise poorly defined group comprising several families including the Chrysobalanaceae, Malpighiaceae and Dichapetalaceae (Stevens, 2001 onwards). Matthews & Endress (2013) undertook a detailed examination of the floral structure of the family and found that the ovule structure was the best character to define the relationship between Lophopyxidaceae and Putranjivaceae, but also have several other shared features including sepal characters (outer smaller than inner), stamen position (antesepalous) and the presence of a short gynophore.

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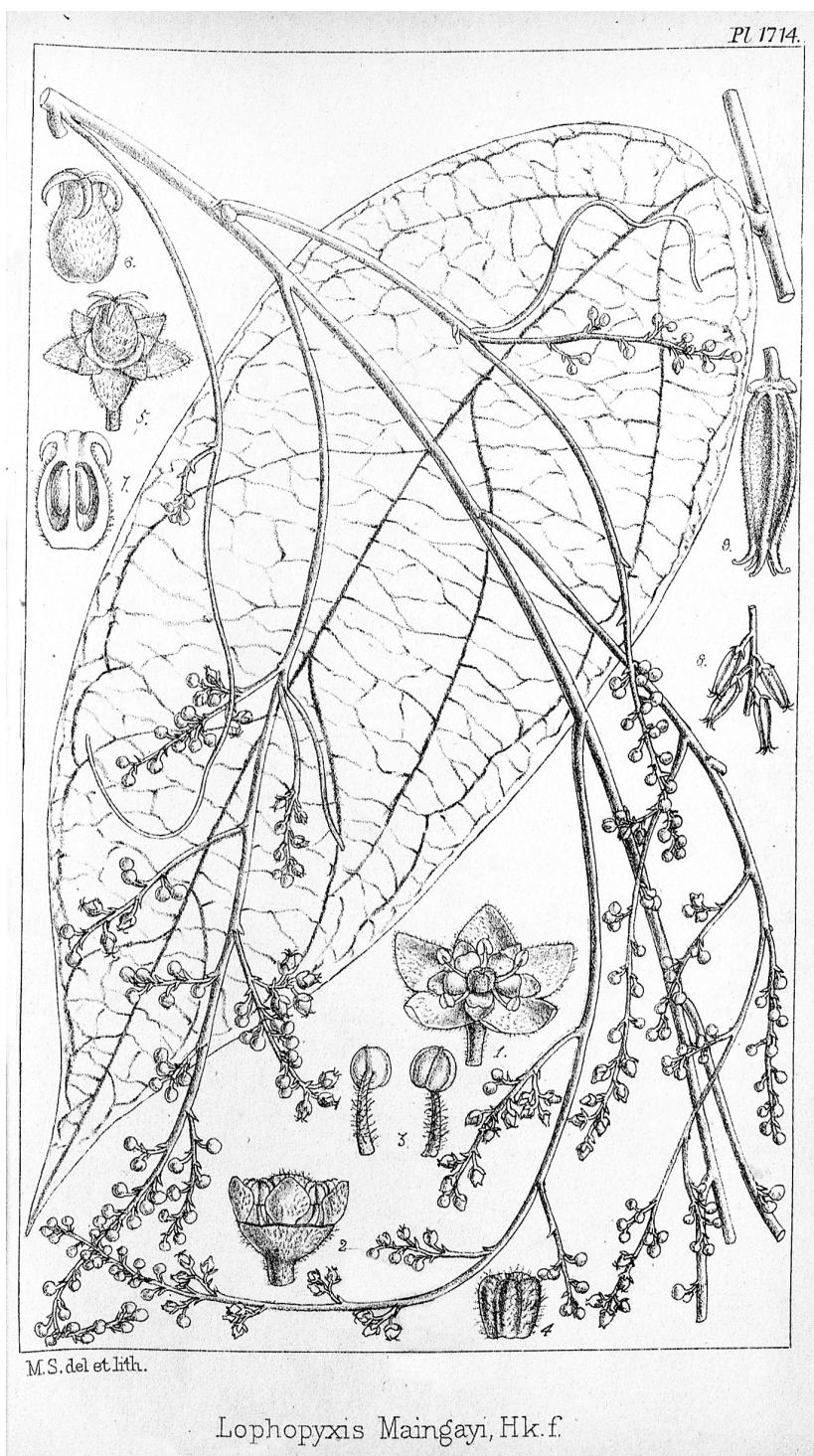


Figure 1. *Lophopyxis maingayi* Hook.f. Source Hooker (1887), drawn from the type Maingay 2962.

Until now, *Lophopyxis maingayi* was known from Malesia, Melanesia and Micronesia (reaching the Caroline Islands); the species is not yet known from Sumatra or Java.

## DESCRIPTION

**Lophopyxidaceae** (Engl.) H.Pfeiff. in *Revista Sudamer. Bot.* 10: 4. 1951; Airy Shaw in *Willis, Dict. Fl. Pl.*, ed. 7: 668. 1966. ; Sleumer, *Fl. Males.*, Ser. I: 89. 1971; Kubitzki Fam. Gen. Vasc. Pl. [Kubitzki] XI: 247. 2013.— *Lophopyxidoideae* Engler in Engler & Prantl, *Nat. Pflanzenfam.* III, 5: 257. 1893 (in *Icacinaceae*).

**Lophopyxis** Hook.f., *Hooker's Icon. Pl.* 18, t. 1714. 1887; *Fl. Brit. India* 5: 476. 1888; Boerl., *Handl. Fl. Ned. Ind.* 1, 2: 673. 1890; Pax in *Nat. Pflanzenfam.* [Engler & Prantl] III, 5: 117. 1890; Engl., *ibid.* 238, 257. 1893; Tiegh., *Bull. Soc. Bot. France* 44: 115, Feb. 1897; Pierre, *Bull. Mens. Soc. Linn. Paris* 1316, June 1897; Hallier f., *Meded. Rijks-Herb.* 1: 9. 1910; Gilg, *Bot. Jahrb. Syst.* 55: 278. 1918; Hallier f., *Beih. Bot. Centralbl.*, Abt. 2, 39, ii, 64, nota, 161. 1921; Ridl., *Fl. Malay. Penins.* 1: 435. 1922; Schellenb., *Bot. Jahrb. Syst.* 58: 177. 1923; M.R.Hend., *Gard. Bull. Straits Settlem.* 4: 239. 1928; Kaneh., *Bot. Mag. (Tokyo)* 45: 293. 1931; Pax & K.Hoffm., *Nat. Pflanzenfam.*, ed. 2 [Engler & Prantl] 19c: 232. 1931; Sleumer, *Nat. Pflanzenfam.*, ed. 2 [Engler & Prantl] 20b: 392. 1942; H.Pfeiff., *Revista Sudamer. Bot.* 10: 3. 1951; Hutch., *am. Fl. Pl. Dicot.*, ed. 2, 320. 1959; H.Scholz, *Syllabus* (ed. 12), 294. 1964; Airy Shaw in *Willis, Dict. Fl. Pl.*, ed. 7, 668. 1966; Bakh.f & Steenis, *Fl. Males. Bull.* 21: 1426. 1966; Sleumer, *Blumea* 16: 322. 1969; *Fl. Males.*, Ser. I: 89. 1971; I.M.Turner, *Gard. Bull. Singapore* 47: 316. 1995; Kubitzki Fam. Gen. Vasc. Pl. [Kubitzki] XI: 247. 2013.— Type: *Lophopyxis maingayi* Hook.f.

— *Combreopsis* K.Schum. in K.Schum. & Hollrung, *Fl. Kais. Wilh. Land*, 69. 1889.

— *Treubia* Pierre ex Boerl. *Handl. Fl. Ned. Ind.*, 1(2): 445. 1890.

Scendent or liana-like shrubs or small trees, coiled tendrils present (modified leaves or subtending leaves of inflorescences). *Stipules* present, small. *Leaves* spiral, simple, serrulate to crenulate. *Inflorescences* axillary and terminal, racemose, flowers solitary or

crowded into glomerules. *Flowers* small, regular, unisexual (plants monoecious). *Staminate flowers*: sepals 5, valvate, shortly united basally, persistent; petals 5(–6), much smaller than the sepals, free; glands 5(–6), opposite and adnate to the subtending petals, cordate; stamens 5(–6), opposite to the sepals, filaments filiform, anthers basifix, introrse, pistillode present. *Pistillate flowers* as staminate except: glands concrecent into a 5(–6)-lobed disk, lobes opposite the petals and ovary cells; ovary superior, shallowly 5-ribbed, 5(–4)-celled, stigmas 5(–4), sessile, subulate; ovules 2 per cell, apical, axile, pendulous, anatropous, epitropous, bitegmic. *Fruit* obovoid or ellipsoid, indehiscent, fusiform, 1-locular, 1-seeded, with 5 broad stramineous wings subtended by the persistent calyx. *Seed* oblong, with endosperm.

Monotypic genus: *Lophopyxis maingayi* Hook.f.

**Lophopyxis maingayi** Hook.f., *Hooker's Icon. Pl.* 18, t. 1714. 1887; *Fl. Brit. India* 5: 476. 1888; Pax in *Nat. Pflanzenfam.* [Engler & Prantl] III, 5: 117. 1890; Engl., *ibid.* 238, 257. 1893; Hallier f., *Meded. Rijks-Herb.* 1: 9. 1910; Ridl., *Fl. Malay. Penins.* 1: 435. 1922; Slooten, *Bull. Jard. Bot. Buitenzorg* III, 7: 364. 1925; Holthuis & H.J.Lam, *Blumea* 5: 205, f. 7. 1942; Sleumer, *Nat. Pflanzenfam.*, ed. 2 [Engler & Prantl] 20b, 392. 1942; *Fl. Males.* I, 5: 63. 1954; *Blumea* 16: 322. 1969; *Fl. Males.*, Ser. I: 89. 1971; I.M.Turner, *Gard. Bull. Singapore* 47: 316. 1995; Kubitzki Fam. Gen. Vasc. Pl. [Kubitzki] XI: 247. 2013. Type: Malaysia, 'Malacca', 12 Feb. 1867, Maingay 2962 [Kew Distribution no. 1429] (holotype **K-2** sheets K000736370, K000736369).— For synonyms see Sleumer, *Blumea* 16: 322. 1969.

Woody vine or climbing shrub, 3–8(–30) m. *Branches* longitudinally grooved when young, with elliptic lenticels in the grooves, hairy. *Tendrils* present, coiled, either from axillary branchlets or basal inflorescence bracts. *Stipules* small. *Leaves* narrowly ovate, ovate to oblong, 8–18(–24) by 3–8(–10) cm, apex attenuate to acuminate, base rounded to obtuse, chartaceous to subcoriaceous, hairy especially at the nerves beneath, glabrescent but persisting in the nerve axils as domatia, serrulate, serrate to crenate, sometimes subentire, nerves 1(–2) basal or slightly supra- basal, and 3–4 upper pairs arching and steeply ascending, veins and veinlets densely reticulate; petiole to 10 mm long. *Inflorescences* axillary in distal

leaves and terminal, spike-like racemes 10–25 cm, flowers crowded into glomerules spaced along the rachis, occasionally solitary at the distal part, inflorescence axis hairy; pedicels short, up to 2 mm. *Staminate flowers*: sepals ovate, greenish white or yellowish, hairy on both sides, ca 1.5 mm; petals ovate, ca 1 mm long; disk yellowish; filaments hairy, 2 mm long, anthers subglobose, 0.5 mm long; pistillode subglobose, shallowly 5-ribbed, hairy. *Pistillate flowers* as staminate except: ovary ellipsoid to ovoid, slightly angular, 2 mm long, yellowish-brown hairy. *Capsule* obovoid-ellipsoid in outline, 5-winged, green, later dark brown, glabrescent, 2.2–3(–3.5) by 1.3–1.8 cm; wings chartaceous, 5–8 mm wide, with irregularly crenulate margin. *Seed* 1, subcylindrical, acuminate, lengthwise grooved, 12–15 by 5–6 mm.

Thailand.—PENINSULAR: Narathiwat [(Phru To Daeng, Suddee pers. comm.), 21 Apr. 1986, *Nanakorn* s.n. (BKF166627)].

Distribution.—Peninsular Malaysia, northern Borneo, Sulawesi, New Guinea to the Caroline Islands.

Ecology.—The notes for the collection from Thailand only state “swamp forest by roadside”. In the rest of the range, however, the species is recorded as a climber in primary and disturbed habitats, including reaching the canopy of well drained and swampy forest, littoral forest and even mangrove, but also in forest regrowth and seaside scrub (see Sleumer, 1971: 91). No elevation data are given for the Thailand collection, but the species is recorded from sea-level up to ca 300 m throughout the rest of its range.

Notes.—*Lophopyxis maingayi* is a distinctive climbing plant recognised by the coiled tendrils, the elliptic to oblong leaves with serrate margins, the 3–4 upper pairs of secondary veins which are arching and steeply ascending, the lax terminal inflorescences with small flowers arranged in glomerules, the sepals larger than the petals, with the pistillate flowers immediately recognisable in being angular-ellipsoid with the obvious subulate stigma lobes at the apex, and the fruit with 5 wings. Note the tendrils are not always present in herbarium material and, as most specimens are collected with flowers and fruits, tendrils, if present, are more likely to be found arising from the inflorescence. For example, of the 79 specimens held at Kew, only 19 have tendrils present:

7 with tendrils from vegetative axils and 12 from the inflorescence; the latter are found in axillary inflorescences rather than the inflorescences terminating the branchlets.

The species may be confused with other tendrilate climbers, especially such as *Gouania* and *Hugonia* L. (Linaceae) also with coiled tendrils and serrate leaves, but differs from both of those in the inflorescence structure. The winged fruits, combined with a climbing habit, are reminiscent of *Combretum* Loefl. (Combretaceae), but species in that genus usually have opposite leaves. It is unlikely to be confused with Celastraceae where it was often placed, as species in that family usually have sub-opposite leaves, flowers with a distinct disk, and several seeded capsules.

The genus and species descriptions given above are based on specimens of *Lophopyxis maingayi* from throughout its range as the new Thai material is lacking some of the key diagnostic characters, e.g. tendrils and fruit, that will be useful for collectors when encountering the plant.

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