GELSEMIACEAE

D.J. Middleton

Struwe & V.A.Albert, Cladistics 10 (1994) 175; Rafidah, Fl. Penins. Malaysia, ser. 2, 6 (2017) 3; Struwe in Kadereit & Bittrich (ed.), Fam. Gen. Vasc. Pl. 15 (2019) 447. **Type:** *Gelsemium* Juss.

Pteleocarpaceae Brummitt, Kew Bull. 66 (2011) 3. **Type:** *Pteleocarpa* Oliv.

Trees, shrubs or climbers; latex absent. **Leaves** opposite or spirally arranged, rarely verticillate, simple colleters present in axils of leaf bases with stems or absent; stipules absent, with an interpetiolar line or with small stipules or ocrea; blade entire, venation pinnate. **Inflorescence** terminal or axillary, dichasial, thyrsoid or paniculate. **Flowers** bisexual, 5-merous, rarely 4-merous, actinomorphic. **Calyx** with colleters inside (these sometimes obscure), of free lobes or fused at base, deciduous or persistent in fruit. **Corolla** with a short tube and free lobes, rotate or infundibuliform, aestivation imbricate. **Stamens** inserted in lower or upper half of corolla tube, included or exserted from corolla tube, oppositisepalous, free from each other and from gynoecium, equal or unequal; filaments filiform; anthers orbicular to ellipsoid, base sagittate, dorsifixed, dehiscence latrorse. **Disc** absent. **Gynoecium** superior, 2-carpellate, syncarpous, 2-locular, stalked or not; placentation axile, ovules 1–many; styles two, free or branched; stigma terminal, capitate. **Fruit** a capsule or samara, dehiscent or indehiscent, compressed or not, with 1–8 seeds. **Seeds** elongate to orbicular, glabrous or hairy.

Distribution. Three genera and c. 16 species in Southeast Asia, North, Central and South America, Africa and Madagascar. In Singapore 1 native species.

Ecology. Mostly in tropical wet forest, sometimes extending into dry forest and savannah.

Uses. Wood used for light construction and some species are grown as ornamentals. *Gelsemium elegans* (Gardner & Champ.) Benth. is widely known to be poisonous and is used in Chinese traditional medicines.

Taxonomy. The Gelsemiaceae is a fairly recently recognised family as a segregate from the Loganiaceae, originally highlighted by molecular phylogenetic work. The phylogenetic studies showed that the Loganiaceae as then defined was very polyphyletic and resulted in some genera being removed from the Gentianales altogether, some transferred to Gentianaceae, and two genera being placed in the new family Gelsemiaceae (Struwe et al., Cladistics 10 (1994) 175–206). These two genera, *Gelsemium* Juss. and *Mostuea* Didr., are not found in Singapore. Even more recently, *Pteleocarpa* Oliv., which is present in Singapore, has been transferred to Gelsemiaceae (Struwe et al., Bot. J. Linn. Soc. 175 (2014) 482–496). In the botanical literature from the region, *Pteleocarpa* has previously been included in Boraginaceae although it has

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long been recognised as possibly misplaced there (see Veldkamp, Fl. Males. Bull. 10 (1988) 47–50). It has also been included in its own monotypic family, Pteleocarpaceae (Brummitt, Kew Bull. 66 (2011) 1–3).

PTELEOCARPA Oliv.

(*pteleo-* = pertaining to *Ptelea* L., Greek, *-carpa* = fruit; fruit resembling those of *Ptelea*)

Trans. Linn. Soc. London 28 (1873) 515; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 64 (1895) 130; Ridley, Fl. Malay Penins. 2 (1923) 464; Veldkamp, Fl. Males. Bull. 10 (1988) 47; Ng, Tree Fl. Malaya 4 (1989) 64; Riedl, Fl. Males., ser. 1, 13 (1997) 141; Rafidah, Fl. Penins. Malaysia, ser. 2, 6 (2017) 4; Struwe in Kadereit & Bittrich (ed.), Fam. Gen. Vasc. Pl. 15 (2019) 451. **Type:** *Pteleocarpa malaccensis* Oliv. (= *Pteleocarpa lamponga* (Miq.) Bakh. ex K.Heyne).

Trees. **Leaves** spirally arranged, petiolate, blade entire. **Inflorescence** terminal, paniculate, distally thyrsoid or umbelliform, many-flowered. **Flowers** shortly stalked, 5-merous. **Calyx** lobes 5, imbricate, colleters obscure if present, persistent in fruit. **Corolla** yellow, rotate with short tube and much longer lobes, lobes 5, imbricate. **Stamens** 5, oppositisepalous, inserted in upper half of tube, equal, long-exserted from corolla tube. **Ovary** syncarpous, 2-locular; styles 2; stigmas capitate. **Fruit** a winged samara, suborbicular to ellipsoid in outline, wings distinctly veined, 1-seeded. **Seeds** flattened.

Distribution. A genus of 1 species in Peninsular Thailand, Peninsular Malaysia, Singapore, Sumatra and Borneo.

Taxonomy. As noted above, this genus has generally been treated in the literature of the region in the Boraginaceae. It had at times also been associated with a number of other families until its placement in Gelsemiaceae relatively recently (see literature cited above).

Pteleocarpa lamponga (Miq.) Bakh. ex K.Heyne

(of Lampong, Sumatra)

Nutt. Pl. Ned.-Ind., ed. 2, 2 (1927) 1309; Veldkamp, Fl. Males. Bull. 10 (1988) 49; Ng, Tree Fl. Malaya 4 (1989) 64; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 175; Turner, Gard. Bull. Singapore 45 (1993) 46; Dayang Awa, Tree Fl. Sabah & Sarawak 2 (1996) 103; Riedl, Fl. Males., ser. 1, 13 (1997) 142; Tan et al. in Davison et al. (ed.), Singapore Red Data Book, ed. 2 (2008) 218; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 73, 117, 197; Rafidah, Fl. Penins. Malaysia, ser. 2, 6 (2017) 4. **Basionym:** *Dodonaea lamponga* Miq., Fl. Ned. Ind., Eerste Bijv., fasc. 3 (1861) 511. **Type:** *Teijsmann s.n.* [HB 4447], [Indonesia], Sumatra, Lampong, Siring-kebau (lectotype U [U.1163599], designated by Veldkamp, Fl. Males. Bull. 10 (1988) 49; isolectotypes BO n.v., L [L0281635], M [M-0210907, M-0210908]). **Fig. 1, 2.**

Pteleocarpa malaccensis Oliv., Trans. Linn. Soc. London 28 (1873) 515; Beccari, Malesia 1(2) (1877) 130; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 64 (1895) 131; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 61; Ridley, Fl. Malay Penins. 2 (1923) 464. **Type:** *Maingay 1984B*, [Malaysia], Malacca, 1867

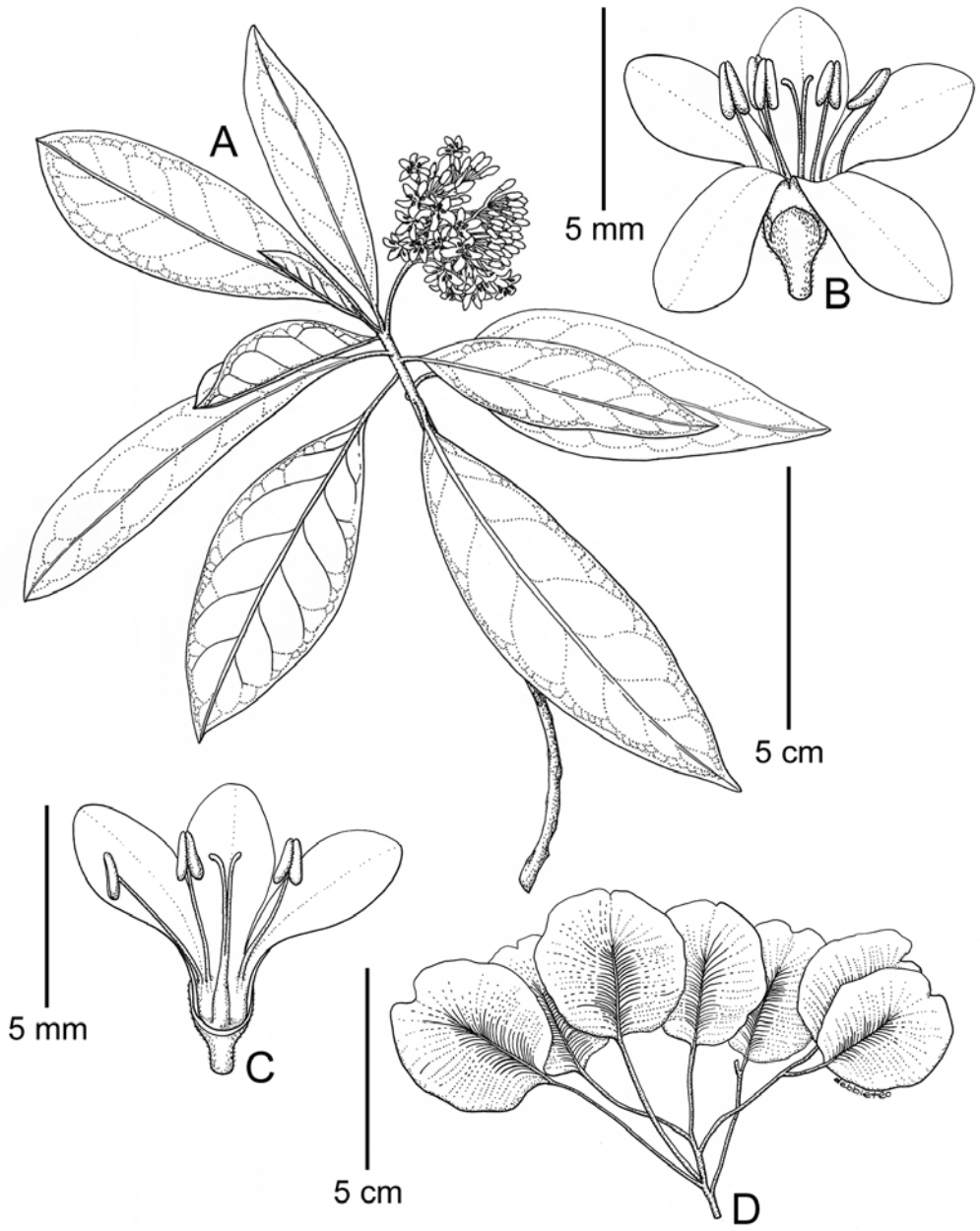

Figure 1. *Pteleocarpa lamponga* (Miq.) Bakh. ex K.Heyne. **A.** Habit. **B.** Flower. **C.** Flower dissection. **D.** Fruit. (A–C from Peninsular Malaysia, *Curtis 835*; D from Singapore, Changi, *Ridley 3610a*. Drawn by D. Teo).

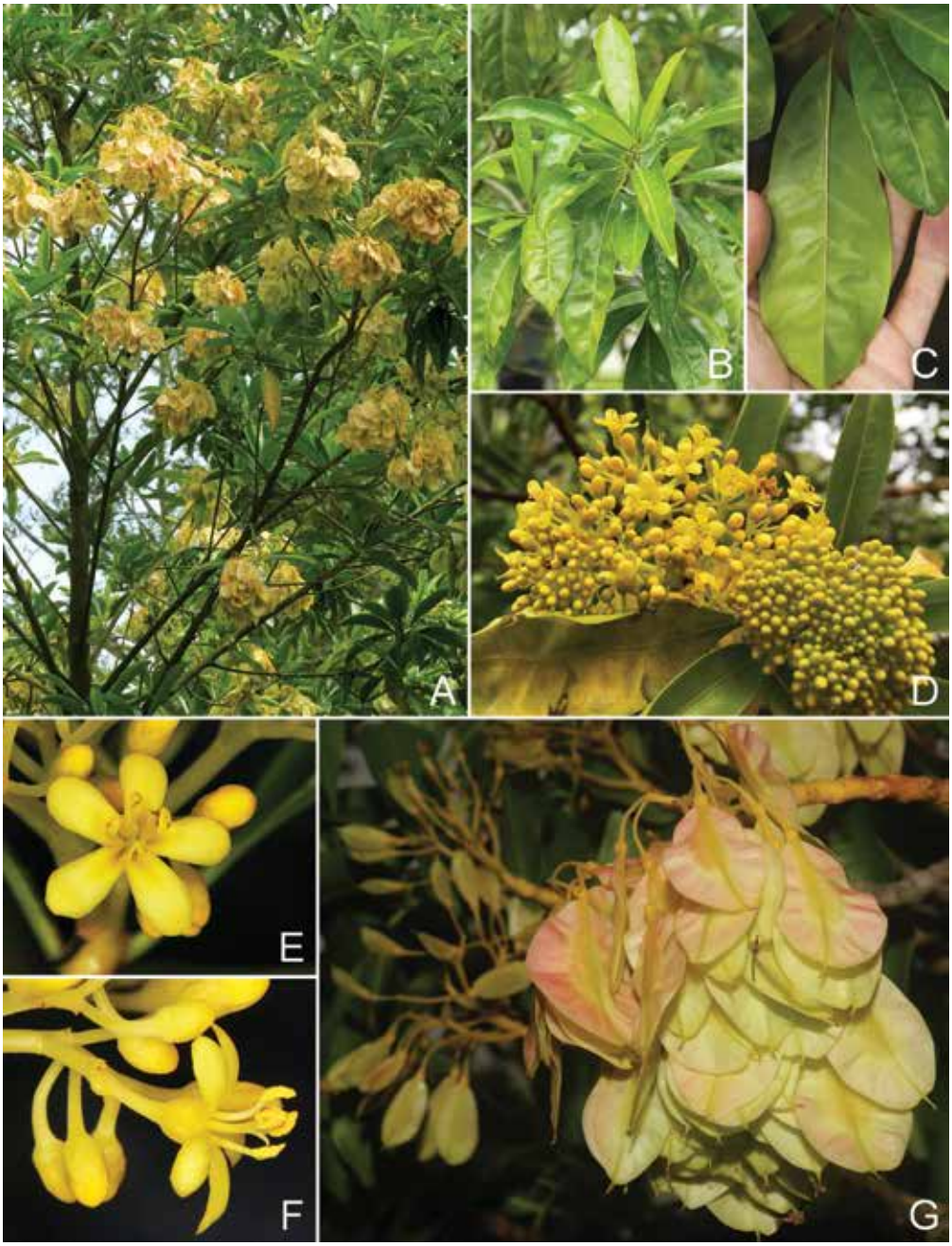

Figure 2. *Pteleocarpa lamponga* (Miq.) Bakh. ex K.Heyne. **A.** Part of the tree crown with fruiting branches. **B.** Branch with leaves. **C.** Lower leaf surface. **D.** Inflorescence. **E.** Flower from the front. **F.** Flower from the side. **G.** Fruits. (Cultivated in Singapore, Pasir Panjang Nursery. Photos: A–C, E, F, W.F. Ang; D, G, X.Y. Ng).

(lectotype K [K000630504], first step designated by Veldkamp, Fl. Males. Bull. 10 (1988) 49, second step designated here; isolectotypes GH [GH01154293], K [K001129685]).

Pteleocarpa longistyla Becc., Malesia 1(2) (1877) 130, fig. 8. **Type:** *Beccari 1611*, [Malaysia], Sarawak, 1st Div., Mt Mattang, November 1865 (lectotype FI [FI013058], designated by Veldkamp, Fl. Males. Bull. 10 (1988) 49; isolectotypes A [A01154292], K [K001129688], M [M-0210906]).

Tree to 37 m tall; dbh to 60 cm; bark smooth to weakly fissured, brown or grey-white; twig bark pale grey to pale brown, glabrous. **Leaves** glabrous throughout; petioles 6–20 mm long; blades elliptic to obovate, (2.5–)4.8–13.5 × (1.1–)2.5–5 cm, base cuneate, apex shortly acuminate, more rarely long acuminate, 4–7 secondary veins on each side of midrib, midrib and secondary veins slightly prominent to flat above, prominent beneath, tertiary venation reticulate, obscure above, visible beneath. **Inflorescence** terminal, paniculate, 3.5–8 cm long, axes minutely puberulent throughout, flowers congested distally; pedicels 3–6 mm long. **Sepals** ovate to orbicular, fused at base, lobes 1–2.3 × 1–1.5 mm, apex rounded, more rarely to acute, glabrous or puberulent at base, ciliate. **Corolla** yellow, glabrous inside and outside; tube 0.9–1.4 mm long; lobes oblong to obovate, 4.3–5 × 2.3–2.5 mm, apex rounded. **Stamens** inserted below corolla lobe sinuses; filaments 3–3.5 mm long, glabrous; anthers narrowly oblong to ovate, 1.6–2 × 0.5–1.2 mm, base sagittate. **Ovary** 2–2.5 × 0.6–0.7 mm, glabrous; styles 2.5–4 mm long. **Fruit** ellipsoid, 2.6–6 × 2.1–4.2 cm, apex emarginate to deeply bifid, style persistent.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra and Borneo. In Singapore only known from old specimens from Changi (*Ridley s.n.*, 1892, K [K00112916]; *Ridley 3610a*, 1892, K, SING [SING0004052]).

Ecology. Throughout its range in lowland evergreen forest.

Provisional conservation assessment. Globally Least Concern (LC). In Singapore presumed Nationally Extinct.

Notes. Due to the small number of specimens from Singapore, the description is based on material from throughout the distribution of the species.