

MAGNOLIACEAE

J. Chen

Juss., Gen. Pl. (1789) 280, as ‘Magnoliae’, nom. cons.; Ridley, Fl. Malay Penins. 1 (1922) 12; Hutchinson, Fam. Fl. Pl., Dicot., ed. 2 (1959) 123; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 96; Keng, Tree Fl. Malaya 2 (1973) 281; Keng, Fl. Thailand 2(3) (1975) 251; Keng, Ord. Fam. Malayan Seed Pl., ed. 3 (1983) 26; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 561; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 8; Nootboom in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 391; Heywood in Heywood et al., Fl. Pl. Fam. World (2007) 198; Xia et al., Fl. China 7 (2008) 48; Nootboom & Chalermglin, Thai Forest Bull., Bot. 37 (2009) 111; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 219. **Type:** *Magnolia* L.

Trees or shrubs; latex absent. **Stipules** entire, conical, large and conspicuous, at first enclosing the terminal bud, caducous, later leaving circular scars around the nodes. **Leaves** simple, spirally arranged or (not in Singapore) rarely distichous; blade entire or (in *Liriodendron*, not in Singapore) rarely lobed, venation pinnate. **Inflorescence** terminal or terminal on axillary brachyblasts, reduced to a solitary flower; bracts spatheaceous, 1 or more, caducous, later leaving circular scars around the nodes. **Flowers** bisexual or (not in Singapore) rarely unisexual, actinomorphic, large, often fragrant. **Tepals** arranged spirally or in whorls, free, usually fleshy, aestivation imbricate, outer ones sometimes sepal-like. **Stamens** many, free, spirally arranged; filaments stout or (not in Singapore) rarely elongate; anthers linear, thecae 2, dehiscence introrse or (not in Singapore) latrorse or extrorse, connective usually forming an appendage. **Gynoecium** superior, sessile or stipitate on a gynophore; carpels many or (not in Singapore) rarely few, free or at first concrescent or (not in Singapore) rarely completely connate, spirally arranged; ovules 2 or more, ventrally oriented. **Fruit** apocarpous or syncarpous, dehiscent or (in *Liriodendron*, not in Singapore) indehiscent and samaroid. **Seeds** 1 or more per fruiting carpel, testa a fleshy sarcotesta or (in *Liriodendron*, not in Singapore) adnate to the endocarp; endosperm large; embryo tiny.

Distribution. With about 220 species in two genera (Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 219), the Magnoliaceae has a disjunct distribution in tropical, subtropical and temperate regions of Asia and the Americas. *Liriodendron* L. comprises only two species, one occurring in North America and another in China. The species-rich *Magnolia* L. is widely distributed in East and Southeast Asia as well as North and Central America. In Singapore, 1 genus and 4 native species.

Ecology. Our knowledge of the floral biology and pollination ecology of Magnoliaceae is largely based on species in temperate regions; furthermore studies of tropical species are restricted to the Neotropics. In general, *Magnolia* flowers are protogynous and have an anthetic duration of 2–4 days (Thien, Amer. J. Bot. 61 (1974) 1037–1045). Beetles are the primary pollinators, but bees and flies have been implicated as occasional pollinators (Yasukawa et al.,

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Doi: 10.26492/fos4.2026-10; 4 September 2026 (online & print).

Pl. Species Biol. 7 (1992) 121–140). The flowers emit a strong scent during the pistillate and staminate phases (Azuma et al., Pl. Species Biol. 12 (1997) 69–83). Floral thermogenesis has been recorded in several taxa, including tropical species that produce heat at night during the pistillate and staminate phases (Dieringer et al., Int. J. Pl. Sci. 160 (1999) 64–71; Gottsberger et al., Flora 207 (2012) 107–118). Heated floral chambers enhance the volatilisation of floral scent and may directly serve as an energy reward to pollinators (Azuma et al., Pl. Species Biol. 14 (1999) 121–127). The food reward for beetle and fly pollinators includes petal secretion, stigmatic exudate and pollen whereas the only food reward available to bee pollinators is pollen (Thien et al. in Hunt (ed.) *Magnolias & Allies* (1998) 37–58). Large scarab beetle pollinators additionally feed on petal tissue (Dieringer & Espinosa, Bull. Torrey Bot. Club 121 (1994) 154–159).

Seed dispersal differs greatly between *Liriodendron* and *Magnolia*. The diaspore of *Liriodendron* is a samara – a dry, indehiscent, winged fruit that is dispersed by wind (van der Pijl, Princ. Dispersal Higher Pl., ed. 3 (1982) 66). In contrast, the dry follicles of *Magnolia* dehisce at maturity to reveal brightly-coloured fleshy seeds that are dispersed via endozoochory (van der Pijl, Princ. Dispersal Higher Pl., ed. 3 (1982) 36). The showy seeds of *Magnolia* have been observed to be consumed by birds (Snow, Biotropica 13 (1981) 1–14; Ganesh & Davidar, Curr. Sci. 80 (2001) 394–399; Oppel & Mack, Biotropica 42 (2010) 229–235). The intact seeds defaecated by birds show successful germination (Lombardi & Motta-Junior, Ciência e Cultura 45 (1993) 408–409), although a few parrot and dove species have been reported as seed predators (Oppel & Mack, Biotropica 42 (2010) 229–235). Kitamura et al. (Oecologia 133 (2002) 559–572) have reported bulbuls, pigeons and hornbills as seed dispersers of *Magnolia baillonii* Pierre and bulbuls as seed dispersers of *Magnolia champaca* (L.) Baill. ex Pierre in Khao Yai National Park, Thailand. In Singapore, *Magnolia elegans* (Blume) H.Keng has been reported in the diet of long-tailed macaques, which swallow the fleshy sarcotesta but spit out the seed intact, some of which were transported 20 m or more (Lucas & Corlett, Amer. J. Primatol. 45 (1998) 29–44).

Uses. Many species and hybrids are cultivated in gardens for their huge, showy flowers. Notable exotic ornamentals in Singapore include *Magnolia* × *alba* (DC.) Figlar, *Magnolia champaca*, *Magnolia coco* (Lour.) DC., *Magnolia figo* (Lour.) DC. and *Magnolia grandiflora* L. The wood of *Liriodendron tulipifera* L. has been used widely for the interior finish of houses and other wooden ware whereas champaca (*Magnolia champaca*) is used as a minor source of timber in India and Southeast Asia. The essential oil extracted from *Magnolia* flowers is used in aromatherapy and for making soaps and perfumes. The flowers are also used to make tea. Champaca is perhaps the most widely used species in the region, particularly for medicinal, religious and cultural purposes. In traditional Ayurvedic medicine, the bark and flower buds of champaca are claimed to be useful for treating many ailments including fever, ulcers, gingivitis and gout. In India, the flowers of champaca are strung into garlands, used by women to decorate hair, floated in bowls of water as perfume and used as a decoration for bridal beds. Some Buddhists use champaca trees as a focus in their search for enlightenment; therefore, they have been very commonly planted in temples in Thailand since ancient times.

Taxonomy. Although Canellaceae, Eupteleaceae, Schisandraceae, Trochodendraceae and Winteraceae were once included in a broadly circumscribed Magnoliaceae (Bentham &

Hooker, Gen. Pl. 1(1) (1862) 16–20; Baillon, Nat. Hist. Pl. 1 (1871) 129–186), they are now recognised as distantly related families. The family Magnoliaceae, as currently circumscribed, resides within the order Magnoliales, which, in turn, is nested within the Magnoliid clade (APG IV, Bot. J. Linn. Soc. 181 (2016) 1–20). A phylogenetic study with extensive sampling of taxa and molecular markers indicated that Myristicaceae is sister to all remaining families of the Magnoliales (Annonaceae, Degeneriaceae, Eupomatiaceae, Himantandraceae and Magnoliaceae), but the position of Magnoliaceae within the order is unresolved (Massoni et al., Molec. Phylogen. Evol. 70 (2014) 84–93). Dandy (Bull. Misc. Inform. Kew 1927 (1927) 257–264) divided the family into two tribes: Liriodendreae (comprising only the distinct genus *Liriodendron*) and Magnolieae (comprising nine genera). Presently, two subfamilies corresponding to Dandy's tribes have generally been recognised: Liriodendroideae and Magnolioideae. The generic delimitation within subfamily Magnolioideae, however, has been highly contested. For example, Law (Acta Phytotax. Sin. 22 (1984) 89–109) expanded Dandy's classification and recognised 14 genera whereas Nooteboom (Blumea 31(1) (1985) 65–121) reduced the subfamily Magnolioideae to 6 genera. Even with data from numerous molecular phylogenetic studies (Azuma et al., Amer. J. Bot. 88 (2001) 2275–2285; Kim et al., Amer. J. Bot. 88 (2001) 717–728; Nie et al., Molec. Phylogen. Evol. 48 (2008) 1027–1040; Azuma et al., Thai Forest Bull., Bot. 39 (2011) 148–165; Kim & Suh, J. Pl. Biol. 56 (2013) 290–305) and comparative morphology surveys (Figlar, Proc. Int. Symp. Fam. Magnoliac. (2000) 14–25), generic classification within the subfamily remains contentious, with several systems proposed according to these data. Sima & Lu (Proc. Second Int. Symp. Fam. Magnoliac. (2012) 55–71) recognised 14 genera within Magnolioideae, but their system has rarely been followed by subsequent authors. Xia (Proc. Second Int. Symp. Fam. Magnoliac. (2012) 12–38) divided the subfamily into 16 genera; his system has been followed by several authors describing new Magnoliaceae species from China. A third system by Figlar & Nooteboom (Blumea 49 (2004) 87–100) considers subfamily Magnolioideae to contain only a single genus, *Magnolia*. This monogeneric circumscription was originally adopted by Baillon (*Adansonia* 7 (1866) 1–16, 65–69). The *Flora of China* treatment of Magnoliaceae (Xia et al., Fl. China (2008) 48–91) provides two options for users, with a checklist of names based on a monogeneric subfamily Magnolioideae but with the main text of the treatment following Xia et al.'s multi-generic scheme. Figlar (Proc. Second Int. Symp. Fam. Magnoliac. (2012) 47–54) provided several justifications for the monogeneric system: 1) DNA sequence divergence between clades is very low; 2) frequency of inter-clade hybrids is very high under cultivated conditions; and 3) nomenclatural stability will be maximised as future refinements in clade boundaries will not necessitate any name changes. In contrast, Xia et al.'s multi-generic system (Xia et al., Fl. China (2008) 48–91) utilises fruit characters that may be difficult to interpret (Kim & Suh, J. Pl. Biol. 56 (2013) 290–305) and the key to genera cannot be used for herbarium specimens that lack fruit as early couplets rely solely on fruit characters. The most recent phylogenetic study of Magnoliaceae based on whole chloroplast genomes and a dense taxon sampling of 86 species has endorsed the one-genus delimitation within Magnolioideae (Wang et al., J. Syst. Evol. 58 (2020) 673–695). The broad generic concept of *Magnolia* is quite widely accepted and adopted here.

MAGNOLIA L.

(Pierre Magnol, 1638–1715, French physician and botanist)

Sp. Pl. 1 (1753) 535; Ridley, Fl. Malay Penins. 1 (1922) 13; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 96; Keng, Tree Fl. Malaya 2 (1973) 285; Keng, Fl. Thailand 2(3) (1975) 253; Nootboom, Blumea 31(1) (1985) 83; Nootboom, Blumea 32 (1987) 344; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 568; Nootboom in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 399; Figlar & Nootboom, Blumea 49 (2004) 88; Nootboom & Chalermglin, Thai Forest Bull., Bot. 37 (2009) 113; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 220. **Type:** *Magnolia virginiana* L., lectotype designated by Hitchcock, Nom. Prop. Brit. Bot. (1929) 163.

Michelia L., Sp. Pl. 1 (1753) 536. **Type:** *Michelia champaca* L. (= *Magnolia champaca* (L.) Baill. ex Pierre).

Talauma Juss., Gen. Pl. (1789) 281. **Type:** *Talauma plumieri* (Sw.) DC. (= *Magnolia plumieri* Sw.).

Manglietia Blume, Verh. Batav. Genootsch. Kunsten 9 (1823) 149. **Type:** *Manglietia glauca* Blume (= *Magnolia blumei* Prantl).

Aromadendron Blume, Bijdr. Fl. Ned. Ind., pt 1 (1825) 10. **Type:** *Aromadendron elegans* Blume (= *Magnolia elegans* (Blume) H.Keng).

For additional generic synonyms see Figlar & Nootboom, Blumea 49 (2004) 88.

Trees or shrubs. **Stipules** free or adnate to petiole (and leaving a stipular scar on petiole). **Leaves** spirally arranged or (not in Singapore) rarely distichous; blade entire. **Inflorescences** terminal or terminal on axillary brachyblasts, single-flowered. **Flowers** bisexual or (not in Singapore) rarely unisexual, large, often fragrant. **Tepals** arranged spirally or in whorls, outer ones sometimes sepal-like, 6–12(–45). **Stamens** many, spirally arranged; anther dehiscence introrse or (not in Singapore) latrorse, connective usually forming an appendage. **Gynoecium** sessile or stipitate on a gynophore; carpels many or (not in Singapore) rarely few, free or at first concrescent or (not in Singapore) rarely completely connate, spirally arranged. **Fruit** apocarpous or syncarpous; mature carpels dehiscent. **Seeds** 1 or more per fruiting carpel, with a brightly coloured sarcotesta free from the endocarp, in dehiscent carpels pendulous on a thread-like funiculus.

Distribution. As for the family. In Singapore, 4 native species.

Taxonomy. The most recent phylogenetic classification of *Magnolia* based on complete plastomes (Wang et al., J. Syst. Evol. 58 (2020) 673–695) recognises 15 sections within the genus: *Magnolia* sect. *Gwillimia* DC., *M.* sect. *Gynopodium* Dandy, *M.* sect. *Kmeria* (Pierre) Figlar & Noot., *M.* sect. *Macrophylla* Figlar & Noot., *M.* sect. *Magnolia*, *M.* sect. *Maingola* Dandy, *M.* sect. *Manglietia* (Blume) Baill., *M.* sect. *Michelia* (L.) Baill., *M.* sect. *Oyama* Nakai, *M.* sect. *Rytidospermum* Spach, *M.* sect. *Splendentes* Dandy ex J.A.Vázquez, *M.* sect. *Talauma* (Juss.) Baill., *M.* sect. *Tuliparia* Spach, *M.* sect. *Tulipastrum* (Spach) Dandy and *M.* sect. *Yulania* (Spach) Dandy; neither subgenera nor subsections are recognised. The

study included several cases of incongruence between chloroplast topology and a nuclear topology from a previous study (Nie et al., *Molec. Phylogen. Evol.* 48 (2008) 1027–1040), and it remains to be seen if their infrageneric system will be widely adopted by taxonomists. Therefore, the *Magnolia* species in Singapore are not assigned to any infrageneric rank in the present treatment.

Key to *Magnolia* species

1. Stipules free from the petiole (stipular scar absent on petiole); petiole not dilated at base; twigs 1.5–4 mm thick in young branches; leaf midrib flush or sunken above; flowering peduncle 1.5–2.5 mm thick, with 1–2 internode(s); fruiting peduncle 2–3 mm thick at midpoint, 3–6 mm thick below receptacle; fruit 3–7 cm long, 2–3.7 cm wide; mature carpels not beaked or minutely mucronate 2
 Stipules adnate to the petiole (stipular scar present on petiole); petiole dilated at base; twigs 5–11 mm thick in young branches; leaf midrib raised above; flowering peduncle 7–10 mm thick, with 3–13 internodes; fruiting peduncle 6–9 mm thick at midpoint, 8–13 mm thick below receptacle; fruit 8–10 cm long, 4.5–7 cm wide; mature carpels conspicuously beaked 3
2. Young twigs, lower leaf and bract surfaces, flowering and fruiting peduncles and mature carpels glabrous; inner tepals 14–32, chartaceous, linear, 34–53 mm long; anther connective apex setaceous; gynoeceium glabrous, shortly stipitate; mature carpels apex not beaked, connate into a dry syncarp but breaking up into irregular masses when ripe **1. *M. elegans***
 Young twigs, lower leaf and bract surfaces, flowering and fruiting peduncles and mature carpels tawny-tomentose to tawny-villose; inner tepals 6, coriaceous, lanceolate or narrowly obovate, 17–31 mm long; anther connective apex acute; gynoeceium tawny-woolly, not stipitate; mature carpels apex minutely mucronate, free and dehiscing abaxially when ripe **2. *M. macklottii***
3. Leaf tertiary venation laxly netted, areoles c. 2 mm²; petiole base 5–8 mm wide; flowering and fruiting peduncles and bract outer surface tawny-sericeous; outer tepals 60–80 mm long, 18–35 mm wide, inner tepals 60–80 mm long, 10–28 mm wide; stamens about twice as long as carpels; gynoeceium nearly glabrous; mature carpels glabrous, apex narrowed into a sharp, slender, often recurved beak **3. *M. singapurensis***
 Leaf tertiary venation very densely netted, areoles less than 1 mm²; petiole base 2–5 mm wide; flowering and fruiting peduncles and bract outer surface tawny-tomentose to tawny-woolly; outer tepals 40–50 mm long, 10–17 mm wide, inner tepals 30–39 mm long, 5–10 mm wide; stamens only slightly longer than carpels; gynoeceium tawny-tomentose to tawny-woolly; mature carpels tawny-woolly, glabrescent, apex bluntly and stoutly beaked **4. *M. villosa***

1. *Magnolia elegans* (Blume) H.Keng

(Latin, *elegans* = elegant; referring to the form of the tree)

Gard. Bull. Singapore 31 (1978) 129, pl. 1; Nootboom, Blumea 32 (1987) 361; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 577; Turner, Gard. Bull. Singapore 45 (1993) 129; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 320; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 194; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 58, 145, 208; Nootboom & Chalermglin, Thai Forest Bull., Bot. 37 (2009) 122; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 43; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 229; Neo et al., Nat. Singapore 7 (2014) 104; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 90; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 418. **Basionym:** *Aromadendron elegans* Blume, Bijdr. Fl. Ned. Ind., pt 1 (1825) 10; Blume, Fl. Javae, fasc. 19–20 (1829) 26, t. 7, 8, as '*Aromadendrum*'; Korthals, Ned. Kruidk. Arch. 2(3) (1850) 97; Miquel, Fl. Ned. Ind. 1(2), fasc. 1 (1858) 16; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 38; Ridley, Fl. Malay Penins. 1 (1922) 17, fig. 3, as '*Aromadendrum*'; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 98; Keng, Tree Fl. Malaya 2 (1973) 283, fig. 1; Keng, Gard. Bull. Singapore 27 (1974) 67; Keng, Fl. Thailand 2(3) (1975) 259; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 8, fig. 8.1; Kochummen, Tree Fl. Pasoh Forest (1997) 304. **Synonym:** *Talauma elegans* (Blume) Miq., Ann. Mus. Bot. Lugduno-Batavi 4, fasc. 3 (1868) 70; Koorders & Valetton, Meded. Lands Plantentuin 17 [Bijdr. Boomsort. Java 4] (1896) 167; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 38. **Type:** *Blume* 215, [Indonesia], Java (lectotype L [L0038349], first step designated by Nootboom, Blumea 32 (1987) 361, second step designated by Chen & Baldini, Blumea 65(3) (2020) 182; isolectotypes L [L0038348], BO n.v.). **Fig. 1.**

Manglietia oortii Korth., Ned. Kruidk. Arch. 2(3) (1850) 97. **Type:** *Korthals s.n.*, [Indonesia], Sumatra (lectotype L [L0038346], designated by Nootboom, Blumea 32 (1987) 361).

Aromadendron glaucum Korth., Ned. Kruidk. Arch. 2(3) (1850) 98. **Synonyms:** *Talauma glauca* (Korth.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4, fasc. 3 (1868) 70. – *Magnolia glauca* (Korth.) Pierre, Fl. Forest. Cochinch., fasc. 1 (1880) sub pl. 2, nom. illeg. non (L.) L. (1759). – *Talauma elegans* (Blume) Miq. var. *glaucum* (Korth.) P.Parm., Bull. Sci. France Belgique 27(2) (1896) 277. – *Aromadendron elegans* Blume var. *glaucum* (Korth.) Dandy, Bull. Misc. Inform. Kew 1928 (1928) 183. **Type:** *Korthals s.n.*, [Indonesia], Sumatra, Kassan (lectotype L [L0038347], first step designated by Dandy, Bull. Misc. Inform. Kew 1928 (1928) 183, second step designated by Nootboom, Blumea 32 (1987) 361; isolectotype BM [BM000574750]).

Tree to 40 m tall, dbh to 150 cm; bark grey, smooth or slightly rugose; twig bark blackish to greyish brown, glabrous, smooth when young, becoming longitudinally ridged, 1.5–2.5 mm thick in young branches. **Stipules** free from the petiole, glabrous except the tuft of hairs at apex. **Leaves** spirally arranged; petiole not dilated at base, 7–18 × 1–2 mm, glabrous, stipular scar absent; lamina chartaceous to thin-coriaceous, drying greyish brown to dark brown, rarely glaucous beneath, oblong-elliptic to narrowly elliptic, rarely oblong-obovate, 7.3–26.4 × 2.9–8.4 cm, glabrous above and below, base attenuate-cuneate or sometimes rounded, apex acute or acuminate (acumen 4–15 mm long); midrib flush or sunken above, prominent below; secondary veins 10–15 pairs, flush to slightly raised above, prominent below; tertiary veins reticulate, visible above and below, reticulations very densely netted, areoles less than 1 mm². **Flowers** terminal; peduncle 20–34(–60) mm long, 1.5–2 mm thick, with 1–2 internode(s), glabrous; bracts chartaceous, glabrous outside. **Tepals** 18–36, chartaceous, glabrous, apex acute; outer tepals 4, yellowish green, narrowly elliptic or obovate, 37–53 mm long, 6–16

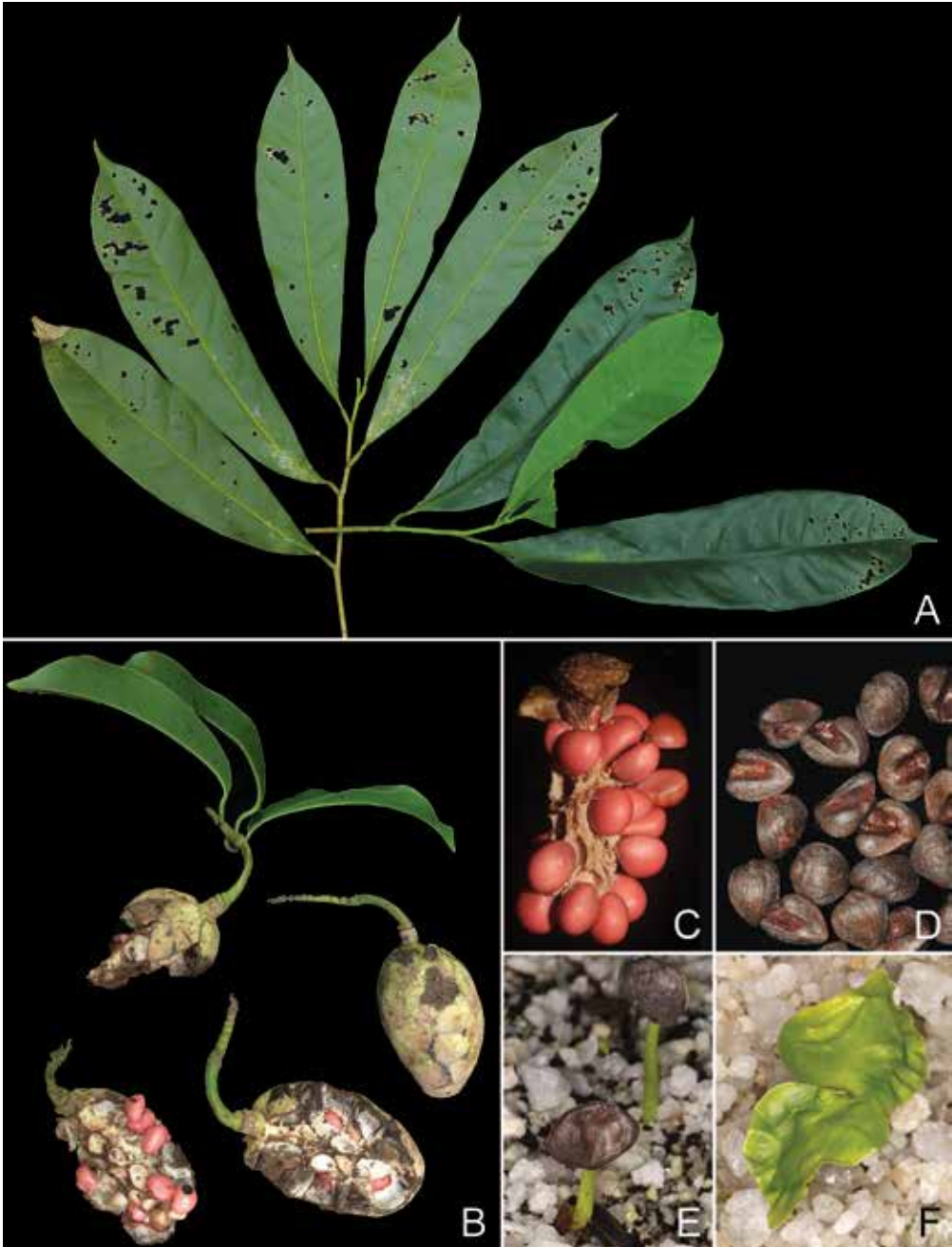


Figure 1. *Magnolia elegans* (Blume) H.Keng. **A.** Leaves. **B.** Pendent fruit on slender peduncles. **C.** Seeds with bright pink sarcotesta, pendulous on a thread-like funiculus. **D.** Seeds with sarcotesta removed. **E.** Germinating seeds. **F.** Emerging seed leaves. (A–F from Singapore; A, Bukit Timah, *Niissalo et al. SING2019-1183*; B–F, Bukit Timah. Photos: A, P.K.F. Leong; B–F, X.Y. Ng).

mm wide; inner tepals white, linear, 34–53 mm long, 2–7 mm wide. **Stamens** 33–60, c. 1 mm wide; anther connective apex setaceous, 10–12 mm long; filaments less than 1 mm long; anthers introrse, 8–9 mm long. **Gynoecium** glabrous, shortly stipitate; carpels 24–30, obovoid, 10–13 mm long, c. 0.5 mm wide. **Fruit** pendent, greyish brown, ellipsoid, 5–6.5 cm long, 2.7–3.7 cm wide, peduncle glabrous, 25–80 mm long, 2–3 mm thick at midpoint, 4–6 mm thick below receptacle; mature carpels glabrous, apex not beaked, connate into a dry syncarp but breaking up into irregular masses when ripe, with 1–2 seeds per carpel; gynophore 1–4 mm long; scars of perianth and stamens along receptacle 3–7 mm long. **Seeds** 10–11 mm long, 8–10 mm wide, smooth, glabrous, sarcotesta pink.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra and Java. In Singapore, known from Singapore Botanic Gardens’ Rain Forest (*Ridley 4429*, 19 Nov 1892, K [K001292395], SING [SING0013393]), Bukit Timah (*Corner SFN 34534*, 15 Nov 1937, K [K001292396], SING [SING0047781]; *Ngadiman SFN 35781*, 12 Dec 1938, K [K001292390, K001292391], SING [SING0044556, SING0047756]; *Ngadiman SFN 36401*, 13 Apr 1939, K [K001292393, K001292394], SING [SING0013392]) and Upper Peirce (*Gwee SING2009-703*, 22 Dec 2009, SING [SING0144137]).

Ecology. In Singapore, in primary forest.

Conservation assessment. Globally, Data Deficient (DD) (IUCN Red List, 2026). In Singapore, assessed as Critically Endangered (CR/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 488).

Vernacular name. *Cempaka hutan* (NParks’ Flora & Fauna Web, 2026).

Notes. The dimensions of the flowers and fruit were obtained from specimens throughout the distribution of the species owing to the scarcity of material from Singapore. When ripe, the fruit breaks up into irregular masses, which fall off to expose the brightly coloured seeds that are attached to the central axis by a thread-like funiculus.

2. *Magnolia macklottii* (Korth.) Dandy

(Heinrich Christian Macklot, 1799–1832, German naturalist
based in the Dutch East Indies)

Bull. Misc. Inform. Kew 1927 (1927) 263; Keng, Tree Fl. Malaya 2 (1973) 294; Nootboom, Blumea 32 (1987) 347; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 571; Kim et al., Blumea 47 (2002) 335; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 235. **Basionym:** *Manglietia macklottii* Korth., Ned. Kruidk. Arch. 2(3) (1850) 97; Miquel, Fl. Ned. Ind. 1(2), fasc. 1 (1858) 15, p.p. **Synonym:** *Aromadendron macklottii* (Korth.) Sima & S.G.Lu, Proc. Second Int. Symp. Fam. Magnoliac. (2012) 67. **Type:** *Korthals s.n.*, [Indonesia], Sumatra, Singalang (lectotype L [L0038360], designated by Nootboom, Blumea 32 (1987) 347; isoelectotypes BO, U [U0043856]).

Distribution. Peninsular Malaysia, Singapore, Sumatra, Java and Borneo.

Taxonomy. There are two recognised varieties, *Magnolia macklottii* var. *macklottii* in Sumatra, Java and Borneo and *Magnolia macklottii* var. *beccariana* in Peninsular Malaysia, Singapore and Sumatra.

var. *beccariana* (A.Agostini) Noot.

(Odoardo Beccari, 1843–1920, Italian naturalist
known for his work in Malesia)

Blumea 32 (1987) 348; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 571; Kim et al., Blumea 47 (2002) 336; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 235, pl. 24; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 90; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 418. **Basionym:** *Michelia beccariana* A.Agostini, Atti Reale Accad. Fisiocrit. Siena, ser. 10, 1 (1926) 184. **Synonym:** *Aromadendron macklottii* (Korth.) Sima & S.G.Lu var. *beccarianum* (A.Agostini) Sima & S.G.Lu, Proc. Second Int. Symp. Fam. Magnoliac. (2012) 67. **Type:** *Beccari PS 116*, [Indonesia], Sumatra, Mt Singalang, June–July 1878 (lectotype FI [FI007537], first step designated by Nootboom, Blumea 32 (1987) 347, second step designated here; isoelectotypes BM [BM000574751], FI, K [K000681574], L [L0038359], MEL [MEL2115999, MEL2116000]). **Fig. 2.**

Magnolia maingayi King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 58(4) (1889) 369; King, Ann. Roy. Bot. Gard. Calcutta 3 (1891) 208, pl. 45: B; Ridley, J. Straits Branch Roy. Asiat. Soc. 35 (1901) 84; Ridley, Fl. Malay Penins. 1 (1922) 13; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1393; Keng, Tree Fl. Malaya 2 (1973) 285, fig. 2; Keng, Gard. Bull. Singapore 27 (1974) 67; Nootboom, Blumea 32 (1987) 357; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 573; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 9, fig. 8.2; Turner, Gard. Bull. Singapore 45 (1993) 129; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 320; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 194; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 58, 145, 194; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 43. **Synonym:** *Aromadendron maingayi* (King) Sima & S.G.Lu, Vouchered Fl. S.E. Yunnan (2009) 37. **Type:** *Maingay s.n.* [Kew Distribution 17], [Malaysia], Penang (lectotype K [K000681527, K000681528 – a single specimen over 2 sheets], designated by Chen & Baldini, Blumea 65(3) (2020) 185; isoelectotypes CAL [CAL0000004114, CAL0000004115], L [L0038362]).

Magnolia aequinoctialis Dandy, Bull. Misc. Inform. Kew 1928 (1928) 185. **Type:** *Houtvester Sumatra's Oostkust 25*, [Indonesia], Sumatra, Karolanden (holotype BO; isotype L [L0038358]).

Treelet, 6–12 m tall, dbh to 30 cm; bark greyish brown, slightly flaky; twig bark greyish brown to greyish black, tawny-tomentose to tawny-villose when young, 2–4 mm thick in young branches. **Stipules** free from the petiole, tawny-tomentose to tawny-villose. **Leaves** spirally arranged; petiole not dilated at base, 2–10 × 1–2.5 mm, tawny-tomentose to tawny-villose when young, stipular scar absent; lamina chartaceous to thin-coriaceous, rarely thick-coriaceous (see notes), drying blackish brown to dark brown or rarely dark green above, greyish brown or rarely dark green below, often glaucous below, oblong-obovate to oblong-elliptic, 12–27.2 × 3–9.5 cm, tawny-tomentose to tawny-villose below, especially on the midrib when young, glabrous above, base attenuate-cuneate or rounded, apex often acuminate (acumen 2–20 mm long), rarely acute; midrib sunken above, prominent below; secondary veins 12–20 pairs, flush above, prominent below; tertiary veins reticulate, visible above and below, reticulations densely netted, areoles c. 1 mm². **Flowers** terminal but appears axillary by overtopping of the adjacent axillary bud; peduncle 10–35 mm long, 1.5–2.5 mm thick, with a single internode,

tawny-tomentose to tawny-villose; bracts chartaceous, tawny-tomentose to tawny-villose outside. **Tepals** 9, cream-white to pale orange, glabrous; outer tepals 3, chartaceous, oblong, 24–34 mm long, 8–14 mm wide, apex rounded, sometimes mucronate at the very tip; inner tepals 6, coriaceous, lanceolate or narrowly obovate, 17–31 mm long, 5–12 mm wide, apex acute. **Stamens** c. 60, pale green, c. 1 mm wide; anther connective apex acute, 1–2 mm long; filaments 1–2 mm long; anthers introrse, 6–7 mm long. **Gynoecium** tawny-woolly (carpels often completely concealed by hairs), not stipitate; carpels 12–30, obovoid, 6–9 mm long, c. 1 mm wide. **Fruit** green, cylindrical, sometimes distorted due to abortion of carpels, 3–7 cm long, 2–2.5 cm wide, peduncle tawny-tomentose to tawny-villose, 15–55 mm long, 2–3 mm thick at midpoint, 3–5 mm thick below receptacle; mature carpels tawny-tomentose to tawny-villose, 11–18 mm long, 8–10 mm wide, apex minutely mucronate, free, dehiscing abaxially when ripe, usually with 1 seed per carpel, rarely with 2 seeds per carpel; scars of perianth and stamens along receptacle 8–14 mm long. **Seeds** 7–10 mm long, 5–8 mm wide, smooth, glabrous, sarcotesta pink.

Distribution. Peninsular Malaysia, Sumatra and Borneo. In Singapore, known only from historical collections from Bukit Timah (*Ngadiman SFN 34677*, 4 Feb 1938, SING [SING0011641, SING0042287]; *Ngadiman SFN 36382*, 27 Mar 1939, SING [SING0297030]; *Ngadiman SFN 36547*, 22 Oct 1940, SING [SING0042286]; Sinclair *SFN 40248*, 13 Apr 1954, SING [SING0011642]).

Ecology. In Singapore, in formerly in primary forest.

Conservation assessment. Globally, Data Deficient (DD) (IUCN Red List, 2026, under *Magnolia macklottii*). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 488).

Notes. The measurements were obtained from specimens collected in the entire Malay Peninsula owing to the scarcity of material from Singapore. The specimens collected from higher elevations in Peninsular Malaysia have thick-coriaceous, elliptic leaves with a denser indumentum.

3. *Magnolia singaporensis* (Ridl.) H.Keng (of Singapore)

Gard. Bull. Singapore 31 (1978) 129; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 58, 145, 217; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 243; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 176, 388; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 90; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 419. **Basionym:** *Talauma singaporensis* Ridl., Bull. Misc. Inform. Kew 1914 (1914) 323; Ridley, Fl. Malay Penins. 1 (1922) 16; Dandy, Bull. Misc. Inform. Kew 1928 (1928) 192; Keng, Tree Fl. Malaya 2 (1973) 293; Keng, Gard. Bull. Singapore 27 (1974) 68, as '*singaporensis*'; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 77; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 9, fig. 8.5, as '*singaporensis*'; Turner, Gard. Bull. Singapore 64 (2012) 249. **Synonyms:** *Magnolia candollei* (Blume) H.Keng var. *singaporensis* (Ridl.) Noot., Blumea 32 (1987) 376, as '*candollii*'; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 586, as '*candollii*'; Turner, Gard. Bull. Singapore 45 (1993)

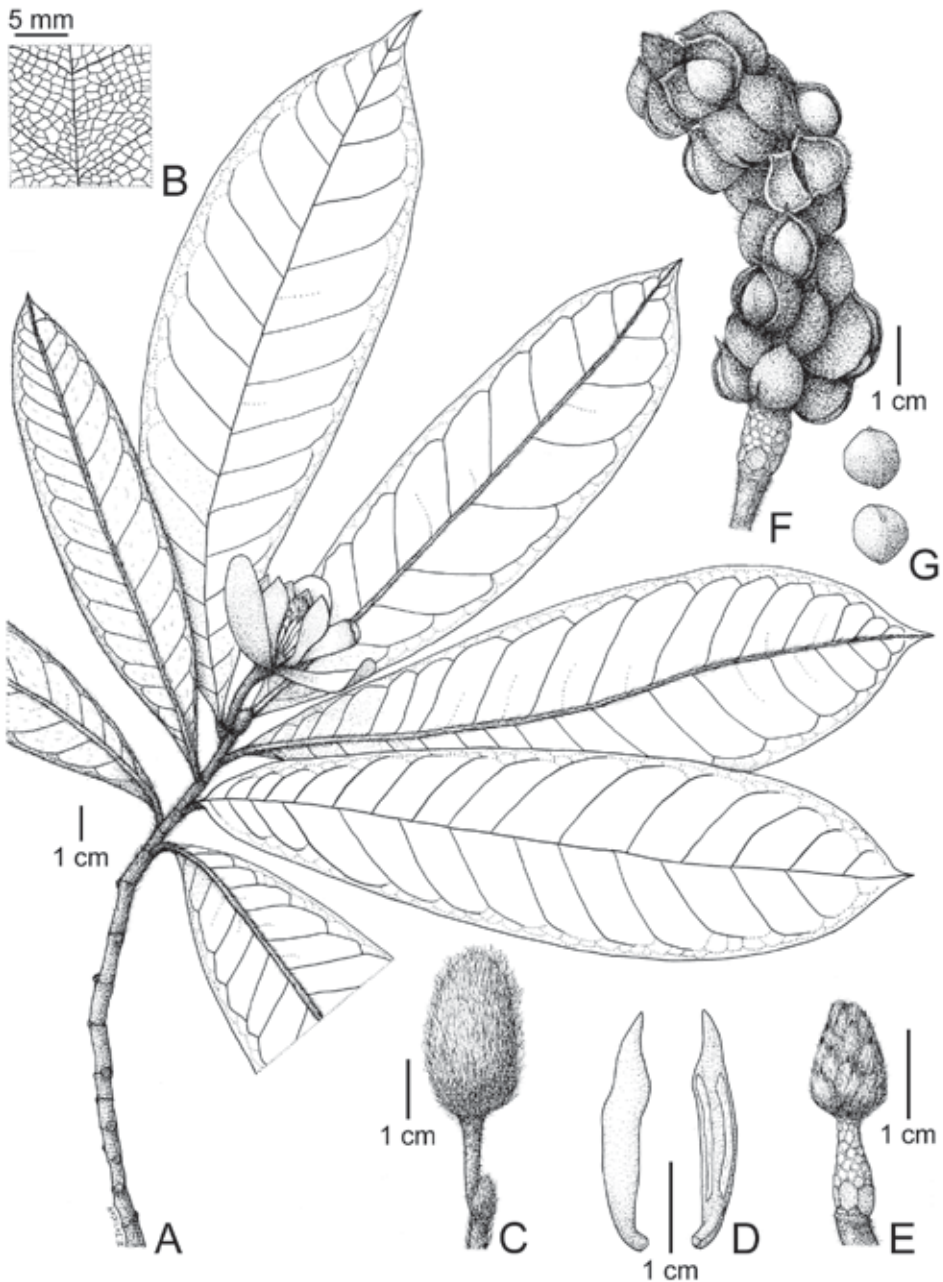


Figure 2. *Magnolia macklottii* (Korth.) Dandy var. *beccariana* (A. Agostini) Noot. **A.** Habit. **B.** Close-up of leaf lamina showing tertiary venation. **C.** Flower bud. **D.** Stamens, abaxial view (left) and adaxial view (right). **E.** Gynoecium and scars of perianth and stamens along receptacle. **F.** Fruit. **G.** Seeds. (A–C from Singapore, Bukit Timah, *Ngadiman SFN 34677*; D–G from Peninsular Malaysia, D, *Ridley s.n.*; E, *Kiah SFN 31997*; F & G, *Poore 1339*. Drawn by E. Tay-Koh).

129, as '*candolii*'; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 320, as '*candollii*'; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 148, as '*candollii*'. – *Magnolia liliifera* (L.) Baill. var. *singaporensis* (Ridl.) Govaerts in Frodin & Govaerts, World Checkl. Bibliogr. Magnoliac. (1996) 71; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 43. – *Lirianthe liliifera* (L.) Sima & S.G.Lu var. *singaporensis* (Ridl.) Sima & S.G.Lu, Proc. Second Int. Symp. Fam. Magnoliac. (2012) 61. **Type:** *Ridley 5091*, Singapore, Chan Chu Kang, 1891 (lectotype BM [BM000551337], designated by Dandy, Bull. Misc. Inform. Kew 1928 (1928) 193; isolectotypes MEL [MEL2085479, MEL2121641], SING [SING0067862], UC [UC267519]). **Fig. 3.**

Talauma kutcinensis A.Agostini, Atti Reale Accad. Fisiocrit. Siena, ser. 10, 1 (1926) 191. **Type:** *Beccari PB 2102*, [Malaysia], Sarawak, Kutcin [Kuching], July 1866 (holotype FI [FI007529]).

Magnolia candollei auct. non (Blume) Noot.: Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73, as '*candolii*'; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 193, as '*candollii*'.

Treelet, 5–12 m tall, dbh to 40 cm; bark greyish brown, smooth; twig bark greyish to blackish brown, tawny-sericeous when young, becoming glabrous, 7–11 mm thick in young branches. **Stipules** adnate to petiole for one-third to its entire length, tawny-sericeous. **Leaves** spirally arranged; petiole conspicuously dilated at base, 20–70 × 2.5–4 mm, at base 5–8 mm wide, sparsely to densely appressed-hairy when young, becoming glabrous, stipular scar 8–40 mm long; lamina coriaceous, drying greyish green to greyish brown, oblong-elliptic to oblong-obovate, 26–54 × 8–19.5 cm, subglabrous to puberulent below, glabrous above, base attenuate-cuneate, apex acute to shortly acuminate (acumen 5–9 mm long); midrib raised above, prominent below; secondary veins 17–29 pairs, raised above, prominent below; tertiary veins reticulate, visible above and below, reticulations laxly netted, areoles c. 2 mm². **Flowers** terminal; peduncle 50–100 mm long, 7–8 mm thick, with 3–13 internodes, tawny-sericeous; bracts chartaceous, tawny-sericeous outside. **Tepals** 9–12, coriaceous, cream-white, glabrous, sometimes tawny-sericeous at the very base below; outer tepals 3, broadly obovate, 60–80 mm long, 18–35 mm wide, apex obtuse or rounded; inner tepals 6–9, oblong-elliptic to oblong-obovate, 60–80 mm long, 10–28 mm wide, apex acute. **Stamens** 70–80, cream-white except the pink base, c. 1.5 mm wide; anther connective apex acute, c. 2 mm long; filaments 3–4 mm long; anthers introrse, 20–23 mm long. **Gynoecium** nearly glabrous, not stipitate; carpels 60–70, ovoid to ellipsoid, 8–11 mm long, c. 1.5 mm wide. **Fruit** cream with green or reddish tinge, ovoid to ellipsoid, 8.5–10 cm long, 5–7 cm wide, peduncle tawny-sericeous, sometimes glabrous in older specimens, 60–100(–130) mm long, 7–9 mm thick at midpoint, 8–13 mm thick below receptacle; mature carpels glabrous, 17–35 mm long, 10–18 mm wide, apex narrowed into a sharp, slender, often recurved beak, connate into a dry syncarp but dehiscing adaxially when ripe (the apical part falling off, the basal part remaining adnate to the receptacle), with 1–2 seeds per carpel; scars of perianth and stamens along receptacle 10–15 mm long. **Seeds** 9–13 mm long, 6–10 mm wide, smooth, glabrous, sarcotesta pink.

Distribution. Peninsular Malaysia, Sumatra, Bangka and Borneo. In Singapore, known from historical collections from Bukit Timah (*Goodenough 3963*, 23 May 1889, SING [SING0042280]), Ang Mo Kio (*Ridley s.n.*, 1894, SING [SING0057825]) and Mandai (*Kiah SFN 37126*, 25 Jul 1940, SING [SING0042282]) but, nowadays, known only in Nee Soon (*Samsuri et al. NES 380*, 6 Apr 2004, SING [SING0053906]; *Teo & Nasir SING2009-400*, 28 Jul 2009, SING [SING0131723]).



Figure 3. *Magnolia singapurensis* (Ridl.) H.Keng. **A.** Habit. Inset: Bark. **B.** Leaves. **C.** Flower (side view). **D.** Flower (front view). **E.** Post-anthetic flower, showing the glabrous gynoecium. Inset: Fallen stamens. **F.** Dehiscent carpels, showing seeds with bright pink sarcotesta. **G.** Seeds pendulous, each on a thread-like funiculus. **H.** Seeds with sarcotestas removed. (A–H including insets from Singapore, Nee Soon, Ng SING2014-337. Photos: A, B & E inset, Zaki Jamil; A inset, W.F. Ang; C–H, X.Y. Ng).

Ecology. In Singapore, in primary forest and freshwater swamp forest.

Conservation assessment. Globally, Data Deficient (DD) (IUCN Red List, 2026). In Singapore, assessed as Critically Endangered (CR/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 48, 488).

4. *Magnolia villosa* (Miq.) H.Keng

(Latin, *villosus* = villous; with long shaggy hairs)

Gard. Bull. Singapore 31 (1978) 129; Nootboom, Blumea 32 (1987) 380; Nootboom, Fl. Males., ser. 1, 10(3) (1988) 588; Turner, Gard. Bull. Singapore 45 (1993) 129; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 321; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 194; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 58, 145, 208; Nootboom, Fl. Penins. Malaysia, ser. 2, 3 (2012) 245; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 176, 388; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 419. **Basionym:** *Talauma villosa* Miq., Fl. Ned. Ind., Eerste Bijv., fasc. 3 (1861) 366; Keng, Tree Fl. Malaya 2 (1973) 293; Keng, Gard. Bull. Singapore 27 (1974) 68; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 9, fig. 8.6. **Synonyms:** *Talauma rabaniana* Hook.f. & Thomson var. *villosa* (Miq.) P.Parm., Bull. Sci. France Belgique 27(2) (1896) 271; Turner, Adansonia, sér. 3, 34 (2012) 244. – *Lirianthe villosa* (Miq.) Sima & S.G.Lu, Proc. Second Int. Symp. Fam. Magnoliac. (2012) 61. **Type:** *Teijsmann HB3690*, [Indonesia], Sumatra, Moeara Enim (lectotype L [L0038374], designated by Nootboom, Blumea 32 (1987) 380; isoelectotypes BO, U [U0003783]). **Fig. 4.**

Talauma lanigera Hook.f. & Thomson in Hooker, Fl. Brit. India 1, fasc. 1 (1872) 40; King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 58(4) (1889) 372; King, Ann. Roy. Bot. Gard. Calcutta 3 (1891) 202, pl. 42; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 38; Ridley, Fl. Malay Penins. 1 (1922) 15. **Synonym:** *Magnolia lanigera* (Hook.f. & Thomson) H.J.Chowdhery & P.Daniel, Indian J. Forest. 4(1) (1981) 64. **Type:** *Griffith s.n.* [Kew Distribution 65], [Malaysia], Malacca [Melaka] (lectotype K [K001292330], designated by Nootboom, Blumea 32 (1987) 380).

Tree, 6–15 m tall, dbh to 90 cm; bark light grey, with horizontal lenticels; twig bark greyish black or greyish brown, tawny-tomentose to tawny-woolly when young, becoming glabrous, 5–7 mm thick in young branches. **Stipules** adnate to petiole for half to its entire length, tawny-tomentose to tawny-woolly. **Leaves** spirally arranged; petiole slightly to conspicuously dilated at base, 10–46 × 1–3 mm, at base 2–5 mm wide, tawny-tomentose to tawny-woolly when young, becoming glabrous, stipular scar 7–29 mm long; lamina chartaceous to coriaceous, drying grey-brown to black-brown, rarely chestnut brown, broad-elliptic, oblong-elliptic or obovate, 17–37.3 × 6.8–17 cm, tawny-tomentose to tawny-woolly when young, especially on the midrib and secondary veins below, becoming glabrous, base attenuate-cuneate, apex obtuse, acute or acuminate (acumen 10–18 mm long); midrib raised above, prominent below; secondary veins 14–22 pairs, raised to flush above, prominent below; tertiary veins reticulate, visible above and below, reticulations very densely netted, areoles less than 1 mm². **Flowers** terminal; peduncle (13–)28–55 mm long, 7–8 mm thick at midpoint, 8–10 mm thick below receptacle, with (3–)7–13 internodes, tawny-tomentose to tawny-woolly; bracts chartaceous, tawny-tomentose to tawny-woolly outside. **Tepals** 9(–12), coriaceous, cream-white; outer tepals c. 4, oblong-elliptic to oblong-obovate, 40–50 mm long, 10–17 mm wide, glabrous, sometimes tawny-tomentose to tawny-woolly at the very base below, apex obtuse; inner tepals

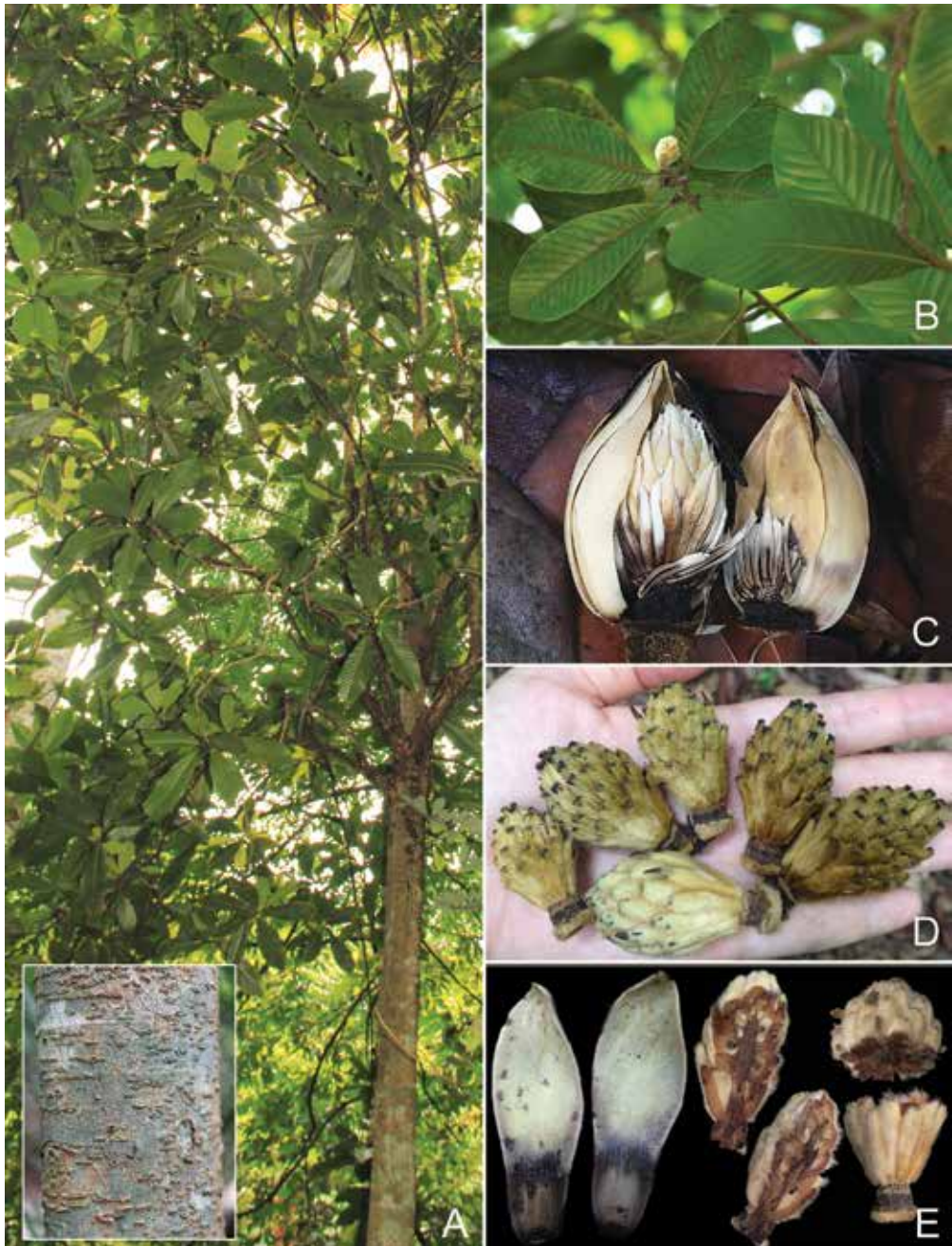


Figure 4. *Magnolia villosa* (Miq.) H.Keng. **A.** Habit. Inset: Bark. **B.** Leaves. **C.** Aborted flower, showing the outer and inner tepals, detached stamens and tawny-tomentose to tawny-woolly gynoecium. **D.** Aborted immature fruit. **E.** Fallen outer tepals (left) and sections of immature fruit (right). (A–E including inset from Singapore, MacRitchie. Photos: A, W.F. Ang; A inset, S.K. Ganesan; B–E, X.Y. Ng).

c. 8, oblong-obovate, 30–39 mm long, 5–10 mm wide, glabrous, apex acute. **Stamens** c. 90, 1–2 mm wide; anther connective apex acute, 1.5–2 mm long; filaments c. 1 mm long; anthers introrse, 10–12 mm long. **Gynoecium** tawny-tomentose to tawny-woolly, not stipitate; carpels 24–40, obovoid, c. 10 mm long, c. 1.5 mm wide. **Fruit** cream, ellipsoid, 8–9 cm long, 4.5–6 cm wide, peduncle tawny-woolly, 27–57 mm long, 6–9 mm thick at midpoint, 8–11 mm thick below receptacle; mature carpels tawny-woolly, becoming glabrous, 25–45 mm long, 8–14 mm wide, apex bluntly and stoutly beaked, connate into a dry syncarp but dehiscing adaxially when ripe (the apical part falling off, the basal part remaining adnate to the receptacle), with 1–2 seeds per carpel; scars of perianth and stamens along receptacle 6–10 mm long. **Seeds** 8–14 mm long, 6–10 mm wide, smooth, glabrous, sarcotesta colour unknown.

Distribution. Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from MacRitchie (*Sinclair* 9973, 21 Dec 1958, SING [SING0042277]; *Mhd Shah & Ali* MS 3867, 30 Jun 1976, SING [SING0042292]; *Lee et al.* SING2005-184, 18 May 2005, SING [SING0061608]) and Bukit Timah (*Tang & Sidek* 1024, 26 Oct 1995, SING [SING0042283]; *Khoo* KMS 82, 5 May 2009, SING [SING0123456]).

Ecology. In Singapore, in primary and mature secondary forests.

Conservation assessment. Globally, Data Deficient (DD) (IUCN Red List, 2026). In Singapore, assessed as Critically Endangered (CR/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 488).

Notes. The measurements were obtained from specimens throughout the distribution of the species owing to the scarcity of material from Singapore.

Excluded taxa

Magnolia acuminata (L.) L. var. **acuminata**: Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest: 175, 387 (2013). – Although this taxon has been listed for Singapore, it is a New World taxon that is not known to have escaped in Singapore and no records have been seen to ascertain if it has been misapplied. The only species of *Magnolia* known to occur in Nee Soon Freshwater Swamp Forest is *Magnolia singapurensis*.