

LAURACEAE

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Juss., Gen. Pl. (1789) 80, as ‘Lauri’, nom. cons.; Nees, Syst. Laur. (1836) 1; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 36; Ridley, Fl. Malay Penins. 3 (1924) 75; Corner, Wayside Trees Malaya (1940) 334; Kostermans, Reinwardtia 4(2) (1957) 193; Keng, Ord. Fam. Malayan Seed Pl., ed. 3 (1983) 35; Kochummen, Tree Fl. Malaya 4 (1989) 98; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 17; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 366; van der Werff & Richter, Ann. Missouri Bot. Gard. 83 (1996) 409; van der Werff, Blumea 46 (2001) 125; Chayamarit et al., Fl. Thailand 16(4) (2025) 967. **Type:** *Laurus* L.

Trees or shrubs or twining, parasitic, perennial herbs with leaves reduced or absent (*Cassytha*), sometimes dioecious; bark and foliage usually aromatic. **Twigs** with terminal vegetative buds sometimes perulate. **Leaves** alternate to subopposite or in (pseudo-)whorls, simple; lamina margin entire, mostly pinnately veined, sub-palmately veined, or often tripliveined, estipulate. **Inflorescences** axillary, occasionally terminal or internodal, panicles, spikes, racemes, or pseudo-umbels. **Flowers** trimerous, rarely bimerous, bisexual or unisexual, actinomorphic, small, greenish, yellowish, white or rarely brownish, orange or reddish. Perianth biseriate, usually of 4 or 6 basally connate and usually undifferentiated perianth lobes, deciduous or persistent; perianth tube usually persisting as a cupule at base of fruit. **Androecium** typically of 4 whorls of 3 stamens each, sometimes fewer through reduction of whorls, adnate to perianth tube, innermost whorl rarely united, usually reduced to staminodes; filaments usually free, third whorl usually bearing 2 mostly sessile and distinct basal glands; anthers basifixed, 2-locular or 4-locular at anthesis, those of 2 outer whorls mostly introrse, inner third whorl extrorse, dehiscing by flaplike valves opening upward. **Pistil** 1; ovary superior, sometimes appearing inferior in fruit, unilocular; ovule solitary, anatropous, pendulous, placentation parietal; style 1; stigma 1, occasionally 2- or 3-lobed. **Fruit:** 1-seeded berries, free or surrounded at base by a cupule, or wholly or partly enveloped by cupule, or seated on a slender or swollen pedicel. **Seeds** 1, with large straight embryo; endosperm absent.

Distribution. The Lauraceae are a pantropical family of about 59 genera and 3000–3500 species, mainly from tropical Southeast Asia and tropical America, while tropical Africa (apart from Madagascar) is relatively poor in species. Only a few species are found in temperate regions. *Sassafras albidum* (Nutt.) Nees reaches as far north as Maine and Southern Ontario in North America, while *Persea lingue* (Ruiz & Pav.) Nees gets as far as southern Chile. In Asia, several genera occur in temperate Japan, with *Lindera* Thunb. spp. reaching as far north as Hokkaido, while in the Pacific a few species of *Beilschmiedia* Nees reach as far south as New Zealand. In Europe, a few species occur in Mediterranean countries and adjacent regions (the Canary Islands, Madeira, and the Azores).

In Singapore, 14 genera and 51 native species, of which 1 species has yet to be identified.

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The fruit tree *Persea americana* Mill. (avocado) is introduced from America and known only from cultivation.

Ecology. The Lauraceae are one of the most species-rich tree families in Southeast Asia. Several genera, including *Litsea* Lam., *Cinnamomum* Schaeff. and *Cryptocarya* R.Br., have more than 200 species in total. Species diversity is highest in lowland forests but at a higher elevations the family can become a more dominant part of the vegetation due to a larger number of individuals.

The basic flowering mechanism in Lauraceae is that when flowers first open, they are functionally female, and when they open for the second time, they are functionally male (Kubitzki & Kurz, Pl. Syst. Evol. 147 (1984) 253–266; Rohwer, Pl. Biol. 11 (2009) 490–492). There are two versions of this: either the flowers open in the morning in the female phase, close at noon, and open again in the male phase in the afternoon on the same or on the following day, or the flowers open in the afternoon in the female phase, close at night, and open again the next morning in the male phase. This mechanism effectively prevents self-pollination. However, self-pollination is still possible when the rhythm of opening and closing of flowers is disturbed during unfavourable weather conditions. In Southeast Asia, the flowers are visited by a variety of possible pollinators: bees, butterflies, hoverflies, wasps, flies and small beetles (Corner, Wayside Trees Malaya, ed. 2 (1952) 335; Shivaprasad et al., Proc. Int. Acad. Ecol. Environm. Sci. 5 (2015) 7–15). Most species are sweet scented, but some species produce a rancid smell.

The fruit of most Lauraceae are adapted to be dispersed by various animals such as birds, bats, squirrels, monkeys and porcupines (Corner, Wayside Trees Malaya, ed. 2 (1952) 335, Kostermans, Reinwardtia 4(2) (1957) 211; Yaakob, FRIM Reports 83 (2005) 90).

Uses. The Lauraceae are economically important as sources of timber, medicine, food, spices, perfumes and chemicals. Many of the taller trees are minor commercial timbers, usually traded under the name *medang*, which is characterised as a light- to medium-weight hardwood (Lemmens et al., Pl. Resources S.E. Asia 5(2) (1995) 78, 130, 152, 306). The bark of several species of *Cinnamomum* (e.g., *C. subavenium* Miq., *C. verum* J.Presl) is used as a spice, while *Persea americana* is the source of avocado.

Some species, like *Cinnamomum camphora* (L.) J.Presl, yield camphor and essential oils which are used for perfumes and medicines. Certain poisons (e.g., Laurotetanin) are suspected to occur in the fruit and/or bark of some species of *Cryptocarya* (Burkill, Dict. Econ. Prod. Malay Penins., ed. 2, 1 (1966) 703).

Taxonomy. The delimitation of the Lauraceae is uncontroversial but the recognition and delimitation of its genera have always been problematic. The general framework of characters that has been employed by most authors was first established by Nees (Syst. Laur. (1836) 1–720). However, even within this framework, classifications can vary greatly, depending upon the weight given to any particular character. The delimitation of genera as recognised here follows Rohwer (in Kubitzki et al. (ed.) Fam. Gen. Vasc. Pl. 2 (1993) 366), except for the split between *Persea* Mill. and *Machilus* Nees. Generic boundaries in general are not always well defined or are defined on characters that may not reflect their evolutionary history. It is likely, therefore, that many generic circumscriptions will change with further research beyond the scope of this Flora account.

Species of Lauraceae are often difficult to identify. The main reason for this is that

often one needs flowers with mature stamens to identify a specimen to genus level and fruit for identification to species level. Because very few specimens have both flowers and fruit, identifying them using a dichotomous key is often difficult. Here, two keys are provided, one to flowering and one to fruiting material. Not all final leads in the key to genera result in only one genus.

Key to genera
(using flowering material where possible)

1. Herbaceous parasitic twiner with leaves reduced to minute bracts **4. Cassytha**
Tree or shrub with regular leaves 2
2. Leaves in pseudo-whorls; inflorescences with a cluster of imbricate bracts or their scars at the base **1. Actinodaphne**
Leaves alternate or (sub-)opposite, sometimes clustered towards the twig apex but not whorled; inflorescences without a cluster of imbricate bracts or their scars at the base ... 3
3. Flowers unisexual; inflorescences consisting of umbels 4
Flowers bisexual, rarely unisexual; inflorescences paniculate or rarely racemose 6
4. Flowers with 4 perianth lobes; anthers 2-locular; leaves tripliveined **12. Neolitsea**
Flowers with 6 perianth lobes; anthers 2- or 4-locular; leaves tripliveined or pinnately veined 5
5. Anthers 2-locular **9. Lindera**
Anthers 4-locular **10. Litsea**
6. Inflorescences paniculate with lateral flowers of the ultimate cymes not strictly opposite (inflorescence type 3 sensu van der Werff, Blumea 46 (2001) 129); anthers 2-locular ... 7
Inflorescences paniculate-racemose with lateral flowers of the ultimate cymes strictly opposite (inflorescence type 2 sensu van der Werff, Blumea 46 (2001) 128); anthers 2- or 4-locular 9
7. Fertile stamens 3 **8. Endiandra**
Fertile stamens 6 or 9 8
8. Flowers with a shallow receptacle, the fruit unprotected on the pedicel ... **3. Beilschmiedia**
Flowers with a deep, tubular receptacle that encloses the ovary and later the fruit
..... **6. Cryptocarya**
9. Anthers of all stamen whorls 2-locular 10
Anthers of all stamen whorls 4-locular, or rarely anthers of first and third row 2-locular and of second row (3-)4-locular 11

10. Leaves opposite or subopposite **5. Cinnamomum**
 Leaves alternate or clustered **7. Dehaasia**
11. Leaves opposite or subopposite **5. Cinnamomum**
 Leaves alternate or clustered 12
12. Perianth lobes unequal, the outer ones about half as long as the inner 13
 Perianth lobes equal or nearly so 14
13. Stamens with well differentiated filaments that are longer to slightly shorter than the
 anthers **2. Alseodaphne**
 Stamens sessile or subsessile on poorly differentiated filaments that are much shorter
 than the anthers **13. Nothaphoebe**
14. Perianth lobes persisting as inconspicuous, small remnants forming an irregular, wavy
 rim at the fruit pedicel apex **2. Alseodaphne**
 Perianth lobes persisting and conspicuous in fruiting stage 15
15. Perianth lobes remaining small and not stiffening in fruit, or enlarging slightly but then
 reflexed or spreading **11. Machilus**
 Perianth lobes enlarging, becoming stiff and clasping base of fruit **14. Phoebe**

Key to genera
 (fruiting material)

1. Herbaceous parasitic twiner with leaves reduced to minute bracts **4. Cassytha**
 Tree or shrub with regular leaves 2
2. Fruit without perianth parts at base 3
 Fruit with perianth parts at base in the form of perianth lobes or a cup 7
3. Fruit showing a ring-like aperture and the scars of the fallen perianth lobes on the top of
 the fruit **6. Cryptocarya**
 Fruit without apical aperture or perianth scars at top of fruit 4
4. Leaves placed along the whole length of the twigs; twigs of various colours and usually
 not sharply contrasting with petiole
 **3. Beilschmiedia, 8. Endiandra and 13. Nothaphoebe** (in part)
 Leaves loosely to densely clustered at apex of twigs and distal part of twigs; twigs with
 pale whitish bark, this contrasting with the dark petioles 5
5. Pedicel in fruit much thickened and fleshy **2. Alseodaphne and 7. Dehaasia**
 Pedicel in fruit not or weakly thickened 6

6. Fruit (sub-)globose, < 20 mm long **2. Alseodaphne** (in part)
Fruit elliptic, obovoid or cylindrical, > 20 mm long **13. Nothaphoebe**
7. Fruit seated in a cup-shaped cupule 8
Fruit with persistent, appressed, spreading or reflexed perianth lobes at the base or with persistent perianth lobes which are inconspicuous, small remnants forming an irregular, wavy rim at the pedicel apex 11
8. Leaves in pseudo-whorls; infructescence with bracts at its very base ... **1. Actinodaphne**
Leaves alternate to subopposite; infructescence without bracts at its very base 9
9. Leaves subopposite, triveined or tripliveined **5. Cinnamomum**
Leaves alternate or clustered, pinnately, triveined or tripliveined 10
10. Leaves triveined or tripliveined **5. Cinnamomum** and **12. Neolitsea**
Leaves pinnately veined **9. Lindera** and **10. Litsea**
11. Perianth lobes persisting as inconspicuous, small remnants forming an irregular, wavy rim at the pedicel apex 12
Perianth lobes conspicuous, appressed to the fruit or reflexed 14
12. Pedicel in fruit conspicuously thickened and fleshy **2. Alseodaphne** and **7. Dehaasia**
Pedicel in fruit not or weakly thickened, not conspicuously fleshy 13
13. Fruit (sub-)globose, < 20 mm long **2. Alseodaphne** (in part)
Fruit elliptic, obovoid or cylindrical, > 20 mm long **13. Nothaphoebe**
14. Perianth lobes remaining small and not stiffening in fruit, or enlarging slightly and stiffening at base but with upper half of lobes reflexed or spreading **11. Machilus**
Perianth lobes enlarging, becoming stiff and clasping base of fruit **14. Phoebe**

1. ACTINODAPHNE Nees

(Greek, *actinos* = ray, *daphne* = laurel; referring to the whorled leaves)

in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 61, 68; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 112; Ridley, Fl. Malay Penins. 3 (1924) 107; Corner, Wayside Trees Malaya (1940) 345; Kostermans, Reinwardtia 4(2) (1957) 234; Kochummen, Tree Fl. Malaya 4 (1989) 102; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 388; van der Werff, Blumea 46 (2001) 133; Julia, Gard. Bull. Singapore 57 (2005) 69; Li et al., Fl. China 7 (2008) 161; Tanaros et al., Thai J. Bot. 2 (2010) 7; Tanaros et al. in Chayamarit et al., Fl. Thailand 16(4) (2025) 970. **Type:** *Actinodaphne pruinosa* Nees.

Trees or shrubs. **Terminal vegetative bud** scales often leaf-like, leaving distinct scars on twigs. **Leaves** usually clustered or nearly verticillate, rarely alternate or opposite, pinnately

veined, rarely tripliveined. **Inflorescences** paniculate or umbellate with clusters of involucre bracts at the very base; involucre bracts imbricate, caducous. **Flowers** trimerous, unisexual, dioecious; perianth tube short; perianth segments usually 6 in 2 whorls of 3 each, nearly equal, rarely persistent, villous outside. **Male flowers:** fertile stamens usually 9 in 3 whorls of 3 each; filaments of first and second whorls without glands, filaments of third whorl with 2 glands at base; anthers all introrse and 4-locular; rudimentary pistil small or lacking. **Female flowers:** staminodes as many as stamens of male flowers; ovary superior; stigma peltate or dilated. **Fruit** seated on shallow or deep cup-shaped or discoid perianth tube.

Distribution. A genus of about 100 species in tropical and subtropical regions of India, Sri Lanka, China, Japan, Korea, continental Southeast Asia and through Malesia to the Solomon Islands. In Singapore, 4 native species.

Notes. The species of this genus are easy to recognise by their whorled leaves. The terminal vegetative buds are perulate and sometimes covered by large leaf-like bracts.

Actinodaphne has an inflorescence which is unlike any found in the other genera of Southeast Asian Lauraceae (van der Werff, Blumea 46 (2001) 133). The paniculate inflorescence is enclosed by alternate bracts when very young. These fall off very early in the development of the inflorescence, but a cluster of scars at the very base of the inflorescence remains.

Key to *Actinodaphne* species

- 1. Terminal vegetative buds covered with large leaf-like scale leaves; leaves 6.5–42 × 2.8–14 cm 2
Terminal vegetative buds not covered with large leaf-like scale leaves; leaves 6.5–25 × 2.5–11.5 cm 3
- 2. Leaf lamina lower surface yellowish brown hairy, apex acute to long-acuminate **1. *A. glomerata***
Leaf lamina lower surface reddish brown hairy, apex rounded to acuminate **2. *A. macrophylla***
- 3. Tree or shrub, 2–18 m tall; leaves 2.8–11.5 cm wide, lower surface sparsely hairy, more densely hairy on major veins **3. *A. malaccensis***
Tree, 18–20 m tall; leaves 2.5–4 cm wide, lower surface glabrous apart from a few hairs on and along the midrib **4. *A. pruinosa***

1. *Actinodaphne glomerata* (Blume) Nees

(Latin, *glomeratus* = clustered closely together into a head; referring to the inflorescences)

Syst. Laur. (1836) 597; Blume, Mus. Bot. 1(22) (1851) 343; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 968; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 116; Ridley, Fl. Malay Penins. 3 (1924) 108; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 124; Keng, Gard.

Bull. Singapore 27 (1974) 78; Corner, *Wayside Trees Malaya*, ed. 3, 1 (1988) 220; Kochummen, *Tree Fl. Malaya* 4 (1989) 104; Keng, *Concise Fl. Singapore*, vol. 1, Gymn. Dicot. (1990) 18; Turner, *Gard. Bull. Singapore* 45 (1993) 112; Wong et al., *Gard. Bull. Singapore* 46(2) (1995 ['1994']) 66; Turner, *Gard. Bull. Singapore* 47 (1997 ['1995']) 273; Chew et al., *Gard. Bull. Singapore* 49(2) (1999 ['1997']) 190; Julia, *Gard. Bull. Singapore* 57 (2005) 73; Chong et al., *Checkl. Vasc. Pl. Fl. Singapore* (2009) 9, 141, 200; Tanaros et al., *Thai J. Bot.* 2 (2010) 13; Turner & Chua, *Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res.* (2011) 37; Ho et al., *Gard. Bull. Singapore* 71(Suppl. 1) (2019) 88; Lindsay et al., *Gard. Bull. Singapore* 74(Suppl. 1) (2022) 393; Tanaros et al. in Chayamarit et al., *Fl. Thailand* 16(4) (2025) 974. **Basionym:** *Litsea glomerata* Blume, *Bijdr. Fl. Ned. Ind.*, pt 11 (1826 ['1825']) 566. **Synonym:** *Laurus glomerata* Blume, *Cat. Gew. Buitenzorg* (1823) 66, nom. illeg. non Lam. (1792). **Type:** *Blume s.n.*, [Indonesia], Java, Gunung Salak (lectotype L [L1779809], designated here; isoelectotypes L [L1779803, L1779810, L1779811, L1779813], NY [00355279]).

Trees or shrubs, 6–20 m high, dbh 10–30 cm; bark smooth, dark grey to reddish brown, inner bark yellow to brown; sapwood white to yellowish. **Twigs** slender to stout, 3.3–13.5 mm diam., velutinous, glabrescent, hairs reddish, appressed; terminal vegetative buds elliptic-ovate, 4.8–6.4 mm long, velutinous, sometimes margins glabrous, covered with leaf-like scales. **Leaves** in whorls of 4–7; lamina coriaceous, elliptic to (ob)lanceolate, 6.5–28 × 2.8–14 cm, apex acute to long-acuminate, base cuneate, secondary veins 5–13 pairs, brochidodromous, tertiary veins scalariform, hairs appressed, yellowish; upper surface dark green, glabrous except densely hairy on midrib, midrib raised, secondary veins raised to sunken, tertiary veins distinct; lower surface glaucous, sparsely hairy, denser on major veins, midrib and secondary veins raised, tertiary veins distinct; petiole slender to swollen at base, half-terete, 0.5–4.2 cm long, glabrous to velutinous, hairs yellowish, appressed to curly. **Inflorescences** 0.6–2.5 cm long, in pseudo-umbels, on bare twigs between leaf whorls, velutinous; involucre bracts ovoid, 2.2–3.2 × 1.5–2.5 mm, velutinous outside, glabrous inside. **Flowers** white to yellow, fragrant. **Male flowers:** perianth tube shallow, perianth lobes elliptic-ovate, 1.7–4.2 × 1–3 mm, apex acute to rounded, velutinous outside, glabrous inside; stamens 1.2–3.7 mm long, with a tuft of hairs at base, anthers 0.6–1.3 mm long. **Female flowers:** perianth lobes 1.8–2.6 × 1–1.8 mm, apex acute to rounded, sparsely hairy outside and inside; ovary 1–2 mm diam., glabrous; style 1.2–1.7 mm long, stigma 2-lobed, c. 0.5 mm long. **Fruit** globose, 12–23 × 21–24 mm, apex rounded and depressed, smooth, glabrous; cupule shallow, 12.8–13.3 × 3.7–6.8 mm, margin entire, woody, warty, sparsely hairy; fruit stalk swollen, to 3.4 mm diam.

Distribution. India, Peninsular Thailand, Peninsular Malaysia, Sumatra, Java, Borneo and Sulawesi. In Singapore, known from Bukit Timah (*Ridley* 6296, 1894, K [K003276232, K003276233], KEP; *Niissalo SING2019-848*, 11 Sep 2019, SING [SING0296108]), Bukit Mandai (*Ridley* 6741, 1894, SING [SING0013090]) and Bukit Panjang (*Ridley* 12529, 1906, K [K003276234], SING [SING0013091]).

Ecology. Across its range, in lowland and montane rain forests, sometimes along rivers. In Singapore, in primary and secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

2. *Actinodaphne macrophylla* (Blume) Nees

(Greek, *macro* = large, *phyllon* = leaf; with large leaves)

Nees, Syst. Laur. (1836) 598; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 114; Ridley, Fl. Malay Penins. 3 (1924) 108; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 345; Kochummen, Tree Fl. Malaya 4 (1989) 105; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Turner, Gard. Bull. Singapore 45 (1993) 112; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Julia, Gard. Bull. Singapore 57 (2005) 77; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 8, 141, 186; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 9, 378; Chong et al., Nat. Singapore 9 (2016) 5; Chong et al., Gard. Bull. Singapore 70(Suppl. 1) (2018) 54; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 394. **Basionym:** *Litsea macrophylla* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 567. **Synonym:** *Iozoste macrophylla* (Blume) Kuntze, Revis. Gen. Pl. 2 (1891) 570, as ‘*Jozoste*’. **Type:** *Blume s.n.*, [Indonesia], Java, Nusa Kambangan (lectotype L [L.1779940], designated here; isolectotypes L [L.1779937, L.1779938, L.1779939]). **Fig. 1.**

Actinodaphne maingayi Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 151; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 114; Ridley, Fl. Malay Penins. 3 (1924) 108; Keng, Gard. Bull. Singapore 27 (1974) 78; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 382; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 394. **Synonym:** *Iozoste maingayi* (Hook.f.) Kuntze, Revis. Gen. Pl. 2 (1891) 570, as ‘*Jozoste*’. **Type:** *Maingay 1782* [Kew Distribution 1258], [Malaysia], Malacca [Melaka], August 1865–1866 (lectotype K [K000793036], first step designated by Julia, Gard. Bull. Singapore 57 (2005) 77, second step designated by de Kok, Gard. Bull. Singapore 71 (2019) 151; isolectotype L [L0035469]).

Trees, 3–34 m tall, dbh 4–90 cm, sometimes with steep buttresses to 1 m high; bark smooth, dull brown to dark green, inner bark bright orange-brown to yellow; sapwood (yellow) white. **Twigs** stout, 7–9.5 mm diam., round in cross-section, velutinous, hairs appressed to erect, dark to reddish brown; terminal vegetative buds covered with 1–5 cm long leaf-like scales, velutinous. **Leaves** in whorls of 6–13; lamina elliptic to (ob)lanceolate, 15–42 × 5–13 cm, apex rounded to acuminate, base cuneate, secondary veins 11–17 pairs, curving near the margin, tertiary veins scalariform, thickly coriaceous; upper surface bright to dark green, glabrous except for velutinous midrib, midrib flattened to raised, secondary veins sunken to raised, tertiary veins distinct; lower surface sometimes glaucous, sparsely to densely hairy, midrib and secondary veins raised, tertiary veins distinct, hairs appressed to erect, dark to reddish brown; petiole not swollen, half-terete, 2–5 cm long, densely hairy. **Inflorescences** 1–1.7 cm long, in pseudo-umbels on bare twigs between leaf whorls, velutinous; involucre bracts ovoid, 2.5–4 × 2.4–2.7 mm, apex rounded to acute, velutinous outside, glabrous inside; infructescence with 2–7 fruit. **Flowers** pale green to brown or yellow. **Male flowers:** perianth tube 5–5.5 mm long, perianth lobes elliptic to orbicular, unequal, 2.7–4.5 × 2–3.7 mm, apex acute, velutinous outside, glabrous to sparsely hairy inside; stamens 9, 1.8–3.5 mm long, with a tuft of hair at base, anthers 1.4–2.3 mm long. **Female flowers:** perianth tube 5.3–5.8 mm long, perianth lobes 3–3.7 × 2.3–2.6 mm, apex rounded, sparsely hairy outside, glabrous inside; ovary 1.3–1.5 mm diam., sparsely hairy; style 1.8–2 mm long, glabrous; stigma with two flattened, 1.4–1.8 mm long lobes. **Fruit** globose, 10–16 × 10–19 mm, apex rounded, smooth, glabrous, yellow and bright red when mature, smelling strongly of turpentine; cupule shallow, woody, 5.5–10 × 1.4–2.7 mm, covering only the base of the fruit, lobes caducous to persistent, glabrous; perianth



Figure 1. *Actinodaphne macrophylla* (Blume) Nees. **A.** Habit. **B.** Leafy branch. **C.** Flowering branch with female flowers. (A & B from Singapore, Pasir Panjang Nursery; C from Peninsular Malaysia. Photos: Zaki Jamil).

lobes 2–2.3 mm long, apex acute, patent to recurved, sparsely hairy; fruit stalk slender, c. 2.6 mm diam., sparsely hairy.

Distribution. Peninsular Malaysia, Java and Borneo. In Singapore, known from Pulau Ubin (*Ridley 9489*, Aug 1898, K [K003276224]), Bukit Timah (*Sinclair 8020*, Mar 1954, E [E01014275]) and Mandai (*Gwee SING2009-02*, 6 Jan 2001, SING [SING0123465]).

Ecology. Across its range, in lowland, swamp and mountain forests. In Singapore, in secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Notes. In Lindsay et al. (Gard. Bull. Singapore 74(Suppl. 1) (2022) 394), this species was treated under the name *Actinodaphne maingayi* with *A. macrophylla* being treated as misapplied to it. It has since been concluded that these names are indeed heterotypic synonyms and *Actinodaphne macrophylla* has priority.

3. *Actinodaphne malaccensis* Hook.f.

(of Malacca)

Fl. Brit. India 5, fasc. 13 (1886) 148; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 118; Ridley, Fl. Malay Penins. 3 (1924) 109; Keng, Gard. Bull. Singapore 27 (1974) 78; Kochummen, Tree Fl. Malaya 4 (1989) 105; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18, fig. 13.1; Turner, Gard. Bull. Singapore 45 (1993) 112; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 66; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 273; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; LaFrankie et al., Forest Trees Bukit Timah (2005) 99, 160; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 10, 141, 213; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 9, 378; Chong et al., Nat. Singapore 9 (2016) 7; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 394. **Type:** *Maingay 1995* [Kew Distribution 1259], [Malaysia], Malacca [Melaka], 1865–1866 (lectotype K [K000793043], designated by de Kok, Gard. Bull. Singapore 71 (2019) 152; isolectotypes K [K000793042], L [L0035470]). **Fig. 2.**

Actinodaphne hullettii Gamble, Bull. Misc. Inform. Kew 1910 (1910) 314; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 120; Ridley, Fl. Malay Penins. 3 (1924) 110; Keng, Gard. Bull. Singapore 27 (1974) 78; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18. **Type:** *Hullett 659*, Singapore, Singapore Botanic Gardens, January 1885 (lectotype K [K000793049], designated here).

Actinodaphne cuspidata Gamble, Bull. Misc. Inform. Kew 1910 (1910) 314, nom. illeg. non P.A. Friedrich (1884); Ridley, Fl. Malay Penins. 3 (1924) 111; Kochummen, Tree Fl. Malaya 4 (1989) 104. **Type:** *King's Collector 10797*, [Malaysia], Perak, Ulu Bera, August 1886 (lectotype K [K000793059], designated by de Kok, Gard. Bull. Singapore 71 (2019) 151; isolectotype K [K000793058]).



Figure 2. *Actinodaphne malaccensis* Hook.f. **A.** Habit with leafy shoots. **B.** Leaves. **C.** Flowering branch. Inset: Close-up of male flowers. (A–C including inset from Singapore, A & C, Chestnut, Ng SING2016-158; B, Bukit Timah; C inset, Chestnut. Photos: A & C, X.Y. Ng; B, P.K.F. Leong; C inset, W.F. Ang).

Trees or shrubs, 2–18 m tall, dbh 5–50 cm; bark smooth, grey, inner bark orange to yellow-brown; sapwood yellow to yellowish white. **Twigs** slender, 1.7–6.4 mm diam., round in cross-section, densely hairy to velutinous, glabrescent, hairs reddish to yellowish, curly to appressed; terminal vegetative buds 3–5.3 mm long, apex rounded, velutinous with a glabrous margin, imbricate. **Leaves** in whorls of 2–7; lamina elliptic to obovate, 6.5–25 × 2.8–11.5 cm, apex rounded to long-acuminate, base cuneate, secondary veins 4–12 pairs, brochidodromous, tertiary veins scalariform, thickly coriaceous; upper surface dark green, glabrous, sometimes velutinous on midrib, midrib raised, secondary veins raised to sunken, tertiary veins indistinct; lower surface glaucous, sparsely hairy, denser on major veins, midrib and secondary veins raised, tertiary veins distinct, hairs appressed to curly, reddish; petiole sometimes slender but slightly swollen at base, half-terete, 0.5–2.5 cm long, sparsely hairy to velutinous. **Inflorescences** 0.7–1.3 cm long, in pseudo-umbels or short panicles, in leaf axils and from twigs between leaf whorls, velutinous; involucre bracts elliptic to ovoid, 1.4–5.4 × 1.1–2.9 mm, glabrous or with a line of hairs along the middle; infructescence with 3–9 fruit. **Flowers** light or greenish yellow. **Male flowers:** perianth tube shallow, perianth lobes ovoid, 1.7–2.3 × 1–1.9 mm, apex acute, glabrous to sparsely hairy outside, glabrous inside; stamens 1.2–2.4 mm long, with a tuft of hairs at the base, anthers 0.6–1.4 mm long. **Female flowers:** perianth lobes ovoid, 1.7–2.4 × 0.9–1.6 mm, apex acute, velutinous outside, glabrous inside; ovary 0.9–1.4 mm diam., glabrous or with only a few long hairs present; style 1–1.9 mm long; stigma capitate. **Fruit** globose, 5.8–10 × 6.4–8.6 mm, smooth, glabrous, reddish when mature; cupule shallow, 3.5–7 × 1.6–4.6 mm, woody, sparsely hairy, margin entire; stalk not to slightly swollen, to 5–10 × 2.6–3 mm, sparsely hairy.

Distribution. Peninsular Malaysia. In Singapore, known from Singapore Botanic Gardens' Rain Forest (*Ridley 9123*, Dec 1897, K [K003276220]), Bukit Timah (*Lim et al. CTFS F2-25386*, 17 Jan 2019, SING [SING0293014]), MacRitchie (*Sinclair 7250*, Feb 1953, E; *Sinclair 39493*, Feb 1953, E), Chestnut (*Ng SING2016-158*, 16 Sep 2016, SING [SING0251972]) and Nee Soon (*Samsuri et al. NES 336*, 9 Sep 2003, SING [SING0046370]).

Ecology. Across its range, in lowland forest, sometimes in peat swamps. In Singapore, in primary and old secondary forest and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

4. *Actinodaphne pruinosa* Nees

(Latin, *pruina* = waxy whitish powdery bloom; referring to the lower surface of the leaves)

in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 68; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 967; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 119; Ridley, Fl. Malay Penins. 3 (1924) 110; Burkill, Dict. Econ. Prod. Malay Penins. 1 (1935) 43; Keng, Gard. Bull. Singapore 27 (1974) 78; Kochummen, Tree Fl. Malaya 4 (1989) 106; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Turner, Gard. Bull. Singapore 45 (1993) 112; Wong et al.,

Gard. Bull. Singapore 46(2) (1995 ['1994']) 66; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 274; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Julia, Gard. Bull. Singapore 57 (2005) 81; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 10, 142, 214; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 9, 378; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88, 130; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 394. **Synonym:** *Laurus pruinosa* Wall., Numer. List no. 2584 (1830), nom. nud. **Type:** *Wallich s.n.* [EIC 2584b], [Malaysia], Penang, 1822 (lectotype K-W [K001116508], designated by de Kok, Gard. Bull. Singapore 71 (2019) 152; isoelectotypes BO, BM, E [E00413920], K [K000793046], L [L0035487]). **Fig. 3.**

Trees 18–20 m tall, dbh 13–38 cm; bark reddish brown, smooth, inner bark brown; sapwood yellow. **Twigs** slender, 1.1–3.2 mm diam., round in cross-section, velutinous when young, soon glabrous, hairs yellowish, appressed; terminal vegetative buds ovoid, 2.4–3.5 mm long, apex acute, sparsely hairy to velutinous. **Leaves** in whorls of 3–5; lamina elliptic to (ob)lanceolate, 7.5–16 × 2.5–4 cm, apex acuminate, sometimes with a long tip, base cuneate, asymmetric, midrib sometimes slightly crooked, secondary veins 7–9 pairs, brochidodromous, tertiary veins scalariform-reticulate; upper surface glossy, rich green, glabrous apart from a few hairs on midrib, midrib raised to sunken, secondary veins raised to sunken, tertiary veins indistinct; lower surface faintly glaucous, bluish green or whitish, glabrous apart from a few hairs on and along the midrib, midrib and secondary veins raised, tertiary veins distinct; petiole slender, half-terete, 0.8–1.5 cm long, sparsely hairy, hairs yellowish, appressed. **Inflorescences** 0.8–1.8 cm long, in pseudo-umbels or short panicles from leaf axils and from twigs between leaf whorls, velutinous; involucre bracts 1.5–1.6 × 1.5–1.8 mm, apex rounded, velutinous outside, glabrous inside; infructescence with 2–5 fruit. **Flowers** yellow. **Male flowers:** perianth tube shallow, perianth lobes elliptic to orbicular, 1.5–2.6 × 1.6–1.9 mm, apex rounded to acute, outside densely hairy, inside glabrous; stamens 2.6–3.3 mm long, with a dense tuft of hairs at base, anthers 1.3–1.5 mm long. **Female flowers:** perianth tube shallow, perianth lobes elliptic to orbicular, 1.6–2.2 × 1.3–1.5 mm, apex rounded to acute, inside glabrous, outside densely hairy; ovary 0.9–1.2 mm long, glabrous; style 1–1.3 mm long; stigma minute. **Fruit** globose to ellipsoid, 5–6 × 6.5–8 mm, apex rounded, glabrous, smooth, red or black when mature; cupule 5.8–7 × 3–4.4 mm, margin entire, glabrous, warty; fruit stalk not swollen, densely hairy.

Distribution. Peninsular Malaysia and Borneo. In Singapore, known from Changi (*Ridley* 2768, 1891, K [K003276246]; *Collector unknown* 180, 1928, KEP), Bukit Timah (*Leong et al.* SING2019-363, 24 Apr 2019, SING [SING0286348]) and Upper Peirce (*Gwee* SING2009-569, 9 Dec 2009, SING [SING0138082]).

Ecology. Across its range, in primary and secondary lowland, swamp and montane forests. In Singapore in primary forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

2. ALSEODAPHNE Nees

(Greek, *alsos* = a grove, *daphne* = laurel)

in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 61, 71; Nees, Syst. Laur. (1836) 20, 181; Blume, Mus. Bot. 1(21) (1851) 331; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 915; Meisner in de Candolle, Prodr. 15(1) (1864) 4, 27; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 143; Ridley, Fl. Malay Penins. 3 (1924) 97; Corner, Wayside Trees Malaya, ed. 2, 1 (1952) 338; Kostermans, Candollea 28 (1973) 99; Kochummen, Tree Fl. Malaya 4 (1989) 109; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 381; Middleton in Argent et al. (ed.), Man. Non-Dipt. Trees Centr. Kalimantan 1 (1997) 303; Suhandono in Sosef et al. (ed.), Pl. Resources S.E. Asia 5(3) (1998) 67; Julia et al., Blumea 54 (2009) 193; Chong et al., Nat. Singapore 9 (2016) 7; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 982. **Type:** *Alseodaphne semecarpifolia* Nees, designated by Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 116.

Stemmatodaphne Gamble, Bull. Misc. Inform. Kew 1910 (1910) 227. **Type:** *Stemmatodaphne perakensis* Gamble (= *Alseodaphne perakensis* (Gamble) Kosterm.).

Small to tall trees. **Terminal vegetative buds** not perulate. **Leaves** spirally arranged, loosely to densely crowded at the twig apex, pinnately veined. **Inflorescences** axillary or terminal, paniculate-cymose, many-flowered, with the lateral flowers of the ultimate cymes strictly opposite (type 2 sensu van der Werff, Blumea 46 (2001) 133); bracts leaf like, involucre bracts absent. **Flowers** bisexual, hypanthium shallow; perianth lobes 6, subequal to distinctly unequal and the outer smaller than the inner; fertile stamens 9 in 3 whorls of 3 each plus 1 whorl of 3 staminodes; stamens with filaments much longer than the anthers; anthers usually 4-locular, or rarely second order stamens (3–)4-locular and first and third order stamens 2-locular (*Alseodaphne nigrescens* (Gamble) Kosterm.), locules of first and second whorl introrse, locules of third whorl extrorse, third whorl stamens with 2 sessile glands; staminodes with hairy stalk and ovoid apical nectary part; ovary sessile, ellipsoid, narrowing into a style; stigma papillose, minutely bilobed. **Fruit** indehiscent, fleshy, (sub-)globose or ellipsoid; perianth lobes usually persistent, frequently as small rudiments forming a wavy rim at the pedicel apex; pedicel in fruit weakly to distinctly thickened, fleshy, lenticellate.

Distribution. A genus of 54 species in India, Nepal, Sri Lanka, Bangladesh, South China, Myanmar, Thailand, Vietnam, Peninsular Malaysia, Sumatra, Borneo and the Philippines. In Singapore, 3 native species.

Ecology. Across the range of the genus, most species are found in lowland, hill or lower montane rain forest, but *Alseodaphne semecarpifolia* (India, Sri Lanka) occurs in dry forests in areas with a pronounced dry season. Several species occur in lowland swamp forests.

Uses. The timber of *Alseodaphne* species yields medium-weight hardwood sold as *medang*, a term referring to various Lauraceae taxa. Reported uses of the timber include house building, interior finish, furniture, cabinet making, carving, and agricultural implements; some species with heavier timber may be used for outdoor construction, ship and boat building and salt-water piling (Kostermans, Candollea 28 (1973) 95; Suhandono in Sosef et al. (ed.), Pl. Resources S.E. Asia 5(3) (1998) 67).

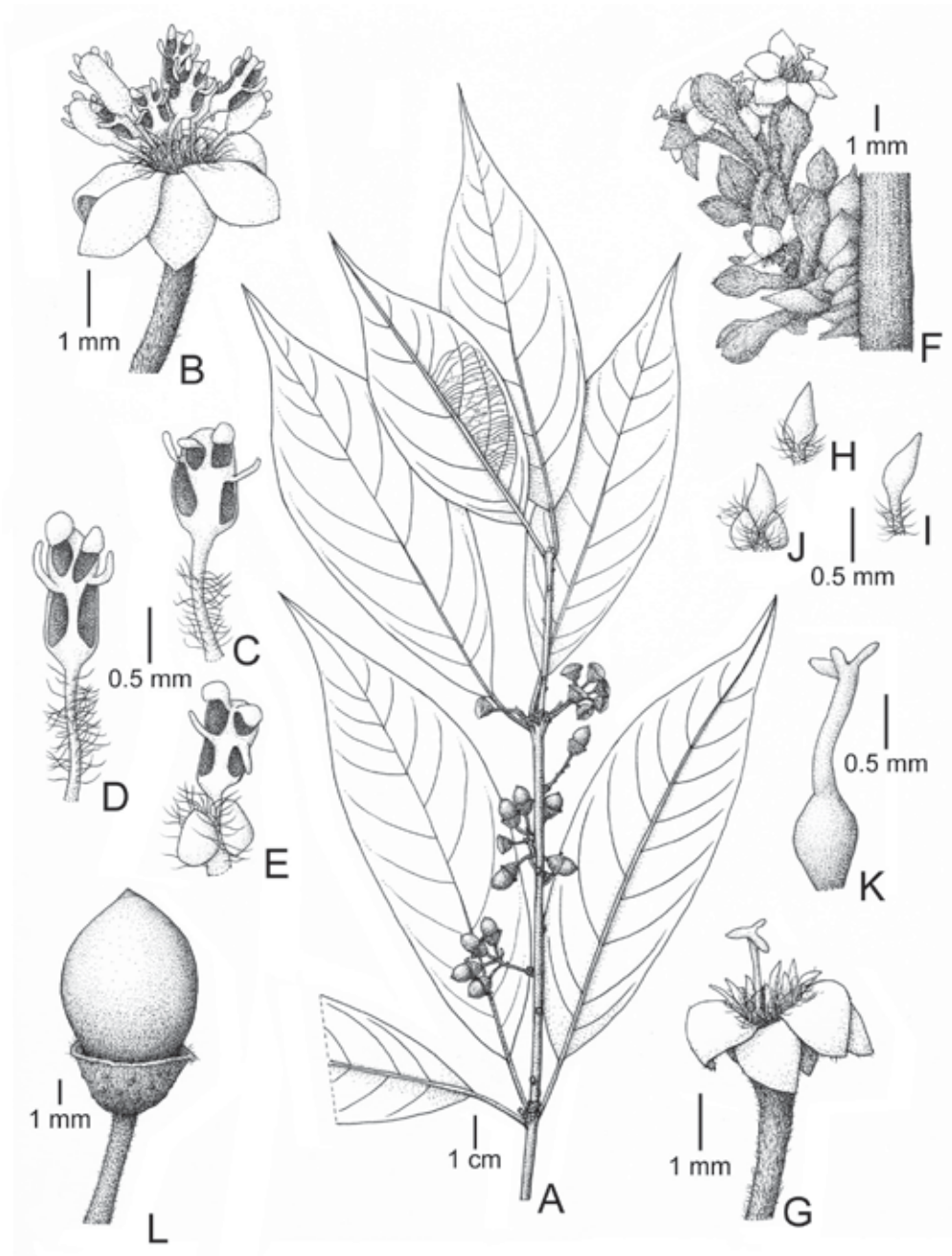


Figure 3. *Actinodaphne pruinosa* Nees. **A.** Leafy twig with infructescences. **B.** Male flower. **C.** Stamen (first whorl). **D.** Stamen (second whorl). **E.** Stamen with glands (third whorl). **F.** Inflorescence. **G.** Pistillate flower. **H.** Staminode. **I.** Staminode. **J.** Staminode with glands. **K.** Pistil. **L.** Fruit. (A–L from Peninsular Malaysia, A & L, *Chelliah FRI 104628*; B–E, *Whitmore FRI 20503*; F–K, *Kochummen FRI 2073*. Drawn by E. Tay-Koh).

Notes. *Alseodaphne* is much in need of a thorough revision using both morphological and molecular data. Its generic circumscription, several species circumscriptions and identification of several species, particularly from sterile material, remain highly problematic. The non-monophyly of *Alseodaphne*, *Dehaasia* and *Nothaphoebe* has been indicated in several molecular phylogenetic studies (e.g., Mo et al., *PLoS ONE* 12 (2017) e01286545; Xiao et al., *BMC Pl. Biol.* (2022) 22) and in van der Werff (*Blumea* 46 (2001) 125–140) emphasised that *Dehaasia* is morphologically indistinguishable from *Alseodaphne* except for the two-locular anthers. Extensive generic realignment of *Alseodaphne*, *Dehaasia*, *Nothaphoebe* and related genera in tribe Perseeae is required.

Key to *Alseodaphne* species

1. Leaves adaxially slightly bullate with weakly impressed secondary veins, secondaries joined by distinct arches adaxially (venation brochidodromous); fruit (sub-)globose, 14–17 mm long, pedicel in fruit weakly thickened, to 2 mm diameter when dried **1. *A. bancana***
 Leaves not bullate, secondary veins flush or weakly raised, joining of secondaries obscure adaxially; fruit ellipsoid, 12–39 mm long, pedicel in fruit much thickened, to 11 mm diameter when dried 2
2. Terminal vegetative buds densely appressed-hairy; leaf lamina higher level venation finely areolate abaxially; perianth lobes subequal, the outer only slightly smaller and shorter than the inner (about 80 to 90% in length) **2. *A. intermedia***
 Terminal vegetative buds glabrous or sometimes with some hairs at the margins of the cataphylls; leaf lamina higher level venation lax-reticulate; perianth lobes strongly unequal, the outer much shorter and smaller than the inner (60% or less in length) **3. *A. nigrescens***

1. *Alseodaphne bancana* Miq. (of Banca)

Fl. Ned. Ind. 1(1), fasc. 6 (1858) 915; Meisner in de Candolle, *Prodr.* 15(1) (1864) 28; Gamble, *J. Asiat. Soc. Bengal*, Pt. 2, *Nat. Hist.* 75(1) (1912) 91; Ridley, *Fl. Malay Penins.* 3 (1924) 98; Kostermans, *Candollea* 28 (1973) 101; Keng, *Gard. Bull. Singapore* 27 (1974) 78; Kochummen, *Tree Fl. Malaya* 4 (1989) 111; Keng, *Concise Fl. Singapore*, vol. 1, *Gymn. Dicot.* (1990) 18, fig. 13.2; Turner, *Gard. Bull. Singapore* 45 (1993) 112; Wong et al., *Gard. Bull. Singapore* 46(2) (1995 [‘1994’]) 66; Middleton in Argent et al. (ed.), *Man. Non-Dipt. Trees Centr. Kalimantan* 1 (1997) 304; Turner, *Gard. Bull. Singapore* 47 (1997 [‘1995’]) 274; Turner et al., *Gard. Bull. Singapore* 48 (1998 [‘1996’]) 147; Chew et al., *Gard. Bull. Singapore* 49(2) (1999 [‘1997’]) 190; Chong et al., *Checkl. Vasc. Pl. Fl. Singapore* (2009) 12, 142, 200; Turner & Chua, *Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res.* (2011) 38; Wong et al., *Checkl. Pl. Sp. Nee Soon Swamp Forest* (2013) 18, 379; Chong et al., *Nat. Singapore* 9 (2016) 7; Ho et al., *Gard. Bull. Singapore* 71(Suppl. 1) (2019) 88; Lindsay et al., *Gard. Bull. Singapore* 74(Suppl. 1) (2022) 395. **Type:** *Horsfield s.n.*, [Indonesia], Banca [Bangka] (lectotype K [K000778944], first step

designated by Kostermans, Candollea 28 (1973) 101, second step designated here; isoelectotypes CAL [CAL0000021914], K [K000778945], U [U0002593]). **Fig. 4.**

Alseodaphne decipiens Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 145; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131. **Type:** *Cantley s.n.*, Singapore (lectotype K [K000442643], designated by Kostermans, Candollea 28 (1973) 101; isoelectotype SING [SING0055145]).

Medium-sized to tall trees. **Twigs** slender, to 5 mm diam., glabrous except for appressed hairs in apical part, lenticellate and with prominent leaf scars in distal part, drying brown to greyish-brownish; terminal vegetative buds conical to ovoid, to c. 5 mm long, densely appressed-hairy or sometimes glabrous except for the ciliate margins. **Leaves** alternate, spirally arranged, crowded towards the twig apex; lamina obovate to elliptic, 6–16.2 × 2.9–6.7 cm, apex obtuse to acute, usually shortly acuminate, acumen to 1.7 cm long, base concave-tapering to cuneate, secondary veins 7–10 pairs, tertiary veins scalariform-reticulate, higher level venation not finely areolate; upper surface drying brownish or greyish-greenish, glabrous, midrib usually raised, slightly bullate with weakly impressed secondary veins, tertiary veins faint; lower surface drying brownish, sometimes slightly glaucescent, glabrous or frequently with sparse indumentum of minute appressed hairs on both the veins and the lamina, midrib and secondary veins raised, tertiary veins distinct; petiole 0.5–1.5 cm long, glabrous to sparsely appressed-hairy, bark sometimes developed in the basal to middle part of the petiole. **Inflorescences** to 11 cm long, sparsely hairy; bracteoles minute, ovate to elliptic, hairy, caducous. **Flowers** drying blackish-brownish, sparsely to moderately densely hairy; pedicel to 4 mm long, sparsely to moderately densely hairy; perianth tube very short and rather abruptly contracted into the slender pedicel, perianth lobes subequal, the outer slightly shorter, ovate, c. 1.1–1.5 × 1.1–1.2 mm, sparsely to moderately densely hairy outside, sparsely hairy inside, inner ovate, c. 1.5–1.7 × 1.1–1.2 mm, moderately densely hairy outside, densely to moderately densely hairy inside, apex acute; stamens 9, to c. 1.2 mm long, stamens of the first and second whorls non-glandular, the third whorl glandular; glands 2, sessile, conspicuous, glabrous; filaments to c. 0.5–0.6 mm long, clearly differentiated from and narrower than the anthers, hairy, anthers 4-locular, apex rounded to truncate; staminodes to c. 0.9 mm long, oblongish, distinctly stalked, stalk hairy, apical part ovoid, acute, adaxially glabrous, abaxially hairy; ovary ellipsoid, c. 0.6 mm diam., glabrous, style about as long as ovary, c. 0.6 mm long, stigma papillose, minutely lobed. **Fruit** (sub-)globose, 14–17 × 14–15 mm, apex rounded, drying blackish; pedicel in fruit slightly thickened, to 6 mm long, to c. 2 mm diam. at apex, lenticellate, drying blackish with pale brown lenticels; perianth lobes persistent and frequently reflexed at the pedicel apex.

Distribution. Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from a historical collection from Chan Chu Kang and from more recent collections from Singapore Botanic Gardens' Rain Forest (*Chua et al. C 85*, 1992, SING [SING0007207]), Bukit Timah (*Tang 957*, 11 Sep 1995, SING [SING0016802]), MacRitchie (*Gwee SING2009-751*, 28 Dec 2009, SING [SING0144652]), Mandai (*Gwee SING2010-290*, 2 Feb 2010, SING [SING0144273]) and Nee Soon (*Gwee SING2010-399*, 23 Feb 2010, SING [SING0145603]).

Ecology. In Singapore, in freshwater swamp forest and lowland rain forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Uses. The timber of this species has been used for construction purposes (Kostermans, Candollea 28 (1973) 101; Suhandono in Sosef et al. (ed.), Pl. Resources S.E. Asia 5(3) (1998) 68).

Notes. Most collections from Singapore are sterile and the description is mainly based on material from Peninsular Malaysia.

2. *Alseodaphne intermedia* Kosterm.

(Latin, *intermedius* = intermediate; possibly referring to the general morphology in comparison to related species)

Candollea 28 (1973) 113; Kochummen, Tree Fl. Malaya 4 (1989) 113, fig. 2; Turner, Gard. Bull. Singapore 45 (1993) 112; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 66; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 275; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 12, 142, 200; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 395. **Type:** *Cockburn FRI 7751*, [Malaysia], Gunung Panti, Johor, 2 March 1968 (holotype L [L0035546]; isotype K [K000442656]).

Alseodaphne oblancoolata auct. non (Merr.) Kosterm.: Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190.

Medium-sized to tall trees. **Twigs** slender to moderately thick, to 6 mm diam., glabrous or sparsely hairy with minute hairs in apical part, lenticellate and with prominent leaf scars in distal part, drying dark brown; terminal vegetative buds conical to cylindrical, to c. 7 mm long, densely appressed-hairy. **Leaves** alternate, spirally arranged, crowded towards the twig apex; lamina coriaceous, narrowly obovate, obovate or sometimes elliptic, 7–28 × 4–7.5 cm, apex obtuse to acute, frequently apiculate to shortly acuminate, acumen to 14 mm long, base concave-tapering to cuneate, secondary veins 8–10 pairs, tertiary veins scalariform-reticulate, higher level venation finely areolate; upper surface drying brownish or greyish-greenish, glabrous, midrib flush to weakly raised, secondary veins flush, tertiary veins faint; lower surface drying brownish-greyish or pale green-greyish, frequently glaucescent, glabrous or frequently with sparse indumentum of minute hairs along the midrib, midrib and secondary veins raised, tertiary veins distinct to obscure; petiole 1.2–4.5 cm long, glabrous or sparsely hairy with minute hairs. **Inflorescences** to 15 cm long, sparsely hairy with minute hairs; bracteoles minute, ovate to elliptic, hairy, caducous. **Flowers** drying brownish, sparsely to moderately densely hairy; pedicel to 3 mm long, sparsely to moderately densely hairy; perianth tube very short and gradually contracted into the slender pedicel, perianth lobes subequal, the outer slightly smaller, ovate, c. 1.8–2.2 × 0.9–1.1 mm, sparsely to moderately densely hairy outside, glabrous to sparsely hairy in the apical part inside, inner ovate, c. 2.3–2.5 × 1.1–1.3 mm, sparsely to moderately densely hairy outside, moderately densely hairy inside; stamens 9, to c. 1.8 mm long, stamens of the first and second whorls non-glandular, the

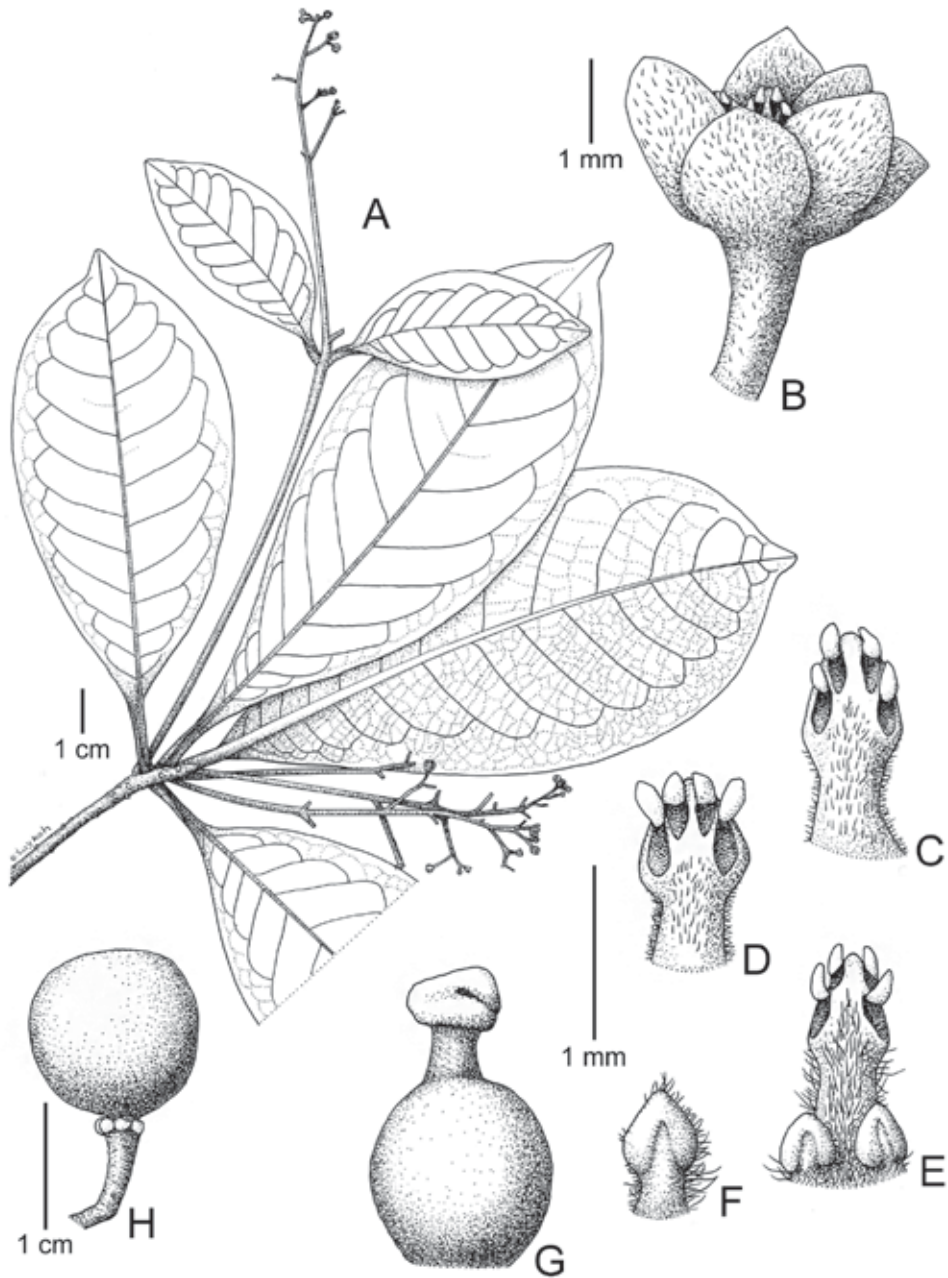


Figure 4. *Alseodaphne bancana* Miq. **A.** Leafy twig with inflorescences. **B.** Flower. **C.** Stamen (first whorl). **D.** Stamen (second whorl). **E.** Stamen with glands (third whorl). **F.** Staminode. **G.** Pistil. **H.** Fruit. (A–H from Singapore, A, Nee Soon, *Samsuri Ahmad SA 1401*; B–G, Chan Chu Kang, *Ridley 6156*; H, Bukit Timah, *Ridley 3369*. Drawn by E. Tay-Koh).

third whorl glandular; glands 2, sessile, conspicuous, glabrous; filaments 0.9–1.1 mm long, clearly differentiated from and narrower than the anthers, hairy, anthers 4-locular, the upper two locules much smaller than the lower two, apex acute to narrowed truncate-emarginate; staminodes to c. 1.1 mm long, distinctly stalked, stalk hairy abaxially, apical part ovoid, apex acute, adaxially glabrous, abaxially glabrous or with a few hairs; ovary ellipsoid, c. 0.7 mm diam., glabrous, style about as long as ovary, c. 0.8 mm long, stigma papillose, minutely lobed. **Fruit** ellipsoid, 29–39 × 19–21 mm, apex rounded, drying dark brownish to blackish; pedicel in fruit much thickened, to 15 mm long, to c. 11 mm diam. at apex, lenticellate, drying dark brownish with paler brown lenticels; perianth lobes persistent, spreading, forming a wavy ring at the pedicel apex.

Distribution. Peninsular Malaysia and Sumatra. In Singapore, known from MacRitchie (*Corner SNF37269*, 10 Nov 1941, SING [SING0013106]), Bukit Timah (*Shah MS2418*, 13 Jul 1971, SING [SING081718]) and Nee Soon (*Chong et al. NSSF2-Q101T28*, 19 Jan 2014, SING [SING0359172]).

Ecology. In Singapore, in lowland rain forest and swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Notes. Most collections from Singapore are sterile and the description is mainly based on material from Peninsular Malaysia. *Alseodaphne oblanceolata* (Merr.) Kosterm., which is morphologically similar to *Alseodaphne intermedia*, has been reported from Singapore (Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’] 190) and some Singapore material has previously been identified as this species. When Kostermans described *Alseodaphne intermedia* (Candollea 28 (1973) 113), he differentiated it from *Alseodaphne oblanceolata* emphasising differences in fruit size and leaf texture, and he indicated that *Alseodaphne oblanceolata* is restricted to Borneo, while *Alseodaphne intermedia* occurs in Peninsular Malaysia and Sumatra. However, Kochummen (Tree Fl. Malaya 4 (1989) 109–117) indicated that both *Alseodaphne intermedia* and *Alseodaphne oblanceolata* are present in Peninsular Malaysia. The morphological differentiation and exact distributions of these two species require further study, but the material from Singapore corresponds better to the type of *Alseodaphne intermedia* from Johor than to the type material of *A. oblanceolata* from Borneo. Vegetatively, the two species are difficult to differentiate, but the Bornean material of *Alseodaphne oblanceolata* has thickened petiole bases with greyish-pale brownish bark, which is not found in any of the material from Singapore.

3. *Alseodaphne nigrescens* (Gamble) Kosterm.

(Latin, *nigrescens* = becoming black; likely alluding to the plant turning black when dried)

Candollea 28 (1973) 119; Kochummen, Tree Fl. Malaya 4 (1989) 114; Turner, Gard. Bull. Singapore 45 (1993) 112; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 275; Chong et al., Checkl. Vasc. Pl. Fl.

Singapore (2009) 12, 142, 187; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88, 130; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 395; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 984. **Basionym:** *Dehaasia nigrescens* Gamble, Bull. Misc. Inform. Kew 1910 (1910) 150; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 64; Ridley, Fl. Malay Penins. 3 (1924) 88; Keng, Gard. Bull. Singapore 27 (1974) 79; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19. **Type:** *Curtis 1183*, [Malaysia], Penang, Government Hill, June 1893 (lectotype K [K000778942], first step designated by Kostermans, Candollea 28 (1973) 119, second designated here; isolectotypes BO, CAL, K [K000778943], SING [SING0055169, SING0055170, SING0055171]).

Small to medium-sized trees. **Twigs** slender, to 4 mm diam., glabrous, drying greyish-pale brown for most of their length and black in the apical part; terminal vegetative buds narrowly ovoid, to c. 6 mm long, glabrous or sometimes cataphylls with ciliate margins. **Leaves** alternate, spirally arranged, loosely crowded towards the twig apex; lamina elliptic to obovate, 5.2–12.5 × 1.7–5.2 cm, apex acute, frequently shortly acuminate, acumen to 15 mm long, base concave-tapering, secondary veins 6–8 pairs, tertiary veins reticulate, higher level venation laxly reticulate (not finely areolate); upper surface drying brownish or blackish, glabrous, midrib flush to weakly raised, secondary veins flush to weakly raised, tertiary veins faint; lower surface drying brownish or blackish, glabrous, midrib and secondary veins raised, tertiary veins distinct to obscure; petiole 1.2–1.9 cm long, glabrous. **Inflorescences** to 12 cm long, glabrous in the basal part, sparsely hairy in the distal part; bracteoles minute, ovate to elliptic, hairy, caducous. **Flowers** drying brownish-blackish, sparsely to moderately densely hairy; pedicel to 4 mm long, sparsely hairy; perianth tube very short and abruptly contracted into the pedicel, perianth lobes unequal, the outer much smaller, broadly ovate, c. 0.8–0.9 × 0.7–0.8 mm, sparsely hairy outside, glabrous to very sparsely hairy inside, inner ovate, c. 1.4–1.6 × 1.1–1.2 mm, sparsely to moderately densely hairy outside, moderately densely to densely hairy inside; stamens 9, to c. 1.2 mm long, stamens of the first and second whorls non-glandular, the third whorl glandular; glands 2, sessile, conspicuous, glabrous; filaments c. 0.8 mm long, clearly differentiated from and narrower than the anthers, densely hairy, anthers of the first and third order stamens usually 2-locular, second order stamens (3–)4-locular, apex truncate or truncate-emarginate; staminodes to c. 0.7 mm long, distinctly stalked, stalk hairy, apical part ovoid, apex acute, adaxially glabrous, abaxially glabrous or with a few hairs; ovary ellipsoid, c. 0.6 mm diam., glabrous, style about as long as or slightly longer than ovary, c. 0.8 mm long, stigma papillose, minutely lobed. **Fruit** ellipsoid, 12–29 × 11–16 mm, apex rounded, drying blackish; pedicel in fruit much thickened, to 16 mm long, to c. 6 mm diam. at apex, lenticellate, drying blackish with paler brown lenticels; perianth lobes persistent, spreading to reflexed, forming a wavy ring at the pedicel apex.

Distribution. Thailand, Peninsular Malaysia, Sumatra and Borneo. In Singapore, only known with certainty from historical collections from Singapore Botanic Gardens' Rain Forest (*Ridley 13017*, 1907, SING [SING0000623]) and other collections from the Botanic Gardens which may or may not be cultivated. Recently collected sterile specimens from Singapore Botanic Gardens' Rain Forest that have been identified as *Alseodaphne nigrescens* are likely wrongly identified.

Ecology. In Singapore, in lowland rain forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

Notes. There is very limited material from Singapore and the description is mainly based on material from Peninsular Malaysia. Kostermans (Candollea 28 (1973) 119) indicated that material of *Alseodaphne nigrescens* from the island of Belitung (Indonesia, east of Sumatra) has flowers with two whorls of 4-locular stamens, and that only the third whorl stamens are 2-locular. This is not reflected in the description above because the examined material from Peninsular Malaysia has first and third order stamens that are 2-locular and second order stamens that are 4- or occasionally 3-locular. This indicates that the development of this character is rather variable in this species. Kochummen (Tree Fl. Malaya 4 (1989) 114) already emphasised that this species ‘is a typical *Dehaasia* except for the 4-locular anthers.’ Morphological characters such as a relatively lax-reticulate tertiary and higher-level venation, outer perianth lobes that are much smaller than the inner perianth lobes, and filaments that are much longer than the anthers, are clearly better aligned with the type of *Dehaasia* than the type of *Alseodaphne*, highlighting the problems with generic delimitations in *Alseodaphne*, *Dehaasia*, *Nothaphoebe* and other closely related genera (see also Notes section under the genus).

3. BEILSCHMIEDIA Nees

(Karl Traugott Beilschmied, 1793–1848, German pharmacist and botanist)

in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 61, 69; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, Bull. Misc. Inform. Kew 1910 (1910) 142; Ridley, Fl. Malay Penins. 3 (1924) 82; Kostermans, Reinwardtia 4(2) (1957) 229; Kochummen, Tree Fl. Malaya 4 (1989) 117; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 385; van der Werff, Blumea 46 (2001) 134; Nishida, Blumea 53 (2008) 345; de Kok, Blumea 61 (2016) 147; Chong et al., Nat. Singapore 9 (2016) 9; de Kok, Thai Forest Bull., Bot. 49 (2021) 1; Tetsana & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 989. **Type:** *Beilschmiedia roxburghiana* Nees, lectotype designated by Kostermans, Recueil Trav. Bot. Néerl. 35 (1938) 839.

Trees or shrubs. **Terminal vegetative buds** conspicuous, not perulate. **Leaves** arranged spirally or alternate to opposite, pinnately veined. **Inflorescences** axillary panicles, usually paniculate-cymose, repeatedly branched, with the lateral flowers of the ultimate cymes not strictly opposite (type 3 of van der Werff, Blumea 46 (2001) 134); orbicular bracts usually absent, rarely present. **Flowers** bisexual, perianth tube short or absent; perianth lobes 6, subequal, deciduous; stamens and staminodes together forming 4 whorls, each of 3 stamens/staminodes, either 3 whorls of fertile stamens (total of 9 stamens) plus 1 whorl of staminodes, or (rarely in Singapore) 2 whorls of fertile stamens (total of 6 stamens) plus 2 whorls of staminodes; stamens with hairy filaments; anthers 2-locular, in the first and second whorls introrse, in the third whorl extrorse to almost introrse, with 2 glands on each filament; staminodes of the 4th whorl cordate or ovoid, shortly stalked or sessile; ovary sessile, narrowing into a style; stigma obtuse. **Fruit** oblong or ovoid; perianth deciduous leaving a narrow ring; stalk often not or

only slightly thickened, but sometimes much thickened; sometimes a small constriction at the apex of the fruit stalk is present.

Distribution. A genus of about 200–300 species throughout the tropics but extending as far south as central Chile and New Zealand. In Singapore, 2 native species.

Taxonomy. The classification of the genera within the Lauraceae has always been problematic. This is also true for *Beilschmiedia* which has often been confused with *Dehaasia*, which also has bisexual flowers with nine 2-locular stamens. However, *Dehaasia* has a different inflorescence type (type 2 sensu van der Werff, *Blumea* 46 (2001) 134) and it frequently has leaves that are clustered and twigs with pale bark and contrasting dark petioles. Recently, with the help of molecular data, taxonomic relationships are becoming clearer in the Lauraceae and *Beilschmiedia* is now placed in the *Cryptocarya* group as one of the early divergent clades within the family (Rohwer et al., *Phytotaxa* 158 (2014) 111).

Notes. *Beilschmiedia tonkinensis* (Lecomte) Ridl. (= *Beilschmiedia roxburghiana* Nees) is reported from Pulau Salu based on sterile material (Tan et al., *Nat. Watch* 13(1) (2005) 6) and presumably based on this record also included in Tan et al. (in Davison et al. (ed.), *Singapore Red Data Book*, ed. 2 (2008) 225) and Chong et al. (*Checkl. Vasc. Pl. Fl. Singapore* (2009) 18, 142, 201). *Beilschmiedia roxburghiana* is not otherwise recorded from Singapore but it is common in Peninsular Malaysia. As this record cannot be verified and the species is otherwise unknown in Singapore, it is excluded here.

Key to *Beilschmiedia* species

1. Twigs stout ((5.5–)15–20 mm diameter); leaves spirally arranged and crowded at ends of twigs, lamina oblanceolate, 21–37 × 6–14 cm; terminal vegetative buds 6.2–11.5 mm long **1. *B. kunstleri***
- Twigs slender (2.5–7.5 mm diameter); leaves alternate to (sub)opposite and evenly spread along twigs, lamina broadly elliptic to obovate, 8–25 × 3–12 cm; terminal vegetative buds 3–6.5 mm long **2. *B. madang***

1. *Beilschmiedia kunstleri* Gamble

(Jacob Heinrich Hermann Kunstler, 1837–1887, German explorer and botanist who collected plants for Calcutta Botanic Garden)

Bull. Misc. Inform. Kew 1910 (1910) 147; Gamble, *J. Asiat. Soc. Bengal*, Pt. 2, *Nat. Hist.* 75(1) (1912) 54; Ridley, *Fl. Malay Penins.* 3 (1924) 83; Keng, *Gard. Bull. Singapore* 27 (1974) 78; Corner, *Gard. Bull. Singapore*, Suppl. 1 (1978) 76; Kochummen, *Tree Fl. Malaya* 4 (1989) 120; Keng, *Concise Fl. Singapore*, vol. 1, *Gymn. Dicot.* (1990) 18; Turner, *Gard. Bull. Singapore* 45 (1993) 112; Wong et al., *Gard. Bull. Singapore* 46(2) (1995 ['1994']) 67; Turner et al., *Gard. Bull. Singapore* 48 (1998 ['1996']) 147; Chew et al., *Gard. Bull. Singapore* 49(2) (1999 ['1997']) 190; Nishida, *Blumea* 53 (2008) 362; Chong et al., *Checkl. Vasc. Pl. Fl. Singapore* (2009) 18, 142, 201; Turner & Chua, *Checkl. Vasc. Pl. Sp.*

Bukit Timah Nat. Res. (2011) 38; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 34, 379; de Kok, *Blumea* 61 (2016) 155; Chong et al., *Nat. Singapore* 9 (2016) 9; Ho et al., *Gard. Bull. Singapore* 71(Suppl. 1) (2019) 88; de Kok, *Thai Forest Bull., Bot.* 49 (2021) 7; Lindsay et al., *Gard. Bull. Singapore* 74(Suppl. 1) (2022) 395; Tetsana & de Kok in Chayamarit et al., *Fl. Thailand* 16(4) (2025) 993. **Type:** *King's Collector 6854*, [Malaysia], Perak, near Larut, November 1884 (lectotype K [K000768665], designated by de Kok, *Blumea* 61 (2016) 155). **Fig. 5.**

Trees or shrubs, 5–35 m tall, dbh 15–30 cm; bark greyish or black to brownish, smooth to scaly, lenticellate; inner bark pinkish to yellow-brown; sapwood whitish or pale yellow to creamy. **Twigs** stout, (5.5–)15–20 mm diam., sparsely hairy, with prominent lenticels and leaf scars; terminal vegetative buds ovoid to lanceolate, 6.2–11.5 mm long, velutinous, hairs both short, erect and curly, and long and straight, dark brown. **Leaves** spirally arranged and crowded at the ends of twigs; lamina oblanceolate, 21–37 × 6–14 cm, apex blunt or acute, base cuneate, margins revolute, secondary veins 9–16 pairs, tertiary veins reticulate to scalariform; upper surface glabrous, glossy, light to dark green, midrib raised or flattened, secondary veins sunken to raised, tertiary veins distinct; lower surface glabrous, midrib raised and very sparsely hairy, secondary veins raised, tertiary veins distinct; petiole slightly swollen, 1–3.3 cm long, sparsely hairy. **Inflorescences** 11–19 cm long, not enclosed at base by orbicular bracts, sparsely hairy to velutinous; bracteoles linear, 1.7–3 mm long, apex acute. **Flowers** sparsely hairy, white or yellow; perianth tube not distinct; perianth lobes sparsely hairy, 3.3–3.5 × 1.3–1.6 mm, apices rounded, margins not ciliate; stamens 9, 2–3 mm long, hairy; ovary c. 1 mm diam., glabrous; style c. 1.6 mm long. **Fruit** (dried) ovate to ellipsoid, 1.5–25 × 8–20 mm, apex acute to blunt, base attenuate, surface smooth to ribbed, red to brown when mature, shiny; stalk when mature (slightly) swollen to 5 mm diam., bright red, with a constriction at the apex.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from Bukit Timah (*Ridley 3885*, 1894, BM; *Lim et al. SING2019-757*, 21 Aug 2019, SING [SING0293107]), Upper Peirce (*Gwee SING2010-106*, 19 Jan 2010, SING [SING0144594]) and Nee Soon (*Dahlan et al. SING2005-51*, 14 Mar 2005, [SING0058107, SING0060026]).

Ecology. Across its range, in primary and secondary forests, sometimes in swamp forest or along streams. In Singapore, in primary forest and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

2. *Beilschmiedia madang* (Blume) Blume

(from a vernacular name)

Mus. Bot. 1(21) (1851) 332; Kochummen, *Tree Fl. Malaya* 4 (1989) 120; Keng, *Concise Fl. Singapore*, vol. 1, *Gymn. Dicot.* (1990) 18; Turner, *Gard. Bull. Singapore* 45 (1993) 112; Wong et al., *Gard. Bull. Singapore* 46(2) (1995 [‘1994’]) 67; Chew et al., *Gard. Bull. Singapore* 49(2) (1999 [‘1997’]) 190; LaFrankie et al., *Forest Trees Bukit Timah* (2005) 100, 161; Nishida, *Blumea* 53 (2008) 345; Chong



Figure 5. *Beilschmiedia kunstleri* Gamble. Leaves. Inset: Unripe fruit. (From Singapore, Nee Soon, inset, Dahlan Sambubari SING2005-51. Photos: X.Y. Ng; inset, P.K.F. Leong).

et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 18, 142, 214; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 34, 379; Neo et al., Nat. Singapore 7 (2014) 104; de Kok, Blumea 61 (2016) 157; Chong et al., Nat. Singapore 9 (2016) 10; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 396. **Basionym:** *Laurus madang* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 555. **Synonym:** *Polyadenia madang* (Blume) Nees, Syst. Laur. (1836) 578. **Type:** *Blume* 776, [Indonesia], Java (lectotype L [L0035617], designated here; isolectotypes L [L0035616, L0035618, L0035619, L0035620], U [U0002637, U0002636]). **Fig. 6, 7.**

Beilschmiedia roxburghiana Nees var. *malaccensis* Meisn. in de Candolle, Prodr. 15(1) (1864) 63. **Synonym:** *Beilschmiedia malaccensis* (Meisn.) Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 123; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 54; Ridley, Fl. Malay Penins. 3 (1924) 83; Keng, Gard. Bull. Singapore 27 (1974) 78. **Type:** *Griffith s.n.*, [Malaysia], Malacca [Melaka] (holotype K [K000768666]).

Beilschmiedia curtisii Gamble, Bull. Misc. Inform. Kew 1910 (1910) 148; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 55; Ridley, Fl. Malay Penins. 3 (1924) 84. **Type:** *Ridley* 8075, Singapore, Garden Jungle [Singapore Botanic Gardens’ Rain Forest], July 1896 (lectotype K [K001083364], designated by de Kok, Gard. Bull. Singapore 69 (2017) 171; isolectotypes BM [BM000832664], SING [SING0219777]).

Beilschmiedia perakensis Gamble, Bull. Misc. Inform. Kew 1910 (1910) 149; Ridley, Fl. Malay Penins. 3 (1924) 85; Kochummen, Tree Fl. Malaya 4 (1989) 122; Nishida, Blumea 53 (2008) 348; de Kok, Blumea 61 (2016) 157. **Type:** *King’s Collector* 10026, [Malaysia], Perak, September 1886 (lectotype K

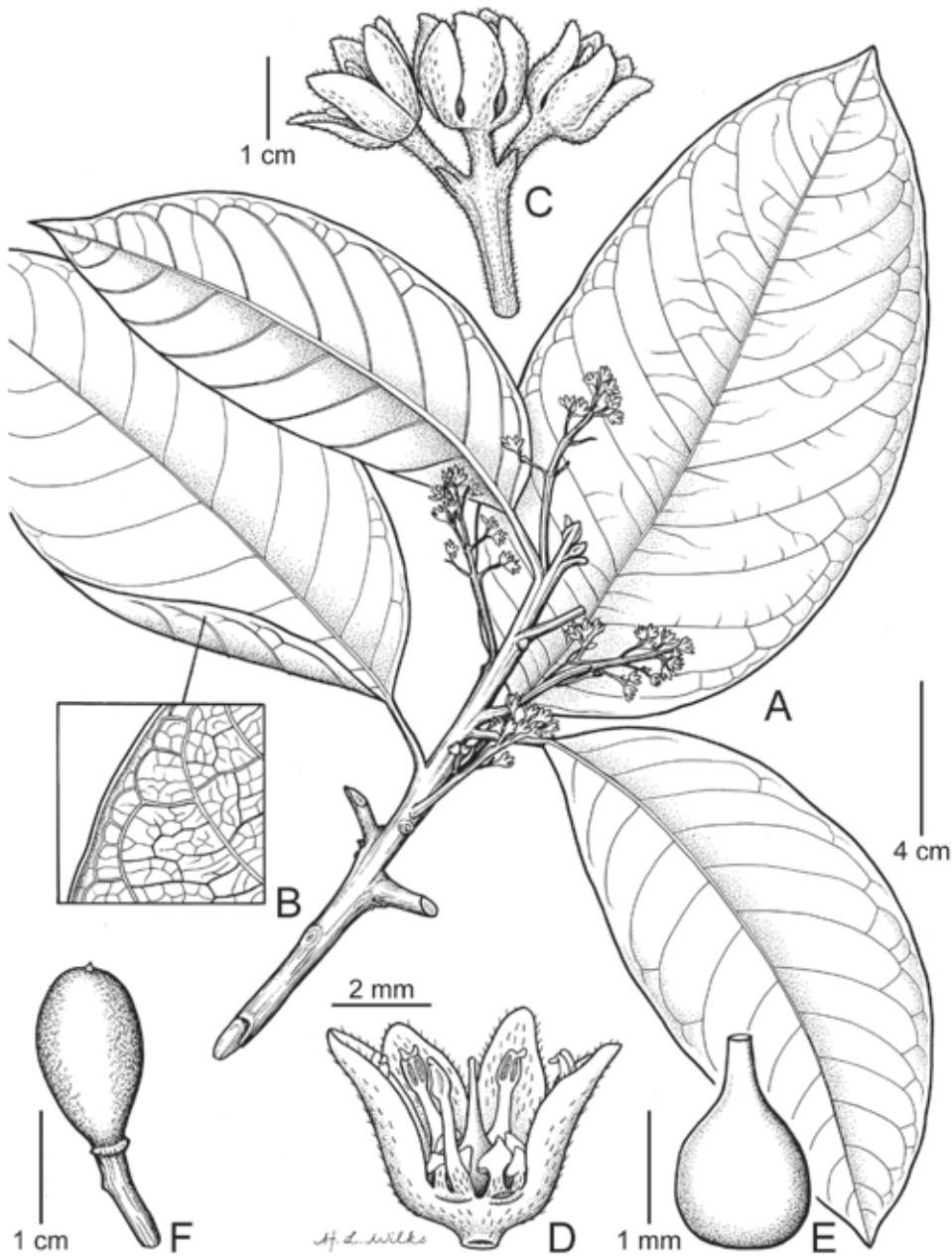


Figure 6. *Beilschmiedia madang* (Blume) Blume. **A.** Portion of leafy twig with inflorescence. **B.** Detail of glabrous lower leaf surface. **C.** Detail of inflorescence. **D.** Mature opened flower to show androecium and ovary. **E.** Ovary with almost sessile stigma. **F.** Fruit with stalk. (A–E from Singapore, Bukit Timah, Ridley 4424; F from Peninsular Malaysia, Kochummen FRI 16518. Drawn by H. Wilks).

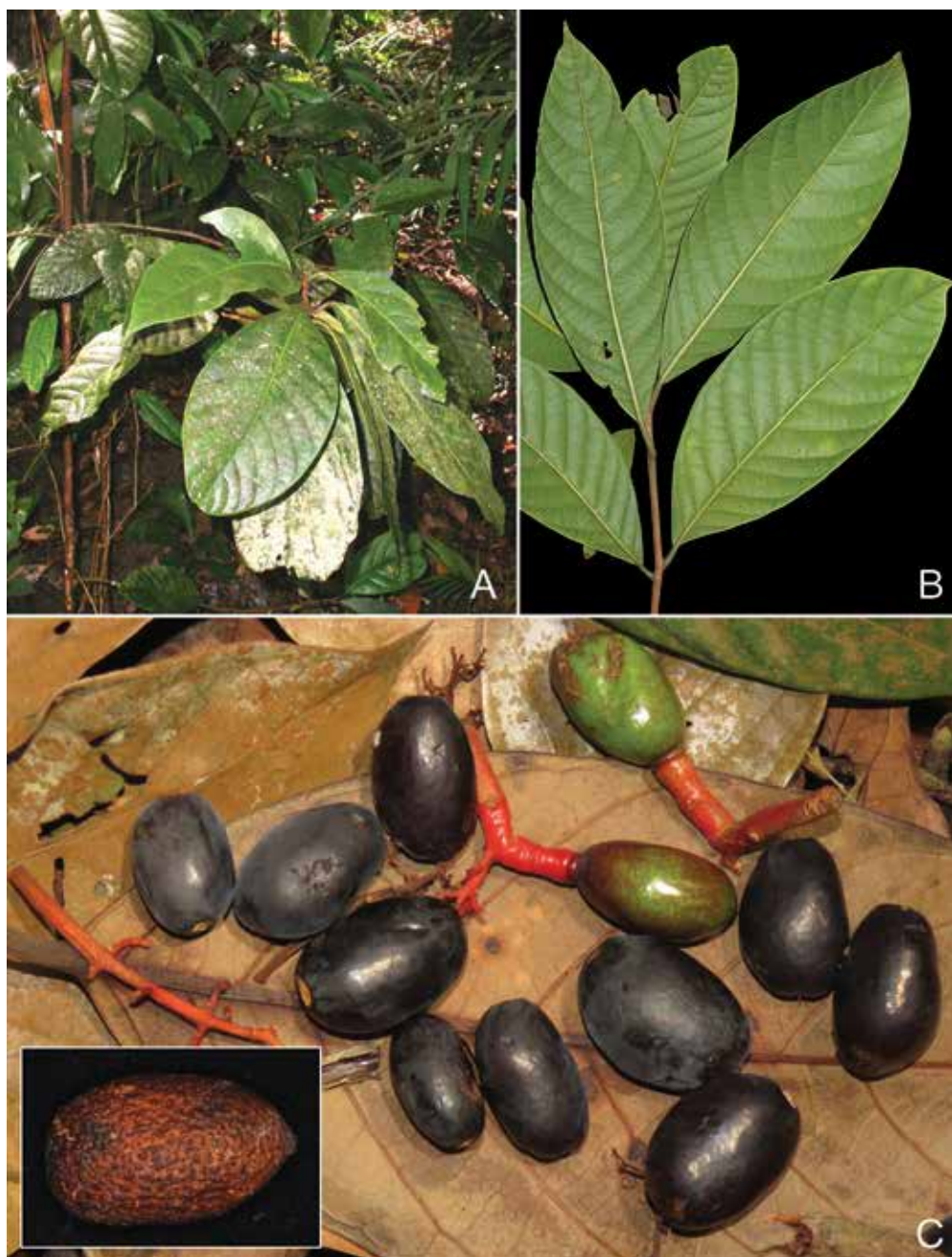


Figure 7. *Beilschmiedia madang* (Blume) Blume. **A.** Habit. **B.** Leaves. **C.** Fruit with red stalks. Inset: Seed. (A–C from Singapore, A, MacRitchie, *Lee et al. MRR26*; B & C including inset, Central Catchment. Photos: A, P.K.F. Leong; B & C, R.C.J. Lim; C inset, X.Y. Ng).

[K000768677], designated by de Kok, Gard. Bull. Singapore 69 (2017) 171; isoelectotype K [K001098151, K001098153]).

Trees, 1.2–30 m tall, dbh 5–40 cm, with buttresses to 1.5 m high; bark smooth, grey-white to (greyish) brown to black; inner bark reddish brown to deep red; sapwood yellow to yellowish brown or cream. **Twigs** slender to thick, 2.5–7.5 mm diam., velutinous, hairs falling off in patches, reddish brown; terminal vegetative buds lanceolate to ovate, 3–6.5 mm long, velutinous, hairs short, curly, erect, dark reddish brown. **Leaves** alternate to (sub)opposite; lamina (thickly) coriaceous, broadly elliptic to obovate, 8–25 × 3–12 cm, light to dark green, apex rounded to acute, often with a clear point, base rounded to cuneate, sometimes unequal, margins flat to recurved, secondary veins 7–18 pairs, curving and joining near margins, tertiary veins reticulate to scalariform; upper surface glabrous to sparsely hairy at base, midrib sunken to raised, secondary veins sunken to raised, tertiary veins faint to distinct; lower surface glabrous to sparsely hairy, more densely so on veins, hairs reddish brown, midrib raised, secondary veins raised, tertiary veins distinct; petiole slender to slightly swollen, channelled to half-terete, 0.5–3 cm long, velutinous at base, becoming less hairy distally when older, hairs often reddish brown. **Inflorescences** 2–15 cm long, sparsely hairy to velutinous, becoming sparsely hairy more distally, not enclosed at base by orbicular bracts; bracteoles triangular to oblong, 0.6–7 mm long, persistent. **Flowers** pale yellow to pale yellowish brown, sparsely hairy to velutinous; perianth tube not distinct; perianth lobes elliptical, 1.2–3 × 1.2–1.5 mm, apices rounded to acute, margins not ciliate; stamens 9, 1.1–2 mm long, hairy; ovary 0.7–1 mm diam., glabrous; style 0.5–0.6 mm long. **Fruit** (dried) ellipsoid, 13–25 × 5–19 mm, apex rounded to pointed, base rounded to cuneate, surface smooth, glabrous to sparsely hairy (hairs long), shiny, turning dark blue or black when ripe; stalk when mature slender to slightly swollen, to c. 1.8 mm diam., red when mature, sometimes constricted below apex.

Distribution. Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known from Singapore Botanic Gardens' Rain Forest (*Ridley* 8075, Jul 1896, BM [BM000832664], SING [SING0219777]), Bukit Timah (*Ridley* 4424, 1892, K [K001098075], SING [SING0058912]; *Ngadiman* 34696, 1 Feb 1938, K [K001098076], SING [SING0013115]; *Lim et al. CTFS E1-9*, 10 Jan 2019, SING [SING0292955]) and Nee Soon (*Chong et al. NSSF2-Q102T08*, 21 Sep 2013, SING [SING0359174]).

Ecology. Across its range and in Singapore, in primary and mature secondary lowland forests, including the margins of swamp forests but not in the wettest parts.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Vulnerable (VU/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

4. CASSYTHA Osbeck

(Greek, *kasytas*, *kadytas* = *Cuscuta* or dodder; due to a superficial similarity to the genus *Cuscuta* L. in the Convolvulaceae)

in Linneaus, Sp. Pl. 1 (1753) 35; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Ridley, Fl. Malay Penins. 3 (1924) 137; Kostermans, Reinwardtia 4(2) (1957) 193; Henderson, Malay. Wild Flowers, Dicot. (1959) 444; Weber, J. Adelaide Bot. Gard. 3 (1981) 187; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 386; van der Werff, Blumea 46 (2001) 135; Le Cussan & Hyland, Fl. Australia 2 (2007) 117; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1004. **Type:** *Cassytha filiformis* L.

Perennial parasitic twiners, partly autotrophic, attached by small elliptical haustoria formed along the stem at points of contact with the host, stem filiform or terete; terminal vegetative buds not perulate. **Leaves** alternate, scale-like, base clasping. **Inflorescences** erect, sessile or stalked, panicle, spike or raceme or reduced to a sessile or stalked head, bracts scale-like; bracteoles caducous. **Flowers** trimerous, bisexual, perianth and androecium confined to the rim of receptacle tube; perianth lobes 6, free, persistent, unequal, the outer 3 much smaller than the inner 3, perianth tube at first short, turbinate, after fertilisation becoming fleshy and enlarging to enclose the ovary; stamens (6 or) 9, in (2 or) 3 whorls of 3; staminodes 3(or 6); anthers 2-locular, those of first and second whorls introrse, those of third whorl if fertile extrorse; ovary globular; style short, capitate stigma. **Fruit** globular, largely enveloped by fleshy perianth tube.

Distribution. A pantropical genus but with most of the 17 species confined to Australia. In Singapore, 1 native species.

Taxonomy. This genus is the only one with parasitic twiners in the Lauraceae and has accordingly always been seen as highly anomalous in the family. However, both morphological evidence (flowers and fruit) and molecular evidence place it clearly within the Lauraceae (Rohwer & Rudolph, Ann. Missouri Bot. Gard. 92 (2005) 153).

Notes. *Cassytha* is sometimes confused with species of *Cuscuta* (Convolvulaceae), another genus of parasitic twiners. *Cassytha* differs from *Cuscuta* in having light brown hairs on the stems, while the latter has glabrous stems; *Cassytha* having flowers with 6 perianth lobes and fruit which appear to be inferior with the perianth lobes situated at the apex of the fruit, while *Cuscuta* has a corolla and a calyx each with 4 or 5 lobes and superior fruit with 1–4 seeds.

Cassytha filiformis L.

(Latin, *filum* = thread, *forma* = form; referring to the general shape of the plant)

Sp. Pl. 1 (1753) 35; Nees, Syst. Laur. (1836) 642; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 188; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 202; Ridley, Fl. Malay. Penins. 3 (1924) 137; Henderson, Malay. Wild Flowers, Dicot. (1959) 444; Keng, Gard. Bull. Singapore 27 (1974) 78; Weber, J. Adelaide Bot. Gard. 3 (1981) 228; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18, fig. 13.3; Turner, Gard. Bull. Singapore 45 (1993)

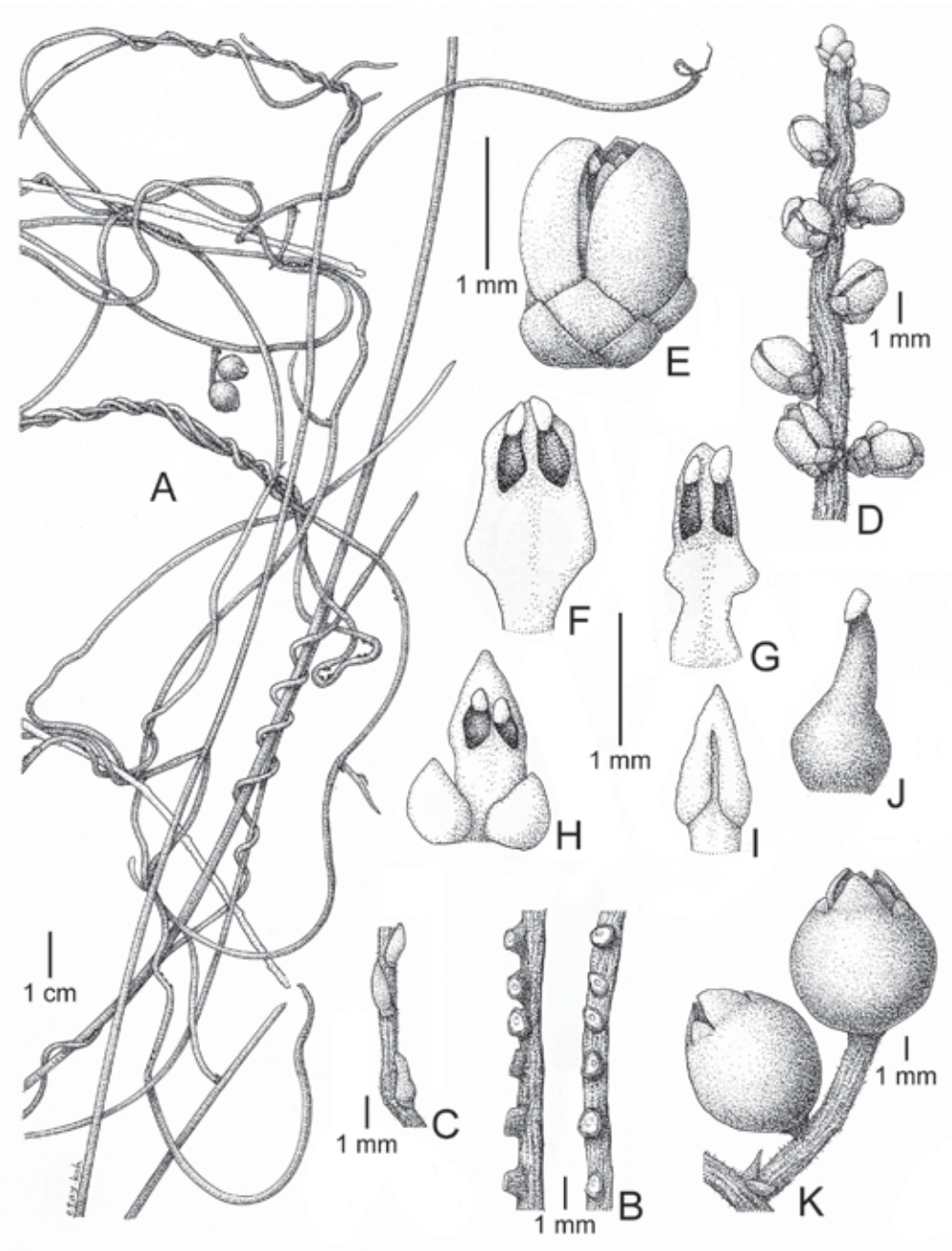


Figure 8. *Cassytha filiformis* L. **A.** Twining habit with infructescence. **B.** Stems with haustoria. **C.** Stem with reduced leaves. **D.** Inflorescence. **E.** Flower. **F.** Stamen (first whorl). **G.** Stamen (second whorl). **H.** Stamen with glands (third whorl). **I.** Staminode. **J.** Pistil. **K.** Infructescence. (A–K from Singapore, A–C & K, Bukit Batok, *Ho SING2019-131*; D–J, Pulau Semakau, *Lai & Ali Ibrahim LJ 47*. Drawn by E. Tay-Koh).

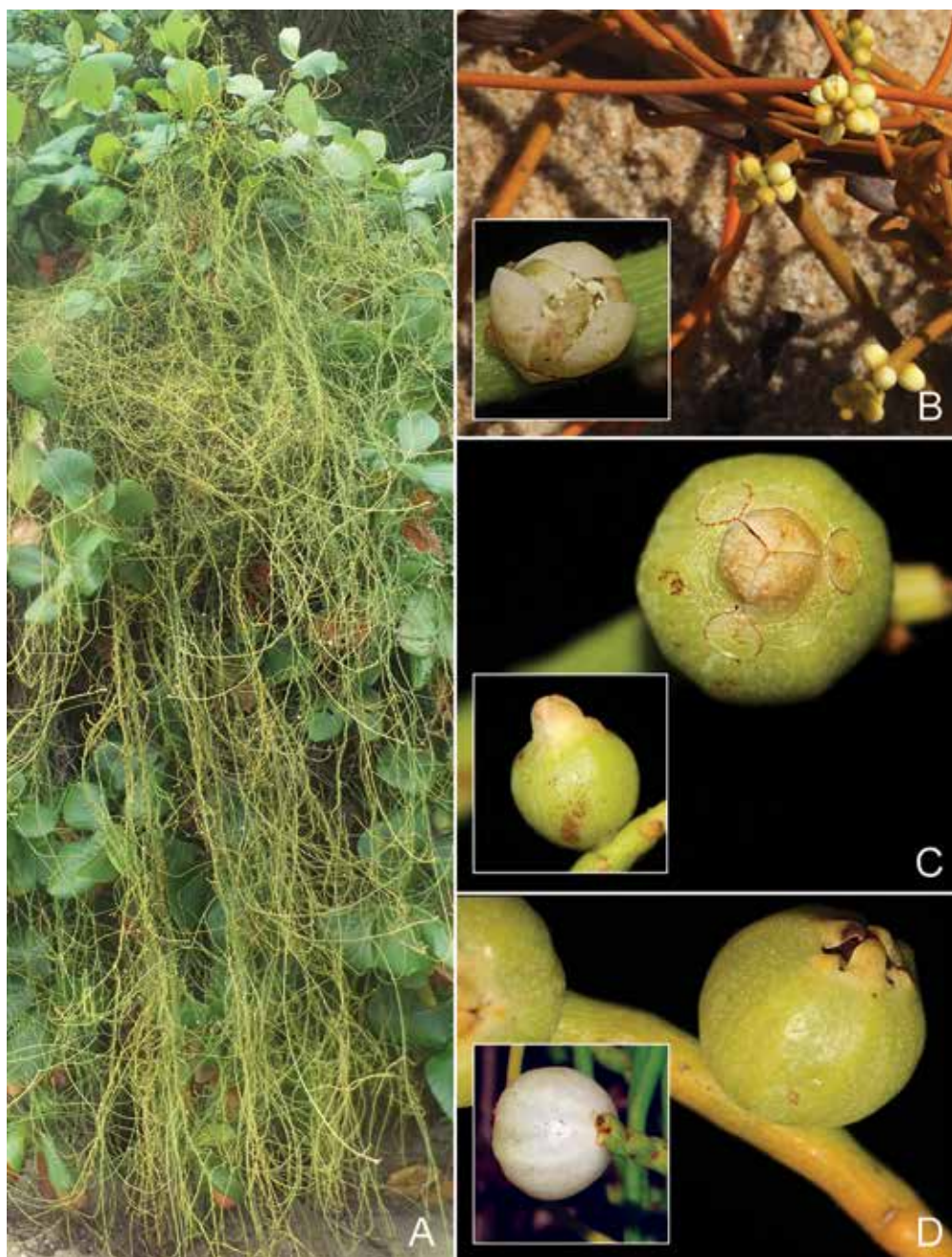


Figure 9. *Cassytha filiformis* L. **A.** Habit. **B.** Stems with flowers. Inset: Close-up of flower. **C.** Front view of young fruit. Inset: Side view of the same. **D.** Side view of a more mature fruit. Inset: Fruit maturing white. (A–D including insets from Singapore, A, Pulau Tekukor; B–D including insets, Pulau Hantu. Photos: A, H.K. Lua; B–D including insets, X.Y. Ng).

112; Turner et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 20; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 24, 142, 226; Teo et al., Nat. Singapore 4 (2011) 270; Hung et al., Nat. Singapore 10 (2017) 15, 22; Hung et al., Nat. Singapore 10 (2017) 33; Hung et al., Nat. Singapore 10 (2017) 44; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 396; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1005, fig. 5. **Type:** [Published illustration] *Acatsia-valli* in Rheede, Hort. Malab. 7 (1688) t. 44, lectotype designated by Weber, J. Adelaide Bot. Gard. 3 (1981) 229. **Fig. 8, 9.**

Stems (0.2–)0.6–0.8(–1.5) mm diam., round in cross-section, striate when dried, glabrous to sparsely hairy, dark to yellow-green or orange when fresh, hairs erect to patent, light brown; haustoria mostly elliptic, 1–2 mm long. **Leaves** alternate, scale-like; lamina ovate to triangular subulate, keeled, 1–2.5 × 1–1.2 mm, apex acute, glabrous or ciliate, sometimes with a gland on the upper surface; appressed-hairy, white or red. **Inflorescences** axillary spikes, 0.3–10 cm long, glabrous to sparsely hairy, hairs erect, light brown; bracts triangular, 1–3 × 1–1.3 mm, apex acute, sparsely hairy; bracteoles triangular, 0.6–1.2 × 0.9–0.5 mm, glabrous to ciliate. **Flowers** white to pale whitish green; perianth tube short, glabrous; perianth lobes triangular, 0.6–1.8 × 0.5–1.5 mm, apex rounded to acute, glabrous to sparsely hairy, ciliate; stamens 6 or 9, sometimes the third whorl sterile, 0.7–1 mm long; anthers c. 0.4 mm diam; ovary fusiform, less than 2 mm long, glabrous or with ring of hairs in central portion. **Fruit** globular to ellipsoid, 4–10 × 3–10 mm, smooth, glabrous, red or sometimes white when mature; cupule enveloping most of the fruit, outside glabrous, inside hairy; persistent perianth 1.2–2 mm long, apex acute, leathery, brown; stalk slender, 0.8 mm diam.

Distribution. A pantropical species. In Singapore, known from many localities including Changi (*Ridley* 3380, Feb 1889, SING [SING0043332]), Mandai (*Turner et al. NSR* 1365, 1 Apr 1993, SING [SING0043329]), Pulau Biola (*Burkill & Kiah HMB* 459, 29 Mar 1956, SING [SING0043341]; *Samsuri* 856, 10 Dec 1973, KEP, SING [SING0043340]), Pulau Semakau (*Bazilah et al. SING2014-052*, Feb 2014, SING [SING0231942]) and St. John’s Island (*Lua et al. SING2020-257*, 18 Feb 2020, SING [SING0341501]).

Ecology. Parasitic plant growing in exposed positions, along the seashore, roadsides, forest edges and swamps, on various hosts (including grasses and various dicotyledonous shrubs).

Conservation assessment. Globally, Least Concern (LC), assessed here. In Singapore, assessed as Least Concern (LC) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

Vernacular name. *Cemar batu, chemar hantu, dodder laurel, rambut puteri, seashore dodder, tali puteri, woe vine*, 无根藤 (NParks’ Flora & Fauna Web, 2026).

5. CINNAMOMUM Schaeff.

(Greek, *kinnamomon* = spice or sweet wood; referring to its culinary uses)

Bot. Exped. (1760) 74, nom. cons.; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 71; Ridley, Fl. Malay Penins. 3 (1924) 90; Cammerloher,

Bull. Jard. Bot. Buitenzorg, sér. 3, 7 (1925) 446; Kostermans, Reinwardtia 4(2) (1957) 233; Kostermans, Reinwardtia 8(1) (1970) 29; Kostermans, Bull. Bot. Surv. India 25 (1985) 90; Kostermans, Ginkgoana 6 (1986) 1; Kochummen, Tree Fl. Malaya 4 (1989) 124; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 381; van der Werff, Blumea 46 (2001) 135; Soh, Blumea 56 (2011) 241; Chong et al., Nat. Singapore 9 (2016) 10; de Kok, Gard. Bull. Singapore 71 (2019) 89; Chayamarit & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1007. **Type:** *Laurus cinnamomum* L. (= *Cinnamomum verum* J.Presl).

Camphora Fabr., Enum. Meth. Pl. (1759) 218. **Type:** *Camphora officinarum* Boerh. ex Fabr. (= *Cinnamomum camphora* (L.) J.Presl).

Parthenoxylon Blume, Mus. Bot. 1(21) (1851) 322; Kostermans, Reinwardtia 4(2) (1957) 233. **Type:** *Laurus parthenoxylon* Jack (= *Cinnamomum parthenoxylon* (Jack) Meisn.), lectotype designated by Pfeiffer, Nomencl. Bot. 2(1) (1873) 598.

Trees or shrubs, bark, root and crushed leaves often with a characteristic smell of cinnamon, cloves, sassafras or camphor. **Terminal vegetative buds** not conspicuous, rarely perulate. **Leaves** (sub-)opposite, rarely alternate or spiral, triveined, rarely tripliveined, palmately veined or pinnately veined, crushed fresh leaves and inner bark with strong aromatic smell. **Inflorescences** axillary and terminal, rarely only terminal, cymose panicles, with the lateral flowers of the ultimate cymes strictly opposite (type 2 sensu van der Werff, Blumea 46 (2001) 135), bracts leaf-like, involucre bracts absent. **Flowers** bisexual, rarely unisexual; perianth tube short; perianth lobes 6, sub-equal, persistent, partly truncate or deciduous in fruit; tube short, funnel-shaped and enlarged in fruit; stamens usually 9, in 3 whorls, third whorl with a pair of stalked or sessile glands on the filaments; anthers (2–)4-locular, those of the first and second whorls introrse, those of the third extrorse; staminodes cordate or sagittate, stalked; ovary sessile, narrowing into a style; stigma discoid or obscurely 3-lobed. **Fruit** ellipsoid, seated on the usually cup-shaped enlarged perianth tube, the perianth lobes usually persistent and sometimes truncated; stalk not or only slightly thickened, rarely with a small constriction at the apex of the stalk.

Distribution. A genus of about 350 species, mainly in the tropics. In Singapore, 3 native species.

Uses. *Cinnamomum iners* (Reinw. ex Nees & T.Nees) Blume is grown as a shade tree and many species are used in traditional medicine (Burkill, Dict. Econ. Prod. Malay Penins., ed. 2, 1 (1966) 549). The bark of several species is used as a spice in cooking, including cultivated species such as *Cinnamomum camphora* (L.) J.Presl and *C. verum* J.Presl.

Taxonomy. Thanks to the work of Kostermans (Reinwardtia 4(2) (1957) 233; Reinwardtia 8(1) (1970) 29; Bull. Bot. Surv. India 25 (1983) 90; Ginkgoana 6 (1986) 1; Fl. Ceylon 9 (1995) 112) and more recently Soh (Blumea 56 (2011) 241), the taxonomy is reasonably well known for a Lauraceae genus. In recent molecular studies, the genus is considered to be part of the ‘core’ Lauraceae group (Rohwer & Rudolph, Ann. Missouri Bot. Gard. 92 (2005) 153).

Notes. *Cinnamomum burmannii* (Nees & T.Nees) Blume is a native of South China and North Vietnam and has been introduced into Malaysia, Indonesia and the Philippines. In Singapore, it

occasionally used to be planted as a shade tree or for ornamental purposes but it is not known to have naturalised (Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 26, 142). It can be distinguished from the more commonly cultivated species *Cinnamomum camphora* by having an inflorescence which is never longer than the accompanying leaves and having perianth lobes of which at least the lower parts are persistent in fruit.

Cinnamomum aromaticum Nees (often mistakenly named *Cinnamomum cassia*) is a native of South China and is cultivated from Indochina to India and south to Indonesia. In Singapore, it occasionally used to be planted but is not known to have naturalised (Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 26, 142). It can be distinguished from *Cinnamomum javanicum* Blume by having an axillary inflorescence and tertiary veins which are not sunken above.

No evidence could be found for the presence of *Cinnamomum sintoc* Blume in Singapore. It is a native of Thailand, Peninsular Malaysia, Borneo, Sumatra and Java and has been recorded as occurring in Singapore in several publications (e.g., Tan et al. in Davison et al. (ed.), Singapore Red Data Book, ed. 2 (2008) 225).

Key to *Cinnamomum* species

1. Lower leaf surface sparsely to densely hairy with erect hairs; leaves bullate and tertiary veins sunken above **2. *C. javanicum***
 Lower leaf surface glabrous or sparsely hairy with appressed hairs; leaves not bullate and tertiary veins not sunken above 2
2. Fruit cupule with distinct lobes **1. *C. iners***
 Fruit cupule minutely lobed **3. *C. subavenium***

1. *Cinnamomum iners* (Reinw. ex Nees & T.Nees) Blume

(Latin, *iners* = inert; probably alluding to the relative lack of usefulness compared to related species)

Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 570; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 76; Ridley, Fl. Malay Penins. 3 (1924) 92; Cammerloher, Bull. Jard. Bot. Buitenzorg, sér. 3, 7 (1925) 471; Keng, Gard. Bull. Singapore 27 (1974) 79; Kostermans, Ginkgoana 6 (1986) 50; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 377; Kochummen, Tree Fl. Malaya 4 (1989) 126; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18, fig. 13.4; Turner, Gard. Bull. Singapore 45 (1993) 112; Turner et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 20; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 68; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Lee et al., Gard. Bull. Singapore 55 (2003) 297; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 26, 142, 226; Soh, Blumea 56 (2011) 249; Neo et al., Nat. Singapore 5 (2012) 281; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 56, 379; Neo et al., Nat. Singapore 6 (2013) 14; Neo et al., Nat. Singapore 6 (2013) 70; Neo et al., Nat. Singapore 6 (2013) 80; Neo et al., Nat. Singapore 6 (2013) 121; Neo et al., Nat. Singapore 6 (2013) 279; Neo et al., Nat. Singapore 7 (2014) 64; Neo et al., Nat. Singapore 7 (2014) 104; Chong et al., Nat. Singapore 9 (2016) 11; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88, 130; de Kok, Gard. Bull. Singapore 71 (2019)

104; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 396; Chayamarit & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1016. **Basionym:** *Laurus iners* Reinw. ex Nees & T.Nees, Cinnam. Disp. (1823) 57. **Synonym:** *Cinnamomum nitidum* (Roxb.) Hook. var. *iners* (Reinw. ex Nees & T.Nees) Miq., Ann. Mus. Bot. Lugduno-Batavi 1, fasc. 9 (1864) 258. **Type:** *Reinwardt s.n.*, [Indonesia], Java (lectotype L [L0035811], designated here). **Fig. 10.**

Cinnamomum paraneuron Miq., Fl. Ned. Ind. 1(1), fasc. 6 (1858) 895; Ridley, Fl. Malay Penins. 2 (1924) 92. **Type:** *Teijsmann s.n.*, [Indonesia], Sumatra, Loeboe Sikeppeng (lectotype U [U0002662], designated here).

Cinnamomum iners (Reinw. ex Nees & T.Nees) Blume var. *angustifolium* Ridley, Fl. Malay Penins. 3 (1924) 93. **Type:** *Ridley 14516*, [Malaysia], Perak, Ulu Temengoh, July 1909 (lectotype SING [SING0055564], designated by Soh, Blumea 56 (2011) 250; isolectotype K [K006946426]).

Trees, 3.5–24 m tall, dbh 20–60 cm; bark greyish brown or greenish black, smooth; inner bark pinkish to brown, with strong fragrant smell; sapwood yellowish to whitish. **Twigs** slender, 1.6–2.2 mm diam., glabrous to sparsely hairy, round to slightly angular in cross-section, dark brown to black; terminal vegetative buds ovate, 1.4–3 mm long, apex acuminate, velutinous. **Leaves** (sub)opposite, domatia absent; lamina thinly coriaceous, ovate to elliptic, lanceolate or linear, 5–35 × (1.4–)2–9 cm, apex broadly acute to acuminate, base broadly cuneate to rounded, sometimes almost cordate, margin slightly revolute, triveined, secondary veins 1 pair, reaching to the apex, tertiary veins scalariform to scalariform-reticulate, hairs white, appressed; upper surface glabrous, midrib and secondary veins raised, tertiary veins faint, deep green, shiny; lower surface glabrous to sparsely hairy, midrib and secondary veins raised, tertiary veins faint or distinct, often glaucous, dull green; petiole channelled, 0.8–3 cm long, glabrous to densely hairy, hairs white, appressed. **Inflorescences** axillary and terminal, 5–26 cm long, densely hairy to becoming sparsely hairy later, hairs white, appressed; bracteoles 1.5–2 mm long, lanceolate, persistent to caducous. **Flowers** bisexual, creamy to green-white, with unpleasant smell, velutinous to densely hairy, hairs white, appressed; perianth tube obconical, 1–2 mm long; perianth lobes (ovate)-oblong to elliptic, 2.5–4 × 1.3–2.2 mm, apex acute, densely whitish appressed-hairy outside, yellowish appressed-hairy inside; stamens 9, 2–3.6 mm long, velutinous; anthers 4-locular; ovary c. 1.5 mm diam.; style c. 3 mm long; stigma discoid. **Fruit** ellipsoid to ovoid, 8–12 × 5–7 mm, apex rounded, smooth, glabrous, blue-black when mature; cupule obconical, c. 8 mm diam., perianth lobes persistent, free; lobes 1.2–3 mm long, apex acute, erect to patent; stalk slightly swollen, 1.1–1.8 mm diam.

Distribution. South China, Myanmar, Thailand, Cambodia, Laos, Vietnam, Peninsular Malaysia, Sumatra, Java, Borneo and the Philippines. In Singapore, known from historical collections from an unspecified locality (*Hullet 187*, Dec 1883, SING [SING0042447]) and Tyersall Road (*Ridley 3370*, 26 Mar 1891, SING [SING0042452]) and from more recent collections from Bukit Timah (*Faizu SING2011-247*, 16 Feb 2011, SING [SING0164252]), Nee Soon (*Leong et al. SING2014-037*, 12 Feb 2014, SING [SING0205490]), Sentosa (*Lua et al. SING2020-494*, 3 Mar 2020, SING [SING0341406]) and other places.

Ecology. Across its range, in primary and secondary lowland to mountain forest or waste lands, often along riverbanks. In Singapore, in a variety of forest types and more open habitats.

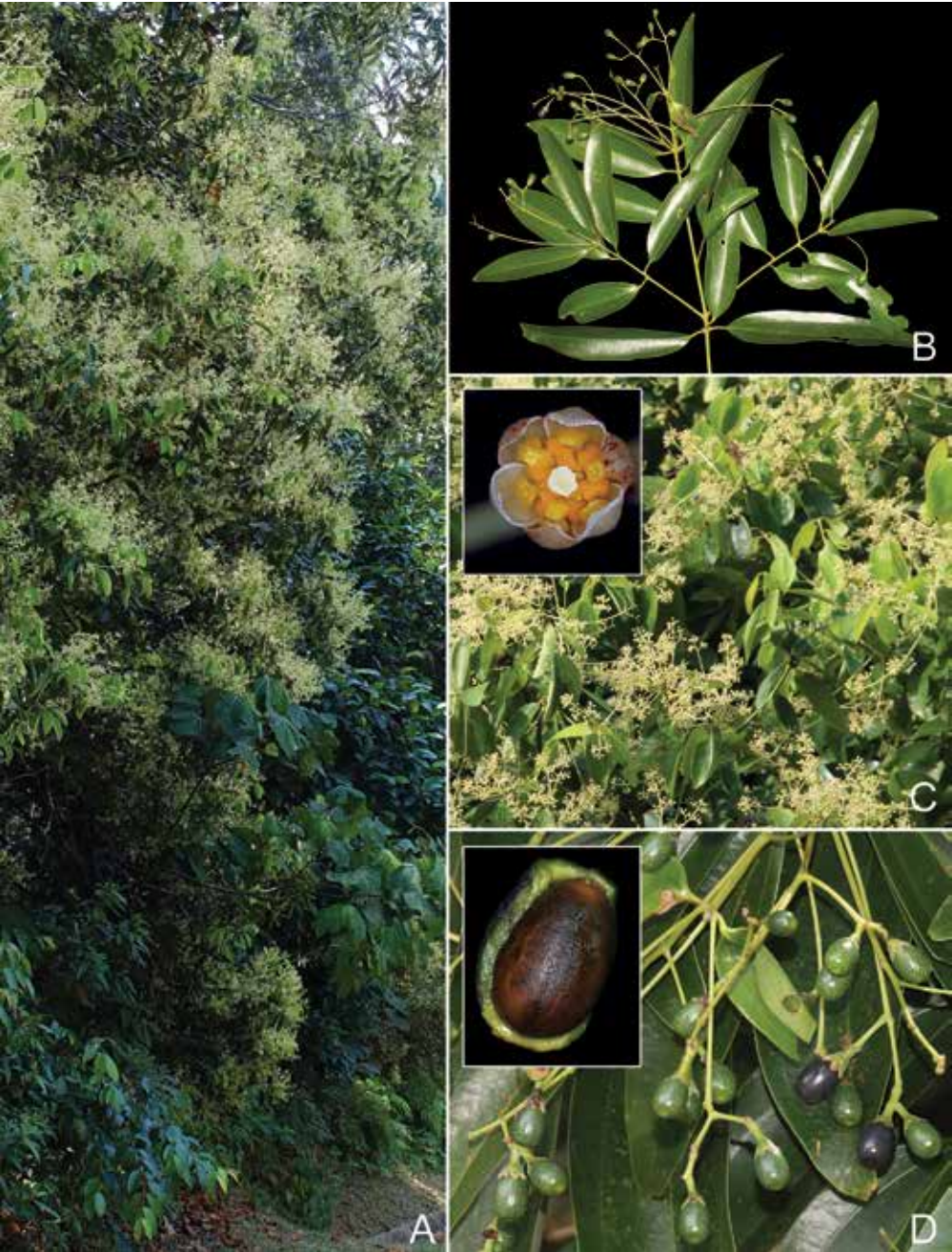


Figure 10. *Cinnamomum iners* (Reinw. ex Nees & T.Nees) Blume. **A.** Habit. **B.** Leaves and infructescences. **C.** Plant in flower. Inset: Close-up of a flower (front view). **D.** Plant in fruit. Inset: A fruit with the seed coat partially removed showing the seed. (A–D including insets from Singapore, A, Nee Soon, *Leong & Yam SING2014-037*; B–D including insets, Nee Soon. Photos: A, P.K.F. Leong; B–D including insets, X.Y. Ng).

The seeds are dispersed by birds, bats and squirrels (Corner, *Wayside Trees Malaya*, ed. 2 (1952) 340).

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Least Concern (LC) by Middleton et al. (in Davison et al. (ed.), *Singapore Red Data Book*, ed. 3 (2024) 486).

Uses. This species has several medicinal uses (Burkill, *Dict. Econ. Prod. Malay Penins.*, ed. 2, 1 (1966) 558) and, in Singapore and elsewhere, is often planted as an ornamental or shade tree.

Vernacular name. *Clove cinnamon*, *kayu manis*, *kayu manis hutan*, *medang teja*, *teja lawang*, *wild cinnamon*, 大叶桂 (NParks' Flora & Fauna Web, 2026).

Notes. The record of *Cinnamomum nitidum* in Ridley (J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131) from Tanglin could not be matched to any specimens and although it was placed in synonymy of *C. iners* by Turner (Gard. Bull. Singapore 45 (1993) 112) and Lindsay et al. (Gard. Bull. Singapore 74(Suppl. 1) (2022) 396), it is unlikely to be this species. It is therefore placed in the Excluded species section.

2. *Cinnamomum javanicum* Blume (of Java)

Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 570; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 130; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 81; Ridley, Fl. Malay Penins. 3 (1924) 94; Cammerloher, Bull. Jard. Bot. Buitenzorg, sér. 3, 7 (1925) 465; Kostermans, Reinwardtia 8(1) (1970) 47; Keng, Gard. Bull. Singapore 27 (1974) 79; Corner, *Wayside Trees Malaya*, ed. 3, 1 (1988) 378; Kochummen, Tree Fl. Malaya 4 (1989) 126; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Turner, Gard. Bull. Singapore 45 (1993) 112; Turner et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 20; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 26, 142, 202; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Soh, Blumea 56 (2011) 251; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 57, 379; Chong et al., Nat. Singapore 9 (2016) 11; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88, 121; de Kok, Gard. Bull. Singapore 71 (2019) 110; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 396; Chayamarit & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1018. **Type:** *Blume s.n.*, [Indonesia], West Java, Bantam, Harriang (lectotype L [L0035826], designated by Soh, Blumea 56 (2011) 251). **Fig. 11, 12.**

Trees, 12–35 m tall, dbh 2–35 cm, buttresses to 1 m high; bark grey, smooth or lenticellate, very aromatic; inner bark fibrous, yellowish-brownish to pink or orange; sapwood yellowish to white. **Twigs** slender, 2.5–4.5 mm diam., rounded to angled, densely hairy, glabrescent, hairs yellow-brown, erect; terminal vegetative buds ovoid, c. 3–8 mm long, densely hairy, hairs yellow-brown. **Leaves** (sub-)opposite, domatia absent; lamina thinly to thickly coriaceous, slightly ovate to elliptic, 7–40 × 3–15 cm, apex acuminate, with a long tip, base cuneate to slightly rounded, margin straight, triveined, secondary veins one pair, extending to the base of leaf tip, tertiary veins scalariform, false side vein present, hairs yellow-brown, erect; upper

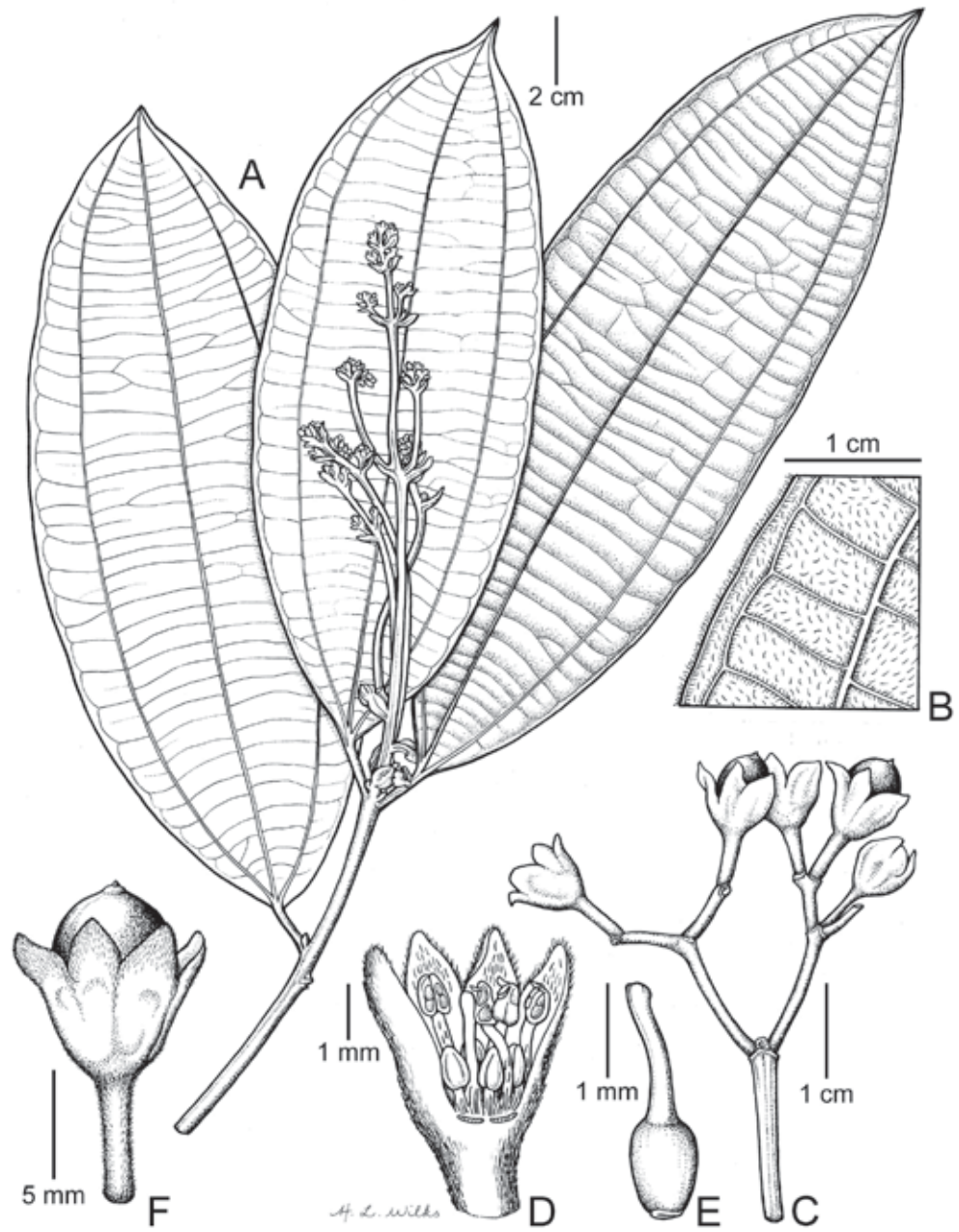


Figure 11. *Cinnamomum javanicum* Blume. **A.** Portion of leafy twig with inflorescence. **B.** Detail of lower leaf surface with hairs. **C.** Detail of inflorescence. **D.** Mature opened flower to show androecium and ovary. **E.** Ovary with style and stigma. **F.** Fruit with stalk. (A–F from Peninsular Malaysia, A & B, Ogata KEP110370; C–F, Kochummen 77823. Drawn by H. Wilks).



Figure 12. *Cinnamomum javanicum* Blume. **A.** Habit. Inset: Trunk. **B.** Leaves. **C.** Densely hairy leaf lower surface and swollen petiole. **D.** Fruit. (A–C from Singapore, A, Singapore Botanic Gardens; A inset & D from Peninsular Malaysia; B, Nee Soon, *Samsuri Ahmad et al. NES65*; C, MacRitchie. Photos: A, A inset & D, Zaki Jamil; B, P.K.F. Leong; C, R.C.J. Lim).

surface glabrous or with very few hairs, veins sometimes densely hairy at base, soon becoming glabrous, midrib and secondary veins raised, major tertiary veins sunken, making the surface bullate, shiny; lower surface sparsely hairy to densely hairy, midrib and secondary veins raised, tertiary veins distinct; petiole swollen, half-terete, 1–2 cm long, densely to sparsely hairy, hairs yellow-brown. **Inflorescences** terminal, 5–30 cm long, angled in cross-section, densely hairy, hairs yellowish brown, curly; bracteoles oblong to elliptic, 3–7 mm long, apex acute, sometimes persistent. **Flowers** yellowish white, bisexual, velvety hairy; perianth tube 1 mm high; perianth lobes elliptic to broadly elliptic, (1.5–)2–2.5(–3.5) mm, densely hairy; stamens usually 9, 2–2.5 mm long; anthers 2- or 4-locular; ovary ovoid or subglobose, c. 1 mm diam.; style c. 1 mm long; stigma sub-peltate. **Fruit** ellipsoid, 9–15 × 1.2–8 mm, glabrous, smooth; cupule woody, cup-shaped, c. 8 mm diam., densely hairy to glabrous when mature, enveloping half of the fruit; lobes broadly ovate, 3–6 × 2.4–3 mm, apex acute, densely hairy, persistent; stalk slightly swollen, 1.2–2 mm diam., densely yellow-brown hairy.

Distribution. South China (Yunnan), Vietnam, Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known from historical collections from Pinerong (*Cantley's Collector s.n.*, 1881, SING [SING0013132]), Changi (*Ridley s.n.*, Feb 1894, SING [SING0013133]) and Singapore Botanic Gardens' Rain Forest. More recent collections are from Bukit Timah (*Sinclair SFN 39227*, 14 Mar 1951, SING [SING0013137]; *Metcalfe D230*, Nov 1992, SING [SING0359280]), MacRitchie (*Gwee SING2009-732*, 28 Dec 2009, SING [SING0144155]) and Nee Soon (*Lim et al. SING2024-066*, 19 Mar 2024, SING [SING0397354]).

Ecology. Across its range, in primary and secondary lowland and hill forests, sometimes in seasonal swamp forest between 20–150 m elevation. In Singapore, in primary, secondary and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Vernacular name. 爪哇肉桂 (NParks' Flora & Fauna Web, 2026).

3. *Cinnamomum subavenium* Miq.

(Latin, *sub-* = somewhat, not completely, *avenis* = without veins;
presumably referring to the veins in the leaves)

Fl. Ned. Ind. 1(1), fasc. 6 (1858) 902; Cammerloher, Bull. Jard. Bot. Buitenzorg, sér. 3, 7 (1925) 452; Burkill, Dict. Econ. Prod. Malay Penins. 1 (1935) 556; Kostermans, Reinwardtia 8(1) (1970) 68; Kochummen, Tree Fl. Malaya 4 (1989) 131; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Turner, Gard. Bull. Singapore 45 (1993) 113; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 278; Li et al., Fl. China 7 (2008) 186; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 26, 142, 189; Soh, Blumea 56 (2011) 258; de Kok, Gard. Bull. Singapore 71 (2019) 131; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 397; Chayamarit & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1025. **Type:** *Teijsmann s.n.*, [Indonesia], Sumatra, Solok (lectotype U [U0002677], designated by de Kok, Gard. Bull. Singapore 69 (2017) 171; isoelectotypes BO n.v., U [U0002678]).

Cinnamomum ridleyi Gamble, Bull. Misc. Inform. Kew 1910 (1910) 218; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 77; Ridley, Fl. Malay Penins. 3 (1924) 93; Kostermans, Reinwardtia 8(1) (1970) 69; Keng, Gard. Bull. Singapore 27 (1974) 79. **Type:** *Ridley 4823*, Singapore, Changi Road, 1893 (lectotype K [K000778657], designated by de Kok, Gard. Bull. Singapore 71 (2019) 132; isolectotypes CAL [CAL0000021455], K [K000778656], KEP, L [L0035987], SING [SING0055570]).

Trees, 12–30 m tall, dbh 40–60 cm, buttresses to 2 m high; bark grey-brown or reddish brown, smooth; inner bark light brown, rapidly becoming red on exposure, with aromatic smell; sapwood pale yellow. **Twigs** slender, 2–3 mm diam., round to angular in cross-section, glabrous to sparsely hairy; terminal vegetative buds ovate to lanceolate, 1.3–3 mm long, glabrous to sparsely hairy. **Leaves** (sub-)opposite to alternate, domatia absent, pale pink when young; lamina thinly coriaceous, elliptic, oblong to lanceolate, 4–16 × 2–6 cm, apex long-acuminate, base cuneate to rounded, margin straight, triveined, secondary veins one pair, almost reaching the apex, tertiary veins scalariform, drying reddish brown on both surfaces, hairs appressed, white when young; upper surface glabrous, a few hairs at base on veins, midrib and secondary veins flat to sunken or raised, tertiary veins inconspicuous, dark green and shiny; lower surface sparsely hairy, midrib and secondary veins raised, tertiary veins faintly visible, yellow-green; petiole channelled, 0.5–1.5 cm long, glabrous to sparsely hairy, wrinkled. **Inflorescences** axillary, 8–10 cm long, sparsely to densely hairy at apex; bracteoles linear, 2–3 mm long, densely to sparsely hairy, persistent to caducous. **Flowers** bisexual, yellowish to greenish white, velutinous to densely hairy, becoming more glabrous when old; perianth tube 0.5–1 mm long; perianth lobes oblong-lanceolate to ovate-oblong, 1.7–3 × 1–1.8 mm long, apex acute, densely hairy outside and inside; stamens 9, 2–2.7 mm long, velutinous; anthers 4-locular, velutinous abaxially; ovary globose, c. 1 mm diam., glabrous; style 1.5–2.5 mm long; stigma small, discoid. **Fruit** ovoid to ellipsoid, 7–13 × 5–9.5 mm, apex rounded, smooth, glabrous, blue-black when mature; cupule 5–7 mm diam., margin entire to minutely lobed, erect to patent; stalk slightly swollen or not, 1–2 mm diam.

Distribution. Northern India, South China, Thailand, Cambodia, Laos, Peninsular Malaysia, Sumatra and Borneo. In Singapore, known only from a single tree on Changi Road in 1893 (*Ridley 4823*, 1893 (BM, K [K000778656, K000778657], KEP, SING [SING0055570])).

Ecology. Across its range, in lowland to mountain forests.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

Notes. De Kok (Gard. Bull. Singapore 71 (2019) 132) designated *Ridley 4823* (K [K000778657]), collected from Changi Road in 1893, as the lectotype of *Cinnamomum ridleyi* Gamble. He also designated (de Kok, Gard. Bull. Singapore 69 (2017) 174) another specimen labelled as *Ridley 4823* (K [K003279652]), collected in Reservoir Woods [MacRitchie] in 1893, as the lectotype of *Litsea griffithii* Gamble (a synonym of *Litsea ferruginea* (Blume) Blume).

6. CRYPTOCARYA R.Br.

(Greek, *kryptos* = hidden, *karyon* = nut; referring to the fruit enveloped by the perianth tube)

Prodr. Fl. Nov. Holland. (1810) 402, nom. cons.; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 117; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 37; Ridley, Fl. Malay Penins. 3 (1924) 76; Kostermans, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 42 (1937) 557; Kostermans, Reinwardtia 4(2) (1957) 243; Kochummen, Tree Fl. Malaya 4 (1989) 132; Hyland, Austral. Syst. Bot. 2 (1989) 162; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 386; van der Werff & Richter, Ann. Missouri Bot. Gard. 83 (1996) 409; van der Werff, Blumea 46 (2001) 135; Ng, Gard. Bull. Singapore 57 (2005) 63; Le Cussan & Hyland, Fl. Australia 2 (2007) 140; de Kok, Gard. Bull. Singapore 67 (2015) 309; de Kok, Kew Bull. 71-7 (2016) 1; Chong et al., Nat. Singapore 9 (2016) 11; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1030. **Type:** *Cryptocarya glaucescens* R.Br., lectotype designated by Kostermans, Notul. Syst. (Paris) 8 (1939) 112.

Caryodaphne Blume ex Nees, Syst. Laur. (1836) 225. **Type:** *Caryodaphne laevigata* (Blume) Nees (= *Cryptocarya laevigata* Blume), lectotype designated by Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 122.

Trees or shrubs, evergreen. **Terminal vegetative buds** inconspicuous, not perulate. **Leaves** alternate or rarely (sub-)opposite (not in Singaporean species), pinnately veined, rarely tripliveined. **Inflorescences** axillary panicles, with the lateral flowers of the ultimate cymes not strictly opposite (type 3 sensu van der Werff, Blumea 46 (2001) 135); bracteoles triangular, linear to elliptic or orbicular, usually caducous during flowering. **Flowers** bisexual, small, involucre bracts absent; perianth lobes 6, isomorphic, caducous, tube turbinate or ovoid, persistent, constricted at top after flowering; stamens 9, inserted on throat of perianth tube, first and second row introrse, glandless; third row extrorse and with glands at base; anthers 2-locular; staminodes of innermost whorl shortly stalked, glandless; ovary sessile, enveloped by perianth tube; style linear; stigma small or inconspicuous. **Fruit** wholly enveloped by fleshy or hard and dilated perianth tube, but leaving a small aperture at apex; stalk sometimes swollen when mature.

Distribution. A genus of about 200–250 species, pantropical except central Africa. In Singapore, 7 native species.

Taxonomy. *Cryptocarya* is taxonomically one of the most easily recognised genera within the Lauraceae. It forms part of the *Cryptocarya* group as one of the early divergent clades within the family. In addition, since it was synonymised with the endemic monotypic Madagascan genus *Ravensara* Sonn., the genus is now clearly monophyletic (see Rohwer et al., Phytotaxa 158 (2014) 111).

Key to the *Cryptocarya* species

1. Lower surface of mature leaves glabrous, or hairs only on the midrib and veins **6. C. nitens**
- Lower surface of mature leaves sparsely hairy to velutinous 2

2. Midrib sunken at base on upper leaf surface 3
Midrib raised at base on upper leaf surface 5
3. Bracteoles elliptic, < 1 mm long; petiole half-terete to channelled **1. *C. ferrea***
Bracteoles elliptic to lanceolate or linear, > 1 mm long; petiole half-terete 4
4. Leaf lamina thinly coriaceous; bracteoles linear, 1.1–1.8 mm long **4. *C. kurzii***
Leaf lamina coriaceous; bracteoles elliptic to lanceolate, (1.5–)2–3.5 mm long
..... **7. *C. rugulosa***
5. Leaves bullate; petiole swollen **2. *C. griffithiana***
Leaves not or only slightly bullate; petiole slender 6
6. Leaf base symmetrical, hairs rusty to dark brown (when dried) **3. *C. impressa***
Leaf base slightly oblique, hairs light brown (when dried) **5. *C. malayana***

1. *Cryptocarya ferrea* Blume

(Latin, *ferrum* = iron; probably referring to the colour of the dried leaves)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 557; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 45; Ridley, Fl. Malay Penins. 3 (1924) 79; Liu, Laurac. Chine & Indochine (1934 [‘1932’]) 101; Keng, Gard. Bull. Singapore 27 (1974) 79; Kochummen, Tree Fl. Malaya 4 (1989) 134; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18, fig. 13.5; Turner, Gard. Bull. Singapore 45 (1993) 113; Turner et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 20; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 69; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; LaFrankie et al., Forest Trees Bukit Timah (2005) 161; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 30, 142, 203; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 70, 380; de Kok, Gard. Bull. Singapore 67 (2015) 326; de Kok, Kew Bull. 71-7 (2016) 11; Chong et al., Nat. Singapore 9 (2016) 11; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 397; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1036. **Type:** *Blume s.n.*, [Indonesia, Java], Cheribon Province, Mt Tjerimai (lectotype L [L0036127], designated by de Kok, Gard. Bull. Singapore 67 (2015) 326; isoelectotypes BO, L [L0036128]. **Fig. 13, 14.**

Cryptocarya tomentosa Blume, Mus. Bot. 1(21) (1851) 335; Ridley, Fl. Malay Penins. 3 (1924) 79; Kostermans, Reinwardtia 7(4) (1968) 338; Kochummen, Tree Fl. Malaya 4 (1989) 137; Ng, Gard. Bull. Singapore 57 (2005) 66. **Type:** *Blume s.n.*, [Indonesia], Java, Patuhae (lectotype L [L0036276], designated by de Kok, Gard. Bull. Singapore 69 (2017) 172; isoelectotype L [L0036277]).

Cryptocarya tomentosa Blume var. *rugosa* Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 45; Ridley, Fl. Malay Penins. 3 (1924) 79. **Type:** *Derry 1142*, [Malaysia], Malacca [Melaka], Sungai Udang, January 1893 (lectotype SING [SING0260818], designated here).

Trees or shrubs, (2–)8–22 m tall, dbh 5–40 cm; bark grey to reddish brown, smooth to finely scaly; wood white to yellowish. **Twigs** smooth to angled, velutinous when young, almost glabrous when mature, hairs yellowish to brown, appressed. **Leaves:** lamina coriaceous, young

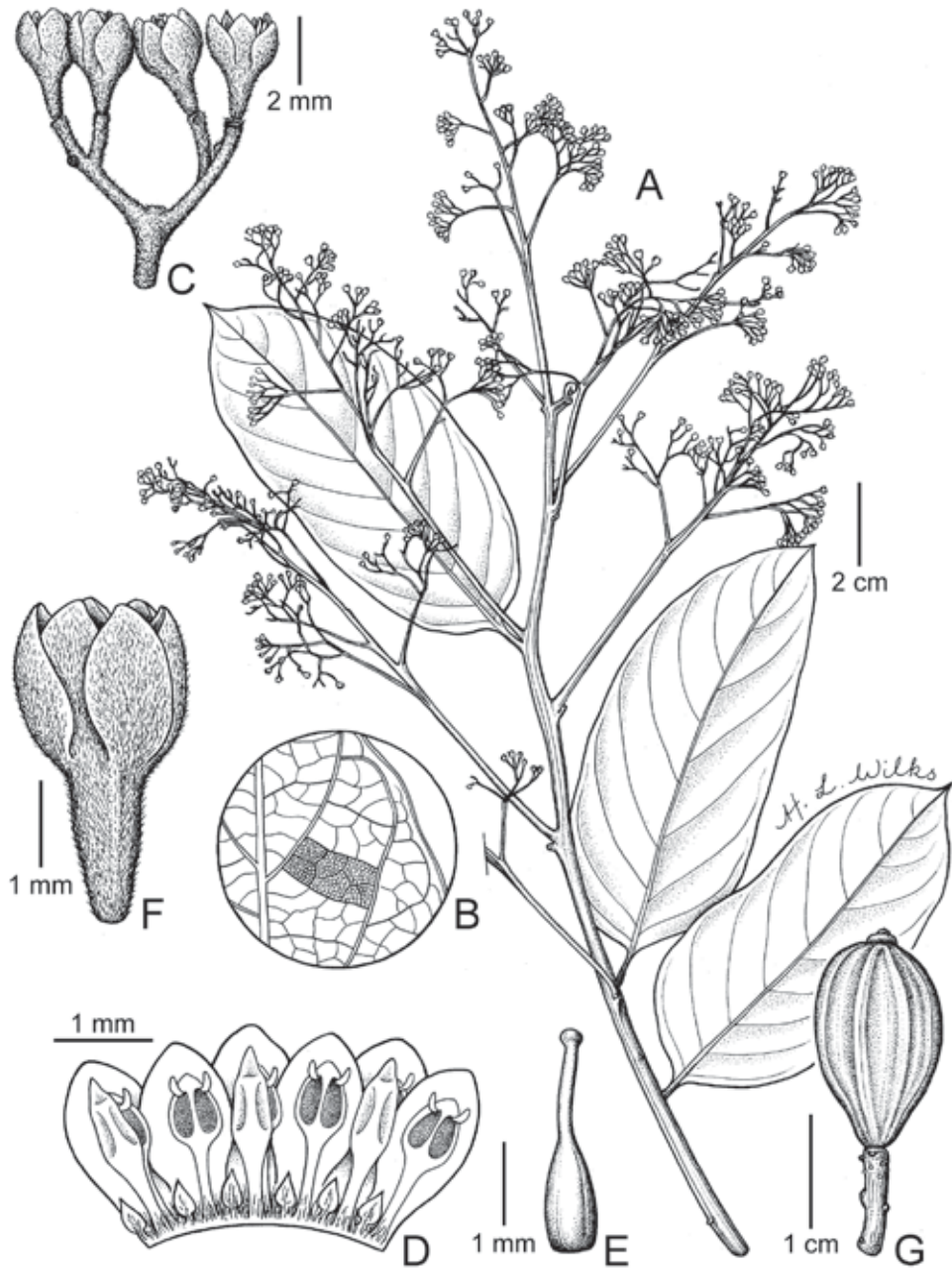


Figure 13. *Cryptocarya ferrea* Blume. **A.** Portion of leafy twig with inflorescence. **B.** Detail of lower leaf surface. **C.** Detail of inflorescence. **D.** Mature opened flower to show androecium. **E.** Ovary with style and stigma. **F.** Flower bud. **G.** Fruit with stalk. (A–C, E & F from Peninsular Malaysia, Selangor, Gombak, *Kunstler* 8818; D from Peninsular Malaysia, Fraser’s Hill, *Kunstler* 7050; G from Peninsular Malaysia, Selangor, Gombak, *Kunstler* 8776. Drawn by H. Wilks).



Figure 14. *Cryptocarya ferrea* Blume. **A.** Flowering habit. **B.** Leaves. **C.** Flowers. **D.** Unripe fruit. (A–D from Singapore, Nee Soon. Photos: W.F. Ang).

leaves red, narrowly elliptic to oblong or lanceolate, 6–20 × 2–9 cm, apex blunt to acuminate, base cuneate to rounded, sometimes slightly oblique, venation pinnate, secondary veins 4–14 pairs, tertiary veins scalariform; upper surface glabrous with sparsely to densely hairy midrib and major veins, midrib and secondary veins sunken, tertiary veins sunken to inconspicuous, light to dark green, glossy; lower surface sparsely hairy with denser patches along and on veins, hairs yellowish to brown, midrib and secondary veins raised, tertiary veins faint to distinct, glaucous, grey-green; petiole slender to slightly swollen, half-terete to channelled, 0.6–2 cm long, velutinous, hairs yellowish, appressed. **Inflorescences** 1.5–20 cm long, velutinous when flowering to almost glabrous when in fruit, greenish yellow to cream; bracteoles elliptic, < 1 mm long, seldom persistent. **Flowers** pale green to pale yellow, hairs yellowish; perianth tube 0.9–1.6 mm long, velutinous; perianth lobes elliptic, 1.5–2.5 × 1–1.6 mm, apex rounded to acute, velutinous to sparsely hairy; stamens 1.3–1.7 mm long, densely hairy; ovary clavate, c. 0.6 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) ovoid to ellipsoidal, sometimes obovoid, 11–28(–35) × 7–17.5 mm, glabrous, smooth to obscurely ridged, apex with a narrow ring-like aperture, black when mature; stalks swollen when mature.

Distribution. Thailand, Cambodia, Laos, southern Vietnam, Peninsular Malaysia, Sumatra, Java, Borneo, Sulawesi and the Philippines. In Singapore, known from Chua Chu Kang (*Ridley 3996*, Dec 1894, KEP) and Nee Soon (*Sinclair 40521*, Nee Soon, 22 Dec 1954, KEP, SING [SING0013124]).

Ecology. Across its range, in lowland forest, sometimes in peat swamps. In Singapore, now known only from freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

2. *Cryptocarya griffithiana* Wight

(William Griffith, 1810–1845, English botanist known for his work in India and Malaya)

Icon. Pl. Ind. Orient. 5, fasc. 2 (1852) 12, pl. 1830; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 40; Ridley, Fl. Malay Penins. 3 (1924) 77; Keng, Gard. Bull. Singapore 27 (1974) 79; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 379; Kochummen, Tree Fl. Malaya 4 (1989) 134, fig. 6; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Turner, Gard. Bull. Singapore 45 (1993) 113; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 279; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 30, 142, 203; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 70, 380; de Kok, Kew Bull. 71-7 (2016) 13; Chong et al., Nat. Singapore 9 (2016) 12; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 397. **Synonym:** *Cryptocarya infectoria* (Blume) Miq. var. *caudata* Meisn. in de Candolle, Prodr. 15(1) (1864) 68. **Type:** *Griffith s.n.*, [Malaysia], Malacca [Melaka], 1845 (lectotype K [K001052586], designated here; isolectotypes E [E00179318, E00179319], HBG [HBG509767], K [K001052585], MEL [MEL2386564]). **Fig. 15.**



Figure 15. *Cryptocarya griffithiana* Wight. **A.** Habit. **B.** Leaves. **C.** Inflorescence and flowers. (A–C from Singapore, A & C, Central Catchment, Zaki Jamil SING2020-054; B, MacRitchie, Leong *et al.* MR2015-003. Photos: A & C, Zaki Jamil; B, P.K.F. Leong).

Cylicodaphne infectoria Blume, Mus. Bot. 2(1) (1856) 11. **Synonym:** *Cryptocarya infectoria* (Blume) Miq., Fl. Ned. Ind. 1(1), fasc. 6 (1858) 924; Kostermans, Reinwardtia 7(4) (1968) 312; Kochummen, Tree Fl. Malaya 4 (1989) 135. **Type:** *Waitz, s.n.*, ‘In Archipelago Indico’ (lectotype L [L0036159], designated by de Kok, Gard. Bull. Singapore 69 (2017) 172; isolectotypes L [L0036157, L0036158]).

Trees, 6–20(–33) m tall, dbh 8–40 cm; bark (slightly) scaly to smooth, reddish white to dark brown, aromatic; wood pale yellow, white exudate sometimes present. **Twigs** angled in cross-section, velutinous, flaking in patches when old, hairs long, erect, reddish brown. **Leaves:** lamina thickly coriaceous, bullate, aromatic, lanceolate to elliptic, obovate, 7–32 × (2.7–)3–17 cm, apex long-acuminate, very rarely acute to emarginate, base cuneate to rounded, clearly to slightly asymmetric, venation pinnate, secondary veins 5–9 pairs, tertiary veins scalariform, hairs erect, long, reddish; upper surface glabrous, except for the velvety midrib and secondary veins, midrib raised at base, secondary veins sunken, tertiary veins distinct, sunken, shiny, deep green; lower surface sparsely to densely hairy, midrib and secondary veins prominently raised, tertiary veins raised, glaucous; petiole swollen, half-terete, 0.7–1.7 cm long, smooth, velutinous. **Inflorescences** 3–11 cm long, velutinous, axis angular in cross-section, hairs erect, long, reddish; bracteoles lanceolate, 5–18 mm long, persistent in flower, not persistent in fruit. **Flowers** (pale) yellow to creamy, hairs reddish; perianth tube 1–2 mm long, velutinous; perianth lobes elliptic, 2.5–4 × 1.2–1.5 mm, apex rounded to acute, velutinous; stamens 1.1–2.7 mm long, densely hairy; ovary clavate, c. 1 mm long, glabrous or with a few hairs; style c. 2 mm long, linear; stigma inconspicuous. **Fruit** (dried) ellipsoidal to ovoid, 17–25 × 6.5–15 mm, glabrous, smooth with faint ridges, bluish purple to turning black when mature; stalk swollen when mature.

Distribution. Peninsular Malaysia and Borneo (Sarawak). In Singapore, known from Singapore Botanic Gardens’ Rain Forest (*Ridley s.n.*, 1907, K [K001052662]), the Central Catchment (*Shah & Ali* 3953, 2 Aug 1976, KEP, SING [SING0011243]; *Leong et al.* MR 2005-003, 6 Jan 2015, SING [SING212475]; *Zaki Jamil* SING2020-054, 31 Jan 2020, SING [SING0295791]) and Bukit Timah (*Niissalo et al.* SING2019-813, 28 Aug 2019, SING [SING0295566]).

Ecology. Across its range, in primary and secondary forests, sometimes in sandy soil, sometimes over shale or acidic rock. In Singapore, in primary and mature secondary forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

3. *Cryptocarya impressa* Miq.

(Latin, *impressus* = impressed, sunken; referring to the secondary veins on the upper surface)

Fl. Ned. Ind. 1(1), fasc. 6 (1858) 923; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 42; Ridley, Fl. Malay Penins. 3 (1924) 78; Kostermans, Reinwardtia 7(4) (1968) 311; Keng, Gard. Bull. Singapore 27 (1974) 79; Kochummen, Tree Fl. Malaya 4 (1989) 135; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 113; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 69; Chew et al., Gard. Bull.

Singapore 49(2) (1999 [‘1997’]) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 30, 142, 203; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; de Kok, Gard. Bull. Singapore 67 (2015) 333; de Kok, Kew Bull. 71-7 (2016) 14; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 88; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1037. **Type:** *Teijsmann 1005*, [Indonesia], Sumatra, Payo Kombo (lectotype U [U0002696], designated by de Kok, Gard. Bull. Singapore 67 (2015) 333; isolectotype BO).

Trees, 10–33 m tall, dbh 25–45 cm; bark smooth to finely fissured, grey to reddish brown. **Twigs** velutinous, hairs erect, rusty brown. **Leaves:** lamina coriaceous, elliptic to narrowly obovate, 6–19 × 3–8 cm, apex long-acuminate, base cuneate, venation pinnate, secondary veins 5–9 pairs, tertiary veins scalariform, hairs erect, dark brown; upper surface slightly bullate, glabrous to sparsely hairy, veins velutinous, dark green, midrib slightly raised at base, secondary veins sunken, tertiary veins sunken; lower surface densely hairy, veins velutinous, bluish grey, glaucous, midrib and secondary veins raised, tertiary veins and reticulations prominently raised; petiole slender, half-terete to shallowly channelled, 0.5–1.5 cm long, smooth, velutinous. **Inflorescences** 3–13 cm long, velutinous, hairs light rusty brown; bracteoles linear, 2.5–3.8 mm long, velutinous, caducous. **Flowers** yellow, hairs reddish; perianth tube 0.7–1.4 mm long, velutinous to sparsely hairy; perianth lobes elliptic, 1.2–2 × 0.9–1.2 mm, apex acute, velutinous; stamens 1.1–1.5 mm long, densely hairy; ovary clavate, c. 2 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) globose to ovoid, 15–16 × 10–15 mm, glabrous, smooth, blue when mature; stalk slender when mature.

Distribution. Laos, Vietnam, Peninsular Malaysia and Sumatra. In Singapore, known from Singapore Botanic Gardens’ Rain Forest (*Ridley 4921*, 1893, K [K001084354], SING [SING0000619]), MacRitchie (*Gwee SING2009-624*, 15 Dec 2009, SING [SING0138125]) and Bukit Timah (*Niissalo et al. SING2019-974*, 2 Oct 2019, SING [SING0296123]; *Ngadiman 36147*, 21 May 1940, K [K001084355], KEP, SING [SING0013141, SING0013142]).

Ecology. Across its range, in lowland forest and swamps.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

4. *Cryptocarya kurzii* Hook.f.

(Wilhelm Sulpiz Kurz, 1834–1878, German botanist known for his work in Myanmar)

Fl. Brit. India 5, fasc. 13 (1886) 119; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 48; Ridley, Fl. Malay Penins. 3 (1924) 80; Keng, Gard. Bull. Singapore 27 (1974) 79; Kochummen, Tree Fl. Malaya 4 (1989) 135; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 113; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 30, 142, 190; de Kok, Gard. Bull. Singapore 67 (2015) 335; de Kok, Kew Bull. 71-7 (2016) 16; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1037. **Synonym:** *Cryptocarya wightiana* Thwaites var. *griffithii* Meisn. in de Candolle, Prodr. 15(1) (1864) 70. **Type:** *Griffith 1142* [Kew Distribution

4274], [Myanmar], Tenasserim, Mergui (lectotype K [K000768400], designated by de Kok, Gard. Bull. Singapore 67 (2015) 336). **Fig. 16.**

Cryptocarya argentea Gamble, Bull. Misc. Inform. Kew 1910 (1910) 144; Ridley, Fl. Malay Penins. 3 (1924) 81; Ng, Gard. Bull. Singapore 57 (2005) 66. **Synonym:** *Cryptocarya kurzii* Hook.f. var. *argentea* (Gamble) Airy-Shaw, Bull. Misc. Inform. Kew 1939(10) (1940 ['1939']) 535. **Type:** *King's Collector* 7966, [Malaysia], Perak, August 1885 (lectotype K [K001084384], designated by de Kok, Gard. Bull. Singapore 69 (2017) 171; isolectotypes BM [BM001124600], K [K001084383], P [P00745434], SING [SING0059162]).

Trees or shrubs, 2.5–30 m tall, dbh 10–25 cm; bark smooth to slightly scaly, grey-black to reddish brown; wood yellow to pinkish white. **Twigs** velutinous when young, becoming more glabrous when older, hairs yellow to brown. **Leaves:** lamina thinly coriaceous, elliptic to lanceolate, 5–18 × 2.2–6.5 cm, apex rounded to acuminate, base cuneate or rounded, symmetrical, venation pinnate, secondary veins 4–9 pairs, tertiary veins scalariform; upper surface glabrous except for hairs on midrib, midrib sunken, secondary veins sunken, tertiary veins inconspicuous, dull or shiny, bright to darkish green, young leaves salmon pink; lower surface sparsely hairy to almost glabrous, hairs yellow, midrib and secondary veins raised, tertiary veins faint below, silvery to greenish grey or bluish, veins brown; petiole slender to slightly swollen, half-terete, not channelled, 1–1.3 cm long, glabrous to velutinous, hairs yellowish, appressed. **Inflorescences** 3–12 cm long, velutinous to sparsely hairy, greenish yellow; bracteoles linear, 1.4–1.8 mm long, caducous. **Flowers** pale yellow to yellowish brown or pale greenish yellow, hairs yellowish; perianth tube 0.8–1.2 mm long, velutinous to sparsely hairy; perianth lobes elliptic, 1.6–1.8 × 0.8–1.3 mm, apex rounded to acute, sparsely hairy; stamens 1.2–1.4 mm long, densely hairy; ovary clavate, c. 0.6 mm; style c. 1 mm long, linear; stigma inconspicuous. **Fruit** (dried) ovoid to ellipsoidal, 18–21 × 10–15 mm, smooth, glabrous when mature, sparsely hairy when young, apex with a wide ring-like aperture, purple-blue or black when mature; stalk swollen when mature, to 3.3 mm diam.

Distribution. Southern Myanmar, Thailand, Peninsular Malaysia, Sumatra, Borneo and the Philippines. In Singapore, known from Chua Chu Kang (*Ridley* 8040, Feb 1896, SING [SING0013119]), Nee Soon (*Samsuri* SA 1402, 16 Feb 1977, SING [SING0013125]; *O'Dempsey* SING2012-159, 4 May 2012, SING [SING0173924]), Mandai (*Yeo* SING2012-397, 18 Sep 2012, SING [SING0194908]) and Seletar (*Noor* SRMN 20, 11 Mar 1971, SING [SING0013129]).

Ecology. Across its range, in primary and secondary forests, often in wet localities, sometimes over granite. In Singapore, it is found in mature secondary and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).



Figure 16. *Cryptocarya kurzii* Hook.f. **A.** Lower surface of leaves. Inset: Upper side of leaf. **B.** Trunk. **C.** Inflorescence with unripe fruit. (A–C including inset from Singapore, Nee Soon, Ng *et al.* SING2019-118. Photos: X.Y. Ng).

5. *Cryptocarya malayana* de Kok (of Malaya)

Kew Bull. 71-7 (2016) 18, fig. 1; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398. **Type:** *Derry 1144*, [Malaysia], Malacca [Melaka], Sungai Udang, 1893 (holotype K [K001052786]; isotype SING [SING0260199]).

Cryptocarya caesia auct. non Blume: Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 49; Ridley, Fl. Malay Penins. 3 (1924) 81; Keng, Gard. Bull. Singapore 27 (1974) 79; Kochummen, Tree Fl. Malaya 4 (1989) 133; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 18; Turner, Gard. Bull. Singapore 45 (1993) 113; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 278; Tan et al. in Davison et al. (ed.), Singapore Red Data Book, ed. 2 (2008) 225; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 30, 142, 190.

Trees, 8–30 m tall, dbh 11–36 cm; bark with small irregular scales, red-brown; inner bark red-brown with lighter rays; wood cream, hard. **Twigs** velutinous when young, hairs yellowish. **Leaves:** lamina coriaceous, ovate or elliptic-oblong, 7.5–15.5 × 2–6.5 cm, apex long-acuminate, base cuneate to rounded, slightly oblique, venation pinnate, secondary veins 6–8 pairs, tertiary veins reticulate or obscurely scalariform; upper surface glabrous, except for hairs on the midrib and secondary veins, midrib raised at base, secondary veins sunken, tertiary veins inconspicuous; lower surface sparsely hairy, midrib raised, velutinous, secondary veins raised, sparsely hairy, tertiary veins faintly visibly, glaucous; petiole slender, half-terete, 0.1–1.8 cm long, velutinous. **Inflorescences** 4.5–13 cm long, velutinous; bracteoles linear, 1–1.8 mm long, persistent. **Flowers** with perianth tube 1.2–1.8 mm long, velutinous; perianth lobes narrowly ovate to elliptic, 1.8–2.5 × 1.0–1.2 mm, apex acute, velutinous to densely hairy; stamens 1–2 mm long, hairy; ovary c. 1.5 × 0.6 mm, glabrous except for a few long hairs; style c. 1 mm long. **Fruit** (dried) globose, 10–13 mm diam., smooth with a few shallow ridges, glabrous except for a few hairs at apex, red with a yellow tip when mature; stalk slender when mature.

Distribution. Peninsular Malaysia and Sumatra. In Singapore, known only from historical collections from Chua Chu Kang (*Ridley 4820*, 1893, K [K001052788], KEP, SING [SING0013117]) and Bukit Mandai (*Ridley 6665*, 1894, BM, K [K001052787], KEP, SING [SING0013116]).

Ecology. Grows in lowland forest.

Conservation assessment. Globally, Endangered (EN B2ab(i,ii,iii,iv)) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

6. *Cryptocarya nitens* (Blume) Koord. & Valeton (Latin, *nitens* = shining, polished; referring to the leaves)

Meded. Lands Plantentuin 68 [Bijdr. Boomsoort. Java 10] (1904) 220; Kochummen, Tree Fl. Malaya 4

(1989) 136; Neo et al., Nat. Singapore 7 (2014) 64; de Kok, Gard. Bull. Singapore 67 (2015) 253; de Kok, Gard. Bull. Singapore 67 (2015) 339; Chong et al., Nat. Singapore 9 (2016) 14; de Kok, Kew Bull. 71-7 (2016) 20; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89, 121; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1038, fig. 10. **Basionym:** *Tetranthera nitens* Blume, Mus. Bot. 1(24) (1851) 375. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype L [L0036214], designated by de Kok, Gard. Bull. Singapore 67 (2015) 255; isolectotype L [L0036213]).

Trees, 8–30 m tall, dbh 15–30 cm; bark smooth or scaly, grey-brown, inner bark brownish, wood cream-coloured with a spicy odour. **Twigs** strongly angular when young, velutinous, hairs brown. **Leaves:** lamina coriaceous, elliptic to lanceolate, ovate to obovate (6–)7.5–23 × (2.2–)3.5–10.5 cm, apex acute to acuminate, base cuneate or rounded, slightly unequal, venation pinnate, secondary veins 5–10 pairs, tertiary veins scalariform; upper surface glabrous, sometimes with hairs on midrib and secondary veins, midrib sunken, secondary veins sunken, tertiary veins faint, shiny, (light to yellow-) green, drying greenish brown; lower surface glabrous, sometimes with hairs on midrib and secondary veins, midrib and secondary veins raised, tertiary veins faint, pale bluish to pale green, glaucous; petiole slender, 1–3 cm long, velutinous. **Inflorescences** 10–15 mm long, velutinous, greenish white; bracteoles triangular, 0.5–0.6 mm long, caducous. **Flowers** pale green to yellow or white, hairs yellowish; perianth tube 1.2–1.6 mm long, velutinous; perianth lobes elliptic to lanceolate, 1.3–1.8 × 0.8–1 mm, apex acute, velutinous, greenish white; stamens 1.2–1.6 mm long, hairy, dull greenish yellow, anthers bright yellow-orange; ovary clavate, 1–1.2 mm, glabrous; style 1.2–1.6 mm long, linear; stigma inconspicuous. **Fruit** (dried) globose, 8–16 mm diam., shallowly ridged, sparsely hairy, black when mature; stalk slender when mature.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra, Java and Christmas Island. In Singapore, known from Bukit Timah (*Khoo KMS 14*, 27 Jun 2006, SING [SING0123468]); *Chua CSC 1*, 7 Jul 2006, SING [SING0123469]) and Nee Soon (*Chong et al. NSSF2-Q405U45*, 10 Oct 2013, SINU [SING0359307]).

Ecology. Across its range, in open vegetation or lowland or hill forest, sometimes along rivers. In Singapore, in primary and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

7. *Cryptocarya rugulosa* Hook.f.

(Latin, *rugulosus* = somewhat wrinkled; referring to the upper surface of the leaves)

Fl. Brit. India 5, fasc. 13 (1886) 118; Ridley, Fl. Malay Penins. 3 (1924) 78; Kostermans, Reinwardtia 7(4) (1968) 329; Kochummen, Tree Fl. Malaya 4 (1989) 136; Turner, Gard. Bull. Singapore 45 (1993) 113; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 69; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 279; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; LaFrankie et al., Forest Trees Bukit Timah (2005) 161; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 30, 142,

203; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; de Kok, Gard. Bull. Singapore 67 (2015) 344; de Kok, Kew Bull. 71-7 (2016) 21; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1042. **Type:** *Maingay 1262*, [Malaysia], Malacca [Melaka], 26 June 1867 (lectotype K [K001084564], designated by de Kok, Gard. Bull. Singapore 67 (2015) 344; isoelectotypes GH [GH00041377], K [K001084565], L [L0036239]).

Trees, (3–)12–40 m tall, dbh 25–35 cm; bark smooth to dimpled and/or scaly, reddish brown; wood (pale) yellow-white to brown, aromatic. **Twigs** round or slightly angled in cross-section, velutinous when young, flaking off in patches when old, hairs yellowish. **Leaves:** lamina coriaceous, young leaves red, elliptic to lanceolate, ovate, 4–14(–20) × 2–5(–6.5) cm, apex rounded to (long-)acuminate, base cuneate, symmetrical to slightly oblique, venation pinnate, secondary veins 3–13 pairs, tertiary veins scalariform; upper surface glabrous with sparsely to densely hairy midrib, hairs yellowish, midrib sunken, secondary veins sunken, tertiary veins sunken or inconspicuous, glossy, dark green; lower surface sparsely hairy, more densely hairy on and along veins, hairs yellowish-reddish, secondary and tertiary veins raised, faintly glaucous, grey-green; petiole slender to slightly swollen, half-terete, 0.7–1.5 cm long, velutinous, hairs yellowish. **Inflorescences** 1.5–10 cm long, velutinous to densely hairy, hairs brown to yellowish; bracteoles elliptic to lanceolate, (1.5–)2–3.5 mm long, persistent. **Flowers** yellowish brown to pale yellow; perianth tube 1.2–2 mm long, velutinous; perianth lobes elliptic, 1.2–2 × 1–1.3 mm, sparsely hairy, apex acute; stamens 1.2–1.5 mm long; ovary clavate, 1–1.2 mm; style 1–1.2 mm long, stigma inconspicuous. **Fruit** (dried) ellipsoidal to obovoid or ovoid, 17–26 × 9.5–15.5 mm, smooth or with faint ridges, glabrous, sometimes with some hairs at apex, apex with a wide ring-like aperture, purple to black when mature; stalk swollen when mature.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from MacRitchie (*Mohd. Shah & Mohd. Ali MS 3952*, 2 Aug 1976, KEP) and Bukit Timah (*Lim et al. CTFS B1-21002*, 25 Oct 2018, SING [SING0289578]).

Ecology. Across its range, in primary and secondary forests, often in peat swamps or in sandy soil. In Singapore, in primary and mature secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

7. DEHAASIA Blume

(Cornelius de Haas [Dirk de Haas], died 1702, Dutch Governor of Ambon)

in Nees, Syst. Laur. (1836) 372, as ‘*Haasia*’, nom. cons.; Blume, Rumphia 1, fasc. 10–12 (1837) 161; Blume, Mus. Bot. 1(21) (1851) 333; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 928, as ‘*Haasia*’; Lecomte, Fl. Indo-Chine 5, fasc. 2 (1914) 150, as ‘*Haasia*’; Ridley, Fl. Malay Penins. 3 (1924) 87; Kostermans, J.

Sci. Res. (Jakarta) 1 (1952) 120; Kostermans, Reinwardtia 4(2) (1957) 228; Kostermans, Bibliogr. Laurac. (1964) 466; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 130; Kostermans, Bot. Jahrb. Syst. 93 (1973) 427; Kochummen, Tree Fl. Malaya 4 (1989) 138; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 381; van der Werff, Blumea 46 (2001) 136; Li et al., Fl. China 7 (2008) 224; Julia et al., Blumea 54 (2009) 193; Fijridiyanto et al., Blumea 65(2.8) (2020) 168; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1044. **Type:** *Dehaasia microcarpa* Blume (= *Dehaasia incrassata* (Jack) Nees).

Cyanodaphne Blume, Mus. Bot. 1(21) (1851) 333; Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 126. **Type:** *Cyanodaphne cuneata* Blume (= *Dehaasia cuneata* (Blume) Blume), lectotype designated by Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 126.

Small to medium-sized trees, twigs usually with a pale greyish bark contrasting with the blackish colour of the petioles in dried material. **Terminal vegetative buds** not perulate. **Leaves** spirally arranged, loosely to densely crowded at the twig apex, pinnately veined. **Inflorescences** axillary or terminal, paniculate-cymose, usually many-flowered, with the lateral flowers of the ultimate cymes strictly opposite (type 2 sensu van der Werff, Blumea 46 (2001) 136); involucre bracts absent. **Flowers** bisexual, hypanthium short; perianth lobes 6, usually distinctly unequal, outer smaller than inner, sometimes subequal; fertile stamens 9 in 3 whorls of 3 each plus 1 whorl of 3 staminodes, or staminodes absent (*Dehaasia incrassata* (Jack) Nees); stamens with filaments as long as or longer than the anthers; anthers 2-locular, locules of first and second whorl introrse, locules of third whorl extrorse, third whorl stamens with 2 sessile glands; staminodes oblongish (*Dehaasia cuneata* (Blume) Blume), stalked, hairy; ovary sessile, ovoid to subglobose, narrowing into a style; stigma papillose, minutely bilobed. **Fruit** indehiscent, fleshy, ellipsoid; perianth lobes frequently persistent as small rudiments forming a rim at the pedicel apex or sometimes completely caducous; pedicel in fruit thickened, fleshy and lenticellate.

Distribution. A genus of about 40 species from South China and Taiwan to continental Southeast Asia and Malesia to New Guinea. In Singapore, 2 native species.

Ecology. Across the range of the genus, the species are found in lowland to lower montane rain forests.

Uses. The timber of *Dehaasia* species is a light hardwood sold as *medang*, a term referring to various Lauraceae taxa. Uses of the timber include house building, interior finish, furniture, tools, oars, boats, carving and knife sheaths, and the production of veneer and plywood (Kostermans, Bot. Jahrb. Syst. 93 (1973) 424–480; Wiselius in Sosef et al. (ed.), Pl. Resources S.E. Asia 5(3) (1998) 182–187; Fijridiyanto et al., Blumea 65(2.8) (2020) 167–175).

Notes. Non-monophyly of *Alseodaphne*, *Dehaasia* and *Nothaphoebe* has been indicated in several molecular phylogenetic studies (see notes under *Alseodaphne*).

Key to *Dehaasia* species

1. Leaf lamina abaxially sparsely hairy along the veins with appressed hairs, or sometimes glabrescent, frequently glaucous; terminal vegetative buds densely hairy; perianth lobes abaxially moderately densely to densely hairy, inner perianth lobes $1\text{--}1.4 \times 1.1\text{--}1.5$ mm **1. *D. cuneata***
 Leaf lamina abaxially glabrous, not glaucous; terminal vegetative buds glabrous or with some hairs on the cataphyll margin; perianth lobes abaxially glabrous to sparsely hairy, inner perianth lobes $2.1\text{--}3.2 \times 2\text{--}2.9$ mm **2. *D. incrassata***

1. *Dehaasia cuneata* (Blume) Blume

(Latin, *cuneatus* = wedge-shaped; referring to the leaf lamina base)

in Nees, Syst. Laur. (1836) 378, as '*Haasia*'; Blume, Rumphia 1, fasc. 10–12 (1837) 164; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 125; Koorders & Valetton, Meded. Lands Plantentuin 68 [Bijdr. Boomsort. Java 10] (1904) 203; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 64; Lecomte, Fl. Indo-Chine 5, fasc. 2 (1914) 151, as '*Haasia*'; Ridley, Fl. Malay Penins. 3 (1924) 87; Burkill, Dict. Econ. Prod. Malay Penins. 1 (1935) 776; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 131; Kostermans, Bibliogr. Laurac. (1964) 467; Kostermans, Bot. Jahrb. Syst. 93 (1973) 435; Kochummen, Tree Fl. Malaya 4 (1989) 139; Khoo et al., Gard. Bull. Singapore 70 (2018) 60; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89, 121; Fijridiyanto et al., Blumea 65(2.8) (2020) 171; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1045. **Basionym:** *Cryptocarya cuneata* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 558. **Synonym:** *Cyanodaphne cuneata* (Blume) Blume, Mus. Bot. 1(21) (1851) 334. **Type:** *Blume s.n.*, [Indonesia], Java, Nusakambangan (lectotype L [L0036313], first step designated by Kostermans, Bot. Jahrb. Syst. 93 (1973) 435, second step designated here; isolectotype L [L0036315]). **Fig. 17.**

Tall trees. **Twigs** slender to moderately thick, to 6 mm diam., glabrous, with prominent leaf scars and lenticels, drying whitish-pale brownish; terminal vegetative buds conical, to 4 mm long, densely hairy with appressed brownish hairs. **Leaves** alternate, spirally arranged, crowded towards the twig apex; lamina coriaceous, usually obovate, sometimes elliptic, $7\text{--}20\text{--}(23) \times 3\text{--}6\text{--}(10.5)$ cm, apex obtuse to acute, sometimes shortly acuminate, acumen to 1.7 cm long, base cuneate to convex, secondary veins $6\text{--}9\text{--}(10)$ pairs, tertiary veins scalariform-reticulate, higher level venation finely areolate; upper surface drying brown to dark brownish, glabrous, midrib impressed to flat, secondary veins flat or weakly raised, tertiary veins distinct; lower surface drying greyish-brownish, often distinctly glaucescent, sparsely appressed-hairy along the veins and sometimes sparsely hairy between the veins to glabrescent, midrib and secondary veins raised, tertiary veins distinct; petiole $(0.5\text{--})1\text{--}3.1$ cm long, sparsely hairy with appressed hairs to glabrescent. **Inflorescences** to 14 cm long, sparsely to moderately densely hairy; bracts minute, ovate, densely hairy, caducous. **Flowers** drying brownish, hairy; pedicel to 3 mm long, densely hairy; perianth yellowish, hypanthium tube short, perianth lobes unequal, outer shorter and smaller, slightly spreading at full anthesis, broadly ovate, $0.5\text{--}1.2 \times 0.6\text{--}1$ mm, apex acute, moderately densely to densely hairy outside, glabrous inside, inner perianth lobes broadly ovate, $1\text{--}1.4 \times 1.1\text{--}1.5$ mm, moderately densely to densely hairy outside, hairy inside, apex

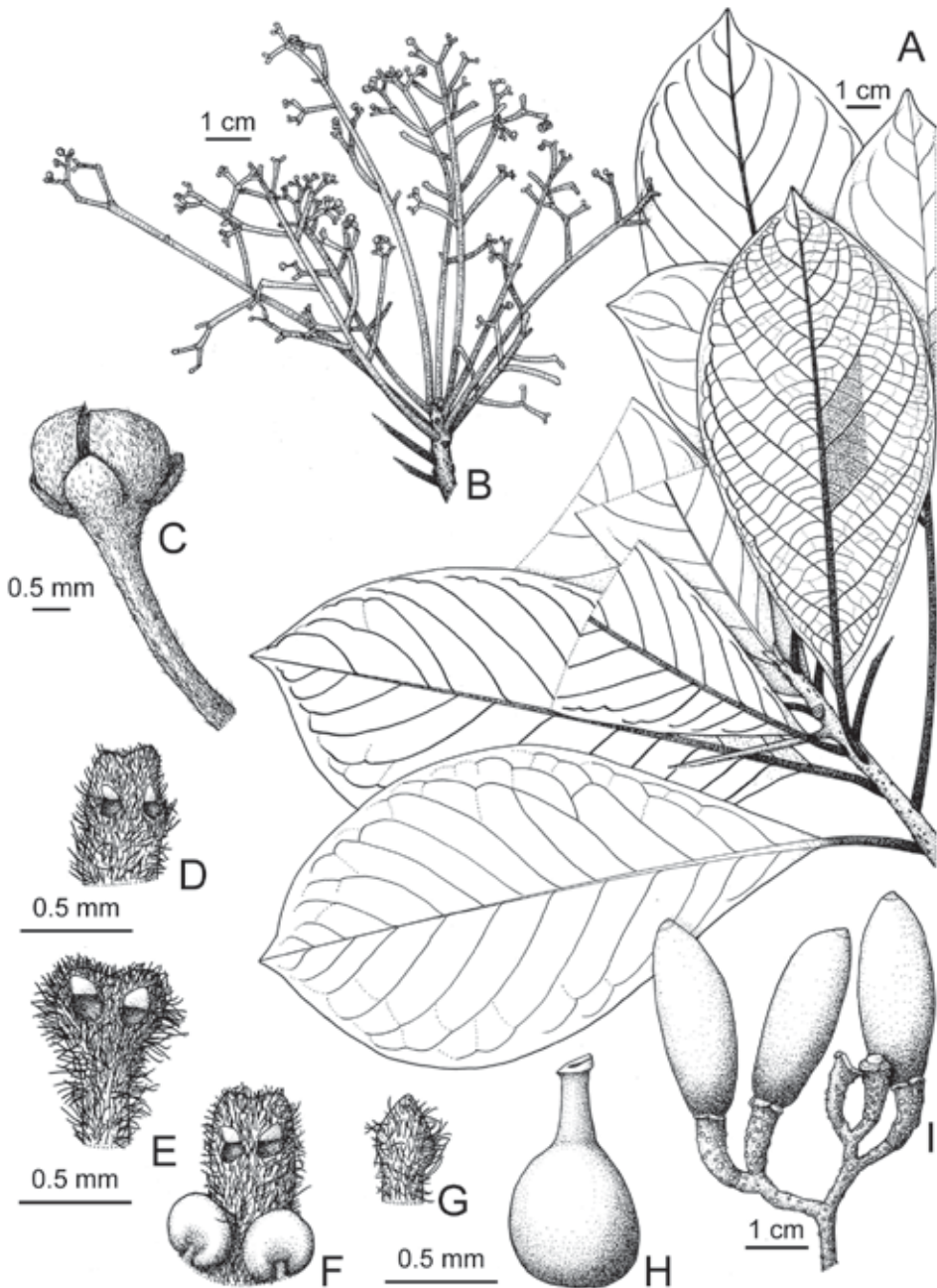


Figure 17. *Dehaasia cuneata* (Blume) Blume. **A.** Leafy twig. **B.** Inflorescence. **C.** Flower. **D.** Stamen (first whorl). **E.** Stamen (second whorl). **F.** Stamen with glands (third whorl). **G.** Staminode. **H.** Pistil. **I.** Infructescence. (A from Singapore, Bukit Timah, *Khoo & Nik Faizu KMS 47*; B–I from Peninsular Malaysia, B–H, *Hassan 26509*; I, *Abdul Rahim 615-8*. Drawn by E. Tay-Koh).

obtuse; stamens 9, 0.9–1.1 mm long, glands on third stamen whorl 2, sessile, conspicuous, glabrous except for hairy attachment; filaments about as long as or longer than anthers, hairy; anther apex truncate or emarginate, hairy; staminodes oblongish, with glabrous apical part and brownish hairy stalk, $0.6\text{--}0.8 \times 0.1\text{--}0.3$ mm; ovary on cupulate receptacle, ovoid, 0.5–0.6 mm diam., glabrous; style relatively stout, slightly shorter or about as long as the ovary, 0.5–0.7 mm long; stigma papillose, minutely bilobed. **Fruit** ellipsoid, $18\text{--}31 \times 10\text{--}15$ mm, apex rounded, drying blackish; pedicel in fruit distinctly thickened, 11–20 mm long, to 6 mm diam. at apex, fleshy, red and warty-lenticellate, drying blackish with pale brown lenticels; perianth lobes caducous or persistent as small rudiments forming a wavy rim at the pedicel apex.

Distribution. Myanmar, Thailand, Cambodia, Laos, Vietnam, Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known only from sterile collections from Bukit Timah (*Khoo 47*, 19 Dec 2008, SING [SING0123470]) and MacRitchie (*Leong et al. MR 2015-017*, 17 Mar 2015, SING [SING0232249]).

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

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Notes. Only two sterile collections from Singapore have been identified as *Dehaasia cuneata* and the description here is based primarily on material from Peninsular Malaysia. Additional fertile collections are required to corroborate the identification of the material and ascertain the presence of this species in Singapore.

2. *Dehaasia incrassata* (Jack) Nees

(Latin, *incrassatus* = thickened; referring to the fruit stalk)

Syst. Laur. (1836) 376, as '*Haasia*'; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 930, as '*Haasia*'; Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 120; Kostermans, Reinwardtia 4(2) (1957) 228; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1964) 130; Kostermans, Bibliogr. Laurac. (1964) 466; Kostermans, Bot. Jahrb. Syst. 93 (1973) 427; Keng, Gard. Bull. Singapore 27 (1974) 79; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 380; Kochummen, Tree Fl. Malaya 4 (1989) 139; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19, fig. 13.6; Turner, Gard. Bull. Singapore 45 (1993) 113; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 69; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Li et al., Fl. China 7 (2008) 224; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 32, 142, 203; Neo et al., Nat. Singapore 7 (2014) 104; Fijridiyanto et al., Blumea 65(2.8) (2020) 171; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 398; Phuphatthanaphong & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1047. **Basionym:** *Laurus incrassata* Jack, Malayan Misc. 2(7) (1822) 33, as '*incrassatus*'. **Synonyms:** *Machilus incrassatus* (Jack) Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 70. – *Persea incrassata* (Jack) Nees, Syst. Laur. (1836) 127. **Type:** [Published illustration] Rumphius, Herb. Amboin. 3 (1743) t. 41, lectotype designated by Chakrabarty et al., Plant Science Today 9 (2022) 64. **Fig. 18.**



Figure 18. *Dehaasia incrassata* (Jack) Nees. **A.** Habit. **B.** Leafy branch. **C.** Inflorescence. **D.** Fruit with red fruit stalk. (Photos: A, B & D, D.C. Thomas; C, Saniyatun Mar'atus Solihah, reproduced with kind permission).

Dehaasia microcarpa Blume in Nees, Syst. Laur. (1836) 373, as '*Haasia*'; Blume, Rumphia 1, fasc. 10–12 (1837) 162; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 928, as '*Haasia*'; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 126; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 130; Koorders & Valetton, Meded. Lands Plantentuin 68 [Bijdr. Boomsoort. Java 10] (1904) 201; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 62; Ridley, Fl. Malay Penins. 3 (1924) 87; Burkill, Dict. Econ. Prod. Malay Penins. 1 (1935) 776; Corner, Wayside Trees Malaya 1 (1940) 343. **Type:** *Hasskarl s.n.*, [Indonesia], Java, Bantam (Banten) (lectotype L [L0036319], designated by Kostermans, Bot. Jahrb. Syst. 93 (1973) 441; isoelectotype U [U0002728]).

Dehaasia media Blume in Nees, Syst. Laur. (1836) 375, as '*Haasia*'; Blume, Rumphia 1, fasc. 10–12 (1837) 163. **Type:** *Collector unknown*, [Indonesia], Amboina [Ambon] (lectotype L [L0036322], designated by Fijridiyanto et al., Blumea 65(2.8) (2020) 171; isoelectotypes L [L0036323], L [L0036324]).

Dehaasia squarrosa Zoll. & Moritzi in Zollinger, Syst. Verz. 2 (1854) 115; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 929, as '*Haasia*'. **Type:** *Zollinger 1376*, [Indonesia], Java (lectotype U [U0002732], first step designated by Kostermans, Bot. Jahrb. Syst. 93 (1973) 441, second step designated here; isoelectotypes BO, P [P01753085]).

Endiandra lanyuensis C.E.Chang, Bot. Bull. Acad. Sin., n.s. 4 (1963) 4. **Synonym:** *Dehaasia lanyuensis* (C.E.Chang) Kosterm., Bull. Bot. Surv. India 7 (1965) 128. **Type:** *Ching-En Chang 3106*, [Taiwan], Aopên Shan, Taitung Hsien, 14 August 1962 (holotype PPI).

Tall trees. **Twigs** slender to moderately thick, to 7 mm diam., glabrous, drying whitish-pale brownish; terminal vegetative buds ovoid or conical, to 12 mm long, glabrous to glabrescent, sometimes cataphyll margin ciliate towards the apex. **Leaves** alternate, spirally arranged, very loosely crowded at the twig apex; lamina papery to thinly coriaceous, elliptic to broadly elliptic or sometimes obovate, (6.5–)12–32(–43.8) × (2.5–)3.5–12(–15.5) cm, apex acute to acuminate, acumen to 4.5 cm long, base cuneate or sometimes concave-attenuate, secondary veins (6–)8–10(–13) pairs, tertiary veins scalariform-reticulate, higher level venation laxly reticulate; upper surface drying greenish-brownish, glabrous, midrib flat or slightly raised, secondary veins flat or weakly raised, tertiary veins obscure; lower surface drying greenish-brownish, glabrous, midrib and secondary veins raised, tertiary veins distinct; petiole 0.7–2.5(–3) cm long, glabrous. **Inflorescences** (4–)10–19 cm long, glabrescent, frequently with minute appressed hairs in the basal part; bracts ovate, to 3 mm long, densely appressed-hairy, caducous. **Flowers** drying black; pedicel to 7 mm long, glabrous to sparsely hairy; perianth greenish white, hypanthium tube short, outer perianth lobes usually much smaller than inner, broadly ovate, 0.9–1.3 × 1.5–2.5 mm, glabrous to sparsely hairy and glabrescent outside, glabrous inside, inner perianth lobes ovate to broadly ovate, 2.1–3.2 × 2–2.9 mm, glabrescent to moderately densely appressed-hairy outside, sparsely to densely appressed-hairy inside, apex acute; stamens 9, 1.5–2.1 mm long, glands on third stamen whorl 2, small and inconspicuous, sessile at filament base, glabrous; filaments much longer than anthers, hairy, anther apex rounded, truncate or emarginate, hairy; staminodes absent; ovary on cupulate receptacle, subglobose to ovoid, to 1.3 mm diam., glabrous; style slender, as long as or longer than ovary, 1.1–1.6 mm long; stigma minute, papillose and obscurely bilobed. **Fruit** ellipsoid, 20–44(–50) × 9–25 mm, apex rounded, black and glossy when ripe, drying blackish; pedicel in fruit distinctly thickened, 25–41 mm long, 7–23 mm diam. at apex, fleshy, bright red and warty-lenticellate, drying brownish to blackish with pale brown lenticels, perianth lobe rudiments persistent, forming a wavy ring at the pedicel apex.

Distribution. Taiwan, Thailand, Vietnam, Peninsular Malaysia, Sumatra, Java, Borneo, Sulawesi, Philippines, Moluccas and New Guinea. In Singapore, known from historical collections from Bukit Mandai (*Ridley s.n.*, Nov 1890, SING [SING0013143]) and Jurong (*Ridley 10760*, 1899, SING [SING0013144]). More recent collections are from Upper Seletar (*Gwee SING2005-27*, 21 Feb 2005, SING [SING0059383]), MacRitchie (*Gwee SING2009-746*, 28 Dec 2009, SING [SING0144160]) and Bukit Timah (e.g., *Niissalo CTFS A4-8091*, 4 Sep 2019, SING [SING0295504]).

Ecology. In Singapore, in primary and secondary lowland rain forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Uses. The timber has been used for house building (Burkill, Dict. Econ. Prod. Malay Penins. 1 (1935) 788).

8. ENDIANDRA R.Br.

(Greek, *endeia* = lack, *andros* = man; referring to the fewer stamens compared to other genera in the family)

Prodr. Fl. Nov. Holland. (1810) 402; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 67; Ridley, Fl. Malay Penins. 3 (1924) 88; Kostermans, Reinwardtia 4(2) (1957) 229; Kochummen, Tree Fl. Malaya 4 (1989) 141; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 385; Arifiani, Blumea 46 (2001) 99; van der Werff, Blumea 46 (2001) 136; Le Cussan & Hyland, Fl. Australia 2 (2007) 178; Li et al., Fl. China 7 (2008) 231; Pattharahirantricin & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1051. **Type:** *Endiandra glauca* R.Br.

Trees or shrubs. **Terminal vegetative buds** small, scaly. **Leaves** alternate, pinnately veined, foveolate. **Inflorescences** panicate-cymose, with the lateral flowers of the ultimate cymes not strictly opposite (type 3, sensu van der Werff, Blumea 46 (2001) 136), axillary, many-flowered to almost reduced to a single cyme. **Flowers** trimerous, bisexual; perianth tube very short to nearly absent or campanulate; perianth lobes 6, subequal or outer 3 somewhat larger, half-erect to spreading at anthesis; stamens 3, of third whorl, anthers slightly thickened, sessile, 2-locular, extrorse; stamens of first and second whorls absent or undeveloped and reduced to glands, sometimes glands united into a fleshy ring; staminodes of innermost whorl absent or rarely 3; ovary globose, style short; stigma capitate, small. **Fruit** seated unprotected on the stalk, the perianth lobes deciduous in fruit; stalk not dilated or only slightly so, no constriction at apex.

Distribution. A genus of about 100 species from South China, throughout Southeast Asia and Malesia to Australia and Fiji. In Singapore, 1 native species.

Notes. Vegetatively *Endiandra* is similar to *Beilschmiedia* and sterile and fruiting specimens often cannot be assigned to either genus with any certainty.

Two non-native cultivated species of *Endiandra* are recorded for Singapore: *Endiandra impressicosta* C.K.Allen, from Australia and New Guinea, and *E. longipedicellata* C.T.White & W.D.Francis, from Australia.

***Endiandra maingayi* Hook.f.**

(Alexander Carroll Maingay, 1836–1869, English physician,
colonial administrator and botanist)

Fl. Brit. India 5, fasc. 13 (1886) 127; Ridley, Fl. Malay Penins. 3 (1924) 89; Kochummen, Tree Fl. Malaya 4 (1989) 142, fig. 7; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Khoo et al., Gard. Bull. Singapore 70 (2018) 61; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89, 121; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 399. **Type:** *Maingay 2456* [Kew Distribution 1270], [Malaysia], Malacca [Melaka], 24 July 1868 (lectotype K [K000009823], designated by de Kok, Gard. Bull. Singapore 71 (2019) 154; isolectotype K [K002131308], L [L0036404]). **Fig. 19.**

Trees, 12–40 m tall, dbh 20–60 cm; bark (grey-) brown, smooth to cracking; inner bark red or reddish brown; sapwood pale brown. **Twigs** slender, 1.6–4 mm diam., round in cross-section, velutinous when young, glabrescent, beige, hairs appressed, yellowish; terminal vegetative buds ovoid, 2.2–2.6 mm long, apex acute, velutinous. **Leaves** alternate; lamina coriaceous, elliptic, 7–17 × 3–7 cm, apex acute to long-acuminate, base cuneate, secondary veins 7–10 pairs, brochidodromous, tertiary veins reticulate; upper surface glabrous, midrib raised to flattened, secondary veins raised, tertiary veins distinct; lower surface glabrous, midrib and secondary veins raised, tertiary veins distinct; petiole slightly swollen, half-terete, 0.6–2 cm long, black, glabrous to sparsely hairy. **Inflorescences** 0.8–1.5 cm long, axillary, sparsely hairy, bracts leaf-like; bracteoles linear, 1–1.2 mm long, velutinous, caducous. **Flowers** yellow; perianth tube shallow; perianth lobes ovoid, 2–2.5 × 1.5–1.9 mm, apex acute, sparsely hairy outside, inside a velutinous patch at base; stamens 0.8–1.5 mm long, densely hairy; ovary 0.6–0.8 mm diam., glabrous; style 0.2–0.3 mm long; stigma minute. **Fruit** one per infructescence; ellipsoid, 20–60 × 12–25 mm, apex rounded, smooth, glabrous; stalk slightly swollen, to 3.8 mm diam.

Distribution. Peninsular Malaysia. In Singapore, known from Bukit Mandai (*Ridley 6781*, 1894, SING [SING0042460]), Jurong (*Corner 26196*, 5 Mar 1933, K [K002131307], SING [SING0042461]) and Bukit Timah (*Khoo & Nik Faizu KMS40*, 12 Dec 2008, SING [SING0123471]; *Niissalo et al. SING2019-976*, 2 Oct 2019, SING [SING0296125]).

Ecology. Across its range, in primary and secondary lowland to mountain forests, sometimes in swamps.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

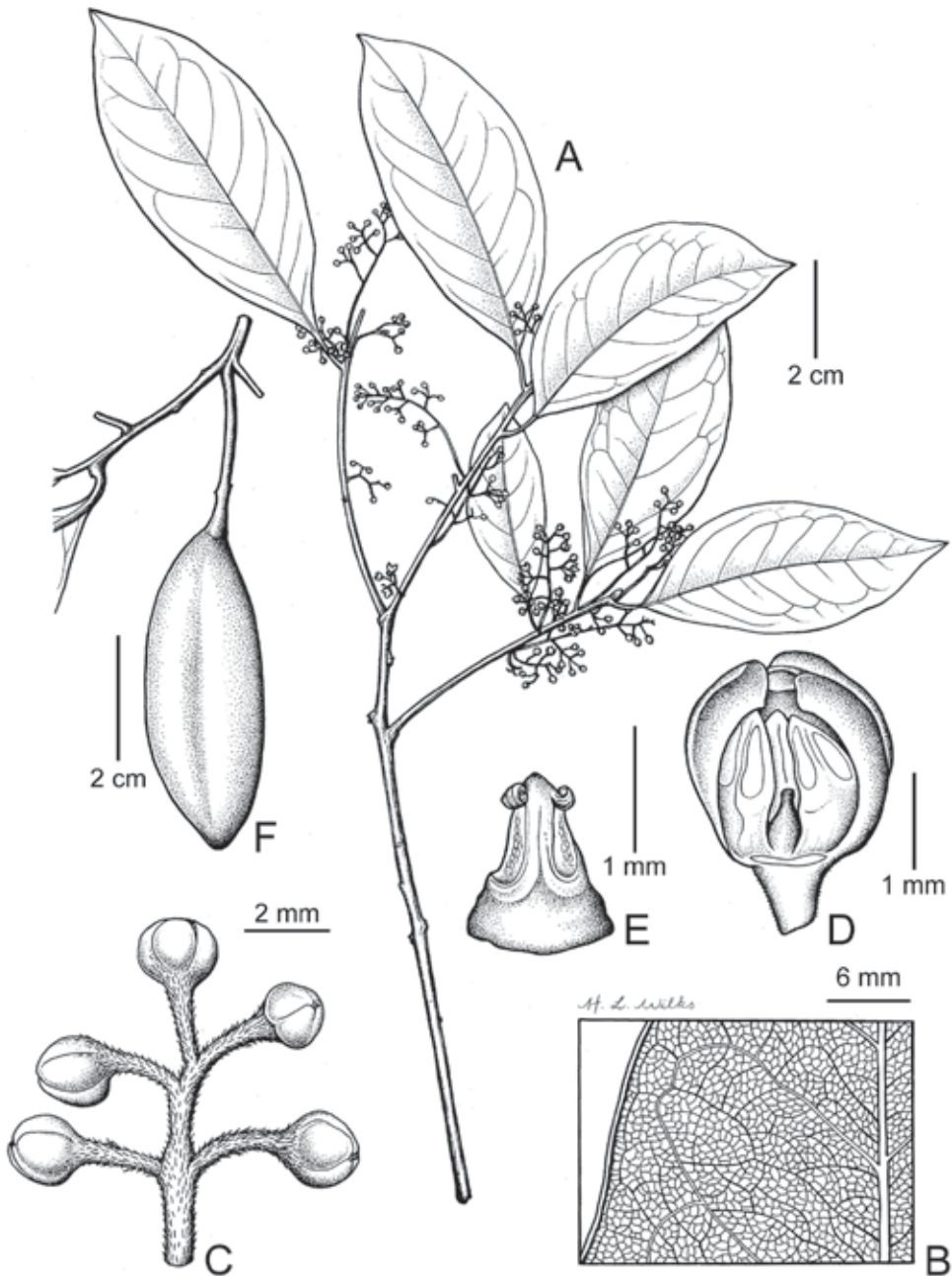


Figure 19. *Endiandra maingayi* Hook.f. **A.** Portion of leafy twig with inflorescence. **B.** Detail of glabrous lower leaf surface with dense reticulate tertiary nerves. **C.** Detail of inflorescence. **D.** Mature opened flower to show androecium and ovary. **E.** Short stamen with anthers and anther flaps. **F.** Infructescence with fruit. (A–E from Peninsular Malaysia, *King's collector* 6103; F from Peninsular Malaysia, Selangor, Gombak, *Matan KEP* 94369. Drawn by H. Wilks).

9. LINDERA Thunb.

(Johan Linder, 1676–1724, Swedish botanist and physician)

Nov. Gen. Pl. 3 (1783) 64, nom. cons.; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Liu, Laurac. Chine & Indochine (1934 [‘1932’]) 117; Kochummen, Tree Fl. Malaya 4 (1989) 144; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 389; van der Werff, Blumea 46 (2001) 137; Pattharahirantricin & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1058. **Type:** *Lindera umbellata* Thunb.

Trees or shrubs. **Terminal vegetative buds** naked or covered by scales. **Leaves** alternate to (sub-)opposite, pinnately veined or tripliveined. **Inflorescences** umbellate, along a short-shoot or in leaf axils, each pseudoumbel with 3–15 flowers, before anthesis with an involucre of decussate, mostly persistent bracts. **Flowers** dioecious, trimerous, unisexual; perianth lobes 6, equal or nearly so, often caducous during anthesis. **Male flowers:** 9–12 fertile stamens, the inner whorl(s) with glands; filaments usually longer than the anthers, anthers 2-locular, introrse; staminodes absent; pistillode minute to absent; receptacle small and flat. **Female flowers:** ovary ovoid; style stout; stigma peltate; staminodes 9–12. **Fruit** globose or ovoid; cupule small, sometimes absent, margin usually lobed.

Distribution. A genus of about 100 species in (sub)tropical Asia, 2 in temperate northern America and 1 in Australia. In Singapore, 1 native species.

Taxonomy. *Lindera* is in all likelihood a polyphyletic genus and its circumscription is therefore likely to change in the future (Li et al., Pl. Syst. Evol. 246 (2004) 19). As it differs from *Litsea* only in its 2-locular anthers (4-locular in *Litsea*), fruiting specimens or specimens with female flowers are sometimes difficult to determine to genus. In recent molecular studies, the genus is considered to be part of the ‘core’ Lauraceae group (Rohwer & Rudolph, Ann. Missouri Bot. Gard. 92 (2005) 153).

Lindera lucida (Blume) Boerl.

(Latin, *lucidus* = shining, clear, transparent; referring to the shiny upper leaf surface)

Handl. Fl. Ned. Ind. 3 (1900) 147; Corner, Wayside Trees Malaya, ed. 2, 1 (1952) 346; Keng, Gard. Bull. Singapore 27 (1974) 79; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 383; Kochummen, Tree Fl. Malaya 4 (1989) 146; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19, fig. 13.7; Turner, Gard. Bull. Singapore 45 (1993) 113; Turner et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 20; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 72; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 55, 142, 222; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 161, 380; Neo et al., Nat. Singapore 6 (2013) 14; Neo et al., Nat. Singapore 6 (2013) 70; Neo et al., Nat. Singapore 6 (2013) 121; Neo et al., Nat. Singapore 6 (2013) 279; Neo et al., Nat. Singapore 7 (2014) 64; Neo et al., Nat. Singapore 7 (2014) 104; Chong et al., Nat. Singapore 9 (2016) 14; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 399. **Basionym:** *Litsea lucida* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 562. **Synonyms:** *Polyadenia lucida* (Blume) Nees, Syst. Laur. (1836) 575. – *Aperula lucida* (Blume) Blume,

Mus. Bot. 1(23) (1851) 366. – *Benzoin lucidum* (Blume) Kuntze, Revis. Gen. Pl. 2 (1891) 569. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype L [L0036501], designated by de Kok, Gard. Bull. Singapore 69 (2017) 172). **Fig. 20, 21.**

Lindera malaccensis Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 183; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 194; Ridley, Fl. Malay Penins. 3 (1924) 133; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1349; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 162, 380. **Synonym:** *Benzoin malaccense* (Hook.f.) Kuntze, Revis. Gen. Pl. 2 (1891) 569. **Type:** *Maingay 1988* [Kew Distribution 1272], [Malaysia], Malacca [Melaka], 11 October 1866 (lectotype K [K000815601], designated by de Kok, Gard. Bull. Singapore 69 (2017) 173).

Lindera selangorensis Ridley, J. Fed. Malay States Mus. 5 (1914) 44. **Type:** *Robinson s.n.*, [Malaysia], Selangor, Gunung Menkuang Lebah, 6 February 1913 (lectotype K [K000815585], designated by Turner, Gard. Bull. Singapore 64 (2012) 231; isolectotypes BM, SING [SING0046618]).

Lindera sp. in Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132.

Trees, 3–20 m tall, dbh 10–60 cm; bark smooth, greyish to yellow-white; inner bark yellow; sapwood yellowish brown. **Twigs** slender, 1.5–3.7 mm diam., round to angular in cross-section, densely hairy when young, glabrescent; terminal vegetative buds 7–9 mm long, velutinous, apex acute. **Leaves** alternate, often drying greenish or greenish yellow, papery; lamina membranaceous, elliptic to broadly lanceolate, sometimes ovate, 5.5–20 × 3.3–8.2 cm, apex acute, often with a long tip, base cuneate to rounded, sometimes unequal, secondary veins 4–7 pairs, curving near the margin, tertiary veins scalariform reticulate; upper surface glabrous, midrib sunken, secondary veins sunken to raised, tertiary veins distinct, dark green to yellow green; lower surface glabrous to sparsely hairy when young, sometimes remaining sparsely hairy on and along midrib and secondary veins, midrib and secondary veins raised, tertiary veins distinct, (pale) green, rarely slightly glaucous; petiole channelled, slender, 1.2–2.5 cm long, a few hairs present. **Inflorescences** 14–26 mm long, 8 flowers per umbel, along branchlets or in axils of leaves, sparsely hairy; umbels 4–5 mm diam.; involucre bracts (4–)5, imbricate, suborbicular to broadly ovate, concave, 3–3.5 × 4–5 mm, coriaceous. **Flowers** (pale) yellow. **Male flowers:** 8–12 flowers in each umbel, perianth lobes elliptic, 1.5–3 × 0.8–1 mm, sparsely hairy; stamens 9–12, unequal, anthers 0.2–0.5 mm long, filaments slender, 0.5–1 mm long, glabrous. **Female flowers:** 9–10 flowers in each umbel, perianth lobes 6, elliptic to oblanceolate, 0.7–2 × 0.5–0.9 mm, sparsely hairy; ovary ellipsoid, 0.6–0.8 × 0.4–0.6 mm, glabrous; style 0.5–1.3 mm long; stigma peltate; staminodes 9–12, linear, 0.5–1.3 mm long, sparsely hairy. **Fruit** ellipsoid, 6–9.5 × 3–5.8 mm, apex acute, glabrous, with a yellow tinge in mature fruit, aromatic (smelling like a mango), thick sap present; cupule 1.7–2 mm diam., margin entire; stalk not swollen, 1.3–1.6 mm diam.

Distribution. Peninsular Malaysia, Sumatra, Java, Borneo and Sulawesi. In Singapore, known from Bukit Timah (*Ridley s.n.*, 12 Aug 1889, SING [SING0013152]), Upper Peirce (*Dahlan et al. SING2005-72*, 21 Mar 2005, SING [SING0060019]), the Western Catchment (*Lua et al. SING2016-030*, 3 Feb 2016, SING [SING 0243736]), Nee Soon (*Lim SING2019-239*, 31 Mar 2019, SING [SING0286081]), Admiralty Forest (*Lua SING2019-725*, 5 Aug 2019, SING [SING0289595]) and other places.

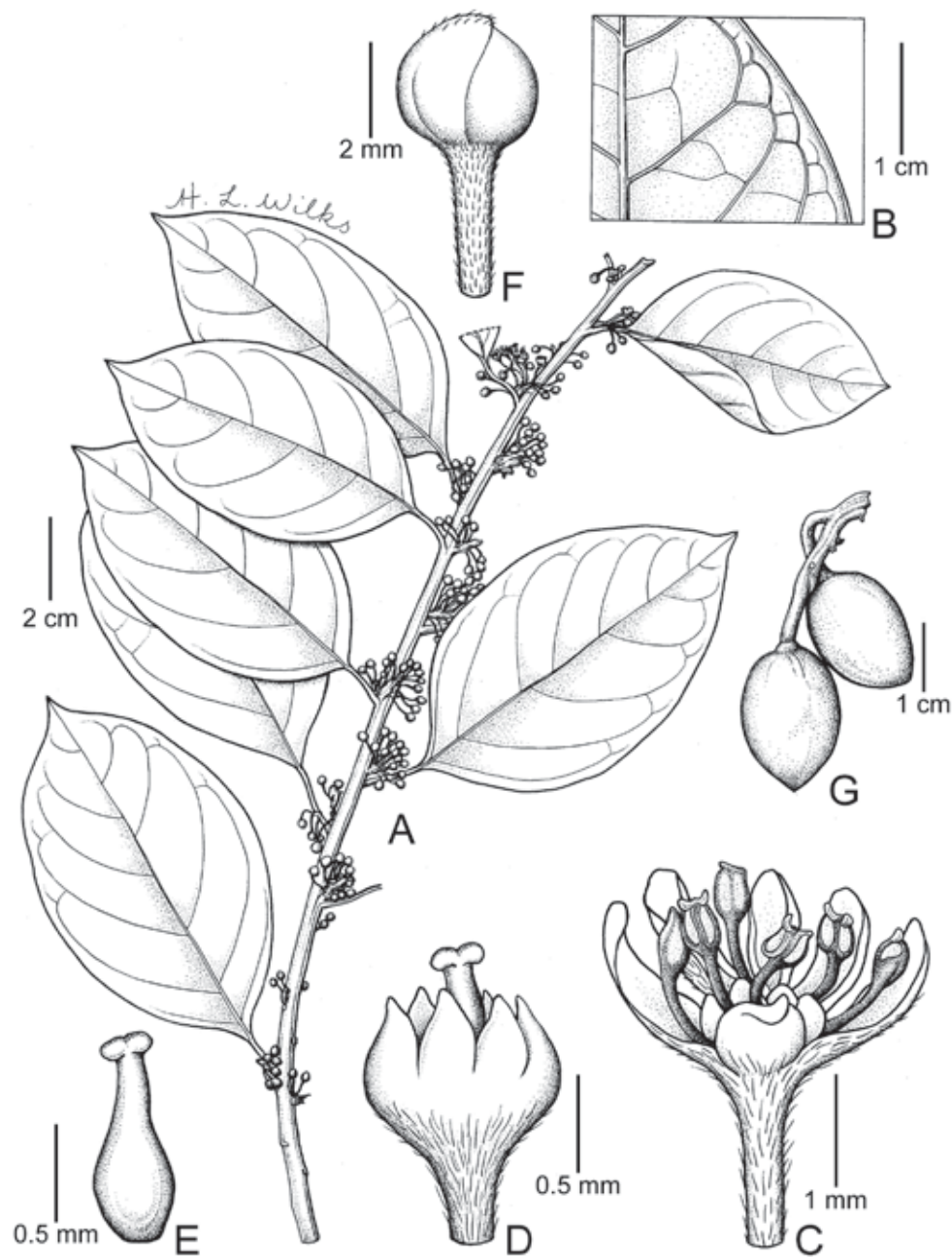


Figure 20. *Lindera lucida* (Blume) Boerl. **A.** Portion of leafy twig with male inflorescences in clusters of umbels. **B.** Detail of lower leaf surface. **C.** Male flower. **D.** Female flower. **E.** Ovary with style and stigma. **F.** Flower bud. **G.** Fruit. (A–G from Peninsular Malaysia, A–C & F, *Maingay 1257*; D & E, *Kunstler 963*; G, *Collector unknown 11030*. Drawn by H. Wilks).



Figure 21. *Lindera lucida* (Blume) Boerl. **A.** Habit. **B.** Glossy leaves. **C.** Branch with inflorescences. Inset: Open inflorescence with withered flowers. **D.** Branch with young fruit. (A–D including inset from Singapore, A, Bukit Timah, B & D, Nee Soon, *Lim SING2019-239*; C including inset, Western Catchment, *Lua et al. SING2016-030*. Photos: A & C, P.K.F. Leong; B & D, R.C.J. Lim).

Ecology. Across its range, in lowland to mountain forest. In Singapore, in primary and secondary forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Vulnerable (VU/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

10. LITSEA Lam.

(from a Chinese vernacular name for chestnuts, possibly alluding to superficial similarities)

Encycl. 3, fasc. 2 (1792) 574, nom. cons.; Hooker, Fl. Brit. India 5, fasc. 13 (1886) 155; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Ridley, Fl. Malay Penins. 3 (1924) 112; Kostermans, Reinwardtia 4(2) (1957) 240; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 384; Kochummen, Tree Fl. Malaya 4 (1989) 149; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 388; van der Werff, Blumea 46 (2001) 137; de Kok, Gard. Bull. Singapore 73 (2021) 81; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1065. **Type:** *Litsea chinensis* Lam. (= *Litsea glutinosa* (Lour.) C.B.Rob.).

Trees or shrubs. **Terminal vegetative buds** usually not perulate, the scales usually falling off after the buds elongate. **Leaves** spirally arranged or rarely (sub)opposite, sometimes crowded toward the apex of branchlets, usually aromatic when crushed; blade pinnately veined. **Inflorescences** umbellate, on umbel-bearing short or long reduced branchlets, usually in clusters of umbels, or sometimes with the appearance of a short or long raceme of umbels or sometimes umbels solitary, in the axils of leaves or along branchlets, sometimes at apex of branchlets or rarely cauliflorous (not in Singapore); umbels with 4–5(–6) involucre bracts surrounding the flowers. **Flowers** dioecious, 3–8(–16) in each umbel; perianth lobes (0–)6(–12), in (1–)2(–4) whorls of 3, membranaceous. **Male flowers:** stamens (6–)9–12(–30) in (2–)3–4(–10) whorls of 3; anthers 4-locular; filaments of the outer 2 whorls without glands, the third and inner whorls (when present) with 2 glands at or near base; pistillode present or absent. **Female flowers:** ovary enclosed in the perianth tube or free; stigma peltate; staminodes equal in number to the stamens in male flowers or almost so, the outer 2 whorls without glands, the third and inner whorls (when present) with 2 glands at or near base. **Fruit** seated on the more or less enlarged perianth tube (cupule), usually aromatic when crushed; cupule shallowly or deeply cup-shaped, partly enveloping the fruit; pedicel in fruit more or less thickened, rarely subsessile or sessile.

Distribution. A genus of more than 300 species in tropical Asia, Australia, Pacific, and in North and Central America. In Singapore, 20 native species, of which 1 species has yet to be identified.

Taxonomy. *Litsea* is in all likelihood a polyphyletic genus and its circumscription will change in the future (Li et al., P1. Syst. Evol. 246 (2004) 19). *Litsea* differs from *Lindera* only in its 4-locular anthers (2-locular in *Lindera*) and from *Neolitsea* by the latter having dimerous flowers. Consequently, fruiting specimens or specimens with female flowers are sometimes difficult to determine to genus. In recent molecular studies, the genus is considered to be part of the ‘core’ Lauraceae group (Rohwer & Rudolph, Ann. Miss. Bot. Gard. 92 (2005) 153).

Notes. The species *Litsea bindoniana* F.Muell. is a native of Queensland, Australia, and is introduced into Singapore and is occasionally planted, but has not naturalised (Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009)). It can be distinguished from other species of *Litsea* by having large green leaves (11–28 × 5–18 cm) with yellow venation.

Key to *Litsea* species

1. Leaves (sub)opposite 2
 Leaves alternate 5
2. Leaves with sparse to dense dark brown indumentum below **7. *L. ferruginea***
 Leaves glabrous or very sparsely white to yellowish hairy 3
3. Young twigs glabrous; leaf apex acute to sharply acute, sometimes with a distinct tip
 **8. *L. gracilipes***
 Young twigs densely hairy; leaf apex acute without a distinct tip 4
4. Leaf apex acute to short-acuminate, drying reddish brown, secondary veins clearly
 brochidodromous; terminal vegetative buds 1.4–1.7 mm long **10. *L. lanceolata***
 Leaf apex acuminate with 1–2.7 mm long tip, drying greenish brown, secondary veins
 curving near margin and obscurely brochidodromous; terminal vegetative buds > 2 mm
 long **11. *L. lancifolia***
5. Leaf base cordate **3. *L. cordata***
 Leaf base attenuate, cuneate or rounded 6
6. Leaves hairy below 7
 Leaves glabrous below 15
7. Leaf lower surface dark rusty brown hairy **6. *L. erectinervia***
 Leaf lower surface yellowish to light brown hairy 8
8. The inflorescences with the appearance of a raceme with a series of umbels along the
 axis, 5–20 cm long 9
 The inflorescences in clusters of umbels, < 4 cm long 10
9. Leaf lower surface sparsely hairy on midrib only **13. *L. aff. maingayi****
 Leaf lower surface sparsely hairy to densely hairy **17. *L. robusta***
10. Leaves crowded at the apex of twigs; petiole 1–5.5 cm long **19. *L. tomentosa***
 Leaves placed along the twigs; petiole 0.5–3.7 cm long 11
11. Terminal vegetative buds 8–19 mm long; leaves 8–38 × 6–18.5 cm, margins wavy
 **9. *L. grandis***
 Terminal vegetative buds 2–12 mm long; leaves 3–32 × 1.2–12 cm, margins flat 12

12. Leaf apex acuminate with distinct sharp tip **13. L. aff. maingayi***
 Leaf apex acute to rounded, or acuminate but without a sharp tip 13

13. Involucral bracts $5-6.5 \times 5-6$ mm; fruit $15-20 \times 11-14$ mm, apex acute, cupule 13–15 mm diameter; leaf lamina $11-29 \times 4-12$ cm; inflorescences 1–4 cm long, **18. L. sphaerocarpa**
 Involucral bracts $2-4.5 \times 2-4$ mm; fruit $2.5-14 \times 0.6-2$ mm, apex rounded, cupule 3–8 mm diameter; leaf lamina $3-25 \times 1.2-7.5$ cm; inflorescences 0.5–2 cm long 14

14. Secondary veins 5–7 pairs, below sharply contrasting in colour with blade, curving towards margin at about 45° **16. L. ridleyi**
 Secondary veins 8–17 pairs, below more or less same colour as blade, curving towards the margin between $60-90^\circ$ **20. L. umbellata**

15. Young twigs covered with yellowish scales, sometimes with a dense layer of short hairs **2. L. castanea**
 Young twigs without scales, glabrous to densely hairy 16

16. Terminal vegetative buds glabrous 17
 Terminal vegetative buds velutinous 18

17. The inflorescences with the appearance of a short or long raceme of umbels, 1–16 cm long; leaf apex acuminate, often with a 10–20 mm long tip, secondary veins brochidodromous **12. L. machilifolia**
 The inflorescences are clusters of umbels, 1–2.5(–4) cm long; leaf apex acute or obtuse, secondary veins arching near the margin **14. L. myristicifolia**

18. Inflorescences with the appearance of a raceme with a series of umbels along the axis, or a cluster of umbels on a peduncle (1–)5–16 cm long 19
 Inflorescences clusters of umbels, either (almost) sessile or on a peduncle 0.5–4 cm long 20

19. Fruit $8-30 \times 10-26$ mm, apex round, smooth when dried; twigs sparsely hairy when young; leaves obovate to oblanceolate, $14-47 \times 6-20$ cm, apex acute with a short point; petiole 1.7–7 cm long **4. L. costalis**
 Fruit $18-33 \times 8-18$ mm, apex acute, rough when dried; twigs velutinous when young; leaves elliptic to obovate, $9-30 \times 2.5-15$ cm, apex acute to acuminate; petiole 1–3 cm long **15. L. resinosa**

20. Leaves with secondary veins 4–8 pairs; fruit with cupule 3.5–5 mm diameter, 0–2 mm high **5. L. elliptica**
 Leaves with secondary veins 8–14 pairs; fruit with cupule > 10 mm diameter and > 5 mm high 21

21. Leaf lamina coriaceous; fruit $10-16 \times 10-15$ mm; cupule surface warty ... **1. L. accedens**
 Leaf lamina membranous to thinly coriaceous; fruit $15-20 \times 11-14$ mm; cupule surface smooth **18. L. sphaerocarpa**

**Litsea* aff. *maingayi* appears in the key following both leads from couplet 8 but note that this is only because the inflorescence type is unknown rather than that the taxon has both inflorescence types.

1. *Litsea accedens* (Blume) Boerl.

(Latin, *accedens* = resembling; similar to another species)

Handl. Fl. Ned. Ind. 3 (1900) 145; Keng, Gard. Bull. Singapore 27 (1974) 80; Kochummen, Tree Fl. Malaya 4 (1989) 151; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 113; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 281; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; LaFrankie et al., Forest Trees Bukit Timah (2005) 101, 163; Ng, Gard. Bull. Singapore 57 (2005) 222; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 216; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Neo et al., Nat. Singapore 7 (2014) 104; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 90, fig. 1; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 399; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1068. **Basionym:** *Tetranthera accedens* Blume, Mus. Bot. 1(24) (1851) 383. **Type:** *Forsten s.n.*, [Indonesia], Celebes [Sulawesi], Tondano, July 1840 (lectotype L [L0036569], designated by de Kok, Gard. Bull. Singapore 69 (2017) 173). **Fig. 22.**

Cylicodaphne costata Blume, Mus. Bot. 2(1) (1856) 13. **Synonym:** *Litsea costata* (Blume) Boerl., Handl., Fl. Ned. Ind. 3 (1900) 144; Kochummen, Tree Fl. Malaya 4 (1989) 154; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 20; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89. **Type:** *Korthals s.n.*, [Indonesia], Borneo (lectotype L [L0036657]), designated by Ng, Gard. Bull. Singapore 57 (2005) 222.

Litsea singaporensis Gamble, Bull. Misc. Inform. Kew 1910 (1910) 358; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 159; Ridley, Fl. Malay Penins. 3 (1924) 122. **Type:** *Ridley 4135*, Singapore, Garden Jungle [Singapore Botanic Gardens' Rain Forest], November 1892 (lectotype K [K003279746], designated by de Kok, Gard. Bull. Singapore 69 (2017) 176; isoelectotypes BM, SING [SING0000630]).

Litsea perakensis Gamble, Bull. Misc. Inform. Kew 1910 (1910) 359; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 160; Ridley, Fl. Malay Penins. 3 (1924) 122; Keng, Gard. Bull. Singapore 27 (1974) 80. **Type:** *King's Collector 5114*, [Malaysia], Perak, Larut, November 1883 (lectotype K [K000797091], designated by Ng, Gard. Bull. Singapore 57 (2005) 224; isoelectotypes BM [BM000799063], E [E00393258], P [P00745239]).

Litsea penangiana auct. non Hook.f.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131.

Trees, 3–24 m tall, dbh 5–10 cm; bark red to (greyish) brown, smooth to finely scaly; wood pale yellow to white, aromatic. **Twigs** slender, 2.7–5 mm diam., round to angular in cross-section, glabrous; terminal vegetative buds elliptic, 4–8.6 mm long, apex acute to acuminate, velutinous, hairs appressed, yellow. **Leaves** alternate; lamina coriaceous, elliptic to lanceolate, sometimes obovate, 7–35 × 3–12 cm, apex broadly to sharply acute, base cuneate to attenuate, often slightly asymmetric, drying dark to light brown or green, secondary veins 8–14 pairs, curved

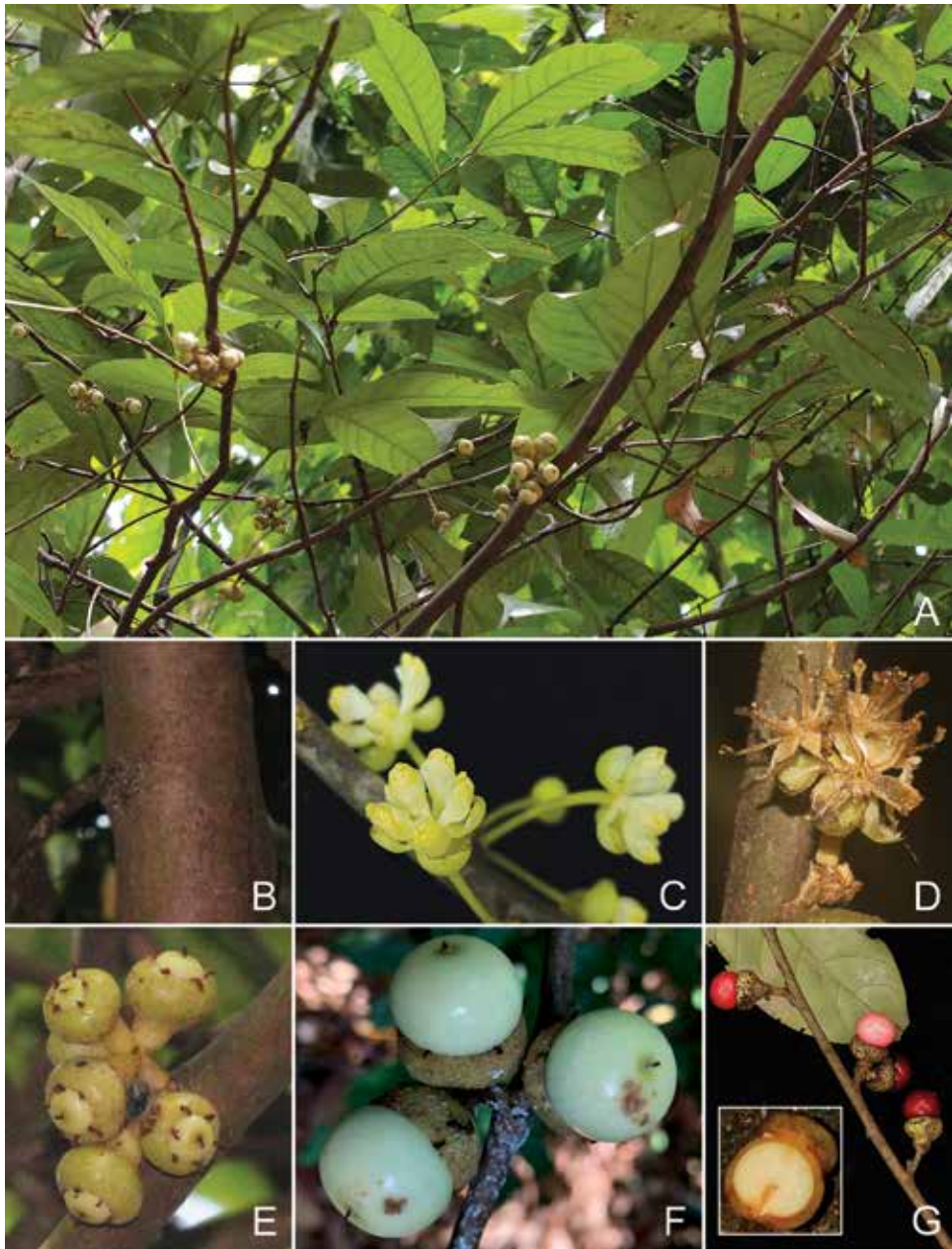


Figure 22. *Litsea accedens* (Blume) Boerl. **A.** Habit with fruit on branches. **B.** Trunk. **C.** Inflorescences with newly open male flowers. **D.** Male flower past anthesis. **E.** Young developing fruit. **F.** Unripe fruit with cupules. **G.** Ripened fruit with cupules. Inset: Cross-section of fruit and cupule. (A–G including inset from Singapore, A, Bukit Timah, Niissalo *et al.* SING2019-563; B & F, Bukit Timah, Lim *et al.* SING2018-731; C, MacRitchie, Leong *et al.* MR2015-014; D, MacRitchie, Lua *et al.* SING2018-420; E, Bukit Timah; G, MacRitchie, Lua SING2014-253. Photos: A, C & G including inset, P.K.F. Leong; B & D–F, X.Y. Ng).

from the margin, sometimes brochidodromous, tertiary veins reticulate, occasionally with few scalariform veins; upper surface glabrous, midrib and secondary veins flattened to sunken or sometimes slightly raised at base, tertiary veins distinct, dark green, glossy; lower surface glabrous with a few hairs along the midrib and secondary veins raised, tertiary veins distinct, pale green-white, glaucescent; petiole slightly swollen, half-terete, 1.2–3 cm long, wrinkled, black, glabrous. **Inflorescences** in clusters of umbels, 1–2.6 cm long, along branchlets or in axils of leaves; umbels 10–12 mm diam.; involucre bracts 4–5, imbricate, suborbicular to broadly ovate, concave, 4–7 × 4–5 mm, coriaceous, glabrous, brown to brownish green. **Flowers** yellowish white to yellow, lightly scented. **Male flowers** 4–6 in each umbel; perianth lobes 6, linear-oblong or oblong, subequal, 4–5 × 1.5–2.2 mm, densely to sparsely hairy; stamens light yellow, 12–16, unequal, anthers 1.3–2 mm long, yellow, filaments slender, 2.3–3 mm long, with a few hairs along filament; ovary c. 1 mm long, style c. 1 mm long. **Female flowers** 4–6 in each umbel; perianth lobes 6, elliptic to oblanceolate, 1.5–2 × 1–1.2 mm, sparsely hairy; ovary ellipsoid, 1–1.2 × 1–1.2 mm, glabrous, style 1–2 mm long, stigma inconspicuous; staminodes 9–12, linear, 0.5–2 mm long, sparsely hairy. **Fruit** globose, 10–16 × 10–15 mm diam., apex with a very short beak, surface smooth, glabrous, greenish white when immature, red when mature, smelling of cinnamon; cupule a shallow cup, 10–18 mm diam., 5.3–7.3 mm high, woody, margin entire with a few small remnants of lobes covering up to half of the fruit, surface warty, dark green to straw coloured; stalk 8–12 mm long, slightly swollen, pustulated.

Distribution. Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from Changi (*Ridley* 3803, 1892, K [K000797116], SING [SING0164437]), Singapore Botanic Gardens' Rain Forest (*Sinclair* 40679, 22 Jul 1955, K [K003279749, K003279750], SING [SING0220489]), MacRitchie (*Leong et al.* MR 2015-014, 17 Mar 2015, SING [SING0213499]), Bukit Timah (*Niissalo et al.* SING2019-563, 11 Jun 2019, SING [SING0295682]) and other places.

Ecology. Across its range, in lowland and hill forests, sometimes in swamps. In Singapore, in primary and secondary forest

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

2. *Litsea castanea* Hook.f.

(Latin, *castanea* = chestnut; referring to the colour of the dried leaves)

Fl. Brit. India 5, fasc. 13 (1886) 171; Ridley, Fl. Malay Penins. 3 (1924) 121; Kostermans, Reinwardtia 8(1) (1970) 89; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 384; Kochummen, Tree Fl. Malaya 4 (1989) 152, fig. 9; Turner, Gard. Bull. Singapore 45 (1993) 113; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 81; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 216; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 169, 380; Neo et al., Nat. Singapore 7 (2014) 104; Chong et al., Nat. Singapore 9 (2016) 16; Ho et al., Gard.

Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 100, fig. 4; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 400; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1070. **Type:** *Maingay 1779* [Kew Distribution 1269], [Malaysia], Malacca [Melaka], 10 August 1866 (lectotype K [K000797100], designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 81; isoelectotype K [K000797101]). **Fig. 23.**

Trees, 6–40 m tall, dbh 10–75 cm; buttresses to 1 m high; bark smooth, dark to reddish brown; inner bark cream or yellowish and orange mottled, with a pungent smell; sapwood (pale) yellow. **Twigs** slender, 2.5–5.3 mm diam., round in cross-section, smooth to slightly angled, covered with yellowish scales when young, sometimes also with a dense layer of short hairs, becoming more glabrous when mature; terminal vegetative buds 5–6.5 mm long, covered with yellowish scales, sometimes with a dense layer of short hairs. **Leaves** alternate; lamina coriaceous, ovate to obovate or elliptic, 5–30 × 2.5–13 cm, apex emarginate or rounded to shortly acute, base rounded to slightly cuneate, sometimes oblique, secondary veins 7–18 pairs, brochidodromous, tertiary veins scalariform-finely reticulate; upper surface glabrous or sparsely covered with yellowish scales on main veins, sometimes with a dense layer of short hairs, midrib and secondary veins sunken, tertiary veins distinct, deep to dark green; lower surface glabrous or sparsely covered with yellowish scales on veins, sometimes with a dense layer of short hairs, midrib and secondary veins raised, paler green; petiole 1–3 cm long, densely to sparsely covered with yellowish scales, sometimes with a dense layer of short hairs. **Inflorescences** in clusters of umbels, 1–2 cm long, along branchlets or in axils of leaves; umbels 10–12 mm diam.; densely covered with yellowish scales, sometimes with a dense layer of short hairs; involucre bracts (4–)5, usually imbricate, suborbicular, broadly ovate or ovate, concave, 5–7.5 × 3–4.5 mm, coriaceous, brown, densely covered with yellowish scales, sometimes with a dense layer of short hairs. **Flowers** cream to light yellow. **Male flowers** 6–8 in each umbel; perianth lobes 6, linear-oblong or oblong, subequal, 2.5–3.5 × 0.8–1 mm, sparsely hairy; stamens light yellow, 12–16, unequal, anthers 0.8–1.5 mm long, filaments slender, 3–6 mm long, with a few hairs along filament. **Female flowers** 4 in each umbel; perianth lobes 6, elliptical to oblong, subequal, 1.8–2 × 0.8–1 mm, sparsely hairy; ovary ellipsoid, 1.8–2 × 0.5–0.8 mm, glabrous, style 1.5–2 mm long, stigma peltate; staminodes 9–12, linear, 1–1.5 mm long, glabrous or with a few hairs. **Fruit** ellipsoid, 14–35 × 10–30 mm, glabrous, smooth; cupule woody, 9–14.5 mm diam., 6–10 mm high, sparsely hairy, margin entire; pedicel in fruit 3.7–10 × 2.7–3 mm, sparsely hairy; stalk 5–15 mm long, sparsely hairy.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known from Bukit Timah (*Henderson SFN 36197*, 19 Feb 1929, K [K003279384], SING [SING0013184, SING0013185, SING0229010]; *Lim et al. CTFS E3-6154*, 10 Jan 2019, SING [SING0293797]), Singapore Botanic Gardens' Rain Forest (*Sinclair 9366*, 2 Nov 1957, K [K003279410], SING [SING0013193]) and MacRitchie (*Gwee SING2010-335*, 9 Feb 2010, SING [SING0145693]).

Ecology. Across its range, in lowland and montane forests. In Singapore, in primary and mature secondary forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

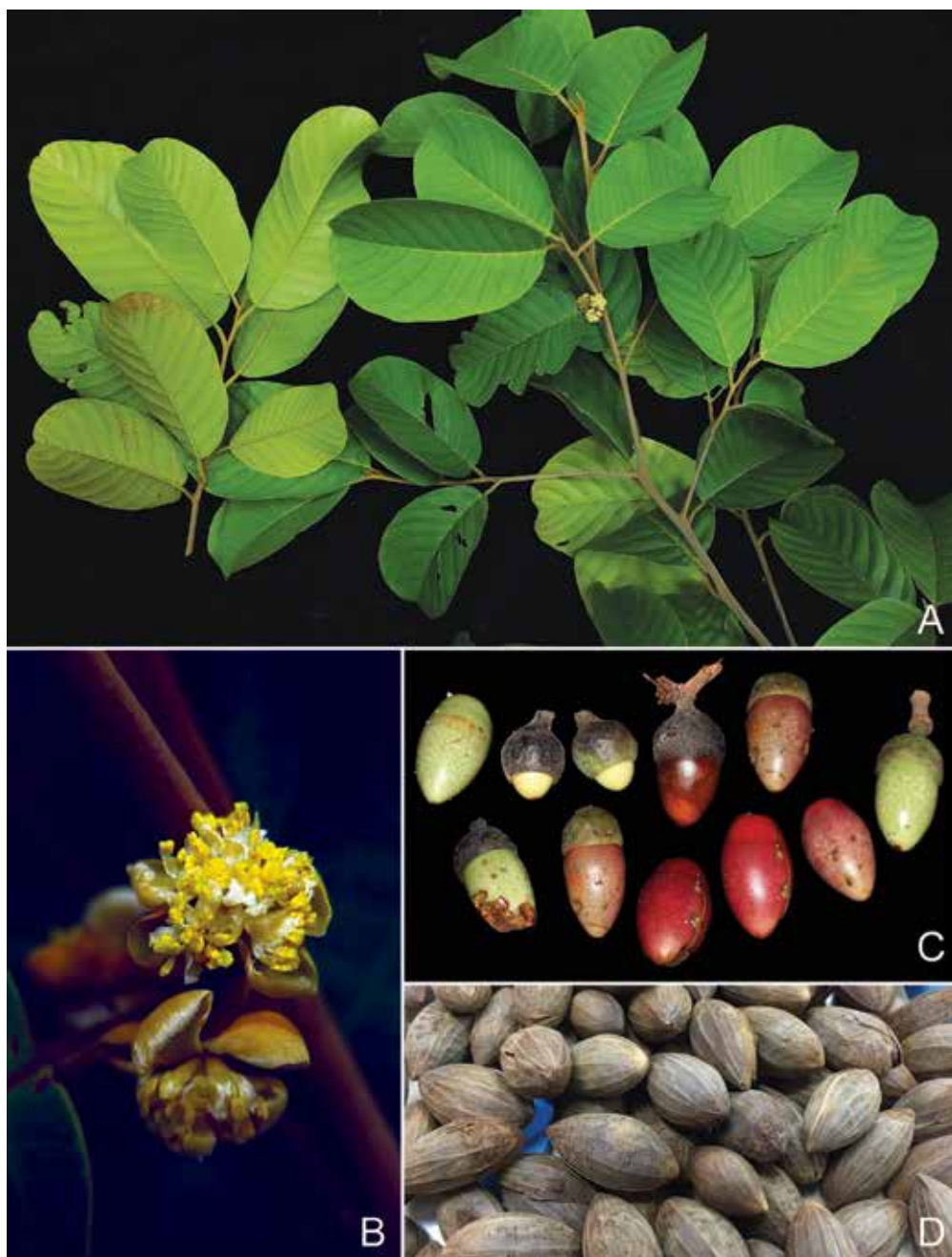


Figure 23. *Litsea castanea* Hook.f. **A.** Leafy branch with inflorescences. **B.** Male inflorescences with cluster of flowers. **C.** Fruit with cupules. **D.** Seeds. (A–D from Singapore, A & B, Thomson Road, See SING2018-790; C & D, MacRitchie. Photos: A & B, P.K.F. Leong; C & D, X.Y. Ng).

3. *Litsea cordata* (Jack) Hook.f.

(Latin, *cordatus* = cordate, with two equal rounded lobes at base; referring to the leaf shape)

Fl. Brit. India 5, fasc. 13 (1886) 177; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 144; Ridley, Fl. Malay Penins. 3 (1924) 118; Keng, Gard. Bull. Singapore 27 (1974) 80; Kochummen, Tree Fl. Malaya 4 (1989) 154; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 113; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 82; Ng, Gard. Bull. Singapore 57 (2005) 226; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 207; Chong et al., Nat. Singapore 9 (2016) 17; de Kok, Gard. Bull. Singapore 73 (2021) 106, fig. 6; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 400; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1071. **Basionym:** *Tetranthera cordata* Jack, Malayan Misc. 2(7) (1822) 34; Meisner in de Candolle, Prodr. 15(1) (1864) 196. **Type:** *Ngernsaengsaruy & Chantarasuwan 373*, Thailand, Narathiwat, Sirindhorn Peat Swamp Forest, 18 June 2003 (neotype BKF, designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 82; isoneotype BK). **Fig. 24.**

Trees or shrubs, 3–36 m tall, dbh 45–60 cm; short buttresses and in swampy habitats with stilt roots and pneumatophores; bark smooth, lenticellate, greyish brown or (pale) grey; inner bark yellow-brown or brownish; sapwood white to yellowish. **Twigs** slender, 2.3–4.8 mm diam., round in cross-section, velutinous when young, glabrescent, hairs short, erect, brown; terminal vegetative buds velutinous, ovoid, c. 2.3 mm long. **Leaves** spirally arranged; lamina thinly coriaceous, broadly ovate to oblong, 5.5–26 × 4–17 cm, apex broadly acute or acute, base deeply cordate to almost rounded, often unequal, secondary veins 6–17, curving and looping near margin, tertiary veins scalariform-reticulate; upper surface glabrous, except densely hairy on midrib and secondary veins, midrib and main secondary veins sunken, tertiary veins distinct, glossy or bright or dark green with brown or yellowish veins; lower surface sparsely hairy, midrib and secondary veins raised, tertiary veins distinct, dark green with brown or yellowish veins, glaucous; petiole 1.5–3.5 cm long, velutinous, hairs brown, short, erect. **Inflorescences** the appearance of a raceme with a series of umbels along the axis, (3–)4.5–20 cm long, terminal or in the axils of leaves or along branchlets; umbels 6–12 mm diam.; involucre bracts (4–)6, usually imbricate, suborbicular, broadly ovate or ovate, concave, 3–7 × 3–5 mm, velutinous, pale green. **Flowers** greenish white. **Male flowers** 6–8(–9) in each umbel; perianth lobes 6, ovate-oblong or ovate-lanceolate, subequal, 2–4 × 0.5–1 mm, membranaceous, hairy; stamens 9–12, unequal, anthers 0.8–1.2 mm long, filaments slender, 2–4 mm long, sparsely hairy. **Female flowers** 6–8 in each umbel; perianth lobes 6, ovate-oblong or ovate-lanceolate, subequal, 1.5–2.5 × 0.5–0.8 mm, membranaceous, hairy; ovary ellipsoid, 1–1.5 × 0.5–0.8 mm, glabrous, style 1–1.5 mm long, stigma peltate; staminodes 9–12, linear, 1–1.5 mm long, hairy. **Fruit** ellipsoid to oblong, 12–25 × 6–10 mm, apex acute, glabrous, blackish purple, black or reddish when mature; cupule shallow or nearly flattened, 3–5.6 mm diam., margin entire, sparsely hairy; stalk 6–18 × 2.5–5 mm, sparsely hairy.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra, Borneo, Philippines and the Moluccas. In Singapore, known from historical collections from Bukit Timah (*King's Collector* 353, Aug 1880, K [K003279314, K003279315]) and Kranji (*Mat* 4743, Apr 1895, SING [SING0013204]). More recent collections are from Nee Soon (*Samsuri et al. NES* 86, 8 Jul 2003, SING [SING0045794]; *Lim et al. SING* 2021-696, 20 Sep 2021, SING [SING0386477]) and the Western Catchment (*Samsuri et al. WC* 57, 27 Apr 2004, SING [SING0054254]).

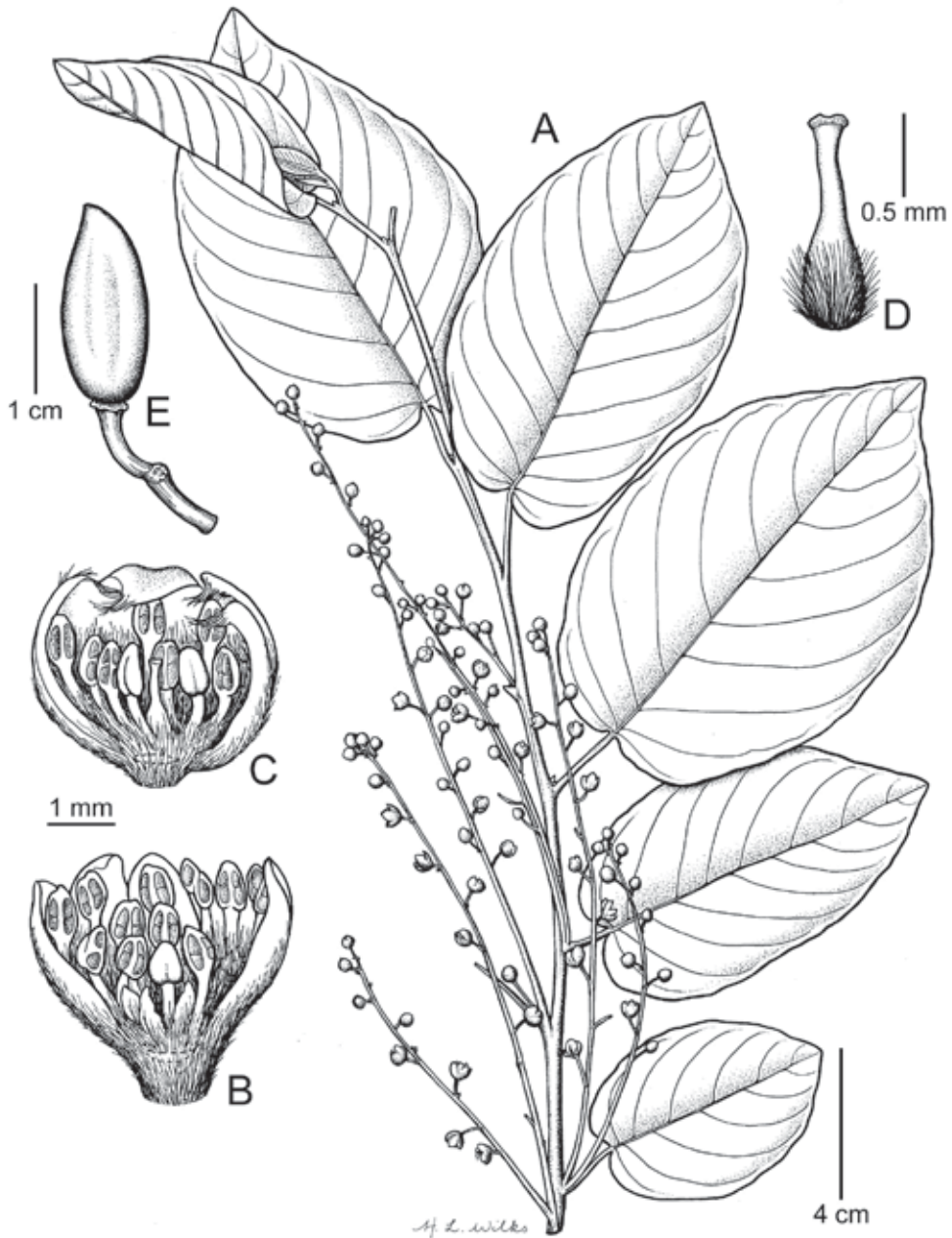


Figure 24. *Litsea cordata* (Jack) Hook.f. **A.** Portion of leafy twig with inflorescences with the appearance of a raceme of umbels. **B.** Mature opened male flower to show androecium. **C.** Mature opened female flower to show ovary and staminodes **D.** Ovary with style and stigma. **E.** Fruit with stalk. (A–E from Peninsular Malaysia, A & B, Wray 3045; C & D, Wray 2462; E, Kamarudin FRI 31463. Drawn by H. Wilks).

Ecology. Across its range, in forests and in open vegetation, sometimes along rivers and in (peat) swamp forests. In Singapore, in primary and secondary forest and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

4. *Litsea costalis* (Nees) Kosterm.

(Latin, *costalis* = relating to the midrib; likely referring to the sunken midrib)

Reinwardtia 7(5) (1969) 501; Keng, Gard. Bull. Singapore 27 (1974) 80; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 384; Kochummen, Tree Fl. Malaya 4 (1989) 154; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 113; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 282; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Ng, Gard. Bull. Singapore 57 (2005) 226; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 169, 380; Chong et al., Nat. Singapore 9 (2016) 19; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89, 130; de Kok, Gard. Bull. Singapore 73 (2021) 109, fig. 7; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 400. **Basionym:** *Alseodaphne costalis* Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 72; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 916; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Ridley, Fl. Malay Penins. 3 (1924) 100. **Type:** *Wallich s.n.* [EIC 2594B], Singapore, 1822 (lectotype K [K000797144], designated by de Kok, Gard. Bull. Singapore 73 (2021) 109; isolectotypes BM [BM000799072], K-W [K00116521]). **Fig. 25.**

Litsea megacarpa Gamble, Bull. Misc. Inform. Kew 1910 (1910) 364; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 175; Ridley, Fl. Malay Penins. 3 (1924) 127. **Type:** *Ridley 6456*, Singapore, Toas [Tuas], 1894 (lectotype K [K003279576], designated by de Kok, Gard. Bull. Singapore 69 (2017) 175; isolectotypes BM, SING [SING0013205]).

Trees, 5–30 m tall, dbh 15–60 cm; rarely with stilt roots, clear sap present; bark light brown or grey to reddish brown, smooth, lenticellate; inner bark pale yellow to yellowish brown or pale orange, slightly mottled, with strongly fragrant smell; sapwood yellowish. **Twigs** stout, 4.3–13 mm diam., rounded to strongly angled in cross-section, sparsely hairy when young, soon glabrous; terminal vegetative buds 5–10 mm long, apex acute, velutinous. **Leaves** alternate, young leaves purple or red, fragrant when crushed; lamina coriaceous, obovate to oblanceolate, 14–47 × 6–20 cm, apex acute with a short point, base cuneate to attenuate, secondary veins 12–14 pairs, arching near the margin, tertiary veins scalariform-reticulate; upper surface glabrous, midrib sunken, secondary veins sunken to raised, tertiary venation faint to distinct, deep green, glossy; lower surface glabrous, midrib and secondary veins raised, tertiary venation distinct, sometimes glaucous; petiole slender, half-terete to channelled in cross-section, 1.7–7 cm long, glabrous. **Inflorescences** the appearance of a raceme with a series of umbels along the axis, in axils of leaves or terminal, along branchlets or at apex of branchlets, raceme 3–15 cm long; umbels 5–6 mm diam.; peduncles 2.5–3 mm long, sparsely hairy to glabrous; involucre bracts 4–5, suborbicular or broadly ovate, concave, 2.4–6 × 1.2–4 mm, sparsely hairy outside. **Flowers** yellowish white. **Male flowers** 5–6 in each umbel;



Figure 25. *Litsea costalis* (Nees) Kosterm. **A.** Habit with fruit on branches. Inset: Leaves. **B.** Flower buds. **C.** Female flower showing staminodes and stigma. **D.** Branch with young fruit. **E.** Fruit and cupules at different stages of maturity. **F.** Fallen fruit and cupules. Inset: Seed. (A–F including insets from Singapore, A–C, E, F & F inset, Nee Soon; A inset, Nee Soon, *Leong et al. SING2011-374*; D, Nee Soon, *Ng et al. SING2017-771*. Photos: A–F including F inset, X.Y. Ng; A inset, P.K.F. Leong).

perianth lobes 6, oblanceolate, subequal, $2.5\text{--}3 \times 0.8\text{--}1$ mm, hairy; stamens 9–12, unequal, anthers 0.8–1 mm long, filaments slender, 3–5 mm long, glabrous. **Female flowers** 5 in each umbel; perianth lobes 6, oblanceolate, subequal, $1\text{--}1.3 \times 0.5\text{--}1$ mm, hairy; ovary globose, 0.5 mm diam., glabrous, style 1.5–2 mm long, stigma peltate; staminodes linear, 0.5–1 mm long, hairy. **Fruit** globose to ellipsoid, $8\text{--}30 \times 10\text{--}26$ mm, apex round, glabrous, smooth, reddish when mature; cupule a shallow cup when mature, 14–28 mm diam., 6–10 mm high, margin entire, glabrous, fleshy, patent to only covering the base of the fruit, green; stalk 4.8–11 mm long, 5.5–8.8 mm diam., smelling strongly of resin.

Distribution. Peninsular Malaysia. In Singapore, known from MacRitchie (*Corner s.n.*, 8 Jan 1937, SING [SING 0228825]), Bukit Timah (*Noor MN 1512*, 22 Dec 1970, SING [SING 011018]) and Nee Soon (*Turner et al. 128*, 5 Apr 1992, SING [SING0068023]; *Leong et al., SING2011-374*, 11 Sep 2011, SING [SING0165835]).

Ecology. Across its range, in primary and secondary forest. In Singapore, in primary and secondary forest and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

5. *Litsea elliptica* Blume

(Latin, *ellipticus* = elliptic; referring to the shape of the leaves)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 563; Kochummen, Tree Fl. Malaya 4 (1989) 155; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 20; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 73; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 282; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Lee et al., Gard. Bull. Singapore 55 (2003) 297; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Ng, Gard. Bull. Singapore 57 (2005) 230; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 229; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 38; Neo et al., Nat. Singapore 5 (2012) 281; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 169, 380; Neo et al., Nat. Singapore 6 (2013) 70; Neo et al., Nat. Singapore 6 (2013) 121; Neo et al., Nat. Singapore 6 (2013) 279; Neo et al., Nat. Singapore 7 (2014) 64; Neo et al., Nat. Singapore 7 (2014) 104; Chong et al., Nat. Singapore 9 (2016) 19; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 114, fig. 9; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 401; Ngernsaengsaruyay & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1073. **Synonym:** *Tetranthera elliptica* (Blume) Nees, Syst. Laur. (1836) 550. **Type:** *Collector unknown s.n.*, [Indonesia], Java, Mt Salak (lectotype L [L0036670], designated by de Kok, Gard. Bull. Singapore 73 (2021) 114; isolectotypes BO [sheet no. BO-1274910], U [U0002803]). **Fig. 26.**

Litsea petiolata Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 171; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 147; Ridley, Fl. Malay Penins. 3 (1924) 119; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1356; Keng, Gard. Bull.

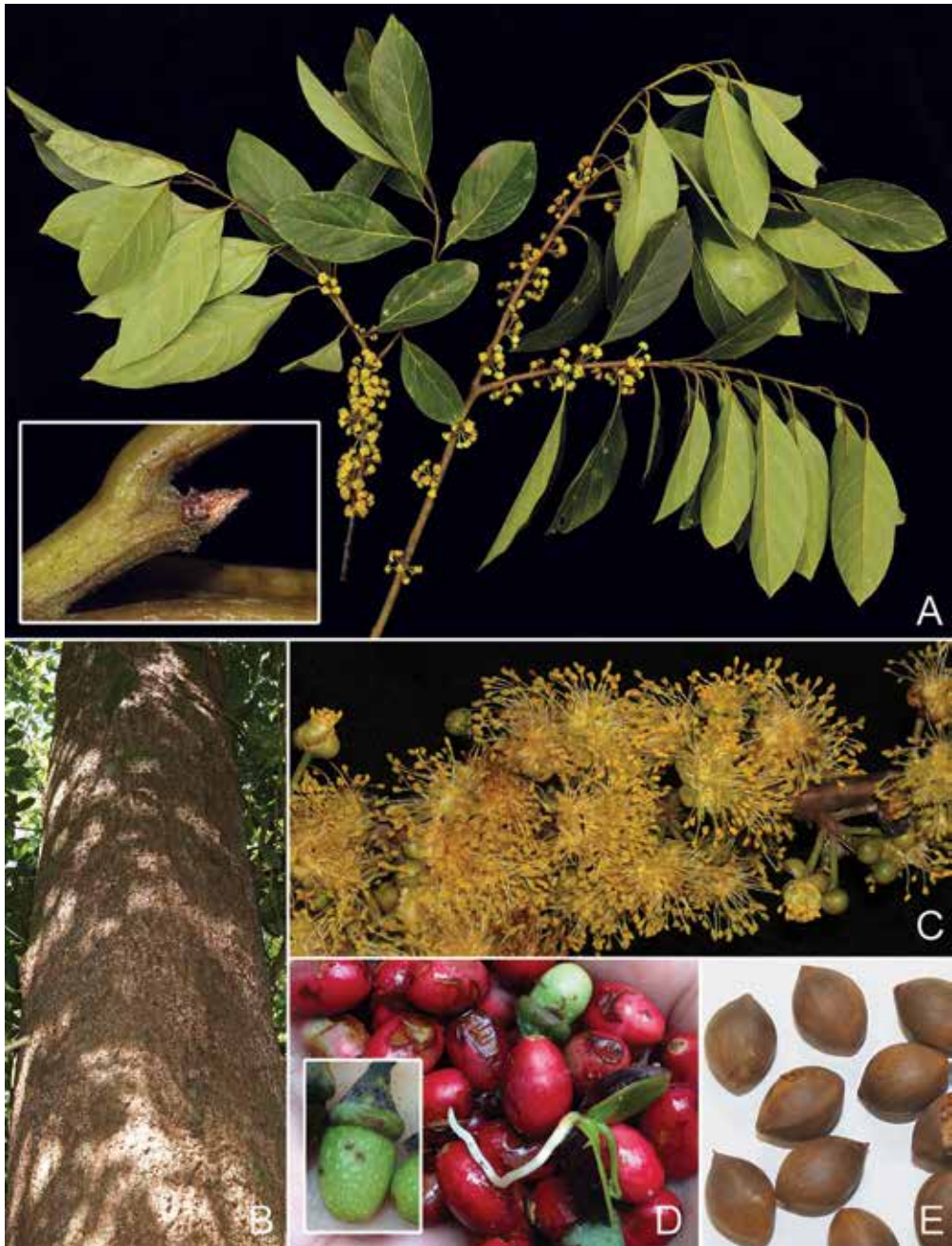


Figure 26. *Litsea elliptica* Blume. **A.** Leafy branch with flowers. Inset: Terminal leaf bud. **B.** Trunk. **C.** Male flowers showing numerous anthers. **D.** Fallen fruit. Inset: Unripe fruit with cupule. **E.** Seeds. (A–E including insets from Singapore, A, Admiralty Forest, *Lua* SING2014-106; B, Chestnut, *Lim* SING2020-436; A inset, C, D, D inset & E, Pasir Panjang Nursery. Photos: A, P.K.F. Leong; B, R.C.J. Lim; A inset, C, D, D inset & E, X.Y. Ng).

Singapore 27 (1974) 80. **Type:** *Maingay 1998* [Kew Distribution 1265], [Malaysia], Malacca [Melaka], 1865 (lectotype K [K000797128], designated by de Kok, Gard. Bull. Singapore 73 (2021) 114).

Trees, 4.5–45 m tall, dbh 20–80 cm, with buttresses to 1 m high; bark smooth, rarely fissured or scaly, lenticellate, greyish brown or grey; inner bark pinkish with a strong spicy smell; sapwood pale yellow. **Twigs** slender to thick, 2.2–7.7 mm diam., rounded in cross-section, glabrous; terminal vegetative buds 3.8–4.8 mm long, apex acuminate, velutinous, hairs long, appressed, yellowish. **Leaves** alternate; lamina thinly coriaceous, with a pungent smell when crushed, elliptic to (narrowly) elliptic-oblong, 6–20 × 2–7.8 cm, apex acute to rounded or broadly acuminate, base cuneate, sometimes oblique, secondary veins 4–8 yellow pairs, curving near margin, tertiary veins scalariform-reticulate; upper surface glabrous, midrib sunken, secondary veins sunken to flattened, tertiary veins distinct, dark green; lower surface glabrous, sometimes sparsely hairy on veins beneath, midrib and secondary veins raised, veins sometimes reddish, tertiary veins distinct, glaucous, grey-green; petiole slender, half-terete in cross-section, 1.5–3.2 cm long, glabrous. **Inflorescences** clusters of umbels, 1–2 cm long, along branchlets, sometimes in axils of leaves or on bare twigs; umbels 7–10 mm diam., light green; involucre bracts 4, decussate, suborbicular or broadly ovate, concave, 3–5.5 × 3–4 mm, glabrous to sparsely pubescent outside, pale green. **Flowers** white. **Male flowers** 5–6 in each umbel; perianth lobes 6, obovate, obovate-oblong or oblong, subequal, 2–4 × 1–1.5 mm, hairy; stamens 9–12, unequal, yellow, anthers 1–2 mm long, filaments slender, 2–7 mm long, sparsely hairy. **Female flowers** 5–6 in each umbel; perianth lobes 6, obovate, obovate-oblong or oblong, subequal, 2.5–3 × 1–1.5 mm, hairy; ovary globose, 1 mm diam., glabrous, style 2–2.5 mm long, stigma peltate; staminodes 6–8, linear, 1.5–3 mm long, hairy. **Fruit** globose to elliptic, 7–11 × 6–7 mm, apex acute, smooth, glabrous, dark pink to purple or black when mature; cupule 2.6–5 mm diam., flat to 2 mm high, margin entire, patent to covering only the base, smooth, glabrous; pedicel in fruit 5–7 mm long, glabrous; stalk 5–8 mm long, slightly swollen, 1.2–1.5 mm diam., glabrous.

Distribution. Thailand, Peninsular Malaysia, Java, Borneo and New Guinea. In Singapore, known from many localities including Singapore Botanic Gardens' Rain Forest (*Ridley 56*, 1890, BM), Chan Chu Kang (*Ridley 8056*, 1896, SING [SING0013210]), Pulau Brani (*Ridley 11319*, 1902, SING [SING0013215]), the Central Catchment (*Maxwell 82-36*, 11 Feb 1982, SING [0013214]) and Chestnut (*Yeo SING2012-419*, 1 Oct 2012, SING [SING0190405]).

Ecology. In Singapore, and across its range, in primary and secondary lowland forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Least Concern (LC) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

Vernacular names. *Medang, perawas* (NParks' Flora & Fauna Web, 2026).

6. *Litsea erectinervia* Kosterm.

(Latin, *erectus* = erect, *nervosus* = with conspicuous nerves, veins or ribs; referring to the raised secondary veins)

Reinwardtia 8(1) (1970) 94; Keng, Gard. Bull. Singapore 27 (1974) 80; Kochummen, Tree Fl. Malaya 4 (1989) 156; Turner, Gard. Bull. Singapore 45 (1993) 114; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 282; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 169, 380; Chong et al., Nat. Singapore 9 (2016) 21; de Kok, Gard. Bull. Singapore 73 (2021) 118, fig. 10: A; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 401. **Type:** *Achmad* 1338, [Indonesia], Sumatra, Simaloer Islands, Tapah (Defajan), 26 August 1919 (lectotype BO [sheet no. BO-1276855], designated by de Kok, Gard. Bull. Singapore 73 (2021) 118; isolectotypes BO [sheet no. BO-1276856, BO-1278280]). **Fig. 27.**

Litsea ferruginea auct. non (Blume) Blume: Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19.

Trees, 5–30(–40) m tall, dbh to 50 cm. **Twigs** slender, 2.3–4.8 mm diam., round to angled in cross-section, velutinous, hairs reddish brown, erect; terminal vegetative buds ovate, 7.9–8.8 mm long, apex acute, velutinous. **Leaves** alternate or spiral; lamina coriaceous, elliptic to oblanceolate, 7.8–23 × 3.4–9 cm, apex acute, base cuneate, often asymmetric, secondary veins 6–12 pairs, arching gradually to the margin, tertiary veins scalariform, drying dark to light brown, with a strong smell when crushed; upper surface glabrous with some hairs on the midrib, midrib and secondary veins flattened to sunken, tertiary veins distinct, glossy bright to dark green, drying dark brown, hairs brown, erect; lower surface midrib and secondary veins raised, tertiary veins faint, densely to sparsely hairy, glaucous, hairs reddish brown, erect; petiole half-terete to channelled, 0.7–2.5 cm long, sparsely to densely hairy, hairs erect. **Inflorescences** in clusters of umbels, 13–15 mm long, along branchlets or in axils of leaves, umbels 3–4 mm diam., velutinous, hairs dark brown, erect; involucre bracts 2–5, suborbicular or broadly ovate, concave, 3–4 × 2–3.5 mm, velutinous outside, sparsely hairy inside. **Flowers** cream to dark yellow. **Male flowers** 6–8 in each umbel; perianth lobes 6, oblong, apex acute to rounded, 1.5–3 × 0.5–1 mm, velutinous; stamens 6, unequal, anthers 0.5–1 mm long, filaments 1–4 mm long, hairy. **Female flowers** c. 5 in each umbel; perianth lobes 6, 1–3 × 0.8–1 mm, velutinous; ovary c. 1 mm diam., glabrous, style 1–2 mm long, stigma peltate. **Fruit** globose, 10–17 mm diam., apex rounded, surface warty, apex surface smooth, yellow to red when mature; cupule woody, 12.5–20 mm diam., 4–9.5 mm high, enveloping up to half of the fruit, surface warty, grey.

Distribution. Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from Seletar (*Ridley* 6151, Apr 1894, K [K003279660, K003279662], SING [SING0013227]), Bukit Arang (*Ridley* 5854, 1894, BM, K [K003279659], SING [SING0013228]), Mandai (*Corner* 37132, 22 Jul 1940, SING [SING0013224]), Nee Soon (*Gwee* SING2010-440, 3 Aug 2010, SING [SING0145614]) and Bukit Timah (*Niissalo* SING2019-912, 18 Sep 2019, SING [SING0295588]).

Ecology. Across its range, in wet areas in lowland forest to 280 m. In Singapore, in primary and secondary forest and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Notes. This species is part of a small group of species with densely hairy brown twigs, terminal vegetative buds and leaf lower surfaces and inflorescences. In Singapore, there are only two representatives (*Litsea erectinervia* and *L. ferruginea*) with the leaf arrangement as the main difference between these two species. *Litsea erectinervia* has alternate leaves, while *L. ferruginea* has opposite leaves. Keng (Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19) mistakenly exchanged the two names.

7. *Litsea ferruginea* (Blume) Blume

(Latin, *ferrugineus* = reddish brown, rusty; referring to the indumentum on the twigs and leaves)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 561; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 186; Ridley, Fl. Malay Penins. 3 (1924) 129; Kostermans, Reinwardtia 8(1) (1970) 96; Keng, Gard. Bull. Singapore 27 (1974) 80; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 20; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 73; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 169, 380; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 122, fig. 10: B; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 401; Ngernsaengsaruyay & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1074. **Basionym:** *Cryptocarya ferruginea* Blume, Cat. Gew. Buitenzorg (1823) 65. **Synonyms:** *Tetranthera blumei* Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 65. – *Actinodaphne blumei* Nees, Syst. Laur. (1836) 598, as ‘*blumii*’, nom. illeg. superfl. – *Cylicodaphne ferruginea* (Blume) Blume, Mus. Bot. 2(1) (1856) 11. – *Lepidadenia ferruginea* (Blume) Miq., Fl. Ned. Ind. 1(1), fasc. 6 (1858) 935. – *Litsea blumei* Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 160, as ‘*blumii*’, nom. illeg. superfl.; Ridley, Fl. Malay Penins. 3 (1924) 129. – *Malapoenna ferruginea* (Blume) Kuntze, Revis. Gen. Pl. 2 (1891) 572. **Type:** *Blume s.n.*, [Indonesia], Java, Salak, January 1823 (lectotype L [L0036676], designated by de Kok, Gard. Bull. Singapore 73 (2021) 122).

Litsea griffithii Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 187; Ridley, Fl. Malay Penins. 3 (1924) 129. **Type:** Ridley 4823, Singapore, Reservoir Woods [MacRitchie], 1893 (lectotype K [K003279652], designated by de Kok, Gard. Bull. Singapore 69 (2017) 174; isoelectotype SING [SING0043342]).

Litsea erectinervia auct. non Kosterm.: Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19.

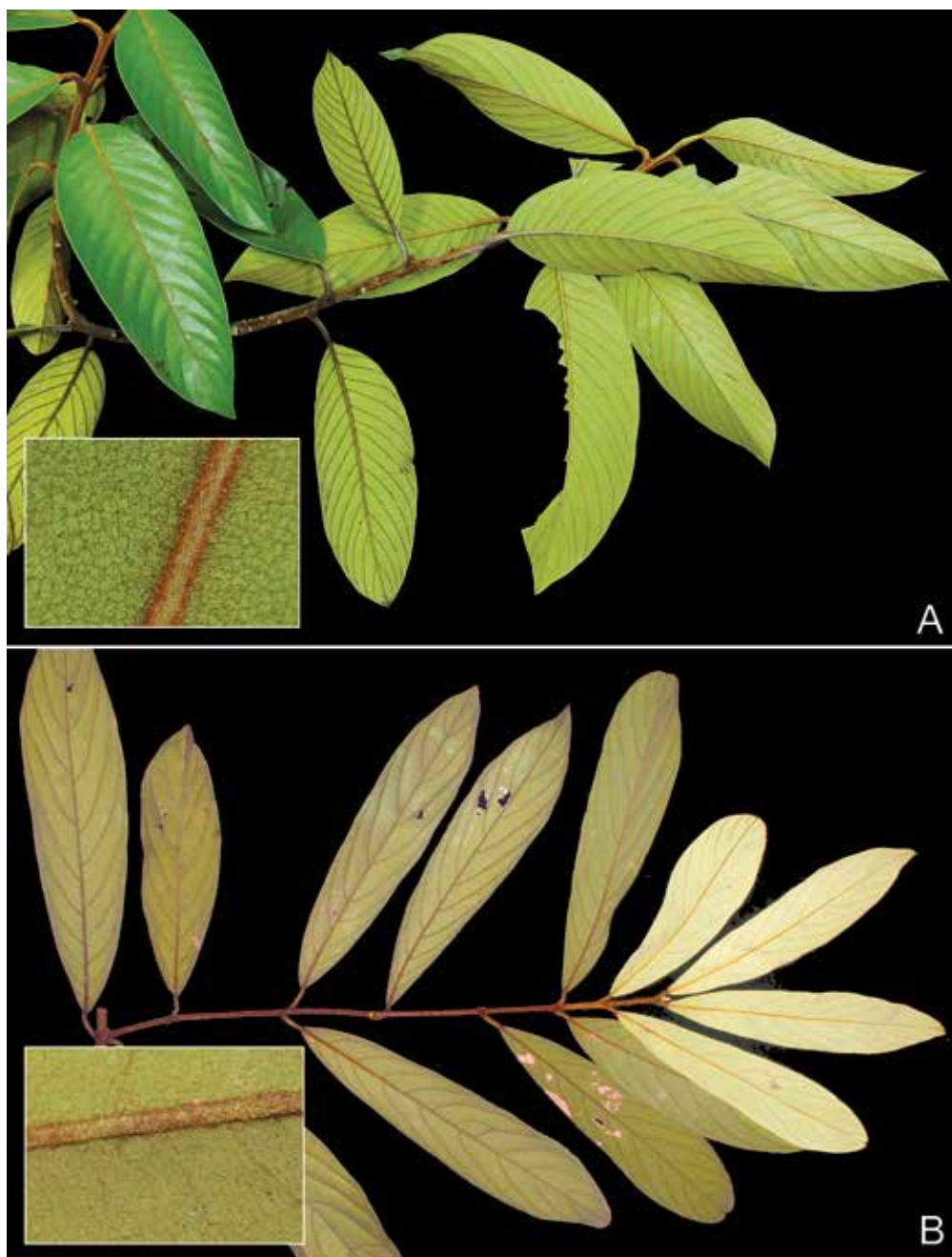


Figure 27. *Litsea erectinervia* Kosterm. **A.** Leafy branch showing alternate leaf arrangement. Inset: Close-up of hairy vein on leaf. *Litsea ferruginea* (Blume) Blume. **B.** Leafy branch showing opposite leaf arrangement. Inset: Close-up of hairy vein on leaf. (A & B including insets from Singapore, A including inset, Bukit Timah, Niissalo SING2019-912; B including inset, Rifle Range Road area. Photos: A including inset, P.K.F. Leong; B including inset, X.Y. Ng).

Trees, 6–21 m tall, dbh 50–90 cm, buttresses to 1 m high; bark dark grey, smooth; inner bark yellow; sapwood pale yellow to white. **Twigs** slender, 2.7–6.5 mm diam., round to angular in cross-section, velutinous, hairs erect, dark brown, short; terminal vegetative buds ellipsoid, 5.6–9 mm long, velutinous. **Leaves** opposite; lamina elliptic to obovate, (6–)8.3–25 × (2–)5–10 cm, apex broadly acute to rounded, base cuneate, secondary veins 8–12 pairs, looping near margin, tertiary veins reticulate; upper surface glabrous, midrib and secondary veins raised to flattened, tertiary veins inconspicuous, dark green, drying greenish yellow; lower surface sparsely to densely hairy, midrib and secondary veins raised, tertiary veins visible, hairs reddish brown, erect; petiole swollen at base, half-terete, 0.5–1.5 cm long, densely hairy, hairs reddish brown. **Inflorescences** in clusters of umbels, 11–15 mm long, along branchlets or in axils of leaves, umbels 2–3 mm diam., densely hairy, hairs dark brown, erect; involucre bracts 5, suborbicular or broadly ovate, concave, 5–6 × 3.5–6 mm, velutinous outside, sparsely hairy inside. **Flowers** pale green to cream or bright yellow. **Male flowers** 6–8 in each umbel; perianth lobes 6, 2–3 × 0.5–1 mm, oblong, apex acute to rounded, velutinous; stamens 6, unequal, anthers 0.5–1 mm long, filaments 1–4 mm long. **Female flowers** 6–7 in each umbel; perianth lobes 6, 1–1.5 × 0.5–0.7 mm, velutinous; ovary c. 0.6 mm diam., glabrous, style 3–4 mm long, stigma peltate; staminodes 12, linear, 0.6–1.5 mm long, hairy. **Fruit** globose to ellipsoid, 8–25 × 13–14 mm, apex rounded, surface warty, apex surface smooth, dull red becoming black when mature; cupule fleshy, 15.6–19 mm diam., 11–16 mm high, enveloping almost the entire fruit, surface smooth to warty.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra and Java. In Singapore, known from Singapore Botanic Gardens' Rain Forest (*Ridley* 5569, 1893, BM, SING [SING0001667]) and the Central Catchment (*Ridley* 4823, 1893, K [K003279652], SING [SING0043342]; *Chong et al. SING2022-637*, 15 Jun 2022, SING [SING0392060]). It has also been observed but not collected on Rifle Range Road (see de Kok, Gard. Bull. Singapore 73 (2021) 119, fig. 10: B).

Ecology. Across its range, in lowland and hill forest. In Singapore, in primary and secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Vernacular name. *Medang pinang* (NParks' Flora & Fauna Web, 2026).

Notes. De Kok (Gard. Bull. Singapore 69 (2017) 174) designated *Ridley* 4823 (K [K003279652]), collected in Reservoir Woods [MacRitchie] in 1893, as the lectotype of *Litsea griffithii* Gamble, whilst also noting that this collection had been cited in error as 5823 in the protologue. He also designated (de Kok (Gard. Bull. Singapore 71 (2019) 132) another specimen labelled as *Ridley* 4823 (K [K000778657]), collected from Changi Road in 1893, as the lectotype of *Cinnamomum ridleyi* Gamble (a synonym *Cinnamomum subavenium* Miq.).

8. *Litsea gracilipes* Hook.f.

(Latin, *gracilis* = slender, *pes* = foot; likely suggesting this species is more delicate than other species)

Fl. Brit. India 5, fasc. 13 (1886) 159; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1354; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Kochummen, Tree Fl. Malaya 4 (1989) 157; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 194; de Kok, Gard. Bull. Singapore 73 (2021) 127; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 401. **Type:** *Griffith s.n.*, [Kew Distribution 4311], [Malaysia], Malacca [Melaka] (lectotype K [K000797135], designated by de Kok, Gard. Bull. Singapore 69 (2017) 174; isoelectotypes K [K000797136], P [P00745274]).

Trees, 9–21 m tall, dbh 7–40 cm; with short buttresses and occasionally with stilt roots; bark dark to reddish brown, smooth; inner bark yellow-brown, rapidly darkening on exposure and with a strong aromatic smell; sapwood yellow. **Twigs** slender, 1.8–2.6 mm diam., round in cross-section, glabrous; terminal vegetative buds lanceolate, 2.5–3.4 mm long, apex acute, velutinous. **Leaves** (sub)opposite, some leaves alternate; lamina (thinly) coriaceous, elliptic to obovate, (3.5–)7.5–14 × (1.6–)2.5–6.5 cm, apex acute to sharply acute, often with a distinct tip, base cuneate to attenuate, secondary veins 5–8 pairs, tertiary veins finely reticulate; upper surface glabrous, midrib sunken, secondary veins sunken, secondary and tertiary veins inconspicuous, pale to dark green; lower surface glabrous, midrib raised, secondary veins raised, tertiary veins visible; petiole half-terete, 0.7–1.2 cm long, wrinkled when dry, glabrous. **Inflorescences** in clusters of umbels, 11–20 mm long, along branchlets or in axils of leaves; umbels 4–5 mm diam., densely to sparsely hairy; involucre bracts 4, 3.5–5 × 1.5–3 mm, orbicular to oblong, densely to sparsely hairy outside. **Flowers** yellowish green. **Male flowers** 4 in each umbel; perianth lobes 6, obovate-oblong or oblong, apex acute, subequal, 2–2.2 × 0.8–1.1 mm, sparsely hairy; stamens 10, unequal, anthers 0.8–1 mm long, filaments slender, 2–4 mm long, glabrous. **Female flowers** 4 in each umbel; perianth lobes 6, obovate-oblong or oblong, subequal, 1.2–1.5 × 0.5–1 mm; ovary globose, 1 mm diam., glabrous, style c. 2 mm long, stigma peltate; staminodes 6–8, linear, 0.8–1 mm long, glabrous. **Fruit** ellipsoid, 8–16.6 × 4–10 mm, apex rounded, glabrous; cupule 5–7.2 mm diam., margin entire, smooth, covering the base of the fruit, glabrous to sparsely hairy; stalk slightly swollen, 2–2.2 mm diam.

Distribution. Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known from Seletar (*Sinclair 40274*, 1 May 1954, K [K003279730], SING [SING0011249]) and Bukit Timah (*Noor MN 404*, 1 Aug 1969, SING [SING0013248]).

Ecology. Across its range, in freshwater and peat swamps, from sea level to 120 m. In Singapore, formerly in lowland forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

9. *Litsea grandis* (Nees) Hook.f.

(Latin, *grandis* = large; referring to the leaves)

Fl. Brit. India 5, fasc. 13 (1886) 162, as '*Litsaea*'; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 136; Ridley, Fl. Malay Penins. 3 (1924) 115; Liu, Laurac. Chine & Indochine (1934 ['1932']) 191; Keng, Gard. Bull. Singapore 27 (1974) 80; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 385, fig. 123; Kochummen, Tree Fl. Malaya 4 (1989) 158; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Ng, Gard. Bull. Singapore 57 (2005) 233; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 216; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 57; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Chong et al., Nat. Singapore 9 (2016) 22; de Kok, Gard. Bull. Singapore 73 (2021) 128, fig. 13; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 402; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1076. **Basionym:** *Polyadenia grandis* Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 62. **Synonym:** *Tetranthera grandis* Wall., Numer. List no. 2552 (1830), nom. nud. **Type:** *Porter s.n.* [EIC 2552], [Malaysia], Penang, October 1822 (lectotype K-W [K001116410], designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 57; isolectotypes E [E00393267], K [K000797043, K000797041]). **Fig. 28.**

Litsea polyantha auct. non Juss.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132.

Trees, 10–30 m tall, dbh 15–80 cm; bark smooth to scaly, lenticellate, greyish brown; inner bark pale brown to yellowish, strongly aromatic; sapwood yellowish. **Twigs** slender to stout, 4–12 mm diam., angular in cross-section, velutinous, hairs reddish brown, short, erect; terminal vegetative buds 8–19 mm long, apex acute, velutinous. **Leaves** alternate, crowded toward the apex of branchlets; lamina stiff-coriaceous, elliptic, sometimes ovate or obovate, 8–38 × 6–18.5 cm, apex rounded to acute, sometimes emarginate, base rounded to cuneate, sometimes oblique, margin wavy, secondary veins 7–14 pairs, curving and looping near margin, tertiary veins scalariform-reticulate; upper surface glabrous or hairy only on midrib and secondary veins, midrib and secondary veins sunken, tertiary veins distinct; lower surface sparsely to densely hairy, secondary veins strongly raised, tertiary veins distinct, sometimes glaucous; petiole half-terete, 0.8–3.2 cm long, velutinous with brown hairs. **Inflorescences** clusters of umbels, 1.5–2.5 cm long, along branchlets or in axils of leaves; umbels 7–12 mm diam.; involucre bracts 4, decussate, suborbicular or broadly ovate, concave, 4–7 × 3–5 mm, coriaceous, with dense indumentum of reddish brown hairs. **Flowers** greenish. **Male flowers** 5–7 in each umbel; perianth lobes 6, linear-oblong or oblong, subequal, 3.5–4 × 0.5–0.8 mm, sparsely hairy; stamens 15–18, unequal, anthers 1–1.5 mm long, filaments slender, 2–5 mm long, glabrous to very sparsely hairy. **Female flowers** 5–6 in each umbel; perianth lobes 6, ovate or ovate-oblong, subequal, 1.5–3 × 0.8–1 mm, sparsely hairy; ovary ovoid, 1–1.2 × 0.8–1 mm, glabrous, style 1.5–2.5 mm long, stigma peltate; staminodes 6–9, linear, 1–2 mm long, sparsely hairy. **Fruit** ellipsoid, 10–22 × 7–8(–13) mm, apex acute, smooth, glabrous, dark red, purple or black when ripe, glossy; cupule cup-shaped, 0.6–0.7(–1.1) cm diam., 0.4–0.5(–0.8) cm high, sparsely pubescent, margin entire or wavy, black; pedicel in fruit 0.5–1 cm long, sparsely pubescent; stalk slightly swollen, 7–14 × 2–3 mm, sparsely hairy.



Figure 28. *Litsea grandis* (Nees) Hook.f. Habit. Inset: Close-up of inflorescences buds. (From Singapore, Central Catchment. Photos: X.Y. Ng).

Distribution. Myanmar, Thailand, Peninsular Malaysia, Sumatra, Java, Borneo, Sulawesi and the Philippines. In Singapore, known from historical collections from Chua Chu Kang (*Ridley* 3962, 1892, BM, SING [SING0013280]), Changi and Tanglin. More recent collections are from Bukit Timah (*Ngadiman SFN* 34606, 1 Dec 1937, K [K003279121], SING [SING0013259]), Nee Soon (*Samsuri et al. NES* 80, 8 Jul 2003, SING [SING0045788]), Lower Peirce (*Gwee SING*2008-36, 26 Feb 2008, SING [SING0105438]) and Upper Seletar (*Leong et al. SING*2011-062, 15 Feb 2011, SING [SING0159969]).

Ecology. Across its range, in primary and secondary forest and in open vegetation, sometimes in (peat) swamp forest. In Singapore, in primary and mature secondary forests and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

10. *Litsea lanceolata* (Blume) Kosterm.

(Latin, *lanceolatus* = shaped like a lance; referring to the leaves)

Reinwardtia 7(4) (1968) 348; Backer & Bakhuizen van der Brink, Fl. Java (Spermatoph.) 3 (1968) 643; Keng, Gard. Bull. Singapore 27 (1974) 80; Kochummen, Tree Fl. Malaya 4 (1989) 159; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 283; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 194; de Kok, Gard. Bull. Singapore 73 (2021) 137; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 402. **Basionym:** *Aperula lanceolata* Blume, Mus. Bot. 1(23) (1851) 367. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype U [U0002822], designated by de Kok, Gard. Bull. Singapore 69 (2017) 174; isoelectotype U [U0002823]).

Litsea sarawacensis Gamble, Bull. Misc. Inform. Kew 1910 (1910) 365; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 182; Ridley, Fl. Malay Penins. 3 (1924) 130. **Type:** *Ridley 4817*, Singapore, Reservoir Woods [MacRitchie], July 1893 (lectotype K [K000797140], designated by de Kok, Gard. Bull. Singapore 69 (2017) 176; isoelectotypes BM, SING [SING0011250]).

Trees or shrubs, 4–7 m tall. **Twigs** slender, 1.2–2.1 mm diam., round to flattened in cross-section, densely hairy when young, soon becoming sparsely hairy or glabrous, hairs small, appressed, yellowish; terminal leaf buds lanceolate, 1.4–1.7 mm long, velutinous. **Leaves** (sub)opposite; lamina thinly coriaceous, elliptic to (ob)lanceolate, 7.5–18 × 1.9–5 cm, apex acuminate with a 1–2.7 mm long tip, base cuneate, secondary veins 5–7 pairs, curving and becoming brochidodromous, drying reddish brown; upper surface glabrous with a few hairs on the midrib, midrib raised to sunken, secondary veins sunken, tertiary veins visible; lower surface glabrous with hairs on the midrib, midrib and secondary veins raised, tertiary veins distinct, glaucous; petiole slender, half-terete to channelled, 0.5–1 cm long, black and wrinkled when dried, glabrous or sparsely hairy. **Inflorescences** clusters of umbels, 5–10 mm long, in axils of leaves or along branchlets; umbels 3–5 mm diam., densely hairy; involucre bracts 4, decussate, suborbicular or broadly ovate, concave, 1.5–2.2 × 1–2 mm, densely hairy. **Flowers** yellow. **Male flowers** 5–6 in each umbel; perianth lobes 6, elliptic, elliptic-oblong or oblong, subequal, 0.6–1.6 × 0.6–1 mm, membranaceous, hairy; stamens 6–12, unequal, anthers 0.8–1.3 mm long, filaments 1.3–1.6 mm long, glabrous to sparsely hairy at base. **Female flowers** 3 in each umbel; perianth lobes 6, elliptic, elliptic-oblong, subequal, 0.8–1 × 0.5–1 mm, membranaceous, hairy; ovary ovoid, 0.5–0.6 mm long, glabrous, style 0.8–1 mm long, stigma inconspicuous. **Fruit** ovoid to ellipsoid, 9–13 × 4.5–8 mm, apex shortly pointed, glabrous; cupule shallow cup-shaped, c. 3.7 mm diam., velutinous; stalk velutinous.

Distribution. Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known only from one historical collection from Reservoir Woods [MacRitchie] (*Ridley 4817*, Jul 1893, BM [BM001121299], K [K000797140], SING [SING0011250]).

Ecology. Across its range, in lowland and mountain forests, sometimes in swamps.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

11. *Litsea lancifolia* (Roxb. ex Nees) Fern.-Vill.

(Latin, *lanci*- = lanceolate, *folium* = leaves; with narrow leaves)

in Blanco, Fl. Filip., ed. 3, 4, fasc. 13A–21A (1880) 181; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 182; Ridley, Fl. Malay. Penins. 3 (1924) 130; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1355; Keng, Gard. Bull. Singapore 27 (1974) 80, as '*lanceifolia*'; Maxwell, Gard. Bull. Singapore 35(2) (1983 ['1982']) 195; Kochummen, Tree Fl. Malaya 4 (1989) 160; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 283; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; Ng, Gard. Bull. Singapore 57 (2005) 234; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 68; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Chong et al., Nat. Singapore 9 (2016) 22; de Kok, Gard. Bull. Singapore 73 (2021) 138, fig. 16; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 402; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1081. **Basionym:** *Tetranthera lancifolia* Roxb. ex Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 65. **Type:** *Wallich s.n.* [EIC 2532], [Bangladesh], Sylhet, 1821 (lectotype K-W [K001116369], first step designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 68, second step designated by de Kok, Gard. Bull. Singapore 73 (2021) 139; isolectotypes BM [BM000951038], E [E00393197, E00393199, E00393200], GH [GH00041772], GZU [GZU000254496, GZU000254497], K [K000357527], K-W [K001116368], MEL [MEL2388443], NY [NY00355982], PH [PH00030197], U [U0002824]). **Fig. 29.**

Trees or shrubs, 2–12 m tall, dbh 4–20 cm; bark smooth, greyish brown or dark brown. **Twigs** slender, 1.3–2 mm diam., rounded in cross-section, densely hairy when young, hairs erect, short, yellowish; terminal vegetative buds 2.2–5.5 mm long, lanceolate to ovate, apex acute, velutinous. **Leaves** (sub)opposite; lamina thinly coriaceous, elliptic to (ob)lanceolate, 5–23.5 × 1.8–7 cm, apex acute to short-acuminate, sometimes with a long tip, base cuneate, secondary veins 5–13 pairs, obscurely brochidodromous, tertiary veins scalariform-reticulate or reticulate, drying greenish brown; upper surface glabrous, but densely hairy on midrib and secondary veins, midrib and secondary veins shallowly sunken or flattened, tertiary veins visible, dark green; lower surface sparsely hairy and densely hairy on veins, midrib and secondary veins raised beneath, tertiary veins distinct, green, glaucous; petiole 0.2–1.5 cm long, dark and wrinkled when dried, glabrous to densely hairy. **Inflorescences** clusters of umbels, 5–10 mm long, in axils of leaves or along branchlets; umbels 3–6 mm diam., sparsely to densely hairy; involucral bracts 4, decussate, suborbicular or broadly ovate, concave, 2–4.5 × 2–3 mm, densely hairy outside, green. **Flowers** yellowish to orange. **Male flowers** 3–5 in each umbel; perianth lobes 6, elliptic-oblong or oblong, subequal, 1.4–2.5 × 0.5–1 mm, membranaceous, hairy; stamens 7–9, unequal, anthers 0.5–1 mm long, filaments 1–2 mm long, few hairs present. **Female flowers** 3–5 in each umbel; perianth lobes 6, elliptic, elliptic-oblong, subequal, 1.5–2 × 0.5–0.8 mm, membranaceous, hairy; ovary ovoid, 0.8–1.5 × 0.5–0.8 mm, glabrous, style 1–1.5 mm long, stigma peltate; staminodes 7–9, linear, 1–1.5 mm long, hairy. **Fruit** globular to ellipsoid, 4–15 × 4–9.5 mm, apex rounded, green with white dots, turning dark purple and black when ripe, glabrous, glossy; cupule shallow cup-shaped, 2.7–3.2 mm diam., densely to sparsely hairy; stalk 0–1.6 cm long, densely hairy.

Distribution. India, Nepal, China, Myanmar, Thailand, Laos, Vietnam, Peninsular Malaysia, Sumatra and Borneo. In Singapore, known from Bukit Panjang (*Ridley 12563*, 27 May 1906,

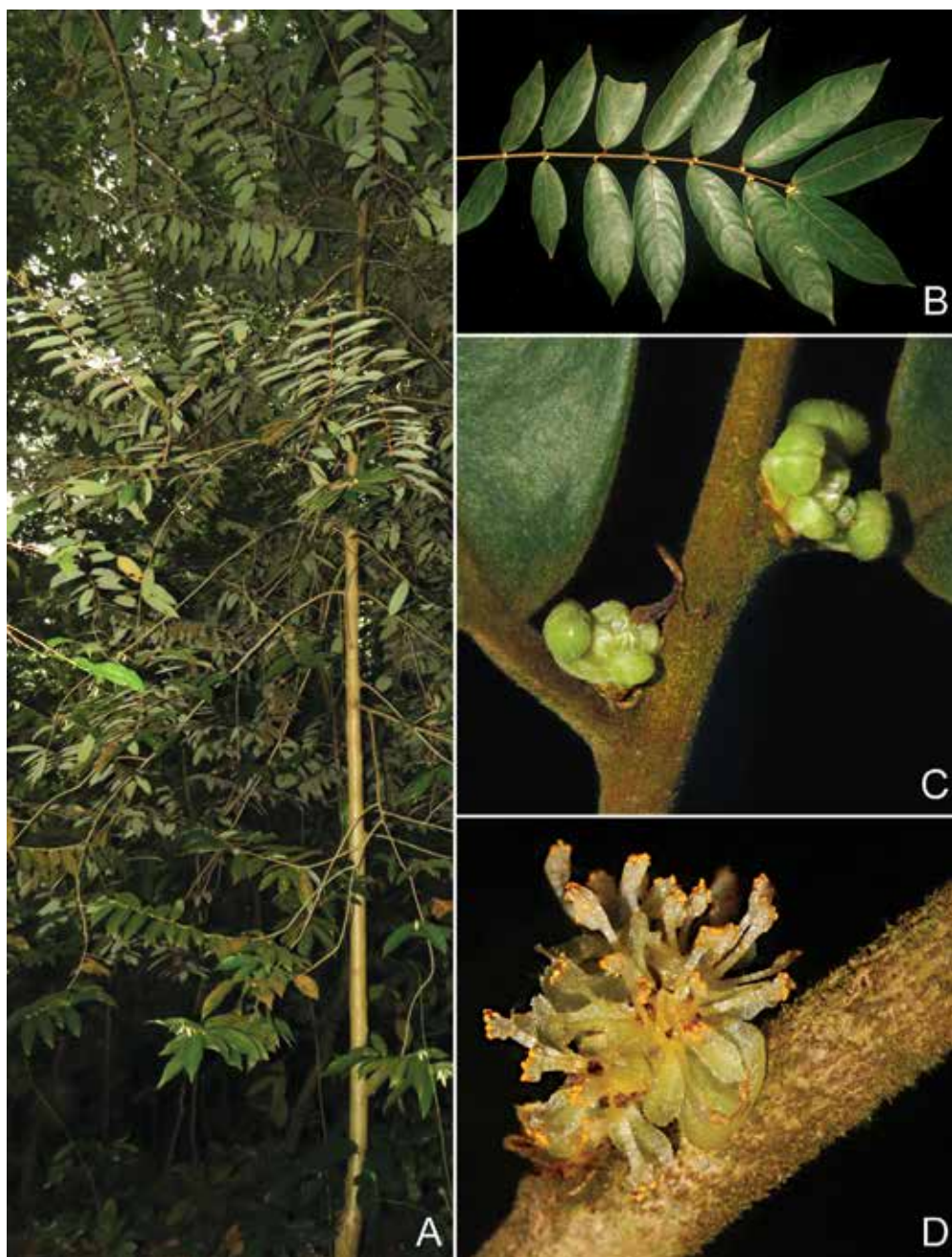


Figure 29. *Litsea lancifolia* (Roxb. ex Nees) Fern.-Vill. **A.** Habit. **B.** Leafy branch with inflorescences. **C.** Inflorescences with flower buds. **D.** Male inflorescence with open flowers, showing anther flaps. (A–D from Singapore, A–C, MacRitchie, Ng & Lim SING2018-226; D, MacRitchie, Lim SING2018-397. Photos: A & C, R.C.J. Lim; B & D, X.Y. Ng).

BM, K [K003279705], SING [SING0011253]), Nee Soon (*Maxwell* 82-78, 19 Mar 1982, SING [SING0011252]), Mandai (*Leong et al.* SING2009-247, 3 Mar 2009, SING [SING0124412]), Seletar (*Lua* SING2011-218, 27 May 2011, SING [SING0162355]) and MacRitchie (*Chew* SING2014-213, 29 May 2014, SING [SING0205600]).

Ecology. Across its range, in lowland and lower mountain forests. In Singapore, in mature secondary forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 486).

Notes. Ng (Gard. Bull. Singapore 57 (2005) 234) recognised four varieties in *Litsea lancifolia* of which only *L. lancifolia* var. *lancifolia* would be found in Singapore. The varieties are not recognised here pending further work on the species in Borneo where there are many intermediates between the varieties.

12. *Litsea machilifolia* Gamble

(the genus *Machilus*, Lauraceae, Latin, *folium* = leaf;
with leaves like those of *Machilus* Rumph. ex Nees)

Bull. Misc. Inform. Kew 1910 (1910) 320; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 171; Ridley, Fl. Malay Penins. 3 (1924) 126; Keng, Gard. Bull. Singapore 27 (1974) 80; Kochummen, Tree Fl. Malaya 4 (1989) 160; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 284; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Ng, Gard. Bull. Singapore 57 (2005) 234; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Ngernsaengsarua et al., Thai Forest Bull., Bot. 39 (2011) 70; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 142, fig. 17; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 403; Ngernsaengsarua & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1082. **Type:** *Curtis* 795, [Malaysia], Penang, Moniot Road, June 1886 (lectotype SING [SING0068773], first step designated by Ng, Gard. Bull. Singapore 57 (2005) 238, second step designated by de Kok, Gard. Bull. Singapore 69 (2017) 174). **Fig. 30.**

Litsea machilifolia Gamble var. *angustifolia* Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 172; Ridley, Fl. Malay Penins. 3 (1924) 126. **Type:** *King's Collector* 6815, [Malaysia], Perak, Larut, November 1884 (lectotype K [K003279542], designated by de Kok, Gard. Bull. Singapore 69 (2017) 175; isolectotypes SING [SING0229214, SING0229215]).

Litsea panamanja auct. non (Buch.-Ham. ex Nees) Hook.f.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131, as '*panamonja*'; Gamble, J. As. Soc. Bengal. 75, 2 (1912) 172; Ridley, Fl. Malay Penins. 3 (1924) 127, as '*panamonja*'; Kochummen, Tree Fl. Malaya 4 (1989) 162, as '*panamonja*'.

Trees or shrubs, 7–30 m tall, dbh 10–70 cm; bark smooth to pustulate, white or grey to (reddish) brown; inner bark pinkish to reddish or pale yellow; sapwood yellowish, aromatic. **Twigs** slender, 2.6–4 mm diam., rounded to slightly angled in cross-section, glabrous to sparsely



Figure 30. *Litsea machilifolia* Gamble. Leafy branches bearing fruit. Inset: Close-up of fruit with cupules. (From Singapore, Bukit Timah, *Teo SING2018-331*. Photos: P.K.F. Leong).

hairy, drying dark brown to blackish; terminal vegetative buds 6.5–8 mm long, linear, apex acute, glabrous. **Leaves** alternate; lamina thinly coriaceous, lanceolate or ovate-lanceolate, 9–22 × 1.7–7 cm, apex acuminate, with a 10–20 mm long tip, base cuneate, secondary veins 8–14 pairs, brochidodromous, tertiary veins reticulate; upper surface glabrous, midrib raised, secondary veins raised to flattened above, tertiary veins obscure, shiny, dark green; lower surface glabrous, midrib raised beneath, secondary veins raised, tertiary veins distinct, glaucous, pale green; petiole half-terete to channelled in cross-section, 1–2 cm long, glabrous to sparsely hairy, drying black. **Inflorescences** with the appearance of a raceme with a series of umbels along the axis, 2.5–10 cm long, in axils of leaves or terminal, along branchlets or at apex of branchlets; umbels 5–7 mm diam., sparsely hairy to glabrous; involucre bracts 4, decussate, suborbicular or broadly ovate, concave, 3–5 × 3–4 mm, sparsely hairy outside. **Flowers** (pale) yellow to yellowish green. **Male flowers** 5–6 in each umbel; perianth lobes 6, elliptic or elliptic-oblong, subequal, 1.7–3 × 0.8–1 mm, glabrous; stamens 9–12, unequal, anthers 1–1.5 mm long, filaments slender, 2.5–6 mm long, glabrous. **Female flowers** 5 in each umbel; perianth lobes 6, elliptic or elliptic-oblong, subequal, 0.5–0.8 × 1.5–2 mm, glabrous; ovary globose, 0.8–1 mm diam., glabrous, style 1.5–2 mm long, stigma peltate; staminodes 10–12, linear, 1–1.5 mm long. **Fruit** globose, 10–26 mm diam., glabrous, black or (dark) purple when mature; cupule shallow, 9.5–20 mm diam., patent, fleshy, glabrous, margin entire, (bright) orange when mature; pedicel in fruit 6–13 mm long, glabrescent; stalk 2–13 mm long, 3–6 mm diam., sparsely hairy.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known from historical collections from an unspecified locality (*King's Collector 1236*, Jan 1881, K [K003279541]), Singapore Botanic Gardens' Rain Forest (*Ridley 3458*, 1891, SING [SING0000626]) and Bukit Mandai. Additional historical collections and most of the more recent ones are from Bukit Timah (*Sinclair SFN 39990*, 19 Aug 1953, K [K003279520], SING [SING0013270]; *Noor MN 449*, 26 Aug 1969, SING [SING0013266]; *Niissalo et al. SING2019-849*, 11 Sep 2019, SING [SING0296109]).

Ecology. Across its range, in primary and secondary lowland and hill forests, sometimes in peat swamps. In Singapore, in primary and mature secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

13. *Litsea* aff. *maingayi* Hook.f.

(Alexander Carroll Maingay, 1836–1869, English physician,
colonial administrator and botanist)

de Kok, Gard. Bull. Singapore 73 (2021) 176; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 400. **Fig. 31.**

Litsea maingayi auct. non Hook.f.: Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191.

Trees, about 5 m tall. **Twigs** slender to stout, 3.5–7.5 mm diam., dark brown, angular to round in cross-section, glabrous; terminal vegetative buds 5–9 mm long, lanceolate, apex acute, velutinous. **Leaves** alternate; lamina coriaceous, elliptic to oblanceolate, 10–32 × 3.5–9 cm, apex acuminate with distinct tip, base cuneate, margin flat, secondary veins 8–16 pairs, brochidodromous, tertiary veins scalariform; upper surface glabrous, midrib raised to flattened, secondary veins sunken, tertiary veins indistinct; lower surface glabrous, but slightly hairy on midrib, midrib and secondary veins raised, tertiary veins distinct, glaucous; petiole slender, half-terete, 24–37 mm long, glabrous. **Inflorescences** unknown. **Flowers** unknown. **Fruit** unknown.

Distribution. Known from Bukit Timah (*Liew 37266*, 4 Apr 1921, SING [SING0228683, SING0228684]) and Chestnut (*Leong et al. SING2015-193*, 1 Jul 2015, SING [SING0226592]).

Ecology. Lowland forest.

Conservation assessment. In Singapore, it was assessed as Data Deficient (DD) by Middleton et al. (in Davison et al., Singapore Red Data Book, ed. 3 (2024) 486) but as an unnamed species it is not appropriate to assign a conservation status until its identity is clarified.



Figure 31. *Litsea* aff. *maingayi* Hook.f. Habit of a sapling. Inset: Trunk of the parent plant. (From Singapore, Chestnut, Leong *et al.* *SING2015-193*. Photos: P.K.F. Leong).

Notes. This taxon is known only from sterile specimens that closely resemble *Litsea maingayi*. The status of this species cannot be confirmed until flowering and/or fruiting material is available to identify the species with certainty.

14. *Litsea myristicifolia* (Wall. ex Nees) Hook.f.

(the genus *Myristica*, Myristicaceae, Latin, *folium* = leaf; with leaves like those of *Myristica* Gronov.)

Fl. Brit. India 5, fasc. 13 (1886) 172, as '*myristicaefolia*'; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131, as '*myristicaefolia*'; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 169, as '*myristicaefolia*'; Ridley, Fl. Malay Penins. 3 (1924) 125, as '*myristicaefolia*'; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1355; Keng, Gard. Bull. Singapore 27 (1974) 80, as '*myristicaefolia*'; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 385, as '*myristicaefolia*'; Kochummen, Tree Fl. Malaya 4 (1989) 161, as '*myristicaefolia*'; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19, as '*myristicaefolia*'; Turner, Gard. Bull. Singapore 45 (1993) 114, as '*myristicaefolia*'; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 284; Lee et al., Gard. Bull. Singapore 55 (2003) 297; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 79, as '*myristicaefolia*'; de Kok, Gard. Bull. Singapore 73 (2021) 149; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 403; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1087. **Basionym:** *Tetranthera myristicifolia* Wall. [Numer. List no. 2548 (1830), as '*myristicaefolia*', nom. nud.] ex Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 67. **Synonym:** *Cylicodaphne myristicifolia* (Wall. ex Nees) Meisn. in de Candolle, Prodr. 15(1) (1864) 208, as '*myristicaefolia*'. **Type:** Porter s.n. [EIC 2548], [Malaysia], Penang (lectotype K-W [K001116392 – twig on right], first step designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 79, second step designated here; isoelectotypes BM [BM000951043], E [E00393261], K [K000357612], K-W [K001116393 – upper specimen]).

Cylicodaphne myristicifolia (Wall. ex Nees) Meisn. var. *acutata* Meisn. in de Candolle, Prodr. 15(1) (1864) 209, as '*myristicaefolia*'. **Type:** Wallich 1831 [EIC 4129], Singapore, September 1822 (lectotype K [K000797066], designated by de Kok, Gard. Bull. Singapore 73 (2021) 149).

Trees, (1–)6–27 m tall, dbh 20–60 cm, with buttresses to 1 m high; bark grey-brown, lenticellate, smooth to scaly; inner bark pale yellow to reddish; sapwood pale yellow. **Twigs** slender, 2–3 mm diam., round in cross-section, glabrous, slightly aromatic when cut; terminal vegetative buds c. 5.6 mm long, glabrous, apex acuminate with a long-keeled point. **Leaves** alternate, young leaves coppery on lower surface; lamina coriaceous, elliptic, obovate-oblong or obovate, 7.5–26 × 2.5–10 cm, apex acute or obtuse, base cuneate, secondary veins 7–12 pairs, curving near margin, tertiary veins finely reticulate; upper surface glabrous, midrib sunken above, secondary veins flattened or sunken, tertiary veins faintly visible, deep green, glossy, drying greenish; lower surface glabrous, midrib and secondary veins raised, hairs long, appressed, yellowish, tertiary veins faintly visible, glaucous and pale brown; petiole slightly swollen, channelled, 1–3 cm long, glabrous. **Inflorescences** clusters of umbels, 1–2.5 cm long, in axils of leaves, along branchlets or at apex of branchlets; umbels 5–10 mm diam.; involucre bracts 4, decussate, suborbicular or broadly ovate, concave, 4–5 × 3–5 mm, coriaceous, glabrous, yellow-green. **Flowers** yellow. **Male flowers** 5–6 in each umbel; perianth lobes 6, obovate-oblong or oblong, subequal, 3–3.5 × 0.8–1.5 mm, glabrous; stamens 9–12, unequal, anthers 0.8–1.5 mm long, filaments slender, 2–4 mm long, glabrous. **Female flowers** 5–7 in each umbel; perianth lobes 6, ovate, ovate-oblong or oblong, subequal, 2–3 ×

0.8–1 mm, glabrous; ovary globose or sub-globose, 0.8–1 mm diam., glabrous, style 2–2.5 mm long, stigma peltate; staminodes 9, linear, 1–2 mm long. **Fruit** (sub-)globose, 7–13 mm diam., apex round, glabrous, white when mature; cupule a deep cup, 6–12 mm diam., 8–10 mm high, glabrous, margin entire, green; pedicel in fruit thickened, 8–20 mm long, glabrous; stalk gradually thickening upwards, 2–3.5 mm diam., 8–15 mm long, glabrous.

Distribution. Southeastern Myanmar, Peninsular Thailand and Peninsular Malaysia. In Singapore, known from historical collections from an unspecified locality (*Wallich 1831* [EIC 4129], Sep 1822, K [K001038210]), Geylang (*Ridley 4824*, 1893, BM, K [K003279496], SING [SING0011259]) and Bedok (*Ridley 13331*, 1908, BM, K [K003279494], SING [SING0011255]). More recent collections are from Changi (*Lai LJ548*, 1999, SING [SING0019948]; *Lua SING2022-1081*, 22 Nov 2022, SING [SING0390152]), Pulau Ubin and other places.

Ecology. Across its range, in primary and secondary forests, sometimes on clay, or along the back of mangrove swamps, from sea level to 200 m. In Singapore, recorded from secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Vernacular name. *Nutmeg laurel* (NParks' Flora & Fauna Web, 2026).

15. *Litsea resinosa* Blume

(Latin, *resinosus* = having resin; suggesting that this species produces resin)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 562; Kochummen, Tree Fl. Malaya 4 (1989) 163; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 87; Chong et al., Nat. Singapore 9 (2016) 24; de Kok, Gard. Bull. Singapore 73 (2021) 154, fig. 20; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 403; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1091. **Synonyms:** *Tetranthera resinosa* (Blume) Nees, Syst. Laur. (1836) 550. – *Malapoenna resinosa* (Blume) Kuntze, Revis. Gen. Pl. 2 (1891) 573. **Type:** *Collector unknown s.n.*, [Indonesia], Java (lectotype K [K000815281], designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 87). **Fig. 32.**

Trees, 10–30 m tall, dbh 20–60 cm; buttresses short, with stilt roots in swampy habitats; bark grey, smooth with wide fissures, lenticellate; inner bark reddish; sapwood pale. **Twigs** slender to stout, 3–7 mm diam., angular in cross-section, velutinous, soon glabrescent, hairs short, yellowish appressed; terminal vegetative buds 3.3–4.5 mm long, apex rounded to apex, ovate, velutinous. **Leaves** alternate; lamina coriaceous, elliptic to obovate, 9–30 × 2.5–15 cm, apex acute to acuminate, base cuneate, sometimes asymmetric, secondary veins 7–16 pairs, curving near the margin, tertiary veins scalariform-reticulate; upper surface glabrous, midrib and secondary veins sunken, tertiary veins faint, deep to dark green, glossy; lower surface glabrous or with a few hairs on the veins, midrib and secondary veins raised, tertiary veins

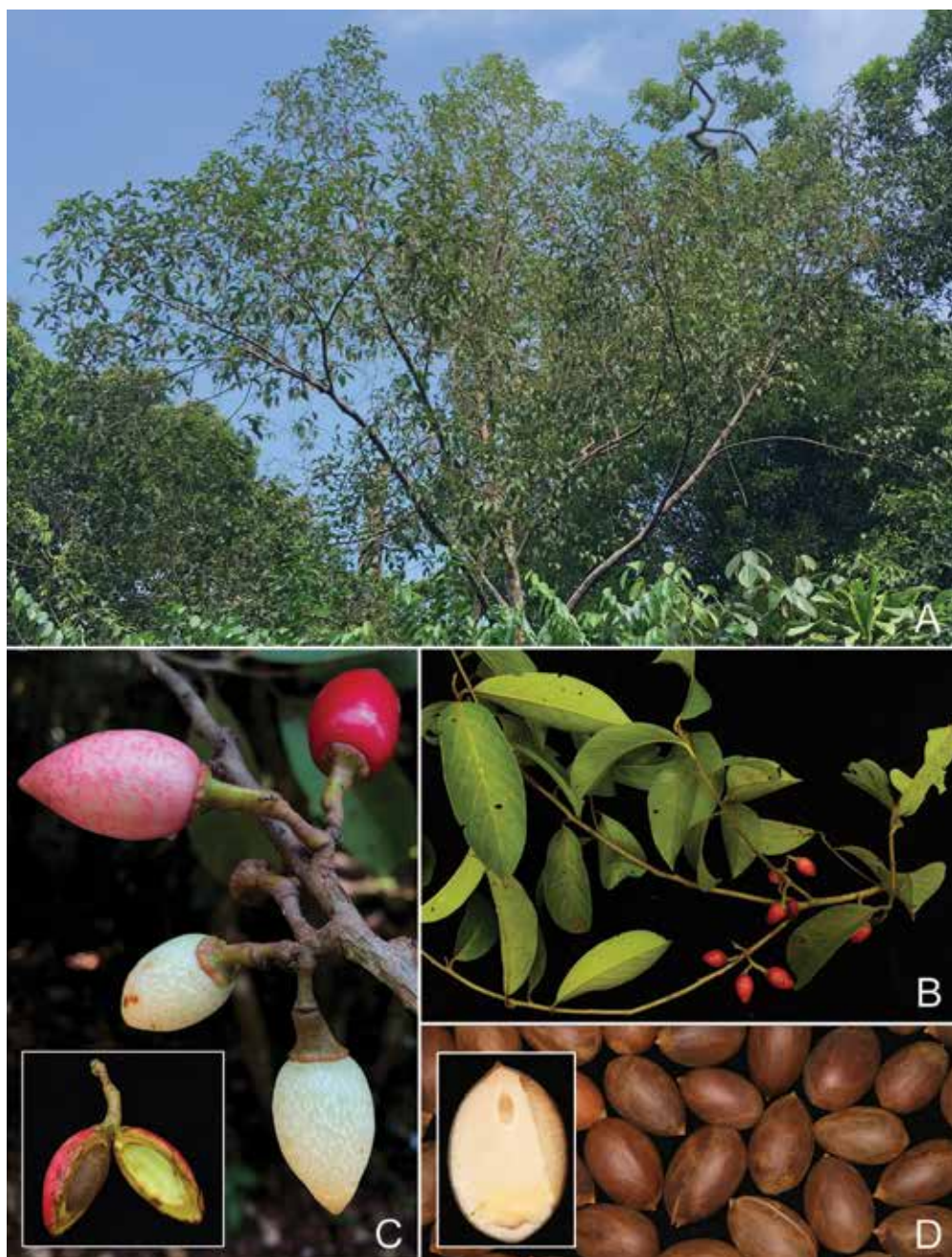


Figure 32. *Litsea resinosa* Blume. **A.** Habit. **B.** Leafy branch with fruit. **C.** Fruit and cupules at different stages of maturity. Inset: Fruit split to reveal seed. **D.** Seeds. Inset: A halved seed. (A–D including insets from Singapore, A–C, D & D inset, Upper Seletar; C inset, Nee Soon, *Vijayakumar SING2014-097*. Photos: A–C, D & D inset, X.Y. Ng; C inset, P.K.F. Leong).

distinct, glaucous below, pale green; petiole slender, channelled in cross-section, 1–3 cm long, finely wrinkled, black. **Inflorescences** in clusters of umbels on a 1–2.4 cm long peduncle, in axils of leaves or along branchlets; umbels 7–9 mm diam.; peduncles 0.4–1 cm long, densely to sparsely hairy; involucre bracts 4–5, decussate, suborbicular or broadly ovate, concave, 3–7 × 2.5–5 mm, glabrous to sparsely hairy outside. **Flowers** pale yellow. **Male flowers** 4–7 in each umbel; perianth lobes 6, elliptic, obovate-lanceolate, subequal, 2–3.5 × 0.8–1 mm, hairy, margin fimbriate; stamens 9–16, unequal, anthers 0.5–1.5 mm long, filaments 1.5–3.5 mm long, sparsely hairy; female flowers 3–7 in each umbel; perianth lobes 6, elliptic to obovate-lanceolate, subequal, 3–3.5 × 0.8–1 mm, hairy; ovary ovoid, 0.5–1 mm diam., glabrous, style 1–2.5 mm long, stigma inconspicuous; staminodes 7–12, linear, 0.5–5 mm long, hairy. **Fruit** ellipsoid, 18–33 × 8–18 mm, apex acute, glabrous, rough when dried, bright pink-red to dark red and shiny when mature; cupule shallowly cup-shaped, 6–10 mm diam., 2.5–5 mm high, margin undulate, glabrous; pedicel in fruit 5–8 mm long, glabrous; stalk 6–12 mm long, slightly to strongly swollen, 2–6 mm diam., glabrous to sparsely hairy.

Distribution. Peninsular and Southeastern Thailand, Peninsular Malaysia, Sumatra, Java, Borneo, Sulawesi and the Philippines. In Singapore, known from Seletar (*Hassan & Lua SING2012-058*, 7 Mar 2012, SING [SING0168913, SING0168914, SING0174261]), Upper Seletar (*Ng et al. SING2019-435*, 21 May 2019, SING [SING0286173]) and Nee Soon (*Vijayakumar SING2014-097*, 20 Mar 2014, SING [SING0205802]).

Ecology. Across its range, in lowland to mountain forests, often found in (peat) swamps forest. In Singapore, in primary and secondary forest and freshwater swamp forest.

Conservation assessment. Globally, Least Concern (LC) (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) 486).

Vernacular name. *Medang sesudu* (NParks' Flora & Fauna Web, 2026).

16. *Litsea ridleyi* Gamble

(Henry Nicholas Ridley, 1855–1956, English botanist and first Director of Singapore Botanic Gardens)

Bull. Misc. Inform. Kew 1910 (1910) 317; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 153; Ridley, Fl. Malay Penins. 3 (1924) 120; Keng, Gard. Bull. Singapore 27 (1974) 81; Maxwell, Gard. Bull. Singapore 35(2) (1983 ['1982']) 195; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Turner et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 20; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 284; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 216; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 157, fig. 21; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 403. **Type:** *Ridley 5101*, Singapore, 1893

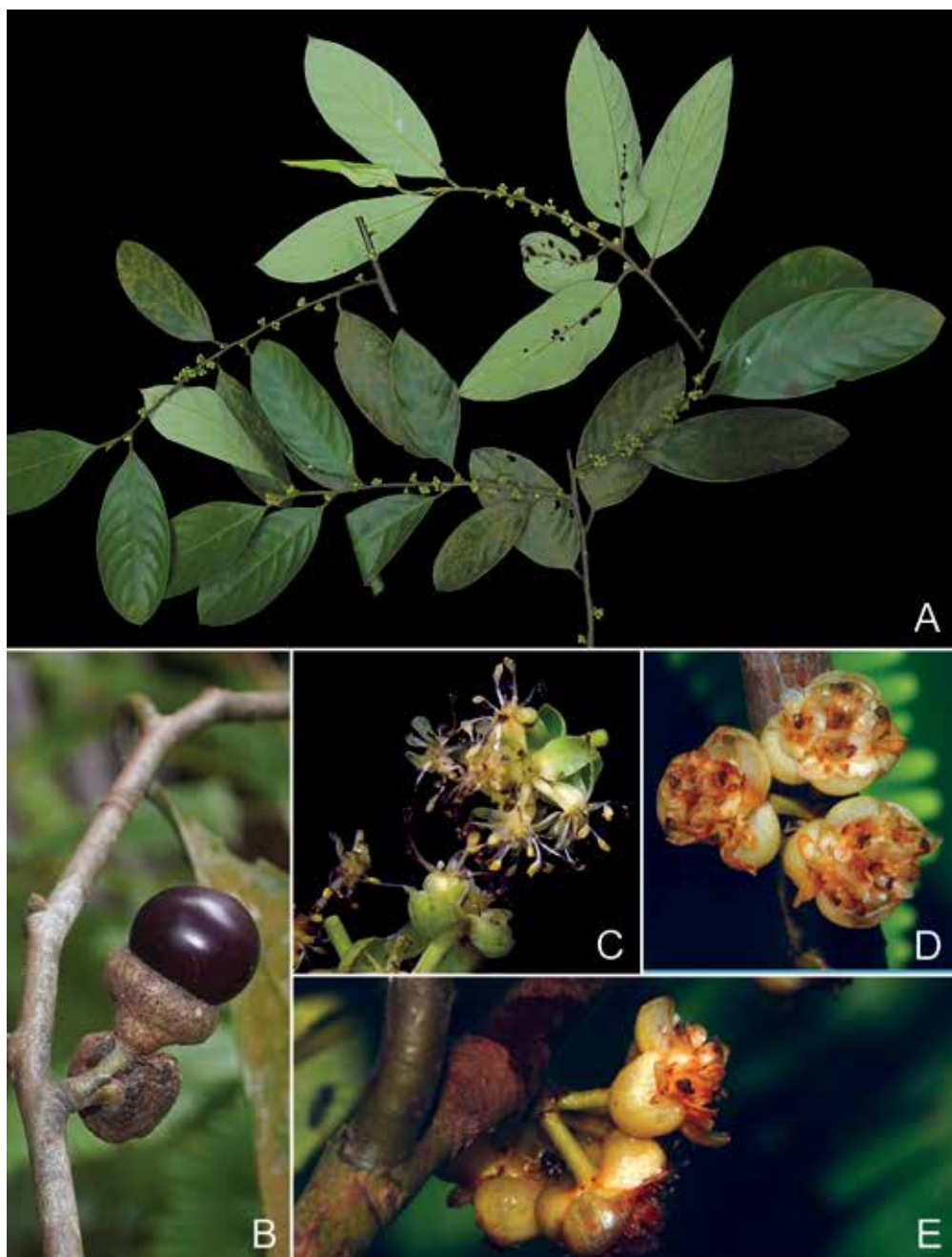


Figure 33. *Litsea ridleyi* Gamble. **A.** Leafy branch with inflorescence buds. **B.** Ripe fruit with cupule. **C.** Male inflorescences with open flowers at anthesis showing stamens. **D & E.** Female inflorescences with open flowers at anthesis showing styles and staminodes. (A–E from Singapore, A–C, Bukit Timah; D & E, Sime Track. Photos: A & C, P.K.F. Leong; B, R.C.J. Lim; D & E, X.Y. Ng).

(lectotype SING [SING0046619], designated by Ng, Gard. Bull. Singapore 57 (2005) 224; isoelectotypes BM [BM001209870], CAL [CAL0000021807, CAL0000220652,]). **Fig. 33.**

Trees, 7–25 m tall. **Twigs** slender, 2–6.5 mm diam., rounded to angular in cross-section, densely hairy when young, hairs appressed to erect, yellowish to reddish brown; terminal vegetative buds ovoid to lanceolate, apex acute, 5–10 mm long, velutinous. **Leaves** alternate; lamina elliptic to (narrowly) lanceolate, 11–25 × 3.4–5 cm, apex acute to acuminate, base cuneate, margin straight, papery, secondary veins 5–7 pairs, curving toward margin at a roughly 45° angle, tertiary veins reticulate; upper surface glabrous, midrib densely hairy, midrib and secondary veins sunken to flattened, tertiary veins distinct, dark green; lower surface sparsely hairy, denser on and along the midrib and secondary veins, midrib and secondary veins raised, tertiary veins distinct, hairs appressed to erect, yellowish, light green, glaucous; petiole slightly swollen, half-terete, 0.7–1 cm long, velutinous to sparsely hairy, hairs appressed to erect, long, yellowish to light brown. **Inflorescences** in clusters of umbels, usually 0.5–2 cm long, in axils of leaves or along branchlets; umbels 2–4 mm diam.; involucre bracts 4–5, usually imbricate, orbicular, concave, 2–4 × 2–4 mm, hairy outside. **Flowers** slightly fragrant. **Male flowers** 3–8 in each umbel; perianth lobes 5–6, elliptic or elliptic-lanceolate, subequal, 1.5–3.8 × 0.4–0.5 mm, hairy; stamens 8–14, white, unequal, anthers 0.5–1.5 mm long, filaments 1–5 mm long, sparsely hairy. **Female flowers** 3–6 in each umbel; perianth lobes 5–6, elliptic to elliptic-lanceolate, subequal, 1–2.5 × 0.4–0.8 mm, sparsely hairy; ovary globose or ovoid, 0.5–1 mm diam., glabrous, style 1–2.5 mm long, stigma peltate; staminodes 7–12, linear, 0.5–2 mm long, hairy. **Fruit** globose, 13–14 mm diam., apex rounded, glabrous; cupule a shallow cup, 3–7 mm diam., sparsely hairy, margin entire; pedicel in fruit 2–7 mm long, sparsely hairy; stalk 8–9 mm long, sparsely hairy.

Distribution. This species is only known with certainty from Singapore and is therefore considered to be endemic. The previous unverified reports of the species in Borneo have been found to be incorrect. More recent collections are from Bukit Timah (*Noor MN 1878*, 22 Apr 1974, SING [SING0013182]; *Maxwell 82-61*, 28 Feb 1982, SING [SING0013174]; *Niissalo et al. SING2019-535*, 6 Jun 2019, SING [SING0296218]), Upper Peirce (*Gwee SING2010-143*, 19 Jan 2010, SING [SING0144681]) and MacRitchie (*Ng & Lim SING2021-393*, 9 Jun 2021, SING [SING0382684]).

Ecology. In lowland primary and secondary forests, from sea level to 80 m.

Conservation assessment. Globally, Endangered (EN/D), assessed here. In Singapore, assessed as Endangered (EN/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 47, 487).

17. *Litsea robusta* Blume

(Latin, *robustus* = robust; referring to the relatively large growth habit for a *Litsea*)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 560; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 180; Ridley, Fl. Malay Penins. 3 (1924) 129; Keng, Gard. Bull. Singapore 27 (1974) 81; Kochummen,

Tree Fl. Malaya 4 (1989) 163; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 73; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 284; Turner et al., Gard. Bull. Singapore 48 (1998 ['1996']) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; Ng, Gard. Bull. Singapore 57 (2005) 233; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 208; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89, 130; de Kok, Gard. Bull. Singapore 73 (2021) 160; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 404; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1092. **Synonym:** *Cylicodaphne robusta* (Blume) Blume, Mus. Bot. 2(1) (1856) 11. **Type:** *Blume s.n.*, [Indonesia], Java, Salak (lectotype U [U0002841], designated by de Kok, Gard. Bull. Singapore 73 (2021) 160; isolectotype BO [sheet no. BO1278382]).

Litsea longipes auct. non (Meisn.) Hook.f.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131.

Litsea sebifera auct. non Blume: Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 176; Ridley, Fl. Malay Penins. 3 (1924) 128.

Trees, 10–50 m tall, dbh 25–60 cm; bark smooth to scaly, sometimes hooped, grey; wood yellow. **Twigs** slender to stout, 2.3–12 mm diam., rounded to angular in cross-section, densely hairy when young, soon glabrous, hairs appressed, yellowish; terminal vegetative buds 9–15 mm long, apex acute, velutinous. **Leaves** alternate; lamina coriaceous, broadly elliptic to lanceolate, (6–)14–60 × (4–)6.8–30 cm, apex broadly rounded to acute, sometimes with a very short tip, base cuneate, symmetric to asymmetric, secondary veins 10–20 pairs, curving and looping near margin, tertiary veins scalariform-reticulate; upper surface glabrous, midrib and main secondary veins sunken, tertiary veins distinct, dark green; lower surface sparsely hairy to densely hairy, midrib and secondary veins raised, tertiary veins prominent, whitish grey to light green, hairs appressed, long and short hairs present; petiole slightly swollen, half-terete, channelled, 2–4.8 cm long, glabrous. **Inflorescences** with the appearance of a raceme with a series of umbels along the axis, 5–20 cm long, in the axils of leaves or along branchlets, or terminal; umbels 8–13 mm diam.; involucre bracts 4–6, usually imbricate, suborbicular, 4–7 mm diam., densely hairy, pale green-white. **Flowers** (bright) yellow to white, fragrant. **Male flowers** 3–7 in each umbel; perianth lobes 6, linear, apex acute, 1.5–2 × 0.8–1 mm; stamens 12–15, unequal, anthers 0.5–1 mm long, filaments 1–3 mm long, sparsely hairy. **Female flowers** c. 7 in each umbel; perianth lobes 6, 2.3–3 mm long, apex acute; ovary elliptic, few hairs present, 1.4–1.7 mm long, style c. 4 mm long, stigma peltate; staminodes 12, linear, 1.8–2.5 mm long, hairy. **Fruit** globose, 10–27 × 10–20 mm diam., apex rounded to acute, smooth, glabrous, violet when mature; cupule woody, 17–28 mm diam., patent to enveloping at least half of the mature fruit, margin entire, dark green; stalk 14–18 mm long, strongly swollen, 4.5–10 mm diam.

Distribution. Peninsular Malaysia, Sumatra, Java, Borneo and the Philippines. In Singapore, known only from one historical collection from Balestier Road (*Goodenough s.n.*, 10 Nov 1890, SING [SING0043344]).

Ecology. Across its range, in lowland and hill forest, often near streams.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

18. *Litsea sphaerocarpa* Blume

(Greek, *sphaera* = sphere, globe, ball, *carpos* = fruit; referring to the shape of the fruit)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 559; de Kok, Gard. Bull. Singapore 73 (2021) 165; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 404. **Synonyms:** *Actinodaphne sphaerocarpa* (Blume) Nees, Syst. Laur. (1836) 605; Kochummen, Tree Fl. Malaya 4 (1989) 108. – *Iozoste sphaerocarpa* (Blume) Kuntze, Revis. Gen. Pl. 2 (1891) 570, as ‘*Jozoste*’. **Type:** *Blume s.n.*, [Indonesia, Java], Parang (lectotype L [L0035503], designated by de Kok, Gard. Bull. Singapore 73 (2021) 165).

Litsea spathacea Gamble, Bull. Misc. Inform. Kew 1910 (1910) 358; Ridley, Fl. Malay Penins. 3 (1924) 120; Kochummen, Tree Fl. Malaya 4 (1989) 165; de Kok, Gard. Bull. Singapore 69 (2017) 168. **Type:** *Wray 2286*, [Malaysia], Perak, Sungei Larut, July 1888 (lectotype K [K000797118], designated by de Kok, Gard. Bull. Singapore 69 (2017) 168; isolectotype SING [SING0229222]).

Trees or shrubs, 4.5–15 m tall, dbh 7–30 cm. **Twigs** slender to stout, 2.7–9 mm diam., grey (–brown), angled to round in cross-section, densely hairy, glabrescent, hairs appressed, yellowish; terminal vegetative buds 2–6.3 mm long, lanceolate to ovate, apex acute, velutinous. **Leaves** alternate; lamina membranous to thinly coriaceous, elliptic to oblanceolate or obovate, 11–29 × 4–12 cm, apex acute, base cuneate, secondary veins 9–14 pairs, curving near margin and sometimes brochidodromous, tertiary veins scalariform-reticulate; upper surface glabrous with a few hairs on midrib, midrib sunken, secondary veins raised, tertiary veins distinct, glossy, dark green; lower surface glabrous to sparsely hairy, always some hairs present on midrib, midrib and secondary veins raised, tertiary veins distinct, green with yellowish midrib, glaucous; petiole slender to slightly swollen, half-terete, 1–2.5 cm long, sparsely hairy. **Inflorescences** clusters of umbels, 1–4 cm long, in axils of leaves or along branchlets; umbels 6–7.5 mm diam., involucre bracts 5, usually imbricate, (sub)orbicular, concave, 5–6.5 × 5–6 mm, velutinous outside. **Flowers** white. **Male flowers** 6–8 in each umbel; perianth lobes 5–6, elliptic-lanceolate, subequal, 1.5–4 × 0.8–1 mm, hairy; stamens 8–14, unequal, anthers 0.5–1.5 mm long, yellow, filaments 1–5 mm long, a few hairs present. **Female flowers** 3–6 in each umbel; perianth lobes 5–6, elliptic-lanceolate, subequal, 2–3 × 0.9–3 mm, sparsely hairy; ovary ovoid, 0.5–1 mm diam., glabrous, style 1–2 mm long, stigma peltate; staminodes 7–12, linear, 0.5–3 mm long, glabrous. **Fruit** globose to elliptic, 15–20 × 11–14 mm, smooth, glabrous, red or purplish when mature; cupule a shallow cup, 13–15 mm diam., 6–7.2 mm high, glabrous, margin entire or undulate, surface smooth, white; pedicel in fruit slightly thickened, 1.7–2.6 mm diam., 5–10 mm long.

Distribution. Peninsular Malaysia. In Singapore, known only from two historical collections that lack precise localities and dates (*Cantley’s Collector s.n.*, SING [SING081872]; *Collector unknown s.n.*, BM).

Ecology. Across its range, in lowland and hill forests, sometimes along rivers.

Conservation assessment. Globally, Near Threatened (NT B2ab(i,ii,iii,iv)) (IUCN Red List, 2026). In Singapore, this species was considered to be Data Deficient (DD) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487) due to unresolved taxonomic issues. As these issues are now resolved, the species is here reassessed as Nationally Extinct (NEx).

19. *Litsea tomentosa* Blume

(Latin, *tomentum* = stuffing for cushions, wool, *-osus* = abundance; referring to the indumentum of the leaves and twigs)

Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 566; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 132; Ridley, Fl. Malay Penins. 3 (1924) 115; Backer & Bakhuizen van den Brink, Fl. Java (Spermatoph.) 1 (1963) 125; Kochummen, Tree Fl. Malaya 4 (1989) 165; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 86; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 90; de Kok, Gard. Bull. Singapore 69 (2017) 169; de Kok, Gard. Bull. Singapore 73 (2021) 168; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 404; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1094, pl. 119; C. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype K [K000815822]), designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 86).

Trees, 6–40 m tall, dbh 7–40 cm, buttresses spreading for up to 60 cm; bark smooth, lenticellate, greyish or light brown to black; inner bark red-brown; wood yellow. **Twigs** slender to stout, 3.8–12 mm diam., round or angular in cross-section, velutinous, glabrescent, hairs appressed to patent, yellowish; terminal vegetative buds 5.5–8.3 mm long, ovate, apex acuminate, velutinous. **Leaves** spiral, crowded toward the apex of branchlets; lamina chartaceous, elliptic to oblanceolate, 8–40 × 4–16 cm, apex acute, base cuneate to rarely rounded, sometimes asymmetric, secondary veins 11–16 pairs, curving and sometimes brochidodromous, tertiary veins scalariform-finely reticulate; upper surface glabrous with densely hairy midrib and secondary veins, midrib raised to sunken, secondary veins shallowly sunken, tertiary veins faint, green; lower surface sparsely to densely hairy on major veins, midrib and secondary veins raised, tertiary veins distinct, glaucous; petiole half-terete, 1–5.5 cm long, velutinous, hairs appressed, yellowish. **Inflorescences** clusters of umbels, 1.5–3 cm long, along branchlets, velutinous; umbels 12–20 mm diam.; involucre bracts 4–5, suborbicular or broadly ovate, concave, 5–6 × 4–5 mm, velutinous. **Male flowers** 5–6 in each umbel; perianth lobes 9–12, lanceolate, unequal, 4–6 × 1.5–1.5 mm, sparsely hairy; stamens 24–30, unequal, anthers 1–1.5 mm long, filaments 2–5 mm long, sparsely hairy. **Female flowers** 5–6 in each umbel, perianth lobes 8–12, lanceolate, 2–3.1 × 1–1.3 mm, densely hairy; ovary ovoid, 1–1.5 mm diam., glabrous, style 1.5–2 mm long, stigma peltate; staminodes 26–30, linear, 1.5–3.8 mm long, sparsely hairy. **Fruit** (sub)globose, 16–22 × 20–21 mm, smooth, glabrous, glossy, red when mature; cupule a shallow cup, 11–15 mm diam., sparsely hairy, margin entire, surface warty; pedicel in fruit 7–9.6 mm long, 4.3–5.8 mm diam., sparsely hairy; stalk 2–10 mm long, sparsely hairy.

Distribution. Peninsular Thailand, Peninsular Malaysia, Sumatra, Java, Borneo and the Philippines. In Singapore, known only from one old collection from Tanglin (*Ridley s.n.*, 1893, SING [SING0229017]).

Ecology. Across its range, in open areas in disturbed lowland forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

20. *Litsea umbellata* (Lour.) Merr.

(Latin, *umbellatus* = umbellate, referring to the shape of the inflorescence)

Philipp. J. Sci. 14 (1919) 242; Corner, Wayside Trees Malaya (1940) 347; Corifner, Wayside Trees Malaya, ed. 3, 1 (1988) 385; Kochummen, Tree Fl. Malaya 4 (1989) 166; Turner, Gard. Bull. Singapore 45 (1993) 115; Lee et al., Gard. Bull. Singapore 55 (2003) 297; Ng, Gard. Bull. Singapore 57 (2005) 234; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 222; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 91; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; de Kok, Gard. Bull. Singapore 73 (2021) 169, fig. 24; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 404; Ngernsaengsaruy & de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1095. **Basionym:** *Hexanthus umbellatus* Lour., Fl. Cochinch. 1 (1790) 196. **Synonym:** *Litsea hexantha* Juss. [Ann. Mus. Natl. Hist. Nat. 6 (1805) 212, nom. inval.] ex Pers., Syn. Pl. 2, fasc. 1 (1806) 4, as ‘*hexanthus*’, nom. illeg. superfl. **Type:** *Loureiro s.n.*, Cochinchina [Vietnam] (lectotype BM [BM000951060], designated by de Kok, Gard. Bull. Singapore 69 (2017) 176; isolectotype BM [BM000951061]). **Fig. 34.**

Litsea amara Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 [‘1825’]) 563; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 140; Ridley, Fl. Malay Penins. 3 (1924) 117. **Synonym:** *Tetranthera amara* (Blume) Nees in Wallich, Pl. Asiat. Rar. 3, fasc. 11 (1832) 30. **Type:** *Blume s.n.*, [Indonesia, Java], in mountains (lectotype L [L0308989], designated by de Kok, Gard. Bull. Singapore 73 (2021) 169; isolectotypes L [L0308990, L0308992]).

Tetranthera firma Blume, Mus. Bot. 1(24) (1851) 381. **Synonym:** *Litsea firma* (Blume) Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 162; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 138; Ridley, Fl. Malay Penins. 3 (1924) 116; Keng, Gard. Bull. Singapore 27 (1974) 80; Corner, Gard. Bull. Singapore, Suppl. 1 (1978) 76; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 385; Kochummen, Tree Fl. Malaya 4 (1989) 156; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 114; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 73; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 282; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 191; LaFrankie et al., Forest Trees Bukit Timah (2005) 163; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 84; Ng, Gard. Bull. Singapore 57 (2005) 230; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 56, 142, 222; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Ngernsaengsaruy et al., Thai Forest Bull., Bot. 39 (2011) 53; Neo et al., Nat. Singapore 5 (2012) 281; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 170, 381; Neo et al., Nat. Singapore 6 (2013) 70; Neo et al., Nat. Singapore 6 (2013) 121; Neo et al., Nat. Singapore 6 (2013) 279; Neo et al., Nat. Singapore 7 (2014) 64; Neo et al., Nat. Singapore 7 (2014) 104; Chong et al., Nat. Singapore 9 (2016) 21. **Type:** *Korthals s.n.*, [Indonesia], Borneo (lectotype K [K000815225], designated by Ngernsaengsaruy et al., Thai Forest Bull., Bot. 33 (2005) 84; isolectotype U [U0002806]).

Litsea salicifolia auct. non (Roxb. ex Nees) Hook.f.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132.

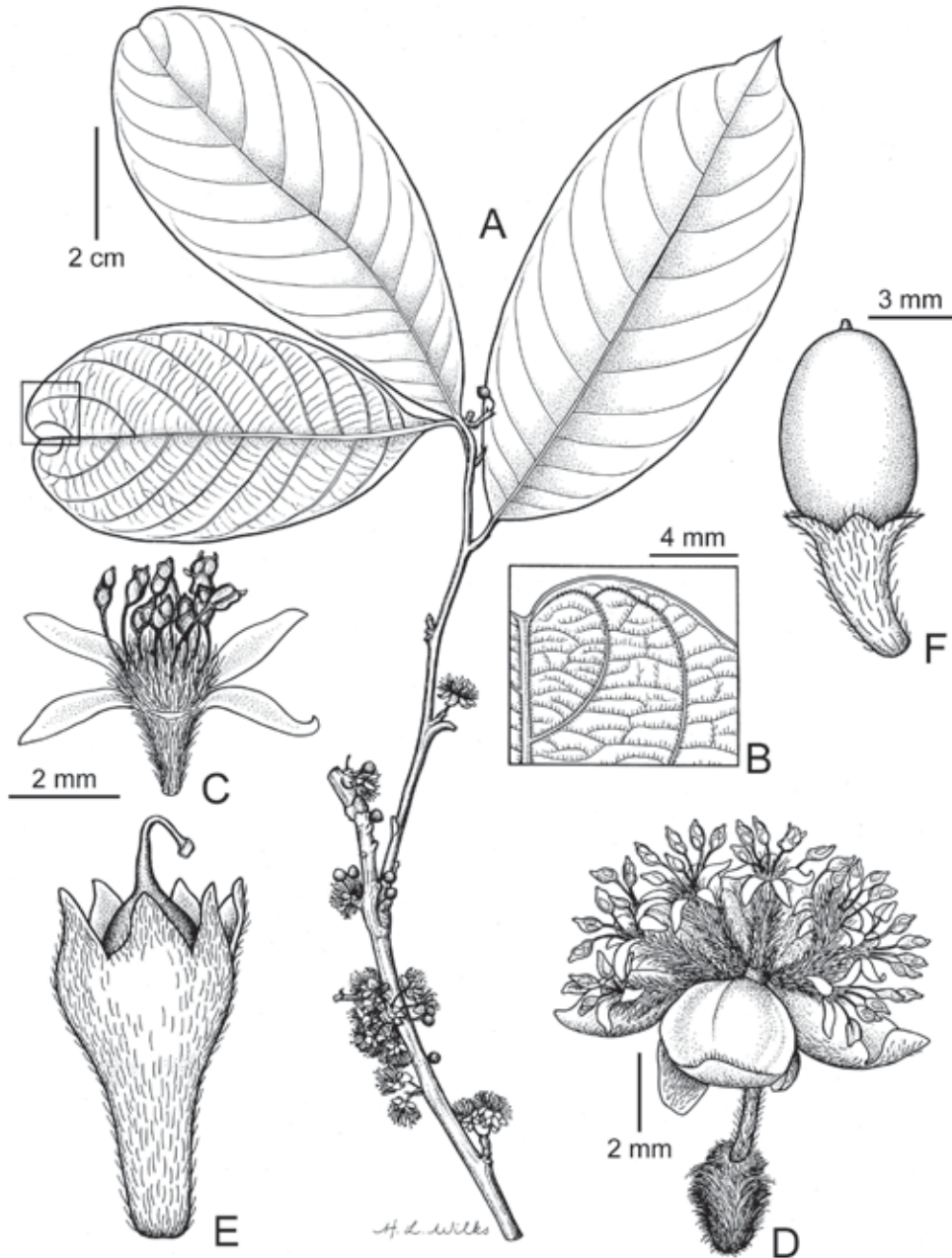


Figure 34. *Litsea umbellata* (Lour.) Merr. **A.** Portion of leafy twig with male inflorescences in clusters of umbels. **B.** Detail of lower leaf surface. **C.** Open male flower. **D.** Inflorescence with male flowers. **E.** Female flower. **F.** Fruit with perianth cup and stalk. (A–E from Peninsular Malaysia, *King's collector* 7626; F from Peninsular Malaysia, *King's collector* 2584. Drawn by H. Wilks).

Trees or shrubs, 1–42 m tall, dbh 4–80 cm, sometimes with buttresses to 2.5 m high; bark smooth to scaly or dimpled, lenticellate, pale to dark brown or yellowish grey or reddish brown; inner bark yellow; sapwood yellow. **Twigs** slender, 2–4.4 mm diam., rounded to angular in cross-section, densely hairy, hairs appressed to erect, yellowish to reddish brown; terminal vegetative buds ovoid to lanceolate, apex acute, 3–12 mm long, velutinous. **Leaves** alternate, with a pleasant scent when crushed; lamina elliptic to obovate or (narrowly) lanceolate, 3–20 × 1.2–7.5 cm, apex acute to rounded, sometimes acuminate, base rounded to cuneate, sometimes oblique, margin straight, papery, often reddish brown when dry, secondary veins 8–17 pairs, curving near margin, tertiary veins scalariform-reticulate; upper surface glabrous, midrib and secondary veins very sparsely to densely hairy, midrib and secondary veins sunken to flattened, tertiary veins distinct to indistinct, (dark) green to bluish green; lower surface sparsely hairy, denser on and along the midrib and secondary veins, midrib and secondary veins raised, tertiary veins distinct, hairs appressed to erect, yellowish, glaucous, pale green; petiole slightly swollen, half-terete, 0.5–2.3 cm long, velutinous to sparsely hairy, hairs appressed to erect, long, yellowish to light brown. **Inflorescences** clusters of umbels, usually 0.5–2 cm long, in axils of leaves or along branchlets; umbels 2–5 mm diam.; involucre bracts 4–5, usually imbricate, suborbicular or broadly ovate, concave, 2–4.5 × 2–4 mm, densely hairy outside, greenish white. **Flowers** pale green to white, sweetly scented. **Male flowers** 3–8 in each umbel; perianth lobes 5–6, elliptic or elliptic-lanceolate, subequal, 1.5–3.8 × 0.5–1.2 mm, hairy; stamens (bright) yellow to cream, 8–14, unequal, anthers 0.5–1.5 mm long, yellow, filaments 1–5 mm long, sparsely hairy, white. **Female flowers** 3–6 in each umbel; perianth lobes 5–6, elliptic to elliptic-lanceolate, subequal, 1–2.5 × 0.4–0.8 mm, sparsely hairy; ovary globose or ovoid, 0.5–1 mm diam., glabrous, style 1–2.5 mm long, stigma peltate; staminodes 7–12, linear, 0.5–2 mm long, hairy. **Fruit** elliptic or (sub)globose, 2.5–10 × 0.6–2 mm diam., apex rounded, dark red-purple or black when mature, glabrous, glossy; cupule a shallow cup, 3–8 mm diam., sparsely hairy, margin entire; pedicel in fruit 2–7 mm long, sparsely hairy; stalk 2–10 mm long, sparsely hairy.

Distribution. India, Myanmar, Thailand, Cambodia, Laos, Vietnam, Peninsular Malaysia, Borneo, Philippines, New Guinea and the Solomon Islands. In Singapore, known from MacRitchie (*Sha & Ali 3915*, 14 Jul 1976, SING [SING0013240]), Bukit Timah (*Maxwell 82-298*, 5 Dec 1982, SING [SING0013231]), Pulau Ubin (*Gwee et al. GAT93*, 5 Nov 2002, SING [SING0042372]), Nee Soon (*Ali Ibrahim et al. SING2013-236*, 1 Sep 2013, SING [SING0200466]), Seletar (*Ng et al. SING2013-210*, 17 Sep 2013, SING [SING0200460]), Pasir Ris, Changi and other places.

Ecology. Across its range, in lowland primary and secondary forests and in open vegetation. In Singapore, recorded from primary and secondary forest and more open vegetation.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Vulnerable (VU/D) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

Vernacular names. *Blue laurel*, *medang* (NParks' Flora & Fauna Web, 2026).

Notes. In the field, two forms can often be found: a tall tree which has hitherto been called *Litsea firma* and a smaller and straggling form which has been called *Litsea umbellata*. These two forms cannot be distinguished in the herbarium and show a continuum of variation between them. Further fieldwork combined with more taxonomic work is needed to assess the status of these names but here they are treated as synonyms.

11. MACHILUS Rumph. ex Nees

(from a vernacular name)

in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 61, 70; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 102; Ridley, Fl. Malay Penins. 3 (1924) 103; Li et al., Fl. China 7 (2008) 201; Middleton in Chayamarit et al., Fl. Thailand 16(4) (2025) 1098. **Type:** *Machilus odoratissimus* Nees, lectotype designated by Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 116.

Persea auct. non Mill.: Kochummen, Tree Fl. Malaya 4 (1989) 172; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 380, p.p.; van der Werff, Blumea 46 (2001) 138.

Trees or shrubs. **Terminal vegetative buds** sometimes perulate; twigs sometimes with prominent ring-like scars left by bud scales and leaves. **Leaves** alternate, pinnately veined, tertiary venation minutely veined. **Inflorescences** paniculate-cymose, with the lateral flowers of the ultimate cymes strictly opposite (type 2 sensu van der Werff, Blumea 46 (2001) 138, under *Persea*), with long peduncles or rarely without peduncles, bracts leaf-like. **Flowers** trimerous, bisexual, perianth tubes short; perianth lobes 6 in 2 series, equal or occasionally outer ones conspicuously smaller than inner ones, usually persistent, rarely deciduous; fertile stamens 9 in 3 whorls of 3 each plus 1 whorl of 3 staminodes; stamens with filaments much longer than the anthers; anthers 4-locular, locules of first and second whorl introrse, locules of third whorl extrorse or latrorse, third whorl stamens with 2 sessile or stipitate glands; staminodes sagittate; ovary sessile, ellipsoid, narrowing into a style; stigmas small, dish-shaped or capitate. **Fruit** globose, perianth lobes persistent, erect to reflexed, sometimes enlarged, not stiffening; stalk slender to only slightly swollen.

Distribution. A genus of about 100 species from tropical and subtropical India and Nepal to South China, Japan and Korea and south through continental Southeast Asia and Malesia to Borneo, Philippines and the Moluccas. In Singapore, 2 native species.

Taxonomy. The delimitation of genera within the *Persea* group has always been difficult. *Machilus* was first proposed by Rumphius (Herb. Amboin. 3 (1743) 70, t. 41, t. 42) and this was later validated by Nees (in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 61, 70). It has mostly been recognised as a part of *Persea* but this has always been controversial (see Kostermans, Reinwardtia 6(2) (1962) 189; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 380; van der Werff, Blumea 46 (2001) 138; Li et al., Fl. China 7 (2008) 201). Molecular phylogenetic analyses of the *Persea* group (e.g., Rohwer et al., Taxon 58 (2009) 1153; Xiao et al., BMC Pl. Biol. (2022) 22) have shown that the Asian clade of *Persea* (*Machilus*) is best treated as a separate genus, not as a part of *Persea*. It is closely related to the *Alseodaphne*-

Phoebe clade, which also includes *Dehaasia*, *Nothaphoebe* and the remaining species of *Persea* from the Americas and Macaronesia.

Key to *Machilus* species

1. Twigs without ring-like scars at base of shoots **1. *M. declinatus***
- Twigs with prominent ring-like scars at base of shoots **2. *M. rimosus***

1. *Machilus declinatus* (Blume) de Kok

(Latin, *declinatus* = bent or curved downwards or forwards; referring to the veins)

Gard. Bull. Singapore 71 (2019) 150, as '*declinata*'; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 405, as '*declinata*'; Middleton in Chayamarit et al., Fl. Thailand 16(4) (2025) 1100, pl. 120: A. **Basionym:** *Laurus declinata* Blume, Cat. Gew. Buitenzorg (1823) 66. **Synonyms:** *Ocotea declinata* (Blume) Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 572. – *Phoebe declinata* (Blume) Nees, Syst. Laur. (1836) 114; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 105; Ridley, Fl. Malay Penins. 3 (1924) 104; Keng, Gard. Bull. Singapore 27 (1974) 81. – *Persea declinata* (Blume) Kosterm., Reinwardtia 9(1) (1974) 111; Kochummen, Tree Fl. Malaya 4 (1989) 173, fig. 12; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 115; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 286; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 68, 142, 210. **Type:** *Blume s.n.*, [Indonesia, Java], Mt Salak, December 1822 (lectotype L [L0036918], designated by de Kok, Gard. Bull. Singapore 71 (2019) 150). **Fig. 35.**

Ocotea ligustrina Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 71. **Synonym:** *Phoebe ligustrina* (Nees) Nees, Syst. Laur. (1836) 113; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 907. **Type:** *Wallich s.n.* [EIC 2588A], Singapore, 1822 (lectotype K-W [K001116511], designated here; isoelectotype BR [BR0000005118151]).

Phoebe sumatrana auct. non Miq.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131.

Machilus rimosus auct. non (Blume) Blume: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131.

Trees, 9–30 m tall, dbh 15–80 cm, bark dull brown to (white) grey, smooth to finely fissured; inner bark reddish to orange-red; sapwood cream to yellow; slightly fragrant, exudate clear, sticky. **Twigs** slender, 2.5–4.2 mm diam., angular in cross-section, smooth, without prominent ring-like scars left by terminal leaf bud, glabrous, whitish to blackish; terminal vegetative buds ovoid, 2.6–5 mm long, apex acute to acuminate, glabrous to sparsely hairy, hairs appressed, yellowish. **Leaves** alternate; lamina (thinly) coriaceous, elliptic to lanceolate, 4.2–16 × 1.3–3.6 cm, apex acuminate, base cuneate, secondary veins 6–10 pairs, curving near leaf margin and brochidodromous distally, tertiary veins reticulate; upper surface green, glabrous, midrib sunken, secondary veins raised, tertiary veins distinct; lower surface glaucous, glabrous, midrib and secondary veins raised, tertiary veins distinct; petiole slender, half-terete, 0.5–2 cm long, glabrous. **Inflorescences** 3–12 cm long, axillary, glabrous; bracteoles linear, c. 1.7 mm long, caducous. **Flowers** greenish to cream; perianth lobes 1.6–3.3 × 1.1–1.3 mm, apex acute to

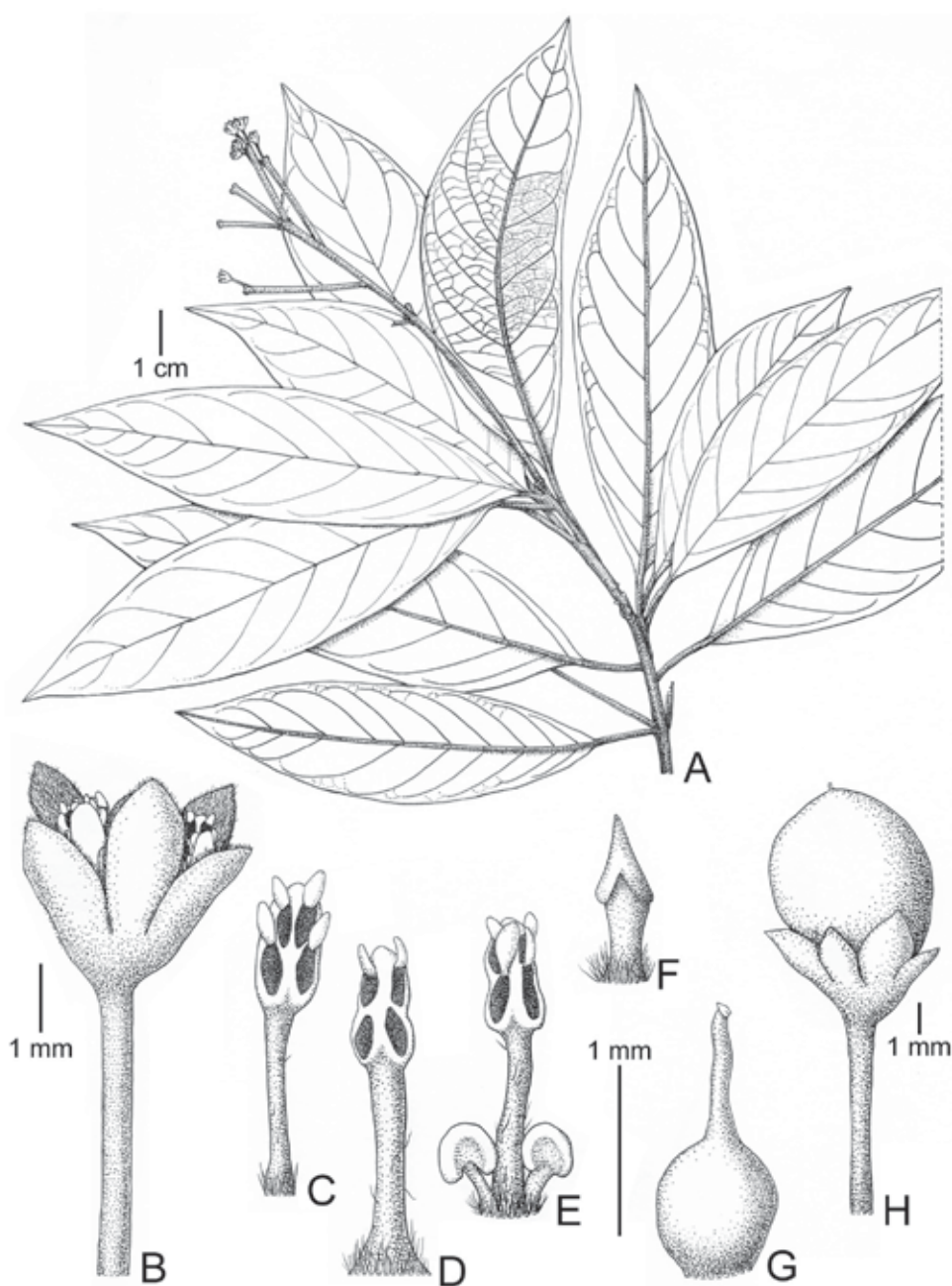


Figure 35. *Machilus declinatus* (Blume) de Kok. **A.** Portion of leafy twig with inflorescence. **B.** Flower. **C.** Fertile stamen (first whorl). **D.** Fertile stamen (second whorl). **E.** Fertile stamen with glands at base (third whorl). **F.** Staminode. **G.** Ovary and style. **H.** Fruit with persistent perianth lobes. (A–G from Singapore, Changi, *Ridley 1811*; H from Malaysia, *Rahim Ismail KEP98930*. Drawn by E. Tay-Koh).

acuminate, glabrous to sparsely hairy outside and inside; stamens 1.7–2.3 mm long, glabrous with a tuft of hairs at base; anthers 0.7–1 mm long; ovary 0.9–1.1 mm diam., glabrous; style 0.7–0.8 mm long; stigma capitate. **Fruit** globose, 5–13.5 × 5–14.5 mm, apex rounded, smooth, glabrous, dark purple-red when mature; cupule shallow, lobes 2.6–3 × 1–1.8 mm, apex acute, glabrous to sparsely hairy, spreading to reflexed; stalk not swollen.

Distribution. Myanmar, Peninsular Thailand, Peninsular Malaysia, Sumatra, Java, Borneo and Sumbawa. In Singapore, known only from historical collections from Changi (*Ridley 1811*, Oct 1890, SING [SING0013299]; *Ridley 4707*, 1892, K [K003569075, K003569076], SING [SING0013298]).

Ecology. Across its range, in open country and in primary and secondary lowland and coastal forests, sometimes over sandy soil.

Conservation assessment. Globally, Least Concern (LC), assessed here. In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

2. *Machilus rimosus* (Blume) Blume

(Latin, *rimosus* = cracked; referring to the twigs)

Mus. Bot. 1(21) (1851) 330, as '*rimosa*'; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 405, as '*rimosa*'. **Basionym:** *Laurus rimosa* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 574. **Type:** *Reinwardt s.n.*, [Indonesia], Java, Tjiburum, Gede, mountain forest, '*Huru hiries*' (lectotype L [L0036954], designated by de Kok, Gard. Bull. Singapore 71 (2019) 157).

Machilus odoratissimus Nees var. *glabratus* Blume, Mus. Bot. 1(21) (1851) 330, as '*odoratissima* var. *glabrata*'; Meisner in de Candolle, Prodr. 15(1) (1864) 41, as '*odoratissima* var. *glabrata*'. **Type:** *Wallich s.n.* [EIC 2607F], Singapore, 1822 (lectotype K-W [K001116557], designated by de Kok, Gard. Bull. Singapore 71 (2019) 157; islectotype K [K000778834]).

Laurus odoratissima Wall., Numer. List no. 2607 (1831), nom. nud.

'*Machilus odoratissimus* Nees var. β': Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 70.

Machilus odoratissimus auct. non Nees: Hooker, Fl. Brit. India 5, fasc. 13 (1886) 139, as '*odoratissima*', p.p.

Trees, 6–18 m tall, dbh 30–60 cm bark grey to greyish black, smooth to shallowly fissured; inner bark (light) brown; sapwood white to cream. **Twigs** slender, 2.4–4.1 mm diam., rounded to angular in cross-section, glabrous, with prominent ring-like scars left by terminal vegetative buds, dark brown to black; terminal vegetative buds ovoid, 1.5–1.9 mm long, apex acute, sparsely hairy, hairs appressed, yellowish. **Leaves** alternate; lamina coriaceous, elliptic to oblanceolate, 6–19 × 3–8 cm, apex rounded to acute, base cuneate, secondary veins 7–10 pairs, brochidodromous, tertiary veins reticulate; upper surface glabrous, midrib sunken, secondary

veins raised, tertiary veins distinct; lower surface glaucous, glabrous, midrib and secondary veins raised, tertiary veins distinct; petiole slender, half-terete, 0.5–1.5 cm long, glabrous. **Inflorescences** 9–17 cm long, axillary, sparsely hairy; bracteoles caducous. **Flowers** light green; perianth lobes elliptic, $3-5 \times 1.2-3$ mm, apex acute, sparsely hairy to velutinous outside, sparsely hairy inside; stamens 2.3–3.6 mm long, glabrous with tuft of hairs at base; anthers 1–1.2 mm long; ovary 0.7–1.4 mm diam., glabrous; style 2.2–2.6 mm long; stigma capitate. **Fruit** globose, $5.5-8.3 \times 4.8-8.2$ mm, apex rounded, smooth, glabrous; cupule shallow, lobes $2.6-4.6 \times 1.7-2.2$ mm, apex acute, persistent, reflexed, not enlarged; stalk slender, to 1.2 mm diam.

Distribution. Peninsular Malaysia, Java and Borneo. In Singapore, known only from one historical collection from an unspecified locality (*Wallich s.n.* [EIC 2607F], 1822, K [K000778834], K-W [K001116557]).

Ecology. Across its range, in lowland and mountain forests.

Conservation assessment. Globally, Least Concern (LC), assessed here. In Singapore, assessed as Nationally Extinct (NEX) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

12. NEOLITSEA (Benth. & Hook.f.) Merr.

(Latin, *neo-* = new, the genus *Litsea*, Lauraceae; a new genus resembling *Litsea* Lam.)

Philipp. J. Sci. 1(Suppl. 1) (1906) 56, nom. cons.; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 189; Ridley, Fl. Malay Penins. 3 (1924) 131; Corner, Wayside Trees Malaya (1940) 349; Kostermans, Reinwardtia 4(2) (1957) 241; Kochummen, Tree Fl. Malaya 4 (1989) 167; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 388; van der Werff, Blumea 46 (2001) 138; Ng, Gard. Bull. Singapore 57 (2005) 243; Le Cussan & Hyland, Fl. Australia 2 (2007) 220; Li et al., Fl. China 7 (2008) 105; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1113. **Basionym:** *Litsea* Lam. sect. *Neolitsea* Benth. & Hook.f., Gen. Pl. 3(1) (1880) 161. **Type:** *Neolitsea zeylanica* (Nees & T.Nees) Merr., type cons. (= *Neolitsea cassia* (L.) Kosterm.).

Trees or shrubs. **Terminal vegetative buds** covered with large imbricate scales which often leave ring-like scars on the twigs. **Leaves** alternate, subopposite or in pseudowhorls, usually tripliveined, rarely pinnately veined. **Inflorescences** umbellate, 3–7 flowers in each umbel, umbels single or several close together along a short shoot, axillary and/or internodal; involucre bracts 4, opposite, large, late deciduous. **Flowers** dimerous, rarely trimerous, unisexual, dioecious, perianth segments equal, 4, in 2 whorls, spreading at anthesis. **Male flowers** with stamens 6 in 3 whorls of 2 each; filaments of first and second whorls without glands, filaments of third whorl with 2 glands at base; staminodes absent; anthers 4-locular, the locules arranged in two pairs above each other, all introrse, or lower locules lateral. **Female flowers:** ovary free, style stout; stigma peltate; staminodes 6, clavate, first and second whorls without glands, filaments of third whorl with 2 glands at base. **Fruit** seated on slightly enlarged plate-like cupule, perianth lobes sometimes initially persisting, but ultimately falling off; stalk often slightly thickened.

Distribution. A genus of about 100 species from Pakistan, India, Nepal, South China, Japan, Korea and through continental Southeast Asia and Malesia to northern Australia. In Singapore, 1 native species.

Taxonomy. *Neolitsea* is part of the ‘core’ Lauraceae group of genera and is closely related to *Litsea*, *Lindera* and *Actinodaphne*. The genus can be recognised by its dimerous flowers and usually having tripliveined leaves that are clustered at the ends of the twigs.

***Neolitsea cassia* (L.) Kosterm.**

(Greek, *kassia* = fragrant bark; an unfortunate name because this species does not have fragrant bark, unlike the *Cinnamomum* species with which it is often confused)

J. Sci. Res. (Jakarta) 1 (1952) 85; Kostermans, Reinwardtia 4(2) (1957) 246; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 63, 142, 222; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 186, 381; Chong et al., Nat. Singapore 9 (2017) 24; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 405; de Kok in Chayamarit et al., Fl. Thailand 16(4) (2025) 1115, fig. 21. **Basionym:** *Laurus cassia* L., Sp. Pl. 1 (1753) 369. **Type:** Herb. Hermann 2: 67, no. 146, [Sri Lanka] (lectotype BM [BM000621733], first step designated by Kostermans, Reinwardtia 4(2) (1957) 246, second step designated by Chakrabarty, Phytotaxa 379 (2018) 273; islectotype BM [BM000621734]). **Epitype:** *Kostermans 23429*, Sri Lanka, Above Belihuloya, 10 May 1969 (epitype L [L.1802766], designated by Chakrabarty, Phytotaxa 379 (2018) 273). **Fig. 36, 37.**

Litsea zeylanica Nees & T.Nees, Cinnam. Disp. (1823) 58, t. 5, as ‘*Litsaea*’; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 386. **Synonyms:** *Tetradenia zeylanica* (Nees & T.Nees) Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 64. – *Neolitsea zeylanica* (Nees & T.Nees) Merr., Philipp. J. Sci. 1(Suppl. 1) (1906) 57; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 189; Lecomte, Fl. Indo-Chine 5, fasc. 2 (1914) 142; Ridley, Fl. Malay Penins. 3 (1924) 132; Corner, Wayside Trees Malaya (1940) 349; Kochummen, Tree Fl. Malaya 4 (1989) 169; Turner, Gard. Bull. Singapore 45 (1993) 115; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 74; Turner, Gard. Bull. Singapore 47 (1997 [‘1995’]) 286; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 191; Lee et al., Gard. Bull. Singapore 55 (2003) 297; LaFrankie et al., Forest Trees Bukit Timah (2005) 102, 164; Li et al., Fl. China 7 (2008) 114; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39. **Type:** [Published illustration] *Litsaea ceylanica* in Nees & T.Nees, Cinnam. Disp. (1823) t. 5, lectotype designated here.

Tetradenia furfuracea Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 64; de Kok, Gard. Bull. Singapore 71 (2019) 141. **Synonyms:** *Tetranthera furfuracea* Wall., Numer. List no. 2568 (1830), nom. nud. – *Litsea furfuracea* (Nees) Nees, Syst. Laur. (1836) 625; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 975. **Type:** *Wallich s.n.* [EIC 2568A], Singapore, 1822 (lectotype GZU [GZU000254222], designated by de Kok, Gard. Bull. Singapore 71 (2019) 160; islectotype K [K000815651]).

Trees or shrubs, 2–20 m tall; bark grey to black, smooth or finely cracking; inner bark (light or orange-) brown to yellow; sapwood cream to yellow. **Twigs** slender, 1.9–3.3 mm diam., rounded in cross-section, glabrous to sparsely hairy, hairs appressed, white to yellowish; terminal vegetative buds ovoid, 1.3–2.4 mm long, apex rounded to acute, velutinous. **Leaves** alternate, young leaves silvery white, with a strong resinous or mango smell when crushed; lamina coriaceous, elliptic to ovate, 5–13 × 2.1–6.7 cm, apex acuminate to long-acuminate,

base cuneate to attenuate, secondary veins 2–5 pairs, tripliveined, tertiary veins scalariform-reticulate; upper surface glabrous, sometimes sparsely hairy on midrib, midrib raised, secondary veins raised to sunken, tertiary veins sometimes distinct, shiny; lower surface glabrous to very sparsely hairy, midrib and secondary veins raised, tertiary veins sometimes distinct, glaucous; petiole slender, half-terete, 1.4–3 cm long, sparsely hairy, hairs appressed, whitish. **Inflorescences** clusters of umbels, 0.4–0.8 cm long, in axils of leaves or along branchlets, 4 or 5 flowers in each umbel; umbels 3.4–4 mm diam.; involucre bracts green, 3–5, usually imbricate, suborbicular, concave, $3-6 \times 2.8-5$ mm, apex rounded to acute, glabrous to sparsely hairy outside, glabrous inside. **Flowers** (greenish) yellow, slightly aromatic. **Male flowers** with perianth tube 2.5–3.2 mm long, densely hairy; perianth lobes 4, lanceolate, $2.4-3.3 \times 1.4-1.8$ mm, apex acute, glabrous to sparsely hairy outside, glabrous inside; stamens yellow, 5–7 mm long, sparsely hairy, more densely so at base, anthers 0.7–0.8 mm long. **Female flowers** with perianth tube 2.5–3 mm long, densely hairy; perianth lobes lanceolate, $1.3-2.8 \times 0.7-1.2$ mm, apex acute, densely hairy outside and inside; ovary globose, c. 0.8 mm diam., glabrous, style c. 0.7 mm long, stigma peltate. **Fruit** 1–7 per infructescence; ellipsoid to globose, $6-15 \times 4.3-8$ mm, apex rounded to acute, smooth, glabrous, black when mature; cupule shallow, $2.6-5.3 \times 1.2-3.2$ mm, margin entire, smooth, sparsely hairy; stalk slender to slightly swollen, to 2 mm diam., sparsely hairy.

Distribution. India, Sri Lanka, South China (Guangxi), Myanmar, Thailand, Cambodia, Vietnam, Peninsular Malaysia and Borneo. In Singapore, known from Bukit Timah (*Ngadiman* 34984, 31 May 1938, SING [SING0045659]; *Lim et al. CTFS E3-6428*, 10 Jan 2019, SING [SING0292967]), MacRitchie (*Leong et al. MR2014-076*, 28 Oct 2014, SING [SING0213485]), Nee Soon (*Ng et al. SING2023-309*, 24 Jul 2023, SING [SING0392929]), Bedok, Changi, Pulau Ubin (*Gwee et al. GAT116*, 17 Dec 2002, SING [SING0042781]) and Pulau Tekong.

Ecology. Across its range, in open vegetation, thickets and (riverine) lowland and mountain forests. In Singapore, it is found in a variety of forest types.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Least Concern (LC) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

Vernacular names. *Medang pasir, shore laurel, tejur, tejur pasir*, 南亚新木姜子 (NParks' Flora & Fauna Web, 2026).

13. NOTHAPHOEBE Blume

(Greek, *nothos* = false, the genus *Phoebe*, Lauraceae; resembling the genus *Phoebe* Nees)

Mus. Bot. 1(21) (1851) 328; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 911; Meisner in de Candolle, Prodr. 15(1) (1864) 58; Koorders & Valetton, Meded. Lands Plantentuin 68 [Bijdr. Boomsoort. Java 10] (1904) 104, as '*Notaphoebe*'; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 96; Lecomte, Fl. Indo-Chine 5, fasc. 2 (1914) 117; Ridley, Fl. Malay Penins. 3 (1924) 100; Kostermans, J. Sci. Res.

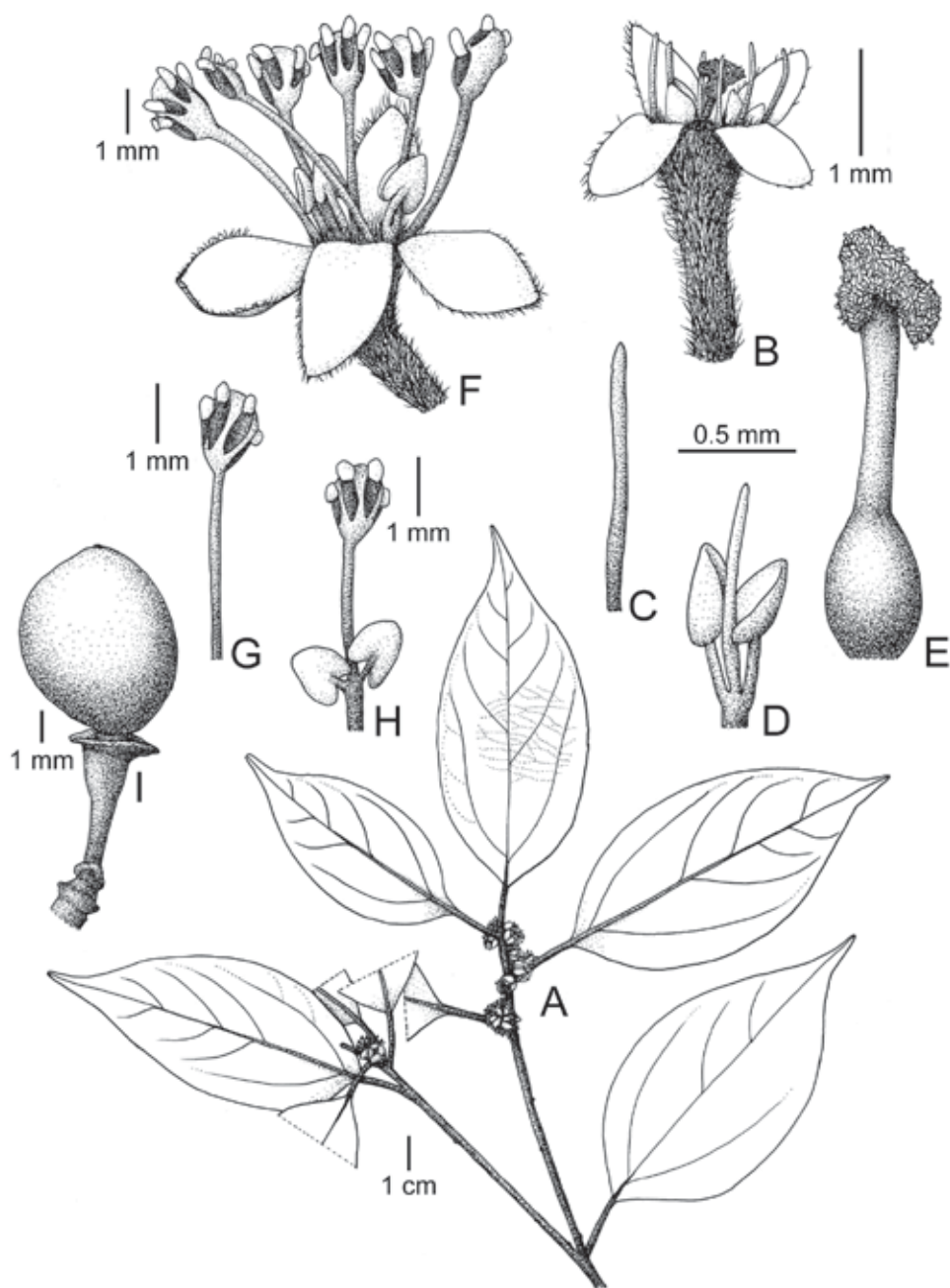


Figure 36. *Neolitsea cassia* (L.) Kosterm. **A.** Leafy twig with inflorescences. **B.** Pistillate flower. **C.** Staminode. **D.** Staminode with glands. **E.** Pistil. **F.** Male flower. **G.** Stamen. **H.** Stamen with glands. **I.** Fruit. (A–I from Singapore, A, Pulau Ubin, *Leong et al. PL2*; B–E Changi, *Teruya 2181*; F–H Nee Soon, *Lim SING2017-280*; I, Pulau Ubin, *Gwee et al. GAT312*. Drawn by E. Tay-Koh).



Figure 37. *Neolitsea cassia* (L.) Kosterm. **A.** Habit. Inset: Glaucous lower surface of a leaf. **B.** Male inflorescences with open flowers and closed inflorescence buds on twig. **C.** Close-up of inflorescence buds. **D.** Front view of inflorescence with several male flowers. **E.** Back view of inflorescence showing the involucre bracts. (A–E including inset from Singapore, A, A inset, B, D & E, Nee Soon; C, Nee Soon, Chen SING2017-780. Photos: A, A inset, B, D & E, X.Y. Ng; C, L.M.J. Chen).

(Jakarta) 1 (1952) 126; Kostermans, Bibliogr. Laurac. (1964) 1053; Kochummen, Tree Fl. Malaya 4 (1989) 170; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 380; Middleton in Argent et al. (ed.), Man. Non-Dipt. Trees Centr. Kalimantan 1 (1997) 325; Julia et al., Blumea 54 (2009) 193; Middleton in Chayamarit et al., Fl. Thailand 16(4) (2025) 1121. **Type:** *Nothaphoebe umbelliflora* (Blume) Blume, designated by Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 126.

Trees, buttresses sometimes present (*Nothaphoebe coriacea* (Kosterm.) Kosterm.). **Terminal vegetative buds** not perulate. **Leaves** spirally arranged, loosely to moderately densely crowded at the twig apex, pinnately veined. **Inflorescences** axillary or terminal, panicate-cymose, usually many-flowered, with the lateral flowers of the ultimate cymes strictly opposite (type 2 sensu van der Werff, Blumea 46 (2001) 133, under *Alseodaphne*); bracts leaf-like, involucre bracts absent. **Flowers** bisexual; perianth tube short; perianth lobes 6, unequal, outer smaller than inner; stamens 9 in 3 whorls, each of 3 stamens, and 1 whorl of 3 staminodes, sessile or with filaments shorter than the anthers; anthers 4-locular, locules of first and second whorl introrse, locules of third whorl usually extrorse (lower pores) and latrorse (upper pores), third whorl stamens usually with 2 sessile glands, or sometimes glands absent; staminodes minute, ovate or triangular, sessile, hairy; ovary sessile, ovoid, globose or ellipsoid, narrowing into a style; stigma papillose, capitate or minutely lobed. **Fruit** fleshy, ellipsoid, obovoid or cylindrical; perianth lobes usually persistent, but inconspicuous and not enlarged; pedicel in fruit indistinctly thickened, corky.

Distribution. A genus of about 22 species in tropical and subtropical continental Southeast Asia and through Malesia to New Guinea. In Singapore, 2 native species.

Ecology. Across its range, in lowland to hill mixed dipterocarp, riparian and swamp forests.

Uses. *Nothaphoebe* species yield lightweight to medium-weight hardwood sold as *medang*, a term referring to various Lauraceae taxa. Uses of the timber include house building, interior finish, furniture, carving and sculpture, pattern making and the production of veneer and plywood (Boer & Sosef in Sosef et al. (ed.), Pl. Resources S.E. Asia 5(3) (1998) 409).

Notes. Non-monophyly of *Alseodaphne*, *Dehaasia* and *Nothaphoebe* has been indicated in several molecular phylogenetic studies (e.g., Mo et al., *PLoS ONE* 12 (2017) e01286545; Xiao et al., *BMC Pl. Biol.* (2022) 22). See Notes under *Alseodaphne*.

Key to *Nothaphoebe* species

1. Leaves moderately densely crowded towards the twig apex; inflorescences short (to 3.9 cm long) and relatively few-flowered (< 30 flowers) **1. *N. coriacea***
 Leaves very loosely crowded towards the twig apex; inflorescences > 4 cm long (to 9.6 cm long) and many-flowered (> 30 flowers) **2. *N. umbelliflora***

1. *Nothaphoebe coriacea* (Kosterm.) Kosterm.

(Latin, *coriaceus* = leathery; referring to the leaf texture)

Candollea 28 (1973) 134; Keng, Gard. Bull. Singapore 27 (1974) 81; Kochummen, Tree Fl. Malaya 4 (1989) 170; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19, as '*coriaceae*'; Turner, Gard. Bull. Singapore 45 (1993) 115; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 286; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 64, 142, 195; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 405. **Basionym:** *Alseodaphne coriacea* Kosterm., New Crit. Malaysian Pl. 3 (1955) 15. **Type:** *Beguin 521*, [Indonesia], Sumatra, Bengkalis, Sg. Selat Panjang (holotype BO; isotype L [L0037037]). **Fig. 38.**

Medium-sized to tall trees, buttresses small or absent, knee-like pneumatophores present or absent. **Twigs** slender, to c. 5 mm diam., glabrous or sparsely hairy on the youngest growth, drying pale brownish-whitish; terminal vegetative buds ovoid, 4–14 mm long, densely appressed brownish hairy. **Leaves** alternate, spirally arranged, crowded at twig apex; lamina obovate or rarely narrowly elliptic, (2.8–)5–11(–16.5) × 1.5–5.5(–7.5) cm, apex obtuse or acute, frequently apiculate, rarely shortly acuminate, base cuneate to shortly concave-tapering, secondary veins 5–8 pairs, tertiary veins reticulate; upper surface drying blackish, greenish or dark brown, glabrous, midrib flat to slightly raised, secondary veins flat to weakly raised, tertiary veins distinct; lower surface drying reddish brown, glabrous, midrib raised, secondary veins weakly raised, tertiary veins distinct; petiole (0.5–)1–1.5(–2.5) cm long, glabrous, sometimes lenticellate. **Inflorescences** to 3.9 cm long, sparsely to moderately densely hairy with appressed, brownish hairs; bracteoles ovate, to c. 2 mm long, persistent. **Flowers** drying black, except for lighter brown margin of the outer petals, sparsely hairy; pedicel 2–3 mm long, sparsely to moderately densely hairy; hypanthium tube very short, perianth lobes unequal, outer smaller than inner, ovate, c. 0.9–1 × 1–1.1 mm, glabrous to sparsely appressed-hairy outside, brownish papillose inside except for margin, inner perianth lobes ovate, 1.3–1.5 × 1 mm, glabrous to sparsely hairy outside, brownish papillose inside, apex acute; stamens 0.5–0.75 mm long, first and second whorls non-glandular, third whorl with 2 glands or sometimes non-glandular, glands inconspicuous, sessile, densely villous; anthers sessile (first order) to subsessile (second and third order) with filaments much shorter than anthers, anther apices truncate to rounded, glabrous except for densely villous indumentum of curly hairs at the stamen base; staminodes minute, ovate-triangular, sessile, villous; ovary on shallowly cupulate receptacle, ellipsoid, 0.3–0.6 mm diam., glabrous; style to c. 0.5 mm long, about as long as the ovary; stigma papillose, minutely bilobed. **Fruit** obovoid or ellipsoid, 25–42 × 11–17 mm, frequently notched at the apex, drying blackish; pedicel in fruit indistinctly thickened, 4–7 mm long, to c. 4 mm diam. at the apex; perianth lobes persistent as small remnants and spreading at the pedicel apex or sometimes caducous.

Distribution. Peninsular Malaysia, Sumatra and Borneo. In Singapore, known only from a single historical collection from Tuas (*Goodenough s.n.*, 29 May 1890, SING [SING0042502]).

Ecology. Across its range, in lowland swamp forests.

Conservation assessment. Globally, not assessed. In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

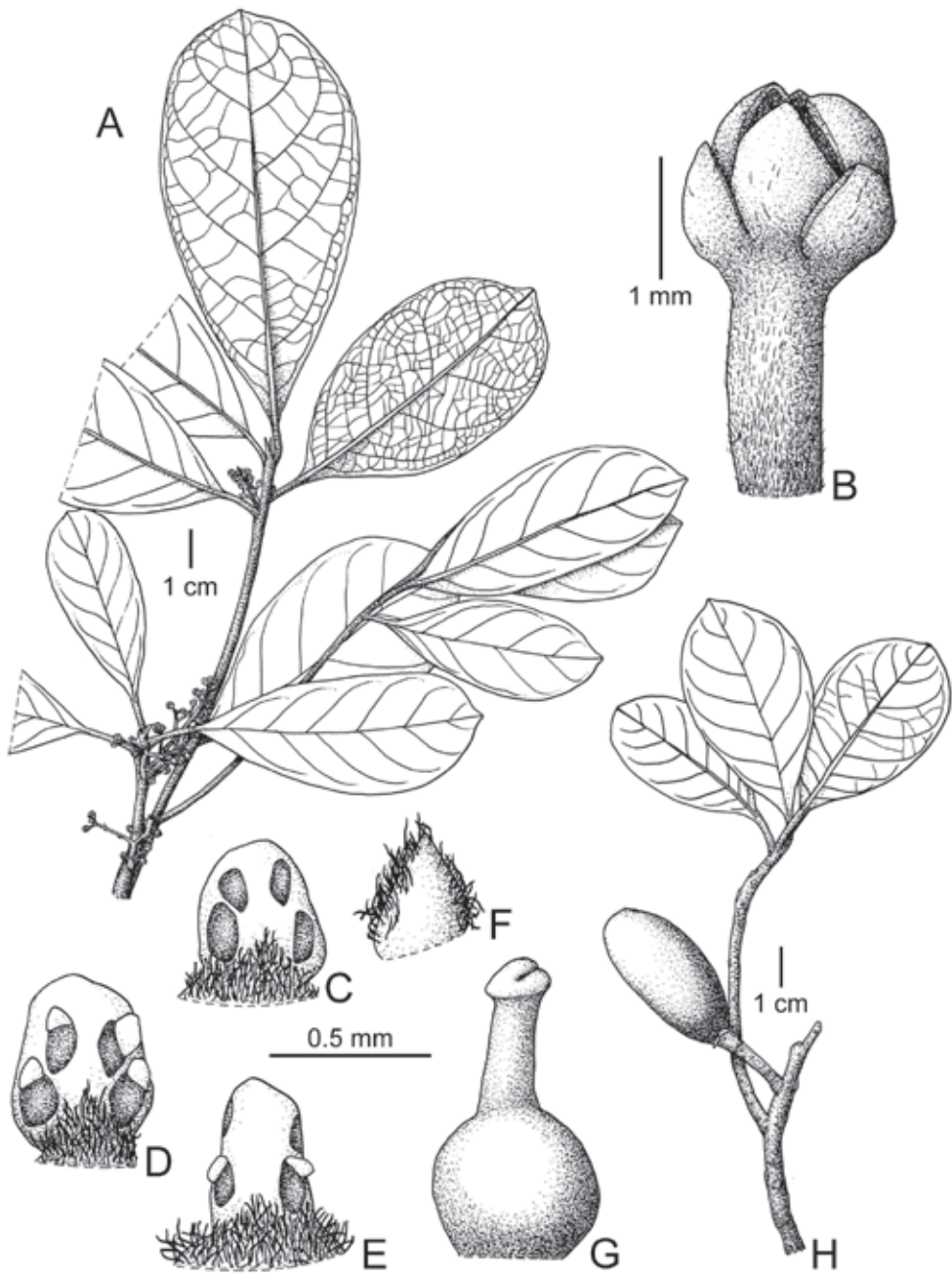


Figure 38. *Nothaphoebe coriacea* (Kosterm.) Kosterm. **A.** Leafy twig with inflorescences. **B.** Flower. **C.** Stamen (first whorl). **D.** Stamen (second whorl). **E.** Stamen (third whorl). **F.** Staminode. **G.** Pistil. **H.** Leafy branch with fruit. (A–H from Peninsular Malaysia, A, *Teo & Wintz 4875*; B–G, *Beguin 521*; H, *Flemmich 32650*. Drawn by E. Tay-Koh).

Notes. Due to the existence of only one Singapore specimen, the species description is primarily based on material from Peninsular Malaysia. This species is rather poorly understood and circumscribed. Additional studies are required to evaluate whether the material from Singapore represents the same species as the type material from Sumatra.

2. *Nothaphoebe umbelliflora* (Blume) Blume

(Latin, *umbellatus* = umbellate, *flos* = flower; with flowers in umbels)

Mus. Bot. 1(21) (1851) 328; Miquel, Fl. Ned. Ind. 1(1), fasc. 6 (1858) 911; Meisner in de Candolle, Prodr. 15(1) (1864) 58; Koorders & Valetton, Meded. Lands Plantentuin 68 [Bijdr. Boomsoort. Java 10] (1904) 105, as '*Notaphoebe*'; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 97; Lecomte, Fl. Indo-Chine 5, fasc. 2 (1914) 119; Koorders & Valetton, Atl. Baumarten Java 2 (1914) fig. 245; Ridley, Fl. Malay Penins. 3 (1924) 101; Kostermans, J. Sci. Res. (Jakarta) 1 (1952) 126; Keng, Gard. Bull. Singapore 27 (1974) 81; Kochummen, Tree Fl. Malaya 4 (1989) 172, fig. 11; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 115; Wong et al., Gard. Bull. Singapore 46(2) (1995 ['1994']) 74; Turner, Gard. Bull. Singapore 47 (1997 ['1995']) 286; Kochummen, Tree Fl. Pasoh Forest (1997) 288; Middleton in Argent et al. (ed.), Man. Non-Dipt. Trees Centr. Kalimantan 1 (1997) 326; Chew et al., Gard. Bull. Singapore 49(2) (1999 ['1997']) 191; LaFrankie et al., Forest Trees Bukit Timah (2005) 103, 164; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 64, 142, 229; Turner & Chua, Checkl. Vasc. Pl. Sp. Bukit Timah Nat. Res. (2011) 39; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 188, 381; Neo et al., Nat. Singapore 7 (2014) 104; Chong et al., Nat. Singapore 9 (2018) 26; Ho et al., Gard. Bull. Singapore 71(Suppl. 1) (2019) 89; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 405; Middleton in Chayamarit et al., Fl. Thailand 16(4) (2025) 1123, fig. 22. **Basionym:** *Ocotea umbelliflora* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 573. **Synonyms:** *Phoebe umbelliflora* (Blume) Nees, Syst. Laur. (1836) 115. – *Euphoebe umbelliflora* Blume ex Meisn. in de Candolle, Prodr. 15(1) (1864) 58, nom. inval. – *Alseodaphne umbelliflora* (Blume) Hook.f., Fl. Brit. India 5, fasc. 13 (1886) 145; Ridley, Straits Branch Roy. Asiat. Soc. 33 (1900) 131. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype L [L0037022], designated here). **Fig. 39.**

Nothaphoebe umbelliflora (Blume) Blume var. *lanceolata* Blume, Mus. Bot. 1(21) (1851) 328. **Type:** *Korthals s.n.*, [Indonesia], Sumatra (lectotype U [U1406277], designated here).

Nothaphoebe umbelliflora (Blume) Blume var. *pyrifolia* Blume, Mus. Bot. 1(21) (1851) 328. **Type:** *Korthals s.n.*, [Indonesia], Borneo (lectotype L [L0035670], designated here).

Dehaasia nitida Meisn. in de Candolle, Prodr. 15(1) (1864) 61, as '*Haasia*'. **Synonym:** *Nothaphoebe nitida* (Meisn.) Kosterm., Bot. Jahrb. Syst. 93 (1973) 478. **Type:** *Motley 282*, [Indonesia], Borneo, Bangarmassing [Banjarmasin], 1957 (lectotype K [K000778914], designated here).

Tall trees. **Twigs** slender, to c. 4 mm diam., sparsely hairy or glabrescent towards the end of the twig, finely fissured or smooth, drying brownish-greyish and usually black towards the apex (young growth); terminal vegetative buds conical, to c. 4 mm long, densely hairy with appressed, short, brownish hairs. **Leaves** alternate, spirally arranged, very loosely crowded towards the twig apex; lamina papery to coriaceous, narrowly to broadly elliptic or obovate, 6.5–19.5(–21) × 3–6.5(–7.5) cm, apex acute or acuminate, acumen to 1.5 cm long, base shortly concavely tapering or sometimes cuneate, secondary veins 5–8 pairs, tertiary veins reticulate to scalariform-reticulate; upper surface drying dark brown-blackish or sometimes greenish

brown, glabrous, midrib flat or sometimes weakly raised, secondary veins flat or sometimes weakly raised, tertiary veins distinct; lower surface drying reddish brown or dark brown, glabrous to glabrescent (basal midrib sometimes with some hairs), midrib and secondary veins raised, tertiary veins distinct; petiole 0.5–2(–3) cm long, sparsely hairy or glabrescent. **Inflorescences** to 9.6 cm long, sparsely hairy or glabrescent to moderately densely hairy with brownish hairs, often glabrous or glabrescent in basal part; bracteoles ovate to triangular, to c. 1.5 mm long, densely hairy, persistent or caducous. **Flowers** drying black, usually sparsely hairy; pedicel 2–4 mm long, sparsely to moderately densely brown hairy; perianth reddish, orange to yellowish, tube short, outer perianth lobes usually much smaller than inner, ovate, 0.6–1 × 0.7–1 mm, sparsely hairy to sometimes moderately densely hairy outside, glabrous inside, inner perianth lobes ovate, 1.1–1.5 × 0.8–1 mm, sparsely to sometimes moderately densely hairy outside, brownish papillose inside, apex acute; stamens 0.4–0.5 mm long, stamens of the first and second whorls non-glandular, the third whorl glandular with 2 glands or glands absent, glands inconspicuous, sessile, hairy; anthers sessile (first order) or filaments much shorter than anthers, anther apices truncate or sometimes rounded, glabrous or with some hairs on the lower back, densely hairy on the filaments and at the stamen base; staminodes narrowly ovate-triangular, sessile, densely hairy abaxially, glabrous adaxially; ovary on cupulate receptacle, ovoid to subglobose, 0.3–0.6 mm diam., glabrous, style 0.3–0.4 mm long, stigma papillose, a flat head or minutely lobed. **Fruit** ellipsoid or cylindrical, 24–42(–50) × 11–23 mm, apex obtuse, sometimes umbonate or apiculate, black and glossy when ripe, drying dark brown or blackish; pedicel in fruit woody, indistinctly thickened, 4–7 mm long, 2–3 mm diam. at the apex; perianth lobes persistent as small remnants at the pedicel apex.

Distribution. Thailand, Peninsular Malaysia, Sumatra, Java, Borneo, Bali and the Philippines. In Singapore, known from MacRitchie (*Jumali s.n.*, 8 Mar 1966, SING [SING0359688]), Bukit Timah (*Noor MN1061*, 14 Jul 1970, SING [SING0012009]), Nee Soon (*Vijayakumar SING2014-099*, 20 Mar 2014, SING [SING0205576]), Singapore Botanic Gardens' Rain Forest (*Ali Ibrahim SING2016-225*, 27 Dec 2016, SING [SING0230983]), Chan Chu Kang, Seletar and Changi.

Ecology. In Singapore, in primary and secondary lowland rain forest and swamp forest.

Conservation assessment. Globally, Least Concern (LC) (IUCN Red List, 2026). In Singapore, assessed as Least Concern (LC) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

Vernacular names. *Common false laurel*, *medang*, *medang losa* (NParks' Flora & Fauna Web, 2026).

14. PHOEBE Nees

(Greek, *phoibos* = shining, also the name of Apollo in his role as the sun god)

Syst. Laur. (1836) 98; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 102; Ridley, Fl. Malay Penins. 3 (1924) 103; Corner, Wayside Trees Malaya (1940) 343; Kostermans, Reinwardtia 4(2) (1957)

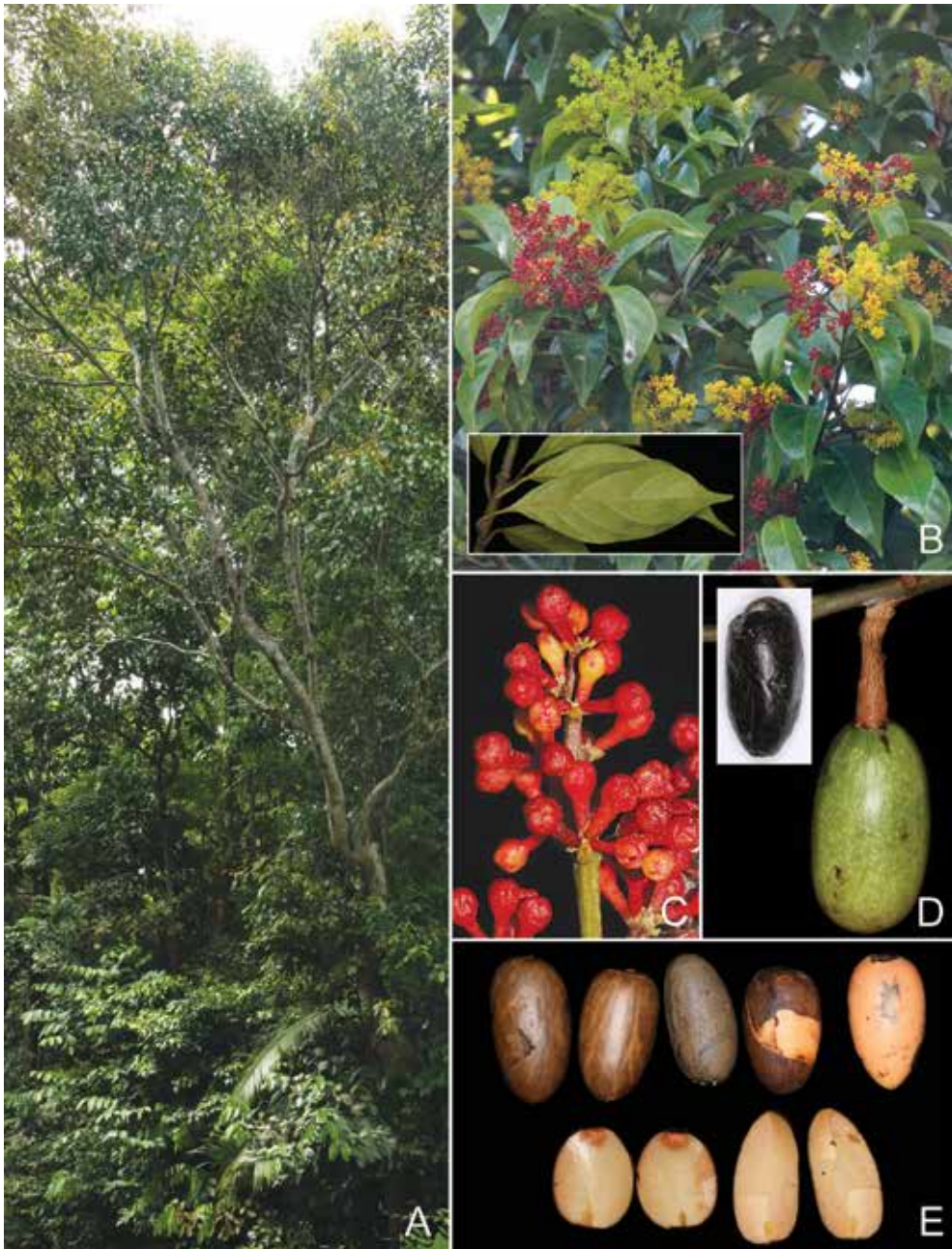


Figure 39. *Nothaphoebe umbelliflora* (Blume) Blume. **A.** Habit. **B.** Leafy twigs with inflorescences. Inset: Lower surface of a leaf. **C.** Flower buds. **D.** Young, green fruit. Inset: Mature, fallen fruit. **E.** Seeds. Top row: Side view; seed coat partially or completely removed in seeds on the right. Bottom row: Seeds halved, side view. (A–E including insets from Singapore, A–C, Nee Soon; B inset & D, Nee Soon, *Lim & Ng SING2019-575*; D inset, Singapore Botanic Gardens; E, MacRitchie. Photos: A, Zaki Jamil; B, B inset & C–E, X.Y. Ng; D inset, W.F. Ang).

227; Kochummen, Tree Fl. Malaya 4 (1989) 175; Rohwer in Kubitzki et al. (ed.), Fam. Gen. Vasc. Pl. 2 (1993) 380; van der Werff, Blumea 46 (2001) 139; Li et al., Fl. China 7 (2008) 189; Middleton in Chayamarit et al., Fl. Thailand 16(4) (2025) 1125. **Type:** *Phoebe lanceolata* (Nees) Nees, lectotype designated by Kostermans, Reinwardtia 4(2) (1957) 227.

Trees or shrubs. **Terminal vegetative buds** usually not perulate. **Leaves** alternate, often fascicled at ends of twigs, pinnately veined. **Inflorescences** paniculate-cymose, with the lateral flowers of the ultimate cymes strictly opposite (type 2 sensu van der Werff, Blumea 46 (2001) 139), in upper leaf axils, bracts leaf-like, involucre bracts absent. **Flowers** trimerous, bisexual; perianth tube short, perianth lobes 6, equal or sometimes outer ones slightly shorter, becoming leathery or woody after flowering; stamens 9 in 3 whorls, each of 3 stamens, and 1 whorl of 3 staminodes sessile or with filaments shorter than the anthers, first and second series without glands, anthers introrse, third series with 2 glands, anthers extrorse; anthers 4-locular; staminodes triangular or sagittate; ovary ovoid or globose; style slender; stigma dish-shaped or capitate. **Fruit** base surrounded by persistent, stiff and enlarged perianth lobes which clasp the base of the fruit; pedicel in fruit not or only slightly thickened.

Distribution. A genus of 80–100 species from tropical and subtropical India, Nepal, South China and throughout continental Southeast Asia and Malesia to western New Guinea. In Singapore, 2 native species.

Key to *Phoebe* species

1. Young twigs glabrous to velutinous, hairs appressed; terminal vegetative buds sparsely hairy; lower leaf surface with appressed hairs; petiole glabrous to sparsely hairy **1. *P. grandis***
 Young twigs velutinous, hairs curly; terminal vegetative buds velutinous; lower leaf surface with erect hairs; petiole velutinous **2. *P. macrophylla***

1. *Phoebe grandis* (Nees) Merr.

(Latin, *grandis* = large; referring to the leaves)

Contrib. Arnold Arbor. 8 (1934) 61; Corner, Gard. Bull. Straits Settlement. 10 (1939) 278; Corner, Wayside Trees Malaya (1940) 343; Keng, Gard. Bull. Singapore 27 (1974) 81; Corner, Wayside Trees Malaya, ed. 3, 1 (1988) 380; Kochummen, Tree Fl. Malaya 4 (1989) 176, fig. 13; Keng, Concise Fl. Singapore, vol. 1, Gymn. Dicot. (1990) 19; Turner, Gard. Bull. Singapore 45 (1993) 115; Wong et al., Gard. Bull. Singapore 46(2) (1995 [‘1994’]) 74; Turner et al., Gard. Bull. Singapore 48 (1998 [‘1996’]) 147; Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 191; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 69, 143, 210; Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 199, 381; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 406; Middleton in Chayamarit et al., Fl. Thailand 16(4) (2025) 1128. **Basionym:** *Alseodaphne grandis* Nees in Wallich, Pl. Asiat. Rar. 2, fasc. 8 (1831) 72. **Synonym:** *Persea grandis* (Nees) Nees in Wallich, Pl. Asiat. Rar. 3, fasc. 11 (1832) 32. **Type:** *Porter s.n.* [EIC 2594a] [Malaysia], Penang, from the hills (lectotype GZU [GZU000254427], designated here; isoelectotypes [BM000799264], K-W [K001116520]). **Fig. 40.**

Persea macrophylla Blume var. *cuneata* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 568. **Synonyms:** *Machilus cuneatus* (Blume) Hassk., Cat. Hort. Bot. Bogor. (1844) 88, as '*cuneata*'. – *Phoebe cuneata* (Blume) Blume, Mus. Bot. 1(21) (1851) 326; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 109; Ridley, Fl. Malay Penins. 3 (1924) 106; Keng, Gard. Bull. Singapore 27 (1974) 81. – *Euphoeba cuneata* Blume ex Meisn. in de Candolle, Prodr. 15(1) (1864) 58, nom. inval. – *Alseodaphne cuneata* (Blume) Boerl., Handl. Fl. Ned. Ind. 3 (1900) 137. **Type:** *Blume s.n.*, [Indonesia], Java (lectotype L [L0036859], designated by de Kok, Gard. Bull. Singapore 71 (2019) 158).

Phoebe opaca Blume, Mus. Bot. 1(21) (1851) 327; Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 108; Ridley, Fl. Malay Penins. 3 (1924) 105; Burkill, Dict. Econ. Prod. Malay Penins. 2 (1935) 1712; Keng, Gard. Bull. Singapore 27 (1974) 81. **Type:** *Blume s.n.*, [Indonesia], Java, Papandaijang (lectotype L [L0036868], designated here; isolectotype L [L0036869]).

Phoebe kunstleri Gamble, Bull. Misc. Inform. Kew 1910 (1910) 226; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 107; Ridley, Fl. Malay Penins. 3 (1924) 105; de Kok, Gard. Bull. Singapore 71 (2019) 159. **Type:** *Kunstler 8173*, [Malaysia] Perak, near Goping, September 1885 (lectotype K [K000778870], designated by de Kok, Gard. Bull. Singapore 71 (2019) 159; isolectotypes K [K000778869, K000778870], MEL [MEL2390378], P [P00752546]).

Trees, 3–33 m tall, dbh 10–50 cm; bark grey to light brown, smooth or scaly; inner bark yellow to dark or light brown, strongly aromatic; sapwood deep to bright yellow. **Twigs** slender to stout, 2.2–7.8 mm diam., rounded in cross-section, glabrous to velutinous, glabrescent, hairs yellowish to brownish, appressed; terminal vegetative buds ovoid, 2.9–4.2 mm long, apex acute, sparsely hairy. **Leaves** alternate, frequently clustered at ends of twigs, young leaves reddish; lamina papery to coriaceous, elliptic or obovate or (ob)lanceolate, 6–30 × 2–12.5 cm, apex rounded to acuminate, base cuneate to attenuate, secondary veins 7–13 pairs, brochidodromous, tertiary veins scalariform-reticulate; upper surface bright to deep green, glabrous apart from some hairs on midrib, midrib sunken, secondary veins raised to sunken, tertiary veins indistinct; lower surface glaucous, sparsely hairy, more densely hairy on major veins, midrib and secondary veins raised, tertiary veins distinct, hairs yellowish to brownish, appressed; petiole slender, half-terete to channelled, 1.2–5 cm long, glabrous to sparsely hairy. **Inflorescences** 6–25 cm long, glabrous to velutinous, hairs yellowish to brownish, appressed; bracteoles linear, 1–2.1 mm long, apex acuminate, velutinous, caducous. **Flowers** white to yellowish brown or pale yellow; perianth lobes elliptic, 2.1–4.3 × 1.7–2.8 mm, apex acute, velutinous outside, velutinous to sparsely hairy inside; stamens 1.4–2.2 mm long, sparsely hairy; anthers 1–1.2 mm long; ovary 0.7–1.5 mm diam., glabrous; style 1.6–1.9 mm long; sigma capitate. **Fruit** ellipsoid to obovoid, 12–20 × 7–12 mm, apex rounded, smooth, glabrous, black to blue-green when mature; fruiting perianth lobes elliptic, 2.8–6 × 2.4–3.5 mm, apex acute, erect, glabrous to sparsely hairy, hairs yellowish to brownish, appressed; stalk slender, to 2.2 mm diam., red when fresh.

Distribution. Peninsular Malaysia, Sumatra, Java and Borneo. In Singapore, known from Changi (*Ridley 4812*, 1 Mar 1893, SING [SING0013301]), Pulau Ubin (*Ridley 5915*, 1894, K [K003569092]), Lower Peirce (*Corner SFN 37264*, 12 Mar 1941, L [L.1813803], SING [SING0013302, SING0013303]) and MacRitchie (*Corner SFN 37269*, 10 Apr 1941, L [L.1784727]).

Ecology. Across its range, in open country and forest edges of lowland and mountain forests. In Singapore, recorded from primary and secondary forest.

Conservation assessment. Globally, Least Concern (LC) (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) 487).

2. *Phoebe macrophylla* (Nees) Blume

(Greek, *macro* = large, *phyllon* = leaf; with large leaves)

Mus. Bot. 1(21) (1851) 326; Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 106; Ridley, Fl. Malay Penins. 3 (1924) 105; Lindsay et al., Gard. Bull. Singapore 74(Suppl. 1) (2022) 406. **Basionym:** *Machilus macrophylla* Nees, Syst. Laur. (1836) 674, as '*macrophylla*'. **Synonym:** *Persea macrophylla* Blume, Bijdr. Fl. Ned. Ind., pt 11 (1826 ['1825']) 568, nom. illeg. non (Kunth) Spreng. (1825). **Type:** *Blume s.n.*, [Indonesia], Java, Salak, Gede (lectotype L [L0036882], designated by de Kok, Gard. Bull. Singapore 71(2019) 159).

Phoebe elliptica Blume, Mus. Bot. 1(21) (1851) 326; Kochummen, Tree Fl. Malaya 4 (1989) 176. **Type:** *Blume s.n.*, [Indonesia], Java, in mountain forests (lectotype L [L0036885], designated by de Kok, Gard. Bull. Singapore 71 (2019) 159).

Trees, 12–27 m tall, dbh 20–50 cm, with buttresses to 2 m high; bark grey-brown, cracking to smooth to scaly; inner bark yellow to yellow-brown; sapwood yellow. **Twigs** slender to stout, 6.5–8.5 mm diam., rounded in cross-section, velutinous, hairs rusty brown, curly; terminal vegetative buds ovoid, 5.2–6 mm long, apex acute, velutinous. **Leaves** alternate; lamina thickly coriaceous, lanceolate to obovate, 9–36 × 4.5–13.5 cm, apex rounded to acute, base cuneate, secondary veins 6–13 pairs, top pairs arching, tertiary veins scalariform; upper surface dark green, glabrous, except for midrib and secondary veins, midrib raised, secondary veins usually sunken, tertiary veins indistinct; lower surface glaucous, sparsely hairy more densely on veins; midrib and secondary raised, tertiary veins distinct, hairs brown, erect; petiole slightly swollen, half-terete, 1.2–4 cm long, velutinous. **Inflorescences** 14–30 cm long, axillary, velutinous, hairy brown, erect; bracteoles linear, 1.7–3.7 mm long, apex acute, velutinous, caducous. **Flowers** yellow; perianth lobes elliptic, 4.3–5 × 2–3.2 mm, apex acute, velutinous outside, sparsely hairy inside; stamens 2.5–3 mm long, sparsely hairy; anthers 1–1.3 mm long; ovary c. 1.3 mm diam., glabrous; style c. 2 mm long; stigma capitate. **Fruit** ellipsoid, 10–15 × 5–11.5 mm, apex rounded, smooth, glabrous, shining, blue-black when mature; fruiting perianth lobes 6.2–7.6 × 4.6–5.6 mm, apex acute, sparsely hairy; stalk swollen, to 3.3 mm diam.

Distribution. Peninsular Malaysia, Java and New Guinea. In Singapore, known from Bukit Mandai (*Ridley* 4580, 28 Oct 1892, K [K003569111]), Singapore Botanic Gardens' Rain Forest (*Ridley* 3579, 1892, K [K003569110]; *Ridley* 3891, 1893, K [K003569109], SING [SING0222242]; *Ridley* 13317, 1908, K [K003569112], SING [SING0000646]) and Bukit Timah (*Sinclair* 39566, 21 Apr 1953, L [L.1813973], SING [SING0042504]).

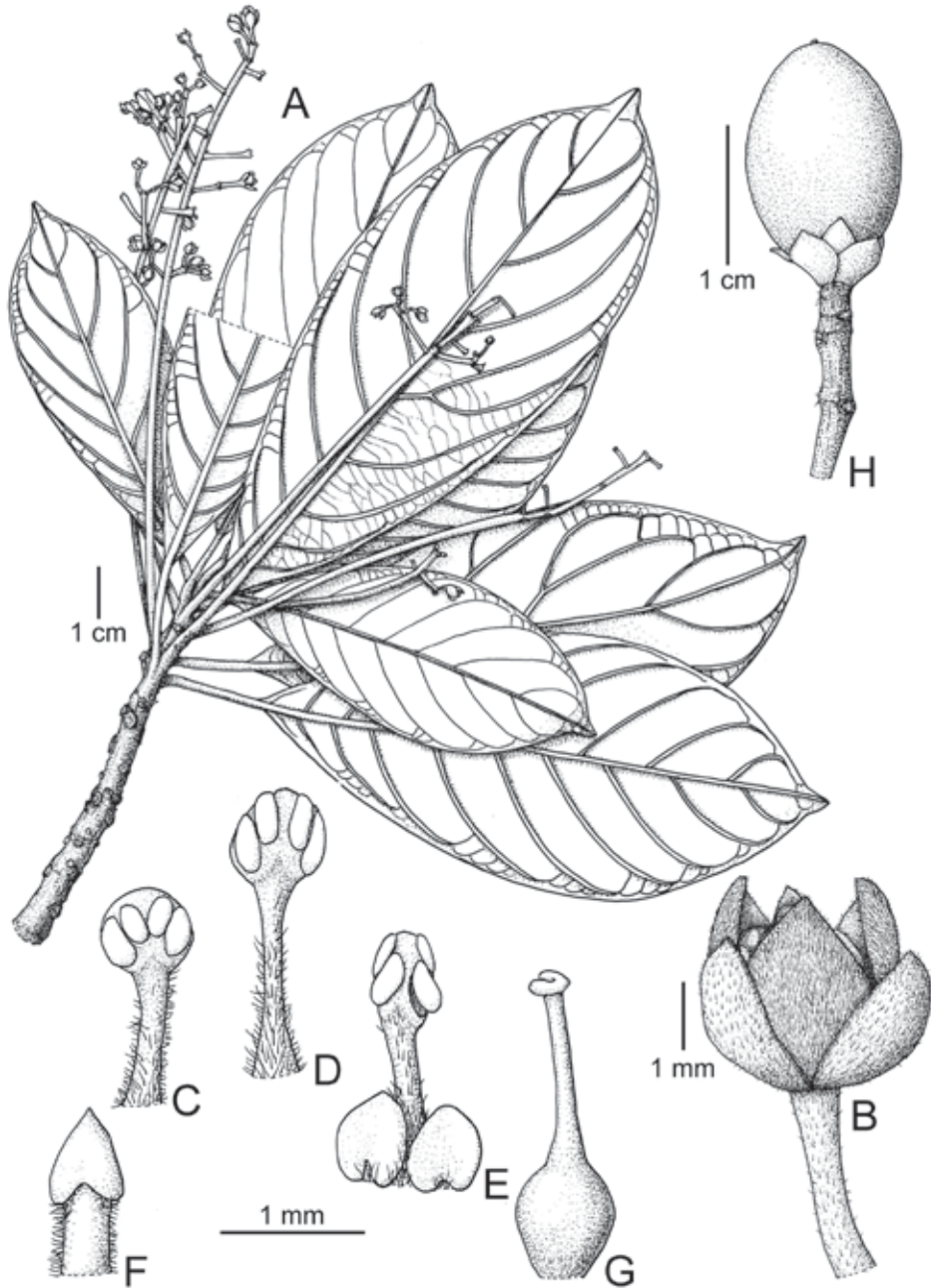


Figure 40. *Phoebe grandis* (Nees) Merr. **A.** Leafy twig with inflorescence. **B.** Flower. **C.** Stamen (first whorl). **D.** Stamen (second whorl). **E.** Stamen with glands (third whorl). **F.** Staminode. **G.** Pistil. **H.** Fruit with persistent calyx. (A–H from Singapore; A–G, Lower Peirce, *Corner 37264*; H, Changi, *Ridley 4812*. Drawn by E. Tay-Koh).

Ecology. Across its range, in primary and secondary lowland and mountain forest. In Singapore, formerly in primary forest.

Conservation assessment. Globally, not assessed. In Singapore, assessed as Nationally Extinct (NEx) by Middleton et al. (in Davison et al. (ed.), Singapore Red Data Book, ed. 3 (2024) 487).

Excluded species

The following names have been recorded for Singapore but there is no evidence they occur, under this name or under synonyms, and it is unknown to which species that do occur in Singapore the names may have been misapplied.

Beilschmiedia tonkinensis (Lecomte) Ridl.: Tan et al., Nat. Watch 13(1) (2005) 6; Tan et al. in Davison et al. (ed.), Singapore Red Data Book, ed. 2 (2008) 225; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 18, 142, 201.

Cinnamomum nitidum (Roxb.) Hook.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 131. See note under *Cinnamomum iners* (Reinw. ex Nees & T.Nees) Blume.

Cinnamomum sintoc Blume: Chew et al., Gard. Bull. Singapore 49(2) (1999 [‘1997’]) 190; LaFrankie et al., Forest Trees Bukit Timah (2005) 161; Tan et al. in Davison et al. (ed.), Singapore Red Data Book, ed. 2 (2008) 225; Chong et al., Checkl. Vasc. Pl. Fl. Singapore (2009) 26, 142, 203.

Cryptocarya costata Blume: Wong et al., Checkl. Pl. Sp. Nee Soon Swamp Forest (2013) 70, 380.

Litsea nitida Blume, ined.: Ridley, J. Straits Branch Roy. Asiat. Soc. 33 (1900) 132.

Litsea noronhae Blume: Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 75(1) (1912) 179.

Micropora curtisii (Hook.f.) Hook.f.: Keng, Gard. Bull. Singapore 27 (1974) 81.