

Annotated list of seed plants of Singapore (II)

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II. Angiosperms — Dicotyledons

8. MAGNOLIACEAE

Key to the genera

- A. Flowers terminal.
 - B. Aggregate fruit of a mass of fleshy, indehiscent and fused carpels; perianth-segments 18 or more, narrow (less than 1cm wide) *Aromadendron*
 - B. Aggregate fruit of dry, dehiscent and \pm free carpels; perianth-segments 15 or less, relatively broader.
 - C. Mature carpels dehiscing along the dorsal (or outer) side *Magnolia*
 - C. Mature carpels dehiscing along the ventral (or inner) side, and separating from the floral axis *Talauma*
- A. Flowers axillary; mature carpels free, dehiscent along the dorsal side *Michelia*

Aromadendron elegans Bl.

Large tree with grey bark; flowers white, sweet-scented; fruit an ovoid mass; found on Bukit Timah (*Ngadiman* 243), very rare. Vern. *Champaka hutan*.

Magnolia maingayi King

Shrub or small tree; flowers scented, white; formerly also found in Gardens' jungle, now only on Bukit Timah (*Ngadiman* 36547), very rare.

Magnolia coco (Lour.) DC.

Shrub; flowers white, nodding, scented, the petals falling off shortly after blooming; native of China. 夜香木蘭。

Michelia alba DC.

Tree; flowers white, strong scented; native of S. China, propagation by marcots. Vern. *Champaka puteh*, 白玉蘭。

Michelia champaca Linn.

Tree; flowers orange, strongly scented; native of India, Thailand and northern Malaya, producing viable seed. Vern. *Champaka kuning*, 黃玉蘭。

Michelia figo (Lour.) Spr.

Small shrub; flowers ivory-coloured, scented but barely opened; native of S. China. 含笑花。

Talauma singaporensis Ridl.

Small tree; leaves very large; flowers white, large; carpels glabrous; formerly found at Chua Chu Kang (*Ridley* s.n. date 1894) and elsewhere, now surviving in Water Catchment Area, rare.

Talauma villosa Miq.

Recorded as *T. lanigera* Hook. f. in *Ridley's* Flora; small tree; flowers white, large; carpels woolly; formerly near Chua Chu Kang, Ang Mo Kio, Kranji and elsewhere, now limited to Water Catchment Area (Nee Soon, *Keng & Jumali* 6354), rare.

9. SCHISANDRACEAE**Kadsura scandens** Bl.

Big woody climber with smooth or rough bark; flowers rosy, on stems; Gardens' jungle, Bukit Timah (*Ridley* 6354), rare. (A small leaved form of this species was formerly called *K. cauliflora* Bl.) Vern. *Akar dama-dama*, 南五味子。

10. ANNONACEAE

Key to the common genera

- A. Carpels united into a fleshy mass, especially in fruit (cultivated fruit trees; connective of anther truncate or oblong, concealing the anther locules.) *Annona*
- A. Carpels free or slightly united but always quite free in fruit.
 - B. Petals 2-seriate, one or both series imbricate in bud (inner petals with a broad base; anther connective broad).
 - C. Petals usually large (1-4 cm long), imbricate *Uvaria*
 - C. Petals smaller (below 8 mm long), valvate at base, imbricate at tips *Cyathostemma*
 - B. Petals 2-seriate or sometimes 1-seriate, all valvate.
 - D. All petals, or the inner ones cohering (or connivent) by their edges.
 - E. Petals 3, entirely connate into a \pm conical hood (flowers solitary, long-pedicelled, pendulous, 6-8 cm long; ripe carpels necklace-shaped; erect shrubs) *Desmos dasymaschala*
 - E. Petals 6 in 2 series, inner ones often shorter than the outer; cohering into a long hood.
 - F. Erect trees or shrubs; flowers axillary, inner petals clawed (ripe carpels bright red) *Goniothalamus*
 - F. Climbers; flowers extra-axillary; inner petals not clawed (ovary densely pubescent) *Friesodielsia*
 - D. All petals free or separating very readily or shortly connate at the base only.
 - G. Connectives narrow, pointed, not concealing anther locules; trees or erect shrubs.
 - H. Outer petals not or only slightly longer than calyx; the inner much larger with saccate base; ovaries numerous (ovules 1-2) *Milusa*
 - H. Outer petals much longer than calyx; the inner not or only slightly longer than the outer, sometimes smaller.
 - I. Flowers 4 to many in cymes, only 1-2 in each cyme open at a time; petals with saccate base; all stamens perfect, ripe carpels ellipsoid, fleshy, 3-12 seeded *Alphonsea*
 - I. Flowers solitary; petals not with saccate base, sometimes obtuse; ripe carpels club-shaped, 2 valved, 1-2 seeded *Anaxagorea*

G. Connective widened and truncate, concealing anther locules.

J. Flowers borne on hooked, rigid, laterally compressed short shoots; base of petals cohering into a cap over stamens and carpels; climbers *Artabotrys*

J. Flowers not borne on such hooked, short shoots.

K. Outer petals slightly longer than calyx (the inner petals erect, concave inside; ripe carpels 1-2 seeded; trees or shrubs) *Popowia*

K. Outer petals much longer than calyx.

L. Anthers transversely septate (trees, flowers axillary, petals usually linear lanceolate; ripe carpels several seeded) *Xylopia*

L. Anthers normal, not septate.

M. Apex of connective acute; flowers very fragrant, in pendulous, umbellate inflorescence; petals lanceolate or linear-lanceolate; ovaries numerous; ripe carpels ellipsoid, 2-many seeded; trees *Cananga*

M. Apex of connective obtuse or truncate.

O. Flowers solitary, extra-axillary or opposite the leaves, pendulous, yellow; the inner petals clawed at base; ovaries many; ripe carpels necklace-shaped with 1-8 segments; shrubs often with drooping twigs *Desmos*

O. Not as above

P. Climbers, densely brown pubescent; flowers in terminal cymes or panicles; the outer petals erect or spreading, the inner slightly shorter; ovaries many, pubescent; ripe carpels stalked, subglobose, 1-8 seeded *Fissistigma*

P. Trees or erect shrubs, rarely slightly climbing.

Q. Flowers axillary, solitary or 2-3 together; petals subequal or the inner ones shorter; all stamens fertile, subequal; ovaries 2-5 with several ovules in 2 rows; ripe carpels thick-walled, fleshy, sessile *Meiogyne*

Q. Not as above.

R. Trees with a crown of branches near top; flowers usually opposite the leaves; petals linear or oblong, clawed; inner petals concealing the stamens and carpels by the broadened base; ripe carpels many-seeded *Cyathocalyx*

R. Trees or shrubs; flowers axillary or on branches or stem; petals usually spreading; ripe carpels 1-5 seeded *Polyalthia*

***Alphonsea maingayi* Hook. f. & Thoms.**

Tall tree; flowers in cymose clusters, opposite the leaves; outer petals with reflexed tip and saccate base; ripe carpels oblong; seeds many; Chua Chu Kang (Ridley 6758), Gardens' jungle.

Anaxagorea javanica Bl.

Shrub; petals spreading, the edges very thick; ripe carpels of 4–8 clavate follicles; seeds 2, black, shining. Called *A. scortechinii* in Ridley's flora. In Singapore only found in Gardens' jungle (*Keng & Jumali 3027*). 蒙蒿子。

Annona muricata Linn.

Shrub or small fruit tree; this and the two following species are native to trop. America. Vern. *Soursop*, *Durian belanda*, 刺番荔枝。

An. reticulata Linn.

Vern. *Custard apple*, *Bullock's Heart*, 牛心梨。

An. squamosa Linn.

Vern. *Sweet-sop*, *sugar apple*, 番荔枝, 釋迦果。

Artabotrys costatus King

Climber; petals creamy white, tomentose; Mandai (*Ridley 10921*).

Art. crassifolius Hook. f. & Thoms.

Stout climber; petals rose-pink; Bukit Timah (*Ridley 10853*).

Art. maingayi Hook. f. & Thoms.

Climber; common in MacRitchie Reservoir jungle (*Sinclair 4876*); petals green to creamy yellow.

Art. suaveolens (Bl.) Bl.

Climber; young branches glabrous or nearly so; peduncles hooked; flowers creamy white, fragrant; the commonest species of the genus in Singapore; Peirce Reservoir (*Wee 184*).

Art. uncinatus (Lam.) Merr.

Scandent shrub, native of Ceylon and S. India, sometimes cultivated, known as *Art. odoratissimus* R. Br. 鶯爪花。

Art. wrayi King

Climber; petals pale yellow; Bukit Mandai (*Ridley 3630*).

Cananga odorata (Lamk.) Hook. f. & Thoms.

Tree, wild in N. Malaya and elsewhere, cultivated in gardens; Flowers very fragrant; called *Canangium odoratum* King in Ridley's Flora; a dwarf cultivated variety (var. *fruticosa* J. Sinclair) about 2 m. high, often has supernumerary petals but never sets fruit. Vern. *Kenanga*.

Cyathocalyx remuliflorus (Maingay ex. Hook. f. & Thoms.) Scheff.

Tall monopodial tree; branches spreading at top; Jurong (*Corner 26162*); called *Drepananthus ramuliflorus* Maingay in Ridley's Flora.

Cyath. ridleyi (King) Sinclair

Small tree, with pole-like trunk and crown branches at top; petals filiform, pale yellow, pink at base, the claws orbicular; Bukit Timah (Sinclair 38449) and elsewhere; called *Xylopia ridleyi* King in Ridley's Flora.

Cyath. sumatranus Scheff.

Tree, with a crown of spreading branches at top; petals green, tomentose with pink claws; Gardens' jungle (Corner s.n. in 1943); called *Xylopia curtisii* King in Ridley's Flora.

Cyathostemma hookeri King

Climber, twigs glabrous; petals waxy-yellow; Gardens' jungle (Ridley 4790).

Cyath. viridiflorum Griff.

Climber, often in swampy forest; flowers on stem, small petals, greenish yellow; fruit orange, large; Seletar Reservoir (Sinclair SFN 39246).

Desmos chinensis Lour.

Bushy shrub, wild in Malaya and elsewhere, occasionally cultivated.

Desmos dasymaschala (Bl.) Safford

Bushy shrub; petals cream coloured, 3-4 in one row (inner row absent); MacRitchie Reservoir (Wee 49).

Desmos dumosus (Roxb.) Safford

Straggling shrub; petals greenish yellow, 6 in 2 rows; Cluny Road (Ridley 6305).

Ellipeia cuneifolia Hook. f. & Thoms.

Climber, young twigs rusty; petals fleshy yellow; Gardens' jungle (Ridley 4919).

Fissistigma fulgens (Hook. f. & Thoms.) Merr.

Large climber; flowers few, in cymes opposite to a leaf; petals thick, ovate, orange; ripe carpels globose to oblong, 3-4 cm long; seeds several in 2 rows; called *Melodorum fulgens* Hook. f. & Thoms. in Ridley's Flora. MacRitchie Reservoir (Wee 135).

Fis. lanuginosum (Hook. f. & Thoms.) Merr.

Climber, young twigs rusty-tomentose; petals oblong-lanceolate, MacRitchie (Wee 46).

Fis. latifolium (Hook. f. & Thoms.) Merr. var. **ovoideum** Sinclair

Large climber, twigs rusty-tomentose; flowers like *F. fulgens* but larger; Seletar Reservoir (Wee 301).

Fis. manubriatum (Hook. f. & Thoms.) Merr.

Stout climber; flowers terminal, opposite a leaf; MacRitchie (*Wee* 173).

Friesodielsia biglandulosa (Bl.) Steenis

Climber; flowers extra-axillary; mature carpels ovoid or oblong, thin-walled, 1-seeded, usually stalked; Seletar Reservoir (*Sinclair* 38870); called *Oxymitra biglandulosa* Scheff. in Ridley's Flora.

Fri. glauca (Hook. f. & Thoms.) Steenis

Climber; Jurong (*Corner SFN* 26151).

Fri. latifolia (Hook. f. & Thoms.) Steenis

Climber; young branches rusty-tomentose; flowers solitary, extra-axillary; petals creamy white; ripe carpels ovoid, clustered; Gardens' jungle (*Ridley* 10809).

Goniothalamus malayanus Hook. f. & Thoms.

Shrub or small tree; flowers solitary, axillary or from the axils of fallen leaves; petals valvate, greenish yellow, outer ones oblong-ovate; ripe carpels oblong, 2–5 seeded, clustered; Seletar (*Ridley* s.n. in 1894).

Gon. ridleyi King

Tree; flowers in fascicles from warty tubers at base of trunk; ripe carpels numerous, obovoid, glabrous, 1-seeded, short-stalked; Bukit Timah (*Ridley* 4450).

Gon. tapis Miq.

Shrub or tree; flowers solitary or in pairs; leaves broader than *Gon. malayanus*; ripe carpels red, 1-seeded; Bukit Timah (*Ridley* 8405).

Mezzettia leptopoda (Hook. f. & Thoms.) Oliv.

Tall monopodial tree; petals linear, pale yellow, 1–1.2 cm long; fruit globose with a resinous odour; Mandai (*Corner SFN* 33147).

Meiogyne virgata (Bl.) Miq.

Tree; petals lanceolate, 1.5–2.5 cm long, greenish yellow or pink, reddish at base; ripe carpels oblong, brown-tomentose; Bukit Timah (*Ridley* 4457); called *Cyathocalyx virgatus* King in Ridley's Flora.

Miliusa longipes King

Shrub or small tree; flowers solitary, axillary, sepals and outer petals alike (resembling *Phaeanthus*); inner petals greenish yellow outside, dark red inside; ripe carpels globose, 1–2 seeded; Bukit Timah (*Ridley* 8450).

Mitrella kentii (Bl.) Miq.

Climber; leaves very variable; flowers 1–3, axillary; Bukit Mandai (*Ridley* 2117); called *Melodorum elegans* Hook. f. & Thoms. in Ridley's Flora.

Monocarpia marginalis (Scheff.) J. Sinclair

Tree; ripe carpels 1–3, subglobose, 4–6.5 cm across; called *Cyathocalyx maingayi* Hook. f. & Thoms. in Ridley's Flora.

Phaeanthus ophthalmicus (Roxb. ex Don) J. Sinclair

Small shrub, common in shady forests; flowers 1–2, extra-axillary; outer petals and sepals alike; inner petals large, green, flat, ovate-lanceolate; ripe carpels numerous, ovoid to oblong, 1-seeded; MacRitchie (Keng & Jumali s.n., April, 1961); called *Ph. nutans* in Ridley's Flora.

Polyalthia angustissima Ridley

Small tree; petals pink, linear; Bukit Timah (Ridley 8050, type).

Poly. cauliflora Hook. f. & Thoms.

Shrub or small tree; flowers arising mostly from woody tubercles on the trunk and branches; petals pinkish brown, narrow lanceolate; Bukit Timah (Ridley 8117), with 2 varieties, var. *beccarii* (King) Sinclair (with narrowed leaves) and var. *desmantha* (Hk. f. & Thoms) Sinclair (with denser brown tomentum esp. on midrib).

Poly. glauca (Hassk.) Boerl.

Tree; flowers fragrant; petals linear, oblong; Mandai (Holttum 37706).

Poly. hookeriana King

Tree; petals pale yellow; Fern Valley in B.T.N.R.* (Sinclair 39149).

Poly. hypoleuca Hook. f. & Thoms.

Tree; petals yellow, linear oblong; Jurong (Corner SFN 26163).

Poly. lateriflora King

Monopodial tree; leaves oblong, 20–40 cm long; petals pale yellow, with tinges of red; Mandai (Corner SFN 33141); another related species, *Poly. sclerophylla* Hook. f. & Thoms. with smaller leaves (15–20 cm long), also found in Mandai (Kiah s.n. in 1940).

Poly. macropoda King

Tree; petals green, yellowish to white; Seletar (Ridley 429, type); a closely related species, *Poly. clavigera* King with much longer stalked fruiting stalks (2–3.5 cm vs. 0.5 cm), was found at Fern Valley in B.T.N.R. (Ridley 5851).

Poly. rumphii Merr.

Tree; Gardens' jungle (Ridley 3863); called *Poly. scortechinii* King in Ridley's Flora.

Poly. sumatrana (Miq.) Kurz

Tree; petals greenish, linear, spreading; Seletar (Wee 338).

* Bukit Timah Nature Reserve.

Popowia fusca King

Shrub or tree; leaves thinner than *Pop. pisocarpa*; ripe carpels 1–4 globose-falcate; Bukit Timah (*Ngadiman SFN 36364*).

Pop. pisocarpa Endl.

Shrub or small tree; flowers extra-axillary and leaf-opposed in small fascies; ripe carpels globose, 1–4 seeded; common; MacRitchie (*Wee 153*). Called *Pop. ramosissima* Hk. f. & Th. in Ridley's Flora.

Pop. tomentosa Maing. ex Hook. f. & Thoms.

Tree; Gardens' jungle (*Ridley 4916*).

Pyramidanthe prismatica (Hk. f. & Th.) Sinclair

Climber; flowers axillary or terminal, solitary or in pairs; ripe carpels oblong, tuberculate, 3–5 cm long; seeds in 2 rows; Kranji (*Ridley 6344*). Called *Melodorum prisomaticum* Hook. f. & Th. in Ridley's Flora.

Uvaria curtisii King

Large climber; petals white or greenish-yellow; Bukit Timah (*Sinclair SFN 39652*).

Uvar. cordata (Dunal) Alston

Climber; petals dark-red; common; Seletar (*Wee s.n.*, Dec. 1961). Called *Uvar. macrophylla* Roxb. in Ridley's Flora.

Uvar. grandiflora Roxb.

Climber; petals purplish red; common; Bukit Panjang (*Wee 90*). Called *Uvar. purpurea* Bl. in Ridley's Flora.

Uvar. hirsuta Jack

Woody climber; petals dark red; Bedok (*Ridley s.n.* in 1877).

Uvar. leptopoda (Ding) R. E. Fries

Climber, petals dark crimson; Bukit Mandai (*Ridley 4708*, type); called *Uvariella leptopoda* Ridl. in Ridley's Flora; often confused with *Uvar. rufa* Bl.

Uvar. lobbiana Hook. f. & Thoms.

Climber; collected once at Gardens' jungle (*Ridley 9211*).

Uvar. pauci-ovulata Hook. f. & Thoms.

Stout climber with rusty-brown, stellate-hairy twig; petals yellow-brown; Bukit Timah (*Ngadiman SFN 36432*).

Xylopia caudata Hook. f. & Thoms.

Tree; flowers very small; petals pale yellow; Jurong (*Corner SFN 26030*).

Xyl. ferruginea Hook. f. & Thoms.

Tree, with stilt roots; leaves ferrugineous pubescence beneath; ripe carpels numerous, elongate, constricted between the seeds; Gardens' jungle (*Abu Kassim* 2687).

Xyl. magna Maing. ex Hook. f. & Thoms.

Tree; petals linear, 8–10 cm long; Bukit Timah (*Sinclair SFN* 39690).

Xyl. malayana Hook. f. & Thoms.

Tree; flowers fragrant; petals pale yellow; ripe carpels 3 to many in a bundle, irregularly dehiscent; seeds 2–7 in 2 rows; common; Chua Chu Kang (*Ridley* 6759).

N.B. For the full range of species distribution of Annonaceae in Singapore, see J. Sinclair, *Gard. Bull. Sing.* (1955) **14**: 149–477.

11. MYRISTICACEAE

Key to the genera

- A. Twigs not striate, often angled; leaves whitish beneath, reticulations not visible above (aril lacinate to the base or nearly so; androecium columnar; anthers free at apex)
Gymnacranthera
- A. Twigs striate (namely marked with fine grooves or ridges) or at least in the older parts.
 - B. Leaves often whitish beneath.
 - C. Reticulations forming a dense, close network raised above in dried material, (aril lacinate at the apex only; androecium a stalked disc with free anthers)
Knema
 - C. Reticulations few above, not forming a dense network, mostly sunk (aril lacinate to the base; anthers completely fused to the stalked column)
Myristica
 - B. Leaves not whitish beneath (aril entire, covering the seed; androecium various, always sessile; anthers completely fused)
Horsfieldia

Gymnacranthera bancana (Miq.) Sinclair

Tree, young twigs rusty-tomentose; flowers unisexual, in branched inflorescences; fruit rusty-tomentose, ovoid, 2.8 by 1.5 cm; Seletar (*Ridley* 1835), Mandai. Called *G. murtonii* Warb. in *Ridley's Flora*.

Gymn. eugenifolia (A. DC.) Sinclair

Bukit Timah, Woodlands (*Ridley* 11646).

Gymn. forbesii Warb.

Seletar (*Ridley* 6270, type), Mandai

Horsfieldia irya Warb.

Tree, often slightly buttressed, by streams in swampy places; fruit round, 2–3 cm across, in bundles of 2–4; ochre yellow to pinkish orange; aril orange-red; Changi (*Ridley* 4814), Gardens' jungle.

Horsf. macrocoma Warb. var. **canarioides** (King) Sinclair

Bukit Mandai (*Ridley* 6324), Jurong.

Horsf. subglobosa Warb.

Bukit Timah (*Ridley* 6451), Mandai

Horsf. sucosa Warb.

Gardens' jungle (*Ridley* 6559), Changi.

Horsf. superba Warb.

Bukit Timah (*Ngadiman* 36141), Seletar. Vern. *Pendarah*.

Horsf. tomentosa Warb.

Collected only once from Bukit Timah (*Cantley* 30); recorded in Thailand, Malaya and Sumatra. Vern. *Manchong*.

Horsf. wallichii Warb.

MacRitchie Reservoir (*Corner* 33556).

Knema conferta Warb.

Bukit Timah (*Ridley* 442, type), Mandai Vern. *Panara Batu*.

Knema curtisii Warb.

Bukit Mandai (*Goodenough* 3376), Jurong.

Knema furfuracea Warb.

Botanic Gardens (*Sinclair* 39488).

Knema glaucescens Jack

Jurong (*Ridley* 3873).

Knema globularia Warb.

Changi (*Ridley* 13342), Pulau Ubin.

Knema hookeriana Warb.

Small tree, leaves very large, densely covered with brown wool when young; fruit also covered with brown wool; Water Catchment Area, Bukit Timah (*Ridley* 3701). Vern. *Singah putih*.

Knema intermedia Warb.

Bukit Timah (*Ridley* 2107), Changi, Jurong.

Knema latericia Elm.

Common in Water Catchment Area, Bukit Timah (*Cantley* 21).

Knema laurina Warb.

Water Catchment Area, Bukit Timah (*Cantley* 3083).

Knema malayana Warb.

Bukit Timah (*Cantley* 20), Seletar.

Myristica cinnamomea King.

Tree; fruit ellipsoid, reddish yellow, 7–8 cm long; aril thin, red, deeply lacinate; Sembawang, Bukit Mandai (*Ridley 3581a*). Nee Soon, Sungei Buloh. According to *Ridley* (*Flora* 3: 66), this is the only Malayan species in which the seed and aril have any spiciness. The seeds in all other species seem to be deficient in aromatic properties, and are not used by the villagers at all. Vern. *Maiang pahong*.

Myrist. crassa King.

MacRitchie Reservoir (*Sinclair 39490*).

Myrist. elliptica Hook f. & Th.

Bukit Timah (*Ridley 6920*), Seletar. Vern. *Tabah*, *Pala hutan*.

Myrist. fragrans Houtt.

The nutmeg of commerce is the seed, and mace is the red aril of the seed of this species. A native of the Moluccas, once plantation crop in Singapore. Vern. *Pokok pala*. 肉荳蔻。

Myrist. maingayi Hook. f.

MacRitchie Reservoir (*Corner 33555*).

Myrist. maxima Warb.

Bukit Timah (*Ridley 3363*) and Nee Soon.

N.B. For the full range of species distribution of Myristicaceae in Singapore, see *J. Sinclair, Gard. Bull. Sing.* (1958) **16**: 205–472.

12. MONIMIACEAE**Matthaea sancta** Bl.

Large shrub; leaves opposite, light green; flowers yellow; drupe blue black. In forests and thickets, rare; Gardens' jungle, Chua Chu Kang, Ang Mo Kio; Bukit Timah (*Ridley 9165*).

13. LAURACEAE

Key to the genera

- A. Hemi-parasitic herbaceous twiner; leaves totally reduced *Cassytha*
- A. Trees or rarely shrubs; leaves normal, alternate, opposite or whorled.
- B. Inflorescence umbellate (in *Actinodaphne*, a very short panicle is seen on full expansion of the infl.), surrounded by an involucre of bracts.
- C. Leaves alternate; bracts persistent; fruit seated on a cup formed by the persistent perianth-tube.
 - D. Anthers 2-loculate *Lindera*
 - D. Anthers 4-loculate *Litsea*
- C. Leaves in false whorls; bracts deciduous; fruiting pedicels strongly thickened, fleshy *Actinodaphne*

B. Inflorescence paniculate.

E. Fruit on naked pedicel, or if perianth persistent, not cup-like.

F. Perianth in fruit hardened, clasping the base of fruit *Phoebe*

F. Perianth in fruit mostly deciduous, if persistent, neither hardened nor clasping the base of fruit.

G. Fruiting pedicel strongly thickened, fleshy.

H. Anthers 2-loculate *Dehaasia*H. Anthers 4-loculate *Alseodaphne*

G. Fruiting pedicel hardly or not thickened.

I. Anthers 2-loculate *Beilschmiedia*

I. Anthers 4-loculate.

J. Anthers sessile *Nothaphoebe*J. Anthers with long filaments *Persea*

E. Fruit seated either on a shallow or deep cup, or completely included in the persistent perianth-tube.

K. Fruit seated on a shallow cup; anthers 4-loculate *Cinnamomum*K. Fruit completely included in and adnate to the persistent and enlarged perianth-tube; anthers 2-loculate *Cryptocarya***Actinodaphne glomerata** NeesTree; Bukit Timah, Bukit Mandai (*Ridley* 6741), Bukit Panjang.**Actin. hullettii** GambleBotanic Gardens (*Cantley* 38); "A single tree on the bandstand, which died about 1911" (*Ridley*).**Actin. maingayi** Hook. f.Tree, in dense forests; Bukit Timah, Bukit Mandai, Pulau Ubin (*Ridley* 9489).**Actin. malaccensis** Hook. f.Tree, in forests; Gardens' jungle, Bukit Timah (*Ridley* s.n. in 1897). Vern. *Medang kachigawei*.**Actin. pruinosa** NeesTree; Botanic Gardens, Changi (*Ridley* 2768).**Alseodaphne bancana** Miq.Shrub; Gardens' jungle, Bukit Timah, Mandai Road (*Sinclair* 10900).**Beilschmiedia kunstleri** GambleBig tree; Bukit Timah (*Bayliss* 5885).**Beils. malaccensis** Hook. f.

Tree; Bukit Timah, Gardens' jungle (no specimens available).

Cassytha filiformis L.Leafless, hemi-parasitic twiner, yellow, common in open bushes near the sea; Changi (*Ridley* 3380). Vern. *Chemar hantu*, 無根藤。

***Cinnamomum camphora* Sieb.**

The oriental camphor is obtained by distillation from the wood of this tree, native of S. China and Japan; occasionally planted. 樟樹。

***Cinn. iners* Reinw. ex Bl.**

Small or medium-sized tree, very common in open places all over the Island; young leaves reddish; fruit blue-black; Tyersall Road (*Ridley* 3370). Vern. *Kayu manis*.

***Cinn. javanicum* Bl.**

Tree, in dense woods: Bukit Timah (*Ridley* 15621), Gardens' jungle.

***Cinn. ridleyi* Gamble**

"A single tree on the Changi Road near Changi" (*Ridley*), (no specimens).

***Cinn. verum* J.S. Presl**

Native of S.W. India and Ceylon, formerly called *Cinn. zeylanicum* Garc. ex Bl.; of which the bark is cinnamon of commerce; a smaller flowered variety (or called *Cinn. deschampsii* Gamble) was found in the ground of Botanic Gardens. Vern. *Kayu manis*, 錫蘭肉桂。

***Cryptocarya caesia* Bl.**

Tall tree; Bukit Mandai, Chua Chu Kang (no specimens), Vern. *Kayu Grisek*.

***Crypt. ferrea* Bl.**

Big tree; Chua Chu Kang (*Ridley* 6158), Bukit Mandai. Vern. *Medang merah*.

***Crypt. griffithiana* Wight**

Tree; Tempinis, Changi, Seletar, Tebau (*Goodenough* 3382). Vern. *Medang buaya*.

***Crypt. impressa* Miq.**

Tall tree, rare; Gardens' jungle, Bukit Timah (*Ngadiman* 36147). Vern. *Munjuat*.

***Crypt. kurzii* Hook. f.**

Tree; recorded from Chua Chu Kang (no specimens).

***Dehaasia incrassata* (Jack) Kosterm.**

Tree, formerly known as *D. microcarpa* Bl.; Sungei Jurong, Bukit Mandai (no specimens).

***Dehaas. nigrescens* Gamble**

Tree, once collected from Gardens' jungle (no specimens).

***Lindera lucida* (Bl.) Boerl.**

Medium sized tree, formerly called *L. malaccensis* Hook. f. Small tree; Gardens' jungle, Tanglin, Bukit Timah, Seletar (*Ridley* 3373).

Litsea accedens (Bl.) Boerl.

Tree, formerly known as *Lits. singaporensis* Gamble; Gardens' jungle, Bukit Timah, Kranji (Ridley 6740), Tuas.

Lits. cordata Hook. f.

Tree; Kranji (Mat. 4743), Bukit Timah.

Lits. costalis (Bl.) Kosterm.

Large tree, formerly called *Lits. megacarpa* Gamble; Tuas, Reservoir Jungle (Corner s.n. in 1930).

Lits. erectinervia Kosterm.

Tree, formerly called *Lits. griffithii* Gamble; Gardens' jungle, Reservoir woods (Ridley 4823).

Lits. ferruginea Bl.

Tree; Gardens' jungle, Seletar (Ridley 6151).

Lits. firma Hook. f.

Tree, fruit pink; Bukit Timah (Ngadiman 35509), Chua Chu Kang.

Lits. garciae Vidal

Tree, formerly called *Lits. sebifera* Bl.; native of Java, occasionally cultivated. Vern. *Malek*.

Lits. grandis Hook. f.

Tree, common in open places; Tanglin, Bukit Timah, Changi (Ridley 4700). Vern. *Medang busuk*, *Medang Daun Lebar*.

Lits. lanceifolia Hook. f.

Small tree; Gardens' jungle, Bukit Timah (Ridley 12563), Seletar.

Lits. lanceolata (Bl.) Kosterm.

Small tree, once collected from Reservoir woods (Ridley 4817); formerly called *Lits. sarawacensis* Gamble.

Lits. machilifolia Gamble

Tree; Gardens' jungle, Bukit Mandai (Md. Shah & Kadim 413).

Lits. myristicaefolia Hook. f.

Tall tree; Geylang, Changi, Tanglin (no specimens).

Lits. perakensis Gamble

Large tree; recorded once in Bukit Timah (no specimens).

Lits. petiolata Hook. f.

Large tree; highly valued in native medicine; Gardens' jungle, Cluny Road, Geylang (no specimens).

Lits. ridleyi Gamble

Small tree; Changi, Gardens' jungle, Bukit Mandai (*Ridley* 5064).

Lits. robusta Bl.

Tree; collected once from Singapore by Wallich (no specimens).

Micropora curtisii Hook. f.

Tree, recorded once from Jurong swamp forest (no specimens available). The monotypic genus *Micropora* Hook. f. is endemic to the Malay Peninsula (Penang) and Singapore.

Nothaphoebe coriacea Kosterm.

Tree; Tuas (*Goodenough* s.n. in 1890).

Notha. umbelliflora (Bl.) Bl.

Tree; Chua Chu Kang; Bukit Timah (no specimens). Vern. *Medang Losa*.

Persea americana Mill.

Native of C. America, cultivated in gardens for the large edible fruit known as "avacado" or "alligator pear". 鳄梨, 酪梨。

Phoebe cuneata Bl.

Tree; once collected at Changi (no specimens).

Phoebe declinata Nees

Tree; Changi (no specimens).

Phoebe grandis Merr.

Tree; MacRitchie Reservoir (*Corner* 37269).

Phoebe opaca Bl.

Large tree, Gardens' jungle, Changi, Pulau Ubin (*Ridley* 5915).

14. HERNANDIACEAE

Hernandia nymphaeifolia (Presl) Kubitzki

Tree with large glossy peltate leaves; collected from Singapore coast by Wallich in 1822, no specimens available in Singapore; extinct long ago but survived in S. Johore and elsewhere; formerly called *H. peltata* Meisn. or *H. ovigera* L. 蓮葉桐。

Hern. cordigera Vieill.

A bush, native of New Caledonia, rarely cultivated and under the erroneous name of *Aralia triloba* Hort.; flowering frequently but never sets fruit.

Illigera trifoliata (Griff.) Dunn

Woody climber; leaves alternate, 3-foliolate; recorded from Bukit Timah forest (no specimens available); called *Illigera appendiculata* Bl. in *Ridley's Flora*.

15. RANUNCULACEAE

Clematis dioscoreifolia Levl. & Van. var. *robusta* Rehder

A slender twiner of Japanese origin (possibly also one or two other horticultural species), is sometimes cultivated in gardens for its white flowers and plumose achenes. 鐵線蓮。

16. MENISPERMACEAE

Key to the genera

- A. Leaves distinctly peltate (namely, petiole attached to the under surface of blade); inflorescence a large panicle.
 - B. Leaves round, with dense white tomentose hairs beneath *Coscinium*
 - B. Leaves ovate or heart-shaped, not with white hairs beneath *Cyclea*
- A. Leaves not peltate (namely, petiole attached to or near the base of blade).
 - C. Inflorescence a few-flowered, axillary cyme; leaves 3-nerved from base.
 - D. Slender woody climber; leaves glabrous *Cocculus, Hypserpa*
 - D. Large woody climber; leaves tomentose *Limacia*
 - C. Infl. raceme-like.
 - E. Racemes mostly solitary.
 - F. Leaves cordate, glabrous, 5-nerved from base *Tinospora*
 - F. Leaves ovate, tomentose, 3-nerved from base *Limxia*
 - E. Racemes few to many in fascicles from old twig; leaves ovate, glabrous, 3-nerved from base *Timomiscium*
 - C. Infl. paniculate; leaves ovate, glabrous, 3-nerved from base *Fibraurea*

***Cocculus trilobus* (Thunb.) DC.**

Slender climber, twining on bushes near sandy shore; formerly called *C. ovalifolium* DC.; Changi (*Sinclair* 40021). 木防己。

***Coscinium wallichianum* Miers**

Woody climber with yellow sap; leaves large rounded, white tomentose beneath; flowers in dense globose heads, on racemose or paniculate infl.; Chua Chu Kang, Changi (*Ridley* 3967). Vern. *Akar Kunyit*.

***Cyclea laxiflora* Miers**

Slender hairy climber; leaves ovate or heart-shaped; in hedges and forests; local medicinal plant; Changi, Bukit Timah (*Ridley* s.n. in 1898), Tanglin. Vern. *Akar gasing Bukit*.

***Fibraurea chloroleuca* Miers**

Woody climber, with yellow sap formerly used in dyeing; fruit orange; common in forest; Bukit Mandai (*Ridley* 3834), etc. Vern. *Akar Kuning, Akar Kenching kerbau*.

***Hypserpa cuspidata* Miers**

Woody climber, in hedges and thickets; Chua Chu Kang (*Ridley* 6189). Seletar, Tanglin. Vern. *Akar minyak*.

Limacia velutina Miers

Woody climber; branches and leaves covered with rusty hair; common in open thickets; Chua Chu Kang, Bukit Mandai (*Ridley* s.n. in 1893).

Tinomiscium petiolare Miers ex Hook. f. & Th.

Woody climber, similar to *Fibraurea chloroleuca* in general appearance but with profuse white sap and green fruit; common on forest edge; Bukit Mandai (*Goodenough* s.n. in 1892).

Tinospora crispa Miers ex Hook. f. & Th.

Woody climber with numerous warts on stem; native of India, cultivated as a medicinal plant.

17. NYMPHAEACEAE

Key to the genera.

- A. Petiole stout; leaf-blade, high above the water; flower showy; carpels free, immersed on ob-conical receptacle *Nelumbo*
- A. Petiole slender; leaf-blade generally floating on the water surface; carpels united into a many-chambered ovary.
 - B. Flower hardly expanded; outer perianth-lobes (sepals) 5 *Barclaya*
 - B. Flower showy; outer perianth-lobes (sepals) 4 *Nymphaea*

Barclaya motleyi Hook.

Aquatic, rhizomatous herb, in shallow muddy streams in thick jungle; leaves round, dark-green; Bukit Timah (*Ridley* s.n. in 1892), Ang Mo Kio, Nee Soon. Vern. *Daun kelapu*.

Nelumbo nucifera Gaertn.

"The Indian Lotus" is sometimes cultivated as an ornament; the rhizome imported from China as a vegetable. Native of India and China. 荷花・蓮。

Nymphaea capensis Thunb.

"The cape-blue water lily" originated from S. Africa. Leaves glabrous beneath; sepals without dark markings; petals blue-purple or purple.

Nymphaea nouchali Burm. f.

"Blue lotus of Egypt", often called *Nymphaea stellata* Willd., is a native of tropical Africa. Leaves glabrous beneath; sepals with dark lines or marks; petals light blue or purple. 埃及睡蓮。

Nymphaea pubescens Willd.

Sometimes erroneously called *Nymphaea lotus* (non L.), native of Africa; leaves densely short hairy beneath; flowers mostly white, occasionally pink or red.

18. CERATOPHYLLACEAE**Ceratophyllum demersum** L.

Hornwort, a submerged water plant with whorls of simple, but finely dissected leaves; occasionally found growing in aquaria. 金魚藻。



Keng, Hsuan. 1974. "Annotated list of seed plants of Singapore (II)." *The Gardens' bulletin, Singapore* 27, 67–83.

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