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# GYMNOSPERMS

# 裸子植物

XIA Nian-he 夏念和

Trees or shrubs, rarely woody vines; mostly evergreen; vascular bundles arranged in circles, with cambium, secondary xylem consists of tracheids, rarely with vessels. Leaves usually linear, needle-shaped or scale-like. Cones generally unisexual, mostly dioecious, globose, conical to cylindric; ovules naked, not enclosed in an ovary. Seeds with endosperm, embryo straight; cotyledons 2 to many.

Sixteen families, 83 genera and about 742 species. Eleven families, 41 genera and 243 species in China. Six families are native to Hong Kong; another four families namely Ginkgoaceae, Araucariaceae, Cycadaceae and Zamiaceae were introduced.

**Key to the Families**

1a. Leaves large, partitioned, fascicled on top of stem.
  2a. Pinnae with midrib ..... G12. Cycadaceae
  2b. Pinnae without midrib, with many longitudinal veins ..... G14. Zamiaceae
1b. Leaves small, not partitioned.
  3a. Leaves fan-shaped, veins dichotomous ..... G1. Ginkgoaceae
  3b. Leaves not fan-shaped, veins not dichotomous.
    4a. Woody vines; leaves simple, opposite, veins reticulated; flowers with pseudoperianth ..... G17. Gnetaceae
    4b. Trees.
      5a. Seeds solitary or in pairs, enclosed in fleshy epimatium and becoming berry- or drupe-like; embryo with 2 cotyledons.
        6a. Pollen-sacs 3–9 in a microsporophyll; pollen grains saccate ..... G9. Cephalotaxaceae
        6b. Pollen-sacs 2 in a microsporophyll; pollen grains nonsaccate ..... G8. Podocarpaceae
      5b. Seeds several to many, in axil of seed scale; ovuliferous scales usually forming a dry woody cones; embryo with 2 to many cotyledons.
        7a. Plant dioecious, rarely monoecious; microsporophylls with 4–20 suspended microsporangia, pollen nonsaccate ..... G2. Araucariaceae
        7b. Plant monoecious; microsporophylls with 2–9 microsporangia, pollen saccate or nonsaccate.
          8a. Seed scales free from bracts ..... G3. Pinaceae
          8b. Seed scales partly or completely connate with bracts.
            9a. Leaves and seed scales spirally arranged or in 2 series ..... G5. Taxodiaceae
            9b. Leaves and seed scales decussate or verticillate ..... G6. Cupressaceae

## G1. GINKGOACEAE 銀杏科

XIA Nian-he 夏念和

Deciduous trees, dioecious; trunk tall, densely branched. Leaves spirally arranged on long branches and fasciculate on brachyblasts, fan-shaped, long petiolate, base cuneate, apex 2-lobed or notched, margin entire; venation parallel, close, dichotomous. Reproductive structures produced in clusters in axils of scalelike leaves at apex of brachyblast before leaves expanded. Pollen cones pedunculate, catkinlike, microsporophylls numberous, spirally and sparsely arranged; microsporangia 2, ellipsoid; pollen sacs longitudinally dehiscent. Ovules borne on a long, dichotomously branched peduncle sometimes dividing into 3–5 terminal forks; each fork discoid at apex, bearing an erect, sessile ovule; usually only one seed ripening per peduncle. Seed drupelike, long pedunculate, pendulous; sarcotesta fleshy, sclerotesta bony, endotesta membranous; endosperm abundant; cotyledons usually 2, hypogeal.

One genus and one species, endemic to China; it is cultivated in Hong Kong.

## 1. Ginkgo L. 銀杏屬

Morphological characters and geographical distribution are the same as those of the family.

**1. Ginkgo biloba** L. 銀杏 **(Fig. 1; Photo 1)**

Mant. Pl. 2: 313. 1771; FRPS 7: 18. 1978; FOC 4: 8. 1999; FGD 4: 6, fig. 3. 2000.

Tree, deciduous, up to 40 m high and 4 m in d.b.h.; bark greyish brown, fissured and rough; branches nearly verticillate, ascending; long branches pale brownish yellow to grey; brachyblasts densely covered by leaf scar, grey. Leaves spirally arranged on 1st year branches, and 3–8 in clusters on brachyblasts, pale green, turning yellow before fallen off in autumn, fan-shaped, 5–8 cm wide at apex, notched or bilobed, base broadly cuneate, glabrous, with many dichotomous veins; petiole 3–10 cm. Pollen cones pedunculate, catkinlike, pendulous, microsporophylls with short stipe. Seed ellipsoid or ovoid, 2.5–3.5 × 2 cm, yellow or orange when mature, glaucous.

Locality: Cultivated in gardens. *P. S. Choi 417, 472.*

Distribution: Zhejiang (Tianmushan). Widely cultivated in China and E Asia, Europe and America.

Ecology: Pollinating: Mar.–Apr.; seed maturing: Aug.–Oct.

Uses: Ornamental, medicinal, food (seeds).

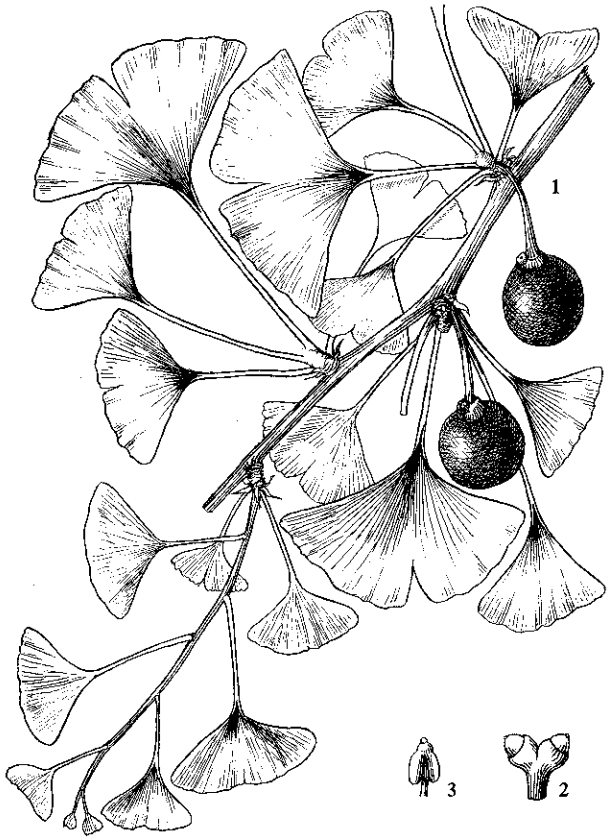



**Figure 1.** *Ginkgo biloba* L.
*1.* long branch, brachyblasts and seeds; *2.* top of seed cone; *3.* microsporophyll. (drawn by H. P. Yu)

# G2. ARAUCARIACEAE 南洋杉科

XIA Nian-he 夏念和

Evergreen trees, with resin in cortex. Branches verticillate; lateral branchlets in 2 series. Leaves spirally arranged or decussate, sessile, decurrent. Cones unisexual, dioecious or rarely monoecious. Pollen cones axillary or terminal on branchlets, solitary or clustered; microsporophylls numerous, spirally arranged, sessile; microsporangia 4–20, suspended, arranged in 2 rows, filiform; pollen nonsaccate. Seed cones solitary, terminal on branchlets, ellilpsoid or subglobose; bracts numerous, spirally arranged; ovulate scales degenerate or ligulate, connate with bracts on one side, each with 1 ovule at base abaxially; ovules connate with ovulate scales or with bracts. Mature seed cones large, bracts woody or thickly leathery; seeds flattened, connate with bracts or detached.

Three genera and 41 species: Indonesia, Malaysia, Papua New Guinea, Philippines; Australia, New Zealand, SW Pacific Islands, S America; two genera and four species (all introduced) in China; one genus and two species introduced into Hong Kong.

## 1. Araucaria Juss. 南洋杉屬

Trees; branches verticillate, patent or ascending. Leaves spirally arranged, needlelike to broadly ovate or triangular. Pollen cones axillary or terminal on branchlets, cylindric, ovoid, or ellipsoid; microsporophylls densely arranged. Seed cones erect, ellipsoid, or ovoid to subglobose; ovulate scales ligulate; bracts of mature cones large, woody, distal part thickened; seed scales adnate with bracts in basal, detached in apical part. Seeds connate with bracts, not winged or sometimes with 2 lateral wings.

19 species: Papua New Guinea; Australia, New Caledonia, S America; two species (introduced) in Hong Kong.

1a. Leafy branchlets set in all directions; seed cones ovoid or ellipsoid; apex of bracts caudate, thickened, obviously reflexed ..... 1. *A. cunninghamii*

1b. Leafy branchlets usually pinnately arranged in a horizontal plane; seed cones subglobose; apex of bracts triangular, flattened, upcurved ..... 2. *A. heterophylla*

**1. Araucaria cunninghamii** Aiton ex D. Don 南洋杉 **(Fig. 2; Photo 2)**

Lambert, Descr. Pinus, ed. 2, 3: t. 79. 1837; FRPS 7: 28. 1978; FOC 4: 9. 1999; FGD 4: 8. 2000.

Tree to 30 m tall (up to 70 m in original habitats); bark grey-brown or dark grey, rough, transversely split; crown tower-shaped; lateral branchlets dense, drooping. Leaves dimorphic: leaves of young trees and lateral branchlets loosely arranged, needlelike, falcate, subulate, or triangular, ca. 0.7–1.7 cm × 2.5 mm wide at base, stomatal lines numerous adaxially and weakly evident abaxially; leaves on mature trees and cone-bearing branchlets densely arranged, overlapping, stretching upward, ovate to triangular, 0.6–1 cm, ca. 4 mm wide at base, ridged or not, midvein obvious or not, with many white stomatal lines adaxially, only with irregular stomatal lines at lower half abaxially. Pollen cones terminal, solitary, ovoid or ellipsoid. Seed cones ovoid or ellipsoid, 6–10 × 4.5–7.5 cm; bracts narrowly obovate, sharply ridged, with thin, lateral wing, apex caudate, thickened, acute, obviously reflexed; seed scales thin at apex. Seeds

ellipsoid, with a membranous, lateral wing.

Locality: Cultivated in gardens. *Y. S. Lau 433; L. T. Lo 476.*

Distribution: Cultivated in S & SW China. Native to Papua New Guinea; NE Australia.

Uses: Ornamental.

**2. Araucaria heterophylla** (Salisb.) Franco
异叶南洋杉 **(Photos 3–4)**

Anais Inst. Super. Agron. 19: 11. 1952; FRPS 7: 30. 1978; FOC 4: 10. 1999; FGD 4: 9. 2000.

*Eutassa heterophylla* Salisb., Trans. Linn. Soc. London 8: 316. 1807.

Tree to 30 m (up to 70 m in original habitats); bark dark grey, flaking; crown tower-shaped; branchlets spreading horizontally or drooping; lateral branchlets usually pinnately arranged, drooping. Leaves dimorphic: those of young trees and lateral branchlets loosely arranged, spreading openly, bright green, glaucous abaxially, subulate, usually laterally depressed, upcurved, 6–12 mm, 3- or 4-ridged; those of mature trees and cone-bearing branchlets densely arranged, slightly openly spreading, broadly ovate or triangular-ovate, 5–9 mm, widest at base, midvein obviously raised or not, apex obtuse. Pollen cones terminal, solitary. Seed cones subglobose, 8–12 × 7–11 cm, sometimes wider than long; apex of bracts triangular, flattened, acute, upcurved. Seeds ellipsoid, slightly flattened, with a lateral wing.

Locality: Cultivated in gardens. *Y. S. Lau 432; HK sheet 40551.*

Distribution: Cultivated in SE & SW China; native to Australia (Norfolk Island).

Uses: Ornamental.

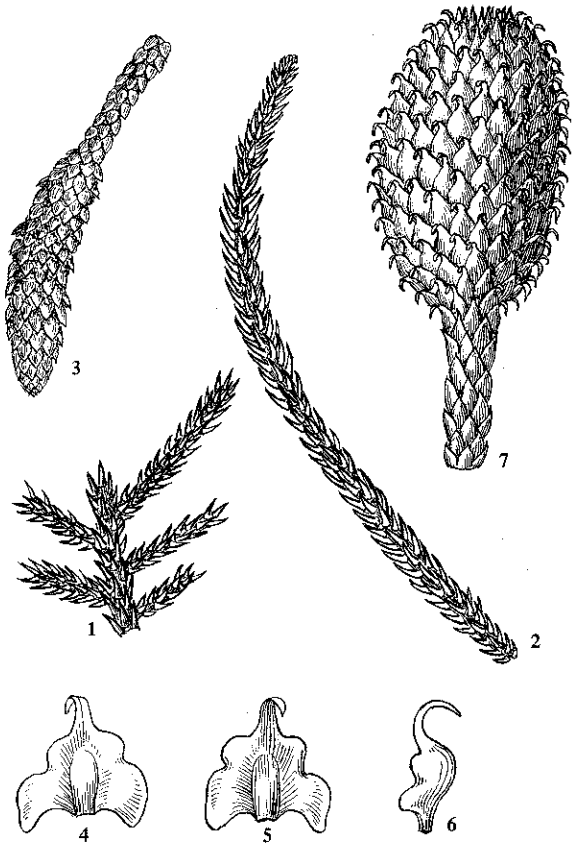



**Figure 2.** *Araucaria cunninghamii* Sweet
*1, 2.* leafy branch; *3.* pollen cone; *4, 5, 6.* dorsal, ventral and lateral surface of bract; *7.* seed cone. (drawn by H. P. Yu)

# G3. PINACEAE 松科

XIA Nian-he 夏念和

Evergreen or deciduous trees, rarely shrubs, monoecious. Leaves spirally arranged or in bundles of (1 or)2–5(–8) when basally subtended by a leaf sheath; leaf blade linear or needlelike, not decurrent. Pollen cones solitary or clustered, with numerous spirally arranged microsporophylls; microsporophyll with 2 microsporangia. Seed cones erect or pendulous, with many spirally arranged ovulate scales and bracts; ovulate scales usually with 2 upright ovules adaxially, free or only basally adnate with bracts. Seed scales appressed, woody or leathery, variable in shape and size, with 2 seeds adaxially, persistent or deciduous after cone maturity. Seeds usually with one membranous wing at apex, rarely not winged.

Ten genera, ca. 235 species: N hemisphere; ten genera (two endemic) and 108 species (43 endemic, 24 introduced) in China; two genera and three species (two native, one introduced) in Hong Kong.

1a. Leaves flattened; seed cones mature at the current year ..... 1. *Keteleeria*
1b. Leaves needle-like, 2, 3 or 5 in bundle; seed cones mature at 2nd year ..... 2. *Pinus*

## 1. Keteleeria Carr. 油杉屬

Evergreen trees; crown broad; bark grey, fissured; branches whorled, spreading. Leaves spirally and usually ± pectinately arranged, linear to linear-lanceolate, flattened, midvein raised on both sides, stomatal lines present or absent adaxially, usually 2 bands separated by midvein abaxially, vascular bundle 1, resin canals 2, sublateral, marginal; petiole short, slightly enlarged at base. Pollen cones lateral or terminal, 4–8 in umbellate clusters; pollen 2-saccate. Seed cones terminal, solitary, erect, maturing in the current year. Seed scales woody, persistent. Bracts ligulate-spatulate, shorter than seed scales, persistent, not exserted, apex 3-lobed. Seeds large, triangular-oblong, covered on 1 side by wing, together as long as seed scales. Cotyledons 2–4.

Five species: China, Laos, Vietnam; five species (three endemic) in China; one species in Hong Kong.

**1. Keteleeria fortunei** (A. Murr.) Carr. 油杉 **(Photos 5–6)**

Rev. Hort. 37: 449. 1866; FRPS 7: 50. 1978; FOC 4: 42. 1999; FGD 4: 12. 2000.

*Picea fortunei* A. Murr., Proc. Hort. Soc. 421. 1862.

Tree to 30 m tall; trunk to 1 m d.b.h.; bark dark grey, rough, irregularly fissured; branches spreading; young branchlets hairy or glabrous, reddish or pale pink when dry, 2 or 3 years old branchlets pale yellowish grey or yellowish brown. Leaves linear, 1.2–3 cm long, 2–4 mm wide, base attenuate, apex obtuse or rounded, green and glossy adaxially, pale green abaxially, stomatal lines 12–17 on each side abaxially. Seed cones cylindric, 6–18 cm long, 5–6.5 cm in diam. Seed scales compressed orbicular, rhombic-orbicular, or rarely oblong, thick or thin, 2.5–3.2 × 2.7–3.5 cm, exposed part glabrous abaxially, margin entire, apex convex, rounded, or rounded-truncate. Seeds oblong, 1–1.3 cm × 5–6 mm; wing yellowish brown, more or less cuneate, apex oblique.

Locality: Cape D'Aguilar, Stanley. *Y. S. Lau 1584, 1266.*

Distribution: Guangdong, Guangxi, Zhejiang, Jiangxi, Hunan, Guizhou, Yunnan; Vietnam.

Ecology: In secondary forests, on coastal hillside. Pollinating: Mar.–Apr.; seed maturing: Oct.

Uses: The species is propagated locally for afforestation and ex-situ conservation.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

## 2. Pinus L. 松屬

Evergreen trees, rarely shrubs; branches verticillate; branchlets strongly dimorphic: long branchlets bearing scalelike leaves and spreading leaf bundles; short branchlets bearing leaves in bundles of 2–5(–7); winter buds large, with numerous scales. Leaves dimorphic, needlelike, slender or stout, straight or twisted, triangular, flabellate-triangular, or semiorbicular in cross section, stomatal lines several, on 1, 2, or all surfaces, vascular bundles 1 or 2, resin canals 2–10 or more, marginal or median, rarely internal, base enclosed by persistent or deciduous, membranous sheath. Pollen cones usually borne in spikelike clusters at base of 1st-year branchlets, sessile, cylindric or ovoid; pollen 2-saccate. Seed cones pedunculate or subsessile, erect or pendulous, cylindric or ovoid, maturing in 2nd or 3rd year. Seed scales spirally arranged, woody, exposed apex thickened and ridged (the apophysis), with a prominent protuberance (umbo), usually terminating in a spine or prickle, persistent. Bracts minute. Seeds variable in color, shape, and size, winged or not; wing adnate or articulated to seed. Cotyledons 3–18.

About 110 species: N Africa, Asia, Europe, N America; 39 species (seven endemic, 16 introduced) in China; two species (one endemic, one introduced) in Hong Kong.

1a. Needles 2 or 3 per bundle co-occurring, 18–25 cm long, stout; resin canals 2–9, internal; cones to 14 cm long ..... 1. *P. elliottii*

1b. Needles 2 per bundle, 10–18 cm long, slender, slightly twisted, drooping or slightly; resin canals 4–8, marginal; cones to 4–7 cm long ..... 2. *P. massoniana*

**1. Pinus elliottii** Engelm. 濕地松 **(Photos 7–8)**

Trans. Acad. Sci. St. Louis. 4: 186, pl. 1–3. 1880; FRPS 7: 274, pl. 65: 8–14. 1978; FOC 4: 20. 1999; FGD 4: 17. 2000.

Tree to 30 m tall; trunk to 0.8 m d.b.h. in native range; bark orange- or purple-brown, furrowed into irregularly oblong, large, papery, scaly plates; branchlets growing twice or more each year, orange-brown, later becoming brown to greyish brown, stout, roughly scaly; winter buds silvery brown, cylindric, scales fringed at margin. Needles 2 or 3 per bundle, 18–25 cm × 2 mm, stout, yellow- or blue-green, stomatal lines present on all surfaces, base with persistent sheath 1–2 cm, margin finely serrulate, resin canals 2–9(–11), mostly internal. Seed cones solitary or paired, pedunculate (peduncle to 3 cm), pale brown, ovoid or ovoid-cylindric when open, (7–)9–18(–20) cm, maturing in 2 years. Apophyses lustrous, slightly raised, strongly cross keeled; umbo depressed-pyramidal, with a short, stout prickle. Seeds dark brown, ellipsoid, 6–7 mm, apex oblique; wing to 2 cm.

Locality: Widely planted in countryside. *Y. S. Lau 2950.*

Distribution: Guangdong, Guangxi, Fujian, Taiwan, Jiangxi, Zhejiang, Jiangsu, Anhui, Hubei (introduced). Native to SE United States.

Uses: Afforestation.

**2. Pinus massoniana** Lamb. 馬尾松 **(Fig. 3; Photos 9–10)**

Descr. Pinus. 1: 17. 1803; FKH 10: 256. 1912; FRPS 7: 263, pl. 63: 1–6. 1978; FOC 4: 14. 1999; FGD 4: 16. 2000.

*Pinus sinensis* auct. non Lamb.: FHK. 337. 1861

Tree to 45 m tall; trunk to 1.5 m d.b.h.; bark red-brown, irregularly scaly and flaking; crown broadly pyramidal or umbrellalike; branchlets usually growing once per year, yellowish brown, occasionally glaucous; winter buds brown, ovoid-cylindric or cylindric. Needles 2

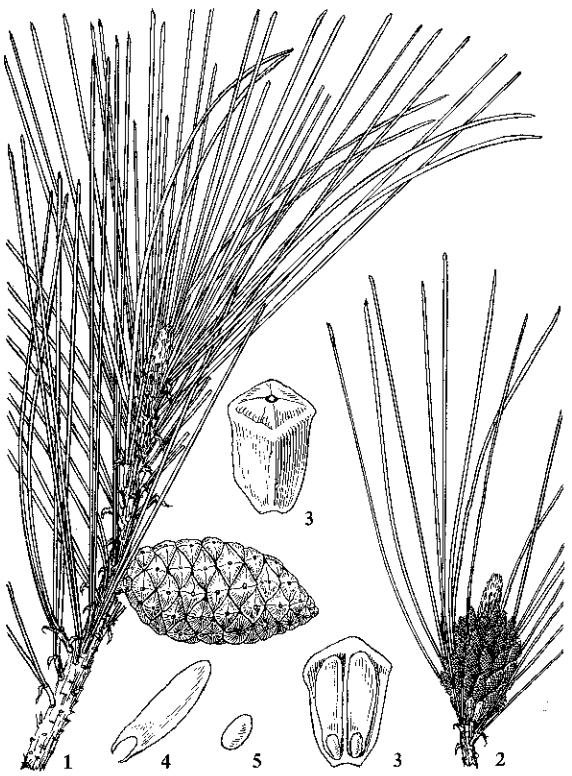



**Figure 3.** *Pinus massoniana* Lamb.
*1.* strobilus branch; *2.* staminate strobilus branch; *3.* dorsoventral surface of ovuliferous scale; *4.* wing of seed; *5.* seed. (drawn by H. P. Yu)

(rarely 3) per bundle, slender, slightly twisted, 10–18 cm, stomatal lines present on all surfaces, resin canals 4–8, marginal, base with persistent sheath. Seed cones pendulous, shortly pedunculate, green, turning chestnut brown at maturity, ovoid, conical-ovoid, or ovoid-cylindric, 4–7 × 2.5–5 cm. Seed scales suboblong-obovoid or subsquare; apophyses rhombic, slightly swollen or flat, slightly transversely ridged; umbo flattened, slightly sunken, blunt or shortly mucronate in apical part of cone. Seeds narrowly ovoid, 4–6 mm; wing 1.6–2.1 cm.

Locality: Common in Hong Kong, also widely planted in countryside. *Champion s.n.* (K); *H. C. Tang 1227.*

Distribution: Areas S of Changjiang River.

Ecology: On hills. Pollinating: Apr.–May; seed maturing: Oct.–Dec. of 2nd year.

Uses: Afforestation.

Notes: The local populations of the species declined because of the attack of pinewood nematodes from 1978 onwards.

# G5. TAXODIACEAE 杉科

XIA Nian-he 夏念和

Trees, monoecious; trunk straight; main branches more or less whorled. Leaves monomorphic, dimorphic, or trimorphic on same tree, spirally arranged or rarely decussate, lanceolate, subulate, scalelike, or linear. Microsporophylls, bracts and cone scales spirally arranged, rarely decussate. Pollen cones in panicles, or solitary or clustered at branch apices, or axillary, small; microsporangia with 2–9 pollen sacs; pollen nonsaccate. Seed cones terminal or subterminal on previous year's growth; bracts and cone scales semiconnate and free only at apex, or completely united; ovules 2–9 per bract axil, erect or pendulous; cone scales of mature cones flattened or shield-shaped, woody or leathery, 2–9-seeded on abaxial side. Cotyledons 2–9.

Nine genera and 12 species, mainly in N temperate; eight genera (one endemic, three introduced) and nine species (one endemic, four introduced) in China; four genera (one native and three introduced) and four species in Hong Kong.

1a. Leaves and cone scales spirally arranged.
  2a. Evergreen trees; leaves linear-lanceolate, flat, margin serrulate; bracts large; cone scales 3-seeded ..... 1. *Cunninghamia*
  2b. Deciduous or semievergreen trees; leaves scalelike, subulate or linear; cone scales 2-seeded.
    3a. Pollen cones borne on short, erect branchlets; seeds elliptic, slightly flattened, small, with a single, terminal, recurved wing ..... 2. *Glyptostrobus*
    3b. Pollen cones borne in pendulous racemes or panicles; seeds irregularly triquetrous, large, wingless..... 3. *Taxodium*
1b. Leaves and cone scales decussate ..... 4. *Metasequoia*

## 1. Cunninghamia R. Brown, *nom. cons.* 杉木屬

Evergreen trees, monoecious; branches verticillate or irregularly so; winter buds ovoid. Leaves spirally arranged, usually in 2-serials because of base twisted on lateral branches, sessile, lanceolate or linear-lanceolate, base attenuate, margin serrulate, stomatal bands present on both surfaces but fewer adaxially. Pollen cones terminal, clustered; microsporophylls many, spirally arranged, sessile, scalelike, distal margin serrulate; pollen sacs 3, pendulous. Seed cones 1–3 together, terminal, globose or ellipsoid; bracts and cone scales spirally arranged, sessile, connate at lower part; bracts persistent, broadly ovate or triangular-ovate, flat, large, margin irregularly and finely serrulate, apex long acuminate, hard; ovules 3 per bract axil, sessile; cone scales of mature cones sessile on and fused to proximal middle part of abaxial side of bract, minute, distal part free, 3-lobed, lobes irregularly serrulate at apex. Seeds 3, flat, with 2 narrow, lateral wings. Cotyledons 2.

One species in Cambodia, China, Laos, N Vietnam.

**1. Cunninghamia lanceolata** (Lamb.) Hook.
杉木 **(Fig. 4; Photos 11–12)**

Bot. Mag. 54: t. 2743. 1827; FRPS 7: 285, pl. 66: 1–13. 1978; FOC 4: 55. 1999; FGD 4: 19, fig. 10. 2000.

*Cunninghamia sinensis* auct. non R. Br. ex Rich: FHK 337. 1861; FKH 256. 1912.

Tree up to 50 m tall; trunk to 3 m d.b.h.; bark dark grey to dark brown, or reddish brown, longitudinally fissured, inner bark pale red. Leaves narrowly linear-lanceolate, straight or slightly falcate, 2–6 cm × 3–5 mm, base decurrent, apex usually symmetric and spinescent, margin denticulate, adaxial surface glossy deep green,

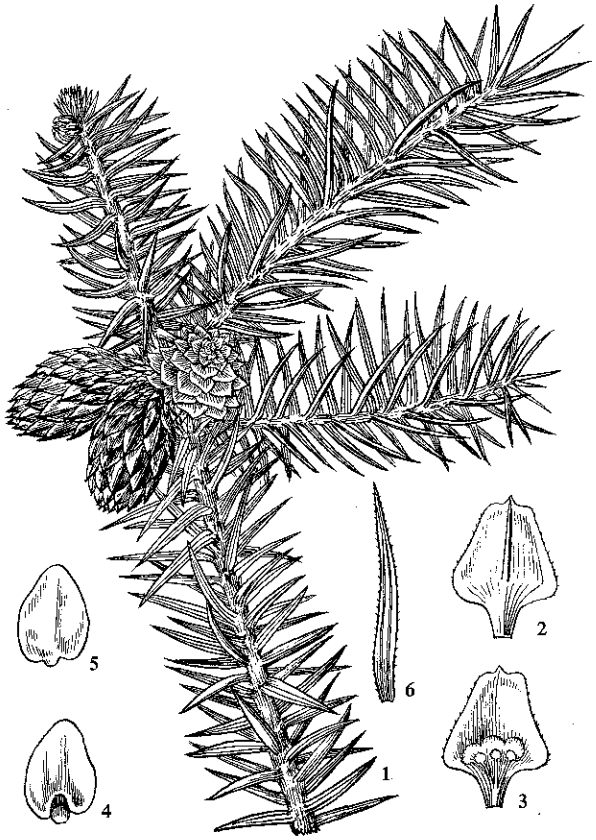



**Figure 4.** *Cunninghamia lanceolata* (Lamb.) Hook.
*1.* pollen and seed cone-bearing branch; *2.* dorsal view of bract; *3.* ventral view of bract and ovuliferous scale; *4, 5.* dorsal and ventral view of seed; *6.* leaf. (drawn by H. P. Yu)

with 2 narrow stomatal bands, bands white powdery or not, abaxial surface pale green, with 1 stomatal band along midvein each side, band white powdery. Pollen cone conical, 0.5–1.5 cm long, with a short peduncle, usually 40 clustered at apex. Seed cones terminal, 1–4 together, ovoid or subglobose; bracts glaucous or rather glossy, broadly ovate or triangular-ovate, base with short claw 1. Seeds dark brown, oblong or narrowly ovate, 5–6 × ca. 4 mm, narrowly winged laterally.

Locality: Widely planted in countryside. *Y. S. Hsu s.n.; C. C. Luo 1281.*

Distribution: Exact native distribution uncertain owing to widespread planting. Widely cultivated in areas S of Qinling Range; Cambodia, Laos, N Vietnam.

Ecology: Pollinating: Jan.–May; seed maturing: Aug.–Nov.

Uses: Afforestation, timber.

## 2. Glyptostrobus Endl. 水松屬

Semievergreen trees, monoecious; winter buds small; branchlets dimorphic: perennial branchlets remaining green for several years, becoming ridged and grooved with decurrent leaf bases; annual branchlets deciduous, short, never developing scars or buds. Leaves spirally arranged, sessile, base decurrent, trimorphic: leaves on 1–3 year main branches radially spreading, scalelike, relatively thick; leaves on annual branchlets of mature trees in 3 rows, radially spreading, subulate, quadrangular in cross section, deciduous with branchlet as a unit; leaves of annual branchlets of young trees and seedlings often 2-ranked, sessile, linear, flat, thin, deciduous. Pollen cones terminal on scalelike leaves-bearing branchlets, solitary; microsporophylls spirally arranged, sessile; pollen sacs 2–9. Seed cones terminal, shortly pedunculate, erect when mature, ± pyriform; bracts of mature cones nearly completely connate with cone scales (free only at apex), triangular, recurved, borne on central or middle distal part of abaxial side of cone scales; ovules 2 per bract axil; cone scales 20–22, spirally arranged, sessile, woody, basal scales sterile, median scales 2-seeded, with 6–10 triangular, acute teeth at distal margin, distal scales ligulate, multiangular, sterile. Seeds ellipsoid, slightly flattened, small, with a single, terminal, recurved wing. Cotyledons 4 or 5.

One species in China, N Vietnam, extinct in the wild.

**1. Glyptostrobus pensilis** (Staunton ex D. Don) K. Koch 水松 **(Fig. 5; Photos 13–14)**

Dendrologie. 2(2): 191. 1873; FRPS 7: 299, pl. 69. 1978; FOC 4: 57. 1999; FGD 4: 22, fig. 12. 2000.

*Thuja pensilis* Staunton ex D. Don in Lamb., Descr. Pinus, ed. 2, 2: 115. 1828.

*Glyptostrobus heterophyllus* (Brongn.) Endl., Syn. Conif. 70. 1847; FKH 255. 1912.

*Glyptostrobus sinensis* A. Henry ex Loder, Gard. Chron., ser. 3, 66: 259, fig. 118, 122, 123. 1919.

*Taxodium japonicum* (Thunb. ex L. f.) Brongn. var. *heterophyllum* Brongn, Ann. Sci. Nat. (Paris) 30: 184. 1833.

*Taxodium sinense* J. Forb., Pinet. Woburn. 179. 1839.

Semi-deciduous tree to 15(–25) m tall; trunk to 1.2 m d.b.h., basal part (ca. 0.7 m) buttressed; bark brown or greyish white with brown tinge, cracking into long, irregular strips; main branches spreading horizontally; lateral branchlets in 2 rows, those of older branches often very dense and broomlike. Scale leaves on mature branchlets appressed, ca. 2 mm long, with scattered, white, stomatal spots, adaxial surface convex, persistent; linear leaves compressed, thin, usually in 2-rows, 1–3 cm × 1.5–4 mm, pale green, base narrow, apex acute, with stomatal bands along midveins on each side abaxially; linear-subulate leaves compressed, slightly falcately recurved distally, 4–11 mm long, in 3-rows; linear and linear-subulate leaves deciduous with short branchlets in winters. Seed cones obovoid, 1.4–2.5 × 0.9–1.5 cm. Seeds brown, ellipsoid, slightly flattened, 5–7 × 3–4 mm, with a basal wing 4–7 mm.

Locality: Fanling (recorded at Tai Hang Village in 1912, probably planted but no longer exist; see Iu & Lay, J. Roy. Asiatic Soc. H. K. Br. 22: 302–305. 1982). Also cultivated in gardens. *S. C. Lau s.n.; L. T. Lo 280.*

Distribution: Guangdong, Guangxi, Yunnan, Sichuan, Jiangxi, Fujian; N Vietnam.

Ecology: River deltas, etc., on flooded or waterlogged soil in full sun; near sea level. Pollinating: Jan.–Mar.; seed maturing: Sep.–Oct.(–Nov.), persisting until following spring.

Uses: Ornamental.

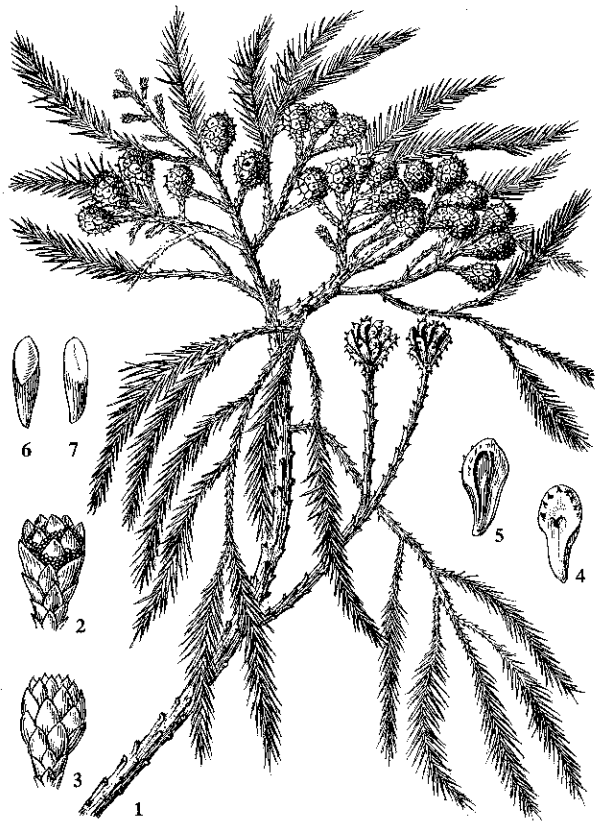



**Figure 5.** *Glyptostrobus pensilis* (Staunton ex. D. Don) K. Koch
*1*. cone-bearing branch; *2*. pollen cone-bearing branch; *3*. female cone-bearing branch; *4*. dorsal view of ovuliferous scale; *5*. ventral view of ovuliferous scale; *6, 7*. dorsal and ventral view of seed. (drwan by H. P. Yu)

## 3. Taxodium Rich. 落羽杉屬

Deciduous or semievergreen trees, monoecious; main branches persistent; lateral branches alternate and deciduous in winter; winter buds globose, small. Leaves spirally arranged, base decurrent,

dimorphic: subulate leaves on main branches persistent; linear leaves on lateral branchlets deciduous together with branchlet as a unit, 2-ranked. Pollen cones terminal, in long, pendulous, catkinlike racemes or panicles; microsporophylls 6–many, spirally arranged; pollen sacs 4–9. Seed cones solitary, attached laterally by minute peduncle to apex of previous year's growth, globose or ellipsoid but faceted; bracts scales almost completely connate with its cone scale but with free, protruding, triangular, acute apex; ovules 2 per bract axil; cone scales shield-shaped, woody at maturity, apex irregularly quadrangular. Seeds 2 per cone scale, irregularly triquetrous, large, strongly keeled, wingless. Cotyledons 4–9.

Two species in Guatemala, Mexico, United States; both introduced in China; one species cultivated in Hong Kong.

**1. Taxodium distichum** (L.) Rich. 落羽杉 **(Photos 15–16)**

Ann. Nat. Hist. 16: 298. 1810; FRPS 7: 304, pl. 70: 1–3. 1978; FOC 4: 58. 1999; FGD 4: 22, fig. 13. 2000.

Deciduous tree, to 50 m tall, 2 m in d.b.h. in native habitat; pneumatophores present or absent around trunk; trunk swollen and buttressed at base, strongly tapered upward; bark brown, peeling off in long strips; main branches spreading horizontally or ascending; lateral branchlets 2-ranked. Leaves linear, flat, base twisted, 2-ranked on annual branchlets, 1–1.5 cm × 1 mm, apex acute, pale green, midvein depressed adaxially, yellowish green or greyish green, midvein raised abaxially, stomatal lines 4–8 on each side. Pollen cones borne in terminal, crowded, short, dense racemes or panicles 5–12 cm, shortly pedunculate, ovoid. Seed cones brownish yellow or white powdery, globose, oblong-globose, or ovoid, ca. 2.5 cm in diam.; cone scales shield-shaped, woody, ± conspicuously longitudinally grooved at apex. Seeds brown or reddish brown, irregularly triangular-pyramidal, 1.2–1.8 cm long, sharply ridged.

Locality: Cultivated in gardens. *Y. S. Lau 1705; HK sheet 34504.*

Distribution: Introduced to Guangdong, Jiangxi, Zhejiang, Shanghai, Jiangsu, Hubei, Henan. Native to SE region of N America.

Ecology: Pollinating: Mar.–Apr.; seed maturing: (Jul.–)Oct.

Uses: Ornamental.

## 4. Metasequoia Miki ex Hu & Cheng, *nom. cons.* 水杉屬

Deciduous trees, monoecious; main branches irregularly whorled; branchlets opposite or subopposite; winter buds ovoid or ellipsoid, bud scales 6–8 pairs, decussate. Leaves deciduous together with lateral branchlet as a unit, linear, soft, decussate, 2-ranked, stomatal bands 4–8, on abaxial surface only, or on both surfaces on seedling leaves, base twisted. Pollen cones borne in spikes or panicles, shortly pedunculate; microsporophylls 15–20, decussate, each with 3 pollen sacs, except apical and basal with 2. Seed cones terminal or subterminal on previous year's growth, solitary, shortly pedunculate at pollination, becoming long pedunculate and pendulous, subglobose, slightly cubic, or occasionally oblong-globose, ripening in 1st year; peduncle clothed with decussate, linear leaves; cone scales 16–24, persistent, decussate, shieldlike, woody, grooved, 5–9-seeded (when fertile), base cuneate, distal part transversely rhombic. Seeds 5–9, compressed-obovoid, winged all round, apex emarginate. Cotyledons 2.

One species in central China; it is also cultivated in Hong Kong.

**1. Metasequoia glyptostroboides** Hu & W. C. Cheng 水杉 **(Photos 17–18)**

Bull. Fan Mem. Inst. Biol., n.s. 1: 154. 1948; FRPS 7: 310, pl. 71. 1978; FOC 4: 60. 1999; FGD 4: 24, fig. 14. 2000.

Tree to 50 m tall; trunk buttressed at base, to 2.5 m d.b.h.; bark of young trees pale orange-brown, dark reddish brown to grey, fissured; branches ascending; branchlets pendulous; winter buds ovoid or ellipsoid, apex obtuse, scales yellowish brown. Leaves linear, (0.8–)1.3–2 (–3.5) cm × (1–)1.5–2(–2.5) mm, pale green, with 4–8 stomatal bands along midvein each side. Pollen cones ovoid, 2.5–5.5 × 2–3.8 mm; bracts triangular-ovate or obovate, ca. 4 × 3 mm, lowest minutely ciliate distally, others glabrous. Seed cones purplish black when young, oblong-ellipsoid and to 9 × 5.5 mm at pollination, subglobose and 1.4–2.5 × 1.6–2.3 cm when mature; basal cone scales 9-ovulate, middle 7-ovulate, distal 5-ovulate, apical sterile. Seeds ca. 5 × 4 mm.

Locality: Cultivated in gardens. *Y. S. Lau 429; HK sheet 40548.*

Distribution: Widely cultivated in China. Native to E Sichuan & NW Hubei.

Ecology: Pollinating: Jan.–Mar.; seed maturing: Sep.–Oct.

Uses: Ornamental.

# G6. CUPRESSACEAE 柏科

XIA Nian-he 夏念和

Evergreen trees or shrubs , monoecious or dioecious. Leaves decussate or in whorls of 3, scalelike and then often dimorphic with flattened facial leaves and keeled lateral leaves, or needlelike particularly in juvenile plants, often with an abaxial resin gland. Pollen cones terminal or axillary, solitary; microsporophylls 6–16, decussate or whorled, each bearing (2 or)3–6(–9) pollen sacs; pollen wingless. Seed cones usually terminal, solitary, globose, ovoid, or oblong, dehiscent or indehiscent when mature in 1st or 2nd (or 3rd) year; cone scales developing after ovules originate in bract axils; bracts almost completely enveloped by cone scales, free only at apex; ovules 1-numerous per bract axil, erect; cone scales of mature cones 3–16, flat or peltate, woody, more or less leathery, or succulent, 1–20-seeded. Seeds winged or not; wings derived from seed coat. Cotyledons usually 2, rarely 3–6. Germination epigeal.

19 genera and ca. 125 species: worldwide; eight genera (one introduced) and 46 species (16 endemic, 13 introduced) in China; six genera and eight species introduced to Hong Kong; here only recorded two genera and two widely cultivated species. Another six

species, namely *Callitris cupressiformis* F. Muell., *Callitris robusta* R. Br., *Chamaecyparis pisifera* (Sieb. & Zucc.) Endl. 'Squarrosa', *Cupressus funebris* Endl., *Fokienia hodginsii* (Dunn) A. Henry & H. H. Thomas and *Juniperus chinensis* L. 'Kaizuca' are not described as there is no recent cultivation or records.

1a. Cone scales woody, opened when ripe; branchlets bearing scalelike leaves on one plane ..... 1. *Platycladus*
1b. Cone scales succulent, not opened or slightly opened when ripe; branchlets bearing scalelike leaves not on one plane ..... 2. *Juniperus*

## 1. Platycladus Spach 側柏屬

Evergreen trees or shrubs, aromatic, monoecious; bark thin, reddish brown, flaking in long strips; branchlets arranged in a plane, spreading or ascending, flattened. Leaves dimorphic, decussate, 4-ranked, scalelike, base decurrent, with an abaxial resin gland. Pollen cones ovoid, with 8–12 microsporophylls, each with 3–6 pollen sacs. Seed cones terminal, solitary, subglobose, dehiscent when mature in 1st year; cone scales 6 or 8, decussate, flat, thick, woody, only the middle 2 pairs fertile; free bract apex a long, recurved cusp. Seeds wingless, rarely with a very narrow wing, often ridged. Cotyledons 2.

One species in China, Korea, E Russia; it is cultivated in Hong Kong.

**1. Platycladus orientalis** (L.) Franco 側柏 **(Photos 19–20)**

Portug. Acta Biol., ser. B, Sist. Suppl. 33. 1949; FRPS 7: 322, pl. 74: 5–7. 1978; FOC 4: 64. 1999.

*Thuja orientalis* L., Sp. Pl. 2: 1002. 1753; FGD 4: 25, fig. 15. 2000.

*Biota orientalis* (L.) Endl., Syn. Conif. 47. 1847; FHN 1: 213. 1964.

Tree 8–20 m tall; trunk to 1 m (or more) d.b.h.; crown pyramidal when young, broadly ovoid when old. Leaves 1–3 mm, green, not glaucous, apex bluntly pointed; facial leaves rhomboid, with a conspicuous, linear, glandular groove at center abaxially; lateral leaves overlapping facial ones, boat-shaped, ridged, apex slightly incurved. Pollen cones yellowish green, ovoid, 2–3 mm. Seed cones when immature bluish green, when ripe reddish brown, subovoid, 1.5–2.5 × 1–1.5 cm; fertile cone scale 1–2-seeded. Seeds greyish brown or purplish brown, ovoid, 5–7 × 3–4 mm, slightly ridged, usually wingless.

Locality: Cultivated in gardens. *S. C. Lau s.n.; Y. S. Lau 2067.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Fujian, Jiangxi, Zhejiang, Jiangsu, Anhui, Shandong, Hunan, Hubei, Sichuan, Henan, Shaanxi, Gansu, Shanxi, Hebei, Inner Mongolia, Jilin, Liaoning; Korea, Russia.

Ecology: Pollinating: Mar.–Apr.; seed maturing: Oct.

Uses: Timber, ornamental.

## 2. Juniperus L. 刺柏屬

Evergreen trees or shrubs, monoecious or dioecious; branchlets not arranged in a plane, terete or 3-, 4-, or 6-angled in cross section. Leaves scalelike or needlelike, scalelike leaves opposite or decussate, rarely in whorls of 3, needlelike leaves usually opposite or in whorls of 3, base not jointed; juvenile leaves always needlelike; adult leaves scalelike or needlelike, usually not dimorphic along branchlets but sometimes different on juvenile and adult branchlets, with 1 or 2 pale stomatal bands adaxially, or in addition a few stomata near base abaxially. Pollen cones solitary, axillary or terminal, yellow, ovoid or globose; microsporophylls 6–16, each with 2–8 pollen sacs. Seed cones terminal or axillary, berrylike or drupelike, globose or ovoid, indehiscent or slightly dehiscent when mature in (1st or) 2nd (or 3rd) year; cone scales connate or fused, succulent; each fertile scale bearing 1–3 seeds; free bract apex a small point. Seeds 1–6 per cone, wingless, usually with resin pits. Cotyledons 2–6.

About 60 species, widely distributed in temperate to subtropical areas of N hemisphere; 23 species (ten endemic, two introduced) in China; one species widely cultivated in Hong Kong.

**1. Juniperus chinensis** L. 圓柏 **(Fig. 6; Photos 21–22)**

Syst. Nat., ed. 12, 2: 660. 1767; Mant. Pl. 1: 127. 1767; FOC 4: 74. 1999; FGD 4: 30. 2000.

*Sabina chinensis* (L.) Ant., Cupress. Gatt. 54. 1857; FRPS 7: 362, pl. 80: 6–8. 1978.

Tree to 25 m, 3.5 m in d.b.h., dioecious, rarely monoecious; bark greyish brown, fissured; branches spreading; branchlets

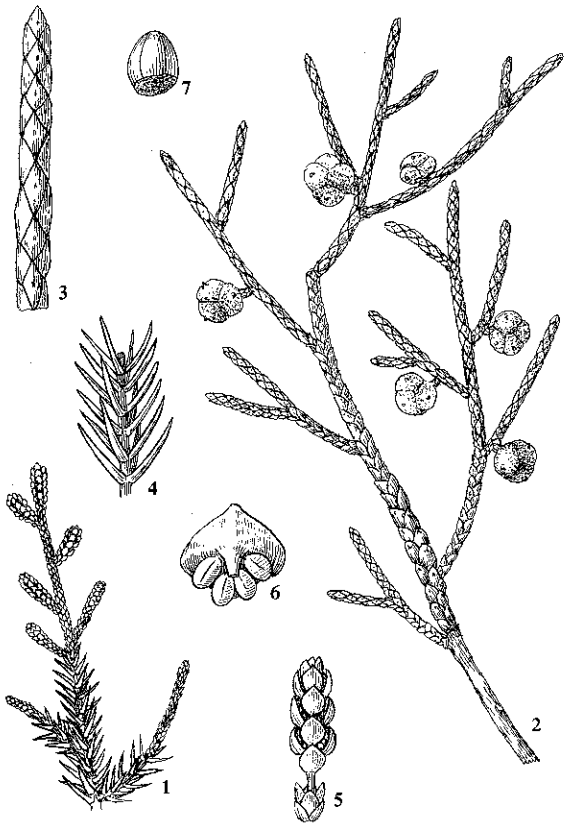



**Figure 6.** *Juniperus chinensis* L.

*1.* acicular and scale leafy branch with pollen cone; *2.* cone-bearing branch; *3.* enlarged scale leafy branch; *4.* enlarged acicular leafy branch; *5.* enlarged pollen cone; *6.* upper surface of microsporophyll (viewing pollen sac); *7.* seed. (drawn by H. P. Yu)

straight or slightly curved, terete or 4-angled, 1–1.2 mm in diam.; crown of trees pyramidal to open, broad and irregular. Leaves dimorphic; needlelike leaves present on both young and adult plants, decussate or in whorls of 3, loosely arranged, ascending, nearly lanceolate, 6–12 mm, with 2 white stomatal bands adaxially; scalelike leaves present on adult plants, decussate, closely appressed, 2.5–5 mm, abaxially with an elliptic slightly concave gland near center. Pollen cones yellow, ellipsoid, 2.5–3.5 mm; microsporophylls 10–18, each with 3 or 4 pollen sacs. Seed cones mature in 2nd year, brown when ripe, usually glaucous, subglobose, 6–8 mm in diam., 1–4-seeded. Seeds ovoid, 3–6 × 2–5 mm, slightly flattened, ridged, with resin pits, apex blunt.

Locality: Cultivated in gardens. *Y. S. Lau 2704; HK sheet 26824.*

Distribution: Widely distributed in China; Korea, Japan, Myanmar, E Russia.

Uses: Ornamental.

Notes: *Juniperus chinensis* L. 'Kaizuca' (龍柏) is also cultivated in gardens in Hong Kong for ornamental purpose. It differs from *J. chinensis* by its crown being cylindrical or pyramidal, branches initiating from lower part and twisted.

# G8. PODOCARPACEAE 羅漢松科

XIA Nian-he 夏念和 • YIP Kwok-leung 葉國樑

Evergreen trees or shrubs, dioecious or rarely monoecious. Leaves spirally arranged, subopposite, or decussate. Pollen cones terminal, solitary or clustered in leaf axils; microsporophylls numerous, spirally arranged, with distinct adaxial and abaxial surfaces; microsporangia 2; pollen 2(or 3)-saccate, rarely nonsaccate. Seed-bearing structures terminal or axillary, solitary, occasionally spikelike, comprising few to several spirally arranged bracts; all or only apical bracts fertile, smooth or warty; basal bracts sometimes fused and succulent (together with peduncle) to form a "receptacle," or obsolete. Seed drupelike or nutlike, wholly or partly enveloped in a sometimes colored and succulent epimatium. Cotyledons 2.

18 genera and ca. 180 species in tropical, subtropical, and S temperate zones; four genera and 12 species in China; two genera and three species in Hong Kong.

1a. Leaves opposite or subopposite, without evident midvein ..... 1. *Nageia*
1b. Leaves spirally arranged, with evident midvein ..... 2. *Podocarpus*

## 1. Nageia Gaertn. 竹柏屬

Trees or shrubs, dioecious or rarely monoecious. Leaves opposite or subopposite; petiole twisted through 90°; blade broadly ovate-elliptic to oblong-lanceolate, without obvious midvein but with many, slender, parallel, longitudinal veins, stomatal lines abaxial or rarely on all surfaces. Pollen cones axillary, solitary or clustered in small, spikelike groups of 3–6, borne on naked peduncles, ovoid-cylindric, with basal sterile scales; pollen 2-saccate. Seed-bearing structures terminal on short, scaly, axillary branchlets, solitary or occasionally paired; bracts usually obsolete, scarcely thicker than peduncle, rarely succulent and thicker than peduncle; ovule inverted. Epimatium wholly enveloping seed, leathery, with bluish black bloom when ripe. Seed drupelike, globose.

Five to seven species in Bangladesh, Cambodia, China, India, Indonesia, Japan (including Ryukyu Islands), Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; three species in China; one species cultivated in Hong Kong.

**1. Nageia nagi** (Thunb.) Kuntze 竹柏 **(Fig. 7; Photos 23–24)**

Revis. Gen. Pl. 2: 798. 1891; FOC 4: 80. 1999; FGD 4: 33, fig. 22. 2000.

*Myrica nagi* Thunb., Syst. Veg. (ed. 14) 884. 1784.

*Podocarpus nagi* (Thunb.) Makino, Bot. Mag. (Tokyo) 17: 113. 1903; FRPS 7: 404, pl. 90. 1978.

Tree to 20 m tall; bark nearly smooth, reddish brown, dark purplish red, peeling off in small, thin flakes; branchlets spreading; crown broadly conical. Leaves opposite; petiole strongly twisted at base; blade leathery, ovate-lanceolate, elliptic-lanceolate, or narrowly elliptic, 3.5–9 × 1.5–2.5 cm, base attenuate, apex acuminate, dark green and glossy adaxially, pale green abaxially, parallel veins indistinct. Pollen cones axillary, solitary or in clusters of up to 10, cylindric, 1.8–2.5 cm. Seed-bearing structures axillary, solitary rarely paired. Receptacle obsolete, consisting of few bracts. Epimatium green with white bloom when young, dark purple with sparser white




Figure 7. *Nageia nagi* (Thunb.) Kuntze

*1*. seed cone-bearing branch; *2*. seed-bearing branch; *3*. pollen cone; *4, 5*. pollens. (drawn by H. P. Yu)

bloom when ripe. Seed globose to pyriform, 1–1.5 cm in diam., with dense punctiform depressions, base pointed, apex rounded.

Locality: Cultivated in gardens. *HK sheet 26939, 34481.*

Distribution: Guangdong, Guangxi, Sichuan, Hunan, Jiangxi, Fujian, Zhejiang; Japan.

Ecology: Pollinating: Mar.–May; seed maturing: Aug.–Nov.

Uses: Ornamental.

## 2. Podocarpus L'Hert. ex Pers., *nom. cons.* 羅漢松屬

Evergreen trees or shrubs, dioecious. Leaves spirally arranged, rarely subopposite, with single, obvious, often raised midvein on 1 or both surfaces. Pollen cones axillary, rarely terminal, solitary or in clusters; microsporophylls numerous, spirally arranged; microsporangia 2; pollen 2-saccate. Seed-bearing structures usually borne in leaf or bract axils, solitary; apical bracts fertile; basal bracts often fused to form a receptacle; ovule 1 (rarely few), inverted. Epimatium wholly enveloping seed, sometimes colored and succulent. Seed ripening in first year, drupelike, dry, or leathery.

About 100 species in E Asia, tropical and subtropical regions of S hemisphere; seven species in China; one species and one varieties in Hong Kong.

1a. Leaves obtuse or acute at apex; pollen cones in clusters of 3–5 ..... 1. *P. macrophyllus*
2a. Leaf blade 7–12 cm × (5–)7–10 mm ..... 1a. *P. macrophyllus* var. *macrophyllus*
2b. Leaf blade 2–7 cm × 3–7 mm ..... 1b. *P. macrophyllus* var. *maki*
1b. Leaves long acuminate at apex; pollen cones solitary or in clusters of 2–3 ..... 2. *P. neriifolius*

**1. Podocarpus macrophyllus** (Thunb.) Sweet 羅漢松 **(Photos 25–26)**

Hort. Suburb. Londin. 211. 1818; FRPS 7: 412, pl. 93: 1–2. 1978; FOC 4: 83. 1999; FGD 4: 35. 2000.

*Taxus macrophyllus* Thunb., Syst. Veg. (ed. 14) 895. 1784.

Tree to 15 m tall; trunk to 30 cm d.b.h.; bark grey or greyish brown, irregularly fissured; branches dense, spreading, pale brown. Leaves spirally arranged on upper half of branchlets, sessile; blade linear-lanceolate, oblanceolate, or oblong-oblanceolate, 7–12 cm × 7–10 mm, base cuneate, apex mucronate or acute to long acuminate, margin slightly recurved, dark green and glossy adaxially, greyish green, pale green abaxially, midvein prominently raised adaxially, slightly raised abaxially. Pollen cones axillary, usually in clusters of 3–5, spikelike, 3–5 cm, subsessile, microsporangia ovoid. Seed-bearing structures axillary, solitary, shortly pedunculate. Receptacle red or purplish red when ripe, columnar. Epimatium purplish black when ripe, with white powder. Seed ellipsoid or ovoid, ca. 1 cm in diam., apex rounded, with a projected mucro.

Locality: Coastal hillslopes on eastern seashores. It is also cultivated in urban parks and gardens. *P. S. Choi 340; Y. S. Lau 666.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Anhui, Jiangxi, Fujian, Zhejiang, Jiangsu; Japan.

Ecology: Open thickets. Pollinating: Apr.–May; seed maturing: Aug.–Sep.

Uses: Ornamental.

**1a. Podocarpus macrophyllus** var. **maki** Sieb. & Zucc. 短葉羅漢松

Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(3): 232. 1846.

*Podocarpus chinensis* Wall. ex J. Forbes, Pinet. Woburn. 212. 1839; FKH 256. 1912.

A small tree or shrublike. It differs from var. *macrophyllus* by shorter and denser leaves, 2–7 cm × 3–7 mm.

Locality: Cultivated in urban parks and gardens. *HK sheet 26927, 26928, 40769.*

Distribution: Cultivated in Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Hunan, Hubei, Jiangxi, Fujian, Zhejiang, Jiangsu; Japan. Possibly native in Guangdong, Taiwan and Zhejiang.

Ecology: Pollinating: Apr.–May; seed maturing: Aug.–Sep.

Uses: Ornamental.

**2. Podocarpus neriifolius** D. Don 百日青 **(Fig. 8)**

Lambert, Descr. Pinus. 2: 21. 1824; FRPS 7: 409, pl. 92: 1–4. 1978; FOC 4: 82. 1999; FGD 4: 35, fig. 24. 2000.

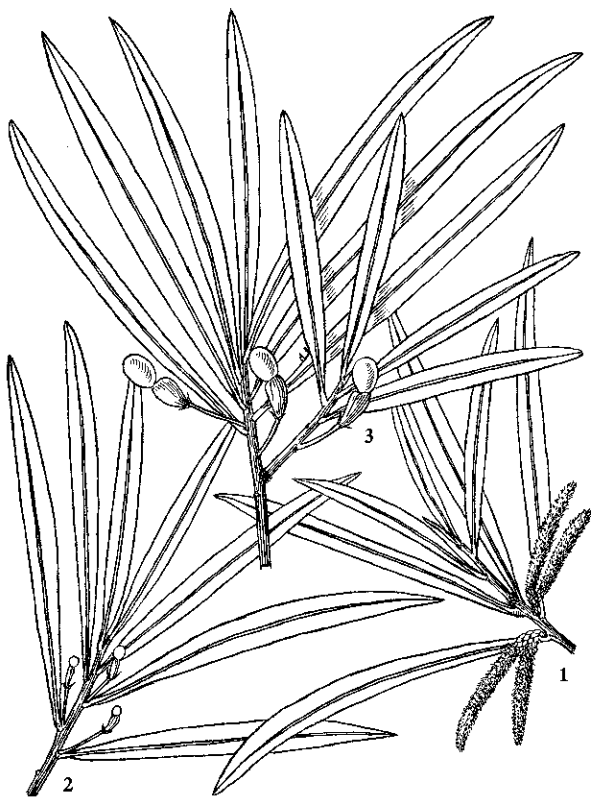



**Figure 8.** *Podocarpus neriifolius* D. Don

*1*. pollen cone-bearing branch; *2*. seed cone-bearing branch; *3*. seed-bearing branch. (drwan by H. P. Yu)

Tree to 25 m tall; trunk usually to 50 cm d.b.h.; bark greyish brown, shallowly fissured; branches spreading or ascending. Leaf blade lanceolate, leathery, usually slightly curved, 7–15 × 0.9–1.3 cm, base cuneate into short petiole, apex long acuminate, midvein raised adaxially, flat or slightly raised abaxially. Pollen cones solitary or in clusters of 2 or 3, 2.5–5 cm, basal bracts numerous, spirally arranged. Seed-bearing structures axillary, solitary; peduncle 0.9–2.2 cm. Receptacle orange-red when ripe, obconical-ellipsoid, 8–10 × 5–8 mm, base with 2 subulate bracts 2–6 mm. Epimatium purplish red when ripe. Seed ovoid or ovoid-subglobose, 0.8–1.6 cm, apex rounded or obtuse.

Locality: Victoria Peak. *HK sheet 7044*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Nepal, NE India, Sikkim, Bhutan, Myanmar, Vietnam, Laos, Cambodia, Indonesia, Malaysia, Papua New Guinea, Philippines, Thailand, Pacific Islands.

Ecology: In forests. Pollinating: May; seed maturing: Aug.–Nov.

Uses: Ornamental.

# G9. CEPHALOTAXACEAE 三尖杉科

XIA Nian-he 夏念和

Evergreen trees or shrubs, dioecious; bud scales persistent. Leaves 2-ranked, decussate or more or less opposite, sessile or subsessile, basally somewhat twisted; blade linear, linear-lanceolate, or occasionally lanceolate, margin entire, stomatal bands 2, abaxial, white, as wide as or usually wider than midvein, resin canal abaxial. Pollen cones borne on branches of previous year, aggregated into capitula of 6–8; capitula axillary, solitary, pedunculate or subsessile; peduncle usually with several spirally arranged scales, rarely naked; cones subtended by 1 ovate or triangular-ovate bract; microsporophylls 7–12, each with 2–3 or more pollen sacs; pollen nonsaccate, globose. Seed cones in axils of terminal bud scales, 1–6(–8) per bud, long pedunculate; floral axis with several pairs of decussate bracts each bearing 2 erect, axillary ovules. Seeds ripening in 2nd year, drupelike, completely enclosed by succulent aril, ovoid, ellipsoid, or globose, apex mucronate. Cotyledons 2.

Two genera and ca. 12 species, distributed from Himalayas to Japan and Thailand; two genera and seven species in China; one genus and one species in Hong Kong.

## 1. Amentotaxus Pilg. 穗花杉屬

Evergreen shrubs or small trees, dioecious; branchlets opposite, base without persistent bud scales; winter buds tetragonal-ovate, acute, glossy, scales, decussate, in 3–5 whorles of 4, ridged abaxially. Leaves decussate, but brought into a single plane by twisting of petioles; blade straight or slightly falcate, leathery, linear-lanceolate, lanceolate or elliptic-linear, base decurrent, margin slightly downcurved, adaxial surface with evident midvein, abaxial surface with 2 white, yellowish white or pale brown stomatal bands, resin canal present below sheath of vascular bundle, sclereids present, rarely absent. Pollen cones aggregated into (1 or)2–6(–10) long, slender, compound racemes or spikes arising from bract axil near apex of branches; individual cones opposite, sessile or subsessile, ellipsoid or subglobose; microsporophylls numerous, ± shield-shaped; pollen sacs 3–8. Seed-bearing structures compressed-tetragonal or flattened abaxially, basal part with 6–10 pairs of decussate bracts arranged in 4 rows each of 3–5 bracts; ovule 1, sessile, erect. Seed ripening in 1st year, long pedunculate, ellipsoid or obovoid-ellipsoid, enclosed except for apex in a saclike aril which is bright red or reddish yellow when ripe; bracts persistent at base.

Five or six species in China and Vietnam; three species (one endemic) in China; one species in Hong Kong. It was placed in the Taxaceae in W. C. Cheng's system.

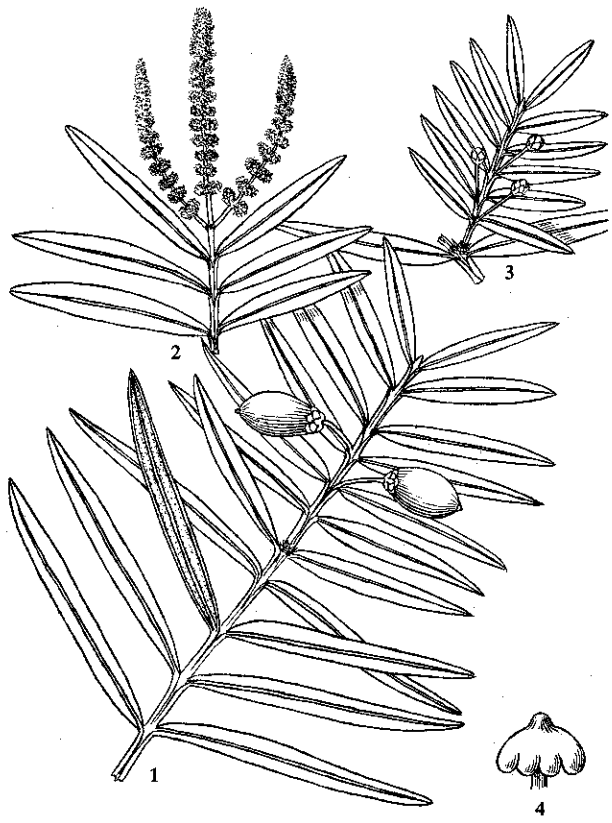



**Figure 9.** *Ametotaxus argotaenia* (Hance) Pilg.
*1*. seed-bearing branch; *2*. pollen cone-bearing branch; *3*. seed cone-bearing branch; *4*. microsporophyll. (drwan by H. P. Yu)

**1. Amentotaxus argotaenia** (Hance) Pilg.
穗花杉 **(Fig. 9; Photos 27–28)**

Bot. Jahrb. Syst. 54: 41. 1916; FRPS 7: 455, pl. 104: 4–7. 1978; FFJ rev. ed. 1: 321, fig. 298. 1991; FOC 4: 92. 1999; FGD 4: 42. 2000.

*Podocarpus argotaenia* Hance, Journ. Bot. 21: 357. 1883; FKH 256. 1913.

Shrub or small tree to 7 m; bark greyish brown or pale reddish brown. Leafy branchlets ascending or suberect. Leaves subsessile or with a petiole up to 3 mm, dark green adaxially, linear or linear-lanceolate, falcate or straight, 2–11 cm × 5–11 mm, leathery, base cuneate to attenuate, asymmetric, margin flat or very narrowly

revolute, apex dark, callose, rounded to sharply triangular, abaxial surface with two 1–2 mm wide stomatal bands. Pollen-cone racemes borne (1 or)2–4(–10) together, 1.5–6.5 cm; cones in ca. 12 pairs, ovoid, ca. 3.5 × 2.5–3.2 mm; bracts ca. 6 at base of otherwise naked peduncle, distal bract ca. 2.5 × 2 mm, keeled; microsporophylls 6–8, peltate, each with (2 or)3(–5) pollen sacs. Seed-bearing structures with peduncle to ca. 2/3 length of subtending leaf. Aril bright red when ripe. Seed finally red, narrowly obovoid-ellipsoid, 1.9–2.6 × 1–1.3 cm, with small, mucronulate apex; peduncle 1.1–1.4 cm, compressed-quadrangular, dilated below bracts, naked.

Locality: Ma On Shan, Tai Mo Shan, Mount Parker, Sunset Peak, Lantau Peak, Sai Kung. *Y. W. Lam 165, 206.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Xizang, Gansu, Hubei, Hunan, Jiangxi, Fujian, Taiwan, Zhejiang, Jiangsu; Vietnam.

Ecology: In forests. Pollinating: Apr.; seed maturing: Oct.

Uses: Ornamental.

Note: Listed in *Rare and Precious Plants of Hong Kong.*

# G12. CYCADACEAE 蘇鐵科

XIA Nian-he 夏念和

Evergreen trees or shrubs, mostly palmlike, dioecious; trunk columnar, sometimes dichotomously branched at apex; bark often thickened and roughened; pith large, xylem and phloem narrow. Leaves borne at apex of trunk, 1(–3)-pinnately compound, spirally arranged; petiole with spines, rarely unarmed, base swollen and hairy; leaflets numerous, alternate to subopposite, dichotomously branched in a few species, midvein present, margin usually entire. Pollen cones borne at apex of trunk, cylindric or fusiform; microsporophylls numerous, scalelike, spirally and tightly arranged along axis of cone, with numerous microsporangia in groups abaxially; pollen tubes producing 2 ciliary motile sperm cells. Megasporophylls several to numerous, flat, arranged in a loose, "conelike" crown surrounding apex of trunk, each with a linear fertile stalk and an apical, pinnatifid or subentire sterile blade; ovules 1–5 on each side of stalk. Seeds drupelike, seed coat 3-layered (colored sarcotesta, woody sclerotesta, and membranous endotesta), endosperm copious.

One genus and ca. 60 species: E Africa (including Madagascar), E and S Asia, N Australia, Pacific Islands; 16 species (eight endemic) in China; two species cultivated in Hong Kong.

## 1. Cycas L. 蘇鐵屬

Morphological characters and geographical distribution are the same as the family.

1a. Leaflets strongly recurved at margin, sparsely pubescent abaxially ..... 1. *C. revoluta*

1b. Leaflets not recurved at margin, glabrous ..... 2. *C. taiwaniana*

**1. Cycas revoluta** Thunb. 蘇鐵 **(Fig. 10; Photos 29–30)**

Verh. Holl. Maatsch. Weetensch. Haarlem. 20(2): 424, 426–427. 1782; FKH 256. 1912; FRPS 7: 7, pl. 1: 1–6. 1978; FFJ rev. ed. 1: 268, fig. 252. 1991; FOC 4: 4. 1999; FGD 4: 3, fig. 1. 2000.

Trunk to 2–8 m; bark grey-black, scaly. Leaves fascicled at apex of stem, 1-pinnate; petiole subtetragonal in cross section, 10–20 cm, with 6–18 spines along each side; leaflets in 60–150 pairs, straight to subfalcate, 10–20 cm × 4–7 mm, leathery, sparsely pubescent abaxially, base decurrent, margin strongly recurved, apex acuminate, pungent. Pollen cones pale yellow, ovoid-cylindric, 30–60 × 8–15 cm; microsporophylls narrowly cuneate, 3.5–6 × 1.7–2.5 cm, apex rounded-truncate, cuspidate. Megasporophylls yellow to pale brown, 14–22 cm, densely tomentose; stalk 7–12 cm; sterile blade ovate to narrowly so, 6–11 × 4–7 cm, deeply laciniate, with 21–35 lobes 1–3 cm; ovules 2 or 3 on each side of stalk, densely pale brown tomentose. Seeds 2(–5), orange to red, obovoid or ellipsoid, somewhat compressed, (3–)4–5 × 2.5–3.5 cm, sparsely hairy; sclerotesta not grooved on sides.

Locality: Widely cultivated in gardens and parks. *HK sheet 27073; Y. S. Lau 1896.*

Ecology: Pollinating: May–Jul.; seed maturity: Sep.–Oct.

Distribution: Guangdong, Fujian, Taiwan. Widely cultivated in China.

Uses: Ornamental.

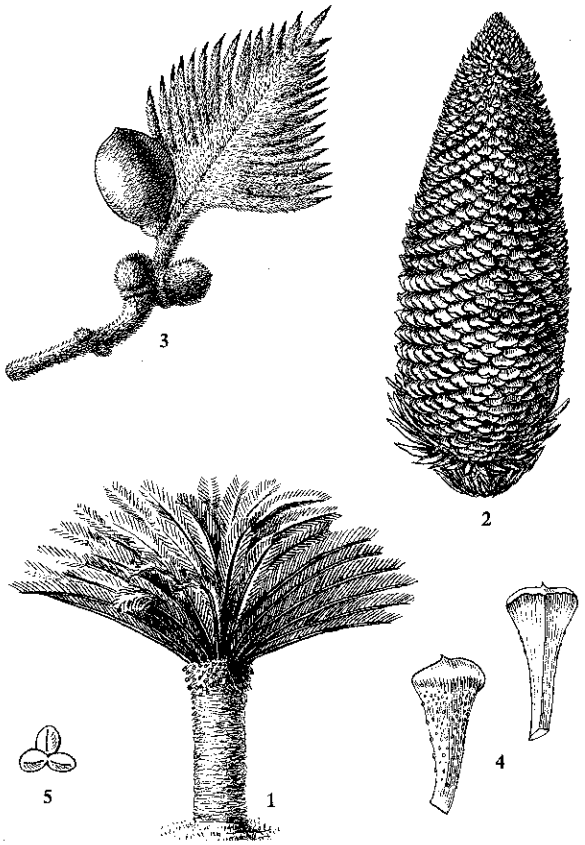



**Figure 10.** *Cycas revoluta* Thunb.

*1.* whole plant; *2.* pollen cone; *3.* megasporophyll and seeds; *4.* dorsal and ventral view of microsporophyll; *5.* pollen. (drawn by H. P. Yu)

**2. Cycas taiwaniana** Carruth. 廣東蘇鐵(台灣蘇鐵)

J. Bot. 31: 2. 1893; FKH 256. 1912; FRPS 7: 9, pl. 2: 1–4. 1978; FFJ rev. ed. 1: 268, fig. 253. 1991; FOC 4: 5. 1999; FGD 4: 4, fig. 2. 2000.

*Cycas fairylakea* D. Y. Wang, Cycads in China (eds. F.X. Wang & H.B. Liang): 54. 1996; FGD 4: 4. 2000.

*Cycas revoluta* Thunb. var. *taiwaniana* (Carruth.) J. Schust., Pflanzenr. 99, 4(1): 84. 1932.

*Cycas siamensis* auct. non Miq.: Check List HK Plants 26. 1993.

Trunk cylindric, to 3.5 m; bark dark brown or grey-brown, scaly. Leaves fascicled at apex of stem, 1-pinnate; petiole obovate in cross section, 40–120 cm, with 30–60 spines along each side of basal part, glabrous; leaflets in 70–150 pairs, often falcate, 18–35 cm × 11–14 mm, leathery, glabrous abaxially, midvein raised on both surfaces only when fresh, slightly raised or flat abaxially when dry, base decurrent, margin flat, apex attenuate, pungent. Pollen cones ovoid or ellipsoid-cylindric, 30–45 × 8–10 cm; microsporophylls narrowly cuneate, 2–3 cm × 5–8 mm; apex obtuse-rounded, with very short, upcurved mucro. Megasporophylls more than 30, tightly grouped, 15–22 cm, pale brown tomentose; stalk 8–12 cm; sterile blade rhombic-ovate, 7–12 × 6–7 cm, margin glabresent and pectinate, with (11–)23–47 lobes 2–3.5 cm, terminal lobe ± flattened, 2–3.5 cm × 5–10 mm, margin usually irregularly serrulate, apex acute; ovules 2 or 3 on each side of distal part of stalk, glabrous. Seeds 2(–4), pale yellowish, globose, or broadly obovoid, slightly compressed, 2.8–3.3 × 2.5–3 cm; sclerotesta finely verrucose.

Locality: Cultivated. *Y. S. Lau 690; HK sheet 27079.*

Distribution: Guangdong, E Guangxi, SW Hunan, SE Yunnan; Vietnam.

Ecology: Pollinating: Apr.–May; seed maturing: Sep.–Nov.

Uses: Ornamental.

# G14. ZAMIACEAE 澤米蘇鐵科

XIA Nian-he 夏念和

Palm-like plants, dioecious. Stem subterranean to arborescent. Leaves even-pinnately coumpound, clustered at stem apex; pinnae 10–120, subopposite to opposite, dichotomously veined, with or without a midrib; petiole and lower third of rachis smooth or with small prickles or with reduced spinose pinnae; stipules small or absent. Strobili one to several, usually emerging from center of crown; sporophylls flat to peltate. Pollen cones: microsporophylls many, with sporangia localited on the abaxial surface and rarely on the adaxial surface; microsporangia many, in groups of 2–5 and dehiscent longitudinally; pollen monosulcate, proximal sculpturing psilate to foveolate. Seed cones: ovule-bearing structure many, megasporophylls stalked, each with two ovules. Seed coat consisting of a red or orange/red or white outer fleshy layer and an inner stony layer when mature; megagametophyte farineacous; embryo with two cotyledons and a coiled suspensor.

Eight genera and about 180 species in tropical to warm temperate regions of Africa, Australia, the West Indies and N, S, and C America; one genus and one species cultivated in China; it is also cultivated in Hong Kong.

## 1. Zamia L. 澤米蘇鐵屬

Stem with or without persistent leaf bases. Cataphylls alternating with leaf flushes, sheathing at first, with a pair of inconspicuous stipules. Leaves 2–15, even-pinnate; stipules present; petioles smooth or armed with scattered prickles; rhachis smooth or armed with scattered prickles in lower one-third to two-thirds, ending in a terminal acute spine; leaflets linear to oblong to broadly ovate, sessile to petiolulate, with or without a collar-shaped gland, apex rounded to long-acuminate, margin entire or more commonly serrate in upper leaf. Pollen cones: pedunculate, cream colored to tan to dark to reddish brown, 1–30, emerging from center of leaf crown, cylindrical but gradually tapering toward acute apex, densely pubescent; microsporophylls obscurely peltate, 8–64 abaxial microsporangia in 2–4 clusters; pollen exine foveolate. Seed cones: pedunculate, tomentose, green to dark reddish brown, usually solitary but often to 3, cylindrical to slightly ovoid with blunt or slightly acute apex, densely pubescent or glabrous; megasporophylls arranged in 5–21 vertical orthostichies, the exposed tips thick, truncate, hexagonal, with six lateral facets surrounding a central prominent, often depressed facet, each bearing two lateral ovules. Seed with red to orang-red or white sarcotesta and a stony endotesta, ovoid.

A genus about 55 species represented sporadically throughout the Neotropics; one species cultivated in Hong Kong.

**1. Zamia furfuracea** L. f. 澤米蘇鐵(牙買加蘇鐵) **(Photos 31–32)**

Aiton Hortus Kew. 3: 477. 1789.

*Palmifolium furfuraceum* (L. f.) Kuntze, Revis. Gen. Pl. 2: 803. 1891.

Stem tuberous, cylindrical, to 75 cm tall or more, ca. 20 cm in diam., old plants branched at apex. Leaves 5–7 per crown, 0.5–2 × 0.1–0.25 m; petioles 15–25 cm, spiny, rare unarmed; leaflets 10–15 pairs, thick and stiff, obovate-oblong 16–18 × 4–6 cm, apex obtuse or irregular. Pollen cones solitary, erect, cylindrical, 7–12 cm long, 1.8–2.5 cm in diam., densely light brown tomentose; peduncles 8–10 cm long, 0.8–1 cm in diam., densely light tomentose; microsporophylls in 10–12 vertical rows of 18–20 each; sporangia in two patches on the lower edges of the sporophyll with a sterile center band 2–5 mm wide. Seed cones solitary, erect, cylindrical, 16–24 cm long, 6.5–7 cm in diam., densely reddish tomentose, the sterile apex mucronate, ca. 2 cm long; megasporophylls arranged in 10–12 vertical rows of 14–15 each; peduncle 10–20 cm long, 1.5–2 cm in diam., densely tan tomentose. Seeds red when ripe, 1.1–1.5 × 0.8–1 cm, light tan, smooth.

Locality: Cultivated in gardens. *Y. W. Lam s.n. (HK sheet 34677)*

Distribution: S China (cultivated). Native to Mexico.
Uses: Ornamental.

# G17. GNETACEAE 買麻藤科

XIA Nian-he 夏念和

Evergreen woody vines, rarely erect shrubs or trees, dioecious or sometimes monoecious; stems with swollen nodes. Leaves opposite, petiolate, simple, pinnately veined, margin entire. Flowers unisexual, in spikes. Spikes with many cupular to almost flat, annular, involucral collars, each formed by the fusion of a whorl of bracts. Male spikes solitary or several in terminal or lateral cymes; annular involucral collar densely arranged, each collar with 20–80 flowers, often also with a whorl of sterile female flowers at apex; male flowers with a cupular, succulent false perianth; stamens 2, rarely 1, filaments fused, exserted from false perianth; anthers with 1 thecae. Female spikes solitary or several in a cymose panicle, often cauliflorous; involucral collars widely separated, each with 4–12 flowers; female flowers with a false perianth tightly enclosing ovule; ovule with 2 integuments, innermost integument elongated into a micropylar tube exserted from false perianth; outer integument with a fleshy, outer layer connate with false perianth and developing into a false seed coat, inner layer bony. Seeds drupelike, enclosed in a red, orange, or yellow, fleshy (rarely corky) false seed coat; endosperm copious, succulent. Cotyledons 2.

One genus and about 40 species: mostly tropical and subtropical Asia, Africa and South America; six species in China; two species in Hong Kong.

## 1. Gnetum L. 買麻藤屬

Morphological characters and geographical distribution are the same as those of the family.

1a. Leaves larger, 10–20 × 4–10 cm; Male spikes longer, with 10–20 whorls of involucral collars; Seeds 2.4–2.8 × 1.5–1.6 cm, very fleshy, base often contracted into an apparent stipe as long as wide when dried ..... 1. *G. luofuense*

1b. Leaves smaller, 4–10 × 2.5–3.5 cm; Male spikes short and small, with 5–10 whorls of involucral collars; seeds 1.5–2 cm long, 1 cm in diam. ..... 2. *G. parvifolium*

**1. Gnetum luofuense** C. Y. Cheng 羅浮買麻藤 **(Fig. 11; Photos 33–34)**

W. C. Cheng et al., Acta Phytotax. Sin. 13(4): 89. 1975; FOC 4: 105. 1999; FGD 4: 44, fig. 31. 2000.

*Gnetum scandens* auct. non Roxb.: FHK 336. 1861, *p.p.*; FKH 255. 1912, *p.p.*

*Gnetum montanum* auct. non Makgraf: FRPS 7: 492, pl. 114: 1–5. 1978; FFJ rev. ed. 1: 324. 1991.

Bark purplish brown, lenticels shallow, obscure. Petiole 8–12 mm; leaf blade oblong, elliptic or oblong-ovate, 10–20 × 4–10 cm, leathery or papery, base rounded or broadly cuneate, apex shortly acuminate, glossy, reticulate veins evident on both surfaces. Male spikes simple or once branched; involucral collars 12–20, each collar with 60–80 male flowers plus 15–30 sterile female flowers, often patent at anthesis; male flower: basal hairs dense, brown, false perianth slightly succulent, in irregular rhomboid tube, apex truncate. Female spikes with 10–20 involucral collars, each collar with 8–13 female flowers. Seeds sessile, ellipsoid, 1.5–2.8 × 1.5–1.8 cm, very fleshy, base often contracted into an apparent stipe when dried, apex acute with a mucro, outer coat orange-red, coarsely reticulate-wrinkled when dried.

Locality: Common in Hong Kong. *H. C. Tang 1369; Y. W. Lam 635.*

Distribution: Guangdong, Hainan, Fujian, Jiangxi, Hunan, Guangxi, Guizhou, Yunnan.

Ecology: Forest; Pollinating: May–Jul.; seed maturing: Aug.–Oct.

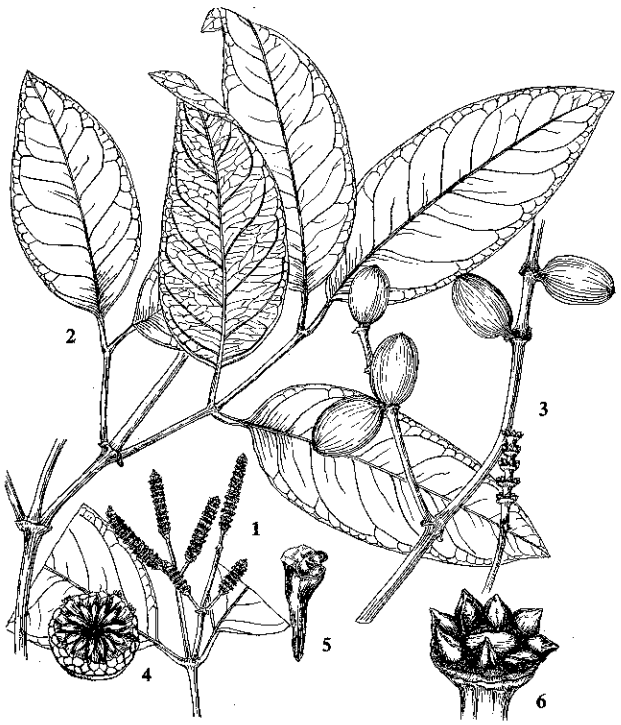



**Figure 11.** *Gnetum luofuense* C. Y. Cheng
*1*. male branch; *2*. leafy branch; *3*. mature female spike and seeds; *4*. portion of male spike; *5*. male flower; *6*. portion of female spike. (drwan by Y. X. Liu)

**2. Gnetum parvifolium** (Warb.) C. Y. Cheng ex Chun
小葉買麻藤 **(Photos 35–36)**

Acta Phytotax. Sin. 9: 386. 1964; FRPS 7: 498, pl. 117. 1978; FFJ rev. ed. 1: 325, fig. 301. 1991; FOC 4: 104. 1999; FGD 4: 44, fig. 30. 2000.

*Gnetum scandens* Roxb. var. *parvifolium* Warb., Monsunia 1: 196. 1900.

*Gnetum montanum* Markgraf. f. *parvifolium* (Warb.) Markgraf., Bull. Jard. Bot. Buitenzorg, ser. 3, 10: 468. 1930.
*Gnetum scandens* auct. non Roxb.: FHK 336. 1861, *p.p.*; FKH 255. 1912, *p.p.*

Bark pale or greyish brown, lenticels usually relatively conspicuous. Petiole 5–8(–10) mm; leaf blade elliptic to narrowly elliptic, or long-obovate, 4–10 × 2.5 cm, leathery, base cuneate to subrounded, apex acute or attenuate, sometimes obtuse, lateral veins usually inconspicuous adaxially, reticulate veins conspicuous abaxially. Male inflorescences simple or once branched; peduncle slender, 0.5–1.5 cm; involucral collars 5–10, each collar with 40–70 male flowers plus 10–12 sterile female flowers, enclosed at anthesis; male flower: basal hairs few, brown, short, false perianth rhomboid. Female inflorescences usually borne on old branches, 10–15 cm in fruit; peduncle 1.5–2 cm; female spikes with involucral collars 6–9 mm apart, nodes each with 5–8 female flowers, basal hairs brown, short. Seeds sessile or nearly so, red, elongate ellipsoid or fusiform to narrowly oblong-obovoid, (1.3–)1.6–2.2 cm × (4–)5–8(–10) mm, 2–3 times as long as wide, apex usually with a small, pointed tip, outer coat thin, longitudinally striate when dried.

Locality: Common in Hong Kong. *P. S. Choi 448; Y. W. Lam 844.*

Distribution: Guangdong, Hainan, Guangxi, Guizhou, Fujian, Jiangxi, Hunan; Laos, Vietnam.

Ecology: Forests; 100–1000 m. Pollinating: Apr.–Jun.; seed maturing: Jun.–Nov.

Uses: Food (seeds).

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# ANGIOSPERMS
# 被子植物

HU Qi-ming 胡啟明

Herbs, shrubs or trees, usually with roots, stems and leaves. Secondary xylem almost all with vessels, rarely with tracheids. Flowers usually consisting of sepals, petals, androecium and gynoecium. Perianth undifferentiated or differentiated into calyx and corolla. Ovules enclosed by one or more carpels. Fruit dehiscent or indehiscent, containing one or more seeds.

## A. Magnoliopsida
## 木蘭亞綱

Leaves usually with net-veined. Vascular bundles of the stem open or less often closed, typically arranged in concentric rings, with cambium. Flowers often 4- or 5-merous, rarely 3-merous. Cotyledons 2, rarely 1, 3 or 4.

**Key to the Families**

1a. Petals free at the base, or petals absent.
  2a. Flowers always unisexual and apetalous, at least the male flowers in deciduous catkins. Plants woody ..... Key 9
  2b. Flowers unisexual or bisexual, polypetalous or apetalous, not in catkins or, if so, plants herbaceous.
    3a. Gynoecium of 2 or more free carpels ..... Key 1
    3b. Gynoecium of 1 carpel or syncarpous (if subapocarpous then carpels united near the base, or by a common style).
      4a. Perianth of 2 or more whorls, calyx and corolla both present (calyx rarely obsolescent; excluding aquatic plants with minute, quickly caducous petals, and branch parasites with opposite, leathery leaves).
        5a. Stamens more than 2 × the number of petals (petals never more than 10) ..... Key 2
        5b. Stamens 2 × the number of petals or fewer.
          6a. Stamens and perianth perigynous, or ovary fully or partly inferior ..... Key 5
          6b. At least one whorl of the perianth hypogynous, or stamens hypogynous or inserted on the top of a hypogynous disc in which the ovary may be immersed.
            7a. Placentation axile, apical, basal or free-central ..... Key 3
            7b. Placentation parietal or marginal ..... Key 4
      4b. Perianth of 1 whorl, sometimes petaloid or 0; if perianth of 2 or more whorls then the segments of each whorl ± indistinguishable in flower.
        8b. Stamens apparently bone on the perianth, or ovary partly or fully inferior (female flowers sometimes without a perianth) ..... Key 8
        8a. Stamens not borne on the perianth or ovary naked.
          9a. Flowers unisexual ..... Key 6
          9b. Flowers bisexual ..... Key 7
1b. Petals present, united at the base, at least shortly so.
  10a. Ovary partly or fully inferior ..... Key 12
  10b. Ovary superior.
    11a. Corolla actinomorphic ..... Key 10
    11b. Corolla zygomorphic ..... Key 11

**Key 1**

1a. Trees with exfoliating bark, palmately lobed leaves and unisexual flowers in pendulous, globose heads ..... 44. **Platanaceae**
1b. Combination of characters not as above.
  2a. Perianth and stamens perigynous.
    3a. Perianth polymerous; leaves opposite ..... 15. **Calycanthaceae**

3b. Perianth 4–5-merous; leaves alternate or basal ..... 177. **Rosaceae**

2b. Perianth and stamens hypogynous.

4a. Aquatic plants with peltate leaves; carpels sunk in an obconical receptacle ..... 25. **Nelumbonaceae**

4b. Combination of characters not as above.

5a. Herbs and succulent shrubs, if climbers then with bisexual flowers and opposite leaves.

6a. Perianth absent ..... 20. **Saururaceae**

6b. Perianth present.

7a. Stout herbs; Flowers in racemes; fruit a berry; leaves simple, entire, alternate ..... 67. **Phytolaccaceae**

7b. Combination of characters not as above.

8a. Leaves succulent; stamens in 1 or 2 whorls ..... 174. **Crassulaceae**

8b. Leaves not succulent; stamens spirally arranged, numerous and indefinite ... 30. **Ranunculaceae**

5b. Trees, shrubs, or if climbers then with unisexual flowers and alternate leaves.

9a. Leaves simple.

10a. Sepals 5, persistent; petals 3–5; anthers extrose or latrose ..... 81. **Dilleniaceae**

10b. Combination of characters not as above.

11a. Unisexual climbers.

12a. Carpels many; seeds not U-shaped ..... 24. **Schisandraceae**

12b. Carpels 3 or 6; seeds often U-shaped ..... 35. **Menispermaceae**

11b. Erect trees or shrubs, if climbers then flowers bisexual.

13a. Leaves with large caducous stipules ..... 6. **Magnoliaceae**

13b. Leaves without stipules.

14a. Perianth parts imbricate; fruit capsular ..... 23. **Illiciaceae**

14b. Perianth parts valvete; fruit berry-like ..... 8. **Annonaceae**

9b. Leaves compound.

15a. Trees, erect shrubs or perennial herbs; leaves punctate with pellucid, aromatic glands; fruit a follicle ..... 266. **Rutaceae**

15b. Woody climbers.

16a. Leaves pinnately compound; flowers bisexual; fruit a 1-seeded follicle ..... 160. **Connaraceae**

16b. Leaves ternate or pamately compound; flowers unisexual; fruit berry-like.

17a. Carpels 3–9, in 1–2 whorls; ovules many in each carpel ..... 34. **Lardizabalaceae**

17b. Carpels many, spirally arranged on an elongate receptacle; ovules 1 in each carpel ..... 33. **Sargentodoxaceae**

## Key 2

1a. Perianth and stamens hypogynous.

2a. Placentation axile or free-central.

3a. Placentation free-central; sepals usually 2 ..... 75. **Portulacaceae**

3b. Placentation axile; sepals usually 5, rarely fewer.

4a. Leaves opposite, exstipulate ..... 100. **Guttiferae**

4b. Leaves alternate.

5a. Anthers opening by terminal pores.

6a. Shrubs or woody climbers; fruit a berry; seeds numerous ..... 89. **Actinidiaceae**

6b. Trees; fruit a drupe or a capsule, 1–many-seeded ..... 101. **Elaeocarpaceae**

5b. Anthers opening lengthwise.

7a. Leaves punctuate with pellucid, aromatic glands ..... 266. **Rutaceae**

7b. Leaves not punctate, nor aromatic.

8a. Stipules absent; leaves evergreen ..... 88. **Theaceae**

8b. Stipules present; leaves usually deciduous.

9a. Filaments free; anthers 2-celled ..... 102. **Tiliaceae**

9b. Filaments united into a tube, at least around the ovary, often also around the styles; anthers often 1-celled.

10a. Style divided, several; pollen grains spiny; stipules often persistent; carpels 5 or more ..... 105. **Malvaceae**

10b. Style 1, capitate or lobed, stigmas 1–several; pollen grains not spiny; stipules usually deciduous; carpels 2–5.

11a. Stamens in 2 whorls, those of the outer whorl usually staminodial; trunks or stems relatively slender ..... 103. **Sterculiaceae**

11b. Stamens in several whorls, staminodes absent; trunks often swollen, spiny ..... 104. **Bombacaceae**

2b. Placentation marginal or parietal.

12a. Carpel 1, with marginal placentation; fruit a legume.

13a. Adaxial petal interior (ascending imbrication) or petal 1 or absent; seed usually with a straight radicle ..... 184. **Caesalpiniaceae**
13b. Adaxial petal exterior (descending imbrication); seed usually with a incurved radicle ..... 185. **Fabaceae**
12b. Combination of characters not as above.
14a. Leaves opposite, with pellucid glands ..... 100. **Guttiferae**
14b. Leaves alternate or basal, without pellucid glands.
15a. Herbs; leaves mostly basal ..... 38. **Papaveraceae**
15b. Trees or shrubs; leaves alternate.
16a. Anthers horseshoe-shaped, opening by pore-like slits; fruit covered with prickles ..... 112. **Bixaceae**
16b. Anthers not horseshoe-shaped, opening lengthwise; fruit without prickles ..... 136. **Capparaceae**
1b. Perianth and stamens perigynous or epigynous.
17a. Flowers unisexual; leaf base oblique ..... 133. **Begoniaceae**
17b. Flowers bisexual; leaf base not oblique.
18a. Placentation free-central; ovary partly inferior ..... 75. **Portulacaceae**
18b. Placentation not free-central; ovary superior or inferior.
19a. Aquatic plants with cordate leaves ..... 26. **Nymphaeaceae**
19b. Terrestrial plants; leaves various.
20a. Carpels 8–12, superposed ..... 200. **Punicaceae**
20b. Carpels fewer ± side by side.
21a. Leaves stipulate.
22a. Leaves opposite; petals lacerate or deeply bilobed ..... 205. **Rhizophoraceae**
22b. Leaves alternate; petals entire or emarginated ..... 177. **Rosaceae**
21b. Leaves exstipulate.
23a. Leaves with pellucid aromatic glands; style 1 ..... 199. **Myrtaceae**
23b. Leaves without pellucid aromatic glands; style more than 1 ..... 167. **Hydrangeaceae**

## Key 3

1a. Resinous trees or shrubs; leaves simple or pinnate, alternate; flowers with a hypogynous disc, mostly unisexual; stamens 4–5 or 8–10; fruit 1-seeded, drupe-like ..... 261. **Anacardiaceae**
1b. Combination of characters not as above.
2a. Placentation free-central or basal.
3a. Stamens antipetalous.
4a. Anthers opening by valves; stigma 1; shrubs ..... 32. **Berberidaceae**
4b. Anthers opening by slits; stigmas more than 1; fleshy herbs ..... 75. **Portulacaceae**
3b. Stamens not antipetalous ..... 78. **Caryophyllaceae**
2b. Placentation axile or apical.
5a. Anthers opening by terminal pores; stamens not antipetalous
6a. Flowers strongly zygomorphic, papilionaceous.
7a. Perennial herbs or subshrubs; fruit a capsule ..... 250. **Polygalaceae**
7b. Evergreen trees; fruit a drupe ..... 251. **Xanthophyllaceae**
6b. Flowers actinomorphic, not papilionaceous ..... 91. **Pentaphylacaceae**
5b. Anthers opening by longitudinal slits or stamens antipetalous.
8a. Herbs.
9a. Leaves aromatic, glandular-punctate ..... 266. **Rutaceae**
9b. Leaves neither aromatic nor glandular-punctate.
10a. Perianth actinomorphic; leaves trifoliolate ..... 268. **Oxalidaceae**
10b. Perianth zygomorphic, spurred; leaves simple ..... 272. **Balsaminaceae**
8b. Trees, shrubs, or climbers.
11a. Flowers with a well developed hypogynous glandular disc below or around the ovary.
12a. Stamens antipetalous.
13a. Inflorescence leaf-opposed; usually climbers with leaf opposed tendrils ..... 240. **Vitaceae**
13b. Inflorescence not leaf-opposed; trees or shrubs without tendrils ..... 37. **Sabiaceae**
12b. Stamens not antipetalous.
14a. Leaves with pellucid aromatic glands ..... 266. **Rutaceae**
14b. Leaves without pellucid aromatic glands.
15a. Resinous trees; style 1; fruit a 1-seeded drupe ..... 260. **Burseraceae**
15b. Combination of characters not as above.
16a. Corolla zygomorphic ..... 257. **Sapindaceae**
16b. Corolla actinomorphic.
17a. Flowers functionally unisexual or polygamous.
18a. Leaves opposite; fruit a schizocarp of 2 samaras ..... 259. **Aceraceae**

18b. Leaves alternate; fruit otherwise.
19a. Disc extra-staminal; leaves usually paripinnate, sometimes imparipinnate (*Koelreuteria*) or simple (*Dodonaea*) ..... 257. **Sapindaceae**
19b. Disc intra-staminal; leaves usually imparipinnate ..... 263. **Simaroubaceae**
17b. Flowers all bisexual.
20a. Leaves entire or toothed; stamens 4–5, emerging from the fleshy disc ..... 223. **Celastraceae**
20b. Combination of characters not as above.
21a. Leaves compound; filaments usually connate into a tube ..... 265. **Meliaceae**
21b. Leaves simple; filaments free ..... 243. **Ixonanthaceae**
11b. Flowers without hypogynous glandular disc.
22a. Petals long-clawed, fringed; sepals with abaxial nectaries ..... 246. **Malpighiaceae**
22b. Combination of characters not as above.
23a. Filaments united below ..... 103. **Sterculiaceae**
23b. Filaments free.
24a. Stamens 2, anther cells back to back ..... 298. **Oleaceae**
24b. Stamens 3–10, anther cells not back to back.
25a. Ovules numerous on each placenta; fruit a capsule ..... 165. **Pittosporaceae**
25b. Ovules 1–2 on each placenta; fruit otherwise.
26a. Flowers usually 4-merous; fruit a berry-like drupe ..... 228. **Aquifoliaceae**
26b. Flowers 5-merous; fruit drupaceous, not berry-like ..... 236. **Pandaceae**

## Key 4

1a. Flowers zygomorphic.
2a. Ovary of 1 carpel with marginal placentation; fruit a legume.
3a. Adaxial petal interior (ascending imbrication) ..... 183. **Caesalpiniaceae**
3b. Adaxial petal exterior (descending imbrication) ..... 185. **Fabaceae**
2b. Ovary of 2 or more carpel; fruit various, never a legume.
4a. Stamens and petals 5; carpels 3 ..... 118. **Violaceae**
4b. Stamens and petals 4 or 6; carpels 2.
5a. Ovary bone on a gynophore; stamens usually exserted ..... 136. **Capparaceae**
5b. Ovary usually sessile; stamens not exserted ..... 39. **Fumariaceae**
1b. Flowers actinomorphic.
6a. Petals and stamens numerous.
7a. Trees or shrubs; leaves not succulent ..... 110. **Flacourtiaceae**
7b. Herbs or subshrubs; leaves succulent ..... 70. **Aizoaceae**
6b. Petals and stamens definite.
8a. Petals 5; stamens 10; leaves imparipinnate ..... 160. **Connaraceae**
8b. Combination of characters not as above.
9a. Trees or shrubs; leaves scaly ..... 119. **Tamaricaceae**
9b. Herbs or climbers; leaves not scaly.
10a. Leaves insectivorous by means of glandular hairs ..... 109. **Droseraceae**
10b. Leaves not insectivorous.
11a. Climbers with tendrils; stamens 5; corona present; fruit a berry ..... 125. **Passifloraceae**
11b. Herbs; stamens 2+4; corona absent; fruit a silique ..... 137. **Brassicaceae**

## Key 5

1a. Petals and stamens numerous; plants succulent.
2a. Stem succulents; spiny and with much reduced or obsolete leaves; placentation parietal ..... 72. **Cactaceae**
2b. Leaf succulents, without spines; placentation axile or parietal ..... 70. **Aizoaceae**
1b. Petals and stamens definite, usually less than 10; plants usually not succulent.
3a. Anthers opening by a single (rarely 2) pore; stamens geniculate; leaves with 3 parallel main veins ..... 203. **Melastomataceae**
3b. Anthers opening by slits or valves; stamens not geniculate; leaves with reticulate venation.
4a. Placentation marginal; fruit a legume.
5a. Adaxial petal interior (ascending imbrication) or petal 1 or absent; seed usually with a straight radicle ..... 184. **Caesalpiniaceae**
5b. Adaxial petal exterior (descending imbrication); seed usually with a incurved radicle ..... 185. **Fabaceae**

4b. Placentation not marginal; fruit never a legume.
6a. Placentation prietal, placentae sometime intrusive.
7a. Herbaceous climbers with tendrils; flowers unisexual....130. **Cucurbitaceae**
7b. Herbs, shrubs or woody climers, without tendrils; flowers usually bisexual.
8a. Leaves digitately 3–5-foliate; carpel 1 with 1 pendulous ovule ....18. **Hernandiaceae**
8b. Leaves simple; carpels more than 1, each with many ovules.
9a. Perennial herbs; leaves radical....176. **Saxifragaceae**
9b. Shrubs; leaves opposite or alternate.
10a. Stamens 8 or more; leaves opposite ....167. **Hydrangeaceae**
10b. Stamens 5; leaves alternate....169. **Grossulariaceae**
6b. Placentation axile, basal, apical or free-central.
11a. Placentation free-central; fruit a capsule ....78. **Caryophyllaceae**
11b. Placentation axile, basal or apical.
12a. Stamens antipetalous; trees or shrubs with simple leaves....238. **Rhamnaceae**
12b. Stamens antisepalous or 2 × as many as petals; herbaceous or woody, leaves simple to compound.
13a. Flowers in umbels, sometimes condensed into heads; leaves usually compound; ovary inferior.
14a. Fruit a schizocarp, splitting into 2 mericarps; flowers usually bisexual; petals imbricate; herbs without stellate hairs....274. **Umbelliferae**
14b. Fruit a berry; flowers often unisexual; petals valvate; plants woody, often with stellate hairs....273. **Araliaceae**
13b. Flowers not in umbels; leaves usually simple; ovary superior or inferior.
15a. Style 1.
16a. Ovary 1-locular with 2–5 ovules; fruit leathery or drupe-like,1-seeded....204. **Combretaceae**
16b. Ovary (1–)2–5-locular, ovules various ; fruit not as above.
17a. Ovules solitary in each locule.
18a. Stamens with swollen, villous filaments; petals recurved....206. **Alangiaceae**
18b. Stamens without swollen, villous filaments; petals not recurved....207. **Cornaceae**
17b. Ovules 2–numerous in each locule.
19a. Ovary inferior....201. **Onagraceae**
19b. Ovary superior.
20a. Calyx tube not prominently ribbed; seeds arillate; mostly trees, shrubs or climbers....223. **Celastraceae**
20b. Calyx tube prominently ribbed; seeds not arillate; mostly herbaceous....192. **Lythraceae**
15b. Style more than 1, often 2 divergent.
21a. Fruit a group of samaras; trees or shrubs with opposite lobed or compound leaves....259. **Aceraceae**
21b. Combination of characters not as above.
22a. Trees or small trees, flowers in heads or short, condensed spikes....45. **Hamamelidaceae**
22b. Shrubs or herbs, flowers in corymbs or panicles.
23a. Stoloniferous herbs; leaves radical....176. **Saxifragaceae**
23b. Shrubs; leaves opposite or alternate.
24a. Leaves opposite, rarely whorled....167. **Hydrangeaceae**
24b. Leaves alternate....169. **Grossulariaceae**

## Key 6

1a. Root parasites, lacking chlorophyll....218. **Balanophoraceae**
1b. Free-living plants.
2a. Ovary 3-locular; styles 3.
3a. Leaves with sheathing, membranous stipules; perianth segments 6; fruit a nut ....79. **Polygonaceae**
3b. Combination of characters not as above.
4a. Fruit schizocarpic; sap often milky; styles usually divided; seeds usually carunculate....237. **Euphorbiaceae**
4b. Fruit a loculicidal capsule; sap not milky; styles undivided; seeds not carunculate....234. **Buxaceae**
2b. Ovary 1, 2- or 4-locular; styles 1–2.
5a. Stamens 2, anther cells back to back....298. **Oleaceae**
5b. Stamens more than 2, anther cells not back to back.
6a. Leaves forming insectivorous pitcher....108. **Nepenthaceae**
6b. Leaves neither insectivorous nor pitcher-like.
7a. Placentation parietal; stamens numerous; fruit a berry or capsule ....110. **Flacourtiaceae**
7b. Combination of characters not as above.
8a. Trees, shrubs or climbers; ovules apical.
9a. Ovules 4, of which only 1 develops; flowers in axillary racemes....47. **Daphniphyllaceae**

9b. Ovule 1, flowers not in axillary racemes.
10a. Sap watery; fruit a drupe ..... 51. **Ulmaceae**
10b. Sap milky; fruit a syncarp ..... 53. **Moraceae**
8b. Herbs or shrubs; ovules not apical.
11a. Plants usually with cystoliths; leaves often 3-veined; stamens incurved in bud ..... 55. **Urticaceae**
11b. Plants without cystoliths; leaves not 3-veined; stamens erect in bud.
12a. Perianth scarious; stamens often connate below ..... 74. **Amaranthaceae**
12b. Perianth greenish or absent; stamens free.
13a. Leaves all opposite; fruit splitting into 2 mericarps ..... 237. **Euphorbiaceae**
13b. Leaves alternate, at least above; fruit not as above.
14a. Ovary septate, 4-ovuled; leaves leathery ..... 234. **Buxaceae**
14b. Ovary unilocular, 1-ovuled; leaves not leathery.
15a. Leaves stipulate; ovule apical ..... 52. **Cannabaceae**
15b. Leaves exstipulate; ovule basal ..... 73. **Chenopodiaceae**

## Key 7

1a. Trees or aromatic shrubs.
2a. Leaves with pellucid, aromatic glands; anthers opening by valves ..... 17. **Lauraceae**
2b. Leaves without pellucid, aromatic glands; anthers opening by slits.
3a. Calyx lobes usually 5; stamens 10–numerous; ovary 2–5-locular, with 2–many ovules in each locule .. 102. **Tiliaceae**
3b. Calyx lobes 4–5; stamens as many; ovary 1-locular with 1 ovule ..... 51. **Ulmaceae**
1b. Herbs, climbers or non-aromatic shrubs.
4a. Perianth absent; flowers borne in a continuous fleshy spike ..... 21. **Piperaceae**
4b. Combination of characters not as above.
5a. Very tiny aquatics of running water, resembling algae, mosses or hepatics ..... 188. **Podostemaceae**
5b. Combination of characters not as above.
6a. Leaves with sheathing, membranous stipules; fruit often a 3-sided nut ..... 79. **Polygonaceae**
6b. Leaves exstipules; fruit not as above.
7a. Ovary of 1 carpel, 1-seeded; perianth usually petaloid, bracts often calyx-like ..... 69. **Nyctaginaceae**
7b. Ovary of 2 or more carpels, 1–many-seeded; perianth not petaloid.
8a. Ovules numerous on axile placenta; leaves opposite or whorled ..... 77. **Molluginaceae**
8b. Ovules solitary, basal; leaves often alternate.
9a. Perianth green, membranous or 0; stamens free ..... 73. **Chenopodiaceae**
9b. Perianth scarious; stamens often connate below ..... 74. **Amaranthaceae**

## Key 8

1a. Stem-parasitic shrubs.
2a. Flowers bisexual; calycule present; perianth petaloid ..... 215. **Loranthaceae**
2b. Flowers unisexual; calycule absent; perianth greenish, inconspicuous ..... 216. **Viscaceae**
1b. Terrestrial free-living plants.
3a. Perianth absent; flowers in spikes.
4a. Ovary inferior, 1-locular with 1 ovule; leaves opposite, petioles connate at the base ..... 19. **Chloranthaceae**
4b. Ovary superior, 3 carpellate with 3–8 ovules; leaves alternate, petioles not connate at the base ..... 20. **Saururaceae**
3b. Perianth present; flowers usually not in spikes.
5a. Plants covered with silvery scurfy scales; fruit enclosed in a fleshy perianth tube ..... 186. **Elaeagnaceae**
5b. Plants without silvery scurfy scales; fruit not as above.
6a. Perianth tube cylindric, gibbous at the base; stamens 4, inserted on the perianth-segments ..... 187. **Proteaceae**
6b. Combination characters not as above.
7a. Stamens 4–5, opposite to the perianth-segments; ovules suspended from a central placental column; scandent shrubs or herbs with trinerved or linear leaves ..... 213. **Santalaceae**
7b. Combination of characters not as above.
8a. Flowers zygomorphic or 3-lobed.
9a. Perianth-segments free; ovary 3-locular; leaf base oblique ..... 133. **Begoniaceae**
9b. Perianth tubular or united at base; ovary usually 6-locular; leaf base symmetrical ..... 22. **Aristolochiaceae**
8b. Flowers actinomorphic.
10a. Herbaceous climbers; stems and leaves ± fleshy ..... 76. **Basellaceae**
10b. Trees, shrubs or herbs; stems and leaves not fleshy.
11a. Ovary inferior.
12a. Leaves alternate; perianth-segments thickening in fruit; ovary 1-locular with 1 ovule ..... 73. **Chenopodiaceae**

12b. Leaves opposite or whorled; perianth-segments not thickened in fruit; ovary usually 4-locular, each locule with 1 ovule ..... 189. **Haloragaceae**

11b. Ovary superior.

13a. Leaves aromatic, dotted with pellucid glands; anthers opening by valves ..... 17. **Lauraceae**

13b. Leaves neither aromatic nor gland-dotted; anthers not opening by valves.

14a. Perianth of 1 whorl or petals recduced to scales; stamens 8–10 borne at differentlevels in the perianth-tube ..... 197. **Thymelaeaceae**

14b. Perianth of 2 whorls; petals conspicuous, inserted at calyx-tube; stamens not as above ..... 192. **Lythraceae**

## Key 9

1a. Branchlets jointed; leaves reduced to whorls of scales ..... 66. **Casuarinaceae**

1b. Branchlets not jointed; leaves expanded.

2a. Leaves pinnate ..... 59. **Juglandaceae**

2b. Leaves simple or lobed.

3a. Ovules many, parietal; seeds many, woolly; male catkins erect with the stamens exserted beyond the bracts, or pendulous with deciduous, laciniate bracts ..... 134. **Salicaceae**

3b. Ovules solitary or few; seeds few, glabrous; male catkins not as above.

4a. Leaves exstipulate, with golden, aromatic glands ..... 60. **Myricaceae**

4b. Leaves neither gland-dotted nor aromatic, stipulate or not.

5a. Styles 3, often divided; fruit schizocarpic; seeds carunculate ..... 237. **Euphorbiaceae**

5b. Style 1–6, simple; fruit not schizocarpic;seeds not carunculate.

6a. Plants without milky sap; fruit a nut surrounded or enclosed by a scaly cupule ..... 63. **Fagaceae**

6b. Plants with milky sap; fruit not as above ..... 53. **Moraceae**

## Key 10

1a. Stamens 2, anther cells back to back; plants woody ..... 298. **Oleaceae**

1b. Combination of characters not as above.

2a. Carpels several, ± free; plants always succulent ..... 174. **Crassulaceae**

2b. Ovary syncarpous, or at least with the styles united; rarely 1-carpellate; plants seldom succulent.

3a. Parasites, without chlorophyll ..... 284. **Cuscutaceae**

3b. Terrestrial free-living plants, with chlorophyll.

4a. Corolla scarious, 4-lobed; stamens 4, exserted; leaves basal with parallel veins ..... 296. **Plantaginaceae**

4b. Combination of characters not as above.

5a. Sap milky; leaves alternate; stamens antipetalous or at least 2 × the number of corolla lobes.

6a. Flowers bisexual; leaves entire; fruit a hard, few-seeded berry ..... 151. **Sapotaceae**

6b. Flowers mostly unisexual; leaves palmately lobed; fruit a pepo-like berry ..... 127. **Caricaceae**

5b. Combination of characters not as above.

7a. Stamens antipetalous; placentation axile, free-central or basal.

8a. Plants usually with leaf-opposed tendrils; petals calyptrate; placentation axile ..... 240. **Vitaceae**

8b. plants without tendrils; petals not calyptrate; placentation free-central or basal.

9a. Placentation basal; ovule 1, pendulous on long, curved funicle; fruit 1-seeded ..... 80. **Plumbaginaceae**

9b. Placentation free-central; ovules usually many though fruit often 1-seeded.

10a. Shrubs or small trees; fruit a 1-seeded drupe or a many-seeded berry ..... 157. **Myrsinaceae**

10b. Herbs, rarely subshrubs; fruit a many-seeded capsule ..... 158. **Primulaceae**

7b. Stamens antisepalous or more numerous or fewer than corolla lobes; placentation various, never free-central.

11a. Leaves bipinnate or phyllodic; fruit a legume ..... 183. **Mimosaceae**

11b. Combination of characters not as above.

12a. Anthers opening by pores.

13a. Stamens numerous ..... 89. **Actinidiaceae**

13b. Stamens 5, 8 or 10.

14a. Stamens hypogynous, often 2 × the number of corolla lobes ..... 147. **Ericaceae**

14b. Stamens epipetalous, usually 5, alternating with the corolla lobes ..... 282. **Solanaceae**

12b. Anthers opening lengthwise.

15a. Stamens at least 2 × the number of corolla lobes.

16a. Leaves stipulate; stamens united, forming a long tube around the style ..... 105. **Malvaceae**

16b. Leaves exstipulate; stamens free or shortly united.
17a. Flowers unisexual; fruit fleshy ..... 152. **Ebenaceae**
17b. Flowers bisexual; fruit a capsule ..... 88. **Theaceae**
15b. Stamens as many as corolla lobes or fewer.
18a. Leaves alternate or all basal; carpels never 2 and almost free with single terminal style.
19a. Woody, often evergreen; stigma sessile or nearly so.
20a. Flowers usually 4-merous; ovary 2–several-locular, with 1–2 ovule in each locule ..... 228. **Aquifoliaceae**
20b. Woody climbers (in ours); flowers 5-merous; ovary unilocular with 1 ovule ..... 229. **Icacinaceae**
19b. Combination of characters not as above.
21a. Flowers in scorpioid cymes; style usually gynobasic; fruit of 4 nutlets, rarely a 1–4-seeded drupe ..... 290. **Boraginaceae**
21b. Flowers not in scorpioid cymes; style terminal; fruit not as above.
22a. Aquatic plants with peltate leaves ..... 286. **Menyanthaceae**
22b. Combination of characters not as above.
23a. Ovules 1–2 per locule.
24a. Sepals free; corolla lobes contorted and infolded, rarely imbricate; herbaceous twiners ..... 283. **Convolvulaceae**
24b. Sepals connate; corolla lobes imbricate; trees or shrubs ..... 290. **Boraginaceae**
23b. Ovules 3–numerous per locule.
25a. Corolla lobes usually folded, contorted or valvate; septum often oblique; internal phloem present ..... 282. **Solanaceae**
25b. Corolla lobes imbricate; septum horizontal; internal phloem absent ..... 299. **Scrophulariaceae**
18b. Leaves opposite or whorled, alternate only when carpels 2 and almost free with single terminal style.
26a. Milky sap usually present; fruit often of 2 'follicles' and seeds with silky appendages.
27a. Pollen granular, transferred directly from anthers; corona absent; corolla lobes contorted in bud ..... 278. **Apocynaceae**
27b. Pollen often in pollinia, transferred by means of special translator; corona usually present; corolla lobes contorted or valvate in bud ..... 279. **Asclepiadaceae**
26b. Milky sap absent; fruit a capsule or fleshy; seeds without silky appendages.
28a. Placentation parietal; carpels 2 ..... 276. **Gentianaceae**
28b. Placentation axile; carpels 2–3.
29a. Stamens fewer than corolla lobes ..... 291. **Verbenaceae**
29b. Stamens as many as corolla lobes.
30a. Corolla (4–)5-lobed; stellate and/or glandular hairs absent; internal phloem present ..... 275. **Loganiaceae**
30b. Corolla 4-lobed; stellate and/or glandular hairs present; internal phloem absent ..... 297. **Buddlejaceae**

## Key 11

1a. Stamens more numerous than the corolla lobes, or anthers opening by pores.
2a. Anthers opening by pores; leaves undivided; ovary syncarpous.
3a. Two lateral sepals petaloid; filaments united ..... 250. **Polygalaceae**
3b. No sepals petaloid; filaments free ..... 147. **Ericaceae**
2b. Anthers opening by slits; leaves dissected or compound; ovary a legume.
4a. Adaxial petal interior (ascending imbrication) or petal 1 or absent ..... 184. **Caesalpiniaceae**
4b. Adaxial petal exterior (descending imbrication) ..... 185. **Fabaceae**
1b. Stamens as many as corolla lobes or fewer, anthers not opening by pores.
5a. Stamens as many as corolla lobes.
6a. Corolla contorted; stamens 5, equal; leaves opposite; climbers ..... 275. **Loganiaceae**
6b. Corolla imbricate; stamens 4 or unequal; not climbers ..... 299. **Scrophulariaceae**

5b. Stamens 4 or 2, fewer than corolla lobes.
7a. Placentation axile; ovules 4 or many.
8a. Ovules numerous but not superposed (not in a vertical row in each locule).
9a. Seeds winged; trees, shrubs or climbers with opposite, compound leaves ..... 306. **Bignoniaceae**
9b. Seeds usually wingless; mainly herbs or shrubs with simple leaves.
10a. Corolla lobes variously imbricate in bud; septum horizontal; leaves opposite or alternate; internal phloem absent ..... 299. **Scrophulariaceae**
10b. Corolla lobes usually folded, contorted or valvate in bud; septum usually oblique; leaves alternate; internal phloem present ..... 282. **Solanaceae**
8b. Ovules 4, or more numerous and superposed.
11a. Leaves all alternate, often studded with resinous glands; woody ..... 301. **Myoporaceae**
11b. At least the lower leaves opposite or whorled; herbaceous or woody.
12a. Fruit a capsule; ovules 4–many, usually superposed.
13a. Leaves all opposite, often with cystoliths; pedicels without swollen glands at the base; capsule opening elastically, seeds usually on hooked funicles ..... 304. **Acanthaceae**
13b. At least upper leaves alternate, without cystoliths; pedicels with swollen glands at the base; capsule not elastic, seeds not on hooked funicles ..... 305. **Pedaliaceae**
12b. Fruit not a capsule; ovules 4, side by side.
14a. Style gynobasic, or if terminal then corolla with a reduced upper lip; fruit usually of 4 one-seeded nutlets; corolla often strongly bilabiate; calyx often 2-lipped ..... 292. **Labiatae**
14b. Style terminal; upper lip of corolla well-developed; fruit usually a berry or drupe; corolla often less strongly zygomorphic; calyx ± actinomorphic ..... 291. **Verbenaceae**
7b. Placentation parietal, free-central, basal or apical; ovules many or 1–2.
15a. Ovules 4, side by side ..... 291. **Verbenaceae**
15b. Ovules many.
16a. Placentation free-central; corolla spurred ..... 308. **Lentibulariaceae**
16b. Placentation parietal; corolla not spurred, rarely saccate.
17a. Leaves scale-like, never green; root parasites ..... 302. **Orobanchaceae**
17b. Leaves green, expanded; free-living plants.
18a. Seeds winged; mainly climbers with opposite, compound leaves ..... 306. **Bignoniaceae**
18b. Seeds not winged; herbs or subshrubs with simple leaves ..... 303. **Gesneriaceae**

## Key 12

1a. Inflorescence an involucrate capitulum; ovules solitary ..... 323. **Compositae**
1b. Inflorescence and ovules not as above.
2a. Stamens 2 united with the style into a sensitive column; leaves linear ..... 312. **Stylidiaceae**
2b. Combination of characters not as above.
3a. Leaves alternate or all basal.
4a. Anthers opening by pores; fruit a berry or drupe ..... 147. **Ericaceae**
4b. Anthers opening by slits; fruit various.
5a. Tendrillar climbers with unisexual flowers; stamens 1–5; placentation parietal; fruit berry-like ..... 130. **Cucurbitaceae**
5b. Combination of character not as above.
6a. Stamens 10–many, ± united at the base; trees or shrubs.
7a. Leaves gland-dotted, smelling of eucalyptus; corolla calyptrate ..... 199. **Myrtaceae**
7b. Combination of characters not as above.
8a. Plant with stellate hairs or peltate scales; stamens 1-seriate; anthers linear ..... 153. **Styracaceae**
8b. Plants glabrous or pubescent; stamens in more than one series; anthers broadly ovate or rounded ..... 155. **Symplocaceae**
6b. Stamens 4–5(–8), epipetalous; herbs or shrubs.
9a. Stigma surrounded by a sheath ..... 315. **Goodeniaceae**
9b. Stigma not surrounded by a sheath.
10a. Stamens epipetalous; fruit a drupe; woody ..... 211. **Olacaceae**
10b. Stamens ± free from corolla; fruit a capsule; herbs ..... 311. **Campanulaceae**
3b. Leaves opposite or appearing whorled.
11a. Placentation parietal; stamens 2 or 4 and paired ..... 303. **Gesneriaceae**
11b. Placentation axile or apical; stamens 1 or more, not paired.
12a. Stipules conspicuous, sometimes leafy; ovary usually 2-locular; flowers usually actinomorphic; fruit capsular, fleshy or schizocarpic ..... 316. **Rubiaceae**
12b. Stipules usually absent, when present not as above; ovary (2–)3(–5)-locular, sometimes only 1 locule fertile; flowers often zygomorphic, sometimes twinned; fruit a berry or drupe ..... 318. **Caprifoliaceae**

# 6. MAGNOLIACEAE 木蘭科

XIA Nian-he 夏念和

Deciduous or evergreen trees or shrubs, usually hairy, rarely glabrous; buds enclosed by hooded stipules. Leaves simple, alternate, sometimes fascicled on apex of twigs and becoming pseudoverticillate, entire, rarely lobed, penninerved, petioled; stipules adnate to petioles or free from petioles, caducous, remaining stipular scars on twigs or petioles. Flowers large, solitary, rarely 2–3 in thyrses, bisexual, rarely unisexual, insect-pollinated; spathose bracts 1 to several below the tepals; tepals 6–9(–45), in 2 to many whorls, 3(–6) in each whorl, usually fleshy, sometimes the outer ones nearly leathery, or reducing to calyx-like; pistils and stamens many, distinct, spirally arranged on elongated torus; androecium usually at the lower part of torus; anthers linear, dehiscing by longitudinal slits, filaments thick and short, sometimes elongated, connectives usually exserted and forming a long or short tip; gynoecium at upper part of torus, sessile or gynophored; carpels folded, usually distinct, sometimes connate at base or rarely connate completely; ovules 2–14 in each carpel, biseriate on ventral sutures. Aggregate apocarpus or sometimes syncarpous; mature follicles woody, bony or leathery, usually dehiscing along dorsal and/or ventral sutures, rarely connate to each other, thick woody or fleshy, irregularly dehiscing; seeds 1–12 in each fruiting carpel, pendulous on a filiform and elastic funiculus, exserted to the follicles; testa fleshy, red, endotesta bony; mature carpels rarely samaroid, seeds connate to endotesta; embryo minute; endosperm copious, oily.

15 genera, ca. 300 species, mainly distributed in SE Asia and SE N America, C America, Antilles Islands, Mexico, Columbia, Venezuela, E Brasil; 11 genera, 107 species and one subspecies in China; four genera and 14 species in Hong Kong.

1a. Flowers terminal on axillary spurs ..... 1. *Michelia*
1b. Flowers terminal on normal leafy branches.
  2a. Deciduous plants; flowers appearing before or at the same time with leaves ..... 2. *Yulania*
  2b. Evergreen plants.
    3a. Ovules 2 in each carpel ..... 3. *Magnolia*
    3b. Ovules 3–12 in each carpel ..... 4. *Manglietia*

## 1. Michelia L. 含笑屬

Evergreen trees or shrubs. Leaves leathery, simple, alternate, entire; stipules membranous, hooded, 2-valved, adnate or distinct to petioles, caducous, remaining an annular scar on twigs or, if adnate to petioles, a linear scar on petioles. Young leaves erect, folded in buds. Flowers bisexual, usually fragrant, solitary and axillary, subtended by 2–4 deciduous spathose bracts. Tepals 6–21, in whorls of 3 or 6, subequal, or rarely the inner ones much smaller than the outer ones; stamens numerous, connectives elongated, dehiscing laterally or nearly laterally, filaments short or long, connectives exserted and forming a long or short tip, rarely not exserted; gynoecium stipitate, carpels numerous or few, adaxial base inserted on rachis, upper part free, usually partly undeveloped; ovules 2 to several in each carpel. Aggregate a syncarp, usually spike-like; mature follicles leathery or woody, completely persistent on fruiting axis, sessile or short-stalked, dehiscing into 2 valves along dorsal sutures or along both dorsal and ventral sutures. Seeds 2 to several, red or brown.

About 50 species, distributed in tropical, subtropical Asia and temperate China, S Japan; 41 species in China, mainly in SW to E China; six species (two cultivated) in Hong Kong.

1a. Stipules adnate to petioles, with stipular scars on petioles; tepals subequal.
  2a. Petioles less than 5 mm; tepals 6 (rarely 12–17) ..... 1. *M. figo*
  2b. Petioles longer than 5 mm; tepals 9–13, in 3–4 whorls, outer ones larger.
    3a. Flowers yellow; stipular scars longer than 1/2 of petioles ..... 2. *M. champaca*
    3b. Flowers white; stipular scars at most 1/2 the length of petioles.
      4a. Young branchlets and buds densely pale yellowish brown puberulous, glabrescent later ..... 3. *M. alba*
      4b. Branchlets, buds, petioles and abaxial surface of leaves yellowish brown strigose ..... 4. *M. odora*
1b. Stipules free from petioles, without stipular scars on petioles; tepals equal or unequal.
  5a. Tepals 6, in 2 whorls; leaves not glaucous abaxially ..... 5. *M. chapensis*
  5b. Tepals 9, in 3 whorls; leaves glaucous abaxially ..... 6. *M. maudiae*

**1. Michelia figo** (Lour.) Spreng. 含笑 **(Photo 37)**

Syst. Veg. 2: 643. 1825; FGZ 82. 1956; FHN 1: 227. 1964; FGD 1: 12, fig. 10: 1–6. 1987; FRPS 30(1): 165, pl. 43: 1–6. 1996.

*Liriodendron figo* Lour. Fl. Cochinch. 1: 347. 1790.

*Magnolia fuscata* Andr., Bot. Repos. 4: t. 229. 1802.

*Magnolia figo* (Lour.) DC., Syst. Nat. 1: 460. 1817.

*Michelia fuscata* Bl. ex Wall., Fl. Javae 19-20: 8. 1829; FKH 28. 1912.

*Liriopsis fuscata* (Andr.) Spach, Hist. Nat. Veg. 7: 461. 1839.

Evergreen shrub, 2–3 m tall, much branched; buds, young twigs, petioles and peduncles densely yellowish brown-tomentose. Stipular scars reached petiole apex. Petioles 2–4 mm. Leaves narrowly elliptic or obovate-elliptic, 4–10 × 1.8–4.5 cm, base cuneate or broadly cuneate, apex obtusely acute, adaxially glossy and glabrous, abaxially covered with brown appressed hairs on midvein, other parts glabrescent. Flowers erect, sweet fragrant; tepals 6, fleshy, thick, long-elliptic, 1.2–2.0 × 0.6–1.1 cm, pale yellow, margin

sometimes red or purple; stamens 7–8 mm, connectives exserted and forming a sharp tip; gynoecium glabrous, ca. 7 mm, exceeding androecium; gynoecium stalk ca. 6 mm, pale yellow tomentose. Aggregate fruit 2–3.5 cm; follicles ovoid or globose, apex beaked.

Locality: Widely cultivated in gardens. *Y. W. Lam 204; F. W. Xing 8626.*

Distribution: S China, widely cultivated.

Ecology: Flowering: Mar.–May; fruiting: Jul. –Aug.

Uses: Ornamental.

**2. Michelia champaca** L. 黃蘭 **(Photo 38)**

Sp. Pl. 536. 1753; FGZ 81. 1956; FHN 1: 227. 1964; FGD 1: 12, fig. 9: 1–7. 1987; FRPS 30(1): 157, fig. 40: 1–7. 1996.

Evergreen tree, up to 10 m or taller; buds, young twigs, young leaves and petioles covered with pale yellow appressed hairs. Stipular scars exceeding middle of petioles. Petioles 2–4 cm. Leaves lanceolate-ovate or lanceolate-long elliptic, 10–20(–25) × 4.5–9 cm, base broadly cuneate or cuneate, apex long acuminate or subcaudate, abaxially slightly puberulous. Flowers yellow, fragrant, tepals 15–20, oblanceolate, 2–4 × 0.4–0.5 cm; connectives exserted and forming a long tip; gynoecium hairy; gynoecium stalk ca. 3 mm. Aggregate fruit 7–15 cm; follicles obovoid-ellipsoid, 1–1.5 cm, tuberculate; seeds 2–4, rugose.

Locality: Cultivated in gardens. *Y. S. Lau 2617; HK sheet 820.*

Distribution: Xizang, Yunnan, cultivated in Fujian, Guangdong, Guangxi, Hainan and Taiwan; India, Nepal, Myanmar, Vietnam.

Ecology: Flowering: Jun.–Jul.; fruiting: Sep.–Oct.

Uses: Ornamental.

**3. Michelia × alba** DC. 白蘭 **(Photo 39)**

Syst. 1: 449. 1818; FGZ 81, fig. 23. 1956; FHN 1: 226. 1964; FGD 1: 12, fig. 9: 8–9. 1987; FRPS 30(1): 159, fig. 40: 8–14. 1996.

Evergreen tree, up to 17 m tall; bark grey; young twigs and buds densely covered with pale yellowish white hairs. Stipular scars nearly reached middle of petioles. Petioles 1.5–2 cm, sparsely puberulous. Leaves long-elliptic or lanceolate-elliptic, 10–27 × 4–9.5 cm, thinly leathery, base cuneate, apex long acuminate or caudate-acuminate, adaxially glabrous, abaxially sparsely puberulous, reticulations of veins very conspicuous on both surfaces when dry. Flowers white, very fragrant; tepals 10, lanceolate, 3–4 × 0.3–0.5 cm; connectives exserted and forming a long tip; gynoecium puberulous, gynoecium stalk ca. 4 mm; carpels numerous, usually undeveloped.

Locality: Widely cultivated in gardens. *Y. S. Lau 1840; L. T. Lo 96.*

Distribution: Widely cultivated in S China and tropical and subtropical regions of the world.

Ecology: Flowering: Apr.–Sep.

Uses: Ornamental.

**4. Michelia odora** (Chun) B. L. Chen & Noot. 觀光木 **(Photo 40)**

Ann. Missouri Bot. Gard. 80(4): 1086. 1993.

*Tsoongiodendron odorum* Chun, Acta Phytotax. Sin. 8: 283. 1963; FHN 1: 230. 1964; FGD 1: 20, fig. 20. 1987; FRPS 30(1): 194, pl. 55. 1996.

Evergreen tree, up to 25 m tall; twigs, buds, petioles, abaxial surfaces of leaves and peduncles yellowish brown-strigose. Stipular scars nearly reached middle of petioles. Petioles 1.2–2.5 cm, flattened at base. Leaves obovate-elliptic, 8–17 × 3.5–7 cm, base cuneate, apex acute or obtuse, adaxially green and glossy; lateral veins 10–12 on each side of midvein; midvein, lateral veins and reticulations impressed adaxially. Spathose bract dehiscing along one side, pubescent. Peduncles 6 mm, with 1 bract scar. Flowers fragrant; tepals ivory-yellow, dotted with red, narrowly obovate-elliptic, outer ones largest, 1.7–2 × 0.7–0.8 cm, innermost ones 1.5–1.6 × 0.5 cm; stamens 35–45, 7.5–8.5 mm, filaments white or reddish, 2–3 mm; carpels 9–13, narrowly ovoid, densely appressed pubescent, styles subulate, red, ca. 2 mm, ventral sutures conspicuous; gynophore stout, ca. 2 mm, sulcate, densely strigose. Aggregate fruit long-ellipsoid, sometimes globose because of upper carpels aborted, 13 × [illegible] cm, pericarp olive-green, dark brown when dried, markedly yellow-dotted; valves thick, 1–2 cm; fruiting: peduncle 1–2 × 1–2 cm; seeds 4–6 in each carpel, ellipsoid or triangular-obovoid, ca. 1.5 × 0.8 cm.

Locality: A rare species in Hong Kong, only found in Tai Mo Shan. *F. W. Xing 7898, 8928; Y. W. Lam 199.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian.

Ecology: Forests. Flowering: Mar.; fruiting: Oct.–Dec.

Uses: Ornamental.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

**5. Michelia chapensis** Dandy 樂昌含笑(景烈含笑) **(Photo 41)**

Journ. Bot. 67: 222. 1929; FGD 1: 17, fig. 16. 1987; FRPS 30(1): 170, pl. 45: 7–9. 1996.

*Michelia tsoi* Dandy, J. Bot. 68: 213. 1930.

Tree, up to 15–30 m tall; bark grey to dark brown; twigs glabrous or greyish puberulous on nodes when young. Petioles 1.5–2.5 cm, without stipular scar, adaxially furrowed, puberulous when young, glabrescent. Leaves obovate, narrowly obovate or oblong-obovate, 6.5–15(–16) × 3.5–6.5(–7) cm, thinly leathery, base cuneate or broadly cuneate, apex abruptly short-acuminate, tip blunt, adaxially deep green and glossy; lateral veins 9–12(15) on each side of midvein. Peduncles 0.4–1 cm, puberulous, with 2–5 bract scar. Flowers fragrant; tepals 6, pale yellow, in 2 whorls, outer 3 obovate-elliptic, ca. 3 × 1.5 cm; inner 3 narrower; stamens 1.7–2 cm, anthers 1.1–1.5 cm, connectives exserted and forming a 1 mm mucro; gynoecium narrowly cylindrical, ca. 1.5 cm; gynophore ca. 7 mm, densely covered

with silvery appressed hairs; carpels ovoid, ca. 2 mm, styles ca. 1.5 mm; ovules 6 in each carpel. Aggregate fruit ca. 10 cm, fruiting peduncle ca. 2 mm; follicles ellipsoid or ovoid, 1–1.5 × 1 cm, base broad, apex with short and curved tip; seeds red, ovoid or ellipsoid-ovoid, ca. 1 × 0.6 cm.

Locality: Tai Mo Shan, Ng Tung Chai. *N. H. Li 56; G. Barretto 283.*

Distribution: Jiangxi, Hunan, Guangdong, Guangxi; Vietnam.

Ecology: Forests. Flowering: Mar.–Apr.; fruiting: Aug.–Sep.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

**6. Michelia maudiae** Dunn

深山含笑(莫氏含笑) **(Fig. 12; Photo 42)**

J. Linn. Soc. Bot. 38: 353. 1908; FKH 28. 1912; FGD 1: 14, fig. 12. 1987; FRPS 30(1): 179. 1996.

*Michelia chingii* W. C. Cheng, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 10: 110. 1936.

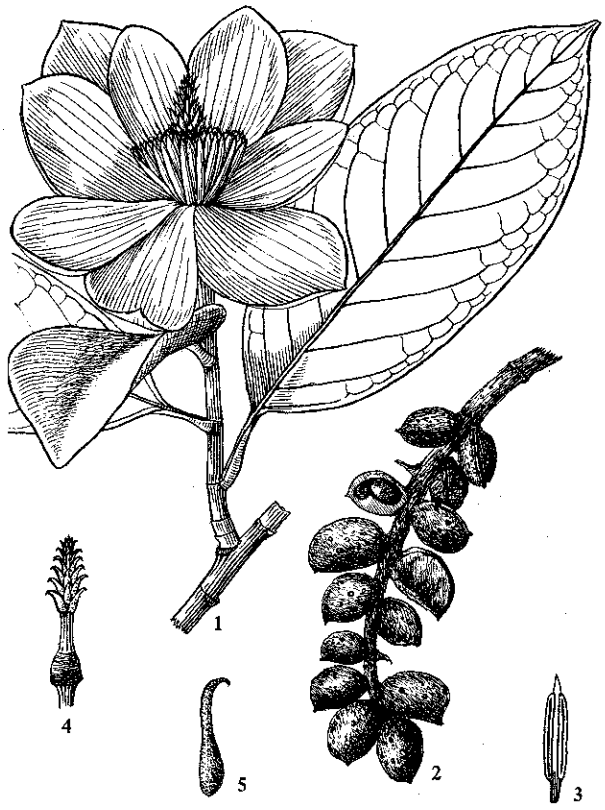



**Figure 12.** *Michelia maudiae* Dunn
*1.* flowering branch; *2.* aggregate fruit; *3.* stamen; *4.* gynoecium; *5.* carpel. (drwan by H. P. Yu)

Tree, up to 20 m tall, glabrous. Buds, young twigs, abaxial surfaces of leaves, bracts white farinose. Petioles 1–3 cm, without stipular scars. Leaves oblong-elliptic, rarely elliptic-oblong, 7–18 × 3.5–8.5 cm, leathery, base cuneate, broadly cuneate or obtuse, apex abruptly short-acuminate, tip blunt, adaxially deep green and glossy, abaxially greyish green and glaucous; lateral veins 7–12 on each side of midvein. Peduncles green, with 3 annular bract scars; spathose bracts pale brown, thinly leathery, ca. 3 cm. Flowers fragrant; tepals 9, purely white, slightly pale red at base, outer 3 obovate, 5–7 × 3.5–4 cm, base clawed, apex acute, inner 6 narrower, nearly spoon-shaped, apex acute; stamens 1.5–2.2 cm, filaments flat, pale purple, ca. 4 mm, connectives exserted and forming a 1–2 mm tip; gynoecium 1.5–1.8 cm; gynophore 5–8 mm; carpels green, narrowly ovoid, 5–6 mm including style. Aggregate fruit 7–15 cm; follicles ellipsoid, obovoid, ovoid, apex obtuse or abruptly mucronate. Seeds red, obliquely ovoid, ca. 1 × 0.5 cm, slightly compressed.

Locality: Lantau Peak, Sunset Peak. *Y. S. Lau 2952; L. T. Lo 316.*

Distribution: Guangdong, Guangxi, Guizhou, Fujian, Zhejiang, Hunan.

Ecology: Forests. Flowering: Feb.–Mar.; fruiting: Sep.–Oct.

Uses: Timber; ornamental.

Notes: The lectotype specimen (*S. T. Dunn s.n.* in Herb. Hongk. No. 2065, *HK sheet 834*) was collected from "Fung Wong Shan" (Lantau Peak), Lantau Island in 1905. Listed in *Rare and Precious Plants of Hong Kong.*

## 2. Yulania Spach. 玉蘭屬

Deciduous trees or shrubs. Leaves alternate, entire or rarely bilobed; stipules membranaceous, adante to petioles, caducous, leaving a scar on petiole; young leaves erect and folded in buds. Flowers solitary, terminal, bisexual, blooming before leaves or at the same time as leaves; tepals 9–21(–45), in whorls of 3–5, subequal, sometimes the outer ones smaller; stamens caducous, anthers dehiscing laterally or introrse-laterally; gynophore absent; carpels free, styles curved outward, 2 ovuled. Fruit an aggregate, usually cylindrical and distorted because of sterile carpels; follicles leathery or ± woody, free, rarely connate, dehiscent along dorsal suture, persistent on receptacles.

About 18 species, distributed in temperate and subtropical SE Asia and N America; 15 species in China; two species cultivated in Hong Kong.

1a. Outer tepals purplish green, sepaloid ..... 1. *Y. liliiflora*
1b. Outer tepals petaloid.
2a. Tree, tepals pure white, sometimes reddish at base abaxially, outer tepals nearly as long as inner ones ..... 2. *Y. denudata*
2b. Small trees, tepals light red or deep red, outer tepals two third the lengh of the inner ones ..... 3. *Y. soulangiana*

**1. Yulania liliiflora** (Desr.) D. L. Fu 紫玉蘭(辛夷)

J. Wuhan Bot. Res. 19(3): 198. 2001

*Lassonia quinquepeta* Buc'hoz, Pl. Nouv. Decouv. 21, t. 19, fig. 2. 1779, *nom. rej. prop.*

*Magnolia liliiflora* Desr. in Lam. Encycl. Bot. 3: 675. 1791, excl. syn. "Mokkwuren fl. albo" Kaempfer; FRPS 30(1): 140. 1996.

*Magnolia quinquipeta* (Buc'hoz) Dandy, J. Bot. 72: 103. 1934.

Deciduous shrub, up to 3 m tall; twigs greenish purple or pale purplish brown. Stipular scars about 1/2 the length of petioles. Petioles 0.8–2 cm. Leaves elliptic-obovate or obovate, 8–18 × 3–10 cm, base gradually narrowed, decurrent along petioles to stipular scars,

apex acute or acuminate, adaxially deep green, sparsely pubescent when young, abaxially greyish green, pubescent along veins; lateral veins 8–10 on each side of midvein. Flowers appearing at the same time with leaves, vase-shaped, erect, slightly fragrant; peduncles thick, hairy; tepals 9–12, outer 3 calyx-like, purplish green, lanceolate, 2–3.5 cm, caducous, the inner two whorls fleshy, adaxially whitish, abaxially purple or purplish red, petaloid, elliptic-obovate, 8–10 × 3–4.5 cm; stamens purplish red, 8–10 mm, anthers ca. 7 mm, dehiscing laterally, connectives exserted and forming a mucro; gynoecium ca. 1.5 cm, pale purple, glabrous. Aggregate fruit dark purplish brown, cylindrical, 7–10 cm; follicles subglobose when mature, apex short-beaked.

Locality: Cultivated in gardens. *HK sheet 35819.*

Distribution: Fujian, Hubei, Sichuan, Yunnan.

Ecology: Flowering: Mar.–Apr.; Fruiting: Aug.–Sep.

Uses: Ornamental, medicinal.

**2. Yulania denudata** (Desr.) D. L. Fu 玉蘭(玉堂春)

J. Wuhan Bot. Res. 19(3): 198. 2001.

*Magnolia denudata* Desr., Lam. Encycl. Bot. 3: 675. 1791, excl. syn.; FGZ 88, fig. 22. 1956; FGD 1: 9. 1987; FRPS 30(1): 131. 1996.

*Lassonia heptapeta* Buc'hoz, Pl. Nouv. Decour. 21, t. 19, fig. 1. 1779, *nom. rej. prop.*

*Magnolia heptapeta* (Buc'hoz) Dandy, J. Bot. 72: 103. 1934.

*Magnolia conspicua* Salisb., Parad. Lond. 1: t. 38. 1806.

*Magnolia yulan* Desf., Hist. Arb. 2: 6. 1809.

Deciduous tree, up to 25 m tall; bark deep grey, rough and fissured; winter buds and peduncles densely covered with pale greyish yellow silky hairs. Stipular scars 1/4–1/3 the length of petioles. Petioles 1–2.5 cm, villose, adaxially narrowly furrowed. Leaves obovate to obovate-elliptic 10–15(–18) × 6–10(–12) cm, papery, gradually narrowed below middle, apex broadly rounded, truncate or slightly emarginate, adaxially deep green, villose when young, pilose on veins in age, abaxially pale green, villose along veins; lateral veins 8–10 on each side of midvein, reticulations of veins conspicuous. Flower appearing before leaves, erect, fragrant, 10–16 cm in diam.; peduncles conspicuously enlarged, densely pale yellow sericeous; tepals 9, white, usually pinkish at base, subequal, oblong-obovate, 6–8 (–10) × 2.5–4.5(–6.5) cm; stamens 7–12 mm, anthers 6–7 mm, dehiscing laterally, connectives ca. 5 mm wide, exserted and forming a mucro; gynoecium pale green, glabrous, cylindrical, 2–2.5 cm; pistils narrowly ovoid, 3–4 mm; style conical 4 mm. Aggregate fruit cylindrical, often curved due to some undeveloped carpels, 12–15 × 3.5–5 cm; follicles thickly woody, brown, white lenticeled; seeds heart-shaped, laterally compressed, ca. 9 × 10 mm; testa red, endotesta black.

Locality: Cultivated in gardens. *HK sheet 799.*

Distribution: Jiangxi, Zhejiang, Hunan, Guizhou.

Ecology: Flowering: Feb.–Mar.; fruiting: Aug.–Sep.

Uses: Ornamental, medicinal (folklore).

**3. Yulania × soulangeana** (Soul.-Bod.) D. L. Fu 二喬木蘭(紫玉蘭) **(Photo 43)**

J. Wuhan Bot. Res. 19(3): 198. 2001.

*Magnolia soulangeana* Soul.-Bod., Mem. Soc. L. Paris 269. 1826; FRPS 30(1): 132. 1996.

Deciduous small tree, 6–10 m tall; twigs glabrous. Stipular scars about 1/3 the length of petioles. Petioles 1–1.5 cm, pubescent. Leaves obovate, 6–15 × 4–7.5 cm, papery, base cuneate, gradually narrowed, apex short acute, adaxially remaining with hairs along midvein at base, abaxially ± pubescent; lateral veins 7–9 on each side of midvein. Flowers appearing before leaves, pale red to dark red; tepals 6–9, the outer 3 usually one third shorter than the inner ones; stamens 1–1.2 cm, anthers ca. 6 mm, dehiscing laterally, connectives exserted and forming a mucro; gynoecium glabrous, cylindrical, ca. 1.5 cm. Aggregate fruit ca. 8 × 3 cm; follicles ovoid or obovoid, 1–1.5 cm, black when mature, white-lenticeled; seeds dark brown, broadly obovate or obovate, compressed laterally.

Locality: Cultivated in gardens. *HK sheet 3045, 31231.*

Distribution: Widely cultivated in subtropical and temperate regions of the world.

Ecology: Flowering: Feb.–Mar.; fruiting: Sep.–Oct.

Uses: Ornamental.

Note: A hybrid of *Y. denudata* × *Y. liliiflora*, it varies in the shape, size and colour of tepals. There are about 20 cultivars in cultivation.

## 3. Magnolia L. 木蘭屬

Trees or shrubs, usually deciduous, rarely evergreen; twigs with annular stipular scars. Leaves alternate, sometimes fascicled at apex of short branches and becoming pseudoverticillate, entire, rarely bilobed; stipules membranous, adnate to petioles, and remaining stipular scars on petioles; young leaves erect, folded in buds. Flowers bisexual, usually fragrant, large, solitary, rarely 2–3 terminal on normal branches, usually appearing before or at the same time as leaves, pistils mature prior to stamens; tepals white, pink or purplish red, rarely yellow, 9–21(–45), 3–5 in each whorl, subequal, sometimes the outer ones smaller, greenish or yellowish brown, calyx-like; stamens caducous, filaments flat, connectives elongated and forming a short or long tip, rarely not exserted, thecae dehiscing introrsely or laterally; gynoecium linked to androecium, without gynophore. Carpels distinct, many or few, styles curved outwards, stigmas papillate and located in the adaxial side, each carpel 2-ovuled (rarely lower ones 3–4-ovuled). Aggregate usually cylindrical, ovoid-cylindrical or cylindrical-ovoid when mature, usually curved because of carpels partly undeveloped. Mature follicles leathery or woody, free from each other, rarely connate, dehiscing along dorsal sutures, apex long or short beaked. Seeds 1–2, testa orange-red or fresh red, fleshy,

oily, endotesta rigid, hilum connected to placentation by filiform funicle.

About 90 species, distributed in SE Asia, SE N America, C America, Antilles Islands; 31 species occurred in China, distributed in SW, NE China, Area S of Qinling to E China; three species (two cultivated) in Hong Kong.

1a. Leaves 4–7(–10) cm wide, flowers 15–20 cm in diam. ..... 1. *M. grandiflora*
1b. Leaves 2–4.5(–9) cm wide, flowers 1.5–4 cm in diam.
2a. Plants glabrous throughout ..... 2. *M. coco*
2b. Plants more or less hairy ..... 3. *M. championii*

**1. Magnolia grandiflora** L. 荷花玉蘭(洋玉蘭) **(Photo 44)**

Syst. Nat. ed. 10, 2: 1802. 1759; FHN 1: 224. 1964; FGD 1: 8, fig. 7. 1987; FRPS 30(1): 125. 1996.

Evergreen tree, up to 30 m in native place; bark pale brown or grey, thin scaly fissured; twigs, buds, abaxial surfaces of leaves and petioles densely brown or greyish brown tomentellate. Petioles 1.5–4 cm, without stipular scar, deeply furrowed. Leaves elliptic, oblong-elliptic or obovate-oblong, 10–20 × 4–7(–10) cm, thickly leathery, base cuneate, apex obtuse or mucronate, adaxially deep green, glossy; lateral veins 8–10 on each side of midvein. Flowers erect, white, fragrant, 15–20 cm in diam.; tepals 9–12, thickly fleshy, obovate, 6–10 × 5–7 cm; stamens ca. 2 cm, filaments flat, purple, anthers introrse, connectives exserted and forming a mucro; gynoecium ellipsoid, densely tomentose; carpels ovoid, 1–1.5 cm, styles reclinate. Aggregate fruit terete or ovoid, 7–10 × 4–5 cm, densely brown or pale greyish yellow tomentose; follicles dehiscing along dorsal sutures, abaxially rounded, apex long-beaked; seeds ovoid, ca. 14 × 6 mm; testa red.

Locality: Cultivated in gardens. *HK sheet 773, 23652.*

Distribution: Cultivated in S China; native to SE region of N America.

Ecology: Flowering: May–Jun.; fruiting: Sep.–Oct.

Uses: Ornamental.

**2. Magnolia coco** (Lour.) DC. 夜香木蘭(夜合花) **(Photo 45)**

Syst. 1: 459. 1818; FHN 1: 224. 1964; FGD 1: 6. 1987; FRPS 30(1): 113, pl. 26: 1–6. 1996.

*Liriodendron coco* Lour., Fl. Cochinch. 347. 1790.

Evergreen shrub or small tree, 2–4 m, glabrous; bark grey, twigs green, smooth, slightly ridged and glossy. Stipular scars reached apex of petioles; petioles 5–10 mm. Leaves elliptic, narrowly elliptic or obovate-elliptic, 7–14(–28) × 2–4.5(–9) cm, leathery, base cuneate, apex long-acuminate, adaxially deep green and glossy, slightly wavy wrinkled, margin slightly revolute; lateral veins 8–10 on each side of midvein, reticulations of veins sparse. Peduncles pendulous, with 3–4 bract-scars. Flowers globose, 3–4 cm in diam.; tepals 9, fleshy, obovate, adaxially concave, the outer 3 greenish, 5-veined, ca. 2 cm, the inner 6 in two whorls, purely white, 3–4 × 4 cm; stamens 4–6 mm, filaments white, ca. 2 mm, anthers ca. 3 mm, connectives exserted and forming a mucro; gynoecium green, ovoid, 1.5–2 cm; carpels ca. 10, narrowly ovoid, 5–6 mm, abaxially with 1 furrow downward to the base of style, stigma short.

Locality: Cultivated in gardens. *Y. S. Lau 1907; HK sheet 32247.*

Distribution: Guangdong, Guangxi, Yunnan, Zhejiang, Fujian, Taiwan; Vietnam.

Ecology: Flowering: Summer.

Uses: Ornamental, medicinal (folklore).

**3. Magnolia championii** Benth. 香港木蘭 **(Fig. 13; Photo 46)**

FHK 8. 1861; FRPS 30(1): 117, pl. 26: 7–13. 1996; FGD 1: 7, fig. 6. 1987.

*Magnolia pumila* Andr. var. *championii* Finet et Gagnep., Bull. Soc. Bot. France 52(4): 36. 1906.

*Magnolia liliflora* Baill. var. *championii* Pampan., Bull. Soc. Tosc. Ort. Ser. 4, 1: 136. 1916.

*Magnolia paenetalauma* Dandy, J. Bot. 68(7): 206–207. 1930; FRPS 30(1): 117. 1996.

*Magnolia pumila* auct. non Andr.: FKH 28. 1912.

*Magnolia tenuicarpella* H.T. Chang, Acta Sci. Nat. Univ. Sunyatseni. 1: 56. 1961.

Evergreen shrub or small tree; twigs green and hairy when young; Stipular scars nearly reached apex of petioles. Petioles 0.5–15 cm. Leaves elliptic, narrowly oblong-elliptic or narrowly obovate-elliptic, 7–14(–20) × 2–4.5(–6.5) cm, leathery, base slightly decurrent, cuneate or narrowly cuneate, apex acuminate




**Figure 13.** *Magnolia championii* Benth.

*1.* flowering branch; *2.* androecium and gynoecium; *3, 4.* ventral and dorsal view of stamen; *5.* cross section of stamen; *6.* aggregate fruit; *7.* longitudinal section of pistil. (drawn by H. P. Yu)

or cuspidate, rarely acute, adaxially deep green and glossy, abaxially pale green, ± hairy on midvein; lateral veins 8–12 on each side of midvein. Flowers globose, 1.5–2 cm in diam., very fragrant; peduncles 1–1.5 cm, densely covered with pale yellow silky hairs, with 3–4 spathose-bract scars ca. 1 cm below tepals; tepals 9, outer 3 pale green, oblong-elliptic, 3.5–4 × 2 cm, the inner 6 in two whorls, white, obovate, fleshy, 2–2.5 × 1.5 cm, apex sometimes emarginate; stamens 7–9 mm, anthers 6–7 mm, dehiscing introrsely, connectives exserted and forming a triangular mucro; gynoecium narrowly obovate, 1–1.4 cm, white villose; carpels 8–9 mm, furrows reached to the base of style abaxially, ovules 2, parallel. Aggregate fruit 3–4 cm; follicles ca. 1 cm, each with a beak of 2 mm; seeds narrowly ellipsoid or irregular ovoid, 8–12 × 4–6 mm.

Localities: Tai Tam, Tai Po Kau, Lantau Island. *Y. S. Lau 1838; L. T. Lo 638.*

Distribution: Hainan, Guangdong, Guangxi.

Ecology: Evergreen broadleaved forests. Flowering: May–Jun.; fruiting: Sep.–Oct.

Uses: Ornamental.

Notes: The type specimen (*Champion* 37, holotype, K) was collected between 1847 and 1850 from Hong Kong Island.

## 4. Manglietia Bl. 木蓮屬

Evergreen trees. Stipules enclosing young buds, lower part adnate to petioles, caducous, leaving long or short scars on petioles. Leaves leathery, entire, folded in buds. Flowers bisexual, terminal and solitary; tepals usually 9–13, 3 in each whorl, subequal, the outer 3 usually thinner, subleathery, greenish or red; filaments short and inconspicuous, anthers linear, dehiscing introrsely, connectives exserted and mucronate; gynoecium sessile; carpels numerous, spirally arranged, distinct, adaxially completely connate to receptacle, abaxially usually with 1 or several furrows at base, each carpel 4- or more ovuled. Aggregates dense, globose, ovoid, terete or ellipsoid-ovoid; mature follicles subwoody, or thicky woody, persistent, dehiscent along dorsal suture or sometimes also along ventral suture, usually beaked at apex, with 4 or more seeds.

About 30 species, distributed in tropical and subtropical Asia. 23 species in China, distributed in the areas south of Changjiang River valley. One species native to Hong Kong.

**1. Manglietia fordiana** Oliv. 木蓮(綠楠) **(Photo 47)**

Hook., Icon. Pl. 20(3): t. 1953. 1891; FKH 28. 1912; FGD 1: 4. 1987; FRPS 30(1): 105. 1996.

*Magnolia fordiana* (Oliv.) Hu, J. Arnold Arbor. 5(4): 228. 1924.

*Paramanglietia microcarp* Chang, Acta Sci. Nat. Univ. Sunyatseni 1: 53. 1961.

Trees, up to 20 m tall. Young twigs and buds reddish brown pubescent, glabrescent. Stipular scars semi-elliptic, 3–4 mm. Petioles 1–3 cm, base slightly swollen. Leaves narrowly obovate, narrowly elliptic-obovate or oblanceolate, 8–17 × 2.5–5.5 cm, leathery, base cuneate, decurrent to petioles, apex acute, margin slightly involute, abaxially sparsely reddish brown pubescent; lateral veins 8–12 on each side of midvein. Pedicels 6–11 × 6–10 mm, with 1 annular bract-scar, reddish brown pubescent; tepals white, in whorls of 3, the outer 3 slightly thinner, nearly leathery, oblong-elliptic, 6–7 × 3–4 cm, the inner ones smaller, usually fleshy, obovate, 5–6 × 2–3 cm; stamens ca. 1 cm, anthers ca. 8 mm, connectives obtuse; gynoecium ca. 1.5 cm, 23–30-carpellate, smooth, basal carpels 5–6 × 3–4 mm, middle ones ca. 5 mm wide on exposed side; styles ca. 1 mm; ovules 8–10, in 2 series. Aggregate fruit brown, ovoid, 2–5 cm; follicles dotted with protuberance on exposed side, apex with ca. 1 mm beak; seeds red.

Locality: Victoria Peak, Ma On Shan, Tai Mo Shan, Sunset Peak. *Y. S. Lau 1439; HK sheet 33073.*

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Yunnan.

Ecology: Forests. Flowering: May; fruiting: Oct.

Uses: Ornamental, medicinal.

Notes: The type specimen (*C. Ford 90*, holotype K) was collected from Victoria Peak, Hong Kong Island in 1883. Listed in *Rare and Precious Plants of Hong Kong.*

# 8. ANNONACEAE 番荔枝科

WANG Rui-jiang 王瑞江 • Richard M. K. SAUNDERS

Trees, shrubs, or climbers, evergreen. Young branches glabrous, lepidote or with simple or stellate hairs. Leaves alternate, distichous, papery to leathery, glabrous or pubescent, entire, without stipules. Inflorescences terminal, axillary, leaf-opposed, extra- or supra-axillary, on young growth, ramiflorous or cauliflorous. Flowers solitary or in fascicles, bisexual or unisexual. Pedicels glabrous or pubescent; bracts often present, adnate to base or middle of pedicels. Sepals (2–)3(–4), valvate or imbricate in bud, free or connate at least basally. Petals 3 or 6, rarely more, in 1 or 2 whorls, valvate or imbricate in bud, variable in size and shape, fleshy to papery, free or ± connate. Stamens numerous, apparently spirally arranged; staminodes rarely present; anthers extrorse; connective conspicuous, dilated, liguliform or conical, glabrous or pubescent; filaments short. Carpels 1 to many per flower, free or connate, wholly fused or paracarpous; ovary glabrous or pubescent; ovules 1 to numerous, lateral or basal; style conspicuous or not; stigma capitate or clavate, sometimes 2-cleft and incurved, glabrous or hairy. Fruits apocarpous or syncarpous; monocarps 1 to many, globose, oblong, cylindrical or moniliform, subsessile or stipitate, glabrous or pubescent, indehiscent or rarely dehiscent. Seeds 1 to numerous per monocarp, round, ovoid, discoid, or lenticular; testa smooth or rugose; aril sometimes present; raphes present; endosperm abundant, ruminate.

Approximately 128 genera and 2300 species, widespread in tropical and subtropical regions; 24 genera and 103 species in China; six genera and 12 species in Hong Kong.

*Polyalthia suberosa* sensu Benth., non (Roxb.) Thw. was recorded by Dunn & Tutcher (FKH 30. 1912) but this record is doubtful.

Key for flowering specimens

1a. Outer petals much larger than inner; inner ones very small or reduced ..... 1. *Annona*
1b. Outer petals a little larger, smaller or subequal to inner.
  2a. Petals not basally concave, not enclosing reproductive organs at maturity ..... 2. *Uvaria*
  2b. Petals basally concave, enclosing reproductive organs at maturity.
    3a. Flowers peduncles thickened and hook-curved ..... 3. *Artabotrys*
    3b. Flowers peduncles not thickened and hook-curved.
      4a. Flowers very small; outer petals smaller than inner ..... 4. *Popowia*
      4b. Flowers big; outer petals subequal or larger than inner.
        5a. Petals papery or fleshy, elongated, without ridges ..... 5. *Desmos*
        5b. Petals fleshy, with thickened ridges ..... 6. *Fissistigma*

Key for fruiting specimens

1a. Fruit syncarpous ..... 1. *Annona*
1b. Fruit apocarpous.
  2a. Monocarps moniliform ..... 5. *Desmos*
  2b. Monocarps cylindrical, ovate or globose.
    3a. Sepals persistent ..... 4. *Popowia*
    3b. Sepals caducous.
    4a. Fruit peduncles thickened and hook-curved ..... 3. *Artabotrys*
    4b. Fruit peduncles not thickened and hook-curved.
      5a. Monocarps globose to ellipsoid, glabrous to hairy; stipes 2–4 mm long (for Hong Kong species) ..... 6. *Fissistigma*
      5b. Monocarps ellipsoid to cylindrical, constricted, with sparsely or densely tomentose, sometimes spiny; stipes 5.5–15 mm long (for Hong Kong species) ..... 2. *Uvaria*

## 1. Annona L. 番荔枝屬

Trees or shrubs. Young branches with simple or stellate hairs. Leaves leathery, glabrous to pubescent. Inflorescences terminal, leaf-opposed, or supra-axillary, 1–several-flowered. Flowers bisexual. Sepals 3, valvate in bud, free or connate. Petals 3 or 6, free or connate, in 1 or 2 whorls, fleshy and concave at base inside loosely, with thick edges; outer petals much larger than inner, enclosing reproductive organs; inner petals very small or reduced. Stamens numerous, extrorse; connective with truncate, dilated, or capitate (rarely apiculate or hemispherical) apex, glabrous, hairy or papillose. Carpels numerous per flower; ovary glabrous or hairy, free or fused; ovule 1 per ovary, basal; style conspicuous or not; stigma broadly ovoid, lanceoloid, ellipsoid or cylindrical, glabrous. Fruits syncarpous, many-loculed, ovoid or globose, fleshy, glabrous to hairy; receptacles 2–14(–21) mm in diam.; sepals caducous or persistent. Seeds 1 per monocarp, basal, 1-seriate, ellipsoid to broadly obovoid; raphes generally conspicuous.

Approximately 110 species in tropical America and four species in tropical Africa. Some species cultivated as fruit trees throughout the tropics; five species cultivated in China, and one species in Hong Kong.

**1. Annona squamosa** L. 番荔枝 **(Photo 48)**

Sp. Pl. 1: 537. 1753; FGZ 84, fig. 24. 1956; FHN 1: 258. 1964; FRPS 30(2): 171, pl. 79. 1979; FGD 2: 39. 1991; FYN 5:61, fig. 18: 1–8. 1991.

Small trees, to 4 m. Young branches pubescent. Petioles 9–15 × ca. 1.5 mm. Leaf blades 9–13.5 × 4–5 cm, oblong or elliptic-oblong, glabrous or slightly pubescent both sides, base cuneate, apex obtuse or subacute; midvein impressed adaxially; secondary veins 6–8 pairs. Inflorescences leaf-opposed or terminal, 1–2(–4)-flowered. Flowers greenish (to yellow); pedicel 17.5–20.5 × ca. 0.8 mm, glabrous; bracts adnate to base or middle of pedicel. Sepals broadly ovate. Outer petals ca. 18 × 5 mm, narrowly oblong, reddish towards base adaxially; inner petals rudimentary, ca. 2 × 2.3 mm, triangular. Stamens numerous, ca. 1 mm long; connective capitate. Carpels numerous per flower; ovary glabrous; stigma glabrous. Fruits 8–10 cm in diam. when mature, ovate or globose, tuberculate, glaucous, pulp creamy-yellow, soft. Seeds blackish, shiny.

Locality: Hong Kong Zoological & Botanical Gardens, The University of Hong Kong Tai Po, Tai Mo Shan, Kei Ling Ha Hoi, Sai Kung (cultivated). *C. L. Law & R. Kendrick 00/06* (HKU); *HK sheet 1027*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Zhejiang, Fujian, Taiwan (cultivated). Widely cultivated in tropical areas.

Ecology: Flowering: May–Jun.; fruiting: Sep.–Nov.

Uses: Food (fruit).

## 2. Uvaria L. 紫玉盤屬

Scandent shrubs. Young branches usually with stellate hairs. Leaves leathery, glabrous or stellate-pubescent. Inflorescences terminal, leaf-opposed or supra-axillary, 1–4-flowered. Flowers bisexual. Sepals 3, valvate in bud, free or basally connate. Petals 6, free or connate, in 2 whorls, fleshy, papery or membranous; outer petals slightly larger than inner, both whorls generally spreading. Stamens numerous, extrorse; connective with a truncate, liguliform and enlarged apex, glabrous, rarely hairy. Carpels few to numerous per flower; ovary hairy, free, oblong or cylindrical; ovules 3–30 per ovary, lateral, 1- or 2-seriate; style not conspicuous; stigma obconical to cylindrical, usually 2-cleft and incurved, glabrous or hairy. Fruits apocarpous; monocarps 1–70 per fruit, ellipsoid to cylindrical, constricted, sparsely to densely hairy, sometimes spiny; stipes 0–140 mm long; receptacles 3–24 mm in diam.; sepals caducous. Seeds 1–30 per monocarp, lateral,1–2-seriate, ellipsoid to lenticular or ovoid; raphes conspicuous, ribbed.

Approximately 110 species in tropical Africa, Asia and Australia; nine species in China, and four species in Hong Kong.

1a. Leaf blades densely villous abaxially, with long stellate hairs; petals more than 2 cm long ..... 1. *U. grandiflora*
1b. Leaf blades glabrous or sparsely pubescent abaxially, with short stellate hairs; petals less than 1.5 cm long.
2a. Leaf blades glabrous abaxially; monocarp stipes 4–5.5 cm long..... 2. *U. boniana*
2b. Leaf blades pubescent abaxially; monocarp stipes less than 1.5 cm long.
3a. Leaf blades densely pubescent abaxially; flowers pale yellow; monocarps 1–3 per fruit ..... 3. *U. calamistrata*
3b. Leaf blades sparsely pubescent abaxially; flowers red; monocarps 22–30 per fruit ..... 4. *U. macrophylla*

**1. Uvaria grandiflora** Roxb. ex Hornem. 大花紫玉盤 **(Fig. 14; Photos 49–50)**

Suppl. Hort. Bot. Hafn. 140. 1819; FRPS 30(2): 26, pl. 10. 1979; FGD 2: 11, fig. 8. 1991.

*Uvaria purpurea* Blume, Bijdr. 11. 1825; FHK 9. 1861; FKH 29. 1912; FHN 1: 235. 1964.

*Uvaria platypetala* Champ. ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 3: 257. 1851.

*Uvaria rhodantha* Hance ex Walp., Ann. Bot. Syst. 2: 19. 1851.

*Uvaria hamiltonii* auct. non Hook. f. & Thomson: FKH 29. 1912.

Scandent shrubs. Young branches densely stellate-tomentose. Leaves papery or sub-leathery; petioles 6.5–10 × ca. 1.7 mm, densely pubescent; leaf blades 15–23 × 7.5–9.5 cm, obovate or obovate-oblong, densely villous with long stellate hairs abaxially, sparsely pubescent adaxially, base truncate or shallowly cordate, apex acuminate; secondary veins 10–14 pairs. Inflorescences leaf-opposed or terminal, 1(–3)-flowered. Flowers red, ca. 10 cm in diam.; pedicels 9.5–11.5 × 2.3–3.2 mm, tomentose; bracts ca. 3 × 2.5 cm, obovate, tomentose. Sepals 15–25 × 15–25 mm, broadly triangular, basally connate, tomentose abaxially, glabrous adaxially. Petals obovate or oblong, densely tomentose abaxially, sparsely tomentose adaxially; outer petals 24–34 × 13–21 mm; inner petals 22–29 × 11–13 mm. Stamens ca. 250 per flower, ca. 7 mm long; connective liguliform, glabrous. Carpels numerous per flower; ovary cylindrical, hairy; stigma cylindrical, 2-cleft and incurved. Monocarps 15–20 per fruit, 2.9–6.2 × 0.8–1.5 cm, cylindrical, densely tomentose, slightly tuberculate; stipes ca. 1.5 cm long, tomentose. Seeds few to many, flat, pale brown.

Locality: Pokfulam, Victoria Peak, Lady Clementi's Ride, Aberdeen, Shatin, Tai Po Kau, Tai Mo Shan, Shing Mun. *P. S. Choi 374; Y. S. Lau 3108.*

Distribution: Guangdong, Guangxi. Widely distributed in tropical Asia.

Ecology: Shrublands and forests. Flowering: Apr.–Jun.; fruiting: Jul.–Sep.

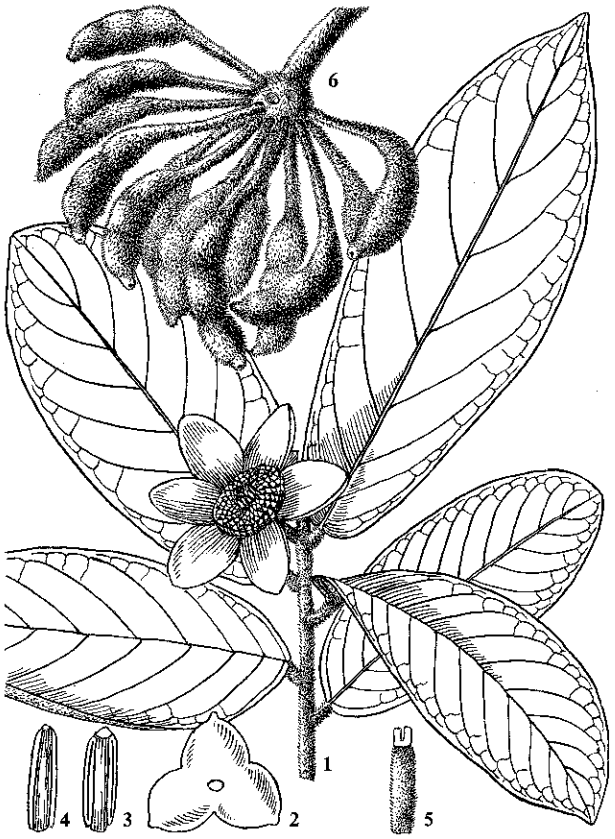



**Figure 14.** *Uvaria grandiflora* Roxb. ex Hornem.
*1.* flowering branch; *2.* calyx; *3–4.* stamens; *5.* carpel; *6.* fruit. (drawn by H. P. Yu)

**2. Uvaria boniana** Finet & Gagnep. 光葉紫玉盤 **(Photo 51)**

Bull. Soc. Bot. France Mem. 4: 71, pl. 11A. 1906; FHN 1: 237. 1964; FGD 2: 9, fig. 5. 1991.

Scandent shrubs. Young branches stellate-pubescent. Leaves papery; petioles 5–7 × 1.3–1.7 mm, pubescent or glabrous; leaf blades 13.5–15 × 3.5–5 cm, elliptic to oblong, glabrous ab- and adaxially, base cuneate to subrounded, apex acuminate; secondary veins 10–13 pairs. Inflorescences leaf-opposed or extra-axillary, 1–2-flowered. Flowers purplish-red to pink, ca. 2.5 cm in diam.; pedicels ca. 22 × 0.9 mm, glabrous; bracts near base, ca. 1 mm long, oblong to ovate, pubescent. Sepals ca. 2.5–3 mm long, subrounded, basally connate, pubescent abaxially. Petals broad ovate, apically pubescent both sides; outer petals ca. 10 × 5.5–7.5 mm; inner petals slightly smaller. Stamens numerous, ca. 1 mm long; connective truncate, papillate. Carpels ca. 20 per flower; ovary oblong, densely

hairy; stigma 2-cleft and incurved. Monocarps 10–20 per fruit, 1.5–4 × ca. 1.5 cm, ovoid or cylindrical, rarely globose, glabrous; stipes 4–5.5 cm long, glabrous. Seeds 1–8 per monocarp, ca. 10 × 7–10 mm, ellipsoid to lenticular, blackish brown.

Locality: Tai Po Kau, Ma On Shan. *Y. W. Lam 182; F. W. Xing 6887.*

Distribution: Hainan, Guangdong, Guangxi, Jiangxi; Vietnam.

Ecology: Forests. Flowering: Mar–Apr.; fruiting: Autumn.

**3. Uvaria calamistrata** Hance 刺果紫玉盤 **(Photos 52–53)**

J. Bot. 20: 77. 1882; FKH 29. 1912; FHN 1: 235. 1964; FRPS 30(2): 20, pl. 7. 1979; FGD 2: 10, fig. 6. 1991.

Scandent shrubs. Young branches stellate-pubescent. Leaves leathery; petioles 5.5–7.5 × 1.5–1.9 mm, pubescent; leaf blades 8.5–13.5 × 3.5–5.5 cm, ovate, obovate or elliptic, densely pubescent with short stellate hairs abaxially, glabrous adaxially, base cuneate or rounded, apex acuminate or acute; secondary veins 8–12 pairs. Inflorescences leaf-opposed or axillary, 1–4-flowered. Flowers pale yellow, ca. 1.8 cm diam.; pedicels ca. 6 × 4 mm, pubescent; bracts near base, ca. 5.5 × 4 mm, broad ovate, pubescent. Sepals ca. 5 × 4.5 mm, ovate, free, pubescent both sides. Petals oblong, pubescent both sides; outer petals 6–8 × 2.5–3.5 mm; inner petals subequal or slightly smaller. Stamens numerous, ca. 3 mm long; connective liguliform, slightly pubescent. Carpels 7–15 per flower; ovary cylindrical, hairy; stigma 2-cleft and incurved. Monocarps 1–3 per fruit, 2.7–3 × 2–2.2 cm, ovate, rounded at apex, spiny; stipes 5.5–6.5 mm long, pubescent. Seeds ca. 6 per monocarp, ca. 12.5 × 9.5 mm, lenticular or discoid, brown.

Locality: Aberdeen, Lady Clementi's Ride, Wong Chuk Hang, Tai Mo Shan. *Y. W. Lam 1477; P. S. Choi 103; Y. S. Lau 1203.*

Distribution: Guangdong, Guangxi; Vietnam.

Ecology: Forests. Flowering: May–Jun.; fruiting: Aug.–Nov.

**4. Uvaria macrophylla** Roxb. 紫玉盤 **(Photos 54–55)**

Fl. Ind. 2: 663. 1824.

*Uvaria microcarpa* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 256. 1851; FHK 10. 1861; FKH 29. 1912; FRPS 30(2): 22, pl. 8: 1–8. 1979; FGD 2: 11, fig. 7: 1–8. 1991; FYN 5: 8, fig. 2: 1–8. 1991.

*Uvaria macrophylla* Roxb. var. *microcarpa* (Champ. ex Benth.) Finet & Gagnep., Bull. Soc. Bot. France 53, Mém. 4: 67. 1906; Finet & Gagnep., in Fl. Indo-Chine 1: 51. 1907.

*Uvaria obovatifolia* Hayata, Icon. Pl. Forms. 3: 11. 1913; FKH 29. 1912.

*Uvaria synsepala* Miq., J. Bot. Neerl. 1: 128. 1861; FKH 29. 1912.

Scandent shrubs. Young branches stellate-pubescent. Leaves leathery; petioles 3.5–7.5 × 2–2.5 mm, pubescent; leaf blades 14–16.5 × 5–8 cm, elliptic or obovate, sparsely pubescent with short stellate hairs abaxially, glabrous adaxially, base subcordate or rounded, apex obtuse or acute; secondary veins 11–13 pairs. Inflorescences terminal or leaf-opposed, 1–2-flowered. Flowers red, 2.5–3.5 cm in diam.; pedicels 7–14.5 × 1.3–2 mm, pubescent; bracts basal, 1.5–3 × 2 mm, oblong, pubescent. Sepals ca. 5 × 10 mm, broad ovate, basally connate, hairy abaxially. Petals ovate, pubescent; outer petals 8.5–14 × 7–8.5 mm; inner petals 9–11 × 7–9 mm. Stamens ca. 120 per flower, 5.5–8 mm long; connective liguliform, glabrous. Carpels ca. 40 per flower; ovary cylindrical, hairy; stigma subcapitate, 2-cleft and incurved. Monocarps 22–30 per fruit, 1.1–1.8 × ca. 1 cm, globose or ovate, sparsely pubescent; stipes 0.9–1.5 cm, densely pubescent. Seeds 1–3 per monocarp, ca. 7.5 × 3.3–4.5 mm, lenticular or discoid, brown.

Locality: Common in Hong Kong. *C. L. Law & R. Kendrick 00/01* (HKU); *S. T. Chan s.n.* (HKU); *P. S. Choi 360; HK sheet 931, 940.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; Laos, Vietnam.

Ecology: Shrublands and forests. Flowering. May–Jun.; fruiting: Autumn–Dec.

## 3. Artabotrys R. Br. 鷹爪花屬

Scandent shrubs. Young branches with simple hairs. Leaves leathery, glabrous to pubescent. Inflorescences leaf-opposed or extra-axillary, 1(–several)-flowered, borne on thickened, hook-curved peduncles. Flowers bisexual. Sepals 3, valvate in bud, free or basally connate. Petals usually 6, free, in 2 whorls, fleshy; outer and inner petals subequal; inner petals usually connivent, erect. Stamens numerous, extrorse; connective with truncate, dilated or peltate apex, glabrous. Carpels 7–15(–20) per flower; ovary glabrous or hairy, free; ovules (1–)2 per ovary, basal, 2-seriate; style conspicuous or not; stigma ovoid or obconical, glabrous or hairy. Fruits apocarpous; monocarps 1–12(–15) per fruit, ovoid or ellipsoid, glabrous to hairy; stipes 0–10(–15) mm long; receptacles 2–13(–17) mm in diam.; sepals caducous. Seeds 1–2 per monocarp, basal, 1–2-seriate, ellipsoid to lenticular; raphes generally conspicuous.

Approximately 100 species in tropical Africa and Asia; four species in China, and two species in Hong Kong.

1a. Petioles 4–6 mm long, smooth, without transverse ribs; leaf blades with 9–12(–14) pairs of secondary veins; outer petals more than 2 cm long ..... 1. *A. hexapetalus*

1b. Petioles 1.5–3 mm long, with transverse ribs; leaf blades with 5–7 pairs of secondary veins; outer petals less than 1.5 cm long.. ..... 2. *A. hongkongensis*

**1. Artabotrys hexapetalus** (L. f.) Bhandari 鷹爪花 **(Photos 56–57)**

Baileya 12: 149. 1964; FRPS 30(2): 122, pl. 55. 1979; FGD 2: 31. 1991; FYN 5: 44. 1991.

*Annona hexapetala* L. f., Suppl. Pl. 270. 1782.

*Artabotrys uncinatus* (Lam.) Merr., Philipp. J. Sci., C. 7: 234. 1912; FHN 1: 238, fig. 115. 1964.

*Artabotrys odoratissimus* R. Br. in Edward, Bot. Reg. 5: fig. 423. 1819; FHK 10. 1861; FKH 30. 1912.

Scandent shrubs. Young branches glabrous. Leaves subleathery; petioles 4–6 × 1.2–1.9 mm, without transverse ribs; leaf blades ca. 9–16 × 3–6 cm, oblong, lanceolate or narrowly elliptical, glabrous, base cuneate, apex short acuminate; midvein impressed or flush adaxially; secondary veins 9–12(–14) pairs. Inflorescences ± leaf-opposed, 1–2-flowered. Flowers pale green or yellow; pedicels ca. 12 × 2–4 mm. Sepals 4.5–7 × 3.5–5 mm, triangular, basally connate, puberulous abaxially. Petals oblong or ovate-lanceolate, pubescent; outer petals ca. 22–28 × 7 mm; inner petals 22–24 × 4–6 mm. Stamens numerous, ca. 1.5 mm long; connective peltate and prominent. Carpels 11–20 per flower; stigma ovoid. Monocarps 3–5(–7) per fruit, 2.5–4 × 2.5 cm, ovoid, apiculate, glabrous; pedicel ca. 2 cm long; stipes ca. 1–3.5 mm long. Seeds 1–2 per monocarp, blackish-grey.

Locality: Cultivated. *L. Chau s.n.* (HKU); *L. T. Lo 235; Y. S. Lau 3250.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangxi, Zhejiang, Fujian, Taiwan. Widely distributed in tropical Asia.

Ecology: Lowland areas. Flowering: May–Aug.; fruiting: Aug.–Feb.

Uses: Flowers used for perfumes in India, roots used medicinally.

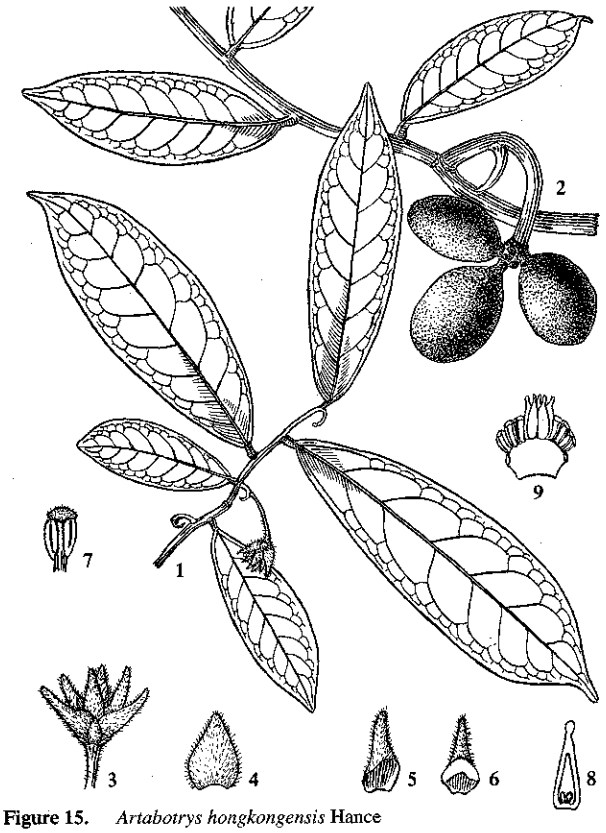



**Figure 15.** *Artabotrys hongkongensis* Hance
*1.* flowering branch; *2.* fruiting branch; *3.* gynoecium; *4.* abaxial surface of outer tepal; *5.* abaxial surface of inner tepal; *6.* adaxial surface of inner tepal; *7.* stamen; *8.* carpel; *9.* longitudinal section of flower after removal of perianth. (drawn by H. P. Yu)

**2. Artabotrys hongkongensis** Hance
香港鷹爪花 **(Fig. 15; Photos 58–59)**

J. Bot. 8: 71. 1870; FKH 30. 1912; FHN 1: 239. 1964; FRPS 30(2): 125, fig. 56: 1–9. 1979; FGD 2: 31, fig. 25: 5–8. 1991; FYN 5: 45. 1991.

*Artabotrys blumei* Hook. f. & Thomson, Fl. Ind. 1: 128. 1855, *p.p.*; FHK 10. 1861.

Scandent shrubs. Young branches sparsely pubescent. Leaves sub-leathery; petioles 1.5–3(–4.5) × 1–1.4 mm, with transverse ribs; leaf blades ca. 6.5–10 × 3 cm, oblong or obovate, glabrous, base cuneate to subrounded, apex acuminate; midvein flush or prominent adaxially; secondary veins 5–7 pairs. Inflorescences leaf-opposed, 1-flowered. Flowers whitish to yellow; pedicels (6.5–)8–13.5 × 0.5–0.8 mm. Sepals 3.5–5 × 3.5–4 mm, triangular, basally connate, pubescent abaxially. Petals oblong, pubescent abaxially; outer petals 6.5–11(–13.5) × 2–6.5 mm; inner petals 8–12 × 2.5–6 mm, with strongly concave claw. Stamens numerous, ca. 1.7 mm long; connective peltate and prominent. Carpels 7–10 per flower; stigma clavate. Monocarps (1–)2–3(–5) per fruit, 2–3.5 × 1.5–3 cm, ovoid, apiculate, glabrous; pedicel ca. 2 cm long; stipes ca. 3–3.5 mm long. Seeds 1–2 per monocarp, black.

Locality: Tai Tam, Nam Fung Road, Lantau Peak. *C. L. Law et al. 00/12* (HKU); *L. T. Lo 341; Y. S. Lau 2802.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan; Vietnam.

Ecology: Lowland forests. Flowering: May–Aug.; fruiting: Aug.–Feb.

Notes: The type specimen was collected from "Buddhist Temple, East Point" (now Causeway Bay) by J. G. Champion between 1847 and 1850. Listed in *Rare and Precious Plants of Hong Kong.*

## 4. Popowia Endl. 嘉陵花屬

Small trees or erect shrubs. Young branches with simple hairs. Leaves leathery, glabrous, pubescent or tomentose. Inflorescences leaf-opposed or supra-axillary, 1–several-flowered. Flowers bisexual. Sepals 3, valvate in bud, free or connate. Petals 6, free or connate, in 2 whorls, fleshy, edges cohering at first, becoming free; outer petals slightly smaller than inner, both whorls basally concave, enclosing reproductive organs, erect. Stamens few, extrorse; connective with truncate dilated apex, glabrous. Carpels 5–8 per flower; ovary glabrous or hairy, free; ovules 1 or 2 per ovary, basal or lateral, 1-seriate; style not conspicuous; stigma subcapitate, discoid to flat and lobed, glabrous. Fruits apocarpous; monocarps 1–9(–14) per fruit, globose or ovoid, glabrous to hairy; stipes 0–10 mm long; receptacles 1–5 mm in diam.; sepals persistent. Seeds 1–4 per monocarp, basal or lateral, 1-seriate, globose to ellipsoid or lenticular; raphes (in)conspicuous.

Approximately 30 species in tropical E Asia and Australia; one species in China and Hong Kong.

**1. Popowia pisocarpa** (Blume) Endl. 嘉陵花 **(Photos 60–61)**

Walpers, Repert. Bot. Syst. 1: 74. 1842; FHN 1: 249, fig. 122. 1964; FRPS 30(2): 108, pl. 48. 1979; FGD 2: 27, fig. 21. 1991.

*Guatteria pisocarpa* Blume, Bijdr. 21. 1825.

Shrubs, to ca. 1 m. Young branches rufous-pubescent. Leaves membranous; petioles 3–4 × ca. 1.5 mm, sparsely pubescent; leaf blades 9–11 × ca. 4 cm, elliptic, oblong or obovate, glabrous except sparely pubescent veins adaxially, base cuneate, apex acute; midvein impressed adaxially; secondary veins 6–9 pairs. Inflorescences supra-axillary or leaf-opposed, 1–2(–4)-flowered. Flowers white; pedicels ca. 6.5–7.5 mm long, slender; bracts ca. 1 mm long, pubescent. Sepals 1.5–2 × 1.5–2.5 mm, triangular-ovate, pubescent abaxially, glabrous adaxially, persistent. Outer petals ca. 2 × 1.5–2 mm; inner petals ca. 3 × 2.7–4 mm. Stamens 15–18 per flower, ca. 1 mm long; connective truncate or slightly concave. Carpels 3–6 per flower; ovary pubescent; ovule 1, basal; style very short; stigma subcapitate. Monocarps 3–5 per fruit, ca. 6 × 5.5 mm, flattened-globose, glabrous; stipes 3–3.5 mm. Seeds ca. 5.5 mm in diam., globose, brown; raphes ribbed.

Locality: Lam Tsuen Valley. *C. L. Law et al. 00/09* (HKU); *Y. W. Lam 200, 446.*

Distribution: Hainan, Guangdong; Vietnam, Thailand, Myanmar, Malaysia, Indonesia, Philippines.

Ecology: Forests. Flowering: Mar.; fruiting: Nov.–Dec.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

## 5. Desmos Lour. 假鷹爪屬

Small trees, erect or scandent shrubs. Young branches with simple hairs. Leaves papery to leathery, glabrous to pubescent. Inflorescences leaf-opposed or supra-axillary, 1(–2)-flowered. Flowers bisexual. Sepals 3, valvate in bud, free. Petals 6, free, in 2 whorls, papery or fleshy; outer petals slightly larger than inner, both whorls concave, enclosing reproductive organs, elongated. Stamens numerous, extrorse; connective with truncate dilated or subglobose apex, glabrous. Carpels numerous per flower; ovary glabrous or hairy, free; ovules 2–7 per ovary, lateral, 1-seriate; style conspicuous or not; stigma oblong, ovoid or clavate, glabrous. Fruits apocarpous; monocarps (3–)10–40 per fruit, moniliform, glabrous to hairy; stipes 4–26 mm long; receptacles 3–10 mm in diam.; sepals caducous. Seeds 1–8 per monocarp, lateral, 1-seriate, globose to ellipsoid; raphes generally conspicuous.

Approximately 30 species in SE Asia; four species in China; one species in Hong Kong.

**1. Desmos chinensis** Lour. 假鷹爪 **(Photos 62–63)**

Fl. Cochinch. 1: 352. 1790; FRPS 30(2): 50, pl. 18: 1–7. 1979; FGD 2: 17, fig. 12. 1991; FYN 5: 19, fig. 5: 11–12. 1991.

*Unona discolor* Vahl, Symb. Bot. 2: 63, pl. 36. 1791; FHK 11. 1861; FKH 30. 1912.

*Desmos cochinchinensis* auct. non Lour.: FGZ 85, fig. 25. 1956; FHN 1: 256, fig. 129. 1964.

Scandent or erect shrubs, to 2 m. Young branches slightly pubescent. Petioles 2.5–6 × 1–1.7 mm; leaf blades 8.5–13 × 3–4 cm, oblong or lanceolate, pubescent initially and then glabrous, glaucous abaxially, glossy adaxially, base cuneate, subrounded or subcordate and oblique, apex acuminate; midvein impressed adaxially; secondary veins 8–11 pairs. Inflorescences supra-axillary or leaf-opposed, 1-flowered. Flowers greenish (to yellow); pedicels 33–37 × ca. 0.6 mm; bracts adnate to base or middle of pedicel, 2.5–3.5 × ca. 1 mm, oblong. Sepals 4.5–6.5 × 2.5–4 mm, triangular or oblong. Petals oblong or narrowly lanceolate; outer petals slightly larger than inner, 48–67 × 12–21 mm; inner petals 38–66 × 9–20 mm. Stamens 150–200 per flower; connective discoid. Carpels 25–35 per flower; ovary hairy; ovules lateral; stigma clavate with U-shape groove. Monocarps 11–20(–25) per fruit, moniliform, slightly apiculate. Seeds 1–5(–8) per monocarp, 1-seriate, 5.5–6.5 mm in diam., globose, brown, smooth.

Locality: Common in Hong Kong. *C. L. Law & R. Kendrick 00/04* (HKU), *Y. W. Lam 248; H. C. Tang 86.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan; Vietnam, Laos, Philippines, India, Sri Lanka, Malaysia, Indonesia.

Ecology: Very common on sunny slopes and roadsides. Flowering: Mar.–Jul.; fruiting: Oct.–Jan.

Uses: Medicinal.

## 6. Fissistigma Griffith 瓜馥木屬

Scandent shrubs. Young branches with simple hairs. Leaves leathery, pubescent or tomentose. Inflorescences terminal, leaf-opposed, or axillary; flowers in cymes or branched panicles. Flowers bisexual. Sepals 3, valvate in bud, basally connate. Petals 6, free, in 2 whorls, fleshy, with thickened ridges; outer and inner petals subequal; inner petals usually connivent, erect. Stamens numerous, extrorse; connective slightly prominent, obtuse, liguliform, pyramidal, or slightly apiculate, glabrous. Carpels few to many per flower; ovary hairy, free; ovules 2 or more per ovary, lateral, 2-seriate; style not conspicuous; stigma ellipsoid or clavate, usually 2-cleft, glabrous or hairy. Fruits apocarpous; monocarps 1–20(–30) per fruit, globose to ellipsoid, glabrous to hairy; stipes 2–48 mm long; receptacles 2–13 mm in diam.; sepals caducous. Seeds 1–12 per monocarp, lateral, 1–2-seriate, ellipsoid to lenticular; raphes conspicuous.

Approximately 60 species in SE Asia and NE Australia; approximately 22 species in China, and three in Hong Kong.

1a. Petals less than 1 cm long; monocarps less than 1 cm long ..... 1. *F. glaucescens*

1b. Petals more than 1 cm long; monocarps more than 1.5 cm long

2a. Leaf blades densely pubescent abaxially, with distinct, percurrent tertiary veins; inflorescences terminal or leaf-opposed .... ..... 2. *F. oldhamii*

2b. Leaf blades sparsely pubescent abaxially, with indistinct reticulate tertiary veins; inflorescences axillary ..... 3. *F. uonicum*

**1. Fissistigma glaucescens** (Hance) Merr.
白葉瓜馥木 **(Fig. 16; Photos 64–65)**

Philip. J. Sci. 15(2): 132. 1919; FHN 1: 251. 1964; FRPS 30(2): 136, pl. 60. 1979; FGD 2: 33. 1991; FTW ed. 2, 2: 415. 1996.

*Melodorum glaucescens* Hance, J. Bot. 19: 112. 1881; FKH 30. 1912.

Scandent shrubs. Young branches glabrous. Leaves sub-leathery; petioles 4–7 × ca. 2 mm; leaf blades 10–12 × ca. 2 cm, (obovate-) oblong or elliptic, glabrous adaxially, sparsely pubescent with simple hairs abaxially and glaucous when dry, base cuneate or subrounded, apex acute, obtuse or retuse; secondary veins 10–12 pairs; tertiary veins indistinct. Inflorescences terminal or axillary, (1–)6–10-flowered. Flowers light yellow; pedicels 4.5–7 × ca. 0.6 mm; bracts adnate to base or middle of pedicel, ca. 0.6 × 0.4 mm, ovate. Sepals 2–4.5 mm, triangular. Petals triangular; outer petals ca. 3.5–6 × 2–5 mm, pubescent both sides; inner petals ca. 5 × 4 mm, pubescent abaxially. Stamens numerous, ca. 1.5 mm long; connective pyramidal. Carpels ca. 15 per flower; ovary pubescent; stigma 2-cleft, glabrous. Monocarps few per fruit, 5.5–8.5 mm long, globose, glabrous; stipes ca. 2 mm long. Seeds 1–2 per monocarp, globose, pale yellow.

Locality: Happy Valley, Wu Kau Tang. *C. L. Law & R. Kendrick 00/07b* (HKU); *HK sheet 107.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Fujian, Taiwan.

Ecology: Lowland forest. Flowering and fruiting: Spring to autumn.

Notes: The type specimen (*C. Ford s.n.* in Herb. Hance No. 21141, BM) was collected from Victoria Peak, Hong Kong Island in August, 1879.

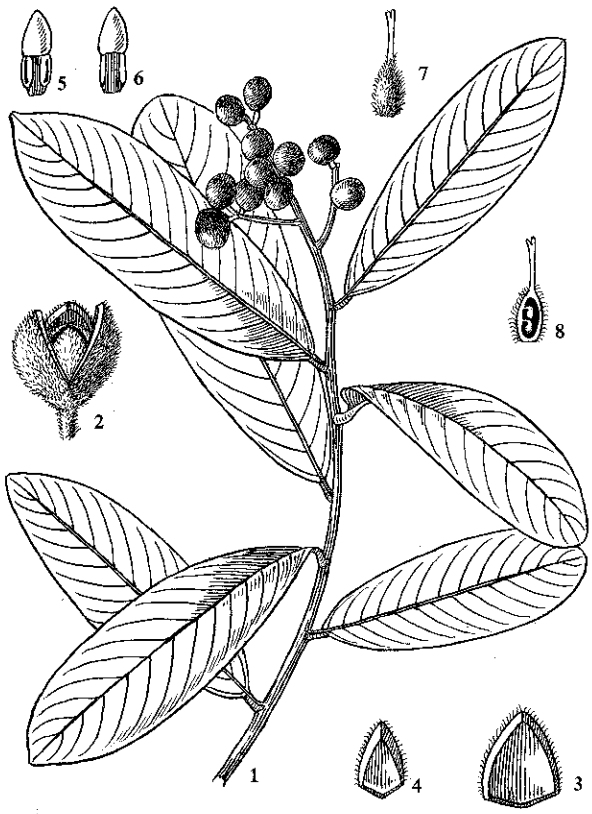



**Figure 16.** *Fissistigma glaucescens* (Hance) Merr.
*1.* fruiting branch; *2.* flower; *3.* adaxial surface of outer tepal; *4.* adaxial surface of inner tepal; *5.* stamen (dorsal view); *6.* stamen (ventral view); *7.* carpel; *8.* longitudinal section of carpel. (drawn by H. P. Yu)

**2. Fissistigma oldhamii** (Hemsl.) Merr. 瓜馥木 **(Photo 66)**

Philip. J. Sci. 15(2): 134. 1919; FHN 1: 250. 1964; FRPS 30(2): 162, pl. 57: 1–9. 1979; FGD 2: 36, fig. 26. 1991; FTW ed. 2, 2: 416, pl. 193. 1996.

*Melodorum oldhamii* Hemsl., J. Linn. Soc. Bot. 23: 27. 1886; FKH 30. 1912 (as *M. oldhami*).

Scandent shrubs. Young branches pubescent. Leaves leathery; petioles ca. 5 × 1.1–1.4 mm; leaf blades 7–12(–16.5) × 2.5–3.5 cm, oblong to elliptical, densely pubescent with simple hairs abaxially, glabrous adaxially, base cuneate to subrounded, apex acute to obtuse; secondary veins 13–15 pairs; tertiary veins distinct. Inflorescences terminal or leaf-opposed, 1–3-flowered. Flowers light yellow; pedicels 8.5–12(–20) × 1 mm; bracts towards middle of pedicel, 3–5 × 2–3.5 mm, oblong. Sepals 4.5–7.5 × 4–4.5 mm, ovate-triangular. Petals broad triangular; outer petals 12.5–16.5 × 5.5–7 mm, glabrous or hairy both sides; inner petals slightly smaller and more slender, glabrous. Stamens numerous, ca. 2 mm long; connective pyramidal. Carpels numerous per flower; ovary pubescent; stigma 2-cleft, glabrous. Monocarps 25–30 per fruit, ca. 18 mm long, globose, pubescent; stipes 2–2.5 cm long. Seeds ca. 10 per monocarp, broadly ellipsoid or lenticular, brown.

Locality: Mount Parker, Shek O, Tai Mo Shan, Ng Tung Chai, Shek Pik Reservoir. *C. L. Law & R. Kendrick 00/03* (HKU); *N. H. Li 32; Y. S. Lau 2125.*

Distribution: Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Vietnam.

Ecology: Forests. Flowering: Mar.–Apr.; fruiting: Summer to autumn.

**3. Fissistigma uonicum** (Dunn) Merr. 香港瓜馥木 **(Photo 67)**

Philip. J. Sci. 15(2): 137. 1919; FHN 1: 251. 1964; FRPS 30(2): 136, pl. 61. 1979; FGD 2: 34. 1991.

*Melodorum uonicum* Dunn, J. Bot. 48: 323. 1910; FKH 30. 1912.

Scandent shrubs. Young branches pubescent. Leaves papery; petioles 6–10 × 1.3–1.9 mm; leaf blades 7.5–14.5 × 2–3.5 cm, oblong, sparsely pubescent with simple hairs abaxially, glabrous adaxially, base cuneate to subrounded, apex obtuse to acute; secondary veins 14–16 pairs; tertiary veins indistinct. Inflorescences axillary, 1–2-flowered. Flowers yellow; pedicel ca. 6 × 2 mm; bracts near base of pedicel, small, oblong or ovate. Sepals ca. 2.5 × 2 mm, ovate-triangular. Petals ovate; outer petals ca. 24 × 13 mm, glabrous both sides; inner petals slightly smaller, glabrous. Stamens numerous, 1–2 mm long; connective liguliform. Carpels few per flower; ovary pubescent; stigma clavate, glabrous. Monocarps 3–7 per fruit, 30–40 × 20–26 mm, ovoid, glabrous to pubescent; stipes ca. 4 mm long. Seeds 2–3(–11) per monocarp, flattened-ovoid, deep brown.

Locality: Wong Nai Chung, Tai Tam, Tai Po Kau, Lantau Island. *C. L. Law & R. Kendrick 00/05* (HKU); *HK sheet 1036, 34483.*

Distribution: Guangdong, Guangxi, Hunan, Fujian.

Ecology: Forests. Flowering: Apr.; fruiting: Autumn.

Notes: The type specimen was collected by W. J. Tutcher from Hong Kong Island in 1893.

# 15. CALYCANTHACEAE 臘梅科

HU Qi-ming 胡啟明

Deciduous or evergreen shrubs, with aromatic bark; buds scaly or naked. Leaves opposite, short-petioled, entire, penninerved, exstipulate. Flowers bisexsual, actinomorphic, solitary, short-stalked, perigynous. Tepals numerous, spirally arranged, not differentiated into sepals and petals. Staments 5–30, spirally arranged; filaments very short; anthers extrorse, 2-celled, opening by longitudinal slits. Carpels numerous, free, inserted inside of a hollow receptacle with the styles protruding, 1–2-ovuled, developing into one-seeded achenes enclosed by the urn-shaped receptacle. Seeds without endosperm; cotyledons spirally rolled.

Two genera with about seven species in E Asia and N America; two genera and six species in China; one genus and one species cultivated in Hong Kong.

## 1. Chimonanthus Lindl. 臘梅屬

Deciduous or evergreen shrubs; buds with many imbricate scales. Leaves opposite, petiolate. Flowers with very short scaly stalks, solitary from axillary buds on branches of the previous year's growth. Tepals 15–25, ± waxy, imbricate, yellow; often with purple stripes. Stamens 5 or 6, free; filaments short, dilated at base, usually hairy; anthers 2-celled, extrorse. Carpels 5–15, free, inserted inside of a hollow receptacle, with 2 ovules in each carpel, usually only one developed. Fruit (enlarged receptacle) constricted at the mouth, puberulous outside.

Three species, all endemic to China.

**1. Chimonanthus praecox** (L.) Link. 臘梅 **(Fig. 17)**

Enum. Pl. Hort. Berol. 2: 66. 1822; FRPS 30(2): 7. 1979; P.T. Li & Z. Q. Li, Higher Pl. China 3: 204. 2000.

*Calycanthus praecox* L., Sp. Pl. ed. 2, 718. 1762.

Shrub to 3 m tall, almost evergreen in Hong Kong; buds with imbricate scales. Leaves opposite; petioles ca. 5 mm; leaf blade papery to sub-leathery, elliptic-ovate to ovate-lanceolate, 5–25 × 2–8 cm, base rounded or cuneate, apex acute to acuminate, glabrous except the puberulent veins on abaxial surface. Flowers solitary on branches of the previous year's growth, fragrant, 2–4 cm in diam., the outer tepals yellow, elliptic to oblong; the inner ones shorter, base clawed and striped purple brown. Fruit (enlarged receptacle) urn-shaped, 2–5 × 1–2.5 cm.

Locality: Cultivated in gardens.

Distribution: Fujian, Jiangxi, Zhejiang, Jiangsu, Shandong, Anhui, Henan, Shaanxi, Hubei, Hunan, Guizhou, Sichuan, Yunnan.

Ecology: Flowering: Nov. to Mar. of the following year; fruiting: Apr.–Jun.

Uses: Ornamental.

Notes: The species is deciduous in N China, flowering before the leaves appear, but in Hong Kong it is almost evergreen.

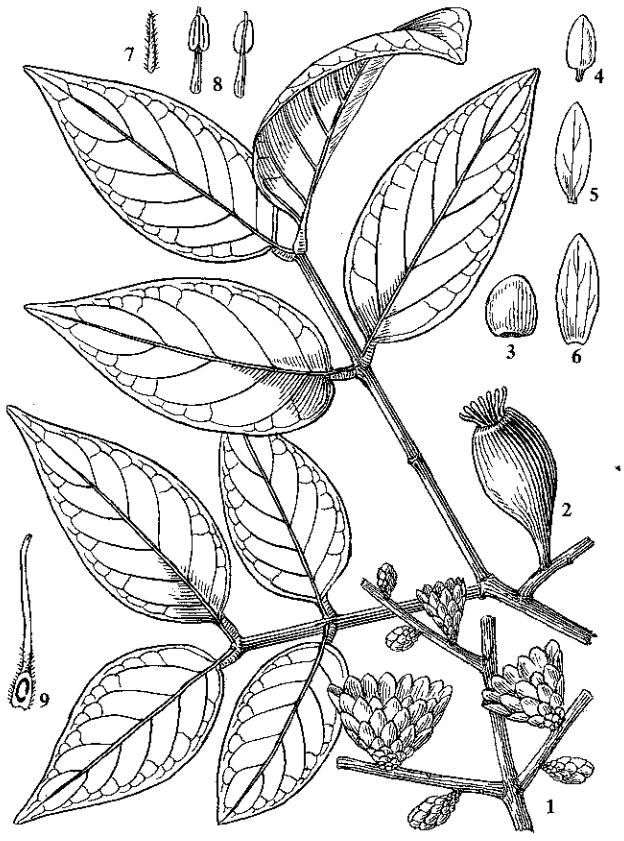



Figure 17. *Chimonanthus praecox* (L.) Link.
*1*. flowering branch; *2*. fruiting branch; *3–6*. tepals; *7*. staminodes; *8*. stamens; 9. carpel. (drawn by H. P. Yu)

# 17. LAURACEAE 樟科

YANG Yong 楊永 • FU De-zhi 傅德志

Evergreen or deciduous, trees or shrubs, rarely parasitic herbaceous vines (*Cassytha*), usually all parts containing aromatic volatile oil. Leaves alternate, opposite, subopposite, or whorled, petiolate, usually leathery, entire, rarely lobed; pinninerved, trinerved or triplinerved, exstipulate. Flowers bisexual or unisexual, regular, usually small, in axillary cymes, clusters, panicles, or racemes. Perianth-tube conical or urceolate, sometimes enlarged in fruit, limb usually 6 or 4 parted and arranged in 2 whorls, or 9 in 3 whorls. Stamens in 3–4 whorls of 3 each, often partly staminodal; anthers opening by lids. Ovary usually superior, 1-locular; style terminal; stigma simple, discoid or dilated and 2–3-lobed; ovule solitary, pendulous, anatropous. Fruit a drupe or a berry, often cupped or almost enclosed by a persistent, accrescent, fleshy or woody hypanthium. Seed 1, without endosperm; embryo straight.

About 45 genera with 2000–2500 species, mainly tropical; 20 genera about 400 species in China; nine genera, 46 species and two varieties in Hong Kong.

1a. Parasitic herbaceous twiner; leaves reduced; inflorescences indeterminate ..... 1. *Cassytha*
1b. Trees or shrubs; broadleaved; inflorescences determinate.

2a. Inflorescences paniculate, flowers bisexual.
3a. Fruits entirely enclosed by perianth tubes ..... 2. *Cryptocarya*
3b. Fruits not entirely enclosed by perianth tubes.
4a. Anthers 2-celled; filaments very short.
5a. Fertile stamens 6 ..... 3. *Syndiclis*
5b. Fertile stamens 9 ..... 4. *Beilschmiedia*
4b. Anthers 4-celled; filaments prominent.
6a. Basal part of fruit surrounded by a fleshy cupule; leaves usually trinerved ..... 5. *Cinnamomum*
6b. Fruit not surrounded by a fleshy cupule; leaves pinninerved ..... 6. *Machilus*
2b. Inflorescences umbellate, flowers unisexual.
7a. Leaves usually clustered at the base of twigs; flowers bimerous ..... 7. *Neolitsea*
7b. Leaves usually alternate, rarely opposite; flowers trimerous
8a. Anthers 4-celled ..... 8. *Litsea*
8b. Anthers 2-celled ..... 9. *Lindera*

## 1. Cassytha L. 無根藤屬

Herbaceous parasitical twiners. Stems threadlike, ramified, green or greenish brown. Leaves reduced to minute scales. Flowers bisexual, sessile, in axillary spikes, racemes or heads. Perianth ovoid or tubular, lobes 6, in 2 whorls, the outer minute, persistent. Fertile stamens 9, the 3 inner ones with 2 glands at the base; anthers 2-celled, introrse, those of the inner stamens extrorse; staminodes 3, small. Ovary superior, free from the perianth tube at anthesis. Fruit enclosed in the succulent tube of the perianth.

About 17 species distributed in tropical and subtropical regions, mostly in Australia, with a few in Africa; only one species in China; it occurs in Hong Kong.

**1. Cassytha filiformis** L. 無根藤 **(Fig. 18; Photos 68–69)**
Sp. Pl. 1: 35. 1753; FHK 294. 1861; FHN 1: 301, fig. 147. 1964; FRPS 31: 463, pl. 124. 1982; FTW ed. 2, 2: 437, pl. 203. 1996.

Stems filiform or wiry, pale green to yellow-green, glabrous or slightly pubescent when young, twining round and attaching to other plants by means of small suckers. Leaves reduced to tiny scales, alternate, ca. 1 mm. Inflorescences spicate, 2–5 cm, rarely reduced to single flower, densely rusty pubescent; bract and bracteoles broad ovate, small, ca. 1 mm, brown, ciliate. Flowers white, less than 2 mm, sessile; perianth-lobes 6 in 2 whorls, the outer 3 much smaller than the inner ones. Stamens 9; filaments of the outer stamens broad and petal-like, of the other 6 filiform; anthers all fertile. Fruit drupaceous, ovoid, enclosed in the succulent tube of the perianth and crowned by the persistent connivent perianth-lobes, to 4 mm in diam.

Locality: Common in Hong Kong. *P. S. Choi 172; Y. S. Lau 2307.*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; tropical Asia, Africa, and Australia.

Ecology: Thin forests and thickets on slopes. Flowering and fruiting: May–Dec.

Uses: Medicinal (folklore).

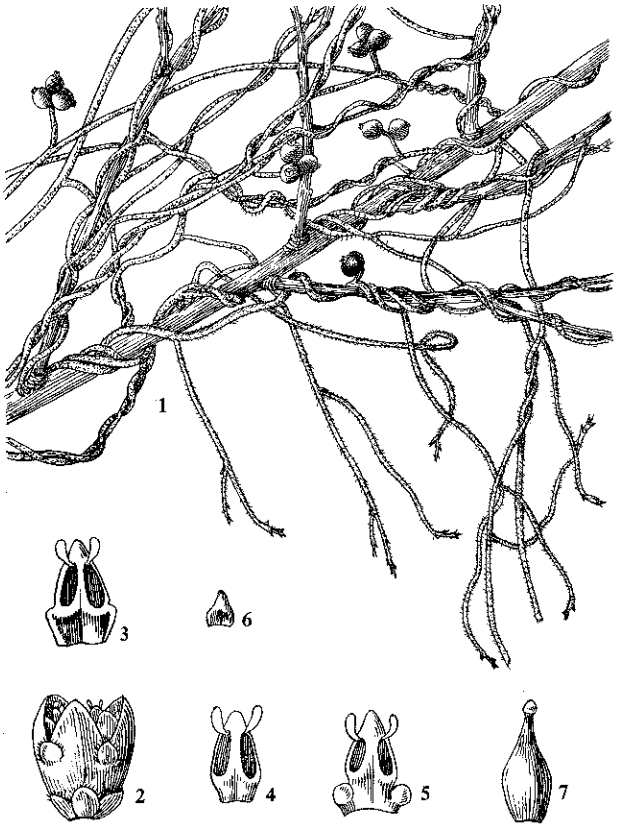



**Figure 18.** *Cassytha filiformis* L.
*1*. flowering and fruiting branch; *2*. flower; *3*. stamen of 1st whorl; *4*. stamen of 2nd whorl; *5*. stamen of 3rd whorl; *6*. staminode; *7*. ovary. (drwan by H. P. Yu)

## 2. Cryptocarya R. Br. 厚殼桂屬

Evergreen trees, or shrubs. Leaves alternate, rarely subopposite, usually pinninerved, rarely triplinerved, exstipulate. Inflorescences paniculate, axillary or subterminal. Flowers bisexual. Perianth-tubes turbinate or ovoid, persistent, constricted at the top; lobes 6, subequal, deciduous. Fertile stamens usually 9 in 3 whorls, the 3 innermost ones with 2 glands at the base; anthers 2-celled, introrse, those of the 3 innermost stamens extrorse. Staminodes present, shortly stipitate, eglandular. Ovary enclosed within the perianth-tube. Fruits drupaceous, wholly enclosed in the fleshy or hardened perianth-tubes, smooth or with many longitudinal ridges and grooves.

About 200–250 species in tropical and subtropical regions, with the distribution centre in Malesia; 19 species in China and three species in Hong Kong.

1a. Leaves pinninerved ..... 1. *C. concinna*
1b. Leaves triplinerved.
2a. Fruits 12–18 × 15–25 mm, smooth, obscurely longitudinal-grooved; leaves 10–15 × 5–8.5 cm; young branches, petioles and abaxial surface of leaves ± rusty tomentose ..... 2. *C. densiflora*
2b. Fruits 7.5–9 × 9–12 mm, prominently longitudinal-furrowed; leaves 7–11 × 3.5–5.5 cm; young branches, petioles and abaxial surface of leaves usually glabrescent ..... 3. *C. chinensis*

**1. Cryptocarya concinna** Hance 黄果厚壳桂(黄果桂) **(Photo 70)**

J. Bot. 20: 79. 1882; FKH 222. 1912; FHN 1: 282. 1964; FRPS 31: 455, pl. 122: 1–6. 1982; FTW ed. 2, 2: 449, photo 183. 1996.

*Cryptocarya konishii* Hayata ex Kawakami, List Pl. Form. 1910.

Tree, up to 18 m tall; bark brownish. Young branches slender, angular, yellowish brown tomentellate. Leaves alternate, subleathery; petioles 0.4–1 cm, yellowish-brown puberulous; leaf blade oblong elliptic or oblong, 5–10 × 2–3 cm, base cuneate, often unequal, apex obtuse, subacute to shortly acuminate, adaxially shining, glabrous, abaxially ± glaucous, slightly puberulous when young, glabrescent, pinninerved; midvein impressed adaxially, raised abaxially; lateral veins 4–7 on each side of midvein. Inflorescences paniculate, axillary or terminal, (2–)4–8 cm, puberulous. Pedicels 1–2 mm, puberulous. Perianth-tubes campanulate, ca. 1 mm; lobes oblong, ca. 2.5 mm, apex obtuse, puberulous on both surfaces. Stamens 9; anthers oblong, ca. 1 mm; filaments pubescent at the base. Ovary enclosed in perianth tubes after anthesis. Fruit long ellipsoid, 1.5–2 × 8 mm, with 12 longitudinal grooves, black to bluish-black when mature.

Locality: Cape D'Aguilar Peak (Hok Tsui Shan), Stubbs Road. *Y. S. Lau 2341; HK sheet 24825.*

Distribution: Guangdong, Guangxi, Jiangxi, Taiwan; N Vietnam.

Ecology: Forests on slopes. Flowering: Mar.–May; fruiting: Jun.–Dec.

**2. Cryptocarya densiflora** Bl. 丛花厚壳桂

Bijdr. 556. 1826; FHN 1: 281. 1964; FRPS 31: 441, pl. 116: 1–8. 1982.

*Cryptocarya laevigata* Elmer, Leafl. Philipp. Bot. 8: 2720. 1915.

Tree, 7–20 m tall. Branchlets angular, rusty tomentose. Leaves leathery; petioles 1–2 cm, rusty tomentose or glabrescent; leaf blade long elliptic to elliptic-ovate, 10–15 × 5–8.5 cm, base cuneate, broadly cuneate to rounded, apex shortly acuminate, adaxially glabrous and shining, abaxially glaucous, initially rusty pubescent, glabrescent, triplinerved; midvein impressed adaxially, raised abaxially; lateral veins 2–3 on each side of midvein. Panicles axillary or terminal, 2.5–8 cm, densely flowered. Pedicels less than 1 mm, densely tawny puberulous. Perianth white, ca. 4 mm, divided to middle, puberulous; tubes turbinate; lobes ovate, apex acute. Stamens 9, filaments pubescent. Staminodes sagittate, stalked. Ovary clavate, ca. 2 mm. Fruit subglobose, 1.2–1.8 × 1.5–2.5 cm, smooth, obscurely grooved, black when mature.

Locality: Ma On Shan. *S. C. Ng 2864; Y. W. Lam 236.*

Distribution: Guangdong, Guangxi, Fujian, Yunnan; Laos, Vietnam, Malaysia, Indonesia, Philippines.

Ecology: Forests in valley. Flowering: Apr.–Jun.; fruiting: Jul.–Nov.

**3. Cryptocarya chinensis** (Hance) Hemsl.

厚壳桂 **(Fig. 19; Photos 71–72)**

J. Linn. Soc. Bot. 26: 370. 1891; FKH 222. 1912; FHN 1: 282. 1964; FRPS 31: 443, pl. 116: 9–10. 1982; FTW ed. 2, 2: 449, pl. 207. 1996.

*Beilschmiedia chinensis* Hance, J. Bot. 20: 79. 1882.

Tree, up to 20 m tall. Branchlets terete, finely and longitudinally striated, initially tawny tomentose, glabrescent. Leaves leathery, alternate or opposite; petioles 1 cm long. Leaf blade long elliptic, 7–11 × 3.5–5.5 cm, base broad cuneate, apex acuminate, adaxially green and shining, abaxially glaucous, initially tawny tomentose on both surfaces, glabrescent, triplinerved; midvein impressed adaxially, raised abaxially; lateral veins 3–4 on each side of midvein. Panicles axillary or terminal, 1.5–4 cm, tawny tomentellate. Flowers yellowish, ca. 3 mm long. Pedicels less than 0.5 mm. Perianth-tubes turbinate, 1–1.5 mm; lobes yellowish subobovate, ca. 2 mm, apex acute. Stamens 9; filaments pubescent. Staminodes sagittate, pubescent. Ovary clavate, ca. 2 mm. Fruit globose or compressed globose, 7.5–9 × 9–12 mm, longitudinally furrowed, purplish-black when mature.

Locality: Common in Hong Kong. *P. S. Choi 158; Y. W. Lam 1424.*

Distribution: Guangdong, Guangxi, Sichuan, Fujian, Taiwan.

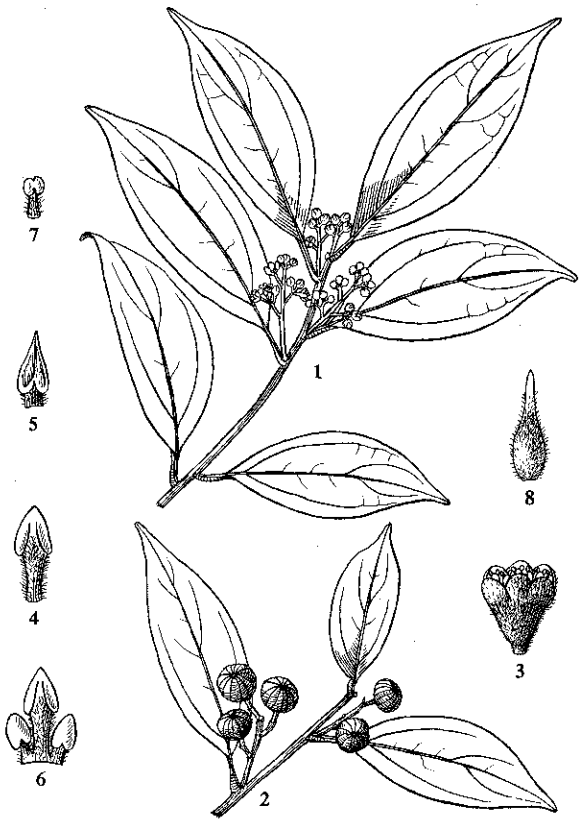



**Figure 19.** *Cryptocarya chinensis* (Hance) Hemsl.
*1.* flowering branch; *2.* fruiting branch; *3.* flower; *4.* stamen of 1st whorl; *5.* stamen of 2nd whorl; *6.* stamen of 3rd whorl; *7.* staminode; *8.* pistil. (drawn by H. P. Yu)

Ecology: Evergreen forests. Flowering: Apr.–May; fruiting: Aug.–Dec.

Notes: The type specimen (*C. Ford s.n.* in Herb. Hance No. 21705, BM) was collected in the valley of "Su-kun-pu" (now So Kong Po), Hong Kong Island in May 1881.

## 3. Syndiclis Hook. f. 油果樟屬

Evergreen trees. Leaves subopposite or alternate, or clustered towards apex of twigs, pinninerved. Inflorescences paniculate, axillary, pedunculate; bracts and bracteoles subulate, minute, caducous. Flowers bisexual, pedicellate. Perianth-tube obconical; lobes usually 4, occasionally 5 or 6, broad ovate-triangular or transversally oblong, falling off together with the tube after anthesis. Fertile stamens 4, occasionally 5 or 6, opposite with the perianth-lobes, pubescent and glandular dotted; filaments short; anthers broad ovate, 2-celled or fused into 1-celled, introrse. Staminodes 4, minute, linear or lanceolate, densely pubescent. Ovary glabrous, ovoid, narrowed upwards into style. Fruits large, turbinate, compressed globose or globose.

About ten species; nine species endemic to China; one species in Hong Kong.

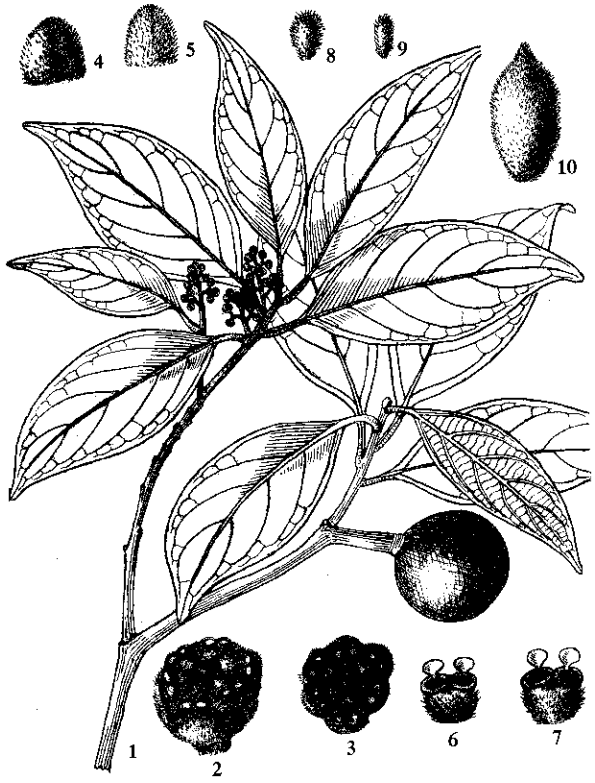



**Figure 20.** *Syndiclis hongkongensis* N. H. Xia, Y. F. Deng & K. L. Yip
*1*. flowering and fruiting branch; *2*. flower (lateral view); *3*. flower (apical view); *4, 5*. tepals; *6, 7*. stamens of 1st and 2nd whorls; *8, 9*. staminodes of 3rd and 4th whorls; *10*. ovary. (drawn by H. P. Yu)

**1. Syndiclis hongkongensis** N. H. Xia, Y. F. Deng & K. L. Yip **(Fig. 20; Photo 73)**
香港油果樟
J. Trop. & Subtrop. Bot. 14(1): 75, fig. 1. 2006.

Tree, up to 16 m tall and up to 90 cm in diam. at base; bark reddish brown, peeling off in small pieces. Branchlets reddish brown, lenticellate, at apex somewhat angular, glabrescent; leaf buds small, hardly hairy. Leaves alternate; leaf blade leathery, elliptic, 6–10 × 2.5–4 cm, base cuneate but always asymmetrical, apex acuminate, with sharp tip, margin entire, glabrescent, dark green above, pale green and glaucous below, midvein and lateral veins brownish, flat above, prominent below, lateral veins 3–4 pairs, veinlets densely reticulate. Petioles slender, 1–2 mm long, flat above. Inflorescence a panicle, axillary, 1–3.5 cm long, slender, tomentose, short pedunculate. Bracteoles linear-triangular, rusty-tomentose, ca. 3 × 1 mm. Flowers globose, green-yellow, 1.5 mm long; pedicels 2–4 mm long; perianth-lobes 6, ovate, densely tomentose. Fertile stamens 6 in 2 whorls, slightly exserted, subsessile, villose, eglandular; the anthers 2-celled, cells introrse; staminodes 6, opposite to the fertile stamens, villose. Ovary ellipsoid, sparsely tomentose, styles tomentose at base. Fruit globose, rough, yellowish brown, ca. 4 cm diam., glabrous; pericarp woody, ca. 2 mm thick; fruiting pedicel 8 mm long, cylindrical, thickened under the fruit.

Locality: Tai Mo Shan. *L. T. Lo 337; Y. W. Lam 1276.*

Distribution: Endemic to Hong Kong.

Ecology: Forests. Flowering: Nov.–Dec.; fruiting: Oct. of the following year.

Notes: The species was reported as *Syndiclis furfuracea* H. W. Li previously (Check List HK Plants 47. 2002). The type specimen (*N. H. Xia et al. s.n.*, holotype: IBSC; isotype: *HK sheet 39986*) was collected from Tai Mo Shan in 2005. Listed in *Rare and Precious Plants of Hong Kong.*

## 4. Beilschmiedia Nees 瓊楠屬

Evergreen trees or shrubs. Leaves opposite, subopposite or alternate, leathery, entire, pinninerved. Flowers small, bisexual, in panicles or sometimes in axillary fascicles or racemes. Perianth-tube short; lobes 6, equal or subequal. Fertile stamens 9, rarely 6, the 3 inner ones with 2 glands at the base; anthers 2-celled, introrse, those of the inner ones extrorse. Staminodes ovoid, triangular, or cordate, shortly stalked. Fruits drupaceous, ellipsoid, ovoid-ellipsoid or oblong-ellipsoid.

About 200 species mainly distributed in tropical Africa, SE Asia, Australia and America; 35 species in China and two species in Hong Kong.

1a. Buds and inflorescences glabrous, leaves eglandular ..... 1. *B. fordii*
1b. Buds and inflorescences pubescent, leaves glandular ..... 2. *B. glandulosa*

**1. Beilschmiedia fordii** Dunn 廣東瓊楠 **(Fig. 21)**
J. Bot. 45: 404. 1907; FKH 222. 1912; FRPS 31: 142, pl. 37: 1. 1982.

Tree, 6–18 m tall. Terminal buds ovate-lanceolate, glabrous. Branchlets angular, glabrous. Leaves leathery, alternate or opposite; petioles glabrous, 1–2 cm, leaf blade lanceolate, oblong-elliptic to broadly elliptic, 7–13 × 2.5–4.6 cm, base cuneate to broadly cuneate, apex

shortly acuminate or obtuse, glabrous, adaxially dark green, abaxially paler, turning brown when dry; midvein impressed adaxially, raised abaxially; lateral veins slender, 6–9 on each side of midvein. Cymose panicles usually axillary, 1–3 cm, densely flowered. Pedicels 3–5 mm. Perianth-lobes yellowish green, ovate to oblong, 1.5–2 mm, glabrous. Fruit ellipsoid, 1.4–1.8 cm, rounded on both ends, usually warty.

Locality: Happy Valley. *HK sheet 4746, 4754.*

Distribution: Guangdong, Guangxi, Sichuan, Hunan, Jiangxi; Vietnam.

Ecology: Forests in valleys. Flowering: Jun.–Dec.; fruiting: Dec.–Jun. of the following year.

Notes: The type specimen was collected from Happy Valley, Hong Kong Island by C. Ford in August 1881.

**2. Beilschmiedia glandulosa** N. H. Xia, F. N. Wei & Y. F. Deng 腺葉瓊楠 **(Fig. 22; Photo 74)**

J. Trop. & Subtrop. Bot. 14(1): 78, fig. 1. 2006.

*Beilschmiedia fagifolia* auct. non Nees: Dunn & Tutch., FKH 222. 1912.

Tree; branchlets greyish brown, pubescent, glabrescent, terminal buds pubescent. Leaves subopposite, leathery, elliptic, narrowly elliptic to oblanceolate, 4.5–8.5 × 1.5–3.5 cm, base attenuate, apex obtuse, margin entire, glabrous, brownish abaxially when dry, densely glandular spotted adaxially; main veins elevated on both surfaces, lateral veins 5–7 pairs, together with tertiary veins prominent on both surfaces. Petioles 5–8 mm. Inflorescences axillary, racemose or thyrsoid, 1–3 clustered, 1.5–3 cm, shortly pedunculate. Bracteoles ovate, ca. 1 × 0.6 mm, pilose. Pedicels 2–4 mm. Flowers ca. 4 × 4 mm, perianth-tube short. Perianth-lobes 6, rarely 7–8, ovate, ca. 2.5 mm, pilose inside, sparsely villose outside. Fertile stamens 9 in 3 whorls, 6 of outer two whorls opposite to perianth-lobes, filaments 1 mm, densely pilose, anthers ca. 0.8 mm, 2-celled, cells introrse, each of the third whorl stamens with a pair of short-stalked orbicular-reniform glands near the base of filaments, filaments ca. 0.5 mm, densely villose, anthers ca. 0.5 mm, 2-celled, cells extrorse. Staminodes 3 of the innermost whorl, ca. 0.8 mm, ovoid. Ovary cylindrical, ca. 2.5 mm, sparsely villose, style ca. 1 mm, stigma capitate. Fruit ellipsoid, apiculate, bluish black when maturing, 1.5–2.2 x 1–1.5 cm, smooth, wrinkled when dry. Seeds 1.3–2 x 0.8–1.2 cm.

Locality: Mount Gough, Mount Cameron, Bowen Road, Mount Parker, Tai Tam, Severn Road, Deep Water Bay Road, Ng Tung Chai, Lantau Island. *HK sheet 34208; Y. S. Lau 440; K. L. Yip 4197.*

Distribution: Endemic to Hong Kong.

Ecology: Thin forests on slopes. Flowering: Summer; fruiting: Jul.–Dec.

Notes: The species was reported as *B. tsangii* Merr. previously (Check List HK Plants 42. 2002). The type specimen *(F. Yip s.n., HK sheet 34327)* was collected from Tai Tam, Hong Kong Island in August 1982.

## 5. Cinnamomum Trew 樟屬

Evergreen trees or shrubs, usually all parts aromatic. Leaves alternate or opposite, leathery, usually trinerved or triplinerved. Inflorescences paniculate, axillary or subterminal. Flowers bisexual, rarely polygamous. Perianth-tubes short, cup-shaped or campanulate; lobes 6, subequal. Stamens 9 in 3 whorls, the 3 inner ones with 2 glands at the base; anthers 4-celled, introrse, those of the 3 inner stamens extrorse. Staminodes 3, with capitate or cordate abortive

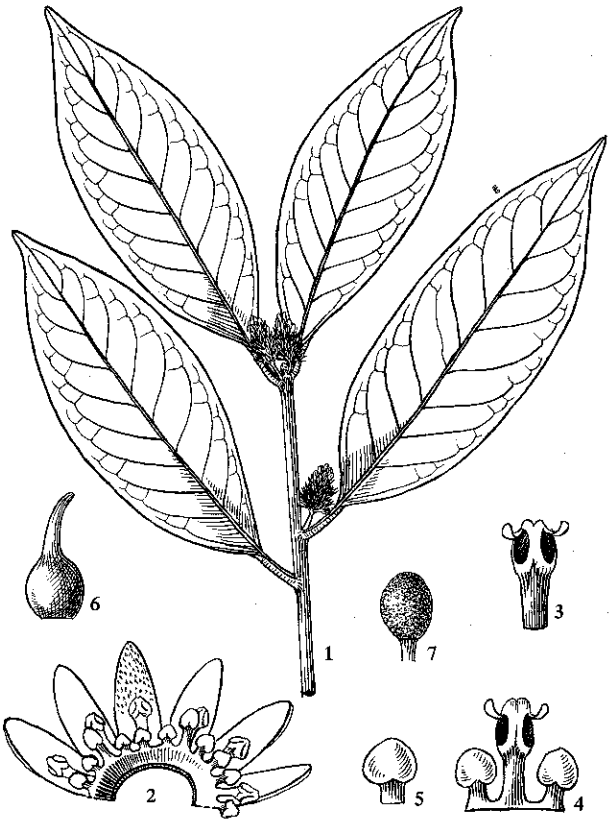



**Figure 21.** *Beilschmiedia fordii* Dunn

*1.* flowering branch; *2.* corolla and stamens; *3.* stamen of 1st and 2nd whorls; *4.* stamens of 3rd whorl; *5.* staminode; *6.* pistil; *7.* fruit. (drawn by H. P. Yu)

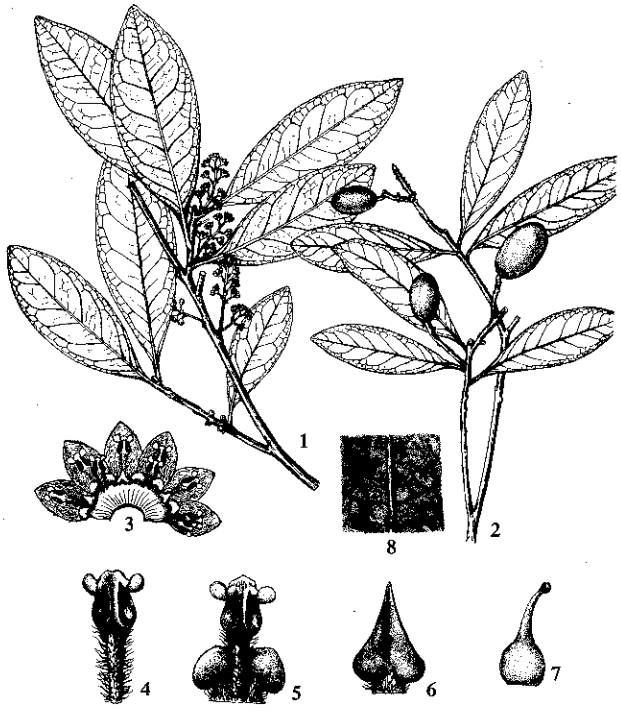



**Figure 22.** *Beilschmiedia glandulosa* N. H. Xia, F. N. Wei & Y. F. Deng

*1.* flowering branch; *2.* fruiting branch; *3.* flower; *4.* stamen of the 1st and 2nd whorls; *5.* stamen of the 3rd whorl; *6.* staminode; *7.* ovary; *8.* part of adaxial surface of leaf blade (enlarged). (drawn by Y. X. Liu)

anthers. Fruits fleshy, resting on the enlarged cup-shaped receptacle and base of perianth.

About 250 species distributed in tropical and subtropical E Asia, Australia and Pacific Islands; 49 species in China; seven species in Hong Kong.

1a. Leaves pinninerved ..... 1. *C. parthenoxylon*
1b. Leaves trinerved or triplinerved.
2a. Leaves alternate, or with subopposite pairs.
3a. Leaves alternate.
4a. Leaves thin leathery, abaxially pale green or greyish, with domatia in axils of lateral veins..... 2. *C. camphora*
4b. Leaves thick leathery, abaxially reddish, without domatia in axils of lateral veins..... 3. *C. validinerve*
3b. Leaves alternate or also with supopposite pairs.
5a. Leaves ovate to oblong-lanceolate, 2–4(–5) cm broad, glabrous..... 4. *C. burmannii*
5b. Leaves oblong, 4–9.5 cm broad, yellowish puberulent abaxially when young ..... 5. *C. aromaticum*
2b. Leaves opposite to subopposite.
6a. Young branchlets and leaves densely covered with tawny hairs ..... 6. *C. appelianum*
6b. Young branchlets glabrous; leaves glabrous or slightly pulverulent abaxially when young..... 7. *C. jensenianum*

**1. Cinnamomum parthenoxylon** (Jack) Meisn. **(Fig. 23; Photo 75)**
黃樟

Prodr. 15(1): 26. 1864; FHK 223. 1912; FHN 1: 261. 196; FRPS 31: 186, pl. 46: 1–6. 1982, pro syn. sub *C. porrectum* (Roxb.) Kosterm.

*Laurus parthenoxylon* Jack, Malayan Miscellanies 1: 28. 1820.

*Camphora parthenoxylon* Nees in Wall. Pl. Asiat. Rar. 2: 72. 1831; FHK 290. 1861.

Tree, 10–20 m tall, all parts strongly camphor-scented. Leaves alternate; petioles 1.5–3.5 cm, glabrous; leaf blade elliptic-ovate or long elliptic-ovate, leathery, 6–12 × 3–6 cm, much smaller on the flowering branchlets, base cuneate to broadly cuneate, apex usually acute or shortly acuminate, margin entire, dark green and shining adaxially, pale green or glaucous abaxially, glabrous on both surfaces, pinnately veined; lateral veins 4–5 on each side of midvein; domatia in axils of lateral veins inconspicuous. Panicles or cymes axillary on the upper part of twigs or subterminal, 4.5–8 cm, 5–10-flowered, glabrous. Peduncles 3–5.5 cm. Pedicels slender, up to 4 mm. Perianth-tube obconical, ca. 1 mm; lobes narrowly elliptic, ca. 2 × 1.2 mm, greenish yellow, puberulous adaxially. Stamens 9, filaments pubescent. Fruit globose, 6–8 mm in diam., black when mature.

Locality: Common in Hong Kong. *Y. S. Lau 699; S. T. Dunn s.n. (HK sheet 4791).*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Sichuan, Hunan, Jiangxi, Fujian; Pakistan, India, Indochina, Malaysia to Indonesia.

Ecology: Evergreen broadleaved forests. Flowering: Mar.–May; fruiting: Apr.–Oct.

Uses: Materials (essential oils).

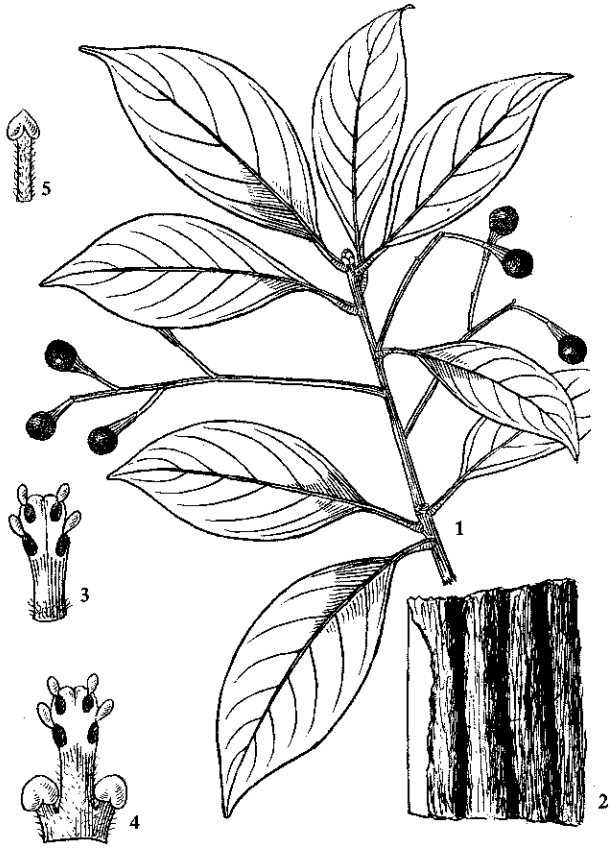



Figure 23. *Cinnamomum parthenoxylon* (Jack) Meisn.
*1.* fruiting branch; *2.* bark; *3.* stamen of 1st and 2nd whorl; *4.* stamens of 3rd whorl; *5.* staminode. (drawn by H. P. Yu)

**2. Cinnamomum camphora** (L.) J. Presl 樟 **(Photos 76–77)**

Prir. Rostlin 2: 36 et 47–56, t. 8. 1825; FHK 223. 1912; FHN 1: 262. 1964; FRPS 31: 182, pl. 43: 1–3. 1982; FTW ed. 2, 2: 440, 1996.

*Laurus camphora* L., Sp. Pl. 369. 1753.

Tree, up to 30 m tall, all parts strongly camphor-scented. Leaves alternate; petioles slender, 2–3 cm, glabrous; leaf blade ovate-elliptic, 6–12 × 2.5–5.5 cm, base broadly cuneate to rounded, apex acute, margin entire, subleathery, glabrous or sparsely puberulent abaxially when young, triplinerved, with domatia in axils of secondary and tertiary veins. Panicles or cymes axillary, 3.5–7 cm; peduncles 2.5–4.5 cm, glabrous or puberulent, especially on the nodes. Pedicels 1–2 mm, glabrous. Flowers yellowish white, ca. 3 mm; perianth-tube obconical, ca. 1 mm; lobes elliptic, white or yellowish, ca. 2 mm. Stamens 9, filaments pubescent. Fruit ovoid or subglobose, 6–8 mm in diam., purplish black when mature.

Locality: Common in Hong Kong. Also widely cultivated. *H. C. Tang 2354; Y. S. Lau 92.*

Distribution: Widely distributed in South to Southwest China; Vietnam, Korea, Japan.

Ecology: In woods near villages. Flowering: Apr.–May; fruiting: Aug.–Nov.

Uses: Materials (essential oils, wood), medicinal (source of camphor), ornamental.

**3. Cinnamomum validinerve** Hance 粗脈桂 **(Photo 78)**

J. Bot. 20: 80. 1822; FKH 223. 1912; FRPS 31: 198. 1982.

Small tree, all parts strongly camphor-scented; branchlets angular, glabrous or minutely tomentulose near apex. Leaves alternate; petioles 0.8–1.3 cm, glabrous; leaf blade thick-leathery, elliptic, 4–9.5 × 2–3.5 cm, base cuneate, apex abruptly and shortly acuminate, tip blunt, dark green and shining adaxially, paler and reddish abaxially, triplinerved; midvein and lateral veins slightly impressed adaxially and strongly raised abaxially, transversal veins inconspicuous. Panicles about the length of the substanding leaves, cymosely branching, the utmost branch 3-flowered. Pedicels very short, greyish white sericeous. Perianth-lobes ovate, apex obtuse. Fruit unknown.

Locality: Mount Parker, Jardine's Lookout, Ma On Shan, Lantau Island. *P. S. Choi 118; HK sheet 4804.*

Distribution: Guangdong, Guangxi.

Ecology: Thin forest. Flowering: Apr.–Jun.

Notes: The type specimen (*Herb. Hance No. 21045*, BM) was collected in the valley of Wong Nai Chung, Hong Kong Island by C. Ford in June 1879.

**4. Cinnamomum burmannii** (C. G. & T. Nees) Blume 陰香 **(Photo 79)**

Bijdr. 569. 1826; FHK 223. 1912; FHN 1: 264. 1964; FRPS 31: 202, pl. 52: 1–6. 1982.

*Laurus burmannii* C. G. & T. Nees, Disput. Cinn. 57, t. 4. 1823.

*Cinnamomum dulce* Nees in Wall. Pl. Asiat. Rar. 2: 75. 1831; FHK 290. 1861.

Tree, up to 14 m tall, all parts strongly camphor-scented. Leaves alternate or subopposite; petioles slender, 0.5–1.2 cm, subglabrous; leaf blade leathery, ovate, oblong to lanceolate, 5.5–10.5 × 2–5 cm, base broadly cuneate, apex shortly acuminate, margin entire, glabrous, green and shining adaxially, ± glaucous abaxially, triplinerved; midvein and lateral veins plane adaxially, raised abaxially. Panicles or cymes axillary or subterminal, 2–6 cm, ± greyish puberulent. Pedicels slender, 4–6 mm. Flowers greenish white, ca. 5 mm; perianth densely greyish puberulent on both surfaces; tube very short; lobes oblong-ovate. Stamens 9, filaments puberulent. Fruit ovoid, 8 × 5 mm, purplish black when mature.

Locality: Common in Hong Kong. Also cultivated. *L. T. Lo 9; Y. S. Lau 2102.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; India, Myanmar, Vietnam, Indonesia and Philippines.

Ecology: Mixed forests on hillslope or by streams. Flowering: Mar.–Apr.; fruiting: Oct.–Nov.

Uses: Additive (flavouring).

**5. Cinnamomum aromaticum** Nees 肉桂 **(Photos 80–81)**

Wall. Pl. Asiat. Rar. 2: 74. 1831.

*Cinnamomum cassia* Presl, Prir. Rostlin 2: 36 & 44–45, fig. 6 (sinister). 1825; FHK 223. 1912; FHN 1: 263. 1964; FRPS 31: 223, pl. 59: 1–5. 1982.

Tree, all parts strongly camphor-scented; branchlets dark brown, ± tetragonous, puberulent. Leaves alternate or subopposite; petioles thick, 1.2–2 cm, greyish yellow puberulent; leaf blade thick-leathery, oblong-elliptic to sublanceolate, 8–16(–34) × 4–5.5(–9.5) cm, base acute, apex slightly acute, tip blunt, margin cartilaginous, slightly involute, glabrous, green and shining adaxially, pale and sparsely yellowish puberulent abaxially when young, triplinerved; midvein and lateral veins prominently impresed on adaxial surface, strongly raised on abaxial surface. Panicles axillary, 8–16 cm, many-flowered, densely tawny tomentulose. Pedicels 3–6 mm, glabrous. Flowers white; perianth densely tawny tomentulose on both surfaces; tube obconical, ca. 2 mm; lobes ovate-oblong, ca. 2.5 mm. Stamens 9, filaments pubescent. Fruit ellipsoid, 10 × 7–9 mm, purplish black when mature.

Locality: Cultivated in gardens. *P. S. Choi 411; L. T. Lo 616.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Fujian, Taiwan. Also cultivated in India, Laos, Vietnam, Malaysia and Indonesia.

Ecology: Flowering: Apr.–May; fruiting: Aug.–Nov.

Uses: Additive (flavouring), material (essential oils), medicinal (folklore).

**6. Cinnamomum appelianum** Schewe 毛桂 **(Photo 82)**

Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl., Abt. 1. 61: 20. 1925; FRPS 31: 222, pl. 60: 1–5. 1982.

*Cinnamomum taimoshanicum* Chun ex H. T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1959(1): 21. 1959.

*Cinnamomum villosulum* S. Lee & F. N. Wei, Guihaia 8(4): 301, fig. 1. 1988.

Small tree, 4–6 m tall; branchlets subopposite, densely tawny hirsute-tomentose when young. Leaves alternate or subopposite; petioles thick, 4–5(–9) cm, tawny hirsute-tomentose; leaf blade leathery, elliptic, elliptic-lanceolate, ovate or ovate-elliptic, 4.5–11.5 × 1.5–4 cm, base cuneate to subrounded, apex abruptly and shortly acuminate, adaxially tawny pubescent on veins, glabrous in age, abaxially densely tawny pubescent, triplinerved; midvein and lateral veins impressed adaxially, raised abaxially. Panicles or cymes 4–6.5 cm, densely tawny pubescent, usually shorter than the substanding leaves, (3–)5–7(–11)-flowered. Peduncles slender, 1–1.5(–3.5) cm. Pedicels 2–3 mm. Flowers white, 3–5 mm; perianth tube obconical, 1–1.5 mm; lobes broadly obovate to oblong-ovate, 3–3.5 × 2 mm, acute, silky puberulent on both surfaces. Stamens 9; filaments pilose. Immature fruit ellipsoid.

Locality: Tai Tam, Tai Mo Shan, Shing Mun, Ma On Shan, Sunset Peak. *HK sheet 36068; Y. W. Lam 89.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi.

Ecology: Woods in ravines. Flowering: Apr.–Jun.; fruiting: Jun.–Aug.

Notes: The type specimen of *C. taimoshanicum* Chun ex H. T. Chang was collected from Tai Mo Shan by N. K. Chun.

**7. Cinnamomum jensenianum** Hand.-Mazz. 野黄桂

Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturwiss. Cl., Abt. 1. 58: 63. 1921; FRPS 31: 194, pl. 49: 8–14. 1982.

*Cinnamomum pauciflorum* H. T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1959(1): 21. 1959.

*Cinnamomum pedunculatum* auct. non Nees: Dunn & Tutch. FKH 223. 1912.

Small tree, to 6 m tall, all parts strongly camphor-scented. Leaves subopposite, thick-leathery; petioles slender, 2–3 cm, glabrous; leaf blade lanceolate or oblong-lanceolate, 5–10(–20) × 1.5–3(–6) cm, base broadly cuneate to subrounded, apex caudate-acuminate, margin thickened and entire, together with main veins yellowish, adaxial surface glabrous, green and shining, abaxial surface pulverulent when young, glabrous when aged; triplinerved, main veins and lateral veins raise on both surfaces. Cymes 2–5-flowered. Peduncles slender, usually 1.5–2.5 cm, subglabrous. Pedicels 5–10(–20) mm, erect, gradually thickened upwards. Flowers yellowish or white; perianth tube short, ca. 1.5 mm; lobes obovate, subequal, 2–5(–6) × 1.75(–2.2) mm, acute, abaxially glabrous, adaxially sericeous. Stamens 9, filaments pilose. Fruit ovoid, up to 1(–1.2) × 0.6(–0.7) mm, apiculate, glabrous.

Locality: Wong Lung Hang. *Y. W. Lam 616*.

Distribution: Guangdong, W Hunan, Hubei, Sichuan, Jiangxi, Fujian.

Ecology: Thin forests in valleys. Flowering: Apr.–Jun.; fruiting: Jul.–Aug.

## 6. Machilus Nees 潤楠屬

Evergreen trees or shrubs. Leaves alternate, entire, pinnately veined. Flowers bisexual, in panicles, terminal or becoming lateral by the elongation of the shoot; involucral bracts deciduous after anthesis. Perianth-tubes short; lobes 6 in 2 whorls, equal, subequal, or occasionally the outer 3 smaller than the inner ones, persistent. Stamens 9 in 3 whorls, the 3 inner ones with stipitate glands; anthers 4-celled, introrse, those of the 3 inner stamens extrorse or lateral. Staminodes present, shortly stalked, sagittate. Ovary sessile. Fruits fleshy, globose, rarely ellipsoid, subtended by persistent and reflexed perianth-lobes; pedicels not enlarged or slightly enlarged in fruit.

About 100 species in tropical and subtropical SE and S Asia; ca. 85 species in China and 12 species in Hong Kong.

1a. Perianth-lobes glabrous or only puberulous initially.
  2a. Fruits less than 10 mm in diam.; leaves not foveolate abaxially ..... 1. *M. thunbergii*
  2b. Fruits 2.5 cm in diam.; leaves foveolate abaxially ..... 2. *M. wangchiana*
1b. Perianth-lobes hairy.
  3a. Perianth-lobes tomentose abaxially.
    4a. Leaves cuneate at base, rusty tomentose abaxially ..... 3. *M. velutina*
    4b. Leaves ± rounded at base, tawny tomentose abaxially ..... 4. *M. grijsii*
  3b. Perianth-lobes puberulous or sericeous abaxially.
    5a. Fruits larger, 2.5–3 cm in diam. ..... 5. *M. robusta*
    5b. Fruits smaller, less than 1.2 cm in diam.
      6a. Panicles borne at the base of branches of the current year's growth.
        7a. Leaves glabrous abaxially ..... 6. *M. chekiangensis*
        7b. Leaves pubescent abaxially
          8a. Branchlets hairy.
            9a. Branchlets rusty tomentose; lateral veins of leaves 10–12 pairs; fruit compressed globose ..... 7. *M. kwangtungensis*
            9b. Branchlets rusty sericeous; lateral veins of leaves 6–10 pairs; fruit globose ..... 8. *M. gamblei*
          8b. Branchlets glabrous.
            10a. Bud scales densely sericeous; leaves obovate-oblong, 14–24 × 3.5–7 cm, lateral veins 19–20 pairs ..... 9. *M. leptophylla*
            10b. Bud scales brown or yellowish brown puberulous; leaves elliptic or oblanceolate, 7–15 × 2–4 cm, lateral veins 12–17 pairs ..... 10. *M. pauhoi*
      6b. Panicles terminal or subterminal.
        11a. Petioles 3–5 mm; leaves obovate to obovate-lanceolate, 1.5–2 cm wide ..... 11. *M. breviflora*
        11b. Petioles 6–14 mm; leaves obovate-oblong to oblong-oblanceolate, 2–3(–4) cm wide ..... 12. *M. chinensis*

**1. Machilus thunbergii** Sieb. & Zucc. 紅楠 **(Fig. 24; Photo 83)**

Abh. Bayer. Akad. Wiss., Math.-Naturwiss. Kl. 4(4): 202. 1846; FHK 291. 1861; FKH 224. 1912; FRPS 31: 19, pl. 4: 1. 1982; FTW ed. 2, 2: 483, photo 207. 1996.

*Machilus rimosa* auct. non Blume: FHK 291. 1861.

Tree, usually 10–15(–20) m tall, glabrous except the ciliate scales of the leaf-buds. Petioles slender, 1–3.5 cm, reddish when fresh; leaf blade leathery to obovate, obovate-lanceolate, 4.5–9(–13) × 1.7–4.2 cm, base cuneate, apex shortly cuspidate to shortly acuminate,

dark green and shining adaxially, ± glaucous abaxially, midvein slightly impressed adaxially, prominently raised abaxially, lateral veins 7–12 on each side of midvein. Panicles loosely oblong or pyramidal, 5–12 cm, terminal or arising from the base of twigs. Pedicels 5–8 mm. Perianth-lobes narrow-oblong, ca. 5 mm, outer 3 narrower and shorter, apex acute, Fruit compressed globose, 8–10 mm in diam., blackish purple when mature; peduncles and fruiting pedicels bright red.

Locality: Tai Mo Shan, Ma On Shan, Sunset Peak. *N. H. Li 18; Y. W. Lam 1408.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Anhui, Jiangsu, Shandong, Zhenjiang, Fujian, Taiwan; Japan, Korea.

Ecology: Forests on hill slopes or in valleys. Flowering: Feb.; fruiting: Jun.–Aug.

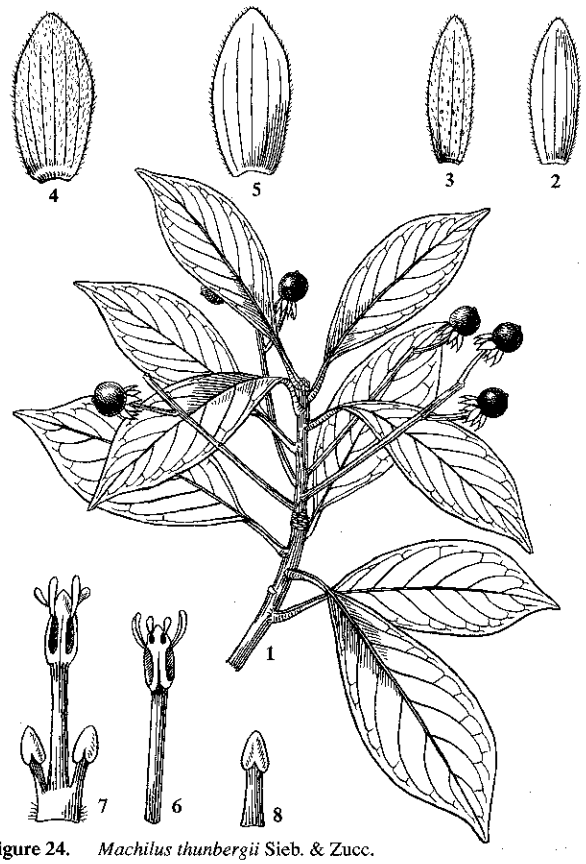



**Figure 24.** *Machilus thunbergii* Sieb. & Zucc.
*1.* fruiting branch; *2, 3.* abaxial and adaxial surface of inner tepal; *4, 5.* abaxial and adaxial surface of outer tepal; *6.* stamen of 1st whorl; *7.* stamen of 3rd whorl; *8.* staminode. (drawn by H. P. Yu)

**2. Machilus wangchiana** Chun
信宜潤楠(嘉道理楠) **(Photo 84)**

Acta Phytotax. Sin. 2: 166. 1953; FRPS 31: 29. 1982.

*Persea wangchiana* (Chun) Kosterm., Reinwardtia 6: 194. 1962.

*Persea kadooriei* Kosterm., J. S. Afr. Bot. 47(1): 110. 1981.

Tree, 6–15 m tall; branchlets dark grey, glabrous. Leaves clustered near apex of twigs; petioles ca. 2 cm; leaf blade leathery, oblong oblanceolate or oblong elliptic, 18–25 × 5–8 cm, base cuneate and decurrent, apex cuspidate, midvein thick, impressed adaxially, prominently raised abaxially, lateral veins 24–30 on each side of midvein, reticulation of veins foveolate. Inflorescences subracemose, 5–12 cm, densely aggregated on branchlets of the current year's growth. Peduncles ± fleshy and purplish when fresh, branched above middle; the branches 1–3-flowered. Pedicels ca. 8 mm. Perianth-lobes, unequal, inner 3 oblong elliptic, ca. 7 mm long, outer 3 smaller, apex acute, initially puberulous. Fruit globose, ca. 2.5 cm in diam., black; pedicels purplish when mature.

Locality: Mount Parker, Kadoorie Farm, Tai Mo Shan. *Y. W. Lam 170, 1459.*

Distribution: Guangdong, Guangxi.

Ecology: Forests in valleys. Fruiting: Apr.–May.

Notes: The type specimen of *Persea kadooriei* Kosterm. was collected by G. Barretto in Kadoorie Farm in 1972. Listed in *Rare and Precious Plants of Hong Kong.*

**3. Machilus velutina** Champ. ex Benth. 絨毛潤楠 **(Photo 85)**

Hooker's J. Bot. Kew Gard. Misc. 5: 198. 1853; FHK 291. 1861; FKH 224. 1912; FHN 1: 268. 1964; FRPS. 31: 31, pl. 8: 2. 1982.

Tree, up to 18 m tall. Branches, buds and inflorescences densely rusty tomentose. Petioles 1–2.5(–3) cm; leaf blade leathery, leaf blade leathery, narrowly obovate, elliptic, or narrowly ovate, 5–11(–18) × 2–5(5.5) cm, base cuneate, apex acuminate or shortly acuminate, shining adaxially, midvein slightly impressed adaxially, prominently raised abaxially, lateral veins 8–11 on each side of midvein, reticulation of veins inconspicous. Cymes solitary or 2–3 aggregated at apex of branchlets, shortly pedunculate or sessile, profusely and shortly branched. Flowers yellowish green, aromatic, densely rusty tomentose; perianth-lobes slightly unequal, inner 3 ovate, ca. 6 × 3 mm, outer 3 smaller and narrower. Fruit globose, ca. 4 mm in diam., purplish red when mature.

Locality: Common in Hong Kong. *H. C. Tang 21, 1148.*

Distribution: Guangdong, Guangxi, Jiangxi, Zhejiang, Fujian; Indochina.

Ecology: Flowering: Oct.–Dec.; fruiting: Feb.–Mar.

Notes: The type specimen was collected by J. G. Champion from Hong Kong Island between 1847 to 1850.

**4. Machilus grijsii** Hance 黃絨潤楠(黃楠) **(Photo 86)**

Ann. Sci. Nat., Bot., ser. 4, 18: 226. 1863; FKH 224. 1912; FHN 1: 268. 1964; FRPS 31: 32, pl. 8: 1. 1982.

Tree, up to 5 m tall. Buds, branchlets, petioles and abaxial surface of leaves tawny tomentulose. Petioles 7–18 mm; leaf blade leathery, obovate-oblong, 7.5–14(–18) × 3.7–6.5(–7) cm, base ± rounded, apex acuminate, glabrous adaxially, midvein and lateral veins impressed adaxially, raised abaxially, lateral veins 8–11 on each side of midvein, veinlets slender and indistinct. Cymes short, ca. 3 cm, fasciculate at apex of branchlets, densely tawny tomentulose. Pedicels ca. 5 mm. Perianth-lobes oblong elliptic, subequal, ca. 3.5 mm, tomentose on both surfaces. Fruit globose, ca. 1 cm in diam.

Locality: Ma On Shan. *HK sheet 24155, 34136.*

Distribution: Guangdong, Jiangxi, Zhejing, Fujian.
Ecology: Thickets, forests. Flowering: Mar.; fruiting: Apr.

**5. Machilus robusta** W. W. Sm. 粗壯潤楠 **(Photo 87)**

Notes Roy. Bot. Gard. Edinburgh 13: 169. 1921; FRPS 31: 62. 1982.
*Machilus liangkwangensis* Chun, Acta Phytotax. Sin. 2: 165, t. 30. 1953.

Tree, 15–20 m tall. Branchlets stout, more or less compressed and puberulous when young, glabrescent, lenticellate. Buds small, ovoid, with brownish densely puberulous scales. Petioles 2.5–5 cm; leaf blade thickly leathery, narrowly elliptic to obovate-elliptic or suboblong, 10–26 × 5.5–8.5 cm, base subrounded or broadly cuneate, apex acute or sometimes shortly acuminate, glabrous on both surfaces, glaucous abaxially, midvein impressed adaxially, strongly raised on abaxial surface, turning red when dry, lateral veins (5–)7–9 on each side of midvein, ca. 2.5 cm spaced, reticulation of veins foveolate. Panicles terminal or in axils of leaves near apex of branchlets, 4–12(–16) cm, much branched and many-flowered. Peduncles 2.5–11.5 cm, stout, compressed, reddish when fresh, densely puberulous, glabrescent. Pedicels 5–8 mm long, pubescent, reddish when fresh. Perianth-lobes subequal, ovate-lanceolate, 6–7(–9) × 2–3(–3.5) mm, acute, puberulous to glabrous on both surfaces. Fruit globose, 2.5–3 cm in diam., bluish black when mature; fruiting pedicels thickened, 1–1.5 cm, crimson.

Locality: Ng Tung Chai, Castle Peak. *S. C. Ng 2874; HK sheet 24230.*
Distribution: Guangdong, Guangxi, S Guizhou, S Yunnan; Myanmar.
Ecology: Evergreen forests, especially in valleys. Flowering: Jan.–Apr.; fruiting: Apr.–Jun.

**6. Machilus chekiangensis** S. Lee 浙江潤楠 **(Photo 88)**

Acta. Phytotax. Sin. 17(2): 53, pl. 5, fig. 4. 1979; FRPS 31: 49, pl. 12: 2. 1982.
*Machilus longipedunculata* S. Lee et F. N. Wei, Guihaia, 4(2): 93, pl. 1, fig. 1. 1984.

Tree. Branches brown, with scattered labiate lenticels; young branches with bud scale scars at the base. Leaves usually aggregate at apex of branchlets; petioles slender, 8–15 mm; leaf blade leathery or thin-leathery, oblanceolate, 6.5–13 × 2–3.6 cm, base attenuate, apex caudate-acuminate, ± falcate, yellowish green when dry, initially appressed puberulous, midvein impressed adaxially, raised abaxially, lateral veins 10–12 on each side of midvein, veinlets slender, reticulation of veins foveolate. Flowers not seen. Infructescence 7–9 cm, borne on the base of branchlets of the current year's growth, greyish puberulous. Fruit globose, ca. 7 mm in diam.; fruiting pedicels ca. 4 mm, together with peduncles purplish reddish when fresh; persistent Perianth-lobes subequal, ca. 4 mm.

Locality: Common in Hong Kong. *Y. S. Lau 3296; HK sheet 35411.*
Distribution: Zhejiang, Fujian.
Ecology: Mixed forests. Flowering: Feb.; fruiting: Apr.–May.

**7. Machilus kwangtungensis** Y. C. Yang 廣東潤楠

J. W. China Border Res. Soc. Ser. B. 15: 77. 1945; FRPS 31: 37, pl. 9: 2. 1982.

Tree, to 10 m tall. Young branches densely rusty tomentose. Leaves leathery; petioles 8–10(–15) mm, pubrulous; leaf blade oblong or oblanceotate, 6–11(–15) × 2–4.5 cm, base attenuate, apex acuminate, dark greenish and glabrous adaxially, paler and appressed puberulent abaxially, midvein impressed adaxially, raised abaxially, lateral veins slender, usually 10–12 on each side of midvein, inconspicuous on both surfaces. Panicles arising from lower part of the current year's branchlets, 5–10.5 cm, greyish yellow puberulous. Peduncles slightly compressed. Pedicels slender, 5–7 mm. Perianth-lobes subequal, oblong, ca. 5 mm, apex obtuse, puberulous on both surfaces. Fruit subglobose, slightly compressed, 8–9 mm in diam., blackish when mature; fruiting pedicels 5–8 mm, puberulous.

Locality: Ho Sheung Heung, Sheung Shui (Kwu Tung). *Y. W. Lam 1512, 1483.*
Distribution: Guangdong, Guangxi, Guizhou, Hunan.
Ecology: Forest on hillslopes or in valleys. Flowering: Mar.–Apr.; fruiting: May–Jul.

**8. Machilus gamblei** King ex Hook. f. 黃心樹(芳槁潤楠) **(Photo 89)**

Fl. Brit. India 5: 138. 1886.
*Machilus suaveolens* S. Lee, Acta Phytotax. Sin. 8(3): 187. 1963; FHN 1: 272. 1964; FRPS 31: 38. 1982.

Tree, to 25 m tall. Young shoots densely rusty sericeous, glabresent. Petioles 1–2 cm; leaf blade leathery, oblong, obovate or oblanceolate, (5–)6–15 × 1.5–5.5 cm, base cuneate to attenuate, apex bluntly acute or shortly acuminate, greenish or greenish white abaxial, densely rusty sericeous on both surfaces when young, glabresent adaxially. Puberulous abaxially, lateral veins 6–10 on each side of midvein, raised on both surfaces, veinlets inconsipicuous. Panicles arising from the base of branchlets, 4–13 cm. Peduncles (2–)4–8.5 cm, densely greyish sericeous. Pedicels slender, ca. 5 mm. Perianth-lobes equal, oblong, 4 × 1.5 mm, sericeous on both surfaces. Fruit globose, 7–8 mm in diam., blackish when mature; fruiting pedicels slightly thickened, to 1.5 mm thick at the apex.

Locality: Tai Po Kau, Sha Lo Tung. *X. Y. Zhuang 1950; Y. W. Lam 1457.*
Distribution: Hainan, Guangdong, Guangxi, Guizhou; India, Nepal to Vietnam.
Ecology: Forests on slopes or in valleys. Flowering: Mar.–Apr.; fruiting: May–Jun.

**9. Machilus leptophylla** Hand.-Mazz. 薄葉潤楠

Symb. Sin. 7: 252. 1931; W. Y. Chun, Acta Phytotax. Sin. 2: 167, t. 32. 1953; FRPS 31: 44. 1982.

Tree, to 28 m tall. Branchlets stout, dark brown, glabrous. Terminal buds subglobose, with minutely sericeous scales. Leaves alternate or clustered on branchlets of the current year's growth; petioles 1–3 cm, glabrous; leaf blade firmly papery, obovate-oblong, 14–24(–32) × 3.5–7(–8) cm, base cuneate, apex shortly acuminate, abaxial surface densely appressed sericeous when young, sparsely sericeous to glabrescent when aged; lateral veins 14–20(–24) on each side of midvein, reddish when fresh. Panicles 6–10 clustered at the base of branchlets, 8–12(–15) cm, many-flowered, densely greyish puberulous. Pedicels slender, ca. 5 mm. Perianth-lobes subequal, oblong-elliptic, pulverulent abaxially, puberulous or glabrous adaxially. Fruit globose, ca. 1 cm in diam.; fruiting pedicels 5–10 mm.

Locality: Tai Mo Shan. *Y. W. Lam 1405, 1426.*

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Zhejing, Fujian.

Ecology: Forests in valleys. Fruiting: Jul.

**10. Machilus pauhoi** Kanehira 刨花潤楠(多脈潤楠、密脈潤楠) **(Photo 90)**

Trop. Woods 23: 8. 1930; FRPS 31: 43, pl. 11: 1–7. 1982.

*Machilus polyneura* H. T. Chang, Acta Sci. Nat. Sunyatseni 1960(1): 18. 1960.

*Machilus salicina* sensu Dunn & Tutch., FKH 224. 1912.

Tree, 6–20 m tall. Branchlets glabrous or brownish puberulous at the base. Buds globose to subovoid, with brownish puberulous scales. Leaves usually clustered towards apex of branchlets; petioles slender, 8–13 mm; leaf blade leathery, elliptic to narrowly elliptic, occasionally oblanceolate, 7–15(–17) × 2–4(–5) cm, apex acuminate or caudate-acuminate, tip blunt, adaxial surface dark green and glabrous, abaxial surface except for the midvein and lateral veins densely covered with appressed tawny short hairs; lateral veins slender, 12–17 on each side of midvein, veinlets inconspicuous on both surfaces. Inflorescence cymose-paniculate, arising from the base of the current year's branchlets, puberulous. Pedicels slender, 8–13 mm. Perianth-lobes ovate-lanceolate, ca. 6 mm, puberulous on both surfaces. Fruit globose, ca. 1 cm in diam., black when mature.

Locality: Tai Po (Nam Hang), Sai Kung (Tsiu Hang). *Y. W. Lam 195, 657.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Thickets or open forests on hillslopes or in valleys.

**11. Machilus breviflora** (Benth.) Hemsl. 短序潤楠(短花楠) **(Photo 91)**

J. Linn. Soc. Bot. 26: 374. 1861; FKH 224. 1912; FRPS 31: 59. 1982.

*Alseodaphne breviflora* Benth., FHK 292. 1861.

Tree, ca. 8 m tall. Branchlets dark brown to greyish brown. Buds ovoid, with tomentose scales. Leaves clustered towards apex of branchlets; petioles 3–5 mm; leaf blade leathery, obovate to obovate-lanceolate, 4–5(9) × 1.5–2 cm, base attenuate, apex obtuse, glabrous on both surfaces, midvein impressed adaxially, raised abaxially, lateral veins and veinlets slender. Panicles 3–5, terminal, glabrous. Peduncules 3–5 cm. Pedicels short, ca. 3–5 mm. Perianth-lobes slightly unequal, outer 3 smaller, persistent or sometimes deciduous in fruit. Fruit globose, ca. 8–10 mm in diam.

Locality: Common in Hong Kong. *N. H. Li 133; H. C. Tang 1967.*

Distribution: Hainan, Guangxi.

Ecology: Mixed forests on hillslopes or in valleys. Flowering: Jul.–Aug.; fruiting: Oct.–Dec.

Notes: The type specimen of *Alseodaphne breviflora* was collected by C. Wright in Hong Kong Island between 1854 and 1855.

**12. Machilus chinensis** (Champ. ex Benth.) Hemsl. 華潤楠(香港楠) **(Photo 92)**

J. Linn. Soc. Bot. 26: 374. 1891; FKH 224. 1912; FRPS 31: 59. 1982.

*Alseodaphne chinensis* Champ. ex Benth., J. Bot. Kew Misc. 5: 198. 1853; FHK 292. 1861.

Tree, 8–11 m tall, glabrous. Buds small, glabrous or sometimes pubescent. Petioles 6–14 mm; leaf blade leathery, obovate-oblong to oblong-oblanceolate, 5–8(–10) × 2–3(–4) cm, base attenuate, apex obtuse or shortly acuminate, glaucous or brownish yellow abaxially when dry, midvein impressed adaxially, raised abaxially, lateral veins ca. 8 on each side of midvein, veinlets finely reticulated. Panicles terminal, ca. 3.5 cm. Peduncles 2–2.5 cm. Pedicels ca. 3 mm. Perianth-lobes oblong lanceolate, slightly unequal, inner 3 larger than the outer ones, abaxially puberulous, adaxially glabrous or only puberulous at the base. Fruit globose, 8–11 mm in diam.

Locality: Aberdeen, Nam Fung Road. *C. P. Lau 146; HK sheet 38389.*

Distribution: Guangdong, Guangxi; Vietnam.

Ecology: Mixed forest on hillslopes. Flowering: Sep.; fruiting: Feb.

Notes: The type specimen of *Alseodaphne chinensis* was collected by J. G. Champion in Happy Valley, Hong Kong Island between 1847 and 1850.

## 7. Neolitsea Merr. 新木薑子屬

Evergreen trees and shrubs. Leaves alternate, clustered or whorled, rarely subopposite, triplinerved, rarely pinninerved. Flowers unisexual, dioecious, in umbels; the umbels solitary or clustered, bracteate at base; bracts decussate, deciduous. Perianth-lobes 4 in 2 whorls. Staminate flowers: fertile stamens 6 in 3 whorls; filaments of the inner 3 stamens with 2 glands at the base; anthers 4-celled, all introrse. Pistillate flowers: staminodes 6, linear or clavate. Ovary superior; style short; stigma peltate. Fruits globose, with resin on the slightly dilated perianth tube.

About 85 species distributed in Indo-Malaysia to E Asia; 45 species in China; seven species in Hong Kong.

1a. Leaves pinnately veined or subtriplinerved ..... 1. *N. cambodiana* var. *glabra*
1b. Leaves tripliveined.
2a. Leaves glabrous.
3a. Leaves distinctly foveolate on both surfaces ..... 2. *N. ovatifolia*
3b. Leaves not foveolate on both surfaces.
4a. Petiole 2.5–4 mm; leaf blade broadly ovate, ovate or ovate-oblong, 11–19 × 6.8–12.5 cm ..... 3. *N. kwangsiensis*
4b. Petiole 2.5–4 cm; leaf blade elliptic to oblong-elliptic or ovate-elliptic, 8–16 × 3–9 cm ..... 4. *N. chunii*
2b. Young leaves pubescent.
5a. Leaves large, usually 15–30 cm long ..... 5. *N. levinei*
5b. Leaves smaller, usually less than 10(–13) cm long.
6a. Petioles 1–2 cm long; fruit 5–9 mm in diam. ..... 6. *N. phanerophlebia*
6b. Petioles 0.5–0.8 cm long; fruit 4–6 mm in diam. ..... 7. *N. pulchella*

**1. Neolitsea cambodiana** Lecomte var. **glabra** C. K. Allen 香港新木薑子 **(Photo 93)**

Ann. Missouri Bot. Gard. 25: 418. 1938; FRPS 31: 346. 1982.

*Actinodaphne angustifolia* auct. non Nees: Benth., FHK 293. 1861.

*Actinodaphne hongkongensis* Chun, J. Arnold Arbor. 8: 22. 1927.

*Neolitsea hongkongensis* (Chun) C.K. Allen, Ann. Missouri Bot. Gard. 25: 418. 1938.

Tree, 8–12 m tall. Branchlets tawny adpressed-pubescent. Leaves 3–5, subverticillate; petioles 1–1.5 cm, adpressed-pubescent; leaf blade leathery, oblong-lanceolate, oblong-elliptic lanceolate, obovate or elliptic, 10–17 × 3.5–6 cm, base attenuate or cuneate, apex acuminate or acute, glabrous on both surfaces, glaucous abaxially, pinnately veined or subtriplinerved, lateral veins 4–5 on each side of midvein. Umbels 4–5-flowered, clustered, sessile or subsessile; bracts 4, pubescent on the ridge of abaxial surface. Male flowers: Perianth-lobes ovate; fertile stamens 6, exserted, filaments villous at the base; pistillodes glabrous. Female flowers: Perianth-lobes linear or ovate-lanceolate, staminodes pubescent at the base; ovary ovoid, stigma bifid. Fruit globose, 8–10 mm diam., on a discoid perianth tube; fruiting pedicels 7 mm.

Locality: Victoria Peak (Lugard Road), Happy Valley. *Y. S. Lau 2524, 2649.*

Distribution: Guangdong, Guangxi, Hunan, S Jiangxi, Fujian; Cambodia, Laos.

Ecology: Mixed forests, thickets. Flowering: Oct.–Dec.; fruiting: Jul.–Aug.

Notes: The type specimen of *Actinodaphne hongkongensis* Chun was collected in Happy Valley Woods by C. Wilford between 1857 and 1858.

**2. Neolitsea ovatifolia** Yang & P. H. Huang 卵葉新木薑子 **(Photo 94)**

Acta Phytotax. Sin. 16(4): 44, fig. 5. 1978; FRPS 31: 369, pl. 94: 9–10. 1982; FGD 6: 49. 2005.

*Neolitsea ovatifolia* var. *puberula* Yang & P. H. Huang, Act. Phytotax. Sin. 16(4): 44. 1978.

Shrub. Branchlets glabrous. Leaves alternate or crowded toward apex of branchlets; petiole 8–10(–15) mm, slightly flattened, glabrous; leaf blade leathery, ovate, 4–6(–8.5) × 2–2.5(–4) cm, base obtusely rounded or broadly cuneate, apex acuminate, glabrous, glaucous abaxially, triplinerved, distinctly foveolate on both surfaces, due to the raised midvein and lateral veins. Umbels 5-flowered, solitary or 3–4 fascicled; peduncles very short or obsolete; pedicels sericeous-pubescent. Perianth-segments 4, elliptic. Male flowers: fertile stamens 6; filaments glabrous; pistillodes glabrous. Fruit globose or subglobose, ca 1 cm in diam., glabrous; fruiting pedicels 5–8 mm, very stout, glabrous.

Locality: Lantau Peak. *S. C. Ng 3226, 3228.*

Distribution: Hainan, Guangdong, Guangxi.

Ecology: Thin forests. Flowering: May–Jul.; fruiting: Aug.–Oct.

**3. Neolitsea kwangsiensis** Liou 廣西新木薑子

Laurac. Chine & Indochine 146. 1932; Allen, Ann. Missouri Bot. Gard. 25: 423. 1938; FRPS 31: 370. 1982

Shrub or small tree, to 5 m tall; bark greyish, smooth. Branchlets stout, yellowish brown, glabrous. Bud scales subglabrous abaxially, margin ciliate. Leaves leathery, alternate or clustered towards apex of branchlets; petioles 2.5–4 mm, slightly compressed, glabrous; leaf blade broadly ovate, ovate or ovate-oblong, 11–19 × 6.8–12.5 cm, base rotund or attenuate, apex acuminate or obtuse, dark green and slightly lustrous adaxially, glaucous abaxially, glabrous on both surfaces; triplinerved, primary veins raised on both surfaces. Umbels 5-flowered, 5–8 in axillary fascicles. Bracts 4, puberulous abaxially. Pedicels short, densely pubescent. Perianth-lobes 4, ovate or ovate-orbicular, 3.5 × 2.5–3 mm, puberulous on both surfaces. Fruit globose, 15–16 mm in diam.; fruiting pedicels 6–7 mm, puberulous.

Locality: Ma On Shan (Mau Ping Village), Sunset Peak. *F. W. Xing 8547; Y. S. Lau 1486.*

Distribution: Guangdong, Guangxi.

Ecology: Forests in valleys. Flowering: Dec.; fruiting: Aug. of the following year.

**4. Neolitsea chuii** Merr. 鴨公樹 **(Photo 95)**

Lingnan Sci. J. 7: 306. 1929; FRPS 31: 372, pl. 95: 1–2.1982; FGD 6: 50. 2005

Tree, to 8 m tall, glabrous, except for the inflorescence. Leaves alternate or crowded toward apex of the branchlets; petioles 2.5–4 cm; leaf blade elliptic to oblong-elliptic or ovate-elliptic, 8–16 × 3–9 cm, base acute, apex acuminate, glaucous abaxially, triplinerved, lateral veins of 3–5 pairs. Umbels pubescent, 5–6-flowered, axillary or lateral, clustered; peduncles very short or almost obsolete; pedicels 4–5 mm. Perianth-segments 4, ovate or oblong, abaxially puberulous at base and on midvein. Male flowers: fertile stamens 6; filaments pubescent at base; pistillodes ovoid. Fruit ellipsoid or subglobose, ca. 8 mmin diam.; fruiting pedicels 7 mm, slightly thickened.

Locality: Sai Kung, Tai Po Kau. *S. C. Ng 3209, 3240; K. Y. Tam s.n. (HK Sheet 39679).*

Distribution: Guangdong, Guangxi, SE Yunnan, Hunan, Jiangxi, Fujian.

Ecology: Native forests in valleys. Flowering: Sep.–Oct.; fruiting: Dec.

**5. Neolitsea levinei** Merr. 大葉新木薑子 **(Photo 96)**

Philipp. J. Sci. Bot. 13: 138. 1918; Allen, Ann. Missouri Bot. Gard. 25: 423. 1938; FRPS 31: 359. 1982

*Neolitsea lanuginosa* Gamble var. *chinensis* Gamble, Sarg. Pl. Wils. 2: 79. 1914.

Tree, up to 22 m tall. Branchlets terete, densely tawny pubescent when young, glabrate in age. Buds scales rusty puberulous abaxially. Leaves 4–5 whorled; leaf blade leathery, oblong-lanceolate to oblong-oblanceolate or elliptic, 15–30 × 4.5–9 cm, base acute, apex shortly acute, adaxially dark green and shining, glabrous, abaxially glaucous, initially densely tawny villose, glabrate in age; triplinerved, lateral veins 3–4 on each side of midvein, raised on both surfaces. Umbels 5-flowered, clustered. Pedicels 3 mm, densely tawny pubescent. Perianth-lobes 4, ovate, sparsely pubescent abaxially, margin ciliate. Fruit ellipsoid or globose, 12–18 × 8–15 mm, black when mature; fruiting pedicels 7–10 mm, densely pubescent, slightly enlarged at apex.

Locality: Ma On Shan, Tai Mo Shan. *F. W. Xing 7554; Y. W. Lam 1232.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Fujian.

Ecology: Forests in valleys. Flowering: Mar.–Apr.; fruiting: Aug.–Oct.

**6. Neolitsea phanerophlebia** Merr. 顯脈新木薑子

Lingnan Sci. J. 7: 305. 1929; Allen, Ann. Missouri Bot. Gard. 25: 430. 1938; FRPS 31: 360. 1982

Small tree, to 10 m tall. Branchlets, bud scales and petioles, densely rusty puberulous. Leaves in false whorls or scattered; petioles 1–2 cm; leaf blade papery or thin-leathery, oblong to oblong-elliptic or oblong-lanceolate to ovate, 6–13 × 2–4.5 cm, base acute or obtuse, apex acuminate, adaxially pale greenish, ± shining, glabrous except puberulous on veins when young, abaxially glaucous, densely appressed-pubescent and villous; triplinerved, lateral veins 3–4 on each side of midvein, raised on both surfaces. Umbels sessile, 5–6-flowered, 2–4 clustered in axils of leaves or leaf scars. Bracts 4, appressed-puberulous abaxially. Pedicels 2–3 mm, densely rusty pubescent. Perianth-lobes 4, ovate or orbicular, 3 × 2 mm, margin ciliate, pubescent at the base of adaxial surface. Fruit subglobose, 5–9 mm in diam., glabrous, purplish black when mature; fruiting pedicels 5–7 mm, appressed-pubescent.

Locality: Sunset Peak, Lantau Peak. *L. T. Lo 473, 592.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi.

Ecology: Thin forests in valleys. Flowering: Oct.–Nov.; fruiting: Jul.–Aug. of the following year.

**7. Neolitsea pulchella** (Meisn.) Merr.

美麗新木薑子 **(Fig. 25; Photo 97)**

Philip. J. Sci. Bot. 13: 137. 1918; Allen, Ann. Missouri Bot. Gard. 25: 427. 1938; FHN 1: 297. 1964; FRPS 31: 361. 1982

*Litsea pulchella* Meisn. in DC. Prodr. 15(1): 224. 1864; FKH 225. 1912.

*Litsea ceylanca* auct. non Nees: Benth., FHK 294. 1861.

Small tree, 6–8 m tall. Branchlets slender, initially brown pubescent; bud scales densely brown puberulous. Leaves alternate or crowded towards apex of branchlets in false whorls; petioles 6–8 mm, initially brown pubescent; leaf blade leathery, elliptic or oblong-elliptic, 4–6 × 2–3 cm, base cuneate or attenuate, apex acuminate or caudate-acuminate, adaxially dark green and shining, glabrous except for the pubescent midvein when young, adaxially glaucous, grey villous when young, glabrescent in age, triplinerved, lateral veins 2–3 on each side of midvein, raised on both surfaces. Umbels 4–5-flowered, solitary or 2–3 clustered in axils of leaves. Pedicels ca. 2 mm, densely villous. Perianth-lobes 4, elliptic, 2.5 × 1.5 mm, abaxially villous on midvein. Fruits globose, 4–6 mm in diam., on a discoid cupule; fruiting pedicels slender, 5–6 mm, slightly thickened at apex.

Locality: Aberdeen, Pok To Yan. *Y. S. Lau 46; P. S. Choi s.n. (HK sheet 35879).*

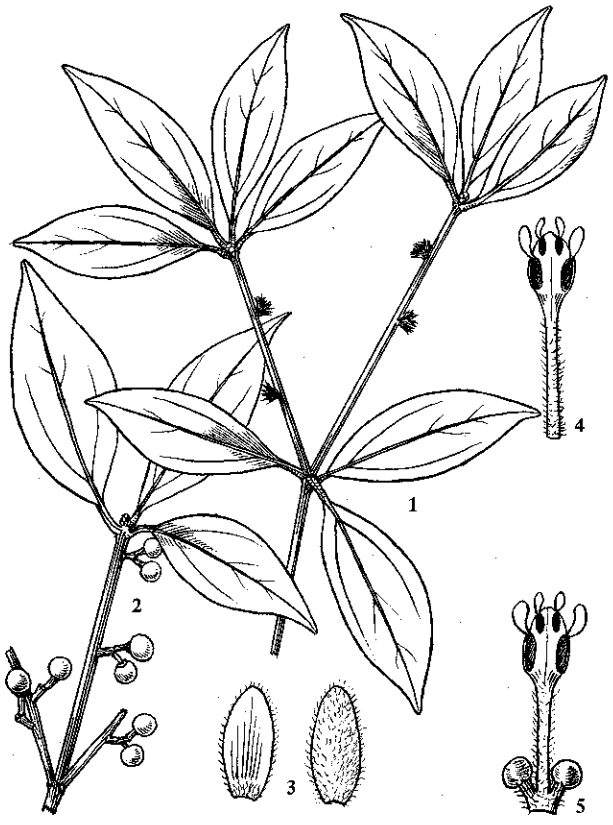



**Figure 25.** *Neolitsea pulchella* (Meisn. ) Merr.

*1*. flowering branch; *2*. fruiting branch; *3*. dorsal and ventral view of tepal; *4*. stamen of 1st and 2nd whorls; *5*. stamen of 3rd whorl. (drawn by H. P. Yu)

Distribution: Guangdong, Guangxi, Fujian.

Ecology: Mixed forests. Flowering: Oct.–Nov.; fruiting: Aug.–Sep. of the following year.

## 8. Litsea Lam. 木薑子屬

Trees or shrubs, evergreen or deciduous. Leaves alternate, rarely opposite or verticillate, pinnately veined. Inflorescences cymose-umbellate, the cymes or umbels solitary or clustered in axils of leaves; involucral bracts 4–6, decussate, persistent at anthesis. Flowers unisexual, dioecious; perianth with a long or short tube; lobes usually 6 in 2 whorls, equal or unequal, rarely wanting or 8. Staminate flowers: fertile stamens 9 or 12, rarely more, in 3–4 whorls of 3 each; filaments of the 3rd and 4th whorl (if present) stamens usually bearing 2 glands at the base; anthers 4-celled, all introrse; rudimentary pistil present or absent. Pistillate flowers: staminodes as many as the stamens of the staminate flowers; ovary superior, style prominent. Fruits a drupe, sometimes succulent, resting on the cup-shaped, enlarged perianth-tube.

About 200 species distributed in tropical and subtropical Asia, Australia, N America to subtropical S America; about 72 species in China; eight species and one variety in Hong Kong.

1a. Leaves papery or membranous, deciduous ..... 1. *L. cubeba*

1b. Leaves leathery or thin-leathery, evergreen.

2a. Perianth-lobes absent or inconspicuous; fertile stamens 15–30 ..... 2. *L. glutinosa*

2b. Perianth-lobes 6–8; fertile stamens usually 9–12.

3a. Perianth-tubes not or slightly enlarged, flat or shallowly discoid.

4a. Leaves irregularly whorled, usually 3–4 at nodes ..... 3. *L. verticillata*

4b. Leaves alternate.

5a. Umbels and infructescences subsessile, flowers and fruits subsessile ..... 4. *L. rotundifolia*

5b. Umbels and infructescences pedunculate or sometimes subsessile, flowers and fruits pedicellate ..... 5. *L. monopetala*

3b. Perianth-tubes prominently enlarged discoid or cup-shaped, enclosed almost half of the fruit.

7a. Branchlets, petioles puberulous ..... 6. *L. greenmaniana*

7b. Branchlets, petioles tomentose or pubescent.

8a. Umbels usually solitary; pedicels short, 2–3 mm; leaves 4–5 times longer than broad ..... 7. *L. elongata*

8b. Umbels usually several clustered on axillary short branches; pedicels ca. 10 mm; leaves scarcely 3 times longer than broad ..... 8. *L. acutivena*

### 1. Litsea cubeba (Lour.) Pers. 木薑子(山蒼樹) **(Photos 98–99)**

Syn. Pl. 2: 4. 1807; FHN 1: 289. 1964; FRPS 31: 271. 1982; FTW ed. 2, 2: 470, photo 198. 1996.

*Laurus cubeba* Lour. Fl. Cochinch. 252. 1790.

*Tetranthera polyantha* Wall., Cat. No. 2538, *nom. nud.*; FHK 293. 1861.

*Litsea citrata* auct. non Bl.: Dunn & Tutch., FKH 225. 1912.

Deciduous, aromatic shrub or small tree, 8–10 m tall. Branchlets slender, green, glabrous; terminal buds conical, pubescent. Leaves alternate; petioles 6–20 mm, glabrous; leaf blade papery, lanceolate, oblong or elliptic, 4–11 × 1.1–2.4 cm, base cuneate, apex acuminate or acute, dark green adaxially, glaucous abaxially, glabrous on both surfaces; pinnately veined, lateral veins slender, 6–16 on each side of midvein, together with midvein raised on both surfaces. Umbels 4–6-flowered, solitary or fascicled; peduncles slender, 6–10 mm; bracts ciliate. Perianth-lobes 6, broad ovate. Fertile stamens 9; filaments pubescent in the lower part; staminodes in female flowers pubescent on the lower part. Ovary ovoid, stigma capitate. Fruit subglobose, ca. 5 mm in diam., black at maturity; fruiting pedicels 2–4 mm, slightly enlarged at the apex.

Locality: Common in Hong Kong. *H. C. Tang 1304, 1480.*

Distribution: Guangdong, Guangxi, Sichuan, Xizang, Yunnan, Guizhou, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; SE Asia.

Ecology: Sunny slopes, thickets, thin forests. Flowering: Feb.–Mar.; fruiting: Jul.–Aug.

Uses: Materials (essential oil), ornamental, medicinal (folklore).

### 2. Litsea glutinosa (Lour.) C. B. Rob. 潺槁樹 **(Photo 100)**

Philip. J. Sci. Bot. 6: 321. 1911; FHN 1: 291, fig. 144. 1964; FRPS 31: 285. 1982

*Sebifera glutinosa* Lour., Fl. Cochinch. 638. 1790.

*Tetranthera citrifolia* sensu Benth., FHK 293. 1861.

*Litsea sebifera* Pers., Syn. Pl. 2: 4. 1807; FKH 225. 1912.

Evergreen tree, 3–15 m tall. Branchlets greyish brown, initially tawny tomentose. buds scales greyish yellow tomentose. Leaves alternate; petioles 1–2.6 cm, grey yellow tomentose; leaf blade leathery, obovate, obovate-oblong or elliptic-lanceolate, 3.5–10(–26) × 1.5–11 cm, base cuneate, obtuse or rotund, apex obtuse or rounded, initially tomentose on both surfaces, glabrate in age; pinnately veined, lateral veins 5–12 on each side of midvein, together with midvein slightly raised adaxially, distinctly raised abaxially; Umbels few flowered, solitary or several clustered on short spurs, or more often in axils of distal leaves. Peduncles 1–1.5 cm, together with pedicels tawny tomentose. Perianth inconspicuous or wanting. Fertile stamens 15 or more; filaments greyish pubescent. Ovary of female flowers subrounded, glabrous; staminodes pubescent. Fruit globose, ca. 7 mm in diam.; fruiting pedicels 5–6 mm, slightly thickened at apex.

Locality: Common in Hong Kong. *Y. S. Lau 2220; P. S. Choi 290.*

Distribution: Guangdong, Guangxi, S Yunnan, Fujian; India, Philippines, Vietnam.

Ecology: Forest edges, streamsides, or thickets.

Uses: Medicinal (folklore), bark is used to make incense.

**3. Litsea verticillata** Hance 輪葉木薑子(槁樹) **(Photo 101)**

J. Bot. 21: 356. 1883; FHN 1: 289. 1964; FRPS 31: 287, pl. 76: 1–2. 1982

*Litsea multiumbellata* Lec. f. *annamensis* H. Liu, Laurac. Chine et Indochine 171. 1932 et 1934.

Evergreen shrub or small tree, 2–5 m tall. Branchlets brown, densely yellow hirsute, glabrous in age; bud scales densely tawny pubescent. Leaves 4–6 irregularly whorled; petioles 2–6 mm, densely yellow villose; leaf blade thin leathery, lanceolate or oblanceolate-oblong, 7–25 × 2–6 cm, base acute, obtuse or rotund, apex acuminate, adaxially green and glabrous excepting the puberulous midvein, abaxially greyish green or yellowish brown, brown pubescent, margin ciliate, pinnately veined, lateral veins 12–14 on each side of midvein, midvein impressed adaxially, raised abaxially. Umbels 5–8-flowered, subsessile, 2–10 clustered at apex of spurs; bracts 4–7, greyish brown puberulous; Perianth-lobes 6 (4), lanceolate, abaxially villose along midvein. Fertile stamens 9; filaments exserted, villose. Ovary ovoid or ellipsoid; styles slender; stigma 3-lobed. Fruit ovoid or ellipsoid, 10–15 × 5–6 mm, apiculate, subtended by enlarged, discoid perianth-tube.

Locality: Common in Hong Kong. *Y. S. Lau 2765; P. S. Choi 418.*

Distribution: Guangdong, Guangxi, S Yunnan; Cambodia, Vietnam.

Ecology: Forests or thickets in valleys, streamsides. Flowering: Apr.–Nov.; fruiting: Nov.–Jun. of the following year.

**4. Litsea rotundifolia** (Nees) Hemsl. 圓葉豺皮樟 **(Fig. 26)**

J. Linn. Soc. Bot. 26: 385. 1891; FKH 225. 1912; FRPS 31: 292. 1982.

*Iozoste rotundifolia* Nees, Pl. Asiat. Rar. 2: 63. 1831.

Evergreen shrub or small tree, up to 3 m tall. Branchlets slender, greyish brown, glabrous or nearly so; bud scales yellow silky puberulous. Leaves thin leathery, alternate; petioles 3–5 mm, initially pubescent, glabrescent in age; leaf blade thin leathery, broadly ovate-rounded to suborbicular, 2.2–4.5 × 1.5–4 cm, base subrounded, apex rotund or shortly acuminate, adaxially dark green and shining, abaxially glaucous, glabrous on both surfaces; pinnately veined, lateral veins 3–4 on each side of midvein, midvein and lateral veins impressed adaxially, raised abaxially. Umbels 3–4-flowered, often 3 clustered in axils of leaves. Peduncles and pedicels almost lacking. Perianth-lobes 6, obovate-rounded, unequal. Fertile stamens 9; filaments villose. Fruit globose, ca. 6 mm in diam. subsessile, greyish bluish black when mature.

Locality: Hong Kong Island, Fanling, Haihung. *HK sheet 24421.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian; Vietnam.

Ecology: Sparse forests, thickets of lower parts on mountain, roadsides on mountains, riversides; below 800 m.

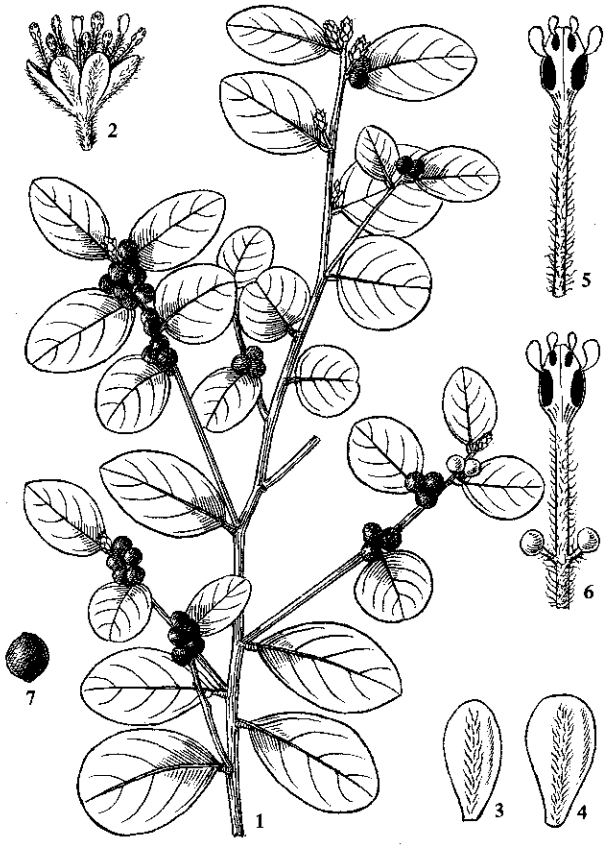



**Figure 26.** *Litsea rotundifolia* (Nees) Hemsl.
*1.* fruiting branch; *2.* flower; *3, 4.* dorsal view of perianth-lobes; *5.* stamen of 1st and 2nd whorls; *6.* stamen of 3rd whorl; *7.* fruit. (drawn by H. P. Yu)

**4a. Litsea rotundifolia** (Nees) Hemsl. var. **oblongifolia** (Nees) C. K. Allen 豺皮樟 **(Photo 102)**

Ann. Missouri Bot. Gard. 25: 386. 1938; FRPS 31: 292. 1982; FTW ed. 2, 2: 474, pl. 220. 1996.

*Iozoste rotundifolia* Nees var. *oblongifolia* Nees in J. D. Hooker & Arnott, Bot. Beechey Voy. 209. 1836 (based on *Litsea chinensis* Bl.).

*Litsea chinensis* Bl., Bijdr. 565. 1825, non Lam.

*Actinodaphne chinensis* Nees, Syst. Laur. 600. 1836; FHK 293. 1861.

Differs from var. *rotundifolia* by leaves ovate-oblong, 2.5–5.5 × 1–2.2 cm, base cuneate or obtuse, apex obtuse or shortly acuminate; reticulation of veins conspicuous on both surfaces.

Locality: Common in Hong Kong. *Y. S. Lau 6; Y. W. Lam 960.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Vietnam.

Ecology: Thin forests, thickets.

**5. Litsea monopetala** (Roxb.) Pers. 假柿木薑子(假柿樹) **(Photo 103)**

Syn. Pl. 2: 4. 1807; FHN 1: 292. 1964; FRPS 31: 302, pl. 78: 1–4. 1982.

*Tetranthera monopetala* Roxb., Pl. Coromandel 2: 26, pl. 148. 1798; FHK 292. 1861.

*Litsea polyantha* Juss., Ann. Mus. Natl. Hist. Nat. 6: 211. 1805; FKH 225. 1912.

Evergreen tree, to 18 m tall. Branchlets and bud scales densely rusty pubescent. Leaves alternate; petioles 1–3 cm, densely rusty pubescent; leaf blade thin leathery, broadly ovate, obovate to ovate-oblong, 8–20 × 4–12 cm, base rounded or acute, apex obtuse or rounded, occasionally acute, adaxially rusty pubescent along midvein when young, glabrescent in age, abaxially densely rusty pubescent, pinnately veined, lateral veins of 8–12 on each side of midvein, impressed adaxially, raised abaxially. Umbels 4(–6)-flowered, clustered on axillary spurs. Peduncles 4–6 mm. Pedicels 6–7 mm, rusty pubescent. Perianth-lobes of male flowers 5–6, lanceolate, ca. 2.5 mm, yellowish white. Fertile stamens 9; filaments slender, pubescent. Female flowers smaller, Perianth-lobes oblong, ca. 1.5 mm; staminodes pubescent. Ovary ovoid, glabrous. Fruit long-ovoid, 7 × 5 mm, subtended by slightly enlarged, shallow discoid perianth tube (receptacles); fruiting pedicels 1 cm.

Locality: Hong Kong Island, Sai Kung, Lantau. *H. C. Tang 122, 984.*

Distribution: Guangdong, Guangxi, SW Guizhou, S Yunnan; India, Pakistan, SE Asia.

Ecology: Thickets or sparse forests on sunny slopes; up to 1500 m, but mostly found on hills at low altitudes. Flowering: Nov.–Jun. of the next year; fruiting: Jun.–Jul.

**6. Litsea greenmaniana** C. K. Allen 華南木薑子

Ann. Missouri Bot. Gard. 25: 394. 1938; FRPS 31: 316. 1982.

*Litsea greenmaniana* var. *angustifolia* Y. C. Yang & P. H. Huang, Acta Phytotax. Sin. 16(4): 56. 1978.

*Litsea variabilis* auct. non Hemsl.: Check List HK Plants 28. 1993.

Evergreen small tree, 6–8 m tall. Branchlets reddish brown, pubescent when young, glabrescent in age; bud scales covered with silky short hairs. Leaves alternate; petioles 0.7–1.3 cm, initially pubescent; leaf blade thin leathery, elliptic or suboblanceolate, 4–13.5 × 0.7–3.5 cm, base cuneate, apex acuminate or falcate, green and shining adaxially, glaucous abaxially, glabrous on both surfaces; pinnately veined, lateral veins slender, ca. 10 on each side of midvein, reticulation of veins prominent abaxially. Umbels 3–4-flowered, 1–4 clustered on axillary spurs. Peduncles 3–4 mm, puberulous. Male flowers: pedicels puberulous; Perianth-lobes 6, yellow, ovate or elliptic, ca. 2 × 1 mm, pubescent abaxially, glabrous adaxially; fertile stamens 9, filaments villose. Fruit ellipsoid, 13 × 8 mm, subtended by enlarged, cup-shaped perianth tube (receptacles); fruiting pedicels 3 mm.

Locality: Victoria Peak, Happy Valley, Ma On Shan. *W. J. Tutcher s.n.(HK sheet 4923); F. W. Xing 8467.*

Distribution: Guangdong, Guangxi, Fujian.

Ecology: Forests on valleys, dense forests on mountain slopes; below 1200 m. Flowering: Jul.–Aug.; fruiting: Dec.–Mar. of the next year.

**7. Litsea elongata** (Wall. ex Nees) Benth. & Hook. f. 黃丹木薑子

Gen. Pl. 3: 163. 1880; FKH 225. 1912; FHN 1: 294. 1964; FRPS 31: 329, pl. 86: 1. 1982.

*Daphnidium elongata* Nees in Wall. Pl. Asiat. Rar. 2: 63. 1831.

Evergreen tree, to 12 m tall. Branchlets yellowish brown or greyish brown, densely brown-tomentose; bud scales covered with silky short hairs abaxialy. Leaves alternate; petioles 10–25 mm, densely brown tomentose; leaf blade leathery, oblong, oblong-lanceolate, narrowly lanceolate or oblanceolate, 6–22 × 2–6 cm, base cuneate or subrounded, apex obtuse or shortly acuminate, adaxially glabrous, abaxially puberulous and villose along midvein and lateral veins; pinnately veined, lateral veins 10–20 on each side of midvein, midvein and lateral veins immersed or slightly impressed adaxially, raised abaxially. Umbels 4–5-flowered, solitary, rarely clustered. Peduncles stout, 2–5 mm, densely brown tomentose. Pedicels villose. Perianth-lobes 6, ovate, abaxially villose along midvein. Fertile stamens 9–12; filaments villose. Female umbels smaller than the males. Ovary ovoid, glabrous. Fruit oblong, 11–13 × 7–8 mm, subtended by enlarged, cup-shaped perianth-tube, blackish purple when mature; fruiting pedicels 2–3 mm.

Locality: Tai Tam, Wu Kau Tang, Lai Chi Wo. *Y. W. Lam 156.*

Distribution: Guangdong, Guangxi, Sichuan, Xizang, Yunnan, Guizhou, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian; India, Nepal.

Ecology: Roadsides, streamsides, forests on mountain slopes; thickets, moist places in sparse forests. Flowering: May–Nov.; fruiting: Feb.–Jun.

**8. Litsea acutivena** Hayata 尖脈木薑子 **(Photo 104)**

Icon. Pl. Formosan. 5: 163. 1915; FHN 1: 293. 1964; FRPS 31: 328. 1982; FTW ed. 2, 2: 465, pl. 215. 1996.

*Actinodaphne acutivena* (Hayata) Nakai, J. Jap. Bot. 14: 191. 1938.

*Litsea dolichocarpa* Hayata, Icon. Pl. Formosan. 5: 166. 1915.

Evergreen tree, to 7 m tall. Branchlets densely tawny villose when young, glabrescent in age; bud scales rusty pubescent abaxially. Leaves alternate or crowded towards apex of branches; petioles 6–12 mm, densely tawny pubescent; leaf blade leathery, lanceolate, oblanceolate or oblong-lanceolate, 4–11 × 2–4 cm, base cuneate, apex acute or shortly acuminate, adaxially glabrous, abaxially yellowish tawny pubescent; pinnately veined, lateral veins 9–10 on each side of midvein, midvein and lateral veins impressed adaxially, raised abaxially. Umbels 5–6-flowered, clustered near apex of branchlets. Peduncles 3 mm, pubescent. Pedicels densely pubescent. Perianth-lobes 6, long-elliptic, ca. 2 mm, abaxially pubescent on midvein. Fertile stamens 9; filaments pubescent. Ovary ovoid, subglabrous, style ca. 2.5 mm; stigma 2-lobed; staminodes pubescent. Fruits ellipsoid, 12–20 × 10–12 mm, black at maturity, subtended by enlarged, cup-shaped perianth-tube; fruiting pedicels 1 cm.

Locality: Victoria Peak. *Y. S. Lau 467; C. Ford s.n. (HK sheet 4975).*

Distribution: Hainan, Guangdong, Guangxi, Taiwan; Cambodia, Laos, Vietnam.
Ecology: Forests on hillslopes. Flowering: Jul.–Aug.; fruiting: Dec.–Feb.

## 9. Lindera Thunb. 山胡椒屬

Evergreen or deciduous shrubs or small trees, aromatic. Leaves alternate, entire or tri-lobed, pinnately veined, triveined or tripliveined. Inflorescences umbellate; umbels solitary or 2–many inserted on axillary spurs, each umbel subtended by 2 pairs of decussate bracts. Flowers unisexual, (plant dioecious); involucral bracts 4, decussate. Perianth-lobes 6, sometimes 7–9, subequal or the outer 3 slightly larger than the inner 3, deciduous. Male flowers with usually 9 fertile stamens in 3 whorls; filaments of the innear 3 stamens with 2 glands at the base; anthers 2-celled, all introrse; pistillodes small. Female flowers with 9 staminodes; ovary ovoid; style short; stigma peltate. Fruits drupaceous, globose or ellipsoid, 1-seeded, on enlarged perianth-tube.

About 100 species distribute Asia, tropical region of N America; 40 species in China. Five species and one variety in Hong Kong.

1a. Leaves triveined.
  2a. Branchlets, leaves, and flowers densely golden pubescent; leaves broadly ovate to rounded ..... 1. *L. aggregata*
  2b. Branchlets, leaves, and flowers sparsely whitish pubescent or subglabrous; leaves narrow-ovate to lanceolate..... 1a. *L. aggregata* var. *playfairii*
1b. Leaves pinnately veined.
  3a. Umbels in pairs on axillary spurs..... 2. *L. megaphylla*
  3b. Umbels many, clustered on axillary spurs.
    4a. Peduncles longer than or at least equal to pedicels; spurs usually developed into normal shoots..... 3. *L. metcalfiana*
    4b. Peduncles shorter than pedicels; spurs usually not developed into normal shoots.
      5a. Branchlets and abaxial surface of leaves densely rusty villose; leaves usually 6–11 × 3.5–6 cm.... 4. *L. nacusua*
      5b. Branchlets and abaxial surface of leaves usually yellowish puberulous; leaves usually 3–5 × 1.5–3.5 cm..... 5. *L. communis*

**1. Lindera aggregata** (Sims) Kosterm. 烏藥 **(Photo 105)**

Reinwardtia 9(1): 98. 1974; FHN 1: 299. 1964; FRPS 31: 434. 1982: FTW ed. 2, 2: 456, pl. 211. 1996.

*Laurus aggregata* Sims, Bot. Mag. 51: t. 2497. 1824.

Evergreen shrub or small tree, up to 5 m tall. Young shoots green, densely covered with golden silky hairs, glabrescent. Leaves alternate; petioles 0.5–1 cm, brown pubescent, glabrescent; leaf blade leathery or subleathery, ovate, elliptic to suborbicular, usually 2.7–5(–7) × 1.5–4 cm, base rounded, apex long acuminate to caudate, adaxially green and shining, abaxially glaucous, densely brown pubescent when young, glabrescent, triveined; midvein and the basal pair of lateral veins impressed, rarely raised on adaxial surface, but prominently raised on abaxial surface. Umbels 6–7-flowered, sessile, usually 6–8 clustered on axillary spurs, each umbel subtended by a bract. Perianth-lobes 6, subequal, usually yellow or yellowish green, white pubescent abaxially. Pedicels ca. 0.4 mm, pubescent. Fruit ovoid or subglobose, 4–7 mm in diam.; fruiting pedicels 5–8 mm, apex slightly enlarged.

Locality: Pat Sin Leng, Lai Chi Wo. *P. S. Choi 420; N. H. Li 28.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Vietnam, Philippines.

Ecology: Thin forests and thickets on sunny slopes, or in valleys. Flowering: Mar.–Apr.; fruiting: May–Nov.

**1a. Lindera aggregata** (Sims) Kosterm. var. **playfairii** (Hemsl.) H. P. Tsui 小葉烏藥

Acta Phytotax. Sin. 16(4): 69. 1978; FHN 1: 299. 1964; FRPS 31: 435. 1982: FTW ed. 2, 2: 458. 1996.

*Litsea playfairii* Hemsl., J. Linn. Soc. Bot. 26: 384. 1891; FKH 225. 1912.

Differs from the type variety by the following characteristics: hairs on young shoots, leaves and flowers thiner, usually greyish white, or subglabrous; leaves smaller, narrowly ovate to lanceolate, 4–6 × 1.3–2 cm, apex usually caudate; flowers smaller.

Locality: Kat O. *HK sheet 24475, 24573.*

Distribution: Hainan, Guangdong, Guangxi; Vietnam.

Ecology: Thin forests and thickets. Flowering: Mar.–Apr.; fruiting: May–Nov.

**2. Lindera megaphylla** Hemsl. 黑殼楠

J. Linn. Soc. Bot. 26: 389. 1891; FKH 226. 1912; FRPS 31: 384. 1982.

Evergreen tree, 3–15 m tall. Branches terete, stout, usually purplish black, minutely pubescent to glabrous, sparsely lenticellate. Leaves alternate or often crowded towards apex of branchlets; petioles 1.5–3 cm, glabrous; leaf blade leathery, oblanceolate to obovate-oblong, 10–23 × 2–6 cm, base attenuate to cuneate, apex acute or acuminate, green and shining adaxially, pale greenish to glaucous abaxially, glabrous on both surfaces, pinnately veined, lateral veins 15–21 on each side of midvein. Umbels many-flowered, usually borne on axillary spurs. Peduncles of male umbels 1–1.5 cm, those of pistillate umbels 6 mm, all tawny puberulous. Perianth-lobes 6, ± tawny puberulous at base abaxially. Fruit ellipsoid to ovoid, ca. 1.8 × ca. 1.3 cm, glabrous, purplish black at maturity; fruiting pedicels ca. 1.5 cm long, thickened upwards.

Locality: Ng Tung Chai. *HK sheet 4953, 24577.*

Distribution: Guangdong, Guangxi, Sichuan, Yunnan, Guizhou, Shaanxi, Gansu, Hubei, Hunan, Anhui, Jiangxi, Fujian.

Ecology: Forests and thickets on slopes or in valleys. Flowering: Feb.–Apr.; fruiting: Sep.–Dec.

**3. Lindera metcalfiana** C. K. Allen 滇粤山胡椒 **(Photo 106)**

J. Arnold Arbor. 22: 3. 1941; FRPS 31: 401, pl. 104: 1–4. 1982.

*Lindera meissneri* auct. non King: Merr. et Chun, Sunyatsenia 2: 1935.

Shrub or small tree, 3–12 m tall. Branchlets slender, brown to greyish brown, initially ± yellowish puberulous. Leaves alternate; petioles 5–8 mm long, yellowish brown pubescent; leaf blade leathery, elliptic or oblong, 5–13 × 2–4.5 cm, base broadly cunneate, apex acuminate or caudate, usually falcate, dark green to yellowish green adaxially, glaucous abaxially, tawny puberulous on veins of both surfaces, pinnately veined; lateral veins 6–10 on each side of midvein, turning purplish brown when dry, reticulation of veins prominent abaxially. Umbels 1–2(–3) on axillary spurs, tawny pubescent, inserted on axillary spurs. Male umbels 6–8-flowered; peduncles slender, 1–1.6 cm; pedicels 2–3 mm. Female umbels 4–8-flowered; peduncles 0.6–0.8 cm; pedicels 2–2.5 mm. Fruit globose, ca. 6 mm in diam., purplish black at maturity; fruiting pedicels ca. 6 mm, stout, slightly brownish puberulous.

Locality: Sunset Peak. *Y. W. Lam 1744*.

Distribution: Guangdong, Guangxi, Yunnan, Fujian.

Ecology: Forest on hillslopes. Flowering: Mar.–May; fruiting: Jun.–Oct.

**4. Lindera nacusua** (D. Don) Merr. 絨毛山胡椒 **(Photo 107)**

Lingnan Sci. J. 15: 419. 1936; FHN 1: 300. 1964; FRPS 31: 406. 1982.

*Laurus nacusua* D. Don, Prodr. Fl. Nepal. 64. 1825.

*Daphnidium bifarium* auct. non Nees, in Wall. Pl. Asiat. Rar. 2: 63. 1831; FHK 294. 1861.

Evergreen shrub or small tree, 2–10 m tall. Branchlets brown, densely tawny villose when young, glabrescent. Leaves alternate; petioles stout, 5–7(–10) mm, densely tawny pubescent; leaf blade leathery, broadly ovate, elliptic or oblong-ovate, 6–11 × 3.5–6 cm, base cuneate to attenuate, sometimes rotunded, asymmetrical, apex usually acute, adaxially glabrous, sometimes puberulous on the midvein, abaxially densely tawny villose, pinninerved; lateral veins 5–10 on each side of midvein, together with midvein impressed adaxially, prominently raised abaxially. Male umbels 8–9-flowered, female umbels (2–)3–6-flowered, solitary or 2–4 clustered in axils of leaves; peduncules short, 2–3 mm. Pedicels 3–5.5 mm long, densely yellow villose. Perianth-lobes 6, ovate to broadly ovate, 2–3.5 mm. Fruit subglobose, ca. 6 mm in diam., red at maturity; fruiting pedicels stout, 5–7 mm, thickened upwards, slightly yellowish brown puberulous.

Locality: Hong Kong Island. *H. C. Tang 727; Y. S. Lau 74*.

Distribution: Guangdong, Guangxi, Yunnan, Xizang, Sichuan, Jiangxi, Fujian; Nepal, India, Myanmar, Vietnam.

Ecology: Forests in valley or on hillslopes. Flowering: May–Jun.; fruiting: in Jul.–Oct.

**5. Lindera communis** Hemsl. 香葉樹 **(Fig. 27; Photo 108)**

J. Linn. Soc. Bot. 26: 387. 1891; FKH 226. 1912; FRPS 31: 408, pl. 101: 6. 1982; FTW ed. 2, 2: 458. 1996.

*Lindera glauca* auct. non Blume: FKH 226. 1912 (quoad specimens from Hong Kong).

Evergreen shrub or small tree, (1–)3–4 m tall. Branchlets slender, sparsely or densely yellowish puberulous, glabrescent in age. Leaves alternate; petioles 5–8 mm long, yellowish puberuous or glabrescent; leaf blade leathery, usually lanceolate, ovate or elliptic, 4–9 × 1.5–3 cm, base broad cuneate or subrounded, apex acuminate, acute or sometimes caudate; adaxially glabrous, abaxially greyish green or yellowish, initially tawny pubescent, glabrescent in age, margin involute, pinnately veined; lateral veins 5–7 on each side of midvein, together with midveins impressed adaxially, raised abaxially. Umbels 5–8-flowered, solitary or paired in axils of leaves. Peduncles short and stout, 2–5 mm. Pedicels 2–2.5 mm, slightly golden puberulous. Perianth-lobes 6, ovate, subequal, ca. 3 × 1.5 mm, ± golden puberulous abaxially. Fruit ovoid, 7–8 mm in diam., glabrous, red when mature; fruiting pedicels 4–7 mm, yellowish brown puberulous.

Locality: Common in Hong Kong. *Y. S. Lau 2804; N. H. Li 35*.

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Sichuan, Shaanxi, Gansu, Hunan, Hubei, Jiangxi, Zhejiang, Fujian, Taiwan; Vietnam, Myanmar, India, the Ryukyus.

Ecology: Mixed forests on hillslopes. Flowering: Mar.–Apr.; fruiting: Sep.–Oct.

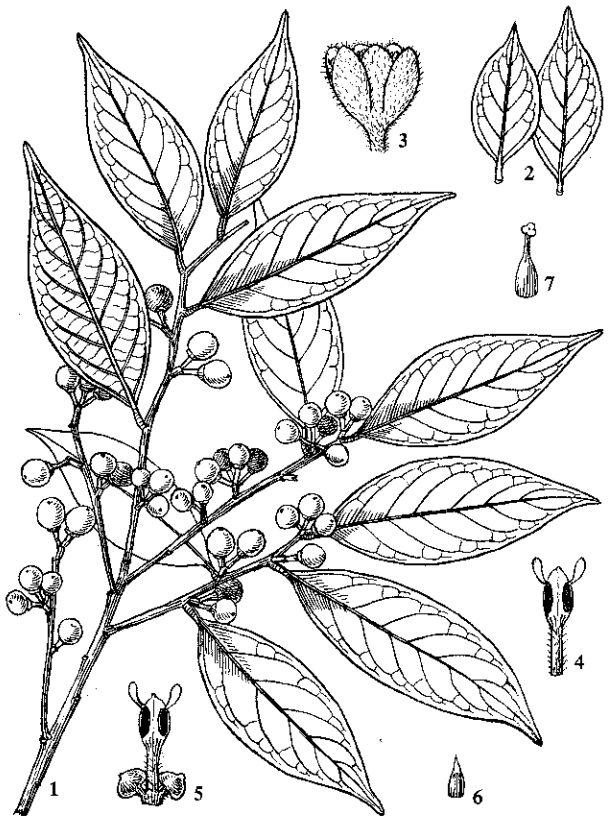



**Figure 27.** *Lindera communis* Hemsl.

*1*. fruiting branch; *2*. leaves; *3*. male flower; *4*. stamen of 1st and 2nd whorl; *5*. stamen of 3rd whorl; *6*. staminode; *7*. pistil of female flower. (drawn by H. P. Yu)

# 18. HERNANDIACEAE 蓮葉桐科

HU Qi-ming 胡啟明

Trees, shrubs, or woody vines. Leaves alternate, simple or palmately compound, with 3(–5) leaflets. Stipules absent. Flowers regular, unisexual or bisexual, arranged in cymose inflorescence; perianth-segments 2–8, united into a tube at base; stamens 3–5(–7), in 1–2 series; filaments usually with a pair of glands or staminodes at base; anthers introrse, 2-celled, opening longitudinally by 2 valves; ovary inferior, 1-locular, with one pendulous ovule; style single, stigma terminal. Fruit a one-seeded achene, sometimes two- or four-winged.

About four genera and 68 species mostly in coastal regions of tropics; two genera and 15 species in China; one genus and one species in Hong Kong.

## 1. Illigera Blume 青藤屬

Scandent shrubs or lianas. Leaves alternate, 3-foliolate; petioles often twisted at middle; leaflets petiolulate, entire, pinnately veined. Flowers bisexual, in axillary cymose inflorescence; perianth-segments 10, in 2 series, the outer 5 united into a short tube at base, the inner 5 petaloid, valvate in buds; stamens 5, alternating with inner perianth-segments; filaments filiform, with glands or petaloid staminodes at the slightly dilated base; ovary inferior, 1-locular, ovule solitary, pendulous. Fruit an indehiscent achene, 2–4-winged.

About 18 species in tropical regions of the Old World; about 14 species in China; one species in Hong Kong.

**1. Illigera celebica** Miq. 寬藥青藤 **(Fig. 28; Photo 109)**

Ann. Mus. Bot. Lugduno-Batavum 2: 215. 1866; Kubitzki, Fl. Cam. Laos Vietn. 12: 8–9. 1970; FRPS 31: 476, pl. 127: 4–7. 1982; FGD 3: 3. 1995.

*Illigera platyandra* Dunn, J. Linn. Soc. Bot. 38: 296. 1908.

Evergreen woody liana. Stems 5–8 m long, striate. Leaves 3-foliolate; petioles 5–7(–14) cm, often twisted at middle; leaflets ovate to ovate-elliptic, 6–15 × 3–7 cm, base rounded or subcordate, apex acute, margin entire, papery or subleathery, glabrous; petiolules 1.5–2 cm, glabrous. Cymes 15–20 cm, glabrous. Perianth-segments 10, the outer 5 green, elliptic or oblong, pubescent, the inner 5 white, puberulent, with translucent glandular dots. Stamens 5, longer than perianth-segments. Fruit with 4 unequal wings.

Locality: Fung Yuen, She Shan. *Y. W. Lam 298; P. S. Choi 475.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Indochina, Malesia.

Ecology: Thin forests and thickets. Flowering: Apr.–Oct.; fruiting: Jun.–Nov.

Notes: The type specimen of *Illigera platyandra* Dunn was collected by S. T. Dunn in Wong Nai Chung in 1906. Listed in *Rare and Precious Plants of Hong Kong.*

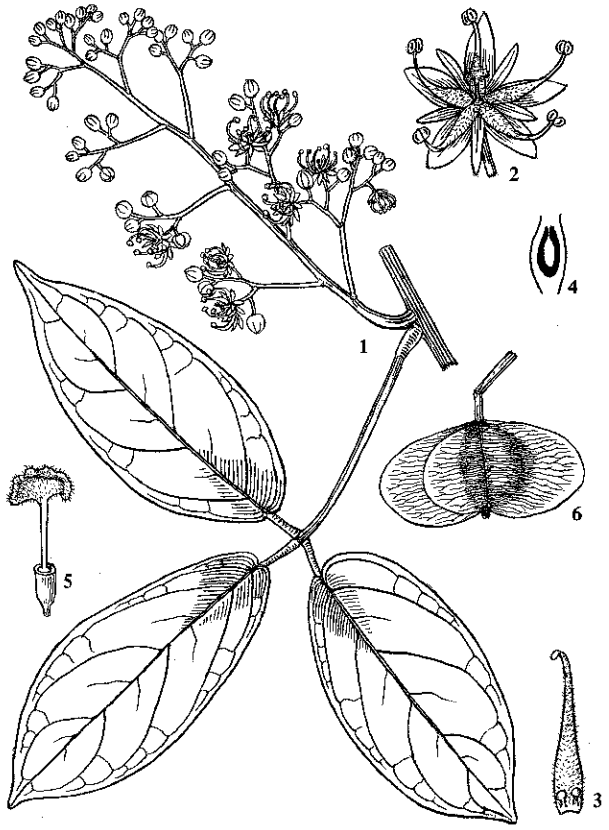



**Figure 28.** *Illigera celebica* Miq.

*1.* flowering branch; *2.* flower; *3.* filament and two staminodes; *4.* longitudinal section of ovary; *5.* pistil; *6.* fruit. (drawn by H. P. Yu)

# 19. CHLORANTHACEAE 金粟蘭科

XIA Nian-he 夏念和

Shrubs, small trees, or perennial herbs. Leaves simple; stipules small; petioles usually connate at base; leaf blade pinnately veined, margin serrate or crenate. Flowers small, bisexual or unisexual, arranged in spikes, capitula, or panicles; perianth present in female flowers or absent. Bisexual flowers: stamens 1 or 3, on one side of ovary; filaments inconspicuous; connectives developed, if stamens 3, connectives connate at base or free; anthers 1- or 2-celled, longitudinally dehiscent. Ovary inferior, 1-locular; ovule 1, pendulous, orthotropous; style short or absent. Unisexual flowers: male flowers many, stamen 1; female flowers few; perianth 3-toothed, calyx-like, connate to ovary. Drupes ovoid or globose; exocarp ± fleshy; endocarp hard. Seeds containing rich endosperm and tiny embryo.

Five genera, ca. 70 species, distributed in tropical and subtropical regions; three genera and 15 species occur in China; two genera and three species in Hong Kong.

1a. Stamens 3(–1), base ± connate, central anther 2-celled, lateral anthers 1-celled; perennial herbs or subshrubs ..... 1. *Chloranthus*

1b. Stamen 1, clavate or ovoid, anthers 2(–3)-celled; subshrubs ..... 2. *Sarcandra*

## 1. Chloranthus Swartz 金粟蘭屬

Subshrubs or perennial herbs. Leaves opposite or verticillate, serrate; stipules tiny; petioles connected by a transverse ridge on stem. Inflorescences spicate or branched in panicles, terminal or axillary. Flowers small, bisexual; perianth absent. Stamens usually 3, rarely 1, on one side of apical part of ovary if stamens 3, central anther 2-celled or occasionally absent, lateral anthers 1-celled, if stamen 1, anther 2-celled; connectives ovoid, lanceolate, or sometimes linear. Ovary 1-locular; ovule 1, pendulous, orthotropous; style usually absent, rarely present; stigma truncate or parted. Drupes globose, obovoid, or pyriform.

Approximately 17 species distributed in temperate to tropical Asia; ca. 13 species occur in China; two species in Hong Kong.

1a. Perennial herb; leaves opposite, 4–6 on the upper part of stem; flowers white. ..... 1. *C. serratus*

1b. Subshrub; leaves opposite, not fascicled on the upper part of stem; flowers yellowish green..... 2. *C. spicatus*

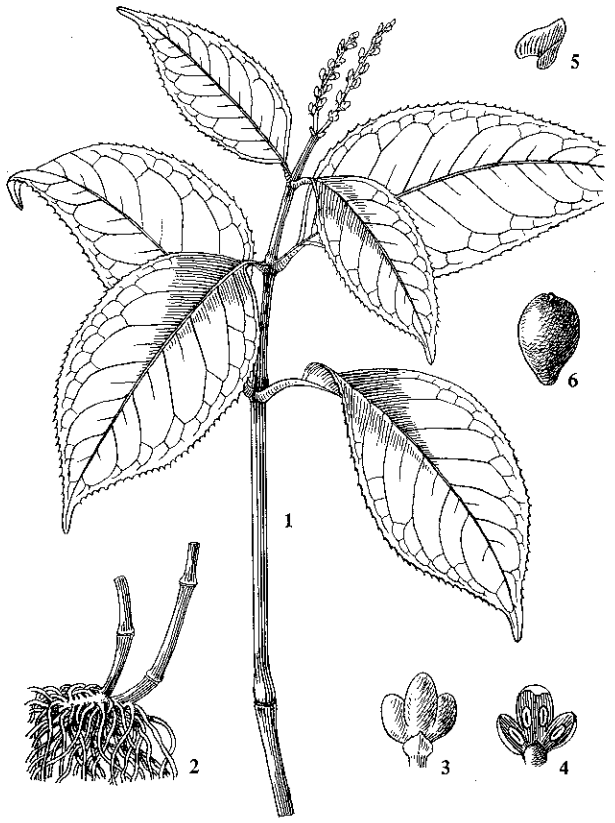



**Figure 29.** *Chloranthus serratus* (Thunb. ) Roem. & Schult. *1*. flowering branch; *2*. rhizome and roots; *3*. dorsal view of flower; *4*. ventral view of flower; *5*. bract; *6*. fruit. (drawn by H. P. Yu)

**1. Chloranthus serratus** (Thunb.) Roem. & Schult. 及己(四葉對) **(Fig. 29; Photo 110)**

Syst. Veg. 3: 461. 1818; FRPS 20(1): 91. 1982; FGD 3: 21, fig. 15. 1995; FOC 4: 136. 1999.

*Nigrina serrata* Thunb., Nova Acta Regiae Soc. Sci. Upsal. 7: 142, pl. 5, fig. 1. 1815.

Perennial herb, 15–50 cm tall. Rhizomes procumbent, short, ca. 3 mm in diam., with many yellowish brown fibrous roots. Stems erect, glabrous, with distinct swollen nodes. Leaves opposite, 4–6 on the upper part of stem; petiole 0.8–2.5 cm; leaf blade papery, elliptic, obovate, ovate-lanceolate, suborbicular, or broadly elliptic, sometimes ovate-elliptic or oblong, 7–15 × 3–6 cm, base cuneate, apex acute or acuminate, margin serrulate, with glandular-tipped teeth, glabrous or pubescent on veins abaxially; lateral veins 6–8 on each side of midvein. Spikes terminal, sometimes axillary, 1 or 2- or 3-branched; peduncles 1–3.5 cm; bracts triangular or nearly semiorbicular, usually several toothed at apex. Flowers white. Stamens 3, on outside of apical part of ovary; connectives oblong, connate at basal part, central anther with 2 locules; lateral ones each with 1 locule;. Ovary ovoid; style absent; stigma thick, short. Drupes green, globose or pyriform.

Locality: Tai Mo Shan, Ng Tung Chai, Kap Lung. *HK Sheet 34863, 34448.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hubei, Anhui, Hunan, Jiangxi, Fujian, Zhejiang, Jiangsu; Japan.

Ecology: Wet places in forests, swamps, streamsides, ravines. Flowering: Apr.–May; fruiting: Jun.–Aug.

Uses: Medicinal.

**2. Chloranthus spicatus** (Thunb.) Makino 金粟蘭(珍珠蘭) **(Photo 111)**

Bot. Mag. (Tokyo) 16: 180. 1902; FRPS 20(1): 83, pl. 26: 1–5. 1982; FGD 3: 20. 1995; FOC 4: 134. 1999.

*Nigrina spicata* Thunb., Nov. Gen. Pl. 59. 1783.

*Chloranthus inconspicuous* Swartz, Philos. Trans. 78: 359, t. 15. 1787; FHK 334. 1861; FKH 221. 1912.

Subshrub, erect or slightly prostrate at base, 30–60 cm. Stems terete, glabrous. Leaves opposite; petioles 0.8–1.8 cm, leaf blade thick papery, elliptic or obovate-elliptic, 5–11 × 2.5–5.5 cm, base cuneate, apex acute or obtuse, margin crenate-serrate, with glandular-tipped teeth, abaxially pale yellowish green, adaxially deep green and shiny; lateral veins 6–8 pairs, slightly prominent on both surfaces. Spikes arranged, in panicles, usually terminal, rarely axillary; bracts triangular. Flowers yellowish green, small, very fragrant. Stamens 3; connectives connate at base; central anther sometimes apex shallowly 3-lobed, with one 2 loucles; lateral anthers smaller, each with one locule. Ovary obovoid.

Locality: Cultivated. *HK Sheet 23950.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian; Japan, Vietnam, India, Indonesia.

Ecology: Forests. Flowering: Apr.–Jul.; fruiting: Aug.–Sep.

Uses: Ornamental, medicinal.

## 2. Sarcandra Gardn. 草珊瑚屬

Subshrubs, glabrous; wood without vessels. Leaves opposite, stipules small; petioles short, base connate; leaf blade elliptic, ovate-elliptic, or elliptic-lanceolate, margin serrate, with glandular-tipped teeth. Spikes terminal, usually branched, ± in panicles; flowers bisexual, perianth and pedicel absent; bract 1, triangular, persistent. Stamen 1, fleshy, clavate to compressed; anther 2(–3)-celled, cells lateral to introrse. Ovary globose or ovoid; style absent; stigma subcapitate or minutely spotted. Drupes globose or ovoid.

Three species distributed in SE Asia to India; one species in S China, also in Hong Kong.

**1. Sarcandra glabra** (Thunb.) Nakai

草珊瑚(雞爪蘭，九節楓) **(Fig. 30; Photo 112)**

Fl. Sylv. Koreana 18: 17. 1930; FRPS 20(1): 79, pl. 25: 1–5. 1982; FGD 3:18, fig. 14. 1995; FOC 4: 132. 1999.

*Bladhia glabra* Thunb., Trans. Linn Soc. 2: 331. 1794.

*Chloranthus brachystachys* auct. non Blume: FHK 334. 1861; FKH 221. 1912.

Subshrub, evergreen, 50–150 cm tall. Stems cylindric, erect, glabrous, nodes swollen. Stipules subulate; petioles 0.5–2 cm, connate, forming a short sheath; leaf blade leathery or papery, elliptic or ovate to ovate-lanceolate, or broadly elliptic to oblong, 6–20 × 2–8 cm, base cuneate or broad-cuneate, apex acute to acuminate, margin sharply coarse-serrate, with glandular-tipped teeth, glabrous; lateral veins 5–7 on each side of midvein, slightly prominent on both surface. Inflorescences terminal, spicate, usually branched, 1.5–4 cm including peduncle; bracts triangular or ovate. Flowers yellowish green. Stamen 1, fleshy, clavate to terete or ovoid; anther 2-celled, cells lateral or sometimes introrse, on both sides of apical part of connective or nearly as long as connective. Ovary globose or ovoid; style absent; stigma subcapitate or minutely spotted. Drupes green when young, shiny-red or yellowish red at maturity, globose or ovoid, ca. 3–4 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang 381, 1472.*

Distribution: S, SW, C & S China; SE Asia.

Ecology: Forests on hillslopes and in valleys. Flowering: Jun.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore), ornamental.

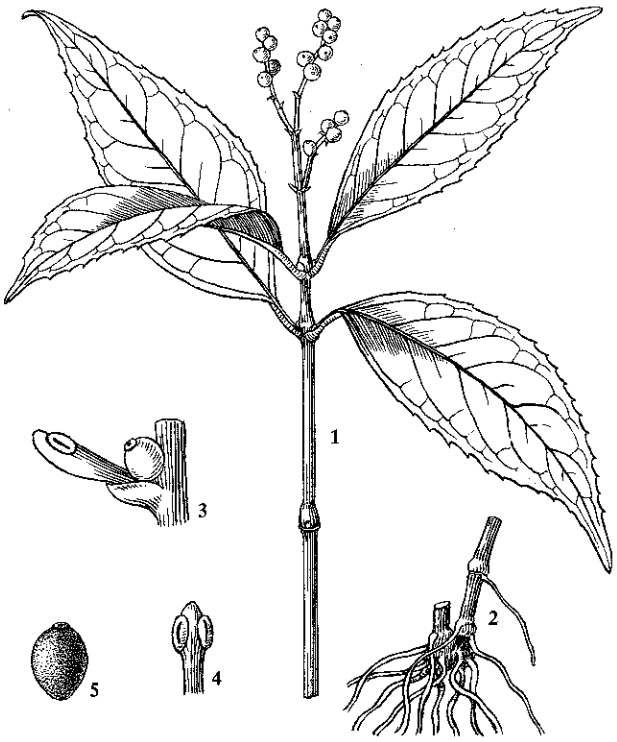



**Figure 30.** *Sarcandra glabra* (Thunb.) Nakai
*1.* fruiting branch; *2.* rhizome and roots; *3.* portion of inflorescence; *4.* stamen; *5.* fruit. (drawn by H. P. Yu)

## 20. SAURURACEAE 三白草科

XIA Nian-he 夏念和

Perennial herbs, aromatic. Stems erect, ascending, or prostrate, obviously jointed. Leaves simple, alternate; stipules interpetiolar, connate or adnate to base of petiole, forming a sheath. Inflorescence a dense spike or raceme, sometimes resembling a single flower when large involucral petaloid bracts are present at base; bracts evident or inconspicuous. Flowers bisexual. Perianth absent. Stamens usually 3, 6, or 8, free or adnate to ovary base; anthers 2-celled, longitudinally dehiscent. Pistils (2- or)3- or 4-carpellate; carpels distinct or connate, if distinct: each carpel with 2–4 ovules, if connate: ovary 1-locular, placentation parietal, each placenta with 6–13 ovules; styles free. Fruit a schizocarp or apically dehiscent capsule; seeds with little endosperm, copious perisperm, minute embryo.

Four genera and ca. six species, distributed in E Asia and N America; three genera and four species occur in China; two genera and two species in Hong Kong.

1a. Inflorescence a dense spike, with 4 (rarely 6 or 8) petal-like involucral bracts at base; stamens 3(–4), filaments ca. 3 times as long as anthers; fruit a dehiscent capsule ..... 1. *Houttuynia*

1b. Inflorescence a raceme, without petal-like involucral bracts at base; stamens 6 or 8, rarely 3, filaments ca. as long as or slightly longer than anthers; fruit a schizocarp ..... 2. *Saururus*

### 1. Houttuynia Thunb. 蕺菜屬

Herbs, erect or ascending, rhizomatous. Stems longitudinally ridged and sulcate. Leaves entire; stipules membranous; petioles shorter than leaf blades. Inflorescence a terminal or leaf-opposed spike, with 4 (rarely 6 or 8), white petal-like involucral bracts at base. Flowers white when mature, small. Stamens 3(–4), longer than styles; filaments ca. 3 times as long as anthers, basal part connate to ovary; anthers oblong. Pistils 3, 3-carpellate; carpels partly connate; ovary semi-inferior (flowers perigynous), 1-locular; placentae 3, each with 6–9 ovules; styles 3, recurved. Capsules subglobose, dehiscent at apex.

One species occurs in E and SE Asia; it occurs in Hong Kong.

**1. Houttuynia cordata** Thunb.
蕺菜(魚腥草) **(Fig. 31; Photo 113)**

Kongl. Vetensk. Acad. Nya Handl. 4: 149, 151. 1783; FHK 334. 1861; FKH 220. 1912; FHN 1: 338. 1964; FRPS 20(1): 8, pl. 3: 1–3. 1982; FGD 1: 79, fig. 84. 1987; FOC 4: 109. 1999.

Herb, 30–60 cm tall; rhizomes creeping. Basal part of stems creeping, rooted at nodes, apical part erect, glabrous or pubescent on nodes, sometimes purplish red. Stipules membranous, 1–2.5 cm, lower part connate with petiole and forming a 8–20 mm sheath. Petiole 1–3.5 cm, glabrous; leaf blade thinly papery, broadly ovate or ovate-cordate, 4–10 × 2.5–6 cm, base cordate, apex short acuminate, densely glandular, usually glabrous, sometimes pubescent at vein axils, usually purplish abaxially; veins 5–7, basal or innermost pair arising ca. 5 mm above base. Inflorescences 1.5–2.5 cm × 5–6 mm; peduncles 1.5–3 cm, subglabrous; involucral bracts oblong or obovate, 10–15 × 5–7 mm, apex rounded. Stamens longer than ovary. Capsules 2–3 mm, with persistent styles.

Localitiy: Lam Tsuen, Sha Lo Tung. *HK Sheet 23812, 23813.*

Distribution: S, E, C, SW & NW China; SE Asia, Africa (Madagascar), Pacific Islands.

Ecology: In wet places. Flowering: Apr.–Aug.; fruiting: Jun.–Oct.

Uses: Medicinal, food (vegetable).

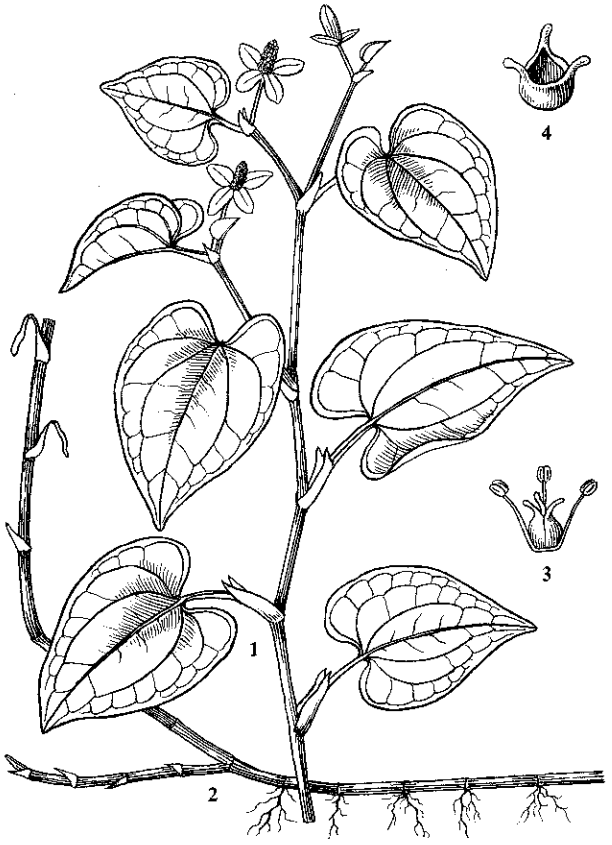



**Figure 31.** *Houttuynia cordata* Thunb.
*1*. flowering branch; *2*. lower part of stem; *3*. flower; *4*. capsule. (drawn by H. P. Yu)

## 2. Saururus L. 三白草屬

Herbs, erect or ascending, rhizomatous. Stems longitudinally ridged and sulcate. Leaves entire; stipules membranous. Inflorescence a leaf-opposed or terminal raceme. Flowers white when mature, small. Stamens usually 6, sometimes 8, rarely 3, longer than styles; filaments ca. as long as or slightly longer than anthers; anthers oblong. Pistils 4, 3- or 4-carpellate, with carpels distinct or connate at base; ovary superior; each carpel with 2–4 ovules; styles 4, recurved. Fruit a schizocarp with 3 or 4 1-seeded mericarps.

Two species distributed disjunctly in E Asia and N America; one species occurs in China; it occurs in Hong Kong.

**1. Saururus chinensis** (Lour.) Baill.
三白草 **(Fig. 32; Photo 114)**

Adansonia 10(2): 71. 1871; FHN 1: 339. 1964; FRPS 20(1): 6, pl. 2. 1982; FGD 1: 78. 1987; FOC 4: 108. 1999.

*Spathium chinense* Lour., Fl. Cochinch. 217. 1790.

*Saururus loureiri* Decne., Ann. Sci. Nat. ser. 3, 3: 102. 1845; FKH 220. 1912.

Herb, to more than 1 m tall; rhizomes creeping, white, thick. Stems strong, basal part creeping and usually whitish, apical part erect and green. Stipular sheath 2–10 mm, ca. as long as petiole, slightly clasping; petioles 1–3 cm, glabrous; leaf blade papery, ovate to ovate-lanceolate, 10–20 × 5–10 cm, base cordate or oblique-cordate, apex acute or acuminate, densely glandular, glabrous; veins 5–7, basal. Apical leaves smaller, 2 or 3 at stem apex, usually petal-like, white at anthesis. Inflorescences axillary or terminal, racemose, 12–20 cm; peduncles 3–4.5 cm, glabrous; rachis densely pubescent. Bract beneath each flower spatulate, basal part linear and pilose, apical part orbicular and glabrous or sparsely ciliate, small, apex rounded to acute. Filaments slightly longer than anthers. Fruit subglobose, ca. 3 mm in diam., tuberculate.




**Figure 32.** *Saururus chinensis* (Lour.) Baill.
*1*. lower part of stem; *2*. flowering branch; *3*. flower; *4*. fruit; *5*. mericarp. (drawn by H. P. Yu)

Locality: Tai Tam, Sha Tin, Tai Po, Sha Lo Tung, Tai Mei Tuk. *P. S. Choi 133; HK Sheet 35615.*
Distribution: Hebei, Henan, Shandong and regions S of Changjiang River; Japan, Philippines to Vietnam.
Ecology: Margins of ponds, ditches and other wet places. Flowering: Apr.–Jun., fruiting: Jun.–Jul.
Uses: Medicinal (folklore).

# 21. PIPERACEAE 胡椒科

XIA Nian-he 夏念和

Herbs, shrubs or climbers, rarely trees, usually aromatic. Vascular bundles ± scattered in transverse section. Tip of stem sometimes enclosed within a stipule-like sheath, the prophyll, sometimes adnate to petiole (absent in *Peperomia).* Leaves alternate, often opposite or whorled, simple, base often asymmetric, palmately or pinnately veined. Inflorescence usually a pedunculate spike, rarely grouped into an umbel, leaf-opposed or axillary, rarely terminal. Flowers small, hermaphrodite, polygamous or dioecious, nearly always sessile; bracts small, usually peltate or cup-like, usually without perianth. Stamens 1–10; filaments usually free; anthers 2-celled, distinct or connate, longitudinally dehiscent. Gynoecium 2–5-carpellate, connate; ovary superior, unilocular, ovule 1, orthotropous; stigmas 1–5, sessile or with very short styles. Fruit a small drupe or nutlet; pericarp fleshy, thin or dry, sometimes with sticky papillae or glochidiate spines. Seeds with copious starchy perisperm and a minute embryo embedded in small endosperm.

About eight or nine genera, variously estimated to include 2000–3000 species, distributed in tropical and subtropical regions of America, Asia and Africa; three genera and ca. 70 species occur in China, distributed from Taiwan through SE to SW China; two genera and eight species in Hong Kong.

1a. Leaves without prophylls or scars at nodes, alternate or 3–5-verticillate; stigma 1, rarely 2-cleft ..... 1. *Peperomia*
1b. Leaves with prophylls, often adnate to petiole, leaving conspicuous scars around stem nodes, alternate; stigmas (2–)3–5 ..... 2. *Piper*

## 1. Peperomia Ruiz & Pavon 草胡椒屬

Herbs, annual or, usually perennial, rooting from lower nodes and with erect or ascending flowering shoots. Stems usually dwarf, fleshy; vascular bundles free, scattered. Prophylls absent. Leaves alternate, opposite, or whorled, main lateral veins all basal, reticulate veins inconspicuous. Flowers bisexual, very small, often within depressions in rachis, sessile. Inflorescence a spike, usually erect, terminal, axillary, or rarely leaf-opposed, solitary, paired or clustered, rachis as thick or slightly thicker than peduncle; bracts ± orbicular, peltate, sometimes oblong. Stamens 2, filaments short, anther cells ± globose, ellipsoid, or cylindric. Ovary 1-locular; ovule 1; stigma 1, rarely 2-cleft, globose, apex obtuse or acute, beaked or brush-like, lateral or terminal. Fruit a very small, sticky nutlet, often partly enclosed in pit in rachis, sometimes distinctly curved.

About 1000 species, widely distributed in tropical and subtropical areas; seven species and two varieties occur from SE to SW China; two species in Hong Kong.

In addition, *Peperomia obtusifolia* A. Dietr. and *Peperomia sandersii* C. DC. are occasionally cultivated as ornamentals in Hong Kong.

1a. Leaves opposite or 3–5-verticillate, base cuneate to rounded, 3–5-veined ..... 1. *P. blanda*
1b. Leaves alternate, base cordate; 5–7-veined.... 2. *P. pellucida*

**1. Peperomia blanda** (Jacq.) Kunth
石蝉草 **(Fig. 33; Photo 115)**

Nov. Gen. Sp. 1: 67, t. 3. 1816; FOC 4: 130. 1999.

*Piper blandum* Jacq., Collectanea 3: 211. 1789.

*Peperomia dindygulensis* Miq., Syst. Pip. 122. 1843; FKH 221. 1912, 'dingdigulensis'; FRPS 20(1): 75, pl. 24: 5–7. 1982; FGD 1: 75, fig. 80. 1987.

*Peperomia leptostachya* Hook. & Arn., Bot. Beechey Voy. 96. 1832.

*Peperomia leptostachya* f. *cambodiana* C. DC., Fl. Indo-chine 5: 64. 1910.

*Peperomia leptostachya* var. *cambodiana* (C. DC.) Merr., Lingnan Sci. J. 5: 58. 1927; FHN 1: 336. 1964. FGD 1: 75. 1987.

Herb, perennial, usually terrestial, (10–)20–45(–50) cm tall, all parts pubescent. Stolons present, slender, leafless. Stems fleshy, often reddish. Petioles (5–)10–15 mm; leaf blade elliptic-obovate,

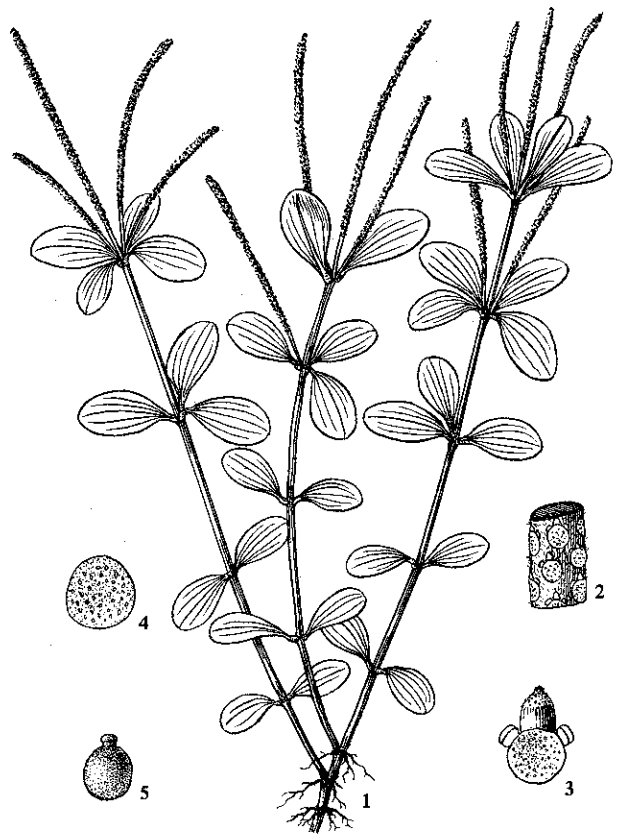



**Figure 33.** *Peperomia blanda* (Jacq.) Kunth
*1.* whole plant; *2.* portion of inflorescence; *3.* flower; *4.* bract; *5.* berry. (drawn by H. P. Yu)

lowermost sometimes suborbicular, abaxial surface often reddish, 20–40(–65) x 10–20(–40) mm, ± membranous when dried, base tapered to cuneate, apex rounded to subacute; veins 3(–5), glandular. Spikes terminal and from axils of uppermost leaves, sometimes fascicled, (3.5–)5–8(–12) cm, flowers lax; peduncle 0.5–1.5(–2) cm, rachis 2.5–10 cm, (0.5–)1–2 mm thick; bracts ± orbicular, ca. 0.8 mm wide, glandular– dotted. Filaments short, anther-cells rounded–"D"-shaped. Ovary obovoid, apex obtuse to emarginate. Nutlet sometimes on short conical pseudopedicels when fully ripe, globose to broadly ellipsoidal, 0.5–0.8(–1.2) mm, obscurely papillate.

Locality: Ma On Shan, Tai Mo Shan. *Y. S. Lau 1593; H. C. Tang 562* (HK).

Distribution: Taiwan, Fujian, Hainan, Guangdong, Guangxi, Guizhou, Yunnan; Japan, India, Bangaladesh, Sri Lanka, Thailand, Myanmar, Cambodia, N Vietnam, Malaysia, Africa, S America.

Ecology: Forests and other wet places. Flowering: Apr.–Dec.

Uses: Medicinal (folklore).

**2. Peperomia pellucida** (L.) Kunth 草胡椒 **(Photo 116)**

Nov. Gen. Sp. 1: 64. 1815; FKH 221. 1912; FHN 1: 336. 1964; FRPS 20(1): 77, pl. 24: 8–9. 1982; FGD 1: 76, fig. 81. 1987; FOC 4: 130. 1999.

*Piper pellucidum* L., Sp. Pl. 1: 30. 1753.

Herb, annual, fleshy, 20–40 cm tall, all parts glabrous. Stems erect or ascending, branched. Petioles 1–2 cm; leaf blade membranous, broad-ovate or ovate-triangular, length ± equal to width, 10–35 mm, translucent, base cordate, apex acute or obtuse; veins 5–7. Spikes terminal or leaf-opposed, slender, 2–6 cm. Flowers lax; bracts suborbicular, ca. 0.5 mm wide, stalk short. Anthers subglobose. Ovary ellipsoidal; stigmas pubescent. Nutlet globose, ca. 0.5 mm in diam.

Locality: Naturalized in Hong Kong. *Y. S. Lau 2292; H. C. Tang 1362* (HK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; native to tropical America, widely naturalized in tropical Africa and Asia.

Ecology: Shaded old walls and other wet places. Flowering: Apr.–Jul.

## 2. Piper L. 胡椒屬

Shrubs or climbers, rarely herbs or small trees, aromatic. Stems thickened at nodes; outer vascular bundles in a ring, inner bundles scattered in 1 or 2 series. Prophylls present, often ± connate to petiole, caducous, forming a prominent ring-like stipular scar at each node. Leaves alternate, entire, main lateral veins all basal or partly pinnate. Flowers mostly unisexual (plant dioecious, less often monoecious) or bisexual, sessile. Inflorescences leaf-opposed or rarely terminal, spicate rarely the spikes grouped into an apparently axillary umbel. Bracts small, sometimes adnate to rachis, often peltate. Stamens 2–6, usually on rachis, rarely at base of ovary, anthers 2-locular, 2–4-lobed. Ovary distinct or sometimes immersed in rachis; ovule 1; stigmas (2–)3–5. Fruit a drupe, sessile or stalked, often red or yellow, ovoid, globose, or obovoid to cuneate-obovoid and laterally compressed, rarely ellipsoidal, usually glabrous.

1000–2000 species, distributed mainly in tropical regions; at least 59 species occur in China, from Taiwan through SE to SW China; six species (one introduced) in Hong Kong.

1a. Ovaries and fruits free from rachis.
  2a. Leaves hairy ..... 1. *P. hongkongense*
  2b. Leaves glabrous ..... 2. *P. hancei*
1b. Ovaries and fruits partly fused to rachis
  3a. Fruit apically tomentose, completely fused to each other and form a nearly smooth, fleshy, cylindric mass ..... ..... 3. *P. betle*
  3b. Fruit glabrous, distinct.
    4a. Stoloniferous herbs; leaves very finely powdery pubescent abaxially ..... 4. *P. sarmentosum*
    4b. Climbers.
      5a. Leaves glabrous ..... 5. *P. austrosinense*
      5b. Leaves pubescent ..... 6. *P. cathayanum*

**1. Piper hongkongense** C. DC 毛蒟 **(Fig. 34; Photo 117)**

Prodr. 16: 347. 1868; FOC 4: 121. 1999.

*Chavica puberula* Benth., FHK 335. 1861.

*Piper puberulum* (Benth.) Maxim., Bull. Acad. Imp. Sci. Saint-petersbourg 31: 94. 1887, non (Benth.) Seemann, 1868; FKH 221. 1912; FHN 1: 332. 1964, *p.p.*; FRPS 20(1): 34. 1982; FGD 1: 70. 1987.




**Figure 34.** *Piper hongkongense* C. DC

*1*. male flowering plant; *2*. female flowering plant; *3*. fruiting branch; *4*. bract. (drawn by H. P. Yu)

Climber. Young branches softly hairy, glabrescent. Petioles 5–10 mm, densely pubescent; leaf blade papery, ovate-lanceolate or ovate, 5–11 × 2–6 cm, base ± cordate, apex acute or acuminate, usually asymmetrical, abaxially pubescent, mixed with a few dichotomous hairs, adaxially ± glabrescent; veins 5–7, apical pair arising 1.5–3 cm above base, alternate, others ± basal. Flowers unisexual (plant dioecious), in leaf-opposed spikes. Male spikes ca. 7 cm long, ca. 3 mm thick; peduncle slightly longer than petioles, pilose; bracts orbicular, sometimes slightly tapered, peltate, glabrous. Stamens usually 3, filaments very short, anthers reniform. Female spikes 4–6 cm; peduncle, rachis, and bracts as in male flowers. Ovary subglobose; stigmas 4. Drupe globose, ca. 2 mm in diam.

Locality: Tai Mo Shan, Ma On Shan, Sunset Peak. *N. H. Li 22* (HK); *HK Sheet 35607.*

Distribution: Hainan, Guangdong, Guangxi.

Ecology: Thickets or forests, often climbing on trees or rocks; Flowering: Mar.–May.

Notes: The type specimen was collected from Hong Kong Island by Seemann around 1850.

**2. Piper hancei** Maxim. 山蒟 **(Photo 118)**

Bull. Acad. Imp. Sci. Saint-Pétersbourg, sér. 3, 31: 94. 1887; FKH 221. 1912; FRPS 20(1): 60, pl. 19: 1–3. 1982; FGD 1: 69, fig. 72. 1987; FOC 4: 127. 1999.

*Chavica leptostachya* Hance, J. Bot. 6: 301. 1868, non *Piper leptostachyon* Nutt. 1822.

*Piper matthewii* Dunn, J. Bot. 47: 377. 1909; FKH 221. 1912.

Climber, glabrous except for rachis and bases of bracts. Petioles 0.5–1.2 cm; leaf blade papery to ± leathery, ovate-lanceolate or elliptic, rarely lanceolate, 6–12 × 2.5–4.5 cm, base gradually tapered or cuneate, sometimes rounded, symmetrical or nearly so, apex acute or acuminate; veins 5(–7), apical pair arising 1–3 cm above base, alternate, nearly reaching leaf apex. Flowers unisexual (plant dioecious) in leaf-opposed spikes. Male spikes yellow, 6–10 cm, ca. 2 mm thick; peduncle ca. as long as petioles or slightly longer, rachis pubescent; bracts suborbicular, ca. 0.8 mm wide, peltate, adaxially pilose, ± sessile to short stalked. Stamens 2. Female spikes ca. 3 cm, longer in fruit; bracts as in male spikes. Ovary subglobose, distinct; stigmas (3 or) 4. Drupe yellow, globose, 2.5–3 mm in diam.

Locality: Common in Hong Kong. *P. S. Choi 499; HK sheet 34040.*

Distribution: Guangdong, Guangxi, Hunan, Guizhou, Yunnan, Fujian, Zhejiang.

Ecology: Forests, usually climbing on trees or rocks; Flowering: Mar.–Aug.

Uses: Medicinal (folklore).

**3. Piper betle** L. 蒌葉

Sp. Pl. 1: 28. 1753; FRPS 20(1): 42. 1982; FGD 1: 67, fig. 70. 1987; FOC. 4: 120. 1999.

Climber; stems rooted at nodes. Petioles 2–5 cm, very finely powdery pubescent; leaf blade papery to ± leathery, ovate to ovate-oblong, 7–15 × 5–11 cm, base cordate, sometimes rounded in upper leaves, symmetrical or nearly so, apex acuminate, abaxially densely glandular, with very finely powdery pubescent veins, adaxially glabrous; veins 7, apical pair arising 0.7–2 cm above base, usually opposite. Flowers unisexual (plant dioecious) in leaf-opposed spikes. Male spikes nearly as long as leaf blades at anthesis; peduncle nearly as long as petioles; rachis pubescent; bracts orbicular or suborbicular, rarely obovate, 1–1.3 mm wide, peltate, ± sessile. Stamens 2, filaments thick, ca. as long as anthers or longer, anthers reniform. Female spikes 3–5 cm, longer in fruit, ca. 1 cm thick; rachis fleshy, densely pubescent. Ovary partly immersed in and connate to rachis, apex tomentose; stigmas usually 4 or 5, lanceolate, tomentose. Drupes fused to form fleshy, reddish cylindrical mass; tips tomentose, prominent.

Locality: Cultivated. *N. H. Li 117* (HK).

Distribution: Cultivated in S, SW & E China; India, Sri Lanka, Vietnam, Malaysia, Indonesia, Philippines, Madagascar.

Ecology: Flowering: May–Jul.

Uses: Social (masticatory), medicinal (folklore).

**4. Piper sarmentosum** Roxb. 假蒟 **(Photo 119)**

Fl. Ind. 1: 162. 1820; FKH 221. 1912; FHN 1: 332. 1964; FRPS 20(1): 42, pl. 14: 7–10. 1982; FGD 1: 68, fig. 71. 1987; FOC 4: 119. 1999.

*Chavica hainana* C. DC., Annuaire Conserv. Jard. Bot. Geneve 2: 275. 1898.

*Chavica sarmentosa* (Roxb.) Miq., Syst. Piperac. 242. 1843; FHK 335. 1861.

Perennial stoloniferous herb, most parts very finely powdery pubescent at least when young. Fertile stems ± erect. Petioles 2–5 cm; leaf blade membranous, toward base of stem ovate to suborbicular, those toward apex of stem smaller, ovate or ovate-lanceolate, 7–14 × 6–13 cm, base cordate to rounded, sometimes cuneate on uppermost branches, subsymmetrical, apex acute, finely glandular, abaxially finely powdery pubescent along veins, adaxially glabrous; veins 7, glaucous when dry, abaxially very prominent, apical pair arising 1–2 cm above base, reaching leaf apex; reticulation of veins conspicuous. Flowers unisexual (plant dioecious) in leaf-opposed spikes. Male spikes white, 1.5–2.5 cm, 2–3 mm thick; peduncle nearly as long as spikes, rachis pubescent; bracts transversely elliptic, 0.5–0.6 mm, peltate, ± sessile. Stamens 2, filaments ca. two times as long as anthers, anthers subglobose. Female spikes 6–8 cm, to 8 mm thick in fruit; peduncle as in male spikes, rachis glabrous; bracts suborbicular, peltate, 1–1.3 mm in diam. Stigmas 3–5, hispidulous. Drupe subglobose, 4-angled, 2.5–3 mm, partly connate to rachis.

Locality: Hong Kong Island, Castle Peak, Tai Mo Shan, Sha Tin, Fanling, Ma On Shan.

Distribution: Fujian, Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang; India, Cambodia, Laos, Vietnam, Malaysia, Philippines, Indonesia.

Ecology: Forests and wet places near villages. Flowering: Apr.–Nov.

Uses: Medicinal (folklore).

**5. Piper austrosinense** Y. C. Tseng 華南胡椒 **(Photo 120)**

Acta Phytotax. Sin. 17: 36, fig. 12. 1979; FRPS 20(1): 54. 1982; FGD 1: 68. 1987; FOC 4: 125. 1999.

Climber, woody, glabrous except for rachis and bracts. Petioles 0.4–2 cm; leaf blades ovate or ovate-lanceolate to lanceolate, 6–11 × 5–6 cm, base usually oblique, rounded or slightly cordate, apex acuminate. Flowers unisexual (plant dioecious) in leaf-opposed spikes. Male spikes white, 3–6.5 cm, ca. 2 mm thick; peduncle 1–1.8 cm; rachis and abaxial surface of bracts densely white pubescent; bracts orbicular, ca. 1 mm wide, peltate, sessile. Stamens 2, filaments nearly as long as anthers. Female spikes white, 1–1.5 cm, ca. 3 mm thick; peduncle nearly as long as rachis; bracts as in male flowers. Ovary partly immersed in rachis; stigmas 3 or 4, tomentose. Drupe globose, red, ca. 3 mm in diam., partly immersed in rachis.

Locality: Kwun Yam Shan Tsuen. *K. Y. Tam s.n. (HK Sheet 39789).*

Distribution: E & SW Guangdong, SE Guangxi, Hainan.

Ecology: Forests, climbing on trees or rocks. Flowering: Apr–Jun.

Notes: This species when without fruits may be confused with *Piper hancei*, but can be easily distinguished by its white spikes.

**6. Piper cathayanum** M. G. Gilbert & N. H. Xia 華山蓽(青蒟) **(Photo 121)**

Novon 9: 191. 1999; FOC 4: 118. 1999.

*Chavica sinensis* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 116. 1854.

*Piper sinense* (Champ. ex Benth.) C. de Candolle, Prodr. 16(1): 361. 1868, non *Piper chinense* Miq., 1845; FHK 335. 1861; FKH 221. 1912; FRPS 20(1): 38, pl. 13: 7–11. 1982; FGD 1: 71, fig. 74. 1987.

Climber, to 5 m or longer. Petioles 10–15 mm, densely pubescent; leaf blade papery, ovate, ovate-oblong, or oblong, 8–15 × 3.5–6.5 cm, base deeply cordate, basal lobes often overlapping, ± symmetrical, apex obtuse or acute, abaxially pubescent, especially along veins, adaxially glabrous or sparsely pubescent at base; veins 7, usually opposite, apical pair arising 0.5–1 cm above base. Flowers unisexual (plant dioecious) in leaf-opposed spikes. Male spikes 2.5–4 cm, 4–5 mm thick; peduncle shorter than petioles, roughly pubescent, rachis glabrous; bracts orbicular, ca. 1.2 mm wide, peltate, glabrous, ± sessile. Stamens 2. Female spikes to 3 cm in fruit; rachis and bracts as in male flowers. Stigmas usually 3. Drupe globose, ca. 2.5 mm in diam., partly connate to rachis.

Locality: Mount Gough, Victoria Peak, Tai Po Kau. *Y. S. Lau 593; Y. W. Lam 17.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan.

Ecology: Forests streamsides, often climbing on trees. Flowering: Mar.–Jun.

Notes: The type specimen was collected from Victoria Peak, Hong Kong Island by J. G. Champion between 1847 and 1850.

## 22. ARISTOLOCHIACEAE 馬兜鈴科

XIA Nian-he 夏念和

Lianas, subshrubs, or herbs. Leaves simple, alternate, petiolate; stipules absent. Inflorescences terminal or axillary, racemose, cymose, or corymbose, or flowers solitary. Flowers bisexual, zygomorphic or actinomorphic. Perianth usually with 1 petaloid whorl (in *Saruma* with 2 whorls: outer one sepaloid, inner one petaloid), mostly connate into distinct tube, cylindric to campanulate or subglobose; limb rotate, urceolate, cylindric, or ligulate, 1–3-lobed; lobes valvate. Stamens 6–many, in 1 or 2 series; filaments short and thick; anthers 2-celled, longitudinally dehiscent. Ovary inferior to superior, 6-locular; carpels connate only at base or fully fused; ovules numerous, usually in 1 or 2 series on parietal placenta. Styles free or connate, column 3- or 6-lobed. Fruit a fleshy or dry capsule. Seeds many; testa somewhat hard or crustaceous; endosperm copious, fleshy; embryo minute.

About eight genera and 450–600 species, mainly distributed in tropical and subtropical regions; four genera and 86 species in China; two genera and six species in Hong Kong.

1a. Perianth zygomorphic; stamens 6 in 1 series; stems climbing or twining; ..... 1. *Aristolochia*

1b. Perianth actinomorphic; stamens usually 12 in 2 series; plants acaulescent ..... 2. *Asarum*

### 1. Aristolochia L. 馬兜鈴屬

Climbers, sometimes subshrubs, rarely small trees. Roots often tuberous. Leaves entire or 3–5-lobed, pinnately or palmately veined. Flowers axillary, solitary, fasciculate, or arranged in racemes. Perianth uniseriate, zygomorphic, lobes fused; tube often enlarged at or near base to form a utricle, apically cylindric or funnel-shaped, rectilinear or curved; limb ligulate, discoid, or subpeltate; lobes 1–3. Stamens 6 (rarely 4–10 or many) in 1 series, fully adnate to the style column to form gynostemium; filaments absent; anthers extrorse. Ovary inferior, 4–6-locular; carpels fully connate; gynostemium 3- or 6-lobed. Fruit dry capsules, 6-valved, dehiscing from the apex or from the base or rarely indehiscent. Seeds many, flat, with or without wing, with fleshy funicle, persistent on seed.

About 400 species, widely distributed in tropical, subtropical and temperate regions of the Old World, also in Australia; 45 species in China; five species in Hong Kong.

1a. Stems glabrous; leaves palmately veined; perianth-tube straight; anthers ovoid, gynostemium 6-lobed.

2a. Leaves hairy; stems 6-angled ..... 1. *A. fordiana*

2b. Leaves glabrous; stems terete ..... 2. *A. tagala*

1b. Stems hairy; leaves pinnately veined; perianth-tube curved; anthers ellipsoid, gynostemium 3-lobed.
3a. Subshrubs ..... 3. *A. thwaitesii*
3b. Climbers.
4a. Leaf base rounded or shallowly cordate ..... 4. *A. championii*
4b. Leaf base narrowly auriculate ..... 5. *A. westlandii*

**1. Aristolochia fordiana** Hemsl. 福氏馬兜鈴(通城虎) **(Photos 122–123)**

J. Bot. 23: 286. 1885; FKH 219. 1912; FGD 1: 48, fig. 46. 1987; FRPS 24: 231, pl. 55: 5–8. 1988; FOC 5: 266. 2004.

Herbaceous vine; tubers terete, slender. Stems 6-angled, glabrous. Petiole 2–4 cm, glabrous; leaf blade leathery or thinly leathery, ovate-cordate or ovate-triangular, 10–12 × 5–8 cm, base cordate, apex long-acuminate, glabrous adaxially, densely puberulous abaxially, veins palmate, 5–7 from base, reticulation of veins conspicuous. Racemes 3- or 4-flowered, 3–5 cm, or flowers solitary. Pedicel ca. 0.8 cm; bracts subulate to lanceolate-ovate. Perianth yellowish green; tube rectilinear or slightly curved, abaxially glabrous; utricle globose, ca. 3.5 mm in diam., sessile; tube ca. 15 × 2 mm; limb unilateral, ligulate, ovate-oblong, 1–1.5 ×0.5 cm. Anthers ellipsoid, ca. 0.3 mm. Ovary ellipsoid, ca. 5 mm. Gynostemium 6-lobed. Capsule ellipsoid or obovoid, 1.5.2 cm in diam., dehiscing acropetally. Seeds ovoid, ca. 5 × 5 mm.

Locality: Victoria Peak, Tai Mo Shan, Sunset Peak, Lantau Peak. *HK Sheet 10460, 34033.*

Distribution: Guangdong, Guangxi, Jiangxi, Zhejiang, Fujian.

Ecology: Forest, thickets, crevices of rocks. Flowering: Mar.–Apr.; fruiting: May–Jul.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by A. B. Westland from Tai Mo Shan.

**2. Aristolochia tagala** Chamisso 印度馬兜鈴(耳葉馬兜鈴) **(Photos 124–125)**

Linnaea 7: 207, pl. 5, fig. 3. 1832; FKH 219. 1912; FGD 1: 50, fig. 47. 1987; FRPS 24: 243, pl. 60: 1–5. 1988; FOC 5: 269. 2003.

*Aristolochia roxburghiana* Klotzsch, Monatsber. Konigl. Preuss. Akad. Wiss. Berlin 1859: 596. 1859.

Herbaceous vine; tubers terete, more than 1 m, 3–5 cm in diam. Stems terete, slightly furrowed, glabrous. Petiole 2–5.4 cm, glabrous; leaf blade papery, ovate-cordate or oblong-ovate, 8–12(–24) × 4–14(–20) cm, base deeply cordate, apex short-acuminate, both surfaces glabrous, veins palmate, 5 from base. Racemes 2- or 3-flowered, 2–6 cm. Pedicels ca. 1 cm; bracts ovate-lanceolate. Perianth pale yellowish or greenish; tube rectilinear or slightly curved; utricle globose, 5–8 mm in diam.; limb ligulate, oblong, 2–3 × 0.6 cm. Anthers ovoid, ca. 1 mm. Gynostemium 6-lobed. Capsule obovoid-globose to ovoid-cylindric, 3–5.5 × 2–3.5 cm, dehiscing acropetally. Seeds subcordiform, ca. 8 × 8 mm.

Locality: Tai Po, Fanling, Ho Chung. Also cultivated. *P. S. Choi 399; HK Sheet 33864.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; India, Vietnam, Malaysia, Philippines.

Ecology: Thickets. Flowering: May–Aug.; fruiting: Oct.–Dec.

Uses: Medicinal (folklore).

**3. Aristolochia thwaitesii** Hook. f. 海邊馬兜鈴(田氏馬兜鈴) **(Photos 126–127)**

Bot. Mag. 82: t. 4918. 1856; FKH 220. 1912; FGD 1:57, fig. 57. 1987; FRPS 24: 225. 1988; FOC 5: 265. 2003 .

Erect subshrub; tubers ellipsoid or terete, up to 10 cm or longer, ca. 7 cm in diam. Stems up to 70 cm, terete, villous. Petioles ca. 1 cm, villous; leaf blade leathery, spathulate, narrowly oblanceolate, or oblong-oblanceolate, 10–15 × 2.5–3 cm, base attenuate to subcuneate, apex acute to shortly acuminate, subglabrous adaxially, densely brown-villous abaxially, veins pinnate, 12–16 pairs. Racemes arising from the base of plant, 3–7-flowered, up to 8 cm. Pedicel ca. 3 cm, recurved, villous; bracts lanceolate, villous. Perianth yellow-green; tube geniculately curved, densely brown villous abaxially; basal portion of tube 1.5–2.5 × 0.5–1.0 cm; limb subcylindric to conic, symmetric, 1.5–3 cm in diam., 5– or 6–dentate. Anthers ellipsoid, ca. 2 mm. Gynostemium 3-lobed. Capsule ovoid-globose, 3.5 × 2–2.5 cm, dehiscing basipetally. Seeds ovoid, ca. 4 × 3 mm.

Locality: Deep Water Bay, Wong Nai Chung Gap, Lantau Island. *W. J. Tutcher 8273; Y. W. Lam 1633.*

Distribution: Guangdong.

Ecology: Thickets, bamboo forests and crevices of rocks. Flowering: Mar.–May; fruiting: Aug.–Sep.

Uses: Medicinal (folklore).

Notes: Listed in *Rare and Precious Plants in Hong Kong.*

**4. Aristolochia championii** Merr. & Chun 長葉馬兜鈴 **(Photos 128–129)**

Sunyatsenia 5: 47. 1940; FGD 1: 55, fig. 54. 1987; FRPS 24: 219, pl. 51: 7–9. 1988; FOC 5: 264. 2004.

*Aristolochia longifolia* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 116. 1854, non *A. longlifolia* Roxb., Fl. Ind. 3: 490. 1832; FHK 333. 1861; FKH 219. 1912.

*Aristolochia compressicaulis* Z. L. Yang in J. Wuhan Bot. Res., 6(1): 32. 1988, *nom. inval.*

Woody vine; tubers fusiform, 3–5 cm in diam. Stems terete, densely pubescent with rusty soft hairs. Petiole 1–2.5 cm, densely villous; leaf blade leathery, lanceolate or linear-lanceolate, 15–25 × 2.5–4.5 cm, base rounded or shallowly cordate, apex narrowly acuminate, entire, subglabrous adaxially, densely brown villous abaxially, veins pinnate, 5–10 pairs. Flowers solitary or in 2–5-flowered racemes. Pedicel 3–4 cm, pendulous, brown villous; bracts small, lanceolate. Perianth yellow, with reddish brown veins; tube geniculately curved, abaxially villous; limb discoid, 4.6 cm in diam., 3-lobed, adaxially papillate; lobes broadly rounded, slightly unequal. Anthers ellipsoid, ca. 3 mm. Gynostemium 3-lobed. Capsule ellipsoid, ca. 6 × 3 cm, dehiscing basipetally. Seeds ovoid, ca. 5 × 3 mm.

Locality: Victoria Peak, High West, Ma On Shan, Tai Mo Shan. *Y. W. Lam 1631; HK Sheet 34401.*

Distribution: Guangdong, Guangxi, Sichuan, Guizhou, Yunnan.

Ecology: Thickets, thin forests. Flowering: Apr.–Jun.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

Notes: The type specimen was collected in Victoria Peak by J. G. Champion in 1848 to 1849. Listed in *Rare and Precious Plants in Hong Kong.*

**5. Aristolochia westlandii** Hemsl.
香港馬兜鈴(威氏馬兜鈴) **(Fig. 35; Photos 130–131)**
J. Bot. 23: 286. 1885; FKH 219. 1912; FGD 1: 54, fig. 53. 1987; FRPS 24: 217, pl. 51: 1–3. 1988; FOC 5: 263. 2003.

Woody vine; tubers fusiform, 3–5 cm in diam., usually moniliform. Stems terete, densely villous. Petioles 1–1.5 cm, slightly hairy; leaf blade leathery or papery, narrowly lanceolate to narrowly oblong, 12–20 × 2–5 cm, base narrowly auriculate, apex acute, glabrous adaxially, sparsely villous abaxially, glaucous, veins pinnate, 8–12 pairs. Flowers solitary, axillary, on leafy shoots or on old woody stems. Pedicels pendulous, 7–12 cm, villous. Perianth yellow with purple veins and blotches, 10–15 cm; tube geniculately curved, villous abaxially; basal portion of tube 5–6 × 1.5–2 cm; limb discoid, 8–13 cm in diam., shallowly 3-lobed or emarginate; lobes broadly rounded, slightly unequal. Anthers ellipsoid, 4.5–5 mm. Gynostemium 3-lobed. Capsule ovoid, hexagonous.

Locality: Tai Mo Shan. *Y. W. Lam 1639; HK Sheet 23776.*

Distribution: Guangdong.

Ecology: Forests of valleys. Flowering: Mar.–Apr.

Notes: The type specimen was collected by A. B. Westland from Tai Mo Shan around 1880. Listed in *Rare and Precious Plants in Hong Kong.*

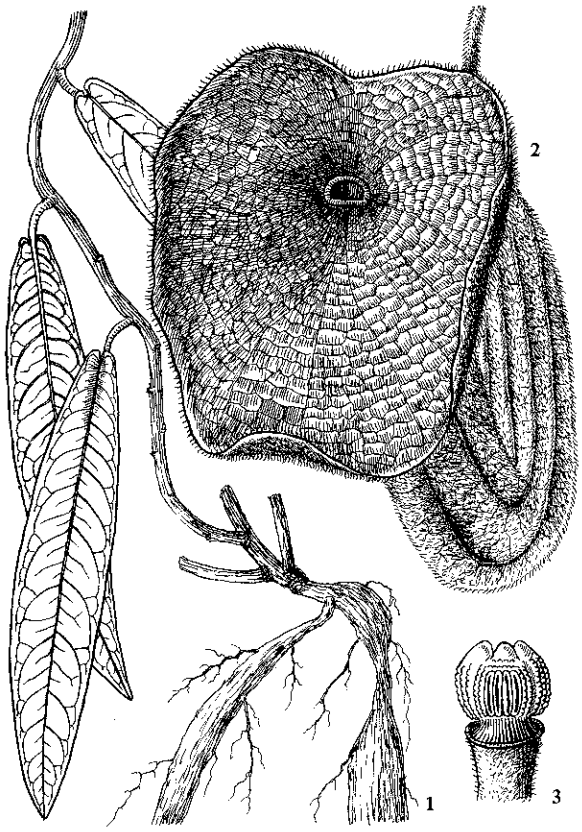



**Figure 35.** *Aristolochia westlandii* Hemsl.
*1.*whole plant and tubers; *2.* flower; *3.* gynostemium. (drawn by H. P. Yu)

## 2. Asarum L. 細辛屬

Perennial herbs, acaulescent. Rhizomes and roots often pungently aromatic. Leaves solitary or paired on rhizomes (when paired appearing opposite), usually long-petiolate, often cordate or sagittate. Flowers terminal, solitary (rarely paired). Perianth uniseriate, actinomorphic, campanulate or urceolate, apex 3-lobed, lobes erect, spreading, or reflexed. Stamens 12 in 2 series, free or connate, filaments very short, anthers ovoid, extrorse. Ovary inferior or half-inferior, subglobose, 6-locular; carpels fully connate; styles 6, free or united into column; stigma 2-lobed; ovules many. Capsules subglobse, irregularly dehiscent, often with persistent perianth and stamens. Seeds ellipsoid, flat, plane or grooved ventrally, with fleshy funicle at base; endosperm copious, embryo small.

About 90 species, mainly distributed in SE Asia, a few species in N America, one species endemic to Europe; 39 species in China; one species endemic to Hong Kong.

**1. Asarum hongkongense** S. M. Hwang & T. P. Wong Siu
香港細辛 **(Fig. 36; Photo 132)**
Acta Phytotax. Sin. 28: 406. 1990; FOC 5: 252. 2003.

Perennial herb. Rhizomes horizontal, ca. 3 mm in diam. Leaves solitary; petiole 12–30 cm, glabrous; leaf blade nearly leathery, ovate-cordate to ovate, 6–11 × 5–8 cm, base deeply cordate, basal lobes semi-orbicular, apex acute or apiculate, margin entire, shining adaxially, both surfaces glabrous; basal veins 7, impressed adaxially and elevated abaxially. Peduncle ascending, 1.5–4 cm.

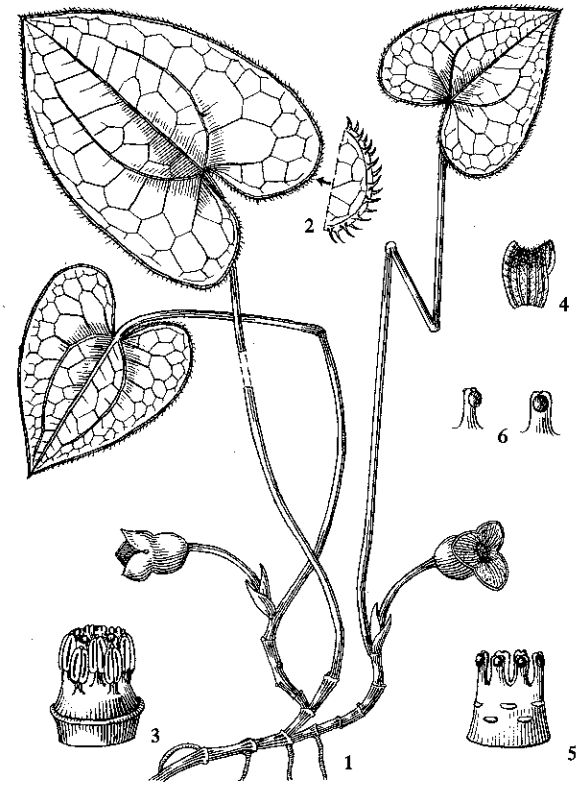



**Figure 36.** *Asarum hongkongense* S. M. Huang & T. P. Wong Siu
*1.* whole plant; *2.* portion of leaf (viewing indumentum); *3.* flower with perianth removed (viewing stamens and pistils); *4.* portion of perianth; *5.* pistil; *6.* style and lateral and dorsal view of stigma. (drawn by H. P. Yu)

Perianth purple-green, campanulate-urceolate, ca. 2 × 2.5 cm; perianth-lobes connate beyond attachment to ovary, glabrous abaxially; tube broadly ovoid to subglobose, ca. 1.5 × 1.5 cm, slightly constricted at throat, adaxially longitudinally papillate-rugose, orifice ring inconspicuous; lobes broadly ovate, ca. 1.5 × 1.2 cm, base with purple papillate-corrugate area; lateral lobes erect or spreading. Stamens 12; filaments much shorter than anthers; connectives slightly extended beyond anthers, obtuse. Ovary subsuperior; styles connate, apex with 6, erect, slightly 2-cleft arms; stigmas subterminal.

Locality: Sunset Peak. *P. Chow s.n. (HK sheet 34402).*

Distribution: Endemic to Hong Kong.

Ecology: Thickets on hillslopes. Flowering: Apr.–Jul.

Uses: Medicinal (folklore).

Notes: The type specimen was collected by P. Chow from Lantau Island in 1983. Listed in *Rare and Precious Plants of Hong Kong.*

# 23. ILLICIACEAE 八角科

XIA Nian-he 夏念和

Evergreen trees or shrubs, glabrous, aromatic. Leaves simple, alternate, usually fascicled near twig apex, sometimes pseudoverticillate or subopposite, pinnately veined. Flowers bisexual, usually solitary, rarely 2–5 clustered, axillary or inserted above leaf axils; peduncles 1 to several bracteoled; tepals 7–many, distinct, usually glandular, in several whorls, imbricate; stamens many–4, in several to 1 whorls, erect, filaments tongue-shaped or subterete, anthers 2-celled, basifixed, longitudinally dehiscent, connectives sometimes glandular; carpels usually 7–15, rarely more (21) or fewer (5), distinct, in one whorl, laterally compressed, styles short, subulate, with 1 anatropous ovule. Fruit an aggregate, consisted of several to more than 10 follicles, in one whorl, obliquely on a short torus, in star-shape, dehiscing along ventral sutures. Seeds elliptic or ovate, compressed laterally, endosperm abundant, oily, embryo small.

One genus and about 40 species, mainly distributed in E, SE Asia, Indochina, Malay Peninsula, with a few species in SE of N America, West Indies, C & S America; 28 species and two varieties in China; four species in Hong Kong.

## 1. Illicium L. 八角屬

Morphological characters and geographical distribution are the same as those of the family.

1a. Flowers white; inner tepals lanceolate ..... 1. *I. angustisepalum*

1b. Flowers red; inner tepals ovate.

2a. Leaf blades lanceolate or oblanceolate ..... 2. *I. dunnianum*

2b. Leaf blades oblong-elliptic, obovate-elliptic or narrowly oblong-elliptic.

3a. Tepals 21–23; stamens 29–30 ..... 3. *I. leiophyllum*

3b. Tepals 14–17(–21); stamens 10–12 ..... 4. *I. micranthum*

**1. Illicium angustisepalum** A. C. Sm.

大嶼八角 **(Fig. 37; Photos 133–134)**

Sargentia 7: 36. 1947; FGD 2: 2. 1991; FRPS 30(1): 207. 1996.

*Illicium spathulatum* auct. non Y. C. Wu: Xing et al, Memoirs HK Nat. Hist. Soc. (23): 66. 2000 (excl. synonym); Check List HK Plants 50. 2002; 23. 2004.

Small tree; branchlets slender, angled, yellowish brown. Petioles 1–2.5 cm, narrowly winged adaxially. Leaves 4–6, pseudoverticillate on distal nodes, leathery, oblong-elliptic, (5.5–)7–12 × (2–)2.5–4.2 cm, base attenuate, apex nearly acute to acuminate; midvein slightly elevated adaxially, prominent abaxially; lateral veins elevated on both surfaces or slightly impressed adaxially. Flowers axillary; peduncles 1.2–1.4 cm; tepals 22–24, membranous, largest one narrowly oblong, 1.4–1.5 × 0.3–0.35 cm, inner ones lanceolate; stamens ca. 24, 2.5–2.8 mm, filaments 1.2–1.6 mm, anthers 1.1–1.3 mm; carpels 11–13, at anthesis, 3.5–4 mm; ovaries 1.3–1.7 mm, styles subulate, 2.2–2.5 mm. Fruit unseen.

Locality: Sunset Peak, Lantau Peak. *L. T. Lo 656; Y. S. Lau 3232.*

Distribution: Endemic to Hong Kong.

Ecology: Forests. Flowering: Feb.

Notes: The type specimen was collected from Lantau Peak,

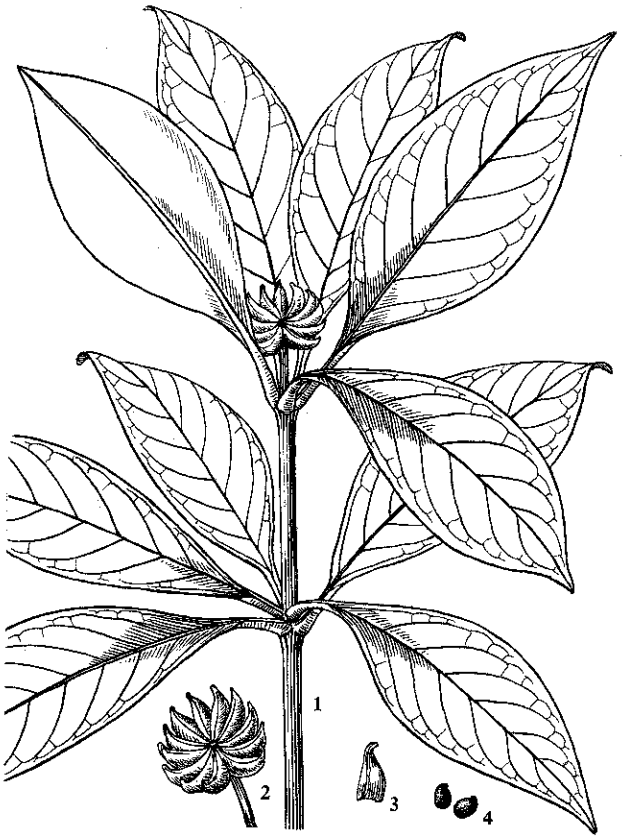



Figure 37. *Illicium angustisepalum* A. C. Sm.
*1.* fruiting branch; *2.* fruit; *3.* follicle; *4.* seeds. (drawn by H. P. Yu)

Lantau Island in 1905 by U. On. Listed in *Rare and Precious Plants in Hong Kong*.

**2. Illicium dunnianum** Tutcher 紅花八角(鄧氏八角) **(Photo 135)**

J. Linn. Soc. Bot. 37: 62. 1905; FKH 28. 1912; FGD 2: 3, fig. 1. 1991; FRPS 30(1): 222. 1996.

Shrub, usually 1–2 m, rarely to 10 m tall. Young twigs slender. Leaves congested near twig apex, 3–8 fascicled, or pseudo-verticillate, thinly leathery, narrowly lanceolate or narrowly oblanceolate, 5–12 × 0.8–1.2(–2.7) cm, base attenuate, decurrent to petioles and evidently forming narrow wings, apex abruptly caudate or acuminate; midvein slightly impressed adaxially, prominnet abaxially. Flowers solitary at axils or 2–3 fascicled in axils of apical leaves; peduncles slender, 1–3.5 cm; tepals 12–20, pink to red, purplish red, the largest elliptic to suborbicular, 0.6–1.1 × 0.4–0.8 cm; stamens (19–)24(–31), rarely 11, 1.7–3.3 mm; carpels 8–13, 2.5–3.5 mm; ovaries 1.2–1.5 mm, styles 1.4–2 mm. Fruiting peduncles slender, 2–5.5 cm; fruit small, 1.5–3 cm in diam.; follicles usually 7–8, rarely 13, 0.9–1.5 × 0.4 × 0.2–0.3 cm, with a subulate (3–5 mm), slightly curved acumen. Seeds small, 4–5 × 2.5–3.3 × 1.7–2.2 mm.

Locality: Wu Kau Tang, Bride's Pool, Nam Chung, Luk Keng. *Y. S. Lau 1940; F. W. Xing 6965.*

Distribution: Fujian, Guangdong, Guangxi, Hunan, Guizhou.

Ecology: Forests and streamsides. Flowering: Mar.–Jul. or Oct.–Nov.; Fruiting: Jul.–Oct.

Note: The type specimen was collected from Sam Tam Lo near Bride's Pool, New Territories in March 1903 by W. J. Tutcher.

**3. Illicium leiophyllum** A. C. Sm. 平滑葉八角(野八角)

Sargentia 7: 54. 1947; FGD 2: 3. 1991, quod specimen from Hong Kong; FRPS 30(1): 219. 1996.

Shrub, 3–4 m. Petioles 0.8–1.7 cm. Leaves 3–5 fascicled, leathery, oblong-elliptic, (6–)8–13 × (2–)2.5–4 cm, base attenuate and decurrent to petioles, apex acuminate; midvein evidently impressed adaxially, prominent abaxially; lateral veins 6–9 on each side of midvein, impressed. Flowers axillary or subterminal, 2–4 in clusters; peduncles thick and short when young; tepals 21–23, outer ones papery, margin membranous, inner ones fleshy, outermost 3–4 suborbicular-triangular, 4–5 × 4–5 mm; stamens 29–30, filaments fleshy, connectives obtuse or slightly emarginate, thecae slightly protuberant; carpels 11–12, styles nearly as long as ovaries; fruiting peduncles 2–2.5 cm; follicles 11–12, 1.1–1.9 × 0.5–0.7 × 0.3–0.4 cm.

Locality: Mount Nicholson. *W. J. Tutcher s.n. (Herb. Hongkong 4661); HK sheet 749, 755.*

Distribution: Endemic to Hong Kong.

Ecology: On rock slits.

Notes: The type specimen was collected from Mount Nicholson, Hong Kong Island in 1906 by W. J. Tutcher. It was misidentified as *Illicium griffithii* Hook. f. by Dunn & Tutcher (Kew Bull. Misc. Inform. Add. Ser. 10: 28. 1912) and Herklots (Hong Kong Nat. 4: 21. 1933).

**4. Illicium micranthum** Dunn 小花八角 **(Photo 136)**

Icon. Pl. 28: pl. 2714. 1901; FRPS 30(1): 228. 1996.

*Illicium wangii* Hu, Bull. Fan. Mem. Inst. Biol. 10: 120. 1940.

Shrub or small tree, up to 10 m tall. Petioles slender, 0.4–1.2 cm. Leaves irregularly alternate or subopposite, or 3–5 fascicled towards apex of branchlets, leathery or thinly leathery, obovate-elliptic, narrowly oblong-elliptic, 4–11 × 1.3–4 cm, base cuneate, apex usually caudate-acuminate or acuminate, with minute glands on both sufaces (visible under hand lens); midvein impressed adaxially, decurrent to petioles and forming a broad furrow. Flowers very small, fragrant, solitary in axils of leaves or several pseudoverticillate near apex of branchlets, young flowers greenish white; peduncles slender, 0.7–2.8 cm; tepals red or orange-red 14–17(–21), inconspicuously pellucid-dotted, the largest elliptic, 5–8 × 3.5–8 mm; stamens 10–12, rarely 8, 2.5–3.5 mm; carpels 7–8, 2.3–3.2 mm; ovaries 1.3–1.7 mm, styles 1–1.5 mm. Fruiting peduncles up to 2.8–3.5 cm; follicles 6–8, 1.7–2.1 cm in diam., single one 0.9–1.4 × 0.3–0.7 × 0.2–0.35 cm, acumen short, 0.5–3 mm. Seeds 4.5–5 × 3–3.5 × 2 mm.

Locality: Mount Gough, Ma On Shan. *P. S. Choi 284; F. W. Xing 7481.*

Distribution: Hubei, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, Yunnan.

Ecology: Thickets and forests. Flowering: Apr.–Jun.; Fruiting: Jul.–Sep.

# 24. SCHISANDRACEAE 五味子科

Richard M. K. Saunders

Woody vines, monoecious or dioecious. Leaves simple, alternate or ± clustered, exstipulate, petiolate. Flowers generally solitary and axillary to leaves on ultimate branches, or in axils of fugacious bracts near base of ultimate shoots, occasionally in pairs or in clusters of up to 8, unisexual, hypogynous, few to numerous parts generally spirally arranged, pedicellate; tepals free, not as distinct sepals and petals, outermost and innermost sometimes reduced; androecium very variable, of 4–80 stamens, sometimes of ± free stamens fused only at base of filaments, sometimes as head of fused stamens or free but tightly compressed stamens; anthers essentially basifixed, thecae dehiscing by longitudinal slits; filaments at least basally fused into modified column of variable shape; gynoecium of 12-300 carpels; carpels developmentally conduplicate; stigmatic crest as unvascularised "pseudostyle", sometimes modified as peltate "pseudostigma"; ovary unilocular; ovules 2–5(–11), anatropous, ventrally attached or pendulous, bitegmic, crassinucellar. Fruit an aggregate of apocarps; receptacle ellipsoid to elongate; apocarps with carnose pericarp. Seeds 1–5, rarely more, ventrally attached or pendulous, laterally flattened, with copious oily endosperm.

Two genera and 39 species, generally distributed in tropical to temperate regions of E and SE Asia, with one species in N America; two genera and 27 species in China; one genus and two species in Hong Kong.

## 1. **Kadsura** Kaempf ex Juss. 南五味子屬

Woody vines, glabrous (except *K. induta* A. C. Sm.); dioecious or monoecious. Leaves alternate, exstipulate; blade papery to leathery, elliptic to ovate, apex acute or acuminate, base cuneate (especially when young), obtuse, truncate or subcordate, margins denticulate to entire. Flowers unisexual, generally solitary in axils of leaves or fugacious bracts, occasionally with secondary flower growing in axils of bract, or in clusters of 2–4 forming glomerules, occasionally cauliflorous; tepals 7–24. Staminate flowers with androecium of numerous (13–80) stamens; stamens sometimes ± free but adnate at base of filaments and occasionally with several subulate appendages attached to distal apex of receptacle, stamens sometimes aggregated into subglobose head with connectives either broader than thick with thecae of adjacent stamens contiguous, or else with connective as broad as thick with thecae of adjacent stamens not contiguous; pollen hexacolpate, distally syncolpate. Pistillate flowers with gynoecium of numerous (17–ca. 300) free carpels; stigmatic crest forming subulate or laterally flattened "pseudostyle", or modified as subpeltate or irregular "pseudostigma"; ovary with 1–5(–11) pendulous or ventrally attached ovules. Fruit an aggregate of apocarps attached to ellipsoid or clavate receptacle; apocarps subglobose to obovoid or elongate-obovoid, ripening red or yellow. Seeds 1–5(–11), smooth.

Sixteen species in tropical to temperate regions of E and SE Asia; eight species in China and two species in Hong Kong.

1a. Inner tepals red (at least apically); floral receptacle elongate-conical; staminate flowers with essentially free stamens, and 0–14(–22) apical staminodes ..... 1. *K. coccinea*

1b. Inner tepals white to yellow; floral receptacle subglobose; staminate flowers with closely appressed stamens forming compact subglobose to ovoidal androecium, staminodes absent ..... 2. *K. heteroclita*

### 1. **Kadsura coccinea** (Lem.) A. C. Sm. 黑老虎 **(Fig. 38; Photos 137–138)**

Sargentia 7: 166. 1947; R. M. K. Saunders, Syst. Bot. Monogr. 54: 41–46. 1998 & Sp. Pl. 4: 32–34. 2001.

*Kadsura chinensis* Hance ex Benth., FHK 8. 1861, *p.p.*

Woody vine, glabrous. Petiole (9–)10–30(–41) mm; leaf blade papery to leathery, elliptic, rarely ovate-elliptic or ovate, 7–16(–19) × 2.5–7.5(–10) cm, base acute (younger leaves) to obtuse (older), rarely truncate, apex acute to short acuminate, rarely obtuse, margin entire, rarely denticulate with 1–17 teeth; secondary veins (3–)5–8(–12) pairs. Flowers borne solitary in axils of leaves, often at base of short shoot. Flowering peduncle (4.5–)7–38 mm. Receptacle elongate-conical. Tepals (8–)10–16(–24), white with red tips, or entirely (purple-) red (occasionally yellowish); outermost tepal ovate, 1–4 × 1.5–4.5 mm; innermost tepal variably ovate to oblong to obovate, (5–)7.5–19.5 × 2–5.5 mm; largest tepal variably ovate to oblong to obovate, (8–)12–23 × 6–12(–15) mm. Staminate flowers with androecium of (10–)20–50 essentially free stamens; distal apex of receptacle with 0–14(–22) sterile (occasionally partly fertile) staminodes. Pistillate flowers with gynoecium of 20–68 carpels; pseudostyle narrow, subulate, without pseudostigma. Fruit of up to 60 apocarps, ripening red or purple-red, apocarps ca. 14–24 × 7–17 mm. Fruiting peduncle 26–49 mm long. Seeds 1–2 per apocarp, pyriform, 10–18 × 7.5–11 mm.

Locality: Victoria Peak, Pak Ngan Shek (Kadoorie Farm), Lamma Island (Sok Kwu Wan). *L. T. Lo 315; HK sheet 33466; S. Y. Hu 13701* (A, IBSC); *R. M. K. Saunders & H. P. Y. Ho 96/1* (HKU).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Jiangxi; Myanmar, Vietnam.

Ecology: Semi-open shrubland and forests. Flowering: May–Jul.; fruiting: Oct.–Dec.

Uses: Medicinal, food (edible fruit).

Notes: The type specimen of *Kadsura chinensis* was collected by J. G. Champion in a ravine below Victoria Peak, Hong Kong Island around 1850.

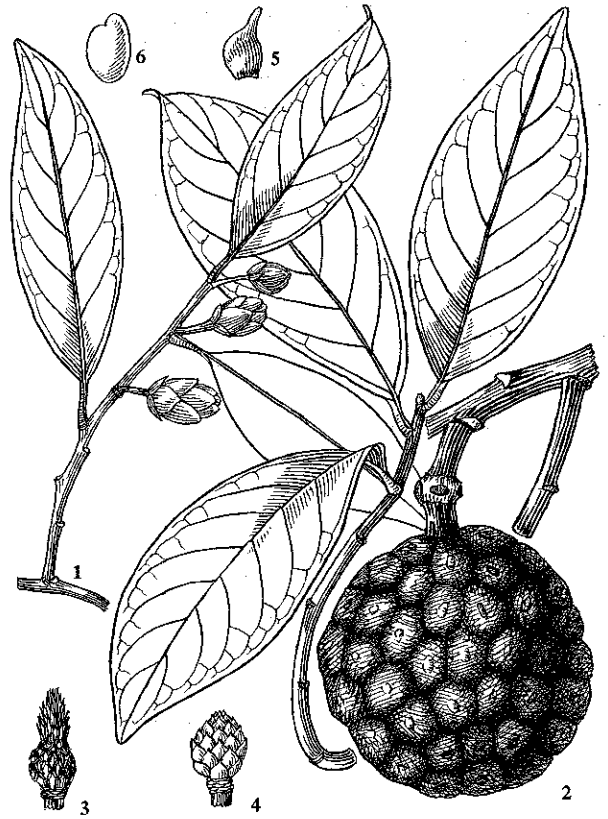



**Figure 38.** *Kadsura coccinea* (Lem.) A. C. Sm.
*1.* flowering branch; *2.* fruiting branch; *3.* androecium; *4.* gynecium; *5.* carpel; *6.* seed. (drawn by H. P. Yu)

### 2. **Kadsura heteroclita** (Roxb.) Craib 異形南五味子 **(Photo 139)**

Fl. Siam. 1: 28. 1925 ("1931"); R. M. K. Saunders, Syst. Bot. Monogr. 54: 46–54. 1998 & Sp. Pl. 4: 35–37. 2001.

*Uvaria heteroclita* Roxb., Hort. Bengal. 43. 1814.

Woody vine, glabrous. Petiole (7–)10–20(–29); leaf blade ± papery to subleathery, elliptic, rarely ovate-elliptic, (6.5–)7.5–13.5(–16) × (2.5–)3.5–6.5(–9.5) cm, base cuneate to obtuse, often short-attenuate, apex acute to (short) acuminate; margin entire, to denticulate, 0(–11) teeth per margin; secondary veins 5–9(–16) pairs. Flowers borne solitary in axils of leaves, occasionally with secondary flower borne in axil of bract. Flowering peduncle (1.5–)3–33(–35) mm. Receptacle subglobose. Tepals 10–17(–25), white, cream or yellow; outermost tepal ovate, 1–2.5(–8) × 1.5–4(–9) mm; innermost tepal elliptic to ovate (rarely obovate), (2–)3.5–10.5 × (1–)2–7 mm; largest tepal elliptic to ovate (rarely

obovate), 4.5–20.5 × (3.5–)4.5–12(–15) mm. Staminate flowers with androecium of 40–62(–74) stamens, anthers ± sessile, closely appressed in subglobose to ellipsoid head, 2–4.5 mm in diam., connectives broader than thick, with lateral thecae so that thecae of adjacent stamens contiguous. Pistillate flowers with gynoecium of 28–72 carpels; pseudostigma broad, subpeltate. Fruit of ca. 33–41 (or more) apocarps, ripening red, apocarps ca. (7–)10–22 × (6–)8–10(–15) mm. Fruiting peduncle ca. 14–46 mm long. Seeds 1–2(–11) per apocarp, pyriform, discoid or reniform, 4–5.5(–7.5) × 4.5–7 mm.

Locality: Pat Sin Leng, Lantau Island. *L. T. Lo 212; Y. W. Lam 1696; R. M. K. Saunders & G. Hao 96/2* (HKU).

Distribution: Fujian, Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Hunan; Vietnam, Thailand, Laos, Bangladesh, India, Sri Lanka, Malesia.

Ecology: Forests. Flowering: May–Aug.; fruiting: Aug.–Dec.

Uses: Medicinal.

# 25. NELUMBONACEAE 蓮科

HU Qi-ming 胡啟明

Perennial aquatic herbs, with stout creeping rhizomes. Leaves floating or emersed, peltate, suborbicular, with radiating nerves. Flowers large, bisexual, solitary and terminal on an emersed pedicel; sepals 4–5; petals many and showy, pink, red, yellow or white; stamens many, anthers with clavate appendages at apex; carpels many, free, immersed in the pits of a sponge, obconical receptacle; styles very short, stigmas capitate; ovule 1–2 per carpel, pendulous, anatropous. Fruit a nut, indehicent, embedded in the enlarged receptacle.

One genus and two species in Asia, Australia and N America; one species in China; one species in Hong Kong.

## 1. Nelumbo Adans. 蓮屬

Morphological characters and geographical distribution are the same as those of the family

Two species in E and S Asia, N Australia, C and N America; one cultivated in Hong Kong.

**1. Nelumbo nucifera** Gaertn. 蓮(荷花) **(Photo 140)**

Fruct. Sem. Pl. 1: 73. 1788; FHN 1: 311, fig. 152. 1964; FRPS 27: 3. 1979; FOC 6: 114. 2001.

Aquatic plant. Rhizome 1–5 m, with many constricted nodes and stout internodes, bearing many scale-like leaves and foliage leaves. Foliage leaves peltate, without sinus; petioles 1–2 m, with scattered small prickles; leaf blade almost orbicular, 25–100 cm in diam., glabrous and ± glaucous. Flowers solitary and terminal, 16–23 cm in diam., pink or white, scented. Pedicels as long as or longer than petioles, also prickly. Nuts ellipsoid or ovoid, 1.7 × 1.3 cm, exocarp leathery.

Locality: Cultivated. *HK sheet 1348, 40214.*

Distribution: Asia-temperate, Indian Subcontinent, Indochina, Malesia, Australia, E Europe; naturalized elsewhere.

Ecology: In ponds or paddy fields.

Uses: Ornamental, food (nut, rhizomes).

# 26. NYMPHAEACEAE 睡蓮科

HU Qi-ming 胡啟明

Aquatic herbs, with horizontal or erect rhizomes. Leaves long-petioled, floating or emersed, ovate to orbicular, with deep sinus. Flowers bisexual, actinomorphic, solitary and terminal on pedicels; sepals 3–12, usually 4–6, green or petaloid; petals 3–5 or more, free, hypogynous or adherent on the fleshy receptacle; stamens many, often petaloid. Carpels 3 or more, free or united into a many-locular ovary, superior or inferior; stigmas as many as carpels, forking into a radiating and furrowed ring; ovules 1–many, scattered all over the inner walls of the carpels. Fruit a nut or a berry.

About six genera and 60 species, cosmopolitan, in fresh water habitat; three genera and eight species in China; one genus and two species cultivated in Hong Kong.

## 1. Nymphaea L. 睡蓮屬

Perennial aquatic herbs, with thick rhizomes. Leaves floating, orbicular or ovate, with deep sinus at base. Flowers large, bisexual, solitary on a long pedicel; sepals 4, almost free; petals many, in many series, white, red, blue or yellow, sometimes the inner ones gradually passing into stamens; stamens many, anthers with or without appendages; carpels many, in 1 series, sunk in the fleshy disc forming a many-locular ovary crowned by the connate radiating furrowed stigmas. Fruit a sponge berry, dehiscent irregularly.

About 50 species widely spread in tropical and temperate regions; five species in China; two species commonly cultivated in Hong Kong.

1a. Leaf margin dentate, blade pubescent abaxially; flowers red or white ..... 1. *N. lotus* var. *pubescens*

1b. Leaf margin entire, blade glabrous abaxially; flowers blue-violet ..... 2. *N. nouchali*

**1. Nymphaea lotus** L. var. **pubescens** (Willd.) Hook. f. & Thom. 柔毛齒葉睡蓮 **(Photo 141)**

Fl. Brit. India 1: 114. 1872; FOC 6: 117. 2001.

*Nymphaea pubescens* Willd., Sp. Pl. 2: 1154. 1799.

Aquatic herb. Rhizomes erect, producing slender stolons. Leaves papery, suborbicular, 20–40(–65) cm in diam., base deeply cordate, basal lobes subparallel or slightly spreading, margin with acute to subspinose teeth, adaxially glabrous, abaxially pubescent on the strongly raised veins. Flowers emergent, usually 15–25 cm in diam.; sepals 4, abaxial surface green to purplish, conspicuously veined, adaxial surface white or red, oblong, 10–11 × 3–4 cm; petals 20–25, white or red, oblong to oblong-oblanceolate, 7–10 × 1.5–3.5 cm decaying after anthesis; stamens numerous, shorter than the petals; filaments dilated at base; anther connectives apically unappendaged; ovary crowned by 15–20 radiating furrowed stigmas. Fruit ovoid to subglobose, 3.5–5 cm in diam.

Locality: Cultivated. *HK sheet 1324*.

Distribution: S & SE Asia. Cultivated elsewhere in tropics and subtropics.

Ecology: Freshwater ponds. Flowering: Jun.–Dec. Flowers open from late evening till next noon.

Uses: Ornamental.

**2. Nymphaea nouchali** N. L. Burm. 延藥睡蓮 **(Photo 142)**

Fl. Ind. 120. 1768; FOC 6: 118. 2001.

Aquatic herb. Rhizomes erect, unbranched. Leaves papery, suborbicular, (15–)20–40(–50) cm in diam., base deeply cordate, basal lobes parallel or slightly overlapping, margin subentire or with irregular and broadly triangular teeth, glabrous, secondary nerves raised abaxially, reticulation inconspicuous. Flowers emergent, usually 8–15 cm in diam.; sepals 4, leathery, broadly lanceolate, 6–10 × 3–3.8 cm, abaxial surface green and shining, adaxial surface blue-violet, persistent; petals 20–25(–30), blue-violet, broadly lanceolate, 6–9 × 2–3.8 cm; stamens numerous, shorter than the petals; filaments dilated at base; anther connectives apically appendaged; ovary crowned by 15–25 radiating furrowed stigmas. Fruit globose, 1.5–4.5 cm in diam.

Locality: Cultivated. *HK sheet 1318*.

Distribution: E & W Asia, Indochina, Indian Subcontinent, Malesia, Australia. Cultivated elsewhere in tropics and subtropics.

Ecology: Freshwater ponds. Flowering: Jun.–Dec. Flowers open in the morning till evening.

Uses: Ornamental.

# 29. CERATOPHYLLACEAE 金魚藻科

HU Qi-ming 胡啟明

Submerged rootless perennial herbs. Leaves rather stiff, 4–12 in whorls, forked, with linear toothed segments, without stipules. Flowers minute, unixesual (plants monoecious), subsessile, solitary in axils of leaves, but male and female in separarte leaf-whorls. Bracts (explained by some authors as petals) 8–12, linear, with colored hairs at apex. Stamens usually 10–20 in male flowers; filaments very short; anthers extrorse, opening longitudinally; connectives thickened, usually bilobed. Ovary superior, 1-locular, with a solitary orthotropous ovule. Fruit an achene, ovoid or ellipsoid, with 3 spines.

A monotypic family with about seven species widely spread over the world.

## 1. Ceratophyllum L. 金魚藻屬

Morphological characters and geographical distribution are the same as the family.

Five species in China; one species in Hong Kong.

**1. Ceratophyllum demersum** L. 金魚藻 **(Fig. 39)**

Sp. Pl. 992. 1753; FRPS 27: 16, fig. 6. 1979.

Submerged perennial herb. Stems 40–50 cm, branched. Leaves 4–12 in whorls, once or twice forked, segments filiform or linear, 15–20 × 0.1–0.5 mm, finely toothed on one side, apex with whitish cartilaginous tip. Bracts 9–12, linear, 1.5–2 mm, pale green, translucent, 3-toothed and with purplish hairs at apex. Stamens 10–16, ± congested. Ovary ovoid; style subulate. Achenes broadly ellipsoid, 4–5 × 1.5–2 mm, with 3 spines.

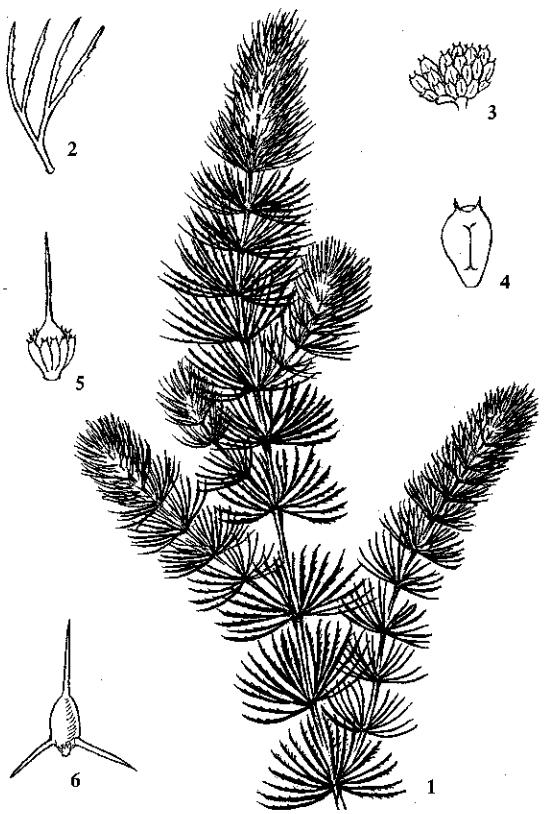



Figure 39. *Ceratophyllum demersum* L.

*1*. plant; *2*. leaf (enlarged) ; *3*. staminate flower; *4*. stamen; *5*. pistillate flower; *6*. achene. (drawn by H. P. Yu)

Locality: Cultivated. *HK sheet 26750, 26752.*

Distribution: Cosmopolitan.

Ecology: Ponds and streams, in still or slow fresh water; also cultivated in aquarium as an ornamental plant.

# 30. RANUNCULACEAE 毛茛科

YANG Yong 楊永 • YANG Zhi-rong 楊志榮 • FU De-zhi 傅德志

Perennial or annual herbs, rarely shrubs or woody climbers. Leaves alternate or basal, rarely opposite, simple or compound, palmately veined, rarely pinninerved. Flowers bisexual, rarely unisexual (plant monoecious or dioecious), actinomorphic, rarely zygomorphic, solitary, in cymes or racemes. Sepals 3 or more, usually 5, free, green or petaloid. Petals present or absent, 3–5 or more, free, or sometimes none, often nectariferous. Stamens many, hypogynous, free, spirally arranged; anthers 2-celled, opening by longitudinal slits; staminodes sometimes present. Carpels several, usually free, with one or more ovules in each. Fruits indehiscent achenes or berries, or follicular capsules. Seeds small, with abundant endosperm and minute embryo.

About 60 genera and 2500 species widely distributed in N temperate regions; 39 genera and 921 species in China; three genera, nine species and one variety in Hong Kong.

1a. Woody climber; style elongated and feathery in fruit ..... 1. *Clematis*
1b. Perennial or annual herbs; style not as above.
2a. Petal present, yellow; sepals 5, green ..... 2. *Ranunculus*
2b. Petal absent; sepals 4, white or pinkish ..... 3. *Thalictrum*

## 1. Clematis L. 鐵綫蓮屬

Herbaceous or woody climber. Leaves pinnate, ternate or twice ternate, rarely simple, usually opposite; leaflets entire, dentate, or lobed; petioles sometimes broadened and connate at base. Flowers bisexual, in axillary or terminal panicles or racemes, sometimes solitary. Sepals 4 or 5, valvate in the bud, petaloid and deciduous. Petals none, or small and narrow and passing gradually into the stamens. Stamens numerous, glabrous or pubescent; staminodes sometimes present. Carpels numerous, with a single pendulous ovule in each. Achenes indehiscent, terminating in long feathery persistent style.

About 300 species widely spread throughout the world; 147 species in China; six species and one variety in Hong Kong.

1a. Connectives conspicuously projected or prolonged ..... 1. *C. filamentosa*
1b. Connectives not projected or prolonged.
2a. Leaves once ternate.
3a. Leaflets cuneate at the base; anthers much shorter than filaments ..... 2. *C. crassifolia*
3b. Leaflets rounded or cordate at the base; anthers slightly longer than filaments ..... 3. *C. meyeniana*
2b. Leaves pinnate or twice ternate.
4a. Leaves pinnate, turning black when dry; anthers longer than filaments.
5a. Leaflets thinly leathery; achenes subulate-terete ..... 4. *C. uncinata*
5b. Leaflets papery; achenes compressed ..... 5. *C. chinensis*
4b. Leaves twice ternate, not turning black when dry; anthers shorter than filaments ..... 6. *C. parviloba*

**1. Clematis loureiroana** DC. 絲鐵線蓮(甘木通、長毛鐵線蓮)

Syst. Nat. 1: 144. 1817; FOC 6: 369. 2001.

*Clematis filamentosa* Dunn, J. Bot. 47: 197. 1909; FKH 26. 1912; FRPS 28: 233, pl. 78: 1–6. 1980; FGD 5: 12. 2003.

Woody climber, glabrous with exception of the inflorescence. Leaves ternate; petioles 4–10 cm; leaflets thinly leathery, ovate to lanceolate, 7–11 × 4–8 cm, base rounded to subcordate, apex obtusely rotund, margin entire, 5-palmately veined; petiolules 2–5 cm. Racemes axillary, usually 5–7-flowered; pedicels 3–4 cm, initially brown pubescent near apex, glabrescent; bracts linear lanceolate; sepals 4, white, narrowly ovate to ovate-lanceolate, 13–20 × 4–6 mm, spreading, rusty pubescent abaxially, glabrous adaxially. Stamens glabrous; connectives prolonged, 1–2 times longer than the anthers; staminodes broadly linear, glabrous. Achenes narrowly ovoid, brown, 10 × 2 mm, pubescent; persistent style 3–5 cm, filiform, villose.

Locality: Ha Hang, Fanling, Fung Yuen, Lin Ma Hang. *Y. S. Lau 2827, 2848; HK sheet 76.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Yunnan.

Ecology: Thickets by streams and in valleys. Flowering: Nov.–Dec.; fruiting: Jan.–Feb.

Notes: The type specimen was collected from Ha Hang near Tai Po by S. T. Dunn in January in 1904.

**2. Clematis crassifolia** Benth. 厚葉鐵線蓮 **(Photo 143)**

FHK 7. 1861; FKH 26. 1912; FHN 1: 307. 1964; FRPS 28: 178, pl. 53. 1980; FTW ed. 2, 2: 518, pl. 241. 1996; FOC 6: 353. 2001; FGD 5: 14. 2003.

Woody climber, glabrous with exception of the flowers. Leaves ternately compound; leaflets leathery, oblong elliptic or ovate, 7–10 × 3–5 cm, base cuneate to broadly cuneate, apex acute or obtuse, margin entire, 3-nerved. Inflorescences paniculate, axillary or terminal, many-flowered. Flowers 2.4–5 cm in diam. Sepals 4, spreading, white or tinged with red, lanceolate to oblanceolate, 1.2–2 × 0.2–0.5 cm, densely pubescent at margin and on adaxial surface. Stamens glabrous, anthers ellipsoid, ca. 2 mm; filaments 3–5 times longer than the anthers. Achenes narrowly ovoid, puberulent; persistent style 1.2–2 cm feathery.

Locality: Tai Mo Shan, Lantau Island. *H. C. Tang 2127; Y. S. Lau 817; HK sheet 40220.*

Distribution: Guangdong, Guangxi, Hunan, Fujian, Taiwan; Japan.

Ecology: Forests in ravine. Flowering: Dec.–Jan.; fruiting: Feb.–Mar.

Notes: The type specimens was collected from Victoria Peak, Hong Kong Island by C. Wilford around 1858.

**3. Clematis meyeniana** Walp. 毛柱鐵線蓮(甘草藤) **(Photo 144)**

Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19 (suppl.1): 297. 1843; FHK 6. 1861; FKH 26. 1912; FHN 1: 306. 1964; FRPS 28: 171, pl. 22. 1980; FTW ed. 2, 2: 532, pl. 249. 1996; FOC 6: 354. 2001; FGD 5: 14. 2003.

*Clematis oreophila* Hance ex Walp., Ann. Bot. Syst. 2: 3. 1851.

Woody climber. Leaves ternate; leaflets subleathery, ovate to oblong-ovate, sometimes broad-ovate, 4.5–11.5 × 1.5–6 cm, base rounded, broadly cuneate or sometimes cordate, apex acute, acuminate, or obtusely acute, margin entire, glabrous on both surfaces, 3–5-nerved. Panicles axillary or terminal, loose and many-flowered. Flowers white, 1.5–2 cm in diam. Sepal 4, spreading, oblong to lanceolate, 7–12 × 3–4 mm, pubescent only on the margin of abaxil surface. Stamens glabrous; anthers slightly longer than the filaments. Achenes narrowly falcate-ovoid, or narrowly obovoid, pubscent; persistent style up to 2.5 cm, feathery.

Locality: Common in Hong Kong. *Y. S. Lau 341; N. H. Li 131; S. Y. Hu & P. P. H. But 24064.*

Distribution: Guangdong, Guangxi, Guizhou,Yunnan, Sichuan, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Laos, Vietnam, Japan.

Ecology: Thicket in ravines. Flowering: Jun.–Aug.; fruiting: Sep.–Oct.

Notes: The type specimen of this species was collected near Kap Shui Mun by F. J. F. Meyen in 1831.

**3a. Clematis meyeniana** Walp. var. **granulata** Finet & Gagnep. 沙葉鐵線蓮

Bull. Soc. Bot. France 50: 530. 1903; FHN 1: 307. 1964; FRPS 28: 173. 1980; FOC 6: 355. 2001.

Differs from *C. meyeniana* var. *meyeniana* by the leaflets being finely tuberculate on abaxial surface.

Locality: Victoria Peak, Ma On Shan, Tai Mo Shan. *H. C. Tang 547, 1804.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Laos, Vietnam.

Ecology: Thickets and margins of forests. Flowering: May–Aug.; fruiting: Jul.–Sep.

**4. Clematis uncinata** Champ. 柱果鐵線蓮(鉤葉鐵線蓮)

Hooker's J. Bot. Kew Gard. Misc. 3: 255. 1851; FHK 6. 1861; FKH 26. 1912; FRPS 28: 165. 1980; FTW ed. 2, 2: 544, pl. 257: 1–9. 1996; FOC 6: 359. 2001; FGD 5: 15. 2003.

*Clematis uncinata* var. *floribunda* Hayata, J. Coll. Sci. Univ. Tokyo 30: 18. 1911, & Icon. Pl. Formosan. 7: 20. 1911.

*Clematis uncinata* var. *biternata* W. T. Wang in L. K. Fu et al, Higher Plants of China 3: 374. 2000.

Subshrubby climber, turning black in drying. Leaves pinnate; leaflets 5–15, thin leathery, broad-ovate, ovate to lanceolate, 5–11 × 1.5–5 cm, base broadly cuneate, sometimes cordate or truncate, apex acuminate to acute, with a short hooked point, margin entire and ± thickened, glabrous, shining adaxially, 3-nerved at the base. Panicles axillary or terminal, many-flowered. Sepals 4, white, linear lanceolate to oblanceolate, 10–17 × 2–3 mm, white-pubescent on the margin. Stamens glabrous; anthers linear, much longer than filaments. Achenes cylindric, terminating in awn-shaped feathery persistent style.

Locality: Hong Kong Island, Shing Mun. *L. T. Lo 146; W. J. Tutcher 4676; Y. S. Lau 998.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Gansu, Shaanxi, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Thickets and margins of forests in ravine. Flowering: Apr.–Jul.; fruiting: Sep.–Oct.

Notes: The type specimen was collected from Mount Parker, Hong Kong Island by J. G. Champion in 1848.

**5. Clematis chinensis** Osbeck 威靈仙 **(Fig. 40; Photo 145)**

Dagb. Ostind. Resa 205, 242. 1757; FRPS 28: 161. 1980; FTW ed. 2, 2: 581, pl. 240. 1996; FOC 6: 356. 2001; FGD 5: 15. 2003.

*Clematis sinensis* Lour., Fl. Cochinch. 345. 1790.

Woody climber, turning black in drying. Stems and branches almost glabrous or sparsely puberulous. Leaves pinnate; petioles 3.5–6 cm; leaflets 3–7, usually 5, papery, ovate to lanceolate, 2.5–5 × 1–1.8 cm, base broadly cuneate, rounded or shallowly cordate, apex acute to acuminate, rarely emarginate, margin entire, subglabrous. Panicles axillary or terminal, many-flowered. Flowers 1–2 cm in diam. Sepals 4(–5), white, spreading, oblong to oblong-obovate, 8–10 × 2–3 mm, apex apiculate, densely white-pubescent at margin on abaxil surface. Stamens glabrous; anthers 2 times longer than filaments. Achenes compressed, 3–7, ovoid to broadly ellipsoid, persistent styles 2–5 cm, feathery.

Locality: Tai Hang, Tai Po, Luk Keng. *H. C. Tang 2033; Ross s.n. (HK sheet 29).*

Distribution: SE, C to SW China; Vietnam.

Ecology: Thickets and grassy slopes. Flowering: Jun.–Sep.; fruiting: Aug.–Nov.

**6. Clematis parviloba** Gardner & Champ.
裂葉鐵線蓮(小裂鐵線蓮)

Hooker's J. Bot. Kew Gard. Misc. 1: 241. 1849; FHK 6. 1861; FKH 26. 1912; FRPS 28: 180, pl. 54. 1980; FTW ed. 2, 2: 532, pl. 251. 1996; FOC 6: 351. 2001 ; FGD 5: 16. 2003.

*Clematis pierotii* Miq., Ann. Mus. Bot. Lugduno-Batavum 3: 1. 1867.

Subshrubby climber, stem and branches loosely clothed with short silky hairs. Leaves mostly twice ternate; leaflets papery, ovate-lanceolate or oblong-ovate, 1.5–6 × 0.8–2.3 cm, base rounded, apex acuminate, entire or coarsely serrate, appressed pubescent on both surfaces, 3-nerved. Panicles few flowered and leafy, axillary or terminal; pedicels 1–2.5 cm. Flowers 1.5–3.5 cm in diam. Sepals 4, white, sublanceolate to narrow obovate, 8–20 × 3–7 cm, densely covered with silky hairs abaxially. Stamens glabrous, anthers ca. 2 mm, much shorter than filaments. Achenes ovoid, ca. 4 × 3 mm, pubescent, persistent styles ca. 4 cm, feathery.

Locality: Hong Kong Island. *H. C. Tang 1542, 1764; C. P. Lau 115.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Jiangxi, Zhejiang, Taiwan; Japan.

Ecology: Thickets and margins of forests. Flowering: May–Jun.; fruiting: Jul.–Sep.

Notes: The type specimen was collected from West Point, Hong Kong Island by J. G. Champion between 1847 and 1850.

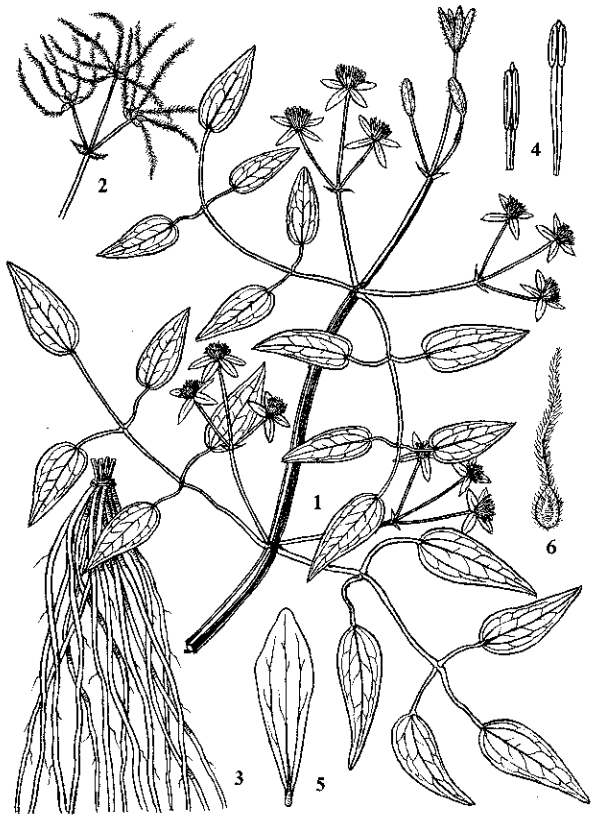



**Figure 40.** *Clematis chinensis* Osbeck
*1.* flowering branch; *2.* infructescence; *3.* roots; *4.* stamens; *5.* sepal; *6.* achene. (drawn by H. P. Yu)

## 2. Ranunculus L. 毛茛屬

Perennial or annual herbs, terrestrial or partly aquatic. Stems erect, ascending, or prostrate. Leaves basal and alternate on stems, simple or ternately compound, entire, serrate, or trilobed; petioles elongate, base broadened into sheath. Flowers bisexual, actinomorphic, solitary or in cymes. Sepals 5, green, caducous. Petals 5, sometimes 6–10, yellow, clawed and with a nectary at base. Stamens numerous, centripetal. Carpels 5 to many, free, 1-ovuled, ripening into small hard achenes clustered on the receptacle to form a little head. Achenes ovoid or bilaterally compressed, dorsal suture ribbed or winged.

About 550 species widespread in N temperate regions; 125 species in China; two species in Hong Kong.

1a. Basal leaves ternately compound; stems densely hirsute ..... 1. *R. cantoniensis*
1b. Basal leaves simple, 3-partite; stems glabrous or sparsely puberulent ..... 2. *R. sceleratus*

**1. Ranunculus cantoniensis** DC. 禺毛茛(小回回蒜、自扣草) **(Photo 146)**

Prodr. 1: 43.1842; FRPS 28: 321, pl. 99: 1–3. 1980; FTW ed. 2, 2: 550, pl. 260. 1996; FOC 6: 428. 2001; FGD 5: 22. 2003.

*Ranunculus pensylvanicus* auct. non L.: FKH 27. 1912.

Perennial herb. Stems erect, 20–50 cm tall, branched at the upper part, densely yellowish white hirsute. Basal leaves ternate; petioles 4.5–12 cm, hirsute; central leaflet stalked, elliptic or rhomboid 3–4.6 × 2–3.5 cm, 3-lobed or 3-parted, serrate, sparsely strigose on both surfaces; lateral leaflets unequally 2-parted, short-stalked or sessile; lower cauline leaves similar to the basal leaves, upper ones gradually reduced. Flowers terminal, solitary or in few-flowered cymes. Pedicels 2–5 cm, hirsute. Sepals ovate, ca. 3 mm. Petals 5, yellow, elliptic, 5–6 × 2–3 mm, base clawed. Stamens numerous, anthers ca. 1 mm. Receptacles oblong, white puberulous. Aggregate fruits subglobose, ca. 1 cm in diam.; achenes compressed, glabrous.

Locality: Hong Kong Island, Sha Tin. *H. C. Tang 801; Y. S. Lau 1241.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; India, Vietnam, Korea, Japan.

Ecology: Wet places, ditches, paddy fields. Flowering: Mar.–Sep.; fruiting: Apr.–Jun.

**2. Ranunculus sceleratus** L. 石龍芮 **(Fig. 41; Photo 147)**

Sp. Pl. 1: 551. 1753; FKH 27. 1912; FRPS 28: 310, pl. 96: 1–4. 1980; FTW ed. 2, 2: 560, pl. 267. 1996; FOC 6: 421. 2001; FGD 5: 21. 2003.

*Hecatonia palustris* Lour., Fl. Cochinch. 303. 1790.

Annual herb. Stems erect, 10–40 cm tall, branched above middle, glabrous or nearly so. Basal leaves long petioled, simple, pentagonous or reniform in outline, 1–4 × 1.5–5 cm, base broadly cordate, 3-partite; central lobes obovate-cuneate, apex obtuse, indistinctly 3-lobed, margin

coarsely margin coarsely dentate, glabrous; lateral lobes obliquely fan-shaped, unequally 2-lobed. Petioles 3–15 cm subglabrous. Cauline leaves many, lower ones similar to basal leaves, upper ones smaller, 3-divided, sparsely pubescent on abaxial surface. Cymes terminal, many-flowered. Flowers 4–8 mm in diam. Pedicels 1–2(–3) cm, glabrous or sparsely pubescent. Sepals elliptic, 2–3.5 mm, puberulous abaxially. Petals 5, yellow, narrowly obovate, ca. 3.5 mm, base shortly clawed. Stamens 10 or more, ca. 2 mm. Receptacles cylindric, sparsely puberulous. Aggregate fruits oblong, 8–12 mm; achenes numerous, obovoid, slightly compressed, glabrous.

Locality: New Territories. *H. C. Tang 2466; Y. S. Lau 2457.*

Distribution: Widely distributed in China and in subtropical and temperate regions of the N hemisphere.

Ecology: Wet places, near ponds, ditches and in paddy fields. Flowering: Jan.–Jun.; fruiting: Mar.–Jun.

## 3. Thalictrum L. 唐松草屬

Perennial herbs, with fibrous roots, often glabrous. Stems terete, usually branched. Leaves basal and cauline, 1–4-ternately or pinnately compound, rarely simple; leaflets usually palmately lobed, rarely entire; petioles broadened forming a sheath at base; stipules present or absent. Inflorescences usually monochasial cymes, sometimes paniculate, 1–200-flowered. Flowers usually bisexual, rarely unisexual, actinomorphic. Sepals 4–5, elliptic or narrowly ovate, yellowish green, white, pink or purplish, petal-like, often caducous. Petals absent. Stamens usually numerous; connectives obtuse or apiculate; filaments linear or oblanceolate. Carpels 2 to many, 1-ovulate; style short or long, more or less with stigmatic tissue on the ventral surface. Achenes, sessile or stalked, ellipsoid, narrow ovate or fusiformis, usually longitudinally ribbed.

About 200 species widespread over temperate regions of Asia, Europe, Africa, N & S America; 67 species in China; one species in Hong Kong.

### 1. **Thalictrum acutifolium** (Hand.-Mazz.) Boivin

尖葉唐松草(白蓬草) **(Fig. 42; Photo 148)**

Rhodora 46: 364. 1944; Ico. Cor. Sin. 1: 677. 1972; FRPS 27: 553. 1979; FOC 6: 285. 2001; FGD 5: 19. 2003.

*Thalictum clavatum* auct. non DC.: FKH 26. 1912.

*Thalictrum clavatum* DC. var. *acutifolium* Hand.-Mazz., Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 43: 1. 1926.

Perennial herb, 20–40 cm tall, glabrous. Roots fleshy, carrot-shaped, to 4 mm in diam. Basal leaves 2–3, long petiolate; biternate; terminal leaflets long stalked, ovate, 1–1.4 × 0.8–3.5 cm, base rounded, broadly cuneate or cordate, apex acute or obtuse, entire or obscurely lobed, margin sparsely dentate, glaucous abaxially; lateral leaflets smaller; petiolule ca. 1.2 cm. Cauline leaves smaller, shortly petiolate. Cymes lax-flowered. Flowers small, ca. 8 mm in diam. Sepals 4, ovate, ca. 2 mm, white or pinkish, caducous. Stamens numerous, ca. 5 mm; anthers oblong, 0.8–1.3 mm; filaments distally oblanceolate, ca. 3 times as broad as anthers, base filiform. Carpels 6–12, stalked; styles short. Achenes compressed, narrowly oblong, sometimes slightly falcate, 3–4 × 0.6–1.2 mm, longitudinally 8-ribbed.

Locality: Ma On Shan, Sunset Peak, Lantau Peak. *Y. S. Lau 1401; P. S. Choi 36.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Ravines, margins of forests. Flowering and fruiting: Apr.–Jul.

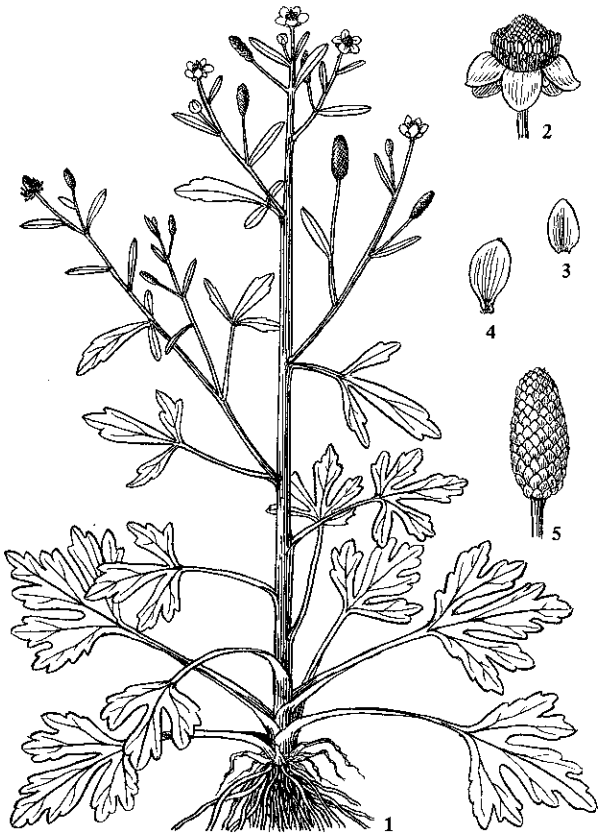



**Figure 41.** *Ranunculus sceleratus* L.
*1*. whole plant; *2*. flower; *3*. sepal; *4*. petal; *5*. aggregate fruit. (drawn by H. P. Yu)

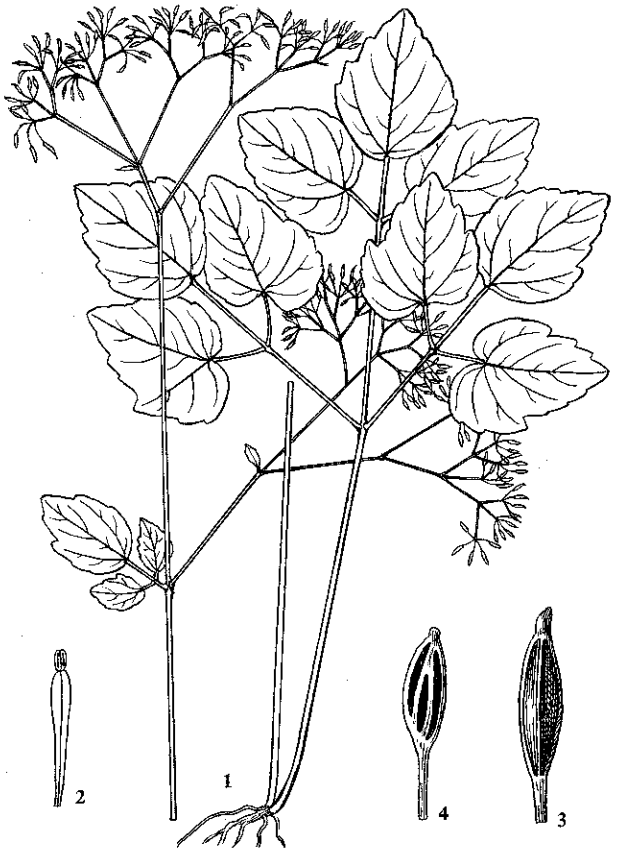



**Figure 42.** *Thalictrum acutifolium* (Hand.-Mazz. ) Boivin
*1*. whole plant; *2*. stamen; *3*. carpel; *4*. achene. (drawn by H. P. Yu)

coarsely margin coarsely dentate, glabrous; lateral lobes obliquely fan-shaped, unequally 2-lobed. Petioles 3–15 cm subglabrous. Cauline leaves many, lower ones similar to basal leaves, upper ones smaller, 3-divided, sparsely pubescent on abaxial surface. Cymes terminal, many-flowered. Flowers 4–8 mm in diam. Pedicels 1–2(–3) cm, glabrous or sparsely pubescent. Sepals elliptic, 2–3.5 mm, puberulous abaxially. Petals 5, yellow, narrowly obovate, ca. 3.5 mm, base shortly clawed. Stamens 10 or more, ca. 2 mm. Receptacles cylindric, sparsely puberulous. Aggregate fruits oblong, 8–12 mm; achenes numerous, obovoid, slightly compressed, glabrous.

Locality: New Territories. *H. C. Tang 2466; Y. S. Lau 2457.*

Distribution: Widely distributed in China and in subtropical and temperate regions of the N hemisphere.

Ecology: Wet places, near ponds, ditches and in paddy fields. Flowering: Jan.–Jun.; fruiting: Mar.–Jun.

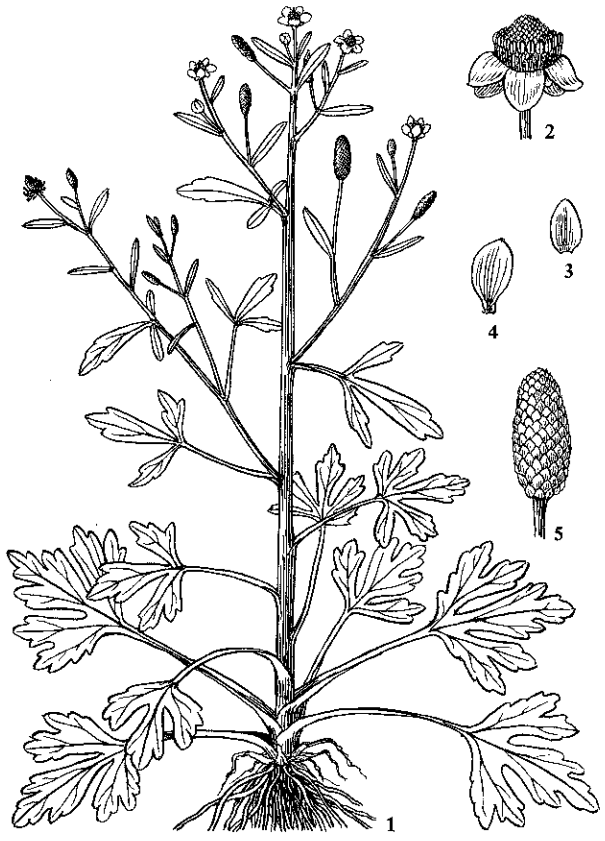



**Figure 41.** *Ranunculus sceleratus* L.
*1.* whole plant; *2.* flower; *3.* sepal; *4.* petal; *5.* aggregate fruit. (drawn by H. P. Yu)

## 3. Thalictrum L. 唐松草屬

Perennial herbs, with fibrous roots, often glabrous. Stems terete, usually branched. Leaves basal and cauline, 1–4-ternately or pinnately compound, rarely simple; leaflets usually palmately lobed, rarely entire; petioles broadened forming a sheath at base; stipules present or absent. Inflorescences usually monochasial cymes, sometimes paniculate, 1–200-flowered. Flowers usually bisexual, rarely unisexual, actinomorphic. Sepals 4–5, elliptic or narrowly ovate, yellowish green, white, pink or purplish, petal-like, often caducous. Petals absent. Stamens usually numerous; connectives obtuse or apiculate; filaments linear or oblanceolate. Carpels 2 to many, 1-ovulate; style short or long, more or less with stigmatic tissue on the ventral surface. Achenes, sessile or stalked, ellipsoid, narrow ovate or fusiformis, usually longitudinally ribbed.

About 200 species widespread over temperate regions of Asia, Europe, Africa, N & S America; 67 species in China; one species in Hong Kong.

**1. Thalictrum acutifolium** (Hand.-Mazz.) Boivin
尖葉唐松草(白蓬草) **(Fig. 42; Photo 148)**
Rhodora 46: 364. 1944; Ico. Cor. Sin. 1: 677. 1972; FRPS 27: 553. 1979; FOC 6: 285. 2001; FGD 5: 19. 2003.

*Thalictum clavatum* auct. non DC.: FKH 26. 1912.

*Thalictrum clavatum* DC. var. *acutifolium* Hand.-Mazz., Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 43: 1. 1926.

Perennial herb, 20–40 cm tall, glabrous. Roots fleshy, carrot-shaped, to 4 mm in diam. Basal leaves 2–3, long petiolate, biternate; terminal leaflets long stalked, ovate, 1–1.4 × 0.8–3.5 cm, base rounded, broadly cuneate or cordate, apex acute or obtuse, entire or obscurely lobed, margin sparsely dentate, glaucous abaxially; lateral leaflets smaller; petiolule ca. 1.2 cm. Cauline leaves smaller, shortly petiolate. Cymes lax-flowered. Flowers small, ca. 8 mm in diam. Sepals 4, ovate, ca. 2 mm, white or pinkish, caducous. Stamens numerous, ca. 5 mm; anthers oblong, 0.8–1.3 mm; filaments distally oblanceolate, ca. 3 times as broad as anthers, base filiform. Carpels 6–12, stalked; styles short. Achenes compressed, narrowly oblong, sometimes slightly falcate, 3–4 × 0.6–1.2 mm, longitudinally 8-ribbed.

Locality: Ma On Shan, Sunset Peak, Lantau Peak. *Y. S. Lau 1401; P. S. Choi 36.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Ravines, margins of forests. Flowering and fruiting: Apr.–Jul.

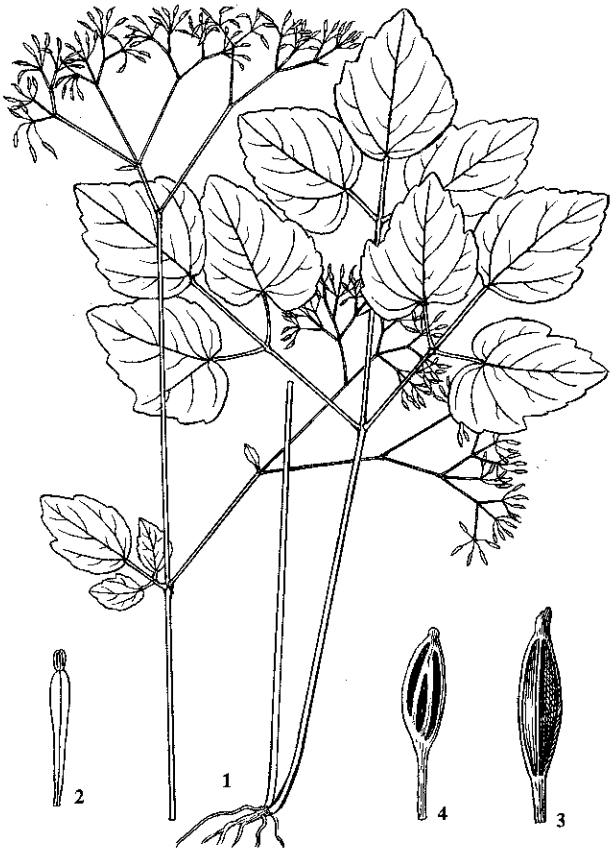



**Figure 42.** *Thalictrum acutifolium* (Hand.-Mazz.) Boivin
*1.* whole plant; *2.* stamen; *3.* carpel; *4.* achene. (drawn by H. P. Yu)

# 32. BERBERIDACEAE 小檗科

HU Qi-ming 胡啟明

Shrubs or perennial herbs. Leaves alternate or radical, simple, pinnately or ternately compound, with or without stipules. Flowers bisexual, solitary, clustered or arranged in cymose, racemose or paniculate inflorescence; sepals and petals similar, in 2 to many series, imbricate or the outer ones valvate, usually caducous; stamens 6, opposite to petals; anthers 2-celled, usually opening by 2 valves; ovary superior, 1-locular, with a few to many ovules; style very short or none; stigma capitate or dilated and peltate. Fruit a berry or a capsule.

About 15 genera and 570 species widespread especially in N temperate regions; 11 genera about 200 species in China; two genera (one cultivated) and two species in Hong Kong.

1a. Leaves pinnate, margin spinose-dentate ..... 1. *Mahonia*
1b. Leaves twice or thrice pinnate, margin entire ..... 2. *Nandina*

## 1. Mahonia Nutt. 十大功勞屬

Evergreen shrubs. Stems little branched, without spines. Leaves pinnately compound; leaflets leathery, usually spinose dentate. Flowers in terminal racemes; perianth-segments usually 9, the 3 outermost (sometimes interpreted as bracteoles) small and sepaloid, the 6 inner bright yellow, petaloid; stamens 6, opening by 2 valves; ovary 1-locular, with a few ovules. Fruit a 2-seeded berry, dark blue, usually glaucous.

About 100 species in E & S Asia, C & N America; about 30 species in China; one species in Hong Kong.

**1. Mahonia oiwakensis** Hayata 海島十大功勞 **(Photo 149)**

Icon. Pl. Formosan. 6: 1. 1916; Li, Woody Fl. Taiwan 175. 1963; FTW ed. 2, 2: 583, pl. 279, photo 254–255. 1996; FRPS 29: 220, pl. 42. 2001.

*Berberis nepalensis* auct. non Spreng.: FKH 32. 1912.

*Mahonia hainanensis* C. M. Hu et al., Guihaia 14 (1): 18. 1994.

Evergreen shrub, 1–7 m tall. Leaves crowded at apex of stems, odd-pinnate, narrowly oblong-elliptic in outline, 15–42 × 8–15 cm; leaflets 12–20 pairs, sessile, ovate-lanceolate or lanceolate, 2–10 × 1–2.5 cm, base rounded, apex acute to acuminate, margin with 2–9 spinulose teeth on each side, adaxially dark green, abaxially yellowish green; terminal leaflet petiolulate or sometimes sessile. Racemes fascicled, upright, 9–25 cm. Pedicels (2–)5–6 mm. Flowers golden yellow, outer perianth-segments ovate to elliptic, inner ones oblong, 4.5–6.5 × 22.7 mm, with 2 glands at the base, apex bilobed; stamens 3–4 mm; ovary 3–4 mm, with 2–3 ovules; style very short. Fruit ovoid, 5–6 mm in diam., blue to blue-black, white-farinose.

Locality: Sunset Peak. *Y. S. Lau 2812; L. T. Lo 328.*

Distribution: Taiwan, Hainan, Guizhou, Sichuan, Yunnan, Xizang.

Ecology: Forests by streams. Flowering: Jun.–Sep.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

## 2. Nandina Thunb. 南天竺屬

Evergreen shrubs. Leaves alternate, twice or thrice pinnately compound; rhachis articulate; leaflets entire. Flowers small, white, in terminal panicles; sepals many, spirally arranged, gradually increasing in size from out towards inside; petals 6, slightly larger than the inner sepals; nectaries none; stamens 6, opposite to the petals; anthers subsessile, opening with longitudinal slit; ovary 1-locular, with 1–2 ovules. Fruit a berry, globular, scarlet when mature.

A monotypic genus, the only one species distributed in S China and Japan; it is cultivated in Hong Kong.

**1. Nandina domestica** Thunb. 南天竺 **(Photo 150)**

Fl. Jap. 9. 1784; Forb. & Hemsl., J. Linn. Soc. Bot. 23: 32. 1886; FGZ 98. 1956; FGD 3: 15. 1995; FRPS 29: 52, pl. 11. 2001.

Evergreen shrub, 1.5–2 m tall, glabrous throughout. Stems tufted, unbranched. Leaves twice or thrice pinnate, 30–50 cm; petioles sheathed and semi-amplexicaul at the base, rachis articulate; pinnae opposite; leaflets subsessile, thinly leathery, lanceolate to elliptic-lanceolate, 1.5–4(–7) × 0.8–1.5–2 cm, base cuneate, apex acute, apiculate, margin entire. Panicles terminal, erect, 13–25 cm; pedicels 3–5 mm. Sepals many, greenish, scarious, the lowest small, triangular, ca. 1 mm, upper ones larger, ovate to ovate-elliptic, to 4.5 mm. Petals 6, white, sub-scarious, elliptic, 6–7.5 × 3–3.5 mm. Stamens 6, rarely 7, subsessile, 4.5–5 mm, yellow. Ovary urceolate, about the length of the stamens; style very short. Fruit a globular berry, scarlet, ca. 8 mm in diam.

Locality: Cultivated in gardens. *HK sheet 32807; Y. S. Lau 1902.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Shaanxi, Henan, Shandong, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian; Japan.

Ecology: The plant shrives in calcareous soil, but also grows well in acid soil. Flowering: May–Jun.; fruiting: Nov. to Feb. of the following year.

Uses: Ornamental, medicinal (folklore).

# 33. SARGENTODOXACEAE 大血藤科

HU Qi-ming 胡啟明

Deciduous twining vines. Leaves alternate, trifoliate, long-petioled, exstipulate. Flowers unisexual (plants dioecious), in drooping racemes from scaly axillary bud. Male flowers: sepals 6, in 2 sets of 3, petaloid; petals 6, very small and scale-like, nectariferous; stamens 6, free, opposite the nectariform petals; filaments short; anthers extrorse, 2-celled, opening by longitudinal slits; connectives slightly produced; vestigial carpels linear, usually 4–6. Female flowers: sepals and petals as in staminate flower; staminodes 6; carpels numerous, free, spirally arranged on a globose receptacle, each carpel with a solitary ovule. Fruit a 1-seeded berry, bearing on the enlarged and fleshy receptacle.

The family consists only one species distributed in China, Vietnam and Laos.

## 1. Sargentodoxa Rehd. & Wils. 大血藤屬

Morphological characters and geographical distribution are the same as the family.

**1. Sargentodoxa cuneata** (Oliv.) Rehd. & Wils.
大血藤 **(Fig. 43; Photo 151)**

Sargent, Pl. Wils. 1: 351. 1913; FGD 4: 56, fig. 34. 2000; FRPS 29: 305. 2001; FOC 6: 454. 2001.

*Holboellia cuneata* Oliv., Hooker's Icon. Pl. 19: t. 1817. 1889.

Twining woody vine. Bark on old stems longitudinally fissured; branches reddish brown, glabrous. Leaves alternate, ternate; petioles 5–10 cm. termianal leaflets rhomboid-obovate, 4–14 × 3–9 cm, base cuneate, apex acute; petiolules 5–10 mm; lateral leaflets larger, obliquely ovate, bilaterally asymmetrical, subsessile. Racemes pendulous, 8–15 cm, many-flowered. Flowers yellow or yellowish green, fragrant. Pedicels 1–1.5 cm, with an oblong bract at base and 2 linear alternate bracteoles near middle. Male flowers: sepals 6, narrowly oblong, 6–10 × 2–4 mm, margin slightly involute; nectariform petals very small, rhomboid-orbicular, ca. 1.2 mm; stamens ca. 4 mm; vestigial carpesl linear, ca. 1 mm. Female flowers: sepals and petals as in staminate flower; carpels numerous, spirally arranged on the globose receptalcle. Ripe carpel an ovoid berry, 7–10 mm in diam, dark blue and glaucous, usually 20–40 on the enlarged receptacle. Seeds black, ovoid, ca. 5 mm.

Locality: Mount Parker, Wong Nai Chung, Ng Tung Chai. *W. J. Tutcher 8335; Y. S. Lau 1634.*

Distribution: Guangdong, Guangxi, SE Yunnan, Sichuan, Hunan, Hubei, Henan, Anhui, Jiangsu, Jiangxi, Zhejiang; Laos, Vietnam.

Ecology: Margins of forests, thickets on hillslopes and in ravines. Flowering: Spring.

Uses: Medicinal (folklore).

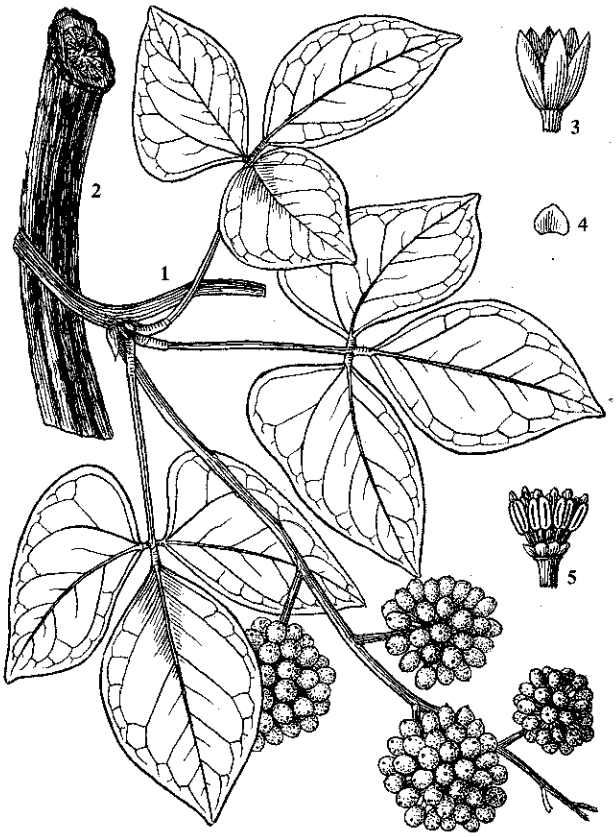



**Figure 43.** *Sargentodoxa cuneata* (Oliv.) Rehd. & Wils.
*1*. fruiting branch; *2*. stem; *3*. male flower; *4*. petal; *5*. male flower with sepals removed (viewing nectariform petals and stamens). (drawn by H. P. Yu)

# 34. LARDIZABALACEAE 木通科

HU Qi-ming 胡啟明

Deciduous or evergreen shrubs, mostly twining. Leaves alternate, digitately or pinnately compound, exstipulate. Flowers unisexual (plants monoecious or dioecious), rare polygamous, regular, in racemes, rarely solitary. Sepals 6 or rarely 3, petaloid. Petals wanting, but nectaries often present. Stamens 6, free or connate, sterile in female flowers; anthers free, extrorse, opening by slits; connectives often produced. Carpels 3 to many, superior, free; stigmas oblique, subsessile; ovules numerous and arranged in longitudinal rows, rarely only one ovule. Fruit a berry or a fleshy follicle, dehiscent or indehiscent. Seeds ovoid or subreniform, with copious endosperm.

Nine genera with about 35 species in E Asia and S America; six genera and 45 species in China; one genus and four species in Hong Kong.

Notes: Previous reports of species of *Akebia* in Hong Kong were erroneous.

## 1. Stauntonia DC. 野木瓜屬

Evergreen twining shrubs, glabrous. Leaves digitate, long-petioled; leaflets 3–7(–9), entire, stalked. Flowers functionally unisexual (plants monoeious), in few-flowered axillary racemes. Sepals 6, petaloid, outer 3 often ovate or lanceolate, apex acuminate, inner 3 smaller. Petals lacking, or rarely represented by nectaries. Male flower: stamens 6; filaments connate into a tube; vestigial carpels small. Female flower: staminodes 6, small; carpels 3, free, conduplicate; with many ovules on parietal placenta; stigmas sessile, capitate. Fruit an indehiscent pod-like berry. Seeds numerous, black, in several rows.

About 13 species distributed from Myanmar through Indochina and China to Korea and Japan; 12 species in China; four species in Hong Kong.

1a. Branches, petioles and petiolules narrowly winged ..... 1. *S. decora*
1b. Branches, petioles and petiolules not winged.
2b. Flowers without petals; connectives slightly produced; leaves glaucous abaxially, reticulation of veines obscure ..... 2. *S. obovata*
2a. Flowers with nectariform petals; connectives with a prolonged apex; leaves pale green abaxially.
3a. Leaves trifoliate; veins raised only on abaxial surface ..... 3. *S. elliptica*
3b. Leaves 5–7-foliate; veins raised on both surfaces ..... 4. *S. chinensis*

**1. Stauntonia decora** (Dunn) C. Y. Wu ex S. H. Huang 翅野木瓜
FYN 2: 8. 1979; FGD 4: 50. 2000; FRPS 29: 26. 2001; FOC 6: 448. 2001.
*Parvatia decora* Dunn, Hooker's Icon. Pl. ser. 4, 8(1): t. 2712. 1901.

Stems, petioles and petiolules narrowly winged. Leaves trifoliate; petioles 3–8 cm; leaflets leathery, elliptic, ovate, or oblong, 5–12 × 3–7 cm, base rounded or broadly cuneate, apex acute to shortly acuminate, sometimes subrounded and mucronate, margin entire and slightly revolute, glabrous and shining adaxially, scurfy puberulous abaxially; lateral nerves and veins raised on abaxial surface; petiolules of terminal leaflets 2.5–4 cm, lateral ones 1–1.5 cm. Racemes several to many, 1–2-flowered, fascicled in axils of leaves; peduncles 4–10 mm. Male flowers: pedicels 2.5–4 mm; outer sepals lanceolate, 20–25 × 5–6 mm, inner ones narrower, ca. 21 mm; petals lanceolate, ca. 2 mm; stamens 7–14 mm, connective apical appendage hornlike, equaling or longer than anther; pistillodes subulate. Female flowers similar to staminate flower; carpels 3, clavate, 6–7 mm; stigmas lanceolate, reflexed. Fruit ellipsoid, 7–8 × 2.5–3.5 cm.

Locality: Ma On Shan. *H. C. Tang 1175, 1928.*
Distribution: Guangdong, Guangxi, Yunnan.
Ecology: Open forests in ravines. Flowering: Oct.–Dec.

**2. Stauntonia obovata** Hemsl. 倒卵葉野木瓜 **(Photo 152)**
Hooker's Icon. Pl. ser. 4, 9: t. 2847, 1907; FKH 32. 1912; H. N. Qin, Cathaya 8–9: 130, fig. 56. 1997; FGD 4: 53. 2000; FRPS 29: 42, pl. 9: 10–14. 2001; FOC 6: 452. 2001.
*Holboellia obovata* (Hemsl.) Chun, Sunyatsenia 1(4): 233. 1934.

Woody twining shrub, glabrous throughout. Leaves digitate; petioles slender, 2–6(–8) cm; leaflets 3–5(–6), leathery, very variable in size and shape, usually obovate, sometimes oblong or lanceolate, 3.5–6(–11) × 1.5–3(–6) cm, base cuneate to broadly cuneate, apex rounded, occasionally acute or acuminate, margin entire and ± revolute, adaxially dark green, abaxially glaucous; lateral veins 5–6 on each side of midvein, reticulation of veins obscure; petiolules 8–20 mm. Racemes 4–6 cm, 3–5 fascicled in axils of leaves. Pedicels 2–4 cm. Male flowers: sepals 6, white, rarely yellowish white, outer 3 lanceolate, 10–11 × 3.5–4 mm, inner 3 linear, 6–10 × 1–1.5 mm; petals lacking; stamens ca. 3.5 mm, connectives slightly produced; vestigial carpels 3, very small. Female flowers: sepals as in staminate flower; carpels 3, free, stigmas capitate; staminodes squamiform, less than 0.5 mm. Fruit ellipsoid or ovoid, (3–)4–5(–6) × 2–2.5 cm.

Locality: Mount Victoria, Mount Gough, Tai Mo Shan. *K. L. Yip 4139; Y. S. Lau 518, 2831.*
Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Anhui, Jiangxu, Zhejiang, Fujian, Taiwan
Ecology: Margins of forests in ravines, by streams. Flowering: Apr.–May; fruiting: Sep.–Nov.
Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1849.

**3. Stauntonia elliptica** Hemsl. 牛藤果
Hooker's Icon. Pl. 29: t. 2844. 1907; FGD 4: 50. 2000; FRPS 29: 28. 2001; FOC 6: 448. 2001.
*Parvatia brunoniana* (Wall.) Decaisne subsp. *elliptica* (Hemsl.) H. N. Qin, Cathaya 8–9: 61, fig. 36. 1997.

Woody twining shrub, glabrous throughout. Leaves trifoliate; petioles 10–17 cm; leaflets elliptic, oblong to ovate-oblong or obovate, 3–11 × 2–5 cm, base rounded, apex acute or obtuse, margin entire and slightly revolute, dark green adaxially, pale green abaxially; lateral nerves and veins raised on abaxial surface; petiolules 1–3 cm. Racemes several and fascicled in axils of leaves, with many pendent pale green to whitish flowers. Male flowers: pedicels 10–12 mm; outer sepals ovate-elliptic, inner sepals lanceolate, 6–9 × 2–3 mm; nectariform petals ovate, 1–1.5 mm; stamens ca. 5 mm, connective apical appendages as long as anther. Female flowers: pedicels 18–20 mm; sepals narrowly to linear lanceolate, 14–15 × 2–4 mm; staminodes ca. 1 mm; carpels 3, free, oblong, with elongated and pointed stigmas. Fruit ovoid or oblong, 4–5 × 2–4 cm.

Locality: Tai Mo Shan. *F. W. Xing 7226.*
Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Hubei, Hunan, Jiangxi.
Ecology: Thin forests and thickets. Flowering: May–Aug.; fruiting: Jun.–Dec.

Notes: The species was erroneously reported as *Akebia trifoliate* var. *australis* (Diels) Rehd. (Check List HK Plants 53. 2002).

**4. Stauntonia chinensis** DC. 野木瓜 **(Fig. 44; Photo 153)**

Syst. Nat. 1: 514. 1818; FHK 13. 1861; FKH 32. 1912; H. N. Qin, Cathaya 8–9: 151, fig. 67. 1997; FGD 4: 51, fig. 32. 2000; FRPS 29: 29, pl. 5: 1–7. 2001; FOC 6: 449. 2001.

*Stauntonia hexaphylla* auct. non Decaisne: FKH 32. 1912.

Woody twining shrub, glabrous throughout. Leaves digitate; petioles 5–10 cm; leaflets 5–7, leathery, oblong, elliptic or oblong-lanceolate, 6–9(–11.5) × 2–4 cm, base obtuse, rounded or cuneate, apex acuminate, margin entire and ± thickened, adaxially dark green, abaxially paler and often maculate when young; reticulation of veins conspicuously raised on both surfaces; petiolules 6-25 mm. Flowers usually 3–4 in corymbose-racemes; pedicels 2–3 cm. Male flowers: sepals 6, yellowish or cream white abaxially, purplish red adaxially, outer 3 lanceolate, ca. 18 × 6 mm, inner 3 linear lanceolate, ca. 16 × 3 mm; nectariform petals liguliform, ca. 1.5 mm; connective apical appendage as long as anther. Female flowers: sepals slightly larger than that of staminate flower; staminodes aciculiform, less than 1 mm; carpels 3, free, narrowly ellipsoid or oblong, with oblique capitate stigmas. Fruit oblong, 7–10 × 3–5 cm.

Locality: Mount Parker, Mount Gough, Tai Mo Shan. *Y. S. Lau 1745; HK sheet 1179, 39261.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Forests of hill slopes. Flowering: Mar.–Apr.

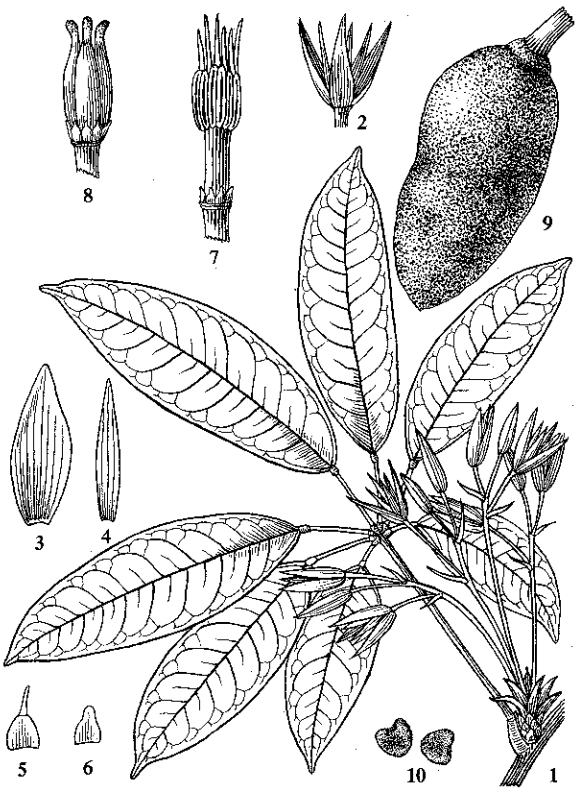



**Figure 44.** *Stauntonia chinensis* DC.
*1*. flowering branch; *2*. flower; *3*. outer sepal; *4*. inner sepal; *5*. reduced sepal; *6*. nectary-like petal; *7*. stamens; *8*. pistil; *9*. fruit; *10*. seeds. (drawn by H. P. Yu)

# 35. MENISPERMACEAE 防己科

HU Qi-ming 胡啟明

Climbing or twining vines, rarely erect shrubs or small trees. Leaves spirally arranged, often peltate, usually palmately nerved. Stipules absent. Petioles thickened at both ends. Flowers unisexual (plant dioecious), usually small, in cymose, racemose or paniculate inflorescence, rarely solitary. Sepals often 6, rarely 1–4 or 9–12, usually free, imbricate, in 2–4 whorls, the inner ones the largest. Petals usually 3–6, in 1 or 2 whorls, rarely reduced to 4–2(–1) or absent, free or rarely connate, imbricate or valvate. Male flowers: stamens usually of the same number as the petals, and opposite to them, free or united in a central column, rudimentary pistil very small. Female flowers: carpels 3–6, rarely 1–2 or 12, free; style terminal; stigma lobed or divided, rarely entire; ovules 2 per carpel, only 1 developed; staminodes present or absent. Fruit a drupe, with a bony or woody kernel. Seed often curved.

About 65 genera and 350 species mostly in tropical and subtropical regions; 19 genera, 78 species in China; seven genera and nine species in Hong Kong.

1a. Stamens united in a central column; carpel solitary.
  2a. Sepals united; cymes racemosely or paniculately arranged ..... 1. *Cyclea*
  2b. Sepals free; cymes umbellately arranged or in heads ..... 2. *Stephania*
1b. Stamens free; carpels 2–6.
  3a. Anthers opening transversely; petals apex bifid or, if entire, sepals with black stripes.
    4a. Petals bifid; sepals without black stripes ..... 3. *Cocculus*
    4b. Petals entire; sepals with black stripes ..... 4. *Diploclisia*
  3b. Anthers opening longitudinally; sepals without black stripes; petals entire.
    5a. Flowers solitary (female) or 2–5 in axillary racemes; carpels 2 ..... 5. *Hypserpa*
    5b. Flowers in racemes or panicles, many-flowered; carpels 3.
      6a. Herbaceous vine, lenticels on branches distinctly raised ..... 6. *Tinospora*
      6b. Woody vine, lenticels on branches not distinctly raised ..... 7. *Pericampylus*

## 1. Cyclea Arnott ex Wight 輪環藤屬

Herbaceous or woody vines. Leaves mostly peltate, palmately nerved. Flowers in axillary panicles. Male flowers: sepals usually 4 or 5, usually united into a campanulate or inflated and globose calyx, rarely free; petals 4 or 5, small, connate or free; stamens united in a central column, anthers horizontal, opening transversely. Female flowers: sepals and petals 1 or 2, opposite to each other, rarely

absent; carpel solitary, style short, stigma divided into 3 to many radiating subulate branches. Drupes obovate or subglobose, slightly compressed, the scar of style near the base; the kernel bony, with 2 or 3 rows of tubercles on each side.

About 30 species in S & SE Asia; 12 species in China; one species in Hong Kong.

**1. Cyclea hypoglauca** (Schauer) Diels
粉葉輪環藤 **(Fig. 45)**

Pflanzenr. IV. 94: 319. 1910; FHN 1: 325. 1964; FGD 1: 45. 1987; FRPS 30(1): 75. 1996.

*Cissampelos hypoglauca* Schauer, Nov. Act. Acad. Leop. Carol. 11 (Suppl. 1): 479. 1843.

*Cyclea deltoidea* Miers, Hooker's J. Bot. Kew Gard. Misc. 3: 258. 1851; FHK 14. 1861; FKH 31. 1912.

Herbaceous or ± woody vine. Branchlets slender, glabrous. Leaves peltate, papery; petioles 1.5–4 cm; leaf blade broadly ovate to triangular ovate, 2.5–7 × 1.5–4.5 cm, base truncate to rounded, apex acuminate, margin entire, adaxially shining, abaxially glaucous, glabrous or sparsely pubescent, palmately 5–7-nerved. Panicles narrow, almost reduced to racemes. Male flowers: sepals 4 or 5, free, obovate or obovate-cuneate, 1–1.2 mm; petals 4 or 5, usually connate and saucer-shaped, scarcely lobed, 0.5–1 mm; stamens united in a central column, 1–1.2 mm, slightly exserted. Female flowers: sepals 2, suborbicular, ca. 0.8 in diam.; petals 2, unequal; ovary glabrous. Drupes red, glabrous; the kernel ca. 3.5 mm, dorsally with 3 rows of tuberculous ribs on each side.

Locality: Pok Fu Lam, Wong Nai Chung, Tai Tam, Victoria Peak, Mount Nicholson, Shing Mun, Ma On Shan, Tsing Yi. *Y. W. Lam 149, 999; H. C. Tang 994.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian; Vietnam.

Ecology: Forest edges and bushes on hillsides. Flowering: May–Jul.; fruiting: Aug.– Oct.

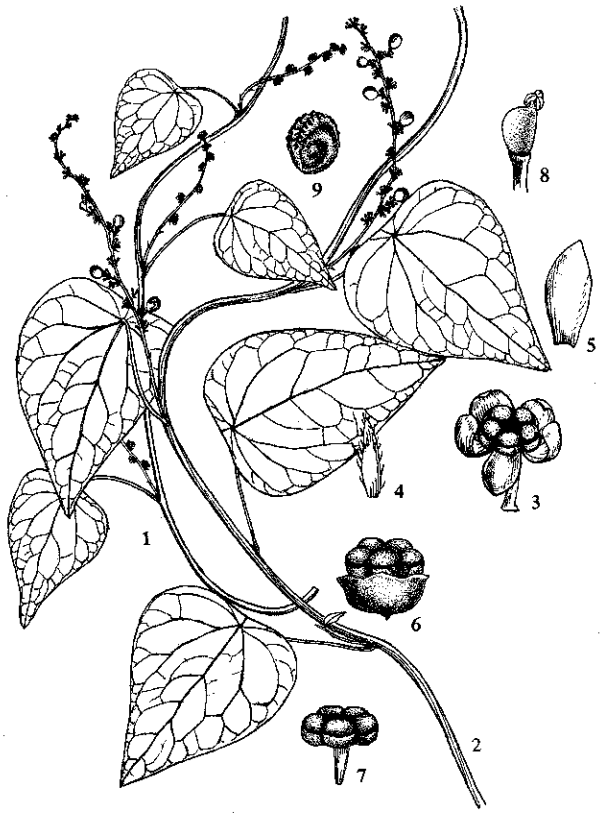



**Figure 45.** *Cyclea hypoglauca* (Schauer) Diels
*1*. male flowering branch; *2*. female flowering branch; *3*. male flower; *4*. bracteole; *5*. sepal; *6*. male flower with calyx removed; *7*. synantherous stamen; *8*. pistil; *9*. kernel. (drawn by Y. X. Liu)

## 2. Stephania Lour. 千金藤屬

Herbaceous or woody vines, often with tuberous roots. Leaves mostly peltate, long-petioled and palmately nerved. Flowers in axillary umbels or condensed to discoid heads. Male flowers: sepals (4–)6–8, in 2 series, free or occasionally connate at base; petals 3–4, in 1 series, shorter than the sepals; stamens 2–6, united in a central column, bearing a flat disc with the anthers on the margin. Female flowers: sepals (1–)3–4, in 1 series; petals as many; carpel solitary, style very short, lobed or fimbriate. Drupes flattened, the scar of the style near the base; kernel horseshoe-shaped, dorsally tuberculous.

About 40 species in tropical and subtropical regions of the Old World; about 30 species in China; two species in Hong Kong.

1a. Leaves ovate-triangular, glabrous on both surfaces ..... 1. *S. longa*

1b. Leaves broadly triangular or triangular-orbicular, puberulous at least on abaxial surfaces ..... 2. *S. tetrandra*

**1. Stephania longa** Lour. 粪箕篤 **(Fig. 46)**

Fl. Cochinch. 608. 1790; FHN 1: 322, fig. 160. 1964; FGD 1: 42. 1987; FRPS 30(1): 51, pl. 10: 7–9. 1996; FTW ed. 2, 2: 602. 1996.

*Stephania japonica* (Thunb.) Miers var. *hispidula* Yamam., Icon. Pl. Formosan., Suppl. 3: 33, fig. 11. 1927.

*Stephania hernandifolia* auct. non Walp: FHK 13. 1861; FKH 31. 1912.

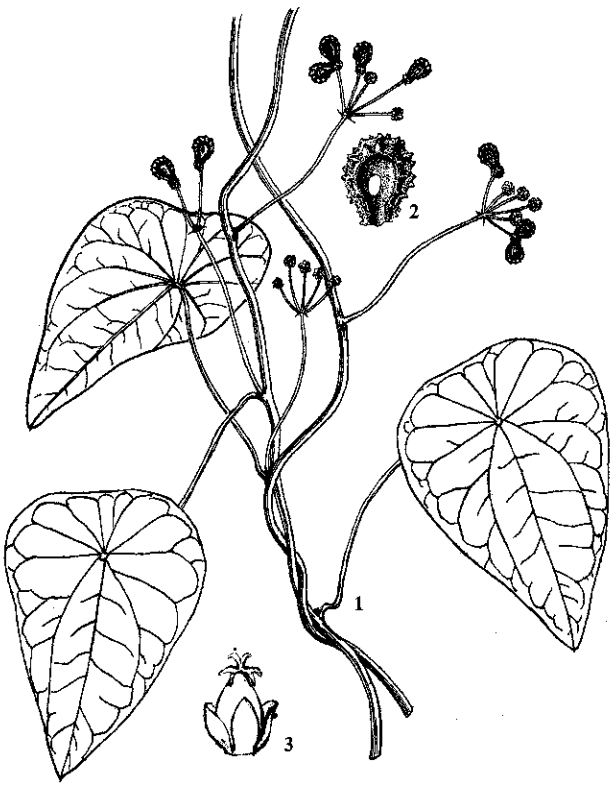



**Figure 46.** *Stephania longa* Lour.
*1*. flowering and fruiting branch; *2*. kernel; *3*. female flower. (drawn by Y. X. Liu)

Herbaceous vine, 1–4 m or longer, without tuberous roots, glabrous except inflorescence. Leaves usually more or less peltate, papery; petioles 1–4.5 cm, often twisted at the base; leaf blade broadly ovare, orbicular or nearly triangular, 3–9 × 2–6 cm, base subtruncate or subrounded, rarely slightly concave, apex obtuse, mucronate, sometimes glaucous on abaxial surface, palmately 10–11-nerved. Inflorescences an axillary umbel with 5 or 6 rays, each ray terminated by a head, or partial umbel of 8 to 12 small sessile or shortly pedicellate flowers; peduncles 1–4 cm. Male flowers: sepals 6–8, cuneate or obovate, ca. 1 mm; petals 4 or sometimes 3, greenish yellow, suborbicular, ca. 0.4 mm. Female flowers: sepals and petals 4, rarely 3, ca. 0.6 mm; ovary glabrous, stigma lobes divaricate. Drupes red, 5–6 mm; kernel obovate, dorsally with 2 rows transverse tuberculous ridges.

Locality: Aberdeen, Tai Po Kau, Ma On Shan, Sheung Shui, Tai Mong Tsai. *L. T. Lo 79; Y. S. Lau 296, 2837; HK sheet 35909.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan.

Ecology: Margins of forests and in thickets. Flowering: Apr.–Jun.; fruiting: Aug.–Oct.

**2. Stephania tetrandra** S. Moore 粉防己

J. Bot. 13: 225. 1875; FGD 1: 42, fig. 43. 1987; FRPS 30(1): 52, pl. 11: 7–9. 1996; FTW ed. 2, 2: 605, pl. 292. 1996.

Herbaceous vine, 1–3 m or longer, with fleshy, cylindrical taproot. Leaves peltate; petioles 3–7 cm; leaf blade papery, broadly triangular to triangular orbicular, usually 4–7 × 5–8.5 cm, base slightly cordate or truncate, apex acute and apiculate, appressed pubescent at least on abaxial surface, palmately 9- or 10-nerved, reticulation of veins conspicuous. Flowers in racemose discoid heads. Male flowers: sepals 4 or sometimes 5, usually obovate-elliptic, 0.8 mm including the claw; petals 5, fleshy, 0.6 mm. Female flowers: sepals and petals as in males. Drupes subglobose, red when mature; the kernel ca. 5.5 mm in diam. Dorsally cristate, with ca. 15 transverse ribs on each side.

Locality: Ng Tung Chai, Ko Lau Wan. *HK sheet 34042, 35806.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan.

Ecology: Thickets. Flowering: Jun.–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

## 3. Cocculus DC., *nom. cons.* 木防己屬

Woody vines, rarely half-erect shrubs or small trees. Leaves not peltate, entire or lobed, palmately nerved. Inflorescences cymose or thyrsoid, axillary, elongated, forming panicles or reduced to few flowers. Male flowers: sepals 6 or 9, in 2 or 3 series, the outer ones smaller, the inner ones larger and concave, imbricate; petals 6, smaller than the sepals, cuneate or obovate, often embracing the stamens by auricles at their base; stamens 6 or 9, free, anthers opening by a transverse slit. Female flowers: sepals and petals as in males; staminodes 6 or absent; carpels 6 or 3; styles cylindrical, stigmas reflexed. Drupes obovate or rotund, laterally compressed, the scar of the style near the base; kernel bony, with a dorsal ridge and lateral ribs.

About eight species in C & N America, Africa, E, SE & S Asia, Malaya, Sumatra, Java, Philippines, Polynesia; two species in China; one species in Hong Kong.

**1. Cocculus orbiculatus** (L.) DC.

木防己 **(Fig. 47; Photo 154)**

Syst. Nat. 1: 523. 1817; Forman, Kew Bull. 22: 372–374. 1968; FGD 1: 37, fig. 38. 1987; FRPS 30(1): 32, pl. 7: 1–8. 1996.

*Menispermum orbiculatus* L., Sp. Pl. 341. 1753.

*Menispermum trilobus* Thunb., Fl. Jap. 194. 1784.

*Cocculus trilobus* (Thunb.) DC., Syst. 1: 522. 1817; FHN 1: 321. 1964.

*Cocculus thunbergii* DC., Syst. Nat. 1: 524. 1818; FKH 31. 1912.

*Cocculus ovalifolius* DC., Syst. Nat. 1: 526. 1818; FHK 13. 1861.

Woody vine. Young shoots densely pubescent, glabrescent in age. Leaves papery or subleathery; petioles (0.5–)1–3 cm, puberulous; leaf blade variable in shape and size, usually ovate or elliptic, sometimes obovate or obcordate, or occasionally suborbicular or oblong, 3–8(–10) × 0.5–2.5(–5) cm, apex acute, obtuse or rounded, sometimes slightly emarginate, margin entire or obtusely 3-lobed; glabrous or pubescent especially on abaxial surface, palmately 3–5-nerved. Cymes axillary, few-flowered, or many-flowered and racemosely arranged, up to 10 cm or longer, puberulous. Male flowers: sepals 6, broadly elliptic, 6–15 mm, glabrous; petals 6, lanceolate, 1–2 mm, apex divided into 2 acuminate or acute lobes; stamens 6, shorter than petals. Female flowers: sepals and petals as

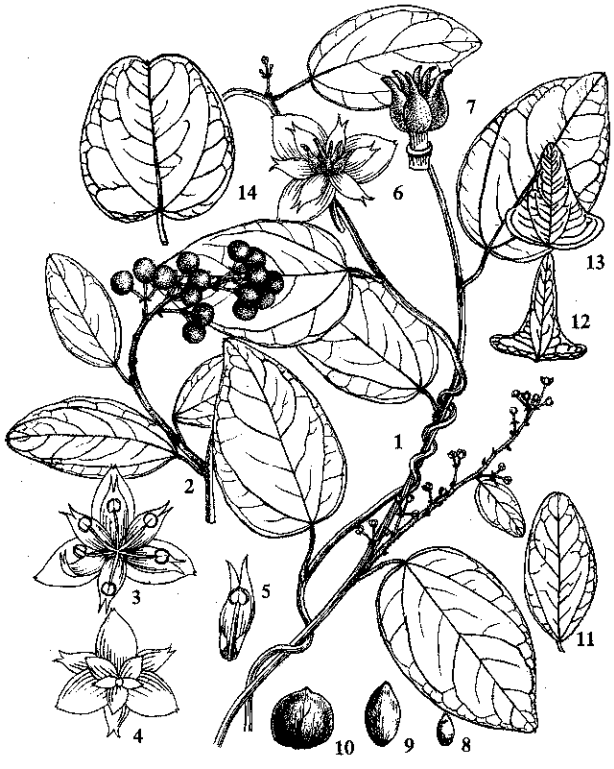



**Figure 47.** *Cocculus orbiculatus* (L.) DC.

*1.* flowering branch; *2.* fruiting branch; *3.* male flower; *4.* male flower (dorsal view); *5.* petal and stamen; *6.* female flower; *7.* pistil; *8.* bract; *9.* outer whorl sepal; *10.* inner whorl sepal; *11–14.* leaves (showing variation). (drawn by Y. X. Liu)

in males; staminodes 6, very small; carpels 6, glabrous. Drupes subglobose, red to reddish purple, usually 7–8 mm in diam.; kernel bony, 5–6 mm in diam., dorsally ornamented with branched ridges.

Locality: Common in Hong Kong. *H. C. Tang 1285; Y. S. Lau 338, 900; HK sheet 1102.*

Distribution: Most parts of China except NW China and Xizang; widely distributed in SE & E Asia and extending to Hawaii.

Ecology: Thickets near villages. Flowering: Apr.–Aug.; fruiting: Aug.–Oct.

## 4. Diploclisia Miers 秤鈎風屬

Woody vines. Leaves broadly triangular ovate to broadly triangular orbicular, palmately 3–7-nerved. Cymes supra-axillary, or borne on old stems and forming panicles. Male flowers: sepals 6, in 2 series, usually with black stripes when dry, the inner 3 larger; petals 6, usually rhomboid, base folded inward and embracing the opposite filament; stamens 6, free, anthers transversely dehiscent. Female flowers: sepals and petals as in males; petals usually 2-lobed at apex; staminodes 6; carpels 3; styles very short; stigmas recurved. Drupes oblong to obovoid, laterally compressed, with style-scar close to base; kernel bony, narrowed at base, with dorsal ridge and many transverse ribs on both faces.

Two species in China and tropical Asia; one species in Hong Kong.

**1. Diploclisia glaucescens** (Blume) Diels
蒼白秤鈎風 **(Fig. 48; Photo 155)**

Pflanzenr. IV. 94: 225. 1910; FHN 1: 320, fig. 159. 1964; Forman, Kew Bull. 22: 363. 1968; FGD 1: 35, fig. 36. 1987; FRPS 30(1): 31, pl. 6: 6. 1996.

*Cocculus glaucescens* Blume, Bijdr. 25. 1825

*Diploclisia macrocarpa* (Wright) Miers, Ann. Mag. Nat. Hist., ser. 2, 7: 42. 1851.

*Cocculus macrocarpus* Wright, Illstr. 1: 22, t. 7. 42. 1840; FHK 12. 1861; FKH 31. 1912.

Large woody vine, glabrous throughout. Stems up to 20 m or longer; branchlets light brown, striate. Leaves thinly leathery, sometimes peltate; petioles 3–7 cm; leaf blade triangular orbicular, sometimes broadly ovate-triangular, 3–6 × 3–7 cm, base truncate, subrounded or slightly cordate, apex abruptly acute to rounded and apiculate, glaucescent on abaxial surface, usually palmately 5-nerved. Cymes forming panicles, 10–30 cm, usually fascicled and borne on leafless old stems. Flowers light yellow, slightly fragrant. Male flowers: sepals ovate-oblong, 1.5–2.5 mm; petals obovate or rhomboid, ca. 1.5 mm; stamens ca. 2 mm. Female flowers: sepals and petals as in males, except petals 2-lobed at apex. Drupes yellowish red, glaucous, narrowly oblong-obovate, 1.3–2 × 0.7–0.9 cm.

Locality: Mount Parker, Cape D'Aguilar, Wan Chai, Tai Po Kau, Lantau Island. *Y. S. Lau 552, 2217; HK sheet 152.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; India, Ceylon, Myanmar, Thailand, Malesia.

Ecology: Forests. Flowering: Apr.; fruiting: Aug.

Uses: Medicinal (folklore).

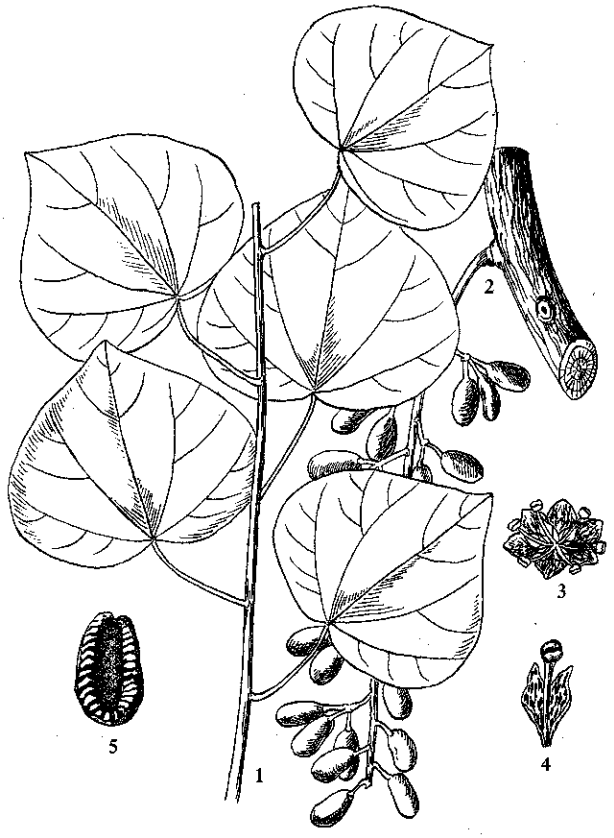



**Figure 48.** *Diploclisia glaucescens* (Blume) Diels
*1.* vegetative branch; *2.* fruiting branch; *3.* male flower; *4.* petal and stamen of male flower; *5.* kernel. (drawn by Y. X. Liu)

## 5. Hypserpa Miers 夜花藤屬

Woody vine. Leaves undivided, palmately 3–(rarely 5–7)-nerved. Inflorescences axillary, cymose or paniculate. Male flowers: sepals 7–12, spirally arranged, the outer ones smaller, the inner ones larger, imbricate, with membranous margins; petals 4–9, fleshy, usually obovate or spathulate, sometimes absent; stamens 6 to many, free or connate; filaments thickened at apex; anthers opening longitudinally. Female flowers: sepals and petals similar to that in males; staminodes present or absent; carpels 2 or 3, sometimes 6 or 1; style short; stigma entire or 3-lobed. Drupe compressed obovoid to subglobose, with style-scar near base; kernel bony, with radiating ribs.

About six species in S & SE Asia to Polynesia and Australia; one species in China, also in Hong Kong.

**1. Hypserpa nitida** Miers 夜花藤 **(Fig. 49; Photo 156)**

Ann. Mag. Nat. Hist. ser. 3, 14: 363. 1864; Forman, Kew Bull. 12: 453. 1958; FHN 1: 318, fig. 157. 1964; FGD 1: 34, fig. 34. 1987; FRPS 30(1): 27. 1996.

*Limacia cuspidata* Hook. f. & Thoms., Fl. Ind. 1: 189. 1855; FHK 12. 1861; FKH 31. 1912.

Woody vine. Branchlets sparsely to densely pubescent with yellowish hairs when young, glabrous in age. Leaves papery to leathery;

petioles 1–2 cm, pubescent or glabrescent; leaf blade ovate, ovate-elliptic to oblong elliptic, rarely elliptic or broadly elliptic, 4–10(–12) × 1.5–5(–7) cm, base obtuse or rounded, sometimes cuneate, apex acuminate, acute or obtuse and mucronate, palmately 3-nerved, usually glabrous, rarely pubescent along nerves. Male panicles 1–2 cm, scarcely longer than the petioles, pubescent. Male flowers: sepals 7–11, the outer ones minute and bracteoliform, 0.5–0.8 mm, puberulous outside, the innermost 4 or 5 broadly obovate, ovate to ovate-orbicular, 1.5–2.5 mm, ciliate; petals 4 or 5, subobovate, 1–1.2 mm; stamens 5–10, free or ± connate at the base, 1–1.5 mm. Female flowers few or solitary; sepals and petals as in males, staminodes none; carpels 2; ovary glabrous. Drupes yellow or orangish red when mature, subglobose or slightly compressed; kernel broadly obovate, 5–6 mm long.

Locality: Common in Hong Kong. *K. Y. Tam 134; Y. S. Lau 997; HK sheet 122.*

Distribution: Hainan, Guangdong, Guangxi, S Yunnan, Fujian; Sri Lanka, India (Assam), Lower Myanmar, Thailand, Malesia.

Ecology: Thin forests or margins of forests. Flowering and fruiting: May–Aug.

Uses: Medicinal (folklore).




**Figure 49.** *Hypserpa nitida* Miers

*1.* fruiting branch; *2.* male flower; 3 androeciun; *4.* stamen; *5.* bracteole; *6–8.* sepal; *9.* petal; *10.* kernel. (drawn by Y. X. Liu)

## 6. Tinospora Miers 青牛膽屬

Vines. Leaves palmately nerved, base cordate, sometimes sagittate or hastate. Inflorescences axillary or borne on old stems, racemose, cymose or paniculate, solitary or fascicled. Male flowers: sepals usually 6, sometimes more or fewer, the outer 3 usually smaller, membranous, imbricate; petals 6, rarely 3, base unguiculate; stamens 6, filaments usually free, anthers nearly extrorse, opening by longitudinal and ± oblique slits. Female flowers: sepals and petals similar to that in males, except petals often smaller; staminodes 6, shorter than petals; carpels 3; style short and thick; stigmas ligulate-peltate, margin undulate or fimbriate. Drupes 1–3, short-stalked; style-scar subterminal; kernel bony, dorsally convex and sometimes verrucose or tuberculate, ventrally more or less flat, with a central aperture.

More than 30 species in tropical and subtropical E hemisphere; six species and two varieties in China; two species in Hong Kong.

1a. Leaves deciduous, suborbicular, base cordate ..... 1. *T. sinensis*

1b. Leaves evergreen, lanceolate, base sagittate ..... 2. *T. sagittata*

**1. Tinospora sinensis** (Lour.) Merr. 中華青牛膽 **(Photo 157)**

Sunyatsenia 1: 193. 1934; FHN 1: 318, 1964; Forman, Kew Bull. 36: 386, fig. 1 (F, G). 1981; FGD 1: 33, fig. 33. 1987; FRPS 30(1): 20. 1996.

*Campylus sinensis* Lour., Fl. Cochinch. 113. 1790.

*Cocculus tomentosus* Colebrr., Trans. Linn. Soc. 13: 59. 1822.

*Menispermum tomentosum* (Colebr.) Roxb., Fl. Ind. 3: 813. 1832.

*Tinospora tomentosa* (Colebr.) Hook. f. & Thoms., Fl. Ind. 1: 183. 1855.

Vine up to 20 m or longer. Branches slightly fleshy; young shoots green, striate, pubescent; old branches thick, usually glabrous, with brownish, membranous epidermis and convex lenticels. Leaves papery; petioles (4–)6–13 cm, puberulous; leaf blade ovate-orbicular, rarely broadly ovate, 7–14 × 5–13 cm, base deeply to slightly cordate, apex acute, margin entire, puberulent on both surfaces, palmately 5(–7)-nerved. Inflorescences appearing when plant is leafless. Male inflorescences 1–4 cm or longer, solitary or fascicled. Male flowers: sepals 6 in 2 series, outer 3 minute, oblong-elliptic, 1–1.5 mm, inner ones broadly ovate, 5 × 3 mm; petals 6, sub-rhomboid, ca. 3 mm including the claw; stamens 6, filaments ca. 4 mm. Female inflorescences solitary. Female flowers: sepals and petals as in males; carpels 3. Drupes red, subglobose, to 10 mm; kernel semi-ovoid, with dorsal ridges and tubercles.

Locality: Cape D'Aguilar, Tai Mong Tsai, Mau Ping, Yung Shue O, Ping Chau, Ching Chau. *L. T. Lo 308; Y. S. Lau 3010, 3104.*

Distribution: Guangdong, Guangxi, Yunnan; Sri Lanka, India, Nepal, Thailand, Cambodia, Vietnam.

Ecology: Forests. Flowering: Apr.; fruiting: May–Jun.

Uses: Medicinal (folklore).

**2. Tinospora sagittata** (Oliv.) Gagnep. 青牛膽 **(Fig. 50; Photo 158)**

Bull. Soc. Bot. France 55: 45. 1908; Forman, Kew Bull. 36(2): 383, fig. 1 (d-e). 1981; FGD 1: 34, fig. 32. 1987; FRPS 30(1): 23. 1996.

*Limacia sagittata* Oliv., Hook. Icon. Pl. 1749. 1888.

*Tinospora capillipes* Gagnep., Bull. Bot. France 55: 44. 1908.

*Tinospora imbricata* S. Y. Hu, J. Arnold Arbor. 35: 195, t. 1 (2). 1954.

Herbaceous vine, with moniliform roots. Stems slender, striate, usually puberulous. Leaves papery to thinly leathery; petioles 2.5–5 cm or longer, pubescent or glabrescent; leaf blade lanceolate, rarely ovate or elliptic, 7–15(–20) × 2.4–5 cm, base sagittate or hastate, apex acuminate, sometimes caudate, lobes rounded, obtuse or mucronate, usually puberulous on nerves, sometimes glabrescent adaxially or on both surfaces, palmately 5-nerved; reticulation of nerved raised abaxially. Cymes axillary, usually fascicled, or forming panicles, 2–10(–15) cm or sometimes longer; peduncles and pedicels filamentous; bracteoles 2, closely subtending sepals. Male flowers: sepals 6, or sometimes more, often unequal, the outermost minute, ovate or lanceolate, only 1–2 mm, inner ones conspicuous larger, broadly ovate to obovate, or broadly elliptic to elliptic, to 3.5 mm; petals 6, subrounded or broadly obovate, rarely subrhomboid, often clawed, 1.4–2 mm. Female flowers: sepals similar to that in males; petals cuneate, ca. 0.4 mm; staminodes 6, usually clavellate, ca. 0.4 mm; carpels 3, subglabrous. Drupes ± subglobose; kernel half-globular, 6–8 mm wide.

Locality: Sai Kung, Mount Parker. *Y. W. Lam 1451; HK sheet 126, 127, 33668.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, SE Xizang, Hunan, Hubei, Shanxi, Jiangxi, Fujian; N Vietnam.

Ecology: Forests, bamboo groves and grassy slopes. Flowering: Apr.–May; fruiting: Jul.–Aug.

Uses: Medicinal (folklore).

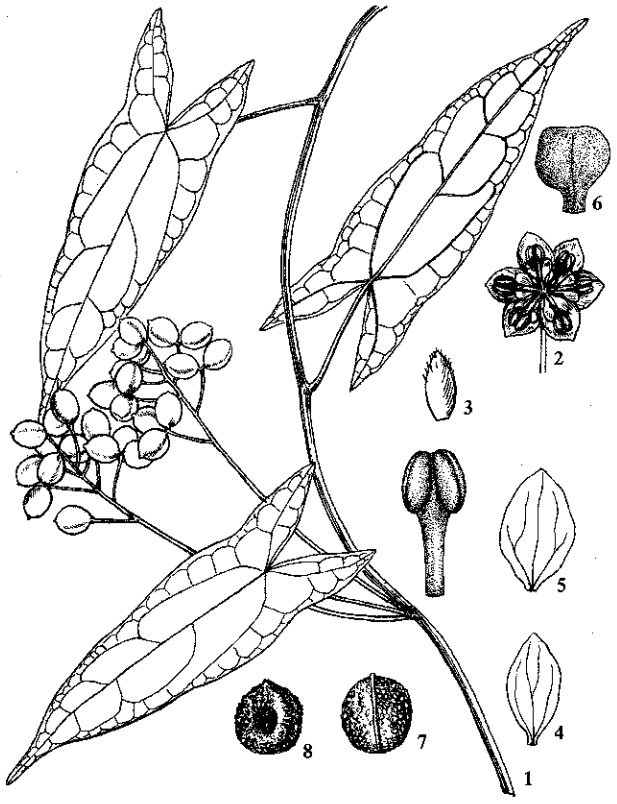



**Figure 50.** *Tinospora sagittata* (Oliv.) Gagnep.
*1.* fruiting branch; *2.* male flower; *3.* bracteole; *4.* outer sepal; *5.* inner sepal; *6.* petal; *7–8.* kernels. (drawn by Y. X. Liu)

## 7. Pericampylus Miers 細圓藤屬

Woody vines. Leaves palmately nerved. Cymes axillary, solitary or 2–3 fascicled. Male flowers: sepals 9, in 3 whorls, the outmost 3 minute, bracteal, the inner 6 larger and concave, imbricate; petals 6, cuneate or rhomboid-obovate, lateral margins involute and clasping opposite stamen; stamens 6, free or ± connate, anthers dehiscing longitudinally. Female flowers: sepals and petals as in males; staminodes 6, clavellate; carpels 3; style short; stigma 2-parted, or the lobes bifid again. Drupes compressed globose with style-scar near base; kernel bony, broadly obovate-globose, dorsally covered with conical or short spiny processes on both faces; seeds horseshoe-shaped.

About two or three species in SE Asia; one species in China, also in Hong Kong.

### 1. Pericampylus glaucus (Lam.) Merr.

細圓藤 **(Fig. 51; Photo 159)**

Interpr. Herb. Amboin. 219. 1917; FHN 1: 319, fig. 158. 1964; Forman, Kew Bull. 22: 366. 1968; FGD 1: 34, fig. 35. 1987; FRPS 30(1): 28. 1996.

*Menispermum glaucum* Lamarck, Dict. 4: 100. 1797.

*Pericampylus incanus* (Colebr.) Hook. f. & Thoms., Fl. Ind. 1: 194. 1855; FHK 13. 1861; FKH 31. 1912.

*Cocculus incanus* Colebr., Trans. Linn. Soc. London 13: 57. 1822.

Woody vine to 10 m or longer. Branchlets initially yellowish tomentose, glabrous in age. Leaves papery or thinly leathery, sometimes slightly peltate; petioles 3–7 cm, tomentose; leaf blade

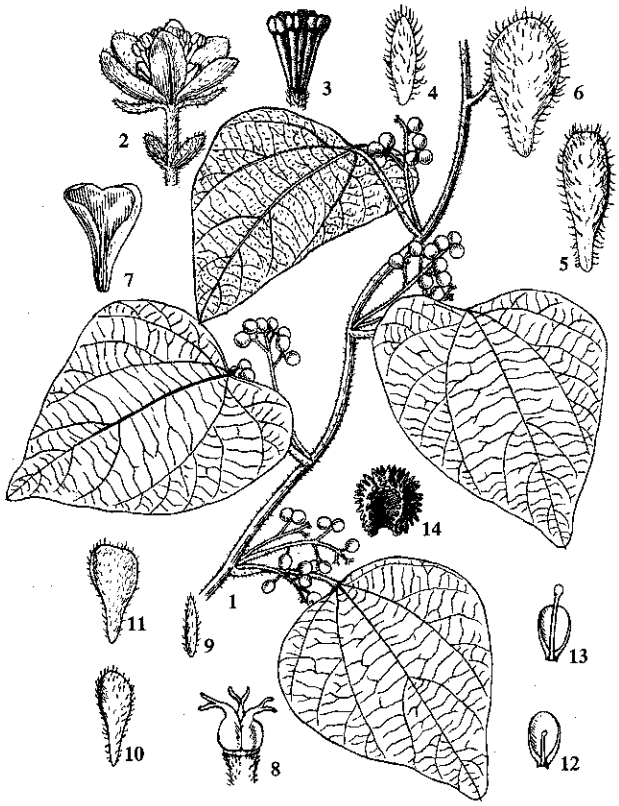



**Figure 51.** *Pericampylus glaucus* (Lam.) Merr.
*1.* fruiting branch; *2.* male flower; *3.* androecium; *4–6.* sepals of male flower; *7.* petal; *8.* gynecium; *9–11.* sepal of female flower; *12, 13.* petal of female flower and staminodes; *14.* kernel. (drawn by Y. X. Liu)

triangular ovate to triangular orbicular, 3.5–8(–10) cm long and wide, base subtruncate to cordate, rarely broadly cuneate, apex obtuse or rounded, rarely apiculate, margin obscurely undulate or subentire, tomentose on both surfaces, or sparsely pubescent to glabrescent abaxially, rarely glabrous on both surfaces, palmately (3–)5-nerved. Cymes axillary, dichotomous, 2–10 cm, tomentose. Male flowers: sepals 9, ± pubescent abaxially; petals 6, cuneate or sometimes spathulate, 0.5–0.7 mm, margin involute; stamens 6. Female flowers: sepals and petals as in males; staminodes 6; ovary glabrous; stigma 2-lobed. Drupes red or purple; kernel 5–6 mm in diam.

Locality: So Kon Po, Tai Hang, Mount Cameron, Tai Po. *W. J. Tutcher 9146; Y. S. Lau 219, 2973.*

Distribution: Widely distributed in the Yangtze River basin and southwards to Guangdong, Guangxi, Yunnan, eastwards to Taiwan; SE Asia.

Ecology: Forests, thickets and on forest edges. Flowering: Apr.–Jun.; fruiting: Sep.–Oct.

Uses: Material (stems for weaving utensils).

# 37. SABIACEAE 清風藤科

GUO Li-xiu 郭麗秀

Trees, shrubs or woody climbers. Leaves simple, alternate, or odd-pinnate compound; stipules absent. Inflorescences axillary or terminal, usually in cymes or panicles. Flowers bisexual, or polygamous, actinomorphic or zygomorphic. Sepals 5, rarely 4, free or united at base, imbricate, equal or unequal. Petal 5, rarely 4 or 6, imbricate, equal or the inner 2 much smaller than the outer 3. Stamens 5, rarely 4, opposite to petals, inserted at the base of or on the disc, all fertile or the outer 3 sterile, anthers 2-celled. Disc hypogynous, cup-shaped or annular. Ovary superior, sessile, usually 2, rarely 3-locular, with 2 or 1 half-anatropous ovules in each locule. Fruit 1-seeded, drupaceous.

Three genera and about 80 species, distributed in tropical Asia and America, some species widely distributed in temperate E Asia; two genera, about 45 species in China; two genera and six species in Hong Kong.

1a. Woody climbers; flowers solitary or in cymes; stamens 4–5, all fertile ..... 1. *Sabia*
1b. Trees or shurbs; flowers in panicles; stamens 5, 2 fertile ..... 2. *Meliosma*

## 1. Sabia Colebr. 清風藤屬

Woody climbers or scandent shrubs. Branchlets with persistent bud-scales at base. Leaves simple, alternate, mostly entire. Flowers usually hermaphroditic, axillary, solitary or in cymes or panicles. Sepals 5 or 4, imbricate, united at the base, persistent. Petals usually 5, rarely 6 or 4, opposite to the sepals. Stamens as many as and opposite to the petals, all fertile; filaments more or less flattened, inserted at the base of disc; anthers introrse or extrorse. Ovary 1- or 2-locular, with 2 superposed ovules in each locule; styles 2, coherent. Fruit a drupe, containing a single reniform seed.

About 30 species in S and SE of Asia; 16 species, four subspecies and two varities in China; two species in Hong Kong.

1a. Branchlets, petioles and infloresences glabrous; flowers in panicles ..... 1. *S. limoniacea*
1b. Branchlets, petioles and infloresences pubescent or tomentose; flowers in cymes ..... 2. *S. swinhoei*

**1. Sabia limoniacea** Wall. ex Hook. f. & Thoms. 檸檬清風藤 **(Photo 160)**

Fl. Ind. 1: 210. 1855; Benth., FHK 70. 1861; FKH 68. 1912; FRPS 47(1): 93. 1985.

*Sabia limoniacea* Wall. ex Hook. f. & Thoms. var. *ardisioides* L. Chen, Sargentia 3: 58. 1943.

Evergreen woody climber, up to 10 m, glabrous. Leaves leathery; petioles 1.5–2.5 cm; leaf blade elliptic, oblong-elliptic or ovate-elliptic to lanceolate, 7–15 × 4–6 cm, base broadly cuneate or rounded, apex short-acuminate or acute; lateral veins 6–7 on each side of midvein. Cymes 2–4-flowered, solitary, subtended by a leafy bract, or arranged in a long and narrow panicle up to 15 cm. Pedicels 1–3 mm. Sepals 5, ovate or oblong-ovate, 0.5–1 mm, apex acute or obtuse, glabrous, ciliolate. Petals 5, pale green, obovate or elliptic ovate, 1.5–2 mm, apex rounded. Stamens 5; filaments flattened; anthers introrse. Ovary glabrous. Drupes globose to obovoid, strongly compressed.

Locality: Common in Hong Kong. *L. T. Lo 1; Y. W. Lam 1379.*

Distribution: Hainan, Guangdong, Guangxi, SW Yunnan, Fujian; Indochina, Myanmar, N India, Thailand, Malay Peninsula.

Ecology: Forests, climbing on trees or rocks. Flowering: Aug.–Nov.; fruiting: Jan.–May of the following year.

**2. Sabia swinhoei** Hemsl. ex Forb. & Hemsl. 尖葉清風藤 **(Fig. 52; Photo 161)**

J. Linn. Soc. Bot. 23: 144. 1886; FRPS 47(1): 89. 1985; FTW ed. 2, 3: 614, pl. 315. 1993.

*Sabia gracilis* Hemsl., Hook. Icon. Pl. 29: t. 2831. 1907.

*Sabia swinhoei* Hemsl. var. *hainanensis* L. Chen, Sargentia 3: 44. 1943.

Evergreen woody climber or scandent shrub, up to 6 m. Branchlets pubescent or tomentose. Leaves papery to thin leathery; petioles 3–5 mm, pubescent; leaf blade elliptic, ovate-elliptic, ovate or broadly ovate, 5–12 × 2–5 cm, base cuneate to rounded, apex acuminate or abruptly and shortly acuminate to acute, adaxially glabrous but pubescent on midvein when young, abaxially all over laxly or densely pubescent, glabrescent in age; lateral veins 4–6 on each side of midvein, straight or curved, anastomosing at a distance of 5–8 mm from the margin. Cymes 2–7-flowered, axillary, sparsely pubescent or tomentose, 1.5–2.5 cm. Peduncles 0.7–1.5 cm. Pedicels 2–4 mm.

Sepals 5, ovate, 1–1.5 mm, ciliate or not, with inconspicuous red dots abaxially. Petals 5, ovate-lanceolate or lanceolate, 3.5–6 × 1–1.5 mm, light green. Stamens 5, 1–1.6 mm; filaments slightly flattened; anthers ellipsoid, often inflexed, introrse. Ovary glabrous; style 0.3–0.75 mm. Dupes more or less obovoid and compressed, 7–9 × 6–8 mm, blue or dark blue in fresh.

Locality: Mount Parker, Kowloon Peak, Tai Mo Shan, Sunset Peak. *F. W. Xing 9865; Y. W. Lam 1437; K. Y. Tam s.n. (HK sheet 39787).*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Hubei, Hunan, Jiangxi, Jiangsu, Zhejiang, Fujian, Taiwan; N Vietnam.

Ecology: Margins of forests and thickets. Flowering: Mar.–Apr.; fruiting: Jul.–Sep.

## 2. Meliosma Blume 泡花樹屬

Trees or shrubs. Buds naked, brownish tomentose. Leaves simple or pinnate, alternate; petioles usually thickened at the base. Flowers small, hermaphroditic, in terminal or axillary panicles. Sepals 5, sometimes 4, imbricate, usually with bracteoles underneath. Petals 5, imbricate, unequal, 3 outer ones larger, usually suborbicular or reniform, 2 inner ones much smaller, bifid or entire. Stamens 5, 2 fertile ones opposite to the 2 inner petals, filaments short and flattened, incurved, expanded at the top into a cup, bearing two globose 2-celled anthers; the other 3 stamens degenerated, opposite to the outer petals. Disc cup-shaped. Ovary sessile, 2–(rarely 3)-locular, with 2 ovules in each locule. Fruit a drupe, with fleshy mesocarp; endocarp stony or crustaceous. Seed more or less globose, usually somewhat concave ventrally, without endosperm.

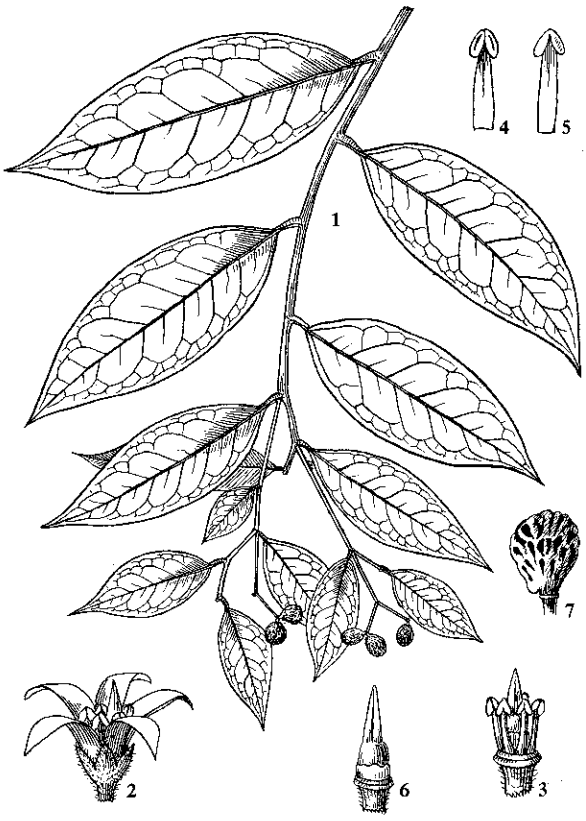



**Figure 52.** *Sabia swinhoei* Hemsl. ex Forb. & Hemsl.
*1.* fruiting branch; *2.* flower; *3.* flower with perianth removed; *4.* ventral view of stamen; *5.* dorsal view of stamen; *6.* disc and pistil; *7.* kernel. (drawn by H. P. Yu)

About 50 species mainly in SE Asia with a few in S America; 29 species and seven varieties in China; four species in Hong Kong.

1a. Leaves abaxially glabrous, densely covered with tiny scales.....1. *M. squamulata*
1b. Leaves abaxially more or less hairy, without scales.
2a. Leaves with tufts of hairs in axils of lateral veins abaxially; ovary hairy.....2. *M. thorelii*
2b. Leaves without tufts of hairs in axils of lateral veins abaxially; ovary glabrous.
3a. Leaves rusty pubescent abaxially; drupes 5–8mm in diam.....3. *M. rigida*
3b. Leaves sparsely pubescent abaxially; drupes 3–5 mm in diam.....4. *M. fordii*

**1. Meliosma squamulata** Hance 樟葉泡花樹 **(Photo 162)**

J. Bot. 1: 364. 1876; FKH 68. 1912; FRPS 47(1): 111. 1985; FGD 1: 265, fig. 294. 1987; FTW ed. 2, 3: 612, pl. 314. 1993.

Evergreen small tree, to 15 m tall. Young shoots appressed pubescent, glabrescent. Leaves simple, thin leathery; petioles slender, 2.5–6.5(–10) cm; leaf blades elliptic or ovate, 5–12 × 1.5–5 cm, base cuneate, more or less decurrent, apex caudate-acuminate, tip blunt, margin entire, adaxially glabrous and shining, abaxially glaucous, densely covered with yellowish brown tiny scales; lateral veins 3–5 on each side of midvein. Panicles terminal or axillary, 7–20 cm, densely tawny pubescent. Flowers white, 3 mm in diam. Sepals 5, ovate, ciliolate. Petals glabrous, outer 3 suborbicular, 2.5 mm in diam. inner 2 ca. 1 mm, bifid to middle, lobes acute divaricate. Ovary ovoid, glabrous; style ca. 1 mm. Drupes globose or obovoid, 4–6 mm in diam.

Locality: Victoria Peak, Tai Mo Shan, Ng Tung Chai, Ma On Shan, Sunset Peak. *Y. S. Lau 299; HK sheet 1216.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, S Hunan, S Jiangxi, S Fujian, Taiwan; Japan.

Ecology: Forests. Flowering: Summer; fruiting: Sep.–Oct.

Uses: Timber.

**2. Meliosma thorelii** Lecomte 山檨葉泡花樹 **(Photo 163)**

Bull. Soc. Bot. France 54: 677. 1907; FRPS 47(1): 109. 1985; FGD 1: 265, fig. 293. 1987.

*Meliosma buchananifolia* Merr., Philip. J. Sci. 23: 250. 1923.

*Meliosma affinis* Merr., J. Arnold Arbor. 21: 375. 1940.

*Meliosma henryi* Diels subsp. *thorelii* (Lecomte) Beusekom, Blumea 19: 449. 1971.

*Meliosma simplicifolia* auct. non Walp.: Merr., Lingnan Sci. J. 5: 119. 1927.

Tree, 6–14 m tall. Leaves simple, subleathery; petioles 1.5–2 cm; leaf blades oblanceolate-elliptic or oblanceolate, 15–25 × 4–8 cm, base cuneate, decurrent to the petioles, apex acuminate, margin entire or sharply serrulate, glabrous or sparsely pubescent abaxially and barbate in axils of nerves; lateral veins 15–22 on each side of midvein, reticulation of veins raised on both surfaces. Panicles terminal or axillary, erect, 15–18 cm, branches flatted, brownish pubescent. Flowers fragrant, 2–2.5 mm in diam., shortly pedicellate. Sepals 5, ovate, 0.6–0.8 mm, apex obtuse, ciliolate. Petals white, outer 3 suborbicular, ca. 2 mm in diam., inner 2 narrow lanceolate, entire, shorter than the outer ones. Ovary pubescent; style ca. 1 mm. Drupes globose, slightly oblique, 6–9 mm in diam.

Locality: Tai Mo Shan. *F. W. Xing 7221, 8588.*

Distribution: SE Fujian, Hainan, Guangdong, Guangxi, S Guizhou, SE to SW Yunnan; Vietnam, Laos.

Ecology: Forests. Flowering: Summer; fruiting: Oct.–Nov.

**3. Meliosma rigida** Sieb. & Zucc. 筆羅子 **(Photo 164)**

Abh. Bayer. Akad. Wiss., Math.-Naturwiss. Kl. 4(2): 153. 1845; FKH 68. 1912; FRPS 47(1): 117. 1985; FGD 1: 267, fig. 296. 1987; FTW ed. 2, 3: 612. 1993.

*Meliosma patens* Hemsl., J. Linn. Soc. Bot. 23: 145. 1886; FKH 68. 1912.

*Meliosma glomerulata* Rehd. & Wils., Sargent Pl. Wils. 2: 203. 1914.

Tree, to 7 m tall. Young branches, bud scales and inflorescences rusty tomentose. Leaves simple, leathery; petioles 1.5–4 cm; leaf blade oblanceolate or narrow obovate, 8–25 × 2.5–4.5 cm, apex acuminate or caudate-acuminate, tapering from middle into a cuneate base, margin entire or with a few teeth above middle, adaxially glabrous except the puberulous midvein and lateral veins, abaxially rusty pubescent; lateral veins 9–18 on each side of midvein. Panicles terminal, erect, thrice branched. Flowers sessile, 3–4 mm in diam. Sepals 4(–5), ovate or suborbicular, unequal, ciliolate. Petals white, outer 3 suborbicular, 2–2.5 mm in diam., inner 2 bifid halfway at an acute angle, lobes acute, apex ciliolate. Ovary glabrous; style 2 times the length of the ovary. Drupes globose, 5–8 mm in diam.

Locality: Hong Kong Island, Clear Water Bay, Tai Po Kau, Tai To Yan, Tai Mo Shan, Lantau Island. *Y. S. Lau 1262, 2978.*

Distribution: Hainan, Guangdong, Guangxi, S Yunnan, Guizhou, SW Hubei, Hunan, Jiangxi, Fujian, Taiwan; Japan.

Ecology: Forests. Flowering: Summer; fruiting: Sep.–Oct.

**4. Meliosma fordii** Hemsl. 香皮樹 **(Fig. 53; Photo 165)**

J. Linn. Soc. Bot. 23: 14. 1886; FKH 68. 1912; FRPS 47(1): 118. 1985; FGD 1: 268, fig. 297. 1987.

*Meliosma hainanensis* How, Acta Phytotax. Sin. 3: 433. 1955.

Tree, to 10 m tall. Branchlets, petioles and inflorescences brownish pubescent. Leaves simple, subleathery; petioles 1.5–3.5 cm; leaf blade oblanceolate or lanceolate, 9–18(–25) × 2.5–5(–8) cm, base narrowly cuneate, decurrent, apex acuminate, margin entire or sometimes with a few teeth near apex, adaxially more or less shining, appressed pubescent on midvein and lateral veins, abaxially sparsely pubescent; lateral veins 11–20. Panicles terminal or subterminal, 4–5-branched. Flowers 1–1.5 mm in diam. Pedicels 1–1.5 mm. Sepals 4(–5), broadly ovate, 0.5 mm, sparsely pubescent abaxially, ciliolate. Petals white, outer 3 suborbicular, ca. 1.5 mm in diam., inner 2 smaller, bifid halfway at an obtuse angle; lobes linear. Ovary glabrous, style about the length of ovary. Drupes subglobose or compressed globose, 3–5 mm in diam.

Locality: Tai Po Kau. *Y. S. Lau 339; HK sheet 32241.*

Distribution: Hainan, Guangdong, Guangxi, S Yunnan, Guizhou, S Hunan, S Jiangxi, Fujian; Vietnam, Laos, Cambodia, Thailand.

Ecology: Forests. Flowering: May–Jul.; fruiting: Aug.–Oct.

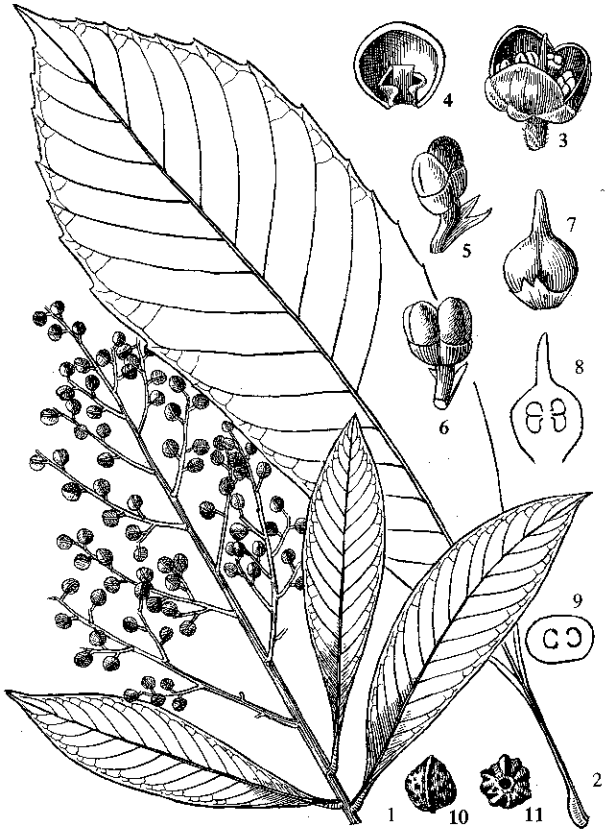



**Figure 53.** *Meliosma fordii* Hemsl.

*1.* fruiting branch; *2.* leaf; *3.* flower; *4.* outer petal and staminode; *5, 6.* inner petal and stamen; *7.* discs and pistil; *8.* longitudinal section of pistil; *9.* cross section of pistil; *10.* dorsal surface of kernel; *11.* ventral surface of kernel. (drawn by H. P. Yu)

# 38. PAPAVERACEAE 罌粟科

XIA Nian-he 夏念和

Annual or perennial herbs, rarely subshrubs or small trees, usually with milky or yellow juice. Leaves often alternate, sometimes subopposite or nearly verticillate, entire, lobed or sinuate, estipulate. Flowers bisexual, actinomorphic, usually large, solitary and terminal, or arranged in thyrses or umbels, rarely panicles. Sepals 2–4, distinct or more or less connate, enclosing flower buds, deciduous at anthesis. Petals 4–6 or 8–12, in 2 whorls, imbricate, crumpled in bud, rarely apetalous. Stamens usually many, in several whorls, rarely few, filaments distinct, anthers 2-celled, dehiscing by longitudinal slits; nectaries absent. Pistil composed of 2–many carpels; ovary

superior, sessile, or stipitate, 1-locular, with parietal placentation, sometimes 2–many-locular by intrusion of septa; ovules many, rarely 1, styles present or absent, stigmas isomerous with carples, distinct or connate. Capsules dehiscing into valves or by apical pores, rarely indehiscent; seeds usually small, endosperm abundant, fleshy, embryo small.

About 23 genera and 200 species, mainly distributed in N temperate regions; twelve genera and 70 species in China. One genera and one species cultivated in Hong Kong.

## 1. Papaver L. 罌粟屬

Annual, biennial or perennial herbs, rarely subshrubs; plant usually hispid, with milky juice, usually with pungent odour. Stem single or branched, sometimes very short. Leaves varied in shape, unlobed or pinnately to bipinnately lobed, margin sinuate, basal ones petiolate, cauline ones sessile. Flowers solitary on long pedicels, rarely arranged in racemes; flower buds pendulous, ovoid or subglobose; sepals 2, rarely 3, deciduous before flowering; petals 4, rarely 5–6, in 2 whorls, red, white, yellow or pale purple; stamens many, filaments filiform, coloured. Pistil 2–18-carpelled, ovary 1-locular, style absent, stigmas flat or plateform, with 4–18-radiate lobes; parietal placentation 4–18, ovules many. Capsules cylindrical or subglobose, dehiscing by apical pores; seeds small, reniform, with striate or netted ornamentation.

About 50 species, mainly distributed in Europe and temperate Asia, few in America, Australia and Africa; six species in China; one species cultivated in Hong Kong.

**1. Papaver rhoeas** L. 虞美人 **(Fig. 54)**

Sp. Pl. 1: 507. 1753; FFJ 2: 156, fig. 131. 1985; FGX 1: 406, pl. 168: 1–2. 1991; FRPS 32: 53. 1999; FGD 4: 61, fig. 38. 2000.

Annual herb; stems branched, 30–80 cm, sparsely hispid. Leaves alternate, pinnately or bipinnately lobed, 3–15 cm, lobes lanceolate, margin coarsely serrate, leaves on the upper part of stems coarse-serrate-pinnately lobed, sparsely hispid on both surfaces. Flowers solitary, pedicels 10–15 cm; sepals 2, broadly elliptic, 1–2 cm, green, hispid; petals 4, red, purple or white, usually with black patches at base, suborbicular or obovate, 2–3.5 cm; stamens many, filaments red; ovary obovoid, ca. 1 cm, glabrous, stigmas plateform, with 5–18-radiate lobes, persistent, 1.2–2 cm.

Locality: Cultivated. *Y. W. Lam 32*.

Distribution: Widely cultivated in China, native to Europe.

Ecology: Flowering: Jan.–May.

Uses: Ornamental.

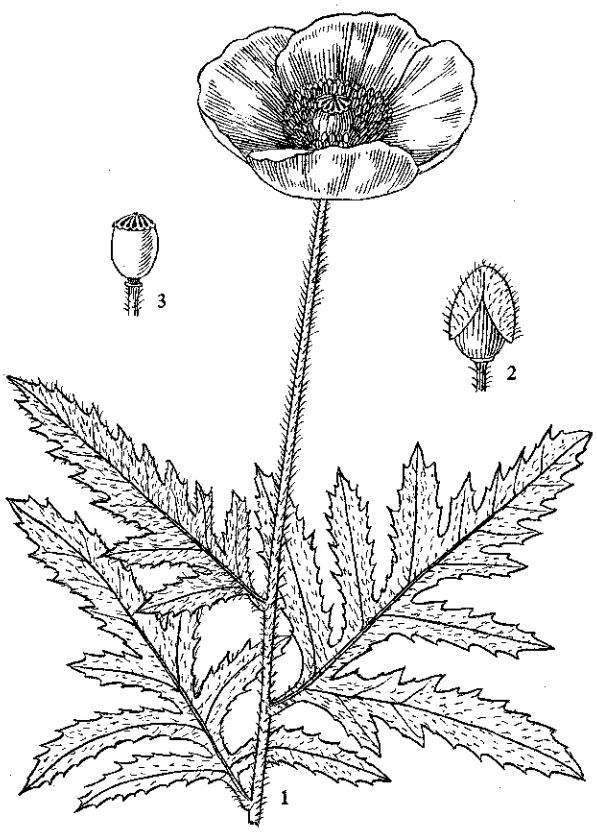



**Figure 54.** *Papaver rhoeas* L.
*1*. flowering branch; *2*. flower bud; *3*. capsule. (drawn by H. P. Yu)

# 39. FUMARIACEAE 荷包牡丹科

WU De-lin 吳德鄰

Herbs, sometimes climbing, usually with watery sap. Stipules absent. Leaves basal, alternate or rarely subopposite, often dissected. Inflorescence racemose, rarely cymose. Flowers bisexual, usually irregular. Sepals 2, small, caducous. Petals 4, in 2 whorls, imbricate, 1 or both outer with basal spurs or pouch and inner more or less connate. Stamens 4, free or 6 in 2 bundles. Ovary superior, 1-locular, with parietal placentas; ovules 1–many, anatropous to campylotropous; style slender; stigmas 2 or 2–several-lobed. Capsules often with a replum, longitudinally dehiscent or nut-like. Seeds usually arillate, with small embryo and abundant oily endosperm.

About 17 genera, 530 species mainly distributed in N temperate, few in tropical Africa; seven genera and 200 species in China; one genus and one species in Hong Kong.

## 1. Corydalis DC. 紫堇屬

Annual or perennial herbs. Stems erect, procumbent or climbing, sometimes tuberous. Leaves basal or cauline, ternately bipinnate or palmately divided. Racemes terminal or leaf-opposed. Bracts present. Sepals 2 or absent, scale-like, caducous. Petals 4, 2 whorls, one of the out whorl shortly spurred or shallowly pouched at base, another flat, inner 2 narrower, adherent at tip, dorsal keel-like or winged. Stamens 6, connate into 2 bundles. Ovary superior, 1-locular, with 2 parietal placentas; ovules many. Caspules linear, ellipsoid or ovoid, with persistent style and stigmas at apex, dehiscing into 2 valves, rarely indehiscent; arils sometimes cristate.

About 320 species distributed in N temperate and S Africa, mainly in Asia; 200 species in China; one species in Hong Kong.

**1. Corydalis balansae** Prain 台灣黃堇 **(Fig. 55)**

J. Asiat. Soc. Bengal 65: 25. 1879; FRPS 32: 440. 1999; FGD 4: 64. 2000.

*Corydalis tashiroi* Makino, Bot. Mag. (Tokyo) 33: 65. 1909.

Annual or biennial herb, ca. 50 cm tall, without tubers. Stems glabrous, many-branched, angulate. Petiole 7–16 cm; cauline leaves bipinnate, outline broadly ovate, 10–20 × 10–15 cm; leaflets pinnately parted to divided, segments obovate or ovate, base cuneate, apex obtuse, margin incised. Racemes leaf-opposed, ca. 12 cm. Bracts oblong-lanceolate or ovate. Flowers yellow, 1.2–2 cm. Petals often shallowly cristate, outer one shortly spurred. Stigma 2-fid. Capsules linear, 3–4.5 × 0.3 cm. Seeds black, many, densely small pitted, carunculate.

Locality: Lantau Island (Tung Chung). *Y. W. Lam 33.*

Distribution: S, E & SW China; Japan, Vietnam.

Ecology: Forests. Flowering and fruiting: Mar.–Jul.

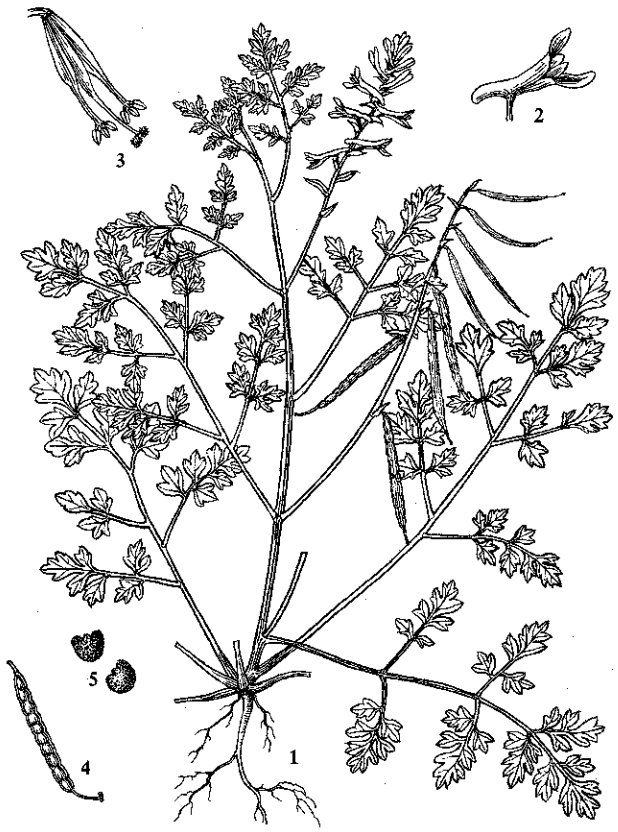



Figure 55. *Corydalis balansae* Prain

*1*. plant; *2*. flower; *3*. stamens and pistil; *4*. capsule; *5*. seeds. (drawn by H. P. Yu)

## 44. PLATANACEAE 懸鈴木科

HU Qi-ming 胡啟明

Deciduous trees. Leaves alternate, palmately lobed; petioles with dilated base enclosing the bud. Flowers unisexual (plant monoecious), arranged in globose capitula; perianth-segments 4- or 6-merous, arranged in two whorls; stamens 4–6, opposite the outer perianth-segments, filaments very short; ovary superior; carpels 3–6, free, each with 1(–2) pendulous ovules. Fruit indehiscent, surrounded at the base by long hairs.

One genus with six to seven species in S and E Europe to India and from N America to Mexico; three species introduced to China; one species cultivated in Hong Kong.

### 1. Platanus L. 懸鈴木屬

Morphological characters and geographical distribution are the same as those of the family.

One species cultivated in Hong Kong.

**1. Platanus × acerifolia** (Ait.) Willd.

二球懸鈴木 **(Fig. 56; Photo 166)**

Sp. Pl. 4: 474. 1797; FRPS 35(2): 120, pl. 26. 1979; FGD 4: 248, fig. 148. 2000.

*Platanus hybrida* Brot., Fl. Lusit. 2: 487. 1804.

*Platanus orientalis* L. var. *acerifolia* Ait., Hort. Kew 3: 364. 1789.

Deciduous tree, to 30 m tall. Bark greyish green, exfoliating in large flakes. Young shoots brownish tomentose, glabrous and reddish brown in age. Leaves papery; petioles 3–10 cm, densely pubescent; leaf blade broadly ovate, 10–24 × 12–25 cm, base truncate to cordate, upper part palmately (3–)5(–7)-lobed; lobes triangular-ovate or broadly triangular, the middle one about as long as broad, entire or sparsely toothed, tawny tomentose when young, glabrous or nearly so at maturity. Infructescence a globular head, usually 2, rarely1 or 3 racemosely arranged, 2.5–3 cm in diam., bristly. Nutlet ovoid or rounded at apex and crowned by the persistent remnant of the style.

Locality: Cultivated. *Y. S. Lau 1552, 2773.*

Distribution: Probably a hybrid of *P. occidentalis* L. and *P. orientalis* L. Widely cultivated in temperate regions.

Ecology: Flowering: May; fruiting: Sep.–Oct.

Uses: Ornamental.

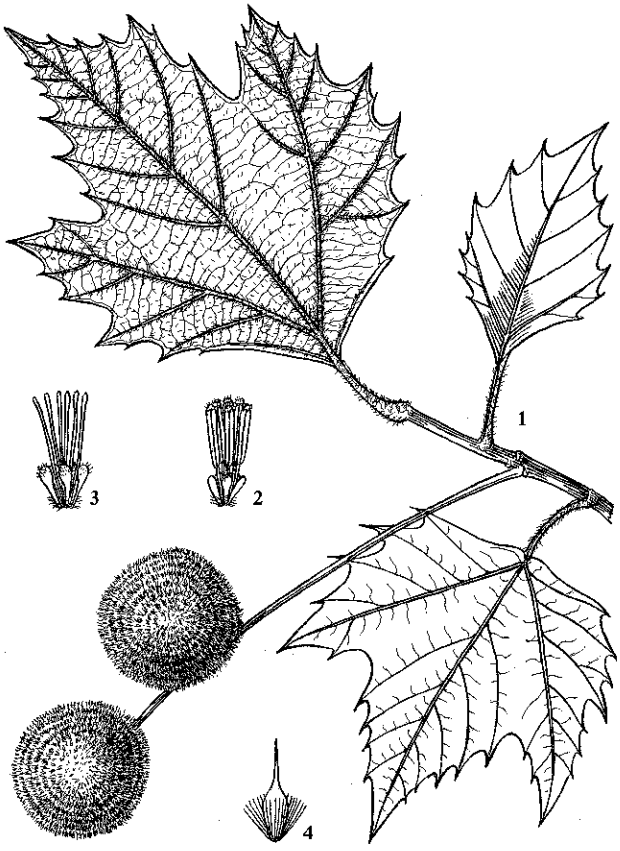



Figure 56. *Platanus* × *acerifolia* (Ait.) Willd.

*1*. flowering branch; *2*. male flower; *3*. female flower; *4*. nutlet. (drawn by H. P. Yu)

# 45. HAMAMELIDACEAE 金縷梅科

XIA Nian-he 夏念和

Evergreen or deciduous trees or shrubs, hermaphroditic, andromonoecious, or monoecious. Leaves usually alternate, petioled, stipules present; leaf blade simple or palmately lobed, pinnately veined or palmately 3–5-veined. Flowers usually arranged in axillary or terminal spikes or heads, rarely in racemes or thyrses or panicles, bisexual or unisexual, actinomorphic or rarely zygomorphic; sepals 4 or 5(–10), sometimes absent, imbricate, usually persistent; petals absent or 4 or 5; stamens 4, 5, or many, free; anthers basifixed, thecae longitudinally or valvately dehiscent. Ovary half-inferior, rarely superior, 2-locular; ovules mostly 1 per carpel, less often many; placentation axile. Styles and stigmas 2. Fruit a capsule, septicidally or septifragally dehiscent; endocarp woody or leathery, usually loose from leathery exocarp. Seeds 1 to many per carpel, sometimes winged. Endosperm thin; embryo straight.

About 30 genera and 140 species, mainly distributed in E, W, and SE Asia, rarely in E and S Africa (including Madagascar), NE Australia, America; 18 genera and 74 species in China; nine genera and 12 species in Hong Kong.

1a. Leaves palmately veined.
  2a. Leaves deciduous; stipules linear ..... 1. *Liquidambar*
  2b. Leaves evergreen; stipules elliptic ..... 2. *Exbucklandia*
1b. Leaves pinnately veined.
  3a. Inflorescences capitate.
    4a. Stipules present; petals absent; capsules immersed in rhachis ..... 3. *Altingia*
    4b. Stipules absent; petals present; capsules free ..... 4. *Rhodoleia*
  3b. Inflorescences racemose or spicate.
    5a. Petals absent.
      6a. Floral cup absent ..... 5. *Distylium*
      6b. Floral cup present ..... 6. *Distyliopsis*
    5b. Petals present.
      7a. Petals small, scale-like ..... 7. *Eustigma*
      7b. Petals larger, not scale-like.
        8a. Petals strap-like, white or pink ..... 8. *Loropetalum*
        8b. Petals orbicular or ovate, rarely oblanceolate, yellow ..... 9. *Corylopsis*

## 1. Liquidambar L. 楓香屬

Deciduous trees. Leaves alternate, petiolate; stipules linear, usually adnate to base of petioles, caducous; leaf blade palmately 3–7-lobed, margin serrate, palmately veined. Male inflorescence capitate or spicate, several to many together racemosely arranged. Female inflorescence capitate, with 1 bract. Flowers unisexual (plant monoecious). Sepals and petals absent. Male flowers: stamens many; filaments as long as anthers; anthers ovoid, 2-celled, longitudinally dehiscent. Female flowers: ovary semi-inferior, 2-locular; ovules many, inserted on septum, only lowest ones fertile; stigmas decurrent. Infructescences globose. Capsules woody, dehiscing into 2 valves; pericarp thin; styles persistent. Seeds many, narrowly winged.

Five species distributed in E and SW Asia, C and N America; two species in China; one species in Hong Kong.

**1. Liquidambar formosana** Hance 楓香 **(Fig. 57; Photo 167)**
Ann. Sci. Nat., Bot., ser. 5, 5: 215. 1886; FKH 101. 1912; FRPS 35(2): 55. 1979; FGD 1: 156. 1987.

*Liquidambar formosana* var. *monticola* Rehd. & E. H. Wils., Pl. Wils. 1: 422. 1913; FRPS 35(2): 55. 1979; FGD 1: 153. 1987.

Tree to 30 m tall; bark grey-brown; branchlets pubescent or glabrous, slightly lenticellate. Buds ovoid, glossy. Stipules linear, red, free or adnate to petiole, 1–1.4 cm, caducous; petioles to 12 cm, pubescent; leaf blade broadly ovate, palmately 3-lobed and 3-veined, central lobe longer, base rounded, apex caudate-acuminate, margin glandular serrate, usually grey-white, pubescent or glabrous abaxially, veins prominent on both surfaces. Male inflorescence a short spike, several arranged in a raceme. Female

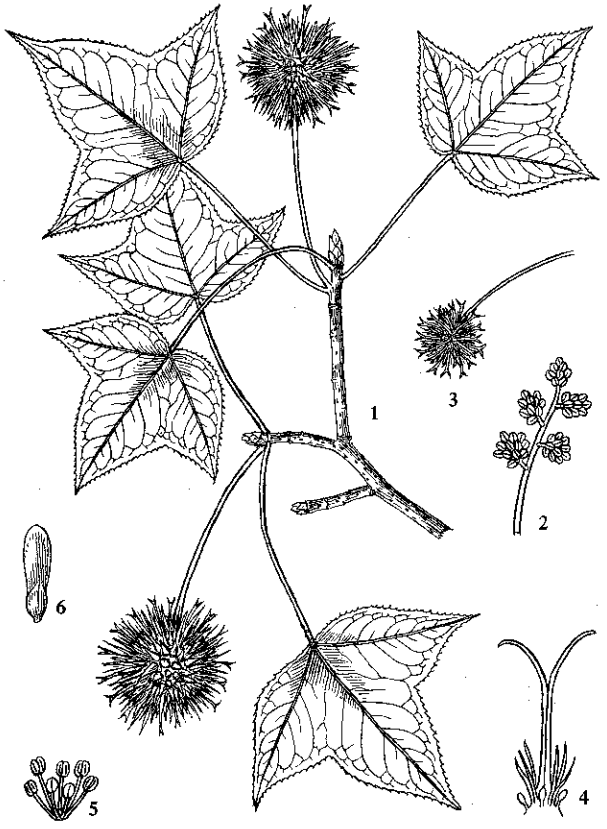



**Figure 57.** *Liquidambar formosana* Hance
*1*. flowering branch; *2*. male inflorescence; *3*. female inflorescence; *4*. female flower; *5*. male flower; *6*. seed. (drawn by H. P. Yu)

inflorescence capitate, 20–40-flowered; peduncle 3–6 cm. Male flowers: stamens many. Female flowers: staminode-teeth 4–7, needlelike, 4–8 mm; ovary hairy, styles 0.6–1 mm. Infructescence globose, 3–4 cm wide. Capsules with persistent staminodes and styles.

Locality: Common in Hong Kong. Also widely planted. *H. C. Tang 1473; Y. S. Lau 2487.*

Distribution: S, SW, E & C China; S Korea, Laos, Vietnam.

Ecology: Forests. Flowering: Mar.–Jun.; fruiting: Jul.–Sep.

Uses: Materials (timber, resin), ornamental, medicinal.

## 2. **Exbucklandia** R. W. Brown 馬蹄荷屬

Evergreen trees; branchlets with swollen nodes and annular stipular scars at each node. Leaves alternate, long-petiolate; stipules large, bract-like, coherent, caducous; leaf blade palmately 3–5-lobed, leathery, palmately veined. Inflorescence capitate, axillary, pedunculate, 7–16-flowered. Flowers bisexual. Floral cup adnate to ovary base. Petals 2–5 or absent, white, linear. Stamens 10–15; filaments subulate or filiform; anthers 2-celled, longitudinally dehiscent. Ovary semi-inferior; ovules 5 or 6 per locule; styles 2. Infructescences globose or subglobose. Capsules dehiscing loculicidally by 4 valves; exocarp usually smooth, sometimes tuberculate. Seeds 5–7 in each locule, upper 4 or 5 sterile and wingless, lower 1 or 2 fertile and narrowly winged.

Four species distributed in Bhutan, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam; three species in China; one species in Hong Kong.

1. **Exbucklandia tonkinensis** (Lec.) H. T. Chang
大果馬蹄荷 **(Fig. 58; Photo 168)**

Acta Sci. Nat. Univ. Sunyatseni; 1959(2): 3. 1959; FRPS 35(2): 43, pl. 8. 1979; FGD 1: 152, fig. 167. 1987; FOC 9: 24. 2003.

*Bucklandia tonkinensis* Lec., Bull. Mus. Natl. Hist. Nat. 30: 392. 1924.

*Bucklandia tonkinensis* (Lec.) Steenis, Blumea 7(3): 595. 1954, *nom. illeg.*

*Symingtonia tonkinensis* (Lec.) Steenis, Fl. Malesiana, Ser. 1, Spermatoph. 5: 375. 1957; FHN 2: 332. 1965.

Tree to 30 m tall; young branches brown-pubescent. Stipules elliptic, 2–4 × 0.8–1.3 cm, puberulent; petioles 3–5 cm; leaf blade broadly ovate, 8–13 × 5–9 cm, base broadly cuneate, apex acuminate, margin entire or sometimes 3-lobed, dark green and shining adaxially, glabrous and tuberculate abaxially; palmately 3–5-veined. Inflorescences capitate, solitary; heads 7–9-flowered; peduncles 1–1.5 cm, brown-tomentose. Petals absent. Stamens less than 1 cm. Ovary brown-pubescent; styles 4–5 mm. Capsules ovoid, 1–1.5 × 0.8–1 cm, tuberculate. Seeds 6, narrowly winged at lower part.

Locality: Sunset Peak. *Y. S. Lau 3242; N. H. Li 21.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian; Laos, Vietnam.

Ecology: Forests. Flowering: May–Jul.; fruiting: Aug.–Sep.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

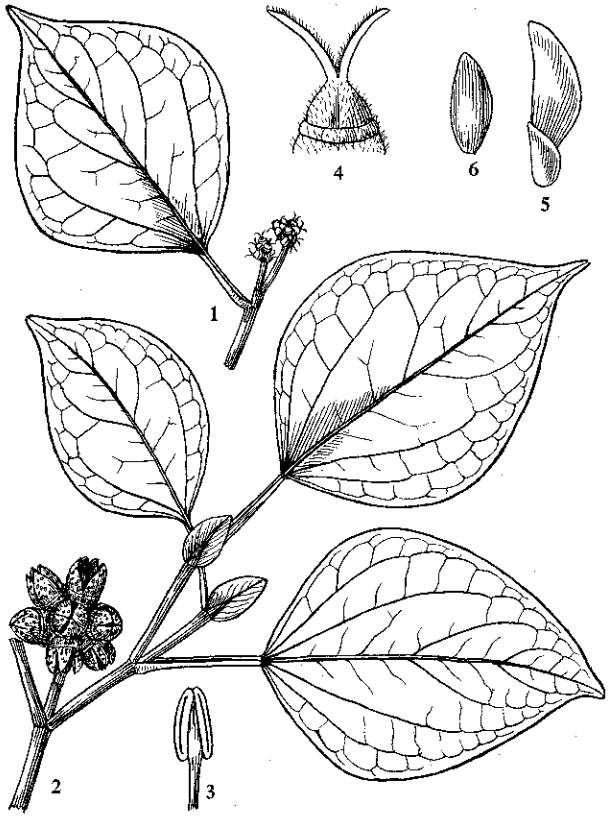



**Figure 58.** *Exbucklandia tonkinensis* (Lec.) H. T. Chang
*1.* flowering branch; *2.* fruiting branch; *3.* stamen; *4.* pistil; *5.* winged seed; *6.* seed. (drawn by H. P. Yu)

## 3. **Altingia** Noronha 蕈樹屬

Evergreen trees. Leaves petiolate; stipules usually present, minute, linear, caducous or connate with petiole, leaving small scars; leaf blade leathery, margin usually crenate-serrate, occasionally entire, venation pinnate. Flowers unisexual (plant monoecious), petals absent. Male inflorescence a globose to shortly cylindrical many-flowered head, pedunculate and grouped in terminal or subterminal racemes or panicles; bracts 1–4. Female inflorescences capitate, 5–30-flowered, bracts 3–4. Male flowers: stamens many; filaments very short; anthers 2-celled, longitudinally dehiscent. Female flowers: ovary inferior, 2-locular; ovules many per locule, axile; styles subulate, divergent, often strongly recurved; stigmas papillose, caducous. Infructescences globose. Capsules woody, without persistent calyx teeth and styles, immersed in rhachis. Seeds many, narrowly winged.

About 11 species, distributed in SE Asia; eight species in China; two species in Hong Kong.

1a. Infructescence with 12–30 capsules, subglobose, base truncate; leaves obovate-oblong ..... 1. *A. chinensis*
1b. Infructescence with 5–7 capsules, obconical; leaves ovate-lanceolate ..... 2. *A. gracilipes*

**1. Altingia chinensis** (Champ. ex Benth.) Oliv. ex Hance
蕈樹(阿丁楓、山荔枝) **(Fig. 59; Photo 169)**

J. Linn. Soc., Bot. 13: 103. 1873; FKH 101. 1912; FRPS 35(2): 64, pl. 14. 1979; FGD 1: 158, fig. 174. 1987; FOC 9: 21. 2003.

*Liquidambar chinensis* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 164. 1852; FHK 132. 1861.

Tree up to 20 m tall, glabrous except the inflorescences. Stipules caducous; petiole ca. 1 cm; leaf blade obovate-oblong, 7–13 × 3–4.5 cm, leathery, base cuneate, apex acute, margin serrate; lateral veins prominent on both surfaces. Male inflorescences ca. 1 cm, usually many arranged in panicles; peduncle pubescent. Female inflorescence solitary or many in panicles, 15–26-flowered; peduncle 2–4 cm. Male flowers: stamens subsessile; anthers obovoid. Female flowers: calyx connate with ovary, styles 3–4 mm, pubescent, apex recurved. Infructescences subglobose, 1.7–2.8 cm wide, base truncate, without persistent styles.

Locality: Common in Hong Kong. *Y. S. Lau 206; HK sheet 34771.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Fujian, Jiangxi, Zhejiang; Vietnam.

Ecology: Forests. Flowering: Mar.–Jun.; fruiting: Jul.–Sep.

Uses: Timber.

Notes: The type specimen was collected from Wong Nai Chung Valley woods, Hong Kong Island by J. G. Champion between 1847 and 1850.

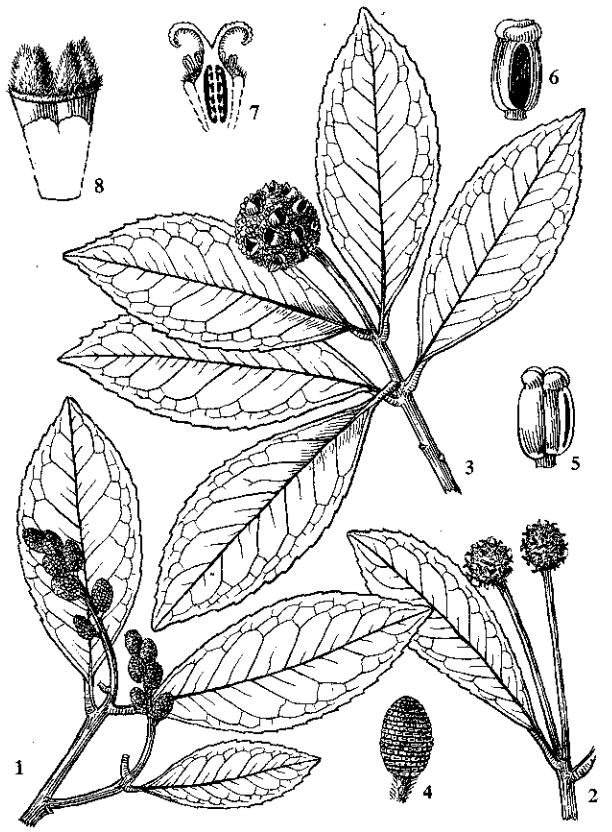



**Figure 59.** *Altingia chinensis* (Champ. ex Benth.) Oliv. ex Hance
*1*. male flowering branch; *2*. female flowering branch; *3*. fruiting branch; *4*. male inflorescence; *5–6*. stamens; *7*. longitudinal section of female flower; *8*. capsule. (drawn by H. P. Yu)

**2. Altingia gracilipes** Hemsl. 細柄蕈樹 **(Photo 170)**

Hooker's Icon. Pl. 29: t. 2837. 1907; FRPS 35(2): 66. 1979; FGD 1: 159. 1987; FOC 9: 20. 2003.

*Altingia gracilipes* var. *serrulata* Tutch., Rep. Bot. & For. Dept. Hongk. 1914: 31. 1915; FRPS 35(2): 67. 1979; FGD 1: 159. 1979; Check List HK Plants 56. 2002; 25. 2004.

*Altingia gracilipes* f. *uniflora* H. T. Chang, Sunyatsenia 7: 74. 1948.

Tree 12–20 m tall; young branches hairy. Stipules absent; petiole slender, 1.3 cm, glabrous; leaf blade ovate-lanceolate, 4.7 × 1.5–2.5 cm, leathery, base obtuse or narrowly rounded, apex caudate-acuminate, margin usually entire or sometimes serrate, abaxially glabrous; lateral veins 5 or 6 pairs. Male inflorescences globose, 0.5–0.6 cm in diam., usually several arranged in a panicle. Female inflorescences solitary or arranged in raceme, 5–6-flowered; peduncle 2–3 cm, pubescent. Male flowers: stamens sessile; anthers red, obovoid, ca. 1.5 mm. Female flowers: styles ca. 2.5 mm, apex recurved. Infructescences obconical, 1.5–2 cm wide, base cuneate.

Locality: Pat Sin Leng, Wu Kau Tang, Nam Chung. *Y. S. Lau 2634; L. T. Lo 629.*

Distribution: Guangdong, Hainan, Fujian, Zhejiang.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jul.–Sep.

Uses: Materials (resin).

## 4. Rhodoleia Champ. ex Hook. f. 紅花荷屬

Evergreen trees or shrubs. Leaves alternate, leathery, pinnately veined, petiolate; stipules absent. Inflorescence capitate, axillary, pedunculate, 5–8-flowered; involucral bracts 5-many, imbricate. Flowers bisexual, zygomorphic. Floral cup very short, enclosing base of ovary. Sepals absent or rudimentary. Petals 2–6, red, spathulate or oblanceolate, well developed only on abaxial side of flower, making the head as whole like a rayed flower. Stamens 4–11; filaments linear; anther 2-celled, each dehiscent into 2 valves. Ovary semi-inferior, 2-locular or imperfectly so; ovules 12–18 per locule; styles 2, long, very slender, nearly equal to stamens. Capsules loculicidally dehiscing above middle by 4 valves; pericarp thin. Seeds flattened, mostly sterile and wingless, fertile seeds laterally narrowly winged.

About ten species distributed in China, Indonesia, Malaysia, Myanmar, Vietnam; six species in China; one species in Hong Kong.

**1. Rhodoleia championii** Hook. f. 紅花荷(紅苞木、吊鐘王) **(Fig. 60; Photos 171–172)**

Bot. Mag. 76: t. 4509. 1850; FHK 131. 1861; FKH 101. 1912; FRPS 35(2): 46, pl. 9. 1979; FGD 1: 155, fig. 171. 1987; FOC 9: 24. 2003.

*Rhodoleia latiovatifolia* G. A. Fu, Guihaia 11(3): 208–209. 1991.

Tree, to 12 m tall; young branches glabrous. Petioles 3–5.5 cm; leaf blade ovate, 7–13 × 4.5–6.5 cm, leathery, base broadly cuneate, apex obtuse or subacute, green and shining adaxially, whitish grey abaxially; obscurely 3-veined at base, lateral veins

7–9 pairs, conspicuous on both surfaces, reticulation of veins inconspicuous. Inflorescences 3–4 cm, pendulous; peduncle 2–3 cm, with 5–6 scale-like bracts; involucral bracts many, ovate, brown-pubescent; bracteoles 5 or 6, scale-like. Petals spathulate, 2.5–3.5(–4) × 0.4–0.8 cm. Stamens as long as petals. Ovary glabrous; styles shorter than stamens. Infructescence ca. 3 cm wide, with 5 capsules. Capsule ovoid-globose, ca. 1.2–1.5 cm, without persistent styles.

Locality: Mount Nicholson, Mount Cameron, Aberdeen. *H. C. Tang 865; HK sheet 1707.*

Distribution: Guangdong, Hainan, Guangxi, Guizhou, Yunnan; Indonesia (Sumatra), W Malaysia, Myanmar, Vietnam.

Ecology: Forests. Flowering: Feb.–Apr.; fruiting: May–Aug.

Uses: Ornamental.

Notes: The type specimen was collected from Little Hong Kong, Hong Kong Island by J. G. Champion in 1849. Listed in *Rare and Precious Plants of Hong Kong.*

## 5. Distylium Sieb. & Zucc. 蚊母樹屬

Evergreen shrubs or trees; branches stellately tomentose or lepidote when young. Leaves alternate, shortly petiolate; stipules lanceolate, caducous; leaf blade leathery, pinnately veined. Inflorescence a condensed panicle or botryoid, flowers axillary, ± sessile; each flower usually subtended by two (simple or 3-lobed) subopposite sepal-like bracteoles, sometimes lacking in male flowers. Flowers male or bisexual (plants andromonoecious). Sepals, petals and floral cup absent. Male flowers: stamens 4–8, filaments short, unequal, anthers ellipsoid, thecae 2-sporangiate, longitudinally dehiscent, connective protruded. Bisexual flowers: stamens 5–8, ovary superior, ovules 1 per locule; stigmas decurrent. Capsules ovoid-globose, woody, stellately tomentose, dehiscing above middle by two 2-lobed valves, without persistent calyx tube. Seeds 1 per locule, narrowly ovoid.

About 18 species, distributed in China, NE India (Assam), Indonesia (Java, Sumatra), Japan (Ryukyu Islands), Korea, Malaysia; 12 species (11 endemic) in China; one species in Hong Kong.

### 1. Distylium racemosum Sieb. & Zucc.

蚊母樹 **(Fig. 61; Photo 173)**

Fl. Jap. 1: 178. 1835; FHK 133. 1861; FRPS 35(2): 102. 1979; FGD 1: 163. 1987; FOC 9: 29. 2003.

Shrub or small tree, glabrous except ovary; young branches stellate-lepidote; buds lepidote. Petioles 0.5–1 cm, sparsely stellate-lepidote; leaf blade elliptic or obovate, 3–6 × 1.5–3.5 cm, leathery, base broadly cuneate, apex slightly obtuse, margin entire; lateral veins 5 or 6 pairs, reticulation of veins inconspicuous on both surfaces. Inflorescences 1.8–2 cm, male and female flowers on the same inflorescence, with female ones on the top. Floral bracts lanceolate, 2–3 mm. Male flower: stamens 5–6, filaments 1.5–2 mm; anthers red, 2.5–3.5 mm. Female flower: ovary stellate-tomentose; styles 6–7 mm. Capsules ovoid, 1–1.3 cm, stellate-pubescent with brown hairs. Seeds ovoid, 4–5 mm.

Locality: Hong Kong Island, Ma On Shan, Tai Mo Shan, Tung Chung, Lantau Peak. *H. C. Tang 285, 2081.*

Distribution: Hainan, Guangdong, Fujian, Zhejiang, Taiwan; Korea, Japan (Ryukyu).

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Aug.

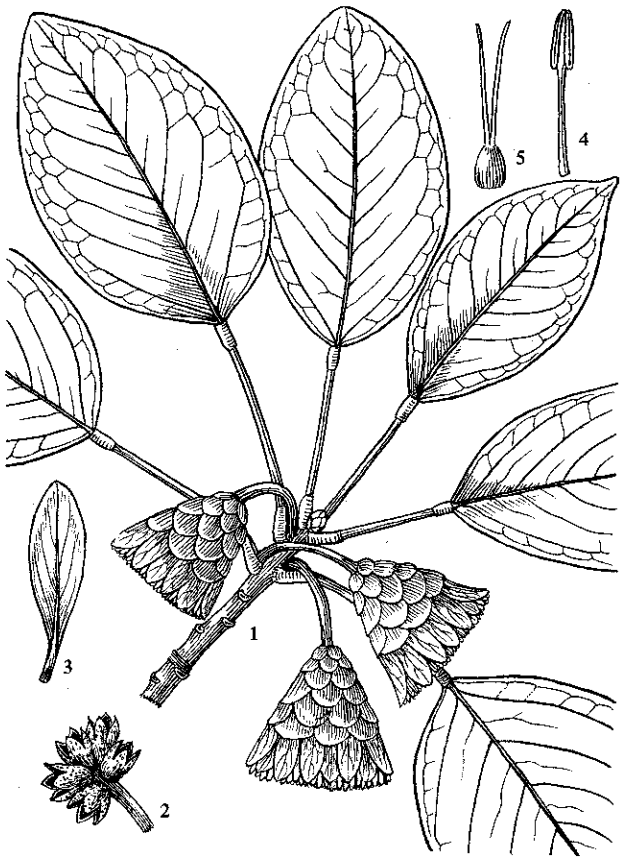



**Figure 60.** *Rhodoleia championii* Hook. f.
*1.* flowering branch; *2.* infructescence; *3.* petal; *4.* stamen; *5.* pistil. (drawn by H. P. Yu)

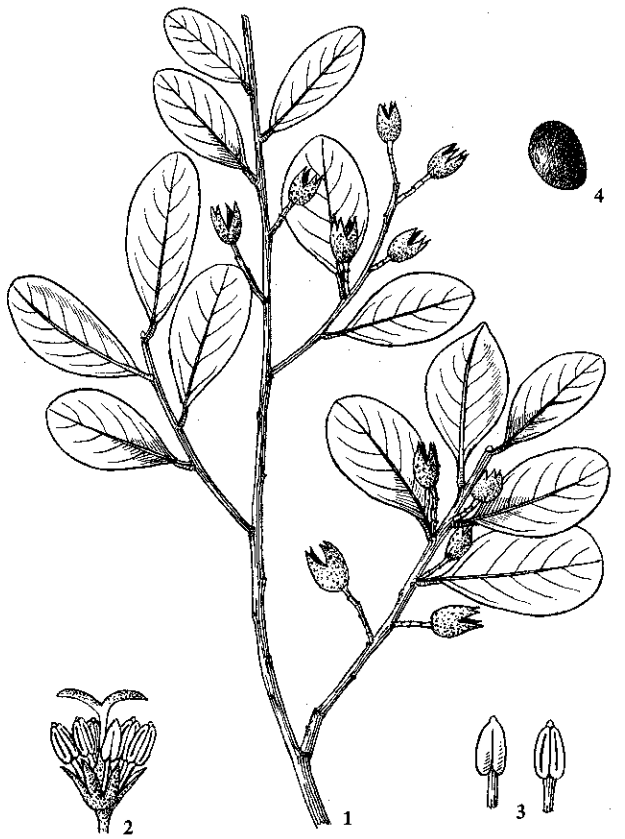



**Figure 61.** *Distylium racemosum* Sieb. & Zucc.
*1.* fruiting branch; *2.* flower; *3.* dorsal and ventral view of stamen; *4.* seed. (drawn by H. P. Yu)

## 6. Distyliopsis P. K. Endress 假蚊母樹屬

Evergreen shrubs or small trees; young branches usually stellately tomentose or with sessile peltate scales. Leaves alternate, shortly petiolate; stipules minute, caducous; leaf blade leathery, margin entire or nearly so, pinnately veined, sometimes with 3 basal veins. Inflorescence a condensed panicle or botryoid, axillary or terminal, few-flowered; bracts 3-lobed. Flowers male or bisexual (plants andromonoecious). Floral cup urceolate to cup-shaped, subtended by sepal-like bracts, often ± ascending on one side. Male flowers sessile, bisexual flowers often pedicellate. Sepals and petals absent. Stamens (1–)5–6(–15), thecae 2-sporangiate, longitudinally dehiscent; rudimentary carpels present. Ovary superior, enclosed by long floral cup, ovules 1 per locule; stigmas decurrent. Capsules woody, ± stalked, arranged in 2 series along axis, densely hispid, dehiscing into 2 valves, persistent calyx-tube shorter than capsules. Seeds ellipsoid.

About six species, distributed in China, Laos, Malaysia, New Guinea; five species in China; two species in Hong Kong.

1a. Leaf blade ovate-oblong to ovate-lanceolate, 6–9 cm long, apex acute to acuminate ..... 1. *D. dunnii*
1b. Leaf blade elliptic or obovate, 3–6 cm long, apex rounded or obtuse ..... 2. *D. tutcheri*

**1. Distyliopsis dunnii** (Hemsl.) P. K. Endress 尖葉假蚊母樹

Bot. Jahrb. Syst. 90: 30. 1970; FFJ 2: 260. 1985; FOC 9: 31. 2003.

*Sycopsis dunnii* Hemsl., Hooker's Icon. Pl. 29: t. 2836. 1907; FRPS 35(2): 114, pl. 24. 1979; FGD 1: 166, fig. 181. 1987.

Shrub or small tree; young branches with sessile, peltate scales. Petiole 1–1.5 cm, densely lepidote; leaf blade oblong or ovate-oblong, occasionally oblong-lanceolate, 6–9 × 2.5–4.5 cm, leathery, base cuneate, apex acute or acuminate, margin entire, both surfaces glabrescent. Flowers arranged in axillary short spike or racemes. Bracts oblong. Male flowers: borne on lower part, sessile, calyx 5–6-teethed. Stamens 5–9, filaments 2–5 mm, without rudimentary ovary. Bisexual flowers: borne on the upper part, shortly pedicellate; floral cup 2–3 mm; stamens 4–11. Ovary villous; styles 4–5 mm, glabrous, recurved. Capsules 1–4, stalked, 1–1.3 cm, grey-brown villous, persistent floral cup 3–4 mm, with dense sessile scales.

Locality: Tai Mo Shan. *L. T. Lo 432; Y. W. Lam 1403.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian; Laos.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Sep.

**2. Distyliopsis tutcheri** (Hemsl.) P. K. Endress 鈍葉假蚊母樹 **(Fig. 62)**

Bot. Jahrb. Syst. 90: 30. 1970; FFJ 2: 261. 1985; FOC 9: 32. 2003.

*Sycopsis tutcheri* Hemsl., Hooker's Icon. Pl. 29: t. 2834. 1907; FKH 101. 1912; FRPS 35(2): 115. 1979; FGD 1: 167. 1987.

*Sycopsis oblanceolata* H. T. Chang, Sunyatsenia 7: 72. 1948.

Shrub or small tree; young branches with sessile, peltate scales. Petioles 3–6 mm, densely lepidote; leaf blade elliptic or obovate, 3–6 × 2–3 cm, leathery, base broadly cuneate, apex obtuse or subrounded, margin entire. Male flowers not seen. Female (or bisexual) flowers arranged in 1–2 cm long racemes. Peduncle and rachis lepidote; pedicels 3–4 mm; bracts oblong, lepidote; ovary villous, style 3–5 mm, recurved. Capsules 1–5, 1–1.3 cm, yellow-brown-villous, persistent floral cup 4–5 mm, with sessile scales.

Locality: Victoria Peak, Lantau Island. *HK sheet 10909, 10910.*

Distribution: Hainan, Guangdong, Fujian.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Sep.

Notes: The type specimen was collected from east of Mountain Lodge, Victoria Peak, Hong Kong Island by W. J. Tutcher on 6 January 1904.

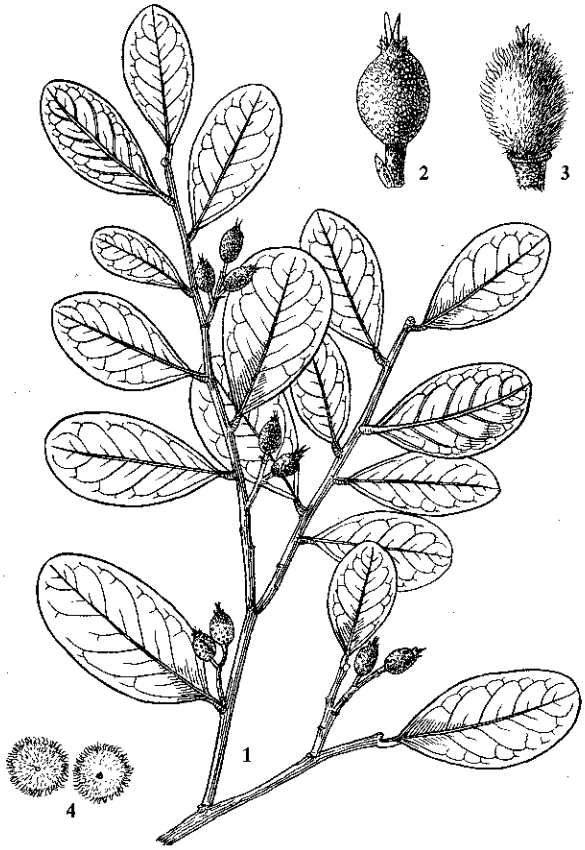



**Figure 62.** *Distyliopsis tutcheri* (Hemsl.) P. K. Endress
*1.* fruiting branch; *2.* fruit; *3.* seed; *4.* scale. (drawn by H. P. Yu)

## 7. Eustigma Gardn. & Champ. 秀柱花屬

Evergreen shrubs or small trees; young branches and leaves stellate-pubescent. Leaves alternate, petiolate; stipules minute, caducous; leaf blade leathery, pinnately veined. Inflorescence racemose, terminal, pedunculate, subtended by 2 general bracts. Flowers bisexual. Floral cup turbinate, stellate-tomentose. Sepals 5. Petals 5, small, yellow, scale-like. Stamens 5, opposite to sepals, filaments very short; thecae 2-sporangiate, dehiscent into 2 valves; staminodes absent. Ovary inferior, 2-locular; ovules 1 per locule; styles long; stigmas very large, spathulate, verrucose. Capsules ovoid-globose, woody, dehiscing loculicidally. Seeds ovoid.

Three species distributed in China, Vietnam; one species in Hong Kong.

**1. Eustigma oblongifolium** Gardn. & Champ.
秀柱花 **(Fig. 63; Photo 174)**

Hooker's J. Bot. Kew Gard. Misc. 1: 312. 1849; FHK 132. 1861; FKH 101. 1912; FHN 2: 335. 1965. FRPS 35(2): 96, pl. 21. 1979; FGD 1: 162, fig. 179. 1987; FOC 9: 34. 2003.

Shrub or small tree; young branches lepidote. Stipules linear; petioles 0.5–1 cm; leaf blade oblong or oblong-lanceolate, 7–17 × 2.5–6 cm, leathery, base obtuse or cuneate, apex acuminate, margin entire or sometimes dentate towards apex, glabrous on both surfaces. Inflorescences 2–3 cm; general bracts ovate, ca. 1 cm; bracts and bracteoles ovate, stellate-pubescent. Floral cup ca. 2.5 mm, stellate-pubescent. Sepals ovate, ca. 3 mm, deciduous. Petals obovate, slightly shorter than sepals, apex 2-lobed. Anthers ovoid, 0.8–1 mm. Styles 0.8–1.2 cm. Capsule ca. 2 cm, glabrous. Seeds 0.8–1 cm.

Locality: Hong Kong Island, Tai Mo Shan, Lantau Island. *Y. S. Lau 222; P. S. Choi 471.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Jiangxi, Fujian, Taiwan.

Ecology: Forests. Flowering: Apr.–Jun., fruiting: Jul.–Sep.

Notes: The type specimen was collected from Happy Valley, Hong Kong Island by J. G. Champion between 1847 and 1849.

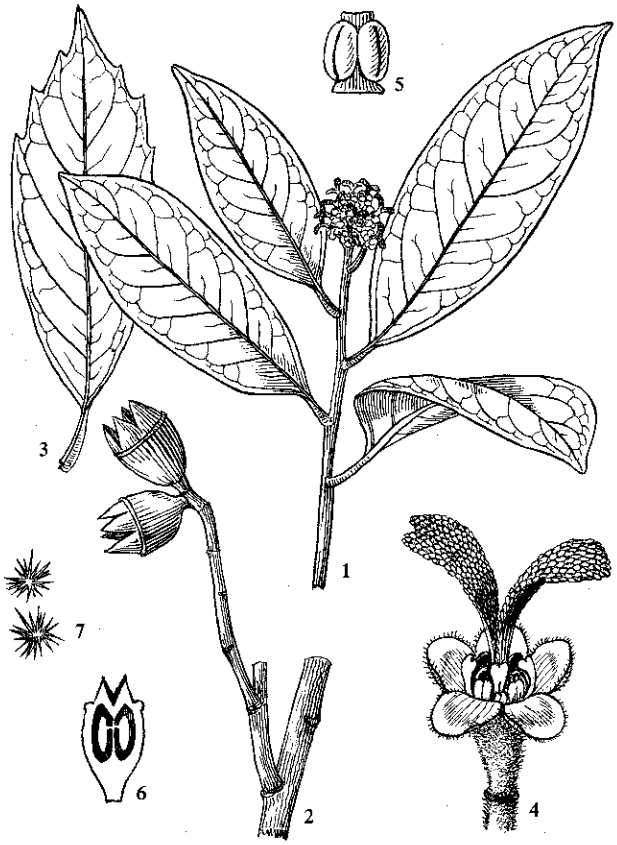



Figure 63. *Eustigma oblongifolium* Gardn. & Champ.
*1*. flowering branch; *2*. fruiting branch; *3*. leaf; *4*. flower; *5*. stamen; *6*. longitudinal section of fruit; *7*. stellate trichomes. (drawn by H. P. Yu)

## 8. Loropetalum R. Br. 檵木屬

Evergreen or semievergreen shrubs or small trees. Leaves alternate, unequal, pinnately veined, short-petioled. Inflorescence capitate, shortly spicate, or racemose, axillary or terminal. Flowers bisexual, usually 4 or 5-merous. Floral cup obconical, stellate-pubescent. Sepals ovate, pubescent, deciduous. Petals strap-like. Stamens 4 or 5, perigynous, anther 2-celled, each dehiscing into 2 valves, connective protrudent; disc scales present. Ovary semi-inferior, 2-locular; ovules 1 per locule. Capsules dehiscing into two 2-lobed valves. Seeds 1 per carpel, long-ovoid, hilum white.

Three species distributed in China, E and N India, Japan; three species in China; two species in Hong Kong.

1a. Leaf blades 2–6.5 cm, with stellate hairs; flowers 4-merous ..... 1. *L. chinense*

1b. Leaf blades 7–12 cm, glabrous; flowers 5-merous ..... 2. *L. subcordatum*

**1. Loropetalum chinense** (R. Br.) Oliv.
檵木(紙末花) **(Fig. 64; Photo 175)**

Trans. Linn. Soc. London 23: 459. 1862; FKH 101. 1912; FRPS 35(2): 70, pl. 16. 1979; FGD 1: 160, fig. 176. 1987; FOC 9: 33. 2003.

*Hamamelis chinensis* R. Br. in G. F. Abel, Narr. Journey China 375. 1818.

Deciduous or semi-evergreen shrub or small tree, much branched; branchlets stellate-pubescent. Petioles 2–5 mm, stellate-pubescent; leaf blade leathery, ovate, elliptic or, rarely obovate, 2–6.5 × 1–3 cm, base unequal, rounded or cuneate, apex acute, margin entire, sparsely pubescent adaxially, densely stellate-pubescent and slighty greyish abaxially; lateral veins 4–8 pairs. Flowers usually 3–8 arranged in a short spike or head; peduncle 0.8–1 cm, stellate-

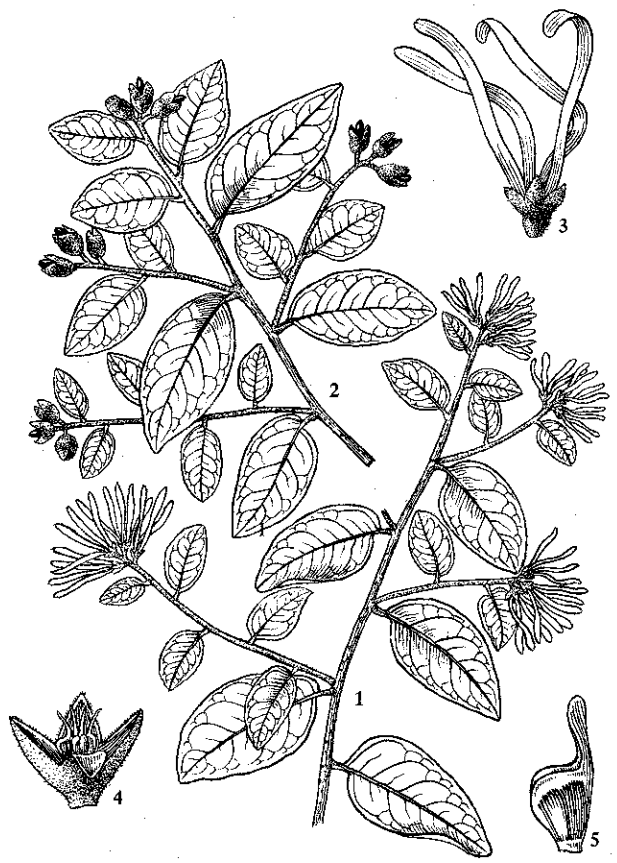



Figure 64. *Loropetalum chinense* (R. Br.) Oliv.
*1*. flowering branch; *2*. fruiting branch; *3*. flower; *4*. flower with petals removed; *5*. lateral view of stamens. (drawn by H. P. Yu)

pubescent; bracts linear, ca. 3 mm. Flowers shortly pedicellate. Floral cup cupular, stellate-pubescent, 1.2–1.5 mm. Sepals 4, ovate, 2–3 mm. Petals 4, white to slightly yellowish, 1–2 cm. Stamens 4, filaments very short, connective elongated into a horn, anthers ovoid, 0.5–0.6 mm; staminodes 4, scale-like, alternate with stamens. Ovary inferior, stellate-pubescent, styles very short. Capsules ovoid or obovoid-globose, 7–8 mm, adnate to floral cup, stellate-tomentose. Seeds ovoid-globose or ellipsoid, 4–7 × 3.5–4 mm.

Locality: North Point, Shing Mun, Castle Peak, Lantau Island. *Y. S. Lau 935; P. S. Choi 398.*

Distribution: Areas S of Changjiang River to Tropic of Cancer; Japan, India.

Ecology: Tickets. Flowering: Mar.–Apr.; fruiting: May–Jul.

Uses: Ornamental, medicinal (folklore).

Notes: *Loropetalum chinense* f. *rubrum* H. T. Chang (紅花檵木)(Photo 176) is also cultivated in Hong Kong. It differs from *L. chinense* by red petals.

**2. Loropetalum subcordatum** (Benth.) Oliv.
四藥門花 **(Fig. 65; Photos 177–178)**

Hooker's Icon. Pl. 15: t. 1417. 1883; FKH 101. 1912; FOC 9: 33. 2003.

*Tetrathyrium subcordatum* Benth., FHK 133. 1861; FRPS 35(2): 68, pl. 15. 1979; FGD 1: 159, fig. 175. 1987.

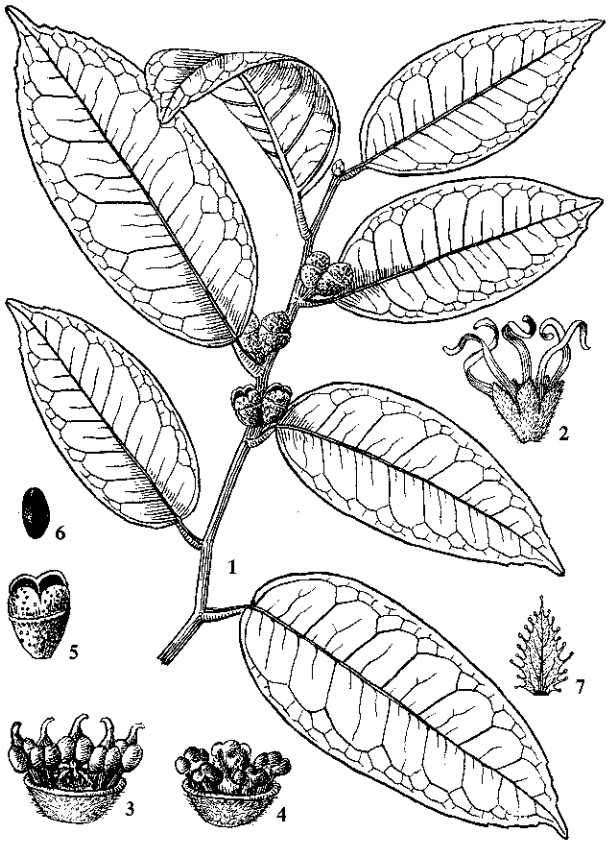



Figure 65. *Loropetalum subcordatum* (Benth.) Oliv.
*1.* fruiting branch; *2.* flower; *3.* stamens and staminodes; *4.* staminodes and pistil; *5.* capsule; *6.* seed; *7.* bract. (drawn by H. P. Yu)

Evergreen shrub or tree, to 12 m tall; branchlets glabrous. Stipules lanceolate, 5–6 mm, stellate-pubescent, caducous; petioles 1–1.5 cm; leaf blade ovate-elliptic, 7–12 × 3.5–5 cm, base rounded or subcordate, apex acute, margin entire or sparsely serrulate on distal part; lateral veins 6–8 pairs. Inflorescence axillary, 14–25-flowered; peduncle 4–5 cm; bracts linear. Flowers subsessile. Sepals 5, ca. 1.5 mm, stellate-pubescent. Petals 5, ca. 1.5 cm. Stamens 5, anthers ovoid; staminodes divergent. Ovary semi-inferior, stellate-pubescent, styles very short, glabrous. Capsules subglobose, 10–12 mm in diam., adnate to floral cup, dehiscing into two valves. Seeds ovoid-ellipsoid, 6–7 mm.

Locality: Jardine's Lookout, Bowen Rd., Wong Lung Hang. *Y. W. Lam 281; P. Chow s.n. (HK sheet 38315).*

Distribution: Guangdong, Guangxi, Guizhou.

Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jul.–Aug.

Note: The type specimen was collected from "Black Mountain", Hong Kong Island by C. Wilford between 1857 and 1858. Listed in *Rare and Precious Plants of Hong Kong.*

## 9. Corylopsis Sieb. & Zucc. 蠟瓣花屬

Deciduous or semievergreen shrubs or small trees; branches usually stellately pubescent; buds perulate. Leaves alternate, petiolate; stipules large, membranous, caducous; leaf blade usually oblique at base, margin serrate, pinnately veined. Inflorescence a raceme, pendulous. Flowers bisexual, usually open before leaves appear; each flower usually with 1 bract and 2 bracteoles. Sepals 5, persistent or deciduous. Petals 5, yellow, orbicular or ovate, rarely oblanceolate. Stamens 5; anther 2-celled, longitudinally dehiscent; 5–10 nectar producing disc scales present, alternating with stamens, apex truncate or 2-lobed. Ovary semi-inferior, rarely superior, 2-locular; ovules 3 per locule, 2 of them sterile; styles 2. Capsules woody, dehiscing loculicidally by 4 valves, with persistent styles. Seeds ellipsoid; endosperm fleshy; embryo straight.

About 29 species distributed in E & SE Asia; 20 species in China and one species in Hong Kong.

**1. Corylopsis multiflora** Hance 瑞木(大果臘瓣花) **(Photo 179)**

Ann. Sci. Nat., Bot., sér. 4, 15: 224. 1861; FHN 2: 335. 1965; FRPS 35(2): 82, pl. 18. 1979; FFJ 2: 254, fig. 213. 1985; FGD 1: 162, fig. 178. 1987; FOC 9: 37. 2003.

*Corylopsis wilsonii* Hemsl., Icon. Pl. 29: pl. 2819. 1919.

Shrub or small tree; young branches tomentose; older branches grey-brown, glabrescent; buds grey-white tomentose. Stipules oblong, 1.8–2 cm, hairy; petiole 1–1.5 cm; leaf blade leathery, ovate, obovate or obovate-elliptic, 7–15 × 4–8 cm, base almost symmetrical, cordate, apex acute, margin serrate, teeth mucronate, abaxially glaucous, stellately pubescent at least along veins; lateral veins 7–9 pairs. Inflorescence 2–4 cm, with 1–5 leaves at base, peduncle pubescent; general bracts ovate, 1.5–2 cm, abaxially hairy. Calyx tube glabrous. Petals oblanceolate, 4–5 × 1.5–2 mm. Stamens 6–7 mm, exserted. Ovary glabrous, styles slightly shorter than stamens. Capsules hard woody, glabrous, 1.2–2 × 0.8–1.4 cm. Seeds 8–10 mm, black.

Locality: Lantau Peak, Sunset Peak. *Y. W. Lam 2117; F. W. Xing 9194.*

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Taiwan, Yunnan.
Ecology: Forests. Flowering: Apr.–Jun.; fruiting: Jun.–Sep.

# 47. DAPHNIPHYLLACEAE 交讓木科

WU De-lin 吳德鄰

Trees or shrubs, dioecious; all parts glabrous. Stipules absent. Leaves simple, alternate, leathery, often crowded at branchlet top, entire, often pruinose, penninerved. Racemes axillary. Flowers small. Bracts deciduous. Petals absent. Male flowers: calyx 3–8-lobed, lobes imbricate, persistent or deciduous; stamens 5–12, radiate, filaments short and free; anthers 2-celled, oblong, latrorse, sometimes apiculate; rudimentary ovary absent. Female flowers: calyx 3–8-lobed; staminodes small or absent; ovary imperfectly 2-locular; styles 1–2, very short or absent; stigmas 2; ovules 2 per locule, anatropous, pendulous. Drupes ovoid. Seeds with thin testa, copious oily and proteinaceous endosperm, and minute apical embryo.

One genus, about ten species distributed in E Asia, Malaysia to tropical Australia; eight species in China; two species in Hong Kong.

## 1. Daphniphyllum Blume 交讓木屬

Morphological characters and geographical distribution are the same as those of the family.

1a. Leaves 10–20 × 4–10 cm; petioles 5–15 cm; drupes ovoid, ca. 1 cm, with persistent sepals ..... 1. *D. calycinum*
1b. Leaves 5–14 × 2.5–4 cm; petioles 2–5 cm; drupes elliptic or obovoid, ca. 8 mm, without persistent sepals ..... 2. *D. oldhamii*

**1. Daphniphyllum calycinum** Benth.
牛耳楓 **(Fig. 66; Photo 180)**
FHK 316. 1861; FKH 236. 1912; FHN 2: 187.1965; FRPS 45(1): 8. 1980; FGD 3: 224. 1995.

Shrub, 1–5 m tall. Branchlets sparsely lenticellate. Petioles 5–15 cm; leaves papery, elliptic, obovate-elliptic or broadly elliptic, 10–20 × 4–10 cm, base cuneate, apex acute or subrounded, sometimes mucronate, margin entire, slightly pruinose and papillose abaxially; lateral veins 8–11 each side. Racemes 2–6 cm. Male flowers: calyx 3–4-lobed, lobes triangular, ca. 3 mm; stamens 9–10, ca. 4 mm; filaments very short; anthers oblong. Female flowers: calyx lobes broadly elliptic or broadly triangular, ca. 2 mm; ovary ellipsoid; style very short. Drupes ovoid, ca. 1 cm, pruinose, papillose, base with persistent calyx lobes.

Locality: Common in Hong Kong. *W. J. Tutcher 9183; H. C. Tang 371.*

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Fujian; Japan.

Ecology: Thin forests and thickets. Flowering: May–Aug.; fruiting: Oct.–Dec.

Notes: The type specimen was collected from Hong Kong Island around 1850.

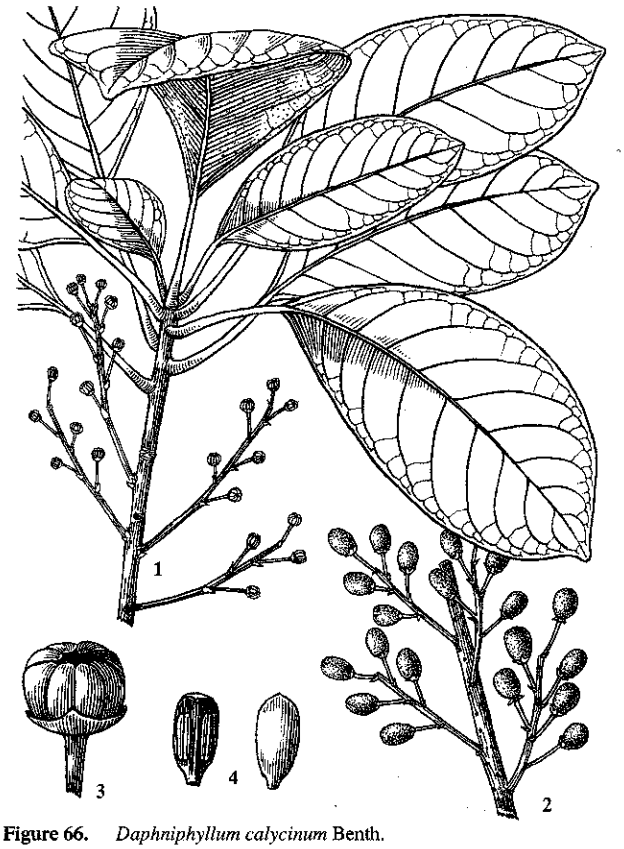



**Figure 66.** *Daphniphyllum calycinum* Benth.
*1*. branch with male flowers; *2*. branch with fruits; *3*. male flower; *4*. stamen (dorsal and ventral views). (drawn by H. P. Yu)

**2. Daphniphyllum oldhamii** (Hemsl.) Rosenth.
虎皮楠(交讓木) **(Photos 181)**
Pflanzenr. 68 (IV, 147a): 8. 1919; FRPS 45(1): 6. 1980; FGD 3: 225. 1995.

*Daphniphyllum glaucescens* Blume var. *oldhami* Hemsl., J. Linn. Soc., Bot. 26: 429. 1894.

*Daphniphyllum roxburghii* Baill., Euph. 565. 1858; FHK 316. 1861.

*Daphniphyllum glaucescens* auct. non Blume: FKH 236. 1912.

Shrub or tree, 5–10 m tall. Branchlets lenticellate. Petioles 2–5 cm. Leaves leathery, elliptic-lanceolate or oblong, 5–14 × 2.5–4 cm, base cuneate, rarely rounded, apex obtuse, shortly acuminate or acute, margin entire, abaxially distinctly pruinose and papillose; lateral veins 8–15 pairs. Racemes axillary, 2–4 cm. Male flowers: calyx 4–5-lobed, lobes triangular, 0.5–1 mm; stamens 6–9; anthers ovate, ca. 2 mm; filaments not more than 1 mm. Female inflorescence 4–6 cm. Female flowers: calyx 4–5-lobed; ovary ovoid-oblong, pruinose. Drupes ellipsoid or obovoid, 8 × 6 mm, base without persistent calyx lobes.

Locality: Common in Hong Kong. *H. C. Tang 669; Y. S. Lau 337.*

Distribution: Areas S of Changjiang River; Korea, Japan.

Ecology: By streams in valleys. Flowering: Mar.–May; fruiting: Aug.–Nov.

# 51. ULMACEAE 榆科

WU De-lin 吳德鄰

Deciduous or evergreen trees or shrubs. Stipules opposite. Leaves simple, alternate, rarely opposite, base often oblique, margin serrulate, pinnately veined or triveined, caducous. Inflorescence a cyme or flowers solitary. Flowers small, wind-pollinated, unisexual (plant monoecious), bisexual or polygamous. Sepals 3–8, free or connate at base, imbricate or introrse valvate. Petals absent. Stamens as many as sepals and opposite to them, or rarely twice as many or up to 15; filaments straight, free. Anthers 2-celled, dehiscent longitudinally; ovary superior, 1-locular or rarely 2-locular; styles 2; ovules solitary, pendulous. Fruit a samara, drupe or nut. Seeds single, endosperm absent or rather scanty; cotyledons compressed or contorted.

About 16 genera, 230 species distributed in tropical and temperate regions, especially in N hemisphere; eight genera and 46 species in China; four genera and nine species in Hong Kong.

1a. Leaves pinninerved.
  2a. Stipules larger, 1–2.5 cm, base connate ..... 1. *Gironniera*
  2b. Stipules smaller, 6–10 mm, base free ..... 2. *Aphananthe*
1b. Leaves 3-nerved.
  3a. Lateral veins ending in marginal teeth ..... 2. *Aphananthe*
  3b. Lateral veins anastomosing before reaching margin.
    4a. Female flowers in condensed, multi-flowered cyme; leaf margin wholly denticulate; drupes 1.5–3.5 mm in diam. ..... 3. *Trema*
    4b. Female flowers solitary; leaf margin entire or serrulate on upper half; drupes 5–15 mm in diam. ..... 4. *Celtis*

## 1. Gironniera Gaudich. 白顏樹屬

Evergreen trees or shrubs, monoecious or rarely dioecious. Stipules 2, large, connate at base, enclosing terminal buds but deciduous, leaving a circular scar around node. Leaves alternate, entire or rarely serrulate, pinninerved. Cymes axillary, rarely male flowers solitary. Flowers unisexual. Male flowers: sepals 5, imbricate; stamens 5; filaments short, erect, rudimentary ovary pilose. Female flowers: sepals 4–5, narrower; ovary sessile, 1-locular; ovules 1, pendulous; styles 2, filiform. Drupes ovoid or subglobose, compressed, endocarp cartilaginous. Seeds with or without endosperm.

About six species distributed in Indo-Malesia to Pacific islands; one species in China; it occurs in Hong Kong.

**1. Gironniera subaequalis** Planch.

白顏樹 **(Fig. 67; Photo 182)**

Ann. Sci. Nat., Bot., ser. 3, 10: 229. 1848; FHN 2: 371. 1965; FGD 2: 227. 1991; FOC 5: 11. 2002.

*Gironniera chinensis* Benth., FHK 321. 1861; FKH 243. 1912.

Tree, 10–20(–30) m tall; bark grey or dark grey. Branchlets yellow-green, sparsely yellow-brown hirsute. Stipules paired, lanceolate, 1–2.5 cm, enclosing bud. Leaves leathery, elliptic or elliptic-oblong, 10–25 × 5–10 cm, base rounded or broad-cuneate, apex shortly caudate, margin subentire or sparsely and obtusely serrate at upper most, glabrous adaxially, scabrous on nerves abaxially; lateral veins 8–12 pairs. Cymes paired, axillary; male cymes many branched, female racemose. Male flowers: sepals 5, broad-elliptic, margin membranaceous. Drupes yellow, elliptic, 4–5 cm in diam., hirsute when young, with persistent sepals and styles.

Locality: Hong Kong Island, Tai Wai, Tai Po Kau, Lam Tsuen, Sheung Wo Hang, Bride's Pool. *H. C. Tang 1921; Y. W. Lam 606.*

Distribution: Guangdong, Guangxi, Yunnan; Indochina, Thailand, Myanmar, Sri Lanka, Malaysia, Indonesia.

Ecology: Flowering: Feb.–Apr.; fruiting: Jul.–Nov.

Uses: Timber, medicinal (folklore).




**Figure 67.** *Gironniera subaequalis* Planch.

*1*. fruiting branch; *2*. male flower; *3*. sepal and stamen of male flower; *4*. drupe. (drawn by H. P. Yu)

## 2. Aphananthe Planch. 糙葉樹屬

Deciduous or subevergreen trees, monoecious or rarely dioecious. Stipules caducous, free. Leaves alternate, serrulate, rarely entire, pinnately veined or distinctly tri-veined; lateral veins ending in margin. Cymes borne at base of annual branchlets. Flowers unisexual. Male flowers: sepals 4–5; petals absent; stamens as many as sepals and opposite to them, rudimentary ovary absent. Female flowers: solitary, axillary, rarely mixed in male inflorescence; sepals 4–5 or 6, without or with few staminodes; ovary unilocular; ovule solitary, anatropous. Fruit a drupe, pericarp slightly fleshy, endocarp cartilaginous.

About four species and one variety distributed in Madagascar, S and SE Asia, E Australia and Mexico; two species and one variety in China; two species in Hong Kong.

1a. Leaves papery, 3-veined from base, lateral veins ending in marginal teeth, margin sharply serrulate ..... 1. *A. aspera*
1b. Leaves leathery, pinninerved, lateral veins anastomosing before reaching margin, margin entire or inconspicuously serrate ..... 2. *A. cuspidata*

**1. Aphananthe aspera** (Thunb.) Planch.
糙葉樹 **(Fig. 68; Photo 183)**
Prodr. 17: 208. 1873; FGD 2: 224. 1991; FOC 5: 12. 2003.
*Prunus aspera* Thunb., Syst. Veg. (ed. 14) 463. 1784.

Tree, 7–20 m tall or more, monoecious. Branchlets slender, scabrous hairy when young. Stipules linear-lanceolate, nearly 1 cm. Petioles 7–15 cm; leaves papery, ovate, narrowly ovate, or rarely subelliptic, 5–13 × 3–6 cm, base broadly cuneate or obtuse, apex attenuate to cuspidate, margin regularly and sharply serrulate except base, sparsely scabrous hairy on both surfaces, denser abaxially, 3-veined and pinninerved; lateral veins 6–8 pairs, obliquely ascending to teeth. Male cymes fasciculated at base of young branchlets, axillary. Sepals 5, rarely 4, persistent; stamens as many as sepals; ovary hairy. Drupes black when dry, ovoid-globose, 8–9 mm in diam., scabrous hairy.

Locality: Sha Tau Kok. *Y. W. Lam 360*.

Distribution: S, E & SW China, Hubei, Shanxi; Korea, Japan, Vietnam.

Ecology: Forests. Flowering: Mar.–May; fruiting: Aug.–Oct.

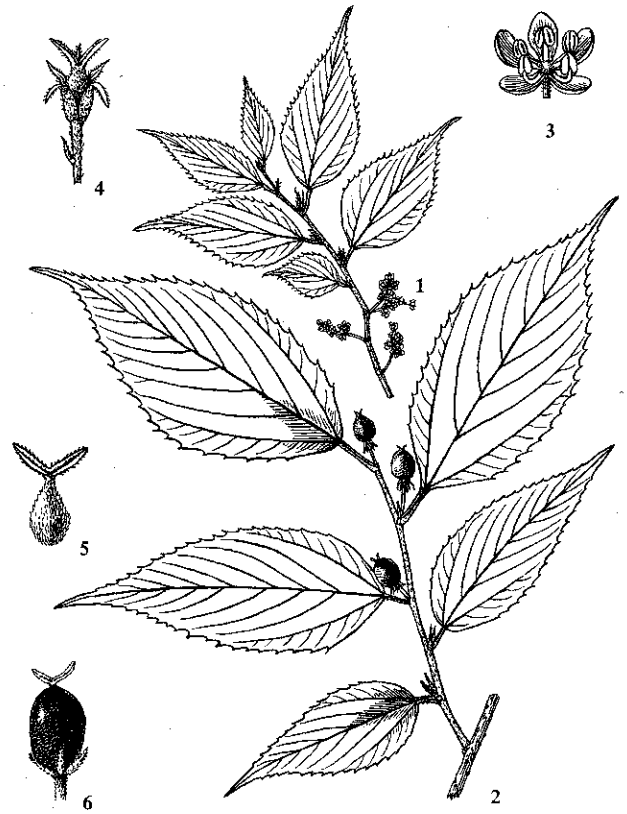



**Figure 68.** *Aphananthe aspera* (Thunb.) Planch.
*1*. flowering branch; *2*. fruiting branch; *3*. male flower; *4*. female flower; *5*. pistil; *6*. drupe. (drawn by H. P. Yu)

**2. Aphananthe cuspidata** (Blume) Planch.
滇糙葉樹(坡命工) **(Photo 184)**
Prodr. 17: 209. 1873; FGD 2: 226. 1991; FOC 5: 12. 2003.
*Cyclostemon cuspidatum* Blume, Bijdr. 599. 1825.
*Gironniera nitida* Benth., FHK 325. 1861; FKH 243. 1912.
*Gironniera cuspidata* (Blume) Kurz, For. Fl. Brit. Burma 2: 479. 1877; FHN 2: 370. 1965.

Tree, 10–18 m tall, dioecious. Branchlets slender, glabrous. Stipules lanceolate , 6–10 mm. Petioles 7–10 mm; leaves leathery, nitid, oblong to ovate-lanceolate, 6–13 × 2–5 cm, base obtuse, apex long acuminate, margin entire, glabrous on both surfaces, pinninerved; lateral veins 6–10 pairs, anastomosing before reaching margin, or inconspicuously serrate, reticulate veins dense, conspicuous on both surfaces. Male inflorescences short, many-flowered. Male flowers: sepals 4–5, oblanceolate, ca. 2 mm; staminodes becoming a fascicle of yellow hairs. Female inflorescences ca. 1 cm, branched, sometimes 1–2-flowered, axillary; sepals oblong, ca. 12 mm, adnated to ovary. Drupes ovoid, 8–10 mm in diam., glabrous, beak 3–4 mm at tip. Stalk up to 1 cm.

Locality: Hong Kong Island, Sha Tin, Tai Po, Lam Tsuen, Lantau Island. *W. J. Tutcher 589; Y. S. Lau 2682*.

Distribution: Hainan, Guangdong, Yunnan; India, Sri Lanka, Vietnam, Thailand, Myanmar, Malaysia, Indonesia.

Ecology: Forests. Flowering: Mar.–May, Sep.–Nov.; fruiting: Jul.–Sep., Nov.–Dec.

## 3. Trema Lour. 山黃麻屬

Small trees or large shrubs, monoecious or dioecious. Stipules free, deciduous. Leaves alternate, ovate to narrowly lanceolate, margin denticulate, 3-veined, rarely 5-veined or pinninerved. Flowers unisexual or polygamous, densely arranged in cymes, paired and axillary. Male flowers: sepals 4(–5), valvate or slightly imbricate; stamens as many as sepals; filaments straight; rudimentary ovary present. Female flowers: calyx 4–5-lobed; ovary sessile, base with villose cycles; style short; stigmas 2, linear, ovules solitary, pendulous. Drupes small, erect, ovoid or subglobose, with persistent sepals and stigmas, exocarp fleshy, endocarp bony. Seeds with fleshy endosperm.

About 15 species distributed in tropical and subtropical regions; six species and one variety in China; three species in Hong Kong.

1a. Leaf blade abaxially glabrous except for appressed hairs on main veins ..... 1. *T. cannabina*
1b. Leaf blade abaxially pubescent over its entire surface.
2a. Leaves discolour on both surfaces, green or pale green adaxially, grey-white or green-grey abaxially; drupes ovoid-globose or subglobose, 3–5 mm in diam. ..... 2. *T. orientalis*
2b. Leaves concolour on both surfaces, brown or grey brown; drupes ovoid 2–3 mm in diam., compressed ..... 3. *T. tomentosa*

**1. Trema cannabina** Lour. 光葉山黃麻 **(Photos 185)**

Fl. Cochinch. 2: 563. 1790; FGD 2: 224. 1991; FOC 5: 15. 2003.

Shrub or small tree to 6 m tall, monoecious. Branchlets slender, with appressed pubescence when young, later glabrescent. Petiole 0.6–1 cm, with appressed hairs; leaves nearly membranous, ovate, long ovate or ovate-lanceolate, 4–10 × 1.5–4 cm, base rounded, truncate or shallowly cordate, apex acuminate to caudate-acuminate, margin crenate-serrate; smooth to slightly scabrous adaxially, glabrous abaxially except for scattered tightly appressed hairs on main veins, basally 3-veined; lateral veins usually 3 pairs. Cymes as long as petiole or slightly longer, subglabrous. Male flowers ca. 1 mm in diam. Female flowers ca. 2 mm in diam. Drupes ovoid-globose, ca. 3 mm in diam., shortly stalked, rugate when dry.

Locality: Shing Mun. *HK sheet 40449.*

Distribution: S, E & SE China; E & SE Asia, Australia, Pacific islands.

Ecology: Thickets and open places. Flowering: May–Jun.; fruiting: Nov.

Uses: Fibre.

**2. Trema orientalis** (L.) Blume
異色山黃麻 **(Fig. 69; Photo 186)**

Mus. Bot. 2: 62. 1852; FHN 2: 369. 1965; FGD 2: 223. 1991; FOC 5: 13. 2003.

*Celtis orientalis* L., Sp. Pl. 1044. 1753.

Tree or shrub, up to 20 m. Branchlets grey-brown, hairy. Leaves leathery, ovate-oblong or ovate, 10–18 × 5–9 cm, base cordate, slightly oblique, apex acuminate or acute, margin serrulate, discolour on both surfaces, pale green or grey-green adaxially, grey-white or greenish-grey and densely pubescent abaxially, 3-veined; lateral veins 4–6 pairs. Male cymes 1.8–2.5 cm. Male flowers: 1.5–2 mm in diam., sessile; sepals 5, ovate-oblong, puberulent outside, ciliate. Female inflorescence 1–2.5 cm. Female flowers: stalked; sepals 5–4, triangular-ovate, 1–1.5 mm. Drupes black, subglobose, slightly compressed, 2.5–3.5 mm in diam., slightly wrinkled. Seeds ovoid, 2–3 mm in diam.

Locality: Shek Kong. *P. S. Choi 432; HK sheet 34720.*

Distribution: S & SW China, Fujian, Taiwan; S flank of Himalayas, India, Sri Lanka, Bangladesh, Myanmar, Indochina, Malay Peninsula, Indonesia, Philippines, Japan, Polynesia, Australia to Tropical Africa.

Ecology: Forests or open places. Flowering: May–Aug.; fruiting: Jun.–Nov.

Uses: Fibre.

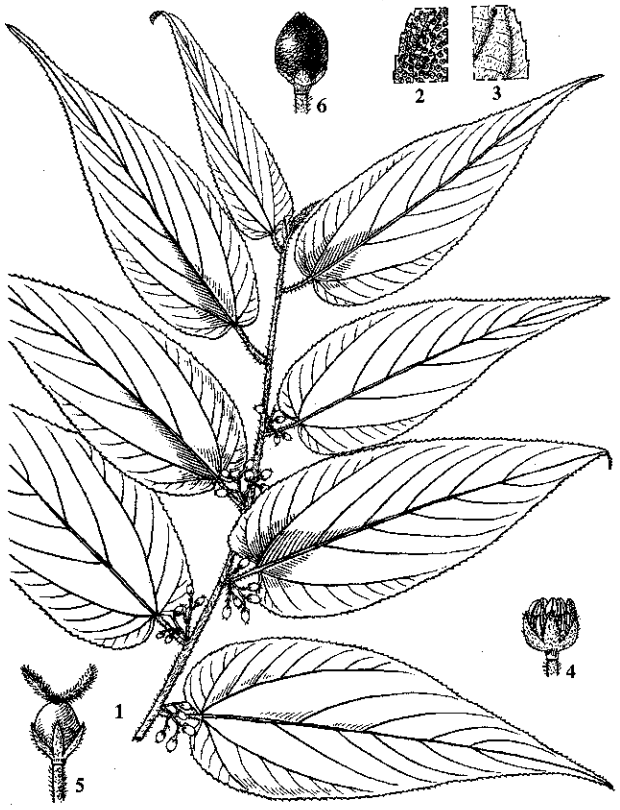



**Figure 69.** *Trema orientalis* (L.) Blume
*1.* fruiting branch; *2.* adaxial surface of leaf viewing indumentum; *3.* abaxial surface of leaf viewing indumentum; *4.* male flower; *5.* female flower; *6.* drupe. (drawn by H. P. Yu)

**3. Trema tomentosa** (Roxb.) Hara 山黃麻 **(Photo 187)**

Fl. E. Himalaya 2nd. Rep. 19. 1971; FOC 5: 13. 2003.

*Celtis tomentosa* Roxb., Fl. Ind., ed. Carey 2: 66. 1832.

*Trema amboinensis* (Willd.) Blume, Mus. Bot. 2: 61. 1852, *p.p.*; FKH 243. 1912.

*Celtis amboinensis* Willd., Sp. Pl., ed. 4., 4(2): 997. 1805, *p.p.*

*Sponia velutina* Planch., Ann. Sci. Nat. Bot. 10: 327. 1848, *p.p.*; FHK 324. 1861.

Small tree or shrub, up to 10 m tall. Branchlets densely tomentose. Leaves broadly ovate or ovate-oblong, rarely broadly lanceolate, 7–5 × 3–7 cm, base cordate, distinctly oblique, apex acuminate or cuspidate, rarely acute, margin serrulate, concolour on both surfaces, very rough and hirsute adaxially, brown or grey brown pubescent abaxially, 3-veined; lateral veins 4–5 pairs. Male cymes 2–4.5 cm. Male flowers: 1.5–2 mm in diam., subsessile; sepals 5, ovate-oblong, puberulous outside, ciliate; stamens 5; rudimentary ovary obovate-oblong. Female inflorescences 1–2 cm. Female flowers: shortly stalked; sepals 5–4, triangular-ovate, 1–1.5 mm; ovary glabrous. Drupes brown-black or purple-black, ovoid, 2–3 mm in diam., irregularly rugate, with persistent calyx. Seeds ovoid, 1.5–2 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang 935, 2128.*

Distribution: Xizang, Sichuan, Yunnan, Guizhou, Guangxi, Hainan, Guangdong, Fujian, Taiwan; Sikkim, Bhutan, Nepal, India, Sri Lanka, Bangladesh, Myanmar, Indochina, Malaysia, Indonesia, Philippines, Japan, islands of South Pacific.

Ecology: Flowering: Dec.; fruiting: Apr. of the following year.

Uses: Materials (fibre, timber), medicinal (folklore).

## 4. Celtis L. 朴屬

Deciduous or evergreen trees or shrubs. Stipules small, free. Leaves alternate, base slightly oblique, margin entire or serrate, triplinerved. Inflorescence a cyme or fascicle on young shoots, or female flowers solitary. Flowers polygamous. Sepals 4–5, green or purple, imbricate, deciduous when fruiting. Stamens 4–5. Ovary sessile, borne on hairy torus, 1-locular; style 2-fid, reflexed. Fruit a drupe, exocarp fleshy; endocarp bony. Seed solitary, with membranous seed coats; cotyledons very broad, sometimes crumpled.

About 50 species widely distributed in temperate or tropical regions; 14 species in China; three species in Hong Kong.

1a. Leaves distinctly serrulate on upper half; female flowers 2–3, axillary.
  2a. Leaves leathery, becoming black when dry; fruit stalk twice as long as petioles ..... 1. *C. biondii*
  2b. Leaves papery, not becoming black when dry; fruit stalk as long as or slightly longer than petioles ..... 2. *C. sinensis*
1b. Leaves obscurely serrulate near apex; female flowers in 2–3-branched cymes, 3.5–4 cm when fruiting ..... 3. *C. timorensis*

**1. Celtis biondii** Pamp. 紫彈朴 **(Photo 188)**

Nuovo Giorn. Bot. Ital., n.s., 17: 252, fig. 3. 1910; FGD 2: 220. 1991; FOC 5: 17. 2003.

Deciduous tree, 4–18 m tall; young shoots densely red-brown pubescent, glabrescent when old. Petioles 4–7 mm; leaves leathery, abaxially, often becoming black when dry, ovate or ovate-elliptic, 4–9 × 2.5–4.5 cm, base broadly cuneate, obtuse, oblique, apex acuminate, margin serrate on upper half, often densely strigose abaxially, shorter and sparser adaxially, 3-veined. Sepals 4, elliptic. Stamens 4. Drupes often 2, axillary, subglobose, 6 mm in diam., sparsely pubescent when young. Fruits stalk 12–15 mm.

Locality: Hong Kong Island, Peng Chau. *Y. W. Lam 22271; F. W. Xing 9125.*

Distribution: S, E, & C China, Gansu, Shaanxi; Japan, Korea.

Ecology: Forests. Flowering: Mar.–May.

**2. Celtis sinensis** Pers. 朴樹 **(Fig. 70; Photo 189)**

Syn. Pl. 1: 292. 1805; FHK 324. 1861; FKH 243. 1912, *p.p.*; FHN 2: 368. 1965; FGD 2: 220. 1965; FOC 5: 18. 2003.

Deciduous tree, about 10 m tall; bark grey. Young shoots pubescent, glabrescent when old. Petioles 5–10 mm; leaves ovate or ovate-oblong, 5–10 × 2.5–5 cm, base rounded and slightly oblique, apex shortly acuminate, margin serrate on upper half, pubescent on both surfaces when young, glabrescent when old, prominently 3-veined. Male cymes at lower part of annual branchlets. Female flowers: axillary at upper branchlets; sepals 4; stamens 4, opposite to sepals; filaments hairy at base; ovary ovate, grown on densely white tomentose torus; style 2, reflexed. Drupes red-brown, subglobose, 5–7 mm in diam., fruit stalk equal or slightly longer than petioles.

Locality: Common in Hong Kong and widely planted. *H. C. Tang 519; Y. W. Lam 897.*

Distribution: S, E, C & SW China.

Ecology: Thin forests. Flowering: Mar.–May; fruiting: Sep.–Oct.

Uses: Timber, fibre.

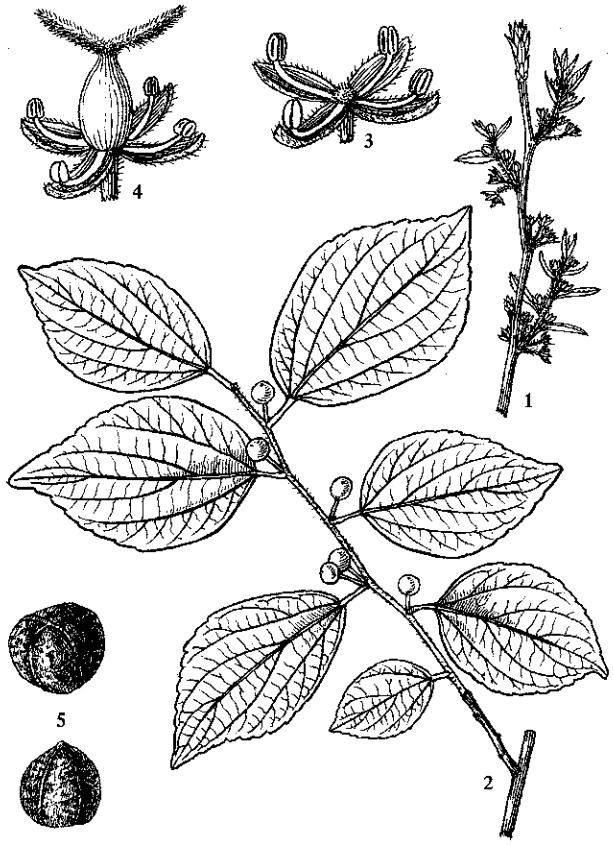



**Figure 70.** *Celtis sinensis* Pers.
*1.* flowering branch; *2.* fruiting branch; *3.* male flower; *4.* female flower; *5.* drupes. (drawn by H. P. Yu)

**3. Celtis timorensis** Span. 假玉桂 **(Photo 190)**

Linnaea 15: 343. 1841; FOC 5: 16. 2003.

*Celtis cinnamomea* Lindl. ex Planch., Ann. Sci. Nat. ser. 3, Bot. 10: 303. 1848; FGD 2: 221, fig. 142. 1991.

*Celtis philippensis* auct. non Blanco: FHK 324. 1861; FKH 243. 1912; FHN 2: 368. 1965; FGD 2: 221. 1991.

Tree, 5–8 m tall. Branchlets slender, adpressedly red-brown pubescent when young. Petioles ca. 1 cm; leaves subleathery, ovate to ovate-lanceolate, 5–15 × 2.5–6 cm, base oblique, obtuse or cuneate, apex acuminate, often cuspidate, entire or obscurely

serrulate upper most, 3-veined. Cymes 2–3-branched, 15–25 mm, elongated to 3.5–4 cm when fruiting, adpressed red-brown pubescent. Sepals 4, oblong, ciliate; styles 2. Drupes ellipsoid, 8 × 5 mm.

Locality: Hong Kong Island, Sha Tin, Shing Mun, Lam Tsuen, Lantau Island. *Y. S. Lau 841, 2970.*

Distribution: Xizang, Yunnan, Guizhou, Guangxi, Fujian, Taiwan; E Asia.

Ecology: Flowering: Mar.–May.

Uses: Fibre, timber.

# 52. CANNABACEAE 大麻科

WU De-lin 吳德鄰

Annual or perennial herbs, dioecious, rarely monoecious. Stipules persistent. Leaves simple, alternate or opposite, entire, palmately lobed or compound. Inflorescence a paniculate (♂) or spicate (♀) cyme, axillary. Male flowers: sepals 5; petals absent; stamens 5; filaments short; anther 2-celled, opening by short slits. Female flowers: calyx appressed to ovary, membranous, entire; petals absent; ovary sessile, 1-locular; style 2-parted, branches filiform; ovules solitary, pendulous, anatropous. Fruit an achene covered by persistent calyx. Seeds with fleshy endosperm and involute or curved embryo.

Two genera, four species distributed in N temperate regions; two genera and three species in China; one genus and one species in Hong Kong.

## 1. Humulus L. 葎草屬

Perennial herbs, twining. Stems rough with retrorse spines. Stipules persistent for sometimes. Leaves opposite, palmately 3–7-lobed, or undivided, serrate. Male inflorescence laxly paniculate. Male flowers: sepals 5, imbricate; stamens 5; anthers oblong. Female inflorescence cone-like spicate. Female flowers: calyx thinly membranous, closely appressed to ovary, margin entire; ovary sessile; style 2-branched; ovules pendulous. Achenes broadly ovoid, enclosed within persistent, often glandular calyx. Pericarp crustaceous. Seeds with white fleshy endosperm, and spirally involute embryo.

Three species distributed in N temperate regions; two species in China; one species in Hong Kong.




**Figure 71.** *Humulus scandens* (Lour.) Merr.
*1*. male inflorescence; *2*. female plant; *3*. male flower; *4*. female flower; *5*. achenes. (drawn by H. P. Yu)

**1. Humulus scandens** (Lour.) Merr. 葎草 **(Fig. 71)**

Trans. Amer. Philos. Soc., n.s., 24: 138. 1935; FGD 6: 107. 2005; FOC 5: 75. 2003.

*Antidesma scandens* Lour., Fl. Cochinch. 1: 157. 1790.

*Humulus japonicus* Sieb. & Zucc., Fl. Jap. 2: 89. 1849.

Stems, branches and petioles with retrorse spines. Leaves papery, palmately 5–7-lobed, rarely 3-lobed, 7–10 × 7–10 cm, base cordate, rough on both surfaces, sparsely strigose, pubescent and with yellow glands abaxially, lobes ovate to broadly lanceolate, margin serrulate, apex acute. Male flowers: small, yellowish green in laxly paniculate cyme, axillary; sepals 5; stamens 5; anthers pendulous on filaments. Female flowers in cone-like spikes of 5 mm in diam. Bracts violet, brown-green, triangular, apex acuminate, spinulose. Ovary enclosed by bracts; style 2, exserted from bracts. Infructescences 0.5–1.5 cm. Achenes enclosed within enlarged calyx, compressed-globose, 5 mm in diam.

Locality: Sai Kung. Exotic. *P. S. Choi s.n. (HK sheet 36004, 36005).*

Distribution: Widely distributed in China except Xinjiang and Qinghai; Russia (Asian region), Japan, Korea, Vietnam.

Ecology: Wasteland, roadside, near villages. Flowering: Summer to autumn.

Uses: Medicinal (folklore).

# 53. MORACEAE 桑科

WU De-lin 吳德鄰

Trees, shrubs, lianas or rarely herbs, with milky juice, armed or unarmed. Stipules 2, usually caducous and leaving an amplexicaul scar. Leaves simple, alternate, rarely opposite, entire, serrate, or lobed, palmately or pinnately veined, sometimes with cystoliths. Inflorescence a raceme, panicle, head or spike, axillary, or at trunk or major branches, the axis of inflorescence sometimes thickened to form a head or an invaginated common receptacle. Flowers very small, unisexual (plant monoecious or dioecious). Sepals usually 4, sometimes 1 or up to 8, free or connate, imbricate or valvate, persistent. Petals absent. Stamens as many as and opposite sepals; anthers 1 or 2-celled, opening lengthwise; pistillodes present or absent. Ovary superior or inferior, usually 1-locular, rarely 2-locular; ovules mostly pendulous from apex, rarely basal and erect; styles mostly 2, usually filiform. Fruit a syconium, achene, nut or drupe; often enclosed in enlarged common receptacle to form a fleshy syconium (fig). Seeds with or without endosperm.

About 37 genera, 1100 species, widely distributed in tropical and subtropical regions, less common in temperate regions; nine genera and 144 species in China; seven genera, 36 species, two subspecies and two varieties in Hong Kong.

1a. Flowers many, enclosed within a hollow common receptacle to form a fleshy fig ..... 1. *Ficus*
1b. Flowers not enclosed in an enlarged common receptacle to form a fleshy fig; inflorescence various.
  2a. Herbs, climbers or erect shrubs with spines.
    3a. Herbs; inflorescence a lax cyme ..... 2. *Fatoua*
    3b. Climbers or erect shrubs with spines; inflorescence a head or spike.
      4a. Erect or climbing and armed plants, with milky juice; both male and female inflorescence a head ..... 3. *Maclura*
      4b. Unarmed climbers, without milky juice; male inflorescence a spike, female inflorescence a head ..... 4. *Malaisia*
  2b. Trees or shrubs without spines.
    5a. Both male and female inflorescence a spike ..... 5. *Morus*
    5b. Both male and female inflorescence a head, or male a catkin, female a head.
      6a. Plant monoecious, both male and female inflorescence a head; stamen 1 ..... 6. *Artocarpus*
      6b. Plant dioecious, male inflorescence a catkin, female a head; stamens 4 ..... 7. *Broussonetia*

## 1. Ficus L. 榕屬

Trees, shrubs or climbers, sometimes epiphytic, with milky juice. Stipules enclosing terminal bud, often caducous and leaving a scar. Leaves alternate, rarely opposite, entire or lobed, venation pinnate, sometimes palmately 3–5-veined at base. Flowers unisexual (plant monoecious or rarely dioecious), minute, enclosed within fleshy, globose, ellipsoid or obovoid receptacles (called fig or synoecium), solitary or in clusters of 2 or more, axillary or on scaly leafless shoots from trunk or major branches. Figs with a mouth (ostiole) at apex more or less closed by small bracts, sometimes bracts scattered over surface of fig or 2 in a whorl at base or on peduncle. Flowers of three kinds: male, female and gall flowers. Male flowers: usually near the mouth of fig, perianth 3–6-lobed, with 1–2 rarely more stamens. Female flowers: usually lining the greater part of cavity, perianth entire, or 2 or more lobes or segments; style usually lateral, with a more or less oblique, variously shaped stigma. Gall flowers: ovary occupied by the pupa of a hymenopterous insect; style short. Achenes enclosed within a common receptacle forming a syconium (fig).

About 1,000 species distributed in tropical and subtropical regions; 99 species in China; 26 species, one subspecies and one variety in Hong Kong.

1a. Climbers.
  2a. Leaves with 3–5 pairs of lateral veins.
    3a. Leaves base cordate ..... 1. *F. sagittata*
    3b. Leaves base cuneate or obtuse.
      4a. Figs larger, 3.5–6.5 cm in diam. ..... 2. *F. pumila*
      4b. Figs smaller, 0.7–1.4 cm in diam. ..... 3. *F. hederacea*
  2b. Leaves with 6–10 pairs of lateral veins.
      5a. Figs 2–5 mm in diam. ..... 4. *F. subulata*
      5b. Figs 7–10 mm in diam. ..... 5. *F. sarmentosa* var. *impressa*
1b. Trees or shrubs.
  6a. Figs clustered on brachyblast or trunk.
    7a. Leaves opposite, rough on both surfaces ..... 6. *F. hispida*
    7b. Leaves alternate, not rough on both surfaces.
      8a. Leaves broad-ovate to ovate-elliptic, 6–13 cm wide; lateral veins 4–6 pairs ..... 7. *F. variegata*
      8b. Leaves obovate to oblong, 4–7 cm wide; lateral veins 6–9 pairs ..... 8. *F. fistulosa*
  6b. Figs solitary, paired or several axillary or on leafless branchlets.
    9a. Figs not pedunculate.
      10a. Base of figs not constricted into a stalk.
        11a. Figs hairy; leaves 3–5-lobed or irregularly lobed.

12a. Leaves broad-ovate or suborbicular, apex caudate; figs 2–2.5 cm in diam. ..... 9. *F. esquiroliana*
12b. Leaves polymorphic, apex acute or acuminate; figs 10–15 mm in diam. ..... 10. *F. hirta*
11b. Figs glabrous; leaves entire.
13a. Figs smaller, 6–8 mm in diam.
14a. Leaves oblong or elliptic, 8–30 × 4–11 cm; petioles 2–5 cm; stipules scarlet, up to 10 cm ..... 11. *F. elastica*
14b. Leaves elliptic, ovate-elliptic or obovate, 4–8 × 3–4 cm; petioles 0.5–1 cm; stipules green, 1.5–3.5 cm ..... 12. *F. microcarpa*
13b. Figs larger, (7–)8–28 mm in diam.
15a. Leaves with many lateral veins, not 3–5 basiveined ..... 13. *F. benjamina*
15b. Leaves with 5–10 pairs of lateral veins and 3–5 basiveined.
16a. Leaves cordate or ovate-cordate, apex acuminate ..... 14. *F. rumphii*
16b. Leaves ovate, broadly ovate-elliptic, oblong or oblong-ovate, apex acute, shortly acuminate or obtuse.
17a. Leaves ovate or broadly ovate-elliptic, 7–27 × 4–17 cm; lateral veins 5–6 pairs; figs globose, 17–28 mm in diam ..... 15. *F. altissima*
17b. Leaves oblong or oblong-ovate, 6–15 × 2–7.5 cm; lateral veins 5–10 pairs; figs subglobose, 5–8 mm in diam. ..... 16. *F. virens*
10b. Base of figs abruptly constricted into a stalk.
18a. Leaves bilaterally symmetrical, margin not angulate ..... 17. *F. nervosa*
18b. Leaves asymmetrical, margin angulate.
19a. Shrubs; leaves papery, reticulate veins indistinct; stipules subulate, 1–2 cm long ..... 4. *F. subulata*
19b. Trees; leaves leathery, reticulate veins distinct; stipules lanceolate, not more than 1 cm long ..... 18. *F. tinctora* subsp. *gibbosa*
9b. Figs pedunculate.
20a. Base of figs constricted into a stalk.
21a. Figs pear-shaped; leaves apex long-acuminate ..... 19. *F. pyriformis*
21b. Figs globose or subglobose.
22a. Leaves leathery; lateral veins many, dense and fine, elevated on both surfaces ..... 20. *F. vasculosa*
22b. Leaves papery or membraneous; lateral veins 3–15 pairs, not elevated on both surfaces.
23a. Figs larger, 1.2–2 cm in diam. ..... 22. *F. erecta*
23b. Figs smaller, 4–10 mm in diam.
24a. Petioles 3–5 mm; leaves pandurate, obovate, lanceolate or linear-lanceolate; lateral veins 3–5 pairs. ..... 21. *F. pandurata*
24b. Petioles 7–10 mm; leaves oblanceolate to linear; lateral veins 6–15 pairs ... 23. *F. formosana*
20b. Base of figs not constricted into a stalk.
25a. Figs smaller, 5–8 mm in diam.
26a. Figs globose ..... 24. *F. concinna*
26b. Figs oblate ..... 25. *F. subpisocarpa*
25b. Figs larger, (5–)8–15 mm in diam.
27a. Leaves with lateral veins 7–11 pairs, apex obtuse or acute ..... 26. *F. variolosa*
27b. Leaves with lateral veins 2–7 pairs, apex caudate.
28a. Leaves elliptic-lanceolate to elliptic, base broadly cuneate ..... 27. *F. langkokensis*
28b. Leaves deltoid-ovate, base truncate to shallow-cordate ..... 28. *F. religiosa*

**1. Ficus sagittata** Vahl 羊乳榕(箭葉榕)

Symb. Bot. 2: 185. 1806; FHN 2: 395. 1965; FGD 1: 204. 1987; FOC 5: 68. 2003.

Tree when mature, epiphytic vine when young; rooting from nodes. Stipules caducous. Petioles ca. 15 mm, slightly pubescent; leaves leathery, ovate to ovate-elliptic, 7–13 × 5–10 cm, base cordate, apex acute to short-acuminate, margin entire to sinuate, nerves pubescent abaxially when young; basal veins 3–5, lateral veins 5–6 pairs. Figs paired or solitary, axillary, rarely clustered on leafless branches or verrucose brachyblasts, orange, subglobose, 8–15 mm in diam., apex umbonulate, basal bracts 3, base constricted in short stalk. Male flowers: Perianth-lobes 3, ovate; stamens 3; filaments connate. Gall flowers: Perianth-lobes 3; ovary obovate; style lateral, short. Female flowers in another set; perianth-lobes 3. Achenes elliptic; styles long.

Locality: No precise locality. *W. J. Tutcher s.n. (HK sheet 6562, 6563).*

Distribution: Hainan, Guangdong, Guangxi, Guizhou; S Asia to Australia.

Ecology: Forests. Flowering and fruiting: Mar.–Dec.

**2. Ficus pumila** L. 薜荔(文頭郎) **(Fig. 72; Photo 191)**

Sp. Pl. 1060. 1753; FKH 246. 1912; FHN 2: 395. 1965; FGD 1: 212. 1987; FOC 5: 69. 2003.

*Ficus stipulata* Thunb., Dissert. Ficus 8. 1786; FHK 328. 1861.

Shrub prostrate or creeping, adventitious roots arising from unfruiting branches. Stipules 2, lanceolate, yellow-brown silk hairy. Leaves on sterile branches thin leathery, ovate-cordate, ca. 2.5 cm, base slightly unequal, apex acuminate. Petioles 5–10 mm, very short; leaves on fertile branches leathery, ovate-elliptic, 5–10 × 2–3.5 cm, base rounded to shallow cordate, apex acute to obtuse, margin entire, glabrous adaxially, yellow-brown pubescent abaxially; lateral veins 3–4 pairs, reticulate veins distinct, alveolar. Figs solitary or paired, axillary, yellow-green or reddish, pear-shaped or turbinate, 3.5–6.5 cm in diam., somewhat pubescent, basal bracts 3, stalk short and thick, 0.5–1.5 cm, pubescent. Male flowers: long-pedicellate; perianth-lobes 3–4; stamens 2, sessile. Gall flowers: long-pedicellate to sessile; perianth-lobes 4, linear; ovary sessile; style lateral; stigma dilated. Female flowers in another fig: long pedicellate or sessile; perianth-lobes 4–5; ovary sessile. Achenes subglobose, mucilaginous.

Locality: Common in Hong Kong. *H. C. Tang 714, 2271; Y. S. Lau 1347.*

Distribution: Areas S of Changjiang River; Japan, India, Vietnam.

Ecology: On walls and trees. Flowering and fruiting: Apr.–Dec.

Uses: Edible, medicinal (folklore).

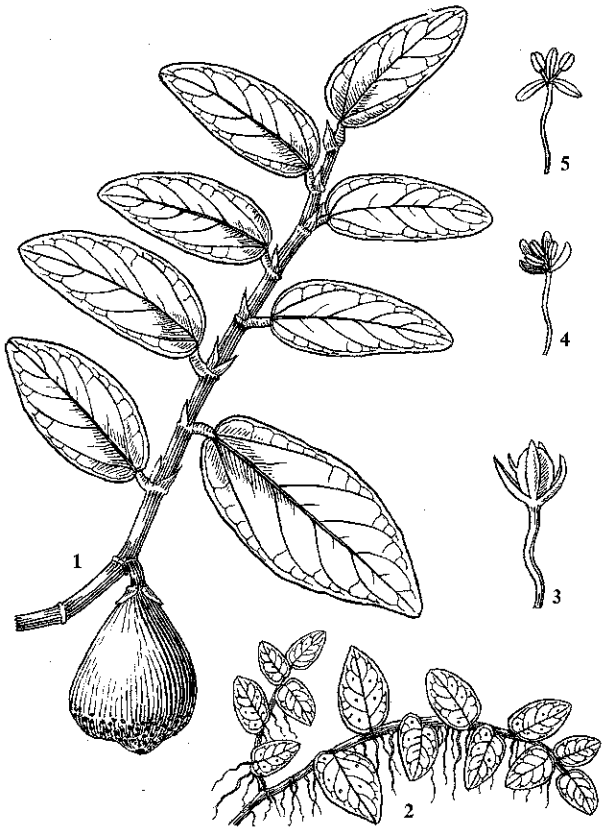



**Figure 72.** *Ficus pumila* L.
*1*. fruiting branch; *2*. sterile branch; *3*. gall flower; *4, 5*. male flower. (drawn by H. P. Yu)

**3. Ficus hederacea** Roxb. 藤榕(爬牆榕) **(Photo 192)**
Fl. Ind. 3: 538. 1832; FHN 2: 398. 1965; FGD 1: 211. 1987; FOC 5: 68. 2003.

Climber. Young branchlets pubescent. Petioles 10–20 mm; leaves distichous, thickly leathery, elliptic to ovate-elliptic, 6–11 × 3.5–5 cm, base broadly cuneate or obtuse, apex obtuse, rarely round, margin entire, hairy when young, papillary on both surfaces; lateral veins 3–5 pairs. Figs simple or paired, axillary, globose, 7–14 mm in diam., apex umbonulate; basal bracts connate below medium, upper 3-lobed. Peduncles 10–12 mm. Male flowers: few, sparsely, sessile; perianth-lobes 3–4; stamens 2, filaments free. Gall flowers: pedicellate; perianth-lobes 4, lanceolate; ovary black, obovate; style short, subterminal; stigma curved. Female flowers: pedicellate, in another figs; perianth-lobes 4, linear. Achenes ellipsoid, keeled abaxially; style elongated.

Locality: Hong Kong Island, Shing Mun, Tai Po Kau. *C. Ford s.n. (HK 25645); Y. S. Lau 482.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang; S to SE Asia.

Ecology: Forests, on rocks. Flowering and fruiting: Feb.–Jul.

**4. Ficus subulata** Blume 假斜葉榕 **(Photo 193)**
Bijdr. 461. 1825; FKH 246. 1912; FHN 2: 393. 1965; FGD 1: 201. 1987; FOC 5: 66. 2003.

Shrub scandent, male plants erect. Branchlets slender. Stipules subulate, 1.5–2 cm. Petioles 1–1.5 cm; leaf blade papery, obliquely elliptic or obovate-elliptic, 8–15 × 2.5–7 cm, usually asymmetrical, apex abruptly acute to acuminate, margin entire, glabrous on both surfaces when grown up, verruculose abaxially; lateral veins 7–10 pairs. Figs orange, paired or clustered, axillary or on leafless branches, globose or ovoid, 2–5 mm in diam., verruculose. Basal bracts sometimes sheath-shaped. Male flowers: perianth tubiform, 4-toothed; stamens 1. Gall flowers: perianth as in male flowers; ovary globose; stigma capitate. Female flowers in another set: perianth connate, apex toothed, hairy. Achenes ellipsoid; style lateral, elongated.

Locality: Hong Kong Island, Tai Mo Shan, Lam Tsuen Valley, Ng Tung Chai, Ma On Shan, Mau Ping, Wu Kau Tang, Sha Tau Kok. *Y. S. Lau 1631, 2118.*

Distribution: Xizang, Yunnan, Guizhou, Guangxi, Hainan, Guangdong, Taiwan; Bhutan, Sikkim, Malaysia, Indonesia.

Ecology: Forests. Flowering and fruiting: Feb.–Nov.

**5. Ficus sarmentosa** Buch. -Ham. ex Smith var. **impressa** (Champ. ex Benth.) Corner 爬藤榕(凹葉榕) **(Photo 194)**
Gard. Bull. Singapore 18(1): 6. 1960. FHN 2: 398. 1965; FGD 1: 212. 1987; FOC 5: 71. 2003.

*Ficus impressa* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 76. 1854; FHK 328. 1861; FKH 246. 1912.

Shrub prostrate or creeping. Stem much branched. Petioles 5–10 mm; leaves distichous, leathery, oblong, elliptic or lanceolate, 4–7 × 1–2 cm, base obtuse, apex acuminate; lateral veins 6–8 pairs, reticulate veins prominent abaxially. Figs paired, axillary, globose, 7–10 mm in diam., pubescent when young. Basal bracts 3, triangular. Peduncles 5–15 mm, bristles dispersed in inner wall of figs. Male and gall flowers in one set, female ones in another set. Male flowers: pedicellate; perianth-lobes 3–4, oblanceolate; stamens 2, filaments very short. Gall flowers: pedicellate; perianth-lobes 4, obovate-spathulate; ovary ellipsoid; style short; stigma shallow-infundibular.

Female flowers similar to gall flower; ovary obovoid; style subterminal. Achenes ovoid-ellipsoid, mucilaginous.

Locality: Hong Kong Island, Tai Mun Shan, Tai Mo Shan, Lautau Island. *HK sheet 6506, 25549.*

Distribution: Area S of Hebei; India, Vietnam.

Ecology: Forests and thickets. Flowering and fruiting: May–Dec.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

**6. Ficus hispida** L. f. 對葉榕 **(Photo 195)**

Suppl. Pl. 442. 1781; FHK 329. 1861; FKH 247. 1912; FHN 2: 387. 1965; FGD 1: 190. 1987; FOC 5: 49. 2003.

Shrub or small tree; young branches hispid. Stipules ovate-lanceolate, often 4, decussate. Petioles 1–4 cm, hispid; leaves mostly opposite, thickly papery, ovate or obovate to oblong, 10–25 × 5–10 cm, base rounded to cuneate, apex shortly acuminate, margin entire or crenate-serrate, very rough on both surfaces with stiff hairs; lateral veins 6–9 pairs. Figs yellow, axillary or 2–3 together on leafless branches of old stem, turbinate, 1.5–2.5 cm in diam., densely hirsute. Male flowers near mouth, many; perianth-lobes 3, membranous; stamen 1, perianth of gall and female flowers truncate, thin and transparent (easily overlooked). Gall flower: style subterminal, short. Female flower: style lateral, hairy.

Locality: Common in Hong Kong. *HK sheet 6501; L. T. Lo 488.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan; S & SE Asia to Australia.

Ecology: Thickets of wasteland, by streams. Flowering and fruiting: May–Oct.

Uses: Medicinal (folklore).

**7. Ficus variegata** Blume 青果榕 **(Photo 196)**

Bijdr. Fl. Ned. Ind. 459. 1825; FHN 2: 388. 1965; FGD 1: 191. 1987; FOC 5: 49. 2003.

*Ficus chlorocarpa* Benth., FHK 330. 1861; FKH 247. 1912.

*Ficus variegata* var. *chlorocarpa* (Benth.) Benth. ex King, Ann. Bot. Gard. Calcutta 1: 170. 1888; FRPS 23(1): 174. 1998.

Large tree, up to 15 m tall; bark grey. Young branchlets green, sparse pubescent. Stipules ca. 1 cm. Petioles 5–7 cm; leaves thickly papery, broadly ovate to ovate-elliptic, 7.5–15(–20) × 6–13 cm, base round or shallowly cordate, apex acuminate, margin entire, shallowly sinuate or sparsely serrulate, sparsely pubescent or glabrous; basal veins 5, lateral veins 4–6 pairs, with reticulate veins distinct abaxially. Figs usually green, clustered on brachyblasts of trunk or branch, pear-shaped or globose, 1–2.5 cm in diam., apex umbonulate; basal bracts 3, caducous; peduncles 2–4 cm. Male flowers: perianth-lobes 3–4, broadly ovate; stamens 2, filaments base connate into a stalk. Gall flowers: perianth tubular, 4–5 toothed; style lateral; stigma infundibular. Female flowers: perianth-lobes 3–4, linear-lanceolate, membranaceous. Achenes obovate, slightly verrucose; style as long as achenes; stigma clavated.

Locality: Common in Hong Kong. *HK sheet 6470; L. T. Lo 490.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; Thailand, Vietnam.

Ecology: Forests. Flowering and fruiting: Mar.–Dec.

Uses: Ornamental, host of lac insect.

Notes: The type specimen of *Ficus chlorocarpa* was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

**8. Ficus fistulosa** Reinw. ex Blume 水同木 **(Fig. 73; Photo 197)**

Bijdr. 442. 1825; FGD 1: 192. 1987; FOC 5: 50. 2003.

*Ficus harlandii* Benth., FHK 330. 1861; FKH 247. 1912; FHN 2: 388. 1965.

Small tree; bark black-brown. Stipules ovate-lanceolate, ca. 1.7 cm. Petioles 1.5–4 cm; leaves alternate, papery, obovate to oblong, 10–20 × 4–7 cm, base oblique cuneate or rounded, apex mucronate, margin entire or repand, glabrous adaxially, slightly pubescent or minutely punctate-scabrous abaxially; basal veins short, lateral veins 6–9 pairs. Figs clustered on verrucose brachyblast from old wood, orange, subglobose, 1.5–2 cm in diam., glabrous. Peduncles 8–24 mm, male and gall flowers in one set, pedicellate. Male flowers near mouth, few; perianth-lobes 3–4; stamen 1, filaments short. Gall flowers: perianth-lobes very short or absent; ovary glabrous, obovoid; style sublateral, slender; stigma ampliate. Female flowers: in another set; perianth tubular, enclosed lower part of fruit stalk. Achenes rhomboidal, verrucose; style elongated, clavate.

Locality: Common in Hong Kong. *H. C. Tang 2196; Y. S. Lau 1970.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; S to SE Asia.

Ecology: Forests in valleys or by streams. Flowering and fruiting: Mar.–Dec.

**9. Ficus esquiroliana** H. Lév. 黃毛榕(馬鞍天仙果) **(Photo 198)**

Bull. Acad. Int. Geogr. Bot. 24: 252. 1914; Hill, Figs. Hongk. 59, pl. 39. 1967; FOC 5: 60. 2003.

*Ficus fulva* auct. non Reinw. ex Blume: FKH 247. 1912; FHN 2: 390. 1965; FGD 1: 193. 1987.

Small tree or shrub, 4–10 m tall; bark with longitudinal ridges. Young branchlets yellow hirsute, hollowed at center. Stipules lanceolate, 1–1.5 cm, caducous. Petioles 5–11 cm, sparsely brown hirsute; leaves alternate, thick papery, broadly ovate, but lobed when young, 17–27 × 12–20 cm, base shallow-cordate, apex caudate, tip ca. 1 cm, margin serrulate, teeth point pilose, sparsely strigose adaxially, long or short, brown-yellow or grey white hairy; basal veins 5–7, lateral veins 5–6 pairs. Figs paired, sessile, axillary, conic-ovoid, 20–25 mm in diam., light brown hairy; basal bracts ovate-lanceolate, 8 mm, terminal bracts umbilicate. Male flowers at inner wall of

mouth, stipitate; perianth-lobes 4; stamens 2. Gall flowers same as female flowers; perianth-lobes 5; ovary globose, glabrous; style lateral, short; stigma funnel-shaped. Achenes obliquely ovoid, verrucose.

Locality: Ma On Shan, Tai Mo Shan, Ng Tung Chai, Ta Tit Yan. *HK sheet 25476, 32110.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Xizang, Fujian; S to SE Asia.

Ecology: Forests or along streams. Flowering and fruiting: May–Nov.

**10. Ficus hirta** Vahl 粗葉榕(牛奶仔) **(Photo 199)**

Enum. Pl. 2: 203. 1806; FHK 328. 1861; FKH 247. 1912; FGD 1: 194. 1987; FOC 5: 60. 2003.

*Ficus simplicissima* var. *hirta* Migo in Bull. Shanghai Sci. Inst. 14: 331. 1944; FHN 2: 390. 1965.

Shrub or small tree. Young branchlets shollowed, branchlets, leaves and figs golden hirsute. Stipules red, ovate-lanceolate, 1–3 cm. Petioles 2–8 cm; leaves alternate, papery, very variable in shape, oblong-lanceolate to broadly ovate, 10–25 cm, base rounded, shallow-cordate, or broadly cuneate, apex acute or acuminate, margin serrulate, entire or deeply 3–5-lobed, basal veins 3–5; lateral veins 4–7 pairs. Figs paired, axillary, or on leafless branches, globose or ellipsoid, 10–15 mm in diam., sessile or subsessile, apex umbonulate, basal bracts ovate-lanceolate. Male flowers near mouth, pedicellate; perianth-lobes 4, red, lanceolate; stamens 2–3; anthers longer than filament. Gall flowers: perianth-lobes 4; ovary globose; style lateral; stigma infundibular. Female flowers: pedicellate or sessile; perianth-lobes 4. Achenes ellipsoid, glabrous; style elongated; stigma clavate.




**Figure 73.** *Ficus fistulosa* Reinw. ex Blume
*1.* leafy branch; *2.* fruiting branch; *3.* famale flower; *4.* gall flower. (drawn by H. P. Yu)

Locality: Common in Hong Kong. *H. C. Tang 36; Y. S. Lau 2319.*

Distribution: SW to SE China; S to SE Asia.

Ecology: Forests, thickets, near villages by streams. Flowering and fruiting: almost all year round.

Uses: Medicinal (folklore).

**11. Ficus elastica** Roxb. ex Hornem. 印度榕(印度橡樹) **(Photo 200)**

Fl. Ind. 3: 543. 1832; FHN 2: 391. 1965; FGD 1: 196. 1987; FOC 5: 42. 2003.

Large tree, 20–30 m tall. Branchlets thick. Stipules membranaeous, up to 10 cm, leaving annular scars on branches after falling down. Petioles 2–5 cm; leaves thick leathery, oblong or elliptic, 8–30 × 4–11 cm, base rounded, apex acute, margin entire, shining abaxially, midvein distinct; lateral veins many, parallel. Figs paired, borne on axils of leaf scars, ovate-oblong, 10 × 5–8 mm, male, gall and female flowers in one set. Male flowers: pedicellate; perianth-lobes 4, ovate, stamens 1. Gall flowers: perianth-lobes 4, ovary glabrous; style subsessile, curved. Female flowers: sessile. Achenes ovoid, verrucose, persistent style long; stigma subcapitate.

Locality: Cultivated. *HK sheet 25431; P. S. Choi s.n. (HK sheet 35991).*

Distribution: Cultivated in S to SW China. Widely cultivated in tropical and subtropical regions; native to Sikkim, NE India, Myanmar, N Malaysia, Indonesia.

Ecology: Flowering and fruiting: Sep.–Nov.

Uses: Ornamental.

**12. Ficus microcarpa** L. f. 榕樹(細葉榕) **(Photo 201)**

Suppl. Pl. 442. 1781; Corner, Gard. Bull. Singapore 17: 397. 1959; FHN 2: 393. 1965; FGD 1: 198. 1987; FOC 5: 44. 2003.

*Ficus retusa* auct. non L.: FHK 327. 1861; FKH 246. 1912.

Large tree, 15–25 m tall; bark deep grey, crown ample. Branches often bearing pendulous aerial roots. Stipules lanceolate, 1.5–3.5 cm. Petioles stout, 5–10 mm, glabrous; leaves leathery, elliptic, ovate-elliptic or obovate, 4–8 × 3–4 cm, base cuneate, apex bluntly apiculate, entire, rarely emarginate, basal veins 3; lateral veins 3–10 pairs. Figs yellowish or reddish, paired or solitary, axillary, obovoid, 6–8 mm in diam., without peduncles, basal bracts 3, oval, persistent; male, gall and female flowers in one set, with few bristles mixed with them. Male flowers: pedicellate or sessile; perianth-lobes 3–4, elliptic to oblanceolate; stamen 1. Gall flowers: pedicellate; perianth-lobes 3–5, broadly spathulate; ovary globose; style lateral, rather long; stigma trumpet-shaped. Female flowers: sessile; perianth-lobes 3–5; ovary ovoid; style slender; stigma acute.

Locality: Common in Hong Kong. Also widely cultivated. *Y. S. Lau 2323; L. Gibbs 7567.*

Distribution: SW, S to SE China; S & SE Asia to Australia.
Ecology: Forests. Flowering and fruiting: May–Dec.
Uses: Roadside tree.

**13. Ficus benjamina** L. 垂葉榕 **(Photo 202)**
Mant. 1: 129. 1767; FHN 2: 392. 1965; FGD 1: 196. 1987; FOC 5: 45. 2003.

Large tree, up to 20 m tall; crown broad, aerial roots pendulous from large branches, reaching ground and rooting, forming new trunks with drooping branches; bark grey, glabrous. Branchlets pendulous. Stipules lanceolate, ca. 6 mm. Petioles 1–2 cm; leaves thinly leathery, ovate to ovate-elliptic, 4–8 × 2–4 cm, base rounded or cuneate, apex abruptly acuminate, margin entire, not 3-veined at base; lateral veins many, parallel, fine, connected at margins. Figs paired or single, red, yellow or orange, globose or compressed-globose, 0.8–1.5 cm in diam., glabrous, basal bracts 3, triangular-ovate; male, female and gall flowers in one set. Male flowers: few, shortly pedicellate; perianth-lobes 4, broadly ovate; stamen 1; filament short. Gall flowers: many, pedicellate; perianth-lobes 4–5, narrowly spathulate; ovary ovoid; style lateral. Female flowers: sessile; perianth-lobes 3, shortly spathulate. Achenes ovate-reniform, shorter than style; styles sublateral; stigma dilated.
Locality: Cultivated. *C. I. Lei 92*.
Distribution: S to SW China; S Asia to Australia.
Ecology: Flowering and fruiting: Sep.–Nov.
Uses: Roadside tree.

**14. Ficus rumphii** Blume 心葉榕 **(Photo 203)**
Bijdr. Fl. Ned. Ind. 437. 1825; FOC 5: 42. 2003.

Tree, ca. 15 m tall, usually epiphytic when young. Bark grey. Stipules caducous, ovate-lanceolate, 1.5–2.5 cm, scar conspicuous. Petiole 6–8 cm, glabrous; leaf blade ± leathery, cordate to ovate-cordate, 6–13 × 6–11 cm, glabrous, base ± cordate to broadly cuneate, apex acuminate; basal lateral veins 5, secondary veins 5 or 6 on each side of midvein. Figs axillary on leafy branchlets, paired or in small clusters on leafless older branchlets, globose, 1–1.5 cm in diam., with dark spots when young, dark purple when mature, sessile; involucral bracts orbicular, small; apical bracts ± navel-like. Male, gall, and female flowers within same fig. Male flowers: few, scattered among other flowers; perianth-lobes 3, lanceolate; stigma clavate. Achenes tuberculate and with adherent liquid; style long; stigma clavate.
Locality: Cultivated in parks and along roadsides.
Distribution: Yunnan; Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam.
Ecology: Flowering & fruiting: May–Sep.
Uses: Ornamental.

**15. Ficus altissima** Blume 高山榕(雞榕) **(Photo 204)**
Bijdr. 444. 1825; FKH 246. 1912; FHN 2: 391. 1965; FGD 1: 196. 1987; FOC 5: 43. 2003.

Large tree, 25–30 m tall; bark grey, glabrous. Young branchlets puberulent. Stipules 2–3 cm, grey sericeous. Petioles 2–5 cm; leaves thick leathery, broadly ovate to ovate-elliptic, 10–19 × 8–11 cm, base broadly cuneate, apex obtuse or acute, margin entire, glabrous on both surfaces; lateral veins 5–7 pairs. Figs paired, axillary, elliptic-ovoid, 17–28 mm in diam., enclosed within cauducous bracts when young, red or yellowish when ripen, apex umbilicate-salient, basal bracts short, broadly obtuse, leaving annular scars after falling off. Male flowers scattered in inner walls of figs; perianth 4-parted, membranous; stamen 1. Perianth of gall and female flowers as in male flowers. Achenes verrucose; style elongated.
Locality: Cultivated. Caine Rd. *Y. S. Lau 1154; P. S. Choi s.n. (HK sheet 36186)*.
Distribution: Xizang, Yunnan, Guangxi, Hainan, Guangdong; SE Asia.
Ecology: Forests, margins of forests. Flowering and fruiting: Mar.–Oct.
Uses: Ornamental, host of lac insect.

**16. Ficus virens** Aiton 黃葛樹(大葉榕) **(Photo 205)**
Hort. Kew 3: 451. 1789; FGD 1: 199. 1987; FOC 5: 40. 2003.
*Ficus virens* var. *sublanceolata* (Miq.) Corner, Gard. Bull. Singapore 17: 377. 1959, et 21: 9. 1965; FRPS 23(1): 95. 1998.
*Ficus wightiana* Wall. ex Benth., FHK 327. 1861; FHN 2: 392. 1965.
*Ficus infectoria* auct. non Willd.: FKH 247. 1912.

Deciduous or semideciduous tree, epiphytic when young, with buttressed or prop roots. Stipules lanceolate-ovate, up to 10 cm. Petioles 2–5 cm; leaves leathery or rigid papery, sublanceolate, 10–15(–20) × 4–7 cm, base obtuse-rounded, cuneate or shallow-cordate, apex acuminate, margin entire; lateral veins 7–10 pairs, prominent abaxially. Figs purple-red, solitary, paired, axillary or clustered on leafless branches, globose, 7–12 mm in diam., basal bracts 3, minute; peduncles absent; male, gall and female flowers in one set. Male flowers: few, sessile; perianth-lobes 4–5, lanceolate; stamen 1, filament short. Gall flowers: pedicellate; perianth-lobes 3–4; style lateral, shorter than ovary. Female flowers: like gall flowers; style longer than ovary. Achenes wrinkled.
Locality: Cultivated. *Y. S. Lau 1844, 2426*.
Distribution: SW, S to SE China; S Asia to Australia.
Ecology: Flowering and fruiting: Apr.–Oct.
Uses: Roadside tree, timber, medicinal (folklore), host of lac insect.

**17. Ficus nervosa** B. Heyne ex Roth 九丁樹(凸葉榕) **(Photo 206)**

Nov. Pl. Sp. 388. 1819; FHK 327. 1861; FKH 246. 1912; FHN 2: 393. 1965; FGD 1: 200. 1987; FOC 5: 46. 2003.

Medium sized tree; bark dark brown. Branchlets pubescent. Stipules fugacious. Petioles 1.5–2.5 cm, scurfy; leaves leathery, oblanceolate, oblong to elliptic, 6–15(–20) × 2.5–6 cm, base obtuse or cuneate, apex short-acuminate, margin entire, basal nerves 3; lateral veins 7–11 pairs, midvein and lateral veins prominent abaxially. Figs yellow or reddish-brown, solitary or paired, axillary, globose, 1–1.2 cm in diam., glabrous, basal bracts none; stalks slender; male, gall and female flowers mixed in one fig. Male flowers: few near apex of figs; perianth-lobes 3–5; stamen 1, filament short. Gall flowers: pedicellate; perianth-lobes 3–4; ovary ovoid; style sublateral; stigma clavate. Female flowers: perianth-lobes 3–4, ovoid; style slender, terminal or sublateral; stigma elongate.

Locality: Hong Kong Island, Ma On Shan, Mui Tsz Lam, Yim Tso Ha, Lantau Island. *Y. S. Lau 2271; P. S. Choi s.n. (HK sheet 34799).*

Distribution: SW, S to SE China; India, Sri Lanka, Myanmar, Vietnam.

Ecology: Forests, along roadside by streams. Flowering and fruiting: Mar.–Dec.

Uses: Timber.

**18. Ficus tinctoria** G. Forst. subsp. **gibbosa** (Blume) Corner 斜葉榕(水榕) **(Fig. 74; Photo 207)**

Gard. Bull. Singapore 17: 476. 1960 & 21: 74. 1965; FOC 5: 65. 2003.

*Ficus gibbosa* Blume, Bijdr. Fl. Ned. Ind. 466. 1825; FKH 246. 1912; FHN 2: 394. 1965; FGD 1: 201. 1987.

Tree or epiphyte when young. Branchlets brown. Stipules ca. 7 mm. Petioles 0.6–2 cm, stout; leaves alternate, leathery, very variable in shape, ovate-elliptic or subrhomboid, unequal-sided, less than 13 × 5 cm on large trees, base cuneate or obtuse, apex obtuse, acute or short-acuminate, margin entire or angulate, glabrous on both surfaces, basal veins 3; lateral veins 5–7 pairs, slightly prominent on both surfaces. Figs yellow, paired or solitary, axillary, subglobose, 5–6 mm in diam., base abruptly constricted into a 5–10 mm stalk, glabrous or puberulent, apex umbonulate, basal bracts 3. Male flowers: white; perianth-lobes 4–6, linear; stamen 1, rudimentary ovary present. Gall flowers: perianth as male one; ovary oblique-ovate; style lateral. Female flowers in another set: perianth-lobes 4, linear, hyaline. Achenes elliptic, verrucose and keeled; style lateral, elongate; stigma dilated.

Locality: Ma On Shan, Tai Po, Yuen Long, Fung Kat Heung, Tuen Mun, Sheung Shui, Sha Tau Kok. *HK sheet 25493, 36769.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Fujian, Jiangxi, Hunan, Taiwan; S Asia to Australia.

Ecology: Forests near villages. Flowering and fruiting: Apr.–Oct.

Uses: Timber, host of lac insect, ornamental.




**Figure 74.** *Ficus tinctoria* subsp. *gibbosa* (Blume) Corner
*1*. fruiting branch; *2*. female flower. (drawn by H. P. Yu)

**19. Ficus pyriformis** Hook. & Arn. 舶梨榕 **(Photo 208)**

Bot. Beechey Voy. 216. 1836; FHK 328. 1861; FKH 246. 1912; FHN 2: 396. 1965; FGD 1: 203. 1987; FOC 5: 54. 2003.

Shrub, 1–2 m tall, branchlets hirsute. Stipules red, lanceolate, ca. 1 cm. Petioles 1–1.5 cm; leaves papery, oblanceolate or oblong-lanceolate, 4–11 × 2–4 cm, base cuneate, round, apex obtuse-acuminate, margin entire slightly revolute, puberulent and verrucose abaxially; lateral veins 5–9 pairs, anastomosing very near margin. Figs solitary, axillary, pear-shaped, 2–3 cm in diam., glabrous, white, maculate, much constricted at base. Male flowers: perianth-lobes 3–4, lanceolate; stamens 2. Gall flowers: perianth-lobes 4, linear; ovary globose; style lateral. Female flowers in another fig; perianth-lobes 3–4; ovary reniform; style lateral, elongated. Achenes verrucose.

Locality: Common in Hong Kong. *Y. S. Lau 1347; L. T. Lo 51.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Fujian; Vietnam.

Ecology: Along ditches, in thickets. Flowering and fruiting: Feb.–Nov.

**20. Ficus vasculosa** Wall. ex Miq. 白肉榕 **(Fig. 75; Photo 209)**

London J. Bot. 454. 1848; FKH 246. 1912; FOC 5: 46. 2003.

*Ficus championii* Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 76. 1954; FHK 328. 1861; FGD 1: 204. 1987.

Tree, 10–15 m tall. Branchlets grey-brown. Stipules ovate, ca. 6 mm. Petioles 1–2 cm; leaves leathery, elliptic to oblong-lanceolate, 4–11 × 2–4 cm, base cuneate, apex obtuse or acuminate, margin entire or irregularly lobed, dark green and shining adaxially, pale or whitish abaxially; lateral veins 10–12 pairs, prominent on both surfaces, reticulate veins distinct adaxially. Figs yellow or yellow-red, globose, 7–10 mm in diam., base constricted into a short stalk. Peduncles 7–8 mm, basal bracts 3, deciduous; male, gall and female

flowers within same fig. Male flowers: few, shortly pedicellate; perianth-lobes 3–4; stamens 2, rarely 1 or 3. Gall and female flowers: many, pedicellate or sessile; perianth-lobes 3–4; ovary obovate; stigma 2-fid. Achenes glabrous, apex keeled one side.

Locality: Common in Hong Kong. *H. C. Tang 327, Y. S. Lau 1232.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou; Thailand, Laos, Vietnam, Malaysia.

Ecology: Forests. Flowering and fruiting: Feb.–Dec.

Uses: Timber.

Notes: The type specimen of *Ficus championii* was collected from woods of the Happy Valley by J. G. Champion between 1847 and 1850.

**21. Ficus pandurata** Hance 琴葉榕 **(Fig. 76)**

Ann. Sci. Nat., Bot., ser. 4, 18: 229. 1862; FHN 2: 400. 1965; FGD 1: 205. 1987; FOC 5: 59. 2003.

*Ficus holophylla* Migo, Bull. Shanghai Instit. 14: 329. 1944.

*Ficus pandurata* Hance var. *holophylla* Migo, Bull. Shanghai Sci. Inst. 14: 329. 1944; Check List HK Plants 27. 2004.

Small shrub, 1–2 m tall. Branchlets white, pubescent when young. Stipules lanceolate. Petioles 3–5 mm; leaves papery, pendurate, obovate, lanceolate or linear-lanceolate, 3–15 × 1.2–6 cm, base rounded or to broadly cuneate, sometimes constricted at middle, apex acute, mucronate, glabrous adaxially, verrucose and sparsely pubescent on nerves abaxially; lateral veins 3–5 pairs. Figs scarlet, solitary, axillary, elliptic or globose, 4–10 mm in diam., apex umbonate, basal bracts 3, ovate. Peduncles slender, 4–5 mm. Male flowers: near the mouth; perianth-lobes 4, linear; stamens 3, rarely 2, unequal. Gall flowers: pedicellate or sessile; perianth-lobes 3–4, oblanceolate to linear, ovary subglobose; style lateral, very short. Female flowers: perianth-lobes 3–4, elliptic; style lateral, elongate; stigma infundibular.

Locality: Cape D'Aguilar, the New Territories. *P. S. Choi s.n. (HK sheet 35391); Levine & Kwok s.n. (HK sheet 25463, 25465).*

Distribution: SW, S to SE China.

Ecology: Open field, near villages. Flowering and fruiting: Mar.–Nov.

**22. Ficus erecta** Thunb. 天仙果 **(Photo 210)**

Diss. Ficus 5. 1786; FKH 246. 1912; FOC 5: 54. 2003.

*Ficus erecta* Thunb. var. *beecheyana* (Hook. & Arn.) King, Ann. Bot. Gard. Calcutta 1(2): 142, pl. 178A. 1888; FRPS [illegible](1): 134. 1998; FGD 1: 208. 1987.

Small tree or shrub, 2–7 m tall. Branchlets densely hirsute. Stipules caducous. Petioles 1–4 cm, slender, densely white hirsute; leaves thick papery, obovate-elliptic, 7–20 × 3–9 cm, base rounded to shallowly cordate, apex shortly acuminate, margin entire or rarely undulate on upper margin, surfaces scabrous, sparsely pubescent adaxially, pubescent abaxially; lateral veins 5–7 pairs. Figs yellow-red or purple-black, solitary axillary, globose or pyriform, 1.2–2 cm in diam., terminal bracts umbilicate, basal bracts 3, ovate-triangular, male and gall flowers in one set, female flowers in another set. Male flowers: pedeicellate or sessile; perianth-lobes 3 or 2–4, elliptic to ovate-lanceolate; stamens 2–3. Gall flowers: subsessile or shortly pedicellate; perianth-lobes 3–5, lanceolate, hairy; ovary ellipsoid-globose; style lateral; stigma 2-fid. Female flowers; perianth-lobes 4–6, broadly spathulate; ovary glabrous, shortly stalked; style lateral; stigma 2-fid.

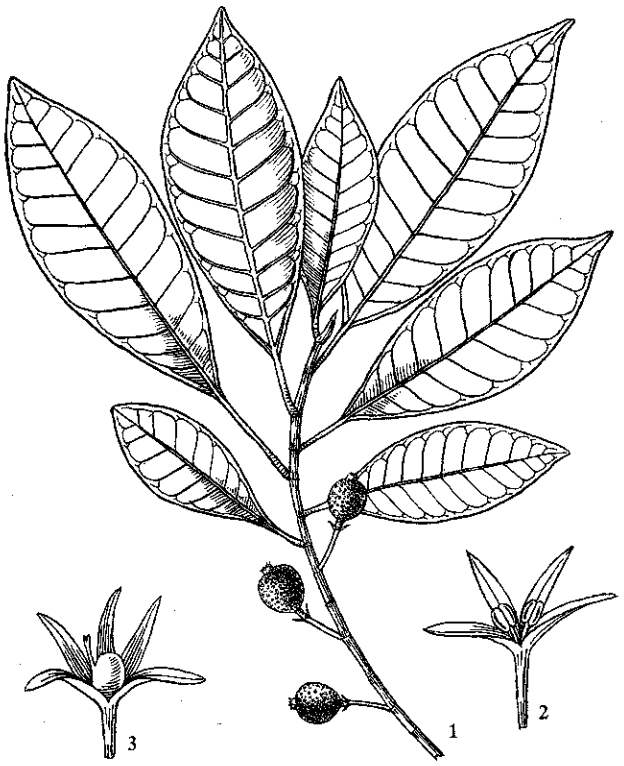



**Figure 75.** *Ficus vasculosa* Wall. ex Miq.
*1*. fruiting branch; *2*. male flower; *3*. female flower. (drawn by H. P. Yu)

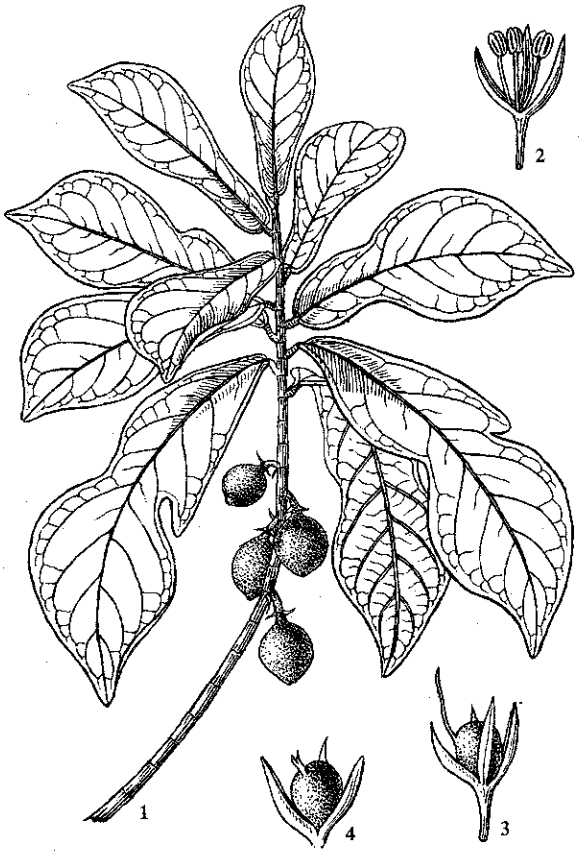



**Figure 76.** *Ficus pandurata* Hance
*1*. fruiting branch; *2*. male flower; *3*. female flower; *4*. gall flower. (drawn by H. P. Yu)

Locality: Common in Hong Kong. *Y. S. Lau 382, 597.*
Distribution: SW to SE China; Japan, Vietnam.
Ecology: Forests or thickets. Flowering and fruiting: Apr.–Sep.

**23. Ficus formosana** Maxim. 台灣榕 **(Photo 211)**
Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 546. 1881; FKH 246. 1912; FHN 2: 397. 1965; FGD 1: 206. 1987; FOC 5: 58. 2003.
*Ficus formosana* var. *shimadai* (Hayata) W. C. Chen, FGD. 1: 207. 1987, *nom. illeg.*
*Ficus formosana* f. *shimadai* Hayata, Ic. Pl. Form. 8: 118. 1919.

Shrub, 1.5–3 m tall. Branchlets sparsely pilose. Stipules linear-lanceolate, 0.5 cm. Petioles 0.7–1 cm; leaves membranaceous, oblanceolate to linear, 4–11 × 1.5–3.5 cm, base narrowly cuneate, apex acuminate, margin entire or rarely coarsely dentate; lateral veins 5–15 pairs. Figs green with reddish, solitary, axillary, ovoid-globose, 6–9 cm in diam., apex mucronate, basal bracts 3; stalk stout, 0.5–1 cm; male and gall or female flowers mixed. Male flowers: perianth-lobes 3–4, ovate; stamens 2, rarely 3. Gall flowers: perianth-lobes 4–5; ovary globose, stipitate; style lateral. Female flowers: pedicellate or sessile; perianth-lobes 4; styles elongated; stigma infundibular.
Locality: Tai Mo Shan, Tai Po Kau. *HK sheet 36154, 36288, 36249.*
Distribution: Hainan, Guangdong, Guangxi, Guizhou, Jiangxi, Fujian, Taiwan; Vietnam.
Ecology: Forests. Flowering and fruiting: Mar.–Dec.

**24. Ficus concinna** (Miq.) Miq. 雅榕 **(Photo 212)**
Ann. Mus. Bot. Lugd.-Bat. 3: 286. 1867; FGD 1: 198. 1987; FOC 5: 40. 2003.

Tree, 15–20 m tall; bark dark grey, lenticellate. Branchlets thick, glabrous. Stipules lanceolate, ca. 1 cm. Petioles short; leaves alternate, elliptic, 5–10 × 1.5–4 cm, base cuneate, apex acute to acuminate, margin entire, glabrous on both surfaces; lateral veins 4–8 pairs, conspicuously, net-veined. Figs light blue-purple, sometimes with yellow spots, paired or 3–4-clustered, axillary, globose, 5–8 mm in diam., basal bracts minute; peduncles 1–5 mm; male, female and gall flowers in one set. Male flowers: few, near mouth, perianth-lobes 2, lanceolate; ovary oblique-ovate; style lateral, stigma round. Gall flowers similar to female flowers; style filiform, short.
Locality: Ma On Shan Village. *Y. W. Lam 1675.*
Distribution: Guangdong, Guangxi, Fujian, Yunnan.
Ecology: Flowering and fruiting: May–Oct.

**25. Ficus subpisocarpa** Gagnep. 筆管榕 **(Photo 213)**
Notul. Syst. (Paris) 4: 95. 1927; FOC 5: 40. 2003.
*Ficus superba* var. *japonica* auct. non Miq.: Hill, Figs Hongk. 18. 1967; FRPS 23(1): 96. 1998.
*Ficus wightiana* auct. non Wall. ex Miq.: FHK 327. 1861; FKH 246. 1912; FHN 2: 392. 1965.

Deciduous tree, sometimes with aerial roots; bark black-brown. Branchlets reddish, glabrous. Stipules lanceolate, ca. 2 cm. Petioles 3–7 cm; leaves alternate or clustered, subpapery, elliptic to oblong, 10–15 × 4–6 cm, base round, apex short-acuminate, margin entire or slightly undurate; lateral veins 7–9 pairs. Figs purple-black, solitary or paired, axillary or on leafless branches, oblate, 5–8 mm in diam., apex concave, basal bracts 3, bradly ovate; peduncles 3–4 mm; male, gall and female flowers in one set. Male flowers: few, sessile; perianth-lobes 3, broadly ovate; stamen 1, anthers ovate, filament short. Gall flowers: pedicellate or sessile; perianth-lobes 3, lanceolate; ovary stipitate, stigma linear; style short, lateral. Female flowers as gall flowers but ovary sessile; stigma capitate.
Locality: Common in Hong Kong. *H. C. Tang 290; Y. S. Lau 1966.*
Distribution: S, SW to SE China; E, S to SE Asia.
Ecology: Open field and forests. Flowering and fruiting: Feb.–Sep.

**26. Ficus variolosa** Lindl. ex Benth. 變葉榕 **(Photo 214)**
London J. Bot. 1: 492. 1842; FHK 328. 1861; FKH 246. 1912; FHN 2: 399. 1965; FGD 1: 209. 1987; FOC 5: 55. 2003.

Shrub or small tree, 3–10 m tall; bark grey-brown. Branchlets with short internodes. Stipules long-triangular , ca. 8 mm. Petioles 5–10 mm; leaves thinly leathery, narrowly elliptic, elliptic-lanceolate, 5–12 × 1.5–4 cm, base cuneate, apex obtuse or acute, margin entire; lateral veins 7–11 pairs. Figs paired or solitary, axillary, globose, 10–12 mm in diam., verrucose, apex umbonulate; basal bracts 3, ovate-triangular , base slightly connate; peduncles 8–12 mm. Male flowers: near apical pore. Gall flowers: ovary globose; style short, lateral. Female flowers in another set; perianth-lobes 3–4; ovary reniform; style lateral, slender. Achenes verrucose.
Locality: Common in Hong Kong. *H. C. Tang 19; Y. S. Lau 1306.*
Distribution: S, SW to SE China; Laos, Vietnam.
Ecology: Thickets or forests. Flowering and fruiting: Feb.–Dec.
Uses: Medicinal (folklore), fibre.

**27. Ficus langkokensis** Drake 青藤公 **(Photo 215)**
J. Bot. (Morot) 10: 215. 1896; FGD 1: 208. 1987; FOC 5: 53. 2003.

Tree, 6–15 m tall; bark red-brown or grey-yellow. Branchlets slender, ferrugineo-scurfy. Stipules lanceolate, 7–10 mm. Petioles

1–4 cm. Leaves alternate, papery, elliptic-lanceolate to elliptic, 7–19 × 2–6 cm, base broadly cuneate, apex caudate, margin entire, glabrous on both surfaces; basal nerves 3, lateral veins 2–4 pairs. Figs paired or simple, axillary, globose, 5–12 mm in diam., ferrugineo-scurfy, apex umbonulate; basal bracts 3, broadly ovate; peduncles slender, 5–15 mm, ferrugineo-scurfy. Male flowers: pedicellate; perianth-lobes 3–4, ovate; stamens 1–2, filaments short. Female flowers: perianth-lobes 4, obovate, dark red; styles lateral.

Locality: Ma On Shan, Wu Kau Tang, Lai Chi Wo. *W. J. Tutcher s.n. (HK sheet 25749); Y. W. Lam 525.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Fujian; India, Laos, Vietnam.

Ecology: Forests. Flowering and fruiting: Feb.–Sep.

**28. Ficus religiosa** L. 菩提樹 **(Photo 216)**

Sp. Pl. 1059. 1753; FGD 1: 197. 1987; FOC 5: 41. 2003.

Large tree, epiphytic when young, 15–25 m tall; crown ample. Branchlets grey-brown, pubescent. Stipules small. Petioles slender, articulate, as long as leaf-blade or longer; leaves leathery, triangular-ovate, 9–17 × 8–12 cm, base truncate to shallow-cordate, apex cundate, margin entire or undulate, 2–5 cm, basal veins 3; lateral veins 5–7 pairs. Figs red, globose to oblate, 1–1.5 cm in diam., basal bracts 3, ovoid; peduncles 4–9 mm; male, gall and female flowers in one set. Male flowers: few, near mouth, sessile; perianth-lobes 2–3, involute; stamen 1, filament short. Gall flowers: pedicellate; perianth-lobes 3–4; ovary globose, glabrous; style short; stigma dilated, 2-fid. Female flowers: sessile; perianth-lobes 4, broadly lanceolate; style slender; stigma narrow.

Locality: Cultivated. *S. P. Lau 15; Y. S. Lau 2261.*

Distribution: Cultivated in Hainan, Guangdong, Guangxi, Yunnan; native to India.

Ecology: Flowering and fruiting: Sep.–Nov.

Uses: Ornamental.

## 2. Fatoua Gaud. 水蛇麻屬

Herbs, without latex. Stipules free, caducous. Leaves alternate, distichous, margin toothed. Inflorescences a lax cyme. Flowers unisexual (plant monoecious), bracteolate. Male flowers: perianth 4-lobed; stamens 4, filament incurved in buds. Female flowers: perianth 4–6-lobed; ovary oblique; style slightly lateral, stigma 2-fid, filiform; ovules pendulous. Achenes small, oblique globose, slightly compressed, enclosed in persistent perianth, pericarpum slightly crustaceous. Seed coat membranaceous, without endosperm.

Two species distributed in E & SE Asia to Australia; two species in China; one species in Hong Kong.

**1. Fatoua villosa** (Thunb.) Nakai 水蛇麻 **(Fig. 77)**

Bot. Mag. (Tokyo) 41: 516. 1927; FOC 5: 22. 2003.

*Urtica villosa* Thunb. ex Murray, Syst. Veg. ed. 14, 851. 1784.

*Fatoua pilosa* auct. non Gaudich.: FKH 244. 1912; FHN 2: 372. 1965; FGD 1: 169. 1987.a

Annual herb, 30–80 cm tall, few-branched. Branches slender, slightly villose. Petioles long, slender; leaves membranaceous, broad-ovate, 5–10 × 3–5 cm, base cordate or cuneate, slightly decurrent, apex acute, margin crenate-dentate, triplinerved; lateral veins 3–11 each side, roughly and appressed-pilose on both surfaces. Cymes axillary, 5 mm in diam.; male and female flowers mixed together. Male flowers: perianth campanulate, 4-lobed; stamens 4, exserted, opposite perianth-lobes. Female flowers: perianth-lobes boat-shaped; ovary slightly compressed-globose; style lateral, filiform, 1–1.5 mm. Achenes compressed-trigonous, 1 mm, with dispersed, raised, minute spots, 1-seeded.

Locality: Causeway Bay. *HK sheet 6429; H. C. Tang 1413.*

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Jiangsu, Jiangxi, Taiwan, Yunnan, Zhejiang; E & SE Asia to Australia, New Caledonia.

Ecology: Roadsides and by streams. Flowering and fruiting: Late spring to autumn.

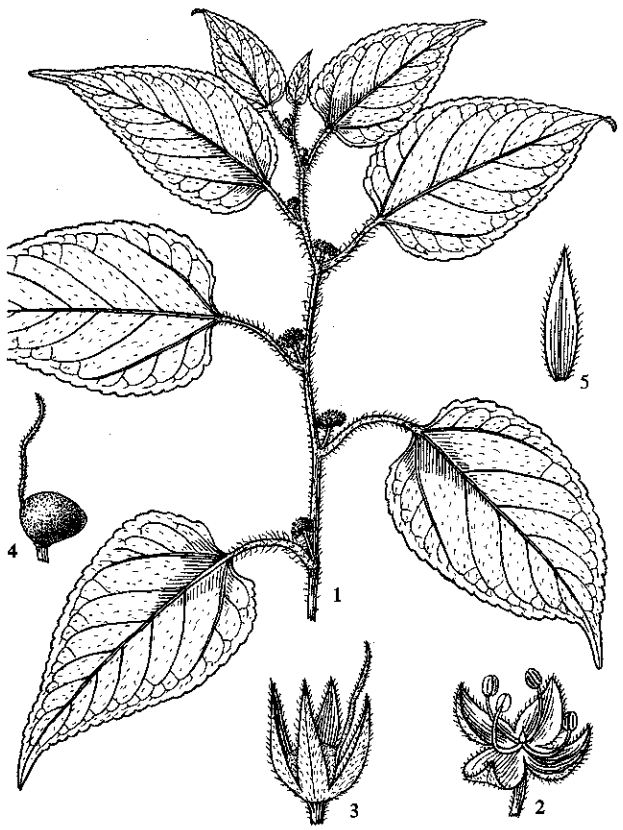



Figure 77. *Fatoua villosa* (Thunb.) Nakai

*1*. flowering branch; *2*. staminate flower; *3*. pistillate flower; *4*. pistil; *5*. bract. (drawn by H. P. Yu)

## 3. Maclura Nutt. 柘屬

Trees, shrubs or scandent shrubs, with milky juice. Branches usually spinose. Stipules 2. Leaves alternate, entire; lateral veins pinnate. Inflorescences axillary, racemose, spicate or capitate, with many sterile bracts at base. Flowers dioecious; Bracts 2–4 in each flower, adnated to perianth-lobes; perianth-lobes usually 4, rarely

3 or 5, free or basally connate, each lobe with 2–7 embedded yellow glands. Male flowers: stamens 4, straight in buds; pistillodes subulate or absent. Female flowers: sessile, perianth-lobes fleshy, peltate, free or basally connate, apex thick; ovary free or immersed in receptacle; style short, 2-fid or undivided. Syncarps formed by laterally fused flowers and bracts, fleshy, globose; achenes many, small, ovoid, pericarp crustaceous, enclosed in fleshy persistent perianth lobes.

About 12 species distributed in Africa, Asia, Australia and America; five species in China; two species in Hong Kong.

1a. Lateral veins of leaflets 7–10 pairs, indistinct abaxially; syncarps 2–5 cm in diam. ..... 1. *M. cochinchinensis*

1b. Lateral veins of leaflets 4–5 pairs, distinct abaxially; syncarps ca. 2.5 cm in diam. ..... 2. *M. tricuspidata*

**1. Maclura cochinchinensis** (Lour.) Corner
構棘(葨芝) **(Fig. 78; Photo 217)**

Gard. Bull. Singapore 19: 239. 1962; FOC 5: 35. 2003.

*Cudrania cochinchinensis* (Lour.) Kudo & Masam., Annual Rep. Taihoku Bot. Gard. 2: 27. 1932; FHN 2: 379. 1965; FGD 1: 180. 1987; FRPS 23(1): 58. 1998.

*Vanieria cochinchinensis* Lour., Fl. Cochinch. 564. 1790.

*Cudrania rectispina* Hance, J. Bot. 365. 1876; FKH 247. 1912.

*Cudrania javanensis* Tréc, Ann. Sci. Nat., Bot., ser. 3, 8: 123. 1847.

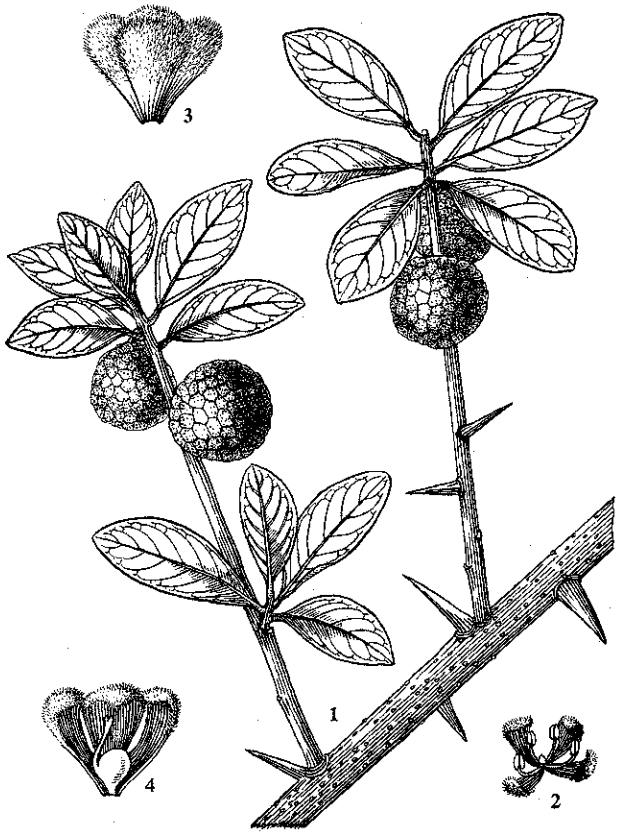



Figure 78. *Maclura cochinchinensis* (Lour.) Corner
*1*. fruiting branch; *2*. male flower; *3*. female flower; *4*. female flower opened (drawn by H. P. Yu)

Erect or scandent shrub. Branches glabrous, with axillary spines. Petioles 0.5–1 cm; leaves alternate, leathery, elliptic-lanceolate or oblong, 3–8 × 2–2.5 cm, base cuneate, apex obtuse or shortly acuminate, margin entire, glabrous on both surfaces; lateral veins 7–10 pairs. Head axillary, yellowish, 6–10 mm in diam., glabrous. Flowers dioecious, bracts subulate, with 2 yellow glands inside. Male flowers: perianth-lobes 4, unequal; stamens 4, pistillodes subulate or peltate. Female flowers: bracts tomentose; perianth-lobes 4, free or connate below; style 2-lobed, stigma filiform. Syncarp orange, globose, 2–5 cm in diam., slightly hairy; achenes ovoid, brown.

Locality: Hong Kong Island, Sai Kung, Tai Au Mun, Tai Po, Tai Mo Shan, Ma On Shan, Lantau Island. *HK sheet 29810, 31248.*

Distribution: SW to SE China; E Africa, E, S & SE Asia to Australia, New Caledonia.

Ecology: Open thickets, forests, near villages. Flowering and fruiting: May–Nov.

**2. Maclura tricuspidata** Carr. 柘樹

Rev. Hort. 390. 1864; FOC 5: 36. 2003.

*Cudrania tricuspidata* (Carr.) Bureau ex Lavallée, Arb. Segrez. 243. 1877; FGD 1: 181. 1987; FRPS 23(1): 63. 1998; Check List HK Plants 61. 2002.

Deciduous shrub or small tree, 1–7 m tall. Branchlets slightly angulate, with spines. Petioles 1–2 cm; leaves ovate or rhomboid-ovate, 5–14 × 3–6 cm, base cuneate or rounded, apex acuminate, margin entire or occasionally trilobed, green-white and glabrous or pubescent abaxially; lateral veins 4–6 pairs. Head globose, solitary or paired, axillary; peduncles short. Male heads 5 mm in diam., bracts 2, adnated on perianth-lobes. Male flowers: perianth-lobes fleshy, apex thick, involute, with yellow glands; stamens 4, pistillode subulate. Female heads: 10–15 mm in diam. Female flowers: perianth-lobes shield-shaped at apex, others as in male one. Syncarp orange, subglobose, ca. 2.5 cm in diam., fleshy.

Locality: Fanling. *W. J. Tutcher 9536.*

Distribution: S Hebei; Korea, Japan, Vietnam.

Ecology: Thickets. Flowering: Early summer; fruiting: Summer to autumn.

Uses: Leaves for feeding silkworms, medicinal (folklore).

## 4. Malaisia Blanco 牛筋藤屬

Climbing shrubs with latex. Stipules lateral, deciduous. Leaves alternate, entire or obscurely dentate, pinnately veined. Flower dioecious. Male inflorescence a spike, axillary, simple or branched. Male flowers: perianth 3–4-lobed, lobes valvate; stamens 3–4, filaments incurved in bud, pistillodes minute. Female inflorescence a small head, axillary, globose, solitary or clustered, with many bracts at base. Female flowers: mostly sterile, usually 1 or 2(–5) fertile, perianth urceolate; ovary included; style central, deeply 2-fid, stigma filiform; ovules pendulous. Infructescence accrescent; achenes enclosed by thin and fleshy perianth, pericarp thin.

Only one species distributed in S, E Asia to Australia; it also occurs in Hong Kong.

This genus is sometimes placed within the genus *Trophis* P. Brown. Here the author followed the treatment of *Flora of China* and kept it as a distinct genus.

**1. Malaisia scandens** (Lour.) Planch.
牛筋藤 **(Fig. 79; Photo 218)**
Ann. Sci. Nat. Bot. Ser. 4, 3: 293. 1855; FHN 1: 377. 1964; FGD 1: 177. 1987; FOC 5: 27. 2003.

*Caturus scandens* Lour., Fl. Cochinch. 612. 1790.

*Trophis scandens* (Lour.) Hook. & Arn., Bot. Beechey Voy. 214. 1836.

Climbing shrub. Branchlets slender, with white lenticels. Petioles 3 mm; leaves alternate, papery, oblong or elliptic-obovate, 5–12 × 2–4.5 cm, base rounded to shallow-cordate, asymmetric, apex acute, margin entire or obscurely serrate, slightly rough abaxially; lateral veins 7–12 pairs. Male spikes cylindric, solitary or 2–4-clustered; peduncles 2–4 cm; bracts connate at base. Male flowers: perianth 3–4-lobed, lobes triangular, pubescent; stamens as many as perianth-lobes and opposite to them, anther subglobose; pistillodes minute; female heads 3–5 in clusters, subglobose, ca. 6 mm in diam., densely pubescent; bracts crowded; peduncles ca. 10 mm, hairy. Female flowers: perianth urceolate, 1–1.5 mm, enlarged later; ovary included; style 2-fid, filiform, 10–13 mm. Achenes red, ovoid, 6–8 mm.

Locality: Man Kam To, Tai O, Fan Lau, Shui Hou, Tong Fuk, Tai A Chau. *HK sheet 36190, 36496.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; SE Asia to Australia.

Ecology: Thickets or forests, often on trees and rocks.

Uses: Fibre.

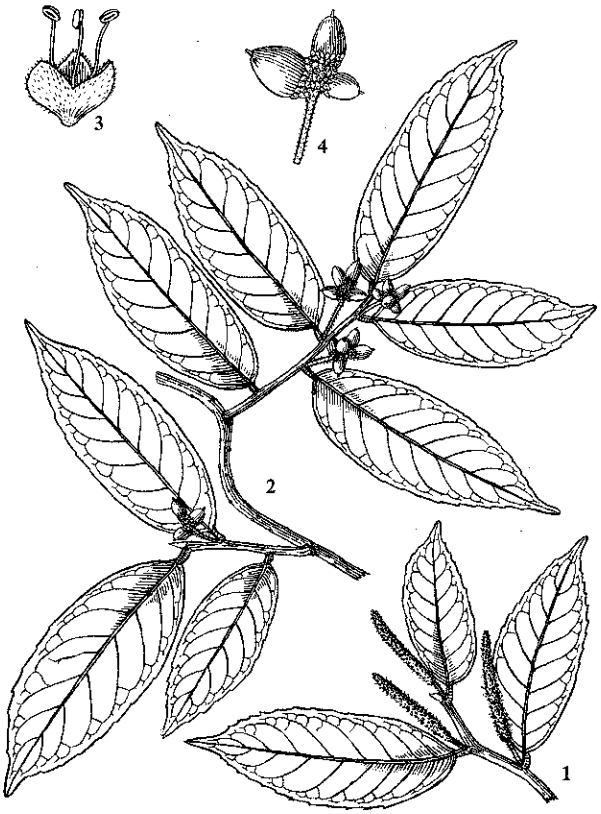



**Figure 79.** *Malaisia scandens* (Lour.) Planch.
*1*. male branch; *2*. fruiting branch; *3*. male flower; *4*. drupe. (drawn by H. P. Yu)

## 5. Morus L. 桑屬

Deciduous trees or shrubs, monoecious or dioecious. Winter buds with 3–6 imbricate scales. Stipules caducous. Leaves alternate, simple, entire, serrate to variously lobed, with 3–5 veins at base. Spikes catkin-like, pendulous, ebracteate. Male flowers: perianth 4-lobed, lobes imbricate; stamens 4, incurved in bud, later elongating and exserted; pistillodes turbinate. Female flower: perianth 4-lobed, lobes imbricate, fleshy in fruit; ovary 1-locular, sessile; style 2-parted, ovules pendulous. Syncarps black berry-like, consisting of many achenes enclosed in enlarging succulent perianths (sorosis). Seeds subglobose, testa membranaceous, endosperm abundant.

About 16 species distributed in temperate and warm regions of the world; 11 species in China; one species in Hong Kong.

**1. Morus alba** L. 桑 **(Fig. 80; Photo 219)**
Sp. Pl. 2: 986. 1753; FKH 244. 1912; FHN 2: 374. 1965; FGD 1: 172. 1987; FOC 5: 23. 2003.

Tree or shrub, 3–10 m tall or more; winter buds red-brown, scales imbricate. Branchlets fine hairy. Petioles 1.5–5.5 cm; leaves ovate or broad-ovate, 5–15 × 5–12 cm, base rounded or slightly cordate, apex acute, acuminate or obtuse, margin serrate, sometimes variously lobed, pubescent along veins abaxially. Flowers unisexual. Male spike pendulous, 2–3.5 cm, densely white villose. Male flowers: perianth-lobes broad-elliptic, greenish; anther globose or reniform. Female spike 1–2 cm. Female flowers: perianth-lobes obovate, outside and margin hairy; style absent, stigma 2-parted. Syncarps ovoid-ellipsoid, 1–2.5 cm, red or dark purple when mature.

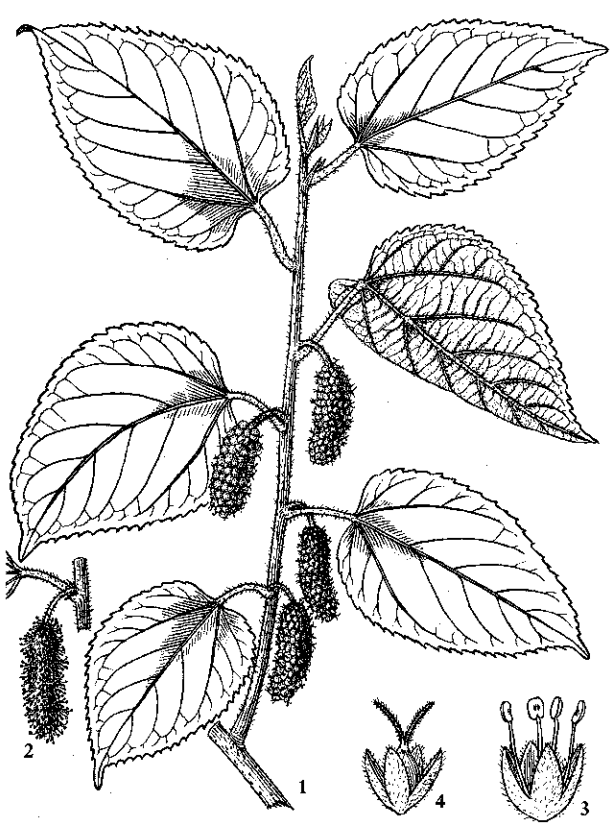



**Figure 80.** *Morus alba* L.
*1*. fruiting branch; *2*. male inflorescence; *3*. male flower; *4*. female flower. (drawn by H. P. Yu)

Locality: Common in Hong Kong. Also cultivated. *H. C. Tang 1164; Y. S. Lau 279.*
Distribution: Widely distributed in China; cultivated in Korea, Japan, C Asia, Europe.
Ecology: Flowering & fruiting: Feb.–Aug.
Uses: Host (silkworms), food (fruit), fibre, medicinal (folklore).

## 6. Artocarpus J. R. & G. Forster 桂木屬

Evergreen trees with milky juice, monoecious. Stipules various. Leaves alternate, entire or pinnately lobed, penninerved. Heads axillary or on brachyblasts, solitary or paired, variable in shape. Flowers unisexual, small, densely crowded on a fleshy rachis, often mixed with peltate bract. Male flowers: perianth 2–4-lobed, lobes obtuse, concave, valvate or slightly imbricate; stamen 1, erect; pistillode absent. Female flowers: perianth tubular, connate and confluent at lower part with the rachis, mouth minute; ovary enclosed; style central or lateral, stigma entire, rarely 2–3-fid; ovules pendulous. Syncarps fleshy, ellipsoid, cyclindric, globose or lobed, formed by enlarged fleshy connate perianth and carpels, papilary or with hardened spinous, truncate, pyramidal protuberance on surface. Achenes deeply sunk in fleshy rachis of inflorescence, without endosperm.

About 50 species distributed in tropical Asia; 14 species in China; four species and one subspecies in Hong Kong.

1a. Leaf blade abaxially glabrous.
  2a. Leaves spirally arranged; male inflorescence borne on branches or trunk; syncarps 30–100 cm in diam. ..... 1. *A. heterophyllus*
  2b. Leaves distichous; male inflorescence axillary; syncarps less than 5 cm in diam. ..... 2. *A. nitidus* subsp. *lingnanensis*
1b. Leaf blade abaxially pubescent.
  3a. Leaves smaller, 4–8 × 2.5–3 cm; syncarps with numerous cylindric protuberances of toward 5 mm at surfaces ..... 3. *A. styracifolius*
  3b. Leaves larger,7–20 × sign 3–10 cm; syncarps not as above.
    4a. Leaves pubescent abaxially; syncarps ca. 6.5 cm in diam. ..... 4. *A. tonkinensis*
    4b. Leaves powdery white tomentose abaxially; syncarps 3–4 cm in diam. ..... 5. *A. hypargyreus*

**1. Artocarpus heterophyllus** Lam. 菠蘿蜜 **(Photo 220)**

Encyl. 3: 209. 1789; FHN 2: 381. 1964; FGD 1: 182. 1987; FOC 5: 31. 2003.

*Artocarpus intergrifolia* auct. non L. f.: FKH 247. 1912.

*Artocarpus macrocarpon* Dancer, Cat. Bot. Gard. Jamaica: 1. 1792; Check List HK Plants 59. 2002, "*macrocarpus*".

Tree, 10–20 m tall; old trees buttressed. Petioles 1–3 cm; leaves spirally arranged, elliptic or obovate, 7–15 × 3–7 cm, base cuneate, apex obtuse or acuminate, margin entire (young trees or germinate shoots often divided), glabrous adaxially, slightly coarse abaxially; lateral veins 6–8 pairs. Heads on trunk or on brachyblasts. Male heads cylindric or clavate-elliptic, 2–7 cm; peduncles 1–5 cm. Syncarps yellow-brown, ellipsoid to globose, or with irregular form, 30–100 × 25–50 cm, with stiff hexagonal tubercles and thick hairs.

Locality: Cultivated. *HK sheet 6569, 25816.*
Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian (cultivated); native to India, widely cultivated in tropical regions.
Ecology: Flowering: Spring to summer; fruiting: Summer to autumn.
Uses: Food (fruit), timber, medicinal (folklore).

**2. Artocarpus nitidus** Trécul subsp. **lingnanensis** (Merr.) F. M. Jarrett 桂木(紅桂木)

J. Arnold Arbor. 41: 124. 1960; FHN 2: 382. 1965; FGD 1: 182. 1987; FOC 5: 33. 2003.

*Artocarpus lingnanensis* Merr., Lingnan Sci. J. 7: 302. 1929.

Tree to 17 m tall. Bark black to brown, longitudinally fissured. Branchlets wrinkled, appressed puberulent, rapidly glabrescent. Stipules lanceolate, caducous. Petiole 0.5–1.5 cm; leaves distichous, thinly leathery, oblong-elliptic to obovate-elliptic, 7–15 × 3–7 cm, base cuneate to ± rounded, apex mucronate to caudate, margin entire or irregularly shallowly toothed, glabrous on both surfaces; secondary veins 6–10 on each side of midvein, adaxially prominent. Male inflorescences capitate, obovoid, or oblong, 2.5–12 × 2.7–7 mm. Peduncle of female inflorescences 1.5–5 mm. Male flowers: perianth-lobes 2–4, basally connate for 0.5–0.5 mm. Syncarps red when mature, ± globose, with coarse pubescence.

Locality: Cultivated.
Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan; Vietnam, Cambodia, Thailand.
Ecology: Flowering: Mar.–May; fruiting: May–Sep.
Uses: Timber, food (fruit).

**3. Artocarpus styracifolius** Pierre 二色菠蘿蜜 **(Fig. 81; Photo 221)**

Bull. Soc. Bot. France 2: 492. 1905,"*styracifolia*"; FHN 2: 382. 1965; FGD 1: 183. 1987; FOC 5: 32. 2003.

Tree, up to 20 m tall; young branchlets densely white pubescent. Petioles 8–14 mm, hairy; leaves distichous, oblong or obovate-lanceolate, sometimes elliptic, 4–8 × 2.5–3 cm, base cuneate, slightly decurrent, apex caudate, margin entire (young leaves often lobed), white powdery hairy abaxially; lateral veins 4–7 pairs. Head axillary, solitary. Male heads elliptic, obovate or cyclindric, 6–12 × 4–7 mm, densely white pubescent. Female heads yellow, red-brown when dry, globose, 6–10 mm in diam. Syncarps globose, 4 cm

in diam., villose, with many cylindric protuberances on surfaces; achenes globose.

Locality: Ma On Shan, Tai Po, Wu Kau Tang. *Y. W. Lam 889; P. S. Choi s.n. (HK sheet 38342).*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou; Vietnam, Laos.

Ecology: Forests. Flowering: Jun.–Aug.; fruiting: Aug.–Dec.

Uses: Timber, food (fruit).

**4. Artocarpus tonkinensis** A. Chev. ex Gagnep.
胭脂樹 **(Photo 222)**

Bull. Soc. Bot. France 73: 90. 1926; FHN 2: 383. 1965; FGD 1: 184. 1987; FOC 5: 34. 2003.

Tree, 14–16 m tall. Branchlets reddish-brown, adpressedly pubescent. Petioles 4–10 mm, puberulent; leaves elliptic, obovate or oblong, 8–20 × 4–10 cm, base rounded or cuneate, apex acute, margin entire or shallowly serrate, densely puberulent abaxially; lateral veins 6–9 pairs, midvein purple-red when dry. Heads axillary, solitary. Male heads obovoid or ellipsoid, 0.8–1.5 cm wide; peduncles shorter than head. Bracts peltate. Male flowers: perianth 2–3-lobed, ciliate; stamen 1. Female heads globose. Female flowers: perianth perfectly confluent. Syncarps yellow, subglobose, 6.5 cm in diam.; stalk 3–4 cm. Achenes ellipsoid, 12–15 × 9–12 mm.

Locality: Shing Mun, Tai Po, Lam Tsuen, Lai Chi Wo. *L. T. Lo 261.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Fujian; Vietnam, Cambodia.

Ecology: Flowering: Spring to summer; fruiting: Autumn to winter.

Uses: Timber, food (fruit).

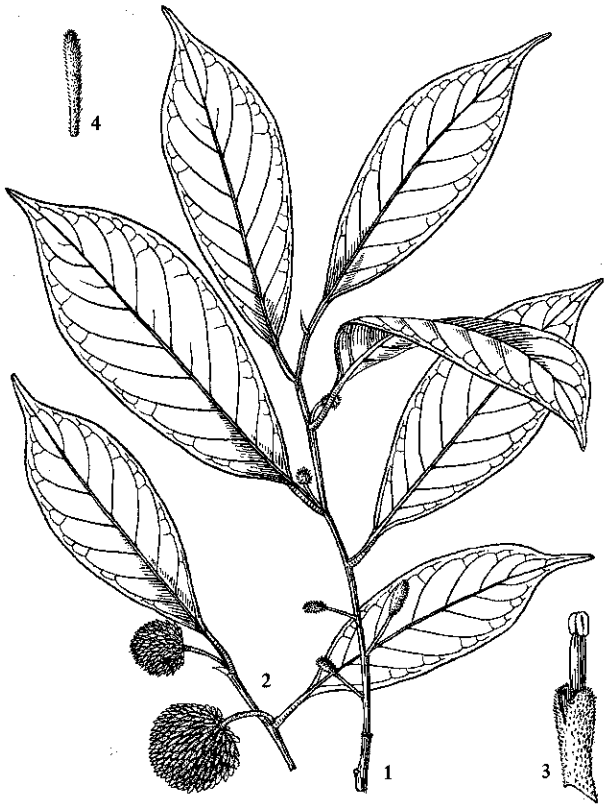



**Figure 81.** *Artocarpus styracifolius* Pierre
*1*. flowering branch; *2*. fruiting branch; *3*. male flower; *4*. bract. (drawn by H. P. Yu)

**5. Artocarpus hypargyreus** Hance ex Benth.
白桂木 **(Fig. 82; Photo 223)**

FHK 325. 1861, "*hypargyrea*"; FKH 248. 1912; FHN 2: 383. 1965; FGD 1: 185. 1987; FOC 5: 33. 2003.

*Ficus laceratifolia* auct. non Lévl. & Van.: FKH 246. 1912.

Large tree, 10–25 m tall; bark dark purple. Young branches white pubescent. Petioles 1.5–2 cm, hairy; leaves leathery, oblong, elliptic to obovate, 8–15 × 4–7 cm, base cuneate, apex narrow-acuminate, margin entire or slightly sinuate-toothed (leaves of young trees often pinnately divided), glabrous and shining adaxially, rough with powdery white tomentum abaxially; lateral veins 6–7 pairs, reticulate veins raised and pubescent. Head solitary, axillary. Male heads obovoid to ellipsoid, 1.5–2 × 1–1.5 cm; peduncles 2–4.5 cm, hairy. Male flowers: perianth 4-lobed, lobes spathulate plumose-hairy, adnated to clavate or subpeltate bracts; stamen 1, anther ellipsoid. Female heads rather smaller. Female flowers: perianth densely hairy; style shortly protruding. Syncarps subglobose, 3–4 cm in diam., yellowish to orange, brown pubescent, slightly papillary on surfaces; stalk 3–5 cm; pubescent.

Locality: Common in Hong Kong. *H. C. Tang 587; Y. S. Lau 1958.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Fujian.

Ecology: Flowering: May–Aug.; fruiting: Jun.–Aug.

Uses: Timber, food (fruit).

Notes: The type specimen was collected from Hong Kong Island by H. F. Hance around 1850. Listed in *Rare and Precious Plants of Hong Kong*.

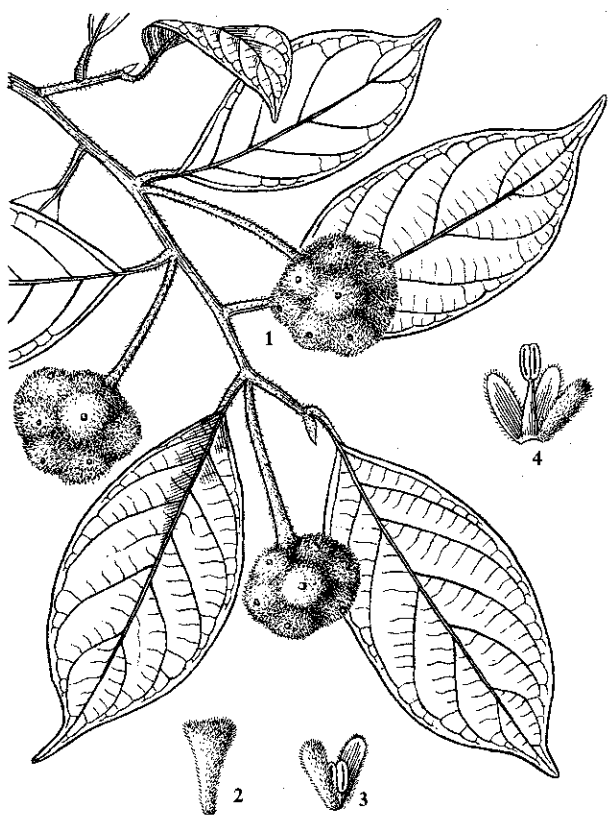



**Figure 82.** *Artocarpus hypargyreus* Hance ex Benth.
*1*. fruiting branch; *2*.bract; *3–4*. male flower. (drawn by H. P. Yu)

## 7. **Broussonetia** L'Hérit. ex Vent. 構屬

Trees or shrubs or climbers, with milky juice, monoecious or dioecious. Stipules lateral, free, caducous. Leaves alternate, spirally arranged or distichous, serrulate or 3–5-lobed; 3-veined at base, secondary veins pinnate. Male catkins solitary, cylindrical. Male flowers: perianth 4-fid, or lobed, valvate; stamens 4, inflexed in bud; pistillode minute. Female heads globose, mixed with persistent bracts. Female flowers: perianth tubular, 3–4-toothed, persistent; ovary enclosed, stipitate; style lateral, 2-partite; ovule pendulous. Syncarps globose; achenes surrounded by bracts and perianth, exserted, fleshy below, crustaceous above.

Four species distributed in E Asia and Pacific Island; four species in China; two species in Hong Kong.

1a. Climbers; leaves not lobed ..... 1. *B. kaempferii* var. *australis*
1b. Trees; leaves often deeply 3–5-lobed ..... 2. *B. papyrifera*

**1. Broussonetia kaempferi** Sieb. var. **australis** Suzuki 藤構(葡蟠) **(Photo 224)**

Trans. Nat. Hist. Soc. Taiwan 24: 433. 1934; FOC 5: 27. 2003.

*Broussonetia kaempferi* auct. non Sieb.: FKH 244. 1912

Climber, with milky juice, dioecious. Branches and branchlets elongate, brown pubescent when young. Leaves alternate, ovate-elliptic, 3.5–8 × 2–3 cm, base rounded or cordate, apex acuminate to caudate, margin serrulate, scabrous adaxially, pubescent abaxially. Male spikes 1.5–2.5 cm. Male flowers: perianth 4–3-parted; segments hairy abaxially; stamens 4–3, pistillode minute. Female heads globose. Female flowers: perianth hairy; style filiform, reddish violet. Syncarps red, globose, 1 cm in diam., with persistent exserted styles.

Locality: Hong Kong Island, Sha Tin, Ho Chung, Tai Mo Shan, Bride's Pool, Tai Po Kau, Lantau Island. *D. P. M. Guile s.n. (HK sheet 30347); P. S. Choi 350.*

Distribution: Areas S of Qinling Range; Korea, Japan, Vietnam.

Ecology: Thickets. Flowering: Feb.–Jun.; fruiting: Mar.–Jul.

Uses: Fibre, medicinal (folklore).

**2. Broussonetia papyrifera** (L.) L'Hérit. ex Vent.
構樹 **(Fig. 83; Photo 225)**

Tabl. Regn. Veg. 3: 458. 1799; FHN 2: 378. 1965; FGD 1: 178. 1987; FOC 5: 26. 2003.

*Morus papyrifera* L., Sp. Pl. 986. 1753.

Tree, 10–20 m tall, dioecious. Branchlets densely pubescent. Stipules ovate, 1.5–2 × 0.8–1 cm. Petioles 2.5–8 cm; leaves thick papery, broad-ovate or oblong-ovate, 6–18 × 5–9 cm, base cordate, unequal, apex acuminate, margin serrulate or 3–5-lobed, scabrous and sparsely hirsute adaxially, densely tomentose abaxially, basal veins 3; lateral veins 6–7 pairs. Male catkin cylindrical, 4–8 cm. Male flowers: perianth 4-lobed, hairy; stamens 4. Female heads globose, bracts clavate. Female flowers: perianth tubular, apex adnated with style; ovary ovoid. Syncarps red, globose, 1.5–3 cm in diam., fleshy; bracts and perianth persistent, clustered together; achenes red, pericarp crustaceous.

Locality: Common in Hong Kong. *H. C. Tang 2350.*

Distribution: Areas S of Shanxi Province; Japan, India, Vietnam.

Ecology: Wasteland, roadsides. Flowering: Mar.–May; fruiting: Apr.–Aug.

Uses: Fibre.

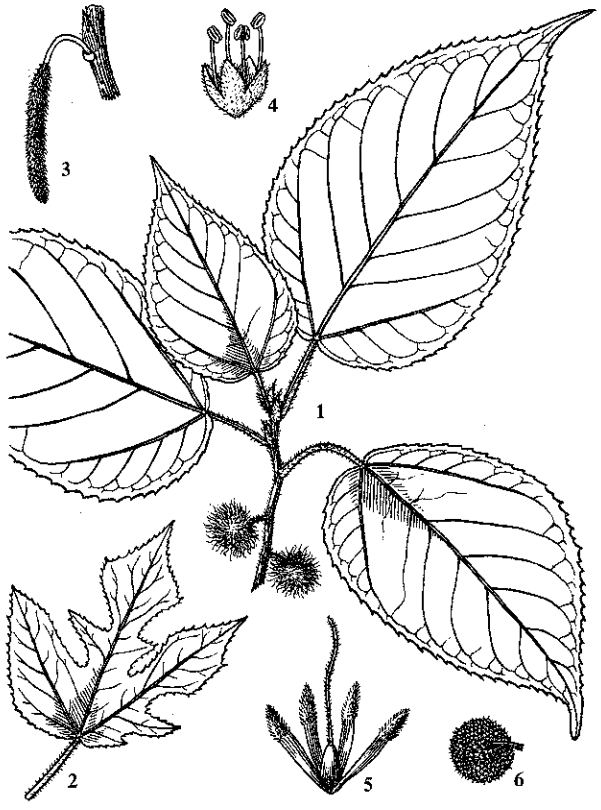



**Figure 83.** *Broussonetia papyrifera* (L.) L'Hérit. ex Vent.
*1*. flowering branch; *2*. leaf; *3*. male inflorescence; *4*. male flower; *5*. female flower; *6*. fruit. (drawn by H. P. Yu)

# 55. URTICACEAE 蕁麻科

HU Qi-ming 胡啟明

Herbs or subshrubs, very rarely trees or lianas, often with cystoliths in epidermal cells of leaves and stems. Leaves simple, alternate or opposite, mostly stipulate. Inflorescence basically cymose, variously modified, often condensed into heads. Flowers small, mostly green, unisexual (plants monoecious or dioecious). Perianth biseriate, of 4–5 distinct or connate sepal-like lobes. Male flowers mostly with 4 stamens, opposite to the perianth-lobes, bent inward in the bud; anthers 2-celled; rudimentary pistil often present. Female flowers with a single pistil; ovary superior, free or adnate to perianth, containing a single erect basal ovule; style 1, ending in a brush-like stigma or bearing along its length long collecting hairs; scale-like staminodes often present. Fruit an achene or a drupe often enclosed by persistent perianth.

About 47 genera and 1300 species widely distributed in tropical and temperate regions; 25 genera and 341 species in China; seven genera and 17 species with two subspecies and one variety in Hong Kong.

1a. Leaves opposite.
  2a. Leaves toothed.
    3a. Stigma filiform ..... 1. *Boehmeria*
    3b. Stigma shortly penicillate ..... 2. *Pilea*
  2b. Leaves entire.
    4a. Stems prostrate, 50–100 cm ..... 3. *Gonostegia*
    4b. Stems erect or ascendent, 12–40 cm ..... 4. *Pouzolzia*
1b. Leaves alternate.
  5a. Flowers in sessile clusters; the clusters forming axillary spikes or panicles; stigma filiform ..... 1. *Boehmeria*
  5b. Flowers in clusters or cymes; stigma penicillate.
    6a. Shrubs or small trees; leaf-base symmetrical ..... 5. *Oreocnide*
    6b. Herbs, rarely subshrubs; leaf-base ± oblique.
      7a. Leaves pinninerved; female inflorescence capitate, without involucre ..... 6. *Procris*
      7b. Leaves trinerved or pinninerved; female inflorescence cymose or, if in clusters, involucrate ..... 7. *Pellionia*

## 1. Boehmeria Jacq. 苧麻屬

Subshrubs, shrubs, rarely small trees. Leaves alternate or opposite, usually toothed, trinerved. Stipules usually free, deciduous. Flowers unisexual (plants monoecious or dioecious), in small dense clusters (glomerules); the clusters in unisexual spikes or panicles. Male flowers: perianth-segments (3–)4(–5), valvate in the bud; stamens as many, inward in bud. Female flowers: perianth tubular, apex constricted, with 2–4 small teeth, slightly enlarged in fruiting time; ovary enclosed by perianth, 1-locular, with 1 erect ovule; stigma filiform on a short style, persistent. Achene closely enclosed in thin perianth.

About 65 species chiefly tropical and subtropical, a few extended to temperare regions; 25 species in China; three species and one variety in Hong Kong.

1a. Leaves alternate; flower clusters in panicles.
  2a. Stems and petioles covered with spreading long hairs and appressed short hairs; leaf blade orbicular-ovate or broadly ovate, base subtruncate or broadly cuneate; stipules fee ..... 1a. *B. nivea*
  2b. Stems and petioles only covered with appressed short hairs; leaf blade generally ovate, base abruptly narrowed, cuneate; stipules united at the base ..... 1b. *B. nivea* var. *tenacissima*
1b. Leaves opposite, or occasionally alternate at apex of stem.
  3a. Leaves ovate, margin coarsely dentate ..... 2. *B. macrophylla*
  3b. Leaves lanceolate, margin obtusely denticulate ..... 3. *B. densiflora*

**1. Boehmeria nivea** (L.) Gaudich. 苧麻 **(Photo 226)**

Voy. Uranie, Bot. 12: 499. 1830; FHK 331. 1861; FKH 250. 1912; FHN 2: 414. 1965; FRPS 23(2): 327, pl. 73: 1–4. 1995; FOC 5: 166. 2003; FGD 6: 101, fig. 43. 2005.

*Urtica nivea* L., Syst. 985. 1753.

Subshrub, 0.5–1.5 m tall. Stems and petioles covered with spreading long hairs and appressed short hairs. Leaves alternate; stipules free, subulate-lanceolate, 7–11 mm, hairy abaxially; petioles 2.5–9.5 cm; leaf blade orbicular-ovate or broadly ovate, 6–15 × 4–11 cm, base subtruncate or broadly cuneate, apex cuspidate, margin dentate, adaxial surface slightly scabrous, sparsely strigose, abaxial surface densely white-tomentose; lateral veins 3 on each side of midvein. Flowers unisexual (plants monoecious or dioecious), in glomerules. Female glomerules globular, 0.5–2 mm in diam., numerous, in axillary panicles. Male glomerules 1–3 mm in diam., in panicles, usually below the females. Male flowers: perianth-segments 4, narrowly elliptic, ca. 1.5 mm, united to middle, apex acute, sparsely pubescent abaxially; stamens 4, ca. 2 mm; rudimentary pistil narrowly obovoid, ca. 0.7 mm. Female flowers: perianth-segments elliptic, 0.6–1 mm, apex minutely 2–3-toothed, puberulent abaxially; style filiform, 0.5–0.6 mm. Achene subglobular, ca. 0.6 mm in diam.

Locality: Common in Hong Kong, either wild or in cultivation. *HK sheet 25985, 25989, 40468.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Gansu, Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Vietnam, Laos.

Ecology: Waste places near villages. Flowering: May–Aug.; fruiting: Sep.–Oct.

Uses: Material (fibre).

**1a. Boehmeria nivea** var. **tenacissima** (Gaudich.) Miq. 青葉苧麻

Fl. Ind. Bat. 1(2): 253. 1859; FOC 5: 167. 2003; FGD 6: 102. 2005.

*Boehmeria nivea* (L.) Gaudich. var. *nippononivea* (Koidz.) W. T. Wang, Acta Bot. Yunnan. 3(3): 320. 1981; FRPS 23(2): 330, pl. 73: 5. 1995; FOC 5: 166. 2003.

*Boehmeria nipononivea* Koidz., Acta Phytotax. Geobot. 10: 223. 1941.

*Boehmeria tenacissima* Gaudich., Voy. Uranie, Bot. 500. 1830.

It differs from var. *nivea* mainly by the following characters: Stems and petioles only covered with appressed short hairs, without spreading hairs; leaf blade generally ovate, rarely orbicular-ovate, base abruptly narrowed, cuneate; stipules united at the base.

Locality: Tseng Lan Shue. *Y. S. Lau 2716; HK sheet 25986.*

Distribution: Guangdong, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Japan.

Ecology: Waste places near villages.

Uses: Material (fibre).

**2. Boehmeria macrophylla** Hornem. 水苧麻 **(Fig. 84)**

Hort. Bot. Hafn. 2: 890. 1815; Grierson & Long, Fl. Bhutan 1(1): 126. 1983; FRPS 23(2): 336, pl. 75: 1–2. 1995; FOC 5: 169. 2003; FGD 6: 105. 2005.

*Boehmeria platyphylla* D. Don, Prodr. Fl. Nepal. 60. 1825; FKH 250. 1912.

Subshrub, 1–2(–3.5) m tall. Stems covered with appressed short hairs on upper part. Leaves opposite or nearly so; petioles 0.8–8 cm, unequal in the same pair; leaf blade ovate to elliptic-ovate, 6.5–14 × 3.2–7.5 cm, base rounded or shallowly cordate, ± oblique, apex long-cuspidate or acuminate, margin denticulate above the base, adaxial surface slightly scabrous, covered with appressed short hairs, abaxial surface sparsely covered with appressed short hairs; lateral veins 2–3 on each side of midvein. Flower-clusters (glomerules) 1–2.5 mm in diam., forming axillary, solitary spikes of 7–15 cm, or the rachis with a few branches, usually the males below the females. Male flowers: perianth-segments 4, navicular or elliptic, ca. 1 mm, sparsely puberulent abaxially; stamens 4, ca. 1.5 mm; rudimentary pistil narrowly obovoid, ca. 0.4 mm. Female flowers: perianth-segments rhomboid or elliptic, ca. 1 mm, apex with 2 small teeth, puberulent abaxially; style 1–1.6 mm.

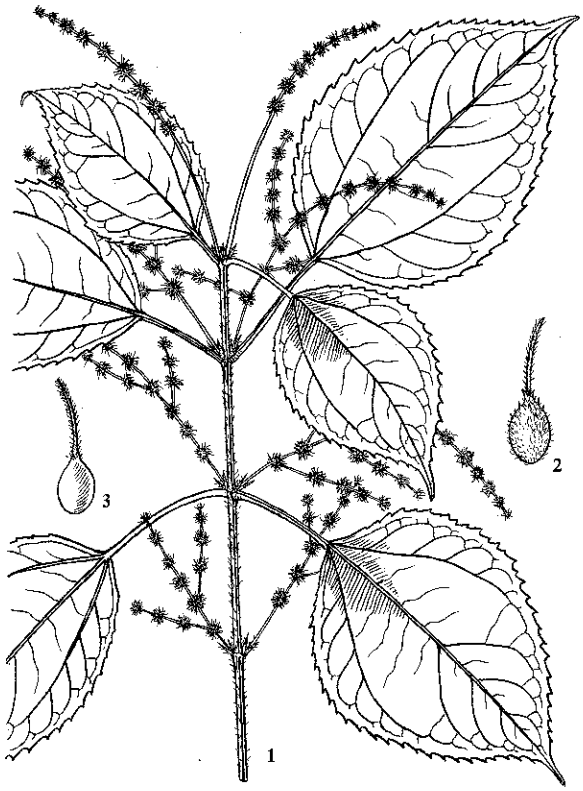



**Figure 84.** *Boehmeria macrophylla* Hornem.
*1*. upper part of plant; *2*. persistent perianth and achene; *3*. achene. (drawn by H. P. Yu)

Locality: Mount Gough, Victoria Peak. *H. C. Tang 1417; W. J. Tutcher 11209.*

Distribution: Guangdong, Guangxi, Yunnan, SE Xizang; Vietnam, Myanmar, Nepal, India.

Ecology: Ravines, margins of forests or by streams.

Uses: Material (fibre).

**3. Boehmeria densiflora** Hook. & Arn. 密花苧麻 **(Photo 227)**

Bot. Beechey Voy. 271. 1838; FKH 250. 1912; FOC 5: 174. 2003.

*Boehmeria penduliflora* Wedd. ex Long var. *loochooensis* (Wedd.) W. T. Wang, FRPS 23(2): 355. 1995; FGD 6: 103. 2005.

*Boehmeria platyphylla* D. Don. var. *loochooensis* Wedd., Prodr. 16(1): 213. 1869.

Shrub to 2 m tall. Branchlets densely covered with appressed short hairs. Leaves opposite, rarely subopposite; stipules subulate, to 1.5 cm; petioles 1–2 cm, hispid; leaf blade lanceolate to narrowly lanceolate, 5–19 × 1.2–3.5 cm, base obtuse or subrounded, apex acuminate, margin obtusely denticulate above the base, adaxial surface scabrous, sparsely pubescent, glabrescent, bullate due to impressed reticulation of veins, abaxial surface covered with appressed short hairs on raised veins; lateral veins 3–4 on each side of midvein. Female spikes axillary, 4–12 cm; male spikes shorter, borne on separate plants, or on the same plant but below the females. Male flower clusters 1–2 mm in diam.; female flower cluster 2.5–6 mm in diam. Male flowers: perianth-segments 4, elliptic, ca. 1.2 mm, puberulent abaxially; stamens 4, ca. 1.8 mm; rudimentary pistil elliptic, ca. 0.5 mm. Female flowers rhomboid or oblanceolate, 1–1.5 mm; stigma 0.7–1 mm. Achene compressed elongate-ellipsoid to fusiform, ca. 0.5 mm, margin more or less flattened.

Locality: Stubbs Road, Lugard Road, Pok Fu Lam. *HK sheet 31319.*

Distribution: Guangdong, Taiwan; Japan, Philippines.

Ecology: Roadsides, hillslopes, stream banks. Flowering: Apr.–May.

## 2. Pilea Lindl. 冷水花屬

Herbs or subshrubs, rarely shrubs. Leaves opposite, subequal or very unequal in pairs, symmetrical or sometimes oblique, margin toothed or rarely entire, trinerved, or rarely pinninerved; cystoliths usually linear. Stipules membranous and squamiform, or herbaceous and leafy, intrapetiolar, or rarely interpetiolar. Inflorescence axillary, solitary or in pairs, cymose, forming spikes, panicles or clusters. Flowers unisexual, rarely polygamous (plants monoecious or dioecious). Male flowers 4- or 5-merous; perianth united at base or up to middle; segments valvate, or rarely imbricate in the bud; stamens as many as perianth-segments and opposite to them; rudimentary pistil small. Female flowers usually 3-merous, sometimes 2-, 5- or 4-merous; perianth free or slightly united, usually unequal, enlarged in fruiting time; sterile stamens bending inwards, squamiform; ovary erect, apex slightly oblique; stigma sessile, shortly penicillate. Achene ovoid or subglobose, more or less compressed, smooth or tuberculate.

About 400 species spread worldwide, but mainly in tropical and subtropical regions; 80 species in China; seven species in Hong Kong.

1a. Leaves pinnately nerved ..... 1. *P. microphylla*
1b. Leaves trinerved.
2a. Perianth-segments of female flowers 2.
3a. Leaves rhomboid-orbicular or fan-shaped, apex rounded or obtuse, base broadly cuneate ..... 2. *P. peploides*
3b. Leaves triangular, broadly ovate to ovate, apex acute (at least the upper leaves), base cordate or subtruncate ..... 3. *P. swinglei*
2b. Perianth-segments of female flowers 3.
4a. Scandent herbs or subshrubs; stems woody at base; leaves subentire ..... 4. *P. glaberrima*
4b. Herbs; stems fleshy; leaves distinctly toothed.
5a. Leaves coarsely dentate, apex caudate-acuminate; stipules triangular ca. 2 mm ..... 5. *P. sinofascita*
5b. Leaves shallowly serrate or crenate, apex acute to acuminate.
6a. Leaves membranous, ovate; stipules cordate, 3–5 mm; stems puberulent .. 6. *P. aquarum* subsp. *acutidentata*
6b. Leaves thickly papery, elliptic-lanceolate; stipules ovate, ca. 3 mm; stems glabrous ..... 7. *P. chartacea*

**1. Pilea microphylla** (L.) Liebm. 小叶冷水花 **(Photo 228)**

Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 5, 5(2): 302. 1851; FOC 5: 119. 2003; FGD 6: 90. 2005.

*Parietaria microphylla* L., Syst. Nat., ed. 10, 1308. 1759.

*Pilea muscosa* Linndl., Coll. Bot. t. 4. 1821, *nom. illeg.*; FKH 248. 1912.

Delicate herb, 3–17 cm tall, glabrous. Stems fleshy, erect or ascending, simple or branched, with dense cystoliths. Leaves membranous when dry; stipules triangular, ca. 0.5 mm; petioles slender, unequal in length, 1–4 mm; leaf blade obovate or spathulate, unequal in size, 2–7 × 1.5–3 mm, base cuneate or attenuate, apex obtuse, margin entire, adaxially green, abaxially paler, foveolate when dry, pinnately nerved. Flowers in compact cymose capitulum on a peduncle of 1.5–6 mm, sometimes sessile. Male flowers: perianth-segments 4, ovate, corniculate near apex; stamens 4; rudimentary ovary minute. Female flowers smaller, perianth-segments 3, subequal, oblong, the ventral one larger, subequal to achene, the lateral 2 ovate, acute. Achene ovoid, ca. 4 mm, compressed, smooth, enclosed by persistent perianth.

Locality: Common in Hong Kong (naturalized). *H. C. Tang 1406, 1795; L. T. Lo 156.*

Distribution: Guangdong, Guangxi, Jiangxi, Zhejiang, Fujian, Taiwan (naturalized). Native to tropical America, naturalized elsewhere in tropical regions of Asia and Africa.

Ecology: Shady old walls, moist rocks and other wet places. Flowering; Jun.–Aug; fruiting: Sep.–Oct.

**2. Pilea peploides** (Gaudich.) Hook. & Arn. 齿叶冷水花

Bot. Beechey Voy. 96. 1832; FKH 248. 1912; FOC 5: 119. 2003.

*Pilea peploides* (Gaudich.) Hook. & Arn. var. *major* Wedd., Prodr. 16(1): 109. 1869; C. J. Chen, Bull. Bot. Res. 2(3): 115. 1982; FRPS 23(2): 150, pl. 33: 1–3. 1995.

Annual herb, 5–30 cm tall, glabrous. Stems fleshy, often clumped. Leaves membranous when dry; stipules small, triangular; petioles slender, 3–20 mm; leaf blade rhomboid-orbicular to depressed orbicular, sometimes fan-shaped, (7–)10–21 × (7–)11–23 mm, apex rounded or broadly obtuse, base obtuse or sub-rounded, sometimes broadly cuneate, shallowly dentate or undulate above middle, rarely sub-entire, trinerved. Flowers in subsessile clusters, or in compact cymes on short peduncles. Male flowers: perianth-segments 4, ovate; stamens 4. Female flowers: perianth-segments 2, unequal, the ventral one larger, navicular or obovate-oblong, thickened in fruit, about the length of the fruit or slightly shorter. Achene ovoid, with scattered minute spiny projections.

Locality: Hong Kong Island. *W. J. Tutcher 4619.*

Distribution: Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Japan, Vietnam, Philippines, Indonesia.

Ecology: Forests, moist rocks and wet places. Flowering; Apr.–May; fruiting: May–Jul.

**3. Pilea swinglei** Merr. 三角冷水花 **(Fig. 85)**

Philip. J. Sci. 13: 136. 1918; Hand.-Mazz., Symb. Sin. 7: 141. 1929; FRPS 23(2): 151. pl. 33: 4–9. 1995; FOC 5: 120. 2003; FGD 6: 92. 2005.

Annual herb, 7–30 cm tall, glabrous. Stems fleshy. Leaves membranous when dry; stipules small, triangular, ca. 1 mm; petioles 5–30 mm; leaf blade broadly ovate, triangular or narrowly ovate, 1–5.5 × 0.8–3 cm, apex acute, sometimes obtuse or shortly acuminate, base cordate, obtuse or truncate, margin sparsely serrate, adaxial surface green, abaxial surface paler, foveolate

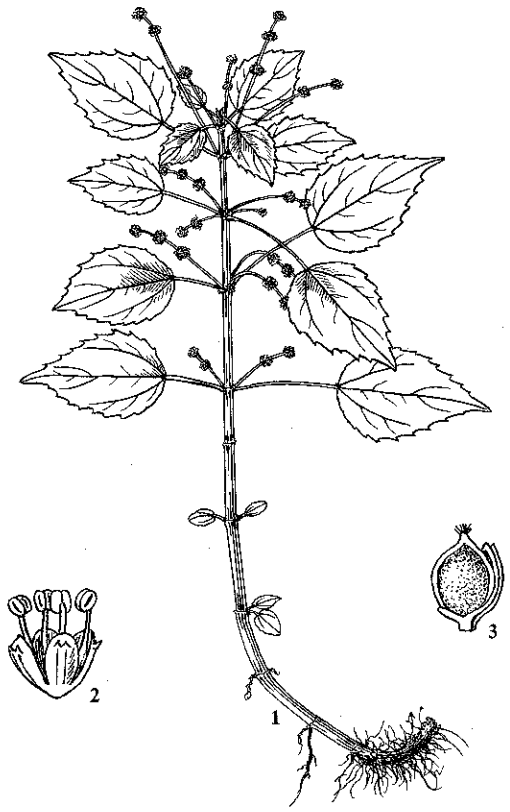



**Figure 85.** *Pilea swinglei* Merr.
*1*. plant; 2. male flower; *3*. achene with persistent perianth (drawn by H. P. Yu)

when dry, often densely marked with purple minute dots; trinerved. Leaves on the lower part of the stem much smaller, ovate-orbicular or sub-orbicular, apex obtuse or subrounded. Flowers in head-like clusters, 2.5–5 mm in diam.; the clusters 2–4 arranged on a slender, simple or little branched rachis, usually shorter than the subtending leaves. Male flowers: perianth-segments 4, obovate-oblong; stamens 4; rudimentary pistil inconspicuous. Female flowers: perianth-segments 2, very unequal, the larger one oblong-navicular, 2-keeled on upper part of abaxil surface, another very small. Achene broadly ovoid, slightly compressed, ca. 0.5 mm, apex slightly oblique.

Locality: Sunset Peak. *Y. S. Lau 1550, 2739.*

Distribution: Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Rocks by streams and wet places near villages.

**4. Pilea glaberrima** (Blume) Blume 點乳冷水花

Mus. Bot. 2(4): 54. 1856; Gierson & Long, Fl. Bhutan 1(1): 112. 1983; C. J. Chen, Bull. Bot. Res. (Harbin) 2(3): 71. 1982; FRPS 23(2): 100. 1995; FOC 5: 105. 2003; FGD 6: 96. 2005.

*Urtica glaberrima* Blume, Bijdr. Fl. Ned. Ind. 493. 1826.

Straggling herb or subshrub, stoloniferous, 0.5–1.5 m tall, glabrous. Stems much branched, woody at base. Leaves opposite; stipules triangular, 1–2 mm; petioles 1.5–5 cm; leaf blade ovate, elliptic, oblong-lanceolate or elliptic-lanceolate, 6–15 × 2.5–7 cm, base rounded, obtuse or cuneate, apex acuminate, margin shallowly serrate or crenate above middle, sometimes subentire; trinerved. Flowers in clusters; the clusters forming axillary panicles, usually shorter than the subtending leaves. Male flowers: perianth-segments 4, elliptic-navicular; stamens 4; rudimentary pistil very small. Female flowers: perianth-segments 3, unequal. Achene ovoid, slightly compressed, ca. 1 mm, minutely tuberculate.

Locality: Tai Mo Shan. *HK sheet 31557.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan; Nepal, India, Myanmar, Indonesia.

Ecology: Ravines. Flowering: Jul.–Sep.; fruiting: Oct.–Nov.

**5. Pilea sinofasciata** C. J. Chen 粗齒冷水花

Bull. Bot. Res. (Harbin) 2(3): 85. 1982; FRPS 23(2): 115, pl. 24: 5–8. 1995; FOC 5: 110. 2003; FGD 6: 95. 2005.

*Pilea wightii* auct. non Wedd.: FKH 248. 1912.

Perennial herb, 25–100 cm tall. Stems fleshy, scarcely branched, glabrous or sometimes puberulent on the upper part. Leaves subequal on the same pair; stipules membranous, triangular, ca. 2 mm; petioles 1–5 cm, ± puberulent; leaf blade elliptic, or oblong-lanceolate, (2–)4–17 × 2–7 cm, base cuneate or rounded, slightly oblique, apex caudate-acuminate, margin coarsely serrate, adaxial surface green, initially with scattered pellucid short hairs, glabrescent, often with 2 white stripes along the midvein, abaxial surface subglabrous, or sometimes puberulent on veins; trinerved. Leaves on the lower part of the stem smaller, obovate or fan-shaped, apex acute or subrounded. Flowers in cymose panicles, usually shorter than petioles of the subtending leaves. Male flowers: perianth united at base, segments 4, elliptic, concave, apex obtuse; stamens 4; rudimentary pistil small, conical. Female flowers: perianth-segments 3, subequal. Achene ovoid, ca. 0.7 mm, apex slightly oblique.

Locality: Lantau Island. *HK sheet 25864, 25867.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, SW Shaanxi, SE Gansu, Hubei, Hunan, Jiangxi, Anhui, Zhejiang.

Ecology: Ravines, by streams. Flowering: Jun.–Jul.; fruiting: Aug.–Oct.

**6. Pilea aquarum** Dunn subsp. **acutidentata** C. J. Chen 銳齒濕生冷水花

Bull. Bot. Res. (Harbin) 2(3): 60. 1982; FRPS 23(2): 90. 1995; FOC 5: 102. 2003; FGD 6: 94. 2005.

Perennial herb, 30–70 cm tall. Stems fleshy, puberulent or subglabrous. Leaves unequal on the same pairs, membranous when dry; stipules subcordate, 3–5 mm, apex acute; petioles 1–4 cm; leaf blade ovate, 5–14 × 2.5–7 cm, base broadly cuneate or obtuse, slightly oblique, apex acute, margin sharply dentate, in dry state adaxial surface dark green, shining, abaxial surface paler, puberulent or subglabrous on both surfaces, trinerved. Male inflorescence cymose-paniculate, 2–6 cm including peduncle. Female inflorescence cymose, compact or cluster-like, ca. 2 cm. Male flowers: perianth-segments 4, elliptic; stamens 4; rudimentary pistil very small. Female flowers: perianth-segments 3, unequal, in fruiting time the middle one sub-navicular, about half length of the fruit, the lateral 2 much small. Achene subglobose, ca. 0.7 mm, apex slightly oblique, tuberculate.

Locality: Robin's Nest (Sha Tau Kok) (fide Xing et al. 2000).

Distribution: Guangdong, Guangxi.

Ecology: Ravines, by streams or on other shade places. Flowering: Mar.–May; fruiting: Apr.–Jun.

**7. Pilea chartacea** C. J. Chen 紙質冷水花

Bull. Bot. Res. (Harbin) 2(3): 63. 1982; FRPS 23(2): 92. 1995; FOC 5: 103. 2003; FGD 6: 96. 2005.

Perennial herb, with creeping rhizomes, glabrous. Stems fleshy, above 30 cm tall, pinkish. Leaves papery; stipules membranous, ovate, ca. 3 mm; petioles 0.7–1.5 cm; leaf blade elliptic-lanceolate, 3–7 × 1.2–2.3 cm, base broadly cuneate or obtuse, apex acuminate, margin shallowly serrate, in dry state adaxial surface dark green, sometimes bullate, abaxial surface paler, often with purplish scattered red scaly dots along veins; trinerved. Male cymes shortly pedunculed, 1–1.5 cm; female cymes subsessile, ca. 7 mm across. Male flowers: perianth pink, ca. 2.5 mm in the bud, united at base; segments 4, ovate-oblong; stamens 4; rudimentary pistil coniform. Female flowers: perianth-segments 3, unequal, the middle one ovate-oblong, about one-third length of the fruit, the lateral 2 much smaller; sterile. Achene ovoid, ca. 1 mm, apex slightly oblique, inconspicuously tuberculate.

Locality: Tai Mo Shan. *S. Y. Hu 11621* (CUHK, PE).
Distribution: Guangdong.
Ecology: Ravines, wet shady places. Flowering: Mar.–Sep.
Notes: The type specimen was collected from Tai Mo Shan by S. Y. Hu in 1972.

## 3. Gonostegia Turcz. 糯米團屬

Perennial herbs or subshrubs. Leaves entire, opposite, or the uppermost alternate, 3(–5)-nerved. Stipules free, intrapetiolar, often persistent. Flowers in axillary clusters with both male and female flowers or unisexual (plants monoecious or dioecious). Male flowers: perianth-segments (3–)4–5, usually free, oblong, valvate and folding inwards at a right angle in the bud, with a transverse ring of hairs on the bending angle; stamens as many as the perianth-segments and opposite to them; rudimentary pistil very small. Female flowers: perianth tubular, constricted and 2–4-toothed at apex; staminodes absent; ovary included; style very short; stigma filiform, hairy on one side. Achene ovoid, surrounded by accrescent and ribbed perianth.

About three species in tropical and subtropical Asia and Australia; all species occur in China; one species in Hong Kong.

**1. Gonostegia hirta** (Blume ex Hassk.) Miq.
糯米團 **(Fig. 86; Photo 229)**

Ann. Mus. Bot. Lugd.-Bat. 4: 303. 1868; FRPS 23(2): 367, pl. 82: 2–7. 1995; FOC 5: 178. 2003; FGD 6: 99, fig .42. 2005.

*Memorialis hispida* Buch.-Ham. ex Wall. Cat. sub n. 4601; FHK 332. 1861.

*Memorialis hirta* (Blume ex Hassk.) Wedd., Prodr. 16(1): 235(6). 1869.

*Pouzolzia hirta* Blume ex Hassk. in Teismann & Binnendijk, Cat. Hort. Bogor. 80. 1844, based on *Urtica hirta* Blume (1826), not Swartz (1797); FKH 250. 1912.

Perennial herb. Stems prostrate or upper part ascending, 50–100 cm or longer, pubescent. Leaves opposite; stipules subulate, ca. 2.5 mm; petioles 1–4 mm; leaf blade lanceolate to narrowly ovate, (1.5–)3–10 × 1–2.8 cm, base shallowly cordate or rounded, apex acuminate, margin entire, adaxial surface ± scabrous, sparsely strigose or subglabrous, abaxial surface sparsely pubescent on the veins or glabrescent, 3–5-nerved. Flowers in axillary clusters of 2–9 mm in diam. Male flowers: pedicels 1–4 mm; bud turbinate, top flat, with a ring of hairs on the rim; perianth-segments 5, free, oblanceolate, 2–2.5 mm, apex abruptly acute; stamens 5; staminodes very small. Female flowers sessile, perianth tube ovoid, ca. 1.6 mm, longitudinally 10-ribbed, apex 2-toothed; stigma ca. 3 mm, hairy. Achene ovoid, ca. 1.4 mm.

Locality: Common in Hong Kong. *H. C. Tang 937, 2152; Y. S. Lau 606.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, SE Xizang, Sichuan, S Shaanxi, Henan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; tropical and subtropical Asia and Australia.

Ecology: Waste and shady places. Flowering; May–Sep.

Uses: Medicinal (folklore).

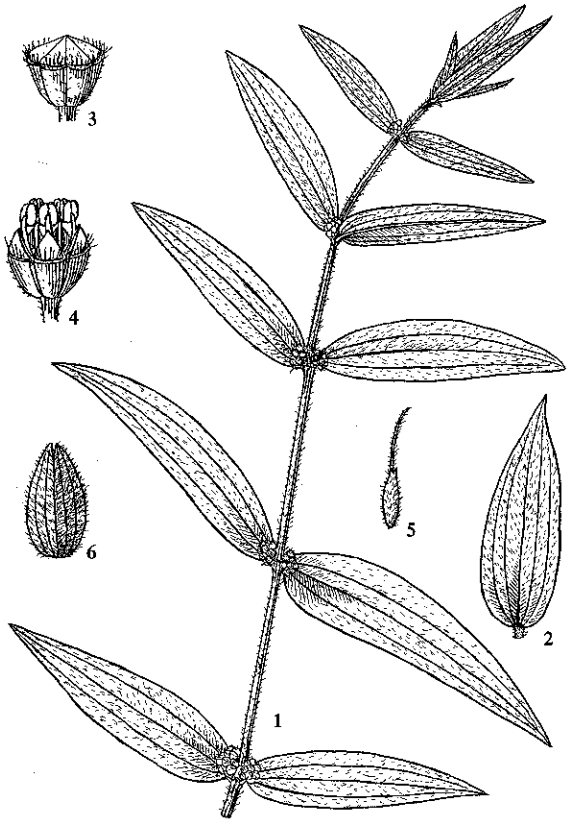



**Figure 86.** *Gonostegia hirta* (Bl. ex Hassk.) Miq.
*1*. upper part of plant; *2*. leaf; *3*. alabastrum of male flower; *4*. male flower; *5*. female flower; *6*. persistent perianth. (drawn by H. P. Yu)

## 4. Pouzolzia Gaudich. 霧水葛屬

Shrubs, subshrubs or perennial herbs. Leaves alternate, rarely opposite, usually entire, 3-nerved or triplinerved; stipules usually free, persistent. Flowers usually in axillary clusters (glomerules), rarely in naked spikes; the glomerules bisexual or rarely unisexual (plants monoecious or dioecious). Male flowers: perianth usually united to middle; segments (3–)4–5, elliptic, convex on the back, valvate in the bud; stamens as many and opposite to the perianth-segments; rudimentary pistil obovate or clavate. Female flowers: perianth tubular, apex constricted, with 2–4 small teeth, more or less enlarged at fruiting time; ovary included; stigma filiform, villose along one side, articulate on the ovary, deciduous. Achene ovoid, enclosed in the persistent and occasionally 2-winged perianth.

About 37 species in tropical and subtropical regions; four species in China; one species in Hong Kong.

**1. Pouzolzia zeylanica** (L.) Benn. 霧水葛 **(Fig. 87; Photo 230)**

Pl. Jav. Rar. 67. 1838; Wight, Ic. Pl. Ind. Or. 6: t. 2101, f. 45. 1853; FGZ 403, fig. 209. 1956; FRPS 23(2): 364, pl. 81: 1–4. 1995; FOC 5: 177. 2003; FGD 6: 83, fig. 32. 2005.

*Parietaria zeylanica* L., Sp. Pl. 1052. 1753.

*Pouzolzia indica* auct. non Gaudich.: FHK 331. 1861; FKH 250. 1912.

Perennial herb. Stems ascending or erect, 12–40 cm tall, covered with appressed short hairs and mixed with spreading hairs. Leaves opposite, or alternate near apex; petioles 0.3–1.6 cm; leaf blade ovate to broadly ovate, 1.2–3.8 × 0.8–2.6 cm (leaves on short branches much smaller), base rounded, apex shortly acuminate or slightly obtuse, margin entire, sparsely covered with appressed hairs on both surfaces; lateral veins 1–2 on each side of midvein. Flowers in small sessile, axillary clusters, 1–2.5 mm in diam., the males and females usually mixed. Male flowers: perianth-segments 4, narrowly oblong, ca. 1.5 mm, united at the base; stamens 4, ca. 1.8 mm; rudimentary pistil narrowly obovate, ca. 0.4 mm. Female flowers: perianth-segments elliptic or subrhomboid, ca. 0.8 mm, enlarged to 1.5 mm in fruiting time, apex minutely 2-toothed, densely pubescent outside; stigma 1.2–2 mm. Achene ovoid, ca. 1.2 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang 1374; Y. S. Lau 1583, 2234.*

Distribution: Guangdong, Guangxi, SE Yunnan, Sichuan, S Gansu, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian; widely distributed in tropical Asia.

Ecology: Thickets or grasses. Flowering: Autumn.

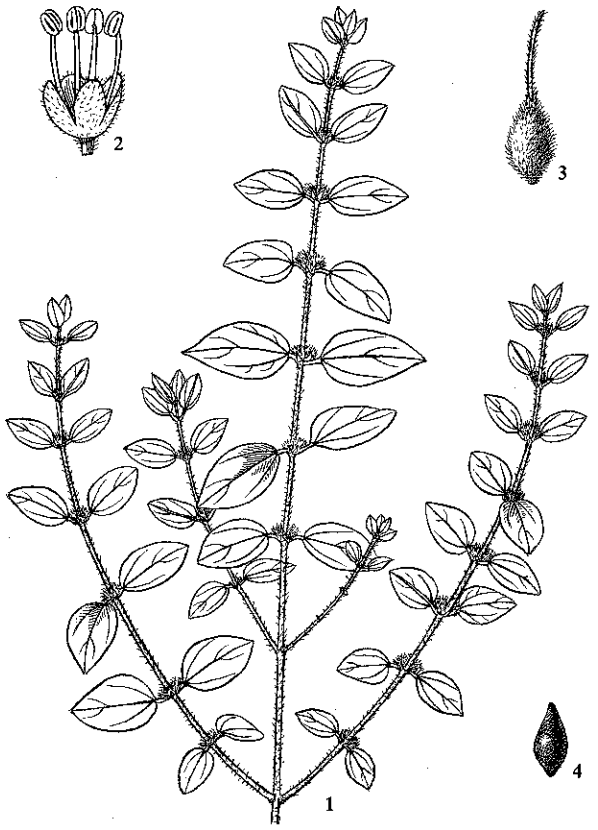



**Figure 87.** *Pouzolzia zeylanica* (L.) Benn.
*1*. upper part of plant; *2*. male flower; *3*. female flower; *4*. achene. (drawn by H. P. Yu)

## 5. Oreocnide Miq. 紫麻屬

Shrubs or trees. Leaves alternate, 3-nerved or pinninerved; cystoliths punctiform. Stipules scarious, free, lateral. Flowers unisexual (plants dioecious), in head-like clusters; the clusters forming axillary twice to thrice branched dichotomous cymes, rarely solitary on short peduncles. Male flowers: perianth-segments 3–4, valvate in the bud; stamens 3–4, filaments inflexed in bud; rudimentary pistil small, ± wooly. Female flowers: perianth tubular, slightly fleshy, adnate to the ovary, apex constricted, inconspicuously 3–4 toothed; stigma sessile, discoid or peltate, with long ciliate hairs on the margin; staminodes absent. Achene drupaceous, the base or almost wholly enclosed by the accrescent, discoid or cupular fleshy receptacle.

About 18 species in tropical and subtropical regions of E Asia and in New Guinea; ten species in China; one species (including one subspecies) in Hong Kong.

**1. Oreocnide frutescens** (Thunb.) Miq.
紫麻 **(Fig. 88; Photo 231)**

Ann. Mus. Bot. Lugd.-Bat. 3: 131. 1867; FHN 2: 419. 1965; FRPS 23(2): 386, pl. 84: 3–6. 1995; FOC 5: 184. 2003; FGD 6: 85, fig. 33. 2005.

*Villebrunea frutescens* (Thunb.) Blume., Mus. Bot. Luggd. Bat. 2: 168. 1856; FHK 332. 1861; FKH 250. 1912.

*Urtica frutescens* Thunb., Fl. Jap. 70. 1784.

Shrub or rarely small tree, 1–3 m tall. Branchlets and petioles purplish brown, strigose or pubescent, rarely grey tomentose. Leaves usually borne on the upper part of branches; stipules linear-lanceolate, ca. 10 mm, apex caudate-acuminate; petioles 1–7 cm; leaf blade ovate to narrowly ovate, rarely obovate, 3–15 × 1.5–6 cm, base rounded, rarely broadly cuneate, apex acuminate to caudate-acuminate, serrate or coarsely dentate above the base, adaxial surface sparsely strigillose, sometimes subglabrous, abaxial surface usually ashy-white-tomentose, later glabrate, or only with short hairs on veins, 3-nerved. Flowers in subsessile clusters on older branches. Male flowers: perianth-segments 3, oblong-ovate,

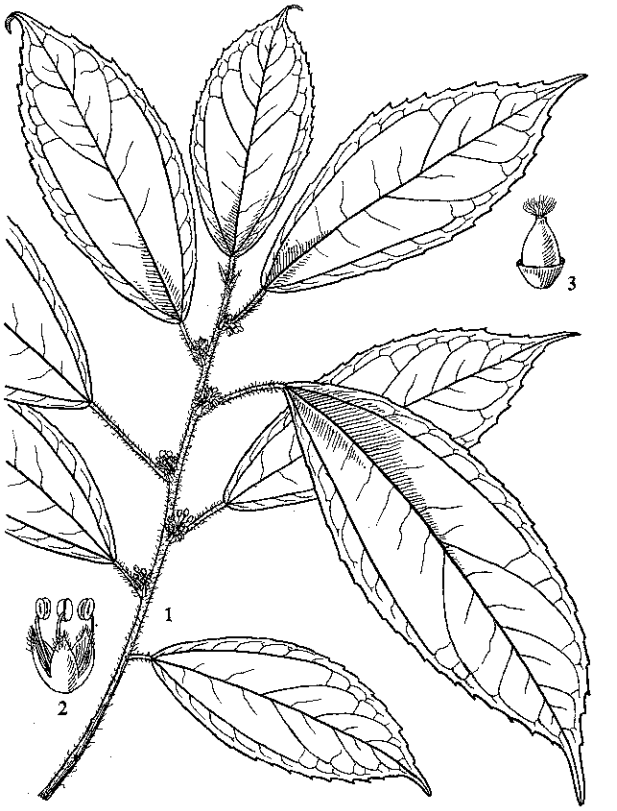



**Figure 88.** *Oreocnide frutescens* (Thunb.) Miq.
*1*. branch with male flowers; *2*. male flower; *3*. achene. (drawn by H. P. Yu)

incurved, united at base, hairy on the upper part of outside; stamens 3; rudimentary pistil clavate, ca. 0.6 mm, white-wooly. Female flowers sessile, ca. 1 mm. Achene ovoid, slightly compressed, ca. 1.2 mm, surrounded by the fleshy cupular receptacle at base.

Locality: Mount Parker. *HK sheet 6596*.

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, SE Gansu, S Shaanxi, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian; Japan, N India, Indochina, Myanmar, Thailand, Malaysia.

Ecology: Moist places in ravines, margins of forests or thickets. Flowering: Mar.–May; fruiting: Jun.–Oct.

**1a. Oreocnide frutescens** subsp. **insignis** C. J. Chen 細梗紫麻

Acta Phytotax. Sin. 21(4): 475. 1983; FOC 5: 185. 2003; FGD 6: 85. 2005.

It differs from subsp. *frutescens* mainly by the following characters: female inflorescence distinctly pedunculate; peduncles 5–13 mm; leaves narrowly obovate to oblong-obovate, adaxial surface glabrous, abaxial surface sparsely pubescent, margin with 13–21 serratures above middle.

Locality: Tai Mo Shan, Shing Mun. *S. T. Dunn 7055; Y. S. Lau 1522, 3004*.

Distribution: Guangdong, Guangxi.

Ecology: Forests in ravines. Flowering: Apr.–Jun.; fruiting: Jul.–Aug.

## 6. Procris Comm. ex Juss. 藤麻屬

Perennial herbs or subshrubs, usually glabrous. Leaves alternate, distichous, ± asymmetrical, entire or toothed, pinninerved; cystoliths linear, very small. Stipules intrapetiolar, small, entire. Flowers unisexual, in glomerules (plants monoecious or dioecious). Male glomerules in loose cymes or crowded on a small receptacle; female glomerules compact, head-like, subsessile on a fleshy globose or clavate receptacle. Male flowers: perianth deeply 5-lobed; lobes obovate, fleshy; stamens 5; rudimentary pistil globose or obovoid. Female flowers: perianth-lobes 3–4, obovate-navicular, free or united at the base, ± fleshy; staminodes absent; ovary ovoid; stigma sessile, penicillate. Achene ovoid or ellipsoid, surrounded by flesy perianth.

About 20 species in tropical and subtropical Asia and Africa; one species in China, also in Hong Kong.

**1. Procris crenata** C. B. Robinson 藤麻 **(Fig. 89; Photo 232)**

Philipp. J. Sci. 5(6): 507. 1911; FOC 5: 163. 2003.

*Procris wightiana* Wall. ex Wedd., Arch. Mus. Hist. Nat. 9: 336. 1856; FRPS 23(2): 317, pl. 71: 1–2. 1995; FGD 6: 87. 2005.

*Procris laevigata* auct. non Blume: FKH 249. 1912.

Perennial herb. Stems fleshy, 30–80 cm tall, glabrous. Leaves alternate, borne on the upper part of stems and branches; stipules very small, ovate, deciduous; petioles 1.5–12 mm; leaf blade narrowly oblong to oblong, (4.5–)8–20 × (1.5–)2.2–4.5 cm, base attenuate, slightly asymmetrical, apex acuminate, margin with a few teeth or undulate above middle, glabrous; lateral veins 5–8 on each side of midvein. Flowers in clusters; male clusters with short and slender peduncle; the females on a short and thick peduncle and usually borne above the males. Male flowers: perianth-lobes 5, oblong or ovate, ca. 1.5 mm, corniculate below apex; stamens 5. Female flowers sessile; perianth-lobes often 4, ca. 3.5 mm, glabrous; ovary ellipsoid, ca. 0.3 mm; stigma very small. Achene narrowly ovoid, 0.6–0.8 mm, compressed, often minutely punctate or almost smooth.

Locality: Tai Mo Shan, Ng Tung Chai. *P. S. Choi 361; Y. S. Lau 1758*.

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, SE Xizang, Sichuan, Fujian, Taiwan; Bhutan, India, Sri Lanka, Laos, Thailand, Indochina and Malesia.

Ecology: Shady, moist places in forests, on rocks or tree trunks. Flowering: Jul.–Aug.; fruiting: Aug.–Oct.

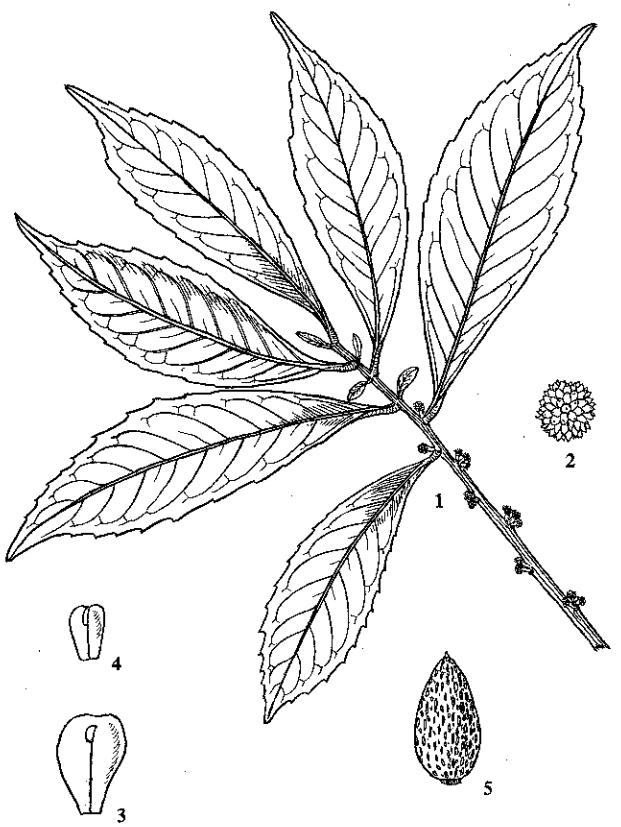



**Figure 89.** *Procris crenata* C. B. Robinson

*1*. branch with female flowers; *2*. infructescence; *3*. perianth segments of male flower; *4*. perianth segments of female flower; *5*. achene . (drawn by H. P. Yu)

## 7. Pellionia Gaudich. 赤車屬

Herbs or subshrubs, leaves distichous, alternate, usually very oblique. Stipules in opposite pairs. Flowers in axillary cymes or clusters (plants monoecious or dioecious). Male flowers: perianth-segments 4–5, elliptic, united at the base, imbricate in the bud; stamens as many and opposite to the segments; rudimentary pistil small, obconical. Female flowers: perianth-segments free,

narrowly oblong, usually unequal; staminodes squamiform; ovary 1-locular, with 1 erect ovule; stigma sessile, small, shortly penicillate. Achene small, ovoid or ellipsoid, slightly compressed, surrounded by persistent perianth.

About 60 species chiefly in tropical Asia; 20 species in China; four species in Hong Kong.

1a. Leaves pinninerved ..... 1. *P. grijsii*
1b. Leaves triplinerved.
2a. Leaves less than 3.5 cm long, apex obtuse ..... 2. *P. brevifolia*
2b. Leaves much larger, apex acuminate.
3a. Stems herbaceous, glabrous or puberulent, hairs ca. 0.1 mm ..... 3. *P. radicans*
3b. Stems woody at base, hirsute, hairs 0.3–1 mm ..... 4. *P. scabra*

**1. Pellionia grijsii** Hance 華南赤車 **(Fig. 90)**

J. Bot. 6: 49. 1886 & 12: 262. 1874; FRPS 23(2): 178. 1995; FOC 5: 126. 2003; FGD 6: 81. 2005.

Perennial herb. Stems 40–70 cm tall, unbranched, or occasionally with a few branches, hirsute, the hairs 0.5–2 mm, slightly recurved or spreading. Leaves alternate; stipules subulate, ca. 4 mm, glabrous; petioles 1–4 mm, hirsute; leaf blade obliquely oblong to oblong-lanceolate or oblique-elliptic, 6–14(–18) × 2.4–5(–6) cm, base very unequal, cuneate or obtuse on the narrow side, auriculate on the broad side, apex long-acuminate or acuminate, sometimes caudate, obtusely serrate above the base, adaxial surface glabrous or with scattered short hairs, rarely densely strigose, abaxial surface hirsute on veins, sub–pinnately nerved; lateral veins 4–5 on each side of midvein. Male cymes 2–3 times branched, 0.5–5.6 cm in diam.; peduncles 0.9–8 cm, together with the branches hirsute; female cymes more compact and densely flowered, 3–10 mm in diam.; peduncles 1.5–7 mm, hirsute. Male flowers: perianth-segments 5, elliptic, ca. 2 mm; stamens 5; rudimentary pistil ca. 0.2 mm. Female flower: perianth-segments 5, ca. 0.6 mm, unequal, 3 larger, narrowly navicular-oblong, 2 smaller, narrowly lanceolate; staminodes very minute or none. Achene ellipsoid, ca. 0.8 mm, tuberculate.

Locality: Tai Mo Shan. *S. Y. Hu 11443* (CUHK).

Distribution: Guangdong, Guangxi, SE Yunnan, Jiangxi, S Fujian.

Ecology: Ravines, by streams or on rocks. Flowering: Winter.




**Figure 90.** *Pellionia grijsii* Hance
*1*. plant; *2*. male flower; *3*. female flower. (drawn by H. P. Yu)

**2. Pellionia brevifolia** Benth. 短葉赤車

FHK 330. 1861; FKH 249. 1912; FHN 2: 409. 1965; FRPS 23(2): 174, pl. 38: 4. 1995; FOC 5: 125. 2003; FGD 6: 79. 2005.

Perennial herb. Stems prostrate, 10–30 cm or longer, rooting at nodes, hispid, hairs recurved or slightly spreading. Leaves alternate; stipules subulate, 1.2–2 mm; petioles 1.5–2 mm; leaf blade very obliquely elliptic to obovate, 5–32 × 4–20 mm, base very unequal, slightly obtuse or cuneate on the narrow side, auriculate on the broad side, apex obtuse or rounded, sparsely and obtusely serrate above the middle, adaxial surface glabrous or with scattered, appressed short hairs, abaxial surface pubescent on veins, subtriplinerved. Male cymes 8–15 mm in diam.; peduncles 2.5–4 cm, puberulent; female cymes compact, 2.5–4 mm in diam., almost sessile or on peduncles of 2–6 mm. Male flowers: perianth-segments 5, elliptic, ca. 2 mm, slightly unequal, glabrous; stamens 5. Female flowers: perianth-segments 5, very unequal, linear-lanceolate, 1–1.8 mm; staminodes lanceolate, bent in at about the middle. Achene narrowly ovoid, ca. 1.2 mm, tuberculate.

Locality: Mount Gough, Victoria Peak, Tai Po Kau, Sunset Peak. *W. J. Tutcher 7248.*

Distribution: Guangdong, Guangxi, Hunan, Hubei, Jiangxi, Fujian.

Ecology: Ravines. Flowering: May–Jul.

Notes: The type specimen was collected from Mount Gough and Victoria Peak, Hong Kong Island by C. Wilford (No. 227, K) between 1857 and 1858.

**3. Pellionia radicans** (Sieb. & Zucc.) Wedd. 赤車

Prodr. 16(1): 167. 1869; FKH 249. 1912; FHN 2: 408. 1965; FRPS 23(2): 171, pl. 37: 6. 1995; FOC 5: 125. 2003; FGD 6: 79. 2005.

*Procris radicans* Sieb. & Zucc., Fl. Jap. 218. 1846.

Perennial herb. Stems ascending from the procumbent base, 20–60 cm or longer, glabrous or puberulent, the hairs ca. 0.1 mm. Leaves alternate; stipules subulate, 1–4 mm; petioles 1–4 mm; leaf blade obliquely rhomboid-ovate or lanceolate, (1.2–)2.4–5(–8) × 0.9–

2(–2.7) cm, base very unequal, obtuse on the narrow side, auriculate on the broad side, apex shortly acuminate to long-acuminate, serrate above the middle, glabrous on both surfaces or nearly so, subtriplinerved. Flowers usually dioecious. Male cymes loose, 1–5(–8) cm; peduncles 0.4–3.5(–7) cm, glabrous or papillose-puberulent; female cymes compact, 3–5 mm in diam.; peduncles 0.5–3(–18) mm, with a few short hairs. Male flowers: perianth-segments 5, elliptic, ca. 1.5 mm, glabrous or puberulent outside; stamens 5; rudimentary pistil narrowly obconical, ca. 0.6 mm. Female flowers: perianth-segments 5, ca. 0.4 mm, 3 larger, navicular-oblong, 2 smaller, narrowly oblong; staminodes very minute or none; ovary about the length of the perianth-segments. Achene ellipsoid, ca. 0.9 mm, tuberculate.

Locality: Ma On Shan. *F. W. Xing 8463*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Fujian, Taiwan; N Vietnam, Korea, Japan.

Ecology: Thickets, forests in ravines. Flowering: May–Dec.

**4. Pellionia scabra** Benth. 蔓赤車 **(Photo 233)**

FHK 330. 1861; FKH 249. 1912; FGZ 404. 1956; FHN 2: 407. 1965; FRPS 23(2): 168, pl. 37: 5 & 44: 3–4. 1995; FOC 5: 124. 2003; FGD 6: 79, fig. 29. 2005.

Subshrub. Stems erect or ascending, 30–100 cm tall, woody at base, upper part hirsute; hairs 0.3–1 mm. Leaves alternate; stipules subulate, 1.5–3 mm; petioles 0.5–2 mm; leaf blade obliquely rhomboid-oblanceolate or narrowly oblong, 3.2–6.5(–10) × 1.3–3.2(–4) cm, base very unequal, slightly obtuse on the narrow side, broadly cuneate, rounded or auriculate on the broad side, apex acuminate to caudate-acuminate, serrate above the middle, adaxial surface scabrous, with short hairs on the midvein, abaxial surface pubescent, sub-triplinerved. Male cymes loose, on slender peduncles of 0.3–3.6 cm, puberulent; female cymes very compact, subsessile, densely puberulent. Male flowers: perianth-segments 5, elliptic, ca. 1.5 mm, united at base, unequal, 3 larger, the other 2 smaller; stamens 5; rudimentary pistil subulate, ca. 0.3 mm. Female flowers: perianth-segments 4–5, narrowly oblong, ca. 0.5 mm, 2 or 3 larger than others; staminodes very minute or none. Achene ellipsoid, ca. 0.8 mm, tuberculate.

Locality: Mount Gough, Victoria Peak, Tai Mo Shan. *H. C. Tang 2435; L. T. Lo 591; Y. W. Lam 1388*.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Japan, Vietnam.

Ecology: Ravines, on shady and wet places. Flowering: Mar.–Jul.

Notes: The type specimens were collected from Hong Kong Island in 1850s by A. W. Harland, C. Wright and C. Wilford.

# 59. JUGLANDACEAE 胡桃科

XIA Nian-he 夏念和

Trees or rarely shrubs, monoecious or rarely dioecious. Terminal buds subglobose or ovoid to oblong, naked or with scales. Stipules absent. Leaves pinnately compound, sometimes trifoliolate, rarely simple, alternate, rarely opposite; leaflets with glandular, peltate scales. Flowers unisexual, anemophilous, rarely entomophilous. Male flowers arranged in catkin, subtended by an entire or 3-lobed bract; bracteoles 2 or absent; sepals 0–4, adnate to receptacle when present; stamens 3–many, filaments short, free or united at base; anthers glabrous or pubescent, 2-celled, longitudinally dehiscent. Female flowers arranged in capitate or spike-like catkin, with an entire or 3-lobed bracts; bracteoles 2 or 3 (or absent); sepals 0–4, adnate to ovary; ovary inferior, 2–3-carpellate, 1-locular; style 1, rarely absent; stigmas 2, plumose or fleshy; ovule 1, orthotropous. Fruit a drupe-like nut or winged nutlet. Seed solitary, without endosperm. Cotyledons 4-lobed, much contorted.

Nine genera and about 60 species, mostly distributed in temperate and subtropical regions of the N hemisphere; seven genera and 28 species in China; one genus and two species in Hong Kong.

## 1. Engelhardia Leschen. ex Blume 黃杞屬

Trees, monoecious or rarely dioecious. Leaves alternate, usually even-pinnate. Flowers unisexual. Male flowers arranged in pendulous catkin, with a 3-lobed bract; sepals 1–4, rarely absent; stamens 3–15, anthers glabrous or pubescent. Female flowers arranged in erect or pendulous spikes, subtended by an enlarged, 3-lobed bract; bract adnate to base of ovary; sepals 4, adnate to ovary; ovary 1-locular; style short or absent; stigmas 2-lobed, with 2 or 4 plumose branches, or short and 4-lobed. Fruit a 3-winged nutlet, (2–)4-chambered at base. Persistent bract enlarged, membranous.

About 12 species distributed in S and SE Asia, N India; seven species in China; two species in Hong Kong.

1a. Branchlets greyish white; leaflets 2 pairs, lateral veins 5–7 pairs ..... 1. *E. fenzelii*

1b. Branchlets purplish brown or dark brown; leaflets 3–5 pairs; lateral veins 10–13 pairs ..... 2. *E. roxburghiana*

**1. Engelhardia fenzelii** Merr. 白皮黃杞 **(Photo 234)**

Lingnan Sci. J. 7: 300. 1929; FRPS 21: 13, pl. 3: 2. 1979; FGD 2: 322. 1991.

*Engelhardtia roxburgiana* auct. non. Wall.: FOC 4: 278. 1999, *p.p.* (quoad syn. *Engelhardtia fenzelii* Merr.)

Tree, 5–15 m; bark greyish yellow; branchlets greyish white, lenticellate. Bud, young branches, leaf axis, inflorescence and fruit with golden or brownish yellow peltate scales. Petioles 1.5–3 cm. Leaves 8–18 cm; leaflets usually 2 pairs, sometimes 1 pair, subopposite, leathery, elliptic to oblong-elliptic, 6–9 × 2.5–5 cm, asymmetrical, base cuneate, apex acuminate, margin entire, olive or pale brown and glossy when dried; lateral veins 5–7 pairs, inconspicuous; petiolules 3–6 mm. Inflorescence terminal, slightly pendulous, ca. 10 × 4 cm; peduncle 2–4 cm, with peltate scales. Nutlet glabrous, 3–4 mm. Persistent bract membranous, 3-lobed, densely covered with

brownish yellow peltate scales; lobes glabrous, central lobe 2.5 × 0.8 cm, lateral lobes 1.5 × 0.6 cm.

Locality: Hong Kong Island, Ma On Shan. *H. C. Tang 887; C. P. Lau 115.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Zhejiang.

Ecology: Forests. Flowering: May–Jul.; fruiting: Sep.–Oct.

**2. Engelhardia roxburghiana** Lindl. ex. Wall.
黄杞 **(Fig. 91; Photos 235–236)**

Pl. Asiat. Rar. 2: 85. 1831; FRPS 21: 12, pl. 3: 1. 1979; FGD 2: 322, fig. 212. 1991; FOC 4: 278. 1999, excl. syn. *E. fenzelii* Merr. & *E. unijuga* Chun ex P. Y. Chen.

*Engelhardtia chrysolepis* Hance, Ann. Sci. Nat. Ser. 4, 15: 227. 1861.

*Engelhardtia formosana* Hayata, Icon. Pl. Formosan. 6: 61. 1916.

*Engelhardtia wallichiana* auct. non Lindl.: FKH 251. 1912.

Tree to 30 m tall; bark dark brown. Branchlets purplish or dark brown. Buds, young branches, abaxial surfaces of leaves and inflorescence covered with brown peltate scales. Petioles 3–8 cm. Leaves 12–25 cm; leaflets 3–5 pairs, oblong, oblong-elliptic or ovate, 5–12 × 2–4 cm, asymmetrical, base cuneate or broadly cuneate, apex acuminate, margin entire, lateral veins 10–13 pairs; petiolules 0.6–1.5 cm. Inflorescence terminal, pendulous. Infructescence 15–25 cm. Nutlet globose, densely covered with peltate scales, 4 mm in diam. Persistent bract membranous, 3-lobed, densely covered with peltate scales, lobes glabrous, central lobe 3–5 × 0.8–1.2 cm, lateral lobes 1.5–2 × 0.5–0.8 cm.

Locality: Hong Kong Island, Ma On Shan, Tai Mo Shan, Ng Tung Chai, Tai Po Kau, Tseng Lan Shue. *Y. S. Lau 1437, 2718.*

Distribution: S & SW China; Indochina, Indonesia, Myanmar, E Pakistan, Thailand.

Ecology: Forests. Flowering: May–Jul.; fruiting: Sep.–Oct.

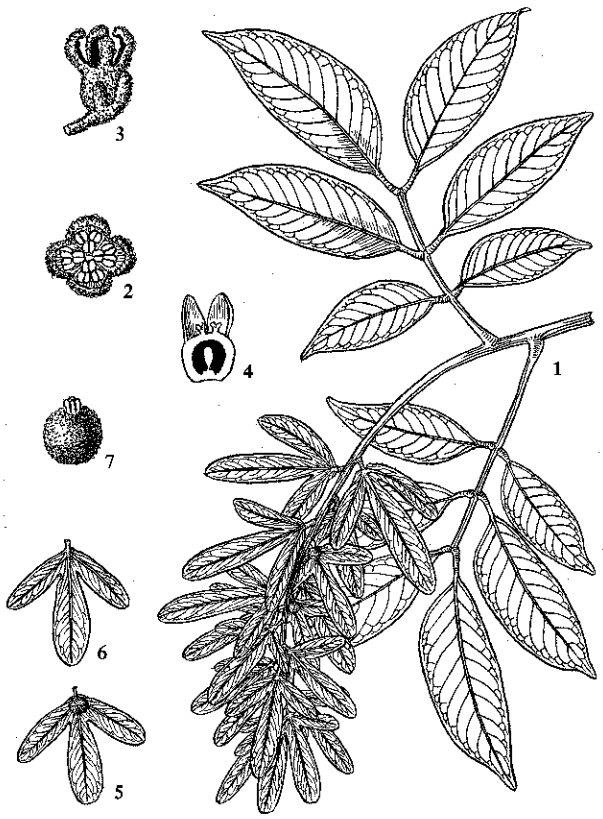



**Figure 91.** *Engelhardia roxburghiana* Lindl. ex. Wall.
*1.* fruiting branch; *2.* male flower; *3.* female flower; *4.* longitudinal section view of female flower showing stigma and ovary; *5.* nutlet and persistent bract; *6.* dorsal view of persistent bract; *7.* nutlet. (drawn by H. P. Yu)

## 60. MYRICACEAE 楊梅科

XIA Nian-he 夏念和

Evergreen or deciduous trees or shrubs, monoecious or dioecious, aromatic. Leaves alternate, simple; stipules absent or rarely present. Flowers in axillary spikes, usually unisexual, anemophilous, without perianth. Male flowers: solitary in axil of each bract, bracteoles absent or 2–4; stamens often 4–8, rarely 2–20, filaments short, free or slightly united at base; anthers 2-celled, longitudinally dehiscent, sometimes with reduced pistils. Female flowers: solitary or 2–4 in axil of bract, bracteoles usually 2–4 or absent. Ovary 2-carpellate, 1-locular; ovule solitary, basal, orthotropous; style very short or nearly absent, stigmas 2, slender. Fruit a drupe or nutlet; pericarp fleshy, often with head-like, wax-covered papillae; endocarp hard. Seed 1, endosperm tiny or absent; embryo straight; cotyledons fleshy and thick.

Three genera and ca. 50 species, mostly in temperate or subtropical regions of both hemispheres; one genus and four species in China; one species in Hong Kong.

### 1. Myrica L. 楊梅屬

Evergreen or deciduous trees or shrubs; dioecious or monoecious. Leaves simple, alternate, often aggregated at shoot apex; stipules absent. Flowering precocious or coetaneous.

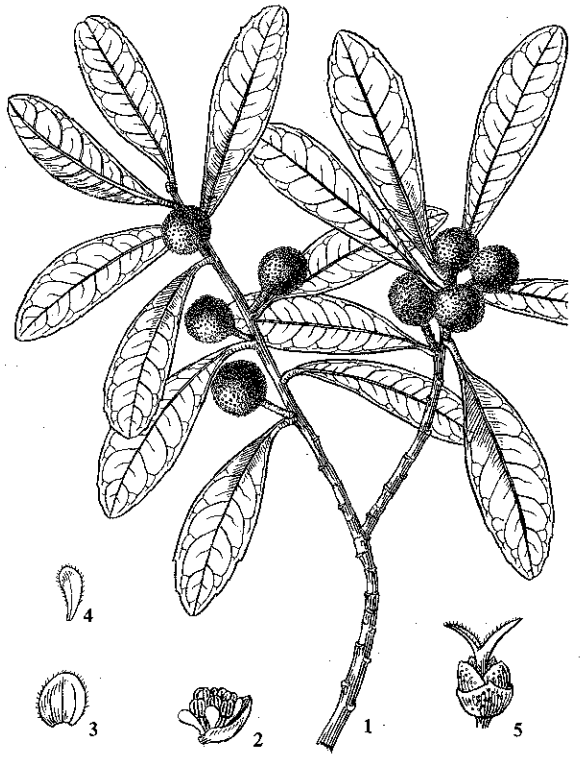



**Figure 92.** *Myrica rubra* (Lour.) Sieb. & Zucc.
*1.* fruiting branch; *2.* male flower; *3.* bract; *4.* bracteole; *5.* female flower. (drawn by H. P. Yu)

Inflorescences spicate, sometimes paniculate. Bract scale-like. Male flowers: stamens 2–12(–20), filaments free or united at base, bracteoles present or absent. Female flowers: bracteoles 2–4; ovary 1-locular; style short, stigmas 2, slender. Fruit a drupe, often with head-like, wax-covered papillae; endocarp hard. Seeds erect, with membranous testa.

About 50 species, distributed in SE Asia, C Africa, S Africa, N Europe and America; four species in China; one species in Hong Kong.

**1. Myrica rubra** (Lour.) Sieb. & Zucc. 楊梅 **(Fig. 92; Photo 237)**

Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4: 230. 1846; FHK 322. 1861; FKH 251. 1912; FGD 3: 239, fig. 160. 1995; FOC 4: 276. 1999.

*Morella rubra* Lour., Fl. Cochinch. 2: 548. 1790.

Evergreen tree, dioecious, to 15 m tall; bark grey. Branchlets robust, glabrous. Petioles 0.2–1 cm. Leaves obovate-oblong to oblanceolate, 5–14 × 1–4 cm, leathery, base cuneate, apex obtuse to acute, margin entire or serrate at upper part, glabrous on both surfaces, sparsely to moderately golden-glandular abaxially. Male spikes solitary or sometimes several together in leaf axils, 1–3 cm, usually not branched; bracts imbricate, suborbicular, ca. 1 mm, glabrous, with golden glands abaxially. Male flowers: bracteoles 2–4, ovate; stamens 4–6; anthers dark red, ellipsoid. Female spikes often solitary in leaf axils, 0.5–1.5 cm, many-flowered; bracts imbricate, glabrous, with golden glands abaxially. Female flowers: bracteoles 4; ovary ovoid, velutinous; stigmas 2, bright red. Drupe dark red or purple-red at maturity, globose, 1–1.5 cm in diam.; pericarp fleshy, juicy, papilliferous.

Locality: Common in Hong Kong. Also cultivated. *H. C. Tang 2408, 2486; Y. S. Lau 501.*

Distribution: Areas S of Changjiang River; Vietnam, Philippines, Korea, Japan.

Ecology: Forests. Flowering: Mar.–Apr.; fruiting: May–Jul.

Uses: Food (fruit), medicinal (folklore).

# 63. FAGACEAE 殼斗科

HU Qi-ming 胡啟明

Evergreen or deciduous trees, rarely shrubs. Leaves alternate or spirally arranged; stipules usually caducous. Flowers unisexual (plants monoecious). Male flowers in catkins, spikes, or sometimes panicles; perianth 4–6(–9), scale-like, connate or free; filaments filiform; anthers dorsifixed or versatile, opening by longitudinal slits; rudimentary pistil present or not. Female flowers 1–7 subtended by a cupule formed from many fused bracts, forming a separate spike, or sometimes in short clusters at the base of the male inflorescence; perianth 1–7 or more; pistil 1, ovary inferior, 3–6(–9)-locular; style and carpels as many as locules. Fruit a nut, solitary or 2–3 partly or entirely enclosed by a cupule or involucre; seeds with large embryo.

About seven genera and 1000 species widely distributed in subtropical and temperate regions of both hemispheres; seven genera and 294 species in China; four genera and 36 species in Hong Kong.

1a. Male flowers in pendulous catkins; style and stigma distinctly demarcated; stigma peltate, capitate or decurrent.
  2a. Bracts of cupule free and imbricate ..... 1. *Quercus*
  2b. Bracts of cupule fused and arranged in concentric rings ..... 2. *Cyclobalanopsis*
1b. Male flowers in upright spikes or panicles; no distinct demarcation between style and stigma; stigma punctiform.
  3a. Female flowers or nuts 1–3 per cupule; cupule solitary, scattered on rachis, usually completely enclosing the nut, rarely cup-shaped, outside spiny, rarely covered with scales; leaves 2-ranked ..... 3. *Castanopsis*
  3b. Female flower or nut 1 per cupule; cupule usually 3–5 clustered, rarely solitary, cup-shaped or discoid, rarely completely enclosing the nut, outside covered with scales; leaves not 2-ranked ..... 4. *Lithocarpus*

## 1. Quercus L. 櫟屬

Deciduous or Tree, rarely shrubs. Branchlets with terminal bud covered with many imbricate scales. Leaves short-petiolate, penninerved, lobed or entire. Male flowers in slender, pendulous catkins; perianth 4–7-lobed; stamens 4–12, usually 6. Female flowers 1 per cupule, solitary or in 2- to many-flowered spikes; ovary 3- or rarely 4–5-locular; style elongated, dilated above and stigmatose on the inner surface. Fruit a nut, subglobose to oblong or cylindric, surrounded at base or sometimes entirely enclosed by a cup-like cupule or involucre covered with imbricate scales.

About 100 species in the temperate regions of the northern hemisphnere and into the tropics at high altitudes; 33 species in China; two species in Hong Kong.

1a. Leaves oblong-lanceolate to broadly lanceolate, margin with bristle-like teeth ..... 1. *Q. acutissima*
1b. Leaves obovate, margin obtusely serrate ..... 2. *Q. fabri*

**1. Quercus acutissima** Carr. 麻櫟

J. Linn. Soc. Bot. 6: 33. 1862; FFJ 1: 413, fig. 370. 1982; FRPS 22: 219, pl. 68: 1. 1998; FTW ed. 2, 2: 114. 1996; FOC 4: 372. 1999.

Deciduous tree, to 15 m tall. Bark dark greyish brown, deeply fissured. Branchlets yellowish brown, glabrescent. Leaves thinly leathery; petioles 1.5–3.5 cm, glabrescent; leaf blade variable in shape, usually oblong-lanceolate, 9–13(–18) × 2–4(–6) cm, base

subrounded or broadly cuneate, apex acuminate, margin serrate with bristle-like teeth, adaxially glabrous and shining, abaxially pubescent when young, soon glabrate, only with tuft of hairs on axil of veins; lateral veins 13–17 on each side of midvein. Male catkins, 3–4 cm; stamens usually 3–7, rarely 2–10; filaments 2.5–3 mm. Female flowers 2–3, clustered or in short catkins. Cupule cup-shaped, ca. 1.5 cm high, 2–4 cm in diam., enclosing 1/3–1/2 of nut; bracts subulate to linear, reflexed, greyish-white-tomentose. Nut ovoid or ellipsoid, 1.6–2.2 cm high, 1.5–2 cm in diam., top rounded; scar convex.

Locality: New Territories. *HK sheet 26470, 40661.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Xizang, Hunan, Hubei, Henan, Shanxi, Shaanxi, Liaoning, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang, Fujian; Korea, Japan, Vietnam, Myanmar, Thailand, N India, Nepal.

Ecology: Woods on sunny slopes.

Uses: Material (timber).

**2. Quercus fabri** Hance 白櫟 **(Fig. 93)**

J. Linn. Soc. Bot. 10: 202. 1869; FFJ 1: 414, fig. 372. 1982; FRPS 22: 227, pl. 71: 1–2. 1998; FOC 4: 373. 1999; FKH 253. 1912.

*Quercus serrata* auct. non Thunb.: FKH 253. 1912.

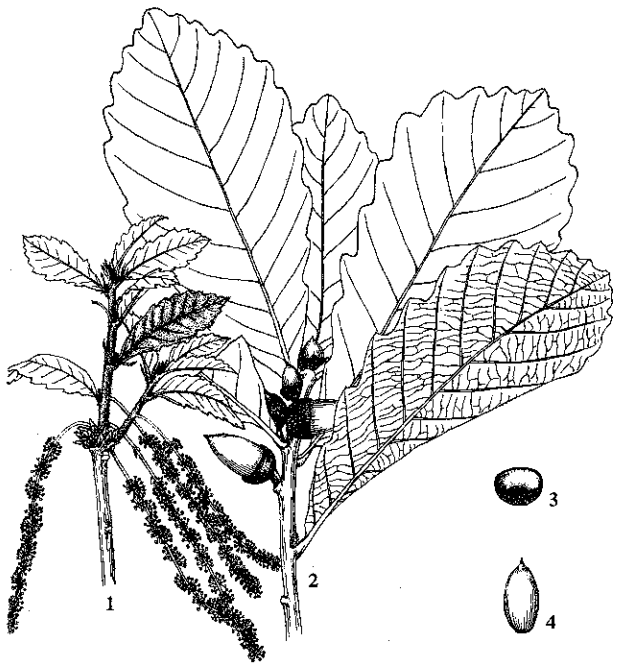



**Figure 93.** *Quercus fabri* Hance
*1.* flowering branch; *2.* fruiting branch; *3.* cupule; *4.* fruit. (drawn by Y. X. Liu)

Deciduous tree to 20 m tall, but often shrubby. Bark dark greyish brown, deeply fissured. Branchlets densely grey to greyish brown tomentose. Leaves thickly papery or thinly leathery; petioles 3–6 mm, yellowish-brown-tomentose; leaf blade obovate, to obovate-elliptic, 6–16 × 2.5–8 cm, base broadly cuneate or narrowly rounded, apex obtuse, margin undulate-serrate or coarsely and obtusely serrate, covered with greyish yellow stellate hairs on both surfaces when young, only on abaxial surface when mature; lateral veins 8–12 on each side of midvein, tertiary veins conspicuous abaxially. Male catkins 3–4 cm, pendulous, rachis tomentose. Female catkins 1–4 cm, with 2–4 flowers. Cupule cup-shaped, 7–8 mm high, 0.8–1 cm in diam., enclosing 1/3 of nut; bracts ovate-lanceolate, imbricate. Nut ellipsoid to ovoid-ellipsoid, 1.5–1.8 cm high, 0.8–1 cm in diam., glabrous; scar convex.

Locality: Fanling. *W. J. Tutcher s.n. (HK sheet 10934, 11656).*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Henan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Thickets and secondary forests. Flowering: Apr.; fruiting: Oct.

Uses: Fuelwood.

## 2. Cyclobalanopsis Oerst. 青岡屬

Tree, rarely shrubby. Branchlets with terminal buds covered with many imbricate scales. Stipules extrapetiolar. Leaves spirally arranged, entire or dentate. Flowers unisexual (plants monoecious). Male flowers in slender pendulous catkins; perianth (4–)6(–7)-lobed; stamens (4–)6(–12), filaments very short; rudimentary pistil very small. Female flowers 1 per cupule, solitary or in 2- to many-flowered spikes; ovary 3-celled; styles 3, stigmas capitate or dilated; staminodes sometimes present. Cupule discoid, cup-shaped or subglobose; bracts scale-like, forming entire concentric rings. Nut usually 1 per cupule, subglobose to ellipsoid or cylindrical, partially enclosed in a cupule.

About 150 species mainly in the temperate regions of N hemisphere, but with some species extended to the tropics at high altitudes; 69 species in China; ten species in Hong Kong.

1a. Leaves narrowly lanceolate, 0.5–1.8 cm broad, margin entire ..... 1. *C. neglecta*
1b. Leaves much broader or margin toothed.
  2a. Young shoots glabrous.
    3a. Leaves obovate-elliptic to oblong-elliptic, the length/width ratio < 2.5 ..... 2. *C. glauca*
    3b. Leaves oblong to lanceolate, the length/width ratio > 3.
      4a. Leaves glaucous abaxially.
        5a. Leaves apex long-acuminate or shortly caudate; cupule 1–1.5 cm in diam. ..... 3. *C. myrsinifolia*
        5b. Leaves apex acute or slightly acuminate; cupule 1.8–2.5 cm in diam. ..... 4. *C. edithiae*
      4b. Leaves green to greyish green abaxially
        6a. Leaves oblong-lanceolate, lateral veins 12–14 pairs; nuts compressed globose, 1.5–2 cm high ..... 5. *C. bella*
        6b. Leaves elliptic or obovate-oblanceolate, lateral veins 8–12 pairs; nuts ellipsoid, 2.5–3.5 cm high ..... 6. *C. blakei*
  2b. Young shoots tomentose or pubescent.
    7a. Leaves obovate to oblong, stellate-tomentose abaxially.

8a. Lateral veins of leaves 6–9 pairs; petioles 0.6–0.9 cm; cupule bowl-shaped, enclosing 1/3–1/2 of nut..... 7. *C. championii*

8b. Lateral veins of leaves 9–15 pairs; petioles 1–2.2 cm; cupule discoid, enclosing 1/4–1/3 of nut..... 8. *C. chungii*

7b. Leaves obovate-or oblong-lanceolate, glabrous on both surfaces.

9a. Leaves more or less acute at apex; petioles 1–1.4 cm; nuts compressed globose, 1.5–2.5 cm in diam..... 9. *C. hui*

9b. Leaves subsessile, rounded at apex; nuts ellipsoid, ca. 1 cm in diam ..... 10. *C. litseoides*

**1. Cyclobalanopsis neglecta** Schott. 竹叶青冈 **(Fig. 94; Photo 238)**

Bot. Jahrb. Syst. 47: 650. 1912; FOC 4: 387. 1999.

*Cyclobalanopsis bambusifolia* (Hance) Chun ex Y. C. Hsu & H. W. Jen, J. Forest. Univ. 15(4): 44. 1993; FRPS 22: 280, pl. 85: 4–5. 1998.

*Quercus bambusifolia* Hance in Seem. Bot. Voy. Herald, t. 91. 1875, non Fortune (1860).

*Quercus salicina* auct. non Blume: FHK 321. 1861; FKH 253. 1912.

Tree, to 20 m tall. Young shoots silky-hairy, glabrous in age. Leaves thinly leathery, crowded towards apex of branchlets; petioles 2–5 mm, glabrous; leaf blade narrowly lanceolate to elliptic-lanceolate, 3–11 × 0.6–1.8 cm, narrowed to both ends, apex blunt, margin entire, adaxially dark green, glabrous, abaxially ± glaucous, glabrous or with some long hairs at base; lateral veins 7–14 on each side of midvein, inconspicuous. Male catkins axillary, very slender, 2.5–5 cm, rachis rusty-tomentose. Female spikes short and erect, 0.5–1 cm, with 2 flowers; styles 3 or 4. Infructescences 5–10 mm, usually with only one fruit. Cupule discoid or cup-shaped, 5–10 mm high, 1.3–1.8 cm in diam., enclosing ca. 1/2 of nut, greyish brown tomentose outside; bracts in 4–6 concentric rings. Nut obovoid or ellipsoid, 1.5–2.5 cm high, 1–1.6 cm in diam., slightly tomentose; scar convex, 5–7 mm in diam.

Locality: Mount Gough, Mount Nicholson, Tai Tam, Wan Chai Gap. *Y. S. Lau 1703; H. C. Tang 1137; W. J. Tutcher s.n. (HK sheet 6819).*

Distribution: Hainan. Guangdong, Guangxi; Vietnam.

Ecology: Woodlands. Flowering: Jun.; fruiting: Oct.

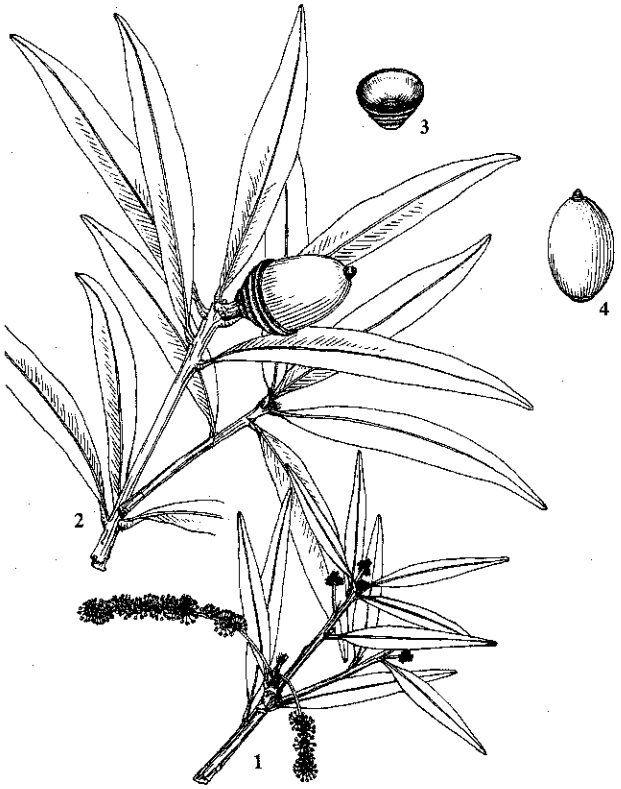



**Figure 94.** *Cyclobalanopsis neglecta* Schott.
*1*. flowering branch; *2*. fruiting branch; *3*. cupule; *4*. fruit. (drawn by Y. X. Liu)

**2. Cyclobalanopsis glauca** (Thunb.) Oerst. 青冈 **(Photo 239)**

Vidensk. Meddel. Dansk Naturhist. Foren. Kjobenhavn 1866: 78. 1867; H. L. Li, Woody Fl. Taiwan 101. 1963; FFJ 1: 408, fig. 365. 1982; FTW ed. 2, 2: 72, pl. 31. 1996; FRPS 22: 315, pl. 98: 1. 1998; FOC 4: 396. 1999.

*Quercus glauca* Thunb., Syst. Veg., ed. 14, 858. 1784; FKH 253. 1912.

Tree, to 20 m tall. Branchlets glabrous. Leaves leathery; petioles 1–2.5 cm, glabrous; leaf blade obovate-elliptic or elliptic, 6–15(–18) × 2.5–5(–8) cm, base rounded or broadly cuneate, apex acuminate to caudate-acuminate, margin remotely serrate on the upper half, adaxially glabrous and shining, abaxially glaucous, with appressed hairs and scurfy lepidote; lateral veins 9–10 on each side of midvein. Male spike (2–)5–6 cm, rachis brown-tomentose. Female spikes 1.5–3 cm in fruiting time, with 1–3 cupules. Cupule bowl-shaped, 6–7 mm high, 0.8–1 cm in diam., sparsely pubescent outside, enclosing 1/3 of nut; bracts in 5–7 concentric rings. Nut ellipsoid-ovoid or ellipsoid, 1–1.5 cm high, 0.9–1.2 cm in diam., scar flat or slightly convex, ca. 5 mm in diam.

Locality: Shek O, Cape d'Aguilar, Pok Fu Lam, Ma On Shan. *X. Y. Zhuang 1931; Y. S. Lau 1514, 3009.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Xizang, Hunan, Hubei, Henan, Shaanxi, Gansu, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Vietnam, N India, Bhutan.

Ecology: Woods. Flowering: Apr.–May; fruiting: Oct.

Uses: Material (wood), environmental.

**3. Cyclobalanopsis myrsinifolia** (Blume) Oerst. 小叶青冈 **(Photo 240)**

Skr. Vidensk.-Selsk. Christiana, Math.-Naturvidensk. Kl. 9(6): 387. 1871; FFJ 1: 407. 1982; FRPS 22: 325, pl. 98: 3. 1998; FTW ed. 2, 2: 78, pl. 36. 1996; FOC 4: 398. 1999.

*Quercus myrsinifolia* Blume, Mus. Bot. 1: 305. 1850.

Tree, 10–15 m tall. Branchlets glabrous, with raised light brown lenticels. Leaves leathery; petioles 1–2.5 cm, glabrous; leaf blade lanceolate to oblong-lanceolate or broadly ovate-oblong, 5–12 × 1.5–4 cm, base cuneate or sub-rounded, apex acuminate to caudate-acuminate, margin serrulate above middle, adaxially green, abaxially glaucous, becoming dark grey when dry, glabrous on

both surfaces; lateral veins 10–14 on each side of midvein. Male spike 4–6(–9) cm, rachis slender, ± tawny tomentose. Female spikes 1.5–3 cm, with 2–3 cupules. Cupule cup-shaped, 5–7 mm high, 0.7–1 cm in diam., whitish pubescent outside, enclosing 1/3 of nut; bracts in 6–9 concentric rings. Nut ellipsoid, 1.3–2 cm high, 0.8–1.1 cm in diam., glabrous, apex rounded; scar flat, ca. 6 mm in diam.

Locality: Common in Hong Kong. *Y. S. Lau 3164; H. C. Tang 11651; W. J. Tutcher s.n. (HK sheet 6801).*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Henan, Shaanxi, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Vietnam, Laos, Thailand.

Ecology: Woods by streams or ravines. Flowering: Jun.; fruiting: Oct. of the following year.

Uses: Material (wood), environmental.

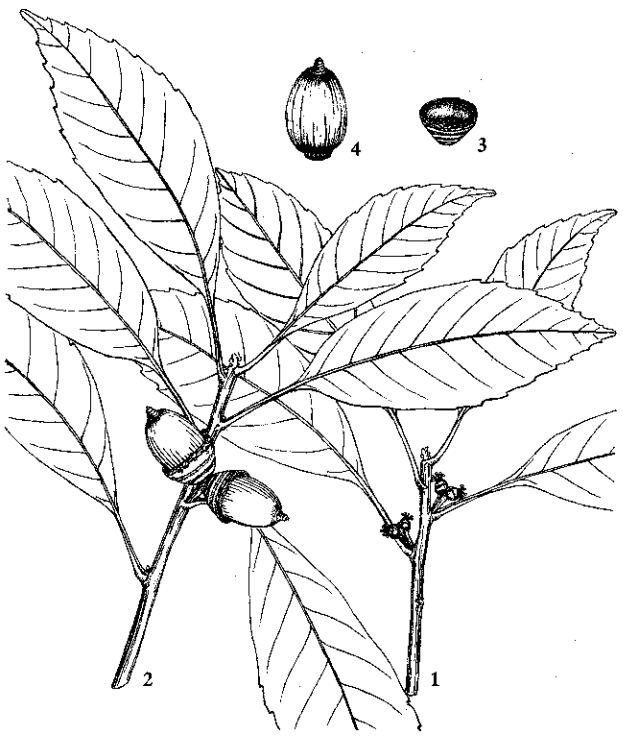



**Figure 95.** *Cyclobalanopsis edithiae* (Skan) Schott.
*1*. flowering branch; *2*. fruiting branch; *3*. cupule; *4*. nut. (drawn by Y. X. Liu)

**4. Cyclobalanopsis edithiae** (Skan) Schott.
華南青岡 **(Fig. 95; Photo 241)**

Bot. Jahrb. Syst. 47: 650. 1912; FRPS 22: 306, pl. 86: 5–7. 1998; FOC 4: 393. 1999.

*Quercus edithiae* Skan, Hooker's Icon. Pl. 27: t. 2661. 1901; FKH 253. 1912.

Tree, to 20 m tall. Branchlets slightly angular, glabrous. Leaves leathery; petioles 2–3 cm, glabrous; leaf blade oblong to obovate-oblong, 5–16 × 2–6 cm, base cuneate, apex broadly acute, margin shallowly serrulate on the upper 1/3, adaxially dark green, glabrous, abaxially greyish brown-tomentose when young, glabrous in age; lateral veins 9–12 on each side of midvein, inconspicuous. Male spike 2–3 cm, densely yellow-tomentose. Female spikes 1–2 cm in fruiting time, with 3–4 cupules. Cupule bowl-shaped, 12–15 mm high, 1.8–2.5 cm in diam., wall 2–3 mm thick, dark-yellow-tomentose outside, enclosing 1/4–1/3 of nut; bracts in 6–8 concentric rings. Nut ellipsoid to cylindrical-ellipsoid, 3–4.5 cm high, 2–3 cm in diam.; scar slightly convex, ca. 7 mm in diam.

Locality: Mount Kellet, Sai Kung, Tai Wai, Ta Tit Yan. *W. J. Tutcher 8049, 9486; L. T. Lo 371.*

Distribution: Hainan, Guangdong, Guangxi.

Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Oct.– Dec.

Uses: Material (wood), environmental.

Notes: The leaves of this species are somewhat similar to *C. blakei*, but can be easily distinguished by its bowl-shaped and yellow-tomentose cupule. The type specimen was collected from "Tatitin", New Territories, by C. Ford.

**5. Cyclobalanopsis bella** (Chun & Tsiang) Chun ex Y. C. Hsu & H. W. Jen 槠椆青岡 **(Photo 242)**

J. Beijing Forest Univ. 15(4): 45. 1993; FRPS 22: 302, pl. 95: 1–4. 1998; FOC 4: 393. 1999.

*Quercus bella* Chun & Tsiang, J. Arnold Arbor. 28: 326. 1947.

Tree, to 30 m tall. Branchlets angular, initially pubescent, glabrescent with age. Leaves thinly leathery; petioles 1–2 cm, glabrous; leaf blade oblong-lanceolate, 8–15 × 2–3.5 cm, base cuneate, slightly oblique, apex acuminate, margin serrate above middle, adaxially glabrous, abaxially covered with short appressed hairs when young, glabrous and glaucous in age; lateral veins 12–14 on each side of midvein. Male spikes unknown. Female spikes 1–2 cm, usually with 2–3 cupules. Cupule discoid, ca. 5 mm high, 2.5–3 cm in diam., greyish yellow-puberulent outside, surrounding the base of nut; bracts in 6–8 concentric rings. Nut compressed globose, 1.5–2 cm high, 1.5–2 cm in diam., pubescent when young; scar slightly concave, 1–1.4 cm in diam.

Locality: Tai Po, Yin Ngam. *Y. W. Lam 215.*

Distribution: Hainan, Guangdong, Guangxi.

Ecology: Woods. Flowering: Mar; fruiting: Oct.–Dec.

Uses: Material (wood), environmental.

**6. Cyclobalanopsis blakei** (Skan) Schott. 櫟子青岡

Bot. Jahrb. Syst. 47: 649. 1912; FRPS 22: 304, pl. 95: 5–10. 1998; FOC 4: 393. 1999.

*Quercus blakei* Skan, Hooker's Icon. Pl. 27: t. 2662. 1901; FKH 253. 1912.

Tree, to 35 m tall. Bark greyish black, smooth. Branchlets glabrous. Leaves thinly leathery; petioles slender, 1.5–3 cm, glabrous; leaf blade narrowly ovate-elliptic to obovate-oblanceolate, variable in size, 7–12 × 1.5–2 cm, base cuneate, apex acuminate, margin serrate on the upper 1/3, reddish-tomentose on both surfaces when young, soon glabrescent; lateral veins 8–14 on each side of midvein. Male spike ca. 4 cm, tawny tomentose. Female spikes 1–2 cm, with 1–2 cupules. Cupule solitary or in pairs, discoid, 5–10 mm high, 2–3 cm in diam., dark-brown-tomentose outside, surrounding the base of nut; bracts in 6–7 concentric rings. Nut ellipsoidal or ovoid, 2.5–3.5 cm high, 1.5–3 cm in diam., scar 7–11 mm in diam.

Locality: Ta Tit Yan, Tai Po, She Shan Tsuen. *W. J. Tutcher 7288, 11293; S. C. Ng 3525.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou; Vietnam, Laos.

Ecology: Woods. Flowering: Mar.; fruiting: Oct.–Dec.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from "Tatitin", New Territories by C. Ford.

**7. Cyclobalanopsis championii** (Benth.) Oerst. 岭南青冈 **(Photo 243)**

Vidensk. Meddel. Dansk Naturhist. Foren. Kjobenhavn 1866: 79. 1876; H. L. Li, Woody Fl. Taiwan 100. 1963; FFJ 1: 405, fig. 361. 1982; FTW ed. 2, 2: 69, pl. 29, photo 25. 1996; FRPS 22: 281, pl. 103: 3–7. 1998; FOC 4: 388. 1999.

*Quercus championii* Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 113. 1854; FHK 321. 1861; FKH 253. 1912.

Tree, to 20 m tall. Young shoots, petioles and inflorescence tawny tomentose. Leaves thickly leathery; petioles 0.8–1.5 cm; leaf blade obovate to oblong, 3.5–10(–13) × 2–3.5(–6) cm, base cuneate to acute, apex broadly obtuse or rounded, with a blunt tip, rarely retuse, margin revolute, entire or sometimes slightly crenulate near apex, adaxially glabrous and shining when full-grown, abaxially densely brownish stellate-tomentose; lateral veins 6–10 on each side of midvein, as is the midvein impressed adaxially, conspicuously raised abaxially. Male spike 4–8 cm. Female spikes erect, ca. 4 cm, with 3–10 cupules. Cupule bowl-shaped, 7–10 mm high, 1.4–1.7 cm in diam., brownish-tomentose abaxially, enclosing 1/3–1/4 of nut; bracts in 4–7 concentric rings. Nut broadly ovoid or compressed globose, 1.5–2 cm high, 1.2–1.5(–1.8) cm in diam., rounded on both ends, pubescent when young; scar 4–5 mm in diam.

Locality: Victoria Peak, Mount Nicholson, Mount Cameron, Ma On Shan, Tai Mo Shan, Lautau Island. *H. C. Tang 621; C. P. Lau 60; HK sheet 6718*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian.

Ecology: Woods. Flowering: Dec. to Mar. of the following year; fruiting: Nov.–Dec.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

**8. Cyclobalanopsis chungii** (Metc.) Y. C. Hsu & H. W. Jen ex Q. F. Zheng 福建青冈 **(Photo 244)**

FFJ 1: 405, fig. 362. 1982; FRPS 22: 282, pl. 103: 8–10. 1998; FOC 4: 388. 1999.

*Quercus chungii* Metc., Lingnan Sci. J. 10: 481. 1931.

Tree, to 15 m tall. Branchlets, petioles and inflorescence densely brown stellate tomentose. Leaves thinly leathery; petioles 1–2.2 cm; leaf blade obovate, obovate-elliptic to elliptic, 5–12 × 1.5–4 cm, base broadly cuneate to subrounded, apex short-caudate, rarely acute, margin obscurely serrulate or crenulate towards apex, rarely entire, adaxially glabrous and shining when full-grown, abaxially densely greyish brown stellate-tomentose; lateral veins 9–15 on each side of midvein. Male spike unknown; Female spikes erect, 1.5–2 cm, with 2–6 cupules. Cupule discoid, 6–8 mm high, 1.2–1.8 cm in diam., brown-tomentose outside, enclosing 1/4–1/3 of nut; bracts in 5–7 concentric rings. Nut compressed globose or ovoid, 1.5–2.1 cm high, 1.4–1.8 cm in diam., top flat-rounded, minutely tomentose; scar 1–1.2 cm in diam.

Locality: Castle Peak, So Kwun Wat. *P. S. Choi s.n. (HK sheet 38401); F. W. Xing 9333, 10205.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian.

Ecology: Woods. Flowering: May–Jun.; fruiting: Oct.–Nov.

Uses: Material (wood), environmental.

**9. Cyclobalanopsis hui** (Chun) Chun ex Y. C. Hsu & H. W. Jen 雷公青冈 **(Photo 245)**

J. Beijing Forest. Univ. 15(4): 45. 1993; FRPS 22: 282, pl. 85: 1–3. 1998; FOC 4: 388. 1999.

*Quercus hui* Chun, J. Arnold Arbor. 9: 126. 1928.

Tree, 10–15 m tall. Branchlets, petioles and inflorescences densely tawny-tomentose when young, glabrescent with age. Leaves thinly leathery; petioles 1–1.4 cm; leaf blade oblong, oblanceolate or elliptic-lanceolate, 7–13 × 1.5–3 cm, base broadly cuneate, often slightly oblique, apex obtuse, rarely acuminate, margin recurved, entire or obscurely serrulate towards apex, adaxially glabrous and shining when full-grown, abaxially tawny-tomentose when young, gradually glabrate; lateral veins 6–10 on each side of midvein. Male spike 5–9 cm, 2–4 clustered. Female spikes 1–2 cm, with 2–5 cupules crowded at apex of rachis. Cupule shallow bowl-shaped, 6–10 mm high, 1.5–3 cm in diam., brown-tomentose outside, enclosing 1/2 of nut; bracts in 4–6 concentric rings. Nut compressed globose, 1.5–2 cm high, 1.5–2.5 cm in diam., densely tawny-tomentose when young, but glabrescent later; scar concave, 7–10 mm in diam.

Locality: Pat Sin Leng. *Y. W. Lam 500, 501.*

Distribution: Guangdong, Guangxi, Hunan.

Ecology: Woods. Flowering: Apr.–May; fruiting: Oct.–Dec.

Uses: Material (wood), environmental.

**10. Cyclobalanopsis litseoides** (Dunn) Schott. 木薹叶青冈 **(Photo 246)**

Bot. Jahrb. Syst. 47: 658. 1912; FRPS 22: 277, pl. 85: 6–8. 1998; FOC 4: 387. 1999.

*Quercus litseoides* Dunn, J. Bot. 47: 377. 1909; FKH 253. 1912.

Tree, to 10 m tall. Branchlets slender, initially tomentose, gradually glabrate. Leaves subsessile, blade obovate-oblanceolate or narrowly elliptic, 2.5–7 × 0.8–3 cm, apex broadly obtuse to rounded, base cuneate, margin entire, adaxially dark green, abaxially greyish green, glabrous on both surfaces; lateral veins 6–9 on each side of midvein. Male spike 3–5 cm; rachis and perianth brown-tomentose. Female spikes ca.

1 cm, with 2 apical cupules. Cupule bowl-shaped, 5–6 mm high, 1–1.5 cm in diam., sparsely greyish-brown-tomentose outside, enclosing 1/3 of nut; bracts in 5–7 concentric rings. Nut ellipsoidal, 1.5–1.8 cm high, ca. 1 cm in diam., puberulent at apex; scar flat 5–6 mm in diam.

Locality: Lantau Island. *W. J. Tutcher 6597; H. C. Tang 2149; P. S. Choi s.n. (HK sheet 35584).*

Distribution: Guangdong, Guangxi.

Ecology: Woods. Flowering: Jan.; fruiting: Dec.

Uses: Material (wood), environmental.

## 3. Castanopsis (D. Don) Spach 錐屬

Tree, rarely shrubby. Branchlets with terminal buds; bud usually compressed ovoid, with many, decussate-imbricate scales. Leaves alternate, usually 2-ranked. Stipules extrapetiolar. Flowers unisexual (plants monoecious). Male flowers 3–7-fascicled, rarely solitary and scattered, forming upright spikes or panicles; perianth 5- or 6-lobed; stamens usually 9–12; rudimentary pistil very small, densely covered with curved woolly hairs. Female flowers usually 1–3 per cupule, in separate usually short spikes, sometimes at the base of the male spikes; staminodes when present opposite perianth lobes; ovary 3-locular; styles usually 3, terminating in punctiform stigmas. Cupules covered with spine-like or rarely scale-like bracts, solitary and scattered on rachis, completely or partially enclosing nut. Nuts 1–3 per cupule, maturing the second year or rarely in the current year.

About 120 species, mainly in S and E Asia; 58 species in China; ten species in Hong Kong.

1a. Cupule outside covered with scales or tubercles, without spines.
- 2a. Leaves small, usually less than 10 cm long and 3 cm broad; tubercles of cupule in irregular or interrupted 6–7 rings ..... 1. *C. carlesii*
- 2b. Leaves larger, over 10 cm long and 3 cm broad.
  - 3a. Tubercles of cupule in 6–7 concentric rings; leaves thickly leathery; lateral veins 10–14 on each side of midvein ..... 2. *C. sclerophylla*
  - 3b. Tubercles of cupule in 3–4 concentric rings; leaves thinly leathery; lateral veins 15–20 on each side of midvein ..... 3. *C. fissa*

1b. Cupule outside covered with spines.
- 4a. Spines of cupule very short, tuberculate ..... 1. *C. carlesii*
- 4b. Spines of cupule long and needle-like.
  - 5a. Mature nuts 1–3 per cupule.
    - 6a. Leaves abaxially reddish brown to yellowish brown scurfy when young, pale grey when mature; cupule 2–2.5 cm in diam. including spines ..... 4. *C. fabri*
    - 6b. Leaves concolour, pale green on both surfaces; cupule 4–5 cm in diam. including spines ..... 5. *C. lamontii*
  - 5b. Mature nut 1 per cupule.
    - 7a. Branchlets tawny scurfy.
      - 8a. Petioles very short, 1–3 mm ..... 6. *C. fordii*
      - 8b. Petioles longer, over 5 mm.
        - 9a. Leaves and branchlets glabrous; spines of cupule thick and short (6–10 mm), not completely covering cupule ..... 7. *C. fargesii*
        - 9b. Leaves and branches hairy when young; spines of cupule fine and longer (10–20 mm), completely covering cupule ..... 8. *C. concinna*
    - 7b. Branchlets not tawny scurfy
      - 10a. Branchlets reddish brown; bud-scale glabrous; cupule opening by 4 regular valves; spines of cupule 1.5–2.5 cm ..... 9. *C. kawakamii*
      - 10b. Branchlets greyish brown; bud-scale puberulent; cupule opening irregularly; spines of cupule 4–8 mm ..... 10. *C. eyrei*

**1. Castanopsis carlesii** (Hemsl.) Hayata 米櫧(小紅栲) **(Fig. 96; Photos 247–248)**

Icon. Pl. Formosan. 6 (suppl.): 72. 1917; H. L. Li, Woody Fl. Taiwan 88. 1963; FFJ 1: 384, fig. 335. 1982; FRPS 22: 66, pl. 18: 5–8. 1998; FOC 4: 330. 1999.

*Quercus carlesii* Hemsl., Hooker's Icon. Pl. 26: t. 2591. 1899.

*Castanopsis cuspidata* (Thunb. ex Murray) Schott. var. *carlesii* (Hemsl.) Yamazaki, J. Jap. Bot. 62(11): 333. 1987; FTW ed. 2, 2: 55, pl. 20, photo 19. 1996.

Tree, to 20 m tall. Young shoots and rachis of inflorescences sparsely reddish brown scurfy. Leaves thinly leathery; petioles to 1 cm, base thickened; leaf blade lanceolate to ovate-laceolate, 4–12 × 1–4.5 cm, base cuneate, ± oblique, apex acuminate to narrowly caudate, margin entire or with a few shallow teeth above middle, abaxial surface initially reddish brown scurfy, greyish brown to silvery when full grown; lateral veins 8–11 on each side of midvein. Male spikes simple or branched, 5–7 cm; rachis glabrous or glabrescent. Female spikes 3–4 cm, lengthening to 7–8.5 cm in fruiting time, glabrous; flower 1 per cupule. Cupule subglobose to ovoid, 0.8–1.2 cm in diam., usually entirely enclosing nut, wall 0.5–1 mm thick, yellowish brown to reddish brown tomentose abaxially; bracts spine-like or

reduced to tubercles, arranged into 6–7 continuous or interrupted rings. Nut subglobose to broadly conical, 0.8–1 cm in diam., apex shortly pointed; scar ca. 5 mm in diam.

Locality: Tai Tam, Victoria Peak, Wu Kau Tang, Tai Mo Shan, Tai Po Kau, Lantau Island. *W. J. Tutcher 9119; Y. S. Lau 1722; L. T. Lo 379.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Woods. Flowering: Mar.–Jun.; fruiting: Sep.–Nov. of following year.

Uses: Material (wood), food (seeds).




**Figure 96.** *Castanopsis carlesii* (Hemsl.) Hayata
*1*. flowering branch; *2*. fruiting branch; *3*. male flower; *4*. female flower; *5*. nut. (drawn by Y. X. Liu)

**2. Castanopsis sclerophylla** (Lindl.) Schott. 苦櫧

Bot. Jahrb. Syst. 47: 638. 1912; FFJ 1: 385, fig. 337. 1982; FRPS 22: 25, pl. 4: 8–9. 1998; FOC 4: 321. 1999.

*Quercus sclerophylla* Lindl. in Lindl. & Paxton, Fl. Gard. 1: 59. 1850; FKH 252. 1912.

Tree, 5–10 m tall. Bark shallowly fissured, exfoliating in flakes. Branchlets of the current year reddish brown, glabrous. Leaves leathery; petioles 1.2–1.6(–2.5) cm; leaf blade oblong to ovate-elliptic, sometimes obovate-elliptic, 6–12(–17) × 2–5(–7) cm, base subrounded to broadly cuneate, ± oblique, apex acuminate or abruptly and shortly caudate, margin serrulate from middle to apex, glabrous, abaxially silver-grey when full grown; lateral veins 10–15 on each side of midvein, slender but evident. Male spikes usually solitary, axillary, 5–15 cm. Female spikes to 15 cm; rachis glabrous. Cupule globose to subglobose 1.4–1.5 cm in diam., enclosing completely (when young) or 3/5–4/5 (when mature) of nut, wall ca. 1 mm thick, yellowish brown puberulent outside; bracts scale-like, mostly reduced and base united in 6–7 zoned ribs. Nut 1 per cupule, subglobose , 1–1.4 cm in diam., top puberulous; scar to 1 mm in diam.

Locality: Happy Valley, Garden Road. *C. P. Lau 40.*

Distribution: Guangxi, Guizhou, E Sichuan, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Woods. Flowering: Apr.–May; fruiting: Oct.–Nov.

Uses: Materials (wood), food (nut).

**3. Castanopsis fissa** (Champ. ex Benth.) Rehd. & Wils. 黧蒴錐(裂斗錐栗) **(Photo 249)**

Pl. Wilson. 3: 204. 1916; FFJ 1: 386, fig. 338. 1982; FRPS 22: 21, pl. 3: 5–14. 1998; FOC 4: 320. 1999.

*Quercus fissa* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 114. 1854; FHK 320. 1861; FKH 252. 1912.

Tree, to 20 m tall. Bud-scales and apex of young leaves reddish purple or yellowish brown puberulent. Leaves thickly papery; petioles 1–2.5 cm; leaf blade elliptic, oblong to obovate-elliptic, very variable in size, usually 11–23(–30) × 5–9 cm, base cuneate, apex shortly acuminate to rounded, margin undulate and crenate on the lower half, adaxially glabrous, abaxially yellowish brown puberulent when young; lateral veins 15–20(–28) on each side of midvein. Spikes erect, 8–15 cm, forming a terminal panicle; the males usually many, with 1 terminal female or sometimes 1–2 androgynous spikes just below the female one; rachis glabrous. Infructescence 8–18 cm. Cupule ovoid to ellipsoid, 1–1.5 cm in diam., entirely enclosing the nut when young, afterwards splitting into 2–3(–4) irregular segments, wall 0.5–1 mm thick, slightly tomentose outside; bracts scale-like, triangular and imbricate when young, irregularly zoned with age. Nut 1 per cupule, globose to elliptic, 1.3–1.8 × 1.1–1.6 cm, apex tawny tomentose; scar 4–7 mm in diam.

Locality: Common in Hong Kong. Also widely planted. *H. C. Tang 858, 2091, 2386.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian; N Thailand, N Vietnam.

Ecology: Secondary forests. Flowering: Apr.–Jun.; fruiting: Oct.–Dec.

Uses: Afforestation.

Notes: The type specimen was collected from the Happy Valley Woods, Hong Kong Island by J. G. Champion between 1847 and 1850.

**4. Castanopsis fabri** Hance 羅浮錐(白櫟) **(Photo 250)**

J. Bot. 22: 230. 1884; FKH 254. 1912; FFJ 1: 386. 1982; FTW ed. 2, 2: 57, pl. 23, photo 21. 1996; FRPS 22: 71, pl. 20: 6–13. 1998; FOC 4: 331. 1999.

Tree, to 20 m tall. Young shoots glabrescent or sparsely pubescent. Leaves leathery; petioles (0.5–)1–1.5 cm; leaf blade ovate-elliptic to elliptic-lanceolate, 6–10(–15) × 2.5–4.5(–5) cm, base subrounded to cuneate, rarely broadly cuneate, ± oblique, apex acuminate to caudate, margin serrate on the upper 1/3, rarely entire, adaxially glabrous, abaxially reddish brown to yellowish brown scurfy when young; lateral veins 10–12 on each side of midvein. Male spikes simple or branched and forming panicles, rachis sparsely pubescent. Female spikes 8–17 cm in fruiting time; flowers 2 or 3 per cupule. Cupule globose, broadly ellipsoid or ovoid, 2–3 cm in diam., entirely

enclosing nut, splitting irregularly when mature, wall ca.1 mm thick; bracts spine-like, 4–6(–10) mm, brown to yellowish brown when dry, sparsely pubescent to glabrescent, base connate into bundles and 4–5 interrupted rings, apex branched. Nut (1–)2(–3) per cupule, conical, 1–1.4 × 1–1.2 cm, glabrous; scar 8–10 mm in diam.

Locality: Pok Fu Lam, Tai Tam Tuk, Victoria Peak, Wan Chai Gap, Mount Parker, Tai Mo Shan, Lantau Island. *W. J. Tutcher 4609; Y. S. Lau 455; H. C. Tang 792.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Zhejiang, Fujian, Taiwan; Laos, Vietnam.

Ecology: Woods. Flowering: Apr.–May; fruiting: Sep.–Nov. of following year.

Uses: Material (wood), food (seeds).

**5. Castanopsis lamontii** Hance 鹿角錐(鐵錐樹) **(Photo 251)**

J. Bot. 13: 368. 1875; FKH 254. 1912; FFJ 1: 387. 1982; FRPS 22: 74, pl. 21: 1–5. 1998; FOC 4: 332. 1999.

*Castanopsis tribuloides* auct. non A. DC.: FKH 254. 1912.

Tree, to 30 m tall. Bark greyish brown, longitudinally fissured, inner bark dark reddish brown. Branchlets dark brown, glabrous. Leaves thick-papery or subleathery; petioles 1.5–2.5 cm, base dark brown when dry; leaf blade elliptic, ovate or oblong, (6–)12–23(–30) × (2–)3–5(–8) cm, base broadly cuneate to subrounded, ± oblique, apex acuminate to long-acuminate, margin entire, or sometimes with a few obtuse serratures near apex, glabrous, abaxially glaucous when full grown; lateral veins 10–12(–15) on each side of midvein. Male spikes axillary, 8–9 cm, usually forming leafy panicle. Female spike axillary, above the male ones, 10–20 cm in fruiting time, flowers 3 per cupule; rachis very thick. Cupule globose to subglobose, 4–6 cm in diam. including spines, wall ca. 1 mm thick; bracts spine-like, stout, 0.5–1(–1.5) cm, connate into 4–6 spine-zones. Nut 2–3 per cupule, broadly conical, 1.5–2.5 cm high, densely pubescent; scar covering 2/5–1/2 of nut.

Locality: Victoria Peak, Pok Fu Lam, Mount Kellet, Mount Parker, Mount Gough, Wong Nai Chung, Tai Po Kau, Ta Tit Yan, Lantau Island. *HK sheet 7011, 25062, 25671.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian.

Ecology: Woods. Flowering: Mar.–May; fruiting: Sep.–Nov. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Wong Nai Chung, Hong Kong Island by J. Lamont (in *Herb. Hance No. 18992*, K, BM) in 1874.

**6. Castanopsis fordii** Hance 毛錐

J. Bot. 22: 230. 1884; FKH 254. 1912; FFJ 1: 387, fig. 340. 1982; FRPS 22: 33, pl. 5: 8–10. 1998; FOC 4: 323. 1999.

Tree, to 20 m tall. Bark rough, dark grey, finely fissured. Branchlets and rachis of inflorescence densely tawny tomentose. Leaves leathery; petioles short and stout, 1–3(–5) mm; leaf blade oblong to lanceolate or oblanceolate-oblong, 9–14(–21) × 3–7 cm, base slightly cordate, rarely rounded, apex acute, or rarely rounded, margin entire and revolute, densely reddish brown tomentose on abaxial surface; lateral veins (12–)14–18 on each side of midvein. Male spikes usually forming panicle, densely flowered. Female spikes 6–12 cm in fruiting time; flowers 1 per cupule. Cupule globose, 4.5–6 cm in diam. including spines, splitting into 4–5 regular segments when mature, wall 0.5–1 mm thick; bracts spine-like entirely covering cupule; spines 10–15(–20) mm, connate into bundles, pubescent. Nut 1 per cupule, compressed conical, 1.2–1.5 × 1.5–2 cm, with appressed hairs; scar basal, 4–7 mm in diam.

Locality: Ma On Shan, Tiu Shau Ngam. *Y. W. Lam 220; F. W. Xing 8787.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian; N Thailand, N Vietnam.

Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Oct.–Dec.

Uses: Fuelwood.

Notes: The type specimen was collected by C. Ford from Lo Fau Shan, Guangdong Province in Sept. 1888.

**7. Castanopsis fargesii** Franch. 栲 **(Photo 252)**

J. Bot. (Morot) 13: 195. 1899; FFJ 1: 388, fig. 341. 1982; FTW ed. 2, 2: 61, pl. 24. 1996; FRPS 22: 55, pl. 15: 1–9. 1998; FOC 4: 328. 1999.

Tree, 10–20 m tall. Branchlets rusty scurfy when young, glabrous in age. Leaves leathery; petioles 1–1.5(–2) cm; leaf blade oblong or elliptic-lanceolate rarely ovate, 6.5–8(–15) × 1.8–2.5(–5) cm, base subrounded to broadly cuneate, sometimes oblique, apex shortly acuminate, margin entire or with 1–3 pairs of shallow teeth towards apex, densely reddish brown scurfy on abaxial surface; lateral veins 10–15 on each side of midvein. Male spikes solitary or forming panicles; flowers solitary, but crowded on the rachis. Female spikes solitary, glabrous, to 30 cm; flowers 1 per cupule and scattered on rachis. Cupule globose to broadly ovoid, 1.5–2.5 × 9–30 cm in diam., splitting irregularly, wall ca. 1 mm thick, whitish grey to brownish puberulent abaxially; bracts spine-like, 6–10 mm, base connate into 4–6 zoned bundles. Nut 1 per cupule, ovoid, 1–1.5 × 0.8–1.4 cm, glabrous; scar 8–10 mm in diam.

Locality: Tai Mo Shan (Ng Tung Chai). *F. W. Xing 6932, 8971.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Aug.–Oct. of following year.

Uses: Material (wood), food (seeds).

**8. Castanopsis concinna** (Champ. ex Benth.) A. DC. 華南錐(毛葉栲栗) **(Photo 253)**

J. Bot. 1: 182. 1863; FRPS 22: 30, pl. 5: 5–7. 1998; FOC 4: 322. 1999.

*Castanea concinna* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 115. 1854; FHK 319. 1861.

enclosing nut, splitting irregularly when mature, wall ca.1 mm thick; bracts spine-like, 4–6(–10) mm, brown to yellowish brown when dry, sparsely pubescent to glabrescent, base connate into bundles and 4–5 interrupted rings, apex branched. Nut (1–)2(–3) per cupule, conical, 1–1.4 × 1–1.2 cm, glabrous; scar 8–10 mm in diam.

Locality: Pok Fu Lam, Tai Tam Tuk, Victoria Peak, Wan Chai Gap, Mount Parker, Tai Mo Shan, Lantau Island. *W. J. Tutcher 4609; Y. S. Lau 455; H. C. Tang 792.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Zhejiang, Fujian, Taiwan; Laos, Vietnam.

Ecology: Woods. Flowering: Apr.–May; fruiting: Sep.–Nov. of following year.

Uses: Material (wood), food (seeds).

**5. Castanopsis lamontii** Hance 鹿角錐(鐵錐樹) **(Photo 251)**

J. Bot. 13: 368. 1875; FKH 254. 1912; FFJ 1: 387. 1982; FRPS 22: 74, pl. 21: 1–5. 1998; FOC 4: 332. 1999.

*Castanopsis tribuloides* auct. non A. DC.: FKH 254. 1912.

Tree, to 30 m tall. Bark greyish brown, longitudinally fissured, inner bark dark reddish brown. Branchlets dark brown, glabrous. Leaves thick-papery or subleathery; petioles 1.5–2.5 cm, base dark brown when dry; leaf blade elliptic, ovate or oblong, (6–)12–23(–30) × (2–)3–5(–8) cm, base broadly cuneate to subrounded, ± oblique, apex acuminate to long-acuminate, margin entire, or sometimes with a few obtuse serratures near apex, glabrous, abaxially glaucous when full grown; lateral veins 10–12(–15) on each side of midvein. Male spikes axillary, 8–9 cm, usually forming leafy panicle. Female spike axillary, above the male ones, 10–20 cm in fruiting time, flowers 3 per cupule; rachis very thick. Cupule globose to subglobose, 4–6 cm in diam. including spines, wall ca. 1 mm thick; bracts spine-like, stout, 0.5–1(–1.5) cm, connate into 4–6 spine-zones. Nut 2–3 per cupule, broadly conical, 1.5–2.5 cm high, densely pubescent; scar covering 2/5–1/2 of nut.

Locality: Victoria Peak, Pok Fu Lam, Mount Kellet, Mount Parker, Mount Gough, Wong Nai Chung, Tai Po Kau, Ta Tit Yan, Lantau Island. *HK sheet 7011, 25062, 25671.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian.

Ecology: Woods. Flowering: Mar.–May; fruiting: Sep.–Nov. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Wong Nai Chung, Hong Kong Island by J. Lamont (in *Herb. Hance No. 18992*, K, BM) in 1874.

**6. Castanopsis fordii** Hance 毛錐

J. Bot. 22: 230. 1884; FKH 254. 1912; FFJ 1: 387, fig. 340. 1982; FRPS 22: 33, pl. 5: 8–10. 1998; FOC 4: 323. 1999.

Tree, to 20 m tall. Bark rough, dark grey, finely fissured. Branchlets and rachis of inflorescence densely tawny tomentose. Leaves leathery; petioles short and stout, 1–3(–5) mm; leaf blade oblong to lanceolate or oblanceolate-oblong, 9–14(–21) × 3–7 cm, base slightly cordate, rarely rounded, apex acute, or rarely rounded, margin entire and revolute, densely reddish brown tomentose on abaxial surface; lateral veins (12–)14–18 on each side of midvein. Male spikes usually forming panicle, densely flowered. Female spikes 6–12 cm in fruiting time; flowers 1 per cupule. Cupule globose, 4.5–6 cm in diam. including spines, splitting into 4–5 regular segments when mature, wall 0.5–1 mm thick; bracts spine-like entirely covering cupule; spines 10–15(–20) mm, connate into bundles, pubescent. Nut 1 per cupule, compressed conical, 1.2–1.5 × 1.5–2 cm, with appressed hairs; scar basal, 4–7 mm in diam.

Locality: Ma On Shan, Tiu Shau Ngam. *Y. W. Lam 220; F. W. Xing 8787.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian; N Thailand, N Vietnam.

Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Oct.–Dec.

Uses: Fuelwood.

Notes: The type specimen was collected by C. Ford from Lo Fau Shan, Guangdong Province in Sept. 1888.

**7. Castanopsis fargesii** Franch. 栲 **(Photo 252)**

J. Bot. (Morot) 13: 195. 1899; FFJ 1: 388, fig. 341. 1982; FTW ed. 2, 2: 61, pl. 24. 1996; FRPS 22: 55, pl. 15: 1–9. 1998; FOC 4: 328. 1999.

Tree, 10–20 m tall. Branchlets rusty scurfy when young, glabrous in age. Leaves leathery; petioles 1–1.5(–2) cm; leaf blade oblong or elliptic-lanceolate rarely ovate, 6.5–8(–15) × 1.8–2.5(–5) cm, base subrounded to broadly cuneate, sometimes oblique, apex shortly acuminate, margin entire or with 1–3 pairs of shallow teeth towards apex, densely reddish brown scurfy on abaxial surface; lateral veins 10–15 on each side of midvein. Male spikes solitary or forming panicles; flowers solitary, but crowded on the rachis. Female spikes solitary, glabrous, to 30 cm; flowers 1 per cupule and scattered on rachis. Cupule globose to broadly ovoid, 1.5–2.5 × 9–30 cm in diam., splitting irregularly, wall ca. 1 mm thick, whitish grey to brownish puberulent abaxially; bracts spine-like, 6–10 mm, base connate into 4–6 zoned bundles. Nut 1 per cupule, ovoid, 1–1.5 × 0.8–1.4 cm, glabrous; scar 8–10 mm in diam.

Locality: Tai Mo Shan (Ng Tung Chai). *F. W. Xing 6932, 8971.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Aug.–Oct. of following year.

Uses: Material (wood), food (seeds).

**8. Castanopsis concinna** (Champ. ex Benth.) A. DC. 華南錐(毛葉栲栗) **(Photo 253)**

J. Bot. 1: 182. 1863; FRPS 22: 30, pl. 5: 5–7. 1998; FOC 4: 322. 1999.

*Castanea concinna* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 115. 1854; FHK 319. 1861.

Tree, 10–15 m tall. Branches of the current year growth and rachis of inflorescences softly tomentose. Leaves firmly leathery; petioles 4–12 mm; leaf blade oblong-elliptic to oblong-lanceolate, 5–10 × 1.5–3.5(–5) cm, base subrounded or broadly cuneate, apex acuminate, margin entire, slightly revolute, adaxially glabrous or sparsely pilose on midvein when young, abaxially reddish brown scurfy; lateral veins 12–16 on each side of midvein. Male spikes 5–10 cm, solitary in the axils of the young leaves and forming a terminal leafy panicle. Female spikes solitary, 4–8 cm in fruiting time. Cupule globose, 5–6 cm in diam., splitting into 4 regular segments, wall 2–4 mm thick, densely crowded with stout clustered branching spines. Nut 1 per cupule, compressed globular, ca. 1 × 1.4 cm, densely pubescent; scar covering 1/3–1/2 of nut.

Locality: Deep Water Bay, Wong Nai Chung, Happy Valley, Sai Kung, Tai Wai, Tai Mo Shan. *W. J. Tutcher 8410; Y. S. Lau 199; H. C. Tang 1469.*

Distribution: Guangdong, Guangxi.

Ecology: Woods. Flowering: Apr.–May; fruiting: Sep.–Oct. of following year.

Uses: Material (wood), food (seeds).

Notes: The type specimen was collected from Happy Valley by J. G.. Champion between 1847 and 1850. Listed in *Rare and Precious Plants of Hong Kong.*

**9. Castanopsis kawakamii** Hayata
吊皮錐 **(Fig. 97; Photo 254)**

J. Coll. Sci. Imp. Univ. Tokyo 30(1): 300. 1911; H. L. Li, Woody Fl. Taiwan 86. 1963; FFJ 1: 389, fig. 342. 1982; FTW ed. 2, 2: 64, pl. 27, photo 24. 1996; FRPS 22: 26, pl. 5: 1–4. 1998; FOC 4: 321. 1999.

*Castanopsis greenii* Chun, J. Arnold Arbor. 9: 150. 1928.

Tree, to 30 m tall. Bark fissured, exfoliating in long stripes hanging on the trunk. Branchlets reddish brown, glabrous. Leaves leathery; petioles 1–1.5(–2.5) cm; leaf blade ovate, ovate-lanceolate or elliptic-lanceolate, 6–12 × 2–5 cm, rarely broader, base broadly cuneate to subrounded, ± oblique, apex acuminate or caudate, margin entire or rarely with 1–3 minute teeth towards apex, glabrous on both surfaces; lateral veins 8–12 on each side of midvein, reticulation of veins conspicuous abaxially. Male spikes usually forming panicles; rachis sparsely pubescent. Female spikes 5–10 cm, glabrous; flowers 1 per cupule. Cupule globose, 5–8(–10) cm in diam. including the spines, splitting into 4, rarely 5 segments; bracts spine-like, 20–30 mm, connate to middle into radial branched bundles. Nut 1 per cupule, compressed globose, 1.2–1.5 × 1.7–2 cm, densely tawny tomentose; scar covering 1/3 of nut.

Locality: Sha Tin, Wu Kau Tang. *W. Y. Chun 4966.*

Distribution: Guangdong, Guangxi, Jiangxi, Fujian, Taiwan.

Ecology: Woods. Flowering: Mar.–Apr.; fruiting: Aug.–Oct. of the following year.




**Figure 97.** *Castanopsis kawakamii* Hayata
*1.* fruiting branch; *2.* flowering branch; *3.* male flower; *4.* cupule; *5.* nut. (drawn by Y. X. Liu)

Uses: Material (wood), environmental.

Notes: The type specimen of *Castanopsis greenii* Chun (*W. Y. Chun 4966, HK sheet 26578*) was collected in Shatin by W. Y. Chun on 24 March 1927. Listed in *Rare and Precious Plants of Hong Kong.*

**10. Castanopsis eyrei** (Champ. ex Benth.) Tutch. 甜櫧(埃氏櫧) **(Photo 255)**

J. Linn. Soc. Bot. 37: 68. 1905; FKH 254. 1912; FFJ 1: 390. 1982; FTW ed. 2, 2: 57, pl. 22. 1996; FRPS 22: 53, pl. 13: 5–9. 1998; FOC 4: 327. 1999.

*Quercus eyrei* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 114. 1854; FHK 320. 1861.

Tree, 8–15 m tall. Bark greyish brown, longitudinally fissured. Branchlets glabrous. Leaves leathery; petioles to 0.7–1(–1.5) cm, base thickened; leaf blade ovate to ovate-lanceolate, rarely ovate-elliptic, 5–7(–13) × 1.5–2.5(–5) cm, base cuneate, ± oblique, apex caudate-acuminate, margin entire or with a few coarse serratures towards apex, green, glabrous and shining on both surfaces; lateral veins 8–10 on each side of midvein, very slender but evident. Male spikes 3.5–5 cm, in a terminal panicle; rachis glabrous. Females spikes simple and shorter; flowers 1 per cupule. Cupule subglobose to broad ovoid, 1.5–3 cm in diam., splitting irregularly when mature, wall ca. 1 mm thick, greyish to yellowish grey puberulent outside; bracts spine-like, 4–8 mm, usually entirely covering cupule. Nut 1 per cupule, broadly conical, 1–1.4 cm in diam., glabrous; scar basal, 8–10 mm in diam.

Locality: Aberdeen, Middle Gap, Wong Nai Chung. *W. J. Tutcher 2031, 4675; Y. S. Lau 2953.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Qinghai, Xizang, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan.

Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Sep.–Nov. of following year.

Uses: Material (wood), food (seeds).

Notes: The type specimen was collected in Wong Nai Chung by Eyre between 1849 and 1851.

## 4. Lithocarpus Blume 柯屬

Evergreen trees. Branchlets with terminal buds covered by spirally imbricate scales. Stipules extrapetiolar. Leaves spirally arranged, entire or dentate. Flowers unisexual (plant monoecious). Male flowers in upright simple or branched spikes with rudimentary ovary; perianth 4–6-lobed; stamens usually 10–12, much longer than the perianth. Female flowers 1 per cupule, solitary or 2–(3–5) clustered at the base of male spikes, or in separate spikes; ovary usually 3-localar; style 3; stigma punctiform. Cupules corky, woody or crustaceous, enclosing completely or partly the nut; bracts variously shaped. Nut always solitary; pericarp woody or bony, scar convex or concave.

About 300 species, mostly in tropical and subtropical areas of Asia; 123 species in China; 14 species in Hong Kong.

1a. Cupule bowl-shaped or globose, enclosing more than 1/2 of nut.
  2a. Scar of nut convex.
    3a. Cupule enclosing nut completely, scar covering 1/4 of nut; leaves firmly leathery ..... 1. *L. irwinii*
    3b. Cupule enclosing most part of nut, scar covering 2/3 of nut; leaves papery or leathery ..... 2. *L. corneus*
  2b. Scar of nut concave.
    4a. Cupule enclosing nut completely.
      5a. Cupule stalked; nuts farinose ..... 3. *L. attenuatus*
      5b. Cupule sessile; nuts not farinose ..... 4. *L. elizabethae*
    4b. Cupule enclosing most parts of nut ..... 5. *L. fenestratus* var. *brachycarpus*
1b. Cupule discoid, enclosing less than 1/2 of nut.
  6a. Cupule solitary, rarely in pairs on rachis.
    7a. Nuts yellowish grey puberulous ..... 6. *L. quercifolius*
    7b. Nuts glabrous.
      8a. Leaves serrate; nuts compressed globose, 2–3 cm in diam. ..... 7. *L. konishii*
      8b. Leaves entire; nuts ovoid, 0.8–1 cm in diam. ..... 8. *L. iteaphyllus*
  6b. Cupule 3–5 clustered on rachis.
    9a. Cupule covered with reflexed, tip hooked bracts ..... 9. *L. haipinii*
    9b. Cupule covered with imbricate, scale-like bracts.
      10a. Branchlets of the current year growth hairy.
        11a. Nuts compressed globose, 13–15 mm high, 15–17 mm broad; petioles less than 1 cm long ..... 10. *L. macilentus*
        11b. Nuts ellipsoid, 12–25 mm high, 8–15 mm broad; petioles 1–2 cm long ..... 11. *L. glaber*
      10b. Branchlets of the current year growth glabrous.
        12a. Leaves undulate-dentate near apex; bud-scale pilose ..... 12. *L. harlandii*
        12b. Leaves entire; bud-scale glabrous.
          13a. Lateral veins of leaves 8–11 on each side of midvein, concealed near the edge, reticulation of veins obscure on both surfaces ..... 13. *L. litseifolius*
          13b. Lateral veins of leaves 11–14 on each side of midvein, anastomosing near the edge; reticulation of veins distinct on both surfaces ..... 14. *L. hancei*

### 1. **Lithocarpus irwinii** (Hance) Rehd. 廣南柯 **(Fig. 98)**

J. Arnold Arbor. 1: 127. 1919; FRPS 22: 103. 1998; FOC 4: 342. 1999.

*Quercus amygdalifolia* auct. non Skan: FKH 252. 1912.

*Quercus irwinii* Hance, Ann. Sci. Nat. Bot. ser. 2, 18: 229. 1862.

Tree, 8–12 m tall. Young shoots sulcate, with raised lenticels, densely tawny pilose, soon glabrate. Leaves thickly and rigidly leathery; petioles usually less than 1 cm, brownish black when dry; leaf blade elliptic or lanceolate, 7–12 × 2–4 cm, base cuneate, decurrent, apex acute or acuminate, margin ± revolute, entire or undulate on the upper half, dark brown and often oily on adaxial surface when dry, abaxial surface reddish brown scurfy and sparsely pilose on midvein when young, greyish when mature; lateral veins 10–15 on each side of midvein; veins very slender or inconspicuous. Male spike 3–5 cm, solitary in axils of leaves or 2–3 in panicles; rachis tawny pubescent. Female spike in pairs terminal on branchlets, 2–5 cm; rachis 5–8 mm thick in fruiting time; flowers in clusters of 3, sometimes solitary. Cupule turbinate, broadest at apex, 20–26 mm high, 18–24 mm in diam., apex almost flat, enclosing the nut completely, wall 2–4 mm thick; bracts deltoid, middle and margins thickened in ridges, imbricate. Nut subglobose, ca. 15 mm in diam., densely covered with minute appressed hairs; scar convex, covering ca. 1/4 of the nut.

Locality: Mount Cameron, Tai Tam, Lantau Island. *HK sheet 6694, 26307; W. J. Tutcher 5589.*

Distribution: Guangdong, Guangxi, Fujian.

Ecology: Woods. Flowering: Apr.–May; fruiting: Oct.–Nov. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Wong Nai Chung, Hong Kong Island in Nov. 1862 by J. J. Irwin (in *Herb. Hance No. 9818*, BM).

**2. Lithocarpus corneus** (Lour.) Rehd.
煙斗柯(石柯) **(Photo 256)**

Stand. Cycl. Hort. 3569. 1917; FFJ 1: 393, fig. 344. 1982; FRPS 22: 128, pl. 36: 1–3. 1998; FOC 4: 349. 1999.

*Pasania cornea* (Lour.) Liao, Taxon. Revis. Fam. Fagac. 118, fig. 34: 1–2. 1991; FTW ed. 2, 2: 96, pl. 46, photo 40. 1996.

*Quercus cornea* Lour., Fl. Cochinchin. 572. 1790; FHK 322. 1861; FKH 252. 1912.

Tree, to 15 m tall. Branchlets light tawny, glabrous or pubescent. Leaves papery or leathery, ± crowded towards apex of branches; petioles 0.5–2(–4) cm; leaf blade narrowly elliptic to ovate-oblong or lanceolate-elliptic, (4–)6–13(–20) × 1.5–4(–7) cm, base cuneate to subrounded, symmetric or oblique, apex acuminate to acute, margin serrate or dentate, sometimes shallowly undulate, rarely entire, adaxial surface glabrous, or puberulent on the compressed midvein, abaxial surface slightly pubescent on midvein, or only with tuft of hairs on axils of veins; lateral veins 9–12 on each side of midvein, ending in teeth. Spikes mostly androgynous, terminal, erect, 2.5–4 cm, with female flowers on the lower part of the rachis. Cupule broadly turbinate, 22–45 mm high, 25–55 mm in diam., enclosing most part of nut, wall woody and thickened at base; bracts deltoid or rhomboid, central and margin ridged, the upper ones turned inwards. Nut hemispherical and glabrous in the enclosed part, the exserted flat top slightly concave and tomentose, wall ± horny, usually thicker than the wall of cupule; scar covering 2/3 of the nut.

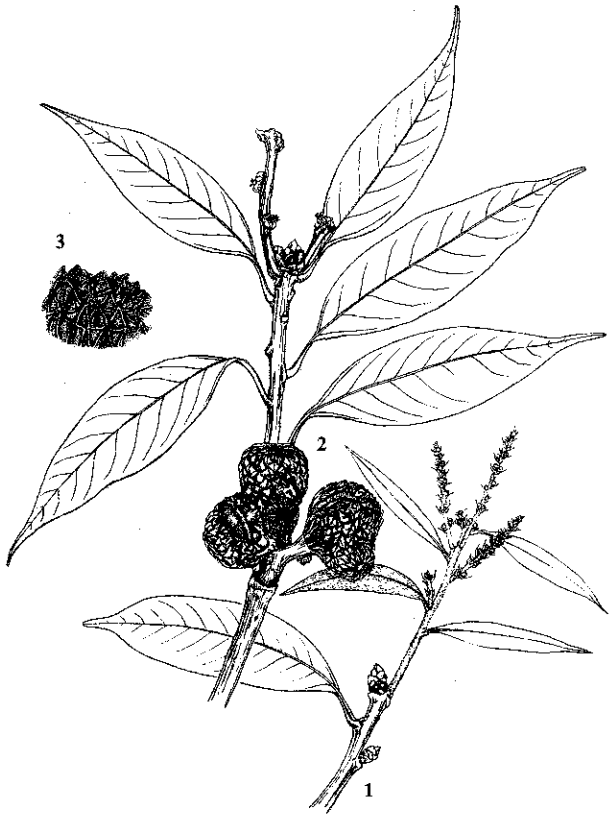



**Figure 98.** *Lithocarpus irwinii* (Hance) Rehd.
*1*. flowering branch; *2*. fruiting branch; *3*. bracts of cupule. (drawn by Y. X. Liu)

Locality: Common in Hong Kong. *C. P. Lau 44, 68; H. C. Tang 1893*.

Distribution: Hainan, Guangdong, Guangxi, S Guizhou, SE Yunnan, S Fujian, Taiwan.

Ecology: Woods, frequent on sunny slopes. Flowering: Almost all the year round, but mainly May–Jun.; fruit matures in the following year.

Uses: Material (wood), environmental.

**3. Lithocarpus attenuatus** (Skan) Rehd. 尖葉柯 **(Photo 257)**

J. Arnold Arbor. 1: 123. 1919; FRPS 22: 134, pl. 40: 4–7. 1998; FOC 4: 350. 1999.

*Quercus attenuata* Skan in F. B. Forbes & Hemsley, J. Linn. Soc. Bot. 26: 506. 1899; FKH 254. 1912.

Tree, 10–15 m tall, glabrous throughout. Bud-scales with oily resin when dry. Branchlets of last year growth white-farinose. Leaves thin-leathery; petioles 1.5–3 cm; leaf blade ovate-elliptic or lanceolate, 7–13 × 2–4 cm, base cuneate, decurrent to the petiole, apex long-acuminate, entire or sometimes undulate, abaxial surface glaucous when dry, with adhersive waxy-scales; lateral veins 9–13 on each side of midvein, slender; veins invisible or obscure. Male spike solitary or branched, axillary. Female flowers solitary and scattered on rachis; rachis sulcate, with white waxy scales. Cupules globose in fruiting time, base slightly narrowed like a stalk, 30–35 mm high, 25–30 mm in diam., enclosing nut completely, wall less than 0.5 mm thick, crustaceous; bracts triangular, small and obscure, the proximal ones united into concentric rings, the distal ones only remaining a subulate tip or wart-like. Nut subglobse, 20–25 mm high, 18–28 mm in diam., white-farinose, wall ca. 0.5 mm , apex slightly narrowed, obtuse, base flat, scar 7–12 mm in diam., concave to 1–1.5 mm.

Locality: Happy Valley, Tai Tam. *W. J. Tutcher s.n. (HK sheet 6708); HK sheet 4515*.

Distribution: S Guangdong, SW Guangxi.

Ecology: Woods. Flowering: Jun.–Oct.; fruiting: Jun.–Oct. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Happy Valley woods by C. Ford.

**4. Lithocarpus elizabethae** (Tutch.) Rehd. 厚斗柯 **(Photo 258)**

J. Arnold Arbor. 1: 125. 1919; FRPS 22: 157, pl. 46: 1–5. 1998; FOC 4: 357. 1999.

*Quercus elizabethae* Tutch., J. Bot. 49: 273. 1911; FKH 254. 1912.

Tree, 9–15 m tall. Branches and leaves glabrous. Leaves thickly papery; petioles 1–2 cm; leaf blade narrowly oblong or lanceolate, 9–17 × 2–4 cm, base cuneate, decurrent, apex acuminate, margin entire, concolorous or ± glaucous abaxially; lateral veins slender, 13–16 on each side of midvein; veins almost invisible. Male spikes 3-many forming panicle, or sometimes solitary in axils of leaves; rachis sparsely pubescent. Female spikes 2–4 congested at apex of branches; rachis 4–6(–10) mm thick in fruiting time; female flowers usually in cluster of 3. Cupule subglobose, apex abruptly narrowed and slightly elongate into a nipple, 15–30 mm high, 15–28 mm in diam., usually covering nut completely, wall 2 mm (upper part) to 4 mm (lower part) thick; bracts broadly triangular or rhomboid, imbricate, the apical ones incurved. Nut compressed globose or subglobose, 14–24 mm in diam.; scar concave, 13–16 mm in diam.

Locality: Tai Po Kau, Ta Tit Yan. *HK sheet 26371; W. J. Tutcher 9114, 9469.*
Distribution: Guangdong, Guangxi, SE Guizhou, SE Yunnan.
Ecology: Mixed forests, frequent in moist places. Flowering: Jul.–Sep.; fruiting: Aug.–Nov.
Uses: Material (wood), environmental.
Notes: The type specimens were collected from Victoria Peak and Tai Wai by W. J. Tutcher (*nos. 4616, 9114*, HK) around 1910.

**5. Lithocarpus fenestratus** (Roxb.) Rehd. var. **brachycarpus** A. Camus 泥柯 **(Photo 259)**
Bull. Soc. Bot. France 90: 201. 1934; FRPS 22: 172, pl. 51: 8–9. 1998; FOC 4: 360. 1999, pro syn. sub *L. fenestratus* auct. non (Roxb.) Rehd.

*Quercus fenestrata* auct non Roxb.: FKH 253. 1912.

Tree, to 30 m tall. Young shoots tawny scurfy-lepidote. Leaves thickly papery; petioles 10–18 mm; leaf blade ovate-elliptic or lanceolate, 9–15 × 2–7 cm, base cuneate, apex acute or shortly acuminate, margin entire, abaxially tawny scurfy-lepidote, ± greyish when dry; lateral veins 12–16 on each side of midvein, usually impressed adaxially; veins slender or invisible. Male spikes usually in panicles. Female spikes solitary and axillary, to 18 cm; rachis 5–8 mm thick in fruiting time, scurfy-lepidote. Cupules in cluster of 3, only 1 or 2 developed, compressed globose, 10–15 mm high, 15–28 mm in diam., covering most part of nut, wall ca. 0.5 mm thick, scurfy puberulent abaxially; bracts triangular, imbricate and appressed, only the subulate tips separate from the cupule. Nut compressed globose 10–15 mm high, 13–25 mm in diam., apex rounded or pointed; scar concave, 10–18 mm in diam.

Locality: Pok Fu Lam, Tai Po Kau, Lantau Peak. *HK sheet 6707; W. J. Tutcher s.n. (HK sheet 6747).*
Distribution: Hainan, SW Guangxi, SE Yunnan; NE Vietnam.
Ecology: Woods. Flowering: Aug.–Oct.; fruiting: Oct.–Dec. of the following year.
Uses: Material (wood), environmental.

**6. Lithocarpus quercifolius** C. C. Huang & Y. T. Chang 櫟葉柯
Guihaia 8(1): 16. 1988; FRPS 22: 142, pl. 43: 1–3. 1998; FOC 4: 352. 1999.

Tree, 5–6 m tall. Branchlets of the current year growth pubescent. Leaves usually crowded towards apex of branches, firmly papery, concolour; petioles 2–5 mm; leaf blade oblong or obovate-elliptic, 4–11 × 1–4 cm, apex acute, base rounded or broadly cuneate, margin with a few acute teeth towards apex, usually with tuft of hairs on axils of veins on abaxial surface; lateral veins 8–11 on each side of midvein, branched near the edge; veinlets conspicuous or slender, ending in teeth. Male spike 3.5–7 cm, with solitary and scattered female flowers on the proximal part of the rachis; rachis tawny pubescent. Cupule discoid, 2–5 mm high, 20–25 mm in diam., enclosing the basal part of nut; bracts lanceolate when young, rhomboid or broadly triangular when mature, imbricate, midvein ridged. Nut compressed globose, 12–16 mm high, 20–14 mm in diam., with appressed minute hairs; scar with the margin concave, center convex, 16–20 mm in diam.

Locality: Shek O, Mount Parker. *W. J. Tutcher 6798; HK sheet 6733, 34314.*
Distribution: Guangdong, S Jiangxi.
Ecology: Woods. Flowering: Apr.–Jun.; fruiting: Sep.–Oct.

**7. Lithocarpus konishii** (Hayata) Hayata 油葉柯 **(Photo 260)**
Icon. Pl. Formosan. 6 (Suppl.): 72. 1917; FRPS 22: 145, pl. 43: 4–9. 1998; FOC 4: 353. 1999.

*Quercus konishii* Hayata, J. Coll. Imp. Univ. Tokyo 25(19): 201. 1908.

*Pasania konishii* (Hayata) Schott., Bot. Jahrb. Syst. 47: 673. 1912; H. L. Li, Woody Fl. Taiwan 93. 1963; FTW ed. 2, 2: 108, pl. 53, photo 46. 1996.

Trees, usually to 5 m tall. Bud-scales with light grey silky short hairs. Spring shoots glabrous; autumn shoots tawny pubescent. Leaves firmly papery; petioles 0.5–1.5 cm; leaf blade ovate-obovate, elliptic or obovate-elliptic, 3–6 × 1.2–2.4 cm, apex acute or shortly caudate-acuminate, base cuneate, margin with 3–6 obtuse teeth on each side, with tuft of hairs at axils of veins on abaxial surface when young; midvein puberulous adaxially; lateral veins 7–10 on each side of midvein, slightly impressed adaxially; veins slender but visible. Male spikes 3–5(–10) cm, solitary or forming panicles; rachis tawny tomentose; female flowers solitary or rarely 2 in clusters on the basal part of the male rachis, or in separate spike. Cupule discoid, 4–8 mm high, 15–23 mm in diam., enclosing the bottom of nut, wall 1.5–2 mm thick; bracts broadly triangular, midvein ridged, imbricate, greyish brown tomentose. Nut compressed globose, apex rounded or flat, 10–18 mm high, 15–25 mm in diam., wall 3–6 mm thick, horny, glabrous; scar margin concave, central ± convex, 13–24 in diam.

Locality: Lan Nai Wan, Long Ke, Sai Wan Shan, Kau Ling Chung. *Y. S. Lau 1480; Y. W. Lam 294, 462.*
Distribution: E Hainan, S Taiwan.
Ecology: Woods. Flowering: Apr.–Aug.; fruiting: Jul.–Oct. of the following year.
Uses: Material (wood), environmental.

**8. Lithocarpus iteaphyllus** (Hance) Rehd. 鼠刺葉柯
J. Arnold Arbor. 1: 127. 1919; FRPS 22: 146. 1998; FOC 4: 353. 1999.

*Quercus iteaphylla* Hance, J. Bot. 22: 229. 1884; FKH 253. 1912.

*Lithocarpus iteaphylloides* Chun, J. Arnold Arbor. 28: 236. 1947.

Tree, 5–10 m tall. Branchlets of the current year growth conspicuously sulcate, dark reddish brown, glabrous; bud-scale glabrous. Leaves thickly papery; petioles usually 5–8 mm, sometimes to 3 cm, ± thickened at base; leaf blade narrowly oblong or lanceolate, 8–13 × 2.5–4.5 cm, apex acuminate, base broadly cuneate, decurrent to petiole, margin entire; midvein raised on both surfaces; lateral veins 8–12 on each side of midvein, slender, conspicuous on both surfaces. Spikes usually androgynous, 3–7 cm, solitary or congested on apex of branches of last year growth, with male flowers on apical part and female ones on basal part, both solitary and scattered on tawny puberulous rachis. Cupule bowl-shaped, 5–8 mm high, 10–14 mm broad, base thickly woody; bracts reduced and united into 6–8 concentric rings, tawny waxy-lepidote and sparsely puberulous abaxially. Nut ellipsoid, 10–18 mm high, 10–14 mm in diam., sometimes as broad as high, apex pointed or rounded, glabrous, light chestnut brown; scar concave, 5–6 mm in diam.

Locality: Happy Valley, Causeway Bay. *W. J. Tutcher s.n. (HK sheet 6791, 6792).*

Distribution: Guangdong, Guangxi, S Hunan, S Jiangxi.

Ecology: Woods on sunny slopes and banks of streams. Flowering: Apr.–May; fruiting: Jul.–Oct.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Hong Kong Island by C. Ford in 1882.

**9. Lithocarpus haipinii** Chun 耳柯(卷葉石櫟) **(Photo 261)**

J. Arnold Arbor. 28: 233. 1947; FFJ 1: 398, fig. 353. 1982; FRPS 22: 209, pl. 65: 1. 1998; FOC 4: 369. 1999.

Tree, to 30 m tall. Branchlets of the current year, petioles and rachis of inflorescence densely covered with greyish white or tawny long hairs. Leaves firmly leathery; petioles 2–3.5 cm; leaf blade broadly elliptic, ovate, obovate or obovate-elliptic, 8–15 × 4–8 cm, base rounded or broadly cuneate, often asymmetric, apex rounded or acute, sometimes shortly caudate, falcate, margin recurved, abaxial surface densely pilose; lateral veins 9–13 on each side of midvein, veins as is the lateral veins impressed adaxially. Male spike forming panicle. Female spikes shorter, usually terminal on apex of branches, 6–14 cm; female flowers 3–5-clustered. Young cupule covering entirely nut; bracts linear; mature cupule discoid, 3–6 mm high, 15–25 mm in diam., covering ca. 1/3 nut, wall almost woody; bracts reflexed, tip hooked. Nut subglobose but slightly compressed, bottom flat, 18–26 mm high, 20–30 mm in diam., white-farinose when young; scar concave, 8–14 mm in diam.

Locality: Victoria Peak, Tai Po Kau, Ma On Shan. *Y. S. Lau 1268, 2053; P. S. Choi 512; W. Y. Chun 9159.*

Distribution: Guangdong, Guangxi, S Hunan, S Guizhou.

Ecology: Woods, frequent on gentle, dry slopes. Flowering: Jul.–Aug.; fruiting: Jul.–Aug. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Victoria Peak in 1930 (*C. L. Tso 22580,* IBSC).

**10. Lithocarpus macilentus** Chun & C. C. Huang 粉葉柯 **(Photo 262)**

Guihaia 8: 30. 1988; FRPS 22: 184, pl. 57. 1998; FOC 4: 363. 1999.

*Quercus irwinii* auct. non Hance: FKH 253. 1912.

Tree, 7–12 m tall. Young shoots and petioles tawny tomentose. Leaves thinly leathery; petioles less than 1 cm; leaf blade lanceolate, rarely oblanceolate, 6–11 × 2–3 cm, narrowed to both ends, base decurrent, margin entire, covered with fugacious, minute and crisped hairs on both surfaces when young, abaxially scurfy; lateral veins 6–9 on each side of midvein; veins inconspicuous. Male spikes forming panicle. Female spikes 7–10 cm, lengthening to 20 cm in fruiting time. Rachis tawny tomentose; female flowers in cluster of 3. Cupule bowl-shaped, 6–8 mm high, 15–20 mm in diam., covering basal part of nut, wall thin, ± thickened at base. Nut broadly conical or compressed globose, glabrous, dark chestnut brown, 13–15 mm high, 15–17 mm in diam., scar concave, 7–8 mm in diam.

Locality: Tai Tam, Aberdeen, Cameron Road, Ma On Shan. *Y. S. Lau 1721; HK sheet 6782; X. Y. Zhuang 1920; K. Wong 1188.*

Distribution: W Guangdong, E Guangxi.

Ecology: Woods on banks of streams. Flowering: Jul.–Aug.; fruiting: Oct.–Nov. of the following year.

Uses: Material (wood), environmental.

Notes: The species was reported as *Lithocarpus irwinii* (Hance) Rehd. previously (Check List HK Plants 38. 1993).

**11. Lithocarpus glaber** (Thunb.) Nakai 柯 **(Photo 263)**

Cat. Sem. Spor. Hort. Bot. Univ. Imp. Tokyo 8. 1916; FFJ 1: 400, fig. 355. 1982; FRPS 22: 186, pl. 58: 6. 1998; FOC 4: 363. 1999.

*Pasania glabra* (Thunb.) Oerst., Nat. Foren. Vidensk. Meddel. 18: 83. 1866; H. L. Li, Woody Fl. Taiwan 91. 1963; FTW ed. 2, 2: 99, photo 42. 1996.

*Quercus glabra* Thunb., Murray, Syst. Veg., ed. 14, 858. 1784.

*Quercus thalassica* Hance, Hooker's J. Bot. Kew Gard. Misc. 1: 176. 1849; FHK 321. 1861; FKH 253. 1912.

Tree, to 15 m tall. Branchlets and bud-scales densely tawny tomentose. Leaves leathery or thick papery; petioles 1–2 cm, initially tomentose; leaf blade obovate, obovate-elliptic or oblong, 6–12 × 2.5–4(–5.5) cm, base cuneate, apex abruptly acute, shortly caudate or long-acuminate, margin entire or with 2–4 teeth near apex, abaxially scurfy tomentose when young, later glabrate or nearly so; lateral veins 6–8(–10) on each side of midvein; veinlets usually invisible. Male spikes forming panicle or solitary in axils of leaves, 5–10(–15) cm; rachis densely tawny tomentose. Female spikes 7–13(–18) cm in fruiting time, often with a few male flowers; female flowers 3(–5) clustered. Cupule discoid or cup-shape, 5–7(–10) mm high, 9–11(–15) mm in diam., thickened towards base, woody; bracts small, triangular, appressed, imbricate or united into concentric rings, densely puberulous abaxially. Nut ellipsoid, 12–25 mm high, 8–15 mm in diam., apex pointed, ± white-farinose, dark chestnut brown; scar concave, 3–5(–8) mm in diam.

Locality: Common in Hong Kong. *HK sheet 6850; C. P. Lau 147; Y. W. Lam 31.*

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Hubei, Henan, Anhui, Jiangxi, Zhejiang, Taiwan.

Ecology: Woods, frequent on sunny slopes. Flowering: Jul.–Nov.; fruiting: Jul.–Nov. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen of *Quercus thalassica* was collected from Hong Kong Island by H. F. Hance before 1850.

**12. Lithocarpus harlandii** (Hance ex Walpers) Rehd. 港柯(夏蘭柯) **(Photo 264)**

J. Arnold Arbor. 1: 127. 1919; FFJ 1: 402, fig. 358. 1982; FRPS 22: 193, pl. 60: 1–5. 1998; FOC 4: 365. 1999.

*Quercus harlandii* Hance ex Walpers, Ann. Bot. Syst. 3: 382. 1852; FHK 321. 1861; FKH 253. 1912.

Tree, to 18 m tall, glabrous except inflorescences. Young branches sulcate, purplish brown, becoming dark brown when dry. Leaves firmly leathery; petioles 1.5–3 cm; leaf blade oblong to elliptic 7–18 × 3–6 cm, base attenuate-cuneate, often slightly oblique, apex caudate-acuminate, often falcate, margin entire or obtusely undulate-dentate near apex, rarely entire, glabrous; lateral veins 8–13 on each side of midvein; veinlets obscure. Male spikes 2.5–5 cm, solitary in the upper axils of leaves or forming panicles to 15 cm, erect, tomentose. Female spikes terminal, rigid, flexuose, ca. 5 cm, lengthening to 5–10 cm in fruiting time; female flowers in cluster of 3, scattered on rachis; rachis shortly tomentose. Cupule cup-shaped, 6–10 mm high, 14–20 mm in diam.; bracts triangular or rhomboid, margin and midvein ± ridged, imbricate, puberulous outside. Nut conical or broadly ellipsoid, 22–28 mm high, 16–2 mm in diam., apex rounded or obtuse, wall 1.5–2 mm thick; scar concave, 9–12 mm in diam.

Locality: Aberdeen, Wong Nai Chung, Repulse Bay, Bowen Road, Lantau Island. *C. P. Lau. 79; H. C. Tang 367; Y. S. Lau 2393.*

Distribution: Guangdong, Guangxi, S Jiangxi, Taiwan.

Ecology: Woods. Flowering: May–Jun.; fruiting: Sep.–Oct. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Happy Valley woods around 1850.

**13. Lithocarpus litseifolius** (Hance) Chun 木薑葉柯(多穗柯)

J. Arnold Arbor. 9: 152. 1928; FRPS 22: 201. 1998; FOC 4: 367. 1999.

*Lithocarpus synbalanos* (Hance) Chun, J. Arnold Arbor. 9: 152. 1928; FFJ 1: 399, fig. 354. 1982;

*Quercus litseifolia* Hance, J. Bot. 22: 229. 1884.

*Quercus polystacha* auct. non Wall. ex DC.: FKH 253. 1912.

*Quercus synbalanos* Hance, J. Bot. 22: 228. 1884; FKH 253. 1912.

Tree, to 20 m tall, glabrous except the inflorescence. Branchlets and petioles sometimes ± white-farinose when dry. Leaves papery or subleathery; petioles 1.5–2.5 cm; leaf blade elliptic, obovate-elliptic or ovate, rarely narrowly elliptic, 8–18 × 3–8 cm, base cuneate to broadly cuneate, apex acuminate or abruptly acute, margin entire, concolorous or ± glaucous abaxially; lateral veins 8–11 on each side of midvein, concealed near the edge; veins slender, reddish brown or brownish yellow when dry. Male spike 7–15(–25) cm, forming panicle, rarely solitary. Female spikes 14–25 cm; female flowers 3–5 clustered, but the spikes sometimes androgynous, 2–6 congested at apex of branches; rachis sparsely pubescent. Cupule discoid, 8–14 mm in diam., glabrous, thickened towards base, woody; bracts triangular, appressed and imbricate, the basal ones connate into concentric rings. Nut broadly conical or subglobose, rarely compressed globose, 8–15 mm high, 12–20 mm in diam., glabrous, often ± white-farinose; scar concave, ca. 11 mm in diam.

Locality: Hong Kong Island, Tai Mo Shan, Ta Tit Yan, Lantau Island. *W. J. Tutcher s.n. (HK sheet 6813); HK sheet 6814; C. P. Lau 118.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Jiangxi, Hubei, Zhejiang, Fujian; Vietnam, Myanmar, Laos.

Ecology: Woods. Flowering: May–Sep.; fruiting: Jun.–Oct. of the following year.

Uses: Material (wood), environmental.

**14. Lithocarpus hancei** (Benth.) Rehd. 硬殼柯(漢斯石柯) **(Photos 265–266)**

J. Arnold Arbor. 1: 127. 1919; FFJ 1: 400, fig. 356. 1982; FRPS 22: 176, pl. 54. 1998; FOC 4: 362. 1999.

*Quercus hancei* Benth., FHK 322. 1861; FKH 253. 1912.

Tree, to 15 m tall, glabrous except the inflorescence. Branchlets ± tawny or grey, usually with a thin layer of translucent wax. Leaves thinly papery to rigid leathery; petioles 1–2(–4) cm; leaf blade variable in shape and size, ovate, obovate, broadly elliptic, obovate-elliptic, narrowly elliptic or lanceolate, usually 6–14 × 3–5 cm, the ratio of length/width = 1.2–5:1, base attenuate to broadly cuneate, usually decurrent to the petiole, apex shortly caudate-acuminate, sometimes rounded obtuse or acute, margin entire, ± recurved, concolour or sometimes white farinose adaxially when dry; lateral veins 11–14 on each side of midvein, slender and closely spaced; veins reticulate. Male spikes rarely 4–10(–13) cm, usually forming panicle, sometimes with female flowers on the basal part; rachis sometimes twisted. Female spikes 2–many crowded at apex of branches, 5–8 cm. Cupule usually 3–5 clusterd, rarely solitary, shallow-bowl-shaped or discoid, 3–7 mm high, 10–20 mm broad, covering nearly 1/3 of nut; bracts scale-like, triangular, appressed, imbricate or connate into a few concentric rings. Nut compressed globose, subglobose or broadly conical, 8–12 mm high, 6–25 mm in diam., apex rounded to pointed, rarely flat, glabrous; scar concave, 5–10 mm in diam.

Locality: Common in Hong Kong. *H. C. Tang 354, 418, 1329.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Zhejiang.

Ecology: Woods. Flowering: Jul.–Aug.; fruiting: Aug.–Nov. of the following year.

Uses: Material (wood), environmental.

Notes: The type specimen was collected from Hong Kong Island around 1850 by J. G. Champion.

# 66. CASUARINACEAE 木麻黄科

XIA Nian-he 夏念和

Evergreen trees, monoecious or dioecious. Ultimate branchlets jointed, with several short, basal internodes and 1–numerous elongated internodess, slender, ridged, often pubescent at least when young. Leaves small, tooth-like, in whorls of 4–17; stipules absent. Inflorescences spike-like or head-like, with alternating whorls of tooth-like bracts, in each bract with a single flower and 2 lateral scale-like, persistent (rarely deciduous in male *Allocasuarina*) bracteoles. Flowers unisexual, without pedicels. Male inflorescences spicate, terminal or lateral, terete, slender. Female inflorescences head-like, globose or ellipsoid, usually terminal on short, lateral branches. Male flowers: tepals 1 or 2, scale-like, deciduous, hooded; stamen 1. Female flowers: perianth absent; carpels 2, fused, only the anterior carpel fertile; ovules 2 (rarely 4). Infructescences woody, cone-like. Samaras flat, winged at apex, initially enclosed by 2 bracteoles. Seed 1; cotyledons large; endosperm absent; embryo straight.

Four genera and 97 species, mainly in Australia, extending to SE Asia, Malesia, Pacific Islands; a few species commonly cultivated and occasionally naturalized elsewhere; one genus and three species introduced to China; one genus and two species introduced to Hong Kong.

## 1. Casuarina L. 木麻黄屬

Trees. Branches verticillate or pseudoverticillate, slender, hairy when young. Leaves (5 or) 6–17 per whorl. Bracteoles never greatly thickened in infructescence ("cone"), without an abaxial protuberance. Samara body pale yellow-brown or greyish, dull, glabrous.

17 species in Australia, extending to SE Asia, Malesia, Pacific Islands; three species introduced to China; two species cultivated in Hong Kong.

1a. Tooth-like leaves usually 8(–10) per whorl, marcescent; cone 7–12 mm; inner layer bark pale red..... 1. *C. cunninghamiana*

1b. Tooth-like leaves usually (6 or) 7 (or 8) per whorl, not marcescent; cone 12–25 mm; inner layer bark red brown..... 2. *C. equisetifolia*

**1. Casuarina cunninghamiana** Miq. 細枝木麻黄(肯氏木麻黄)

Rev. Crit. Casuar. 56. 1848; FRPS 20(1): 3, pl. 1: 1–10. 1982; FOC 4: 107. 1999; FGD 5: 380. 2003.

Tree dioecious, to 25(–35) m tall, often with suckers from roots. Bark finely fissured and scaly, grey, inner layer pale red. Ultimate branchlets spreading to slightly pendulous, dark green, greyish green, or glaucous-green when dry, 15–38 cm × 0.5–0.7 mm; internodes 4–5 mm. Leaves erect, 8(–10) per whorl, narrowly lanceolate. Male spikes 1.2–2(–4) cm. Cones ellipsoid or subglobose, 7–12 mm, truncate at both ends; apex of bracteoles acute. Samaras 3–5 mm including wing.

Locality: Cultivated. *Y. S. Lau 3324*.

Distribution: Cultivated in Hainan, Guangdong, Fujian; native to Australia.

Ecology: Flowering: Apr.; fruiting: Jun.–Sep.

Uses: Ornamental, agroforestry.

**2. Casuarina equisetifolia** L. 木麻黄 **(Fig. 99; Photo 267)**

Amoen. Acad. 4: 143. 1759; FRPS 20(1): 2. 1982; FOC 4: 106. 1999; FGD 5: 379. 2003.

Tree monoecious, to 35 m tall, without suckers from roots. Bark scaly, inner layer red-brown on old trees. Ultimate branchlets usually pendulous, greyish green, 10–27 cm × 0.8–0.9 mm; internodes (2.5–)4–9 mm. Leaves erect and appressed to branchlets, 6–8 per whorl, lanceolate or triangular, 1–3 mm. Male inflorescences 1–4 cm. Cones ellipsoid, 1.2–2.5 cm, greyish green or yellowish brown tomentose when young, glabrous at maturity, base and apex truncate to obtuse; apex of bracteoles slightly obtuse or acute. Samaras 5–8 mm including wing.

Locality: Cultivated. *HK sheet 35816, 34685*.

Distribution: Cultivated in Hainan, Guangdong, Fujian. Native to Australia, Pacific Islands.

Ecology: Flowering: Apr.–May; fruiting: Jul.–Oct.

Uses: Planted as wind breaks and for soil stabilizations.

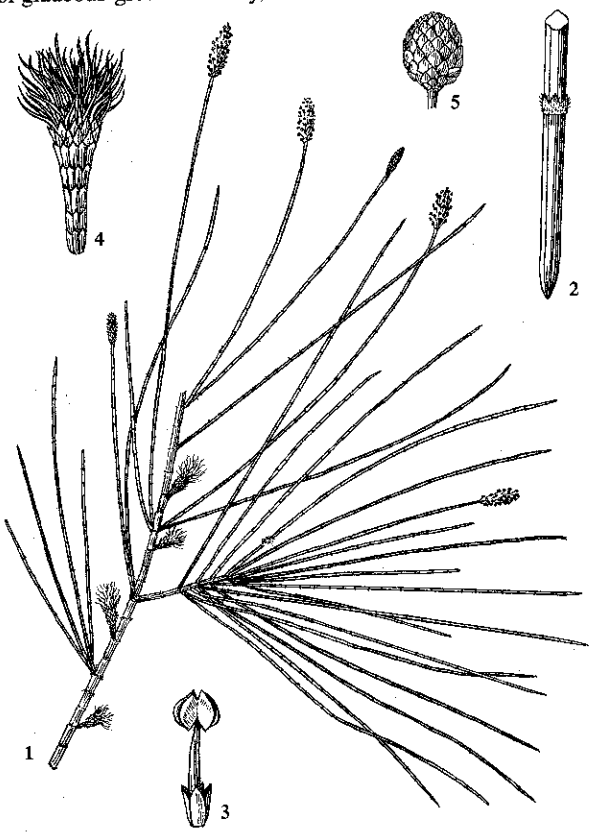



**Figure 99.** *Casuarina equisetifolia* L.
*1*. flowering branch; *2*. branchlet and scale leaves; *3*. fruit; *4*. female inflorescence; *5*. infructescence. (drawn by H. P. Yu)

# 67. PHYTOLACCACEAE 商陸科

HU Qi-ming 胡啟明

Perennial herbs, shrubs or trees. Leaves simple, alternate, petiolate or sessile, entire, usually exstipulate. Flowers bisexual or rarely unisexual (plants monoecious or dioecious), in leaf-opposed or axillary racemes or spikes; perianth-segments 4–5(–10), free or connate at base; stamens 5–10(–30), inserted on a fleshy disc; filaments free or connate at base; anthers 2-celled, introse, opening by longitudinal slits; ovary superior, composed of 4–12 carpels; carpels united at least at base, each containing a single ovule; styles very short or none; stigmas as many as the carpels, linear or subulate. Fruit a fleshy berry, dry nut or, rarely a loculicidal capsule.

About 18 genera and 65 species, chiefly in tropical and subtropical regions; two genera (one introduced) in China; one genus in Hong Kong.

## 1. Phytolacca L. 商陸屬

Perennial or scandent herbs, shrubs or rarely trees. Leaves simple, alternate, exstipulate. Inflorescence a many-flowered, terminal or leaf-opposed raceme. Flowers bisexual or functionally unisexual; perianth-segments 4–5, small, ± petaloid; stamens 5–10(–30), inserted on margin of disc, in 2 series, rudimentary in functionally female flowers. Carpels 5–10(–15), free or fused; styles as many as carpels, free. Fruit fleshy, syncarpous, compressed globose, 5–10-grooved.

About 25 species in tropical and warm regions; four species (one introduced) in China; two species in Hong Kong.

1a. Carpels distinct; infructescence suberect ..... 1. *P. acinosa*
1b. Carpels connate; infructescence pendulous ..... 2. *P. americana*

**1. Phytolacca acinosa** Roxb. 商陸 **(Fig. 100)**

Fl. Ind. 2: 458. 1832; Hook. f., Fl. Brit. Ind. 5: 21. 1886; FGD 2: 94, fig. 65. 1991; FOC 5: 435. 2003.

Perennial herb, glabrous throughout, with thick, conical tap root. Stems branched, green or reddish, 1–1.5 m tall. Petioles 1.5–3 cm; leaf blade ovate-elliptic or oblong, 12–25 × 4–10 cm, base cuneate, decurrent, apex acute or acuminate, margin entire. Racemes terminal and lateral, often opposite to leaves, 3–15 cm, more or less erect; bracts linear-lanceolate. Pedicels slender, ca. 6 mm. Perianth-segments usually 5, cream or greenish, becoming pink or reddish in fruit, 2–3 mm. Stamens 8–10; anthers pink; carpels 8–10, distinct; styles separate. Fruit compressed-spherical, purplish to black, with 8–10 fused fruitlets.

Locality: Cultivated. *P. S. Choi 515; HK sheet 23274, 33267.*

Distribution: Dispersed over most parts of China except Liaoning, Jilin, Heilongjiang, Nei Mongol and Xinjiang; Korea, Japan, India.

Ecology: Cultivated, sometimes escaped from cultivation, in waste places near villages. Flowering: May–Aug.; fruiting: Jun.–Oct.

Uses: Medicinal (folklore).

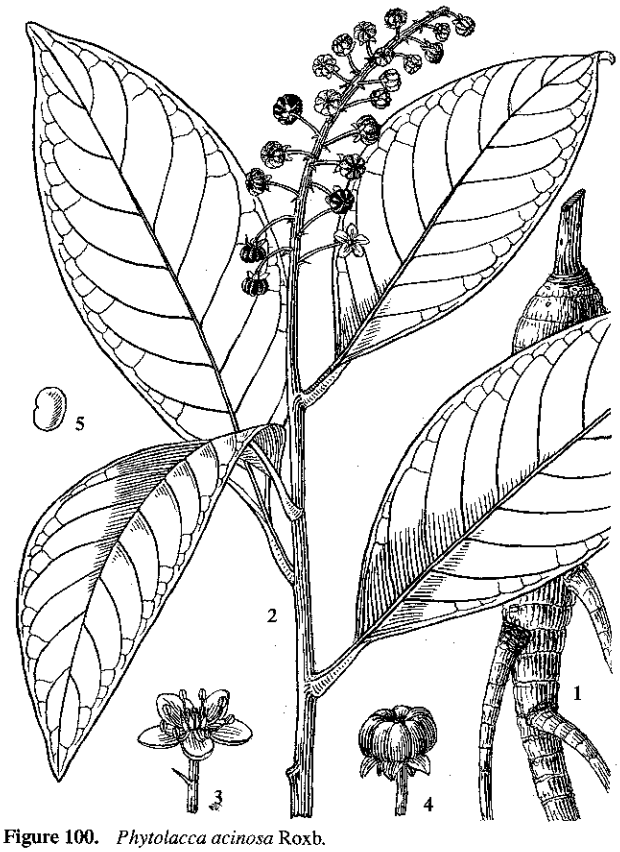



**Figure 100.** *Phytolacca acinosa* Roxb.
*1*. root; *2*. fruiting branch; *3*.flower; *4*. fruit; *5*. seed. (drawn by H. P. Yu)

**2. Phytolacca americana** L. 美洲商陸

Sp. Pl. 1: 441. 1753; FGD 2: 95. 1991; FRPS 26: 19, pl. 3: 6–7. 1996.

*Phytolacca decandra* L., Sp. Pl. (ed. 2) 631. 1763.

Perennial herbs, with thick, conical root. Stems erect, sometimes reddish purple, terete, 1–15 m tall. Petiole 1–4 cm; leaf blade elliptic-ovate or ovate-lanceolate, 10–30 × 5–16 cm, base cuneate, apex acuminate and mucronate, margin entire. Racemes terminal or lateral, 10–15 cm. Pedicel 6–8 mm. Flowers ca. 6 mm in diam. Perianth-segments 5, white, slightly red. Stamens, carpels, and styles 10; carpels connate. Infructescence pendulous. Fruit purple-black when mature, oblate.

Locality: Cultivated. *Y. W. Lam 731; HK sheet 32242.*

Distribution: Guangdong, Guizhou, Yunnan, Sichuan, Shaanxi, Hebei, Henan, Hubei, Hunan, Anhui, Fujian, Jiangsu, Jiangxi, Shandong, Zhejiang, Taiwan; native to N America; widely naturalized in Asia and Europe.

Ecology: Flowering: Jun.–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal, ornamental.

# 69. NYCTAGINACEAE 紫茉莉科

HU Qi-ming 胡啟明

Herbs, shrubs or woody climbers, often with swollen nodes. Leaves simple, petiolate, alternate or opposite, entire, exstipulate. Flowers bisexual, rarely unisexual, solitary or in small terminal cymes, thyrses or umbels, subtended by colored, calyx-like or even corolla-like bracts. Calyx tubular, corolla-like, with a short, 5-lobed limb; ture corolla absent. Stamens 1–40, usually 3–5, free or united at base; anthers 2-celled, opening by longitudinal slits. Ovary superior, 1-locular, containing a single ovule; style 1, stigma capitate or lobed. Fruit an achene, enclosed by the persistent lower part of perianth-tube.

About 30 genera and 290 species, mainly in tropical and subtropical regions, especially in C and S America; six genera (two introduced) and 13 species in China; three genera (two introduced) and four species in Hong Kong.

1a. Scandent shurbs; stems spiny ..... 1. *Bougainvillea*
1b. Herbs
2a. Stems erect; perianth-tube to 4.5 cm; fruit without viscid glands ..... 2. *Mirabilis*
2b. Stems diffuse; perianth-tube 4–12 mm; fruit with viscid glands ..... 3. *Boerhavia*

## 1. Bougainvillea Comm. ex Juss. 葉子花屬

Scandent shrub, often with spines. Leaves alternate, entire, petiolate. Flowers small, bisexual, in clusters of 3, subtended by large, colored bracts. Pedicels adnate to the midvein of bracts. Calyx-tube usually green, limb 5–6-lobed, red, purple or yellow. Stamens 5–10, included in perianth-tube; filaments unequal. Ovary stalked; stigma laterally. Fruit an achene, 5-ribbed.

About 14 species in C and tropical S America; one species commonly cultivated in Hong Kong.

**1. Bougainvillea spectabilis** Willd. 葉子花(毛寶巾，簕杜鵑) **(Photo 268)**

Sp. Pl. 2: 348. 1799; FGZ 170. 1956; FGD 2: 107. 1991; FRPS 26: 6. 1996; FOC 5: 432. 2003.

Scandent shrub. Stems to 10 m or longer, puberulous; branches often with spines. Leaves papery; petioles 1–2 cm; leaf blade ovate to ovate-lanceolate or elliptic, 4–9 × 2–4.5 cm, base broadly cuneate to subrounded or subtruncate, often slightly oblique, apex shortly acuminate, puberulent on both surfaces or glabrescent abaxially. Flowers in cluster of 3, subtended by 3 large bracts and forming large, terminal panicles. Pedicels adnate to the midvein of bracts. Bracts leafy, broadly ovate to subrounded, 3–3.8 × 2.5–2.8 cm, red, purple or orange. Calyx-tube ca. 1.4 mm, 5-ribed, puberulent abaxially; limb ca. 7 mm in diam., 5-lobed, white or pink. Stamens usually 8, unequal, included; filaments united at the base. Ovary elongate; stigma feathery, on one side of the style.

Locality: Cultivated in gardens or as a pot plant. *Y. S. Lau 1087, 1091, 3064.*

Distribution: Cultivated in S China; native to Brazil.

Ecology: The plant thrives in sunny places, flowering almost all the year round, but never set fruit in Hong Kong and S China.

Notes: *Bougainvillea glabra* Choisy is also cultivated in Hong Kong. It is very similar to this species, but can be distinguished by its glabrescent calyx-tube, young shoots and leaves.

## 2. Mirabilis L. 紫茉莉屬

Perennial herbs. Leaves opposite. Flowers bisexual, in axillary cymes, each flower surrounded by a calyx-like involucre. Calyx infundibuliform, corolla-like, with a long tube, constricted above the ovary, and a spreading, plicate, slightly 5-lobed limb. Stamens 3–5, as long as perianth-tube or sometimes exserted; filaments unequal, united at base. Ovary superior, 1-locular; style filiform; stigma capitate. Fruit an achene, exocarp leathery and ribbed.

About 45 species in tropical and warm regions of America; one species cultivated in China and Hong Kong.

**1. Mirabilis jalapa** L. 紫茉莉 **(Photo 269)**

Sp. Pl. 177. 1753; FGZ 171, fig. 75. 1956; Fl. Europ. 1: 111. 1964; FHN 1: 440, fig. 242. 1964; FGD 2: 107, fig. 74. 1991; FRPS 26: 7. 1996; FOC 5: 432. 2003.

Perennial herb, 30–100 cm tall, glabrous or slightly pubescent, with thick, conical roots. Stems erect, much branched, often reddish, with tumid nodes. Leaves opposite; petioles to 6.5 cm; leaf blade ovate to ovate-triangular, 5–11(–15) × 3.5–6 cm, base truncate or cordate, apex acuminate. Flowers in terminal dichotomous cymes, opening in the afternoon, each flower subtended by a involucre. Involucre calyx-like, green, 9–10 mm, united to middle; lobes 5, narrowly triangular, 1-nerved, ± ciliate. Calyx corolla-like, red, yellow, white or striped; tube 4.5–5 cm, constricted above the ovary; limb 5-lobed, ca. 2.5 cm in diam. Stamens 5; anthers compressed globose, slightly exserted. Ovary ovoid; style filiform, as long as or longer than filaments; stigma capitate. Fruit ovoid, ca. 5 mm in diam., black, with tubercles.

Locality: Cultivated or sometimes escaped from cultivation. *Y. S. Lau 1579, 2157.*

Distribution: Native to tropical America; widely cultivated and naturalized elsewhere in tropical regions.

Ecology: Flowering: May.–Oct. Flowers opening late afternoon till next morning.

Uses: Ornamental.

## 3. Boerhavia L. 黃細心屬

Annual or perennial herbs. Stems erect or diffuse, often with tumid nodes. Leaves opposite, petiolate. Flowers small, bisexual, in axillary thyrses. Bracts and bracteoles small, caducous. Pedicels articulate at the apex. Calyx united, constricted at middle, lower part tubular, persistent, upper part campanulate or funnel-form, 5-lobed, deciduous after anthesis. Stamens 1–5, exserted. Ovary superior, stalked, 1-locular; style 1; stigma peltate or capitate. Fruit enclosed in persistent calyx, 5–10 ribbed, often with viscid glands.

About 30 species spread over tropical and subtropical regions; four species in China; two species in Hong Kong.

1a. Calyx ca. 4 mm; fruit pubescent and glandular, transverse section rounded ..... 1. *B. diffusa*
1b. Calyx 1.7–2.5 cm; fruit glabrous, transverse section stellate ..... 2. *B. erecta*

**1. Boerhavia diffusa** L. 黃細心

Sp. Pl. 3. 1753; FGZ 172. 1956; FGD 2: 108, fig. 75. 1991; FTW ed. 2, 2: 320, pl. 149, photo 135. 1996; FRPS 26: 11, pl. 2: 5–7. 1996; FOC 5: 434. 2003.

*Boerhavia repens* L., Sp. Pl. 3. 1753; FKH 213. 1912.

Perennial herb, 1–2 m tall. Stems diffuse, glabrous or sparsely pubescent. Leaves opposite; petioles 1–3.5 cm; leaf blade ovate to ovate-oblong, 0.5–5 × 0.5–3 cm, base obtuse, cuneate or cordate, apex obtuse, acuminate or acute, margin slightly undulate, sparsely pubescent on both surfaces, often glaucous and glandular on abaxial surface. Thyrses axillary, 0.5–7 cm; pedicels 0.3–2 mm; bracteoles 1–3, lanceolate. Calyx ca. 4 mm, constricted at middle, upper part campanulate, 1–2 mm, white, red or purple, 5-lobed, lower part tubular, 1–1.2 mm, 5-ribed. Stamens 1–3(–5), slightly exserted. Ovary obovate or obovate-oblong. Fruit clavate, 2.5–3.3 mm, 5-ribbed, covered with glands and hairs.

Locality: Hung Hom, Lantau Island, Ping Chau. *Y. S. Lau 2478, 3125; HK Sheet 22959.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; Japan, Indochina, Indian Subcontinent, Malesia, Australia.

Ecology: Open fields. Flowering: May–Jun.; fruiting: Autumn.

Uses: Medicinal (folklore).

**2. Boerhavia erecta** L. 直立黃細心 **(Fig. 101)**

Sp. Pl. 3. 1753; FGD 2: 108. 1991; FRPS 26: 12, pl. 2: 8. 1996; FOC 5: 433. 2003.

Perennial herb, 20–80 cm tall. Stems erect or decumbent at base, initially puberulous, glabrescent. Leaves opposite; petioles 1.5–4 cm; leaf blade ovate or lanceolate, 1.5–5 × 1–4 cm, base rounded or truncate, apex acute, rarely obtuse, margin entire, adaxially scabrous, abaxially white, puberulous or glandular. Thyrses axillary, 2–3 cm; pedicels 0.5–5 mm; bracteoles 1–2, lanceolate, 0.8–1 mm. Calyx 1.7–2.5 cm, constricted at middle, upper part campanulate, 1.5–2 mm, white, red or purple, 5-lobed, lower part tubular, 1–1.2 mm, 5-ribbed. Stamens 2–3, slightly exserted. Fruit obconical, 3–3.5 mm, 5-ribbed, glabrous.

Locality: Tai Po. *Y. S. Lau 1269.*

Distribution: Guangdong, Xisha Islands; Malesia, Pacific Islands.

Ecology: Open fields. Flowering & fruiting: Summer to autumn.

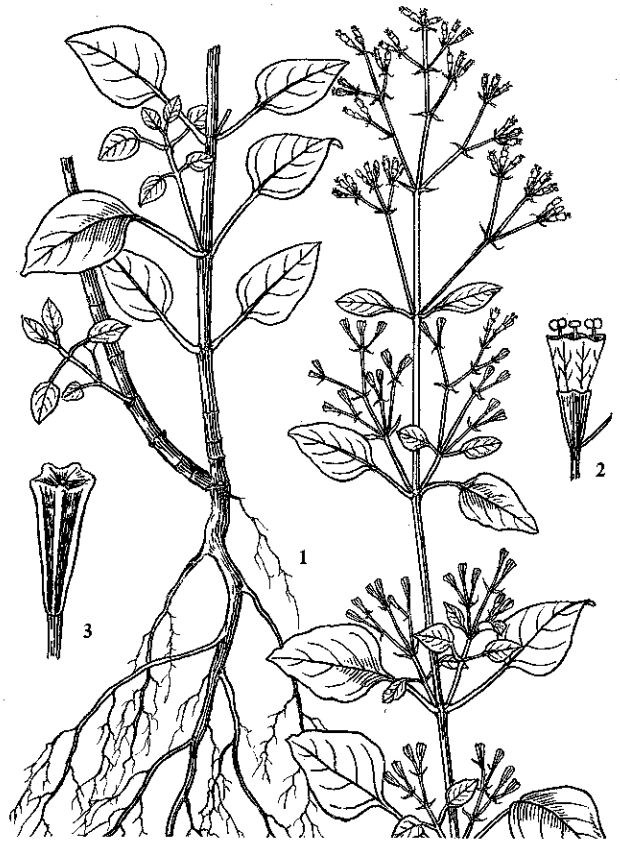



**Figure 101.** *Boerhavia erecta* L.
*1*. plant; *2*. flower; *3*. fruit. (drawn by H. P. Yu)

# 70. AIZOACEAE 番杏科

HU Qi-ming 胡啟明

Herbs or subshrubs. Stems erect or prostrate. Leaves opposite or alternate, usually fleshy, often ± terete or triquetrous. Flowers usually bisexual, actinomorphic; calyx tubular or turbinate, with often fleshy, unequal 5–8 lobes; petals usually many, inserted on calyx-tube, rarely absent; stamens usually many, perigynous, free or united in fascicles at the base; anthers 2-celled, opening by longitudinal slits; ovary half-inferior or inferior, 1–many-locular, with 1–many ovules on axile or parietal placenta. Fruit a dry capsule, rarely a berry or a nut, usually enclosed in persistent calyx-tube.

About 20 genera and 600 species, mainly in S Africa and Mediterranean areas; three genera and three species in China; two genera and two species in Hong Kong.

1a. Leaves opposite; ovary superior; fruit a circumscissile capsule ..... 1. *Sesuvium*

1b. Leaves alternate; ovary inferior; fruit an indehiscent nut..... ..... 2. *Tetragonia*

## 1. Sesuvium L. 海馬齒屬

Succulent herbs or subshrubs. Stems prostrate or erect. Leaves opposite, fleshy, exstipulate; petioles often dilated and sheathing at the base. Flowers axillary, solitary, clustered or in cymes; calyx deeply 5-lobed, lobes often colored adaxially; petals absent; stamens 5, alternate with calyx-lobes, or many and inserted near apex of calyx-tube; filaments filiform, free or united at the base; ovary superior, 3–5-locular, with many ovules in each loucular; styles 3–5, filiform. Capsules membranous, opening transversely at middle; seeds reniform, smooth.

About 17 species widely distributed in tropical and subtropical regions; one species in China, also in Hong Kong.

**1. Sesuvium portulacastrum** (L.) L.
海馬齒 **(Fig. 102; Photo 270)**

Syst. Nat. ed. 10, 1058. 1759; FKH 114. 1912; FHN 1: 383, fig. 201. 1964; FGD 2: 87, fig. 60. 1991; FTW ed. 2, 2: 329, pl. 152, photo 140–141. 1996; FRPS 26: 30, pl. 5: 4–6. 1996; FOC 5: 441. 2003.

*Portulaca portulacastrum* L., Sp. Pl. 446. 1753.

Perennial succulent herb. Stems prostrate, 20–80 cm or longer, glabrous, green or red, often with white tubercles, rooting at nodes. Leaves fleshy; petioles 7–15 mm, base dilated, with membranous, amplexicaul margins; leaf blade linear oblanceolate or linear spathulate, 1.5–5 × 0.2–1 cm, apex obtuse, tapering from middle to the base. Flowers solitary in axil of leaves. Pedicels 5–15 mm. Calyx 6–8 mm; tube ca. 2 mm; lobes 5, ovate-lanceolate, green abaxially, red adaxially. Petals absent. Stamens 15–40, inserted at apex of calyx-tube, shorter than the calyx-lobes; filaments free or united below middle. Ovary ovoid, glabrous, 3- or sometimes 4-locular; style 3, rarely 4–5. Capsule ovoid, opening transversely below middle.

Locality: Tai Tam, Castle Peak, Lung Kwu Tan, Sai Kung, Pui O, Tung Chung. *H. C. Tang 1293; S. Y. Hu & P. P. H. But 24044; Y. S. Lau 3253.*

Distribution: Hainan, Guangdong, Fujian, Taiwan, Xisha Islands; tropical and subtropical coastal areas.

Ecology: Sandy beaches. Flowering: Apr.–Jul.

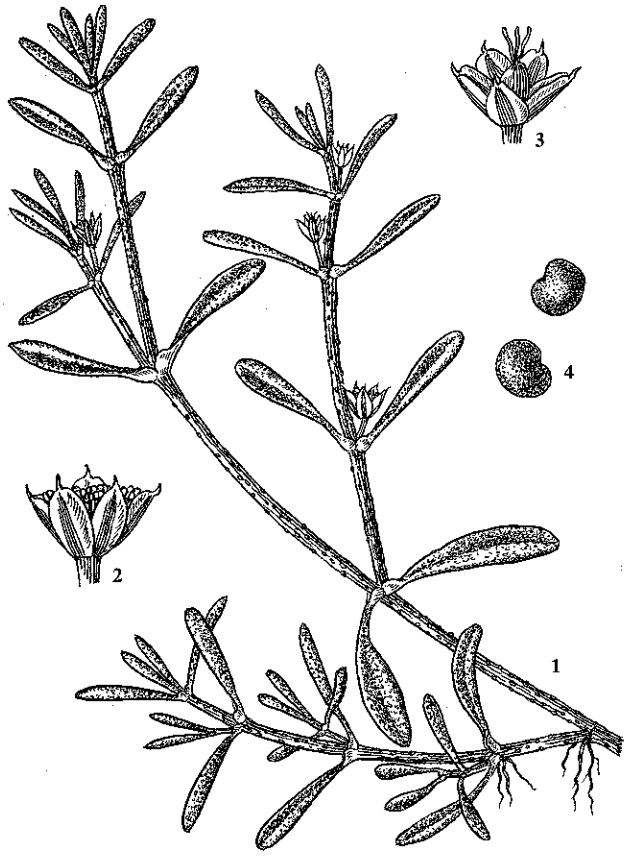



**Figure 102.** *Sesuvium portulacastrum* (L.) L.
*1*. plant; *2*. male flower; *3*. female flower; *4*. seeds. (drawn by H. P. Yu)

## 2. Tetragonia L. 番杏屬

Succulent herbs or subshrubs, often with white small tubercles. Stems erect, prostrate or scandent. Leaves alternate, flat, entire, exstipulate. Flowers solitary or clustered in axil of leaves, pedicellate or sessile. Calyx-tube adnate to ovary, often angled; lobes 3–5, short and often unequal. Petals absent. Stamens few to many, inserted on calyx-tube and alternate with calyx-lobes. Ovary inferior, 2–9-locular, each locule with a pendulous ovule; styles as many as ovary locules. Fruit a bony nutlet, indehiscent, often angled.

About 60 species in SE & S Asia, Africa and Australia; one species in China, also in Hong Kong.

**1. Tetragonia tetragonioides** (Pall.) Kuntze
番杏 **(Fig. 103; Photo 271)**

Rev. Gen. 264. 1891; FGD 2: 89, fig. 62. 1991; FTW ed. 2, 2: 331,

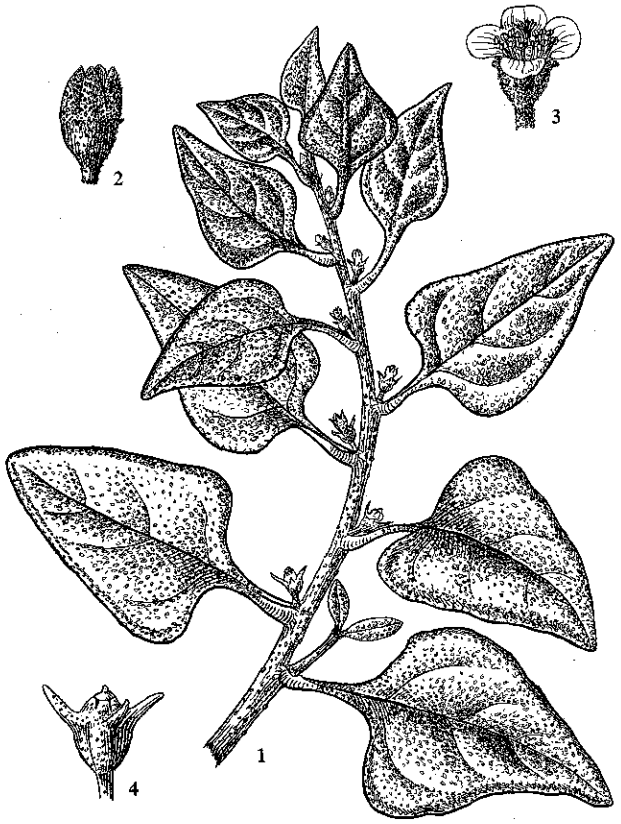



**Figure 103.** *Tetragonia tetragonioides* (Pall.) Kuntze.
*1*. upper part of plant; *2*. alabastrum; *3*. flower; *4*. fruit. (drawn by H. P. Yu)

pl. 153, photo 142–143. 1996; FRPS 26: 35, pl. 7: 5–7. 1996; FOC 5: 440. 2003.

*Demidovia tetragonioides* Pall., Enum. Pl. 150, t. 1. 1781.

*Tetragonia expansa* Murr., Comm. Goett. 6: 13. 1783; FKH 114. 1912.

Annual succulent herb, glabrous, often with small tubercles. Stems thick, terete or slightly angled, initially erect, later elongate and ascending, 30–60 cm or longer. Leaves alternate; petioles 0.5–2.5 cm; leaf blade ovate-rhombic or ovate-triangular, 4–11 × 1–5 cm, base broadly cuneate to subtruncate, decurrent, apex obtuse or acute, margin entire or undulate. Flowers solitary or in cluster or 2–3, axillary. Pedicels ca. 2 mm. Calyx-tube 1.5–2 mm; lobes 3–5, yellowish green adaxially, 2–3 mm. Stamens 4–10; filaments yellow, 1–1.5 mm. Nutlet turbinate, 0.5–1 cm, 4–5-angled.

Locality: Stanley, Lan Nai Wan, Lung Kwu Tan, Tai O. *Y. W. Lam 814, 1523; HK sheet 2054.*

Distribution: Guangdong, Fujian, Taiwan, Zhejiang, Jiangsu; E Asia, Malesia, Australia, New Zealand, S America; cultivated and naturalized elsewhere.

Ecology: Sandy seashores. Flowering & fruiting: Aug.–Oct.

Uses: Food (vegetable), medicinal (folklore).

# 72. CACTACEAE 仙人掌科

HU Qi-ming 胡啟明

Perennial succulent plants. Stems cylindric, globular or flattened, and often constricted or jointed, succulent or woody at base, with areoles (oval or circular areas) bearing spines and glochids (barbed spines or bristles). Leaves usually none or much reduced, and mostly caducous, rarely flat and fleshy. Flowers usually bisexual, regular or irregular, solitary or clustered, arising from areoles; perianth-segments many, sharply or not differentiated into sepals and petals; stamens many, sometimes clustered; ovary 1-locular, inferior, rarely half-inferior or superior, with 2 or more parietal placenta and many ovules. Fruit a berry, often spiny or bristly.

About 130 genera and 1650 species mainly in semi-desert regions of N, C and S America; about 65 genera (mostly cultivated) in China; four genera and four species are commonly cultivated in Hong Kong.

1a. Stem and branch-joints 3-angled, climbing by means of aerial roots. ..... 1. *Hylocereus*

1b. Stem and branch-joints flat, erect or diffuse.

2a. Branch-joints with spiny areoles on both surfaces ..... 2. *Opuntia*

2b. Branch-joints with unarmed areoles only on the edges

3a. Branch-joints 15–40 × 5–6 cm; flowers 20–25 cm ..... 3. *Epiphyllum*

3b. Branch-joints 3–7 × 1.5–2.5 cm; flowers 5–6 cm ..... 4. *Schlumbergera*

## 1. Hylocereus (A. Berger) Britt. & Rose 量天尺屬

Climbing succulent plants. Stems elongated, 3-angled or 3-winged, adhering to walls or trees by means of aerial roots; areoles borne on the ridges of angles, felted, short-spinose or spineless. Flowers usually large and white, rarely red, nocturnal. Perianth-segments many, united into a long tube, with large green or purplish scales outside; limb very broad. Stamens many, in 2 whorls, attached on the perianth-tube or on the throat. Ovary spineless; stigma with many simple or branched lobes. Fruit a fleshy berry, with scales outside.

About 18 species in tropical America; one species is commonly cultivated or naturalized in S China and Hong Kong.

**1. Hylocereus undatus** (Haw.) Britt. & Rose

量天尺 **(Fig. 104; Photo 272)**

Fl. Bermuda 256. 1918; FHN 1: 493. 1964; FGX 1: 739. 1991; FRPS 52(1): 283. 1999; FGD 4: 136, fig. 84. 2000.

*Cereus undatus* Haw., Phil. Mag. 7: 110. 1830.

Succulent cactus, climbing by aerial roots. Stems 6–7 m or longer, 3-angled, depth of ribs 1–2.5 cm, margin undulate; areoles borne on the ribs, 3–4 cm apart, with 1–3 small spines. Flowers solitary, 25–30(–35) cm long; limb 10–12 cm in diam.; segments many, outer ones yellowish green or purplish, inner ones white. Stamens many, cream-white, equaling the perianth-segments. Fruit a fleshy berry, oblong, ca. 10 cm, with large scales outside.

Locality: Cultivated. *HK sheet 12287.*

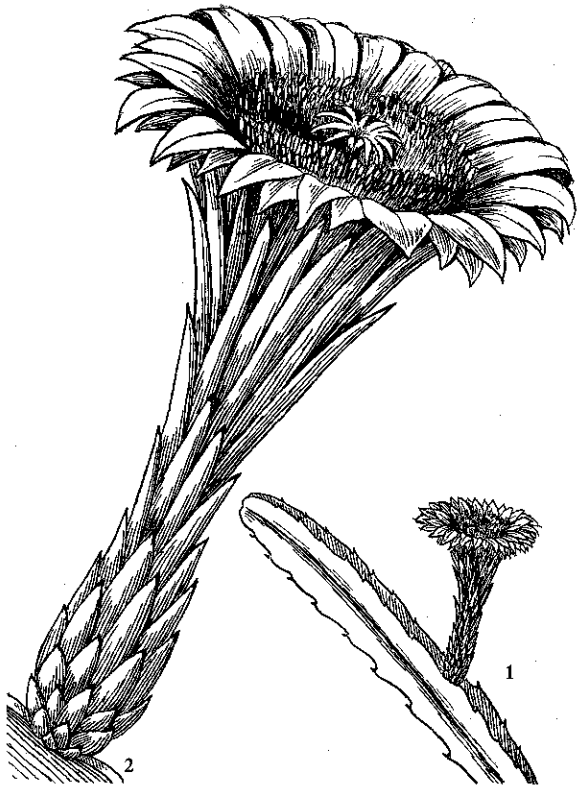



**Figure 104.** *Hylocereus undatus* (Haw.) Britt. & Rose
*1.* flowering branch; *2.* flower. (drawn by H. P. Yu)

Distribution: Originated from neotropics; widely cultivated in tropical regions.
Ecology: Climbing by aerial roots on walls and tree trunks. Flowering: Summer.
Uses: Ornamental, food (beverage base, vegetable).

## 2. Opuntia Mill. 仙人掌屬

Small or large succulent plants, very variable in size and habit, ranging from shrubs to small trees. Stem and branch-joints cylindric, globular or flat, with axillary areoles bearing woolly hairs and barbed spines or bristles. Leaves usually small, cylindric or subulate, caducous. Flowers actinomorphic, solitary, arising from areoles near apex of branch-joints. Perianth-segments many, outer ones green or colored, inner ones petaloid, green, red or yellow. Stamens many, much shorter than the inner perianth-segments. Ovary inferior; style single; stigma shortly lobed. Fruit a berry, globose, ovoid or ellipsoid, spiny or naked.

About 300 species native to America; about 50 species (introduced) in China; one naturalized in Hong Kong.

**1. Opuntia stricta** (Haw.) Haw. var. **dillenii** (Ker-Gaw.) L. D. Benson 仙人掌 **(Photo 273)**
Cact. et Succ. J. (Los Angeles) 41: 126. 1968; FRPS 52(1): 277. 1999.

*Cactus dillenii* Ker-Gaw., in Edwards, Bot. Reg. 3: pl. 255. 1818.

*Opuntia dillenii* (Ker-Gaw.) Haw., Suppl. Pl. Succ. 79. 1819; FKH 114. 1912; FGX 1: 735. 1991; FGD 4: 138. 2000.

Shrubby or tree-like cactus, 1–4 m tall. Trunk almost cylindric, woody at base. Stem-joints flat, green, obovate to oblong, 1–30 × 7–10 cm; areoles raised, with woolly hairs; spines solitary, white, tip dark brown. Leaves small, subulate, caducous. Flowers solitary, yellow, 5–8 cm in diam. Fruit a berry, obovate, 6–8 cm, spineless.

Locality: Cultivated or naturalized. *HK sheet 12291, 2049.*
Distribution: Hainan, S Guangdong, S Guangxi; Mexico, S-C USA, S America; naturalized elsewhere.
Ecology: Dry grassy places. Flowering: Summer.
Uses: Ornamental.

## 3. Epiphyllum Haw. 曇花屬

Shrubby, unarmed succulent plants. Stems upright, often cylindric and woody at the base. Branches flat, 2-edged, with sunken areoles on the edges. Flowers usually large and nocturnal, solitary, arising from areoles; perianth united into a long tube; segments linear lanceolate, white, red or yellow; stamens many, borne on the throat of perianth tube; ovary solitary, style 9–19-cleft. Fruit a berry, ellipsoid or globose, red or purple, bearing a few bracts.

About 16 species native to tropical and subtropical regions of America; four species (introduced) in China; one cultivated in Hong Kong.

**1. Epiphyllum oxypetalum** (DC.) Haw. 曇花 **(Photo 274)**
Phil. Mag. 6: 109. 1829; FHN 1: 494. 1964; FGX 1: 738. 1991; FRPS 52(1): 284. 1999; FGD 4: 138. 2000.

Shrubby succulent plant, 2.5–3 m tall. Branch-joints flat, green, 15–40 × 5–6 cm, thickened in the middle, margin undulate, with areoles, unarmed. Flowers solitary, arising from areoles, white, nocturnal. Perianth-tube 15–20 cm; limb 10–12 cm in diam.; segments many, outer ones scale-like, 2.5–3 mm, inner ones lanceolate, 5–6 cm; stamens many; anthers light yellow. Ovary ovoid, slightly angled; style 16–18-cleft.

Locality: Cultivated. *HK sheet 2053.*
Distribution: Mexico, Mesoamerica; cultivated elsewhere.
Ecology: In Hong Kong usually cultivated as a pot plant. Flowering: Summer.
Uses: Ornamental.

## 4. Schlumbergera Lemaire 蟹爪屬

Succulent plants. Stems much branched and short-jointed; joints usually flat, or becoming ± cylindric in age; areoles borne on the margins and the truncate end of joints, with a few bristles. Flowers ± zygomorphic, arising from the areoles, solitary; perianth-segments many, united into a tube below; stamens many; ovary inferior, spineless. Fruit a berry, globose or obconical, red or purplish.

About five to six species, all native to Brazil; two species (introduced) in China, one commonly cultivated in Hong Kong.

**1. Schlumbergera truncata** (Haw.) Moran 蟹爪 **(Photo 275)**
Gentes Herbarium 8: 329. 1953; FGX 1: 738. 1991; FGD 4: 139, fig. 87. 2000.

*Zygocactus truncates* (Haw.) K. Schum. in Martius, Fl. Bras. 4: 224. 1890.

*Epiphyllum truncatum* Haw., Suppl. Pl. Succ. 85. 1819.

Small shrubby cactus. Stems dichotomously branched and short-jointed; joints flat, ovate to oblong, 3–6 × 1.5–2.5 cm, apex truncate, margin with 2–4 incurved teeth on each side, green on both surfaces. Flowers solitary, in various shades of red, borne on the apex of the joints; perianth-tube ca. 2.5 cm; limb 4–5 cm in diam.; segments 21–23, in 4–5 irregular tiers on the tube, basal ones ovate to ovate-lanceolate, 0.7–1.5 × 0.5–0.8 cm, distal ones oblong-lanceolate, 2.5–3.5 × 1–1.2 cm. Stamens many. Ovary turbinate, 4-angled, glabrous; stigma 6–7-lobed.

Locality: Cultivated. *C. Chan 73* (CUHK); *M. Y. Wong 36* (CUHK).

Distribution: Native to Brazil; widely cultivated elsewhere.

Ecology: In Hong Kong the species is usually cultivated as a pot plant, or grafted on a stock of *Hylocereus undatus*. Flowering: Dec.–Feb. of the following year.

Uses: Ornamental.

# 73. CHENOPODIACEAE 藜科

WU De-lin 吳德鄰

Annual or perennial herbs, or shrubs, rarely small trees, monoecious or dioecious. Stem often fleshy or jointed. Leaves simple, alternate, rarely opposite, sometimes leafless; usually exstipulate. Inflorescence a spike, panicle or cyme, 1–many-flowered, axillary or terminal. Flower small, actinomorphic, often green, bisexual or unisexual, rarely polygamous; perianth 3–5 in a series, free or connate or absent, persistent; Stamens usually as many as and opposite perianth-lobes, filaments free or connate at base, adnate to perianth-lobes or on annular disc. Anthers dehiscent by longitudinal slits. Ovary superior, 1-locular; ovules 4, basal; styles short; stigmas 2–5, linear. Utricles often subtended by persistent perianth or bracteoles, indehiscent or rarely circumscissile. Seed 1, embryo annular or spirally twisted or only slightly curved, endosperm much reduced or absent, perisperm abundant or absent.

About 100 genera, 400 species distributed in temperate to tropical regions of the world; 42 genera and 190 species in China; six genera, seven species, one subspecies and one variety in Hong Kong.

1a. Leaves entire, sessile.
  2a. Leaves fleshy, semi-terete, linear, 10–35 × 1–3 mm ..... 1. *Suaeda*
  2b. Leaves not fleshy, flat, lanceolate or linear-lanceolate, 7–50 × 1–7 mm ..... 2. *Bassia*
1b. Leaves more or less serrate, petiolate.
  3a. Flowers bisexual or both bisexual and unisexual.
    4a. Leaves larger, generally 20–30 × 10–15 cm, glabrous, midvein elevated abaxially (cultivated vegetable) ..... 3. *Beta*
    4b. Leaves smaller, 2–10 × 0.5–5 cm, farinose or glandular, midvein not as above (wild plants) ..... 4. *Chenopdium*
  3b. Flowers unisexual.
    5a. Plants dioecious; leaves hastate or triangular-ovate, larger, 5–15 × 5–10 cm ..... 5. *Spinacia*
    5b. Plants monoecious; leaves not as above, smaller, 2–3 × 1–2 cm ..... 6. *Atriplex*

## 1. **Suaeda** Forssk. ex J. F. Gmel. 鹼蓬屬

Annual herbs, subshrubs or shrubs. Leaves sessile, usually terete or semi-terete, fleshy, entire. Inflorescences axillary, clustered or flowers solitary. Flower bisexual or pistillate, subtended by 3 bracteoles; perianth subglobose, lobes 5, free or connate to middle, often with winged, or horn-like projection when fruiting. Stamens 5, filaments short. Ovary globose, stigmas 2–5. Utricles enclosed by or sometimes adnate to perianth; pericarp membranaceous, free to seed. Seed 1, horizontal or vertical, seed coat crustaceous or membranaceous.

About 100 species distributed worldwide; 20 species in China; one species in Hong Kong.

**1. Suaeda australis** (R. Br.) Moq.
南方鹼蓬 **(Fig. 105; Photo 276)**

Ann. Sci. Nat. 23: 318. 1831; FHN 1: 394. 1964; FHK 283. 1861; FKH 215. 1912; FOC 5: 394. 2003. .

*Suaeda maritima* (L.) Dumort, Fl. Belg. 22. 1827; FGD 3: 62. 1995; FTW 2: 387. 1996.

*Chenopodium maritimum* L., Sp. Pl. 221. 1753.

*Chenopodium australe* R. Br., Prodr. Fl. Nov. Holl. 407. 1810.

*Suaeda monoica* auct. non Forssk.: FKH 215. 1912.

Perennial herb or subshrub, 7–10 cm tall. Stems much branched. Leaves fleshy, white or purple, semi-terete, linear, 10–35 × 1–3 mm, base attenuate, apex slightly acute or obtuse, margin entire. Flowers small, polygamous, solitary or 2–5-clustered in glomerules. Bracteoles 2–3, oblong, 0.8–1 mm, persistent; perianth purple-green, 5-lobed; lobes ovate-oblong, enclosing fruit when fruiting. Utricle compressed globose, 1.2–1.5 mm in diam.

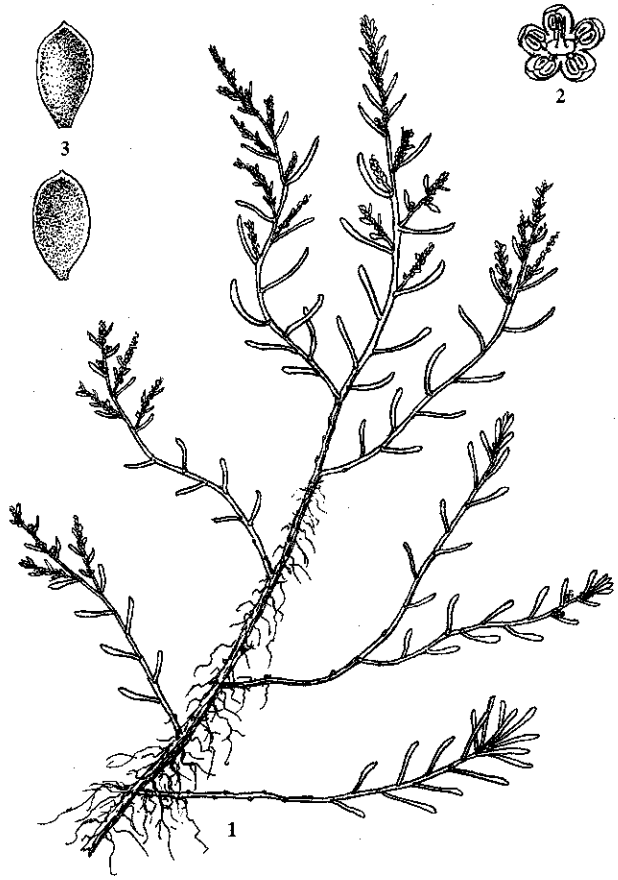



**Figure 105.** *Suaeda australis* (R. Br.) Moq.
*1*. plant; *2*. flower; *3*. leaves near apex of branch. (drawn by H. P. Yu)

Seeds black, lustrous.

Locality: Sha Tin, Lau Fau Shan, Plover Cove, Yung Shue O, Lantau Island. *Y. S. Lau 437; HK sheet 36813.*

Distribution: Guangxi, Guangdong, Fujian, Taiwan, Jiangsu; cosmopolitan.

Ecology: Sandy beaches and margins of mangroves. Flowering & fruiting: Jul.–Nov.

## 2. Bassia All. 地膚屬

Annual herbs, rarely subshurbs. Stems often many-branched. Leaves alternate, sessile or subsessile, flat to terete. Inflorescence a spike. Flowers bisexual or pistillate, sessile; perianth subglobose, membranaceous, hairy, 5-lobed; lobes incurved, with winged or not winged appendage on outsides when fruiting. Stamens 5, inserted on perianth-base, exserted. Ovary broad-ovate, sessile; style short; stigma 2(-3). Urticles oblate, pericarp membranaceous, not adnate to seeds. Seeds orbicular or ovate.

About 21 species distributed in tropical to subtropical regions; ten species in China; one species in Hong Kong.

According to the opinion of A. T. Scott (*Fedd. Repert.* 89: 101–119. 1978) and D. J. Mabberley (*The Plant Book*, ed. 2, 1997), the genus *Kochia* Roth was merged into *Bassia*.

**1. Bassia scoparia** (L.) A. J. Scott 地膚 **(Fig. 106)**

Fedd. Repert. 89: 108. 1978.

*Kochia scoparia* (L.) Schrad. in Neues Journ. 3: 85. 1809; FGD 3: 63. 1995; FOC 5: 385. 2003.

*Chenopodium scoparium* L., Sp. Pl. 221. 1753.

Annual herb, 0.5–1 m tall. Stems terete, slightly pubescent or glabrous on lower parts. Leaves sessile, lanceolate or linear lanceolate, 0.7–5 × 1–7 mm, base attenuate, apex shortly acuminate, margin entire, glabrous or slightly hairy, 3-veined. Spikes 1–3-flowered, axillary. Flowers bisexual or pistillate; perianth subglobose, green-yellowish; lobes 5, subtriangular, winged on outside. Stamens 5, exserted, inserted at base of perianth. Anthers yellowish, ovoid. Ovary oblate; style very short; stigmas 2–3, filiform. Utricles oblate, subtended by persistent perianth, pericarps membranaceous. Seeds black-brown, ovoid, 1.5–2 mm.

Locality: Cultivated. Lam Tsuen (Kadoorie Farm).

Distribution: Widely distributed in China; Europe, Asia.

Ecology: Farmland, roadsides. Flowering & fruiting: Jun.–Oct.

Uses: Medicinal (folklore), ornamental.

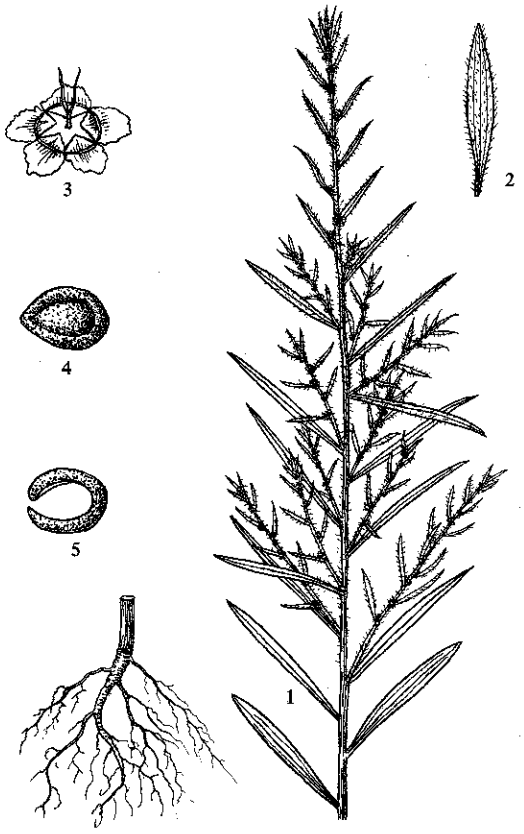



**Figure 106.** *Bassia scoparia* (L.) A. J. Scott

*1*. plant; *2*. leaf; *3*. female flower; *4*. seed; *5*. embryo. (drawn by H. P. Yu)

## 3. Beta L. 甜菜屬

Succulent herbs. Leaves alternate, entire or sinuate. Flowers bisexual, solitary or in axillary panicles or spikes. Bracteoles minute or absent. Perianth urceolate, 5-lobed, cohering in fruiting by their enlarged hardened bases. Stamens 5. Ovary compressed, sunk in disc; style short; stigmas 2–4, subulate. Utricles adnate to perianth-base. Seeds horizontal; testa thin, endosperm floury.

About ten species distributed in Europe, Asia and N Africa; one species in China; one variety cultivated in Hong Kong.

**1. Beta vulgaris** L. var. **cicla** L. 菾蓮菜 **(Fig. 107; Photo 277)**

Sp. Pl. 222. 1753; FHN 1: 398. 1964; FGD 3: 67. 1995; FOC 5: 354. 2003.




**Figure 107.** *Beta vulgaris* var. *cicla* L.

*1*. plant; *2*. part of flowering branch; *3*. flower; *4*. fruit. (drawn by H. P. Yu)

Annual or biennial succulent herbs, 0.3–1 m tall; roots fleshy, branched, not tuberous. Petioles rough, long; basal leaves ovate or oblong-ovate, 20–30 × 10–15 cm, base cuneate or cordate, decurrent, margin sinuate, apex obtuse, midvein elevated abaxially; cauline leaves smaller, rhombic-ovate to lanceolate. Flowers sessile, small, green, solitary or 2–3 clustered in paniculate spikes. Bracts linear. Perianth-lobes oblong, thickened at base when fruiting. Utricles with lower part enclosed in hardened perianth, upper part slightly fleshy. Seeds reddish brown, 2–3 mm in diam., shiny.

Locality: Cultivated.

Distribution: Widely cultivated in China; Europe, Asia & N Africa.

Ecology: Farmland, roadside. Flowering & fruiting: May–Jul.

Uses: Vegetable.

## 4. Chenopodium L. 藜屬

Annual or perennial herbs, rarely subshrubs. Leaves alternate, petiolate, usually nearly pubescent, margin entire, lobed or toothed. Inflorescence a glome rule, rearranged in axillary or terminal spicate or paniculate cymes. Flower bisexual or sometimes pistillate, sessile, without bract and bracteole. Perianth-lobes 5, free or shortly connate at base, persistent. Stamens usually 5. Ovary globose base slightly flattened; stigmas 2–5. Fruit a utricle with membranaceous pericarp, enclosed by persistent perianth and adnated with seed. Seed 1, horizontal or vertical.

About 100 species distributed worldwide, mainly in temperate regions; 19 species in China; four species in Hong Kong.

1a. Plants with glandular hairs and strongly aromatic ..... 1. *C. ambrosioides*

1b. Plants without glandular hairs.

2a. Leaves entire ..... 2. *C. acuminatum* subsp. *virgatum*

2b. Leaves toothed.

3a. Leaves ovate-oblong, 3-lobed, central lobe oblong ..... 3. *C. ficifolium*

3b. Leaves rhomboid-ovate to broad-lanceolate, not 3-lobed ..... 4. *C. album*

**1. Chenopodium ambrosioides** L. 土荊芥 **(Photo 278)**

Sp. Pl. 219. 1753; FKH 215. 1912; FRPS 25(2): 82. 1979; FHN 1: 396. 1964; FGD 3: 65. 1995.

*Dysphania ambrosioides* (L.) Mosyakin & Clemants, Ukrayins'k. Bot. Zurn. 59: 382. 2002; FOC 5: 377. 2003.

Annual or perennial herb, 50–80 cm tall, with strong smell. Stems erect much branched, with whitish or yellowish glandular hairs (not farinose) or subglabrous. Leaves oblong or lanceolate, 2–10 × 0.5–2 cm, base attenuate, apex acute or obtuse, margin sinuate, dentate to parted, glabrous adaxially, sparsely oil-spotted abaxially. Inflorescence a terminal leafy panicle or spike, 2–10 cm. Flowers bisexual and pistillate. Perianth-lobes 5, rarely 3. Stamens 5; stigmas 3, rarely 4, filiform, exserted. Utricles compressed-globose. Seeds horizontal or oblique, black or dark red, 0.7 mm in diam., smooth and shining.

Locality: Common in Hong Kong. Naturalized. *HK sheet 36804; Y. S. Lau 3206.*

Distribution: Guangxi, Guangdong, Fujian, Taiwan, Zhejiang, Jiangsu, Jiangxi, Hunan, Sichuan; native to tropical America, widely distributed in tropical and temperate regions of the world.

Ecology: Near villages, roadsides and riversides. Flowering & fruiting: May–Nov.

Uses: Medicinal.

Note: This species was transferred to *Dysphania* R. Br. by Mosyakin & Clements (2002) and accepted in *Flora of China*. But there are no distinct characters to separate *Dysphania* from *Chenopodium*, except the glandular hairs of *Dysphania*.

**2. Chenopodium acuminatum** Willd. subsp. **virgatum** (Thunb.) Kitam. 狹葉尖頭葉藜 **(Photo 279)**

Acta Phytotax. Geobot. 20: 206. 1962; FGD 3: 65. 1995; FOC 5: 380. 2003.

*Chenopodium virgatum* Thunb., Nov. Act. Reg. Soc. Upsal. 143. 1815.

*Chenopodium vachelii* Hook. & Arn., Bot. Beechey Voy. 269. 1838.

*Chenopodium acuminatum* auct. non Willd.: FHK 28. 1861; FKH 215. 1912; FHN 1: 397. 1964.

Annual herb, up to 80 cm tall. Stems erect, angulate, much branched; branches ascending, farinose. Petioles 1.5–2.5 cm; leaves narrowly ovate, oblong or lanceolate, 1–4 × 0.5–2.5 cm, base cuneate, rounded or truncate, apex acute or acuminate, mucronate, margin entire, translucent, greenish and glabrous adaxially, grey-white and farinose abaxially. Inflorescence a terminal leafy panicle. Flowers bisexual; perianth-lobes 5, broadly ovate, margin membranaceous, ridged near central. Stamens 5. Utricles compressed-globose, smooth. Seeds black, 1 mm in diam., shiny.

Locality: Shek O, Sai Kung, Tsing Lung Tau, Sheung Pak Nai, Ha Pak Nai, Pui O, Tung Chung. *HK sheet 36802, 36805.*

Distribution: Guangxi, Guangdong, Fujian, Taiwan, Zhejiang, Jiangsu, Hebei, Liaoning; Japan.

Ecology: Wastelands near seashore and on lakes. Flowering & fruiting: Jun.–Sep.

**3. Chenopodium ficifolium** Sm. 小藜 **(Fig. 108)**

Fl. Brit. 1: 276. 1800; FKH 215. 1912; FOC 5: 383. 2003.

*Chenopodium serotinum* auct. non L.: FHN 1: 396. 1964; FGD 3: 66. 1995.

Annual herb, 20–50 cm tall. Stems erect, much branched; branches ascending, farinose when young. Leaves petiolate, ovate-oblong, 2.5–5 × 1–3.5 cm, often shallowly 3-lobed, central lobe oblong, margin sinuate-toothed, farinose abaxially. Inflorescence a terminal leafy panicle, 4–12 cm; perianth subglobose, deeply 5-lobed; lobes broadly ovate, keeled and farinose abaxially. Stamens 5, exserted; stigmas 2, filiform. Utricles compressed-globose, smooth. Seeds horizontal, black, 1 mm in diam., shiny.

Locality: Ha Hang. *K. Wong s.n. (HK sheet 23122, 23158).*

Distribution: Widely distributed in China; temperate and tropical regions of the world.

Ecology: Farmlands, wastelands and roadsides. Flowering: Apr.–May; fruiting: Jun.–Aug.

Notes: The name *Chenopodium serotinum* L. has often been misapplied to this species but in fact refers to a species of *Atriplex* (FOC 5: 383. 2003).

**4. Chenopodium album** L. 藜

Sp. Pl. 219. 1753; FHK 282. 1861; FKH 215. 1912; FRPS 25(2): 98. 1979; FGD 3: 67. 1995; FOC 5: 383. 2003.

Annual herb, 30–150 cm tall. Stems rough, erect, angulate, with green or purple striae. Leaves petiolate, rhomboid-ovate to broad-lanceolate, 3–6 × 2.5–5 cm, base cuneate, apex acute or obtuse, lower ones more or less sinuately toothed or angular, upper ones usually narrow and entire. Clusters of flowers in short axillary spikes, either dense or interrupted, upper ones forming a long panicle, leafy at base. Flowers bisexual; perianth-lobes 5, broad-ovate to elliptic, keeled abaxially, mealy-white, apex emarginated. Stamens 5, exserted; stigmas 2. Utricles compressed-globose, smooth; entirely enclosed in perianth. Seeds horizontal, black, 1.2–1.5 mm in diam.

Locality: Sha Tin, Tai Lung. *Y. S. Lau 960, 2156.*

Distribution: Widely distributed in China; temperate and tropical regions.

Ecology: Farmland and roadsides. Flowering: Jul.–Aug.; fruiting: Aug.–Sep.

Uses: Medicinal, noxious weed.

## 5. Spinacia L. 菠菜属

Annual or biennial herbs. Leaves alternate, petiolate, usually triangular-ovate or hastate. Flowers unisexual, dioecious; male ones in terminal leafless spikes or panicles; female ones in axillary clusters. Male flowers: perianth deeply 4–5-lobed; stamens as many as perianth-lobes, exserted, without disc and rudimentary ovary. Female flowers: without perianth; ovary subglobose, within 2 connated bracteoles; stigmas 4–5, filiform. Utricles compressed-globose, enclosed within hardened bracteoles, unarmed or with 2–3 dorsal spines; pericarp membranaceous, adnated with seed testa. Seeds erect, albumen floury.

About three species; one species cultivated in China; it also cultivated in Hong Kong.

**1. Spinacia oleracea** L. 菠菜 **(Fig. 109; Photo 280)**

Sp. Pl. 1027. 1753; FHN 1: 399. 1964; FGD 3: 68. 1995; FOC 5: 366. 2003.

Annual herb, up to 1 m tall; roots conical, often reddish. Stems erect, simple or branched. Leaves light green, tender and juicy, hastate or triangular-ovate, generally 5–15 × 5–10 cm, entire or dentately lobed. Male flowers arranged in interrupted

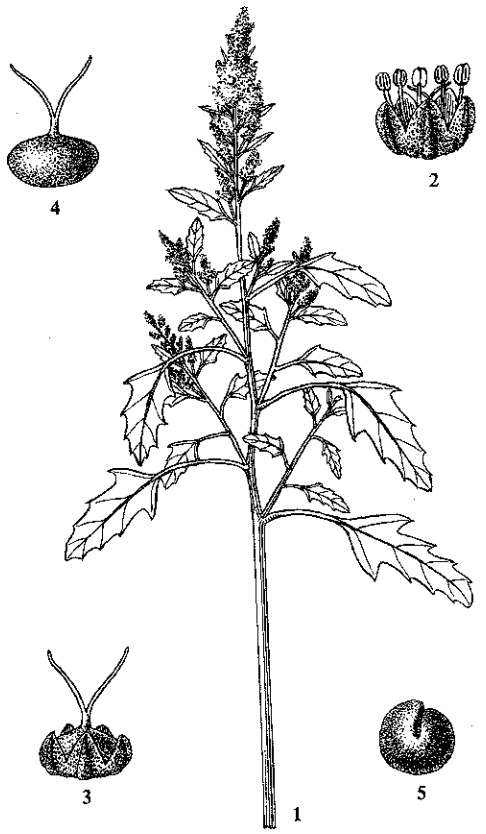



**Figure 108.** *Chenopodium ficifolium* Sm.
*1*. plant; *2*. bisexual flower; *3*. female flower; *4*. pistil; *5*. seed. (drawn by H. P. Yu)




**Figure 109.** *Spinacia oleracea* L.
*1*. plant; *2*. male inflorescence; *3*. male flower; *4*. female flower; *5*. utricle. (drawn by H. P. Yu)

spicate panicles; perianth-lobes 4. Female flowers in axillary clusters; bracteoles spinose abaxially; ovary globose; stigmas 4 or 5. Utricles brown, ovoid or subglobose 2.5 mm in diam.

Locality: Cultivated. *S. Y. Hu 6741, 6988* (CUHK).

Distribution: Cultivated in China; native to Iran.

Ecology: Farmland. Flowering & fruiting: May–Aug.

Uses: Vegetable.

### 6. Atriplex L. 濱藜屬

Herbs or shrubs, monoecious or dioecious, often with squarrose induments. Leaves alternate, or lower ones opposite, margin entire or toothed. Inflorescence a spike or panicle, or flowers solitary. Flowers unisexual. Male flowers: without bracts and bracteoles; perianth 3–5-lobed; stamens 3–5. Female flowers: solitary, subtended by 2-bracteoles; perianth absent or rarely present and then 3–5-lobed; ovary globose; stigmas 2. Utricles with membranaceous pericarp, enclosed by enlarged persistent bracteoles.

About 200 species distributed in temperate and subtropical regions of the world; 17 species in China; one species in Hong Kong.

**1. Atriplex maximowicziana** Makino

海濱藜 **(Fig. 110; Photo 281)**

Bot. Mag. (Tokyo) 10: 2. 1896; FOC 5: 365. 2003.

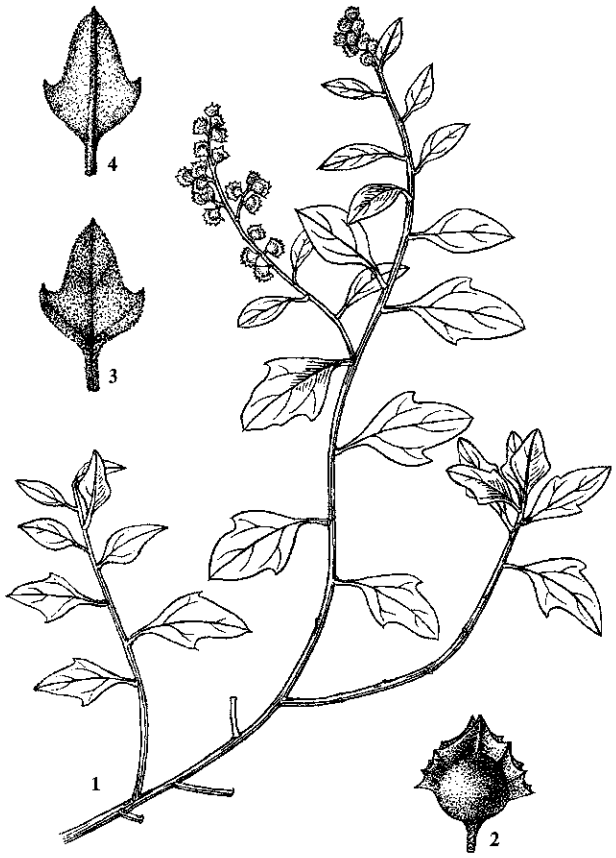



**Figure 110.** *Atriplex maximowicziana* Makino
*1*. plant; *2*. utricle; *3*. abaxial surface of leaf; *4*. adaxial surface of leaf. (drawn by H. P. Yu)

Perennial herb, monoecious. Stem 30–100 cm tall, densely farinose, many branched; branches ascending. Leaves alternate or lower ones subopposite, rhomboid-ovate or ovate-oblong, 2–3 × 1–2 cm, base cuneate, apex acute or obtuse and mucronate, margin slightly 3-lobed, densely farinose on both surfaces. Male flowers in ca. 1 cm long, terminal, densely packed spikes; perianth-lobes 5, obovate; stamens 5. Female flowers smaller, clustered into panicles. Utricles compressed-globose or biconvex, persistent bracteoles rhomboid-ovate, 6–9 mm, margin triangular-toothed, connate only at base. Seeds reddish brown, 2 mm in diam.

Locality: Tai O, Sha Chau. *HK sheet 36803; S. P. Lau 128.*

Distribution: Fujian, Guangdong; Japan (Ryukyu).

Ecology: Sandy beach. Flowering & fruiting: Jun.–Dec.

Notes: The species was reported as *A. nummularia* Lindl. previously (Check List HK Plants 64. 1993).

## 74. AMARANTHACEAE 莧科

HU Qi-ming 胡啟明

Annual or perennial herbs, rarely subshrubs or climbers. Leaves simple, alternate or opposite, without stipules. Flowers small, bisexual, or rarely unisexual, normally regular, solitary or in axillary dichasial cymes and arranged in spike-like or head-like, usually bracteate inflorescence. Perianth-segments 3–5, free or sometimes united at the base, usually scarious and colored. Stamens usually as many as perianth-segments and opposite them; filaments free or more often united at the base into a tube, sometimes with petaloid appendixes between the filaments. Ovary superior, comprising 2 or 3 fused carpels, 1-locular, with 1 to many ovules on a basal or free central placenta. Fruit an achene or a small nut, or a 1-seeded circumscissile capsule, rarely a berry, usually enclosed by the persistent perianth.

About 71 genera and 800 species, cosmopolitan, but mainly in tropical and warm regions of the world; 15 genera about 40 species in China; six genera with 16 species, including some cultivated ones, in Hong Kong.

1a. Leaves alternate, at least on the upper part of stem.
  2a. Flowers unisexual; filaments free ..... 1. *Amaranthus*
  2b. Flowers bisexual; filaments united at the base ..... 2. *Celosia*
1b. Leaves opposite.
  3a. Flowers 2 to several clustered in axils of bracts and accompanied with fascicled hooks ..... 3. *Cyathula*
  3b. Flowers solitary in axils of bracts, without hooks.
    4a. Anthers 2-celled; flowers in elongate racemes or spikes ..... 4. *Achyranthes*
    4b. Anthers 1-celled; flowers in heads or head-like spikes.

5a. Style simple, stigma capitate; perianth-segments without hairs ..... 5. *Alternanthera*
5b. Style 2-cleft; perianth-segments with long woolly hairs at the base ..... 6. *Gomphrena*

## 1. Amaranthus L. 莧屬

Annual herbs. Stems erect or decumbent. Leaves alternate, entire, petiolate. Flowers unisexual or polygamous, clustered, in axillary or terminal spikes or panicles; each flower subtended by a bract and 2 bracteoles. Perianth-segments 5, rarely 1–4, scarious. Stamens as many as perianth-segments; filaments free; anthers 2-celled, without staminodes. Ovary 1-locular, with a solitary ovule; style divided to the base into 2 or 3 stigmatic lobes. Utricle opening transversely or indehiscent.

About 50 species widely distributed over the warmer regions of the world; 14 species in China; four species in Hong Kong.

1a. Plants with axillary spines ..... 1. *A. spinosus*
1b. Plants without spines.
2a. Utricles opening transversely ..... 2. *A. tricolor*
2b. Utricles indehiscent or opening irregularly.
3a. Utricles (incl. apex) 1–1.5 mm, not or slightly longer than the perianth, strongly wrinkled ..... 3. *A. viridis*
3b. Utricles 1.5–3 mm, distinctly longer than the perianth, smooth or slightly wrinkled ..... 4. *A. blitum*

**1. Amaranthus spinosus** L. 刺莧 **(Fig. 111; Photo 282)**

Sp. Pl. 991. 1753; FHK 284. 1861; FKH 214. 1912; FHN 1: 404. 1964; FRPS 25(2): 210. 1979; FTW ed. 2, 2: 398, pl. 185, photo 155. 1996; FGD 4: 99. 2000; FOC 5: 419. 2003.

Annual herb, 30–100 cm tall. Stems erect, green or purplish. Leaves alternate, armed with 1 or 2 straight spines in each axil; petioles 1–8 cm; leaf blade ovate to ovate-lanceolate, 3–12 × 1–5.5 cm, base cuneate, apex obtuse, aristate, margin entire, glabrous or sparsely puberulent on veins when young. Flowers many, greenish, in dense axillary clusters, the upper ones forming long dense terminal spikes, either simple or paniculately branched. Female flowers always on the lower part of the spikes. Bracts and bracteoles ovate triangular, ca. 5 mm. Perianth-segments 5, oblong, ca. 1.5 mm. Stigmas 2–3. Utricles oblong, 1–1.2 mm, opening transversely.

Locality: Common in Hong Kong. Naturalized. *L. Gibbs 7752; Y. S. Lau 2166, 3084.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Henan, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian. A common weed of the tropics, subtropics and warm temperate regions; probably originated from neotropics.

Ecology: Wastelands, roadsides and cultivated fields. Flowering & fruiting: Jul.–Dec.

Uses: Food (vegetable), medicinal (folklore).




**Figure 111.** *Amaranthus spinosus* L.
*1*. flowering branch; *2*. bracteole; *3*. male flower; *4*. female flower; *5*. pistil. (drawn by Y. X. Liu)

**2. Amaranthus tricolor** L. 莧菜 **(Photo 283)**

Sp. Pl. 989. 1753; FHN 1: 404. 1964; FRPS 25(2): 212. 1979; FGD 4: 100. 2000; FOC 5: 420. 2003.

Annual herb, 30–150 cm tall. Stems erect, green or purplish, glabrous or puberulous when young. Leaves alternate; petioles 2–6 cm; leaf blade ovate to rhombic-ovate or ovate-triangular, 4–10 × 2–7 cm, base broadly cuneate, apex obtuse or emarginate with mucro at the tip, margin entire or obscurely undulate, glabrous on both surfaces. Flowers many, greenish, in dense axillary clusters, the upper ones forming long dense terminal spikes or panicles. Male and female flowers mixed on the rachis. Bracts and bracteoles ovate-lanceolate, 2.5–3 mm, aristate. Perianth-segments 3, oblong, 3–5 mm. Stigmas 3. Utricles oblong-ovoid, 2–2.5 mm, opening transversely.

Locality: Cultivated. *S. T. Dunn 9313; Y. S. Lau 3128.*

Distribution: Widely cultivated and naturalized in tropics, probably originated from tropical Asia.

Ecology: Sometimes escaped from cultivation, in wastelands. Flowering & fruiting: May–Sep.

Uses: Food (vegetable), ornamental.

**3. Amaranthus viridis** L. 綠莧(野莧) **(Photo 284)**

Sp. Pl. ed. 2, 1405. 1763; FHK 284. 1861; FKH 214. 1912; FHN 1: 405, fig. 216. 1964; FRPS 25(2): 216, pl. 47: 5–8. 1979; FTW ed. 2, 2: 400, pl. 186. 1996; FGD 4: 100. 2000; FOC 5: 420. 2003.

Annual herb, 20–60 cm tall, glabrous throughout. Stems erect, green or purplish, branched on the upper part. Leaves alternate; petioles 3–6 cm; leaf blade ovate to rhombic-ovate, 3–9 × 2.5–6 cm, base broadly cuneate or subtruncate, apex obtuse or emarginate, margin entire or obscurely undulate, glabrous on both surfaces. Flowers many, greenish, in dense clusters, the upper ones forming long dense terminal panicles. Bracts and bracteoles lanceolate, less than 1 mm. Perianth-segments 3(–4), oblong, ca. 1.5 mm. Stigmas 3. Utricles subglobose, 1–1.5 mm, not or slightly longer than perianth, strongly wrinkled, indehiscent or bursts irregularly.

Locality: Common in Hong Kong. *Y. S. Lau 2148; Y. W. Lam 951.*

Distribution: A pantropical weed, adventive to warm temperate regions.

Ecology: Wastelands, roadsides near villages. Flowering & fruiting: Jun.–Oct.

Uses: Food (vegetable).

**4. Amaranthus blitum** L. 凹頭莧

Sp. Pl. 990. 1753; FKH 214. 1912; FOC 5: 421. 2003.

*Amaranthus lividus* L., Sp. Pl. 990. 1753; FRPS 25(2): 217. 1979; FGD 4: 101. 2000.

Annual herb, 10–30 cm tall. Stems decumbent or ascending, green or purplish, branched from the base. Leaves alternate; petioles 1–4 cm; leaf blade ovate to rhombic-ovate, 1.5–4.5 × 1–3 cm, base broadly cuneate, apex retuse, with a mucro in the sinus, margin entire or obscurely undulate, glabrous on both surfaces. Flowers many, greenish, in dense axillary clusters, the upper ones forming long dense terminal spikes or panicles. Bracts and bracteoles ovate, less than 1 mm. Perianth-segments 3, oblong, 1–1.5 mm; stigmas 2 or 3. Utricles ovoid, 1.5–3 mm, distinctly longer than perianth, smooth or slightly wrinkled.

Locality: Ping Shan. *Y. W. Lam 372, 1349.*

Distribution: Widely distributed in China, except NW dry regions. A pantropical weed, adventive to warm temperate regions.

Ecology: Wastelands, roadsides. Flowering & fruiting: Feb.–Sep.

Uses: Food (vegetable).

## 2. Celosia L. 青葙屬

Annual or perennial herbs, rarely shrubby. Leaves alternate, petiolate. Flowers bisexual, in terminal spikes, simple, or branched and forming panicles. Bracts and bracteoles chaffy, persistent. Perianth-segments 5, nearly equal, scarious and glabrous. Stamens 5; filaments united at the base into a cup; anthers 2-celled; staminodes absent. Ovary 1-locular, with several ovules; style single, with a capitate or minutely 2-lobed stigma. Utricle opening transversely.

About 50 species dispersed over the World, especially in tropical and warm regions; three species (one endemic) in China; one species and one commonly cultivated variety in Hong Kong.

1a. Inflorescence cylindrical, not branched; sepals white or pink ..... 1. *C. argentea*

1b. Inflorescence strongly flattened or much branched, cristate or feathered; sepals variously coloured ..... 1a. *C. argentea* var. *cristata*

**1. Celosia argentea** L. 青葙(野雞冠) **(Fig. 112; Photo 285)**

Sp. Pl. 205. 1753; FHK 284. 1861; FKH 213. 1912; FHN 1: 402. 1964; FTW ed. 2, 2: 400, pl. 187. 1996; FRPS 25(2): 200, pl. 44: 1–4. 1996; FGD 4: 102. 2000; FOC 5: 416. 2003.

Annual herb, 30–100 cm tall, glabrous throughout. Stems erect, angled, young shoots purplish. Leaves alternate; petioles 2–15 mm; leaf blade lanceolate to elliptic-lanceolate, 5–8 × 1–3 cm, gradually narrowed to both ends, margin entire or very minutely serrulate. Spikes terminal, 3–10 cm, densely flowered; bracts and bracteoles lanceolate, 3–5 mm, white, scarious. Perianth-segments oblong-lanceolate, 6–8 mm, pink, with white and scarious margins. Stamens 5; filaments and anthers pink or purplish; style 3–5 mm, minutely 2-lobed. Utricles ovoid, 3–3.5 mm, enclosed in the persistent perianth.

Locality: Kowloon, Sha Tin, Fanling, Sheung Shui, Lantau Island. *W. J. Tutcher 11720; Y. S. Lau 1157, 2192.*

Distribution: A pantropical weed, dispersed over most parts of China.

Ecology: Wastelands, roadsides near villages. Flowering & fruiting: Jul.–Nov.

Uses: Medicinal, animal food.

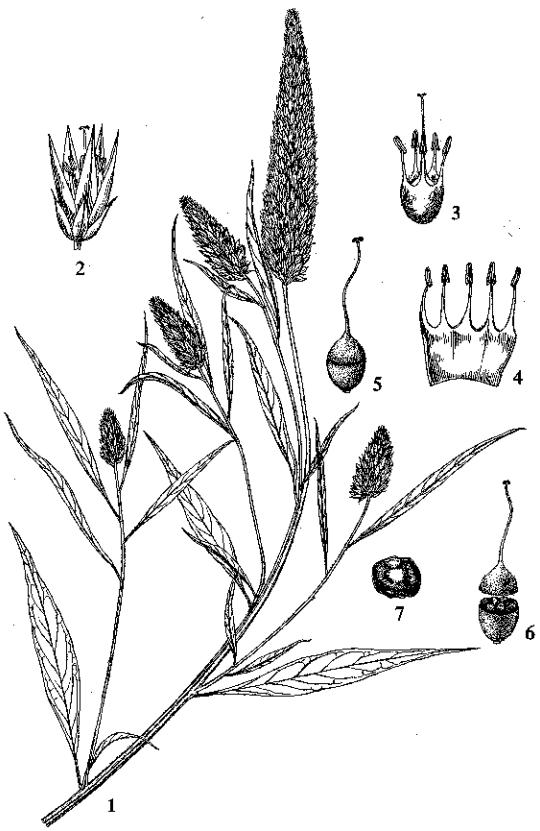



**Figure 112.** *Celosia argentea* L.

*1.* flowering branch; *2.* flower; *3.* stamens and ovary; *4.* stamens; *5–6.* fruit; *7.* seed. (drawn by Y. X. Liu)

**1a. Celosia argentea** L. var. **cristata** (L.) Kuntze 雞冠花 **(Photo 286)**

Revis. Gen. Pl. 2: 541. 1891; FHN 1: 403. 1964; FGD 4: 103. 2000.

*Celosia cristata* L., Sp. Pl. 205. 1753; FHN 1: 403. 1964; FTW ed. 2, 2: 403. 1996; FRPS 25(2): 201. 1979; FOC 5: 416. 2003.

This variety is a tetraploid cultigen derived from *Celosia argentea*. Leaves ovate, ovate-lanceolate or lanceolate, 6–15 × 1.5–6 cm. Spikes terminal, the main axis strongly flattened or much branched, cristate or feathered, or with plumy slender spikes and panicles; bracts, bracteoles and perianth variously colored, ranging from white to orange, red to purple.

Locality: Cultivated. *HK sheet 23009, 23010.*

Distribution: Cultivated worldwide.

Ecology: Cultivated in flowering beds or as a pot plant. Flowering & fruiting: Jul.–Oct.

Uses: Ornamental.

## 3. Cyathula Blume 杯苋屬

Herbs or subshrubs. Leaves opposite, without stipules. Flowers in clusters, forming terminal racemes or heads; the flower-cluster consisting of 1–3 perfect flowers and on each side a cluster of stiff hooked bristles. Perianth-segments 5, scarious, pilose. Stamens 5; filaments united at the base into a cup, with as many small staminodes between the filaments; anthers 2-celled. Ovary 1-locular; style simple, with a capitate stigma. Utricles indehiscent, 1-seeded.

About 20 species widely distributed in tropical regions of the world; four species in China; one species in Hong Kong.

**1. Cyathula prostrata** (L.) Blume 杯苋 **(Fig. 113)**

Bijdr. 549. 1825; FHK 285. 1861; FKH 214. 1912; FHN 1: 405. 1964; FTW ed. 2, 2: 403, pl. 188. 1996; FRPS 25(2): 218. 1979; FGD 4: 104, fig, 65. 2000; FOC 5: 421. 2003.

*Achyranthes prostrata* L., Sp. Pl. ed. 2, 296. 1762.

Perennial herb, pubescent throughout. Stems prostrate, usually purplish, rooting at nodes; flowering branches ascending or erect, 15–50 cm tall. Leaves opposite; petioles 2–3 mm; leaf blade obovate to obovate-elliptic, 1–6(–8) × 0.5–3 cm, base broadly cuneate, apex obtuse or abruptly acute, margin entire. Racemes terminal, 5–20 cm; flower-clusters reflexed, 3–8 mm spaced on rachis, consisting of 2–3 perfect flowers and 2–3 cluster of purplish hooked bristles. Perianth segments 5, oblong, ca. 5 mm, densely white pubescent outside. Stamens 5; staminodes apex truncate or slightly 2-toothed. Utricles globose, ca. 5 mm in diam., indehiscent.

Locality: Aberdeen, Sai Kung, Tai Po, Lam Tsuen. *Y. S. Lau 1343; Y. W. Lam 2187; HK sheet 4539.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; Indochina, Indian subcontinent, tropical Africa, Australia.

Ecology: Wastelands, roadsides near villages, also in bushes in valleys or by streams. Flowering & fruiting: Jun.–Nov.

Uses: Medicinal (folklore).

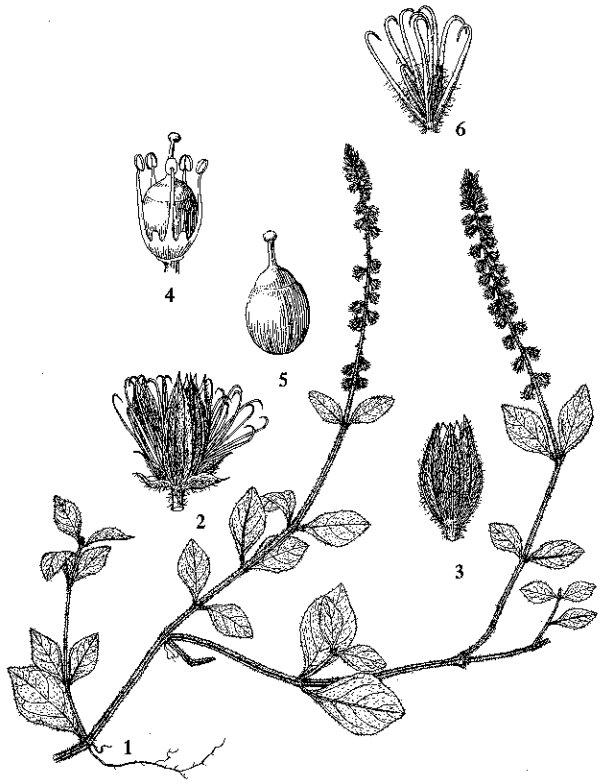



**Figure 113.** *Cyathula prostrata* (L.) Blume

*1*. flowering branch; *2*. flower cluster; *3*. flower; *4*. stamens and ovary; *5*. pistil; *6*. flower and hooker bristles. (drawn by Y. X. Liu)

## 4. Achyranthes L. 牛膝屬

Perennial herbs, rarely subshrubs. Stems decussately branched, with tumid nodes. Leaves opposite, without stipules. Flowers bisexual, in terminal or axillary spikes. Perianth-segments 4–5, slightly unequal, usually glabrous, terminating gradually in a hard sharp point, hardened after flowering, with 1 subulate almost spinous bracteole on each side. Stamens 5; filaments united at the base into a cup, with as many small scale-like staminodes between the filaments; anthers 2-celled. Ovary 1-locular; style simple, with a capitate stigma. Utricles indehiscent, 1-seeded, falling with the persistent perianth and bracteoles.

About six species in tropical and subtropical regions, especially in the Old World; three species in China; two species in Hong Kong.

1a. Bracteoles ovate, entire; staminodes apex fimbriate ..... 1. *A. aspera*

1b. Bracteoles with 2 minute basal auricles; staminodes apex truncate ..... 2. *A. bidentata*

**1. Achyranthes aspera** L. 土牛膝 **(Fig. 114; Photo 287)**

Sp. Pl. 204. 1753; FHK 285. 1861; FKH 214. 1912; FHN 1: 407. 1964; FRPS 25(2): 227. 1979; FGD 4: 108. 2000; FOC 5: 424. 2003.

Perennial herb, 50–120 cm tall, greyish pubescent throughout. Stems quadrangular, woody at the base. Leaves papery; petioles 5–15 mm; leaf blade ovate, obovate or oblong-elliptic, 4–10 × 1.5–6 cm, base cuneate, apex obtuse or acute, margin entire. Spikes terminal or axillary, 10–30 cm. Flowers green, reflexed after anthesis. Bracteoles subulate and spiny, 2.5–3.5 mm, base ovate, membranous, not lobed. Perianth-segments 5, lanceolate, 4.5–5 mm, with a hard and sharp point. Stamens 5; filaments united at the base; staminodes apex fimbriate. Utricle ellipsoid, enclosed in the persistent perianth.

Locality: Common in Hong Kong. *L. Gibbs 10192; Y. S. Lau 1505; HK sheet 36017.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Jiangxi, Fujian, Taiwan; SW to SE Asia; naturalized elsewhere.

Ecology: Wastelands and grassy places near villages. Flowering & fruiting: Jun.–Nov.

Uses: Medicinal (folklore).




**Figure 114.** *Achyranthes aspera* L.
*1.* flowering branch; *2.* bracteole; *3.* flower with bracteoles; *4.* flower with perianth removed; *5.* stamens and staminodes; *6.* pistil. (drawn by Y. X. Liu)

**2. Achyranthes bidentata** Blume 牛膝

Bijdr. 545. 1825; FKH 214. 1912; FHN 1: 408, fig. 218. 1964; FRPS 25(2): 228. 1979; FTW ed. 2, 2: 391. 1996; FGD 4: 108, fig, 68. 2000; FOC 5: 425. 2003.

Perennial herb, 25–120 cm tall. Stems angled or quadrangular; branches initially pubescent, glabrous in age. Leaves papery; petioles 5–30 mm, pubescent; leaf blade ovate, elliptic or elliptic-lanceolate, rarely oblanceolate, 4.5–13 × 2.5–5 cm, base cuneate to broadly cuneate, apex shortly acuminate, margin entire, pubescent on both surfaces. Spikes terminal or axillary, 3–5 cm; rachis densely pubescent. Flowers green, spreading or reflexed after anthesis. Bracteoles subulate and spiny, 2.5–3 mm, with 2 minute basal auricles. Perianth-segments 5, lanceolate, 3–5 mm, with a hard and sharp point. Stamens 5; filaments united at the base; staminodes apex truncate. Utricle ellipsoid, enclosed in the persistent perianth.

Locality: Tai Mo Shan, Ng Tung Chai. *HK sheet 31567.*

Distribution: Most provinces of China; E Asia, Indochina, Indian Subcontinent, Malesia, W tropical Africa, S W Pacific.

Ecology: Wastelands, bushes and woodlands near villages. Flowering & fruiting: Jun.–Dec.

Uses: Traditional Chinese medicine.

## 5. Alternanthera Forrsk. 蓮子草屬

Annual or perennial herbs. Stems prostrate, ascending or erect. Leaves opposite, entire. Flowers bisexual, in axillary or terminal clusters or head-like spikes. Bracts and bracteoles scarious. Perianth-segments 5, nearly equal, scarious. Stamens 5 or sometimes fewer, very shortly united at base; anthers 1-celled; staminodes entire, toothed or fimbriate. Ovary with a solitary ovule; style very short, with a capitate stigma. Utricle usually flattened, ovate or obcordate, indehiscent.

About 80 species widely spread over the tropical and subtropical regions of the world; six species (five introduced) in China and Hong Kong.

1a. Inflorescence long-peduncled.
  2a. Plant erect; stems and leaves dark purple ..... 1. *A. dentata* f. *rubiginosa*
  2b. Plant prostrate at base; stems and leaves green ..... 2. *A. philoxeroides*
1b. Inflorescence sessile.
  3a. Bracts and the 2 outer perianth-segments pungent at apex ..... 3. *A. pungens*
  3b. Bracts and perianth-segments not pungent at apex.
    4a. Leaves purplish or green, with white-yellow to red blotches ..... 4. *A. bettzickiana*
    4b. Leaves green, concolor.
      5a. Stamens 5; branches white-pubescent or glabrescent ..... 5. *A. paronychioides*
      5b. Stamens 3; branches with a line of short hairs on one side ..... 6. *A. sessilis*

**1. Alternanthera dentata** (Moench) Stuchl. ex R. E. Fr. f. **rubiginosa** Suess. 紅莖莧

Repert. Spec. Nov. 35: 299. 1934.

*Alternanthera dentata* (Moench) Stuchl. ex R. F. Fr. cv. Rubiginosa

Short-lived perennial herb, 30–160 cm tall, all parts dark purple except inflorescence. Stems obtusely quadrangular, ± swollen at nodes, sparsely pubescent. Leaves opposite; petioles 5–20 mm; leaf blade ovate elliptic to elliptic lanceolate, 3–6 × 1.5–3 cm, base attenuate, apex short-acuminate or acute, margin entire, sparsely strigillose on adaxial surface and on veins of abaxial surface. Flowers in axillary and terminal subglobose heads of 6–9 mm in diam.; peduncles 3–15 mm; bracts and perianth scarious, white to greenish; stamens usually 5, equaling to the perianth.

Locality: Cultivated in gardens.

Distribution: West Indies to Brazil. Widely cultivated in tropic and subtropical areas.

Ecology: Flowering and fruiting: Sep.–Mar. of the following year.

Uses: Ornanmental.

**2. Alternanthera philoxeroides** (Mart.) Griseb.
空心莧(空心蓮子草) **(Fig. 115; Photo 288)**

Abh. Konigl. Ges. Wiss. Gottingen 24: 36. 1879; FRPS 25(2): 236. 1979; FTW ed. 2, 2: 395. 1996; FGD 4: 112. 2000; FOC 5: 427. 2003.

*Bucholzia philoxeroides* Mart., Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 13(1): 107. 1825.

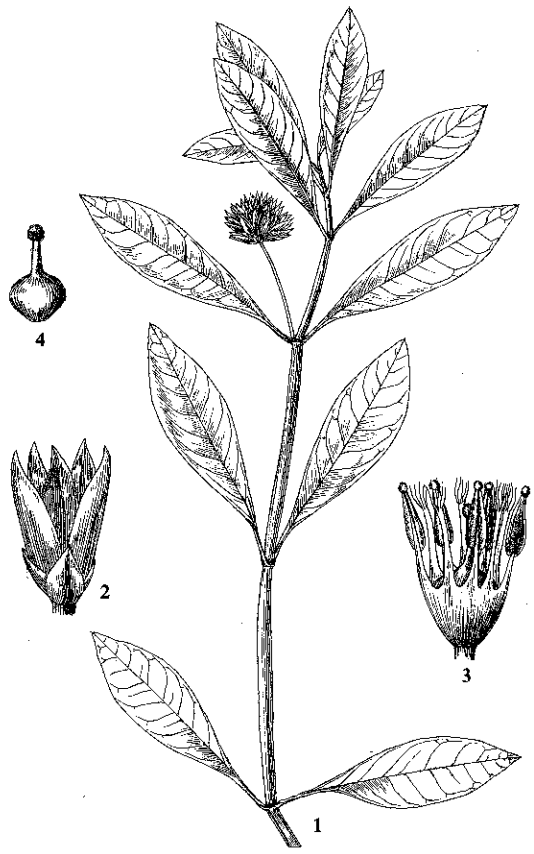



**Figure 115.** *Alternanthera philoxeroides* (Mart.) Griseb. *1*. flowering branch; *2*. flower; *3*. flower with perianth removed; *4*. pistil. (drawn by Y. X. Liu)

Perennial herb. Stems ascending from the prostrate base, 50–120 cm or longer, obscurely quadrangular, with a line of short hairs in the groove on both sides. Leaves papery; petiole 3–5 mm; leaf blade oblong-oblanceolate, to narrowly obovate, 2.5–5 × 1–2 cm, apex acute or obtuse, gradually narrowed to the base, margin entire, glabrous or with appressed hairs on adaxial surfaces. Flowers in axillary, peduncled clusters of 1–1.5 cm in diam. Peduncles 1–2(–3) cm, sparsely pubescent. Bracts ovate; bracteoles lanceolate, both about 2 mm, white and scarious. Perianth-segments 5, oblong, 4–5(–6) mm, apex acute, white, scarious and shining. Stamens usually 5, alternating with linear-oblong staminodes. Ovary pyriform.

Locality: Common in Hong Kong. Naturalized. *Y. S. Lau 2719; L. T. Lo 506.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian (naturalized). Native to S America; naturalized in N America, tropical Asia, and Australia.

Ecology: Wet places on roadsides and cultivated fields or wastelands. Flowering: May–Oct.

**3. Alternanthera pungens** Kunth 刺花蓮子草

Nov. Gen. Sp. (quarto ed.) 2: 206. 1817; FRPS 25(2): 234. 1979; K. Larsen, Fl. Thailand, 5(4): 403. 1992; FOC 5: 427. 2003.

*Alternanthera repens* (L.) Link, Enum. Hort. Berol. Alt. 1: 154. 1821.

*Achyranthes repens* L., Sp. Pl. 205. 1753.

Annual herb. Stems prostrate, 20–30 cm or longer, densely white-strigose. Leaves papery; petiole 3–5 mm, glabrous or hairy; leaf blade ovate, obovate or oblong-obovate, 1–2.5 × 0.5–1.5 cm, base cuneate, apex rounded, margin entire, glabrous or sparsely pubescent with appressed hairs on both surfaces. Flowers in axillary, sessile clusters; flower-clusters globose to oblong-ovoid, 0.5–1 cm. Bracts lanceolate, ca. 4 mm, strongly spinescent. Bracteoles lanceolate, 3–4 mm, apex acuminate or acute. Perianth-segments 5, the outer 2 navicular, ca. 5 mm, apex pungent, with tuft of hairs near base, middle one oblong-elliptic, 3–3.5 mm, acute, inner 2 smaller, embracing ovary, with dorsal hair-tuft, scarious. Stamens 5, with intervening teeth (staminodes). Ovary compressed globose; style very short. Utricle compressed ovoid, 1–1.5 mm.

Locality: The New Territories. Exotic. *Y. S. Lau 3315.*

Distribution: Guangdong, Fujian (naturalized). Native to Brazil; naturalized elsewhere.

Ecology: Wastelands, roadsides. Flowering & fruiting: May–Oct.

**4. Alternanthera bettzickiana** (Regel) G. Nicholson 錦繡莧(紅草)

Ill. Gard. Dict. 1: 59. 1884; FRPS 25(2): 237. 1979; FTW ed. 2, 2: 395. 1996; FGD 4: 111. 2000; FOC 5: 427. 2003.

*Telanthera bettzickiana* Regel, Ind. Sem. Hort. Petrop. 28. 1862, et Gartenflora 11: 178. 1862.

Perennial herb, 20–50 cm tall. Stems erect or prostrate at base, much branched, young shoots pubescent. Leaves papery; petiole 1–4 cm; leaf blade rhombic, elliptic to narrowly spatulate, 1–8 × 0.5–2.5 cm, apex obtuse or acute, gradually tapering to the base, sparsely pubescent on both surfaces when young, later glabrescent, purplish or green, with white-yellow to red blotches. Flowers in

terminal and axillary, sessile heads. Bracts and bracteoles ovate-lanceolate, 1.5–3 mm. Perianth-segments 5, unequal, the outer 3 longer, pubescent. Stamens 5; anthers linear oblong. Ovary glabrous, with a short style and capitate stigma.

Locality: Cultivated. *Y. S. Lau 1557, 2176.*

Distribution: Widely cultivated in tropics; possibly originated from Brazil.

Ecology: Flowering: Oct.–Nov.

Uses: Ornamental.

**5. Alternanthera paronychioides** A. St.-Hil. 星星蝦鉗菜 **(Photos 289–290)**

Voy. Distr. Diam. 2: 439. 1833; FTW ed. 2, 2: 395. 1996; FGD 4: 112. 2000; FOC 5: 427. 2003.

Annual or perennial herb. Stems tufted, prostrate, 30–50 cm or longer, young shoots white-pubescent, glabrescent. Leaves opposite; petioles 0.5–1.5 cm; leaf blade elliptic, ovate or obovate, 1–3 × 0.4–1 cm, apex obtuse or acute, gradually narrowed to the base, margin entire, adaxially glabrous, sparsely pubescent on abaxial surface. Flowers in axillary, sessile clusters; flower-clusters globose, ovoid, ca. 1 cm in diam. Bracteoles ovate-oblong, ca. 2 mm, white and scarious 1–1.5 mm. Perianth -segments 5, nearly equal, oblong-lanceolate, ca. 4 mm, scarious, apex acute and mucronate, 3-nerved and sparsely pubescent on the lower part. Stamens 5, very short, with intervening teeth or appendages (staminodes). Utricle obcordate, laterally compressed, ca. 1.5 mm long.

Locality: Mai Po, Tai Shan Wai. Exotic. *P. S. Choi 526; Y. W. Lam 736.*

Distribution: Hainan, Guangdong (naturalized). Native to tropical America, widely dispersed over most tropical regions.

Ecology: Wastelands, roadsides. Flowering: Mar.–Sep.

**6. Alternanthera sessilis** (L.) DC. 蝦鉗菜(蓮子草) **(Photo 291)**

Cat. Pl. Horti Monsp. 77. 1813; FHK 286. 1861; FKH 214. 1912; FHN 1: 409. 1964; FRPS 25(2): 234. 1979; FTW ed. 2, 2: 396, pl. 184, Photo 154. 1996; FGD 4: 111. 2000; FOC 5: 427. 2003.

*Gomphrena sesselis* L., Sp. Pl. 225. 1753.

*Alternanthera nodiflora* R. Brown, Prodr. 1: 417. 1810; FKH 214. 1912; FGD 4: 111. 2000.

Perennial herb. Stems prostrate, 15–50 cm or longer, with a line of short hairs on one side. Leaves subsessile; leaf blade variable in shape and size, linear lanceolate, oblong-elliptic to oblong obovate, 1–8 × 0.2–2 cm, apex rounded, obtuse or acute, gradually narrowed to the base, margin entire, glabrous on both surfaces. Flowers in axillary, sessile clusters, surrounded by a few short woolly hairs; flower-clusters initially globose, afterwards elongate and cylindric, to 1–1.5 cm. Bracts and bracteoles ovate, white and scarious 1–1.5 mm. Perianth-segments 5, oblong-lanceolate, 1.5–2 mm, scarious, apex acute, but not pungent. Stamens 3, very short. Utricle obcordate, laterally compressed, falling with the perianth.

Locality: Common in Hong Kong. *HK sheet 4547; Y. S. Lau 399; H. C. Tang 2017.*

Distribution: A common weed widely distributed throughout tropics and subtropics.

Ecology: Roadsides, wastelands and cultivated fields. Flowering & fruiting: May–Dec.

Uses: Medicinal (folklore), animal food.

## 6. Gomphrena L. 千日紅屬

Annual or perennial herbs, rarely shrubby. Leaves opposite, entire. Flowers bisexual, in dense chaffy heads or short spikes. Bracts and bracteoles usually colored, glabrous. Perianth-segments 5, erect, pilose at base or glabrous. Stamens 5; filaments almost entirely united into a long 5-lobed tube; the lobes emarginated or bifid; anthers 1-celled, borne on the lobes or in the sinus of the lobes. Ovary 1-locular; style short, 2 branched. Utricles subglobose or ellipsoid, 1-seeded, indehiscent.

About 100 species mostly in the New World tropics; two species (one cultivated) in China and Hong Kong.

1a. Inflorescence initially globose, gradually elongating into a spike of 2–4 cm long; flowers white ..... 1. *G. celosioides*

1b. Inflorescence a dense globular head, 2–3 cm in diam.; flowers purplish red, rarely white ..... 2. *G. globosa*

**1. Gomphrena celosioides** C. Martius 銀花莧(野千日紅) **(Photo 292)**

Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 13(1): 301. 1825; FHN 1: 410. 1964; FRPS 25(2): 239. 1979; FTW ed. 2, 2: 407. 1996; FGD 4: 113. 2000; FOC 5: 428. 2003.

Annual herb, 10–35 cm tall. Stems erect or ascending, white-pilose. Leaves papery, shortly petiolate or subsessile; leaf blade oblong to somewhat spathulate, 3–4.5 × 0.5–1.5 cm, base attenuate, apex acute or obtuse, margin entire and ciliate, adaxially ± with appressed hairs or glabrous, abaxially pubescent. Inflorescence a terminal head, initially globose, afterwards elongate into a short spike, to 2–4 cm. Bracteoles triangular lanceolate, ca. 6 mm, silvery white, winged dorsally. Perianth-segments lanceolate, ca. 5 mm, woolly outside; filament-tube slightly shorter than perianth-segments; style 2 branched. Utricles ellipsoid, enclosed by the woolly persistent perianth.

Locality: Harlech Road, Ngau Chi Wan, Sha Tin, Sai Kung, Sham Tseng, Lantau Island. *Y. S. Lau 400, 1641; H. C. Tang 2113.*

Distribution: Hainan, Guangdong, Taiwan (naturalized). Native to S America, widely naturalized in tropics.

Ecology: Roadsides, wastelands. Flowering & fruiting: Feb.–Sep.

**2. Gomphrena globosa** L. 千日紅 **(Photo 293)**

Sp. Pl. 224. 1753; FHN 1: 410. 1964; FRPS 25(2): 238. 1979; FGD 4: 113. 2000; FOC 5: 428. 2003.

Annual herb, 20–60 cm tall. Stems erect, covered with hoary long hairs. Leaves papery; petioles 0.5–1.5 cm, hairy; leaf blade oblong to elliptic or somewhat obovate, 3.5–13 ×1.5–5 cm, apex acute or obtuse, base attenuate, margin entire and ciliate, white-pilose on both surfaces. Inflorescence a dense globular head, 2–3 cm in diam., closely subtended by 2 broad leafy bracts. Bracteoles triangular lanceolate, ca. 1 cm, violate, red, yellowish or white in different garden races, winged dorsally. Perianth-segments lanceolate, 5–6 mm, woolly outside. Filament-tube as long as perianth-segments. Style 2 branched. Utricles subglobose, 2–2.5 mm in diam., enclosed by the woolly persistent perianth.

Locality: Cultivated. *L. T. Lo 640; Y. S. Lau 1011.*

Distribution: Widely cultivated throughout tropical and warm temperate regions, sometimes naturalized.

Ecology: Usually cultivated as a pot plant in Hong Kong. Flowering & fruiting: Feb.–Sep.

Uses: Ornamental.

# 75. PORTULACACEAE 馬齒莧科

HU Qi-ming 胡啟明

Annual or perennial herbs, rarely shrubby. Leaves simple, alternate or opposite, often succulent. Stipules scarious or bristle-like, rarely wanting. Flowers bisexual, actinomorphic, solitary, in clusters or forming racemes, cymes or panicles. Sepals 2, rarely 3–8, free or partially united at base. Petals 5 or rarely more, sometimes slightly united. Stamens equal in number and opposite to the petals, or more often indefinite. Ovary superior or half-inferior, 1-locular, with several ovules attached to free central or basal placenta; style single, with 2–8 stigmas or branches. Capsule opening by two or three valves or a lid.

About 22 genera and 400 species, with a wide geographical range over the greater part of the world, but especially well represented in S Africa and America; two genera and six species in China; two genera with three species in Hong Kong.

1a. Flowers solitary or clustered, ovary half-inferior; capsule opening by a lid ..... 1. *Portulaca*
1b. Flowers in a terminal panicle, ovary superior; capsule opening by valves ..... 2. *Talinum*

## 1. Portulaca L. 馬齒莧屬

Annual or perennial herbs, more or less succulent. Leaves alternate or sub-opposite, or crowded towards apex of stems in false whorls, terete or flat. Stipules scarious, or modified into tufts of hairs, rarely wanting. Flowers solitary, or in terminal clusters, usually surrounded by 4 or more leafy bracts. Sepals 2, connate at base, the free part caducous. Petals 4–5, free or united at base. Stamens 4 to many. Ovary half-inferior, 1-locular, with many ovules; styles 2 to many. Capsule opening transversely.

About 40 species, widely spread over tropical and warm regions of the world; five species (two endemic) in China; two species in Hong Kong.

1a. Leaves flat, obovate to spathulate; axillary hairs inconspicuous ..... 1. *P. oleracea*
1b. Leaves ± terete, linear to elliptic; axillary hairs conspicuous ..... 2. *P. pilosa*

**1. Portulaca oleracea** L. 馬齒莧 **(Fig. 116; Photo 294)**

Sp. Pl. 445. 1753; FHK 127. 1861; FKH 41. 1912; FHN 1: 384. 1964; FGD 2: 91. 1991; FTW ed. 2, 2: 336, photo 144. 1996; FRPS 26: 38. 1996; FOC 5: 443. 2003.

Annual succulent herb. Stems prostrate or spreading, 10–50 cm or longer, usually purplish, glabrous, with inconspicuous scales or minute hairs in axils of leaves. Leaves alternate or subopposite, subsessile; leaf blade flat, obovate to cuneate-oblong, 1–2.5(–4) × 0.5–2 cm, apex obtuse to rounded. Flowers yellow, solitary or in terminal clusters of 3–5, sessile above the leafy bracts. Sepals ca. 6 mm. Petals yellow, broadly obovate, fugacious and scarcely exceeding the sepals. Stamens 7–10(–15); styles mostly 5. Capsule ovoid, opening transversely.

Locality: Common in Hong Kong. *S. T. Dunn 1072, 4204; HK sheet 298.*

Distribution: Worldwide weed.

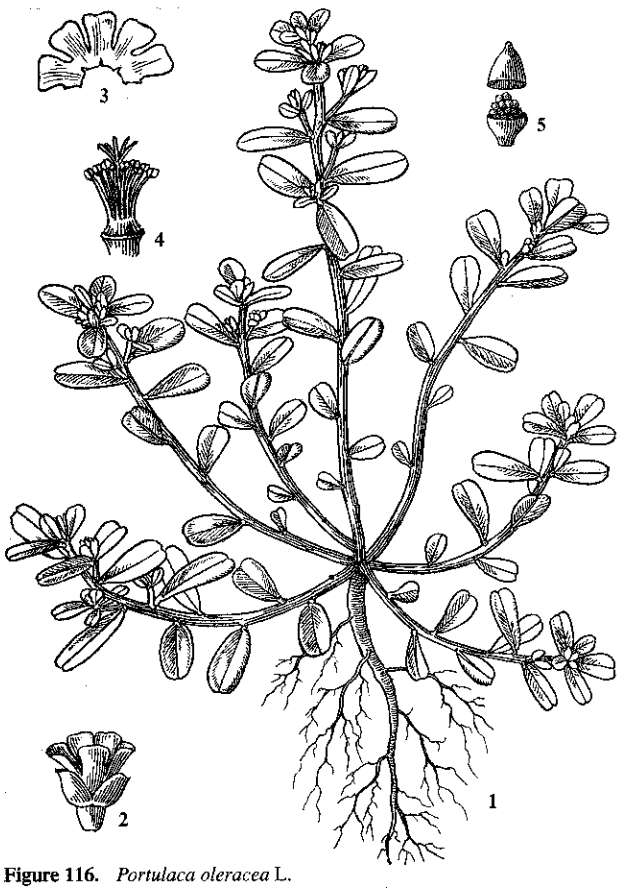



**Figure 116.** *Portulaca oleracea* L.
*1*. plant; *2*. flower; *3*. corolla opened up; *4*. stamens and pistil; *5*. fruit. (drawn by H. P. Yu)

Ecology: Cultivated grounds, waste places. Flowering: May–Aug.; fruiting: Jun.–Sep.
Uses: Food (vegetable), medicinal (folklore).

**2. Portulaca pilosa** L. 毛馬齒莧 **(Photo 295)**

Sp. Pl. 445. 1753; FHN 1: 384. 1964; FGD 2: 91. 1991; FTW ed. 2, 2: 336, photo 145. 1996; FRPS 26: 38. 1996; FOC 5: 442. 2003.

Annual succulent herb. Stems erect or ascending, 10–30 cm tall, with long hairs in axils of leaves. Leaves alternate, short petiolate; leaf blade ± terete, linear to elliptic, 0.4–2.8 × 0.1–0.4 cm, apex acute. Flowers yellow, solitary or in terminal clusters of 2–10, sessile, surrounded by 4–9 verticillate leaves and axillary hairs. Sepals oblong, 2–6 mm. Petals 4–6, obovate, 2.5–12 × 1.8–11 mm, red, pink or yellow. Stamens usually 20–30; style 3–7-lobed. Capsule ovoid or subglobose, opening transversely.

Locality: Shek O, Lan Nai Wan, Tseng Tau, Pui O, Cheung Chau, Waglan Island. *H. C. Tang 2097; K. L. Yip 4194; Y. S. Lau 1473.*
Distribution: Hainan, Guangdong, Guangxi, S Yunnan, Fujian, Taiwan; Malesia and tropical America.
Ecology: Sandy places near seashore. Flowering & fruiting: May–Aug.
Uses: Medicinal (folklore).

## 2. Talinum Adans. 土人參屬

Annual or perennial herbs or subshrubs, more or less succulent. Stems erect, glabrous. Leaves alternate or sub-opposite, flat, entire. Stipules none. Flowers small, in terminal panicles, racemes or cymes, rarely solitary and axillary. Sepals 2, free or connate at base, usually caducous. Petals 5, rarely more (8–10), red, often caducous. Stamens 5 to many (10–30), usually adherent to base of petals. Ovary superior, 1-locular; ovules many on a free central placenta; style usually 3-lobed. Capsule globose or ovoid, opening by 2–3 valves.

About 50 species mainly in N and C America; one species naturalized in S China and Hong Kong.

**1. Talinum paniculatum** (Jacq.) Gaertn.
土人參 **(Fig. 117; Photo 296)**

Fruct. Sem. Pl. 2: 219, t. 128. 1791; FGD 2: 92, fig. 64. 1991; FTW ed. 2, 2: 337, 1. 155. 1996; FRPS 26: 42, pl. 8: 6–11. 1996; FOC 5: 444. 2003.

Perennial herb, 30–70 cm tall, with thick roots, glabrous throughout. Stems erect, little branched. Leaves alternate or sub-opposite, short stalked or subsessile; leaf blade obovate, obovate-oblanceolate or elliptic, 4–12 × 2–4.5 cm, base cuneate, apex acute or shortly acuminate, margin entire. Inflorescence a terminal thyrse, to 18 cm, usually dichotomous. Pedicels 5–10 mm. Sepals 2, ovate, purplish red, 1–3 mm, caducous. Petals 5, pink to light purplish red, oblong obovate or elliptic, 6–12 mm. Stamens 10–20. Ovary globose, 1-locular; style 3-lobed. Capsule globose, ca. 3 mm in diam., opening by 3 valves.

Locality: Common in Hong Kong, cultivated or naturalized. *H. C. Tang 1953; HK sheet 36018.*
Distribution: Cultivated and sometimes naturalized in C & S China. Native to tropical America; naturalized elsewhere.
Ecology: Usually cultivated as a pot plant, sometimes escaped, growing on waste places. Flowering: Jun.–Aug.; fruiting: Sep.–Nov.
Uses: Medicinal (folklore), ornamental.

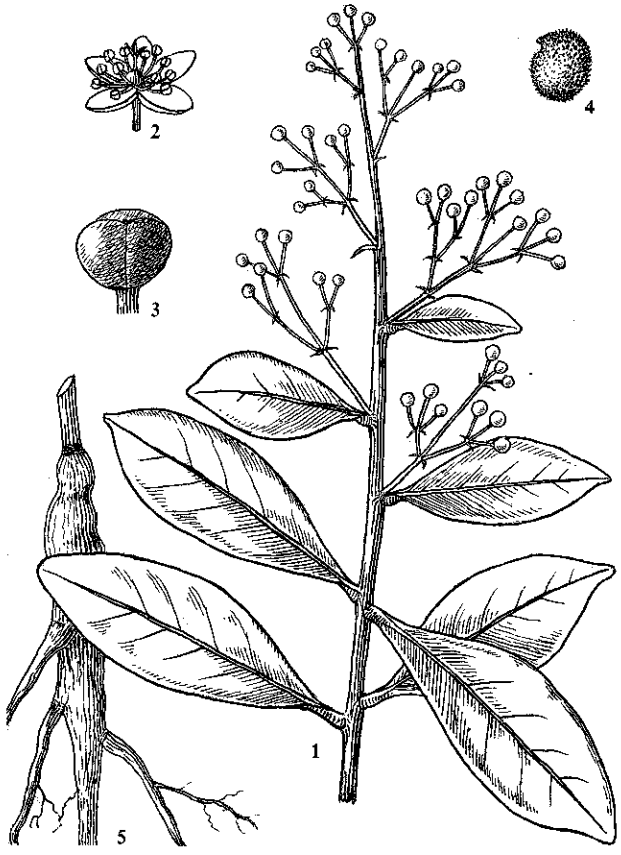



**Figure 117.** *Talinum paniculatum* (Jacq.) Gaertn
*1.* plant; *2.* flower; *3.* capsule; *4.* seed; *5.* root. (drawn by H. P. Yu)

# 76. BASELLACEAE 落葵科

HU Qi-ming 胡啟明

Herbaceous climbing vines, more or less fleshy, often with tuberous rootstocks. Leaves alternate, simple, entire, usually petioled, exstipulate. Flowers bisexual, rarely functionally unisexual, usually small, supported by a pair of bracts, arranged in spikes or racemes in axils of leaves. Perianth-segments 5, united or almost separate. Stamens 5, opposite the perianth-segments and adnate to its base. Ovary superior, 1-locular, with a solitary ovule; styles usually 3, with entire or cleft stigmas. Fruit a drupe, usually enclosed within the persistent fleshy perianth.

About four genera and 15 species in tropical and warm areas, especially in tropical America; two genera (introduced) in China, one in Hong Kong.

### 1. Basella L. 落葵屬

Twining fleshy vines. Leaves alternate, simple, entire. Spikes axillary or terminal, with deciduous bracteoles. Flowers small, sessile, clustered on elongated and thickened peduncles. Perianth-segmens 5, fleshy, united to middle or upper. Stamens 5; filaments erect in bud, base fused into a tube or disc and adnate to perianth-tube. Ovary globose, 1-locular; styles 3. Fruit subglobose, enclosed within persistent fleshy perianth.

About five species in tropical Africa and Asia; one species cultivated in China; it is also cultivated in Hong Kong.

**1. Basella alba** L. 落葵(潺菜) **(Fig. 118; Photo 297)**

Sp. Pl. 272. 1753; FTW ed. 2, 2: 340. 1996; FRPS 26: 44. 1996; FGD 4: 115, fig. 72. 2000; FOC 5: 445. 2003.

*Basella rubra* L., Sp. Pl. 272. 1753; FGZ 149, fig. 60. 1956; FHN 1: 411, fig. 221. 1964.

Perennial twining vine. Stems fleshy, glabrous, green or purplish. Leaves fleshy; petioles 1–3 cm; leaf blade ovate or suborbicular, 3–12 × 3–10 cm, base shallowly cordate or rounded, apex acute or shortly acuminate, margin entire. Spikes axillary, 4–20 cm. Flowers small, sessile, in small clusters. Perianth fleshy, lower part white, apex purple, with 5 obtuse lobes. Stamens 5, included; filaments erect in bud. Ovary globose; styles 3. Fruit subglobse, 5–7 mm in diam., enclosed within fleshy persistent perianth, dark purple when mature.

Locality: Cultivated. *P. S. Choi 495; Y. S. Lau 2846.*

Distribution: Pantropical. Widely cultivated in China, sometimes escaped from cultivation.

Ecology: Flowering: May–Sep.; fruiting: Jul.–Oct.

Uses: Food (vegetable), ornamental.

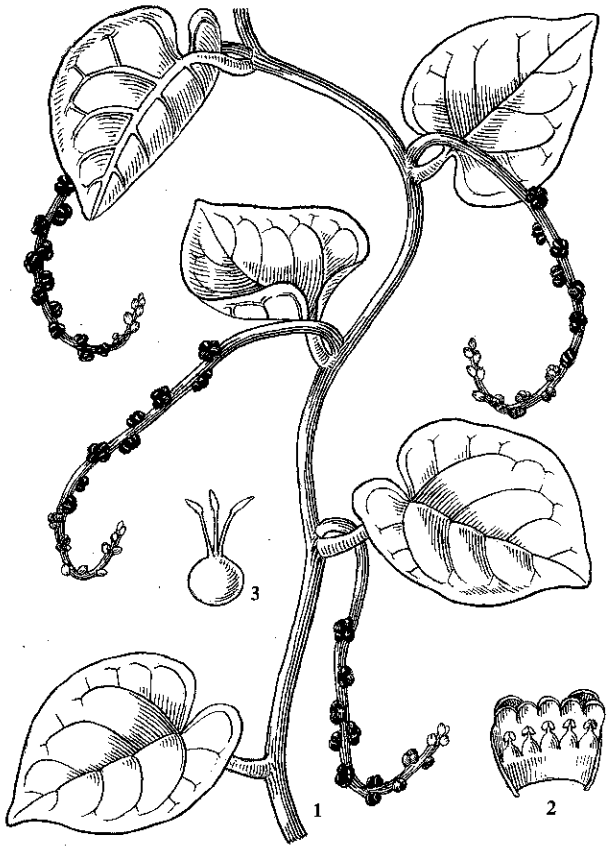



**Figure 118.** *Basella alba* L.
*1*. part of branch; *2*. perianth opened up showing stamens; *3*. pistil. (drawn by H. P. Yu)

## 77. MOLLUGINACEAE 粟米草科

HU Qi-ming 胡啟明

Annual or perennial herbs, rarely shrubby. Leaves simple, opposite, alternate or in false whorls. Flowers bisexual, or rarely unisexual, actinomorphic, in cymose inflorescence or solitary in axils of leaves. Sepals usually 5, free or connate at base, persistent. Petals 5, or more often wanting. Stamens (2–)5–10; filaments free or more or less connate at base; anthers 2-celled, opening by longitudinal slits. Gynoecium usually of 2–5 carpels united to form a compound, superior ovary with distinct styles and axile placentation. Fruit a capsule, opening loculicidally in valves.

About nine genera and 90 species dispersed over tropical and warm regions of both hemispheres; three genera and eight species in China; one genus with two species in Hong Kong.

### 1. Mollugo L. 粟米草屬

Annual herbs. Stems much branched, glabrous. Leaves subopposite or more often in false whorls, and in rosettes at base. Flowers small, in axillary umbellate-clusters, or in terminal or leaf-opposite cymes. Sepals 5, free, with scarious white margins. Petals none. Stamens usually 3, sometimes 4 or 5, rarely 6–7, alternating with the sepals. Carpels 3(–5), united, forming a superior ovary, with many ovules; styles 3, very short. Capsule opening by 3–5 valves.

About 20 species, mainly in tropical and subtropical regions; four species in China; two species in Hong Kong.

1a. Flowers in terminal dichotomous cymes; stem-leaves lanceolate to linear-lanceolate ..... 1. *M. stricta*
1b. Flowers in axillary umbellate-clusters; stem-leaves ± oblanceolate ..... 2. *M. verticillata*

**1. Mollugo stricta** L. 粟米草

Sp. Pl. 2: 131. 1762; FHK 23. 1861; FKH 114. 1912; FRPS 26: 28, pl. 6: 7. 1996; FTW ed. 2, 2: 326, pl. 151, photo 139. 1996; FOC 5: 439. 2003.

*Mollugo pentaphylla* auct. non L.: FHN 1: 382. 1964; FGD 2: 85. 1991.

Annual glabrous herb, 10–40 cm tall. Stems diffuse, much branched. Basal leaves rosulate, oblong-obovate 1.5–5 × 0.6–1 cm; stem-leaves opposite or in false whorls of 4–6; petioles 1–3 mm; leaf blade lanceolate to linear-lanceolate, rarely narrowly elliptic, 1.5–5

× 0.2–0.8 mm, base attenuate, apex acute or acuminate, margin entire. Flowers very small, in slender bifid racemes or dichotomous cymes, on slender peduncles. Pedicels filiform, 1–2.5 mm. Sepals 5, light green, with white edges. Petals none. Stamens 3–5; filaments dilated at base. Ovary 3-locular; styles 3, linear, very short. Capsule subglobose, opening by 3 valves; seeds tuberculate.

Locality: Mount Cameron, So Kong Po, Sha Tin. *Y. S. Lau 2284; HK sheet 36034.*

Distribution: Widely distributed in areas S of Qingling and Yellow River. Dispersed over tropical and subtropical regions of Asia.

Ecology: Wastelands, cultivated fields, sandy places near seashore.

**2. Mollugo verticillata** L. 種棱粟米草 **(Fig. 119)**

Sp. Pl. 89. 1753; FGD 2: 85. 1991; FRPS 26: 29. 1996; FTW ed. 2, 2: 328. 1996; FOC 5: 439. 2003.

Annual glabrous herb, 10–30 cm tall. Stems erect or ascending, much branched. Basal leaves rosulate, obovate or obovate-spathulate 1.5–5 × 0.6–1 cm; stem-leaves opposite or in false whorls of 3–8, subsessile; leaf blade oblanceolate to linear-oblanceolate, 1.5–2.5 × 0.15–0.5 mm, base narrowly cuneate or attenuate, apex acute or obtuse, margin entire. Flowers in umbellate-clusters of 3–5, on one side of nodes. Pedicels slender, 3–5 mm. Sepals 5, or rarely 4, oblong to ovate-oblong, 2.5–3 mm, whitish adaxially, with scarious edges. Petals none. Stamens 3, rarely 2, or 4–5; filaments slightly dilated at base. Ovary 3-locular; styles 3. Capsule ellipsoid or subglobose, opening by 3 valves; seeds smooth and shining.

Locality: Pak Nai, Castle Peak. *Y. W. Lam 1513; HK sheet 32383.*

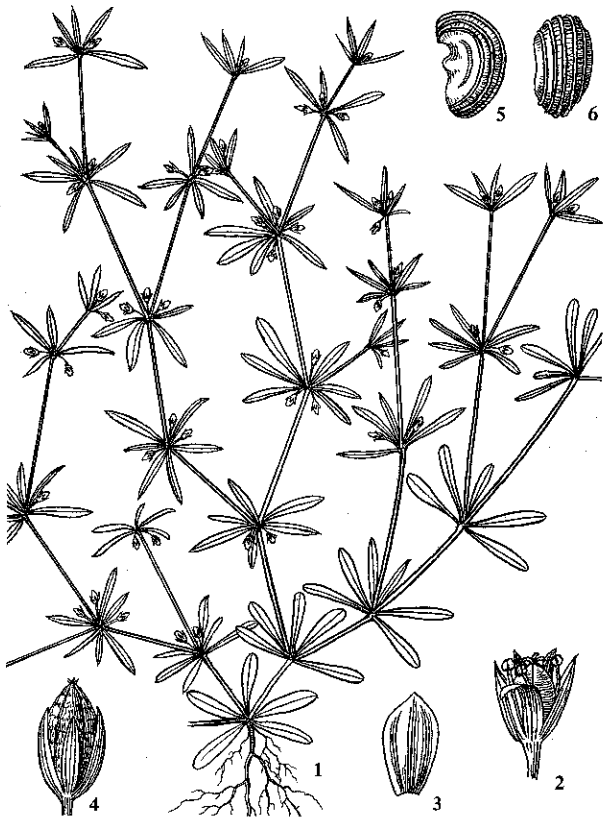



**Figure 119.** *Mollugo verticillata* L.
*1.* plant; *2.* flower; *3.* sepal; *4.* capsule; *5.* lateral view of seed; *6.* dorsal view of seed. (drawn by H. P. Yu)

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; Japan, tropical America, S Europe.

Ecology: Grassy slopes, farmlands. Flowering & fruiting: Aug.–Dec.

# 78. CARYOPHYLLACEAE 石竹科

HU Qi-ming 胡啟明

Annual or perennial herbs, rarely shrubby. Stems usually tumid at nodes. Leaves simple, opposite, rarely alternate or verticillate, entire, more or less connate at base. Stipules none, or small and scarious. Flowers actinomorphic, bisexual, rarely unisexual, usually in dichotomous panicles or leafy cymes. Sepals 5, rarely 4, herbaceous or scarious, persistent. Petals as many, contorted in bud, entire or lobed. Stamens free, twice as many as petals and in 2 whorls, rarely fewer. Ovary 1-locular, very rarely divided into imperfect locule; ovules several to many borne on a free central placenta; styles or style-branches 2–5, stigmatic along their whole length. Fruit a capsule, opening at the top into as many or twice as many teeth or valves as styles.

About 75–80 genera and 2000 species, widespread worldwide, but mostly in temperate regions, especially in the N hemisphere; about 30 genera and 390 species in China; eight genera and nine species in Hong Kong.

1a. Stipules present, scarious.
  2a. Styles free ..... 1. *Spergularia*
  2b. Styles connate at base or throughout.
    3a. Sepals green, herbaceous; leaves broad, ovate-cordate ..... 2. *Drymaria*
    3b. Sepals white, scarious; leaves linear or subulate.
      4a. Style elongate, apex nearly entire; sepals hyaline throughout, without rigid midrib ..... 3. *Polycarpaea*
      4b. Style very short, apex 3-lobed; sepals with rigid midrib, hyaline only at margin ..... 4. *Polycarpon*
1b. Stipule wanting.
  5a. Capsule opening to the middle into 5 valves.
    6a. Valves of capsule 2-fid at apex; leaves broad, ovate ..... 5. *Myosoton*
    6b. Valves of capsule entire; leaves linear ..... 6. *Sagina*
  5b. Capsule opening at top into 6-10 small and equal teeth.
    7a. Capsule cylindrical; petals lobed to 1/3 of their length ..... 7. *Cerastium*
    7b. Capsule ovoid to ellipsoid; petals lobed to near base ..... 8. *Stellaria*

## 1. Spergularia (Pers.) J. & C. Presl, *nom. cons.* 擬漆姑屬

Annual or perennial herbs. Stems erect or procumbent, ± swollen at nodes. Leaves decussate; stipules scarious, connate at base. Flowers bisexual, in racemose cymes. Sepals 5, free, green, with scarious margin. Petals 5, white or pink, entire. Stamens 2–5 or 10. Ovary 1-locular, with numerous ovules; styles 3. Capsules ovoid, opening by 3 valves.

About 25 species in N temperate regions; four species in China; one species in Hong Kong.

**1. Spergularia marina** (L.) Griseb. 擬漆姑

Spic. Fl. Rumel. 1: 213. 1843; FOC 6: 5. 2001.

*Spergularia salina* J. & C. Persl., Fl. Cech. 95. 1819.

*Arenaria rubra* L. var. *marina* L. Sp. Pl. 423. 1753.

Annual or biennial herb. Stems 8–20(–30) cm tall, densely pubescent. Leaves linear, 5–30 × 1–1.5 mm, ± fleshy, apex mucronate; stipules broadly triangular, forming a sheath. Flowers terminal or axillary. Sepals ovate, abaxially glandular pubescent, margin membranous. Petals pink above, white near base, rarely entirely white, shorter than sepals, apex obtuse. Capsules ovoid, 5–6 mm, slightly longer than calyx.

Locality: Nien Wan (Mei Hui Hu). *Y. W. Lam 2018.*

Distribution: Most provinces in China; widely distributed Asia, Europe, N Africa and N America.

Ecology: Stream-sides, lake-sides, farmlands near seaside.

## 2. Drymaria Willd. ex Schult. 荷蓮豆屬

Annual or perennial herbs. Stems prostrate or ascending, dichotomously branched. Leaves opposite, shortly petiolate, 3–5-nerved. Stipules minute, subulate, usually caducous. Flowers solitary or in dichotomous cymes. Sepals 5, herbaceous. Petals absent or 3–5, deeply 2-lobed. Stamens 5, alternate with sepals; filaments slightly dilated at base. Ovary 1-locular, with several ovules; style single, 3-lobed. Capsule ovoid, opening into 3 valves.

About 44 species, mostly in C America; two species in China; one species in Hong Kong.

**1. Drymaria cordata** (L.) Schult. 荷蓮豆 **(Fig. 120; Photo 298)**

Syst. Veg. 5: 406. 1819; FHK 22. 1861; FKH 40. 1912; Hand.-Mazz., Symb. Sin. 7: 202. 1929; FHN 1: 377, fig. 196. 1964; FGD 2: 80, fig. 55. 1991; FOC 6: 6. 2001.

*Drymaria diandra* Bl., Bijdr. 62. 1825; FRPS 26: 61, pl. 10: 8–12. 1996; S. S. Ying, FTW ed. 2, 2: 360, pl. 167. 1996.

Annual herb. Stems prostrate, rooting at nodes, glabrous. Leaves opposite, short petiolate; leaf blade ovate-cordate or orbicular, about 1–1.5 cm long and broad, 3–5-nerved. Flowers in axillary or terminal cymes. Pedicels 1.5–3 mm, with glandular hairs. Sepals narrowly ovate, 2–3.5 mm, herbaceous, with scarious margin, 3-nerved, glandular-hairy. Petals white, obovate-cuneate, ca. 2.5 mm, deeply 2-lobed. Stamens slightly shorter than sepals; filaments slightly dilated at base. Ovary ovoid; styles 3, united at base. Capsule ovoid, 3-valved.

Locality: Tsiu Hang, Mui Tsz Lam, Mau Ping, Chung Mei, Tai Po Kau, Ng Tung Chai, Tai Mo Shan, Lin Fa Shan. *W. J. Tutcher 11146; Y. S. Lau 1342, 1627.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; E Asia, Indian subcontinent, Malesia, Australia, N Africa.

Ecology: Margins of forests, streamsides and other damp shaded places. Flowering: Apr.–Oct.; fruiting: Jun.–Dec.

Uses: Medicinal (folklore).




**Figure 120.** *Drymaria cordata* (L.) Schult.
*1.* flowering branch; *2.* flower; *3.* flower with perianth removed showing pistil and stamens; *4.* stamen. (drawn by Y. X. Liu)

## 3. Polycarpaea Lam. 白鼓釘屬

Annual or perennial herbs. Stems erect or spreading. Leaves opposite or in false whorls. Stipules white, scarious. Flowers in terminal or axillary dichotomous cymes, densely flowered. Sepals 5, scarious and translucent. Petals 5, small, entire or 2-toothed. Stamens 5. Ovary 1-locular, with many ovules; style single, 3-cleft or nearly entire. Capsule opening into 3 valves.

About 50 species in tropical and subtropical regions; two species in China; one species in Hong Kong.

**1. Polycarpaea corymbosa** (L.) Lam.
白鼓釘 **(Fig. 121)**

Tabl. Encycl. 2: 129. 1793; FHK 22. 1861; FKH 40. 1912; FHN 1: 378, fig. 197. 1964; FGD 2: 81. 1991; FRPS 26: 63, pl. 13: 4–7. 1996; FOC 6: 7. 2001.

*Achyranthes corymbosa* L., Sp. Pl. 205. 1753.

Perennial herb, 15–35 cm tall. Stems erect, more or less hoary with loose cotton hairs. Leaves sessile, often clustered at nodes in false whorls; leaf blade linear to subulate, 15–20 × 1–1.5 mm, apex acute, glabrescent. Flowers many, in dense cymes and forming broad terminal dichotomous corymbs. Bracts lanceolate, scarious and translucent. Pedicels slender, white-puberulent. Sepals lanceolate, 2–3 mm, scarious and shining, white or reddish brown. Petals broadly ovate, obtuse, not half so long as sepals. Stamens shorter than petals. Ovary ovoid; style single, entire. Capsule ovoid, not half so long as the persistent sepals.

Locality: Silverstrand, Deep Water Bay. *L. Gibbs 7665; HK sheet 297, 2625.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Hubei, Jiangxi, Anhui, Fujian; throughout tropical regions.

Ecology: Grassy slopes, waste places and sandy seashores. Flowering: Jul.–Aug.; fruiting: Sep.–Oct.

Uses: Medicinal (folklore).

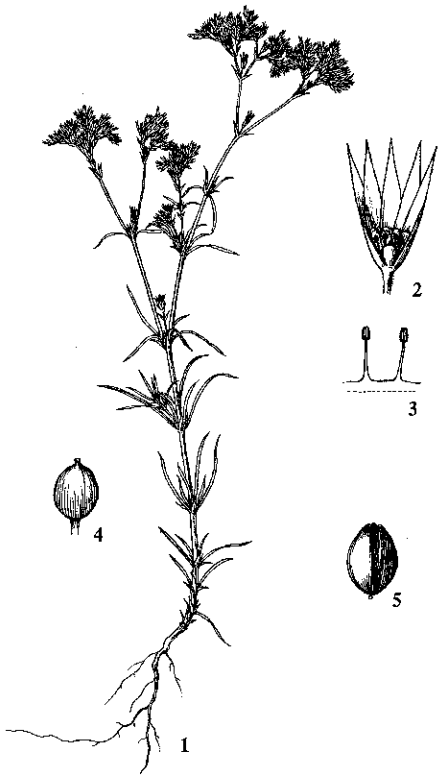



Figure 121. *Polycarpaea corymbosa* (L.) Lam.
*1*. plant; *2*. flower; *3*. stamen; *4*. pistil; *5*. fruit. (drawn by Y. X. Liu)

## 4. Polycarpon L. 多茎草屬

Annual or perennial herbs. Stems erect or diffuse, dichotomously branched. Leaves opposite or sometimes false verticillate, sessile or indistinctly petiolate; stipules 2–4, triangular, scarious. Flowers small, in axillary or terminal cymose cluster. Sepals 5, free, centrally rigid abxially, hyaline at margin. Petals 5 or often fewer, less than half the length of sepals, hyaline, entire or toothed. Stamens 3–5; filaments united at base. Ovary 1-locular, with numerous ovules; style short, 3-lobed. Capsule shorter than calyx, opening by 3 valves.

About six species in tropical and subtropical regions; one species in China; it occurs in Hong Kong.

**1. Polycarpon prostratum** (Forssk.) Asch. & Schweinf. ex Asch. 多茎草
Oesterr. Bot. Z. 39: 128. 1889; FOC 6: 6. 2001.

Annual herb. Stems diffuse or prostrate, 10–25 cm, much branched, usually pubescent, rarely glabrescent. Leaves opposite or almost in whorls; petioles very short; leaf blade oblanceolate, linear-oblanceolate, spathulate or narrowly elliptic, 6–20 × 1.5–5 mm, base cuneate or attenuate, apex acute or obtuse, glabrous, veins obscure; stipules ovate-lanceolate, about 1/4 the length of leaf blade, scarious. Cymes axillary or terminal, 2–4 cm. Flowers small, ca. 3 mm in diam.; sepal lanceolate, 2.5–3 mm, midvein raised, apex obtuse and more or less hooked, margin hyaline; petals often fewer than 5, linear oblong, less than half the length of sepals; stamens 5, opposite with sepals. Capsules ovoid, shorter than sepals.

Locality: Ho Pui Reservoir. *Y. W. Lam 1490.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian; tropical regions of Asia and Africa.

Ecology: Open fields, farmlands. Flowering and fruiting: Almost all year round.

## 5. Myosoton Moench 鵝腸菜屬

Biennial or perennial herbs. Stems prostrate or erect. Leaves opposite, ovate-cordate. Flowers bisexual, in terminal dichotomous cymes. Sepals 5. Petals 5, white, shorter than sepals, deeply 2-lobed to near base. Stamens 10; filaments slightly dilated at base. Ovary 1-locular; styles 5. Capsule ovoid, opening to middle into 5 valves; the valves 2-toothed at apex. Seeds reniform, with tubercles on ridges.

Only one species widely spread over temperate and subtropical regions in Europe, Asia and Africa, also in Hong Kong.

**1. Myosoton aquaticum** (L.) Moench 鵝腸菜(牛繁縷) **(Fig. 122; Photos 299–300)**
Methodus 225. 1794; FRPS 26: 74, pl. 16: 1–9. 1996; FOC 6: 38. 2001.

*Stellaria aquatica* (L.) Scop., Fl. Carn. 2(1): 319. 1774; FHK 20. 1861; FKH 40. 1912; FGD 2: 79. 1991; FTW ed. 2, 2: 373, pl. 174, photo 150. 1996.

*Cerastium aquaticum* L., Sp. Pl. 439. 1753.

Biennial or perennial herbs. Stems ascending from the prostrate base, 50–80 cm or longer, glabrous or glandular hairy on upper part. Leaves ovate to broadly ovate, 2.5–5.5 × 1–3 cm, apex acute, base cordate, margin entire, sometimes ciliate, upper ones smaller, on long petioles; lower ones sessile or stem-clasping. Flowers in terminal dichotomous cymes. Bracts foliaceous, ciliate. Pedicels slender,

1–2 cm, lengthening after flowering, with glandular hairs. Sepals ovate-lanceolate, 4–5 mm, with scarious margin and glandular hairs abaxially. Petals white, deeply 2-lobed to near base; lobes linear to linear-lanceolate, 3–3.5 × 1 cm. Stamens 10, slightly shorter than petals. Capsule ovoid, opening to middle into five 2-toothed valves.

Locality: Victoria Peak, Pok Fu Lam, So Kon Po, Tai Long Wan, Shing Mun, Mui Tsz Lam. *Y. W. Lam 516, 611; HK sheet 294.*

Distribution: Dispersed over most parts of China. Widely distributed in temperate Asia; Indian subcontinent; Europe, and naturalized elsewhere in temperate regions.

Ecology: In fields, wet places by streams. Flowering: May–Aug.; fruiting: Jun.–Sep.

Uses: Medicinal (folklore), food (vegetable).

## 6. Sagina L. 漆姑草屬

Annual or perennial herbs. Stems usually tufted. Leaves linear or linear-subulate, connate at base. Stipules wanting. Flowers bisexual, solitary in axils of leaves or forming terminal 2–3-flowered cymes. Sepals 4–5. Petals 4–5, sometimes wanting, usually shorter than sepals, apex entire or retuse. Stamens 4–5, sometimes 8 or 10. Ovary 1-locular, with many ovules; styles 4–5, alternate with sepals. Capsule ovoid, opening to the middle into 4–5 valves.

About 30 species, widely spread over N temperate regions; four species in China; one species in Hong Kong.

**1. Sagina japonica** (Sw.) Ohwi 漆姑草 **(Fig. 123)**

J. Jap. Bot. 13: 438. 1937; FGD 2: 77. 1991; FRPS 26: 255, pl. 61: 5–7. 1996; FTW ed. 2, 2: 362, pl. 168. 1996; FOC 6: 10. 2001.

*Spergula japonica* Sw., Ges. Naturf. Freunde Berlin Neue Schriften 3: 164. 1801.

*Sagina linnaei* auct. non Presl: FKH 40. 1912.

Annual smalll herb, 5–20 cm tall. Stems tufted, ± diffuse, sparsely glandular hairy on the upper part. Leaves sessile, linear, 5–20 × 0.8–1.5 mm, apex acute, connate at base, glabrous. Flowers small, solitary, terminal or in axils of apical leaves. Pedicels slender, 1–2 cm, sparsely pubescent. Sepals 5, ovate-elliptic, ca. 2 mm. Petals 5, white, narrowly ovate, slightly shorter than sepals, apex rounded, entire. Stamens 5, shorter than petals. Ovary ovoid; styles 5, linear. Capsule ovoid, slightly longer than the persistent sepals, opening to the middle into 5 valves.

Locality: Wong Chuk Hang, Sunset Peak. *W. J. Tutcher 4630; Y. W. Lam 1771; HK sheet 31558.*

Distribution: Widely distributed in China; also in Russia (Far East), Korea, Japan, Indian subcontinent; naturalized elsewhere in temperate regions.

Ecology: Wastelands, grassy banks. Flowering: Mar.–May; fruiting: May–Jun.

Uses: Medicinal (folklore).

## 7. Cerastium L. 卷耳屬

Annual or perennial herbs. Stems erect or ascending from a prostrate base, usually pubescent or with glandular hairs. Leaves opposite, usually sessile. Flowers bisexual, in terminal dichotomous cymes. Sepals 5, rarely 4, free. Petals 5, rarely 4, bi-lobed, rarely entire or retuse. Stamens 10, rarely 5; filaments glabrous or hairy. Ovary 1-locular, with many ovules; styles usually 5, rarely 3,




**Figure 122.** *Myosoton aquaticum* (L.) Moench

*1*. part of plant; *2*. flower; *3*. sepal; *4*. petal; *5*. fruit. (drawn by Y. X. Liu)

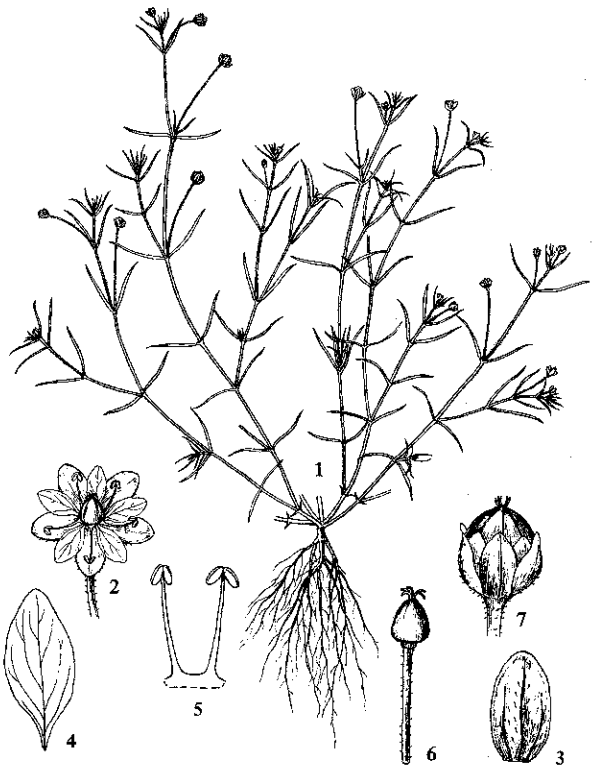



**Figure 123.** *Sagina japonica* (Sw.) Ohwi

*1*. plant; *2*. flower; *3*. sepal; *4*. petal; *5*. stamens; *6*. pistil; *7*. fruit with persistent perianth. (drawn by Y. X. Liu)

opposite with sepals. Capsule cylindrical, crustaceous, opening at the top into twice as many teeth as there are styles.

About 100 species mainly in N temperate regions; 32 species in China; one species in Hong Kong.

**1. Cerastium fontanum** Baumg. subsp. **trivale** (Link) Jalas 簇生卷耳

Arch. Soc. Zool. Bot. Fenn. "Vanamo" 18: 63. 1963; FRPS 26: 86, pl. 20: 1–6. 1996.

*Cerastium fontanum* Baumg. subsp. *vulgare* (Hartm.) Greuter, Willdenowia 12: 37. 1982; FOC 6: 35. 2001.

*Cerastium triviale* Link, Enum. Pl. Hort. Berol. 1: 433. 1821, *nom. illeg. superfl.*

*Cerastium vulgare* Hartm., Handb. Skand. Fl. 182. 1820.

Perennial or annual herb, 15–30 cm tall. Stems single or tufted, erect, white-puberulent or glandular hairy. Leaves subsessile, basal ones spathulate or obovate-oblanceolate; cauline ones ovate, narrowly ovate-oblong to lanceolate, 1–3(–4) × 0.3–1(–1.2) cm, apex acute or obtuse, puberulent on both surfaces. Cymes terminal. Pedicels slender, 5–25 mm, densely glandular-hairy, turned down after flowering. Sepals 5, oblong-lanceolate, 5.5–6.5 mm, densely glandular hairy outside. Petals 5, white, obovate-oblong, equaling or slightly shorter than sepals, apex shallowly 2-lobed, glabrous. Stamens shorter than petals; filaments glabrous. Ovary oblong-ellipsoid; styles 5, linear. Capsule cylindrical, 8–10 mm, opening at the top into 10 teeth.

Locality: Sheung Shui, Sunset Peak. *Y. W. Lam 2821, 3054; HK sheet 2521.*

Distribution: Dispersed over most parts of China; Mongolia, Korea, Japan, Indochina, India, Iran.

Ecology: Grassy slopes, forest margins. Flowering: May–Jun.; fruiting: Jun.–Jul.

## 8. Stellaria L. 繁縷屬

Annual or perennial herbs. Stems erect or prostrate. Leaves broad and flat, rarely subulate. Flowers bisexual, in terminal dichotomous cymes, rarely solitary in axils of leaves. Sepals 5, rarely 4. Petals 5, rarely 4, white, or rarely green, bifid, rarely retuse or with more lobes. Stamens 10, sometimes fewer (8, or 2–5). Ovary 1-locular, rarely 3-locular when young; ovules many, but only 1–2 developed; styles 3, rarely 2. Capsule globose or ovoid, opening at the top into twice as many teeth as there are styles.

About 120 species widely spread over temperate and cold regions; 64 species in China; two species in Hong Kong.

1a. Leaves lanceolate to oblong-lanceolate, sessile or shortly petioled ..... 1. *S. alsine*

1b. Leaves ovate-cordate, with distinct petioles ..... 2. *S. media*

**1. Stellaria alsine** Grimm 雀舌草 **(Fig. 124; Photo 301)**

Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 3. (app.): 313. 1767; FOC 6: 21. 2001.

*Stellaria uliginosa* Murr., Prodr. Stirp. Gott. 55. 1770; FHK 22. 1861; FKH 40. 1912; FGD 2: 78, fig. 54. 1991; FRPS 26: 129, pl. 30: 1–5. 1996.

Annual or biennial herb, 15–25(–35) cm tall, glabrous throughout. Stems tufted, ascending, much branched. Leaves sessile, lanceolate to oblong lanceolate, 5–20 × 2–4 mm, base cuneate and semi-amplexicaul, apex acuminate, margin cartilaginous, ± glaucous on both surfaces. Flowers in terminal 2–3-flowered cymes, rarely solitary in axils of leaves. Pedicels slender, 5–20 mm, turned down in fruiting time. Sepals 5, lanceolate 2–4 × 1 mm, margin scarious. Petals 5, white, shorter than or equaling to sepals, deeply 2-lobed to near base; lobes linear. Stamens 5(–10), slightly shorter than petals. Ovary ovoid; styles 3, or sometime 2. Capsule ovoid, opening at top into 6 teeth.

Locality: Tai Mo Shan, Shing Mun, Sha Tin. *L. T. Lo 287; S. P. Lam 107; Y. W. Lam 1345.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Gansu, Nei Mongol, Henan, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; N Africa, Europe, temperate Asia.

Ecology: Rice fields, moist places by streams. Flowering: May–Jun.; fruiting: Jul.–Aug.

Uses: Medicinal (folklore).

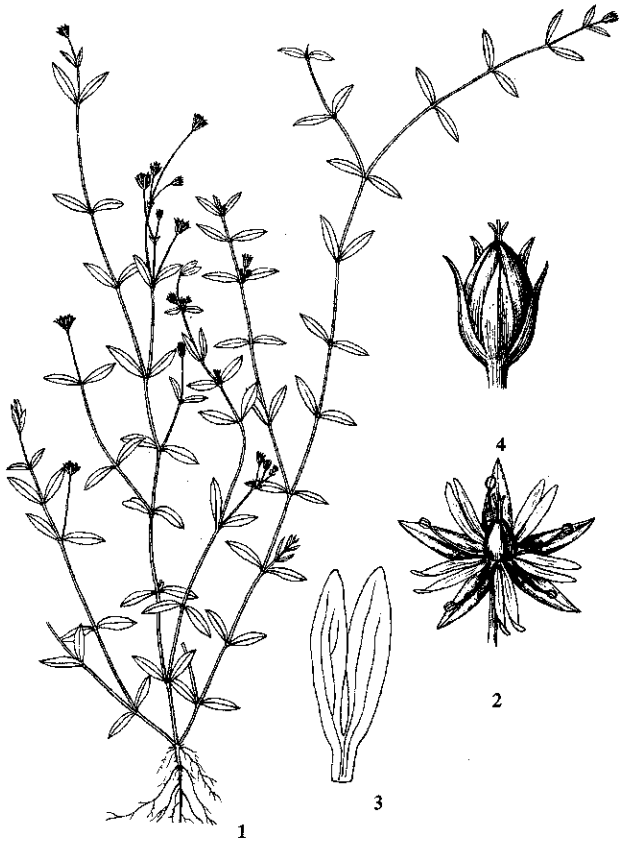



Figure 124. *Stellaria alsine* Grimm

*1*. plant; *2*. flower; *3*. petal; *4*. fruit with persistent calyx. (drawn by Y. X. Liu)

**2. Stellaria media** (L.) Vill. 繁縷(魚腸草)

Hist. Pl. Dauphine 3: 615. 1789; FHK 21. 1861; FKH 40. 1912; FHN 1: 376. 1964; FGD 2: 79. 1991; FTW ed. 2, 2: 376, pl. 176. 1996; FRPS 26: 104. 1996; FOC 6: 15. 2001.

*Alsine media* L., Sp. Pl. 272. 1753.

Annual or biennial herb, 10–30 cm tall. Stems decumbent or ascending, much branched, with a line of hairs down one side. Leaves opposite, lower ones long petioled; upper ones usually sessile; leaf blade broadly ovate or ovate, 1.5–2.5 × 1–1.5 cm, base abruptly narrowed or sub-cordate, apex acuminate or acute, margin entire. Flowers in terminal 2–3-flowered cymes. Pedicels slender, with a line of hairs, lengthening and turning down in fruiting time, 7–14 mm. Sepals 5, lanceolate ca. 4 mm, apex obtuse or sub-rounded, margin scarious, with short glandular hairs abaxially. Petals 5, white, oblong, shorter than sepals, deeply 2-lobed to near base; lobes linear. Stamens 3–5, slightly shorter than petals. Ovary ovoid; styles 3. Capsule ovoid, slightly longer than persistent sepals, opening at top into 6 teeth.

Locality: Tai Mo Shan. *HK sheet 40607.*

Distribution: Dispersed over all China except Xinjiang and Heilongjiang. Widely spread in temperate regions.

Ecology: Waste places, roadsides, cultivated fields. Flowering: Jun.–Jul.; fruiting: Jul.–Aug.

Uses: Medicinal (folklore), food (vegetable).

# 79. POLYGONACEAE 蓼科

HU Qi-ming 胡啟明

Annual or perennial herbs, rarely shrubs or lianas. Stems often tumid at nodes. Leaves alternate; stipules usually thin and scarious, rarely herbaceous, forming a sheath or ring (the ocrea) round the stem within the petiole. Flowers small, hermaphroditic, occasionally unisexual, clustered in axils of the leaves, or in spikes or racemes forming terminal panicles. Perianth-segments 5–6, or fewer, regular and equal, or the inner ones enlarged, basally united into a tube. Stamens usually 6–9, in 2 whorls; filaments free or united at the base; anthers 2-celled. Ovary superior, 1-locular, with a single erect ovule; styles or stigmas 2, 3, or rarely more. Fruit an achene or a small nut, usually with angles and enclosed in the persistent perianth.

About 51 genera and 1050 species with a worldwide distribution; 13 genera and 238 species in China; three genera (including one cultivated) with 30 species in Hong Kong.

1a. Tendril-bearing climbers ..... 1. *Antigonon*

1b. Erect, prostrate or climbing herbs, without tendrils

2a. Perianth-segments 6, the inner 3 enlarged after flowering ..... 2. *Rumex*

2b. Perianth-segments 4–5, subequal and not enlarged after flowering ..... 3. *Polygonum*

## 1. Antigonon Endl. 珊瑚藤屬

Herbaceous or woody tendril-climbing vines. Leaves alternate, petiolate, cordate to hastate, entire; ocrea short, caducous or reduced to a fine line. Flowers bisexual, 3–5 fascicled, forming terminal or axillary racemes, with the rachis elongated into tendrils. Perianth-segments 5, unequal, usually colorful and slightly enlarged in fruit. Stamens 7–8, alternate with the tooth-like nectaries; filaments united at base. Ovary 3-carpellate; style 3; stigma capitate. Achenes 3-angled at least on the upper part, enclosed by the enlarged persistent perianth.

About three species in C America; one species cultivated in China and Hong Kong.

**1. Antigonon leptopus** Hook. & Arn. 珊瑚藤 **(Photo 302)**

Bot. Beech. Voy. 308. 1841; FHN 1: 385, fig. 203. 1964; FTW ed. 2, 2: 294; 1996; FGD 4: 80, fig. 53. 2000.

Perennial tendril-climbing vines, to 10 m or longer, with thick tuberous root. Stems angular, woody at base, covered with short hairs. Leaves papery; petioles 0.8–2 cm; leaf blade ovate-triangular, 6–15 × 4–8 cm, base cordate to sagittate, apex acuminate, tip blunt, margin crenate-undulate, covered with soft short hairs on both surfaces; veins impressed adaxially, raised abaxially. Flowers in terminal panicles and axillary racemes, 5–10 cm, densely flowered, with the rachis terminating in forked tendrils; pedicels slender, 0.5–1 cm, pubescent. Perianth-segments 5, pink or white, the outer 3 elliptic, 1–1.5 × 0.6–1.2 cm, apex rounded, base cordate, inner 2 oblong, 1–1.2 × 0.4–0.6 cm, apex obtuse, narrowed to the base. Stamens 8; filaments united at base, the free parts covered with rusty glandular hairs. Achenes 1–1.5 cm, 3-angled, enclosed in the enlarged, persistent perianth.

Locality: Cultivated in gardens. *H. C. Tang 176; L. T. Lo 561.*

Distribution: Native to Mexico, widely cultivated or naturalized in tropical regions.

Ecology: Flowering and fruiting: Aug.–Dec.

Uses: Ornamental.

## 2. Rumex L. 酸模屬

Annual or perennial herbs, rarely shrubby. Stems erect, usually sulcate. Leaves basal and cauline; cauline leaves alternate; ocrea scarious, usually caducous. Flowers bisexual, rarey unisexual and plant dioecious, in whorl-like clusters, forming terminal simple or paniculate racemes. Perianth-segments 6, the inner 3 enlarged after flowering, and closing over the fruit. Stamens 6, in 2 whorls. Ovary 1-locular; styles 3, very short, with fringed stigmas. Achenes 3-angled, usually enclosed by the persistent inner perianth-segments.

About 200 species widely distributed over most parts of the world, but mainly in temperate regions; 27 species in China; four species in Hong Kong.

1a. Perennial herbs, with a thick root-stock.....1. *R. japonicus*
1b. Annual herbs.
2a. Inner perianth-segments entire in fruiting time.....2. *R. microcarpus*
2b. Inner perianth-segments with spine-like teeth on margins in fruiting time.
3a. Inner perianth-segments with 1 spine-like tooth on each side .....3. *R. trisetifer*
3b. Inner perianth-segments with 2–4 teeth on each side.....4. *R. dentatus*

**1. Rumex japonicus** Houtt. 羊蹄 **(Fig. 125; Photo 303)**

Nat. Hist. 2(8): 394. 1777; FRPS 25: 156, pl. 37: 3–4. 1998; FYN 11: 376. 2000; FOC 5: 338. 2003.

*Rumex crispus* auct. non L.: FHK 286. 1861; FKH 218. 1912; FGD 4: 83. 2000.

Perennial herb, with thick root-stock. Stems erect, furrowed, 50–100 cm tall. Radical leaves oblong to lanceolate-oblong, 8–20(–25) × 4–8(–10) cm, base rounded or cordate, apex acute or obtuse, margin undulate, abaxially papillose on veins; petioles 2–4 cm; stem-leaves smaller, narrowly oblong, shortly petiolate or sessile, upwards gradually passing into bracts; ocrea tubular, scarious, 1.5–2 cm, glabrous. Flowers bisexual, in many whorls, forming terminal panicles. Pedicels slender, 5–10 mm. Perianth-segments 6, light green, outer ones elliptic, 1.5–2 mm, inner ones enlarged in fruit, broadly ovate, 4–5 mm, with tubercles, apex acuminate, base cordate, margin irregularly denticulate. Achenes broadly ovoid, sharply 3-angled, ca. 2.5 mm, dark brown and shining.

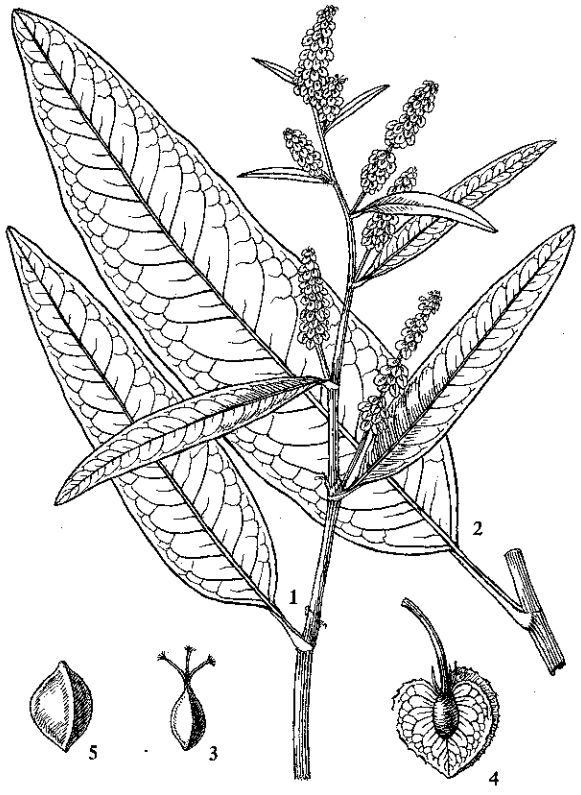



**Figure 125.** *Rumex japonicus* Houtt.
*1*. upper part of plant; *2*. leaf; *3*. pistil; *4*. fruit enclosed by persistent perianth; *5*. achene. (drawn by H. P. Yu)

Locality: Tuen Mun. *Y. S. Lau 2164, HK sheet 30751.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Jiangxi, Hunan, Hubei, Henan, Anhui, Shandong, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan.

Ecology: Flowering: May–Jun.; fruiting: Jun.–Jul.

Uses: Medicinal (folklore).

**2. Rumex microcarpus** Campd. 小果酸模

Monogr. Rum. 143. 1819; FRPS 25: 166. 1998; FGD 4: 83. 2000; FYN 11: 380. 2000; FOC 5: 341. 2003.

*Rumex wallichii* Meisn., DC. Prodr. 14(1): 48. 1856; FHN 1: 387. 1964.

Annual herb, 40–80 cm tall. Stems erect, ± furrowed, glabrous, branched on the upper part. Radical leaves oblong-elliptic, 10–15 × 2–5 cm, base cuneate, apex acute or slightly obtuse, margin entire; petioles 2–4 cm; stem-leaves smaller, narrowly elliptic; ocrea tubular, scarious, caducous. Flowers bisexual, in many whorls, forming terminal leafy panicles. Perianth-segments 6, yellowish green, outer ones lanceolate, ca. 1 mm, inner ones enlarged in fruit, narrowly triangular, 3–4 × 1.5–2 mm, with tubercles, apex acute, base truncate, margin entire. Achenes ovoid, sharply 3-angled, 1–2 mm, brown and shining.

Locality: Lai Chi Kok. *H. C. Tang 1912, 2468; Y. S. Lau 247.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Liaoning, Hebei, Jiangsu, Taiwan; Vietnam, India.

Ecology: Flowering: Apr.–Jul.; fruiting: May–Jul.

**3. Rumex trisetifer** Stokes 長刺酸模(假菠菜) **(Photo 304)**

Bot. Mat. Med. 2: 305. 1814; FRPS 25: 161. 1998; FYN 11: 379, pl. 102: 4–5. 2000; FOC 5: 340. 2003.

*Rumex maritimus* auct. non L.: FKH 218. 1912; FGD 4: 83. 2000.

Annual herb, 30–80 cm tall, with thick root-stock. Stems erect, brown to reddish brown, furrowed, glabrous. Petioles 1.5–6 cm; Lower stem-leaves oblong to lanceolate-oblong, 8–20 × 2–5 cm, base cuneate, apex acute, margin undulate; upper leaves smaller, narrowly lanceolate; ocrea tubular, 15–20 mm, scarious, caducous. Flowers bisexual, in many whorls, forming terminal or axillary panicles. Pedicels slender, 2–6 mm, articulate near base. Perianth-segments 6, in 2 whorls, yellowish green, outer 3 smaller, lanceolate, inner ones enlarged in fruit, narrowly triangular ovate, 3–4 × 1.5–2 mm, with tubercles, base truncate, apex acute, margin with 1 spine on each side. Achenes ellipsoid, sharply 3-angled, 1.5–2 mm, yellowish brown and shining.

Locality: Hong Kong Islands. *Y. S. Lau 1807.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Jiangxi, Hunan, Hubei, Henan, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Indochina, Thailand, India.

Ecology: Flowering: May–Jun.; fruiting: Jun.–Jul.

**4. Rumex dentatus** L. 齿果酸模

Mant. Pl. 2: 226. 1771; Forb. & Hemsl., J. Linn. Soc. Bot. 26: 356. 1891; Sam, Symb. Sin. 7: 168. 1929; FRPS 25: 161. 1996; FYN 11: 379, pl. 102: 6–8. 2000; FOC 5: 339. 2003.

Annual herb. Stems erect, furrowed, 30–70 cm tall, branched from base; branches ascending. Petioles 1.5–5 cm. Radical leaves oblong or oblong-elliptic, 4–12 × 1.5–3 cm, base rounded or cordate, apex obtuse or acute, margin undulate; stem-leaves smaller, upwards gradually passing into bracts; ocrea tubular, 8–15 mm, scarious, glabrous. Flowers bisexual, in many whorls, forming terminal or axillary panicles, to 35 cm. Perianth-segments 6, light green, outer ones elliptic, ca. 2 mm, inner ones enlarged in fruit, triangular ovate, 3.5–4 × 2–2.5 mm, with tubercles, apex acute, base sub-rounded, margin with 2–4 spine-like teeth on each side. Achenes ovoid, sharply 3-angled, 2– 2.5 mm, yellowish brown and shining.

Locality: Shatin. *Y. S. Lau 2151*.

Distribution: Spread over most parts of China; Nepal, India, Afghanistan, Kazakstan and SE Europe.

Ecology: Flowering: May–Jun.; fruiting: Sep.–Oct.

## 3. Polygonum L. 蓼属

Annual or perennial herbs. Stems erect, prostrate or climbing. Leaves alternate, entire or lobed; stipules united into a sheath (ocrea). Flowers small, green or red, clustered or rarely solitary in axils of the upper leaves, or in little cluster surrounded by a sheathing bract, and forming terminal spikes, heads or panicles. Perianth-segments 5, or rarely fewer, united into a tube at the base. Stamens 5–8, sometimes variable in the same species. Ovary compressed or triangular; styles 3 or 2, united at the base or almost free; stigma entire. Fruit an achene or small nut, triangular or flattened, enclosed in or surrounded by the persistent perianth.

About 230 species, widely distributed over most parts or the world, but especially in N temperate regions; 113 species in China; 25 species and one variety in Hong Kong.

1a. Stem and petioles prickly.
  2a. Leaves peltate; fruit fleshy ..... 1. *P. perfoliatum*
  2b. Leaves and fruit not as above.
    3a. Leaves triangular; stipules leafy ..... 2. *P. senticosum*
    3b. Leaves not triangular; stipules scarious.
      4a. Ocrea apex oblique, fringed with short hairs or glabrous.
        5a. Bracts funnel-form, embracing rachis of inflorescence; styles 3 cleft ..... 3. *P. praetermissum*
        5b. Bracts elliptic, not embracing rachis of inflorescence; styles 2 cleft ..... 4. *P. dichotomum*
      4b. Ocrea apex truncate, fringed with long hairs.
        6a. Prickles on stems 1.5–2 mm long; ocrea densely prickled at base ..... 5. *P. strigosum*
        6b. Prickles on stems 0.3–1 mm long; ocrea usually glabrous at base.
          7a. Leaves ovate to oblong-ovate, base truncate, rounded or subcordate; pedicels shorter than bracts ..... 6. *P. muricatum*
          7b. Leaves lanceolate or narrowly elliptic, base sagittate or ± hastate; pedicels longer than bracts ..... 7. *P. hastatosagittatum*

1b. Stem and petioles not prickly.
  8a. Twining vines or stout herbs, woody at base; fruit winged.
    9a. Twining vine; flowers bisexual; stigma capitate ..... 8. *P. multiflorum*
    9b. Stout herb, with erect, hollowed stem; flowers unisexual (plant dioecious); stigma fimbriate ..... 9. *P. cuspidatum*
  8b. Erect or decumbent herbs, usually less than 1.5 m tall.
    10a. Flowers 3–6 clustered in axils of leaves; leaves jointed at base ..... 10. *P. plebeium*
    10b. Flowers in terminal racemes, heads or panicles; leaves not jointed at base.
      11a. Flowers in little globular heads.
        12a. Ocrea glabrous; petioles 0.6–1.5 cm ..... 11. *P. chinense*
        12b. Ocrea glandular hairy and ciliate; petioles 2–3 mm ..... 12. *P. capitatum*
      11b. Inflorescence racemose or paniculate.
        13a. Perennial herbs.
          14a. Ocrea sparsely strigose and puberulous, fringed with 1–1.2 cm long hairs ..... 13. *P. japonicum*
          14b. Ocrea densely villous and long-strigose, fringed with 1.5–2 cm long hairs ..... 14. *P. barbatum*
        13b. Annual herbs.
          15a. Plants glabrous throughout ..... 15. *P. glabrum*
          15b. Plants hairy, at least hairy on veins of leaves or on ocrea.
            16a. Peduncle glandular hairy or with glands.
              17a. Stems and ocrea densely glandular hairy ..... 16. *P. viscosum*
              17b. Stems and ocrea glabrous ..... 17. *P. lapathifolium*
            16b. Peduncle not glandular hairy nor with glands.
              18a. Ocrea expanded at the top into a green, spreading limb ..... 18. *P. orientale*

18b. Ocrea tubular, without a spreading limb.
19a. Leaves ovate or broadly elliptic, apex rounded, dark blue-green when dry ..... 19. *P. tinctorium*
19b. Leaves narrowly or broadly lanceolate, apex acuminate, not turning blue-green when dry
20a. Perianth with glandular-dots.
21a. Stems glabrous; upper part of perianth white or pink; plants biting or acrid to the taste ..... 20. *P. hydropiper*
21b. Stems strigose; upper part of perianth red; plants not biting or acrid to the taste ..... 21. *P. pubescens*
20b. Perianth without glandular-dots.
22a. Inflorescence slender, interrupted at least at the lower part.
23a. Leaves ovate-lanceolate to ovate, apex caudate, base broadly cuneate; racemes 5–10 cm, each bract embracing 3–4 flowers ..... 22. *P. posumbu*
23b. Leaves lanceolate, base cuneate or rounded; racemes 2–4 cm, each bract embracing 5–6 flowers ..... 23. *P. longisetum*
22b. Inflorescence densely flowered, not interrupted.
24a. Leaves linear-lanceolate to narrowly lanceolate, 4–8 mm broad; achenes 1–1.5 mm long ..... 24. *P. tenellum* var. *karagoeanum*
24b. Leaves oblong-lanceolate, 1.5–2.5 cm broad; achenes to 2.5 mm long ..... 25. *P. jucundum*

**1. Polygonum perfoliatum** L. 杠板歸(貫葉蓼)

**(Fig. 126; Photo 305)**

Syst. Nat. (ed. 10) 1006. 1759; Sp. Pl. ed. 2, 521. 1762; FHK 289. 1861; FKH 218. 1912; FHN 1: 393, fig. 206. 1964; FTW ed. 2, 2: 307, photo 129. 1996; FRPS 25: 68, pl. 15: 1–4. 1998; FGD 4: 86. 2000; FYN 11: 309, pl. 88: 2. 2000; FOC 5: 311. 2003.

Annual herb. Stems climbing or twining, much branched, angled and armed with retrorse prickles. Leaves peltate; petioles 3–7 cm, with retrorse prickles; leaf blade deltoid, 2–7(–10) × 2–6(–8) cm, base truncate or slightly cordate, apex obtuse or ± acute, adaxially glabrous, abaxially with retrose prickles on veins. Ocrea foliaceous, green, orbicular, perfoliate, 1.5–3 cm in diam. Racemes spike-like, 3–5 cm, terminal or in axils of upper leaves. Peduncles prickly, 2–4 cm. Bracts ovate-elliptic, glabrous, apex acute, each embracing 2–4 flowers. Perianth ca. 3 mm, deeply 5-lobed; segments elliptic, 2–3 mm, white or pink, becoming fleshy and blue in fruit. Stamens 8; styles deeply 3-cleft; stigmas capitate; nectaries present. Achenes globose, 3–4 mm in diam., black and shining, enclosed in the fleshy persistent perianth.

Locality: Common in Hong Kong. *H. C. Tang 667, 1393; L. T. Lo 57.*

Distribution: Dispersed over all parts of China. Widely distributed in E Asia, India Subcontinent, Malesia; naturalized in N America.

Ecology: Roadsides, wastelands and other wet places. Flowering: Jun.–Aug.; fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

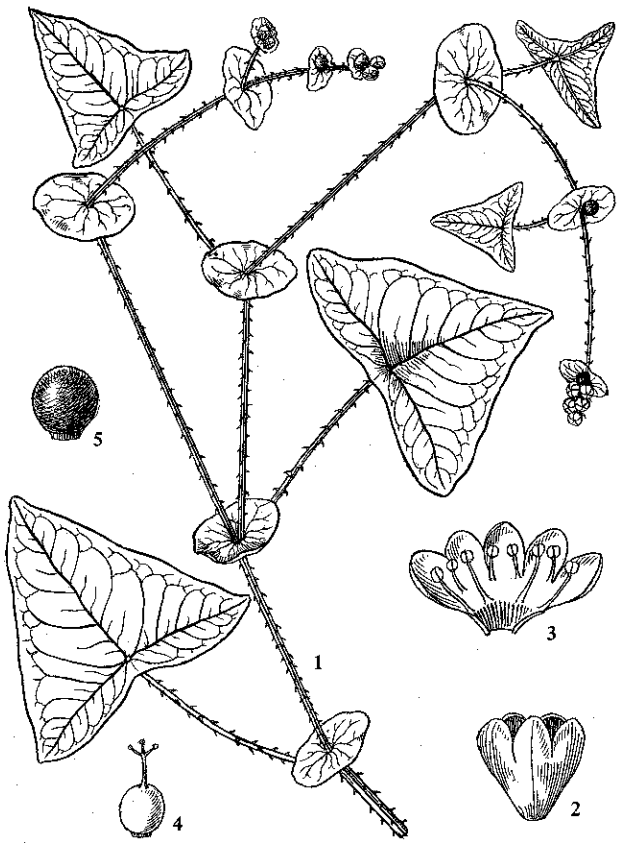



**Figure 126.** *Polygonum perfoliatum* L.
*1*. upper part of plant; *2*. flower; *3*. corolla opened up showing stamens; *4*. pistil; *5*. fruit. (drawn by H. P. Yu)

**2. Polygonum senticosum** (Meisn.) Franch. & Sav. 刺蓼(廓茵)

Enum. Pl. Jap. 1: 401. 1875; FKH 218. 1912; FTW ed. 2, 2: 311, photo 133. 1996; FRPS 25: 71, pl. 15: 5–8. 1998; FGD 4: 87. 2000; FOC 5: 312. 2003.

Annual herb. Stems climbing or twining, much branched, 1–1.5 m or longer, quadragular, pubescent and with retrorse prickles along the angles. Leaves alternate; petioles 2–7 cm, with retrorse prickles; leaf blade deltoid or triangular hastate, 4–8 × 2–7 cm, base cordate to hastate, apex acute or acuminate, pubescent on both surfaces, with retrorse prickles on veins abaxially. Ocrea tubular, margin winged; wings reniform, herbaceous and green, shortly ciliate. Racemes head-like, terminal or in axils of upper leaves. Peduncles densely glandular pubescent, 2–5 cm. Bracts oblong-ovate, light green, margin scarious, shortly ciliate, each embracing 2–3 flowers. Perianth

pink, 3–4 mm, deeply 5-lobed; segments elliptic. Stamens 8, in 2 whorls, included. Ovary 3-angled; styles deeply 3-cleft; stigmas capitate. Achenes globose, 2.5–3 mm, obscurely 3-ribbed, dark brown, enclosed in the fleshy persistent perianth.

Locality: Common in Hong Kong.

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Hubei, Henan, Hebei, Heilongjiang, Liaoning, Jilin, Shandong, Jiangsu, Anhui, Zhejiang, Fujian.

Ecology: Forests of valleys. Flowering: Jun.–Jul.; fruiting: Jul.–Sep.

**3. Polygonum praetermissum** Hook. f. 疏蓼

Fl. Brit. Ind. 5: 47. 1886; FTW ed. 2, 2: 309. 1996; FRPS 25: 73, pl. 16: 1. 1998; FYN 11: 312. 2000; FOC 5: 312. 2003.

Annual herb, 30–90 cm tall. Stems ascending from the prostrate base, sparsely armed with retrorse prickles. Leaves alternate; petioles prickly, 0.5–1 cm, or almost sessile in the leaves near apex of stem; leaf blade lanceolate to narrowly oblong, 4–8 × 0.5–1.5 cm, base hastate to sagittate, apex obtuse or acute, glabrous or sparsely pubescent on both surfaces, abaxially with prickles on midvein. Ocrea tubular, 1–1.5 cm, scarious, apex oblique, glabrous or bristly on the veins, usually ciliate. Spikes 2–5 cm, sparsely flowered, terminal or in axils of upper leaves. Peduncles dichotomous branching, glandular pubescent. Bracts funnel-form, each embracing 2–4 flowers. Perianth pink, 3–4 mm, deeply 4-lobed; segments broadly elliptic. Stamens 4–5, included. Ovary subglobose; styles deeply 3-cleft. Achenes subglobose, obscurely 3-ribbed, ca. 3 mm, dark brown, enclosed in persistent perianth.

Locality: Tai O, Ping Chau. *Y. W. Lam 995, 996, 2161.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Jiangsu; Korea, Japan, India, Philippines.

Ecology: Wet places by streams and ditches. Flowering: Jun.–Aug.; fruiting: Jul.–Sep.

**4. Polygonum dichotomum** Blume 二歧蓼 **(Photos 306–307)**

Bijdr. 11: 529. 1826; FHN 1: 392. 1964; FTW ed. 2, 2: 299, pl. 145. 1996; FRPS 25: 76. 1998; FGD 4: 87. 2000; FOC 5: 314. 2003.

Annual herb, 40–100 cm tall. Stems ascending or erect, longitudinally ribbed, sparsely armed with retrorse prickles on the ribs. Leaves alternate; petioles 0.5–1.5 cm; leaf blade lanceolate or narrowly elliptic, 5–10 × 1–3 cm, base cuneate, truncate or sub-sagittate, apex acute, adaxially green, glabrous, abaxially glaucous, sometimes sparsely armed with short prickles on midvein. Ocrea tubular, 1.5–2 cm, scarious, apex oblique, glabrous or sparsely strigose. Racemes head-like, 1–2 cm, forming dichotomous, corymbose panicles, terminal or in axils of upper leaves. Peduncles covered with glandular hairs. Bracts broadly elliptic, 2–3 mm, ciliate, each embracing 2–3 flowers. Perianth white or pink, 2–2.5 mm, deeply 5-lobed; segments broadly elliptic. Stamens 5, included. Ovary ovoid; styles 2-cleft, stigmas capitate. Achenes subglobose, 2–2.5 mm, convex on both sides, dark brown, not shining, enclosed in the persistent perianth.

Locality: Wo Hop Shek, Ho Chung, San Wai, Fanling. *Y. W. Lam 429, 837; HK sheet 39288.*

Distribution: Hainan, Guangdong, Fujian, Taiwan; Japan, Vietnam, India, Phillippines and Indonesia.

Ecology: Ditches and wet places. Flowering: Jun.–Jul.; fruiting: Aug.–Oct.

**5. Polygonum strigosum** R. Br. 糙毛蓼

Prodr. Fl. Nov. Holl. 420. 1810; FKH 218. 1912; FRPS 25: 77, pl. 16: 2–3. 1998; FGD 4: 88. 2000; FYN 11: 313. 2000; FOC 5: 314. 2003.

*Polygonum bodinieri* Lével. & Van., Bull. Acad. Int. Geogr. Bot. 11: 343. 1902; FKH 218. 1912.

Perennial herb, 50–100 cm tall. Stems erect or prostrate at base, longitudinally ribbed, with retrorse prickles on the ribs. Leaves alternate; petioles 1–3 cm, with retrorse prickles; leaf blade oblong or lanceolate, 6–10 × 1–3.5 cm, base sub-cordate to truncate, sometimes sagittate, apex acuminate or acute, ciliate on margins, glabrous or sparsely strigose adaxially, with retrorse prickles on midvein abaxially. Ocrea tubular, 1.5–3 cm, scarious, apex truncate, fringed with long (ca. 5 mm) hairs. Racemes spike-like, 2–5 cm, forming terminal or axillary panicles. Peduncles densely pubescent and mixed with some glandular hairs. Bracts elliptic or ovate, 2–3 mm, usually strigose, each embracing 2–3 flowers. Perianth white or pink, 3–4 mm, deeply 5-lobed; segments elliptic. Stamens 5–7, included. Ovary broadly ovoid; styles deeply 2–3-cleft; stigmas capitate. Achenes subglobose, ca. 3 mm, 3-ribbed or convex on both sides, dark brown, not shining, enclosed in the persistent perianth.

Locality: Shau Kei Wan, Mai Po, Mo Fan Heung, Ta Kwu Ling, Lamma Island. *W. J. Tutcher 11176; Y. W. Lam 1743; HK sheet 33196.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Fujian; Nepal, India, Indochina, Malesia, Philippines.

Ecology: Wet places in forests and valleys. Flowering: Aug.–Sep.; fruiting: Sep.–Oct.

**6. Polygonum muricatum** Meisn. 小花蓼

Monogr. Polyg. 74. 1826; FTW ed. 2, 2: 306. 1996; FRPS 25: 78, pl. 18: 1–4. 1998; FGD 4: 87. 2000; FYN 11: 314. 2000; FOC 5: 314. 2003.

Annual herb, 80–100 cm tall. Stems erect or ascending from the prostrate base, longitudinally ribbed, sparsely armed with retrorse prickles on the ribs. Leaves alternate; petioles 0.7–2 cm, sparsely and shortly prickled; leaf blade broadly ovate to oblong-ovate, 2.5–6 × 1.5–3 cm, base broadly truncate, rounded or subcordate, apex acuminate or acute, margin entire, densely and shortly ciliate, usually glabrous to sparsely pubescent, or rarely with stellate hairs on adaxial surface, pubescent and with short stellate hairs on abaxial surface, with short retrorse prickles or bristles on midvein. Ocrea tubular, scarious, glabrous, 1–2 cm, apex truncate, long-ciliate. Racemes spike-like, very short, forming terminal or axillary panicles. Peduncles densely pubescent and mixed with some glandular hairs. Bracts broadly elliptic or ovate, apex acute to acuminate, ciliate, each embracing 2 flowers. Pedicels ca. 2 mm. Perianth white or pink, 2–3 mm, deeply 5-lobed; segments broadly elliptic. Stamens usually 6–8. Ovary ovoid; styles 3; stigmas capitate. Achenes ovoid, 3-ribbed, 2–2.5 mm,

yellowish brown, shining, enclosed in persistent perianth.

Locality: Shatin, Tai Om, Ho Pui, Kuk Po. *L. T. Lo 545, 587; Y. W. Lam 560, 2163.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Jiangxi, Hubei, Anhui, Zhejiang, Jilin, Heilongjiang; Korea, Japan, India, Nepal, Thailand.

Ecology: Wet places by streams and rice-fields. Flowering: Jul.–Aug.; fruiting: Sep.–Oct.

**7. Polygonum hastatosagittatum** Makino 長葉箭蓼

Bot. Mag. (Tokyo) 17: 119. 1903; Sam., Symb. Sin. 7: 182. 1929; FTW ed. 2, 2: 301. 1996; FRPS 25: 80. 1998; FGD 4: 88, fig. 58. 2000; FYN 11: 314. 2000; FOC 5: 315. 2003.

Annual herb, 40–90 cm tall. Stems erect or ascending from the prostrate base, longitudinally ribbed, armed with short, retrorse prickles on the ribs. Leaves alternate; petioles 1–2.5 cm, with retrorse prickles; leaf blade lanceolate or elliptic, 3–8(–10) × 1–2(–3) cm, base sagittate or almost hastate, apex acute to acuminate, margin shortly ciliate, adaxially glabrous or puberulous, abaxially prickly on midvein, and sometimes with stellate hairs. Ocrea tubular, 1.5–2 cm, scarious, apex truncate, long-ciliate. Racemes spike-like, 1–2.5 cm, forming terminal or axillary panicles. Peduncles densely pubescent and mixed with glandular hairs. Bracts broadly elliptic or ovate, 2.5–3 mm, ciliate, usually each embracing 2 flowers. Pedicels 4–6 mm, densely covered with glandular hairs. Perianth pink, 3–4 mm, deeply 5-lobed; segments broadly elliptic. Stamens 7–8. Ovary ovoid; styles deeply 3-cleft, stigmas capitate. Achenes ovoid, 3-ribbed, 3–4 mm, dark brown and shining, enclosed in persistent perianth.

Locality: Ho Chung, Fanling, Wo Hop Shek, Sai Wan. *P. S. Choi 163; W. J. Tutcher 8138; Y. S. Lam 814.*

Distribution: Widely distributed from S to NE China; also in Siberia, Korea and Japan.

Ecology: Wet places near ponds and ditches. Flowering: Aug.–Sep.; fruiting: Sep.–Oct.

**8. Polygonum multiflorum** Thunb.

何首烏 **(Fig. 127; Photo 308)**

Syst. Veg. ed. 14, 379. 1784; FKH 218. 1912; FGD 4: 86. 2000.

*Fallopia multiflora* (Thunb.) Harald., Symb. Bot. Upsl. 22(2): 77. 1978; FRPS 25: 102. 1998; FYN 11: 357. 2000; FOC 5: 317. 2003.

Perennial herb, with thick, tuberous rhizomes. Stems twining, 2–4 m or longer, much branched, glabrous, woody at base. Leaves alternate; petioles 1–3.5 cm; leaf blade ovate to oblong-ovate, 3–7 × 2–5 cm, base cordate, apex acuminate, margin entire, glabrous on both surfaces. Ocrea tubular, scarious, brown, 3–5 mm, apex oblique, glabrous. Inflorescence paniculate, terminal or axillary, 10–20 cm. Peduncles papillose. Bracts triangular ovate, papillose, each embracing 2–4 flowers. Pedicels slender, 2–3 mm, articulate at lower part. Perianth white or light green, 3–4 mm, deeply 5-lobed; lobes elliptic, unequal, the outer 3 larger, dorsally winged; wings suborbicular, enlarged to 6–7 mm in diam. in fruit. Stamens 8; filaments dilated at base. Ovary ovoid; styles 3, very short; stigmas capitate. Achenes ovoid, 3-ribbed, 2.5–3 mm, dark brown and shining, enclosed in the winged persistent perianth.

Locality: Severn Road, Stubbs Road. *H. C. Tang 687; P. S. Choi 168; Y. S. Lau 176.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, S Shaanxi, S Gansu, Hunan, Hubei, Henan, Anhui, Jiangxi, Jiangsu, Zhejiang, Fujian; Japan.

Ecology: Thickets and thin forests on rocky slopes and in valleys. Flowering: Aug.–Sep.; fruiting: Sep.–Oct.

Uses: Medicinal.

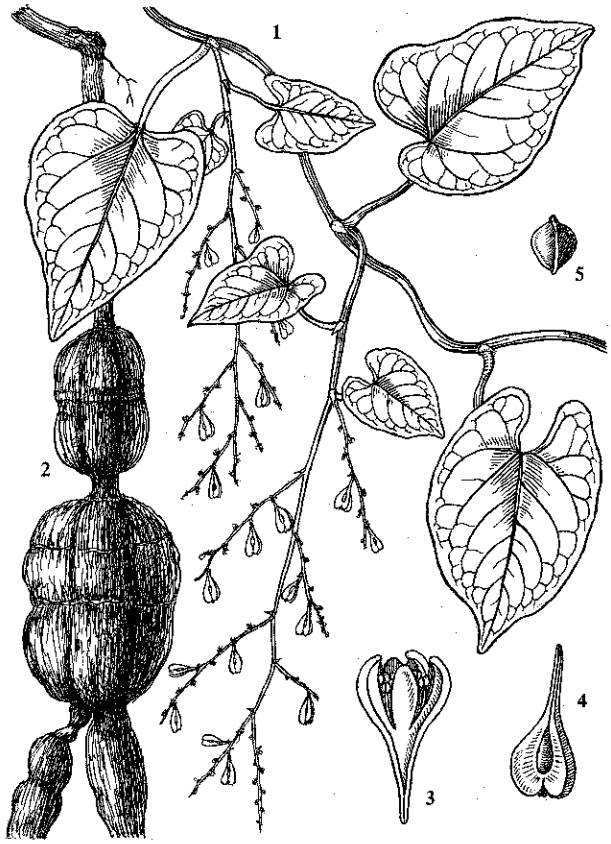



**Figure 127.** *Polygonum multiflorum* Thunb.

*1*. upper part of plant; *2*. tuberous root; *3*. flower; *4*. fruit with perianth; *5*. achene. (drawn by H. P. Yu)

**9. Polygonum cuspidatum** Siebold & Zucc. 虎杖

Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4: 208. 1846; FTW ed. 2, 2: 299, photo 126. 1996; FGD 4: 90. 2000.

*Reynoutria japonica* Houtt., Nat. Hist. 2(8): 640, t. 51, f. 1. 1777; FRPS 25: 105, pl. 22: 1–3. 1998; FYN 11: 359, pl. 98: 1–3. 2000; FOC 5: 319. 2003.

Perennial stout herb, with creeping rhizomes. Stems erect, fistulous, 1–2 m tall, glabrous, with scattered red or reddish purple dots, woody at base. Leaves alternate; petioles 1–2 mm, papillose; leaf blade broadly ovate to ovate-elliptic, 5–12 × 4–9 cm, base broadly cuneate, truncate or subrounded, apex acuminate, margin entire, glabrous, papillose on veins. Ocrea tubular, scarious, 0.3–1 cm, apex oblique, glabrous, usually caducous. Inflorescence paniculate, axillary, 3–8 cm. Peduncles papillose. Bracts funnel-form, 1.5–2 mm, apex acuminate, eciliate, each embracing 2–4 flowers. Pedicels 2–4 mm, articulate at the lower part. Flowers unisexual (plant dioecious);

perianth light green, 2–3 mm, deeply 5-lobed. Male flowers: perianth-segments with green midvein, not winged; stamens 8, exserted; female flowers: the outer 3 perianth-segments winged dorsally; wings enlarged in fruit. Ovary ovoid; styles 3; stigmas fimbriate. Achenes ovoid, 3-ribbed, 4–5 mm, dark brown and shining, enclosed in the persistent perianth.

Locality: Castle Peak. *Y. S. Lau 2167.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Shaanxi, Gansu, Hunan, Hubei, Henan, Anhui, Jiangxi, Jiangsu, Zhejiang, Fujian; Korea, Japan.

Ecology: Valleys and other wet places. Flowering: Aug.–Sep.; fruiting: Sep.–Oct.

Uses: Medicinal (folklore), food (vegetable).

**10. Polygonum plebeium** R. Br. 腋花蓼(習見蓼) **(Photo 309)**

Prodr. Fl. Nov. Holl. 420. 1810; FHK 287. 1861; FKH 217. 1912; FHN 1: 388. 1964; FTW ed. 2, 2: 308. 1996; FRPS 25: 11, pl. 1: 1–3. 1998; FGD 4: 89, fig. 59. 2000; FYN 11: 309. 2000; FOC 5: 285. 2003.

Annual herb. Stems prostrate, branched from the base, 10–40 cm, internodes usually shorter than leaves. Leaves subsessile or with a very short petiole; leaf blade narrowly elliptic or oblanceolate, 5–15 × 2–4 mm, base narrowly cuneate, apex obtuse or acute, glabrous on both surfaces; lateral veins obscure. Ocrea tubular, 2.5–3 mm, white and translucent, apex lacerate. Flowers 3–6 in axillary clusters. Pedicels slender, 1–2 mm, articulate at middle. Bracts scarious. Perianth green, margin white or pink, 1–1.5 mm, deeply 5-lobed; segments elliptic. Stamens 5; filaments slightly dilated at base, included. Ovary 3-angled; styles 3 rarely 2, very short; stigmas capitate. Achenes broadly ovoid, 1.5–2 mm, sharply 3-ribbed or convex on both sides, blackish brown, smooth and shining, enclosed in the fleshy persistent perianth.

Locality: Fanling, Tai Po, Wu Kau Tang, Mui Wo. *Y. S. Lau 2450; HK sheet 9932, 32384.*

Distribution: Dispersed over all parts of China except Xizang; also in Japan, India, Australia, Europe and Africa.

Ecology: Cultivated and in waste places. Flowering: May–Aug.; fruiting: Jun.–Sep.

**11. Polygonum chinense** L. 火炭母 **(Fig. 128; Photo 310)**

Sp. Pl. 363. 1753; FHK 289. 1861; FKH 217. 1912; FHN 1: 392. 1964; FTW ed. 2, 2: 298. 1996; FRPS 25: 55, pl. 12: 1. 1998; FGD 4: 91, fig. 60. 2000; FYN 11: 324, pl. 91: 1–2. 2000; FOC 5: 300. 2003.

Perennial herb to 1 m tall, with creeping rhizomes. Stems initially erect, later elongate and diffuse, glabrous or glabrescent. Leaves alternate; petioles 0.6–1.5 cm, purplish, usually with 2 caducous auricles at base; leaf blade ovate to oblong-ovate, 5–10 × 2–6 cm, base truncate or broadly cordate, apex acute to shortly acuminate, margin entire or obscurely undulate, glabrous, usually with purplish blue blotches. Ocrea tubular, scarious, 1.5–2.5 cm, glabrous, apex oblique, not ciliate. Flowers in little globular head, forming dichotomous, corymbose panicles, terminal or in axils of upper leaves. Peduncles and pedicels glandular-pubescent. Bracts broadly ovate, glabrous, each embracing 1–3 flowers. Perianth ca. 3.5 mm, 5-lobed beyond middle; segments ovate, greenish white or pink. Stamens 8, included. Ovary ovoid; styles 3-cleft. Achenes triangular, 3–4 mm, enclosed in fleshy, blue-black persistent perianth.

Locality: Common in Hong Kong. *H. C. Tang 1167; HK sheet 4576, 32345.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hunan, Hubei, Jiangxi, Zhejiang, Fujian, Taiwan; Japan, India, Malesia.

Ecology: Ditches, wastelands, and on roadsides. Flowering: Jul.–Sep.; fruiting: Aug.–Nov.

Uses: Medicinal (folklore).

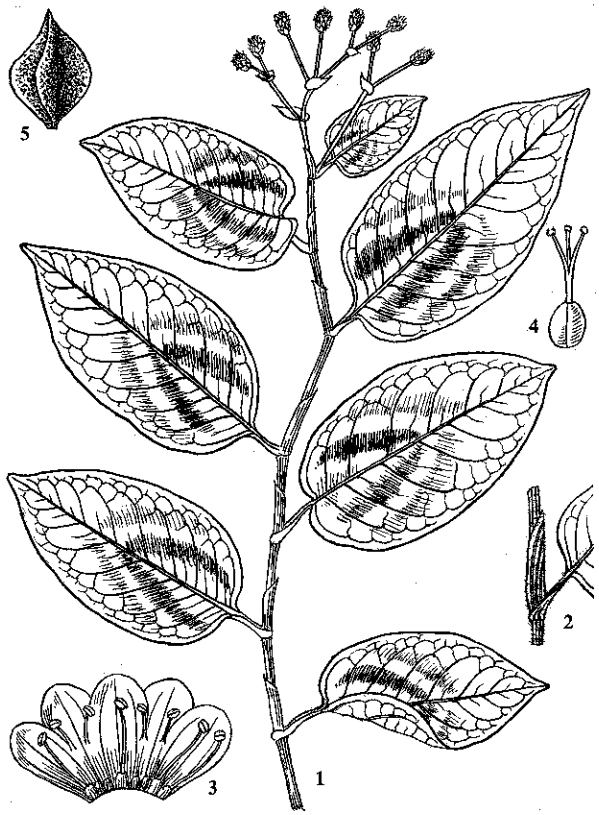



**Figure 128.** *Polygonum chinense* L.

*1*. upper part of plant; *2*. petiole and stipule; *3*. corolla opened up showing stamens; *4*. pistil; *5*. achene. (drawn by H. P. Yu)

**12. Polygonum capitatum** Buch.-Ham. ex D. Don 頭花蓼

Prodr. Fl. Nep. 73. 1825; FRPS 25: 57. 1998; FGD 4: 91. 2000; FYN 11: 326. 2000; FOC 5: 301. 2003.

Perennial herb. Stems tufted, prostrate, sparsely glandular pubescent or glabrescent, woody at base; branches of the current year growth nearly erect, sparsely glandular pubescent. Leaves alternate; petioles 2–3 mm, sometimes with auricles at base; leaf blade ovate to elliptic, 1.5–3 × 1–2.5 cm, base cuneate, apex acute, margin entire, glandular-ciliate, adaxial surface sparsely glandular-pubescent, sometimes with crescent-shaped, dark brown blotches. Ocrea tubular, scarious, 5–8 mm, glandular-pubescent, apex truncate, ciliate. Flowers in terminal, globular head of 6–10 mm in diam., solitary or in pairs. Peduncles glandular-pubescent. Bracts oblong-ovate, scarious. Perianth pink, 2–3 mm, deeply 5-lobed; segments elliptic. Stamens 8, included. Ovary triangular; styles 3-cleft; stigmas capitate. Achenes triangular, 1.5–2 mm, dark brown, enclosed in the persistent perianth.

Locality: Cultivated in gardens. *Y. W. Lam 825.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Xizang, Hunan, Hubei, Jiangxi; India, Bhutan, Nepal, Myanmar, Vietnam.

Ecology: Wet places on slopes or in valleys. Flowering: Jun.–Sep.; fruiting: Aug.–Oct.

Uses: Medicinal (folklore).

**13. Polygonum japonicum** Meisn. 日本蓼(鸳鸯蓼)

Prodr. 14(1): 112. 1856; FKH 218. 1912; FTW ed. 2, 2: 302. 1998; FRPS 25: 19. 1998; FGD 4: 94. 2000; FYN 11: 344. 2000; FOC 5: 287. 2003.

Perennial herb, 50–100 cm tall, with creeping rhizomes. Stems erect, usually pink, glabrous or sometimes sparsely and shortly strigose. Leaves alternate; petioles very short or almost obsolete; leaf blade lanceolate, 7–15 × 1–2 cm, base cuneate, apex acuminate, margin entire, bristly ciliate, sparsely and shortly strigose on both surfaces, especially on the midvein. Ocrea tubular, scarious, 1.5–2 cm, strigose, apex truncate, fringed with long (1–1.2 cm) hairs. Racemes spikes-like, 6–12 cm, forming terminal or axillary panicles. Bracts funnel-form, glabrous, upper part pink, ciliate, each embracing 3–6 flowers. Pedicels 2.5–4. Flowers unisexual (plant dioecious). Perianth white or pink, 2.5–3 mm, deeply 5-lobed; segments elliptic. Stamens 8 in male flowers. In female flower ovary ovoid; styles 2–3-cleft. Achenes ovoid, 3-ribbed or convex on both sides, 1.5–2 mm, black and shining, enclosed in persistent perianth.

Locality: Kwai Chung, Shan Liu, Ha Tsuen, Tung Chung. *Y. W. Lam 374, 867, 902.*

Distribution: Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Xizang, Hunan, Hubei, Henan, Shaanxi, Jiangxi, Anhui, Jiangsu, Shandong, Fujian, Taiwan; Korea, Japan.

Ecology: Wet places and on grasslands of valleys. Flowering: Aug.–Oct.; fruiting: Sep.–Nov.

Uses: Medicinal (folklore).

**14. Polygonum barbatum** L. 毛蓼 **(Photo 311)**

Sp. Pl. 1: 362. 1753; FHK 288. 1861; FKH 217. 1912; FHN 1: 390. 1964; FTW ed. 2, 2: 298. 1996; FRPS 25: 21, pl. 6: 1–2. 1998; FGD 4: 93. 2000; FYN 11: 346. 2000; FOC 5: 288. 2003.

Perennial herb, 40–100 cm tall, with creeping rhizomes. Stems erect, pubescent. Leaves alternate; petioles 5–8 mm, densely pilose; leaf blade lanceolate to elliptic-lanceolate, 6–15 × 1.5–4 cm, base cuneate, apex acuminate, margin entire, ciliate, sparsely pubrulous on both surfaces, pilose along midvein abaxially. Ocrea tubular, 1.5–2 cm, densely pilose and mixed with rigid, curly hairs, apex truncate, with 1.3–3 cm long fine bristles. Racemes spikes-like, 4–8 cm, densely flowered, forming terminal or axillary panicles. Bracts weakly funnel-form, glabrous, apex acute, ciliate, each embracing 3–5 flowers. Pedicels very short. Perianth 1.5–2 mm, deeply 5-lobed; segments elliptic, white or light green, apex acute. Stamens 5–8. Ovary ovoid; styles 3-cleft; stigmas capitate. Achenes triangular, 1.5–2 mm, black, smooth, and shining.

Locality: Common in Hong Kong. *P. S. Choi 275; Y. W. Lam 904; HK sheet 9904.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Hunan, Hubei, Jiangxi, Fujian, Taiwan; India, Myanmar, Philippines.

Ecology: Swamps and wet places. Flowering: Aug.–Sep.; fruiting: Sep.–Oct.

**15. Polygonum glabrum** Willd. 光蓼

Sp. Pl. 2: 477. 1799; FHK 288. 1861; FKH 217. 1912; FHN 1: 389. 1964; FTW ed. 2, 2: 301. 1996; FRPS 25: 21. 1998; FGD 4: 90. 2000; FOC 5: 288. 2003.

Annual glabrous herb, 70–100 cm tall, glabrous throughout. Stems erect, reddish brown, weekly branched. Leaves alternate; petioles 8–10 mm, rather thick; leaf blade lanceolate to oblong-lanceolate, 8–20 × 1.5–3 cm, base cuneate, apex acuminate, margin entire. Ocrea tubular, scarious, 1–3 cm, apex truncate, without hairs. Racemes spikes-like, 4–12 cm, forming terminal or axilllary panicles. Bracts weakly funnel-form, glabrous, apex truncate, each embracing 3–4 flowers. Pedicels very short. Perianth 3–4 mm, deeply 5-lobed; segments elliptic, apex rounded, white or pink. Stamens 6–8. Ovary subglobose; styles 3-cleft below middle. Achenes ovoid, 1.5–2 mm, convex on both sides, dark brown to black, smooth and shining.

Locality: Ta Kwu Ling, Sheung Shui. *W. J. Tutcher 11451; Y. W. Lam 392.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Hubei, Fujian; India, Myanmar, Thailand, Vietnam, Phillippines, Africa and America.

Ecology: Ditches and other wet places. Flowering: Jun.–Aug.; fruiting: Jul.–Sep.

**16. Polygonum viscosum** Buch.-Ham. ex D. Don 黏毛蓼(香蓼)

Prodr. Fl. Nep. 71. 1825; FHK 287. 1861; FKH 217. 1912; FTW ed. 2, 2: 312. 1996; FRPS 25: 21. 1998; FGD 4: 92. 2000; FYN 11: 346. 2000; FOC 5: 288. 2003.

Annual aromatic herb, 50–90 cm tall. Stems erect or ascending, much branched, densely covered with harsh long hairs and glandular hair. Leaves alternate; petioles 1–2 cm; leaf blade ovate-lanceolate to elliptic-lanceolate, 4–15 × 1–4 cm, base cuneate, decurrent to the petioles, apex acuminate, margin entire, densely short-ciliate, densely hirsute on both surfaces, especially on the veins. Ocrea tubular, 1–1.2 cm, densely covered with glandular and harsh hairs, apex truncate, with long hairs. Racemes spikes-like, 2–5 cm, forming terminal or axillary panicle. Peduncles 2–5 cm. Bracts funnel-form, as is the peduncle densely covered with glandular and harsh hairs, apex acute, sparsely ciliate, each embracing 3–5 flowers. Pedicels longer than bracts. Perianth ca. 3 mm, deeply 5-lobed; segments elliptic, pink or purplish. Stamens 8. Ovary ovoid; styles 3-cleft; stigmas capitate. Achenes triangular, 1.5–2 mm, black, smooth, and shining.

Locality: Tai Po Kau, Fanling, Sai Kung. *Y. S. Lau 269, 949.*

Distribution: Dispersed over all parts of China except dry regions in NW; also in Russia (far east), Korea, Japan, India.

Ecology: Wet places on roadsides and in ditches. Flowering: Jul.–Sep.; fruiting: Aug.–Oct.

**17. Polygonum lapathifolium** L. 大馬蓼 **(Fig. 129)**

Sp. Pl. 360. 1753; FHK 288. 1861; FKH 217. 1912; FHN 1: 388, fig. 205. 1964; FTW ed. 2, 2: 304, photo 127. 1996; FRPS 25: 23. 1998; FGD 4: 93. 2000; FYN 11: 347. 2000; FOC 5: 289. 2003.

Annual herb, 0.5–2 cm tall. Stems erect, glabrous, with longitudinal furrows, nodes tumid. Leaves alternate; petioles 0.2–1 cm, shortly strigose; leaf blade lanceolate to broadly lanceolate, 6–15 × 1–3.5 cm, base cuneate, apex acuminate or acute, margin entire, ciliate, strigose on midvein, usually with crescent-shaped, dark blotches on adaxial surface. Ocrea tubular, 1.5–3 cm, scarious, light brown, glabrous, apex truncate, not ciliate or slightly hairy. Racemes spikes-like, 2–6 cm, densely flowered, terminal or in axils of upper leaves. Peduncle simple, rarely branched, with glandular hairs. Bracts funnel-form, sparsely ciliate. Perianth ca. 2 mm, 4(–5)-lobed; segments elliptic, pink or white. Stamens usually 6. Ovary compressed ovoid; styles 2-cleft. Achenes broadly ovoid, 1.5–2 mm, flat, but rather thick, concave on both sides, black and shining.

Locality: Tsuen Wan, Sha Tin, Ha Tsuen, Ta Kwu Ling, Sheung Shui. *L. T. Lo 576; Y. W. Lam 1351; HK sheet 39381.*

Distribution: Widely distributed in China; also in Mongolia, Korea, Japan, Philippines, India and Parkistan.

Ecology: Roadsides, wastelands and other wet places. Flowering: Jun.–Aug.; fruiting: Jul.–Sep.

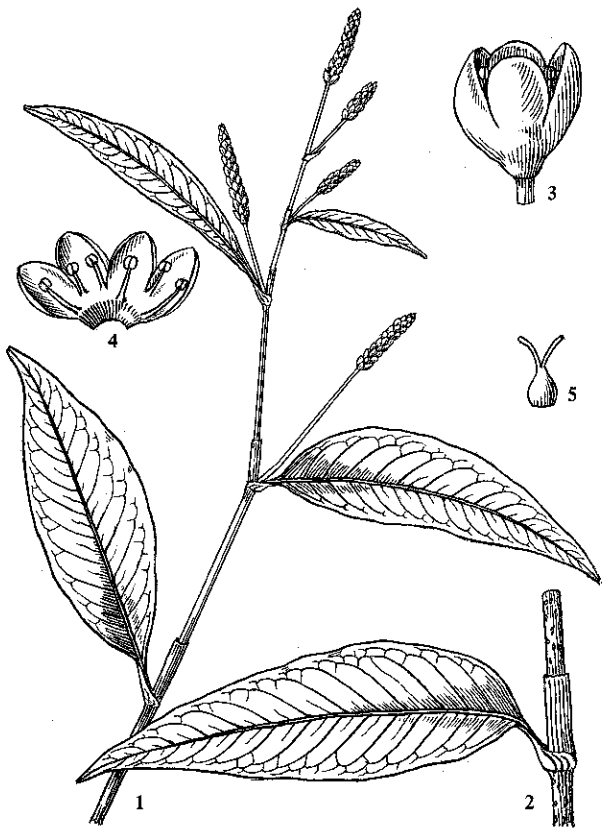



**Figure 129.** *Polygonum lapathifolium* L.
*1.* upper part of plant; *2.* leaf and ocrea; *3.* flower; *4.* perianth opened up showing stamens; *5.* pistil. (drawn by H. P. Yu)

**17a. Polygonum lapathifolium** L. var. **salicifolium** Sibth.
綿毛酸模葉蓼

Fl. Oxon. 129. 1794; FRPS 25: 24. 1998; FGD 4: 93. 2000; FYN 11: 348. 2000; FOC 5: 290. 2003.

It differs from the type variety by the leaves densely covered with cottony-white hairs abaxially.

Locality: Lai Chi Kok, Sha Tin. *S. P. Lau 109; Y. S. Lau 249.*

Distribution: Widely distributed in China; also in Mongolia, Korea, Japan, Philippines, India and Parkistan.

Ecology: Wet places. Flowering: Jun.–Aug.; fruiting: Jul.–Sep.

**18. Polygonum orientale** L. 紅蓼(紅草) **(Photo 312)**

Sp. Pl. 362. 1753; FHK 288. 1861; FKH 218. 1912; FHN 1: 389. 1964; FTW ed. 2, 2: 306. 1996; FRPS 25: 24. 1998; FGD 4: 92. 2000; FYN 11: 348, pl. 96: 1–3. 2000; FOC 5: 290. 2003.

Annual herb, 1–2(–3) m tall. Stems erect, much branched, densely pilose. Leaves alternate; petioles 2–5(–10) cm, pilose; leaf blade ovate to broadly ovate or ovate-lanceolate, 10–20 × 6–12 cm, base subrounded or slightly cordate, ± decurrent, apex acuminate, margin entire, ciliate, pubescent on both surfaces and densely pilose on veins. Ocrea tubular, 1–2 cm, scarious, densely pubescent, upper margin enlarged and foliaceous, with long hairs. Racemes spike-like, 3–7 cm, densely flowered, terminal or in axils of upper leaves. Peduncles pubescent. Bracts broadly funnel-form, 3–5 mm, herbaceous, green, puberulous, upper margin with long hairs, each embracing 3–5 flowers. Pedicels longer than the bracts. Perianth 3–4 mm, deeply 5-lobed; segments elliptic, pink or white. Stamens usually 7. Ovary compressed ovoid; styles 2-cleft below middle; nectaries present. Achenes subglobose, flat, 2–3.5 mm in diam., enclosed in persistent perianth.

Locality: Sha Po, Yuen Long. *Y. W. Lam 1269; HK sheet 4585.*

Distribution: Widely dispersed over all provinces of China except Xizang; Japan, India, Malesia and Australia; widely cultivated and naturalized elsewhere.

Ecology: Wet places near villages. Flowering: Jun.–Sep.; fruiting: Aug.–Oct.

Uses: Ornamental.

**19. Polygonum tinctorium** Ait. 蓼藍

Hort. Kew. 2: 31. 1789; FKH 217. 1912; FHN 1: 390. 1964; FRPS 25: 26. 1998; FGD 4: 91. 2000; FYN 11: 349. 2000; FOC 5: 290. 2003.

Annual herb, 50–80(–90) cm tall. Stems erect, weekly branched, glabrescent. Leaves alternate; petioles 5–10 mm; leaf blade ovate or broadly elliptic, 3–8 × 2–4 cm, base broadly cuneate, apex rounded, margin entire, shortly ciliate, glabrous adaxially, sometimes

sparsely hairy on veins of abaxial surfaces, dark blue-green when dry. Ocrea tubular, 1–1.5 cm, scarious, covered with appressed hairs, apex truncate, fringed with long hairs. Racemes spike-like, 2–5 cm, terminal or in axils of upper leaves. Bracts funnel-form, green, ciliate, each embracing 3–5 flowers. Pedicels slender, subequal to bracts. Perianth 2.5–3 mm, deeply 5-lobed; segments ovate, pink or purplish, apex acute. Stamens 6–8, included. Ovary ovate-ellipsoid; styles 3-cleft. Achenes broadly ovoid, 3-ribbed, 2–2.5 mm, brown and shining, enclosed in persistent perianth.

Locality: Sai Wan. *HK sheet 9906.*

Distribution: Dispersed over all parts of China; cultivated or naturalized.

Ecology: Flowering: Aug.–Sep.; fruiting: Aug.–Oct.

Uses: Materials (tannin, dyestuff).

**20. Polygonum hydropiper** L. 水蓼

Sp. Pl. 361. 1753; FHK 288. 1861; FKH 218. 1912; FHN 1: 391. 1964; FTW ed. 2, 2: 302, pl. 146. 1996; FRPS 25: 27, pl. 6.: 3–4. 1998; FGD 4: 95. 2000; FYN 11: 351. 2000; FOC 5: 291. 2003.

Annual herb, 0.3–1.3 m tall. Stems erect or ascending, much branched, glabrous. Leaves alternate; petioles 4–8 mm; leaf blade lanceolate to elliptic-lanceolate, 4–8 × 0.5–2.5 cm, base cuneate, apex acuminate, margin entire, ciliate, glabrous or sometimes with appressed hairs on midvein, with glandular dots on both surfaces. Ocrea tubular, 11.5 cm, scarious, sparsely strigose, apex truncate, shortly ciliate. Racemes spike-like, 3–8(–15) cm, terminal or in axils of upper leaves. Bracts funnel-form, 2–3 mm, green, margin scarious, sparsely ciliate, each embracing 3–5 flowers. Pedicels longer than the bracts. Perianth 3–3.5 mm, deeply 5(–4)-lobed; segments elliptic, pink or white, with translucent glandular dots. Stamens 5, rarely 8, included. Ovary elliptic-triangular; styles 2–3-cleft; stigmas capitate. Achenes ovoid, 3-ribbed, 2–3 mm, punctate, enclosed in persistent perianth.

Locality: Lai Chi Kok, Sha Tin. *H. C. Tang 1911; S. P. Lau 111.*

Distribution: Widely distributed from S to N China; Korea, Japan, India, Malesia, Europe and N America.

Ecology: Ditches, rice-fields and other wet places. Flowering: May–Sep.; fruiting: Jun.–Oct.

Uses: Medicinal (folklore).

**21. Polygonum pubescens** Blume 伏毛蓼(短毛蓼)

Bijdr. 2: 532. 1825; FTW ed. 2, 2: 309, photo 131. 1996; FRPS 25: 29, pl. 4: 4–5. 1998; FGD 4: 88, fig. 57. 2000; FYN 11: 351. 2000; FOC 5: 291. 2003.

Annual herb, 70–100 cm tall. Stems erect, much branched, sparsely strigose, often reddish. Leaves alternate; petioles 4–7 mm, densely strigose; leaf blade ovate-lanceolate or broadly lanceolate, 5–10 × 1–2.5 cm, base broadly cuneate, apex acuminate or acute, margin entire, ciliate, densely strigose on both surface, with dark blotches on the center of adaxial surface. Ocrea tubular, 1–1.5 cm, scarious, strigose, apex truncate, long-ciliate. Racemes spike-like, 7–15 cm, terminal or in axils of upper leaves. Bracts green, funnel-form, margin scarious, ciliate, each embracing 3–4 flowers. Perianth 3–4 mm, deeply 5-lobed; segments elliptic, green, upper part pink. Stamens 8, included. Ovary ovoid; styles 3-cleft, stigmas capitate. Achenes ovoid, 3-ribbed, 2.5–3 mm, black, enclosed in persistent perianth.

Locality: Sai Kung, Sheung Shui, Tai Kwu Ling. *L. T. Lo 577; Y. W. Lam 394; HK sheet 9902.*

Distribution: Dispersed over all parts of China except dry regions in NW; also in Korea, Japan, India, Malesia.

Ecology: Wet places by streams, ditches and rice-fields. Flowering: May–Jun.; fruiting: Jul.–Sep.

**22. Polygonum posumbu** Buch.-Ham. ex D. Don 丛枝蓼

Prodr. Fl. Nep. 71. 1825; FKH 218. 1912; FTW ed. 2, 2: 308. 1996; FRPS 25: 29. 1998; FGD 4: 94. 2000; FYN 11: 352. 2000; FOC 5: 291. 2003.

Annual herb, 30–70(–100) cm tall. Stems slender, ascending from the prostrate base, glabrous, with longitudinal furrows. Leaves alternate; petioles 5–7 mm, shortly strigose; leaf blade ovate-lanceolate to ovate, 3–6 × 1–3 cm, base broadly cuneate, apex caudate, margin entire, ciliate, sparsely covered with rigid, appressed hairs on both surface or glabrescent. Ocrea tubular, 4–6 mm, scarious, with appressed hairs, apex truncate, ciliate. Racemes spike-like, 4–12 cm, terminal or in axils of upper leaves. Bracts funnel-form, light green, glabrous, ciliate, each embracing 2–4 flowers. Perianth 2–2.5 mm, deeply 5-lobed; segments elliptic, pink. Stamens 8. Ovary ovoid; styles 3-cleft, stigmas capitate. Achenes ovoid, 3-ribbed, 2–2.5 mm, dark brown to black, enclosed in the persistent perianth.

Locality: Sha Tau Kok. *Ross 11452; Y. W. Lam 2214.*

Distribution: Dispersed over all parts of China, except Xinjiang and Xizang; Korea, Japan, India and Malesia.

Ecology: Margins of forests in valleys and wet places. Flowering: May–Sep.; fruiting: Jun.–Oct.

**23. Polygonum longisetum** Bruijn 長梨蓼

Pl. Jungh. 307. 1854; Meisn. in DC. Prodr. 14(1): 10. 1856; FKH 218. 1912; FTW ed. 2, 2: 304. 1996; FRPS 25: 30. 1996; FGD 4: 94. 2000; FYN 11: 352. 2000; FOC 5: 292. 2003.

Annual herb, 25–60 cm tall. Stems erect from the prostrate base, glabrous, nodes tumid. Leaves alternate; petioles very short; leaf blade lanceolate to broadly lanceolate, 4–8(–15) × 1–2.5 cm, base cuneate, apex acuminate, margin entire, ciliate, adaxial surface subglabrous, abaxial surface with short hairs on veins. Ocrea tubular, 5–10 mm, sparsely pubescent, apex truncate, fringed with long (6–7 mm) bristles. Racemes spike-like, 2–5 cm, terminal or in axils of upper leaves. Peduncles glabrous. Bracts funnel-form, sparsely ciliate, each embracing 3–6 flowers. Perianth ca. 2.5 mm, deeply 5-lobed; segments elliptic, pink or purplish. Stamens 6–8. Ovary

ovoid; styles 3-cleft, stigmas capitate. Achenes broadly ovoid, ca. 2 mm, 3-ribbed, black and shining, enclosed in persistent perianth.

Locality: Tai Tam Reservior. *L. T. Lo 569.*

Distribution: Widely distributed in China, except Gansu, Xinjiang, and Xizang; Korea, Japan, Myanmar, India, Malesia, Philippines.

Ecology: Valleys and grasslands by streams. Flowering: Jun.–Aug.; fruiting: Jul.–Sep.

**24. Polygonum tenellum** Blume var. **karagoeanum** (Makino) G. Murata 柔蓼蓼

Acta Phytotax. Geobot. 26 (3–4): 88. 1974; FYN 11: 353. 2000.

*Polygonum micranthum* Meisn., Ann. Mus. Bot. Lugduno-Batavum 2: 59. 1865; FTW ed. 2, 2: 305. 1996.

*Polygonum tenellum* var. *micranthum* (Meisn.) C. Y. Wu, Index Fl. Yunnan. 1: 282. 1984; FRPS 25: 33. 1998.

*Polygonum kawagoeanum* Makino, Bot. Mag. (Tokyo) 28: 115. 1914; FOC 5: 293. 2003.

*Polygonum minus* auct. non Huds.: FKH 218. 1912; FHN 1: 390. 1964; FGD 4: 93. 2000.

Annual herb, 20–50 cm tall. Stems slender, ascending from the prostrate base, glabrous, reddish brown. Leaves alternate; petioles very short; leaf blade linear-lanceolate to narrowly lanceolate, 3–6 × 0.4–0.8 cm, base usually rounded, apex acute, margin entire, ciliate, sparsely pubescent on both surface or glabrescent, but strigose along midvein. Ocrea tubular, 8–10 mm, scarious, sparsely strigose, long-ciliate. Racemes spike-like, 2–3 cm, densely flowered, terminal or in axils of upper leaves. Bracts funnel-form, ciliate, each embracing 2–4 flowers. Perianth 1–1.5 mm, deeply 5-lobed; segments elliptic, pink or white. Stamens 5–6. Ovary ovoid; styles 2-cleft, stigmas capitate. Achenes ovoid, 1–1.5 mm, flat, but rather thick, concave on both sides, black and shining, enclosed in persistent perianth.

Locality: Tai Kwu Ling. *W. J. Tutcher 5269; Y. W. Lam 393.*

Distribution: Guangdong, Guangxi, Yunnan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Japan, India, Malesia.

Ecology: Wet places near rice-fields, and valleys. Flowering: May–Sep.; fruiting: Jun.–Oct.

Notes: The specimen *W. J. Tutcher 5269* was reported as *Polygonum longisetum* var. *rotundatum* A. J. Li in *Check List of Hong Kong Plants (2002, 2004).*

**25. Polygonum jucundum** Meisn. 愉悦蓼

Monogr. Polyg. 71. 1826; FKH 218. 1912; FRPS 25: 34. 1998; FGD 4: 94. 2000; FYN 11: 354. 2000; FOC 5: 293. 2003.

Annual herb, 50–100 cm tall. Stems much branched, erect from the prostrate base, glabrous. Leaves alternate; petioles 3–6 mm; leaf blade oblong-lanceolate, 3–10 × 1–2.5 cm, base cuneate, apex acuminate, margin entire, shortly ciliate, sparsely strigose or glabrescent on both surface. Ocrea tubular, scarious, 0.5–1 cm, sparsely strigose, apex truncate, ciliate. Racemes spike-like, 3–6 cm, densely flowered, terminal or in axils of upper leaves. Bracts funnel-form, green, ciliate, each embracing 3–5 flowers. Pedicels 4–6 mm. Perianth 2.5–3.5 mm, deeply 5-lobed; segments oblong, pink or white. Stamens 7–8. Ovary ovoid; styles 3-cleft below middle. Achenes ovoid, 3-ribbed, ca. 2.5 mm, black and shining, enclosed in persistent perianth.

Locality: Ng Tung Chai, Tai Om, Lin Au, Ho Pui. *B. Gloria s.n. (HK sheet 32369); Y. W. Lam 449; Y. S. Lau 2433.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Gansu, Shaanxi, Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Fujian.

Ecology: Wet places near ditches, and grassy slopes. Flowering: Aug.–Sep.; fruiting: Sep.–Nov.

# 80. PLUMBAGINACEAE 白花丹科

HU Qi-ming 胡启明

Perennial herbs and shrubs or climbers, aculescent or with elongated and branched stems. Leaves simple, in basal rosette or alternate on stems, without stipules. Flowers bisexual, regular, in cymose, racemose, spicate or capitulate inflorescence, bracteate. Sepals fused to form a 5-toothed or 5-lobed tube, 5–10-ribbed; lobes often with scarious margins. Petals 5, united into a tube or connate only at base, persistent; lobes imbricate. Stamens 5, opposite petals, free or inserted on corolla-tube; anthers 2-celled, opening by longitudinal slits. Ovary superior, 1-locular, with a single basal anatropous ovule; styles 5, free or united. Fruit an achene or a capsule, usually enclosed by persistent sepals.

About 22 genera and 440 species, cosmopolitan, but best developed from the Mediterranean region to W and C Asia, especially prefers to dry and saline habitats; seven genera and 46 species in China; two genera and two species in Hong Kong.

1a. Leaves in basal rosette; petal connate only at base; styles free ..... 1. *Limonium*

1b. Leaves alternate on stems; petals united into a long tube; style single, branched at apex ..... 2. *Plumbago*

## 1. Limonium Mill. 補血草屬

Perennial herbs or subshrubs. Leaves basal or alternate on the aerial stems in the shrubby species, entire or pinnately lobed. Flowers 2 to many in spikes, subtended by scale-like bracts and arranged into branched cymes or panicles. Sepals tubular, 5–10-ribbed, scarious, often colored, apex 5-lobed. Petals 5, free or connate at base. Stamens 5 inserted at base of petals. Ovary superior, 1-locular, with a single pendulous ovule; styles 5, free. Fruit a capsule, 5-ribbed, dehiscent or indehiscent.

About 150 species, cosmopolitan, but especially in maritime and arid regions on N hemisphere; 22 species in China; one species in Hong Kong.

**1. Limonium sinense** (Girad) Kuntze
補血草 **(Fig. 130; Photo 313)**

Rev. Gen. Pl. 2: 396. 1891; FHN 3: 439, fig. 841. 1974; FRPS 60(1): 30, pl. 5: 5. 1987; FGD 3: 314, fig. 204. 1995; FOC 15: 199. 1996; FTW ed. 2, 4: 80, pl. 35, photo 50. 1998.

*Statice sinensis* Girad, Ann. Sci. Nat. 3, 2: 329. 1844; FHK 281. 1861; FKH 155. 1912.

Perennial herb, 15–50 cm tall, with thick tap root. Leaves in a basal rosette, obovate-oblanceolate or spatulate, 4–10 × 0.8–2 cm including petiole, apex obtuse or rounded, tapering from middle into the petiole, glabrous, margin entire. Spikes with 2–3 secund flowers, arranged in cymose panicle, terminal on scape; Bracteoles scarious, elliptic, 5–6 mm. Calyx funnel-form, 6–7 mm, with white hairs on ribs. Petals pale yellow, connate only at base, slightly longer than calyx. Stamens 5, inserted at the base of petals. Ovary obovate; style 5, filiform. Capsule cylindrical, ca. 3 mm long and 1 mm in diam.

Locality: Hong Kong Island, Shatin, Sai Kung, Chek Keng, Tai Po, Lantau Island. *H. C. Tang 757; C. Ford s.n. (HK sheet 2814); Y. S. Lau 557.*

Distribution: Hainan, Guangdong, Guangxi, Taiwan, Fujian, Zhejiang, Jiangsu, Shandong, Hebei, Liaoning; Japan, Vietnam.

Ecology: Sandy grassy lands near seashore. Flowering: Almost all year round.

Uses: Medicinal (folklore), ornamental.

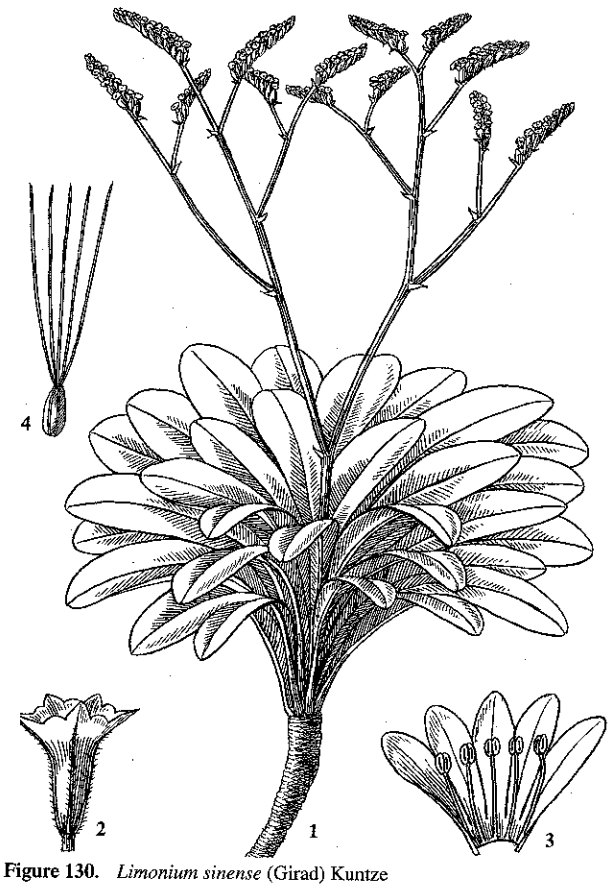



**Figure 130.** *Limonium sinense* (Girad) Kuntze
*1*. plant; *2*. calyx; *3*. corolla opened up showing stamens; *4*. pistil. (drawn by H. P. Yu)

## 2. Plumbago L. 白花丹屬

Perennial herbs or subshrubs, sometimes climbing. Leaves alternate, entire; petioles often dilated at the base and amplexicaul. Flowers in terminal spikes. Bracts and bracteoles shorter than calyx. Calyx tubular, glandular, 5-ribbed, parts between the ribs scarious, apex 5-lobed. Corolla salverform, with slender tube and 5 spreading lobes. Stamens 5, free; filaments filiform, dilated at the base. Ovary 1-locular, with a single ovule; styles slender, 5 branched. Capsule enclosed in the persistent calyx, opening transversely near the base.

About ten species in temperate and subtropical regions; two species in China; one species in Hong Kong.

**1. Plumbago zeylanica** L. 白花丹 **(Fig. 131; Photo 314)**

Sp. Pl. 151. 1753; FKH 156. 1912; FGZ 561, fig. 297. 1956; FRPS 60(1): 4, pl. 1: 1–2. 1987; FGD 3: 315. 1995; FOC 15: 191. 1996; FTW ed. 2, 4: 80, photo 51. 1998.

Semi-climbing subshrub, 1–2 cm tall. Leaves alternate, or sometimes in cluster of 3 on branches, ovate to ovate-elliptic, unequal, 3–10 × 2–2.5 cm, base broadly cuneate, ± decurrent, apex acute or acuminate; petioles often dilated in auricles and amplexicaul, usually with a few small leaves in axils. Spikes terminal and axillary, 8–17 cm, often branched; rhachis glandular; each flower subtended by 3 bracts. Calyx-tube ca. 11 cm, 5-ribbed, with glandular hairs. Corolla white or bluish; tube 17–20 mm; lobes elliptic or obovate, ca. 5 mm, spreading. Ovary oblong; style slender; stigma with 5 linear lobe. Capsule oblong, 5–7 mm, opening transversely.

Locality: Sai Kung, Sha Kok Mei, San Tin, Castle Peak, Cheung Chau. *H. C. Tang 18; Y. S. Lau 2418; W. J. Tutcher s.n. (HK sheet 17239).*

Distribution: Hainan, Guangdong, Guangxi, S Guizhou, Sichuan, Yunnan, Fujian, Taiwan; tropical Asia.

Ecology: Grassy lands and thickets. Flowering: Sep. to Mar. of the following year.

Uses: Ornamental, medicinal (folklore).




**Figure 131.** *Plumbago zeylanica* L.
*1*. upper part of plant; *2*. calyx; *3*. corolla opened up showing stamens; *4*. pistil. (drawn by H. P. Yu)

# 81. DILLENIACEAE 第倫桃科

Xia Nian-he 夏念和 • Deng Yun-fei 鄧雲飛

Trees, shrubs, lianas, rarely perennial herbs. Leaves spirally arranged, conduplicate, often scabrid, margins toothed, rarely entire; exstipulate, or with long petiolar flanges. Flowers in cymes, panicles, or racemes, sometimes reduced to a single flower, terminal or axillary, horizontally monosymmetrical, bisexual; pedicels articulate; sepals (3–)4–5(–20), imbricare, overlapping, persistent in fruit; petals (2–)3–5(–7), imbricate, often crumpled in bud; stamens numerous, rare 1–10, often asymmetrical, connective often well-developed, anthers basifixed, often dehiscing by pores; carpels 1–20, distinct, or more or less connate at base; with 1–many ovules. Fruits baccate or follicle. Seeds 1–many, arillate or with a rudimentary aril.

12 genera and ca. 300 species in tropical regions; two genera and five species in China; one genus and one species in Hong Kong.

## 1. Tetracera L. 錫葉藤屬

Evergreen shrubs or lianas. Leaves simple, entire or serrate, often scabrid on one or both sides; petioles short, furrowed. Panicles axillary or terminal, few to many-flowered. Flowers actinomorphic, hermaphrodite; sepals 4–5, persistent, often reflexed in fruit; petals 3–5, with emarginated apex, whitish or slightly reddish; stamens numerous, dilated at distal end, with long filament and short thecae along rhomboid receptacle; carpels 1–4, free, with 4–20 ovules, style short, simple. Follicles leathery, opening with 1–2 longitudinal silts, ovoid to globular with style persisting as a short beak. Seeds reniform to ovoid or globular, glabrous, glossy dark brown to black; aril fleshy, cup-shaped, reddish or purplish, with fimbriate or laciniate margin.

A pantropical genus of ca. 45 species; two species in China; one species in Hong Kong.

**1. Tetracera asiatica** (Lour.) Hoogland
錫葉藤 **(Fig. 132; Photos 315–316)**

Fl. Malesiana 1(4): 143. 1951; FHN 1: 446. 1964; FRPS 49(2): 191. 1984.

*Segnieria asiatica* Lour., Fl. Cochinch. 341. 1790.

*Tetracera sarmentosa* (L.) Vahl. subsp. *asiatica* (Lour.) Hoogland, Blumea 9: 588. 1959; FGD 3: 93. 1995.

*Leontoglossum scabrum* Hance, Ann. Bot. Syst. 2: 18. 1851.

*Dilima sarmentosa* auct. non L.: FHK 7. 1861; FKH 27. 1912.

Woody vine, 3–5 m or more; branches scabrous, strigose. Petioles 0.5–1.0 cm; pubescent or glabrescent; leaf blade leathery, obovate to broadly lanceolate, 3–15 × 2–7 cm, base rounded or cuneate, apex acute or obtuse, margin entire or serrate-crenuate, scabrous on both surfaces; lateral veins 7–16 on each side of midvein, elevated abaxially. Inflorescence paniculate, terminal or axillary, many-flowered; flower white, ca. 8–10 mm. in diam.; pedicels 1–5 mm; bracts and bracteoles linear, sparsely pubescent abaxially, margin ciliate; sepals 5, suborbicular, margin ciliate, sparsely pubescent abaxially, the outer two 2 × 1.5 mm, the inner three 4 × 3 mm; petals 3; ovate, ca. 3.5 × 2.5 mm, membranaceous, glabrous; stamens numerous, 3–4 mm, filaments filiform, dilated at the distal end; anther-cells slightly separated at the apex; carpels 1(–2), with ca. 10–12 ovules, glabrous. Follicles ovoid, 6–10 × 4–6 mm with a 2–5 mm long beak, 1(–2)-seeded. Seeds ovoid, black, ca. 4 × 3 mm with an up to 5 mm fringe-margined aril.

Locality: Common in Hong Kong. *L. T. Lo 108.*

Distribution: Guangdong, Guangxi; Thailand, Vietnam, Malesia.

Ecology: Thin forests on hillslopes and in ravines.

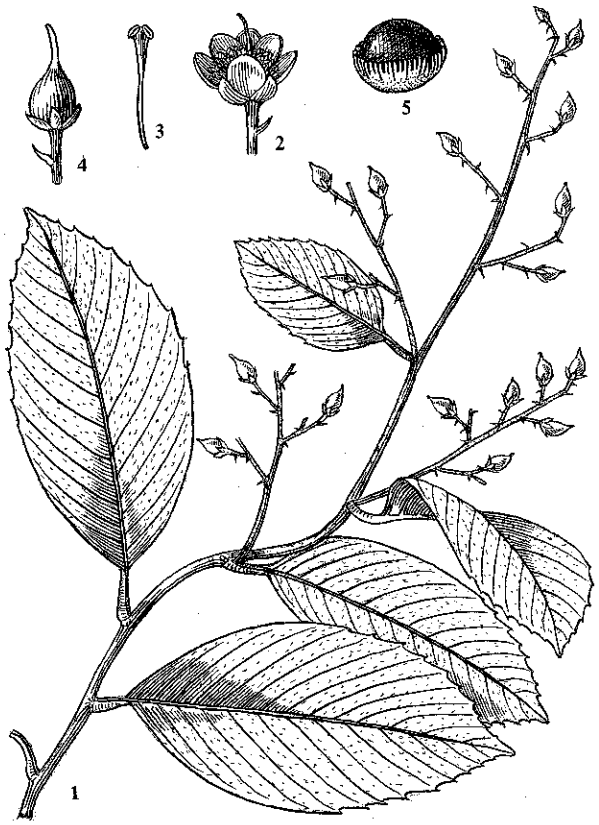



**Figure 132.** *Tetracera asiatica* (Lour.) Hoogland
*1*. fruiting branch; *2*. flower; *3*.stamen; *4*. follicle; *5*. seed. (drawn by H. P. Yu)

# 88. THEACEAE 山茶科

Deng Yun-fei 鄧雲飛 • XIA Nian-he 夏念和

Evergreen or deciduous trees or shrubs. Leaves simple, alternate, pinnately veined, exstipulate. Flowers axillary, rarely terminal, solitary, or sometimes fascicled, bisexual, or rarely unisexual (plant dioecious). Sepals mostly 5, rarely 4 or many, imbricate, distinct or very shortly connate at the base. Petals 5, rarely more, distinct or connate at base. Stamens many, in 2–6 series, rarely as few as 5, distinct or connate at base, usually adnate to the base of petals. Ovary superior, rarely half-inferior, 2–10-locular, ovules 2 to many per

locule, placentas axile; styles as many as carpels, distinct to connate at base. Fruit a capsule, a berry or a drupe; seeds 1 to many, winged or not, sometimes arillate; embryo large, straight or curved; endosperm present or absent, rarely abundant.

About 21 genera and 500 species, mostly distributed in tropical and subtropical regions of the world; 12 genera and about 270 species in China; ten genera, 32 species and four varieties in Hong Kong.

1a. Stamens in 3–6 series; anthers dorsifixed; fruit usually a capsule, dehiscent.
2a. Seeds wingless.
3a. Capsules dehiscent from the apex; valves persistent; seeds usually 1–3 per locule ..... 1. *Camellia*
3b. Capsules dehiscent from the base; valves deciduous; seeds usually 6–9 per locule ..... 2. *Pyrenaria*
2b. Seeds winged.
4a. Capsule cylindric; seeds winged at one end ..... 3. *Polyspora*
4b. Capsule ovoid-conical, globose or oblate; seeds winged all around.
5a. Fruit globose or oblate, with central axis; sepals deciduous; columella more or less developed; seeds broadly winged ..... 4. *Schima*
5b. Fruit ovoid-conical, without central axis; sepals persistent; columella almost aborted; seeds narrowly winged ..... 5. *Stewartia*
1b. Stamens in 1 or 2 series; anthers basifixed; fruit usually a berry, indehiscent.
6b. Flowers unisexual and plants dioecious ..... 6. *Eurya*
6a. Flowers bisexual or unisexual and plant polygamous.
7b. Anthers glabrous; leaves crowded at ends of branchlets.
8a. Ovary superior; petals obtuse at apex ..... 7. *Ternstroemia*
8b. Ovary half-inferior; petals acute at apex ..... 8. *Anneslea*
7a. Anthers pilose; leaves not crowded at ends of branchlets.
9a. Terminal buds hairy; filaments often connate; ovary 3–5-locular ..... 9. *Adinandra*
9b. Terminal buds glabrous; filaments distinct; ovary 2–3-locular ..... 10. *Cleyera*

## 1. Camellia L. 山茶屬

Evergreen shrubs or small trees. Leaves alternate, serrate, rarely entire. Flowers axillary or subterminal, solitary or 2–3 clustered, sessile or shortly pedicelled; bracteoles 2–10, spirally arranged, persistent or caducous; sepals 5 to many, distinct or not at all distinguishable from the lower bracteoles; petals 5–12, unequal, slightly connate at the base; stamens many, outer ones with the proximal half connate to the base of petals, inner ones free; anthers more or less basifixed; ovary 3–5-locular, with 4–6 pendulous ovules per locule, styles filiform, connate at base. Capsule woody, globose or oblate, 3–5-locular, sometimes reduced to 1–2-locular by abortion, opening loculicidally into 3–5 valves from apex; central axis (columella) persistent, calyx persistent at base of fruit, rarely deciduous. Seeds globose, wingless; semi-globose or polygonal; embryo straight, radicle superior.

About 120 species distributed in E and SE Asia; 98 species in China; 13 species and one variety in Hong Kong.

1a. Flowers clearly pedicellate; bracteoles and sepals persistent.
2a. Stamens in 3–4 whorls; fruit 3-locular, central axis persistent.
3a. Leaves elliptic to oblong ..... 1. *C. sinensis*
3b. Leaves oblanceolate ..... 1a. *C. sinensis* var. *waldenae*
2b. Stamens in 2 whorls; fruit only 1 locule developed, central axis abortive.
4a. Petals glabrous abaxially; ovary and styles glabrous ..... 2. *C. euryoides*
4b. Petals silky-hairy abaxially; ovary and styles tomentellous.
5a. Leaf-base rounded ..... 3. *C. salicifolia*
5b. Leaf-base cuneate ..... 4. *C. caudata*
1b. Flowers subsessile; bracteoles and sepals usually caducous, sometimes remaining on young fruit.
6a. Styles distinct.
7a. Flowers red ..... 5. *C. hongkongensis*
7b. Flowers white.
8a. Branchlets reddish brown; flowers 6–10 cm in diam.; sepals up to 2 cm long; ovary 3–5-locular; pericarp (6–)10–15 mm thick ..... 6. *C. crapnelliana*
8b. Branchlets greyish brown; flowers 2–3.5 cm in diam.; sepals ca. 1 cm long; ovary 3-locular; pericarp 2–4 mm thick ..... 7. *C. furfuracea*
6b. Styles more or less connate.
9a. Leaves rugose; ovary 5-locular ..... 8. *C. granthamiana*
9b. Leaves not rugose; ovary usually 3-locular, rarely 4–5-locular.
10a. Petals connate at the base.
11a. Ovary glabrous ..... 9. *C. japonica*
11b. Ovary tomentose ..... 10. *C. reticulata*
10b. Petals free or nearly so.

12a. Fruit 1-2 cm in diam., usually one locule developed with 1 seed ..... 11. *C. kissii*
12b. Fruit larger, >2.5 cm in diam., 3-locular.
13a. Leaves 6–10 × 2–4 cm, apex acuminate, margin serrate, midvein pubescent ..... 12. *C. oleifera*
13b. Leaves 3–6 × 1–3 cm, apex acute, margin crenulate, midvein glabrous ..... 13. *C. sasanqua*

**1. Camellia sinensis** (L.) Kuntze 茶 **(Photo 317)**

Trudy Imp. S.-Peterburgsk. Bot. Sada 10: 195. 1887; FGD 2: 137. 1991; FRPS 49(3): 130. 1998.

*Thea sinensis* L., Sp. Pl. 1: 515. 1753; FHN 1: 496. 1964.

*Camellia thea* Link., Enum. Hort. Berol. Alt. 2: 73. 1822; FKH 45. 1912.

Shrub or small tree; young branches pubescent, glabrescent; terminal buds silvery grey sericeous. Petioles 3–8 mm, glabrous; leaf blades leathery, elliptic to oblong, 4–12 × 2–5 cm, base cuneate, apex acute or obtuse, margin serrate to serrulate, glabrous adaxially, glabrous or pubescent abaxially, lateral veins 6–9 pairs. Flowers axillary, solitary or 2–3 clustered, 2–3 cm in diam.; pedicels 4–6 mm, recurved, pubescent or glabrous; bracteoles 2, caducous, ovate, ca. 2 mm; sepals 5, persistent, leathery, broadly ovate to suborbicular, 3–4 mm, glabrous or white-pubescent abaxially, white-sericeous adaxially, margin ciliolate; petals 6–8, white, outer 1–3 sepaloid, inner ones obovate to broadly obovate, 1–1.6 × 1.2–2 cm, connate at base, apex rounded, glabrous or pubescent; stamens many, 0.8–1.3 cm, glabrous, in 3–4 whorls, connate at base; ovary globose, 3-locular, pubescent; styles ca. 1 cm, glabrous or pubescent at base, 3-lobed at apex. Capsule oblate, rarely globose, 1–1.5 × 1.5–3 cm, 1–2-locular with 1–2 seeds per locule; pericarp ca. 1 mm thick; central axis persistent. Seeds brown, subglobose, 1–1.4 cm in diam.

Locality: Mount Parker, Tai Mo Shan. *Y. W. Lam 1390; HK sheet 32921.*

Distribution: Area S of Changjiang River; Japan, Korea, Laos, Myanmar, Thailand, Vietnam; widely cultivated in tropical and subtropical parts of the world.

Ecology: Forests and thickets, or cultivated. Flowering: Oct.–Feb.; fruiting: Aug.–Oct.

Uses: Food (beverage base), medicinal (source of caffeine & theophylline).

**1a. Camellia sinensis** (L.) Kuntze var. **waldenae** (S. Y. Hu) H. T. Chang 香花茶 **(Photo 318)**

Acta Sci. Nat. Univ. Sunyatsenia 20(1): 98. 1981; FGD 2: 137. 1991; FRPS 49(3): 131. 1998.

*Camellia waldenae* S. Y. Hu, Wild Flowers of Hong Kong. 61. 1977.

Differs from var. *sinensis* by its narrowly oblanceolate leaves and sweet-smelling flowers.

Locality: Tai Mo Shan, Ma On Shan, Wu Kau Tang. *S. Y. Hu 12573* (CUHK); *L. T. Lo 428.*

Distribution: Guangdong, Guangxi.

Ecology: Forest.

Notes: The type specimen was collected from Tai Mo Shan by S. Y. Hu.

**2. Camellia euryoides** Lindl. 柃葉茶

Bot. Reg. 1: 983. 1826; FGD 2: 140. 1991; FRPS 49(3): 162. 1998.

*Thea euryoides* (Lindl.) Booth, Trans. Hort. Soc. London 7560. 1830.

Shrub or small tree, young branches densely greyish yellow-pubescent, glabrescent. Petioles 1–3 mm, pubescent; leaf blades thinly leathery, elliptic to ovate-elliptic, 2–4 × 0.7–1.4 cm, base broadly cuneate, apex bluntly acuminate, margin serrulate, hirtellous along midvein adaxially, sparsely appressed villose or glabrescent abaxially; lateral veins obscure on both surfaces. Flowers axillary or subterminal, solitary, ca. 1.5 cm in diam.; pedicels 5–9 mm, slender, glabrous; bracteoles 4 or 5, triangular to broadly ovate, 1–1.5 mm, abaxially puberulous near apex, margin ciliolate; sepals 5, ca. 2.5 mm, connate at base, abaxially puberulous near apex, adaxially sericeous, margin ciliolate; petals 5, white, obovate to broadly obovate, ca. 2 cm, connate at base, abaxially glabrous, apex emarginate to truncate; stamens many, in 2 whorls, 0.9–1.5 cm, glabrous, proximal 2/3 of filaments connate into a cup; ovary ovoid, 1.5–2 mm, glabrous; styles ca. 1.8 mm, glabrous, 3-lobed at apex. Capsules subglobose, 1–1.5 cm in diam., 1-locular with 1 seed; pericarp green to brown, thinly woody; central axis abortive. Seeds brown, globose, ca. 1 cm in diam.

Locality: Mount Parker, Pat Sin Leng, Nam Chung, Lantau Island. *F. W. Xing 8066; HK sheet 35553.*

Distribution: Guangdong, Jiangxi, Fujian.

Ecology: Forest. Flowering: Mar.–May; fruiting: Aug.–Oct.

**3. Camellia salicifolia** Champ. ex Benth. 柳葉茶 **(Photo 319)**

Hooker's J. Bot. Kew Gard. Misc. 3: 309. 1851; FHK 30. 1861; FKH 46. 1912; FGD 2: 142. 1991; FRPS 49(3): 194. 1998.

*Thea salicifolia* (Champ.) Seem., Trans. L. Soc. 22: 349. 1859.

*Camelliastrum salicifolia* (Champ.) Nakai, J. Jap. Bot. 16: 701. 1940.

Shrub or small tree, young branchlets densely pubescent, glabrescent. Petioles 1–3 mm, densely pubescent; leaf blades membranaceous, lanceolate, 6–10 × 1.5–2.5 cm, base rounded, apex long-acuminate to caudate, margin serrulate, glabrous adaxially except for the pubescent midvein, densely pubescent abaxially; lateral veins 6–9 pairs. Flowers axillary, solitary; pedicels 4–5 mm, densely villose; bracteoles 4–5, lanceolate, 4–10 mm, pubescent, persistent; sepals 5, lanceolate, 1–1.5 cm, silky-hairy abaxially; petals 5–6, white, subequal, obovate to obovate-elliptic, 1.5–2 × 0.8–1.5 cm, silky-hairy abaxially, connate at base; stamens many, in 2 whorls, filaments ca. 1–1.5 cm, connate to 3/4 of its length, free portion hairy, anthers pubescent; ovary densely tomentellous; styles ca. 1 cm, densely

tomentellous, 3-lobed. Capsule globose, 1.5–2.5 cm in diam., 1-locular with 1 seed, apex shortly conical; pericarp ca. 1 mm thick. Seed brown, subglobose.

Locality: Victoria Peak, Mount Parker, Tai Mo Shan. *H. C. Tang 1487; N. H. Li 3.*

Distribution: Guangdong, Guangxi, Jiangxi, Fujian,Taiwan.

Ecology: Forests. Flowering: Nov.; fruiting: Sep.–Oct.

Notes: The type specimen was collected from Happy Valley, Hong Kong Island by J. G. Champion around 1850.

**4. Camellia caudata** Wall.

長尾毛蕊茶 **(Fig. 133; Photos 320–321)**

Pl. Asiat. Rar. 3: 36. 1832; FKH 46. 1912; FRPS 49(3): 192. 1998.

*Thea caudata* (Wall.) Seem., Trans. Linn. Soc. London 22: 348. 1859.

*Theopsis caudata* (Wall.) Hu, Acta Phytotax. Sin. 8: 266. 1963; FHN 1: 497. 1964.

*Camellia assimilis* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 309. 1851; FHK 30. 1861; FKH 46. 1912; FGD 2: 144. 1991; FRPS 49(3): 193. 1998.

Shrub or small tree, branchlets pubescent. Leaves membranaceous; petioles 3–7 mm, pubescent; leaf blade oblong or oblong-lanceolate, 4–12 × 1–3.5 cm, base cuneate to broadly cuneate, apex long-caudate to caudate, margin serrulate, glabrous adaxially except for the hirsute midvein, slightly hirsute to nearly glabrous abaxially; Flowers axillary, solitary or 2–3 clustered; pedicels 3–6 mm, pubescent; bracteoles 3–6, semiorbicular to broadly ovate, 1–6 mm, abaxially pubescent, margin ciliolate; sepals 5, 2–4 mm, broadly ovate to suborbicular, silky-hairy abaxially, margin ciliolate; petals 5–7, white, 1–3 cm, connate at base, silky-hairy abaxially; stamens many, in 2 whorls, 1–2.5 cm, connate to middle, filaments densely silky-pilose; ovary globose, 2 mm in diam., densely tomentellous; styles 1–2.5 cm, tomentellous, 3-lobed at apex. Capsule ellipsoid-globose, 2 cm in diam., 1-locular and 1-seeded. Seeds brown, globose, ca. 1 cm in diam.

Locality: Hong Kong Island, Castle Peak, Victoria Peak, Ma On Shan, Tai Mo Shan. *Y. S. Lau 1680; P. S. Choi 516.*

Distribution: Guangdong, Guangxi, Xizang, Yunnan; Bhutan, India, Myanmar, Vietnam.

Ecology: Forest. Flowering: Oct.–Jan.; fruiting: Sep.–Oct.

Uses: Materials (lipids).

Notes: The type specimen of *Camellia assimilis* was collected from Mount Gough and Victoria Peak, Hong Kong Island by J. G. Campion around 1850.

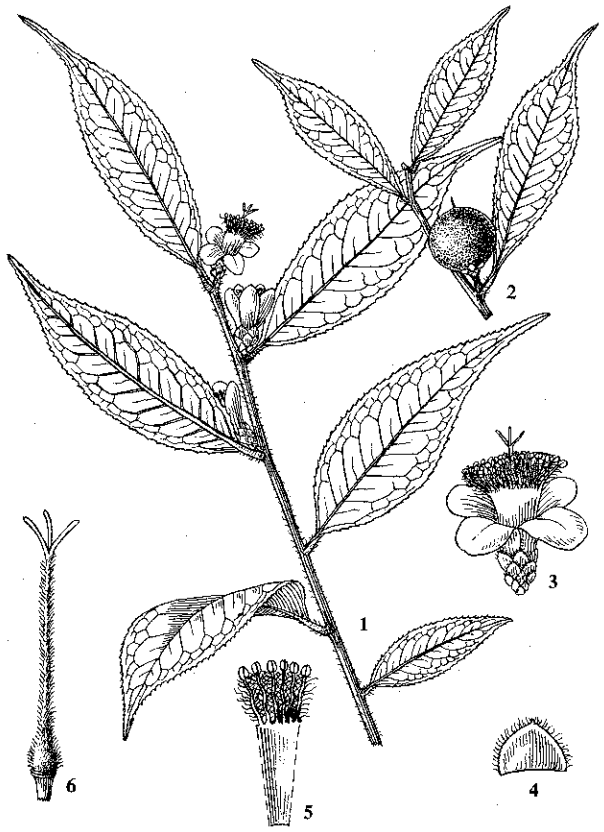



**Figure 133.** *Camellia caudata* Wall.

*1.* flowering branch; *2.* fruiting branch; *3.* flower; *4.* sepal; *5.* portion of stamens (showing indumentum); *6.* pistil. (drawn by H. P. Yu)

**5. Camellia hongkongensis** Seem.

香港茶 **(Fig. 134; Photo 322)**

Trans. Linn. Soc. London 22: 342, t. 60. 1859; FHK 30. 1861; FKH 46. 1912; FGD 2: 134. 1991; FRPS 49(3): 71. 1998.

*Thea hongkongensis* (Seem.) Pierre, Fl. For. Cochinch. 2: t. 117. 1887.

Shrub or small tree, up to 10 m tall, young branches reddish brown, glabrous. Leaves leathery; petioles ca. 1 cm, glabrous; leaf blade oblong, 7–13 × 2–4 cm, base cuneate to obtuse, apex acuminate, margin entire or obscurely undulate-denticulate, light green adaxially, dark green and glabrous abaxially; midvein impressed adaxially, prominent abaxially, lateral veins 7–10 on each side of midvein. Flowers subterminal, solitary, subsessile; bracteoles and sepals 9–11, 3–20 mm, silky hairy, deciduous or persistent in fruit; petals 6–7, broadly obovate, 3.5–4 cm, connate

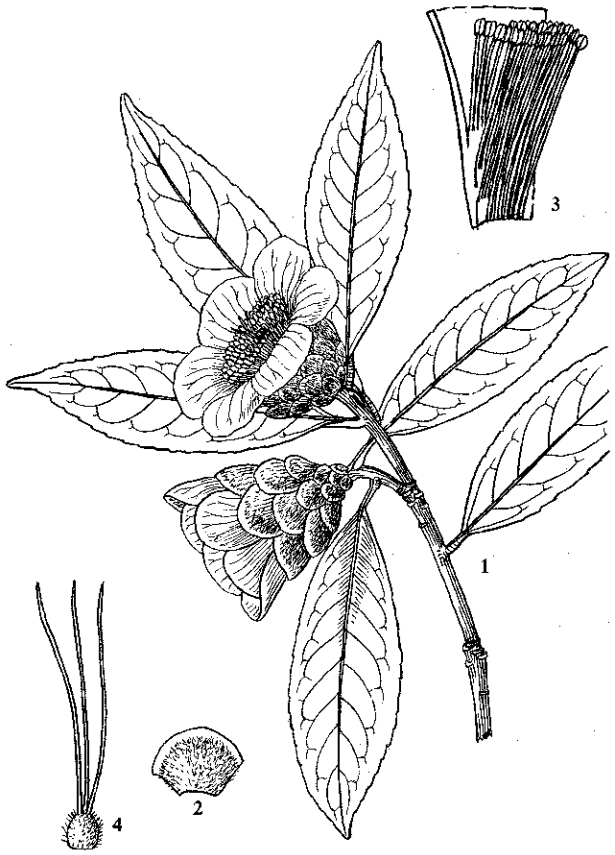



**Figure 134.** *Camellia hongkongensis* Seem.

*1.* flowering branch; *2.* sepal; *3.* petal (showing stamens); *4.* pistil. (drawn by H. P. Yu)

at base; stamens many, ca. 3 cm, glabrous, connate at base; ovary globose, ca. 2 mm in diam., 3-locular, densely tomentose; styles 3–4, free, 2.8–3.3 cm, glabrous. Capsule brown, globose to oblate, ca. 3 cm in diam., 3–4-locular with 1–2 seeds per locule. Seeds brown, subglobose to globose, ca. 1.5 cm in diam., glabrous.

Locality: Victoria Peak, Pok Fu Lam, Mount Nicholson, Mount Parker. *W. Y. Chun 9172; C. Wang 30303; N. K. Chun 40030, 40280, 40286; H. T. Chang 6558, 6559.*

Distribution: Guangdong.

Ecology: Forests. Flowering: Dec.–Jan.; fruiting: Aug.– Sep.

Uses: Ornamental, materials (lipids).

Notes: The type specimen was collected in a ravine of Victoria Peak, Hong Kong Island in 1849. Listed in *Rare and Precious Plants of Hong Kong.*

**6. Camellia crapnelliana** Tutch. 紅皮糙果茶 **(Photos 323–324)**

J. Linn. Soc. London 37: 63. 1904; FKH 46. 1912; FGD 2: 129. 1991; FRPS 49(3): 18. 1998.

*Thea crapnelliana* (Tutch.) Rehd., J. Arnold Arbor. 5: 238. 1924.

Tree or shrub, branches and branchlets reddish brown, glabrous. Leaves leathery; petioles 6–12 mm, glabrous; leaf blade elliptic to oblong-elliptic, 7–19 × 3–6 cm, base cuneate to broadly cuneate, apex bluntly cuspidate, margin denticulate, glabrous; lateral veins 7–9 on each side of midvein, obscure adaxially, raised abaxially. Flowers axillary or subterminal, solitary or paired, 6–10 cm in diam., subsessile; bracteoles and sepals 7–13, persistent, suborbicular, 0.3–2 cm, tawny tomentellous abaxially; petals 6–8, white, obovate to obovate-oblong, 3.5–6.5 × 2–4 cm, connate at base, apex rounded to emarginate; stamens many, ca. 1.5–1.7 cm; filaments glabrous, basal ca. 5 mm connated; ovary ca. 2 mm in diam., 3–5-locular, densely tomentose; styles 3–5, free, ca. 1.5 cm, proximal part pubescent to tomentose. Capsule greyish brown, subglobose, 5–10 cm in diam., 3–5-locular with 3–5 seeds per locule, furfuraceous, dehiscing into 3–5 valves; central axis thick, persistent; pericarp woody, (6–)10–15 mm thick. Seeds brown, semiglobose, 1.5–2 cm in diam., glabrous.

Locality: Mount Parker, Mau Ping. *W. J. Tutcher 967; Y. S. Lau 1328.*

Distribution: Guangdong, E Guangxi, E Jiangxi, Fujian, S Zhejiang.

Ecology: Forests. Flowering: Dec.–Jan.; fruiting: Sep.–Oct.

Notes: The type specimen was collected from Mount Parker, Hong Kong Island in 1903. Listed in *Rare and Precious Plants of Hong Kong.*

**7. Camellia furfuracea** (Merr.) Cohen-Stuart 糙果茶 **(Photo 325)**

Bull. Jard. Bot. Buitenzorg, ser. 3, 1: 240. 1919; FGD 2: 130. 1991; FRPS 49(3): 19. 1998.

*Thea furfuracea* Merr., Philipp. J. Sci. 13(3): 149. 1918.

*Theopsis furfuracea* (Merr.) Nakai, J. Jap. Bot. 16(12): 706. 1940.

Small tree or shrub, branches and branchlets greyish brown, glabrous. Leaves papery, narrowly to broadly elliptic or oblong-elliptic, 8–15 × 2.5–5.5 cm, base cuneate to broadly cuneate, apex acuminate or shortly acuminate, margin mucronulate-denticulate, glabrous; lateral veins 7–9 on each side of midvein, slightly impressed above, elevated below; petioles 4–9 mm, glabrous. Flowers axillary or subterminal, solitary or paired, 2–3.5 cm in diam., subsessile; bracteoles and sepals 7–8, persistent, semiorbicular to suborbicular, smaller ones 2.5–4 mm long, larger ones 8–13 mm long, pubescent or yellow-tomentose abaxially; petals 6–8, white, obovate, 1.5–2 × 0.9–1.2 cm, connate at base for about 4 mm; stamens many, ca. 1.3–1.5 cm; filaments glabrous, connate at base, filament tube 5–6 mm; ovary ca. 1.5 mm in diam., 3-locular, densely tomentose, ovules 2–4 per locule; styles 3, free, ca. 1.8 cm, pubescent almost to apex. Capsule subglobose, greyish brown, furfuraceous, 2–4 cm in diam., dehiscing into 3 valves; central axis thick, persistent; pericarp woody, 2–4 mm thick. Seeds brown, semiglobose, 1.5–2 × 0.8–1.7 cm, glabrous.

Locality: Au Pui Wan. *K. L. Yip 4166; P. S. So 11.*

Distribution: Fujian, Guangdong, Guangxi, Hainan, Jiangxi; Vietnam.

Ecology: Forests. Flowering: Dec.–Jan.; fruiting: Sep.–Oct.

**8. Camellia granthamiana** Sealy 大苞山茶 **(Photo 326–327)**

J. Roy. Hort. Soc. 81: 182. 1956; FGD 2: 127. 1991; FRPS 49(3): 6. 1998.

Shrub or tree, up to 8 m tall. Petioles 8–12 mm; leaf blades leathery, oblong-elliptic or elliptic, 7–11 × 3–5 cm, base rounded to obtuse, apex acuminate, margin serrulate, glabrous, lateral veins 6–7 on each side of midvein, rugose adaxially when dry. Flowers axillary or subterminal, solitary, 10–14 cm in diam., subsessile; bracts and sepals 12, persistent, crustaceous, leathery, orbicular, 3–4 cm, grey silky-hairy abaxially; petals 8–10, white, broadly obovate, 5–7 × 3.8–5 cm, basal 1.5 cm united, glabrous; stamens many, ca. 2.5 cm, basal 5–6 mm united, glabrous. Ovary globose, 4–5 mm in diam., 5-locular, densely white-tomentose; styles 2 cm, 5-lobed at apex, densely white-tomentose. Capsule subglobose, ca. 6 cm in diam., furfuraceous, surrounded by persistent sepals, dehiscing into 5 valves; pericarp 5 mm thick. Seeds dark brown, spherical, 1–1.5 cm long.

Locality: Tai Mo Shan, Ma On Shan. *Y. S. Lau 2056; P. S. Choi 246.*

Distribution: Guangdong.

Ecology: Forests. Flowering: Dec.–Jan. of the following year; fruiting: Aug.–Sep.

Uses: Ornamental, materials (lipids).

Notes: The type specimen was collected in a ravine of Tai Mo Shan by Hong Kong Herbarium staff in 1955. Listed in *Rare and Precious Plants of Hong Kong.*

**9. Camellia japonica** L. 山茶

Sp. Pl. 2: 698. 1753; FGD 2: 134. 1991; FRPS 49(3): 87. 1998.

*Thea japonica* (L.) Baill., Hist. Pl. 4: 229. 1873.

Shrub or small tree, branches and branchlets greyish brown, glabrous. Leaves leathery; petioles 8–15 mm, glabrous; leaf blade oblong or obovate-oblong, 5–12 × 3–6 cm, base cuneate to broadly cuneate, apex shortly acuminate or acute, margin serrulate, glabrous, lateral veins 7–8 on each side of midvein. Flowers axillary or subterminal, solitary or in pairs, 5–8 cm in diam., subsessile; bracteoles and sepals 10, suborbicular to orbicular, 0.5–2 cm in diam., pubescent; petals 6–7, 2.5–3.5 cm, rose or white, connate at base, silky-pubescent abaxially; stamens many, filaments connate about half way into a tube and united at base with petals, glabrous, 2.5–3.5 cm, anthers oblong, 2 mm; ovary ovoid, 2.5 mm in diam., glabrous, 3-locular; styles ca. 2.8 cm, 3-lobed at the apex, glabrous. Capsule globose, 2.5–4.5 cm in diam., 3-locular with 1 or 2 seeds per locule; pericarp woody, 5–8 mm thick when dry. Seeds brown, semiglobose to globose, 1–2 cm in diam., glabrous.

Locality: Cultivated. *HK sheet 32805; C. H. Tsou 1824.*

Distribution: Shandong, Zhejiang; S Japan, S Korea. Widely cultivated in gardens.

Ecology: Flowering: Jan.–Mar.; fruiting: Sep.–Oct.

Uses: Ornamental.

**10. Camellia reticulata** Lindl. 滇山茶

Bot. Reg. t. 1078. 1827; FRPS 49(3): 68. 1998.

*Desmitus reticulata* (Lindl.) Rafin., Sylva Tellur 39. 1838.

*Thea reticulata* (Lindl.) Kochs, Bot. Jahbr. Syst. 27: 595. 1900.

Shrub or tree, branches and branchlets greyish brown, pubescent or glabrescent. Leaves leathery; petioles 6–13 mm, pubescent or glabrescent; leaf blade oblong to oblong-elliptic, 5–12 × 3–5.5 cm, base cuneate to broadly cuneate, apex acute to shortly acuminate, margin serrulate, sparsely appressed pubescent or glabrescent adaxially, glabrous abaxially; lateral veins 6–8 on each side of midvein and raised on both surfaces. Flowers axillary or subterminal, solitary or 2–3 clustered, 7–10 cm in diam., subsessile; bracteoles and sepals 9–11, deciduous after anthesis; petals 5–7 but often more for some cultivars, rose to pink, rarely white, obovate to broadly obovate, 4–6 × 3–4.5 cm, apex emarginate, connate at base; stamens many, 3–4 cm, glabrous, filaments connate at base; ovary globose, 3–4 mm in diam., 3–5-locular, tomentose; styles 2.5–3.5 cm, glabrous or hairy proximally, 3–5-lobed at apex. Capsule globose to oblate, 3.5–4 × 4–5 cm, 3–5-locular with 1–2 seeds per locule; pericarp firmly fleshy, ca. 1 cm thick or 5–6 mm when dry. Seeds brown, semiglobose to globose, 1–1.5 cm in diam.

Locality: Cultivated. *HK sheet 33869, 33870.*

Distribution: Guizhou, Sichuan, Yunnan.

Ecology: Flowering: Jan.–Mar.; fruiting: Sep.–Oct.

Uses: Ornamental.

**11. Camellia kissii** Wall. 落瓣油茶 **(Photo 328)**

Asiat. Res. 13: 429. 1820; FHN 1: 500. 1964; FGD 2: 131. 1991; FRPS 49(3): 24. 1998.

*Thea sasanqua* var. *kissi* (Wall.) Pierre, Fl. For. Cochinch. 2: sub. t. 115–6. 1887.

Shrub or small tree; branchlets greyish brown, pubescent. Leaves leathery; petioles 4–7 mm, densely pubescent; leaf blade oblong, or oblong-elliptic, 5–7 × 1.5–3 cm, base cuneate to obtuse, apex acute or acuminate, margin serrulate; hirtellous along midvein adaxially, villose or glabrescent abaxially, lateral veins 6–8 on each side of midvein, slightly impressed adaxially, raised abaxially, or slightly raised on both surfaces. Flowers axillary, solitary or in pair, 2–3 cm in diam., subsessile; bracteoles and sepals 9–10, 2–7 mm, pubescent, caducous; petals 5–8, white, nearly free, obovate to ovate, 1.2–1.5 cm, pubescent abaxially; stamens 6–9 mm, glabrous, filaments basal 1–3 mm connate; ovary 3-locular, white-tomentose; styles 3, 3–7 mm, connate at base, glabrous or tomentose proximally. Capsule subglobose to globose-pyriform, 1.4–2.5 × 1.5–2 cm, usually 1 locule developed with 1 seed per locule, dehiscing into 2–3 valves; pericarp thickly, ca. 1.5 mm thick. Seed brown, globose, 1–1.5 cm in diam.

Locality: Tai Mo Shan, Kwun Yam Shan, Pat Sin Leng, Bride's Pool. *Y. S. Lau 2811; HK sheet 33868.*

Distribution: Guangdong, Guangxi, Hainan and Yunnan; Nepal, India, Myanmar, Sikkim, Vietnam.

Ecology: Evergreen forests and thickets. Flowering: Nov.–Dec.; fruiting: Sep.–Oct.

**12. Camellia oleifera** Abel 油茶 **(Photo 329)**

Narr. Journey China 174, 363. 1818; FHN 1: 500. 1964; FGD 2: 128. 1991; FRPS 49(3): 13. 1998.

*Camellia drupifera* Lour., Fl. Cochinch. 411. 1790; FKH 46. 1912, *non. rej. prop.*

*Thea oleifera* (Abel) Rehd. & Wils., Pl. Wilson. 2: 393. 1915.

Shrub or small tree, young branchlets reddish brown, pubescent. Leaves leathery; petioles 5–10 mm, pubescent; leaf blade elliptic or obovate, 6–10 × 2–4 cm, base cuneate, apex acuminate, margin serrate to serrulate, sparsely pilose along midvein or glabrous adaxially, hirtellous along midvein abaxially, lateral veins 5–8 on each side of midvein. Flowers axillary or subterminal, solitary or in pairs, 4–6 cm in diam., subsessile; bracteoles and sepals 8–11, broadly ovate, 3–12 mm, yellow-tomentose abaxially, margin membranous and ciliolate, caducous; petals 5–7, white, nearly free, obovate, oblong-obovate, or oblanceolate, 2.5–4 × 1.5–2.5 cm, 2-lobed at apex; stamens 1–1.5 cm, glabrous, filaments connate at base into a tube; ovary globose, 2–3 mm in diam., 3-locular, white-tomentose; styles

0.8–1.2 cm, glabrous or tomentose at base, 3-lobed. Capsule globose to ellipsoid, 2–4 cm in diam., 1–3-locular with 1–2 seeds per locule, dehiscing into 2–3 valves; pericarp 3–6 mm thick, villose. Seeds brown to reddish brown, globose to semiglobose, 1.5–2 cm in diam.

Locality: Cape D'Aguilar, Tai Mo Shan, Sunset Peak, Lantau Peak. *L. T. Lo 652; Y. S. Lau 3275; Y. W. Lam 134.*

Distribution: Area S of Changjiang River; N Laos, N Myanmar, N Vietnam.

Ecology: Forest. Flowering: Dec.–Jan. of the following year; fruiting: Sep.–Oct.

Uses: Materials (lipids).

**13. Camellia sasanqua** Thunb. 茶梅 **(Photo 330)**

Fl.: Jap. 273, t. 30. 1784; FKH 46. 1912; FHN 1: 500. 1964; FRPS 49(3): 12. 1998.

Small tree; young branchlets pubescent. Leaves leathery; petioles 4–6 mm, glabrescent; leaf blade elliptic, 3–6 × 1–3 cm, base cuneate, or sometimes rounded, apex acute, margin serrulate; lateral veins 5–6 on each side of midvein, obscure on both surfaces. Flowers axillary or terminal, 4–7 cm in diam.; bracteoles and sepals 6–7, pubescent; petals 6–7, red, nearly free, unequal, broadly obovate, the largest one 5 × 6 cm; stamens many, free, 1.5–2 cm; ovary pilose, styles 1–1.3 cm, free or 3-lobed at apex. Capsules globose, 1.5–2 cm across, 1–3-locular. Seeds brown, glabrous.

Locality: Cultivated. *L. T. Lo 274; Y. S. Lau 3021.*

Distribution: Native to Japan. Widely cultivated.

Uses: Ornamental.

## 2. Pyrenaria Blume 核果茶屬

Evergreen trees or shrubs. Leaves spirally arranged, leathery, serrate. Flowers axillary, solitary, pedicellate or subsessile; bracteoles 2 or rarely more, caducous or persistent; sepals 5, imbricate, persistent or caducous, unequal; petals 5 or rarely more, slightly connate at base; stamens many, more or less connate at the base, and adnate to the base of petals; anthers dorsally inserted on basal incision; ovary superior, 3–6-locular with 2–5 ovules per locule; styles 3–6, free or connate at base. Fruit a drupe, indehiscent, or a capsule, loculicidally dehiscing from the base, central axis robust, persistent. Seeds 2–5 per locule, ellipsoid, compressed, wingless.

About 25 species distributed in E India, Malay Peninsula to S China; 13 species in China; two species in Hong Kong.

1a. Leaves 12–18 cm; flowers more than 4–7 cm in diam.; capsule spherical, 4–8 cm in diam., 3–5-locular ..... 1. *P. spectabilis*

1b. Leaves less than 12 cm; flowers 2–4 cm in diam.; capsule triangular-globose, 1–2 cm in diam., 3-locular..... 2. *P. microcarpa*

**1. Pyrenaria spectabilis** (Champ.) C. Y. Wu & S. X. Yang 石筆木 **(Fig. 135; Photos 331–332)**

Novon 15(2): 381. 2005.

*Camellia spectabilis* Champ., Trans. Linn. Soc. Bot. London 21: 111. 1850; et in Hook., Kew Journ. 3: 131. 1851.

*Thea spectabilis* (Champ.) Kochs, Bot. Jahrb. Syst. 27: 595. 1900.

*Tutcheria spectabilis* (Champ.) Dunn, J. Bot. 46: 324. 1908; FKH 45. 1912; Yip, Acta Phytotax. Sin. 42: 575. 2004.

*Pyrenaria championii* (Nakai) H. Keng, Gard. Bull. Singapore 26(1): 134. 1972, *nom. illeg.*

*Tutcheria championii* Nakai, J. Jap. Bot. 26: 708. 1940; FGD 2: 145. 1991; FRPS 49(3): 197. 1998, *nom. illeg.*

*Camellia reticulata* auct. non Lindl.: FHK 31. 1861.

Tree or small tree, branches greyish brown, young branches puberulous, soon glabrescent. Leaves leathery; petioles 0.5–1.5 cm; leaf blade oblong or lanceolate, 12–18 × 4–7 cm, base cuneate, apex acuminate, margin entire or undulate-serrate, yellowish when dry, shining and glabrous adaxially, sparsely pubescent, soon glabrescent abaxially; lateral veins 10–14 on each side of midvein, conspicuous on both surfaces. Flowers axillary or subterminal, solitary, white, 4–7 cm in diam; pedicels 0.6–1.0 cm, pubescent; bracteoles 2, ovate, 1–1.5 × 1.5–2 cm, densely yellow sericeous abaxially; sepals 9–11, white, suborbicular, 2–3 cm in diam., yellowish sericeous abaxially, apex rounded to retuse, margin membranous; petals 5 or 6, broadly obovate, 4–5 × 2–3 cm, yellowish sericeous abaxially, apex emarginate, margin membranous; stamens many, ca. l. 5 cm, glabrous, slightly connate at the base and adnate to base of petals; ovary 3–6-locular with 2–5 ovules per locule, densely yellowish tomentose; styles 3–6-

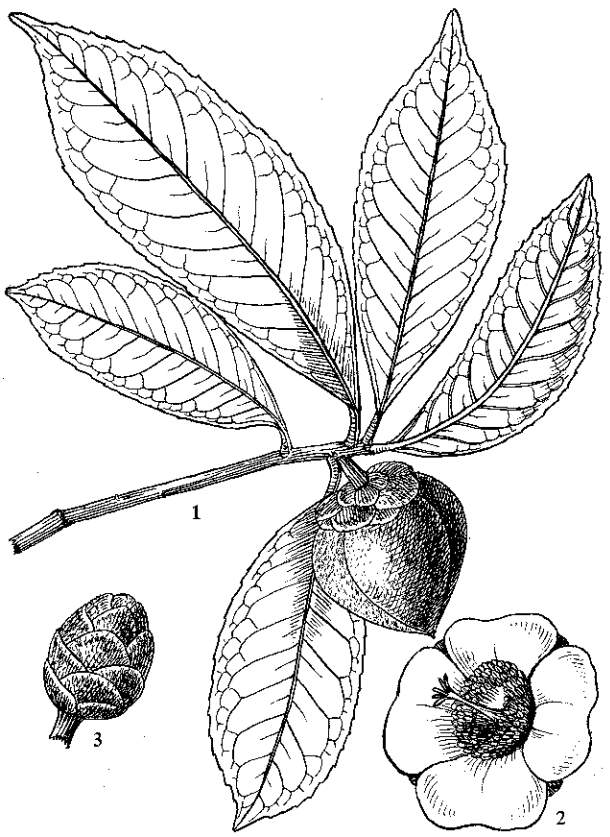



**Figure 135.** *Pyrenaria spectabilis* (Champ.) C. Y. Wu & S. X. Yang
*1*. fruiting branch; *2*. flower; *3*. alabastrum. (drawn by H. P. Yu)

lobed, pubescent at proximal part. Capsule globose to oblate, 4–7 cm in diam., 3–6-locular with 2–5 seeds per locule, dehiscing from base, greyish tomentose. Seeds brown, oblong, 1.5–2.0 cm.

Locality: Hong Kong Island, Ma On Shan, Tao Po, Kwai Tau Leng, Wu Kau Tang, Lantau Island. *C. P. Lau 25; N. K. Chun 40709; K. L. Yip 4199.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian.

Ecology: Broad-leaf evergreen forests. Flowering: Apr.–Jun.; fruiting: Sep.–Nov.

Uses: Onamental, materials (timber, lipids).

Notes: The type specimen (*Champion s.n.*, K) was collected from Happy Valley, Hong Kong Island between 1847 and 1850.

**2. Pyrenaria microcarpa** (Dunn) H. Keng 小果石筆木 **(Photo 333)**

Gard. Bull. Singapore 26: 134. 1972.

*Tutcheria microcarpa* Dunn, J. Bot. 47: 197. 1909; FKH 45. 1912; FGD 2: 147. 1991; FRPS 49(3): 203. 1998.

Tree or shrub; young branches yellowish brown, pubescent, soon glabrescent. Leaves leathery; petioles 5–8 mm, sparsely pubescent or glabrous; leaf blade elliptic to oblong, 5–12 × 2–4 cm, base cuneate, apex acuminate, margin serrate, sparsely pubescent or glabrous, lateral veins 8–10 on each side of midvein, conspicuous on both surface. Flowers axillary, solitary, white or light yellow, 1.5–2.5 cm in diam.; pedicels 1–2 mm, pubescent; bracteoles 2, caducous, broadly ovate to crescent-shaped, 2–3 mm, densely yellow sericeous abaxially, glabrous adaxially; sepals 5–7, caducous, semiorbicular to reniform, unequal, 3–8 × 5–10 mm, leathery, densely yellow sericeous abaxially, glabrous adaxially, apex rounded; petals 5–7, obovate, 1–1.5 × 1–1.3 cm, sericeous abaxially, slightly connate at base; stamens many, 6–8 mm, glabrous; adnate to petals; ovary 3-locular, densely sericeous; styles 5–8 mm, glabrous. Capsule triangular-globose, 1.0–1.8 × 1–1.5 cm, 3-locular with 3 seeds per locule, dehiscing from base, sparsely sericeous; pericarp 1–1.5 mm thick when dry. Seeds brown, compressed, oblong-ovate, 6–8 mm.

Locality: Mount Nicholson, Lin Fa Shan, Tai Mo Shan, Ng Tung Chai, Wu Kau Teng, Sunset Peak. *L. T. Lo 660; Y. S. Lau 2984; Y. W. Lam 1661.*

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Taiwan, Yunnan, Zhejiang; Japan, Vietnam.

Ecology: Broadleaved evergreen forests. Flowering: Apr.–Jul.; fruiting: Aug.–Nov.

Notes: The type specimen was collected from Mount Nicholson in September 1909.

## 3. Polyspora Sweet 大頭茶屬

Evergreen trees or shrubs. Leaves alternate, spirally arranged, petiolate, entire or serrate. Flowers axillary, usually solitary, white; pedicels short; bracteoles 3–7, caducous; sepals 5, imbricate, unequal; petals 5, unequal, distinct or connate at base, persistent; stamens many, 1–5-seriate, connate at base and adhering to the petals; anthers inserted dorsally in basal incision; ovary 3–5(–6)-locular, ovules 4–8 per locule, pendulous, style slender, 3–6-lobed at the tip. Capsule woody, oblong-cylindric, 5-locular, loculicidally dehiscing, with a solid persistent central axis (columella). Seeds many, compressed or angled, obliquely winged above; endosperm abscent.

About 20 species distributed in tropical or subtropical Asia; six species in China; one species in Hong Kong.

**1. Polyspora axillaris** (Roxb. ex Ker-Gawl.) Sweet

大頭茶 **(Fig. 136; Photo 334)**

Hort. Brit. 1: 61. 1827; FHN 1: 501. 1964.

*Camellia axillaris* Roxb. ex Ker-Gawl., Bot. Reg. t. 349. 1818.

*Gordonia axillaris* (Roxb. ex Ker-Gawl.) D. Dietr., Syn. Pl. 4: 863. 1847; FGD 2: 148. 1991; FRPS 49(3): 207. 1998.

*Gordonia anomala* Spreng., Syst. Veg. 3: 126. 1826; FHK 29. 1861; FKH 45. 1912.

Tree or shrub, up to 8 m tall; young branchlets and terminal buds densely pubescent. Leaves leathery; petioles 1.0–1.5 cm; leaf blade oblong-ovate to oblanceolate, 6–15 × 2.5–4.5 cm, base cuneate and decurrent, apex rounded or obtuse, margin entire or remotely crenate on distal part, dark green and glabrous adaxially, paler and slightly pubescent abaxially when young, midvein impressed adaxially, veins obscure on both surfaces. Flowers axillary or subterminal, solitary or in pairs, nearly sessile, 7–13 cm in diam., bracteoles 4–5, deciduous, suborbicular, densely pubescent abaxially; sepals 5, ovate, 1–1.5 cm, densely pubescent abaxially, persistent; petals 5, white, broadly obovate, 3.5–5 cm, emarginate at the apex, pubescent abaxially; stamens many, unequal, 1.5–2 cm, glabrous, connate at base and adnate

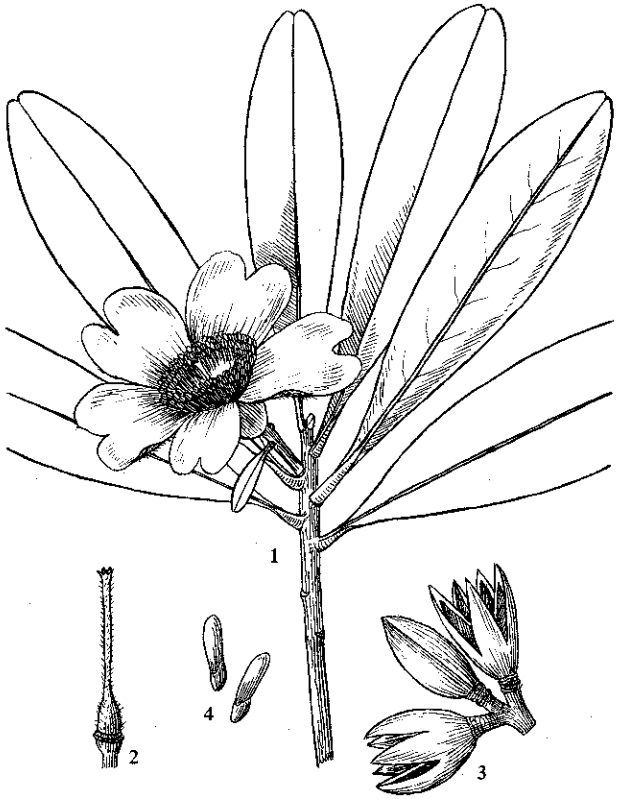



**Figure 136.** *Polyspora axillaris* (Roxb. ex Ker-Gawl.) Sweet
*1.* flowering branch; *2.* pistil; *3.* fruit; *4.* seed. (drawn by H. P. Yu)

to petals at the base; ovary 5-locular, pubescent; style ca. 2 cm, sericeous. Capsule oblong or oblong-ovoid, ca. 5 cm, pilose. Seeds compressed, oblong, 1.5–2 cm including wing.

Locality: Common in Hong Kong. *H. C. Tang 2258; Y. W. Lam 418; K. L. Yip 4187.*

Distribution: Guangdong, Guangxi, Hainan, Taiwan; Vietnam.

Ecology: Thickets and early secondary forests. Flowering: Sep.–Oct.; fruiting: Nov.–Dec.

Uses: Ornamental, materials (timber).

## 4. Schima Reinw. ex Blume 木荷屬

Evergreeen trees. Leaves spirally arranged, petiolate, margin entire or serrate. Flowers bisexual, axillary or subterminal, solitary or subracemosely arranged; bracteoles 2–7, caducous. Sepals 5, imbricate, persistent, slightly connate at base; petals 5, subequal, outermost one enveloping the others, shortly connate at base; stamens many, adnate to base of petals, anthers versatile; ovary 5-locular with 2–6 ovules per locule; style simple, shortly lobed at the top. Capsule globose or depressed globose, woody, dehiscing into 5 valves; central axis stout, persistent. Seeds small, reniform, flat, surrounded by a membranous wing.

About 20 species distributed in tropical and subtropical Asia to New Guinea; 13 species in China; one species in Hong Kong.

**1. Schima superba** Gardn. & Champ.
木荷 **(Fig. 137; Photo 335)**

Hooker's J. Bot. Kew Gard. Misc. 1: 246. 1849; FHN 1: 501. 1964; FGD 2: 150. 1991; FRPS 49(3): 224. 1998.

*Schima noronhae* auct. non Reinw. ex Blume: FHK 29. 1861; FKH 45. 1912.

Tree or small tree, branches greyish brown or reddish brown, glabrescent. Leaves papery or leathery; petioles 1–2 cm; leaf blade elliptic to oblong-elliptic, 7–13 × 3–6 cm, base cuneate, apex acuminate, margin crenulate to crenulate-serrate, glabrous, midvein slightly impressed adaxially, veins distinct on both surfaces. Flowers white, 2–3 cm in diam., in short terminal racemes; pedicel stout, 1–2.5 cm, glabrous or sparsely pubescent; bracteoles 2, deciduous; calyx 5-lobed, lobes semiorbicular, 2–3 mm, glabrous abaxially, pubescent adaxially, margins ciliolate; petals 5, obovate, 1–1.5 cm, proximally connate into a short tube, pubescent at base; stamens many, 5–7 mm, connate at base; ovary ovoid, densely pubescent on proximal part, glabrescent on distal part; style ca. 5 mm. Capsule subglobose, 1–1.5 cm in diam, pubescent; seeds flat, reniform, narrowly winged, 7–9 × 4.5–5 mm.

Locality: Common in Hong Kong. *H. C. Tang 554, 2146; K. Y. Tam 105.*

Distribution: Hainan, Guangdung, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan.

Ecology: Forests. Flowering: Jun.–Aug.

Uses: Materials (timber, fuelwood).

Notes: The type specimen was collected from Wong Nai Chung, Hong Kong Island by J. G. Champion between 1848 and 1849.

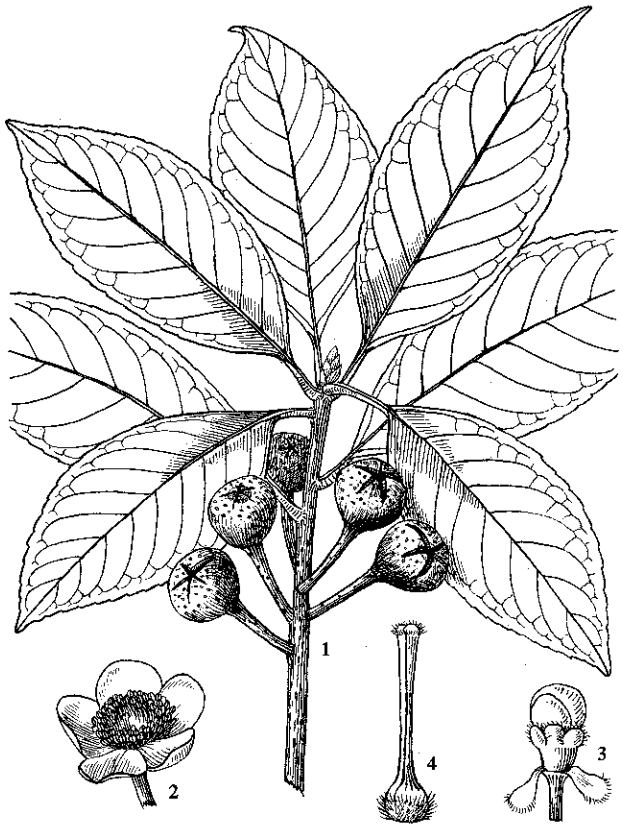



**Figure 137.** *Schima superba* Gardn. & Champ.
*1.* fruiting branch; *2.* flower; *3.* alabastrum; *4.* pistil. (drawn by H. P. Yu)

## 5. Stewartia L. 紫莖屬

Trees or shrubs, evergreen or deciduous. Winter buds laterally compressed; bud scales 1 to several, imbricate. Leaves alternate, short-petioled, serrate. Flowers axillary, solitary or several arranged in a short raceme, pedicellate; bracteoles 2, persistent or rarely caducous; sepals 5, persistent, imbricate, basally connate; petals 5, imbricate, slightly connate at base; stamens many, basally connate into a short tube and adnate to petals; anthers dorsifixed; ovary superior, 5-locular with 2–4(–7) ovules per locule; styles connate or free. Capsule ovoid and wraped by persistent sepals, 5-ribbed, 5-locular with (1–)2–4 seeds per locule, loculicidally dehiscent into 5 valves, central axis abortive, apex rostrate. Seeds compressed, usually narrowly winged.

About 20 species disjunctly distributed in E Asia and N America; 15 species in China; one species in Hong Kong.

**1. Stewartia villosa** Merr. 柔毛紫莖 **(Fig. 138)**

Lingnan Sci. J. 7: 315. 1931.

*Hartia villosa* (Merr.) Merr., J. Arnold Arbor. 19: 55. 1938; FGD 2: 153. 1991; FRPS 49(3): 235. 1998.

Evergreen tree, to 8 m tall; branchlets and petioles villose or appressed pubescent. Leaves leathery; petioles 1–2 cm, narrowly winged; leaf blade oblong or oblong-lanceolate, 8–13 × 3–5 cm, base rounded to obtuse, apex acuminate to acute, margin sparsely serrate,

villose or pubescent on both surfaces, glabrescent in age, lateral veins 10–16 on each side of midvein. Flowers solitary, white; pedicels 6–8 mm, villose; bracteoles lanceolate, 0.8–1.5 cm, villose; sepals ovate-lanceolate, unequal, 1.5–1.8 × 0.5–0.8 cm, villose abaxially, apex acute; petals yellowish white, obovate, ca. 1.8 × 1.2 cm; stamens ca. 1 cm, filaments connate at the base; ovary tomentose, style short. Capsule conical, ca. 1.8 cm.

Locality: Tai Mo Shan, Ngong Ping. *H. C. Tang 2440; Y. S. Lau 421; S. T. Dunn s.n. (HK sheet 3263).*

Distribution: Guangdong, Guangxi.

Ecology: Forests. Flowering: Jun.–Jul.; fruiting: Oct.

Uses: Materials (timber).

## 6. Eurya Thunb. 柃木屬

Evergreen shrubs or small trees, dioecious. Leaves leathery, distichous, usually serrulate, petiolate. Flowers unisexual, small, axillary, solitary or clustered, sessile or shortly pedicellate; bracteoles 2, lying close to sepals; sepals 5, imbricate, persistent; petals 5, white, slightly connate at base; male flowers: stamens 5–35; filaments linear, glabrous, free or adnate to the base of petals; anthers basifixed, 2-celled, connective slightly exserted; vestigial pistil conspicuous; female flowers: ovary superior, 3–5-locular, with axile placenta, ovules 3–60 per locule; styles 3–5, free or connate proximally. Fruit baccate, globose, ovoid or ellipsoid, 2–60 seeds per locule. Seeds globose, black and shining, foveolate-pitted; endosperm fleshy, embryo recurved.

About 130 species, E & SE Asia, Indo-malesia, SW Pacific Islands; 81 species in China; eight species and one variety in Hong Kong.

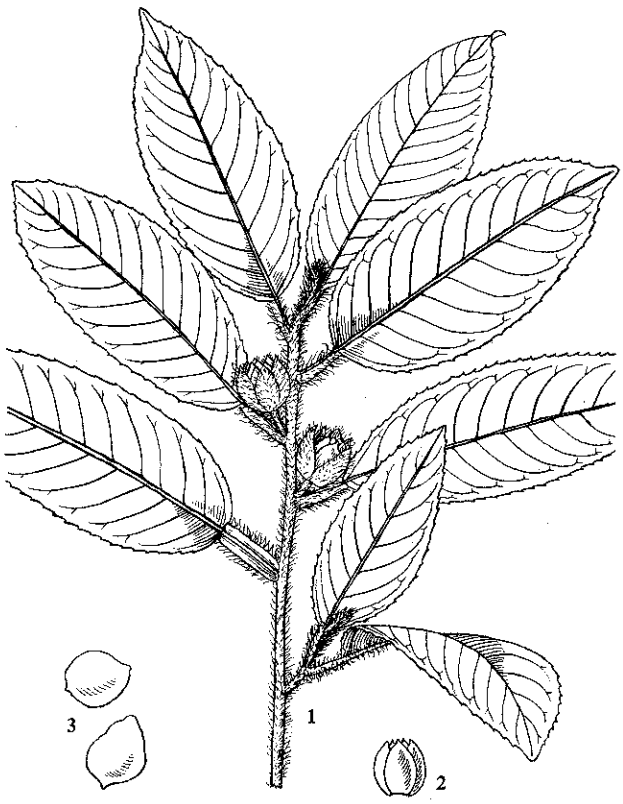



**Figure 138.** *Stewartia villosa* Merr.
*1.* fruiting branch; *2.* capsule; *3.* seeds. (drawn by H. P. Yu)

1a. Ovary and fruit pubescent.
2a. Leaves rounded at base; sepals ovate, apex obtuse ..... 1. *E. distichophylla*
2b. Leaves cuneate at base; sepals suborbicular, apex rounded, mucronate ..... 2. *E. acuminatissima*
1b. Ovary and fruit glabrous.
3a. Young branchlets and terminal buds pubescent or villose, at least the terminal buds pubescent.
4a. Leaves pubescent ..... 3. *E. groffii*
4b. Leaves glabrous.
5a. Young branchlets terete ..... 4. *E. loquaiana*
5b. Young branchlets 2-ribbed ..... 5. *E. chinensis*
3b. Young branchlets and terminal buds glabrous.
6a. Young branchlets 2–4-ribbed.
7a. Leaves obovate-lanceolate or oblanceolate, margin serrulate ..... 5a. *E. chinensis* var. *glabra*
7b. Leaves oblong-elliptic or obovate-elliptic, margin sparsely serrate ..... 6. *E. nitida*
6b. Young branchlets terete.
8a. Leaves reddish brown abaxially when dry; anthers not locellate; styles 3, free ..... 7. *E. macartneyi*
8a. Leaves light green abaxially when dry; anthers locellate; styles 3-lobed ..... 8. *E. muricata*

### 1. Eurya distichophylla Hemsl. 二列葉柃 (Photo 336)

J. Linn. Soc. 23: 77. 1886; FKH 43. 1912; FGD 2: 167. 1991; FRPS 50(1): 89. 1998.

*Eurya swinglei* Merr., Philip. J. Sci. Bot. 12: 106. 1917.

Shrub; young branchlets terete, densely covered with spreading long hairs. Leaves thin-leathery; petioles short, ca. 1 mm, villose; leaf blade lanceolate, 3–6 × 0.8–1.5 cm, base obliquely rounded or oblique-cordate, apex acuminate or long-acuminate, margin serrulate, glabrous adaxially, densely appressed villose abaxially, lateral veins 8–11 on each side of midvein. Flowers white, axillary, solitary or in clusters of 3; pedicels ca. 1 mm, villose. Male flowers: bracteoles ovate, very small; sepals ovate, ca. 1.5 mm, apex slightly acute or obtuse, densely villose abaxially; petals obovate-oblong to obovate, ca. 2.5 mm, apex rounded; stamens 15–18; anthers locellate; pistillode densely pubescent. Female flowers: sepals ovate, ca. 1 mm, apex acute or obtuse, densely villose abaxially; petals lanceolate, 2–2.5 mm; ovary ovoid, densely pubescent, 3-locular; styles 3–5 mm, 3-lobed almost to base. Fruit globose or ovoid, 4–5 mm in diam., pubescent. Seeds orbicular-reniform.

Locality: Tai Mo Shan, Mount Parker, Lantau Island. *H. C. Tang 2497; L. T. Lo 213; Y. S. Lau 3060.*

Distribution: Hainan, Guangdong, Guangxi, Jiangxi, Fujian; Vietnam.

Ecology: Ravines.

**2. Eurya acuminatissima** Merr. & Chun 尖葉毛柃 **(Photo 337)**

Sunnyatsenia 1: 72. 1930; FGD 2: 166. 1991; FRPS 50(1): 100. 1998.

Shrub or small tree, 1.5–7 m tall; young branchlets densely covered with spreading long hairs; terminal buds villose. Leaves thin-leathery; petioles 2–3 mm; leaf blade lanceolate, 5–9 × 1.1–2.5 cm, base cuneate, apex caudate-acuminate, margin closely serrulate, dark green and shining adaxially, light green abaxially, glabrous or initially sparsely appressed pubescent on abaxial surface, lateral veins ca. 9 on each side of midvein. Flowers white, axillary, solitary or in cluster of 3; pedicels 1–3 mm, glabrous or nearly so. Male flowers: bracteoles orbicular; sepals ovate, 1 mm, apex rounded, mucronate; petals oblong, ca. 2.5 mm; stamens 14–16; anthers not locellate; pistillode densely pubescent. Female flowers: sepals ovate, apex acuminate; petals lanceolate, 2–2.5 mm; ovary ovoid, densely pubescent, 3-locular; styles slender, 3–3.5 mm, 3-lobed. Fruit ellipsoidal-ovoid or globose, 3–4 mm, sparsely pubescent.

Locality: Lantau Peak, Sunset Peak. *P. S. Choi 99; Y. W. Lam 688, 1358.*

Distribution: Guangdong, Guangxi. Guizhou, Hunan, Jiangxi, Fujian.

Ecology: Forests on mountain slopes or in valleys. Flowering: Sep.–Nov.; fruiting: Jul.–Aug. of the following year.

**3. Eurya groffii** Merr. 崗柃 **(Photo 338)**

Philipp. J. Sci. Bot. 25: 247. 1919; FHN. 1: 507. 1964; FGD 2: 170. 1991; FRPS 50(1): 119. 1998.

*Eurya acuminata* DC. var. *groffii* (Merr.) Kobuski, Ann. Missouri Bot. Gard. 25: 325. 1937.

Shrub or small tree, 2–7 m tall; young branchlets terete, densely yellowish brown-pubescent or glabrescent; terminal buds densely yellowish brown-villose. Leaves leathery; petioles ca. 1 mm, densely villose; leaf blade lanceolate, 5–10 × 1.2–2.2 cm, base obtuse or broadly cuneate, apex acuminate or long acuminate, margin closely serrulate, dark green and glabrous adaxially, yellowish green and appressed pilose abaxially, lateral veins 10–14 on each side of midvein. Flowers axillary, solitary or 3–9 clustered; pedicels 1–1.5 mm, densely pubescent. Male flowers bracteoles ovate, ca. 1 mm; sepals ovate, 1.5–2 mm, apex obtuse and mucronate, yellowish brown-pubescent abaxially; petals obovate, ca. 3.5 mm; stamens ca. 20; anthers not locellate; pistillode glabrous. Female flowers: bracteoles and sepals as in male flower, but slightly smaller; petals lanceolate, ca. 2.5 mm; ovary ovoid, glabrous, 3-locular; style 2 mm, 3-lobed to the base. Fruit globose, ca. 4 mm in diam.

Locality: Mount Parker, Tai Po Kau, Pat Sin Leng, Wu Kau Tang. *C. P. Lau 5; Y. W. Lam 558; K. L. Yip 4251.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian; Vietnam.

Ecology: Forests and thickets.

**4. Eurya loquaiana** Dunn 細枝柃 **(Photo 339)**

J. Linn. Soc. Bot. 38: 355. 1908; FHN 1: 508. 1964; FGD 2: 171. 1991; FRPS 50(1): 124. 1998.

Shrub or small tree, young branchlets terete, puberulous. Leaves thinly leathery; petioles 2–4 mm, puberulous; leaf blade ovate-elliptic, 4–9 × 1.5–2.5 cm, base cuneate or broadly cuneate, apex long-acuminate, margin serrulate, adaxially dark green or yellowish green, glabrous, abaxially light green, becoming purplish red when dry, sparsely puberulous or only hairy on midvein, lateral veins 10–20 on each side of midvein. Flowers axillary, solitary or in clusters of 4; pedicel 2–3 mm, puberulous. Male flowers: bracteoles ovate, ca. 1 mm; sepals ovate or suborbicular, ca. 2 mm, subglabrous; petals obovate, ca. 3.5 mm; stamens 10–15; anthers not locellate; pistillode glabrous. Female flowers: bracteoles and sepals as in male flowers, but smaller; petals elliptic, 3 mm; ovary glabrous 3-locular; style 2–3 mm, 3-lobed. Fruit globose, 3–4 mm in diam. Seeds reniform, dark brown and shining.

Locality: Tai Mo Shan, Ma On Shan. *F. W. Xing 9030; Y. W. Lam 1442, 1755.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Guizhou, Sichuan, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan.

Ecology: Forests and thicktets in ravines. Flowering: Oct.–Dec.; fruiting: Jul.–Sep. of the following year.

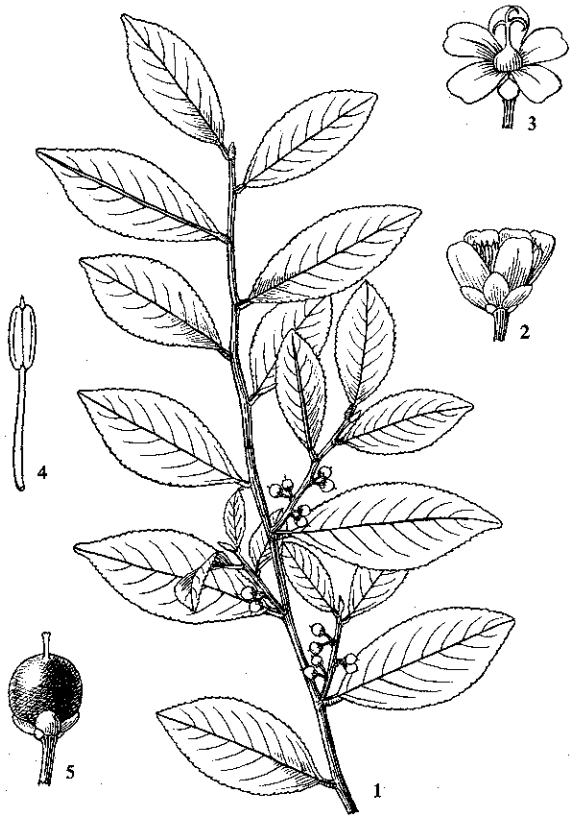



**Figure 139.** *Eurya chinensis* R. Brown

*1.* fruiting branch; *2.* male flower; *3.* female flower; *4.* stamen; *5.* fruit. (drawn by H. P. Yu)

**5. Eurya chinensis** R. Brown 米碎花 **(Fig. 139; Photo 340)**

Narr. J. China 379, t. 1818; FKH 44. 1912; FGD 2: 175. 1991; FRPS 50(1): 132. 1998.

Shrub, 1–3 m tall; young branchlets 2-ribbed, pubescent; terminal buds densely yellowish brown, pubescent. Leaves thinly leathery; petiole 2–3 mm; leaf blade obovate, 3–4.5 × 1–2 cm, base cuneate, apex obtuse or slightly emarginate, rarely acuminate, margin closely serrulate, glabrous, lateral veins 6–8 on each side of midvein. Flowers axillary, solitary or 2–4 clustered; pedicel ca. 2 mm,

glabrous. Male flowers: bracteoles very small, glabrous; sepals ovate, 1.5–2 mm, apex subrounded, glabrous; petals obovate, 3–3.5 mm, glabrous; stamens ca. 15; anthers not locellate; pistillode glabrous. Female flowers: bracteoles lightly smaller; sepals ovate, 1–1.5 mm, glabrous; petals ovate, 2–2.5 mm; ovary ovoid, glabrous, 3-locular; styles 1.5–2 mm, apex 3-lobed. Fruit globose, 3–4 mm in diam. Seeds reniform, blackish brown, shining.

Locality: Common in Hong Kong. *H. C. Tang 950; Y. W. Lam 1275; Y. S. Lau 2239.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Taiwan.

Ecology: Thickets on hillslopes or by streams.

**5a. Eurya chinensis** R. Brown var. **glabra** Hu & L. K. Ling 光枝米碎花

Acta Phytotax. Sin. 11: 314. 1966; FGD 2: 175. 1991; FRPS 50(1): 133. 1998.

Differs from var. *chinensis* by its terminal buds and the branchlets of the current year's growth are completely glabrous.

Locality: Stanley, Ho Pui, Ninepin Group. *S. P. Lau 130; Y. W. Lam 141, 1144.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Taiwan.

Ecology: Thickets on hillslopes or by streams. Flowering: Nov.–Dec.; fruiting: Jun.–Jul. of the following year.

**6. Eurya nitida** Korth. 細齒葉柃 **(Photo 341)**

Verh. Nat. Gesch. Bot. 3: 115, t. 17. 1840; FHN 1: 509. 1964; FGD 2: 176. 1991; FRPS 50(1): 134. 1998.

*Eurya japonica* var. *nitida* (Korth.) Th.-Dyer, Fl. Brit. Ind. 1: 284. 1874.

*Eurya japonica* auct. non Thunb.: Benth., FHK 28. 1861; FKH 43. 1912.

Shrub or small tree, glabrous throughout; young branchlets 2-ribbed. Leaves thinly leathery; petioles ca. 3 mm; leaf blade oblong or obovate-oblong, 4–7 × 1.5–2.5 cm, base cuneate, apex acuminate, margin closely serrulate or crenulate, dark green and shining adaxially, light green or yellowish green abaxially, lateral veins 9–12 on each side of midvein. Flowers axillary, solitary or 3–4 clustered; pedicels ca. 3 mm. Male flowers: bracteoles suborbicular, ca. 1 mm; sepals suborbicular, 1.5–2 mm, apex rounded; petals obovate, 3.5–4 mm; stamens 14–17, as long as petals; anthers not locellate; pistillode very small. Female flowers: bracteoles and sepals as in male flower; petals oblong, 2–2.5 mm; ovary ovoid, 3-locular; styles 1.5–3 mm, apex 3-lobed. Fruit globose, 3–4 mm in diam., bluish black. Seeds reniform or globose-reniform, brown and shining.

Locality: Common in Hong Kong. *H. C. Tang 450, 2140; Y. S. Lau 1360; Y. W. Lam 1244.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, S Hunan, Jiangxi, Zhejiang, Fujian; Vietnam, Myanmar, Malaya, Indonesia, Philippens.

Ecology: Forests and thickets.

**7. Eurya macartneyi** Champ. 黑柃 **(Photo 342)**

Proc. Linn. Soc. Lond. 2: 99. 1850; FHK 27. 1861; FKH 43. 1912; FHN 1: 509. 1964; FGD 2: 172. 1991; FRPS 50(1): 144. 1998.

Shrub or small tree, glabrous throughout; young branchlets terete. Leaves leathery; petioles 3–4 mm; leaf blade oblong or elliptic, 6–14 × 2–4.5 cm, base broadly cuneate or obtuse, apex shortly acuminate, margin subentire or serrulate on distal portion, adaxially yellowish green, abaxially reddish brown when dry, lateral veins 12–14 on each side of midvein. Flowers axillary, solitary or 3–4 clustered; pedicels 1–1.5 mm. Male flowers: bracteoles suborbicular, ca. 1 mm; sepals leathery, orbicular, ca. 3 mm, apex rounded, mucronate or retuse; petals obovate, 4–6 mm; stamens 17–24; anthers not locellate; pistillode glabrous. Female flowers: bracteoles as in male flower; sepals ovate, 2–2.5 mm; petals obovate, ca. 4 mm; ovary ovoid, 3-locular; styles 3, free. Fruit globose, ca. 5 mm in diam., purplish black. Seeds reniform, dark brown and shining.

Locality: Hong Kong Island, Lion Rock, Shing Mun, Tai Mo Shan, Ma On Shan, Lantau Island. *H. C. Tang 2101; N. K. Chun 41907; K. L. Yip 4403.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Fujian.

Ecology: Forests on mountain slopes and in ravines. Flowering: Nov.–Jan.; fruiting: Jun.–Aug.

**8. Eurya muricata** Dunn 格萼柃

J. Bot. 48: 324. 1910; FKH 43. 1912; FGD 2: 172. 1991; FRPS 50(1): 115. 1998.

*Eurya huiana* Kobuski f. *glaberrima* H. T. Chang, Acta Phytotax. Sin. 3: 36. 1954.

Shrub or small tree, glabrous throughout; young branchlets terete. Leaves leathery; petioles 3–5 mm; leaf blade elliptic, 5–8.5 × 2–3.2 cm, base cuneate, apex acuminate, margin subentire, dark green adaxially, light green or yellowish green abaxially, lateral veins 9–11 on each side of midvein. Flowers axillary, solitary or 3–4 clustered; pedicels 1–2 mm. Male flowers: bracteoles suborbicular, 1–1.5 mm; sepals orbicular, 2–2.5 mm; petals oblong, 3–3.5 mm; stamens 15–22; anthers locellate; pistillode very small. Female flowers: bracteoles as in male flower; sepals ovate, 1.5–2 mm; petals obovate, 2.5–3 mm; ovary ovoid, 3-locular; styles 3-lobed. Fruit globose, ca. 4 mm in diam. Seeds reniform, dark brown, shining.

Locality: Victoria Peak, Mount Gough. *S. T. Dunn s.n. (Herb. Hongk. No. 1772).*

Distribution: Guangdong, Guizhou, Sichuan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Forests and thickets. Flowering: Nov.–Jan.; fruiting: Jun.–Aug.

Notes: The type specimen was collected from Mount Gough around 1909.

## 7. Ternstroemia Mutis ex L. f., *nom. cons.* 厚皮香屬

Evergreen trees or shrubs. Leaves alternate, often crowded towards apex of branchlets, entire, rarely serrate, petiolate. Flowers usually hermaphrodite, or polygamo-dioecious, borne below expanded leaves, solitary or frequently in a cluster, pedicellate; bracteoles 2, deciduous or persistent, alternate or nearly opposite; sepals 5, persistent or rarely deciduous, imbricate, margin glandular dentate, more or less connate at the base; petals 5, imbricate, slightly connate at the base; stamens 30–50, 2(–many) seriate; filaments adnate to base of petals; anthers basifixed, glabrous. Ovary superior, 1–3-locular, or 4–6-locular with false septae, 1–20 ovules per locule; style simple, stigma 2–3-lobed. Fruit baccate, indehiscent or irregularly dehiscent. Seeds reniform, slightly compressed, red arillate; endosperm abundent.

About 90 species in tropical and subtropical Asia, Central and S America, and Africa; 13 species in China; four species in Hong Kong.

1a. Leaves glandular punctuate abaxially; ovary 3–4-locular; fruit depressed globose ..... 1. *T. kwangtungensis*
1b. Leaves not glandular punctate.
2a. Leaves obovate or oblanceolate, 2–6 cm; fruit ellipsoidal..... 2. *T. microphylla*
2b. Leaves elliptic to oblong-ovate, longer than 5 cm; fruit globose.
3a. Sepals ovate to long ovate, apex rounded not mucronate..... 3. *T. gymnanthera*
3b. Sepals long ovate to ovate-lanceollate, apex acuminate and mucronate ..... 4. *T. luteoflora*

**1. Ternstroemia kwangtungensis** Merr. 廣東厚皮香（厚葉厚皮香） **(Fig. 140; Photo 343)**
Philip. J. Sci. 13: 148. 1918; FGD 2: 161. 1991; FRPS 50(1): 5. 1998.

Shrub or small tree, 4–5 m tall; branchlets stout, greyish brown, glabrous. Leaves thickly leathery; petioles stout, 1–2 cm, glabrous; leaf blade broadly elliptic to obovate, 7–12 × 3–6 cm, apex abruptly acute, tip blunt, base broadly cuneate to obtuse, margin entire, glabrous, dark green and shining adaxially, light green and densely reddish brown or brown punctuate abaxially; midvein raised adaxially, plane or slightly impressed abaxially, lateral veins 5–7 on each side of midvein. Flowers axillary, solitary or in pairs, white; pedicels 1.5–2 cm, slightly recurved, glabrous. Male flowers: bracteoles 2, ovate to triangular-ovate, 4–5 × 3 mm, margin sparsely glandular dentate; sepals ovate to suborbicular, 6–8 mm in diam., glabrous, margin glandular dentate, apex rounded; petals obovate to oblong-obovate, ca. 10 × 8 mm, apex rounded; stamens many, ca. 6 mm; anther ovate, ca. 3 mm; pistillode very small. Female flowers: bracteoles 2, obovate or triangular obovate, ca. 3 × 4 mm; sepals suborbicular, 6–7 mm in diam.; ovary 3–4(–5) locular, glabrous, styles 3–4(–5)-lobed, 6–7 mm long. Fruit baccate, depressed-globose, 1.5–1.8 × 1.5–2 cm, 3–4(–5)-locular, 1 seed per locule; bracteoles and sepals persistent. Seeds subreniform, 7–8 × 6 mm, aril red.

Locality: Ping Fung Shan. *Y. W. Lam 401, 499; F. W. Xing 9984.*

Distribution: Guangdong, S Guangxi, Jiangxi, Fujian.

Ecology: Forests and thickets on hillslopes and by streams.

**2. Ternstroemia microphylla** Merr.
小葉厚皮香 **(Photo 344)**
Sunyatsenia 3: 254. 1937; FGD 2: 163. 1991; FRPS 50(1): 20. 1998.

*Ternstroemia pseudoverticillata* Merr. & Chun, Sunyatsenia 5: 131. 1940

Shrub or small tree; branchs greyish brown, glabrous. Leaves leathery to thickly leathery; petioles ca. 3 mm, glabrous; leaf blade obovate, oblong-obovate, or oblanceolate, 2–6 × 1–2 cm, base cuneate and decurrent, apex acute, obtuse, or rounded, margin subentire or sparsely serrulate towards apex, green and shining adaxially, light green abaxially, glabrous on both surfaces; midvein impressed adaxially, raised abaxially, lateral veins 3–5 on each side of midvein. Flowers white, polygamous, axillary, solitary or several borne on leafless branchlets, 5–8 mm in diam; pedicels slender, 5–10 mm, glabrous. Bisexual flower: bracteoles ovate-triangular, ca. 1 mm, apex acute, marigns glandular dentate; sepals ovate-orbicular, 2–3 mm in diam., apex rounded, margin sparsely glandular dentate; petals broadly obovate, ca. 4 × 3.5 mm; stamens 35–45, ca. 3 mm; anthers oblong, ca. 1.5 mm; ovary ovoid, 2-locular with 1 ovule per locule; style 2 mm, 2-lobed. Male flower: bracteoles, sepals, and petals as in bisexual flower; stamens 35–45; pistillode very small. Fruit ellipsoidal, 8–10 × 5–6 mm, 2-locular, with 1 seed per locule. Seeds long reniform, 5–7 mm long, aril red.

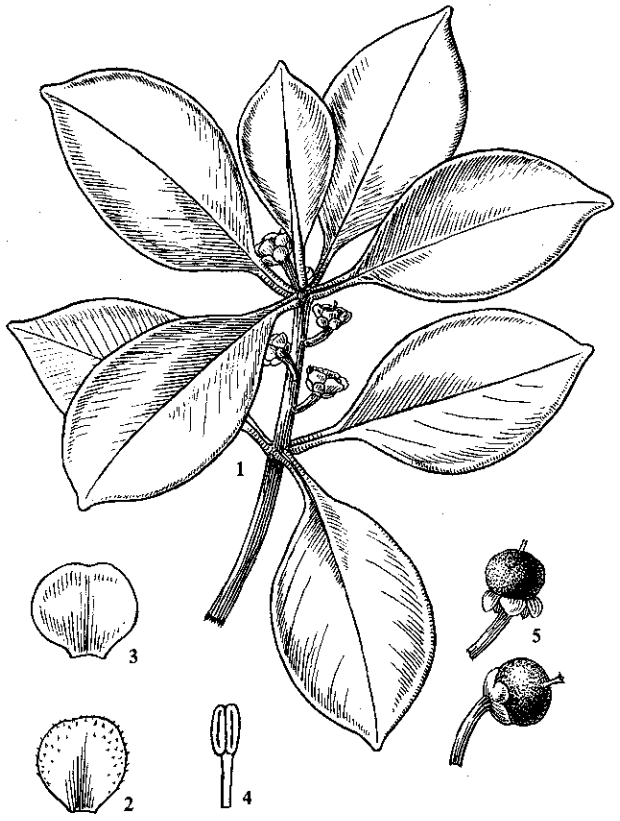



**Figure 140.** *Ternstroemia kwangtungensis* Merr.
*1.* flowering branch; *2.* sepal; *3.* petal; *4.* stamen; *5.* fruit. (drawn by H. P. Yu)

Locality: Pat Sin Leng, Wong Leng, Nam Chung, Lantau Island. *S. P. Lau 33; P. S. Choi 444; Y. W. Lam 400.*

Distribution: Hainan, Guangdong, Guangxi, Fujian.

Ecology: Forests and shrublands. Flowering: May–Jun.; fruiting: Aug.–Oct.

**3. Ternstroemia gymnanthera** (Wight & Arn.) Beddome 厚皮香 **(Photo 345)**

Fl. Sylv. 19. 1871; FHN 1: 504. 1964; FGD 2: 161. 1991; FRPS 50(1): 11. 1998.

*Cleyera gymnanthera* Wight & Arnott, Prodr. Pl. Ind. Occ. 87. 1834.

*Ternstroemia japonica* auct. non Thunb.: Benth., FHK 27. 1861; FKH 43. 1912.

Shrub or small tree, glabrous throughout. Leaves leathery; petiole 5–10 mm; leaf blade obovate to broadly elliptic, 5–10 × 2.5–4.5 cm, base cuneate, apex acute to shortly acuminate, margin entire, dark green and shining adaxially, light green becoming reddish brown when dry abaxially, midvein impressed adaxially, lateral veins 7–9 on each side of midvein. Flowers andro-dioecious, axillary; pedicels 1.5–3 cm; bracteoles 2, ovate, ca. 2 mm, margin glandular dentate, apex acute; sepals ovate or oblong-ovate, 4–5 × 3–4 mm, glabrous, apex rounded, margin glandular dentate; petals obovate, 6–8 × 4–6 mm, apex rounded or retuse; stamens 4–5 mm; anthers oblong, longer than filaments; ovary ovoid, 2-locular with 2 ovules per locule; style short, 2-lobed. Fruit purplish red when mature, globose, 1–1.5 cm in diam., 2-locular with 1–2 seeds per locule. Seeds reniform, ca. 6 × 4 mm, with red aril.

Locality: Hong Kong Island, Tai Mo Shan, Ma On Shan, Lantau Island. *H. C. Tang 2363; Y. S. Lau 2556; K. L. Yip 4451.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; Bhutan, Cambodia, India, Laos, Myanmar, Nepal, Vietnam.

Ecology: Forests and shrublands. Flowering: Jul.–Aug.

Uses: Ornamental.

**4. Ternstroemia luteoflora** L. K. Ling 尖萼厚皮香 **(Photo 346)**

FRPS 50(1): 183. 1998.

Tree; branchlets glabrous. Leaves leathery; petioles 1–2 cm; leaf blade elliptic to oblong-lanceolate, 5–11 × 2.5–4 cm, base cuneate, apex shortly acuminate, margin entire and slightly revolute, glabrous, dark green and shining adaxially, light green and becoming reddish brown when dry abaxially, lateral veins 6–8 on each side of midvein. Flowers andro-dioecious, ca. 1.5 cm in diam; pedicels 2–3 cm, more or less incurved. Male flowers: bracteoles 2, ovate-lanceolate, ca. 3 × 2 mm, margin glandular dentate, apex acuminate; sepals ovate-lanceolate, 5–7 × 3–4 mm, apex acuminate to long-acuminate, margin glandular ciliolate; petals 5, white or yellowish white, obovate or suborbicular, 8–10 × 8–10 mm, apex retuse; stamens 35–45, ca. 5 mm; anthers oblong, 2–4 mm; pistillode small, flattened. Female flowers: bracteoles, sepals and petals as in male flower, ovary globose, 2-locular with 2 ovules per locule; style 2-lobed. Fruits globose, 1.5–2 cm in diam., 2-locular with 2 seeds per locule, bracteoles and sepals persistent. Seeds reddish brown, ellipsoid, ca. 8 × 6 mm.

Locality: Hong Kong Island, Tai Mo Shan, Tai Po, Ping Fung Shan, Wu Kau Tang, Tai Long Sai Wan. *H. C. Tang 584; P. S. Choi 388; Y. W. Lam 244.*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Hubei, Hunan, Jiangxi, Fujian.

Ecology: Secondary forests. Flowering: May–Jun.; fruiting: Aug.–Oct.

## 8. Anneslea Wall., *nom. cons.* 茶梨屬

Evergreen trees or shrubs. Leaves alternate, often crowded towards apex of branchlets, petiolate entire or rarely serrate. Flowers bisexual, axillary, solitary or several in a corymb; bracteoles 2, persistent, close to calyx; sepals 5, imbricate, persistent, connate at base, deeply constricted at middle, enlarged in fruit; petals 5, imbricate, slightly connate at base; stamens 30–40, adnate to receptacle, in 1–2 series; filaments free; anthers linear, usually long-cuspidate; ovary half-inferior, 2–5-locular with 3 to several ovules per locule; ovules suspended from apex of placenta; style 2–5-lobed. Fruit subglobose, indehiscent, crowned by persistent enlarged calyx; pericarp woody. Seeds arillate; embryo curved.

About four species distributed in S and SE Asia; one species and four varieties in China; one variety in Hong Kong.

**1. Anneslea fragrans** Wall. var. **hainanensis** Kobuski
海南茶梨 **(Fig. 141; Photo 347)**

J. Arnold Arbor. 33: 86. 1952; FHN 1: 503. 1964; FGD 2: 176. 1991; FRPS 50(1): 180. 1998.

*Anneslea hainanensis* (Kobuski) Hu, Acta Phytotax. Sin. 8: 265. 1963.

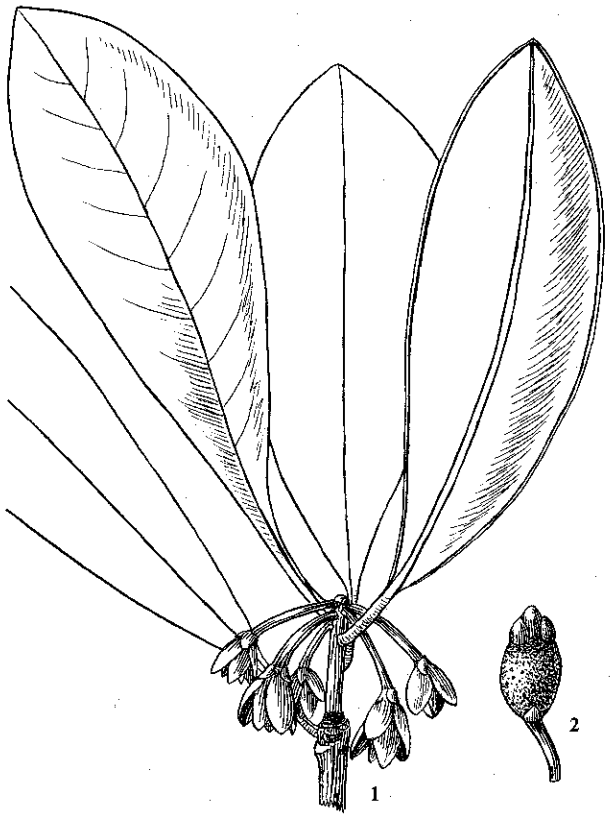



**Figure 141.** *Anneslea fragrans* var. *hainanensis* Kobuski
*1*. flowering branch; *2*. fruit. (drawn by H. P. Yu)

Evergreen tree, up to 15 m tall. Leaves leathery; petioles 2–3 cm; leaf blade oblong to elliptic, 7–15 × 3–7 cm, base cuneate to broadly cuneate, apex obtuse or rarely rounded, margin entire or sparsely serrate towards apex. Flowers in axillary clusters; pedicels 1–2 cm; bracteoles 2, broadly ovate to triangular-ovate, ca. 4 × 3 mm, margin sparsely glandular; sepals reddish, broadly ovate, 1–1.5 cm, glabrous, base slightly connate, apex rounded to obtuse, margin glandular; petals red or white, broadly ovate, 6–8 mm, connate at base; stamens ca. 40, ca. 1.5 mm; filaments connate at base; anthers linear, glabrous, connective prolonged; ovary half-inferior, 3-locular, glabrous; styles ca. 1.5 mm, 3-lobed. Fruit ovoid, 2–2.5 cm, 2–3-locular with 2–3 seeds per locule, indehiscent, wrapped by persistent enlarged sepals; carpopodium 2–4 cm. Seeds long obovate, 7–10 × 5 mm.

Locality: Ma On Shan. *Y. W. Lam 218; F. W. Xing 6893; P. S. So 4.*

Distribution: Hainan, Guangdong, Guangxi.

Ecology: Forests. Flowering: Nov.–Dec.; fruiting: Jul.–Aug. of the following year.

Uses: Materials (timber).

## 9. Adinandra W. Jack 楊桐屬

Evergreen trees or shrubs. Leaves distichous, entire or serrulate, petiolate. Flowers axillary, solitary or in pairs, bisexual; pedicels usually recurved, rarely erect; bracteoles 2, attached near apex of pedicel, persistent or deciduous; sepals 5, unequal, imbricate, connate at base, persistent; petals 5, imbricate, connate at base; stamens 15–many, 1–5-seriate, filaments more or less connate at base, adnate to base of sepals; anthers basifixed, apiculate, base subrounded, hispid; ovary 2–5-locular; ovules usually many per locule; style simple or 3–5-lobed, persistent. Fruit baccate, indehiscent. Seeds many to few.

About 80 species, mostly in tropical Asia, a few in New Guinea and tropical Africa; 21 species in China; two species in Hong Kong.

1a. Leaves and styles hirsute ..... 1. *A. glischroloma* var. *jubata*

1b. Leaves pubescent, glabrescent; styles glabrous ..... 2. *A. millettii*

**1. Adinandra glischroloma** Hand.-Mazz. var. **jubata** (H. L. Li) Kobuski 長毛楊桐 **(Photo 348)**

J. Arnold Arbor. 28: 21. 1947.

*Adinandra jubata* Li, J. Arnold Arbor. 25: 422. 1944; FGD 2: 158. 1991.

Shrub or small tree, branchlets and terminal buds densely villose, with spreading tawny or rusty hairs. Leaves leathery; petioles 8–10 mm, densely hirsute; leaf blade oblong-elliptic, 8–13 × 2.5–4.5 cm, base cuneate, rarely rounded, apex acuminate, margin entire, dark green and glabrous adaxially, yellowish green and rusty-hirsute abaxially. Flowers white, axillary, 2–3 clustered, rarely solitary. Pedicel 0.5–1.5 cm, often recurved, densely hirsute; bracteoles 2, caducous. Sepals broadly ovate, 5–14 mm, apex acute, densely rusty hirtellous abaxially. Petals oblong or ovate-oblong, 8–15 × 4–6 mm, apex rounded, hirtellous abaxially. Stamens ca. 25, 5–9 mm; filaments glabrous; anthers linear, 2–4.5 mm, hispid, connective prolonged. Ovary ovoid, densely hirsute, 3-locular, many ovules per locule; style 1, ca. 8 mm, densely hirsute. Fruit globose, black when mature, 0.8–1.3 cm in diam., densely hirsute.

Locality: Pat Sin Leng, Nam Chung, Sze Tau Leng. *Y. W. Lam 243; F. W. Xing 8009; S. C. Ng 4486; K. L. Yip 4083.*

Distribution: Guangdong, S Guangxi, S Fujian.

Ecology: Forests. Flowering: May–Jun.

**2. Adinandra millettii** (Hook. & Arn.) Benth. & Hook. f. ex Hance 黃瑞木 **(Fig. 142; Photo 349)**

J. Bot. 16: 9. 1878; FKH 43. 1912; FGD 2: 158. 1991; FRPS 50(1): 48. 1998.

*Cleyera millettii* Hook. & Arn., Bot. Beechey Voy. 171, t. 33. 1841.

Shrub or small tree, 2–10 m tall; branchlets greyish brown, pubescent when young; terminal buds appressed pubescent. Leaves leathery; petioles 3–5 mm, sparsely pubescent, glabrescent; leaf blade oblong-elliptic, 4–9 × 2–3 cm, base cuneate, apex shortly acuminate, margin entire or sparsely serrate towards apex, glabrous and shining adaxially, paler, appressed pubescent or glabrescent abaxially. Flowers white, solitary, axillary. Pedicels slender, ca. 2 cm, sparsely pubescent or glabrescent; bracteoles linear-lanceolate, ca. 2 × 1 mm, caducous. Sepals ovate-lanceolate or ovate-triangular, 7–8 × 4–5 mm, apex acute, margin ciliolate and glandular, sparsely pubescent or glabrescent abaxially. Petals

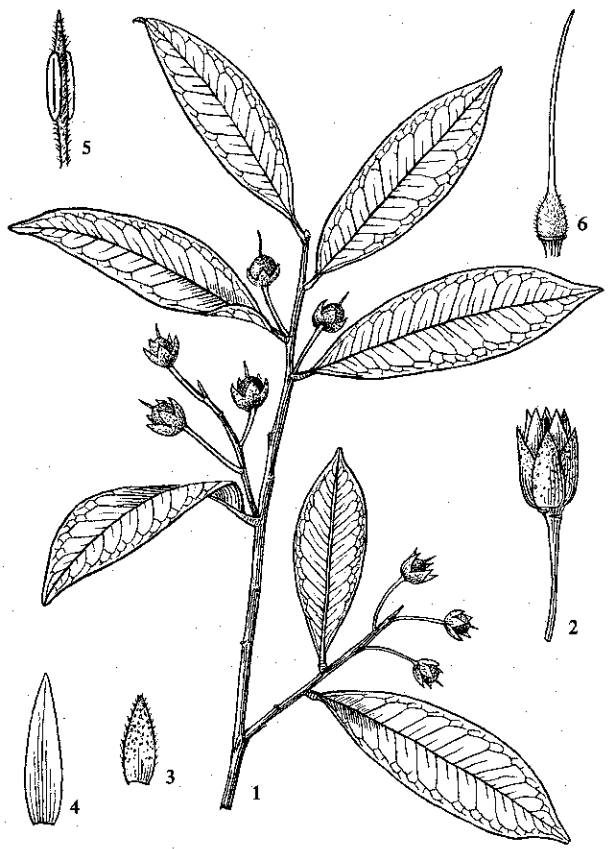



**Figure 142.** *Adinandra millettii* (Hook. & Arn.) Benth. & Hook. f. ex Hance

*1.* fruiting branch; *2.* flower; *3.* sepal; *4.* petal; *5.* stamen; *6.* pistil. (drawn by H. P. Yu)

ovate-oblong to oblong, ca. 9 × 4–5 mm, apex acute, glabrous. Stamens ca. 25, 6–7 mm; filaments ca. 3 mm, glabrous or white pubescent proximally; anthers linear-oblong, ca. 2 mm, hispid, connective prolonged. Ovary globose, pubescent, 3-locular, many ovules per locule. Style simple, 7–8 mm, glabrous. Fruit globose, pubescent, ca. 1 cm in diam., black when mature, many seeded.

Locality: Hong Kong Island, Sai Kung, Tai Mong Tsai, Ma On Shan, Fanling, Tai Lam Chung, Lantau Island. *L. T. Lo 109; Y. S. Lau 1409; K. L. Yip 4076.*

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Anhui, Zhejiang, Fujian.

Ecology: Secondary forests and thickets. Flowering: Jul.

## 10. Cleyera Thunb., *nom. cons.* 紅淡比屬

Evergreen trees or shrubs. Leaves distichous, entire or serrulate; petiolate. Flowers bisexual, axillary, solitary or several clustered; pedicels thickened towards apex; bracteoles 2, small, inserted near apex of pedicel, deciduous; sepals 5, imbricate, slightly connate at base, unequal, outer sepals small, persistent; petals 5, imbricate, connate at base, reflexed at anthesis; stamens about 25, filaments free, glabrous; anthers basifixed, introrse, opening by short slits, apiculate, base cuneate; ovary usually glabrous, 2–3-locular, 5–10 ovules per locule; style 2–3-lobed, persistent. Fruit baccate, ovoid or oblate, many-seeded. Seeds reniform-globose or compressed globose, dark brown and shining, foveolate-pitted.

About ten species in SE Asia and C America; nine species in China; two species in Hong Kong.

1a. Leaves oblong to elliptic-oblong, 6–9 × 2–3 cm, petioles 5–10 mm; sepals round, apex rounded; fruiting pedicels 1.5–2 cm long ..... 1. *C. japonica*

1b. Leaves elliptic, 3–5.5 × 1.5–2 cm, petioles 3–5 mm; sepals triangular, apex acute; fruiting pedicels 0.5–0.8 cm long ..... 2. *C. parvifolia*

**1. Cleyera japonica** Thunb. 紅淡比 **(Fig. 143; Photo 350)**

Nov. Gen. 3: 69. 1783, *p. p.*; FGD 2: 159. 1991; FRPS 50(1): 56, 1998

Shrub or small tree, branches and branchlets greyish brown, glabrous. Leaves leathery; petioles 5–10 mm, glabrous, canaliculate; leaf blade oblong to elliptic-oblong, 5–9 × 2–3 cm, base cuneate or broadly cuneate, apex acuminate or shortly acuminate, margin entire, glabrous. Flowers axillary, or 2–5 clustered; pedicels ca. 1.5 cm, glabrous; bracteoles 2, alternate, deciduous; sepals 5, subrounded, ca. 3.5 × 3.5 mm, imbricate, apex rounded, apex acuminate or shortly acuminate, margin ciliate; petals 5, white, obovate-oblong, ca. 1 × 0.5 cm, reflexed at anthesis; stamens about 25, in 2 series, unequal, 5–7 mm; filaments slender, glabrous; anthers elliptic, hispid; ovary glabrous, 2-locular; style 6–10 mm, 2-lobed. Fruit baccate, globose, purplish black when mature, 6–9 mm in diam. Seeds many, compressed, dark brown and shining.

Locality: Chek Keng, Tung Lung Chau. *F. W. Xing 9393; S. C. Ng 2171.*

Distribution: Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Fujian; India, Japan.

Ecology: Shrublands and forests. Flowering: Apr.–May.




**Figure 143.** *Cleyera japonica* Thunb.
*1.* flowering branch; *2.* fruiting branch; *3.* stamen; *4.* fruit. (drawn by H. P. Yu)

**2. Cleyera parvifolia** (Kobuski) Hu ex L. K. Ling. 小葉紅淡比 **(Photo 351)**

Iconogr. Cormophytorum Sinicorum Suppl. 2: 481. 1983; FRPS 50(1): 61. 1998.

*Cleyera japonica* Thunb. var. *parvifolia* Kobuski, J. Arnold Arbor. 18(2): 125. 1937; FTW 2: 604. 1976; FGD 2: 160. 1991.

Small tree or shrub, branches reddish brown, branchlets greyish brown, glabrous. Leaves leathery, elliptic, 3–5.5 × 1.5–2 cm, base cuneate, apex acuminate, margin entire, slightly revolute, glabrous, midvein prominent on both surfaces, lateral veins 5–6 pairs; petioles 3–5 mm, glabrous, sulcate above. Flowers axillary, solitary or 2–3 in cluster; pedicels 5–8 mm, glabrous; bracteoles 2, deciduous; sepals 5, triangular, ca. 3.5 × 2 mm, imbricate, apex acute, margin ciliate, persistent in fruit; petals 5, white, oblong or obovate-oblong, 5–6 × 2.5–3 cm; stamens about 25, 2-seriate, unequal, ca. 5 mm long; filaments filiform, glabrous; anthers ovoid, hispid, 2-celled, longitudinally opening, ca. 2 mm; ovary spherical, glabrous, 2-locular; style ca. 4 mm, apex 2-fid. Fruit baccate, globose, black, 5 mm in diam. Seeds many, compressed, dark brown, shiny, ca. 2 mm in diam.

Locality: Pat Sin Leng, Nam Chung. *S. C. Ng 2176; Y. W. Lam 1427; K. L. Yip 4085.*

Distribution: Guangdong, Taiwan.

Ecology: Forest. Flowering: May; fruiting: Sep.

# 89. ACTINIDIACEAE 獼猴桃科

XIA Nian-he 夏念和

Woody vines, trees or shrubs, polygamous or dioecious. Leaves simple, alternate, pinnately veined, exstipulate. Inflorescence usually fascicled, cymose, or paniculate, axillary. Flowers bisexual or unisexual. Sepals 5, rarely fewer, imbricate. Petals 5, sometimes 4 or 6, imbricate or convolute. Stamens 10–many, distinct or adnate to base of petals; anthers 2-celled, dehiscing by apical pores or longitudinal slits. Ovary superior, 5–many-locular; ovules 10–many on axile placentation; styles 3–many, distinct or connate, usually persistent. Fruit a berry or capsule. Seeds small, endosperm copious, embryo large, straight.

Three genera and ca. 350 species mainly distributed in tropical region of the world; three genera and ca. 60 species in China; two genera and three species in Hong Kong.

1a. Woody vines; flowers unisexual, plants dioecious or polygamous; styles many ..... 1. *Actinidia*
1b. Trees or shrubs; flowers bisexual or plants functionally dioecious ..... 2. *Saurauia*

## 1. Actinidia Lindl. 獼猴桃屬

Deciduous or semi-deciduous woody vines, polygamous or dioecious. Branches glabrous or hairy, often lenticellate. Stipules minute or absent. Leaves papery, membranous or leathery, margin serrate or rarely entire, often long petiolate. Inflorescence cymose, axillary, several- or many-flowered, or flowers solitary. Flowers variable in colour. Sepals 5, sometimes 4 or 6, distinct or connate at base, imbricate, rarely valvate, persistent or not. Petals 5, rarely 4 or 6, imbricate, rarely convolute. Stamens many; filaments slender; anthers 2-celled, dehiscing by longitudinal slits. Disc absent. Ovary many-locular; ovules many per locule; styles as many as carpels (15–30), usually reflexed, persistent. Fruit a berry, globose, ovoid, or ellipsoid, spotted with lenticels or not, glabrous or hairy. Seeds many, small, immersed in pulp; testa reticulate-pitted; endosperm copious; embryo straight, cotyledons short.

About 50 species distributed in SE Asia; 48 species in China; two species in Hong Kong.

1a. Leaves glabrous on both surfaces ..... 1. *A. callosa* var. *discolor*
1b. Leaves glabrous adaxially, densely greyish to yellowish brown-tomentose, with appressed stellate hairs on abaxial surface ..... 2. *A. latifolia*

**1. Actinidia callosa** Lindl. var. **discolor** C. F. Liang 異色獼猴桃 **(Photo 352)**

FRPS 49(2): 315, pl. 64: 6–7. 1984; FFJ 3: 455, fig. 317. 1988; FGD 4: 144. 2000.

*Actinidia fanjingshanensis* S. D. Shi & Q. B. Wang, Acta Bot. Yunnan. 16(4): 345. 1994.

Deciduous woody vine. Branches glabrous, greyish yellow when dried. Pith solid, pale brown, lamellate. Petioles reddish, 2–4 cm, glabrous; leaf blade obovate or elliptic, 5–12 × 3–6 cm, base cuneate or obtuse, slightly oblique, apex acute to acuminate, margin serrate to nearly entire, dark brown adaxially and greyish brown abaxially when dried, glabrous on both surfaces; lateral veins 6–8 pairs. Cymes 1–3-flowered; peduncles 0.5–1.2 cm; pedicels 0.5–1.5 cm. Flowers white. Sepals 5, ovate, 4–5 mm, glabrous. Petals 5, obovate-oblong, 8–10 mm. Filaments 3–5 mm; anthers yellow, ovoid, 1.5–2 mm, sagittate at base. Ovary subglobose, densely white-tomentose; styles slightly longer than ovary. Fruit subglobose to ellipsoid, 1.5–2 cm, glabrous when mature, greenish brown, with conspicuous spots outside and with reflexed persistent sepals at base.

Locality: Tai Mo Shan. *K. Y. Tam 101; Y. W. Lam 1638.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian, Taiwan, Zhejiang, Anhui, Shanxi.

Ecology: Forests. Flowering: May–Jun.; fruiting: Jul.–Sep.

**2. Actinidia latifolia** (Gardn. & Champ.) Merr. 闊葉獼猴桃 **(Fig. 144; Photo 353)**

J. Straits Branch Roy. Asiat. Soc. 86: 330. 1922; FRPS 49(2): 255, pl. 72: 1. 1984; FFJ 3: 458. 1988; FGD 4: 148, fig. 95. 2000.

*Heptaca latifolia* Gardn. & Champ., Hooker's J. Bot. Kew Gard. Misc. 1: 243. 1849.

*Actinidia championii* Benth., FHK 26. 1861; FKH 44. 1912.

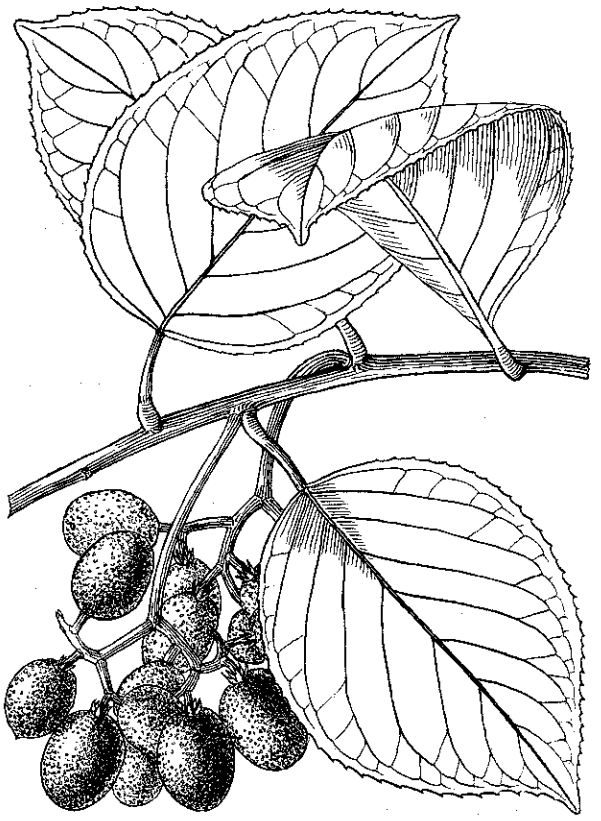


**Figure 144.** *Actinidia latifolia* (Gardn. & Champ. ) Merr. (drawn by H. P. Yu)

Deciduous woody vine. Branchlets subglabrous, whitish lenticellate; pith white, lamellate, solid or hollow. Petioles 3–7 cm, glabrous to puberulous; leaf blade broadly ovate, 8–13 × 5–8.5 cm, base rounded, shallowly cordate or broadly cuneate, apex acute to acuminate, margin remotely callose-serrulate, glabrous adaxially, densely greyish to yellowish brown-tomentose, with appressed stellate hairs on abaxial surface; lateral veins 6–7 pairs. Cymes 3- or 4-branched, many-flowered; peduncles 2.5–8.5 cm, densely brownish tomentose; pedicels 0.5–1.5 cm, densely brownish tomentose; bracts linear, 1–2 mm. Flowers white, fragrant, 1.4–1.6 cm in diam. Sepals 5, spathulate-ovate, 4–5 mm, reflexed after anthesis, yellowish tomentose on both surfaces. Petals 5–8, oblong to obovate-oblong, 6–8 mm, reflexed after anthesis. Filaments 2–4 mm, slender; anthers sagittate-ovoid, ca. 1 mm, pubescent. Ovary globose, ca. 2 mm, densely pilose; styles 2–3 mm. Fruit brown, subglobose to ovoid, 3–3.5 × 2–2.5 cm, spotted, glabrous when mature. Seeds 2–2.5 mm.

Locality: Hong Kong Island, Tai Mo Shan, Ng Tung Chai, Ma On Shan, Sai Kung, Lantau Island. *H. C. Tang 946; Y. S. Lau 2514, 3019.*

Distribtution: SW, S to E China; Vietnam, Laos, Cambodia, Malaysia, Thailand.

Ecology: Forests and thickets. Flowering: May–Jun.; fruiting: Oct.–Nov.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1849.

## 2. Saurauia Willd. 水東哥屬

Trees or shrubs. Branchlets usually with more or less stiff appressed hairs or subulate scales. Stipules absent. Leaves serrate or serrulate at margin; veins with scales or stiff hairs, lateral veins many, parallel. Flowers bisexual, in axillary thyrsoid or paniculate cymes, rarely solitary. Bracts small, linear. Sepals 5, imbricate. Petals 5, imbricate, usually connate at base. Stamens many, inserted at base of petals; anthers obtrigonal, dorsifixed, dehiscing by longitudinal slits or by apical pores. Ovary superior, 3–5-locular, with many ovules per locule; styles 3–5, connate at lower half, rarely distinct, stigma simple to discoid. Berry globose or depressed-globose, usually ridged, white to pale green, rarely red. Seeds many, small, brown, buried in pulp, areolate.

About 300 species distributed in tropical regions of Asia and America; 13 species in China; one species in Hong Kong.

### 1. Saurauia tristyla DC.

水東哥(米花樹) **(Fig. 145; Photo 354)**

Mem. Ternstroem. 31, t. 4. 1822; FHK 27. 1861; FKH 45. 1912; FHN 1: 512. 1964; FRPS 49(2): 296. 1984; FGD 3: 152. 1995.

Small tree or shrub, 1–5 m or taller. Branchlets stout, densely tomentose to glabrescent, with unguiculate hairs or subulate scales. Petiole 2.5–5.5 cm, with appressed scales or subulate stiff hairs; leaf blade elliptic, oblong or obovate-oblong, 10–30 × 5–14 cm, papery, base broadly cuneate or rounded, apex acuminate, sparsely pubescent with appressed stiff hairs along midvein and lateral veins on both surfaces, glabrescent; lateral veins 8–20 pairs. Cymes solitary or 2–3 fascicled, 2–5 cm, hairy and scaly. Pedicels 0.8–1 cm. Flowers pink to white. Sepals broadly ovate, 3–4 mm. Petals ovate, ca. 8 mm, recurved at apex. Stamens 25–34. Ovary ovoid to globose; styles 3 or 4(or 5), connate at proximal half. Berry globose, 0.6–1 cm in diam., green to white or pale yellow.

Locality: Hong Kong Island, Tai Mo Shan, Lantau Island. *C. P. Lau 87; W. J. Tutcher 5262; Y. S. Lau 633.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Fujian, Taiwan; India, Malaysia, Nepal and Thailand.

Ecology: Broadleaved forests and thickets in ravines. Flowering: Mar.–Jul.; fruiting: Aug.–Dec.

Uses: Medicinal (folklore).

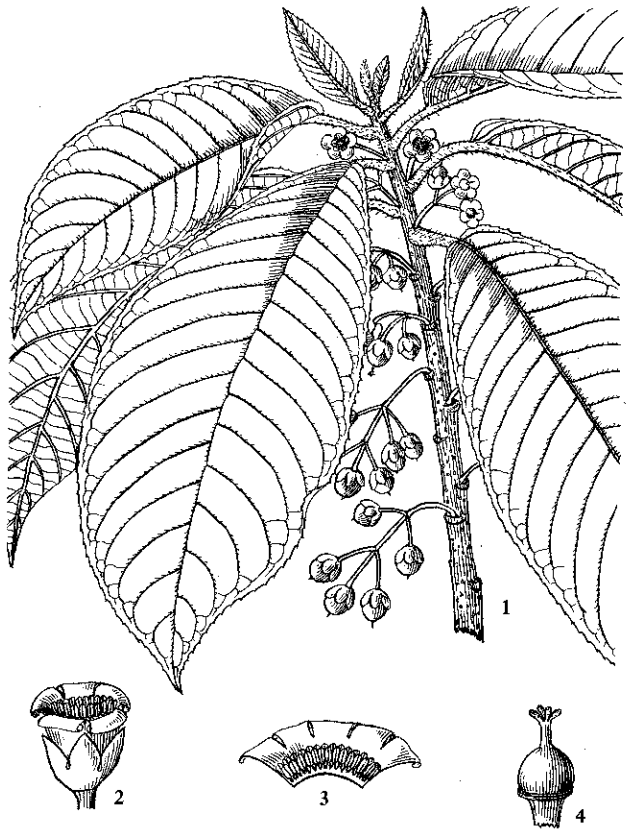



**Figure 145.** *Saurauia tristyla* DC.

*1.* flowering and fruiting branch; *2.* flower; *3.* corolla opened up showing stamens; *4.* pistil. (drawn by H. P. Yu)

# 91. PENTAPHYLACACEAE 五列木科

XIA Nian-he 夏念和

Evergreen shrubs or trees. Stipules persistent. Leaves simple, alternate. Flowers small, bisexual, actinomorphic, axillary, in pseudo-spikes or pseudo-racemes. Bracteoles 2, firmly adnate to calyx, ciliate, persistent. Sepals 5, unequal, imbricate, ciliate, persistent. Petals 5, white, imbricate, usually connate with stamens at base. Stamens 5, inflexed in bud, alternate with petals, shorter than petals; anthers small, 2-celled, dehiscing by apical pores. Ovary superior, 5-locular; ovules 2 per locule, collateral, pendulous, style 1, apically 5-lobed, persistent. Capsule ellipsoid, loculicidal. Seeds ellipsoid, flattened, apex winged or not; embryo U-shaped; endosperm very thin.

One genus and one species distributed in SE and SW China, Indonesia, Malaysia, Vietnam; it also occurs in Hong Kong.

### 1. Pentaphylax Gardn. & Champ. 五列木屬

The morphological characters and geographical distribution are the same as those of the family.

**1. Pentaphylax euryoides** Gardn. & Champ.
五列木 **(Fig. 146; Photo 355)**

Hook. J. Bot. Kew Gard. Misc. 1: 245. 1849; FHK 28. 1861; FKH 44. 1912; FHN 1: 510. 1964; FRPS 45(1): 136, pl. 39. 1980; FGD 4: 141. 2000.

Shrub or tree, 4–15 m tall, glabrous except bracteoles and sepals. Branchlets terete, greyish brown. Petioles 1–1.5 cm, grooved adaxially; leaf blade ovate, ovate-oblong or oblong—lanceolate, 4–9 × 2–5 cm, leathery, base rounded to broadly cuneate, apex caudate, margin entire and slightly revolute, dark green adaxially, pale green abaxially, lateral veins 6–8 pairs. Pseudo-racemes axillary or terminal, 4.5–12 cm. Pedicels ca. 0.5 mm; bracteoles triangular, 1–1.5 mm, sparsely white puberulous adaxially, margin ciliolate. Sepals 5, orbicular, 1.5–2.5 mm in diam., sparsely white puberulous adaxially, apex slightly 2-cleft, margin ciliolate. Petals white, oblong-lanceolate to oblanceolate, 4–5 × 1.5–2 mm, apex retuse to 2-cleft; filaments oblong, petaloid, 2.5–3.5 mm; anthers globose, ca. 0.5 mm in diam. Ovary ca. 1 mm long; style columnar, ca. 2 mm, 5-ridged. Capsule ellipsoid, 6–9 × 4–5 mm, purplish brown to dark brown, dehiscing into 5-valves when mature. Seeds reddish brown, 5–6 mm long, apex very compressed or winged.

Locality: Hong Kong Island, Ma On Shan, Pat Sin Leng, Wu Kau Tang, Lantau Island. *W. J. Tutcher 10912; P. S. Choi 212; K. L. Yip 4452.*

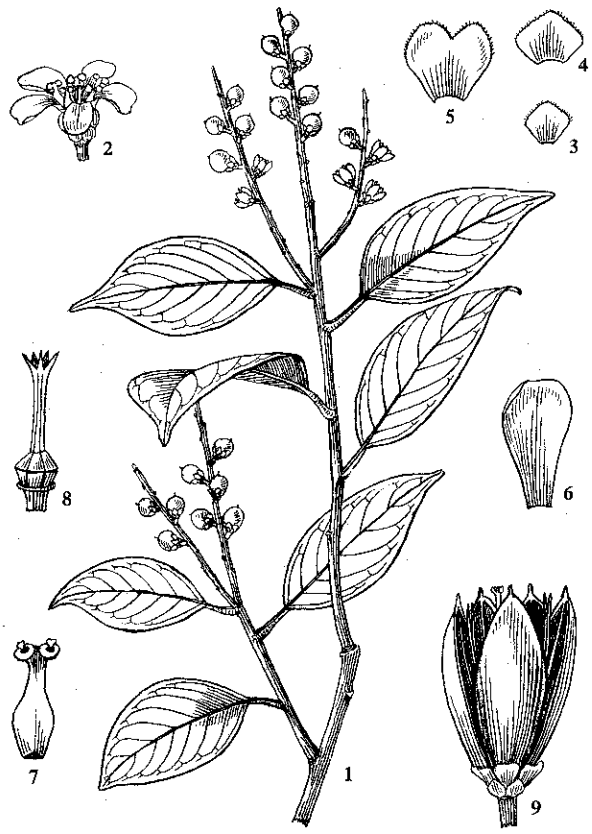



**Figure 146.** *Pentaphylax euryoides* Gardn. & Champ.
*1.* fruiting branch; *2.* flower; *3.* bracteoles; *4, 5.* sepal; *6.* petal; *7.* stamen; *8.* pistil; *9.* fruit. (drawn by H. P. Yu)

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian; Vietnam, Malaysia, Indonesia.

Ecology: Thickets and forests. Flowering: Apr.–Jun.; fruiting: Oct.–Nov.

Uses: Timber.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1849.

## 100. CLUSIACEAE (GUTTIFERAE) 山竹子科

WU De-lin 吳德鄰

Trees, shrubs, lianas or herbs with yellow or otherwise brightly coloured resinous juice. Stipules absent. Leaves simple, usually opposite or whorled, entire, leathery or thick, often with pellucid dots. Cymes terminal, rarely flowers solitary. Bracteoles present. Flowers bisexual or unisexual, regular. Sepals (2–)4–5(–6), rarely more, imbricate in pairs. Petals (2–)4–5(–6) or more, imbricate or convolute. Stamens many, free or grouped into (2–)4–5 bundles. Ovary superior, (1–)3–5(–20)-locular, placentation axile, rarely parietal on intruded placentas, with 1–many ovules per locule; styles as many as locules, or 1 style with lobed or peltate stigma. Fruit a drupe, berry or capsule. Seeds often arillate, embryo straight or curved, endosperm absent.

About 45 genera, 1370 species distributed in tropical and temperate regions of the world; eight genera and 87 species in China; four genera and seven species in Hong Kong.

1a. Fruit a berry or drupe.
  2a. Leaves with many parallel unbranched lateral veins; fruit a drupe ..... 1. *Calophyllum*
  2b. Leaves with more or less oblique branched lateral veins; fruit a berry ..... 2. *Garcinia*
1b. Fruit a capsule.
  3a. Shrubs or trees; leaves without glandular spots; capsules loculicidal; seeds winged ..... 3. Cratoxylum
  3b. Herbs; leaves with glandular spots; capsules septicidal; seeds not winged ..... 4. *Hypericum*

### 1. Calophyllum L. 紅厚殼屬

Trees or shrubs. Leaves opposite, entire, glabrous, many parallel-veined. Racemes or panicles terminal or axillary. Flowers bisexual or unisexual. Sepals 2–4, imbricate, inner ones often petal like; petals (2–)4–(8–)12, imbricate; stamens many; filaments free or united into several bundles at base; anthers 2-celled, opening by longitudinal slit; ovary 1-locular, 1-ovuled; style filiform, stigma peltate. Drupes globose or ovoid, pericarp thin, mesocarp fleshy or fibriform. Seeds with thin arils, cotyledons fleshy, oily.

About 187 species mainly distributed in tropical Asia, few in C & S America; three species in China; one species in Hong Kong.

**1. Calophyllum membranaceum** Gardn. & Champ.
胡桐 **(Fig. 147; Photo 356)**

Hooker's J. Bot. Kew Gard. Misc. 1: 309. 1849; FHK 25. 1861; FKH 42. 1912; FRPS 50(2): 83. 1990; FHN 2: 56. 1965; FGD 3: 211. 1995

Shrub or small tree, 1–5 m tall. Branchlets narrowly 4-winged, glabrous. Petioles 0.4–1 cm; leaves thinly leathery, oblong, elliptic or lanceolate, 4–13 × 1.5–4.5 cm, base cuneate, apex acuminate, acute or caudate-acuminate, margin entire, often slightly sinuate-revolute, shining on both surfaces, midvein elevated on both surfaces; lateral veins many, slender, parallel. Cymes axillary, 1–3 cm, (1–)3–9-flowered. Flowers white, reddish. Sepals 4, outer 2 suborbicular, ca. 4 mm; inner 2 petal-like, obovate, ca. 8 mm. Petals 4, obovate, ca. 8 mm. Stamens many; filaments united into 4 bundles at base. Ovary ovoid; style 4.5–5.5 mm. Drupes yellow, ovoid-oblong, 16–20 × 10–12 mm, apex mucronate. Seeds ca. 15 mm.

Locality: Hong Kong Island, Tai Mo Shan, Ma On Shan, Wu Kau Tang, Lantau Island. *H. C. Tang 393; K. L. Yip 4099.*

Distribution: Hainan, Taiwan, Guangdong, Guangxi; India, Sri Lanka, Indochina, Malaysia, Indonesia, Philippines, Polynesia, Madagascar, Australia.

Ecology: Secondary forests. Flowering: Mar.–May; fruiting: Aug.–Oct.

Uses: Medicinal.

Notes: The type specimen was collected from Victoria Peak, Hong Kong Island by J. G. Champion between 1847 and 1849.

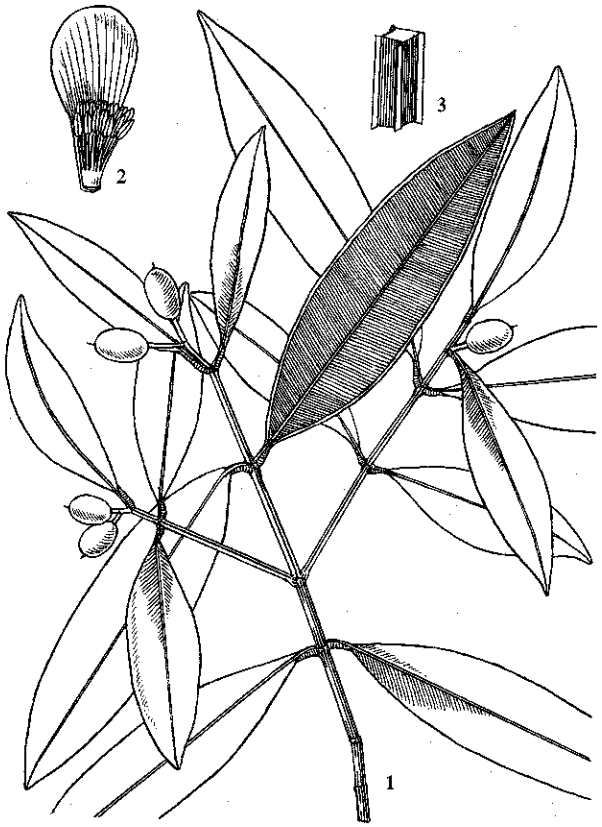



**Figure 147.** *Calophyllum membranaceum* Gardn. & Champ.
*1.* fruiting branch; *2.* petal and stamens; *3.* narrowly winged young branch. (drawn by H. P. Yu)

## 2. Garcinia L. 藤黃屬

Trees or shrubs, usually with yellow resinous juice. Leaves opposite, entire. Cymes terminal or axillary, or flowers solitary. Flower unisexual, bisexual or polygamous; sepals and petals 4–5, imbricate. Male flowers: stamens many, free or united into 1–5 bundles, surrounding pistillode; pistillodes sometimes absent; anthers dehiscing by longitudinally slits or apical pores. Female flowers: staminodes 8–many, free or united; ovary 2–12-locular; styles short or absent; stigma peltate, entire or divided, ovule 1 in each locule. Berries globose, with leathery pericarp. Seeds with succulent arils.

About 200 species distributed in tropical Asia and S Africa; 21 species in China; two species Hong Kong.

1a. Flowers in corymbs; petals 12–14 mm; stamens united into 4 bundles ..... 1. *G. multiflora*
1b. Flowers solitary or fascicled; petals 7–9 mm; stamens monadelphous ..... 2. *G. oblongifolia*

**1. Garcinia multiflora** Champ. ex Benth.
多花山竹子 **(Fig. 148; Photo 357)**

Hook. J. Bot. Kew Gard. Misc. 3: 310. 1851; FHK 25. 1861; FKH 42. 1912; FRPS 50(2): 94. 1990; FGD 3: 209. 1995; FHN 2: 54. 1965.

Shrub or tree, 3–12 m tall; bark grey-white. Petioles 0.5–4 cm; leaves leathery, obovate, oblong-obovate to oblanceolate, 5–20 × 3–10 cm, base cuneate, apex obtuse, acute or acuminate, margin slightly revolute; lateral veins 10–20 each side, oblique. Cymes

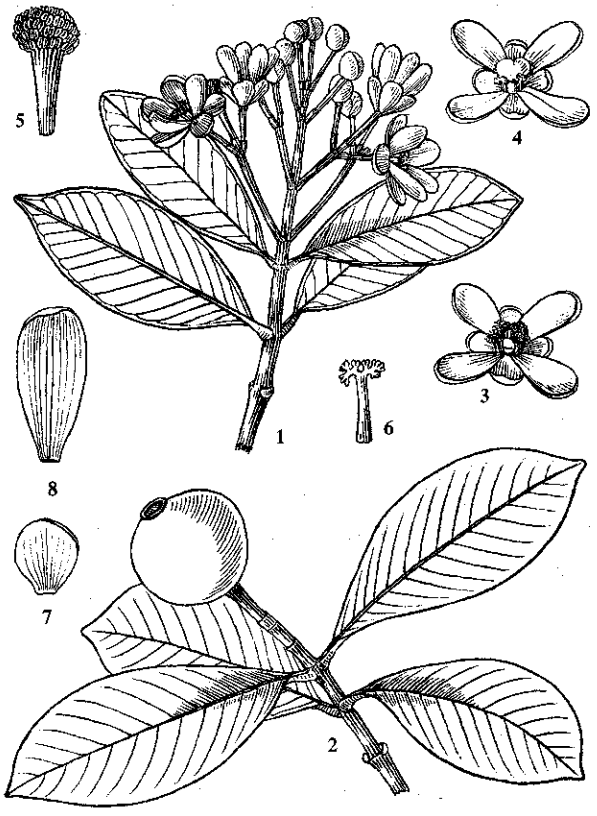



**Figure 148.** *Garcinia multiflora* Champ. ex Benth.
*1.* flowering branch; *2.* fruiting branch; *3.* male flowers; *4.* female flower; *5.* bundle of stamens; *6.* bundle of rudimentary staminodes; *7.* sepal; *8.* petal. (drawn by H. P. Yu)

rearranged in corymbs, terminal. Flowers orange, unisexual, rarely polygamous. Male flowers: sepals 4, orbicular, concave, outer ones 6–7.5 mm, inner ones 8–10 mm; petals obovate-spathulate, 12–14 × 6–7 mm; stamens united into 4 bundles; anthers densely on top of bundles, globose. Female flowers: sepals and petals similar to those of male flowers; ovary 2-locular, without style; stigma peltate, persistent. Berries green-yellow, globose, ovoid or obovoid, 1.8–3 cm in diam.

Locality: Hong Kong Island, Tai Mo Shan, Ng Tung Chai. *L. T. Lo 98; Y. S. Lau 920; P. S. Choi 85.*

Distribution: Taiwan, Fujian, Jiangxi, Hunan, Guangdong, Hainan, Guangxi, Guizhou, Yunnan.

Ecology: Secondary forests on higher grounds. Flowering: Jun.–Aug.; fruiting: Nov.–Dec.

Uses: Food (fruit).

Notes: The type specimen was collected from "the Black Mountain", Hong Kong Island by J. G. Champion between 1847 and 1850.

**2. Garcinia oblongifolia** Champ. ex Benth. 岭南山竹子(黄牙果) **(Photo 358)**

Hook. J. Bot. Kew Gard. Misc. 3: 331. 1851; FHK 25. 1861; FKH 42. 1912; FRPS 50(2): 106. 1990; FHN 2: 55. 1965; FGD 3: 210. 1995.

Shrub or tree, 5–15 m tall. Petioles 0.5–1.5 cm; leaves thinly leathery or papery, oblong, obovate-oblong, elliptic to oblanceolate, 4–14 × 1.5–4.3 cm, base cuneate, apex obtuse or acute rarely shortly acuminate, margin entire; lateral veins 10–18 pairs, slender. Flowers unisexual, solitary or a few in fascicle, axillary or terminal. Male flowers: sepals 4, orbicular, 3–4 mm; petals 4, obovate-oblong, 7–9 mm; stamens many consolidated into a fleshy mass; pistillode absent. Female flowers: sepals and petals similar to male flowers; staminodes united into 4 bundles; ovary ovoid, without style; stigma peltate. Berries ovoid or subglobose, 2–4 × 2–3.5 cm, with persistent calyx at base and stigma at apex.

Locality: Common in Hong Kong. *H. C. Tang 23; W. J. Tutcher 10542; Y. S. Lau 2178.*

Distribution: Guangxi, Guangdong, Hainan; Vietnam.

Ecology: Fung Shui Woods and lowland secondary forests. Flowering: Apr.–May; fruiting: Oct.–Dec.

Uses: Materials (timber).

Notes: The type specimen was collected in the Happy Valley woods, Hong Kong Island by J. G. Champion between 1847 and 1850.

## 3. Cratoxylum Blume 黄牛木属

Shrubs or trees. Leaves opposite, rarely subopposite, entire, sessile or petiolate. Cymes terminal or axillary, or flowers solitary. Sepals 5, leathery, persistent. Petals 5, red or white, with linear or spotted glands, with or without scales at base. Stamens many, united into 3–5 bundles; filaments slender, with fleshy glands alternate to staminal bundles. Ovary 3-locular; styles 3, free, slender, stigma small, ovules 4–many in each locule. Capsules loculicidal. Seeds 4–many, winged on one side.

Six species distributed in SE Asia; two species in China; one species in Hong Kong.

**1. Cratoxylum cochinchinense** (Lour.) Blume
黄牛木 **(Fig. 149; Photo 359)**

Mus. Bot. Lugd. Bat. 2: 17. 1852; FRPS 50(2): 76.1990; FHN 2: 53. 1965; FGD 3: 204. 1995.

*Hypericum cochinchinense* Lour. Fl. Cochinch. 472. 1790.

*Cratoxylum polyanthum* Korth. Verh. Nat. Gesch. Bot. 175, t. 36. 1842; FHK 24. 1861; FKH 42. 1912.

Shrubs or trees, 1–10 m tall, bark yellowish-white, glabrous. Petioles 2–5 mm; leaves elliptic, narrow-elliptic, ovate-oblong or rarely subovate, 3–11 × 1.5–4 cm, base cuneate, rarely rounded, apex acute, shortly acuminate or slightly obtuse; lateral veins slightly obvious on both surfaces. Cymes axillary or extra-axillary, 1–5-flowered. Flowers red, ca. 1 cm in diam. Sepals elliptic, 5–7 mm. Petals obovate, ca. 10–14 mm, base cuneate, without scale, with linear-glands. Stamens usually united into 3 bundles, 4–8 mm, glands 3, alternate with staminal bundles, conic, 2–3 mm. Capsules elliptic, 8–12 mm, with persistent calyx. Seeds 6 mm, winged on one side.

Locality: Common in Hong Kong. *H. C. Tang 110, 2270; Y. S. Lau 2180.*

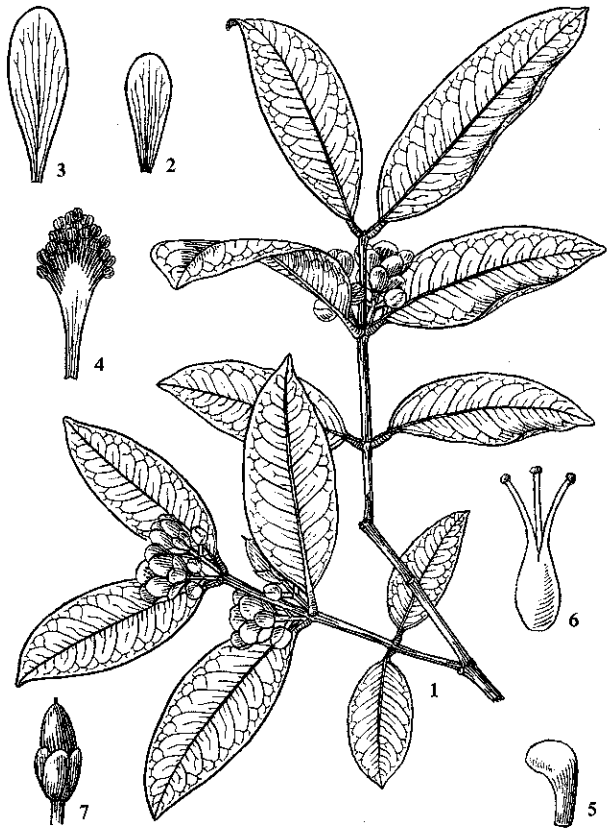



**Figure 149.** *Cratoxylum cochinchinense* (Lour.) Blume
*1.* flowering branch; *2.* sepal; *3.* petal; *4.* bundle of stamens; *5.* gland; *6.* pistil; *7.* capsule. (drawn by H. P. Yu)

Distribution: Guangdong, Guangxi, S Yunnan; Indochina, Thailand, Myanmar, Philippines, Indonesia.
Ecology: Thickets or secondary forests. Flowering: Apr.–May; fruiting: Jun.
Uses: Medicinal (folklore).

## 4. Hypericum L. 金絲桃屬

Herbs or shrubs. Leaves opposite, rarely whorled, often with glandular spots. Cymes terminal or axillary, rarely flower solitary. Sepals 5, often persistent. Petals 5, yellow, rarely pink or purplish, oblique. Stamens many, free or united into 3–5-bundles, opposite to petals, filaments slender; anther dorsifixed, connective glandular. Ovary 3–5-locular, ovules many in each locule, rarely few; styles (2–)3–5, free or connate; stigma small. Capsules septicidal. Seeds small, without aril.

About 400 species distributed in temperate to subtropical regions of the world; 40 species in China; three species in Hong Kong.

1a. Opposite leaves wholly connate at base and perfoliate; capsules with yellow-brown vesicular gland dots.....1. *H. sampsonii*
1b. Opposite leaves not wholly connate at base and not perfoliate; capsules without yellow-brown vesicular glands.
2a. Small shrubs; leaves 2.5–11 × 1–4 cm; capsules ovoid, 6–10 × 4–7 mm.....2. *H. monogynum*
2b. Herbs; leaves 2.5–18 × 1–10 mm; capsules elliptic, 2.5–6 × 1.3–2.8 mm.....3. *H. japonicum*

**1. Hypericum sampsonii** Hance 元寶草 **(Fig. 150; Photo 360)**
J. Bot. 3: 378. 1865; FKH 41. 1912; FRPS 50(2): 60. 1990; FGD 3: 205. 1995.

Perennial herbs, 0.2–0.8 m tall, often branched above. Leaves opposite, in perfoliate pairs, oblong-lanceolate, 3–15 × 1–3.5 cm, base wholly connate, apex obtuse or rounded, sparsely black glandular dotted; lateral veins ca. 4 pairs. Cymes terminal. Flowers yellow, 6–15 mm in diam. Sepals elliptic or oblong, 3–7 mm, with black glandular dotted. Petals oblong or obovate, 4–8 mm, persistent, sparsely glandular dotted. Stamens united into 3 bundles. Ovary 3-locular; styles 3. Capsules ovoid to narrowly pyramidal, 6–9 × 4–5 mm, with yellow-brown vesicular glands. Seeds orange-brown, ca. 1 mm.

Locality: Ma On Shan (Ngong Ping).
Distribution: Areas S of Changjiang River; India, Japan.
Ecology: Farmland. Flowering: Mar.
Uses: Medicinal (folklore).

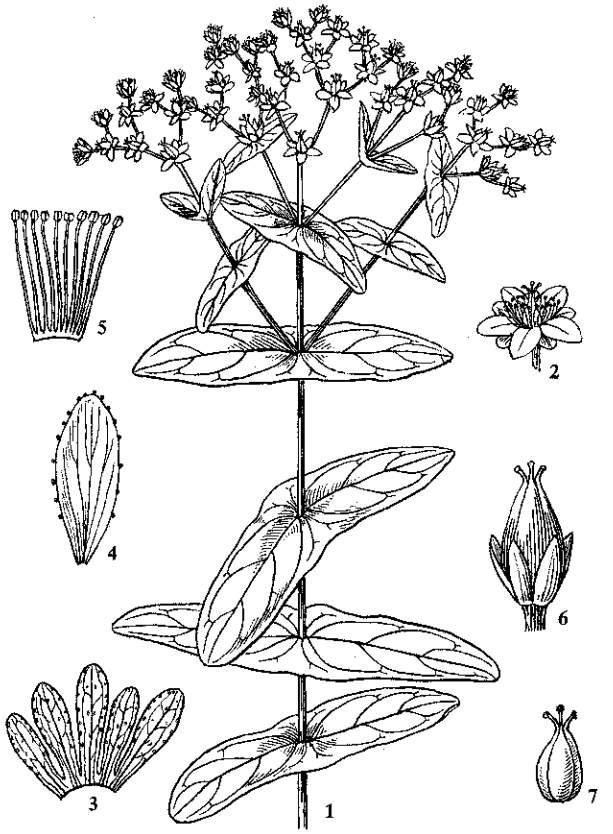



**Figure 150.** *Hypericum sampsonii* Hance
*1*. flowering branch; *2*. flower; *3*. calyx opened; *4*. petal; *5*. stamen bundle; *6*. capsule; *7*. pistil. (drawn by H. P. Yu)

**2. Hypericum monogynum** L. 金絲桃 **(Photo 361)**
Sp. Pl. ed. 2, 2: 1107. 1763; FRPS 50(2): 12. 1990; FGD 3: 206. 1995.

*Hypericum chinense* L., Syst. Nat. ed. 10, 2: 1184. 1759 non Osbeck (1757).

Small shrub, 0.5–1 m tall, many branched. Leaves papery, elliptic, oblong, obovate, oblanceolate or ovate-oblong, 2.5–11 × 1–4 cm, base cuneate or slightly cordate, sometimes amplexicaul; lateral veins 4–5 pairs, slender, obvious abaxially. Cymes terminal. Flowers yellow, ca. 3–6.5 cm in diam. Sepals ovate-oblong, 4.5–13 mm. Petals obovate, 2–3.5 cm; stamens many, base united into 5 bundles, slightly shorter than petals. Ovary ovoid, 3–4 mm, 5-locular; style 5-lobed. Capsules ovoid, 6–10 × 4–7 mm. Seeds dark red, ca. 1.3 mm.

Locality: Cultivated in gardens. *HK sheet 2695*.
Distribution: Guangdong, Guangxi, Guizhou, Hunan, Sichuan, Hubei, Anhui, Zhejiang, Jiangxi, Fujian, Taiwan, Henan, Hebei, Shaanxi, Shandong, Jiangxi.
Ecology: Flowering: May–Aug.; fruiting: Aug.–Sep.
Uses: Ornamental, medicinal (folklore).

**3. Hypericum japonicum** Thunb. ex Murray 地耳草(田基黃) **(Photo 362)**
Syst. Veg. ed. 14, 702. 1784; FHK 23. 1861; FKH 42. 1912; FRPS 50(2): 47. 1990; FHN 2: 52. 1965; FGD 3: 207. 1995.

Annual or perennial herb, 2–45 cm tall. Branches diffuse or ascending, 4-angled. Leaves sessile, ovate or ovate-lanceolate, 2–18 × 1–10 mm, base slightly cordate, amplexicaul, rarely cuneate, apex obtuse, with transparent dots, 3-basinerved. Cymes terminal. Flowers yellow, 4–8 mm in diam. Sepals narrow-oblong or elliptic, 2–5.5 mm, often with glandular dots. Petals elliptic, oblong or obovate, equaling to sepals. Stamen many; filaments base united; ovary ovate to elliptic, 1–1.8 mm; style 3–2. Capsules ellipsoid, 2.5–6 ×

1.3–2.8 mm, dehiscing into 3 valves when ripen. Seeds yellow-brown, 0.5 mm.

Locality: Pok Fu Lam, Aberdeen, Victoria Peak, Tsim Shan, Fanling, Lantau Island. *Y. W. Lam 661; H. C. Tang 2472; Y. S. Lau 2134.*

Distribution: Liaoning, Shandong to S regions of Changjiang River; Japan, Korea, Nepal, Sikkim, India, Sri Lanka, Myanmar to Indonesia, Australia, New Zealand, Hawaii.

Ecology: Along roadside. Flowering: May–Aug.; fruiting: Jun.–Oct.

Uses: Medicinal (folklore).

# 101. ELAEOCARPACEAE 杜英科

XIA Nian-he 夏念和

Evergreen or semi-evergreen trees or shrubs. Leaves simple, alternate, sometimes opposite, pinnately veined; stipules persistent or deciduous. Inflorescence racemose, paniculate or cymose, or flowers solitary. Flowers bisexual or rarely unisexual, actinomorphic. Sepals 4–6, distinct or connate at base, usually valvate or sometimes imbricate. Petals 4–6, valvate or rarely imbricate, often laciniate at apex, sometimes wanting. Stamens 8–many, distinct; filaments free and borne on discs; anthers 2-celled, opening by apical pores or longitudinal lateral slits; connective often conspicuously prolonged; disc circular or lobed. Ovary superior, 2–many-locular; styles connate or distinct; ovules 2–many per locule. Fruit a capsule or drupe. Seeds with copious endosperm; embryo flat.

About nine genera and 400–450 species mainly distributed in tropical to subtropical regions of the world except Africa; two genera and 52 species in China; two genera and eight species in Hong Kong.

1a. Flowers in racemes; petals laciniate; fruit a drupe ..... 1. *Elaeocarpus*
1b. Flowers in clusters; petals entire or laciniate; fruit a capsule ..... 2. *Sloanea*

## 1. Elaeocarpus L. 杜英屬

Trees. Leaves usually alternate or spirally arranged. Petioles long and usually swollen at both ends; leaf blade usually with black glands abaxially, margin serrate or entire, pinnately veined. Stipules linear or rarely leaf-like, caducous, rarely persistent. Inflorescence racemose, axillary. Flowers bisexual or polygamous, 4- or 5-merous. Sepals 4–6. Petals 4–5, white, free, laciniate at apex, rarely entire or lobed. Stamens numerous, often 10–50; filaments very short; anthers dehiscing by apical pores, with awn or hairs at tip. Disc usually 5–10-lobed, rarely circular. Ovary 2–5-locular; ovules 2–12 per locule; style linear or subulate, not branched. Fruit a drupe, 1–5-locular; endocarp hard, bony, usually lacunose on surface. Seeds usually one per locule; endosperm fleshy; cotyledons thin; embryo straight or curved.

About 360 species distribtuted in tropical regions of the Old World; 38 species and seven varieties in China; seven species in Hong Kong.

1a. Leaf blades black punctuate abaxially.
  2a. Branchlets pubescent when young; ovary 2-locular; endocarp with 2 ventral sutures ..... 1. *E. chinensis*
  2b. Branchlets glabrous; ovary 3-locular; endocarp with 3 ventral sutures ..... 2. *E. japonicus*
1b. Leaf blades not black punctuate abaxially.
  3a. Anthers awned at apex.
    4a. Branchlets silver-grey-pubescent at first; leaves lanceolate or oblong ..... 3. *E. dubius*
    4b. Branchlets glabrous; leaf blades narrowly lanceolate or oblanceolate ..... 4. *E. hainanensis*
  3b. Anthers without appendage at apex.
    5a. Leaf blades slivery white-sericeous abaxially ..... 5. *E. nitentifolius*
    5b. Leaf blades glabrous.
      6a. Leaf blades lanceolate or oblanceolate, 7–12 × 2–3.5 cm; sepals puberulous ..... 6. *E. decipiens*
      6b. Leaf blades narrowly obovate 4–8 × 2–4 cm; sepals glabrous ..... 7. *E. sylvestris*

**1. Elaeocarpus chinensis** (Gardn. & Champ.) Hook. f. ex Benth. 中華杜英(野杜英) **(Photo 363)**

FHK 43. 1861; FGD 1:118. 1987; FRPS 49 (1): 22, pl. 4:1–6. 1989.

*Friesia chinensis* Gardn. & Champ., Hooker's J. Bot. Kew Gard. Misc. 1: 243. 1849; l. c. 3: 264. 1851.

*Elaeocarpus integripetalus* Gagnep., Notul. Syst. (Paris) 11: 6. 1943

Small tree, 3–7 m tall. Branchlets puberulous at first, glabrescent. Petioles 1.5–2 cm; leaf blade ovate-lanceolate or lanceolate, 5–8 × 2–3 cm, thin leathery, base rounded, rarely broadly cuneate, apex acuminate, margin minutely crenate, abaxially pubescent at first, later glabrescent, black glandular-punctate; lateral veins 4–6 pairs. Racemes in axils of fallen leaves, 3–4 cm; rachis and peduncles puberulous. Pedicels ca. 3 mm. Flowers polygamous. Bisexual flowers: sepals lanceolate, ca. 3 mm, puberulous on both surfaces. Petals oblong, ca. 3 mm, margin nearly entire, sparse-puberulous adaxially, glabrous abaxially. Stamens 8–10, ca. 2 mm; filaments very short; anthers without hairs at apex. Ovary 2-locular. Male flowers: sepals and petals as in bisexual flowers; stamens 8–10, without pistillodes. Drupe ellipsoid, 7–8 mm, endocarp with 2 ventral sutures.

Locality: Common in Hong Kong. *S. C. Ng 3145; Y. W. Lam 645; P. S. Choi 30.*

Distribution: Fujian, Zhejiang, Jiangxi, Guangdong, Guangxi, Guizhou, Yunnan; Vietnam, Laos.
Ecology: Evergreen broadleaved forests. Flowering: May–Jun.; fruiting: Autumn.
Uses: Ornamental.
Notes: The type specimen was collected from Happy Valley Woods by J. G. Champion between 1847 and 1849.

**2. Elaeocarpus japonicus** Sieb. & Zucc. 日本杜英 **(Photo 364)**

Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4: pt. 2. 165. 1845; FGD 1: 119. fig. 125: 2A–2D. 1987; FRPS 49(1): 20. 1989.

*Elaeocarpus yunnanensis* Brandis ex Tutch., Rep. Bot. For. Dept. Hongk. 1914: 30. 1915.
*Elaeocarpus japonicus* var. *euplebius* Merr., Lingnan Sci. J. 5: 123. 1928; FHN 2: 68. 1965.

Tree, to 25 m tall. Branchlets glabrous. Buds sericeous. Petioles 2–6 cm; leaf blade varied in shape and size, often ovate, sometimes elliptic, obovate, or lanceolate to narrowly oblong, 6–12(–17) × 3–6 cm, leathery, base rounded or obtuse, acute, or broadly cuneate, apex acuminate or acute, margin sparsely dentate, both surfaces densely silvery-grey-sericeous at first, glabrescent, black glandular-punctate abaxially; lateral veins 5–8 pairs. Racemes axillary, 3–6 cm. Flowers polygamous. Pedicels 3–4 mm, puberulous. Bisexual flowers: sepals oblong, ca. 4 mm, pubescent on both surfaces. Petals oblong, as long as sepals, entire or incised, pubescent on both surfaces or only on abaxial surface. Stamens 15; anthers ca. 2 mm, without awns at apex, puberulous. Disc 5- or 10-lobed. Ovary pubescent, 3-locular; style ca. 3 mm, pubescent. Male flowers: stamens 9–12; pistillodes present or not. Drupe ellipsoid, 1–1.3 × ca. 0.8 cm, shiny, with 3 ventral sutures; seed 1, ca. 8 mm.

Locality: Tai Mo Shan, Lantau Island. *Y. W. Lam 2159; Y. S. Lau 298; N. K. Chun 40646.*
Distribution: Areas S of Changjiang River; Vietnam, Japan.
Ecology: Evergreen broadleaved forests. Flowering: Apr. –May; fruiting: May–Jul.
Uses: Ornamental.

**3. Elaeocarpus dubius** A. DC. 顯脈杜英(山模果) **(Photo 365)**

Bull. Herb. Boiss. Ser. 2, 3: 366. 1903; FHN 2: 70. 1965; FGD 1: 121, fig. 126: 1A-1E. 1987; FRPS 49(1): 16, pl. 3: 1–5. 1989.

Tree to 25 m tall. Branchlets slender, silver-grey-pubescent at first, glabrescent. Petioles slender, 1–2.5 cm; leaf blade oblong or lanceolate, 5–7(–10) × 2–2.5(–4) cm, thin leathery, base broadly cuneate or obtuse, apex acute or acuminate, margin crenate, glabrous; lateral veins 8–10 pairs, reticulation of veins conspicuous when dry. Racemes axillary, 3–5 cm; peduncles silvery grey-white pubescent, 4–7-flowered. Pedicels 7–9 mm. Sepals 5, narrowly lanceolate, conspicuously keeled, 7–8 mm, puberulous on abaxial surface. Petals 5, as long as sepals, oblong, 7–8 × ca. 2.5 mm, grey-white-pubescent on both surfaces, distal 1/3 laciniate; segments 9–11. Stamens 20–23; anthers ca. 3.5 mm, with awns (ca. 1.5 mm) at apex. Disc 10-lobed, pubescent. Ovary 3-locular, pubescent; style ca. 5 mm. Drupe ellipsoid, 1–1.3 cm, glabrous; endocarp bony, with 3 ventral sutures.

Locality: Tai Po, Wu Kau Tang. *W. J. Tutcher 10219; Y. S. Lau 1516.*
Distribution: Guangdong, Hainan, Guangxi, Yunnan; Vietnam.
Ecology: Evergreen broadleaved forests. Flowering: Mar.–Apr.; fruiting: Autumn.
Uses: Ornamental.
Notes: The species was misidentified as *E. griffithii* Mast. by Tutcher (Rep. Bot. For. Hongk. 1914: 30. 1915).

**4. Elaeocarpus hainanensis** Oliv. 水石榕 **(Photo 366)**

Hooker's Icon. Pl. 25: t. 2462. 1896; FHN 2: 67. 1965; FGD 1: 116, fig. 122: 1A–1E. 1987; FRPS 49(1): 8. 1989.

Small tree, to 5 m tall. Branchlets glabrous. Leaves clustered at twig apices; petioles 1–2 cm; leaf blade narrowly lanceolate, or oblanceolate, 7–15 × 1.5–3 cm, leathery, base cuneate, apex acuminate, margin denticulate, glabrous; lateral veins 14–16 pairs. Racemes axillary, 5–8 cm, 2–6-flowered. Flowers 3–4 cm in diam. Bracts persistent, leaf-like, sessile, ovate or elliptic, 1–1.6 cm, base rounded or auriculate, margin dentate. Pedicels 4 cm. Sepals 5, lanceolate, 1.2–2 cm. Petals 5, white, as long as sepals, obovate, hairy, apex laciniate; segments 30–46, 4–6 mm. Stamens many; connective prolonged and awn-like. Disc many-lobed, tomentose. Ovary 2-locular, glabrous; ovules 2 per locule. Style ca. 1 cm. Drupe fusiform, 4–5 cm, ca. 1–1.2 cm in diam.; endocarp hard, with 2 ventral sutures. Seeds ca. 2 cm.

Locality: Cultivated. *Y. S. Lau 1492; P. S. Choi 359.*
Distribution: Hainan, Guangdong, SW Guangxi, SE Yunnan; Vietnam, Thailand and Myanmar.
Ecology: Flowering: Jun.–Jul.; fruiting: Jul.–Sep.
Uses: Ornamental.

**5. Elaeocarpus nitentifolius** Merr. & Chun 絹毛杜英 **(Photo 367)**

Sunyatsenia 2: 279. 1935; FHN 2: 68. 1965; FGD 1: 119, fig. 125: 1A–1E. 1987; FRPS 49(1): 19, pl. 5: 1–5. 1989.

Tree to 20 m tall. Branchlets and petioles silvery-white-sericeous. Petioles 2–4 cm; leaf blade elliptic or oblong, 8–15 × 3.5–7.5 cm, leathery, base broadly cuneate, apex long acuminate or nearly caudate, margin densely serrulate, adaxially glabrescent, sericeous along veins, abaxially silvery-white-sericeous, not black-punctate; lateral veins 6–8 pairs. Racemes axillary, 2–4.5 cm; rachis hairy; bracts caducous, lanceolate. Flowers polygamous, usually pendulous. Pedicels 4–5 mm. Sepals 4–5, lanceolate, 4 mm, gray-puberulous abaxially. Petals 4–5, oblong, ca. 4 mm, glabrous, incised, with 5 or 6 segements. Stamens 12–15; anthers without awns at apex. Disc inconspicuously lobed. Ovary 2-locular, sparsely sericeous; style ca. 2.5 mm, pubescent, 2- or 3-lobed at apex. Drupe ellipsoid, small, shining, 1.5–2 × 1 cm.

Locality: Pok Fa Lam, Wu Kau Tang, Sheung Wo Hang. *W. J. Tutcher 11152; Y. W. Lam 1278; K. L. Yip 4464.*
Distribution: Fujian, Guangdong, Hainan, Guangxi, Yunnan; Vietnam.
Ecology: Evergreen broadleaved forests. Flowering: Apr.–May; fruiting: Sep.
Uses: Ornamental.

**6. Elaeocarpus decipiens** Hemsl. 杜英 **(Fig. 151; Photo 368)**
J. Linn. Soc. Bot. 23: 94. 1886; FGD 1: 117, fig. 123: 1A–1D. 1987; FRPS 49(1): 33, pl. 6: 10–14. 1989.

*Elaeocarpus lanceaefolius* auct. non Roxb.: FHK 42. 1861; Forbes & Hemsley, J. Linn. Soc. Bot. 23: 95. 1885.

Small tree, 5–15 m tall. Branchlets puberulous at first, glabrescent. Petioles ca. 1 cm; leaf blade oblanceolate, 7–12 × 2–4 cm, leathery, base attenuate, apex acuminate, tip blunt, margin serrulate, glabrous on both surfaces; lateral veins 7–9 pairs. Racemes 5–10 cm, puberulous; peduncles slender; pedicels 4–5 mm. Flowers bisexual. Sepals 5, lanceolate, ca. 5–6 mm. Petals 5, white, obovate, as long as sepals, puberulous near base adaxially, glabrous abaxially, laciniate on distal half; segments 10–16. Stamens 25–30, anthers without appendage at apex. Disc 5-lobed, pubescent. Ovary 3-locular, tomentose; ovules 2 per locule. Drupe ellipsoid, 1-locular, 2–3 cm; exocarp glabrous; endocarp bony, with many ventral sutures; seed 1, ca. 1.5 cm.

Locality: Hong Kong Island, Tai Long Sai Wan, Long Ke. *H. C. Tang 2392; Y. S. Lau 166; Y. W. Lam 1335.*

Distribution: Taiwan, Fujian, Zhejiang, Jiangxi, Hunan, Guangdong, Guangxi, Guizhou, Yunnan; Japan, Vietnam.

Ecology: Evergreen broadleaved forests. Flowering: Jun.–Jul.; fruiting: Autumn.

Uses: Ornamental.

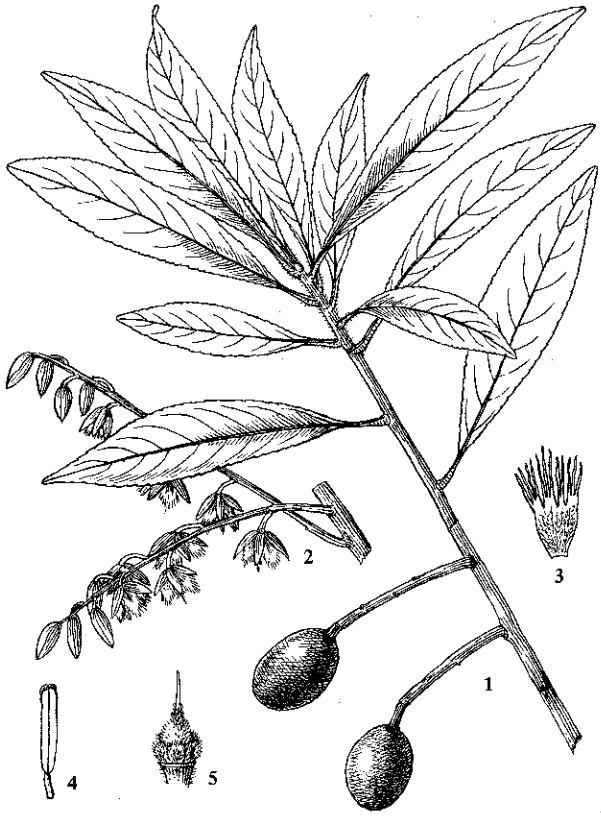



**Figure 151.** *Elaeocarpus decipiens* Hemsl.
*1*. fruiting branch; *2*. inflorescence; *3*. petal; *4*. stamen; *5*. pistil. (drawn by H. P. Yu)

**7. Elaeocarpus sylvestris** (Lour.) Poir. 山杜英(膽八樹) **(Photo 369)**
Encycl. Suppl. 11: 704. 1811; FGD 1: 121, fig. 121: 1A–1F. 1987; FRPS 49(1): 24, pl. 1: 1–6. 1989.

*Adenodus sylvestris* Lour., Fl. Cochinch. 294. 1790.
*Elaeocarpus henryi* Hance, J. Bot. 23: 322. 1885.
*Elaeocarpus kwangtungensis* Hu, J. Arnold Arbor. 5: 229. 1924.

Trees to 15 m tall. Branchlets slender, glabrous or sparsely pilose. Petioles 1–1.5 cm; leaf blade narrowly obovate, 4–8 × 2–4 cm, papery, base narrowly cuneate, apex ± rounded, margin crenate, glabrous on both surfaces; lateral veins usually 5–6 pairs. Racemes axillary, 4–6 cm, glabrous. Flowers bisexual. Pedicels 3–5 mm, slender, glabrous. Sepals 5, lanceolate, ca. 4 mm, sparsely pubescent. Petals 5, obovate, laciniate on distal half; segments 10–12, pubescent at base abaxially. Stamens ca. 15, 3 mm; anthers without awns at apex. Disc 5-lobed, white-pubescent. Ovary pubescent, 2–3-locular; style ca. 2 mm. Drupe ellipsoid, 1–1.2 cm; endocarp thinly bony, with 3 ventral sutures.

Locality: Common in Hong Kong. *Y. S. Lau 1126; P. S. Choi 140; K. L. Yip 4495.*

Distribution: Fujian, Zhejiang, Jiangxi, Hunan, Guangdong, Hainan, Guangxi, Guizhou, Yunnan, Sichuan; Vietnam.

Ecology: Evergreen broadleaved forests. Flowering: Apr.–May; fruiting: May–Aug.

Uses: Ornamental.

## 2. Sloanea L. 猴歡喜屬

Trees. Leaves simple, alternate, long petiolate, margin entire or serrate, pinnately veined; stipules caducous. Flowers usually bisexual, solitary or in clusters, axillary, long stalked. Sepals 4–5, valvate or imbricate, slightly connate at base. Petals 4–5, rarely absent, obovate, margin entire or laciniate at apex. Stamens many, inserted on disc; filaments short; anthers opening by apical pores or vertical slits, connective usually elongated and forming a beak. Disc broad, thick. Ovary 2–7-locular, pubescent; style free or connate; ovules several per locule. Capsule globose or ovoid, prickly, septicidally dehiscing into 3–7 valves; exocarp woody, thick; endocarp thin, leathery. Seed(s) 1 to several, pendulous, usually arillate; endosperm fleshy, copious. Cotyledons flat.

About 120 species, mainly distributed in tropics and subtropics; 14 species in China; one species in Hong Kong.

**1. Sloanea sinensis** (Hance) Hemsl. 猴歡喜 **(Photo 370)**
Hooker's Icon. Pl. 27(2): t. 2628. 1900; FGD 1: 123, fig. 129. 1987; FRPS 49(1): 43, pl. 9. 1989.

*Echinocarpus sinensis* Hance, J. Bot. 22: 103. 1884; FKH 52. 1912.

*Sloanea hongkongensis* Hemsl., Hook. Icon. Pl. t. 2628. 1900; Hayata, Fl. Form. 49. 1911; FKH 52. 1912.
*Sloanea sinensis* Hu, J. Arnold Arbor. 5: 230. 1924.
*Sloanea chinensis* Hu, Contr. Biol. Lab. Sci. Soc. China 1: 4. 1925, *nom. illeg.*
*Sloanea oligophlebia* Chun & Ting, Acta Phytotax. Sin. 8: 269. 1963.
*Sloanea parvifolia* Chun & How, Acta Phytotax. Sin. 7: 14, pl. 5. 1958; FHN 2: 65. 1965.

Tree to 20 m tall. Branchlets glabrous. Petioles 1–4 cm; leaf blade variable in shape and size, usually oblong or narrowly obovate, 6–12 × 3–5 cm, thinly leathery, base cuneate or rounded, apex acute, margin usually entire or rarely sparsely dentate on distal half, glabrous; lateral veins 5–7 pairs. Flowers clustered, axillary. Pedicels 3–6 cm. Sepals 4, broadly ovate, 6–8 × 5–6 mm, puberulous. Petals 4, white, 7–9 mm, puberulous, laciniate at apices. Stamens many, as long as petals; anthers awned at apex. Ovary ovoid, 3–7-locular, 4–5 mm, pubescent; style 1, 4–6 mm, puberulous on proximal half. Capsule variable in size, 2–4 cm in diam., dehiscing into 3–7 valves; prickles 1–1.5 cm; endocarp purple-red. Seeds black, shiny, 1–1.3 cm; aril yellow.

Locality: Wong Nai Chung, Aberdeen, Repulse Bay, Shing Mun, Tai Mo Shan, Sham Tseng, Tate's Cairn, Ma On Shan, Pat Sin Leng. *H. C. Tang 1861; Y. S. Lau 2386; Y. W. Lam 1377.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Fujian, Zhejiang, Taiwan; Cambodia, Laos, Myanmar, Thailand, Vietnam.

Ecology: Evergreen broadleaved forests. Flowering: Jun.–Oct.; fruiting: May–Nov.

Uses: Ornamental.

Notes: The type specimen of *Sloanea hongkongensis* was collected from Happy Valley and Aberdeen New Road by W. J. Tutcher (*Herb. Hongk. No. 611*) in 1895.

# 102. TILIACEAE 椴樹科

XIA Nian-he 夏念和

Trees, shrubs or herbs, usually with stellate or peltate scales. Leaves simple, alternate, rarely opposite, entire or serrate, sometimes lobed, palmately or pinnately veined. Stipules present, often deciduous, rarely persistent. Inflorescence cymose or cymose-paniculate. Flowers bisexual, rarely unisexual and dioecious, actinomorphic. Bracts caducous, sometimes large and persistent. Sepals (3–)5, valvate, distinct, sometimes connate at base. Petals as many as sepals, distinct, imbricate or convolute or valvate, sometimes lacking, usually glandular adaxially. Stamens usually many, distinct or united into 5–10 bundles at base, anthers 2-celled, dehiscent longitudinally or apically. Ovary superior, 2–6-locular, sometimes more, ovules 1 to numerous per locule on axile placenta. Style 1, branched or not; stigma capitate or lobed. Fruit a drupe, capsule, sometimes berry-like or samara, 2–10-locular. Seeds usually not arillate, endosperm copious, embryo erect, cotyledons flat.

About 52 genera and 500 species mainly distributed in tropical and subtropical areas; 11 genera and about 77 species in China; four genera and eight species with one additional variety in Hong Kong.

1a. Herbs or subshrubs.
  2a. Capsule without prickles or acicular hairs ..... 1. *Corchorus*
  2b. Capsule with prickles or acicular hairs ..... 2. *Triumfetta*
1b. Trees or shrubs.
  3a. Leaf blades serrate, sometimes lobed; ovary 2–4-locular; fruit with grooves ..... 3. *Grewia*
  3b. Leaf blades usually entire or slightly lobed; ovary 3-locular; fruit without grooves ..... 4. *Microcos*

## 1. Corchorus L. 黃麻屬

Herbs or subshrubs. Stipules 2, filiform. Leaves papery, basally 3-veined, usually with linear appendages on both sides at base, margin serrate, petiolate. Flowers bisexual, yellow, solitary or several in cymes. Cymes axillary or extra axillary. Sepals usually 5, rarely 4. Petals as many as sepals. Stamens 10 or more, inserted on androgynophore, distinct. Ovary 2–5-locular, ovules many per locule; style short; stigma peltate or disk-shaped, entire or lobed. Capsule cylindrical or globose, angled or horned, loculicidally dehiscing into 2–5 valves. Seeds many.

About 40 species, mainly distributed in tropical regions of the world; four species in China; two species in Hong Kong.

1a. Capsule cylindrical, 1.5–3 cm long, apex with 3–4 beaks; ovary hairy ..... 1. *C. aestuans*
1b. Capsule globose, 1 cm in diam., not beaked at apex; ovary glabrous ..... 2. *C. capsularis*

**1. Corchorus aestuans** L. 甜麻(假黃麻) **(Fig. 152; Photo 371)**

Syst. Nat. (ed. 10) 1079. 1774; FTW 3: 695. 1977; FFJ 3: 396, fig. 279. 1987; FRPS 49(1): 80, pl. 20: 4–7. 1989; FGD 4: 163. fig. 105. 2000.

*Corchorus acutangulus* Lam., Encycl. 2: 104. 1786; FHK 40. 1861; FKH 50. 1912; FHN 2: 64. 1965.

Annual herbs, up to ca. 1 m tall; stem red brown, slightly yellowish puberulous. Stipules subulate, 4mm. Petioles ca. 0.5–2 cm, pale yellow-hispid; leaf blade ovate, 2–6.5 × 1–4 cm, base rounded, apex short acuminate or acute, margin serrate, one pair of teeth near base usually elongating into caudate appendages, sparsely hispid on both surfaces; basal veins 3, lateral veins 3–6 pairs. Peduncle and

pedicels very short or almost obsolete. Sepals 5, narrowly oblong, ca. 5 mm, boat-shaped at distal half, horned at apex, purple red abaxially. Petals nearly as long as sepals, obovate, yellow. Stamens many, ca. 3 mm, yellow. Ovary long cylindric, pubescent. Style clavate; stigma 5-toothed. Capsule cylindrical, angular cylindric, ca. 1.5–3 cm, 6-ribbed, 3–4 of the ribs expaned into narrow wings, terminating in 3 entire or bifid points or horns, dehiscing into 3–4 valves when mature. Seeds many.

Locality: Sha Tin, Sai Kung, Tai Long Sai Wan, Tsing Yi, Lantau Island. *Y. S. Lau 899, 2382.*

Distribution: Areas S of Changjiang River; tropical Asia, C America, Africa.

Ecology: Wastelands, roadsides and near villages. Flowering & fruiting: Summer to autumn.

**2. Corchorus capsularis** L. 黃麻 **(Photo 372)**

Sp. Pl. 529. 1753; FHK 40. 1861; FKH 50. 1912; FHN 2: 63. 1965; FRPS 49(1): 78. 1989; FGD 4: 163. 2000.

Annual erect woody herbs, 1–2.5 m tall, glabrous; stems erect woody. Stipules filiform, deciduous. Petioles 1–3.5 cm; leaf blade ovate lanceolate or lanceolate, 5–12 × 2–5 cm, papery, base round, apex acuminate, margin rough coarsely serrate, one pair of teeth near base subulate and curved downward; 3 basal veins ascending but not exceeding middle of leaf blade, lateral veins 6–7 pairs. Peduncle and pedicels short. Sepals 5, pale purple, 3–4 mm. Petals yellow, narrowly obovate, as long as sepals. Stamens 8–22, inserted on short androgynophore. Ovary globose, 5-locular; stigma lobed. Capsule globose, 1 cm in diam., without horns at apex, ribbed and verrucose on the surface, dehiscing into 5 valves when mature.

Locality: Ma On Shan, Tai Po, Fanling, Luk Keng, Sha Po, Pui O (cultivated or naturalized). *Y. S. Lau 1313, 1991; Y. W. Lam 1234.*

Distribution: Commonly cultivated in regions S of Changjiang River; native to tropical Asia.

Ecology: Flowering: Summer; fruiting: Late autumn.

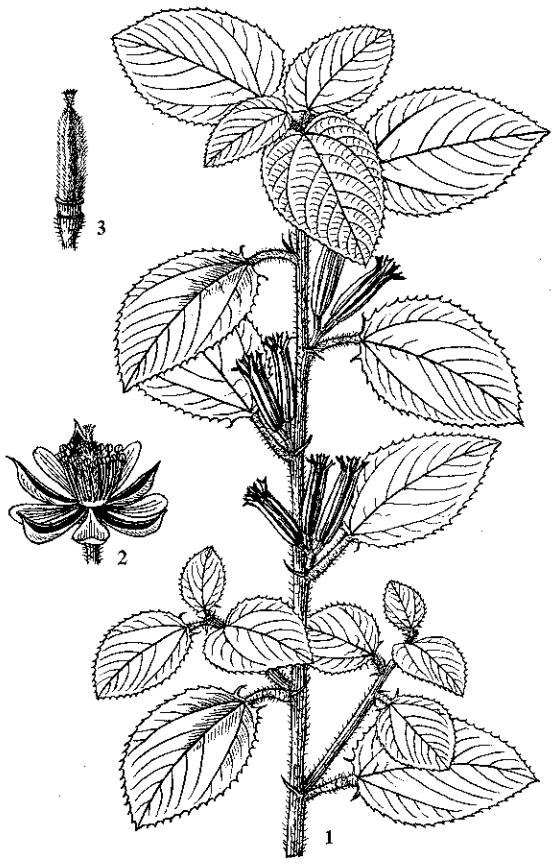



**Figure 152.** *Corchorus aestuans* L.
*1*. upper part of plant; *2*. flower; *3*. pistil. (drawn by H. P. Yu)

## 2. Triumfetta L. 刺蒴麻屬

Erect or procumbent herbs or subshrubs, stellate hairy or pubescent. Leaves simple, alternate, not lobed or palmately 3–5-lobed, palmately veined, margin serrate. Flowers bisexual, solitary or arranged in axillary or extra-axillary cymes. Sepals 5, distinct, valvate, usually with hooked appendages at apex. Petals 5, distinct, with thickened glands at base adaxially. Stamens many to 5, distinct, inserted on fleshy, segmented androgynophore; anthers dorsifixed, subglobose, longitudinally dehiscent. Ovary 2–5-locular, ovules 2 per locule; style 1; stigma 2–5-lobed. Capsule subglobose, dehiscing into 3–6 valves, or indehiscent, spiny or strigose, spines pointed, erect or hooked.

About 60 species, mainly distributed in tropical and subtropical areas; six species in China; two species in Hong Kong.

1a. Leaves not lobed; capsule dehiscent ..... 1. *T. cana*
1b. Leaves lobed; capsule indehiscent ..... 2. *T. rhomboidea*

**1. Triumfetta cana** Bl. 毛刺蒴麻 **(Photo 373)**

Bojer. 1: 126. 1825; FRPS 49(1): 106. 1989; FGD 4: 161. 2000.

*Triumfetta pilosa* auct. non Roth: FHK 41. 1861.

*Triumfetta pseudocana* Sprag. & Craib, Kew Bull. Misc. Inform. 1: 23. 1911.

*Triumfetta tomentosa* Bojer, Bouton Rapp. Ann. Maur. 19. 1842; FHN 2: 62. 1965.

Erect subshrub, 0.6–2 m tall. Branchlets densely yellowish brown-stellate-tomentose. Petioles 0.5–3 cm; leaf blade ovate or ovate lanceolate, 4–8 × 2.4 cm, papery, base rounded, apex acuminate, margin irregularly serrate, adaxial surface sparsely, abaxial surface densely stellate-tomentose; basal veins 3–5. Cymes often 2–6 clustered in leaf axils; peduncle ca. 3 mm; pedicels 1.5 mm. Sepals narrowly oblong, 5–7 mm, stellate-tomentose abaxially. Petals oblong, slightly shorter than sepals, yellow, shortly stalked at base, sparsely stellate-tomentose. Stamens 8–10(–12). Ovary covered with spiny hairs, 4-locular; stigma 3–5-lobed. Capsule globose, ca. 1–1.5 cm in diam. with spines, dehiscing into 4 valves, spines slender, 5–8 mm, curved, tip straight, not hooked, pubescent. Seeds 2 per locule.

Locality: Aberdeen, Sai Kung, Tai Mo Shan, Yuen Tun Ha, Shek Kong, Tai To Yan, Wu Kau Tang. *Y. S. Lau 2633; P. S. Choi 371; H. C. Tang 1422.*

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Xizang; SE Asia.

Ecology: Secondary forests and dry thickets. Flowering & fruiting: Summer to autumn.

**2. Triumfetta rhomboidea** Jacq.
刺蒴麻 **(Fig. 153; Photo 374)**

Enum. Syst. Pl. 22. 1760; FRPS 49(1): 109. 1989; FGD 4: 160, fig. 103. 2000.

*Triumfetta bartramia* L., Syst. ed. 10: 1044. 1757, *nom. superfl.* for *Bartramia indica* L.; FHN 2: 62. 1965.

*Bartramia indica* L., Sp. Pl. 389. 1753, non *Triumfetta indica* Lam. 1791.

*Triumfetta angulata* Lam., Encycl. 3: 421. 1791; FHK 41. 1861.

Erect subshrub, 0.5–1.5 m. Branchlets greyish brown-tomentose. Petioles 1–5 cm; leaf blade variable, those on the lower part of stem broadly ovate-orbicular, or rhomboid-ovate, 3–8 × 2–6 cm, papery, upper part 3-lobed, base rounded; those on the upper part of stem smaller, oblong to ovate-lanceolate, not lobed, sparsely hairy adaxially, stellate-pubescent abaxially; margin irregularly serrate; basal veins 3–5. Cymes several in leaf axils. Peduncle and pedicels very short. Sepals narrowly oblong, 5–6 mm, with a mucro at apex, stellate-hispid abaxially. Petals slightly shorter than sepals, yellow, hairy along margin. Stamens 10. Ovary spiny. Capsule subglobose, ca. 4–6 mm in diam. with spines, indehiscent, grey yellow-pubescent; spines 2–3 mm, glabrous, hooked. Seeds 2–6 per locule.

Locality: Common in Hong Kong. *H. C. Tang 2079; L. T. Lo 191; Y. S. Lau 2184.*

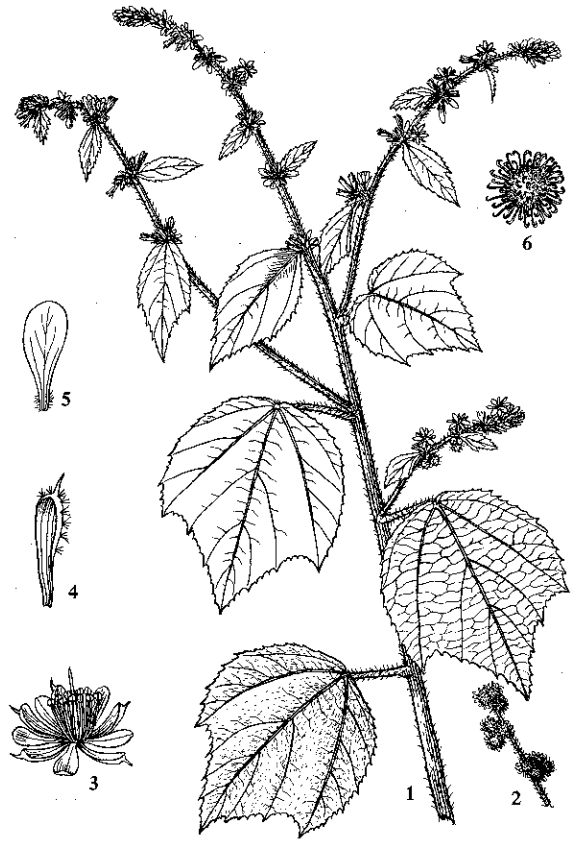



**Figure 153.** *Triumfetta rhomboidea* Jacq.
*1.* flowering branch; *2.* fruiting branch; *3.* flower; *4.* sepal; *5.* petal; *6.* capsule. (drawn by H. P. Yu)

Distribution: Guangdong, Guangxi, Yunnan, Fujian, Taiwan; tropical Asia and Africa.

Ecology: Wastelands, roadsides and thickets. Flowering & fruiting: Summer to autumn.

## 3. Grewia L. 扁擔桿屬

Trees or shrubs. Branchlets usually covered with stellate hairs. Leaves alternate, margin serrate or rarely lobed, basal veins 3–5, short-petiolate. Stipules minute, caducous. Flowers bisexual, polygamous, or unisexual and dioecious, usually in 3-flowered cymes, arranged in axillary, terminal or leaf-opposed cymes. Bracts caducous. Peduncles and pedicels usually hairy. Sepals 5, distinct, valvate, hairy abaxially. Petals 5, minute, with scale-like glands at base adaxially. Androgynophore present. Stamens many, distinct; anthers globose, dorsifixed, longitudinally dehiscent. Ovary 2–4-locular, ovules 2–8 per locule; style 1, usually swollen at apex; stigma swollen, peltate, entire or divided into small lobes, lobes entire, lobed or laciniate. Drupe usually grooved, 2–4(–8)-seeded.

About 150 species, distributed in tropics of the Old World; 26 species in China; three species and one variety in Hong Kong. According to Dunn & Tutcher, *Grewia asiatica* L. occurs in Hong Kong (FKH 51. 1912). It is not recorded here because no specimen of this species has been checked by the author.

1a. Sepals hairy adaxially; drupe slightly grooved or almost smooth, not separating into drupelets ..... 1. *G. eriocarpa*
1b. Sepals glabrous adaxially, or only hairy at base; drupe deeply grooved, separating into 2–4(–6) drupelets.
2a. Leaves lanceolate or oblong-lanceolate; petals 2–3 mm ..... 2. *G. oligandra*
2b. Leaves ovate, rhomboid-orbicular or obovate-elliptic; petals 1–1.5 mm.
3a. Leaves rough and sparsely stellate-hispid ..... 3. *G. biloba*
3b. Leaves densely yellow-tomentose ..... 3a. *G. biloba* var. *parviflora*

**1. Grewia eriocarpa** Juss. 毛果扁擔桿

Ann. Mus. Natl. Hist. Nat. 4: 93. 1804; FHN 2: 60. 1965; FRPS 49(1): 91, pl. 24: 1–5. 1989; FGD 4: 156. 2000.

*Grewia celtidifolia* Juss. var. *eriocarpa* (Juss.) Hsu & Zhuge, Bot. Journ. South China 2: 19. 1993.

*Grewia asiatica* auct. non L.: FKH 51. 1912 (quoad *Birdwood s.n.*).

Shrub or small tree, 1–8 m tall. Young branchlets grey stellate-pubscent; branchlets subglabrous, dark brown to brown after dried. Stipules linear-lanceolate, 0.5–1 cm; petioles 0.6–1 cm, densely stellate hairy; leaf blade oblique ovate or ovate-oblong, 6–13 × 3–6(–9) cm, papery, base oblique and rounded, apex acuminate or acute, margin serrulate, sparsely stellate hairy and rough adaxially, grey stellate-pubescent abaxially; basal veins usually 5, rarely 4 or 6, lateral veins 2–3 pairs. Cymes 3- to several-flowered, axillary,

1.5–3 cm, densely yellow or greyish yellow stellate-pubescent; peduncle 3–8 mm. Bract lanceolate, densely yellow or greyish yellow stellate-pubescent abaxially. Flowers bisexual. Sepals narrowly oblong, 6–8 mm, hairy on both surfaces. Petals subulate, ca. 3 mm, glands less than 1 mm. Stamens distinct, unequal, shorter than sepals. Ovary densely villose. Style pubescent; stigma peltate, 4-lobed or entire. Drupe subglobose, 6–8 mm in diam., stellate hairy, slightly grooved or nearly smooth, apex mucronate, not divided into drupelets.

Locality: Cultivated but nowadays not common. *L. T. Lo 458; Y. S. Lau 381; Birdwood s.n. (HK sheet 3763).*

Distribution: Guangdong, Guangxi, Guizhou, Taiwan, Yunnan; India, Indochina, Indonesia, Philippines.

Ecology: Flowering: May–Jun.; fruiting: Jun.–Jul.

Notes: This species was reported as *Grewia tiliaefolia* Vahl (椴葉扁擔桿) previously (Check List HK Plants 94. 2002).

**2. Grewia oligandra** Pierre 寡蕊扁擔桿(粗毛扁擔桿)

Fl. Forest. Cochinch. 2: 163. 1888; FRPS 49(1): 102. 1989; FGD 4: 157. 2000.

Shrub. Branchlets stellate tomentose, old branches dark brown. Stipules subulate, 4 mm, caducous. Petioles 5–8 mm, densely stellate-tomentose; leaf blade lanceolate or oblong lanceolate, 9–10.5 × 2–3.5 cm, papery, base round, apex acute, margin serrulate with alternating large and small teeth, sparsely stellate-hispidulous and dark brown when dry adaxially, densely grey-brown-tomentose abaxially; basal veins 3, lateral veins 4–5 pairs. Cymes 3–5-flowered; peduncle 4–7 mm, tomentose. Pedicels 3–4 mm, tomentose. Bracts 3–4 mm. Sepals 5–6 mm, tomentose abaxially, glabrous adaxially. Petals oblong, 2–3 mm; glands scale-like, surrounded by hairs. Stamens shorter than sepals. Ovary hairy; stigma multi-lobed. Drupe double or tetra-globose, 1 cm in diam., shiny; stalk 0.5–1 cm, densely tomentose.

Locality: Chuen Lung. *Y. S. Lau 2542, 2331; L.T. Lo 382.*

Distribution: Guangdong, Guangxi; Indochina.

Ecology: Shrubby forests or thin forests. Flowering: Jul.–Aug.; fruiting: Sep.–Oct.

Notes: This species was reported as *Grewia hirsuta* Vahl previously (Check List HK Plants 94. 2002).

**3. Grewia biloba** G. Don 扁擔桿 **(Fig. 154; Photo 375)**

Gen. Hist. 1: 549. 1831; FFJ 3: 401, fig. 282. 1987; FRPS 49(1): 94, pl. 24: 5–9. 1989; FGD 4: 158, fig. 101. 2000.

*Grewia glabrescens* Benth., FHK 42. 1861; FKH 51. 1912.

*Grewia parviflora* Bunge var. *glabrescens* Rehd. & Wils., Pl. Wils. 2: 371. 1916.

*Grewia biloba* G. Don var. *parviflora* auct. non (Bunge) Hand.-Mazz.: Check List HK Plants 43.1993.

Shrub or small tree, 1–2.5 m tall, much branched. Branchlets covered with yellow stellate hairs. Stipules subulate, 3–4 mm; petioles 6–15 mm, stellate hairy; leaf blade ovate, rhomboid-orbicular or obovate elliptic, 4–12 × 2.5–7 cm, thin leathery, base cuneate or obtuse, apex acute, margin irregularly serrate, rough and sparsely stellate-hispid abaxially and adaxially; basal veins 3, lateral veins 3–5 on each side of midvein. Cymes axillary, many-flowered, peduncle less than 1 cm. Pedicels 3–6 mm, bract subulate, 3–5 mm. Sepals narrow oblong, 4–7 mm, hairy abaxially, glabrous adaxially. Petals 1–1.5 mm. Stamens 2 mm. Ovary hairy; style as long as sepals; stigma swollen, disk-shaped, lobed. Drupe red, with 2–4 drupelets.

Locality: Tai Tam, Aberdeen, Cape D'Aguilar, Sai Kung, Tai Wan, Beaufort Island, Po Toi. *Y. W. Lam 1563, 653; S. P. Lau 166.*

Distribution: Taiwan, Zhejiang, Jiangxi, Anhui, Hunan, Hubei, Guangdong, Sichuan.

Ecology: Shrubby forests. Flowering: May–Jul; fruiting: Jul.–Sep.

**3a. Grewia biloba** G. Don var. **parviflora** (Bunge) Hand.-Mazz. 小花扁擔桿

Symb. Sin. 7: 612. 1929; FRPS 49(1): 94. 1989; FGD 4: 158. 2000.

*Grewia parviflora* Bunge, Mem. Sav. Etr. Acad. Sci. St. Petersb. 2: 83. 1833; FKH 51. 1912.

It differs from var. *biloba* by its densely yellow-tomentose leaves and smaller flowers.

Locality: Without precise locality. *HK sheet 569.*

Distribution: Guangdong, Guangxi, Hunan, Guizhou, Yunnan, Sichuan, Hubei, Jiangxi, Zhejiang, Jiangsu, Anhui, Shandong, Hebei, Shanxi, Henan.

Ecology: Shrubby forests. Flowering: May–Jul.




**Figure 154.** *Grewia biloba* G. Don

*1*. fruiting branch; *2*. flower; *3*. petal (adaxial view); *4*. petal (abaxial view); *5*. drupes. (drawn by H. P. Yu)

### 3. Microcos L. 破布葉屬

Shrubs or small trees. Leaves alternate, leathery, margin entire or slightly lobed, basal veins 3, shortly petiolate. Inflorescence cymose or paniculate, terminal or axillary. Flowers bisexual. Sepals 5, distinct. Petals 5, or rarely wanting, with glands at base adaxially. Stamens many, free, inserted on androgynophore. Ovary superior, hairy or glabrous, usually 3-locular; ovules 4–7 per locule. Style 1; stigma thin or lobed. Drupe globose or pyriform, not sulcate.

About 60 species, mainly distributed in Africa and SE Asia; three species in China; one species in Hong Kong.

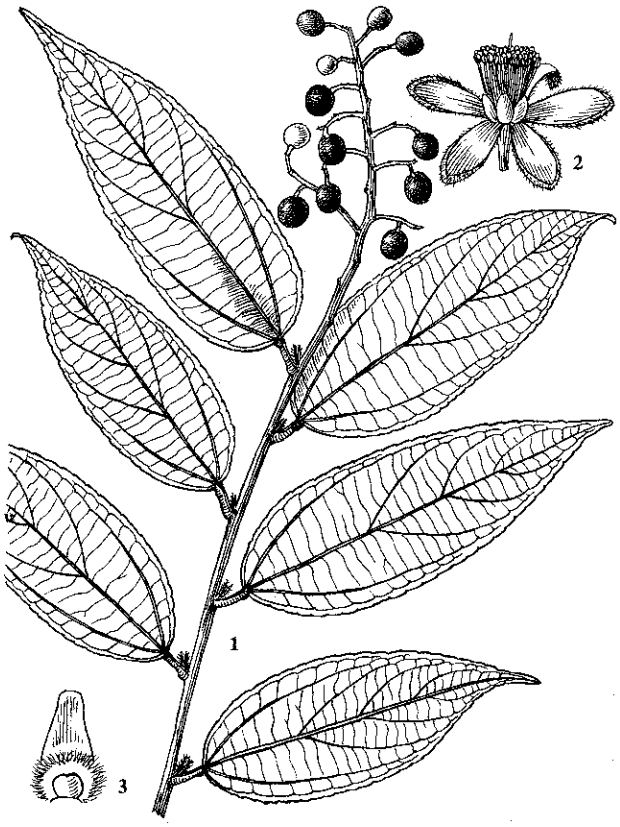


Figure 155. *Microcos nervosa* (Lour.) S. Y. Hu
*1*. fruiting branch; *2*. flower; *3*. petal. (drawn by H. P. Yu)

1. **Microcos nervosa** (Lour.) S. Y. Hu
破布葉(布渣葉) **(Fig. 155; Photo 376)**

J. Arnold Arbor. 69(1): 79. 1988.

*Fallopia nervosa* Lour., Fl. Cochinch. 336. 1790.

*Grewia microcos* L., Syst. Ed 12. 2: 602. 1767; FHK 42. 1861; FKH 51. 1912.

*Microcos paniculata* auct. non. L.: FHN 2: 58. 1965; FFJ 3: 402, fig. 283. 1987; FRPS 49(1): 87. 1989; FGD 4: 154, fig. 100. 2000.

Shrub or small tree, 3–12 m tall. Branchlets hairy. Stipule linear-lanceolate, 5–7 mm. Petioles 1–1.5 cm, hairy; leaf blade ovate or ovate oblong, 8–18 × 4–8 cm, thin leathery, base round, apex acuminate, margin finely serrulate, stellate-pubescent initially, glabrescent on both surfaces in age. Inflorescence paniculate, terminal or axillary, 4–10 cm, stellate hairy; bracts lanceolate, yellowish-pubescent and stellate-pubescent; pedicels short and slender. Sepals oblong, 5–7 mm, stellate hairy abaxially. Petals oblong, about 1/3–1/2 the length of sepals, yellowish-pubescent on both surfaces; glands as large as half of petals. Stamens shorter than sepals. Ovary subglobose, glabrous, dark brown; stigma pointed. Drupe subglobose or obovoid, ca. 1 × 0.7 cm, dark brown, glabrous.

Locality: Common in Hong Kong. *S. P. Lau 150*.

Distribution: Guangdong, Hainan, Guangxi, Yunnan; SE Asia.

Ecology: Thickets on hillslopes. Flowering: Jun.–Jul.

Uses: Medicinal (folklore).

## 103. STERCULIACEAE 梧桐科

WU De-lin 吳德鄰

Trees, shrubs, rarely herbs or climbers; indumentum usually stellate. Stipules usually present. Leaves alternate or very rarely opposite, simple of digitately lobed or foliolate. Inflorescence a panicle, raceme, cyme or corymb, axillary or terminal, sometimes 1-flowered. Flowers bisexual or unisexual; sepals 5–3, valvate, partially connate or rarely free; petals 5, or absent, contorted or imbricate, free or adnate at base to staminal tube, often persistent; stamens free or connate into a narrow tube (androphore), and sometimes with staminodes; anthers 2-celled, opening lengthwise by slits, or rarely by apical pores; ovary 2–5-locular or rarely reduced to 1 carpel; ovules (1–)2 or more per carpel or locule; styles simple or lobed, rarely free. Capsules or follicles, dehiscent or indehiscent, rarely berries or drupes. Seeds with or without endosperm; cotyledons flat or folded.

About 67 genera, 1500 species distributed in tropical and subtropical regions, few in temperate zone; 19 genera and 84 species in China; ten genera and 11 species in Hong Kong.

1a. Large trees.
  2a. Flowers bisexual; petals 5; seeds winged.
    3a. Flowers in terminal corymbose-panicles; seeds winged at lower end ..... 1. *Reevesia*
    3b. Flowers axillary, solitary or few; seeds winged at upper end ..... 2. *Pterospermum*
  2b. Flowers unisexual or polygamous; petals absent; seeds not winged.
    4a. Carpels nut-like, indehiscent ..... 3. *Heritiera*
    4b. Carpels follicular, dehiscent.
      5a. Follicles with leathery pericarp, dehiscent at maturity ..... 4. *Sterculia*
      5b. Follicles with membranaceous pericarp, dehiscent before maturity ..... 5. *Firmiana*
1b. Shrubs, subshrubs or climbers.

6a. Climbers ..... 6. *Byttneria*
6b. Shrubs or subshrubs.
7a. Capsules 5-winged ..... 7. *Abroma*
7b. Capsules 5-angulate or not.
8a. Capsules 1-locular, not angulate ..... 8. *Waltheria*
8b. Capsules 5-locular, 5-angulate.
9a. Leaves 3-veined; stamens 10, staminodes 5 ..... 9. *Helicteres*
9b. Leaves 5-veined; stamens 5, staminodes absent ..... 10. *Melochia*

## 1. Reevesia Lindl. 梭羅樹屬

Trees. Leaves simple, entire, leathery. Panicles terminal, corymbose. Flowers white; calyx campanulate, or funnel-shaped, irregularly 3–5-fid; petals 5, clawed; staminal column elongated, adnate to gynophore, forming an androgynophore, shortly 5-lobed at top, each lobe bearing 3 sessile anthers outside and all irregularly crowded in a globose head, anther cells divaricate; ovary enclosed in staminal column, 5-grooved, 5-locular, 2-ovuled in each locule; stigma sessile, 5-lobed. Capsules woody, loculicidally 5-valved. Seeds superposed, oblong, compressed, winged at lower end; endosperm fleshy.

About 18 species distributed mainly in China and Himalaya regions; 14 species in China; one species in Hong Kong.

**1. Reevesia thyrsoidea** Lindl. 梭羅樹 **(Fig. 156; Photo 377)**

Quart. Journ. Sci. Lit. Arts, 2(2): 112. 1827; FHK 37. 1861; FKH 49. 1912; FRPS 49(2): 150. 1984; FHN 2: 79. 1965; FGD 1: 137. 1987.

Tree; bark grey-brown. Petioles 1–3 cm, inflated at both ends; leaves leathery, lanceolate or ovate-lanceolate, 5–7 × 2.5–3 cm, base round or obtuse, apex acute or acuminate, margin quite entire, glabrous on both surfaces. Inflorencence corymbose, terminal. Flowers dense; calyx campanulate, 6 mm, 5-lobed, stellate hairy abaxially; petals 5, white, spathulate, 1 cm, slightly spreading; androgynophore ca. 2 cm, with 15 anthers at apex forming a terminal head; ovary globose, 5-locular, hairy. Capsules ellipsoid, pear-shaped, ca. 3 cm, 5-angulate.

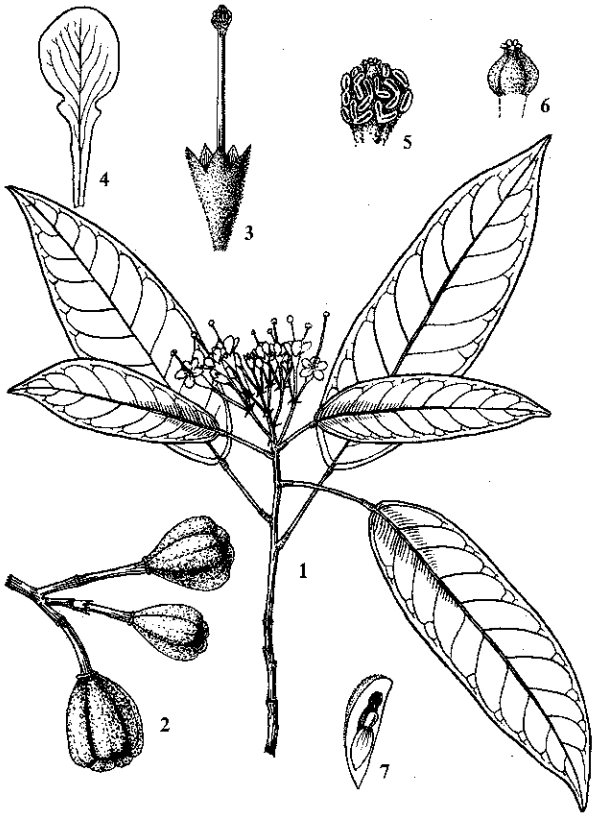



**Figure 156.** *Reevesia thyrsoidea* Lindl.
*1*. flowering branch; *2*. fruiting branch; *3*. calyx and androgynophore; *4*. petal; *5*. apex of androgynophore; *6*. pistil; *7*. fruit valve with seed. (drawn by H. P. Yu)

Locality: Common in Hong Kong. *H. C. Tang 851; K. T. Tso 20207; N. K. Chun 40707.*
Distribution: Guangdong, Guangxi, Yunnan; Vietnam, Cambodia.
Ecology: Secondary forests, thickets and grassland. Flowering: Mar.–Apr.
Uses: Fibre, timber.

## 2. Pterospermum Schreb. 翅子樹屬

Trees or shrubs, lepidote or stellate-tomentose. Leaves simple, leathery, oblique, entire or serrate, lobed or not, pinnately veined or 3–7-veined, often cordate, rarely peltate at base. Flowers bisexual, solitary or several in cymes, axillary; calyx tubular, 5-lobed or -parted; petals 5, deciduous; stamens 15, in 5 groups of each 3, united into a column at base, with 5 long barren filaments and 15 shorter fertile ones, each bearing a linear 2-celled anther; cells parallel, connectives apiculate; ovary 5-locular, with several ovules in each locule; style entire, stigma clavate, 5-grooved. Capsule woody or leathery, terete or angular, loculicidally 5-valved. Seeds winged at upper end; endosperm thin or absent.

About 25 species distributed in tropical and subtropical Asia; nine species in China; one species in Hong Kong.

**1. Pterospermum heterophyllum** Hance 翻白葉樹 **(Fig. 157; Photo 378)**

J. Bot. 6: 112. 1865; FKH 50. 1912; FHN 2: 84. 1965; FRPS 49(2): 178. 1984; FGD 1: 146. 1987.
*Pterospermum acerifolium* auct. non (L.) Willd.: FHK 39. 1861.

Tree. Leaves on coppices: petioles 12 cm; leave blade peltate, palmately 3–5-lobed, ca. 15 cm in diam., densely brown stellate-pubescent abaxially; leaves on normal branches: petioles 1–2 cm; leave blade oblong to ovate-oblong, 7–15 × 3–10 cm, brown pubescent abaxially. Flowers solitary or 3–4 in cymes, axillary; bracteoles squamiform; sepals linear, up to 28 mm; petals oblanceolate, equaling sepals; androgynophore 2.5 mm; stamens 15; staminodes 5, linear, slightly longer than fertile stamens; ovary ovoid, 5-locular, hairy. Capsules woody, oblong-ovoid, 6 × 2–2.5 cm, yellow-brown tomentose, stalk thick, 1–1.5 cm. Seeds winged.

Locality: Ho Chung, Tai Mo Shan, Tai Po, Pat Sin Leng, Kop Tong, Au Ha, Ha Wo Hang, Ma Wan, Lantau Island. *S. T. Dunn 7143; Y. S. Lau 2624; P. S. Choi 267.*

Distribution: Guangxi, Guangdong, Fujian.

Ecology: Forests. Flowering: Autumn.

Uses: Medicinal (folklore), materials (timber, fibre).

## 3. Heritiera Aiton 銀葉樹屬

Trees with well-developed buttresses, monoecious. Leaves alternate, simple or digitate, usually lepidote abaxially, pinnately veined. Panicles axillary; pedicels jointed. Flowers unisexual, small; calyx campanulate or urceolate, shortly 4–6-lobed; petals absent. Male flower: stamens 4–15, filaments united into a column; anthers 2-celled, dehiscing lengthwise, in a ring on apex of column, staminodes present; pistillode minute or completely reduced. Female flower: similar to male flowers, but with sterile anthers; carpels 4–6, loosely connivent, with one erect ovule in each carpel; style very short with minute stigmas. Ripe carpels free, woody or leathery, with carina or wings, indehiscent. Seeds lacking endosperm.

About 30 species distributed in tropical and subtropical Africa, Asia to Australia; three species in China; one species in Hong Kong.

**1. Heritiera littoralis** Aiton 銀葉樹 **(Fig. 158; Photo 379)**

Hort. Kew, 3: 546. 1789; FHK 36. 1861; FKH 49. 1912; FHN 2: 76. 1965; FRPS 49(2): 140. 1984; FGD 1: 133. 1987.

Evergreen tree. Branchlets white lepidote when young. Petioles 1–2 cm; leaves leathery, oblong-lanceolate, elliptic or ovate, 10–20 × 5–10 cm, base obtuse, apex acute or obtuse, margin entire, densely silvery-lepidote abaxially. Panicles axillary, many-flowered densely stellate-hairy and lepidote. Flowers red-brown; calyx campanulate, 4–6 mm. Male flower: stamens 4–5. Female flowers with 4–5 carpels; stigmas as many as carpels. Ripe carpels woody, yellow-brown, nut-like, ovoid, 6 × 3.5 cm, with a slightly projecting inner edge, and a strong projecting almost winged keel along the outer edge.

Locality: Tai Po Kau, Yung Shue O, Lai Chi Wo. *Y. W. Lam 683; Y. S. Lau 1698; H. C. Tang 1436.*

Distribution: Guangdong, Guangxi, Hainan, Taiwan; Japan, Philippines, SE Asia, E Africa, Australia.

Ecology: Seashores. Flowering: Autumn.

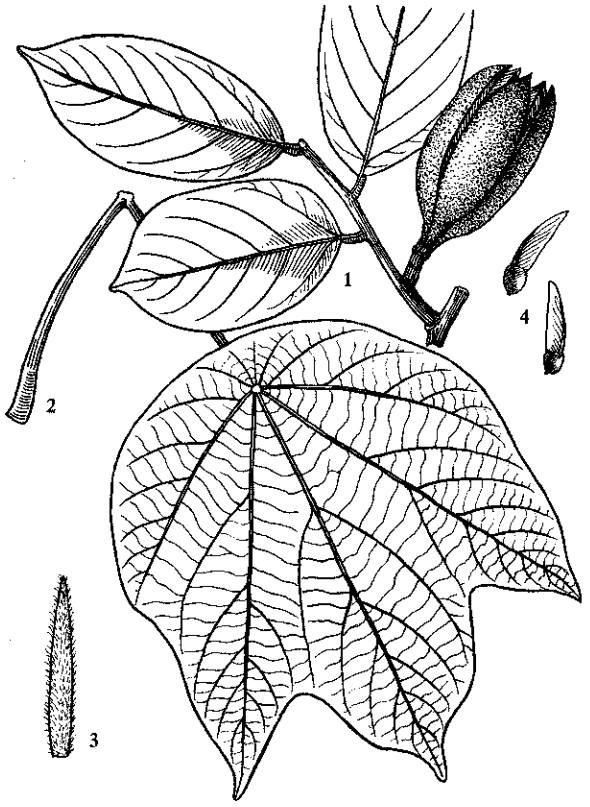



**Figure 157.** *Pterospermum heterophyllum* Hance

*1*. fruiting branch; *2*. peltate leaf; *3*. sepal; *4*. seeds. (drawn by H. P. Yu)

## 4. Sterculia L. 蘋婆屬

Trees. Leaves undivided and pinnately veined, or palmately lobed or digitate. Inflorescence paniculate or racemose, axillary. Flowers unisexual, monoecious or polygamous, the terminal mostly female and more precocious; calyx (4–)5-fid or -parted, often more or less petaloid; petals absent; staminal column with 15–10-anthers at apex. Carpels 5, partly free, 2–many-ovuled; style peltate or lobed at apex. Ripe carpels free, stellately spreading, follicules dehiscent soon. Seeds with endosperm.

About 150 species distributed in tropical and subtropical regions, especially in tropical Asia; 23 species in China; two species in Hong Kong.

1a. Calyx lobes as long as calyx tube ..... 1. *S. lanceolata*

1b. Calyx 5-parted nearly to base..... 2. *S. nobilis*

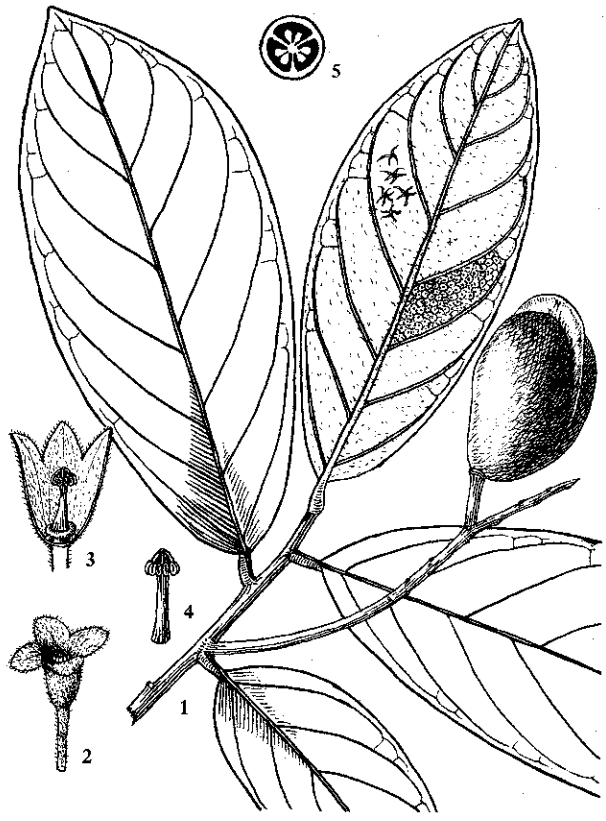



**Figure 158.** *Heritiera littoralis* Aiton

*1*. fruiting branch; *2*. flower; *3*. longitudinal section of flower stamen; *4*. staminal column; *5*. cross section of ovary. (drawn by H. P. Yu)

**1. Sterculia lanceolata** Cav.
假蘋婆 **(Fig. 159; Photos 380–381))**
Diss. 5: 287, pl. 143, fig. 1. 1788; FHK 36. 1861; FKH 49. 1912; FHN 2: 73. 1965; FRPS 49(2): 132. 1984; FGD 1: 129. 1987.

Tree. Petioles 2.5–3.5 cm; leaves leathery, elliptic, lanceolate or elliptic-oblong, 9–20 × 3.5–8 cm, base obtuse or subrounded, apex acute, margin entire; lateral veins 7–9 pairs, curved, connected near margin. Panicles much branched, axillary, more or less tomentose; calyx 5-parted nearly to base, segments stellately spreading, green and slightly reddish at base, oblong-lanceolate, 4–6 mm, margin ciliate, abaxially pubescent; staminal column shorter than sepals; anthers 10, nearly sessile on outside of the very short lobes, forming a terminal globose head. Follicles bright scarlet, long-ovate or oblong, 5–7 × 2–2.5 cm, base attenuate, apex rostrate, densely pubescent. Seeds black-brown, ellipsoid-ovoid, 1 cm in diam.

Locality: Common in Hong Kong. *Y. S. Lau 1363; H. C. Tang 460, 845.*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Sichuan; Myanmar, Vietnam, Thailand, Laos.

Ecology: Lowland secondary forests and valleys. Flowering: Apr.–May.

Uses: Fibre, medicinal (folklore), ornamental.

**2. Sterculia nobilis** Smith 蘋婆 **(Photo 382)**
Cycl. no. 4. 1816; FKH 49. 1912; FHN 2: 73. 1965; FRPS 49(2): 121. 1984; FGD 1: 127. 1987.

Tree, bark brown-black. Petioles 2–3.5 cm; leaves thinly leathery, oblong or elliptic, 8–25 × 4–15 cm, base rounded or obtuse, apex acute or obtuse, glabrous on both surfaces. Panicles terminal or axillary. Male flowers: calyx initially milk-white, becoming reddish, campanulate, ca. 10 mm, pubescent abaxially, 5-fid, lobes linear-lanceolate, as long as calyx tube, incurved and sticking together at apex; staminal column curved; anther yellow. Female flowers: slightly larger than male; ovary globose, 5-grooved. Follicles scarlet, thickly leathery, ellipsoid-ovoid, 5 × 2–3 cm, apex rostrate. Seeds 1–4 per follicle, black-brown, ca. 1.5 cm in diam.

Locality: Tsuen Wan, Shatin. Cultivated. *Y. S. Lau 2723; HK sheet 3603.*

Distribution: Yunnan, Guangdong, Guangxi, Fujian, Taiwan; India, Vietnam, Indonesia.

Ecology: Flowering: Apr.–May.

Uses: Food, ornamental.

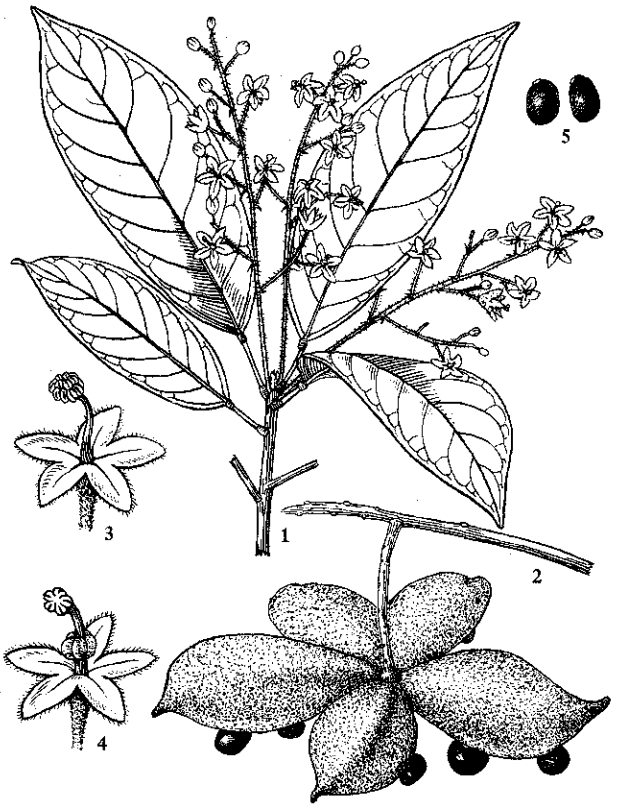



**Figure 159.** *Sterculia lanceolata* Cav.
*1.* flowering branch; *2.* fruiting branch; *3.* male flower; *4.* female flower; *5.* seeds. (drawn by H. P. Yu)

## 5. Firmiana Marsili 梧桐屬

Trees. Leaves with long petioles, 3–5-lobed or entire, sometimes very large, often cordate, glabrous or covered with stellate hairs. Panicles axillary or terminal. Flowers unisexual or polygamous; calyx tubular, 5-lobed to middle or base, rarely 4-lobed. Petals absent; stamens ususally 10, anthers sessile or on short filaments, 2-celled, opening lengthwise; carpels 5, free; styles short; ovules 2 or more. Mature carpels stipitate, membranous, opening very early and dispersing with seeds adhering to the margins. Seeds globose, wrinkled when dry.

About 12 species distributed in tropical Asia, Africa and Madagascar; six species in China; one species in Hong Kong.

**1. Firmiana simplex** (L.) W. Wight
梧桐 **(Fig. 160; Photo 383)**
U.S.D.A. Bur. Pl. Industr. Bull. 142: 67. 1909; FHN 2: 75. 1965; FGD 1: 130 1987.

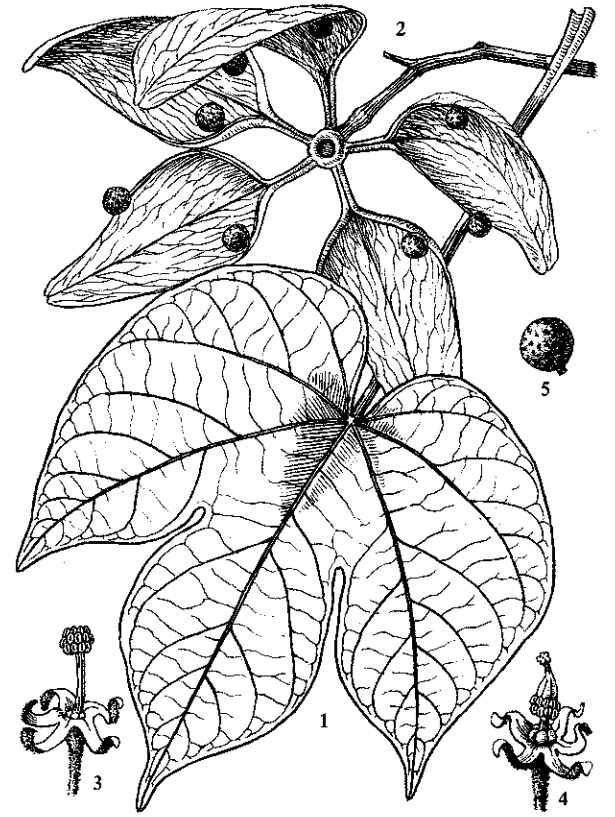



**Figure 160.** *Firmiana simplex* (L.) W. Wight
*1.* leaf; *2.* fruit; *3.* male flower; *4.* female flower; *5.* seed. (drawn by H. P. Yu)

*Hibiscus simplex* L., Sp. Pl. ed. 2, 2: 977. 1763.
*Firmiana platanifolia* (L. f.) Marsili, Sagg. Sci. Lett. Acc. Padova 1: 106–116. 1786; FRPS 49(2): 134. 1984.
*Sterculia plantanifolia* L. f., Suppl. Pl. 423. 1781; FHK 36. 1861; FKH 49. 1912.

Deciduous tree; bark green, smooth. Petioles as long as leaf-blade; leaf blade suborbicular in outline, palmately 3–5-lobed, 15–30 cm in diam., base cordate, apex acuminate, glabrous or slightly pubescent abaxially, 7-veined. Panicles terminal 20–50 cm; calyx yellow-greenish, 5-lobed, lobes linear, 7–9 mm, abaxially yellowish pubescent; anthers about 15; cells usually unequal and very irregularly crowded in a terminal head, often with imperfect, sessile anthers round the base of ovary in female flowers. Follicles stipulate, dehiscent before maturity, each carpel with seeds 1–2 on edge near base.

Locality: Deep Water Bay, Shek O (Tai Long Wan), Sai Kung, Sai Wan, Po Toi. Cultivated or naturalized.
Distribution: Widely distributed in China; Japan.
Ecology: Flowering: Jun.
Uses: Ornamental, timber.

## 6. Byttneria Loefl. 刺果藤屬

Trees or climbing shrubs. Leaves polymorphic, usually orbicular or ovate. Cymes terminal or axillary. Flowers small, bisexual; sepals 5, base connate; petals 5, more or less adnate to staminal tube, clawed, hooded at upper portion, apex usually 3-lobed, central lobe long and narrow; stamens united in a short tube, with 5 barren lobes (staminodes) and 5 nearly sessile 2-celled anthers between them; ovary sessile, 5-locular, locule 2-ovulate; style 5-fid at apex or subentire. Capsules globose, echinate, carpels separating when ripe and opening along inner edge, 1-seeded. Seeds without endosperm and with spirally contorted cotyledons.

About 130 species distributed in tropics; three species in China; one species in Hong Kong.

**1. Byttneria aspera** Colebr. 刺果藤 **(Fig. 161; Photo 384)**
Fl. Ind. ed. Carey, 2: 283. 1824; FRPS 49(2): 186. 1984; FGD 1: 149. 1987.

*Buettneria aspera* Colebr. in Roxb., Fl. Ind. ed. Carey, 2: 283. 1824; FHK 39. 1861; FKH 50. 1912; FHN 2: 86. 1965;.

Large woody climber, slightly tomentose on young parts. Petioles 2–8 cm, hairy; leaves broad-ovate, cordate or suborbicular, 7–23 × 5.5–16 cm, base cordate, apex obtuse or acute, nearly glabrous adaxially, white stellate-pubescent abaxially, 5-veined. Panicles shorter than leaves. Flowers small, yellowish and slightly pink adaxially; sepals ovate, 2 mm, pubescent; petals shortly bifid at top, with linear appendage longer or equal to sepals; staminal tube short; anther alternate with staminodes. Capsules globose, 3–4 cm in diam., covered with short stout prickles, pubescent. Seeds black, oblong, ca. 12 mm.

Locality: Common in Hong Kong. *Y. S. Lau 503, 2218; H. C. Tang 2159.*

Distribution: Guangdong, Guangxi, Yunnan; India, Vietnam, Cambodia, Laos, Thailand.

Ecology: Margin of forests or valleys. Flowering: Spring to summer.

Uses: Fibre, medicinal.

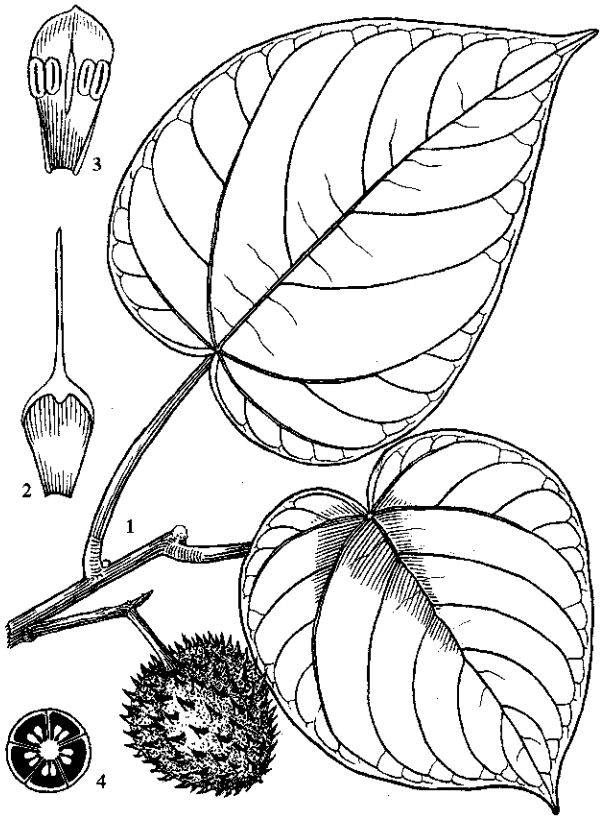



**Figure 161.** *Byttneria aspera* Colebr.
*1*. fruiting branch; *2*. petal; *3*. stamens and staminodes; *4*. cross section of ovary. (drawn by H. P. Yu)

## 7. Abroma Jacq. 昂天蓮屬

Trees or shrubs. Leaves cordate or ovate-elliptic, entire or slightly digitate-lobed. Cymes leaf-opposed or subterminal and axillary; calyx 5-parted; petals 5, spathulate, claw concave, broadly glandular at base; anthers 15, 3 in group in sinuses of staminal tube; staminodes 5, ciliate, alternate with anthers. Ovary 5-grooved, 5-locular, locule many-ovuled; styles 5, connivent. Capsules membranous, 5-angled or subwinged, truncate at apex. Seeds many, with endosperm; cotyledons flat, cordate.

Two species distributed in Asia to Australia; one species in China; it also occurs in Hong Kong.

**1. Abroma augusta** (L.) L. f. 昂天蓮 **(Fig. 162)**
Suppl. Pl. 341, 1781; FHN 2: 85. 1965; FRPS 49(2): 181. 1984; FGD 1: 148. 1987.

*Theobroma angusta* L., Syst. Nat. (ed. 12) 233. 1767.
*Abroma fastuosa* Jacq., Hort. Vind. 3: 3, t. 1. 1776; FKH 50. 1912.

Shrub, 1–4 m tall. Branchlets densely stellate-tomentose. Petioles 1–10 cm; leaves cordate or ovate-cordate, occasionally slightly 3–5-lobed, 10–22 × 9–18 cm, base cordate or obliquely cordate, apex acute or acuminate, sparsely stellate pubescent adaxially, densely tomentose abaxially. Cymes 1–5-flowered. Flowers purple; sepals lanceolate, 15–18 mm; petals 2–5 cm; ovary oblong, ca. 1–5 mm. Capsules membranous, obconic, 3–6 in diam., apex truncate, stellate-hairy, 5-winged, margin long tomentose. Seeds black, ellipsoid, ca. 2 mm.

Locality: Cultivated, though not common nowadays. *HK sheet 543, 544, 3732.*

Distribution: Guangdong, Guangxi, Yunnan, Guizhou; India, Vietnam, Malaysia, Thailand, Indonesia, Philippines.

Ecology: Flowering: Spring to summer.

## 8. Waltheria L. 蛇婆子屬

Herbs, subshrubs, rarely trees, with stellate and simple hairs mixed. Stipules narrow. Leaves simple, serrate. Cymes or glomes terminal or axillary. Flowers minute, bisexual; calyx 5-fid; petals 5, spathulate, marcescent; stamens 5, connate at base, opposite to petals; anthers 2-celled; staminodes absent; ovary sessile, 1-locular, 2-ovuled; styles excentric clavate or fimbriate on upper part. Capsules dehiscent, 2-valved, 1-seeded. Seeds with endosperm and flat cotyledons.

About 50 species mainly distributed in tropical America; one species in China and in Hong Kong.

**1. Waltheria indica** L. 蛇婆子 **(Fig. 163; Photo 385)**

Sp. Pl. 673. 1753; FKH 50. 1912; FRPS 49(2): 169. 1984;

*Waltheria americana* L., Sp. Pl. 673. 1753; FHK 38. 1861; FHN 2: 83. 1965; FGD 1: 144. 1987.

Suberect or decumbent subshrubs, up to 1 m or taller, many branched. Branchlets densely pubescent. Petioles 0.5–1 cm; leaves ovate or oblong-ovate, 2.5–4.5 × 1.5–3 cm, base rounded or shallow-cordate, margin serrulate, apex obtuse, densely pubescent on both surfaces. Cymes axillary, head-form; bracteoles narrow-lanceolate, ca. 4 mm; calyx tubiform, 5-lobed; lobes triangular, longer than tube; petals 5, yellowish, spathulate, slightly longer than calyx; stamens 5; filaments connate, enclosing ovary; ovary sessile, pubescent; styles excentric; stigma fimbriate. Capsules obovate, ca. 3 mm, opening into 2 valves, hairy, enclosed by persistent calyx. Seeds obovate, minute.

Locality: Hong Kong Island, Lantau Island. *P. S. Choi 250; S. Lau 3000; Gibbson 7710.*

Distribution: Taiwan, Fujian, Guangdong, Guangxi, Yunnan; widely distributed in tropical regions of the world.

Ecology: Sunny hillslopes. Flowering: Summer to autumn.

## 9. Helicteres L. 山芝麻屬

Trees or shrubs, more or less stellate-tomentose. Leaves simple, entire or serrate. Flowers axillary, rarely terminal, solitary or in cymes; bracteoles small or remote from calyx; calyx tubular, shortly 5-lobed; petals 5, regular or sub-bilabiate; claws elongated, all or the lower often with ear-like appendages; stamens 10, at top of elongated staminal column; staminodes 5; ovary stalked, 5-lobed, 5-locular, with several ovules in each locule; styles united, linear, slightly thickened and stigmatose at apex. Carpels separating when ripen, dehiscing along ventral suture, straight or often at length spirally twisted, often stellate-tomentose or setose. Seeds

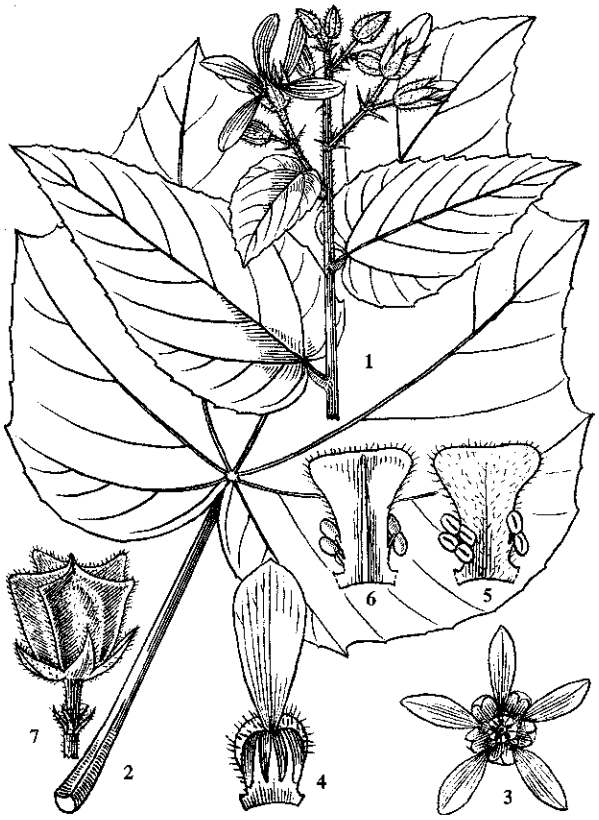



**Figure 162.** *Abroma augusta* (L.) L. f.

*1.* flowering branch; *2.* leaf; *3.* flower; *4.* dissected flower showing a petal; *5–6.* stamens and staminodes (dorsal and ventral views); *7.* capsule. (drawn by H. P. Yu)

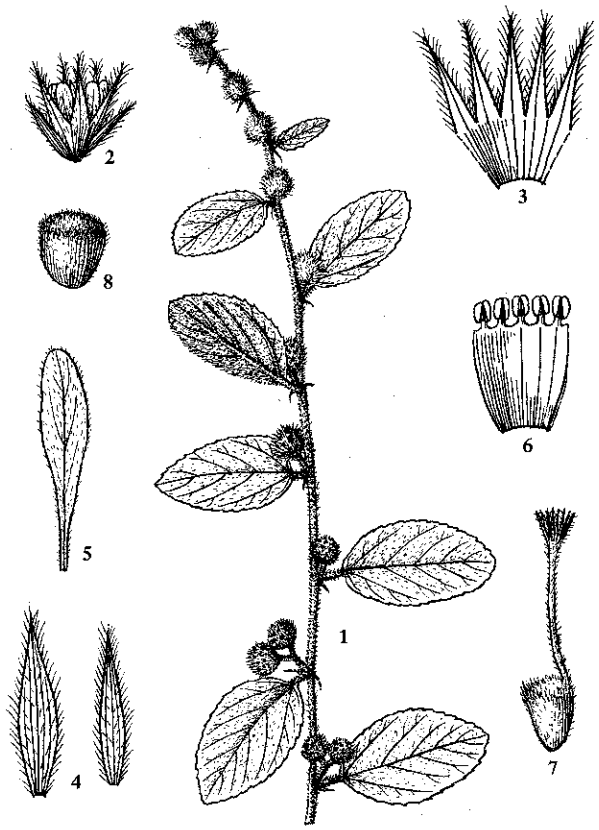



**Figure 163.** *Waltheria indica* L.

*1.* fruiting branch; *2.* flower; *3.* calyx opened; *4.* bracts; *5.* petal; *6.* stamens; *7.* pistil; *8.* capsule. (drawn by H. P. Yu)

verruculose with scanty endosperm.

About 40 species distributed in tropical Asia and America; nine species in China; one species in Hong Kong.

**1. Helicteres angustifolia** L. 山芝麻 **(Fig. 164; Photo 386)**
Sp. Pl. 963. 1753; FHK 37. 1861; FKH 50. 1912; FHN 2: 80. 1965; FGD 1: 141. 1987; FRPS 49(2): 156. 1984.

Small shrub, to 1 m tall. Branchlets grey-green pubescent. Petioles 5–7 mm; leaves narrow-oblong or linear-lanceolate, 3.5–5 × 1.5–2.5 cm, base rounded, apex obtuse or acute, glabrous or nearly so adaxially, grey white or yellowish stellate-tomentose abaxially, sometimes mixed setae. Cymes 2–several-flowered; bracteoles 4; calyx 4 mm, stellate-pubescent, 5-lobed; lobes triangular ; petals 5, reddish or purple, with 2 appendages at base; stamens 10; staminal column 10-cleft, with 1-celled anther; staminodes 5; ovary 5-locular, hairy. Capsules straight, ovoid-oblong, 12–20 × 7–8 mm, apex acute, densely stellate hairy and mixed with long tangled hairs. Seeds brown with small elliptic spots.

Locality: Common in Hong Kong. *H. C. Tang 595; Y. S. Lau 2202; K. L. Yip 4381.*

Distribution: Taiwan, Fujian, Jiangxi, Hunan, Guangdong, Guangxi, Yunnan; India, Myanmar, Malaysia, Vietnam, Cambodia, Laos, Thailand, Indonesia, Philippines.

Ecology: Grassy slopes or thickets. Flowering: May–Aug.

Uses: Medicinal (folklore), fibre.

## 10. Melochia L. 馬鬆子屬

Trees, shrubs or herbs, slightly stellate-pubescent, Leaves ovate or broadly cordate, serrate. Inflorescence a cyme or glome. Flower small, bisexual. Calyx campanulate, 5-fid; petals 5, spathulate or oblong, marcescent; stamens 5, opposite to petals, connate from base to middle; anthers 2-celled; staminodes absent or minute; ovary 5-locular, 1–2-ovuled each locule; styles 5, free or united at base, stigma slightly thickened. Capsules dehiscent, 5-valved, locule 1-seeded. Seeds obovate, with thinly endosperm, cotyledons flat.

About 54 species distributed in tropical and subtropical regions, especially in America; one species in China; it also occurs in Hong Kong.

**1. Melochia corchorifolia** L. 馬鬆子 **(Fig. 165; Photo 387)**
Sp. Pl. 675. 1753; FHN 2: 82. 1965; FRPS 49(2): 167. 1984; FGD 1: 143. 1987.

Subshrub, less than 1 m tall. Branchlets slightly stellate-pubescent. Stipules linear, 2–4 mm. Petioles 5–25 mm; leaves thinly papery, ovate, oblong-ovate or lanceolate, rarely indistinctly 3-lobed, 2.5–7 × 1–1.3 cm, base rounded or cordate, margin serrate, apex acute or obtuse, nearly glabrous adaxially, slightly stellate-pubescent abaxially, 5-veined. Cymes or glomes terminal or axillary; bracteoles linear; calyx campanulate, slightly 5-lobed, hairy; petals reddish, oblong, ca. 6 mm, base attenuate; ovary densely pubescent. Capsules globose, 5–6 mm in diam., 5-angulate, pilose. Seeds brown-black, subtriangular, 2–3 mm.

Locality: Hong Kong, Ma Liu Shui, Fanling, Ho Pui, Sha Po, Tuen Mun. *Y. W. Lam 673; L. T. Lo 221; W. J. Tutcher 11554.*

Distribution: Areas S of Changjiang River, Taiwan; tropical Asia.

Ecology: Open fields. Flowering: Summer to autumn.

Uses: Fibre.

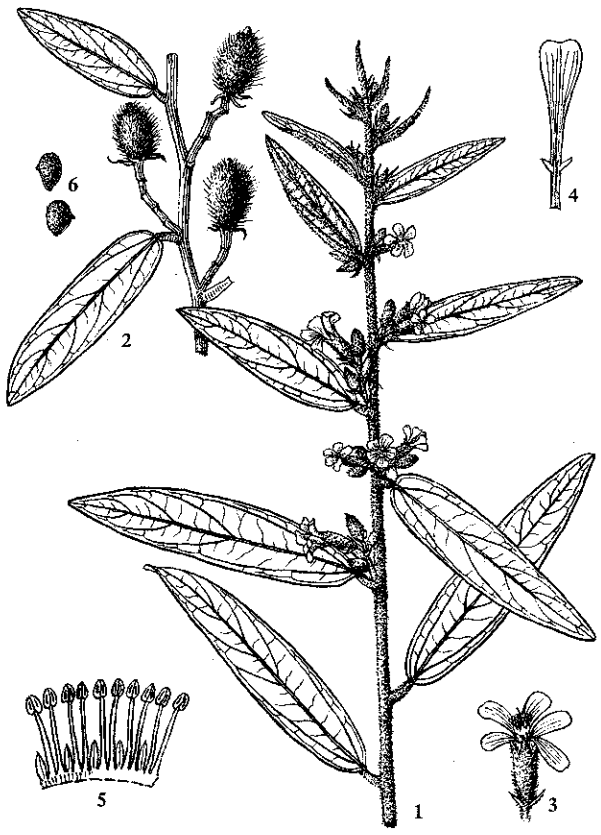



**Figure 164.** *Helicteres angustifolia* L.
*1.* flowering branch; *2.* fruiting branch; *3.* flower; 4 petal; *5.* stamens and staminodes; *6.* seeds. (drawn by H. P. Yu)

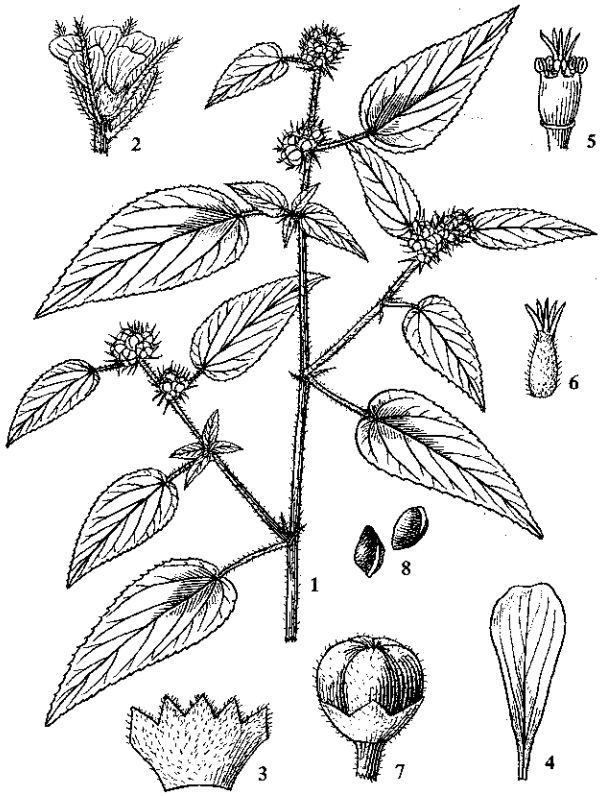



**Figure 165.** *Melochia corchorifolia* L.
*1.* fruiting branch; *2.* flower; *3.* calyx (opened up); *4.* petal; *5.* stamens and pistil; *6.* pistil; *7.* capsule; *8.* seeds. (drawn by H. P. Yu)

# 104. BOMBACACEAE 木棉科

XIA Nian-he 夏念和

Deciduous trees, trunk usually with buttresses at base. Leaves alternate, palmately compound or simple, usually with scales. Stipules caducous. Flowers bisexual, large and showy, actinomorphic, axillary or nearly terminal, solitary or fascicled. Calyx cup-shaped, apex truncate or irregularly 3–5-lobed. Petals 5, rarely absent, imbricate, rarely connate with staminal tube at base. Stamens 5 to numerous, staminodes usually present; filaments distinct or connate into a staminal tube, anthers reniform to linear, 1- or 2-celled. Ovary superior, 2–5-locular, each locule with 2 to many anatropous ovules on axile placenta. Style unlobed or 2–5-lobed. Capsule loculicidally dehiscent or indehiscent. Seeds usually enclosed by wooly hairs.

About 30 genera and 180 species, widely in tropics especially tropical America; six genera (one native) and eight species (three native) in China; three genera and three species are cultivated in Hong Kong.

1a. Filaments more than 40 ..... 1. *Bombax*
1b. Filaments 3–15.
2a. Stamens in 1 series, without staminodes ..... 2. *Ceiba*
2b. Stamens in 2 series, with staminodes ..... 3. *Chorisia*

## 1. Bombax L. 木棉屬

Trees; Stems usually spiny when young. Leaves palmately compound. Flowers solitary or fascicled, axillary or subterminal; bracts absent; calyx leathery, cup-shaped, truncate or short toothed; petals 5, obovate or obovate-lanceolate; stamens many; filaments connate at base into a tube, in several series, the outermost series aggregated into 5 bundles, alternating with petals; anthers 1-celled, reniform, peltate; ovary 5-locular, ovules many per locule; style slender, longer than stamens; stigma stellately 5-lobed. Capsule loculicidally dehiscing into 5 valves; the valves leathery, with silky wool inside. Seeds small, black, enclosed by woolly hairs.

About 50 species, mainly in tropical America, also in tropical Asia, Africa and Australasia; three species in China; one species cultivated in Hong Kong.

**1. Bombax ceiba** L. 木棉 **(Fig. 166; Photo 388)**

Sp. Pl. 511. 1753.

*Gossampinus malabarica* (DC.) Merr., Lingnan Sci. J. 5: 126. 1927; FGZ 243. 1956; FHN 2: 87, fig. 337. 1965.

*Bombax malabaricum* DC., Prodr. 1: 479. 1824; FRPS 49(2): 106, pl. 29: 5–9. 1984; FGD 3: 215, fig. 146. 1995.

Tree, up to 25 m tall; bark greyish white, trunk of young trees and branches of older trees usually very spiny. Stipules small. Petioles 10–20 cm; petiolules 1.5–4 cm; leaflets 5–7, oblong to oblong-lanceolate, 10–20 × 3.5–7 cm, base broad cuneate, apex acuminate, margin entire, glabrous; lateral veins 15–17 pairs. Flowers usually red, sometimes orange-red, ca. 10 cm in diam.; calyx 2–4.5 cm, glabrous abaxially, densely yellowish sericeous adaxially, 3–5-lobed, lobes semiorbicular, 1.5 × 2.3 cm; petals fleshy, obovate-oblong, 8–10 × 3–4 cm, stellate-puberulous on both surfaces; stamen-tubes short, filaments thick; style longer than stamens. Capsule ellipsoid, obtuse, 10–15 × 4.5–5 cm, densely greyish-white-villous and stellate-puberulous. Seeds many, obovate, smooth.

Locality: Cultivated. *Y. S. Lau 1104, 2454; HK sheet 3573.*

Distribution: S & SW China; tropical Asia.

Ecology: Flowering: Mar.–Apr.; fruiting: May.

Uses: Ornamental, medicinal (folklore).

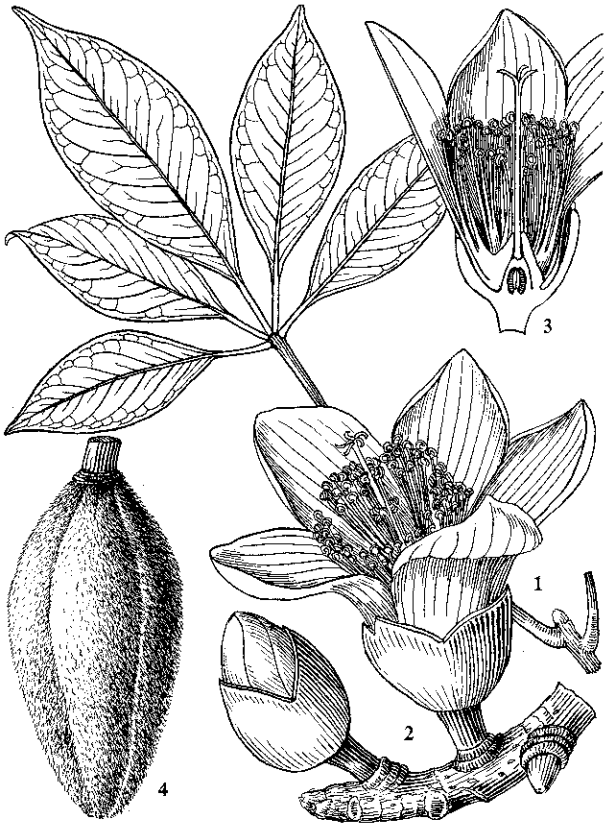



**Figure 166.** *Bombox ceiba* L.

*1*. leafy branch; *2*. flowering branch; *3*. longitudinal section of flower; *4*. fruit. (drawn by H. P. Yu)

## 2. Ceiba Mill. 吉貝屬

Trees; trunk spiny or not. Leaves spirally arranged, palmately compound, petiolate, leaflets 3–9, glabrous, entire. Flowers solitary or 2–15 fascicled on nodes, pendulous, actinomorphic, rarely zygomorphic; calyx campanulate urceolate, irregularly 3–5-lobed, thick, persistent; petals connate at base, fallen off with stamens and style, reddish or yellowish white; stamen-tube short, adnate to petals; filaments 3–15, distinct or in 5 bundles, each bundle with 1–3 twisted 1-celled anthers; ovary 5-locular, ovules many

per locule; style filiform, obscurely 5-lobed. Capsule woody or leathery, pendulous, ellipsoid or nearly obovoid, loculicidally dehiscing into 5 valves, densely woolly inside. Seeds many, enclosed in woolly hairs, arillate.

About ten species, mainly distributed in tropical America; one species introduced to China, also cultivated in Hong Kong.

**1. Ceiba pentandra** (L.) Gaertn. 吉貝(美洲木棉) **(Photo 389)**

Fruct. Sem. Pl. 2: 244. 1791; FGD 3: 216. 1995.

*Bombax pentandrum* L., Sp. Pl. 1: 511. 1753.

Tree, up to 30 m tall; branches verticillate, spiny when young. Petioles 7–14 cm; petiolules 3–4 mm; leaflets 5–9, thin-leathery, oblong-lanceolate, 5–16 × 1.5–5 cm, base cuneate, apex acute or acuminate, margin entire or remotely and minutely toothed toward the apex, glabrous, glaucous abaxially. Flowers fascicled in leaf axils on upper part of twigs, sometimes solitary, reddish or yellowish white. Pedicels 2.5–5 cm. Calyx 1.25–2 cm, glabrous adaxially. Petals obovate-oblong, 2.5–4 cm, densely white-villous abaxially. Filaments in 5 bundles, each bundle with 1 anther; anthers reniform. Ovary glabrous; styles 2.5–3.5 cm, stigma clavate, 5-lobed. Capsule ellipsoid, 7.5–15 × 3–5 cm, stipe 7–25 cm, dehiscing into 5 valves, densely covered with silky wool abaxially. Seeds globose, endocarp leathery, smooth.

Locality: Cultivated. *Y. S. Lau 2277; HK sheet 35803.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan (cultivated); native to tropical America.

Ecology: Flowering: Mar.–Apr.

Uses: Ornamental, timber.

### 3. Chorisia Kunth. 絲木棉屬

Deciduous or semi-evergreen trees. Leaves palmately compound, leaflets 5–7, serrate. Flowers showy, solitary or 2–3 clustered in axils of apical leaves. Calyx cup-shaped, irregularly 2–5-lobed. Petals 5, linear or oblong, spreading or reflexed. Stamen-tube in 2 whorls, the outer whorl very short, anthers sterile, the inner whorl much longer, with fertile anthers. Capsule loculicidally dehiscing into 5 valves. Seeds numerous, covered with woolly hairs.

About five species in tropical America; one species cultivated in China, also in Hong Kong.

**1. Chorisia speciosa** A. St.-Hil. 絲木棉(美人樹) **(Photo 390)**

Pl. Usuel. Bras. 63. 1828.

Deciduous trees, 8–15 m tall, trunk with short spines. Leaves spirally arranged on the current years' branches; petioles 4–12 cm, petiolules 6–15 mm, glabrous; leaflets 6–7, firmly papery, narrowly oblong to oblong-oblanceolate, the center one larger, 5.5–12 × 1.5–2.5 cm, base cuneate, apex ± acuminate, margin serrate above the base, glabrous, adaxially bright green, abaxially pale green. Flowers solitary or 2–3 clustered in axils of apical leaves, sometimes appearing a cymose-panicle due to the subtending leaves falling off. Pedicels 1.5–2.5 cm. Caylx cup-shaped, 2–2.5 cm, apex shallowly 4–6-lobed; lobes unequal, apex obtuse or sub-rounded. Petals 5, distinct, oblanceolate, 9.5–10.5 cm, broadest at middle (ca. 3.5 cm), dark red, pink, white with dark strips on the proximal half of adaxial surface. Outer stamen-tube ca. 1.8 cm; anthers 10, sterile, dark purplish red, covered with crisped hairs; inner stamen-tube 8.5 cm, with 5 fertile anthers. Style slightly longer than inner stamen-tube; stigma capitate, hairy.

Locality: Cultivated. *HK sheet 39817, 39818.*

Distribution: Brazil, S to SW America; cultivated in tropical regions.

Ecology: Flowering: Oct.–Feb. of the following year.

Uses: Ornamental.

## 105. MALVACEAE 錦葵科

HU Shiu-ying 胡秀英

Herbs, shrubs or trees, generally mucilaginous and stellate-pubescent. Leaves simple, alternate, stipulate, usually palmately nerved. Flowers regular, perfect, solitary, or arranged in axillary fascicles or cymes, or in terminal panicles. Sepals (3–)5, entire, free or connate at base, often subtended by involucral bracteoles (or epicalyx). Petals as many, adnate to the staminal tube at base. Stamens numerous, united into a tube or column around the ovary, free at the top; anthers 1-celled, longitudinally dehiscent. Ovary 2–many-carpellate, the carpels in whorls around the columella; style single, with as many or twice as many lobes as carpels, enveloped by the staminal tube, stigmas capitate, clavate; ovules curved. Fruit a schizocarp or a loculicidal capsule. Seeds reniform or ovoid, embryo curved; cotyledons leafy.

About 50 genera, 1000 species; some species cultivated for fibre, food or ornamental purposes; 18 genera and 83 species in China; 10 genera, 22 species and 1 variety in Hong Kong.

1a. Corolla tubular, the petals rolling and forming a cylindrical tube; anthers and pistil sterile ..... 1. *Malvaviscus*

1b. Corolla funneliform; stamens bearing fertile anthers.

2a. Fruits armed with glochidiate spines; style-branches twice the number of the carpels; staminal tubes not filamentiferous..... ..... 2. *Urena*

2b. Fruits pubescent, not armed with glochidiate spines; style-branches of the same number as the carpels; staminal tube with free portion of filament.




**Figure 167.** *Malvaviscus arboreus* var. *penduliflorus* (DC.) Schery

*1*. flowering branch; *2*. vertical section of a flower with the perianth removed; *3*. a discoid sterile stigma on a style branch; *4*. vertical section of the ovary; *5*. cross section of the ovary. (drawn by P. Ma)

3a. Stigmas 8 or more; fruit a schizocarp, the carpels separating from one another at maturity, leaving a distinct columella; staminal tubes filamentiferous at and often below the apex.
4a. Fruit discoid; stigmas linear, decurrent on the adaxial surface of the filiform style-branches.
5a. Involucral bracteoles 3, distinct; petals obcordate; fruit 5–7 mm in diam. ..... 3. *Malva*
5b. Involucral bracteoles 6–7, connate at base; petals obovate; fruit 2 cm in diam. ..... 4. *Althaea*
4b. Fruit subglobose or hemispherical; stigmas apical, capitate, discoid or obliquely truncate.
6a. Carpels 5–15; ovule 1 in each locule.
7a. Involucral bracteoles 3: ovules erect; mature carpels reniform, the ventral angle incurved ..... 5. *Malvastrum*
7b. Involucral bracteoles wanting; ovules pendulous; mature carpels trigonous, the ventral angle straight ..... 6. *Sida*
6b. Ovules 2 or more in each locule ..... 7. *Abutilon*
3b. Stigmas 5 or less; fruit a capsule, loculicidally dehiscent or indehiscent; staminal tubes not filamentiferous at the apex.
8a. Herbs, shrubs or small trees, 2.5 m or less tall; capsules dehiscent; carpels 3–5; involucral bracteoles linear or foliaceous; plants cultivated in gardens.
9a. Calyx spathaceous, irregularly 2- or 3-lobed, caducous ..... 8. *Abelmoschus*
9b. Calyx campanulate, cupular, regularly 5-lobed or truncate with minute teeth, persistent ..... 9. *Hibiscus*
8b. Trees, 3–8 m tall; fruit indehiscent; carpels 2 or 3; involucral bracteoles inconspicuous; plants growing naturally by seashore ..... 10. *Thespesia*

## 1. Malvaviscus Fabr. 懸鈴花屬

Shrubs; branchlets slightly pubescent. Leaves palmately lobed or not; stipules caducous. Flowers solitary, axillary. Bracteoles 5–10, lanceolate-spathulate, slightly connate at base. Calyx bell-shaped, apical 1/4 lobed; lobes 5, deltoid-lanceolate. Corolla red, tubular, petals 5, imbricate, rolling into a hanging cylinder at anthesis. Staminal tube exceeding corolla, apex 5-toothed, the apical one-tenth staminiferous. Ovary 5-carpellate; styles 10, exserted; stigmas discoid. Fruit berry-like. Seeds sticky, with red fleshy coat.

Three species, native to Central and South America; one variety cultivated in Hong Kong.

**1. Malvaviscus arboreus** Cav. var. **penduliflorus** (DC.) Schery 垂花懸鈴花 **(Fig. 167; Photo 391)**

Ann. Missouri Bot. Gard. 29: 223. 1942; FRPS 49(2): 50. 1984; FGD 2: 193, fig. 120. 1991.

*Malvaviscus penduliflorus* DC., Prodr. 1: 445. 1824.

Shrub, 1–3 m tall; young branchlets and pedicels sparsely pubescent and with a line of long hairs on one side. Leaves narrowly ovate to ovate-lanceolate, 6–12 × 2.5–6 cm, undivided, or rarely shallowly 3-lobed, base broadly cuneate to rounded, apex long acuminate, margin obtusely dentate, glabrescent or sparsely stellate pubescent on nerves. Flowers bright red, hanging at anthesis. Pedicels 1–4 cm, pubescent. Bracteoles lanceolate to spathulate, 1.2–1.5 cm, pubescent adaxially. Calyx bell-shaped, 1.5–2 cm, 5-lobed; lobes triangular, 5–7 mm. Corolla 5–7 cm.

Locality: Commonly cultivated in Hong Kong. *Y. S. Lau 683, 1889; S. Y. Hu & P. H. But 22634* (CUHK).

Distribution: Cultivated in Guangdong & Yunnan. Native to Mexico & Columbia.

Ecology: Flowering: Almost all year round in Hong Kong.

Uses: Ornamental.

## 2. Urena L. 梵天花屬

Herbs or small shrubs, stellate pubescent. Leaves alternate, palmately lobed or sinuate, palmately 3- to 7-nerved, the middle one with a conspicuous gland near the base. Flowers axillary, solitary, subfasciculate, or crowded at the end of branchlets. Bracteoles campanulate, 5-lobed; lobes lanceolate, acute, striate towards the base. Calyx cup-shaped, deeply 5-parted; lobes ovate or ovate-lanceolate, 1-nerved, keeled. Corolla purplish-red; petals 5, stellate-pilose abaxially. Staminal tube dilated and united with the petals at base; anthers subsessile. Ovary depressed-globose, hirtellous, 5-locular, each with 1 ovule; styles 10, reflexed; stigmas discoid, end fimbriate. Fruit subglobose, mature carpels separating from the axis, triangular obovoid, leathery, indehiscent; dorsally convex, stellately hirsute and with glochidiate spines; laterally plane, striate. Seeds obovoid-trigonous or reniform, glabrous.

About six species in the warmer regions of both hemispheres; three species in China; two species growing naturally in Hong Kong.

1a. Branches obliquely ascending; leaves scarcely lobed to middle; epicalyx lobes narrowly triangular, erect and adpressed to the fruit ..... 1. *U. lobata*
1b. Branches horizontally spreading; leaves usually lobed beyond middle; epicalyx lobes linear to lanceolate, spreading in fruit ..... 2. *U. procumbens*

**1. Urena lobata** L. 肖梵天花(地桃花、黧頭婆) **(Fig. 168; Photo 392)**

Sp. Pl. 692. 1753; FHK 34. 1861; FKH 48. 1912; FHN 2: 96, fig. 341. 1965; FRPS 49(2): 43. 1984; FGD 2: 194, fig. 121. 1991; FTW ed. 2, 3: 752, pl. 377. 1993.

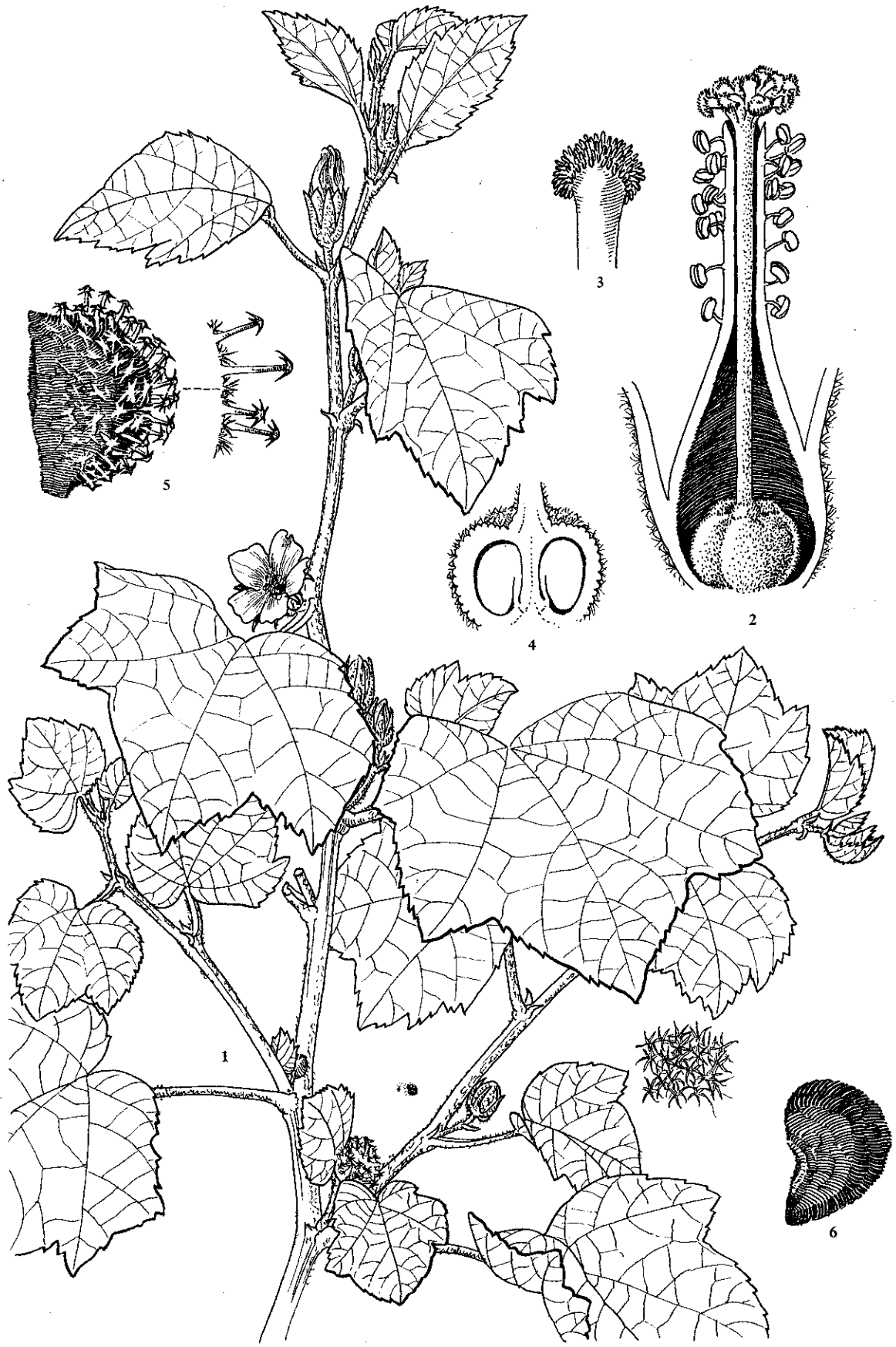



**Figure 168.** *Urena lobata* L.

*1*. flowering and fruiting branch; *2*. vertical section of a flower with perianth removed, showing the staminal tube, the hairy ovary and style; *3*. a style branch with fimbriate stigma; *4*. vertical section of ovary showing the positions of solitary ovule; *5*. a schizocarp pubescent and glochidiate; *6*. seed. (drawn by P. Ma)

Small shrub, to 1 m tall, much branched. Branchlets, petioles and pedicels stellate-tomentose. Petioles 1–4 cm; stipules linear, ca. 2 mm, caducous, leaf blade variable in shape, the lower ones subrotundate, rotundate or subcordate at base, shallowly 3-lobed at apex, 4–5 × 5–6 cm, often broader than long, the middle ones ovate, 5–7 × 3–6.5 cm, the upper ones ovate or ovate-elliptic, margin evenly serrate, adaxially pubescent, abaxially grey or yellowish tomentose, the hairs all short, erect, stellate. Flowers solitary; pedicels 3 mm. Epicalyx lobes 6 mm, basal 1/3 connate, stellate pilose. Calyx lobes 5–7 mm, densely lanate at base of keel. Corolla pink; petals 15 mm. Fruit 1 cm in diam., carpels stellate pubescent and glochidiate.

Locality: Common in Hong Kong. *L. T. Lo 324, 325; Y. S. Lau 1990; S. Y. Hu 8766* (CUHK).

Distribution: Areas S of Changjiang River; Indochina, Thailand, Myanmar, Japan.

Ecology: Wastelands, roadsides near villages. Flowering & fruiting: Jul.–Feb. of the following year.

Notes: A very variable species, some individuals or populations may differing from the typical form in the shape of the leaves and in the nature and density of the hairs.

**2. Urena procumbens** L. 梵天花(狗腳跡) **(Photo 393)**

Sp. Pl. 692. 1753; S. Y. Hu, Malvaceae 77. 1955; FHN 2: 96. 1965; FRPS 49(2): 47. 1984; FGD 2: 195. 1991; FTW ed. 2, 3: 752. 1993.

*Urena sinuata* auct. non L.: FHK 34. 1861; FKH 48. 1912.

Small shrub, ca. 0.5 m tall, with horizontal spreading branches; branchlets stellate tomentose. Petioles 4–15 mm; stipules subulate, 1.5 mm, caducous; leaf blade various in shape, the lower ones ovate in outline, sinuate below the middle, 3-lobed, 1.5–6 × 1–4 cm, apex obtuse, base rounded or subcordate, evenly serrate; the upper ones ovate to elliptic, not sinuate, serrate; all leaves scabrid-hirsute on both surfaces, the hairs homogenous, all short and rigid. Flowers subfasciculate or solitary. Pedicels 2–3 mm. Epicalyx lobes 7 mm, basal one-third connate, sparsely stellate hairy. Calyx lobes 4–7 mm, ovate, acute, stellate along the median longitudinal line, the rest glabrous. Corolla pink to red; petals 10–15 mm. Staminal tube glabrous. Fruits globose, 6 mm in diam., hirsute and echinate, glochidiate. Seeds glabrous.

Locality: Common in Hong Kong. *P. S. Choi 329; S. Y. Hu & P. H. But 21108, 22727* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan.

Ecology: Wastelands, roadsides. Flowering & fruiting: Jul.–Nov.

Uses: Medicinal (folklore), fibre.

## 3. Malva L. 錦葵屬

Annual or perennial herbs. Leaves alternate, angled or palmately lobed. Flowers axillary, solitary or fasciculate; involucral bracts 3, distinct, linear. Sepals cupular, 5-lobed; lobes deltoid, acute. Petals obcordate, cuneate, with deeper colored veins converging towards the claw. Staminal tube with free filaments at apical portion. Ovary 9- to 15-carpellate; ovules 1 in each locule; styles as many as carpels, oblique clavate; stigmas decurrent on adaxial surface. Fruit discoid, at maturity separating into round-reniform indehiscent carpels.

About 30 species, all native to the Old World; one species cultivated in Hong Kong.

**1. Malva verticillata** L. 冬葵(冬莧葵) **(Fig. 169)**

Sp. Pl. 689. 1753; FKH 46. 1912; FRPS 49(2): 5, pl. 1: 5–6. 1984; FGD 2: 196, fig. 122. 1991.

Annual or perennial herb, 0.5–1 m tall at anthesis; stem stellate villose. Leaves basal and alternate on stem; petioles 5–8 cm; stipules ovate-lanceolate; leaf blade reniform or orbicular, 5–11 cm in diam., usually 5–7-lobed; lobes of the lower leaves rounded, those of the upper ones triangular, apex obtuse, margin crenulate-dentate. Flowers in compact fascicles. Pedicels very short, stellate villose; involucral bracts linear-lanceolate. Calyx cup-shaped, 5-lobed. Corolla white or pale purple, almost twice as long as the calyx. Staminal tube setose. Fruit 5–7 mm in diam., entirely glabrous; carpels 10 or 11, smooth abaxially, rugose along the rounded angles, palmately striate on the side.

Locality: Cultivated. *HK sheet 455, 3320.*

Distribution: Widely distributed over China; India, Myanmar, Korea and N Africa.

Ecology: Flowering: Feb.–May.

Uses: Food (leaves edible), ornamental.

## 4. Althaea L. 蜀葵屬

Biennial or perennial herbs, hirsute throughout. Leaves suborbicular in outline, lobed or parted; stipules broad ovate, 3-lobed. Flowers axillary, subracemose towards the end of a branch; involucral bracts 6–9, united at the base, cupular, lobes triangular, striate, densely lanate and bristly. Calyx campanulate, 5-lobed, lanate, and densely bristly. Corolla funnel-form; petals obovate-cuneate, claw barbate. Staminal tube antheriferous almost to the base; filaments short, anthers rod-like, horizontal. Ovary multicarpellate; styles filiform, stigmas adaxial. Fruit discoid; carpels over 30, separating at maturity; columella short, discoid.

About 35 species in temperate Asia; three species in China; one species cultivated in Hong Kong.

**1. Althaea rosea** (L.) Cav. 蜀葵 **(Fig. 170)**

Diss. 2: 91, t. 28, fig 1. 1786; S. Y. Hu, Malvaceae. 9, pl. 3. 1955; FRPS 49(2): 11, pl. 3: 1–3. 1984; FGD 2: 196, fig. 123. 1991.

*Alcea rosea* L., Sp. Pl. 687. 1753.

Biennial herb, 1–2 m tall at anthesis; densely bristly throughout. Leaves alternate; stipules ovate, 8 mm; petioles 5–15 cm; leaf blade suborbicular in outline, 6–16 cm in diam., palmately and shallowly 5–7-lobed; lobes triangular or subrotundate, sparsely stellate

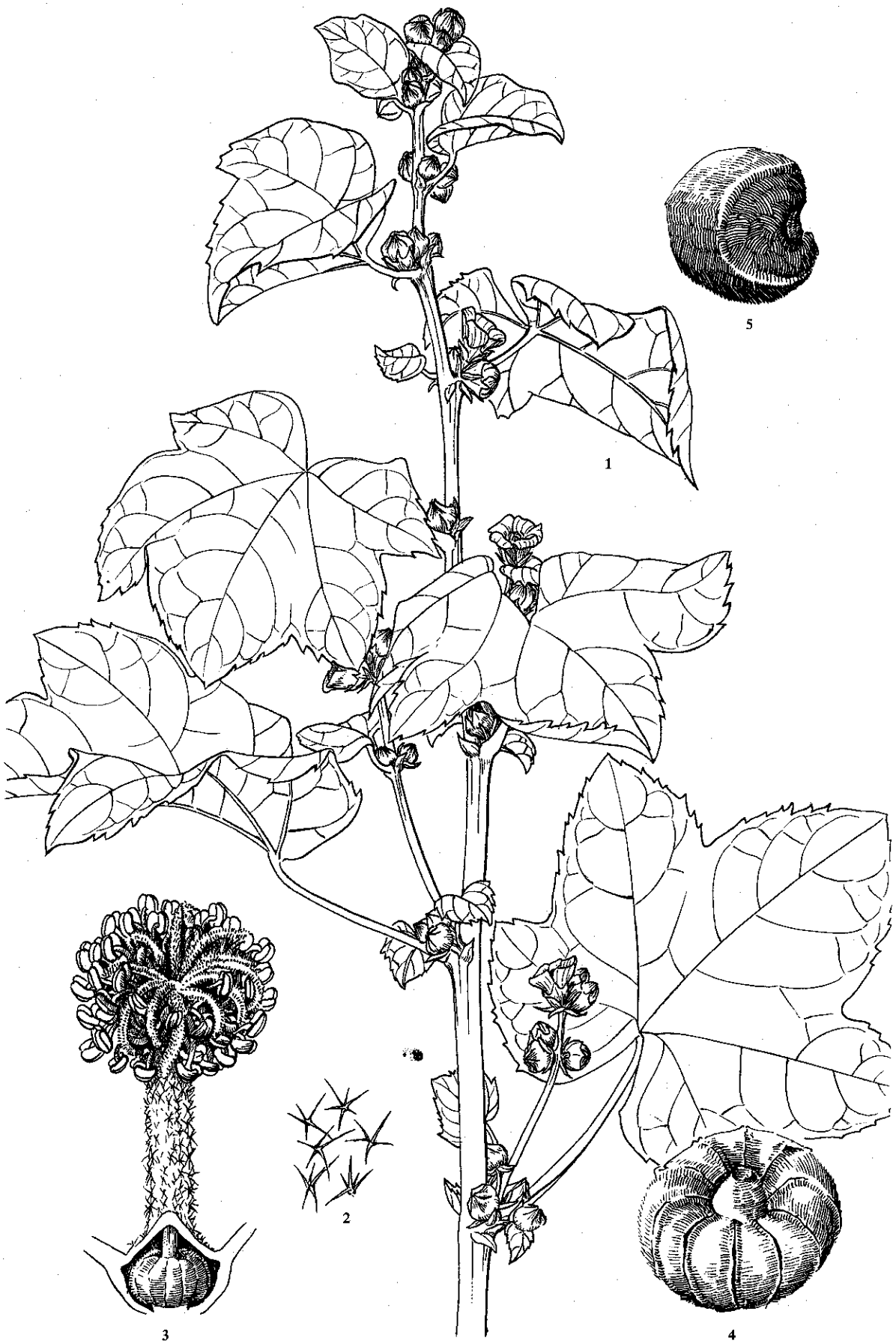



**Figure 169.** *Malva verticillata* L.

*1*. flowering branch; *2*. enlarged stellate hairs of the plants; *3*. a flower with perianth removed; *4*. fruit; *5*. mature schizocarp. (drawn by P. Ma).

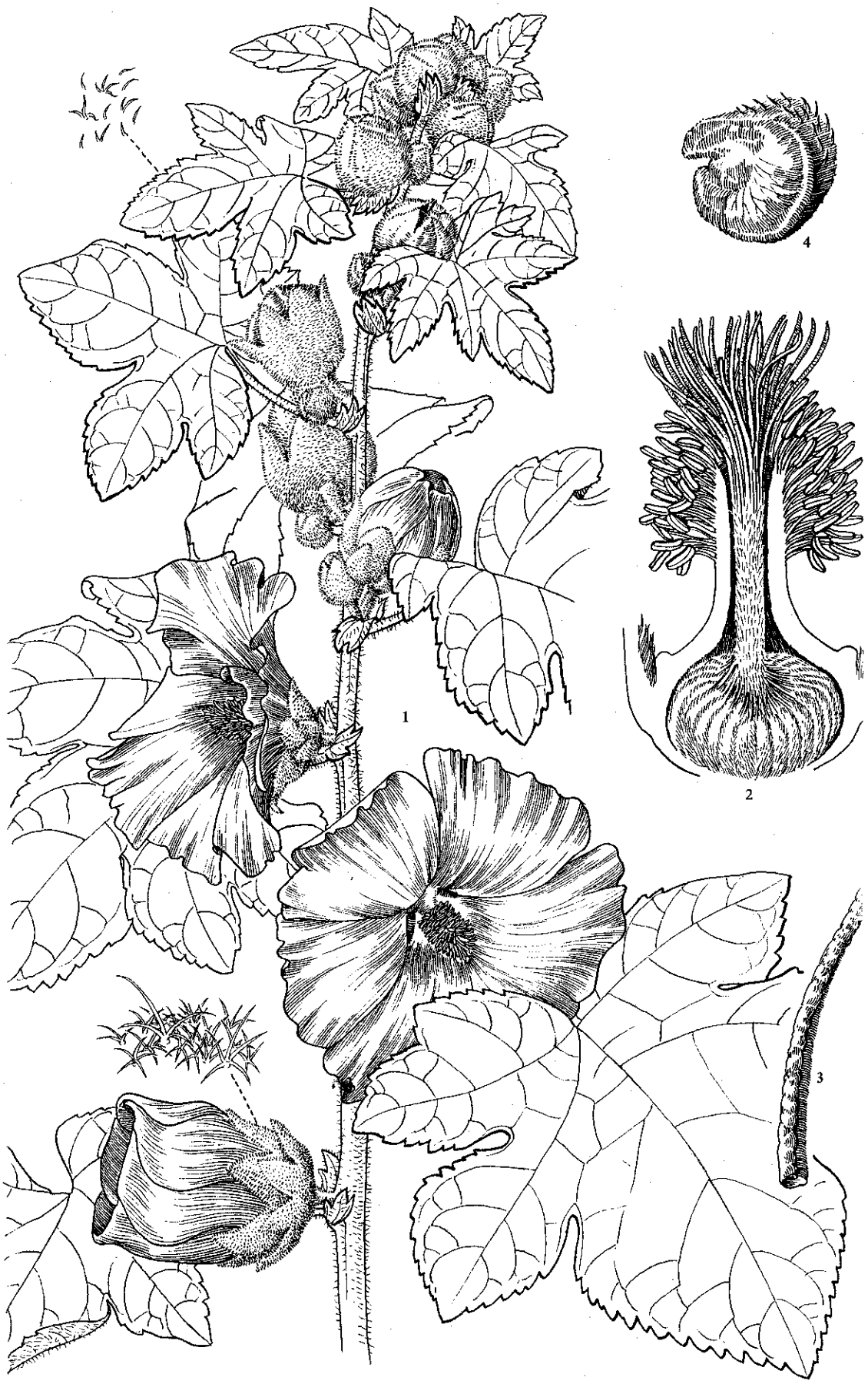



**Figure 170.** *Althaea rosea* (L.) Cav.

*1*. flowering branch; *2*. a flower with the perianth and half of the staminal tube removed, showing the discoid ovary, the position of stamens and the branched styles; *3*. a style-branch; *4*. mature schizocarp. (drawn by P. Ma)

pubescent on adaxial surface, stellate bristly or tomentose and bristly on abaxial surface. Flowers solitary or subfasciculate, axillary, often raceme-like due to subtending leaves gradually diminishing into leaf-like bracts; pedicels 2–5 mm, lengthening to 15 mm in fruit, densely lanate and bristly; involucral bracts 6- or 7-lobed, ovate-lanceolate. Calyx longer than bracts, densely bristly, striate and sulcate. Corolla 6–8 cm across, color various, usually red. Fruit 2 cm in diam., pubescent; carpels suborbicular, back 1 mm wide, longitudinally sulcate, sides 4 mm in diam., striate-sulcate, reticulate, rugose, black.

Locality: Cultivated. *S. Y. Hu 7275, 7275A, 13018* (CUHK).

Distribution: Widely cultivated, origin unknown.

Ecology: Flowering: Apr.–Aug.

## 5. Malvastrum A. Gray 賽葵屬

Herbs or subshrubs. Leaves ovate, dentate or palmately lobed. Flowers axillary, solitary or in terminal racemes. Bracteoles usually 3, rarely 1 or absent, linear or subulate, not connate. Calyx cup-shaped, 5-lobed, foliaceous in fruit. Petals 5, yellow. Staminal tube antheriferous only at the apical end; filaments slender. Ovary (5–)10–15-carpellate; ovule 1 in each carpel; stylar branches as many as carpels. Fruit discoid; carpels compressed, reniform, setose and strigose, indehiscent, at maturity separating from the columella.

About 80 species mainly in tropical America; two species naturalized as pantropic weeds; one species in Hong Kong.

**1. Malvastrum coromandelianum** (L.) Garcke 賽葵 **(Fig. 171; Photo 394)**

Bonplandia 5: 297. 1857; FRPS 49(2): 14, pl. 3: 4–6. 1984; FGD 2: 197, fig. 124. 1991; FTW ed. 2, 3: 745, pl. 374. 1993.

*Malva coromandeliana* L., Sp. Pl. 2: 687. 1753.

*Malvastrum tricuspidatum* (R. Br.) A. Gray, Pl. Wright. 1: 16. 1852; FHK 32. 1861; FKH 47. 1912.

Perennial herb, usually shrubby, up to 1 m tall, sparsely covered with simple and 4-armed stellate strigose hairs. Leaves alternate; petioles 1–3 cm, densely pilose; stipules lanceolate, 5 mm; leaf blade ovate, or ovate-elliptic, 3–6 × 1–3.5 cm, apex obtuse, base subrounded, margin coarsely serrate, sparsely pilose on both surfaces. Flowers yellow, solitary, axillary, ca. 1.5 cm in diam. Pedicels 5 mm. Bracteoles linear, 5 × 1 mm. Sepals ovate, acuminate, 8 mm, basal 1/3 connate. Petals obovate, 8 × 4 mm. Fruit depressed globose, 6 mm in diam.; carpels reniform, weakly stellate pilose, with 2 spines at the middle, and a stiff, persistent style.

Locality: Common in Hong Kong. *Y. S. Lau 1974; HK sheet 35650; S. Y. Hu & P. H. But 22236, 22302* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; pantropical, native to N America.

Ecology: Wastelands, roadsides. Flowering: Jun.–Jul.

## 6. Sida L. 黃花稔屬

Undershrubs or herbs, stellate-pubescent throughout. Leaves alternate, serrate or weekly lobed. Flowers solitary, subfasciculate, or in panicles or corymbs, axillary or terminal. Pedicels articulate. Epicalyx wanting. Calyx cup-shaped or subcampanulate, 5-lobed; lobes deltoid, acuminate. Corolla subrotate, 5-lobed, connate at base and adnate to the staminal tube. Staminal tube with free filaments at apex. Ovary with 5 to 10 carpels; styles as many as carpels, reflexed; stigmas capitate; ovule 1 in each carpel, pendulous. Fruits subdiscoid or subglobose, carpels birostrate or muticous, at maturity separating from the columella, apical end clefted, the back and sides striate-sulcate or smooth. Seed remaining in the pericarp, smooth, glabrous, black, sometimes pilose around the hilum.

About 200 species, majority belonging to the New World; 13 species in the warmer regions of China; six species in Hong Kong.

1a. Flowers corymbose, fasciculate or subpaniculate; leaves ovate or cordate.
  2a. Stems diffuse; carpels 5 ..... 1. *S. cordata*
  2b. Stems erect; carpels 8–10.
    3a. Leaves 5–10 cm long, glabrescent or inconspicuously stellate-pilose abaxially; corolla 30 mm across; staminal tubes glabrous; inflorescences corymbose and subpaniculate ..... 2. *S. subcordata*
    3b. Leaves 1.5–3 cm long, densely stellate-pubescent abaxially; corolla less than 15 mm across; staminal tubes hirsute; inflorescences fasciculate or crowded at the end of short branchlets ..... 3. *S. cordifolia*
1b. Flowers solitary, axillary; leaves linear, lanceolate (except *S. alnifolia*).
  4a. Calyx glabrous; leaves lanceolate or linear-lanceolate, obtuse or rounded at base; carpels 6, glabrous ..... 4. *S. acuta*
  4b. Calyx stellate-pubescent; leaves rhomboid, ovate, orbiculate or obovate, usually cuneate at base; carpels 8 to 10, more or less pubescent at the apex.
    5a. Leaf blade rhombic or oblong-lanceolate; staminal tubes glabrous or sparsely glandular-papillose; hairs on the calyx uniform, all short stellate ..... 5. *S. rhombifolia*
    5b. Leaf blade ovate, suborbicular or obovate; staminal tubes hirsute; hairs on the calyx heterogenous, stellate, those on the margin villose ..... 6. *S. alnifolia*

**1. Sida cordata** (Burm. f.) Borss. 長梗黃花稔 **(Photo 395)**

Blumea 14: 182. 1966; FRPS 49(2): 26, pl. 5: 6–7. 1984.

*Sida humilis* Cav., Diss. 5: 277, t. 134, fig. 2, 1788; FHK 32. 1861; FKH 47. 1912.

Diffuse herb, 0.3–1 m tall; branchlet slender, spreading, covered with long spreading hairs, mixed with short stellate hairs. Petioles 1–3 cm, stellate pilose; stipules linear, 2–3 mm, sparsely pubescent; leaf blade cordiform, 1–5 cm, apex shortly acuminate, margin obtusely dentate or




**Figure 171.** *Malvastrum coromandelianum* (L.) Garcke

*1*. flowing branch; *2*. simple and stellate hairs; *3*. flower; *4*. vertical section of a flower with epicalyx, calyx and petals removed; *5*. apical portions of a style branch; *6*. vertical section of an ovary; *7*. discoid fruit; *8*. lateral view of a schizocarp; 9. dorsal view of a schizocarp; *10*. seed. (drawn by P. Ma)

serrate, stellate pubescent on both surfaces. Flowers solitary or in leafy racemes. Pedicels slender, 2–4 cm, sparsely stellate pubescent, articulate above middle. Calyx cup-shaped, ca. 4 mm; lobes triangular, acute. Corolla yellow. Fruit depressed globose; carpels 5, not curved.

Locality: Hong Kong Island, Clear Water Bay, Tai Po Kau, Sheung Pak Nai, Ha Pak Nai, Fung Kat Heung. *L. T. Lo 539; Y. S. Lau 2022, 2168.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; tropical Asia.

Ecology: Waste places, roadsides. Flowering: May–Jun.

**2. Sida subcordata** Span. 棉葉黃花稔 **(Photo 396)**

Linnaea 15: 172. 1814; FRPS 49(2): 24, pl. 5: 1. 1984; FGD 2: 202, fig. 128. 1991.

*Sida corylifolia* Wall., Num. List. no. 1865. 1829; FKH 47. 1912.

Subshrub, 1(–2) m tall. Branchlets and abaxial surface of leaves sparsely stellate-pubescent when young, soon glabrescent. Petioles 1.5–2.5 cm; stipules linear, 3–4 mm; leaf blade ovate to oblong, 5–10 × 2.5–7.5 cm, base rounded or obtuse, apex shortly acuminate, margin crenulate-serrate. Inflorescence corymbose, subpaniculate; peduncles 2–7 cm; pedicels 6–20 mm, articulate at middle, geniculate. Calyx 8–10 mm. Corolla campanulate, 3 cm in diam.; petals obovate. Staminal tube glabrous. Fruit subglobose, 1 cm in diam.; carpels 8–10, birostrate, awns 6 mm, exposed, covered with reflexed bristles.

Locality: Hong Kong Island, Long Ke, Tai Po, Lam Tsuen, Chung Uk Tsuen, Lantau Island. *Y. S. Lau 2410; Y. W. Lam 484; S. Y. Hu & P. H. But 22720* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; Vietnam, Laos, Myanmar, India, Malesia area.

Ecology: Wastelands, thickets, partially shaded woods near villages. Flowering & fruiting: Sep.–Jan. of the following year.

**3. Sida cordifolia** L. 心葉黃花稔

Sp. Pl. 684. 1753; FHK 33. 1861; Dunn, J. Linn. Soc. Bot. 39: 494. 1911; FKH 47. 1912; FRPS 49(2): 25, pl. 5: 2–3. 1984; FGD 2: 203. 1991; FTW ed. 2, 3: 748, pl. 375. 1993.

*Sida hongkongensis* Gandoger, Bull. Soc. Bot. France 71: 629.1924, *nom. subnud.*

*Sida humilis* Willd., Check List HK Plants 40. 2004.

Subshrub, 0.3–1 m tall, densely stellate hispid and mixed with simple long hairs throughout. Petioles 1–2.5 cm, stipules filiform, 5 mm; leaf blade ovate or subcordate, 1.5–3 × 1–4 cm, base cordate or rounded, apex rounded or obtuse. Flowers solitary or fasciculate; pedicels 4–15 mm, the longer ones articulate near apex. Calyx cup-shaped; lobes 5, triangular, 5–6 mm. Corolla yellow, 15 mm in diam.; lobes oblong, 6–8 mm. Staminal tube hirsute. Fruit subdiscoid, 6–8 mm across; carpels 10, birostrate, the apical end shortly strigose, awns to 3 mm, exposed, covered with stiff reflexed hairs.

Locality: Hong Kong Island, Lai Chi Kok, Sha Tin, Tai Po, Tai Long Sai Wan, Lantau Island. *Y. W. Lam 801, 1185*; *S. Y. Hu & P. H. But 23289* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Sichuan, Fujian, Taiwan; Asia and Africa tropical and subtropical regions.

Ecology: Wastelands, roadsides. Flowering: Nearly all the year round.

Notes: The type specimen of *Sida hongkongensis* was collected by Bodinier (No. 922) from Hong Kong.

**4. Sida acuta** Burm. f. 黃花稔

Fl. Ind. 147. 1768; FHK 32. 1861; FKH 47. 1912; FRPS 49(2): 19. 1984; FGD 2: 201. 1991; FTW ed. 2, 3: 748. 1993.

Herb, usually shrubby, 0.3–1 m tall, much branched; branchlets pubescent or glabrescent. Petioles 4–5 mm, villose; stipules linear, longer than the petioles; leaf blade lanceolate or linear-lanceolate, 1.5–7 × 0.5–2.5 cm, base obtuse or rounded, apex acute or acuminate, margin serrate, both surfaces glabrous or sparsely stellate-pubescent. Flowers solitary or paired, axillary; pedicels 4–12 mm, the longer ones articulate at the middle. Calyx glabrous, cup-shaped, 6 mm, the lower half connate; lobes 5, deltoid, caudate. Corolla yellow, 8–10 mm across; lobes obovate, ciliate. Fruit subglobose, 4 mm in diam., 6-carpellate; carpels birostrate, reticulately striate and sulcate.

Locality: Hong Kong Island, Lai Chi Kok, Tai Po, Lau Fau Shan, Lantau Island. *H. C. Tang 375, 2077; S. Y. Hu 8802* (CUHK); *K. L. Yip 4242.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; Vietnam, Laos, India.

Ecology: Wastelands, roadsides near villages. Flowering & fruiting: Apr.–Dec.

Uses: Medicinal (folklore).

**5. Sida rhombifolia** L. 白背黃花稔 **(Fig. 172)**

Sp. Pl. 684. 1753; FRPS 49(2): 20. 1984; FGD 2: 203. 1991; FTW ed. 2, 3: 748. 1993.

Subshrub, 0.5–1 m tall, much branched. Branchlets, petioles and pedicels stellate lanate. Petioles 3–5 mm; stipules linear, 3–5 mm; leaf blade rhombic or oblong-lanceolate, 2.5–4.5 × 0.6–3 cm, base broadly cuneate or obtuse, apex obtuse or acute, margin serrate, shortly stellate or subglabrous adaxially, stellate-velutinous abaxially. Flowers solitary, axillary. Pedicels 10 mm, (15–25 mm in fruit), geniculate, articulate above middle. Calyx 4–5 mm, the basal 2/3 connate, stellate velutinous. Petals yellow, ca. 8 mm. Staminal tube glabrous, or sparsely glandularly papillose. Fruits subdiscoid, 6–7 mm in diam.; carpels 8–10, birostrate, subglabrous.

Locality: Common in Hong Kong. *L. T. Lo 43; Y. S. Lau 189; S. Y. Hu & P. H. But 20048, 23292* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Fujian, Taiwan; India, Indochina.

Ecology: Thickets on hillslopes or in valleys. Flowering & fruiting: May–Dec.

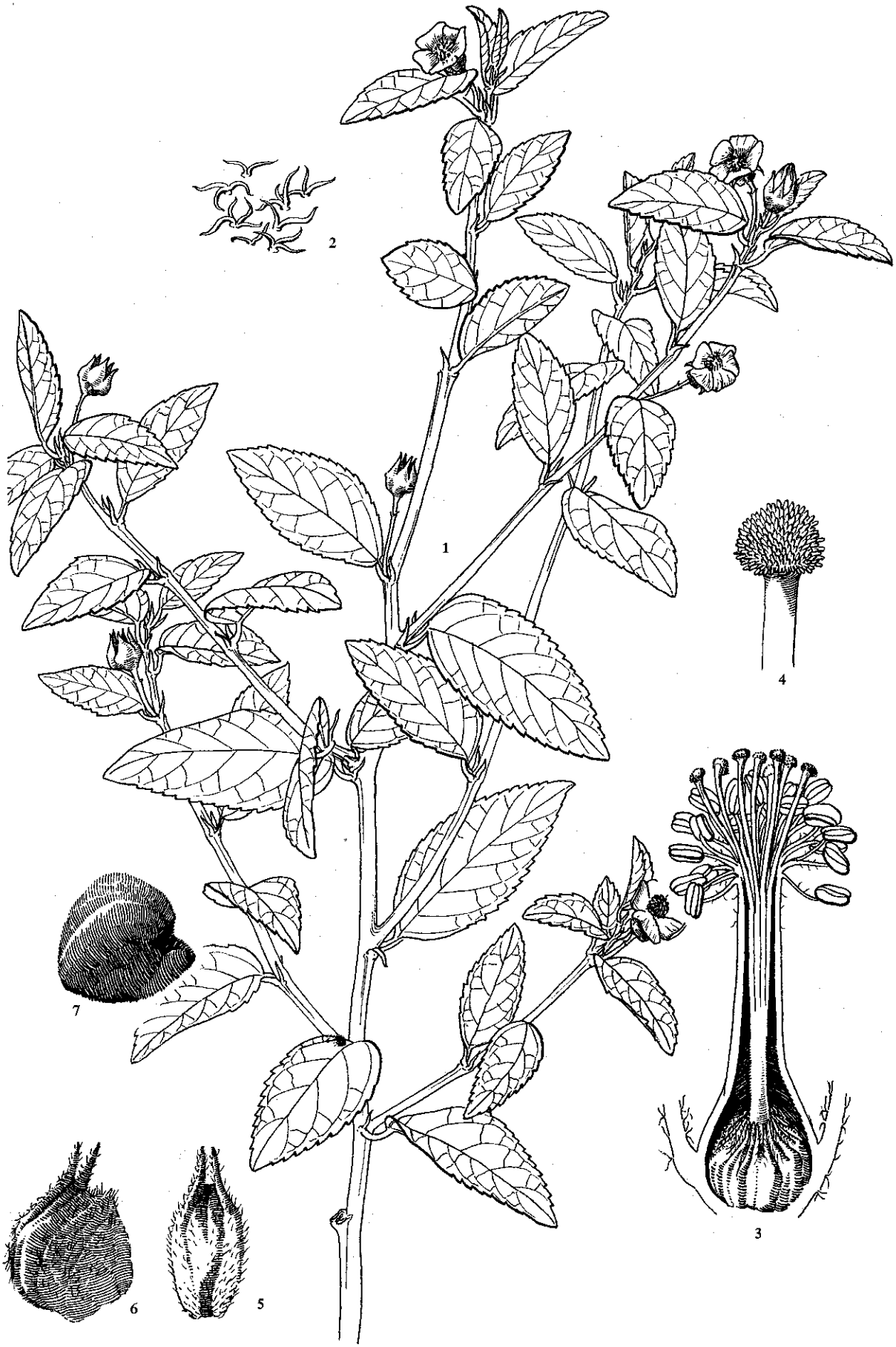



**Figure 172.** *Sida rhombifolia* L.

*1*. flowering branch; *2*. stellate hairs; *3*. vertical section of a flower with perianth removed, showing the attachment of the staminal tube to the petals, the apical stamens and the style; *4*. style branch; *5, 6*. dorsal and lateral views of schizocarps; *7*. seed. (drawn by P. Ma)

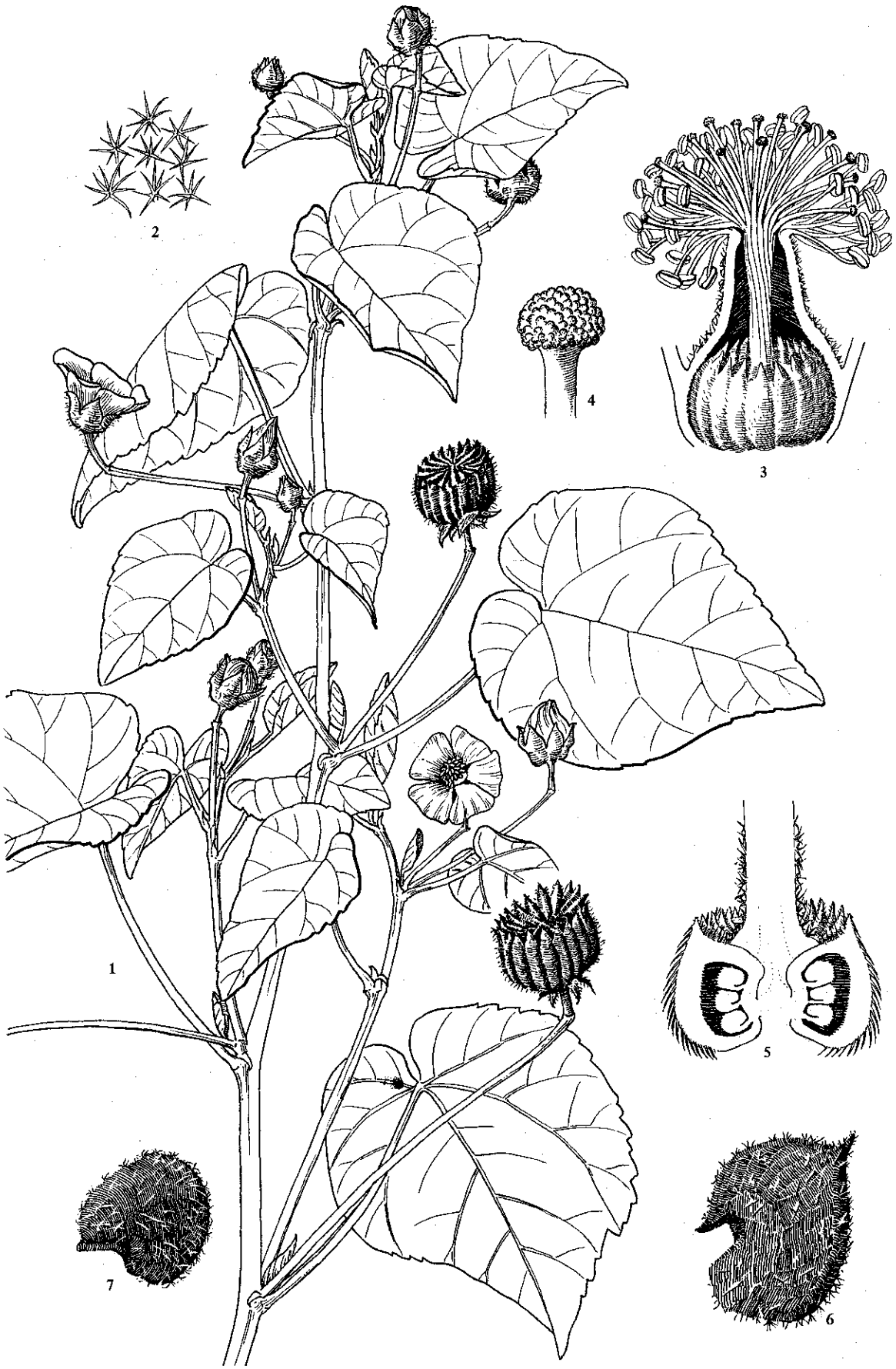



**Figure 173.** *Abutilon indicum* (L.) Sweet

*1*. flowering and fruiting branch; *2*. stellate hairs; *3*. vertical section of a flower with the perianth removed; *4*. apical portion of a style; *5*. vertical section of the ovary; *6*. a mature schizocarp; *7*. seed. (drawn by P. Ma)

**6. Sida alnifolia** L. 榿葉黃花稔

Sp. Pl. 684. 1753; FHN 2: 93. 1965; FRPS 49(2): 21. 1984; FGD 2: 203. 1991.

*Sida rhombifolia* auct. non L.: FHK 33. 1861; FKH 47. 1912.

Subshrub, 0.5–1(–2) m tall; branchlets slender, densely stellate villose. Petioles 3–5 mm, stellate pubescent; stipules subulate, 4–4.5 mm; leaf blade ovate, suborbicular or obovate, 2–5 × 1–2 cm, base cuneate, apex obtuse or truncate, margin evenly serrate, stellate pilose adaxially, stellate villose abaxially, Flowers solitary. Pedicels 5 mm (2 cm in fruit), articulate near middle, densely stellate-velutinous. Calyx cup-shaped, 5–8 mm, stellate-velutinous, long-villose along angles and margins. Corolla yellow, 6 mm across. Staminal tube hirsute. Fruit subglobose, 6 mm in diam., enclosed, the apical end pubescent; carpels 8, birostrate, awns 2 mm.

Locality: Tai Mo Shan, Chung Chi College. *W. J. Tutcher 5570; F. W. Xing 9914; S. Y. Hu 8768, 7899* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Jiangxi, Fujian, Taiwan; Indochina, India.

Ecology: Open fields and thin forests. Flowering: Jan.–Feb.

## 7. Abutilon Mill. 苘麻屬

Herbs, subshrubs or shrubs. Leaves alternate, cordate at base, palmately nerved. Flowers axillary or terminal, solitary or subpaniculate; bracteoles wanting. Pedicels articulate towards the apex. Calyx cupular, patelliform or campanulate, 5-lobed; lobes ovate or lanceolate. Petals 5, connate and adnate to the staminal tube at base. Staminal tube filamentiferous at apex. Ovary 12–15 carpellate; styles as many as carpels; stigmas capitate. Fruits subglobose or turbinate, ripe carpels separating from the cylindric columella. Seeds 2 to 9 in each carpel, reniform, radicle ascending or pointing inward, stellate pilose or glandular papillose.

Over 150 species, in tropical or subtropical regions of both hemispheres; nine species in China; three species in Hong Kong.

1a. Flowers large, petals 4 cm; carpels 10–12; leaves deeply 5-lobed ..... 1. *A. pictum*

1b. Flowers small, petals 1 cm; carpels 15 to 20; leaves not lobed.

2a. Staminal tube stellate-hirsute; carpels slightly beaked, the beak 1 mm ..... 2. *A. indicum*

2b. Staminal tube glabrous; carpels strongly beaked, the beak 5 mm ..... 3. *A. theophrasti*

**1. Abutilon pictum** (Gillies ex Hook. & Arn.) Walp. 金鈴花 **(Photo 397)**

Repert. Bot. Syst. 1: 324. 1842.

*Abutilon striatum* Dicks. ex Lindl., Edwards's Bot. Reg. 39. 1839; FRPS 49(2): 33, pl. 8: 2–3. 1984.

*Sida picta* Gillies ex Hook., Bot. Misc. 3: 154. 1833.

Shrub, to 2 m tall; branchlets glabrous. Leaves 5–7 cm in diam., palmately (3–)5–7-lobed, basal portion reniform, large lobes caudate at apex, glabrous or sparsely stellate pubescent abaxially. Flowers golden-orange with red veins, solitary, axillary; peduncles slender, 10–17 cm, bending at anthesis. Calyx cup-shaped, deeply cleft; lobes deltoid lanceolate, 1.3–1.8 cm. Corolla lantern-like, hanging; petals imbricate, clawed, 4 cm, 1.6 cm across middle, branches of red veins reticulate. Staminal column exceeding petals, basal three-fourth sterile, styles 10–12, exceeding petals, distinct; stigmas discoid. Fruit not known.

Locality: Cultivated. *Y. S. Lau 2658; HK sheet 32799; S. Y. Hu & P. H. But 22038* (CUHK).

Distribution: Cultivated in China; native of Brazil.

Ecology: Flowering: May–Oct.

**2. Abutilon indicum** (L.) Sweet 磨盤草 **(Fig. 173; Photo 398)**

Hort. Brit. 54. 1826; FHK 33. 1861; FKH 47. 1912; FHN 2: 94. 1965; FRPS 49(2): 37. 1984; FTW ed. 2, 3: 739, pl. 372. 1993.

*Sida indica* L., Cent. Pl. 2: 26. 1756; FRPS 49(2): 37. 1984; FGD 2: 198, fig. 126. 1991; FTW ed 2, 3: 739. 1993.

Annual or perennial herb, 0.5–1 m tall, much branched, greyish stellate puberulent throughout. Petioles 2–4 cm; stipules subulate, 1–2 mm; leaf blade ovate or suborbicular, 1.5–7(–9) × 2.5–7 cm, base cordate, apex acute or acuminate, margin coarsely dentate. Flowers solitary, axillary; pedicels slender, 4–5(–7) cm, articulate towards apex. Calyx patelliform, 6–10 mm across; lobes 5, broadly ovate, mucronate. Corolla yellow, 2–2.5 cm across. Staminal tube stellate-hirsute. Fruit depressed globose, 1.5 cm in diam., top flat; carpels 15–20, very short-awned. Seeds reniform, stellate-pilose.

Locality: Deep Bay, Yung Shue O, Tai Po, Shatin, Yuen Tun Ha, Plover Cove, Sam A Tsuen, Stonecutters Island, Lantau Island, Leung Shuen Wan Chau (Tall Island). *Y. S. Lau 1275; HK sheet 11174; S. Y. Hu 5769, 12617* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Fujian, Taiwan; Indochina, Thailand, Myanmar, India, Sri Lanka, Indonesia.

Ecology: Wastelands, thickets near villages. Flowering & fruiting: Jun.–Dec.

Uses: Medicinal (folklore), fibre.

**3. Abutilon theophrasti** Medik. 苘麻

Malvenfam. 28. 1787; FRPS 49(2): 36. 1984; FGD 2: 199. 1991.

*Sida abutilon* L., Sp. Pl. 685. 1753.

*Abutilon avicennae* Gaertn., Fruct. Sem. Pl. 2: 251, t. 135, fig. 1. 1791.

Annual herb or subshrub, 1–2 m tall, much branched. Branches, petioles and pedicels stellate puberulous. Petioles 3–12 cm; leaf

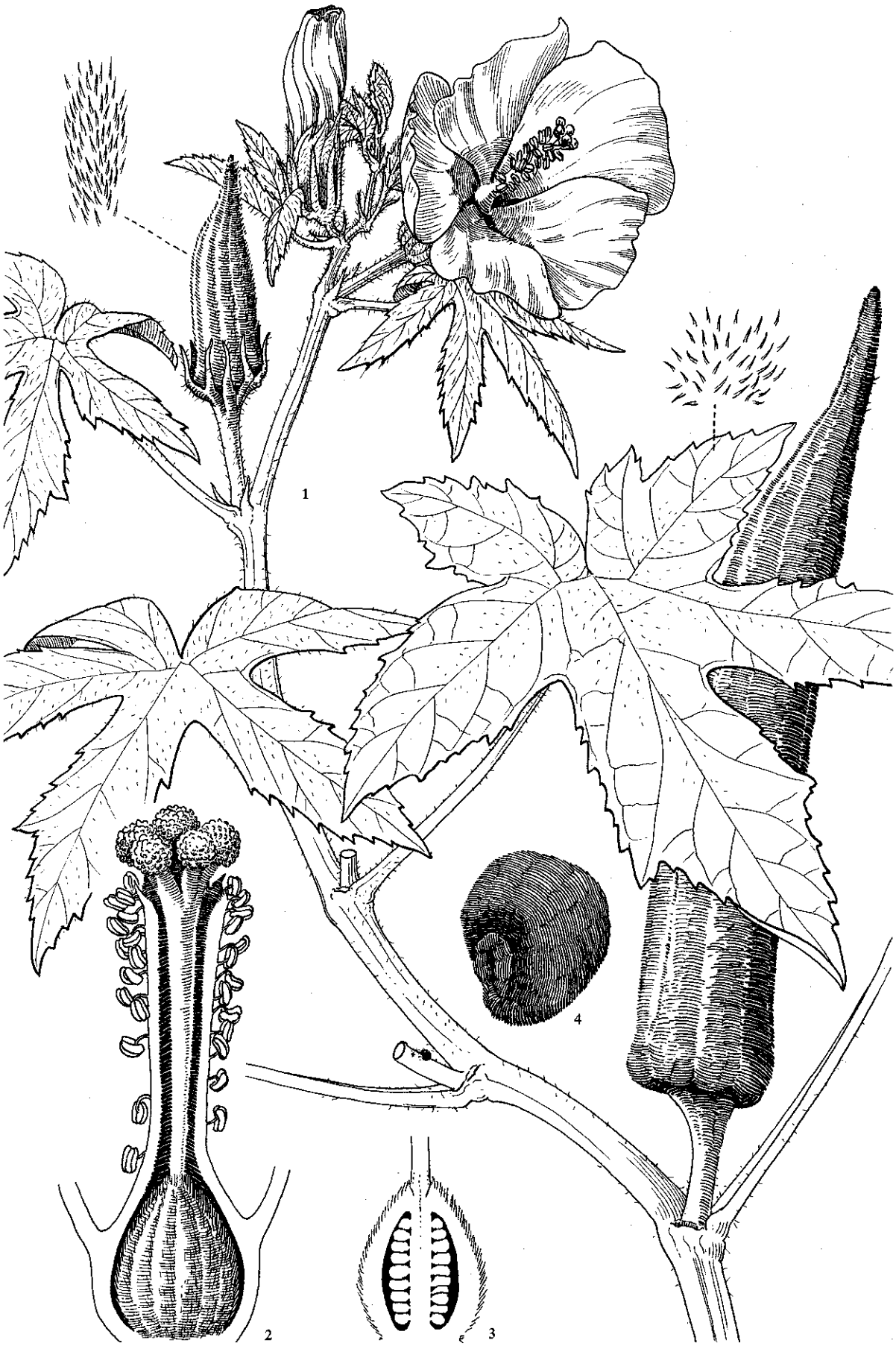



**Figure 174.** *Abelmoschus esculentus* (L.) Moench

*1*. flowering and fruiting branch; *2*. vertical section of a flower with the perianth removed; *3*. vertical section of an ovary; *4*. seed. (drawn by P. Ma)

blade suborbiculate, 3.5–15 cm in diam., base cordate, apex long-acuminate, margin slightly crenulate, stellate hirsute adaxially, tomentose abaxially. Flowers solitary, axillary. Pedicels 1–3 cm, articulate towards apex. Calyx cup-shaped, densely tomentellate; lobes 5, orbicular, oblong in fruit, mucronate. Corolla yellow; lobes obovate, ca. 1cm. Staminal tube glabrous, filamentiferous at apex. Fruits black, depressed globose, 2 cm across, top flat; carpels 12 to 16, strongly birostrate, awns 5 mm. Seeds reniform, stellate-pilose.

Locality: Yuen Long, Mo Fan Heung, Jubilee Reservoir. *Y. W. Lam 1498; HK sheet 36223; S. Y. Hu 10742* (CUHK).

Distribution: Cosmopolitan in the temperate region of the N hemisphere.

Ecology: Wastelands, roadsides. Flowering: Jul.–Aug.

Uses: Materials (fibre).

## 8. Abelmoschus Medicus 秋葵屬

Annual, biennial or perennial herbs. Leaves usually palmately lobed. Flowers solitary, axillary; involucral bracts 5–15, linear filiform, rarely lanceolate, often caducous. Calyx spathaceous, obliquely split on one side, 5-toothed at the apex, caducous. Corolla funnel-form, yellow, 5-lobed. Staminal tubes shorter than the corolla, antheriferous to base. Ovary with 5 carpels, pubescent; style 5, spatulate-discoid, scabrous. Capsules oblong or cylindric, beaked, loculicidally dehiscent, densely hirsute. Seeds numerous, reniform, glandular-papillose, the papillae regularly arranged in longitudinal rows, rarely scabrid.

Approximately 15 species in tropical and subtropical regions of the Old World; six species (including cultivated ones) in China; two species cultivated in Hong Kong.

1a. Fruits cylindrical, 8–15 cm long; flowers yellow with maroon eye ..... 1. *A. esculentus*

1b. Fruits ellipsoid 1.5–2 cm long; flowers yellow ..... 2. *A. moschatus*

**1. Abelmoschus esculentus** (L.) Moench 咖啡黃葵(金寶菜) **(Fig. 174; Photo 399)**

Methodus 617. 1794; FRPS 49(2): 56, pl. 13: 3. 1984; FGD 2: 187. 1991.

*Hibiscus esculentus* L., Sp. Pl. 696. 1753; Forbes & Hemsl., J. Linn. Soc. Bot. 23: 87. 1886.

Tall annual herb, up to 1.5 m tall, strigose-hirsute throughout. Petioles 7–15 cm; stipules linear, 7–8 mm; leaf blade broadly elliptic to orbicular in outline, 10–30 cm in diam., wider than long, base cordate, palmately 5- or 7-lobed; lobes triangular, the central one 2–6 × 3–4.5 cm at the base, margin dentate. Flowers solitary; pedicels 1–2 cm. Corolla yellow with maroon eye, 5–7 cm across. Capsules 8–10 cm or longer, cylindric, beaked, strigose-hirsute. Seeds glandularly striate.

Locality: Cultivated. *HK sheet 6988, 32923; S. Y. Hu 11054* (CUHK).

Distribution: Cultivated in Hebei, Shandong, Jiangsu, Zhejiang, Hunan, Hubei, Yunnan, Guangdong; native to India.

Ecology: Flowering: May–Sep.

Uses: Food (A common food plant of the Mediterranean area, introduced to Hong Kong in some vegetable gardens).

**2. Abelmoschus moschatus** (L.) Medik. 黃葵 **(Photo 400)**

Malvenfam. 46. 1787; FRPS 49(2): 58, pl. 15: 1–3. 1984; FGD 2: 188, fig. 116. 1991; FTW ed. 2, 3: 737, pl. 371. 1993.

*Hibiscus abelmoschus* L., Sp. Pl. 696. 1753; FHK 34. 1861; FKH 48. 1912.

Tall annual or perennial herb, up to 2 m tall, long-hirsute throughout. Petioles 9–15 cm; stipules lanceolate, 6–7 mm; leaf blade suborbicular in outline, 6–15 cm in diam., palmately 5–7-lobed, lobes of the lower ones ovate-triangular, those of the upper ones elliptic or linear, the central lobe 6–12 × 1.5–3 cm. Flowers solitary, axillary; pedicels 3–8 cm; bracteoles 7–10, linear, caducous. Corolla 10 cm in diam., yellow, dark purple at base. Staminal tube 2.5 cm. Capsules ovate-ellipsoid, 4–6 cm, 2 cm in diam., shortly beaked, long-strigose. Seeds longitudinally and glandularly striate.

Locality: Shing Mun, Tai Au Mun, Tai Po, Lam Tsuen, Yuen Tun Ha, Luk Keng, Nam Chung, Tai Mo Shan, Bride's Pool, Wong Wan Chau. *Y. S. Lau 770; S. Y. Hu 5618, 12417* (CUHK).

Distribution: Cultivated or naturalized in Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Taiwan; Indochina, Thailand, India; native to the Old World tropics.

Ecology: Flowering: Feb.–Jul.

Uses: Medicinal, essential oil, fibre.

## 9. Hibiscus L. 木槿屬

Shrubs, small trees or herbs, usually pubescent with stellate hairs. Leaves alternate, toothed or palmately lobed, stipulate. Flowers bisexual, 5-merous, solitary, axillary; bracteoles 5–12. Calyx campanulate, rarely cup-shaped or tubular, 5-toothed, persistent. Corolla showy, yellow, scarlet or white. Staminal-tube truncate or 5-toothed at apex; anthers reniform. Ovary 5-locular, 3 to many ovules per locule; style branches 5, stigmas capitate or spathulate. Fruit a dehiscent capsule. Seeds reniform, pubescent or glandularly papillose.

Over 200 species majority confined to the Old World, most numerous in tropical Africa; 24 species in China; five species in Hong Kong.

*Hibiscus trionum* L. was recorded in Hong Kong by Dunn & Tutcher (1912), but no recent record is available, so it is not described here.

1a. Leaves entire, cordate, roundish, 8–15 cm in diam., 9-nerved; stipules foliaceous; flowers yellow. ..... 1. *H. tiliaceus*

1b. Leaves dentate, serrate, or lobed; stipules inconspicuous; flowers red, pink or white.

2a. Flowers pendulous or suberect; leaves elliptic, oblong or ovate.
3a. Petals laciniate, reflexed; calyx tubular; bracteoles strongly reduced, scale-like ..... 2. *H. schizopetalus*
3b. Petals obovate, not dissected; calyx campanulate; bracteoles linear, 1.5 cm ..... 3. *H. rosa-sinensis*
2b. Flowers upright; leaves cordate, or ovate-rhomboid.
4a. Bases of leaves cordate; flowers pink in the morning changing to white afternoon ..... 4. *H. mutabilis*
4b. Bases of leaves cuneate; flower color lilac, not changing ..... 5. *H. syriacus*

**1. Hibiscus tiliaceus** L. 黃槿 **(Photo 401)**

Sp. Pl. 694. 1753; FKH 48. 1912; S. Y. Hu, Malvaceae. 44. 1955; FRPS 49(2): 64, pl. 16: 2–3. 1984; FGD 2: 182, fig. 115. 1991; FTW ed. 2, 3: 743, pl. 373. 1993.

Small tree, 3–7 m tall; branchlets glabrescent. Leaves leathery; petioles 2–4 cm; stipules foliaceous, oblong, 2 × 12 mm, rounded at the apex, caducous; leaf blade roundish or broadly ovate, 6–15 cm in diam., base cordate, apex acute or shortly acuminate, margin entire or crenulate, inconspicuously stellate pilose adaxially, grey, densely and shortly stellate tomentose abaxially, 7- or 9-nerved, with glands at the base of the main nerves. Flowers in simple axillary or terminal cymes; peduncles 4–5 cm; pedicels 1–3 cm, subtended by a pair of stipule-like bracts; bracteoles 7–10, linear-lanceolate, connate about the middle. Calyx 3 cm, basal 1/4 connate; lobes 5, lanceolate, 1.5 × 5–6 mm. Corolla campanulate; lobes obovate, 4.5 cm, united at the base, yellow, crimson at base. Capsules oblong-ellipsoid, 2.5 × 2 cm; pericarp woody. Seeds smooth, glandularly papillose.

Locality: Hong Kong Island, Shek O, Ma Liu Shui, Mai Po, Leung Shuen Wan Chau (Tall Island). *Y. S. Lau 1435, 1910; S. Y. Hu 6007; S. Y. Hu & P. H. But 21922* (CUHK).

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; coastal regions in tropical and subtropical Asia.

Ecology: Thickets, seashores behind mangroves. Flowering: Jul.–Aug.

Uses: Ornamental, timber, fibre.

**2. Hibiscus schizopetalus** (Masters) Hook. f. 吊燈花(裂瓣槿) **(Photo 402)**

Bot. Mag. 106: t. 6524. 1880; FHN 2: 98. 1965; FRPS 49(2): 69, pl. 17: 6. 1984; FGD 2: 185. 1991.

*Hibiscus rosa-sinensis* var. *schizopetalus* Masters, Gard. Chron. n. s. 12: 272, fig. 45. 1879.

Shrub 2–3 m tall; branchlets glabrous. Leaves papery; petioles 1–2 cm, stellate-pubescent; stipules subulate, ca. 2 mm, caducous; leaf blade elliptic or oblong, 4–7 × 1.5–4 cm, base obtuse, apex acute or shortly acuminate, glabrous on both surfaces, basal half entire, apical half serrate. Flowers solitary, pendulous; pedicels slender, 10–14 cm, articulate at the middle; bracteoles 8, very minute, 1–2 mm, ciliate. Calyx spathulate, tubular, 1.5 cm, shallowly 5-toothed. Corolla scarlet; lobes 4–5 cm, reflexed, laciniate. Staminal tube 9–11 cm. Capsules oblong-cylindrical, 4 × 1 cm. Seed smooth.

Locality: Commonly cultivated in Hong Kong gardens. *Y. S. Lau 1821; HK sheet 3506; S. Y. Hu 5827* (CUHK).

Distribution: Said to be native to E tropical Africa; cultivated in Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan.

Ecology: Flowering: Almost all year round, flowers drop after anthesis; fruit not observed.

Uses: Ornamental.

**3. Hibiscus rosa-sinensis** L. 朱槿(扶桑、大紅花) **(Photo 403)**

Sp. Pl. 694. 1753; FKH 48. 1912; S. Y. Hu, Malvaceae. 47. 1955; FHN 2: 98. 1965; FRPS 49(2): 69. 1984; FGD 2: 185. 1991.

Shrub, 1–4 m tall; branchlets sparsely stellate pubescent. Leaves papery; petioles 5–20 mm, pubescent; stipules linear, 5–12 mm; leaf blade ovate, 4–9 × 2–5.5 cm, base rounded or broadly cuneate, apex acuminate, coarsely dentate above base, glabrous and punctate on both surfaces. Flowers solitary; pedicels 3.5–7.5 cm, articulate towards the apex; bracteoles linear, 8–15 × 1.2–2 mm, hardly connate at the base. Calyx campanulate, 1.7–2.5 cm, glandularly stellate puberulous; lobes 5, obovate deltoid, 7–10 mm. Corolla scarlet, funnel-form, 6–15 cm in diam. Staminal tube 4–8 cm long, the upper 1/3 staminiferous. Flowers dropping off after anthesis, fruit not observed.

Locality: Commonly cultivated in Hong Kong gardens. *Y. S. Lau 903, 3069; S. Y. Hu & P. H. But 22141* (CUHK).

Distribution: Long been accredited as a native of China, cultivated in temples and gardens of South China; wild form not yet discovered; many cultivars with double pink, red and even tinge orange flowers in Hong Kong.

Ecology: Flowering: Almost all year round.

Uses: Ornamental.

Notes: A cultivated form with double red flowers (*Hibiscus rosa-sinensis* L. var. *rubro-plenus* Sweet 重瓣朱槿) is also commonly cultivated in gardens and flowers almost all year round.

**4. Hibiscus mutabilis** L. 木芙蓉(芙蓉花) **(Photo 404)**

Sp. Pl. 694. 1753; FKH 48. 1912; S. Y. Hu, Malvaceae. 49. 1955; FRPS 49(2): 73. 1984; FGD 2: 184. 1991; FTW ed. 2, 3: 742. 1993.

Tall shrub, 2–5 m tall; branchlets, petioles, pedicels and calyx very densely lanate, the hairs straight and stellate mixed. Leaves papery; petioles 5–20 cm; stipules lanceolate, 5–8 mm, caducous; leaf blade broadly ovate to ovate-orbicular in outline, 10–15 cm in diam., base cordate, apex acuminate, 5- or 7-lobed and 7- to 11-nerved, sparsely stellate-hispid and punctate adaxially, densely tomentose abaxially. Flowers solitary in axils of leaves near apex of branches. Pedicels 5–8 cm, articulate towards apex. Bracteoles 8, linear, 10–12 × 2 mm. Calyx campanulate, 2.5–3 cm, conspicuously 5-lobed; lobes ovate, acuminate, 1.6–2 cm. Corolla white, pink or red, the color changing from morning to afternoon; lobes suborbicular, 4–5 cm in diam. Capsules subglobose, 2.5 cm in diam., setose and lanate, inside of the sutures densely villose. Seeds reniform, the back long villose, 2 to 6 hairs sharing a common base.




**Figure 175.** *Hibiscus syriacus* L.

*1*. flowering branch; *2*. vertical section of a flower with the perianth removed; *3*. vertical section of an ovary; *4*. style branch with capitate stigma. *5*. capsule with persistant calyx and epicalyx; *6*. seed. (drawn by P. Ma)

Locality: Extensively cultivated, wild plants observed below Victoria Peak. *H. C. Tang 1452; Y. S. Lau 2044; S. Y. Hu & P. H. But 21356* (CUHK).

Distribution: Native to China; cultivated elsewhere.

Ecology: Flowering: Aug.–Oct.

Uses: Ornamental, medicinal (folklore), fiber.

**5. Hibiscus syriacus** L. 木槿 **(Fig. 175)**

Sp. Pl. 695. 1753; S. Y. Hu, Malvaceae 50. 1955; FHN 2: 99. 1965; FRPS 49(2): 75. 1984; FGD 2: 185. 1991; FTW ed. 2, 3: 742. 1993.

*Hibiscus chinensis* auct. non DC.: Forbes & Hemsl., J. Linn. Soc. Bot. 23: 88 (Ind. Fl. Sin. I). 1886.

Shrubs, 2–4 m tall. Young branches and pedicels stellate puberulous. Leaves papery; petioles 3–16(–25) mm, stellate pilose adaxially; stipules linear, ca. 6 mm; leaf blade ovate-rhomboid to narrowly elliptic, 3–10 × 2–4 cm, apex acuminate, base cuneate, irregularly dentate or shallowly 3-lobed, glabrous or sparsely stellate pubescent on both surfaces. Flowers solitary, axillary. Pedicels 4–14 mm. Bracteoles 6 or 7, linear, 7–9 × 1–1.5 mm, very sparsely stellate pilose. Calyx campanulate, 1.4–1.7 cm, densely short stellate tomentellate, 5-toothed; lobes triangular, 6–8 mm. Corolla lilac, 5–6 cm in diam.; lobes obovate, 3.5–5 cm, ciliate and puberulous abaxially. Staminal tube 2.5–3 cm, antheriferous to the base. Capsules oblong-ellipsoid, densely golden stellate tomentose, 1.5–2 cm, apex 1.5 cm in diam., shortly rostrate. Seed glabrous, with a row of long white hairs along the back, like the mane of a horse.

Locality: Cultivated in gardens. *Y. S. Lau 1864; HK sheet 3526; S. Y. Hu & P. H. But 22193* (CUHK).

Distribution: Native to China; cultivated elsewhere.

Ecology: Flowering: May–Oct.

Uses: Ornamental, food (vegetable), fibre.

## 10. Thespesia Solander 肖槿屬

Trees or shrubs, covered with scales or stellate hairs throughout. Leaves alternate, entire or palmately lobed. Flowers solitary or in small axillary cymes; bracteoles 3 or 5, sometimes caducous. Calyx cup-shaped, apex truncate or minutely 5-toothed. Corolla campanulate; petals 5, yellow. Staminal tube cylindric, apex toothed; filaments paired; anthers horseshoe-shaped. Ovary 5-loculate; style clavate, 5-sulcate; stigmas scabrous. Capsules globose or pyriform, woody or leathery. Seeds ovoid, pubescent, glabrous or scabrous papillose.

About 15 species in tropical Asia and Africa; three species in China; one species in Hong Kong.

**1. Thespesia populnea** (L.) Solander ex Corr. 恒春黃槿(黧楊) **(Fig. 176; Photo 405)**

Ann. Mus. Hist. Nat. Paris 9: 290, t. 8, fig. 2. 1807; FRPS 49(2): 93. 1984; FGD 2: 190. 1991; FTW ed. 2, 3: 750, pl. 376. 1993.

*Hibiscus populneus* L., Sp. Pl. 694. 1753.

Evergreen small tree, 6–8 m tall; branchlets scabrous, densely covered with brown scurfy scales. Petioles 4–10 cm; stipules linear lanceolate, ca. 7 mm; leaf blade ovate-cordate, 7–18 × 4.5–11 cm, base cordate, apex long caudate, margin entire, adaxially glabrous, abaxially sparsely scurfy. Flowers solitary, axillary; pedicels 2–6 cm, densely scurfy. Calyx cup-shaped, ca. 15 mm in diam., apex truncate, 5-toothed. Corolla campanulate, ca. 5 cm, yellow, with purple blotches at base adaxially. Fruit pyriform, ca. 5 cm in diam. Seed triangularly ovoid, striate, lanuginose.

Locality: Tai Tam Reservoir, Tai Po, Butterfly Beach, Lung Kwu Tan, Nam Chung, Luk Keng, Lantau Island, Ma Wan, Po Toi. *Y. S. Lau 1530; HK sheet 32395; S. Y. Hu & P. H. But 23447* (CUHK).

Distribution: Hainan, Guangxi, Guangdong, Taiwan; Indochina, Thailand, India, Sri Lanka, Philippines and tropical Africa.

Ecology: Sunny places near seashores. Flowering: Almost all year round.

# 108. NEPENTHACEAE 豬籠草科

XIA Nian-he 夏念和

Shrubs or herbs, dioecious, carnivorous. Stem erect, prostrate or climbing, simple or branched, cylindric or triangular. Leaves simple, alternate, petiolate or sessile, exstipulate; midvein prolonged into a tendril, apex of tendril usually developing into a pitcher with its lid. Inflorescence a raceme, panicle or cincinnal cyme, terminal. Flowers regular; tepals (3–)4, in 1 whorl, imbricate, distinct or rarely connate at base, glandular adaxially. Male flowers: filaments united into a column; anthers capitate, (4–)8–24 clustered on the apex of column, extrorsely longitudinal dehiscent, 2-celled; pistils inconspicuous. Female flowers: pistils 1, consisting of (3 or) 4 carpels; ovary superior, ovoid-globose or tetragonal-terete, (3–)4-locular; ovules many, in many rows on axile placentae; style very short to obsolete; stigma disc-like, (3–)4-lobed. Capsule leathery or woody, loculicidally dehiscing into (3–)4 valves. Seeds many, filiform; embryo straight; endosperm fleshy.

One genus and ca. 85 species distributed in Africa (Madagascar), S & SE Asia, N Australia and Pacific Islands; one species in China, also in Hong Kong.

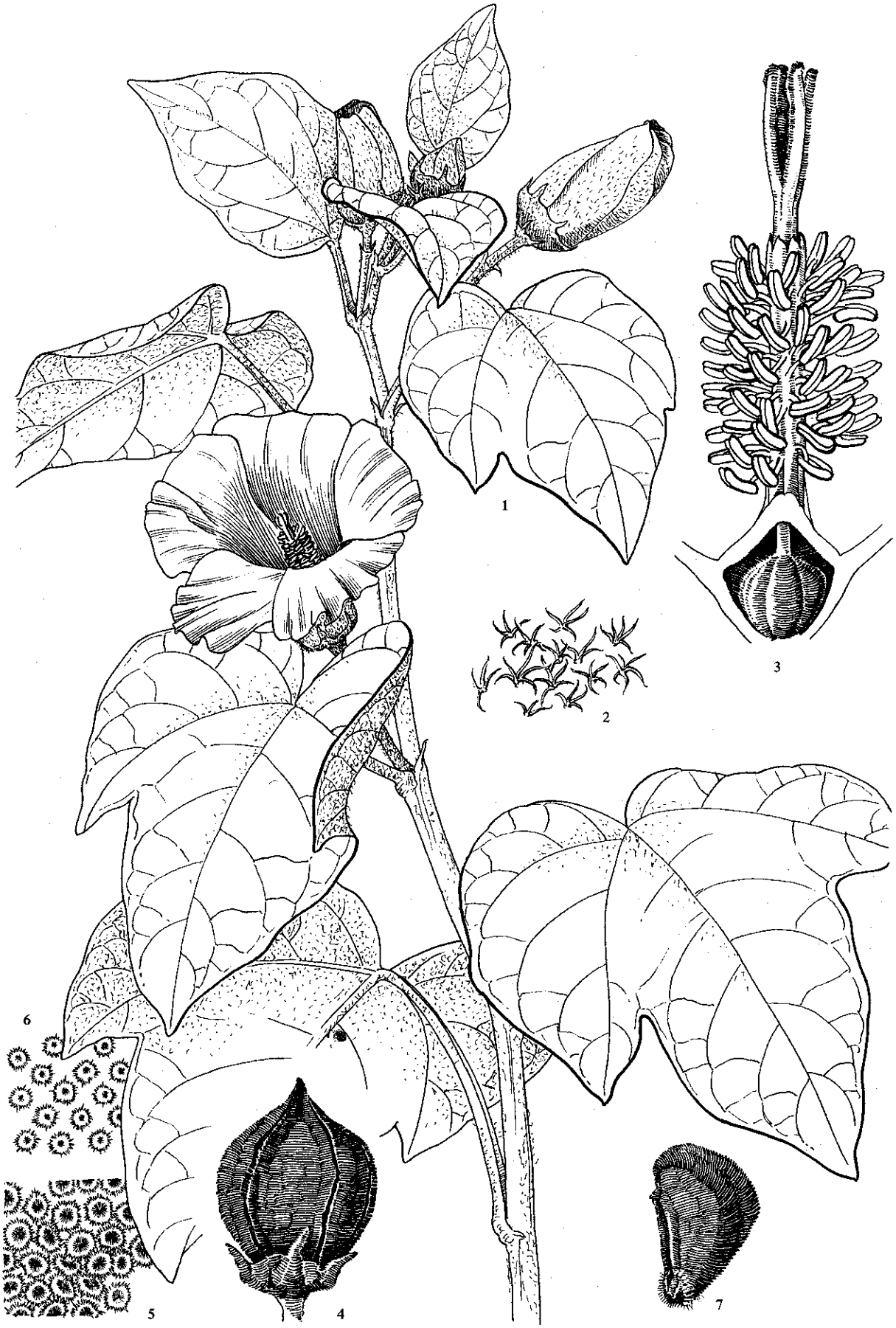



**Figure 176.** *Thespesia populnea* (L.) Solander ex Corr.

*1*. flowering branch; *2*. stellate hairs; *3*. vertical section of a flower with the perianth removed; *4*. capsule; *5*. scales on persistent calyx of fruit; *6*. scales on pericarp of capsule; *7*. seed. (drwan by P. Ma)

## 1. Nepenthes L. 猪籠草屬

Morphological characters and geographical distribution are the same as those of the family.

**1. Nepenthes mirabilis** (Lour.) Druce
猪籠草 **(Fig. 177; Photo 406)**

Bot. Exch. Club Brit. Isles Rept. 4: 637. 1916; FHN 1: 329, fig. 164. 1964; FRPS 34(1): 12, pl. 5. 1984; FGD 2: 46, fig. 32. 1991; FOC 8: 198. 2001.

*Phyllamphora mirabilis* Lour., Fl. Cochinch. 606. 1790.

*Nepenthes phyllamphora* Willd., Sp. Pl. 4(2): 874. 1806, *nom. illeg.*; FKH 219. 1912.

Erect or climbing herb, 0.5–2 m tall; young parts densely tomentose, later glabrescent. Basal leaves forming dense rosette, subsessile; leaf blade lanceolate, ca. 10 cm, base semi-amplexicaul, margin usually denticulate; tendril shorter than blade; pitcher variable in size, narrowly ovoid to terete, 2–6 cm long, 0.6–2 cm in diam., pilose and stellate hairy, 2-winged, 2–8-spurred between lid and mouth; lid ovate or rounded, densely glandular inside. Cauline leaves petiolate; leaf blade oblong to lanceolate, 10–25 × 4–8 cm, base decurrent, entire or ciliate-denticulate, with purplish red dots on both surfaces; tendril nearly as long as blade, with or without pitcher; pitcher subcylindrical, slightly enlarged at base, 8–16 cm long, 2–5 cm in diam., often with purplish red dots, pilose and stellate hairy, 2-winged, inner wall smooth on distal half and densely glandular on proximal half; mouth narrowed or not, with 1–2 spurs on the place bearing lid; lid ovate to oblong, densely glandular inside. Raceme 20–50 cm, villous, opposite to leaves or terminal; pedicels 0.5–1.5 cm. Flower red or purple. Male flowers: tepals 4, elliptic or oblong, 5–7 mm, densely glandular adaxially, villous abaxially; stamens in 1 whorl, slightly contorted, filament column slightly shorter than tepals. Female flowers: tepals ca. 0.5 cm; ovary ellipsoid, shortly stipitate or subsessile, densely pale yellow-pubescent or stellate hairy. Capsule with persistent perianth at base, dehiscing into 4 valves when mature; valves lanceolate, 1.5–3 × 0.3–0.5 cm, brown, shiny. Seeds filiform, ca. 1.2 cm.

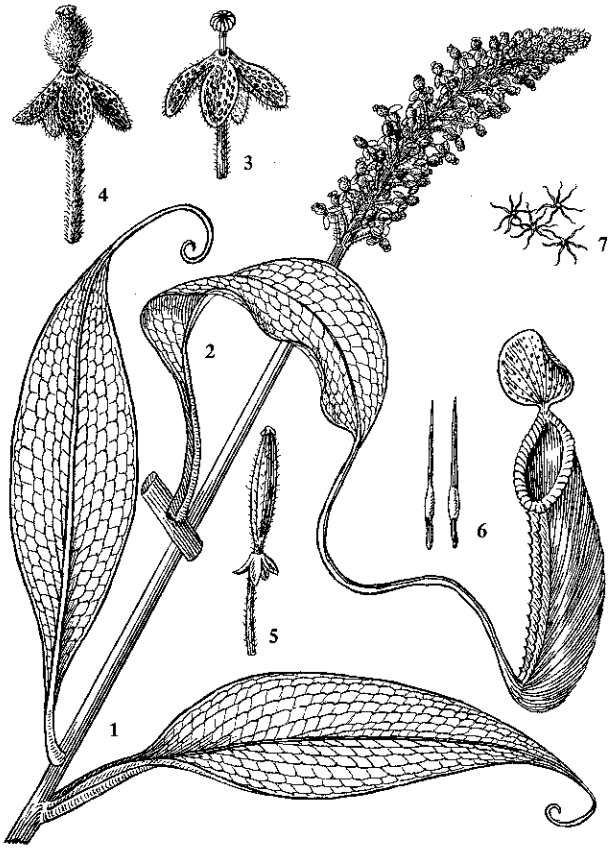



Figure 177. *Nepenthes mirabilis* (Lour.) Druce
*1*. female flowering branch; *2*. leaf; *3*. male flower; *4*. female flower; *5*. fruit; *6*. seeds; *7*. stellate trichomes. (drawn by H. P. Yu)

Locality: Tai Lam Chung, So Kwun Wat, Castle Peak, Lantau Island. *Y. W. Lam 915; P. S. Choi 35; Y. S. Lau 3045.*

Distribution: Guangdong, Hainan; Indochina, Malaysia.

Ecology: Swamps and marshes. Flowering: Mar.–Dec.; fruiting: Aug.–Dec.

Uses: Ornamental, carnivorous plant.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

# 109. DROSERACEAE 茅膏菜科

XIA Nian-he 夏念和 • DENG Yun-fei 鄧雲飛

Perennial or annual herbs, mostly terrestrial or rarely aquatic, carnivorous; stem with much reduced leaf blades that function as rhizoids below ground, with or without tubers or rhizomes. Leaves basal and rosulate, with sticky, glandular hairs, or with sensitive hairs that trigger closing of blade to trap small animals, juvenile leaf blade circinate in buds; stipulate or exstipulate. Flowers axillary or terminal, often in a coil-like raceme or spike, rarely solitary, bisexual, actinomorphic; sepals usually 5 rarely 4 or 6–8, connate at base, imbricate, persistent; petals as many as sepals or more, free, persistent; stamens usually 5, hypogynous, free, alternate with petals, rare 4–5-numerous in 2–4 whorls, filaments free, anthers 2-celled, dehiscing by longitudinal slits; ovary superior or nearly so, globose or ovoid, 2–5-carpellate, 1–3-loculed; placentation parietal or basal; styles 2–5, rare 6, simple or branched. Fruit a capsule, dehiscent or indehiscent. Seeds few to numerous; endosperm fleshy; embryo straight.

Four genera and more than 100 species distributed in temperate and tropical regions of both hemispheres; two genera and seven species in China; one genus and five species in Hong Kong.

## 1. Drosera L. 茅膏菜屬

Perennial or annual herbs, with a short perennial stock, sometimes lengthening out into leafy stems. Leaves basal and rosulate, or alternate, petiolate, more or less covered with glandular, papillose hairs or bristles; stipulate or exstipulate. Flowers bisexual,

actinomorphic, radical or axillary, terminating in a simple or forked one-sided spike; sepals 5, or rarely 4, 6–8, free or connate at base, persistent; petals 5, free, closing and contorted after anthesis, persistent; stamens as many as petals; ovary superior, 1-locular, 2–5-carpellate; ovules many; styles 3–5, rare 2 or 6, free or connate at base, persistent. Capsule dehiscent, 2–5-valved. Seeds numerous, ellipsoid or linear, sometimes winged.

About 100 species distributed in tropical to tundra regions, especially concentrated in Australia; six species in China; five species in Hong Kong.

1a. Stem elongated; leaves alternate, exstipulate; inflorescence axillary or terminal.
  2a. Leaves linear; stem not forming tubers below ground ..... 1. *D. indica*
  2b. Leaves peltate; stem forming tubers below ground ..... 2. *D. peltata*
1b. Stem short; leaves basal in a dense rosette, stipulate; inflorescence scapiform.
  3a. Stipule adnate to petiole at base; petioles short or absent ..... 3. *D. burmannii*
  3b. Stipule not adnate to petiole at base; petioles longer than 8 mm.
    4a. Leaves spatulate, obovate; peduncle and abaxial surface of sepals densely glandular hairy; styles shorter than ovary ..... 4. *D. spathulata*
    4b. Leaves oblanceolate to linear; peduncle and sepals glabrous; styles ± equal to ovary ..... 5. *D. oblanceolata*

**1. Drosera indica** L. 長葉茅膏菜 **(Photo 407)**

Sp. Pl. 1: 282. 1753; FKH 100. 1912; FHN 1: 372. 1964; FRPS 34(1): 18. 1984; FGD 2: 65. 1991; FOC 8: 200. 2001.

Annual herb, with fibrous roots; stem unbranched, erect or procumbent, 2–40 cm, not forming tubers below ground, pubescent with short, glandular hairs. Leaves cauline, alternate, light green or red, narrowly linear, 2–12 × 0.1–0.3 cm, white or reddish glandular pubescent, or glabrous, apex acute; stipule absent or reduced and hair-like; petioles 5–10 mm, glandular hairy or glabrous. Inflorescence axillary or leaf opposed, 6–30 cm, 1–30-flowered, glandular pubescent; peduncles to 12 cm; bracts linear, 2–8 mm; pedicels 0.6–1.5 cm, glandular pubescent; sepals 5, united near the base, lanceolate to narrowly oblong, 3–5 × 1–2 mm, margin entire or serrate, glandular pubescent abaxially; petals 5, white, light red, orange, or reddish violet, obovate to oblanceolate, ca. 6 mm; stamens 5, 3–5 mm, papillose, filaments flattened; ovary obovoid or subglobose, 1–2 mm; placentas 3; styles 3, deeply 2-lobed nearly to base, usually incurved; stigma simple, 2–3 mm. Capsule globose-obovoid, 3-valved, 4–6 mm. Seeds black, small; venation thick and scrobiculate.

Locality: Cape D'Aguilar, Tung Chung. *Y. M. Wan 6; Y. W. Lam 1265; S. P. Lau 58.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan; widely distributed in tropical and subtropical regions of Asia, Africa and Australia.

Ecology: Wet places, soggy soils. Flowering and fruiting: Almost all year round.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

**2. Drosera peltata** Smith ex Willd. 光萼茅膏菜(茅膏菜) **(Photo 408)**

Sp. Pl. 1: 1546. 1797; FKH 100. 1912; FOC 8: 201. 2001

*Drosera peltata* Smith ex Willd. var. *glabrata* Y. Z. Ruan, FRPS 34(1): 27. 1984; FGD 2: 66. 1991.

Perennial herb; stems erect or climbing, branched distally, 9–45 cm, with a tuber below ground, glabrous or with black, papillose glands. Basal leaves densely whorled, or absent in some populations, peltate, orbicular to suborbicular, 2–4 × 6–8 mm, some leaves reduced, linear, ca. 2 mm, yellowish green to green; exstipulate; petioles 2–8 mm. Cauline leaves remote, peltate or lunate to semiorbicular, 2–3 × 4–5 mm, margin glandular hairy, yellowish green; petioles 0.8–1.3 cm; exstipulate. Inflorescence terminal; cincinnus 2–6 cm, 3–22-flowered; bracts cuneate to oblanceolate or subulate; pedicels 0.6–2 cm; sepals 5–7, united near base, yellowish green, lanceolate to ovate, 2–4 mm × ca. 1.5 mm, glabrous to glandular hairy, apex 5–7-fid; petals usually white, rarely pink or red, oblong-cuneate, 4–6 × 2–3 mm; stamens 5, 2–4 mm; ovary subglobose, ca. 1.5 mm in diam.; styles 3–5, sometimes 2 or 6, ca. 0.8 mm, each style deeply bi-lobed, again 2–5-lobed; stigma 2–3-fid. Capsule subglobose, (2–)3–5(–6)-valved. Seeds many, ellipsoid, ovoid to globose, ca. 0.4 mm; venation scrobiculate.

Locality: Pat Sin Leng, Ping Fung Shan. *K. Y. Tam 132; Y. W. Lam 26, 241.*

Distribution: Anhui, Gansu, Guangdong, Guangxi, W Guizhou, Yunnan, Xizang, Sichuan, Hubei, Hunan, Jiangxi, Zhejiang, Taiwan; tropical Asia, Australia.

Ecology: Grassy fields, thickets and thin forests. Flowering & fruiting: Jun.–Sep.

**3. Drosera burmannii** Vahl 錦地羅 **(Fig. 178; Photo 409)**

Symb. Bot. 3: 50. 1794; FKH 100. 1912; FHK 129. 1861; FHN 1: 371. 1964; FRPS 34(1): 18. 1984; FGD 2: 64. 1991; FOC 8: 199. 2001.

Annual or biennial herb, with few fibrous roots; stem unbranched, extremely short, without tuber below ground. Leaves basal, forming a flat rosette, yellowish green or red to reddish violet, spathulate to obovate-spathulate, 6–15 × 5–7 mm, base attenuate, apex fimbriate, glandular hairy or glabrous; petioles short or absent; stipule 3–7 mm, connate with petiole at base, 5–7-fid, lobes laciniate. Inflorescence scapiform; racemes 1–3, 2–19-flowered, 6–22 cm, subglabrous or with white or red to reddish violet glands; bracts hastate, 3- or 5-lobed, 1–3 mm; pedicels erect, 1–7 mm, glandular hairy or glabrous; sepals 5, united at base, light green, red, or reddish violet, narrowly oblong, 2–3 mm, striate, tuberculate, glandular hairs and white glands abaxially; petals 5, obovate, white to light red to reddish

violet, ca. 4 × 2–3 mm; stamens 5, ca. 3 mm; ovary subglobose, glabrous; placentas 5, rare 6; styles 5, rare 6, filiform, 2–3 mm, incurved; stigma tooth-like. Capsule 5- (or rarely 6-) valved. Seeds many, dark-brown to black, veined.

Locality: Aberdeen, Pok Fu Lam, Mount Nicholson. *H. C. Tang 2314; HK sheet 36058.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan; widely distributed in tropical and subtropical regions of Asia, Africa and Australia.

Ecology: Sandy places. Flowering and fruiting: Almost all year round.

Uses: Medicinal (folklore).

**4. Drosera spathulata** Labill. 寬苞茅膏菜 **(Photo 410)**

Nov. Holl. Pl. 1: 79. 1804; FRPS 34(1): 20. 1984; FOC 8: 200. 2001

*Drosera loureirii* Hook. & Arn., Bot. Beechey Voy. 31: 167. 1833; FHK 130. 1861; FKH 100. 1912.

*Drosera spathulata* Labill. var. *loureirii* (Hook. & Arn.) Y. Z. Ruan, Acta Phytotax. Sin. 19: 341. 1981; FGD 2: 64. 1991.

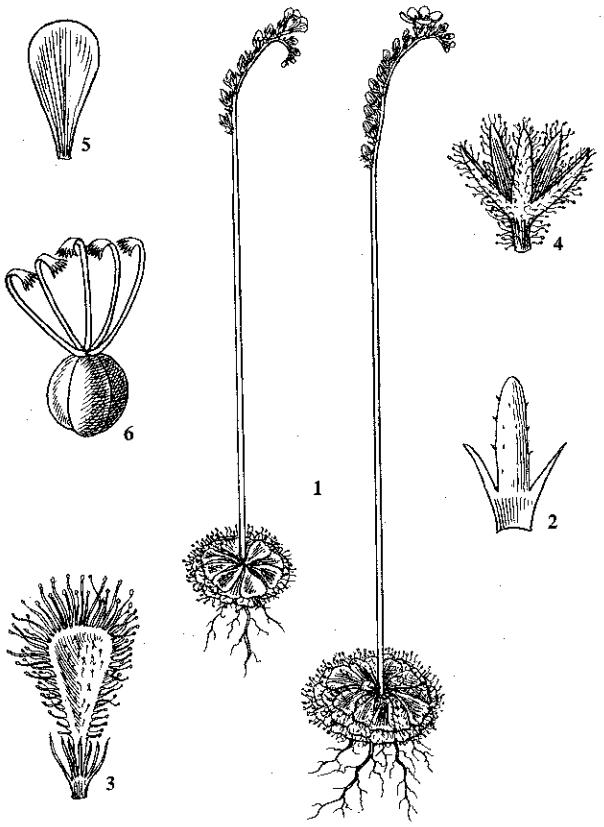



**Figure 178.** *Drosera burmannii* Vahl

*1.* whole plant; *2.* bract; *3.* leaf with stipules; *4.* calyx; *5.* petal; *6.* pistil. (drawn by H. P. Yu)

Perennial herb, with 1 or 2 black, fibrous roots; stem short, without tuber below ground. Leaves forming a dense, flat rosette, circinately 1-folded toward stipule when young, obovate or spathulate, or cuneate, 0.9–2.8 × 0.2–0.5 mm, glandular hairy; stipules light red, narrow, 4–8 mm, scarious, apex fimbriate, setaceous; petioles flattened, gradually dilated distally, 8–10 mm, glandular hairy. Inflorescences 1–6, scapiform, sometimes branched, 4–25 cm; peduncle densely glandular hairy; racemes 1-sided, 10–20-flowered; bracts linear to oblanceolate, ca. 2 mm or more, 3-lobed; pedicels 1–3 mm, densely glandular hairy; sepals 5, united at base, lanceolate or narrowly ovate, 1.5–4 mm, apex obtuse or rounded, margin entire or l-toothed, densely glandular hairy outside; petals white or pink to reddish violet, obovate, 2–6 mm; stamens 5, 2.5–6 mm; filaments flat, ca. 5 mm; anthers oblong, ca. 1.5 mm; ovary ellipsoid; placentas 3–4; styles 3–4, ca. 2.5 mm, each style deeply 2-lobed to base, sometimes again lobed distally; stigma simple, persistent. Capsule 3–4-valved, ca. 1.5 mm; valves obdeltoid, incurved. Seeds small, black, ovoid or ellipsoid; venation thick and scrobiculate.

Locality: Hong Kong Island, Tai Mo Shan, Ho Pui, Ma On Shan, Castle Peak, Lantau Island. *L. T. Lo 662; Y. S. Lau 2172; H. C. Tang 2251.*

Distribution: Guangdong, S Guangxi, Fujian, Taiwan; Japan, Malaysia, Indonesia, Philippines, Australia, Pacific Islands.

Ecology: Grassy fields and thickets. Flowering & fruiting: Mar.–Sep.

**5. Drosera oblanceolata** Y. Z. Ruan 長柱茅膏菜

Acta Phytotax. Sin. 19: 340. 1981; FRPS 34(1): 21. 1984; FGD 2: 65. 1991; FOC 8: 200. 2001.

Perennial herb, with fibrous roots. Stems unbranched, short, without tuber below ground. Leaves basal, dense, petiolate, circinately 2-folded towards stipule when young; stipules light red, 1.5–4.6 cm, scarious, deeply 3-parted, middle lobe 2- or 3-fid; petioles 3–7 mm; leaf blade orbicular to oblanceolate, elliptic, or linear, 1.5–4.6 cm × (1–)2–4 mm, pilose with glandular hairs, ciliate. Inflorescences 1 or 2, scapiform, 5–9 cm; peduncle glabrous; cincinnus corymbose, 8–10-flowered; bracts linear, ca. 2 mm; pedicels 3–5 mm. Sepals 5, united at base, green, narrowly obovate to oblong, ca. 4 mm, glabrous, persistent. Petals pink, obovate to cuneate. Stamens 5. Ovary ellipsoid-globose to globose, ca. 2 mm; placentas 3; styles 3, 2–3 mm, each style deeply 2-lobed, sometimes again 2-lobed; stigma multi-fid. Capsule 3-valved. Seeds black, ellipsoid-globose, ca. 0.3 mm; venation scrobiculate.

Locality: Sunset Peak. *H. G. Ye et al. 1176; Y. S. Lau 2599.*

Distribution: Guangdong, Guangxi.

Ecology: Sunny meadows and bogs. Flowering and fruiting: May–Oct.

Notes: Listed in *Rare and Precious Plants of Hong Kong.*

# 110. FLACOURTIACEAE 大風子科

XIA Nian-he 夏念和 • XU Bing-qiang 許炳強

Evergreen or deciduous trees or shrubs, sometimes armed. Leaves simple, usually alternate, rarely opposite or whorled, pinnately veined; stipules usually small and caducous, sometimes large, leaf-like and persistent, rarely absent. Inflorescences axillary or terminal, racemose, spicate, corymbose, or paniculate, sometimes flowers axillary and solitary. Flowers actinomorphic, bisexual or unisexual, sometimes plants dioecious or polygamous. Sepals 3–8(–15), distinct or connate at base, imbricate, rarely valvate. Petals often present, 3–8(–15), distinct, imbricate, alternate with sepals, with or without scales or beard at base. Stamens often many, 1- or many-seriate, or as many as petals and opposite to them; filaments usually distinct, rarely united into a tube; anthers 2-celled, dehiscent longitudinally or rarely opening by apical pores. Ovary superior or rarely inferior, 1-locular with parietal placentas, or imperfectly 2–8-locular; ovules usually 2–many per placenta; styles and stigmas as many as placentas, distinct to completely united. Fruit a berry or a loculicidal capsule or a drupe. Seeds 1–many, often arillate; endosperm usually abundant, oily; embryo straight; cotyledons broad, often cordate.

About 93 genera, 1300 species, mostly distributed in tropical regions, rarely in temperate zone; 12 genera, 39 species in China; five genera and eight species in Hong Kong.

*Dovyalis hebecarpa* Warb. and *Gynocardia odorata* R. Br. are occasionally cultivated in Hong Kong.

1a. Petals absent
  2a. Flowers bisexual ..... 1. *Casearia*
  2b. Flowers unisexual.
    3a. Ovary 2–8(–10)-locular; seeds not arillate ..... 2. *Flacourtia*
    3b. Ovary 1-locular; seeds arillate ..... 3. *Xylosma*
1b. Petals present.
  4a. Ovary semi-inferior; styles 2–5(–6); fruit a capsule ..... 4. *Homalium*
  4b. Ovary superior; style 1; fruit a berry ..... 5. *Scolopia*

## 1. Casearia Jacq. 嘉賜木屬

Shrubs or small trees. Leaves alternate, distichous, usually glandular; stipules small, caducous, rarely persistent. Flowers small, bisexual, axillary, several to many in dense or sparse glomerules, rarely solitary. Pedicels short, articulate, often surrounded by several scale-like bracts. Calyx 4–5-lobed, lobes imbricate, persistent. Petals absent. Stamens (5–)8–10(–12); filaments united into a short tube with staminodes at base; staminodes as many as stamens and alternate with them, hairy. Ovary superior, 1-locular; parietal placentas 2–4, with many ovules per placenta; styles short or absent; stigmas capitate. Capsule fleshy, leathery or hard, dehiscing into 2–3 valves; seeds several to many, ovoid or obovoid, enclosed by a layer of membranous aril.

About 160 species, distributed in tropical and subtropical regions of the world; seven species in China; two species in Hong Kong.

1a. Mature leaf blades glabrous; branchlets puberulous, glabrescent ..... 1. *C. glomerata*
1b. Mature leaf blades densely yellow-brown villose abaxially; branchlets densely rusty-pubescent ..... 2. *C. velutina*

**1. Casearia glomerata** Roxb. 嘉賜樹 **(Fig. 179; Photo 411)**

Fl. Ind., ed. 2, 2: 419. 1832; FHK 122. 1861; Forb. & Hemsl., J. Linn. Soc. Bot. 36: 311. 1904; FKH 110. 1912; FHN 1: 463. 1964; FFJ 4: 16, fig. 15. 1989; FGD 2: 111. 1991; FRPS 52(1): 76, pl. 18: 1. 1999.

*Casearia glomerata* Roxb. f. *pubinervis* How & Ko, Acta Bot. Sin. 8(1): 31. 1959; FGX 1: 667. 1991.

Shrub or small tree, 2–10 m tall. Young branches puberulous; old branches terete and glabrous. Petioles 0.6–1.4 cm, subglabrous; leaf blade oblong to oblong-elliptic, 9–12 × 3–5 cm, thinly leathery, base obtuse or rounded, slightly oblique, apex acuminate, margin repand or obtusely dentate, sparsely puberulous when young, glabrescent; lateral veins 7–8 pairs. Pedicels 0.7–1 cm, densely yellowish brown-puberulous; bracts broadly triangular, ca. 1 mm. Flowers in glomerules, 10–30-flowered. Calyx lobes 5, oblong, 2–3 mm, densely yellowish puberulous. Stamens 8–10; filaments puberulous; anthers suborbicular; staminodes elliptic, apex with a bundle of hair. Ovary glabrous, ovoid-conical, ca.



**Figure 179.** *Casearia glomerata* Roxb. (drawn by H. P. Yu)

1.5 mm; styles short; stigmas capitate. Capsule ovoid, leathery, 1.2 cm, yellow to orange-red, densely tuberculate when dry; seeds many, ovoid, ca. 4 mm, with red arils.

Locality: Mount Parker, Shatin, Tai Po Kau, Fanling, Sai Kung. *Y. S. Lau 1459; K. Y. Tam 1459; L. T. Lo 442.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Xizang; India, Vietnam.

Ecology: Thin forests on slopes. Flowering: Aug.–Dec.; fruiting: Oct. to spring of the following year.

Uses: Medicinal (folklore).

**2. Casearia velutina** Bl. 毛嘉賜樹 **(Photo 412)**

Mus. Bot. 1: 253. 1850; FFJ 4: 15. 1989; FRPS 52(1): 73, pl. 17: 6. 1999.

*Casearia balansae* Gagnep., Notul. Syst. (Paris) 3: 234. 1914; FRPS 52(1): 71. 1999.

*Casearia balansae* Gagnep. var. *cuneifolia* Gagnep., Notul. Syst. (Paris) 2: 244. 1914.

*Casearia villilimba* Merr., Philip. J. Sci. 23: 254. 1923; FHN 1: 463. 1964; FGD 2: 110, fig. 76. 1991.

*Casearia petelotii* Merr., J. Arnold Arbor. 19: 56. 1938.

Small tree, to 10 m tall; branchlets zigzag, densely rusty pubescent. Petioles 0.5–1 cm, stout, densely brown-pubescent; leaf blade black when dry, elliptic or elliptic-oblong, 7–20 × 4–8 cm, thickly papery, base rounded, unequilateral, apex acuminate, margin serrate, sparsely pilose initially, glabrescent or only pubescent along midveins adaxially, densely yellowish brown villose abaxially; lateral veins 6–12 pairs. Flowers several to many in glomerules. Pedicels 2–4 mm, pilose. Calyx lobes 5, oblong-elliptic, 2–3 mm, pilose on both surfaces. Stamens 8; filaments puberulous; anthers ellipsoid. Staminodes hairy, apex with a bundle of hair. Ovary ellipsoid, pilose; styles short, ca. 1.5 mm; stigmas discoid. Capsule ellipsoid, 1–1.2 cm, glabrous, fleshy, yellow when mature, black when dried; stipe slightly pubescent. Seeds many, ovoid, pale yellow.

Locality: Ma On Shan, Mui Tsz Lam, Tai Po Kau, Wu Kau Tang. *H. C. Tang 2508; Y. S. Lau 1367; Y. W. Lam 221.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Guizhou, Yunnan; SE Asia.

Ecology: Thin forests. Flowering: Mar.–May.

Notes: The species was reported as *C. grewiaefolia* Vent. previously (Check List HK Plants 40. 1993).

## 2. Flacourtia Comm. ex L'Herit. 刺篦木屬

Trees or shrubs, dioecious, rarely polygamous; trunk spiny or not; branchlets usually with axillary spines. Leaves alternate, margin usually serrate, rarely entire, pinnately veined, short-petioled; stipules usually absent. Inflorescence a raceme, terminal or axillary. Flowers small, unisexual, rarely bisexual. Sepals 4–7, slightly connate at base, imbricate. Petals absent. Disc fleshy, entire or divided into several glands. Male flower: stamens 15–many; anthers ellipsoid, longitudinally dehiscent; rudimentary ovary absent. Female flowers: incompletely 2–8-locular; ovules 2 per placenta; styles as many as placentas, free or united; stigmas slightly emarginate or 2-lobed. Fruit a berry-like drupe, globose. Seeds 1–2, obovoid.

About 15 to 17 species, distributed in tropical Asia and Africa; five species in China; one species in Hong Kong.

**1. Flacourtia rukam** Zoll. & Mor.
大葉刺篦木 **(Fig. 180; Photo 413)**

Syst. Verz. 2: 33. 1846; FHN 1: 457. 1964; FGD 3: 107. 1995; FRPS 52(1): 42, pl. 9: 9–11. 1999.

Tree, 5–15 m tall; trunk and old branches zigzag. Young plants armed; spines up to 10 cm; branches spiny or not. Mature plants without spines. Bark brown to grey, smooth; branchlets terete, puberulous, tuberculate and lenticellate when young. Petioles 6–8 mm, brown-pubescent; leaf blade ovate, elliptic to lanceolate, 6–12 × 4–6 cm, more or less leathery, base rounded to obtuse, apex acuminate, margin crenate, glabrous adaxially, pubescent along midvein and lateral veins abaxially; lateral veins 5–11 pairs. Racemes axillary, 0.5–1 cm, puberulous. Bracts long-ovate, ca. 1 mm. Pedicels 3–4 mm. Flowers yellowish green or white. Sepals (3–)4(–6), ovate, puberulous on both surfaces. Male flower: stamens ca. 25; filaments subglabrous, 3–4 mm; anthers yellow, small; disc fleshy, 8-lobed. Female flower: staminodes usually absent; ovary bottle-shaped, with 4–6 parietal placentas; ovules 2 per placenta; styles 4–6, distinct; stigmas 2-lobed. Drupe globose, deep red, 1.4 cm in diam., 4–6-angled, with persistent styles.

Locality: Shing Mun. *L. T. Lo 459.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; India, Vietnam, Thailand, Malaysia, Philippines.

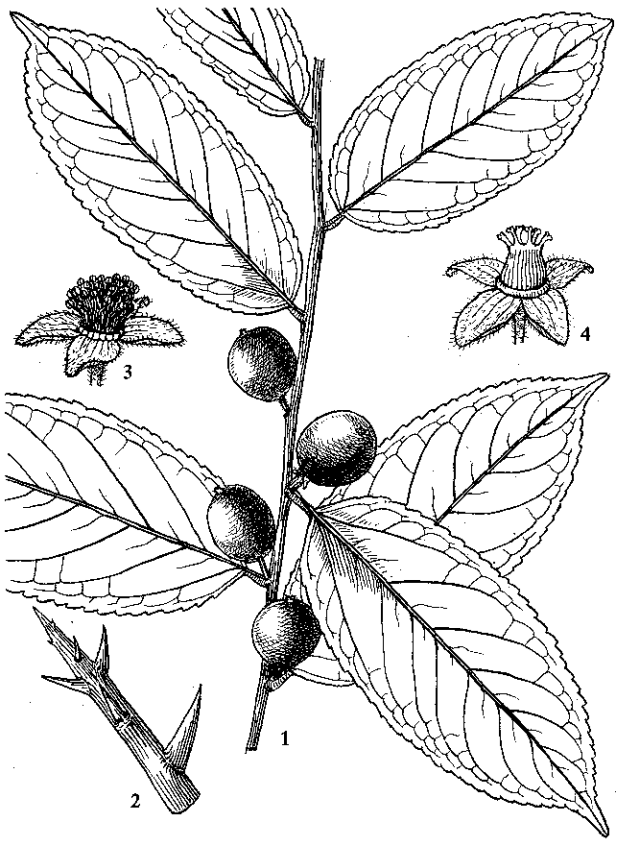



**Figure 180.** *Flacourtia rukam* Zoll. & Mor.
*1.* fruiting branch; *2.* spiny branch; *3.* male flower; *4.* female flower. (drawn by H. P. Yu)

Ecology: Thin forests on hillslopes or near villages. Flowering: Apr.–May; fruiting: Jun.–Oct.
Uses: Food (fruit).

## 3. Xylosma G. Forst. 柞木屬

Shrubs or small trees, dioecious or rarely polygamous, trunk and branches usually spiny. Leaves alternate, thinly leathery, margin glandular-serrate or -crenate, rarely entire, pinnately veined, shortly petiolate; stipules absent. Inflorescence racemose or paniculate, axillary. Flowers unisexual, rarely bisexual, small. Bracts small, caducous. Pedicles articulate. Sepals 4–6(–8), small, imbricate, slightly united at base. Petals absent. Male flower: disc usually 4–8-lobed, rarely entire; stamens many; filaments filiform; anthers basifixed, without appendages; pistillodes absent. Female flower: Disc circular. Ovary 1-locular; parietal placentas 2, rarely 3–6, ovules 2 to many per placenta; styles short or absent; stigmas capitate or 2–6-lobed. Berry black; pericarp thinly leathery. Seeds several, subobovoid, arillate.

About 100 species distributed in tropical and subtropical regions; three species in China; two species in Hong Kong.

1a. Leaves ovate or ovate elliptic, 3–8 × 2–3(–4.5) cm ..... 1. *X. congestum*
1b. Leaves oblong-lanceolate or lanceolate, 5–12 × 1.5–4 cm ..... 2. *X. longifolium*

**1. Xylosma congestum** (Lour.) Merr. 柞木 **(Fig. 181)**

Philipp. J. Sci. 15: 249. 1919; H. L. Li, Woody Fl. Taiwan 611, fig. 241. 1963, & FTW 3: 766, pl. 808. 1977; FFJ 4: 14, fig. 14. 1989; FGD 3: 105, fig. 73. 1995.

*Croton congesta* Lour., Fl. Cochinch. 582. 1790.

*Hisingera japonica* Sieb. & Zucc., Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4(2): 168. 1845.

*Hisingera racemosa* Sieb. & Zucc., Fl. Jap. 1: 169, 189, t. 88, 100, pl. 3, fig. 1–14. 1835.

*Xylosma japonica* A. Gray, Mem. Am. Acad. Sci. Art. n. ser. 2, 6: 381. 1859.

*Xylosma racemorum* (Sieb. & Zucc.) Miq., Ann. Mus. Bot. Lugduno-Batavum 2: 155. 1866; FRPS 52(1): 37, pl. 8: 1–3. 1999.

*Xylosma senticosum* Hance, J. Bot. 1868. 328; FKH 37. 1912.

Evergreen shrub or small tree, to 15 m tall. Branches spinescent when young, spineless in age, glabrous or puberulous. Petioles ca. 2 mm, glabrous or puberulous; leaf blade broadly ovate or ovate to ovate-elliptic, 3–8 × 2–3(–4.5) cm, leathery, base cuneate or rounded, apex acuminate, margin serrate, glabrous or puberulous along veins on both surfaces; lateral veins 3–4 pairs. Racemes 1–2 cm, puberulous. Sepals 4–6, ovate, 2.5–3.5 mm. Male flower: filaments ca. 4.5 mm, slender; anthers ellipsoid. Female flower: ovary ellipsoid, ca. 4.5 mm, glabrous; styles short; stigmas 2-lobed; disc rounded, margin slightly repand. Berry globose, 4–5 mm in diam., black, with persistent sepals at base.

Locality: Wan Chai Gap, Fanling. *S. C. Ng 4508; W. J. Tutcher 9204; HK sheet 262.*

Distribution: S, E, SW & NW China; Japan, Korea.

Ecology: Thin forests on slopes. Flowering: Spring; fruiting: Winter.

Uses: Medicinal (folklore).

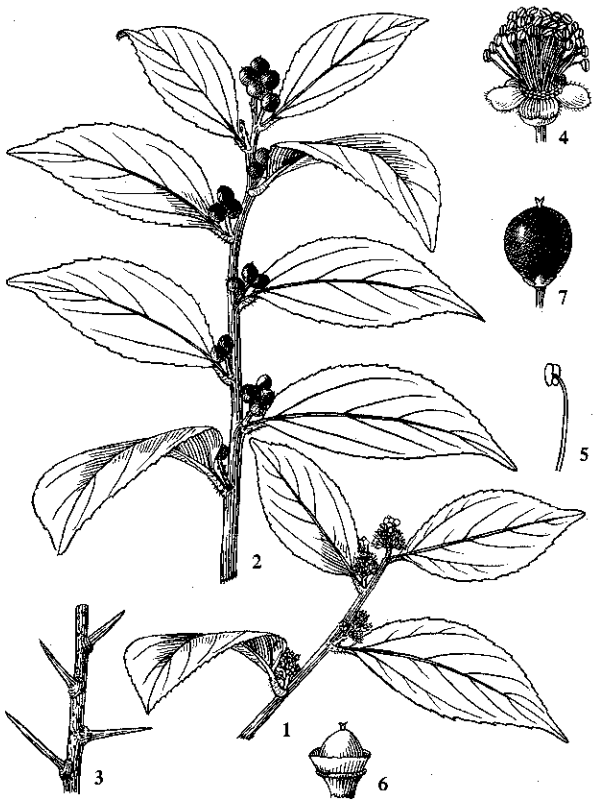



**Figure 181.** *Xylosma congestum* (Lour.) Merr.
*1.* male flowering branch; *2.* fruiting branch; *3.* young branch with spines; *4.* male flower; *5.* stamen; *6.* female flower with calyx removed (viewing disc); *7.* fruit. (drawn by H. P. Yu)

**2. Xylosma longifolium** Clos 長葉柞木 **(Photo 414)**

Ann. Sci. Nat., Bot., ser. 4, 8: 231. 1857; FHN 2: 457. 1964; FFJ 4: 15.1989; FGD 3: 105. 1995; FRPS 52(1): 40, pl. 7: 7. 1999.

*Xylosma congesta* (Lour) Merr. var. *kwangtungensis* Metc., J. Arnold Arbor. 2: 272. 1931.

Evergreen shrub or small tree, up to 7 m. Branchlets spiny, slender, glabrous. Petioles 5–8 mm; leaf blade oblong-lanceolate or lanceolate, 5–12 × 1.5–4 cm, leathery, base cuneate, apex acuminate, margin obtusely serrate, glabrous on both surfaces; lateral veins 4–8 pairs. Racemes 0.5–2 cm, glabrous or puberulous, many-flowered; bracts ovate, small. Sepals 4(–5), small, ovate, 2–4 mm. Male flower: yellowish green; pedicels 2–3 mm, puberulous; filaments ca. 4.5 mm; anthers ellipsoid, disc 8-lobed. Female flower: ovary bottle-shaped, 3.5–4 mm; styles short; stigmas 2-lobed. Berry globose, 4–6 mm in diam., purple, usually with reflexed persistent sepals.

Locality: Fanling, Lam Tsuen, Tai Po Kau, Tai Po, Sha Tau Kok. *P. S. Choi 282, 326; Y. S. Lau 2939.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan; India, Indochina.

Ecology: Thin forests. Flowering: Apr.–May; fruiting: Jun.–Oct.

## 4. Homalium Jacq. 天料木屬

Trees or shrubs. Leaves alternate, rarely opposite or verticillate, margin glandular-dentate, rarely entire, petioled; stipules small, caducous or absent. Flowers bisexual, small, usually in terminal or axillary racemes or panicles. Pedicels articulate. Bracts small, caducous or persistent. Calyx tube turbinate, connate to base of ovary. Calyx-lobes persistent, (4–)5–8(–12). Petals usually as many as and similar to sepals, inserted at throat of calyx. Stamens as many as and opposite to petals, or many; filaments filiform; anthers subglobose, small, dorsifixed; glands of disc as many as sepals and opposite to them. Ovary perigynous, 1-locular; parietal placentas 2–5, ovules (1–)3–7 per placenta; styles 2–5(–7), filiform, distinct or slightly united at base; stigmas 1, small, capitate. Capsule 2–5 mm in diam., leathery, dehiscing apically into 2–8 valves, with persistent calyx-lobes and petals. Seeds 1 to several. Cotyledons leaf-like.

About 180–200 species, distributed in tropical regions of the world; ten species in China; one species in Hong Kong.

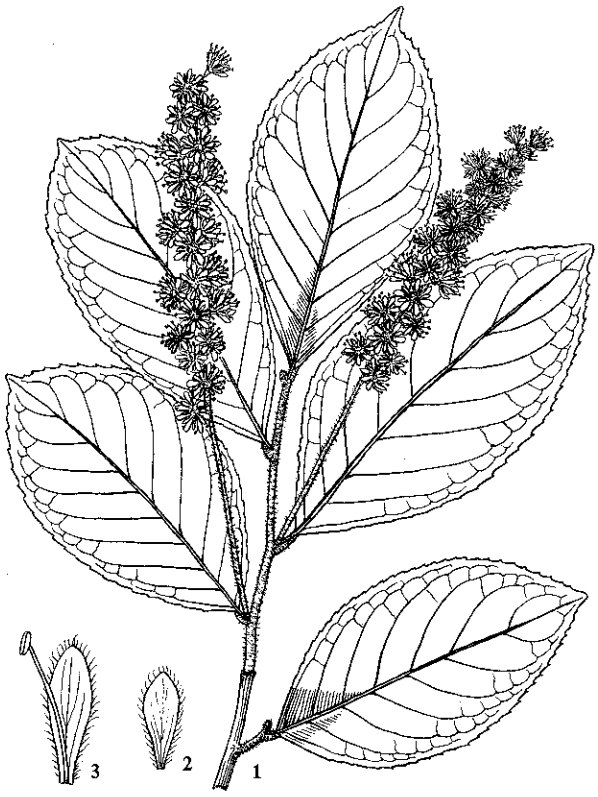



**Figure 182.** *Homalium cochinchinense* (Lour.) Druce
*1*. flowering branch; *2*. sepal; *3*. petal and stamen. (drawn by H. P. Yu)

**1. Homalium cochinchinense** (Lour.) Druce
天料木 **(Fig. 182; Photo 415)**

Rep. Bot. Exch. Club. Brit. Isles 4: 628. 1917; FHN 1: 461. 1964; FFJ 4: 17, fig.16. 1989; FGD 2: 114. 1991; FRPS 52(1): 30, pl. 6: 6. 1999.

*Astranthus cochinchinensis* Lour., Fl. Cochinch. 222. 1790.

*Homalium digynum* Gagnep., Notul. Syst. (Paris) 3: 247. 1914

*Homalium fagifolium* Benth., J. Linn. Soc.4: 35. 1860; FHK 122. 1861; FKH 110. 1912.

*Homalium phanerophlebium* How & Ko, Acta Bot. Sin. 8: 44. 1959.

Shrub or small tree; bark grey-brown; branchlets densely rusty tomentellate when young, glabrescent in age. Petioles 2–3 mm, yellow-pubescent; leaf blade broadly elliptic to obovate-oblong, 6–10(–15) × 3–7 cm, papery, base cuneate, apex acute to shortly acuminate, margin remotely and obtusely dentate, pubescent along midvein and lateral veins on both surfaces, rarely sparsely pubescent abaxially; lateral veins 7–9 pairs. Racemes axillary, sometimes with short branches, (5–)8–15 cm, densely yellow-tomentellate. Pedicels filiform, densely yellow-tomentellate, 2–3 mm. Flowers 7- or 8-merous, 8–9 mm in diam. Calyx tube turbinate, 2–2.5 mm, sparsely pilose and grooved; lobes linear or oblanceolate, ca. 3 × 0.3 mm, subglabrous abaxially, sparsely villous adaxially, margin ciliate, apex slightly obtuse. Petals spatulate, 3–4 × 1 mm, subglabrous or sparsely hairy abaxially, sparsely puberulous adaxially, margin ciliate, conspicuously veined; filaments longer than petals; disc glandular; glands nearly square, hairy. Ovary hairy, styles usually 3, filiform, ca. 3 mm, hairy near base; parietal placentas 3, ovules 2–4 per placenta. Capsule obconical, 5–6 mm, subglabrous.

Locality: Common in Hong Kong. *L. T. Lo 512; Y. S. Lau 717, 1033.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Fujian, Taiwan; Vietnam.

Ecology: Forests or thickets. Flowering: Almost all year round; fruiting: Sep.–Dec.

Uses: Timber.

## 5. Scolopia Schreb. 刺柊屬

Trees or shrubs, often spinose on trunk and branches. Leaves alternate, leathery, entire or serrate or crenate, pinnately veined or 3-veined, sometimes with 2 glands at apex of petioles or at base of leaf blades; stipules small, caducous. Racemes terminal or axillary, sometimes flowers clustered or solitary. Flowers small, bisexual. Sepals 4–6, imbricate, slightly united at base. Petals as many as and similar to sepals. Stamens many, inserted on thick torus; filaments longer than petals; anthers ellipsoid, dorsifixed, connectives prolonged to appendages; disc entire or 8–10-lobed, sometimes absent; ovary sessile, 1-locular, with 2–4 parietal placentas; ovules several; styles linear; stigmas entire or 2–4-lobed. Berry fleshy, with persistent sepals, petals, and stamens; seeds 2–4.

About 40 species distributed in tropical and subtropical regions of the Old World; four species in China; two species in Hong Kong.

1a. Leaf blade with 2 conspicuous glands at base; connective appendage hairy at apex ..... 1. *S. chinensis*
1b. Leaf blade without glands at base; connective appendage glabrous at apex ..... 2. *S. saeva*

**1. Scolopia chinensis** (Lour.) Clos
刺柊 **(Fig. 183; Photo 416)**

Ann. Sci. Nat. Bot. Ser. 4, 8: 249. 1857; FHK 19. 1861; FGZ 179. 1956; FHN 1: 452, fig. 249. 1964; FFJ 4: 12, fig. 13. 1989; FGD 3: 98. 1995; FRPS 52(1): 16, pl. 4, fig. 1–3. 1999.

*Phoberos chinensis* Lour., Fl. Cochinch. 1: 318. 1790.

*Phoberos cochinchinensis* Lour., Fl. Cochinch. 1: 318. 1790.

*Scolopia crenata* auct. non Clos: FKH 37. 1912.

Shrub or small tree, sometimes with stout spines on trunk and branchlets. Petioles 1–5 mm; leaf blade elliptic to oblong-elliptic, 4–7 × 2–4 cm, leathery, base rounded to broadly cuneate, with 1 gland on each side, apex rounded or obtuse, margin entire or rarely serrulate, glabrous on both surfaces. Racemes axillary, 2–6 cm. Flowers pale yellow. Sepals ovate-triangular, 1–2 mm, glabrous on both surfaces, margin ciliate. Petals long-obovate, longer than sepals, glabrous, margin ciliate. Anthers globose, connective-appendages triangular, as long as connectives, apex hairy; disc fleshy, 10-lobed. Ovary ovoid, glabrous, with 2–3 parietal placentas; ovules 2 per placenta, pendulous; styles as long as stamens; stigmas slightly 3-lobed. Berry globose, ca. 4 mm in diam. Seeds 2–6.

Locality: Common in Hong Kong. *H. C. Tang 2261; Y. S. Lau 209, 1999.*

Distribution: Hainan, Guangdong, Guangxi, Fujian; India, Sri Lanka, Laos, Vietnam, Thailand, Malaysia.

Ecology: Lowland forests. Flowering: Late autumn to early winter; fruiting: Late winter.

Uses: Medicinal (folklore).

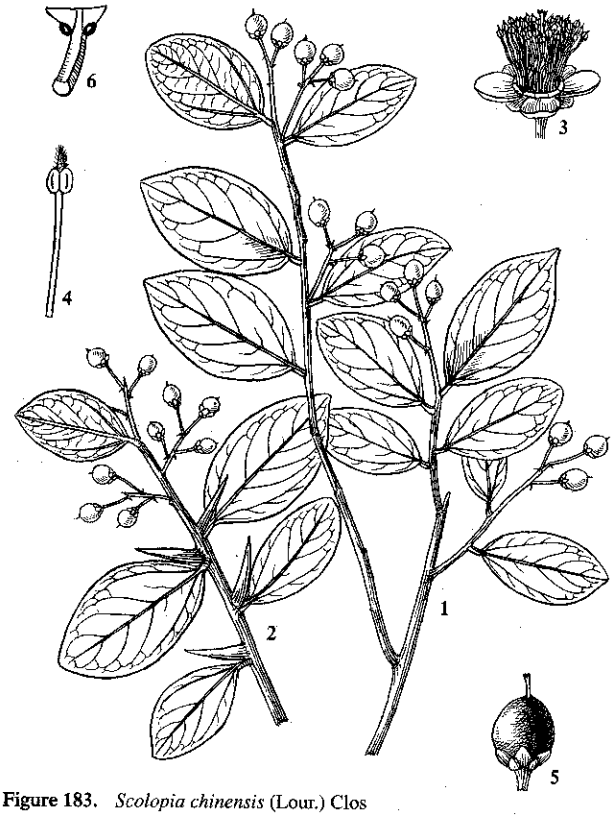



**Figure 183.** *Scolopia chinensis* (Lour.) Clos
*1*. fruiting branch; *2*. fruiting branch with thorns; *3*. flower; *4*. stamen; *5*. fruit; *6*. petiole showing 2 glands at the base of leaf blade. (drawn by H. P. Yu)

**2. Scolopia saeva** (Hance) Hance 廣東刺柊 **(Photo 417)**

Ann. Sci. Nat. Bot. Ser. 4, 8: 217. 1862; FHN 1: 452. 1964; FFJ 4: 13. 1989; FGD 3: 98, fig. 67. 1995; FRPS 52(1): 18, pl. 4: 7. 1999.

*Phoberos saeva* Hance, Ann. Bot. Syst. 3: 825. 1852.

*Scolopia cinnamomifolia* Gagnep., Fl. Indo-Chine 1: 207. 1939.

Shrub or small tree; trunk usually armed with hard spines; young branches glabrous, lenticellate. Petioles 0.8–1 cm; leaf blade ovate or elliptic, 6–8 × 3–5 cm, leathery, base cuneate, not glandular, apex abruptly acuminate, margin remotely and shallowly repand-serrate, glabrous on both surfaces. Racemes axillary or terminal, shorter than leaves. Sepals ovate, ca. 1.2 mm, margin ciliate. Petals obovate, two times as long as sepals, margin ciliate. Stamens ca. 6 mm; anthers ovoid, connectives-appendages triangular, glabrous; disc 8-lobed. Ovary with 2 or 3 parietal placentas, ovules 2 per placenta; styles thick, shorter than stamens. Berry reddish, ovoid, ca. 8 × 3–5 mm. Seeds long-ellipsoid, angled.

Locality: Common in Hong Kong. *H. C. Tang 689; K. L. Yip 4228; C. P. Lau 112.*

Distribution: Hainan, Guangxi, Guangdong, Fujian; Vietnam.

Ecology: Thin forests on slopes. Flowering: Summer to autumn; fruiting: Autumn to winter.

Uses: Timber.

## 112. BIXACEAE 紅木科

XIA Nian-he 夏念和 • HAO Zhen-ping 郝振萍

Shrubs or small trees, with red or orange juice. Leaves simple, alternate, entire, long petiolate, palmately veined; stipules small, usually caducous. Inflorescence a terminal thyrse. Flowers bisexual, actinomorphic. Sepal 5, distinct, imbricate, contorted. Petals 5, distinct, large and conspicuous, imbricate; Stamens many, distinct or slightly united at base, anthers dehiscing by short slits or pores; Ovary superior, 1-locular; ovules many per parietal placenta; style slender, stigmas bilobed. Capsule spiny, bivalved. Seeds many, obovoid, testa fleshy, red; endosperm copious; embryo large, cotyledon broad, incurved at apex.

One genus and one species, native to tropical America, widely cultivated in tropical regions; also cultivated in China including Hong Kong.

### 1. Bixa L. 紅木屬

Morphological characters and geographical distribution are the same as those of the family.

**1. Bixa orellana** L. 紅木 **(Fig. 184; Photo 418)**

Sp. Pl. 512. 1753; FGZ 176, fig. 80. 1956; FRPS 50(2): 180. 1990; FGD 4: 132. 2000.

Evergreen shrubs or small trees, 2–10 m tall; bark greyish brown or brown, smooth; young branchlets and inflorescence densely covered with red-brown glandular hairs. Petioles 2.5–7.5 cm, glabrous. Leaves ovate, 8–20 × 5–13 cm, base cordate, apex acuminate, glabrous on both surfaces, dotted with resin-like glands; palmately 5-veins arising from the base. Thyrses 5–10 cm. Flowers large, pink, 4–5 cm in diam. Sepals obovate, ca. 2 cm, densely red-brown lepidote, with glands at base. Petals obovate, 1–2 cm. Anthers ellipsoid, yellow, 2-celled. Ovary 1-locular, style 1, stigmas bilobed. Capsule subglobose or ovoid, 2.5–4 cm, 2-valved, densely spiny; spines purplish brown, 1–2 cm. Seeds obovoid, dark red.

Locality: Cultivated. *Y. S. Lau 216, 430, 1236.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian (cultivated); native to tropical America.

Ecology: Flowering: May–Aug.; fruiting: Autumn to winter.

Uses: Ornamental, materials (dye).

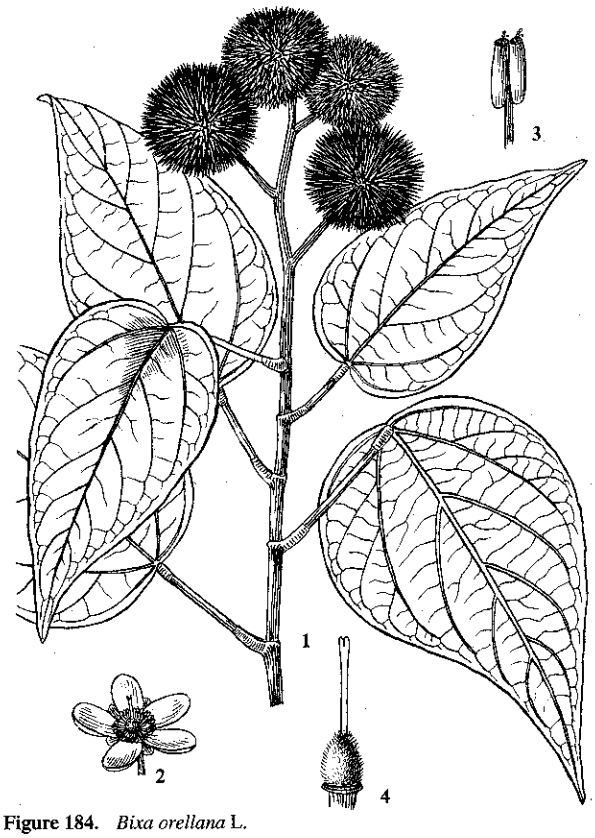



**Figure 184.** *Bixa orellana* L.
*1.* fruiting branch; *2.* flower; *3.* stamen; *4.* pistil. (drawn by H. P. Yu)

## 118. VIOLACEAE 堇菜科

XING Fu-wu 邢福武

Herbs or shrubs. Leaves simple, alternate or rarely opposite, entire or serrate; stipules small or foliaceous. Flowers bisexual or unisexual, very irregular or nearly regular, solitary or in axillary or terminal spikes, racemes or panicles. Sepals 5, imbricate in the bud, persistent. Petals 5, hypogynous, contorted or imbricate in the bud, the lower one usually larger, saccate or spurred at base. Stamens 5, hypogynous, alternate with the petals; filaments very short; anther erect, introrse, free or connected in a ring round the ovary. Ovary superior, consisting of 3 to 5 fused carpels, 1-locular with 3, rarely 4 or 5, parietal placentas. Fruit a capsule dehiscing into as many valves as placentas, or rarely an indehiscent berry. Seeds small, usually spherical, inserted along the centre of the valves of the capsule, attached by very short funicles.

About 22 genera and 900 species, cosmopolitan, but chiefly temperate; four genera in China; only one genus in Hong Kong.

### 1. Viola L. 堇菜屬

Herbs, mostly perennial, stemless or leafy-stemmed. Leaves simple, basal or alternate on stem, petiolate; stipules persistent, often leafy. Flowers bisexual, zygomorphic. Peduncles axillary, 1- or rarely 2-flowered; flowers dimorphic, those in spring with showy petals and those in summer cleistogamous, apetalous, and bearing abundant seeds. Petaliferous flowers: sepals 5, nearly equal, produced at the base below their insertion; petals 5, unequal, the abaxial one largest, and produced into a spur or pouch at the base, the other 4 in 2 unlike pairs. Stamens 5, connected in a ring round the gynoecium; filaments very short; anther 2-celled, the 2 lower with nectar-bearing appendages projecting backward into the spur. Ovary 1-locular, consisting of 3 carpels, with numerous ovules on 3-parietal placentas; styles straight or geniculate at base, often lobed or more or less dilated at apex. Capsules elastically dehiscing into 3 valves.

More than 500 species, widely distributed in temperate regions throughout the world; about 114 species in China; five species (one cultivated) in Hong Kong.

1a. Plants without stems or stolons.
  2a. Leaves narrowly lanceolate, narrowly triangular-hastate or triangular-ovate, base broadly cuneate or truncate, sometimes cordate ..... 1. *V. betonicifolia*
  2b. Leaves triangular or triangular-ovate, base broadly cordate ..... 2. *V. inconspicua*
1b. Plants with stems or stolons.
  3a. Flowers 3.5–6 cm in diam.; stipules large, leafy, pinnatipartite ..... 3. *V. tricolor*
  3b. Flowers less than 2.5 cm in diam.; stipules smaller, not leafy.

4a. Leaves ovate or ovate-oblong; style with two lateral lobes at apex ..... 4. *V. diffusa*
4b. Leaves broadly cordate, ovate-cordate to reniform; style with rounded marginal lobes at apex ..... 5. *V. verecunda*

**1. Viola betonicifolia** J. E. Smith 戟葉堇菜
Cycl. 37(I): 7. 1819; FRPS 51: 71, 1991; FGD 4: 78, fig. 52. 2000.
*Viola patrinii* auct. non DC.: FHK 20. 1861; FKH 36. 1912.

Perennial herb, stemless, with tufted stock. Leaves all basal; petioles 1.5–13 cm, narrowly winged on the distal half, usually glabrous; Stipules 3/4 adnate to the petioles, free parts linear lanceolate or subulate; leaf blade narrowly lanceolate, narrowly triangular-hastate or triangular-ovate, 2–5 × 0.5–3 cm, base broadly cuneate or truncate, or sometimes slightly cordate, apex acute, margin sparsely and shallowly undulate-serrate, glabrous or nearly so on both surfaces. Peduncles 6–28 cm, equaling or exceeding leaves, with a pair of linear bracteoles at middle, glabrous or sometimes pubescent on the proximal part. Flowers 10–20 mm across, white or purple, with darker strips. Sepals 5–9 × 1–3 mm, ovate-lanceolate to lanceolate, basal appendages 0.5–1 mm, tip rounded. Petals obovate to oblong-obovate, 1–1.2 cm, the laterals bearded at base inside, the abaxial one 1.3–1.5 cm including the spur; spurs 2–6 mm, tip rounded. Capsules ellipsoid, 6–9 mm, glabrous.

Locality: Hong Kong Island, Tsim Shan. *H. C. Tang 721; HK sheet 230.*
Distribution: Areas S of Qinling Range; Himalayas, India, Sri Lanka, Australia, Indonesia, Japan.
Ecology: Open grassy fields, summits of hills, margins of forest. Flowering & fruiting: Apr.–Sep.

**2. Viola inconspicua** Blume 長萼堇菜 **(Photo 419)**
Bijdr. Fl. Ned. Ind. 1: 58. 1825; FRPS 51: 52. 1991; FGD 4: 77, fig. 51. 2000.
*Viola confusa* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 260. 1851, *p.p.*; FHK 20. 1861, *p.p.*
*Viola serpens* auct. non Wall. ex Ging.: FKH 36. 1912.

Perennial herb, stemless, with a short rootstock and long tap root. Leaves all basal; petioles 2–7 cm, glabrous; Stipules 3/4 adnate to the petioles, free parts lanceolate, 3–5 mm; leaf blade triangular or triangular-ovate, 1.5–7 × 1–3.5 cm, broadest at base, base broadly cordate, with rounded basal lobes, apex acuminate or acute, margin crenate-serrate, usually glabrous on both surfaces. Peduncles slender, equaling or exceeding leaves, glabrous or pubescent. Flowers pale purple, with dark strips. Sepals ovate-lanceolate to lanceolate, 3–6 mm; basal appendages 2–3 mm, apex acute or sometimes incised. Petals oblong-obovate, the laterals 7–9 mm, bearded inside, the abaxial one 10–12 mm including the spur. Capsules 6–9 mm, ellipsoid, glabrous.

Locality: Mount Parker, Tai Po, Ng Tung Chai. *Y. S. Lau 1628; HK sheet 37538, Y. W. Lam 864.*
Distribution: Areas S of Qinling Range; Myanmar, Philippines, Malaysia.
Ecology: Margins of forest, grassy fields. Flowering & fruiting: Mar.–Nov.
Notes: The type specimen of *Viola confusa* was collected from Mount Parker, Hong Kong Island by J. G. Champion between 1847 and 1850.

**3. Viola tricolor** L. 三色堇 **(Photo 420)**
Sp. Pl. 935. 1753; FRPS 51: 127, pl. 25: 7–9. 1991; FGD 4: 69. 2000.
*Viola tricolor* L. var. *hortensis* DC., Prodr. 1: 303. 1824.

Annual or short-lived perennial herb, glabrous throughout. Stems to 30 cm tall, erect or becoming diffuse and much-branched. Basal leaves long-petioled, orbicular-cordate to oblong-ovate; stem-leaves ovate-oblong or lanceolate, base rounded, apex obtuse, margin crenate-dentate; stipules large, pinnately parted toward base. Flowers solitary and axillary, 3.5–6 cm in diam., usually having three colors, mostly blue, whitish and yellow. Sepals 5, oblong-lanceolate, 12–22 × 3–5 mm. Petals 5, nearly or quite orbicular, imbricate, the lower petal with a short and obtuse spur. Capsules ellipsoid, 7–12 mm, glabrous.

Locality: Cultivated in gardens or as pot-plants: *S. S. Lau 1582, 1787.*
Distribution: Native in Europe; cultivated elsewhere.
Ecology: Flowering: May–Aug.
Uses: Ornamental.

**4. Viola diffusa** Ging. 蔓堇菜 **(Photo 421)**
Prodr. 1: 298. 1824; FHK 20. 1861; FKH 36. 1912; FRPS 51: 100. 1991; FGD 4: 75, fig. 48. 2000.

Annual herb, pubescent throughout. Rootstock short, emitting leafy stolons. Leaves tufted on the stock and crowded towards apex of the stolons; petioles 2–4.5 cm, winged; stipules 1/3 adnate to the petioles, free parts linear lanceolate, 4–12 mm; leaf blade ovate or ovate-oblong, 1.5–3.5 × 1–2 cm, base broadly cuneate to truncate, rarely shallowly cordate, decurrent to the petioles, apex obtuse or acutish, margin crenate-serrate. Peduncles 1.5–8.5 cm, exceeding leaves, with a pair of linear bracteoles at middle. Flowers pale purple to yellowish, not fragrant. Sepals lanceolate, 4–5.5 mm, acute, basal appendages up to 0.5 mm, tip rounded, fimbriate-ciliate. Petals obovate to oblong-obovate, the laterals 6–8 mm, not bearded, the abaxial one shorter, ca. 6 mm including the spur; spurs very short, only 1.5 mm. Capsules ellipsoid, 8–10 mm, glabrous.

Locality: Common in Hong Kong. *Y. W. Lam 478, 773; L. T. Lo 510.*
Distribution: Areas S of Qinling Range; India, Nepal, Philippines, Malaysia, Japan.

Ecology: Summits of hills, grassy fields, margins of forests. Flowering: Mar.–May; fruiting: May–Aug.

**5. Viola verecunda** A. Gray 堇菜 **(Fig. 185; Photo 422)**

Mém. Amer. Acad. Nat. Sci. n. ser. 6: 382. 1858; Forbes & Hemsl., J. Linn. Soc. Bot. 23: 56. 1886; FKH 36. 1912; FRPS 51: 106. 1991; FGD 4: 71, fig. 45. 2000.

Perennial herb, with a short rootstock. Stems 5–20 cm, glabrous. Leaves basal and alternate on stems; leaf blade broadly cordate, ovate-cordate or reniform, 1.5–3 × 1.5–3.5 cm, base cordate, apex broadly obtuse, margin crenate-serrate, subglabrous on both surfaces. Petioles 1.5–7 cm, usually longer on basal leaves. Stipules of basal leaves adnate to the petioles, free parts lanceolate, 5–10 mm, those of stem leaves free, ovate-lanceolate to spatulate, 6–12 mm. Flowers small, white or pale purple, solitary in axils of stem leaves. Peduncles exceeding the leaves, with a pair of linear bracteoles above middle. Sepals ovate-lanceolate, 4–5 mm, apex acuminate, basal appendages short. Petals obovate to oblong-obovate, the laterals ca. 10 × 2.5 mm, bearded at base inside, the abaxial one ca. 10 mm including the spur, emarginate at apex; spurs 1.5–2 mm, gibbous. Capsules oblong or ellipsoid, ca. 8 mm, glabrous.

Locality: Sha Tau Kok, Ma On Shan, Shing Mun, Tai Mo Shan. *Y. S. Lau 1718, 3057; Y. W. Lam 583.*

Distribution: Widely distributed in China; Korea, Japan, Mongolia, Russia.

Ecology: Open grassy fields, roadsides. Flowering & fruiting: May–Oct.

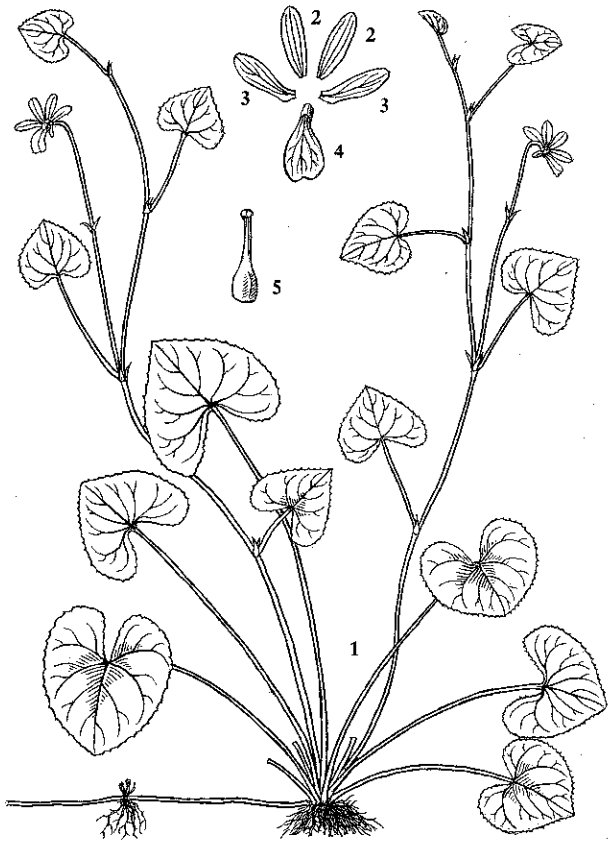



**Figure 185.** *Viola verecunda* A. Gray
*1*. Plant; *2*. upper petals; *3*. lateral petals; *4*. lower petal; *5*. pistil. (drawn by H. P. Yu)

# 119. TAMARICACEAE 檉柳科

XIA Nian-he 夏念和

Small trees, shrubs or subshrubs. Leaves simple, alternate, scalelike, usually sessile, commonly with salt glands; stipule absent. Flower bisexual, actinomorphic, solitary or arranged in spikes, racemes or panicles. Calyx 4–5-lobed, imbricate, persistent. Petals 4–5, imbricate, deciduous or persistent. Stamens 4–5, isomerous and alternate with or twice as many as petals, distinct or connate at lower part. Anthers dorsifixed; 2-celled, dehiscing via longitudinal slits, extrorse, latrorse, or introrse. Disc with 5–10 glands. Pistil 1, composed of 2–5 carpels. Ovary superior, 1-locular; ovules 2–many; styles absent or 3–5, distinct or connate; stigmas 3–5. Capsules loculicidal. Seeds with a bundle of hair or winged. Endosperm present or absent, embryo well differentiated, straight.

Four genera, 120 species, widely distributed in temperate and subtropical Eurasia and Africa; three genera and 32 species in China; one genus and one species cultivated in Hong Kong.

## 1. Tamarix L. 檉柳屬

Deciduous small trees or shrubs, multi-branched; branches terete, slender. Leaves minute, scalelike, alternate, sessile, amplexicaul or sheathing at base, with salt glands; stipules absent. Flowers small, bisexual, white or pale red, short pedicelled or sessile, arranged in spikes or panicles. Calyx non-fleshy or fleshy, 4–5-lobed, persistent. Petals isomerous with calyx lobes, deciduous or persistent. Stamens 4–5, opposite to petals, anthers extrorse, apex apiculate. Pistil 1, composed of 3–4 carpels; ovary superior, surrounded by more or less lobed disc, 1-locular, ovules many; styles 3–4; stigmas short, capitate. Capsule conical, dehiscing into 3–5 valves; seeds many, minute, apex with a bundle of hair.

About 90 species, distributed in Asia, N Africa, S Africa and Europe; 18 species in China; one species cultivated in Hong Kong.

**1. Tamarix chinensis** Lour. 檉柳 **(Fig. 186)**

Fl. Cochinch. 1: 182, pl. 24. 1790; FRPS 50(2): 157, pl. 43: 1–7. 1990. FGD 4: 133, fig. 82. 2000.

*Tamarix gallica* L. var. *chinensis* (Lour.) Ehrenb., Linnaea 2: 267. 1827.

Small tree or shrub, 3–6 m; old branches erect, bark reddish brown, fine striate; young branches slender, pendulous, dark purplish red or dark brown. Leaves scalelike, subulate or ovate-lanceolate, 1–3 mm, base attenuate, apex acuminate and incurved, keeled abaxially. Racemes lateral on the apex of current year branches, often clustered in large panicles. Flower pink; bract linear-subulate, as long as or slightly longer than pedicel; pedicel slender, shorter than calyx. Calyx lobes 5, narrowly ovate, 0.7–1.3 mm. Petals 5, obovate, ca. 2 mm, persistent. Stamens 5, longer than petals, filaments inserted between disc lobes, exserted. Disc fleshy, 5–10-lobed. Ovary conical, styles

3, clavate. Capsule conical, 3 mm long, dehiscing into 3 valves; seeds minute, apex with a bundle of hair.

Locality: cultivated. *P. S. Choi 341; HK sheet 2654, 33473*

Distribution: Anhui, Jiangsu, Shandong, Henan, Hebei, Liaoning; widely cultivated in E, S & SW China.

Ecology: Seasides, sandy places and wastelands. Flowering: Apr.–Sep.

Uses: Ornamental, medicinal (folklore).




Figure 186. *Tamarix chinensis* Lour.

*1*. flowering branch; *2*. leafy branch; *3*. flower; *4*. flower with petals removed; *5*. calyx and disc; *6*. capsule. (drawn by H. P. Yu)

# 125. PASSIFLORACEAE 西番蓮科

XIA Nian-he 夏念和 • XU Bing-qiang 許炳強

Perennial or annual herbaceous or woody vines, rarely erect shrubs or trees, with axillary tendrils or not. Leaves alternate, rarely opposite, simple, rarely compound, entire or lobed, gland-bearing near base and on petioles; stipules small, deciduous. Flowers in cymes or seldom solitary, bisexual, unisexual or rarely polygamous, regular; calyx-tube tubular, often 5-lobed, rarely 3- or 4-lobes, lobes imbricate, persistent; petals as many as and alternate to sepals, rarely absent, distinct or slightly connate; corona consisting of 1 to several whorls of filaments or scales between corolla and stamens. Stamens 5, rarely 4–8 or many, filaments distinct or connate into a tube; anthers 2-celled, longitudinally dehiscent. Gynoecium with 3–5 carpels, borne on the apex of androgynophore or gynophore; ovary superior, 1-locular, with parietal placentas; ovules many, anatropous; styles as many as carpels, distinct or connate at base, stigmas capitate or reniform. Fruit a capsule or berry, loculicidally dehiscent or indehiscent. Seeds several to many, with a fleshy red apical aril; endosperm copious, fleshy; embryo large, straight.

About 18 genera and 530 species, distributed in tropical and temperate regions, especially in tropical America; two genera and 23 species in China; one genus and two species in Hong Kong.

## 1. Passiflora L. 西番蓮屬

Perennial herbaceous vines, with axillary tendrils. Leaves simple, entire or lobed, gland-bearing near base or on petioles; stipules linear or leaf-like, rarely absent. Cymes axillary; peduncles articulate. Flowers bisexual; sepals 5, often petaloid, sometimes with a horn-like appendage abaxially; petals 5, sometimes absent, as long as sepals; corona often consisting of filaments and scales; androgynophore present, surrounded by a membranous cupular appendage at base; stamens 5(–8); ovary 1-locular; ovules many; styles 3. Fruit a berry, indehiscent; seeds arillate.

About 350 species mainly distributed in tropical and subtropical America, rarely in Asia and Australia; 19 species in China; two species in Hong Kong. *Passiflora edulis* Sims and *P. suberosa* L. are occasionally planted as ornamentals in Hong Kong.

1a. Leaves 3-lobed ..... 1. *P. foetida*

1b. Leaves entire ..... 2. *P. moluccana* var. *teysmanniana*

**1. Passiflora foetida** L. 龍珠果 **(Photo 423)**

Sp. Pl. 2: 959. 1753; FHK 123. 1861; FKH 110. 1912; FHN 1: 466. 1964; FRPS 52(1): 111, pl. 25: 8–11. 1999; FGD 2: 120. 1991;

*Passiflora hispida* DC. ex Triana & Planch., Ann. Sci. Nat., Bot., ser. 5, 17: 172. 1873; C. Y. Wu & W. T. Wang, Acta Phytotax. Sin. 6: 236. 1957.

*Dysosmia foetida* (L.) M. Roem., Fam. Nat. Syn. Monogr. 2: 150. 1846.

Stems slender, terete, angled, pubescent or glabrous. Stipules filiform, lobed, glandular at apex. Petioles 2–6 cm, villous; leaf blades broadly ovate to oblong-ovate, membranous, 4.5–13 × 4–12 cm, 3-lobed, base cordate, apex acute or acuminate, margin irregularly undulate, ciliate or glandular-ciliate, villous on both surfaces, mixed with a few glandular hairs adaxially and with scattered small glands abaxially. Cymes 1-flowered. Flowers white or pale purple, white patched, 2–3 cm in diam.; bracts pinnately 1–3-lobed, forming many filiform lobules, lobules glandular hairy at apex. Sepals oblong, 1.5–1.8 cm, with a horn-like appendage near apex abaxially. Petals as long as sepals. Corona lobes in 3–5 whorls, outer 2 whorls 4–5 mm, those of the inner 3 whorls 2.5 mm. Androgynophore 5–7 mm; filaments connate at base; anthers ellipsoid, 4 mm. Ovary ellipsoid, ca. 6 × 4–5 mm, stipitate, glandular hairy or glabrous; style 3(–4), 5–6 mm, stigmas capitate. Berries ovoid or globose, 2–3 cm in diam. Seeds ellipsoid, ca. 5 mm, glabrous.

Locality: Common in Hong Kong. Naturalized. *H. C. Tang 1785; Y. S. Lau 1930; G. Gibbs 7546.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Fujian, Taiwan (naturalized); native to Mexico, S & C USA, S America, widely naturalized in tropical regions worldwide.

Ecology: Thickets on wastelands. Flowering: Jul.–Aug.; fruiting: Apr.–May.

Uses: Food (fruit edible).

**2. Passiflora moluccana** Reinw. ex Blume var. **teysmanniana** (Miq.) de Wilde 蛇王藤 **(Fig. 187; Photo 424)**

Fl. Mal. 1: 7. 1972 & Blumea 20: 239. 1972; FGD 2: 118, pl. 78: 1–6. 1991; FRPS 52(1): 101. 1999.

*Disemma horsfieldii* Miq. var. *teysmanniana* Miq., Fl. Ned. Ind. 1: 700. 1856,

*Passiflora cochinchinensis* Spreng., Syst. Veg. 4(Cur. Post.): 346. 1827; FHN 1: 466, fig. 257. 1964.

*Passiflora ligulifolia* Mast., Trans. Linn. Soc. Lond. 27: 632. 1871; FKH 110. 1912.

*Passiflora hainanensis* Hance, J. Bot. 16: 227. 1878.

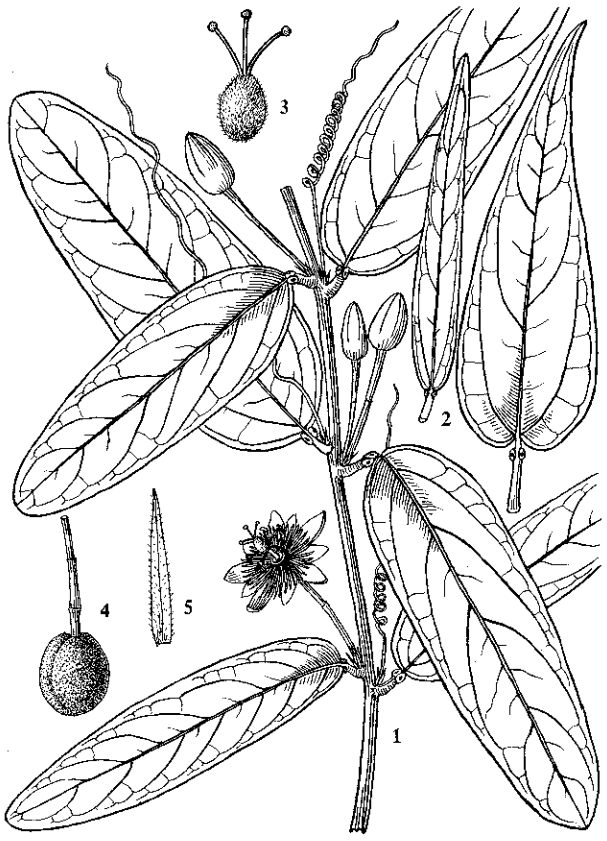



**Figure 187.** *Passiflora moluccana* var. *teysmanniana* (Miq.) de Wilde *1*. flowering branch; *2*. leaf; *3*. pistil; *4*. fruit; *5*. bract. (drawn by H. P. Yu)

Stems glabrous, rarely angled. Stipules absent. Petioles 0.6–1.5 cm, pilose; leaf blades alternate or sometimes opposite, leathery, variable in shape, linear, linear-oblong or broadly elliptic, 4–14 × 1–6 cm, base rounded or obtuse, apex rounded and emarginate or very short acute, margin entire, glabrous and shining adaxially, sometimes pubescent and glandular abaxially. Cymes 1–2-flowered. Bracts and bracteoles very small, linear. Flowers white, 3.5–5 cm in diam.; pedicels 2.5–4.5 cm. Sepals 5, narrowly oblong, 2 cm, pilose abaxially, without appendage at apex. Petals oblong, ca. 1.5 cm; corona consisting of many filiform lobes, lobes in 2 whorls, outer ones 1.2–1.5 cm, inner ones 1.5–3 mm, greenish purple or yellow. Stamens 5, filaments distinct, 6–10 mm; anthers ellipsoid, ca. 4 mm. Ovary globose, sessile, subglabrous; styles 3, distinct, curved, ca. 5 mm. Berries ovoid or subglobose, 1.5–2.5 cm or longer, 1–2 cm in diam., glabrous, green, glaucous. Seeds greyish yellow, compressed, ca. 4 mm.

Locality: Lung Kwu Tan, Po Toi. *Y. W. Lam 2252; HK sheet 40262, 40294.*

Distribution: Guangdong, Guangxi, Hainan.

Ecology: Thickets. Flowering: Jan.–Apr.; fruiting: May–Aug.

Uses: Medicinal (folklore).

# 127. CARICACEAE 番木瓜科

XIA Nian-he 夏念和 • ZHANG Xin-hua 張新華

Soft-stemmed shrubs or small trees, often with an unbranched trunk and a terminal cluster of leaves, lactiferous. Leaves alternate, palmately lobed, long petioled; stipules absent or rarely present and spine-like. Flowers unisexual (monoecious or dioecious) or sometimes bisexual, in cymose, axillary inflorescences, or sometimes solitary in axils of leaves. Male flowers: sessile, in pendulous panicles; calyx 5-lobed; corolla-tube tubular, 5-lobed; stamens 10, in 2 whorls, inserted on corolla-tube, filaments distinct or connate at base, anthers 2-celled, longitudinally dehiscent; pistillodes present or absent. Female flowers: solitary or in corymbs; calyx as in male flowers; corolla-tube shorter than male ones, lobes adnate at first and distinct later; ovary superior, 1-locular or 5-locular with septum, ovules many, styles 5, very short or nearly absent, stigmas branched or not. Bisexual flowers: corolla-tube very short or long; stamens 5–10. Fruit a fleshy berry, large; embryo straight; endosperm fleshy.

Four genera and ca. 33 species distributed in tropical America and Africa; one species introduced to China and Hong Kong.

## 1. Carica L. 番木瓜屬

Small trees or shrubs. Stems unbranched, lactiferous. Leaves clustered at stem apex, large, palmately lobed, long petioled; stipules absent. Racemes axillary, long pedunculate. Flowers unisexual or bisexual. Male flowers: calyx minute, 5-lobed; corolla-tube slender, 5-lobed, lobes oblong or linear; stamens 10, inserted at the mouth of corolla-tube; anthers 2-celled, introrse; pistillodes subulate. Female flowers: calyx as in male flowers; petals 5, linear-oblong, caducous; staminodes absent; ovary sessile, 1- or 5-locular, with septum; styles absent or very short; stigmas 5, lobed or not; ovules many, rarely a few, 2–many rows on parietal placentas. Berries fleshy. Seeds many, with fleshy arils.

23 species distributed in tropical America; one species introduced to China; it is also cultivated in Hong Kong.

**1. Carica papaya** L. 番木瓜 **(Fig. 188; Photos 425–426)**

Sp. Pl. 1036. 1753; FHN 1: 492, fig. 268. 1964; FRPS 52(1): 122. 1999; FGD 5: 23, fig. 17. 2003.

*Papaya carica* Gaertn., Fruct. Sem. Pl. 2: 191, fig. 122. 1791.

Small tree, to 8 m tall, usually unbranched, sometimes branched due to injury, containing white latex in all parts, dioecious or polygamous. Petioles hollowed, to 1 m; leaf blades suborbicular, 25–75 cm in diam., palmately and deeply 7–11-lobed, glabrous, lobes deeply and broadly toothed. Male flowers sessile, in pendulous panicles, up to 1 m; calyx small, connate at base, 5-lobed; corolla light yellow, tube 2.5 cm, lobes ca. 1.8 cm; stamens 10, in 2 whorls, alternate to corolla lobes. Female flowers solitary or in several-flowered cymes, short pedicelled or sessile; corolla-tube very short, lobes 5, oblong to lanceolate, fleshy, ca. 5 × 2 cm; ovary ovoid, 2–3 cm long, 1 locular, ovules many; styles short, 5, stigmas 5, fan-shaped, sessile, deeply 5-cleft. Bisexual flowers: stamens 5 or 10, inserted on long or very short corolla-tubes. Berries ellipsoid or obovoid, 15–30 cm, orange-yellow when mature. Seeds many, black, globose, testa fleshy, endotesta woody, rugose.

Locality: Cultivated. *Y. S. Lau 2144*.

Distribution: S & SW China (cultivated); native to tropical America.

Ecology: Flowering and fruiting: Almost all year round.

Uses: Food (fruit).

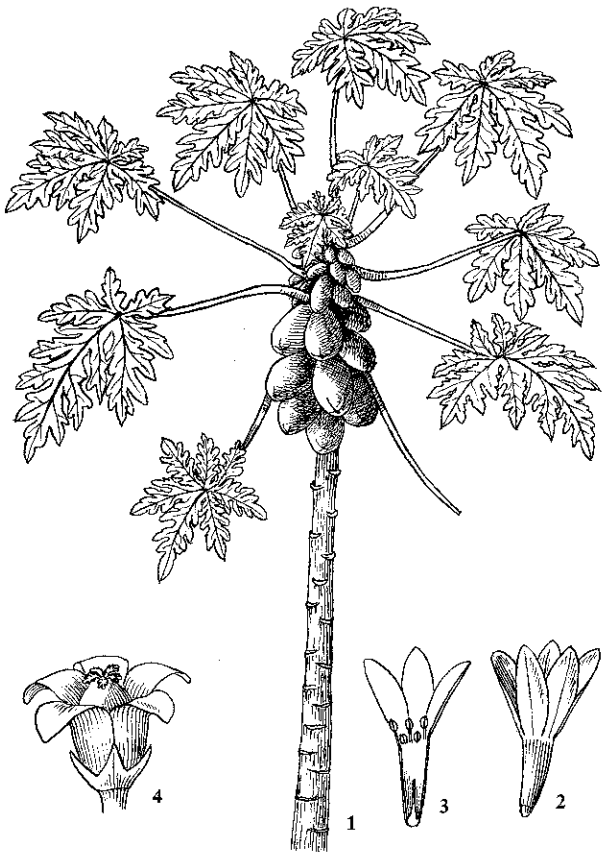



**Figure 188.** *Carica papaya* L.

*1*. whole plant; *2*. male flower; *3*. longitudinal section of male flower; *4*. female flower. (drawn by H. P. Yu)

# 130. CUCURBITACEAE 葫蘆科

XING Fu-wu 邢福武 • YE Hua-gu 葉華谷

Annual or perennial climbing or prostrate herbs or woody vines, with spirally coiled tendrils and watery sap, monoecious or dioecious. Stems often angled and sulcate. Leaves often simple, sometimes compound, alternate, exstipulate. Inflorescences, paniculate, racemose or subumbellate, rarely flowers solitary. Flowers unisexual, very rarely bisexual, actinomorphic, bracteate. Male flowers: Calyx 5-lobed; lobes imbricate or spreading; corolla usually sympetalous or apetalous, lobes imbricate, valvate or involute. Stamens often 3, rarely 1–5, distinct or connate in various ways, of which one often 1-celled and the other 2-celled; cells straight to conduplicate, connectives often elongated; pistillodes often present. Female flowers: Calyx-tube adnate to the ovary; staminodes often absent. Ovary inferior or semi-inferior, mostly composed of 3 carpels, 3-locular; ovules usually many per locule; placentas parietal, fleshy; styles 1–4, usually 1 with 3 stigmas; stigmas thick. Fruit a berry or a pepo, rarely a dry or fleshy capsule, indehiscent or opening in various fashions. Seeds 1-many, large, often compressed and sometimes winged; embryo oily, straight; endosperm wanting or nearly so.

About 113 genera and over 800 species mainly distributed in tropical and subtropical regions, a few in temperate regions; 34 genera and 154 species in China; 14 genera, 21 species and two varieties in Hong Kong.

1a. Tendrils unbranched.
- 2a. Filaments connate ..... 1. *Coccinia*
- 2b. Filaments distinct.
  - 3a. Fruits cylindrical.
    - 4a. Calyx-lobes ovate to oblong ..... 2. *Momordica*
    - 4b. Calyx-lobes subulate or linear ..... 3. *Cucumis*
  - 3b. Fruits ellipsoid, ovoid or subglobose.
    - 5a. All anthers 2-celled ..... 4. *Zehneria*
    - 5b. Two anthers 2-celled, another one 1-celled ..... 5. *Solena*

1b. Tendrils branched.
- 6a. Petals fimbriate ..... 6. *Trichosanthes*
- 6b. Petals not fimbriate.
  - 7a. Leaves palmately compound ..... 7. *Gynostemma*
  - 7b. Leaves simple.

8a. Fruits 1-seeded ..... 8. *Sechium*
8b. Fruits many-seeded.
9a. Corolla lobed to middle ..... 9. *Cucurbita*
9b. Corolla 5-partitioned to base, or petals 5, distinct.
10a. Calyx lobes leaf-like ..... 10. *Benincasa*
10b. Calyx lobes not leaf-like.
11a. Flowers white.
12a. Calyx-tube contracted at mouth ..... 11. *Gymnopetalum*
12b. Calyx-tube narrowly campanulate or infundibuliform ..... 12. *Lagenaria*
11b. Flowers yellow.
13a. Fruits globose or ellipsoid ..... 13. *Citrullus*
13b. Fruits cylindrical ..... 14. *Luffa*

## 1. Coccinia Wight & Arn. 紅瓜屬

Perennial prostrate or climbing herbs, dioecious or rarely monoecious. Roots tuberous. Tendrils usually simple, rarely 2-branched. Leaf blade angled or lobed, sometimes glandular. Male flowers: solitary or arranged in cymes or racemes; calyx-tube short, campanulate or turbinate, lobes 5; corolla campanulate, 5-lobed; stamens 3, inserted at the base of calyx-tube; filaments connate into a column, rarely distinct, anthers connivent or connate, one 1-celled, two 2-celled, cells reflexed, connective not protrudent; pistillodes absent. Female flowers: solitary; calyx and corolla as in male flowers; staminodes 3, oblong or subulate; ovary ovoid, fusiform, ellipsoid or linear, placentas 3, style filiform, stigma 3-lobed; ovules many, horizontal. Fruit a berry, ovoid or ellipsoid, indehiscent. Seeds many, compressed, ovate, marginate.

About 20 species, mainly distributed in tropical Africa; one species in China, also in Hong Kong.

**1. Coccinia grandis** (L.) Voigt 紅瓜 **(Fig. 189)**

Hort. Suburb. Calcutt. 59. 1845; FRPS 73(1): 263. 1986; FGD 3: 140, fig. 101. 1995.

*Bryonia grandis* L., Mant. 1: 126. 1767.

*Coccinia indica* Wight & Arn., Prodr. Fl. Penins. Ind. Or. 1: 347. 1834; FKH 112. 1912.

Herbaceous vine, dioecious. Stems angulate and sulcate, glabrous or with scattered pubescence. Tendrils not branched. Petioles 1–5 cm; leaf blade broadly heart-shaped, 4–10 × 4–10 cm, usually pentagonal or 5-lobed, base deeply cordate, with several glands, apex obtuse, with raised spots on both surfaces. Flowers white or yellowish, solitary. Male flowers: pedicels slender, 2–4 cm, glabrous; calyx-tube broadly campanulate, lobes linear-lanceolate, 3–4 mm; corolla 2.5–3.5 cm, lobes ovate, glabrous abaxially, pubescent adaxially; stamens 3, filaments and anthers connate, filaments 2–3 mm, anthers subglobose, 6–7 mm long. Female flowers: pedicels 2.5–6 cm; staminodes 3, subulate; ovary fusiform, 1.2–1.5 cm, styles 6–7 mm, stigmas 3, 5–6 mm. Berries ellipsoid, 5 × 2.5 cm, red when mature, glabrous. Seeds yellow, oblong, 6–7 × 2.5–4 mm, densely tuberculate.

Locality: Wong Chuk Hang, Tsuen Wan, Shan Liu, Ping Shan. *Y. W. Lam 369, 371, 834.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; tropical Africa, SE Asia.

Ecology: Thickets and forests. Flowering: May–Jun.; fruiting: Jul.–Sep.

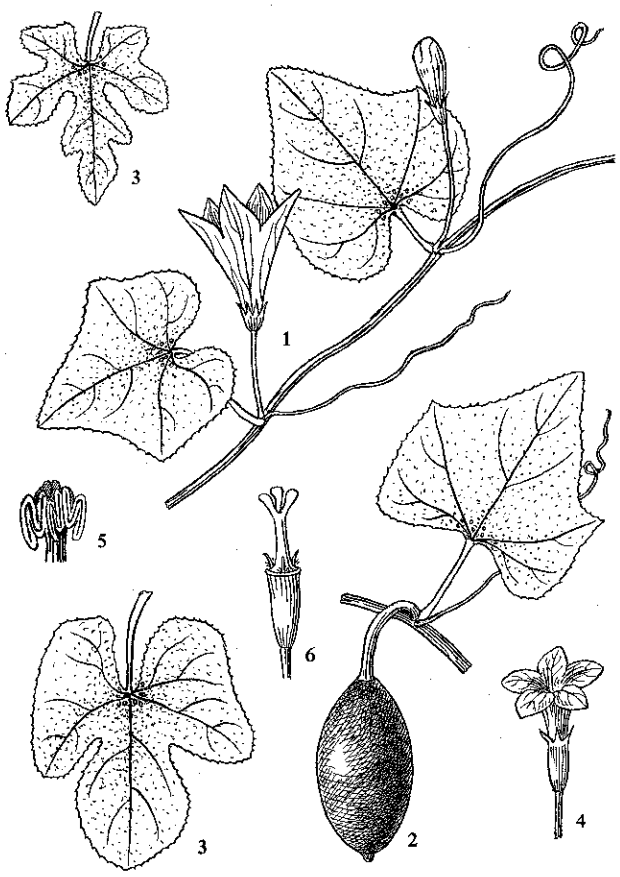



**Figure 189.** *Coccinia grandis* (L.) Voigt
*1.* male flowering branch; *2.* fruiting branch; *3.* irregular leaf; *4.* female flower; *5.* stamens; *6.* staminode and pistil. (drawn by H. P. Yu)

## 2. Momordica L. 苦瓜屬

Annual or perennial herbaceous vines, monoecious or dioecious. Tendrils unbranched or 2-branched. Leaves simple, often palmately 3–7-lobed, rarely undivided, sometimes palmately compound. Male flowers: solitary or in racemes; pedicels often with a large bract; calyx-tube 5-lobed; corolla yellow or white, 5-lobed; stamens 3, sometimes 5 or 2, filaments distinct, anthers coherent, one 1-celled, the other 2-celled, cells reflexed, straight or curved, connective not protrudent; pistillodes glandular or absent. Female flowers: perianth as in male flowers; staminodes 3 or absent; ovary ellipsoid or fusiform, placentas 3; style slender, stigmas 3, undivided or 2-lobed; ovules many, horizontal. Fruits medium-sized, ellipsoid or fusiform, indehiscent or dehiscing into 3-valved when mature, usually verrucose or

spiny. Seeds several to many, ovate or oblong, smooth or reticulate.

About 40 species mainly distributed in tropical Africa, some cultivated in the tropical regions; four species in China; two species in Hong Kong.

1a. Plants monoecious; petioles eglandular; flowers small, corolla-lobes 2 cm long; fruits verrucose, glabrous ..... 1. *M. charantia*
1b. Plants dioecious; petioles glandular; flowers large, corolla-lobes 5–6 cm long; fruits densely spiny ..... 2. *M. cochinchinensis*

**1. Momordica charantia** L. 苦瓜 **(Photo 427)**

Sp. Pl. 1009. 1753; FHK 125. 1861; FKH 112. 1912; FHN 1: 473. 1964; FFJ 5: 249, fig. 233. 1993; FRPS 73(1): 189. 1986; FGD 3: 122, fig. 85. 1995.

*Momordica indica* L., Herb. Amb. 24. 1754.

Annual herbaceous vine, many-branched, monoecious; stems and branches pubescent. Tendrils unbranched. Petioles slender, pilose, glabrescent, 4–17 cm; leaf blade papery, ovate-reniform or suborbicular, 4–24 × 2.5–12 cm, base cordate, puberulous or subglabrous on both surfaces, 5–7-partitioned, lobes ovate-oblong, margin crenate or irregularly lobed. Flowers yellow, solitary and axillary. Male flowers: pedicels slender, puberulous, 3–7 cm; calyx-tube ovoid, 5 mm, pubescent; lobes ovate-lanceolate, 7 × 5 mm, pubescent; corolla 4 cm in diam.; lobes obovate, 2 × 1.3 cm, pubescent; stamens 3, distinct, anther cells conduplicate. Female flowers: pedicels 10–12 cm, with a bract at base; perianth as in male flowers; ovary fusiform, densely verrucose. Fruits fusiform or cylindrical, verrucose, 10–20 cm, orange when mature, glabrous, dehiscing into 3 valves. Seeds many, compressed, oblong, with red arils.

Locality: Cultivated. *Y. W. Lam 870, 871; Y. S. Lau 2616.*

Distribution: Cultivated in tropical and temperate regions.

Ecology: Flowering and fruiting: May–Oct.

Uses: Food (fruit), medicinal (folklore).

**2. Momordica cochinchinensis** (Lour.) Spreng.
木鼈子 **(Fig. 190; Photo 428)**

Syst. Veg. 3: 14. 1826; FHN 1: 473. 1964; FRPS 73(1): 192, pl. 49: 8–12. 1986; FFJ 5: 249, fig. 232. 1993; FGD 3: 122. 1995.

*Muricia cochinchinensis* Lour., Fl. Cochinch. 596. 1790.

Perennial stout herbaceous vine, dioecious. Root tuberous. Stems and branches glabrous or puberulous. Tendrils unbranched. Petioles stout, 5–10 cm, with 2–4 glands at the base or middle; leaf blade broadly ovate-cordate, 8–20 × 6–20 cm, 3–5-lobed, median lobe larger, base cordate, with several glands at margin, apex acute or acuminate, margin undulate-dentate, rarely entire, glabrous on both surfaces, or white punctate abaxially. Male flowers: solitary or in a short racemes; pedicels stout, 3–5 cm, bracteate at the apex, bracts orbicular-reniform; calyx-tube infundibular, lobes oblong-lanceolate or oblong, 10–16 mm, scabrous or pubescent; corolla white, yellowish, lobes ovate-oblong, 5–6 cm, densely pubescent along veins, yellow-glandular at the base; stamens 3, anther cells reflexed. Female flowers: solitary; pedicel 5–10 cm, bracteate at the middle; bracts 2 mm; calyx and corolla as in male flowers; ovary ovoid, 1 cm long, densely spiny. Fruit ovoid, 12–15 cm in diam., red, fleshy, densely spiny. Seeds many, ovate or square, both surfaces sculptured, margin undulate-sublobulate.

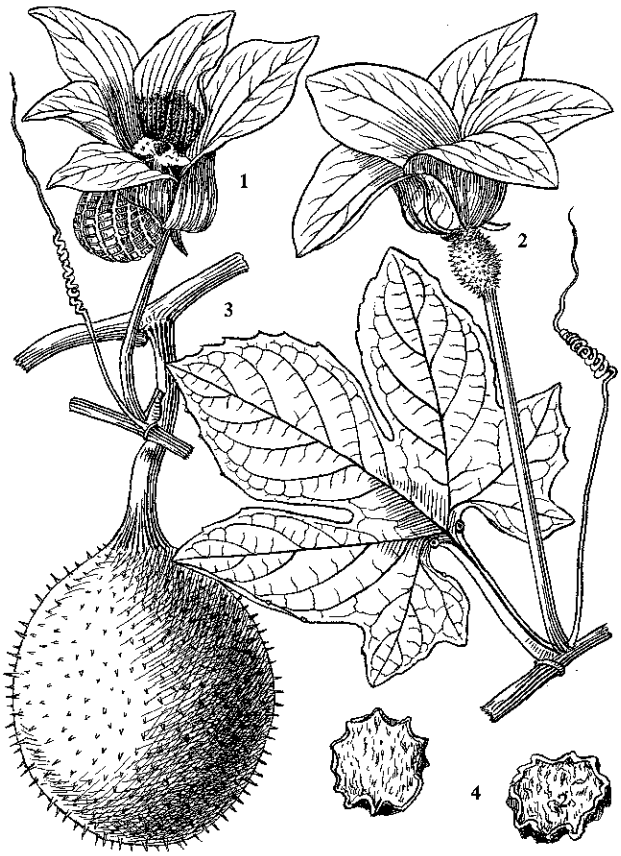



**Figure 190.** *Momordica cochinchinensis* (Lour.) Spreng.
*1.* male flower; *2.* female flowering branch; *3.* pepo; *4.* seeds. (drawn by H. P. Yu)

Locality: Tai Po, Lam Tsuen, Fanling, Sha Tau Kok. *Y. S. Lau 765, 891; W. J. Tutcher 9613.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Bangladesh, India, Indochina, Malaysia, Myanmar.

Ecology: Margins of forests. Flowering: Jun.–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal.

## 3. Cucumis L. 黃瓜屬

Annual or perennial herbaceous vines, monoecious or rarely dioecious. Stems and branches hispid and scabrous. Tendrils not branched. Leaves angled or palmately 3–7-lobed. Flowers yellow, small. Male flowers: clustered or solitary; calyx-tube campanulate or turbinate, 5-lobed, lobes subulate; corolla rotate or campanulate, 5-lobed; stamens 3, distinct, inserted on the calyx-tube, anthers ellipsoid, one 1-celled, two 2-celled, cells linear, reflexed or curved, connective protrudent, often bifid; pistillodes glandular. Female flower: solitary or rarely clustered; calyx and corolla as in male flowers; staminodes 3, subulate; ovary globose, ovoid or cylindrical, placentas 3–5,

style short, stigmas 3–5; ovules many, horizontal. Fruits polymorphic, fleshy, indehiscent, smooth or spiny. Seeds many, compressed, ovate or oblong, usually without thickened margin.

About 30 species, distributed in tropical to temperate regions of the world, most species in Africa; three species and three varieties in China; two species and one variety cultivated in Hong Kong.

1a. Fruit smooth.
2a. Fruit globose or ellipsoid ..... 1. *C. melo*
2b. Fruit terete ..... 1a. *C. melo* var. *conomon*
1b. Fruit spiny or verrucose ..... 2. *C. sativus*

**(Photo 429)**

**1. Cucumis melo** L. 甜瓜

Sp. Pl. 1011. 1753; FRPS 73(1): 202. 1986; FFJ 5: 255, fig. 239. 1993; FGD 3: 126. 1995.

*Cucumis bisexualis* A. M. Lu & G. C. Wang ex Lu & Z. Y. Zhang, Bull. Bot. Res. North-east Inst. 4(2): 126. 1984.

Annual creeping or climbing herb. Stems angled, hispidulous. Petioles 7–12 cm, setose; leaf blade suborbicular or reniform in outline, pentagonal or 3–7-lobed, 7–15 × 7–15 cm, base cordate, margin dentate, pubescent on both surfaces, hispid along veins abaxially. Male flowers: solitary or clustered; pedicels filiform, 0.5–4 cm; calyx-tube villous, 6–8 mm, lobes subulate, shorter than tubes; corolla yellow, 2 cm long; tube 1–2 mm, lobes ovate-oblong; stamens 3; anther cells flexuous, 3–4 mm; pistillodes 1 mm. Female flowers: solitary; pedicel 1–2 cm; ovary ellipsoid or fusiform, densely white-lanate, villous or puberulous; style 1–2 mm; stigmas 3, connivent, 2–2.5 mm. Fruit polymorphic, usually globose or ellipsoid, often grooved or patched, not spiny, pubescent or glabrous. Seeds many, yellow-white, oblong, 10–12 × 5–7 mm, margin not thickened.

Locality: Cultivated.

Distribution: Widely cultivated worldwide.

Ecology: Flowering and fruiting: May–Sep.

Uses: Food (fruit), medicinal (folklore).

**1a. Cucumis melo** L. var. **conomon** (Thunb.) Makino 白瓜(越瓜)

Bot. Mag. (Tokyo) 16: 16. 1902; FGZ 190. 1956; FHN 1: 476. 1964; FFJ 5: 256. 1993; FGD 3: 126. 1995.

It differs from var. *melo* by its fruit being terete, obtuse or slightly truncate at both ends, up to 60 cm long, 5–6 cm in diam., smooth, striped, pulp white or pale green.

Locality: Cultivated. *S. Y. Hu 12131* (CUHK).

Distribution: Cultivated worldwide.

Ecology: Flowering and fruiting: Summer.

Uses: Food (fruit)

**(Photo 430)**

**2. Cucumis sativus** L. 黄瓜(青瓜)

Sp. Pl. 1012. 1753; FRPS 73(1): 205. 1986; FFJ 5: 256, fig. 240. 1993; FGD 3: 127, fig. 89. 1995

Annual climbing or creeping herb, monoecious. Stem angled, hispid. Tendrils slender, not branched. Petioles 2.5–23 cm; leaf blade broadly ovate-cordate, membranous, 7–20 x 7–20 cm, margin 3–5-angular or -lobed, lobes triangular-ovate, usually pentagonal, base deeply cordate, apex acute or acuminate, margin dentate, hispidulous on both surfaces. Flowers yellow. Male flowers: often clustered; pedicel filiform, 5–15 mm, puberulous; calyx-tube tubular, lobes linear-lanceolate or subulate, 1.2 cm; corolla lobes oblong-lanceolate, 2.5 × 1.6 cm; stamens 3, filaments subglabrous, anthers 3–4 mm, connective 1 mm. Female flowers: solitary or clustered, pedicels 1–3 cm, pubescent; ovary fusiform, muricate. Fruit cylindrical, 10–30 cm, 3.5–5 cm in diam., green or yellow-green, muricate, usually verrucose. Seeds small, oblong, white, 5–10 mm, without thickened margin.

Locality: Cultivated. *HK sheet 12078, 34060.*

Distribution: Cultivated in tropical and temperate regions.

Ecology: Flowering and fruiting: Summer.

Uses: Food (fruit).

## 4. Zehneria Endl. 老鼠拉冬瓜屬

Annual or perennial herbaceous vines, monoecious or dioecious. Stems climbing or prostrate. Tendrils unbranched or rarely 2-branched. Leaves petiolate, simple, entire or 3–5-lobed or -partitioned. Male flowers in racemes or cymes; calyx campanulate or infundibular, 5-lobed; corolla campanulate, 5-lobed; stamens 3, inserted at base of corolla tube; anthers all 2-celled or two 2-celled and one 1-celled, cells straight or slightly curved, connectives thickened; pistillodes present. Female flowers solitary or a few in a cyme; calyx and corolla as in male flowers; staminodes present; ovary ovoid or fusiform, 3-locular; ovules many, horizontal; style columnar; stigmas 3. Berries globose or fusiform, indehiscent, small, glabrous. Seeds many, small, elliptic, compressed, smooth or tuberculate, often with thickened margin.

Seven species distributed in Africa and tropical and subtropical Asia; five species in China; one species in Hong Kong.

**1. Zehneria japonica** (Thunb.) H. Y. Liu
老鼠拉冬瓜 **(Fig. 191; Photo 431)**

Bull. Nation. Mus. Nat. (Taiwan) 1: 40. 1989.

*Aechmandra odorata* Hook. f. & Thoms. ex Benth. FHK 124. 1861.

*Bryonia japonica* Thunb., Fl. Jap. 325. 1784.

*Melothria indica* Lour., Fl. Cochinch. 35. 1790; FKH 113. 1912; FGZ 184. 1956.

*Melothria odorata* Hook. f. & Thoms. ex C. B. Clarke, Fl. Brit. India 2(6): 626. 1879; FKH 113. 1912.

*Zehneria indica* (Lour.) Keraudren, Fl. Cambodge, Laos & Vietnam 15: 52, fig. 5–8. 1975; FRPS 73(1): 170, pl. 45: 1–7. 1986; FFJ 5: 244, fig. 228. 1993; FGD 3: 118, fig. 82. 1995.

Plant monoecious. Stems and branches filiform, glabrous. Tendrils unbranched. Petioles slender, 1–3.5 cm; leaf blade membranous, triangular-ovate, undivided or 3–5-lobed, 2–10 × 2–10 cm, base cordate, apex acute or acuminate, margin entire or sparsely denticulate, scabrous and white-punctate adaxially, glabrous or puberulous along veins on both surfaces. Male flower solitary or in 2–3-flowered racemes; pedicels filiform, 1–2.5 cm, glabrous; calyx broadly campanulate, 1.5 × 2–2.5 mm; corolla white or yellow, puberulous, lobes ovate-oblong, 2–2.5 × 1–1.5 mm; filaments short, 0.5 mm; anthers ellipsoid, pubescent, 1 mm, anther cells curved, puberulous, connective protrudent at apex. Female flower solitary or rarely paired in the same axil together with male flowers; corolla broadly campanulate, ca. 2.5 mm in diam., lobes lanceolate, 2.5–5 × 1–1.5 mm; staminodes glandular; ovary narrowly ovoid, 3.5–4 × 1–2 mm, tuberculate; style 1.5 mm. Berries ellipsoid or ovoid, 1–1.5 cm long, 5–8 mm in diam., obtuse at both ends, orange or red. Seeds greyish white, ovate, 3–5 × 3–4 mm, margin inconspicuous.

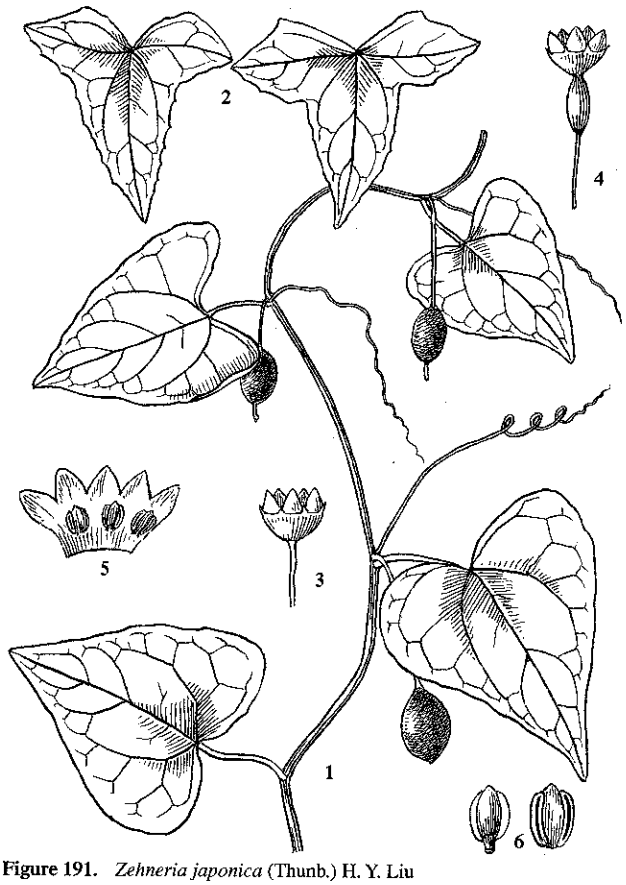



**Figure 191.** *Zehneria japonica* (Thunb.) H. Y. Liu
*1*. fruiting branch; *2*. irregular leaves; *3*. male flower; *4*. female flower; *5*. corolla opened up showing stamens; *6*. dorsal and ventral view of stamen. (drawn by H. P. Yu)

Locality: Tai Mo Shan, Tai Po, Tai Po Kau, Kap Lung. *Y. W. Lam 1151; Y. S. Lau 772, 3259.*

Distribution: Yunnan, Sichuan, Guangxi, Hainan, Guangdong, Hunan, Jiangxi, Fujian, Zhejiang, Jiangsu, Anhui, Hubei; Korea, Japan, India, Vietnam, Indonesia, Philippines.

Ecology: Forests and thickets. Flowering: Apr.–Jul.; fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

## 5. Solena Lour. 茅瓜屬

Perennial herbaceous vines, dioecious or monoecious; roots tuberous. Tendrils unbranched, glabrous. Leaves polymorphic, petiolate. Male flowers: arranged in umbels or corymbs; peduncles short; calyx tube campanulate, lobes 5, subulate; corolla yellow or yellowish white, 5-lobed, lobes triangular; stamens 3, filaments short, anthers globose, two 2-celled, one 1-celled, cells conduplicate or curved, connectives enlarged; pistillodes 3. Female flowers: solitary; calyx and corolla same as in male flowers; ovary ellipsoid, hairy; ovules several, horizontal; staminodes 3. Berries ellipsoid or ovoid, indehiscent. Seeds several, globose.

Two species distributed in Cambodia, India, Myanmar, Vietnam and China; two species in China; one species in Hong Kong.

**1. Solena amplexicaulis** (Lam.) Gandhi 茅瓜 **(Photo 432)**

Fl. Hassan District 179. 1976; FRPS 73(1): 178, pl. 47: 1–9. 1986; FFJ 5: 243, fig. 227. 1993; FGD 3: 121, fig. 84. 1995.

*Bryonia amplexicaulis* Lam., Encycl. 1: 496. 1785.

*Bryonia umbellata* Klein ex Willd., Sp. Pl. 4(1): 618. 1805.

*Karivia umbellata* (Klein ex Willd.) Arn., J. Bot. (Hooker) 3: 275. 1841; FHK. 124. 1861.

*Melothria heterophylla* (Lour.) Cogn., Mon. Phan. 3: 618. 1881; FGZ 184. 1956; FHN 1: 472. 1964.

*Solena heterophylla* Lour., Fl. Cochinch. 2: 514–515. 1790.

*Zehneria umbellata* Thw., Enum. Pl. Zeyl. 125. 1859; FKH 112. 1912.

Plant dioecious. Roots fusiform, 1.5–2 cm in diam. Stems and branches glabrous. Petioles 0.5–1.8 cm; leaf blades papery or leathery, very variable, triangular-hastate, narrowly triangular-lanceolate, ovate-cordate, subtriangular, undivided or 3–5-lobed, 3.5–15 × 3–12 cm, base cordate, apex obtuse or acuminate, margin entire or undulate or sparsely denticulate, often scabrous and glabrous on both surfaces. Male inflorescences umbellate, 10–20-flowered; peduncle very short; pedicels 2–8 mm. Male flowers: calyx-tube 5 mm, lobes subulate, 0.2–0.3 mm; corolla yellow, lobes triangular, 1.5 mm; filaments filiform, ca. 3 mm, anthers curved. Female flowers: solitary; pedicels 0.5–1 cm; ovary ovoid, 2.5–3.5 × 2–3 mm; stigmas 3. Fruit red-brown, ellipsoid or subglobose, 2–6 cm long, 2–5 cm

in diam., pubescent. Seeds grey-white, ovoid, 5–7 mm long, 5 mm in diam., emarginate.

Locality: Common in Hong Kong. *Y. S. Lau 321, 709, 3132.*

Distribution: Xizang, Yunnan, Sichuan, Guizhou, Guangxi, Hainan, Guangdong, Jiangxi, Fujian, Taiwan; India, Sri Lanka, Sikkim, Vietnam, Indonesia (Java), Nepal.

Ecology: Forests or thickets in valleys. Flowering: May–Aug.; fruiting: Aug.–Nov.

Uses: Medicinal (folklore).

## 6. Trichosanthes L. 栝楼属

Annual or perennial herbaceous vines, dioecious, rarely monoecious. Tendrils usually 2–6-branched, rarely unbranched. Leaves simple, unlobed or palmately 3–9-lobed, rarely compound, 3–5-foliolate. Flowers usually white, rarely pink or red. Male flowers: usually in racemes, rarely solitary; calyx-tube tubular, frequently dilated at the apex, 5-lobed, lobes entire or serrate or laciniate; corolla 5-partitioned, lobes usually long fimbriate; stamens 3; filaments very short, distinct; anthers connate, two 2-celled, one 1-celled, the cells conduplicate. Female flowers: solitary, very rarely in racemes. Calyx and corolla as in male flowers; staminodes absent; ovary inferior, ovoid or fusiform, 1-locular, with 3 parietal placentas; ovules usually many, often horizontal; style slender; stigmas 3, entire or 3–6-lobed. Fruit fleshy, globose, ovoid or fusiform, many-seeded, indehiscent. Seeds many, 1- or 3-locular.

About 80 species distributed in Asia and N Australia; 33 species and six varieties in China; five species in Hong Kong.

1a. Leaves pedately 5-foliolate, rarely 3-foliolate ..... 1. *T. pedata*

1b. Leaves simple.

2a. Seeds transversely oblong or obovate-triangular, 3-locular, middle locule seeded, lateral locules empty, papillate; leaves densely tomentose.

3a. Bracts and calyx-lobes of male flowers linear, less than 6 mm, entire, reflexed; seeds transversely oblong, width exceeding its length, lateral locules usually large and orbicular ..... 2. *T. cucumeroides*

3b. Bracts of male flowers lanceolate or oblanceolate, 16 × 5–6 mm, margin triangular-toothed; calyx-lobes triangular ovate, 7–10 mm, spreading; seeds triangular, width subequal to its length, lateral locule small, cylindrical ..... 3. *T. ovigera*

2b. Seeds elliptic, ovate-elliptic or oblong, 1-locular, compressed; leaves glabrous, puberulous to pubescent.

4a. Plant dioecious; bracts of male flower large, leaf-like, 6–25 mm, margin erose ..... 4. *T. rosthornii*

4b. Plant monoecious; bracts of male flower small, 1–4 mm, or absent ..... 5. *T. anguina*

### 1. **Trichosanthes pedata** Merr. & Chun 叉指栝楼

Sunyatsenia 2: 20. 1934; FHN 1: 482. 1956; FRPS 73(1): 234. 1986; FGD 3: 137, fig. 98. 1995.

*Trichosanthes pedata* Merr. & Chun var. *yunnanensis* C. Y. Cheng & Yueh, Acta Phytotax. Sin. 12(4): 445, pl. 87: 4b & pl. 88: 28. 1974.

Perennial herbaceous vine, dioecious. Stems slender, striate, grooved. Tendrils 2-branched. Leaves (3–)5-foliolate. Petioles 2.5–5.5 cm; leaflets lanceolate or oblong-oblancelate, papery, 3–14 × 1.2–4 cm, base cuneate, apex acuminate, margin sparsely denticulate, hispidulous or white-punctate adaxially, glabrous abaxially; petiolules 2–4 mm. Male racemes 8–19 cm; peduncle and pedicels brown-pubescent; bracteoles obovate or rhombic-ovate, 1–2 cm, pubescent, apex laciniate or dentate. Male flowers: calyx-tubes 2–4 cm, lobes triangular-lanceolate, 0.7–1 cm, entire; corolla white. Female flowers: solitary. Fruit globose, 5–6 cm in diam., orange-yellow, smooth. Seeds many, ovate or obovate, slightly tumid, 1–1.2 × 0.8 cm.

Locality: Kop Tong.

Distribution: Guangdong, Hainan, Hunan, Yunnan, Jiangxi; Vietnam.

Ecology: Forests or thickets. Flowering: Jun.–Aug.; fruiting: Jul.–Dec.

### 2. **Trichosanthes cucumeroides** (Seringe) Maxim. 王瓜

Enum. Pl. Jap. 1: 172. 1873

*Bryonia cucumeroides* Ser., Prodr. 3: 308. 1828.

Perennial herbaceous vine, dioecious, with tuberous roots. Stems slender, branched, grooved, pubescent. Petioles 3–10 cm, densely minutely tomentose and hispidulous; leaf blade broadly ovate or orbicular, papery, 5–13(–19) × 5–12(–18) cm, often 3–5-lobed, sometimes unlobed, base deeply cordate, apex obtuse or acuminate, margin serrulate or undulate-dentate; minutely tomentose and hispidulous adaxially; densely and minutely tomentose abaxially. Male flowers in racemes; peduncle 5–10 cm, striate, pubescent; bracteoles linear-lanceolate, 2–3 mm, entire, pubescent, rarely bracteoles absent; calyx-tube 6–7 cm, minutely tomentose, lobes linear-lanceolate, 3–6 × 1.5 mm, entire; corolla white, lobes oblong-ovate, 14–15 × 6–7 mm, very long fimbriate at apex. Female flowers solitary; pedicels 0.5–1 cm; ovary ellipsoid, densely pubescent; perianth as in male flowers. Fruit ovoid, ovoid-ellipsoid or globose, 6–7 × 4–5.5 cm, orange-red, smooth, beaked. Seeds transversely ellipsoid, 7–12 × 7–14 mm, deep brown, 3-locular; the two lateral ones large ca. 4.5 mm in diam., tuberculate.

Locality: Hong Kong without locality. [fide Dunn & Tutcher, 1912]

Distribution: Guangdong, Guangxi, Jiangxi, Sichuan, Zhejiang; Japan.

Ecology: Forests. Flowering: May–Aug.; fruiting: Aug.–Nov.

**3. Trichosanthes ovigera** Blume 全緣栝樓(野王瓜)

Bijdr. 934. 1826; FRPS 73(1): 255, pl. 63: 6–13. 1986; FGD 3: 133, fig. 94. 1995, *p.p.* excl. syn. *T. cucumeroides* (Ser.) Maxim., *T. dicoelosperma* Clarke, *T. baviensis* Gagnep., *T. hainanensis* Hayata, *T. trichocarpa* C. Y. Wu ex C. Y. Cheng & Yueh.

*Trichosanthes himalensis* C. B. Clarke, Fl. Brit. India 2(6): 608. 1879; FKH 111. 1912.

Perennial herbaceous vine, dioecious. Stems slender, grooved, pubescent. Petioles 4–12 cm, striate, pubescent; leaf blade papery, ovate-cordate to suborbicular, 7–19 × 7–8 cm, unlobed or shortly trilobed or 3–5-lobed, base deeply cordate, apex acuminate, margin sparsely serrulate or undulate-dentate, pubescent and hispidulous adaxially, minutely tomentose abaxially. Male flowers in racemes, peduncle 10–26 cm, striate, densely pubescent; pedicels ca. 5 mm; bracteoles lanceolate or oblanceolate, ca. 1.6 × 0.5–0.6 cm, margin triangular-dentate; calyx-tube tubular, ca. 5 mm; lobes triangular-ovate, 7–10 × 2–3 mm, entire. Female flowers solitary; pedicels 1–3.5 cm, striate, pubescent; calyx-tube terete, 2–5 cm, glabrous or pubescent; ovary ovoid, 1–1.5 × 0.3–0.5 cm. Fruit ovoid or fusiform ellipsoid, 5–7 × 2.5–4 cm, smooth, beaked. Seeds triangular in outline, 7–9 × 7–8 mm, turgid with a central thickened zone; 3-locular; two lateral locules empty.

Locality: Hong Kong Island, Chuen Lung, Tai Mo Shan, Tai Po Kau, Ping Shan, Lantau Island, Lamma Island. *Y. W. Lam 368, 959, 1019.*

Distribution: Yunnan, Guizhou, Guangxi, Hainan, Guangdong, Fujian, Taiwan; Japan, E Himalaya, Thailand, Vietnam, Indonesia.

Ecology: Forests. Flowering: May–Sep.; fruiting: Sep.–Dec.

**4. Trichosanthes rosthornii** Harms 中華栝樓 **(Photo 433)**

Engl., Bot. Jahrb. 29: 603. 1901; FRPS 73(1): 243. 1986; FGD 3: 134, pl. 95. 1995.

*Trichosanthes crenulata* C.Y. Cheng & C.H. Yueh, Acta Phytotax. Sin. 18(3): 343–344, pl. 6: 9, 20, 23. 1980.

*Trichosanthes kirilowii* auct. non Maxim.: FKH 111. 1912.

*Trichosanthes guizhouensis* C.Y. Cheng & C.H. Yueh, Acta Phytotax. Sin. 18(3): 344–345, pl. 3 & pl. 6: 10. 1980.

*Trichosanthes stylopodifera* C.Y. Cheng & C.H. Yueh, Acta Phytotax. Sin. 18(3): 341, pl. 6: 7, 22. 1980.

*Trichosanthes uniflora* Hao, Bot. Jahrb. Syst. 68(5): 640–641. 1938.

Perennial herbaceous vine, dioecious. Stems grooved, glabrous or sparsely puberulous. Tendrils 2–7-branched. Petioles 2.5–7 cm, sparsely puberulous; leaf blade variable in shape, broadly ovate to suborbicular, papery, 7–18 × 6–16 cm, deeply 3–7-lobed, base cordate or hastate, apex acuminate, rarely acute or obtuse, margin remotely dentate or sometimes undulate, glabrous or sparsely puberulous on both surfaces. Male racemes 8–20 cm, several to many-flowered; peduncle 8–10 cm; pedicels up to ca. 7 cm; bracteoles leaf-like, 6–25 mm, margin irregularly erose. Male flowers: calyx-tube narrowly cylindric, 1.5–3 cm, lobes subulate-linear, 7–14 mm. Female flowers: solitary; pedicels 5–8 cm, puberulous; ovary ellipsoid, 1–2 × 0.5–1 cm, puberulous. Fruit globose or ellipsoid, 8–16 × 7–10 cm, smooth, glabrous, orange-yellow. Seeds ovate-oblong, compressed, 1.2–2.2 cm, brown, marginate.

Locality: Hong Kong Island, Tai Mo Shan, Wu Kau Tang, Lantau Island. *Y. S. Lau 1509; W. J. Tutcher 9544.*

Distribution: Yunnan, Sichuan, Guizhou, Guangdong, Jiangxi, Hubei, Shaanxi, Gansu.

Ecology: Forests and thickets. Flowering: Jun.–Aug.; fruiting: Aug.–Oct.

Uses: Medicinal (root & fruit).

Notes: The species was reported as *Trichosanthes kirilowii* Maxim. previously (Check List HK Plants 42. 1993).

**5. Trichosanthes anguina** L. 蛇瓜 **(Fig. 192; Photo 434)**

Sp. Pl. 2: 1008. 1753; FHN 1: 480. 1965; FRPS 73(1): 248, pl. 61: 1–3. 1986; FFJ 5: 260, fig. 243. 1993.

*Trichosanthes cucumerina* L. var. *anguina* (L.) Haines, Bot. Bihar Orissa 388. 1922; FGD 3: 134. 1995.

Annual herbs, monoecious, without tuberous root. Stems slender, branched, ridged and sulcate, pubescent and hispid. Tendrils 2–3-branched. Petioles 3–8 cm; leaf blade membranous, suborbicular or reniform-orbicular, 8–16 × 12–16 cm, base cordate, margin sparsely serrate, deeply (3–)5(–7)-lobed, pubescent on both surfaces, sparsely hispid adaxially. Male racemes 8–15-flowered, usually paired with a female flower; peduncle 10–18 cm; pedicels 5–2 cm, erect; bracteoles minute, subulate-lanceolate, 3 mm; Male flowers: calyx-tube subcylindrical, 2.5–3 cm, densely pubescent and sparsely hispid; lobes reflexed, ca. 2 mm; corolla white, lobes ovate-oblong, 7–8 mm, 3-veined, apex long fimbriate. Female flowers: solitary; pedicles to 1 cm, villous; perianth as in male

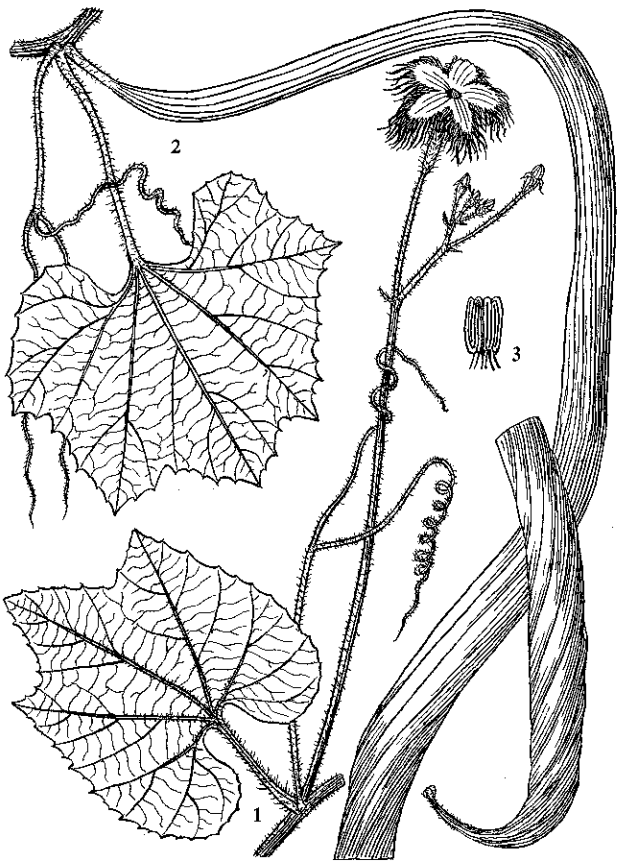



**Figure 192.** *Trichosanthes anguina* L.
*1.* male flowering branch; *2.* fruiting branch; *3.* stamens. (drawn by H. P. Yu)

flowers; ovary clavate, densely pubescent and hispid. Fruit cylindric, smooth, often contorted, 1–2 m long, 3–4 cm in diam., orange when mature. Seed oblong, embedded in fresh red pulp, finely rugulose, margin undulate.

Locality: Cultivated. *Y. W. Lam 885; L. T. Lo 517; HK sheet 12016.*

Distribution: Cultivated in China. Native to India; also cultivated in E Africa, Japan, Malaysia, Philippines.

Ecology: Flowering and fruiting: Summer to autumn.

Uses: Food (fruit), medicinal (root and seed).

## 7. Gynostemma Blume 絞股藍屬

Perennial herbaceous vines, dioecious. Tendrils 2-branched or rarely not branched. Leaves palmately compound, 3–7-foliolate, rarely simple. Inflorescence paniculate, axillary. Peduncles articulate, bracteolate. Male flowers: calyx-tube short, 5-lobed; corolla rotate, 5-partitioned, lobes lanceolate or ovate-oblong; stamens 5, inserted at base of calyx-tube, filaments short, connate at base; anthers 2-celled, cells erect, longitudinally dehiscent, connective narrow, not protrudent; pistillodes absent. Female flowers: calyx and corolla as in male flowers; staminodes present; ovary globose, 3–5-locular; styles 3, rarely 2, distinct, stigmas 2; ovules 2 per locule, pendulous. Berries globose, umbonate, indehiscent, 1–3 seeded. Seeds broadly ovate, compressed, not winged, verrucose or spiny.

About 13 species distributed in tropical Asia to E Asia; 11 species and two varieties in China; one species in Hong Kong.

**1. Gynostemma pentaphyllum** (Thunb.) Makino
絞股藍 **(Fig. 193; Photo 435)**

Bot. Mag. (Tokyo) 16: 179. 1902; FHN 1: 485. t. 266. 1964; FRPS 73(1): 269. 1986; FFJ 5: 242, fig. 226. 1993; FGD 3: 140. 1995.

*Vitis pentaphylla* Thunb., Fl. Jap. 105. 1784.

Stems slender, ridged and sulcate, glabrous or pubescent. Tendrils long, 2-branched at apex. Petioles 2–7 cm, hairy. Leaves membranous or papery, palmately (3–)5(–7)-foliolate, pubescent or glabrous; leaflets ovate-oblong or lanceolate, 2–15 × 0.8–5 cm, central one larger, lateral ones smaller, base attenuate, apex acute or acuminate, mucronate, margin undulate-dentate, glabrous or pilose on both surfaces, lateral veins 4–8 pairs; petiolules 1–5 mm. Male inflorescences 10–16 cm, many-branched. Male flowers: pedicels filiform, 1–4 mm; bracteole subulate; calyx-tube very short, lobes triangular, 0.7 mm; corolla pale green or white, lobes ovate-lanceolate, 2.5–3 mm, ciliolate. Female inflorescences much shorter. Female flowers: calyx and corolla as in male flowers; staminodes 5, short; ovary globose, 2–3-locular, styles 3, stigmas bifid. Berries globose, 5–6 mm in diam., indehiscent, black when mature, glabrous, 2-seeded. Seeds compressed, papillose.

Locality: Tai Mo Shan, Ng Tung Chai, Tsz Mun Tin. *Y. W. Lam 419, 420, 421.*

Distribution: S Shaanxi and regions S of Changjiang River. E Asia to tropical Asia.

Ecology: Forests and thickets. Flowering: Mar.–Nov.; fruiting: Apr.–Dec.

Uses: Medicinal.

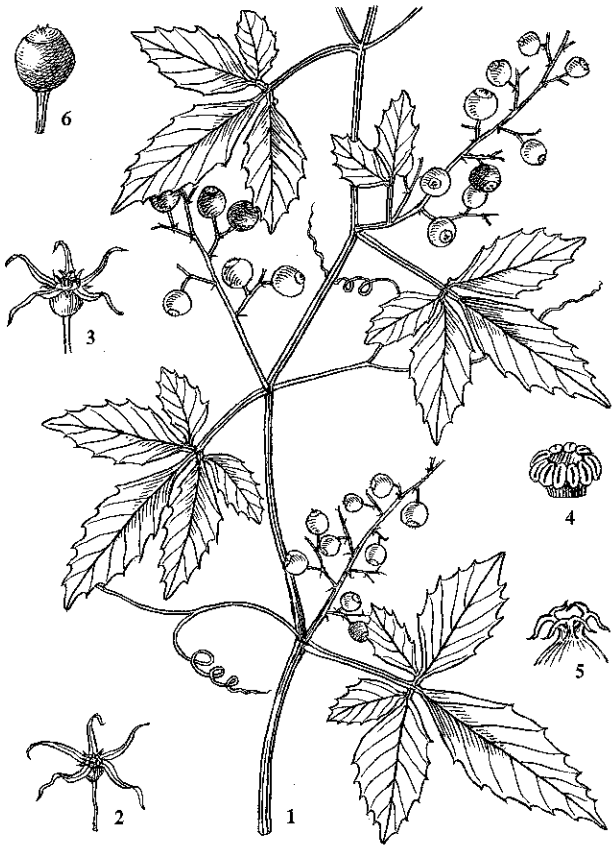



**Figure 193.** *Gynostemma pentaphyllum* (Thunb.) Makino
*1.* fruiting branch; *2.* male flower; *3.* female flower; *4.* stamens; *5.* pistil; *6.* fruit. (drawn by H. P. Yu)

## 8. Sechium P. Browne 佛手瓜屬

Perennial herbaceous vines, monoecious, hispidulous. Roots tuberous. Tendrils 3–5-branched. Leaves polygonal or lobed. Male flowers: arranged in axillary racemes; calyx-tube plateform, lobes 5; corolla rotate, 5-lobed, lobes ovate-lanceolate; stamens 3, inserted at the base of calyx-tube, filaments connate, anthers free, one 1-celled, two 2-celled, cells flexuous; pistillode absent. Female flowers: solitary or in pairs, usually in the same axil with the male ones; calyx and corolla as in male flowers; ovary fusiform, 1-locular, setose, style short, stigma 5-lobed; ovule 1, pendulous. Fruit fleshy, obovoid, sulcate at apex. Seed 1, ovate, compressed. Testa woody, smooth.

About five species distributed in Mexico and C America; one species cultivated in China, also in Hong Kong.

**1. Sechium edule** (Jacq.) Swartz 佛手瓜(合掌瓜) **(Photo 436)**

Fl. Ind. Occ. 2: 1150. 1800; FRPS 73(1): 277, pl. 65: 5–8. 1986; FFJ 5: 252, fig. 236. 1993; FGD 3: 141, fig. 103. 1995.

*Sicyos edulis* Jacq., Enum. Syst. Pl. 32. 1760.

Stem angled and sulcate. Petioles slender, glabrous, 3–15 cm; leaf blade membranous, ovate-cordate in outline, 8–20 × 8–20 cm, base cordate, apex short-acuminate, margin entire or denticulate, polygonal or 3–5-lobed, slightly scabrous adaxially, puberulous

abaxially. Male inflorescences: racemose 10–30-flowered; peduncle 8–30 cm long; pedicels 1–6 mm. Male flowers: calyx-tube short, lobes explanate, 5–7 mm; corolla pale yellow, rotate. Female flowers: pedicels 1–1.5 cm; calyx and corolla as in male flowers; ovary obovoid, 5-angled, style 2–3 mm, stigma 2 mm broad. Fruit pale green, obovoid, slightly hispid, 8–15 cm long, 6–8 cm in diam., 5-sulcate in upper part. Seed large, 10 x 7 cm, ovate, compressed.

Locality: Cultivated. *S. P. Lau 72; H. C. Tang 1455; HK sheet 12124.*

Distribution: Yunnan, Guangxi, Guangdong, Sichuan (cultivated or naturalized); native to America.

Ecology: Flowering: Jul.–Sep.; fruiting: Aug.–Oct.

Uses: Food (fruit).

## 9. Cucurbita L. 南瓜屬

Annual or perennial scandent or creeping herbs, monoecious. Stems and branches stout, hispid. tendrils 2– many-branched. Leaves simple, often lobed. Flowers solitary, yellow. Male flowers: calyx-tube campanulate, lobes 5, lanceolate or foliaceous at apex; corolla campanulate, 5-lobed; stamens 3, inserted at base of calyx, filaments distinct, anthers connate, one 1-celled, two 2-celled, cells linear, twisted, connective not protrudent; pistillodes absent. Female flowers: calyx and corolla as in male flowers; staminodes 3, short, triangular; ovary ellipsoid or globose, placentas 3–5; style short and thick; stigmas 3, bifid; ovules many, horizontal. Fruit large, fleshy, indehiscent. Seeds many, compressed, smooth, marginate.

About 15 species distributed in tropical and subtropical regions of the world; three species cultivated in China; one species cultivated in Hong Kong.

**1. Cucurbita moschata** Duchesne 南瓜 **(Photo 437)**

Essai Hist. Nat. Courges 7, 15-16. 1786; FHN 1: 483. 1964; FRPS 73(1): 262. 1986; FFJ 5: 257, fig. 241. 1993; FGD 3: 139, fig. 100. 1995.

*Cucurbita pepo* L. var. *moschata* Duch. ex Lam., Encycl. 2: 152. 1786.

Annual prostrate or climbing herb. Stems terete or slightly 5-ridged, densely white-setose. Tendrils 3–4-branched, hispid and tomentose. Petioles stout, to 25 cm, setose; leaf blade broadly ovate or ovate-orbicular in outline, pentagonal or 5-lobed, 15–40 × 20–40 cm, margin serrulate, setose and white patched on both surfaces. Male flowers: pedicels to 33 cm, setose; calyx setose, tube short, 5–6 mm, lobes linear, 1–1.5 cm, pubescent, enlarged or leaf-like at apex; corolla tubular, 8 cm long, 6 cm in diam., hairy, lobes spreading, rugose, 5 × 6 cm, with 3 longitudinal veins; stamens 3, filaments glandular, 5–8 mm, enlarged at base, anthers connivent. Female flowers: ovary 1-locular, style short, stigma enlarged, 2-lobed. Fruiting pedicel stout, angled and sulcate, 5–7 cm, enlarged at apex. Fruits varied in shape, size and color, usually sub-pyriform, compressed globose, ovoid. Pericarp sulcate and verrucose. Seeds many, ovate or oblong, grey-white, margin thickened, 1–1.5 × 0.7–1 cm.

Locality: Cultivated. *Y. S. Lau 2757; L. T. Lo 175; HK sheet 2013.*

Distribution: Widely cultivated worldwide; native to Mexico and C America.

Ecology: Flowering and fruiting: Apr.–Nov.

Uses: Food (fruit).

## 10. Benincasa Savi 冬瓜屬

Annual herbaceous vines, monoecious, all part densely hispid. Leaves palmately 5-lobed, petioles eglandular. Tendrils dichotomous to trichotomous branched. Flowers usually unisexual, large, yellow, solitary. Male flowers: long-pedicellate; calyx-tube broadly campanulate, lobes leaf-like, dentate, reflexed; corolla rotate, 5-partitioned to base, segments obovate, entire; stamens 3, distinct, inserted to the corolla-tube, filaments short, anthers one 1-celled, two 2-celled, cells sigmoid, connective margined. Female flowers: short-pedicellate; calyx and corolla as in male flowers; staminodes 3; ovary ovoid; placentas 3; ovules many; style thick; stigmas 3, expanded, 2-lobed. Fruit large, ellipsoid to terete, fleshy, hispid, glaucous, indehiscent. Seeds many, compressed, ovate-oblong, margin tumid.

One species and one variety, cultivated in tropical and subtropical regions of the world; commonly cultivated in China, also in Hong Kong.

**1. Benincasa hispida** (Thunb.) Cogn. 冬瓜 **(Photo 438)**

Mor. Phan. 3: 513. 1881; FRPS 73(1): 198. 1986; FFJ 5: 253, fig. 237. 1993; FGD 3: 128. 1995.

*Cucurbita hispida* Thunb., Syst. Veg. (ed. 14) 868. 1784; Fl. Jap. 322. 1784.

Annual large herbaceous vine. Stems and branches yellow-brown-hispid and villous, sulcate and angled. Tendrils short and slender. Petioles stout, 5–20 cm, yellow-brown-hispid and villous; leaf blade reniform-suborbicular, 19–24 × 10–30 cm, base deeply cordate, apex acute, margin dentate, 5–7-lobed, lobes broadly triangular or ovate, pilose to subglabrous adaxially, scabrous and hispid abaxially. Pedicels hispid, 5–15 cm in male flowers, shorter than 5 cm in female flowers. Bracts pubescent, 6–10 mm. Calyx-tube villous, lobes lanceolate, dentate, 8–12 mm. Corolla-lobes 3–6 × 2.5–4 cm, pubescent on both surfaces, densely hispid at margin near base; filaments 2–3 mm, expanded at base, hispid; anthers 5 mm. Ovary ovoid or cylindric, densely hispid, 2–4 cm long; styles 2–3 mm, stigmas 3, 12–15 mm wide, 2-lobed. Fruit ellipsoid or terete, 25–70 × 10–25 cm, glaucous, hairy. Seeds many, flattened, ovate, 10–11 × 5–7 mm, with or without thickened margin.

Locality: Cultivated. *HK sheet 12036.*

Distribution: Cultivated in tropical and subtropical Asia, E Australia, Madagascar.

Ecology: Flowering: Jun.–Sep.; fruiting: Jul.–Nov.

Uses: Food (fruit), Medicine (folklore).

**1a. Benincasa hispida** (Thunb.) Cogn. var. **chieh-qua** How 節瓜 **(Photo 439)**

Acta Phytotax. Sin. 3(1): 76. 1954; FRPS 73(1): 200. 1986; FFJ 5: 253. 1993; FGD 3: 129. 1995.

It differs from var. *hispida* by its yellow-hispid ovary and the fruit being terete, 15–20 × 4–11 cm, densely white hispid, not glaucous or slightly glaucous.

Locality: Cultivated. *L. T. Lo 515.*

Distribution: Widely cultivated in S China.

Ecology: Flowering and fruiting: Spring and summer.

Uses: Food (fruit).

## 11. Gymnopetalum Arn. 金瓜屬

Herbaceous vines, monoecious or dioecious. Tendrils not branched or 2-branched. Leaves entire or 3–5-partitioned, petiolate. Flowers white or yellow. Male flowers: solitary or arranged in racemes; calyx-tube tubular, enlarged at upper part, lobes 5, subulate; corolla rotate, 5-partitioned, lobes oblong or obovate; stamens 3, inserted at the middle of calyx-tube, filaments short, distinct, anthers connate, one 1-celled, two 2-celled, cells conduplicate, connectives not protrudent; pistillodes erect. Female flowers: solitary; calyx and corolla as in male flowers; staminodes 3, linear; ovary ovoid or ellipsoid, placentas 3; ovules many, horizontal; style filiform; stigmas 3. Fruit a berry. Seeds obovate or oblong, compressed, marginate.

Six species distributed in S Asia; two species in China; one species in Hong Kong.

**1. Gymnopetalum chinense** (Lour.) Merr.
金瓜(越南裸瓣瓜) **(Fig. 194)**

Philipp. J. Sci. 15: 256. 1919; FRPS 73(1): 213. 1986; FGD 3: 130. 1995.

*Bryonia cochinchinensis* Lour., Fl. Cochinch. 595. 1790.

*Evonymus chinensis* Lour., Fl. Cochinch. 156. 1790.

*Gymnopetalum cochinchinense* (Lour.) Kurz, J. As. Soc. Bengal 40: 57. 1871; FKH 112. 1912; FHN 1: 479. 1964.

*Gymnopetalum quinquelobatum* Merr., J. Arnold Arbor. 19: 70. 1938

Perennial herbaceous vine, monoecious. Stems 5-angled, hispid, glabrescent. Petioles 1–5 cm; leaf blade membranous or thinly papery, ovate-heart-shaped in outline, pentagonal or 3–5-lobed, 4–8 × 4–8 cm, base cordate, apex acuminate, margin dentate or undulate, scabrous and tuberculate on both surfaces. Male flowers: solitary or 3–8 in racemes; peduncle slender, 10–15 cm; bract leaf-like, rhomboid, pubescent; calyx-tube narrow, 2 cm, pubescent, lobes linear, 7 mm; corolla white, lobes oblong-ovate, 15 mm; filaments 0.5 mm, anthers 7 mm. Female flowers: solitary; pedicels 1–4 cm; ovary ellipsoid, 1–1.2 cm, 5 mm in diam., yellow-brown-villous, acute at the both ends, style 5–8 mm, stigmas 3. Fruits ellipsoid, orange, 4–5 cm, smooth, 10-ridged, acute at the both ends. Seeds oblong, 7 x 3–3.5 mm, both ends obtuse, rugose and marginate.

Locality: Tai Po. *Y. S. Lau 2535; HK sheet 12023.*

Distribution: Yunnan, Guangxi, Hainan, Guangdong; India to SE Asia.

Ecology: Forests and thickets. Flowering: Jul.–Sep.; fruiting: Sep.–Dec.

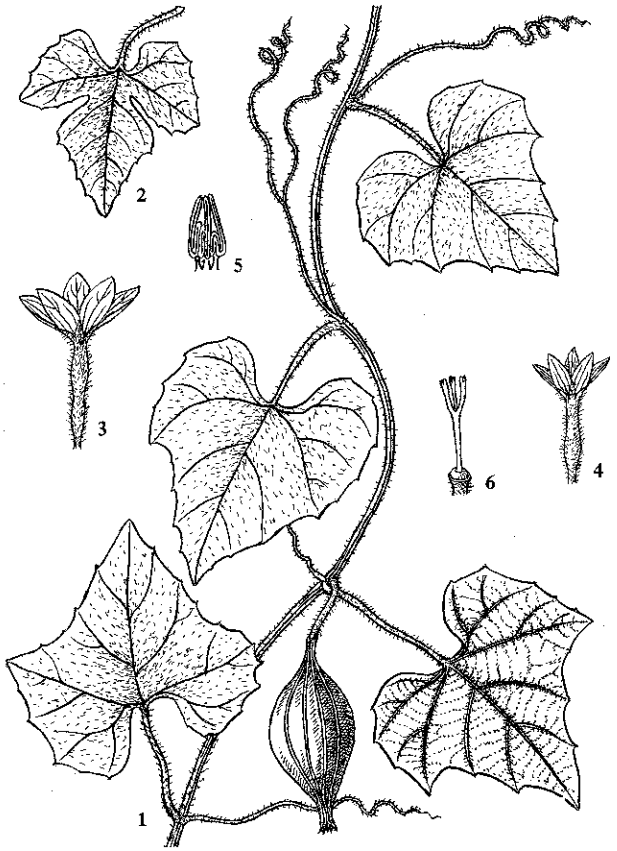



**Figure 194.** *Gymnopetalum chinensis* (Lour.) Merr.
*1.* fruiting branch; *2.* irregular leaf; *3.* male flower; *4.* female flower; *5.* stamens; *6.* pistil. (drawn by H. P. Yu)

## 12. Lagenaria Ser. 葫蘆屬

Annual climbing vines, monoecious, softly pubescent. Tendrils bifid. Petioles with 2 glands at apex. Flowers large, white, solitary. Male flowers: pedicels long; calyx-tube narrowly campanulate or infundibuliform, lobes 5; corolla lobes 5, free, spreading; stamens 3, filaments distinct, anthers inclusive, slightly coalescent or distinct, ellipsoid, one 1-celled, two 2-celled, cells sigmoid, connective not protrudent; pistillode glandular. Female flowers: pedicels short; calyx-tube cupular, calyx lobes and corolla as in male flowers; ovary ovoid or cylindrical, placentas 3, styles short, stigmas 3, 2-lobed; ovules many, horizontal. Fruits polymorphic, indehiscent, fleshy.

Pericarp woody when mature. Seeds many, obovate, compressed, marginate.

Six species, mainly distributed in tropical African region; one species cultivated in China, also in Hong Kong.

**1. Lagenaria siceraria** (Molina) Standl. 葫蘆 **(Photo 440)**

Publ. Field Mus. Nat. Hist. Chicago Bot. Ser. 3: 435. 1930; FHN 1: 480. 1964; FRPS 73(1): 216. 1986; FFJ 5: 247, fig. 231. 1993; FGD 3: 131, fig. 93. 1995.

*Cucurbita siceraria* Molina, Sag. Stor. Nat. Chili 133. 1782.

Stems and branches sulcate and ridged, sticky pubescent. Petioles 5–20 cm, pubescent; leaf blade papery, suborbicular-cordate in outline, pentagonal or slightly 3–5-lobed, 10–35 × 10–35 cm, margin irregularly dentate, puberulous on both surfaces, palmately 5–7-nerved. Male flowers: calyx-tube infundibular, 2 cm, 1 cm in diam., pubescent, lobes lanceolate, 12 × 1.5–2 mm; corolla lobes 3–4 × 2–3 cm, slightly rugose, conspicuously veined; filaments 3–4 mm, anthers 8–10 mm. Female flowers: calyx and corolla as in male flowers; ovary ellipsoid, 3 × 1.3 cm, densely pubescent; stigma enlarged. Fruits varied in shape and size, flask-shape, clavate etc., 20–60 cm long, 9–16 cm in diam. Seeds white, obovate or triangular, apex truncate or bifid.

Locality: Cultivated. *K. Li 5388; HK sheet 12025, 12035.*

Distribution: Cultivated in tropical and temperate regions.

Ecology: Flowering: Summer; fruiting: Autumn.

Uses: Food (fruit), medicinal.

## 13. Citrullus Schrad. 西瓜屬

Annual or perennial herbaceous vines, monoecious or dioecious. Tendrils dichotomous or trichotomous branched, sometimes unbranched and spine-like. Leaves deeply 3–5-partitioned. Flowers yellow, solitary, rarely fasciculate. Male flowers: calyx-tube broadly campanulate, 5-lobed; corolla rotate or broadly campanulate, deeply 5-partitioned; stamens 3, inserted at the base of calyx-tube, filaments distinct, short; anthers distinct or slightly coherent, one 1-celled, the others 2-celled, cells linear, sigmoid; connective dilated, not protrudent; pistillodes glandular. Female flowers: calyx and corolla as in male flowers; staminodes 3, setiform or ligulate; ovary ovoid, placentas 3; style short, columnar, stigmas 3, thick, reniform, nearly 2-fid; ovules many, horizontal. Fruit globose or ellipsoid, fleshy, indehiscent, many-seeded. Seeds oblong, compressed, smooth.

Four species distributed in the Mediterranean region, tropical Africa and Asia; one species cultivated in China, also in Hong Kong.

**1. Citrullus lanatus** (Thunb.) Matsum. & Nakai 西瓜 **(Photo 441)**

Cat. Sem. Spor. Hort. Bot. Univ. Imp. Tokyo 30: n 854. 1916; FRPS 73(1): 200. 1986; FFJ 5: 254, fig. 238. 1993; FGD 3: 125. 1995.

*Momordica lanata* Thunb., Prodr. Pl. Cap. 13. 1800.

*Citrullus vulgaris* Schrad. ex Eckl. & Zeyh., Enum. Pl. Afr. Austr. 2: 279. 1836; FHK 125. 1861; FGZ 188. 1956; FHN 1: 475. 1964.

Annual herb. Stems and branches stout, sulcate-angular, villous. Tendrils puberulous, 2-branched. Petioles 3–12 cm, densely pubescent; leaf blade triangular-ovate, 8–20 × 5–15 cm, base cordate, apex acute or acuminate, margin denticulate, hispid on both surfaces, 3-partitioned, middle lobe longer; lobes pinnately partitioned. Flowers solitary. Male flowers: pedicels 3–4 cm, villous; calyx-tube villous, lobes narrowly lanceolate, as long as tubes; corolla pale yellow, 2.5–3 cm in diam., greenish and villous abaxially, lobes ovate-oblong, 1–1.5 × 0.5–0.8 cm. Female flowers: calyx and corolla as in male flowers; ovary densely villous, 5–8 mm; styles 4–5 mm; stigmas 3, reniform. Fruits globose or ellipsoid. Smooth, with pale green or bluish stripes and patches; pulp red, white or pale yellow, juicy. Seeds many, flattened, ovate, black or white, striped or patched, 1–1.5 × 0.5–0.8 cm.

Locality: Cultivated. *L. T. Lo 530, 244; HK sheet 2012.*

Distribution: Cultivated in China; native to Africa.

Ecology: Flowering and fruiting: Apr.–Oct.

Uses: Food (fruit), medicinal (folklore).

## 14. Luffa Mill. 絲瓜屬

Annual herbaceous vines, monoecious, glabrous or puberulous. Tendrils bi- or multi-fid, pilose. Leaves usually 5–7-lobed. Flowers yellow. Male flowers: arranged in racemes; calyx-tube campanulate or turbinate, lobes 5; corolla rotate, lobes 5, free, spreading; stamens 3, rarely 5, distinct, anthers one 1-celled, two 2-celled when stamens 3, or all 1-celled when stamens 5, cells linear, sigmoid, connective usually dilated; pistillodes glandular or absent. Female flowers: solitary; calyx and corolla as in male flowers; staminodes 3, or rarely 4–5; ovary cylindrical, placentas 3; styles columnar, stigmas 3, bifid; ovules many, horizontal. Fruits cylindric or terete, ribbed or not, fleshy when young, dried when old, fibrous inside, dehiscent by apical opercula. Seeds many, oblong, compressed.

Eight species distributed in tropical and subtropical regions of the Old World; two species cultivated in China, also in Hong Kong.

1a. Leaves 5–7-lobed or angled; stamens 3; fruits ribbed and sulcate ..... 1. *L. acutangula*

1b. Leaves often 5–7-partitioned; stamens 5; fruits smooth ..... 2. *L. aegyptiaca*

**1. Luffa acutangula** (L.) Roxb. 廣東絲瓜(絲瓜) **(Photo 442)**

Hort. Beng. 70. 1814; FKH 112. 1912; FRPS 73(1): 196. 1986; FFJ 5: 251, fig. 235. 1993; FGD 3: 123, fig. 86. 1995.

*Cucumis acutangula* L., Sp. Pl. 1011. 1753.

Stems stout, sulcate and angled, pubescent. Tendrils often trifid. Petioles 8–12 cm; leaf blade membranous, suborbicular in outline, often 5–7-lobed, 15–20 × 15–20 cm, base cordate, apex acute, margin sparsely dentate, slightly scabrous on both surfaces, sometimes with raised white spots adaxially. Male flowers: 17–20 arranged in racemes; peduncles 10–15 cm; pedicels 1–4 cm; calyx-tube campanulate, 5–8 × 10 mm, lobes lanceolate, 4–6 × 2–3 mm, slightly reflexed; corolla rotate, lobes obcordate, 2 × 2–2.5 cm, apex emarginate; stamens 3, filaments 4–5 mm, anthers puberulous. Female flowers: ovary clavate, ridged. Fruits cylindric or clavate, 8–12-ribbed and sulcate, glabrous, 15–75 cm long, 6–10 cm in diam., dark green, scabrous. Seeds ovate, black, 1–1.2 × 0.7–0.8 cm, margin not winged.

Locality: Cultivated. *L. T. Lo 520; HK sheet 12028, 12030.*

Distribution: Widely cultivated in tropical regions.

Ecology: Flowering and fruiting: Summer to autumn.

Uses: Food (fruit).

**2. Luffa aegyptiaca** Mill. 水瓜 **(Photo 443)**

Gard. Dict. ed. 8. 1768.

*Luffa cylindrica* (L.) Roem., Syn. Mon. 2: 63. 1846; FRPS 73(1): 194. 1986; FFJ 5: 250, fig. 234. 1993; FGD 3: 124. 1995.

*Momordica cylindrica* L., Sp. Pl. 1009. 1753.

Stems and branches scabrous, ridged and sulcate. Tendrils usually trifid. Petioles scabrous, 4–12 cm, puberulous; leaf blade triangular or suborbicular in outline, base cordate, 10–25 × 10–25, often palmately 5–7-lobed, lobes triangular, apex acute or acuminate, margin dentate, puberulous on both surfaces, white punctate adaxially. Male flowers: usually 15–20-flowers in a raceme; peduncles stout, 10–15 cm, pubescent; pedicels 1–2 cm; calyx broadly campanulate, 5–9 mm, puberulous, lobes ovate-lanceolate or nearly triangular, 1cm; corolla rotate, 5–9 cm in diam., lobes oblong-cuneate, 2–4 × 2–2.8 cm, densely yellow-white-villous adaxially, apex rounded to truncate, base attenuate. Stamens 5, filaments 6–8 mm. Female flowers: pedicels 2–10 cm; ovary long cylindrical, puberulous, stigmas 3, expanded, bifid. Fruit cylindrical, straight or slightly curved, 15–55 cm, grooved or striped, not ridged, puberulous, strongly fibrous inside when mature. Seeds ovate, smooth, black, margin slightly winged.

Locality: Cultivated. *L. T. Lo 332; Y. S. Lau 2627, 2618.*

Distribution: Cultivated in tropical and temperate regions.

Ecology: Flowering and fruiting: Summer to autumn.

Uses: Food (fruit), medicinal (folklore).

# 133. BEGONIACEAE 秋海棠科

HU Qi-ming 胡啟明

Perennial herbs or subshrubs, more or less succulent, often with thick rhizomes or tubers. Stems erect or decumbent, or sometimes acaulescent. Leaves alternate or basal, entire or irregularly toothed or lobed, usually asymmetrical. Stipules 2, usually membranous and deciduous. Inflorescence usually a dichasial cyme, bearing separate male and female flowers. Male flowers: perianth-segments 2–10; stamens many, free or united at the base; anthers 2-celled, opening by longitudinal slits; female flowers: perianth-segments 2–8; ovary inferior, usually angled or winged, 2–3(4–6)-locular, with axile placentation and many ovules, rarely 1-locular and with parietal placentation; styles 2–3, rarely 4–6, free or united at the base; stigmas usually twisted. Fruit a fleshy capsule often winged.

Five genera and about more than 1000 species, widely distributed in the tropical and subtropical regions of the world and especially abundant in C and S America; one genus and 160 species (endemic) in China; five species (one introduced) in Hong Kong.

## 1. Begonia L. 秋海棠屬

Perennial succulent herbs, very rarely subshrubs, with rhizomes or tubers. Stems erect or decumbent, or often stemless. Leaves alternate or all basal, simple or rarely palmately compound, base usually oblique asymmetrical, margin often irregularly serrate and divided, occasionally entire; stipules membranous, deciduous. Flowers unisexual (plants monoecious), occasionally dioecious, 2–4 to several in dichotomous cymes, rarely numerous and in panicles, with pedicels and bracts; tepals petaloid. Male flower: perianth-segments usually 4, decussate, usually the outer ones longer; stamens numerous; filaments free or connate at base; anthers basifixed, 2-celled, opening by longitudinal slits. Female flower: perianth-segments usually 5 or 4, rarely 2 or 6, free; ovary inferior, 2–3(–4–6)-locular; placentas central or parietal; styles as many as locules of ovary, free or united at base; stigma turgid, spirally twisted-tortuous. Fruit a capsule, sometimes berry-like, usually unequally rarely subequally 3-winged, rarely wingless and 3–4-horned; seeds minute, very numerous.

About more than 1000 species, widely distributed in the tropical and subtropical regions of the world and; about 160 species in China; five species (one introduced) in Hong Kong.

1a. Stem very short, less than 1.5 cm, usually with only one leaf ..... 1. *B. fimbristipula*

1b. Stem much longer, with 3 to many leaves

2a. Leaves ovate to broadly ovate, apex obtuse or rounded ..... 2. *B. cucullata* var. *hookeri*

2b. Leaves obliquely ovate, apex acuminate
3a. Stem hairy; capsule 3-winged ..... 3. *B. palmata*
3b. Stem glabrous.
4a. Plants 90-150 cm tall; capsule not winged ..... 4. *B. crassirostris*
4b. Plants 10-25 cm tall; capsule irregularly 3-winged ..... 5. *B. hongkongensis*

**1. Begonia fimbristipula** Hance 紫背天葵 **(Photo 444)**
J. Bot. 21: 202. 1883; FKH 113. 1912; FHN 1: 490. 1964; FGD 3: 146. 1995; FRPS 52(1): 190. 1999.

Perennial small herb, with tuberous root. Stem very short, less than 1.5 cm, usually with only one leaf. Petioles shorter or longer than leaf blade, with coarse hairs or glabrescent. Stipules small 2–3 mm, ovate-lanceolate, margin fimbriate. Leaf blade orbicular- or ovate-cordate, 4–15 × 3–12 cm, apex acuminate, base cordate, basal lobes more or less overlapped, sparsely or densely covered with small coarse hairs on adaxial surface, usually purplish and strigose along veins on abaxial surface, margin irregularly double-serrate. Cymes twice or thrice branched. Peduncles slender, 3–15 cm, red, glabrous. Flowers pink, slightly scented; male flowers: perianth segments 4, outer 2 ovate, 6–12 mm, inner 2 obovate-oblong; female flowers: smaller, perianth-segments 3, two larger, half-orbicular, ca. 3 mm, another one smaller and narrower, oblong; ovary 3-locular. Capsule triangular, glabrous, with 3 unequal wings.

Locality: Ng Tung Chai, Ma On Shan, Sunset Peak. *Y. S. Lau 1402; L. T. Lo 47.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang, Fujian.

Ecology: Clefts of stones by streams or shaded and wet places. Flowering: May–Aug.

Uses: Ornamental, beverage.

**2. Begonia cucullata** Willd. var. **hookeri** (Sweet) L. S. Sm. & Schub. 四季秋海棠 **(Photo 445)**
Darwiniana 5: 104. 1941; C. M. Hu in FGD 3: 146. 1995.

*Begonia hookeri* Sweet, Hort. Brit. (ed. 2) 437. 1850.

*Begonia semperflorens* auct. non Link & Otto: FGZ 190. 1956; FHN 1: 489. 1964.

Perennial herbs, 15–45 cm tall. Stems succulent, green or reddish. Leaves alternate, ± fleshy; petioles 0.5–2 (–3) cm; leaf blade ovate to broadly ovate, 5–10 × 3.5–7.5 cm, apex rounded or obtuse, base broadly rounded or slightly cordate and oblique, margin serrulate, ciliate, shining adaxially. Cymes axillary. Peduncle 1.5–4 cm. Flowers rosy, pink or white; male flowers: 1–2 cm in diam., perianth-segments 4, outer 2 suborbicular, ca. 1.5 cm in diam., inner 2 obovate-oblong, 8–10 × 4–5 mm; female flowers: smaller, perianth segments 5; ovary 3-locular. Capsule 10–12 mm long, with 3 slightly unequal wings.

Locality: Cultivated in gardens. *HK sheet 12255.*

Distribution: Native to Brazil; widely cultivated elsewhere.

Ecology: Flowering: Apr.–Dec.

Uses: Ornamental.

**3. Begonia palmata** D. Don 裂叶秋海棠 **(Fig. 195; Photo 446)**
Prodr. Fl. Nepal. 223. 1825; Hara, Fl. E. Himal. 215. 1966; FGD 3: 149, fig. 107. 1995.

*Begonia laciniata* Roxb., Fl. Ind. ed. 2, 3: 649. 1832; FHK 126. 1861; FKH 114. 1912.

*Begonia palmata* D. Don. var. *bowringiana* (Champ. ex Benth.) J. Golding & C. Kareg., Phytologia 54: 494. 1984; FRPS 52(1): 234. 1999.

*Begonia bowringiana* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 120. 1852.

Perennial herb, 15–60 cm tall, with horizontal rhizomes. Stems erect or decumbent at base, ± tawny tomentose. Leaves alternate; petioles usually shorter than leaf-blade, tawny tomentose; leaf blade obliquely ovate, 12–20 × 10–15 cm, apex acuminate, base obliquely cordate, margin irregularly and shallowly 5–7-lobed or coarsely toothed, adaxially strigose or with remaining small tubercles when the hairs falling off, abaxially pale green, tawny tomentose on veins. Cymes axillary or terminal. Peduncles 3–12 mm, densely tawny tomentose. Flowers pink or white; male flowers: perianth-segments 4, outer 2 ovate-elliptic to oblong, 10–25 × 7–11 mm, inner 2 smaller, elliptic to oblong; female flowers: perianth segments 5, oblong, subequal, 9–15 mm long; ovary 2-locular, puberulous. Capsule 10–15 mm long, with 3 unequal wings.

Locality: Hong Kong Island, Tai Mo Shan, Ng Tung Chai, Ma




**Figure 195.** *Begonia palmata* D. Don
*1*. plant; *2*. staminate flower. (drawn by H. P. Yu)

On Shan, Pat Sin Leng, Sunset Peak, Lantau Peak. *Y. S. Lau 918; HK sheet 12233; H. C. Tang 1827.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan, Xizang, Hunan, Jiangxi; also in India, Nepal, Myanmar and Vietnam.

Ecology: Streamsides, margins of forests and other wet places. Flowering: Summer.

Uses: Ornamental.

Notes: The type specimen of *Begonia bowringiana* was collected from Hong Kong Island by J. G. Champion between 1847 and 1850; *Begonia circumlobata* Hance reported from Lantau Island (FKH 114. 1912) was a misidentification of *B. palmata.*

**4. Begonia crassirostris** Irmsch. 粗喙秋海棠 **(Photo 447)**

Mitt. Inst. Allg. Bot. Hamburg 10: 513. 1939; FHN 1: 488, fig. 267. 1964; FGD 3: 147. 1995; FRPS 52(1): 150. 1999.

Perennial herb, 90–150 cm tall. Stems erect, glabrous, usually unbranched. Leaves alternate; petioles slender, the lower ones up to 10 cm; leaf blade obliquely oblong, 11–27 × 3.5–10 cm, apex acuminate, base cordate and strongly oblique, the outer basal lobe 1.5–6 × 2.5–6 cm, the inner one orbicular, margin ± irregularly denticulate. Cymes axillary. Peduncles 9–11 mm. Pedicels ca. 10 mm. Flowers white; male flowers: perianth-segments 3, outer 2 broadly obovate or suborbicular, 9–10 × 8–9 mm, inner 2 sligltly smaller, broadly orbicular; female flowers: perianth-segments 6, obovate, outer ones 14–16 × 8–9 mm, inner ones ca. 13 × 7 mm; ovary subglobose, 3-locular. Capsule subglobose, to 14 mm long, without wings.

Locality: Ma On Shan, Mui Tsz Lam, Tsz Mun Tin. *HK sheet 34613; F. W. Xing 7242; Y. W. Lam 1699.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi.

Ecology: Thin forests by streams and wet places. Flowering: Apr.–May; fruiting: Jul.

Uses: Ornamental.

**5. Begonia hongkongensis** F. W. Xing 香港秋海棠 **(Photo 448)**

Ann. Bot. Fennici 42: 151, fig. 1–2. 2005.

Perennial herbs, with creeping rhizome. Stems 10–21 cm, glabrous. Petioles of basal leaves 5–10 cm, sparsely covered with short hairs near apex. Stipules membranous, lanceolate, 1–2 × 2–2.5 mm. Leaf blade oblong-ovate to rhombic-ovate, 7–14 × 2.3–4.5 cm, apex acuminate, base cuneate to broadly cuneate, slightly oblique, margin irregularly and remotely serrate and shallowly 1–4-lobed, glabrous adaxially, sparsely covered with brown short hairs along veins on abaxial surface; cauline leaves 2–3, similar to basal leaves, 4.5–9 × 1.7–5.3 cm. Cymes dichotomous. Peduncles ca. 5 cm in fruiting time, glabrous. Flowers white. Male flowers: pedicels 7–14 mm; perianth-segments 4, outer 2 broadly ovate or oblong, 10 × 9 mm, inner 2 smaller, ovate. Female flowers: pedicels 2–2.5 cm; perianth 5, 7–12 × 6–12 mm; ovary 2-locular. Capsule oblong, subglabrous, with 3 unequal wings.

Locality: Kau Keng Shan, Shum Tseng. *Xing et al. 9972, 15248* (IBSC).

Distribution: Endemic to Hong Kong.

Ecology: Ravines. Flowering: Jul.–Sep.; fruiting: Oct.–Dec.

Uses: Ornamental.

Notes: The type specimen was collected from Kau Keng Shan by F. W. Xing in 1997.

# 134. SALICACEAE 楊柳科

HU Qi-ming 胡啟明

Deciduous shrubs or trees. Leaves alternate, simple, stipulate. Flowers unisexual (plant dioecious), in catkins, appearing before or at the same time as the leaves in early spring; each flower subtended by a bract. Perianth wanting. Stamens 2 to many. Ovary superior, 1-locular; stigmas 2–4, often 2-lobed. Fruit a dehiscent capsule, opening by 2–4-valves; seeds; many, surrounded by tufts of long silky hairs.

Three genera, sub-cosmopolitan, chiefly in N temperate regions; three genera and about 350 species in China; one genus and one species in Hong Kong.

## 1. Salix L. 楊柳屬

Deciduous shrubs or trees; winter-buds covered with a single scale. Leaves alternate, rarely subopposite, mostly lanceolate, dentate or entire; stipules often developed, chiefly on vigorous branches. Flowers unisexual (plant dioecious), usually in upright catkins, solitary on bracteate or leafy peduncles or branches, each flower subtended by a scale-like bract, with 1 or 2 glands or rarely a small lobed disc at the base. Male flowers: stamens usually 2, rarely 1–12; filaments slender, free or sometimes connate, exceeding the bract; female flowers: ovary 2-carpellate, sessile or stipitate; style very short or almost obsolete; stigmas 2, entire or bifid. Capsules 2-valved; seeds surrounded by tufts of long silky hairs.

About 300 species widely distributed in cold and temperate regions; 275 species in China; one species cultivated in Hong Kong.

**1. Salix babylonica** L. 垂柳 **(Fig. 196; Photo 449)**
Sp. Pl. 1017. 1753; Schneid., Pl. Wils. 3: 42. 1916; FGZ 378. 1956; FRPS 20(2): 138. 1984.

Deciduous tree, to 10 m tall, with slender pendulous branches; young shoots slightly silky, soon glabrous. Leaves alternate; petioles (3–)5–10 mm; leaf blade lanceolate to linear-lanceolate, 8–16 × 0.5–1.5 cm, base cuneate, apex long-acuminate, margin serrulate, glabrous, adaxially dark green, abaxially greyish green. Catkins short-stalked: male 1.5–2(–3) cm, female 2–3(–5) cm; bracts scale-like, villous at base; ovary sessile or nearly so, glabrous; style very short; stigmas oblong, 2-lobed; gland about 1/3 as long as ovary.

Locality: Cultivated. *Y. S. Lau 2942; S. P. Lau 105; HK sheet 26653.*

Distribution: Widely distributed in Yellow River and Changjiang River basin.

Ecology: Usually planted in gardens, by streams, on banks of ponds. Flowering: Mar.–Apr.

Uses: Ornamental.

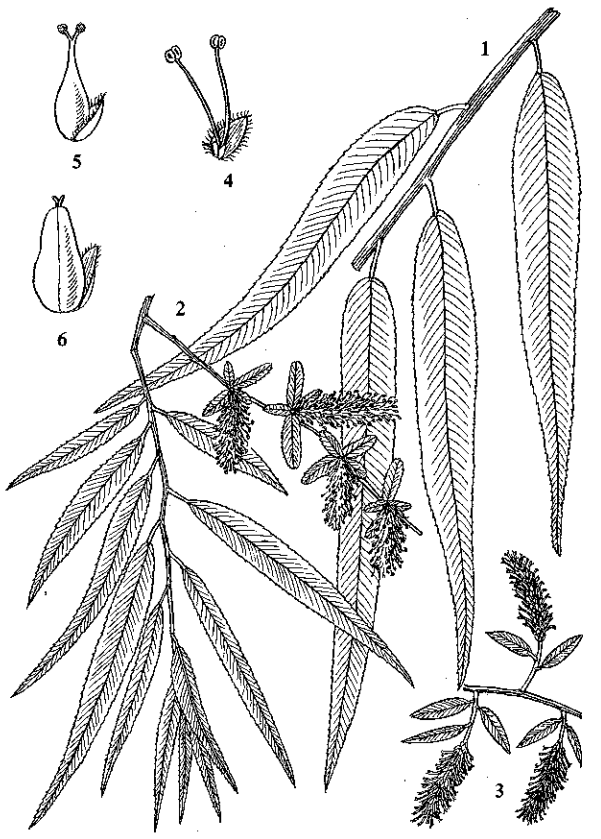



**Figure 196.** *Salix babylonica* L.
*1*. leafy branch; *2*. male flowering branch; *3*. female flowering branch; *4*. male flower; *5*. female flower; *6*. capsule. (drawn by H. P. Yu)

## 136. CAPPARACEAE 白花菜科

HU Qi-ming 胡啟明

Herbs, shrubs, or climbers, rarely trees. Leaves alternate, rarely opposite, simple or digitately compound; stipules usually none, rarely spiniform or small. Flowers usually in terminal racemes or corymbs, or occasionally solitary and axillary, bisexual or rarely unisexual, regular or often somewhat irregular. Receptacle often prolonged into a gynophone or androgynophore, bearing the gynoecium and androecium. Sepals 4–8, free or united below. Petals 4, rarely 8 or wanting, mostly free and alternate with the sepals, with or without a basal claw. Stamens 4 to many; filaments free; anthers 2-celled, opening by longitudinal slits. Ovary superior, 1-locular, with parietal placentas; style single, often very short or almost none; stigma capitate or bilobed. Fruit a capsule or a berry.

About 45 genera more than 1000 species found chiefly within the tropics, a few species stretching northward into temperate regions; five genera and about 42 species in China; three genera and nine species in Hong Kong.

1a. Annual herbs; fruit a cylindrical capsule ..... 1. *Cleome*
1b. Scandent shrubs; fruit a berry.
2a. Leaves simple ..... 2. *Capparis*
2b. Leaves digitately compound ..... 3. *Crateva*

### 1. Cleome L. 白花菜屬

Annual or perennial herbs, often with glandular hairs and disagreeably scented. Leaves alternate, digitately compound, with or without stipules; leaflets 3–9, entire or toothed. Flowers in terminal racemes or panicles. Sepals 4, free or connate at the base. Petals 4, alternate with sepals, often with claw. Stamens 6 to many. Ovary usually stipitate, 1-locular, with many ovules; style short or absent. Fruit a capsule, 2-valved, many-seeded.

About 150 species widely dispersed over tropical and subtropical regions; six species and one variety in China; five species (including one cultivated) in Hong Kong.

1a. Petals yellow, not clawed; stamens 10–22, shorter than petals ..... 1. *C. viscosa*
1b. Petals pink, white or purplish, ± clawed; stamens less than 10, longer than petals.
2a. Flowers in racemes; filaments 1.5–7 cm; plants glandular-hairy.
3a. Leaflets lanceolate or oblanceolate; petals pink or white ..... 2. *C. hassleriana*
3b. Leaflets obovate to obovate-elliptic to oblanceolate; petals white ..... 3. *C. gynandra*
2b. Flowers solitary in axil of upper leaves; filaments 5–7 mm; plants sparsely glandular-hairy or glabrescent.
4a. Plant glandular-hairy; leaflets elliptic-lanceolate ..... 4. *C. rutidosperma*
4b. Plant glabrous; leaflets rhomboid-ovate ..... 5. *C. burmannii*

**1. Cleome viscosa** L. 黄花草(臭屎菜) **(Fig. 197)**

Sp. Pl. 672. 1753; FHN 1: 344. 1964; FGD 1: 81, fig. 86. 1987; FTW ed. 2, 2: 739, pl. 348, photo 329. 1996; FRPS 32: 537, pl. 135. 1999.

*Polanisia viscosa* DC., Prodr. 1: 242. 1824; FHK 17. 1861; FKH 35. 1912.

Annual herb, 30–100 cm tall, covered with short glandular hairs and disagreeably scented. Leaves digitately compound; petioles (1–)2–4 (–6) cm; leaflets 3–5(–7), subsessile, blade obovate to obovate-oblong, the middle one larger, 1–5 × 0.5–1.5 cm, margin entire, ciliate. Flowers solitary in axils of gradually reduced upper leaves, in appearance of a terminal raceme. Bract leafy, 3-lobed. Pedicels slender, 1–2 cm. Sepals narrowly elliptic to oblanceolate-elliptic, 6–7 ×1–3 mm. Petals yellow, narrowly obovate or spathulate, 7–12 × 3–5 mm, without claw. Stamens 10–22(–30), inserted on disc. Gynophore none. Ovary cylindrical, ca. 8 mm, with viscid glandular hairs; style very short. Capsule cylindrical, 4–10 cm.

Locality: Wan Chai, Wong Chuk Hang, Shing Mun. *Y. S. Lau 118; Y. W. Lam 1548; HK sheet 189.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Hunan, Jiangxi, Anhui, Zhejiang, Fujian, Taiwan; widely distributed in tropical and subtropical regions.

Ecology: Waste places. Flowering: Jul.

Uses: Medicinal (folklore).

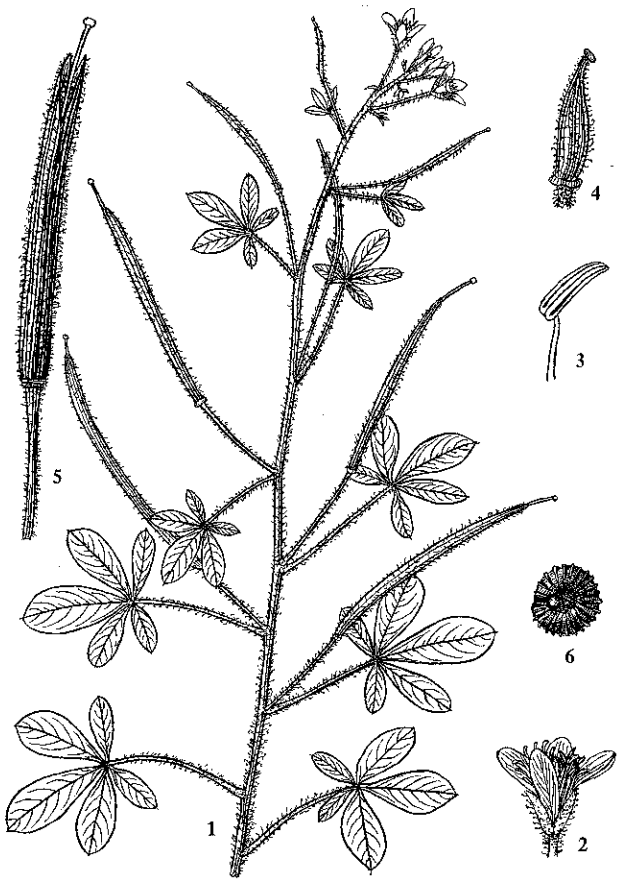



**Figure 197.** *Cleome viscosa* L.
*1.* upper part of plant; *2.* flower; *3.* stamen; *4.* pistil; *5.* capsule; *6.* seed. (drawn by H. P. Yu)

**2. Cleome hassleriana** Chodat 醉蝶花 **(Photo 450)**

Bull. Herb. Boissier 6 (App. I): 12. 1898.

*Cleome spinosa* auct. non Jacq.: FGZ 109, fig. 41. 1956; FGD 1: 82, fig. 87. 1987; FRPS 32: 534. 1999.

Annual herb, 1–1.5 m tall, disagreeably scented. Stems erect, with glandular hairs and spiny stipules. Leaves digitately compound; petioles 2–8 cm, often with yellowish prickles; leaflets 5–7, elliptic-lanceolate or oblanceolate, the middle one larger, 6–10 × 1–2.5 cm, base cuneate, apex acuminate or acute, hairy on both surfaces. Racemes terminal, to 40 cm, densely covered with viscid glandular hairs. Bract leafy, ovate-oblong, 5–20 mm, sessile or nearly so, base ± cordate. Pedicels 2–3 cm, with short glandular hairs. Sepals 4, oblong-elliptic, ca. 6 mm. Petals pink or white, oblanceolate-spathulate,10–15 × 4–6 mm; claw 5–12 mm. Stamens 6; filaments 3.5–4 cm. Gynophore 4–5 cm. Ovary cylindrical, 3–4 mm, glabrous; style very short. Capsule cylindrical, 5–6.5 cm.

Locality: Cultivated. *Y. W. Lam 1752.*

Distribution: Native to tropical America; widely cultivated.

Ecology: Flowering and fruiting: Mar.–Aug.

Uses: Ornamental.

**3. Cleome gynandra** L. 白花菜

Sp. Pl. 2: 671. 1753; FHN 1: 344, fig. 174. 1964; FTW ed. 2, 2: 739, pl. 346. 1996; FRPS 32: 533. 1999; FGD 1: 82, fig. 88. 1987.

Annual herb, ca. 1 m tall. Stems erect; young branches, petioles and inflorescence ± with glandular hairs. Leaves digitately compound; petioles 2–6 cm; leaflets 3–7, sessile or nearly so, blade obovate-elliptic to oblanceolate, the middle one larger, 1–5 × 0.8–1.6 cm, apex acute, obtuse or rounded, base cuneate, margin serrulate, glabrescent on both surfaces. Racemes terminal, 15–30 cm. Bract leafy, 3-lobed. Pedicels 1–2 cm, hairy. Sepals lanceolate, elliptic or ovate, 3–6 × 1–2 mm. Petals white, suborbicular or broadly obovate, 6–12 × 2–6 mm , claw ca. 5 mm. Stamens 6, exserted. Androgynophore 5–18(–22) mm. Ovary cylindrical, with viscid glandular hairs; style very short. Capsule cylindrical, 4–8 cm.

Locality: Cheung Chau. Exotic. *Y. W. Lam 1550; HK sheet 204.*

Distribution: Widely distributed from Hainan northwards to Hebei, and from Yunnan eastwards to Taiwan; widely distributed in tropical and subtropical regions.

Ecology: Roadsides, wastelands near villages. Flowering & fruiting: Jul.–Oct.

Uses: Medicinal (folklore).

**4. Cleome rutidosperma** DC. 皺子白花菜

Prodr. 1: 241. 1824; FTW ed. 2, 2: 739, pl. 347. 1996; FRPS 32: 539. 1999.

Annual herb, to 90 cm tall. Stems erect or decumbent, covered with viscid glandular hairs, but sometimes glabrescent. Leaves digitate-trifoliolate; petioles 2–20 mm, glandular hairy; leaflets subsessile; leaf blade elliptic lanceolate, the middle one larger, 1–2.5

× 0.5–1.2 cm, base cuneate, apex acute, acuminate, obtuse or rounded, glandular hairy on veins abaxially. Flowers solitary in axils of upper leaves, forming interrupted leafy racemes. Pedicels slender, 1–2 cm, lengthening to 3 cm in fruit. Sepals 4, green, lanceolate, ca. 4 mm. Petals 4, oblanceolate-elliptic, ca. 6 × 2 mm, base narrowed into a short claw. Stamens 6; filaments 5–7 mm. Gynophore 1.5–2 mm. Ovary cylindrical, glabrous; style very short; stigma capitate. Capsule cylindrical, 3.5–6 cm.

Locality: Cultivated. *S. Y. Hu & P. P. H. But 22192, 22155* (CUHK).

Distribution: Yunnan, Taiwan; native to tropical Africa, naturalized elsewhere in tropics.

Ecology: Wastelands, farmlands, roadsides. Flowering & fruiting: Jun.–Sep.

**5. Cleome burmannii** Wight & Arn. 印度白花菜 **(Photo 451)**

Prodr. 1: 22. 1834; Hook. f. & Thoms., Fl. Brit. Ind. 1: 170. 1875.

Annual herb, 30–65 cm tall. Stems, branches and pedicels glabrous, but sparsely pubescent when young. Leaves alternate, 3-foliate; petioles 1.5–3 cm; leaflets rhomboid-ovate, the middle one larger, 1.8–3 × 0.7–1.4 cm, narrowed to both ends, tip blunt, lateral leaflets smaller, 1–2 × 0.5–1 cm glabrescent or sparsely pubescent on abaxial veins, margin entire, ciliate. Flowers solitary in axils of leaves. Pedicels slender, ca. 2.5 cm. Sepals 4, lanceolate, ca. 2.5 mm. Petals 4, purplish red, oblanceolate, ca. 5 mm. Capsule 4–6 cm, terete, tapering at both ends, glabrous.

Locality: Chuen Lung, Sheung Pak Nai. Naturalized. *L. T. Lo 346; Y. W. Lam 376.*

Distribution: India.

Ecology: Roadsides, wastelands. Flowering & fruiting: Summer to autumn.

## 2. Capparis L. 山柑屬

Evergreen erect or scandent shrubs, or rarely small trees. Leaves simple, entire, spirally arranged; stipules usually spiny. Flowers in racemes, umbels or panicles, or solitary a little above the axils of the leaves and 2 to many arranged in a vertical row on the flowering branches. Sepals 4, in 2 whorls. Petals 4, imbricate. Stamens 6 to many, free, inserted on the base of gynophore. Ovary usually 1-locular, with (2–)4(–6) parietal placentae and many ovules. Fruit a fleshy berry, 1–many-seeded.

About 250 species widely distributed from tropical to temperate regions; about 33 species in China; two species in Hong Kong.

1a. Flowers in terminal or axillary panicles; fruit rounded at apex ..... 1. *C. cantoniensis*

1b. Flowers solitary a little above axils of leaves; fruit with a short beak at apex ..... 2. *C. acutifolia*

**1. Capparis cantoniensis** Lour.

廣州槌果藤 **(Fig. 198; Photo 452)**

Fl. Cochinch. 331. 1790; FGZ 107. 1956; Jacobs, Fl. Mal. 1. 6: 76. 1960; FHN 1: 349. 1964; FGD 1: 88, fig. 97. 1987; FRPS 32: 526. 1999.

*Capparis pumila* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 3: 260. 1852; FHK 18. 1861; FKH 36. 1912.

Scandent shrub. Branches slender, with small recurved spines, glabrous or slightly pubescent on the upper part. Leaves subleathery; petiole 4–6(–10) mm, pubescent; leaf blade oblong-ovate to oblong-lanceolate, 5–10(–12) × 1.5–4 cm, base broadly cuneate or obtuse, apex usually acuminate, glabrous. Panicles consisting of few-flowered umbels, terminal or axillary. Pedicels 4–10 mm, puberulent. Flowers white, ca. 1 cm in diam. Sepals 4–5 × 2.5–3 mm, with white membranous margins. Petals obovate or oblong, 4–6 × 1.5–2.5 mm. Stamens 20–45; filaments 8–15 mm. Gynophore 6–8(–12) mm. Ovary ovoid or conical, glabrous. Fruit globose, 6–10(–15) mm in diam., apex rounded, glabrous.

Locality: Hong Kong Island, Lantau Island, Cheung Chau, Po Toi. *K. Y. Tam s.n. (HK sheet 38775, 40219).*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Fujian; S to SE Asia.

Ecology: Thin forests on slopes. Flowering: Mar.–Nov.; fruiting: Jun.–Mar. of the following year.

Uses: Medicinal (folklore).

Notes: The type specimen of *Capparis pumila* was collected from "the Black Mountain", Hong Kong Island by J. G. Champion in January 1850.




**Figure 198.** *Capparis cantoniensis* Lour.

*1*. flowering branch; *2*. fruiting branch; *3*. flower bud; *4*. petal viewing indumentum. (drawn by H. P. Yu)

**2. Capparis acutifolia** Sweet 獨行千里(尖葉槌果藤) **(Photo 453)**

Hort. Brit. (ed. 2) 585. 1830; FGD 1: 89, fig. 100. 1987; FTW ed. 2, 2: 735. photo 322. 1996; FRPS 32: 498. 1999.

*Capparis membranacea* Gardn. & Champ., Hooker's J. Bot. Kew Gard. Misc. 1: 241. 1849; FHK 18. 1831; FKH 35. 1912.

Scandent shrub, glabrous, or sometimes with caducous yellowish short hairs on young shoots and petioles, with or without spines. Leaves membranous or slightly leathery; petioles 5–7 mm; leaf blade oblong-lanceolate or ovate-lanceolate, very variable in size, 4–15(–19.5) × (0.8–)1–4(–6.3) cm, base acute or cuneate, sometimes rounded, apex acuminate, glabrous, yellowish green when dry. Flowers white, solitary, borne a little above axils of leaves, often 2–4 together in a vertical row on flowering branches. Pedicels 1–1.5 cm. Sepals narrowly oblong, 5–7 × 3–4 mm, outer ones glabrous, inner ones with caducous yellowish hairs when young. Petals oblong, ca. 1 × 0.3 cm. Stamens 20–30. Gynophore 1.5–2.5 cm, glabrous. Ovary ovoid or conical, glabrous. Fruit subglobose, 1–2.5 × 1–1.5 cm, usually with a short beak at apex.

Locality: Hong Kong Island, Tsuen Wan, Tai Mo Shan, Sha Tau Kok, Lantau Island. *HK sheet 208, 212, 10395, 38797.*

Distribution: Hainan, Guangdong, Hunan, Jiangxi, Fujian, Taiwan; Vietnam.

Ecology: Flowering: Mar.–Jul.; fruiting: Aug.–Feb. of the following year.

Uses: Medicinal (folklore).

Notes: The type specimen of *Capparis membranacea* was collected from Victoria Peak by J. G. Champion between 1847 and 1849.

## 3. Crateva L. 魚木屬

Trees or shrubs, evergreen or deciduous. Leaves digitately ternate, alternate; stipules small, caducous. Flowers bisexual or functionally unisexual, in terminal or axillary racemes or corymbs, with caducous bracts. Sepals 4, subequal, much smaller than petals, fused with the raised and lobed disc at the base. Petals 4, clawed. Stamens (8–)12–50, united with gynophore at the base. Gynophore 2–8 cm, or reduced in male flowers. Ovary 1-locular, with 2 parietal placentae and many ovules; style absent. Fruit a fleshy many-seeded berry.

About 13 species in tropical and subtropical regions; four species in China; two species in Hong Kong.

1a. Leaflets with 8–11 pairs of lateral veins; fruit with cream tubercles ..... 1. *C. unilocularis*

1b. Leaflets with 5–7 pairs of lateral veins; fruit smooth, without tubercles ..... 2. *C. trifoliata*

**1. Crateva unilocularis** Buch.-Ham. 樹頭菜 **(Fig. 199; Photo 454)**

Trans. Linn. Soc. 15: 121. 1827; FGD 1: 83, fig. 90. 1987; FRPS 32: 486, pl. 123. 1999.

*Crateva religiosa* auct. non Forst. f.: FKH 36. 1912; FGZ 108, fig. 40. 1956; FHN 1: 346, fig. 175. 1964.

Deciduous tree, 4–6(–15) m tall. Leaves digitately ternate; petioles 4–12 cm, with glands at apex. Leaflets thinly leathery; petiolules 5–10 mm; blade ovate or elliptic, (4–)7–18 × (2.5–)3–8 cm, base cuneate, apex acuminate or acute, lateral ones inaequilateral, glabrous, adaxially ± shining, abaxially greyish; lateral veins usually 8–11 on each side of midvein. Corymbs terminal. Pedicels 3–7 cm. Sepals lanceolate, 3–7 × 2–3 mm. Petals white or pale yellow; petal-blade ovate or oblong, 1–3.5 × 0.5–2.5 cm; claw 0.7–1 cm. Stamens 13–30. Gynophore 4–7 cm. Ovary ovoid, 3–4 mm; stigma capitate, subsessile. Fruit subglobose, 2.5–4 cm in diam., initially smooth, with yellow or cream tubercles when mature.

Locality: Cultivated. *L. T. Lo 486; H. C. Tang 131.*

Distribution: Guangdong, Guangxi, Fujian, Yunnan; tropical Asia and Australia.

Ecology: Flowering: Spring; fruiting: Summer to autumn.

Uses: Ornamental.

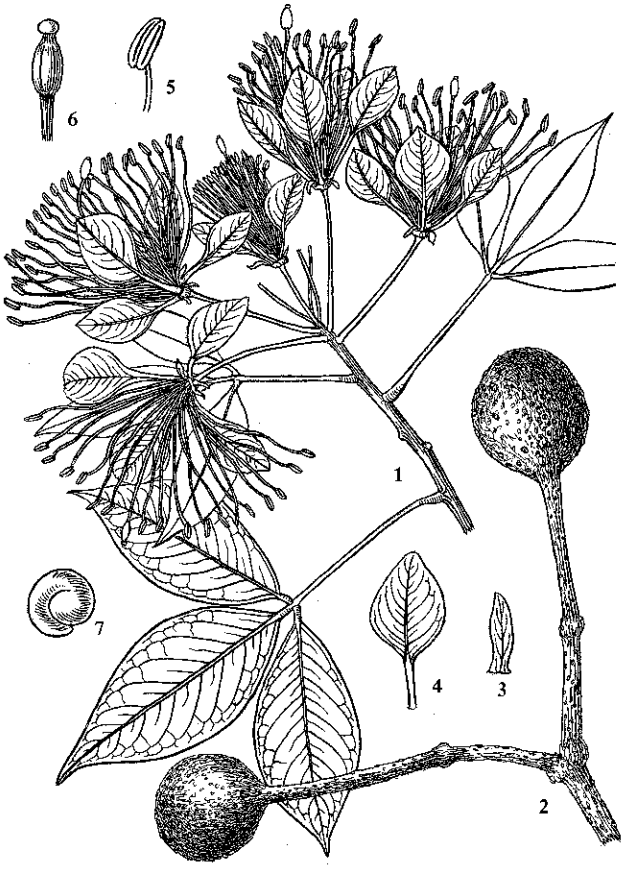



Figure 199. *Crateva unilocularis* Buch.-Ham.
*1*. flowering branch; *2*. fruiting branch; *3*. calyx; *4*. petal; *5*. stamen; *6*. pistil; *7*. seed. (drawn by H. P. Yu)

**2. Crateva trifoliata** (Roxb.) B. S. Sun 鈍葉魚木 **(Photo 455)**

FRPS 32: 489. 1999.

*Capparis trifoliata* Roxb., Fl. Ind. ed. Carey 2: 571. 1832.

*Crateva adansonii* subsp. *trifoliata* (Roxb.) Jacobs, Blumea 12(2): 199. 1964.

*Crateva erythrocarpa* Gagn., Bull. Soc. Bot. France 55: 322. 1908; FHN 1: 345. 1964.

Deciduous tree or shrub, 1.5–30 m tall. Branches greyish brown, with leaf-scars. Leaves digitately ternate; petioles 4.5–12 cm, canaliculated. Leaflets papery; petiolules 3–10 mm; blade ovate, elliptic or ovate-lanceolae, 7–12 × 3–5 cm, base cuneate,

apex acute or acuminate, rarely obtuse, lateral ones inaequilateral, glabrous; lateral veins usually 5–7 on each side of midvein. Corymbs lateral or terminal. Pedicels 4–6 cm. Sepals 3–5 × 2–3 mm, orange red when dry. Petals initially white, later turning pale yellow, ovate or oblong, 1–2 × 1–1.3 cm; claw 4–8 mm. Stamens 15–26, purple, unequal. Gynophore 1.5–4.5 cm. Ovary ellipsoid; stigma sessile. Fruit globose, ca. 4 cm in diam., smooth, red when mature.

Locality: Pat Sin Leng, Ng Tung Chai, also cultivated. *L. T. Lo 281; F. W. Xing 8162; HK sheet 40177.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan; Vietnam, Myanmar, India, Malaysia.

Ecology: Flowering: Mar.–May; fruiting: Aug.–Nov.

Uses: Ornamental.

Notes: This species was reported as *Crateva religiosa* G. Forst. previously (Check List HK Plants 41. 1993).

# 137. BRASSICACEAE (CRUCIFERAE) 十字花科

WU De-lin 吳德鄰

Herbs, often with pungent juice. Leaves alternate, rarely opposite, usually simple, entire to pinnately dissected, rarely pinnate, estipulate. Inflorescence usually a terminal raceme. Flowers bisexual, usually regular. Sepals 4, decussate, free, not saccate or lateral (inner) pair saccate. Petals 4, imbricate or convolute, usually clawed, free, alternated with sepals, rarely reduced. Stamens 6, tetradynamous, inner 2 short, outer 4 longer, anthers dehiscing by longitudinal slits. Ovary superior, with 2 locules separated by a thin replum connecting 2 partietal placentas, each with one or more ovules in 1–3 rows; nectars rich of hexose. Fruit a silique or silicle, dehiscing into 2 valves or indehiscent. Seeds small, without albumen, embryo much curved, cotyledons either accumbent or incumbent.

About 330 genera, 3500 species widely distributed in the world, especially temperate regions; 102 genera and 412 species in China; eight genera, 14 species (one represented by fire varieties) in Hong Kong.

1a. Fruit a silicle (short pod).
- 2a. Silicle obcordate to triangular ..... 1. *Capsella*
- 2b. Silicle reniform or suborbicular.
  - 3a. Stems prostrate; silicle reniform ..... 2. *Coronopus*
  - 3b. Stems erect; silicle suborbicular ..... 3. *Lepidium*

1b. Fruit a silique (long pod).
- 4a. Silique nodose, indehiscent ..... 4. *Raphanus*
- 4b. Silique not nodose, dehiscent.
  - 5a. Leaves pinnate.
    - 6a. Terrestrial plants; silique linear; leaflets 5–15 ..... 5. *Cardamine*
    - 6b. Aquatic or wet plants; silique cylindric; leaflets 3–7 ..... 6. *Nasturtium*
  - 5b. Leaves simple.
    - 7a. Petals short-clawed or without petals ..... 7. *Rorippa*
    - 7b. Petals long-clawed ..... 8. *Brassica*

## 1. Capsella Medik. 薺菜屬

Annual or biennial herbs, glabrous, with simple or furcated hairs. Stems erect. Leaves simple, basal ones pinnately dissected or entire, petiolate, cauline ones toothed or entire, with or without petioles, if epetiolate, then base amplexicaule. Racemes corymbiform. Flowers sparse, white or pink. Sepals 4, oblong; petals 4, spathulate clawed. Stamens 6, tetradynamous; nectar 6. Ovary sessile, ovules many; style short; stigma compressed-globose, lunate. Silicles obcordate to triangular, dehiscing by 2-valves. Seeds brown, 6–12 per locule, elliptic.

Five species mainly distributed in Mediterranean regions; one species in China; it also occurs in Hong Kong.

**1. Capsella bursa-pastoris** (L.) Medik.
薺菜 **(Fig. 200; Photo 456)**

Pfl.-Gatt. 85. 1792; FHK 16. 1861; FKH 35. 1912; FGD 3: 34. 1995; FOC 8: 43. 2001.

*Thlaspi bursa-pastoris* L., Sp. Pl. 2: 647. 1753.

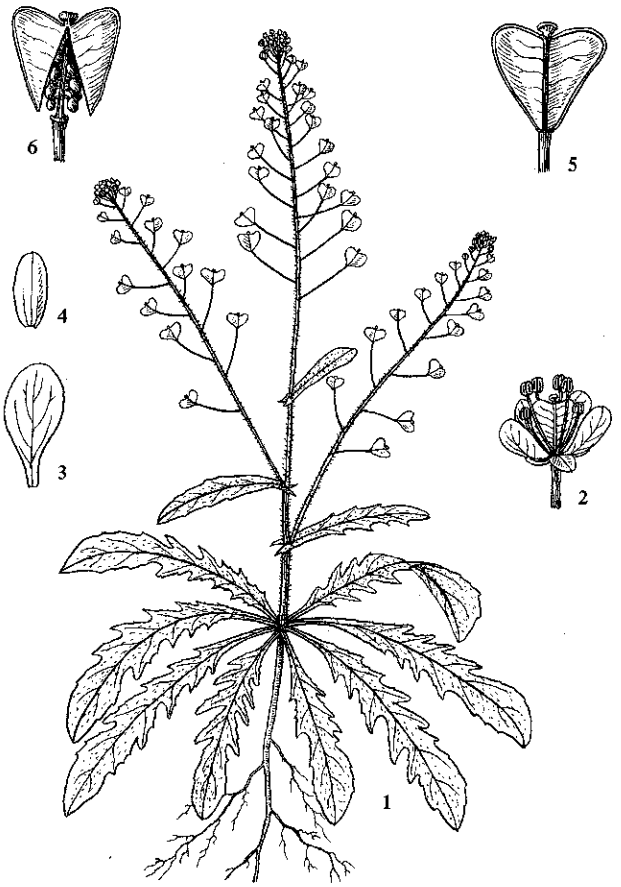



**Figure 200.** *Capsella bursa-pastoris* (L.) Medik.
*1*. plant; *2*. flower; *3*. petal; *4*. sepal; *5*. silicle; *6*. dehiscent silicle. (drawn by H. P. Yu)

Annual or biennial herb, 10–15 cm tall, glabrous or with simple or furcate hairs. Stems erect, simple or branched. Basal leaves rosulate, lyrate, up to 12 cm, terminal lobes ovate to oblong, lateral lobes 3–8 pairs. Petioles 5–40 mm; cauline leaves narrowly lanceolate or lanceolate up to 6 cm, base auriculate, amplexicaul. Racemes terminal and axillary, up to 20 cm; pedicel 3–8 mm. Flowers white, 2.5 mm. Sepals oblong, 1.5–2 mm. Petals ovate, 2–3 mm, shortly clawed. Silicles obtriangular or obcordate-triangular, 5–8 mm, flat, apex emarginate, stalk 5–15 mm. Seeds 2-ranked, brownish, oblong, 1 mm.

Locality: Aberdeen, Victoria Peak, Sai Kung, Ng Tung Chai, Wun Yiu. *P. S. Choi 115; Y. S. Lau 81, 1752.*

Distribution: Widely distributed in temperate regions.

Ecology: Farmlands. Flowering & fruiting: Jan.–Mar.

Uses: Vegetable, medicinal.

## 2. Coronopus Zinn. 臭薺屬

Annual to perennial herbs. Stems prostrate or ascending or suberect, glabrous or simply hairy. Leaves simple, basal ones 1–3-pinnatisect, rarely serrate; cauline ones serrate or entire, petiolate or subsessile. Racemes axillary, many flowered. Flowers minute. Sepals 4, ovate or elliptic. Petals 4, white or violet, obovate or spathulate, claw usually absent. Stamens 6, tetradynamous, sometimes reduced to 4 or 2; nectar with 2, 4 or 6 glands. Ovary 2-ovuled. Silicles indehiscent, didymous, reniform or cordate. Seeds 1 per locule, ovoid or oblong, cotyledons incumbent.

Ten species distributed in SW Europe, S America; two species (introduced) in China; one species naturalized in Hong Kong.

**1. Coronopus didymus** (L.) J. E. Smith 臭薺 **(Fig. 201)**

Fl. Brit. 2: 691. 1804; FGD 3: 33. 1995; FOC 8: 34. 2001.

*Lepidium didymus* L. , Syst. Nat. (ed. 12) 2: 433. 1767.

*Senebiera pinnatifida* DC., Mem. Soc. Hist. Nat. Paris 7: 144, pl. 9. 1799; FKH 35. 1912.

Annual or biennial herb, with foul smell, 10–50 cm tall. Stems usually prostrate, several tufted, branched above. Petioles 5–8 mm; leaves pinnatisect or bipinnatisect, lateral lobes 2–7 on each side or rachis, variable in size, linear or narrow-oblong, 4–8 mm, glabrous on both surfaces; cauline leaves similar to basal ones, progressively smaller and less divided upward. Racemes terminal or lateral and leaf-opposed. Flowers 1 mm in diam. Sepals ovate, 0.5–0.7 mm. Petals white, elliptic to linear, 0.4–0.5 mm. Stamens often 2, rarely 4, filaments white, dilated at base, anthers ovoid. Silicles 1.5 × 2–2.5 mm, didymous, compressed, emarginate at both ends; valves semiorbicular, prominately reticulate or rugose. Seeds red-brown, reniform, ca. 1 mm, finely reticulate.

Locality: Victoria Peak, Tai Hang, Shatin. *Y. S. Lau 2100, 1785; W. J. Tutcher 6763.*

Distribution: Guangdong, Fujian, Jiangxi, Anhui, Jiangsu, Zhejiang, Taiwan, Shandong, Hubei, Sichuan, Yunnan; Europe, N America, Asia.

Ecology: Roadsides, valleys. Flowering: May; fruiting: Apr.

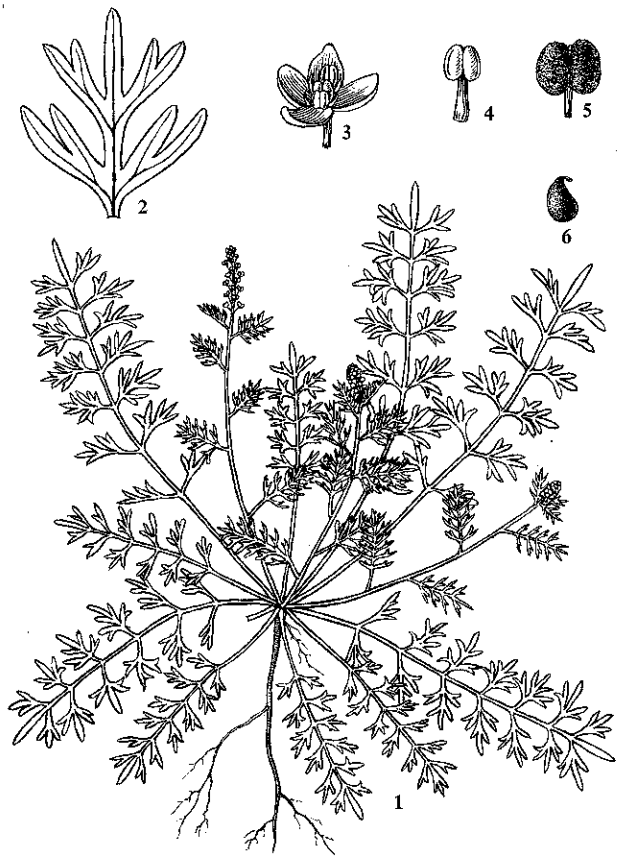



**Figure 201.** *Coronopus didymus* (L.) J. E. Smith
*1*. plant; *2*. part of basal leaf; *3*. flower; *4*. stamen; *5*. silicle; *6*. seed. (drawn by H. P. Yu)

## 3. Lepidium L. 獨行菜屬

Annual, biennial or perennial herbs, sometimes subshrubs or climbers, usually with simple or glandular hairs. Leaves basal and cauline, entire or pinnately dissected, petiolate or sessile. Racemes terminal and axillary. Sepals 4, ovate or oblong, base not saccate; petals 4, white, pink or yellowish, linear to spathulate, sometimes rudimentary or absent. Stamens 6, 2 or 4, base with minute glands. Ovary 2-ovuled, stigma capitate, entire or rarely 2-lobed. Silicles ovate, elliptic to orbiculate. Seeds oblong or ovate, 1 per locule, winged or not, cotyledons incumbent, rarely accumbent or diplecolobal.

About 180 species distributed in all continents except Antarctic; 16 species in China; one species in Hong Kong.

**1. Lepidium virginicum** L. 北美獨行菜 **(Fig. 202)**

Sp. Pl. 2: 645. 1753; FGD 3: 32. 1995; FOC 8: 32. 2001.

*Lepidium ruderale* auct. non L.: FKH 35. 1912.

Annual or biennial herb, 10–25 cm tall. Stems erect, with clavate glandular hairs. Petioles 1–1.5 cm; basal leaves oblanceolate, 1–5 cm, pinnatifid; lobes apex acute, margin serrate or dentate, adpressedly pubescent on both surfaces; cauline leaves shortly petiolate, oblanceolate or linear, 1.5–5.5 cm × 5–10 mm, apex acute, margin serrate or entire. Racemes terminal. Sepals elliptic, ca. 1 mm. Petals

white, spathulate, 1–1.2 mm, rarely rudimentary. Stamens 2 or 4. Silicles orbicular, 2–3 mm, narrowly winged apically, apex emarginate. Seeds reddish brown, ovate, ca, 2 mm, narrowly winged, cotyledons accumbent.

Locality: Lantau Island. *HK sheet 35619, 38871, 40207.*

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shandong, Sichuan, Taiwan, Yunnan; Bhutan, India, Japan, Pakistan, Russia; native to N America; introduced elsewhere.

Ecology: Fields, roadsides, waste places, grassy areas. Flowering: May–Jul.; fruiting: May–Sep.

Notes: This species was reported as *Lepidium apetalum* Willd. previously (Check List HK Plants 111. 2002).

## 4. Raphanus L. 蘿蔔屬

Annual, biennial or perennial herbs, usually simply hairy, sometimes with fleshy roots. Leaves simple, lyrate, pinnately lobate or pinnatipartite. Racemes corymbiform, ebracteate. Flowers large. Sepals 4, oblong or linear, base of lateral pair saccate. Petals 4, yellow, white, pink or purple, usually with dark veins, obovate or suborbicular, long clawed. Stamens 6, tetradynamous, filaments not dilated at base; nectar 4-glanded. Ovary 2–22-ovuled; stigma capitate, entire or slightly 2-lobed. Siliques indehiscent, thick, more or less constricted between seeds. Seeds uniseriate, brown, plump, ovoid or globose, cotyledons conduplicate.

Three species distributed in Mediterranean regions; two species introduced to China; one species cultivated in Hong Kong.

**1. Raphanus sativus** L. 蘿蔔 **(Fig. 203; Photo 457)**

Sp. Pl. 669. 1753; FHK 17. 1861; FHN 1: 356. 1964; FGD 3: 31. 1995; FOC 8: 25. 2001.

Annual or biennial herb, up to 1 m tall; roots fleshy, white or purple, globose or oblong. Stems erect. Basal leaves petiolate, oblong to oblanceolate, 8–30 cm, lyrate or pinnatisect, lateral lobes 4–6 on each side of midrib, oblong or ovate, 10 × 5 cm; upper cauline leaves often narrow and entire. Racemes terminal and axillary; pedicels 5–15 mm. Sepals oblong, 5–7 mm. Petals white or pink, often with dark veins, obovate, 1–1.5 cm, claw ca. 5 mm. Siliques cylindric, 3–6 cm, constricted between seeds, separated by a pithy substance filling the pods. Seeds red-brown, ovoid, ca. 3 mm in diam.

Locality: Cultivated. *S. P. Lau 20; J. L. Sample 7; C. O. Levine 3272.*

Distribution: Widely cultivated.

Ecology: Flowering: Apr.–May; fruiting: May–Jun.

Uses: Vegetable.

## 5. Cardamine L. 碎米薺屬

Annual to perennial herbs, with simple hairs or glabrous. Stems erect or prostrate. Leaves simple or pinnately compound. Racemes corymbiform, usually ebracteate. Sepals 4, ovate or oblong, base of lateral pair saccate or not. Petals 4, white, pink or purple, obovate, oblong or spathulate, sometimes clawed; Stamens 6 and tetradynamous, rarely 4; nectar glands confluent and subtending bases of all stamens. Ovary 4–50-ovuled, style distinct or rarely obsolete, stigma capitate, entire. Siliques linear, dehiscent, flat. Seeds uniseriate, oblong or ovate, flat; cotyledons often accumbent.

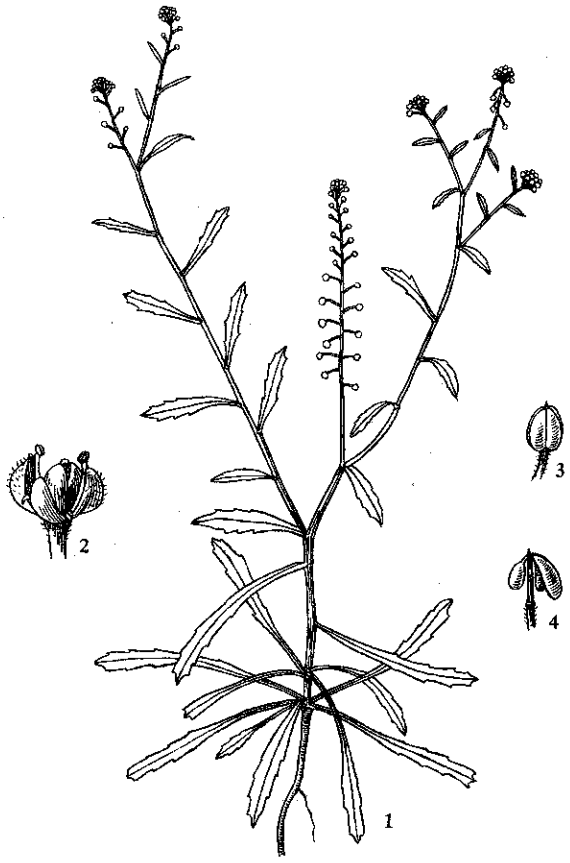



**Figure 202.** *Lepidium virginicum* L.

*1*. plant; *2*. flower; *3*. silicle; *4*. dehiscent silicle. (drawn by H. P. Yu)

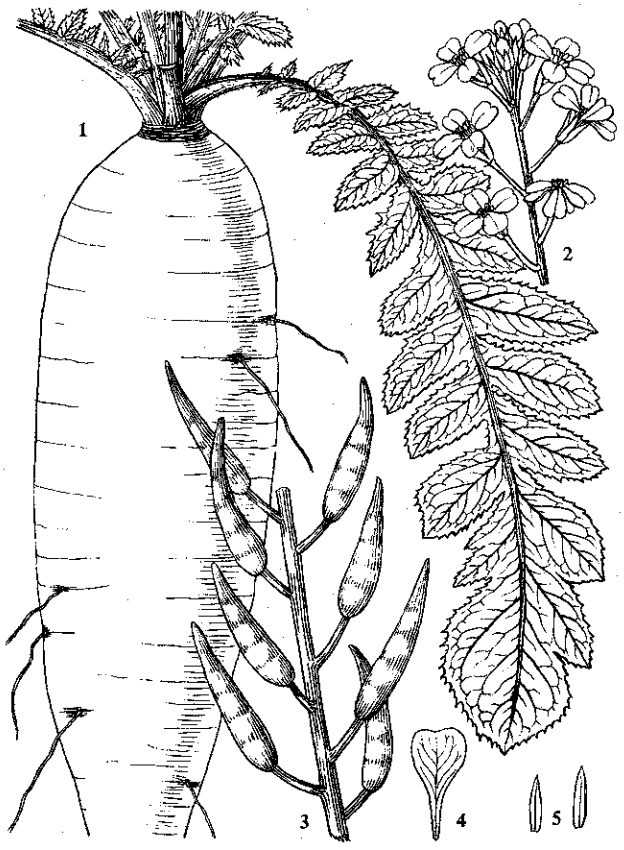



**Figure 203.** *Raphanus sativus* L.

*1*. root and basal leaf; *2*. part of inflorescence; *3*. part of infructescence; *4*. petal; *5*. sepals. (drawn by H. P. Yu)

About 200 species distributed worldwide; 48 species in China; one species in Hong Kong.

**1. Cardamine flexuosa** With. 彎曲碎米薺 **(Fig. 204; Photo 458)**
Arr. Brit. Pl. (ed. 3) 3: 578. 1796; FGD 3: 38. 1995; FOC 8: 105. 2001.

*Cardamine hirsuta* auct. non L.: FHK 16. 1861; FKH 34. 1912.

Annual or biennial herb, ca. 30 cm tall, sparsely pubescent. Stems erect, ascending or decumbent branched from base, usually flexuous. Leaves pinnately compound; basal leaves not rosulate; leaflets 3–7 pairs, ovate, obovate or oblong, 2–5 mm, petiolulate; cauline ones 3–5 pairs, ovate or linear, entire or 1–3-lobed. Racemes terminal; rachis flexuous; pedicles 2–4 mm. Sepals oblong, 1.5–2.5 mm. Petals white, spathulate, ca. 3.5 mm. Stamens 6, rarely 4. Ovary 18–40-ovuled. Siliques linear, 1.2–2 cm, flat. Seeds brown, oblong, 1 mm, flat, apex narrowly margined or not.

Locality: Common in Hong Kong. *L. T. Lo 532; S. P. Lau 26; Y. S. Lau 2095.*

Distribution: Hainan, Guangdong, Guangxi, Fujian (cultivated); Sri Lanka, India, Malaysia, Vietnam, Philippines.

Ecology: Flowering: Apr.–May.

Uses: Medicinal.

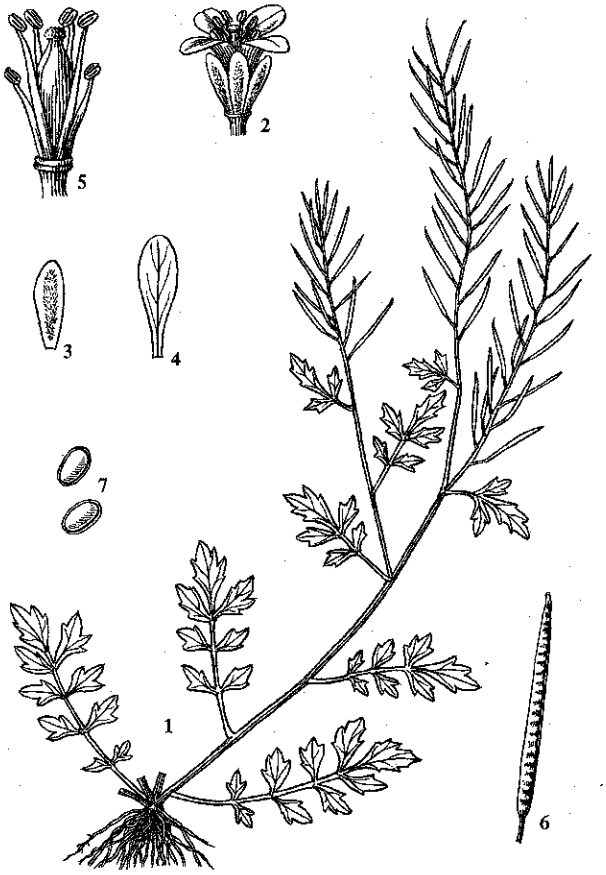



**Figure 204.** *Cardamine flexuosa* With.
*1*. plant; *2*. flower; *3*. sepal; *4*. petal; *5*. flower with sepals and petals removed; *6*. silique; *7*. seeds. (drawn by H. P. Yu)

## 6. Nasturtium R. Br. 豆瓣菜屬

Annual or perennial herbs, aquatic or terrestrial, glabrous or strigose. Stems prostrate or decumbent. Leaves all cauline, pinnately compound or simple, entire or pectinately pinnatisect. Racemes terminal, many flowered, elongated when fruiting. Sepals 4, ovate or oblong, base of lateral pair subsaccate or not. Petals 4, white or purplish, obovate or spathulate. Stamens 6, tetradynamous; medium glands absent, lateral glands 2, annular or semiannular. Siliques dehiscent, smooth or slightly torulose, subcylindric, septum complete. Seeds 1–2, seriate, oblong or ovoid, plump; cotyledons accumbent.

Five species distributed in Africa, Asia, Europe and N America; one species introduced to China; it is also cultivated in Hong Kong.

**1. Nasturtium officinale** R. Br. 西洋菜 **(Fig. 205; Photo 459)**
Hort. Kew. 4: 110. 1812; FGD 3: 40 1995; FOC 8: 136. 2001.

*Rorippa nasturtium-aquaticum* (L.) Hayek, Sched. Fl. Stir. Exs. 22. 1905.

*Sisymbrium nasturtium-aquaticum* L., Sp. Pl. 657. 1753.

Perennial herb, 20–40 cm tall, glabrous. Stems decumbent or prostrate on water surface, many branched, rooting at nodes. Leaves all cauline, pinnately compound, 3–9-foliolate, leaflets sessile, ovate, oblong or suborbiculate, 2–3 cm, base obtuse or subcordate, margin subentire or repand. Racemes terminal. Sepals oblong, 2–3 mm, lateral pair slightly saccate. Petals white or pink, obovate or spathulate, 3–4 mm, claw slender. Stamens 6. Siliques cylindric, 0.5–2 cm. Seeds biseriate, reddish brown, ovoid, ca. 1 mm.

Locality: Cultivated.

Distribution: Guangdong, Guangxi, Sichuan, Guizhou, Yunnan, Xizang, Hebei, Shanxi, Shandong, Henan, Anhui, Jiangsu, Shaanxi, Heilongjiang.

Ecology: Flowering: Apr.–May.

Uses: Vegetable, medicinal.

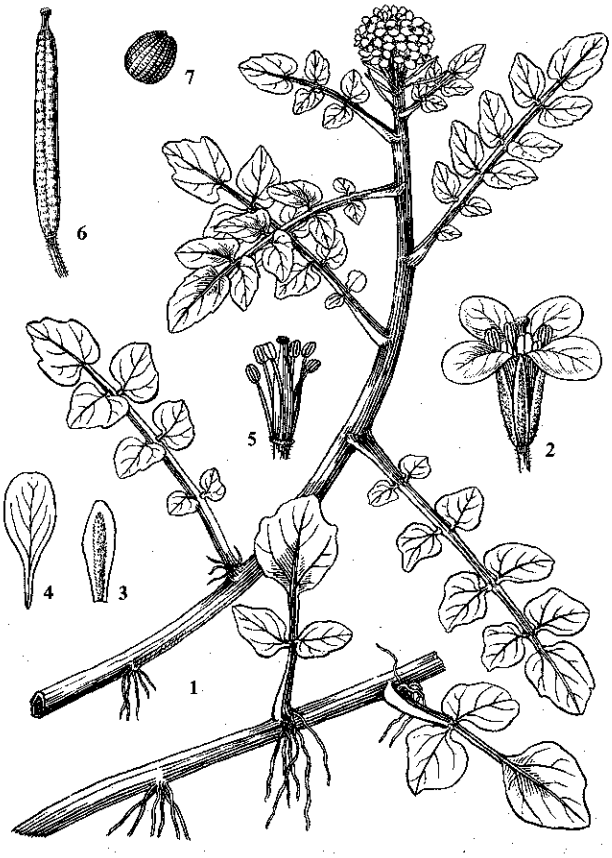



**Figure 205.** *Nasturtium officinale* R. Br.
*1*. plant; *2*. flower; *3*. sepal; *4*. petal; *5*. flower with sepals and petals removed; *6*. silique; *7*. seed. (drawn by H. P. Yu)

## 7. Rorippa Scopoli 蔊菜屬

Annual to perennial herbs, glabrous or simply hairy. Stems erect or prostrate. Leaves simple, entire to pinnatipartite. Racemes terminal, elongated with fruiting. Sepals 4, oblong or ovate. Petals 4, yellow, obovate or spathulate, shortly clawed or not. Stamens 6, tetradynamous, rarely 4 and equal in length; nectar glands confluent. Siliques or silicles, dehiscent, linear to oblong or globose, terete or slightly latiseptate. Seeds biseriate or rarely uniseriate; cotyledons accumbent.

About 75 species distributed worldwide; nine species in China; three species in Hong Kong.

1a. Racemes bracteate ..... 1. *R. cantoniensis*
1b. Racemes ebracteate.
2a. Petals present ..... 2. *R. indica*
2b. Petals absent ..... 3. *R. dubia*

**1. Rorippa cantoniensis** (Lour.) Ohwi 廣州蔊菜(微子蔊菜)

Acta Phytotax. Geobot. 6: 55. 1937; FGD 3: 39. 1995; FOC 8: 134. 2001.

*Ricotia cantoniensis* Lour., Fl. Cochinch. 2: 482. 1793.

*Nasturtium microspermum* DC., Syst. Nat. 2: 199. 1821; FKH 34. 1912.

Annual or biennial herb, 10–30 cm tall, glabrous. Stems erect or decumbent. Basal leaves petiolate, rosulate, lyrate or pinnatisect, 4–7 cm, lateral lobes 4–6 on both sides of midveins, margin 2–3-dentate; cauline leaves gradually becoming smaller upwards, sessile, base auriculate, obovate-oblong or spathulate, 1.5–5 cm, margin dentate or entire. Racemes terminal, bracteate. Sepals broadly lanceolate, 0.5–2 mm. Petals yellow, obovate or narrowly spathulate, 2–3 mm. Siliques cylindric, 6–8 × 2 mm, dehiscent. Seeds many, reddish brown, ovate or ovate-reniform, 0.4–0.6 mm, foveolate.

Locality: Sheung Shui. *Y. S. Lau 2954; A. Lao 1123.*

Distribution: Liaoning, Hebei, Shandong, Henan, Anhui, Jiangsu, Zhejiang, Jiangxi, Fujian, Taiwan, Hubei, Hunan, Guangdong, Guangxi, Shaanxi, Sichuan, Yunnan; Korea, Russia, Vietnam, Japan.

Ecology: Farmlands, on wet places. Flowering: Mar.–Apr.

**2. Rorippa indica** (L.) Hiern 蔊菜(塘葛菜) **(Fig. 206; Photo 460)**

Cat. Afr. Pl. 1: 26. 1896; FHN 1: 355. 1987; FGD 3: 38. 1995; FOC 8: 133. 2001.

*Sisymbrium indicum* L., Sp. Pl. ed. 2, 2: 917. 1763.

*Nasturtium montanum* Wall. ex Hook. f. & Thoms., J. Linn. Soc., Bot. 5: 139. 1861; FHK 16. 1861; FKH 34. 1912.

*Cardamine lamontii* Hance, Journ. Bot. 14: 363. 1876; FKH 34. 1912.

Annual or biennial herb, 20–40 cm tall, glabrous or rarely sparsely pubescent. Stems often branched. Basal and lower cauline leaves long-petiolate, often lyrate-pinnatipartite, 4–10 cm, lateral lobes absent or 1–5 on each side of midvein; upper cauline leaves broadly lanceolate or spathulate, margin serrulate. Racemes terminal and lateral, ebracteate. Flowers small, many. Sepals ovate-oblong, 3–4 mm. Petals yellow, spathulate, 3–4 mm, shortly clawed. Siliques linear-cylindric, 1–2 cm × 1–1.5 mm, dehiscing into 2 valves. Seeds reddish brown, ovate or ovate-orbicular, 0.5–0.9 mm, foveolate.

Locality: New Territories, Lantau Island. *L. T. Lo 77; Y. S. Lau 1789, 281.*

Distribution: Guangdong, Hunan, Sichuan, Yunnan, Xizang, Shandong, Henan, Jiangsu, Zhejiang, Jiangxi, Fujian, Taiwan, Shaanxi, Gansu; Japan, Korea, Philippines, Indonesia, India.

Ecology: Farmlands, on wet places. Flowering: Apr.–May.

Uses: Medicinal (whole plant).

Notes: The type specimen of *Cardamine lamontii* was collected from Hong Kong Island by J. Lamont (in Herb. Hance No. 19355, BM) in September 1874.

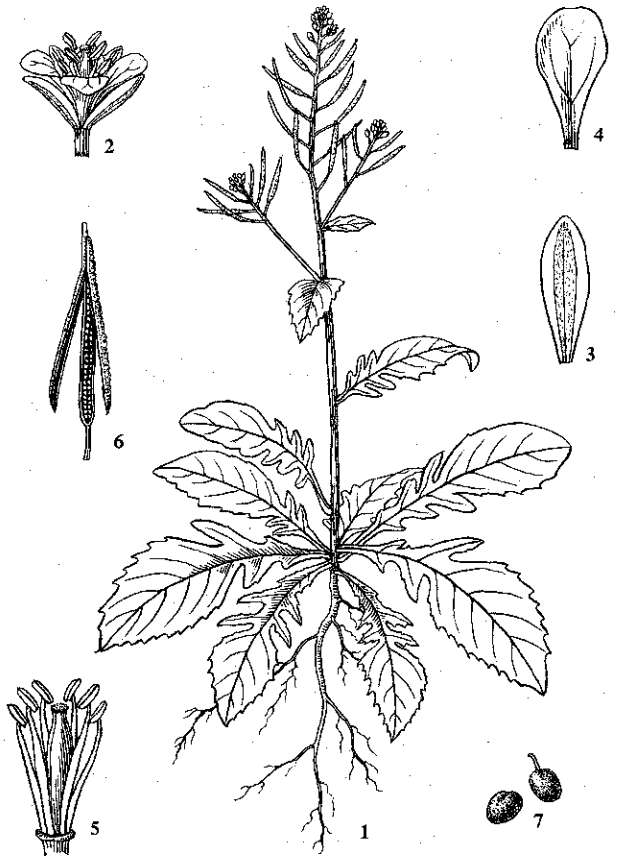



Figure 206. *Rorippa indica* (L.) Hiern

*1*. plant; *2*. flower; *3*. sepal; *4*. petal; *5*. flower with sepals and petals removed; *6*. silique; 7. seeds. (drawn by H. P. Yu)

**3. Rorippa dubia** (Pers.) Hara 無瓣蔊菜

J. Jap. Bot. 30: 196. 1955; FGD 3: 39. 1995; FOC 8: 133. 2001.

*Sisymbrium dubium* Pers., Syn. Pl. 2: 199. 1807.

Annual herb, 10–30 cm tall, glabrous. Stems erect or decumbent. Basal and lower cauline leaves usually lyrate-

pinnatipartite, 3–8 cm, lateral lobes 2–4 on each side of midveins, margin sinuate-serrate; uppermost leaves usually sessile, lanceolate or oblong, margin entire or serrulate. Racemes terminal or lateral, ebracteate. Sepals often pinkish, lanceolate or linear, ca. 3 mm, margin membranous. Petals mostly absent, rarely present and linear or narrowly oblanceolate, often shorter than sepals. Siliques linear, 2–3.5 cm × 1 mm, dehiscent. Seeds uniserrate, brown, ovoid, 0.5–0.8 mm, foveolate.

Locality: Hong Kong Island. *HK sheet 180, 32234*.

Distribution: Anhui, Jiangsu, Zhejiang, Jiangxi, Fujian, Hebei, Hunan, Guangdong, Guangxi, Shaanxi, Gansu, Sichuan, Yunnan, Xizang; Japan, Philippines, Indonesia, India, United States.

Ecology: Farmlands, on wet places. Flowering: May–Jul.; fruiting: Jun.–Aug.

Uses: Medicinal (whole plant).

## 8. Brassica L. 蕓薹屬

Annual, biennial or perennial herbs. Leaves simple, entire to pinnately dissected. Racemes corymbiform, elongated when fruiting, ebracteate. Sepals 4, base of lateral pair saccate or not. Petals 4, yellow or white, long-clawed. Stamens 6, tetradynamous; nectar glands 4. Ovary 4–50-ovuled. Siliques linear or oblong, terete, 4-angled or latiseptate, apex rostrate, dehiscing into 2 valves, glabrous, with distinct midrib, septum complete. Seeds usually uniseriate in each locule, globose or ovoid; cotyledons conduplicate.

About 40 species distributed in Eurasia, especially in Mediterranean; 14 species cultivated in China; five species (one represented by five varieties) in Hong Kong.

1a. Leaves thick, fleshy; flowers larger, 1.2–2.5 cm ..... 1. *B. oleracea*
1b. Leaves thin, herbaceous; flowers smaller, not more than 1 cm.
  2a. Plants with pungent smell; leaves lyrate ..... 2. *B. juncea*
  2b. Plants without pungent smell; leaves not lyrate.
    3a. Leaf-blades rugose and overlapped layer upon layer forming a oblong-cylindric head; petioles complanate, margin crisped ..... 3. *B. pekinensis*
    3b. Leaf-blades not rugose and not overlapped layer upon layer forming a oblong-cylindric head; petioles narrower.
      4a. Basal leaves amplexicaul, petioles fleshy and thicken ..... 4. *B. chinensis*
      4b. Basal leaves not amplexicaul, petioles slender and sulcate ..... 5. *B. parachinensis*

### 1. Brassica oleracea L. 葉甘藍

Sp. Pl. 2: 667. 1753; FOC 8: 17. 2001.

Biennial or perennial herb, rarely annual, 0.6–1.5 m tall, glabrous, glaucous. Stems erect or decumbent, branched at or above middle, sometimes fleshy at base. Basal and lowermost cauline leaves long petiolate, sometimes strongly overlapping and forming a head; petiole to 30 cm; leaf blade ovate, oblong or lanceolate, to 40 × 15 cm, margin entire, repand or dentate, sometimes pinnatifid or pinnatisect and with a large terminal lobe and smaller, 1–13, oblong or ovate, lateral lobes on each side of midvein; upper cauline leaves sessile or subsessile, oblanceolate, ovate or oblong, to 10 × 4 cm, base amplexicaul, auriculate or rarely cuneate, margin entire, repand, or rarely dentate. Racemes sometimes fleshy and condensed into a head. Sepals oblong, 0.8–1.5 cm, erect. Petals creamy yellow or rarely white, ovate or elliptic, 1.8–2.5 cm, claw 0.7–1.5 cm. Siliques linear, 3–9 × 3–5 mm, terete, 10–20-seeded per locule, valves with a prominent midrib. Seeds dark brown or blackish, globose, 1.5–2.5 mm in diam., minutely reticulate.

Wild populations of var. *oleracea* are known only from the coastal cliffs of W Europe; five varieties are cultivated in Hong Kong for vegetable.

1a. Inflorescence fleshy, forming a compact, globose or obconical head.
  2a. Flower buds white, densely and tightly compact; rachis and pedicels white ..... 1a. var. *botrytis*
  2b. Flower buds green, somewhat loosely grouped; rachis and pedicels green ..... 1b. var. *italica*
1b. Inflorescence not fleshy, not forming a compact, globose or obconical head.
  3a. Stem fleshy at base, globose ..... 1c. var. *gongylodes*
  3b. Stem not fleshy at base, cylindric.
    4a. Leaves strongly overlapping into a compact, closed head ..... 1d. var. *capitata*
    4b. Leaves widely spaced, not forming a head ..... 1e. var. *albiflora*

#### 1a. Brassica oleracea L. var. botrytis L. 椰菜花 (Photo 461)

Sp. Pl. 667. 1753; FGD 3: 26. 1995; FOC 8: 18. 2001.

Stems 60–90 cm tall, glaucous, base elongated, not fleshy. Basal and lower cauline leaves green, few to several, widely spaced, not group into a head. Inflorescence fleshy, forming a compact globose head. Flower buds, pedicels, rachis and peduncles white.

Locality: Cultivated.

Distribution: Widely cultivated.

Ecology: Flowering: Apr.

Uses: Vegetable.

**1b. Brassica oleracea** L. var. **italica** Plenck 西蘭花 **(Photo 462)**
Icon. Pl. Medic. 6: 29. 1794; FOC 8: 18. 2001.

Different from the above variety by: inflorescence somewhat loose, usually obconical; flower buds, pedicels, rachis and peduncles green.

Locality: Cultivated.
Distribution: Widely cultivated.
Ecology: Flowering: Apr.
Uses: Vegetable.

**1c. Brassica oleracea** L. var. **gongylodes** L.
芥藍頭 **(Fig. 207; Photo 463)**
Sp. Pl. 667. 1753; FOC 8: 18. 2001.
*Brassica caulorapa* (DC.) Pasq., Catal. Ort. Bot. Nap. 17. 1867; FGD 3: 27. 1995.

Stems 30–60 cm tall, base highly shortened, fleshy, globose. Basal leaves not overlapping into a head, broad-ovate to oblong, 13–20 cm, margin irregularly dentate; cauline leaves oblong to linear-oblong, margin sinuate. Inflorescences neither fleshy nor condensed into a head.

Locality: Cultivated. *Leung & Wong s.n.* (CUHK).
Distribution: Widely cultivated.
Ecology: Flowering: Apr.
Uses: Vegetable.

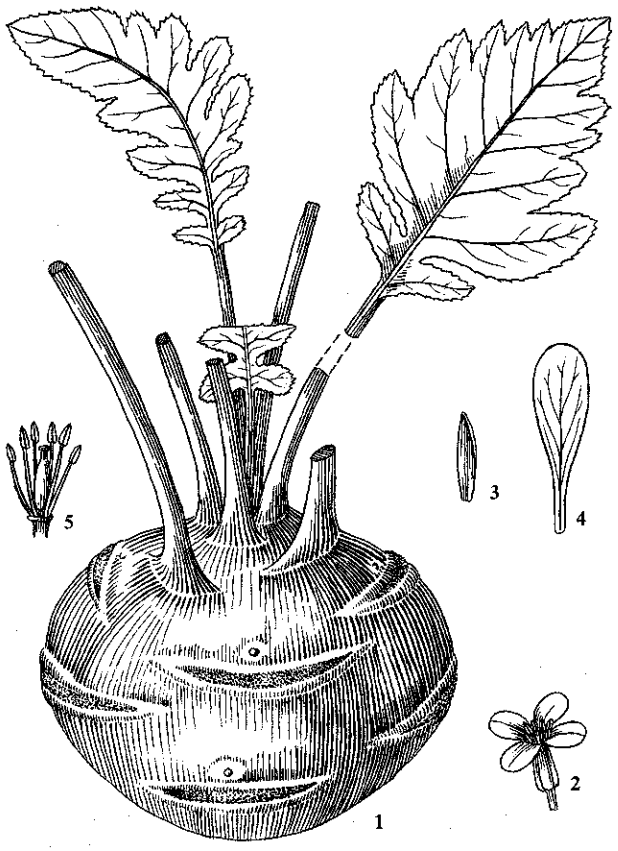



Figure 207. *Brassica oleracea* var. *gongylodes* L.
*1*. plant; *2*. flower; *3*. sepal; *4*. petal; *5*. flower with sepals and petals removed. (drawn by H. P. Yu)

**1d. Brassica oleracea** L. var. **capitata** L.
椰菜(甘藍) **(Photo 464)**
Sp. Pl. 667. 1753; FGD 3: 26. 1995; FOC 8: 18. 2001.

Stems highly shortened, not fleshy, conical. Basal and lower cauline leaves green, many, oblong-obovate to orbicular, overlapped layer upon layer forming a globose or compressed-globose head, 20–40 cm in diam.

Locality: Cultivated.
Distribution: Widely cultivated.
Ecology: Flowering: Apr.
Uses: Vegetable.

**1e. Brassica oleracea** L. var. **albiflora** Kuntze 芥蘭 **(Photo 465)**
Revis. Gen. Pl. 1: 19. 1891; FOC 8: 18. 2001.
*Brassica alboglabra* L. H. Bailey, Gentes Herb. 1: 79. 1922; FGD 3: 27. 1995.

Stems 30–40 cm tall, not fleshy, narrowly cylindric. Basal and lower cauline leaves green, few to several, widely spaced, not grouped into a head, ovate, 6–10 cm, base auriculate, decurrent, margin sinuate or irregularly serrulate. Inflorescence lax, not fleshy. Flowers white or rarely creamy white.

Locality: Cultivated.
Distribution: Widely cultivated.
Ecology: Flowering: Apr.
Uses: Vegetable.

**2. Brassica juncea** (L.) Czern. 芥菜 **(Photo 466)**
Conspect. Fl. Chark 8. 1859; FGD 3: 30. 1995; FOC 8: 20. 2001.
*Brassica juncea* var. *crispifolia* L. H. Bailey, Gentes Herb.1: 91. 1891; FGD 3: 30. 1995.
*Brassica juncea* var. *foliosa* L. H. Bailey, Gentes Herb. 2: 263. 1930; FGD 3: 30. 1995.

Annual herbs, 30–150 cm tall, glaucous, with pungent smell. Basal leaves broad-ovate to obovate, 15–20 cm, lyrate, lateral lobes 2–3 pairs, margin incised or dentate. Petioles 3–9 cm, with small lobes; cauline leaves smaller, not amplexicaul. Racemes terminal. Flowers yellow, 7–10 mm in diam.; pedicles 4–10 mm. Sepals oblong-elliptic, 4–5 mm. Petals obovate, 8–10 mm, claw 4–5 mm. Siliques linear, 3–5.5 cm, beak 6–12 mm, slightly constricted between seeds; stalk 15–25 mm. Seeds purple-brown, globose, ca. 1 mm in diam.

Locality: Cultivated. *HK sheet 183.*
Distribution: Widely cultivated.
Uses: Vegetable, spice, medicinal (seed).

**3. Brassica pekinensis** (Lour.) Rupr.
大白菜(黃牙白) **(Fig. 208)**

Fl. Ingr. 96. 1860; L. H. Bailey, Gentes Herb. 1: 97, fig. 43. 1922; FHN 1: 355. 1964; FGD 3: 29. 1995.

*Brassica rapa* var. *glabra* Regel, Gartenflora 9: 9. 1860; FOC 8: 20. 2001.

Biennial herb, 40–60 cm tall. Basal leaves many and large, thin, obovate-oblong or broad-ovate, margin sinuate. Petioles complanate, 5–10 × 8 cm, margin crisped, thin, wing-like; cauline leaves amplexicaul, entire or serrate. Flowers light yellow, 1.2–1.5 cm in diam.; pedicles 4–6 mm. Sepals oblong or ovate-lanceolate, 4–5 mm. Petals obovate, 7–8 mm, base clawed. Siliques 3–6 cm × 3 mm, compressed, beak 4–10 mm. Seeds brown, globose, 1–1.5 mm in diam.

Locality: Cultivated.

Distribution: Widely cultivated; native to N China.

Ecology: Flowering: May.

Uses: Vegetable.

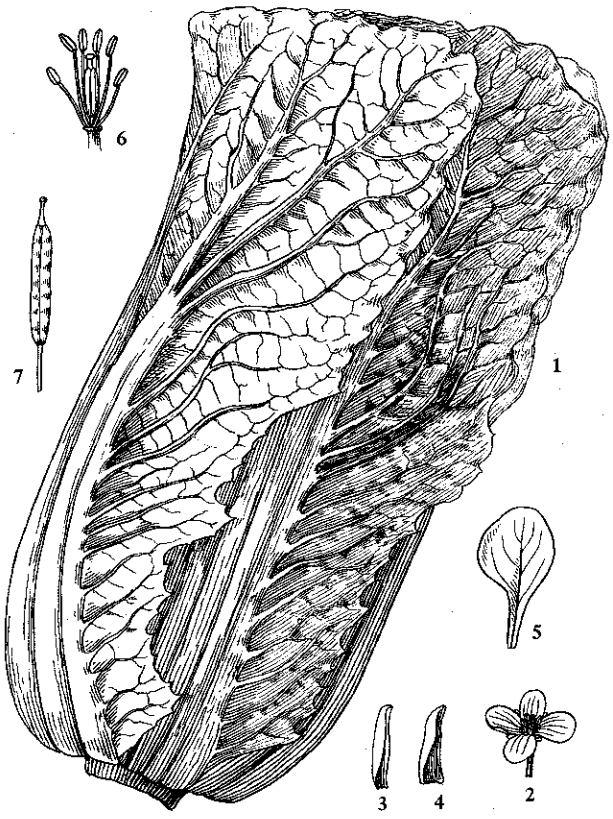



**Figure 208.** *Brassica pekinensis* (Lour.) Rupr.
*1*. plant showing the tightly overlapped leaves; *2*. flower; *3*. outer sepal; *4*. inner sepal; *5*. petal; *6*. flower with sepals and petals removed; *7*. silique. (drawn by H. P. Yu)

**4. Brassica chinensis** L. 白菜(青菜) **(Photo 467)**

Gent. Pl. 1: 19. 1755; FKH 34. 1912; FHN 1: 355. 1964; FGD 3: 29. 1995.

*Brassica rapa* var. *chinensis* (L.) Kitamura, Mem. Coll. Sci. Univ. Kyoto, ser. B, 19: 79. 1950; FOC 8: 20. 2001, *p.p.*

Annual or biennial herb, 25–70 cm tall, glabrous. Basal leaves obovate, oblong or broad-ovate, 20–30 cm, spreading, blades glabrous, entire or repand. Petioles green or white, 3–5 cm, fleshy or thickened, wingless, base amplexicaul or not. Racemes terminal. Flowers yellowish, ca. 9 mm. Sepals oblong, 3–4 mm. Petals oblong, ca. 5 mm, base broad-clawed, apex obtuse. Siliques linear, 2–6 cm, beak 8–12 mm; stalk up to 3 cm. Seeds purple-brown, globose, 1–1.5 mm in diam.

Locality: Cultivated. *W. J. Tutcher 9121; S. T. Dunn 1078.*

Distribution: Widely distributed in China; native to Asia.

Ecology: Farmlands, on wet places. Flowering & fruiting: Apr.–May.

Uses: Vegetable.

**5. Brassica parachinensis** L. H. Bailey 菜心 **(Photo 468)**

Gentes Herb. 1: 102. 1922; FGD 3: 29. 1995.

*Brassica rapa* var. *chinensis* auct. non (L.) Kitamura: FOC 8: 20. 2001, *p.p.*

The differences between the above species and this species are the base of basal leaves of this species not amplexicaul and petioles slender and sulcate.

Locality: Cultivated. *Y. S. Lau 3074.*

Distribution: Widely cultivated.

Uses: Vegetable.

# 147. ERICACEAE 杜鵑花科

NG Sai-chit 吳世捷

Trees or shrubs, evergreen or deciduous. Leaves simple, alternate, rarely pseudo-verticillate; margin entire or serrulate; exstipulate. Flowers bisexual, actinomorphic or slightly zygomorphic, usually in terminal, racemes or panicles, rarely solitary and axillary. Calyx persistent, (4–)5(–8)-lobed. Corolla sympetalous, campanulate, funnel-shaped or urceolate, usually (4–)5(–10)-lobed; lobes imbricate. Stamens as many as or twice as many as corolla-lobes, inserted at base of a hypogynous disc; filaments free; anthers opening by apical pores or rarely by slits, with appendages in some species. Ovary superior or inferior, (4–)5(–10)-locular; ovules usually numerous; style 1; stigma capitate or discoid. Fruit a capsule, rarely enclosed in an accrescent and fleshy calyx, or a berry. Seeds usually numerous, small, sometimes with a narrow wing, or tails at one or both ends; embryo cylindric; endosperm abundant.

Widely distributed in subtropical, temperate, and sub-arctic regions, also at high elevations in the tropics; 15 genera and 757 species in China; five genera, 11 species and 2 varieties in Hong Kong.

1a. Fruit a capsule; ovary superior; anther without tubular extension.
2a. Leaves clustered towards apex of branches.
3a. Inflorescence corymbose or umbellate, at most 10-flowered; rachis absent or, if present, less than 2 times the length of pedicels; corolla campanulate or funnel-shaped.
4a. Capsule septicidal; corolla actinomorphic to slightly zygomorphic, funnel-shaped or oblique-campanulate, more than 2 cm in diam.; lobes spreading; anthers without appendages ..... 1. *Rhododendron*
4b. Capsule loculicidal; corolla actinomorphic, campanulate, less than 1.5 cm in diam.; lobes deflexed; anthers with appendages and tubules ..... 2. *Enkianthus*
3b. Inflorescence racemose, 20–30-flowered; rachis much longer than pedicels; corolla tubular-urceolate ..... 3. *Pieris*
2b. Leaves evenly distributed on branches ..... 4. *Lyonia*
1b. Fruit a berry; ovary inferior; anther with 2 tubular extensions ..... 5. *Vaccinium*

## 1. Rhododendron L. 杜鵑屬

Shrubs, rarely trees, evergreen or deciduous. Leaves alternate, rarely pseudoverticillate, petiolate, margin entire, very rarely ciliate-serrulate. Flowers usually in terminal umbel-like racemes, rarely solitary and axillary. Calyx 5-lobed, rarely 6–10-lobed; lobes often very small, irregular, persistent. Corolla campanulate, funnel-shaped, tubular or hypocrateriform, regular or slightly zygomorphic, usually 5-lobed; lobes imbricate in bud. Stamens 5–10, usually 10, rarely more; filaments slender, glabrous or hairy; anthers dorsifixed, without appendage, opening by apical or oblique pores. Disc usually thick, 5–10(–14)-lobed. Ovary usually 5(–20)-locular, with many ovules in each locule; style slender; stigma capitate-discoid, crenate to lobed. Capsule oblong, to ovoid, rarely falcate, septicidal. Seeds minute, vary numerous.

About 960 species, mainly found in E and SE Asia, also some species in America and Europe and one species in Australia; 542 species in China; six indigenous species in Hong Kong. A number of species, varieties and cultivars were widely cultivated in Hong Kong and two commonly-cultivated species are included here.

The ecology, genetic variation and structure of local native species have been studied recently (Ng & Corlett, *Canadian Journal of Botany* 78: 221–229. 2000; *Molecular Ecology* 9: 959–969. 2000; *Plant Ecology* 164: 225–233. 2002).

1a. Young branches glabrescent or hairy, but not strigose.
2a. Abaxial surface of leaves covered with a thin but firm layer of light brown indumentum formed by densely tangled tawny minute hairs; margin usually strongly reflexed ..... 1. *R. simiarum*
2b. Abaxial surface of leaves without indumentum, glabrous or covered with spreading hairs; margin flat to only slightly reflexed.
3a. Young stems, petioles and leaf margins covered with erect, stiff glandular hairs1–2 mm long; pedicels, calyx, and fruits densely glandular-hairy ..... 2. *R. championiae*
3b. Young branches, petioles, leaf margin, pedicels, calyx, and fruit glabrous or with hairs not as above.
4a. Petiole, young branches, pedicels, calyx, and fruit glabrous, or covered with erect short hairs or glandular hairs; branches obliquely ascending.
5a. Plants ± glandular-hairy; calyx lobes ovate to rounded, 3 –5 mm; fruit subglobose, <8 mm; flower sub-rotate ..... 3. *R. hongkongense*
5b. Plants without glandular hairs; calyx lobes small and inconspicuous, broadly triangular, <2 mm; fruit cylindrical, up to 5 cm or, ± falcate; flower funnel-shaped ..... 4. *R. moulmainense*
4b. Petioles, young branches, pedicels, calyx, and fruit pilose, with appressed to loosely spreading golden to dark brown long hairs; branches often horizontal ..... 5. *R. farrerae*
1b. Young branches densely strigose with narrow triangular scale-like hairs.
6a. Calyx lobes without glandular hairs; corolla bright red; indigenous wild plants but also widely cultivated, capable of setting fruit. ..... 6. *R. simsii*
6b. Calyx lobes with glandular hairs; corolla white, purple to pink; cultivated plants, not or very rarely set fruit.
7a. Calyx lobes with glandular hairs only, strigose hairs absent to rarely a few; flower white ..... 7. *R. mucronatum*
7b. Calyx lobes covered mainly with long (1–1.8 mm) strigose hairs mixed with short glandular hairs; flower purple or pink ..... 8. *R. pulchrum*

**1. Rhododendron simiarum** Hance 南華杜鵑 **(Photo 469)**

J. Bot. 22(1): 22–23. 1884; FKH 155. 1913; D. F. Chamberlain, Not. Bot. Gard. Edinb. 39: 320, 1982; P. C. Tam, Survey of Genus Rhododendron in S. China 20, pl. II, 1983; FRPS 57(2): 157, pl. 48: 6 –10. 1994; FOC 14: 371. 2005.

*Rhododendron fordii* Hemsl., Kew Bull. Misc. Inform. 1894(85): 5. 1894; FKH 155. 1913.

*Rhododendron fokiense* Franch., Bull. Soc. Bot. France 46: 210. 1899; P. C. Tam, Survey of Genus Rhododendron in S. China 21, fig. 19. 1983.

Erect shrub or small tree, evergreen, 1–3(–5) m tall. Branchlets glabrescent. Leaves clustered towards stem apex; thick-leathery; petiole 1.2–2.5 cm, ± pubescent; leaf blade obovate, elliptic-obovate to elliptic, (3.2–)5.4 –9.5 × (1.0–)1.5–3.5 cm, base cuneate, apex subrounded, sometimes retuse, margin entire and usually strongly deflexed, glabrous and shiny adaxially, abaxial surface initially

covered with grey or light tawny tangled hairs, forming a thin but compact and persistent light brown indumentum; midvein impressed adaxially, raised abaxially; lateral veins inconspicuous, reticulation of veins ± foveolate. Flower buds usually borne singly to very rarely in pair at stem apex, ca. 3.5 × 2.7 cm; scale fall off as flower opened, broad ovate to elliptical, up to 3.5 × 2.7 cm, apex obtuse to round, abaxially glabrous to sparsely pubescent, especially towards the apex and along the longitudinal axis, often with sticky secretion. Inflorescence an umbel-like raceme, 3–7-flowered; rachis 1–2.5 cm, glandular hairy. Pedicels 2.2–3.4 cm, glandular hairy. Calyx small, cup-shaped, inconspicuously 5-lobed, lobes round to broad triangular, 0.5–0.7 mm × 1.5–2.0 mm, apex round, glandular hairy. Corolla oblique-campanulate, 3.5–4.5 cm, pink to rosy red initially, soon turning white to pink, with yellow to pink dots on posterior petals, lobes round to broadly elliptic-ovate, 1.7–2.5 cm × 1.5–1.7 cm. Stamens 10–12, 3–4 cm, similar to or shorter than corolla; pubescent on the 1/3 section. Ovary covered with stellate hairs, sticky when fresh; style 3–5 cm, glandular hairy at lower half. Capsule ellipsoid to oblong-ellipsoidal, 1–3 × 0.5–1.2 cm, glabrous and often with sticky secretion. Seeds many, ellipsoidal to ovoid, 2–2.5 × 1–1.5 mm.

Locality: Ma On Shan, Lantau Peak. *U. A. On s.n. (HK sheet 16955); C. Ford s.n. (HK Sheet 16954); Y. S. Lau 936; S. C. Ng 93* (HKU).

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, and Zhejiang.

Ecology: Locally restricted in distribution, specialized in shrubland habitats on rocky outcrops or cliffs and often in small rock crevices and surface, abundant and form dense populations wherever occur. Flowering: Apr.–May; fruiting: Nov.–Dec.

Uses: Ornamental.

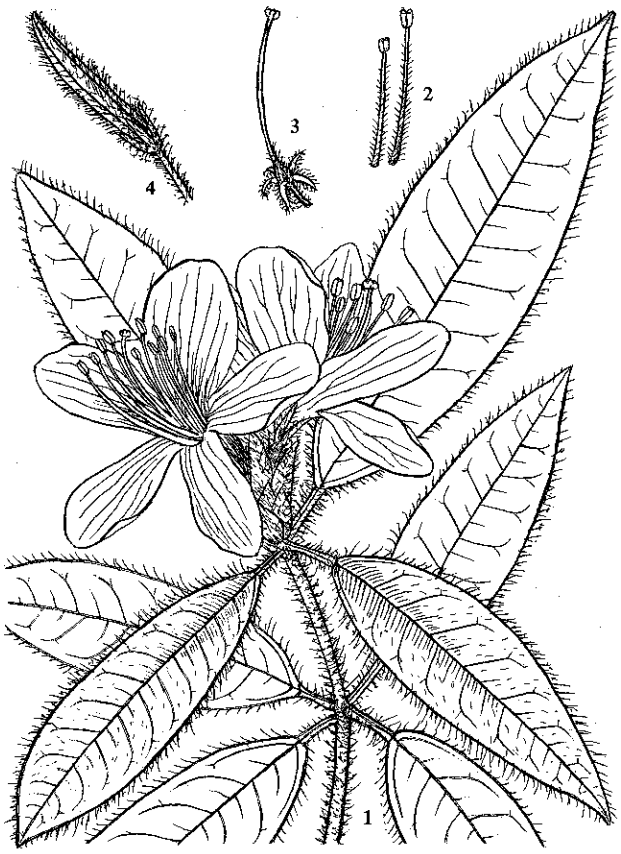



**Figure 209.** *Rhododendron championiae* Hook. f.
*1*. flowering branch; *2*. stamens; *3*. calyx and pistil; *4*. fruit. (drawn by H. P. Yu)

Notes: This species shows considerable variation within its range. The specimens from outside Guangdong and Hong Kong often have glabrous stamens and acute leaf apexes (Chamberlain, 1982; M.Y. Fang 1994). The species is widespread in S China mainly on ridges and cliffs above 1000 m. Listed in *Rare and Precious Plants of Hong Kong*.

**2. Rhododendron championiae** Hook. f. 毛葉杜鵑 **(Fig. 209; Photo 470)**

Bot. Mag. 77: t. 4609. 1851; FHK 200. 1861; FKH 155. 1912; P. C. Tam, Survey of Genus Rhododendron in S. China 72, pl. 9. 1983; W. R. Phillipson & M. N. Phillipson, Not. Bot. Gard. Edinb. 44(1): 9. 1986; FRPS 57(2): 365, pl. 121: 5–10. 1994; FOC 14: 430. 2005.

*Rhododendron subespitatum* Chun ex P. C. Tam, Bull. Bot. Res., Harbin 2(4): 90, fig. 3. 1982.

*Rhododendron championiae* var. *ovatifolium* P. C. Tam., Survey of Genus Rhododendron in S. China 73, 112. 1983.

Shrub or small tree, evergreen, 1.5–3(–5) m tall, much branched. Young branches, petioles and pedicels densely covered with stiff, bristle-like glandular hairs up to 2.5 mm, hairs persistent on 2- or 3-year stem. Leaves crowded towards apex of branches; petiole 0.7–1.7 cm; leaf blade papery, elliptic to elliptic-ovate, 6.2–12.5(–17) × (1.6–)2.5–5 cm, base cuneate, apex acute to acuminate, margin entire, fringed with bristle-like hairs, adaxial surface dark green, more or less bullate, abaxial surface rather rusty-colored, both surfaces initially clothed with glandular hairs; reticulation of veins prominent. Flower buds borne in axils at stem apex, 1–3(–5) per stem, up to 5 × 2 cm; scales ovate to elliptical, up to 4.0 × 1.7 cm, apex acute, adaxial side often with sticky secretion, abaxial side weakly pubescent, margin ciliated. Inflorescence umbellate, 2–5(–7)-flowered. Pedicels 1–2.2 cm. Calyx 4–5-lobed; lobes triangular to triangular-lanceolate, 1–5 × 1–1.5 mm, apex acute to obtuse, margin densely fringed with long hairs. Corolla funnel-shaped, 6–12 cm in diam., 4–6 cm deep, white to very pale pink, with yellow dots on posterior lobes; lobes spreading, elliptic to ovate; limb 6–12 cm in diam. Stamens 10, 4–4.5 cm, exserted; filaments pubescent on the lower half. Ovary oblong, 5–6-locular, densely hairy; style ca. 5 cm, protruding out of the corolla, glabrous. Capsule cylindrical, straight to strongly falcate, (1–)3–6 × 0.5–0.8 mm, covered with long hairs. Seeds many, elliptic, ca. 2.5 × 0.8 mm, with winged appendages on both ends.

Locality: Victoria Peak, Ma On Shan, Lantau Island (Tai O). *H. C. Tang 1715; P. S. Choi 389; S. C. Ng 98* (HKU).

Distribution: Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

Ecology: Locally restricted in distribution, usually on exposed open hillsides. Large populations can be found on hillfire-maintained hillslopes near Tai O, alt. 50–500 m. Flowering: Mar.–May; fruiting: Oct.–Dec.

Uses: Ornamental (garden plants), medicinal (roots and stems).

Notes: This species was first described from Victoria Peak based on the type specimen collected by J. G. Champion in 1849 and was named after his wife. A distinctive species characterized by large flowers and long stiff hairs on all parts of the plants except the petals, otherwise it is morphologically similar to *R. moulmainense*, with the largest and the most fragrant flowers, often having a strong

sweet scent, among the six native rhododendrons. Listed in *Rare and Precious Plants of Hong Kong*.

**3. Rhododendron hongkongense** Hutch.
香港杜鵑 **(Fig. 210; Photo 471)**

Sp. Rhodod. 562. 1930; P. C. Tam, Survey of Genus Rhododendron in S. China 71. 1983; W. R. Phillipson & M. N. Phillipson, Not. Bot. Gard. Edinb. 44(1): 5–6. 1986; FRPS 57(2): 345. 1994; FOC 14: 424. 2005.

*Azalea myrtifolia* Champ., Bot. Mag. 77, sub pl. 4609. 1851, non *Rhododendron myrtifolium* Lodd. (1824), nec Schott & Kotschy (1851).

*Azalea ovata* auct. non Lindl.: FHK 201. 1861.

*Rhododendron ovatum* auct. non Maxim.: FKH 155. 1913.

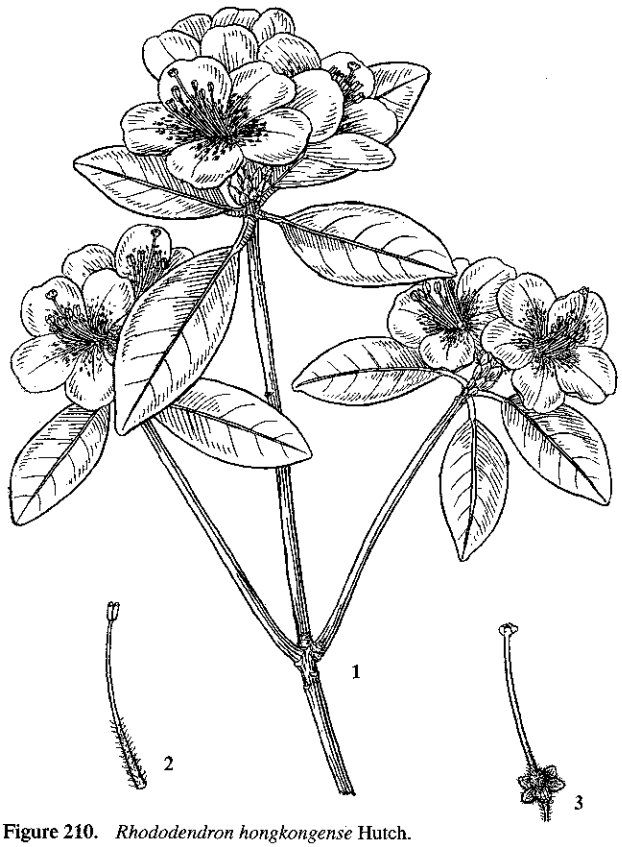



**Figure 210.** *Rhododendron hongkongense* Hutch.
*1*. flowering branch; *2*. stamen; *3*. calyx and pistil. (drawn by H. P. Yu)

Shrub or small tree, evergreen, 1–3(–7) m tall, much branched. Branchlets short glandular hairy when young. Leaves crowded towards apex of branches; petioles 0.5–1.4 cm, puberulent; leaf blade thin leathery to papery, rhombic-elliptic to oblanceolate, 3.2–7.6 × 1.4–3.0 cm, base cuneate, apex acute to retuse, with a blunt point, margin entire and slightly deflexed, glabrous on both surfaces, but pubescent along midvein. Flower buds borne in axils at stem apex, 1–2(–6) per stem, ca. 1.6 × 0.5 cm; scales ovate to elliptical, up to 1.5 × 0.9 cm, apex acute to round, with a sharp to blunt point, abaxially pubescent to rarely glabrous, margin ciliated. Inflorescence umbellate, 1(–2)-flowered. Pedicel 0.7–1.4 cm, glandular hairy. Calyx 5-lobed, glandular hairy at base; lobes ovate to broad elliptic, 3–5 × 3–4.5 mm, apex rounded, margin densely to sparsely glandular ciliate. Corolla sub-rotate, spreading with a shallow tube, 4.5–6 cm in diam., 1.5–2.0 cm deep, white to very pale pink or very pale magenta, rarely very pale green, with magenta (rarely green) dots on posterior lobes; tube very short ; limb 4.5–6 cm in diam. Stamens 5, filaments 2.0–2.5 cm, pubescent below middle. Ovary subglobose to broad ovoid, ca. 1.8 × 2.0 mm, densely glandular hairy; style 2.5–3.2 cm, glabrous. Capsule subglobose to broad ovoid, 5-locular, ca. 5 × 5 mm, tuberculate and sparsely glandular hairy. Seeds many, ellipsoidal to ovoid, multi-faceted, ca. 1 × 0.4 mm.

Locality: Happy Valley, Ma On Shan, Pat Sin Leng, Wong Lung Hang. *H. C. Tang 493*; *Y. S. Lau 2684*; *Y. W. Lam 612; HK sheet 33103, 33104; S. C. Ng 85* (HKU).

Distribution: Guangdong, Jiangxi.

Ecology: Locally restricted in distribution. Populations could be found on rocky outcrops and steep hillside forests, or along streamsides, alt. 100–700 m. Flowering: Jan.–Apr.; fruiting: Oct.–Dec.

Uses: Ornamental (garden plants).

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1850. This species had been misidentified as "*Azalea ovata*" and "*Rhododendron ovatum*" in FHK and FKH respectively. *Rhododendron hongkongense* is morphologically very similar to *R. ovatum* and *R. bachii* H. Léveillé, both of which are widespread in S China and recorded in Guangdong and Jiangxi where *R. hongkongense* was also found. Differs from *R. hongkongense*, *R. ovatum* lacks glandular hairs on calyx margin whereas *R. bachii* bears ovate leaves and calyx lobes. Despite both *R. ovatum* and *R. bachii* showed variable flower colour ranging from purple to light pink, *R. hongkongense* is consistently paler and usually white. These characters are, however, variable within respective species. Specimens of *R. hongkongense* collected in Hong Kong showed that glandular hairs on sepal margin vary continuously from filling the whole length of the margin (e.g. *Y. W. Lam 612* and *HK sheet 33103*) to complete absence or replacement by cilia (e.g. *Y. S. Lau 2684* and *HK sheet 33104*). Further studies are, therefore, needed to ascertain the taxonomic status of *R. hongkongense*. Listed in *Rare and Precious Plants of Hong Kong*.

**4. Rhododendron moulmainense** Hook. f. 羊角杜鵑 **(Photo 472)**

Bot. Mag. 82: t. 4909. 1856; P. C. Tam, Survey of Genus Rhododendron in S. China 78. 1983; W. R. Phillipson & M. N. Phillipson, Not. Bot. Gard. Edinb. 44(1): 13–14, *pro parte*. 1986; FRPS 57(2): 355, pl. 118: 1–5. 1994; FOC 14: 427. 2005.

*Rhododendron westlandii* Hemsl., J. Linn. Soc., Bot. 26(173): 31–32. 1889; FKH 155. 1913.

Shrub or small tree, evergreen, 2–4(–10) m tall, much branched, glabrous throughout except filaments and rarely young leaf margin. Leaves crowded towards nodes of branches; petiole 1.0–1.5 cm, glabrous; leaf blade thick-papery to leathery, elliptic, elliptic-obovate, (5–)6.6–10.5(–14) × (1.5–)2.5–5.2 cm, margin entire or rarely ciliated when young, flat to slightly deflexed, base cuneate, apex acute to shortly and abruptly acuminate; midvein impressed adaxially, raised abaxially; secondary and fine veins inconspicuous on both surfaces. Flower buds borne in axils at stem apex, 1–2(–5) per stem, up to 4 × 2 cm; scales ovate to elliptical, up to 3.0 × 2.5 cm, apex acute, abaxial side glabrous, margin ciliated. Inflorescence umbellate, (2–)3–5(–7)-flowered. Pedicels 1–1.7 cm. Calyx small; lobes

broad triangular to broad ovate, 0.5–1 × 1–1.5 mm, apex obtuse. Corolla funnel-shaped, 5–8 cm in diam., 3–4 cm deep, pink to pale pink lobes spreading, elliptic to elliptic-obovate. Stamens 10, 3.5–4 cm; filaments pubescent on the lower part. Ovary oblong, 5–6 mm, 5–6-locular; style 4–4.5 cm, protruding out of the corolla, glabrous. Capsule cylindrical, straight to strongly falcate, (2–)4–6 × 0.4–0.7 cm. Seeds many, ellipsoidal, 2.5–3.0 × 0.5–1.0 mm, with winged appendages on both ends.

Locality: Ma On Shan, Wu Kau Tang, Pat Sin Leng, Lantau Peak. *A. B. Westland 1697*; *W. J. Tutcher 10609*; *H. C. Tang 492*; *S. C. Ng 88* (HKU).

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan; Cambodia, Laos, Malaysia (Peninsular), Myanmar, Thailand, Vietnam.

Ecology: Locally restricted to steep hillside forests, alt. 300–900 m. Flowering: Jan.–Apr.; fruiting: Oct.–Dec.

Uses: Ornamental.

Notes: This species is morphologically variable throughout its range from S China to Indochina. It was described under various names [see FRPS and Phillipson & Phillipson (1986)], including *R. westlandii*, the type specimen of which was collected from Lantau Island by A. B. Westland in 1886. Listed in *Rare and Precious Plants of Hong Kong*.

**5. Rhododendron farrerae** Tate 華麗杜鵑 **(Photo 473)**

Brit. Fl. Garden ser. 2, 1: t. 95. 1831; FKH 155. 1912; P. C. Tam, Survey of Genus Rhododendron in S. China 28. 1983; D. F. Chamberlain & Rae, Not. Bot. Gard. Edinb. 47(2): 145. 1990; FRPS 57(2): 371. 1994; FOC 14: 433. 2005.

*Azalea squamata* Lindl., J. Hort. Soc. Lond. 1: 152. 1846 & Bot. Reg. t. 3. 1847; FHK 201. 1861.

Shrub, semi-deciduous, 1–1.5(–3) m tall, with false-verticillate branches. Young branches, leaves, petioles, pedicels and calyx densely clothed with tawny hairs up to 2 mm long. Leaves often crowded towards apex of branches to almost pseudo-verticillate; petiole 2.0–5.2 mm; leaf blade thick papery, ovate to rarely elliptic or obovate, 1.2–6.2 × 0.7–2.7 cm, base rounded to truncate, apex acute or obtuse, with a blunt point, margin entire, fringed with golden to dark brown hairs when young; adult leaves glabrous on both surfaces or with dark brown pilose hairs remaining along veins on abaxial side; reticulation of veins prominent. Flower buds borne in axils at stem apex, 1(–2) per stem, up to 9 × 5 mm; scales persistent until flower wilted, broad triangular to oblong-ovate, up to 5 × 8 mm, apex obtuse, abaxially covered in sericeous hairs, especially towards apex. Flowers usually solitary, rarely in pairs. Pedicels 2–5 mm, covered in tawny pilose hairs. Calyx small and inconspicuous; lobes broad triangular, 0.5 × 1.0 mm. Corolla funnel-shaped, 1.5–2.0 cm in diam., 2.5–3.5 cm deep; purplish pink, pink to pale pink, with magenta dots on posterior lobes; lobes round to elliptic-ovate. Stamens 8–10, 2.0–2.5 cm; filaments, glandular pubescent on lower portion. Ovary ovoid, 5-locular, ca. 3.5 × 1.8 mm, 5-locular, densely tawny pilose. Capsule ovoid, 5-celled, 6–10 × 5–6 mm, densely strigose when young, stalk erect. Seeds many, ellipsoidal to barely crescent-shaped, ca. 1–1.5 × 0.4–0.6 mm.

Locality: Victoria Peak, Ma On Shan, Pat Sin Leng, Sha Tau Kok, Castle Peak, Pok To Yan, Tai O. *W. J. Tutcher 8263*, *11676*; *H. C. Tang 81*.

Distribution: Fujian, Guangdong, Guangxi, Hunan, Jiangxi.

Ecology: Locally common, especially in hillfire-maintained shrublands and grasslands on ridges and cliffs, alt. 100–900 m. Flowering: Nov.–Apr.; fruiting: Oct.–Dec.

Uses: Ornamental.

Notes: This species was first described from Hong Kong in 1846 as *Azalea squamata*, which is now considered one of the many synonyms of *R. farrerae*. It is distinctive among the six native rhododendrons in having deciduous flowering individuals and its leafless period usually coincides with flowering. Non-flowering individuals, however, often retain their older leaves until young leaves fully expand.

**6. Rhododendron simsii** Planch. 紅杜鵑 **(Photo 474)**

Fl. des Serres 9: 78. 1854; Sleumer, Fl. Males. Ser. I, 6(4): 665. 1967; P. C. Tam, Survey of Genus Rhododendron in S. China 28, pl. 1. 1983; FRPS 57(2): 386, pl. 124: 1–6. 1994; FOC 14: 440. 2005.

*Azalea indica* auct. non L.: Sims, Bot. Mag. 35: t. 1480. 1812; FHK 201. 1861.

*Rhododendron indicum* auct. non Sweet: FKH 155. 1912.

Ascending shrub, usually evergreen, 1–2(–3) m tall, much-branched. Branchlets, petioles, pedicels, calyx and ovary densely strigose with stiff appressed light brown triangular flat scale-like hairs. Leaves alternate, spirally arranged, often crowded towards nodes of branches; petiole 1.0–3.0 mm; leaf blade thick papery, elliptic to obovate, 1.5–5.5 × 1.0–2.2 cm, margin entire and flat, base cuneate, apex acute, obtuse, to round, with a blunt point, strigose on both surfaces, often becoming glabrous adaxially, but always retaining the hairs on abaxial surface, especially towards leaf base. Flower buds borne in axils at stem apex, 1(–several) per stem; scales ovate, 7–10 × 4–8 mm, apex acute to obtuse, basal scales occasionally with leafy extension at apex; abaxially covered in strigose hairs, especially towards apex and axis. Inflorescence 1–2(–3)-flowered. Pedicels 4–6 mm. Calyx 5-lobed; lobes elliptic ovate to triangular ovate, 2–2.6 × 3–4.7 mm, apex round, rarely acute, margin entire, fringed with narrow triangular scale-like hairs. Corolla funnel-shaped, 3.5–4.5 cm in diam., 3–3.5 cm deep, bright red, with dark red dots on posterior lobes; lobes elliptic to obovate. Stamens 10, 2.7–4.7 cm; filaments inclusive, sparsely pubescent below middle. Ovary ovoid, ca. 3.0 × 1.7 mm, 5-locular, densely strigose; style glabrous. Capsule ovoid to rarely ellipsoid, 7–9 × 3–5 mm, strigose. Seeds many, elliptic, 1.2–1.5 × 0.3–0.4 mm.

Locality: Victoria Peak, Mount Collinson, Kowloon Peak and Lion Rock, Ma On Shan, Tai Mo Shan, Sharp Island, Castle Peak, Pat Sin Leng, Sai Kung Peninsula, Lantau. *H. C. Tang 1267*; *L. T. Lo 423*.

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan; Japan, Laos, Myanmar, Thailand.

Ecology: Common in secondary shrubland on hillsides and along streams, alt. 50–980 m. Flowering: Dec.–May; fruiting: Oct.–Dec.

Uses: Ornamental.

Notes: *Rhododendron simsii* was first described by Sims in 1812 who mistook it as *Azalea indica*. It was not properly identified until 1854 by Planchon. As a result, this species was often mentioned as "*R. indicum*" or "*A. indica*" in 19th century literature as well as FHK and FKH. This wide-ranging species is probably the most common wild rhododendron in S China and also one of the most widely cultivated rhododendrons in E Asia.

**7. Rhododendron mucronatum** (Bl.) G. Don 白杜鵑 **(Photo 475)**

Gen. Syst. 3: 846. 1834; Sleumer, Fl. Males. Ser. I, 6(4): 662. 1967; P. C. Tam, Survey of Genus Rhododendron in S. China 39. 1983; D. F. Chamberlain & Rae, Not. Bot. Gard. Edinb. 47(2): 116–117. 1990; FRPS 57(2): 389, pl. 125: 1–5. 1994; FOC 14: 441. 2005.

*Azalea mucronata* Bl., Cat. Gewass. Buitenz. 44. 1823.

Shrub, evergreen, 1–2(–3) m tall, much branched. Young branches, petioles and pedicels densely covered with ± appressed long narrow triangular flat scale-like hairs and intermixed with glandular hairs and harsh hairs. Leaves alternate, spirally arranged, often crowded towards nodes of branches; petiole ca. 2 mm; leaf blade papery, elliptic, oblong lanceolate to oblong-obovate, deflexed, 1.5–4.7 × 0.7–1.5 cm, base cuneate, apex obtuse to acute and a blunt point, margin entire, fringed with long hairs, adaxial surface sparsely strigose, abaxial surface strigose and intermixed with short glandular hairs. Flower buds borne in axils at stem apex, 1(–several) per stem; scale of flower buds ovate to elliptic, 4–7 × 4–5 mm, apex obtuse, abaxially pilose and often with sticky secretion. Inflorescence umbellate, 1–2(–3)-flowered, with sticky secretion. Pedicels 5–10 mm. Calyx 5-lobed, glandular hairy at base; lobes 5, ovate to lanceolate, 6–8 × 2.5–3 mm, apex rounded to acute, margin glandular hairy. Corolla funnel-shaped, 3–5 cm in diam., 3–4 cm deep, white; lobes elliptic to broad obovate. Stamens 10; filaments glabrous to puberulent below middle. Ovary ovoid, 5-locular, densely strigose, style glabrous, 3–5 cm. Capsule not seen.

Locality: Cultivated in gardens. *Y. S. Lau 1455*.

Distribution: Widely cultivated in China, Japan and introduced to Europe and America, but no wild population has been found.

Ecology: Flowering: Mar.–Apr.

Uses: Ornamental.

Notes: This species was probably originated from *R. mucronatum* var. *ripense* (Makino) Wilson which is native to Japan (Chamberlain & Rae, 1990).

**8. Rhododendron pulchrum** Sweet 錦繡杜鵑 **(Photo 476)**

Brit. Fl. Garden ser. 2, 2: t. 117. 1832; P. C. Tam, Survey of Genus Rhododendron in S. China 41, pl. 2. 1983; D. F. Chamberlain & Rae, Not. Bot. Gard. Edinb. 47(2): 141. 1990; FRPS 57(2): 384. 1994.

Shrub, evergreen, 1–2(–3) m tall. Young branches, petioles, leaf blade, pedicels and calyx covered with ± appressed, harsh long hairs and intermixed with short glandular hairs. Leaves alternate, spirally arranged, often crowded towards nodes of branches; petioles ca. 2 mm; leaf blade papery, elliptic to oblong-obovate or elliptic-lanceolate, 2.7–6.1 × 0.9–2.1 cm, base cuneate, apex obtuse or acute, with a blunt point, margin entire and slightly deflexed, fringed with long hairs, glabrescent adaxially when full-grown. Flower buds borne in axils at stem apex, 1(–several) per stem; scales elliptic to ovate, 7–18 × 6–12 mm, apex acute to short acuminate, basal scales occasionally with leafy extension at apex; abaxially shortly pubescent and glandular papillate. Inflorescence umbellate, 2–4(–5)-flowered. Pedicel 7–10 mm. Calyx 5-lobed; lobes ovate to lanceolate, 7–12 × 3–4 mm, covered in long hairs and shorter glandular hairs, apex rounded to acuminate, margin long hairy. Corolla funnel-shaped, 4–4.5 cm diam., 3–3.5 cm deep, pink to purple, with bright pink to dark purple dots on posterior lobes, 4–7 cm in diam.; lobes elliptic to obovate. Stamens 10; filaments sparsely puberulent on the lower portion. Ovary ovoid, densely tawny strigose, style 3.5–5.0 cm, glabrous. Capsule not seen.

Locality: Cultivated in gardens. *Y. S. Lau 1453, 2467*.

Distribution: Widely cultivated in China and worldwide, but no wild population has been found.

Ecology: Flowering: Mar.–May.

Uses: Ornamental (garden plants).

Notes: A putative hybrid of unknown parentage (Chamberlain & Rae, 1990), this species has long been cultivated in China and worldwide. A number of cultivars of different flower colour and slightly different vegetative morphology are available and at least two cultivars are present in Hong Kong.

## 2. Enkianthus Lour. 吊鐘花屬

Shrubs or small trees, deciduous or semi-deciduous, with whorled branches. Leaves spirally arranged, crowded towards apex of branches, serrate or subentire. Inflorescence terminal, umbellate or racemose, in precocious umbels or serotinous corymbose-racemes, with nodding flowers. Calyx small, 5-lobed. Corolla campanulate or urceolate, shortly 5-lobed, and marked at base by 5 nectariferous almost pellucid pits. Stamens 10, included; filaments flattened, distinctly dilated towards base; anthers 2-awned at apex, opening by short slits. Ovary superior, 5-locular; style slender; stigma entire. Capsule hard, 5-angled, opening loculicidally in 5-valves.

12 species restricted to E Asia from E Himalaya through China to Japan; seven species in China; one species in Hong Kong.

**1. Enkianthus quinqueflorus** Lour.
吊鐘花 **(Fig. 211; Photo 477)**
Fl. Cochinch. 1: 277, 1790; FHK 200. 1861; FKH 154. 1912; FRPS 57(3): 12, pl. 4: 1–2. 1991; FOC 14: 245. 2005.

Deciduous or semi-deciduous shrub or trees, 1–3(–10) m tall, glabrous throughout, with whorled branches. Leaves crowded at ends of branches; petiole 0.5–1.5 cm; leaf blade obovate-lanceolate to elliptic, rarely lanceolate, 5–12.5 × 1.8–4 cm, base cuneate to attenuate, apex acuminate or shortly to abruptly acuminate, margin entire, thick papery to leathery, shining adaxially, reticulation of veins raised and prominent on both surfaces. Inflorescence single and terminal, umbellate, 6–8(–16)-flowered, enclosed in imbricate, reddish scales in buds; scales ovate to pyriformis, glabrous, margins ciliated, apex obtuse with a blunt point, up to 9–16 × 6–8 mm. Pedicels 1–2 cm, usually curved and pointing downward. Calyx 5-lobed, reddish; lobes triangular ovate to triangular, 2–3 × 1.5–2 mm. Corolla broadly campanulate, ca. 1.2 cm in diam., depth ± equals to diam., pink, red, or white, shortly 5-lobed; tube broad; limb 0.8–1.2 cm in diam.; lobes triangular ovate, obtuse, about 1/3 length of corolla-tube, more or less recurved. Stamens 10, included; filaments puberulent; anther-cells tipped with awn-like appendages. Ovary glabrous or densely pubescent; style ca. 4 mm. Capsule ovoid, 5-angled, ca. 1.2 × 1.0 cm; stalk erect; seeds several to many.

Locality: Harlic Road, Wong Nai Chung, Beacon Hill, Kadoorie Farm & Botanic Garden, Pat Sin Leng, Wu Kau Tang, Sunset Peak. *H. C. Tang 1860*; *Y. S. Lau 1754*; *S. Y. Hu 13593* (IBSC); *F. W. Xing 6879* (HKU).

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan; Vietnam.

Ecology: Common in Hong Kong, occasionally abundant in open hillside shrublands, alt. 50–700 m. Flowering: Jan.–Mar.; fruiting: Sep.–Dec.

Uses: Ornamental.

Notes: Majority of individuals in Hong Kong are deciduous; emergence of young leaves occur after the older leaves fall, and the leafless period often coincides with flowering. However, a significant proportion of plants produce young leaves and even flowers before old leaves fall.




**Figure 211.** *Enkianthus quinqueflorus* Lour.
*1*. flowering branch; *2*. fruiting branch; *3*. stamen. (drawn by H. P. Yu)

## 3. Pieris D. Don 馬醉木屬

Evergreen shrubs or small trees. Leaves spirally arranged, pseudoverticillate, or in whorls of three, petiolate, serrate to crenulate, rarely entire. Inflorescences terminal or axillary, paniculate or racemose. Pedicels short, often curved downwards, with 1–2 bracts and bracteoles at base or near apex. Calyx deeply 5-lobed. Corolla ovoid-urceolate, white, rarely reddish, shortly 5-lobed. Stamens 10, included; filaments free or connate with corolla-tube at base; anthers dorsifixed, with a pair of reflexed awns on back, opening by terminal pores. Ovary 5-locular, with many ovules in each locule. Capsule opening loculicidally by 5 valves.

Seven species in E Asia and E North America; three species in China; only one species recorded in Hong Kong.

**1. Pieris swinhoei** Hemsl. 長萼馬醉木 **(Fig. 212)**
J. Linn. Soc., Bot. 26: 17. 1889; FKH 154. 1912; FGD 1: 301, fig. 321. 1987; FRPS 57(3): 27, pl. 7: 9–12. 1991; FOC 14: 461. 2005.

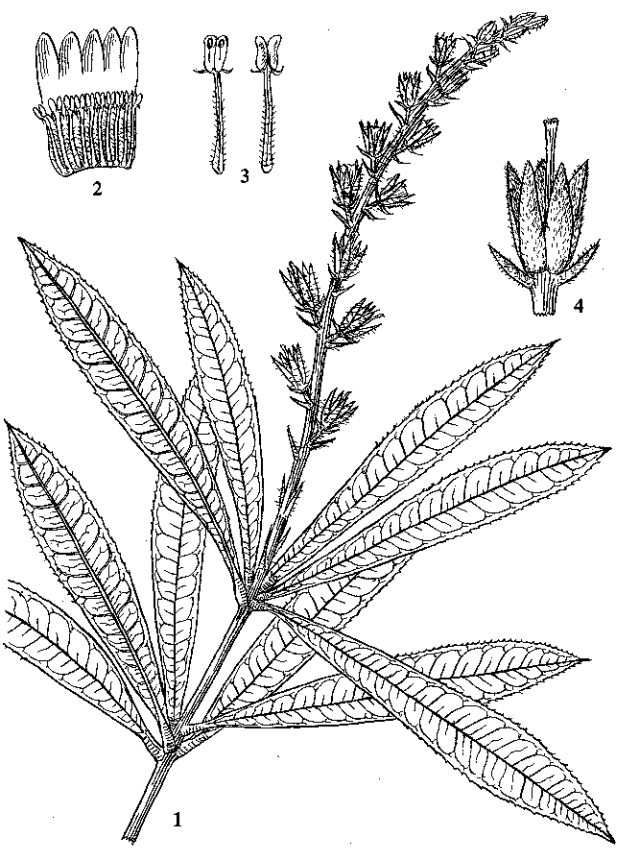



**Figure 212.** *Pieris swinhoei* Hemsl.
*1*. flowering branch; *2*. corolla opened viewing portion of stamen; *3*. stamens; *4*. flower with corolla removed viewing bract, sepals and stigma. (drawn by H. P. Yu)

Shrub, evergreen, 1.2(–3) m tall. Branchlets slender, shortly pubescent. Leaves and spirally arranged, crowded towards the nodes of branches. Petiole 3–6 mm, shortly pubescent, ± swollen at the base; leaf blade leathery, narrow elliptic to oblong oblanceolate, 4.5–13 × 0.6–1.5 cm, base attenuate, ± decurrent, apex acute, often with a blunt to sharp point, margin serrulated above middle, glabrous to sparsely puberulent on both surfaces, lateral veins almost in right angle with the midvein. Inflorescences terminal, single to several, racemose or paniculate, erect, 10–15(–20) cm, shortly pubescent, 20–30-flowered. Pedicels 3–4(–7) mm, shortly pubescent. Calyx-lobes lanceolate 5–6 × 2–2.5 mm, thick papery, pubescent adaxially, puberulent abaxially. Corolla tubular-urceolate, 7–9 mm; lobes broadly triangular, 1–2 mm. Stamens 10; filaments ca. 3.5 mm, flat, geniculate at top, 5.5–7.5 mm; filaments puberulent at base. Ovary conical to subglobous, densely pubescent; style ca. 7.5 mm, glabrous, base sunken into apex of ovary. Capsule ovoid, ca. 5 mm in diam.

Localities: Shing Mun. *HK sheet 16851*; *IBSC sheet 53317*.

Distribution: Fujian, Guangdong.

Ecology: Flowering: Mar.

Uses: Ornamental.

Notes: The above cited specimens are probably duplicates of a single collection from Shing Mun in 1931. The author has not yet noticed this species in the wild.

## 4. Lyonia Nutt., *nom. cons.* 珍珠花屬

Shrubs, rarely trees, deciduous or evergreen. Branchlets terete or angled. Leaves alternate, short-petioled, entire or obscurely serrulate. Inflorescences axillary or terminal, racemose or paniculate. Pedicels with 1 bract and 2 bracteoles at base. Calyx divided beyond middle; lobes (4–)5(–8), persistent. Corolla urceolate or campanulate, white, rarely red, shortly 4–5-lobed. Stamens 10, rarely 8–16; filaments flattened, with a pair of appendages near apex or without; anthers obtuse, without appendages, opening by apical pores. Ovary superior, (4–)5-locular, with many ovules in each locule; stigma truncate. Capsule subglobose or ovoid, (4–)5-angled, loculicidal, with thickened sutures. Seeds oblong-ovoid or spindle-shaped to shortly linear, minute, ends often truncated.

35 species in E Asia and N America; five species in China; one variety in Hong Kong.

**1. Lyonia ovalifolia** (Wall.) Drude var. **hebecarpa** (Franch. ex Forb. & Hemsl.) W. Y. Chun 毛果珍珠花 **(Fig. 213; Photo 478)**

Sunyatsenia 4: 253. 1940; FOC 14: 463. 2005

*Pieris ovalifolia* (Wall.) D. Don var. *hebecarpa* Franch. ex Forb. & Hemsl., J. Linn. Soc., Bot. 26: 17. 1889.

*Xolisma ovalifolia* (Wall.) Rehd. var. *hebecarpa* (Franch. ex Forb. & Hemsl.) Metcalf, J. Arnold Arbor. 12(4): 275. 1931.

Shrub, deciduous or semi-deciduous, 1–2(–4) m tall. Branchlets, petioles, abaxial surface of leaves inflorescence puberulent. Buds narrowly ovoid, 4–7 × 3–4 mm, glabrous. Leaves papery; petioles 2–8 mm; leaf blade ovate, ovate-lanceolate to elliptic-lanceolate, 3–7.5 × 1.5–4 cm, base usually rounded, apex shortly acuminate, margin entire, adaxial surface glabrescent; midvein and secondary veins prominently raised on abaxial surface. Inflorescences racemose or paniculate, terminal or axillary, 5–7(–20) cm. Pedicel 2–5 mm, with 1–3 leafy bracts near base. Calyx 5-lobed; lobes ovate to triangular-lanceolate, ca. 1.4 × 1.2 mm. Corolla white, tubular or tubular-urceolate, 8–10 mm, shortly 5-lobed. Stamens 10; filaments with a pair of appendages near apex. Ovary ovoid, densely puberulent. Capsule subglobose, 3–5 mm in diam.

Locality: Ma On Shan. *Y. S. Lau 1398; Y. W. Lam 1290; K. Y. Tam s.n. (HK sheet 38879)*.

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Jiangsu, Jiangxi, Sichuan, Shaanxi, Yunnan, Zhejiang.

Ecology: Very rare locally, only several plants were found in shrublands at open exposed rocky cliffs, alt. ca. 450 m. Flowering: May; fruiting: Aug.

Uses: Ornamental.

Notes: *Lyonia ovalifolia* is a highly variable species with up to six varieties differs slightly in leaf shape and hair covers being distinguished in China. At least three of them (var. *ovalifolia*, var. *hebecarpa*, and var. *lanceolata*) have almost overlapping ranges and were recorded in Guangdong. Among them, var. *hebecarpa* only differs from the other two varieties in having pubescent, instead of glabrous, ovary and capsule. The typical variety (var. *ovalifolia*) is very variable and therefore needs further studies to ascertain the taxonomic status.

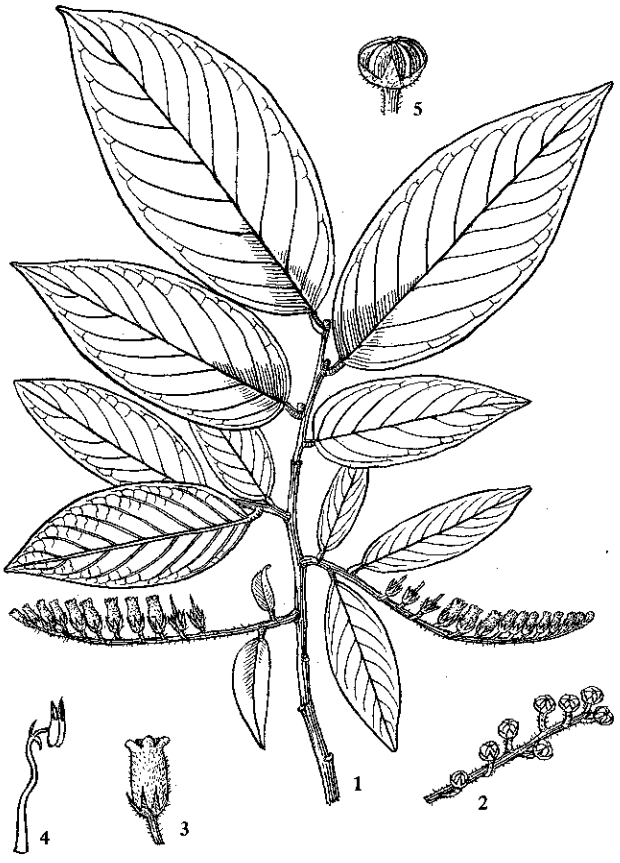



**Figure 213.** *Lyonia ovalifolia* var. *hebecarpa* (Franch. ex Forb. & Hemsl.) W. Y. Chun

*1*. flowering branch; *2*. infructescence; *3*. flower; *4*. stamen; *5*. capsules. (drawn by H. P. Yu)

## 5. Vaccinium L. 越橘屬

Shrubs or rarely small trees, evergreen or deciduous. Leaves alternate, short-petiolate, margin entire or toothed. Flowers in axillary or terminal racemes, rarely solitary or in pairs. Calyx-tube adnate to the ovary, apex 4–5-lobed or toothed. Corolla urceolate, campanulate, or tubular, 4–5-lobed or toothed; lobes erect or recurved, mostly shorter than the tube. Stamens 10 or 8 usually included; anther cell (theca) prolonged into terminal tubule, opening in oblique pores at the top of the tubule. Ovary inferior, (4–)5-locular, sometimes almost divided into 10 cells by false dissepiments; ovules many in each locule. Fruit a several-seeded berry, usually globose, crowned by the persistent calyx-lobes.

About 450 species distributed throughout the N hemisphere, and also in the tropical mountainous regions of C and S America, Asia and Malesia, a few in Africa and Madagascar; 92 species in China (51 endemic); only one species and one variety are known from Hong Kong.

1a. Young branches puberulent to glabrous; leaves ovate-elliptic to oblong-elliptic; corolla 4–6.3 mm, puberulent abaxially; appendage of anther absent to inconspicuous and short ..... 1. *V. bracteatum* var. *chinense*

1b Young branches densely pubescent; leaves ovate or ovate-lanceolate to lanceolate; corolla, 7–8.5 mm, glabrous; appendage of anther conspicuous, ca. 1 mm ..... 2. *V. iteophyllum*

**1. Vaccinium bracteatum** Thunb. var. **chinense** (Lodd.) W. Y. Chun ex Sleumer 小葉烏飯樹 **(Fig. 214; Photo 479)**

Bot. Jahrb. Syst. 71: 474. 1941; FGD 1: 335. 1987; FRPS 57(3): 109. 1991; FOC 14: 488. 2005.

*Andromeda chinensis* Lodd., Bot. Cab. 17, t. 1648. 1830.

*Vaccinium chinense* (Lodd.) Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 297. 1852; FHK 199. 1861.

*Vaccinium bracteatum* auct. non Thunb.: FKH 153. 1913, *p.p.*

Shrub or small tree, evergreen, 1.5–4(–9) m tall, much branched. Branchlets initially ± puberulent, becoming glabrous in age. Leaves alternate, firmly papery to thin leathery; petiole 2–5.5 mm, puberulous; leaf blade rhombic-elliptic to elliptic or lanceolate-elliptic, 1.1–4.5 × 0.5–2.5 cm, base cuneate or broadly cuneate, apex acuminate to acute-acuminate, rarely long acuminate, margin thickened, serrulate at least on the distal half, glabrous; midvein and secondary veins slightly raised on both surfaces. Inflorescences terminal or axillary, racemose, 2–4 cm, glabrous to puberulent. Bracts caducous or rarely persistent, leaf-like, elliptic to lanceolate, ca. 5 × 2 mm; bracteoles subulate, persistent. Pedicels 2.4–4.5 mm, pubescent to glabrous. Calyx pubescent, 5-lobed; lobes triangular, 0.9–1.1 × 0.9–1.1 mm, apex acute to acuminate. Corolla white, rarely reddish, tubular-urceolate, 4.0–6.3 × 2.1–3.2 mm, puberulent abaxially, shallowly 5-lobed; lobes reflexed, triangular. Stamens 10, included; filaments hairy; anther (theca and tubule) 2.5–3 mm; appendage very short and inconspicuous to absent; tubule 2–2.5 times as long as thecae. Style glabrous; ovary inferior, 5-locular, densely pubescent at least surrounding base of style. Berry globose, 6–7 mm in diam., puberulent to pubescent.

Locality: Victoria Peak, Causeway Bay, Repulse Bay, Tai Tam, Mount Parker, Aberdeen, Stanley, Kadoorie Farm & Botanic Garden, Ng Tung Chai, Ma On Shan, Castle Peak, Pat Sin Leng, Lautau Peak. *Y. S. Lau 114, 198*; *S. L. Thrower 764* (HKU).

Distribution: Fujian, Guangdong, Guangxi.

Ecology: Locally common in shrublands and young secondary forests on open hillsides, alt. 200–980 m. Flowering: Jun.–Aug.; fruiting: Aug.– Oct.

Notes: *Vaccinium bracteatum* is known to have edible fruits and its leaves and stems can also be used as herbal medicinal. However, there is no documented uses of var. *chinense*. This variety only differs from *V. bracteatum* var. *bracteatum* in leaf size and shape, although the latter also shown considerable variation. Specimens collected from Guangdong seemed to show a continuous range in leaf size and shape. More detailed studies are therefore needed to ascertain its taxonomic status. The type specimen of *V. chinense* was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

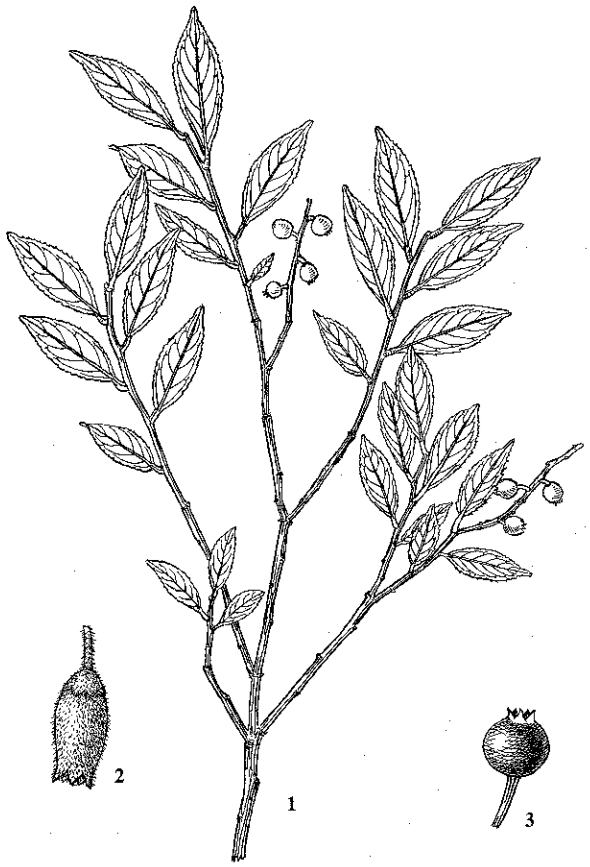



**Figure 214.** *Vaccinium bracteatum* var. *chinense* (Lodd.) W. Y. Chun ex Sleumer

*1*. fruiting branch; *2*. flower; *3*. fruit. (drawn by H. P. Yu)

**2. Vaccinium iteophyllum** Hance 黃背越橘

Ann. Sci. Nat., Bot., ser. 4, 18: 223. 1862; FGD 1: 333, fig. 367. 1987; FRPS 57(3): 122. 1991; FOC 14: 492. 2005.

*Vaccinium iteophyllum* Hance var. *fragrans* Rehd. & Wils., Pl. Wilson. 1(3): 558. 1913.

Shrub or small tree, evergreen, 1(–7) m tall. Young branches, petioles, inflorescence and calyx-tube pubescent with light brown

to rusty hairs. Leaves spirally arranged, papery to thin leathery; petioles 1.5–3.0 mm; leaf blade ovate or ovate-lanceolate to lanceolate, 3.4–6 × 1.8–2.5 cm, apex acuminate, base cuneate to rounded, margin shallowly serrulate, turned yellow-brown when dry, glabrous, only with short hairs remained on midvein of abaxial surface. Inflorescence terminal or axillary, racemose, 1.5–4(–7) cm. Bracts and bracteoles caducous. Pedicel 2–2.5 mm. Calyx 5-lobed; lobes triangular, ca. 1 × 1 mm, apex acute to slightly acuminate. Corolla white or tinged with red blotches, tubular-urceolate, 7–8.5 × 2.5–3.5 mm, glabrous, shallowly 5-lobed; lobes reflexed, triangular. Stamens 10, filaments 2–2.5 mm, hairy; anthers (theca and tubule) 5.0 mm; appendage ca. 1.0 mm, present at the top of each theca cell; tubule ca. 4 times as long as theca. Ovary inferior, densely pubescent; style glabrous. Berry globose, ca. 6 mm in diam., purplish red when mature.

Localities: Ma On Shan. *H. C. Tang 491*.

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang.

Ecology: Flowering: Apr.

Notes: Previously unrecorded for Hong Kong. Only a single specimen collected from Ma On Shan in 1950 is known, which was previously misidentified as *V. bracteatum*. The author has not yet noticed this species in the wild.

# 151. SAPOTACEAE 山欖科

XIA Nian-he 夏念和

Trees or shrubs, usually lactiferous. Leaves simple, alternate, rarely subopposite, opposite or subverticillate, margin entire, pinnately veined; stipules absent or rarely present. Flowers solitary, several clustered or in cymes, bisexual or unisexual, actinomorphic, bracteolate. Sepals 4–8, in 1–2 whorls, imbricate. Corolla-tube short, lobes as many to two times as many as sepals, imbricate, usually entire, rarely with 2 lacerate or lobular appendages. Stamens inserted at corolla base or throat of corolla-tube, as many as corolla lobes, rarely fewer or more, in 2 or 3 whorls, opposite to corolla lobes, rarely alternate to them; anthers 2-celled, longitudinally dehiscent; staminodes present or absent, alternate with stamens, scale-like to petaloid. Ovary superior, (2–)4–14(–30)-carpellate and -locular, with axile placentation; ovules 1 per locule. Style 1; stigmas 1, papillate. Fruit a berry or drupe, 1- to many-seeded. Seed coat brown; endosperm usually oily; seed scar lateral and linear to oblong or basal and round.

About 55 genera and 800 species distributed in tropical regions of the world; 11 genera and 24 species in China; four genera and four species in Hong Kong.

1a. Flowers in axillary panicles or racemes; fruit a drupe ..... 1. *Sarcosperma*
1b. Flowers solitary or several fascicled in leaf axils; fruit a berry.
  2a. Sepals 6, in 2 whorls; corolla 6-lobed .... 2. *Manilkara*
  2b. Sepals 5, in 1 whorl; corolla 5-lobbed.
    3a. Flowers without staminodes ...3. *Chrysophyllum*
    3b. Flowers with staminodes .....4. *Sinosideroxylon*

## 1. Sarcosperma Hook. 肉實樹屬

Evergreen trees. Leaves opposite, subopposite, or rarely alternate, leathery; stipules small, caducous and leaving conspicuous scars on petioles. Flowers small, solitary or in axillary racemes or panicles. Bracts small, triangular. Sepals 5, imbricate. Corolla broadly campanulate; lobes 5, ovate, imbricate. Stamens 5, inserted at corolla-tube and opposite to lobes, filaments short, anthers 2-celled; staminodes 5, subulate to triangular, inserted at throat and alternate to corolla-lobes. Ovary 1- or 2-locular, glabrous; ovules 1 per locule. Style short; stigma capitate or 2-lobed. Fruit a drupe, ellipsoid, 1- or 2-seeded. Seed scar small, rounded.

About nine species distributed in tropical Asia; four species in China; one species in Hong Kong.

**1. Sarcosperma laurinum** (Benth.) Hook. f.
肉實樹 **(Fig. 215; Photo 480)**

Gen. Pl. 2: 655. 1876; FKH 161. 1912; FHN 3: 163. 1974; FRPS 60(1): 83. 1987; FFJ 4: 314. 1989; FGD 2: 358, fig. 224. 1991; FOC 15: 214. 1996.

*Reptonia laurina* Benth., FHK 208. 1861.

Tree, to 20 m tall, conspicuously buttressed. Branchlets angulate, glabrous. Leaves mostly alternate, sometimes opposite or whorled; petioles 1–2 cm; leaf blades almost leathery, obovate to oblanceolate, rarely narrowly elliptic, 7–16 × 2.5–4 cm, base




**Figure 215.** *Sarcosperma laurinum* (Benth.) Hook. f.
*1*. fruiting branch; *2*. corolla opened up showing stamens; *3*. longitudinal section of pistil; *4*. seed. (drawn by H. P. Yu)

cuneate, apex short-acuminate, glabrous on both surfaces; lateral veins 6–9 pairs; stipules small, caducous. Racemes or panicles 2–13 cm, puberulous. Flowers 4 mm in diam. Pedicels 1–5 mm, yellowish brown-tomentose. Sepals 2–3 mm, subrounded, glabrous adaxially, yellowish brown-tomentose abaxially. Corolla white or pale green, 3–4 mm; lobes broadly obovate to subrounded, 2–2.5 mm. Staminodes subulate, nearly as long as stamens. Ovary ovoid, 1–1.5 mm, 1-locular, glabrous. Drupe ellipsoid, 1.5–2.5 × 0.8–1 cm, red and shining, base with recurved persistent calyx. Seed 1, ca. 1.7 × 0.8 cm.

Locality: Common in Hong Kong. *L. T. Lo 417; K. Y. Tam 114; Y. W. Lam 208.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Zhejiang; Vietnam.

Ecology: Forests. Flowering: Aug.–Sep.; fruiting: Dec.–Jan. of the following year.

Uses: Timber.

Notes: The type specimen was collected from Hong Kong Island by W. A. Harland in 1850s.

## 2. Manilkara Adans. 人心果屬

Trees or shrubs, lactiferous. Leaves alternate, leathery to almost leathery, lateral veins dense; stipules caducous. Flowers solitary or several clustered in leaf axils. Sepals 6, in 2 whorls. Corolla 6-lobed, outer lobes with 2 petaloid appendages. Stamens 6; staminodes 6, alternate to corolla lobes, lobed or not. Ovary 6–14-locular, ovules 1 per locule. Fruit a berry, 1–6-seeded. Seeds compressed, scar lateral.

About 70 species distributed tropical regions of the world; two species (one native) in China; one species cultivated in Hong Kong.

**1. Manilkara zapota** (L.) P. Royen 人心果 **(Fig. 216; Photo 481)**

Blumea 7: 410, fig. l–q. 1953; FHN 3: 160. 1974; FRPS 60(1): 50, pl. 9: 1–3. 1987; FFJ 4: 310. 1989; FGD 2: 351. 1991.

*Achras zapota* L., Sp. Pl. ed. 2. 1190, 1753; FGZ 469, fig. 257. 1956.

*Sapota achras* Mill., Gard. Dict. ed. 8. Sapota no. 1. 1768.

Tree, 6–10 m, with milky juice. Branches brown, with conspicuous leaf scars. Petioles 2 cm; leaf blades oblong or ovate-elliptic, 6–19 × 2.5–4 cm, thinly leathery, base cuneate, apex short-acuminate to obtuse, sometimes emarginate, margin sometimes undulate, glabrous on both surfaces; lateral veins many, nearly parallel, inconspicuous. Flowers usually solitary and axillary. Pedicels 2 cm or longer, yellowish brown-tomentose. Sepals ovate, 6–8 mm, rusty tomentose abaxially. Corolla white, 6–8 mm; lobes ovate, 3–5 mm, irregularly dentate at apex. Staminodes petaloid, as wide as half of corolla lobes. Ovary densely brown-tomentose. Berry ovoid or ovoid-ellipsoid, 4–8 cm, brown.

Locality: Cultivated. *HK sheet 17906; Y. S. Lau 2721.*

Distribution: Fujian, Taiwan, Hainan, Guangxi, Guangdong, Yunnan (cultivated); native to C America.

Ecology: Flowering: Summer; fruiting: Autumn.

Uses: Food (fruit).

## 3. Chrysophyllum L. 金葉樹屬

Shrubs or trees. Leaves alternate; stipules absent. Flowers small, several to many fascicled and axillary, pedicellate or sessile. Sepals 5 (or 6). Corolla campanulate, 5–11-lobed. Fertile stamens 5–10 in 1 whorl, inserted at throat and opposite to corolla-lobes; staminodes absent. Ovary 2–10-locular, hairy or not . Style longer to shorter than ovary, glabrous. Fruit a berry, 1–8-seeded, exocarp thick to very thin. Seed coat papery to crusty; scar narrow to wide, lateral.

About 70 species distributed in Madagascar; tropical and subtropical America, tropical Africa and Asia; one species in China; it also occurs in Hong Kong.

**1. Chrysophyllum lanceolatum** (Blume) A. DC. var. **stellatocarpon** P. Royen 金葉樹 **(Photo 482)**

Blumea. 9: 32. 1958; FHN 3: 161, fig. 642. 1974; FRPS 60(1): 60, pl. 11: 3–4. 1987; FGD 2: 350. 1991; FOC 15: 208. 1996.

*Chrysophyllum roxburghii* auct. non G. Don: FKH 160. 1912.

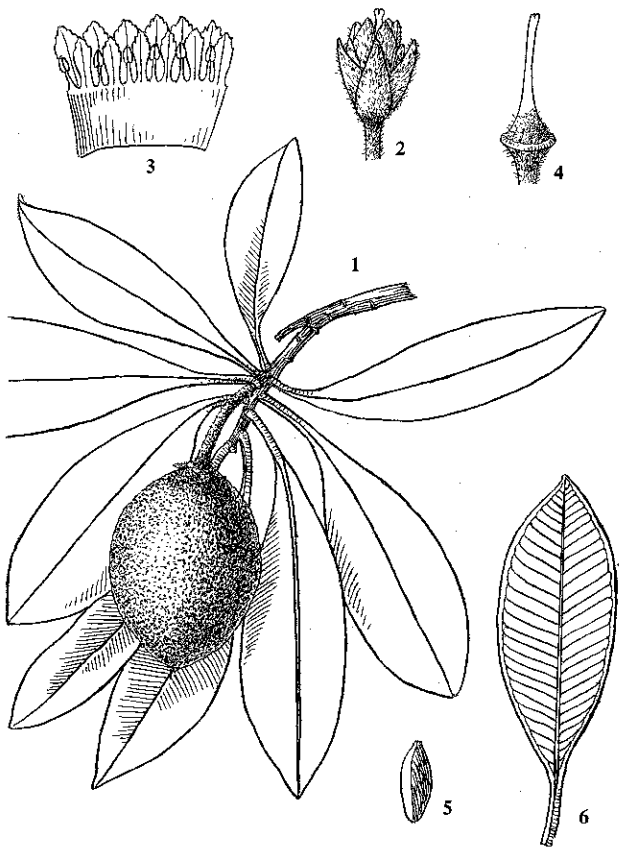



**Figure 216.** *Manilkara zapota* (L.) P. Royen

*1.* fruiting branch; *2.* flower; *3.* corolla opened up showing stamens and staminodes; *4.* pistil; *5.* seed; *6.* leaf. (drawn by H. P. Yu)

Trees, 10–20 m or taller. Branchlets yellow pubescent when young. Petioles shorter than 1 cm, glabrous or pubescent; leaf blade thinly leathery, oblong to oblong-lanceolate, slightly asymmetrical, 7–12 × 1.8–4 cm, base cuneate, apex acuminate to caudate-cuspidate, glabrous on both surfaces, yellowish brown when dry; lateral veins many, closely spaced and slender. Flowers fascicled. Pedicels slender, 5 mm, rusty pubescent. Sepals 5, slightly pubescent abaxially, margin fimbriate. Corolla white, broadly campanulate, 1.8–3 mm, glabrous, 5-lobed; lobes as long as sepals, margin fimbriate. Stamens 5, filaments short. Ovary ca. 0.6 mm, 5-locular, 5-ridged, rusty tomentose. Style ca. 1.5 mm, glabrous. Berry subglobose, brown to purplish black, 5-ridged, 1.5–2 cm in diam., rusty tomentose when young. Seeds often 5, obovoid, compressed laterally, 11–13 mm.

Locality: Happy Valley, Wong Nai Chung, Lai Chi Wo. *HK sheet 3092; K. Y. Tam 121; Y. W. Lam 1898.*

Distribution: Hainan, Guangdong, Guangxi; Indonesia, Sri Lanka, Indochina to Singapore.

Ecology: Forests. Flowering: May; fruiting: Oct.

Uses: Medicinal (root & leaves), food (fruit).

## 4. Sinosideroxylon (Engl.) Aubr. 鐵欖屬

Trees, rarely shrubs. Leaves alternate, exstipulate. Flowers small, usually clustered in leaf axils. Sepals 5 (or 6), imbricate. Corolla campanulate, tube short, lobes 5 (or 6), imbricate. Stamens 5 (or 6), inserted at throat and opposite to corolla-lobes; filaments reflexed at apex; anthers extrorsely or slightly latrorsely dehiscent; staminodes as many as corolla lobes and alternate to them, scale-like or petaloid. Ovary glabrous or villous, 5-locular, rarely 2–4-locular; ovules 1 per locule. Fruit a berry, ovoid to globose; pericarp usually thick, sometimes fleshy; 1–(2–5)-seeded. Seed scar basal, sometimes lateral.

Four species distributed in S & SW China and N Vietnam; three species in China; one species in Hong Kong.

**1. Sinosideroxylon wightianum** (Hook. & Arn.) Aubr.
革葉鐵欖(鐵欖) **(Fig. 217; Photo 483)**

Fl. Cambodge, Laos & Vietnam. 3: 68. 1963; FRPS 60(1): 75, pl. 14: 1–3. 1987; FFJ 4: 312, fig. 247.1989; FGD 2: 357, fig. 243. 1991; FOC 15: 212. 1996.

*Sideroxylon wightianum* Hook. & Arn., Bot. Beechey Voy. 196. 1837; FHK 209. 1861; FKH 161. 1912.

*Sideroxylon wightianum* var. *balansae* Lecomte, Observ. Bot. 3: 887. 1930.

*Mastichodendron wightianum* (Hook. & Arn.) P. Royen, Blumea 10(1): 123, 125, fig. 1. 1960.

Evergreen small trees, 4–10 m tall. Branchlets and leaves rusty tomentose when young, glabrescent, conspicuously lenticellate. Petioles 1–2 cm; leaf blade oblong, elliptic, lanceolate or oblanceolate, 9–15(–17) × 2.5–4 cm, leathery, base cuneate, apex abruptly acuminate and caudate, glabrous; lateral veins 12–17 pairs. Flowers solitary or 2–5 clustered in leaf axils, greenish white, fragrant. Pedicels 4–10 mm, pubescent. Sepals ovate to lanceolate, rusty tomentose, ca. 2.5 mm. Corolla white, 6–8 mm, lobes suborbicular to ovate, glabrous. Stamens slightly longer than corolla lobes. Staminodes lanceolate to subtriangular, petaloid, 2.5–3 mm. Ovary ovoid, tomentose. Berry ellipsoid or ovoid, 1–1.5(–1.8) × 0.5–0.8 cm, glabrous, deep purple. Seed 1, ellipsoid, compressed; shiny, scar basal to lateral-basal, suborbicular.

Locality: Wong Nai Chung, Victoria Peak, Shing Mun, Shatin, Lion Rock, Ma On Shan, Tai Mo Shan, Lantau Island. *H. C. Tang 2025; Y. W. Lam 2303; C. H. Tsou 1871.*

Distribution: Fujian, Guangdong, Guizhou, Yunnan; Vietnam.

Ecology: Thickets and forests. Flowering: May–Jun.; fruiting: Aug.–Oct.

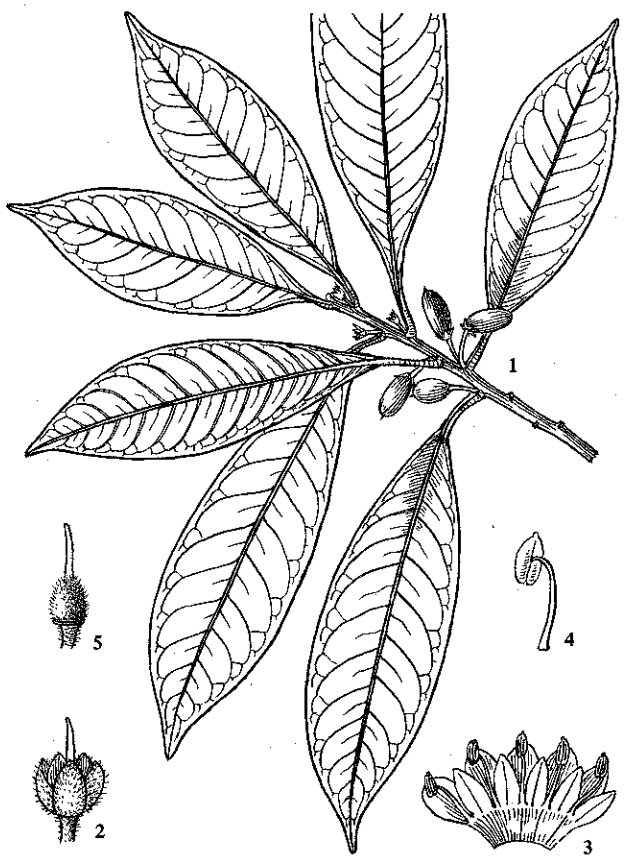



**Figure 217.** *Sinosideroxylon wightianum* (Hook. & Arn.) Aubr.
*1.* fruiting branch; *2.* calyx and pistil; *3.* corolla opened up showing stamens and staminodes; *4.* stamen; *5.* pistil. (drawn by H. P. Yu)

# 152. EBENACEAE 柿科

XIA Nian-he 夏念和

Trees or shrubs, dioecious or rarely polygamous. Leaves simple, alternate, rarely opposite, exstipulate. Flowers actinomorphic, usually unisexual, rarely bisexual, solitary in leaf axils or in cymes. Male flowers usually without pistillodes. Female flowers with or without staminodes. Calyx 3–7-lobed, persistent and often enlarged when fruiting. Corolla 3–7-lobed; lobes convolute, rarely imbricate or valvate. Stamens inserted at base of corolla-tube, 2–4 times as many as and opposite to corolla-lobes, rarely as many as and alternate to corolla-lobes; filaments distinct or connate in pairs; anthers basifixed, 2-celled, longitudinally dehiscent, rarely dehiscing by apical pores. Ovary superior, 2–16-locular; ovules 1 or 2 per locule. Styles 2–8, distinct or connate at base; stigma entire or 2-lobed. Fruit a berry, fleshy or leathery. Seeds usually oblong; endosperm copious, sometimes ruminate; embryo straight; hilum small.

Three genera and ca. 500 species mainly distributed in tropical regions of the world; one genus and 60 species in China; one genus and six species in Hong Kong.

## 1. Diospyros L. 柿屬

Trees or shrubs, dioecious or polygamous. Leaves alternate or rarely subopposite, entire. Male flowers usually arranged in axillary cymes and female ones often solitary and axillary. Calyx 4–5-lobed, enlarged when fruiting. Corolla 4–5-lobed, convolute, rarely imbricate. Male flowers: stamens 4–many, usually 16, distinct or paired; pistillodes present or absent. Female flowers: staminodes 1–16 or absent; ovary (4–)8(–16)-locular, ovules 1(–2) per locule; styles usually 2–4, distinct or connate at base, stigma often 2-cleft. Berries fleshy to somewhat leathery, usually with an enlarged persistent calyx. Seeds 1–10, compressed.

About 500 species mainly distributed in tropical regions, and some species extending to temperate regions; 60 species in China; six species in Hong Kong.

1a. Leaves larger; calyx-lobes lanceolate or ovate.
  2a. Mature leaves hairy.
    3a. Leaves oblong-lanceolate; petioles 5–6 mm; fruit ellipsoid, 1 cm in diam. ..... 1. *D. eriantha*
    3b. Leaves ovate-elliptic, broadly ovate or obovate; petioles 1–2.5 cm; fruit ovoid or depressed globose, to 8 cm in diam. ..... 2. *D. kaki*
  2b. Mature leaves glabrous on both surfaces.
    4a. Fruit subsessile ..... 3. *D. morrisiana*
    4b. Fruit conspicuously stalked.
      5a. Fruit hairy ..... 4. *D. tsangii*
      5b. Fruit glabrous ..... 5. *D. tutcheri*
1b. Leaves small, elliptic, 1–2.5 cm long; calyx-lobes linear ..... 6. *D. vaccinioides*

**1. Diospyros eriantha** Champ. ex Benth. 烏柿(烏材) **(Photo 484)**

Hooker's J. Bot. Kew. Gard. Misc. 4: 302. 1852; FHK 210. 1861; FKH 161. 1912; FHN 3: 151. 1974; FRPS 60(1): 133, pl. 31: 3–5. 1987; FFJ 4: 318, fig. 251. 1989; FGD 3: 304. 1995; FOC 15: 231. 1996.

Evergreen tree or shrub, to 13 m tall; young branches, young leaves and inflorescense rusty strigose, old branches glabrescent. Leaves distichous. Petioles 5–6 mm, densely brown-strigose; leaf blade papery, oblong-lanceolate, 5–15 × 1.8–4 cm, base broadly cuneate to rounded, apex acuminate, glabrous and shining adaxially, rusty-strigose along midvein and lateral veins abaxially; lateral veins 4–8 pairs. Male flowers 1–3 clustered in leaf axils, subsessile, with several imbricate ovate bracts; calyx 4-lobed, lobes lanceolate, 4–5 mm, strigose; corolla white, salverform, strigose abaxially; tubes 7–8 mm; lobes 4, lanceolate, 4–5 mm; stamens 14–16; pistillodes small. Female flowers solitary and axillary, subsessile; perianth as in male flowers; ovary densely strigose, 2-locular; staminodes 8. Fruit ellipsoid, 1.5 × 1 cm, hairy initially, later only hairy at apex. Seeds 1–2; persistent calyx lobes ovate, ca. 1 cm.

Locality: Common in Hong Kong. *N. H. Li 103; Y. S. Lau 1923; C. P. Lau 1.*

Distribution: Guangdong, Hainan, Guangxi, Taiwan, Fujian; Japan, Laos, Vietnam, Malaysia, Indonesia.

Ecology: Lowland thin forests and streamsides. Flowering: Jul.–Aug.; fruiting: Oct.–Feb. of the following year.

Notes: The type specimen was collected from Happy Valley woods by J. G. Champion between 1847 and 1850.

**2. Diospyros kaki** Thunb. 柿 **(Photo 485)**

Nova Acta Regiae Soc. Sci. Upsal. 3: 208. 1780; FKH 161. 1912; FGZ 467. 1956; FHN 3: 150. 1974; FRPS 60(1): 141, pl. 34: 1. 1987; FFJ 4: 322, fig. 256. 1989; FGD 3: 302. 1995; FOC 15: 225. 1996.

Deciduous tree, 5–12 m tall, polygamous. Young branchlets densely brown-pubescent, glabrascent. Petioles 1–2.5 cm; leaf blade papery or leathery, ovate-elliptic, broadly ovate or obovate, 7–17 × 5–10 cm, base attenuate or subrounded, pubescent on both surfaces when young, pubescent abaxially when mature; lateral veins 5–7 pairs. Male flowers small, 3–5 in cymes; pedicels 0.6–1 cm, pubescent. Calyx nearly as long as corolla, hairy on both surfaces, lobes 4; corolla urn-shaped, tubes ca. 1 cm, glabrous, 4-lobed; lobes broadly ovate, ca. 4 mm, reflexed. Stamens 16–24. Female flowers solitary; staminodes 8(–16); ovary glabrous or pubescent, 8-locular, styles distinct, pubescent. Berries ovoid or depressed globose, 3.5–8.5 cm in diam. Pericarp thin, orange or pale red, persistent calyx lobes

3–4 cm in diam., fruiting stipes ca. 1 cm, pubescent.

Locality: Cultivated. *H. C. Tang 920; L. T. Lo 571; Y. S. Lau 1111.*

Distribution: Native to China, widely cultivated.

Ecology: Flowering: May–Jun.; fruiting: Sep.–Oct.

Uses: Food (fruit), medicinal (folklore).

**3. Diospyros morrisiana** Hance 羅浮柿 **(Fig. 218; Photo 486)**

Ann. Bot. Syst. 3: 14. 1852; FHK 210. 1861; FKH 161. 1912; FGZ 468. 1956; FHN 3: 154. 1974; FRPS 60(1): 119, pl. 21: 2–3. 1987; FFJ 4: 319, fig. 253. 1989; FGD 3: 297, fig. 193. 1995; FOC 15: 223. 1996.

Deciduous shrub or tree, to 20 m tall. Young branches very sparsely puberulous, glabrescent. Petioles ca. 1 cm; leaf blade thinly leathery, elliptic, oblong or ovoid, 5–10 × 2.5–4 cm, base cuneate, apex acuminate to obtuse, margin sometimes slightly undulate and recurved, glabrous on both surfaces; lateral veins 4–8 pairs, inconspicuous. Male flowers: 2–3 in cymes; pedicels ca. 2 mm; calyx campanulate, 4-lobed; lobes triangular, tomentose, ca. 5 mm; corolla white, urn-shaped, ca. 7 mm, glabrous, 4-lobed; lobes ovate, ca. 2 × 2 mm; stamens 16–20, conspicuously hairy. Female flowers solitary; calyx-lobes 4, divided to about middle, tomentose; corolla nearly urn-shaped, ca. 7 mm; corolla lobes 4, ca. 3 × 3 mm, glabrous abaxially, densely brown-tomentose adaxially; staminodes 6; ovary globose, glabrous, styles 4, tomentose, connate at lower half. Berries yellow, subglobose, 1.5–2 cm in diam., 4-locular, glabrous, apex sometimes apiculate. Seeds castaneous, oblong, 10–14 × 5–7 mm, persistent calyx nearly square, subglabrous; fruiting pedicels very short.

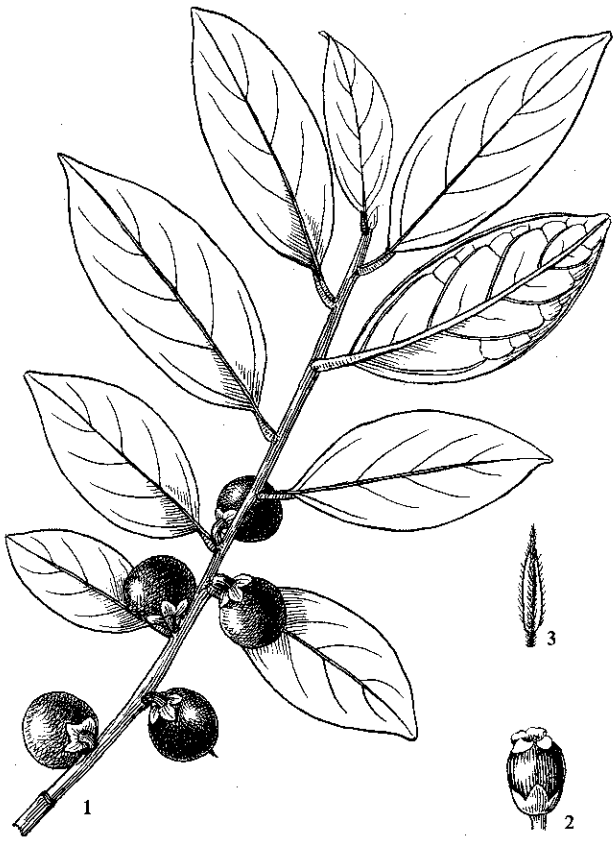



**Figure 218.** *Diospyros morrisiana* Hance
*1.* fruiting branch; *2.* flower; *3.* stamen. (drawn by H. P. Yu)

Locality: Common in Hong Kong. *H. C. Tang 1762; S. Y. Hu & P. P. H. But 24065; H. C. Tang 1402.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan, Yunnan, Sichuan; Vietnam.

Ecology: Thin forests on hillslopes or by streams. Flowering: May–Jun.; fruiting: Nov.

Uses: Medicinal (folklore).

Notes: The type specimen was collected from Victoria Peak by J. G. Champion between 1847 and 1850.

**4. Diospyros tsangii** Merr. 油杯子(延平柿)

Lingnan Sci. J. 13: 43. 1934; FRPS 60(1): 126, pl. 29: 1–3. 1987; FFJ 4: 318, fig. 252. 1989; FGD 3: 300, fig. 194. 1995; FOC 15: 225. 1996.

Shrub or small tree, 3–10 m tall; young branchlets slender, rusty pubescent, old branches glabrous. Petioles 3–6 mm, rusty pubescent; leaf blade papery, oblong or oblong-elliptic, 4–9 × 1.5–3 cm, base cuneate, apex acuminate, sparsely rusty pubescent along midvein and lateral veins adaxially, sparsely rusty pubescent along midvein and lateral veins or subglabrous abaxially; lateral veins 3–5 pairs. Male flowers 1–3 in cymes, peduncles ca. 3 mm, white-pubescent; pedicels ca. 2 mm, white-pubescent; calyx densely pubescent abaxially, lobes 4, lanceolate, ca. 10 × 2.5 mm; corolla urn-shaped, white, glabrous, 4-lobed, lobes ovate, ca. 3 mm, white-pubescent on both surfaces; stamens 16, in pairs. Female flowers solitary, larger than male flowers; staminodes 8; ovary hairy. Berries globose or ellipsoid, 1–3.5 cm in diam., orange when mature, pilose; persistent calyx-lobes to 1.5 cm, pubescent.

Locality: Tai Tam, Sai Kung. *F. W. Xing 8764.*

Distribution: Guangdong, Guangxi, Fujian, Hunan, Jiangxi.

Ecology: Thin forests. Flowering: Feb.–May; fruiting: Aug.

**5. Diospyros tutcheri** Dunn 嶺南柿 **(Photo 487)**

Bull. Misc. Inform. Kew. 1913: 354. 1913; FOC 15: 230. 1996.

*Diospyros taamii* Merr., J. Arnold Arbor. 26(2): 166, fig. 3. 1945.

Small tree 6 m tall. Young branchlets yellowish brown, glabrous. Petioles 0.5–1 cm; leaf blade thinly leathery, elliptic or oblong, 6–14 × 2.5–5 cm, base obtuse, apex acuminate, glabrous on both surfaces; lateral veins 5 or 6 pairs. Male flowers in cymes; pedicels 5–6 mm, articulate near apex; calyx 4-lobed, 1–2 mm, lobes triangular; corolla urn-shaped, 7–8 mm, sericeous abaxially, 4-lobed, lobes broadly ovate, reflexed; stamens 16, in pairs; filaments pubescent; pistillodes small, hispid. Female flowers solitary, pendulous; pedicels 1.3–1.5 cm, sericeous; calyx-lobes 4, ovate, 8 mm; corolla urn-shaped, ca. 5 mm, constricted at mouth, lobes 4, shorter than tubes, tomentose on both surfaces; staminodes 4; ovary depressed globose, 3 mm, 8-locular. Berries globose, ca. 3 cm in diam., glabrous; persistent calyx lobes long ovate, 1–2 cm fruiting pedicels 1–3 cm, slender.

Locality: Mount Gough, Findlay Road, Tai Tam, Tai Mo Shan, Pat Sin Leng. *H. C. Tang 1871; S. C. Ng 3515; F. W. Xing 7084.*

Distribution: Guangdong, Guangxi, Hunan, Guizhou.

Ecology: Thin forests in ravines. Flowering: Apr.–May; fruiting: Aug.–Oct.

Notes: The type specimen was collected from Mount Gough by W. J. Tutcher in 1911.

**6. Diospyros vaccinioides** Lindl. 小果柿 **(Photo 488)**

Exot. Fl. 2: 139. 1825; FKH 161. 1912; FRPS 60(1): 99. 1987; FGD 3: 296. 1995; FOC 15: 221. 1996.

*Rospidios vaccinioides* A. DC., Prodr. 8: 220. 1844; FHK 210. 1861.

*Diospyros vaccinioides* var. *oblongata* Merr. & Chun, Sunyatsenia 5: 162. 1940; FHN 3: 150. 1974; FRPS 60(1): 100. 1987.

Evergreen shrub 1–3 m tall, much branched. Young branchlets firmly rusty villous. Petioles 1–2 mm, rusty pubescent, glabrescent; leaf blade leathery, elliptic, oblong to ovate, 1–3.5 × 1–1.5 cm, base cuneate, apex acute and mucronate, glabrous except pilose along midveins abaxially; lateral veins 5–6 pairs. Male flowers solitary or in cymes, small, pendulous, subsessile; calyx divided nearly to base, lobes 4, narrowly lanceolate, pubescent; corolla ca. 4.5 mm, lobes 4; stamens 16. Female flowers solitary; calyx and corolla as in male flowers; staminodes 4–8, linear; ovary glabrous. Berries globose or ellipsoid, 0.8–1 cm in diam., subsessile; seeds 1–3, testa dark brown; persistent calyx lobes lanceolate, 5–8 mm.

Locality: Common in Hong Kong. *H. C. Tang 1402; C. H. Tsou 1867; Y. S. Lau 562.*

Distribution: Guangdong, Guangxi, Hainan.

Ecology: Thin forests and thickets in ravines or on hillslopes. Flowering: May; fruiting: Autumn and winter.

# 153. STYRACACEAE 安息香科

XIA Nian-he 夏念和 • DENG Yun-fei 鄧雲飛

Trees or shrubs, usually stellate pubescent or scaly, rarely glabrous. Leaves usually alternate, simple, petiolate; stipules absent or very minute. Inflorescences terminal or axillary, racemose, paniculate, cymose, rarely 1-flowered or several flowers in a fascicle; bracteoles minute or absent. Flowers bisexual, rarely polygamous dioecious, actinomorphic; calyx campanulate, obconical, or cup-shaped, tube completely or partially adnate to ovary, teeth or lobes 4–6, sometimes very small or obsolete; corolla gamopetalous, lobes 4–7, more or less connate at base, imbricate or valvate; stamens twice or sometimes as many as corolla lobes, inserted at base of corolla; filaments mostly flattened, more or less connate into a tube; anthers introrse, 2-celled, cells parallel and opening by longitudinal slits; ovary superior, half inferior, or inferior, 3–5-locular or apically 1-locular and basally 3–5-locular; ovules few or solitary per locule, erect, pendulous, or anatropous, integument 1 or 2, placentation axile or parietal; style linear or subulate; stigma truncate, capitate or 2–5-lobed. Fruit a berry, drupe, or capsule, exocarp fleshy to dry. Seeds wingless or winged, often with a broad hilum; embryo straight or slightly curved; endosperm copious; cotyledons flattened or subterete.

11 genera and ca. 180 species in tropical and temperate America, Asia, and Mediterranean; ten genera and 54 species in China; four genera, five species and one variety in Hong Kong.

1a. Bud-scales present; ovary inferior ..... 1. *Rehderodendron*

1b. Bud-scales absent; ovary inferior or half-inferior.

2a. Pedicels articulate; seeds winged.

3a. Ovary inferior, 5-locular ..... 2. *Alniphyllum*

3b. Ovary half-inferior, 3-locular ..... 3. *Huodendron*

2b. Pedicels not articulate; seeds wingless; ovary superior ..... 4. *Styrax*

## 1. Rehderodendron Hu 木瓜紅屬

Deciduous trees, bud scales present. Leaves alternate, serrate or serrulate; stipules absent. Inflorescences axillary or at nodes of previous year branchlets, racemose or paniculate, 3–10-flowered; pedicels articulated; calyx tube obconical and completely adnate to ovary, 5–10-ribbed, 5-toothed; corolla campanulate, lobes 5, imbricate, shortly connate at the base; stamens 10, 5 long and 5 short; filaments flattened, basally connate and adnate to corolla; anthers ovate to oblong; ovary inferior, 3–4-locular; ovules 4 per locule; style elongate, slender; stigma obscurely 4–5-lobed. Fruit woody, indehiscent, broadly cylindrical, apex with persistent style forming a short rostrum; exocarp thin, hard, 5–10-ribbed; mesocarp indistinct from endocarp with many radiate lacunae. Seeds 1–3, narrowly cylindrical; seed-coat almost leathery; embryo fleshy.

Five species distributed in China, Myanmar, Vietnam; five species in China; one species in Hong Kong.

**1. Rehderodendron kwangtungense** Chun 廣東木瓜紅 **(Fig. 219; Photo 489)**

Sunyatsenia. 1: 290. 1943; FGD 1: 383. 1987; FRPS 60(2): 136. 1987; FOC 15: 270. 1996.

*Rehderodendron hui* Chun, Sunyatsenia 1(4): 291. 1934.

Tree to 15 m tall, bark grey; branchlets reddish brown, smooth; winter buds ovoid to obconical, red-brown. Leaves leathery; petioles 1–1.5 cm; leaf blade oblong-elliptic to elliptic, 7–16 × 3–8 cm, apex acute to acuminate, base cuneate, margin remotely serrate, glabrous or slightly stellate pubescent and villose along veins abaxially, lateral veins 7–11 on each side of midvein. Racemes 6–8-flowered, ca. 7 cm;

rhachis, pedicels, bracts and calyx densely grey-yellow stellate tomentose; pedicels ca. 1 cm; calyx campanulate, ca. 6 mm, lobes lanceolate; corolla lobes ovate, slightly unequal in length, 2–2.5 × 1–1.4 cm, densely stellate pubescent on both surfaces; stamens 10, longer ones as long as corolla. Fruit cylindrical, obovoid or ellipsoid, 4.5–8 × 2.5–4 cm, brown to grey-brown, glabrous or slightly pubescent, 5–10-ribbed, smooth between ribs, exocarp ca. 1 mm thick, mesocarp 0.8–1.2 cm thick, endocarp woody. Seeds 2–4, spindly, 2–3 cm.

Locality: Ng Tung Chai, Kwun Yam Shan. *P. S. Choi 348, 323; Y. S. Lau 2746.*

Distribution: Guangdong, Guangxi, Hunan, Yunnan.

Ecology: Forests. Flowering: Mar.–Apr.; fruiting: Jul.–Sep.

## 2. Alniphyllum Matsum. 赤楊葉屬

Deciduous trees, bud scales absent. Leaves alternate, margin serrate; stipules absent. Inflorescences terminal or axillary, racemose or paniculate; bracteoles small, deciduous; pedicels articulate. Flowers bisexual; calyx tube cup-shaped, 5-toothed; corolla campanulate, lobes 5, imbricate; stamens 10, 5 long and 5 short; filaments flattened, mostly connate into a broad tube and adnate to corolla; ovary superior, 5-locular; ovules 8–10 per locule, in 2 longitudinal rows; style linear, slender, stigma obscurely 5-lobed. Fruit a capsule, loculicidally dehiscent into 5 valves, exocarp slightly fleshy. Seeds with irregularly membranous wings at both ends; embryo straight.

Three species in E and SE Asia; three species in China; one species in Hong Kong.

**1. Alniphyllum fortunei** (Hemsl.) Makino 赤楊葉 **(Fig. 220)**
Bot. Mag. (Tokyo) 20: 93. 1906; FGD 1: 383. 1987; FRPS 60(2): 122. 1987; FOC 15: 264. 1996.

*Halesia fortunei* Hemsl., J. Linn. Soc., Bot. 26: 75. 1889.

*Alniphyllum pterospermum* auct. non Matsum.: FKH 164. 1912.

Tree to 20 m tall; bark greyish brown; branchlets, leaves, inflorescence brownish stellate-pubescent. Leaves papery; petioles 1–2 cm; leaf blade elliptic to obovate-elliptic, 8–18 × 4–8 cm, apex acute to acuminate, base broadly cuneate to cuneate, margin remotely serrate, sparsely to densely brownish stellate pubescent to tomentose, sometimes glabrescent abaxially, lateral veins 7–12 on each side of midvein. Inflorescences terminal or axillary, racemose or paniculate, 10–20-flowered, 8–15 cm; flowers 1.5–2 cm, reddish white; pedicels 4–8 mm; calyx cup-shaped, 4–5 mm, densely grey stellate pubescent, with ovate-lanceolate teeth; corolla lobes elliptic, 10–15 × 5–7 mm; stamens 10, filament-tube ca. 8 mm, anthers 3 mm; style 1.5–1.8 cm, villose. Fruit oblong to ellipsoid, 1–2.5 cm, black, sparsely white stellate pubescent or glabrous. Seeds many, oblong, 5–7 mm, winged at both ends.

Locality: Happy Valley, Mount Nicholson, Kwun Yam Shan, New Territories, Lantau Island. *HK sheet 18179, 35066; W. J. Tutcher 8484.*

Distribution: Hainan, Anhui, Fujian, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Zhejiang, Jiangsu; India, Laos, Myanmar, Vietnam.

Ecology: Secondary forests on hill slopes. Flowering: Apr.–Jul.; fruiting: Aug.–Oct.

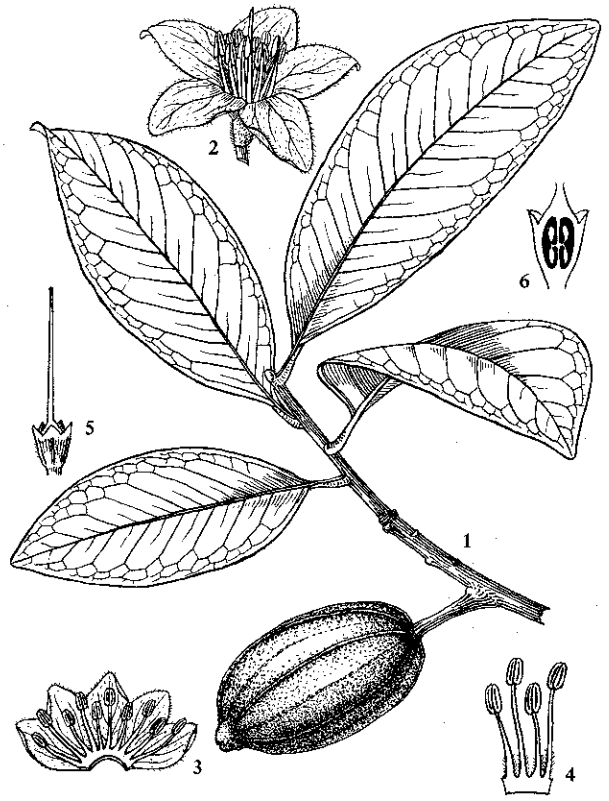



**Figure 219.** *Rehderodendron kwangtungense* Chun

*1*. fruiting branch; *2*. flower; *3*. corolla opening up showing stamens; *4*. portion of stamens; *5*. calyx and pistil; *6*. longitudinal section of ovary. (drawn by H. P. Yu)

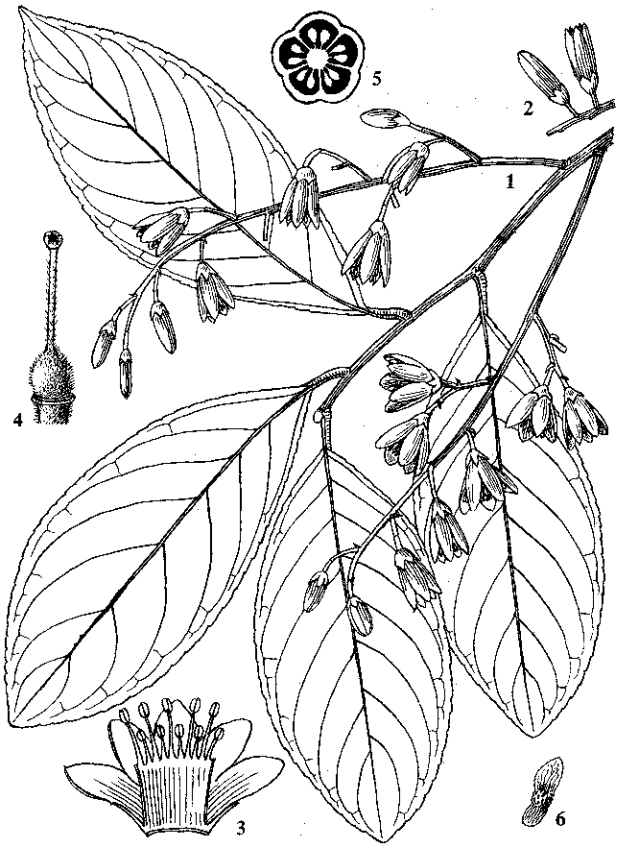



**Figure 220.** *Alniphyllum fortunei* (Hemsl.) Makino

*1*. flowering branch; *2*. infructescence; *3*. corolla opened up showing stamens; *4*. pistil; *5*. cross section of ovary; *6*. seed. (drawn by H. P. Yu)

## 3. Huodendron Rehd. 山茉莉屬

Trees or shrubs, evergreen or deciduous; bud-scales absent. Leaves alternate, margin entire or serrate; stipules absent. Inflorescences terminal or axillary, paniculate or sub-corymbose; bracts and bracteoles small, early deciduous; flowers small, bisexual; pedicels not articulate; calyx 5-toothed; petals 5, bases free, slightly coherent, imbricate or valvate, revolute after anthesis; stamens 8–10, exserted; filaments slightly adnate to petals; anthers oblong, connective 2–3-toothed at the apex; ovary half inferior, 3–4-locular; ovules many per locule, irregularly arranged; styles 3–5, partly connate, stigma capitellate. Fruit a capsule, ovoid, 1/3–2/3 surrounded by calyx, 3–4-locular, loculicidally dehiscent. Seeds numerous, flattened; seed-coat thin, reticulate, fringed on both sides; embryo straight.

Four species in China, Myanmar, Thailand and Vietnam; one variety in Hong Hong.

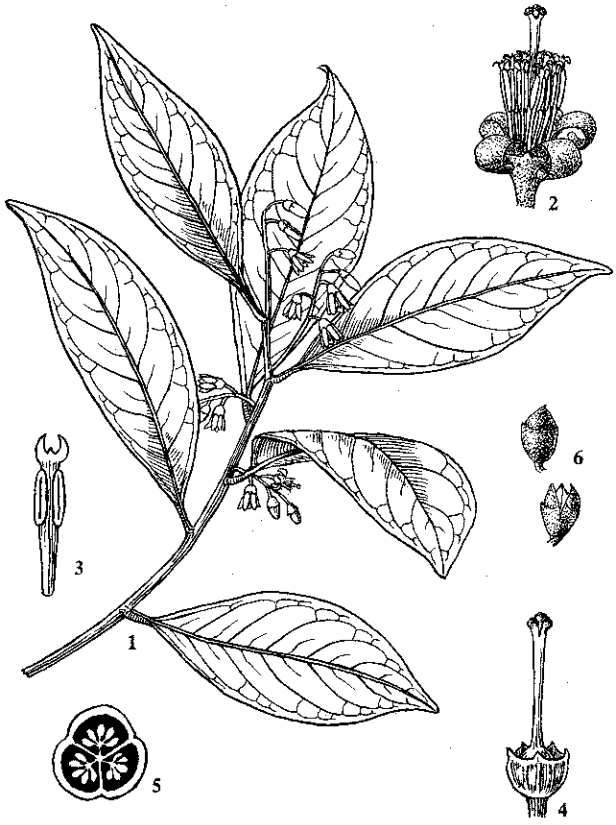



**Figure 221.** *Huodendron biaristatum* var. *parviflorum* (Merr.) Rehd. *1*. flowering branch; *2*. flower; *3*. stamen; *4*. calyx and pistil; *5*. cross section of ovary; *6*. capsules. (drawn by H. P. Yu)

**1. Huodendron biaristatum** (W. W. Smith) Rehd. var. **parviflorum** (Merr.) Rehd. 嶺南山茉莉 **(Fig. 221; Photo 490)**

J. Arnold Arbor. 16: 346. 1935; FGD 1: 384. 1987; FRPS 60(2): 128. 1987; FOC 15: 265. 1996.

*Styrax parviflorus* Merr., J. Arnold Arbor. 8: 15. 1927.

*Huodendron biaristatum* (W. W. Smith) Rehd. subsp. *parviflorum* (Merr.) Y. C. Tang, Ic. Corm. Sin. 3: 335. 1974, *nom. nud.*

Shrub or tree, to 7 m tall; bark greyish brown, exfoliating; branchlets reddish brown or greyish brown, tomentose or glabrous. Leaves sub-leathery; petiole 7–9 mm; leaf blade oblong-elliptic or oblong-lanceolate, 6–11 × 2.5–4.5 cm, apex acute or short acuminate, base cuneate, margin remotely serrate, glabrous on both surfaces, lateral veins 4–6 on each side of midvein. Inflorescences terminal or axillary, sub-corymbose, ca. 5 cm, densely grey-tomentose; pedicels 1 cm; calyx 2-2.5 mm; petals yellowish, narrowly oblong, ca. 6 mm, densely greyish tomentose; stamens 10, as long as petals; filaments flattened, pubescent; anthers as long as filaments, connectives 3-toothed, the middle one smaller than lateral ones, pubescent; styles slightly longer than stamens, 3-lobed at apex. Fruit ellipsoid, ca. 5 mm, densely greyish tomentose. Seeds ca. 1 mm.

Locality: Ng Tung Chai. *P. S. Choi 502; Y. W. Lam 36.*

Distribution: Guangdong, Guangxi, Yunnan, Hunan, Jiangxi.

Ecology: Forests in valleys.

## 4. Styrax L. 安息香屬

Trees or shrubs, stellate pubescent or scaly, rarely glabrous; bud-scales absent. Leaves usually alternate. Inflorescences axillary or terminal, racemose, paniculate, or cymose, sometimes 1-flowered or several-flowered in a fascicle; bracteoles small, caducous. Flowers bisexual; pedicels not articulate; calyx cup-shaped, 5-toothed, rarely 2–6-lobed or truncate; corolla campanulate, lobes 5–7, imbricate or valvate; stamens 10, rare 8–9 or 11–13, attached high on corolla tube; filaments flattened; anthers oblong; ovary superior, 3-locular when young, becoming 1-locular; ovules 1–many per locule, placentation parietal; style subulate or filiform; stigma capitate or 3-lobed. Fruit a drupe, indehiscent or dehiscing by 3 valves, exocarp fleshy to dry. Seeds 1–3; seed-coat thick, with a large basal hilum; endosperm fleshy or almost bony; embryo straight.

About 130 species disjunctly distributed in E Asia and America, Mediterranean; 31 species in China; four species in Hong Kong.

1a. Corolla imbricate ..... 1. *S. odoratissimus*

1b. Corolla valvate.

2a. Leaves densely stellate pubescent abaxially; petioles 1–1.5 cm ..... 2. *S. suberifolius*

2b. Leaves sparsely stellate pubescent, glabrescent; petioles 1–3 mm ..... 3. *S. confusus*

**1. Styrax odoratissimus** Champ. ex Benth. 芳香安息香 **(Photo 491)**

Hooker's J. Bot. Kew. Gard. Misc. 4: 304. 1852; FHK 213. 1861; Forb. & Hemsl., J. Linn. Soc. Bot. 26: 76. 1889, *p.p.*; FKH 164. 1912, "*odoratissimum*"; FGD 1: 388. 1987; FRPS 60(2): 99. 1987; FOC 15: 258. 1996.

Tree 4–10 m tall; bark grey-brown; young branchlets densely stellate pubescent. Leaves alternate; petioles 5–10 mm; leaf blade leathery to papery, ovate to ovate-elliptic, 4–15 × 2–8 cm, base broadly cuneate to rounded, apex acuminate to acute, margin entire

or remotely serrulate, densely brown stellate pubescent on both surfaces when young, glabrescent in age, lateral veins 6–9 on each side of midvein. Inflorescence terminal, racemose or paniculate, 8–12 cm, 6–12-flowered, densely yellow stellate tomentose; flowers 1.2–1.5 cm; pedicels 1.5–1.8 cm; calyx ca. 5 × 5 mm, membranous, apex truncate to undulate; corolla lobes elliptic to obovate-elliptic, 9–11 × 4–5 mm, membranous, imbricate in buds; stamens shorter than corolla; filaments slightly flexuous at middle, densely white stellate pubescent. Fruit subglobose, 8–10 mm in diam., densely grey-yellow stellate tomentose, apex with a slightly curved rostrum. Seeds ovoid, brown, tuberculate, densely brown scaly.

Locality: Repulse Bay, Wan Chai Gap, Wong Chuk Hang, Pok Fu Lam, Aberdeen, Tai Tam Tuk, Mount Victoria, Mount Gough, Causeway Bay, Sunset Peak. *Y. S. Lau 1544; H. C. Tang 809; H. G. Ye et al. 1223.*

Distribution: Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian.

Ecology: Thin forests, margins of forests. Flowering: Mar.–Apr.; fruiting: Jun.–Sep.

Notes: The type specimen was collected from Victoria Peak, Hong Kong Island by J. G. Champion between 1847 and 1850.

**2. Styrax suberifolius** Hook. & Arn. 栓葉安息香(紅皮) **(Photo 492)**

Bot. Beechey Voy. 196. 1841; FHK 213. 1861; FKH 164. 1912, "*suberifolium*"; FHN 3: 182. 1974; FTW 4: 111. 1978; FGD 1: 389. 1987; FRPS 60(2): 109. 1987; FOC 15: 260. 1996.

*Cyrta suberifolia* (Hook. & Arn.) Miers, Contr. Bot. 1: 182. 1851.

Tree 4–20 m tall; bark dark brown. Young branchlets, petioles and inflorescence densely rusty stellate tomentose. Leaves alternate, leathery; petioles 1–1.5 cm; leaf blade elliptic to oblong-lanceolate, 5–15 × 2–5 cm, base cuneate, apex acuminate or acute, margin subentire, glabrous adaxially, densely greyish or brownish stellate tomentose abaxially, lateral veins 5–12 on each side of midvein. Inflorescences terminal or axillary, racemose or paniculate, many-flowered, 6–12 cm; pedicels 1–3 mm; flowers white, 1–1.5 cm; calyx cup-shaped, 3–5(–7) × 2–4(–7) mm, densely grey-yellow tomentose mixed with few stellate hairs; teeth ± rudimentary, deltoid to undulate; corolla tube ca. 3 mm, lobes 4–5, lanceolate to oblong, 8–12 × 2–3 mm, valvate in buds; stamens 8–10, shorter than corolla; filaments expanded, stellate pubescent on free part; anthers oblong, 3 mm; styles subequal to corolla, glabrous. Fruit ovoid-globose, 1.2–3 × 0.8–1.6 cm, densely grey to brown stellate tomentose, 3-valvate dehiscent with persistent calyx enclosing to middle. Seeds 1–2, ellipsoid, brown, smooth or rugose, glabrous or scale-like pubescent.

Locality: Victoria Peak, Mount Nicholson, Tai Tam, Cape D'Aguilar, Tai Mo Shan, Happy Valley, Pok Fu Lam, Mount Kellet. *P. S. Choi 339; H. C. Tang 980, 1742.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Sichuan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Myanmar, Vietnam.

Ecology: Thin forests. Flowering: Mar.–May; fruiting: Aug.–Nov.

**3. Styrax confusus** Hemsl. 賽山梅(狗肝柴) **(Fig. 222)**

Bull. Misc. Inform. Kew. 1906: 162. 1906; FGD 1: 391. 1987; FRPS 60(2): 113. 1987; FOC 15: 262. 1996.

*Styrax mollis* Dunn, Kew Bull. Misc. Inform. 1911: 273. 1911; FKH 164. 1912.

Tree 2–8 m tall; bark greyish brown; branchlets densely brownish stellate pubescent. Leaves alternate, leathery to subleathery; petioles 1–3 mm; leaf blade elliptic to obovate-elliptic, 4–14 × 2.5–7 cm, apex acute to shortly acuminate, base rounded to broadly cuneate, margin irregularly serrulate, sparsely stellate pubescent, gradually glabrescent, lateral veins 5–7 on each side of midvein. Racemes terminal, 3–8-flowered, 4–10 cm; rachis densely brownish stellate pubescent; pedicels 1–1.5 cm, densely brownish stellate pubescent; flowers 1.3–2.2 cm; calyx 4–10 × 4–6 mm, densely yellowish to grey stellate tomentose and villose; teeth 5, deltoid; corolla tube 3–4 mm, lobes lanceolate, 12–20 × 3–4 mm, imbricate or sparsely valvate in buds; stamens 10, filaments slightly expanded, 8–10 mm, free parts basally densely white villose. Fruit sub-globose to obovoid, 0.8–1.5 cm in diam., densely yellowish stellate tomentose; exocarp 1–2 mm thick, rugose. Seeds brown, obovoid, smooth or deeply rugose.

Locality: Lantau Island. *HK sheet 18182.*

Distribution: Anhui, Fujian, Guangdong, Guangxi, Guizhou, Sichuan, Hubei, Hunan, Jiangxi, Jiangsu, Zhejiang.

Ecology: Thin forests, margins of forests. Flowering: Apr.–Oct.

Notes: The species was reported as *styrax faberi* Perkins previously (Check List HK Plants 35. 1993). The type specimen was collected from Lantau Island by Mr. Ford's native collector in May 1888.

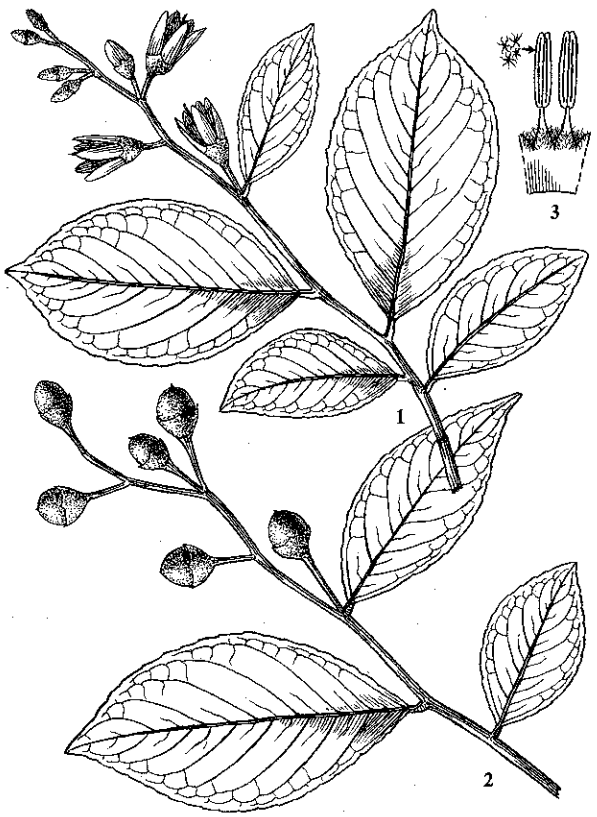



**Figure 222.** *Styrax confusus* Hemsl.

*1*. flowering branch; *2*. fruiting branch; *3*. stamens. (drawn by H. P. Yu)

# 155. SYMPLOCACEAE 山礬科

XING Fu-wu 邢福武

Shrubs or trees, evergreen, rarely deciduous. Leaves spirally or distichously arranged, simple; stipules absent. Inflorescences in spikes, racemes, panicles, or glomerules, rarely flowers solitary. Flowers actinomorphic, bisexual, rarely unisexual, subtended by 1 bract and 2 bracteoles, rarely bractless or with several bracts in leaf axil. Calyx lobes 3–5, valvate or imbricate. Corolla divided to middle or nearly to base, lobes 3–11, imbricate. Stamens many, rarely 4 or 5, adnate to corolla tube, filaments distinct or in fascicles, anthers subglobose, 2-celled. Ovary inferior to semi-inferior, 2–5-locular, but usually 3-locular; ovules 2–4 per locule. Style 1, filiform; stigma small, capitate or 2–5-lobed. Drupes with persistent calyx. Seeds with copious endosperm; embryo straight or curved; cotyledons very short.

One genus and ca. 300 species, widely distributed in tropics and subtropics of Asia, Australia, and America; 77 species in China; 14 species in Hong Kong.

## 1. Symplocos Jacq. 山礬屬

Morphological characters and geographical distribution are the same as those of the family.

1a. Corolla divided to middle, filaments flattened, connate at base into a short tube ..... 1. *S. confusa*
1b. Corolla divided nearly to base, filaments filiform, distinct or in fascicles.
2a. Leaves subsessile, base cordate, ± oblique; calyx 3-lobed ..... 2. *S. fordii*
2b. Leaves petiolate, base cuneate or rounded; calyx 4-5-lobed.
3a. Petioles with 2 rows of glands.
4a. Flowers in racemes ..... 3. *S. adenophylla*
4a. Flowers in glomerules ..... 4. *S. adenopus*
3b. Petioles without marginal glands or only with a few glands.
5a. Plants deciduous; flowers in terminal panicles; ovary 2-locular ..... 5. *S. paniculata*
5b. Plants evergreen; flowers axillary; ovary 3-locular.
6a. Flowers in sessile glomerules ..... 6. *S. congesta*
6b. Flowers in spikes or racemes, pedunculate.
7a. Leaves papery.
8a. Racemes 1–2 cm; bracts and bracteoles caducous; drupes ovoid ..... 7. *S. wikstroemiifolia*
8b. Spikes 1–4 cm; bracts and bracteoles persistent; drupes ellipsoid to sub-globose .... 8. *S. lancifolia*
7b. Leaves leathery, rarely thin leathery.
9a. Inflorescence branched spikes.
10a. Drupes globose, 4–6 mm in diam. ..... 9. *S. cochinchinensis* var. *laurina*
10b. Drupes narrowly ovoid, 1.2–2 cm in diam. ..... 10. *S. glauca*
9b. Inflorescence branched racemes.
11a. Rachis of inflorescences glabrous or nearly so ..... 11. *S. decora*
11b. Rachis of inflorescences pilose or pubescent.
12a. Branchlets and terminal buds hairy ..... 13. *S. anomala*
12b. Branchlets and terminal buds glabrous.
13a. Leaves apex caudate-acuminate; stamens 25–35; ovary glabrous .... 12. *S. sumuntia*
13b. Leaves apex shortly acuminate; stamens 60–80; ovary pubescent ..... 14. *S. crassifolia*

**1. Symplocos confusa** Brand 南嶺山礬 **(Fig. 223)**

Pflanzenr. 6 (IV. 242): 88. 1901; FKH 163. 1912; FRPS 60(2): 74. 1987; FGD 1: 423, fig. 470. 1987.

*Symplocos pendula* var. *hirtistylis* (C. B. Clarke) Noot., Rev. Symplocac. 42. 1975; FOC 15: 252. 1996.

Evergreen small tree; buds, inflorescences, bracts, and calyx grey pubescent. Leaves subleathery; petioles 1–2 cm; leaf blade elliptic-obovate to ovate, 5–12 × 2–4.5 cm, base cuneate, apex acute to shortly acuminate, tip blunt, margin entire or dentate; midvein abaxially impressed, lateral veins 5–9 per side. Racemes 1–2.5(–4.5) cm, axillary; bracts oblong-ovate, 1.5–2 mm, apex obtuse; bracteoles narrowly ovate, 1–1.2 mm, apex acute. Pedicels 3–5 mm. Calyx campanulate, 2.2–3.2 mm, 5-lobed; lobes shorter and rounded. Corolla white, 4.5–7 mm, 5-lobed; tube 1–2 mm. Stamens 40–50, filaments flat, connate into a tube and adnate to the throat of corolla tube. Ovary 2-locular; disc annular, pubescent; style ca. 5 mm; stigmas semi-orbicular. Drupes ovoid, 4–5 mm, pubescent, apex with persistent erect or inflexed calyx-lobes.

Locality: Lantau Peak. *HK sheet 18014*.

Distribution: Guangdong, Guangxi, Yunnan, Guizhou, Hunan, Jiangxi, Zhejiang, Fujian, Taiwan; Vietnam.

Ecology: Secondary forests. Flowering: Jun.–Aug.; fruiting: Sep.–Nov.

**2. Symplocos fordii** Hance 三裂山礬 **(Photo 493)**
J. Bot. 20: 78. 1882; FKH 163.1912; FRPS 60(2): 27. 1987; FGD 1: 414, fig. 455. 1987; FOC 15: 244. 1996.

*Symplocos cordatifolia* H. L. Li, J. Arnold Arbor. 25: 424. 1944.

Shrub to 2 m tall. Branchlets slender, dark brown; young shoots, petioles and abaxial surface of leaves covered with spreading greyish yellow long hairs. Leaves thin leathery, subsessile, narrowly ovate or ovate, 3.5–9 × 1.5–3.5 cm, base cordate, slightly oblique, apex long caudate-acuminate, margin sharply serrate; lateral veins 5–11 pairs, together with tertiary veins prominent on both surfaces. Spikes short, 5–10 flowered, rachis ca. 1 cm, pubescent; bracts broadly ovate, ca. 1 mm, bracteoles ovate, acute. Calyx ca. 2 mm, glabrous; lobes 3, broadly ovate, slightly longer than the tube. Corolla white, ca. 3.5 mm, divided nearly to base; lobes 5, oblong. Stamens 15–30, filaments ± connate at base. Ovary 3-locular, glabrous. Drupes narrowly ovoid, ca. 1 cm, apex with persistent erect calyx-lobes.

Locality: Victoria Peak, High West. *HK sheet 3273, 37728.*

Distribution: Guangdong.

Ecology: Thin forests on summits. Flowering & fruiting: May–Nov.

Notes: The type specimen was collected from Victoria Peak by C. Ford in 1881.

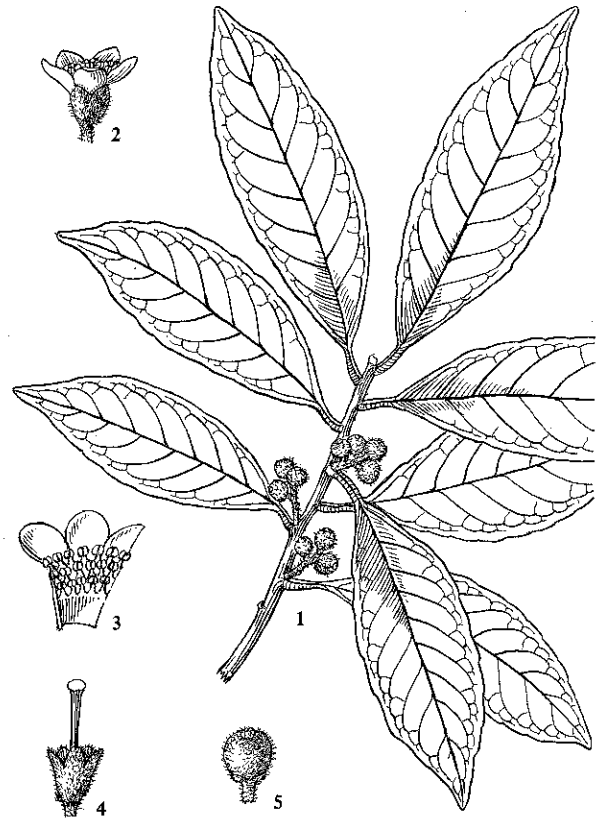



**Figure 223.** *Symplocos confusa* Brand
*1.* fruiting branch; *2.* flower; *3.* part of corolla opened up showing stamens; *4.* flower with corolla removed; *5.* drupe. (drawn by H. P. Yu)

**3. Symplocos adenophylla** Wall. ex G. Don
腺葉山礬 **(Fig. 224)**
Gen. Hist. 4: 3. 1837; FRPS 60(2): 37. 1987; FGD 1: 408, fig. 445. 1987; FOC 15: 245. 1996.

Tree 4–10 m tall; branchlets reddish brown. Young shoots, buds, inflorescences, bracts, and calyx reddish brown powdery puberulent. Leaves thick papery; petioles 5–10 mm, with marginal glands; leaf blade narrowly elliptic, elliptic, or narrowly ovate, 6–11 × 1.8–3 cm, base cuneate, apex acuminate to caudate-acuminate, margin subentire to crenate-serrulate, with ellipsoidal glands at sinus of the teeth; lateral veins 4–12 pairs. Racemes 2–4 cm, with 1–3 branches, rachis puberulent when young; bracts triangular-ovate, 1–1.5 mm; bracteoles less than 1 mm. Calyx 2–2.5 mm; lobes 5, triangular-ovate, 0.3–0.5 mm. Corolla white, ca. 3 mm; lobes 5, 2.5–2.8 mm. Stamens 30–35; filaments ± united at base. Ovary 3-locular, glabrous; style ca. 2 mm; stigma capitate; disc annular, glabrous. Drupes ellipsoid-cylindric, 6–12 × 3–5 mm.

Locality: Ma On Shan. *F. W. Xing 8459.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Yunnan; Vietnam, India, Malaysia, Singapore, Indonesia.

Ecology: Thin forests, valleys. Flowering & fruiting: Jul.–Aug.




**Figure 224.** *Symplocos adenophylla* Wall. ex G. Don
*1.* flowering branch; *2.* fruiting branch; *3.* part of leaf blade (showing glands); *4.* calyx, disc and pistil; *5.* opened corolla (showing stamens); *6.* drupe (drawn by H. P. Yu)

**4. Symplocos adenopus** Hance 腺柄山礬
J. Bot. 21: 322. 1883; FKH 163. 1912; FRPS 60(2): 61. 1987; FGD 1: 409, fig. 447. 1987; FOC 15: 250. 1996.

Shrub or small tree. Branchlets ± angulate; buds, young branchlets and petioles brown pubescent. Leaves papery; petioles 0.5–1.8 cm, marginal ridges densely glandular dentate; leaf blade elliptic-ovate to ovate, 5–16 × 2–6 cm, base rounded or broadly cuneate, apex acute or acuminate, margin glandular dentate, abaxially appressed pilose to tomentose, especially on the veins; lateral veins 6–14 pairs, impressed adaxially. Glomerules axillary;

bracts suborbicular, 2–3 mm in diam., tomentose at least toward apex, margin with large glands; bracteoles elliptic, 1–2 mm, tomentose at least toward apex, margin with small glands. Calyx 2–3 mm; lobes 5, semi-orbicular, 1.5–2 mm, glabrous, sometimes ciliate. Corolla white, ca. 5 mm, divided nearly to base, 5-lobed; lobes elliptic to elliptic-ovate, 3.5–4 mm. Stamens 20–30. Ovary 3-locular, glabrous; disc cylindric, 0.5–1 mm long, glabrous. Drupes cylindric, 7–10 mm, apex with persistent erect calyx-lobes.

Locality: No precise locality, only one specimen collected in Hong Kong. *HK sheet 17993.*

Distribution: Guangdong, Guangxi, Fujian, Yunnan, Guizhou.

Ecology: Valleys or thin forests. Flowering: Nov.–Dec.; fruiting: Jul.–Aug. of the following year.

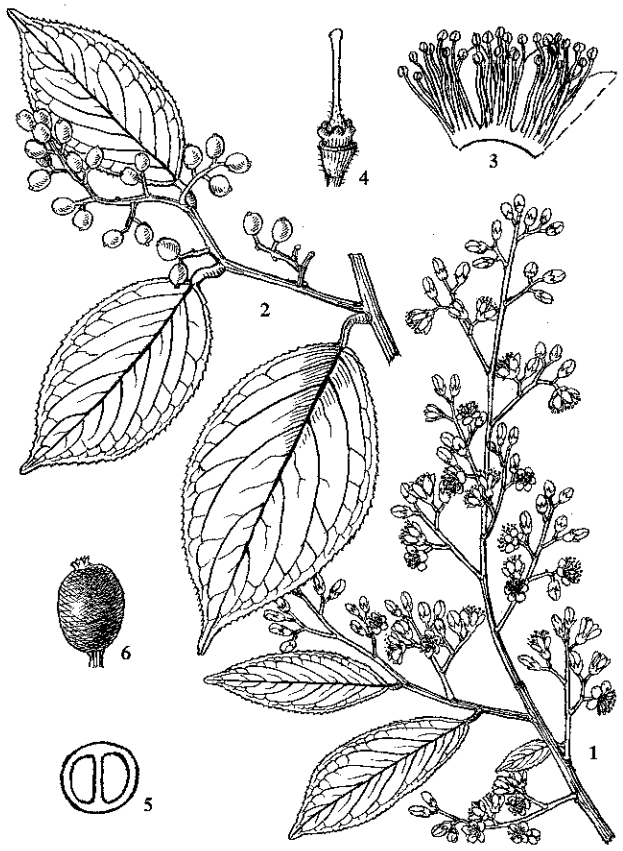



**Figure 225.** *Symplocos paniculata* (Thunb.) Miq.
*1.* flowering branch; *2.* fruiting branch; *3.* part of corolla opened up showing stamens; *4.* pistil and disc; *5.* cross section of ovary; *6.* drupe. (drawn by H. P. Yu)

**5. Symplocos paniculata** (Thunb.) Miq.
白檀 **(Fig. 225; Photo 494)**

Ann. Mus. Bot. Lugduno-Batavum 3: 102. 1867; FRPS 60(2): 72. 1987; FGD 1: 422, fig. 469. 1987; FOC 15: 252. 1996.

*Prunus paniculata* Thunb., Fl. Jap. 200. 1784.

*Symlocos sinica* Ker-Gawl., Bot. Reg. 9: t. 710. 1823; FKH 163. 1912.

*Symplocos crataegoides* Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 145. 1825; FKH 163. 1912.

*Symplocos hunanensis* Hand.-Mazz., Symb. Sin. 7: 807. 1936.

Deciduous shrub or small tree; branchlets greyish white pilose when young, glabrous in age. Leaves membranous to thin papery; petioles 3–7 mm; leaf blade broadly obovate, elliptic-obovate or ovate, 3–11 × 2–4 cm, base broadly cuneate or subrounded, apex acute or acuminate, margin sharply serrulate, adaxially glabrous or puberulent, abaxially usually glabrous or sometimes pubescent on veins; midvein adaxially impressed on proximal half, with 4–8 lateral veins on each side. Panicles 5–10 cm, usually pilose; bracts linear, 1(–3) mm, brown glandular, caducous. Calyx 2–3 mm long; tube brown, glabrous or sparsely pubescent; lobes 5, ovate or semi-orbicular, slightly longer than tube. Corolla white, 4–6 mm, divided nearly to base; lobes 5, elliptic, shortly ciliate. Stamens 40–60, unequal. Ovary 2-locular; disc 5-glandular, glabrous or hairy. Drupes bluish, ovoid-globose, 3–8 mm, apex with persistent erect calyx-lobes.

Locality: Tai Long Wan, Shing Mun, Tai Po Kau, Fanling, Ho Pui, Tai Lam Chung, Castle Peak. *H. C. Tang 1245; Y. S. Lau 2471.*

Distribution: Widely distributed in China; Japan, Korea, India.

Ecology: Thickets or grasslands. Flowering: Apr.–Jun.; fruiting: Sep.–Nov.

**6. Symplocos congesta** Benth. 密花山礬 **(Photos 495–496)**

FHK 211. 1861; FKH 163. 1912; FRPS 60(2): 69. 1987; FGD 1: 410, fig. 448. 1987; FOC 15: 251. 1996.

Evergreen tree or shrub; young branchlets and buds brown pubescent. Leaves papery; petioles 1–1.5 cm; leaf blade elliptic or obovate, 8–10(–17) × 2–6 cm, base cuneate to broadly cuneate, apex acuminate or acute, margin usually entire, rarely and sparsely glandular serrulate, glabrous on both surfaces; lateral veins 5–10 on each side of midvein. Glomerules, axillary; bracts and bractlets brown pubescent, margin with 4 or 5 oblong glands. Calyx often reddish brown, 3–4 mm, glabrous. Corolla white, 4–6 mm, divided nearly to the base; lobes 5, elliptic ovate. Stamens ca. 50, filaments ± united at base in fascicles. Ovary 3-locular; disc flat to annular, glabrous. Drupes purplish blue, cylindric, 8–13 × 3–4 mm, apex with persistent erect calyx-lobes.

Locality: Hong Kong Island, Lantau Island. *P. S. Choi 156; HK sheet 37536.*

Distribution: Guangdong, Guangxi, Hainan, Jiangxi, Hunan, Fujian, Taiwan, Yunnan.

Ecology: Mixed forests. Flowering: Aug. –Nov.; fruiting: Jan. –Feb. of the following year.

Notes: The type specimen was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

**7. Symplocos wikstroemiifolia** Hayata 微毛山礬

Icon. Pl. Formosan. 5: 119. 1915; Noot., Fl. Taiwan 4: 131. 1978; FRPS 60(2): 16. 1987; FGD. 1: 400, fig. 432. 1987; FOC 15: 243. 1996.

Tree or shrub; young branchlets, petioles and abaxial surface of leaves covered with appressed hairs. Leaves papery to thin leathery; petioles 3–10 mm; leaf blade elliptic, broadly oblanceolate, or obovate, 4–12 × 1.5–4 cm, base narrowly cuneate, decurrent to the petioles, apex shortly acuminate, acute, or obtuse, margin entire or obscurely sinuolate-dentate; lateral veins 6–10 on each side of midvein;

Racemes 1–2 cm, branched; rachis, bracts and bracteoles pubescent; bracts caducous, oblong or orbicular, 1.2–2 mm, margin ciliate. Calyx ca. 2 mm; lobes 5, broadly ovate or suborbicular, as long as or slightly longer than the tube. Corolla ca. 3 mm, divided nearly to base; lobes 5, obovate-oblong. Stamens 15–20. Ovary sparsely pubescent or glabrous; disc annular, nearly glabrous or sparsely pilose. Drupes ovoid, black or black-purple, 5–10 mm, apex with persistent erect calyx-lobes.

Locality: Ma On Shan. *HK sheet 37724, 37725.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Fujian, Taiwan, Zhejiang, Yunnan, Guizhou.

Ecology: Secondary forests. Flowering: Mar.; fruiting: Oct.

**8. Symplocos lancifolia** Sieb. & Zucc. 光葉山礬 **(Photos 497–498)**

Abh. Bayer. Akad. Wiss. Math.-Phys. 4(3): 133. 1846; FRPS 60(2): 52. 1987; FGD. 1: 420, fig. 464. 1987; FOC 15: 248. 1996.

*Symplocos microcarpa* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 303. 1852; FHK 212. 1861; FKH 164. 1912.

Evergreen shrub or small tree; branchlets slender, dark brown, yellowish brown when young, glabrous in age. Leaves papery; petioles 1–5 mm; leaf blade ovate to broadly lanceolate, 3–9 × 1.5–3.5 cm, base broadly cuneate or subrounded, apex caudate-acuminate, margin finely dentate to crenate, abaxially yellowish brown pubescent on veins when young; lateral veins 6–11 on each side of midvein. Spikes 1–4 cm; bracts elliptic-ovate, ca. 2 mm; bracteoles broadly triangular-ovate, 1.5 × 2 mm, ciliate. Calyx 1.6–2 mm; lobes 5, ovate, apex rounded, abaxially puberulent; tube glabrous. Corolla cream yellow, divided nearly to base; lobes 5, elliptic, 2.5–4 mm. Stamens ca. 25; filaments in fascicles. Ovary 3-locular, apex glabrous. Drupes ellipsoid to subglobose, ca. 4 mm in diam., apex with persistent erect calyx lobes.

Locality: Common in Hong Kong. *H. C. Tang 1320, 1443.*

Distribution: Areas S of Changjiang River; Japan.

Ecology: Thin forests and thickets. Flowering: Mar.–Nov.; fruiting: Jun.–Dec.

Notes: The type specimen of *Symplocos microcarpa* was collected from Happy Valley woods by J. G. Champion between 1847 and 1850.

**9. Symplocos cochinchinensis** (Lour.) S. Moore var. **laurina** (Retz.) Nooteb. 黃牛奶樹 **(Photo 499)**

Rev. Symploc. 156. 1975; FOC 15: 249. 1996.

*Myrtus laurina* Retz. Obs. 4: 26. 1786.

*Symplocos laurina* (Retz.) Wall. ex G. Don, Gen. Syst. 4: 3. 1837; FRPS 60(2): 55. 1987; FGD 1: 417, fig. 460. 1987.

*Symplocos spicata* Roxb., Fl. Ind. ed. Carey, 541. 1832; FHK 212, 1861; FKH 163. 1912.

Evergreen tree. Branchlets glabrous; buds brown pubescent. Leaves leathery; petioles 1–1.5 cm; leaf blade ovate-elliptic to narrowly elliptic, 5.5–11 × 2–85 cm, base cuneate to broadly cuneate, apex acute or acuminate, margin denticulate, glabrous on both surfaces; midvein impressed abaxially, lateral veins 4–5 on pairs. Spikes terminal or axillary, 3–6 cm, usually branched at base, pubescent at flowering time; bracts broadly ovate, ca. 2 mm, margin glandular punctate. Calyx glabrous, ca. 2 mm; lobes 5, semi-orbicular, shorter than the tube. Corolla white, ca. 4 mm, 5-lobed nearly to the base. Stamens ca. 30; filaments 3–5 mm, ± united at base in fascicles. Ovary 3-locular; disc annular, glabrous. Drupes globose, 4–6 mm in diam., apex with persistent erect calyx-lobes.

Locality: Common in Hong Kong. *H. C. Tang 2098; HK sheet 36098.*

Distribution: S, C, SW & E China; India, Sri Lanka.

Ecology: Secondary forests and thickets. Flowering: Aug.–Dec.; fruiting: Mar.–Jun. of the following year.

**10. Symplocos glauca** (Thunb.) Koidz. 羊舌樹 **(Photo 500)**

Bot. Mag. (Tokyo) 39: 313. 1925; FRPS 60(2): 30. 1987; FGD 1: 413, fig. 454. 1987; FOC 15: 244. 1996.

*Laurus glauca* Thunb. Fl. Jap. 173. 1784.

*Symplocos neriifolia* Sieb. & Zucc., Abh. Bayer. Akad. Wiss. Math.-Phys. 4(3): 134. 1846; FKH 163. 1912.

Evergreen shrub or tree. Buds, young branchlets, and inflorescences densely tawny tomentose. Leaves leathery; petioles 1.5–3 mm; leaf blade narrowly elliptic or oblanceolate, 6–15 × 2–4 cm, base cuneate, apex acute or short acuminate, margin entire, glabrous or rarely abaxially with cobwebby hairs, adaxially dark green, abaxially glaucous, turning brown when dry; midvein adaxially impressed, lateral veins 5–8 on each side of midvein. Spikes 1–1.5 cm, mostly basally branched; bracts broadly ovate, ca. 2 mm, downy tomentose. Calyx ca. 3 mm; lobes 5, ovate, tawny tomentose. Corolla 4–5 mm, divided nearly to base; lobes 5, elliptic, apex rounded. Stamens 30–40; filaments slender, ± united at base in fascicles. Ovary 3-locular, glabrous; disc cylindric, glabrous. Drupes narrowly ovoid, 1.2–2 cm, apex with persistent erect calyx lobes.

Locality: Tai Tam Tuk, Cape D'Aguilar, Tai Au Mun, Ho Chung, Sai Kung, Tai Mo Shan, Tai Po, Lai Chi Wo. *L. T. Lo 349; Y. S. Lau 948.*

Distribution: Guangdong, Guangxi, Yunnan, Fujian, Taiwan, Zhejiang; Japan.

Ecology: Lowland secondary forests. Flowering: Apr.–Aug.; fruiting: Aug.–Oct.

**11. Symplocos decora** Hance 美山礬

J. Bot. 12: 369. 1874; FKH 164.1912; FRPS 60(2): 25. 1987; FGD 1: 402, fig. 435. 1987; FOC 15: 244. 1996, pro syn. sub *S. sumuntia* Buch.-Ham. ex D. Don

*Dicalix decorus* (Hance) Migo, J. Shanghai Sci. Inst. 13: 200. 1943.

Evergreen small tree, 4–6 m tall; branchlets glabrous, greyish when young, turning purplish black in age. Leaves leathery; petioles 0.5–1 cm; leaf blade elliptic-obovate or elliptic, 4–11 × 2.5–4 cm, base broadly cuneate or rounded, apex shortly acuminate, tip blunt, margin shallowly serrate, glabrous on both surfaces; midvein abaxially impressed, lateral veins indistinct. Racemes 3–6 cm, glabrous or slightly pubescent. Bracts suborbicular, ca. 5 mm in diam., caducous; bracteoles oblong-lanceolate, 3–5 × 1.2 mm, caducous. Pedicels 0.8–5 mm, jointed. Calyx 3–4 mm, glabrous; lobes 5, triangular-ovate. Corolla white, 5–7 mm, divided nearly to the base; lobes 5, ovate-orbicular. Stamens ca. 25; filaments united at base in fascicles. Ovary 3-locular; disc annular, glabrous. Drupes urceolate, 6–9 mm, apex with persistent erect or slightly inflexed calyx lobes.

Locality: Tai Mo Shan. *Y. W. Lam 211; HK sheet 8887.*

Distribution: Guangdong, Guangxi, Zhejiang.

Ecology: Secondary forests. Flowering: Mar.–May; fruiting: Jul.–Oct.

Notes: The type specimen was collected by H. F. Hance in March 1874 from the Hong Kong Botanic Gardens. This species was recorded as a synonym of *Symplocos sumuntia* Buch.-Ham. ex D. Don previously (Check List of HK Plants 45. 2004).

**12. Symplocos sumuntia** Buch.-Ham. ex D. Don 山礬

Prodr. Fl. Nepal. 145. 1825; FRPS 60(2): 22. 1987; FGD 1: 401, fig. 433. 1987; FOC 15: 243. 1996, *p.p.* excl. syn. *S. decora* Hance.

*Symplocos caudata* Wall. in DC. Prodr. 8: 256. 1844.

*Symplocos punctata* Brand in Fedde, Repert. Nov. Sp. 3: 217. 1906.

Evergreen tree; young branchlets brown, mostly glabrous. Leaves thin leathery; petioles 0.5–1 cm; leaf blade ovate, narrowly ovate, or elliptic-oblanceolate, 3.5–8 × 1.5–3 cm, base cuneate or rounded, apex caudate-acuminate, margin slightly serrate or sinuolate-dentate, glabrous; midvein adaxially impressed; lateral veins 4–6 on each side of midvein. Racemes 2.5–4 cm, pubescent. Bracts and bracteoles broadly ovate or obovate, 0.5–1.5 mm, densely pubescent. Calyx 2–2.5 mm; tube glabrous; lobes 5, triangular-ovate, equal or slightly shorter than tube. Corolla white or yellow, 4–8 mm, divided nearly to base; lobes 5, obovate-elliptic, 3–3.5 mm, slightly puberulent adaxially. Stamens 25–35; filaments united at base in fascicles. Ovary 3-locular; disc annular, glabrous. Drupes ovoid-urceolate, 7–10 mm, apex with persistent erect calyx lobes.

Locality: Victoria Peak, Ma On Shan, Lantau Island. *Y. S. Lau 931, 1528.*

Distribution: Areas S of Changjiang River; Nepal, Bhutan, India.

Ecology: Thin forests on summits. Flowering: Feb.–Mar.; fruiting: Jun.–Jul.

**13. Symplocos anomala** Brand. 薄葉山礬

Bot. Jahrb. Syst. 29: 529. 1900; FRPS 60(2): 15. 1987; FGD 1: 404, fig. 439. 1987; FOC 15: 242. 1996.

*Symplocos anomala* Brand var. *nitida* Li in J. Arnold Arbor. 24: 452. 1943.

Shrub or small tree; terminal buds and young branchlets brown tomentose. Leaves thin leathery; petioles 4–8 mm; leaf blade narrowly elliptic, elliptic or oblanceolate, 2–7(–11) × 1.2–3 cm, base cuneate, apex acuminate, margin entire or sparsely and shallowly serrulate; glabrous or rarely young leaves finely appressed hairy on abaxial surface; midvein and lateral veins adaxially prominent; lateral veins 7–10 on each side of midvein. Racemes 0.8–1.5 cm, axillary, sometimes 1–3-branched from base, pubescent. Bracts and bracteoles ovate, margin ciliate, 0.8–1.5 mm. Calyx 2–2.5 mm, puberulent; lobes 5, semi-orbicular, ciliate. Corolla white, 4–6 mm, divided nearly to base; lobes 5, elliptic, 3–4 mm. Stamens ca. 30; filaments ± united at base in fascicles. Ovary 3-locular; disc annular, pubescent. Drupes brown, obovid, 7–10 mm, puberulent, apex with persistent erect or inflexed calyx-lobes.

Locality: Sunset Peak. *Y. W. Lam 1647, 1745.*

Distribution: Areas S of Changjiang River.

Ecology: Broadleaved forests. Flowering & fruiting: Apr.–Dec.

**14. Symplocos crassifolia** Benth. 厚葉山礬(光亮山礬，厚皮灰木) **(Photo 501)**

FHK 212. 1861; Forb. & Hemsl., J. Linn. Soc. Bot. 26: 72. 1889; FKH 163. 1912; FRPS 60(2): 13. 1987; FGD 1: 399, fig. 430. 1987; FOC 15: 242. 1996, pro syn. sub *S. lucida* (Thunb.) Sieb. & Zucc.

*Symplocos howii* Merr. & Chun ex Li, J. Arnold Arbor. 25: 211. 1944.

Evergreen small tree or tree; young branchlets, buds and leaves glabrous. Leaves leathery or thick leathery; petioles 0.8–1.4 cm; leaf blade ovate-elliptic, elliptic or narrowly elliptic, 6.5–10 × 2.5–4 cm, base cuneate, apex acuminate, margin entire or sparsely serrate; midvein raised adaxially; lateral veins slender, 6–10 on each side of midvein, Racemes 1–2 cm, pubescent, branched basally, 4–7-flowered; bracts oblong-ovate, pubescent abaxially; bracteoles broadly triangular-ovate. Calyx 3–3.5 mm; lobes 5, broadly ovate or orbicular, margin and abaxial surface puberulent. Corolla white, 4–5 mm, 5-lobed nearly to base. Stamens 60–80; filaments united at base in fascicles. Ovary 3-locular; disc with 5 glands, villose. Drupes oblong-ovoid or obovoid, 1–1.5 cm, apex with persistent erect or slightly inflexed calyx-lobes.

Locality: Hong Kong Island, Ma On Shan, Tai Mo Shan, Lantau Island. *L. T. Lo 196; HK sheet 3269.*

Distribution: Guangdong, Guangxi, Hainan.

Ecology: Secondary forests. Flowering: Jun.–Nov.; fruiting: Dec.–May of the following year.

Notes: The type specimen was collected from Victoria Peak, Hong Kong Island by J. G. Champion between 1847 and 1850. This species was recorded as *Symplocos lucida* (Thunb.) Siebold & Zucc. previously (Check List of HK Plants 45. 2004)

# 157. MYRSINACEAE 紫金牛科

HU Qi-ming 胡啟明

Mostly evergreen shrubs or small trees, sometimes woody vines or undershrubs, glabrous or with an indumentum of hairs, papillae or scales. Leaves simple, alternate, rarely opposite or subverticillate, usually glandular-punctate or with lineate resin ducts. Stipules none. Inflorescence axillary or terminal, generally in fascicles, racemes, corymbs or umbels, simple or compound and forming panicles. Flowers bisexual or unisexual (plant dioecious or polygamo-dioecious), 4- or 5-merous. Calyx more or less gamosepalous, persistent, often glandular-punctate. Corolla rotate or salverform, the lobes coalescent at base, seldom (*Embelia*) distinct, variously imbricate, convolute or rarely valvate. Stamens adnate to corolla-tube and opposite lobes, rarely almost free; filaments distinct or sometimes fused into a short tube at base; anthers 2-celled, dehiscing introrsely by longitudinal slits or seldom by apical pores. Ovary superior, rarely (*Maesa*) half-inferior, unilocular, with few to many ovules on free-central or basal placenta; style 1, slender, elongate or short, stout or obsolete; stigma punctiform, discoid or styliform and curved. Fruit rounded, seldom (*Aegiceras*) elongate and curved, usually a drupe or berry, slightly fleshy with a thin or thickened endocarp, usually 1-seeded, but several to many seeded in the genus *Maesa*.

About 40 genera and more than 2,000 species widely distributed in tropical and subtropical regions of both hemispheres; five genera and 120 species in China; five genera and 25 species in Hong Kong.

1a. Calyx-lobes leathery, asymmetrical; fruit elongate, crescent-shaped ..... 1. *Aegiceras*
1b. Calyx-lobes herbaceous, symmetrical; fruit rounded.
2a. Ovary half-inferior; fruit many-seeded ..... 2. *Maesa*
2b. Ovary superior; fruit 1-seeded.
3a. Corolla-lobes distinctly contorted in buds; flowers bisexual; stigma punctiform ..... 3. *Ardisia*
3b. Corolla-lobes imbricate or valvate in buds; flowers unisexual or, if bisexual, stigma discoid or ligulate.
4a. Climbing plant; inflorescence racemose or paniculate rarely subumbellate ..... 4. *Embelia*
4b. Trees or shrubs; inflorescence fasciculate or umbellate on very short scaly branches or spurs ..... 5. *Myrsine*

## 1. Aegiceras J. Gaertn. 蠟燭果屬

Shrubs or small trees, commonly occuring in mangrove. Leaves alternate, entire, glabrous. Inflorescence consisting of terminal, axillary or leaf-opposed umbels or panicles. Flowers bisexual, 5-merous, pedicellate. Calyx split to base, lobes leathery twisted to the left. Corolla with a short tube, lobes overlapping to right in bud, recurved during aestivation. Stamens with lower part of filaments fused into a tube and inserted on the base of corolla; anthers with transversely septate cells, introrse, dehiscing by longitudinal slit. Ovary fusiform, narrowed into an elongated style; stigma punctiform; ovules many immersed in central globose placenta. Fruit 1-seeded, cylindric, curved, with leathery pericarp; germination of seeds often taking place while still on the plants.

Two species on tropical sea coast of Asia and Australia; one species in China; it also occurs in Hong Kong.

**1. Aegiceras corniculatum** (L.) Blanco
蠟燭果 **(Fig. 226; Photo 502)**

Fl. Filip. 79. 1837; Mez, Pflanzenr. IV. 236(Heft 9): 55, fig. 8. 1902; B. C. Stone, Tree Fl. Malaya 4: 266. 1989; K. Larsen & C. M. Hu, Fl. Thailand, 6(2): 176. 1996; FOC 15: 9. 1996.

*Rhizophora corniculata* L., Amoen. Acad. 4: 123. 1759.

*Aegiceras majus* J. Gaertner, Deucr. & Sem. 1: 216, pl. 46, fig. 1. 1788; FHK 208. 1861; FKH 160. 1912.

Shrub or small tree, 1.5–4 m tall, much branched; branchlets terete, glabrous, brownish black when dry. Leaves alternate; petioles 5–10 mm; leaf blade obovate or elliptic, 3–10 x 2–4.5 cm, base cuneate, apex rounded or emarginate, margin entire and slightly recurved, leathery, glabrous, with many minute pores on both surfaces; lateral veins 7–11 pairs, slender and slightly raised on both surfaces, ascending and anastomosing near the edge; veinlets obscure. Umbels terminal, axillary or leaf-opposed, sessile or very shortly peduncled, usually many flowered. Pedicels ca. 1 cm. Flowers white, without bracteole. Calyx split to base; lobes leathery, oblique-oblong, ca. 6 × 3 mm, gibbous and thickened at base. Corolla-tube ca. 3.5 mm, villous adaxially; lobes ovate to

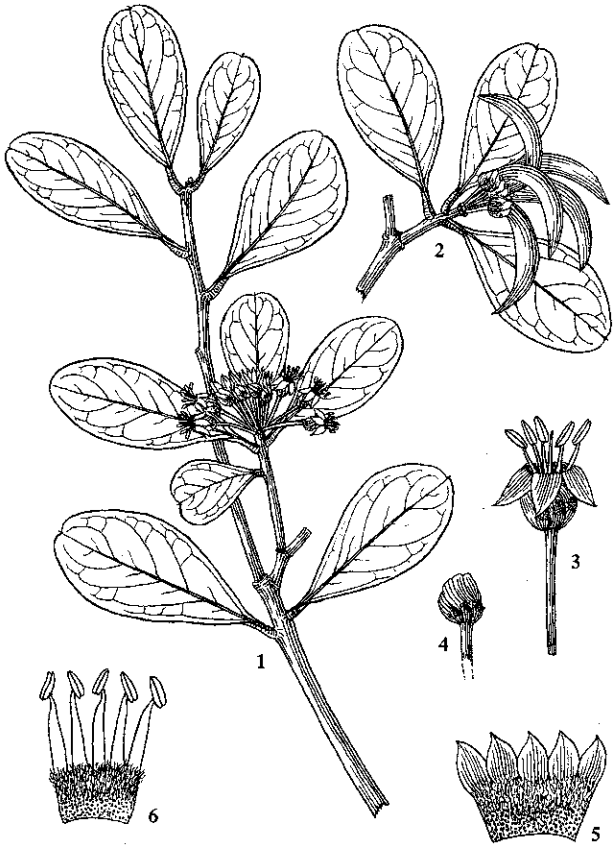



**Figure 226.** *Aegiceras corniculatum* (L.) Blanco
*1*. flowering branch; *2*. fruiting branch; *3*. flower; *4*. calyx; *5*. corolla opened up; *6*. stamens. (drawn by H. P. Yu)

ovate-lanceolate, ca. 6.5 × 3 mm, apex acute, reflexed. Stamens shorter than corolla; filaments 6–7 mm, base fused into a tube, densely villous, free part slightly longer than the tube, glabrous; anthers 2.5–3 mm, dorsifixed. Ovary ovoid; style 6–8 mm, subulate, with black glandular dots. Fruit cylindric, curved, falcate or crescent-shaped, 5–8 cm, acuminate at apex.

Locality: Tytam Took (Tai Tam Tuk), Sai Wan, Shek O, Shatin, Ma Wan Island, Mai Po, Sai Kung, Yung Shue Au, Ho Chung. *Y. S. Lau 1377, 2707; P. S. Choi 131, 207, 208; H. C. Tang 1291, 1902.*

Distribution: Hainan, Guangdong, Fujian, Guangxi; India, Malaysia, Philippines, Sri Lanka, Vietnam, Australia.

Ecology: Sea coasts, mangroves, muddy flats. Flowering: Dec.–Feb; fruiting: Oct.–Dec.

## 2. Maesa Forssk. 杜茎山屬

Erect or straggling shrubs, rarely arborescent. Leaves alternate, frequently with glandular nervilliform lines (secretory canals). Inflorescence axillary or terminal, racemose or paniculate. Flowers 5- rarely 4-merous, bisexual or unisexual, subtended by a pair of bracteoles on pedicels or at base of calyx. Calyx-tube adnate halfway to ovary; lobes valvate, persistent. Corolla white or light yellow, campanulate or rarely urceolate, connate at base or sometimes beyond middle; lobes imbricate or quincuncial, glandular-lined. Stamens adnate to corolla-tube, included; anthers ovate or reniform, about equaling the filaments, opening by longitudinal slits. Ovary half inferior, with ovules immersed in a globose central placenta; style cylindrical; stigma capitate or shortly 3–5-lobed. Fruit subglobose, dry to thinly fleshy, seeds several to many.

About 200 species distributed in palaeotropical regions; 29 species in China; three species in Hong Kong.

1a. Leaves leathery; corolla tubular-campanulate, tube 3–4 times longer than calyx ..... 1. *M. japonica*
1b. Leaves papery; corolla campanulate, tube shorter than or equaling calyx.
2a. Leaves thoroughly hirsute abaxially ..... 2. *M. perlarius*
2b. Leaves glabrous or only sparsely hirsute on veins abaxially ..... 3. *M. montana*

**1. Maesa japonica** (Thunb.) Moritzi & Zoll. 杜茎山 **(Fig. 227; Photo 503)**

Syst. Verz. 3: 61.1855; FRPS 58: 27.1979; FOC 15: 7. 1996.

*Doraena japonica* Thunb., Nov. Gen. Pl. 3: 59. 1783; Fl. Jap. 84. 1784.

*Maesa coriacea* Champ. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 300. 1852; FHK 204. 1861.

*Maesa doraena* Blume ex Sieb. & Zucc., Abh. Bayer. Akad. Wiss. Math.-Phys. 4: 138. 1846; FKH 158. 1912.

Shrub 1–3(–5) m tall, glabrous throughout; branchlets wrinkled with longitudinal lines when dry, sparsely lenticellate. Leaves alternate; petioles channelled, 6–12 mm; leaf blade generally elliptic but variable from elliptic-lanceolate to obovate or oblong-ovate, (5–)7–12(–15) × 2–4(–5) cm, base cuneate to obtuse or sometimes rounded, apex acuminate or acute, subentire or remotely serrate with callose teeth, leathery, without veinlike glandular lines; lateral veins 5–8 pairs, curved-ascending, ending in the teeth; reticulation of veins very fine, but visible on both surfaces. Inflorescence axillary, solitary or sometimes 2–3 together, 1–3(–4) cm, racemose or with a few branches near base. Pedicels 2–3 mm, with a pair of minute bracteoles near apex. Calyx ca. 2 mm, split to middle; lobes ovate to orbicular, apex obtuse or rounded, distinctly glandular striate. Corolla white, tubular-campanulate; tube 3.5–4 mm, glandular striate; lobes ca. 1/3 length of tube, ovate or reniform, apex obtuse or rounded, spreading. Stamens adnate to upper part of corolla-tube, included; anthers oblong or ovate, as long as filaments. Ovary conical; style slender, ca. equaling calyx; stigma lobed. Fruit globose, 4–5 mm in diam., fleshy, with longitudinal glandular lines.

Locality: Widely distributed in Hong Kong. *H. C. Tang 56, 1078, 1174; P. S Choi 364; Y. W. Lam 510.*

Distribution: Guangdong, Guangxi, Fujian, Taiwan, Zhejiang, Jiangxi, Anhui, Hunan, Hubei, Sichuan, Guizhou, Yunnan; Japan, Vietnam.

Ecology: Thin forests and thickets on hillsides. Flowering: Jan.–Mar.; fruiting: Oct.–May.

Notes: Flowers of this species are functionally unisexual, but with limited sexual dimorphism; the staminate flowers possess carpels with aborted ovules, and the pistillate flowers have degenerate stamens that lack pollens. The type specimen of *Maesa coriacea* was collected from Hong Kong Island by J. G. Champion between 1847 and 1850.

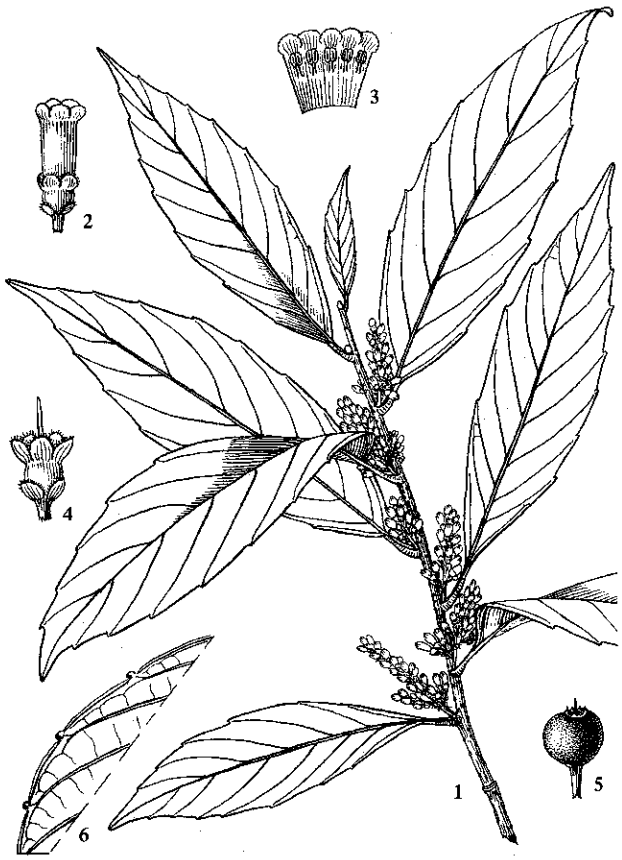



Figure 227. *Maesa japonica* (Thunb.) Moritzi & Zoll.

*1*. flowering branch; *2*. flower; *3*. corolla opened up showing stamens; *4*. bracteoles and calyx; *5*. fruit; *6*. a part of abaxial surface of leaf showing glands. (drawn by H. P. Yu)

**2. Maesa perlarius** (Lour.) Merr. 鯽魚膽 **(Photo 504)**

Trans. Amer. Philos. Soc., n. ser. 24. 298. 1935; FRPS 58: 25. 1979; K. Larsen & C. M. Hu, Fl. Thailand 6(2): 173. 1996; FOC 15: 6. 1996.

*Dartus perlarius* Lour., Fl. Cochinch. 124. 1790.

*Maesa tonkinensis* Mez, Pflanzenr. IV. 236 (Heft 9): 30. 1902.

*Maesa sinensis* A. DC., Ann. Sci. Nat., Bot., ser. 2, 16: 80. 1841; FHK 203. 1861; FKH 158. 1912.

Shrub 1–3 m high; branchlets hirtellous or pubescent. Leaves alternate; petioles channelled, 5–10 mm; leaf blade elliptic to elliptic-lanceolate, 7–11 × 3–5 cm, base cuneate, apex acute or abruptly acuminate, coarsely serrate except for a short distance near base, papery, adaxial surface hirsute or pilose when young, rapidly becoming glabrous except midvein, abaxial surface hirsute, especially on veins; lateral veins 7–9 pairs, raised abaxialy, curved-ascending, ending to the callose teeth. Inflorescence axillary, racemose or paniculate (with 2–3 branches near base), hirtellous or pubescent, 1–5 cm. Pedicels 1.5–2 mm, with a pair of small ovate bracteoles at apex. Calyx ca. 1 mm, split below middle; lobes ovate, acute, ciliate, puberulous abaxially. Corolla white, ca. 2 mm, lobed to middle; lobes broadly ovate to suborbicular, obtuse, with brown glandular lines. Stamens inserted on the upper part of corolla-tube; anthers broadly ovate to reniform, not punctate. Ovary glabrous; style ca. 0.75 mm; stigma obscurely 4-lobed. Fruit globose, ca. 3 mm in diam., striate from the elongated vertical glands.

Locality: Widely distributed in Hong Kong. *H. C. Tang 32, 520; E. D. Merrill 10961; Lei 356; Xing 7144* (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Taiwan, Guizhou, Yunnan; Vietnam, Thailand.

Ecology: Margins of forests and shrubby areas. Flowering: Mar.–Apr.; fruiting: Dec.–May.

**3. Maesa montana** A. DC. 金珠柳

Prodr. 8: 79. 1844; FHK 204. 1861; FRPS 58: 18. 1979; FOC 15: 3. 1996.

*Maesa indica* auct. non (Rox.) A. DC.: FHK 203. 1861.

*Maesa tenera* auct. non Mez: FKH 158. 1912.

Shrubs or small trees, 2–3(–10) m high; branchlets generally sparsely pilose or puberulent, sometimes glabrous, with scattered lenticels when mature. Leaves alternate; petioles channelled, 5–10 mm; leaf blade oblong-elliptic to oblong-lanceolate, rarely broadly ovate, 7–16 × 3–7 cm, base cuneate or obtuse, apex acute or acuminate, coarsely serrate or undulate-dentate, with callose teeth, firmly papery, adaxial surface glabrous, abaxial surface glabrescent or occasionally sparingly hirsute, especially on veins; glandular nervilliform lines invisible or sometimes evident; lateral veins 8–12 pairs, curved-ascending, ending to the teeth; veinlets not evident. Inflorescence axillary, racemose or paniculate, 2–7(–10) cm, sparingly hirtellous or puberulent. Bracts lanceolate, ca. 1 mm. Pedicels 1–2(–3) mm, with a pair of minute ovate or lanceolate bracteoles at apex. Calyx split a little below middle; lobes ovate, ca. 0.6 mm, obtuse, minutely ciliate. Corolla white, lobed to middle; lobes broadly ovate or suborbicular, ca. 1 m wide, apex obtuse or rounded, entire or slightly crenulate. Stamens adnate to middle of corolla-tube, included; anthers suborbicular, ca. 0.25 mm, equaling filaments. Pistil slightly longer than calyx; stigma minutely bilobed. Fruit globose or ovoid, 2.5–4 mm in diam.

Locality: Tai Mo Shan, Ma On Shan, Sha Tau Kok. *F. W. Xing 8212, 8468* (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Fujian, Taiwan, Sichuan, Guizhou, Yunnan, SE Xizang; India, Myanmar, Thailand, Vietnam.

Ecology: Thickets and thin forests, hillsides and stream banks. Flowering: Feb.–Apr.; fruiting: Oct.–Dec.

## 3. Ardisia Swartz, *nom. cons.* 紫金牛屬

Evergreen shrubs or treelets, rarely subshrubs, with or without an indumentum. Branches often swollen and flattened-triangular at base. Leaves alternate, rarely subopposite or subverticillate, entire, crenate or serrate, generally with pellucid or coloured glandular dots or stripes. Inflorescence generally racemose, corymbose or subumbellate, simple or compound, terminal or axillary. Flowers bisexual, usually 5- rarely 4-merous. Calyx deeply split, lobes valvate or imbricate, usually glandular dotted. Corolla-tube usually very short, the lobes contorted, overlapping to the right in bud. Stamens attached at base or middle of corolla-tube; filaments very short; anthers opening by slits, very rarely by apical pores. Ovary ovoid or pyramidal; style slender; stigma punctiform; ovules serveral to many arranged in one to several series on the free central placenta. Fruit a 1-seeded drupe, usually globose, red, purple or black when mature; endocarp crustaceous or bony; seeds with hard endosperm and cylindric embryo.

About 400 species widely distributed in tropical and subtropical regions of the world, but scarce in Australia; 65 species in China; 14 native species in Hong Kong.

1a. Leaves hairy at least on abaxial surface.
  2a. Leaf blade margin crenate or undulate.
    3a. Stem very short, rarely up to 6 cm; leaves aggregate at stem apex forming a rosette ..... 1. *A. primulifolia*
    3b. Stem much taller; leaves alternate.
      4a. Leaves adaxially dense rusty appressed hairy; hairs tuberculate at base ..... 2. *A. mamillata*
      4b. Leaves adaxially glabrous or hirtellous; hairs not tuberculate at base ..... 3. *A. villosa*
  2b. Leaf blade margin roughly to finely serrate.
    5a. Leaf blade cordate at base ..... 4. *A. maclurei*
    5b. Leaf blade cuneate or obtuse at base.
      6a. Leaf blade 5–10 cm, apex ± acuminate; flowers 4–6 mm ..... 5. *A. faberi*
      6b. Leaf blade 2.5–6 mm, apex broadly acute to obtuse; flowers 3–4 mm ..... 6. *A. pusilla*

1b. Leaves glabrous.
7a. Subshrubs, 30–60 cm tall, with creeping rhizomes or stolons.
8a. Leaves entire; inflorescence (1–)2-flowered; peduncle 2–5 mm, often shorter than pedicel ..... 7. *A. fordii*
8b. Leaves undulate to remotely dentate; inflorescence 3–many-flowered; peduncle longer than pedicel ..... 8. *A. cymosa*
7b. Shrubs or small trees, over 1 m high, without creeping rhizomes or stolons.
9a. Leaves entire, without marginal glands.
10b. Branchlets and inflorescence scaly; fruit obtusely 5-angled ..... 9. *A. quinquegona*
10a. Branchlets and inflorescence glabrous; fruit globose.
11a. Calyx with the lower 1/3 united, lobes imbricate ..... 10. *A. elliptica*
11b. Calyx split nearly to base, lobes not imbricate ..... 11. *A. sieboldii*
9b. Leaves crenate with a gland in each sinus or at apex of the teeth.
12a. Flowers epunctate or with a few orange glands; leaves without intramarginal vein ..... 12. *A. hanceana*
12b. Flower black punctate; leaves with an intramarginal vein.
13a. Intramarginal vein of leaf 2–5 mm apart from the edge ..... 13. *A. lindleyana*
13b. Intramarginal vein of leaf near the edge ..... 14. *A. crenata*

**1. Ardisia primulifolia** Gardn. & Champ.
蓮座紫金牛 **(Fig. 228; Photo 505)**

Hooker's J. Bot. Kew Gard. Misc. 1: 324. 1849; FHK 207. 1861; FKH 159. 1912; FRPS 58: 86, pl. 13: 5. 1979; FOC 15: 25. 1996.

Small subshrub. Stem almost absent or rarely up to 6 cm high. Leaves aggregate at apex of stem forming a rosette; petioles 2–5 mm, ± rusty pilose; leaf blade papery, elliptic to elliptic-obovate, 7–17 × 3–10 cm, base obtuse, apex rounded or rarely broadly acute, margin obscurely undulate-crenate, densely covered with rusty appressed long (3–4 mm) hairs on adaxial surface and mainly on midvein and veins of abaxial surface, minutely punctate on both surfaces; lateral veins about 6 pairs, at an angle about 80° with the midvein, ramifying and curved-ascending at half way from the margin, with branches ending in marginal glands near the edge. Inflorescence terminal on a 3–9(–15) cm long scape-like peduncle, arising from the leaf rosette, subumbellate, simple or compound, secondary rays (if present) 6–10(–20) mm, each bearing 3–5 flowers. Pedicels 5–9 mm, rusty pilose. Calyx split to near base; lobes lanceolate, 3.5–4 mm, rusty pilose at base and near margins, sparsely black-punctate. Corolla pink, deeply lobed; lobes ovate-lanceolate, 4.5–5 × 2–3 mm, apex acute, black-punctate towards apex. Anthers ovate, ca. 2.5 mm, apiculate, punctate on back; style slender ca. 3 mm. Ovary glabrous; ovules 3–5 in one series on placenta. Fruit globose, ca. 5 mm in diam., bright red when mature.

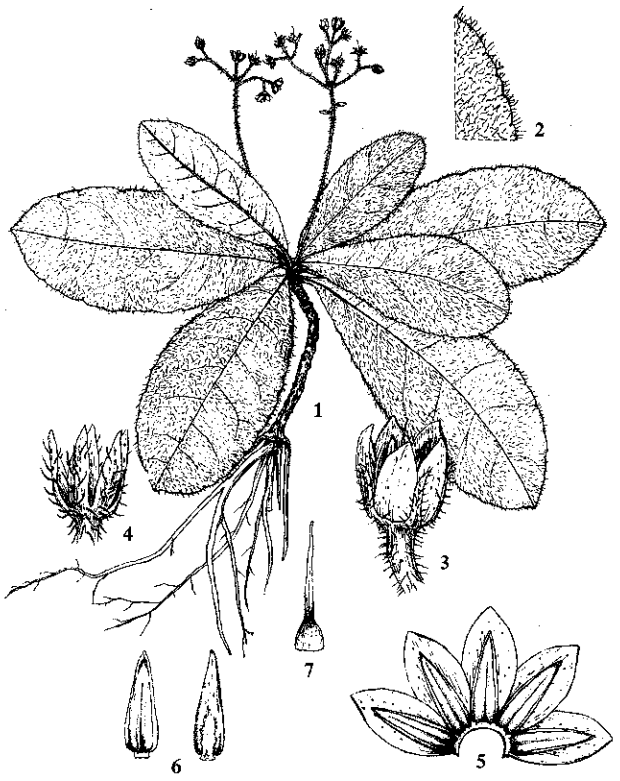



**Figure 228.** *Ardisia primulifolia* Gardn. & Champ.
*1*. whole plant; *2*. enlarged leaf (viewing indumentum and glands); *3*. flower; *4*. calyx; *5*. corolla opened up showing stamens; *6*. stamens; *7*. pistil. (drawn by Y. X. Liu)

Locality: Mount Parker, Sai Kung, Tai Po Kau, Tai Mo Shan, Ng Tung Chai, Lantau Island. *Champion s.n.* (K); *E. D. Merrill 11094*; *H. C. Tang 430*; *Y. S. Lau 2584*.

Distribution: Hainan, Guangdong, Guangxi, Fujian, Jiangxi, Hunan, Guizhou, Yunnan; Vietnam.

Ecology: Forests. Flowering: Jun.–Jul.; fruiting: Nov.–May.

Uses: Ornamental.

Notes: The type specimen was collected from Victoria Peak, Hong Kong Island by J. G. Champion between 1847 and 1849.

**2. Ardisia mamillata** Hance 虎舌紅 **(Photo 506)**

J. Bot. 22: 290. 1884; FKH 160. 1912; FRPS 58: 84, pl. 13: 3–4. 1979; FOC 15: 26. 1996.

Small shrub. Stem erect or ascending-erect from a creeping rhizome, 5–15 cm , rarely up to 25 cm, densely rusty pilose on young parts. Leaves alternate, often crowded towards apex of stem; petioles 5–15(–18) mm, densely pilose; leaf blade papery, elliptic to obovate-elliptic, 7–14 × 3–5 cm, base cuneate to obtuse or narrowly rounded, apex acute or obtuse, margin obscurely undulate-crenate, marginal glands inconspicuous, densely covered with rusty appressed hairs and black glandular dots on both surfaces; the hairs on adaxial surface rising from tuberculate processes, to 3 mm long; lateral veins 6–9 pairs, slender, departing at an angle about 60° from the midvein; veins very fine. Inflorescence simple, subumbellate, 10–15-flowered, terminal on special flowering branches of 3–8 cm long, with 1–2(–3) small leaves near apex. Pedicels 5–12 mm, densely rusty pilose. Calyx split to near base; lobes lanceolate, ca. 5 mm, sparsely pilose and punctate. Corolla pink or whitish, deeply lobed; lobes ovate-lanceolate, ca. 6 mm, apex acute, black-punctate. Anthers

ovate-lanceolate, ca. 4 mm, apiculate. Ovary glabrous or nearly so; ovules many, in 3 series on placenta. Fruit globose, ca. 6 mm in diam., ± punctate, bright red when mature.

Locality: Tai Po, Tai Mo Shan, Kap Lung. *Ford s.n.* (GH); *P. S. Choi 230; Y. W. Lam 1998.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Hunan, Guizhou, Sichuan, Yunnan; Vietnam.

Ecology: Evergreen forest, valleys, shady damp places. Flowering: Jun.–Jul.; fruiting: Nov.–Jan.

Uses: Ornamental.

**3. Ardisia villosa** Roxb. 雪下紅

Fl. Ind. 2: 274. 1824; FRPS 58: 83, pl. 13: 1. 1979; FOC 15: 25. 1996.

*Ardisia dumetosa* Tutch., Rep. Bot. & For. Dep. Hongkong 1914: 33. 1915.

Small shrub, 30–100 cm tall. Stem erect, densely rusty villose-tomentose when young. Leaves alternate; petioles 5–10 mm, rusty villose; leaf blade papery, elliptic to elliptic-lanceolate, rarely oblanceolate, (4–)7–15 × 2.5–5 cm, base cuneate, apex acute or shortly acuminate, margin narrowly recurved, subentire or slightly notched at the marginal glands, adaxial surface glabrous except for the puberulous midvein, abaxial surface rusty villose especially on the midvein, black-punctate on both surfaces; lateral veins 12–16 pairs, at an angle about 60° with the midvein, ending in marginal glands and forming an irregular intramarginal vein near the edge; veins very fine, conspicuous on abaxial surface. Inflorescence subumbellate, simple or compound, 6–12-flowered, densely rusty villose, terminal on leafy or leafless specialized branches or rarely lateral on main stem. Peduncle 5–20(–40) mm; secondary rays (if present) 4–8 mm, each bearing 3–5 flowers. Pedicels 5–10 mm. Calyx split to near base; lobes oblong lanceolate, ca. 4 mm, apex ± obtuse, villose on both surfaces. Corolla pink or white, deeply lobed; lobes ovate, ca. 4 mm, acute, black-punctate. Anthers ovate-lanceolate, ca. 3 mm, ± punctate on back. Ovary ovoid; style ca. 4.5 mm, ± puberulous at base; ovules ca. 5, in 1 series on placenta. Fruit globose, 5–7 mm in diam., dark red or blackish when mature.

Locality: Fanling, Sheung Shui. *HK sheet 17752, 17860.*

Distribution: Hainan, Guangdong, Guangxi, Yunnan, Taiwan; Mynamar, Thailand, West Malaysia , Vietnam.

Ecology: Thin forests and thickets, on mountain slopes and valleys. Flowering: Apr.–Jul.; fruiting: Feb.–Jul.

**4. Ardisia maclurei** Merr. 心葉紫金牛

Philipp. J. Sci. Bot. 21: 351. 1922; H. L. Li, Woody Fl. Taiwan 714. 1963; FTW 3: 53. 1978; FRPS 58: 89. 1979; FOC 15: 25. 1996.

*Ardisia sciophila* Suzuki-tokio, J. Jap. Bot. 13: 507, fig. 1, 2. 1937.

Small shrub, 4–15 cm tall. Stem erect or ascending from creeping rhizomes, densely rusty crisped villous when young. Leaves alternate, rarely almost whorled; petioles 0.5–2.5 cm, rusty pilose; leaf blade papery, ovate- or oblong-elliptic, 4–6 × 2.5–4 cm, base cordate, apex acute to obtuse, margin irregularly serrate, pilose on both surfaces, especially on the midvein; lateral veins ca. 6 pairs, prominent, ending in teeth. Inflorescence axillary from reduced leaves or normal leaves, subumbellate, rarely racemose, rusty-villous, 4–6-flowered. Peduncle 1–4 cm. Bracts linear to narrowly lanceolate, 3–5 mm, pilose. Pedicels slender, 3–7 mm. Calyx split nearly to base; lobes lanceolate, ca. 3.5 mm, pilose on midvein or almost glabrous, margin ciliate, apex acuminate. Corolla white or pink , ca. 4 mm, deeply lobed; lobes ovate, ca. 2 mm broad, glabrous, sparsely punctate, apex acuminate. Anthers ovate, not punctate dorsally, apex acute. Ovary glabrous; style ca. 2.5 mm; ovules ca. 5, in 1 series on placenta. Fruit globose, ca. 6 mm in diam., glabrous, dark reddish when mature.

Locality: Tai Po Kau Nature Reserve. *F. W. Xing 8875* (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Taiwan; Vietnam.

Ecology: Forests of hillsides and valleys. Flowering: May–Jul.; fruiting: Dec.–May.

**5. Ardisia faberi** Hemsl. 月月紅 **(Photo 507)**

J. Linn. Soc. Bot. 26: 64. 1889; FRPS 58: 88. 1979.

Small shrub with creeping rhizomes. Stem ascending, up to 30 cm tall, densely rusty crisped villous when young. Leaves subverticillate or subopposite on the lower part of the stem; petioles 3–8 mm, densely crisped villous; leaf blade papery, ovate- to lanceolate-elliptic or oblanceolate, 4–10 × 1.5–4 cm, base cuneate, apex acuminate or acute, margin coarsely serrate, not glandular, crisped villous on both surfaces; lateral nerves 5–9 pairs; marginal veins absent. Inflorescence in axils of reduced leaves or normal leaves, subumbellate, few flowered. Peduncle 1.5–2.5 cm, densely pilose. Pedicels 6–12 mm, crisped villous. Calyx split nearly to base, lobes linear-lanceolate, ca. 5 mm, densely villous. Corolla white to pink, deeply lobed; lobes broadly ovate, 4–5 mm, ± glandular, glabrous, apex acute or obtuse. Anthers ovate, apiculate, not glandular on back. Ovary glabrous; ovules 5–6, in 1 series. Fruit globose, ca. 6 mm in diam., glabrous or puberulous, turning red when mature.

Locality: Tsing Yi. *HK sheet 35864, 36113; Xing 8825* (IBSC).

Distribution: Hainan, Guangdong, Guangxi, Hunan, Hubei, Guizhou, Sichuan, Yunnan.

Ecology: Evergreen forests, valleys and stream banks. Flowering: May–Jul.; fruiting: Nov.–Jan.

**6. Ardisia pusilla** A. DC. 九節龍 **(Photo 508)**

Trans. Linn. Soc., London 17: 126. 1834; FKH 160. 1912; FRPS 58: 88. 1979; Larsen & C. M. Hu, Fl. Thailand, 6(2): 146.1996; FOC 15: 24. 1996.

*Ardisia reptans* Merr., Philipp. J. Sci. Bot. 5: 220. 1910.

*Ardisia villosa* Mez, Pflanzenr. IV. 236 (Heft 9): 152. 1902, non Roxb. (1824).

Small shrub, stem creeping at base, upper part ascendent, to 30 cm tall, densely covered with light brown crisped long hairs when young. Leaves opposite or subverticillate; petioles ca. 5 mm, villous; leaf blade papery, elliptic-ovate or obovate, 1.5–6.5 × 1–3.5 cm, base acute or rounded, apex broadly acute or obtuse, serrate or denticulate, adaxial surface sparsely strigose at least when young, abaxial surface strigose or mixed with long crisped hairs, with scattered minute orange glandular dots, especially along the margin; lateral veins 4–6(–8) pairs, prominent abaxially, ending in callose teeth; reticulation of veinlets conspicuous on both surfaces. Inflorescence umbellate, (1–)2–4-flowered, pubescent or hirsute, in axils of reduced leaves. Peduncle slender, 1–4 cm. Pedicels 4–10 mm. Calyx split nearly to base; lobes lanceolate, 2.5–3 mm, acuminate, pilose or glabrescent, indistinctly punctate. Corolla white or pink, 3–4 mm, deeply lobed; lobes ovate or broadly ovate, acute, sparsely punctate. Anthers ovate, generally punctate on back. Ovary glabrous; style equaling corolla-lobes; ovules 6–7, in 1 series on placenta. Fruit globose, ca. 5 mm in diam., red when mature, dotted with small dark glands.

Locality: Mount Parker, Tai Po Kau, Lantau Island, Lamma Island. *HK sheet 3060, 17829, 36155.*

Distribution: Guangdong, Guangxi, Taiwan, Fujian, Jiangxi, Hunan, Guizhou, Sichuan; Korea, Japan, Philippines, Thailand.

Ecology: Evergreen forests, hillsides, stream banks. Flowering: May–Jul.; fruiting: Jul.–Dec.

**7. Ardisia fordii** Hemsl. 灰色紫金牛 **(Photo 509)**

J. Linn. Soc., Bot. 26: 64. 1889; FRPS 58: 56. 1979; Larsen & C. M. Hu, Fl. Thailand 6(2): 89. 1996; FOC 15: 27. 1996.

*Embelia fordii* Mez, Pflanzenr. IV. 236 (Heft 9): 326. 1902.

Small shrub, 30–60 cm tall; branches slender, terete, densely covered with rusty scales. Leaves alternate; petioles ca. 3 mm, rusty scaly; leaf blade papery, lanceolate or narrowly elliptic, 2.5–5 × 1–1.6 cm, apex acute or subacuminate, tip blunt, cuneately tapering to the obtuse or rounded base, entire, abaxial surface with scattered rusty peltate scales; lateral veins many and fine, parallel, meeting in an intramarginal vein near edge. Inflorescence umbellate, with (1–)2 flowers, axillary on the upper part of branches or subterminal, glabrous or nearly so. Peduncle 2–5 mm. Pedicels 5–7 mm, flowers pink, ca. 4 mm. Calyx split almost to base; lobes ovate, ca. 1.5 mm long, acute or subobtuse, dotted with black glands, ciliolate. Corolla deeply lobed; lobes broadly ovate, acute, sparsely punctate. Anthers ovate apiculate, not punctate on back. Ovary glabrous; style equaling corolla-lobes; ovules ca. 5, in 1 series on placenta. Fruit globose, 5–6 mm in diam., deep red with black glandular dots.

Locality: Tai Mo Shan, Tai Po Kau, Wu Kau Tang, Sha Tau Kok. *P. S. Choi 390, 514; Y. S. Lau 2813.*

Distribution: Guangdong, Guangxi; Thailand.

Ecology: Evergreen forest , stream banks, valleys. Flowering: Jun.–Aug.; fruiting: Oct.–Dec.

Notes: The species was reported as *Ardisia affinis* Hemsl. previously (Check List HK Plants 51. 1993).

**8. Ardisia cymosa** Blume 小紫金牛 **(Photo 510)**

Bijdr. 689. 1826; C. M. Hu, Blumea 44: 393. 1999.

*Ardisia chinensis* Benth., FHK 207. 1861; FKH 160. 1912; FRPS 58: 90. 1979; FOC 15: 26. 1996.

*Ardisia triflora* Hemsl., J. Linn. Soc., Bot. 26: 67. 1889.

*Ardisia argenticaulis* Yang & Dwyer, Taiwania 34: 287. 1989; FOC 15: 27. 1996, syn. nov.

Small shrub, up to 45 cm tall. Stem ascending-erect, longitudinal ridged by shrinking when dry, often creeping and rooted at base, young parts densely rusty scaly. Leaves alternate; petioles 3–8 mm, brown scaly; leaf blade papery, obovate to elliptic, 2.7–9(–12) × 1.2–4 cm, base cuneate-attenuate, apex acuminate or acute, margin ± revolute, subentire or more often obtusely dentate above middle, glabrous adaxially, ± brown scaly abaxially, epunctate; lateral veins 12–28 pairs, with many shorter intercalated pairs and ramified copiously, marginal vein present or imperfect. Inflorescence subumbellate, 3–7-flowered, in axils of leaves near apex of stem, brown scaly. Peduncle 1–3 cm. Pedicels 5–8 mm. Flowers white or tinged pink, 3–3.5 mm. Calyx ca. 1.2 mm, split nearly to base; lobes ovate-triangular, ca. 1 mm, acute, ciliate, punctate or not. Corolla deeply lobed; lobes ovate, ca. 3 × 2 mm, ± acuminate, not punctate. Anthers ovate, 1.5–2 mm, apiculate, not punctate. Ovary glabrous; style ca. 3 mm; ovules 5–6, in 1 series on placenta. Fruit globose, ca. 5 mm in diam., from purple to black when mature.

Locality: Mount Parker, Wu Kau Tang, Tai Mo Shan, Ng Tung Chai. *HK sheet 3009, 17726; L. T. Lo 430.*

Distribution: Guangdong, Guangxi, Taiwan, Fujian, Zhejiang, Jiangxi, Hunan, Sichuan; Vietnam, Thailand, Malaysia.

Ecology: Thin forests, valleys, stream banks. Flowering: Apr.–Jun.; fruiting: Oct.–Dec.

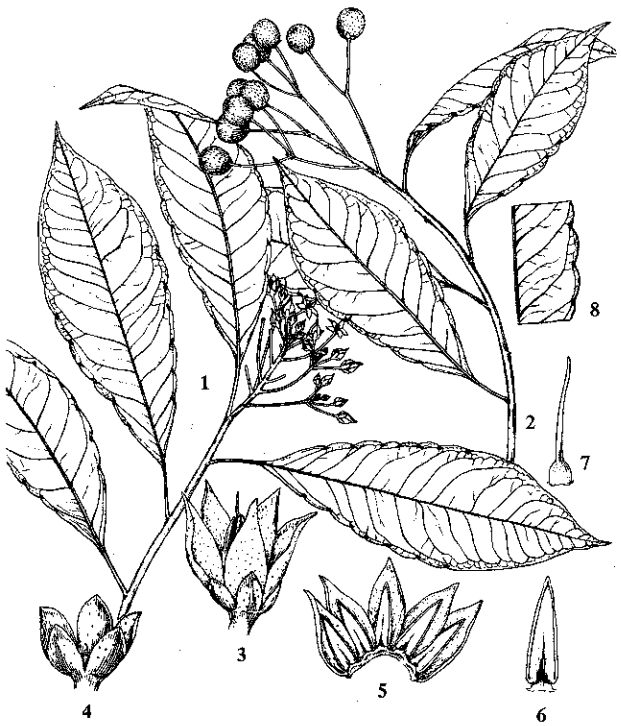



**Figure 229.** *Ardisia hanceana* Mez

*1*. flowering branch; *2*. fruiting branch; *3*. flower; *4*. calyx; *5*. corolla opened up; *6*. stamen; *7*. pistil; *8*. abaxial surface of leaf. (drawn by Y. X. Liu)

**9. Ardisia quinquegona** Blume 羅傘樹 **(Photo 511)**

Bijdr. 689. 1826; FKH 160. 1912; FRPS 58: 54, pl. 8: 1–2. 1979; Larsen & C. M. Hu, Fl. Thailand 6(2): 91. 1996; FOC 15: 14. 1996.

*Ardisia pauciflora* Heyne ex Roxb., Fl. Ind. ed. Carey, 2: 279. 1824; FHK 206. 1861.

Shrub 1–2 m tall. Branchlets slender, ± dilated at insertion, weakly angulate and ± rusty scaly when young, becoming terete and smooth in age. Leaves papery; petioles channelled, 5–10 mm, initially lepidote; leaf blade oblong-elliptic to oblong-lanceolate, rarely oblanceolate 5–16 × 2–4 cm, base cuneate, apex acuminate, entire, adaxial surface dull green and glabrous, abaxial surface covered with appressed rusty scales; glandular dots many, pellucid, evident under transillumination; lateral veins many, very fine, nearly at right angle with the midvein, meeting in an intramarginal vein near edge; veinlets obscure. Inflorescence axillary or lateral, ± brown scaly, subumbellate, usually simple, rarely with 1–2 branches, often appearing a terminal lax panicle due to falling or lack of subtending leaves on lateral branches. Peduncle 1–3.5 cm; branches (if present) 4–8 mm, each bearing 3–8 subumbellate flowers. Pedicels 3–8 mm. Flowers white or pink, ca. 3 mm. Calyx ca. 1 mm, split nearly to base; lobes triangular-ovate, acute, glabrous, sparsely punctate and minutely ciliate. Corolla 2–2.5 mm, deeply lobed; lobes broadly elliptic-ovate, 1.25–1.8 mm wide, acute, distinctly punctate with reddish or dark small glandular dots. Anthers ovate, ca. 1 mm, apiculate, scarcely punctate on back. Ovary glabrous; style ca. 2.5 mm; ovules many, in 2 series on placenta. Fruit typically compressed globose, 5–7 m in diam., ± 5-angled, sometimes globose and without angles.

Locality: Widely distributed in Hong Kong. *H. C. Tang 1149, 1754, 2179.*

Distribution: Hainan, Guangdong, Guangxi, Taiwan, Fujian, Sichuan; Vietnam, Thailand.

Ecology: Forests, hillsides and in valleys. Flowering: Mar.–Jun.; fruiting: Aug.–Feb.

**10. Ardisia elliptica** Thunb. 東方紫金牛

Nov. Gen. Pl. 8: 119. 1798; Merr., Lingnan Sci. J. 11: 54. 1932; Larsen & C. M. Hu, Fl. Thailand, 6 (2): 128. 1996; FOC 15: 14. 1996, *p.p.* excl. syn. *A. squamulosa* Presl., *A. kotoensis* Hayata.

*Ardisia litoralis* Andr., Bot. Rep. T. 630. 1811; King & Gamble, J. Asiat. Soc. Bengal 74(2): 135. 1906.

*Ardisia humilis* auct. non Vahl (*s. str.*): Mez, Pflanzenr. IV. 236(Heft 9): 127, fig. 20: A–E. 1902.

Shrub or small tree, 1–3 m or occasionally up to 10 m tall, glabrous throughout; branchlets terete or slightly angular, greyish brown. Leaves alternate; petioles 10–15 mm; leaf blade subleathery, elliptic to obovate-oblong, 6–12 × 2.5–5 cm, base cuneate, apex bluntly acute to rounded, entire; glandular dots many, scattered, evident only with illumination or sometimes blackish and visible on both surfaces; lateral veins 13–18 pairs, with shorter and thinner intercalated pairs, invisible in fresh plants, ± prominent in dry state, usually not forming an uniform intramarginal vein. Inflorescence corymbose-racemose or subumbellate, (2–)4–8-flowered, in axils of normal leaves on upper part of branches, 3–8 cm including the peduncle. Pedicels 8–15 mm. Flowers pink. Calyx ca. 3 mm, split to 2/3 of its length; lobes broadly ovate or orbicular, obtuse, thickly dotted with brown or black glands, margin ± scarious, distinctly ciliate. Corolla deeply lobed; lobes lanceolate, apex acuminate, with scattered purple glandular lines. Anthers lanceolate, ca. 5 mm, locellate, apiculate, punctate on back. Ovary glabrous; style ca. 6 mm; ovules many, in 3 series on placenta. Fruit slightly compressed globose, grey, with dark purple dots, 6–8 mm in diam.

Locality: Cultivated in Fairview Park, Mai Po. *HK sheet 36156, 36197.*

Distribution: Macau; India, Sri Lanka, Thailand, Indochina, Malay Peninsula, Indonesia, New Guinea.

Ecology: Along coasts behind mangroves. Flowering: Feb.–Apr.; fruiting: Sep.–Nov.

**11. Ardisia sieboldii** Miq. 多枝紫金牛

Cat. Mus. Bot. Lugd.-Bat. 3: 190. 1867; H. L. Li, Woody Fl. Taiwan 709, fig. 291. 1963; FRPS 58: 50, pl. 6: 12–13. 1979; FOC 15: 14. 1996.

Shrub or small tree, to 10 m tall. Branchlets terete, finely wrinkled when dry, sparsely brownish lepidote near apex. Leaves alternate; petioles marginate, 5–10 mm; leaf blade subleathery, obovate to elliptic, 5–8(–14) × 2.3–4(–5) cm, base cuneate, apex broadly to narrowly acute, tip blunt, margin entire, glabrous or sometimes minutely brown scaly on abaxial surface; lateral veins 12–18 pairs, slender, at an angle about 60° to the midvein, forming an intramarginal vein near edge. Inflorescences compound, subumbellate or cymose, axillary near end of branches. Peduncle 2–4(–7) cm, secondary branches 5–15 mm, each bearing 4–6 subumbellate flowers. Pedicels ca. 5 mm, brown scaly. Flowers white, ca. 3 mm. Calyx united for 1/3 their length, lobes ca. 1.5 mm, ovate-triangular, acute, sparsely punctate. Corolla white, ca. 3 mm, deeply lobed; lobes broadly ovate, apex acute, inconspicuously punctate. Anthers ovate, apiculate, punctate on back. Ovary glabrous; style exserted before anthesis; ovules many, multiseriate. Fruit subglobose, red to blackish, 6–7 mm in diam.

Locality: Yeung Chau Island. *HK sheet 3047.*

Distribution: Fujian, Taiwan, Zhejiang.

Ecology: Thin forests near seashore. Flowering: Mar.–Jun.; fruiting: Jan.–Apr.

Notes: The species was reported as *Ardisia obtusa* Mez previously (Check List HK Plants 51. 1993).

**12. Ardisia hanceana** Mez 郎傘樹(大羅傘樹) **(Fig. 229; Photo 512)**

Pflanzenr. IV. 236(Heft 9): 149. 1902; FKH 160. 1912; C. M. Hu, Bot. J. South China 1992: 6. 1992; FOC 15: 21. 1996, *p.p.* excl. syn. *A. impressa* H. R. Fletcher

*Ardisia elegantissima* H. Leveille, Feddes Repert. Sp. Nov. 10: 373. 1912.

*Ardisia elegans* auct. non Andr.: Walker, Philipp. J. Sci. 73: 110. 1940; FRPS 58: 66. 1979.

Shrub 1–3 m tall, glabrous except for inflorescence. Branchlets 20–50 cm, terete or slightly angulate on the upper part. Leaves

alternate, ± evenly distributed on the upper 2/3 of branches; petioles channelled and marginate, 6–15 mm; leaf blade rigidly papery, oblong-lanceolate or sometimes elliptic-obovate, 7–12(–15) × 2–4(–5) cm, base cuneate, apex acuminate, margin coarsely crenate, with 4–8(–10) marginal glands on each side, abaxial surface ± minutely lepidote, often with very small pores, not punctate; lateral veins 12–15 pairs, slender, at an angle about 60° with the midvein, curved-ascending at a distance (ca. 4–8 mm) from the edge, usually not forming an uniform intramarginal vein; veins invisible. Inflorescence compound-corymbose, glabrescent or minutely puberulous, terminal on branches. Peduncle 0.5–2(–4) cm; primary rays 2.5–5.5 cm, each bearing 5–10 flowers. Pedicels 1–2 cm. Calyx 2–2.5 mm, split nearly to base; lobes ovate to oblong-ovate, acute or obtuse, usually broadest at base, scarcely punctate or with a few light brown glandular dots. Corolla pink, rarely white, 6–7(–8) mm, deeply lobed; lobes broadly ovate, ± acuminate, scarcely punctate or with a few orange glandular dots. Anthers ovate-lanceolate, ca. 5 mm, apiculate. Ovary glabrous; style 6–7 mm; ovules 5, in 1 series on placenta. Fruit globose, dark red or black when mature, 8–10 mm in diam.

Locality: Little Hong Kong, Cape D'Aguilar, Mount Nicholson, Wong Chuk Yeung, Sai Kung, Ma On Shan, Ng Tung Chai, Tai Mo Shan, Lantau Island. *HK sheet 3042, 17764, 31587; Y. S. Lau 1541; Y. W. Lam 505, 650.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Jiangxi, Hunan; Laos, Vietnam.

Ecology: Thin forests, valleys, stream banks. Flowering: Jun.–Jul.; fruiting: Dec.–Apr.

Notes: The type specimen was collected from Hong Kong Island around 1850.

**13. Ardisia lindleyana** D. Dietr. 山血丹 **(Photo 513)**

Syn. Pl. 1: 617. 1839, excl. syn. *Ardisia macrocarpa* Wall.; C. M. Hu, Bot. J. South China 1992: 7. 1992; FOC 15: 19. 1996.

*Ardisia punctata* Lindl., Bot. Reg. 10: pl. 827. Sep. 1824, non Jack ex Wall. Mar–Jun. 1824; FHK 206. 1861; FKH 160. 1912; FRPS 58: 72. 1979.

Shrub, 0.5–2 m tall, young parts and branchlets rusty puberulous. Leaves alternate; petioles 1–1.5 cm, densely rusty puberulous; leaf blade, ± leathery or rigidly papery, oblong to elliptic-lanceolate, rarely lanceolate, 7–18 × (1.2–)1.5–4 cm, base cuneate or obtuse, apex acute or shortly acuminate, margin narrowly recurved, subentire or ± undulate due to the projecting marginal glands, adaxially glabrous, abaxially minutely tawny-puberulous, especially on the midvein, punctate, with bigger and denser glands along the margins; lateral veins 6–12 pairs, at an angle about 60° with the midvein, meeting in a conspicuous intramarginal vein 4–8 mm apart from the edge; veins obscure. Inflorescence subumbellate, usually simple, 6–16-flowered, terminal on special flowering branches, subtended by 1–2(–3) reduced leaves or leaflike bracts. Pedicels 6–12 mm, lengthening to 2.5 cm in fruit, rusty puberulous. Calyx 2–2.5 mm, split to base; lobes oblong-ovate, acute, puberulous or glabrescent sparsely punctate. Corolla white, deeply lobed; lobes oblong-elliptic, ca. 4.5 × 2.5mm, apex obtuse, with thick black-glands. Anthers lanceolate, ca. 3.8 mm, acute, black-punctate on back. Ovary glabrous; style ca. 3.5 mm; ovules 4–5, in 1 series on placenta. Fruit globose, ca. 6 mm in diam., dark red when mature, black punctate.

Locality: Widely distributed in Hong Kong. *HK sheet 3011, 34244; Y. S. Lau 2742; Y. W. Lam 1356.*

Distribution: Guangdong, Guangxi, Hunan, Jiangxi, Fujian, Zhejiang; Vietnam.

Ecology: Thin forests and shrubby areas, mountain slopes. Flowering: May–Jul.; fruiting: Oct.–Dec.

**14. Ardisia crenata** Sims 朱砂根 **(Photo 514)**

Bot. Mag. 45: pl. 1950. 1817; FRPS 58: 68. 1979; FOC 15: 19. 1996, *p.p.* excl. syn. *A. kusukusensis* Hayata.

*Ardisia crispa* A. DC., Trans. Linn. Soc. London 17: 124. 1834, & Prodr. 8: 134. 1844, *nom. confus.*, non *Bladhia crispa* Thunb. 1784; FHK 206. 1861; FKH 160. 1912.

*Ardisia linangensis* C. M. Hu, Bot. J. South China 1: 5. 1992.

Shrub, 1–2 m rarely to 3 m tall. Branchlets slender, terete or slightly angular, glabrous, generally bearing 2–5 leaves on upper half. Leaves alternate; petioles 4–10 mm, glabrous; leaf blade papery, ± leathery elliptic to oblong-lanceolate or oblanceolate, (4.5–)6–15(–20) × 1.2–4 cm, base cuneate, apex acute or acuminate, crisp- or undulate-crenate, margin ± recurved, with large marginal glands, glabrous, minutely rusty lepidote on abaxial surface; glandular dots many, scattered, black or sometimes colorless, slightly convex when dry; lateral veins 12–18 pairs, ± raised abaxially, meeting in an irregular intramarginal vein near edge; veins usually obscure. Inflorescence subumbellate or corymbose, simple or compound, terminal on branchlets, glabrous or puberulous; primary rays 2–4 cm. Pedicels 5–10 mm. Calyx split almost to base; lobes ovate to oblong-ovate, ca. 1.5 mm, acute or obtuse, punctate. Corolla white or pinkish, 4–5.5 mm, deeply lobed; lobes ovate, acute, ca. 3 mm wide, with scattered glandular dots. Anthers triangular-lanceolate, 3.5–4 mm, usually punctate on back. Ovary glabrous; style 3–4.5 mm; ovules ca. 5, in 1 series on placenta. Fruit globose, 6–8 mm in diam., bright red, with black glandular dots.

Locality: Common in Hong Kong. *HK sheet 17735, 34491; H. C. Tang 14, 2143.*

Distribution: Hainan, Guangdong, Guangxi, Taiwan, Fujian, Zhejiang, Jiangxi, Anhui, Hubei, Hunan, Yunan, SW Xizang; India, Myanmar, Thailand, Malay Peninsula, Cambodia, Vietnam, Philippines, Japan.

Ecology: Forest , hillsides, valleys and stream banks. Flowering: May–Jun.; fruiting: Oct.–Dec.

Uses: Ornamental, medicinal (folklore).

## 4. Embelia N. L. Burman 酸藤子屬

Straggling shrubs or climbers, rarely erect or arborescent. Leaves alternate and sometimes distichous, petiolate, entire or serrate. Inflorescence terminal or lateral, paniculate, racemose or subumbellate, bracteate at base. Flowers generally unisexual or functionally unisexual (plant dioecious, polygmo-dioecious or monoecious), 4–5-merous. Calyx deeply split. Corolla lobes almost free or shortly united at base, imbricate or quincuncial. Stamens usually adnate to corolla, rarely free; filaments distinct, slender; anthers opening by

longtitudinal slits. Ovary globose or ovoid; style cylindrical; stigma capitate or discoid, sometimes slightly lobed. Fruit a fleshy drupe, 1-seeded, with crustaceous or rarely bony endocarp; endosperm ruminate; embryo terete, transverse.

A pantropical genus with about 140 species; 15 species in China; six species native to Hong Kong.

1a. Inflorescence paniculate, terminal ..... 1. *E. ribes*
1b. Inflorescence racemose or subumbellate, lateral.
2a. Leaves distichous, leaf blade 1–2 cm long ..... 2. *E. parviflora*
2b. Leaves alternate, not distichous, leaf blade much longer.
3a. Inflorescence on leafless old branches; flowers 4-merous ..... 3. *E. laeta*
3b. Inflorescence in axils of leaves on branches of current year's growth; flowers 5-merous
4a. Leaf blade glossy, margin usually remotely serrate on upper half or near apex, rarely entire; calyx-lobes erose, inconspicuously pellucid or brown punctate, apex obtuse to acutish ..... 5. *E. vestita*
4b. Leaf blade dull, margin entire or serrate; calyx-lobes entire, prominently black punctate, apex acuminate.
5a. Reticulation of veins prominent on both surfaces of leaves ..... 6. *E. rudis*
5b. Reticulation of veins obscure on both surfaces of leaves ..... 4. *E. undulata*

**1. Embelia ribes** N. L. Burman 白花酸藤子 **(Photo 515)**

Fl. Ind. 62, pl. 23. 1768; FHK 204. 1861; FKH 159. 1912; FRPS 58: 104, pl. 16: 4–6. 1979; Larsen & C. M. Hu, Fl. Thailand 6(2): 154. 1996; FOC 15: 32. 1996.

Scandent shrub or climber, usually 3–6 m or longer. Branchlets slender, new growth under the inflorescence minutely puberulous, soon becoming glabrous. Leaves alternate; petioles 5–10 mm; leaf blade obovate-elliptic to oblong-elliptic, 4–8(–10) × 1.2–3 cm, base cuneate or rounded, apex shortly acuminate, tip blunt, margin entire, slightly recurved, glabrous; glandular dots many, scattered, black or colorless, ± convex when dry; lateral veins many; reticulation of veins distinct on abaxial surfaces when dry. Panicle terminal, 10–20 cm, with a spread of 10–18 cm cm at base, densely puberulous, 2–3-branched; secondary branches slender, each bearing many racemosely arranged flowers. Pedicels 1–2 mm. Flowers greenish or whitish, 5- rarely 4-merous, functionally unisexual, but bear vestigial organs of the opposite sex. Calyx ca. 0.5 mm, split about to middle; lobes triangular, acute or obtuse, densely puberulous. Corolla-lobes almost free, elliptic, ca. 1.5–2 mm, with a few glandular dots, densely papillose outside. In male flowers, stamens adnate ± to middle of corolla-lobes and slightly shorter than them; anthers ovoid or oblong, punctate on back; ovary highly reduced and lack ovules. In female flowers, pistil fully developed, slightly shorter than corolla-lobes, with ovoid glabrous ovary and capitate stigma on a short style; stamens much reduced. Fruit globose, 3–4 mm in diam., reddish or black, wrinkled when dry.

Locality: Widely distributed in Hong Kong; *H. C. Tang 11, 2321; Y. S. Lau 924, 1353.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Guizhou, Yunnan, Xizang; widely distributed in India, Sri Lanka, Myanmar, Thailand, Indochina, southwards through Malay Peninsula to Indonesia and New Guinea.

Ecology: Open thickets and disturbed evergreen forest. Flowering: Jan.–Jul.; fruiting: May–Dec.

**2. Embelia parviflora** Wall. ex A. DC 當歸藤

Trans. Linn. Soc. London 17: 130. 1834; FRPS 58: 113, pl. 17: 5–7. 1979; FOC 15: 31. 1996.

*Embelia myrtifolia* Hemsl. & Mez, Notizbl. Bot. Gart. Berlin 3: 107. 1901; FKH 159. 1912.

Scandent shrub or climber, up to 3 m or longer. Branches light brown, with scattered elongate lenticelles; branchlets slender, usually distichous, densely rusty villose, with ± glandular or stellate-tipped hairs. Leaves distichous; petioles 0.5–1 mm, villose; leaf blade papery, ovate to oblong-ovate, ovate, 1–2 × 0.6–1 cm, base rounded or subtruncate, apex obtuse to broadly obtuse, entire, adaxial surface glabrous, abaxial surface ± puberulous, especially on the raised midvein; glandular dots many, visible on both surfaces when dry; lateral veins fine and very obscure. Inflorescence axillary, subumbellate or cymose, 2–4-flowered, rusty puberulous. Peduncle 1–1.5 mm. Pedicels 2–4 mm. Flowers white, 5-merous. Calyx 0.5–0.8 mm, split to near base; lobes ovate-triangular, acute, minutely ciliate. Corolla slightly united at base; lobes oblong or oblong-elliptic, 1.5–2 × 1 mm, obtuse, densely papillose on margins and inside. Stamens in male flowers inserted on the lower 1/3 of the corolla-lobes; filaments ca. 1 mm; anthers ovoid. In female flowers ovary ovoid, glabrous; style twice as long as the ovary, ± pubescent at base; stigma flattened or disc-shaped. Fruit globose, ca. 5 mm in diam., dark reddish, ± punctate.

Locality: Tai Mo Shan. *HK sheet 17670.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Zhejiang, Guizhou, Yunnan; India, Myanmar, Vietnam.

Ecology: Thin forests and shrubby areas. Flowering: Dec.–May; fruiting: Jan.–Nov.

Uses: Medicinal (folklore).

**3. Embelia laeta** (L.) Mez 酸藤子 **(Photo 516)**

Pflanzenr. IV. 236(Heft 9): 326. 1902; FRPS 58: 120, pl. 19: 4. 1979; FOC 15: 31. 1996.

*Samara laeta* L., Mant. Pl. (ed. 2) 199. 1771.

*Samara obovata* Benth., FHK 205. 1861.

*Embelia obovata* (Benth.) Hemsl., J. Linn. Soc. Bot. 26: 62. 1889; FKH 159. 1912.

Scandent shrub or climber, 1–3 m or longer. Branches glabrous, ± wrinkled when dry, lenticellate. Leaves alternate; petioles 5–10 mm, glabrous; leaf blade papery, obovate to oblong-obovate, 2.5–5(–7) × 0.8–2(–2.8) cm, base cuneate, apex subrounded to obtuse,

sometimes emarginate, margin entire, glabrous, deep green adaxially, greyish green abaxially, not punctate; lateral nerves 6–10(–12) pairs, at an angle about 50° with midrib, obliquely ascending, anastomosing near edge; veins very fine but conspicuous on both surfaces. Inflorescence lateral or axillary, racemose, 3–8 mm, 3–8-flowered, ± glandular puberulous. Bracts ovate, ca. 1 mm, ciliolate. Pedicels 1.5–2 mm. Flowers white, 4-merous, functionally unisexual, but bear vestigial organs of the opposite sex. Calyx 0.6–0.8 mm, split to 2/3 of its length; lobes ovate, acute. Corolla-lobes almost free, ovate to oblong-ovate, 1.8–2 mm, obtuse, glabrous outside, densely papillose adaxially, obscurely punctate. In male flowers, stamens comparatively larger, inserted on base of corolla-lobes, with filaments ca. equaling corolla-lobes; ovary much reduced, without ovules. In female flowers, ovary glabrous, pyriform, with well developed ovules; stamens much reduced. Fruit globose, ca. 5 mm in diam., obscurely punctate.

Locality: Widely distributed in Hong Kong. *HK sheet 17698; H. C. Tang 115, 785.*

Distribution: Hainan, Guangdong, Guangxi, Taiwan, Fujian, Jiangxi, Yunnan; Laos, Vietnam.

Ecology: Margin of forest, shrubby mountain slopes, roadsides. Flowering: Dec.–Mar.; fruiting: Apr.–Jun.

**4. Embelia undulata** (Wall.) Mez 平葉酸藤子 **(Photo 517)**

Pflanzenr. IV. 236(Heft 9): 327. 1902; FOC 15: 33. 1996.

*Myrsine undulata* Wall., Fl. Ind. 2: 299. 1824.

*Samara longifolia* Benth., FHK 205. 1861.

*Embelia longifolia* (Benth.) Hemsl., J. Linn. Soc. Bot. 26: 62. 1889; FKH 159. 1912; Anonymous, Check List HK Plants 51. 1993.

Scandent shrub, rarely arborescent, 2–4 m tall. Branchlets terete, glabrous, ± lenticellate-warty. Leaves alternate; petioles 1–1.5(–2) cm, deeply channelled, black punctate; leaf blade papery to subleathery, elliptic to oblong, or rarely obovate, (4–)7.5–11.5(–18) × (1.8–)3–5(–8) cm, base acute or cuneate, decurrent on petiole, apex acute or acuminate, rarely rounded, margin entire, glabrous, with many minute black glandular dots or lines on abaxial surface; lateral veins many, prominent. Inflorescence racemose, 1–2(–6) cm, usually rising from axils of leaf scars on branches of previous year's growth, puberulent. Flowers yellowish or greenish, 4-merous. Pedicels 1.5–3 mm. Calyx less than 1 mm, deeply split; lobes triangular or ovate, black punctate. Corolla-lobes almost free, elliptic to ovate, apex obtuse or acute, red punctate abaxially. Stamens inserted at base of corolla-lobes and exserted up to 1 mm, staminodes ca. 2/3 petal length; anthers narrowly oblong, ca. 1 mm. Ovary globose, glabrous; style straight, epunctate; stigma capitate. Fruit globose, (8–)10–15 mm in diam., longitudinally ribbed, black punctate.

Locality: Little Hong Kong, Mount Nicholson, Sheung Wo Hang, Lantau Island. *HK sheet 2970, 17667; Y. W. Lam 1281.*

Distribution: Hainan, Guangdong, Fujian, Jiangxi, Hunan, Guangxi, Guizhou, Sichuan, Yunnan; India, Nepal.

Ecology: Evergreen forests and shrubby areas. Flowering: Apr.–Aug.; fruiting: Nov.–Jan.

**5. Embelia vestita** Roxb. 密齒酸藤子 **(Photo 518)**

Fl. Ind. 2: 288. 1824; FOC 15: 33. 1996, *p.p.* excl. syn. *E. rudis* Hand.-Mazz.

*Embelia oblongifolia* Hemsl., J. Linn. Soc. Bot. 26: 62. 1882; FKH 159. 1912; FRPS 58: 110, pl. 17: 1–3. 1979.

Scandent shrub or climber, to 10 m or longer. Branchlets glabrous or puberulous; old branches copiously lenticellate. Leaves alternate; petioles 5–10 m, with narrow crisped wings on distal part; leaf blade papery, oblong-elliptic to oblong-ovate or elliptic-lanceolate, 6–10 × 2–3.5 cm, base rounded or obtuse, apex acute, margin usually remotely serrate on upper half or near apex, rarely entire, glabrous and glossy, not punctate or with minute glands near apex on abaxial surface; lateral veins 10–18 pairs, with shorter intermediates, at an angle about 70° with the midvein, curved-ascending, anastomosing near the edge; reticulation of veins prominent on both surfaces. Inflorescence axillary, racemose, 1–3 cm, rusty puberulous. Pedicels 3–4 mm, patent, usually at right angle to the rachis. Flowers 5-merous, greenish or white, 2.5–3 mm. Calyx deeply split; lobes broadly ovate, 0.5–0.7 mm, ciliate, sparsely and minutely punctate, glabrous or nearly so. Corolla-lobes almost free, oblong or oblong-lanceolate, ca. 1 mm wide, broadly obtuse or slightly emarginate, glabrous abaxially, densely papillose adaxially, dotted with brown glands. Stamens in male flowers adnate to base of corolla-lobes; anthers ovate, punctate on back. In female flowers ovary pyriforms, glabrous, with a short, curved style. Fruit globose, 6–8 mm in diam., red when mature, ± punctate.

Locality: Tai Mo Shan. *HK sheet 17686, 25195, 30556; Y. S. Lau 1746.*

Distribution: Hainan, Guangdong, Guangxi, Fujian, Hunan, Guizhou, Yunnan; Laos, Vietnam.

Ecology: Margin of forests, shrubby mountain slopes. Flowering: Oct.–Dec.; fruiting: Oct.–Jul.

**6. Embelia rudis** Hand.-Mazz.
網脈酸藤子 **(Fig. 230; Photo 519)**

Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 59: 108. 1922; H. L. Li, Woody Fl Taiwan 717. 1963; FRPS 58: 108. 1979; FOC 15: 33. 1996, pro syn. sub *E. vestita* Roxb.

Scandent shrub, to 10 m or longer. Branchlets glabrous, copiously lenticellate. Leaves alternate, subleathery; petioles 6–8 mm, marginate, ± puberulous; leaf blade oblong-ovate to ovate, rarely broadly lanceolate, 5–10 × 2–4 cm, base rounded or obtuse, rarely cuneate, apex acute or acuminate, margin finely or coarsely serrate, glabrous, sparsely and indistinctly punctate; lateral veins many, ending to the teeth; reticulation of veins prominent, raised on both surfaces. Inflorescence racemose, axillary, 1–2(–3) cm, puberulous. Pedicels 2–3(–5) mm; bracteoles subulate, ca. 1 mm, papillose. Flowers greenish or white, 5-merous, 1–2 mm. Calyx united at base; lobes ovate, ca. 0.7 mm, ciliate. Corolla-lobes almost free, ovate-oblong or elliptic, 1–2 mm, apex obtuse or rounded, ciliate, puberulous or papillose in middle and especially near the base adaxially. Stamens in male flowers ca. equaling corolla-lobes; anthers oblong or ovate, punctate on back. In female flowers ovary pear-shaped or globose, glabrous; style ca. 0.5 mm, curved. Fruit globose, 4–5 mm in diam., blue black or reddish when mature.

Locality: Tai Mo Shan, Lantau. *Y. W. Lam 1397; P. S. Choi 343, 492; H. C. Tang 2231; F. W. Xing 7092, 8192* (IBSC).

Distribution: Guangdong, Taiwan, Fujian, Zhejiang, Jiangxi, Hunan, Guangxi, Guizhou, Sichuan, Yunnan.

Ecology: Forests and shrubby areas. Flowering: Oct.–Dec.; fruiting: Apr.–Jul.

## 5. Myrsine L. 鐵仔屬

Shrubs or small trees. Leaves alternate or spirally arranged, frequently punctate. Inflorescence umbellate or fascicled, axillary or borne on very short scaly branchlets or spurs. Flowers bisexual or unisexual (plant mostly dioecious), 4–5-merous. Calyx small, deeply split or united to 1/2 length; lobes imbricate or valvate, persistent. Corolla-lobes almost free, rarely fused to middle, usually ciliate and punctate. Stamens inserted on the lower part of corolla; filaments free or at base connate into a tube and proximally fused with corolla-tube; anthers ovate or reniform, dehiscing by longitudinal slits. Ovary glabrous; ovules few, in 1 series. Fruit a dry or fleshy drupe, 1-seeded, with crusty or leathery endocarp.

About 300 species, distributed in Africa and Asia; 11 species in China; one species in Hong Kong.

**1. Myrsine seguinii** H. Léveillé 密花樹 **(Fig. 231; Photo 520)**
Fl. Kouy-Tcheou 288. 1915; FOC 15: 37. 1996.

*Myrsine neriifolia* Sieb. & Zucc., Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss. 4: 137. 1846, non Casarato (1843).

*Rapanea neriifolia* (Sieb. & Zucc.) Mez, Pflanzenr. IV. 236(Heft 9): 361.1902.

*Myrsine capitellata* auct. non Wall.: FHK 205. 1861; FKH 158. 1912.

Shrubs or small trees, 2–7 m, occasionally to 15 m tall. Branches somewhat thick, greyish brown to dark brown, glabrous, wrinkled when dry. Leaves spirally arranged; petioles subterete, 0.9–1.5 mm; leaf blade leathery, narrowly oblong to oblong-lanceolate, 5–15 × 1.3–3 cm, apex acute or obtuse, base cuneate, entire, narrowly recurved, glabrous, with many tiny sunken pits on abaxial surface; lateral veins usually more than 15 pairs, inconspicuous, meeting in an intramarginal vein near edge. Inflorescence umbellate, terminal on short verrucose spurs, 3–10-flowered. Pedicels rather thick, 1–4 mm. Flowers white to light green, sometimes reddish. Calyx-lobes ovate, ca. 1 mm, obtuse or acute, fused at base, ciliate, sparsely punctate or not. Corolla 2.5–3 mm; lobes split to 3/4 of its length, lobes ovate to elliptic, acute or obtuse, punctate, densely papillose along the margin. Stamens adnate about to the base of corolla-lobes; filaments very short; anthers ovate, ca. 1.2 mm. Ovary glabrous; stigma as long as or longer than corolla-lobes, cylindric at base, upper part ± flattened, sometimes split at apex. Fruit subglobose, 4–5 mm in diam., punctate.

Locality: Widely distributed in Hong Kong. *Y. S. Lau 984, 2884; L. T. Lo 594; H. C. Tang 12244.*

Distribution: Hainan, Guangdong, Guangxi, Taiwan, Fujian, Zhejiang, Anhui, Jiangxi, Hunan, Hubei, Sichuan, Yunnan, SE Xizang; Japan, Vietnam, Myanmar, Thailand.

Ecology: Thickets and disturbed evergreen forests. Flowering: Apr.–May; fruiting: Oct.–Dec.

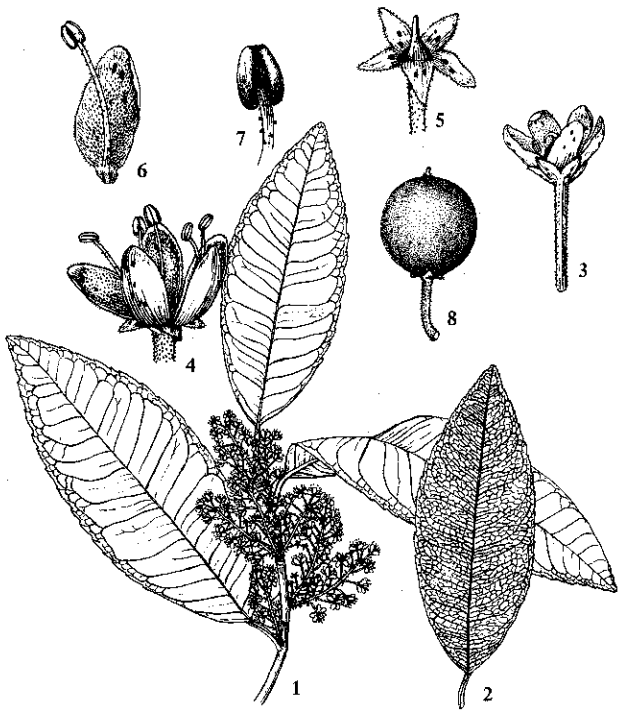



**Figure 230.** *Embelia rudis* Hand.-Mazz.
*1*. flowering branch; *2*. leaf; *3*. female flower; *4*. male flower; *5*. flower with petal removed; *6*. a petal and a stamen of male flower; *7*. dorsal view of anther; *8*. fruit. (drawn by Y. X. Liu)

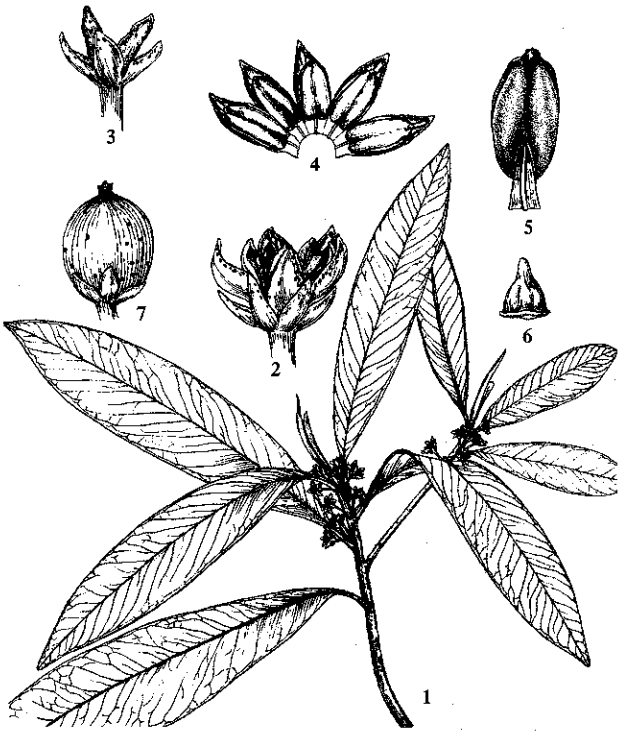



**Figure 231.** *Myrsine seguinii* H. Léveillé
*1*. flowering branch; *2*. flower; *3*. calyx; *4*. corolla opened up; *5*. stamen; *6*. pistil; *7*. fruit. (drawn by H. P. Yu)

# 158. PRIMULACEAE 報春花科

HU Qi-ming 胡啟明

Perennial or annual herbs. Leaves simple, entire to lobed, alternate, opposite or whorled, often all basal and rosulate. Flowers bisexual, usually 5-merous, often dimorphic by heterostyly, solitary or in racemes, panicles, or umbels. Calyx deeply lobed, persistent. Corolla gamopetalous, actinomorphic. Stamens as many as and opposite corolla-lobes; filaments free or united into a tube at base. Ovary superior, rarely semi-inferior, 1-locular, with many ovules on a free-central placenta; style simple, with a inconspicuous capitate stigma. Fruit a capsule, dehiscing by valves, rarely circumscissile or indehiscent.

About 22 genera with about 1000 species mainly in temperate and mountane regions of the N hemisphere; 12 genera and 517 species in China; two genera and five species in Hong Kong.

1a. Capsule circumscissile; leaves opposite ..... 1. *Anagallis*
1b. Capsule opening by valves; leaves alternate or basal ..... 2. *Lysimachia*

## 1. Anagallis L. 琉璃繁縷屬

Annual, biennial, or perennial herbs, usually glabrous. Stems erect or decumbent. Leaves opposite or alternate, rarely whorled in three, sessile or short-petiolate. Flowers solitary in axils of upper leaves, 5-merous. Calyx divided nearly to base. Corolla rotate or funnel-shaped, with a very short tube; lobes contorted in bud. Stamens inserted on base of corolla; filaments usually pubescent; anthers ellipsoid, apex obtuse, dorsifixed. Ovary ovoid; style filiform; stigma obtuse. Capsule globose, circumscissile, many-seeded.

About 20 species spread throughout the temperate zone of both hemisphere; one species in China; it occurs in Hong Kong.

**1. Anagallis arvensis** L. 琉璃繁縷 **(Fig. 232)**

Sp. Pl. 148. 1753; FKH 157. 1912; FRPS 59(1): 136, pl. 36: 1–4. 1989; FOC 15: 79. 1996.

Annual or biennial glabrous herb, 10–30 cm tall. Stems quadrangular, erect or ascendent from the decumbent base. Leaves decussate, sessile; leaf blade ovate to narrowly ovate, 7–18(–25) × 3–12(–15) mm, base subrounded, apex obtuse or acute, margin entire. Flowers solitary in axils of upper leaves. Pedicels slender, 2–3 cm, recurved in fruiting. Calyx 3.5–6 mm, divided nearly to the base; lobes linear lanceolate, margin membranous. Corolla rotate, reddish, divided nearly to base; lobes obovate, 4–6 × 2.7–3 mm. Stamens included; filaments puberulous. Capsule globose, ca. 3.5 mm in diam.

Locality: Cultivated. *HK sheet 4335*.

Distribution: Guangdong, Fujian, Taiwan, Zhejiang; temperate Asia, Indian Subcontinent, Europe, N Africa.

Ecology: Cultivated areas, wastelands, roadsides. Flowering: Mar.–Apr.

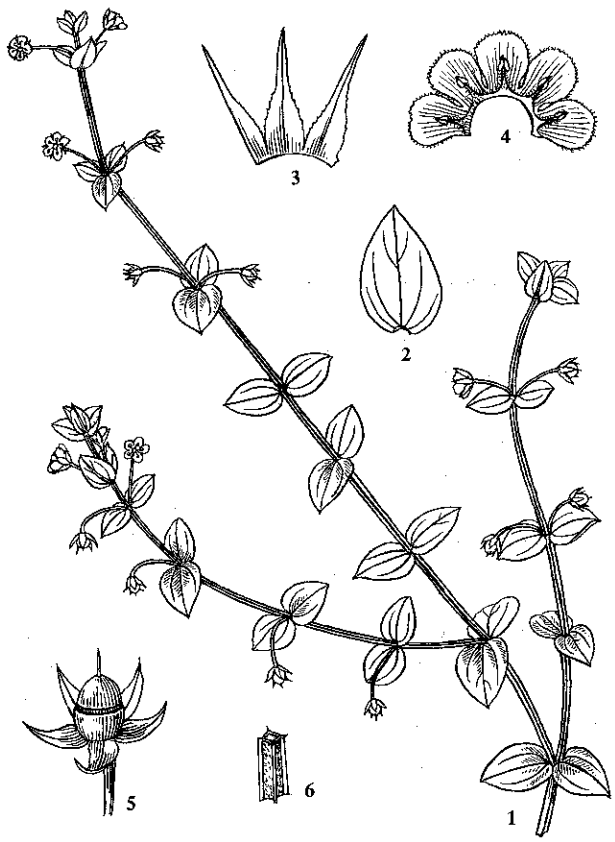



**Figure 232.** *Anagallis arvensis* L.
*1*. upper part of plant; *2*. leaf; *3*. part of calyx opened; *4*. corolla opened up showing stamens; *5*. capsule; *6*. a portion of stem. (drawn by H. P. Yu)

## 2. Lysimachia L. 過路黃屬

Erect or procumbent perennial herbs, rarely suffruticose. Leaves alternate, opposite or whorled, usually entire, often with pellucid or colored glands. Flowers usually 5-merous, solitary, or in racemes, panicles, umbels or head-like clusters. Calyx deeply divided. Corolla white, yellow or rarely pink, subrotate or campanulate; tube very short; lobes contorted in bud. Stamens as many as and opposite corolla lobes; filaments free or connate into a tube at the base and ± adnate to corolla tube; anthers basifixed or versatile, opening by apical pores or lateral slits. Capsule globose, usually opening by valves.

About 180 species mainly in temperate and subtropical regions of the N hemisphere; 138 species in China; four species in Hong Kong.

1a. Flower yellow, solitary on axillary pedicels; leaves stiffly hairy ..... 1. *L. alpestris*
1b. Flowers white, in terminal racemes; leaves glabrous.
2a. Petioles 1–4 cm; stamens long-exserted ..... 2. *L. decurrens*
2b. Stem leaves subsessile; stamens included.

3a. Racemes slender, 10–20 cm; flowers ca. 3 mm; calyx-lobes obtuse; pedicel and persistent style shorter than mature capsule ..... 3. *L. fortunei*

3b. Racemes 3–8 (–10) cm; flowers 6–12 mm; calyx-lobes acute; pedicel and persistent style longer than mature capsule ..... 4. *L. candida*

**1. Lysimachia alpestris** Champ. ex Benth.
香港過路黃 **(Fig. 233; Photo 521)**

Hooker's J. Bot. Kew Gard. Misc. 4: 299. 1852; FHK 202. 1861; FKH 157. 1912; FGD 1: 552. 1987; FRPS 59(1): 98, pl. 26: 5. 1989; FOC 15: 56. 1996.

Perennial herb, stiffy hairy throughout. Stem extremely abbreviated, 1–4 cm tall, often emitting runners. Leaves subsessile, spirally arranged, ± forming a rosette on stems and apex of runners; leaf blade spathulate to narrowly oblanceolate, 3–6 × 0.6–1.5 cm, apex rounded and mucronate, tapering toward base. Flowers solitary, axillary. Pedicels ca. as long as to slightly longer than leaves. Calyx lobes lanceolate, 5–6 × 2 mm, apex acute. Corolla yellow, deeply parted; tube 1–1.5 mm; lobes obovate-elliptic, 4–15 mm wide, apex rounded, erose. Filaments ca. 3 mm, connate into a tube at base; anthers dorsifixed, opening by lateral slits.

Locality: Hong Kong Island, Shing Mun, Ma On Shan. *Y. W. Lam 1449, 230; C. P. Choi 460.*

Distribution: Outside Hong Kong only found in Gu Dou Shan (Xin Hui Xian) of Guangdong province.

Ecology: Damp places on banks of streams, secondary forests and thickets. Flowering: Apr.–May.

Uses: Ornamental.

Notes: The type specimen was collected from Victoria Peak by J. G. Champion around 1850. Listed in *Rare and Precious Plants of Hong Kong*.

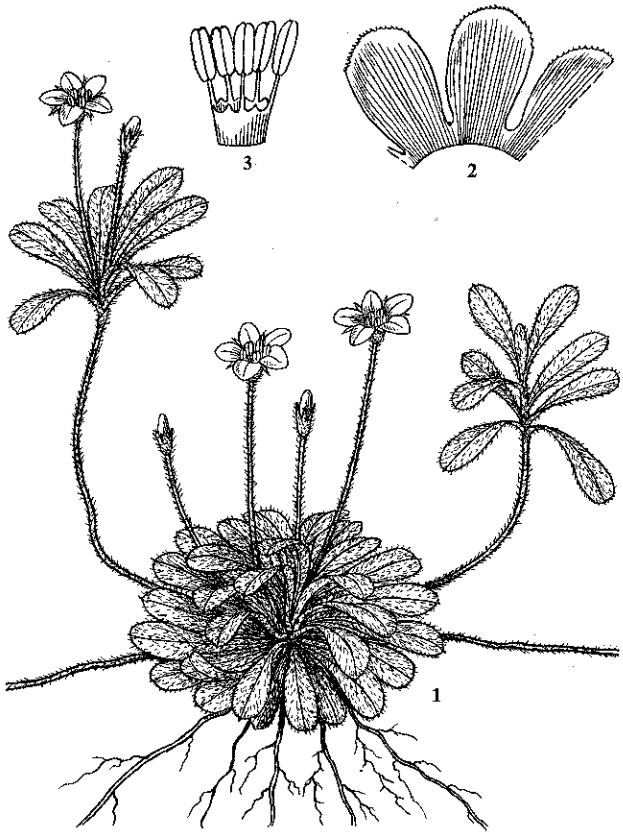



**Figure 233.** *Lysimachia alpestris* Champ. ex Benth.
*1*. plant; *2*. corolla opened up (part); *3*. stamens. (drawn by H. P. Yu)

**2. Lysimachia decurrens** Forst. f. 延葉珍珠菜

Fl. Ins. Austr. 12. 1786; FKH 157. 1912; FGD 1: 552, fig. 633. 1987; FRPS 59(1): 120. 1989; FOC 15: 73. 1996; C. M. Hu, Fl. Thailand 7(1): 161. 1999.

Perennial herb, 40–90 cm tall, glabrous throughout. Stems erect, with raised lines descending from the base of leaf petioles, usually much branched. Leaves alternate; petioles 1–4 cm, narrowly winged; leaf blade lanceolate to elliptic lanceolate, 6–13 × 1.5–4 cm, base cuneate, apex acute or acuminate, with scattered black glandular dots or short stripes on both surfaces, especially near margins. Racemes terminal, 10–25 cm. Bracts subulate, 2–3 mm. Pedicels 2–9 mm, lengthening to 10–18 mm in fruit. Calyx split nearly to base; lobes narrowly lanceolate, 3–4 mm, glandular ciliate, with black glandular stripes abaxially. Corolla white or tinged purple; tube ca. 1.5 mm; lobes oblong-spathulate, 1–2.5 mm, apex rounded. Stamens long-exserted; anthers ovoid, purple, ca. 1 mm. Ovary ovoid; style slender, ca. 5 mm. Capsule globose or slightly compressed, 3–4 mm in diam.

Locality: Tsat Muk Kiu, Luk Keng, Lantau Island. *K. Y. Tam 141; Y. W. Lam 664; L. T. Lo 55.*

Distribution: Guangdong, Guangxi, Guizhou, Yunnan, Hunan, Jiangxi, Fujian, Taiwan; Indochina, Indian Subcontinent, Malesia, Pacific Islands.

Ecology: Margins of forests, damp places by streams, wastelands near villages. Flowering: Apr.–May.

**3. Lysimachia fortunei** Maxim. 紅根草

Bull. Acad. Imp. Sci. Saint-Petersbourg 12: 68. 1868; FKH 157. 1912; FGD 1: 551, fig. 632. 1987; FRPS 59(1): 104, pl. 27: 6–10. 1989; FOC 15: 71. 1996.

Perennial glabrous herb, with creeping, reddish rhizomes. Stems erect, 30–70 cm tall, terete, usually unbranched, with black glandular dots. Leaves alternate, subsessile; leaf blade oblong-lanceolate to narrowly elliptic, 4–11 × 1–2.5 cm, base attenuate, apex shortly acuminate, with many scattered glandular dots on both surface when dry. Racemes slender, 10–20 cm. Bracts lanceolate, 2–3 mm. Pedicels as long as to slightly shorter than bracts. Calyx lobes ovate-elliptic, ca. 1.5 mm, apex obtuse, margin membranous. Corolla white, ca. 3 mm, divided slightly below middle; lobes elliptic to ovate-elliptic, with black glandular dots, apex rounded. Stamens included; filaments adnate to base of corolla lobes; anthers dorsifixed, opening by lateral slits. Capsule globose, 2–2.5 mm in diam.

Locality: Pok Fu Lam. *HK sheet 2832.*

Distribution: Hainan, Guangdong, Guangxi, Hunan, Jiangxi, Anhui, Jiangsu, Zhejiang, Fujian, Taiwan; Korea, Japan, Vietnam.

Ecology: Margins of forests, banks of rice paddies and other wet places. Flowering: Jun.–Aug.

Uses: Medicinal (folklore).

**4. Lysimachia candida** Lindl. 澤珍珠菜

J. Hort. Soc. London 1: 301. 1846; FKH 157. 1912; FGD 1: 552. 1987; FRPS 59 (1): 127. 1989; FOC 15: 77. 1996.

Annual or biennial glabrous herb, 10–30 cm tall. Stems erect, simple or branched from base. Basal leaves spatulate to oblanceolate, 2.6–6 × 0.5–2 cm, with winged petioles, usually withered before anthesis; stem leaves alternate, rarely subopposite, sessile or subsessile; leaf blade obovate to oblanceolate or linear, 1–5 × 0.2–1.2 cm, base attenuate, apex acuminate to obtuse, with sparse black or reddish glandular dots on both surfaces. Racemes terminal, initially short and coniform, lengthening to 5–10 cm in fruiting. Bracts linear, 4–6 mm. Pedicels ca. two times as long as bracts, the lowest to 1.5 cm. Calyx lobes lanceolate, 3–5 mm, with black glandular stripes abaxially, margin membranous. Corolla white, 6–12 mm, divided to middle; lobes oblong to oblong-obovate, apex rounded. Stamens slightly shorter than corolla lobes; anthers dorsifixed, opening by lateral slits. Capsule subglobose, 2–3 mm in diam.

Locality: So Kon Po. *HK sheet 2834.*

Distribution: Hainan, Guangdong, Guangxi, Guizhou, Yunnan, Xizang, Sichuan, Shaanxi, Hunan, Hubei, Jiangxi, Anhui, Shandong, Jiangsu, Zhejiang, Fujian, Taiwan; Japan, Myanmar, Vietnam.

Ecology: Cultivated areas, banks of ditches, rice paddies and other wet places. Flowering: Mar.–Jun.

Uses: Ornamental.

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| Sargentodoxaceae | 大血藤科 | 33 | 1 |
| Saururaceae | 三白草科 | 20 | 1 |
| Saxifragaceae | 虎耳草科 | 176 | 2 |
| Schisandraceae | 五味子科 | 24 | 1 |
| Scrophulariaceae | 玄參科 | 299 | 3 |
| Simaroubaceae | 苦木科 | 263 | 2 |
| Smilacaceae | 菝葜科 | 384 | 4 |
| Solanaceae | 茄科 | 282 | 3 |
| Staphyleaceae | 省沽油科 | 253 | 2 |
| Stemonaceae | 百部科 | 383 | 4 |
| Sterculiaceae | 梧桐科 | 103 | 1 |
| Strelitziaceae | 旅人蕉科 | 363 | 4 |
| Stylidiaceae | 花柱草科 | 312 | 3 |
| Styracaceae | 安息香科 | 153 | 1 |
| Symplocaceae | 山礬科 | 155 | 1 |
| Taccaceae | 蒟蒻薯科 | 382 | 4 |
| Tamaricaceae | 檉柳科 | 119 | 1 |
| Taxodiaceae | 杉科 | G5 | 1 |
| Theaceae | 山茶科 | 88 | 1 |
| Thymelaeaceae | 瑞香科 | 197 | 2 |
| Tiliaceae | 椴樹科 | 102 | 1 |
| Triuridaceae | 霉草科 | 339 | 4 |
| Tropaeolaceae | 旱金蓮科 | 271 | 2 |
| Typhaceae | 香蒲科 | 361 | 4 |
| Ulmaceae | 榆科 | 51 | 1 |
| Umbelliferae (see Apiaceae) | 傘形科 | 274 | 2 |
| Urticaceae | 蕁麻科 | 55 | 1 |
| Verbenaceae | 馬鞭草科 | 291 | 3 |
| Violaceae | 堇菜科 | 118 | 1 |
| Viscaceae | 槲寄生科 | 216 | 2 |
| Vitaceae | 葡萄科 | 240 | 2 |
| Xanthophyllaceae | 黃葉樹科 | 251 | 2 |
| Xyridaceae | 黃眼草科 | 347 | 4 |
| Zamiaceae | 澤米蘇鐵科 | G14 | 1 |
| Zingiberaceae | 薑科 | 367 | 4 |
| Zosteraceae | 大葉藻科 | 337 | 4 |