

HAMAMELIDACEAE

金缕梅科 jin lu mei ke

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Shrubs or trees, evergreen or deciduous, hermaphroditic, andromonoecious, or monoecious. Indumentum usually of stellate hairs or stellate or peltate scales. Buds perulate or naked. Leaves distichous or spiral, rarely subopposite or opposite, stipules minute to large, usually paired (solitary and enclosing bud in *Mytilaria*, and apparently absent in *Rhodoleia*); petiole usually well defined; leaf blade simple or palmately lobed, pinnately veined or palmately 3–5-veined. Inflorescences usually spikes or heads, rarely racemes or (condensed) thyrses or panicles, axillary or terminal. Flowers small to medium-sized, bracteate and often bracteolate, bisexual or unisexual, actinomorphic or rarely zygomorphic (*Rhodoleia*), hypogynous to epigynous, floral cup shallow to urn-shaped, sometimes absent; sepals 4 or 5(–10), sometimes absent, imbricate, usually persistent; petals absent or 4 or 5, yellow, white, greenish or red, often ribbonlike and circinate in bud, caducous; stamens 4, 5, or many, free, rarely arranged in 2 whorls with the inner whorl staminodal, development of polyandrous androecia centripetal or centrifugal; anthers basifixed, thecae mostly bisporangiate, each opening by two valves or a simple longitudinal slit, or monosporangiate and opening by a single valve (*Exbucklandia*, *Hamamelis* and the genera of the S hemisphere), connective protruding; disk scales sometimes present between stamens and carpels. Ovary 2-locular, carpels free at apex; ovules mostly 1 per carpel, less often many, but then most of them sterile, crassinucellar, bitegmic, anatropous, halfway between apotropous and epitropous, pendent from ovary top if solitary, along the carpellary margins if numerous; placentation axile. Styles and stigmas 2. Fruit a capsule, dehiscent septicidally, septifragally, or loculicidally and 4-valved; endocarp woody or leathery, usually loose from leathery exocarp. Seeds 1 to many per carpel; if solitary then seed coat thick, hard, smooth and shiny, black or brown; if numerous then sometimes winged and only a few viable. Endosperm thin; embryo straight; cotyledons leaflike, radicle short.

About 30 genera and 140 species: E and S Africa (including Madagascar), E, W, and SE Asia, NE Australia, Central, North, and South America, Pacific Islands; 18 genera (four endemic) and 74 species (58 endemic) in China.

Several genera and species need critical revision.

Chang Hung-ta. 1979. Hamamelidaceae. In: Chang Hung-ta, ed., Fl. Reipubl. Popularis Sin. 35(2): 36–116.

- 1a. Ovules and seeds several to many per carpel; inflorescences capitate or spicate; leaves palmately veined, sometimes lobed (pinnately veined in *Rhodoleia* and *Altingia*).
- 2a. Stipules apparently absent; leaves pinnately veined, entire; petals spatulate to oblanceolate, red; inflorescence axillary, nodding, enclosed by conspicuous involucre of rounded bracts as long as flowers 6. *Rhodoleia*
- 2b. Stipules present; leaves usually palmately veined, often acuminate lobed (pinnately veined and simple in *Altingia*); petals linear or absent; inflorescence terminal, not nodding, not enclosed by involucre.
- 3a. Stipules large, leaving each node with prominent annular scar; infructescences elongate or, if \pm capitate, capsules clearly exerted.
- 4a. Inflorescence capitate; anthers 2-locular 5. *Exbucklandia*
- 4b. Inflorescence spicate; anthers 4-locular
- 5a. Stipule 1, long and tubular; petals present 7. *Mytilaria*
- 5b. Stipules 2, rounded; petals absent 8. *Chunia*
- 3b. Stipules linear, leaving small discrete scars; infructescences globose, capsules not or only slightly exerted, or inflorescence 2-flowered.
- 6a. Inflorescence with 2 opposite flowers; flower with 5 stamens; petals red 1. *Disanthus*
- 6b. Inflorescence with 5 or more flowers; flowers with more than 5 stamens; petals white or absent.
- 7a. Styles and staminodes caducous; leaves undivided, pinnately veined 2. *Altingia*
- 7b. Styles and staminodes persistent; leaves lobed, or at least basally 3-veined.
- 8a. Leaf blade palmately 3–5-lobed, base cordate; infructescence globose 3. *Liquidambar*
- 8b. Leaf blade heteromorphic, undivided and basally 3-veined or palmately 3-lobed, base cuneate; infructescence semiglobose with truncate base 4. *Semiliquidambar*
- 1b. Ovules and seeds 1(–3) in each carpel (*Corylopsis* with 2 extra, abortive ovules in each carpel); inflorescences racemose, spicate or condensed thyrses or panicles; leaves pinnately veined, undivided.
- 9a. Petals absent, stamens variable in number.
- 10a. Inflorescences capitate spikes, without terminal flowers, each flower with simple bract and without bracteoles, sepals present; capsules arranged spirally along main axis, sessile.
- 11a. Leaves evergreen, venation brochidodromous 9. *Sycopsis*

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- 11b. Leaves deciduous, venation craspedodromous 10. *Parrotia*
- 10b. Inflorescences condensed panicles or botryoids with terminal flowers, each flower with (often 3-parted) bract and (none or) 1 or 2 (3-parted or simple) bracteoles, sepals absent; capsules arranged mostly distichously along main axis, sometimes stalked.
- 12a. Floral cup absent 11. *Distylium*
- 12b. Floral cup present 12. *Distyliopsis*
- 9b. Petals and stamens usually 4 or 5, rarely petals reduced.
- 13a. Petals long, linear, circinate; inflorescences shortly spicate.
- 14a. Anthers with 2 pollen sacs, dehiscent with 2 valves; flowers 4-merous; leaf margin serrate 13. *Hamamelis*
- 14b. Anthers with 4 pollen sacs, dehiscent with 4 valves; flowers usually 4–5(–6)-merous; leaf margin entire to sparsely serrulate 14. *Loropetalum*
- 13b. Petals obovate or reduced and scalelike, 5-merous; inflorescences racemose or spicate, elongated.
- 15a. Stigma large, conspicuously expanded; styles long 15. *Eustigma*
- 15b. Stigma not expanded; styles mostly short.
- 16a. Flowers bisexual; petals well-developed, spatulate, staminodes often also present, floral cup 1/2 as long as capsule; capsules sessile 16. *Corylopsis*
- 16b. Flowers mostly unisexual (bisexual flowers may also occur); petals scalelike or very reduced to absent, staminodes absent in male flowers; floral cup obconical with ovary exserted or urceolate and enclosing ovary.
- 17a. Flowers pedicellate; petals scalelike, ovary semi-inferior; floral cup obconical, ovary exserted; fruit usually conspicuously lenticellate 17. *Fortunearia*
- 17b. Flowers sessile; petals lacking or present as tiny rudiments; ovary nearly superior; floral cup urceolate, distinctly narrowed at mouth and concealing ovary; fruit not lenticellate 18. *Sinowilsonia*

1. DISANTHUS Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 10: 485. 1866.

双花木属 *shuang hua mu shu*

Shrubs, deciduous, most parts glabrous; buds perulate, apex acute. Leaves long petiolate; stipules large, linear, caducous; leaf blade broadly ovate to obovate, thinly leathery or membranous, margin entire, palmately 5–7-veined. Inflorescence with 2 opposite flowers, axillary on short lateral branches; peduncle very short; involucre bracts several, glabrous except for margins; floral bracts hairy. Flowers bisexual, sessile, hypogynous. Floral cup short and broad, hairy. Sepals 5, broader than long, recurved at anthesis. Petals 5, red, linear-lanceolate, circinate in bud. Stamens 5; filaments short; anthers extrorse, thecae 2-sporangiate, each dehiscent by curved longitudinal slit. Ovary superior; ovules 5 or 6 per locule; styles short, stigmas minute. Capsules woody, dehiscent loculicidally by 2 valves; endocarp bony, separated from exocarp. Seeds ellipsoid, unequal. $2n = 16$.

One species: China, Japan.

1. *Disanthus cercidifolius* Maximowicz subsp. **longipes** (H. T. Chang) K. Y. Pan, Cathaya 3: 24. 1991.

长柄双花木 *chang bing shuan hua mu*

Disanthus cercidifolius var. *longipes* H. T. Chang, Sunyatsenia 7: 70. 1948.

Shrub, to 3 m. Branchlets brown, glabrous, lenticellate. Petiole 3–5 cm; leaf blade broadly ovate-rounded, 5–10 × 5–9 cm, membranous, drying gray-white abaxially and green adaxially, glabrous, base slightly to deeply cordate, rarely truncate, margin entire, apex emarginate, rarely obtuse, acuminate. Pe-

duncle (3–)9–22.5 mm, up to 25 mm in fruit; floral cup ca. 1 mm, abaxially brown hairy; sepals ovate, 1–1.5 mm. Petals red, linear from wider base, ca. 7 mm, each with 2 basal nectaries. Stamens much shorter than petals; anthers ovoid. Ovary glabrous; styles 1–1.5 mm. Capsules obovoid, 1.2–1.4 × 1–1.3 cm, apex subtruncate. Seeds black, shiny, irregularly ellipsoid, 4–7 × 3–4 mm. Fl. Oct–Nov, fr. Sep–Oct of following year.

• Mixed evergreen and deciduous broad-leaved forests; 450–1200 m. Hunan, Jiangxi, Zhejiang.

This taxon is listed as endangered by the IUCN. *Disanthus cercidifolius* subsp. *cercidifolius* is endemic to Japan.

2. ALTINGIA Noronha, Verh. Batav. Genootsch. Kunsten 5, art. 2: 1. 1790.

蕈树属 *tan shu shu*

Trees, evergreen; terminal buds perulate, narrowly ovoid. Leaves petiolate; stipules usually present, minute, caducous or connate with petiole, leaving small scars; leaf blade lanceolate to ovate or obovate, leathery, discolorous, margin usually crenate-serrate, occasionally entire, venation pinnate. Plants monoecious. Male inflorescence a globose to shortly cylindrical, pedunculate, many-flowered, head, grouped in terminal or subterminal, compound racemes or panicles; each flower with 1–4 basal bracts. Female inflorescences capitate, subterminal or in lower part of male inflorescence, long-pedunculate, 5–30-flowered. Flowers unisexual. Sepals and petals absent. Male flowers: stamens (4 to) many; filaments very short or absent; anthers obovate-ovoid, thecae 2-sporangiate,

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each dehiscent by a longitudinal slit or rudimentary valve, apex truncate. Female flowers: staminodes (also interpreted as carpel-
lodes) absent or needlelike; ovary semi-inferior; ovules ca. 30–50 per locule, axile; styles subulate, divergent, often strongly recurv-
ed; stigmas papillose, caducous or basal parts persistent in fruit. Infructescences globose, base truncate. Capsules woody, dehiscent
loculicidally by two 2-lobed valves; staminode teeth and styles not persistent. Seeds many, upper ones sterile, wingless; one or a few
lower ones fertile, flattened, narrowly winged along margin or only at apex; seed coat thick and hard; endosperm thin. $2n = 32$.

About 11 species: Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, N Thailand, Vietnam; eight species (five endemic) in
China.

The resin is used in medicine and perfumes, the timber for making furniture, and the trunks and branches for cultivating mushrooms.

- 1a. Inflorescences 5–8-flowered; infructescence obconical with cuneate base.
2a. Leaf blade ovate-lanceolate, 2–2.5 cm wide, leathery, base rounded, margin usually entire, less often
serrate 1. *A. gracilipes*
2b. Leaf blade ovate, 3–5 cm wide, thinly leathery, base slightly cordate, margin serrate 2. *A. tenuifolia*
1b. Inflorescences 10–28-flowered; infructescence subglobose.
3a. Leaf blade ovate, base rounded or slightly cordate.
4a. Leaf blade membranous, lateral veins 6–8 on each side 3. *A. excelsa*
4b. Leaf blade leathery, lateral veins more than 10 on each side 4. *A. multinervis*
3b. Leaf blade oblong, elliptic-oblong, ovate-lanceolate, lanceolate or obovate, base cuneate.
5a. Leaf blade oblong, elliptic-oblong, ovate-lanceolate or lanceolate; petiole 1.5–2 cm.
6a. Leaf blade usually oblong, elliptic-oblong, 6–15 × 3.5–6.5 cm, margin distinctly serrate 5. *A. yunnanensis*
6b. Leaf blade usually ovate-lanceolate or lanceolate, 6–8(–12) × 2.5–4 cm, margin undulate and
indistinctly serrate 6. *A. siamensis*
5b. Leaf blade obovate; petiole 0.4–1 cm.
7a. Leaf blade apex acute to acuminate 7. *A. chinensis*
7b. Leaf blade apex rounded or obtuse 8. *A. obovata*

1. *Altingia gracilipes* Hemsley, Hooker's Icon. Pl. 29: t. 2837. 1907.

细柄蕈树 xi bing tan shu

Altingia gracilipes var. *serrulata* Tutcher; *A. gracilipes* f. *uniflora* H. T. Chang.

Trees 12–20 m tall; young branches glabrescent, older growth lenticellate; buds ovoid, puberulent. Stipules absent; petiole slender, 1–3 cm, glabrous; leaf blade ovate-lanceolate, 4–7 × 1.5–2.5 cm, leathery, abaxially glabrous, base obtuse or narrowly rounded, margin usually entire, less often serrate, apex caudate-acuminate; lateral veins 5 or 6 on each side, abaxially somewhat prominent and glabrous, adaxially indistinct. Male inflorescences globose, 0.5–0.6 cm in diam., usually several arranged in a panicle; bracts 4 or 5, ovate-lanceolate, ca. 8 mm, membranous, brown-pubescent. 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: staminodes scalelike; styles ca. 2.5 mm, apex recurved. Infructescences obconical, 1.5–2 cm wide, base cuneate. Seeds brown, angular. Fl. Apr–Jun, fr. Jul–Sep.

• Evergreen forests; 400–1000 m. Fujian, E Guangdong, Hainan, S Zhejiang.

The bark resin is used in medicine and perfumery.

2. *Altingia tenuifolia* Chun ex H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1973(2): 34. 1973.

薄叶蕈树 bo ye tan shu

Trees 6–10 m tall; young branches glabrescent, sparsely lenticellate; buds ovoid, shiny. Stipules caducous; petiole slender, 1.5–2 cm, glabrous; leaf blade ovate, 6.5–8 × 3.5–5 cm, thinly leathery, abaxially glabrous, base subcordate or rounded,

margin crenate-serrate, apex acuminate and to 1 cm; lateral veins 5 or 6 on each side, somewhat prominent on both surfaces. Peduncle ca. 1 cm in fruit. Flowers not seen. Infructescence solitary, obconical, ca. 1.5 cm wide, base cuneate. Capsules 5 or 6, borne on upper part of head; staminode teeth scalelike. Seeds brown. Fl. Apr–Jun, fr. Jul–Oct.

• Forests; ca. 1000 m. Guizhou, S Jiangxi.

3. *Altingia excelsa* Noronha, Verh. Batav. Genootsch. Kunsten 5, art. 2: 9. 1790.

细青皮 xi qing pi

Liquidambar altingiana Blume.

Trees ca. 20 m tall (to 50 m in Indonesia and Malaysia); young branches glabrous or sparsely pubescent, older growth lenticellate. Stipules 2–6 mm; petiole slender, 2–4 cm, sparsely pubescent; leaf blade ovate or narrowly ovate, 8–14 × 4–7 cm, abaxially glabrescent, base rounded or subcordate, margin crenate-serrate, apex acuminate; lateral veins 6–8 on each side. Male inflorescences globose, many, arranged in raceme. Female inflorescence usually solitary in leaf axils, 14–22-flowered; peduncle 2–4 cm, pubescent. Male flowers: stamen filaments ca. 1 mm, glabrous; anthers somewhat longer than filaments. Female flowers: staminode teeth absent; styles 3–4 mm, pubescent. Infructescences subglobose, 1.5–2 cm wide. Capsules without staminode teeth. Seeds many, brown. Fl. Mar–May, fr. Jun–Aug.

Forests, a dominant species in tropical montane evergreen broad-leaved forests; ca. 1000 m. SE Xizang (Médog Xian), SE Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar].

4. *Altingia multinervis* Cheng, Notes Forest. Inst. Nat. Centr.

Univ. Nanking, Dendrol. Ser., 20. 1947.

赤水蕈树 *chi shui tan shu*

Trees ca. 10 m tall; young branches glabrescent, lenticellate; buds ovoid, ca. 1 cm, pubescent. Petiole 2–3 cm; leaf blade ovate or ovate-elliptic, 7–10 × 4–6 cm, leathery, abaxially glabrous, base rounded or obtuse, rarely subcordate, margin crenate-serrate, apex acuminate; lateral veins 10–14 on each side, prominent on both surfaces. Peduncle 2–3.5 cm in fruit. Flowers not seen. Infructescences globose, ca. 2 cm wide. Capsules 10–18. Fl. Mar–May, fr. Jun–Aug.

- Forests; ca. 1000 m. N Guizhou (Chishui Xian).

5. *Altingia yunnanensis* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 422. 1913.

云南蕈树 *yun nan tan shu*

Trees (3–)15–30 m tall; young branches slightly pubescent, glabrescent, older growth lenticellate. Stipules linear, 2–5 mm, caducous; petiole 1–2 cm, glabrous; leaf blade usually oblong, 6–15 × 3–7 cm, leathery, abaxially glabrous, base cuneate, sometimes subrounded, margin serrate, apex acute; lateral veins 6–9 on each side, prominent on both surfaces. Male inflorescences ellipsoid, ca. 1 cm, several arranged in panicle; bracts 4, ovate, ca. 15 mm. Female inflorescences usually in racemes, 16–24-flowered. Peduncle 3–4 cm in fruit, pubescent. Male flowers: stamens sessile. Female flowers: staminode teeth scalelike; styles 3–4 mm, brown-pubescent. Infructescences subglobose, 1.5–2.5 cm wide. Seeds angular. Fl. Mar–May, fr. May–Jul.

- Forests; ca. 1000 m. SE Yunnan.

6. *Altingia siamensis* Craib, Bull. Misc. Inform. Kew 1928: 68. 1928.

镰尖蕈树 *lian jian tan shu*

Altingia angustifolia H. T. Chang; *A. takhtajanensis* Thai Van Trung & Lie Viet Lok.

Trees 7–30 m tall, trunk 20–100 cm in diam.; young branches glabrescent, older growth sparsely lenticellate; buds ovoid, 3–5 mm, glabrous, inner bud scales brown pubescent. Stipules 3–4 mm; petiole 1–2 cm, glabrous; leaf blade usually ovate-lanceolate or lanceolate, 6–8(–12) × 2.5–4 cm, base subrounded or narrowly so, margin undulate and indistinctly serrate, apex caudate-acuminate, sicklelike, and to 1.5 cm; lateral veins 6–8 on each side, prominent abaxially. Male inflorescences ovoid or globose, usually several arranged in raceme. Female inflorescence solitary in leaf axil. Peduncle 1–2 cm, 2–4 cm in fruit, brown-pubescent when young; bracts 4, ovate,

brown-pubescent. Infructescences compressed-globose, 1.5–2 cm wide. Capsules 15–17. Fl. Apr–Jun, fr. Nov–Dec.

Humid forests; 1000–1200 m. E Guangdong (Han Jiang valley), S Yunnan (Jiangcheng Xian) [Cambodia, Laos, N Thailand, Vietnam].

7. *Altingia chinensis* (Champion) Oliver ex Hance, J. Linn. Soc., Bot. 13: 103. 1873.

蕈树 *tan shu*

Liquidambar chinensis Champion, Hooker's J. Bot. Kew Gard. Misc. 4: 164. 1852.

Trees ca. 20 m tall, trunk to ca. 60 cm in diam.; bark gray, subscabrous; young branches glabrous; buds ovoid, pubescent. Stipules caducous; petiole ca. 1 cm, glabrous; leaf blade obovate-oblong, 7–13 × 3–4.5 cm, leathery, abaxially glabrous, base cuneate, margin crenate-serrate, apex acute; lateral veins ca. 7 on each side, prominent on both surfaces. Male inflorescences cylindrical, ca. 1 cm, usually many arranged in panicle; peduncle pubescent. Female inflorescence solitary or many in panicles, 15–26-flowered; peduncle 2–4 cm; bracts 4 or 5, ovate or lanceolate, 1–1.5 cm. Male flowers: stamens subsessile; anthers obovoid. Female flowers: staminode teeth pointed; styles 3–4 mm, pubescent, apex recurved. Infructescences subglobose, 1.7–2.8 cm wide, base truncate. Seeds brown, shiny. Fl. Mar–Jun, fr. Jul–Sep.

Forests; 600–1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, SE Yunnan, Zhejiang [Vietnam].

The trunks and branches are used for cultivating mushrooms, the essential oils of the wood are used in medicines and perfumes, and the wood itself is used for making furniture.

8. *Altingia obovata* Merrill & Chun, Sunyatsenia 2: 238. 1935.

海南蕈树 *hai nan tan shu*

Trees ca. 30 m tall, trunk to ca. 100 cm in diam.; bark scabrous; young branches sparsely pubescent; buds ovoid, ca. 1 cm, sparsely pubescent. Stipules caducous; petiole 0.4–1 cm; leaf blade obovate or narrowly so, 5–11 × 2–4.5 cm, abaxially glabrous, base narrowly cuneate, margin crenate-serrulate, apex rounded or obtuse; lateral veins 7–9 on each side, prominent on both surfaces. Male inflorescences ellipsoid, usually many arranged in raceme; bracts ovate, brown-pubescent. Female inflorescence usually solitary in leaf axil, 16–28-flowered; peduncle ca. 3 cm. Male flowers: stamen filaments very short; anthers red, obovoid, ca. 1.5 mm. Female flowers: staminodes usually scalelike; styles ca. 3 mm, pubescent, apex recurved. Infructescences subglobose, ca. 2 cm wide, base truncate. Seeds brown, irregularly angular. Fl. Mar–Jun, fr. Jul–Sep.

- Montane evergreen forests; 800–1400 m. Hainan.

3. LIQUIDAMBAR Linnaeus, Sp. Pl. 2: 999. 1753.

枫香树属 *feng xiang shu shu*

Trees, deciduous. Leaves alternate, long-petiolate; stipules linear, ± adnate to base of petioles, caducous, leaving small scars; leaf blade palmately 3–7(or more)-lobed, rarely entire, margin serrate, venation actinodromous. Plants monoecious. Inflorescence usually a globose head (a condensed panicle). Male inflorescence a head or spike, several to many together in racemes. Female inflorescence capitate, with 1 bract. Flowers unisexual. Sepals and petals absent. Male flowers: stamens many; filaments as long as

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anthers; anthers ovoid, thecae 2-sporangiate, each dehiscing by a longitudinal slit or rudimentary valve, apex rounded or emarginate. Female flowers: staminodes (also interpreted as carpelodes) forming rudimentary scales or teeth around gynoecium, persistent in fruit; ovary semi-inferior; ovules many, inserted on septum, only lowest ones fertile; stigmas decurrent, persistent in fruit. Infructescences globose. Capsules woody, dehiscing loculicidally by 2 valves; pericarp thin; styles persistent. Seeds many, most of them sterile, minute, irregularly angular; fertile seeds large, ellipsoid, slightly compressed, membranous-winged; seed coat reticulately sculptured; endosperm thin, embryo straight. $2n = 30, 32$

Five species: E and SW Asia, Central and North America; two species (one endemic) in China.

Liquidambar edentata Merrill (J. Arnold Arbor. 8: 6. 1927) and *L. rosthornii* Diels (Bot. Jahrb. Syst. 29: 380. 1900) were described from China (the former from Fujian), but the present authors have no specimens.

The resin, stems, leaves, and fruit are used medicinally.

- 1a. Pistillate flowers and capsules with calyx teeth clearly defined, acute; infructescences with 24–43 capsules; petiole 8–12 cm 1. *L. formosana*
 1b. Pistillate flowers and capsules with calyx teeth very short and scalelike or absent; infructescences with 15–26 capsules; petiole 4–8 cm 2. *L. acalycina*

1. *Liquidambar formosana* Hance, Ann. Sci. Nat. Bot., sér. 5, 5: 215. 1886.

枫香树 feng xiang shu

Liquidambar acerifolia Maximowicz; *L. formosana* var. *monticola* Rehder & E. H. Wilson; *L. maximowiczii* Miquel; *L. tonkinensis* A. Chevalier.

Trees to 30 m tall, trunk sometimes 1 m in diam.; bark gray-brown; branchlets pubescent or glabrous, somewhat lenticellate; buds ovoid, 1 cm, puberulent. Stipules red, nearly free or adnate to petiole, 1–1.4 cm; petiole 8–12 cm, pubescent; leaf blade broadly ovate, palmately 3-lobed and 3-veined, central lobe longer, abaxially usually drying gray-white, pubescent or glabrous, base rounded, margin glandular serrate, apex caudate-acuminate, cordate, subcordate or truncate, veins prominent on both surfaces. Male inflorescence a short spike, several arranged in a raceme. Female inflorescence 24–43-flowered; peduncle 3–6 cm, occasionally lenticellate, eglandular. Male flowers: stamens many, filaments unequal, anthers slightly shorter than filaments. Female flowers: staminode teeth 4–7, needlelike, 4–8 mm; ovary pubescent, styles 6–10 mm, usually coiled backwards. Infructescence globose, 3–4 cm wide. Capsules with persistent staminodes. Seeds many, brown. Fl. Mar–Jun, fr. Jul–Sep.

Sunny places, near villages, montane forests; 500–800 m. Anhui,

Fujian, Guangdong, Guizhou, Hainan, Hubei, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang [S Korea, Laos, N Vietnam].

2. *Liquidambar acalycina* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1959(2): 33. 1959.

缺萼枫香树 que e feng xiang shu

Trees ca. 25 m tall; bark black-brown; branchlets glabrous, lenticellate. Stipules 3–10 mm, brown-tomentose; petiole 4–8 cm; leaf blade broadly ovate, 8–13 × 8–15 cm, both surfaces glabrous or pubescent in young leaves, palmately 3–5-veined, veins prominent abaxially, lateral lobes triangular-ovate. Male inflorescence globose, several, arranged in racemes, 2–2.5 cm wide, drying black-brown in fruit; peduncle 2–3 cm. Female inflorescence solitary in leaf axils of short shoots, 15–26-flowered; peduncle 3–6 cm, sparsely pubescent. Male flowers: filaments 1–1.5 mm; anthers ovoid. Female flowers: staminode teeth absent or scalelike and sometimes very short; styles 5–7 mm, brown-pubescent. Capsules without persistent staminode teeth, persistent styles recurved. Fertile seeds winged, sterile seeds many, brown, irregularly angular. Fl. Mar–Jun, fr. Jul–Sep.

• Montane evergreen forests; 600–1000 m. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Jiangsu, Jiangxi, Sichuan.

The wood is used for making furniture.

4. SEMILIQUIDAMBAR H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1962(1): 35. 1962.

半枫荷属 ban feng he shu

Trees deciduous or evergreen, up to 30 m tall. Leaves aggregated at shoot apex, petiolate; stipules linear, caducous, leaving small scars; leaf blade usually ovate or elliptic, usually at least some 3-lobed, leathery, margin glandular serrate, 3-veined. Plants monoecious. Male inflorescence a compound spike, terminal. Female inflorescences capitate, solitary in leaf axils, long pedunculate. Flowers unisexual. Sepals and petals absent. Male flowers: stamens many; filaments very short, anther thecae 2-sporangiate, dehiscence pattern uncertain. Female flowers: floral cup adnate to ovary; staminodes (also interpreted as carpelodes) linear, short, persistent, or absent. Ovary semi-inferior; ovules many, axile; styles oblique, usually coiled backwards; stigmas papillose. Infructescences semiglobose with truncate base. Capsules woody, dehiscing by two 2-lobed valves, styles and floral cups persistent. Seeds many, minute, angular, most of them sterile.

• Three species.

- 1a. Leaves monomorphic, undivided, ovate, apex caudate-acuminate 3. *S. caudata*
 1b. Leaves dimorphic, leaf blade undivided or divided, apex acute or acuminate.

- 2a. Leaves firmly leathery, petiole stout; staminode teeth more than 2 mm in fruit 1. *S. cathayensis*
 2b. Leaves thin leathery, petiole slender; staminode teeth less than 2 mm in fruit 2. *S. chingii*

1. Semiliquidambar cathayensis H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1962(1): 37. 1962.

半枫荷 ban feng he

Altingia chingii Metcalfe var. *parvifolia* Chun; *Semiliquidambar cathayensis* var. *fukienensis* H. T. Chang; *S. cathayensis* var. *parvifolia* (Chun) H. T. Chang; *S. coriacea* H. T. Chang.

Trees 15–20 m tall, trunk ca. 60 cm in diam.; bark gray; branches dark brown, glabrous, older growth gray, lenticellate; buds narrowly ovoid, sparsely pubescent. Leaves dimorphic; petiole stout, 1.7–4 cm, glabrous; entire leaves: blade elliptic, ovate-elliptic, oblong, ovate-oblong, 5–13 × 3–6 cm, leathery, discolorous, abaxially glabrous, base cuneate, broadly cuneate or slightly rounded, somewhat asymmetrical, margin serrulate, apex acute or acuminate; lobed leaves: blade palmately 3-lobed, central lobe 3–5 cm, lateral lobes ascending, ovate-triangular, 2–2.5 cm, margin glandular serrate, base rounded or truncate, lateral veins 4 or 8 on each side. Male inflorescences ca. 6 cm. Female inflorescence solitary; peduncle ca. 4.5 cm, glabrous. Male flowers: anthers ca. 1.2 mm, apex emarginate. Female flowers: staminode teeth needlelike, 2–5 mm, pubescent; styles 6–8 mm, pubescent. Infructescence globose, ca. 2.5 cm wide. Capsules 22–28, with upper halves exerted from infructescence, apex mucronate; persistent staminode teeth 2–4 mm; persistent styles 3–6 mm. Fl. Mar–Jun, fr. Jul–Sep.

• Forests; ca. 1000 m. Fujian, Guangdong, N Guangxi, S Guizhou, Hainan, S Jiangxi.

The roots are used for the treatment of rheumatism.

2. Semiliquidambar chingii (Metcalf) H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1962(1): 37. 1962.

细柄半枫荷 xi bing ban feng he

Altingia chingii Metcalfe, Lingnan Sci. J. 10: 413. 1931; *Semiliquidambar chingii* var. *longipes* Y. K. Li & X. M. Wang.

Trees ca. 25 m tall; young branches drying black-brown, glabrescent, lenticellate; buds drying red-brown, shiny, slightly

pubescent. Leaves dimorphic; stipules linear, caducous; petiole slender, 2–4.5 cm; entire leaves: blade elliptic or oblong, 6–10 × 3–5 cm, thinly leathery, discolorous, abaxially glabrous or pubescent, base cuneate or slightly rounded, apex acute, palmately 3-veined, lateral veins 3–7 on each side; veins prominent; lobed leaves: blade broadly ovate, 7–10 × 5–8 cm, central lobe ovate, 4–5 cm, lateral lobes 1.5–2 cm, margin glandular serrate. Male inflorescence not seen. Fruiting peduncle slender, 3–8 cm. Female flowers: staminode teeth persistent, 1–2 mm. Infructescence globose, 1.5–2 cm wide (not including styles). Capsules with persistent styles 4–6 mm, apex recurved. Fl. Mar–Jun, fr. Jul–Sep.

• Forests; ca. 1000 m. Fujian, Guangdong, SE Guizhou (Libo Xian), S Jiangxi.

This species is listed as endangered by the IUCN.

3. Semiliquidambar caudata H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1962(1): 37. 1962.

长尾半枫荷 chang wei ban feng he

Semiliquidambar caudata var. *cuspidata* (H. T. Chang) H. T. Chang; *S. cuspidata* H. T. Chang.

Trees evergreen or semievergreen, ca. 10 m tall; young branches pubescent with gray-brown hairs, glabrescent, older growth lenticellate; buds drying red-brown, shiny, subglabrous. Petiole slender, 1.5–4.5 cm; leaf blade ovate, ovate-elliptic, or oblong-ovate, 4–10 × 2–4.5 cm, leathery, base rounded or broadly cuneate, somewhat asymmetrical, margin sparsely or densely serrate, apex caudate-acuminate, prominently 3-veined from base. Male inflorescence not seen. Female inflorescence solitary in leaf axils, opening together with leaves, 18–24-flowered; fruiting peduncle 2.5–3.5 cm, pubescent. Female flowers: staminode teeth persistent, 1–2 mm; styles 3–4 mm. Infructescence subglobose or compressed-globose, ca. 1.5 × 2–2.5 cm (not including styles). Capsules somewhat exerted from infructescence; persistent staminodes spinelike, less than 1 mm. Seeds brown, angular. Fl. Mar–Jun, fr. Jun–Sep.

• Forests; 600–1000 m. C. Fujian, S Zhejiang.

5. EXBUCKLANDIA R. W. Brown, J. Wash. Acad. Sci. 36: 348. 1946.

马蹄荷属 ma ti he shu

Bucklandia R. Brown ex Griffith, Asiat. Res. 19(1): 94. 1836, not Presl (1825), nor Brongniart (1828); *Symingtonia* Steenis.

Trees, evergreen; branchlets stout, with distinct nodes. Leaves alternate, long petiolate; stipules large, leathery, coherent, caducous, leaving annular scar at each node; leaf blade simple or, in saplings and young shoots, palmately 3–5-lobed, thickly leathery, margin entire, venation palmate. Inflorescence capitate, sometimes in compound racemes, usually axillary, pedunculate, 7–16-flowered. Flowers bisexual, initially enclosed by a pair of stipules. Floral cup adnate to ovary base. Petals absent or 2–5, white, linear, straight in bud. Stamens 10–15; filaments varying in length, subulate; anthers oblong or ovoid, thecae 1-sporangiate, each dehiscing by 1 valve, connective apiculate. Ovary semi-inferior; ovules 5 or 6 per locule; styles somewhat elongated; stigmas decurrent, caducous in fruit. 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, embryo scant, fleshy; cotyledon compressed. $2n = 32$.

About four species: Bhutan, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam; three species (one endemic) in China.

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Some authors have questioned the validity of *Exbucklandia* because Brown did not give the place of publication of the replaced synonym, *Bucklandia*. However, the rule requiring citation of this information (St. Louis Code, Art. 33.3) applies only to names published on or after 1 January 1953.

- 1a. Petals present, 10–12 mm, longer than stamens; leaf base truncate 1. *E. longipetala*
1b. Petals absent or, if present, 2–3 mm, shorter than stamens; leaf base cordate or broadly cuneate.
2a. Leaf base usually cordate or occasionally broadly cuneate; capsules 7–9 × 4–5 mm, smooth 2. *E. populnea*
2b. Leaf base usually broadly cuneate; capsules 10–15 × 6–8 mm, tuberculate 3. *E. tonkinensis*

1. *Exbucklandia longipetala* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1959(2): 33. 1959.

长瓣马蹄荷 chang ban ma ti he

Branchlets glabrous, drying dark brown; buds compressed, oblong-elliptic, 2–2.5 × ca. 1 cm, puberulent. Stipules 2–2.5 × ca. 1 cm, glabrous; petiole 3–5 cm; leaf blade broadly ovate, sometimes 3-cuspidate, 8–12 × 6–10 cm, drying discolorous, both surfaces glabrous, base truncate, margin entire, apex acute, palmately 3–5-veined, reticulate veins conspicuous. Inflorescences capitate, 7–8-flowered; peduncle 1–1.5 cm, brown tomentose. Petals white, 10–12 × 1–1.5 mm, apex 2-lobed. Stamens 10–11, 5–6 mm; anthers ovoid, connective apiculate. Ovary puberulent; styles ca. 2 mm. Capsules 7–8 mm, smooth. Fl. May–Jun, fr. Aug–Oct.

- Montane evergreen forests; ca. 1500 m. N Guangxi, S Guizhou.

This species is listed as vulnerable by the IUCN.

2. *Exbucklandia populnea* (R. Brown ex Griffith) R. W. Brown, J. Wash. Acad. Sci. 36: 348. 1946.

马蹄荷 ma ti he

Bucklandia populnea R. Brown ex Griffith, Asiat. Res. 19(1): 95. 1836; *Aeschynanthus esquirolii* H. Léveillé; *B. populifolia* J. D. Hooker & Thomson; *Symingtonia populnea* (R. Brown ex Griffith) Steenis.

Trees 16–20(–30) m tall; branchlets pubescent. Stipules elliptic or obovate, 2–3 × 1–2 cm; petiole 3–6 cm, longer in young leaves, glabrous; leaf blade broadly ovate-rounded or sometimes palmately 3-lobed in young leaves, 10–17 × 9–13 cm, abaxially glabrous, adaxially drying dark green, shiny, base broadly cuneate, margin entire, palmately 5–7-veined. Inflorescences capitate, sometimes arranged in racemes; heads 8–12-flowered; peduncle 1–2 cm, pubescent. Petals usually absent (2–3 mm in Indian plants). Stamens ca. 5 mm, filaments

slender, glabrous. Ovary yellow-brown pubescent; styles 3–4 mm, erect. Capsules ellipsoid, 7–9 × 5–6 mm, smooth, dehiscent above middle. Seeds narrowly winged. Fl. May–Jul, fr. Aug–Oct.

Slopes in evergreen forests; ca. 1200 m. Guangxi, Guizhou, Xizang, Yunnan [Bhutan, India, Indonesia, W Malaysia, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

3. *Exbucklandia tonkinensis* (Lecomte) H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1959(2): 3. 1959.

大果马蹄荷 da guo ma ti he

Bucklandia tonkinensis Lecomte, Bull. Mus. Hist. Nat. (Paris) 30: 392. 1924; *Symingtonia tonkinensis* (Lecomte) Steenis.

Trees to 30 m tall; young branches brown pubescent, glabrescent. Stipules narrowly oblong, 2–4 × 0.8–1.3 cm, puberulent; petiole 3–5 cm, glabrescent; leaf blade broadly ovate or sometimes palmately 3-lobed in young leaves, 8–13 × 5–9 cm, dark green, abaxially glabrous and tuberculate, adaxially shiny, base broadly cuneate, margin entire or palmately 3-lobed in young leaves, apex acuminate, palmately 3–5-veined. Inflorescences capitate, sometimes arranged in racemes; heads 7–9-flowered; peduncle 1–1.5 cm, brown tomentose. Petals absent. Stamens ca. 13, ca. 8 mm. Ovary yellow-brown pubescent; styles 4–5 mm. Capsules ovoid, 10–15 × 8–10 mm, tuberculate. Seeds 6, winged at lower part, 8–10 mm. Fl. May–Jul, fr. Aug–Sep.

Slopes and valleys in evergreen forests; 800–1500 m. Fujian, Guangdong, Guangxi, Hainan, S Hunan, Jiangxi, SE Yunnan [Laos, N Vietnam].

This combination was first published by Steenis (Blumea 7: 595. 1954), but not validly, because the place of publication of the basionym, as required by the ICBN since 1953 (St. Louis Code, Art. 33.3), was not cited.

6. RHODOLEIA Champion ex Hooker, Bot. Mag. 76: t. 4509. 1850.

红花荷属 hong hua he shu

Trees or shrubs, evergreen. Leaves alternate, petiolate; stipules apparently absent; leaf blade ovate or lanceolate, leathery, margin entire, venation pinnate, sometimes with 3 basal veins, abaxially usually glaucous. Inflorescence capitate, axillary, pedunculate, usually nodding, 5–8-flowered; involucre bracts 5–many, imbricate, ovate-rounded, outer bracts usually much smaller than inner bracts. Flowers bisexual, zygomorphic. Floral cup very short, enclosing base of ovary. Sepals absent or rudimentary, number not distinguishable. Petals 2–5, well developed only on abaxial side of flower, red, spatulate or oblanceolate, clawed, straight in bud, head as whole rayed and flowerlike. Stamens 4–11, equal to or somewhat shorter than petals; filaments linear; anther thecae 2-sporangiate, each dehiscent by 2 valves; nectariferous disk scales present. Ovary semi-inferior; ovules 12–18 per locule, inserted on septum; styles long, very slender, nearly equal to stamens, apex acute, caducous or persistent in fruit. Capsules dehiscent loculicidally above middle by 4 valves; pericarp thin. Seeds flattened, mostly sterile and wingless, fertile seeds laterally narrowly winged; endosperm rather copious; cotyledons ovate, flat, fleshy; radicle cylindric, ca. 1/3 as long as cotyledons. $2n = 24$.

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About ten species: China, Indonesia, Malaysia, Myanmar, Vietnam; six species (three endemic) in China.

Vink (Flora Malesiana, ser. 1, 5: 371–374. 1957) regarded *Rhodoleia* as monospecific.

- 1a. Petals linear-oblongate, 1.5–3 mm wide; leaf blade base rounded 6. *R. stenopetala*
 1b. Petals spatulate or oblanceolate, 5–8 mm wide; leaf blade base cuneate.
 2a. Leaf blade abaxially brown tomentose, reticulate venation adaxially very distinctly impressed 5. *R. forrestii*
 2b. Leaf blade abaxially glabrous or with stellate scales, reticulate venation adaxially indistinct.
 3a. Leaf blade abaxially stellately scaly; capsules long ovoid, 1.2–2 × 0.6–1 cm 4. *R. macrocarpa*
 3b. Leaf blade abaxially glabrous or very sparsely stellately scaly; capsules subglobose, ca. 1 × 1 cm.
 4a. Peduncles 2–3 cm long, with several scalelike bracts; petals 6–8 mm wide 1. *R. championii*
 4b. Peduncles 1–1.5 cm long, with few or no bracts; petals 5–6 mm wide.
 5a. Leaf blade oblong, lateral nerves indistinct, at ca. 45° to midrib; involucre bracts abaxially mostly whitish stellately pubescent, brown-pilose only at or near margin 2. *R. parvipetala*
 5b. Leaf blade ovate-elliptic, lateral nerves abaxially prominent, pale, at ca. 30° to midrib; involucre bracts abaxially ferruginous-tomentose 3. *R. henryi*

1. *Rhodoleia championii* Hooker, Bot. Mag. 76: t. 4509. 1850.

红花荷 hong hua he

Rhodoleia latiovatifolia G. A. Fu.

Trees, to 12 m tall; young branches stout, drying dark brown, glabrous. Petiole 3–5.5 cm; leaf blade ovate to broadly ovate, 7–16 × 4.5–10.5 cm, firmly leathery, drying discolorous, abaxially whitish gray, usually glabrous or sometimes with remains of brown stellate scales or stellate indumentum that appears tuberculate on drying, base broadly cuneate, apex obtuse or subacute; obscurely 3-veined at base, lateral veins 7–9 on each side at ca. 60° to midrib, conspicuous on both surfaces, reticulate veins obscure. Inflorescences 3–4 cm, 2.5–3.5 cm wide in fruit; peduncle 2–3.8 cm, with several scalelike bracts; involucre bracts many, ovate-rounded, brown pubescent; bracteoles 5 or 6, scalelike. Petals spatulate, 25–35(–40) × 4–8 mm. Stamens as long as petals, filaments glabrous, 1.5–2 cm, anthers 4–6 mm. Ovary glabrous; styles somewhat shorter than stamens. Capsules 5, ovoid-globose, ca. 1.2–1.5 cm, styles not persistent, pericarp thin-woody. Seeds yellow-brown, flattened. Fl. Feb–Apr, fr. May–Aug.

Forests; ca. 1000 m. C and W Guangdong, Guizhou, Hainan [Indonesia (Sumatra), W Malaysia, Myanmar, Vietnam].

Records of *Rhodoleia championii* from outside China must be treated with caution; collectors have commented on the similarity of the foliage to that of *Rhododendron*.

2. *Rhodoleia parvipetala* Tong, Bull. Dept. Biol. Sun Yatsen Univ. 2: 35. 1930.

小花红花荷 xiao hua hong hua he

Trees, to 20 m tall; young branches drying dark brown, stellately scaly but quickly glabrescent. Petiole 2–4.5 cm; leaf blade oblong, 5–10 × 2–4 cm, drying discolorous, abaxially whitish gray, glabrous, adaxially drying dark green, base cuneate, apex acute; obscurely 3-veined at base, lateral veins 6–9 on each side, abaxially somewhat raised, adaxially obscure. Inflorescences 2–2.5 cm, 2.5–3.5 cm wide in fruit; peduncle 1–1.5 cm, to 2 cm in fruit; involucre bracts 5–7, ovate-rounded, 7–10 mm, pubescent with dark brown hairs; bracteoles absent. Petals spatulate, 15–18 × 5–6 mm. Stamens 6–8, about as long as petals. Ovary glabrous; styles as long as stamens. Capsules 0.8–1 cm. Seeds many, flattened. Fl. May–Apr, fr. Apr–Sep.

Slopes in evergreen forests; ca. 1000 m. W Guangxi, SE Guizhou, SE Yunnan [N Vietnam].

3. *Rhodoleia henryi* Tong, Bull. Dept. Biol. Sun Yatsen Univ. 2: 35. 1930.

小脉红花荷 xiao mai hong hua he

Trees, to 15 m tall. Petiole ca. 5 cm; leaf blade ovate-elliptic, ca. 11 × 3–6 cm, abaxially drying yellow-green, glabrous, adaxially drying dark green, base broadly cuneate, apex acuminate; lateral veins ca. 6 on each side at ca. 30° to midrib, abaxially raised, adaxially sunken. Inflorescences 3–3.5 cm, 5-flowered; peduncle 1–1.5 cm; involucre bracts many, rusty tomentose; bracteoles absent. Petals dark red, spatulate, ca. 30 × 6 mm. Stamens 7–9, as long as petals. Ovary glabrous; styles 1.8–2 cm. Capsules not seen. Fl. Mar–May.

• Slopes in evergreen forests; 2000–2450 m. SE Yunnan.

4. *Rhodoleia macrocarpa* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1963(4): 50. 1963.

大果红花荷 da guo hong hua he

Trees, to 10 m tall; young branches drying dark brown, stellately lepidote. Petiole 2.5–4 cm; leaf blade elliptic or narrowly elliptic, 7–11 × 3–6 cm, abaxially gray-white, lepidote, adaxially drying dark green, not shiny, base broadly cuneate, apex mucronate; obscurely 3-veined, lateral veins 8 or 9 on each side at ca. 75° to midrib, obscure on both surfaces. Flowers not seen. Infructescences 2.5–3.5 cm wide; fruiting peduncle 1–1.5 cm, stout, pubescent. Capsules 5, narrowly ovoid, 1.5–2 × 1.1–1.4 cm, glabrous, apex acute; styles persistent, short. Seeds dark brown, flattened, ca. 6 × 4 mm, narrowly winged. Fl. Mar–Jun, fr. Aug–Sep.

• Slopes in evergreen forests; 2000–2400 m. SE Yunnan.

5. *Rhodoleia forrestii* Chun ex Exell, Sunyatsenia 1: 97. 1933.

绒毛红花荷 rong mao hong hua he

Trees, to 15 m tall; young branchlets long tomentose. Petiole ca. 3.5 cm, rusty tomentose; leaf blade oblong lanceolate, 7–15 × 2–7 cm, abaxially whitish gray, brown-tomentose to pilose, adaxially drying dark green, shiny, ± bullate, base cuneate, apex acute or acuminate; lateral veins 7–9 on each side at ca. 45° to midrib, abaxially convex, adaxially sunken, as is the reticulate venation. Inflorescences ca. 3 cm, 2.5–3 cm wide

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in fruit; peduncle ca. 1 cm; involucre bracts many, ovate-rounded or broadly ovate, 5–10 mm, brown-tomentose. Petals oblanceolate, ca. 28 × 6 mm. Ovary glabrous; styles shorter than stamens. Capsules ovoid-globose, angular, 1.3–1.6 cm, styles persistent, long. Seeds dark brown, flattened, narrowly winged. Fl. Mar–May, fr. Jun–Sep.

Evergreen forests; 1500–2300 m. W Yunnan [NE Myanmar].

6. *Rhodoleia stenopetala* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1959(2): 31. 1959.

窄瓣红花荷 zhai ban hong hua he

Trees, to 20 m tall. Petiole 3–5 cm, stout, glabrous; leaf blade ovate or broadly so, 6–10 × 4–6.5 cm, drying discolorous,

abaxially whitish gray, adaxially dark green, somewhat shiny, base rounded or obtuse, apex obtuse or nearly acute; 3-veined at base, lateral veins 4–6 on each side, abaxially slightly raised, obscure adaxially. Inflorescences ca. 2 cm long, ca. 2.5 cm wide in fruit; peduncle 1–1.5 cm, stellately pubescent; involucre bracts ca. 10, ovate-rounded, 5–9 mm, abaxially stellately tomentose. Petals 4, narrowly oblanceolate, 15–20 × 1.5–3 mm. Stamens 8, ca. 17 mm; filaments stout, glabrous. Ovary tomentose; styles ca. 1.5 cm. Capsules 5, ovoid-globose, ca. 1.2 cm long, styles not persistent. Seeds flattened. Fl. Mar–Jun, fr. Jul–Sep.

• Evergreen forests; 600–1000 m. W Guangdong, Hainan.

This species has the narrowest petals in *Rhodoleia*.

7. MYTILARIA Lecomte, Bull. Mus. Hist. Nat. (Paris) 30: 504. 1924.

壳菜果属 ke cai guo shu

Trees, evergreen, up to 20 m tall; branchlets with distinct nodes, glabrous. Leaves long petiolate; stipule solitary, narrowly ovate, enclosing apical bud, caducous, leaving annular scar at each node; leaf blade tricuspidate or simple, broadly ovate-rounded, leathery, base cordate, margin entire, venation actinodromous. Inflorescence densely spicate, terminal or leaf-opposed, pedunculate, many flowered. Flowers bisexual, adjacent flowers united at base. Floral cup adnate to ovary. Sepals usually 5, imbricate, ovate-rounded, unequal. Petals usually 5, white, linear-liguliform, subfleshy, straight in bud. Stamens 10–13 (but see comment below), filaments short, stout; anther thecae 2-sporangiate, each dehiscing by 2 valves, connective protrusion massive, stamens and staminodes fused with petals into a tube. Ovary semi-inferior; ovules 6 per locule; styles very short. Capsules ovoid-globose, dehiscing above middle by two 2-lobed valves; exocarp subfleshy, endocarp woody. Seeds more than 1 per carpel, ellipsoid; seed coat thick and hard; endosperm fleshy; embryo situated in middle. $2n = 26$.

One species; China, Laos, N Vietnam.

The stamen number in *Mytilaria* is uncertain. Chang (Sunyatsenia 7: 69. 1948, and in FRPS 35(2): 50. 1979) gave it as 10–13, but the collection W. T. Tsang 22180 (P) from Guangxi has 5 stamens and 5 staminodes.

1. *Mytilaria laosensis* Lecomte, Bull. Mus. Hist. Nat. (Paris) 30: 505. 1924.

壳菜果 ke cai guo

Trees to 30 m tall; branchlets stout, glabrous. Petiole 7–10 cm, glabrous; leaf blades broadly ovate-rounded, 10–13 × 7–10 cm, abaxially yellow-green or grayish, glabrous, adaxially drying olive-green, shiny, apex shortly acute, palmately 5-vein-

ed, veins raised. Inflorescences terminal or axillary, ca. 4 cm, densely many flowered; peduncle glabrous. Sepals ca. 1.5 mm, apex subacute, abaxially pubescent; petals white, 8–10 mm. Styles 2–3 mm; stigmas decurrent papillose. Capsules yellow-brown, 1.5–2 cm. Seeds brown, shiny, 10–12 × 5–6 mm. Fl. Mar–Jun, fr. Jul–Sep.

Forests; ca. 1000 m. W Guangdong, W Guangxi, SE Yunnan [Laos, N Vietnam].

8. CHUNIA H. T. Chang, Sunyatsenia 7: 63. 1948.

山铜材属 shan tong cai shu

Trees, evergreen; branchlets stout, with distinct nodes; buds compressed globose, glabrous. Leaves long petiolate; stipules thickly leathery, enclosing buds, caducous, leaving annular scar at each node; leaf blade tricuspidate or simple, broadly ovate-rounded, thickly leathery, margin entire, venation actinodromous. Inflorescence densely spicate, terminal or subterminal, 12–16-flowered; bracts 2. Flowers bisexual. Sepals and petals absent. Stamens 8, filaments somewhat longer than anthers; anthers ovoid, thecae 2-sporangiate, each dehiscing by 2 valves, connective produced. Ovary inferior; ovules 6 per locule; styles very short; stigmas papillose. Capsules ovoid-globose, dehiscing loculicidally above middle by two 2-lobed valves; exocarp woody, endocarp thick and hard. Seeds ellipsoid; seed coat thick and hard; endosperm fleshy; embryo straight,

• One species.

1. *Chunia bucklandioides* H. T. Chang, Sunyatsenia 7: 63. 1948.

山铜材 shan tong cai

Trees to 20 m tall; bark scabrous, dark brown; branchlets stout, gray-brown, lenticellate; buds compressed globose. Stipules subrounded, 2–2.5 cm in diam., glabrous; petiole 7–13 cm, glabrous; leaf blade 10–15 × 8–14 cm, abaxially yellow-green,

glabrous, adaxially drying dark green, shiny, base subcordate or truncate, apex acuminate; veins 5, palmate, abaxially convex, adaxially distinct. Flowers opening before leaves, 1.5 × 0.5 cm, stellately pubescent, 3–4 cm in fruit, usually only upper 3 or 4 flowers developing into fruits; peduncle 3–6 cm. Filaments 4–5

mm; anthers red, 2–3 mm. Styles 1.5 mm. Capsules ca. 15 × 13 mm; pericarp 2–2.5 mm thick. Seeds black-brown, shiny, 4–6 mm. Fl. Mar–Jun, fr. Jul–Sep.

- Wet valleys, rain forests; 300–600 m. S Hainan.

This species is listed as endangered by the IUCN.

9. SYCOPSIS Oliver, Trans. Linn. Soc. London 23: 83. 1860.

水丝梨属 shui si li shu

Shrubs or small trees, evergreen; branches with 1 prophyll, glabrous or stellately lepidote; buds naked. Leaves petiolate; stipules minute, caducous, leaving small scars; leaf blade leathery, base rounded to cuneate, margin entire or shallowly toothed towards leaf apex, venation brochidodromous, sometimes with 3 basal veins, lepidote, glabrescent. Plants andromonoecious. Inflorescence a short, dense, spike, terminal on short lateral branches, pedunculate, sometimes recurved, flowers spiral, terminal flower absent; each flower with a large simple bract and without bracteoles. Flowers male or bisexual. Sepals 5 or 6, irregular. Petals absent. Stamens 5–10, inserted on margin of floral cup; filaments equal or unequal; anthers ellipsoid, red, thecae 2-sporangiate, each dehiscing by a longitudinal slit, connective apiculate. Male flowers: floral cup short, rudimentary ovary present or absent. Bisexual flowers: floral cup urceolate, stellately lepidote. Ovary superior, but enclosed by floral cup; ovules 1 per locule; styles subulate, slender, divergent; stigmas decurrent. Capsules arranged spirally along rachis, usually ovoid-globose, woody, tomentose, dehiscing by two 2-lobed valves, persistent floral cup shorter than capsule, splitting irregularly. Seeds narrowly ovoid; endosperm thick; embryo straight. $2n = 36$.

Two or three species: China, NE India (Assam); two species (both endemic) in China.

- 1a. Leaf blade without 3 basal veins, abaxially nearly glabrous; persistent floral cup pubescent, ca. 4 mm 1. *S. sinensis*
 1b. Leaf blade with 3 basal veins, abaxially pubescent; persistent floral cup lepidote, to ca. 2 mm 2. *S. triplinervia*

1. **Sycopsis sinensis** Oliver, Hooker's Icon. Pl. 20: t. 1931. 1890.

水丝梨 shui si li

Distylium formosanum Kanehira; *Sycopsis formosana* (Kanehira) Kanehira & Hatusima; *S. sinensis* var. *integrifolia* Diels.

Trees to 14 m tall; young branches lepidote, older growth drying dark brown, glabrous. Petiole 0.8–1.8 cm; leaf blade narrowly ovate or lanceolate, 5–12 × 2.5–4 cm, discolorous, abaxially sparsely stellately pubescent, glabrescent, adaxially shiny, stellately pubescent when young, soon glabrous, base cuneate or obtuse, margin entire or distally serrulate, apex acuminate; lateral veins 6 or 7 on each side. Inflorescences 7- or 8-flowered. Floral bracts brown, ovate-rounded, 6–8 mm, stellately pubescent. Male flowers: floral cup short, reduced pistil pubescent. Bisexual flowers: floral cup 1.7–2 mm, pubescent. Sepals ovate. Filaments slender, 1–1.2 cm; anthers red, 1.8–2 mm, apex acute. Ovary pubescent; styles 5 mm, coiled backwards. Capsules 8–10 mm, villous, dehiscing irregularly; persistent floral cup 3–4 mm; persistent styles 1–2 mm. Seeds 5–7 mm. Fl. Apr–Jun, fr. Jul–Sep.

- Mountain thickets, evergreen forests; 1300–1500 m. Anhui,

Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang.

2. **Sycopsis triplinervia** H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1960(1): 41. 1960.

三脉水丝梨 san mai shui si li

Shrubs; young branches stellately tomentose, older growth lepidote, glabrescent. Petiole 6–13 mm, stellately pubescent; leaf blade oblong or obovate-oblong, 5–14 × 2–6 cm, discolorous, abaxially sparsely stellately pubescent, adaxially shiny and stellately pubescent along veins, base rounded, margin entire or occasionally 1–3-toothed, apex acute; lateral veins 2 or 3 on each side, distal leaf blades 3-veined at base. Inflorescences ca. 1.5 cm; 10–12-flowered, peduncle 3–5 mm, 0.8–1 cm in fruit. Male and bisexual flowers sessile. Floral cup 1.2–1.5 mm, lepidote. Sepals ovate, as long as floral cup. Stamens 8–10; anthers 2–3 mm, connective produced. Styles 1.2–1.5 mm, pubescent. Capsules 10–12 mm, tomentose and villous; persistent floral cup 1.8–2 mm, lepidote; persistent styles 3–4 mm. Seeds ca. 6 mm. Fl. Apr–Jun, fr. Jun–Sep.

- Forests; 800–1000 m. Sichuan, NE Yunnan (Daguan Xian, Yiliang Xian).

It is uncertain whether this species belongs to the genus *Sycopsis*. Further study is needed.

10. PARROTIA C. A. Meyer, Verzeichn. Pfl. Casp. Meer. 46. 1831.

银缕梅属 yin lu mei shu

Shaniodendron M. B. Deng et al.

Trees, deciduous, up to 30 m tall; branches with 1 prophyll, stellately pubescent when young, glabrescent. Leaves alternate; stipules caducous, leaving small scars; leaf blade broadly obovate or elliptic, membranous, usually dentate towards leaf apex, venation craspedodromous, both surfaces stellately pubescent. Plants andromonoecious. Inflorescence a capitate spike, axillary and terminal, 3–7-flowered; floral bracts large, brown; bracteoles absent. Flowers male or bisexual, open before leaves. Sepals 7–8(–10),

irregular in shape, spirally arranged, basally united, persistent. Petals absent. Stamens (5–)10–15, anthers elongate, thecae 2-sporangiate, each dehiscent by a longitudinal slit. Ovary semi-inferior, ovules 1 per locule; styles long, stigmas decurrent. Capsules arranged spirally along rachis, sessile, long-globose, woody, densely stellately pubescent. Seeds ellipsoid. $2n = 24$.

Two species; one species in SW Asia (S Caspian region) and one in China.

1. *Parrotia subaequalis* (H. T. Chang) R. M. Hao & H. T. Wei, Acta Phytotax. Sin. 36: 80. 1998.

银缕梅 yin lu mei

Hamamelis subaequalis H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1960(1): 35. 1960; *Shaniodendron subaequale* (H. T. Chang) M. B. Deng et al.

Trees, small; branches stellately pubescent, glabrescent. Stipules narrowly lanceolate; petiole 5–7 mm, stellately pubescent; leaf blade broadly obovate or elliptic, 4–6.5 × 2–4.5 cm, abaxially stellately pubescent with pale brown hairs, adaxially green, stellately pubescent only along veins, base rounded, truncate, or subcordate, symmetrical, margin sparsely sinuate dentate, apex obtuse; lateral veins 4 or 5 on each side, abaxially prominent, basal 2 without tertiary veins. Inflorescences capitulate spikes; peduncle ca. 1 cm. Floral bracts ovate or broadly

ovate, large, abaxially densely stellately pubescent, adaxially subglabrous. Lowermost 1 or 2 flowers male, floral cup indistinct, stamens 3–10, filaments very short. Bisexual flowers 4 or 5, floral cup short, margin irregularly toothed, persistent. Sepals ovate, ca. 3 mm. Stamens erect in buds, pendent at anthesis, filaments filiform, 15–18(–20) mm, anthers oblong, 4–4.5 mm, connectives elongated into a mucro. Ovary semi-inferior, styles ca. 2 mm, stigmas decurrent. Capsules subglobose, 8–9 mm in diam., dehiscent by 2 valves, persistent floral cup ca. 2.5 mm; styles persistent. Seeds 6–7 mm, base and apex acute. Fl. May–Jun, fr. Jun–Aug.

• Montane forests; 600–700 m. Anhui (Jinzhai Xian, Jixi Xian, Shucheng Xian), S Jiangsu (Yixing Xian), N Zhejiang (Anji Xian).

This species is listed as critically endangered by the IUCN (as *Shaniodendron subaequale*).

11. *DISTYLIUM* Siebold & Zuccarini, Fl. Jap. 1: 178. 1835.

蚊母树属 wen mu shu shu

Shrubs or small trees, evergreen; branches with 1 prophyll, stellately pubescent or lepidote when young; buds naked. Leaves distichous (rarely spiral), shortly petiolate; stipules caducous, leaving small scars; leaf blade leathery, margin entire or shallowly toothed towards leaf apex, venation pinnate; lateral veins usually prominent abaxially. Plants andromonoecious. Inflorescence a condensed panicle or botryoid, flowers distichously (or rarely spirally) arranged, 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. Floral cup absent. Sepals and petals absent. Male flowers: stamens 1–8, filaments short, unequal, anthers ellipsoid, thecae 2-sporangiate, each dehiscent by a longitudinal slit, connective produced. Bisexual flowers: stamens 5–8, ovary superior, ovules 1 per locule; stigmas decurrent. Fruits distichously (or rarely spirally) arranged, sometimes pedicellate. Capsules ovoid-globose, woody, stellately tomentose, dehiscent above middle by two 2-lobed valves, apex acute. Seeds 1 per locule, narrowly ovoid. $2n = 24$.

About 18 species: China, NE India (Assam), Indonesia (Java, Sumatra), Japan (Ryukyu Islands), Korea, Malaysia; 12 species (11 endemic) in China.

- 1a. Young branches, buds, and abaxial side of leaf blade lepidote or glabrous.
 - 2a. Leaf blade abaxially densely lepidote 4. *D. elaeagnoides*
 - 2b. Leaf blade abaxially glabrous.
 - 3a. Leaf blade lanceolate or oblong, rarely oblanceolate, 3–4 times as long as wide 3. *D. myricoides*
 - 3b. Leaf blade elliptic, ca. 2 times as long as wide.
 - 4a. Leaf blade 3–6 × 1.5–3 cm, margin entire 1. *D. racemosum*
 - 4b. Leaf blade 7–12 × 4–7 cm, margin dentate near apex 2. *D. macrophyllum*
- 1b. Young branches and buds stellately tomentose; leaf blade glabrous or pubescent.
 - 5a. Leaf blade oblong, ovate or ovate-lanceolate, 5–14 × 2–6 cm, usually pubescent.
 - 6a. Leaf blade ovate or ovate-lanceolate, apex caudate-acuminate, base rounded.
 - 7a. Leaf blade 7–14 cm long, reticulate veins prominent 5. *D. pingpienense*
 - 7b. Leaf blade 4–6 cm, reticulate veins indistinct 6. *D. cuspidatum*
 - 6b. Leaf blade oblong, apex acute, base cuneate.
 - 8a. Leaf blade 6–9 cm, abaxially nearly glabrous 7. *D. chungii*
 - 8b. Leaf blade 10–15 cm, abaxially tomentose 8. *D. tsiangii*
 - 5b. Leaf blade usually lanceolate, rarely obovate-lanceolate or narrowly oblong, 2–6(–10) × 1–2 cm, abaxially glabrous.
 - 9a. Leaf blade narrowly lanceolate, 6–10 cm, petiole 5–8 mm 9. *D. dunnianum*
 - 9b. Leaf blade obovate-lanceolate, oblong, or broad-elliptic, 2–5 cm, petiole 1–3 mm.
 - 10a. Petiole densely stellately pubescent, trichomes divided to center 12. *D. gracile*
 - 10b. Petiole densely scaly, trichomes divided up to 1/2 radius.

- 11a. Petiole scales subentire, closely appressed; leaf blade oblanceolate, entire or with 1 or 2 obscure subapical teeth 11. *D. buxifolium*
 11b. Petiole scales lacerate, not appressed; leaf blade obovate, usually with 2 or 3 subapical teeth on each side 10. *D. chinense*

1. *Distylium racemosum* Siebold & Zuccarini, Fl. Jap. 1: 178. 1835.

蚊母树 wen mu shu

Shrubs or trees; young branches stellately lepidote, older growth drying dark brown, glabrous; buds lepidote. Petiole 5–10 mm, sparsely stellately lepidote; leaf blade elliptic or obovate-elliptic, 3–7 × 1.5–3.5 cm, abaxially glabrescent, adaxially drying green, shiny, base broadly cuneate, margin entire, apex obtuse or subacute; lateral veins 5 or 6 on each side, reticulate veins indistinct on both surfaces. Inflorescences 1.8–2 cm; peduncle glabrous. Floral bracts lanceolate, 2–3 mm. Stamen filaments 1.5–2 mm; anthers red, 2.5–3.5 mm. Ovary stellately tomentose; styles 6–7 mm. Fruiting pedicels less than 2 mm. Capsules 1–1.3 cm, stellately pubescent with brown hairs, apex acute. Seeds ovoid, 4–5 mm. Fl. Apr–Jun, fr. Jun–Aug.

Forests; 1000–1300 m. Fujian, Hainan, Taiwan, Zhejiang [Japan (Ryukyu Islands), Korea].

2. *Distylium macrophyllum* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1960(1): 39. 1960.

大叶蚊母树 da ye wen mu shu

Shrubs or small trees, to 5 m tall; young branches angular, stellately lepidote; buds narrowly ovoid, ca. 6 mm, stellately pubescent, stellately lepidote. Petiole 7–10 mm, stout, glabrescent; leaf blade elliptic or ovate-elliptic, 7–12 × 3.5–6.5 cm, drying discolorous, both surfaces glabrous, base rounded or obtuse, margin entire or apically dentate, teeth mucronate, apex acute or subobtuse; lateral veins 5 or 6 on each side, reticulate veins more prominent abaxially. Infructescences 5–7 cm; fruiting peduncle stellately lepidote. Flowers not seen. Fruiting pedicels 2–5 mm, glabrous. Capsules 1.2–1.5 × 1–1.2 cm; persistent styles 2–4 mm, stellately pubescent with yellow-brown hairs. Seeds 5–7 mm. Fr. Aug.

- Forests; 1000–1200 m. N Guangdong, NW Guangxi.

3. *Distylium myricoides* Hemsley, Hooker's Icon. Pl. 29: t. 2835. 1907.

杨梅蚊母树 yang mei wen mu shu

Distylium myricoides var. *nitidum* H. T. Chang.

Shrubs or small trees; young branches stellately lepidote, older growth drying gray-brown, glabrescent, lenticellate; buds stellately pubescent, stellately lepidote. Petiole 5–8 mm, lepidote hairy; leaf blade oblong or oblanceolate, 5–11 × 2–4 cm, drying discolorous, both surfaces glabrous, base cuneate, margin entire or toothed above middle, apex acute; lateral veins 6 on each side, reticulate veins somewhat prominent abaxially. Inflorescences 1–3 cm; peduncle lepidote. Bracts lanceolate, 2–3 mm. Floral bracts 2–3 mm, lepidote. Stamen filaments less than 2 mm; anthers red, 2–3 mm. Ovary stellately pubescent; styles 6–8 mm. Capsules ovoid-globose or subovoid, 1–1.2 cm, stellately pubescent with yellow-brown hairs, apex acute or ob-

tuse, dehiscing by 4 valves. Seeds 6–7 mm. Fl. Apr–Jun, fr. Jun–Aug.

- Montane evergreen forests; 500–800 m. Anhui, Fujian, Guangdong, Guangxi, E Guizhou, Hunan, Jiangxi, Sichuan, SE Yunnan (Funing Xian), Zhejiang.

Distylium myricoides var. *macrocarpum* C. Y. Wu (Fl. Yunnan. 1: 134. 1977) was described from Yunnan (Funing Xian), but two type specimens (flowering and fruiting) were indicated, so the name is invalid under Art. 8.1 and 37 of the St. Louis Code.

4. *Distylium elaeagnoides* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1959(2): 37. 1959.

鳞毛蚊母树 lin mao wen mu shu

Shrubs or small trees, to 6 m tall; young branches densely stellately lepidote, older growth drying gray-brown, glabrescent, lenticellate; buds ovoid, minute, densely stellately lepidote. Petiole 8–12 mm, stellately lepidote; leaf blade obovate or obovate-oblong, 5–10 × 2.5–4.5 cm, drying discolorous, abaxially densely silver-gray lepidote, adaxially glabrescent, base cuneate, margin entire, apex obtuse or rounded; lateral veins 4 or 5 on each side, reticulate veins obscure on both surfaces. Infructescences 3–5 cm, fruiting peduncle lepidote. Flowers not seen. Capsules narrowly ovoid-globose, 1.4–1.6 × 0.6–0.8 cm, densely gray lepidote, base cuneate, apex acuminate, dehiscing by two 2-lobed valves; persistent styles 2–3 mm. Seeds ovoid, 5–6 mm. Fr. Aug.

- Montane evergreen forests; 800–1000 m. N Guangdong (Ruyuan Xian), Guangxi, S Hunan (Jianghua Xian).

5. *Distylium pingpienense* (Hu) E. Walker, J. Arnold Arbor. 25: 331. 1944.

屏边蚊母树 ping bian wen mu shu

Sycopsis pingpienensis Hu, Bull. Fan. Mem. Inst. Bot. 10: 149. 1940; *Distylium pingpienense* var. *serratum* E. Walker.

Shrubs or trees, 3–8 m tall; young branches brown stellately pubescent, older growth drying brown, glabrescent, lenticellate; buds brown tomentose. Petiole 5–10 mm, stellately pubescent; leaf blade ovate-lanceolate or lanceolate, 7–14 × 2.5–3.7 cm, drying discolorous, abaxially brown stellately pubescent or glabrescent, base rounded, somewhat asymmetrical, margin entire or apically 1–3-toothed, apex caudate-acuminate; lateral veins 6 on each side, reticulate veins somewhat prominent abaxially. Male inflorescences 1–1.5 cm; infructescences 3–5 cm. Bracts oblong, 6–7 mm, brown stellately pubescent. Floral bracts 2–3 mm, stellately tomentose. Stamen filaments unequal, 1.5–2.5 mm; anthers ovoid, 1.5–2 mm. Fruiting pedicels 3–4 mm, pubescent. Capsules ovoid-globose, 1–1.2 cm, stellately pubescent with brown hairs, apex acute, dehiscing by two 2-lobed valves. Seeds 5–6 mm. Fl. Apr–Jun, fr. Jun–Aug.

- Forests; 800–1000 m. N Guizhou (Suiyang Xian, Zunyi Shi), W Hubei (Badong Xian), SE Yunnan.

6. *Distylium cuspidatum* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1959(2): 38. 1959.

尖尾蚊母树 jian wei wen mu shu

Trees to 7 m tall; young branches brown stellately pubescent, older growth drying gray-brown, glabrescent; buds ovoid, brown stellately pubescent. Stipules narrowly lanceolate, ca. 4 mm, pubescent; petiole 5–7 mm, densely stellately tomentose; leaf blade ovate, 5–7 × 2–3 cm, drying discolorous, both surfaces stellately tomentose when young, glabrescent, base rounded or broadly cuneate, margin entire or apically with several teeth, teeth mucronate, apex caudate-acuminate; lateral veins 3–5 on each side, reticulate veins indistinct on both surfaces. Inflorescences terminal on shoots, with 2 or 3 basal leaves. Bracts lanceolate, 1.8–2 mm, pubescent. Stamen filaments very short; anthers 1.8–2 mm. Ovary stellately pubescent, hairs brown; styles 2–3 mm. Fruiting pedicels short or absent. Capsules ovoid-globose, 1–1.2 cm, brown stellately tomentose. Fl. Apr–Jun, fr. Jun–Aug.

- Forests; 1200–1400 m. Guizhou, E Yunnan.

7. *Distylium chungii* (Metcalfe) W. C. Cheng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser., 8: 140. 1932.

闽粤蚊母树 min yue wen mu shu

Sycopsis chungii Metcalfe, Lingnan Sci. J. 10: 414. 1931.

Trees, small; young branches brown stellately pubescent, older growth drying gray-brown, glabrous, lenticellate; buds stellately tomentose. Petiole ca. 10 mm, stellately tomentose; leaf blade oblong or ovate-oblong, 6–10 × 3–4 cm, drying discolorous, abaxially sparsely stellately tomentose or glabrescent, base broadly cuneate, margin entire or apically 1- or 2-toothed, teeth mucronate, apex acute or subobtuse; lateral veins 5 or 6 on each side, reticulate veins conspicuous on both surfaces. Inflorescences 2–3 cm. Flowers not seen. Fruiting pedicels very short. Capsules 2 or 3, 1.2–1.5 cm, brown stellately tomentose, dehiscent by two 2-lobed valves; persistent styles 2–3 mm. Seeds 6–7 mm. Fr. Aug.

- Forests; 1000–1200 m. S Fujian, E Guangdong.

8. *Distylium tsiangii* Chun ex E. Walker, J. Arnold Arbor. 25: 331. 1944.

黔蚊母树 qian wen mu shu

Trees to 7 m tall; young branches rusty tomentose, older growth drying brown, glabrescent, lenticellate; buds ovoid, brown tomentose. Petiole 10–15 mm, densely tomentose; leaf blade oblong, 10–15 × 4–5.5 cm, abaxially brown stellately tomentose, adaxially glabrescent, base cuneate, margin entire or apically 1- or 2-toothed, apex acute; lateral veins 5–7 on each side, reticulate veins somewhat conspicuous on both surfaces. Inflorescences terminal on shoots, 3–5 cm, with 2 or 3 basal leaves. Flowers not seen. Fruiting pedicels 2–4 mm. Capsules narrowly ovoid, 1.5–1.7 cm, densely tomentose, dehiscent by two 2-lobed valves; persistent styles ca. 3 mm. Seeds 8–9 mm. Fr. Jul.

- Forests; 1000–1200 m. Guizhou (Bazai, Dushanzi).

9. *Distylium dunnianum* H. Léveillé, Repert. Spec. Nov. Regni Veg. 11: 67. 1912.

窄叶蚊母树 zhai ye wen mu shu

Distylium lanceolatum Chun ex Cheng; *Myrica rapaneoides* H. Léveillé; *M. seguinii* H. Léveillé.

Shrubs or small trees, 2–6 m tall; young branches slightly angular, brown stellately tomentose, older growth drying gray-brown, glabrescent. Petiole 5–8 mm, stellately tomentose; leaf blade narrowly lanceolate, 6–10 × 1.2–2.2 cm, both surfaces glabrous or abaxially with tufts of hairs in axils of main veins, base rounded or broadly cuneate, margin entire, apex acute; lateral veins 6–9 on each side, reticulate veins somewhat conspicuous abaxially. Inflorescences axillary, 3–5 cm. Flowers not seen. Capsules 1–1.2 cm in diam., dehiscent by 4 valves; persistent styles very short. Seeds 4–5 mm. Fr. Aug.

- Slopes and forests; 1200–1400 m. Guangdong, Guangxi, Guizhou, SE Yunnan (Funing Xian).

10. *Distylium chinense* (Franchet ex Hemsley) Diels, Bot. Jahrb. Syst. 29: 380. 1900.

中华蚊母树 zhong hua wen mu shu

Distylium racemosum Siebold & Zuccarini var. *chinense* Franchet ex Hemsley, J. Linn. Soc., Bot. 23: 290. 1887.

Shrubs to 1 m tall; young branches stout, internodes 2–4 mm, older growth glabrescent. Petiole 1.5–2 mm, densely lepidote; leaf blade elliptic to oblanceolate, 2–4 × 1–1.2 cm, both surfaces glabrous, base broadly cuneate, margin entire or with 2 or 3 teeth on each side near apex, apex subacute; lateral veins 5 on each side, reticulate veins obscure on both surfaces. Inflorescences 1–1.5 cm. Floral bracts ovate or lanceolate, 1.2–1.5 mm. Stamens 2–7, 4–7 mm; filaments slender; anthers ovoid. Capsules 0.7–0.8 cm, dehiscent by 4 valves; persistent styles 1–2 mm. Seeds 3–4 mm. Fl. Apr–Jun, fr. Jun–Aug.

- Wet places, river sides or stream sides; 1000–1300 m. Hubei, Sichuan.

11. *Distylium buxifolium* (Hance) Merrill, Sunyatsenia 3: 251. 1937.

小叶蚊母树 xiao ye wen mu shu

Myrsine buxifolia Hance, Ann. Sci. Nat. Bot., sér. 4, 15: 225. 1861; *Distylium buxifolium* var. *rotundum* H. T. Chang; *D. lipoense* Y. K. Li & X. M. Wang; *D. strictum* Hemsley.

Shrubs 1–2 m tall; young branches slender, glabrescent, older growth glabrous; internodes 1–2.5 cm. Leaves at least partly spirally and not distichously arranged. Petiole 1–3 mm; leaf blade oblanceolate, oblong-lanceolate, or obovate, 2–5 × 1–1.8 cm, drying discolorous, both surfaces glabrous, base narrowly cuneate, margin entire or apically with 1 tooth on each side, apex acute or obtuse, mucronate; lateral veins 3–6 on each side, reticulate veins obscure on both surfaces. Flowers not seen. Capsules 0.7–0.9 cm in diam.; persistent styles 1–2 mm. Seeds 4–5 mm. Fl. Apr–May, fr. Jun–Aug.

- River sides, stream sides; 1000–1200 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Zhejiang.

12. *Distylium gracile* Nakai, J. Arnold Arbor. 5: 77. 1924.

台湾蚊母树 tai wan wen mu shu

Trees to 10 m tall; young branches stellately pubescent, older growth glabrescent, lenticellate; buds stellately tomentose. Petioles 2–4 mm, stellately pubescent; leaf blade broadly ellip-

tic, 2–3 × 0.7–2 cm, drying discolorous, both surfaces glabrous, base broadly cuneate, margin entire or apically with 1 tooth on each side, apex obtuse, mucronate. Inflorescences 1.5–3 cm. Flowers not seen. Capsules 1–3, 0.8–1 cm in diam., stellately pubescent; persistent styles very short. Fr. Jul–Aug.

• Forests; 1000–1200 m. Taiwan, NE Zhejiang (Putuo Xian).

12. *DISTYLIOPSIS* P. K. Endress, Bot. Jahrb. Syst. 90: 30. 1970.

假蚊母树属 jia wen mu shu shu

Trees, evergreen, up to 15 m tall; branches with 1 prophyll, young shoots and petioles stellately tomentose or with sessile peltate scales; buds perulate. Leaves distichous (rarely spiral), shortly petiolate; stipules ovate or elliptic, caducous, leaving small scars; leaf blade often oblanceolate, leathery, base cuneate, margin entire or nearly so, venation pinnate, sometimes with 3 basal veins, often glabrescent. Plants andromonoecious. Inflorescence a condensed panicle or botryoid, each axis terminated by a flower, axillary or terminal on short lateral branches, few-flowered; bracts 3-lobed. Flowers male or bisexual, distichously (or rarely spirally) arranged. Floral cup urceolate to cupshaped, subtended by (often stipulate) sepal-like bracts, often ± ascending on one side. Male flowers sessile, bisexual flowers often pedicellate. Sepals and petals absent. Stamens (1–)5–6(–15), anther thecae 2-sporangiate, each dehiscing by a longitudinal slit. Male flowers with reduced carpels. Ovary superior, enclosed by long floral cup, ovules 1 per locule; stigmas decurrent. Capsules arranged distichously (rarely spirally) along rachis, partly stalked. Seeds ellipsoid.

About six species: China, Laos, Malaysia, New Guinea; five species (four endemic) in China.

- 1a. Leaf blade with 3 main basal veins, abaxial surface persistently densely stellately tomentose; floral cup as long as capsule 1. *D. laurifolia*
 1b. Leaf blade without 3 main basal veins, abaxial surface glabrous or glabrescent; floral cup 1/3–1/2 as long as capsule.
 2a. Leaf blade narrowly lanceolate, less than 2 cm wide 5. *D. salicifolia*
 2b. Leaf blade elliptic, obovate or ovate-oblong, 2–6 cm wide.
 3a. Leaf blade elliptic or obovate, apex rounded or obtuse, 3–6 cm 4. *D. tutcheri*
 3b. Leaf blade oblong, ovate-oblong, apex acuminate or bluntly acuminate, 5–13 cm.
 4a. Leaf blade 5–7 × 2–5 cm 2. *D. dunnii*
 4b. Leaf blade 9–13 × 3–6 cm 3. *D. yunnanensis*

1. *Distyliopsis laurifolia* (Hemsley) P. K. Endress, Bot. Jahrb. Syst. 90: 30. 1970.

樟叶假蚊母树 zhang ye jia wen mu shu

Sycopsis laurifolia Hemsley, Hooker's Icon. Pl. 29: t. 2836. 1907; *Distylium velutinum* Hu.

Shrubs to 3 m tall; young branches with stellate scales and stellate hairs, at first tomentose, glabrescent, sparsely lenticellate. Petiole 8–10 mm, densely stellately lepidote; leaf blade ovate or narrowly so, 5–12 × 2–4 cm, discolorous, abaxially glaucous, stellately tomentose, hairs yellowish, adaxially shiny, base cuneate or obtuse, margin entire or with a few teeth near apex, apex acute or acuminate; lateral veins 5 or 6 on each side, with 3 main veins from base, reticulate venation abaxially obscure, adaxially raised. Inflorescences 1–2 cm, bracts lanceolate, 3–4 mm. Male flowers sessile; floral cup lanceolate, 1.8–2 mm, tomentose; bracteoles inserted on cup, subglabrous. Stamens 1–7, filaments ca. 3 mm; anthers ellipsoid, 0.8–1 mm. Bisexual flowers: pedicellate; floral cup 1.2–1.5 mm, stellately tomentose, with subglabrous bracteoles; stamens 8–12; filaments 1.7–2 mm. Ovary stellately pubescent; styles 4–5 mm, glabrous. Capsule 10–12 mm, densely yellow-brown villous, apex acute, persistent floral cup almost as long as capsule, stellately pubescent. Seeds 6–7 mm. Fl. Apr–Jun, fr. Jun–Sep.

• Forests; 1300–1500 m. SW Guizhou (Anlong Xian, Xingren Xian), SE Yunnan.

2. *Distyliopsis dunnii* (Hemsley) P. K. Endress, Bot. Jahrb. Syst. 90: 30. 1970.

尖叶假蚊母树 jian ye jia wen mu shu

Sycopsis dunnii Hemsley, Hooker's Icon. Pl. 29: t. 2836. 1907.

Shrubs or small trees, 3–6 m tall; young branches and petioles with sessile, peltate scales, glabrescent. Petiole 10–15 mm, persistently densely lepidote; leaf blade oblong or ovate-oblong, occasionally oblong-lanceolate, 6–11 × 2–5 cm, discolorous, both surfaces glabrescent, adaxially shiny, base cuneate or sub-obtuse, margin entire, apex acute or acuminate; lateral veins 6 or 7 on each side, abaxially prominent; reticulate venation obscure on both surfaces. Bracts oblong. Male flowers: borne in lower part, sessile. Stamens 4–5, filaments 4–9 mm; anthers 1.7–2 mm; ovary absent. Bisexual flowers: shortly pedicellate; floral cup 2–3 mm; stamens 4–11. Ovary villous; styles 4–5 mm, glabrous, recurved. Capsules 1–4, pedicellate, 10–13 mm, gray-brown villous, apex subacute, persistent floral cup 3–4 mm, with dense sessile scales; persistent styles short. Seeds 4–5 mm. Fl. Apr–Jun, fr. Jun–Sep.

Montane evergreen forests; 800–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan [Laos].

3. *Distyliopsis yunnanensis* (H. T. Chang) C. Y. Wu, Fl. Yunnan. 1: 139. 1977.

滇假蚊母树 dian jia wen mu shu

Sycopsis yunnanensis H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1961(4): 55. 1961.

Shrubs or small trees. Petiole 6–9 mm, lepidote; leaf blade oblong, 9–13 × 3–6 cm, discolorous, abaxially glabrous, base broadly cuneate or subrounded, margin entire, apex acute or subobtuse; lateral veins 6 or 7 on each side, abaxially prominent. Inflorescences axillary or terminal on shoots, 3.5–4 cm in fruit; fruiting peduncle glabrous. Flowers not seen. Capsules 3 or 4, stalked or sessile, 8–10 × 6–8 mm, gray-brown villous, apex subacute, persistent floral cup 4–6 mm; persistent styles absent. Fr. Jul–Aug.

- Evergreen forests; 800–1000 m. S Yunnan (Xishuangbanna).

4. *Distyliopsis tutcheri* (Hemsley) P. K. Endress, Bot. Jahrb. Syst. 90: 30. 1970.

钝叶假蚊母树 dun ye jia wen mu shu

Sycopsis tutcheri Hemsley, Hooker's Icon. Pl. 29: t. 2834. 1907; *S. oblanceolata* H. T. Chang.

Shrubs or small trees, to 12 m tall; young branches and petioles with sessile, peltate scales, glabrescent. Petiole 3–5 mm, persistently densely lepidote; leaf blade elliptic or obovate, 3–6 × 2–4 cm, discolorous, both surfaces glabrescent, base broadly cuneate, margin entire, apex obtuse or subrounded; lateral veins 5 on each side, adaxially impressed; reticulate veins

prominent abaxially, obscure adaxially. Flowers not seen. Pedicel 3–6 mm. Capsules 1–5, 10–13 mm, yellow-brown villous, apex acute to subacute, persistent floral cup 4–5 mm, with sessile scales; persistent styles very short. Seeds 4–5 mm. Fl. Apr–Jun, fr. Jun–Sep.

- Mountains in evergreen forests; 800–1000 m. Fujian, Guangdong, Hainan.

5. *Distyliopsis salicifolia* (H. L. Li ex E. Walker) P. K. Endress, Bot. Jahrb. Syst. 90: 30. 1970.

柳叶假蚊母树 liu ye jia wen mu shu

Sycopsis salicifolia H. L. Li ex E. Walker, J. Arnold Arbor. 25: 341. 1944.

Shrubs to 3 m tall. Leaves at least partly spiral and not distichous. Petiole 3–4 mm; leaf blade narrowly lanceolate, 6–9 × 1–1.5 cm, thinly leathery, discolorous, both surfaces glabrescent, base cuneate, margin entire, apex acute; lateral veins 5–7 on each side, abaxially slightly prominent; reticulate veins obscure on both surfaces. Inflorescences 1–2 cm, 1.5–2.5 cm in fruit; bracts ovate, 2–4 mm, pubescent. Floral cup 2–3 mm, bracts preceding flowers, narrowly ovate, 1.8–2 mm, deciduous. Stamens 6–8(–15); filaments 2–4 mm; anthers ellipsoid, 1.8–2 mm; ovary villous. Styles 5–6 mm, pubescent, recurved. Capsules 1 or 2, 7–8 mm, villous, apex acute, persistent floral cup 3–4 mm; persistent styles very short, apex acuminate. Fl. Apr–May, fr. Jun–Aug.

- Montane forests; 900–1200 m. S Hainan.

13. HAMAMELIS Linnaeus, Sp. Pl. 1: 124. 1753.

金缕梅属 jin lu mei shu

Shrubs or small trees, deciduous; branches with 1 prophyll, young branches tomentose; buds naked, tomentose. Leaves petiolate; stipules caducous, leaving small scars; leaf blade thinly leathery or papery, asymmetrical, margin entire or undulate-dentate, venation pinnate, 2 basal lateral veins usually with tertiary veins. Inflorescence capitate, or shortly spicate, axillary, 3–4-flowered. Flowers bisexual. Sepals 4, ovate, pubescent. Petals 4, yellow, greenish or red, straplike, circinate in bud. Stamens 4; filaments short; anthers ovoid, thecae 1-sporangiate, each dehiscing by 1 valve; staminodes 4, alternating with stamens, scalelike, producing nectar. Ovary semi-inferior; ovules 1 per locule; styles very short. Capsules woody, dehiscing above middle by two 2-lobed valves; endocarp loose from woody exocarp. Seeds ellipsoid; endosperm fleshy. $2n = 24$.

Six species: China, Japan, North America; one species (endemic) in China.

1. *Hamamelis mollis* Oliver, Hooker's Icon. Pl. 18: t. 1742. 1888.

金缕梅 jin lu mei

Hamamelis mollis var. *oblongifolia* M. P. Deng & K. Yao.

Shrubs or small trees to 8 m tall; young branches stellately tomentose, glabrescent; buds narrowly ovoid, gray-yellow tomentose. Petiole 6–10 mm, tomentose; leaf blade broadly obovate-rounded or oblong, 8–15 × 6–10 cm, abaxially densely stellately tomentose with gray hairs, adaxially subsabrous, sparsely stellately pubescent, base cordate, asymmetrical, mar-

gin sinuate-dentate, apex acute; lateral veins 6–8 on each side, abaxially prominent, basal 2 lateral veins with tertiary veins. Inflorescence peduncle ca. 5 mm. Sepals ca. 3 mm, sometimes brown adaxially, persistent. Petals yellow, ca. 1.5 cm; filaments ca. 2 mm; anthers nearly equal to filaments; staminode apex truncate. Ovary tomentose; styles 1–1.5 mm. Capsules ovoid-globose, ca. 1.2 × 1 cm, densely stellately tomentose with yellow-brown hairs; persistent floral cup ca. 1/3 as long as capsules. Seeds ca. 8 mm. Fl. Apr–May, fr. Jun–Aug.

- Thickets, forests; 300–800 m. Anhui, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.

14. LOROPETALUM R. Brown in G. F. Abel, Narr. Journey China, App. B, 375. 1818.

榿木属 ji mu shu

Tetrathyrium Benth.

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Shrubs or small trees, evergreen or semievergreen; buds naked. Leaves shortly petiolate; stipules membranous; leaf blade membranous or thinly leathery, margin entire, venation pinnate. Inflorescence capitate, shortly spicate, or racemose, axillary or terminal, 3–25-flowered. Flowers bisexual, usually 4 or 5(or 6)-merous. Floral cup obconical, stellately pubescent. Sepals usually 4 or 5(or 6), ovate, pubescent, deciduous. Petals white or red, straplike, circinate in bud. Stamens 4 or 5(or 6), perigynous, anther thecae 2-sporangiate, each dehiscent by 2 valves, connective protrusion long and slender; disk scales present. Ovary inferior or semi-inferior; ovules 1 per locule. Fruiting pedicel short or absent. Capsules dehiscent by two 2-lobed valves, lower part enveloped by floral cup. Seeds 1 per carpel; endosperm fleshy.

Three species: China, E and N India, Japan; three species (two endemic) in China.

- 1a. Bracts pectinate, glandular fimbriate; inflorescence axillary, 14–25-flowered; flowers 5-merous; styles ca. 2 mm; capsules sessile, clustered in a head, adnate to floral cup for 1/4–1/2 of their length 1. *L. subcordatum*
 1b. Bracts entire, eglandular; inflorescence terminal, mostly on short branches, 3–16-flowered; flowers 4(or 5)-merous; styles very short; capsules pedicellate, separated, adnate to floral cup for 2/3–3/4 of their length.
 2a. Leaves glabrescent; peduncle 3–5 mm; capsule 10–14 × 9–10 mm 2. *L. lanceum*
 2b. Leaves with scattered stellate hairs, seldom glabrescent; peduncle 8–10 mm; capsule 7–8 × 6–7 mm 3. *L. chinense*

1. *Loropetalum subcordatum* (Benth) Oliver, Hooker's Icon. Pl. 15: t. 1417. 1883.

四药门花 si yao men hua

Tetrathyrum subcordatum Benth, Fl. Hongk. 133. 1861.

Shrubs or trees to 12 m tall; branchlets glabrous. Stipules lanceolate, 5–6 mm, stellately pubescent; petiole 1–1.5 cm; leaf blade ovate or elliptic, 7–12 × 3.5–5 cm, discolorous, base rounded or subcordate, margin entire or sparsely serrulate, apex acute; lateral veins 6–8 on each side, abaxially prominent, glabrous, adaxially impressed. Inflorescence axillary, 14–25-flowered; peduncle 4–5 cm; bracts linear, ca. 3 mm. Sepals ca. 1.5 mm, stellately pubescent. Petals ca. 1.5 cm; anthers ovoid; staminodes divergent, teeth oblong-ovate, ca. 2.5 mm. Ovary stellately pubescent. Persistent floral cup ca. 2/3 as long as capsule; capsules subglobose, 10–12 mm in diam., adnate to floral cup for 1/4–1/2 of their length. Seeds 6–7 mm. Fl. Apr–Jun, fr. Jul–Aug.

• Roadsides; 100–200 m. Guangdong, SW Guangxi (Longzhou Xian), Guizhou.

This species is listed as endangered by the IUCN (as *Tetrathyrum subcordatum*).

2. *Loropetalum lanceum* Handel-Mazzetti, Sinensia 2(10): 123. 1932.

大果榉木 da guo ji mu

Trees, 9–13 m tall; young branches pubescent; buds naked, stellately pubescent. Leaf blade lanceolate or ovate-lanceolate, 5–8.5 × 2.5–3.5 cm, abaxially glabrescent, adaxially olive, glabrous, base cuneate or obtuse, somewhat asymmetrical, apex caudate-acuminate and ca. 1 cm; lateral veins 5 on each side, abaxially somewhat prominent. Inflorescence a short spike, terminal, mostly on short lateral branches, 4- or 5-flowered; peduncle 0.3–0.5 cm. Flowers nearly sessile. Sepals ovate, 2–2.5 mm. Petals white, 1–1.3 cm. Stamens short, filament as long as anthers, connective produced into a long mucro. Ovary tomentose, styles very short. Fruiting pedicel ca. 1.5 mm; capsules compressed-globose, 12–14 × 10–12 mm, stellately tomentose, hairs yellow-brown, adnate to floral cup for 2/3–3/4 of their length. Seeds ellipsoid, 7–8 mm. Fl. Mar–May, fr. Jun–Aug.

• Evergreen forests on mountain slopes; ca. 1000 m. S Guangxi (Shiwan Dashan), Guizhou.

3. *Loropetalum chinense* (R. Brown) Oliver, Trans. Linn. Soc. London 23: 459. 1862.

榉木 ji mu

Hamamelis chinensis R. Brown in G. F. Abel, Narr. Journey China, App. B, 375. 1818.

Shrubs or small trees, 1–3 m tall, much branched; branchlets stellately pubescent. Stipules triangular-lanceolate or obovate, 3–5 × 1.5–2 mm, stellately pubescent; petiole 0.2–0.5 cm, stellately pubescent; leaf blade ovate, elliptic or, rarely, obovate, 2–6.5 × 1–3 cm, discolorous, abaxially densely stellately pubescent, adaxially sparsely pubescent or stellately pubescent when young, glabrescent, base asymmetrical, rounded or cuneate, margin ± entire, apex acute or shortly acuminate; lateral veins 4–8 on each side, abaxially prominent. Inflorescence a short raceme or nearly capitate, terminal, mostly on short lateral branches, 3–16-flowered; peduncle 0.8–1 cm, stellately pubescent; bracts linear or lanceolate, 2–4.5 mm. Flowers shortly pedicellate, open before leaves appear. Floral cup cupular, stellately pubescent, 1.2–1.5 mm. Sepals ovate, 2–3 mm. Petals 4(–6), white, pale yellow or red, 1–2 cm, apex obtuse or rounded. Stamens 4 or 5, filaments very short, connective elongated into a horn, 0.4–0.5 mm, anthers ovoid, 0.5–0.6 mm; staminodes 4–6, scalelike, alternate with stamens. Ovary inferior, stellately pubescent, styles ca. 1 mm. Persistent floral cup 2/3–4/5 as long as capsule; capsules ovoid or obovoid-globose, 7–8 × 6–7 mm, stellately tomentose, hairs brown, apex rounded, adnate to floral cup for 2/3–3/4 of their length. Seeds ovoid-globose or ellipsoid, 4–7 × 3.5–4 mm. Fl. Mar–Apr, fr. May–Jul.

Forests, thickets, sunny hills; 1000–1200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang [NE India, Japan].

This species is widely cultivated in China.

Two varieties occur in China; the present authors have seen no specimens of the recently published var. *coloratum* C. Q. Huang (Bull. Bot. Res., Harbin 21: 508. 2001).

- 1a. Flowers usually white or pale yellow 3a. var. *chinense*
 1b. Flowers usually purple-red or red 3b. var. *rubrum*

3a. *Loropetalum chinense* var. *chinense*

檵木(原变种) ji mu (yuan bian zhong)

Loropetalum indicum K. Y. Tong; *L. subcapitatum* Chun ex H. T. Chang; *Tetrathyrum simaoense* Y. Y. Qian.

Petals usually white or pale yellow.

Forests, sunny hills; 1000–1200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang [NE India, Japan].

Loropetalum indicum was said to have thick leaves with a 2-layered palisade tissue and well-developed cuticle, whereas *L. chinense* mostly has a 1-layered palisade tissue and a weaker cuticle, but these differences alone are not sufficient to distinguish species. *Loropetalum subcapitatum* was said to differ from *L. chinense* by its larger, glabrescent leaves, but the paratype of *L. subcapitatum*, *Liang 65827* (PE), also has small leaves and the difference does not justify recognition of a

separate species. Qian (*Acta Bot. Yunnan.* 16: 235. 1994) described *Tetrathyrum simaoense* with 5-merous flowers, but both 4-merous and 5-merous flowers coexist in the same inflorescences of both the holotype and an isotype as well as *Qian 3288* and *Chen & Feng 97040*, all from Simao, Yunnan. Other characters, such as habit, leaves, and fruit, are similar in *T. simaoense* and *L. chinense*.

3b. *Loropetalum chinense* var. *rubrum* Yieh, *Zhong Guo Yuan Yi Zhuan Kan* (China Bull. Hort. Special Issue) 1942(2): 33. 1942.

红花檵木 hong hua ji mu

Loropetalum chinense f. *rubrum* H. T. Chang.

Petals usually purple-red or red.

• Thickets. Guangxi, Hunan.

This variety was described from material of garden origin and is widely cultivated in southern China.

15. EUSTIGMA Gardner & Champion, Hooker's J. Bot. Kew Gard. Misc. 1: 312. 1849.

秀柱花属 xiu zhu hua shu

Shrubs or small trees, evergreen; branches usually stellately pubescent; buds naked. Leaves petiolate; stipules minute, caducous, leaving small scars; leaf blade leathery, margin entire or dentate towards leaf apex, venation pinnate. Inflorescence racemose, terminal, mostly on short 2-leaved lateral branches, pedunculate; basal inflorescence bracts 2. Flowers bisexual. Floral cup turbinate, stellately tomentose. Sepals 5. Petals 5, small, yellow, scalelike, geniculate, with two dorsal swellings. Stamens 5, opposite to sepals, filaments very short; anther thecae 2-sporangiate, each dehiscent by 2 valves; staminodes absent. Ovary almost inferior; ovules 1 per locule; styles long; stigmas very large, spatulate, verrucose, dark purple. Capsules ovoid-globose, woody, dehiscent loculicidally by two 2-lobed valves; endocarp loose from woody exocarp. Seeds narrowly ovoid.

Three species: China, Vietnam; three species (two endemic) in China.

- 1a. Leaves and young branches glabrescent, leaves oblong to oblong-lanceolate 1. *E. oblongifolium*
 1b. Leaves and young branches pubescent, leaves elliptic or oblong.
 2a. Leaves elliptic or oblong, abaxially brown stellately tomentose 2. *E. balansae*
 2b. Leaves narrowly rounded, abaxially stellately pubescent along veins 3. *E. lenticellatum*

1. *Eustigma oblongifolium* Gardner & Champion, Hooker's J. Bot. Kew Gard. Misc. 1: 312. 1849.

秀柱花 xiu zhu hua

Young branches glabrescent, older growth drying gray-brown, lenticellate. Stipules linear; petiole 5–10 mm, glabrescent; leaf blade oblong or oblong-lanceolate, 7–17 × 3–6 cm, drying discolorous, abaxially glabrous, adaxially somewhat shiny, base obtuse or cuneate, margin entire or sometimes dentate towards leaf apex, apex acuminate; lateral veins 6–8 on each side, abaxially prominent. Inflorescences 2–2.5 cm; peduncle 6–8 mm, initially lepidote; general bracts ovate, 1–1.2 cm; bracts and bracteoles ovate, stellately pubescent. Floral cup 2–2.5 mm, stellately pubescent. Sepals ovate, 2.5–3 mm, deciduous. Petals obovate, slightly shorter than floral cup, apex 2-lobed. Anthers ovoid, 0.8–1 mm. Styles 8–12 mm. Capsule 18–20 mm, glabrous. Seeds 8–10 mm. Fl. Apr–Jun, fr. Jul–Sep.

• Forests; 100–200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Jiangxi, Taiwan.

2. *Eustigma balansae* Oliver, Hooker's Icon. Pl. 20: t. 1954. 1891.

褐毛秀柱花 he mao xiu zhu hua

Distylium chingii Chun ex E. Walker.

Trees to 16 m tall; buds brown tomentose. Stipules linear or narrowly lanceolate; petiole 6–12 mm, brown stellately tomentose; leaf blade elliptic or oblong, 10–16 × 4–6 cm, drying discolorous, abaxially brown stellately tomentose, adaxially shiny, base obtuse or broadly cuneate, margin entire, apex acuminate; lateral veins 7–11 on each side, abaxially slightly prominent. Inflorescences 4–7 cm; peduncle brown tomentose; basal inflorescence bracts 2, leaflike, 1.2–1.5 cm, abaxially brown stellately tomentose; bracts and bracteoles obovate, ca. 3 mm. Floral cup stellately tomentose. Sepals 1.8–2 mm. Petals 1.2–1.5 mm, apex obtuse. Stamens somewhat shorter than sepals. Ovary stellately tomentose; styles 6–8 mm, glabrous. Capsule 15–17 × 12–15 mm, brown stellately tomentose. Seeds 7–8 mm. Fl. Apr–May, fr. Jun–Aug.

Forests; 400–500 m. Guangdong, Guangxi, Yunnan [Vietnam].

3. *Eustigma lenticellatum* C. Y. Wu, Fl. Yunnan. 1: 130. 1977.
 云南秀柱花 yun nan xiu zhu hua

Eustigma stellatum Feng ex C. Y. Wu.

Trees to 10 m tall. Petiole 1–2 cm; leaf blade narrowly rounded, 7–12 × 3–5 cm, abaxially brown stellately tomentose

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along veins, adaxially glabrous, base broadly cuneate or obtuse, margin entire, apex acute; lateral veins 7–10 on each side. Peduncle 5–10 mm; bracts ca. 1 mm. Flowers shortly pedicellate. Floral cup 1.8–2 mm. Sepals short. Petals minute. Stamens ca. 2

mm. Styles 3–4 mm. Fruiting pedicel 8–10 mm; capsule 1.1–1.3 cm. Fl. Apr–May, fr. Jun–Aug.

• Forests; 1000–1200 m. SE Yunnan (Guangnan Xian, Pingbian Xian).

16. CORYLOPSIS Siebold & Zuccarini, Fl. Jap. 1: 45. 1835.

蜡瓣花属 la ban hua shu

Shrubs or small trees, deciduous or semievergreen, branches with 3 prophylls, usually stellately pubescent; buds perulate. Leaves petiolate; stipules large, membranous, usually rapidly caducous, leaving small scars; leaf blade membranous or leathery, margin serrate, venation pinnate, the 2 basal lateral veins usually with tertiary veins. Inflorescence a raceme or compact thyrse, pendent, usually open before leaves appear; peduncle with 2 or 3 basal leaves; each flower usually with 1 bract and 2 bracteoles. Flowers bisexual. Sepals 5, persistent or deciduous. Petals yellow, rounded or ovate. Stamens 5; filaments linear; anther thecae 2-sporangiate, each dehiscing by 2 valves; 5–10 nectar producing disk scales present, alternating with stamens, apex truncate or 2-lobed. Sometimes 1–5 staminodes present. Ovary from almost superior to almost inferior; ovules 3 per locule, 2 of them sterile; styles short or long, stigmas capitate, persistent in fruit. Capsules ovoid-globose, woody, dehiscing loculicidally by 4 valves, with persistent styles. Seeds ellipsoid; endosperm fleshy; embryo straight. $2n = 24, 48, 72$.

About 29 species: China, India, Japan, Korea; 20 species (19 endemic) in China.

Corylopsis calcicola C. Y. Wu (Fl. Yunnan. 1: 126. 1977) was described from NE Yunnan (Zhenxiong Xian), but the present authors have seen no specimens.

- 1a. Ovary superior, free from floral cup, capsule separated from persistent floral cups.
 - 2a. Floral cup, ovary and leaves abaxially stellately pubescent 3. *C. stelligera*
 - 2b. Floral cup and ovary glabrous, leaves glabrous or abaxially pubescent along veins.
 - 3a. Petals narrowly spatulate, 6–7 mm; styles as long as petals 1. *C. henryi*
 - 3b. Petals broadly spatulate, 3–4 mm; styles less than 1/2 as long as petals 2. *C. brevistyla*
- 1b. Ovary semi-inferior, connate with floral cup.
 - 4a. Flowers shortly pedicellate, petals narrowly oblanceolate to spatulate, 1.5–2 mm wide; capsule 12–20 mm, with conspicuously thick pedicel; buds gray-white tomentose 4. *C. multiflora*
 - 4b. Flowers sessile, petals obovate or axelike, 3–4 mm wide; capsules 6–9 mm; buds mostly glabrous, occasionally pubescent (tomentose in *C. rotundifolia*).
 - 5a. Disk scales undivided.
 - 6a. Inflorescences 2–5-flowered 5. *C. pauciflora*
 - 6b. Inflorescences 10 or more-flowered.
 - 7a. Leaf blade obovate, 3.5–5.5 cm, apex rounded; stipules 0.5–0.7 cm 6. *C. alnifolia*
 - 7b. Leaf blade ovate or broadly ovate, 6–10 cm, apex shortly acute; stipules 2–3 cm 7. *C. platypetala*
 - 5b. Disk scales 2-lobed.
 - 8a. Floral cup and ovary stellately pubescent.
 - 9a. Infructescences 8–9 cm, usually with 25–40 capsules, leaf blade with 10–12 lateral veins on each side 12. *C. trabeculosa*
 - 9b. Infructescences 3–6 cm, usually with less than 25 capsules; leaf blade with 6–9 lateral veins on each side.
 - 10a. Styles 5–7 mm, as long as or longer than petals.
 - 11a. Stamens shorter than petals; basal bracts of inflorescences 0.8–1 cm, abaxially pubescent 8. *C. sinensis*
 - 11b. Stamens longer than petals; basal bracts of inflorescences 1–1.3 cm, abaxially glabrous 9. *C. veitchiana*
 - 10b. Styles 1–2.5 mm, shorter than petals.
 - 12a. Leaf blade abaxially pubescent only along nerves; petiole ca. 1 cm; petals 6–7 × 4–5 mm; stamens 4–5 mm; styles 2–2.5 mm 10. *C. yunnanensis*
 - 12b. Leaf blade abaxially densely tomentose; petiole 1.5–2 cm; petals 3–4 × 3–4 mm; stamens ca. 3 mm; styles 1–1.5 mm 11. *C. velutina*
 - 8b. Floral cup and ovary glabrous.
 - 13a. Leaf blade abaxially pubescent, at least along nerves.
 - 14a. Styles 4–5 mm; petals 5–6 mm; peduncle almost glabrous 16. *C. glandulifera*
 - 14b. Styles 1–3 mm; petals 2–3 mm; peduncle pubescent.
 - 15a. Young branches and buds glabrous; capsule globose 15. *C. microcarpa*
 - 15b. Young branches and buds pubescent or tomentose; capsule ovoid.

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- 16a. Leaves circular or oblate; styles 1.2–1.5 mm 13. *C. rotundifolia*
 16b. Leaves obovate; persistent styles 2–3 mm 14. *C. obovata*
 13b. Leaf blade abaxially glabrous or pubescent only along nerves when young.
 17a. Peduncle 5–7 cm, flowers and capsules pedicellate, laxly arranged 20. *C. yui*
 17b. Peduncle 2–4 cm, flowers and capsules sessile, densely arranged.
 18a. Petals oblanceolate, 1.5–1.7 mm wide; leaf blade abaxially pale gray 17. *C. glaucescens*
 18b. Petals obovate, 2–3 mm wide; leaf blade abaxially green.
 19a. Petals, stamens and styles 3 mm or more; leaf blade abaxially pubescent
 along nerves, apex acute 18. *C. willmotiae*
 19b. Petals, stamens and styles 1.5–2 mm; leaf blade abaxially glabrous, apex
 emarginate or truncate, 19. *C. omeiensis*

1. *Corylopsis henryi* Hemsley, Hooker's Icon. 29: Pl.: t. 2819. 1906.

鄂西蜡瓣花 e xi la ban hua

Shrubs; branchlets gray-brown, glabrous, minutely lenticellate; terminal buds ellipsoid, 0.8–1 cm, glabrous. Stipules oblong, 18–20 mm, glabrous; petiole 8–10 mm, puberulent; leaf blade obovate-rounded, 6–8 × 4–6 cm, abaxially pale gray-brown, sparsely pubescent or glabrescent along veins, adaxially drying green, glabrous, base cordate, asymmetrical, margin sinuate-serrate, teeth mucronate, apex acute, lateral veins 8–10 on each side, the 2 lowermost with obscure tertiary veins at 90° to lateral veins. Inflorescence 3–4.5 cm, 5–6 cm in fruit; peduncle ca. 1.5 cm, pubescent, with 1 or 2 basal leaves; floral bract ovate, ca. 7 mm, abaxially glabrous; bracteoles oblong, 4–5 mm, abaxially glabrous. Floral cup glabrous. Sepals ovate, apex rounded. Petals narrowly spatulate, 6–7 × 3–3.5 mm. Stamens 5–7 mm; disk scales 2-lobed, apex acute, shorter than sepals. Ovary superior, glabrous; styles 5–6 mm, somewhat longer than stamens. Capsules 6–7 mm. Seeds 4–5 mm. Fl. Apr–Jun, fr. Jul–Sep.

- Forests; ca. 1000 m. W Hubei, E Sichuan.

2. *Corylopsis brevistyla* H. T. Chang, Sunyatsenia 7: 71. 1948.

短柱蜡瓣花 duan zhu la ban hua

Shrubs; young branches glabrous, with minute, white lenticels; buds narrowly ovoid, 8–10 mm, glabrous, scales ovate. Stipules narrowly oblong, 13–15 × 3–4 mm, abaxially villous, adaxially glabrous; petiole 5–10 mm, glabrous; leaf blade obovate or obovate-rounded, 3–7 × 2.5–5 cm, abaxially drying grayish, initially villous along veins, glabrescent, adaxially drying dark green, base almost symmetrical, cordate, margin serrate above middle of leaf, teeth mucronate, apex obtuse and mucronate or acute; lateral veins 6–8 on each side. Inflorescence 1.5–2 cm, 14–18-flowered, peduncle ca. 1 cm, tomentose, with 1 or 2 basal leaves; involucre bracts 4–5, scalelike, ovate-rounded, 1–1.2 cm, abaxially pubescent with yellow-brown hairs, adaxially villous; floral bract ovate, 3–4 mm, pubescent; bracteoles oblong, 1.2–1.5 mm. Floral cup glabrous. Sepals nearly rounded, equal to floral cup. Petals broadly spatulate, 3–4 × 2–3 mm, base clawed. Stamens 2.5–3 mm; disk scales 2-parted, apex obtuse, somewhat shorter than sepals. Ovary superior, glabrous; styles 1–1.5 mm. Capsules 5–6 mm, glabrous; persistent styles ca. 1 mm. Seeds 3–4 mm. Fl. Apr–Jun, fr. Jul–Aug.

- Forests; ca. 1200 m. NW and NE Yunnan.

3. *Corylopsis stelligera* Guillaumin, Notul. Syst. (Paris) 3: 25. 1914.

星毛蜡瓣花 xing mao la ban hua

Shrubs or small trees; young branches gray-brown, pubescent, lenticellate; terminal buds ellipsoid, 1.5–2 cm, glabrous. Petiole ca. 10 mm, stellately pubescent; leaf blade obovate or obovate-elliptic, 5–12 × 3–7 cm, abaxially stellately pubescent at least along veins, adaxially puberulent along veins, base cordate, asymmetrical, margin serrate above middle of leaf, teeth mucronate, apex acute; lateral veins 7 or 8 on each side, the 2 lowermost with tertiary veins. Inflorescence 3–4 cm, 5–6 cm in fruit; peduncle ca. 1 cm, with 2 or 3 basal leaves; basal bracts of inflorescences (stipules of reduced leaves) 5 or 6, scalelike, ovate, 1–1.3 cm, abaxially glabrous, adaxially villous; floral bracts ovate, 3–4 mm, tomentose on both surfaces; bracteoles oblong-lanceolate, 1.5–2 mm, pubescent. Floral cup stellately pubescent. Sepals ovate, glabrous, apex rounded. Petals spatulate, ca. 5 mm. Stamens ca. 6 mm, exerted from corolla; disk scales acute, 2-lobed, subequal to sepals. Ovary superior, stellately pubescent; styles as long as stamens. Capsules 6–7 mm, stellately pubescent, with persistent styles. Seeds ovoid-ellipsoid, 3–4 mm. Fl. Apr–Jun, fr. Jun–Aug.

- Forests; ca. 1300 m. SW China.

4. *Corylopsis multiflora* Hance, Ann. Sci. Nat. Bot., sér. 4, 15: 224. 1861.

瑞木 rui mu

Shrubs or small trees, sometimes semievergreen; young branches tomentose or glabrous; older growth gray-brown, glabrescent, minutely lenticellate; buds gray-white tomentose. Stipules oblong, 18–20 mm, petiole 10–15 mm; leaf blade ovate, obovate, obovate-elliptic, or almost circular, 5–15 × 4–8 cm, abaxially glabrous or stellately pubescent at least along veins, base almost symmetrical, cordate, margin serrate, teeth mucronate, apex acute or acuminate; lateral veins 7–9 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence 2–4 cm, 5–6 cm in fruit; peduncle and general bracts glabrous or pubescent, with 1–5 basal leaves. Pedicel 1–2 mm. Floral cup glabrous. Sepals ovate, 1–1.5 mm. Petals oblanceolate or narrowly so, 3–5 × 1–2 mm. Stamens 4–7 mm; disk scales not lobed, apex truncate, subequal to sepals. Ovary semi-inferior, glabrous; styles slightly shorter than stamens.

- Forests, slopes, roadsides; 1000–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Taiwan, Yunnan.

- 1a. Young branches tomentose; leaves abaxially stellately pubescent; peduncles pubescent; stamens 6–7 mm 4a. var. *multiflora*
 1b. Young branches, leaves and peduncles glabrous; stamens 4 mm 4b. var. *nivea*

4a. *Corylopsis multiflora* var. *multiflora*

瑞木(原变种) rui mu (yuan bian zhong)

Corylopsis cavaleriei H. Léveillé; *C. cordata* Merrill ex H. L. Li; *C. multiflora* var. *cordata* (Merrill ex H. L. Li) H. T. Chang; *C. multiflora* var. *parvifolia* H. T. Chang; *C. stenopetala* Hayata; *C. wilsonii* Hemsley.

Young branches tomentose. Leaf blade obovate, obovate-elliptic, or almost circular, 7–15 × 4–8 cm, abaxially drying gray-white, stellately pubescent at least along veins, adaxially pubescent along veins. Peduncle pubescent; general bracts 1.5–2 cm, abaxially pubescent with gray-white hairs; bracts ovate, 6–7 mm, pubescent; bracteole 1, oblong, ca. 5 mm, pubescent. Petals oblanceolate, 4–5 × 1.5–2 mm. Stamens 6–7 mm, exerted from corolla. Capsules sessile, hard woody, 12–20 × 8–14 mm; pericarp thick, glabrous. Seeds 8–10 mm. Fl. Apr–Jun, fr. Jun–Sep.

• Forests; ca. 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Taiwan, Yunnan.

4b. *Corylopsis multiflora* var. *nivea* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1960(1): 36. 1960.

白背瑞木 bai bei rui mu

Young branches glabrous. Leaf blade ovate, 5–11 × 4–6.5 cm, abaxially glaucous, glabrous. Peduncle and basal bracts of inflorescences abaxially glabrous; floral bract and bracteoles sparsely pubescent. Petals narrowly oblanceolate, ca. 3 × 1–1.5 mm. Stamens 3–4 mm. Capsules not seen. Fl. May.

• Slopes, roadsides; ca. 1000 m. N Fujian (Chong'an Xian).

5. *Corylopsis pauciflora* Siebold & Zuccarini, Fl. Jap. 1: 48. 1835.

少花瑞木 shao hua la ban hua

Corylopsis matsudae Kanehira & Sasaki.

Shrubs; young branches and terminal buds glabrous. Petiole 5–10 mm, slender, pubescent; leaf blade ovate-elliptic or broadly ovate, 3–6.5 × 2–3.5 cm, abaxially villous along lateral veins, adaxially glabrous, base somewhat asymmetrical, rounded or subcordate, margin serrate above middle of leaf, teeth mucronate, apex acute; lateral veins 6–8 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence 1–2 cm, 2–5-flowered; peduncle short, glabrous; general bracts ovate-rounded, 0.8–1 cm, abaxially glabrous; floral bract broadly ovate, 7–8 mm, glabrous; bracteoles somewhat shorter than bract. Floral cup glabrous. Sepals triangular, glabrous, apex obtuse. Petals broadly obovate, 6–7 mm. Stamens 5–6 mm; disk scales not lobed, apex truncate. Ovary glabrous; styles 5–6 mm. Capsule 6–8 mm, glabrous. Fl. May–Jul, fr. Jul–Sep.

Slopes and forests; 200–300 m. Taiwan [Japan].

6. *Corylopsis alnifolia* (H. Léveillé) C. K. Schneider, Repert. Spec. Nov. Regni Veg. 12: 379. 1913.

桤叶蜡瓣花 qi ye la ban hua

Berchemia alnifolia H. Léveillé, Repert. Spec. Nov. Regni Veg. 10: 433. 1912.

Shrubs, to 2 m tall; young branches dark gray, glabrous, older growth lenticellate; buds narrowly ovoid-globose, glabrous. Stipules oblong-ovate, 5–7 mm, glabrous; petiole 10–15 mm, glabrous; leaf blade obovate-rounded or almost circular, 3.5–5.5 × 3–5 cm, thinly leathery, abaxially pubescent along veins, adaxially glabrous, base asymmetrical, cordate, margin serrate above middle of leaf, teeth mucronate, apex rounded and mucronate; lateral veins 7 or 8 on each side, the 2 lowermost with faint tertiary veins. Inflorescence 3–4 cm, 10–12-flowered; peduncle 1.2–1.5 cm, glabrous; basal bracts of inflorescences and floral bracts caducous. Floral cup 1 mm, glabrous. Sepals broadly ovate, as long as floral cup, glabrous. Petals and stamens not seen. Disk scales shorter than sepals, not lobed, apex obtuse or submarginate. Ovary adnate to floral cup, glabrous; styles 2–3 mm. Capsules 6–7 mm, glabrous. Fl. May–Jul, fr. Jul–Sep.

• Forests and roadsides; 1000–1200 m. Guizhou.

7. *Corylopsis platypetala* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 426. 1913.

阔蜡瓣花 kuo la ban hua

Corylopsis platypetala var. *levis* Rehder & E. H. Wilson.

Shrubs, to 2.5 m tall; young branches sometimes glandular pubescent, older growth gray-brown, glabrescent, lenticellate; buds glabrous. Stipules oblong or oblong-lanceolate, 20–30 mm, apex acute, abaxially glabrous, adaxially villous; petiole 12–15 mm, sometimes glandular pubescent; leaf blade ovate or broadly ovate, 7–10 × 4–7 cm, villous on both surfaces, glabrescent, base symmetrical or asymmetrical, cordate, margin serrate, teeth mucronate, apex short acute; lateral veins 6–10 on each side, the 2 lowermost with tertiary veins. Inflorescence 2–2.5 cm, 8–20-flowered; peduncle 1.5–2 cm, subglabrous; basal bracts of inflorescences caducous; floral bracts oblong, 4–5 mm, sparsely pubescent; bracteoles caducous. Floral cup glabrous. Sepals ovate, glabrous, apex obtuse. Petals axelike, 3–4 × ca. 4 mm, base shortly clawed. Stamens somewhat shorter than petals; disk scales not lobed, shorter than sepals. Ovary semi-inferior, glabrous; styles shorter than stamens. Capsules 7–9 mm, glabrous. Seeds 4–5 mm. Fl. Apr–Jul, fr. Jul–Sep.

• Montane forests; 1300–2600 m. Anhui, Hubei, Sichuan.

8. *Corylopsis sinensis* Hemsley, Gard. Chron., ser. 3, 39: 18. 1906.

蜡瓣花 la ban hua

Corylopsis sinensis var. *parvifolia* H. T. Chang; *C. spicata* Hemsley.

Shrubs; young branches and buds pubescent or glabrous. Stipules narrowly oblong, ca. 20 mm, sparsely pubescent; petiole 5–10 mm, stellately tomentose; leaf blade obovate, obovate-

rounded, broadly ovate or oblong-obovate, 3–9 × 2–6 cm, abaxially gray-brown stellately pubescent to glabrous, adaxially glabrous or pubescent along veins, base asymmetrical, cordate or subtruncate, margin serrate, teeth mucronate, apex obtuse, acute, or acuminate; lateral veins 7–9 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence 3–4 cm, 3–6 cm in fruit; peduncle 1.2–1.5 cm, pubescent; basal bracts of inflorescences ovate-rounded, 0.8–1 cm, abaxially pubescent, adaxially villous; floral bracts ovate, 4–5 mm, pubescent; bracteoles oblong, 2–3 mm. Floral cup stellately pubescent. Sepals ovate, glabrous, apex subobtusate. Petals spatulate, 5–6 × 3–4 mm. Stamens 4–5 mm; disk scales 2-lobed, apex acute, nearly equal to sepals. Ovary stellately pubescent; styles 6–7 mm, base pubescent. Capsules 10–14 × 7–9 mm, stellately pubescent. Seeds 4–5 mm.

• Forests, mountains; 1000–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.

- 1a. Young branches and buds pubescent; leaf blade obovate or obovate-rounded, abaxially gray-brown stellately pubescent 8a. var. *sinensis*
 1b. Young branches and buds glabrous; leaf blade broadly ovate or oblong-obovate, abaxially glabrous or pubescent only along veins 8b. var. *calvescens*

8a. *Corylopsis sinensis* var. *sinensis*

蜡瓣花(原变种) la ban hua (yuan bian zhong)

Young branches and buds pubescent. Leaf blade obovate or obovate-rounded, abaxially gray-brown stellately pubescent, adaxially glabrous or pubescent only along veins, base asymmetrical, cordate, apex subacute or obtuse. Fl. May–Jul, fr. Jul–Sep.

• Forests, mountains; 1000–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.

8b. *Corylopsis sinensis* var. *calvescens* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 424. 1913.

秃蜡瓣花 tu la ban hua

Young branches and buds glabrous. Leaf blade broadly ovate or oblong-obovate, abaxially glabrous or pubescent only along veins, adaxially glabrous, base asymmetrical, cordate or subtruncate, apex acute or acuminate. Fl. Apr–Jul, fr. Jul–Sep.

• Mountains; 1000–1500 m. Guangdong, Guangxi, NE Guizhou, Hunan, Jiangxi, Sichuan.

9. *Corylopsis veitchiana* Bean, Bot. Mag. 136: t. 8349. 1910.

红药蜡瓣花 hong yao la ban hua

Corylopsis sinensis Hemsley f. *veitchiana* (Bean) B. D. Morley & J. M. Chao.

Shrubs; young branches glabrous, older growth dark brown, lenticellate; buds ellipsoid, pubescent. Stipules oblong-lanceolate, 22–25 mm; petiole 5–8 mm, glabrous; leaf blade obovate or elliptic, 5–10 × 3–6 cm, abaxially grayish, glabrous or pubescent along veins, adaxially glabrous, base asymmetri-

cal, cordate, margin serrate, teeth mucronate, apex acute; lateral veins 6–8 on each side, the 2 lowermost with tertiary veins. Inflorescence 3–4 cm, 5–6 cm in fruit; peduncle 1–1.2 cm, pubescent, with 1 or 2 basal leaves; basal bracts of inflorescences 2–4, ovate-rounded, 1–1.3 cm, abaxially pubescent; floral bracts ovate, 5–6 mm, tomentose; bracteoles oblong, pubescent. Floral cup stellately pubescent. Sepals ovate, pubescent, ciliate, apex rounded. Petals spatulate, 5–6 × 3–4 mm. Stamens slightly exerted from corolla; anthers red-brown; disk scales 2-lobed, apex acute, slightly longer than floral cup. Ovary adnate to floral cup, stellately tomentose; styles 5–6 mm. Capsules 7–8 mm, stellately pubescent. Seeds 4–5 mm. Fl. Apr–Jun, fr. Jun–Aug.

• Forests; ca. 1200 m. Anhui, Hubei, E Sichuan.

10. *Corylopsis yunnanensis* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 226. 1912.

滇蜡瓣花 dian la ban hua

Shrubs, to 3 m tall; young branches drying grayish, tomentose, older growth dark brown, glabrescent, lenticellate; buds oblong, glabrous. Stipules oblong, glabrous; petiole 10–12 mm, pubescent; leaf blade obovate-rounded, 5–8 × 3–6 cm, abaxially gray, stellately pubescent at least along veins, adaxially drying dark green, glabrescent, base asymmetrical, cordate, margin serrate, teeth short mucronate, apex rounded with a deltoid mucro; lateral veins 8 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence 1.5–2.5 cm, 3.5–4.5 cm in fruit; peduncle 1–1.2 cm, brown tomentose, with 2 basal leaves; basal bracts of inflorescences ovate-rounded, 1–1.8 cm, abaxially glabrous; floral bracts ovate-rounded, ca. 6 mm, pubescent; bracteoles lanceolate, 3–4 mm, pubescent. Floral cup stellately pubescent. Sepals triangular-ovate, tomentose, apex subacute. Petals spatulate, 6–7 × ca. 5 mm. Stamens 4–5 mm; disk scales 2-lobed, apex truncate or obtuse, shorter than floral cup. Ovary stellately pubescent; styles 2–2.5 mm, base pubescent. Capsules 6–7 mm, stellately pubescent; persistent styles 1.8–2 mm, apex somewhat curved. Seeds 4–5 mm. Fl. Apr–Jun, fr. Jun–Aug.

• Forests; ca. 1500 m. NW Yunnan (Dali Xian).

11. *Corylopsis velutina* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 130. 1925.

绒毛蜡瓣花 rong mao la ban hua

Shrubs, to 3 m tall; young branches tomentose, glabrescent, older growth gray-brown, white lenticellate; buds elliptic, glabrous. Stipules oblong, 15–20 mm, apex rounded, abaxially pubescent, adaxially villous; petiole 15–20 mm, pubescent; leaf blade ovate-rounded or elliptic, 5–9 × 3–5.5 cm, abaxially stellately pubescent with brown hairs, villous along veins, adaxially drying pale green, base asymmetrical, cordate, margin serrate, teeth short mucronate, apex subacute; lateral veins 8 or 9 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence 3–4 cm, 4–6 cm in fruit; peduncle 0.8–1 cm, densely tomentose, with 2 or 3 basal leaves; basal bracts of inflorescences rounded, 1–1.2 cm, pubescent; floral bracts tomentose; bracteoles lanceolate, tomentose. Floral cup pubescent. Sepals ovate, 0.8–1 mm, glabrous or ciliate. Petals spatulate, 3–

4 × 3–4 mm. Stamens 2–3 mm; disk scales linear, 2-lobed. Ovary tomentose; styles 1.2–1.5 mm. Capsules 6–8 mm, tomentose; persistent styles very short. Seeds 4–5 mm. Fl. Apr–Jun, fr. Jun–Aug.

- Montane forests; 1000–1200 m. SW Sichuan.

12. *Corylopsis trabeculosa* He & Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 192. 1948.

球江蜡瓣花 *qiu jiang la ban hua*

Shrubs or small trees, 2.5–5 m high. Young branches and petioles densely villous and glandular pubescent; buds ovoid-conical, pale green, borne at apex of short shoots. Leaf blade with 10–12 lateral veins on each side. Inflorescence 3–8 cm long, densely 20–40-flowered; rachis with dense yellow silky hairs; basal bracts of inflorescences involucrelike at anthesis, usually 4, bright yellow, slightly patent, broadly elliptic or oblong, 2–2.8 × 1.2–1.5 cm, base attenuate, margin entire, apex slightly obtuse or acute, membranous, both surfaces and margin yellow sericeous, glabrescent; floral bracts yellow, oblong or ovate, obtuse or acute at apex, sometimes 3-lobed, the lower lobe 14–16 × 8–10 mm, sericeous on both sides, the upper lobes shorter and smaller; bracteoles lanceolate or linear, 4–6 × 1–1.5 mm, sericeous, apex acuminate. Floral cup densely sericeous. Sepals unequal in size, triangular or lanceolate, 0.5–1.5 mm; petals oblong-spatulate or ovate-spatulate, obviously unequal in size, 4–8 × 2.5–4.5 mm, margin entire or irregularly undulate, apex obtuse. Stamens 5, anthers yellow, ovoid, 0.5–0.8 mm long, filaments yellow-green, filiform, 1.8–2.2 mm long, inflated at base; disk scales 5, red, nearly 2-parted to base, lobes 10, 0.5–0.6 mm long, club-shaped, apex obtuse. Ovary ovoid, densely sericeous; style 1.5–2 mm long, stigmas green, 2-parted to near base, upper part divergent, slightly curved. Infructescences 8–9 cm, usually with 25–40 capsules. Fl. Jan–Mar, fr. May–Sep.

- Valleys, slopes, thickets, evergreen broad-leaved forests; 1300–2000 m. NW Yunnan (Gongshan Xian).

The leaves and fruits of this species are imperfectly known.

13. *Corylopsis rotundifolia* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1960(1): 37. 1960.

圆叶蜡瓣花 *yuan ye la ban hua*

Shrubs, 2–3 m tall; young branches tomentose with yellow-brown hairs, older growth drying brown, glabrescent, minutely lenticellate; buds narrowly ovoid, tomentose. Stipules oblong, 8–13 × 4–5 mm, pubescent with yellow-brown hairs on both surfaces; petiole 7–12 mm, tomentose; leaf blades rounded or subrounded, 4–8 cm in diam., membranous, abaxially sparsely pubescent, villous along veins, adaxially drying green, pubescent along veins, base subsymmetrical, cordate, margin serrate, teeth mucronate, ca. 1 mm, apex rounded and mucronate; lateral veins 6–9 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence terminal on shoots, to 4.5 cm in fruit; peduncle ca. 1.5 cm, tomentose, with 2 or 3 basal leaves; basal bracts of inflorescences 4–6, ovate-rounded, 1.2–1.5 × 1–1.2 cm, brown tomentose on both surfaces; floral bracts ovate, 3–4 mm, pubescent; bracteoles oblong, 2–3 mm, pubescent. Floral cup 1.2–1.5 mm, glabrous. Sepals ovate-rounded, 0.8–1

mm, apex rounded. Petals broadly obovate, 2–3 × 2–2.5 mm, base shortly clawed. Stamens 1.5–2 mm; disk scales 2-lobed, shorter than sepals, apex obtuse. Ovary glabrous; styles 1.2–1.5 mm; stigmas slightly expanded. Capsules 10–17, 5–6 mm in diam. Seeds 3–3.5 mm. Fl. Mar–May, fr. Jun–Aug.

- Montane forests; ca. 1200 m. Chongqing (Nanchuan Xian), N Guizhou (Yinjiang Xian).

14. *Corylopsis obovata* H. T. Chang, Sunyatsenia 7: 72. 1948.

黔蜡瓣花 *qian la ban hua*

Shrubs; young branches stellately pubescent with brown hairs, older growth glabrescent; buds narrowly ovoid, gray pubescent. Stipules oblong-lanceolate, 10–12 mm, abaxially gray pubescent, adaxially villous; petiole 10–15 mm, pubescent; leaf blades obovate or obovate-rounded, 4–6 × 3.5–4 cm, membranous, abaxially stellately pubescent with brown hairs, villous along veins, adaxially drying dark green, glabrous, base obtuse or subrounded, margin serrulate above middle of leaf, apex rounded or truncate and mucronate; lateral veins 7 or 8 on each side, the 2 lowermost with obscure tertiary veins. Flowers not seen. Infructescence terminal on shoots, 4–5 cm; fruiting peduncle 1.8–2 cm, villous, with 1–3 basal leaves. Capsules 15–20, densely arranged, 6–7 mm, glabrous; persistent styles 2–3 mm. Fr. Aug.

- Forests; 1000–1200 m. Chongqing (Youyang Xian), E Guizhou.

15. *Corylopsis microcarpa* H. T. Chang, Acta Sci. Nat. Univ. Sunyatsen. 1960(1): 38. 1960.

小果蜡瓣花 *xiao guo la ban hua*

Shrubs, to 4 m tall; young branches slender, glabrous, older growth drying dark brown, minutely lenticellate; buds ovoid-globose, glabrous. Stipules narrowly rounded, 15–17 mm, adaxially densely pubescent, base abaxially villous; petiole 5–8 mm, slender, glabrescent; leaf blade obovate or obovate-rounded, 3–7 × 2–4 cm, membranous, abaxially stellately pubescent, villous along veins, adaxially drying dark green, glabrescent, base slightly asymmetrical, subcordate or rounded, margin serrate above middle of leaf, teeth minutely mucronate, apex acute; lateral veins 8–10 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence 4–4.5 cm; peduncle pubescent, with 1 or 2 basal leaves; floral bracts ovate, 1.8–2 mm, adaxially tomentose. Flowers subsessile. Floral cup 1.8–2 mm, glabrous. Sepals 0.8–1 mm. Petals obovate, 2–3 mm. Stamens 1.5–2 mm; staminodes 2-lobed. Ovary glabrous; styles less than 1 mm. Capsules minute, 4–5 mm, glabrous. Seeds 2–3 mm. Fl. Mar–May, fr. Jun–Aug.

- Mountains; 800–1400 m. S Gansu (Wen Xian), N Sichuan (Songpan Xian).

16. *Corylopsis glandulifera* Hemsley, Hooker's Icon. Pl. 29: t. 2818. 1906.

腺蜡瓣花 *xian la ban hua*

Corylopsis glandulifera var. *hypoglauca* (Cheng) H. T. Chang; *C. hypoglauca* Cheng; *C. hypoglauca* var. *glaucescens* Cheng; *C. sinensis* Hemsley var. *glandulifera* (Hemsley) Reher & E. H. Wilson; *C. willmottiae* Rehder & E. H. Wilson var. *chekiangensis* Cheng.

Shrubs, to 3 m tall; young branches glabrous, older growth drying gray-brown, lenticellate; buds narrowly ovoid, glabrous. Stipules narrowly oblong, 12–15 mm, glabrous; petiole 6–10 mm, pubescent; leaf blade obovate or obovate-rounded, 5–8 × 3.5–5.5 cm, abaxially sometimes gray-white, stellately pubescent, adaxially glabrous, base asymmetrical, subcordate or subrounded, margin serrate above middle of leaf, apex subacute; lateral veins 6–8 on each side, the 2 lowermost with tertiary veins. Inflorescence terminal on shoots, 4–6 cm in fruit; peduncle 0.8–1.3 cm, glabrous or pubescent at flower bases, with 1 or 2 basal leaves; basal bracts of inflorescences subrounded, 0.8–1 cm, abaxially glabrous, adaxially villous; floral bracts ovate-rounded, 3–4 mm, sparsely pubescent; bracteoles oblong, 3–4 mm, sparsely pubescent. Floral cup glabrous. Sepals ovate, glabrous, apex subobtusate. Petals spatulate, 5–6 × 3–4 mm. Stamens 4–5 mm; disk scales 2-parted, equal to floral cup, apex acute. Ovary glabrous; styles as long as petals. Capsules 6–8 mm, glabrous. Seeds 3–4 mm. Fl. Mar–May, fr. Jun–Aug.

- Slopes, roadsides; ca. 1300 m. Anhui, Jiangxi, Zhejiang.

17. *Corylopsis glaucescens* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 130. 1925.

怒江蜡瓣花 nu jiang la ban hua

Corylopsis polyneura H. L. Li.

Shrubs or small trees; young branches glabrous, older growth drying gray-brown, minutely lenticellate; buds narrowly ovoid, 1–1.5 cm, glabrous. Petiole 10–20 mm, glabrous; leaf blade ovate-rounded or obovate-rounded, 5–12 × 4–8 cm, abaxially drying gray-white, glabrescent, adaxially drying green, sparsely villous along veins, base asymmetrical, cordate, margin serrate, teeth mucronate, apex acute; lateral veins 8 or 9 on each side, the 2 lowermost with tertiary veins. Inflorescence terminal on shoots, 4–5 cm, 5–7 cm in fruit; peduncle 1–2 cm, with 1 or 2 basal leaves. Floral cup glabrous. Sepals shorter than floral cup, apex rounded. Petals oblanceolate, 3–4 × 1.5–1.7 mm. Disk scales 2-lobed, apex obtuse. Ovary glabrous; styles 2–3 mm. Capsules 6–7 mm, glabrous. Seeds narrowly ovoid, 4–5 mm. Fl. Apr–Jun, fr. Jun–Aug.

- Forests; 1700–3000 m. NW Yunnan.

18. *Corylopsis willmottiae* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 425. 1913.

四川蜡瓣花 si chuan la ban hua

Shrubs or small trees, to 5 m tall; young branches slender, glabrous, older growth drying gray-brown, minutely white lenticellate; buds narrowly ovoid, glabrous. Stipules purple, narrowly oblong, 12–20 mm; petiole 10–15 mm; glabrous; leaf blade obovate or broadly so, 4–9 × 2–6 cm, abaxially glabrescent, adaxially glabrous, base asymmetrical, subcordate or rounded, margin serrate, teeth obscurely mucronate, apex short acute; lateral veins 7–9 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence terminal on shoots, 4–5 cm in fruit, 12–20-flowered; peduncle 1–2 cm, tomentose, with 1–3 basal leaves, basal bracts of inflorescences ovate-rounded, 1–1.5 cm, abaxially glabrous; floral bracts 6–8 × 3–4 mm; bracteoles ovate, 2–3 × 1.5–2 mm, pubescent on both surfaces. Floral cup glabrous. Sepals ovate, 1.2–1.5 mm, glabrous, apex rounded. Petals broadly obovate, 3–4 × 2.5–3 mm, base shortly

clawed. Stamens 2.5–3 mm; disk scales 2-lobed, apex acute. Ovary glabrous; styles 3–4 mm. Capsules 7–8 mm, more than 1/2 enclosed in persistent floral cup, persistent styles obliquely patent or slightly curved downward. Seeds ca. 4 mm. Fl. Mar–Jun, fr. Jun–Aug.

- Forests; ca. 1200 m. W Sichuan.

19. *Corylopsis omeiensis* X. J. Yang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser., 12: 133. 1947.

峨眉蜡瓣花 e mei la ban hua

Shrubs, to 3 m tall; young branches slender, glabrous, older growth drying dark brown, sparsely minutely lenticellate; buds narrowly ovoid, ca. 1 cm, glabrous. Leaves glabrous; stipules oblong-lanceolate, 12–17 mm, membranous; petiole 10–18 mm, glabrous; leaf blade obovate-rounded or obovate-elliptic, 4–8 × 2.5–5.5 cm, membranous, abaxially gray-white, glabrous, adaxially drying green, base asymmetrical, cordate, margin entire or serrate above middle of leaf, teeth obscurely mucronate, apex obcordate or truncate; lateral veins 6 or 7 on each side, the 2 lowermost with obscure tertiary veins. Inflorescence terminal on shoots, 12–16-flowered; peduncle 1–1.5 cm, glabrous, with 2 basal leaves, basal bracts of inflorescences elliptic, 1–1.2 × 0.6–0.7 cm, abaxially glabrous, adaxially villous; floral bracts ovate-rounded, 2–3 mm, glabrous; bracteoles 1.2–1.5 mm, glabrous. Floral cup less than 1 mm, glabrous. Sepals shorter than floral cup, apex rounded. Petals spatulate, ca. 2 × 1.5 mm, base very shortly clawed. Stamens 1.5–2 mm; disk scales 2-lobed, apex obtuse or truncate. Ovary glabrous; styles 1.2–1.5 mm. Capsules 5–6 mm. Seeds 2.5–3 mm. Fl. Mar–Jun, fr. Jun–Aug.

- Montane forests; ca. 1500 m. SW Guizhou (Pan Xian), C Sichuan (Emei Shan).

20. *Corylopsis yui* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 193. 1948.

长穗蜡瓣花 chang sui la ban hua

Shrubs, 3–5 m tall; young branches pubescent with gray-brown hairs, older growth drying dark brown, lenticellate; buds narrowly ovoid, 1–1.2 cm, gray pubescent. Stipules narrowly oblong, 16–18 × 3–4 mm, abaxially gray pubescent, adaxially villous; petiole 8–17 mm, pubescent; leaf blade obovate or obovate-rounded, 7–13 × 4–10 cm, membranous, abaxially pubescent, adaxially drying green, glabrous, base asymmetrical, subcordate or rounded, margin serrate, teeth distinctly mucronate, apex acute; lateral veins 8–11 on each side, the 2 lowermost with tertiary veins. Inflorescence terminal on shoots, 9–12 cm in fruit, 11–17-flowered; peduncle 1–1.5 cm, villous, with 1 or 2 basal leaves, basal bracts of inflorescences 4 or 5, ovate, ca. 1.2 cm, abaxially pubescent, adaxially villous; floral bracts ovate, 4–5 mm, tomentose; bracteoles lanceolate, tomentose. Flowers pedicellate. Floral cup 1.2–1.5 mm, glabrous. Sepals ovate-rounded, 1.5–2 mm, glabrous. Petals and stamens not seen. Disk scales 2-lobed, 0.8–1 mm, apex acute. Ovary glabrous; styles 1–1.5 mm. Capsules 9–16, shortly pedicellate, 7–8 mm, glabrous; persistent styles 1.2–1.5 mm. Seeds 3–4 mm. Fl. Mar–Jun, fr. Jun–Aug.

- Forests; 2700–3000 m. NW Yunnan.

17. FORTUNEARIA Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 427. 1913.

牛鼻栓属 niu bi shuan shu

Shrubs or small trees, deciduous; branchlets with 2 prophylls, stellately pubescent. Leaves petiolate; stipules minute, linear, caducous, leaving small scars; leaf blade margin serrate, venation pinnate, 2 basal lateral veins usually with tertiary veins. Plants usually monoecious. Inflorescence racemose, mostly terminal on short lateral branches, pedunculate. Flowers functionally unisexual. Bract and bracteoles densely pubescent; floral cup obconical, pubescent. Male and female flowers similar, anthers slightly larger in male flowers, carpels slightly larger in female flowers. Sepals 5, lanceolate, densely pubescent. Petals 5, minute, scalelike. Stamens 5; filaments very short; anther thecae 2-sporangiate, each dehiscent by 2 valves. Ovary semi-inferior; ovules 1 per locule; styles long, stigmas large, decurrent. Capsules woody, with conspicuous lenticels, dehiscent loculicidally; endocarp thick and hard, usually loose from exocarp. Seeds narrowly ovoid; endosperm scant; embryo straight; cotyledons compressed, base subcordate. $2n = 24^*$.

- One species.

1. *Fortunearia sinensis* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 427. 1913.

牛鼻栓 niu bi shuan

Shrubs or small trees, to 5 m tall; young branches with gray-brown hairs, older growth drying brown or gray-brown, glabrous, sparsely lenticellate; buds minute, naked, stellately pubescent. Petiole 4–10 mm; leaf blade obovate or obovate-elliptic, 7–16 × 4–10 cm, membranous, drying discolorous, abaxially villous, adaxially pubescent along midrib, base rounded or obtuse, margin dentate, apex acute; lateral veins 6–10 on

each side. Inflorescences 4–8 cm; peduncle 1–1.5 cm, tomentose; bracts and bracteoles lanceolate, 1.5–2 mm, stellately pubescent. Pedicel 1–2 mm, stellately pubescent. Floral cup 0.8–1 mm, glabrous; sepals lanceolate, 1.2–1.5 mm. Petals narrowly lanceolate, shorter than sepals. Anthers 0.8–1 mm. Ovary sparsely pubescent; styles 1.5–2.5 mm. Fruiting pedicels 5–10 mm; capsules ovoid-globose, 12–15 mm, glabrous, white lenticellate, apex acute, dehiscent loculicidally by two 2-lobed valves. Seeds 8–10 × 5–6 mm. Fl. Mar–Apr, fr. May–Jun.

- Forests; 800–1000 m. Anhui, Henan, Hubei, Jiangxi, Shaanxi, Sichuan, Zhejiang.

18. SINOWILSONIA Hemsley, Hooker's Icon. Pl. 29: t. 2817. 1906.

山白树属 shan bai shu shu

Shrubs or small trees, deciduous; young branches and leaves abaxially stellately tomentose; buds naked. Leaves petiolate; stipules linear-lanceolate, caducous, leaving small scars; leaf blade membranous or papery, slightly asymmetrical, margin usually serrulate, venation pinnate, 2 basal lateral veins usually with tertiary veins. Plants monoecious (or bisexual). Inflorescence spicate or racemose, terminal, pendent, most parts stellately tomentose; flowers bracteate and bracteolate. Flowers unisexual. Floral cup urceolate, enclosing most of flower. Sepals 5, narrowly spatulate, exerted from floral cup. Petals lacking or present as tiny rudiments. Male flowers: pedicellate; stamens 5, opposite to sepals, filaments very short; anthers ellipsoid, thecae 2-sporangiate, each dehiscent by 2 valves; ovary rudimentary. Female flowers: sessile; staminodes 5; ovary nearly superior but enclosed by floral cup; ovules 1 per locule; styles long, filiform, stigma decurrent, exerted from floral cup. Capsules ovoid-globose, woody, stellately tomentose, dehiscent by 2 valves; endocarp loose from exocarp. Seeds 1 per locule; endosperm fleshy. $2n = 24^*$, 48^* .

- One species.

1. *Sinowilsonia henryi* Hemsley, Hooker's Icon. Pl. 29: t. 2817. 1906.

山白树 shan bai shu

Shrubs or small trees to 8 m tall. Stipules ca. 8 mm; petiole 0.8–1.5 cm; leaf blade 10–18 × 6–10.5 cm, base rounded to shallowly cordate, asymmetrical, margin entire or dentate, apex acute to shortly acuminate, lateral veins 7–9 on each side, abaxially prominent. Male inflorescences 6–8 cm, lacking basal leaves. Female inflorescences 6–8 cm, with 1 or 2 basal leaves; peduncle ca. 3 cm, pendent, 10–20 cm in fruit. Bracts lanceolate, ca. 2 mm; bracteoles linear-lanceolate, ca. 1.5 mm, stellately tomentose. Male flowers: anthers ca. 1 mm. Female flowers: sepals ca. 1.5 mm, stellately tomentose. Ovary stellately tomentose; styles 3–5 mm. Capsules sessile, ca. 10 mm, villous with gray-yellow hairs, apex acute; persistent floral cup 4–5 mm, stellately tomentose with yellow hairs, loose from capsules.

Seeds ca. 8 mm. Fl. Mar–May, fr. Jun–Aug.

- Forests; 800–1500 m. Gansu, Henan, Hubei, Shaanxi, Shanxi, Sichuan.

- 1a. Leaves obovate, rarely elliptic, abaxially pubescent 1a. var. *henryi*
 1b. Leaves obovate-orbicular, abaxially glabrous 1b. var. *glabrescens*

1a. *Sinowilsonia henryi* var. *henryi*

山白树(原变种) shan bai shu (yuan bian zhong)

Corylopsis macrostachya Pampanini.

Leaf blade obovate, rarely elliptic, 10–18 × 6–10 cm, drying discolorous, abaxially pubescent, adaxially sparsely pubescent along veins. Fl. Mar–May, fr. Jun–Aug.

- Forests; 1000–1500 m. Gansu, Henan, Hubei, Shaanxi, Shanxi, Sichuan.

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1b. *Sinowilsonia henryi* var. *glabrescens* H. T. Chang, Fl. Reipubl. Popularis Sin. 35(2): 101. 1979.

秃山白树 tu shan bai shu

Leaf blade obovate-orbicular, ca. 13×10.5 cm, abaxially glabrous. Fl. Mar–May, fr. Jun–Aug.

- Forests; 800–1000 m. S Shanxi (Yuanqu Xian).

HAMAMELIDACEAE