

SABIACEAE

清风藤科 qing feng teng ke

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Trees, shrubs, or woody climbers, deciduous or evergreen. Leaves alternate, simple or odd pinnately compound; stipules absent. Inflorescences axillary or terminal, usually in cymes or panicles, or sometimes solitary axillary flowers. Flowers bisexual or polygamous-dioecious, actinomorphic or zygomorphic, small or minute. Sepals (4 or)5[or 3, 6, or 7], free or united at base, imbricate, equal or unequal. Petals (4 or)5(or 6)[or 7], imbricate, equal or inner 2 much smaller than outer 3. Stamens (4 or)5, opposite petals, attached to petals at base or free, all fertile or outer 3 infertile; anthers 2-celled, with narrow connectives or with thick cupular connectives. Disk cupular or annular, small. Ovary superior, sessile, 2(or 3)-loculed, with 1 or 2 half-anatropous ovules per locule. Fruit a drupe or schizocarp, consisting of 1 or 2 mature carpels, 1(or 2)-loculed, indehiscent. Seed 1; endosperm (if present) reduced to a very thin layer; cotyledons duplicate, radicle curved.

Three genera and ca. 80 species: tropical and E Asia, Central and South America; two genera and 46 species (17 endemic) in China.

Wu Young-fen & Law Yuh-wu. 1985. Sabiaceae. *In*: Law Yuh-wu & Lo Hsien-shui, eds., *Fl. Reipubl. Popularis Sin.* 47(1): 72–132.

This family was recently treated by Kubitzki (*Fam. Gen. Vasc. Pl.* 9: 413–417. 2007).

- 1a. Woody climbers or scandent shrubs; stamens 5, fertile, equal; flowers actinomorphic, solitary or in few flowered axillary cymes or panicles; leaves simple 1. *Sabia*
1b. Trees or shrubs, erect; stamens 2, staminodes 3; flowers zygomorphic, in usually large, many flowered, terminal panicles; leaves compound or simple 2. *Meliosma*

1. *SABIA* Colebrooke, *Trans. Linn. Soc. London* 12: 355. 1819.

清风藤属 qing feng teng shu

Androglossum Champion ex Benthams; *Changi dendron* R. H. Miao.

Woody climbers or scandent shrubs, sometimes suberect, rarely erect, deciduous or evergreen. Branches terete or flexuose, striate, pubescent or glabrous, unarmed (except *S. japonica*); branchlets with bud scales persistent at bases, pubescent or glabrous. Leaves simple, glabrous or slightly pubescent, margins mostly entire or sometimes minutely erose, but never toothed, mostly narrowly cartilaginous and revolute. Flowers bisexual, rarely polygamous, axillary, solitary, or few and arranged in cymes or subumbellate panicles, actinomorphic. Sepals (4 or)5[–7], persistent, imbricate, green, white, yellow, or purple. Petals usually (4 or)5(or 6)[or 7], persistent or not, longer than sepals. Stamens (4 or)5(or 6), all fertile; filaments ± flattened, adherent to bases of petals; anthers introrse or extrorse, upright or inflexed. Carpels 2; styles 2, persistent, connate; ovules 2 per carpel, ± superimposed, half-anatropous. Fruit a schizocarp, with 2 drupelets, usually 1 developed, drupelet laterally compressed; mesocarp white, reddish, or blue, rather thin, fleshy; endocarp crustaceous, with prominent veins forming a reticulate pattern (with faveolate cavities). Seed 1[or 2], subreniform; testa leathery, dotted; embryo with 2 undulate, or strongly folded cotyledons, radicle curved.

About 30 species: S and SE Asia; 17 species (seven endemic) in China.

See Water, A taxonomic revision of the genus *Sabia* (Sabiaceae) (*Blumea* 26: 1–64. 1980).

Sabia cavaleriei H. Léveillé and *Sabia feddei* H. Léveillé (*Repert. Spec. Nov. Regni Veg.* 9: 456. 1911) are both synonyms of *Orixa japonica* Thunberg in the Rutaceae (see *Fl. China* 11).

Sabia edulis H. Léveillé (*Fl. Kouy-Tchéou*, 379. 1914–1915) is a species of *Iodes* Blume in the Icacinaceae (see *Fl. China* 11).

Sabia esquirolii H. Léveillé (*Repert. Spec. Nov. Regni Veg.* 9: 457. 1911) is a synonym of *Gardneria multiflora* Makino in the Loganiaceae (see *Fl. China* 15: 328. 1996).

Key 1 (based on treatment in FRPS)

- 1a. Disk swollen, thickly set, shortly cylindrical, margin annular or undulate, rarely crenate, never distinctly toothed or lobed.
2a. Flowers solitary, rarely 2-paired, never a 2-flowered cyme 1. *S. campanulata*
2b. Flowers 1–5, arranged in a cyme.
3a. Sepals 0.4–1.2 mm, subequal, suborbicular, ovate, or broadly ovate, veins inconspicuous.
4a. Leaf blade glabrous, to 3.5 cm wide; pedicel 8–15 mm; ovary glabrous 2. *S. schumanniana*
4b. Leaf blade pubescent, to 7 cm wide; pedicel 3–5 mm; ovary pubescent, rarely glabrous 3. *S. yunnanensis*

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- 3b. Sepals 2–3 mm, unequal or equal, obovate or oblong, veins conspicuous.
- 5a. Sepals slightly unequal, subobovate, largest one distinctly emarginate at apex, others rounded; petals suborbicular or obovate; leaf blade papery; plants of mainland China 4. *S. emarginata*
- 5b. Sepals equal, oblong, apex rounded; petals oblong or obovate-oblong; leaf blade membranous; plants of Taiwan 5. *S. transarisanensis*
- 1b. Disk not swollen, thin, shallowly cup-shaped, margin irregularly toothed, lobed, or parted to base, never entire.
- 6a. Flowers solitary 6. *S. japonica*
- 6b. Flowers arranged in cymes, or cymes composing a corymb or panicle.
- 7a. Flowers arranged in cymes composing a corymb or panicle.
- 8a. Cymes arranged in corymbs; peduncle very short; petals with red spots 13. *S. fasciculata*
- 8b. Cymes arranged in panicles; peduncle relatively longer; petals without red spots.
- 9a. Panicle 7–25 cm; schizocarps subreniform or suborbicular, 1–1.7 cm in diam.; leaf blade elliptic or oblong-elliptic.
- 10a. Panicle 4–6 cm in diam., yellowish pilose; leaf blade abaxially pubescent, lateral veins 3–5 pairs 14. *S. paniculata*
- 10b. Panicle less than 2 cm in diam., glabrous; leaf blade abaxially glabrous, lateral veins 6 or 7 pairs 15. *S. limoniacea*
- 9b. Panicle 3–5(–7) cm; schizocarps suborbicular, obovoid, or reniform, 5–7(–10) mm in diam.; leaf blade ovate-lanceolate, narrowly oblong, or oblanceolate to lanceolate.
- 11a. Panicle 3–5 cm; schizocarps suborbicular, 5–7 mm in diam.; leaf blade ovate-lanceolate or narrowly oblong, 1–3 cm wide 16. *S. parviflora*
- 11b. Panicle to 7 cm; schizocarps obovoid to oblong-obovoid or pyriform, 7–10 mm in diam.; leaf blade elliptic-oblong to lanceolate, 1.5–8 cm wide 17. *S. lanceolata*
- 7b. Flowers arranged in cymes.
- 12a. Sepals unequal; disk margin parted to near base, lobes fleshy; leaf blade membranous 7. *S. purpurea*
- 12b. Sepals equal; disk margin not parted to near base, lobes not fleshy; leaf blade thinly leathery or papery.
- 13a. Young branches, inflorescences, and young petioles gray-yellowish lanuginous or pubescent, leaf blade pubescent or only pubescent on veins abaxially 12. *S. swinhoei*
- 13b. Young branches, inflorescences, young petioles, and both surfaces of leaf blade glabrous.
- 14a. Leaf blade narrowly oblong-elliptic or oblong.
- 15a. Cyme 3-flowered, peduncle 3–4 cm; branchlet striate; leaf blade 6–10 × 2–4 cm 8. *S. nervosa*
- 15b. Cyme 5–10-flowered, peduncle 0.5–2 cm; branchlet brown; leaf blade 3.5–7 × 1.5–3 cm 9. *S. coriacea*
- 14b. Leaf blade ovate or ovate-lanceolate.
- 16a. Leaves evergreen, blade adaxially black when dried, abaxially pale green; cyme umbelliform; endocarp with distinct midrib 10. *S. discolor*
- 16b. Leaves deciduous, blade adaxially olivaceous when dried, abaxially light green; cyme not umbelliform; endocarp without midrib 11. *S. dielsii*

Key 2 (alternative key)

- 1a. Leaves deciduous.
- 2a. Inflorescence solitary flowers.
- 3a. Leaf blade membranous 1. *S. campanulata*
- 3b. Leaf blade papery.
- 4a. Old branches armed with short spines; flowering Feb–Mar; petals yellowish green; disk margin lobed 6. *S. japonica*
- 4b. Old branches not armed; flowering Mar–Apr; petals green to purple or brown; disk margin swollen or undulate 2. *S. schumanniana*
- 2b. Inflorescence a panicle or cyme.
- 5a. Inflorescence a panicle.
- 6a. Leaf blade abaxially glabrous, to 3.5 cm wide; pedicel 8–15 mm; ovary glabrous 2. *S. schumanniana*
- 6b. Leaf blade abaxially pubescent, to 7 cm wide; pedicel 3–5 mm; ovary pubescent, rarely glabrous 3. *S. yunnanensis*
- 5b. Inflorescence a cyme.
- 7a. Leaf blade membranous.
- 8a. Petiole 2–4 mm, lateral veins of leaf 3 or 4 pairs; flowering in May; cyme 3–12-flowered; disk margin lobed; Yunnan 7. *S. purpurea*
- 8b. Petiole 4–6 mm, lateral veins of leaf 5 or 6 pairs; flowering in Apr; cyme 1- or 2-flowered; disk margin swollen; Taiwan 5. *S. transarisanensis*

- 7b. Leaf blade papery.
- 9a. Cyme 2–6-flowered; disk not swollen, shallowly cup-shaped 11. *S. dielsii*
- 9b. Cyme 3(–30)-flowered; disk swollen, broadly cylindric.
- 10a. Cyme 4–5 cm, 1–20-flowered; sepals triangular-ovate, ca. 0.5 mm, not emarginate; schizocarp obovoid or orbicular 2. *S. schumanniana*
- 10b. Cyme 1.5–1.8 cm, 2- or 3-flowered; sepals subobovate to oblong, 1.5–3 mm, largest ones emarginate; schizocarp reniform 4. *S. emarginata*
- 1b. Leaves evergreen.
- 11a. Leaf blade abaxially pubescent.
- 12a. Leaf blade length : width ratio 1–2 : 1.
- 13a. Petiole 15–30 mm; leaf blade adaxially glabrous; cymes arranged in a panicle 14. *S. paniculata*
- 13b. Petiole 3–5(–10) mm; leaf blade adaxially pubescent; cyme 1–3(–5)-flowered 12. *S. swinhoei*
- 12b. Leaf blade length : width ratio more than 2 : 1.
- 14a. Flowers arranged in a cyme 2–7-flowered 12. *S. swinhoei*
- 14b. Cymes arranged in a corymb or panicle.
- 15a. Cymes arranged in a corymb, glabrous to sparsely tomentulose 13. *S. fasciculata*
- 15b. Cymes arranged in a panicle.
- 16a. Leaf blade 5–9 cm wide, lateral veins 3–5 pairs; panicle 7–25 cm; petals purplish red, ca. 3 mm; schizocarp 10–12 mm in diam. 14. *S. paniculata*
- 16b. Leaf blade 1.5–8 cm wide, lateral veins 6–12 pairs; panicle to 7 cm; petals green to white, 3.5–5.5 mm; schizocarp 7–10 mm in diam. 17. *S. lanceolata*
- 11b. Leaf blade abaxially glabrous.
- 17a. Leaf blade papery.
- 18a. Leaf blade ovate, elliptic-ovate, or elliptic, abaxially pale green, adaxially green, apically acute or obtuse; cymes umbelliform 10. *S. discolor*
- 18b. Leaf blade ovate-lanceolate, narrowly oblong, or oblanceolate to lanceolate, abaxially grayish green, adaxially dark or olivaceous green, apically acuminate or shortly acuminate; cymes arranged in a panicle.
- 19a. Leaf blade ovate-lanceolate or narrowly oblong, 1–3 cm wide; panicle 3–5 cm; schizocarps suborbicular, 5–7 mm in diam., lateral veins to 8 pairs 16. *S. parviflora*
- 19b. Leaf blade elliptic-oblong to lanceolate, 1.5–8 cm wide; panicle to 7 cm; schizocarps obovoid to oblong-obovoid or pyriform, 7–10 mm in diam., lateral veins to 12 pairs 17. *S. lanceolata*
- 17b. Leaf blade leathery.
- 20a. Branchlets green or striate; cymes 2–5-flowered or cymes arranged in a panicle.
- 21a. Branchlets striate; lateral veins of leaf 3–5 pairs; cymes 3(–5)-flowered 8. *S. nervosa*
- 21b. Branchlets green; lateral veins of leaf 6 or 7 pairs; cymes arranged in a panicle 15. *S. limoniacea*
- 20b. Branchlets black or brown; cymes 5–10-flowered or cymes arranged in a corymb or panicle.
- 22a. Cymes 5–10-flowered 9. *S. coriacea*
- 22b. Cymes arranged in a corymb or panicle.
- 23a. Cymes arranged in a corymb; peduncle 1–2 mm; schizocarp red 13. *S. fasciculata*
- 23b. Cymes arranged in a panicle; peduncle 2–6 mm; schizocarp green to blue or red.
- 24a. Leaf blade ovate-lanceolate or narrowly oblong, 1–3 cm wide; panicle 3–5 cm; schizocarps suborbicular, 5–7 mm in diam., lateral veins to 8 pairs 16. *S. parviflora*
- 24b. Leaf blade elliptic-oblong to lanceolate, 1.5–8 cm wide; panicle to 7 cm; schizocarps obovoid to oblong-obovoid or pyriform, 7–10 mm in diam., lateral veins to 12 pairs 17. *S. lanceolata*

1. *Sabia campanulata* Wallich in Roxburgh, Fl. Ind. 2: 311. 1824.

钟花清风藤 zhong hua qing feng teng

Woody climbers, up to 6 m tall, deciduous. Branchlets light green, with brownish spots, striate, glabrous. Bud scales ovoid or broadly ovoid, apices acute, ciliate. Petiole 4–10 mm, pilose; leaf blade abaxially gray, adaxially dark green, lanceolate or narrowly ovate-lanceolate when young, oblong or oblong-ovate when mature, 3.5–8 × (2–)3–4 cm, membranous, abaxially glabrous or pubescent on veins, adaxially puberulent, subglabrous when old, lateral veins 4 or 5 pairs, anastomosing

4–5 mm from margin, reticulate veins sparse, lateral and reticulate veins inconspicuous adaxially, base cuneate or rounded, apex caudate-acuminate or acuminate. Pedicel 1.5–3 mm to 1.5 cm. Flowers solitary, rarely 2-paired, green, yellowish green, or dark purple, 1–1.5 mm in diam. Sepals 5, suborbicular, ca. 0.5 × 2 mm. Petals 5, broadly ovate or suborbicular, 6–9 × 4–7 mm, enlarged to 12 mm at fruiting, 7-veined, apex rounded. Stamens 5, 4–5 mm; filaments flattened; anthers extrorse. Disk margin lobed. Ovary glabrous. Schizocarp broadly obovoid, ca. 7 × 8 mm; endocarp with midrib, faveolate-concave on side, lateral surface concave, shaggy with unarranged strips. Fl. May, fr. Jul.

Humid valley forests, sparse forests, mountain slopes; 500–2800

m. Anhui, Fujian, S Gansu, N Guangdong, Guizhou, Hubei, Hunan, SC Jiangsu, Jiangxi, S Shaanxi, Sichuan, S Xizang, Yunnan, Zhejiang [Bhutan, N India, Nepal].

- 1a. Petals green or yellowish green, persistent, enlarged to 12 mm at fruiting; disk shorter than broad 1a. subsp. *campanulata*
 1b. Petals dark purple, deciduous, 5–6 mm; disk higher than broad 1b. subsp. *ritchiae*

1a. *Sabia campanulata* subsp. *campanulata*

钟花清风藤(原亚种) zhong hua qing feng teng (yuan ya zhong)

Sabia campanulata subsp. *metcalfiana* (L. Chen) Y. F. Wu; *S. metcalfiana* L. Chen.

Pedicel 1.5–3 mm. Petals persistent, green or yellowish green, enlarged to 12 mm at fruiting. Disk shorter than broad.

Sparse forests on mountain slopes; 2200–2800 m. S Xizang, Yunnan [Bhutan, N India, Nepal].

1b. *Sabia campanulata* subsp. *ritchiae* (Rehder & E. H. Wilson) Y. F. Wu, Acta Phytotax. Sin. 20: 426. 1982.

鄂西清风藤 e xi qing feng teng

Sabia ritchiae Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 195. 1914; *S. gaultheriifolia* Stapf ex L. Chen; *S. shensiensis* L. Chen.

Pedicel 1–1.5 cm. Petals deciduous, dark purple, 5–6 mm, not enlarged at fruiting. Disk higher than broad, base broadest, margin annular.

• Humid valley forests, mountain slopes; 500–1200 m. Anhui, Fujian, S Gansu, N Guangdong, Guizhou, Hubei, Hunan, SC Jiangsu, Jiangxi, S Shaanxi, Sichuan, Zhejiang.

2. *Sabia schumanniana* Diels, Bot. Jahrb. Syst. 29: 451. 1900.

四川清风藤 si chuan qing feng teng

Woody climbers, 2–3 m, deciduous. Branchlets of current year yellowish green, striate; second-year branches brown, glabrous. Bud scales ovoid, glabrous, ciliate. Petiole 2–10 mm; leaf blade oblong-ovate, 3–13 × 1.5–3.5 cm, papery, both surfaces glabrous, lateral veins 3–5 pairs, ascending, anastomosing near margin, reticulate veins sparse, base rounded or broadly cuneate, apex acute or acuminate. Cyme or panicle 1–3(–20)-flowered, 4–5 cm; peduncle 2–3 cm. Pedicel 8–15 mm. Sepals 5, triangular-ovate, ca. 0.5 mm. Petals 5, light green or greenish purple to brownish chocolate colored, oblong or broadly obovate, 4–5 mm, 7–9-veined. Stamens 5, 3–5 mm; filaments flattened; anthers ovoid, introrse. Disk swollen, cylindrical, margin undulate. Ovary glabrous; style ca. 4 mm. Schizocarp obovoid or suborbicular, ca. 6 × 7 mm, glabrous; endocarp with midrib narrowly winged, with 2 adjacent reticulate lines, both surfaces concave. Fl. Mar–Apr, fr. Jun–Aug.

• Forests, mountain slopes, valleys, streamsides; 600–2600 m. Chongqing, N and W Guizhou, Henan, W Hubei, Shaanxi, E and S Sichuan, C Yunnan.

This species is used medicinally.

- 1a. Sepals, petals, filaments, and disk without red glandular dots; cyme 1–3-flowered; leaf blade abaxially light green 2a. subsp. *schumanniana*
 1b. Sepals, petals, filaments, and disk with red glandular dots; panicle to 20-flowered; leaf blade abaxially pale 2b. subsp. *pluriflora*

2a. *Sabia schumanniana* subsp. *schumanniana*

四川清风藤(原亚种) si chuan qing feng teng (yuan ya zhong)

Sabia schumanniana subsp. *longipes* (Rehder & E. H. Wilson) C. Y. Chang; *S. schumanniana* var. *longipes* Rehder & E. H. Wilson.

Leaf blade light green abaxially. Cyme 1–3-flowered. Sepals, petals, filaments, and disk without red glandular dots.

• Broad-leaved forests, mountain slopes, valleys, streamsides; 1100–2600 m. Chongqing, N and W Guizhou, Henan, Shaanxi, S Sichuan.

Water (Blumea 26: 25–27. 1980) treated this taxon as a synonym of *Sabia campanulata*.

2b. *Sabia schumanniana* subsp. *pluriflora* (Rehder & E. H. Wilson) Y. F. Wu, Acta Phytotax. Sin. 20: 427. 1982.

多花清风藤 duo hua qing feng teng

Sabia schumanniana var. *pluriflora* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 197. 1914; *S. bicolor* L. Chen; *S. schumanniana* var. *bicolor* (L. Chen) Y. F. Wu.

Leaf blade abaxially pale, narrowly elliptic or linear-lanceolate, 3–8 × 0.8–1.5(–2) cm. Panicle 6–20-flowered. Sepals, petals, filaments, and center of disk with red glandular dots.

• Forests, mountain slopes, valleys, streamsides; 600–2600 m. W Guizhou, W Hubei, E and S Sichuan, C Yunnan.

Plants with leaf blade gray abaxially, sometimes pubescent, panicles 2-flowered, and veined projection of disks apically with red glandular dots have been sometimes treated as *Sabia schumanniana* var. *bicolor* (L. Chen) Y. F. Wu.

Water (Blumea 26: 25–27. 1980) treated this taxon as a synonym of *Sabia campanulata*.

3. *Sabia yunnanensis* Franchet, Bull. Soc. Bot. France 33: 465. 1886.

云南清风藤 yun nan qing feng teng

Woody climbers, 3–4 m, deciduous. Young branches light green, pubescent or puberulent; old branches brown or black-brown, glabrous, striate. Bud scales ovoid or broadly ovoid, midvein prominent, puberulent when young, ciliate. Petiole 3–10 mm, pubescent; leaf blade ovate-lanceolate, oblong-ovate, or obovate-oblong to obovate-orbicular, 3–7(–14) × 1–3.5(–7) cm, membranous or subpapery, both surfaces pubescent, or only abaxially pubescent on veins, lateral veins 3–6 pairs, slender, ascending, anastomosing, base obtuse-rounded to broadly cuneate, apex acute or acuminate to shortly caudate-acuminate. Panicle 2–4-flowered; peduncle 1.5–3 cm. Pedicel 3–5 mm. Sepals 5, with purple-red spots or not, broadly ovate or sub-

orbicular, 0.8–1.2 mm, glabrous. Petals 5, green, yellowish green, or purplish, with purple-red spots at base or not, broadly ovate or obovate-oblong, 4–6 × 3–4 mm, 7–9-veined, sometimes ciliate. Stamens 5. Disk swollen, prominent veins 3 or 4, with or without prominent brown glandular dots at center. Ovary pubescent or puberulent. Schizocarp subreniform, 6–8 mm wide; endocarp with midrib, and 1 or 2 reticulate lines. Fl. Apr–May, fr. May.

Dense or sparse forests, valleys, streamsides; 1400–3600 m. Anhui, Guizhou, Henan, Hubei, Jiangxi, Sichuan, Xizang, C and NW Yunnan [Bhutan, Nepal].

Water (Blumea 26: 25–27. 1980) treated this species complex, including its infraspecific taxa and synonyms, in the synonymy of *Sabia campanulata*.

- 1a. Leaf blade ovate-lanceolate, oblong-ovate, or obovate-oblong, 3–7 × 1–3.5 cm; petals basally with purple-red spots; center of disk with prominent brown glandular dots 3a. subsp. *yunnanensis*
 1b. Leaf blade elliptic-oblong, elliptic-obovate, or obovate-orbicular, 5–14 × 2–7 cm; petals basally without purple-red spots; center of disk without prominent brown glandular dots 3b. subsp. *latifolia*

3a. *Sabia yunnanensis* subsp. *yunnanensis*

云南清风藤(原亚种) yun nan qing feng teng (yuan ya zhong)

Celastrus mairei H. Léveillé; *Sabia angustifolia* L. Chen; *S. callosa* L. Chen; *S. croizatiana* L. Chen; *S. glandulosa* L. Chen; *S. leptandra* J. D. Hooker & Thomson; *S. pallida* Stapf ex L. Chen; *S. pentadenia* L. Chen; *S. puberula* Rehder & E. H. Wilson; *S. puberula* var. *hupehensis* L. Chen; *S. pubescens* L. Chen; *S. rockii* L. Chen; *S. rotundata* Stapf ex L. Chen; *S. yui* L. Chen; *S. yunnanensis* var. *mairei* (H. Léveillé) L. Chen.

Leaf blade ovate-lanceolate, oblong-ovate, or obovate-oblong, 3–7 × 1–3.5 cm. Petals basally with purple-red spots. Disk with prominent brown glandular dots at center.

Sparse forests, valleys, streamsides; 2000–3600 m. Henan, Hubei, Sichuan, Xizang, C and NW Yunnan [Bhutan, Nepal].

3b. *Sabia yunnanensis* subsp. *latifolia* (Rehder & E. H. Wilson) Y. F. Wu, Acta Phytotax. Sin. 20: 428. 1982.

阔叶清风藤 kuo ye qing feng teng

Sabia latifolia Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 195. 1914; *S. latifolia* var. *omeiensis* (Stapf ex L. Chen) S. K. Chen; *S. obovatifolia* Y. W. Law & Y. F. Wu; *S. omeiensis* Stapf ex L. Chen.

Leaf blade elliptic-oblong, elliptic-obovate, or obovate-orbicular, 5–14 × 2–7 cm. Petals basally without purple-red spots. Disk without brown glandular dots at center. $2n = 24^*$.

• Dense forests; 1400–2600 m. Anhui, Guizhou, Henan, Jiangxi, Sichuan, Yunnan.

4. *Sabia emarginata* Lecomte, Bull. Soc. Bot. France 54: 673. 1908.

凹萼清风藤 ao e qing feng teng

Sabia heterosepala L. Chen.

Woody climbers or suberect shrubs, deciduous. Branchlets yellowish green; branches brown, glabrous, striate. Petiole 0.5–1 cm; leaf blade abaxially pale green, adaxially green, oblong-lanceolate, oblong-elliptic, or ovate, 5–11 × 1.5–4 cm, papery, both surfaces glabrous, lateral veins 4 or 5 pairs, slender, ascending, curved, base cuneate or rounded, apex acuminate or acute. Cymes 2(or 3)-flowered, 1.5–1.8 cm. Sepals 5, slightly unequal, subobovate to oblong, (1–)1.5–3 × 0.5–1.5 mm, largest one distinctly emarginate at apex, others rounded. Petals 5, suborbicular or obovate, (3.5–)5–6 × ca. 3.5 mm. Stamens 5, equal; filaments ca. 2 mm, slender; anthers ca. 0.8 mm, introrse. Disk swollen, higher than broad, base broadest, with 2 or 3 obscure projecting veins, each vein with a tiny gland. Ovary ovoid, glabrous. Schizocarp suborbicular, 7–9 mm in diam., with persistent sepals at base. Fl. Apr, fr. Jun–Jul.

• Forests; 400–1500 m. NE Guangxi, Guizhou, S and W Hubei, W Hunan, C and E Sichuan.

Water (Blumea 26: 25–27. 1980) treated this taxon as a synonym of *Sabia campanulata*.

5. *Sabia transarisanensis* Hayata, Icon. Pl. Formosan. 5: 31. 1915.

阿里山清风藤 a li shan qing feng teng

Woody climbers, sometimes trailing, deciduous. Branchlets green, striate. Petiole 4–6 mm, pubescent; leaf blade ovoid-oblong or oblong, 4–6 × 2–3 cm, membranous, both surfaces glabrous, lateral veins 5 or 6 pairs, veins and reticulate veins conspicuous, base cuneate or broadly cuneate, margin entire or inconspicuously erose or denticulate, apex acuminate. Cymes 1- or 2-flowered, 1.5–2 cm. Sepals 5, green, equal, oblong, 2–2.5 × 1–2 mm, apex rounded. Petals 5 or 6, purple, oblong or obovate-oblong, ca. 5 × 2.5 mm. Stamens 5 or 6, slightly shorter than petals; filaments flattened, ca. 2.5 mm; anthers globose, ca. 1 mm. Disk swollen, higher than broad, base broadest. Ovary coniform, glabrous. Schizocarp blue, subreniform or suborbicular, ca. 5 mm in diam., with faveolate cavities. Fl. Apr, fr. Jul–Aug.

• Forest margins, thickets; 1500–3300 m. Taiwan.

This is a rare species.

Water (Blumea 26: 25–27. 1980) treated this taxon as a synonym of *Sabia campanulata*.

6. *Sabia japonica* Maximowicz, Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 6: 202. 1868.

清风藤 qing feng teng

Woody climbers, occasionally suberect shrubs, to 3 m tall, deciduous. Young branches green, with dense brownish hairs; old branches purple-brown, glabrous, waxy, armed with short spines 4–6 mm, spines at apices shallowly bifurcate; bud scales glabrous, ciliolate. Petiole 0.5–1 cm; leaf blade abaxially pale green, adaxially dark green, ovate-elliptic, ovate, or broadly ovate, 3.5–9 × 2–5 cm, papery, glabrous or sparsely pubescent

on midvein, lateral veins 3–5 pairs, base acute, cuneate, or rounded, apex acute or acuminate. Pedicel 2–4 mm, 2–2.5 cm at fruiting; bracts 4, 2–4 mm. Flowers appearing before leaves, solitary. Sepals 5, suborbicular or broadly ovate, ca. 0.5 mm, ciliate or not. Petals 5, light yellowish green, obovate or oblong-ovate, 3–4 mm. Stamens 5; anthers narrowly elliptic, extrorse. Disk cup-shaped, shallowly 5-lobed. Ovary ovoid, pubescent or glabrous. Schizocarp green to red, purple, or bluish black, suborbicular or subreniform, ca. 5 mm in diam.; endocarp with prominent midrib, with faveolate cavities. Fl. Feb–Mar, fr. Apr–Jul.

Dense forests, forest margins, mountains, valleys, roadsides; below 800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangsu, Jiangxi, Zhejiang [Japan].

- 1a. Pedicels shortly pubescent or tomentellous;
ovary pubescent 6a. var. *japonica*
1b. Pedicels and ovary glabrous 6b. var. *sinensis*

6a. *Sabia japonica* var. *japonica*

清风藤(原变种) qing feng teng (yuan bian zhong)

Sabia bullockii Hance; *S. japonica* var. *spinosa* Lecomte.

Pedicels shortly pubescent or tomentellous. Ovary pubescent.

Dense forests, forest margins, valleys; below 800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangsu, Jiangxi, Zhejiang [Japan].

6b. *Sabia japonica* var. *sinensis* L. Chen, Sargentia 3: 36. 1943.

中华清风藤 zhong hua qing feng teng

Pedicels and ovary glabrous.

• Mountains, roadsides; ca. 500 m. Fujian, N Guangdong, SW Jiangxi.

7. *Sabia purpurea* J. D. Hooker & Thomson subsp. *dumicola* (W. W. Smith) Water, Blumea 26: 54. 1980.

灌丛清风藤 guan cong qing feng teng

Sabia dumicola W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 63. 1917; *S. acuminata* L. Chen; *S. parvifolia* L. Chen.

Woody climbers, 2–6 m, deciduous. Branches green, slender, striate, glabrous; bud scales broadly ovoid, glabrous. Petiole 2–4 mm; leaf blade oblong-ovate or narrowly ovate, 1.5–6 × 1–3 cm, membranous, both surfaces glabrous, lateral veins 3 or 4 pairs, ascending, arched-anastomosing, reticulate veins sparse, base broadly cuneate or rounded, apex acute or acuminate. Cymes 3–12-flowered, 1–3 cm. Flowers appearing at same time as leaves, 3–5 mm in diam. Sepals 5, slightly unequal, ovate or suborbicular, 0.5–1 mm. Petals 5, purple-green, purple, or dark red, with red dots distally, elliptic or ovate, 2–4 × 1.5–2 mm, 5-veined, apex obtuse or rounded. Stamens ca. 1 mm; filaments flattened; anthers introrse or extrorse. Disk cup-shaped, deeply lobed to near base, fleshy. Pistil ca. 1 mm; ovary glabrous. Schizocarp subobovoid, 5–7 mm; endocarp with prominent midrib, with faveolate cavities. Fl. May, fr. Jul–Aug.

• Dense forests, valleys, streamsides; 1700–2700 m. W Yunnan.

Sabia purpurea subsp. *purpurea* is distributed in W Bangladesh, Bhutan, NE India, Myanmar, Nepal, and Thailand.

8. *Sabia nervosa* Chun ex Y. F. Wu, Acta Phytotax. Sin. 17(1): 42. 1979.

长脉清风藤 chang mai qing feng teng

Woody climbers, evergreen. Young branches striate; old branches waxy; bud scales triangular, thick, pilosulose. Petiole 8–10 mm; leaf blade abaxially light green, adaxially dark green and shiny, black when dried, narrowly oblong or narrowly obovate-elliptic, rarely ovate, 6–10 × 2–4 cm, thinly leathery, both surfaces glabrous, lateral veins 3–5 pairs, slender, ascending, anastomosing near margins, reticulate veins sparse, base broadly cuneate or cuneate, apex caudate-acuminate. Cymes usually 3(–5)-flowered; peduncles 3–4 cm. Pedicel 4–8 mm. Sepals 5, triangular-ovate, ca. 1.5 mm, ciliate. Petals 5, light green, ovate, obovate, or oblong-ovate, 5–6 × 3.5–4 mm, 9-veined, apex rounded. Stamens 5, 3–3.5 mm; filaments flattened; anthers introrse. Disk shallowly cup-shaped. Ovary glabrous. Schizocarp blue when mature, obovoid, 6–7 mm; endocarp with midrib, with faveolate cavities. Fl. May, fr. Aug–Sep.

• Dense forests, valleys, hillsides, streamsides; below 900 m. N and W Guangdong, N Guangxi.

9. *Sabia coriacea* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 198. 1914.

革叶清风藤 ge ye qing feng teng

Woody climbers, to 5 m, evergreen. Branchlets dark brown; bud scales broadly triangular-ovoid, apex acute. Petiole 5–15 mm; leaf blade abaxially light green, adaxially dark green and shiny, oblong or elliptic, 3.5–7 × 1.5–3 cm, leathery, lateral veins 4–7 pairs, ascending, anastomosing 5–7 mm from margin, reticulate veins sparse, base broadly cuneate or rounded, apex acute or acuminate. Cymes 5–10-flowered, umbelliform, 1.5–2.5 cm; peduncles 0.5–2 cm. Pedicel 1–5 mm. Sepals 5, broadly ovate, ca. 1 mm. Petals 5, light green with reddish tinge, oblong-ovate or ovate, 3–3.5 × 1.5–2 mm, 5–7-veined, apex acute or narrowly obtuse. Stamens 5, 1.5–2.5 mm; filaments flattened; anthers introrse. Disk cup-shaped. Ovary glabrous. Schizocarp pink to red or reddish purple, suborbicular or obovoid, ca. 5 mm; endocarp with midrib, with faveolate cavities. Fl. Apr, fr. Sep–Nov.

• Hillside scrub, valleys; below 1000 m. SC Fujian, Guangdong, S Jiangxi.

10. *Sabia discolor* Dunn, J. Linn. Soc., Bot. 38: 358. 1908.

灰背清风藤 hui bei qing feng teng

Woody climbers, to 3.5 m, evergreen. Young branches striate, glabrous; old branches dark brown, waxy; bud scales broadly ovoid. Petiole 7–15 mm; leaf blade abaxially pale green, adaxially green, becoming black when dried, ovate, elliptic-ovate, or elliptic, 4–7 × 2–4 cm, papery, both surfaces glabrous, lateral veins 3–5 pairs, base rounded or broadly cuneate, apex acute or obtuse. Cymes 4- or 5-flowered, umbel-

liform, 2–3 cm, glabrous; peduncles 1–1.5 cm. Pedicel 4–7 mm. Sepals 5, triangular-ovate, 0.5–1 mm, ciliate. Petals 5, yellow, ovate or elliptic-ovate, 2–4 × 1.5–2 mm, 4–7-veined. Stamens 5, 2–3.5 mm; filaments flattened; anthers extrorse. Disk cup-shaped. Ovary glabrous. Schizocarp red or purplish red, obovoid, orbicular, or subreniform, compressed, 5–6.5 × 5.5–7 mm; endocarp with distinct midrib, keeled, faveolate cavities only at margin. Fl. Mar–Apr, fr. May–Aug.

• Mountain thickets; below 1000 m. Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Zhejiang.

11. *Sabia dielsii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 9: 456. 1911.

平伐清风藤 ping fa qing feng teng

Sabia brevipetiolata L. Chen; *S. olacifolia* Stapf ex L. Chen; *S. wangii* L. Chen.

Woody climbers, 1–2 m, ?deciduous. Young branches yellowish green or light brown; old branches purple-brown or brown, striate, glabrous; bud scales triangular or triangular-ovoid, thick. Petiole 3–10 mm; leaf blade abaxially light green, adaxially dark green, olivaceous-green when dried, ovate-lanceolate, oblong-ovate, or elliptic-ovate, 6–14 × 2–6 cm, papery, both surfaces glabrous, lateral veins 4–6 pairs, reticulate veins sparse, base rounded or broadly cuneate, apex acuminate or long acuminate. Cymes 2–6-flowered, to 5 cm; peduncles 1.5–3 cm. Pedicel 5–10 mm. Sepals 5, ovate, 0.5–1 mm, ciliate. Petals 5, white, ovate or ovate-elliptic, 2–3 × 1.5–2 mm, inconspicuously 7-veined, apex rounded. Stamens 5, 1.2–2 mm; filaments flattened; anthers upright, elliptic, introrse. Disk cup-shaped. Ovary ovoid, glabrous. Schizocarp green, subreniform, somewhat compressed, 5.5–7 × 6.5–8 mm; endocarp without midrib, with faveolate cavities. Fl. Apr–Jun, fr. Jul–Oct.

• Forest margins, streamsides in thickets, mountain slopes, roadsides in valleys; 800–2000 m. N Guangxi, S Guizhou, C and S Yunnan.

12. *Sabia swinhoei* Hemsley, J. Linn. Soc., Bot. 23: 144. 1886.

尖叶清风藤 jian ye qing feng teng

Embelia bonii Gagnepain; *Sabia dunnii* H. Léveillé; *S. gracilis* Hemsley; *S. longruiensis* X. X. Chen & D. R. Liang; *S. ovalifolia* S. Y. Liu; *S. swinhoei* var. *hainanensis* L. Chen; ?*S. swinhoei* var. *parvifolia* Y. H. Xiang & Q. H. Chen; *S. swinhoei* var. *subcorymbosa* L. Chen; *S. uropetala* Gagnepain.

Woody climbers, to 8 m, evergreen. Branchlets long and straight pilose; bud scales pubescent, ciliate. Petiole 3–5(–10) mm, pubescent; leaf blade elliptic, ovate-elliptic, ovate, or broadly ovate, 5–12 × 2–5(–5.5) cm, papery or thinly leathery, abaxially shortly pilose or pilose only on midvein, adaxially glabrous but pubescent on midvein when young, lateral veins 4–6 pairs, reticulate veins sparse, base cuneate or rounded, apex acuminate to caudate-acute, or obtuse to subrounded. Cymes (1 or) 2–7-flowered, 1.5–2.5(–22) cm, sparsely pubescent or tomentose; peduncles (0.4–)0.7–1.5 cm. Pedicel 2–4 mm. Sepals 5, with inconspicuous red dots outside, ovate or narrowly triangular, 1–1.5 mm, ciliate. Petals 5, white to light green, yellow, or purple, ovate-lanceolate or lanceolate, (3–)3.5–6 × 1–1.5 mm, 5-veined, apex acuminate. Stamens 5, 1–1.6 mm;

filaments slightly to broadly flattened; anthers often inflexed, elliptic, introrse. Disk shallowly cup-shaped. Ovary glabrous, entire (or bifid). Schizocarp green to red or dark blue, suborbicular or obovoid, compressed, 7–9 × 6–8 mm; endocarp with inconspicuous midrib, with faveolate cavities. Fl. (Jan–)Mar–Apr(–Jun), fr. Jul–Sep(–Oct).

Valley forests, thickets on limestone hills; 300–2300 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [N Vietnam].

13. *Sabia fasciculata* Lecomte ex L. Chen, Sargentia 3: 42. 1943.

簇花清风藤 cu hua qing feng teng

?*Sabia calcicola* C. Y. Wu ex S. K. Chen.

Woody climbers, to 12 m, evergreen. Young branches brown or black-brown, waxy; branchlets glabrous, sparsely puberulent, or tomentulose; bud scales broadly triangular or broadly ovoid, glabrous, ciliate. Petiole 8–15 mm, glabrous or somewhat puberulent; leaf blade abaxially light green, adaxially dark green, oblong, elliptic, obovate-oblong, or narrowly elliptic, 5–12 × 1.5–4 cm, leathery, lateral veins 5–8 pairs, straight, base cuneate or rounded, apex acute or long acuminate. Cymes 3–6-flowered, arranged in a short, ± corymbose inflorescence 10–20-flowered, glabrous to sparsely tomentulose, glomerulate-clustered at early flowering, to 4 cm when blooming; peduncles very short, 1–2 mm. Pedicel 3–6 mm. Sepals 5, ovate or oblong-ovate, 1–2 mm, glabrous, with red glandular dots, margin white, apex acute or obtuse. Petals 5, light green, with red spots at middle, oblong-ovate or ovate, 4.5–6.5 × 2–2.5 mm, 7-veined. Stamens 5, 3–5 mm; filaments flattened; anthers upright, elliptic or oblong-elliptic, extrorse. Disk cup-shaped, shortly 5-lobed. Ovary glabrous. Schizocarp red, obovoid or broadly obovoid, compressed, 6–7 × 7–8.5 mm; endocarp with conspicuous midrib, narrowly keeled, with faveolate cavities. Fl. Feb–May, fr. May–Oct.

Forests, mountain slopes, valleys, rocks; 600–1900 m. S Fujian, N Guangdong, Guangxi, SE Yunnan [N Myanmar, Vietnam].

14. *Sabia paniculata* Edgeworth ex J. D. Hooker & Thomson, Fl. Ind. 1: 211. 1855.

锥序清风藤 zhui xu qing feng teng

Woody climbers, to 4 m, evergreen. Young branches yellowish brown, hispidulous, subglabrous when old. Petiole 1.5–3 cm, pubescent; leaf blade elliptic or oblong-elliptic, 10–20 × 5–9 cm, leathery, abaxially puberulent, adaxially glabrous, lateral veins 3–5 pairs, reticulate veins sparse, adaxially inconspicuous, base cuneate or rounded, apex acute or shortly acuminate. Cymes 3–6-flowered, arranged in a panicle 7–25 cm, 4–6 cm in diam., yellowish long pilose. Sepals 5, with purple-red stripes and spots in middle, ovate, ca. 1 mm, ciliate, densely pubescent outside. Petals 5, purple-red, narrowly oblong, ca. 3 × 0.8 mm, 5-veined. Stamens 5; filaments with purple-red spots, flattened; anthers introrse. Disk shallowly cup-shaped, shortly 5-lobed. Ovary glabrous. Schizocarp suborbicular, 1–1.2 cm in diam.; endocarp with midrib, with faveolate cavities. Fl. Jan–Apr, fr. Mar–Aug.

Forests; below 1000 m. SW Yunnan [Bangladesh, Bhutan, NE and NW India, Myanmar, Nepal, Thailand].

15. *Sabia limoniacea* Wallich ex J. D. Hooker & Thomson, Fl. Ind. 1: 210. 1855.

柠檬清风藤 ning meng qing feng teng

Androglossum reticulatum Champion ex Benth; *Sabia limoniacea* var. *ardisioides* L. Chen.

Woody climbers, to 10 m, evergreen. Young branches green; old branches brown, waxy; bud scales broadly triangular. Petiole 1.5–2.5 cm; leaf blade elliptic, oblong-elliptic, or ovate-elliptic, 7–15 × 4–6 cm, leathery, both surfaces glabrous, lateral veins 6 or 7 pairs, reticulate veins sparse, distinct abaxially, inconspicuous adaxially, base broadly cuneate or rounded, apex shortly acuminate or acute. Cymes 2–4-flowered, sometimes with a leaflike bract at base, arranged in a long, narrowly paniculate inflorescence 7–15 cm, less than 2 cm in diam. Flowers fragrant. Sepals 5, ovate or oblong-ovate, 0.5–1 mm, apex acute or obtuse, glabrous, ciliate. Petals 5, greenish white to light green, yellowish green, or light red, obovate or elliptic-ovate, 1.5–2 mm, 5–7-veined, apex rounded. Stamens 5; filaments flattened; anthers introrse. Disk cup-shaped, shortly 5-lobed. Ovary glabrous. Schizocarp pink to red or bluish black, suborbicular or subreniform, 1–1.7 cm; endocarp with inconspicuous midrib, with faveolate cavities. Fl. Aug–Nov, fr. Jan–May of following year.

Dense forests; 800–1300 m. Fujian, Guangdong, Hainan, Sichuan, SW Yunnan [Bangladesh, N India, Indonesia, Malaysia, Myanmar, Thailand].

16. *Sabia parviflora* Wallich in Roxburgh, Fl. Ind. 2: 310. 1824.

小花清风藤 xiao hua qing feng teng

Celastrus discolor H. Léveillé; *C. esquirolii* H. Léveillé; *Changiodendron guangxiense* R. H. Miao; *Sabia harmandiana* Pierre; *S. parviflora* var. *harmandiana* (Pierre) Lecomte; *S. parviflora* var. *nitidissima* H. Léveillé; *S. polyantha* Handel-Mazzetti.

Woody climbers, to 6 m, evergreen. Young branches pubescent, glabrous when old; bud scales ovoid, apex long acute, ciliate. Petiole 0.5–2 mm, sparsely puberulent or glabrous; leaf blade abaxially grayish green, adaxially dark green or olivaceous-green, sometimes shiny, obovate-lanceolate, narrowly oblong, or oblong-elliptic, 5–12 × 1–3 cm, papery or thinly leathery, both surfaces glabrous, lateral veins 5–8 pairs, anastomos-

ing 3–10 mm from margin, base rounded or broadly cuneate, apex acuminate. Cymes comprising a 10–20(–25)-flowered panicle 3–5 cm, glabrous or sparsely pilose; peduncles 2–6 mm. Pedicel 3–6 mm. Sepals 5, ovate or oblong-ovate, ca. 0.8 mm, apex acute, ciliate. Petals 5, green, yellowish green, or greenish white, oblong or oblong-lanceolate, 2–4 × 0.7–1.3 mm, veins up to 7 and reddish, apex acute or obtuse. Stamens 5, 3–5 mm; filaments broad and flattened, 1–2 × 0.25–0.5 mm; anthers often inflexed, elliptic or ovoid, extrorse. Disk cup-shaped, distinctly 5-lobed. Ovary glabrous; styles narrowly conical. Schizocarp green to red or blue, suborbicular, 5–7 mm in diam.; endocarp with inconspicuous midrib, with obscure faveolate cavities. Fl. Mar–May, fr. Jul–Sep.

Forests, streamsides in forests, thickets on mountain slopes, ravines; 800–2800 m. W Guangxi, W Guizhou, Sichuan, S Yunnan [India, Indonesia, Myanmar, Nepal, Philippines, Thailand, Vietnam].

17. *Sabia lanceolata* Colebrooke, Trans. Linn. Soc. London 12: 355. 1819.

披针清风藤 pi zhen qing feng teng

Sabia kachinica L. Chen.

Woody climbers or suberect shrubs, evergreen. Branchlets glabrous. Petiole to 1.2 cm; leaf blade elliptic-oblong to lanceolate, 5–22 × 1.5–8 cm, papery to leathery, both surfaces glabrous, lateral veins 6–12 pairs, obvious, straight or sometimes curved, base cuneate or cordate, apex acute or acuminate. Cymes 10–30-flowered, solitary, axillary or arranged in axillary panicles 1.5–7 cm, glabrous. Pedicel to 1.3 cm; bracteoles ovate to oblong-ovate, to 1.2 mm, often near calyx, glabrous, ciliate or not. Sepals 5, broadly ovate to ovate, 0.75–1.25(–2) × 0.7–1(–1.5) mm, glabrous, ciliate or not, apex acute to obtuse. Petals 5, green to white, oblong-ovate to oblong, 3.5–5.5 × 1.5–2 mm, veins to 6, but often obscured by many “granules” forming dotted lines, apex acute or narrowly obtuse. Stamens 1.5–2.5 mm; filaments flattened, 1.2–2 mm, 0.3–0.5 mm wide; anthers inflexed, globose or ellipsoid, ca. 0.3 mm. Disk crown-shaped; lobes short, but often with distinctly disciform apices. Ovary broadly transversely ellipsoid, 0.6–0.75 × 0.7–1 mm, glabrous. Schizocarp probably blue when fresh, distinctly obovoid to oblong-obovoid or pyriform, somewhat compressed, 1.2–1.5 cm × 7–10 mm, with or without persistent petals and stamens at base, reticulate pattern faint or absent. Fl. Oct, fr. Dec.

Forests, riverbanks; 700–1100 m. Xizang [Bangladesh, Bhutan, India, Myanmar].

2. MELIOSMA Blume, Catalogus, 10. 1823.

泡花树属 pao hua shu shu

Millingtonia Roxburgh, Pl. Coromandel 3: 50. 1820 [“1819”], not Linnaeus f. (1782); *Wellingtonia* Meisner (1840), not Lindley (1853).

Trees or shrubs, evergreen or deciduous. Buds naked, brownish tomentose. Leaves simple or odd pinnate, leaves or leaflets entire or often dentate; petiole usually thickened at base. Inflorescence terminal, sometimes axillary, a pyramidal panicle, usually profusely flowered but sometimes sparsely so, up to 4 × branched and very large. Flowers numerous, 1–3 mm in diam., hermaphroditic, zygomorphic, sessile or shortly pedicellate. Sepals [3 or](4 or)5(–9), imbricate, with bracts beneath. Petals 5,

imbricate, unequal, 3 outer ones larger, usually suborbicular or reniform, convex, 2 inner ones much smaller, bifid or entire, sometimes 3-lobed, ± adherent to base of filaments of fertile stamens, concealed under outer petals at bud stage. Fertile stamens 2, opposite 2 inner petals; filaments flattened, short, incurved at apex into a cup-shaped connective; anthers 2-celled, globose or elliptic; staminodes 3, opposite outer sepals, adherent to their bases. Disk cup-shaped or shallowly cup-shaped, 5-dentate. Ovary sessile, 2(or 3)-loculed, with 1 or 2 ovules per locule. Fruit a drupe, small; mesocarp fleshy; endocarp stony or crustaceous. Seed ± globose, usually somewhat concave ventrally, without endosperm.

About 50 species: SE Asia, Central and South America; 29 species (ten endemic) in China.

The reader may also wish to refer to Beusekom, Revision of *Meliosma* (Sabiaceae), section *Lorenzanea* excepted, living and fossil, geography and phylogeny (Blumea 19: 355–529. 1971).

Meliosma cavaleriei H. Léveillé (Repert. Spec. Nov. Regni Veg. 9: 457. 1911) is probably a synonym of *Ampelopsis chaffanjonii* (H. Léveillé & Vaniot) Rehder in the Vitaceae (see p. 183).

1a. Leaves pinnate.

- 2a. Terminal leaflet (rarely 2 leaflets) with articulation on petiolule; sepals usually 4; outer petals broadly reniform or other shapes, slightly broader than long.
- 3a. Leaflets abaxially crinite at vein axils; panicle 12–30 cm; 2 inner petals acutely bifid 28. *M. alba*
- 3b. Leaflets abaxially not crinite at vein axils; panicle 40–45(–60) cm; 2 inner petals obtusely bifid 29. *M. veitchiorum*
- 2b. Terminal leaflets 3, petiolules not articulate; sepals 5; outer petals suborbicular or broadly elliptic, narrower than long.
- 4a. Leaflets leathery, abaxially pubescent or glabrous.
- 5a. Leaflets narrowly elliptic, elliptic-lanceolate, or lanceolate, margin entire or rarely 1- or 2-toothed near apex, only sparsely pubescent on midvein 21. *M. angustifolia*
- 5b. Leaflets narrowly ovate, ovate-lanceolate, or oblong-elliptic, margin sparsely spinose-serrate, both surfaces glabrous, or only crinite at axils of lateral veins 22. *M. rhoifolia*
- 4b. Leaflets subleathery, abaxially pubescent, lanuginous, or glandulous (except in *M. pinnata*).
- 6a. Leaflets basally usually cuneate, glabrous on both surfaces; petiole terete 23. *M. pinnata*
- 6b. Leaflets basally usually obtuse-rounded, ± pubescent; petiole grooved.
- 7a. Leaflets adaxially shortly pubescent, abaxially pubescent or subglabrous 27. *M. oldhamii*
- 7b. Leaflets adaxially glabrous except pubescent on midvein and lateral veins.
- 8a. Leaflets abaxially pale, claviform-glandular, but crinite at vein axils 26. *M. glandulosa*
- 8b. Leaflets abaxially light green, sparsely pilose or lanuginous.
- 9a. Branchlets brown; leaflets ovate or ovate-lanceolate, abaxially and on inflorescences pilose or lanuginous 24. *M. arnotiana*
- 9b. Branchlets red; leaflets narrowly oblong, narrowly ovate, or narrowly obovate-elliptic, abaxially and on inflorescences sparsely pubescent 25. *M. kirkii*

1b. Leaves simple.

- 10a. Lateral veins straight or nearly so.
- 11a. Two inner petals entire, longer than fertile stamens 5. *M. myriantha*
- 11b. Two inner petals bifid, or sometimes between the 2 lobes, with a smaller one, shorter than fertile stamens.
- 12a. Panicle pendulous, rachis and branches distinctly zigzag 4. *M. flexuosa*
- 12b. Panicle erect, lateral branches not pendulous, rachis and branches straight or slightly flexuose.
- 13a. Leaf margin sharply biserrate, abaxially curved pilose, inconspicuously crinite at vein axils 1. *M. dillenifolia*
- 13b. Leaf margin serrate, or seldomly 1- or 2-biserrate, straight or sparsely pubescent, conspicuously crinite at vein axils.
- 14a. Leaf blade obovate-cuneate or narrowly obovate-cuneate, apex shortly acuminate, margin serrate 2. *M. cuneifolia*
- 14b. Leaf blade obovate, apex subtruncate, with short acute tip, margin undulate 3. *M. parviflora*
- 10b. Lateral veins distinctly ascending.
- 15a. Panicle narrow, 4–7 cm wide, lateral branches short, less than 1 cm in diam.
- 16a. Petiole narrowly winged, adaxially glabrous; 2 inner petals 2-lobed 6. *M. paupera*
- 16b. Petiole densely pubescent, adaxially scattered pubescent; 2 inner petals bifid to half 7. *M. bifida*
- 15b. Panicle broad, more than 8 cm wide.
- 17a. Leaves 15–40 × 4–16 cm, lateral veins 15–28 pairs.
- 18a. Leaf blade abaxially densely lanuginous; sepals 5, outside with 4 or 5 equal bracts 8. *M. thomsonii*
- 18b. Leaf blade glabrous or sparsely pubescent; sepals 4 or 5, without equal bracts.
- 19a. Ovary densely pubescent, drupes persistently pubescent; 2 inner petals entire 9. *M. thorelii*
- 19b. Ovary and drupes pubescent; 2 inner petals bifid.

- 20a. Petiole 1.5–2.5 cm; branchlets pubescent; drupes globose 10. *M. simplicifolia*
 20b. Petiole 3–5 cm; branchlets glabrous; drupes obovoid or subglobose 11. *M. longipes*
- 17b. Leaves usually shorter than 15 cm, if to 15 cm, less than 5 cm wide, lateral veins fewer than 15 pairs.
- 21a. Leaf margin serrate.
- 22a. Abaxial surface of leaves and inflorescences sparsely pilose or densely tomentose 18. *M. rigida*
 22b. Abaxial surface of leaves and inflorescences sparsely procumbent pubescent.
- 23a. Petiole densely lanuginous; panicle 2 or 3 × branched 20. *M. yunnanensis*
 23b. Petiole sparsely pubescent; panicle 3 or 4 × branched 19. *M. fordii*
- 21b. Leaf margin entire, rarely 1- or 2-toothed near apex.
- 24a. Petiole slender, 2.5–6.5(–10) cm, base terete, swollen; leaves clustered terminally.
 25a. Leaves abaxially pale, densely yellowish brown squamellate 12. *M. squamulata*
 25b. Leaves abaxially light brown, sparsely pilose 13. *M. dumicola*
- 24b. Petiole stouter, usually shorter than 2.5 cm, base not swollen; leaves scattered on branches.
- 26a. Leaves abaxially glabrous or only crinite at vein axils.
- 27a. Leaves leathery, abaxially glabrous; flowers ca. 2 mm in diam., 2 inner petals entire 14. *M. henryi*
 27b. Leaves papery, crinite at vein axils; flowers 1–1.5 mm in diam., 2 inner petals bifid 15. *M. callicarpifolia*
- 26b. Leaves densely ferruginous lanuginous or pilose.
- 28a. Leaves leathery, adaxially glabrous except on midvein and lateral veins; 2 inner petals bifid to half 16. *M. laui*
 28b. Leaves membranous or papery, adaxially pubescent, at least sparsely so; 2 inner petals 2-lobed 17. *M. velutina*

1. *Meliosma dilleniifolia* (Wallich ex Wight & Arnott) Walpers, Repert. Bot. Syst. 1: 423. 1842 [“*dilleniaefolia*”].

重齿泡花树 chong chi pao hua shu

Millingtonia dilleniifolia Wallich ex Wight & Arnott, Edinburgh New Philos. J. 15: 179. 1833.

Trees to 8 m tall, deciduous. Leaves simple; petiole ca. 3.5 cm; leaf blade obovate or ovate-elliptic, 10–30 × 4.5–8(–14) cm, papery, abaxially curved villous, adaxially pubescent, lateral veins 16–20 pairs, straight, running out into teeth, base cuneate, margin biserrate, apex acute or acuminate. Panicles terminal, erect, 14–30 cm, branched 3 or 4 times; peduncles and branches angulate, pubescent. Flowers ca. 2 mm in diam. Sepals 5, ovate or broadly ovate, ca. 1 mm, ciliate. Petals: 3 outer ones white, flat, orbicular, ca. 2 mm wide; 2 inner ones ca. 1 mm, bifid to half; lobes acute, ciliate. Stamens ca. 1.5 mm. Pistil ca. 1 mm. Drupe globose, 3–3.5 mm in diam., finely reticulate, midrib prominent. Fl. Jun–Jul, fr. Sep–Oct. $2n = 32$.

Jungles, valleys; 2000–3300 m. SE Xizang, Yunnan [Bhutan, N India, N Myanmar, Nepal].

2. *Meliosma cuneifolia* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 211. 1886.

泡花树 pao hua shu

Shrubs or trees, to 9 m tall, deciduous. Bark black-brown; branchlets dull black, pubescent. Leaves simple; petiole (0.2–)1–2 cm, sometimes narrowly winged; leaf blade obovate-cuneate or narrowly obovate, 8–12 × 2.5–4 cm, papery, abaxially white hairy, adaxially pubescent, lateral veins 16–20(–30) pairs, straight, more than 3/4 of them into teeth, crinite in vein axils, attenuate from middle to base, base cuneate or decurrent, margin more than 3/4 serrate, apex shortly acuminate. Panicle terminal, erect, 15–20(–30) cm long and wide, pubescent,

branched 3(or 4) times. Sepals 5, broadly ovate, ca. 1 mm, ciliate. Petals white or greenish yellow: 3 outer ones suborbicular, ca. 1 mm in diam.; 2 inner ones ca. 0.5 mm, bifid to half; lobes narrowly ovate, acute, outer margin ciliate. Stamens 1.5–1.8 mm. Disk 5-dentate. Pistil ca. 1.2 mm; ovary ca. 0.8 mm high. Drupe compressed-globose, 6–7 mm in diam.; endocarp triangular-ovoid, midrib prominent. Fl. May–Jul, fr. Sep–Nov.

• Forests; 500–3300 m. Anhui, E Gansu, Guizhou, Henan, Hubei, Hunan, S Shaanxi, Shanxi, Sichuan, S Xizang, C and N Yunnan.

This species is used medicinally and as a source of good timber.

- 1a. Petiole slender, 10–20 mm, leaf base not decurrent, adaxially pubescent; panicle 15–20 cm 2a. var. *cuneifolia*
 1b. Petiole stouter, 2–15 mm, leaf base decurrent, adaxially subglabrous; panicle 16–30 cm 2b. var. *glabriuscula*

2a. *Meliosma cuneifolia* var. *cuneifolia*

泡花树(原变种) pao hua shu (yuan bian zhong)

Meliosma dilleniifolia (Wallich ex Wight & Arnott) Walpers subsp. *cuneifolia* (Franchet) Beusekom; *M. platypoda* Rehder & E. H. Wilson.

Petiole slender, 10–20 mm; leaf blade adaxially pubescent, base not decurrent. Panicle 15–20 cm.

• Forests; 500–3300 m. E Gansu, Guizhou, W Henan, W Hubei, S Shaanxi, Sichuan, S Xizang, C and N Yunnan.

2b. *Meliosma cuneifolia* var. *glabriuscula* Cufodontis, Oesterr. Bot. Z. 88: 257. 1939.

光叶泡花树 guang ye pao hua shu

Meliosma cuneifolia var. *multinervia* (Beusekom) Y.

W. Law ex C. Y. Chang; *M. dilleniifolia* var. *multinervia* Beusekom; *M. mairei* Cufodontis.

Petiole 2–15 mm, glabrous or sparsely pubescent, narrowly winged; leaf blade 10–24 × 4–10 cm, adaxially subglabrous, base decurrent. Panicle 16–30 cm.

• Forests; 600–2000 m. Anhui, Gansu, Guizhou, Henan, Hubei, Hunan, Shanxi, C and S Sichuan, Xizang, N Yunnan.

3. *Meliosma parviflora* Lecomte, Bull. Soc. Bot. France 54: 676. 1908.

细花泡花树 xi hua pao hua shu

Meliosma dilatata Diels.

Shrubs or small trees, to 10 m tall, deciduous. Bark gray, smooth. Leaves simple; petiole 5–15 mm; leaf blade adaxially dark green and nitid, obovate, 6–11 × 3–7 cm, papery, abaxially sparsely pubescent, crinite in axils of lateral veins, adaxially sometimes pubescent on midvein, lateral veins 8–15 pairs, straight or not, branched far away from margin, terminal veins running into teeth, attenuate from middle to base, upper margin undulate-serrulate, apex rounded or subtruncate, tip shortly acute. Panicle terminal, 9–30 × 10–20 cm, 4 × branched, pubescent. Flowers 1.5–2 mm in diam. Sepals 5, broadly ovate or orbicular, ca. 0.5 mm wide, ciliate. Petals white: 3 outer ones orbicular, ca. 1 mm in diam., ciliate; 2 inner ones ca. 0.5 mm, bifid to half at an obtuse angle; lobes ciliate. Stamens ca. 1 mm. Ovary pubescent. Drupe globose, 5–6 mm in diam.; endocarp compressed-globose, midrib prominent. Fl. summer, fr. Sep–Oct.

• Jungles, streamsides in forests; 100–1200 m. Henan, W Hubei, S Jiangsu, Sichuan, Xizang, N Zhejiang.

This species is a source of good timber.

4. *Meliosma flexuosa* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 17: 423. 1910.

垂枝泡花树 chui zhi pao hua shu

Meliosma dilleniifolia (Wallich ex Wight & Arnott) Walpers subsp. *flexuosa* (Pampanini) Beusekom; *M. pendens* Rehder & E. H. Wilson.

Trees small, to 5 m tall, deciduous. Buds, young branches, midveins of young leaves, and peduncles slightly brownish pilose, usually with 2 buds in leaf axil. Leaves simple; petiole 5–20 mm, concave adaxially, base slightly enlarged; leaf blade obovate or obovate-elliptic, 6–12(–20) × 3–3.5(–10) cm, membranous, both surfaces sparsely pubescent, lateral veins 12–18 pairs, attenuate from middle to base, margin serrate, apex acuminate or abruptly acuminate. Panicle terminal, pendulous, 12–18 × 7–22(–25) cm; peduncle and branches zigzag. Pedicel 1–3 mm. Flowers 3–4 mm in diam. Sepals 5, ovate or broadly ovate, 1–1.5 mm, outer one very small, ciliate. Petals white: 3 outer ones suborbicular, 2.5–3 mm wide; 2 inner ones ca. 0.5 mm, bifid to half at an obtuse angle; apex of lobes ciliate, sometimes 3-lobed, and middle lobe very small. Fertile stamens 1.5–2 mm. Pistil ca. 1 mm; ovary glabrous. Drupes obovoid, ca. 5 mm; endocarp oblique, midrib prominent. Fl. May–Jun, fr. Jul–Sep.

• Forests; 600–2800 m. Anhui, Fujian, N Guangdong, Guizhou, Henan, W Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, E Sichuan, Zhejiang.

5. *Meliosma myriantha* Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(2): 153. 1845.

多花泡花树 duo hua pao hua shu

Trees to 20 m tall, deciduous. Bark grayish brown; young branches and petioles brownish pubescent. Leaves simple; petiole 5–15 mm; leaf blade obovate-elliptic, obovate-oblong, or oblong, 8–30 × 3.5–12 cm, membranous or papery, young leaves abaxially sparsely pubescent or densely pilose, crinite in axils of lateral veins, adaxially sparsely pubescent, then glabrous, lateral veins (10–)20–25 pairs, straight, running into teeth, base obtuse, margin serrulate or basally entire, apex sharply acuminate. Panicle terminal, erect, 15–25 cm, pubescent; branches flat, long and slender, axis 3-angulate. Pedicel short. Flowers ca. 3 mm in diam. Sepals 4 or 5, ovate or broadly ovate, ca. 1 mm, apex rounded, ciliate. Petals: 3 outer ones suborbicular, ca. 1.5 mm in diam.; 2 inner ones lanceolate, ca. 1.5 mm, entire. Fertile stamens 1–1.2 mm. Pistil ca. 2 mm; ovary glabrous. Drupe obovoid or globose, 4–5 mm in diam.; endocarp compressed-globose, midrib slightly prominent. Fl. summer, fr. May–Sep.

Humid forests, moist mountain forests, valleys, streamsides; below 2000 m. Anhui, Fujian, N Guangdong, NE Guangxi, N to SC Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, SW Shaanxi, Shandong, S Sichuan, Zhejiang [Japan, S Korea].

1a. Leaves serrate along whole margin 5a. var. *myriantha*

1b. Leaves not serrate along basal margin.

2a. Leaf blade abaxially sparsely pubescent or only on midvein and lateral veins, margin serrate but not to base, lateral veins 12–22(–24) pairs; inflorescences sparsely pubescent 5b. var. *discolor*

2b. Leaf blade abaxially densely pilose, adaxially ± pubescent, margin serrate from middle to apex, lateral veins 10–20 pairs 5c. var. *pilosa*

5a. *Meliosma myriantha* var. *myriantha*

多花泡花树(原变种) duo hua pao hua shu (yuan bian zhong)

Leaves serrate along whole margin.

Moist mountain forests; below 600 m. Henan, N Jiangsu, Shandong [Japan, S Korea].

5b. *Meliosma myriantha* var. *discolor* Dunn, J. Linn. Soc., Bot. 38: 358. 1908.

异色泡花树 yi se pao hua shu

Meliosma myriantha var. *stewardii* (Merrill) Beusekom; *M. stewardii* Merrill.

Leaf blade abaxially sparsely pubescent or only on midvein and lateral veins, lateral veins 12–22(–24) pairs, margin serrate but not to base. Inflorescences sparsely pubescent.

• Humid forests, valleys, streamsides; 200–2000 m. Anhui, Fu-

jian, N Guangdong, NE Guangxi, N to SC Guizhou, Hubei, S to SW Hunan, Jiangxi, Zhejiang.

5c. *Meliosma myriantha* var. *pilosa* (Lecomte) Y. W. Law, Acta Phytotax. Sin. 20: 430. 1982.

柔毛泡花树 rou mao pao hua shu

Meliosma pilosa Lecomte, Bull. Soc. Bot. France 54: 676. 1908; *M. myriantha* subsp. *pilosa* (Lecomte) Beusekom.

Leaf blade densely pilose abaxially, ± pubescent adaxially, lateral veins 10–20 pairs, margin serrate from middle to apex.

• Streamsides in forests, valleys; 100–2000 m. Anhui, Fujian, NE Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, SW Shaanxi, S Sichuan, Zhejiang.

6. *Meliosma paupera* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 150. 1921.

狭序泡花树 xia xu pao hua shu

Meliosma donnaiensis Gagnepain; *M. paupera* var. *repandoserata* Merrill.

Trees small or medium-sized, to 9 m tall, evergreen. Young branchlets pubescent, glabrous when old. Leaves simple; petiole 7–13 mm, concave and pubescent adaxially, narrowly winged; leaf blade oblanceolate or narrowly ovate, 5.5–14 × 1–3 cm, thinly leathery, abaxially pubescent and adaxially only on midvein, lateral veins 7–10 pairs, slender, ascending or running into teeth, attenuate to base, margin entire or sparsely 1–4-serrate from middle to apex, apex acuminate. Panicle terminal, 7–14 cm, 3(or 4) × branched, sparsely pubescent. Pedicel ca. 1 mm or flowers subsessile. Flowers ca. 1 mm in diam. Sepals 5, broadly ovate, ca. 0.7 mm, 2 outer ones smaller and narrower, ciliate. Petals: 3 outer ones broadly ovate or orbicular, ca. 1 mm wide; 2 inner ones ca. 0.6 mm, slightly bifid at an obtuse angle, apex rounded, ciliate. Stamens ca. 0.7 mm. Pistil nearly equal to stamens; ovary glabrous. Drupe globose, 4–5 mm in diam.; endocarp subglobose, 3–4 mm in diam., midrib slightly prominent. Fl. summer, fr. Aug–Oct.

Jungles, forests, valleys, streamsides; 200–1500 m. N and W Guangdong, Guangxi, S Guizhou, S Jiangxi, SE Yunnan [Vietnam].

7. *Meliosma bifida* Y. W. Law, Acta Phytotax. Sin. 17(1): 44. 1979.

双裂泡花树 shuang lie pao hua shu

Trees to 15 m tall. Branchlets slender, pubescent. Leaves simple; petiole 0.5–1.5 cm, brownish pubescent; leaf blade narrowly elliptic or obovate-elliptic, 6–10 × 2–3 cm, thinly leathery, both surfaces brownish pubescent, densely so on midvein, lateral veins 7–11 pairs, slender, ascending, arched-anastomosing near margin, reticulate veins fine, base cuneate, slightly oblique, margin entire, apex acute or caudate-acuminate. Panicle terminal or axillary, brownish pubescent, 5–8 × ca. 3 cm, branched 2(or 3) times; lateral branches slender, near axis. Pedicel 0.5–2 mm, brownish pubescent; upper flowers subsessile; bracts 1–1.5 mm, densely brownish pubescent, ciliate. Flowers ca. 2 mm in diam. Sepals 5, ovate or suborbicular, 1–1.3 mm, outer one smaller and narrower. Petals white: 3 outer ones suborbicular, ca. 2 mm wide; 2 inner ones

ca. 0.7 mm, bifid to middle and below; lobes linear, nearly parallel, apex ciliate. Fertile stamens ca. 1 mm. Disk cup-shaped, 5-crenate. Pistil ca. 1 mm; style ca. as long as ovary, apex 2-lobed. Fruit unknown. Fl. Jun–Jul, fr. unknown.

• Forests; ca. 2000 m. S Yunnan.

8. *Meliosma thomsonii* King ex Brandis, Indian Trees, 195. 1906.

西南泡花树 xi nan pao hua shu

Meliosma forrestii W. W. Smith; *M. simplicifolia* (Roxburgh) Walpers subsp. *thomsonii* (King ex Brandis) Beusekom; *M. subverticillaris* Rehder & E. H. Wilson; *M. thomsonii* var. *trichocarpa* (Handel-Mazzetti) C. Y. Wu & S. K. Chen; *M. trichocarpa* Handel-Mazzetti.

Trees to 12 m tall, evergreen. Branchlets, petioles, abaxial surface of leaves, and inflorescences densely brownish velutinous. Leaves simple; petiole 2–4 cm, stout; leaf blade obovate-oblong or obovate-elliptic, 18–37 × 7–16 cm, leathery, abaxially densely lanuginous, adaxially pubescent on midvein and lateral veins, lateral veins 16–20 pairs, ascending and arched to margin, upper ones running into teeth, base attenuate to cuneate, margin sparsely serrate at and above middle, apex acute to acuminate. Panicle terminal, to 30 cm, branched 3(or 4) times. Flowers ca. 2 mm, nearly sessile. Sepals 5, ovate to broadly ovate, 1–1.2 mm, abaxially pubescent, ciliate, with 4 or 5 bracts outside. Petals light yellow: 3 outer ones suborbicular, ca. 1.5 mm in diam.; 2 inner ones ca. 1 mm, bifid to half at an obtuse angle; lobes subovate, ± ciliate. Fertile stamens ca. 1.2 mm. Disk very shallow, acutely 5-toothed. Pistil 1–1.2 mm; ovary ovoid, glabrous; style shorter than ovary. Drupe compressed-globose, 7–8 mm in diam.; endocarp subrounded, slightly oblique, irregularly distinctly projecting, midrib prominent.

Forests; 1000–2000 m. Guizhou, Sichuan, SE Xizang, NW Yunnan [N India, N Myanmar, Nepal].

9. *Meliosma thorelii* Lecomte, Bull. Soc. Bot. France 54: 677. 1908.

山榉叶泡花树 shan she ye pao hua shu

Meliosma affinis Merrill; *M. buchananifolia* Merrill; *M. henryi* Diels subsp. *mannii* (Lace) Beusekom; *M. henryi* subsp. *thorelii* (Lecomte) Beusekom; *M. mannii* Lace.

Trees to 14 m tall, evergreen. Leaves simple; petiole 1.5–2 cm; leaf blade oblanceolate-elliptic or oblanceolate, 15–25 × 4–8 cm, leathery, abaxially glabrous or sparsely pubescent, vein axils crinite, lateral veins 15–22 pairs, nearly straight, arched-anastomosing near margin, attenuate 3/4 to base, margin entire or acutely serrulate, apex acuminate. Panicle terminal or axillary on apical branches, erect, 15–18 cm; branches flattened, brownish pubescent. Pedicel short. Flowers aromatic, 2–2.5 mm in diam. Sepals 5, ovate, 0.6–0.8 mm, apex obtuse, ciliate. Petals white or yellowish white: 3 outer ones suborbicular, ca. 2 mm; 2 inner ones narrowly lanceolate, shorter than outer ones, margin entire. Fertile stamens ca. 1.3 mm. Pistil ca. 1.6 mm; ovary pubescent; style ca. 1 mm. Drupe globose, slightly oblique, 6–9 mm in diam.; endocarp subglobose, convex, with sparse, scattered netlike strips, midrib inconspicuously projecting. Fl. summer, fr. Oct–Nov.

Forests, wooded ravines; 200–1000 m. E and S Fujian, Guangdong, Guangxi, S Guizhou, Hainan, Sichuan, S Yunnan [Laos, Vietnam].

The bark is used in making incense.

10. *Meliosma simplicifolia* (Roxburgh) Walpers, Repert. Bot. Syst. 1: 423. 1842.

单叶泡花树 dan ye pao hua shu

Millingtonia simplicifolia Roxburgh, Pl. Coromandel 3: 50. 1820 [“1819”].

Trees to 20 m tall, evergreen. Branchlets, petioles, and adaxial midveins on leaves brownish pubescent early. Leaves simple, usually clustered terminally; petiole 1.5–2.5 cm, broadly grooved; leaf blade obovate or obovate-oblong, 15–40 × 5–15 cm, papery, adaxially glabrous, vein axils crinite, lateral veins 15–20 pairs, arched-anastomosing near margin, reticulate veins slender and conspicuous, attenuate 2/3 to base, margin entire, sometimes serrulate, apex acute or shortly caudate. Panicle terminal, 10–40 cm, branched 3 (or 4) times, axis nearly triangular. Flowers ca. 2 mm in diam., subsessile. Sepals (4 or) 5, ovate-triangular, pubescent and ciliate. Petals white or yellowish white: 3 outer ones suborbicular; 2 inner ones ca. 0.7 mm, slightly shorter than stamens, deeply bifid at an angle; lobes narrow, shortly ciliate. Ovary glabrous; style equal or shorter than ovary. Drupe globose, 3.5–6 mm in diam.; endocarp compressed-globose, with sparse, scattered netlike strips, triangular adaxially, midrib distinct. Fl. Jan–Feb, fr. Apr–May.

Evergreen broad-leaved forests; 1200–2000 m. SE Xizang, W Yunnan [Bangladesh, Bhutan, India, N Laos, Myanmar, Nepal, Sri Lanka, Thailand].

11. *Meliosma longipes* Merrill, J. Arnold Arbor. 23. 178. 1942.

疏枝泡花树 shu zhi pao hua shu

Meliosma depauperata Chun ex F. C. How; *M. lepidota* Blume subsp. *longipes* (Merrill) Beusekom.

Shrubs or small trees, ca. 1 m tall or more, evergreen. Branchlets glabrous. Leaves simple, usually clustering terminally; petiole 3–5 (–10) cm, shallowly grooved; leaf blade abaxially pale green turning grayish brown when dried, adaxially deep green turning brown when dried, narrowly obovate or oblanceolate, rarely narrowly elliptic, 15–25 × 4–9 cm, subleathery, midvein and lateral veins concave and sparsely pubescent, lateral veins 15–18 pairs, ascending, anastomosing, reticulate veins sparse, base acute to cuneate, margin entire, apex acute to acuminate or cuspidate. Panicle terminal or axillary on apical branches, 10–200 cm, sparsely branched, slightly pubescent. Pedicel 1–1.5 (–3) mm, sometimes flowers sessile. Drupe subglobose or obovoid, 8–10 mm in diam.; fruiting pedicel 2–3 mm, stout, puberulent; endocarp subglobose, somewhat oblique, convex, with sparse, scattered netlike strips, midrib distinctly projecting. Fl. summer, fr. Aug–Sep.

Wet subtropical jungles, evergreen broad-leaved forests; below 1200 m. SW Guangdong, Guangxi, Yunnan [Vietnam].

12. *Meliosma squamulata* Hance, J. Bot. 1: 364. 1876.

樟叶泡花树 zhang ye pao hua shu

Meliosma lepidota Blume subsp. *squamulata* (Hance) Beusekom; *M. lutchuensis* Koidzumi.

Trees small, to 15 m tall, evergreen. Young branches and buds brownish pubescent, glabrous when old. Leaves simple; petiole 2.5–6.5 cm, rarely to 10 cm, slender; leaf blade abaxially pale, adaxially nitid, elliptic or ovate, 5–12 × 1.5–5 cm, thinly leathery, abaxially densely brown squamellate, adaxially glabrous, lateral veins 3–5 pairs, ascending, anastomosing, base cuneate, margin entire, apex caudate-acuminate or with an obtuse tip. Panicle terminal or axillary, solitary or 2–8-clustered, 7–20 cm, axes, branches, pedicels, and bracts densely brownish pubescent. Pedicel to 3 mm, sometimes flowers sessile. Flowers ca. 3 mm in diam. Sepals 5, ovate, ciliate. Petals white: 3 outer ones suborbicular, ca. 2.5 mm in diam.; 2 inner ones equal to filaments, 2-parted at an obtuse angle; lobes narrow and acute. Pistil ca. 2 mm; style equal to ovary; ovary glabrous. Drupe globose, 4–6 mm in diam.; endocarp globose, slightly oblique, convex, with conspicuous, scattered netlike strips, midrib projecting. Fl. summer, fr. Sep–Oct.

Evergreen broad-leaved forests; below 1800 m. S Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Hunan, S Jiangxi, Taiwan, Yunnan, Zhejiang [Japan].

13. *Meliosma dumicola* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 13: 170. 1921.

灌丛泡花树 guan cong pao hua shu

Meliosma dumicola var. *serrata* Vidal; *M. lepidota* Blume subsp. *dumicola* (W. W. Smith) Beusekom; *M. tsangtakii* Merrill.

Trees to 30 m tall, evergreen. Young branches, buds, abaxial surface of young leaves, petioles, and inflorescences brownish pilose; branchlets grayish brown. Leaves simple; petiole 1.5–4 cm, narrowly concave; leaf blade abaxially light brown when dry, narrowly elliptic, narrowly obovate-elliptic, or elliptic, 5–15 (–18) × 1.5–5 cm, leathery, abaxially sparsely pilose, adaxially glabrous, midvein and lateral veins concave adaxially when dry, lateral veins 7–10 pairs, slightly ascending, anastomosing near margin, base cuneate, margin entire or serrate, apex abruptly narrowed, linear-caudate, rarely acuminate. Panicle terminal and solitary, or 2–4-clustered at branch apices, sometimes axillary near branch apices, erect, 10–16 cm, branched 3 times, lower branches 4–7 cm. Pedicel short. Flowers ca. 2 mm in diam. Sepals 5, ovate, ca. 1 mm, apex rounded, 2 outer ones smaller and narrower, ciliate. Petals yellowish or brownish white: 3 outer ones suborbicular, ca. 1.5 mm in diam.; 2 inner ones lanceolate, slightly longer than fertile stamens. Ovary subglobose, ca. 0.6 mm in diam., glabrous; style slightly longer than ovary. Drupe obovoid, 3–4 mm in diam.; endocarp convex, with inconspicuous, scattered netlike strips, midrib narrow. Fl. Mar–May, Oct–Nov.

Open jungles, densely wooded ravines; (1200–)1400–1900 (–2400) m. Guangdong, Hainan, S Xizang, SW Yunnan [Thailand, N Vietnam].

14. *Meliosma henryi* Diels, Bot. Jahrb. Syst. 29: 452. 1900.

贵州泡花树 gui zhou pao hua shu

Trees small, ca. 3 m tall, evergreen. Leaves simple; petiole

1–2 cm, pubescent; leaf blade adaxially dark green and nitid, lanceolate or narrowly elliptic, 7–12 × 1.5–3.5 cm, leathery, both surfaces glabrous except pubescent on midvein early, lateral veins 5–9 pairs, slender, ascending, anastomosing, reticulate veins dense, base narrowly cuneate, margin entire, apex acuminate. Panicle usually terminal, sometimes axillary, 10–20 cm, branched 2(or 3) times; branches straight, pubescent. Pedicel 1–4 mm. Flowers ca. 2 mm in diam. Sepals elliptic-ovate, ca. 1 mm, apex obtuse, ciliate. Petals: 3 outer ones flat-orbicular, ca. 2 mm wide; 2 inner ones ovate-elliptic, slightly longer than fertile stamens, entire. Disk shallow, 5-lobed. Pistil 1.2–2 mm; ovary glabrous; style slightly longer than ovary. Drupe obovoid, 7–8 mm in diam.; endocarp subglobose, slightly oblique, 4–5 mm in diam., convex, without or with inconspicuous, scattered netlike strips, midrib extremely inconspicuous. Fl. summer, fr. Sep–Oct.

• Evergreen broad-leaved forests; 700–1400 m. N and SW Guangxi, Guizhou, W Hubei, E Sichuan, C and S Yunnan.

15. *Meliosma callicarpifolia* Hayata, Icon. Pl. Formosan. 3: 68. 1913 [*“callicarpaefolia”*].

紫珠叶泡花树 *zi zhu ye pao hua shu*

Trees small, evergreen. Bark smooth; young branches, petioles, and perianth brownish pubescent. Leaves simple; petiole 1–3 cm; leaf blade abaxially grayish green, adaxially dark green and nitid, oblanceolate or narrowly elliptic, 10–16 × 3–5 cm, papery, abaxially glabrous except vein axils crinite, adaxially glabrous except on midvein, lateral veins 6–10 pairs, slender and slightly ascending, anastomosing near margin, base narrowly cuneate, margin entire or undulate, apex acuminate. Panicle terminal, 10–13 × 7–8 cm, branched 3(or 4) times. Flowers 1–1.5 mm in diam., with 2 small bracts at base. Sepals 4, broadly ovate, ca. 1.2 mm, ciliate. Petals: 3 outer ones broadly ovate, ca. 1.5 mm in diam.; 2 inner ones ca. 0.7 mm, bifid to middle at a sharp angle; lobes lanceolate. Fertile stamens ca. 0.8 mm. Ovary glabrous; style equal to ovary. Drupe black, globose, 3–5 mm in diam.; endocarp elliptic-globose, convex, with coarse, scattered netlike strips, midrib distinctly prominent. Fl. summer, fr. autumn.

• Forests; ca. 2400 m. C Taiwan.

Beusekom (Blumea 19: 355–529. 1971) treated this taxon as a synonym of *Meliosma simplicifolia* subsp. *fruticosa* (Blume) Beusekom.

16. *Meliosma laui* Merrill, Lingnan Sci. J. 14: 32. 1935.

华南泡花树 *hua nan pao hua shu*

Meliosma laui var. *megaphylla* H. W. Li ex S. K. Chen; *M. simplicifolia* (Roxburgh) Walpers subsp. *laui* (Merrill) Beusekom.

Trees small, to 7 m tall, evergreen. Buds, young branches, abaxial surface of leaves, petioles, inflorescences, and outsides of sepals densely brownish lanuginous; branchlets light gray, shallowly grooved. Leaves simple; petiole 1–4 cm; leaf blade elliptic, elliptic-obovate, or oblong-lanceolate, 7–14(–25) × 2.5–5.5(–9) cm, leathery, adaxially subglabrous except on midvein and lateral veins, lateral veins 9–13 pairs, anastomosing

near margin, base cuneate or rounded, margin entire, apex acuminate, with a sharp tip. Panicle terminal, 15–25 cm, elongating, branched 3 times, lateral branches explanate. Flowers aromatic, dense on tertiary branches, ca. 3 mm in diam., sessile. Sepals 5, ovate, ca. 2 mm. Petals yellow: 3 outer ones broadly ovate, ca. 3 mm; 2 inner ones ca. 0.7 mm, bifid nearly to half at an acute angle, apex ciliate. Stamens ca. 1 mm; filaments of fertile stamens equal to inner petals; anthers broader than long; connectives enlarged, peltate. Pistil ca. 1.5 mm; ovary 1.5–2 × shorter than style, glabrous. Drupe obovoid or subglobose, 8–12 mm in diam.; endocarp slightly laterally flattened, with coarse, scattered netlike strips, midrib sharply prominent. Fl. Mar–Apr, fr. Jul–Aug.

Forests; 600–800 m. Guangdong, SW Guangxi, SE Hainan, Yunnan [Vietnam].

17. *Meliosma velutina* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 202. 1914.

毛泡花树 *mao pao hua shu*

Meliosma costata Cufodontis.

Trees to 10 m tall, evergreen. Branches of current year, buds, petioles, abaxial midveins of leaves, inflorescences brownish lanuginous. Leaves simple; petiole 1–2.5 cm, stout; leaf blade oblanceolate or obovate, 9–17(–26) × 2.5–4.5(–9) cm, papery or membranous, abaxially pilose, adaxially persistently sparsely pilose on midvein and lateral veins, lateral veins 15–25 pairs, ascending, anastomosing near margin, attenuate 2/3 downward to base, margin entire or serrate near apex, apex acuminate. Panicle terminal, 20–26 × 15–20 cm, branched 2(or 3) times. Flowers 3–3.5 mm in diam., subsessile. Sepals 5, ovate, 1–1.2 mm, outer ones smaller, pubescent, ciliate. Petals white: 3 outer ones suborbicular, ca. 2 mm in diam.; 2 inner ones ca. 0.8 mm, 2-lobed; lobes triangular, ciliate near apex. Fertile stamens ca. 1.5 mm. Disk shallowly cup-shaped, dentate. Pistil ca. 1.7 mm; ovary ovoid, glabrous. Fruit unknown. Fl. Apr–May, fr. unknown.

Broad-leaved forests; 500–1500 m. N Guangdong, Guangxi, S Yunnan [Vietnam].

Beusekom (Blumea 19: 355–529. 1971) treated this taxon as a synonym of *Meliosma simplicifolia*.

18. *Meliosma rigida* Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(2): 153. 1845.

笔罗子 *bi luo zi*

Trees to 7 m tall, evergreen. Buds, young branches, abaxial midveins, and inflorescences ferruginous lanuginous, pilose, or tomentose, pubescence persistent after 2 or 3 years. Leaves simple; petiole 1.5–4 cm; leaf blade oblanceolate or narrowly obovate, 8–25 × 2.5–4.5 cm, leathery, abaxially ferruginous pubescent, sparsely pilose, or densely tomentose, adaxially glabrous except on midvein and lateral veins, lateral veins 9–18 pairs, base attenuate from 1/3 or 1/2 downward to base, margin coarsely serrate, sometimes entire, apex acuminate or caudate-acuminate. Panicle terminal, 10–30 cm; axis erect, triangular, branched 3 times. Pedicel ca. 2 mm. Flowers dense on tertiary branches, (2–)3–4 mm in diam. Sepals 4 or 5, ovate or subor-

bicular, 1–1.5 mm, pubescent at abaxial base, ciliate. Petals: 3 outer ones white or light yellow, suborbicular, 2–2.5 mm; 2 inner ones bifid to half at an acute angle; lobes acute, apex ciliate. Fertile stamens 1.2–1.5 mm. Ovary glabrous; style ca. 2 × as long as ovary. Drupe globose, 5–8 mm; endocarp oblique, convex, with scattered netlike strips, midrib slightly prominent. Fl. summer, fr. Sep–Oct.

Broad-leaved forests, mountain forests; below 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Taiwan, S Yunnan, Zhejiang [Japan, Laos, Philippines, S Vietnam].

The hard wood is used for walking sticks, and the seeds for oil.

- 1a. Abaxial surface of leaf blade and inflorescences sparsely pilose 18a. var. *rigida*
 1b. Abaxial surface of leaf blade and inflorescences densely tomentose 18b. var. *pannosa*

18a. *Meliosma rigida* var. *rigida*

笔罗子(原变种) bi luo zi (yuan bian zhong)

Meliosma glomerulata Rehder & E. H. Wilson; *M. patens* Hemsley; *M. rigida* var. *patens* (Hemsley) Cufodontis; *M. simplicifolia* (Roxburgh) Walpers subsp. *rigida* (Siebold & Zuccarini) Beusekom.

Leaf blade abaxially and inflorescences sparsely pilose.

Broad-leaved forests; below 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Henan, SW Hubei, Hunan, Jiangxi, Taiwan, S Yunnan, Zhejiang [Japan, Laos, Philippines, S Vietnam].

18b. *Meliosma rigida* var. *pannosa* (Handel-Mazzetti) Y. W. Law, Acta Phytotax. Sin. 20: 430. 1982.

毡毛泡花树 zhan mao pao hua shu

Meliosma pannosa Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 179. 1921.

Branches, abaxial surface of leaf blade, petioles, and inflorescences densely pilose or tomentose. Fl. May–Jun, fr. Aug–Sep.

• Mountain forests; below 800 m. S Fujian, N Guangdong, NE Guangxi, SE Guizhou, Hubei, S Hunan, S Jiangxi, Zhejiang.

19. *Meliosma fordii* Hemsley, J. Linn. Soc., Bot. 23: 144. 1886.

香皮树 xiang pi shu

Trees to 10 m tall, evergreen. Bark gray; branchlets, petioles, abaxial surface of leaf blade, and inflorescences brownish pubescent. Leaves simple; petiole 1.5–3.5 cm, sparsely pubescent; leaf blade adaxially nitid, oblanceolate to lanceolate, or narrowly obovate to narrowly elliptic, 9–18(–25) × 2.5–5(–8) cm, subleathery, adaxially pubescent on midvein and lateral veins, lateral veins 11–20 pairs, base narrowly cuneate, elongated, margin entire or somewhat serrate near apex, apex acuminate, rarely obtuse. Panicle terminal or subterminal, 10–40 cm, broad, branched 3 or 4(or 5) times. Pedicel 1–1.5 mm or flowers subsessile. Flowers 1–1.5 mm in diam. Sepals 4(or 5), broadly ovate, ca. 0.5 mm, abaxially sparsely pubescent, ciliate. Petals: 3 outer ones suborbicular, ca. 1.5 mm in diam.; 2 inner

ones ca. 0.5 mm, bifid to half at an obtuse angle; lobes linear. Stamens ca. 0.7 mm. Pistil ca. 0.8 mm; ovary glabrous; style equal to ovary. Drupe subglobose or compressed-globose, 3–5 mm in diam.; endocarp convex, with distinct, scattered netlike strips, midrib prominent. Fl. May–Jul, fr. Aug–Oct.

Evergreen tropical and subtropical forests, forested ravines; below 1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Hunan, S Jiangxi, Yunnan [Cambodia, Laos, Thailand, Vietnam].

This species is used medicinally.

- 1a. Young branches, petioles, abaxial surface of leaf blade, and inflorescences sparsely pubescent; leaf blade oblanceolate or lanceolate 19a. var. *fordii*
 1b. Young branches, petioles, abaxial surface of leaf blade, and inflorescences densely pilose; leaf blade narrowly obovate or narrowly elliptic 19b. var. *sinii*

19a. *Meliosma fordii* var. *fordii*

香皮树(原变种) xiang pi shu (yuan bian zhong)

Meliosma hainanensis F. C. How; *M. obtusa* Merrill & Chun; *M. pseudopaupera* Cufodontis; *M. pseudopaupera* var. *pubisepala* F. C. How; *M. simplicifolia* (Roxburgh) Walpers subsp. *fordii* (Hemsley) Beusekom; ?*M. xichouensis* H. W. Li ex S. K. Chen.

Young branches, petioles, abaxial surface of leaf blade, and inflorescences sparsely pubescent. Leaf blade oblanceolate or lanceolate.

Evergreen tropical and subtropical forests, thickets, forested ravines; below 1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Hunan, S Jiangxi, Yunnan [Cambodia, Laos, Thailand, Vietnam].

19b. *Meliosma fordii* var. *sinii* (Diels) Y. W. Law, Acta Phytotax. Sin. 20: 430. 1982.

辛氏泡花树 xin shi pao hua shu

Meliosma sinii Diels, Notizbl. Bot. Gart. Berlin-Dahlem 11: 213. 1931.

Young branches, petioles, abaxial surface of leaf blade, and inflorescences densely pilose. Leaf blade narrowly obovate or narrowly elliptic. Panicle narrowly pyramidal. Pedicels short or flowers subsessile near branch apices.

• Evergreen broad-leaved forests; ca. 1000 m. C Guangdong, E Guangxi, Guizhou.

20. *Meliosma yunnanensis* Franchet, Bull. Soc. Bot. France 33: 465. 1886.

云南泡花树 yun nan pao hua shu

Meliosma fischeriana Rehder & E. H. Wilson; *M. simplicifolia* (Roxburgh) Walpers subsp. *yunnanensis* (Franchet) Beusekom; *M. yunnanensis* var. *fischeriana* (Rehder & E. H. Wilson) C. Y. Chang.

Trees to 30 m tall, evergreen. Bark gray; young branches sparsely pubescent. Leaves simple; petiole 6–10 mm, base enlarged, densely shortly lanuginous and persistently pubescent

when old; leaf blade narrowly obovate-elliptic, obovate-lanceolate, or oblanceolate, 4–15 × 2–6 cm, leathery, sparsely pubescent abaxially and crinite at vein axils, lateral veins 6–10 pairs, ascending to margin, attenuate from lower 2/3 to base, narrowly cuneate, margin sparsely spinose-serrate from middle to apex, apex cuspidate to caudate. Panicle terminal or axillary at apices of branches, 4–10 cm, narrow, branched 2(or 3) times, yellowish pubescent; bracts lanceolate, pubescent. Flowers 3–4 mm in diam., subsessile. Sepals 5, suborbicular, 2–2.3 mm in diam., ciliate. Petals white or pale yellow: 3 outer ones suborbicular, 2–2.5 mm in diam.; 2 inner ones equal to fertile stamens, bifid; lobes ovate, ciliate. Fertile stamens ca. 2 mm. Pistil 2–2.5 mm; ovary glabrous; style equal to ovary or slightly longer. Disk cup-shaped, ca. 1/2 as long as ovary, 5-toothed. Drupe subglobose, somewhat compressed, 3.5–5 mm in diam.; endocarp compressed-globose, with coarse, scattered netlike strips, midrib prominent. Fl. summer, fr. Aug–Oct.

Evergreen broad-leaved forests; 1000–3000 m. C Guizhou, Sichuan, E and S Xizang, Yunnan [Bhutan, N India, N Myanmar, Nepal].

21. *Meliosma angustifolia* Merrill, Philipp. J. Sci. 21: 348. 1922.

狭叶泡花树 xia ye pao hua shu

Meliosma crassifolia Handel-Mazzetti; *M. pinnata* (Roxburgh) Maximowicz subsp. *angustifolia* (Merrill) Beusekom.

Trees large or small, to 20 m tall, evergreen. Young branches, petioles, petiolules, and inflorescences light brown pubescent. Leaves odd pinnate, 20–30 cm; leaflets 13–23, abaxially red-brown when dry, adaxially nitid, narrowly elliptic, elliptic-lanceolate, or lanceolate, 5–12 × 1.5–3 cm, leathery, sparsely pubescent on midvein, lateral veins 5–7 pairs, anastomosing 2–5 mm from margin, base somewhat narrowly cuneate or rarely rounded, oblique, margin entire or sometimes 1- or 2-toothed, apex obtuse-acuminate. Panicle terminal or axillary, equal to leaf or slightly shorter. Flowers aromatic, subsessile, dense; buds ca. 2 mm in diam. Sepals 5, ovate, ciliate. Petals: 3 outer ones suborbicular, ca. 2 mm in diam.; 2 inner ones slightly shorter than filaments, bifid. Fertile stamens ca. 1.8 mm; connectives orbicular-peltate. Pistil ca. 2 mm; ovary yellowish pubescent. Drupe obovoid, 4–6 mm; endocarp convex, with scattered netlike strips, midrib prominent. Fl. Mar–May, fr. Jun–Oct.

• Valleys, wooded ravines, low mountains; below 1500 m. S Guangdong, S Guangxi, Hainan, SE Yunnan.

This species is a good source of timber.

22. *Meliosma rhoifolia* Maximowicz, Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 6: 262. 1868.

漆叶泡花树 qi ye pao hua shu

Trees medium-sized, evergreen. Leaves odd pinnate, axis somewhat pilose abaxially; petiolules ca. 1 cm; leaflets 11–15, abaxially gray or pale green, adaxially dark green and nitid, narrowly ovate, ovate-lanceolate, or oblong-elliptic, (3–)5–15 × 2–3.5 cm, leathery, both surfaces glabrous or crinite at vein axils abaxially, lateral veins (6–)9–13 pairs, slightly ascending, anastomosing 2–5 mm from margin, base rounded or broadly cuneate, margin sparsely spinose-serrulate or entire, apex acu-

minate or caudate-acuminate. Panicle terminal or axillary on upper branches, ca. 25 × 20 cm, ferruginous pubescent, soon glabrescent, branched 3(or 4) times, axis triangular, lateral branches flat. Pedicel short. Sepals 5, ovate, ca. 1 mm, outer ones narrower, ciliate. Petals white: 3 outer ones flat-orbicular, ca. 2 × 2.2 mm; 2 inner ones ca. 1/2 as long as filaments, bifid, lobes fringed. Fertile stamens ca. 1.5 mm. Disk shallowly cup-shaped, 5-toothed. Pistil ca. 1.7 mm; ovary pubescent; style slightly longer than ovary. Drupe subglobose, 4–6 mm in diam.; endocarp convex, with scattered netlike strips, midrib slightly prominent. Fl. May–Jun, fr. Aug–Oct.

Evergreen broad-leaved forests; below 1800 m. Fujian, N Guangdong, NE Guangxi, E Guizhou, S and W Hunan, E Jiangxi, C and N Taiwan, SW Zhejiang [Japan (Ryukyu Islands)].

1a. Leaflet blade abaxially with lateral vein axils not crinite 22a. var. *rhoifolia*

1b. Leaflet blade abaxially with lateral vein axils yellowish crinite 22b. var. *barbulata*

22a. *Meliosma rhoifolia* var. *rhoifolia*

漆叶泡花树(原变种) qi ye pao hua shu (yuan bian zhong)

Leaflet blade abaxially with lateral vein axils not crinite.

Evergreen broad-leaved forests; below 1800 m. C and N Taiwan [Japan (Ryukyu Islands)].

22b. *Meliosma rhoifolia* var. *barbulata* (Cufodontis) Y. W. Law, Acta Phytotax. Sin. 20: 431. 1982.

腋毛泡花树 ye mao pao hua shu

Meliosma rhoifolia subsp. *barbulata* Cufodontis, Oesterr. Bot. Z. 88: 254. 1939; *M. pinnata* (Roxburgh) Maximowicz subsp. *barbulata* (Cufodontis) Beusekom ex Welzen.

Leaflet blade abaxially pale, lateral veins 6–9 pairs, axils yellowish crinite.

• Evergreen broad-leaved forests; 400–1100 m. Fujian, N Guangdong, NE Guangxi, E Guizhou, S and W Hunan, E Jiangxi, SW Zhejiang.

Welzen (Thai Forest Bull., Bot. 32: 168–169. 2004) treated this taxon as *Meliosma pinnata* [subsp. *barbulata*] var. *barbulata*.

23. *Meliosma pinnata* (Roxburgh) Maximowicz, Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 6: 263. 1868.

羽叶泡花树 yu ye pao hua shu

Millingtonia pinnata Roxburgh, Fl. Ind. 1: 103. 1820.

Trees to 15 m tall, evergreen or deciduous. Leaves odd pinnate; leaflets 11–25, lanceolate on lower axis, lanceolate or narrowly oblong on mid-axils, terminal one suboblanceolate, 7–17 × 2–4 cm, papery or subleathery, both surfaces nearly glabrous, lateral veins 10–14 pairs, somewhat ascending, arched-anastomosing 2–5 mm from margin, base cuneate or broadly cuneate, margin sparsely serrate or nearly entire, apex caudate-acuminate. Panicle erect, 10–55(–70) cm, pubescent, axis long and stiff, triangular, broadly and sparsely branched. Sepals 5, broadly ovate, 6–8 mm, 2 outer ones narrower. Petals: 3 outer ones suborbicular; 2 inner ones bifid to half. Ovary glabrous. Drupe globose or obovoid, 4–5 mm in diam.; endocarp globose,

convex, with coarse, scattered netlike strips, midrib prominent. Fl. May–Jun, fr. Sep–Oct.

Evergreen broad-leaved forests; 1000–1500 m. S Xizang [Bangladesh, Bhutan, NE India, N Myanmar].

24. *Meliosma arnottiana* (Wight) Walpers, Repert. Bot. Syst. 1: 423. 1842.

南亚泡花树 nan ya pao hua shu

Millingtonia arnottiana Wight, Ill. Ind. Bot. 1: 144. 1840, based on *Sapindus microcarpus* Wight & Arnott, Prodr. Fl. Ind. Orient. 1: 112. 1834, not Ruiz & Pavón (1804); *Meliosma pinnata* (Roxburgh) Maximowicz subsp. *arnottiana* (Wight) Beusekom; *M. pinnata* var. *arnottiana* (Wight) Beusekom; *M. wallichii* Planchon ex J. D. Hooker.

Trees to 20 m tall, evergreen. Branchlets brown. Leaf axes, abaxial surface of leaves, and inflorescences sparsely curved pubescent or lanuginous. Leaves odd pinnate; petiolule 15–30 mm; leaflets 7–15, ovate on lower axis, oblong-ovate or narrowly oblong-elliptic at middle, narrowly elliptic at apices, 6–14(–17) × 2.5–4(–5.5) cm, subleathery, abaxially pilose or lanuginose, lateral veins 5–10 pairs, ascending, anastomosing 2–6 mm from margin, crinite at vein axils, base rounded or broadly cuneate, margin entire or spinously serrulate along upper margin, apex caudate-acuminate, tip usually curved. Panicle terminal or axillary by upper leaf of branches, 15–25 cm, axis triangular, branched 3 times, lateral branches flat. Pedicel 1–1.5 mm, pubescent. Sepals 5, ovate or suborbicular, ca. 1 mm, outer one narrower, ciliate. Petals light yellow: 3 outer ones flattened orbicular or orbicular, ca. 2 mm in diam.; 2 inner petals equal or slightly shorter than filaments, bifid to half at an obtuse angle, toothed at middle, lateral lobes ovate, ciliate. Stamens ca. 1 mm. Pistil ca. 1.3 mm; ovary pubescent; style equal to ovary. Drupe obovoid, 4–7 mm; endocarp convex, with coarse, scattered netlike strips, midrib obscurely prominent. Fl. May–Jul, fr. Aug–Oct.

Evergreen broad-leaved forests on mountain slopes, valleys; 500–2000 m. S Guangxi, Xizang, S Yunnan [India, Indonesia, Japan, S Korea, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam].

25. *Meliosma kirkii* Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1906: 154. 1906.

山青木 shan qing mu

Trees to 16 m tall, deciduous. Young branches light red, pubescent. Leaves odd pinnate, 12–50 cm; leaflets 7–15, abaxially pale, adaxially dark green, ovate on lower axes, narrowly ovate or narrowly oblong at middle, narrowly elliptic at apices, 4–15 × 1.5–4.5 cm, papery, abaxially pilose on veins, adaxially glabrous except on midvein and lateral veins, lateral veins 6–15 pairs, ascending, anastomosing 3–5 mm from margin, crinite on vein axils, base usually broadly rounded, margin spinose-serrate, apex acuminate. Panicle terminal or axillary at apices of branches, 15–20 cm, axis triangular, branched 3 times, brown pubescent. Pedicel ca. 1 mm. Flowers ca. 3 mm in diam. Sepals 5, elliptic-ovate, 1–1.2 mm, 2 outer ones smaller, pubescent abaxially, ciliate. Petals yellow: 3 outer ones flat-orbicular, ca. 2.5 mm wide, 5–7 veins distinct; 2 inner ones subequal to filaments, 3-lobed, midlobe very small, lateral lobes ovate, ciliate.

Fertile stamens 1.2–1.5 mm. Pistil ca. 1.5 mm; ovary pubescent; style equal to ovary. Drupe globose, 3–5 mm in diam., convex, with coarse, scattered netlike strips, midrib obscurely prominent. Fl. Jun–Jul, fr. Aug–Oct.

• Forests; 900–2000 m. S Sichuan, Yunnan.

26. *Meliosma glandulosa* Cufodontis, Oesterr. Bot. Z. 88: 252. 1939.

腺毛泡花树 xian mao pao hua shu

Trees to 15 m tall, evergreen. Branchlets dark brown, glabrous. Leaves odd pinnate, ca. 40 cm; leaflets 7–9, abaxially pale, adaxially black-brown when dry, ovate on lower axis, ovate or oblong-ovate at middle, elliptic terminally, 5–12 × 1.5–4 cm, rarely to 25 cm, subleathery, abaxially scattered with claviform glands, pubescent along veins, crinite on vein axils, adaxially hispidulous on midvein and lateral veins, lateral veins 6–10 pairs, straight or slightly ascending, base broadly cuneate or rounded-obtuse, oblique, margin sparsely serrulate on upper 2/3, apex shortly acuminate. Panicle terminal, 15–24 cm, axis triangular, branched 3 times, lateral branches flat, brown pubescent. Flowers ca. 2 mm in diam., subsessile. Sepals 5, ovate, ca. 1 mm, margin glandulous, apex obtuse. Petals: 3 outer ones light green, broadly ovate, ca. 2 mm; 2 inner ones shorter than filaments, bifid to half, lobes ovate, ciliate. Ovary densely pubescent, shorter than style. Drupe globose, 4–5 mm in diam.; endocarp compressed-globose, with scattered netlike strips, midrib distinctly prominent. Fl. summer, fr. Aug–Oct.

• Evergreen broad-leaved forests in mountains; 400–1400 m. N Guangdong, E Guangxi, SC Guizhou.

27. *Meliosma oldhamii* Miquel ex Maximowicz, Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg 6: 263. 1868.

红柴枝 hong chai zhi

Trees to 20 m tall, deciduous. Axillary buds globose or compressed-globose, densely light brownish pubescent. Leaves odd pinnate, 15–30 cm, axis, petiolules and both surfaces of leaflets brownish pubescent; leaflets 7–15, ovate on lower axis, 3–5 cm, oblong-ovate or narrowly ovate at middle, terminal one obovate or oblong-obovate, 5.5–8(–10) × 2–3.5 cm, thinly papery, abaxially pubescent or subglabrous, adaxially shortly pubescent, lateral veins 7 or 8 pairs, ascending, arched-anastomosing near margin, crinite at vein axils, base rounded or broadly or narrowly cuneate, margin sparsely acutely serrate, apex acute or acute-acuminate. Panicle terminal, erect, 15–30 cm long and wide, branched 3 times, brownish pubescent. Pedicel 1–1.5 mm. Sepals 5, elliptic-ovate, ca. 1 mm, outer ones narrower, ciliate. Petals white: 3 outer ones suborbicular, ca. 2 mm in diam.; 2 inner ones slightly shorter than filaments, bifid to half, sometimes 3-lobed and middle one very small, lateral lobes narrowly obovate, ciliate. Fertile stamens ca. 1.5 mm. Ovary equal to style, yellow pubescent. Drupe globose, 4–5 mm in diam.; endocarp convex, with distinct, scattered netlike strips, midrib conspicuously prominent. Fl. May–Jun, fr. Aug–Sep.

Valley forests, mountain forests, humid mountain slopes; 300–1900 m. Anhui, Fujian, N Guangdong, Guangxi, Guizhou, Henan,

Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Yunnan, Zhejiang [Japan, S Korea].

- 1a. Leaflets abaxially densely or sparsely pubescent or subglabrous 27a. var. *oldhamii*
 1b. Leaflets sparsely shortly claviform-glandulous 27b. var. *glandulifera*

27a. *Meliosma oldhamii* var. *oldhamii*

红柴枝(原变种) hong chai zhi (yuan bian zhong)

Meliosma arnottiana (Wight) Walpers var. *oldhamii* (Maximowicz) H. Ohba; ?*M. glandulosa* Cufodontis var. *sinensis* Cufodontis; *M. oldhamii* var. *sinensis* (Nakai) Cufodontis; *M. pinnata* (Roxburgh) Maximowicz var. *oldhamii* (Maximowicz) Beusekom; *M. sinensis* Nakai; *Rhus bofillii* H. Léveillé.

Leaflets densely or sparsely pubescent or subglabrous abaxially.

Valley forests, humid mountain slopes; 300–1300 m. Anhui, Fujian, N Guangdong, NE Guangxi, Guizhou, Henan, Hubei, Jiangsu, Jiangxi, S Shaanxi, Yunnan, Zhejiang [Japan, S Korea].

27b. *Meliosma oldhamii* var. *glandulifera* Cufodontis, Oesterr. Bot. Z. 88: 253. 1939.

有腺泡花树 you xian pao hua shu

Leaflets sparsely shortly claviform-glandulous.

• Mountain forests; 1200–1900 m. Anhui, Guangxi, Hunan, Jiangxi.

28. *Meliosma alba* (Schlechtendal) Walpers, Repert. Bot. Syst. 2: 816. 1843.

珂南树 ke nan shu

Millingtonia alba Schlechtendal, Linnaea 16: 395. 1842; *Meliosma beaniana* Rehder & E. H. Wilson.

Trees to 25 m tall, deciduous. Branches of current year brownish velutinous, 2-year-old branches light gray; both surfaces of leaflets, petiolules, and axes brownish pubescent when young. Leaves odd pinnate, 15–35 cm; petiolule of terminal leaflet articulate, well marked against axis; leaflets 5–13, ovate or narrowly ovate, apical ones ovate-elliptic, 5–15 × 2.5–3.5 cm, papery, lateral veins 8–10 pairs, anastomosing far away

from margin, distinctly yellowish crinite at vein axils, base broadly cuneate or obtuse, oblique, margin sparsely serrulate, rarely nearly entire, apex acuminate. Panicle axillary at upper leaf-axil of branch, often clustering near branch apices, extending and pendulous, 12–30 cm (including peduncle 2–5 cm), branched 2(or 3) times, brownish pubescent. Sepals 4, ovate, 1.5–2 mm, coarsely ciliate, shortly acute or obtuse-rounded. Petals light yellow: 3 outer ones broadly reniform, apex concave, ca. 2 × 4 mm; 2 inner ones equal to filaments, bifid to 1/4. Fertile stamens ca. 2 mm. Pistil ca. 2.5 mm; ovary glabrous. Drupe globose, 6–7 mm in diam.; endocarp compressed-globose, smooth laterally, midrib obscurely prominent. Fl. May–Jun, fr. Aug–Oct.

Humid dense or sparse forests on mountains; 1000–2500 m. Fujian, NW Guizhou, Hubei, Hunan, Jiangxi, Sichuan, N Yunnan, Zhejiang [N Myanmar].

This species is a good source of timber for furniture.

29. *Meliosma veitchiorum* Hemsley, Bull. Misc. Inform. Kew 1906: 155. 1906.

暖木 nuan mu

Meliosma longicalyx Lecomte.

Trees to 20 m tall, deciduous. Young parts ± brownish pilose; branchlets robust, with suborbicular thick leaf scars. Leaves pinnate, 60–90 cm, axis terete, swollen at base; leaflets 7–11, ovate or ovate-elliptic, 7–15(–20) × 4–8(–10) cm, papery, persistently pubescent on veins or both surfaces, not crinite at vein axils, lateral veins 6–12 pairs, base rounded-obtuse, oblique, margin entire or coarsely serrate, apex acute or acuminate. Panicle terminal, erect, 40–45(–60) cm, branched 4(or 5) times; lenticels dense and large on axis or branches. Pedicel 0.5–3 mm, brown pubescent. Sepals 4(or 5), elliptic or ovate, 1.5–2.5 mm, outer ones narrower, apex obtuse. Petals white: 3 outer ones obcordiform, 1.5–2.5 × 1.5–3.5 mm; 2 inner ones ca. 1 mm, bifid to 1/3, lobes rounded at apex, ciliate. Stamens 1.5–2 mm. Drupe subglobose, ca. 1 mm in diam.; endocarp subglobose, smooth or with inconspicuous, scattered netlike strips, midrib distinctly prominent. Fl. May, fr. Aug–Sep.

• Humid dense or sparse forests; 1000–3000 m. S Anhui, NE Guizhou, Henan, Hubei, Hunan, S Shaanxi, Shanxi, Sichuan, N Yunnan, N Zhejiang.