

2. ACER Linnaeus, Sp. Pl. 2: 1054. 1753.

枫属 feng shu

Trees or shrubs. Leaves mostly simple and palmately lobed or at least palmately veined, in a few species pinnately veined and entire or toothed, or pinnately or palmately 3–5-foliolate. Inflorescence corymbiform or umbelliform, sometimes racemose or large paniculate. Sepals (4 or)5, rarely 6. Petals (4 or)5, rarely 6, seldom absent. Stamens (4 or 5 or)8(or 10 or 12); filaments distinct. Carpels 2; ovules (1 or)2 per locule. Fruit a winged schizocarp, commonly a double samara, usually 1-seeded; embryo oily or starchy, radicle elongate, cotyledons 2, green, flat or plicate; endosperm absent. $2n = 26$.

About 129 species: widespread in both temperate and tropical regions of N Africa, Asia, Europe, and Central and North America; 99 species (61 endemic, three introduced) in China.

Acer lanceolatum Molliard (Bull. Soc. Bot. France 50: 134. 1903), described from Guangxi, is an uncertain species and is therefore not accepted here. The type specimen, in Berlin (B), has been destroyed. Up to now, no additional specimens have been found that could help clarify the application of this name.

Worldwide, Japanese maples are famous for their autumn color, and there are over 400 cultivars. Also, many Chinese maple trees have beautiful autumn colors and have been cultivated widely in Chinese gardens, such as *Acer buergerianum*, *A. davidii*, *A. duplicatoserratum*, *A. griseum*, *A. pictum*, *A. tataricum* subsp. *ginnala*, *A. triflorum*, *A. truncatum*, and *A. wilsonii*. In winter, the snake-bark maples (*A. davidii* and its relatives) and paper-bark maple (*A. griseum*) are eye-catching. Maple wood is used for furniture, interior beams in buildings, and wooden tools. The young leaves of *A. tataricum* subsp. *ginnala* can be used as a substitute for tea.

1a. Leaves compound.

- 2a. Leaves palmatifoliolate, 5(–9) leaflets 12. *A. sect. Pentaphylla*
- 2b. Leaves trifoliolate or pinnate.
 - 3a. Bud scales 10–15-paired; leaves trifoliolate; inflorescence corymbose, terminal and axillary; stamens 10–13; androdioecious 13. *A. sect. Trifoliata*
 - 3b. Bud scales 2–4-paired; leaves pinnate or trifoliolate; inflorescence racemose, axillary from leafless buds; dioecious 14. *A. sect. Negundo*

1b. Leaves simple.

- 4a. Inflorescence lateral from leafless buds.
 - 5a. Leaves entire, leathery, evergreen; inflorescence cymose-paniculate; stamens 4–12; nutlets slightly flat 10. *A. sect. Hyptiocarpa*
 - 5b. Leaves lobed, papery, deciduous; inflorescence racemose; stamens 8; nutlets strongly convex 11. *A. sect. Lithocarpa*
- 4b. Inflorescence terminal, or terminal and lateral, with leaves at base.
 - 6a. Inflorescence spicate-paniculate 9. *A. sect. Spicata*
 - 6b. Inflorescence corymbose, racemose, or paniculate.
 - 7a. Leaf margin usually not serrate; petiole with white latex; nutlets usually flat 1. *A. sect. Platanoidea*
 - 7b. Leaf margin usually serrate; petiole without white latex; nutlets usually convex.
 - 8a. Shoots striped; bud scales 2-paired.
 - 9a. Axillary buds stalked; flowers 5-merous, bisexual (plants monoecious); nutlets slightly veined 5. *A. sect. Macrantha*
 - 9b. Axillary buds not stalked; flowers 4-merous, unisexual (plants dioecious); nutlets strongly convex and distinctly veined 6. *A. sect. Arguta*
 - 8b. Shoots not striped; bud scales 4- or more paired.
 - 10a. Bud scales always 4-paired, terminal buds usually absent 2. *A. sect. Palmata*
 - 10b. Bud scales 5- or more paired.
 - 11a. Leaf margin entire 3. *A. sect. Oblonga*
 - 11b. Leaf margin coarsely serrate or biserrate.
 - 12a. Stamens 5; disk amphistaminal; nutlets flat 4. *A. sect. Pubescentia*
 - 12b. Stamens 8; disk extrastaminal; nutlets convex.
 - 13a. Leaves 3- or 5-lobed, leaf margin coarsely serrate, blade usually broader than long; nutlets strongly convex; winter buds large, scales 10–14 7. *A. sect. Acer*
 - 13b. Leaves slightly 3- or 5-lobed or unlobed, leaf margin serrate or biserrate, blade oblong; nutlets slightly convex; winter buds small, scales 8–10 8. *A. sect. Ginnala*

1. *Acer* sect. *Platanoidea* Pax, Bot. Jahrb. Syst. 6: 327. 1885.

桐状枫组 tong zhuang feng zu

Trees, andromonoecious. Branchlets gray or brownish yellow, green or purple-green and striped; bud with 5–8 pairs of imbricate scales. Leaves simple, usually 3- or 5-lobed or unlobed, lobes usually entire, sometimes undulate, rarely toothed; petioles

with white latex. Infructescence terminal, corymbose. Sepals and petals 5. Stamens (5–)8. Disk amphistaminal. Nutlets usually compressed-flat.

Fifteen species: China, Europe, Japan, Russia; 12 species (eight endemic) in China.

- 1a. Leaf blade 3-lobed, margin undulate; lobes obtuse 1. *A. miaotaiense*
- 1b. Leaf blade 3-, 5-, or 7-lobed, or unlobed, margin entire or rarely dentate; middle lobes usually acute or acuminate.
 - 2a. Shoots gray or brownish yellow.
 - 3a. Leaf blade 4–6 × 3–6 cm, usually 3-lobed, rarely undivided, suborbicular or ovate, base rounded or subcordate, margin entire or slightly sinuate, apex obtuse or acute, abaxially glabrous except slightly pubescent at vein axil 9. *A. tenellum*
 - 3b. Leaf blade 7–13 × 5–20 cm, usually 3- or 7-lobed, base truncate or obtuse, apex acuminate, abaxially densely pubescent or glabrous.
 - 4a. Leaves abaxially densely pubescent, usually 3-lobed, or unlobed when young 10. *A. fulvescens*
 - 4b. Leaves abaxially glabrous, usually 5-lobed, sometimes 3- or 7-lobed.
 - 5a. Nutlets convex and thick; leaf base usually truncate, lobes sometimes dentate 11. *A. truncatum*
 - 5b. Nutlets flat and thin; leaf base rounded or cordate, lobes entire 12. *A. pictum*
 - 2b. Shoots green or purple-green.
 - 6a. Nutlets slightly convex.
 - 7a. Leaf blade 3- or 5-lobed 6. *A. shenkanense*
 - 7b. Leaf blade 5- or 7-lobed.
 - 8a. Wing including nutlet 2–5 cm × 5–9 mm; leaves abaxially glabrous or slightly pubescent, base truncate or cordate 7. *A. cappadocicum*
 - 8b. Wing including nutlet 3.5–4 cm × ca. 12 mm; leaves abaxially densely yellow-gray tomentose, base rounded 8. *A. tibetense*
 - 6b. Nutlets flat, thin.
 - 9a. Leaves glabrous.
 - 10a. Leaf blade unlobed or 3-lobed, 4–11 × 2.5–4(–8) cm, apex caudate-acuminate; nutlet including wing ca. 2.5 cm 2. *A. chunii*
 - 10b. Leaf blade 3- or 5-lobed, rarely unlobed, 10–20 × 4–26 cm, apex usually obtuse or acute; nutlet including wing (2.5–)3–4.5 cm 3. *A. amplum*
 - 9b. Leaves abaxially pubescent.
 - 11a. Leaf blade usually 3-lobed or unlobed when young, base rounded or slightly cordate; nutlets conspicuously veined 4. *A. longipes*
 - 11b. Leaf blade usually 5- or 7-lobed, base truncate or cordate; nutlets not veined 5. *A. acutum*

1. *Acer miaotaiense* P. C. Tsoong, Bull. Misc. Inform. Kew 1954: 83. 1954 [“*miaotense*”].

庙台枫 miao tai feng

Acer miaotaiense var. *glabrum* M. C. Wang; *A. miyabei* Maximowicz subsp. *miaotaiense* (P. C. Tsoong) A. E. Murray; *A. yangjuechi* W. P. Fang & P. L. Chiu.

Trees to 25 m tall. Bark brownish gray, rough. Branchlets glabrous; lenticels rounded; winter buds ellipsoid, scales 4. Leaves deciduous; petiole 6–7 cm, glabrous; leaf blade broadly ovate, (4–)7–9 × 5–8 cm, papery, abaxially pubescent, adaxially glabrous, primary veins 3–5, secondary veins 5–7 pairs, base cordate or subcordate, 3- or 5-lobed; lobes ovate, margin undulate, apex acute. Inflorescence terminal, corymbose-paniculate. Flowers yellow-green. Sepals 5, oblong, ca. 4 mm, margin ciliate. Petals 5, obovate-lanceolate, ca. as long as sepals. Stamens 8. Disk orbicular, margin 5-repand-lobed. Infructescence corymbose, glabrous; pedicel 3–6 mm; samara pubescent or rarely glabrous. Nutlets flat, ca. 8 mm in diam.; wing including nutlet 2–2.5 × 0.8–0.9 cm; wings spreading horizontally. Fl. May, fr. Sep.

• Mixed forests; 700–1600 m. SE Gansu, SW Henan, NW Hubei, S Shaanxi, Zhejiang.

This taxon is closely related to *Acer miyabei* Maximowicz; the

bark, inflorescences, flowers, and fruit are very similar. For one of us (de Jong), *A. miaotaiense* is a subspecies of *A. miyabei*.

2. *Acer chunii* W. P. Fang, Sunyatsenia 3: 263. 1937.

乳源枫 ru yuan feng

Trees ca. 7 m tall, glabrous. Bark dark brown. Branchlets dull brown, slender, minutely lenticellate. Leaves deciduous, long petiolate; petiole 3–7 cm, very slender; leaf blade abaxially pale green, adaxially bright green, drying brownish green, ovate, variable in size, larger ones 7–9 × 4–5 cm, smaller ones not exceeding 4 × 2.5 cm, papery, 3 principal veins slender, slightly prominent abaxially, obscure adaxially, lateral veins 3 or 4, slender, densely minutely reticulate on both surfaces, base rounded, margin entire and unlobed or 3-lobed, apex abruptly long acuminate with a long slender caudate-falcate acumen minutely aristate; 3-lobed leaf blade 10–11 × 7–8 cm; lateral lobes equal or unequal, very short to nearly obsolete, or obtuse to acute, or ovate-triangular and distinctly long caudate-acuminate. Flowers unknown. Inflorescence corymbose, few branched, apparently nodding, to 6 cm and ca. as broad, sessile or subsessile; peduncle when present not exceeding 3 mm. Samara reddish purple when immature; pedicels 2–3 cm, slender; wing subhorizontal, straight, obtuse, including nutlet 2–3 cm × 5–8 mm. Nutlets flattened, ovoid-oblong, ca. 10 × 6

mm, not reticulate. Fl. Apr, fr. Sep.

- Sparse forests; 800–2500 m. Fujian, N Guangdong, SW Sichuan.

This is a rare species.

- 1a. Leaves usually unlobed 2a. subsp. *chunii*
 1b. Leaves usually 3-lobed 2b. subsp. *dimorphophyllum*

2a. Acer chunii subsp. chunii

乳源枫(原亚种) ru yuan feng (yuan ya zhong)

Leaf blade usually entire and unlobed, rarely with 3-lobed leaves on same branchlet.

- Sparse forests; 800–1200 m. Fujian, N Guangdong.

2b. Acer chunii subsp. dimorphophyllum W. P. Fang, Acta Phytotax. Sin. 17(1): 68. 1979.

两型叶乳源枫 liang xing ye ru yuan feng

Leaf blade 3-lobed, rarely unlobed; 3-lobed leaf blade 10–11 × 7–8 cm, base nearly rounded; central lobe ovate, apex caudate-acuminate, lateral lobes triangular, apex acute; unlobed leaf blade oblong, 8–9 × 3.5–4 cm, base rounded, apex caudate-acuminate; petiole 5–7 cm. Nutlet including wing 2–2.8 cm, 5–8 mm in diam., spreading at obtuse angle.

- Sparse forests; 1000–2500 m. SW Sichuan.

3. Acer amplum Rehder in Sargent, Pl. Wilson. 1: 86. 1911.

阔叶枫 kuo ye feng

Trees to 25 m tall, andromonoecious. Bark brownish, dark brown, or dark gray, smooth. Branchlets slender, glabrous; those of present year green or purplish green, those more than 2 years old gray or dark gray, lenticels rounded; winter buds purplish brown, subglobose or ovoid, glabrescent, scales 5 or 6 pairs. Leaves deciduous; petiole 4–14 cm, slender, glabrous or slightly puberulent near apex when young; leaf blade 7–26 × 5–25 cm, papery, abaxially light green, adaxially dark green or yellowish green, base rounded, subcordate, or truncate, 3- or 5-lobed or unlobed and entire, apex obtuse to caudate. Inflorescence terminal, corymbose, sessile or with peduncles ca. 5 mm, or up to 3 cm, numerous flowered, glabrous. Pedicel 1–2 mm, glabrous. Sepals 5, oblong-ovate and emarginate near apex, 4.5–5 mm, glabrous, apex obtuse. Petals 5, slightly longer than sepals. Stamens 8, ca. 5 mm in staminate flowers, shorter in pistillate, glabrous. Disk amphistaminal, slightly lobed and glabrous. Ovary glabrous, style glabrous, and stigmas recurved. Nutlets compressed, flat; wing including nutlet 2.5–5.5 × 0.6–1.5 cm, wings spreading at obtuse, acute, or erect angle. Fl. Apr, fr. Sep.

Forests, usually in valleys; 500–2500 m. S Anhui, Fujian, NW Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [Vietnam].

- 1a. Leaf blade usually entire and unlobed, rarely 2- or 3-lobed leaves on same branchlet; samara 5–5.5 cm 3d. subsp. *catalpifolium*
 1b. Leaf blade 3- or 5-lobed; samara 2.5–4.5 cm.

- 2a. Leaf blade usually shallowly 5-lobed, sinus between lobes at obtuse angle 3a. subsp. *amplum*
 2b. Leaf blade usually deeply 3-lobed, sinus between lobes at acute angle.
 3a. Lateral lobes extending laterally; wings spreading at obtuse angle 3b. subsp. *tientaiense*
 3b. Lateral lobes extending upward; wings spreading at acute angle 3c. subsp. *bodinieri*

3a. Acer amplum subsp. amplum

阔叶枫(原亚种) kuo ye feng (yuan ya zhong)

Acer amplum var. *convexum* (W. P. Fang) W. P. Fang; *A. bodinieri* H. Léveillé var. *convexum* W. P. Fang; *A. capadocicum* Gleditsch subsp. *amplum* (Rehder) A. E. Murray; *A. catalpifolium* Rehder subsp. *xinganense* W. P. Fang; *A. firmianoides* W. C. Cheng; *A. longipes* Franchet ex Rehder subsp. *amplum* (Rehder) P. C. de Jong; *A. longipes* subsp. *firmianoides* (W. C. Cheng) P. C. de Jong.

Leaf blade 9–26 × 9–20 cm, usually broader than long, papery, reticulate veins conspicuous adaxially, base subcordate or truncate, shallowly (3 or) 5-lobed or undivided, lobes usually shortly ovate, sinus between lobes at obtuse angle, apex obtuse or acuminate. Fruit purple when young; nutlets 1–1.9 cm × 8–10 mm; wings slender, including nutlet 3.5–4.5 × 1.2–1.5 cm, wings spreading obtusely, rarely horizontally. Fl. Apr, fr. Sep. 2n = 26*.

- Forests, valleys; 1000–2000 m. S Anhui, Fujian, NW Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

3b. Acer amplum subsp. tientaiense (C. K. Schneider) Y. S. Chen, **stat. nov.**

天台阔叶枫 tian tai kuo ye feng

Basionym: *Acer longipes* Franchet ex Rehder var. *tientaiense* C. K. Schneider, Ill. Handb. Laubholz. 2: 224. 1907; *A. amplum* var. *tientaiense* (C. K. Schneider) Rehder; *A. tientaiense* (C. K. Schneider) Pojarkova.

Leaf blade 7–16 × 6–14 cm, base truncate or slightly cordate, usually deeply 3-lobed, lobes oblong, margin slightly undulate, apex caudate; lateral lobes extending laterally. Peduncles ca. 5 mm. Wing including samara 2.5–3.5 cm × 6–8 mm, wings spreading at obtuse angle. Fl. Apr, fr. Sep.

- Mixed forests; 700–1000 m. Fujian, Jiangxi, Zhejiang.

3c. Acer amplum subsp. bodinieri (H. Léveillé) Y. S. Chen, **comb. et stat. nov.**

建水阔叶枫 jian shui kuo ye feng

Basionym: *Acer bodinieri* H. Léveillé, Repert. Spec. Nov. Regni Veg. 10: 433. 1912; *A. amplum* var. *jianshuiense* W. P. Fang; *A. bodinieri* var. *nayongense* (W. P. Fang) K. Rushforth; *A. chapaense* Gagnepain; *A. longipes* var. *hunanense* W. P. Fang & W. K. Hu; *A. nayongense* W. P. Fang; *A. nayongense* var. *hunanense* (W. P. Fang & W. K. Hu) W. P. Fang & W. K.

Hu.

Leaf blade 8–20 × 5–25 cm, usually 3-lobed, rarely unlobed, base rounded or obtuse to truncate, apex acute; lateral lobes extending upward. Wing including nutlet 2.8–3.5 × 0.6–1 cm, wings spreading acutely. Fl. Mar–Apr, fr. Oct.

Mixed forests, valleys; 1200–2500 m. Guangxi, Guizhou, Hunan, Yunnan [Vietnam].

3d. *Acer amplum* subsp. *catalpifolium* (Rehder) Y. S. Chen, comb. nov.

梓叶枫 *zi ye feng*

Basionym: *Acer catalpifolium* Rehder in Sargent, Pl. Wilson. 1: 87. 1911; *A. cappadocicum* subsp. *catalpifolium* (Rehder) A. E. Murray.

Leaf blade ovate or ovate-oblong, 8–20 × 5–9 cm, abaxially glabrous except with tufts of hairs at bases of veins, adaxially glabrous, base rounded or nearly so, undivided with margin entire or occasionally with undeveloped lateral lobes below middle, apex acuminate. Fruit yellowish, glabrous; fruiting pedicel 2–3 mm; nutlets ovoid, compressed; wing including nutlet 5–5.5 × ca. 1.4 cm, wings spreading at erect, obtuse, or acute angles. Fl. Apr, fr. Aug–Oct.

• Mixed forests, valleys; 500–2000 m. NE Guangxi, N Guizhou, Sichuan.

4. *Acer longipes* Franchet ex Rehder in Sargent, Trees & Shrubs 1: 178. 1905.

长柄枫 *chang bing feng*

Acer cappadocicum Gleditsch var. *tomentulosum* (Rehder) A. E. Murray; *A. laetum* C. A. Meyer var. *tomentulosum* Rehder; *A. longipes* var. *chengbuense* W. P. Fang; *A. longipes* var. *nanchuanense* W. P. Fang; *A. pashanicum* W. P. Fang & T. P. Soong.

Trees to 10 m tall, andromonoecious. Bark purplish or purplish gray. Branchlets slender; lenticels rounded or ovate; winter buds small, scales 5–8 pairs. Leaves deciduous; petiole 5–9 cm, slender, glabrous; leaf blade abaxially pale green, adaxially dark green, (6–)8–13(–14) × 7–15 cm, papery, abaxially grayish soft pubescent especially on veins, adaxially glabrous, primary veins 3–5, base subcordate, usually 3-lobed, rarely 5-lobed or undivided; lobes triangular-ovate, 3–5 × 2–4 cm, apex acuminate or aristate. Inflorescence terminal on leafy branchlets, loosely corymbose, glabrous, numerous flowered; peduncles 1–1.5 cm. Sepals 5, elliptic-oblong, ca. 4 mm, apex obtuse. Petals 5, oblong-obovate, ca. as long as sepals. Stamens 8, glabrous; disk amphistaminal, lobed. Ovary glabrous; style short; stigmas revolute. Peduncles ca. 0.5 cm; pedicels ca. 1 cm. Samara yellowish brown; nutlets compressed, 10–13 × ca. 7 mm; wing including nutlet 2.2–4.5 × ca. 1 cm, wings spreading acutely or erectly. Fl. Apr, fr. Sep.

• Mixed forests, valleys; 300–1600 m. Chongqing, N Guangxi, S Henan, Hunan, W Hubei, Jiangxi, S Shaanxi.

5. *Acer acutum* W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 8: 164. 1932.

锐角枫 *ruì jiǎo fēng*

Acer acutum var. *quinquefidum* W. P. Fang & P. L. Chiu; *A. acutum* var. *tientungense* W. P. Fang & M. Y. Fang.

Trees to 10 m tall, andromonoecious. Bark brown or brownish gray. Branchlets smooth, glabrous; winter buds brown, ovoid; scales 6, margin ciliate. Leaves deciduous; petiole 4–12 cm, puberulent near apex when young, glabrescent; leaf blade adaxially dark green, ovate or ovate-oblong, 8–15 × 6–12 cm, papery, abaxially pubescent when young, adaxially glabrous, base cordate or subcordate, (5 or)7-lobed; lobes broadly ovate or triangular, middle lobe and lateral lobes usually acuminate apically. Inflorescence terminal, corymbose, puberulent; peduncles 3–5 mm, from leafy branchlets, appearing with development of leaves. Sepals 5, oblong. Petals 5, linear-oblongate or obovate. Stamens 8; filaments glabrous. Disk amphistaminal, glabrous. Ovary glabrous; style glabrous; stigmas incurved. Fruit pale brown, glabrous; nutlets compressed, 9–11 × ca. 17 mm; samara wing oblong, parallel-margined, including nutlet 2.5–3.5 cm × 7–11 mm, wings spreading acutely. Fl. Apr, fr. Aug.

• Forests; 800–1100 m. S Anhui, S Henan, Jiangxi, Zhejiang.

6. *Acer shenkanense* W. P. Fang ex C. C. Fu, Fl. Tsinling, 1(3): 452. 1981.

陕甘枫 *shān gān fēng*

Acer cappadocicum Gleditsch f. *tricaudatum* (Rehder ex Veitch) Rehder; *A. cappadocicum* var. *tricaudatum* (Rehder ex Veitch) Rehder; *A. cappadocicum* subsp. *trilobum* A. E. Murray, p.p.; *A. fulvescens* Rehder subsp. *fupingense* (W. P. Fang & W. K. Hu) W. P. Fang & W. K. Hu; *A. fulvescens* var. *fupingense* W. P. Fang & W. K. Hu; *A. fulvescens* subsp. *fuscenscens* W. P. Fang; *A. laetum* C. A. Meyer var. *tricaudatum* Rehder ex Veitch; *A. tricaudatum* W. P. Fang & C. C. Fu.

Trees to 10 m tall, andromonoecious. Bark brown or grayish brown. Branchlets reddish green, glabrous; winter buds subglobose, outside glabrous. Leaves deciduous; petiole 7–12 cm, slender, pubescent or glabrescent; leaf blade abaxially pale green, adaxially dark green, 5–10 × 4–12 cm, papery, abaxially pubescent or glabrous, adaxially glabrous, primary veins (3–)5, reticulate veins conspicuous abaxially, usually 3- or 5-lobed; lobes basally truncate, margin entire, apex acute or caudate-acute. Inflorescence terminal, corymbose. Flowers yellow-green. Sepals 5, obovate, 2–2.5 mm. Petals 5, oblong-obovate, ca. 5 mm. Stamens 6–8. Disk nearly glabrous. Samara oblong, 1.2–3 cm including wings; nutlets convex, usually impressed on other side of one nutlet; wings 0.4–1 cm wide, spreading with acute to obtuse angle. Fl. Apr–May, fr. Jul–Sep.

• Forests along streams, mixed forests, valleys; 700–3000 m. SE Gansu, W Hubei, S Shaanxi, N and NW Sichuan.

7. *Acer cappadocicum* Gleditsch, Schriften Ges. Naturf. Freunde Berlin 6: 116. 1785.

青皮枫 *qīng pí fēng*

Trees to 20 m tall, andromonoecious. Bark brown or

grayish brown. Branchlets reddish green, stout, glabrous and with light stripes (as in *A. sect. Macrantha*); winter buds subglobose, outside glabrous, margin slightly ciliate. Leaves deciduous; petiole 7–12 cm, slender, glabrous; leaf blade abaxially pale green, adaxially dark green, usually longer than broad, 4–12(–20) × 5–20 cm, papery, adaxially glabrous, primary veins 3–7, reticulate veins conspicuous abaxially, base rounded, 3-, 5-, or 7-lobed, occasionally with leaves small, entire; middle lobe triangular-ovate, apex acuminate; lateral lobes obtuse or triangular-ovate. Flowers yellowish green. Sepals 5. Petals 5. Disk amphistaminal, glabrous. Inflorescence corymbose, ca. 5 cm. Fruiting pedicel 2–2.5 cm. Nutlets oblong, compressed, ± flat, 1–1.5 cm × ca. 6 mm; samara wing including nutlet 2–5 cm × 5–9 mm, wings spreading variously. Fl. Apr, fr. Aug.

Mixed forests; 1500–3000 m. Guizhou, W Hubei, S Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, N India, Kashmir, Nepal, Pakistan; SW Asia, S Europe (S Italy)].

- 1a. Leaf blade 12–18 cm, 5- or 7-lobed; samara wings 4.5–5 cm, spreading horizontally or obtusely 7a. subsp. *cappadocicum*
- 1b. Leaf blade 6–8 cm, 5-lobed, rarely 7-lobed; samara wings 2.5–3 cm, spreading acutely or obtusely 7b. subsp. *sinicum*

7a. *Acer cappadocicum* subsp. *cappadocicum*

青皮枫(原亚种) qing pi feng (yuan ya zhong)

Acer cappadocicum var. *cultratum* (Wallich) W. P. Fang; *A. cappadocicum* var. *indicum* (Pax) Rehder; *A. cultratum* Wallich; *A. laetum* C. A. Meyer; *A. laetum* var. *cultratum* (Wallich) Pax; *A. lobelii* Tenore var. *indicum* Pax.

Leaf blade 12–18 × 14–20 cm, 5- or 7-lobed. Samara wing 4.5–5 cm, spreading horizontally or obtusely.

2400–3000 m. S Xizang, NW Yunnan [Bhutan, N India (Assam, Sikkim), Kashmir, Nepal, Pakistan; SW Asia (Caucasus, Iran, Turkey), S Europe (S Italy)].

7b. *Acer cappadocicum* subsp. *sinicum* (Rehder) Handel-Mazzetti, Symb. Sin. 7: 640. 1933.

小叶青皮枫 xiao ye qing pi feng

Acer cappadocicum var. *sinicum* Rehder in Sargent, Pl. Wilson. 1: 85. 1911; *A. cappadocicum* var. *brevialatum* W. P. Fang; *A. fulvescens* Rehder subsp. *danbaense* W. P. Fang; *A. fulvescens* subsp. *pentalobum* (W. P. Fang & T. P. Soong) W. P. Fang & T. P. Soong; *A. fulvescens* var. *pentalobum* W. P. Fang & T. P. Soong.

Petiole reddish; leaf blade 6–8 × 5–8 cm, 5-lobed. Samara wing 2.5–3 cm, wings spreading acutely, purplish.

• 1500–2500 m. Guizhou, W Hubei, S Shaanxi, Sichuan, Xizang, Yunnan.

8. *Acer tibetense* W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 11: 45. 1939.

察隅枫 cha yu feng

Acer cappadocicum Gleditsch f. *rubrocarpum* A. E. Murray, p.p.

Trees usually ca. 10 m tall. Branchlets slender, glabrous; buds brownish, ovoid. Leaves deciduous; petiole 5–7 cm, puberulent near apex; leaf blade abaxially pale green, adaxially dark green, 6–9 × 5–8 cm, papery, abaxially densely yellow-gray tomentose, adaxially glabrous, base rounded, usually 5-lobed; lobes triangular-ovate, margin entire. Inflorescence corymbose, 5–6 cm, glabrous. Sepals 5, green, oblong, ca. 3 mm. Petals 5, obovate, 4–5 mm. Stamens 8. Ovary pubescent; style ca. 1.9 mm, glabrous; stigmas revolute. Fruit greenish yellow; nutlets ± flat, ca. 1.2 cm × 6–7 mm; wing including nutlet 3.5–4 × ca. 1.2 cm, wings spreading ± horizontally. Fl. Apr, fr. Sep.

• Forests, valleys; 1600–2700 m. SE Xizang.

9. *Acer tenellum* Pax, Hooker’s Icon. Pl. 19: t. 1897. 1889.

薄叶枫 bao ye feng

Trees usually ca. 7 m tall, andromonoecious. Bark gray or dark gray, smooth. Branchlets slender; lenticels rounded or ovate, small; winter buds small, scales ca. 4 pairs. Leaves deciduous; petiole 3–6 cm, slender, glabrous; leaf blade abaxially pale green, adaxially dark green, suborbicular or ovate, 4–6 × 3–6 cm, membranous, abaxially glabrous except slightly pubescent at vein axils, adaxially glabrous, veins raised abaxially, base subcordate or cordate, usually 3-lobed, rarely undivided; middle lobe obtuse, margin entire or slightly sinuate, apex acute or rarely acuminate; lateral lobes obtuse or triangular-ovate, margin entire, apex acute or obtuse. Inflorescence terminal, corymbose, glabrous. Pedicel ca. 2 cm. Sepals 5, oblong, 2–3 mm, both surfaces glabrous, margin slightly ciliate. Petals 5, yellowish green, oblong-obovate, 2–3 mm, glabrous. Stamens 8, in staminate flowers ca. as long as or slightly shorter than petals; filaments glabrous; anthers yellow. Disk amphistaminal, lobed, glabrous. Ovary glabrous, compressed; style glabrous, very short, connate at base; stigmas recurved. Fruit purple when young, glabrous; wing including nutlet 2–3 cm; nutlets compressed, with wings spreading nearly horizontally. Fl. May, fr. Sep.

• Mixed forests, valleys; 1200–1900 m. W Hubei, E and SE Sichuan.

- 1a. Leaf blade 3-lobed or undivided, lobes obtuse; samara wing 2–2.2 cm 9a. var. *tenellum*
- 1b. Leaf blade 7-lobed, lobes triangular-ovate; samara wing 2.8–3 cm 9b. var. *septemlobum*

9a. *Acer tenellum* var. *tenellum*

薄叶枫(原变种) bao ye feng (yuan bian zhong)

Acer cappadocicum Gleditsch var. *rotundilobum* A. E. Murray.

Leaf blade small, 3-lobed, sometimes undivided; lobes undulate, apex obtuse. Samara wing 2–2.2 cm.

• Mixed forests, valleys; 1200–1900 m. W Hubei, E Sichuan.

9b. *Acer tenellum* var. *septemlobum* (W. P. Fang & T. P. Soong) W. P. Fang & T. P. Soong, *Acta Phytotax. Sin.* 17(1): 61. 1979.

七裂薄叶枫 *qi lie bao ye feng*

Acer mono Maximowicz f. *septemlobum* W. P. Fang & T. P. Soong, *Acta Phytotax. Sin.* 11: 146. 1966.

Leaf blade 7-lobed; lobes triangular-ovate. Samara wing 2.8–3 cm.

- Mixed forests; 1400–1700 m. SE Sichuan.

10. *Acer fulvescens* Rehder in Sargent, *Pl. Wilson.* 1: 84. 1911.

黄毛枫 *huang mao feng*

Trees to 20 m tall, andromonoecious. Bark gray or yellowish gray; lenticels yellow, small; buds very few, brownish, ovoid, scales glabrescent. Leaves deciduous; petiole 3–9 cm, slender; leaf blade abaxially pale green, adaxially dark green, suborbicular, 7–10 × 5–11 cm, papery, abaxially pubescent, fulvous or brown pubescent especially on veins, adaxially glabrous or pubescent, primary veins 5–7, prominent, reticulate veins conspicuous abaxially, base rounded or subcordate, usually 3- or 5-lobed, rarely undivided or with 1 or 2 small additional basal lobes; lobes broadly triangular-ovate, 2–3 × 1–3 cm, apex aristate or long acuminate. Inflorescence corymbose, 8–10 cm, glabrous. Peduncles 0.5–2 cm. Sepals 5, ca. 3 mm. Petals 5, obovate. Stamens 8. Fruit purplish yellow when mature; nutlets compressed, 1.3–1.5 cm × 8–10 mm; samara wing 2.5–3.8 × ca. 1.5 cm, slender, broadest at middle, apex obtuse, wings spreading nearly horizontally. Fl. Apr, fr. Aug.

- Forests; 1800–3200 m. Sichuan, SE Xizang.

11. *Acer truncatum* Bunge, *Enum. Pl. China Bor.* 10. 1833.

元宝枫 *yuan bao feng*

Acer cappadocicum Gleditsch subsp. *truncatum* (Bunge) A. E. Murray; *A. laetum* C. A. Meyer var. *truncatum* (Bunge) Regel; *A. lobelii* Tenore subsp. *truncatum* (Bunge) Wesmael; *A. lobulatum* Nakai; *A. lobulatum* var. *rubripes* Nakai; *A. pictum* Thunberg subsp. *truncatum* (Bunge) A. E. Murray; *A. pictum* var. *truncatum* Chin S. Chang; *A. platanooides* Linnaeus var. *truncatum* (Bunge) Gams; *A. truncatum* var. *acuminatum* X. M. Liu; *A. truncatum* var. *beipiao* S. L. Tung; *A. truncatum* f. *cordatum* S. L. Tung; *A. truncatum* var. *nudum* Schwerin.

Trees 5–10 m tall, andromonoecious. Bark grayish brown or dark brown. Branchlets slender, glabrous; winter buds ovoid. Leaves deciduous; petiole 3–9 cm, glabrous, rarely puberulent at base when young; leaf blade abaxially pale green, adaxially dark green, 8–12 × 5–10 cm, papery, abaxially reticulate, glabrous, rarely with tufts of hairs at vein axils when young, adaxially glabrous, base usually truncate or rarely subcordate, usually 5-lobed, rarely 7-lobed; lobes triangular-ovate or triangular-lanceolate, 3–5 × 1.5–2 cm, margin entire, apex acuminate or caudate-acuminate. Inflorescence erect, corymbose; peduncles 1–2 cm, slender, glabrous. Pedicel ca. 1 cm, slender. Sepals 5, oblong, 4–5 mm, apex obtuse. Petals 5, oblong-obovate, 5–7

mm. Stamens 8, 2–3 mm in staminate flowers, shorter in pistillate flowers, glabrous, inserted near inner margin of disk. Disk slightly lobed. Ovary in fertile flowers compressed; style ca. 1 mm, glabrescent. Inflorescence corymbose, pendulous, each with 3–10 fruit. Nutlets flat, thick, 1.3–1.8 × 1–1.2 cm, glabrous; wing greenish white, usually ca. as long as nutlets, rarely longer, parallel on both sides, wings spreading at obtuse or right angles. Fl. Apr, fr. Aug. $2n = 26$.

Forests; 400–1000 m. Gansu, Hebei, Henan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi [Korea].

One of us (Chang) treats this as *Acer pictum* subsp. *truncatum*; however, two of us (Chen and de Jong) believe that *A. pictum* and *A. truncatum* differ in fruit, bark, and leaves, and de Jong notes that the seeds of *A. truncatum* are larger, with an exceptionally high percentage of fat and with hypogeous germination.

12. *Acer pictum* Thunberg in Murray, *Syst. Veg.*, ed. 14, 912. 1784.

色木枫 *se mu feng*

Trees to 20 m tall, andromonoecious. Bark gray. Branchlets slender, glabrous; winter buds subglobose, scales 4 pairs. Leaves deciduous; petiole 4–6 cm, slender, glabrous; leaf blade abaxially pale green, adaxially dark green, oblong, (8–)9–11(–12)

× (4–)6–8(–12) cm, papery, abaxially glabrous except for yellowish or whitish hairs on veins or at vein axils, sometimes abaxially pubescent, adaxially glabrous, base truncate, subtruncate, or hastate, 3-, 5-, 7-, or 9-lobed; lobes triangular or ovate, margin entire, apex acuminate or subcaudate-acuminate. Inflorescence terminal, paniculate-corymbose, ca. 4 × 4 cm, glabrous, numerous flowered; peduncles 1–2 cm. Pedicel ca. 1 cm, glabrous. Sepals 5, greenish yellow, oblong, 2–8 mm, ciliate, apex obtuse. Petals 5, whitish, elliptic or elliptic-obovate, ca. 3 mm. Stamens 8, shorter than petals, glabrous. Ovary glabrous or glabrescent, rudimentary in staminate flowers; style very short, glabrous; stigmas revolute. Fruit yellowish when mature; nutlets flat, compressed, 1–1.3 cm × 8–10 mm; wing oblong, including nutlet 3–3.5 × 1–1.5 cm, wings spreading variously. Fl. Apr–May, fr. Sep. $2n = 26$.

Forests, usually in valleys, also cultivated; sea level to 3300 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, SE Xizang, Yunnan, Zhejiang [Japan, Korea, Mongolia, E Russia].

One of us (Chang) believes that *Acer pictum* subsp. *macropterum*, subsp. *mono*, subsp. *pictum*, subsp. *pubigerum*, and subsp. *tricuspis* so closely resemble each other that they may be taken for one variable and widely distributed taxon. However, one of us (Chen) believes that some of the subspecies are good and differ in their distributions; while awaiting future results about their status, it is best to retain their subspecific status. de Jong notes that *A. pictum* is a very complex species requiring further study.

- 1a. Leaf blade usually 3-lobed, sometimes 5-lobed.
- 2a. Wings spreading horizontally, wing 3–4 cm including nutlet

- 12d. subsp. *macropterum*
- 2b. Wings spreading at acute angle, wing ca. 3 cm including nutlet 12e. subsp. *tricuspis*
- 1b. Leaf blade usually 5- or 7-lobed.
 - 3a. Leaf blade smaller, 5-lobed, rarely 3-lobed 12c. subsp. *pubigerum*
 - 3b. Leaf blade larger, 5-, 7-, or 9-lobed.
 - 4a. Leaf blade abaxially with short upright hairs throughout 12a. subsp. *pictum*
 - 4b. Leaf blade abaxially not hairy, or pilose on main veins 12b. subsp. *mono*

12a. *Acer pictum* subsp. *pictum*

色木枫(原亚种) se mu feng (yuan ya zhong)

Leaf blade orbicular, suborbicular, or cordate, 5- or 7-lobed, to middle or shallowly lobed, abaxially with short upright hairs throughout.

Deciduous forests; 200–1300 m. Cultivated in China [native to Japan and Korea].

12b. *Acer pictum* subsp. *mono* (Maximowicz) H. Ohashi, J. Jap. Bot. 68: 321. 1993.

五角枫 wu jiao feng

Acer mono Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 126. 1856; *A. cappadocicum* Gleditsch subsp. *mono* (Maximowicz) A. E. Murray; *A. laetum* C. A. Meyer var. *parviflorum* Regel; *A. leptophyllum* W. P. Fang; *A. mono* subsp. *incurvatum* (W. P. Fang & P. L. Chiu) T. Z. Hsu; *A. mono* var. *incurvatum* W. P. Fang & P. L. Chiu; *A. mono* f. *septemlobum* W. P. Fang & T. P. Soong; *A. pictum* subsp. *incurvatum* (W. P. Fang & P. L. Chiu) H. Ohashi; *A. pictum* subvar. *mono* (Maximowicz) Maximowicz; *A. pictum* var. *mono* (Maximowicz) Franchet; *A. pictum* var. *parviflorum* (Regel) Schneider; *A. truncatum* Bunge subsp. *mono* (Maximowicz) A. E. Murray.

Leaf blade 5- or 7-lobed, to middle or shallowly lobed, abaxially not hairy, or pilose on main veins. Nutlets flat, compressed, 1–1.3 cm × 8–10 mm; wing oblong, including nutlet 3–3.5 × 1–1.5 cm, wings spreading variously. Fl. Apr–May, fr. Sep. 2n = 26.

Broad-leaved forests; sea level to 3000 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Mongolia, E Russia].

12c. *Acer pictum* subsp. *pubigerum* (W. P. Fang) Y. S. Chen, **stat. nov.**

江南色木枫 jiang nan se mu feng

Basionym: *Acer pictum* var. *pubigerum* W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 8: 163. 1932; *A. longipes* Franchet ex Rehder var. *pubigerum* (W. P. Fang) W. P. Fang; *A. mono* var. *pubigerum* (W. P. Fang) W. P. Fang.

New branchlets sometimes pubescent. Leaf blade 5-lobed, rarely 3-lobed, abaxially yellowish brown or white villous on veins. Nutlets and lower part of wings pubescent.

- Broad-leaved forests; 700–1200 m. S Anhui, Zhejiang.

12d. *Acer pictum* subsp. *macropterum* (W. P. Fang) H. Ohashi, J. Jap. Bot. 68: 322. 1993.

大翅色木枫 da chi se mu feng

Acer mono var. *macropterum* W. P. Fang, Acta Phytotax. Sin. 17(1): 62. 1979; *A. longipes* var. *weixiense* W. P. Fang; *A. mono* var. *minshanicum* W. P. Fang; *A. pictum* subsp. *minshanicum* (W. P. Fang) H. Ohashi.

Leaf blade 3- or 5-lobed, abaxially ± pubescent. Wing including nutlet 3–4 cm, wings spreading horizontally.

- Mixed forests; 1900–3300 m. SE Gansu, W Sichuan, SE Xizang, Yunnan.

12e. *Acer pictum* subsp. *tricuspis* (Rehder) H. Ohashi, J. Jap. Bot. 68: 322. 1993.

三尖色木枫 san jian se mu feng

Acer pictum f. *tricuspis* Rehder, Mitt. Deutsch. Dendrol. Ges. 22: 258. 1913; *A. cappadocicum* subsp. *trilobum* A. E. Murray, p.p.; *A. mono* f. *tricuspis* (Rehder) W. P. Fang; *A. mono* subsp. *tricuspis* (Rehder) T. Z. Hsu; *A. mono* var. *tricuspis* (Rehder) Rehder.

Leaf blade (4–)7–10 × (5–)8–12 cm, 3-lobed. Samara wing 1.6–3 × 1–1.2 cm, ca. 3 cm including nutlet, wings spreading at acute angle.

- Forests; 1000–2800 m. Gansu, Hubei, Shaanxi, Shanxi.

2. *Acer* sect. *Palmata* Pax, Bot. Jahrb. Syst. 6: 326. 1885.

鸡爪枫组 ji zhua feng zu

Trees or shrubs, deciduous or evergreen; terminal buds usually abortive. Leaves 3–13-lobed or undivided, margins serrate or entire. Bud scales 4-paired. Inflorescences terminal, corymbose with cincinni. Flowers 5-merous. Stamens 8. Disk extrastaminal. Nutlets elliptic-globose.

About 35 species: Bhutan, China, N India, Japan, Korea, Myanmar, Nepal, SE Russia, Thailand, Vietnam; W North America; 34 species (23 endemic, two introduced) in China.

- 1a. Leaves evergreen, entire.
- 2a. Inflorescence corymbose-paniculate 38. *A. laevigatum*
- 2b. Inflorescence only corymbose.
- 3a. Leaf blade abaxially light green.
- 4a. Petioles pubescent 43. *A. pubipetiolatum*
- 4b. Petioles glabrous.
- 5a. Leaf blade lanceolate 44. *A. fabri*
- 5b. Leaf blade oblong.
- 6a. Leaves leathery, petiole 2–4 cm; samara 4–4.2 cm 45. *A. kwangnanense*
- 6b. Leaves papery, petiole 1–1.5 cm; samara 2.5–2.8 cm 46. *A. oligocarpum*
- 3b. Leaf blade abaxially white mealy, gray.
- 7a. Leaf blade lanceolate, lateral veins 13–15 pairs; samara 2.2–2.4 cm 39. *A. wangchii*
- 7b. Leaf blade elliptic to oblong, lateral veins no more than 10 pairs; samara 2.8–3.2 cm.
- 8a. Leaves papery; samara pubescent when immature 42. *A. hilaense*
- 8b. Leaves leathery or thickly leathery; samara glabrous.
- 9a. Leaf blade 8–14 × 3.5–6 cm, thickly leathery, lateral veins 8–10 pairs 40. *A. crassum*
- 9b. Leaf blade 6–9 × 2–4 cm, leathery, lateral veins 5–7 pairs 41. *A. sino-oblongum*
- 1b. Leaves deciduous, 3–11-lobed.
- 10a. Inflorescence corymbose; nutlet strongly veined.
- 11a. Leaves usually 3- or 5-lobed.
- 12a. Leaves 3-lobed 37. *A. calcaratum*
- 12b. Leaves 5-lobed.
- 13a. Petiole, pedicel, and ovary pubescent; leaf small (4.5–5.5 × 2.5–7.5 cm) and petiole short (2–4 cm), petiole and leaves villous 17. *A. pauciflorum*
- 13b. Petiole, pedicel, and ovary glabrous; leaf large (5–8 × 5–9 cm) and petiole long (3–6 cm), leaves glabrous.
- 14a. Leaf blade 5–8 × 5–9 cm and petiole to 6 cm, relatively less flowered 18. *A. oliverianum*
- 14b. Leaf blade to 12 × 4.5–16.5 cm and petiole to 7.5 cm, relatively more flowered 19. *A. serrulatum*
- 11b. Leaves usually 7–13-lobed.
- 15a. Leaves usually 7- or 9-lobed.
- 16a. Petiole and peduncle usually pubescent when young, ovary villous 16. *A. duplicatoserratum*
- 16b. Petiole, peduncle, and ovary glabrous.
- 17a. Both surfaces of leaves glabrous; nutlet including wing 2–2.5 cm 20. *A. palmatum*
- 17b. Leaves abaxially pubescent; nutlet including wing 2.6–4 cm 21. *A. ceriferum*
- 15b. Leaves 9-, 11-, or 13-lobed.
- 18a. Leaf blade 9–12 cm in diam. 13. *A. japonicum*
- 18b. Leaf blade 5–10 cm in diam.
- 19a. Leaf blade 6–10 cm in diam., usually 9-, 11-, or 13-lobed, both surfaces white tomentose; ovary white tomentose; branchlets not white mealy 14. *A. pseudosieboldianum*
- 19b. Leaf blade 5–6 cm in diam., usually 9-lobed, rarely 7- or 8-lobed, glabrous except tomentose at vein axils; ovary yellowish rough hairy; branchlets white mealy 15. *A. linganense*
- 10b. Inflorescence paniculate; nutlet usually not obviously veined.
- 20a. Leaves subleathery, 3-lobed at middle, lobes triangular, margin entire or undulate.
- 21a. Young branchlets, leaves abaxially, nutlets, and pedicels glabrous; samara wing including nutlet 2.5–2.8 cm, wings spreading horizontally 35. *A. tonkinense*
- 21b. Young branchlets, leaves abaxially, nutlets, and pedicels gray-yellow tomentose; samara wing including nutlet 3.5–3.8 cm, wings spreading obtusely 36. *A. fenzelianum*
- 20b. Leaves papery, deeply 3-, 5-, or 7-lobed, lobes ovate or lanceolate, margin serrate or serrulate, rarely entire or undulate.
- 22a. Inflorescence paniculate-corymbose.
- 23a. Leaves 5-lobed 22. *A. chingii*
- 23b. Leaves 3-lobed 23. *A. confertifolium*
- 22b. Inflorescence paniculate.
- 24a. Leaves 3(or 5)-lobed.
- 25a. Inflorescence long paniculate with more flowers; leaf blade membranous or subleathery, 3- or 5-lobed, lobes oblong or lanceolate, apex acuminate, margin entire or apex crenulate; inflorescence 5–6 cm; disk glabrous; ovary pilose; samara wing including nutlet 2.5–3 cm 24. *A. wilsonii*
- 25b. Inflorescence shortly paniculate with less flowers; leaf blade papery, 3-lobed, lobes ovate or oblong-ovate, apex acute or oblong-acute, margin serrate; inflorescence 3–4 cm; disk pubescent; ovary pubescent; samara wing including nutlet 2–5 cm 25. *A. tutcheri*

- 24b. Leaves 5- or 7-lobed.
 26a. Leaves subleathery.
 27a. Leaves 5-lobed, rarely 7-lobed; nutlet ellipsoid, wings not recurved; sepals light green 29. *A. sinense*
 27b. Leaves 7-lobed, rarely 5-lobed; nutlets globose, wings recurved in upper part; sepals purple 30. *A. kuomeii*
 26b. Leaves papery.
 28a. Nutlets strongly veined, pubescent 26. *A. erianthum*
 28b. Nutlets not veined or not obviously veined, glabrous.
 29a. Ovary and disk glabrous 27. *A. flabellatum*
 29b. Ovary hairy, disk hairy or glabrous.
 30a. Disk hairy; leaves abaxially pubescent when immature 28. *A. campbellii*
 30b. Disk glabrous; leaves glabrous or pilose.
 31a. Leaves and petiole glabrous 31. *A. elegantulum*
 31b. Leaf veins abaxially pilose, petiole pilose.
 32a. Samara 2.5–2.7 cm, spreading nearly horizontally; leaves 3- or 5-lobed 34. *A. miaoshanicum*
 32b. Samara 2.3–2.5 cm, usually spreading at obtuse angle; leaves 5-lobed.
 33a. Leaf blade 10–12 × 11–14 cm, margin of lobe obtusely serrate; ovary, abaxial veins, and petiole velutinous 32. *A. pubinerve*
 33b. Leaf blade 5–8 × 7–11 cm, margin of lobe acutely serrate; ovary, abaxial veins, and petiole villous 33. *A. kweilinense*

13. *Acer japonicum* Thunberg in Murray, Syst. Veg., ed. 14, 911. 1784.

羽扇枫 yu shan feng

Trees small, 8–10 m tall, andromonoecious. Bark grayish white or grayish brown. Branchlets green or purplish green, glabrous; winter buds ellipsoid, scales 5 pairs, nearly rounded, glabrous. Leaves deciduous; petiole 3–5 cm, pubescent when young; leaf blade abaxially pale green, adaxially dark green or yellowish green, suborbicular, 9–12 cm in diam., papery or membranous, base deeply cordate, 9- or 11-lobed; lobes ovate, margin incised-serrate, teeth ± acute or sharp, incised to less than 1/2 width of leaf, apex acuminate. Inflorescence terminal, corymbose, 10–15-flowered, 3–5 cm; peduncles 3–5 cm. Pedicel 1–2 cm, pubescent. Sepals 5, ovate or obovate, ca. 6 × 4 mm, apex obtuse. Petals 5, purple, elliptic, ca. 5 mm, emarginate, apex obtuse. Stamens 8, ca. 7 mm, glabrous. Disk glabrous, slightly lobed, extrastaminal. Ovary densely villous; style glabrous; stigmas short. Fruit yellowish green; nutlets convex, densely villous, veined; wing incurved, leaflike, including nutlet 2–2.8 × ca. 1 cm, wings spreading at 90°–160°. Fl. May, fr. Sep. $2n = 26$.

Cultivated. Jiangu, Liaoning [native to Japan].

14. *Acer pseudosieboldianum* (Pax) Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 22: 725. 1904.

紫花枫 zi hua feng

Acer circumlobatum Maximowicz var. *pseudosieboldianum* Pax, Bot. Jahrb. Syst. 7: 200. 1886; *A. pseudosieboldianum* var. *koreanum* Nakai; *A. sieboldianum* Miquel var. *mandshuricum* Maximowicz.

Shrubs or small trees, to 8 m tall, andromonoecious. Branchlets slender; winter buds large, scales 6, ovate, outside densely pilose. Leaves deciduous; petiole 3.5–4 cm, slender, densely pubescent when young; leaf blade abaxially light green, adaxially dark green, suborbicular, 6–8(–10) cm in diam., papery, abaxially densely white pubescent, base deeply cordate to

cordate, usually 9-, 11-, or 13-lobed, sinuses 1/2–2/3 width of leaf; lobes triangular-ovate or ovate-lanceolate, margin doubly serrate, teeth incised, apex acuminate. Inflorescence terminal, corymbose, 3–4 cm wide, pubescent; peduncles 2–3 cm. Pedicel 8–10 mm. Sepals 5, lanceolate, pubescent along margin. Petals 5, white or yellowish white, obovate, ca. 4 × 3 mm. Stamens 8, ca. 4 mm. Disk glabrous. Ovary slightly pilose, nearly glabrous; stigmas ca. 1 mm. Fruit purplish yellow; nutlets convex, 5–7 × 4–5 mm, glabrous, strongly veined; wing narrowly obovate, contracted at base, including nutlet 1.5–2.5 cm × 5–6 mm, wings spreading obtusely or nearly horizontally. Fl. May–Jun, fr. Sep. $2n = 26$.

Forests; 700–900 m. Heilongjiang, SE Jilin, E Liaoning [Korea, E Russia].

15. *Acer linganense* W. P. Fang & P. L. Chiu, Acta Phytotax. Sin. 17(1): 70. 1979.

临安枫 lin an feng

Trees 5–7 m tall, andromonoecious. Bark blackish gray. Young branchlets greenish gray, covered with white wax; winter buds ovoid, scales imbricate, margin ciliate. Leaves deciduous; petiole 2.5–5 cm, slender, glabrous; leaf blade suborbicular, 5–6 cm in diam., papery, glabrous, base deeply cordate, (7 or)9-lobed; lobes usually ovate-oblong, margin serrulate to ca. 1/2 of blade, teeth acute, apex acute. Inflorescence terminal, corymbose, usually 3–5-flowered; peduncles 2–3 cm. Pedicel 4–8 mm. Sepals 5, purple, ovate-oblong. Petals 5, yellowish white, broadly ovate. Stamens 8. Disk extrastaminal. Ovary densely villous; style glabrous. Fruit yellowish white; nutlets convex; wing narrowed at base, 2–2.4 cm × 6–8 mm, wings spreading acutely or obtusely. Fl. Apr–May, fr. Sep.

• Mixed forests; 600–1300 m. S Anhui, Zhejiang.

One of us (Chang) believes that this species would be better treated as a synonym of *Acer ceriferum*. Chang considers *A. ceriferum* to be a distinct taxon from *A. robustum*, which is here treated as a synonym of *A. ceriferum*, due to distinctive chemical differences. Further work is required to clarify the relationship between *A. robustum*

and *A. ceriferum*. One of us (Chen) believes that *A. ceriferum* occurs only at its type locality and is within the distributional range of *A. robustum*, whereas *A. linganense* is common only in Anhui and Zhejiang.

16. *Acer duplicatoserratum* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 65. 1911.

重齿枫 chong chi feng

Trees small. Young branchlets glabrous or white villous-pubescent, glabrescent, glabrous when mature. Petiole glabrous or pubescent, geniculate at base, 1.5–5 cm; leaf blade orbicular, lanceolate-oblong, or subcordate, 2.3–10 × 3–10 cm, palmately 7- or 9-lobed, lobes lanceolate or lanceolate-oblong, both surfaces villous especially on veins, base cordate, margin sharply and doubly serrate, apex acuminate. Inflorescence corymbose, densely villous at first; peduncles 1–2.5 cm. Flowers small; pedicel 5–6 mm. Staminate flowers ca. 6 mm in diam. Sepals 5, slightly purplish, ovate-oblong or lanceolate, 2–3 mm, ± glabrous. Petals 4, white, orbicular-ovate, 1–1.5 mm. Disk into 4 glands. Ovary densely villous in pistillate flowers. Stamens short; anthers and filaments each ca. 1 mm. Nutlets strongly convex, 5–7 mm in diam., including wing 2–3 cm; wings spreading at obtuse angle. Fl. Apr or May, fr. Sep.

• Deciduous forests; 200–2000 m. Anhui, Fujian, Guizhou, S Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Taiwan, Zhejiang.

- 1a. Petioles of mature leaves
pubescent 16a. var. *duplicatoserratum*
1b. Petioles of young leaves
pubescent, becoming glabrous 16b. var. *chinense*

16a. *Acer duplicatoserratum* var. *duplicatoserratum*

重齿枫(原变种) chong chi feng (yuan bian zhong)

Acer ornatum Carrière subvar. *formosanum* (Koidzumi) Nemoto; *A. palmatum* Thunberg subvar. *formosanum* Koidzumi; *A. palmatum* subsp. *pubescens* (Li) A. E. Murray; *A. palmatum* var. *pubescens* Li.

Young branchlets white villous-pubescent, glabrescent, becoming glabrous. Petioles of mature leaves pubescent; leaf blade lanceolate-oblong, subcordate, 2.3–5.5 × 3–8 cm, 7-veined at base, 7-lobed; lobe margin subduplicately serrate. Stamens 4. Fl. Apr, fr. Sep.

• Deciduous forests; 1000–2000 m. Taiwan.

16b. *Acer duplicatoserratum* var. *chinense* C. S. Chang, J. Arnold Arbor. 71: 557. 1990.

中华重齿枫 zhong hua chong chi feng

Branchlets glabrous. Petioles of young leaves pubescent, becoming glabrous, 4–5 cm; leaf blade orbicular, 6.5–10 cm wide, palmately 7- or 9-lobed; lobe margin sharply and doubly serrate. Flowers purplish. Fl. May, fr. Sep.

• Deciduous forests; 200–1500 m. Anhui, Fujian, Guizhou, S Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Zhejiang.

The taxonomic status of *Acer ceriferum* and *A. duplicatoserratum* is subject to debate. The only difference between *A. duplicatoserratum* var. *duplicatoserratum*, from Taiwan, and *A. duplicatoserratum* var. *chinense*, from mainland China, is the degree of pubescence. On the other hand, only one collection of *A. ceriferum*, a type from W Hubei, which is very pubescent along the veins and petioles including the twigs, was available for study prior to the current work. Collections of *A. duplicatoserratum* var. *chinense* from locations near Hubei and many collections, including *A. linganense*, from E China cannot be easily identified. One of us (Chang) considers that *A. duplicatoserratum* var. *duplicatoserratum* should be placed in the synonymy of *A. ceriferum*, although geographic separation of these two taxa is evident. Moreover, mainland Chinese individuals of *A. duplicatoserratum* var. *chinense* resemble *A. linganense*, which should therefore be made synonymous. In summary, *A. ceriferum*, which is a pubescent taxon, is distributed in Hubei and Taiwan; and a glabrescent taxon, for which a new combination would be required ("*A. ceriferum* var. *chinense*"), is distributed in E China.

17. *Acer pauciflorum* W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 7: 166. 1932.

稀花枫 xi hua feng

Acer changhuaense (W. P. Fang & M. Y. Fang) W. P. Fang & P. L. Chiu; *A. pauciflorum* var. *changhuaense* W. P. Fang & M. Y. Fang; *A. bipalmatum* W. P. Fang; *A. bipalmatum* var. *pulcherrimum* W. P. Fang & P. L. Chiu.

Trees usually 10–15 m tall, andromonoecious. Bark gray or blackish gray. Branchlets slender, densely white tomentose; buds purple, scales ciliate along margins, apex ± acute. Leaves deciduous; petiole 2–4 cm, densely villous when young, soon less villous; leaf blade abaxially pale green, adaxially dark green, 4–5.5 × 2.5–7.5 cm, membranous, abaxially densely white villous, primary veins raised abaxially, base truncate or subcordate, deeply 5-lobed, rarely 7-lobed; lobes lanceolate, margin doubly serrate, teeth acute, apex acuminate. Inflorescence terminal, corymbose, usually 5–8-flowered; peduncles 2–3 cm, villous. Pedicel ca. 5 mm, very slender, villous. Sepals 5, ovate or ovate-oblong, margin ciliate, apex acute or obtuse. Petals 5, broadly ovate. Stamens 8, glabrous. Disk glabrous, extrastaminal. Ovary densely villous; style glabrous; stigmas very short, slightly revolute. Fruit purplish brown; nutlets globose, 3–4 mm in diam., pubescent or glabrous; wing including nutlet 9–20 × 5–7 mm, ± pubescent, wings spreading obtusely. Fl. May, fr. Sep.

• Sparse forests; 500–1000 m. S Anhui, Zhejiang.

18. *Acer oliverianum* Pax, Hooker's Icon. Pl. 19: ad t. 1897. 1889.

五裂枫 wu lie feng

Acer campbellii J. D. Hooker & Thomson ex Hiern subsp. *oliverianum* (Pax) A. E. Murray; *A. campbellii* subsp. *schneiderianum* (Pax & K. Hoffmann) A. E. Murray; *A. lanpingense* W. P. Fang & M. Y. Fang; *A. schneiderianum* Pax & K. Hoffmann; *A. schneiderianum* var. *pubescens* W. P. Fang & Y. T. Wu.

Trees to 7 m tall, andromonoecious. Branchlets smooth,

green and glabrous, greenish brown or olive-brown in second year and ± with grayish white waxy bloom; winter buds ovoid. Leaves deciduous; petiole 2.5–6 cm, glabrous; leaf blade adaxially dark yellowish green, 5–8 × 5–9 cm, base truncate or subcordate with a broad sinus, abaxially lustrous, reticulate and glabrous with exception of axillary tufts of pale hairs, 5-lobed, rarely 3- or 4-lobed in young shoots; lobes triangular-ovate, margin sharply serrulate, apex acuminate. Inflorescence corymbose, terminal on a 2-leaved branchlet. Sepals 5, purplish, elliptic-ovate, ca. 2 mm, margin denticulate. Petals 5, white, ovate or broadly ovate-obtuse. Stamens 8, longer than petals, inserted inside disk. Ovary sparsely villous, with long hairs, minute, villous, and rudimentary in staminate flowers; styles 2, ca. 2 mm. Samaras glabrous; nutlets brown, convex, ca. 6 × 5 mm, distinctly veined; wings spreading nearly horizontally, wing including nutlet 2.5–3.5 × ca. 1 cm. Fl. May, fr. Sep.

• Forests, valleys; 1000–2000 m. Anhui, Fujian, S Gansu, Guizhou, S Henan, W Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, C and N Taiwan, Yunnan, Zhejiang.

19. *Acer serrulatum* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 70. 1911.

台湾五裂枫 tai wan wu lie feng

Acer oliverianum Pax subsp. *formosanum* (Koidzumi) A. E. Murray; *A. oliverianum* subvar. *formosanum* Koidzumi; *A. oliverianum* f. *longistamineum* Hayata; *A. oliverianum* var. *microcarpum* Hayata; *A. oliverianum* var. *nakaharae* Hayata.

Trees to 20 m tall. Branchlets glabrous. Petiole 3–7.5 cm, glabrous; leaf blade wholly orbicular-cordate to orbicular in outline, 3.5–12 × 4.5–16.5 cm, both surfaces glabrous, veinlets reticulate, palmately 5-lobed, rarely 3- or 4-lobed; lobes triangular-lanceolate to triangular-ovate, truncate to cordate at base, margin duplicately crenate-serrate. Flowers in terminal corymbose cymes; peduncle 3–5 cm, glabrous. Sepals 5, orbicular-oblong, ca. 2 mm, outside hirsute toward apex, margin ciliate. Disk 8-lobed, round, thick. Pistillate flowers: staminodes 5–8; anthers oblong; filaments ca. 1 mm; ovary hirsute; styles ca. 2 mm, connate at base. Staminate flowers ca. 6 mm in diam.; stamens 8, ca. 4 mm; anthers oblong. Fruit brown; nutlets globose, 3–4 mm in diam., glabrous; wing including nutlet 1.8–2.5 cm, wings spreading obtusely. Fl. Mar–Apr, fr. Jun–Oct.

• Forests; 1000–2000 m. C and N Taiwan.

Acer serrulatum has more flowers and different flavonoid patterns than the preceding species, *A. oliverianum*.

20. *Acer palmatum* Thunberg in Murray, Syst. Veg., ed. 14, 911. 1784.

鸡爪枫 ji zhua feng

Trees deciduous, andromonoecious, to 15 m tall. Bark greenish gray or light brown, smooth. Branchlets grayish green, glabrous; winter buds purplish red, conical, small, with 5 pairs of scales, ciliate, terminal buds usually absent. Petiole 2–6 cm; leaf blade suborbicular, 3–6 × 4–8 cm, membranous to papery, yellowish brown pubescent when unfolding, soon glabrous except for axillary tuft of hairs on abaxial surface, base cordate to subtruncate, palmately 5- or 7-lobed to middle; lobes lanceolate, margin irregularly doubly serrate, apex long

acuminate. Inflorescence corymbose-paniculate, 10–20-flowered, 3–4 cm, half-pendulous, subtended by 1 or 2 pairs of leaves. Flowers opening

with leaves. Sepals 5, purplish red, oblong to oblanceolate, ca. 3 mm, pubescent near margin. Petals pale yellow to pinkish white, broadly obovate, smaller than sepals, glabrous. Stamens 8, exerted, ca. 3.5 mm, shorter in pistillate flowers, inserted at inside of disk. Ovary glabrous; style long, topped by divergent stigmas. Abortive pistil in staminate flowers minute. Samaras ca. 1.5 cm with wing, glabrous; wings spreading at obtuse angle; nutlets elliptic-convex, only slightly veined with thin, weak wall. Fl. Apr–May, fr. Sep. $2n = 26$.

Widely cultivated in gardens in China [native to Japan and S Korea].

This species is a famous small ornamental tree with many cultivars.

21. *Acer ceriferum* Rehder in Sargent, Pl. Wilson. 1: 89. 1911.

槭叶枫 cha ye feng

Acer anhweiense W. P. Fang & M. Y. Fang; *A. anhweiense* var. *brachypterum* W. P. Fang & P. L. Chiu; *A. campbellii* J. D. Hooker & Thomson ex Hiern subsp. *robustum* A. E. Murray; *A. robustum* Pax (1902), not Opiz (1852); *A. robustum* var. *honganense* W. P. Fang; *A. robustum* var. *minus* W. P. Fang.

Trees 5–10 m tall, andromonoecious. Branchlets slender, glabrous; winter buds ovoid. Leaves deciduous; petiole 4–5 cm, glabrous or slightly villous toward apex; leaf blade 4–13 × 4–14 cm, papery or membranous, base truncate or subcordate, 7- or 9-lobed; lobes ovate or ovate-oblong, 4–5 cm, margin remotely and irregularly serrate with sharp teeth, apex caudate-acuminate. Inflorescence terminal, 4–8-flowered; peduncle 3–4 cm. Pedicel 1–1.5 cm, glabrous. Sepals 5, purple, ovate-oblong. Petals 5, oblong or obovate-oblong. Stamens 8, glabrous. Disk glabrous, extrastaminal. Ovary glabrous or slightly villous; style ca. 3 mm; stigmas ca. 1 mm. Fruit greenish yellow; nutlets ellipsoid, 5–7 × 4–5 mm; wing including nutlet 2.2–4 × ca. 1 cm, wings spreading horizontally or obtusely. Fl. May, fr. Sep.

• Forests; 700–2000 m. Anhui, S Gansu, Henan, W Hubei, S Shaanxi, Shanxi, Sichuan, Zhejiang.

22. *Acer chingii* Hu, J. Arnold Arbor. 11: 224. 1930.

黔桂枫 qian gui feng

Acer sinense Pax subsp. *chingii* (Hu) A. E. Murray.

Trees 10–15 m tall, andromonoecious. Bark whitish. Branchlets slender, glabrous. Leaves deciduous; petiole ca. 3 cm, pubescent; leaf blade abaxially light green, adaxially dark green, suborbicular, ca. 10 cm wide, membranous, abaxially glabrous except for pubescent midvein, adaxially glabrous, base cordate or deeply so, 5-lobed; lobes lanceolate, margin entire or sparsely appressed serrate toward apex, apex acuminate; middle lobe ca. 5.5 × 2 cm. Inflorescence corymbose, ca. 5 cm, glabrous. Sepals 5, yellowish green, oblong. Petals 5, white, obovate. Stamens 8. Disk extrastaminal. Fruit yellowish; nutlets convex; wing including nutlet 1.8–2 cm × 5–7 mm, wings spreading acutely. Fl. Apr, fr. Aug.

• Forests; 1200–2000 m. N Guangxi, S Guizhou.

Acer chingii was originally placed in *A. sect. Platanoidea* by Hu. It is characterized by its villous petiole; 5-lobed leaf blade, with villous abaxial veins, base deeply cordate, and margin of lobes nearly entire and undulate, only appressed serrate near the apex; corymbose inflorescence; and small samaras.

23. *Acer confertifolium* Merrill & F. P. Metcalf, Lingnan Sci. J. 16: 167. 1934.

密叶枫 mi ye feng

Acer confertifolium var. *serrulatum* (Dunn) W. P. Fang; *A. john-edwardianum* F. P. Metcalf; *A. oliverianum* Pax var. *serrulatum* (Dunn) Rehder; *A. tutcheri* Duthie subsp. *confertifolium* (Merrill & F. P. Metcalf) A. E. Murray; *A. wilsonii* Rehder var. *serrulatum* Dunn.

Shrubs or small trees, 1–4 m tall. Bark brown or gray-brown. Branchlets slender, glabrous, those of present year green, densely white waxy. Leaves deciduous, compactly arranged; petiole 2–2.8 cm; leaf blade shiny, olivaceous on both surfaces, 3–5 × 3–4 cm, glabrous, 3-veined, secondary veins numerous, closely reticulate, base cordate or subcordate, 3-lobed; lobes ovate, extending 1/3–1/2 distance to base of leaf, margin crenate-serrate, apex acutely acuminate. Inflorescence corymbose, terminal at apices of small branchlets, with few samaras, wings widely divergent; nutlets convex, including wings 1.5–2.5 cm; wings obtuse, slightly falcate, 4–7 mm wide, glabrous. Fl. unknown, fr. Sep.

• Mixed forests; 500–1000 m. E Fujian, NE Guangdong, SE Jiangxi.

24. *Acer wilsonii* Rehder in Sargent, Trees & Shrubs 1: 157. 1905.

三峡枫 san xia feng

Acer angustilobum Hu; *A. angustilobum* f. *longicaudatum* W. P. Fang; *A. angustilobum* var. *longicaudatum* (W. P. Fang) W. P. Fang; *A. angustilobum* var. *sichouense* W. P. Fang & M. Y. Fang; *A. campbellii* J. D. Hooker & Thomson ex Hiern subsp. *wilsonii* (Rehder) P. C. de Jong; *A. sichouense* (W. P. Fang & M. Y. Fang) W. P. Fang; *A. taipuense* W. P. Fang; *A. tutcheri* Duthie subsp. *angustilobum* A. E. Murray; *A. wilsonii* subsp. *burmense* A. E. Murray; *A. wilsonii* var. *longicaudatum* (W. P. Fang) W. P. Fang; *A. wilsonii* var. *obtusum* W. P. Fang & Y. T. Wu.

Trees 10–15 m tall, andromonoecious. Bark dark brown, smooth. Branchlets slender, glabrous; winter buds small, scales 6, slightly villous outside. Leaves deciduous; petiole 2–3 cm; leaf blade ovate, 7–12 × 9–12 cm, membranous or subleathery, base usually rounded, rarely truncate or subcordate, usually 3-lobed, occasionally with 2 or more basal lobes; lobes ovate-oblong, triangular-ovate, or lanceolate, margin entire except occasionally with a few small appressed serrations apically, apex caudate-acuminate. Inflorescence paniculate, 5–6 cm, glabrous; peduncles 2–3 cm, slender. Sepals 5, glabrous. Petals 5, white. Stamens 8; filaments glabrous. Disk glabrous, extrastaminal. Ovary pilose; style nearly glabrous; stigmas short. Inflorescence pendulous. Nutlets ovoid; wing including

nutlet 2.5–3 cm; wings spreading horizontally. Fl. Apr, fr. Sep. $2n = 26$.

Forests; 900–2000 m. N Guangdong, N Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, E Sichuan, Xizang, Yunnan, Zhejiang [Myanmar, Thailand, Vietnam].

25. *Acer tutcheri* Duthie, Bull. Misc. Inform. Kew 1: 16. 1908.

岭南枫 ling nan feng

Trees 5–15 m tall, andromonoecious. Bark brown or dark brown. Branchlets slender, glabrous; winter buds ovoid. Leaves deciduous; petiole 2–3 cm, slender, glabrous; leaf blade abaxially pale green, 6–9 × 2–13 cm, membranous, both surfaces glabrous, primary veins 3, base rounded or rounded-truncate, usually 3-lobed, rarely 5-lobed; lobes triangular-ovate, rarely ovate-oblong, margin serrulate, with appressed acute teeth, entire near base, rarely only with a few small serrations near apex, apex acute or acuminate, rarely caudate-acuminate. Inflorescence shortly paniculate. Pedicel 5–8 mm. Sepals 4, ovate-oblong, apex obtuse. Petals 4, obovate. Stamens 8. Disk villous, extrastaminal. Ovary densely white pilose; style glabrous; stigmas recurved. Fruit yellowish; nutlets convex, ca. 6 mm in diam., veined; wing including nutlet 1.5–2.5 cm × 8–10 mm, wings spreading acutely to nearly horizontally. Fl. Apr, fr. Sep.

• Forests; 300–1000 m. Fujian, Guangdong, Guangxi, S Hunan, S Jiangxi, Taiwan, S Zhejiang.

- 1a. Wing including nutlet 1.5–2.5 cm × 8–10 mm, wings spreading obtusely or nearly horizontally 25a. var. *tutcheri*
- 1b. Samara smaller, ca. 1.5 cm, wings spreading at acute angle 25b. var. *shimadae*

25a. *Acer tutcheri* var. *tutcheri*

岭南枫(原变种) ling nan feng (yuan bian zhong)

Acer oliverianum Pax var. *tutcheri* (Duthie) F. P. Metcalf ex Krüssmann; *Liquidambar edentata* Merrill.

Wing including nutlet 1.5–2.5 cm × 8–10 mm, wings spreading obtusely or nearly horizontally.

• Forests; 300–1000 m. Fujian, Guangdong, Guangxi, S Hunan, S Jiangxi, S Zhejiang.

25b. *Acer tutcheri* var. *shimadae* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 70. 1911 [“*shimadai*”].

小果岭南枫 xiao guo ling nan feng

Acer oliverianum subvar. *trilobatum* Koidzumi; *A. tutcheri* subsp. *formosanum* A. E. Murray.

Samara ca. 1.5 cm, wings spreading at acute angle.

• Broad-leaved forests. Taiwan.

26. *Acer erianthum* Schwerin, Mitt. Deutsch. Dendrol. Ges. 10: 59. 1901.

毛花枫 mao hua feng

Acer oxyodon Franchet ex W. P. Fang; *A. stachyanthum* Franchet ex W. P. Fang (1939), not Hiern (1874).

Shrubs or small trees, to 15 m tall, andromonoecious. Bark greenish gray. Branchlets glabrous; winter buds small, scales 8, pilose along margin. Leaves deciduous; petiole 5–9 cm, glabrous; leaf blade abaxially light green, adaxially green, 9–10 × 8–12 cm, papery, abaxially usually slightly pubescent, adaxially glabrous, reticulate veins prominent abaxially, base rounded or truncate, occasionally subcordate, usually 5-lobed, rarely 7-lobed; lobes ovate or triangular-ovate, apex acuminate. Inflorescence erect, compound paniculate racemes, 6–9 × 1–1.8 cm, pilose or glabrous, numerous flowered. Pedicel 3–4 mm, slender. Sepals 5, ovate or broadly ovate, outside glabrous, villous especially along margin, apex obtuse. Petals 5, obovate, slightly shorter than sepals. Stamens 8, 3–4 mm in staminate flowers, much shorter in pistillate flowers; filaments glabrous. Disk glabrous, extrastaminal. Ovary densely villous with yellowish hairs; style nearly glabrous. Fruit greenish purple; nutlets nearly round, ca. 5 mm in diam., strongly convex and veined, densely pubescent when young; wing including nutlet 2.5–3 × ca. 1 cm, wings spreading horizontally, slightly acutely, or obtusely. Fl. May, fr. Sep.

• Mixed forests; 1000–2300 m. S Gansu, N Guangxi, W Hubei, S Shaanxi, Sichuan, Yunnan.

27. *Acer flabellatum* Rehder in Sargent, Trees & Shrubs 1: 161. 1905.

扇叶枫 shan ye feng

Acer campbellii J. D. Hooker & Thomson ex Hiern subsp. *flabellatum* (Rehder) A. E. Murray; *A. campbellii* var. *yunnanense* Rehder; *A. flabellatum* var. *yunnanense* (Rehder) W. P. Fang; *A. gracile* W. P. Fang & M. Y. Fang (1966), not Saporta (1867); *A. mapienense* W. P. Fang; *A. shangszeense* W. P. Fang & T. P. Soong; *A. shangszeense* var. *anfuense* W. P. Fang & T. P. Soong.

Trees ca. 10 m tall, andromonoecious. Bark smooth. Branchlets slender, glabrous; winter buds ellipsoid, margin ciliate, inner scales densely villous outside. Leaves deciduous; petiole to 7 cm, slender; leaf blade abaxially pale green, adaxially dark green, 8–12 cm wide, papery or membranous, abaxially glabrescent except villous on veins and tufts of hairs at vein axils, adaxially glabrous, primary and secondary veins raised on both surfaces, base deeply cordate, usually 7-lobed; lobes ovate-oblong, rarely ovate or triangular-ovate, margin sharply and irregularly serrate with appressed acute teeth, apex acuminate or rarely long acuminate. Inflorescence paniculate, to 5 cm, glabrous; peduncles ca. 3 cm. Pedicel ca. 1 mm, slender, glabrous. Sepals 5, ovate-lanceolate, ca. 3 mm, ciliate along margin, apex acute. Petals 5, obovate, ca. as long as sepals. Stamens 8, glabrous. Disk glabrous, slightly lobed, extrastaminal. Ovary glabrous. Fruit yellowish brown; nutlets convex, subglobose, ca. 6 × 5 mm; wing including nutlet 3–3.5(–4) × 1–1.2 cm, wings spreading horizontally. Fl. Jun, fr. Oct. $2n = 26$.

Mixed forests; 800–3500 m. Guangxi, Guizhou, W Hubei, Jiangxi, Sichuan, Yunnan [Myanmar, Vietnam].

One of us (Oterdoom) believes that this taxon is a young form of *Acer campbellii* because of its identical chemical structure.

28. *Acer campbellii* J. D. Hooker & Thomson ex Hiern in J. D.

Hooker, Fl. Brit. India 1: 696. 1875.

藏南枫 zang nan feng

Trees to 15 m tall, andromonoecious. Branchlets purplish green, glabrous, with elliptic or oblong lenticels; winter buds ovoid, scales yellowish pubescent outside. Leaves deciduous; petiole pale green or purplish green, 4–5 cm, glabrous; leaf blade (7–)8–15 × 9–22 cm, membranous, abaxially pubescent on veins when young or nearly glabrous, glabrous when mature except for tufts of barbed hairs at vein axils, adaxially glabrous, primary veins 7, secondary veins 18 or 19 pairs, base cordate, rounded, cuneate, or truncate, (5 or)7(or 9)-lobed, sinuses to 1/2 width of blade; lobes lanceolate or ovate-oblong, 1–1.5 cm, margin remotely or doubly serrulate, apex acuminate. Inflorescence terminal, paniculate, 4–6 cm, glabrous. Sepals 5, ovate. Petals 5, yellow-green. Stamens 8, glabrous. Disk pubescent, extrastaminal. Ovary densely white pilose. Fruit yellowish when mature; nutlets convex, ca. 5 mm in diam.; wing falcate, including nutlet 2.3–2.8 cm × ca. 8 mm, wings spreading nearly horizontally. Fl. May, fr. Sep. $2n = 26$.

Mixed forests; 1800–3700 m. S Sichuan, S Xizang, NW Yunnan [Bhutan, N India, Myanmar, Nepal, Vietnam].

- 1a. Leaf blade abaxially nearly glabrous, base truncate, margin serrulate; inflorescence dense 28a. var. *campbellii*
- 1b. Leaf blade abaxially pubescent on veins, base cordate, margin often doubly serrate; inflorescence elongated 28b. var. *serratifolium*

28a. Acer campbellii var. *campbellii*

藏南枫(原变种) zang nan feng (yuan bian zhong)

Leaf blade abaxially nearly glabrous, base truncate, margin serrulate. Inflorescence dense.

Mixed forests; 2500–3700 m. S Xizang, NW Yunnan [Bhutan, N India, Myanmar, Nepal, Vietnam].

28b. Acer campbellii var. *serratifolium* Banerji, J. Bombay Nat. Hist. Soc. 58(1): 306. 1961.

重齿藏南枫 chong chi zang nan feng

Acer heptalobum Diels.

Leaf blade large, abaxially pubescent on veins, base cordate, margin often doubly serrate. Inflorescence elongated.

Mixed forests; 1800–2800 m. S Xizang, NW Yunnan [Bhutan, N India, Nepal].

One of us (de Jong) considers this a small basis for distinguishing the two varieties in a ± sympatric large area.

29. Acer sinense Pax, Hooker's Icon. Pl. 19: ad t. 1897. 1889.

中华枫 zhong hua feng

Acer bicolor F. Chun; *A. bicolor* var. *serratifolium* (W. P. Fang) W. P. Fang; *A. bicolor* var. *serrulatum* (F. P. Metcalf) W. P. Fang; *A. brachystephanum* T. Z. Hsu; *A. campbellii* J. D. Hooker & Thomson ex Hiern subsp. *sinense* (Pax) P. C. de Jong; *A. cappadocicum* Gleditsch var. *serrulatum* F. P. Metcalf; *A. prolificum* W. P. Fang & M. Y. Fang; *A. sinense* var.

brevilobum W. P. Fang; *A. sinense* var. *concolor* Pax; *A. sinense* var. *iatrophifolium* Diels; *A. sinense* var. *longilobum* W. P. Fang; *A. sinense* var. *microcarpum* F. P. Metcalf; *A. sinense* var. *undulatum* W. P. Fang & Y. T. Wu; *A. sunyiense* W. P. Fang; *A. tutcheri* Duthie var. *serratifolium* W. P. Fang; *Liquidambar rosthornii* Diels.

Trees usually 3–5 m tall, rarely to 15 m tall, andromonoecious. Bark yellowish brown or dark brown, smooth. Branchlets slender, glabrous; winter buds small, scales 6, villous along margin. Leaves deciduous; petiole 3–5 cm, sturdy, glabrous; leaf blade 9–14 × 9–15 cm, subleathery, glabrous or glabrescent except for tufts of yellowish hairs at vein axils, base cordate or subcordate, rarely truncate, usually 5-lobed, rarely 7-lobed; lobes oblong-ovate or triangular-ovate, margin slightly serrate or undulate except near base, apex acuminate. Inflorescence pendulous, terminal, paniculate, 5–7 cm, many flowered. Pedicel ca. 5 mm, slender, glabrous. Sepals 5, light green, ovate-oblong or triangular-oblong, slightly ciliate, apex ± acute. Petals 5, white, oblong or ovate. Stamens 5–8, longer than sepals, very short in pistillate flowers. Disk thick, extrastaminal, slightly pubescent. Ovary white pilose, rudimentary in staminate flowers; style glabrous; stigmas spreading or recurved. Fruit yellowish, glabrous; nutlets ellipsoid, strongly convex, 5–7 × 3–4 mm; wing including nutlet 2–3.5 × 1–1.2 cm, wings spreading acutely, obtusely, or horizontally. Fl. May, fr. Sep.

• Forests, valleys; 500–2500 m. Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Sichuan.

30. Acer kuomeii W. P. Fang & M. Y. Fang, Acta Phytotax. Sin. 11: 156. 1966.

国楣枫 guo mei feng

Trees 8–10 m tall, andromonoecious. Bark yellowish brown or dark brown, smooth. Branchlets slender, glabrous. Leaves subleathery; petiole 3–5 cm, sturdy, glabrous; leaf blade 9–11 × 11–13 cm, glabrous or glabrescent except for tufts of yellowish hairs at vein axils, base truncate or subcordate, usually 7-lobed, rarely 5-lobed; lobes oblong-ovate or ovate, margin sparsely crenate, apex acute. Inflorescence terminal, paniculate, 5–7 cm, many flowered. Sepals 5, purple, ovate-oblong, apex obtuse. Petals 5, white, oblong or ovate. Stamens 8. Disk thick, extrastaminal, slightly pubescent. Ovary white pilose, rudimentary in staminate flowers; style glabrous; stigmas spreading or recurved. Fruit yellowish, glabrous; nutlets globose, strongly convex, ca. 5 mm in diam.; wing including nutlet 2.5–3 × 1–1.5 cm, wings spreading obtusely, upper part recurved. Fl. Apr–May, fr. Jul–Sep.

• Montane forests, usually in valleys; 1300–2300 m. W Guangxi, SE Yunnan.

31. Acer elegantulum W. P. Fang & P. L. Chiu, Acta Phytotax. Sin. 17(1): 76. 1979.

秀丽枫 xiu li feng

Acer elegantulum var. *macrurum* W. P. Fang & P. L.

Chiu; *A. olivaceum* W. P. Fang & P. L. Chiu; *A. yaoshanicum* W. P. Fang.

Trees to 15 m tall, andromonoecious. Bark on trunk dark brown, scabrous; bark on branches green. Petiole 2.8–6 cm, glabrous; leaf blade abaxially light green, adaxially green, somewhat broader than long, 5–13 × 7–16 cm, thinly papery,

primary veins 5, level on both surfaces, lateral veins not distinct, adaxially glabrous, abaxially glabrous with exception of axillary tufts and pubescent or glabrous on primary veins, usually 5-lobed or rarely 7-lobed, base truncate or broadly cordate; lobes ovate or oblong, basal lobes smaller, margin serrulate, apex acute to caudate-acuminate. Inflorescence paniculate, terminal on a 2-leaved branchlet; peduncles 2–3 cm. Sepals 5, light green, ovate to oblong, ca. 2 mm. Petals 5, light green, obovate or oblong-obovate, ca. 2 mm. Stamens 8. Disk glabrous, extrastaminal. Ovary villous. Samara glabrous; nutlets convex, ca. 6 × 5 mm; wings spreading obtusely, wing including nutlet 2–2.5 cm × 8–10 mm. Fl. May, fr. Sep.

• Mountains, forests, usually in valleys; 200–1400 m. S Anhui, Fujian, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang.

Acer elegantulum is characterized by its velutinous ovary and nearly glabrous abaxial veins and petiole. *Acer pubinerve* differs by its velutinous abaxial veins and petiole. These two taxa are difficult to distinguish and possibly can be combined. They differ from *A. sinense* by their smaller papery leaves, slender petioles, smaller samaras, and velutinous ovary.

32. *Acer pubinerve* Rehder in Sargent, *Trees & Shrubs* 2: 26. 1907.

毛脉枫 mao mai feng

Acer angustilobum Hu var. *kwangtungense* (Chun) W. P. Fang; *A. campbellii* J. D. Hooker & Thomson ex Hiern subsp. *chekiangense* (W. P. Fang) A. E. Murray; *A. pubinerve* var. *apiferum* W. P. Fang & P. L. Chiu; *A. pubinerve* var. *kwangtungense* (Chun) W. P. Fang; *A. sinense* Pax subsp. *chekiangense* (W. P. Fang) A. E. Murray; *A. sinense* var. *kwangtungense* Chun; *A. sinense* var. *pubinerve* (Rehder) W. P. Fang; *A. wilsonii* Rehder var. *kwangtungense* (Chun) W. P. Fang; *A. wuyuanense* W. P. Fang & Y. T. Wu; *A. wuyuanense* var. *trichopodium* W. P. Fang & Y. T. Wu.

Trees 7–10(–15) m tall. Bark dark gray, smooth. Branchlets green, glabrous or densely pubescent; winter buds with few scales. Leaves deciduous; petiole 4–5 cm, densely velutinous; leaf blade abaxially light green, adaxially dark green, suborbicular or ovate, 10–12 × 11–14 cm, abaxially nearly glabrous except densely villous on veins, adaxially glabrous except shortly velutinous on veins, 5-lobed, margin slightly serrate, with short acuminate teeth, usually entire toward base, base subcordate, apex caudate; lobes oblong-ovate, caudate, appressed serrate, with short acuminate teeth, usually entire toward base, middle lobes 4–6 cm, basal lobes 1–1.5 cm; sinuses acute, reaching more than 1/2 to middle. Inflorescence paniculate, glabrous; peduncles 2–3.5 cm. Pedicels 2–6 mm. Sepals 5, purplish, ovate, ca. 2 mm. Petals 5, white, ovate, slightly shorter than sepals. Disk extrastaminal, glabrous. Stamens 8, those in staminate flowers ca. as long as sepals, those in pistillate flowers shorter than sepals. Ovary densely pilose; style ca. 1.5 mm, cleft at apex. Fruit yellowish; nutlets convex, ca. 8 × 15 mm; wing obovate, including nutlet (1.3–)2.3–

2.5(–3.5) × 1.2–1.9 cm, wings spreading obtusely or nearly horizontally. Fl. Apr, fr. Oct.

• Forests; ca. 100 m. S Anhui, N Fujian, Guangdong, N Guangxi, S Guizhou, E Jiangxi, Zhejiang.

33. *Acer kweilinense* W. P. Fang & M. Y. Fang, *Acta Phytotax. Sin.* 11: 157. 1966.

桂林枫 *gui lin feng*

Acer huangpingense T. Z. Hsu.

Trees 6–8 m tall, andromonoecious. Bark gray or brownish gray, smooth. Branchlets glabrous, young branchlets green. Petiole 4–5 cm, villous; leaf blade abaxially green, adaxially deep green, elliptic, 5–8 × 7–11 cm, papery, abaxially distinctly villous on primary veins, adaxially glabrous, base truncate or nearly cordate, margin serrate, apex caudate-acute. Inflorescence erect, paniculate, 4–9 cm, glabrous; peduncles ca. 3 cm. Sepals 5, purplish green, oblong, ca. 1.5 mm. Petals 5, whitish green, oblong, ca. 1.5 mm. Stamens 8. Disk glabrous, slightly lobed, extrastaminal. Ovary densely villous. Samara purplish red when young, yellowish brown when mature, 2–2.5 cm; nutlets convex, globose, ca. 4 mm in diam.; wings 6–8 mm wide, spreading at obtuse angle. Fl. Apr, fr. Sep.

• Sparse forests; 1000–1500 m. NE Guangxi, SE Guizhou.

Acer kweilinense is characterized by its villous ovary, abaxial veins, and petioles.

34. *Acer miaoshanicum* W. P. Fang, *Acta Phytotax. Sin.* 11: 158. 1966.

苗山枫 *miao shan feng*

Trees to 4 m tall, andromonoecious. Bark gray or brown-gray, smooth. Branchlets slender, glabrous, those of present year green or purplish green, older ones grayish or gray-green. Leaves deciduous; petiole 4–5 cm, slender, yellow pubescent; leaf blade abaxially green, adaxially dark green, elliptic, 7–10 × 8–12 cm, papery, abaxially pubescent in vein axils, adaxially glabrous, base truncate or subcordate, 5-lobed to ca. 1/2 width of blade, rarely 3-lobed or shortly lobed at base; lobes lanceolate or ovate-oblong, margin serrulate, apex caudate-acuminate. Inflorescence erect, paniculate, 4–5 cm; peduncles ca. 3 cm. Sepals 5, gray-green, ovate-oblong, ca. 1.5 mm. Petals 5, white-green, oblong. Stamens 8. Disk extrastaminal, slightly lobed, glabrous. Ovary densely yellow pilose; style glabrous; stigmas recurved. Fruit yellowish brown; nutlets convex, ovoid, ca. 4 mm in diam.; wing falcate, including nutlet 2.5–2.7 × 0.8–1.6 cm, wings spreading obtusely or ± horizontally. Fl. Apr, fr. Sep.

• Mixed forests; 900–1200 m. NE Guangxi, SE Guizhou.

35. *Acer tonkinense* Lecomte, *Fl. Indo-Chine* 1: 1054. 1912.

粗柄枫 *cu bing feng*

Acer kwangsiense W. P. Fang & M. Y. Fang; *A. liquidambarifolium* Hu & W. C. Cheng; *A. tonkinense* subsp. *kwangsiense* (W. P. Fang & M. Y. Fang) W. P. Fang; *A. tonkinense* subsp. *liquidambarifolium* (Hu & W. C. Cheng) W. P. Fang.

Trees to 12 m tall, andromonoecious. Bark dark brown, smooth. Branchlets white waxy, glabrous, those of present year

purplish green, older ones purple-brown or dark purple. Leaves deciduous; petiole purplish green, glabrous, 2–3.5 cm; leaf blade elliptic, suborbicular, or oblong, (8–)10–17 × 7–15 cm, subleathery, abaxially glabrous except for axillary tufts of hairs,

adaxially glabrous, primary veins 3, lateral veins 7–10 pairs, base nearly rounded or subcordate, deeply or shallowly 3-lobed or 3-dentate, sinuses to 1/3 width of blade; lobes triangular, margin entire, apex acute. Inflorescence terminal, paniculate, 8–10 cm, many flowered. Sepals 5, purplish green, triangular. Petals 5, yellowish. Stamens 8. Disk extrastaminal, pubescent. Ovary densely pubigerous. Fruit yellowish; nutlets convex, nearly rounded, ca. 8 × 6 mm; wing falcate, including nutlet 1.8–3.5 cm, wings spreading ± horizontally. Fl. Apr–May, fr. Sep.

Mixed forests; 300–1800 m. Guangxi, S Guizhou, SE Xizang, SE Yunnan [Myanmar, Thailand, N Vietnam].

36. *Acer fenzelianum* Handel-Mazzetti, Oesterr. Bot. Z. 82: 250. 1933.

河口枫 he kou feng

Acer tonkinense H. Lecomte subsp. *fenzelianum* (Handel-Mazzetti) A. E. Murray.

Trees 7–20 m tall. Bark gray or blackish gray. Branchlets slender, densely tomentose; lenticels brown, rounded. Leaves deciduous; petiole 2–3 cm, densely yellowish tomentose; leaf blade thickly membranous or subleathery, abaxially glabrous except densely tomentose on main veins, adaxially glabrous except slightly pubescent at base of veins, primary veins 3, from base to apex of blade, reticulate veins conspicuous abaxially, base rounded or broadly cuneate, shallowly 3-lobed or 3-dentate, rarely unlobed, sinuses to 1/5–1/4 width of blade; lobes triangular-ovate, apex acuminate. Inflorescence corymbose, short, few flowered. Flowers unknown. Infructescence usually gray or yellow tomentose, rarely glabrescent. Fruit purplish yellow, 4–6; nutlets convex, oblong, 1–1.2 cm × 6–8 mm, persistently villous, veined; wing including nutlet 3.5–3.8 × ca. 1.7 cm; wings spreading obtusely, pubescent or glabrescent. Fr. Sep.

Forests, valleys; 1100–1700 m. S Yunnan [Vietnam].

37. *Acer calcaratum* Gagnepain, Notul. Syst. (Paris) 13: 192. 1948.

三裂枫 san lie feng

Trees small, to 7 m tall, andromonoecious, deciduous. Branchlets smooth, green and glabrous, greenish brown or olive-brown in second year; winter buds ovoid, 4-paired. Petioles 1.5–4.6 cm, glabrous; leaf blade abaxially light green, adaxially olive green, 6–15 × 5–21 cm, papery, deeply 3-lobed, base rounded, rarely subcordate, abaxially reticulate and glabrous except for axillary tufts of pale hairs; lobes triangular-ovate, margin entire, apex acuminate; main veins 3, developing from leaf base, main veins and veinlets distinct on both surfaces. Inflorescence corymbose, terminal on a 2-leaved branchlet. Sepals 5, purplish red. Petals 5, white. Stamens 8. Disk glabrous, extrastaminal. Styles 2. Samaras glabrous; nutlets brown, ovoid, ca. 5 × 7 mm, distinctly veined; wings spreading obtusely, wing including nutlet 4–6 × 1.4–1.7 cm, reddish when young, brownish when mature; pedicel 1.7–2 cm, glabrous. Fl.

Nov–Jan, fr. Mar–Jul.

Scattered by streams in rain forests; 1200–2400 m. S Yunnan [Myanmar, Thailand, Vietnam].

This is a new record and a very rare maple in China.

38. *Acer laevigatum* Wallich, Pl. Asiat. Rar. 2: 3. 1830.

光叶枫 guang ye feng

Trees 10–15 m tall, andromonoecious. Branchlets slender, glabrous or pubescent. Leaves persistent; petiole 1–1.8 cm, glabrous or pubescent, purple-green; leaf blade light green on both surfaces or abaxially greenish, lanceolate to oblong or ovate- or elliptic-oblong, 7–15 × 2.5–5 cm, leathery or papery, abaxially with tufts of hairs at vein axils when young, then glabrous, adaxially glabrous, 3-veined at base, reticulate, veins slightly raised, lateral veins 7–12 pairs, base cuneate, broadly cuneate, or rounded, undivided, margin usually entire or remotely serrate when young, apex acuminate or shortly acuminate, acumen to 1.5 cm. Inflorescence terminal on leafy branchlets, corymbose-paniculate, pubescent or glabrous. Pedicel 6–8 cm, slender, glabrous. Sepals 5, ovate-oblong. Petals 5, white, obovate, longer than sepals. Stamens 8, glabrous. Disk glabrous, extrastaminal. Ovary slightly pubescent; style glabrous. Fruit brownish yellow when mature or purplish green; nutlets strongly convex, ellipsoid or ellipsoid-oblong, ca. 1 cm in diam., introrsely falcate, wings spreading acutely, erectly, or horizontally. Fl. Apr, fr. Aug–Sep. *2n* = 26.

Forests; 1000–2000 m. Guangdong, Guangxi, Guizhou, W Hubei, Hunan, N Shaanxi, Sichuan, S Xizang, Yunnan [Bhutan, N India, Myanmar, Nepal, Vietnam].

- 1a. Flowers, inflorescence, pedicels, and petioles glabrous 38a. var. *laevigatum*
- 1b. Flowers, inflorescence, pedicels, and petioles pubescent 38b. var. *salweenense*

38a. *Acer laevigatum* var. *laevigatum*

光叶枫(原变种) guang ye feng (yuan bian zhong)

Acer caloneurum C. Y. Wu & T. Z. Hsu; *A. guizhouense* Y. K. Li; *A. hainanense* F. Chun & W. P. Fang; *A. laevigatum* var. *angustum* Pax; *A. laevigatum* subsp. *reticulatum* (Champion) A. E. Murray; *A. laevigatum* var. *reticulatum* (Champion) Rehder; *A. legonsanicum* Y. K. Li; *A. oblongum* Wallich ex Candolle var. *laevigatum* (Wallich) Wesmael; *A. reticulatum* Champion ex Benth.

Petiole glabrous. Inflorescence, pedicels, and flowers glabrous.

Forests; 1000–2000 m. Guangdong, Guangxi, Guizhou, W Hubei, Hunan, N Shaanxi, Sichuan, S Xizang, Yunnan [Bhutan, N India, Myanmar, Nepal, Vietnam].

38b. *Acer laevigatum* var. *salweenense* (W. W. Smith) J. M. Cowan ex W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 11: 158. 1939.

怒江光叶枫 nu jiang guang ye feng

Acer salweenense W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 13: 151. 1921; *A. kiukiangense* Hu & W. C. Cheng.

Petiole purple-green, pubescent. Inflorescence, pedicels, and flowers pubescent. Infructescence paniculate. Fruiting peduncles 2.3–2.5 cm. Fruit purplish green; nutlets ca. 8 × 5 mm; wing including nutlet 2.5–2.8 cm × ca. 7 mm.

Forests; 1000–1700 m. S Yunnan [N Myanmar].

One of us (de Jong) notes that variation concerns the pubescence, a minor characteristic. In addition, this taxon grows in the same area as the typical variety; thus, there is a small basis for distinction as a variety.

39. *Acer wangchii* W. P. Fang, Acta Phytotax. Sin. 11: 168. 1966.

天峨枫 tian e feng

Trees evergreen, to 15 m tall. Bark dark brown or dark purple, rough. Branchlets purplish green, becoming brown, slender, glabrous; lenticels yellowish, elliptic; winter buds ovoid. Leaves persistent; petiole purplish green, 1.5–4 cm, glabrous; leaf blade abaxially glaucous, adaxially greenish, lanceolate, oblanceolate, or oblong, 8–11 × 2–4 cm, leathery, base broadly truncate, margin entire to undulate, apex caudate, acumen 1–1.5 cm. Flowers unknown. Infructescence corymbose, densely yellowish tomentose. Fruit purple; nutlets strongly convex, 8–9 × ca. 6 mm; wing falcate, including nutlet 2.2–2.8 cm, wings spreading acutely or erectly. Fl. unknown, fr. Sep.

• Mixed forests; 700–1500 m. N Guangxi, Guizhou.

40. *Acer crassum* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 201. 1948.

厚叶枫 hou ye feng

Trees to 12 m tall, andromonoecious. Bark blackish brown, rough. Branchlets glabrous, those of present year purplish green, older ones blackish gray or grayish brown; winter buds ovoid, scales yellowish brown, ciliate along margin. Leaves persistent; petiole 1–2 cm, rough; leaf blade abaxially gray-green, adaxially dark green and shiny, elliptic or elliptic-oblong, (6–)8–14 × (2.2–)3.5–6 cm, thickly leathery, abaxially mealy, veins 8–10 pairs, base cuneate or broadly cuneate, margin entire, apex acute or obtuse, acumen 6–12 mm. Inflorescence terminal, corymbose, 5–6 cm, villous; peduncles 1–2 cm. Pedicel slender, yellowish pilose. Sepals 5, greenish, obovate-oblong, 3–3.2 mm. Petals 5, yellowish, lanceolate or oblanceolate, 3.3–4 mm. Stamens 8. Disk glabrous, extrastaminal. Ovary purple, densely yellow pilose. Fruit yellow-purple, ± villous; nutlets convex, ca. 1 cm; wing including nutlet 2.8–3.2 cm, wings spreading at 90°. Fl. Apr, fr. Sep.

• Mixed forests; ca. 1000 m. SE Yunnan.

41. *Acer sino-oblongum* F. P. Metcalf, Lingnan Sci. J. 11: 202. 1932.

滨海枫 bin hai feng

Trees evergreen, to 7 m tall, andromonoecious. Bark

brownish gray, rough. Branchlets glabrous, those of present year purple or purplish green, those more than 1 year old brownish purple or grayish purple, lenticels ovate or rounded; winter buds brownish, ovoid, scales slightly ciliate. Petiole 1–3 cm, glabrous; leaf blade abaxially yellowish green and whitish glaucous, adaxially green or pale green, elliptic or elliptic-oblong, 6–9 × 2–4 cm, leathery, veins weak, lateral veins 5–7 pairs, slightly raised below, base broadly cuneate or rounded, margin entire, apex acuminate or caudate-acuminate, adaxially glabrous. Inflorescence terminal, corymbose; peduncle ca. 1 cm. Flowers greenish yellow. Sepals 5, obovate-oblong, ca. 4 mm. Petals 5, oblanceolate, ca. 4 mm. Stamens 8. Disk extrastaminal. Ovary glabrous. Pedicels 5–10 mm, villous. Nutlets strongly convex, ca. 8 × 5 mm; wing including nutlet ca. 3 cm × 10–12 mm, wings spreading at acute angle. Fl. Apr, fr. Sep.

• Evergreen forests, near sea shores. Guangdong.

42. *Acer hilaense* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 203. 1948.

海拉枫 hai la feng

Trees to 10 m tall. Bark gray, rough. Branchlets glabrous, those of present year purplish brown, older ones dark brown; winter buds ovoid, scales numerous, ciliate along margin, glabrous outside. Leaves persistent; petiole purplish brown, 2.5–3 cm, slender; leaf blade abaxially gray-green and glaucous, adaxially dark green, oblong, ovate, or suborbicular, 6–8 × 2.2–3 cm, papery or subleathery, adaxially glabrous, lateral veins 8–10 pairs, margin entire, base rounded, apex acuminate or shortly acuminate. Flowers unknown. Infructescence corymbose, 3.5–4 cm, gray pubescent. Fruit purple-brown; nutlets strongly convex, ovoid, ca. 7 mm in diam., yellowish or gray pubescent; wing including nutlet 2.4–3 cm × 5–6 mm, wings spreading acutely. Fr. Sep.

• Mixed forests; ca. 1500 m. W Yunnan.

43. *Acer pubipetiolatum* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 205. 1948.

毛柄枫 mao bing feng

Trees to 10 m tall, andromonoecious. Bark gray or dark gray, smooth. Branchlets slender, those of present year purplish green, pubescent, older ones greenish or yellowish gray, glabrous. Leaves deciduous; petiole 8–10 mm, densely yellowish or brownish villous or glabrous; leaf blade abaxially pale green, adaxially dark green, lanceolate or oblong-lanceolate, 6–9 × 2–3 cm, papery, abaxially with tufts of hairs at vein axils, adaxially glabrous, base rounded or subcordate, deeply 5- or 7-lobed; lobes entire or doubly serrate near and below apex, apex acuminate. Inflorescence terminal, corymbose, 1–1.5 cm, gray villous. Sepals 5, green, ovate-oblong, ca. 4 mm. Petals 5, white, obovate, ca. 3 mm in diam. Stamens 8. Disk purple, glabrous, extrastaminal. Ovary purple, slightly pubescent. Fruit yellowish green, pubescent; nutlets convex, 8–9 mm; wing falcate, including nutlet 2.8–3.4 × ca. 1.4 cm, wings spreading obtusely. Fl. Mar–Apr, fr. Jul–Aug or Sep.

• Mixed forests, valleys, limestone slopes; 800–2600 m. SW Guizhou, Yunnan.

- 1a. Leaf blade usually serrulate in upper part; petiole tomentose; samara ca. 3.4 cm 43a. var. *pubipetiolatum*
- 1b. Leaf blade entire throughout; petiole tomentose when young, but glabrescent when mature; samara 2.8–3 cm 43b. var. *pingpienense*

43a. *Acer pubipetiolatum* var. *pubipetiolatum*

毛柄枫(原变种) mao bing feng (yuan bian zhong)

Petiole tomentose; leaf blade usually serrulate in upper part. Samara ca. 3.4 cm.

• Mixed forests, valleys; 1900–2600 m. W Yunnan.

43b. *Acer pubipetiolatum* var. *pingpienense* W. P. Fang & W. K. Hu, Acta Phytotax. Sin. 11: 170. 1966.

屏边毛柄枫 ping bian mao bing feng

Petiole tomentose when young, but glabrescent when mature; leaf blade always entire. Samara 2.8–3 cm. Fl. Apr, fr. Sep.

• Limestone slopes; 800–1500 m. SW Guizhou, SE Yunnan.

The name "*Acer changii*" (Z. R. Xu, Acta Sci. Nat. Univ. Sunyatseni 1986(2): 100. 1986) belongs here but was not validly published because no type was indicated (*Vienna Code*, Art. 37.1).

44. *Acer fabri* Hance, J. Bot. 22: 76. 1884.

罗浮枫 luo fu feng

Acer fabri var. *dolichophyllum* W. P. Fang & S. Y. Liang; *A. fabri* var. *gracillimum* W. P. Fang; *A. fabri* var. *megalocarpum* Hu & W. C. Cheng; *A. fabri* f. *rubrocarpum* (F. P. Metcalf) Rehder; *A. fabri* var. *rubrocarpum* F. P. Metcalf; *A. fabri* var. *tongguense* Z. X. Yu; *A. fabri* var. *virescens* W. P. Fang; *A. fargesii* Veitch ex Rehder; *A. laevigatum* Wallich var. *fargesii* (Rehder) Veitch; *A. prainii* H. Léveillé.

Trees small, usually ca. 1 m tall, andromonoecious. Bark brownish gray. Branchlets slender, glabrous. Leaves persistent; petiole 1–1.5 cm, slender, glabrous; leaf blade abaxially pale green, adaxially dark green, oblong, lanceolate, oblong-oblan- ceolate, or elliptic, 4–11 × 2–3.5 cm, leathery, abaxially gla- brous, rarely with tufts of hairs at vein axils, adaxially glabrous, midvein raised, lateral veins 4 or 5 pairs, base acuminate or ob- tuse, undivided, margin entire, apex acuminate or shortly acu- minate. Inflorescence erect, paniculate, glabrous or pubescent. Sepals 5, oblong, slightly pubescent. Petals 5, purple, obovate, shorter than sepals. Stamens 8, glabrous. Ovary glabrous. Fruit- ing pedicel 1–1.5 cm, slender, pubescent or glabrous. Fruit brownish yellow when mature; nutlets convex, ca. 5 mm in diam.; wing red, including nutlet 2.5–4.8 cm × 8–10 mm, wings spreading obtusely. Fl. Mar–Apr, fr. Sep.

Mixed forests, valleys; 500–2000 m. Guangdong, Guangxi, Gui-

zhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan [Vietnam].

45. *Acer kwangnanense* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 204. 1948.

广南枫 guang nan feng

Acer fengii A. E. Murray.

Trees to 15 m tall. Bark dark gray or dark brown, rough. Branchlets glabrous, those of present year purplish brown, older ones dark brown or dark gray; winter buds ovoid, scales slightly ciliate. Leaves persistent; petiole reddish, 2–4 cm; leaf blade abaxially pale green, adaxially dark green, ovate-oblong or ob- long-elliptic, (7–)8–14 × 3.5–4.2(–6) cm, leathery, both surfaces glabrous, veins 7–9 pairs, base obtuse or broadly cuneate, apex acuminate, acumen 8–10 mm. Flowers unknown. Inflorescence corymbose, 3–4 cm, yellowish pubescent. Fruiting peduncles 1.5–2 cm, pubescent. Fruit yellowish brown; nutlets strongly convex, ca. 1 × 1.2–1.4 cm, wings spreading at 90°. Fr. Sep.

• Mixed forests; 1000–1500 m. SE Yunnan.

46. *Acer oligocarpum* W. P. Fang & L. C. Hu, Acta Phytotax. Sin. 17(1): 82. 1979.

少果枫 shao guo feng

Acer foveolatum C. Y. Wu.

Trees to 12 m tall. Bark gray. Branchlets cylindrical, those of present year purplish green, glabrous, older ones grayish. Leaves deciduous; petiole purplish green, 1–1.4 cm, glabrous; leaf blade green, oblong-ovate or lanceolate, 5–14 × 3–4.3 cm, subleathery, glabrous, veins 6–8 pairs, base rounded, margin

entire, apex acute. Flowers unknown. Infructescence purplish, corymbose, 4–5 cm, glabrous, 2–4-fruited. Fruiting pedicel 1–1.5 cm, slender. Fruit yellowish; nutlets convex, globose, ca. 8 × 5 mm, glabrous; wing including nutlet 2–3.2 cm, wings spreading acutely or obtusely. Fl. unknown, fr. Sep.

- Mixed forests; 1400–1600 m. S Xizang, Yunnan.

3. *Acer* sect. *Oblonga* (Hu & W. C. Cheng) Delendick, Brittonia 34: 83. 1982.

全缘叶枫组 quan yuan ye feng zu

Acer subsect. *Oblonga* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 200. 1948.

Trees, mostly evergreen, andromonoecious. Leaves undivided or 3-lobed, margins mostly entire, sometimes serrate. Bud scales 4–8-paired. Inflorescences corymbose, terminal and axillary. Flowers 5-merous. Stamens 8. Disk extrastaminal. Nutlets keeled convex.

Fifteen species: China, Himalayas, Japan, Laos, Thailand, Vietnam; 14 species (12 endemic) in China.

- 1a. Leaves usually 3-lobed.
 - 2a. Leaves deeply 3-lobed, middle lobe oblong-lanceolate 47. *A. yui*
 - 2b. Leaves shallowly 3-lobed, middle lobe ovate, triangular, or triangular-ovate.
 - 3a. Leaf lateral lobes nearly same size as middle lobe 48. *A. buergerianum*
 - 3b. Leaf lateral lobes usually smaller than middle lobe (sometimes with unlobed leaves on same tree).
 - 4a. Lateral lobes long, apex acuminate.
 - 5a. Leaf central lobe apically acuminate, lateral lobes triangular, petiole 2–5 cm 49. *A. paxii*
 - 5b. Leaf lobes apically acute, petiole 2.5–9 cm 50. *A. shihweii*
 - 4b. Lateral lobes small, apex obtuse.
 - 6a. Margin of leaf lobe serrulate 51. *A. cordatum*
 - 6b. Margin of leaf lobe entire.
 - 7a. Branchlets, inflorescence, and petioles densely pubescent; leaf margin reflexed, abaxially pubescent 52. *A. sycopseoides*
 - 7b. Branchlets and petioles glabrous, inflorescence hairy when immature; leaf margin not reflexed, abaxially glabrous 53. *A. paihengii*
- 1b. Leaves usually not lobed, sometimes 3-lobed in young shoots.
 - 8a. Young branchlets, petioles, and leaves abaxially pubescent 54. *A. coriaceifolium*
 - 8b. Young branchlets, petioles, and leaves abaxially usually glabrous.
 - 9a. Leaves papery.
 - 10a. Leaf base cordate, abaxially light green, usually serrulate in upper part; samara purple-red when young 51. *A. cordatum*
 - 10b. Leaf base rounded, abaxially pale white, margin entire or undulate; samara green when young 55. *A. gracilifolium*
 - 9b. Leaves thickly leathery or subleathery.
 - 11a. Leaf blade ovate, apex obtuse 56. *A. poliophyllum*
 - 11b. Leaf blade oblong, oblong-ovate, or lanceolate, apex acute to acuminate.
 - 12a. Samara less than 2 cm; leaf blade lanceolate or oblong, apex acuminate or acute.
 - 13a. Leaf blade 8–14 × 2.5–5 cm 57. *A. albopurpurascens*
 - 13b. Leaf blade 3.5–4.5 × 1.5–2 cm 58. *A. yinkunii*
 - 12b. Samara usually 2–3 cm; leaf blade oblong, apex usually acute.
 - 14a. Leaves adaxially shiny, abaxially conspicuously pale white, margin slightly reflexed 59. *A. lucidum*
 - 14b. Leaves adaxially not shiny and deep green, abaxially light green or pale green, margin not reflexed 60. *A. oblongum*

47. *Acer yui* W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 9: 235. 1934.

川甘枫 chuan gan feng

Acer yui var. *leptocarpum* W. P. Fang & Y. T. Wu.

Trees ca. 7 m tall. Bark brownish gray or blackish gray.

Branchlets slender, glabrous; lenticels ovate or nearly rounded, small; winter buds terminal or axillary, ellipsoid, small, scales numerous, exterior ones glabrous, ciliate along margin, interior ones pubescent. Leaves deciduous; petiole purplish or purplish green, 3–4 cm; leaf blade broadly ovate, 3–7 × 2–2.5 cm, papery, abaxially yellow pubescent at vein axils, adaxially

glabrous and smooth, primary veins 3, reticulate veins conspicuous abaxially, base nearly rounded or broadly obtuse, 3-lobed or 3-dentate, sinuses 1/3–3/5 width of blade; lobes entire or slightly undulate; middle lobe ovate-triangular or lanceolate, apex acute; lateral lobes triangular-ovate, apex obtuse. Inflorescence corymbose. Infructescence 5–7 cm. Fruiting pedicel 3–5 mm, slender. Fruit 3–5; nutlets convex, ca. 7 × 5 mm, slightly puberulent, veined; wing including nutlet obovate, ca. 2.2 × 1 cm, apex obtuse, wings spreading obtusely. Fl. unknown, fr. Sep.

- Mixed forests, valleys; 1800–2000 m. S Gansu, NW Sichuan.

48. *Acer buergerianum* Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 88. 1865.

三角枫 san jiao feng

Trees 5–20 m tall, andromonoecious. Bark rough. Branchlets slender; winter buds brown, ellipsoidal, small, scales villous along margin. Leaves deciduous; petiole 2.5–5(–8) cm, glabrous; leaf blade abaxially whitish, ovate, obovate, elliptic, or orbicular, (3–)6–10 × (3–)4–6 cm, membranous, abaxially glaucous, slightly pubescent especially on veins, adaxially glabrous, primary veins 3, base rounded or cuneate, shallowly or deeply 3-lobed, occasionally entire; middle lobe triangular-ovate or lanceolate, apex acute or shortly acuminate; lateral lobes short, margin usually entire, rarely with a few serrations, apex acute, sometimes lobes very small or obsolete. Inflorescence terminal, corymbose, ca. 3 cm wide, pubescent, numerous flowered. Pedicel 5–10 mm. Sepals 5, ovate, glabrous. Petals 5, yellowish white, narrowly lanceolate or spatulate-lanceolate, ca. 2 mm, apex obtuse. Stamens 8. Disk glabrous, extrastaminal. Ovary densely yellowish villous; style glabrous, very short; stigmas widely spreading or recurved. Fruit yellowish brown; nutlets strongly convex, 6–7 mm in diam.; wing broad at middle, contracted at base, wings spreading variously. Fl. Apr, fr. Aug.

Forests; sea level to 1500 m. Anhui, Fujian, Gansu, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Shandong, Sichuan, Taiwan, Zhejiang [Japan].

- 1a. Leaf blade orbicular, deeply 3-lobed; samara 1.5–2 cm, spreading at obtuse angle.
- 2a. Leaf blade 4–6 × 4–6 cm, lobes nearly lanceolate; samara 1.8–2 cm 48e. var. *kaiscianense*
- 2b. Leaf blade ca. 3 × 3 cm, lobes ovate; samara 1.5–1.8 cm 48f. var. *yentangense*
- 1b. Leaf blade ovate, shallowly 3-lobed, rarely unlobed, samara 2–2.5(–3) cm.
 - 3a. Wings spreading at acute to right angle, rarely at obtuse angle.
 - 4a. Samara wings spreading at acute to obtuse angle, never inflexed 48a. var. *buergerianum*
 - 4b. Samara wings inflexed 48b. var. *jiujiangense*
 - 3b. Samara wings spreading at obtuse angle or nearly horizontally.
 - 5a. Samara 2–2.5 cm, spreading horizontally 48c. var. *horizontale*

- 5b. Samara 2.5–3 cm, spreading at obtuse angle, rarely horizontally 48d. var. *formosanum*

48a. *Acer buergerianum* var. *buergerianum*

三角枫(原变种) san jiao feng (yuan bian zhong)

Acer buergerianum var. *ningpoense* (Hance) Rehder; *A. buergerianum* var. *trinerve* (Siesmayer) Rehder; *A. lingii* W. P. Fang; *A. ningpoense* (Hance) W. P. Fang; *A. paxii* Franchet var. *ningpoense* (Hance) Pax; *A. trialatum* L. L. Deng et al.; *A. trifidum* Hooker & Arnott (1841), not Thunberg (1784); *A. trifidum* f. *buergerianum* (Miquel) Schwerin; *A. trifidum* f. *ningpoense* (Hance) Schwerin; *A. trifidum* var. *ningpoense* Hance; *A. trinerve* Siesmayer.

Leaf blade ovate, (3–)6–10 × 4–6 cm. Samara wings spreading erectly, obtusely, or acutely.

Mixed forests; below 1500 m. Anhui, Fujian, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Sichuan, Zhejiang [Japan].

48b. *Acer buergerianum* var. *jiujiangense* Z. X. Yu, Acta Phytotax. Sin. 21: 368. 1983.

九江三角枫 jiu jiang san jiao feng

Leaf blade ovate, slightly 3-lobed. Samara wings inflexed.

- Mixed forests; ca. 100 m. Jiangxi (Jiujiang)

48c. *Acer buergerianum* var. *horizontale* F. P. Metcalf, Lingnan Sci. J. 20: 219. 1942.

平翅三角枫 ping chi san jiao feng

Leaf blade ovate, 6–8 × 4–6 cm, shallowly 3-lobed; lobes triangular-ovate. Samara wing 2–2.5 cm, wings spreading horizontally.

- Below 100 m. S Zhejiang.

48d. *Acer buergerianum* var. *formosanum* (Hayata ex H. Léveillé) Sasaki, List Pl. Formosa 275. 1928.

台湾三角枫 tai wan san jiao feng

Acer trifidum var. *formosanum* Hayata ex H. Léveillé, Bull. Soc. Bot. France 6: 593. 1906; *A. buergerianum* subsp. *formosanum* (Hayata ex Koidzumi) A. E. Murray & Lauener.

Leaf blade ovate, 4–10 × 4–6 cm, shallowly 3-lobed; lobes triangular-ovate. Samara wing 2.5–3 cm, wings spreading obtusely or nearly horizontally.

- Mixed forests; sea level to 100 m. C and N Taiwan.

48e. *Acer buergerianum* var. *kaiscianense* (Pampanini) W. P. Fang, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 11: 127. 1939.

界山三角枫 jie shan san jiao feng

Acer trifidum var. *kaiscianense* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 18: 127. 1911.

Leaf blade orbicular, 4–6 × 4–6 cm, deeply 3-lobed; lobes

lanceolate. Samara wing 1.8–2 cm, spreading at obtuse angle.

- Mixed forests; 1000–1500 m. SE Gansu, NW Hubei, S Shaanxi.

48f. *Acer buergerianum* var. *yentangense* W. P. Fang & M. Y. Fang, Acta Phytotax. Sin. 11: 164. 1966.

雁荡三角枫 yan dang san jiao feng

Leaf blade orbicular, ca. 3 × 3 cm, deeply 3-lobed; lobes ovate. Samara wing 1.5–1.8 cm, spreading at obtuse angle.

- Mixed forests; 700–900 m. C Zhejiang.

49. *Acer paxii* Franchet, Bull. Soc. Bot. France 33: 464. 1886.

金沙枫 jin sha feng

Acer oblongum Wallich ex Candolle var. *biauratum* W. W. Smith; *A. oblongum* var. *erythrocarpum* H. Léveillé; *A. paxii* var. *semilunatum* W. P. Fang.

Trees evergreen, ca. 15 m tall, andromonoecious. Bark brown. Branchlets slender, glabrous; winter buds ellipsoid; scales brownish, ciliate along margin. Petiole 2–5 cm, glabrous; leaf blade ovate, obovate, or suborbicular, 5–11 × 2–6 cm, leathery or thickly leathery, abaxially glaucous, adaxially glabrous and smooth, primary veins 3, base rounded or broadly cuneate, margin entire or occasionally 3-lobed toward apex, undivided leaves also on same tree. Inflorescence terminal on leafy branchlets, corymbose, 3–4 cm wide, numerous flowered. Pedicel slender, glabrous. Sepals 5, glabrous. Petals 5, white, linear-lanceolate. Stamens 8; filaments glabrous. Disk glabrous, extrastaminal. Ovary white tomentose. Fruit greenish yellow; nutlets strongly convex, globose, ca. 8 × 6 mm, wings spreading variously. Fl. Mar, fr. Aug.

- Alpine forests; 1500–2500 m. C and N Guangxi, Guizhou, SW Sichuan, NW Yunnan.

50. *Acer shihweii* F. Chun & W. P. Fang, Acta Phytotax. Sin. 11: 165. 1966.

平坝枫 ping ba feng

Trees to 33 m tall. Bark brown, rough. Branchlets purplish green; lenticels yellowish, elliptic, small; winter buds axillary, ovoid, bud scales obtuse, imbricate. Leaves persistent; petiole purplish green, 2.5–9 cm; leaf blade abaxially glaucous, adaxially olive-colored, oblong, sometimes ovate or obovate, 12–15 × 5.5–8 cm, leathery, undivided to slightly lobed, 3-veined at base, base rounded, margin entire, apex caudate. Flowers unknown. Infructescence terminal, corymbose, ca. 6 cm. Fruiting pedicel 1–1.5 cm. Fruit with dense lenticels; nutlets purple brown, convex, ovoid; wing ca. 8 mm wide, ca. 2.3 cm including nutlet; wings spreading obtusely. Fl. unknown, fr. Sep.

- Dense forests, very rare; ca. 1400 m. Guizhou (Pingba).

51. *Acer cordatum* Pax, Hooker's Icon. Pl. 19: t. 1897. 1889.

紫果枫 zi guo feng

Trees to 10 m tall, andromonoecious. Bark gray, smooth.

Branchlets slender, glabrous. Leaves persistent; petiole 1–3.5 cm, slender, glabrous; leaf blade ovate or ovate-oblong, 3.5–9 × 1.5–4.5 cm, papery, abaxially glabrous and slightly reticulate, adaxially glabrous, veins slightly prominent, lateral veins 4 or 5 pairs, base subcordate, undivided or rarely 2- or 3-lobed, margin nearly entire, remotely serrate, or serrate, apex shortly acuminate or obtuse. Inflorescence terminal on leafy branchlets, corymbose, 3–5-flowered. Pedicel 1–2 cm, slender, glabrous. Sepals 5. Petals 5, yellowish green. Stamens 8, glabrous. Disk glabrous. Ovary glabrous. Samaras brownish yellow when mature; nutlets convex, ca. 4 × 3 mm, glabrous; wing including nutlet 1.4–2(–3.5) × ca. 1 cm, wings spreading variously. Fl. Apr, fr. Sep.

- Forests, valleys; 200–1200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

- 1a. Leaves undivided, margin nearly entire or remotely serrate, apex shortly acuminate 51a. var. *cordatum*
- 1b. Leaves usually 2- or 3-lobed, margin serrate, apex obtuse 51b. var. *dimorphifolium*

51a. *Acer cordatum* var. *cordatum*

紫果枫(原变种) zi guo feng (yuan bian zhong)

Acer cordatum var. *microcordatum* F. P. Metcalf; *A. cordatum* var. *subtrinervium* (F. P. Metcalf) W. P. Fang; *A. laevigatum* Wallich subsp. *cordatum* (Pax) A. E. Murray; *A. laevigatum* var. *microcordatum* (F. P. Metcalf) A. E. Murray; *A. subtrinervium* F. P. Metcalf.

Leaves undivided, margin nearly entire or remotely serrate, apex shortly acuminate.

- Forests, valleys; 500–1200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

51b. *Acer cordatum* var. *dimorphifolium* (F. P. Metcalf) Y. S. Chen, **comb. nov.**

两型叶紫果枫 liang xing ye zi guo feng

Basionym: *Acer dimorphifolium* F. P. Metcalf, Lingnan Sci. J. 11: 201. 1932; *A. cordatum* var. *jingangshanense* Z. X. Yu; *A. kiangsiense* W. P. Fang & M. Y. Fang; *A. reticulatum* Champion ex Bentham var. *dimorphifolium* (F. P. Metcalf) W. P. Fang & W. K. Hu.

Leaves usually 2- or 3-lobed, margin serrate, apex obtuse.

- Sparse forests; 200–1200 m. Fujian, E Guangdong, Jiangxi.

52. *Acer sycopseoides* F. Chun, Hooker's Icon. Pl. 32: t. 3160. 1932.

角叶枫 jiao ye feng

Acer coriaceifolium H. Léveillé subsp. *obscurilobum* A. E. Murray.

Trees to 6 m tall. Bark grayish. Branchlets purplish brown, densely yellowish tomentose. Leaves persistent; petiole ca.

2.5 cm; leaf blade adaxially yellow-green, ovate, oblong-ovate, or obovate, 5–8 × 2.5–4 cm, leathery, abaxially pubescent, 3-veined, base rounded, margin strongly revolute and shortly 1- or 2-lobulate, apex obtuse-acuminate. Infructescence terminal, corymbose, densely pubescent, with few samaras; pedicels 4–5 mm. Samaras finally glabrous, 1.8–2.2 cm including wing; nutlets strongly convex, elliptic-oblong, ca. 5 × 3 mm, wings ca. 4 mm wide, spreading at obtuse angle. Fl. Apr, fr. Sep.

- Forests; 600–2100 m. N Guangxi, S Guizhou, C Yunnan.

53. *Acer paihengii* W. P. Fang, Acta Phytotax. Sin. 11: 169. 1966.

富宁枫 fu ning feng

Acer amoenum Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 1: 200. 1948, not Carrière (1867).

Trees to 12 m tall, andromonoecious. Bark brown, rough. Branchlets glabrous; lenticels elliptic. Leaves deciduous; petiole 1.8–3.5 cm, glabrous; leaf blade abaxially glaucous, adaxially deep green, oblong or ovate, 4–6 × 1.6–2.8 cm, leathery, primary veins prominent abaxially, conspicuous adaxially, lateral veins from base to central part of blade, base rounded, margin entire or slightly with 2 obtuse lateral lobes, apex acute. Inflorescence terminal, corymbose, densely pubescent; peduncles 4–6 mm. Flowers green. Sepals 5, green, lanceolate, rarely oblong, 3.5–4.3 mm, glabrous. Petals 4, light green, ca. as long as sepals. Stamens 8. Disk glabrous, extrastaminal. Ovary hairy. Samara 2–2.2 cm; nutlets strongly convex, ca. 6 × 4 mm; wings ca. 7 mm wide, spreading at obtuse angle. Fl. Apr, fr. Aug.

- Broad-leaved forests; 700–1100 m. SE Yunnan.

54. *Acer coriaceifolium* H. Léveillé, Repert. Spec. Nov. Regni Veg. 10: 433. 1912.

樟叶枫 zhang ye feng

Acer cinnamomifolium Hayata; *A. cinnamomifolium* var. *microphyllum* W. P. Fang & S. Y. Liang; *A. coriaceifolium* var. *microcarpum* W. P. Fang & S. S. Chang; *A. oblongum* Wallich ex Candolle var. *macrocarpum* Hu.

Trees to 15 m tall. Bark blackish gray or blackish brown; lenticels ovate or oblong-ovate; winter buds brown, scales ovate, tomentose along margin. Leaves persistent; petiole 1.5–3 cm, slender, tomentose; leaf blade abaxially pale green, adaxially dark green, ovate-oblong or rarely lanceolate, 8–12 × 2.5–5 cm, leathery, abaxially tomentose, less so when mature, adaxially glabrous, lateral veins 5 or 6 pairs, base broadly cuneate, cuneate, or rarely obtuse, margin entire, apex apiculate. Inflorescence terminal, corymbose. Pedicel ca. 1 cm, slender, tomentose. Flowers 5-merous. Sepals 5, light green, oblong, ca. 4 mm. Petals 5, light yellow, obovate, ca. as long as sepals. Stamens 8, longer than petals. Disk extrastaminal, white pubescent. Ovary white pubescent. Infructescence corymbose, tomentose. Fruit brownish yellow, tomentose when young, slightly so when mature; nutlets strongly convex, ca. 7 × 6 mm; wing including nutlet 2.8–3.5 cm × ca. 7 mm, wings spreading

obtusely or acutely. Fl. Mar, fr. Aug.

- Forests; 1500–2500 m. S Anhui, Fujian, Guangdong, N Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, SE Sichuan, Zhejiang.

55. *Acer gracilifolium* W. P. Fang & C. C. Fu, Fl. Tsinling. 1(3): 453. 1981.

长叶枫 chang ye feng

Trees evergreen, to 5 m tall, andromonoecious. Bark brown or gray, smooth. Branchlets purplish, glabrous. Petiole 2–2.5 cm, slender; leaf blade abaxially glaucous, adaxially green, ovate to oblong, 4.5–8 × 2–2.5 cm, papery, adaxially glabrous, basal veins 3, lateral veins 4 or 5 pairs, base rounded, margin entire or slightly undulate, apex acuminate. Flowers yellow-green. Sepals and petals 5. Stamens 8. Infructescence terminal, corymbose, glabrous, with leaves at base; pedicels 2–2.5 cm. Samaras 1.5–1.7 cm; wings light yellow, ca. 5 mm wide; nutlets brown, convex, ca. 4 mm in diam. Fl. Mar–Apr, fr. Sep–Oct.

- Mixed forests near streams; 300–1000 m. SE Gansu, N Sichuan.

56. *Acer poliophyllum* W. P. Fang & Y. T. Wu, Acta Phytotax. Sin. 17(1): 82. 1979.

灰叶枫 hui ye feng

Trees evergreen, ca. 5 m tall. Bark dark gray. Branches slender, glabrous; lenticels light yellow, elliptic; winter buds axillary, ovoid, bud scales ovate, imbricate, margin ciliate. Petiole 2–2.5 cm, glabrous; leaf blade abaxially gray, glaucous, adaxially light green, ovate, 6–7 × 3–4.5 cm, leathery, adaxially smooth, primary veins prominent abaxially, distinct adaxially, lateral veins 6 or 7 pairs, base rounded, margin entire or slightly undulate, apex acuminate. Flowers unknown. Infructescence terminal, corymbose, on leafy branchlets, glabrous, ca. 6 cm. Samara red when young, ca. 2.3 cm; nutlets rhombic, convex, ca. 6 × 4 mm; wings ca. 1 cm wide. Fr. Sep.

- Mixed forests; 1000–1800 m. SW Guizhou, SE Yunnan.

57. *Acer alborpurpurascens* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 64. 1911.

紫白枫 zi bai feng

Acer hypoleucum Hayata; *A. litseifolium* Hayata.

Trees small, to 15 m tall, andromonoecious. Bark dark. Branchlets of present year pubescent, glabrescent; winter buds ovoid, glabrous, ciliate on margin, ca. 6 pairs. Leaves persistent; petiole 1–3.5 cm, pubescent; leaf blade abaxially whitish glaucescent, adaxially green, oblong or oblong-lanceolate, 2.5–13 × 1–4 cm, leathery, abaxially densely pubescent, adaxially glabrous, 3-veined at base, veins slightly raised abaxially, lateral veins 5 or 6 pairs, base obtuse to cuneate, margin entire or rarely slightly undulate, apex caudate to acuminate. Inflorescence terminal on leafy branchlets, corymbose; peduncles ca. 1.5 cm, densely pubescent. Flowers small. Sepals 5, orbicular-ovate. Petals 5, oblong-ovate. Stamens 8. Disk not distinct, extrastaminal. Ovary hairy. Infructescence terminal,

corymbose, on leafy branchlets. Samara glabrous; nutlets convex, ca. 5 mm in diam.; wing including nutlet 1.5–2.5 cm × ca. 6 mm, wings spreading at 50°–70°. Fl. Apr, fr. Sep.

- Forests; 400–2000 m. Taiwan.

58. *Acer yinkunii* W. P. Fang, Acta Phytotax. Sin. 11: 169. 1966.

都安枫 du an feng

Trees small, 3–5 m tall. Bark purplish gray to brown. Branchlets purple, slender, glabrous; buds purple, acute, scales imbricate. Leaves persistent; petiole 1.8–2.4 cm, glabrous; leaf blade abaxially glaucous, adaxially light green, oblong-lanceolate, 3.5–4.5(–5.5) × 1.5–2 cm, leathery, adaxially glabrous, lateral veins 8 or 9 pairs, slightly raised, veinlets inconspicuous, reticulate, margin entire, base rounded or broadly cuneate, apex acuminate or caudate-attenuate. Inflorescence terminal on leafy branchlets, corymbose-paniculate, sparsely pubescent. Flowers unknown. Fruit brownish yellow when mature; nutlets ellipsoid or ellipsoid-oblong, strongly convex, ca. 7 × 5 mm; wing including nutlet ca. 1.8 cm × ca. 8 mm, wings spreading nearly erectly. Fr. Aug–Sep.

- Sparse forests; 1000–2000 m. Guangxi.

This apparently rare species requires further study.

59. *Acer lucidum* F. P. Metcalf, Lingnan Sci. J. 11: 197. 1932.

亮叶枫 liang ye feng

Acer laikuanii Y. Ling; *A. oblongum* Wallich ex Candolle var. *pachyphyllum* W. P. Fang; *A. pehpeiense* W. P. Fang & H. Y. Su; *A. wangchii* W. P. Fang subsp. *tsinyunense* W. P. Fang; *A. wuyishanicum* W. P. Fang & C. M. Tan.

Trees 5–10 m tall, andromonoecious. Bark gray or gray-brown. Branchlets slender, glabrous; winter buds purplish brown, ovoid, scales ciliate along margin. Leaves persistent; petiole 1–1.5 cm, slender, glabrous; leaf blade abaxially pale white, adaxially shiny, elliptic to ovate-oblong, 5–9 × 2–4 cm, thickly leathery, abaxially glabrous, adaxially glabrous, 3-veined at base, veins prominent abaxially, inconspicuous adaxially, lateral veins 4–7 pairs, base rounded, margin entire, apex acuminate or acute. Inflorescence terminal, corymbose. Pedicel ca. 1 cm, slender, slightly pubescent. Sepals 5, yellowish green, oblong. Petals 5, obovate-oblong. Stamens 8, 3–4 mm in staminate flowers, much shorter in pistillate flowers; filaments glabrous. Disk extrastaminal. Ovary glabrous. Fruit brownish yellow; nutlets convex, ca. 7 × 5 mm; wing including nutlet 2–2.5 cm. Fl. Mar–Apr, fr. Aug–Sep.

- Forests; 500–1000 m. Fujian, N Guangdong, N Guangxi, Jiangxi, E Sichuan.

60. *Acer oblongum* Wallich ex Candolle, Prodr. 1: 593. 1824.

飞蛾树 fei e shu

Trees to 20 m tall, andromonoecious. Bark gray, gray-brown, or blackish gray, rough, scaly. Branchlets slender, those

more than 1 year old brown or dark brown, glabrous; winter buds small, glabrescent. Leaves persistent; petiole 2–5 cm, slender, glabrous; leaf blade abaxially whitish glaucous, adaxially green, elliptic, elliptic-oblong, oblong-ovate, or lanceolate, 5–17 × 2.5–5 cm, leathery, smooth, adaxially glabrous, veins usually 3 at base, basal veins usually 1/3–1/2 width of blade, lateral veins 6 or 7 pairs, base cuneate, obtuse, nearly rounded, or truncate, margin entire, apex acuminate. Inflorescence terminal on leafy branchlets, corymbose, pubescent. Pedicel 1–2 cm, pubescent. Sepals 5, oblong. Petals 5, yellowish green, obovate. Stamens 8, glabrous. Disk slightly lobed, extrastaminal. Ovary pubescent; style short, glabrous; stigmas recurved. Fruiting pedicel 2–3 cm, slender, glabrous. Fruit brownish yellow when mature or purplish; nutlets strongly convex, ca. 7 × 3–5 mm; wing yellow, including nutlet 1.8–2.5 cm × ca. 8 mm, wings spreading variously. Fl. unknown, fr. Oct. 2n = 26, 52.

Mixed forests, valleys; 1000–1800 m. NW Fujian, S Gansu, Guangdong, Guizhou, SW Henan, W Hubei, Jiangxi, S Shaanxi, Sichuan, S Xizang, Yunnan [Bhutan, N India, S Japan, Kashmir, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam].

- 1a. Samara 2–2.5 cm 60a. var. *oblongum*
- 1b. Samara 1.8–2 cm 60b. var. *omeiense*

60a. *Acer oblongum* var. *oblongum*

飞蛾枫(原变种) fei e feng (yuan bian zhong)

Acer discolor Maximowicz; *A. eucalyptoides* W. P. Fang & Y. T. Wu; *A. guanense* W. P. Fang; *A. oblongum* var. *concolor* Pax; *A. oblongum* var. *latialatum* Pax; *A. oblongum* var. *trilobum* Henry.

Branchlets purplish green, becoming brownish, glabrous; winter buds ovoid. Petiole purplish green, 2.5–5 cm; leaf blade elliptic-oblong or lanceolate, 8–12 × 3–5 cm, base broadly cuneate or obtuse. Inflorescence corymbose, ca. 7 cm, glabrous. Fruit purplish; nutlets ca. 3 mm in diam.; wing falcate, including nutlet 2–2.5 cm × 6–8 mm. Samara wing narrow, ca. 8 mm wide.

NW Fujian, S Gansu, Guangdong, Guizhou, SW Henan, W Hubei, Jiangxi, S Shaanxi, Sichuan, S Xizang, Yunnan [Bhutan, N India, Kashmir, Laos, Myanmar, Nepal, Thailand, Vietnam].

The name "*Acer paxii* var. *integrifolia*" [sic] (H. Léveillé, Fl. Kouy-Tchéou, 383. 1914–1915) belongs here but is a nomen nudum and, therefore, was not validly published.

60b. *Acer oblongum* var. *omeiense* W. P. Fang & T. P. Soong, Acta Phytotax. Sin. 17(1): 81. 1979.

峨眉飞蛾枫 e mei fei e feng

Leaf blade narrow, lanceolate, elliptic, or oblong-ovate, 6–11 × 2.5–3 cm, veinlets not conspicuous, base broadly truncate. Inflorescence shortly corymbose, ca. 3 cm. Ovary villous. Samara small, 1.8–2 cm, spreading at acute or right angle. Fl. Apr, fr. Sep.

- Mixed forests, valleys; 1200–1700 m. Sichuan.

疏毛枫组 *shu mao feng zu*

Acer ser. *Pubescentia* Pojarkova, Trudy Bot. Inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssh. Rast. 1: 236, 307. 1933.

Trees small, deciduous, andromonoecious. Leaves 3-lobed, margins coarsely serrate. Bud scales 6–10-paired. Inflorescences axillary and terminal, corymbose. Flowers 5-merous. Stamens 5 or 6. Disk extrastaminal, lobed.

Two species: Afghanistan, N China, Pakistan; one species (endemic) in China.

61. *Acer pilosum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 26: 436. 1880.

疏毛枫 *shu mao feng*

Trees small, ca. 5 m tall, andromonoecious. Branchlets slender, glabrous; winter buds brownish, small, densely ciliate along margin. Leaves deciduous; petiole 1.5–3 cm, glabrous; leaf blade abaxially pale green, 3–6(–8) × 2.5–7(–12) cm, papery or nearly leathery, abaxially villous on veins and ciliate along margin when young, soon glabrescent, adaxially glabrous, primary veins 3, lateral veins 8 or 9 pairs, base nearly truncate, deeply 3-lobed, sinuses to 5/6–9/10 width of blade; lobes oblong-lanceolate, margin entire or rarely with few serrations apically or with few obtuse teeth, apex obtuse or acute. Inflorescences terminal or lateral, corymbose, glabrous, numerous flowered; peduncles 1–1.5 cm. Sepals 5, ovate, sparsely ciliate along margin. Petals 5, linear-oblong, glabrous. Stamens 5 or 6, in fertile flowers nearly as long as sepals; filaments glabrous. Disk lobed, extrastaminal. Ovary puberulent in fertile flowers, rudimentary in staminate flowers; style glabrous; stigmas papillose, revolute. Fruit greenish or brownish yellow; nutlets slightly convex to convex, ca. 6 mm in diam.; wing including nutlet 2–2.5 cm × 8–10 mm, wings spreading acutely to nearly horizontally. Fl. Apr or May, fr. Sep.

• Forests; 1000–2000 m. Gansu, SW Nei Mongol, SE Ningxia, Shaanxi, Shanxi.

1a. Samara ca. 2 cm, wings spreading at acute angle 61a. var. *pilosum*

1b. Samara 2–2.5 cm, wings spreading at 90° or nearly horizontally 61b. var. *stenolobum*

61a. *Acer pilosum* var. *pilosum*

疏毛枫(原变种) *shu mao feng* (*yuan bian zhong*)

Leaf blade ovate, 3–6 × 4–7 cm, sinuses to 9/10 width of blade; lobes oblong-ovate or lanceolate, margin nearly entire or rarely with few obtuse teeth, apex acute. Fruit brownish yellow; nutlets convex; wing including nutlet ca. 2 cm, wings spreading acutely. Fl. May, fr. Sep.

• Mixed forests; 1000–2000 m. Gansu, Shaanxi, Shanxi.

61b. *Acer pilosum* var. *stenolobum* (Rehder) W. P. Fang, Acta Phytotax. Sin. 11: 163. 1966.

细裂枫 *xi lie feng*

Acer stenolobum Rehder, J. Arnold Arbor. 3: 216. 1922; *A. stenolobum* var. *megalophyllum* W. P. Fang & Y. T. Wu; *A. stenolobum* var. *monochladea* S. C. Cui & J. X. Yu; *A. stenolobum* var. *pubescens* W. Z. Di.

Leaf blade 3–6(–8) × 2.5–7(–12) cm, sinuses to 5/6 width of blade; lobes oblong-lanceolate, margin entire or rarely with few serrations apically, apex obtuse. Fruit greenish; nutlets slightly convex, ca. 6 mm in diam.; wing including nutlet 2–2.5 cm × 8–10 mm, wings spreading at 90° or nearly horizontally. Fl. Apr, fr. Sep.

• Forests; 1000–1500 m. NE Gansu, SW Nei Mongol, SE Ningxia, N Shaanxi.

5. *Acer* sect. *Macrantha* Pax, Bot. Jahrb. Syst. 6: 328. 1885.

大花枫组 *da hua feng zu*

Trees or shrubs, deciduous, andromonoecious, but apparently androdioecious. Bark striped. Leaves undivided or 3- or 5(or 7)-lobed, margin usually serrate. Bud stalked, scales 2-paired. Inflorescence racemose, terminal and axillary. Flowers 5-merous; perianth green-yellow or reddish; stamens 8, disk intrastaminal.

Eighteen species: China, Himalayas, Japan, E Russia; North America; 13 species (seven endemic) in China.

1a. Inflorescences paniculate-racemose, with conspicuous bracts; sepals of flowers reflexed and linear-oblong; leaves 3-lobed, abaxially rufous pilose at primary vein axils 71. *A. wardii*

1b. Inflorescences racemose, without bracts; sepals of flowers spreading and oblong; leaves unlobed or 3- or 5-lobed, abaxially glabrous to pubescent.

2a. Leaves ovate or oblong-ovate, unlobed or 3-lobed.

3a. Inflorescence 40–50-flowered 63. *A. sikkimense*

3b. Inflorescence 10–30-flowered.

4a. Leaves acuminate, margin crenate-serrate, abaxially rufous tomentose on veins at least when young; inflorescence 20–30-flowered; widely distributed in China 62. *A. davidii*

4b. Leaves caudate-acuminate, margin nearly entire or closely serrulate, abaxially glabrous; inflorescence 10–15-flowered; restricted to Taiwan 64. *A. caudatifolium*

2b. Leaves ovate, usually 3- or 5-lobed or occasionally not lobed.

5a. Leaves usually deeply 5-lobed, rarely 3-lobed, lateral lobes as large and long as central lobe.

- 6a. Leaves abaxially ± pubescent on veins 68. *A. pectinatum*
- 6b. Leaves abaxially glabrous.
 - 7a. Middle lobe apically acuminate or caudate-acuminate, lateral lobes apically acuminate, basal lobes apically acute or obtuse, sinuses acute, reaching to 1/3 width of blade; margin doubly serrate 73. *A. komarovii*
 - 7b. Middle and lateral lobes apically acuminate, basal lobes apically acute, sinuses deeply narrowly acuminate, reaching to 2/3 or 4/5 width of blade; margin sharply serrulate 74. *A. maximowiczii*
- 5b. Leaves usually 3-lobed or shallowly 5-lobed, lateral lobes distinctly smaller and shorter than central lobe.
 - 8a. Leaves oblong to ovate, usually much longer than broad.
 - 9a. Leaf lateral lobes in upper part; inflorescence 15–40-flowered 69. *A. chienii*
 - 9b. Leaf lateral lobes in lower part; inflorescence less than 20-flowered.
 - 10a. Inflorescence less than 10-flowered; lateral lobes usually inconspicuous, margin coarsely serrate 67. *A. laxiflorum*
 - 10b. Inflorescence 15–20-flowered; lateral lobes distinct, margin doubly serrulate 70. *A. forrestii*
 - 8b. Leaves orbicular-ovate, nearly as broad as long.
 - 11a. Leaves shallowly 5-lobed, lateral lobes shortly acute or obsolete 72. *A. morrisonense*
 - 11b. Leaves 3-lobed.
 - 12a. Leaves with central lobes ovate-acuminate 66. *A. tegmentosum*
 - 12b. Leaves with central lobes triangular-acuminate.
 - 13a. Lateral lobes apically shortly obtuse or obsolete, rarely acute, margin closely serrulate 62. *A. davidii*
 - 13b. Lateral lobes apically acuminate or long acuminate with entire acumen, margin coarsely serrate 65. *A. metcalfei*

62. *Acer davidii* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 212. 1886.

青榨枫 qing zha feng

Trees ca. 10 m tall, andromonoecious, but often with an androdioecious sex expression. Bark gray-brown. Branchlets brownish green or greenish purple, glabrous; winter buds oblong, small, glabrous, scales 2 pairs. Leaves deciduous; petioles 3–6 cm, rufous pubescent when young; leaf blade abaxially pale green, adaxially dark green, ovate, ovate-oblong, or suborbicular-ovate, (6–)8–12(–14) × (4–)5–8(–9) cm, papery, abaxially rufous pubescent on veins when young, glabrescent when mature, adaxially glabrous, veins 10–13 pairs, base subcordate or rounded, margin undivided or (3 or)5-lobed, serrulate or doubly serrate, apex acuminate or rarely caudate-acuminate; lobes apically obtuse or middle lobe triangular and lateral and basal lobes apically acute. Flowers greenish yellow. Inflorescence pendulous, racemose. Pedicel 1–1.5 cm, slender. Sepals 5, elliptic, ca. 4 mm, apex obtuse. Petals 5, obovate, ca. 4 mm. Stamens 8, ca. 3 mm, glabrous; anthers yellow. Disk glabrous, lobes intrastaminal. Ovary rudimentary. Fruit brownish yellow; nutlets flat, 8–10 × ca. 6 mm; wing including nutlet 2.5–2.8 cm, wings spreading horizontally or obtusely. Fl. Mar–Apr, fr. Sep. $2n = 26$.

Mixed forests. Anhui, Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Ningxia, S Shaanxi, Shanxi, Sichuan, Yunnan, Zhejiang [Myanmar].

This species is ornamental for its snakelike bark and the autumn coloration of its leaves.

- 1a. Leaf blade ovate or ovate-oblong, 8–12 cm, base subcordate or rounded, margin serrate with unequal crenations, blade not lobed or slightly 3-lobed, lobes apically obtuse

- 62a. subsp. *davidii*
- 1b. Leaf blade suborbicular-ovate, base subcordate, margin doubly serrate with appressed acute teeth, 5-lobed, nearly 3-lobed, middle lobe triangular, apex acuminate; lateral and basal lobes apically acute, entire on old branches 62b. subsp. *grosseri*

62a. *Acer davidii* subsp. *davidii*

青榨枫(原亚种) qing zha feng (yuan ya zhong)

Acer cavaleriei H. Léveillé; *A. davidii* var. *acuminatifolium* W. P. Fang; *A. davidii* var. *glabrescens* Pax; *A. davidii* var. *grandifolium* S. Y. Liang & Y. Q. Huang; *A. davidii* var. *tomentellum* Schwerin; *A. davidii* var. *zhanganense* S. Z. He & Y. K. Li; *A. laxiflorum* Pax var. *integrifolium* W. P. Fang; *A. rubronervium* Y. K. Li; *A. sikkimense* Miquel subsp. *davidii* (Franchet) Wesmael.

Leaf blade ovate or ovate-oblong, 8–12 cm, base subcordate or rounded, margin serrate with unequal crenations, blade not lobed or slightly 3-lobed; lobes apically obtuse. Inflorescence terminal, racemose, 20–30-flowered. Fl. Apr, fr. Sep. $2n = 26$.

Mixed forests; 1000–3000 m. Anhui, Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangsu, Ningxia, S Shaanxi, Sichuan, Yunnan, Zhejiang [Myanmar].

One of us (Chang) considers this taxon, with 20–30 flowers per inflorescence, to be distributed only in certain areas of China, such as Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangsu, Ningxia, Sichuan, and Yunnan.

62b. *Acer davidii* subsp. *grosseri* (Pax) P. C. de Jong in van

Gelderen et al., *Maples World*, 151. 1994.

葛罗枫 *ge luo feng*

Acer grosseri Pax in Engler, *Pflanzenr.* 8(IV. 163): 80. 1902; *A. davidii* var. *horizontale* Pax; *A. grosseri* var. *hersii* (Rehder) Rehder; *A. hersii* Rehder; *A. horizontale* Franchet ex W. P. Fang; *A. laisunense* W. P. Fang & W. K. Hu; *A. pavolinii* Pampanini; *A. tegmentosum* Maximowicz subsp. *grosseri* (Pax) A. E. Murray; *A. tegmentosum* var. *pavolinii* (Pampanini) A. E. Murray.

Leaf blade suborbicular-ovate, 5–6 × 4–5 cm, base subcordate, margin doubly serrate with appressed acute teeth, 5-lobed, or nearly 3-lobed; middle lobe triangular, apex acuminate; lateral and basal lobes acute at apices; leaves on older branches unlobed. Fl. Apr, fr. Sep. $2n = 26^*$.

• Mixed forests; 1000–1600 m. Anhui, Gansu, Hebei, Henan, W Hubei, Hunan, Jiangxi, Shaanxi, Shanxi, Sichuan, Zhejiang.

One of us (Chang) considers that this taxon would be better treated as a separate species, *Acer grosseri*, due to a different number of flowers (10–15) per inflorescence and geographic distribution (Anhui, Gansu, Hebei, Henan, W Hubei, Jiangxi, Shaanxi, Shanxi, and Zhejiang). However, one of us (Chen) does not agree.

63. *Acer sikkimense* Miquel, *Arch. Neerl.* 2: 471. 1867.

锡金枫 *xi jin feng*

Acer hookeri Miquel; *A. hookeri* var. *normale* Schwerin; *A. hookeri* var. *orbiculare* W. P. Fang & Y. T. Wu; *A. medogense* T. Z. Hsu & Z. K. Zhou; *A. pluridens* T. Z. Hsu & H. Sun; *A. sikkimense* subsp. *hookeri* (Miquel) Wesmael; *A. sikkimense* var. *serrulatum* Pax; *A. sikkimense* var. *subintegrum* Schwerin.

Trees to 20 m tall, andromonoecious. Bark black-gray. Branchlets brown, glabrous; winter buds ellipsoid, large, scales 4 pairs, glabrous. Leaves deciduous; petiole 2–4 cm, glabrous, leaf blade abaxially pale green, adaxially dark green, ovate or ovate-oblong, 10–14 × 5–8 cm, papery, abaxially with barbed hairs at vein axils when young, glabrescent, adaxially glabrous, base subcordate or nearly rounded, undivided, margin entire or nearly entire, sometimes serrulate, apex caudate. Inflorescence terminal, racemose, 40–50-flowered. Pedicel ca. 2 mm, glabrous. Sepals 5, oblong-ovate, ca. 3 mm, apex obtuse. Petals 5, yellowish green, ca. as long as sepals. Stamens 8, glabrous, rudimentary in pistillate flowers; anthers pale yellow. Disk glabrous, intrastaminal. Ovary glabrous; style very short; stigmas widely spreading. Fruit brownish when mature; nutlets flat, ovate-oblong, ca. 8 × 5 mm; wing falcate, including nutlet 2–2.5 cm × ca. 8 mm, wings spreading obtusely, rarely horizontally. Fl. Mar, fr. Sep. $2n = 26$.

Mixed forests; 1700–3000 m. SE Xizang, Yunnan [Bhutan, N India, N Myanmar, Nepal].

64. *Acer caudatifolium* Hayata, *J. Coll. Sci. Imp. Univ. Tokyo* 30(1): 65. 1911.

尖尾枫 *jian wei feng*

Acer kawakamii Koidzumi; *A. kawakamii* var. *taiton-montanum* (Hayata) Li; *A. pectinatum* Wallich ex G. Nicholson subsp. *formosanum* A. E. Murray; *A. taiton-montanum* Hayata.

Trees to 20 m tall, andromonoecious. Branchlets slender, glabrous; winter buds ellipsoid; scales glabrous. Leaves deciduous; petiole 3–4 cm, glabrous; leaf blade abaxially pale green, adaxially dark green, ovate or ovate-oblong, (5–)6–10(–11) × 3–4.5 cm, papery, adaxially glabrous, 5-veined at base, base rounded, margin densely serrulate with sharp appressed teeth, apex caudate-acuminate. Inflorescence racemose-umbellate, ca. 15-flowered. Pedicel 6–7 mm. Sepals 5, purple, oblong, 2–2.5 mm, apex obtuse. Petals 5, white. Stamens 8, shorter than sepals. Disk glabrous, slightly lobed, intrastaminal. Ovary purple, glabrous; style very short; stigmas revolute. Fruit yellowish brown; nutlets convex, ca. 5 mm in diam.; wings introrsely sulcate, 2–2.2 × ca. 1.2 cm, wings spreading obtusely. Fl. Mar, fr. Jul–Aug.

• Mixed forests; 200–2100 m. Taiwan.

65. *Acer metcalfii* Rehder, *J. Arnold Arbor.* 14: 221. 1933.

南岭枫 *nan ling feng*

Acer davidii Franchet f. *trilobatum* Diels; *A. sikkimense* Miquel subsp. *metcalfii* (Rehder) P. C. de Jong.

Trees to 10 m tall. Bark smooth. Branchlets slender. Leaves deciduous; petiole 2–3(–5) cm, glabrous; leaf blade adaxially dark green, 10–14 × 7–11 cm, subleathery, both surfaces glabrous, lateral veins 9–11 pairs, base subcordate or rounded, 3-lobed; middle and lateral lobes triangular-ovate, margin coarsely serrate with obtuse teeth, except for entire acumen, apex acuminate. Flowers unknown. Inflorescence racemose, 15-flowered. Fruiting pedicel ca. 5 mm, slender, glabrous. Fruit 6–9, brownish yellow; nutlets ca. 8 × 6 mm; wing including nutlet 2.2–2.5 cm × ca. 8 mm, wings spreading obtusely. Fl. unknown, fr. Sep.

• Mixed forests, streamsides; 800–1500 m. N Guangdong, NE Guangxi, SE Guizhou, S Hunan.

One of us (Chang) believes that this species would be better treated as a synonym of *Acer grosseri* (see note under *A. davidii* subsp. *grosseri*). However, one of us (Chen) disagrees because *A. metcalfii* is distributed only in S China, whereas *A. grosseri* is distributed further N in China.

66. *Acer tegmentosum* Maximowicz, *Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg* 15: 125. 1856.

青楷枫 *qing kai feng*

Acer pensylvanicum Linnaeus var. *tegmentosum* (Maximowicz) Wesmael.

Trees to 15 m tall, andromonoecious. Bark dark gray. Branchlets glabrous, glaucous white during winter; winter buds blue, ellipsoid. Leaves deciduous; petiole 4–7(–13) cm, glabrous; leaf blade abaxially pale green, suborbicular-ovate, 10–12 × 7–9 cm, papery, abaxially with yellowish barbed hairs at vein axils, adaxially glabrous, primary veins 5, lateral veins 7

or 8 pairs, base rounded or subcordate, margin doubly serrulate, usually 3- or 5-lobed, rarely with 2 small basal lobes; lobes ovate, apex acuminate. Inflorescence pendulous, racemose, 15-flowered, slender, glabrous. Pedicel ca. 5 mm, very slender. Sepals 5, oblong, ca. 3×1.5 mm, apex obtuse. Petals 5, obovate, ca. 3×2 mm. Stamens 8, glabrous, rudimentary in pistillate flowers. Disk glabrous, intrastaminal. Ovary glabrous, rudimentary in staminate flowers; style short. Fruit yellowish brown, glabrous; nutlets flat or slightly convex; wing including nutlet $2.5\text{--}3 \times 1\text{--}1.3$ cm, wings spreading obtusely or nearly horizontally. Fl. Apr, fr. Sep. $2n = 26$.

Coniferous and mixed forests; 500–1000 m. Heilongjiang, Jilin, Liaoning [Korea, E Russia].

67. *Acer laxiflorum* Pax in Engler, Pflanzenr. 8(IV. 163): 36. 1902.

疏花枫 shu hua feng

Acer laxiflorum var. *dolichophyllum* W. P. Fang; *A. pectinatum* Wallich ex G. Nicholson subsp. *laxiflorum* (Pax) A. E. Murray.

Trees to 15 m tall, andromonoecious. Bark smooth. Branchlets slender, glabrous; winter buds oblong or ellipsoid, glabrous, scales 2 pairs. Leaves deciduous; petiole 4–7 cm, pubescent; leaf blade abaxially pale green, adaxially dark green, ovate, $7\text{--}14 \times 5\text{--}8$ cm, papery, adaxially glabrous, veins 9–11 pairs, base cordate or subcordate, margin sharply serrulate with adpressed teeth, 3-lobed, rarely 5-lobed; middle lobe long acuminate at apex; lateral lobes small, apically acute; basal lobes obsolete. Inflorescence terminal on leafy branchlets, pendulous, racemose, less than 10-flowered, ca. 4 cm, glabrous, appearing after leaves. Pedicel slender, glabrous. Sepals 5, oblong, glabrous, apex obtuse. Petals 5, greenish yellow, obovate, narrowed at base, apex obtuse. Disk glabrous, intrastaminal. Stamens 8, glabrous, rudimentary in staminate flowers. Ovary glabrous; style ca. 1 mm; stigmas recurved. Fruit brownish yellow when mature; nutlets flat, ca. 8 mm in diam.; wing including nutlet $2.5\text{--}2.7 \times$ ca. 1 cm, wings spreading obtusely or nearly horizontally. Fl. Apr, fr. Sep. $2n = 26^*$.

- Mixed forests; 1800–2500 m. Sichuan, Yunnan.

68. *Acer pectinatum* Wallich ex G. Nicholson, Gard. Chron., n.s., 15: 365. 1881.

篦齿枫 bi chi feng

Trees to 20 m tall. Bark dark brown, smooth. Branchlets purplish or purplish green, glabrous; winter buds purplish. Leaves deciduous; petiole purplish red, 2–7 cm, glabrous or densely rufous pubescent when young; leaf blade abaxially pale green, adaxially dark green, suborbicular, $7\text{--}10 \times 6\text{--}8$ cm, 3- or 5-lobed, papery, abaxially pubescent especially on veins or densely rufous pubescent on veins when young, adaxially glabrous, primary veins 5, lateral veins 8 or 9 pairs, base cordate, deeply cordate, or subcordate, 3- or 5-lobed; middle lobe ovate, apex caudate-acuminate, acumen ca. 1 cm; lateral lobes triangular, margin serrate, apex caudate-acuminate or obtuse. Inflorescence terminal on leafy branchlets, appearing after leaves

develop, racemose, 6–8 cm, 10–40-flowered. Pedicel 5–7 mm, slender, glabrous. Staminate flowers: sepals 5, purplish green, oblong, ca. 5 mm, glabrous, apex obtuse; petals 5, obovate, apex obtuse; stamens 8, ca. 2 mm, glabrous; disk glabrous, intrastaminal; ovary rudimentary. Fruit yellowish; nutlets flat, ca. 7×4 mm; wing falcate, including nutlet $1.6\text{--}2.5$ cm \times 6–8 mm, wings spreading obtusely to nearly horizontally. Fl. Apr, fr. Sep.

Mixed forests; 2300–3700 m. W Sichuan, E and S Xizang, NW Yunnan [Bhutan, NE India, NE Myanmar, Nepal].

- 1a. Petioles glabrous, leaves usually 5-lobed, rarely 3-lobed, abaxially slightly pubescent on veins 68a. subsp. *pectinatum*
- 1b. Petioles pubescent, leaves usually 3-lobed, sometimes 5-lobed, abaxially densely rufous pubescent on veins when young 68b. subsp. *taronense*

68a. *Acer pectinatum* subsp. *pectinatum*

篦齿枫(原亚种) bi chi feng (yuan ya zhong)

Acer forrestii Diels f. *caudatilobum* Rehder; *A. pectinatum* f. *caudatilobum* (Rehder) W. P. Fang; *A. pectinatum* var. *caudatilobum* (Rehder) A. E. Murray.

Trees to 8 m tall. Petiole 6–7 cm, glabrous; leaf blade suborbicular, $7\text{--}10 \times 6\text{--}8$ cm, abaxially pubescent especially on veins, base cordate or deeply cordate, usually (3 or)5-lobed; middle lobe ovate, apex caudate-acuminate, acumen ca. 1 cm; lateral lobes triangular, margin serrate, apex caudate-acuminate. Samara wings spreading nearly horizontally. Fl. Apr, fr. Sep. $2n = 26$.

Mixed forests; 2500–3700 m. S Xizang, NW Yunnan [Bhutan, NE India, NE Myanmar, Nepal].

68b. *Acer pectinatum* subsp. *taronense* (Handel-Mazzetti) A. E. Murray, Kalmia 8: 9. 1977.

独龙枫 du long feng

Acer taronense Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 61: 84. 1924; *A. chloranthum* Merrill; *A. laxiflorum* Pax var. *longilobum* Rehder; *A. pectinatum* var. *longilobum* (Rehder) A. E. Murray; *A. tegmentosum* Maximowicz subsp. *rufinerve* A. E. Murray.

Trees to 20 m tall, andromonoecious. Petiole 2–6 cm, densely rufous pubescent when young, less so when mature; leaf blade triangular-ovate or ovate-oblong, $6\text{--}15 \times 4\text{--}9$ cm, abaxially densely rufous pubescent on veins when young, base cordate or subcordate, margin doubly serrulate with adpressed acute teeth, 3- or 5-lobed; middle lobes triangular-ovate, apex acuminate; lateral lobes acuminate apically; basal lobes small, apex acute or obtuse. Samara wings spreading obtusely. Fl. Apr–May, fr. Aug–Sep.

Mixed forests; 2300–3000 m. W Sichuan, E Xizang, NW Yunnan [Bhutan, NE India, NE Myanmar].

One of us (de Jong) noted that *Acer chienii* is indeed different from this taxon. At first look, it is very similar to *A. rufinerve* Siebold &

Zuccarini. At Caerhays Castle (U.K.), both *A. taronense* and *A. chienii* (labeled *A. taronense*) grow side by side, and they are very different. *Acer chienii* has typically tulip-shaped leaves that are very rufous beneath; it is listed as a species in Flora Yunnanica.

One of us (Chang) believes that this subspecies falls within the pattern of variation found in *Acer pectinatum*. According to examination of specimens of *A. chienii* preserved at PE, the inflorescence is 20–25-flowered, but the type specimen has only 10–15 flowers per inflorescence. It seems that this name has been misapplied to *A. forrestii* collected from these areas. *Acer chienii* seems to belong to the pattern of morphological variation of *A. pectinatum*. However, one of us (Chen) believes that flower number is not a very important character; specimens in many species vary in flower number (including *A. chienii* and *A. pectinatum* subsp. *taronense*).

69. *Acer chienii* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., Bot. 2(1): 207. 1948.

怒江枫 nu jiang feng

Acer tegmentosum Maximowicz f. *rufinerve* A. E. Murray.

Trees to 17 m tall, andromonoecious. Bark smooth. Branchlets green or purplish, glabrous; winter buds ellipsoid, glabrous. Leaves deciduous; petiole 3–4 cm, nearly glabrous; leaf blade ovate or ovate-oblong, 9–13 × ca. 8 cm, papery, abaxially densely rufous pubescent on veins, adaxially glabrous, base subcordate, margin doubly serrulate with adpressed acute teeth, 3-lobed; middle lobes triangular-ovate, apex acuminate; lateral lobes in upper part of blade, much shorter and apex acute. Inflorescence terminal on leafy branchlets, appearing after leaves develop, simple racemose, 6–8 cm, 15–40-flowered. Pedicel ca. 4 mm, slender. Staminate flowers: sepals 5, oblong, glabrous, apex obtuse; petals 5, obovate, apex obtuse; stamens 8, glabrous; disk glabrous, intrastaminal; ovary rudimentary. Samara wing including nutlet 1.4–1.8 cm × 4–6 mm, wings spreading obtusely. Fl. Apr, fr. Aug–Oct.

• Mixed forests; 2200–3000 m. NW Yunnan.

This species is similar to *Acer pectinatum* subsp. *taronense*, but the fruit is much smaller, and the leaves are 3-lobed in the upper part. However, one of us (Chen) believes that the size of the fruit and the number of leaf lobes are variable within taxa of *A. sect. Macrantha*.

70. *Acer forrestii* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 165. 1912.

丽江枫 li jiang feng

Acer grosseri Pax var. *forrestii* (Diels) Handel-Mazzetti; *A. maximowiczii* Pax var. *minus* W. W. Smith ex H. Léveillé; *A. pectinatum* Wallich ex G. Nicholson subsp. *forrestii* (Diels) A. E. Murray; *A. pectinatum* f. *rufinerve* A. E. Murray.

Trees to 17 m tall, andromonoecious. Bark rough. Branchlets slender, glabrous; winter buds purple, ellipsoid, small, glabrous. Leaves deciduous; petiole 2.5–5 cm, slender, glabrous or pubescent; leaf blade ovate, 7–12 × 5–9 cm, papery, abaxially glaucescent, rarely with barbed hairs at axils of reticulate veins, adaxially glabrous, base cordate or subcordate, margin doubly serrulate with adpressed acute teeth, 3-lobed or not; middle lobe triangular-ovate, apex caudate-acuminate;

lateral lobes triangular-ovate, ca. 1/2 as long as middle lobe, apex acuminate. Inflorescence terminal on leafy branchlets, racemose, glabrous, 5–20-flowered. Pedicel 6–8 mm, slender, glabrous. Sepals 5, oblong, 3–4 mm, glabrous. Petals 5, obovate, 3–4 mm. Stamens 8, ca. as long as petals. Disk intrastaminal, glabrous. Ovary glabrous. Nutlets flat, ca. 7 mm in diam.; wing including nutlet 2.3–2.5 cm × ca. 8 mm, wings spreading obtusely. Fl. May, fr. Sep.

• Mixed forests, valleys; 3000–3800 m. SW Sichuan, NW Yunnan.

71. *Acer wardii* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 8. 1917.

滇藏枫 dian zang feng

Acer mirabile Handel-Mazzetti.

Trees small or shrubs, to 5 m tall, andromonoecious. Bark gray or blackish gray, rough. Branchlets reddish, slender, glabrous; winter buds brown, ellipsoid. Leaves deciduous; petiole 3–5 cm, slender, glabrous; leaf blade adaxially shiny, ovate, 7–9 × 6–8 cm, papery, abaxially glabrous or rufous pilose at primary vein axils, adaxially glabrous, base subcordate, margin serrulate with adpressed apiculate teeth, 3-lobed; middle lobe triangular-oblong, apex elongated caudate-acuminate; lateral lobes ovate, apex elongated caudate-acuminate. Inflorescence terminal on leafy branchlets, appearing after leaves develop, paniculate-racemose, 10–15-flowered, slender, with conspicuous bracts and small cincinni. Pedicel 1–1.5 cm, slender, glabrous. Flowers: sepals 5, reflexed, linear-oblong; petals 5, purple, linear-oblong; disk flat, glabrous; stamens 8, glabrous, inserted at middle of disk, much shorter in pistillate flowers; ovary purplish, rudimentary in staminate flowers. Fruit purplish yellow when mature; nutlets flat, oblong, ca. 8 × 4 mm; wing including nutlet 2.2–2.5 × ca. 1 cm, wings spreading obtusely. Fl. May, fr. Sep.

Alpine forests; 2400–3600 m. E Xizang, NW Yunnan [NE India, NE Myanmar].

One of us (de Jong) notes that *Acer wardii* has similarities with *A. sect. Macrantha*, but the inflorescences (bracts, cincinni) and flowers (reflexed sepals and amphistaminal disk) are uncharacteristic of this section; thus, there are opinions that this species should be placed in a separate section, or at least as a separate series in *A. sect. Macrantha*. The DNA research of Tian et al. (Acta Bot. Sin. 44: 714–724. 2002) also supports the separate status of this species.

72. *Acer morrisonense* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 66. 1911.

玉山枫 yu shan feng

Acer rubescens Hayata.

Trees to 20 m tall. Bark yellowish gray, smooth. Branchlets glabrous; winter buds ellipsoid, outer scales glabrous. Leaves deciduous; petiole 5–7 cm, glabrous; leaf blade suborbicular-ovate, 8–10 × 6–8 cm, papery, adaxially glabrous, 5-veined at base abaxially, lateral veins 5 or 6 pairs, base nearly truncate or subcordate, margin doubly serrate with coarse acute teeth, shal-

lowly 5-lobed, to 1/5 width of blade; middle lobe shortly ovate, apex acuminate; lateral and basal lobes small, apex acute or obtuse. Flowers unknown. Infructescence racemose, 15-flowered. Fruiting pedicel 7–10 mm, slender, glabrous. Fruit yellowish brown, small; nutlets subellipsoid, ca. 6 × 4 mm; wing including nutlet 1.8–2.3 cm × 6–7 mm, wings spreading obtusely. Fl. Mar–Apr, fr. Oct.

- Mixed forests; 1800–2200 m. E and S Taiwan.

73. *Acer komarovii* Pojarkova in Komarov, Fl. URSS 14: 746. 1949.

小楷枫 xiao kai feng

Acer tschonokii Maximowicz subsp. *koreanum* A. E. Murray; *A. tschonokii* var. *rubripes* Komarov.

Trees ca. 5 m tall, andromonoecious. Bark smooth. Branchlets very slender, glabrous; winter buds purple, ellipsoid, small. Leaves deciduous; petiole purple, 5–7 cm; leaf blade abaxially pale green, triangular-ovate, 6–10 × 6–8 cm, papery, abaxially rufous pubescent at vein axils, adaxially glabrous, primary veins 5, base cordate or subcordate, doubly serrulate and lobulate with dense obtuse teeth, 5-lobed, rarely 3-lobed; middle lobe ovate, apex acuminate; lateral lobes triangular-ovate; basal lobes ovate, apex obtuse. Inflorescence terminal on leafy branchlets, racemose, 5–7(–10)-flowered. Pedicel 7–10 mm, slender, glabrous. Sepals 5, ovate-oblong. Petals 5, obovate-oblong, slightly longer than sepals. Stamens 8, glabrous, very short in pistillate flowers. Disk glabrous, flat, intrastaminal. Ovary reddish, purple when young. Nutlets flat, smooth, ca. 8 × 5 mm; wing including nutlet 2–2.5 × 1–1.2 cm, wings spreading obtusely. Fl. May, fr. Sep.

Mixed alpine forests; 300–1200 m. Jilin, Liaoning [N Korea, E Russia].

The typical subspecies occurs in Japan.

One of us (Chang) believes that this taxon should be *Acer komarovii* Pojarkova and is different from *A. tschonokii* (of Japan) by the number of flowers per inflorescence (5–7 flowers vs. 9–20 flowers).

74. *Acer maximowiczii* Pax, Hooker’s Icon. Pl. 19: t. 1897. 1889.

五尖枫 wu jian feng

6. *Acer* sect. *Arguta* Rehder in Sargent, Trees & Shrubs 1: 181. 1905.

尖齿枫组 jian chi feng zu

Shrubs multi-stemmed, 6–15 m tall, dioecious. Bark slightly white striped. Buds valvate, with 2 or 3 pairs of bud scales. Leaves simple, 3- or 5-lobed or undivided, margin serrate. Staminate inflorescence racemose, axillary from leafless buds; pistillate inflorescence racemose, terminal and axillary from mixed buds. Flowers dioecious, 4-merous. Stamens 4(–6), mostly absent in pistillate flowers. Disk intrastaminal. Ovary very rudimentary in staminate flowers. Nutlets rugose and strongly veined.

Four species: China, Himalayas, Japan; three species in China.

- 1a. Leaf blade 3- or 5-lobed, lateral lobes usually as long as central lobe, apex of lateral lobes caudate-acuminate 75. *A. acuminatum*
- 1b. Leaf blade unlobed or 3- or 5-lobed, lateral lobes much shorter than central lobes.
 - 2a. Leaf blade 5-lobed 76. *A. barbinerve*
 - 2b. Leaf blade unlobed, or rarely 3-lobed 77. *A. stachyophyllum*

Acer maximowiczii subsp. *porphyrophyllum* W. P. Fang; *A. pectinatum* Wallich ex G. Nicholson subsp. *maximowiczii* (Pax) A. E. Murray; *A. urophyllum* Maximowicz.

Trees to 12 m tall, andromonoecious. Bark blackish brown, smooth. Branchlets slender, glabrous; winter buds oblong-ellipsoid, glabrous. Leaves deciduous; petiole 5–7 cm, glabrous; leaf blade abaxially pale green, adaxially dark green, ovate or triangular-ovate, 6–11 × 4–9 cm, papery, abaxially rufous pubescent at axils of lateral veins and base of main veins, adaxially glabrous, base subcordate or cordate, rarely truncate, margin doubly serrulate and lobulate with adpressed apiculate coarse teeth, distinctly 5-lobed; middle lobe triangular-ovate or ovate, apex caudate-acuminate; lateral lobes ovate; basal lobes ovate, small. Inflorescence terminal on leafy branchlets, pendulous, racemose, 4–5 cm, 10–15-flowered, appearing after leaves develop fully. Staminate flowers: pedicel 3–4 mm, glabrous; sepals 5, ovate-oblong, apex obtuse; petals 5, obovate; stamens 8; disk intrastaminal; ovary rudimentary. Pistillate flowers: pedicel ca. 6 mm, slender, glabrous; sepals 5, elliptic, apex obtuse; petals 5, ovate-oblong, apex obtuse; stamens 8, disk very short, glabrous, intrastaminal; ovary purple, glabrous; style very short. Fruit brownish yellow; nutlets flat, ca. 6 mm in diam.; wing including nutlet 1.8–2.5 cm × ca. 8 mm, wings spreading obtusely. Fl. May, fr. Sep.

- Mixed forests, valleys; 1800–2500 m. S Gansu, NE Guangxi, Guizhou, W Henan, W Hubei, Hunan, S Qinghai, S Shaanxi, S Shanxi, Sichuan.

75. *Acer acuminatum* Wallich ex D. Don, Prodr. Fl. Nepal. 249. 1825.

齿裂枫 chi lie feng

Acer caudatum G. Nicholson (1881), not Wallich (1831); *A. sterculiaceum* K. Koch (1869), not Wallich (1830).

Trees small, multistemmed, to 10 m tall, dioecious. Branches often reddish, smooth, glabrous. Petiole often reddish, 5–10 cm, pubescent; leaf blade 5–12 cm wide, abaxially glabrescent except bearded in axils, primary veins 5, base subcordate-truncate, margin sharply serrate, often doubly toothed, 3- or 5-lobed; basal lobes small or absent, lobes triangular, lateral lobes usually as long as central lobe, apex caudate-acuminate, acumen ca. 1 cm. Staminate inflorescence corymbose, axillary from leafless buds; pistillate inflorescence racemose, terminal or axillary from mixed buds. Flowers greenish, 4-merous, ca. 4 mm in diam. Sepals 4, oblong, 3–4 mm. Petals 4, ovate, shorter than sepals. Stamens 4–6, inserted outside disk. Ovary glabrous; style long, connate to ca. 1/2. Infructescence 12–20 cm. Samaras 2–3 cm; nutlets rugose; wings spreading at right angle. Fl. Mar–Apr, fr. Sep.

Mixed forests; 2700–3100 m. S Xizang [N India, Kashmir, Nepal, Pakistan].

76. *Acer barbinerve* Maximowicz ex Miquel, Arch. Neerl. 2: 476. 1867.

簇毛枫 cu mao feng

Acer barbinerve var. *chanbaischanense* S. L. Tung; *A. diabolicum* Blume ex Koch subsp. *barbinerve* (Maximowicz ex Miquel) Wesmael.

Shrubs or small, multistemmed trees, to 7 m tall, dioecious. Bark grayish yellow or grayish brown, smooth. Young branchlets puberulent, becoming nearly glabrous and dull reddish brown in second year; bud scales 2 pairs. Leaves deciduous; petiole 4–6 cm, slender, puberulent when young, glabrescent; leaf blade suborbicular or ovate, 8–10 × 6–8 cm, membranous, abaxially hirsute-pubescent especially on veins, adaxially glabrous, primary veins 5, base cordate or subcordate, margin doubly serrate with coarse obtuse teeth, 5-lobed, rarely 7-lobed; middle and lateral lobes acuminate apically; basal lobes acute. Inflorescence racemose, lateral from leafless buds. Pedicel 1–2 cm, slender, glabrous. Staminate racemes very short, ca. 1.5 cm, 5- or 6-flowered; sepals 4, oblong, slightly ciliate along margin, ca. 5 mm; petals 4, rhombic-obovate, slightly shorter than sepals; stamens 4, ca. as long as sepals, glabrous, absent in pistillate flowers; disk 4-lobed, glabrous, intrastaminal; ovary absent or very rudimentary in staminate flowers. Pistillate racemes with slender peduncle ca. 4 cm, puberulent, usually 7-flowered; sepals oblong, ca. 4.5 mm, ciliate, with long hairs at apex; petals obovate, nearly as long as sepals, distinctly clawed; ovary glabrous; style ca. 2 mm, glabrous; stigmas revolute. Infructescence pendulous, racemose, ca. 5 cm. Samaras 5–7; nutlets subglobose, ca. 10 × 8 mm, rugose, strongly veined; wing

introrsely falcate, slightly contracted at base, including nutlet 3–3.5 cm, wings spreading obtusely. Fl. Apr, fr. Aug–Sep. 2n = 26.

Mixed and coniferous alpine forests; 500–2300 m. Heilongjiang, Jilin, Liaoning [N Korea, E Russia].

77. *Acer stachyophyllum* Hiern in J. D. Hooker, Fl. Brit. India 1: 694. 1875.

毛叶枫 mao ye feng

Trees to 15 m tall, dioecious. Bark yellowish brown, smooth. Branchlets glabrous. Leaves deciduous; petiole 2.5–8 cm, slightly pubescent near apex; leaf blade ovate or oblong, 5–11 × 2.5–6 cm, undivided or 3-lobed, papery, abaxially densely pale or white pubescent, becoming less so when mature or nearly glabrous, adaxially glabrous, 3–5-veined at base abaxially, rarely with rudimentary basal veins, lateral veins 4–6 pairs, base rounded, rarely slightly cordate or truncate, margin coarsely serrate with appressed obtuse or ± acute teeth or nearly 3-lobed, or unequally and incised-serrate, apex caudate-acuminate to obtuse. Staminate inflorescence racemose, 1–1.5 cm, glabrous, 5–8-flowered. Pedicel 8–15 mm, slender. Sepals 4, oblong, apex obtuse. Petals 4, yellowish green, linear-oblong. Stamens 4, rarely 5 or 6, glabrous. Disk glabrous, lobed, intrastaminal. Pistillate flowers unknown. Infructescence pendulous, 12–15 cm. Fruiting pedicel 2–2.5 cm, slender, glabrous. Nutlets oblong, convex, strongly rugose; wing including nutlet 3.5–5.5 × 1–1.5(–2) cm, wings spreading erectly, rarely obtusely or acutely. Fl. Apr–May, fr. Sep or Oct.

Alpine forests; 1400–3500 m. S Gansu, W Henan, W Hubei, Ningxia, S Shaanxi, Sichuan, S and SE Xizang, NW Yunnan [Bhutan, N India, Myanmar, Nepal].

- 1a. Leaf blade ovate, margin serrate, abaxially pale pubescent or with conspicuous tufts in vein axils, undivided; wing including nutlet 4–5 × 1.5(–2) cm 77a. subsp. *stachyophyllum*
- 1b. Leaf blade ovate or oblong, margin unequally and incised-serrate, abaxially white pubescent when young, glabrescent when mature, 3-lobed or undivided; wing including nutlet 3–5.5 × 1–1.2 cm 77b. subsp. *betulifolium*

77a. *Acer stachyophyllum* subsp. *stachyophyllum*

毛叶枫(原亚种) mao ye feng (yuan ya zhong)

Acer muliense W. P. Fang & W. K. Hu; *A. muliense* var. *pentaneurum* W. P. Fang & W. K. Hu; *A. stachyophyllum* var. *pentaneurum* (W. P. Fang & W. K. Hu) W. P. Fang; *A. tetramerum* Pax var. *dolichurum* W. P. Fang & Y. T. Wu; *A. tetramerum* var. *elobulatum* Rehder; *A. tetramerum* f. *longeracemosum* Rehder; *A. tetramerum* f. *mapienense* W. P. Fang; *A. tetramerum* var. *tiliifolium* Rehder; *A. tetramerum* f. *viridicarpum* W. P. Fang.

Petiole 3–8 cm, slightly pubescent near apex; leaf blade ovate, 8–11 × 5–6 cm, papery, abaxially densely pale

pubescent, becoming less so when mature, adaxially glabrous, lateral veins 4 or 5 pairs, base rounded or rarely slightly cordate, margin coarsely serrate with appressed obtuse or ± acute teeth, undivided, apex caudate-acuminate, cuspidate. Fruiting pedicel 2–2.5 cm, slender, glabrous. Nutlets oblong, convex, strongly rugose; wing including nutlet 4–5 × 1.5(–2) cm, wings spreading erectly, rarely obtusely or acutely. Fl. Apr–May, fr. Oct. $2n = 26$.

Alpine forests; 2000–3500 m. W Hubei, Sichuan, S and SE Xizang, NW Yunnan [Bhutan, N India, Myanmar, Nepal].

77b. *Acer stachyophyllum* subsp. *betulifolium* (Maximowicz) P. C. de Jong in van Gelderen et al., *Maples World*, 168. 1994.

四蕊枫 si rui feng

Acer betulifolium Maximowicz, *Trudy Imp. S.-Peterburgsk. Bot. Sada* 11: 108. 1889; *A. lauyuense* W. P. Fang; *A.*

7. *Acer* sect. *Acer*

枫组 feng zu

Trees to 25 m tall, andromonoecious. Buds scales 5–13-paired, imbricate. Leaves 3- or 5-lobed, margin coarsely crenate to dentate, sometimes entire. Inflorescences terminal and axillary, corymbose. Flowers 5-merous. Stamens usually 8. Disk extrastaminal.

Ten species: N Africa, E, S, and W Asia, Europe, North America; one species in China.

78. *Acer caesium* Wallich ex Brandis, *Forest Fl. N. W. India* 3: 111. 1874.

深灰枫 shen hui feng

Acer caesium subsp. *giraldii* (Pax) A. E. Murray; *A. giraldii* Pax.

Trees to 25 m tall, andromonoecious. Bark gray. Branchlets glabrous, usually glaucous; winter buds ovoid, margin ciliate. Leaves deciduous; petiole purplish green, 10–15 cm, glabrous; leaf blade abaxially glaucous, adaxially green, 11–21 × 11–14 cm, papery, lateral veins 7–9 pairs, distinct abaxially, base cordate, 5-lobed, rarely 3-lobed; lobes triangular, 1–1.5 cm, margin serrulate, apex acuminate. Inflorescence terminal, corymbose; peduncles ca. 6 cm. Sepals 5, yellowish green, ca. 5 × 3 mm.

8. *Acer* sect. *Ginnala* Nakai, *Bot. Mag. (Tokyo)* 29: 25. 1915.

茶条枫组 cha tiao feng zu

Small trees or shrubs, 6–8 m tall, rarely to 15 m tall. Leaves undivided or 3-lobed, margin serrate. Buds scales 5–10-paired. Inflorescences terminal and axillary, corymbose. Flowers andromonoecious, 5-merous. Stamens 8. Disk extrastaminal. Nutlets flat, strongly veined.

One species: Asia, E Europe.

79. *Acer tataricum* Linnaeus, *Sp. Pl.* 2: 1054. 1753.

鞑鞑槭 da da qi

Shrubs or trees, 3–5 m tall, rarely to 15 m tall, andromonoecious. Bark gray, rough; lenticels ovate or rounded. Branchlets slender, glabrescent; winter buds small, scales imbricate, 5–10 pairs, villous along margin. Leaves deciduous; petiole 1–5 cm; leaf blade abaxially light green, adaxially

megalodum W. P. Fang & H. Y. Su; *A. tetramerum* Pax; *A. tetramerum* var. *betulifolium* (Maximowicz) Rehder; *A. tetramerum* var. *haopingense* W. P. Fang; *A. tetramerum* f. *latialatum* Rehder; *A. tetramerum* var. *lobulatum* Rehder.

Petiole 2.5–5 cm, slightly pubescent when young, glabrescent; leaf blade ovate, rarely oblong-ovate or elliptic, 5–10 × 2.5–7 cm, membranous, abaxially glabrous or white pubescent when young, glabrescent, adaxially slightly pubescent when young, glabrescent, base rounded, rarely slightly truncate, margin unequally and incised-serrate, 3-lobed or undivided, apex acuminate or obtuse. Fruit 5–8; nutlets oblong, ca. 8 × 6 mm, rugose; wing oblong, slightly contracted at base, including nutlet 3–5.5 × 1–1.2 cm, wings spreading variously. Fl. Apr–May, fr. Sep.

Alpine forests; 1400–3300 m. S Gansu, W Henan, W Hubei, Ningxia, S Shaanxi, Sichuan, Yunnan [Myanmar].

Petals 5, white, oblanceolate, ca. 5 × 1.5 mm. Stamens 8, 3–5 mm. Disk glabrous, extrastaminal. Ovary pubescent. Fruit yellowish; nutlets convex, ca. 8 mm in diam.; wing including nutlet 4–5.5 cm, wings spreading erectly. Fl. May–Jun, fr. Sep. $2n = 26, 52$.

Alpine forests; 2000–3700 m. SE Gansu, SW Henan, W Hubei, Ningxia, S Shaanxi, Sichuan, SE Xizang, NW Yunnan [N India, Nepal, Pakistan].

One of us (de Jong) prefers to distinguish *Acer caesium* subsp. *giraldii* by its thicker branchlets and conspicuous, glaucous-white winter color, with leaves somewhat smaller, mainly 3-lobed; it appears to be a good taxon, comparable with *A. sterculiaceum* subsp. *franchetii* as a northern taxon of *A. sterculiaceum*.

dark green, suborbicular, ovate, or elliptic-oblong, 1.2–10 × 1–6 cm, papery or subleathery, abaxially glabrous, glabrescent when mature, or white pilose, adaxially glabrous, base truncate, subcordate, or rounded, deeply or shallowly 3- or 5-lobed, rarely undivided; lobes marginally irregularly incised-serrate, crenate-serrulate, or duplicately serrate-dentate, middle lobe acute, acuminate, or long acuminate at apex, lateral lobes usually acute.

Inflorescence corymbose, 2–6 cm, pubescent or glabrous, several flowered. Pedicel slightly villous. Sepals 5, ovate, 1.5–2 mm, villous along margin. Petals 5, white or greenish, oblong-ovate. Stamens 8; filaments glabrous. Disk glabrous, extrastaminal. Ovary densely or sparsely villous; style glabrous. Fruit yellowish green; nutlets ca. 8×5 mm, villous when young, strongly veined; wing including nutlet 2.5–3.5 cm \times 8–10 mm, wings spreading erectly or acutely, glabrous or pubescent and glandular pubescent when young. Fl. May–Jun, fr. Sep–Oct. $2n = 26$.

Sparse forests, deciduous forests of valleys and slopes; 100–2200. Anhui, Gansu, N Guangdong, Hebei, Heilongjiang, Henan, Hubei,

Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, W Xinjiang, Zhejiang [Afghanistan, Japan, Korea, Mongolia, Russia; SW Asia (Caucasus, Turkey), C and SE Europe (Austria, Hungary, Romania, Serbia, Ukraine)].

Three subspecies occur in China. *Acer tataricum* subsp. *tataricum* occurs in SW Asia (Caucasus, Turkey) and C and SE Europe (Austria, Hungary, Romania, Serbia, Ukraine).

- 1a. Leaf blade subleathery, 1.2–2.5(–5) \times 1–3.2 cm, 3- or 5-lobed, crenate or doubly serrate; samara wing pubescent and glandular when young 79c. subsp. *semenovii*
- 1b. Leaf blade papery, 6–10 \times 4–6 cm, deeply 3- or 5-lobed (or unlobed), serrate; samara wing glabrous.
 - 2a. Leaf blade elliptic-oblong, 3- or 5-lobed, abaxially glabrous 79a. subsp. *ginnala*
 - 2b. Leaf blade ovate or oblong-ovate, unlobed or slightly 3- or 5-lobed, abaxially white pilose 79b. subsp. *theiferum*

79a. *Acer tataricum* subsp. *ginnala* (Maximowicz) Wesmael, Bull. Soc. Roy. Bot. Belgique 29: 31. 1890.

茶条枫 cha tiao feng

Acer ginnala Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 126. 1856; *A. tataricum* var. *ginnala* (Maximowicz) Maximowicz; *A. tataricum* var. *laciniatum* Regel.

Leaf blade elliptic-oblong, 6–10 \times 4–6 cm, papery, abaxially glabrous, 3- or 5-lobed; lobes serrate. Corymb ca. 6 cm, glabrous. Samara wing including nutlet 2.5–3 cm, glabrous.

Sparse forests; 100–800 m. Gansu, Hebei, Heilongjiang, Henan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi [Japan, Korea, Mongolia, E Russia].

79b. *Acer tataricum* subsp. *theiferum* (W. P. Fang) Y. S. Chen & P. C. de Jong, **comb. nov.**

苦条枫 ku tiao feng

Basionym: *Acer ginnala* Maximowicz subsp. *theiferum* W. P. Fang, Acta Phytotax. Sin. 17(1): 72. 1979; *A. tataricum* var. *acuminatum* Franchet.

Leaves ovate or oblong-ovate, 5–8 \times 2.5–5 cm, thinly papery, abaxially white pilose, unlobed or slightly 3- or 5-lobed; lobes marginally duplicately serrate-dentate. Corymb ca. 3 cm, white pubescent. Samara large, wing including nutlet 2.5–3.5 cm, spreading at right or acute angle, glabrous. Fl. May, fr. Sep.

• Sparse forests; below 1800 m. Anhui, N Guangdong, Henan, Hubei, Jiangsu, Jiangxi, Shaanxi, Zhejiang.

The name “*Acer theiferum*” (W. P. Fang, Acta Phytotax. Sin. 11: 151. 1966) belongs here but was not validly published because two gatherings were indicated as types (*Vienna Code*, Art. 37.2). The intended new combination *A. ginnala* subsp. *theiferum* W. P. Fang was validly published as the name of a new subspecies because a full and

direct reference was given to the Latin description and diagnosis of “*A. theiferum*” and a single gathering (*W. P. Fang 10413*, PE) was indicated as the type (Art. 45.1).

One of us (Chang) believes that this subspecies is a form of *Acer tataricum* subsp. *ginnala* and should be treated as a synonym of that taxon. However, another of us (Chen) believes that subsp. *theiferum* is different from subsp. *ginnala* in its leaf morphology and geographic distribution.

79c. *Acer tataricum* subsp. *semenovii* (Regel & Herder) A. E. Murray, *Kalmia* 12: 17. 1982.

天山枫 tian shan feng

Acer semenovii Regel & Herder, Bull. Soc. Imp. Naturalistes Moscou 39: 550. 1866; *A. ginnala* var. *semenovii*

(Regel & Herder) Pax; *A. tataricum* var. *semenovii* (Regel & Herder) Regel.

Branchlets yellowish brown, glabrous. Petiole 2–4 cm, slender, glabrous; leaf blade ovate, 1.2–2.5 × 1–3.2 cm, subleathery, base rounded, undivided or 3- or 5-lobed, margin serrate or doubly serrate, apex acute. Corymb glandular pubescent, several flowered. Petals greenish. Samara pubescent or glandular pubescent when young, wing including nutlet 3–3.5 cm, wings spreading at right angle. Fl. May–Jun, fr. Sep.

Deciduous forests of valleys and slopes; 2000–2200 m. W Xinjiang [Afghanistan, S Russia; SW Asia].

9. *Acer* sect. *Spicata* Pax, Bot. Jahrb. Syst. 6: 326. 1885.

穗状枫组 sui zhuang feng zu

Leaves 3- or 5-lobed, margin serrate. Bud scales 2(or 3)-paired. Inflorescences dense, racemose, upright. Pedicels very short. Flowers 5-merous. Stamens 8. Disk extrastaminal. Nutlets veined, one side convex, other side concave.

Three species: E and S Asia, North America; two species in China.

- 1a. Leaf blade ovate, 8–12 cm in diam., lobes triangular-ovate, margin doubly and sharply incised-serrate, with acuminate teeth, abaxially yellowish pilose; samara wing including nutlet 2.5–2.8 cm; peduncle and pedicel relatively short 80. *A. caudatum*
- 1b. Leaf blade suborbicular, 7–9 cm in diam., lobes broadly ovate, margin coarsely serrate, with broad acute or ± obtuse teeth, abaxially densely yellowish tomentose; samara wing including nutlet 1.5–2 cm; pedicel and peduncle relatively long 81. *A. ukurunduense*

80. *Acer caudatum* Wallich, Pl. Asiat. Rar. 2: 4. 1831.

长尾枫 chang wei feng

Acer caudatum var. *erosum* (Pax) Rehder; *A. caudatum* subsp. *georgei* (Diels) A. E. Murray; *A. caudatum* var. *georgei* Diels; *A. caudatum* var. *multiserratum* (Maximowicz) Rehder; *A. caudatum* subsp. *prattii* (Rehder) A. E. Murray; *A. caudatum* var. *prattii* Rehder; *A. erosum* Pax; *A. multiserratum* Maximowicz; *A. papilio* King.

Trees to 10 m tall, andromonoecious. Branchlets stout, with elliptic or oblong lenticels; winter buds ovoid, outer scales ovate. Leaves deciduous; petiole red, 5–9 cm, glabrous or pubescent; leaf blade abaxially light green, adaxially dark green, 8–12 cm wide, membranous, abaxially yellowish pilose, adaxially glabrous except pubescent on veins, base cordate or deeply cordate, 5-lobed, rarely 7-lobed; lobes ovate or triangular-ovate, margin doubly and sharply incised-serrate, with acuminate teeth, apex caudate or acuminate. Inflorescence terminal, red, compact, racemose-paniculate, villous; peduncles 8–10(–12) cm. Pedicel 5(–8) mm, slender, slightly pubescent. Sepals 5, ovate-lanceolate, ca. 3 mm. Petals 5, linear-oblong, ca. 7 mm, glabrous. Stamens 8, glabrous. Disk extrastaminal, lobed, glabrous. Ovary densely yellow tomentose; style 1–5 mm; stigmas spreading. Fruit yellowish brown; nutlets ovoid-subglobose, rarely flat, veined; wing including nutlet 2.5–2.8 cm × 7–9 mm, wings spreading acutely or erectly. Fl. May, fr. Sep. $2n = 26$.

Alpine forests; 1700–4000 m. SE Gansu, W Henan, W Hubei, Ningxia, S Shaanxi, W Sichuan, SE Xizang, NW Yunnan [Bhutan, N India, Myanmar, Nepal].

81. *Acer ukurunduense* Trautvetter & C. A. Meyer, Fl. Ochot. Phaenog. 1: 24. 1856.

花楷枫 hua kai feng

Acer caudatum Wallich subsp. *ukurunduense* (Trautvetter & Meyer) A. E. Murray; *A. caudatum* var. *ukurunduense* (Trautvetter & Meyer) Rehder; *A. dedyle* Maximowicz; *A. lasiocarpum* H. Léveillé & Vaniot; *A. spicatum* var. *ukurunduense* (Trautvetter & Meyer) Maximowicz; *A. spicatum* var. *ussuriense* Budishchev; *A. ukurunduense* var. *changbaishanense* W. Cao.

Trees 8–10 m tall, andromonoecious. Bark light grayish brown, slightly fissured. Branchlets light grayish brown or purplish brown, glabrous; winter buds shortly conical, densely yellow pubescent, scales 2 or 3 pairs. Leaves deciduous; petiole 5–8 cm, slightly pubescent or glabrescent; leaf blade adaxially dark green, suborbicular, 10–12 × 7–9 cm, membranous or papery, abaxially densely yellowish tomentose, adaxially glabrescent, primary veins slightly prominent abaxially, secondary reticulate veins conspicuous abaxially, base truncate or subcordate, 5(or 7)-lobed; lobes broadly ovate, rarely triangular-ovate,

margin coarsely serrate, with broad acute or ± obtuse teeth, apex acuminate. Inflorescence terminal, erect, racemose-paniculate, compact, from leafy branchlets; peduncles (8–)10–12 cm. Pedicel (5–)8 mm, pubescent. Sepals 5, lanceolate, ca. 2 mm, outside pubescent. Petals 5, narrowly oblanceolate, ca. 3 mm. Stamens 8, or 7–10, glabrous, inserted at middle of disk. Disk extrastaminal, glabrous, lobed. Ovary densely pubescent. Nutlets flat, ca. 6 mm in diam., puberulent; wing including nutlet 1.5–2 cm × ca. 6 mm, wings spreading erectly. Fl. May,

fr. Sep. $2n = 26$.

Coniferous or mixed forests, thickets on stony slopes, riverbanks; 500–2500 m. Heilongjiang, Jilin, Liaoning [Japan, Korea, E Russia].

Two of us (Chang and de Jong) believe that this species would be better treated as a subspecies of *Acer caudatum*, i.e., *A. caudatum* subsp. *ukurunduense* (Trautvetter & Meyer) A. E. Murray. However, one of us (Chen) does not agree.

10. *Acer* sect. *Hyptiocarpa* W. P. Fang, Acta Phytotax. Sin. 11: 172. 1966.

扁果枫组 bian guo feng zu

Trees evergreen. Leaves undivided, leathery, abaxially blue or snow white, margins entire. Bud scales 7–11-paired. Inflorescences axillary from leafless buds, cymose-paniculate. Flowers unisexual, androdioecious, sometimes andromonoecious, 5-merous. Stamens 4–12. Disk amphistaminal or extrastaminal.

Two species: Cambodia, China, NE India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; two species in China.

- 1a. Leaf blade trinerved, lateral veins 5 or 6 pairs, abaxially ± pubescent; wing including nutlet 4–7 cm, pubescent or nearly glabrous; fruit peduncle stout 82. *A. laurinum*
- 1b. Leaf blade pinnatinerved, lateral veins 8–12 pairs, abaxially glabrous; wing including nutlet 2–4 cm, glabrous; fruit peduncle very slender 83. *A. pinnatinervium*

82. *Acer laurinum* Hasskarl, Tijdschr. Natuurl. Gesch. Physiol. 10: 138. 1843.

十蕊枫 shi rui feng

Acer chionophyllum Merrill; *A. decandrum* Merrill; *A. garrettii* Craib; *A. laurinum* subsp. *decandrum* (Merrill) A. E. Murray; *A. laurinum* var. *petelotii* (Gagnepain) Phamhoang; *A. longicarpum* Hu & W. C. Cheng; *A. macropterum* T. Z. Hsu & H. Sun (1997), not Visiani (1860); *A. niveum* Blume; *A. philippinum* Merrill.

Trees evergreen, to 30(–48) m tall, androdioecious, sometimes andromonoecious. Bark gray. Branchlets green, glabrous; winter buds ovoid, scales 7–11 pairs. Petiole (1.5–)3–6(–10) cm, glabrous; leaf blade abaxially glaucous, whitish or light blue-gray, adaxially glossy dark green, lanceolate or oblong-elliptic to ovate, 9–15 × 3–8 cm, abaxially ± pubescent, trinerved, lateral veins 5 or 6 pairs, 2 basal veins reaching beyond middle of blade, base rounded or cuneate or broadly cuneate, margin entire, glabrous, apex shortly acuminate to obtuse. Inflorescence cymose-paniculate, appearing in axils of fallen leaves, 2.5–10 cm, glabrous or pubescent; peduncle 5–35 mm. Pedicel 4–17 mm, glabrous. Flowers pale yellowish. Sepals 5, ovate, 2.5–3 mm, glabrous. Petals 5, 1.5–2.5 mm. Stamens (4–)8–12, glabrous; filaments ca. 5 mm in staminate flowers, ca. 2.2 mm in pistillate flowers. Disk amphistaminal, glabrous. Ovary rudimentary in staminate flowers. Samara brownish yellow; strongly veined; nutlets slightly convex, ca. 15 × 7 mm, pubescent or nearly glabrous; wing falcate, broadest near apex, including nutlet 4–7 × 2–3 cm, wings spreading acutely. Fruit peduncle 1–3 cm, stout. Fl. Jun–Sep, fr. Sep–Dec. $2n = 26$.

Evergreen forests, scattered; 700–2500 m. SW Guangxi, Hainan, SE Xizang, NW and S Yunnan [Cambodia, S India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

The only true tropical maple spreading to the S Hemisphere, this species is relatively rare.

83. *Acer pinnatinervium* Merrill, Brittonia 4: 109. 1941.

楠叶枫 nan ye feng

Acer jingdongense T. Z. Hsu; *A. machilifolium* Hu & Cheng.

Trees, to 10 m tall, androdioecious. Bark gray-brown or dark brown, rough; branchlets slender, glabrous, those of present year purple-green or green, older ones gray-green or yellow-green. Winter buds purplish green, ovoid. Leaves persistent; petiole purple-green, 2–3.5 cm, glabrous; leaf blade abaxially gray-white, adaxially dark green and lucid, oblong-elliptic or elliptic, 10–14 × 3–6 cm, papery or subleathery, glabrous, pinnatinerved, lateral veins 8–12 pairs, base obtuse, apex caudate-acuminate, acumen 2–2.4 cm. Inflorescences cymose-paniculate, ca. 1.5 cm, pubescent. Sepals 5, yellowish green, ca. 2 × 7 mm. Petals 5, light yellow, ca. 1.8 × 0.4 mm. Stamens 8. Disk extrastaminal. Ovary purplish, villous. Fruit yellowish brown; nutlets flat, 1–2 cm × 6–7 mm; wing falcate, including nutlet 2–4 cm, wings spreading acutely. Fruit peduncle 1–2 cm, very slender. Fl. Aug–Oct, fr. Dec–Feb.

Mixed forests, scattered; 500–2400 m. SW Xizang, Yunnan [N India, Thailand].

This species is very rare and endangered.

11. *Acer* sect. *Lithocarpa* Pax, Bot. Jahrb. Syst. 6: 328. 1885.

坚果枫组 *jian guo feng zu*

Trees, dioecious, very occasionally monoecious. Leaves 3- or 5-lobed, sometimes undivided, margins remotely dentate to serrulate. Bud scales 8–12-paired. Inflorescences axillary from leafless buds, racemose. Flowers 5-merous, unisexual. Stamens usually 8. Disk amphistaminal.

About nine species: E, S, and SE Asia; eight species (six endemic) in China.

- 1a. Leaf blade abaxially pale white to pale gray, margin entire or remotely toothed with a few sinuous teeth; fruiting pedicels slender, 2.5–4 cm; infructescence 10–32 cm.
- 2a. Leaf blade 9–11 × 11–12 cm, abaxially very sparsely pubescent on veins and veinlets, though hairs not detectable by touch, 3-lobed, base rounded; nutlets 3.5–4.3 × 0.8–1.3 cm 84. *A. leipoense*
- 2b. Leaf blade 10–20 × 11–25 cm, very densely pubescent and hairs easily detectable by touch, 5-lobed, base cordate; nutlets 4.7–5.5 × 1.4–1.7 cm 85. *A. yangbiense*
- 1b. Leaf blade abaxially light green, margin toothed or rarely entire; fruiting pedicels relatively thick, 0.7–2(–4) cm; infructescence 7–12(–16) cm.
- 3a. Samara 8–12 cm; leaf blade 3-lobed or unlobed, margin usually entire 86. *A. thomsonii*
- 3b. Samara 3.5–6.5 cm; leaf blade 3- or 5-lobed, lobes toothed.
- 4a. Flowers purple-red; leaf blade 5-lobed, rarely 3-lobed, lobes triangular, very remotely dentate or entire 87. *A. sinopurpurascens*
- 4b. Flowers green; leaf blade 3-, 5-, or 7-lobed, margin toothed.
- 5a. Leaf blade 3-, 5-, or 7-lobed, lobes obtuse 88. *A. sterculiaceum*
- 5b. Leaf blade 3-lobed, lobes acute.
- 6a. Leaf blade small, papery, secondary veins 9–11 pairs; infructescence 4–5 cm, pedicel slender; nutlets irregularly convex 91. *A. tsinglingense*
- 6b. Leaf blade large, leathery or subleathery, secondary veins 14–24 pairs; infructescence 7–12 cm; pedicel stout; nutlets distinctly convex.
- 7a. Leaf blade subleathery, margin crenate, abaxially densely yellowish pilose; infructescence 7–9 cm; samara wing including nutlet 4–4.5 cm, yellowish pilose 89. *A. kungshanense*
- 7b. Leaf blade leathery, margin undulate or crenate, abaxially glabrous; infructescence ca. 12 cm; samara wing including nutlet 6–6.5 cm, glabrous 90. *A. lungshengense*

84. *Acer leipoense* W. P. Fang & T. P. Soong, Acta Phytotax. Sin. 11: 179. 1966.

雷波枫 *lei bo feng*

Acer leipoense subsp. *leucotrichum* W. P. Fang; *A. longipedicellatum* C. Y. Wu.

Trees to 8 m tall. Bark dark brown or purple-brown. Branchlets cylindrical, those of present year green or purplish green and pubescent, older ones brown and glabrous; winter buds ovoid, scales ciliate along margin. Leaves deciduous; petiole purplish green, 7–8 cm, slender, glabrous; leaf blade abaxially gray, adaxially green, suborbicular-ovate, 9–11 × 7–12 cm, papery, abaxially powdery, pubescent, adaxially glabrous, base subcordate or rounded, shallowly 3-lobed, margin usually entire, rarely with a few serrations. Flowers unknown. Infructescence purplish green, racemose, 15–25 cm, subglabrous. Fruiting pedicel 2.5–4 cm, glabrous. Fruit yellowish brown; nutlets yellowish brown, strongly convex, ca. 1 cm in diam., pubescent; wing falcate, including nutlet 4–4.5 × ca. 1.5 cm, wings spreading at 90° or acutely. Fr. Sep.

- Mixed forests; 2000–2700 m. SW Sichuan.

This is an endangered species.

85. *Acer yangbiense* Y. S. Chen & Q. E. Yang, Novon 13: 296. 2003.

漾濞枫 *yang bi feng*

Trees deciduous, to 20 m tall; trunk to 20 cm d.b.h. Branchlets of present year greenish, pubescent; branchlets of previous year brown-green, pale gray pubescent; those more than 2 years old light brown or dark brown, glabrescent, with noticeable brown-yellow lenticels; winter buds dark brown, ovoid, imbricate scales ca. 9 pairs, outside tomentose, deciduous soon after flowers or leaves mature. Petiole 4–17 cm, pale gray pubescent; leaf blade abaxially pale green, adaxially deep green, 10–20 × 11–25 cm, usually broader than long, papery, primary veins 5, prominent abaxially, impressed adaxially, shallowly 5-lobed, base cordate, abaxially very densely pubescent on veins and veinlets, adaxially glabrous; basal lobes usually smaller, apex acuminate, or occasionally absent; middle and lateral lobes triangular-ovate, margin entire or remotely toothed with a few sinuous teeth, apex acuminate; central lobe with 7–9 pairs of parallel lateral veins. Racemes pendulous, glabrous, arising from leafless lateral buds of 2- or 3-year-old branchlets. Flowers hermaphroditic, yellow-green. Sepals 5, yellow-green, ovate-oblong, ca. 4.5 × 4 mm, glabrous. Petals 5, yellow-green, ovate,

base narrow. Intrastaminal disk glabrous. Stamens 8; filaments 2–3 mm; anthers ovoid, ca. 1 mm. Styles 2, base united, free portion curved downward; stigmas simple. Infructescence pendulous, 9–32 × ca. 7 cm. Fruit 9–17 per raceme, red-green when young, brown-yellow when mature; wing including nutlet 4.7–

5.5 × 1.4–1.7 cm, strongly veined, wings spreading at acute or nearly right angle; fruiting pedicel 2.7–3.4 cm, glabrous; nutlets ca. 7 mm in diam., middle convex, globose, villous. Fl. Apr, fr. Sep.

- Mixed forests, valleys; ca. 2400 m. W Yunnan (Yangbi).

This is a very rare, critically endangered species.

86. *Acer thomsonii* Miquel, Arch. Neerl. 2: 470. 1867.

巨果枫 ju guo feng

Acer franchetii Pax var. *majus* Hu; *A. huamum* W. P. Fang & C. C. Hsieh; *A. sterculiaceum* Wallich subsp. *thomsonii* (Miquel) A. E. Murray; *A. villosum* Wallich var. *thomsonii* (Miquel) Hiern.

Trees to 30 m tall, dioecious. Bark dark brown or brown. Branchlets greenish brown, rough, glabrous; winter buds ovoid, scales imbricate. Leaves deciduous; petiole 5–12 cm, subglabrous; leaf blade suborbicular or broadly ovate, 10–15(–30) × 8–15(–20) cm, subleathery, primary veins 5, lateral veins 6–8 pairs, base cordate, 3-lobed; lobes short, margin usually entire or repand, rarely few serrate, lateral lobes acute apically. Inflorescence lateral, racemose, pendulous. Sepals 5, elliptic. Petals 5, ca. as long as sepals. Stamens 8. Ovary glabrous. Infructescence 10–12 cm. Samara wing oblong, including nutlet 8–12 cm, wings spreading acutely or erectly. Fl. Apr, fr. Sep. $2n = 26$.

Mixed forests, valleys; 1800–3000 m. S Xizang, S Yunnan [Bhutan, N India, Myanmar, Nepal, Thailand].

87. *Acer sinopurpurascens* W. C. Cheng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 6: 62. 1931.

天目枫 tian mu feng

Acer diabolicum Blume ex Koch subsp. *sinopurpurascens* (W. C. Cheng) A. E. Murray.

Trees to 10 m tall, dioecious. Bark brownish gray, nearly smooth. Branchlets of first year green and sparsely pilose, later brownish, glabrescent; buds bright brown, ovoid, with many imbricate scales, scales densely pilose. Leaves deciduous; petiole 4–8.5 cm, slender, pubescent when young, glabrescent; leaf blade abaxially light green, adaxially dull green, abaxially with axillary tufts of hairs between primary and secondary veins, both surfaces densely pilose on veins when young, less so when mature, ciliate at margin, 5-veined from cordate or subcordate or truncate base, 5-lobed, rarely 3-lobed; 2 basal lobes spreading, triangular, margin very remotely dentate or entire, apically acute or acuminate, midlobe oblong-ovate, slightly longer or very rarely shorter than lateral ones, margin very remotely dentate or entire, with margin nearly parallel below middle, apex long acuminate. Peduncle green or purplish, 1–2.5 cm, sparsely pilose, sometimes glabrous. Flowers purple-

red, from lateral leafless buds, appearing before leaves. Staminate flowers apetalous, in pendulous racemes or corymbose racemes, 3–7-flowered, embraced by several convex bracts; bracts oblong or oblong-obovate, to 1.2 cm, outside densely pilose, inside glabrous; pedicels purple, 1–2.5 cm, sparsely pilose; sepals (3–)5(or 6), unequal in size, ca. 5 mm, glabrous; petals 5, ca. as long as sepals; stamens 8, inserted inside of disk. Pistillate flowers in pendulous racemes, 3–7-flowered; perianth purple, glabrous; ovary densely pilose; stigma 2-lobed. Fruiting pedicels 8–14 mm, glabrous; samaras slightly ascending at base, with strongly keeled and veined nutlets, ca. 3.6 cm; wings ca. 1 cm wide, sparsely pilose; nutlets pale yellow, ca. 10 × 9 mm, pubescent and bristly. Fl. Apr, fr. Sep.

- Mixed forests; 700–1000 m. S Anhui, NE Hubei, N Jiangxi, NW Zhejiang.

88. *Acer sterculiaceum* Wallich, Pl. Asiat. Rar. 2: 3. 1830.

苹婆枫 ping po feng

Trees to 20 m tall. Bark dark gray or gray-brown. Branchlets grayish, glabrous; winter buds ovoid, scales ciliate along margin. Leaves deciduous; petiole greenish or purplish green, 5–15 cm, glabrous; leaf blade abaxially greenish, adaxially dark green, 10–20 × (12–)15–23 cm, subleathery, abaxially tomentose or pilose, adaxially glabrous, primary veins 5, secondary veins 10 or 11 pairs, distinct adaxially, base subcordate, 3- or 5-lobed, rarely 7-lobed; lobes ovate, margin with obtuse teeth, apex acuminate. Inflorescence racemose, ca. 8 cm, slender, pilose. Sepals 5, greenish, oblong. Petals 5, yellowish green, ca. as long as sepals, ciliate along margin. Stamens 5–8. Ovary hairy. Fruit yellowish; nutlets convex, wing including nutlet 4–6(–6.5) cm, wings spreading erectly. Fl. Apr–May, fr. Sep.

Forests, valleys; 1800–3100 m. Guizhou, SW Henan, NW Hubei, Hunan, S Shaanxi, Sichuan, S Xizang, Yunnan [Bhutan, N India].

- 1a. Leaf blade usually 5-lobed, rarely 3- or 7-lobed 88a. subsp. *sterculiaceum*
- 1b. Leaf blade usually 3-lobed, rarely 5-lobed 88b. subsp. *franchetii*

88a. *Acer sterculiaceum* subsp. *sterculiaceum*

苹婆枫(原亚种) ping po feng (yuan ya zhong)

Acer villosum Wallich f. *sterculiaceum* (Wallich) Schwerin.

Petiole 10–15 cm; leaf blade abaxially pubescent when young and pubescent on veins and at vein axils when mature, usually 5-lobed, rarely 3- or 7-lobed; lobes basally cordate, margin distantly serrate, apex acuminate. Samara wing including nutlet 5–6 cm, wings 1.5–2 cm wide.

2300–3100 m. S Xizang, NW Yunnan [Bhutan, N India].

88b. *Acer sterculiaceum* subsp. *franchetii* (Pax) A. E. Murray, Kalmia 1: 2. 1969.

房县枫 fang xian feng

Acer franchetii Pax, Hooker's Icon. Pl. 19: ad t. 1897. 1889; *A. franchetii* var. *megalocarpum* W. P. Fang & W. K. Hu; *A. franchetii* var. *schoenermarkiae* (Pax) W. P. Fang & H. F. Chow; *A. schoenermarkiae* Pax; *A. schoenermarkiae* var. *oxycolpum* Handel-Mazzetti.

Leaf blade usually 3-lobed, rarely 5-lobed. Samara wing including nutlet 4–6.5 cm.

• Alpine forests, valleys; 1800–2500 m. Guizhou, SW Henan, NW Hubei, S Shaanxi, Sichuan, E Yunnan.

One of us (Chang) believes this taxon would be better treated as a synonym of *Acer sterculiaceum*. However, one of us (Chen) does not agree.

89. *Acer kungshanense* W. P. Fang & C. Y. Chang, Acta Phytotax. Sin. 11: 180. 1966.

贡山枫 gong shan feng

Acer franchetii Pax var. *acuminatilobum* W. P. Fang & H. F. Chow; *A. kungshanense* var. *acuminatilobum* (W. P. Fang & H. F. Chow) W. P. Fang.

Trees to 20 m tall. Bark gray, vertically fissured. Branchlets terete, those of present year grayish brown, older ones grayish brown or dark grayish brown; winter buds gray, circular-conical, scales ciliate along margin. Leaves deciduous; petiole 9–12 cm, pubescent at tip; leaf blade abaxially greenish, adaxially dark green, 15–25 × 15–25 cm, subleathery, abaxially densely yellowish pubescent, adaxially pubescent, primary veins 3, secondary veins 21–24 pairs, distinct abaxially, base cordate, 3-lobed; lobes ovate, margin crenate, apex acute. Flowers unknown. Inflorescence paniculate, 7–9(–12) cm, pubescent. Fruiting pedicel 1.5–3 cm, pubescent. Nutlets convex, yellowish pubescent; wing falcate, including nutlet 4–4.5 × 1.5–1.7 cm, wings spreading erectly or acutely. Fl. unknown, fr. Sep.

• Mixed forests, valleys; 2000–3200 m. NW and S Yunnan.

90. *Acer lungshengense* W. P. Fang & L. C. Hu, Acta Phytotax. Sin. 11: 179. 1966.

龙胜枫 long sheng feng

Acer lichuanense C. D. Chu & G. G. Tang.

12. *Acer* sect. *Pentaphylla* Hu & W. C. Cheng, Bull. Fan Mem. Inst. Biol., n.s., 2(1): 208. 1948.

五小叶枫组 wu xiao ye feng zu

Leaves compound, 5(–7)-palmatifoliolate; leaflets lanceolate, margins serrate to entire. Inflorescence terminal, corymbose. Flowers 5-merous. Stamens 8. Disk extrastaminal.

• One species: China.

92. *Acer pentaphyllum* Diels, Notizbl. Bot. Gart. Berlin-Dahlem 11: 212. 1931.

五小叶枫 wu xiao ye feng

Trees to 10 m tall, andromonoecious. Branchlets brown, widely spreading or slightly pendulous; buds imbricate, purplish. Leaves deciduous; petiole brownish yellow, 6–8 cm, glabrous; leaf blade subleathery, abaxially white glaucous, adaxially

Trees to 15 m tall. Bark dark purple. Branchlets dark purple, rough, those of present year gray pubescent, older ones glabrous; winter buds conical, scales triangular, margin ciliate. Leaves deciduous; petiole 7–9 cm, gray pubescent; leaf blade abaxially greenish, adaxially dark green, ovate, 14–18 × 12–15 cm, leathery, abaxially glabrous except pubescent at vein axils, adaxially glabrous, primary veins 3, secondary veins 14–16 pairs, distinct abaxially, 3-lobed; lobes ovate. Flowers unknown. Inflorescence racemose. Fruiting pedicel 7–15 mm. Nutlets convex, round; wing falcate, including nutlet 6–6.5 × ca. 1.2 cm, wings spreading erectly. Fl. unknown, fr. Sep.

• Mixed forests, valleys; 1500–1800 m. NE Guangxi, SE Guizhou, SW Hubei, NW Hunan.

91. *Acer tsinglingense* W. P. Fang & C. C. Hsieh, Acta Phytotax. Sin. 11: 180. 1966.

秦岭枫 qin ling feng

Trees, 8–10 m tall. Bark gray-brown. Branchlets slender; young branchlets light purple, pubescent; old branches light brown, glabrous; winter buds conical, scales ciliate along margin. Leaves deciduous; petiole 6–10 cm, pubescent; leaf blade abaxially greenish, adaxially dark green, 4–9.5 × 4–11 cm, papery, abaxially tomentose or pilose, adaxially glabrous, primary veins 3, secondary veins 9–11 pairs, distinct adaxially, base rounded or rarely subcordate, 3-lobed, rarely 5-lobed; lobes ovate, margin undulate or with 1 or 2 obtuse teeth, apex acute; lateral lobes spreading horizontally. Inflorescence racemose, 3–5 cm, slender, pilose. Sepals 5, light greenish, oblong, ca. 5 mm. Petals 5, yellowish green, ca. 7 mm. Stamens 8. Ovary hairy. Fruit yellowish; pedicel slender. Nutlets irregularly convex, hispid; wing including nutlet 4–4.5 × 1–1.2 cm, wings spreading erectly or acutely. Fl. Apr, fr. Aug–Sep.

• Sparse forests; 1200–1500 m. SE Gansu, SW Henan, Shaanxi.

This species is very similar to *Acer sterculiaceum* subsp. *franchetii* but differs by its light brown branches, thinner 3-lobed leaves, lateral lobes spreading horizontally, inflorescence smaller and shorter, pedicels slender, and petioles and leaves abaxially pubescent.

ally dark green and glabrous; leaflets (4 or)5(–7); petiolules 5–8 mm, glabrous; leaflet blades 5–8 × 1.5–2 cm, narrowly lanceolate or lanceolate, midvein prominent abaxially, slightly impressed adaxially, veins slightly raised abaxially, base cuneate or broadly cuneate, apex ± obtuse or ± obtuse-acuminate. Inflorescence corymbose, glabrous. Pedicel 1–2 cm, slender, glabrous. Petals 5. Stamens 8; filaments glabrous. Disk glabrous, extrastaminal. Ovary sparsely pubescent. Nutlets ca. 5 mm in

diam., strongly convex, puberulent; wing including nutlet 2.3–2.5 cm × ca. 8 mm, wings spreading at 90°. Fl. Apr, fr. Sep.

• Mixed forests, valleys; 2300–2900 m. SW Sichuan.

This is a very rare, endangered species.

13. *Acer* sect. *Trifoliata* Pax, Bot. Jahrb. Syst. 6: 326. 1885.

三小叶枫组 san xiao ye feng zu

Trees or shrubs; bark sometimes exfoliating. Leaves trifoliolate, margins subentire to coarsely serrate. Bud scales 11–15-paired. Inflorescence terminal and axillary, corymbose. Flowers 5(or 6)-merous. Stamens 10–13. Disk extrastaminal. Nutlets spherically convex; parthenocarpic tendency strong.

Five species: E Asia; five species (two endemic) in China.

- 1a. Bark yellow-brown, orange-brown, or red-brown, fissured.
 - 2a. Leaf more deeply 2- or 3-toothed; small wing and nutlet (3.2–3.8 cm); bark orange-brown or red-brown 93. *A. griseum*
 - 2b. Leaf margin entire or shallowly 2- or 3-toothed; large wing and nutlet (3.5–4.5 cm); bark yellow-brown 94. *A. triflorum*
- 1b. Bark gray, smooth.
 - 3a. Young branchlets and abaxial surface of leaves pubescent 95. *A. nikoense*
 - 3b. Young branchlets and abaxial surface of leaves glabrous.
 - 4a. Inflorescence usually 3-flowered; leaflets lanceolate, 5–10 × 1.5–3 cm 96. *A. mandshuricum*
 - 4b. Inflorescence 20–30-flowered; leaflets oblong-lanceolate, 7–14 × 2–4 cm 97. *A. sutchuenense*

93. *Acer griseum* (Franchet) Pax in Engler, Pflanzenz. 8(IV. 163): 30. 1902.

血皮枫 xue pi feng

Acer nikoense Miquel var. *griseum* Franchet, J. Bot. (Morot) 8: 294. 1894; *A. leiopodum* (Handel-Mazzetti) W. P. Fang & H. F. Chow; *A. pedunculatum* K. S. Hao; *A. shensiense* W. P. Fang & L. C. Hu; *A. triflorum* Komarov subsp. *leiopodum* (Handel-Mazzetti) A. E. Murray; *A. triflorum* var. *leiopodum* Handel-Mazzetti; *A. zhongtiaoense* W. P. Fang & B. L. Li; *Crula grisea* (Franchet) Nieuwland.

Trees to 20 m tall, androdioecious, sometimes andromonoecious. Bark orange-brown or red-brown, fissured. Branchlets cylindric, those of present year purplish, densely pubescent, older ones dark purple or dark brown, hairs persistent on branchlets for 2 or 3 years; buds dark and small. Leaves deciduous; petiole 2–4 cm, densely pilose; leaf blade papery, abaxially glaucous, pubescent, densely so on veins, adaxially dark green, pubescent when young, glabrescent, with 3 leaflets per petiole; petiolule 5–8 cm, pubescent; leaflet blades elliptic or elliptic-oblong, 3–8 × 2–5 cm, apex acute; middle leaflets cuneate apically, coarsely toothed, with 2 or 3 large ± blunt teeth. Inflorescence cymose, small, pilose, usually 3-flowered. Pedicel 2–3 cm, densely pilose. Sepals 5. Petals 5. Stamens 10, glabrous. Disk glabrous, extrastaminal. Fruit yellowish brown; nutlets globose, 8–10 × 6–8 mm, densely pubescent; wing including nutlet 3.2–3.8 × ca. 1.4 cm, wings spreading at 90° or nearly erectly. Fl. Apr, fr. Sep.

• Mixed forests; 1500–2000 m. SE Gansu, SW Henan, W Hubei, NW Hunan, S Shaanxi, S Shanxi, E Sichuan.

94. *Acer triflorum* Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 18: 430. 1901.

三花枫 san hua feng

Acer triflorum f. *subcoriaceum* (Komarov) S. L. Tung; *A. triflorum* var. *subcoriaceum* Komarov; *Crula triflora* (Komarov) Nieuwland.

Trees to 25 m tall, androdioecious, sometimes andromonoecious. Bark yellow-brown, vertically fissured, peeling in small scales. Branchlets slender, sparsely pilose, soon glabrous or nearly glabrous; winter buds small, scales ciliate. Leaves deciduous; petiole purplish, 2.5–6 cm, sparsely pilose or glabrous; leaf blade membranous, papery, or subleathery, abaxially glabrescent, with densely pilose midvein, adaxially pilose, soon glabrous, 3-foliolate per petiole; petiolule 5–10 mm, slender, sparsely pilose; leaflet blades oblong-ovate to obovate-lanceolate, 4–9 × 2–3.5 cm, margin entire or remotely serrate with a few coarse teeth; middle leaflets cuneate apically; lateral veins 11–13 pairs, adaxially conspicuous. Inflorescence corymbose, 3-flowered. Sepals 5. Petals 5. Stamens 10. Ovary pubescent. Fruit greenish yellow; nutlets subglobose, 1.4–1.6 × 1–1.2 cm, densely pubescent; wing including nutlet 3.5–4.5 × 1.3–2 cm, subparallel, wings spreading at 90° or erectly. Fl. Apr, fr. Sep.

Mixed forests; 400–1700 m. Heilongjiang, Jilin, Liaoning [Korea].

95. *Acer nikoense* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 12: 227. 13 Nov 1867.

毛果枫 mao guo feng

Acer maximowiczianum Miquel, nom. illeg. superfl.; *A. maximowiczianum* subsp. *megalocarpum* (Rehder) A. E. Murray; *A. nikoense* var. *megalocarpum* Rehder; *Negundo nikoense* Miquel.

Trees to 20 m tall, androdioecious, sometimes andromonoecious. Bark gray. Branchlets slender; winter buds conical, scales 5 pairs, pubescent. Leaves deciduous; petiole 3–5 cm, densely pubescent; leaf blade subleathery, abaxially pale green and pilose, densely so on veins, midvein sparsely pubescent adaxially, lateral veins 12–14 pairs usually impressed adaxially, with 3 leaflets per petiole; leaflet blades oblong-elliptic or oblong-lanceolate, 7–14 × 3–6 cm, margin entire or remotely and shallowly serrate with obtuse teeth, apex acute or rarely acuminate. Inflorescence cymose, 3–5-flowered. Pedicel densely pilose. Pistillate flowers: sepals 5, obovate;

petals 5, oblong-obovate; stamens 8, glabrous; disk glabrous, extrastaminal; ovary densely pubescent; style glabrous; stigmas widely spreading. Fruit yellowish brown; nutlets flat; wing including nutlet 3.5–4(–6) × ca. 1.2 cm, curved inward and wings spreading at 90°. Fl. Apr, fr. Sep.

Mixed forests; 1000–1800 m. S Anhui, W Hubei, Hunan, N Jiangxi, E Sichuan, NW Zhejiang [Japan].

Delendick (Brittonia 32: 286–290. 1980) reviewed the nomenclatural history and determined that *Acer nikoense* Maximowicz (13 Nov 1867) is the correct name for this taxon, not based on *Negundo nikoense* Miquel, and that the nomenclaturally superfluous synonym *A. maximowiczianum* Miquel (Dec 1867) is based on *A. nikoense*.

96. *Acer mandshuricum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 12: 228. 1867.

东北枫 dong bei feng

Acer kansuense W. P. Fang & C. Y. Chang; *A. mandshuricum* subsp. *kansuense* (W. P. Fang & C. Y. Chang) W. P. Fang; *Crula mandshurica* (Maximowicz) Nieuwland; *Negundo mandshuricum* (Maximowicz) Budishchev ex Trautvetter.

Trees, to 30 m tall, ?dioecious. Bark gray, smooth. Branchlets glabrous; winter buds small, scales glabrous. Leaves deciduous; petiole greenish yellow or purplish red, 7–10 cm; leaf blade papery, abaxially glabrous, with barbed hairs on midvein, adaxially green and glabrous, 3-foliolate; petiolule to 1 cm, slender; leaflet blades oblong, oblong-ovate, oblong-lanceolate, or lanceolate, 5–10 × 1.5–3 cm; middle leaflets cuneate apically, lateral leaflets suborbicular, margin obtusely serrate with very small teeth on upper parts of leaflets; lateral veins 9–11 pairs. Inflorescence corymbose, 3–5-flowered. Pedicel 2.5–3 cm. Sepals 5, ovate. Petals 5, obovate. Stamens 8; filaments glabrous. Disk glabrous, extrastaminal. Fruit yellowish brown; nutlets strongly convex, globose; wing including nutlet 3–3.5(–6) × ca. 1 cm, wings spreading acutely, obtusely, or nearly erectly. Fl. Jun, fr. Sep. *2n* = 26.

Mixed forests; 500–2300 m. SE Gansu, Heilongjiang, Jilin, Liaoning, S Shaanxi [Korea, E Russia].

97. *Acer sutchuenense* Franchet, J. Bot. (Morot) 8: 294. 1894.

14. *Acer* sect. *Negundo* (Boehmer) Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 450. 1880.

复叶枫组 fu ye feng zu

Negundo Boehmer in Ludwig, Def. Gen. Pl., ed. 3, 508. 1760.

Trees or shrubs, deciduous, dioecious. Leaves compound, trifoliolate or pinnate, 5–7-foliolate, margins of leaflets entire to dentate. Bud scales 2- or 3-paired. Inflorescences racemose or compound racemose, axillary from leafless buds or accompanied by 1 or 2 pairs of small leaves. Flowers 4-merous. Stamens 4–6, absent in pistillate flowers. Disk absent or small. Nutlets veined; parthenocarpic tendency strong.

Three species: E Asia, North America; two species (one endemic, one introduced) in China.

1a. Staminate and pistillate flowers in pendulous racemes, from leafless branchlets; leaves 3-foliolate 98. *A. henryi*

1b. Pistillate flowers in pendulous racemes; staminate flowers usually in clusters of 4; leaves pinnately 7–9-foliolate 99. *A. negundo*

98. *Acer henryi* Pax, Hooker's Icon. Pl. 19: t. 1896. 1889.

三叶枫 san ye feng

Acer cissifolium K. Koch subsp. *henryi* (Pax) A. E. Murray; *A. henryi* f. *intermedium* W. P. Fang; *A. henryi* var.

四川枫 si chuan feng

Acer emeiense T. Z. Hsu; *A. sutchuenense* subsp. *tienchuanense* (W. P. Fang & T. P. Soong) W. P. Fang; *A. tienchuanense* W. P. Fang & T. P. Soong; *Crula sutchuenensis* (Franchet) Nieuwland.

Trees small, 8–12 m tall, androdioecious, sometimes andromonoecious. Bark gray, smooth. Branchlets purplish brown at end of first year, later becoming light grayish brown, glabrous, marked by numerous lenticels; winter buds ovoid, scales 4 or 6 pairs, imbricate, lustrous brown, ciliate. Leaves deciduous, trifoliolate; petiole 3–8 cm, densely pilose near articulation of petiolules; leaflet blades elliptic-oblong to oblong-lanceolate, (5–)8–15 × 2–6 cm, papery, abaxially glaucous, sparsely pubescent on midvein, with tufts of hairs at vein axils, adaxially glabrous, veins 8–10, apex acuminate; middle petiolules 1.5–2 cm, glabrescent; lateral petiolules 5–8 mm, glabrescent; lateral leaflets obliquely rounded at base, margin remotely dentate. Inflorescence corymbiform-racemose, on leafy or rarely leafless branches, glabrous, 8–12-flowered; peduncles 8–16 mm. Pedicel 8–12 mm, slender, glabrous. Staminate flowers: sepals 5(or 6), ovate or lanceolate, ca. 6 mm; petals 5(or 6), obovate, ca. as long as sepals; stamens 10–16, nearly 2 × as long as petals; filaments glabrous; rudimentary ovary small, pilose; disk glabrous, extrastaminal. Fruit in short glabrous racemes, purplish or brownish; nutlets 6–7 mm, strongly convex; wing including nutlet 2–5.5 cm × ca. 7 mm, wings spreading erectly. Fl. Apr–May, fr. Sep.

• Mixed forests; 1000–2500 m. W Hubei, NW Hunan, Sichuan.

This is a rare, vulnerable species.

serratum Pampanini; *Crula henryi* (Pax) Nieuwland.

Trees to 10 m tall, dioecious. Branchlets slender; winter buds small, scales ovate, pubescent. Leaves deciduous; petiole 5–10 mm, pubescent; leaf blade elliptic or oblong-elliptic, 6–12

× 3–5 cm, papery, both surfaces pubescent especially on veins abaxially when young, then glabrescent with only tufts of hairs at vein axils abaxially, 3-foliolate, margin entire or remotely serrate apically, apex acuminate or cuneate. Inflorescence pendulous, racemose, to 7 cm, pubescent. Flowers subsessile or sessile, yellow-green. Sepals 4, ovate, ciliate along margin. Petals 4, white, deciduous before anthesis. Stamens 4, glabrous, rudimentary in pistillate flowers. Disk amphistaminal, small. Ovary glabrous, rudimentary in staminate flowers; style glabrous; stigmas revolute. Fruiting pedicel ca. 2 mm. Nutlets convex, oblong, ca. 1 cm; wing including nutlet ca. 2.5 cm × 5 mm, wings spreading at 90° or erectly. Fl. Apr, fr. Sep.

• Mixed forests; 500–1500 m. Anhui, Fujian, Gansu, Guizhou, Henan, Hubei, Hunan, Jiangsu, S Shaanxi, S Shanxi, Sichuan, Zhejiang.
99. *Acer negundo* Linnaeus, Sp. Pl. 2: 1056. 1753.

复叶枫 fu ye feng

Acer fauriei H. Léveillé & Vaniot.

Trees to 20 m tall, dioecious. Bark yellowish brown or gray-brown. Branchlets glabrous, those of present year green, older ones yellowish brown; winter buds small, scales 2(or 3) pairs. Leaves deciduous; leaf blade 10–25 cm, papery, pinnate; petiolules 5–7 cm, pubescent, glabrescent; leaflets 3–7(–9) per petiole; leaflet blades ovate or elliptic-lanceolate, 8–10 × 2–4

cm, base rounded or truncate, margin entire or with 3–5 teeth, apex acute. Pistillate inflorescence pendulous, racemose or compound racemose, axillary from leafless buds, 15–50-flowered. Staminate inflorescence usually a cluster of 4 flowers. Flowers 4-merous. Petals and disk absent. Stamens purplish, 4–6. Ovary glabrous. Samaras brownish yellow; nutlets convex, glabrous; wing including nutlet 3–3.5 cm × 8–10 mm, wings spreading acutely or nearly erectly. Fl. Apr, fr. Sep. $2n = 26$.

Widely cultivated and naturalized in China [native to North America].