

## PLATANACEAE

悬铃木科 xuan ling mu ke

Zhang Zhiyun (张志耘)<sup>1</sup>, Zhang Hongda (张宏达 Chang Hung-ta)<sup>2</sup>; Nicholas J. Turland<sup>3</sup>

Trees deciduous (rarely semi-evergreen), monoecious. Branches and leaves with branched or stellate tomentum; bark pale brown, gray, and/or white, smooth, exfoliating in plates. Terminal buds absent; lateral buds ovoid, slightly acute at apex, enclosed by a separate scale at base of petiole. Leaves alternate; stipules basally surrounding stem, deciduous; petiole long, usually enclosing axillary bud at base; leaf blade simple, large, usually palmately lobed and subpalmately veined, margin coarsely dentate. Flowering branchlets leafy only at base, pendulous at least in fruit; inflorescences 1–5(–12), globose-capitate, male and female ones homomorphic, borne on separate branchlets. Male flowers: sepals 3–8, triangular, pubescent; petals as many as sepals, oblanceolate; stamens 3–8; filaments short; anther connective enlarging into a peltate scale. Female flowers: carpels 3–8, free; ovary long ovoid, 1-locular; ovules 1 or 2, anatropous; style elongate, persistent and exerted from inflorescence. Infructescence a capitate or globose coenocarpium composed of numerous achenes. Achenes narrow and long obconical, 1-seeded, base usually with a tuft of villous hairs, apex with persistent style; style and hairs often exerted from infructescence. Seeds linear; endosperm thin; cotyledons heteromorphic.

One genus and 8–11 species: Central and North America, SW Asia, SE Europe, one species in SE Asia (Laos and N Vietnam); widely cultivated elsewhere; three species (introduced) in China.

Hoot et al. (Ann. Missouri Bot. Gard. 86: 1–32. 1999) treated Platanaceae and Proteaceae as well-supported sister taxa forming a less well supported clade with Nelumbonaceae.

Chang Hung-ta. 1979. Platanaceae. In: Chang Hung-ta, ed., Fl. Reipubl. Popularis Sin. 35(2): 118–121.

### 1. PLATANUS Linnaeus, Sp. Pl. 2: 999. 1753.

悬铃木属 xuan ling mu shu

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

All three species in China are cultivated, usually as street trees. However, it is possible that *Platanus kerrii* Gagnepain (Bull. Soc. Bot. France 86: 301. 1939), described from Laos and also recorded from several places in N Vietnam, may yet be found as a wild plant in China (in SW Guangxi or S Yunnan). In this species, the stipules are very small, the petiole base does not enclose the axillary bud, the leaf blade is long elliptic and pinnately veined, with an entire margin, and the fruiting branchlets each have 8–12 rather small infructescences.

- 1a. Fruiting branchlets with (2 or)3–5 infructescences; central leaf lobe longer than wide; stipules less than 1 cm; flowers 4-merous; basal hairs of achenes exerted from infructescence ..... 1. *P. orientalis*
- 1b. Fruiting branchlets with 1 or 2(or 3) infructescences; central leaf lobe not longer than wide; stipules 1–3 cm; flowers 4–6-merous; basal hairs of achenes not exerted from infructescence.
- 2a. Stipules 1–1.5 cm; leaf blade (3 or)5(or 7)-lobed; flowers usually 4-merous; fruiting branchlets with (1 or)2(or 3) infructescences ..... 2. *P. acerifolia*
- 2b. Stipules bugle-shaped, 2–3 cm; leaf blade 3(or 5)-lobed; flowers 4–6-merous; fruiting branchlets with 1(or 2) infructescences ..... 3. *P. occidentalis*

#### 1. *Platanus orientalis* Linnaeus, Sp. Pl. 2: 999. 1753.

净土树 jing tu shu

Trees deciduous, to 30 m tall. Young branchlets yellow-brown tomentose, old ones glabrous, becoming red-brown after drying, small lenticellate. Stipules less than 1 cm; petiole terete, 3–8 cm, tomentose; leaf blade broadly ovate, 9–18 × 8–16 cm, deeply (3 or)5- or 7-lobed, both surfaces gray-yellow pubescent at first, glabrate and then pubescent only along veins abaxially, principal veins 3 or 5, arising from base, base shallowly cordate or subtruncate; central lobe 7–9 × 4–6 cm, margin lobed; lateral lobes shorter, margin coarsely dentate. Flowers 4-merous. Male flowers: sepals short, small; stamens much longer than petals; filaments very short; anthers elongate. Female flowers: sepals

pubescent; petals oblanceolate; carpels 4; styles elongate, apex crispate. Fruiting branchlets with (2 or)3–5 infructescences. Infructescence capitate, 2–2.5 cm in diam. Achenes with persistent style spiniform, 3–4 mm; basal hairs yellow; both styles and hairs exerted from infructescence. Fl. Mar–May, fr. Jun–Oct.

Cultivated in China [native to SW Asia and SE Europe].

#### 2. *Platanus acerifolia* (Aiton) Willdenow, Sp. Pl. 1: 474. 1797.

法国梧桐 fa guo wu tong

*Platanus orientalis* Linnaeus var. *acerifolia* Aiton, Hort. Kew. 3: 364. 1789; *P. hybrida* Brotero.

Trees deciduous, to 30 m tall. Young branchlets densely

<sup>1</sup> Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences, 20 Nanxincun, Xiangshan, Beijing 100093, People's Republic of China.

<sup>2</sup> Life Sciences College, Zhongshan (Sunyatsen) University, Guangzhou 510275, People's Republic of China.

<sup>3</sup> Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

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gray-yellow tomentose, old ones red-brown, glabrous. Stipules 1–1.5 cm; petiole 3–10 cm, densely yellow-brown pubescent; leaf blade broadly ovate, 12–25 × 10–24 cm, (3 or)5(or 7)-lobed, gray-yellow pubescent on both surfaces when young, glabrate and then pubescent only at vein axils abaxially, principal veins 3(or 5), arising from base or lateral 2(or 4) from midvein above base, base subcordate or truncate; lobes entire or coarsely 1- or 2-dentate at margin; central lobe broadly triangular, as long as wide. Flowers usually 4-merous. Male flowers: sepals ovate, pubescent; petals oblong, ca. 2 × as long as sepals; stamens longer than petals; anther connective peltate, pubescent. Fruiting branchlets with (1 or)2(or 3) infructescences. Infructescence capitate, ca. 2.5 cm in diam. Achenes with persistent style spiniform, 2–3 mm; basal hairs absent or very short, not exerted from infructescence. Fl. Mar–May, fr. Jun–Oct.

Cultivated in C, NE, and S China [of cultivated origin in SW Asia or Europe].

This widely planted tree is either a hybrid between *Platanus occidentalis* and *P. orientalis* or a cultivar of *P. orientalis*; the origin has been much discussed but remains uncertain.

### 3. *Platanus occidentalis* Linnaeus, Sp. Pl. 2: 999. 1753.

悬铃木 xuan ling mu

Trees deciduous, to 40 m tall. Young branchlets yellow-brown tomentose. Stipules 2–3 cm, bugle-shaped, deciduous; petiole 4–7 cm, densely tomentose; leaf blade broadly ovate, 8–20 × 10–22 cm, 3(or 5)-lobed, gray-yellow tomentose on both surfaces at first, soon glabrate and then pubescent only along veins abaxially, principal veins 3, lateral 2 arising from midvein ca. 1 cm above base, base broadly cordate, truncate, or sub-cuneate; lobes shortly triangular, margin coarsely numerous dentate. Flowers 4–6-merous. Male flowers: sepals and petals short, small; filaments very short; anthers peltate, elongate; connective glabrous. Female flowers: long tomentose at base; sepals short, small; petals 4–5 × as long as sepals; carpels 4–6; styles elongate, longer than petals. Fruiting branchlets with 1(or 2) infructescences. Infructescence globose, ca. 3 cm in diam. Achenes obtuse at apex, with persistent style very short; basal hairs ca. 1/2 as long as achene, not exerted from infructescence. Fl. Mar–May, fr. Jun–Oct.

Cultivated in C and N China [native to North America].

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