

CASUARINACEAE

木麻黄科 mu ma huang ke

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Trees or shrubs evergreen, monoecious or dioecious. Ultimate branchlets jointed, with several short, basal articles and 1–numerous elongated articles, slender, ridged, often pubescent at least when young. Leaves small, toothlike, in whorls of 4 to ca. 20 (equal to number of ridges on branchlets); stipules absent. Inflorescences spikelike or headlike, with alternating whorls of toothlike bracts; within each bract a single flower, with 2 lateral scalelike bracteoles, persistent (rarely deciduous in male *Allocasuarina*); parts sometimes pubescent when young, mostly glabrous at maturity. Flowers unisexual, without pedicels. Male inflorescences spikes, terminal or lateral, terete, slender. Female inflorescences headlike, globose or ellipsoid, usually terminal on short, lateral branches. Male flowers: tepals 1 or 2, scalelike, deciduous, hooded; stamen 1; anthers 2-loculed, longitudinally dehiscent, basifixed. Female flowers: perianth none; carpels 2, fused; only anterior carpel fertile, posterior carpel usually \pm reduced or obsolete; ovules 2 (rarely 4), parietal, paired at base of carpel, chalazogamous; style short; stigmas 2, red, linear. Infructescences \pm woody, conelike, with dense whorls of fruit, with 2 bracteoles of each flower enlarged as valves, persistent. Samaras flat, (usually) winged at apex, initially enclosed by 2 bracteoles, which separate at maturity to release samara. Seed 1; cotyledons large; endosperm absent; embryo straight, often more than 1.

Four genera and 97 species: mainly in Australia, extending to SE Asia, Malesia, Pacific Islands; commonly introduced and occasionally naturalized elsewhere; one genus and three species (all introduced) in China.

In addition, five species of the Australian endemic genus *Allocasuarina* L. A. S. Johnson are said to be occasionally introduced to China: *A. fraseriana* (Miquel) L. A. S. Johnson, *A. huegeliana* (Miquel) L. A. S. Johnson, *A. nana* (Sieber ex Sprengel) L. A. S. Johnson, *A. verticillata* (Lamarck) L. A. S. Johnson (formerly *Casuarina stricta* Aiton), and *A. trichodon* (Miquel) L. A. S. Johnson. *Allocasuarina* differs from *Casuarina* as follows: leaves 4–14 per whorl on branchlets; cone bracteoles thickly woody, mostly extending only slightly beyond cone body, mostly with a separate angular or divided abaxial protuberance; mature samaras red-brown to black, shiny. However, no specimens have been seen to confirm these occurrences; some may be misidentifications, e.g., *C. equisetifolia* has been misidentified at times as *A. huegeliana* in Taiwan.

Chen Te-chao. 1982. Casuarinaceae. In: Tseng Yung-chien, ed., Fl. Reipubl. Popularis Sin. 20(1): 1–5.

1. CASUARINA Linnaeus, Amoen. Acad. 4: 123, 143. 1759.

木麻黄属 mu ma huang shu

Trees. Leaves (5 or)6–17 per whorl. Infructescence (“cone”) bracteoles never greatly thickened, without an abaxial protuberance. Samara body pale yellow-brown or grayish, dull, glabrous.

Seventeen species: nearly throughout range of family; three species (all introduced) in China.

The species hybridize freely when cultivated together; hybrids between *Casuarina equisetifolia* and *C. glauca*, and between *C. cunninghamiana* and *C. glauca* are known from Guangdong, Hainan, and Taiwan.

Casuarina junghuhniana Miquel (*C. montana* Junghuhn ex Miquel) has been reported as being occasionally cultivated but no specimens have been seen that confirm this.

1a. Toothlike leaves 12–17 per whorl, strongly recurved at apices of young branchlets; branchlets 0.9–1.4 mm in diam., with broad, slightly rounded, longitudinal ridges; bark pale yellow adaxially 3. *C. glauca*

1b. Toothlike leaves 6–10 per whorl, erect or slightly spreading, but not reflexed at apices of young branchlets;

branchlets less than 1 mm in diam., with narrow, prominently angular, longitudinal ridges; bark red adaxially.

2a. Toothlike leaves usually (6 or)7(or 8) per whorl, not marcescent; cone 12–25 mm; bark dark red adaxially

..... 1. *C. equisetifolia*

2b. Toothlike leaves usually 8(–10) per whorl, marcescent; cone 7–12 mm; bark pale red adaxially 2. *C. cunninghamiana*

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1. *Casuarina equisetifolia* Linnaeus, *Amoen. Acad.* 4: 143. 1759.

木麻黄 mu ma huang

Trees monoecious, to 35 m tall, not suckering from roots. Trunk straight, to 70 cm d.b.h.; crown conical; bark scaly, adaxially red-brown on old trees. Ultimate branchlets usually pendulous, grayish green, 10–27 cm × 0.8–0.9 mm; articles (2.5–)4–9 mm. Leaves erect and appressed to branchlets, (6 or)7(or 8) per whorl, lanceolate or triangular, 1–3 mm. Male inflorescences 1–4 cm. Cones ellipsoid, 1.2–2.5 cm, grayish green or yellowish brown tomentose when young, glabrous at maturity, base and apex truncate to obtuse; apex of bracteoles slightly obtuse or acute. Samaras 5–8 mm including wing. Fl. Apr–May, fr. Jul–Oct. $2n = 18, 20^*$. Cultivated in Fujian, Guangdong, Guangxi, Taiwan, Yunnan, Zhejiang [native to Indonesia, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam; Australia, Pacific Islands].

Only subsp. *equisetifolia* is cultivated in China. Used for timber and medicine, also for erosion control on coastal sands.

2. *Casuarina cunninghamiana* Miquel, *Rev. Crit. Casuar.* 56. 1848.

细枝木麻黄 xi zhi mu ma huang

Trees dioecious, to 25(–35) m tall, often with suckers from roots. Trunk straight, to ca. 40 cm d.b.h.; crown pyramidal; bark finely fissured and scaly, gray, adaxially pale red. Ultimate branchlets spreading to slightly pendulous, dark green, grayish green, or glaucous-green when dry, 15–38 cm × 0.5–0.7 mm; articles 4–5 mm. Leaves erect, 8(–10) per whorl, narrowly lanceolate. Male spikes 1.2–2(–4) cm. Cones ellipsoid or subglobose, 7–12 mm, truncate at both ends; apex of bracteoles acute. Samaras 3–5 mm including wing. Fl. Apr, fr. Jun–Sep. $2n = 18^*$.

Cultivated in Fujian, Guangdong, Guangxi, Hainan, Taiwan, Zhejiang [native to Australia].

Only subsp. *cunninghamiana* is cultivated in China. Used for timber.

3. *Casuarina glauca* Sieber ex Sprengel, *Syst. Veg.* 3: 803. 1826.

粗枝木麻黄 cu zhi mu ma huang

Trees dioecious, to 20 m tall. Trunk to 35 cm d.b.h.; bark grayish brown or grayish black, finely fissured and scaly, pale yellow adaxially. Ultimate branchlets ascending to pendulous, grayish green or glaucous green, rather long, to 1 m, 0.9–1.4 mm in diam.; articles 1–1.8 cm, slightly swollen at apex. Leaves erect but those of new shoots strongly recurved, 12–17 per whorl, narrowly lanceolate. Male inflorescences 1–3 cm. Cones broadly ellipsoid to subglobose, 1.2–2 cm, truncate at both ends; apex of bracteoles broadly acute to obtuse. Samaras 4–6 mm including wing. Fl. Mar–Apr, fr. Jun–Sep. $2n = 18^*$.

Cultivated in Fujian, Guangdong, Hainan, Taiwan, Zhejiang [native to Australia].

Used for timber.

