

2. TYPHA Linnaeus, Sp. Pl. 2: 971. 1753.

香蒲属 *xiang pu shu*

Herbs, perennial, in marshes or aquatic, with creeping rhizomes. Leaves alternate, erect, distichous, linear, usually spongy, margin entire, sheathed at base. Flowers unisexual, minute, numerous, densely crowded in a cylindric spike with lower part female and upper part male; bracts leaflike. Perianth absent. Male flowers consisting of 1–3 stamens usually connate at base of filaments, surrounded by hairs; anthers 2-locous, basifixed, longitudinally dehiscent; filaments short; pollen grains in monads or tetrads. Female flowers: ovary 1-loculed, on a long capillary stalk with many fine hairs or bracteoles at base; styles capillary; stigmas broadened or spatulate; ovule 1; sterile ovary without style. Fruit minute, falling off together with stalk.

About 16 species: tropical and temperate regions; 12 species (three endemic) in China.

- 1a. Female flowers without bracteoles; female part of spikes connected with or separated from male part.
 - 2a. Female part of spikes not separated from male part.
 - 3a. Stigmas spatulate; hairs on stalk of female flowers ca. as long as style 1. *T. orientalis*
 - 3b. Stigmas lanceolate; hairs on stalk of female flowers shorter than style 2. *T. latifolia*
 - 2b. Female part of spikes separated from male part.
 - 4a. Stigmas linear, slender; axis of male part in spikes with brown hairs, hairs furcate or not 3. *T. przewalskii*
 - 4b. Stigmas spatulate; axis of male part in spikes with whitish or yellowish brown hairs, hairs not furcate.
 - 5a. Stems 1.5–2 m tall; hairs on stalk of female flowers shorter than style 4. *T. changbaiensis*
 - 5b. Stems 0.8–1.3 m tall; hairs on stalk of female flowers ca. as long as style 5. *T. laxmannii*
- 1b. Female flowers with bracteoles; female part of spikes separated from male part.
 - 6a. Stems less than 0.8 m, with sheathlike leaves at base.
 - 7a. Axis of male part in spikes with hairs; leaves 2–4 mm wide 12. *T. lugdunensis*
 - 7b. Axis of male part in spikes without hairs; leaves 1–2 mm wide.
 - 8a. Hairs on stalk of female flowers swelling at tip, shorter than style 10. *T. minima*
 - 8b. Hairs on stalk of female flowers not swelling at tip, ca. as long as style 11. *T. pallida*
 - 6b. Stems more than 1 m, without sheathlike leaves.
 - 9a. Bracteoles spatulate or subtriangular; stigmas lanceolate (to linear) 9. *T. davidiana*
 - 9b. Bracteoles not spatulate; stigmas linear to lanceolate.
 - 10a. Leaves abaxially carinate, transverse section triangular; bracteoles linear 6. *T. elephantina*
 - 10b. Leaves abaxially convex, transverse section semicircular; bracteoles filiform to triangular.
 - 11a. Anthers ca. 2 mm; stigmas ca. as broad as styles 7. *T. angustifolia*
 - 11b. Anthers ca. 1.4 mm; stigmas broader than styles 8. *T. domingensis*

1. *Typha orientalis* C. Presl, Abh. Königl. Böhm. Ges. Wiss., ser. 5, 6: 599; Epimel. Bot. 239. 1851.

东方香蒲 *dong fang xiang pu*

Typha latifolia Linnaeus var. *orientalis* (C. Presl) Rohrbach; *T. orientalis* var. *brunnea* Skvortsov; *T. shuttleworthii* Lehmann (1846), not W. D. J. Koch & Sonder (1844); *T. shuttleworthii* subsp. *orientalis* (C. Presl) Graebner; *T. shuttleworthii* var. *orientalis* (C. Presl) Rohrbach.

Stems 1.3–2 m tall, stout. Leaves 40–70 cm × 4–9 mm, abaxially convex, transverse section semicircular. Male part of spikes 2.7–9 cm, with 1–3 deciduous bracts at base or occasionally in middle portion; female part of spikes not separated from male part, 4.5–15 cm, with 1 deciduous bract at base. Male flowers: stamens 3, rarely 2 or 4; anthers ca. 3 mm. Female flowers without bracteoles; ovary fusiform to lanceolate; stalk ca. 2.5 mm, slender; styles 1.2–2 mm; stigmas spatulate, 0.5–0.8 mm; hairs on stalk ca. as long as style. Fruit elliptic. Fl. and fr. May–Aug. $2n = 60$.

Lakes, ponds, channels, swamps, slow-moving rivers. Anhui, Guangdong, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu,

Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Taiwan, Yunnan, Zhejiang [Japan, Korea, Mongolia, Myanmar, Philippines, Russia; Australia].

2. *Typha latifolia* Linnaeus, Sp. Pl. 2: 971. 1753.

宽叶香蒲 *kuan ye xiang pu*

?*Typha latifolia* f. *remota* Skvortsov.

Stems 1–2.5 m tall, stout. Leaves 45–95 cm × 5–15 mm, abaxially convex, transverse section semilunate. Male part of spikes 3.5–12 cm, with 1–3 deciduous bracts at base or occasionally in middle portion; female part of spikes not separated from male part, 5–23 cm. Male flowers: stamens usually 2; anthers ca. 3 mm. Female flowers without bracteoles; ovary lanceolate; stalk ca. 4 mm, slender; styles 2.5–3 mm; stigmas lanceolate, 1–1.2 mm; hairs on stalk shorter than style. Fruit lanceolate. Fl. and fr. May–Aug. $2n = 30$.

Lakes, ponds, channels, swamps, slow-moving rivers. Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Shaanxi, Sichuan, Xinjiang, Xizang, Yunnan, Zhejiang [Afghanistan, Japan, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; Africa, SW Asia, Australia, Europe, North and South America].

3. *Typha przewalskii* Skvortsov, Diagn. Pl. Nov. Mandshur. 1. 1943.

普香蒲 pu xiang pu

Stems 1.3–2.2 m tall, stout at base. Leaves 80–100 cm × 5–13 mm, abaxially convex, transverse section semilunate or rarely semicircular. Male part of spikes with 1 or 2 deciduous bracts, axis with brown hairs; female part of spikes separated from male part, 8–20 cm, ca. 2.5 cm in diam., with 1 bract at base. Female flowers without bracteoles; ovary obconic; stalk 3.5–4.5 mm, slender; styles 2–4 mm; stigmas linear, ca. 1 mm; hairs on stalk shorter than style. Fruit fusiform. Fl. and fr. Jun–Sep.

• Shallow rivers or swamps. Heilongjiang, Jilin, Liaoning.

4. *Typha changbaiensis* M. J. Wu & Y. T. Zhao, Bull. Bot. Res., Harbin 20: 251. 2000.

长白香蒲 chang bai xiang pu

Stems 1.5–2 m tall, stout. Leaves 80–100 cm × 6–10 mm, abaxially convex, transverse section semilunate. Male part of spikes 12–14 cm, axis with curved whitish hairs, usually with 1 bract at base and 1 bract near apex; bracts deciduous; female part of spikes 10–12 cm, ca. 1 cm in diam., separated from male part. Male flowers: stamens 2 or 3; anthers ca. 2 mm. Female flowers without bracteoles; ovary fusiform, ca. 0.2 mm; stalk ca. 0.8 mm, slender; stigmas yellowish brown, narrowly spoon-shaped, 0.4–0.5 mm; hairs on stalk shorter than style. Fl. and fr. Jun–Aug.

• S Jilin (Changbai Shan).

5. *Typha laxmannii* Lepechin, Nova Acta Acad. Sci. Imp. Petrop. Hist. Acad. 12: 84. 1801.

无苞香蒲 wu bao xiang pu

Stems 0.8–1.3 m tall, slender. Leaves 50–90 cm × 2–4 mm, abaxially convex, transverse section semicircular. Male part of spikes 6–14 cm, axis with whitish or yellowish brown hairs, with 1 or 2 deciduous bracts at base and in middle portion; female part of spikes distinctly separated from male part, 4–6 cm, with 1 deciduous bract. Male flowers: stamens 2 or 3; anthers ca. 1.5 mm. Female flowers without bracteoles; ovary lanceolate; stalk 2.5–3 mm, slender; styles 0.5–1 mm; stigmas spatulate, 0.6–0.9 mm; hairs on stalk ca. as long as style. Fruit elliptic. Fl. and fr. Jun–Sep. $2n = 30$.

Lakes, ponds, channels, swamps, shallow rivers. Gansu, Hebei, Heilongjiang, Henan, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang [Afghanistan, Japan, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

Typha laxmannii var. *mongolica* Kronfeld (Verh. K. K. Zool.-Bot. Ges. Wien 39: 169. 1889) was treated in Fl. Hebei. (3: 217. 1991).

6. *Typha elephantina* Roxburgh, Fl. Ind., ed. 1832, 3: 566. 1832.

象蒲 xiang pu

Stems 2–2.5 m tall, stout. Leaves 1.3–1.5 m × 8–10 mm, abaxially carinate, transverse section triangular. Male part of spikes with 1 bract at base, axis densely brown hairy; female

part of spikes distinctly separated from male part, 14–16 cm, 2–2.5 cm in diam. Female flowers with bracteoles; bracteoles whitish, linear; ovary lanceolate; stalk ca. 3.5 mm; styles 1–2 mm; stigmas lanceolate, ca. 1 mm; hairs on stalk shorter than style. Fl. and fr. Jun–Sep.

Swamps, riversides. Yunnan [India, Myanmar, Nepal, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; Africa].

7. *Typha angustifolia* Linnaeus, Sp. Pl. 2: 971. 1753.

水烛 shui zhu

Stems 1.5–3 m tall, stout. Leaves 52–120 cm × 4–9 mm, abaxially convex, transverse section semicircular. Male part of spikes ca. 8 cm, with 1–3 deciduous bracts; female part of spikes (5–)15–30 cm, separated from male part by an axis 2.5–7 cm. Male flowers: stamens 3, rarely 2 or 4; anthers ca. 2 mm. Female flowers with bracteoles; bracteoles filiform; ovary fusiform; stalk ca. 5 mm, slender; styles 1–1.5 mm; stigmas linear to lanceolate, 1.3–1.8 mm; hairs on stalk shorter than style. Fruit narrowly elliptic. Fl. and fr. Jun–Sep. $2n = 30$.

Shallow water of lakes, ponds, and rivers. ?Anhui, ?Fujian, Gansu, Guizhou, ?Hainan, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Nei Mongol, ?Qinghai, Shaanxi, Shandong, Taiwan, Xinjiang, Yunnan, ?Zhejiang [?Afghanistan, India, Indonesia, Japan, Kazakhstan, Kyrgyzstan, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Russia, Tajikistan, Thailand, Uzbekistan; SW Asia, Australia, Europe, North America].

8. *Typha domingensis* Persoon, Syn. Pl. 2: 532. 1807.

长苞香蒲 chang bao xiang pu

Typha angustata Bory & Chaubard; *T. angustifolia* Linnaeus subsp. *angustata* (Bory & Chaubard) Briquet; *T. angustifolia* var. *angustata* (Bory & Chaubard) Jordan.

Stems 0.7–2.5 m tall, stout. Leaves 40–150 cm × 3–8 mm, abaxially convex, transverse section semicircular. Male part of spikes 7–30 cm, with 1 or 2 bracts; bracts to ca. 32 cm, deciduous; female part of spikes 5–23 cm, distinctly separated from male part, with 1 bract at base, with sparse and curved hairs on axis. Male flowers: stamens 3, rarely 2; anthers ca. 1.4 mm. Female flowers with bracteoles; ovary lanceolate; stalk 3–6 mm, slender; styles 0.5–1.5 mm; stigmas linear to lanceolate, 0.8–1.5 mm, broader than styles; hairs on stalk shorter than style. Fruit fusiform. Fl. and fr. Jun–Aug.

Shallow water of lakes, ponds, rivers, and swamps, channels. ?Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Yunnan [India, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Russia, Sri Lanka, Tajikistan, Uzbekistan, Vietnam; Africa, SW Asia, Australia, Europe, North and South America].

9. *Typha davidiana* (Kronfeld) Handel-Mazzetti, Oesterr. Bot. Z. 87: 133. 1938.

达香蒲 da xiang pu

Typha martini Jordan var. *davidiana* Kronfeld, Verh. K. K. Zool.-Bot. Ges. Wien 39: 149. 1889; *T. laxmannii* Lepechin var. *davidiana* (Kronfeld) C. F. Fang.

Stems ca. 1 m tall. Leaves 60–70 cm × 3–5 mm, abaxially convex, transverse section semicircular. Male part of spikes 12–18 cm, with 1 deciduous bract, axis smooth; female part of spikes distinctly separated from male part, 4.5–11 cm, 1.5–2 cm in diam., with deciduous bract. Female flowers with bracteoles; bracteoles spatulate or subtriangular; ovary lanceolate; stalk 3–4 mm; styles short; stigmas linear to lanceolate, 1–1.2 mm; hairs on stalk ca. as long as style. Fruit lanceolate. Fl. and fr. May–Aug. $2n = 30^*$.

• Margins of lakes and rivers. ?Hebei, ?Henan, Jiangsu, Liaoning, Nei Mongol, Xinjiang, Zhejiang.

10. *Typha minima* Funck ex Hoppe, Bot. Taschenb. Anfänger Wiss. Apothekerkunst 5: 187. 1794.

小香蒲 xiao xiang pu

Rohrbachia minima (Funck ex Hoppe) Mavrodiev.

Stems 16–65 cm tall, slender. Leaves usually basal, sheathlike, often without blade or sometimes with blade, 15–40 cm × 1–2 mm, shorter than scape. Male part of spikes 3–8 cm, without hair on axis, with 1 deciduous bract at base; female part of spikes distinctly separated from male part, 1.6–4.5 cm, with bract at base. Male flowers: stamens 1, rarely 2 or 3; anthers ca. 1.5 mm. Female flowers with bracteoles; ovary fusiform; stalk ca. 4 mm, slender; styles ca. 0.5 mm; stigmas linear, ca. 0.5 mm; hairs on stalk swelling at tip, shorter than styles. Fruit elliptic. Fl. and fr. May–Aug.

Shallow water of ponds and rivers. Gansu, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang [Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; SW Asia, Europe].

11. *Typha pallida* Pobedimova, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 11: 17. 1949.

球序香蒲 qiu xu xiang pu

Stems 70–80 cm tall, slender. Leaves dimorphic; sheath-like leaves 4–12 cm; linear leaves 40–45 cm × 1–2 mm, abaxially convex, transverse section semicircular. Male part of spikes 4–5 cm, without hairs on axis, with 1 deciduous bract at base; female part of spikes separated from male part, 2.5–4.5 cm, with a deciduous bract at base. Male flowers: stamen 1; anthers ca. 1.5 mm. Female flowers with bracteoles; ovary elliptic; styles ca. 0.6 mm; stigmas linear, ca. 0.8 mm; hairs on stalk ca. as long as styles. Fruit elliptic. Fl. and fr. May–Sep.

Ponds, streams, swamps. Hebei, Nei Mongol, Xinjiang [C Asia].

Closely related to *Typha minima*, this species is treated as *T. minima* by Govaerts (2010. World Checklist of Typhaceae. The Board of Trustees of the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.kew.org/wcsp/> accessed 16 Feb 2010). Further work is needed to determine the relationships between these two taxa.

12. *Typha lugdunensis* P. Chabert, Bull. Soc. Hort. Prat. Dép. Rhône 1850: 149. 1850.

短序香蒲 duan xu xiang pu

Typha gracilis Jordan, Index Seminum [Grenoble] 1849:

24. 1849, not Rafinesque (1837), nor Reichenbach (1847).

Stems 45–70 cm tall, slender. Leaves dimorphic; sheath-like leaves basal, 4–9 cm; linear leaves 2–4, slightly longer than scape, 50–75 cm × 2–4 mm, abaxially convex, transverse section semicircular. Male part of spikes 3–6 cm, axis hairy, with 1 bract; female part of spikes separated from male part, 1.5–3 cm, 1–1.5 cm in diam. Male flowers: stamens 1; anthers ca. 1.2 mm. Female flowers with small, brown bracteoles; ovary fusiform to elliptic; stalk 2.5–4 mm; styles ca. 0.5 mm, slender; stigmas lanceolate, ca. 0.7 mm; hairs on stalk swelling at tip, shorter than style. Fruit elliptic. Fl. and fr. May–Aug.

Sides of channels, swamps, wetlands. Hebei, Nei Mongol, Shandong, Xinjiang [N and SW Asia, Europe].

