

6. TRICHOPHORUM Persoon, Syn. Pl. 1: 69. 1805, nom. cons.

针蔺属 zhen lin shu

Liang Songyun (梁松筠 Liang Song-jun); Gordon C. Tucker

Herbs, perennial. Culms tufted, naked but clothed at base with a few bladeless ligulate leaf sheaths. Leaf blade much reduced. Involucral bract 1, glumelike, suberect, apex mucronate or awned. Inflorescences reduced to a single terminal spikelet, rarely an anthela or capitate with a few spikelets. Spikelets ellipsoid. Glumes pale brown, spirally arranged, membranous, deciduous, all bearing a bisexual flower in axil. Flower bisexual or unisexual. Perianth bristles 6, filiform, silky, usually much elongated after anthesis and overtopping subtending glume. Stamens 2 or 3 or 6. Style base not distinct, slightly thickened, ± persistent. Nutlet obovoid, 3-sided or dorsiventrally compressed, smooth, apex slightly beaked.

About ten species: arctic and subarctic regions, alpine areas in temperate and tropical regions; six species (one endemic) in China.

- 1a. Perianth bristles absent; nutlet broadly obovoid or narrowly obovoid, ca. 0.9 mm wide; involucral bracts not awned.
 - 2a. Flower bisexual; nutlet oblong-obovoid, ca. 1.5 mm, 3-sided; stigmas 3 5. *T. pumilum*
 - 2b. Flower unisexual; nutlet broadly obovoid, ca. 2 mm, plano-convex; stigmas 2 6. *T. distigmaticum*
- 1b. Perianth bristles 6–9; nutlet ovoid or oblong, 0.6–0.7 mm wide; involucral bracts awned.
 - 3a. Inflorescences consisting of 2–4 spikelet clusters (sometimes reduced to a single terminal spikelet in *T. mattfeldianum*); stolons absent.
 - 4a. Culms 3-angled; stamens 6 1. *T. mattfeldianum*
 - 4b. Culms terete; stamens 3 2. *T. subcapitatum*
 - 3b. Inflorescences reduced to a single terminal spikelet; stolons present.
 - 5a. Glumes 0.9–3.5 mm, apex obtuse and not awned; perianth bristles 4–6, less than 1.5 × as long as nutlet, erect 3. *T. alpinum*
 - 5b. Glumes 4–4.5 mm, apex with a scabrous awn; perianth bristles 7–9, ca. 3 × as long as nutlet, curved 4. *T. schansiense*

1. *Trichophorum mattfeldianum* (Kükenthal) S. Yun Liang, Higher Pl. China 12: 270. 2009.

三棱针蔺 san leng zhen lin

Scirpus mattfeldianus Kükenthal, Repert. Spec. Nov. Regni Veg. 27: 108. 1929.

Roots slender, fibrous. Rhizomes short, woody. Culms densely tufted, 20–100 cm tall, 3-angled, rigid, smooth, clothed at base with 4–6 pale brown leaf sheaths. Apical leaves with mouth obliquely truncate; leaf blade pale green, setaceous or reduced to a mucro, 3–12 mm but apical one to 20 cm, margin scabrous. Involucral bracts lanceolate to oblong-ovate, glume-like, apex mucronate. Inflorescences consisting of 2–4 cincinni or reduced to a single terminal spikelet. Spikelets ellipsoid to oblong, 6–7 × 2–3 mm, several flowered. Glumes reddish brown to brown, laxly arranged, oblong-ovate, 3–4 mm, membranous, apex acute with a costa excurrent into a short mucro. Perianth bristles 6, longer than nutlet, apically sparsely antrorsely scabrous. Stamens 6; anthers linear, ca. 2 mm. Style slender; stigmas 3. Nutlet brown, oblong to oblong-obovoid, ca. 1.8 mm, 3-sided. Fl. and fr. Apr–May.

Wet places at forest margins; ca. 900 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Shanxi, Zhejiang [Vietnam].

2. *Trichophorum subcapitatum* (Thwaites & Hooker) D. A. Simpson, Kew Bull. 53: 227. 1998.

玉山针蔺 yu shan zhen lin

Scirpus subcapitatus Thwaites & Hooker, Enum. Pl. Zeyl. 351. 1864; *Baeothryon subcapitatum* (Thwaites & Hooker) Á.

Löve & D. Löve; *S. morrisonensis* Hayata; *S. subcapitatus* var. *morrisonensis* (Hayata) Ohwi.

Rhizomes short. Culms densely tufted, 20–90 cm tall, 0.7–1 mm thick, subterete, smooth except below inflorescences becoming 3-angled and scabrous on angles, clothed at base with 5 or 6 bladeless leaf sheaths. Leaf sheath brown to cinnamon, 5–18 cm, tightly surrounding base of culm, membranous, mouth obliquely truncate and with a hyaline margin; leaf blade of apical sheaths pale green, setaceous, 0.5–1.5 cm, margin scabrous. Involucral bracts glumelike, ovate to oblong, 3–7 mm, apex obtuse and with a ± long scabrous mucro. Inflorescence a terminal, umbelliform corymb, bearing 2–4(–6) spikelets. Spikelets ovoid to narrowly ovoid-oblong, 5–10 × ca. 2 mm, 5–10-flowered; lateral spikelets with a short peduncle; terminal spikelet sessile. Glumes straw-colored to brown, laxly arranged, oblong to lanceolate-oblong, 3.5–4.5 mm, membranous, margin hyaline, apex acute to obtuse and with a costa sometimes excurrent into a mucro. Perianth bristles 6, as long as nutlet, apically antrorsely scabrous. Stamens 3; filaments long; anthers linear, ca. 2 mm. Style ca. 3 mm; stigmas 3, filiform. Nutlet yellowish brown, oblong to ellipsoid, 2–3 mm, 3-sided, apex apiculate. Fl. and fr. Mar–Jun.

Wet places, thickets, damp ledges in mountain woods; 600–2300 m. Anhui, Chongqing (Nanchuan), Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Taiwan, Zhejiang [India, Indonesia, Japan, Malaysia, Papua New Guinea, Philippines, Sri Lanka, N Thailand, Vietnam].

3. *Trichophorum alpinum* (Linnaeus) Persoon, Syn. Pl. 1: 70. 1805.

鳞苞针蔺 lin bao zhen lin

Eriophorum alpinum Linnaeus, Sp. Pl. 1: 53. 1753; *E. hudsonianum* Michaux; *Scirpus hudsonianus* (Michaux) Fernald; *Trichophorum alpinum* var. *hudsonianum* (Michaux) Persoon.

Rhizomes creeping, branched. Culms densely tufted, 20–30 cm tall, 3-angled, slightly scabrous, clothed at base with bladeless leaf sheaths. Leaf blade of apical leaf ca. 1 cm × 0.3 mm. Involucral bracts glumelike, basalmost awned. Inflorescences reduced to a single terminal spikelet, oblong, 4.5–5 × ca. 3 mm, few flowered. Glumes yellowish brown, oblong to narrowly ovate, ca. 3.5 × 0.9 mm, 1-veined, apex obtuse. Perianth bristles 4–6, white, to 2 cm in fruit, flattened, smooth, silky, eventually ± crinkled. Stigmas 3. Nutlet dark brown, oblong-obovoid, 1–1.5 mm, apex shortly pointed. Fl. and fr. Jun–Aug.

Alpine tundra. Jilin [Japan, Korea, Russia; Europe, North America].

4. *Trichophorum schansiense* Handel-Mazzetti, Oesterr. Bot. Z. 85: 224. 1936.

太行山针蔺 tai hang shan zhen lin

Scirpus heleocharidioides F. T. Wang & Tang; *S. schansiensis* (Handel-Mazzetti) Tang & F. T. Wang.

Rhizomes creeping. Culms tufted, 5–40 cm tall, slender, nearly 4-angled, smooth, clothed at base with 2 or 3 leaf sheaths. Leaf sheaths to 2 cm, with a setaceous blade at apex. Involucral bract glumelike, as long as or shorter than spikelet, apex with a short scabrous awn. Inflorescences reduced to a single terminal spikelet, obovoid to oblong, 4–5 × ca. 2 mm, 5- or 6-flowered. Glumes straw-colored to reddish brown, laxly arranged, oblong, ovate, or oblong-ovate, 4–4.5 mm, apex with 3 costae excurrent into a short scabrous awn. Perianth bristles 7–9, white, ca. 3 × as long as nutlet, curved, smooth, apically antrorsely scabrous. Stamens 2 or 3; anthers linear; connective apex evident beyond anthers. Style slender; stigmas 3, filiform. Nutlet yellowish green, obovoid, ca. 1 mm, 3-sided, shiny. Fl. and fr. May.

• Rock crevices in valleys; below 700 m. Beijing (Fangshan), Shanxi (Yangcheng).

5. *Trichophorum pumilum* (Vahl) Schinz & Thellung, Vierteljahrsschr. Naturf. Ges. Zürich 6: 265. 1921.

矮针蔺 ai zhen lin

Scirpus pumilus Vahl, Enum. Pl. 2: 243. 1805; *Baeothryon pumilum* (Vahl) Á. Löve & D. Löve; *Isolepis pumila* (Vahl) Roemer & Schultes.

Rhizomes creeping, long, slender. Culms rather densely caespitose, 5–15 cm tall, slender, terete, grooved when dry. Leaves basal, semiterete, only apicalmost bearing a blade; leaf blade 0.7–1.6 cm, shorter than culm, very slender. Involucral bract glumelike, shorter than spikelet, apex mucronate. Inflores-

cences reduced to a single terminal spikelet, obovoid to ellipsoid, ca. 4.5 × 2.5 mm, few flowered. Glumes ovate to elliptic, ca. 2.5 mm, membranous, both surfaces yellowish brown, with 1 green vein, margin pale hyaline, apex obtuse; basal 2 glumes empty. Perianth bristles absent. Stamens 3; anthers linear-oblong; connective apex slightly evident beyond anthers. Style of medium length; stigmas 3. Nutlet blackish brown, obovoid, ca. 1.5 mm, 3-sided. Fl. and fr. May–Sep.

Stream margins in grasslands, moist places along valleys; 500–4700 m. Gansu, Hebei, Nei Mongol, Ningxia, NW Sichuan, Xinjiang, Xizang [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Uzbekistan; SW Asia, Europe, North America].

6. *Trichophorum distigmaticum* (Kükenthal) T. V. Egorova in Grubov, Rast. Tsentral. Azii 3: 14. 1967.

双柱头针蔺 shuang zhu tou zhen lin

Scirpus pumilus Vahl subsp. *distigmaticus* Kükenthal, Acta Horti Gothob. 5: 34. 1930; *Baeothryon distigmaticum* (Kükenthal) Y. C. Yang & M. Zhan; *S. distigmaticus* (Kükenthal) Tang & F. T. Wang.

Plants dioecious. Rhizomes creeping, long, slender. Culms 10–25 cm tall, slender, subterete, smooth. Leaf sheath brown, to 2.5 cm, longer than blade; leaf blade setaceous, to 1.8 cm but basal 2 or 3 bladeless. Inflorescences reduced to a single terminal spikelet, ovoid, ca. 5 × 2.5–3 mm, few flowered. Glumes straw-colored, ovate, ca. 3.5 mm, thinly membranous, shiny, margin sometimes basally white but apically brown, apex obtuse. Perianth bristles absent. Stamens 3, sterile on female flowers. Style long; stigmas 2. Nutlet black at maturity, broadly obovoid, ca. 2 mm, plano-convex. Fl. and fr. Jul–Sep.

Alpine grasslands, river margins; 2000–4600 m. Gansu, Ningxia, Qinghai, Shaanxi, Sichuan, NE Xizang, Yunnan [Africa, Australia, Europe].

