

13. BULBOSTYLIS Kunth, Enum. Pl. 2: 205. 1837, nom. cons., not Steven (1817), nor Candolle (1836).

球柱草属 qiu zhu cao shu

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

Herbs, annual [or perennial]. Culms tufted, very slender. Leaves with a leaf blade or rarely reduced to a bladeless sheath, mouth with lax white hairs; leaf blade filiform to linear, margin often involute. Involucral bracts leaflike or setaceous. Inflorescence a terminal simple or compound anthela or capitate, sometimes reduced to a single spikelet. Spikelets ovoid to ellipsoid, many flowered. Glumes spirally arranged or rarely distichous, herbaceous or membranous, deciduous, subtending a flower but basal 1 or 2 empty. Flowers bisexual. Perianth bristles absent. Stamens (1 or)2(or 3). Style filiform, base thickened, bulbous, and persistent in fruit; stigmas 3. Nutlet obovoid to obpyriform, 3-sided.

About 100 species: tropical to temperate regions worldwide with high concentration of species in tropical Africa and tropical America; three species in China.

- 1a. Spikelets 2–15, sessile in a capitate inflorescence; glumes brownish to yellowish green, apex with a recurved short awn 3. *B. barbata*
- 1b. Spikelet single, in a simple to compound anthela; glumes brownish to brown, apex mucronate.
 - 2a. Glumes glabrous, apex obtuse; nutlet irregularly punctulate 1. *B. densa*
 - 2b. Glumes pubescent, apex acute; nutlet undulate-corrugate 2. *B. puberula*

1. Bulbostylis densa (Wallich) Handel-Mazzetti, Vegetationsbilder 20(7): 16. 1930.

丝叶球柱草 si ye qiu zhu cao

Scirpus densus Wallich in Roxburgh, Fl. Ind. 1: 231. 1820; *Bulbostylis capillaris* (Linnaeus) Kunth ex C. B. Clarke var. *trifida* (Kunth) C. B. Clarke; *Isolepis densa* (Wallich) Schultes; *I. tenuissima* D. Don; *I. trifida* Kunth.

Rhizomes absent. Culms tufted, 7–35 cm tall, slender, smooth. Leaf sheath pale, membranous, mouth long pilose; leaf blade filiform, 5–10(–13) × ca. 0.6 mm, papery, abaxially sparsely pilose, margin entire and slightly revolute, apex acuminate. Involucral bracts 2 or 3, setaceous to glumelike, 0.8–1.5 cm, much shorter than inflorescence, apex acuminate. Inflorescence a simple or subcompound anthela, with 4–7 spikelets; rays 3–5, 2–5 cm. Spikelets solitary or clustered, oblong-ovoid to ovoid, 3–6 × ca. 1.5 mm, 5–18-flowered, base rounded, apex acute. Glumes brown, ovate to broadly ovate, 1.5–2 × 1–1.5 mm, membranous, 1–3-veined, base rounded, margin ciliate, apex obtuse to rarely acute; empty glumes yellowish green, apex sometimes mucronate. Stamens 2; anthers oblong-ovoid to ovoid, base cuneate, apex acute. Style filiform; stigmas 3. Nutlet grayish purple at maturity, obovoid, ca. 0.8 × 0.5–0.6 mm, 3-sided, inconspicuously undulate-corrugate and punctulate, apex contracted with a persistent depressed bulbous style base. Fl. and fr. Apr–Dec. 2n = 64.

Sandy wet places, waste slopes, trail margins, coniferous forests; 100–3200 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hebei, S Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shandong, Sichuan, Taiwan, E Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Indonesia, Japan, Kashmir, Myanmar, Nepal, Papua New Guinea, Philippines, Russia (Far East), Sri Lanka, Thailand, Vietnam; tropical Africa, Australia, Pacific islands].

2. Bulbostylis puberula Kunth, Enum. Pl. 2: 213. 1837.

毛鳞球柱草 mao lin qiu zhu cao

Scirpus puberulus Poirlet (1805), not Michaux (1803).

Rhizomes absent. Culms tufted, 10–30 cm tall, slender, smooth. Leaf sheath straw-colored to brownish, thinly membranous, pubescent; leaf blade capillary, 4–6 cm × 0.4–0.8 mm, abaxially pubescent, margin entire and slightly revolute, apex acuminate. Involucral bracts 2 or 3, setaceous, ca. 8 mm, base membranous, margin ciliate. Inflorescence a simple or compound anthela, with 1–3 or more spikelets, often congested to almost capitate, sometimes reduced to a single spikelet. Spikelets ovoid-oblong to ovoid, 3–6 × 1–2 mm, 7–21-flowered, base obtuse to rounded, apex acute. Glumes brownish to dark brown, ovate to broadly ovate, 1.5–2 × 1–1.5 mm, keeled, membranous, abaxially pubescent, margin ciliate, apex with a 1–3-veined yellowish green costa excurrent into a recurved mucro. Stamen 1; anther oblong, apex acute. Style filiform, base depressed globose; stigmas 3. Nutlet white to grayish yellow, obovoid, ca. 0.8 × 0.5–0.6 mm, 3-sided, apex contracted with a persistent depressed bulbous style base. Fl. and fr. Feb–Jun. 2n = 20.

Sandy areas. S Fujian, Guangdong, Hainan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam; tropical Africa, Indian Ocean islands, Madagascar].

3. Bulbostylis barbata (Rottbøll) C. B. Clarke in J. D. Hooker, Fl. Brit. India 6: 651. 1893.

球柱草 qiu zhu cao

Scirpus barbatus Rottbøll, Descr. Icon. Rar. Pl. 27. 1773; *Bulbostylis disticha* Ohwi & T. Koyama; *Isolepis barbata* (Rottbøll) R. Brown.

Rhizomes absent. Culms densely tufted, 0.6–3 cm tall, 0.5–0.8 mm thick, erect, smooth. Leaf sheath brownish, 0.5–2 cm, thinly membranous, glabrous, mouth white hyaline and with scattered long hairs; leaf blade filiform, 4–10 cm × 4–8

mm, abaxially glabrous or sometimes sparsely pilose, margin entire, apex acuminate. Involucral bracts 2 or 3, setaceous, 1–2.5 cm or \pm short, very slender, abaxially glabrous or with scattered hairs. Inflorescences terminal, capitate, 5–12 mm thick, with 3–15 sessile spikelets. Spikelets narrowly ovoid, 3–6.5 \times 1–1.5 mm, angular, 7–13-flowered, base obtuse to subrounded, apex acute. Glumes brownish to yellowish green turning eventually pale brownish, ovate to nearly broadly ovate, 1.5–2 \times 1–1.5 mm, keeled, membranous, apically occasionally pubescent, margin ciliolate, apex with a recurved short awn. Stamens 1(or 2); anther oblong, apex acute. Style filiform; stigmas 3. Nutlet pale brown to yellowish, obovoid-globose, ca. 0.8 \times 0.5–0.6 mm, 3-sided, obscurely tuberculate with transversely rectangular cells, apex rounded to emarginate; persistent style base depressed globose. Fl. and fr. Jun–Nov. $2n = 10$.

Sandy beaches, sometimes beside cultivated fields; 100–2000 m. Anhui, Fujian, Guangdong, Guangxi, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Nei Mongol, Shandong, Taiwan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Kashmir, Korea, Laos, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Africa, Atlantic Ocean islands, Australia, Indian Ocean islands].

This species is naturalized in North and South America.

