

23. RHYNCHOSPORA Vahl, Enum. Pl. 2: 229. 1805 [“*Rynchospora*”], nom. cons.

刺子莞属 ci zi guan shu

Liang Songyun (梁松筠 Liang Song-jun); David A. Simpson

Herbs, perennial or more rarely annual. Culms tufted, erect, 3-angled or terete. Leaves basal or cauline; sheath closed, with or without a ligule; leaf blade linear, flat or canaliculate. Involucral bracts leaflike, sheathing. Inflorescences paniculate, usually consisting of terminal and lateral anthelae, sometimes spicate or capitate. Spikelets sessile or pedunculate, narrowly ovoid, ovoid, or ellipsoid, slightly bilaterally compressed or terete. Glumes few to many, spirally imbricate or rarely distichous, 1-veined; basal 3 or 4 glumes shorter than apical ones and empty. Flowers bisexual or basal flower bisexual and apical one male or sterile. Perianth bristles 0–6(–13), antrorsely or retrorsely scabrous, rarely smooth. Stamens 2 or 3. Style slender; stigmas 2. Nutlet usually obovoid to ovoid, biconvex, with various ornamentations or more rarely smooth; persistent style base thickened, mostly conic or rarely lunate, spongy, base truncate or ± lobed.

About 350 species: cosmopolitan but particularly in tropics and subtropics of the New World; nine species in China.

- 1a. Inflorescences with 1 to several globose heads.
 - 2a. Inflorescence with 2–7 spicate heads 7. *R. malasica*
 - 2b. Inflorescence with 1 terminal head.
 - 3a. Nutlet obovoid; perianth bristles 1/3–1/2 as long as nutlet 8. *R. rubra*
 - 3b. Nutlet linear-oblong; perianth bristles longer than nutlet and persistent style base 9. *R. submarginata*
- 1b. Inflorescences paniculate, consisting of terminal and lateral open panicles.
 - 4a. Perianth bristles absent; persistent style base saddle-shaped, much depressed and much broader than high; nutlet 1.3–1.5 mm, coarsely transversely wrinkled; leaf blade setaceous 6. *R. gracillima*
 - 4b. Perianth bristles present; persistent style base compressed conic to almost subulate; nutlet 2–4 mm; leaf blade flat or canaliculate, not setaceous.
 - 5a. Leaf blade 9–17 mm wide; nutlet 3–4 mm, deeply channeled; style hardly divided 1. *R. corymbosa*
 - 5b. Leaf blade 0.5–4 mm wide; nutlet ca. 2 mm, not channeled; style 2-cleft.
 - 6a. Perianth bristles 9–13, retrorsely scabrous 2. *R. alba*
 - 6b. Perianth bristles less than 6, antrorsely or retrorsely scabrous.
 - 7a. Leaf blade 0.5–1 mm wide; perianth bristles retrorsely scabrous 3. *R. faberi*
 - 7b. Leaf blade 1.5–3 mm wide; perianth bristles antrorsely scabrous.
 - 8a. Spikelets 3–4.5 mm; perianth bristles shorter than nutlet and persistent style base 4. *R. rugosa*
 - 8b. Spikelets 7–9 mm; perianth bristles longer than nutlet and persistent style base 5. *R. chinensis*

1. *Rhynchospora corymbosa* (Linnaeus) Britton, Trans. New York Acad. Sci. 11: 84. 1892.

伞房刺子莞 san fang ci zi guan

Scirpus corymbosus Linnaeus, Cent. Pl. 2: 7. 1756;
Rhynchospora aurea Vahl.

Perennials. Rhizomes short. Culms erect, 60–140 cm tall, stout, 3-angled, with several nodes, smooth or scaberulose on angles. Leaves basal and cauline; sheath semirounded, 2–6 cm, membranous, ligulate at mouth; leaf blade broadly linear, 30–60 × 0.9–1.7 cm, flat, herbaceous to thinly leathery, margin and abaxial midvein scabrous, apex long acuminate. Involucral bracts 3–5, leaflike, shorter than inflorescence, base sheathing. Inflorescence a large compound panicle consisting of 2–5 distant corymbiform anthelae, 20–50 cm; anthelae compound, to 15 cm in diam., ± dense, diffuse, many branched; bractlets setaceous. Spikelets many, in clusters of 2–5, erect or obliquely patent, narrowly ovoid to fusiform, 7–10 mm; basal flower bisexual; apical 1 or 2 flowers male. Glumes 7 or 8, ovate to ovate-lanceolate, basal 4 and apicalmost empty. Perianth bristles 6, as long as nutlet, antrorsely scabrous. Stamens 3; filaments shorter than nutlet and style base; anthers linear; connective subulate. Style ca. 1.7 cm, base dilated; stigmas 2. Nutlet

brown, oblong-obovoid to obovoid, 3–4 mm, compressed, finely transversely wrinkled in middle part, coarsely undulate rugose toward margin; persistent style base long conic, ca. 5.5 mm, ± as broad as nutlet, compressed, conspicuously grooved on both sides, smooth or asperous. Fl. and fr. Mar–Dec. *2n* = 18.

Moist stream margins along valleys; 100–900 m. Guangdong, Guangxi, Hainan, Hunan, Taiwan, Yunnan [Bangladesh, India, Indonesia, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Central and South America, Indian Ocean islands, Madagascar, Pacific islands].

2. *Rhynchospora alba* (Linnaeus) Vahl, Enum. Pl. 2: 236. 1805.

白鳞刺子莞 bai lin ci zi guan

Schoenus albus Linnaeus, Sp. Pl. 1: 44. 1753.

Perennials. Rhizomes short, slender. Culms tufted, erect, 15–42(–50) cm tall, 0.5–0.8 mm thick, apically slightly scabrous. Leaves shorter than culm; sheath straw-colored brown, basal ones with a blade or bladeless; leaf blade filiform, 0.7–2 mm wide, papery, margin involute. Involucral bracts leaflike, basal ones with a sheath, apical ones sheathless. Inflorescences paniculate, consisting of terminal and lateral subcapitate anthe-

lae. Spikelets fascicled in a group of 2–7, sessile or shortly pedunculate, narrowly ovoid, 5–6 mm, 2-flowered. Glumes 5 or 6, at first white turning pale brown, ovate to ovate-lanceolate, membranous, keeled, apex mucronate. Perianth bristles 9–13, longer than nutlet, retrorsely scabrous, base sparsely hispid. Stamens 2; filaments as long as nutlet and style base; anthers linear. Style filiform, base dilated; stigmas 2, almost as long as style. Nutlet yellowish green to greenish brown, obovoid to oblong-obovoid, 1.5–2.5 mm, biconvex, ± smooth to obscurely wrinkled; persistent style base conic-subulate, 1/2–2/3 as long as nutlet. Fl. and fr. Aug. $2n = 26$.

Swamps, wet places; ca. 900 m. Jilin, Taiwan [Japan, Kazakhstan, Korea, Russia; SW Asia, Caribbean (Puerto Rico), Europe, North America].

3. *Rhynchospora faberi* C. B. Clarke, J. Linn. Soc., Bot. 36: 259. 1903.

细叶刺子莞 xi ye ci zi guan

Perennials. Rhizomes very short, with dense and slender fibrous roots. Culms tufted, erect, 20–40(–60) cm tall, 0.5–1 mm thick, 3-angled, basally clothed with pale yellowish bladeless sheaths, apically sometimes slightly scabrous. Leaves basal and a few cauline, shorter than culm; leaf blade filiform, 0.5–1 mm wide, 3-angled, sometimes slightly scabrous, apex finely acuminate. Involucral bracts leaflike or setaceous, sheathing. Inflorescences paniculate, consisting of a terminal and 3 or 4 lateral corymbiform anthelae; anthelae small, very distant, with 2–5 spikelets. Spikelets erect, dark brown, narrowly ovoid, ca. 3.5 mm, base subtruncate, apex acuminate. Glumes 5 or 6, ovate to elliptic-ovate, 1- or 2-flowered; basal 3 or 4 glumes narrowly ovate, empty. Perianth bristles 6, slightly longer than nutlet, retrorsely scabrous. Stamen 1; filament as long as nutlet and style base. Style slender; stigmas 2. Nutlet brown to pale reddish brown, broadly obovoid to obovoid-globose, 1.5–2 mm, biconvex, finely transversely wrinkled with longitudinally oblong epidermal cells; persistent style base narrowly conic, 1/3–2/3 as long as nutlet. Fl. and fr. Aug–Oct.

Swamps, stream margins; ca. 400 m. Fujian, Guangdong, Guangxi, Hunan, Jiangsu, Jiangxi, Shandong, Zhejiang [Japan, Korea, Russia (Far East)].

4. *Rhynchospora rugosa* (Vahl) Gale subsp. ***brownii*** (Roemer & Schultes) T. Koyama in H. Hara, Stearn & L. H. J. Williams, Enum. Fl. Pl. Nepal 1: 118. 1978.

白喙刺子莞 bai hui ci zi guan

Rhynchospora brownii Roemer & Schultes, Syst. Veg. 2: 86. 1817; *R. glauca* Vahl var. *condensata* Kükenthal; *R. rugosa* var. *condensata* (Kükenthal) T. Koyama.

Perennials. Rhizomes very short. Culms tufted, erect, 30–55(–90) cm tall, slender, 3-angled, smooth but apically usually scabrous. Leaves basal and a few cauline and distant, shorter than culm; sheath brown, closed, 2.6–6 cm, glabrous, with very short ligule at mouth; leaf blade narrowly linear, 1.5–3 mm wide, flat or canaliculate, margin and abaxial midvein scabrous, apex long acuminate. Involucral bracts leaflike, basal ones sheathing, apicalmost sheathless. Inflorescences panicu-

late, narrow, consisting of 3 or 4 dense to ± lax corymbiform anthelae; lateral peduncles solitary or 2 together, compressed, often long exerted from sheaths; rays very unequal, erect; raylets setaceous. Spikelets dark brown, ellipsoid to subovoid, 3–4.5 mm, 3- or 4-flowered, base ± obtuse, apex acute. Glumes 7 or 8, elliptic-ovate, ovate, or broadly ovate; basal 3 or 4 glumes empty. Perianth bristles 6, slightly shorter than nutlet, unequal, antrorsely scabrous. Stamens (1–)3; filaments longer than nutlet and style base. Ovary obovoid; style filiform; stigmas 2, as long as style. Nutlet pale rust-colored, broadly ellipsoid-obovoid, ca. 1.7 mm, biconvex, finely transversely wrinkled with longitudinal epidermal cell; persistent style base broadly conic, shorter than nutlet. Fl. and fr. Jun–Oct. $2n = 36$.

Swamps, moist river margins; 1000–2400 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Indonesia, Japan, Malaysia, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Europe, Indian Ocean islands, Madagascar, Pacific islands].

Rhynchospora rugosa subsp. *rugosa* occurs in tropical America and South America.

5. *Rhynchospora chinensis* Nees & Meyen ex Nees, Nov. Actorum Acad. Caes. Leop.–Carol. Nat. Cur. 19(Suppl. 1): 108. 1843.

华刺子莞 hua ci zi guan

Rhynchospora glauca Vahl var. *chinensis* (Nees & Meyen ex Nees) C. B. Clarke; *R. japonica* Makino; *R. longisetigera* Hayata.

Perennials. Rhizomes very short. Culms tufted, erect, 25–60(–125) cm tall, slender, 3-angled, rigid, basally clothed with 1 or 2 bladeless sheaths, apically scabrous. Leaves basal and cauline, shorter than inflorescence; sheath 5–9 cm; ligule rust-colored brown, short, membranous; leaf blade narrowly linear, 1.5–2.5 mm wide, margin scabrous, apex acuminate. Involucral bracts leaflike, longer than inflorescence, basal ones sheathing, apicalmost one shortly sheathing or sheathless. Inflorescences paniculate, consisting of 3–5 corymbiform anthelae, mostly binate, suberect; peduncle exerted, subclaxly bearing 2–9 clusters of spikelets. Spikelets brown, narrowly ovoid, 7–8 mm, 2–5-flowered, base ± obtuse, apex acute. Glumes 5–8, brown to yellowish brown, elliptic-ovate to lanceolate-elliptic; basal 2 or 3 glumes empty; apical glumes broadly ovate to lanceolate-elliptic, membranous, 1-costate, apex mucronate to acuminate. Perianth bristles 6, antrorsely scabrous. Stamens 3; filaments slightly longer than nutlet and style base; anthers linear. Ovary obovoid; style filiform, base dilated; stigmas 2, shorter than style. Nutlet dark reddish brown, broadly ellipsoid-obovoid, 2–3.7 mm, biconvex, finely transversely wrinkled with longitudinally oblong epidermal cell; persistent style base narrowly conic, slightly shorter than or equaling nutlet. Fl. and fr. May–Oct.

Swamps, moist places, wet grasslands; 100–1400 m. Anhui, Fujian, Guangdong, Guangxi, Hainan, Hubei, Jiangsu, Jiangxi, Shandong [Japan, Myanmar, Sri Lanka, Thailand, Vietnam; Indian Ocean islands, Madagascar].

6. *Rhynchospora gracillima* Thwaites, Enum. Pl. Zeyl. 435.

1864.

柔弱刺子莞 rou ruo ci zi guan

Rhynchospora kamphoeveneri Boeckeler.

Annuals or short-lived perennials. Culms densely tufted, 20–60 cm tall, filiform, 3-angled, smooth. Leaves shorter than culm; leaf blade setaceous, 0.5–1 mm wide, canaliculate, apex scabrous. Involucral bracts setaceous, sheathing. Inflorescences laxly paniculate, consisting of 1–3 corymbiform anthelae to 4 cm; terminal anthela longer than lateral ones, simple or sub-compound; lateral anthelae simple, with peduncles exerted from sheaths; rays capillary, 2–4 cm, often upcurved, smooth, subtended by setaceous bractlets. Spikelets solitary, narrowly ovoid, 3- or 4-flowered, apex acute; peduncle long. Glumes 7 or 8, pale rust-colored with purplish lines, spirally imbricate, broadly ovate, membranous, muticous. Perianth bristles absent. Stamens 2; anthers 1.5–2.3 mm. Style ca. 2.3 mm, base much depressed, saddle-shaped, 2-lobed, and almost as broad as nutlet, apex 2-cleft to middle. Nutlet grayish white, shortly stipitate, broadly obovoid, 1.3–1.5 × 1.3–1.5 mm, biconvex, deeply transversely wavy ridged, with longitudinally linear epidermal cells, apex truncate. Fl. and fr. Sep–Oct.

Moist places, grassy slopes, forests; 900–1000 m. Fujian, Hong Kong [India, Indonesia, Papua New Guinea, Sri Lanka, Thailand; tropical Africa, NE Australia, Indian Ocean islands, Madagascar].

No specimens of *Rhynchospora gracillima* from China have been seen by the present authors. The plants from China would be *R. gracillima* subsp. *gracillima*; another subspecies occurs in tropical Africa and Madagascar.

7. *Rhynchospora malasica* C. B. Clarke in J. D. Hooker, Fl. Brit. India 6: 670. 1893.

日本刺子莞 ri ben ci zi guan

Rhynchospora nipponica Makino.

Perennials. Rhizomes short, creeping. Culms erect, simple, 60–100 cm tall, rigid, with several nodes, smooth, basally obtusely 3-angled and clothed with dusky brown bladeless sheaths, apically acutely 3-angled. Leaves longer than culm; sheath elongated, tightly surrounding culm; ligule rust-colored brown, short, membranous; leaf blade broadly linear, 5–9 mm wide, flattish, apex long acuminate to acute. Involucral bracts spreading, 7–20 cm, much longer than inflorescence, sheathless. Inflorescences spicate, 3–20 cm, with 2–7 heads, basally interrupted, apically subcontiguous; heads sessile, globose, 1–1.5 cm in diam. Spikelets narrowly ovoid, 6–7 mm, weakly laterally compressed, 1-flowered, base contracted, apex acuminate. Glumes 5 or 6; basal 3 or 4 grayish brown, ovate, much smaller than others, membranous, 1-veined, apex acute; apical 2 glumes lanceolate-ovate. Perianth bristles 6, filiform, 3.5–4.5 mm, ca. 2 × as long as nutlet, flexuose, smooth. Stamens 3; anthers ca. 2 mm. Style slender; stigmas 2. Nutlet dark brown, obovoid to broadly obovoid, 2–2.3 mm, biconvex, indistinctly transversely wrinkled, shiny, base attenuate; persistent style base narrowly conic-subulate, 4–5 mm, glabrous. Fl. and fr. Sep–Oct.

Swamps, rarely in shallow water. Guangdong, Taiwan [Indonesia, Japan, Korea, Malaysia].

8. *Rhynchospora rubra* (Loureiro) Makino, Bot. Mag. (Tokyo) 17: 180. 1903.

刺子莞 ci zi guan

Schoenus ruber Loureiro, Fl. Cochinch. 1: 41. 1790; *Morisia wallichii* Nees; *Rhynchospora wallichii* (Nees) Kunth.

Annuals or short-lived perennials. Rhizome short. Culms tufted, 30–65 cm tall, 0.8–2 mm thick, terete, smooth. Leaves shorter than culm; sheath brownish straw-colored, 1–7 cm; leaf blade narrowly linear, 1.5–3.5 mm wide, papery, slightly scabrous, apex acuminate. Involucral bracts 4–10, stiffly spreading, leaflike, 1–5(–8.5) cm, longer than inflorescence, unequal, densely ciliate at dilated base, sheathless. Inflorescence a single terminal head, brown to orangish brown, globose, 1–1.8 cm in diam., with many spikelets. Spikelets narrowly ovoid, 6–8 mm, shiny, 2–4-flowered. Glumes 7 or 8, brown, ovate-lanceolate to elliptic-ovate, thinly papery, keeled, vein 1, apex obtuse to acute; basal glumes each with a female flower; apical 1 or 2 glumes each with a male flower. Perianth bristles 4–6, unequal, 1/3–1/2 as long as nutlet, antrorsely scabrous. Stamens 2 or 3; filaments shorter to longer than subtending glume; anthers linear; connective evident. Style filiform; stigmas 2 or sometimes undivided, very short. Nutlet brown when mature, obovoid, 1.5–1.8 mm, biconvex, edges subacute with apical half hispid-serrulate, sides sparsely hispid-scabrous mainly on apical half, obscurely spotted with minute isodiametric epidermal cells; persistent style base conic, 1/5–1/4 as long as nutlet, base abruptly widened. Fl. and fr. May–Nov.

Road margins, grassy slopes, wet places; 100–1400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Taiwan, S Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Laos, Malaysia, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Indian Ocean islands, Madagascar, Pacific islands].

Plants from China would be *Rhynchospora rubra* subsp. *rubra*; other subspecies occur in Africa and Madagascar.

9. *Rhynchospora submarginata* Kükenthal, Bot. Jahrb. Syst. 74: 498. 1949.

类缘刺子莞 lei yuan ci zi guan

Rhynchospora marginata C. B. Clarke (1908), not (Liebmann) Steudel (1855).

Annuals. Roots fibrous. Culms tufted, erect, 10–60 cm tall, slender, 3-angled, smooth. Leaves basal and 1 or 2 cauline in lower 1/3 of culm, 1/4–3/4 as long as culm; leaf blade linear, 2–2.5 mm wide, glabrous or pubescent, margin slightly involute, apex acuminate. Involucral bracts 3–6, leaflike, to 15 cm, base dilated and densely ciliate, apically slightly involute, sheathless, apex acuminate. Inflorescence a single terminal head, 1.2–2 cm in diam. Spikelets narrowly ovoid, 5–6 mm, shiny, 2-flowered. Glumes 6 or 7, rust-colored, ovate-lanceolate to elliptic-lanceolate; basal 3 or 4 empty, ± smaller; middle glumes ca. 4 mm, each with 1 female flower; apical 2 or 3 glumes each with a male flower. Perianth bristles 6, longer than nutlet and style base, antrorsely scabrous. Stamens 2 or 3; anthers linear, ca. 2 mm; connective slightly evident, reddish,

Fl. China 23: 253–256. 2010.

pubescent. Nutlet blackish, linear-oblong, ca. 3.5 mm, sub-bi-convex, whitish setulose to almost glabrous; persistent style base pale brown, ca. 1/2 as long as nutlet. Fl. and fr. Jun–Oct.

Sandy grasslands, paddy fields. Hainan [India, Indonesia, Malaysia, Papua New Guinea, Thailand, Vietnam; N Australia].

