

5. ERIOPHORUM Linnaeus, Sp. Pl. 1: 52. 1753.

羊胡子草属 yang hu zi cao shu

Liang Songyun (梁松筠 Liang Song-jun); Gordon C. Tucker, David A. Simpson

Erioscirpus Palla.

Herbs, perennial. Rhizomes creeping. Culms tufted or nearly scattered, obtusely 3-angled, clothed at base with bladeless leaf sheaths. Leaves basal and cauline; leaf blade of basal leaves slender, elongate, flat or 3-angled; cauline leaves usually reduced to a sheath. Involucral bracts spathe-like or glumelike, rarely leaflike. Inflorescence a terminal simple or compound anthela or reduced to a single spikelet. Spikelets with few to many spirally arranged deciduous glumes. Glumes each subtending a bisexual flower. Perianth bristles 10–30, white or brownish red, elongating extremely after anthesis, smooth, silky. Stamens 3. Style base not distinct, not or slightly thickened; stigmas 3. Nutlet obovoid to oblong, 3-sided, smooth, apex beaked.

About 25 species: mostly in cool temperate, alpine, and arctic regions of N Hemisphere; seven species (one endemic) in China.

Eriophorum japonicum, recognized by Tang and F. T. Wang (Fl. Reipubl. Popularis Sin. 11: 36. 1961), is a synonym of *Scirpus maximowiczii* in this treatment (see p. 174).

- 1a. Spikelets solitary, terminal; involucral bracts glumelike.
 - 2a. Perianth bristles pale reddish brown to reddish; nutlet spinulate on apical margin 6. *E. russeolum*
 - 2b. Perianth bristles white or pure white; nutlet smooth.
 - 3a. Culms tufted; perianth bristles white; nutlet obovoid; anthers ca. 2 mm 5. *E. vaginatum*
 - 3b. Culms scattered; perianth bristles pure white; nutlet oblong; anthers ca. 1 mm 7. *E. scheuchzeri*
- 1b. Spikelets many, arranged in a compound or single anthela; involucral bracts leaflike or spathe-like.
 - 4a. Spikelets arranged in a compound anthela; involucral bracts leaflike.
 - 5a. Spikelets many, densely congested capitate; glumes reddish brown with red lines, oblong 1. *E. transiens*
 - 5b. Spikelets solitary or a cluster of 2 or 3; glumes brown, ovate-lanceolate 2. *E. comosum*
 - 4b. Spikelets arranged in a simple anthela; involucral bracts spathe-like.
 - 6a. Glumes usually 1-veined; culms ± stout; leaf blade 3–5(–7) mm wide, flat but apex 3-angled 3. *E. angustifolium*
 - 6b. Glumes many veined; culms ± slender; leaf blade ca. 1 mm wide, compressed 3-angled 4. *E. gracile*

1. Eriophorum transiens Raymond, Naturaliste Canad. 86: 240. 1959.

中间羊胡子草 zhong jian yang hu zi cao

Culms tufted, 20–25 cm tall, ca. 1.6 mm thick, rigid, striate, clothed at base with dark reddish brown scabrous leaf sheaths. Basal leaves reddish brown-gray; leaf blade ca. 75 cm × 3–4 mm, leathery, margin scabrous, apex acuminate. Involucral bracts 5 or 6, leaflike, ± ascending, ca. 30 cm, overtopping inflorescence, base cymbiform; bractlets cymbiform, broad, dark reddish brown hyaline with fine red lines, apex acuminate and scabrous. Inflorescence a compound anthela, 3–4 cm; rays unequal, ± rigid; second anthela 6–8 mm, sessile or pedunculate. Spikelets 6–20, densely congested into capitate spherical clusters, 1–1.2 × 1.2–1.5 cm, many flowered. Glumes reddish brown with fine red lines, oblong, 3–3.5 mm, 1-veined costa excurrent into an erect short mucro. Perianth bristles many, white, flat, surpassing glume, often connate at base. Stamen 1; connective apex conic, long. Style long; stigmas 3, reddish brown. Nutlet immature, ca. 1.5 mm, oblong 3-sided, apex acuminate. Fl. and (immature) fr. May.

• Guizhou.

This species is known only from the type gathering.

2. Eriophorum comosum (Wallich) Nees in Wight, Contr. Bot. India, 110. 1834.

从毛羊胡子草 cong mao yang hu zi cao

Scirpus comosus Wallich in Roxburgh, Fl. Ind. 1: 234. 1820; *Erioscirpus comosus* (Wallich) Palla.

Rhizomes short, stout. Culms densely tufted, obtusely 3-angled or rarely cylindric, 14–78 cm tall, 1–2 mm thick, smooth, clothed at base with black to brown leaf sheaths. Leaves many, overtopping inflorescence; leaf blade linear, 0.5–1 mm wide, margin involute and scabrous, gradually tapering and setaceous toward apex. Involucral bracts leaflike, overtopping inflorescence; bractlets lanceolate, margin scabrous, apically setaceous. Inflorescence a large compound or decompound anthela, 6–22 cm. Spikelets many, solitary or a cluster of 2 or 3, oblong but ellipsoid at anthesis, 6–12 mm. Glumes

brown, ovate-lanceolate, 2.3–3 mm, membranous, keel green, excurrent into a mucro at acute to obtuse apex; basal 4 glumes empty. Perianth bristles many, surpassing glume at maturity, ca. 7 mm, smooth. Stamens 2; anthers purplish black, narrowly ovoid, apex mucronate. Style shorter than nutlet; stigmas 3. Nutlet narrowly oblong, ca. 2.5 × 0.5 mm (including beak), compressed 3-sided. Fl. and fr. May–Nov. $2n = 52$.

Crevices on rock or cliffs, grassland slopes; 500–2800 m. Chongqing, S Gansu, Guangxi, Guizhou, Hubei, NW Hunan, Sichuan, SE Xizang, Yunnan [Afghanistan, Bangladesh, Bhutan, N India, Indonesia (Java), Kashmir, N Myanmar, Nepal, Pakistan, Vietnam; SW Asia].

3. *Eriophorum angustifolium* Honckeney, Verz. Gew. Teutschl. 153. 1782.

东方羊胡子草 *dong fang yang hu zi cao*

Rhizomes short; stolons slender, creeping. Culms scattered, 35–114 cm tall, subterete but apically 3-angled, smooth. Basal leaves shorter than culm; leaf blade 2–9 mm wide, flat, leathery, margin scabrous, apex long acuminate and 3-angled. Cauline leaves 1–3; sheath blackish purple, long, slightly inflated; leaf blade 3–5(–7) mm wide, plicate or flat, apex 3-angled. Involucral bracts 2 or 3, dark brown, spathe-like, erect, with leaflike blade to 12 cm, apex 3-angled and green. Inflorescence a simple anthela, with (1 or) 2–10 spikelets. Spikelets ovoid to ellipsoid, 10–15 × 5–7 mm; peduncles unequal, flattened, smooth or scabrous, often dropping. Glumes pale brownish gray, ovate to lanceolate, 5–5.5 × 1.8–2 mm, membranous, 1-veined but sometimes obscurely 3-veined at base, apex obtuse. Perianth bristles 10 or more, white, 3–4 mm, soft, unbranched at ends, apex acute. Stamens 3; anthers linear, (2–) 3–4(–5) mm. Style slender; stigmas 3. Nutlet black, narrowly obovoid, 2–3 × ca. 1 mm, compressed 3-sided, apex beaked. Fl. and fr. Jun–Aug. $2n = 58$.

Marshes, wet places; (100–) 400–800 m. Heilongjiang, Jilin, Liaoning, NE Nei Mongol, N Sichuan [Japan, Kazakhstan, Korea, Mongolia, Russia; Europe, North America].

In FRPS (11: 37, t. XV. 1961), the name *Eriophorum latifolium* Hoppe was misapplied to this species, following the usage in Fl. URSS (3: 29. 1935). The name *E. polystachion* Linnaeus, nom. utique rej., has often been applied to both species.

4. *Eriophorum gracile* W. D. J. Koch ex Roth, Catal. Bot. 2: 259. 1800.

细秆羊胡子草 *xi gan yang hu zi cao*

Eriophorum asiaticum V. N. Vassiljev; *E. coreanum* Palla; *Scirpus ardea* T. Koyama; *S. ardea* var. *coreanus* (Palla) T. Koyama.

Rhizomes long creeping, slender. Culms scattered, 25–50 cm tall, slender, ± 3-angled, smooth or sometimes scabrous below inflorescence. Basal leaves narrowly linear, ca. 1 mm wide, compressed 3-angled, channeled only in basal part. Cauline leaves ± short (apicalmost with blade shorter than sheath), 1.5–2.5 cm. Involucral bracts 1 or 2, dark green, sheathlike, ca. 1.5 cm, erect or oblique. Inflorescence a simple anthela with 2–4 spikelets. Spikelets obovoid, 6–10 mm in flower; peduncles

unequal, ca. 2 cm, flattened, scabrous, yellow tomentose, partly dropping. Glumes dark black to gray, broadly ovate, 4.5–5 mm, many veined, keeled, margin hyaline, apex obtuse. Perianth bristles 10 or more, whitish, 1–1.5 cm. Stamens 3; anthers 2–3 mm. Style slender; stigmas 3. Nutlet yellowish brown, oblong, ca. 3 mm, compressed 3-sided. Fl. and fr. Jun–Jul. $2n = 60$.

Marshes, meadows; (below 100–) 700–2200 m. Heilongjiang, Jilin, N Liaoning, NE Nei Mongol, N Sichuan, N Xinjiang, Yunnan (Tengchong) [Japan, Kazakhstan, Korea, Russia; Europe, North America].

5. *Eriophorum vaginatum* Linnaeus, Sp. Pl. 1: 52. 1753.

白毛羊胡子草 *bai mao yang hu zi cao*

Eriophorum fauriei E. G. Camus; *E. scabridum* Ohwi; *E. spissum* Fernald; *Scirpus fauriei* (E. G. Camus) T. Koyama.

Rhizomes short. Culms densely tufted, 15–80 cm tall, obtusely 3-angled, smooth but sometimes scabrous below inflorescence, clothed at base with brown leaf sheaths disintegrating into fibers. Basal leaves linear, shorter than culm; leaf blade ca. 1 mm wide, 3-angled, scabrous, apically narrowly tapering, apex obtuse to acute. Cauline leaves 1 or 2, often black, reduced to a bladeless sheath, 3–6 cm with apical one inflated, membranous, with finely transverse veins. Involucral bracts grayish black, glumelike, ovate-lanceolate, membranous, apex acuminate. Inflorescences terminal with only 1 spikelet, 1–3 cm, many flowered, with ca. 10 sterile basal glumes. Spikelet erect, grayish brown, obovoid-globose and ca. 1.5 cm in flower, subglobose and 2.5–3.5 × 2.5–3.5 cm in fruit. Glumes ovate-lanceolate to deltoid-lanceolate, thinly membranous, 1-veined, margin gray to dark gray with pale hyaline edge, apex acuminate. Perianth bristles 10 or more, white, 1.5–2.5 cm. Stamens 3; anthers linear, 2–2.5 mm. Stigmas 3. Nutlet brown, obovoid, 2–2.2[–3] × ca. 1 mm, compressed 3-sided, minutely apiculate, smooth. Fl. and fr. Jun–Sep. $2n = 26, 58, 60, 61, 83$.

Swamps, moist places; 1700–1800 m. Heilongjiang, Jilin, N Liaoning, NE Nei Mongol [Japan, Kazakhstan, Korea, Mongolia, Russia; SW Asia, Europe, North America].

6. *Eriophorum russeolum* Fries in Hartman, Handb. Skand. Fl., ed. 3, 13. 1838.

红毛羊胡子草 *hong mao yang hu zi cao*

Eriophorum mandshuricum Meinshausen; *E. russeolum* var. *majus* Sommier; *Scirpus russeolus* (Fries) T. Koyama var. *major* (Sommier) T. Koyama.

Rhizomes creeping. Culms erect, 30–60 cm tall, slender, terete. Basal leaves linear, ca. 1 mm wide, subterete, apex obtuse. Cauline leaves 1 or 2, reduced to bladeless leaf sheaths. Leaf sheaths grayish black with reddish fine transverse veins, cylindrical, 6.5–7.5 cm, apically slightly inflated, apex obtuse. Involucral bracts grayish black, glumelike, ovate-lanceolate, 3–9-veined, apex acuminate. Inflorescences terminal with only 1 spikelet. Spikelet oblong-cylindrical and 1.5–2.5 cm in flower, obovoid, fairly lax, and 2.5–4 cm in fruit. Glumes brownish gray, ovate-lanceolate, ca. 7 mm, thinly membranous, 1-veined, margin broadly whitish hyaline, apex obtuse. Perianth bristles 10 or more, usually pale reddish brown to reddish, ca. 3 mm. Stamens 3; anthers linear, 2–3 mm. Stigmas 3. Nutlet oblong-

obovoid to obovoid, ca. 2.5 mm, compressed 3-sided, margin spinulate, apex beaked. Fl. and fr. Jun–Jul. $2n = 58, 60, 62$.

Marshes, moist places; below 100 m. Heilongjiang, Jilin, NE Nei Mongol [Japan, Korea, Mongolia, Russia; N Europe, North America].

7. *Eriophorum scheuchzeri* Hoppe, Bot. Taschenb. Anfänger Wiss. Apothekerkunst 11: 104. 1800.

羊胡子草 yang hu zi cao

Rhizomes long, slender. Culms solitary, scattered, erect, 8–30[–70] cm tall, ± stout, terete. Basal leaves with leaf blade narrowly linear, channeled at base. Apicalmost cauline leaf with a narrow sheath, slightly inflated in apical part and with a very short blade. Involucral bract glumelike, broadly ovate, larger than glumes, apex subobtuse to shortly acuminate. Inflorescences reduced to a single terminal erect spikelet. Spikelet broadly obovoid to subglobose and 0.8–1.2 cm in flower, compressed globose, very dense, and 2–2.5 cm in fruit. Glumes dark gray to blackish, narrowly lanceolate, margin usually whitish and narrow, apex long acuminate. Perianth bristles 10 or more, pure white, ca. 2 cm. Stamens 3; anthers 0.5–1.5 mm. Style slender; stigmas 3. Nutlet oblong, ca. 2×0.5 mm, apex with a subulate beak. Fl. and fr. Jun–Jul. $2n = 58$.

Swampy meadows; 2200–3000 m. Xinjiang [Kashmir, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Russia; Europe, North America].

No specimen from China has been seen by the present authors.

