

99. **PSATHYROSTACHYS** Nevski in Komarov, Fl. URSS 2: 712. 1934.

新麦草属 xin mai cao shu

Plants perennial, densely tufted, or laxly tufted with underground rhizomes. Culms usually erect. Leaf blade flat or rolled. Spike linear, oblong, or ovate; rachis fragile, readily disarticulating between spikelets. Spikelets in groups of 2 or 3, sessile, compressed, with 1 or 2(or 3) florets, usually with rudimentary florets. Glumes subulate-setiform, awnlike, inconspicuously 1-veined, not keeled, margin entire. Lemma lanceolate, broadly rounded abaxially, not keeled, 5–7-veined, apex acuminate to awned. Palea equaling or slightly longer than lemma, 2-keeled. Caryopsis tightly enclosed in lemma and palea at maturity, oblong, apex hairy.  $x = 7$ .

Nine species: steppes and semidesert regions from W Russia and Turkey eastward to Afghanistan and Siberia; cultivated in North America; five species (two endemic) in China.

All species of this genus are good fodder plants.

1a. Plants laxly tufted, with underground rhizomes.

2a. Glumes scabrous; lemma glabrous to sparsely scabrous ..... 1. *P. huashanica*

2b. Glumes pilose in proximal half, scabrous in distal half; lemma sparsely pilose ..... 2. *P. stoloniformis*

1b. Plants usually densely tufted, without underground rhizomes.

3a. Anthers violet, 5–5.6 mm ..... 4. *P. kronenburgii*

3b. Anthers usually yellow, 3–5 mm.

4a. Glumes densely hirsute, hairs 0.5–1.3 mm ..... 3. *P. lanuginosa*

4b. Glumes scabrous or puberulent only proximally and distally ..... 5. *P. juncea*

**1. *Psathyrostachys huashanica*** Keng, Fl. Tsinling. 1(1): 440. 1976 [*“huachanica”*].

华山新麦草 hua shan xin mai cao

Plants laxly tufted, with long, underground rhizomes. Culms glabrous, 30–60 cm tall, 2–4-noded. Leaf sheath brown at base, longer than internode, glabrous; ligule ca. 0.5 mm, margin ciliate; leaf blade usually flat, 3–20 × 0.2–0.4 cm, abaxial surface and margin scabrous, adaxial surface puberulent and pilose. Spike greenish, 4–9 × 1–1.5 cm; rachis densely pubescent, margin hirsute. Spikelets 2 or 3 per node, with 1 or 2(or 3) florets; rachilla internodes 2.1–3.5 mm. Glumes (9–)10–13 mm, scabrous. Lemma glabrous to sparsely scabrous; first lemma 8–10 mm; awn (5–)7–9(–14) mm. Palea equaling lemma, ciliate along keels. Anthers yellow, 4.5–6 mm. Caryopsis 4.5–6 mm. Fl. and fr. May–Aug.  $2n = 14^*$ .

• Stony and rocky slopes; 500–700 m. Henan, Shaanxi (Hua Shan).

In the protologue, the specific epithet was misspelled *“huachanica”* on p. 440, presumably as a typographical error. On pp. 98, 99, and 473 it was correctly spelled *“huashanica.”*

**2. *Psathyrostachys stoloniformis*** C. Baden, Nordic J. Bot. 9: 449. 1990.

匍茎新麦草 pu jing xin mai cao

Plants laxly tufted, with underground rhizomes. Culms 40–60 cm tall, 2- or 3-noded, glabrous, but pubescent below spike. Leaf sheath brown at base, usually shorter than internode; ligule 0.4–0.6 mm; leaf blade involute at margin, (2–)8–17 × (0.2–)0.3–0.5 cm, both surfaces scabrous. Spike oblong, 7–9 × 0.8–1.2 cm; rachis margin hirsute. Spikelets usually 3 per node, narrowly elliptic, with 1 or 2 florets. Glumes (8–)10–12(–14) mm, pilose proximally, scabrous distally. Lemma (8–)9–12(–14) mm including awn, usually sparsely pilose. Palea

(6.5–)7–10 mm, apex bifid. Lodicules 1.4–1.8 mm. Anthers yellow, 3.5–4.5(–5) mm. Caryopsis 4.5–4.6 × 1.2–1.4 mm. Fl. and fr. Jun–Jul.  $2n = 14^*$ .

• Dry steppes; 1600–2500 m. Gansu, Qinghai.

**3. *Psathyrostachys lanuginosa*** (Trinius) Nevski in Komarov, Fl. URSS 2: 714. 1934.

毛穗新麦草 mao sui xin mai cao

*Elymus lanuginosus* Trinius in Ledebour, Fl. Altaic. 1: 121. 1829; *Hordeum lanuginosum* (Trinius) Schenck.

Culms densely tufted, 15–40(–60) cm tall, 2- or 3-noded, glabrous, rarely hairy just below spike. Leaf sheath grayish brown at base when older, glabrous; ligule 0.2–0.6 mm; leaf blade flat to subinvolute, 1–13 × 0.1–0.3 cm, abaxial surface glabrous to scabrous, adaxial surface scabrous to pubescent. Spike ovate, 1–2 × 1–1.3 cm, villous; rachis brittle. Spikelets usually (2 or)3 per node, whitish green or grayish green, with 1(or 2) florets. Glumes setiform, (5–)6–8 mm, with dense, strongly patent, long hairs. Lemma densely patent villous, 7–9 mm including awn 1–2.5 mm. Palea 6–8(–9) mm, sparsely pilose, densely ciliate along keels, apex acute. Anthers yellowish, 3–4 mm. Caryopsis 3.5–4 mm. Fl. and fr. summer.  $2n = 28$ .

Stony or rocky slopes, screes; ca. 200 m. Gansu, Xinjiang [Russia (W Siberia); C Asia].

**4. *Psathyrostachys kronenburgii*** (Hackel) Nevski in Komarov, Fl. URSS 2: 713. 1934.

单花新麦草 dan hua xin mai cao

*Hordeum kronenburgii* Hackel, Allg. Bot. Z. Syst. 11: 133. 1905; *Elymus kronenburgii* (Hackel) Nikiforova.

Culms usually densely tufted, (50–)70–90 cm tall, 3–5-noded, glabrous, but pubescent just below spike. Leaf sheath grayish brown at base when older, ± separating into individual fibers; ligule 0.4–2 mm; leaf blade green or glaucous green,

flat, 3–13 × 0.2–5 cm. Spike greenish, 5–7 × 0.9–1.2 cm; rachis pubescent, margin hirsute. Spikelets usually 3 per node, narrowly ovate, 0.8–1 cm, with 1(or 2) florets. Glumes violet tinged, (6.5–)8–10 mm, pilose. Lemma 6–12 mm, prominently 5-veined, pilose, tapering into a short awn (1.8–)2–3.5 mm. Palea equaling lemma, ciliate along keels. Lodicules 0.6–1.3 mm. Anthers violet, 5–6 mm. Caryopsis 4–4.5 mm. Fl. and fr. Jun–Aug.  $2n = 14$ .

Grassy places on mountain slopes or river banks. Gansu, Qinghai, Xinjiang [Russia; C Asia].

**5. *Psathyrostachys juncea*** (Fischer) Nevski in Komarov, Fl. URSS 2: 714. 1934.

新麦草 xin mai cao

Culms densely tufted, 50–80(–100) cm tall, 2–4-noded, smooth and glabrous, scabrous, or with dense, short, soft hairs below spike. Leaf sheath smooth, glabrous; ligule 0.3–1 mm; leaf blade glaucous to grayish green, flat or involute, 4–18 × 0.2–8 cm, glabrous to scabrous, margin scabrous. Spike (5–)9–12 × (0.5–)0.7–1.2 cm; rachis very brittle, puberulent, margin hirsute. Spikelets 2 or 3 per node, greenish, yellowish brown at maturity, narrowly elliptic, 0.8–1.1 cm, with 1 or 2(or 3) florets. Glumes (4–)5–8 mm, obscurely 1-veined, scabrous or puberulent only proximally and distally. Lemma lanceolate, (7–)8–11 mm including awn 1–2(–3) mm, usually with short, stiff hairs or long, soft hairs. Palea slightly shorter than lemma. Lodicules 1.3–1.5 mm. Anthers yellow or purple, 3.8–4.8 mm. Caryopsis 4.3–5 mm. Fl. and fr. May–Sep.

Grasslands on mountain slopes, stony or pebbly calcareous or schistose mountain slopes, steppes, roadsides, or as a field weed; 1500–2000(–5500) m. Gansu, Nei Mongol, Xinjiang [Kazakhstan, Kyrgyzstan, Russia; cultivated in North America].

- 1a. Culms below spike smooth and glabrous,  
or scabrous; anthers yellow ..... 5a. var. *juncea*  
1b. Culms with dense, short, soft hairs below  
spike; anthers purple ..... 5b. var. *hyalantha*

**5a. *Psathyrostachys juncea* var. *juncea***

新麦草(原变种) xin mai cao (yuan bian zhong)

*Elymus junceus* Fischer, Mém. Soc. Imp. Naturalistes Moscou 1: 25. 1811; *E. junceus* var. *villosus* Drobow.

Culms below spike smooth and glabrous, or scabrous. Anthers yellow. Fl. and fr. May–Sep.  $2n = 14$ .

Stony or pebbly calcareous or schistose mountain slopes, steppes, roadsides, or as a field weed; below 5500 m. Gansu, Nei Mongol, Xinjiang [Kazakhstan, Russia (Siberia); cultivated in North America].

**5b. *Psathyrostachys juncea* var. *hyalantha*** (Ruprecht) S. L. Chen, Novon 7: 229. 1997.

紫药新麦草 zi yao xin mai cao

*Elymus hyalanthus* Ruprecht, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 14: 36. 1869; *Psathyrostachys hyalantha* (Ruprecht) Tzvelev; *P. juncea* subsp. *hyalantha* (Ruprecht) Tzvelev.

Culms with dense, short, soft hairs below spike. Anthers purple, 3–4 mm. Fl. and fr. late summer to autumn.

Grasslands on mountain slopes, steppes; 1500–2000 m. Xinjiang [Kyrgyzstan, Russia].

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