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70. COLPODIUM Trinius, Fund. Agrost. 119. 1822.

小沿沟草属 xiao yan gou cao shu

Wu Zhenlan (吴珍兰); Sylvia M. Phillips

Catabrosella (Tzvelev) Tzvelev; *Colpodium* subg. *Catabrosella* Tzvelev; *Colpodium* subg. *Paracolpodium* Tzvelev; *Paracolpodium* (Tzvelev) Tzvelev.

Small perennials, tufted or rhizomatous. Leaf sheaths with partially connate margins, rarely split to base; leaf blades linear, flat or folded, apex hooded; ligule membranous. Inflorescence an open or contracted panicle or reduced to a raceme. Spikelets with 1–4 florets, glistening; rachilla disarticulating below each floret, extension above floret(s) short or absent; glumes unequal to subequal, upper glume 1/2 as long as to equaling or exceeding florets, lower glume 1-veined, upper glume 3-veined; lemmas ovate or oblong, thinly membranous becoming hyaline at apex, keeled, 3–5-veined below middle, intermediate veins often obscure or absent, veinless toward apex, glabrous or hairy on lower veins or back, apex obtuse to acute; palea about equal to lemma, keels smooth, glabrous or often hairy. Stamens 2 or 3. Caryopsis free or lemma and palea partially adherent; hilum elliptic to oblong. $x = 2, 4, 5, 6, 7, 9$.

Twenty-two species: Turkey eastward through the Caucasus to the Himalayas and E Siberia, also on a few mountains in Africa; five species in China.

Colpodium species usually occur on high mountains. They often resemble *Poa* morphologically, but can be distinguished by the thinner lemmas with veinless tips and smooth palea keels. Species with long glumes, a single floret, and 3-veined lemmas are not easily recognizable as members of tribe *Poeae*.

1a. Spikelet with 2–4 florets; plant densely tufted; culms tuberously thickened at base ..... 1. *C. humile*
1b. Spikelet with 1 floret; plant shortly rhizomatous; culms not tuberously thickened.
2a. Glumes equaling or longer than floret, lanceolate.
3a. Leaf blades 3–4 mm wide; panicle branches bearing 3–4 clustered spikelets; lemma veins densely pilose below middle ..... 2. *C. tibeticum*
3b. Leaf blades 1–2 mm wide; panicle branches capillary, mostly with a single spikelet; lemma veins shortly pubescent below middle ..... 3. *C. wallichii*
2b. Glumes shorter than floret, at least the lower, oblong-lanceolate or ovate-lanceolate.
4a. Leaf blades green, 2–5 mm wide; panicle contracted, lower branches spreading; spikelets usually purple ..... 4. *C. altaicum*
4b. Leaf blades glaucous, 1–3 mm wide; panicle very narrow, branches suberect to appressed; spikelets usually whitish green ..... 5. *C. leucolepis*

1. Colpodium humile (M. Bieberstein) Grisebach in Ledebour, Fl. Ross. 4: 384. 1852 [“1853”].

矮小沿沟草 ai xiao yan gou cao

Aira humilis M. Bieberstein, Fl. Taur.-Caucas. 1: 57. 1808; *Catabrosa humilis* (M. Bieberstein) Trinius; *Catabrosella humilis* (M. Bieberstein) Tzvelev; *C. humilis* subsp. *songorica* Tzvelev; *C. songorica* (Tzvelev) Czerepanov.

Perennial, densely tufted; roots hairy. Culms tuberously thickened at base, clothed in fibrous sheath remnants, erect or geniculate at lowest node, 10–30 cm tall, 2–3-noded. Leaf sheaths closed in lower 1/6; leaf blades usually flat, 1–6 cm × 1–2 mm, glabrous; ligule 1–2 mm. Panicle pyramidal, open, 3.5–7 × 2–5 cm; branches 2–6 per node, ascending or spreading, smooth. Spikelets 3–5 mm, florets 2–3(–4), purplish brown or purplish green; glumes shorter than spikelet, unequal, lower glume ovate, 1.5–2 mm, upper glume broadly ovate, 2–2.3 mm, acute; lemmas ovate-oblong, 2.5–3 mm, keel and marginal veins densely silky villous below middle, intermediate veins inconspicuous or absent, apex truncate-erose; palea keels densely silky villous below middle; rachilla extension 0.3–0.8 mm. Stamens 3; anthers 1.5–1.8 mm. Fl. Apr–Jun. $2n = 10$.

Sandy steppe, mountain valleys, roadsides; 400–1700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, N Uzbekistan; SW Asia (Caucasus, N Iran)].

This is a rather widespread species showing variation over its range, especially in lemma hairiness and venation, and several subspecies have been described. The Chinese material, with mainly 3-veined lemmas, and any weak intermediate veins glabrous, corresponds to *Catabrosella humilis* subsp. *songorica*. Typical *Colpodium humile* has distinctly 5-veined lemmas densely pilose on the proximal part of all veins.

2. Colpodium tibeticum Bor, Kew Bull. [8] 1953: 270. 1953.

藏小沿沟草 zang xiao yan gou cao

Paracolpodium tibeticum (Bor) E. B. Alexeev.

Perennial, shortly rhizomatous. Culms erect, 12–21 cm tall, 2–3-noded. Leaf sheaths slightly inflated, longer than internodes, purple at blade junction, old basal sheaths becoming fibrous; leaf blades folded or lower flat, up to 7 cm × 3–4 mm, glabrous or puberulent; ligule 4–6 mm. Panicle oblong or pyramidal in outline, open, 3–7 × 1–3 cm, shortly exserted from uppermost leaf sheath; branches 2 per node, up to 1.5 cm, 3–4 spikelets clustered at tips with lateral pedicels much shorter than spikelet, reflexed at maturity. Spikelets 5–6 mm, floret 1,

purple; glumes lanceolate, equal, equaling or longer than floret, glabrous, apex acuminate, sometimes slightly recurved; lemma ca. 4 mm, 3-veined, densely pilose along veins below middle, apex rounded; palea keels pilose; rachilla extension present, short. Stamens 2; anthers 2.7–3 mm. Fl. and fr. Jun–Aug.

Moist grassy or stony places in high mountains; 4500–5500 m. S Xizang (Cona) [Bhutan, Nepal].

When describing *Colpodium tibeticum*, Bor annotated the herbarium specimen *Ludlow, Sherriff & Hicks 20796* (BM) as the holotype, but in the protologue he indicated the specimen *Kingdon Ward 11688* (BM) as the holotype. The Kingdon Ward specimen must therefore be taken as the correct holotype of the name.

3. Colpodium wallichii (Stapf) Bor, Kew Bull. [8] 1953: 270. 1953.

瓦小沿沟草 wa xiao yan gou cao

Catabrosa wallichii Stapf in J. D. Hooker, Fl. Brit. India 7: 312. 1896 [“1897”]; *Paracolpodium wallichii* (Stapf) E. B. Alexeev.

Perennial, shortly rhizomatous. Culms erect, 7–25 cm tall, 2–3-noded. Leaf sheaths longer than internodes; leaf blades narrowly linear to filiform, up to 10 cm × 1–2 mm, glabrous; ligule 2–2.5 mm. Inflorescence delicate, open, few-spiculate, almost racemose, 2.5–5.5 cm; branches 1 or 2 per node, up to 1 cm, capillary, flexuous, mostly bearing only 1 spikelet, occasionally 2, equaling or longer than spikelet, gently reflexing at maturity. Spikelets 3.7–5.5 mm, floret 1, purple or less often greenish; glumes slightly shorter to slightly longer than floret, lower glume narrowly lanceolate, 3–5 mm, apex subacute, upper glume lanceolate-oblong, 3.5–5.5 mm, apex narrowly obtuse; lemma narrowly lanceolate-oblong, 3.2–4.3 mm, obscurely 3–5-veined, shortly pubescent along veins below middle, sometimes a few hairs on lower back, apex obtuse to truncate-denticulate; palea keels shortly pubescent; rachilla extension present, short. Stamens 2; anthers 2–2.5 mm.

Stony or sandy places in trickling water from snow melt; above 4000 m. ?Xizang [Bhutan, India (Sikkim), Nepal].

This species is very likely to occur in the mountains of S Xizang, but the illustration in Fl. Xizang. (5: 141. 1987, as *Catabrosa wallichii*) appears to be a form of *Catabrosa aquatica*.

4. Colpodium altaicum Trinius in Ledebour, Fl. Altaic. 1: 100. 1829.

柔毛小沿沟草 rou mao xiao yan gou cao

Catabrosa altaica (Trinius) Boisser; *Paracolpodium altaicum* (Trinius) Tzvelev.

Perennial, shortly rhizomatous, forming loose mats. Culms erect or ascending, 10–40 cm tall, 2–3-noded. Leaf sheaths closed up to middle, longer than internodes; leaf blades green, flat or sometimes folded, up to 8 cm × 2–5 mm, glabrous or rarely adaxial surface sparsely puberulous, apex obtuse or mucronate; ligule 2–4 mm. Panicle lanceolate to ovate in outline, 3–11 × 1–3 cm, fairly dense or lower branches spreading; branches paired. Spikelets 3.2–4.5 mm, floret 1(–2), usually purplish; glumes oblong-lanceolate or ovate-lanceolate, slightly shorter than or upper subequaling floret, lower glume 2.3–2.7 mm, upper glume 3.1–3.6 mm, apex subacute; lemma broadly oblong, as long as spikelet, 3-veined, lanate along lower veins, apex obtuse, irregularly toothed; palea as long as or longer than lemma, keels lanate; rachilla extension absent. Stamens 2; anthers 2–3 mm, dark purple. Fl. and fr. Jun–Aug. 2*n* = 42.

Stony or gravelly mountain slopes; 2500–4800 m. Xinjiang [NE Kazakhstan, Mongolia, Russia (Siberia)].

5. Colpodium leucolepis Nevski, Bull. Soc. Imp. Naturalistes Moscou 43: 224. 1934.

高山小沿沟草 gao shan xiao yan gou cao

Colpodium villosum Bor; *Paracolpodium altaicum* subsp. *leucolepis* (Nevski) Tzvelev; *P. leucolepis* (Nevski) Tzvelev.

Perennial, shortly rhizomatous, forming loose mats. Culms erect or ascending, 8–28 cm tall, 2-noded. Leaf sheaths closed up to middle, longer than internodes; leaf blades glaucous, folded, 2–12 cm × 1–3 mm, adaxial surface puberulous, abaxial surface usualy glabrous, apex acute; ligule 1–3 mm. Panicle very narrow, spikelike, almost racemose, 3–7 cm, branches spaced, erect or almost so. Spikelets 3.4–4.2 mm, floret 1, usually pale green; glumes unequal, slightly shorter than floret, lower glume elliptic, 2.1–3 mm, upper glume lanceolate-elliptic, 2.6–3.5 mm, apex acute; lemma oblong, as long as spikelet, 5-veined, villous on veins or generally in lower half, apex obtuse-denticulate; palea keels villous, rachilla extension absent. Stamens 2; anthers 2–3 mm, dark purple. Fl. and fr. Jun–Aug.

Alpine grasslands, gravelly slopes, rocky fissures; 3900–5000 m. Xinjiang [NE Afghanistan, Kashmir, E Kazakhstan, Kyrgyzstan, N Pakistan, Tajikistan (Pamirs)].

This species is confined to the high mountains of the W Himalayas.

Colpodium himalaicum (J. D. Hooker) Bor, from Kashmir and the W Himalayas, is similar, but has a more densely tufted habit and much shorter glumes not exceeding 1/2 the length of the floret.

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