
披碱草属  pi jian cao shu

*Campeostachys* Drobow; *Clinelymus* (Grisebach) Nevski, nom. superfl.; *Elymus* sect. *Clinelymus* Grisebach; *Gouldidia* Husn.; *Roegneria* K. Koch; *Semeiostachys* Drobow; *Terrellia* Lunell, nom. illeg. superfl.

Plants perennial, usually tufted, usually without, rarely with, rhizomes. Culms usually erect. Leaf sheath of cauline leaves split almost to base; auricles present or absent; leaf blade flat or rolled. Spike erect to nodding. Spikelets 1 or 2 (–4) per node, sessile, rarely very shortly pedicellate, appressed to rachis, clearly laterally compressed, usually all similar, with 2–10 or more florets; rachis tough. Glumes opposite or side-by-side, linear-lanceolate to lanceolate-ovate, firmly membranous to leathery, 1–9 (–11)-veined, not keeled, apex obtuse to shortly awned; veins ± raised. Lemma lanceolate-oblong, rounded abaxially, 5-veined, ± pubescent, apex obtuse or acute to awned, rarely toothed; veins connivent at apex; awn erect or reflexed. Palea shorter than or equaling lemma, a pex

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Loewe's combinations were not validly published. These errors in citation are not correctable under Art. 33.4 because they are omissions, nor are they correctable under Art. 33.6(a) because conditions for valid publication were not again fulfilled in the 1965 work.

All species of this genus are good forage plants.

1a. Spikelets 2 per node (at least at middle nodes), rarely 3 or 4 per node.

2a. Glumes much shorter than lemma.

3a. Lemma awn more than 10 mm.

4a. Leaf blade flat, 10–15 × 0.5–1 cm .............................................................. 7. *E. sibiricus*

4b. Leaf blade flat or ± rolled, 3–10 × 0.2–0.5 cm.

5a. Leaf blade flat, 3–5 mm wide; glume apex with awn 1–4 mm ........................................................................ 8. *E. nutans*

5b. Leaf blade ± rolled, ca. 2 mm wide; glume apex mucronate or acuminate ....................................................... 9. *E. atratus*

3b. Lemma awn less than 7 mm.

6a. Leaf blade 1.5–3 mm wide; glumes oblong, 2–3 mm, 3-veined ........................................................................ 12. *E. sinosubmuticus*

6b. Leaf blade 3–5 mm wide; glumes ovate-lanceolate, oblong-lanceolate, or narrowly lanceolate, 3–4 mm, 1–3-veined.

7a. Spikelets 13–15 mm, with 4–6 florets; glumes oblong-lanceolate or ovate-lanceolate ........................................ 10. *E. breviaristatus*

7b. Spikelets 10–12 mm, with 3 or 4 florets; glumes narrowly lanceolate ................................................................ 11. *E. alpinus*

2b. Glumes slightly shorter than or equaling lemma.

8a. Rachis densely hirsute, nodes swollen ................................................................................................. 6. *E. viltifer*

8b. Rachis not densely hirsute, nodes not swollen.

9a. Culms, leaf blade, and spike all farinaceous; glumes and lemma ± purplish punctate; awn purple, pubescent ................................................................................................................................................................. 5. *E. purpuraristatus*

9b. Culms, leaf blade, and spike not farinaceous; glumes and lemma not purplish punctate; awn green, glabrous but scabrous.

10a. Glumes hirsutulous along veins.

11a. Leaf sheath glabrous; spike purplish; glume apex acuminate or with point ca. 1.5 mm ...................... 2. *E. barystachyus*

11b. Leaf sheath villous at base; spike green; glume apex usually with awn to 5 mm ....................... 4. *E. dahuricus*

10b. Glumes scabrous along veins.

12a. Glume apex acuminate or with awn 1–4 mm; lemma with usually erect awn (3–)5–13 mm.

13a. Culms to 120 cm tall, 4- or 5-noded; leaf blade 10–20 × 0.6–1.4 cm; lemma glabrous, or hirsutulous in distal half .............................................................. 1. *E. tangutorum*

13b. Culms 40–80 cm tall, 2- or 3-noded; leaf blade 5–12 × ca. 0.5 cm; lemma puberulent throughout ... 4. *E. dahuricus*

12b. Glume apex with awn 5–7 mm; lemma with usually reflexed awn 8–20(–40) mm.

14a. Leaf blade 1–1.6 cm wide; spikelets 2 or 3(4) per node ................................................................. 3. *E. excelsus*

14b. Leaf blade 0.5–0.9(–1.2) cm wide; spikelets 2 per node, or 1 per node in proximal and distal parts of spike ................................................................. 4. *E. dahuricus*
b. Spikelets 1 per node.

15a. Lemma with long, strongly recurved awn at seed maturity; if lemma awn short or nearly absent, or only slightly curved, then palea shorter than lemma, ciliate along keels, and apex rounded or emarginate.

16a. Glumes usually slightly shorter than or equaling first lemma, 5–7-veined.

17a. Palea oblong-obovate, much shorter than lemma ................................................................. 14. E. ciliaris

17b. Palea oblong, slightly shorter than or equaling lemma.

18a. Lemma glabrous throughout ................................................................................................... 20. E. tibeticus

18b. Lemma scabrous, pubescent, or hirsidulous throughout.

19a. Glumes with thin margin ........................................................................................................... 15. E. canaliculatus

19b. Glumes not with thin margin.

20a. Lemma abaxially hirsidulous or laxly spinulose.

21a. Lemma abaxially laxly spinulose, awn 2–2.5 cm; culms 30–50 tall ............................................. 16. E. sinoflexuosus

21b. Lemma abaxially hirsidulous, awn 2.5–4.5 cm, culms 60–100 cm tall ....................................... 17. E. gmelinii

20b. Lemma abaxially smooth and glabrous (at middle), scabrous, puberulent, or pubescent, sometimes spinulose along veins.

22a. Lemma abaxially scabrous, puberulent, or pubescent.

23a. Lemma abaxially scabrous, puberulent; culms 25–30 cm tall .................................................... 18. E. zhui

23b. Lemma abaxially scabrous or pubescent, margin ciliolate; culms 30–90 cm tall ..................... 19. E. formosanus

22b. Lemma abaxially smooth and glabrous at middle, otherwise spinulose along veins or ± puberulent.

24a. Leaf blade usually flat, thin; glume apex acuminate ................................................................. 21. E. nakaii

24b. Leaf blade involute, stiff; glume apex acute or with point 1–5 mm .............................................. 22. E. strictus

16b. Glumes much shorter than first lemma, (1–)3–5-veined; if glumes only slightly shorter than first lemma then margin thin, scarious, membranous, or very narrowly hyaline.

25a. Glumes slightly shorter than first lemma, margin thin, scarious, membranous, or very narrowly hyaline.

26a. Glume margin scarious.

27a. Culms 80–150 cm tall .................................................................................................. 23. E. caninus

27b. Culms 30–60 cm tall ........................................................................................................ 24. E. caesifolius

26b. Glume margin thin, membranous, or very narrowly hyaline.

28a. Glume margin thin; spikelets pedicellate, pedicel 0.8–9 mm.

29a. Spikelet pedicel 0.8–1.5(–2) mm .......................................................................................... 25. E. durus

29b. Spikelet pedicel 5–9 mm .................................................................................................. 13. E. cacuminis

28b. Glume margin membranous or very narrowly hyaline; spikelets sessile or subsessile.

30a. Glume margin very narrowly hyaline.

31a. Culms 50–100 cm tall, 3–5-noded; leaf blade flat, 2.5–8 mm wide ........................................... 26. E. antiquus

31b. Culms 10–60 cm tall, 2- or 3-noded; leaf blade tightly involute, 1–4 mm wide ................. 27. E. burchan-buddae

30b. Glume margin membranous.

32a. Lemma glabrous throughout.

33a. Glume apex with short awn; leaf blade adaxial surface villous ............................................ 28. E. serpentinus

33b. Glume apex awnless, usually acute; leaf blade adaxial surface usually scabrous ............... 29. E. glaberrimus

32b. Lemma puberulent or ± hirsidulous.

34a. Spikelets with 3 or 4 florets; lemma puberulent ................................................................. 30. E. pseudocaninus

34b. Spikelets with 4 or 5(6) florets; lemma hirsidulous distally and near margin ................... 31. E. sinkiangensis

25b. Glumes much shorter than first lemma, margin herbaceous.

35a. Glume apex usually tapering into awn 2–7 mm; palea equaling lemma.

36a. Lemma glabrous throughout.

37a. Culms 15–20 cm tall; first lemma 7–9 mm; anthers yellow or purple, 1.2–2.5 mm ............... 32. E. jacquemontii

37b. Culms (15–)40–50 cm tall; first lemma 10–12 mm; anthers black or brown, 2–5 mm.

38a. First lemma ca. 10 mm; anthers black, ca. 2 mm ................................................................. 33. E. aristiglumis

38b. First lemma 11–12 mm; anthers brown, 4–5 mm .............................................................. 34. E. shouliangiae

36b. Lemma hirsute or hirsidulous throughout, pubescent only at base and margin, or puberulent proximally and hirsidulous distally.

39a. Lemma pubescent only at base and margin ........................................................................ 37. E. altissimus

39b. Lemma hirsute or hirsidulous throughout, or puberulent proximally and hirsidulous distally.

40a. Lemma hirsidulous throughout.

41a. Culms 1- or 2-noded; spikelets with 2 or 3 florets .............................................................. 33. E. aristiglumis

41b. Culms 3-noded; spikelets with 4 or 5 florets .............................................................. 35. E. confusus
42a. Lemma hirsute throughout; culms 60–75 cm tall; palea ciliolate along keels distally .... 36. *E. anthosachnoides*
42b. Lemma puberulent proximally, hispidulous distally; culms 20–45 cm tall; palea puberulent between keels distally ................................................................. 39. *E. serotinus*
35b. Glume apex acute, mucronate, or with awn less than 2 mm; palea slightly shorter to slightly longer than lemma.
35a. Glume apex obtuse, acute, or acuminate; palea equaling or slightly longer than lemma.
43a. Palea equaling or slightly longer than lemma; anthers 2.5–3 mm; lemma awn (2.5–)3.5–5.5 cm.
44a. Leaf blade 1–2 mm wide; palea ciliolate along keels .......................................................... 40. *E. retroflexus*
44b. Leaf blade 2–4 mm wide; palea glabrous along keels .................................................... 41. *E. leiotropis*
43b. Palea slightly shorter than lemma; anthers 1–2 mm; lemma awn 1–3 cm.
45a. Spike somewhat nitid; lemma glabrous or sparsely puberulent abaxially ........................ 42. *E. brevipes*
45b. Spike not nitid; lemma pubescent, hisrutulous, or scabrous abaxially.
46a. Spikelets sessile or very shortly pedicellate, with 1–4(or 5) florets. 47a. Spikelets usually very shortly pedicellate, with 3 or 4(or 5) florets .............................. 43. *E. schrenkianus*
47b. Spikelets sessile; with 1–3–(5) florets. 48a. Spikelets with 1–3 florets; culms 70–150 cm tall, 5–7-noded ..................................................... 37. *E. altissimus*
48b. Spikelets with 2–5 florets; culms 40–80 cm tall, 3–4-noded ............................................ 38. *E. laxinodis*
46b. Spikelets usually sessile, with 4–9 florets.
49a. Lemma hirsute throughout, especially distally and near margin, first lemma 13–14 mm .................................................................................................................. 36. *E. anthosachnoides*
49b. Lemma ± hirsutulous or scabrous abaxially, first lemma 9–11 mm.
50a. Lemma ± hirsutulous abaxially, first lemma ca. 11 mm, awn 3–4 cm; spikelets with 7–9 florets .................................................................................................................. 44. *E. pulanensis*
50b. Lemma scabrous abaxially, rarely hirsutulous, first lemma 9–11 mm, awn 1.8–3 cm; spikelets with 4–7 florets.
51a. Spike ± purplish, nodding, 13–15 cm; glumes oblance-lanceolate, apex acute; lemma scabrous or hirsutulous abaxially .................................................................................. 45. *E. purpurascens*
51b. Spike usually glaucous green, slender and flexuose, 7–9 cm; glumes linear-lanceolate, apex usually acuminate; lemma scabrous abaxially ............................................. 46. *E. tschimganicus*

15b. Lemma with straight awn or awnless; palea slightly shorter to slightly longer than lemma.
52a. Lemma awn shorter than 7 mm or absent.
53a. Lemma apex truncate, with 3 teeth ................................................................................... 51. *E. tridentatus*
53b. Lemma ± narrowed toward apex, without teeth.

54a. Palea equaling or slightly longer than lemma, apex narrowly truncate.
55a. Lemma ± pilose .................................................................................................................. 47. *E. mutabilis*
55b. Lemma smooth, glabrous.
56a. Plants without rhizomes ................................................................................................. 48. *E. magnicaseps*
56b. Plants ± with rhizomes.
57a. First lemma ca. 10 mm, callus smooth, glabrous; anthers ca. 3 mm .............................. 49. *E. alashanicus*
57b. First lemma 7.8–9 mm, callus puberulent; anthers 4.5–5 mm .......................................... 52. *E. elytrigiioides*
54b. Palea slightly shorter to longer than lemma, apex emarginate, rounded, or subrounded.
58a. Glumes densely pubescent adaxially ................................................................................ 50. *E. yushuensis*
58b. Glumes not as above.

59a. Palea 2/3–3/4 as long as lemma, subsMOOTH along keels ................................................ 53. *E. grandis*
59b. Palea equaling, subequaling, or longer than lemma, ± ciliate along keels.

60a. Glumes 4–9-veined; palea slightly shorter to slightly longer than lemma.
61a. Culms 30–80 cm tall; leaf blade 2–4 mm wide.
62a. Spikelets 1.4–1.8 cm, with 5 or 6 florets; lemma margin broadly membranous .......... 59. *E. viridulus*
62b. Spikelets 1–1.4 cm, with 2–4 florets; lemma margin not membranous ...................... 60. *E. cheniæae*
61b. Culms usually more than 100 cm tall; leaf blade 5–11 mm wide.
63a. Spikelets with 3–5 florets; glumes 5–7-veined; culms 100–160 cm tall ........................ 61. *E. intramongolicus*
63b. Spikelets with 5–9 florets; glumes 7–9-veined; culms 50–120 cm tall ............................ 62. *E. nevskii*
60b. Glumes 3–5-veined; palea equaling lemma.
64a. Spikelets with 2 or 3 florets .............................................................................................. 55. *E. kronokensis*
64b. Spikelets with 3–6 florets.
65a. Culms ca. 100 cm tall, 4- or 5-noded .......................................................................... 54. *E. sylvaticus*
65b. Culms 20–60 cm tall, 2–4-noded.
67a. Culms ca. 45 cm tall, usually 4-noded, palea keels wingless and ciliolate ........................................ 57. *E. leianthus*
67b. Culms 20–25 cm tall, usually 2-noded; palea keels winged and ciliate ........................................ 58. *E. humilis*

52b. Lemma awn more than 7 mm (but 1–35 mm *E. abolinii*).

68a. Glumes 5–7(–9)-veined, slightly shorter or longer than lemma.

69a. Glumes (especially distal one) longer than lemma.

70a. Spike somewhat lax; palea shorter than lemma; anthers 3–7 mm ............................................... 81. *E. abolinii*
70b. Spike dense, secund; palea subequaling lemma; anthers 2.5–3 mm.

71a. Glume margin membranous; lemma scabrous or appressed setose ........................................ 82. *E. fedtschenkoi*
71b. Glume margin not membranous; lemma pubescent ...................................................................... 83. *E. platyphyllus*

69b. Glumes (especially proximal one) slightly shorter than lemma.

72a. Spikelets pedicellate, pedicel 1–2.5 mm ............................................................................................. 85. *E. magripodus*
72b. Spikelets sessile.

73a. Lemma ± glabrous abaxially, margin narrowly membranous ....................................................... 84. *E. shandongensis*
73b. Lemma puberulent, pilose, or ± hirsutulous abaxially, margin not membranous.

74a. Glumes lanceolate, subequal, 5–6 mm, 2-veined, hispidulous along veins; lemma
    densely pubescent proximally, scabrous-ciliate distally ................................................................. 69. *E. tenuispicus*
74b. Glumes oblong-lanceolate, hirsute, proximal one 5.5–7 mm, 4- or 5-veined; lemma usually densely pubescent proximally, scabrous-ciliate distally ................................................................. 71. *E. trichospiculus*

75a. Glumae margin scariosa; leaf blade abaxial surface glabrous or scabrous, adaxial surface
    scabrous or pubescent .................................................................................................................. 87. *E. komarovi*
75b. Glumae margin not scariosa; leaf blade both surfaces pilose or scabrous ...................................... 88. *E. tianschanigenus*

68b. Glumes (2 or)–3–5-veined, at least proximal glume 3-veined, usually much shorter than lemma,
    or if subequaling lemma then apex shortly awned.

76a. Glumes always and lemma sometimes with membranous or scariosa margin.

77a. Glumes and lemma with membranous or scariosa margin.

78a. Lemma glabrous to hispidulous, margin membranous ................................................................. 63. *E. komoji*
78b. Lemma hirsutulous proximally and distally, subglabrous at middle, long ciliate near margin,
    margin broadly scariosa .................................................................................................................. 64. *E. hybridus*

77b. Glumes with membranous margin; lemma without such margin.

79a. Culms 50–60 cm tall, 2- or 3-noded.

80a. Glumes 5–6 mm; lemma awn 5–10 mm; anthers black ............................................................ 65. *E. curtiaristatus*
80b. Glumes 9–12 mm; lemma awn 12–15 mm; anthers yellow ......................................................... 66. *E. scabridulus*

79b. Culms 60–100 cm tall, 4–7-noded.

81a. Spikelets 3.5–4.5 cm, with 5–10 florets ....................................................................................... 67. *E. yangiae*
81b. Spikelets to 2 cm, with 3–9 florets.

82a. Spikelets ± pedicellate; glumes oblong-lanceolate; palea scabrous along keels distally ...... 68. *E. dolichatherus*
82b. Spikelets sessile; glumes narrowly lanceolate; palea ± ciliate along keels.

83a. Glumes and lemma usually smooth, glabrous, rarely scabrous along veins ............................. 70. *E. calcicola*
83b. Glumes and lemma hisrate or villous.

84a. Glumes lanceolate, subequal, 5–6 mm, 2-veined, hispidulous along veins; lemma
    densely villous abaxially .................................................................................................................. 71. *E. trichospiculus*
84b. Glumes oblong-lanceolate, hisrate, proximal one 5–6.5 mm, 3- or 4-veined, distal
    one 6.5–7.5 mm, 4- or 5-veined; lemma usually densely pubescent proximally,
    scabrous-ciliate distally .................................................................................................................. 69. *E. tenuispicus*

76b. Glumes and lemma without membranous or scariosa margin.

85a. Lemma ± puberulent abaxially.

86a. Spikelets 12–16 mm, with 3–5 florets.

86a. Glumes oblong-lanceolate, 7–10 mm; lemma awn 10–18 mm ............................................................ 72. *E. sinicus*
87b. Glumes lanceolate, 2–5 mm; lemma awn 6–8 mm ............................................................................. 74. *E. caianus*

86b. Spikelets 9–12 mm, with 2 or 3 florets.

88a. Culms usually 2-noded; glume apex acuminate ........................................................................ 76. *E. hongyaanensis*
88b. Culms 5–7-noded; glume apex with awn 1.5–3 mm ...................................................................... 75. *E. debilis*

85b. Lemma smooth or scabrous abaxially.

89a. Lemma callus glabrous or subglabrous ......................................................................................... 78. *E. angustispiculatus*
89b. Lemma callus distinctly hisrate.

90a. Spikelets with 2 or 3 florets; lemma callus hairs 1–3 mm ............................................................ 73. *E. puberulus*
90b. Spikelets with 4–8 florets; lemma callus hairs 4–10 mm.

91a. Lemma callus hairs 6–10 mm ........................................................................................................ 77. *E. barbicallus*
91b. Lemma callus hairs 4–6 mm.

92a. Leaf blade adaxial surface scabrous; lemma scabrous abaxially .............................................. 79. *E. hondae*
92b. Leaf blade adaxial surface pubescent; lemma smooth and glabrous abaxially .......................... 80. *E. alienus*

麦宾草 mai bin cao


Culms erect or geniculate at base, to 120 cm tall, 4- or 5-noded. Leaf sheath smooth; leaf blade flat, 10-20 × 0.6-1.4 cm, both surfaces scabrous or abaxial surface smooth and adaxial surface pilose. Spike erect, usually dense, 8-15 × 0.8-1 cm; rachis margin ciliate. Spikelets usually 2 per node, green or slightly purplish, 9-15 mm, with 3 or 4 florets. Glumes lanceolate or linear-lanceolate, 7-10 mm, obscurely 5-veined, scabrous or hirsutulous along veins, apex acuminate or with awn 1-3 mm. Lemma lanceolate, glabrous, or hirsutulous distally; first lemma 8-12 mm; awn erect, (3-)5-11 mm. Palea equaling lemma, ciliate along keels, apex narrowly obtuse. Fl. and fr. late summer. 2n = 42.

Mountain slopes, steppes. Gansu, Guizhou, Hubei, Nei Mongol, Ningxia, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [Bhutan, ?Nepal].

Elymus mollisculus is very similar to E. tangutorum in culm height and features of leaf blade, spike, spikelets, and lemma. It is therefore treated here in synonymy.


硬穗披碱草 ying sui pi jian cao

Culms laxly tufted or solitary, usually geniculate at base, 50-80 cm tall, 2.5-4.5 mm in diam., 3-5-noded. Leaf sheath glabrous; ligule ca. 1 mm, membranous; leaf blade 7-22 × 0.4-0.8 cm, both surfaces glabrous. Spike 8-18 × 0.5-0.9 cm; rachis margin ciliate. Spikelets usually 2 per node, or 1 per node proximally and distally in spike, purplish, 10-18 mm, with 4-6 florets. Glumes linear-lanceolate, 7-10 mm, 4-7-veined, hirsutulous along veins, apex acuminate or with awn to 0.5 mm. Leaf blade ± glaucous, flat, rarely rolled, 5-25 × 0.5-1(-1.2) cm, abaxial surface smooth, adaxial surface smooth or scabrous. Spike erect, somewhat dense, 14-18 × 0.5-1 cm; rachis margin ciliate. Spikelets green or purplish green, usually stramineous at maturity, (1 or)2 per node, 9-15 mm, with 2-5 florets. Glumes lanceolate or linear-lanceolate, 7-10 mm, 3-5-veined, scabrous or scabrous-hirsutulous along veins, apex acuminate or with awn to 5 mm. Lemma lanceolate, puberulent, pubescent, or densely hirsutulous throughout; first lemma 7-9 mm; awn straight or recurved, 2-20 mm. Palea equaling lemma, ciliate along keels, ± pubescent between keels, apex narrowly truncate. Fl. and fr. Jun-Aug.

Culms more robust, 80-140 cm tall, 2-4-noded. Leaf sheath glabrous, or densely pilose at base; leaf blade ± glaucous, flat, rarely rolled, 5-25 × 0.5-1(-1.2) cm, abaxial surface smooth, adaxial surface smooth or scabrous. Spike erect, somewhat dense, 14-18 × 0.5-1 cm; rachis margin ciliate. Spikelets green or purplish green, usually stramineous at maturity, (1 or)2 per node, 9-15 mm, with 2-5 florets. Glumes lanceolate or linear-lanceolate, 7-10 mm, 3-5-veined, scabrous or scabrous-hirsutulous along veins, apex acuminate or with awn to 5 mm. Lemma lanceolate, puberulent, pubescent, or densely hirsutulous throughout; first lemma 7-9 mm; awn straight or recurved, 2-20 mm. Palea equaling lemma, ciliate along keels, ± pubescent between keels, apex narrowly truncate. Fl. and fr. Jun-Aug.

Culms erect or geniculate at base, 40-140 cm tall, 2-4-noded. Leaf sheath glabrous, or densely pilose at base; leaf blade ± glaucous, flat, rarely rolled, 5-25 × 0.5-1(-1.2) cm, abaxial surface smooth, adaxial surface smooth or scabrous. Spike erect, somewhat dense, 14-18 × 0.5-1 cm; rachis margin ciliate. Spikelets green or purplish green, usually stramineous at maturity, (1 or)2 per node, 9-15 mm, with 2-5 florets. Glumes lanceolate or linear-lanceolate, 7-10 mm, 3-5-veined, scabrous or scabrous-hirsutulous along veins, apex acuminate or with awn to 5 mm. Lemma lanceolate, puberulent, pubescent, or densely hirsutulous throughout; first lemma 7-9 mm; awn straight or recurved, 2-20 mm. Palea equaling lemma, ciliate along keels, ± pubescent between keels, apex narrowly truncate. Fl. and fr. Jun-Aug.

Forest glades, scrub, mountain slopes, valleys, meadows, pebbles, sometimes roadsides and field margins; ca. 2600 m. Hebei, Heilongjiang, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Yunnan [Bhutan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Russia, Turkmenistan, Uzbekistan; SW Asia].

Four varieties occur in China. In addition, Elymus dahuricus var. brevisetus Ohwi (J. Jap. Bot. 19: 168. 1943) was described from N Shanxi (Ningwu), but no specimens have been seen by the authors.

1a. Culms slender, 40-80 cm tall; first lemma 7-8 mm ......................... 4c. var. cylindricus

1b. Culms more robust, 80-140 cm tall; first lemma 8-9 mm.

2a. Lemma awn 2-5 mm ................................ 4d. var. xiningensis

2b. Lemma awn 10-20 mm.

3a. Leaf sheath glabrous; glumes scabrous along veins ....... 4a. var. dahuricus

3b. Leaf sheath densely pilose at base; glumes usually scabrous- hirsutulous along veins ........... 4b. var. violeus

4a. Elymus dahuricus var. dahuricus

披碱草(原变种) pi jian cao (yuan bian zhong)

Clinelymus dahuricus (Turczaninow ex Grisebach) Nevski.

Culms more robust, 80-140 cm tall. Leaf sheath glabrous. Glumes scabrous along veins. First lemma ca. 9 mm; awn 10-20 mm. Fl. and fr. Jun-Aug. 2n = 28, 42*.

Forest glades, scrub, meadows, pebbles, sometimes roadsides and field margins. Hebei, Henan, Nei Mongol, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang [Bhutan, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Russia, Turkmenistan, Uzbekistan; SW Asia].


**青紫披碱草** qing zi pi jian cao

Culms more robust, 80–140 cm tall. Leaf sheath densely pilose at base. Glumes usually scabrous-hirsutulous along veins. First lemma 8–9 mm; awn 10–18 mm.

- Mountain slopes, valleys. Nei Mongol, Qinghai.


**圆柱披碱草** yuan zhu pi jian cao

*Clinelymus cylindricus* (Franchet) Honda; *Elymus beijingensis* B. S. Sun, nom. illeg. superfl.; *E. cylindricus* (Franchet) Honda (1930), not Pohl (1809); *E. dahuricus* subsp. *cylindricus* (Franchet) N. R. Cui; *E. franchetii* Kitagawa.

Culms slender, 40–80 cm tall. Leaf sheath glabrous. Glumes scabrous along veins. First lemma 7–8 mm; awn 6–13 mm. Fl. and fr. later summer. 2n = 42*.

- Mountain slopes, roadsides. Hebei, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Xinjiang, Yunnan.


**西宁披碱草** xi ning pi jian cao


Culms more robust, 80–110 cm tall. Leaf sheath glabrous. Glumes scabrous along veins. First lemma ca. 8 mm; awn 2–5 mm. Fl. and fr. late summer.

- Mountain slopes; ca. 2600 m. Qinghai.


**紫紫披碱草** zi mang pi jian cao

Culms robust, to 160 cm tall, together with leaf blade and spike usually farinaceous throughout. Leaf sheath glabrous; leaf blade usually rolled, 15–25 × 0.25–0.4 cm, abaxial surface smooth, adaxial surface scabrous. Spike erect or slightly curved, slender, usually dense, 8–15 cm; rachis margin ciliolate. Spikelets 2 per node, purplish green, 10–12 mm, with 2 or 3 florets. Glumes lanceolate or linear-lanceolate, 7–10 mm, 3-veined, ± purplish punctate, scabrous, hispidulous along veins, apex mucronate. Lemma oblong-lanceolate, purplish punctate throughout, pubescent; first lemma 6–9 mm; awn purple, 7–15 mm, pubescent. Palea equaling or subequaling lemma, ciliolate along keels. Fl. and fr. late summer.

- Mountain slopes, valleys. Nei Mongol.

In the protologue, the specific epithet was misspelled “purpuraristatus” on p. 83, presumably as a typographical error. In the illustration caption on p. 90 it was correctly spelled “purpuraristatus.”


**毛披碱草** mao pi jian cao

Culms erect, 60–75 cm tall. Leaf sheath densely villous; leaf blade flat or slightly rolled, 9–15 × 0.3–0.6 cm, villous throughout. Spike slightly curved, 9–12 cm; rachis with swollen nodes, densely hisperate throughout, margin narrowly winged. Spikelets usually 2 per node, or 1 per node at apex and base of spike, 6–10 mm, with 2 or 3 florets. Glumes narrowly lanceolate, 4.5–7.5 mm, 3- or 4-veined, hisrutulous along veins, margin narrowly membranous, apex acuminule or with awn 1.5–2.5 mm. Lemma oblong-lanceolate, scabrous or hispidulous distally; first lemma 7–11 mm. Palea equaling lemma, ciliolate along keels, pubescent between keels. Fl. and fr. late summer.

- Swales of mountain valleys. Nei Mongol.


**老芒麦** lao mang mai

*Clinelymus sibiricus* (Linnaeus) Nevski; *C. yubaridakensis* Honda; *Elymus sibiricus* var. *brachstachys* Keng; *E. sibiricus* var. *gracilis* L. B. Cai; *E. sibiricus* var. *erecticusulcus* L. B. Cai; *E. yubaridakensis* (Honda) Ohwi; *Hordeum sibiricum* (Linnaeus) Schenck (1907), not Link ex Steudel (1840), nor Roshevitz (1929); *Triticum arktasianum* F. Hermann.

Culms usually erect, sometimes slightly decumbent at base, 60–90 cm tall. Leaf sheath glabrous; leaf blade flat, 10–15 × 0.5–1 cm, glabrous or adaxial surface slightly pubescent. Spike pendulous, lax, 15–20 cm; rachis margin scabrous, ciliolate. Spikelets glaucous or purplish glaucous, usually 2 per node, with (3 or)4 or 5 florets. Glumes narrowly lanceolate, 4–5 mm, 3–5-veined, glabrous, scabrous along veins, apex acuminate or with awn ca. 4 mm. Lemma lanceolate, 5-veined, obscurely so at base, scabrous or puberulent; first lemma 8–11 mm; awn 15–20 mm. Palea equaling lemma, ciliolate along keels, puberulent between keels. Fl. and fr. Jun–Aug. 2n = 28*, 42*.

Forest glades, scrub, swales, sands and pebbles in river valleys; 1500–4000 m. Gansu, Hebei, Heilongjiang, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang [India, Japan, Korea, Mongolia, Nepal, Russia].


**重穗披碱草** chong sui pi jian cao

Culms erect or geniculate at base, (13–)50–70 cm tall. Leaf sheath puberulent at base; leaf blade flat, 6–8 × 0.3–0.5 cm, abaxial surface scabrous or smooth, adaxial surface pilose. Spike pendulous, flexuose, somewhat dense, 5–12 cm; rachis margin scabrous, ciliolate. Spikelets usually 2 per node (at least at middle nodes), subsessile or very shortly pedicellate, green,
purplish when mature, 9–15 mm, with 2(or 3) glumes and 2–4 florets. Glumes oblong, subequal, 4–5 mm, 3- or 4(or 5)-veined, scabrous along veins, apex with awn 1–4 mm. Lemma narrowly lanceolate, puberulent; first lemma (6–)10 mm; awn (3–)

Mountain slopes, grasslands, riverside sands and pebbles; 2800–3400 m. Gansu, Hebei, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Xinjiang, Xizang, Yunnan [Bhutan, India, Japan, Mongolia, Nepal; C and SW Asia].

1a. Culms 50–70 cm tall; spikelets with 2 glumes; glumes 3- or 4-veined; First lemma ca. 10 mm; awn 12–20 mm ............................................ 8a. var. nutans

1b. Culms 13–20 cm tall; spikelets often with 3 glumes; glumes 5-veined; first lemma awn 3–9 mm ...........................................  8b. var. triglumis

8a. Elymus nutans var. nutans


8. Elymus nutans


Culms erect or geniculate at base, slender, 25–45 cm tall, 2-noded, smooth. Leaf sheath shorter than internode, smooth; ligule very short; leaf blade flat or rolled, 3–6 × 0.15–0.3 cm, abaxial surface smooth, adaxial surface scabrous. Spike lax, curved, 3.5–7.5 cm. Spikelets 2 per node, or 1 per node distally in spike, subsessile or with pedicel ca. 1 mm, purplish, (7–)9–13 mm, with (1 or)2 or 3 (or 4) florets, densely puberulent. Glumes oblong, subequal, 2–3 mm, 3-veined, scabrous along raised midvein, apex acute or acuminate. Lemma lanceolate, ± puberulent; first lemma 7–8 mm; awn less than 2 mm. Palea equaling lemma, ciliolate along keels, apex narrowly obtuse. Anthers ca. 1.7 mm. Fl. and fr. late summer. 2n = 42*.


峰峦披碱草  feng luan pi jian cao

Roegenia cacuminis (B. Rong Lu & B. Salomon) L. B. Cai.

Culms tufted at base, erect or geniculately ascending, 25–57 cm tall, (2 or)3(or 4)-noded, glabrous, or sparsely scabrous below spike. Leaf sheath grayish or purplish, usually hairy at base, smooth distally; ligule to 0.5 mm; auricles pale green, brown, or purple; leaf blade light green to purplish, linear, tightly involute or with involute margin, rarely flat, 2–15 × 0.1–0.6 cm, abaxial surface scabrous, adaxial surface ± pubescent. Spike strongly nodding at flowering, secund or distichous, dense or lax, 4–13 × 0.8–1.2 cm; rachis scabrous on back and margin. Spikelets 1 per node, green or purple, 25–40 × 2.5–4.5 mm, with 3–6 florets; pedicel 5–9 mm. Glumes ovate or narrowly lanceolate, glabrous abaxially, scabrous along veins, margin thin, apex mucronate; proximal glume 2–6 × 0.5–1.4 mm, (1 or)2–5-veined; distal glume (2.5–)3–9 × 0.8–1.5 mm, 3–5(–7)-veined. Lemma narrowly lanceolate-elliptic, 8–11 × 1.2–2 mm, scabrous to sparsely pubescent abaxially; callus narrow ± setulose; awn strongly curved at maturity, 1.5–3 cm. Spikelets 2 per node, or 1 per node distally in spike, subsessile or with pedicel ca. 1 mm, purplish, (7–)9–13 mm, with (1 or)2 or 3 (or 4) florets, densely puberulent. First lemma 7–9.5 mm; culms 4–5 mm in diam.; leaf blade densely pubescent on both surfaces and margin. Anthers yellow or purple, 1.3–2 mm. Fl. and fr. Jul–Sep. 2n = 28*.

Dry scrub, stony mountain slopes, rocky river banks, streams in valleys; 4300–5000 m. Sichuan, Xizang [India (Sikkim), Nepal].


纤毛披碱草  xian mao pi jian cao

Culms solitary or tufted, usually geniculate at base, sometimes erect, 40–130 cm tall, 1–5 mm in diam. Leaf sheath glabrous, or pilose at base; leaf blade flat, 9.25 × 0.3–1 cm, glabrous to scabrous, pilose or pubescent, or densely so. Spike erect or nodding, 10–22 cm; rachis scabrous, margin hispid. Spikelets 1(or 2) per node, green, 10–22 mm excluding awns, with 5–12 florets. Glumes oblong-lanceolate or elliptic-lanceolate, proximal one 6–11 mm, distal one 7–13 mm, 5–7-veined, scabrous, ciliate, or white hisrate along veins and margin, apex acute, acuminate, or pointed. Lemma oblong-lanceolate or oblong, scabrous to hispid or both, margin shortly ciliolate to long ciliolate, apex pointed or awned; first lemma 7–12 mm; awn often reflexed, 1–30 mm. Palea oblong-ovate, much shorter than lemma, scabrous or ciliolate along keels distally, apex truncate. Fl. and fr. May–Jul.

Mountain slopes, moist meadows, roadsides; 1200–1600 m. Anhui, Fujian, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea, Mongolia, Russia].

1a. Leaf blade glabrous to scabrous.

2a. Lemma scabrous abaxially, margin ciliolate; palea scabrous along keels distally ............................. 14c. var. hackeliamus

2b. Lemma hispid abaxially, margin long ciliate; palea ciliolate along keels distally.

3a. Lemma apex with awn 10–30 mm ................................. 14a. var. ciliaris

3b. Lemma apex pointed or with awn 1–3(–7) mm .......................... 14b. var. submuticus

1b. Leaf blade pubescent or pilose to densely so.

4a. Glumes elliptic-lanceolate, ciliate along veins and margin, apex pointed; leaf blade densely pilose on both surfaces .............................. 14f. var. lasiophyllus

4b. Glumes oblong-lanceolate, scabrous or white hisrate along veins and margin, apex acute or acuminate; leaf blade densely pubescent on both surfaces and margin, or pubescent on both surfaces and white pilose along veins and margin.

5a. Glumes scabrous along veins and margin; lemma scabrous or hispidulous abaxially, margin shortly ciliolate, first lemma 9–12 mm; culms 4–5 mm in diam.; leaf blade densely pubescent on both surfaces and margin .............................. 14d. var. amurensis

5b. Glumes white hisrate along veins and margin; lemma punctate-scabrous and densely hispid throughout, first lemma 7–9.5 mm; culms 1–2 mm in diam.; leaf blade pubescent on both surfaces, white pilose along veins and margin .............................. 14e. var. hirtiflorus

14a. Elymus ciliaris var. ciliaris

纤毛披碱草(原变种) xian mao pi jian cao (yuan bian zhong)
Leaf blade glabrous but margin scabrous. Glumes elliptic-lanceolate, apex pointed, usually with teeth below point. Lemma hirsut abaxially, margin long ciliate; first lemma 8–9 mm; awn 10–30 mm. Palea ciliolate along keels distally. Fl. and fr. May–Jul. 2n = 28*.

Mountain slopes, moist meadows, roadsides. Almost throughout China [Japan, Korea, Mongolia, Russia].


短芒纤毛草 duan mang xian mao cao

Agropyron ciliare var. submuticum Honda, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 3(1): 27. 1930; A. ciliare f. submuticum (Honda) Ohwi; Roegneria ciliaris var. submutica (Honda) Keng.

Leaf blade usually glabrous. Lemma hirsut abaxially, margin long ciliate, apex pointed or with awn 1–3(–7) mm. Palea ciliolate along keels distally. Fl. and fr. May–Jul. 2n = 28.

Mountain slopes, moist meadows, roadsides. Anhui, Hebei, Shanxi, Shandong, Zhejiang [Japan, Korea].

14c. Elymus ciliaris var. hackelianus (Honda) G. Zhu & S. L. Chen, comb. nov.

日本纤毛草 ri ben xian mao cao

Basionym: Agropyron japonicum Honda var. hackelianum Honda, Bot. Mag. (Tokyo) 41: 385. 1927; A. ciliare var. hackelianum (Honda) Ohwi; A. ciliare f. japonense (Honda) Ohwi; A. ciliare var. hondense Keng, nom. illeg. superfl.; A. ciliare var. pauperum Keng; A. hackelianum (Honda) Beetle; A. hackelianum var. japonicum Beetle, nom. illeg. superfl.; A. japonense Honda; A. japonense var. hackelianum (Honda) Honda; A. japonicum (Honda) (1927), not (Miquel) P. Candargy (1901); Elymus ciliaris var. japonensis (Honda) S. L. Chen; E. ciliaris subsp. japonicus A. Löve; E. racemifer var. japonensis (Honda) Osaka; Roegneria ciliaris var. hackelianica (Honda) L. B. Cai; R. ciliaris var. japonensis (Honda) C. Yen et al.; R. hackelianica (Honda) Nakai; R. japonensis (Honda) Keng; R. japonensis var. hackelianica (Honda) Keng; R. japonica B. S. Sun, nom. illeg. superfl.


Mountain slopes, Heilongjiang, Nei Mongol [Japan, Korea, Mongolia, Russia].


阿麦纤毛草 a mai xian mao cao

Agropyron amurense Drobow, Trudy Bot. Muz. Imp. Akad. Nauk 12: 50. 1914; A. ciliare subsp. amurense (Drobow) T. Koyama; A. ciliare var. pilosum (Korshinsky) Honda; Elymus ciliaris subsp. amurenensis (Drobow) Tzvelev; Roegneria amurenensis (Drobow) Nevski; R. ciliaris var. pilosa (Korshinsky) Ohwi; Triticum ciliare f. pilosum Korshinsky.

Culms 4–5 mm in diam. Leaf blade both surfaces and margin densely pubescent. Glumes oblong-lanceolate, scabrous along veins and margin, apex acute or acuminate. Lemma scabrous or hispidulous abaxially, margin shortly ciliate; first lemma 9–12 mm; awn 20–25 mm. Fl. and fr. Jun–Jul.

Mountain slopes. Heilongjiang, Nei Mongol [Japan, Korea, Mongolia, Russia].


毛花纤毛草 mao hua xian mao cao


Culms 1–2 mm in diam. Leaf blade both surfaces pubescent, white pilose along veins and margin. Glumes oblong-lanceolate, white hisrate along veins and margin, apex acuminate. Lemma punctate-scabrous and densely hispid throughout; first lemma 7–9.5 mm; awn 16–25 mm. Palea laxly ciliolate along keels distally. Fl. and fr. Jun–Jul.

Mountain slopes; ca. 1200 m. Nei Mongol.

14f. Elymus ciliaris var. lasiophyllus (Kitagawa) S. L. Chen, comb. nov.

毛叶纤毛草 mao ye xian mao cao


Mountain slopes, moist meadows, roadsides; 1500–1600 m. Gansu, Hebei, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi.


沟槽披碱草 gou cao pi jian cao

Agropyron canaliculatum Nevski, Izv. Bot. Sada Akad. Nauk SSSR 30: 509. 1932; Elymus longearistatus (Boissier) Tzvelev subsp. canaliculatus (Nevski) Tzvelev; Roegneria ca-

Plants with short rhizomes. Culms erect, 30–50 cm tall, 1.5–2.5 mm in diam., 3- or 4-noded, glabrous. Leaf sheath glabrous; ligule ca. 1 mm, membranous, apex truncate; leaf blade involute, 4–14 × 0.2–0.3 cm, adaxial surface scabrous or pubescent. Spike slightly nodding, lax, 10–16 cm; rachis flexuose; internodes 12–16 mm. Spikelets 1 per node, yellowish green to dark green, involute, 9–20(–26) × 0.6–1.5 cm, abaxial surface glabrous, adaxial surface scabrous or puberulent. Spike erect or nodding, usually secund, 9–15 cm. Spikelets 1 per node, yellowish green or tinged purplish, 15–25 mm, with (3–)5–7 florets. Glumes oblong-lanceolate or lanceolate, subequal and 10–15 mm or proximal one 6–11 mm and distal one 9–12 mm, 5–7-veined, scabrous along veins, apex acute or acuminate. Lemma lanceolate, hispidulous throughout; first lemma 10–12 mm; awn di varicate, 2.5–4.5 cm. Palea equaling or subequalling lemma, hispid along keels, apex subobtuse or emarginate. Anthers 2.5–3.5 mm. Fl. and fr. Jun–Aug.

Mountain slopes, mountain valleys; 600–2600 m. Gansu, Hebei, Heilongjiang, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Xizang (Pakistan, Russia (Alai, Pamirs), Tajikistan).

17a. Elymus gmelinii var. gmelinii

真穗披碱草 (原变种) zhen sui pi jian cao (yuan bian zhong)

Triticum caninum Linnaeus var. gmelinii Ledebour, Fl. Altaic. 1: 118. 1829 [“gmelini”]. Agropyron caninum (Linnæus) P. Beauvois var. gmelinii (Ledebour) Pease & A. H. Moore; A. gmelinii (Ledebour) Scribn. & J. G. Smith (1897), not (Trinius) P. Candargy (1901); A. tuschianusii Drobow; A. tuschianusii var. tenuisetum Ohwi; Elymus gmelinii subsp. tenuisetus (Ohwi) A. Löve; Roegneria gmelinii (Ledebour) Kitagawa; R. tuschianusii (Drobow) Nevski; R. tuschianusii var. pohuashanensis Keng; R. tuschianusii var. tenuiflora (Ohwi) H. L. Yang & C. P. Wang; Semeiostachys tuschianusii (Drobow) Drobow.

Culms 60–80 cm tall, 1.5–2 mm in diam. at base. Glumes unequal: proximal one 6–11 mm, distal one 9–12 mm. Lemma 2–4 mm. Fl. and fr. Jun–Jul. 2n = 28.

Forest margins, mountain slopes, roadsides; 1300–2300 m. Gansu, Hebei, Heilongjiang, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, Xizang [Japan, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Russia, Turkmenistan, Uzbekistan].


大芒披碱草 da mang pi jian cao


Culms 75–100 cm tall, up to 3 mm in diam. at base; glumes subequal, 10–15 mm. Fl. and fr. Jun–Aug.

Mountain slopes, roadsides; 600–2600 m. Nei Mongol, Xinjiang.

18. Elymus zhui S. L. Chen, nom. nov.

小株披碱草 xiao zhu pi jian cao

Replaced synonym: Roegneria minor Keng, Acta Univ.

Culms erect or slightly procumbent at base, 25–30 cm tall, ca. 4-noded. Leaf sheath glabrous, or pubescent at base; ligule ca. 0.5 mm or obsolete; leaf blade green, involute or flat, 8–10(–15) × 0.2–0.4 cm, abaxial surface pilose, adaxial surface densely pilose. Spike erect, 8–9 cm. Spikelets 1 per node, green, with (2 or)3–5 florets. Glumes oblong-lanceolate, proximal one 5–7 mm, distal one 6–8 mm, 5- or 6-veined, scabrous along veins, apex acute, sometimes with a tooth just below apex. Lemma lanceolate, puberulent throughout; first lemma ca. 8.5 mm; awn reflexed, ca. 1.2 cm. Palea subequaling lemma, rigidly ciliolate along keels, puberulent between keels distally, apex subrounded. Fl. and fr. Jun–Jul. 2


19a. Elymus formosanus var. formosanus

台灣披碱草 tai wan pi jian cao

Culms erect, 30–90 cm tall. Leaf sheath glabrous, or pubescent at base; leaf blade ca. 20 × 0.2–0.6 cm, both surfaces glabrous or scabrous. Spike slightly nodding, 10–20 cm. Spikelets 1 per node, lax, ca. 20 mm, with 5–7 florets. Glumes lanceolate, proximal one ca. 5 mm, distal one 7–9 mm, 5–7-veined, apex acute; veins robust, scabrous. Lemma oblong-lanceolate, ca. 8 mm, abaxially rounded and scabrous or pubescent, margin ciliolate; callus broad, rounded; awn recurved, 1–3.5 cm, rigid. Palea subequaling lemma, ciliate along keels, apex subrounded or slightly emarginate. Caryopsis ca. 3 mm. Fl. and fr. Jun–Jul. 2n = 28*.

1a. Culms 60–90 cm tall; leaf sheath glabrous, leaf blade 0.4–0.6 cm wide; spike 15–20 cm; lemma awn 2–3.5 cm .............. 19a. var. formosanus

1b. Culms 30–50 cm tall; leaf sheath usually pubescent at base; leaf blade 0.2–0.4 cm wide; spike 10–12 cm; lemma awn 1–2 cm ............................................. 19b. var. pubigerus


毛鞘台湾草 mao qiao tai wan cao


Culms 30–50 cm tall. Leaf sheath usually pubescent at base; leaf blade 0.2–0.4 cm wide. Spike 10–12 cm. Lemma with awn 1–2 cm. Fl. and fr. Jun–Jul.

Mountain slopes. Taiwan.


西藏披碱草 xi zang pi jian cao


Culms laxly tufted, 70–100 cm tall, 3- or 4-noded, smooth and glabrous, or nodes pubescent. Leaf sheath densely hispidulous proximally, glabrous distally; leaf blade green, flat, 12–16 × 0.3–0.6 cm, abaxial surface and near margin scabrous, adaxial surface pilose. Spike suberect or ± nodding, usually dense, or lax proximally, 10–16 cm. Spikelets 1 per node, green, 10–16 mm excluding awns, with (3 or)4 or 5 florets. Glumes oblong-lanceolate, proximal one 7–8.5 mm, distal one 8.5–10 mm, 5–7-veined, scabrous along veins, margin narrowly hyaline-membranous, apex acuminate or with awn to 6 mm. Lemma narrowly lanceolate, 8–10 mm, glabrous abaxially, apex hispidulous; awn straight or slightly curved, 1–1.7 cm. Palea narrowly lanceolate, subequaling lemma, hispidulous distally abaxially, ciliate along keels, apex emarginate or truncate-obtuse. Anthers yellow, 2–2.3 mm. Fl. and fr. Jul–Aug. 2n = 28*.

Forests, mountain slopes, valleys, roadsides; ca. 2500 m. Xizang, Yunnan [Bhutan].

21. Elymus nakaii (Kitagawa) S. L. Chen, comb. nov.

吉林披碱草 ji lin pi jian cao


Culms erect, slightly decumbent at base, ca. 100 cm tall, ± puberulent at nodes. Leaf sheath glabrous, or retrorsely pubescent proximally; leaf blade flat, 11–20 × 0.4–0.7 cm, thin, abaxial surface glabrous, adaxial surface pilose. Spike erect, 10–13 cm. Spikelets 1 per node, ± secund, dense, with ca. 5 florets. Glumes lanceolate, proximal one 9–10 mm including point, distal one 9.5–11.5 mm including point, (3–)5(–7)-veined, scabrous along veins, margin glabrous, apex acuminate. Lemma hirsutulous near base and margin and along veins, otherwise glabrous; first lemma ca. 10 mm; awn reflexed, 18–22 mm. Palea subequaling lemma, rigidly ciliate along keels, between keels glabrous proximally and puberulent distally, apex emarginate, truncate, or subrounded. Fl. and fr. Jul–Aug. 2n = 28*.

Meadows, mountain slopes. Hebei, Jilin, Nei Mongol, Ningxia [N Korea].

Löve (Feddes Repert. 95: 458. 1984) did not previously validly ...
publish the combination *Elymus nakaii* because the place of valid publication of the basionym was not cited (Saint Louis Code, Art. 33.3). Instead, *Roegneria nakaii* was cited from Kitagawa (J. Jap. Bot. 17: 236, 1941), where the name was not validly published because no Latin description was provided (Art. 36.1).


#### 腹草 su cao


Culms erect or slightly geniculate at base, 50–100 cm tall, glabrous throughout. Leaf sheath glabrous; leaf blade glaucous or farinose, involute, (3.5–)8–16 × (0.1–)0.4–0.8 cm, stiff, abaxial surface glabrous, adaxial surface pubescent. Spike erect, (3.5–)10–18–(–26) cm. Spikelets 1 per node, glaucous, or purplish at maturity, (8–)15–20 mm, with (3–)5–8–(14) florets. Glumes: proximal one 5–8–(–11) mm, distal one 6–13 mm, (3–) 5–7–veined, apex acute or with macro 1–5 mm; veins usually robust, scabrous. Lemma smooth and glabrous abaxially, or only so at middle and then otherwise ± puberulent, or hirsute along veins and on callus; first lemma (7–)9–10 mm; awn subulate, (7–)14–22 mm, scabrous. Palea equaling lemma, ciliolate along keels distally, between keels puberulent distally or glabrous, apex emarginate or truncate. Anthers usually yellow, 1–2 mm. Fl. and fr. Jul–Oct. 2n = 28*.

- Mountain slopes, valleys, meadows, roadsides; 1300–4000 m. Gansu, Guizhou, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan.
- Lőve (Feddes Repert. 95: 458. 1984) did not previously validly publish the combination *Elymus strictus*; see the note following the genus description above. Because of this, Chen and Zhu (Novon 12: 428. 2002) did not previously validly publish *E. strictus* var. *crassus* (Saint Louis Code, Art. 43.1).

#### 22a. *Elymus strictus* var. *strictus*

#### 腹草 su cao

*Elymus gmelinii* (Ledebour) Tzvelev subsp. *strictus* (Keng) K. B. Jensen; *Roegneria stricta* Keng; *R. stricta* f. *major* Keng; *R. varia* Keng.

Lemma glabrous at middle abaxially, otherwise ± puberulent. Palea between keels puberulent distally.

- Mountain slopes, valleys, meadows, roadsides; 1300–2000 m. Gansu, Guizhou, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan.
- Lőve (Feddes Repert. 95: 448. 1984) did not previously validly publish the name *Elymus caesifolius*; see the note following the genus description above.


#### 粗茎腹草 cu zhuang su cao


Lemma glabrous abaxially or hirsute along veins and on callus. Palea between keels glabrous. Fl. and fr. Jul–Aug.

- Mountain slopes; 1800–4000 m. Ningxia, Qinghai.
- Mountain slopes; 1300–2000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, Uzbekistan; SW Asia, Europe].


#### 犬草 quan cao

*Triticum caninum* Linnaeus, Sp. Pl. 1: 86. 1753; *Agrimony caninum* (Linnaeus) P. Beauvois; *Braconotia canina* (Linnaeus) Fourreau; *R. elymoides* Godron, nom. illeg. superfl.; *Elytrigia canina* (Linnaeus) Drobow; *Goulardia canina* (Linnaeus) Husnot; *Roegneria canina* (Linnaeus) Nevski; *Zea canina* (Linnaeus) Lunell.

Culms laxly tufted, 80–150 cm tall, smooth. Leaf sheath glabrous; leaf blade green or glaucous green, broadly linear, flat, 12–20 × 0.5–1.1 cm, thin, glabrous or adaxial surface scabrous to scattered pilose. Spike nodding, somewhat dense, 10–20 cm. Spikelets 1 per node, green, rarely greenish purple, 10–15 mm excluding awns, with 2–5 florets. Glumes lanceolate, abruptly narrowed distally, 3–5–veined with broad secondary veins, scabrous, margin scarios; proximal glume 0.6–1 cm, awn ca. 2 mm; distal glume 0.7–1.1 cm, awn 2–4 mm. Lemma smooth, 0.9–1.1 cm; awn divergent, 1.5–1.8 cm. Palea apex truncate. Anthers 2.5–2.8 cm. Fl. and fr. Jun–Aug. 2n = 28*.

- Forests, forest glades, scrub, mountain slopes; 1300–2000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, Uzbekistan; SW Asia, Europe].


#### 马格草 ma ge cao


Culms tufted, erect, 30–60 cm tall, 2- or 3-noded, glabrous. Leaf sheath glabrous or pilose at base; leaf blade glaucous, involute, (2–)36–16 × (0.1–)0.3–0.5 cm, stiff; abaxial surface smooth, glabrous, adaxial surface and margin scabrous. Spike erect, 6–15 cm. Spikelets 1 per node, 13–15 mm excluding awns, with 3–5 florets. Glumes oblong-lanceolate, proximal one 4–7 mm, distal one 6–8 mm, both 3-veined or distal one 5–veined, margin scarios, apex acute or acuminate. Lemma oblong-lanceolate, scabrous abaxially, scabrous or hirsutulous along veins; first lemma 9–11 mm; awn reflexed, 15–30 mm, scabrous. Palea slightly shorter than or subequaling lemma, abaxially hirsutulous in distal half, ciliolate along keels, apex truncate. Fl. and fr. late summer. 2n = 42*.

- Mountain slopes. Xizang.
- Lőve (Feddes Repert. 95: 448. 1984) did not previously validly publish the name *Elymus caesifolius*; see the note following the genus description above.


#### 岷山披碱草 min shan pi jian cao

Culms solitary or tufted, usually geniculate or with swollen nodes at base, 55–80 cm tall; nodes glaucous or purplish green, glabrous. Leaf sheath sometimes retrorsely pubescent; leaf blade flat or involute, 6–20(–25) × 0.1–0.45 cm, stiff, abaxial surface smooth or puberulent, adaxial surface scabrous or laxly puberulent. Spike nodding, 5–11 cm. Spikelets 1 per node, green or purplish green, 1.6–2.2 cm, with (3 or)4–7 florets; pedicel 0.8–1.5(–2) mm, glabrous or puberulent. Glumes lanceolate, scabrous along veins, margin thin, apex acute, acuminate, or pointed; proximal glume 3–4(–7) mm, 1–5-veined; distal glume 5–9 mm, 3–5-veined. Lemma lanceolate, hispidulous or scabrous; first lemma ca. 11 mm; awn reflexed, 1.5–2.8 mm. Palea subequaling lemma, ciliate along keels, puberulent between keels. Anthers black, ca. 1.5 mm. Fl. and fr. late summer. 2n = 28.

- Mountain meadows; 3700–4200 m. Gansu, Qinghai, Sichuan, Xinjiang, Xizang, Yunnan.

Löve (Feddes Repert. 95: 448. 1984) published *Elymus schreibersii* as a *nomen novum* for *Brachypodium durum*, but the supposed blocking name, “*Elymus durus* Hedw. ex Steud., 1854” (Steudel, Nomencl. Bot., ed. 2, 1: 550, 551. 1840), was merely cited as a synonym by Steudel and was therefore not validly published under Art. 34.1(c) of the Saint Louis Code. Under Art. 11.4, the correct name in *Elymus* at specific rank is *E. durus*. Löve’s name was therefore nomenclaturally superfluous when published and is illegitimate under Art. 52.1.


Culms tufted at base, slender, 50–100 cm tall, 3–5-noded, glabrous or scabrous below spike. Leaf sheath smooth or scabrous to sparingly hairy, margin sometimes ciliate; ligule 0.2–0.5 mm; leaf blade flat, 6–15 × 0.25–0.8 cm, both surfaces scabrous or pubescent. Spike ± nodding at flowering, distichous, 7.5–21 cm; rachis glabrous or ± scabrous on back and margin. Spikelets 1 per node, subsessile, green or purplish, 20–40 × 2–6 mm, with 3–7(–9) developed florets. Glumes oblong, lanceolate, or subovate, scabrous abaxially or only along veins, margin narrowly hyaline, apex mucronate; proximal glume 1.5–3 × 0.5–1.2 mm, 2–3-veined; distal glume 3.5–5 × 0.6–1.5 mm, 3–5-veined. Lemma lanceolate, 8–11.5 × 1.2–1.8 mm, glabrous, pubescent, or densely so abaxially; awn straight or slightly curved, 1–2 mm at maturity; callus setulose to densely so. Palea slightly shorter than lemma, scabrous-pubescent to pubescent adaxially, ciliate along keels distally, apex obtuse. Anthers yellow or purple, 2–3 mm. Fl. and fr. Jun–Jul. 2n = 28.

Mountain slopes and valleys, river banks; 2300–3800 m. Qinghai, Sichuan, Xizang, Yunnan [Nepal].


rhizome. Culms erect, glaucous, ca. 80 cm tall. Leaf sheath smooth and glabrous, or puberulent at base; leaf blade glaucous, flat, or involute when dry, 8–15 × (0.1–)0.3–0.4 cm, stiff, abaxial surface smooth, glabrous, adaxial surface scabrous. Spike erect, 5–12 cm, with 6–11 spikelets. Spikelets 1 per node, greenish, striamineous when old; rachilla smooth and glabrous, or puberulent. Glumes lucid, oblong-lanceolate, glabrous, margin membranous, apex acute with a tooth on one side; proximal glume 4–6 mm, 3-veined; distal glume 5.5–7.5 mm, 3–5-veined. Lemma oblone-lanceolate, smooth and glabrous throughout; first lemma ca. 9 mm; awn recurved, 3–20 mm, scabrous. Palea equaling lemma, smooth and glabrous abaxially distally or scabrous proximally, ciliolate along keels, apex emarginate or truncate. Fl. and fr. Aug–Sep.

- **Meadows, mountain steppes, rocky slopes; 1400–2300 m. Qinghai, Xinjiang.**

1a. Lemma awn 10–20 mm; plants usually without rhizome ......................... 29a. var. glaberrimus

1b. Lemma awn 3–5 mm; plants usually with short rhizome ........................... 29b. var. breviaristus

29a. Elymus glaberrimus var. glaberrimus

光穗披碱草 (原变种) ɡuānɡ suì pī jiǎn cāo (yuán biàn zhǒnɡ)


- **Rocky slopes; 1400–2300 m. Qinghai, Xinjiang.**


短芒光穗披碱草 duǎn mánɡ ɡuānɡ suì pī jiǎn cāo

Roegneria breviarista (S. L. Chen ex D. F. Cui) L. B. Cai; R. glaberrima var. breviarista (S. L. Chen ex D. F. Cui) L. B. Cai.

Plants usually with short rhizome. Lemma awn 3–5 mm. Fl. and fr. late summer.

- **Meadows, mountain steppes; 1600–1700 m. Xinjiang.**


阿尔泰披碱草 ā ě r tài pī jiǎn cāo


Culms erect, 50–75 cm tall, 3-noded, glabrous; nodes ± purplish. Leaf sheath purplish when young, yellowish brown when older, smooth, glabrous; ligule ca. 1 mm, membranous; leaf blade usually involute, 10–18 × 0.2–0.35 cm, abaxial surface smooth, adaxial surface scabrous. Spike dense, 8–9 cm; rachis smooth, margin ciliolate; internodes 7–9 mm. Spikelets 1 per node, purplish, subulinate, 13–15 mm, with 3 or 4 florets; rachilla puberulent; internodes 2–3 mm. Glumes broadly lanceolate, subequal, 9–11 mm, 5-veined, margin broadly membranous, apex awnless. Lemma purplish, lanceolate, puberulent; first lemma 10–12 mm; callus puberulent; awn purplish, recurved, robust, 14–18 mm. Palea slightly shorter than or sub-equaling lemma, ciliolate along keels distally. Anthers yellow, ca. 2.5 mm. Fl. and fr. Jun–Aug.

- **Forest understories along river valleys, mountain slopes. Xinjiang.**


新疆披碱草 xiān jiāng pī jiǎn cāo

Roegneria sinkiangensis (D. F. Cui) L. B. Cai.

Culms 60–80 cm tall, 2- or 3-noded. Leaf sheath smooth, glabrous, but retrorsely pubescent at base; ligule ca. 0.3 mm; leaf blade flat, 5–30 × 0.3–0.5 cm, abaxial surface smooth, glabrous, adaxial surface long pilose, margin ciliate. Spike erect, dense, 7–10 cm; rachis subglabrous, margin ciliate; internodes 4–7 mm. Spikelets 1 per node, 13–15(–18) mm, with 4 or 5 (or 6) florets. Glumes lanceolate, 3–5-veined, hispidulous along veins, margin membranous, apex acuminate or with awn ca. 2 mm; proximal glume 9–10 mm including awn; distal glume 10–12 mm including awn. Lemma lanceolate, hispidulous distally and near margin; first lemma 10–12 mm; awn recurved, 20–35 mm, scabrous. Palea equaling lemma, ciliate along keels. Anthers yellow, 1.5–2 mm. Fl. and fr. Jul–Sep.

- **Forest margins, mountain steppes; 1800–2100 m. Xinjiang.**


低株披碱草 dī zhu pī jiǎn cāo

Agropyron jacquemontii J. D. Hooker, Fl. Brit. India 7: 369. 1896 ["1897"]; Anthosachne jacquemontii (J. D. Hooker) Nevski; Roegneria jacquemontii (J. D. Hooker) Nevski.

Culms slender, 15–20 cm tall, 2- or 3 (or 4) -noded. Leaf blade green or light green, glaucous, involute, 2–(4–7) × 0.1–0.2 cm, abaxial surface glabrous, adaxial surface scabrous or ± pubescent. Spike 4–11 × 0.8–2 cm, with 4 or 5 spikelets; rachis slender, 8–15 cm, glabrous. Spikelets 1 per node, sub sessile, 12–18 mm, with 4–7 florets. Glumes 4.5–7 mm, 5-veined, glabrous, margin hyaline, apex with short awn 1–3 (–5) mm. Lemma lanceolate, glabrous throughout; first lemma 7–9 mm; awn strongly curved, 20–50–60 mm. Palea equaling lemma, ciliate along keels, apex obtuse. Anthers yellow or purple, 1.2–2.5 mm. Fl. and fr. late summer. 2n = 28*.

- **Stony mountain slopes, alluvial soils, between rocks, usually growing together with *Elymus hurcan-buddae* and *E. nutans*; ca. 3900 m. Xinjiang, Xizang.**


芒颖披碱草 máng yǐng pī jiǎn cāo

Culms solitary or tufted, erect, (15–)40–50 cm tall, 1- or 2-noded, glabrous. Leaf sheath glabrous; leaf blade flat, ± so, or involute, 6–8(–11) × 0.5 cm, glabrous, scabrous, or densely
hispidulous. Spike nodding, 6–8 cm excluding awns; rachis margin scabrous; internodes 3–10 mm. Spikelets 1 per node, purple, 12–15 mm excluding awns, with 2 or 3 florets; pedicel 0.5–1 mm, scabrous. Glumes narrowly lanceolate, subsymmetric, 1–3-veined, scabrous or smooth, apex with awn 3–7 mm; proximal glume 3–4 mm; distal glume 3–5 mm. Lemma oblong, smooth and glabrous or hirsutulous; first lemma ca. 10 mm; awn reflexed, 20–40 mm. Palea equaling lemma, hirsutulous throughout, ciliolate along keels. Anthers black, ca. 2 mm. Fl. and fr. late summer. 2n = 28*, 42*.

- Mountain slopes, river banks; 1500–5200 m. Gansu, Qinghai, Sichuan, Xinjiang, Xizang.

1a. Leaf blade involute, less than 0.2 cm wide, both surfaces densely hispidulous ......... 33b. var. hirsutus

1b. Leaf blade flat or ± so, 0.4–0.5 cm wide, glabrous or scabrous.

2a. Lemma ± hirsutulous throughout except callus glabrous, awn 20–30 mm ........................................ 33a. var. aristiglumis

2b. Lemma smooth, glabrous, awn to 40 mm ...................... 33c. var. leianthus

33a. Elymus aristiglumis var. aristiglumis

芒颖披碱草（原变种） mang ying pi jian cao (yuan bian zhong)


Leaf blade flat, 0.4–0.5 cm wide, glabrous or scabrous. Lemma ± hirsutulous throughout except callus glabrous; awn 20–30 mm. Fl. and fr. late summer.

- Mountain slopes; 1500–3000 m. Gansu, Qinghai, Sichuan, Xinjiang, Xizang.


毛芒颖草 mao mang ying cao


Leaf blade involute, less than 0.2 cm wide, both surfaces densely hispidulous. Lemma hirsutulous throughout; awn 20–30 mm. Fl. and fr. late summer.

- Mountain slopes; 4400–4500 m. Xizang.


平滑披碱草 ping hua pi jian cao


Leaf blade ± flat, 0.4–0.5 cm wide, glabrous or scabrous. Lemma smooth, glabrous; awn to 40 mm. Fl. and fr. late summer.

- Mountain slopes, river banks; 4900–5200 m. Xizang.


守良披碱草 shou liang pi jian cao


Culms erect, 60–70 cm tall, 2–3 mm in diam., ca. 4-noded. Leaf sheath glabrous, ligule ca. 0.3 mm, apex truncate; leaf blade flat, 9–17 × 0.3–0.6 cm, rigid, both surfaces glabrous or adaxial surface scabrous. Spike lax, 16–19 cm; rachis glabrous, but margin scabrous; internodes 15–23 mm. Spikelets 1 per node, 2.6–3.2 cm excluding awns, with 8–10 florets; rachilla internodes puberulent. Glumes lanceolate, glabrous; proximal glume 7–8 mm, distal glume 8–9 mm; 5–7-veined, apex with awn 2–5 mm. Lemma lanceolate, smooth, glabrous; first lemma 11–12 mm; awn recurved, robust, 3.5–4 cm. Palea subequaling lemma, scabrous or spinescent along keels, glabrous between keels, apex truncate. Anthers brown, 4–5 mm. Ovary obovate, apex pubescent. Fl. and fr. Jul.

- River banks; ca. 2800 m. Xizang (Gyirong)


紊乱草 wen cao


Culms 30–70 cm tall, 3-noded. Leaf sheath glabrous, but retrorsely pilose at base; leaf blade green, usually involute, 3–7.4 × ca. 0.4 cm, abaxial surface glabrous, adaxial surface scabrous. Spike erect, ca. 10 cm. Spikelets yellowish, green, or purplish green, 10–15 mm excluding awns, with 4 or 5 florets. Glumes narrowly lanceolate, 3-veined or distal glume 5-veined, scabrous along veins, apex long acuminate or distal glume with short awn; proximal glume 4–6 mm; distal glume 6–8 mm. Lemma laxly hirsutulous abaxially; first lemma 9–11 mm; awn reflexed, 13–15 mm, scabrous. Palea equaling lemma, ciliolate along keels distally, apex usually truncate. Fl. and fr. Jul.–Aug. 2n = 42*.

- Meadows. Ningxia, Xinjiang.

Elymus confusus var. confusus is distributed in Mongolia and Russia, but has not yet been recorded from China. It differs from var. breviaristatus in having the awn of the first lemma about twice as long as the lemma body and in its chromosome number of 2n = 28.


假花鳞草 jia hua lin cao

Culms solitary or tufted, 60–75 cm tall, 1.5–2.5 mm in diam., 4–6-noded. Leaf sheath glabrous; leaf blade flat, 11–25 × 0.35–0.7 cm, both surfaces villous or adaxial surface pilose or glabrous. Spike pendulous, 8–16 cm. Spikelets 1 per node, yel-
lowish green or tinged purplish, 24–30 mm excluding awns, with 5–7 florets; rachilla villous; internodes ca. 3 mm. Glumes lanceolate, 3–5(–7)-veined, scabrous along veins, apex acute; proximal glume 5–7.5 mm; distal glume 7–9 mm. Lemma lanceolate, hirsute throughout, especially distally and near margin, or glabrous or scabrous; first lemma 13–14 mm; awn reflexed, robust, 20–35 mm. Palea slightly shorter than or equaling lemma, ciliolate along keels distally. Anthers reddish brown, 1–2 mm. Fl. and fr. Jul.–Aug.

- Mountain slopes; 2700–4000 m. Qinghai, Sichuan, Xizang, Yunnan.

Löve (Feddes Repert. 95: 459. 1984) did not previously validly publish the combination Elymus anthosachnoides; see the note following the genus description above.

36a. Elymus anthosachnoides var. anthosachnoides

假花鳞草 (原变种) jia hua lin cao (yuan bian zhong)


- Mountain slopes; ca. 4000 m. Sichuan, Yunnan.

36b. Elymus anthosachnoides var. scabrilemmatus (L. B. Cai) S. L. Chen, comb. nov.

糙稃花鳞草 cao fu hua lin cao


- Mountain slopes; 2700–3600 m. Qinghai, Sichuan.


高株披碱草 gao zhu pi jian cao


Culms tufted, erect, slightly glandulate, 70–150 cm, rigid, 5–7-noded. Leaf blade glaucous green, 7–25(–40) × 0.6–1 cm, abaxial surface glabrous, adaxial surface laxly puberulent, margin scabrous. Spike erect or slightly curved, 15–18 cm. Spikelets 1 per node, ca. 11 mm, with 1–3 florets. Glumes greenish or slightly purplish, oblong, 5–6 mm, thick, 5–7-veined or proximal glume 3-veined, apex acuminatae. Lemma yellowish green or slightly purplish, oblong-lanceolate, pubescent only at base and at margin; first lemma ca. 10 mm; awn slightly reflexed, robust, 10–20 mm. Palea slightly shorter than lemma, apex emarginate or subrounded. Fl. and fr. Jun.–Sep. 2n = 28*.

- Mountain slopes. Henan, Qinghai, Shaanxi.

Löve (Feddes Repert. 95: 448. 1984) did not previously validly publish the combination Elymus altissimus; see the note following the genus description above.


稀节披碱草 xi jie pi jian cao


Culms erect or geniculate at base, 40–80 cm tall, 1–1.5 mm in diam., 3- or 4-noded, pubescent below spike and at nodes. Leaf sheath puberulent or scabrous; ligule ca. 0.5 mm, membranous, apex truncate; leaf blade flat, 10–16 × 0.4–0.6 cm, abaxial surface scabrous or ciliate along veins, adaxial surface villose. Spike erect or slightly curved, lax, 8–11 cm; rachis slender, puberulent; internodes 13–20(–28) mm. Spikelets narrow, 15–18 mm, with 2–5 florets. Glumes lanceolate, 3–5-veined, sparsely spinose along veins and at margin, apex pungent; proximal glume 3–4 mm; distal glume 4–5 mm. Lemma narrowly lanceolate, abaxially puberulent; first lemma 9–10 mm; awn curved, 1.2–1.6 cm. Palea slightly shorter than lemma, scabrous along keels, puberulent between keels, apex truncate or obtuse. Anthers yellow, 2–2.5 mm. Caryopsis lanceolate, 6–7 mm. Fl. and fr. Aug.–Sep.

- Mountain slopes; 3500–4000 m. Qinghai (Yushu), Sichuan (Kangding).


秋披碱草 qiu pi jian cao


Culms laxly tufted, erect, or decumbent or geniculate at base, 20–45 cm tall. Leaf sheath puberulent or margin ciliate at base; leaf blade involute, 9–11(–20) × 0.1–0.2 cm, both surfaces smooth and glabrous or adaxial surface scabrous. Spike curved and nodding, 6–10 cm, with 5–11 spikelets. Spikelets 1 per node, yellowish brown or purplish green, 12–13(–22) mm excluding awns, with 3–6(–7) florets. Glumes oblong-lanceolate, 3–5-veined, laxly puberulent, scabrous along veins, apex acute or acuminate; proximal glume 5–6 mm; distal glume 7–8 mm; awn usually 2–5 mm. Lemma oblong-lanceolate, puberulent proximally, hispidulous distally; first lemma ca. 10 mm; awn reflexed, 2.5–3 cm, scabrous. Palea equaling lemma, puberulent between keels distally. Fl. and fr. late summer. 2n = 28*.

- Forests, meadows; 1700–3400 m. Qinghai, Sichuan, Xinjiang, Yunnan.

Löve (Feddes Repert. 95: 467. 1984) did not previously validly publish the combination Elymus serotinus; see the note following the genus description above.

**Elymus leiotropis** (Keng) S. L. Chen, **comb. nov.**


Culms tufted, erect but geniculate at base, 60–90 cm tall, 3-noded. Leaf sheath glabrous; ligule ca. 0.2 mm, apex truncate; leaf blade flat or slightly involute, 7–17 × 0.2–0.4 cm, abaxial surface smooth, adaxial surface scabrous. Spike curved or nodding, 10–15 cm. Spikelets 1 per node, purplish green, ± nitid, 14–22 × 4–7 mm; pedicel 0.5–2 mm. Glumes narrowly lanceolate, subequal, small, slightly shorter than lemma, distally scabrous, smooth along keels, apex truncate. Anthers 1.5–2.5 mm. Fl. and fr. late summer. 2n = 28*.

- Dry to moist mountain slopes and meadows usually with shrubs and *Betula* trees; 3900–4300 m. Xizang.


扭轴披碱草 **niu zhou pi jian cao**


Culms robust, 30–90 cm tall. Sheath of lower leaves trirorsely pubescent; leaf blade flat, 5–8 × 0.3–0.6 cm, scabrous or sometimes pubescent. Spike curved, ± secund, dense, 5–11 cm; internodes 3–5 mm. Spikelets 1 per node, usually very shortly pedicellate, purplish green, with 3 or 4 (or 5) florets. Glumes linear-lanceolate, 3-veined; proximal glume 4.5–5.5 mm, awn ca. 5 mm. Lemma lanceolate, very scabrous; first lemma ca. 11 mm; awn di-varicate, 15–22 mm. Palea subequaling or equaling lemma, hispid along keels, apex subobtuse. Anthers 1.5–1.8 mm. Fl. and fr. Jun–Jul. 2n = 42*.

Glades, mountain slopes, dry river meadows. Qinghai, Xinjiang, Xizang [Bhutan, India (Sikkim), Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Russia, Turkmenistan, Uzbekistan].


普兰披碱草 **pu lan pi jian cao**


Culms laxly tufted, 30–50 cm tall, 3- or 4-noded. Leaf blade flat or involute, 7–10 × 0.15–0.3 cm, both surfaces glabrous or laxly villous. Spike curved, 8–10 cm, with 5–8 spikelets; rachis smooth, glabrous; internodes 14–20 cm. Spikelets 1 per node, 22–26 mm, with 7–9 florets. Glumes oblong-lanceolate, 3–5-veined, smooth, glabrous, margin membranous; proximal glume 4.5–5.5 mm, awn (1–)1.5–5 mm; distal glume 5–7 mm, awn to 7 mm. Lemma lanceolate, ± laxly hirsutulous.
abaxially; first lemma ca. 11 mm; awn reflexed, 30–40 mm. Pala
ea equaling lemma, shortly ciliate along keels distally. Fl. and fr. late summer.

- River banks; ca. 3600 m. Xizang, Yunnan.
45. Elymus purpurascens (Keng) S. L. Chen, comb. nov.

紫穂披碱草  zi sui pi jian cao


Culms laxly tufted, erect or slightly decumbent at base, 60–90 cm tall, rigid. Leaf sheath smooth, glabrous; leaf blade involute, 11–22 × 0.3–0.6 cm, stiff, abaxial surface glabrous, adaxial surface scabrous or pubescent, margin scabrous. Spike nodding, 13–15 cm, with 8–13 spikelets. Spikelets 1 per node, purplish in part, 1.5–2.3 cm excluding awns, with 4–7 florets. Glumes oblong-lanceolate, 5–8 mm, 5-veined, scabrous, apex acute; proximal glume sometimes shorter and 3-veined. Lemma lanceolate, scabrous or hirsutulous abaxially; first lemma 9–11 mm; awn reflexed, purplish, robust, 18–28 mm, scabrous. Palea subequaling lemma, shortly ciliate along keels distally, puberulent between keels. Fl. and fr. Jun–Jul. 2

- Mountain slopes. Gansu, Nei Mongol, Ningxia, Qinghai, Yunnan.

Löve (Feddes Repert. 95: 448. 1984) did not previously validly publish the combination Elymus purpurascens; see the note following the genus description above.

46. Elymus tschimganicus (Drobow) Tzvelev, Rast. Tsentr. Azii 4: 221. 1968 ["czimganicus ".]

云山披碱草  yun shan pi jian cao

Culms erect, usually geniculate at base, 25–60 cm tall, smooth, glabrous. Leaf sheath glabrous throughout, or pubescent proximally; leaf blade glaucous green, subinvolute, 0.15–0.3 cm wide, both surfaces glabrous or adaxial surface slightly hairy. Spike flexuose, slender, 7–9 cm. Spikelets 1 per node, pale glaucous green, rarely very slightly tinged purple, with 5–7 florets. Glumes linear-lanceolate, 4–8 mm, 1/4–1/2 as long as basal florets in spikelet, (3–)5-veined, scabrous along veins, apex usually acuminate, occasionally shortly awned. Lemma lanceolate, 9–10 mm, scabrous; callus shortly setose on sides, or smooth and glabrous; awn reflexed, 20–30 mm. Palea subequaling lemma, apex slightly emarginate or obtuse. Anthers 2–2.5 mm. Fl. and fr. Jun–Jul.

Mountain slopes, high mountain meadows; ca. 3500 m. Qinghai, Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, Uzbekistan].

See the comment under Elymus brevipes (species no. 42).

1a. Lemma callus shortly setose on sides; leaf sheath glabrous, or pubescent proximally .......................... 46a. var. tschimganicus
1b. Lemma callus smooth, glabrous; leaf sheath glabrous throughout .... 46b. var. glabrispiculus

46a. Elymus tschimganicus var. tschimganicus

叶山披碱草 (原变种)  yun shan pi jian cao (yuan bian zhong)

Agropyron tschimganicum Drobow in Vvedensky et al., Key Fl. Tashkent 1: 40. 1923; Roegneria tschimganica (Drobow) Nevski.


- High mountain meadows. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, Uzbekistan].

“Roegneria czimganica,” “Elymus czimganicus,” and “Roegneria czimganica” are merely orthographical variants.


光稃披碱草  guang fu pi jian cao

Roegneria glabrispicula (D. F. Cui) L. B. Cai; R. tschimganica var. glabrispicula (D. F. Cui) L. B. Cai.

Leaf sheath glabrous throughout. Lemma callus smooth, glabrous. Fl. and fr. summer.

- Mountain slopes; ca. 3500 m. Xinjiang.


狭颖披碱草  xia ying pi jian cao

Plants ± with rhizome, or if without rhizome then culms tufted. Culms erect, 60–120 cm tall. Leaf blade flat, 10–20 × 0.4–0.7 cm, glabrous. Spike usually dense, 6–20 × 0.4–0.7 cm; rachis margin ciliate; internodes 9–15 mm. Spikelets 1 per node, green, purple, glaucous, or purplish glaucous, 10–20 mm, with 2–5 florets; very shortly pedicellate. Glumes lanceolate or broadly so, 7–13 × 1.5–2 mm, 5-veined, scabrous or hirsutulous, margin sometimes broadly membranous, apex acute to awned; awn (when present) 1–2 mm. Lemma narrowly elliptic, 8–9 mm, scabrous, ± pilose, or pubescent throughout; awn 1–7 mm. Palea equaling or subequaling lemma, margin ciliate, apex emarginate, truncate, or obtuse. Anthers 2–3 mm. Fl. and fr. Jun–Sep. 2n = 28*.

Sparse forests, forest margins and glades, among shrubs, mountain slopes, meadows, pebbles; 1200–2400 m. Xinjiang [Mongolia, Russia; C and SW Asia, Europe].

This species is a good forage grass.

1a. Plants without rhizome (culms tufted); spikelets usually glaucous or purplish glaucous .................... 47c. var. praecaespitosus
1b. Plants ± with rhizome; spikelets purple or green.

2a. Spikelets usually purple; glumes lanceolate; lemma ± pilose, awn 2–5 mm ......................... 47a. var. mutabilis
2b. Spikelets usually green; glumes broadly lanceolate; lemma pubescent throughout, awn 1–2 mm .................. 47b. var. nemoralis
47a. Elymus mutabilis var. mutabilis

密丛披碱草 (原变种) xia ying pi jian cao (yuán biàn zhòng)


Plants without rhizome. Culms laxly tufted. Glumes oblong-lanceolate, 3–5-veined, densely pubescent. Spikelets 1 per node, 4–6 florets; rachilla densely pubescent. Lemma lanceolate, smooth, obscurely 5-veined, margin narrowly membranous, apex acute to pointed; callus smooth, glabrous; first lemma ca. 10 mm. Palea subequalling or slightly longer than lemma, apex truncate. Anthers ca. 3 mm. Fl. and fr. late summer.

47b. Elymus mutabilis var. nemoralis

狭颖披碱草 (原变种) xia ying pi jian cao (yuan bian zhong)

*Roegneria mutabilis* var. *nemoralis* (D. F. Cui) L. B. Cai.

Plants with rhizome. Spikelets usually green. Glumes broadly lanceolate. Lemma pubescent throughout; awn 1–2 mm.

- Forest glades, mountain slopes; 1800–1900 m. Xinjiang.

47c. Elymus mutabilis var. praeecaespitosus

密丛披碱草 mi cong pi jian cao


- Forest glades, mountain slopes; 1200–2400 m. Xinjiang [Mongolia, Russia].

48. Elymus magnicaespnes

大丛披碱草 da cong pi jian cao

*Roegneria magnicaespnes* (D. F. Cui) L. B. Cai.

Plants without rhizome. Culms tufted, erect, 50–70 cm tall, 2-noded. Leaf sheath glabrous, usually fibrous and broken at base; ligule ca. 5 mm, membranous, apex truncate; leaf blade setaceously, involute, 6–15 × 0.15–0.25 cm, stiff, abaxial surface glabrous, adaxial surface scabrous. Spike erect, slender, 8–12 cm; rachis scabrous, margin ciliate; internodes ca. 10 mm. Spikelets 1 per node, 11–18 × 2–3 mm, with 4–6 florets; rachilla densely puberulent; internodes ca. 1.5 mm. Glumes oblong-lanceolate, 4–5-veined, margin membranous, apex acuminate or pointed; proximal glume 3–6 mm, distal glume 6–9 mm. Lemma oblong-lanceolate, smooth, glabrous, apex acuminate; first lemma ca. 10 mm. Palea equaling lemma, narrowed toward subtruncate apex, ciliolate along keels. Anthers ca. 3 mm. Fl. and fr. Jul.–Aug. 2n = 28*.

49. Elymus alashanicus

阿拉善披碱草 a la shan pi jian cao


Plants ± with rhizome. Culms laxly tufted, 40–60 cm tall, rigid, 3-noded. Leaf sheath usually fibrous and broken at base; leaf blade setaceous, involute, 5–8×(12) 0.2–0.3 cm, stiff, both surfaces pubescent or abaxial surface smooth and glabrous. Spike erect, slender, 5–10 cm. Spikelets 1 per node, yellowish, 12–15 × 2–3 mm, with 3–6 florets, glabrous; rachilla glabrous. Glumes oblong-lanceolate, 3-veined, margin membranous, apex acute, rarely obtuse; proximal glume 5–6 mm; distal glume 7–9 mm. Lemma lanceolate, smooth, obscurely 5-veined, margin narrowly membranous, apex acute to pointed; callus smooth, glabrous; first lemma ca. 10 mm. Palea subequalling or slightly longer than lemma, apex truncate. Anthers ca. 3 mm. Fl. and fr. late summer.

- Forest glades, mountain slopes; ca. 1800 m. Gansu, Nei Mongol, Ningxia, Xinjiang.

50. Elymus jufinshanicus

九峰山披碱草 jiu feng shan pi jian cao


Plants ± with rhizome. Culms laxly tufted, usually geniculate at base, 70–90 cm tall. Leaf sheath usually longer than internode, glabrous; ligule 0.5–1 mm, apex truncate; leaf blade linear, usually involute, 8–18 × 0.1–0.15 cm, abaxial surface usually glabrous, adaxial surface usually villous. Spike erect, 12–15 cm; rachis subglabrous on back, margin ciliate. Spikelets 1 per node, yellowish, 13–18 × 2–3 mm, with 3 or 4 florets; rachilla densely pubescent. Glumes oblong-lanceolate, 3–5-veined, densely pubescent adaxially, apex acuminate; proximal glume 9–11 mm; distal glume 11–12 mm. Lemma lanceolate, subglabrous; first lemma ca. 11 mm; awn ca. 5 mm. Palea shorter than lemma. Anthers yellow, 1.5–2 mm. Fl. and fr. late summer.

- Mountain slopes; ca. 2200 m. Nei Mongol.

51. Elymus tridentatus

三齿披碱草 san chi pi jian cao


Plants tufted, erect or slightly procumbent geniculate at base, 40–65 cm tall, 1.5–2 mm in diam., 2- or 3-noded, smooth, glabrous. Leaf sheath glabrous; ligule ca. 0.5 mm, scarious, apex truncate; leaf blade involute or subinvolute, 5–7 × ca. 0.2 cm, abaxial surface glabrous, adaxial surface pubescent. Spike erect, 5–11.5 × ca. 0.5 cm, with 6–14 spikelets; rachis usually...


Plants with rhizome. Culms laxly tufted, erect, 60–75 cm tall, 1–1.2 mm in diam., 2–4–(6)–noded, glabrous. Leaf sheath shorter than internode, glabrous, fibrous and broken at base; ligule ca. 0.5 mm, membranous, apex truncate; leaf blade green, flat or involute, (7)–10–15 × 0.15–0.33 cm, stiff. Spike linear, straight. (5)–8–16 cm, with 5–12 spikelets; rachis glabrous; internodes 8–15 mm, or to 20 mm at base of spike. Spikelets 1 per node, 12–15 mm, with 5 or 6 florets; rachilla glabrous or puberulent; internodes 1.5–1.8 mm. Glumes oblong-lanceolate, herbaceous, glabrous, margin membranous, apex obtuse or acute, unilaterally dentate; proximal glume 3.5–6.5 mm, 3–4–veined; distal glume 5–8.5 mm, 4–5–veined. Lemma oblong-lanceolate, 5–veined, glabrous, apex obtuse or with point ca. 0.5 mm; first lemma 7.8–9.9 mm; callus obtuse, puberulent. Palea equaling or slightly longer than lemma, abaxially glabrous, ciliate along keels distally, apex truncate. Anthers yellow or pale brown, 4.5–5.5 mm. Caryopsis dark purple, oblong, ca. 5.5 × 1.5 mm, apex densely white hirsutulous. Fl. and fr. Jul–Aug. 2n = 28*.

Mountain slopes. Henan, Shaanxi.

Löve (Feddes Repert. 95: 458. 1984) did not previously validly publish the combination Elymus grandis; see the note following the genus description above.


Plants with short, underground rhizomes. Culms solitary or tufted, 80–100 cm tall, stiff, 5–6-noded. Leaf blade 20–30 × ca. 1 cm, subleathery, both surfaces smooth or adaxial surface scabrous. Spike erect, slender, lax, 20–25 cm; rachis scabrous. Spikelets 1 per node, 20–30 mm, with ca. 12 florets. Glumes oblong-lanceolate, 10–15 mm, 5–7–veined, smooth or scabrous, margin ± membranous. Lemma white pilose, apex pointed; first lemma ca. 15 mm including apical point ca. 1 mm. Palea 2/3–3/4 as long as lemma, subsmooth along keels, apex truncate or subrounded. Fl. and fr. Jul–Aug. 2n = 28*.

Mountain slopes. Henan, Shaanxi.

Plants with rhizome. Culms laxly tufted, erect or slightly decumbent at base, ca. 100 cm tall. Leaf sheath smooth, glabrous; leaf blade flat, 13–25 × 0.6–0.9 cm, soft, glabrous. Spike rather dense, 7.5–8.5 cm. Spikelets 1 per node, 12–14 mm, with 3 florets. Glumes lanceolate, 8–10 mm, 3–5–veined, scabrous, margin narrowly membranous, apex acute, pointed, or with awn 1–2 mm. Lemma hirsutulous, margin narrowly membranous, apex narrowed with short awn 1–3 mm, sometimes with a tooth below apex; first lemma 9–11 mm. Palea subequaling lemma, densely ciliate along keels distally, puberulent between keels, apex emarginate. Fl. and fr. summer.

Culms erect, 45–60 cm tall, 1–2 mm in diam., 2- or 3-noded, glabrous. Leaf sheath glabrous; ligule very short, apex truncate; leaf blade usually involute, 5–9 cm, abaxial surface glabrous, adaxial surface and margin pilose. Spike lax, 6–11 cm; rachis slender, glabrous; internodes 7–18 mm, or to 30 mm at base of spike. Spikelets 1 per node, usually purplish, 12–20 mm, with 4–6 florets; rachilla pubescent. Glumes lanceolate, 3–5-veined, glabrous, apex pungent; proximal glume 4–5 mm; distal glume 6–7 mm. Lemma oblong-lanceolate, abaxially spinose; first lemma 8–9 mm; awn 2–4 mm. Palea slightly shorter than or equaling lemma, ciliolate along keels distally, apex truncate. Caryopsis yellowish, apex pubescent. Fl. and fr. Aug-Sep.


ternodes 5–10 mm. Spikelets 1 per node, green or purplish green, 11–13.5–(18.5) mm, with 3–5 florets. Glumes linear-lanceolate, 5–7-veined, densely hirsutulous abaxially, margin submembranous, apex acuminate; proximal glume 9–10 mm; distal glume 10–11 mm. Lemma lanceolate, puberulent abaxially, apex unequally 1-toothed on each side; first lemma 11–12.5 mm; awn 1–2.5 mm. Palea shorter than lemma, puberulent abaxially, ciliolate along keels. Fl. and fr. Jul–Aug.

- Forest margins, meadows. Nei Mongol.

62. Elymus nevskii Tzvelev

Agropyron ugamicum Drobow in Vvedensky et al., Key Fl. Tashkent 1: 40. 1923, not Elymus ugamicus Drobow (loc. cit. 44. 1923); E. dentatus (J. D. Hooker) Tzvelev subsp. ugamicus (Drobow) Tzvelev; E. gmelinii (Ledebour) Tzvelev subsp. ugamicus (Drobow) Á. Löve; Goulardia ugamica (Drobow) Ikonnikov; Roegneria ugamica (Drobow) Nevski; Semiostachys ugamica (Drobow) Drobow.

Culms geniculate at base, robust, 50–120 cm tall. Leaf sheath glabrous or proximally pilose; leaf blade flat, 0.7–1.1 cm wide, both surfaces pilose and scabrous or abaxial surface glabrous. Spike erect, secund, dense; rachis margin scabrous. Spikelets 1 per node, greenish or tinged purplish, 20–30 mm, with 5–9 florets. Glumes broadly lanceolate, subequal, 12–15 × 2.5–4 mm, prominently (5–)7–9-veined, scabrous, margin hyaline, apex acuminate, often 1-toothed. Lemma lanceolate, 11–13.5 mm, hirsute, scabrous; awn moderately stout, 1–5(–7) mm. Palea subequaling lemma, 10–12 mm, hirsipulous along keels, apex rounded-obtuse. Anthers 2.5–3 mm. Fl. and fr. Jul–Aug. 2n = 28.

Mountain slopes, valleys. Xinjiang [Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, Uzbekistan].

This species has been treated as conspecific with Elymus dentatus (J. D. Hooker) Tzvelev (Spisok Rast. Gerb. Fl. SSSR Bot. Inst. Vsesoyuzn. Akad. Nauk 18: 29. 1970). In addition, E. gmelinii (Ledebour) Tzvelev subsp. ugamicus (Drobow) Ikonnikov, described from China, in which case the name E. dentatus would have priority.


Elymus kamoji has priority.

63a. Elymus kamoji var. kamoji

Copoloni chinensis var. kamoji ke meng pi jian cao (yuan bian zhong)

Agropyron kamoji Ohwi, Acta Phytotax. Geobot. 11: 179. 1942; A. semicostatum (Nees ex Steudel) Nees ex Boissier var. transiens Hackel; A. tsukushiensis (Honda) Ohwi var. transiens (Hackel) Ohwi; Elymus tsukushiensis Honda var. transiens (Hackel) Osada; Roegneria kamoji (Ohwi) Keng & S. L. Chen; R. tsukushiensis (Honda) B. Rong Lu et al. var. transiens (Hackel) B. Rong Lu et al.

Culms 50–100 cm tall. Spikelets 13–25 mm, with 5–8 florets; glume apex usually awned. Fl. and fr. May–Jul. 2n = 42.

Forest margins, mountain slopes, roadsides; 100–2300 m. Anhui, Fujian, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Nei Mongol, Qinghai, Shaanxi, Shandong, Sichuan, Xinjiang, Xizang, Yunnan, Zhejiang [Japan, Korea, Russia (Far East)].

Some authors consider Elymus tsukushiensis Honda (Bot. Mag. Tokyo) 1: 391. 1936, described from Japan, to be conspecific with E. kamoji, described from China, in which case the name E. tsukushiensis would have priority.


63b. Elymus kamoji var. macerrimus


Elymus hybridus (Keng) S. L. Chen, comb. nov.

Culms erect or decumbent at base, ca. 90 cm tall. Leaf sheath brown or purplish; leaf blade flat, 15–25 × (0.25–)0.5–0.8 cm. Spike nodding, ca. 27 cm. Spikelets 1 per node, green, 17–20 mm excluding awns, with 6–8 florets. Glumes oblong-lanceolate, scabrous along veins, margin membranous, apex acuminate or with awn 1–2.5 mm; proximal glume 6–8 mm, 3–5-veined; distal glume 8–9 mm, 5–7-veined. Lemma oblong-lanceolate, proximal and distal parts hirsutulous but middle part subsimple, long ciliate near margin, margin broadly scarious; awn erect or reflexed, 20–30 mm, scabrous. Palea slightly shorter than or equaling lemma, winged along keels, ciliolate along distal 3/4 of wings, apex obtuse. Ovary apex with yellowish, hard hairs. Fl. and fr. late summer.

- Forest margins, mountain slopes. Nei Mongol.


杨氏披碱草  yang shi pi jian cao


Culms erect or nodding at apex, 60–100(–110) cm tall, 4–7-noded, uppermost internode 23–35 cm. Leaf sheath scabrous; ligule 0.3–0.6 mm, apex lacerate; auricles 1.2–2 × 0.5–0.8 mm; leaf blade narrowly linear, 5–25 × 0.3–0.4 mm, both surfaces scabrous, margin ciliate. Spike nodding, 10–15 × 0.5–0.8 cm; rachis margin scabrous. Spikelets 1 per node, 35–45 mm including awns, with 5–10 florets; rachilla pilose, 1.7–2.1 mm. Glumes lanceolate, scabrous along veins, margin membranous, apex mucronate or acute; proximal glume 2–4.5 × 0.2–0.7 mm, (1 or)2- or 3-veined; distal glume 3–3.5 × 0.4–0.9 mm, 2- or 3–(5)-veined. Lemma narrowly lanceolate, 7–10 mm, sparsely pubescent to densely pilose; awn usually straight, 12–32 mm. Palea narrowly lanceolate, 8–10 mm, pubescent, ciliate along keels, apex pointed, 2-cleft. Anthers yellow, 3.5–4.2 mm. Fl. and fr. summer. 2n = 28*.

- Among bushes, stony mountain slopes; 3000–4200 m. Xizang.

68. *Elymus dolichatherus* (Keng) S. L. Chen, comb. nov.

长芒披碱草  chang mang pi jian cao


Culms erect, usually glaucous, 60–90 cm tall, 4- or 5-noded. Leaf blade flat or involute, 10–20 × 0.3–0.7 cm, abaxial surface smooth, glabrous, adaxial surface scabrous or densely pubescent. Spike erect, ± curved, or nodding, 10–15 (=17) cm; rachis ± puberulent. Spikelets 1 per node, ± pedicellate, green or purplish green, 12–20 mm excluding awns, with 3–6 florets. Glumes oblong-lanceolate, subequal, 6–8 mm excluding awn, 3–5-veined, scabrous along veins, margin membranous, apex acuminate or awned. Lemma with teeth just below apex; awn erect or slightly reflexed, slender, (10–)15–30 mm. Palea slightly shorter than lemma, scabrous along keels distally. Fl. and fr. Jun–Jul. 2n = 28*.

- Forests, mountain slopes; 2300–3700 m. Ningxia, Qinghai, Sichuan, Yunnan.

Löve (Feddes Repert. 95: 453. 1984) did not previously validly publish the combination *Elymus dolichatherus*; see the note following the genus description above.

**柔穗披碱草** rou sui pi jian cao


Culms laxly tufted, erect, 35–75 cm tall, 0.5–1 mm in diam., 4- or 5-noded, glabrous but puberulent at nodes. Leaf sheath equaling or longer than internode, villous, persistent basal part often lacerate, fibrous; ligule ca. 0.5 mm, hyaline-membranous, apex truncate; leaf blade green, flat or involute, 15–20 × 0.3–0.4 cm, abaxial surface scabrous, adaxial surface villous. Spike erect or slightly nodding, 9.2–10.5 cm excluding awns; rachilla puberulent. Glumes oblong-lanceolate, herbaceous, hirsute, margin membranous, apex acuminate or pointed; point less than 2 mm. Lemma oblong-lanceolate, 5–6 mm, 3-veined, hirsutulous along veins, apex acuminate or pointed; point less than 2 mm. Plant erect, leaf sheath equaling internode, villous, persistent. Fl. and fr. Jul–Aug.

**70. Elymus calcicola** (Keng) S. L. Chen, comb. nov.

**钙生披碱草** gai sheng pi jian cao


Culms slender, ca. 100 cm tall, 5-noded. Leaf blade glaucous green, flat, 10–20 × 0.4–0.5 cm, thick, abaxial surface glabrous, or puberulent along veins, adaxial surface pubescent. Spike ± curved, 12–20 cm. Spikelets 1 per node, 12–17 mm excluding awns, with 3–6 florets. Glumes narrowly lanceolate, usually asymmetric, smooth, or scabrous along veins, margin membranous, apex acuminate; proximal glume 5–6 mm; distal glume 6–10 mm. Lemma glabrous, scabrous, or hirsutulous; rachilla puberulent. Glumes oblong-lanceolate, usually oblique, 3–5-veined, apex acute or with awn 1–3 mm; proximal glume 7–8 mm; distal glume 8–10 mm. Lemma oblong-lanceolate, laxly puberulent abaxially; first lemma ca. 9 mm; callus with hairs 0.1–0.4 mm; awn erect or slightly recurved, 10–18 mm. Palea equaling lemma, apex emarginate or truncate, setiform ciliate along keels distally, puberulent between keels, apex rounded-ovate. Fl. and fr. Jul–Aug.


**中华披碱草** zhong hua pi jian cao

Plants laxly tufted or with very short rhizome. Culms erect or geniculate at base, 60–90 cm tall, glabrous throughout. Leaf sheath glabrous; leaf blade involute, 6–22 × (0.1–)0.3–0.7 cm, stiff, abaxial surface glabrous, adaxial surface pubescent. Spike erect, 8–13 cm. Spikelets 1 per node, 13–15 mm, with 4 or 5 florets. Glumes oblong-lanceolate, usually oblique, 3–5-veined, apex acute or with awn 1–3 mm; proximal glume 7–8 mm; distal glume 8–10 mm. Lemma oblong-lanceolate, laxly puberulent abaxially; first lemma ca. 9 mm; callus with hairs 0.1–0.4 mm; awn erect or slightly recurved, 10–18 mm. Palea equaling lemma, apex emarginate or truncate, setiform ciliate along keels distally, puberulent between keels, apex rounded-ovate. Fl. and fr. Jul–Aug.
Leaf blade 7–22 × ca. 0.7 cm. Spike 12–13 cm. Spikelets ca. 15 mm, with 5 florets. Glume apex with awn 1–3 mm. Fl. Jul.

- Mountain slopes, roadsides; 800–3800 m. Gansu, Henan, Nei Mongol, Ningxia, Shaanxi, Shanxi, Xinjiang.

73. Elymus puberulus (Keng) S. L. Chen, comb. nov.


Culms laxly tufted, erect or geniculate at base, ca. 60 cm tall. Leaf sheath glabrous but pilose or pubescent at base; leaf blade flat, dark green abaxially, glaucous adaxially, 15–22 × 0.5–0.7 cm, abaxial surface glabrous, adaxial surface pubescent. Spike nodding or curved, 8–11 cm. Spikelets 1 per node, green, ca. 12 mm excluding awns, with 2 or 3 florets; pedicel absent or 0.5–0.7 mm, puberulent. Glumes oblong-lanceolate, 3–5-veined, apex acute or acuminate; proximal glume 8–10 mm; awn 6–8 mm, acute or acuminate; rachilla puberulent; internodes 5–12 mm. Spikelets 1 per node, green, ca. 12 mm excluding awns, with 2 or 3 florets. Glumes narrowly lanceolate, 2.5–4 mm, subequal or proximal one shorter, 2- or 3-veined, scabrous, or spinose along veins, apex awned; awn 1.5–3 mm. Lemma lanceolate, 5-veined, abaxially scabrous or spinose, apex awned; first lemma 7–8 mm; awn flexuose, slender, 7–10 mm. Palea slightly longer than lemma, spinose along keels, scabrous between keels, apex truncate. Anthers yellow, ca. 1 mm. Caryopsis oblong. Fl. and fr. Jul–Aug.

- Mountain slopes; 2300–3400 m. Gansu (Sunan), Qinghai (Tongde).


纤瘦披碱草 xian shou pi jian cao


红原披碱草 hong yuan pi jian cao


Culms slender, 50–60 cm tall, 1–2 mm in diam., 5–7-noded, scabrous; nodes with short, soft hairs. Leaf sheath glabrous; ligule ca. 0.3 mm, apex truncate; leaf blade flat, 7–15 × 0.3–0.5 cm, abaxial surface usually glabrous, adaxial surface scabrous or laxly villos. Spike usually nodding, 6–11 × 0.5–0.7 cm; rachis margin spinose; internodes 4–5 mm. Spikelets green, ca. 9 mm excluding awns, with 2 or 3 florets. Glumes narrowly lanceolate, 2.5–4 mm, subequal or proximal one shorter, 2- or 3-veined, scabrous, or spinose along veins, apex awned; awn 1.5–3 mm. Lemma lanceolate, 5-veined, abaxially scabrous or spinose, apex awned; first lemma 7–8 mm; awn flexuose, slender, 7–10 mm. Palea slightly longer than lemma, spinose along keels, scabrous between keels, apex truncate. Anthers yellow, ca. 1 mm. Caryopsis oblong. Fl. and fr. Jul–Aug.

- Forests; 2300–3400 m. Gansu (Sunan), Qinghai (Tongde).


毛盘草 mao pan cao

Culms laxly tufted, 40–100 cm tall, 4- or 5-noded, glabrous, or puberulent below nodes; nodes glabrous or white pilose. Leaf sheath glabrous or outer margin ciliate; leaf blade 15–30 × 0.3–0.8 cm, both surfaces glabrous or scabrous, or abaxial surface scabrous and adaxial surface pilose. Spike erect or slightly nodding, 18–22 cm. Spikelets 1 per node, green, 15–25 mm excluding awns, with 5–8 florets. Glumes lanceolate or oblong-lanceolate, apex acute or acuminate; proximal glume 7–14 mm, 3–5-veined; distal glume 8–14.5 mm, 5–7-veined. Lemma 8–13 mm, glabrous only abaxially, but scabrous near base, margin, and along veins; callus with hairs 6–10 mm; awn straight, 20–30 mm. Palea slightly shorter than to equaling
**Elymus barbicallus** var. *barbicallus*

毛盘草


Culms 70–100 cm tall, glabrous; nodes glabrous. Leaf sheath glabrous; leaf blade 15–20 × 0.6–0.8 cm, both surfaces glabrous or scabrous. Proximal glume 7–8 mm; distal glume 8–9 mm. Lemma 8–10 mm. Palea slightly shorter than lemma. Fl. and fr. Jun–Jul.

- Forest margins, mountain slopes, river banks. Hebei, Nei Mongol.


毛叶毛盘草 mao ye mao pan cao


Culms ca. 50 cm tall, glabrous; nodes glabrous. Leaf sheath glabrous; leaf blade 15–20 × 0.3–0.7 cm, abaxial surface scabrous, adaxial surface pilose. Glumes 7–12 mm. Lemma ca. 10 mm. Palea slightly shorter than lemma. Fl. and fr. May–Jul.

- Forest margins, mountain slopes, valleys. Hebei, Nei Mongol.


狭穗披碱草 xia sui pi jian cao


Culms erect or slightly geniculate at base, 80–100 cm tall, 2–2.5 mm in diam., ca. 4-noded. Leaf sheath margin ciliate; ligule ca. 0.6 mm, papery, apex truncate; leaf blade flat, 8–15 × 0.4–0.6 cm, both surfaces glabrous or adaxial surface scabrous. Spike erect or slightly curved, 16–20 × ca. 0.6 cm; rachis scabrous on back, margin ciliate. Spikelets 1 per node, narrow, 16–26 mm, with 4–6 florets. Glumes lanceolate, subequal, 8–10 mm, 3-veined, scabrous along veins, apex with mucro 1–2 mm. Lemma narrowly lanceolate, abaxially glabrous; first lemma 10–12 mm; callus glabrous or slightly pilose; awn straight, 20–25 mm, scabrous. Palea subequilact and ciliate along keels distally, glabrous between keels. Anthers yellow, 2–2.7 mm. Fl. and fr. Jul–Aug.

- Mountain slopes, ca. 2500 m. Qinghai (Xunhua).


本田披碱草 ben tian pi jian cao


Culms 70–100 cm tall, glabrous. Leaf sheath glabrous, or retrorsely pilose at base of innovation shoot; leaf blade 13–20 × 0.3–0.9 cm, abaxial surface smooth, subglabrous, adaxial surface scabrous, hispid along veins. Spike lax, 15–20 cm. Spikelets 1 per node, purplish green, ca. 16 mm excluding awns, with ca. 5 florets. Glumes lanceolate, scabrous along veins, apex acuminate or pointed; proximal glume 7–10 mm, 3–5-veined; distal glume 8.5–11 mm, 4–6-veined. Lemma scabrous, with a tooth below apex on one or both sides; first lemma ca. 10 mm; callus with hairs ca. 5 mm; awn straight, 15–25 mm. Palea slightly shorter than lemma, ciliate along keels distally, puberulent between keels distally, apex obtuse or emarginate. Fl. and fr. Jul–Aug. 2n = 28*.

- Mountain slopes. Hebei, Henan, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi.

**80. Elymus alienus** (Keng) S. L. Chen, Novon 7: 227. 1997 [*“aliena”*].

涞源披碱草 lai yuan pi jian cao


Plants usually with short, underground rhizomes. Culms laxly tufted, (30–)60–90 cm tall, 3- or 4(–6)-noded. Leaf sheath glabrous or retrorsely pubescent; leaf blade flat, 12–20 × 0.4–0.9 cm, abaxial surface glabrous, adaxial surface pubescent.
Spike erect or slightly curved, 7–15 cm. Spikelets 1 per node, green or purplish green, 14–17 mm excluding awns, with 4–6 florets; rachilla puberulent; internodes 1–2.5 mm. Glumes oblong-lanceolate, 3–5(or 6)-veined, smooth or scabrous along veins, apex acute or acuminate; proximal glume 7–8 mm; distal glume 8–10 mm. Lemma lanceolate, smooth and glabrous abaxially, but scabrous or puberulent along veins and near margin; first lemma 9–10 mm; callus with hairs 0.4–0.6 mm; awn straight or slightly reflexed, 10–25 mm. Palea slightly shorter than lemma, ciliate along keels distally, apex obtuse. Anthers straight or slightly reflexed, 10–25 mm. Palea apex subobtuse.

Mountain slopes; ca. 1300–2700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan].


Mountain slopes; ca. 2700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan].


多花异芒草 — Roegneria abolinii var. pluriflorus (D. F. Cui) L. B. Cai.


Grassy mountain slopes. Xinjiang.


光鞘披碱草 — Roegneria abolinii var. pluriflorus (D. F. Cui) L. B. Cai.

Mountain slopes, river banks; ca. 1300–2700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Turkmenistan, Uzbekistan].

1a. Lemma awn 3–8 mm or reduced to a cuspid 1 mm.

2a. Spikelets with 5–7 florets; glumes lanceolate, 5–7-veined; palea apex subobtuse ...............81a. var. abolinii

2b. Spikelets with 4 or 5 florets; glumes linear-lanceolate, 6–9-veined; palea apex truncate; awn sometimes recurved, 3–35 mm or reduced to a cuspid 1 mm. Palea shorter than lemma, apex truncate or subobtuse. Anthers 3–7 mm. Fl. and fr. Jun–Aug.

1b. Lemma awn 15–35 mm.

3a. Spikelets 15–25 mm, with 5–7 florets .......................................... 81c. var. divaricans

3b. Spikelets 25–30 mm, with 7–11 florets .......................................... 81d. var. pluriflorus

81a. Elymus abolinii var. abolinii

光鞘披碱草(原变种) — yi mang pi jian cao (yuan bian zhong)

Agropyron abolinii Drobow, Repert. Spec. Nov. Regni Veg. 21: 42. 1925 ["abolinii"]; Gouardia abolinii (Drobow) Ikonnikov; Roegneria abolinii (Drobow) Nevski.

Spikelets 15–25 mm, with 5–7 florets. Glumes lanceolate, 5–7-veined. Lemma awn 3–5 mm or reduced to a cuspid ca. 1 mm. Palea apex subobtuse.

Mountain slopes; ca. 2700 m. Xinjiang [Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan].


Spikelets 15–20 mm, with 4 or 5 florets. Glumes linear-lanceolate, 6–9-veined. Lemma awn 3–8 mm. Palea apex truncate.

- River banks; 1500–2000 m. Xinjiang.


曲芒异芒草 — qu mang yi mang cao


Grassy mountain slopes; 1300–1900 m. Xinjiang [Mongolia, Russia].


多花异芒草 — duo hua yi mang cao

Roegneria abolinii var. pluriflorus (D. F. Cui) L. B. Cai.


- Grassy mountain slopes. Xinjiang.


光鞘披碱草 — guang qiao pi jian cao


Culms erect or slightly geniculate at base, robust, 50–100 cm tall. Leaf sheath smooth, glabrous, rarely pilose at base; leaf blade 0.5–1.2 cm wide, glabrous, scabrous, or adaxial surface laxly pilose. Spike erect or slightly curved, often somewhat secund, dense, 7–16 cm. Spikelets 1 per node, subsecise, green or greenish tawny-purple, 15.5–25 mm excluding awns, with 5 or 6 florets. Glumes broadly lanceolate, 11–18 × 2.3–3.5 mm, 5–7-veined, margin membranous, apex acuminate, pointed, sometimes with a tooth. Lemma lanceolate, 10–14 mm, scabrous or appressed setose; awn reflexed, 25–37 mm. Palea lan-
**83. Elymus platyphyllus** (Keng) Á. Löve ex D. F. Cui in N. R. Cui, Fl. Xinjiang, 6: 192. 1996.  

宽叶披碱草  kuan ye pi jian cao  


Culms erect, 60–100 cm tall. Leaf sheath smooth, glabrous; leaf blade flat, 5–18 × 0.5–1.2 cm, rigid, abaxial surface glabrous, but scabrous along veins, adaxial surface pilose. Spike erect, usually second, dense, 8–13 cm. Spikelets 1 per node, greenish, 18–24 mm excluding awns, with 6 or 7 florets. Glumes lanceolate, 5–7-veined, scabrous or hispidulous along veins, apex pointed; proximal glume 10–12 mm; distal glume 7–10 mm. Lemma lanceolate, 5.7–veined, apex acute or pointed; veins robust, scabrous; proximal glume 5–7 mm; distal glume 7–9 mm. Lemma oblong-lanceolate, subglabrous abaxially, margin membranous; first lemma 9–10 mm; callus pubescent along lateral side; awn erect, (12–)20–30 mm, scabrous. Palea subequaling lemma, wingless and shortly setiform ciliate along keels distally, apex emarginate or truncate. Anthers ca. 3 mm. Ovary hirsute. Fl. and fr. late summer.


山东披碱草  shan dong pi jian cao  

*Roegeineria shandongensis* (B. Salomon) J. L. Yang et al.

Culms laxly tufted, erect or slightly decumbent at base, 60–90 cm tall. Leaf sheath usually glabrous; ligule ca. 6.5 mm; leaf blade flat or involute at margin, 10–25 × 0.4–0.8 cm, both surfaces scabrous or adaxial surface smooth. Spike erect or slightly curved, 8–20 cm. Spikelets 1 per node, 13–19 mm excluding awns, with 5–8 florets. Glumes oblong-lanceolate, 5–7-veined, apex acute or pointed; veins robust, scabrous; proximal glume 5–7 mm; distal glume 7–9 mm. Lemma oblong-lanceolate, subglabrous abaxially, margin membranous; first lemma 9–10 mm; callus pubescent along lateral side; awn erect, (12–)20–30 mm, scabrous. Palea subequaling lemma, wingless and shortly setiform ciliate along keels. Fl. and fr. Jul–Aug. 2n = 28*.

- Mountain slopes, roadsides. Anhui, Guizhou, Henan, Hubei, Jiangsu, Shaanxi, Shandong, Taiwan, Zhejiang.

This species has long been misclassified by some taxonomists in China as *Elymus ×mayebaranus* (Honda) S. L. Chen (*Agropyron ×mayebaranum* Honda; *Roegeineria ×mayebarana* (Honda) Ohwi ex Keng & S. L. Chen). The true *E. ×mayebaranus* is found only in Japan; it is a highly sterile natural hybrid between the hexaploid 

\(2n = 42\) parents *E. humidas* (Ohwi & Sakamoto) Á. Löve (*A. humidum* Ohwi & Sakamoto) and *E. tsukushiensis* Honda.


大柄披碱草  da bing pi jian cao  


Culms erect, 20–35 cm tall, 1–2.5 mm in diam., 2-noded, smooth, glabrous. Leaf sheath usually longer than internode except on upper leaves, glabrous; ligule very short, papery; leaf blade involute, 4–7 × 0.15–0.25 cm, both surfaces glabrous or adaxial surface scabrous. Spike erect, lax, 6–9 cm; rachis glabrous; internodes 10–20(–28) mm. Spikelets 1 per node, yellowish green, 15–25 mm excluding awns, with 6–8 florets; pedicel 1–2.5 mm. Glumes subequal, 4.5–7 mm, 4–7-veined, abaxially glabrous, apex acute. Lemma lanceolate, abaxially smooth, glabrous; first lemma 9–10 mm; awn erect or slightly recurved, 9–15 mm. Palea slightly shorter than or equaling lemma, ciliolate along keels, apex truncate or subrounded. Anthers black, 2–3 mm. Ovary obovate, apex pubescent. Fl. and fr. Jun–Jul.

- River banks; ca. 3100 m. Qinghai (Golmud).


缘毛披碱草  yuan mao pi jian cao  

Culms 60–110 cm tall, glabrous throughout, or puberulent or pubescent at nodes, sometimes also densely retrorsely pubescent in upper part (exserted from leaf sheath). Leaf sheath glabrous, or retrorsely pubescent at least at base; leaf blade flat, 10–25 × 0.3–0.9 cm, glabrous, scabrous, or adaxial surface pilose. Spike slightly nodding, 12–25 cm. Spikelets 1 per node, green or purplish at base, 15–25 mm excluding awns, with 4–9 florets. Glumes lanceolate or oblong-lanceolate, 3–7-veined, sometimes scabrous along veins, margin sometimes laxly ciliate, apex acute or pointed; proximal glume 7–9 mm; distal glume 7–10 mm. Lemma lanceolate or oblong-lanceolate, scabrous abaxially, pilose distally, laxly hirsutulous near apex, or hirsutulous throughout, margin ciliate distally; first lemma 8–11 mm; awn erect or slightly reflexed, slender, 15–30 mm. Palea slightly shorter than or subequaling lemma, ciliolate along keels distally, pubescent between keels. Anthers ca. 2 mm. Fl. and fr. May–Jul. 2n = 28*.

- Forests, mountain slopes, valleys, meadows, along rivers; 100–2400 m. Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Neimongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan [Japan, Korea, Mongolia, Russia].

1a. Culms glabrous throughout (rarely pubescent at nodes) .......................... 86a. subsp. pendulinus

1b. Culms puberulent or densely pubescent, at least at nodes.

2a. Culms puberulent at nodes; leaf sheath glabrous; spikelets with 6–9 florets .......................... 86b. subsp. multiculum

2b. Culms densely retrorsely pubescent in upper part (exserted from leaf sheath) and at nodes; leaf sheath retrorsely pubescent, especially proximally; spikelets with
4 or 5 florets ............................ 86c. subsp. pubicaulis

86a. Elymus pendulinus subsp. pendulinus
缘毛披碱草(原亚种) yuan mao pi jian cao (yuan ya zhong)

*Roegneria pendulina* Nevski in Komarov, Fl. URSS 2: 616. 1934; *Agropyron caninum* (Linnaeus) P. Beauvois var. *amurense* (Korshinsky) Korshinsky; *Triticum caninum* Linnaeus f. *amurense* Korshinsky.


Forests, mountain slopes, valleys, along rivers. Gansu, Hebei, Heilongjiang, Liaoning, Nei Mongol, Shaanxi, Shanxi, Sichuan [Japan, Korea, Mongolia, Russia].


多秆缘毛草 duo gan yuan mao cao


● Mountain slopes; 1100–1200 m. Gansu, Hebei, Heilongjiang, Henan, Jilin, Nei Mongol, Qinghai, Shaanxi, Shanxi.

86c. Elymus pendulinus subsp. pubicaulis (Keng) S. L. Chen, comb. et stat. nov.

毛秆披碱草 mao gan pi jian cao


Culms densely retrorsely pubescent in upper part (exserted from leaf sheath) and at nodes. Leaf sheath retrorsely pubescent, especially proximally. Spikelets with 4 or 5 florets. Fl. and fr. Jun–Jul. 2n = 28*.

● Meadows, damp places; 100–2400 m. Gansu, Liaoning, Nei Mongol, Shaanxi, Yunnan.

Löve (Feddes Repert. 95: 459. 1984) did not previously validly publish the combination *Elymus pendulina* subsp. *pubicaulis*; see the note following the genus description above.


偏穗披碱草 pian sui pi jian cao


Culms erect or geniculate at base, 50–75 cm tall. Leaf sheath smooth and glabrous, or pubescent at base; leaf blade flat, 8–21 × 0.4–0.8 cm, abaxial surface glabrous but scabrous, adaxial surface scabrous or pubescent. Spike erect, usually secund, dense, 8.5–15 cm; rachis margin scabrous. Spikelets 1 per
ciliate along keels, apex emarginate or obtuse. Anthers ca. 2 mm. Fl. and fr. summer. $2n = 28^*$.  

Steppes, near villages; 1800–2900 m. Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Turkmenistan, Uzbekistan].


天山披碱草  tian shan pi jian cao

*Agropyron tianschanicum* Drobow in Vvedensky et al., Key Fl. Tashkent 1: 40. 1923; *Elymus tianschanicus* (Drobow) Nevski (1934), not Drobow (1923); *E. uralensis* (Nevski) Tzvelev subsp. *tianschanicus* (Drobow) Tzvelev; *Roegneria tianschanica* (Drobow) Nevski; *Semeiostachys tianschanica* (Drobow) Drobow.

Culms erect, 50–100 cm tall, smooth, glabrous. Leaf sheath smooth, glabrous; leaf blade flat, 10–18 × 0.5–1 cm, both surfaces scabrous and pilose or abaxial surface scattered pilose. Spike erect or slightly nodding, subsecund, dense, 7–17.5 cm. Spikelets 1 per node, purplish green, 2–3 mm excluding awns, with 3–5(–7) florets. Glumes broadly lanceolate, slightly asymmetric, subequal, 9–12 mm, 5–7-veined, scabrous, apex acute or mucronate, sometimes with a tooth. Lemma lanceolate, 9–12 mm, pilose; awn straight, (4–)7–16 mm. Palea equaling or slightly longer than lemma, ciliate along keels, apex slightly emarginate or subobtuse. Anthers ca. 2.5 mm. Fl. and fr. summer. $2n = 28$.

Slopes in river valleys, meadows; 2700–3000 m. Xinjiang [Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan].