

The leaves of the species in this genus form two ranks or rows—and the Greek word for two-ranked is *distichos*—hence the name. These grasses of the Americas are wiry and well adapted to saline and alkaline soils.

Distichilis spicata (L.) Greene var. ***stricta*** (Torr.)
Beetle Alkali Saltgrass

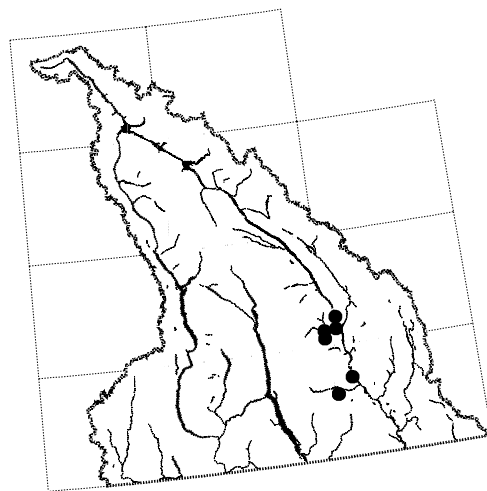
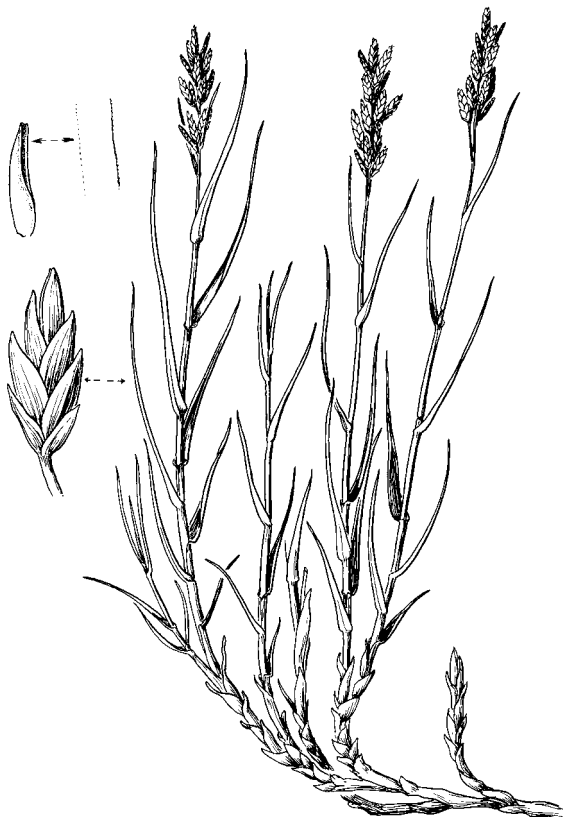
Plant: *Distichilis spicata* is a native species that grows 10–40 cm tall. It is a wiry, spreading, and sod-forming perennial with a solid stem and scaly rhizomes, more or less erect leaves arranged in two distinct rows, and a spiky-looking flowerhead.

Leaves and Stem: Sheaths are open and there are long hairs on the collars and sheath edges. Leaves are narrow and 2–4 mm long, and stand erect in two rows. There are no auricles. The ligules are 0.5 cm long and fringed with long hairs. The species is easy to recognize even in the winter because the leaves, though dry, remain attached.

Flowerhead and Flowers: The flowerhead is a small, compact spike, carried only slightly above the many-stemmed leaves. Large, flattened, and overlapping spikelets contain about five flowers. The two glumes are of different sizes, with the longest shorter than the first lemma. Lemmas are hardened but have no awns. Male and female flowers are on separate plants.

Habitat: Alkali Saltgrass grows along sandy lakeshores and in moist alkaline sites. In the Columbia Basin region, this species grows at Doyle, Marysville, Findlay Creek, Windermere Lake, and Columbia Lake.

Similar Species: There are two varieties of Alkali Saltgrass in British Columbia, and the habitat is important in determining which variety you are looking at. If you are in the Columbia Basin region it is variety *stricta*; if you are along the coast at a tidal shore you have variety *spicata*.



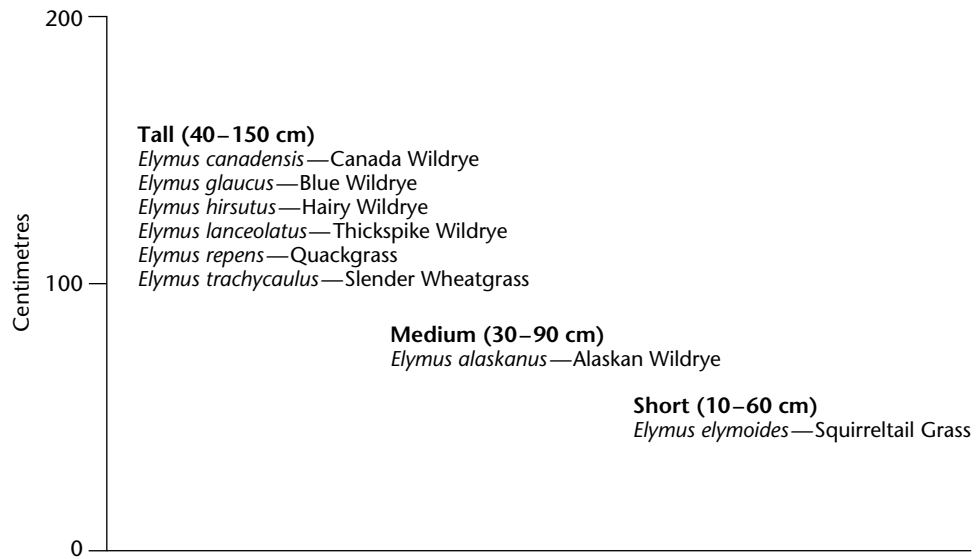
The word *Elymus* is believed to have come from the Greek word for millet, a type of grain. The genus *Elymus* contains species that are all perennial, and have spikelets born singly or occasionally in pairs (up to four in *E. canadensis*) along an elongated axis. In past interpretations, the genus was thought to consist of species in which the spikelets fell off the axis at maturity, but now the genus also includes species with the central axis breaking apart at maturity. Spikelets are laterally flattened and the first glume is usually 1/2 the length of the lowest lemma. The lemmas are rounded on the back or keeled only at the tip. The genus *Elymus* has been at the centre of taxonomic controversy due in part to the rearrangement of the species in the related genus *Agropyron*, a genus in the Wheatgrass tribe. For many years, grass taxonomists had arranged taxa according to species that were recognized from Europe, and these were compared to what was native to North America. In the last 50 years a great deal of taxonomic work has been done in Russia, Asia, and China, and the implication of this work is that a number of species in North America are similar to larger genera that are common in these countries. Initially, in moving species out of the *Agropyron* genus, some were placed in the *Elymus* genus because of similarities to that group. In other instances, species were put in new and unfamiliar groups to reflect the global taxonomy. One species that has been part of this taxonomic musical chairs is *Elymus repens* (Quackgrass). *E. repens* is widespread and well known, but it has a rocky taxonomic history. Hitchcock (1951) placed it in the genus *Agropyron*. Subsequently, it was moved to *Elymus* and then to *Elytrigia* to reflect the similarities to other species of *Elytrigia* in Russia, and now it has been moved back to *Elymus* (M. Barkworth, pers. comm., 1999). In this treatment, *Elymus spicata* is called *Pseudoroegneria spicata*, to reflect recent changes. These species are not renamed on a whim, but reflect new information from treatments in new floras and an increased understanding of the genetics and population dynamics of grasses.

***Elymus*—Adapted from Barkworth (1999)**

- 1a. One spikelet at each node but occasionally paired at the lowest nodes. . . . 2
 - 2a. Plants tufted, short or no rhizome 3
 - 3a. Glumes widest at or above the middle 4
 - 4a. Glumes widest near the tip with transparent margins more than 0.5 mm wide; glumes smooth *Elymus alaskanus*
 - 4b. Glumes widest at the middle with transparent margins about 0.3 mm wide; glumes rough *Elymus trachycaulus*
 - 3b. Glumes linear to lance-shaped with transparent margins 0.1–0.2 mm wide *Elymus glaucus*
 - 2b. Plants with strong rhizomes 5
 - 5a. Glumes strongly keeled *Elymus repens*
 - 5b. Glumes weakly keeled or with no keel at all. . . . *Elymus lanceolatus*
- 1b. Two to five spikelets at each node. 6
 - 6a. Central axis of the flowerhead disintegrates at maturity. *Elymus elymoides*
 - 6b. Central axis of the flowerhead does not disintegrate at maturity. . . . 7

- 7b. Edges of glumes not transparent *Elymus canadensis*
 7a. Edges of glumes transparent 8
 8a. Lemmas have hairs along veins with longest hairs along edges,
 and awns curve slightly outward; spikes flexous. . .
 *Elymus hirsutus*
 8b. Lemmas smooth or with very sparse short hairs; awns straight;
 spikes straight *Elymus glaucus*

Heights of *Elymus* species



Elymus alaskanus (Scribn. & Merr.) A. Love
Alaskan Wildrye

Plant: *Elymus alaskanus* is a native species that grows 30–90 cm tall. It is a tufted perennial with short hairs on the stem nodes, and an erect, moderately dense flowerhead.

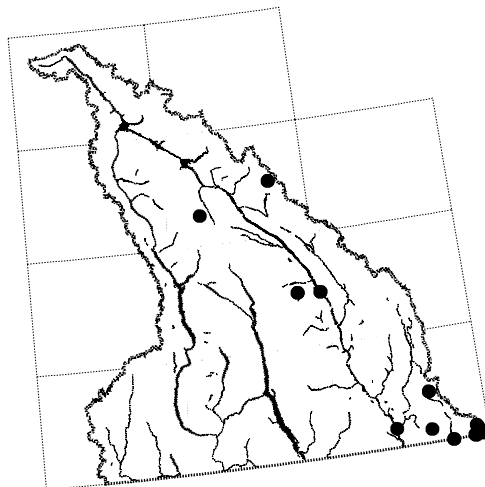
Leaves and Stem: Smooth sheaths are open to the base. The ligules are less than 0.5 mm long and hairy. The auricles, if they are present, are slender and rarely over 1 mm long. The leaf blades are 2–5 mm wide and flat or slightly inrolled, and have scattered hairs.

Flowerhead and Flowers: The flowerhead is a terminal spike about 8–11 cm long and 0.5 cm wide. This is an important visual characteristic when distinguishing the two subspecies. The spikelets are single at each node and have four to six flowers. The equal glumes are oblong or broadly lance-shaped, 5–8 mm long, rough-hairy, and transparent along the edges. The glumes are as long as the first flower and sometimes slightly longer, and can have less than 1-mm-long awns at the tip. The lemma has short hairs toward the tip and has a 1-mm-long awn.

Habitat: Alaskan Wildrye grows in moist to dry sites and is widespread. In the Columbia Basin region it occurs commonly throughout the region and can be found growing at Windermere, along the Flathead River, and on Limestone Ridge.

Similar Species: Alaska Wildrye resembles Slender Wheatgrass (*Elymus trachycaulus*) except that Alaska Wildrye has the widest part of the glumes near the tip and the glume veins are smooth, whereas Slender Wheatgrass has the widest part of the glume near the middle, and the glume veins are rough. This is a character best determined with a hand lens or under a dissecting microscope. Alaska Wildrye has several subspecies in British Columbia, but only two that are found in the Columbia Basin region: *latiglumis* and *alaskanus*.

About the subspecies level, there is some debate among taxonomists whether subspecies *latiglumis* should be placed in *E. alaskanus* subspecies *latiglumis* or in *E. trachycaulus* subspecies *latiglumis*. M. Barkworth (pers. comm. 1999) feels that the subspecies *latiglumis* is better placed in the *E. alaskanus* group. This subspecies is sometimes noted as the *Latiglumis/violaceus* group, and it includes what was once called *Agropyron violaceum*.



Elymus canadensis L.
Canada Wildrye

Plant: *Elymus canadensis* is a native species that grows to 150 cm tall. It is a loosely tufted plant with two spikelets to a node, and a dense, erect flower-head that is sometimes slightly drooping, and has long, sometimes bent, awns.

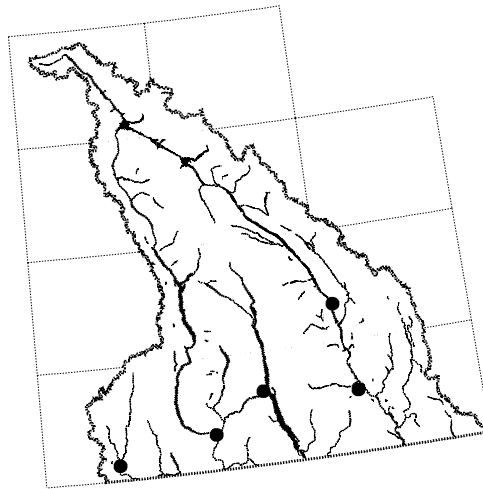
Leaves and Stem: The mostly smooth sheaths are open to the base. The auricles are usually well developed. Ligules are 0.5–1.5 mm long and finely hairy. The leaves are coarse, arranged along the stem, and 5–15 cm wide, and may feel smooth to slightly rough to the touch.

Flowerhead and Flowers: The spike-like, dense flowerhead is up to 20 cm long and sometimes droopy. There is more than one spikelet at each node and the lower spikelets barely overlap, whereas the upper ones overlap. Glumes are narrow, strongly nerved and broadest below the midpoint, sometimes appearing rounded and sometimes slightly flattened. The glume awn is as long as the body of the glume. Glumes are of equal length. Their body is shorter than the first flower. The strongly nerved lemma has short, dense

hairs across the back. The awn curves or arches, and feels rough to the touch. It is twice as long as the body of the lemma, reaching up to 35 mm in length.

Habitat: Canada Wildrye occurs in moist to sandy meadows, disturbed roadsides, and gravelly riverbanks. It grows in the Columbia Basin region at Cranbrook, Windermere, and Queen's Bay.

Similar Species: Within the genus *Elymus* there is a split between those species that have one spikelet per node and those that have two or more spikelets per node. Canada Wildrye can have up to four spikelets per node, but this number varies from plant to plant and even on individual plants; consequently, you should check several nodes before making the decision about how many spikelets are at each node. Blue Wildrye (*Elymus glaucus*), resembles Canada Wildrye in that it has more than one spikelet per node, but they differ in that the spikelets of Blue Wildrye are narrower than those of Canada Wildrye.



Elymus elymoides (Raf.) Swezey
Sitanion hystrix (Nutt.) J.G. Smith
Squirreltail Grass

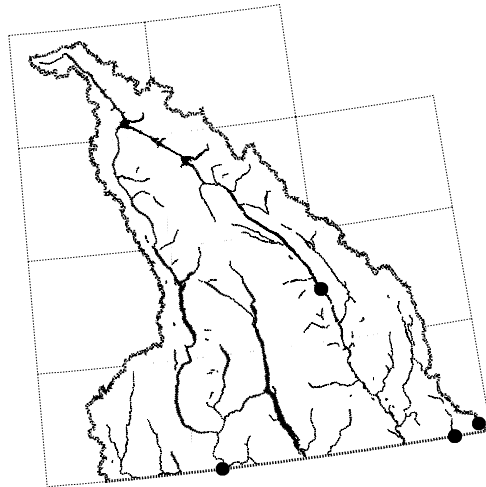
Plant: *Elymus elymoides* is a native species that grows 10–60 cm tall. It is a densely tufted perennial bearing a long, bristly, spike-like flowerhead.

Leaves and Stem: The sheaths are open to the base and the auricles are lacking on some plants and less than 1 mm long on others. The short ligule can be thin with a transparent membrane, or have short hairs and barely reach 0.5 mm high. Leaf blades are flat to folded and inrolled, and 1–4 mm wide.

Flowerhead and Flowers: The spike remains partially enclosed in the uppermost sheath, which explains the large length range (3–15 cm). The rachis breaks apart at maturity. Spikelets are commonly two per node, but rarely one or three, so check several specimens. The narrow glumes are awl-shaped, tapering to a sharp point or into one or two 3- to 10-cm-long awns. The glumes are more or less equal and are shorter than the body of the first flower. The lemma is rough to short-hairy with the main nerve and the two lateral nerves extending into awns that are longer than the glume.

Habitat: Squirreltail Grass grows on dry to moist sites from open grassland to open forest at all elevations. In the Columbia Basin region it occurs in the Flathead area and along the Upper Columbia River.

Similar Species: The flowerhead of Squirreltail Grass takes a range of forms. Sometimes it resembles *Elymus* characters with two spikelets and four glumes per node. Other specimens have sterile flowers so there appear to be many glume-like spikelets. Douglas et al. (1994) describe two subspecies of Squirreltail Grass—*Elymus elymoides* ssp. *californicus*, with entire glumes that have awns shorter than the lemma awns, and *Elymus elymoides* ssp. *elymoides* that has two teeth at the tip of the glume. In subspecies *elymoides*, the glume awns are longer than the lemma awns.



Elymus glaucus (Raf.) Buckl.
Blue Wildrye

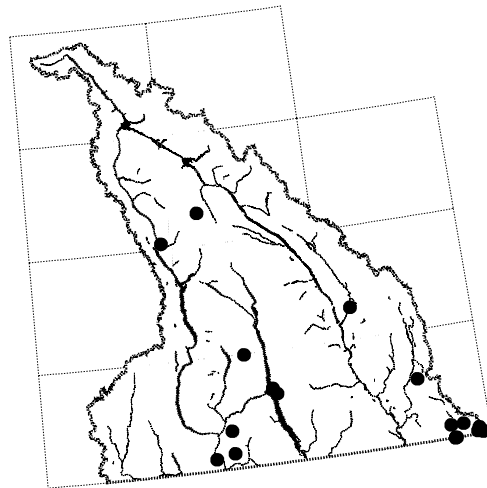
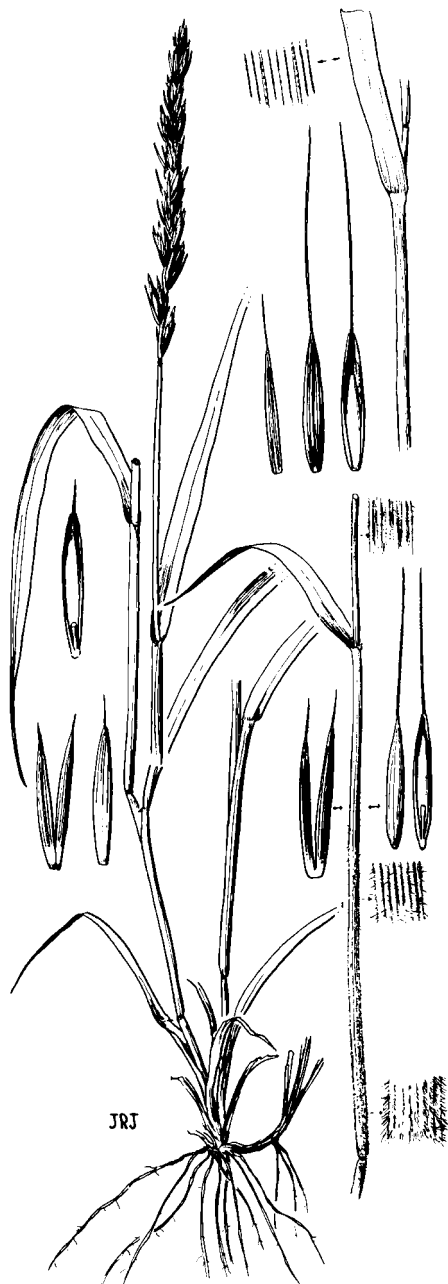
Plant: *Elymus glaucus* is a native species that grows 50–120 cm tall. It is a stiff-stemmed and tufted perennial with a long, slender, spike-like flowerhead.

Leaves and Stem: The sheaths are open, and the leaf blades flat and lax, mostly 5–10 mm wide. Long, thin auricles are present on most leaves. The ligule is about 1 mm high and arises from a purplish collar.

Flowerhead and Flowers: The flowerhead is 5–15 cm long and bears spikelets arranged flatwise to the stem—mostly two per node but sometimes there is only one. Check several plants when identifying this species. The narrow, lance-shaped, nearly equal glumes extend almost to the top of the spikelet, and have three to five distinct nerves. The edges of the glumes are transparent. There are three to five flowers per spikelet. A curved or straight awn extends from the end of the smooth lemma for 1–3 cm, but the awns may be missing in some varieties.

Habitat: Blue Wildrye grows in meadows, open woods, and dry to moist hillsides. It is a common species among rocky knolls and along lakeshores. In the Columbia Basin region it has been collected most often in the Flathead River region and at scattered locations such as Marble Lake and Marten Ridge.

Similar Species: In the spring, Blue Wildrye can be determined by the light bluish colour of the leaves (hence the species name *glaucus*), but later in the season this character is less obvious. See Hairy Wildrye (*Elymus hirsutus*).



***Elymus hirsutus* Presl**
Hairy Wildrye

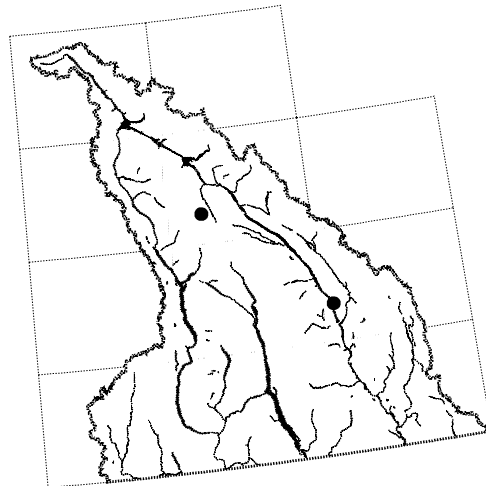
Plant: *Elymus hirsutus* is a native species that grows 50–120 cm tall. It is a slender-stemmed tufted perennial that forms small clumps and has a long, nodding or slightly drooping, spike-like flowerhead.

Leaves and Stem: Sheaths are open and there are small or no auricles. Flat leaf blades are 4–10 mm wide. Ligules are only 0.5–1.0 mm high.

Flowerhead and Flowers: The flowerhead is 6–15 cm long and flexuous, and has spikelets loosely arranged more than one per node. Two narrow, awned glumes are slightly shorter than the flowers and have transparent edges. The awns are 15–25 mm long, protrude from the back of the lemmas, and may be straight to slightly curved. There are hairs along the edges of the lemma.

Habitat: Hairy Wildrye occurs in natural meadows, woodlands, and dry to moist slopes. This species occurs at Glacier National Park in the Cougar Valley and at Fairmont Hotsprings in the Columbia Basin region.

Similar Species: This species resembles Blue Wildrye and may interbreed with it. Hairy Wildrye has long hairs along the margin of the lemmas, whereas Blue Wildrye does not. The generally more open and flexuous, nodding stem of Hairy Wildrye is somewhat diagnostic. The flowerhead may appear somewhat more bristly than the flowerhead of Blue Wildrye because of the slightly longer awns, but this is difficult to assess unless you have both species in hand.



Elymus lanceolatus (Scribn. & J.G. Smith) Gould
Agropyron dasystachyum (Hook.) Scribn.
Thickspike Wildrye

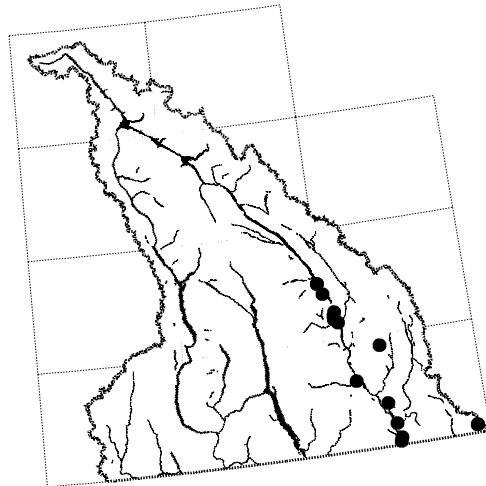
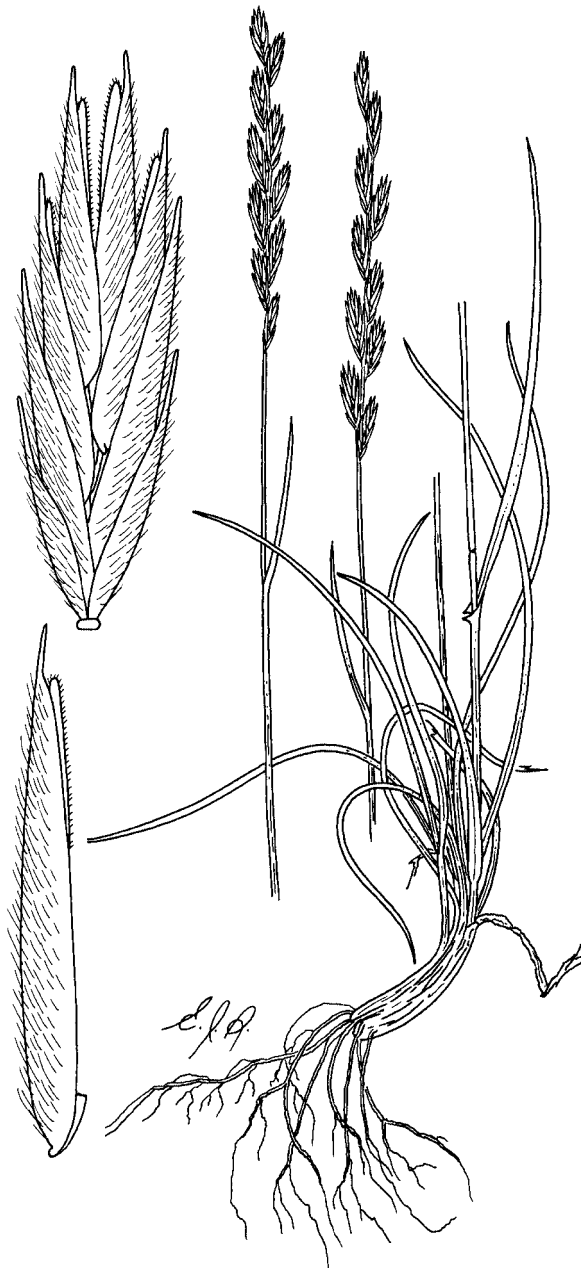
Plant: *Elymus lanceolatus* is a native species that grows 40–100 cm tall. It is a perennial with wiry rhizomes and a shiny, blue-green appearance. The flowerhead is erect and stiff with well-spaced spikelets (none overlapping).

Leaves and Stem: The sheath is open and is densely covered in minute hairs. The auricles are 1.5 mm long, and the ragged ligules scarcely reach 0.5 mm high. The stiff and inrolled leaf blades are 2–4 mm wide.

Flowerhead and Flowers: The stiff and erect flowerhead extends 6–15 cm long. The spike axis does not break apart at maturity. Two spikelets per node contain 4–10 flowers. The oblong to slightly pointed glumes are equal and lightly to strongly hairy, and end in a sharp point. The rounded glumes extend slightly more than half-way up the first flower. Lemmas are rarely awned and are densely covered in short hairs.

Habitat: Thickspike Wildrye grows on dry, gravelly creek beds and banks, sandy dunes, and dry, open prairie sites. In the Columbia Basin region these sites are found near Canal Flats, Invermere, and Saint Mary's River.

Similar Species: Thickspike Wildrye is difficult to tell apart from Western Wheatgrass (*Pascopyrum smithii*). Both have rhizomes. Western Wheatgrass has a glume that is curved to one side. You can observe this character by carefully examining the midvein of the glume. M. Barkworth (pers. comm. 1999) has observed hybrids of Thickspike Wildrye and the awned phase of Bluebunch Wheatgrass (*Pseudoroegneria spicata*).



Elymus repens (L.) Nevski
Agropyron repens (L.) Beauv.
Quackgrass

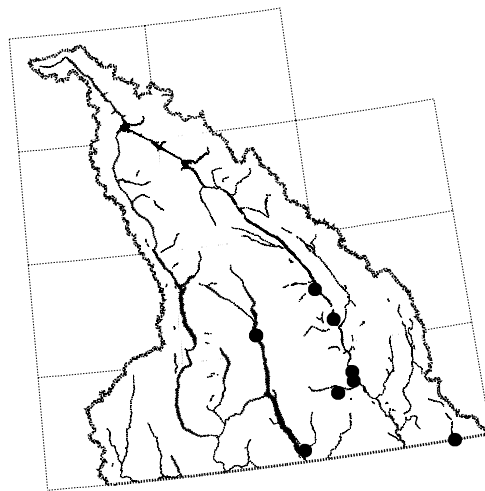
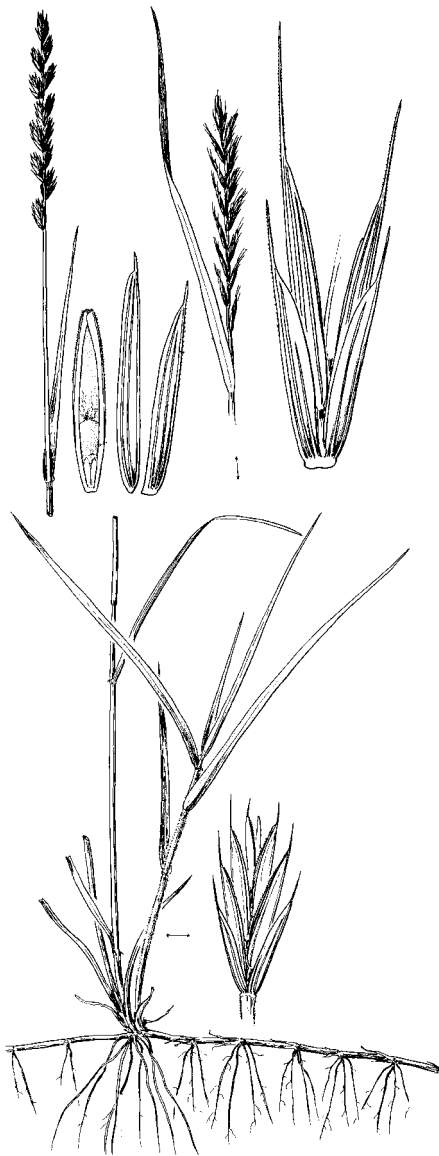
Plant: *Elymus repens* is an introduced species that grows to 100 cm tall. It is a perennial that grows from tough, hard, wiry rhizomes, and it has a dense, narrow, spiky flowerhead. The spikelets are stiff, ascending, and closely crowded along the axis.

Leaves and Stem: The open leaf sheath is mostly hairless, but in some cases the lowermost part of the sheath is soft-hairy. The flat leaf blade is 2–14 mm wide and somewhat ribbed. The clasp ing auricles are well developed. Ligules are less than 0.5 mm long and gnawed-looking or short-haired.

Flowerhead and Flowers: The flowerhead is stiff and erect and approximately 7–15 cm long. There is one spikelet per node attached directly to the stem without a stalk, and these are alternately arranged. The spikelets are closely crowded and twice as long as the internodes. The glume tip is sharply pointed to blunt, and the glumes are strongly keeled. Glumes are more or less equal and shorter than the first flower. The spike axis does not break apart at maturity. The lemmas can be awnless, or awn-tipped with an awn up to 10 mm long. The lemmas are slightly longer than the glumes.

Habitat: Quackgrass, introduced from Eurasia, is a serious weed in disturbed areas below 1800 m elevation. It has spread throughout the Columbia Basin region.

Similar Species: Quackgrass is also called *Agropyron repens*, and is very similar in appearance to Ryegrass (*Lolium perenne*). Ryegrass has only one glume, whereas Quackgrass has two glumes. One quick visual way to distinguish the two is that Quackgrass has the back of its spikelet (wide side) centred along the axis of the spike, whereas in ryegrass species, the edge of the spikelet (narrow side) is oriented along the axis. Quackgrass might be confused with Slender Wheatgrass (*Elymus trachycaulus*). Slender Wheatgrass is a tufted native species that lacks auricles (or has very small ones) and does not have rhizomes.



***Elymus trachycaulus* (Link) Gould**
Slender Wheatgrass

Plant: *Elymus trachycaulus* is a native species that grows 30–100 cm tall. It is a tufted perennial with a spike-like flowerhead that does not break apart at maturity.

Leaves and Stem: The open sheath is hairless to slightly hairy and the auricles are less than 1 mm long. The ligules are smooth-margined or hairy along the edge and less than 0.5 mm high. The flat or inrolled leaves are 1.5–6 mm wide and can have scattered hairs on the upper surface.

Flowerhead and Flowers: The spike-like flowerhead is 4–20 cm long, bearing three to six flowers per spikelet. There is one spikelet per node. The glumes are almost as long as the spikelet, lance-shaped, widest at the middle, and transparent along the margins, with a sharp point and a short awn. The lemmas are smooth or have short hairs, and can have awns or not.

Habitat: Slender Wheatgrass grows in moist to dry sites such as along river flats, beaches, and floodplains. It is common throughout the Columbia Basin region.

Similar Species: Slender Wheatgrass forms fertile hybrids with Alaska Wildrye and Thickspike Wildrye. Douglas et al. (1994) have separated two subspecies based on whether the lemmas have awns or not. Lemmas with 10- to 30-mm-long awns indicate subspecies *subsecundus*. Lemmas without awns or awns less than 10 mm long characterize subspecies *trachycaulus*. Barkworth (1993) in annotating Slender Wheatgrass specimens at the Royal British Columbia Museum, has attached a note to the sheets describing awned specimens of Slender Wheatgrass as occurring only in locations where other awned species, such as Squirreltail Grass, Blue Wildrye, and Foxtail (*Hordeum jubatum*), occur. She suggests that Slender Wheatgrass is an artificial taxon. Alaskan Wildrye differs from Slender Wheatgrass by having glumes that tend to be widest beyond the middle, and have transparent margins that widen until just before the tip.

