

The genus *Hierochloe* has a long association with holy ceremonies. The name comes from the Greek *hieros*, meaning sacred, and *chloë*, meaning grass or holy-grass. In Northern Europe it was placed in front of churches on Saints' days. Throughout North America, First Peoples appreciated sweetgrass for the scent. It was woven into baskets and mats, burned as incense, or worn in a sachet as an insect repellent. The fresh, sweet scent comes from coumarin, a crystalline substance that was once extracted and used commercially as flavouring. There are two species found in British Columbia: *Hierochloe alpina*, which grows in the subalpine and alpine zones, and *H. odorata*, which grows in moist meadows, streambanks, and forest openings from lowland to subalpine zones. Only *H. odorata* occurs in the Columbia Basin region.

***Hierochloa odorata* (L.) Beauv.**
Common Sweetgrass

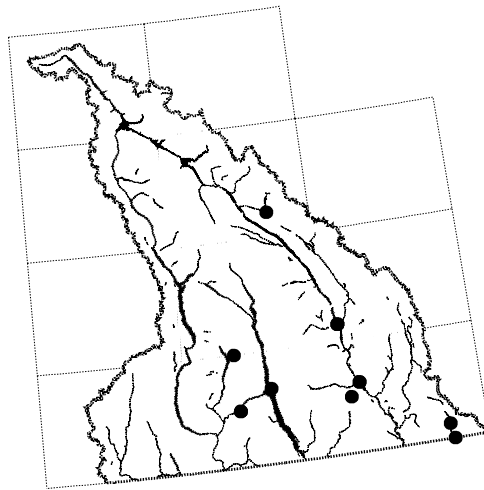
Plant: *Hierochloa odorata* is a native species that grows 30–50 cm tall. It is a sweet-scented perennial with purple bases and rhizomes. The open flower-head is pyramid-shaped.

Leaves and Stem: Open sheaths are smooth to slightly hairy. The ligules are 3–5 mm long, have blunt to pointed tips, and are slightly ragged along the upper edges. There are two kinds of leaf types—leaves formed without stems (vegetative) and leaves formed with stems. The leaves that form along the stems are narrower (1–2 mm) than leaves that form without stems (3–5 mm). The collars on the sheaths of basal leaves often have white hairs. There are no auricles.

Flowerhead and Flowers: The flowerhead is open, 5–10 cm long, and pyramid-shaped. Each brown and shiny spikelet contains three flowers. Two lower flowers contain only stamens, and look like scales; the fuller third flower is complete. The wide, smooth glumes equal or exceed the flowers in length. The unawned lemmas are finely hairy all over and pointed.

Habitat: Sweetgrass is classified as native due to its global distribution, which is circumpolar. It is widely distributed in British Columbia east of the Coast-Cascade Mountains but rarely grows in abundance at any one location. The preferred sites are moist meadows, streambanks, and forest openings from lowland to subalpine zones. Sweetgrass occurs at Canal Flats, Nelson, Cranbrook, Flathead River, Peckam's Lake, Kootenay Lake, and Graystokes Plateau.

Similar Species: Common Sweetgrass is like Alpine Sweetgrass (*Hierochloa alpina*) except that it has a membrane-like ligule and no awns. Alpine sweetgrass has awned flowers, and the ligule is 1/2 membrane-like and the other 1/2 is long hairs. The sweet smell, brown shiny spikelets, and the two staminate flowers in each spikelet make this genus distinctive.



This genus includes the cultivated barley plant *Hordeum vulgare*, but it also contains many weedy species. Six species of *Hordeum* occur in British Columbia. Two of these grow in the Columbia Basin region, *Hordeum brachyantherum* and *H. jubatum*. They are of some importance as forage grasses but are also a nuisance to livestock because of their long awns.

***Hordeum*—Adapted from Douglas et al. (1994)**

- 1a.** Flowerhead including awns nearly as wide as it is long. . .
..... *Hordeum jubatum*
- 1b.** Flowerhead including awns much longer than it is broad. . .
..... *Hordeum brachyantherum*

Hordeum brachyantherum Nevski
Meadow Barley

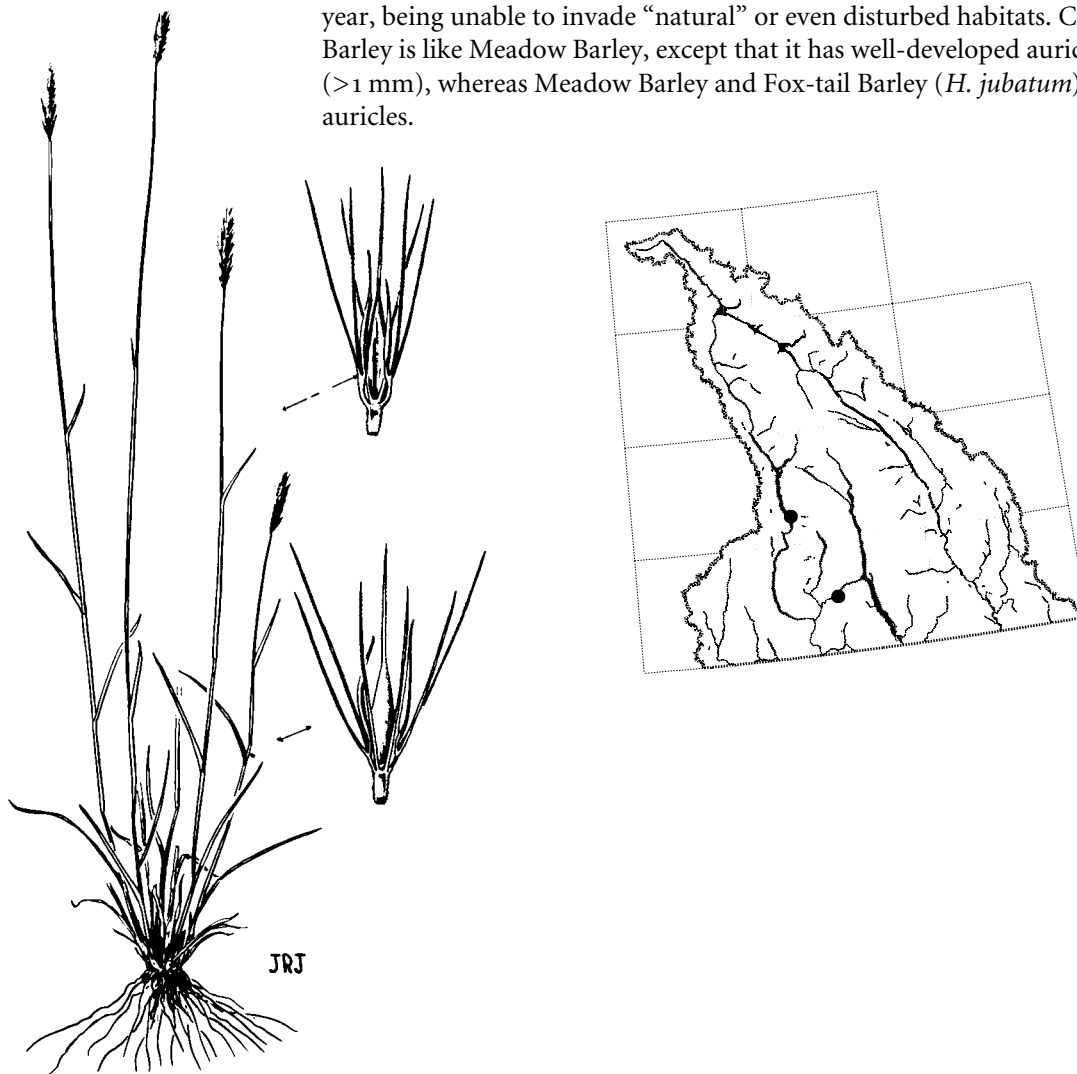
Plant: *Hordeum brachyantherum* is a native species that grows 40–100 cm tall. It is a tufted perennial that bears a stiff, erect stem with a spike-shaped flowerhead.

Leaves and Stem: Sheaths are open. Leaf blades range from 2 to 9 mm wide. There are no auricles, and the ligules are scarcely 0.5 mm high and minutely hairy at the tip.

Flowerhead and Flowers: The relatively narrow, erect, terminal flowerhead is 5–10 cm long. It shatters easily when ripe. There are usually two to three spikelets per node of the flowerhead, each spikelet usually with one flower. The central spikelets are attached directly to the stem, while the other two are on short, curved stalks. The two glumes are 7–12 mm long and are so narrow that they look like awns. The lemma of the central flower extends into a long awn. The lateral flowers may be modified into awn-like structures.

Habitat: Meadow Barley grows usually in moist meadows and possibly at the edges of marshes or streams along forest openings. In the Columbia Basin region it occurs at Nelson and Nakusp.

Similar Species: You may encounter Cultivated Barley (*Hordeum vulgare*) in fields, in pastures, and around livestock. It rarely persists for more than a year, being unable to invade “natural” or even disturbed habitats. Common Barley is like Meadow Barley, except that it has well-developed auricles (>1 mm), whereas Meadow Barley and Fox-tail Barley (*H. jubatum*) have no auricles.



***Hordeum jubatum* L.**
Fox-tail Barley

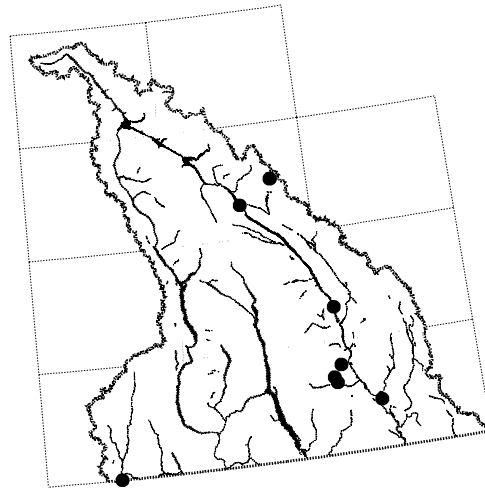
Plant: *Hordeum jubatum* is a native species that grows 20–50 cm tall. It has a showy, silvery to reddish, soft, whisk-shaped, and nodding flowerhead (like a fox's tail).

Leaves and Stem: Stems are smooth to soft-hairy. Sheaths are open nearly to the node below. Flat leaf blades range from 2 to 5 mm wide and up to 18+ cm long. Auricles 0.5 mm long occur on some leaves. Ligules range from 0.2 to 0.6 mm long, and form a frilled collar of even height.

Flowerhead and Flowers: The flowerhead is 5–10 cm long (including the awns) and whisk-like. There are three spikelets per node, of which the central one is usually the largest. Spikelets are attached directly to the central stalk, not by a pedicel like many other grasses. The spikelets are arranged in rows, one above the next on the central axis. Spikelets are generally one-flowered. There are two, narrow, equal, 2- to 6-cm-long glumes that look like awns, and are as long or nearly as long as the spikelet. The lemma has a long awn nearly as long as that of the glumes. The 2- to 6-cm-long purplish awns are distinctive. Awns and glumes are lined with minute, rough teeth that you can easily feel if you push your fingers down along the awns.

Habitat: Foxtail Barley grows at all elevations except in the alpine zone. It is common along roadsides, in moist meadows, and along lakeshores. It tolerates alkaline or brackish soils, and it favours disturbed sites in urban and suburban settings. Most people are surprised to hear this species described as a native grass. It is described as circumpolar and weedy.

Similar Species: The distinctive whisk-shaped flowerhead is unmistakable. The flowerhead of Meadow Barley is long, narrow, and not whisklike or drooping.



Koeleria, a genus that occurs in the Temperate to Arctic areas of North America and Eurasia, is named after George Koeler, the author of a book on grasses of France and Germany. This is the only species listed by Douglas et al. (1994) as occurring in British Columbia but there has been some debate as to what to call this species. In their publication *Flora of the Pacific Northwest*, Hitchcock et al. (1969) describe *Koeleria macrantha* as one of the most variable species in the Pacific Northwest.

Koeleria macrantha (Ledeb.) J.A. Schultes f.

Koeleria cristata Pers.

Junegrass

Plant: *Koeleria macrantha* is a native species that grows 30–60 cm tall. It is a densely tufted perennial with most of the leaves arranged around the base of the stem. The flowerhead has the appearance of a slightly open spike. It has short branches, but they do not spread.

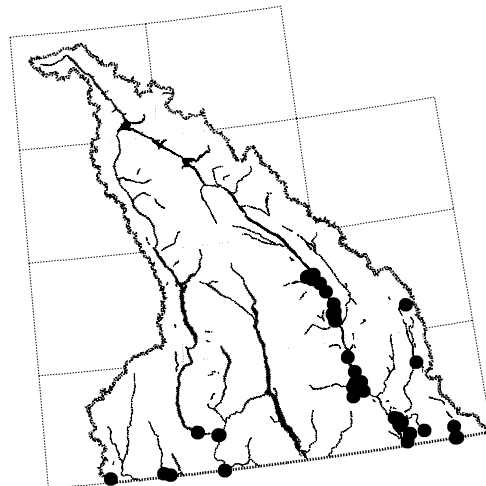
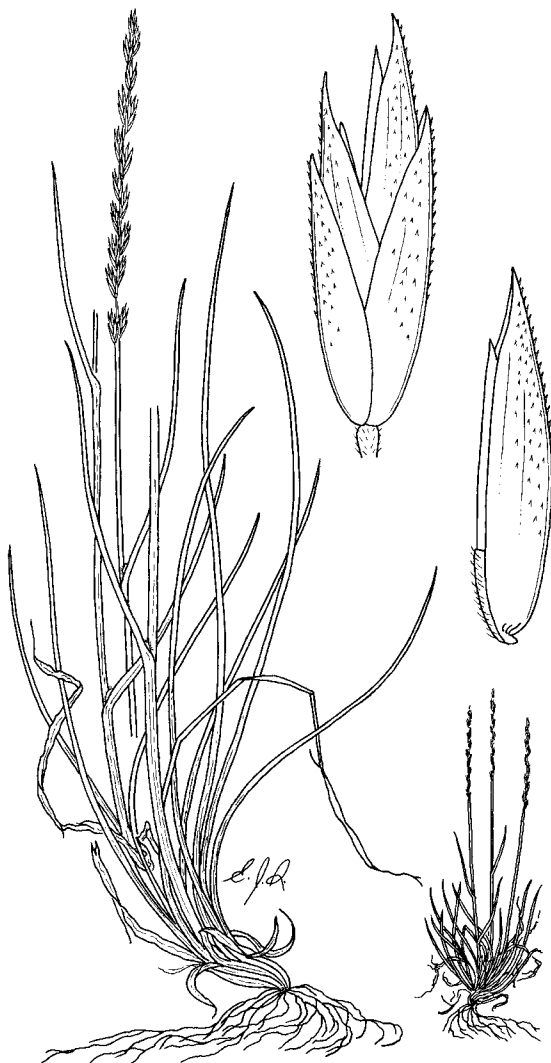
Leaves and Stem: The sheaths are open and the stems are smooth or downy. At the collar of the leaf-margin interface, there are often straight hairs that are 1–1.5 mm long. The 0.5- to 2-mm-long ligules are highest in the front and very hairy along the edge. The leaf blades are 1–2 mm wide and usually in-rolled or folded. They can be covered in short hairs or smooth with minute rough hairs. The tips of the leaf blades are boat-like.

Flowerhead and Flowers: The flowerhead is 4–13 cm long and has short branches that point upward. There are mostly two flowers in each spikelet, but occasionally there are up to four. The unequal glumes do not have awns but have a rough appearance on the back and equal or exceed the first flower. The rough lemmas are awnless or have a short awn tip.

Habitat: Junegrass grows on dry, open sites in the steppe to subalpine zones.

It is common from the Flathead River to Invermere, Radium, and Spillimacheen. It is one of the better range grasses, but it rarely occurs in abundance and does not have as much foliage as some of the other range grasses.

Similar Species: Junegrass is highly variable and many authors consider the genus to contain several species. It is often confused with Fendler's Bluegrass (*Poa fendleriana*). It can be separated from Fendler's Bluegrass by the smaller spikelets, entirely colourless paleas, and the hairy stem axis of the flowerhead.



In Hitchcock’s *Manual of Grasses of the United States* (1951) there was no genus called *Leymus*—the members of this genus were included in *Elymus*, a genus in which the stem axis does not come apart at maturity and has more than one spikelet at each node. The two taxa differ in preferred site characteristics, with *Leymus* growing in open, dry areas, and *Elymus* growing in moist areas. The leaf blades of *Leymus* appear to be more strongly and closely ribbed than those in *Elymus* (Barkworth 1998). This gives *Leymus* a stiff, harsh feel as compared to *Elymus*, which has a softer feel. Douglas et al. (1994) separate *Leymus* from *Elymus* based on *Leymus* having no lemma awns and having rhizomes (*Elymus* are tufted). There are three species of *Leymus* in British Columbia: *Leymus cinereus*, *L. innovatus* and *L. mollis*.

***Leymus*—Adapted from Barkworth in Douglas et al. (1994)**

- 1a.** Plants with a strong rhizome; lemmas obviously and evenly hairy across the back *Leymus innovatus*
- 1b.** Plants tufted, short or no rhizome; lemmas smooth or with scattered hairs across the back *Leymus cinereus*

Leymus cinereus (Scribn. & Merr.) A. Love
Elymus cinereus Scribn. & Merr.
 Giant Wildrye

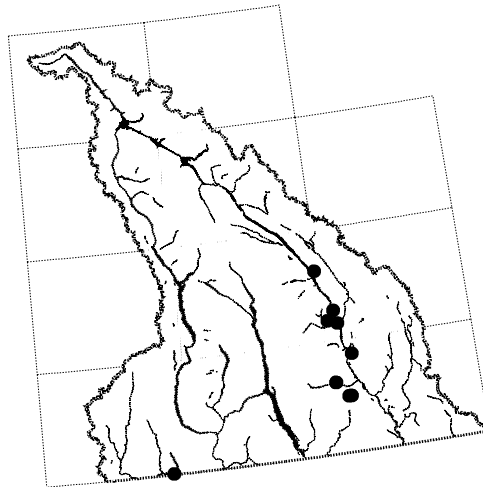
Plant: *Leymus cinereus* is a native species that grows 1–2 m tall. It is a coarse, tufted perennial, with short rhizomes connecting the clumps of grass, which are up to 1 m wide. The flowerhead is a large stiff spike with three spikelets at each node.

Leaves and Stem: The open sheaths are smooth to softly hairy and the auricles are well developed. Stems are hairy at the nodes. The membranous ligules are 3–7 mm high and softly hairy. Large, tough, flat leaf blades are 10–20 mm wide.

Flowerhead and Flowers: The stiff spike flowerhead is 12–20 cm long. Spikelets are sometimes paired but most often occur as three at each node. The nearly equal, narrow glumes are tapered from the base and often as long as the spikelet. Smooth to hairy lemmas have no awn, or may have an awn that is 2–7 mm long.

Habitat: Giant Wildrye commonly grows along the saline margins of ponds or seeps and occasionally on dry, gravelly or sandy sites in the steppe or montane zones. In the Columbia Basin region, Giant Wildrye occurs at Cranbrook, Marysville, Radium Hot Springs, Wasa, and Canal Flats.

Similar Species: Giant Wildrye is similar to Fuzzy-spiked Wildrye (*Leymus innovatus*), and both species are found in the Columbia Basin region. There is a difference in plant habit and size between the two species. Giant Wildrye is tufted and 1–2 m tall, compared to Fuzzy-spiked Wildrye, which is rhizome-bearing and 40–100 cm tall. T.C. Brayshaw (pers. comm. 1999) believes that Giant Wildrye may also be rhizomatous in disturbed sites. The lemmas of Giant Wildrye are smooth or slightly hairy, whereas those of Fuzzy-spiked Wildrye are always hairy.



Leymus innovatus (Beal) Pilger
Elymus innovatus Beal
Fuzzy-spiked Wildrye

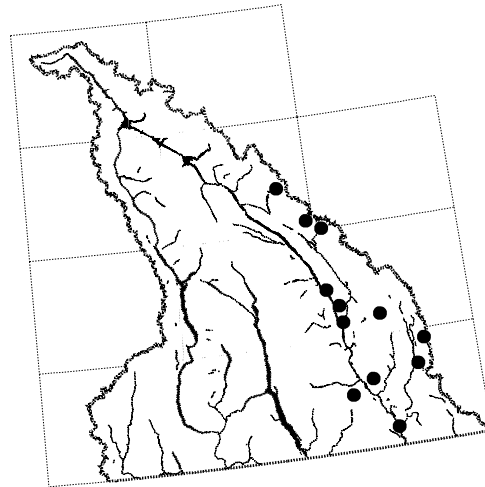
Plant: *Leymus innovatus* is a native species that grows 40–100 cm tall. It is a tufted perennial with a rhizome, and an erect, soft-hairy spike.

Leaves and Stem: The open sheath has short, stiff hairs and the auricles are well developed. The ligules are less than 1 mm long and short-hairy along the upper edge. Stiff, inrolled leaf blades are 2–4 mm wide. The upper leaf surface is rough and the lower leaf surface is smooth. The stems are slightly hairy just below the nodes.

Flowerhead and Flowers: The stiff, spike-like flowerhead is 4–9 cm long and often the lowermost spikelet is widely separated from those above. The stalk-less purple spikelets contain three to five flowers. The stiff, hairy glumes are very narrow with 5- to 12-mm-long awns. Dense, short hairs cover lemmas with awns up to 3 mm long.

Habitat: Fuzzy-spiked Wildrye grows in slightly moist to dry meadows and forests in the montane zone—it is common in British Columbia, east of the Coast-Cascade Mountains. In the Columbia Basin region, Fuzzy-spiked Wildrye occurs at Kootenay, Mount Shanks, Mount Granger, Fairmont Hot Springs, Cranbrook, Natal, Windermere Lake, and Vermillion Range.

Similar Species: Fuzzy-spiked Wildrye is sometimes confused with Blue Wildrye (*Elymus glaucus*). They are different in that Blue Wildrye has long awns, and smooth glumes and lemmas, but does not have a rhizome.



The genus *Lolium* consists of Old World species, and in North America they are weedy species or escapees from cultivation. *Lolium* is the Latin word for ryegrass. *Lolium multiflorum* and *L. perenne* occur in the Columbia Basin region, and are used extensively in pasturage as well as in seed mixtures for roadside restoration. A third weedy species, *L. temulentum* occurs in British Columbia but has not been collected in the Columbia Basin region. A quick field check to determine if the grass is *Lolium* is to look to see if there are two glumes or not. *Lolium* spikelets are oriented so that one edge of the spikelet is along the spike axis and along this edge there is no glume (you will need to remove the spikelet to check this). *Lolium* forms hybrids with *Festuca* and is closely related to that genus.

***Lolium*—Adapted from Douglas et al. (1994)**

- 1a.** Lemmas awnless *Lolium perenne*
- 1b.** Lemmas awned *Lolium multiflorum*

***Lolium multiflorum* Lam.**
Italian Ryegrass

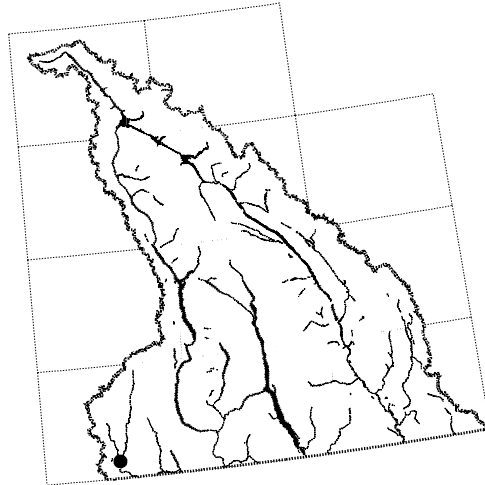
Plant: *Lolium multiflorum* is an introduced species that grows to 105+ cm tall. It is a biennial or tufted perennial with a flat, spike-like flowerhead.

Leaves and Stem: The coarse-growing stout stems are rounded to slightly flattened in cross-section. Sheaths are open. Leaf blades are 3–8 mm wide, 15–22 cm long, inrolled when young (but becoming flat), and drooping from the point of attachment to the sheath. Ligules are short, often no more than a scruffy fringe of tissue. Clearly visible, curved auricles are present.

Flowerhead and Flowers: In the single spike-like flowerhead, the spikelets are attached edgewise directly to the stem (no stalklets). Flowerheads may reach 30 cm long. The 8- to 10-flowered spikelets are flattened. The two, narrow glumes are $\frac{1}{3}$ to $\frac{1}{2}$ as long as the spikelets. Some of the lemmas (especially the upper ones) may bear awns 2+ mm long.

Habitat: Italian Ryegrass grows in disturbed sites, roadsides, fields, and pastures and is used in seed mixtures as a quick cover crop. There is only one specimen in the collection at the Royal B.C. Museum from the Columbia Basin region—it is from Rock Creek.

Similar Species: Italian Ryegrass closely resembles its near-relative Perennial Ryegrass, and the two form hybrids. Italian Ryegrass is a rougher- or coarser-looking plant, has awns, and has glumes much shorter than the spikelet compared to Perennial Ryegrass. Some *Lolium* species appear similar to *Agropyron* species, but the spikelets of *Lolium* species are attached edgewise to the stem, whereas those of *Agropyron* species are attached flatwise.



***Lolium perenne* L.**
Perennial Ryegrass

Plant: *Lolium perenne* is an introduced species that grows 30–80 cm tall. It is a tufted short-lived perennial with rhizomes and a spike-like flowerhead.

Leaves and Stem: Smooth stems arise from numerous young leaves at the base. Stems below the flowerhead are flattened. Sheaths are open. Flat to folded, sometimes inrolled, leaf blades are 2–4 mm wide, glossy, and hairless. Tips of the leaves may be prow-like. Ligules are only about 1 mm high. Clearly visible auricles up to 1.5 mm long occur on most leaves.

Flowerhead and Flowers: The flowerhead is stout, 7–25 cm long, and spike-like with spikelets alternating up the axis. Spikelets are attached edgewise directly to the stem (no stalklets). The 6- to 10-flowered spikelets are flattened. The narrow glume reaches about 1/2 the length of the spikelets. Lemmas are sharp-pointed, but there are no awns.

Habitat: Perennial Ryegrass grows on disturbed sites, pastures, fields, lawns, roadsides, and even clearings. This species was introduced from Europe and is used in seed mixtures as a quick cover and pasture crop. There is only one specimen in the Royal BC Museum's collection from the Columbia Basin region, and it is from Emerald Lake.

Similar Species: The most noticeable difference between Perennial Ryegrass and Italian Ryegrass is that Perennial Ryegrass has awnless lemmas.

