

Siberian wild rye

Elymus sibiricus L.

Synonyms: *Clinelymus sibiricus* (L. J.) Nevski., *C. yubaridakensis* Honda, *Elymus krascheninnikovii* Roshev., *E. pendulosus* Hodgson., *E. praetevisus* Steud., *E. sibiricus* var. *brachstachys* Keng, *E. sibiricus* var. *gracilis* L. B. Cai, *E. tener* L., *E. yubaridakensis* (Honda) Ohwi, *Hordeum sibiricum* (L.) Schenck, *Triticum arktasianum* Hermann.

Other common names: Siberian black-eyed Susan

Family: Poaceae

Invasiveness Rank: 53 The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Note on Native Status: Multiple authors have considered at least some populations of Siberian wild rye to be native to North America, and this species has been recommended as a native, winterhardy, high yield forage crop in Alaska (Bowden and Cody 1961, Klebesadel 1993, Bennett 2006). However, North American populations show no genetic variation and are located in areas historically associated with human travel, agricultural experimentation, and revegetation after fire. Therefore, Siberian wild rye is most likely a non-native grass that was recently introduced to Alaska and northwestern Canada from Russia or central Asia (Bennett 2006, Barkworth et al. 2007).

Description

Siberian wild rye is a tufted or occasionally rhizomatous, perennial grass that grows from 40 to 150 cm tall. Stems are erect or slightly decumbent at the base, thick, uniformly-leaved, and smooth with exposed nodes. Sheathes are glabrous or slightly hairy and often purple-tinted. Leaves are thin, flat, rough on both surfaces, glabrous or slightly hairy, 10 to 30 cm long, and 3 to 16 mm wide. Ligules are up to 1 mm long. Spikes are pendulous, occasionally branched at the base, 7 to 30 cm long, and 2 to 5 cm wide. Spikelets are 10 to 18 mm long and green or purple-tinted. They are usually arranged in pairs at the nodes, and each usually consists of four or five florets. Glumes are three-nerved, lanceolate, 0.4 to 1.5 mm wide, and 3 to 8 mm long with a 1 to 6 mm long awn. Lemmas are 8 to 13 mm long with a 1 to 3 cm long awn. The backs of the lemmas are very rough (Hultén 1968, Cody 1996, Barkworth et al. 2007, eFloras 2008, Dzyubenko and Dzyubenko 2009, Terekhina 2009, Klinkenberg 2010).



Mounted specimen of *Elymus sibiricus* L.

Similar species: Many *Elymus* species and other closely related grasses are known to grow in Alaska and could be confused with Siberian wild rye. Blue wild rye (*Elymus glaucus*) can be distinguished from Siberian wild rye because the backs of its lemmas are glabrous at the base, the bodies of its glumes are approximately the same length as the bodies of the adjacent lemmas, and its spikes are upright or slightly curved and 5 to 20 mm wide. Unlike Siberian wild rye, northern wild rye (*E. hirsutus*) has hairy margins and lateral veins on its lemmas. Slender wheatgrass (*E. trachycaulus*) can be

distinguished from Siberian wild rye by the presence of glumes that are 1.8 to 2.3 mm wide. Slender wheatgrass (*E. trachycaulus* ssp. *glaucus* and *E. trachycaulus* ssp. *subsecundus*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) can be distinguished from Siberian wild rye by the presence of only one spikelet at each node on their spikes. Alaskan wheatgrass (*Elymus alaskanus*), Yukon wheatgrass (*E. × yukonensis*), northern wheatgrass (*E. macrourus*), the non-native quackgrass (*E. repens*), sand ryegrass (*Leymus arenarius*), and american dunegrass (*L. mollis*) can be distinguished from Siberian wild rye by the presence of awns on the lemmas that are much shorter than the bodies of the lemmas. Unlike Siberian wild rye, arctic wheatgrass (*Elymus violaceus*) has awns on its lemmas that are 0.5 to 3 mm long (Hultén 1968, Cody 1996, Barkworth et al. 2007).

Ecological Impact

Impact on community composition, structure, and interactions: Siberian wild rye can form sods or tufts (Dzyubenko and Dzyubenko 2009, Klinkenberg 2010). It may therefore increase the density of graminoid layers and reduce the sizes of native plant populations in disturbed areas. Because it grows along sandy or gravelly river bars (Barkworth et al. 2007, eFloras 2008, Klinkenberg 2010), it has the potential to create a new layer on mineral substrates in riparian areas. Siberian wild rye generally invades anthropogenically disturbed habitats, but it is also known from early to mid-successional floodplain habitats in Interior Alaska, where it is likely having moderate impacts on native species (Carlson and Gotthardt 2009, AKEPIC 2010). When dried, the awns are rough, sharp, and brittle and may be hazardous to grazing livestock (Klebesadel 1993) and possibly wild animals as well. Siberian wild rye is palatable to livestock (Dzyubenko and Dzyubenko 2009) and is likely palatable to wild, grazing herbivores. This species is known to form sterile hybrids with tufted wheatgrass (*E. macrourus*) at high frequencies in south-central Alaska (Mitchell and Hodgson 1965, Hultén 1968, Dewey 1974). It also hybridizes with foxtail barley (*Hordeum jubatum*) (Dewey 1974).

Impact on ecosystem processes: Populations of Siberian wild rye reduce soil erosion and improve soil fertilization (Dzyubenko and Dzyubenko 2009).

Biology and Invasive Potential

Reproductive potential: Siberian wild rye reproduces by seeds, and it sometimes forms short rhizomes (Barkworth et al. 2007, Klinkenberg 2010). Each plant produces many inflorescences with 50 to 100 seeds per inflorescence (Terekhina 2009). The amount of time seeds remain viable is unknown.

Role of disturbance in establishment: In Russia, Siberian wild rye germinates in sparsely vegetated habitats, such as dry meadows, stony slopes, bushlands, forests, and

sandy river banks (Dzyubenko and Dzyubenko 2009). This species can establish in areas naturally disturbed by river action, as it has along the Nenana and Mackenzie Rivers in Alaska and Canada, respectively (Bowden and Cody 1961, AKEPIC 2010). All recorded infestations in Alaska are associated with soil disturbances or open mineral soils; 95% of infestations are associated with fill importation (AKEPIC 2010).

Potential for long-distance dispersal: No information has been recorded on the dispersal mechanisms of Siberian wild rye; however, the seeds of a similar species, sand ryegrass (*Leymus arenarius*), are wind dispersed (Bond 1952). It is likely that the seeds of Siberian wild rye are also dispersed by wind because they are light, weighing approximately 5 mg each (Terekhina 2009).

Potential to be spread by human activity: Siberian wild rye has primarily established along road systems in Alaska, suggesting that it is dispersed by human activities (AKEPIC 2010). This species has been cultivated experimentally in the Matanuska Valley to determine its suitability as a forage crop in subarctic regions (Klebesadel 1993).

Germination requirements: Siberian wild rye germinates quickly (Klebesadel 1993).

Growth requirements: Siberian wild rye is well-suited to climates similar to that of the Matanuska Valley (Dewey 1974, Klebesadel 1993). It is drought tolerant. Plants growing on fertile soil produce more foliage than plants growing on infertile soil (Klebesadel 1993).

Congeneric weeds: Quackgrass (*Elymus repens*) and Canada wild rye (*E. canadensis*) are non-native species known or expected to occur in Alaska (AKEPIC 2010). Quackgrass has an invasiveness rank of 59 and is considered noxious in 18 states of the U.S. and five provinces of Canada (AKEPIC 2010, Invaders 2010, USDA 2010).

Legal Listings

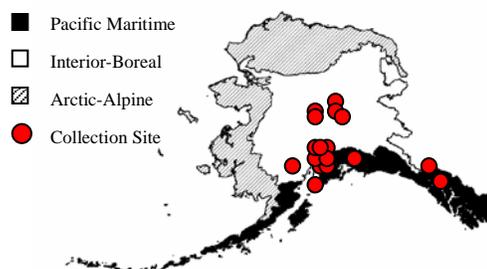
- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states
- Federal noxious weed
- Listed noxious in Canada or other countries

Distribution and Abundance

In much of Russia, Siberian wild rye is grown for hay and silage and is used as a forage crop in areas with severe winters. It is planted on sand or in ravines for erosion control (Dzyubenko and Dzyubenko 2009, Terekhina 2009). In Alaska, British Columbia, Northwest Territories, and Yukon, Siberian wild rye grows in dry to damp grasslands, cabin clearings, eroding river banks, mudflats, coastal benches, dunes, roadsides, and disturbed areas (Hultén 1968, Cody 1996, Barkworth et al. 2007, AKEPIC 2010). It grows on

sandy or gravelly river bars and floodplains in British Columbia (Klinkenberg 2010). This species has been documented growing on an open, grassy bank along the Mackenzie River in British Columbia (Bowden and Cody 1961) and in areas naturally disturbed by river action along the Nenana River in Alaska (Carlson and Gotthardt 2009, AKEPIC 2010).

Native and current distribution: Siberian wild rye is native to western Russia and much of Asia (Dzyubenko et al. 2005, eFloras 2008). It has been introduced to Alaska, British Columbia, Northwest Territories, and Yukon (Barkworth et al. 2007, USDA 2010). Established populations have been recorded from above the Arctic Circle in western and central Russia (Dzyubenko et al. 2005). Siberian wild rye has been documented from the Pacific Maritime and Interior-Boreal ecogeographic regions of Alaska (AKEPIC 2010, UAM 2010).



Distribution of Siberian wild rye in Alaska

Management

Siberian wild rye sometimes forms short rhizomes from which it can resprout (Klinkenberg 2010). Control methods for Siberian wild rye have not been documented.

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