

## smooth brome

### *Bromus inermis* ssp. *inermis* Leyss

Synonyms: None  
Other common name: None  
Family: Poaceae

**Invasiveness Rank:** 62 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.

#### Description

Smooth brome is a perennial, rhizomatous grass that grows up to 1.5 meters tall from extensive, creeping rhizomes. Stems are erect and hairless. Leaf blades are flat, nearly hairless, 15 to 40 cm long, and 5 to 15 mm wide. Leaf sheaths are closed with a small V-shaped notch. Auricles are absent. Panicles are open, nodding, and 5 to 20 cm long with 1 to 4 branches per node. Each branch has several spikelets, which are each 2 to 3 cm long. Spikelets are purplish brown. Seeds are elliptical, pale-yellow to dark-brown, and approximately 13 mm long. Short awns, less than 3 mm long, may be present (Royer and Dickinson 1999).



*Bromus inermis* ssp. *inermis* Leyss. Photo by J. Randall.

**Similar species:** Smooth brome can be confused with arctic brome (*Bromus pumpellianus*), which is native to Alaska. Arctic brome can be distinguished from smooth brome by the presence of pubescent nodes and leaf blades and awns on the lemmas that can be up to 6 mm long (Hultén 1968, Butterfield et al. 1996).

#### Ecological Impact

**Impact on community composition, structure, and interactions:** Smooth brome is a highly competitive grass. It forms dense sods that often exclude other species, thus contributing to the reduction of species diversity in natural areas (Butterfield et al. 1996,

Rutledge and McLendon 1996). Smooth brome is an alternate host for several agriculturally significant viral diseases (Sather 1987, Royer and Dickinson 1999). It is highly palatable to grazing animals (USDA 2006). In southern Alaska, smooth brome hybridizes with arctic brome (Hultén 1968).

**Impact on ecosystem processes:** Smooth brome may inhibit natural successional processes (Rutledge and McLendon 1996, Densmore et al. 2001).

#### Biology and Invasive Potential

**Reproductive potential:** Smooth brome reproduces sexually by seeds and vegetatively from rhizomes. The number of seeds produced per plant has a very wide range. Each plant is capable of producing from 156 to 10,080 viable seeds (Sather 1987, Butterfield et al. 1996). In studies by McKone (1985), smooth brome showed a significantly lower average seed set of only 17.2 seeds per plant. The reproductive potential of this species in Alaska is unknown. Most studies report a range of seed longevity from 2 to 10 years. Smooth brome maintains its population base primarily by vegetative reproduction. Populations also expand by vegetative reproduction, often aggressively (Butterfield et al. 1996, Rutledge and McLendon 1996).

**Role of disturbance in establishment:** Smooth brome can establish in undisturbed or lightly disturbed areas.

**Potential for long-distance dispersal:** Seeds may be transported short distances by wind or ants (Rutledge and McLendon 1996).

**Potential to be spread by human activity:** Smooth brome, which is often planted as a forage crop, persists after cultivation and infests the surrounding vegetation. Seeds can be transported in contaminated top soil (Densmore et al. 2001).

**Germination requirement:** Smooth brome germinates primarily in spring but can also germinate in early fall if soil moisture is adequate. Adequate soil nitrogen is necessary for seedling establishment (Butterfield et al. 1996). Seeds do not require cold stratification to germinate (USDA 2006).

**Growth requirements:** This species is suited to growing in fine and medium-textured soils, especially clay or

loam, with pH between 5.5 and 8. It is not well adapted to growing in coarse soils. Smooth brome has low tolerance of anaerobic, calcareous, and saline conditions. It grows best in highly fertile soil. It is fire tolerant, can withstand temperatures as low as -39°C, and requires 90 frost-free days for reproduction. Smooth brome is not shade tolerant (Dibbern 1947, Rutledge and McLendon 1996, USDA 2006).

**Congeneric weeds:** Rye brome (*Bromus secalinus*), hairy brome (*B. commutatus*), cheatgrass (*B. tectorum*), and Japanese brome (*B. japonicas*) are each listed as a noxious weed in one or more states of the U.S. or provinces of Canada (Invaders 2010). Barren brome (*B. sterilis*), rigpgut brome (*B. diandrus*), field brome (*B. arvensis*), and soft brome (*B. hordeaceus*) are known to occur as non-native weeds in North America (Royer and Dickinson 1999, USDA 2006, ITIS 2010). Cheatgrass is known to occur as a non-native species in Alaska with an invasiveness rank of 78 (AKEPIC 2010).

### Legal Listings

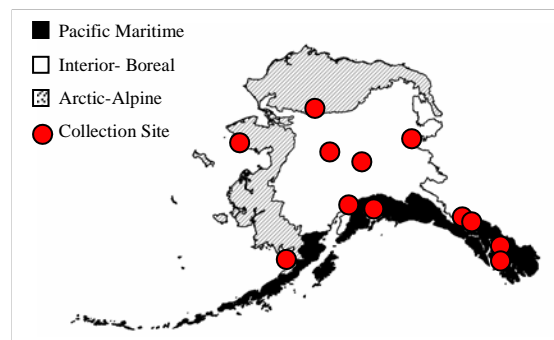
- Has not been declared noxious (but is listed as a weed in NE and as invasive in TN and WI)
- Listed noxious in Alaska
- Listed noxious by other states
- Federal noxious weed
- Listed noxious in Canada or other countries

### Distribution and Abundance

Smooth brome is a forage species that has escaped throughout its range. It is often considered to be a highly competitive weed of roadsides, forests, prairies, fields, lawns, and lightly disturbed sites (Butterfield et al. 1996, Rutledge and McLendon 1996). In Alaska, smooth brome has been widely planted as a pasture and forage

crop. It has also been used to revegetate along roadsides and along the Trans-Alaska Pipeline System corridor (Densmore et al. 2001).

**Native and current distribution:** Smooth brome is native to Eurasia. Its distribution range now includes Europe, temperate Asia, and North America. It grows throughout Canada and the U.S., except in the southeastern states (Royer and Dickinson 1999, USDA 2006). Smooth brome has been documented from all three ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2010, UAM 2010).



Distribution of smooth brome in Alaska

### Management

Smooth brome can be a good target for selective control because it often grows in single stands or along with Kentucky bluegrass (*Poa pratensis*). Cultural, chemical, and mechanical control methods have all been used with varying levels of success. Most herbicides are not specific for smooth brome (Butterfield et al. 1996, Rutledge and McLendon 1996). Unfortunately, most current control techniques are not effective in natural communities (J. Conn – pers. comm.).

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