

common barley

Hordeum vulgare L.

Synonyms: *Hordeum aegiceras* Nees ex Royle, *H. agriocrithon* A. E. Åberg, *H. distichon* L., *H. distichon* ssp. *zeocrithon* (L.) Celak., *H. distichum* L., *H. hexastichon* L., *H. hexastichum* L., *H. irregulare* Aberg & Wiebe, *H. polystichon* Haller f., *H. polystichon* var. *vulgare* (L.) Döll, *H. sativum* Jess., *H. sativum* Pers., *H. sativum* var. *vulgare* (L.) K. Richt., *H. spontaneum* K. Koch, *H. tetrastichum* Stokes, *H. vulgare* ssp. *agriocrithon* (A. E. Åberg) Á. Löve, *H. vulgare* ssp. *hexastichon* (L.) Celak., *H. vulgare* f. *hexastichon* (L.) Hiroe, *H. vulgare* ssp. *spontaneum* (K. Koch) Asch. & Graebn., *H. vulgare* var. *trifurcatum* (Schltdl.) Alef.

Other common names: none

Family: Poaceae

Invasiveness Rank: 39 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

Common barley is an annual grass that grows 50 to 100 cm tall. Stems are erect with glabrous nodes. Leaves are alternate, flat, rough or glabrous, 8 to 30 cm long, and 0.8 to 2 cm wide with open sheaths. Lower sheaths are soft-hairy, while upper sheaths are glabrous. Auricles are often white or purple-tinged, well-developed, and up to 6 mm long with overlapping tips. Ligules are 0.5 to 2 mm long. Spikes are 5 to 10 cm long and 0.8 to 2 cm wide with 10 to 30 nodes and three spikelets per node. Central spikelets are sessile. Lateral spikelets are sessile if fertile and stalked if infertile. Glumes are short-hairy, flattened near the base, and 10 to 30 mm long. Lemmas are 6 to 15 mm long, at least 3 mm wide, rough or glabrous, and usually awned but unawned on sterile florets. Awns are rough and 30 to 180 cm long (von Bothmer et al. 2007, eFloras 2008, Gashkova 2009, Klinkenberg 2010).



Long-awned spikes of *Hordeum vulgare* L. Photo by R. Dupagne.

Similar species: Common barley can be easily confused with three other *Hordeum* species that occur in Alaska: foxtail barley (*H. jubatum*), which is a nuisance weed, leporinum barley (*H. murinum* ssp. *leporinum*), which is a non-native weed, and meadow barley (*H. brachyantherum*), which is a native species. Common barley usually has longer awns than other *Hordeum* species: awns of foxtail barley are 15 to 85 mm long, awns of meadow barley are 3.5 to 14 mm long, and awns of leporinum barley are 20 to 50 mm long. Unlike common barley, meadow barley and foxtail barley lack auricles, and leporinum barley has shorter lemmas that are 2 mm wide or less (von Bothmer et al. 2007).

Ecological Impact

Impact on community composition, structure, and interactions: Common barley escapes cultivation and grows in roadsides and disturbed areas (Hultén 1968, von Bothmer et al. 2007, Klinkenberg 2010, AKEPIC 2011), where it may increase the density of vegetation and decrease native plant populations. However, because all infestations recorded in Alaska have occurred at only 1% ground cover (AKEPIC 2011), potential impacts are minor. Common barley is consumed by grasshoppers (*Melanoplus sanguinipes*, *M. borealis*, and *Camnula pellucida*) in Alaska (Begna and Fielding 2005). Birds and mammals also feed on this species (OGTR 2008). Disease has not been a significant problem for common barley in Alaska in the past, but several pathogens are associated with this species (Quarberg et al. 2009). Common barley is susceptible to loose smut (*Ustilago tritici*), a fungus that can cause significant reductions in seed yield (Lipps 1996). Feral populations of common barley may act as a reservoir for the fungus and transfer it to agricultural crops (Graziano pers. obs.). Pollen of common barley may cause allergic reactions in people (OGTR 2008).

Impact on ecosystem processes: Common barley likely reduces the availability of soil moisture and nutrients

(Ogg and Parker 2000). Populations in Alaska are likely to decrease if natural successional processes are allowed to proceed (Flagstad and Cortés-Burns 2010).



Overlapping auricles on *Hordeum vulgare* L. Photo by R. Old.

Biology and Invasive Potential

Reproductive potential: Common barley reproduces by seeds. Each spike can produce 15 to 60 seeds, depending on the variety (OGTR 2008). The amount of time seeds remain viable in the soil is unknown; however, volunteer populations in Scotland persisted for up to five years in agricultural fields (OGTR 2008).

Role of disturbance in establishment: Common barley grows in agricultural fields, roadsides, and anthropogenically disturbed areas in North America (von Bothmer et al. 2007, Klinkenberg 2010, AKEPIC 2011).

Potential for long-distance dispersal: Seeds are large and heavy and are poorly suited to wind-dispersal. The long awns on the spikelets are densely covered with stiff, straight hairs and can adhere to fur and feathers (von Bothmer et al. 1995).

Potential to be spread by human activity: Common barley is the most commonly cultivated cereal crop in Alaska (Quarberg et al. 2009) and occasionally escapes from cultivation (Hultén 1968). It also occurs as a volunteer weed in agricultural fields where it has been previously cultivated (Blackshaw 2005). Seeds have been associated with imported and locally produced straw (Conn et al. 2010, DeVelice 2010). The awns on the spikelets are densely covered with stiff, straight hairs and can adhere to clothing (von Bothmer et al. 1995).

Germination requirements: Seeds can germinate at temperatures as low as 1°C, but the optimal temperature range for germination is from 18°C to 25°C (Gashkova 2009).

Growth requirements: Common barley usually self-fertilizes. It grows in a wide variety of soil textures and conditions but grows best in fertile loam with pH near 7 (Gashkova 2009).

Congeneric weeds: Foxtail barley (*Hordeum jubatum*) is considered a noxious weed in Manitoba and Quebec (Invaders 2011). Although the native status of foxtail barley is disputed in Alaska, it is considered a nuisance weed with an invasiveness rank of 63. Leporinum barley (*H. murinum* ssp. *leporinum*) is known to occur as a non-native weed in Alaska with an invasiveness ranking of 60 (AKEPIC 2011).

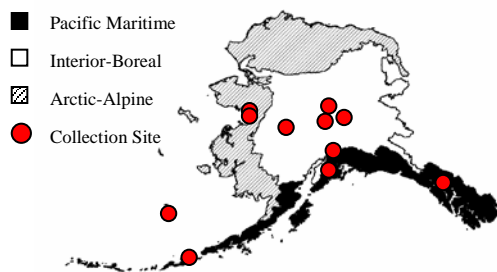
Legal Listings

- 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

Common barley is commonly cultivated throughout the temperate regions of the world (von Bothmer et al. 2007, eFloras 2008, Gashkova 2009), including Alaska (Quarberg et al. 2009). It can occur as a volunteer weed in agricultural fields where it has been previously cultivated (Blackshaw 2005).

Native and current distribution: Common barley was first cultivated in western Asia and is currently cultivated throughout most of the world (von Bothmer et al. 2007). It grows in 48 states of the U.S. and most of Canada (von Bothmer et al. 2007, USDA 2011). It grows north of the Arctic Circle in Scandinavia, Siberia, and Yakutia (Gashkova 2009). Common barley has been documented from all three ecogeographic regions of Alaska (Hultén 1968, DeVelice 2010, AKEPIC 2011, UAM 2011).



Distribution of common barley in Alaska

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Management

Populations in Alaska are likely to decrease if natural successional processes are allowed to proceed (Flagstad and Cortés-Burns 2010). Mechanical methods likely control small populations of common barley effectively because it is an annual grass. Common barley can be controlled with applications of glyphosate, sulfosulfuron, and imidazolinone (Ogg and Parker 2000, O'Donovan et al. 2007). Sethoxydim and fluzafop can control this species without harming broadleaf vegetation (Ogg and Parker 2000).

<http://plants.usda.gov>

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