

cheatgrass

Bromus tectorum L.

Synonyms: *Anisantha tectorum* (L.) Nevski, *Bromus tectorum* var. *glabratus* Spenner, *B. tectorum* var. *hirsutus* Regel, *B. tectorum* var. *nudus* Klett & Richter

Other common names: cheatgrass brome, downy brome, downy cheat, downy chess, drooping brome, early chess, military grass, wild oats

Family: Poaceae

Invasiveness Rank: 78 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

Cheatgrass is an annual or winter annual grass that grows 13 to 58 cm tall. Stems are smooth, slender, and erect. They protrude from a much branched base. Leaf blades are flat, 5 to 15 inches long, and soft-hairy. As the plants and seeds reach maturity, the leaves turn purplish-tan. Panicles are often purple and 5 to 15 inches long with several branches usually dropping to one side. Seeds are narrow, approximately 13 mm long, light, and fluffy (Hultén 1968). Seedlings are tall. The first leaves are narrow, soft-hairy, and twisted with prominent midribs (Royer and Dickinson 1999).



Bromus tectorum L.

Similar species: A number of native and introduced *Bromus* species grow in Alaska. Cheatgrass can be distinguished from other *Bromus* species by the

presence of very long awns (longer than 25 mm) on the lemmas, drooping heads, and a single, keeled nerve on the lower glume.



Panicle of *Bromus tectorum* L.

Ecological Impact

Impact on community composition, structure, and interactions: Cheatgrass forms dominant stands and displaces native vegetation in sagebrush rangelands and juniper or pine woodlands. It outcompetes native species for soil moisture. The sharp spikelets and rough awns can damage the mouth and eyes of wildlife. Cheatgrass is associated with over 20 diseases (Carpenter and Murray 2005, Royer and Dickinson 1999).

Impact on ecosystem processes: Cheatgrass closes communities to the establishment of seedlings of perennial herbaceous species. Additionally, it increases the frequency and timing of wildfires (Carpenter and Murray 2005).

Biology and Invasive Potential

Reproductive potential: Cheatgrass is a rapidly growing annual grass. It establishes by seeds only and can

produce 300 seeds per plant. Seeds remain viable in the soil for two to five years (Butterfield et al. 1996, Rutledge and McLendon 1996, Warner et al. 2003).

Role of disturbance in establishment: Open areas created by fires or anthropogenic disturbances are readily colonized by cheatgrass (Warner et al. 2003, Carpenter and Murray 2005).

Potential for long-distance dispersal: Cheatgrass is spread by wind, and seeds can attach to animal fur or human clothing (Warner et al. 2003).

Potential to be spread by human activity: Cheatgrass spreads along transportation corridors such as highways and railroads. It also contaminates commercial grain seed, hay, straw, and soil (Warner et al. 2003).

Germination requirement: Cheatgrass requires moisture during fall, winter, or early spring to germinate (Mack and Pyke 1983). Seeds germinate best in the dark or in diffuse light under a wide range of temperatures. Litter promotes germination of seeds and establishment of seedlings (Anderson 1996).

Growth requirements: Cheatgrass grows in many climatic areas, in almost any type of soil. It is most often found on coarse-textured soils and does not grow well on heavy, dry, or saline soils.

Congeneric weeds: Rye brome (*Bromus secalinus*), hairy brome (*B. commutatus*), 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*), smooth brome (*B. inermis*), ripgut brome (*B. diandrus*), field brome (*B. arvensis*), and soft brome (*B. hordeaceus*) are known to occur as non-native weeds in North America (Wilken and Painter 1993, Royer and Dickinson 1999, USDA 2006, ITIS 2010). Smooth brome is known to occur as a non-native species in Alaska with an invasiveness rank of 62 (AKEPIC 2010).

Legal Listings

- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (CO)

References:

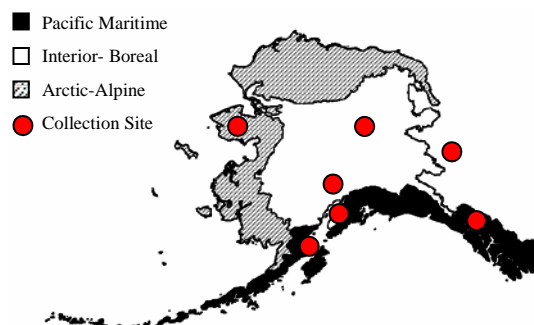
- AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2010. Available: <http://akweeds.uaa.alaska.edu/>
- Anderson, R.L. 1996. Downy brome (*Bromus tectorum*) emergence variability in a Semiarid Region. *Weed Technology*. 10:750-753.
- Butterfield, C., J. Stubbendieck, J. Stumpf. 1996. Species abstract of highly disruptive exotic plants. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/plants/exot/icab/index.htm> (Version 16JUL97).
- Carpenter, A.T., and T.A. Murray. 2005. Element Stewardship Abstract for *Bromus tectorum* L. (*Anisantha tectorum* (L.) Nevski). The Nature Conservancy. Arlington, VA.
- Hultén, E. 1968. *Flora of Alaska and Neighboring Territories*. Stanford University Press, Stanford, CA. 1008 pp.
- Invaders Database System. 2010. University of Montana. Missoula, MT. <http://invader.dbs.umt.edu/>
- ITIS. 2010. Integrated Taxonomic Information System. <http://www.itis.gov/>
- Mack, R. N. and D. A. Pyke. 1983. The demography of *Bromus tectorum*: variation in time and space.

- Federal noxious weed
- Listed noxious in Canada or other countries (AB, MB, SK)

Distribution and Abundance

Cheatgrass is largely a weed of grazed areas and croplands, especially winter wheat and alfalfa.

Native and current distribution: Cheatgrass is native to the Mediterranean region and Eurasia. It has spread throughout Europe, Southern Russia, western central Asia, North America, Japan, South Africa, Australia, New Zealand, Iceland, and Greenland. Populations have established in northern Scandinavia as well (Carpenter and Murray 2005, Warner et al. 2003). This species was first identified in the United States in 1861 in New York and Pennsylvania. It now grows throughout the United States, including Hawaii and Alaska. Cheatgrass has been documented from all three ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2010, UAM 2010).



Distribution of cheatgrass in Alaska

Management

Mechanical methods (fallows, tillage, mowing) are effective in reducing seed production, but do not eliminate plants. Cheatgrass can be controlled with the herbicides atrazine and glyphosate. No biological control agents have been approved by the USDA for use on cheatgrass (Carpenter and Murray 2005).

- Journal of Ecology, 71:69-93.
- Royer, F. and R. Dickinson. 1999. Weeds of the Northern U.S. and Canada. The University of Alberta press. 434 pp.
- Rutledge, C.R. and T. McLendon. 1996. An Assessment of Exotic Plant Species of Rocky Mountain National Park. Department of Rangeland Ecosystem Science, Colorado State University. 97 pp. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/plants/explant/index.htm> (Version 15DEC98).
- UAM. 2010. University of Alaska Museum, University of Alaska Fairbanks. Available:
<http://arctos.database.museum/home.cfm>
- USDA, NRCS. 2006. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
- Warner, P.J., C.C. Bossard, M.L. Brooks, J.M. DiTomaso, J.A. Hall, A.M. Hawald, D.W. Johnson, J.M. Randall, C.L. Roye, M.M. Ryan, and A.E. Stanton. 2003 Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands. (www.caleppc.org and www.swvma.org). California Exotic Pest Plant Council and Southwest Vegetation Management Association. 24 pp.