timothy
Phleum pratense L.

Synonyms: *Phleum nodosum* L., *Phleum pratense* ssp. *nodosum* (L.) Arcang., *Phleum pratense* var. *nodosum* (L.) Huds.
Other common name: common timothy, timothy grass
Family: Poaceae

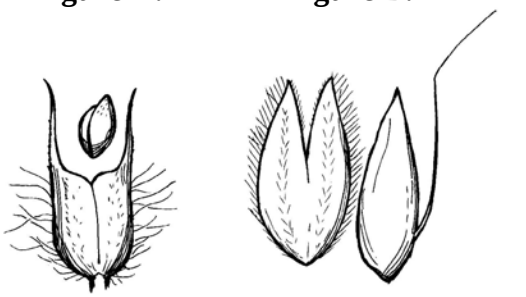
Invasiveness Rank: **54** The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description
Timothy is a tufted or single-stemmed, short-leaved, perennial grass that grows up to 152 ½ cm tall. Stems are erect, purple or brown at the nodes, and often bulbous at the base. Leaf blades are flat, 3 to 6 mm wide, and smooth to slightly rough. Sheaths are smooth. Spikes are 2 ½ to 13 cm long, very condensed, cylindrical, and 6 to 9 ½ mm thick. Spikelets are one-flowered, compressed, and green or often purple-tipped. They turn dull brown with age (Welsh 1974, Cody 1996).

Spike of *Phleum pratense* L.

Similar species: Timothy can be confused with a few other grasses with contracted, cylindrical spikes in Alaska. The *Phleum* genus can be distinguished by the presence of awns on the glumes rather than on the lemmas (refer to figures A and B), as in meadow foxtail (*Alopecuris pratensis*). Unlike timothy, the native alpine timothy (*Phleum alpinum*) has an inflated stem and a short, oblong spike.

Figure A. **Figure B.**


Dissected floret of **A.** *Phleum pratense* and **B.** *Alopecurus pratensis*. The awns are shown on the glumes of *P. pratensis*. The long, bent, awned lemma is shown to the right of the glumes of *A. pratensis*.

Ecological Impact
Impact on community composition, structure, and interactions: Timothy provides habitat and nesting cover for game birds, small mammals, and waterfowl. It is highly palatable and nutritious forage for big game animals, and the seeds are consumed by birds. (Esser 1993, USDA 2002, Forage Information System 2004,). Timothy seedlings may hinder the establishment of conifer seedlings because of competition for resources, the attraction of harmful insects and animals, allelopathy, and increased fire hazard (Esser 1993). Pollen of timothy is known to be an allergen (Ohio State University 2004). Timothy is a host for a number of plants diseases and nematodes that may be problematic for other species (Forage Information System 2004).
Impact on ecosystem processes: Timothy has the potential to inhibit secondary successional processes. It may modify native communities (Rutledge and McLendon 1996).

Biology and Invasive Potential

Reproductive potential: Timothy mainly reproduces by seeds. Each plant can produce a substantial amount of seeds (Esser 1993, USDA 2002). The seeds remain viable for four to five years in dry, cool conditions. Timothy can also reproduce vegetatively through tillering (Esser 1993).

Role of disturbance in establishment: Timothy establishes and grows best following disturbances. Natural or human-made fires stimulate the production of reproductive tillers (Esser 1993).

Potential for long-distance dispersal: The small, hard seeds are often dispersed by wind and livestock (Esser 1993). However, seeds lack specific adaptations for wind or animal dispersal.

Potential to be spread by human activity: Timothy is commonly grown for hay in Alaska. It has escaped cultivation and has become established in grass and forb meadows. More than 30 varieties are used in agriculture (Esser 1993, USDA 2002). Timothy is recommended for use in the Alaska boreal zone for reclamation and erosion control. It is planted widely for the rehabilitation of sites altered by recreational activities or disturbed by the construction of railroads, canals, trails, and highways (Elliott et al. 1987, USDA 2002).

Germination requirement: Timothy can successfully germinate in either spring or late-summer. However, fall seedlings are more successful because the cooler fall weather is more suitable for the growth of timothy (Forages 2004). In agriculture, germination usually peaks about three or four weeks after the mature plants have been harvested (Esser 1993). Seeds do not require cold stratification to germinate (USDA 2002).

Growth requirements: Timothy is suited to fine- and medium-textured soils with pH between 5 and 7.8. It is not well adapted to growing in coarse-textured soils. Timothy can grow at temperatures as low as 5°C, but it grows optimally between 22°C and 25°C. It requires medium to high soil moisture and cannot tolerate drought. Timothy has low anaerobic and saline tolerance and intermediate shade tolerance. It is highly tolerant of soils with high calcium carbonate ($CaCO_3$) contents and can survive temperatures as low as -39°C. It requires 90 frost-free days for growth and reproduction (Esser 1993, USDA 2002, Forage Information System 2004).

Congeneric weeds: A few other *Phleum* species are known to occur as non-native weeds in North America, but none are considered invasive (USDA 2002, Invaders 2010).

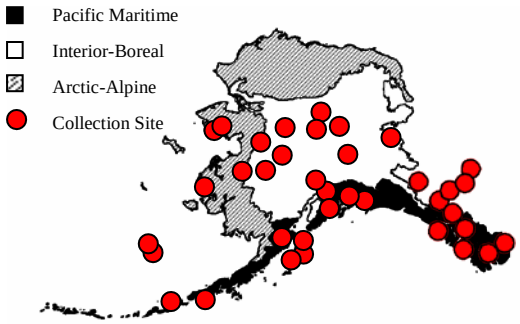
Legal Listings

- ☐ Has not been declared noxious
- ☐ Listed noxious in Alaska
- ☒ Listed noxious by other states (NJ, VA)
- ☐ Federal noxious weed
- ☐ Listed noxious in Canada or other countries

Distribution and Abundance

Timothy grows in old fields, roadsides, home sites, and disturbed areas. It is most common near habitations (Hultén 1968, Welsh 1974). This species can also be found along waterways and in dry to wet meadows (Rutledge and McLendon 1996).

Native and current distribution: Timothy is native to Europe. It is now widespread in North America, South America, South Africa, New Zealand, and Australia (Hultén 1968). It can be found in all 50 states of the U.S. and throughout Canada (Esser 1993). It has been introduced and partly naturalized in many inhabited places of Pacific Maritime, Interior-Boreal, and Arctic-Alpine ecogeographic regions of Alaska (Hultén 1968, ALA 2004, Weeds of Alaska Database 2004).



Distribution of timothy in Alaska

Management

Hand pulling can be effective for controlling timothy infestations. Frequent cutting or mowing can weaken overall plant health (Rutledge and McLendon 1996). Timothy stands become weak under continuous grazing (USDA 2002).

References:

ALA. University of Alaska Herbarium. Arctos on line database. http://arctos.database.museum/home.cfm Accessed 10 November 2004.

Cody, W. 1996. Flora of the Yukon Territory. NRC Research Press. Ottawa, ON. 643 pp.

Elliott, C.L., J.D. McKendrick, and D. Helm. 1987. Plant biomass, cover, and survival of species used for stripmine reclamation in south-central Alaska, U.S.A. Arctic and Alpine Research. 19(4): 572-577.

Esser, L.L. 1993. *Phleum pratense*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available:

http://www.fs.fed.us/database/feis/ [2004, November 5].
Forage Information System. 2004. Timothy (*Phleum pratense* L.). [November 4, 2004] Available: http://forages.oregonstate.edu
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/
Ohio State University. Ohio Perennial & Biennial Weed Guide. Timothy *Phleum pratense.* [November 4, 2004] Available: http://www.oardc.ohio-state.edu/weedguide/
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).
USDA (United States Department of Agriculture), NRCS (Natural Resource Conservation Service). 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
Weeds of Alaska Database. 2004. AKEPIC Mapping Project Inventory Field Data. Alaska Natural Heritage Program, University of Alaska – US Forest Service – National Park Service. Available: http://akweeds.uaa.alaska.edu/
Welsh, S. L. 1974. Anderson's flora of Alaska and adjacent parts of Canada. Brigham University Press. 724 pp.