

Italian ryegrass

Lolium multiflorum Lam.

Synonyms: *L. multiflorum* var. *diminutum* Mutel, *L. multiflorum* var. *muticum* DC., *L. perenne* var. *aristatum* Willd., *L. perenne* var. *multiflorum* (Lam.) Parnell., *L. perenne* ssp. *multiflorum* (Lam.) Husnot.

Other common names: annual ryegrass

Family: Poaceae

Invasiveness Rank: 41 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

Italian ryegrass is a short, rhizomatous, annual or biennial bunchgrass that grows from 30 ½ to 91 cm tall. Culms are generally erect and often purplish at the base. Leaves are dark green, shiny, and prominently veined. Leaf blades are flat and 3 to 6 mm wide. Auricles are conspicuous. Spikes are distinctive with alternately arranged spikelets that are placed edgewise along the flowering stem, giving the spike a flattened appearance. Lemmas have conspicuous awns (Whitson et al. 2000).



Lolium multiflorum Lam.

Similar species: *Lolium* species can be differentiated from a number of similar grasses because they have

only one spikelet per node. Their spikelets are oriented with the narrow edge towards the rachis. Italian ryegrass can be distinguished from perennial ryegrass (*Lolium perenne*) and Darnel ryegrass (*L. temulentum*) by its red-tinged bases, awned lemmas, and short glumes.

Ecological Impact

Impact on community composition, structure, and interactions: Some varieties of ryegrass are capable of forming dense stands and outcompeting native vegetation. The thick litter accumulation of Italian ryegrass may inhibit the growth of other species (Facelli et al. 1987). Italian ryegrass can establish in early successional communities in the western U.S., but it is generally replaced by tall, herbaceous plants or shrubs (Carey 1995, Densmore et al. 2000). This taxon is very palatable and nutritious for all types of livestock and most wild ruminants (Carey 1995). It readily hybridizes with other *Lolium* species (Wilken 1993, Rutledge and McLendon 1996). Ryegrass is allelopathic; it inhibits the growth of surrounding species (McKell et al. 1963).
Impact on ecosystem processes: Infestations of Italian ryegrass may increase erosion rates. Italian ryegrass is one of the most commonly planted grasses for revegetating burned sites. It may, however, also increase the risk of future fires (Zedler et al. 1983, Carey 1995). Observations in Alaska indicate that the impacts of Italian ryegrass on ecosystem processes are minimal (Densmore et al. 2000).

Biology and Invasive Potential

Reproductive potential: Italian ryegrass reproduces entirely by seeds. Seed banks appear to be limited and transient (Thompson and Grime 1979). Germination rates rapidly decrease after seeds have been stored for 5 years (Rutledge and McLendon 1996).

Role of disturbance in establishment: Italian ryegrass colonizes disturbed areas and adjacent border habitats. It is highly intolerant of shade (Carey 1995).

Potential for long-distance dispersal: Seeds are relatively heavy and compact. Their dispersal is limited (Rutledge and McLendon 1996), but they can be transported by animals (Carry 1995).

Potential to be spread by human activity: Italian ryegrass has been recommended for erosion control in Denali National Park and Preserve (Densmore et al. 2000). It is often used as a range, pasture, hay, turf, and rotation crop. Many cultivars have been grown for forage, hay, and silage (Carey 1995, USDA 2002). Italian ryegrass is a problematic weed in cereal crops and grass seed crops (Carey 1995).

Germination requirements: Seeds have no innate dormancy and will germinate when moisture is sufficient. They can tolerate a wide range of diurnal temperature fluctuations and light regimes.

Growth requirements: Italian ryegrass establishes quickly and grows rapidly. It is adapted to a wide range of soil types and drainage regimes with pH from 5 to 7.9. It does not thrive in areas that are subject to extended periods of low temperatures or drought. This taxon can withstand temperatures as low as -22°C, and it requires 150 frost-free days to reproduce successfully. Italian ryegrass does not tolerate shade (Carey 1995, USDA 2002).

Congeneric weeds: Perennial ryegrass (*Lolium perenne*), Persian ryegrass (*Lolium persicum*), and Darnel ryegrass (*L. temulentum*) are known to occur as non-native weeds in North America (Hultén 1968, USDA 2002).

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

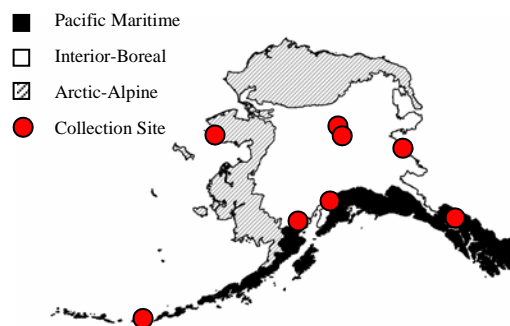
Distribution and abundance

References:

- AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2010. Available: <http://akweeds.uaa.alaska.edu/>
- Beddows, A.R. 1973. Biological flora of the British Isles: *Lolium multiflorum* Lam. (*L. perenne* L. ssp. *multiflorum* (Lam.) Husnot, *L. italicum* A. Braun). *The Journal of Ecology*. 61(2): 587-600.
- Carey, J.H. 1995. *Lolium multiflorum*. In: Fire Effects Information System, (Online). U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: www.fs.fed.us/database/feis/ [2004, December 22].
- Densmore, R.V., M.E. Vander Meer, and N.G. Dunke. 2000. Native plant revegetation manual for Denali National Park and Preserve. Information and Technology Report. March 2000.
- Anchorage: U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division. Report number USGS/BRD/ITR-2000-0006. 42 pp. Available from: NTIS, Springfield, VA.
- Facelli, J.M., E. D'Angela, R.J.C. Leon. 1987. Diversity changes during pioneer stages in subhumid pampean grassland succession. *American Midland Naturalist*. 117(1): 17-25.
- Hultén, E. 1968. *Flora of Alaska and Neighboring Territories*. Stanford University Press, Stanford, CA. 1008 p.
- Invaders Database System. 2010. University of Montana. Missoula, MT. <http://invader.dbs.umt.edu/>
- ITIS. 2010. Integrated Taxonomic Information System. <http://www.itis.gov/> McKell, C.M., C. Duncan, and C.H. Muller. 1969. Competitive relationships of annual ryegrass (*Lolium*

Ryegrass is widely planted as a soil stabilizer and an agricultural crop. It can escape from cultivation and naturalize in moderately disturbed sites, such as waste areas and roadsides.

Native and current distribution: Italian ryegrass is native to central and southern Europe, northwest Africa, and southwest Asia. It has been introduced into North America, South America, New Zealand, Tasmania, and much of Africa (Hultén 1968, Beddows 1973). This taxon grows in nearly all states of the U.S. (USDA 2002). Italian ryegrass has been collected in the Pacific Maritime, Interior-Boreal, and Arctic-Alpine ecogeographic regions of Alaska (Hultén 1968, University of Alaska Museum 2003, AKEPIC 2010).



Distribution of Italian ryegrass in Alaska.

Management

Infestations in agricultural fields have been successfully controlled with herbicides to kill established plants and prevent the production of seeds. Italian ryegrass may be resistant to several herbicides (Carey 1995). In Alaska, it does not appear to persist in sites where previously planted (Densmore et al. 2000).

- multiflorum* Lam.). *Ecology*. 50(4): 653-657.
- 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).
- Thompson, K. and J.P. Grime, 1979. Seasonal variation in the seed banks of herbaceous species in ten contrasting habitats, *Journal of Ecology*. 67: 893-921.
- University of Alaska Museum. University of Alaska Fairbanks. 2003. <http://hispidamuseum.uaf.edu:8080/home.cfm>
- 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.
- Whitson, T. D., L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee, R. Parker. 2000. *Weeds of the West*. The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities, Cooperative Extension Services. University of Wyoming. Laramie, Wyoming. 630 pp.
- Wilken, D. H. 1993. *Lolium*. in J. C. Hickman (ed.) *The Jepson manual: higher plants of California*. University of California Press, Berkeley, California. 1400 pp.
- Zedler, P.H., C.R. Gautier, G.S. McMaster. Vegetation change in response to extreme events: the effect of a short interval between fires in California chaparral and coastal scrub. *Ecology* 64(4): 809-818.