tall fescue
Schedonorus arundinaceus (Schreb.) Dumort.

Synonyms: *Avena secunda* Salisb., *Bromus arundinaceus* (Schreb.) Roth, *B. elatior* (L.) Koeler, *Bucetum elatius* (L.) Parnell, *Festuca arundinacea* Schreb., *F. arundinacea* (Schreb.) Celak., *F. elatior* L., *F. elatior* ssp. *arundinacea* (Schreb.) Hack., *F. elatior* var. *arundinacea* (Schreb.) Wimm., *F. elatior* f. *elatior* L., *F. fenas* Lag., *F. mediterranea* (Hack.) Rouy, *F. orientalis* (Hack.) V. I. Kretch. & Bobrov, *F. phoenix* (Scop.) Vill., *Gnomonia elatior* (L.) Lunell, *Lolium arundinaceum* (Schreb.) Darbyshire, *Poa elatior* (L.) Moench, *P. kunthii* Lindm., *P. phoenix* Scop., *P. remota* Kunth, *P. uliginosa* Willd. ex Spreng., *Schedonorus elatior* (L.) P. Beauv., *S. phoenix* (Scop.) Holub, *Traqus elatior* Panz. ex B. D. Jacks.
Other common names: alta fescue, coarse fescue, reed fescue
Family: Poaceae

Invasiveness Rank: **63** 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
Tall fescue is a robust, tufted perennial grass that grows 50 to 150 cm tall. Leaves on young shoots are rolled upward. Leaves are gray-green, rough, 11 to 30 cm long, and 4 to 12 mm wide. Plants are glabrous except for the auricles, which are often slightly wavy and sparsely hairy along the margins. Ligules are membranous and 0.5 to 1.5 mm long. Panicles are nodding, 10 to 35 cm long, and branched at the lower node. The shorter branch has 2 to 9 spikelets while the longer branch has 4 to 13 spikelets. Spikelets are stalked, 8 to 15.5 mm long, 2 to 3.5 mm wide with 3 to 6 florets each. Lower glumes are 3 to 6 mm long and upper glumes are 4.5 to 7 mm long. Lemmas are rough or short-hairy and 5 to 9 mm long. When present, awns are up to 4 mm long and terminal or attached 0.4 mm below the tips of the lemmas. Seeds are 2 to 4 mm long and 0.9 to 1.6 mm wide (Cody 1996, Darbyshire 2007, Klinkenberg 2010).


Auricles, leaf, and stem of *Schedonorus arundinaceus* (Schreb.) Dumort. Photo by R. Old.


Schedonorus arundinaceus (Schreb.) Dumort. Photo by T. Bodner.

Similar species: Meadow fescue (*Schedonorus pratensis*), a similar non-native grass found in Alaska, can be distinguished from tall fescue by the presence of glabrous margins on the auricles, panicles that are unbranched or branched at the lowest node with fewer spikelets per branch (1 to 2 spikelets on the shorter branch and 2 to 6 spikelets on the longer branch), and

lemmas that are smooth and lack awns. Unlike *Schedonorus* species, *Festuca*, *Puccinellia*, and *Vulpia* species lack auricles. *Lolium* species can be distinguished from *Schedonorus* species by the presence of spikelets that are sessile and have only one glume per spikelet except for the terminal spikelets (Darbyshire 2007).

Ecological Impact

Impact on community composition, structure, and interactions: Tall fescue is known to reduce the growth and survival of woody plant species (Walsh 1995, Smith et al. 2001) and can form dense stands that reduce native plant populations and decrease local biodiversity (Walsh 1995, Batcher 2003). When seeded with red clover (*Trifolium pratense*) in a reclaimed mine site in Indiana, tall fescue reduced the survival of native northern red oak (*Quercus rubra*) and black walnut (*Juglans nigra*). Tree seedling survival was greatly increased when tall fescue was controlled chemically (Andersen et al. 1989). Tall fescue serves as a host for the fungus *Neotyphodium coenophialum*, which produces toxic alkaloids. Livestock grazing mature, infected plants show decreased weight gain, reduced peripheral blood flow, longer hair coats, and lower enzyme activities (Nihsen et al. 2004). Infected seeds negatively impact the growth, circulation, reproduction, and thermoregulation of mice (Tannenbaum et al. 1998). Most populations in the U.S. host the fungus; however, uninfected seeds are available commercially (Washburn and Barnes 2000). Young plants are palatable to livestock. Deer, pronghorn, and elk are known to feed on tall fescue. Birds, including waterfowl, and small mammals eat the seeds and leaves (Walsh 1995). Dense stands can reduce habitat quality for many wildlife species by decreasing structural complexity and biodiversity (Washburn and Barnes 2000). Tall fescue can cause allergic reactions in people (Walsh 1995).

Impact on ecosystem processes: The roots of tall fescue form dense mats that decrease soil erosion and increase the organic matter inputs to the soil (Walsh 1995, Batcher 2003, Dzyubenko and Dzyubenko 2009). This species is a strong competitor with surrounding vegetation and tree seedlings for water, nutrients, and light (Walsh 1995), and its presence is likely to alter natural successional processes. Reclaimed mine sites seeded with tall fescue in the Midwestern U.S. have resisted the development of forb-rich or woody communities (Scott and Lima 2004).

Biology and Invasive Potential

Reproductive potential: Tall fescue reproduces sexually by seeds and vegetatively by tillering and sometimes from short rhizomes (Walsh 1995, Darbyshire 2007, Klinkenberg 2010). The fungus *Neotyphodium coenophialum* is transmitted maternally in seeds. The number of seeds produced per plant has not been quantified. This species produces persistent seed banks. The amount of time seeds remain viable in soil is unknown, but 4.5% of seeds germinated after 19 years of storage in cool, dry conditions (Walsh 1995, Batcher 2003). High nitrogen levels and cold winters stimulate tillering (Walsh 1995).

Role of disturbance in establishment: Tall fescue colonizes bare soil and can invade sparsely vegetated natural areas (Walsh 1995, Batcher 2003). Seeds germinate best on disturbed soil (Washburn and Barnes 2000). Most infestations in Alaska are associated with anthropogenically disturbed habitats (AKEPIC 2011). However, tall fescue was found growing along a rocky upper beach near a logging camp on Chichagof Island (UAM 2011), suggesting that it can spread from anthropogenically disturbed areas to naturally disturbed areas.

Potential for long-distance dispersal: Seeds can be spread in the excrement of animals (Walsh 1995).

Potential to be spread by human activity: Tall fescue is grown for forage, soil stabilization, and coarse turf (Darbyshire 2007). Seeds can be spread in the excrement of livestock (Walsh 1995). They are a contaminant in grass seed purchased in Alaska (Conn pers. obs.).

Germination requirements: Seeds ripen before the foliage loses its green color. They germinate best in temperatures between 12°C and 24°C (Walsh 1995) but can germinate at temperatures as low as 4.5°C. Seedlings do not emerge in crusted soils. Seeds infected with *Neotyphodium coenophialum* germinate more rapidly in some environments, and infected seedlings have higher survival rates (Walsh 1995).

Growth requirements: Tall fescue grows best on deep, fertile, mesic loam in unshaded areas. It tolerates saline and infertile soils. This species can grow in soil with pH as low as 3.6 or as high as 7.7 but grows best when pH is near 6.2. It is tolerant of poor drainage, winter flooding, and drought. Optimal growth occurs in areas that receive over 76 cm of precipitation annually, but tall fescue can grow well in areas that receive as little as 45 cm of precipitation annually. The optimal temperature range for growth is from 15°C to 24°C (Walsh 1995, Batcher 2003). This species is resistant to early spring and late fall frosts (Dzyubenko and Dzyubenko 2009).

Congeneric weeds: Meadow fescue (*Schedonorus pratensis*) is considered a noxious weed seed in New Jersey and Virginia (Invaders 2011). Both meadow fescue and giant fescue (*S. giganteus*) occur as non-native weeds in North America (Darbyshire 2007).

Legal Listings

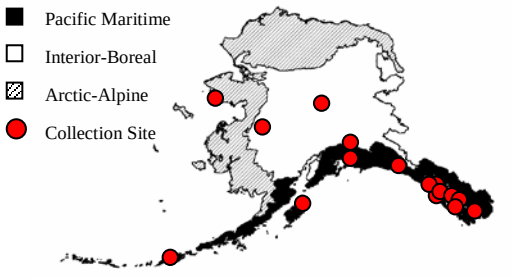
☐ Has not been declared noxious
☐ Listed noxious in Alaska
☒ Listed noxious by other states (noxious weed seed: NJ, VA)

☐ Federal noxious weed
☐ Listed noxious in Canada or other countries

Distribution and Abundance

Tall fescue is grown for forage, soil stabilization, and coarse turf (Darbyshire 2007, Dzyubenko and Dzyubenko 2009, Klinkenberg 2010). It has been planted for the revegetation of surface mines in the eastern U.S. (Walsh 1995). This species can invade the edges of open marshes and fens (Batcher 2003) and has invaded riparian areas in Japan (Miyawaki and Washitani 2004). Tall fescue invades coastal scrub and grassland on the north and central coast in California (DiTomaso and Healy 2007). It has invaded natural grassland, savanna, and woodland habitats in the U.S. (Walsh 1995, Batcher 2003).

Native and current distribution: Tall fescue is native to Eurasia and North Africa (Darbyshire 2007, eFloras 2008). It has been introduced to Japan, Korea, North America, South America, Australia, and New Zealand (Darbyshire 2007, eFloras 2008, Landcare Research 2011, Western Australian Herbarium 2011). Tall fescue grows in 46 states of the U.S. and much of Canada (Darbyshire 2007, USDA 2011). It grows as far north in Norway as 68.8°N (Vascular Plants Field Notes Oslo 2011). This species has been documented from all three ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2011, UAM 2011).



Distribution of tall fescue in Alaska

Management

Mechanical control methods are likely ineffective because tall fescue resprouts from the root crown after the removal of the aboveground growth (Walsh 1995). This species can regenerate from rhizome fragments when rhizomes are present (DiTomaso and Healy 2007). Tall fescue can be controlled with applications of chlorsulfuron, metsulfuron, imazapic, paraquat, glyphosate, or AC 263,222 (Walsh 1995, Washburn and Barnes 2000, Batcher 2003). A mixture of .21 kg of clethodim, 2.34 liters of crop oil concentrate, and 2.85 kg ammonium sulfate per hectare reduced tall fescue as effectively as applications of imazapic; clethodim did less harm to forbs, while imazapic did less damage to native grasses (Ruffner and Barnes 2010). Prescribed burning in spring followed by herbicide applications can further control this species (Batcher 2003, Applegate 2009). However, prescribed burning in summer without subsequent herbicide application has been shown to stimulate seed production during the following season (Batcher 2003). Controlled areas will likely need to be monitored for several years after treatment.

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