

# Kentucky bluegrass

*Poa pratensis* ssp. *pratensis* L.

## spreading bluegrass

*Poa pratensis* ssp. *irrigata* (Lindm.) Lindb. f.

## rough bluegrass

*Poa trivialis* L.

### Introduction

Kentucky bluegrass, spreading bluegrass, and rough bluegrass are treated together here because they share similar biological and ecological attributes.

**Invasiveness Rank:** 52 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.

Family: Poaceae

Synonyms for *Poa pratensis* ssp. *pratensis*: *Poa agassizensis* Boivin & D. Löve, *Poa angustifolia* L., *Poa angustiglumis* Roshevitz, *Poa pratensis* ssp. *agassizensis* (Boivin & D. Löve) Taylor & MacBryde, *Poa pratensis* ssp. *angustifolia* (L.) Lej., *Poa pratensis* var. *angustifolia* (L.) Gaudin, *P. pratensis* var. *anceps* (Gaudin) Grisebach, *Poa pratensis* var. *domestica* Laestad., *Poa pratensis* var. *gelida* (Roemer & J.A. Schultes) Böcher, *Poa pratensis* var. *iantha* Wahlenb., *P. viridula* Palibin.

Other common names: none

Taxonomic notes for *Poa pratensis* ssp. *pratensis*: Kentucky bluegrass is a subspecies of a larger species complex that has both native and non-native forms. The systematics of this group and the native status of its components are not well understood. ITIS and the PLANTS database indicate that this subspecies is native to Alaska; however, we adopt the treatment of local experts (Hultén 1968, Cody 1996), who consider it introduced to Alaska and the Yukon.

Synonyms for *Poa pratensis* ssp. *irrigata*: *Poa irrigata* Lindman, *Poa pratensis* ssp. *rigens* (Hartman) Tzvelev, *Poa pratensis* var. *rigens* (Hartman) Wahlenb., *Poa pratensis* ssp. *subcaerulea* (Sm.) Hiitonen, *Poa subcaerulea* Sm.

Other common names: none

Taxonomic notes for *Poa pratensis* ssp. *irrigata*: Spreading bluegrass, which is in the *P. pratensis* complex, appears to be universally treated as non-native to Alaska.

Synonyms for *Poa trivialis*: *Poa attica* Boiss. & Heldr.

Other common names: none

### Description

Kentucky bluegrass and spreading bluegrass are strongly rhizomatous, mat-forming, perennial grasses that grow 15 to 76 cm tall. Rough bluegrass lacks rhizomes and is tufted with decumbent bases. The culms of rough bluegrass grow up to 91 cm tall. In all three taxa, leaf blades are flat to folded and smooth with double mid-ribs. Leaf tips are prow-shaped, as they are in most *Poa* species. Sheaths are rounded to somewhat keeled, partially closed, and smooth. Panicles are broadly pyramidal and compact. Spikelets are coarse and large (Welsh 1974, Sather 1996).



*Poa pratensis* ssp. *pratensis* L.

*Similar species:* Kentucky bluegrass and spreading bluegrass can be distinguished from other taxa in the *Poa* genus in Alaska because they are rhizomatous, form mats, and have relatively wide (1.5 to 4 mm), flat leaves. Kentucky bluegrass generally has 5 branches on the lowest whorl of its inflorescences, while spreading bluegrass generally has 2 branches on the lowest whorl of its inflorescences. Spreading bluegrass has shorter, more spreading culms than Kentucky bluegrass. Unlike rough bluegrass, both spreading bluegrass and Kentucky bluegrass have large anthers that are 1 to 2 mm long, tufts of long, cobwebby hairs at the bases of the lemmas (but not between the keels and marginal nerves), and short, broad, and rounded glumes.



*Poa pratensis* ssp. *irrigata* (Lindm.) Lindb. f.

Rough bluegrass can be distinguished from other taxa in the *Poa* genus by the presence of acute, long (4 to 5 mm) ligules on the upper leaves, a prominent nerve between the keel and marginal nerves on the lemmas, and narrow, curved, highly acute first glumes (Hultén 1968).



*Poa trivialis* L.

### Ecological Impact

*Impact on community composition, structure, and interactions:* Kentucky bluegrass is known to compete with native plant species, reducing overall diversity and altering species composition (Rutledge and McLendon 1996, Sather 1996, Wisconsin DNR 2003). Because it is less nutritious and has a shorter growing period than native grasses, it can negatively impact grazing animal species (Sather 1996). Kentucky bluegrass can also positively impact grazing animal species. It can be an important component in the diets of elk and mule deer. The leaves and seeds are eaten by many species of rodents, rabbits, and songbirds. When it dominates grasslands, Kentucky bluegrass creates habitats for small mammals and birds (Uchytíl 1993). Kentucky bluegrass is a host for a number of pest insects and diseases (Butterfield et al. 1996). In Alaska, this species is rarely found in undisturbed sites (J. Conn – pers. comm.)

*Impact on ecosystem processes:* Kentucky bluegrass may retard or cause long-term alterations to successional patterns (Butterfield et al. 1996). However, this species does not appear to seriously hamper successional processes in Alaska.

### Biology and Invasive Potential

*Reproductive potential:* These *Poa* taxa are reproductively aggressive. All three reproduce by seeds. Kentucky bluegrass can produce 200 seeds per panicle in the first year. Soil samples from a pasture in the Netherlands had a maximum of 560 seeds per square meter (Sather 1996). Rough bluegrass can produce more than 1,000 seeds per plant (Froud-Williams and Ferris

1987). Kentucky bluegrass and spreading bluegrass can reproduce vegetatively by rhizomes. Rhizomes can extend the horizontal growth of plants by as much as 2 square meters in 2 years (Rutledge and McLendon 1996, Sather 1996).

*Role of disturbance in establishment:* Kentucky bluegrass readily establishes by seeds on disturbed sites. Establishment of this species increases with grazing and burning (Weaver and Darland 1948, Sather 1996). All of these grasses appear to require some level of substrate disturbance to invade successfully.

*Potential for long-distance dispersal:* Seeds can spread short distances (Froud-Williams and Ferris 1986). They do not have clear adaptations for long-distance dispersal.

*Potential to be spread by human activity:* These grasses are commonly planted in lawns and pastures. Over 100 cultivars have been developed (Butterfield et al. 1996). In Alaska, Colorado, and Wisconsin, they are planted for soil stabilization along highways (Uchytel 1993).

*Germination requirement:* Kentucky bluegrass and spreading bluegrass germinate in fall. Freshly harvested seeds must be subjected to temperatures between 5°C and 15°C for 10 to 14 days before they will germinate. Rough bluegrass can germinate in a wide range of temperatures, although temperatures lower than 10°C delay its germination. All three taxa require light to germinate. They are known to germinate within the first four years after being buried up to 1 meter deep in the soil (Budd 1970, Froud-Williams and Ferris 1987, Sather 1996).

*Growth requirements:* These grasses are adapted to fine- and medium-textured soils with pH levels between 5 and 8. They prefer nutrient-rich soils. They grow best in areas that receive between ½ to 1 ¼ meters of precipitation annually. Kentucky bluegrass and spreading bluegrass are not shade tolerant. Kentucky bluegrass can withstand temperatures as low as -39°C. It requires 90 frost-free days to grow and reproduce successfully. The optimal temperature range for the growth of Kentucky bluegrass is from 16°C to 32°C. Rough bluegrass can withstand temperatures as low as -33°C. It requires 120 frost-free days to grow and reproduce successfully (USDA 2002, Gubanov et al 2003).

*Congeneric weeds:* Annual bluegrass (*Poa annua*), Canada bluegrass (*P. compressa*), and fowl bluegrass (*P. palustris*) are known to occur as non-native weeds in Alaska (Hultén 1968, Royer and Dickinson 1999, Whitson et al. 2000, AKEPIC 2010).

### Legal Listings

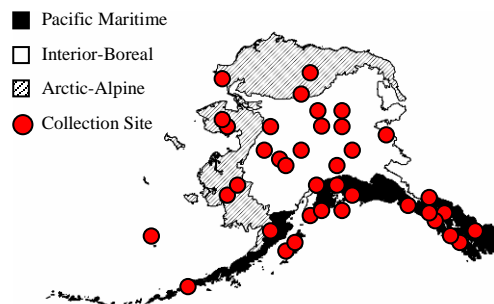
- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states
- Federal noxious weed

Listed noxious in Canada or other countries

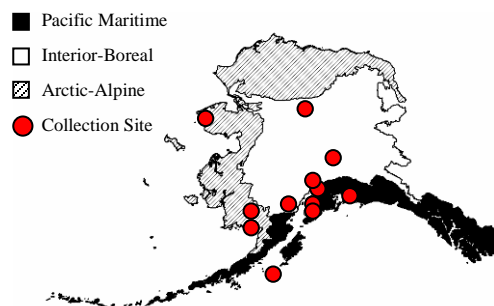
### Distribution and Abundance

Kentucky bluegrass, spreading bluegrass, and rough bluegrass grow in meadows, open woodlands, prairies, and disturbed sites. In the western states, Kentucky bluegrass frequently grows as an understory species. It can be dominant in open aspen, ponderosa pine, sagebrush, and riparian habitats (Uchytel 1993).

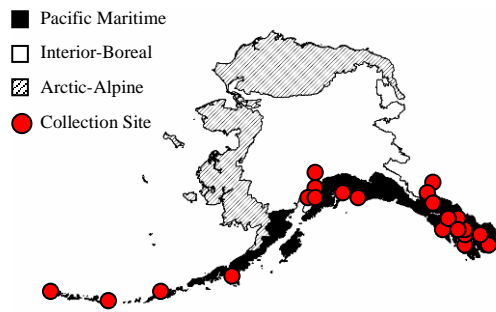
*Native and current distribution:* Kentucky bluegrass is generally considered to be non-native in North America. Some botanists argue, however, that populations in remote mountain meadows of the western United States may be native (Gleason and Cronquist 1963). It is naturalized in all states of the U.S. and in Canada from Labrador to the Pacific Ocean. Spreading bluegrass is clearly an introduced lawn grass. All three of these *Poa* taxa have been introduced into North America, South America, New Zealand, and Australia (Hultén 1968). Kentucky bluegrass and spreading bluegrass have been collected from all three ecogeographic regions of Alaska (however, many of these collections may represent native subspecies of *Poa pratensis*). Rough bluegrass has been documented from the Pacific Maritime ecogeographic region of Alaska (Hultén 1968, UAM 2005, AKEPIC 2010).



Distribution of Kentucky bluegrass (*Poa pratensis*) in Alaska



Distribution of spreading bluegrass (*Poa pratensis* ssp. *irrigata*) in Alaska



Distribution of rough bluegrass (*Poa trivialis*) in Alaska

## Management

These bluegrasses rarely produce pure stands. The rhizomatous habit of Kentucky bluegrass permits it to penetrate areas between already established plants. Eradication may not be feasible because control methods generally harm the coexisting species more than the bluegrass (Sather 1996). The only realistic management goal is to reduce the vigor of the plants and contain their spread (Uchytıl 1993, Butterfield et al. 1996).

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