

# Schedonorus pratensis

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## INTRODUCTORY

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### AUTHORSHIP AND CITATION:

Stone, Katharine R. 2010. Schedonorus pratensis. 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/> [2010, November 18].

### FEIS ABBREVIATION:

SCHPRA

### NRCS PLANT CODE [[99](#)]:

SCPR4

### COMMON NAMES:

meadow fescue  
meadow ryegrass

#### TAXONOMY:

The scientific name of meadow fescue is *Schedonorus pratensis* (Huds.) P. Beauv. (Poaceae) [28].

Meadow fescue hybridizes with perennial ryegrass (*Lolium perenne*) [35,106]. One source reports that the resulting offspring are sterile [106], while another reports that they are fertile [3].

#### SYNONYMS:

*Festuca elatior* subsp. *pratensis* (Huds.) Hack [2,108,109]  
*Festuca pratensis* Huds. [2,20,21,33,35,39,41,53,61,66,83,103,106,108]  
*Festuca pratensis* Huds. subsp. *apennina* (De Not.) Hegi [83]  
*Festuca pratensis* var. *apennina* (De Not.) Hack [58]  
*Festuca pratensis* Huds. subsp. *pratensis* [83]  
*Festuca pratensis* var. *pratensis* [58]  
*Lolium pratense* (Huds.) S.J. Darbyshire [49]

The name *Festuca elatior* has been misapplied to meadow fescue [33]. The Flora of North America [28] reports that *F. elatior* is a synonym for tall fescue (*S. arundinaceus*).

#### LIFE FORM:

Graminoid

## DISTRIBUTION AND OCCURRENCE

**SPECIES:** *Schedonorus pratensis*

- [GENERAL DISTRIBUTION](#)
- [HABITAT TYPES AND PLANT COMMUNITIES](#)

#### GENERAL DISTRIBUTION:

Meadow fescue is native to Europe [39,53,103]. It was commonly planted in North America as a pasture or forage grass [39,74], though it is infrequently planted now [28]. As of this writing (2010), meadow fescue was widely distributed in North America, occurring in all of the United States except Hawaii and all Canadian provinces except the Northwest Territories and Nunavut. [Plants Database](#) provides a distributional map of meadow fescue.

#### HABITAT TYPES AND PLANT COMMUNITIES:

Meadow fescue occurs in both open plant communities and plant communities with canopy cover from shrubs and trees.

**Grasslands:** In central Ohio, meadow fescue occurred in a prairie grassland dominated by switchgrass (*Panicum virgatum*), Canada goldenrod (*Solidago canadensis*), prairie rosinweed (*Silphium terebinthinaceum*), sedges (*Carex* spp.), prairie cordgrass (*Spartina pectinata*), and little bluestem (*Schizachyrium scoparium*) [51]. In northwestern Ohio, meadow fescue occurred in tallgrass prairie on the border of a restored borrow pit. Dominant plants included indiagrass (*Sorghastrum nutans*) and switchgrass [31]. Meadow fescue was an uncommon species in glacial drift prairies at the Roderick Prairie Nature Preserve in central Illinois. Dominant species included big bluestem (*Andropogon gerardii*), little bluestem, pinnate prairie coneflower (*Ratibida pinnata*), pale purple coneflower (*Echinacea pallida*), narrowleaf mountainmint (*Pycnanthemum tenuifolium*), white heath aster (*Symphotrichum ericoides*), and sedges [64].

In north-central Colorado, meadow fescue occurred in tallgrass prairie dominated by big bluestem, little bluestem,

switchgrass, indiangrass, and rough dropseed (*Sporobolus asper*) [18]. It occurred with other planted species in lowland hayfields interspersed with remnant tallgrass prairie in north-central Colorado. Tallgrass prairie species included big bluestem, switchgrass, indiangrass, white prairie aster (*Symphotrichum falcatum* var. *commutatum*), and rough dropseed [17]. At the Big Hole National Battlefield in southwestern Montana, meadow fescue was scarce on a disturbed site dominated by smooth brome (*Bromus inermis*) and Idaho fescue (*Festuca idahoensis*) [77]. In bottomland prairies in Willamette Valley, Oregon, meadow fescue occurred in Kentucky bluegrass-bentgrass (*Poa pratensis*-*Agrostis* spp.) plant communities located in ecotones between tall grass and shrub communities (Moir and Mika 1972 as cited in [29]). Meadow fescue also occurred in lightly grazed, unplowed lowland prairie in Oregon [77].

**Wetlands:** Meadow fescue occurred at low levels in fen meadow plant communities in Big Creek Fen in the sandhills of north-central Nebraska. Fen meadows were dominated by bald spikerush (*Eleocharis erythropoda*), broom sedge (*Carex scoparia*), timothy (*Phleum pratense*), Kentucky bluegrass, inland sedge (*C. interior*), and Emory's sedge (*C. emoryi*) [11]. In Montana, herbarium records show meadow fescue occurring in several moist meadows. Dominant species in 3 different moist meadows included Kentucky bluegrass and Baltic rush (*Juncus balticus*); yellow sedge (*Carex flava*) and bentgrass (*Agrostis*); and wheatgrass (*Agropyron*), bluegrass (*Poa*), and Columbia needlegrass (*Achnatherum nelsonii*). Meadow fescue also occurred in moist meadows in Idaho and Washington. Herbarium records from Oregon documented meadow fescue in a dry meadow [77].

Meadow fescue occurred in a tidal freshwater wetland near the Delaware River in New Jersey [57]. On the shores of Lake Erie, Ohio, meadow fescue occurred in a freshwater, nontidal marsh created over sandy dredge spoils. Some areas of the marsh were dominated by common reed (*Phragmites australis*) or narrow-leaved cattail (*Typha angustifolia*) [105]. Meadow fescue occurred on sand and mud flats along the Mississippi River in southern Illinois [24]. In Montana, meadow fescue occurred in a small marsh with birch (*Betula*). In Oregon, meadow fescue occurred in a marsh surrounded by a Jeffrey pine (*Pinus jeffreyi*) savanna [77].

**Shrublands:** Herbarium records from Wyoming reported meadow fescue occurring in sagebrush (*Artemisia*) plant communities and in a cherry (*Prunus*) thicket [77].

At Gettysburg National Military Park and Eisenhower National Historic Site, Pennsylvania, meadow fescue occurred in the sparse understory of palustrine shrub thickets associated with low-lying riparian areas [73]. It occurred on cobble bars and riparian shrub communities in the Dungenes River Watershed on the Olympic Peninsula, Washington [19]. In Washington, meadow fescue occurred at the North Fork Quinalt River Gauging Station with vine maple (*A. circinatum*), alder (*Alnus*), clover (*Trifolium*), bluegrass, and hollyfern (*Polystichum*) [77].

**Woodlands:** In southwestern Virginia, meadow fescue occurred in calcareous barren communities with a scattered overstory of eastern redcedar (*Juniperus virginiana*) and an understory dominated by little bluestem and big bluestem [59]. Meadow fescue was rare in woodlands dominated by perennial herbs, vines, shrubs, and trees on Assateague Island, Maryland [40]. In eastern Illinois, meadow fescue occurred at an oak savanna restoration site. Overstory trees included white oak (*Quercus alba*), shingle oak (*Q. imbricaria*), bur oak (*Q. macrocarpa*), northern red oak (*Q. rubra*), black oak (*Q. velutina*), black walnut (*Juglans nigra*), yellow-poplar (*Liriodendron tulipifera*), and sweetgum (*Liquidambar styraciflua*) [44]. In south-central Oklahoma, meadow fescue occurred infrequently in an eastern hophornbeam-prairie tea (*Ostrya virginiana*-*Croton monanthogynus*) plant community [42]. On Tinker Air Force Base near Oklahoma City, Oklahoma, meadow fescue was a dominant species in prairies interspersed with patches of transitional forest and shrublands. Other dominant species included big bluestem, little bluestem, indiangrass, sideoats grama (*Bouteloua curtipendula*), Maximilian sunflower (*Helianthus maximiliani*), and eastern redcedar [23].

In the Black Hills of South Dakota, meadow fescue occurred in open woodlands dominated by quaking aspen (*Populus tremuloides*) and ponderosa pine (*Pinus ponderosa*), with common juniper (*Juniperus communis*) and western snowberry (*Symphoricarpos occidentalis*) occurring in the understory [30].

Meadow fescue occurred in upper-canyon plant communities at Canyon de Chelly National Monument in northeastern Arizona. Upper-canyon talus communities included boxelder (*Acer negundo*), Gambel oak (*Q. gambelii*), littleleaf mock orange (*Philadelphus microphyllus*), cliff fendlerbush (*Fendlera rupicola*), Utah juniper (*Juniperus osteosperma*), Colorado pinyon (*Pinus edulis*), and Douglas-fir (*Pseudotsuga menziesii*) [79]. Meadow fescue was

infrequent along roadsides in the San Francisco Volcanic Field in north-central Arizona, an area dominated by Colorado pinyon and oneseed juniper (*J. monosperma*) woodlands [15].

Meadow fescue occurred at low levels in Oregon white oak (*Q. garryana*) woodlands in southwestern Oregon, including Oregon white oak-Douglas-fir/blue wildrye (*Elymus glaucus*), Oregon white oak-Douglas-fir/sheep fescue (*Festuca ovina*), Oregon white oak/California brome (*Bromus carinatus*), and Oregon white oak/bristly dogstail grass (*Cynosurus echinatus*) woodlands [78]. In Washington, meadow fescue occurred on the edge of an Oregon ash (*Fraxinus latifolia*)-Oregon white oak woodland with ground-ivy (*Glechoma hederacea*), ookow (*Dichelostemma congestum*), and common snowberry (*S. albus*) [77].

**Forests:** Meadow fescue was reported in successional forest communities at several historic sites in Virginia. At Richmond National Battlefield Park, meadow fescue and broomsedge bluestem (*Andropogon virginicus*) often dominated the herbaceous layer of successional eastern redcedar forests typically found on former fields and around former homesites. Forests were described as generally open and sometimes containing other successional species including yellow-poplar, sassafras (*Sassafras albidum*), or black cherry (*Prunus serotina*) [72]. At the George Washington Birthplace National Monument, meadow fescue occurred in successional eastern redcedar forests and in the sparse understory beneath successional black locust (*Robinia pseudoacacia*) forests developing on a former livestock pen. The forest also contained hackberry (*Celtis occidentalis*) and common persimmon (*Diospyros virginiana*) [70]. At the Fredericksburg and Spotsylvania National Military Park, meadow fescue occurred in successional mixed-scrub plant communities that included areas of sparse to dense shrubby regeneration following recent (<20 years) land clearing. Typical regenerating trees included eastern redcedar, Virginia pine, red maple (*Acer rubrum*), sweetgum, yellow-poplar, white oak, mockernut hickory (*Carya tomentosa*), flowering dogwood (*Cornus florida*), black tupelo (*Nyssa sylvatica*), and black locust [93]. At Petersburg National Battlefield, meadow fescue occurred in the understory of successional sweetgum forests establishing after logging and clearing. Forests were dominated by young, shrubby sweetgum, but loblolly pine (*Pinus taeda*) was present in some areas [71]. At Colonial National Historical Park, meadow fescue was an understory dominant in open, successional black walnut forests establishing around former homesites and other disturbed areas [69].

Meadow fescue was reported in early-successional forests in other parts of its range. In eastern Tennessee, it was an occasional species in clearcuts in upland mixed-oak forests [46]. In southeastern Ohio, meadow fescue was frequent in disturbed areas including young (30-40 years since canopy closure) mixed-oak (*Quercus* spp.) and mixed-hardwood (red maple, sugar maple (*A. saccharum*), shagbark hickory (*Carya ovata*), American beech (*Fagus grandifolia*), green ash (*Fraxinus pennsylvanica*), yellow-poplar, black cherry, northern red oak) forests [37]. In an 18-year study of vegetation succession following the abandonment of a recreational area in Illinois, meadow fescue and annual bluegrass (*Poa annua*) were among the nonnative species dominating the understory of the regenerating mixed-hardwood forest in early succession, but they were eventually replaced by mesic forest understory species including James' sedge (*Carex jamesii*), woodland muhly (*Muhlenbergia sylvatica*), and eastern hophornbeam. The canopy was dominated by sugar maple, white oak, and northern red oak [32].

Meadow fescue also occurs in nonsuccessional forests. Along the New River Gorge in southern West Virginia, it occurred in a mesic yellow-poplar-white oak-northern red oak-sugar maple forest. Meadow fescue was also found in seasonally-inundated American sycamore-river birch (*Platanus occidentalis*-*Betula nigra*) upper beach forests and black willow (*Salix nigra*)-river birch riverbank forests [91]. In eastern Tennessee, it was an occasional species occurring in upland mixed-oak forests dominated by white oak, chestnut oak (*Q. prinus*), northern red oak, pignut hickory (*Carya glabra*), mockernut hickory, shortleaf pine (*Pinus echinata*), Virginia pine, and sourwood (*Oxydendrum arboreum*). It also was an occasional species on disturbed floodplains dominated by mimosa (*Albizia julibrissin*) and Virginia pine (*Pinus virginiana*) [46]. Meadow fescue was frequent in upland mixed-oak-hickory (*Carya* spp.)-red maple-pine (*Pinus* spp.) forests in central Tennessee [27]. In Utah, meadow fescue infrequently occurred on open slopes in quaking aspen-spruce-fir (*Picea*-*Abies*), ponderosa pine, and lodgepole pine (*Pinus contorta*) forests [106]. In Montana, meadow fescue occurred along a hiking trail in an open subalpine area in fir-spruce forest and in a moist place in a mixed-conifer forest [77]. In Idaho, meadow fescue occurred near the Salmon River in a subalpine fir-beargrass-big huckleberry (*A. lasiocarpa*-*Xerophyllum tenax*-*Vaccinium membranaceum*) habitat type [77].

Two vegetation classifications from Virginia describe plant communities where meadow fescue is a dominant species.

- successional eastern redcedar forests typically found on former fields and around former homesites [72]
- open successional black walnut forests establishing around former homesites and other disturbed areas [69]

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## BOTANICAL AND ECOLOGICAL CHARACTERISTICS

**SPECIES:** *Schedonorus pratensis*

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- [GENERAL BOTANICAL CHARACTERISTICS](#)
- [SEASONAL DEVELOPMENT](#)
- [REGENERATION PROCESSES](#)
- [SITE CHARACTERISTICS](#)
- [SUCCESSIONAL STATUS](#)

GENERAL BOTANICAL CHARACTERISTICS:

- [Botanical description](#)
- [Raunkiaer life form](#)

**Botanical description:** This description covers characteristics that may be relevant to fire ecology and is not meant for identification. Keys for identification are available (e.g., [3,20,21,33,39,41,53,61,66,103]).

Meadow fescue is a loosely to densely tufted perennial grass. Culms are 12 to 47 inches (30-120 cm) long and may be erect or spreading. Leaf blades are flat and up to 18 inches (45 cm) long. The panicle is 4 to 8 inches (10-20 cm) long with 10- to 20-mm-long spikelets [2]. The fruit is a [caryopsis](#) [28]. Seeds usually lack awns [2].



Photo by Richard Old, XID Services Inc., Bugwood.org

In field sites in Germany, meadow fescue roots penetrated 3 inches (8 cm) in loamy fluvial sediments [38]. Rhizomatous character varies. Floras from Montana [53] and Utah [106] report that meadow fescue has short rhizomes, while a flora from Canada [1] states that it may or may not have short rhizomes. A flora from the Great Plains [35] reports that it is [caespitose](#) to short-rhizomatous. The Flora of Pakistan [2] reports that meadow fescue lacks rhizomes.

**Raunkiaer [75] life form:**

[Hemicryptophyte](#)

[Geophyte](#) (rhizomatous plants only)

SEASONAL DEVELOPMENT:

Meadow fescue is a cool-season grass, emerging in the early spring [47]. Planted meadow fescue seedlings produced tillers within 5 weeks of germination in agricultural experiments in Britain [56]. In North America, meadow fescue flowering dates range from May to October.

Month of flowering for meadow fescue in different parts of its North American range	
Location	Month
Illinois	May to August [66]
Maryland	May to June [40]
New York	June [22]
Great Plains	June to October [35]
New England	July to August [61]

Meadow fescue seeds mature in July and August in Missouri [86] and early June through early September in Montana [77]. Meadow fescue may produce new growth in autumn after seeds mature [47]. In southern Missouri, meadow fescue leaves usually stay green all winter [86], though a vegetation management guide suggests that it is dormant in winter [47].

Researchers in Estonia characterized meadow fescue as a short-lived species [84].

#### REGENERATION PROCESSES:

- [Pollination and breeding system](#)
- [Seed production](#)
- [Seed dispersal](#)
- [Seed banking](#)
- [Germination](#)
- [Seedling establishment and plant growth](#)
- [Vegetative regeneration](#)

A vegetation management guide states that meadow fescue spreads primarily by seed to form dense, solid stands [47]. It also spreads vegetatively [74] via rhizomes [1,35,53,106] and tillers [26,56].

**Pollination and breeding system:** Meadow fescue is wind pollinated. It exhibits a high degree of self-incompatibility [82] but is capable of selfing. A review reports that the viability of seeds produced via selfing may be low and that resulting seedlings often show signs of chlorophyll deficiency [9].

**Seed production:** A review of seed-setting studies reported that meadow fescue generally has poor, though highly variable, seed set [9].

**Seed dispersal:** One study reported that meadow fescue seeds are dispersed by animals [47,76]. Meadow fescue seeds may be spread in the manure of domestic livestock [47], by farm machinery [90], and in irrigation water [50].

**Seed banking:** A review of >30 seed bank studies from northwestern Europe indicates that most studies characterized meadow fescue as having a transient or short-term persistent seed bank. Of the few studies that identified maximum seed longevity, 3 listed meadow fescue seed's maximum longevity as <1 year, and 4 listed it as 1 year [94]. Another review of soil seed bank studies similarly suggested that meadow fescue seeds do not accumulate in the soil seed bank [80].

In undisturbed floodplain meadows in Britain, meadow fescue was characterized as forming a short-term persistent seed bank based on the depths at which seeds were found (0-4 inches (0-10 cm)). Seeds were found at densities of 59 seeds/m<sup>2</sup> at depths of 0 to 2 inches (0-5 cm) and 12 seeds/m<sup>2</sup> at depths of 2 to 4 inches (5-10 cm). In floodplain meadows with a recent disturbance history of crop planting and grazing, meadow fescue occurred in the upper soil (0-

2 inches (0-5 cm)) at a density of 190 seeds/m<sup>2</sup> [65]. In mesophilic floodplain meadows in France, meadow fescue comprised 80% to 100% of the aboveground vegetation but made up only 0.4% of the seedlings emerging from the soil seed bank at 0- to 4-inch (0-10 cm) depths [101].

Despite being present in the extant vegetation, meadow fescue was not detected in the soil seed bank of a freshwater, nontidal marsh on the shores of Lake Erie, Ohio [105], an abandoned wet meadow in Poland [25], or several mountain meadows in northern Spain [76].

**Germination:** As of this writing (2010), there was little published information available on the germination requirements of meadow fescue. Different meadow fescue subspecies growing in Europe varied in their requirements for germination; the subspecies occurring at high elevations (>3,600 feet (1,110 m)) required cold stratification for germination, while the subspecies occurring at low elevations (<3,600 feet (1,110 m)) germinated without cold stratification [96]. Meadow fescue seed from dry calcareous grasslands in Estonia showed some tolerance to drought in laboratory germination tests [68]. A reference book on seed ecology reports that meadow fescue germinates well at pH 6.5 and that high aluminum concentrations inhibit germination [7].

**Seedling establishment and plant growth:** Meadow fescue seedlings establish slowly [47,67] but are persistent once established [47]. Planting experiments in dry calcareous grasslands in Estonia suggested that meadow fescue seedling establishment could be limited by moisture. Establishment increased with local disturbance (e.g., removal of bryophytes) that created gaps in the vegetation [68]. Meadow fescue seedlings may be vulnerable to herbivory. In field experiments in Britain, approximately 52% of meadow fescue seedlings sustained high levels of damage due to herbivory by small mammals, with some seedlings entirely consumed [45].

**Vegetative regeneration:** Meadow fescue spreads vegetatively via tillers [26,56], and some populations may spread from short rhizomes [1,35,53,106]. Experiments with meadow fescue cultivars bred for forage production in Europe showed that individual plants could produce more than 200 fertile tillers in a single growing season [26]. One source reports that cutting meadow fescue prompts formation of stolons [67], and another states that meadow fescue may root at lower nodes [106].

#### SITE CHARACTERISTICS:

Meadow fescue tolerates a range of site characteristics, occurring in a variety of sites and plant communities, soil types, moisture regimes, climates, and elevations. Floras report meadow fescue occurring in meadows [20,21,33,53,103], fields [33,61,106], and pastures [35], and along roadsides [35,61,103,106], walkways [106], and ditches [35]. Several floras report that it occurs in disturbed areas [8,20,21,39,106]. Meadow fescue occurs in a variety of plant communities, ranging from open grasslands to intact forests. See [Habitat Types and Plant Communities](#) for descriptions of plant communities where meadow fescue occurs.

**Soil:** It is not clear what soil characteristics meadow fescue prefers. In central Illinois, meadow fescue established on a silt loam that was highly eroded, moderately well drained, low in organic content, and slightly acidic (pH 6.7-6.9) [64]. It occurred on sandy silt and gravelly soil in Washington [77]; on a gravel bar, in gravelly loam, moist silty clay, and granitic coarse sandy loam in Montana [77]; on sandy dredge spoils on the shores of Lake Erie, Ohio [105]; and on dry, ruderal sands on a coastal barrier island on Long Island, New York [22]. A vegetation management guide reports that meadow fescue tolerates acid soils [47]. It was found on calcareous and other basic soils at Colonial National Historical Park, Virginia [69].

**Moisture:** A grass manual from Canada reports that meadow fescue's distribution is restricted by its preference for moist soil [1]. One study from Estonia suggested that meadow fescue seedling establishment is improved with moisture [68]. However, 2 vegetation management guides state that meadow fescue tolerates a wide range of soil moisture regimes [47,86]. Meadow fescue is reported in riparian areas in Pennsylvania [73], West Virginia [91], Tennessee [46], Wyoming [77], Montana [63,77], Idaho [77], Washington [19,77], Oregon [77], and Arizona [87], though it is also found in dry locations [22,106]. See [Habitat Types and Plant Communities](#) for descriptions of both wet (e.g. wetlands and riparian areas) and dry (e.g., grasslands, woodlands, upland forests) plant communities where meadow fescue occurs.

**Climate:** As its widespread distribution suggests, meadow fescue establishes in areas with a wide range of climatic conditions.

Average annual precipitation of sites with meadow fescue within its North American distribution	
Location	Precipitation (mm)
Illinois	843 [ <a href="#">64</a> ]
Ohio	864 [ <a href="#">51</a> ]
South Dakota	166 [ <a href="#">30</a> ]
Tennessee	1,313 [ <a href="#">74</a> ]
West Virginia	1,042 [ <a href="#">91</a> ]

**Elevation:** Meadow fescue occurs at a wide range of elevations in North America.

Elevation of sites with meadow fescue within its North American distribution	
Location	Elevation (feet)
Alabama	660 to 720 [ <a href="#">104</a> ]
Arizona	3,100 to 5,200 [ <a href="#">87</a> ]
Idaho	5,080 to 5,480
Montana	2,950 to 8,900 [ <a href="#">77</a> ]
New Mexico	3,800 to 10,000 [ <a href="#">3</a> ]
Oregon	1,840 to 3,133 [ <a href="#">77</a> ]
South Dakota	5,420 [ <a href="#">30</a> ]
Utah	4,300 to 9,500 [ <a href="#">106</a> ]

#### SUCCESSIONAL STATUS:

Meadow fescue often establishes in early succession, though it is not limited to this successional stage. It is reported from successional forests at several historic sites in Virginia [[69,70,71,72,93](#)], clearcuts in upland mixed-oak forests in Tennessee [[46](#)], and young mixed-oak and mixed-hardwood forests in Ohio [[37](#)]. In an 18-year study of vegetation succession following the removal of recreational activities (e.g. picnicking, camping) from a recreational area in Illinois, meadow fescue was among the nonnative species dominating the understory of the mixed-hardwood forest while recreational activities occurred, but after activities ended, it was eventually replaced by mesic forest understory species. It was not found in surveys 18 years after recreational activities ended [[32](#)]. In a study examining vegetation succession in an abandoned wet meadow in Poland, meadow fescue persisted through the first 10 years of succession at a frequency of 10% to 50% but declined to <10% frequency after year 10 [[25](#)].

Light may favor meadow fescue. A vegetation management guide reports that meadow fescue grows best with full sunlight [[47](#)]. Herbarium records from Washington report that in lawns, meadow fescue grew in areas of full sun [[77](#)]. However, meadow fescue establishment is not limited to open plant communities (see [Habitat Types and Plant Communities](#)).

Many sources report meadow fescue occurring in disturbed areas [[8,20,21,37,39,46,69,77,86,89,91,105,106](#)], though it is not clear what characteristics of disturbed areas promote meadow fescue establishment and persistence. In southeastern Missouri, meadow fescue was found along horse trails but did not occur in undisturbed plant communities [[89](#)]. Meadow fescue is not limited to disturbed areas. In a freshwater, nontidal marsh on the shores of Lake Erie, Ohio, meadow fescue occurred in both undisturbed areas and areas recently disturbed by a bulldozer [[105](#)]. Meadow

fescue often establishes in riparian areas that experience frequent flooding [46,91]. However, in floodplain meadows in Belgium, meadow fescue did not persist when historical flooding regimes were restored in the area [102].

It is not clear whether meadow fescue may influence the successional trajectories of native plant communities where it establishes. In grasslands and other plant communities where it replaces species with similar growth habits and life-history traits, meadow fescue may have little impact on successional trajectories. In areas where meadow fescue differs greatly from the native species it replaces, successional pathways may be altered. This topic had not been addressed in the literature as of this writing (2010).

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## **FIRE EFFECTS AND MANAGEMENT**

**SPECIES:** [Schedonorus pratensis](#)

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- [FIRE EFFECTS](#)
- [FUELS AND FIRE REGIMES](#)
- [FIRE MANAGEMENT CONSIDERATIONS](#)

**FIRE EFFECTS:**

- [Immediate fire effect on plant](#)
- [Postfire regeneration strategy](#)
- [Fire adaptations and plant response to fire](#)

**Immediate fire effect on plant:** Meadow fescue is likely top-killed by fire during the growing season. Belowground parts likely survive and sprout following fire in either the growing or the dormant season. As of this writing (2010), it is not known whether meadow fescue seeds survive fire.

**Postfire regeneration strategy** [88]:

Surface [rhizome](#) and/or a [chamaephytic root crown](#) in organic soil or on soil surface

Rhizomatous herb, rhizome in soil (some plants)

[Tussock graminoid](#) (some plants)

[Geophyte](#), growing points deep in soil (some plants)

[Initial off-site colonizer](#) (off site, initial community)

[Secondary colonizer](#) (on- or off-site seed sources)

**Fire adaptations and plant response to fire:**

- [Fire adaptations](#)
- [Plant response to fire](#)

**Fire adaptations:** Meadow fescue possesses a few characteristics that may allow it to survive fire, primarily tillering and/or sprouting from rhizomes. Response time may depend on fire season. Establishment of new populations after fire may be limited.

Growing-season fire may temporarily reduce meadow fescue cover. However, the stimulation of growth and vegetative spread after treatments removing aboveground vegetation (e.g., cutting [47,62,67] and grazing [47,62]) suggests that meadow fescue may sprout from tillers [26,56] and/or rhizomes [1,35,53,106] soon after growing-season fire. A vegetation management guide reports that dormant-season fire or herbicide application is ineffective at controlling meadow fescue [47], suggesting that belowground parts may survive and sprout the spring following fire in the dormant season.

As of this writing (2010), there was no documentation of meadow fescue establishing from seed after fire, though one source hypothesized that meadow fescue's continued presence after 4 years of prescribed fire could be from increased seed production or seedling establishment following fire treatments [74]. The lack of a persistent [seed bank](#) and limited seed dispersal suggest that postfire seedling establishment may be minimal unless reproductive meadow fescue plants were present before fire. However, nearby populations of meadow fescue, coupled with the presence of grazing livestock or the use of equipment, increase the likelihood that meadow fescue seed could be dispersed on to a burned site (see [Seed dispersal](#)). In a study from Estonia, seedling establishment improved with the removal of other vegetation [68], though this disturbance occurred at a scale much smaller than would be expected after fire.

**Plant response to fire:** As of this writing (2010), there was very little information available describing the response of meadow fescue to fire. Studies from a mesic sand prairie [92] and an oak savanna restoration site [44] in Illinois found no change in meadow fescue cover after 2 consecutive years of spring prescribed fire. A study from Great Smoky Mountains National Park, Tennessee, found a reduction in meadow fescue frequency 1 and 2 years after a treatment that combined mowing, herbicide application, prescribed fire, and seeding of native plant species, but it did not find significant changes in meadow fescue frequency, cover, and biomass 4 years after treatment [74]. See [Use of prescribed fire as a control agent](#) for more information on these studies.

#### FUELS AND FIRE REGIMES:

- [Fuels](#)
- [Fire regimes](#)

**Fuels:** As of this writing (2010), information on the fuels characteristics of meadow fescue was lacking in the literature. The impact of meadow fescue on local fuel conditions likely varies by plant community and may depend on how the fuel characteristics of meadow fescue differ from those of native species.

**Fire regimes:** It is not known what fire regime meadow fescue is best adapted to. In North America, meadow fescue occurs in a wide variety of plant communities, and consequently, a range of fire regimes. See the [Fire Regime Table](#) for further information on fire regimes of vegetation communities in which meadow fescue may occur.

#### FIRE MANAGEMENT CONSIDERATIONS:

**Potential for postfire establishment and spread:** Meadow fescue does not seem likely to establish in burned areas via seed from either on-site or off-site sources. It does not form a persistent [seed bank](#) and seed dispersal appears limited. However, the presence of grazing livestock or the use of fire-related machinery or equipment may increase the potential for meadow fescue seed to be dispersed into a burned area if parent sources are nearby (see [Seed dispersal](#)). Though meadow fescue often establishes in disturbed areas (see [Successional Status](#)), it is not clear what characteristics of disturbed areas are conducive to meadow fescue growth and persistence. There were no reports in the available literature (2010) documenting populations of meadow fescue spreading into a burned area, but seedling establishment and, for some populations, vegetative spread from short rhizomes may occur.

**Preventing postfire establishment and spread:** Preventing seed dispersal via livestock or machinery may reduce meadow fescue establishment and spread after fire. Meadow fescue populations adjacent to a burned area provide a likely seed source and may spread vegetatively into burned areas. The reportedly slow establishment of meadow fescue seedlings [47,67] may improve the likelihood of early eradication.

Preventing invasive plants from establishing in weed-free burned areas is the most effective and least costly management method. This may be accomplished through early detection and eradication, careful monitoring and follow-up, and limiting dispersal of invasive plant seed into burned areas. General recommendations for preventing postfire establishment and spread of invasive plants include:

- Incorporate cost of weed prevention and management into fire rehabilitation plans
- Acquire restoration funding

- Include weed prevention education in fire training
- Minimize soil disturbance and vegetation removal during fire suppression and rehabilitation activities
- Minimize the use of retardants that may alter soil nutrient availability, such as those containing nitrogen and phosphorus
- Avoid areas dominated by high priority invasive plants when locating firelines, monitoring camps, staging areas, and helibases
- Clean equipment and vehicles prior to entering burned areas
- Regulate or prevent human and livestock entry into burned areas until desirable site vegetation has recovered sufficiently to resist invasion by undesirable vegetation
- Monitor burned areas and areas of significant disturbance or traffic from management activity
- Detect weeds early and eradicate before vegetative spread and/or seed dispersal
- Eradicate small patches and contain or control large infestations within or adjacent to the burned area
- Reestablish vegetation on bare ground as soon as possible
- Avoid use of fertilizers in postfire rehabilitation and restoration
- Use only certified weed-free seed mixes when revegetation is necessary

For more detailed information on these topics, see the following publications: [[5,12,34,98](#)].

**Use of prescribed fire as a control agent:** There is little evidence to suggest that prescribed fire is an effective tool for controlling meadow fescue, though information on this topic was limited as of 2010. In a mesic sand prairie in Illinois, there was no change in absolute frequency of meadow fescue following 2 years of spring prescribed fire. Absolute frequency of meadow fescue prior to fire was 0.62, compared to 0.65 and 0.63 2 to 3 months following fire in 2 different years [[92](#)]. Similarly, at an oak savanna restoration site in eastern Illinois, meadow fescue frequency did not change following 2 years of spring prescribed fire. The fires were considered high severity the 1st year and mixed severity the 2nd year. Meadow fescue's relative frequency was 0.65 the autumn prior to the 1st fire, 0.63 the autumn after the 1st fire, and 0.69 the autumn after the 2nd fire [[44](#)].

Integrating prescribed fire with other treatments may increase the likelihood that control efforts will be effective. A vegetation management guide suggests that a combination of herbicide application and prescribed fire may effectively control meadow fescue. In areas with dense populations of meadow fescue, the guide recommends using prescribed fire after herbicide treatments in the spring when meadow fescue is growing but native grasses are dormant, assuming that meadow fescue emerges before native grasses. In areas with sparse populations of meadow fescue, this guide suggests using a prescribed fire in the late spring to eliminate young plants. Repeated fires for 2 to 4 years and spot application of herbicides on remaining meadow fescue plants may be necessary [[86](#)].

Integrated treatments, however, may not always control meadow fescue. One study in Great Smoky Mountains National Park combined mowing, herbicide application, prescribed fire, and seeding of native plant species to control nonnative grasses. There were no significant differences in meadow fescue frequency, cover, and biomass between treated and control plots 4 years after treatment. Managers were attempting to restore former pastures, which were dominated by meadow fescue and other nonnative pasture grasses, to plant communities dominated by native warm-season grasses and forbs. Treatment areas were mowed in the autumn of 1995. Glyphosate was applied after the 2nd frost, when native plants were dormant but cool-season grasses, including meadow fescue, were still growing. Native species were seeded in the spring of 1996. The sites were burned in the early springs of 1997 through 2000. Plots were sampled at the peak of the late growing season from 1995 to 2001. One and 2 years after treatments were initiated, meadow fescue frequency was 35% and 23% lower in treated plots, respectively ( $P=0.008$ ). However, 4 years after treatments began, meadow fescue frequency, cover, and biomass did not differ between treated and control plots. The authors suggested that increased vegetative spread, seed production, or seedling establishment from surviving individuals may have been responsible for meadow fescue's recovery following control treatments. The authors cautioned that the time period of assessment (1-2 years versus 4 years) could greatly alter the inferences made from treatment results [[74](#)].

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## MANAGEMENT CONSIDERATIONS

**SPECIES:** [Schedonorus pratensis](#)

- [FEDERAL LEGAL STATUS](#)
- [OTHER STATUS](#)
- [IMPORTANCE TO WILDLIFE AND LIVESTOCK](#)
- [OTHER USES](#)
- [IMPACTS AND CONTROL](#)

**FEDERAL LEGAL STATUS:**

None

**OTHER STATUS:**

Information on state-level noxious weed status of plants in the United States is available at [Plants Database](#).

**IMPORTANCE TO WILDLIFE AND LIVESTOCK:**

**Palatability and/or nutritional value:** Meadow fescue was once planted in many areas in North America as a pasture or forage grass for livestock [39,74], though it is infrequently planted now [28]. One source reports that it is more palatable to livestock than tall fescue (*Schedonorus arundinaceus*) because it has a softer texture and lacks high levels of silica [1]. Meadow fescue has high protein content [62].

Meadow fescue likely provides forage for wildlife such as ungulates, though documentation of such usage was lacking in the literature as of this writing (2010). It was a year-round food of eastern cottontails in Missouri [52], and small mammals ate the leaves of more than half of the meadow fescue seedlings planted for field experiments in Britain [45].

**Cover value:** No information is available on this topic.

**OTHER USES:**

Meadow fescue has been planted for livestock forage [39,74], turf, erosion control, and habitat rehabilitation [3]. It has been used as a living mulch to suppress weeds in fields of hot pepper (*Capsicum annum*) and okra (*Abelmoschus esculentus*) [10].

**IMPACTS AND CONTROL:**

**Impacts:** A vegetation management guide reports that meadow fescue may establish in open natural plant communities and can displace native species. Its success at the expense of native species is attributed to its adaptability to poor site conditions, [allelopathy](#), and difficulty in control [47]. In parts of Great Smoky Mountains National Park, meadow fescue establishment limited locally rare indiangrass populations [81]. It was listed as one of several nonnative plant species whose establishment could threaten the globally rare coastal plain dry calcareous forests found at the George Washington Birthplace National Monument, Virginia [70].

**Control:** Control of meadow fescue may be difficult due to vegetative spread following control treatments [47]. Multiple years of treatment [86] and control of surrounding seed sources [47] may be necessary.

In all cases where invasive species are targeted for control, no matter what method is employed, the potential for other invasive species to fill their void must be considered [13]. Control of biotic invasions is most effective when it employs a long-term, ecosystem-wide strategy rather than a tactical approach focused on battling individual invaders [60].

**Fire:** For information on the use of prescribed fire to control this species, see [Fire Management Considerations](#).

**Prevention:** It is commonly argued that the most cost-efficient and effective method of managing invasive species is to prevent their establishment and spread by maintaining "healthy" natural communities [60,85] (e.g., avoid road building in wildlands [97]) and by monitoring several times each year [48]. Managing to maintain the integrity of the

native plant community and mitigate the factors enhancing ecosystem invasibility is likely to be more effective than managing solely to control the invader [43].

Weed prevention and control can be incorporated into many types of management plans, including those for logging and site preparation, grazing allotments, recreation management, research projects, road building and maintenance, and fire management [98]. See the [Guide to noxious weed prevention practices](#) [98] for specific guidelines in preventing the spread of weed seeds and propagules under different management conditions.

Cultural control: No information is available on this topic.

Physical or mechanical control: Physical and mechanical control of meadow fescue may be difficult. Thick mats of roots make it difficult to hand pull [47,86], and digging may create undesirable soil disturbance [86]. Isolated clumps and seedlings may be dug up by hand [47].

Cutting [62,67] and intensive grazing [47,62] of meadow fescue stimulate growth and vegetative spread. In pastures in the Netherlands, meadow fescue cover was highest in areas with heavy domestic sheep grazing compared to areas with moderate and light domestic sheep grazing [6]. Meadow fescue withstands trampling by livestock [47].

Biological control: As of this writing (2010) no biological control agent had been identified to control meadow fescue. Biological control of invasive species has a long history that indicates many factors must be considered before using biological controls. Refer to these sources: [100,107] and the [Weed control methods handbook](#) [95] for background information and important considerations for developing and implementing biological control programs.

Chemical control: Herbicides may be effective in controlling meadow fescue [47]. Herbicide application combined with other control measures such as mowing or prescribed fire may be more effective than herbicide alone (see [Use of prescribed fire as a control agent](#)). For information on meadow fescue's susceptibility to foliar-acting graminicides, see Clay and others [16]. For recommendations on herbicide application in areas with large populations of meadow fescue, see Smith [86].

Herbicides are effective in gaining initial control of a new invasion or a severe infestation, but they are rarely a complete or long-term solution to weed management [14]. See the [Weed control methods handbook](#) [95] for considerations on the use of herbicides in natural areas and detailed information on specific chemicals.

Integrated management: A vegetation management guide suggests that integrating herbicide application and prescribed fire may effectively control meadow fescue [86]. However, one study in Great Smoky Mountains National Park found that after combined mowing, herbicide application, prescribed fire, and seeding of native plant species, there were no significant differences in meadow fescue frequency, cover, and biomass between treated and control plots 4 years after treatment [74]. See [Use of prescribed fire as a control agent](#) for more information on this topic.

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## APPENDIX: FIRE REGIME TABLE

### SPECIES: *Schedonorus pratensis*

The following table provides fire regime information that may be relevant to meadow fescue habitats. Follow the links in the table to documents that provide more detailed information on these fire regimes.

<p>Fire regime information on vegetation communities in which meadow fescue may occur. This information is taken from the <a href="#">LANDFIRE Rapid Assessment Vegetation Models</a> [55], which were developed by local experts using available literature, local data, and/or expert opinion. This table summarizes fire regime characteristics for each plant community listed. The PDF file linked from each plant community name describes the model and synthesizes the knowledge available on vegetation composition, structure, and dynamics in that community. Cells are blank where information is not</p>
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available in the Rapid Assessment Vegetation Model.

[Pacific Northwest](#)   [California](#)   [Southwest](#)   [Great Basin](#)   [Northern and Central Rockies](#)  
[Northern Great Plains](#)   [Great Lakes](#)   [Northeast](#)   [South-central US](#)   [Southern Appalachians](#)

### Pacific Northwest

- [Northwest Grassland](#)
- [Northwest Woodland](#)
- [Northwest Forested](#)

Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)

### Northwest Grassland

<a href="#">Marsh</a>	Replacement	74%	7		
	Mixed	26%	20		
<a href="#">Bluebunch wheatgrass</a>	Replacement	47%	18	5	20
	Mixed	53%	16	5	20
<a href="#">Idaho fescue grasslands</a>	Replacement	76%	40		
	Mixed	24%	125		
<a href="#">Alpine and subalpine meadows and grasslands</a>	Replacement	68%	350	200	500
	Mixed	32%	750	500	>1,000

### Northwest Woodland

<a href="#">Oregon white oak-ponderosa pine</a>	Replacement	16%	125	100	300
	Mixed	2%	900	50	
	Surface or low	81%	25	5	30
<a href="#">Pine savannah (ultramafic)</a>	Replacement	7%	200	100	300
	Surface or low	93%	15	10	20
<a href="#">Oregon white oak</a>	Replacement	3%	275		
	Mixed	19%	50		
	Surface or low	78%	12.5		

### Northwest Forested

	Replacement	71%	400		
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<a href="#">Douglas-fir-western hemlock (wet mesic)</a>	Mixed	29%	>1,000		
<b>California</b>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
California Grassland					
<a href="#">California grassland</a>	Replacement	100%	2	1	3
<a href="#">Herbaceous wetland</a>	Replacement	70%	15		
	Mixed	30%	35		
<a href="#">Wet mountain meadow-Lodgepole pine (subalpine)</a>	Replacement	21%	100		
	Mixed	10%	200		
	Surface or low	69%	30		
<a href="#">Alpine meadows and barrens</a>	Replacement	100%	200	200	400
<b>Southwest</b>					
<ul style="list-style-type: none"> <li>• <a href="#">Southwest Grassland</a></li> <li>• <a href="#">Southwest Woodland</a></li> <li>• <a href="#">Southwest Forested</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
Southwest Grassland					
<a href="#">Shortgrass prairie</a>	Replacement	87%	12	2	35
	Mixed	13%	80		
<a href="#">Shortgrass prairie with shrubs</a>	Replacement	80%	15	2	35
	Mixed	20%	60		
<a href="#">Shortgrass prairie with trees</a>	Replacement	80%	15	2	35
	Mixed	20%	60		
<a href="#">Plains mesa grassland</a>	Replacement	81%	20	3	30
	Mixed	19%	85	3	150

<a href="#">Plains mesa grassland with shrubs or trees</a>	Replacement	76%	20		
	Mixed	24%	65		
<a href="#">Montane and subalpine grasslands</a>	Replacement	55%	18	10	100
	Surface or low	45%	22		
<a href="#">Montane and subalpine grasslands with shrubs or trees</a>	Replacement	30%	70	10	100
	Surface or low	70%	30		
<b>Southwest Woodland</b>					
<a href="#">Pinyon-juniper (mixed fire regime)</a>	Replacement	29%	430		
	Mixed	65%	192		
	Surface or low	6%	>1,000		
<a href="#">Pinyon-juniper (rare replacement fire regime)</a>	Replacement	76%	526		
	Mixed	20%	>1,000		
	Surface or low	4%	>1,000		
<a href="#">Ponderosa pine/grassland (Southwest)</a>	Replacement	3%	300		
	Surface or low	97%	10		
<b>Southwest Forested</b>					
<a href="#">Riparian forest with conifers</a>	Replacement	100%	435	300	550
<a href="#">Riparian deciduous woodland</a>	Replacement	50%	110	15	200
	Mixed	20%	275	25	
	Surface or low	30%	180	10	
<b>Great Basin</b>					
<ul style="list-style-type: none"> <li><a href="#">Great Basin Grassland</a></li> <li><a href="#">Great Basin Forested</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
<b>Great Basin Grassland</b>					
<a href="#">Great Basin grassland</a>	Replacement	33%	75	40	110
	Mixed	67%	37	20	54

<a href="#">Mountain meadow (mesic to dry)</a>	Replacement	66%	31	15	45
	Mixed	34%	59	30	90
<b>Great Basin Forested</b>					
<a href="#">Interior ponderosa pine</a>	Replacement	5%	161		800
	Mixed	10%	80	50	80
	Surface or low	86%	9	8	10
<a href="#">Ponderosa pine-Douglas-fir</a>	Replacement	10%	250		≥1,000
	Mixed	51%	50	50	130
	Surface or low	39%	65	15	
<a href="#">Aspen with spruce-fir</a>	Replacement	38%	75	40	90
	Mixed	38%	75	40	
	Surface or low	23%	125	30	250
<b>Northern and Central Rockies</b>					
<ul style="list-style-type: none"> <li>• <a href="#">Northern and Central Rockies Grassland</a></li> <li>• <a href="#">Northern and Central Rockies Shrubland</a></li> <li>• <a href="#">Northern and Central Rockies Forested</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
<b>Northern and Central Rockies Grassland</b>					
<a href="#">Northern prairie grassland</a>	Replacement	55%	22	2	40
	Mixed	45%	27	10	50
<a href="#">Mountain grassland</a>	Replacement	60%	20	10	
	Mixed	40%	30		
<b>Northern and Central Rockies Shrubland</b>					
<a href="#">Riparian (Wyoming)</a>	Mixed	100%	100	25	500
<a href="#">Wyoming big sagebrush</a>	Replacement	63%	145	80	240
	Mixed	37%	250		
<a href="#">Basin big sagebrush</a>	Replacement	60%	100	10	150
	Mixed	40%	150		

<a href="#">Low sagebrush shrubland</a>	Replacement	100%	125	60	150
<a href="#">Mountain big sagebrush steppe and shrubland</a>	Replacement	100%	70	30	200
<b>Northern and Central Rockies Forested</b>					
<a href="#">Ponderosa pine (Northern Great Plains)]</a>	Replacement	5%	300		
	Mixed	20%	75		
	Surface or low	75%	20	10	40
<a href="#">Ponderosa pine (Black Hills, low elevation)</a>	Replacement	7%	300	200	400
	Mixed	21%	100	50	400
	Surface or low	71%	30	5	50
<a href="#">Ponderosa pine (Black Hills, high elevation)</a>	Replacement	12%	300		
	Mixed	18%	200		
	Surface or low	71%	50		
<a href="#">Upper subalpine spruce-fir (Central Rockies)</a>	Replacement	100%	300	100	600
<b>Northern Great Plains</b>					
<ul style="list-style-type: none"> <li>• <a href="#">Northern Plains Grassland</a></li> <li>• <a href="#">Northern Plains Woodland</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
<b>Northern Plains Grassland</b>					
<a href="#">Nebraska Sandhills prairie</a>	Replacement	58%	11	2	20
	Mixed	32%	20		
	Surface or low	10%	67		
<a href="#">Northern mixed-grass prairie</a>	Replacement	67%	15	8	25
	Mixed	33%	30	15	35
<a href="#">Southern mixed-grass prairie</a>	Replacement	100%	9	1	10
	Replacement	75%	5	3	5

<a href="#">Central tallgrass prairie</a>	Mixed	11%	34	1	100
	Surface or low	13%	28	1	50
<a href="#">Northern tallgrass prairie</a>	Replacement	90%	6.5	1	25
	Mixed	9%	63		
	Surface or low	2%	303		
<a href="#">Southern tallgrass prairie (East)</a>	Replacement	96%	4	1	10
	Mixed	1%	277		
	Surface or low	3%	135		
<a href="#">Oak savanna</a>	Replacement	7%	44		
	Mixed	17%	18		
	Surface or low	76%	4		
Northern Plains Woodland					
<a href="#">Great Plains floodplain</a>	Replacement	100%	500		
<b>Great Lakes</b>					
<ul style="list-style-type: none"> <li>• <a href="#">Great Lakes Grassland</a></li> <li>• <a href="#">Great Lakes Woodland</a></li> <li>• <a href="#">Great Lakes Forested</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
Great Lakes Grassland					
<a href="#">Mosaic of bluestem prairie and oak-hickory</a>	Replacement	79%	5	1	8
	Mixed	2%	260		
	Surface or low	20%	2		33
Great Lakes Woodland					
<a href="#">Northern oak savanna</a>	Replacement	4%	110	50	500
	Mixed	9%	50	15	150
	Surface or low	87%	5	1	20
Great Lakes Forested					
<a href="#">Northern hardwood maple-beech-eastern</a>	Replacement	60%	>1,000		

<a href="#">hemlock</a>	Mixed	40%	>1,000		
<a href="#">Maple-basswood-oak-aspen</a>	Replacement	4%	769		
	Mixed	7%	476		
	Surface or low	89%	35		
<b>Northeast</b>					
<ul style="list-style-type: none"> <li><a href="#">Northeast Grassland</a></li> <li><a href="#">Northeast Woodland</a></li> <li><a href="#">Northeast Forested</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)
Northeast Grassland					
<a href="#">Northern coastal marsh</a>	Replacement	97%	7	2	50
	Mixed	3%	265	20	
Northeast Woodland					
<a href="#">Eastern woodland mosaic</a>	Replacement	2%	200	100	300
	Mixed	9%	40	20	60
	Surface or low	89%	4	1	7
Northeast Forested					
<a href="#">Northern hardwoods (Northeast)</a>	Replacement	39%	≥1,000		
	Mixed	61%	650		
<a href="#">Appalachian oak forest (dry-mesic)</a>	Replacement	2%	625	500	≥1,000
	Mixed	6%	250	200	500
	Surface or low	92%	15	7	26
<b>South-central US</b>					
<ul style="list-style-type: none"> <li><a href="#">South-central US Grassland</a></li> <li><a href="#">South-central US Shrubland</a></li> <li><a href="#">South-central US Forested</a></li> </ul>					
Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)

## South-central US Grassland

<a href="#">Bluestem-sacahuista</a>	Replacement	70%	3.6	1	
	Mixed	30%	7.7	2	
<a href="#">Blackland prairie</a>	Replacement	96%	4		
	Surface or low	4%	100		
<a href="#">Southern shortgrass or mixed-grass prairie</a>	Replacement	100%	8	1	10
<a href="#">Southern tallgrass prairie</a>	Replacement	91%	5		
	Mixed	9%	50		
<a href="#">Oak savanna</a>	Replacement	3%	100	5	110
	Mixed	5%	60	5	250
	Surface or low	93%	3	1	4

## South-central US Shrubland

<a href="#">Shinnery oak-mixed grass</a>	Replacement	96%	7		
	Mixed	4%	150		
<a href="#">Shinnery oak-tallgrass</a>	Replacement	93%	7		
	Mixed	7%	100		

## South-central US Forested

<a href="#">Cross Timbers</a>	Replacement	3%	170		
	Mixed	2%	250		
	Surface or low	94%	6		

## Southern Appalachians

- [Southern Appalachians Grassland](#)
- [Southern Appalachians Forested](#)

Vegetation Community ( <a href="#">Potential Natural Vegetation</a> Group)	Fire severity*	Fire regime characteristics			
		Percent of fires	Mean interval (years)	Minimum interval (years)	Maximum interval (years)

## Southern Appalachians Grassland

<a href="#">Bluestem-oak barrens</a>	Replacement	46%	15		
	Mixed	10%	69		
	Surface or low	44%	16		

<a href="#">Eastern prairie-woodland mosaic</a>	Replacement	50%	10		
	Mixed	1%	900		
	Surface or low	50%	10		
Southern Appalachians Forested					
<a href="#">Bottomland hardwood forest</a>	Replacement	25%	435	200	≥1,000
	Mixed	24%	455	150	500
	Surface or low	51%	210	50	250
<a href="#">Mixed mesophytic hardwood</a>	Replacement	11%	665		
	Mixed	10%	715		
	Surface or low	79%	90		
<a href="#">Appalachian oak-hickory-pine</a>	Replacement	3%	180	30	500
	Mixed	8%	65	15	150
	Surface or low	89%	6	3	10
*Fire Severities—					
<b>Replacement:</b> Any fire that causes greater than 75% top removal of a vegetation-fuel type, resulting in general replacement of existing vegetation; may or may not cause a lethal effect on the plants.					
<b>Mixed:</b> Any fire burning more than 5% of an area that does not qualify as a replacement, surface, or low-severity fire; includes mosaic and other fires that are intermediate in effects.					
<b>Surface or low:</b> Any fire that causes less than 25% upper layer replacement and/or removal in a vegetation-fuel class but burns 5% or more of the area [ <a href="#">36,54</a> ].					

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