

11400

Northern Rocky Mountain Subalpine-Upper Montane Grassland

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
Jenifer Hutchinson	jlhutchinson@fs.fed.us	None	None
Dave Swanson	dkswanson@fs.fed.us	None	None
None	None	None	None

Vegetation Type

Herbaceous

Map Zone

9

Geographic Range

In LANDFIRE map zone (MZ) 9, *Festuca viridula* grasslands are found primarily in Wallowa Mountains with only a few occurrences in the northern Blue Mountains in Oregon. *Festuca viridula* is also found in the Rocky Mountains of Canada and northern Idaho and the Cascade Mountains in Oregon.

Biophysical Site Description

BpS generally occurs on high-elevation (6,300-8,400ft) basalt ridges on all aspects. Usually on deep soils (>32in) formed in basalt colluvium, loess, and volcanic ash (Johnson 1994).

Vegetation Description

This type is typically dominated by *Festuca viridula*. Stringers of *Abies lasiocarpa* and *Pinus albicaulis* are adjacent. Pristine *Festuca viridula* grasslands have a nearly continuous sod mat of this species with interspaces consisting of litter with virtually no bare ground. Other species such as *Lupinus* spp., *Juncus parryi*, *Carex* spp, *Penstemon* species, and *Achnatherum occidentale* are minor components.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
FEVI	<i>Festuca viridula</i>	Greenleaf fescue
ABLAL	<i>Abies lasiocarpa</i> var. <i>lasiocarpa</i>	Subalpine fir

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

Late season fires may damage *Festuca viridula* plants. It is possible that lack of fire has promoted invasion by *Abies lasiocarpa* and *Pinus albicaulis* (Johnson and Claustnitzer 1992).

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	667	69		
Moderate (Mixed)	1473	31		
Low (Surface)				
All Fires	459	100		

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

This type occurs on subalpine ridgetops, so the patch size is never large.

Adjacency or Identification Concerns

Grazing has degraded the majority of *Festuca viridula* grasslands in the past. Presently, the majority of these grasslands are protected as wilderness.

Issues or Problems

This type lacks fire history data. Overgrazing can cause soil erosion and an increase in forbs and other grass-like species such as *Lupinus* spp, *Juncus parryi*, *Carex* species, *Achnatherum occidentale*, and *Penstemon* species.

Native Uncharacteristic Conditions

Comments

Kori Blankenship edited this model in February 2019 because the Early class averaged less than 1% of the landscape. Blankenship combined the Early and Mid seral states and increased the probability of alternate succession from .001 to .002. This maintained the proportion of the Late state. The revised two box model aligns with all other models for this type, which have two box models, and will likely be more mappable.

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41 - 50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	B	B	B	B	B	B	B	B	B	B
Shrub	0.5-1.0	B	B	B	B	B	B	B	B	B	B
Shrub	1.0-3.0	B	B	B	B	B	B	B	B	B	B
Shrub	>3.0	B	B	B	B	B	B	B	B	B	B
Tree	0-5	B	B	B	B	B	B	B	B	B	B
Tree	5-10	B	B	B	B	B	B	B	B	B	B
Tree	10-25	B	B	B	B	B	B	B	B	B	B
Tree	25-50	B	B	B	B	B	B	B	B	B	B
Tree	>50	B	B	B	B	B	B	B	B	B	B

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
FEVI	<i>Festuca viridula</i>	Greenleaf fescue	All
LUPIN	<i>Lupinus</i>	Lupine	All
JUPA	<i>Juncus parryi</i>	Parry's rush	All
ACOCO	<i>Achnatherum occidentale</i> ssp. <i>occidentale</i>	Western needlegrass	All

Description

FRI is unknown but probably much longer than adjacent woodlands. If fire were to occur in an intact system, it would most likely burn off litter and dry or dead portions of *Festuca viridula*. Some mortality could occur. Bare ground would be exposed in the interspaces, and openings would be created by minimal *Festuca viridula* mortality. There would be a temporary increase in other components of the community, such as *Lupinus* spp, *Juncus parryi*, and *Achnatherum occidentale*, as well as a temporary increase of annual forbs.

This is pristine green fescue habitat in a range of habitat conditions: from optimal, which has deep soil with moderate to high water-holding capacity, to the most xeric sites, which are represented by FEVI-JUPA. Forbs and graminoids (includes rushes, sedges, and grasses) are generally represented in small percentages of cover.

Maximum Tree Size Class

None

Class B 20 Late Development 1 - Open
Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ABLAL	<i>Abies lasiocarpa</i> var. <i>lasiocarpa</i>	Subalpine fir	Middle
PIAL	<i>Pinus albicaulis</i>	Whitebark pine	Upper
FEVI	<i>Festuca viridula</i>	Greenleaf fescue	Lower
ARAC2	<i>Arenaria aculeate</i>	Prickly sandwort	Lower

Description

Includes all seral phases of ABLA and ABLA climax, in the absence of disturbance agents. Green fescue is represented by 5-20% cover. This box represents conifer invasion into parkland and can return to parkland through disturbance agents such as fire, insects, and disease. FRI is based on Agee 1993.

Maximum Tree Size Class

Medium 9-21" DBH

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Early1:ALL	999
Late1:OPN	1	Late1:OPN	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Replacement Fire	Early1:ALL	Early1:ALL	0.001	1000	Yes	0
Alternative Succession	Early1:ALL	Late1:OPN	0.002	500	Yes	0
Mixed Fire	Late1:OPN	Late1:OPN	0.0035	286	No	0
Replacement Fire	Late1:OPN	Early1:ALL	0.0035	286	Yes	0
Insects or Disease	Late1:OPN	Early1:ALL	0.005	200	Yes	0

References

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