11390

Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland

BpS Model/Description Version: Aug. 2020

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| **Modelers** |  | **Reviewers** |  |
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|  |  |  |  |

Vegetation Type

Herbaceous

Map Zones

18

Geographic Range

Subalpine areas in the Blue Mountains and Northern Rocky Mountains, extending into the Canadian Rockies

Biophysical Site Description

This BpS generally occurs on gentle (<30%) northerly aspects above 4000ft, gentle southerly aspects in the montane zone and steep (>30%) southerly aspects in the upper montane zone. These dry grasslands are small meadows to large open parks surrounded by conifer trees but lack tree cover within them. Generally, the soil textures are much finer and soils are often deeper under grasslands than in the neighboring forests. These northern montane grasslands represent a shift in the precipitation regime from summer monsoons and cold snowy winters found in the southern Rockies to predominantly dry summer and winter rains. Montane grasslands are very similar and intergrade with their subalpine counterparts but are separated here to represent those species that do not occur at higher altitudes. This BpS is typically dominated by one or more perennial bunchgrasses (e.g., *Festuca idahoensis*) but may contain a strong forb component on more mesic sites. Its distribution is largely the product of low precipitation cause by the rain shadow of the Cascades Mountains, though timing or precipitation and soils are also important drivers (Daubenmire 1970). Climatically this vegetation zone is semi-arid with warm dry summers and relatively cold winters (Franklin and Dryness 1988).

Vegetation Description

It is typically dominated by one or more perennial bunchgrasses including *Festuca idahoensis* or *F. compestris*, *Pseudoroegneria spicata* and *Koeleria macrantha*. This BpS also includes a strong forb component including *Balsamorhiza sagittata*, *Hieracium cynoglossoides*, *Lupinus serciceus*, *Lupinus latifolius*, and *Symphoricarpus alba*. *Rosa* spp. may be present in late seral stages.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| FEID | *Festuca idahoensis* | Idaho fescue |
| FECA4 | *Festuca campestris* | Rough fescue |
| BASA3 | *Balsamorhiza sagittata* | Arrowleaf balsamroot |
| KOMA | *Koeleria macrantha* | Prairie junegrass |

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

Disturbance Description

Grasslands retain little evidence of historic fire regimes. Native Americans likely played a role in fire occurrence near populated areas, but the evidence is inconclusive as to their impact at a larger spatial scale and it is likely that fuel conditions and weather were more important drivers of historic fire regimes (Whitlock and Knox c. 2002). Grasslands in this area may have enough fuel to burn annually, but probably did not because of low flammability early in the season and lack of fire starts across grasslands late in the season (Agee 1994). Natural fire frequency was likely no greater than adjacent forest types. Response to fire varies, with Idaho fescue susceptible to mortality if fuel load allows smoldering of the root crown to occur. Following fire, the BpS typically exhibits an increase in forb cover (Agee 1994).

The rangelands of the planning area and many of the major perennial grasses (e.g., bluebunch wheatgrass and Idaho fescue) did not evolve with substantial ungulate grazing (Daubenmire 1970).

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 50 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 50 | 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 fingers up into the montane forests on steep southerly slopes and shallow soils. These patches are often too small to map and may be overlooked. Burn size is variable and patchy with topography and distribution of rock and riparian areas influencing fire spread.

Adjacency or Identification Concerns

Long periods of no fire may lead to a shrub dominated type in some areas, particularly in mesic ecotones.

Issues or Problems

There is no fire history data for this BpS.

This BpS closely resembles BpS 1140 (MZ18)

Native Uncharacteristic Conditions

Comments

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 | B | B | B | B | B | B |
| Herb | 0.5-1.0 | A | A | A | A | B | B | B | B | B | B |
| Herb | >1.0 | A | A | A | A | B | B | B | B | B | B |
| Shrub | 0-0.5 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Shrub | >3.0 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 0-5 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |

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**

Class A 7 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |
| POSA | Poa saltuensis | Oldpasture bluegrass | Upper |
| EPILO | Epilobium | Willowherb | Upper |
| FEID | Festuca idahoensis | Idaho fescue | Low-Mid |

Description

This early seral community follows a top kill event in which cover of bunch grasses and perennial forbs has been reduced. Forb composition is relatively higher in this stage than at later stages with increased occurrence of *Colinsia*, *Lupinus*, *Epilobium*, *Balsamorhiza*, Geum, and Potentilla. Poa and Vulpia may also increase.

*Maximum Tree Size Class*  
None

Class B 60 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| FEID | Festuca idahoensis | Idaho fescue | Mid-Upper |
| LUPIN | Lupinus | Lupine | Upper |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |
| KOMA | Koeleria macrantha | Prairie junegrass | Mid-Upper |

Description

Very little bare ground, litter cover is high. Plants are vigorous and well established. Fires are rarely lethal, and the community responds quickly to fire. Cover values are high.

*Maximum Tree Size Class*  
None

Class C 33 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| SYAL | Symphoricarpos albus | Common snowberry | Upper |
| ROSA | Rorippa sarmentosa | Longrunner | Upper |
| CRDO2 | Crataegus douglasii | Black hawthorn | Mid-Upper |
| FEID | Festuca idahoensis | Idaho fescue | Low-Mid |

Description

Open shrubland resulting from long absences of fire. Shrub component has largely encroached from adjacent deciduous shrublands. These sites are often more mesic.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 4 |
| Mid1:CLS | 5 | Mid1:OPN | 64 |
| Mid1:OPN | 65 | Mid1: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 | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.013 | 77 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.025 | 40 | Yes | 0 |

References

Agee, J.K. 1994. Fire and weather disturbances in terrestrial ecosystems of the eastern Cascades. Gen. Tech. Rep. PNW-GTR-320. Portland OR: USDA Forest Service 52 pp.

Daubenmire, R. 1970. Steppe vegetation of Washington. Was. Agric. Exp. Stn. Tech. Bull. 62, 131 pp., illus.

Franklin, J.F. and C.T. Dyrness. 1988. Natural vegetation of Oregon and Washington. Oregon State University Press, 452 pp.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

USDA-NRCS. 2005. The PLANTS Database (http://plants.usda.gov, 2005). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Whitlock, C. and M.A. Knox c. 2002. Prehistoric burning in the Pacific Northwest: human versus climatic influences. Fire, native peoples, and the natural landscape. Washington D.C. Island Press.