11400

Northern Rocky Mountain Subalpine-Upper Montane Grassland

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
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Vegetation Type

Herbaceous

Map Zones

20

Geographic Range

Northern ID, western MT and eastern WA. In MZ20, this system is very limited in extent.

In MZ20, this probably only occurs in some of the more mountainous areas – i.e. MLRA 43B Central Rocky Mountains, which corresponds to subsection M332Db, and just below Havre in 331Ka. This BpS might also be just creeping into MZ20 from the corners of MZ19, on the southwest corner of MZ20.

Biophysical Site Description

This is a high-elevation (>6,000ft), dry grassland system dominated by perennial grasses and forbs, on dry sites particularly south-facing slopes. Subalpine grasslands are small meadows to large open parks surrounded by conifer trees but lack tree cover within them. In general soil textures are much finer, and soils are often deeper under grasslands than in the neighboring forests. Sites are often wind-swept, resulting in lack of snowpack and summer drought (Daubenmire 1981).

Vegetation Description

Typical dominant species include *Festuca viridula* (not in MZ20), *Festuca idahoensis*, *Aster* spp., *Eriogonum* spp., *Lupinus* spp., and *Xerophyllum tenax*. Rough fescue is present in MZ20. Bluebunch also wouldn't be present in MZ20 - would occur on much drier slopes. Would have Richardson's needlegrass, western needlegrass, and Letterman's needlegrass. Also in MZ20 - *Balsamorhiza sagittata*, *Bromus marginatus*, *Carex* spp., *Geranium viscossimum*, and *Geum triforum* (mesic forbs).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| FECA4 | *Festuca campestris* | Rough fescue |
| FEID | *Festuca idahoensis* | Idaho fescue |
| ASTER | *Aster* | Aster |
| ERIOG | *Eriogonum* | Buckwheat |
| ACRI8 | *Achnatherum richardsonii* | Richardson's needlegrass |
| KOMA | *Koeleria macrantha* | Prairie junegrass |
| TRSP2 | *Trisetum spicatum* | Spike trisetum |
| BASA3 | *Balsamorhiza sagittata* | Arrowleaf balsamroot |

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

Disturbance Description

Fire regimes are probably similar to adjacent forested vegetation, and will generally be long interval, stand replacement regimes (Fire Regime Group IV). Fires may finger into this system from adjacent forests. However, fire scarred lodgepole pine and other species with MFIs of 20-30yrs are commonly encountered; lightning may well have provided more opportunity in this flammable type than in adjacent forest, plus Indian fire use likely occurred in some areas for management of campsites, travel zones, hunting areas and horse grazing purposes.

There is some question as to whether this should have a shorter fire return interval. However, other mapzones modeled this system with a long FRI, it is a high elevation system with few trees and it is described by NatureServe as "upper montane to subalpine, high-elevation, lush grassland system dominated by perennial grasses and forbs on dry sites… subalpine dry grasslands…" However, the low end of the MFI range could go as low as 40yrs, given the inclusion of dry low-elevation grasses in this model, but the inclusion of moist-high elevation XETE definitely argues for a higher MFI. The modeled MFI is similar to the MFI chosen for MZ20's 1145, since the range could vary greatly and due to both of the systems' ambiguous descriptions.

Conifer encroachment is not common due to the drought nature of these grasslands, but undoubtedly fire also plays some role in preventing conifer encroachment. This system is a climatic climax - site maintained grassland system.

Historically, sheep grazing probably occurred more frequently than currently.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 80 | 100 | 40 | 200 |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 80 | 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

Patches are typically tens to hundreds of acres.

Adjacency or Identification Concerns

Historical sheep grazing may have occurred in these systems. The cumulative effects are unknown.

Current grazing is by cattle.

Timothy is a prominent invader in this system in MZ20.

Issues or Problems

Native Uncharacteristic Conditions

Comments

This model for MZ20 was adapted from the same BpS from MZ19 created by Katie Phillips, Randall Walker and Larry Kaiser. Two of the original modelers' names were retained, as most of the model was theirs (at request of MZ20 modeler).

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 | B | B | B | B | B | B | B |
| Herb | 0.5-1.0 | A | A | A | B | B | B | B | B | B | B |
| Herb | >1.0 | A | A | A | B | B | B | B | B | B | B |
| Shrub | 0-0.5 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 0-5 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | B | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | B | 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 5 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| FECA4 | Festuca campestris | Rough fescue | Upper |
| FEID | Festuca idahoensis | Idaho fescue | Upper |
| ACOC3 | Achnatherum occidentale | Western needlegrass | Upper |
| BASA | Baccharis salicina | Great plains false willow | Upper |

Description

Post-replacement disturbance conditions dominated by herbs and sprouting grasses including rough fescue, Idaho fescue, and *Epilobium* spp.

*Maximum Tree Size Class*  
None

Class B 95 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| FECA4 | Festuca campestris | Rough fescue | Upper |
| FEID | Festuca idahoensis | Idaho fescue | Upper |
| ACOC3 | Achnatherum occidentale | Western needlegrass | Upper |
| BASA | Baccharis salicina | Great plains false willow | Upper |

Description

Closed herbaceous cover including rough fescue and Idaho fescue. Low shrubs may be present, particularly mountain big sagebrush, *Erigonum* spp., and *Phlox* spp.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Late1:CLS | 4 |
| Late1:CLS | 5 | Late1:CLS | 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 | Late1:CLS | Early1:ALL | 0.0133 | 75 | Yes | 0 |

References

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