11390

Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland

BpS Model/Description Version: Aug. 2020

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Elena Contreras | econtreras@tnc.org | None | None |
| None | None | None | None |
| None | None | None | None |

Vegetation Type

Herbaceous

Map Zones

29

Geographic Range

Northern Rockies throughout MT, northern ID. May occupy river valleys, including the Salmon, Snake and Clearwater Rivers. Drier portions of this type will resemble bluebunch wheatgrass communities in Columbia Basin.

In MZ20, this system occurs along the western and southern borders, in NRCS's MLRA-46 Northern Rocky Mountain Foothills. - in subsections 331Da, 331Kj, eastern portion of 331Kh

This occurs around the fringes of the Wind River Range (MZ22), the eastern bighorn foothills (MZ29), and the edges of the Ferris Mountains. (MZ 29). NatureServe states that this occurs around the edges of Wind Rivers and Bighorns.

Biophysical Site Description

This type occupies productive uplands below lower treeline or in small pockets where cold air drainage or shallow soils inhibit conifer growth, generally ranging from 1,000-5,000ft. In MZ20, elevation would be approximately 2,200-5,000ft.

Elevation and aspect affect the precipitation and temperature, due to changes in foothills slopes.

Vegetation Description

This type is dominated by rough fescue or bluebunch wheatgrass with Idaho fescue as a less dominant in MZ20 and rough fescue as dominant associates. Bluebunch wheatgrass is more prevalent in drier areas. When dominated by bluebunch wheatgrass, not as much canopy. Mueggler and Stewart (1980) have described these types as: Agsp/Posa, FEID/Agsp and Fesc/Agsp. Additional species include needle-and-thread grass and Sandberg bluegrass, and a variety of mesic forbs (eg, showy cinquefoil, sticky geranium, phlox, lupine and yarrow). In MZ20, very little phlox, needle-and-thread and Sandberg bluegrass. In MZ20, more stoneseed.

For MZ20, additional species include Columbia needlegrass, green needlegrass, slender wheatgrass, thickspike wheatgrass and little bluestem. More spike fescue in southern area near M332Dc. North end has rough fescue (around subsections 331Da, parts of 331Kh,I,j), but central and south don't have rough fescue. Central and south still have bluebunch and Idaho fescue (as does north).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PSSP6 | *Pseudoroegneria spicata* | Bluebunch wheatgrass |
| FEID | *Festuca idahoensis* | Idaho fescue |
| FECA4 | *Festuca campestris* | Rough fescue |
| ACNE9 | *Achnatherum nelsonii* | Columbia needlegrass |
| LEKI2 | *Leucopoa kingii* | Spike fescue |
| SCHIZ4 | *Schizachyrium* | Little bluestem |
| ELMA7 | *Elymus macrourus* | Thickspike wheatgrass |
| ELTR7 | *Elymus trachycaulus* | Slender wheatgrass |

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

Disturbance Description

This type has frequent replacement fires. Most species in this type are fire adapted and respond favorably to these fire types.

Where these systems occur near forested ecosystems, fire frequency will be strongly influenced by the adjacent forest's fire regime (eg, 10-20yrs). Where these systems occur below lower treeline, fire frequencies may be longer (eg, 20-30yrs), for an overall average of between 10-30yrs. The literature in FEIS suggests a MFRI of between 10-30yrs for this type.

In MZ22, fires would likely start in adjacent forests and burn through this type slowly, because fuel loading is generally low. Fires in this system are likely highly influenced by adjacent types. Fires could have ranged in this system from 10 to 100s of yrs.

For MZ29, the FRI was chosen to be between that of original models from MZ20, MZ21, MZ22: 20, 30, 66 respectively. An FRI of 35yrs was chosen.

It is thought that there could have been Native American fire influence in many valleys and therefore FRI might be approximately 15yrs. However, it was modeled at 20yrs for MZ20 originally.

Bison impact was prominent in the late fall and summer periods, depending on precipitation patterns.

Mormon crickets, grasshoppers might have had more of an impact in this system than currently defined, but unsure of historic impact and frequency. Therefore, this was not modeled.

Drought also occurs in this BpS. Drought probably occurs less frequently than in BpS 1141 due to more consistent precipitation patterns, more snow and higher elevation.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 35 | 100 | 10 | 100 |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 35 | 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 can occupy broad expanses and also narrow bands below the lower montane forest. In large valleys, fires may have been expansive historically, up to thousands of acres. In MZ20, there are no large valleys.

Adjacency or Identification Concerns

This variant of the BpS for MZ20 is different from the other mapzones - ie: MZ19, as plant species differ and precipitation. Since this is a broad type, the dry bluebunch wheatgrass-needle and thread variant (in MZ20 it's a bluebunch wheatgrass-thickspike wheatgrass variant) will probably have more bareground and a slightly higher MFRI. Response to fire may differ slightly also, as needle-and-thread is more sensitive to fire.

Non-native species present today can include spotted knapweed, leafy spurge, Japanese brome, Kentucky and Canada bluegrass, timothy, smooth brome and hounds tongue.

Without fire and poor grazing management today, creeping juniper can invade this BpS.

In WY this is distinguished from northwest Great Plains mixedgrass prairie by 1) presence of *Festuca idahoensis*, 2) lack of *Bouteloua gracilis*, 3) presence of *Carex rossii* and 4) presence of *Artemisia nova* or *Artemisia tripartita* ssp. *rupicola*. In this case, it’s not northwest Great Plains mixedgrass prairie; it’s where northwest Great Plains mixedgrass is transitioning with PASSMI fingering up into foothills.

The foothill-montane would be the transitional system around the Pryors - between plains/grassland/shrubland transitioning into limber pine, Rocky Mountain juniper and lower elevation Douglas-fir. In BpS 1140, we're describing above treeline vegetation. So foothill/lowermontane would have a shorter FRI, and BpS 1140 subalpine would have a longer FRI.

Issues or Problems

This is a highly variable type, which includes most of Mueggler and Stewart's habitat types. The Lewis and Clark range type classification needs to be incorporated into this model also.

Native Uncharacteristic Conditions

Unlikely to see bare ground in this BpS. Although herbaceous cover might not exceed 50%, the remainder is litter and/or rocks.

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 | B | B | B | B | UN | UN | UN | UN |
| Herb | 0.5-1.0 | A | A | B | B | B | B | UN | UN | UN | UN |
| Herb | >1.0 | UN | UN | B | B | B | B | UN | UN | UN | UN |
| Shrub | 0-0.5 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 0-5 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | UN | 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 8 Early Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| FECA4 | Festuca campestris | Rough fescue | Upper |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |
| ACNE9 | Achnatherum nelsonii | Columbia needlegrass | Mid-Upper |
| LEKI2 | Leucopoa kingii | Spike fescue | Low-Mid |

Description

Post fire, early seral community dominated by bunchgrasses and forbs. Herbs and forbs will generally have higher cover than pre-burn and may include astragalus, balsamroot, lupines, yarrow, and *Thermopsis rhombifolia*. Wild onion might also come in after fire. Shrubs might be present at 0-5% in some areas. Shrub species may include *Potentilla freticosa*, *Artemisia tridentada* (mountain big sagebrush supspecies), *Symphorocarpus*, fringed sagewort, and mountain silver sagebrush (Artemisia cana). On shallow, silty sites, shrubs such as skunkbush sumac, creeping juniper and yucca are present.

*Maximum Tree Size Class*  
None

Class B 92 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| FECA4 | Festuca campestris | Rough fescue | Upper |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |
| FEID | Festuca idahoensis | Idaho fescue | Low-Mid |
| LEKI2 | Leucopoa kingii | Spike fescue | Low-Mid |

Description

Mid-late-development with moderate canopy closure dominated by bunchgrasses with forb cover generally higher than pre-burn. The late development stage has a closed canopy of grasses and forbs. Bunchgrasses dominate with low densities of shrubs (<15%) in some areas, particularly where this BpS transitions to shrub or tree-dominated communities. Shrub species may include *Potentilla freticosa*, *Artemisia tridentada* (mountain big sagebrush supspecies), *Symphorocarpus*, fringed sagewort, and mountain silver sagebrush (*Artemisia cana*). On shallow, silty sites, shrubs such as skunkbush sumac, creeping juniper and yucca are present.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Mid1:CLS | 3 |
| Mid1:CLS | 4 | Mid1: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 | Early1:OPN | Early1:OPN | 0.0286 | 35 | Yes | 0 |
| Wind or Weather or Stress | Early1:OPN | Early1:OPN | 0.0667 | 15 | No | 0 |
| Native Grazing | Early1:OPN | Early1:OPN | 0.2 | 5 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:OPN | 0.0286 | 35 | Yes | 0 |
| Wind or Weather or Stress | Mid1:CLS | Mid1:CLS | 0.0667 | 15 | No | 0 |
| Native Grazing | Mid1:CLS | Mid1:CLS | 0.2 | 5 | No | 0 |

References

Agee 1994. Fire and weather disturbances in terrestrial ecosystems of the eastern Cascades. In: P. Hessburg, ed. Volume III: Assessment. Eastside Forest Ecosystem Health Assessment. PNW-GTR-320. USDA Forest Service Pacific Northwest Research Station General Technical Report.

Daubenmire, R. and J.B. Daubenmire. 1968. Forest vegetation of eastern Washington and northern Idaho. Technical Bulletin 60. Pullman, WA: Washington State University, Agricultural Experiment Station. 104 pp.

Mueggler, W.F. and W.L. Stewart. 1980. Grassland and shrubland habitat types of western Montana. Gen. Tech. Rep. INT-66. Ogden, UT: USDA Forest Service, Intermountain Forest and Range Experiment Station, 154 pp.

NatureServe. 2006. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 18 July 2006.

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

USDA-NRCS. 2003. eFOTG: Electronic Field Office Technical Guide. Available at: http://www.nrcs.usda.gov/technical/efotg/.