10860

Rocky Mountain Lower Montane-Foothill Shrubland

BpS Model/Description Version: Aug. 2020

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

Shrubland

Map Zone

28

Geographic Range

Foothills, canyon slopes, and lower mountains of the Rocky Mountains. The general information provided in this form is based on personal experience in the upper Rio Grande drainage (specifically the Rio Grande National Forest [Erhard]). The description here focuses more on true mountain-mahogany. Information in the Fire Effects Information System online database indicates that the central distribution of true mountain-mahogany is located on the west side of the Rocky Mountains in the foothills and mountains of Utah, Colorado, and Wyoming. The range of true mountain-mahogany also extends northward into Montana, eastward into South Dakota and Nebraska, southward from Oklahoma into Mexico, and westward into Arizona and Nevada. True mountain-mahogany occasionally occurs in Idaho and southwestern Oregon.

Biophysical Site Description

This biophysical setting (BpS) occurs in the transition zone between the foothill and montane life zones. It ranges from roughly 1,500-2,900m (4,950-9,570ft). This BpS occurs on relatively xeric sites with thinly to moderately well-developed soils on moderately steep to steep southerly aspects. This BpS is not intended to cover ocean spray (HODU)-dominated communities on extremely rocky sites (where vegetation is clearly subordinate to rock).

Vegetation Description

Species dominance varies depending on site conditions and geographic location. Shrubs include *Amelanchier utahensis*, *Cercocarpus montanus*, *Purshia tridentata*, *Rhus trilobata*, *Ribes cereum*, *Symphoricarpus oreophilus*, and *Yucca glauca*. Grasses may include species of *Bouteloua*, *Muhlenbergia*, *Hesperostipa*, and *Pseudoroegneria*. Species dominant in the upper Rio Grande drainage are true mountain-mahogany, several species of rabbitbrush, snowberry, and chokecherry. Gambel oak is not included here.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| CEMO2 | *Cercocarpus montanus* | Alderleaf mountain-mahogany |
| CHRYS9 | *Chrysothamnus* | Rabbitbrush |
| SYMPH | *Symphoricarpos* | Snowberry |
| PRVI | *Prunus virginiana* | Chokecherry |

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

Disturbance Description

Historically, this type may have been in a Fire Regime IV or II -- primarily moderate-interval (e.g., 20-50yrs) stand-replacement fires in the shrub-dominated layer. Nearly all the dominant species in this BpS have the capability to resprout after disturbance.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 74 | 74 |  |  |
| Moderate (Mixed) | 213 | 26 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 55 | 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

Erhard’s observations suggest that the scale of the most common disturbance extent is relatively small. The disturbance regime is expected to be relatively frequent under historical conditions. Scale estimate is in the hundreds of acres, not thousands of acres.

Adjacency or Identification Concerns

Shrub species vary by geographic location in this region. Shrub species dominance is tied to a variety of environmental conditions, including geology, soils, topographic position, etc., making a description of this generalized type problematic.

Issues or Problems

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 | 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 | C | C | B | B | B | B | B | B | B | B |
| Shrub | 0.5-1.0 | C | C | B | B | B | B | B | B | B | B |
| Shrub | 1.0-3.0 | D | D | E | E | E | E | E | E | E | E |
| Shrub | >3.0 | D | D | E | E | E | E | E | E | E | E |
| Tree | 0-5 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | 5-10 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | 10-25 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | 25-50 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | >50 | E | E | E | E | E | 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 14 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | Upper |
| MUMO | Muhlenbergia montana | Mountain muhly | Upper |

Description

Early succession, usually after moderately frequent stand-replacement fire. Grasses and forbs dominant.

*Maximum Tree Size Class*  
None

Class B 16 Mid Development 1 - Closed

Upper Layer Lifeform Is Not the Dominant Lifeform

BOGR2, herb short (0.4m) to herb medium (0.05-0.09 m). Canopy cover 0-20%.

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain-mahogany | Upper |
| CHRYS9 | Chrysothamnus | Rabbitbrush | Upper |
| BOGR2 | Bouteloua gracilis | Blue grama | Lower |
| MUMO | Muhlenbergia montana | Mountain muhly | Lower |

Description

Greater than 10% shrub cover (i.e., line intercept method) by weakly sprouting and seed-producing shrubs. Grasses/forbs dominant in scattered openings.

*Maximum Tree Size Class*  
None

Class C 6 Mid Development 1 - Open

Upper Layer Lifeform Is Not the Dominant Lifeform

BOGR2, herb short (0.05m) to herb medium (0.5-0.9m). Twenty to 60% canopy cover

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | Lower |
| MUMO | Muhlenbergia montana | Mountain muhly | Lower |
| CEMO | Centaurea montana | Perennial cornflower | Upper |
| CHRYS9 | Chrysothamnus | Rabbitbrush | Upper |

Description

Less than 10% shrub cover, with grasses/forbs dominant in extensive openings.

*Maximum Tree Size Class*  
None

Class D 10 Late Development 1 - Open

Upper Layer Lifeform Is Not the Dominant Lifeform

CEMO, shrub short (0.5-0.9m), shrub medium (1.0-2.9m).

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOGR2 | Bouteloua gracilis | Blue grama | Lower |
| CEMO | Centaurea montana | Perennial cornflower | Upper |
| MUMO | Muhlenbergia montana | Mountain muhly | Lower |
| CHRYS9 | Chrysothamnus | Rabbitbrush | Upper |

Description

Less than 10% shrub cover, with over-mature shrubs as patchy, dominant overstory (e.g., in rock outcrops). Grasses/forbs dominant in extensive openings.

*Maximum Tree Size Class*  
None

Class E 54 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain-mahogany | Upper |
| CHRYS9 | Chrysothamnus | Rabbitbrush | Upper |
| SYMPH | Symphoricarpos | Snowberry | Mid-Upper |
| BOGR2 | Bouteloua gracilis | Blue grama | Lower |

Description

Greater than 10% shrub cover. All age classes present, but dominated by over-mature shrubs (e.g., in rocky draws).

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 19 |
| Mid1:OPN | 20 | Mid1:CLS | 29 |
| Mid1:CLS | 20 | Late1:CLS | 39 |
| Late1:OPN | 40 | Late1:CLS | 59 |
| Late1:CLS | 40 | 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** |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.005 | 200 | No | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.015 | 67 | Yes | 0 |
| Alternative Succession | Early1:ALL | Mid1:OPN | 0.03 | 33 | Yes | 0 |
| Wind or Weather or Stress | Mid1:OPN | Mid1:OPN | 0.003 | 333 | No | 0 |
| Replacement Fire | Mid1:OPN | Mid1:OPN | 0.008 | 125 | No | 0 |
| Mixed Fire | Mid1:OPN | Mid1:OPN | 0.008 | 125 | No | 0 |
| Competition or Maintenance | Mid1:OPN | Mid1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Alternative Succession | Mid1:OPN | Late1:OPN | 0.015 | 67 | Yes | 0 |
| Competition or Maintenance | Mid1:CLS | Mid1:CLS | 0.001 | 1000 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Mid1:OPN | 0.005 | 200 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.005 | 200 | Yes | 0 |
| Alternative Succession | Mid1:CLS | Late1:OPN | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Mid1:CLS | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Late1:OPN | 0.003 | 333 | No | 0 |
| Mixed Fire | Late1:OPN | Mid1:OPN | 0.004 | 250 | Yes | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.004 | 250 | No | 0 |
| Replacement Fire | Late1:OPN | Late1:OPN | 0.008 | 125 | No | 0 |
| Competition or Maintenance | Late1:OPN | Late1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Late1:CLS | Mid1:OPN | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.003 | 333 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |

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