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

29

Geographic Range

This occurs in the Laramie Peak Range area of map zone (MZ) 29 (Chumley et al. 1998). Foothills, canyon slopes, and lower mountains of the Rocky Mountains. The description here focuses 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.

It occurs in every section of MZ22. It is questionable as to whether true mountain-mahogany exists in the Bighorn Basin.

Biophysical Site Description

This biophysical setting (BpS) ranges from roughly 4,400-8,500ft. This BpS occurs on relatively xeric sites with thinly to moderately well-developed soils on moderately steep to steep southerly aspects.

Vegetation Description

Species dominance varies depending on site conditions and geographic location. Shrubs include *Cercocarpus montanus*, *Amelanchier utahensis*, *Purshia tridentata*, *Rhus trilobata*, *Ribes cereum*, *Symphoriocarpus oreophilus*, *Yucca glauca*, sagebrush, bitterbrush, serviceberry, and rabbitbrush. Grasses may include species of *Hesperostipa*, *Pseudoroegneria spicata*, Indian ricegrass, and western wheatgrass.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| CEMO2 | *Cercocarpus montanus* | Alderleaf mountain-mahogany |
| ARTRV | *Artemisia tridentata ssp. vaseyana* | Mountain big sagebrush |
| PSSP6 | *Pseudoroegneria spicata* | Bluebunch wheatgrass |
| ACHY | *Achnatherum hymenoides* | Indian ricegrass |

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 Fire Regime Condition Class 4 -- primarily long-interval stand-replacement fires. Nearly all the dominant species other than sagebrush in this BpS have the capability to resprout after disturbance.

Drought and grazing by native ungulates also occur in this system.

*Cercocarpus montanus* is a vigorous sprouter after fire.

Fire size is mostly tens to hundreds of acres and is influenced by adjacent grass and mountain shrub types.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 105 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 105 | 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. Patch size of the system is in the hundreds of acres.

Fire size is mostly tens to hundreds of acres and is influenced by adjacent grass and mountain shrub types.

Adjacency or Identification Concerns

Cheatgrass is present in this system today.

There is occasionally Rocky Mountain juniper and limber pine encroachment into this system.

Issues or Problems

Native Uncharacteristic Conditions

Juniper invasion is uncharacteristic.

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 | UN | UN | UN | UN | UN | UN | UN |
| Herb | 0.5-1.0 | A | A | A | UN | UN | UN | UN | UN | UN | UN |
| Herb | >1.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0-0.5 | B | B | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | B | B | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | B | B | C | C | C | 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 5 Early Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain-mahogany | Upper |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |

Description

Early-seral community. Grasses and sprouting shrubs. Resprouts well after fire.

Herbaceous cover might be approximately 15%. Grasses and shrubs are probably the same height in this class. Shrub cover might be 0-5%. (The canopy cover of true mountain-mahogany resprouts was <3%, per plot data 18mo after a prescribed fire.)

Some grasses that might be present are needle-and-thread, bluebunch wheatgrass, Sandberg bluegrass, blue grama, and western wheatgrass. Hairy golden aster was the most dominant in a wide variety of forbs.

*Maximum Tree Size Class*  
None

Class B 9 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain-mahogany | Upper |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |

Description

Greater shrub cover. Grasses/forbs dominant in scattered openings.

*Maximum Tree Size Class*  
None

Class C 86 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain-mahogany | Upper |
| PSSP6 | Pseudoroegneria spicata | Bluebunch wheatgrass | Upper |

Description

Late-development stage with greater shrub cover. There are more dead and decadent shrubs. Herbaceous cover stays the same as in earlier classes. (In current conditions, tree encroachment might be occurring in this stage due to lack of fire.)

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Mid1:OPN | 5 |
| Mid1:OPN | 6 | Late1:OPN | 15 |
| Late1:OPN | 16 | 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** |
| Wind or Weather or Stress | Early1:OPN | Early1:OPN | 0.005 | 200 | No | 0 |
| Replacement Fire | Early1:OPN | Early1:OPN | 0.005 | 200 | Yes | 0 |
| Native Grazing | Early1:OPN | Early1:OPN | 0.005 | 200 | No | 0 |
| Wind or Weather or Stress | Mid1:OPN | Mid1:OPN | 0.005 | 200 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:OPN | 0.0067 | 149 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Late1:OPN | 0.003 | 333 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:OPN | 0.01 | 100 | Yes | 0 |

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