11060

Northern Rocky Mountain Montane-Foothill Deciduous Shrubland

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Destin Harrell | destin\_harrell@blm.gov |  |  |
| Jack Mononi | jack\_mononi@blm.gov |  |  |
| Jerry Jech | jerry\_jech@blm.gov |  |  |

Vegetation Type

Shrubland

Map Zones

22

Geographic Range

Minor but relatively widespread. Occurs throughout the Intermountain West and Northern Rockies. This type can be found in subsections 331Nc, M33LAr, M331Ah, M331Ai, 342Ac, M331Ba and M331Ad (Cleland et al. 2007).

Biophysical Site Description

This BpS occupies draws and foothills (all aspects) in the transition zone between grasslands/shrublands and forests, including aspen and montane forests. Ranges widely in elevation (3,000-9,000ft) throughout its geographic range. This type occurs on mesic sites. It occurs in canyon areas, shaded areas and where snow accumulates. This 1106 model describes a mesic deciduous shrubland occurring from abiotic factors such as precipitation and groundwater gradients and may be associated with riparian areas, but is not one itself.

Vegetation Description

Various mixes of shrubs such as serviceberry, *Prunus* spp., ninebark, snowberry, and currant. Aspen can be a component. (Society of Range Management Cover Types 317-319, 418-421.)

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| RIBES | *Ribes* | Currant |
| AMELA | *Amelanchier* | Serviceberry |
| SYMPH | *Symphoricarpos* | Snowberry |
| PRUNU | *Prunus* | Plum |
| POTR5 | *Populus tremuloides* | Quaking aspen |

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

Disturbance Description

Fire Regime Group IV, dominated by replacement fire (80%), but may have a mixed severity fire component (20%). The average fire return interval for this system may range from less than 60yrs to 100yrs+, and there is some debate about the role of mixed severity fire. Fire regimes of adjacent BpS will have significant impact on the frequency and severity of this BpS. This BpS will have significant variation in plant response to disturbance.

Drought, insects/disease and native grazing may all impact this BpS. However, little or no data exist to attribute these disturbances, and they were not included in this model.

Peer review for the Rapid Assessment (RA) resulted in the addition of some mixed severity fire in classes B and C. There were disparate opinions about the frequency of fire in this type, ranging from an average fire return interval of 60-100yrs, during the RA. Adjusting the MFI either direction resulted in only slight adjustments (+/-5%) in the resulting percent in each class. The model was left at an 80yr MFI. For MZs 10 and 19, one reviewer felt that the overall MFI should be reduced to 10-60yrs, dominated by mixed severity fire. The other reviewers agreed with the fire frequency and severity in the model, and it was unchanged.

For MZ22, modelers for 1106 felt that mixed severity fire does occur, although it was still questionable to other MZ22 modelers of other systems.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 82 | 83 | 20 | 150 |
| Moderate (Mixed) | 389 | 17 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 68 | 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

Variance in scale is a result of topography and localized moisture variability.

Adjacency or Identification Concerns

In MZ22, in current conditions, the plots found for this type might be successional stages of a Douglas-fir type.

BpS 1106 NRM Lower Montane Deciduous Shrubland could be confused for BpS 10861 RM Lower Montane Foothills Shrubland - no true mountain mahogany. There was disagreement among MZ22 modelers as to whether BpS 1106 was truly a different BpS than 10861. However, modelers for 1106 stated that they are different in that the FRI is less and there is more mixed severity fire due to more mesic conditions in 1106 and different fuel types. Therefore, an individual model for 1106 was retained, although the two will be difficult to distinguish and some modelers for 10861 felt that 1106 and 10861 were indistinguishable for a mapper and functioned similarly.

The 10861 model recommends using a riparian model when the shrub community is in a more mesic site. However, the riparian models for this MZ22 would not be appropriate here. This 1106 model describes a mesic deciduous shrubland occurring from abiotic factors such as precipitation and groundwater gradients and may be associated with riparian areas, but is not one itself. This site is modeled differently than a riparian wetland site.

1106 probably occurs in more mesic sites in canyon areas, shaded areas and where snow accumulates.

There is probably more current Douglas-fir encroachment in 1106 than 10861.

The fire regime of adjacent BpS will dominate the fire regime here. This system is widespread and may be adjacent to many shrubland systems, mountain grassland systems, and forested types including montane aspen, limber pine and Douglas-fir forests.

There is Douglas fir, limber pine and juniper encroachment from fire exclusion today. This 1106 would be a transition vegetation type if disturbance does not occur after class C. There is current Douglas-fir encroachment due to lack of fire and an abnormally late seral stage today.

Issues or Problems

Extreme variability in fire regime, scale and adjacency make this type difficult to model.

Role or presence of mixed severity fire is questioned.

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 | A | A | B | B | C | C | C | C | C | C |
| Shrub | 0.5-1.0 | A | A | B | B | C | C | C | C | C | C |
| Shrub | 1.0-3.0 | A | A | B | B | C | C | C | C | C | C |
| Shrub | >3.0 | A | A | B | B | C | C | C | C | C | C |
| Tree | 0-5 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 5-10 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 10-25 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 25-50 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | >50 | C | C | C | C | C | 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 11 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| AMELA | Amelanchier | Serviceberry | Upper |
| SYMPH | Symphoricarpos | Snowberry | Upper |

Description

Early succession, usually after frequent stand replacement fires. Dominated by grasses and forbs, with some shrubs sprouting. Grass/forb canopy cover will be high and variable (grass cover may reach 100%.), but cover of shrubs will be <15%.

*Maximum Tree Size Class*  
None

Class B 53 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| AMELA | Amelanchier | Serviceberry | Upper |
| SYMPH | Symphoricarpos | Snowberry | Upper |
| LUPIN | Lupinus | Lupine | Lower |

Description

Open shrub canopy, with sprouting shrubs dominant in scattered openings.

*Maximum Tree Size Class*  
None

Class C 36 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| AMELA | Amelanchier | Serviceberry | Upper |
| SYMPH | Symphoricarpos | Snowberry | Upper |
| LUPIN | Lupinus | Lupine | Lower |

Description

Closed shrub canopy; all age classes present but dominated by overmature shrubs and sparse understory except in gaps.

Fire, if it gets in this kind of vegetation is going to topkill the shrubs, not burn beneath them. There are lots of studies that document that when burned, these shrub fields are topkilled with little or no survival (eg, Leege publications on managing shrubfields for elk) - Harrell, pers comm (Gucker 2005).

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 9 |
| Mid1:CLS | 10 | Late1:CLS | 69 |
| Late1:CLS | 70 | 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 | Early1:ALL | Early1:ALL | 0.0067 | 149 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:CLS | 0.0033 | 303 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.013 | 77 | Yes | 0 |
| Mixed Fire | Late1:CLS | Mid1:CLS | 0.0025 | 400 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.0133 | 75 | Yes | 0 |

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