10110

Rocky Mountain Aspen Forest and Woodland

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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Vegetation Type

Forest and Woodland

Map Zone

9

Geographic Range

This model is for LANDFIRE map zone (MZ) 9. Aspen does not occur enough in LANDFIRE MZ08 to warrant a model. In MZ09, aspen occurs in scattered small patches of <10ac and is somewhat more extensive in riparian zones. Extensive areas of aspen (100s of acres) in this zone are rare. Steens Mountain provides an example of an extensive area, as does the Unity District of the Wallowa Whitman NF.

Biophysical Site Description

Commonly on moderate, mid-elevation slopes as small, scattered inclusions in the Douglas-fir ponderosa pine biophysical setting (BpS). Also in riparian zone at lower elevations. Primarily occurs in the mid-elevation zone (3,000-5,000ft).

Vegetation Description

Small, scattered patches of aspen. In the existing vegetation condition, Douglas-fir, grand fir, and ponderosa pine are common in these stands because of fire exclusion; aspen is often decadent.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| POTR5 | *Populus tremuloides* | Quaking aspen |

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

Disturbance Description

Historically burned as part of a mixed-severity vegetation mosaic with Douglas-fir and ponderosa pine.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 59 | 46 | 50 | 300 |
| Moderate (Mixed) | 50 | 54 | 20 | 60 |
| Low (Surface) |  |  |  |  |
| All Fires | 27 | 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

Primarily at fine scale (<10ac) in this MZ. A few areas in the 100s of acres. This is a rare map unit in this zone; normally, aspen is a fine-scale component mapped as part of another BpS.

Adjacency or Identification Concerns

Issues or Problems

Map only where aspen occurs in large enough areas to represent a range of aspen seral stages.

Native Uncharacteristic Conditions

Comments

During the 2017 BpS Review Kori Blankenship found that the reported fire frequency and succession class percents did not match the modeled results. It was unclear why the results differed. Blankenship was able to produce similar results by changing the modeled Alt Succession probability from .25 to .0125.

LANDFIRE National quality control resulted in changing the minimum height of Class C from 5.1m to 10.1m to distinguish from Class B.

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 | A | A | A | A | A | A | A | A |
| Shrub | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | >3.0 | A | A | A | A | A | A | A | A | A | A |
| Tree | 0-5 | A | A | A | A | A | A | A | A | A | A |
| Tree | 5-10 | D | D | D | D | B | B | B | B | B | B |
| Tree | 10-25 | D mix | D mix | D mix | D mix | E mix | E mix | E mix | E mix | E mix | E mix |
| Tree | 10-25 | D con | D con | D con | D con | E con | E con | E con | E con | E con | E con |
| Tree | 10-25 | D brdlf | D brdlf | D brdlf | D brdlf | C brdlf | C brdlf | C brdlf | C brdlf | C brdlf | C brdlf |
| Tree | 25-50 | E | E | E | E | E | E | E | E | E | E |
| Tree | >50 | E | E | E | E | E | E | E | E | E | E |

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 48 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POTR5 | Populus tremuloides | Quaking aspen | Upper |

Description

Aspen suckers and saplings. Grass and forbs present.

*Maximum Tree Size Class*  
Seedling <4.5ft

Class B 22 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POTR5 | Populus tremuloides | Quaking aspen | Upper |

Description

Aspen >6ft tall dominate. Canopy cover highly variable. Mixed-severity fire consumes litter and woody debris and may stimulate suckering.

*Maximum Tree Size Class*  
Sapling >4.5ft; <5" DBH

Class C 13 Mid Development 2 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POTR5 | Populus tremuloides | Quaking aspen | Upper |

Description

True stable aspen trees 5-16in DBH. Solid aspen stands, no evergreens. Canopy cover is highly variable. The fire return interval of mixed-severity fire does not change with age.

*Maximum Tree Size Class*  
Medium 9-21" DBH

Class D 14 Late Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POTR5 | Populus tremuloides | Quaking aspen | Upper |
| PSME | Pseudotsuga menziesii | Douglas-fir | Mid-Upper |
| ABLA | Abies lasiocarpa | Subalpine fir | Mid-Upper |
| ABCO | Abies concolor | White fir | Mid-Upper |

Description

Aspen 5-16" dominate with conifer understory up to co-dominance: 80% aspen overstory. Conifers (e.g., Douglas-fir) are assumed more resistant to fire than aspen and will likely cause the progressive suppression of aspen.

*Maximum Tree Size Class*  
Large 21-33" DBH

Class E 3 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PSME | Pseudotsuga menziesii | Douglas-fir | Upper |
| ABLA | Abies lasiocarpa | Subalpine fir | Upper |
| ABCO | Abies concolor | White fir | Upper |
| POTR5 | Populus tremuloides | Quaking aspen | Middle |

Description

Large-diameter conifers dominate. Aspen >16in, mixed conifer, mixed sizes, main overstory is conifers, >50% conifer in the overstory.

*Maximum Tree Size Class*  
Large 21-33" DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 39 |
| Mid1:CLS | 40 | Late1:ALL | 79 |
| Mid2:CLS | 80 | Mid2:CLS | 999 |
| Late1:ALL | 80 | Late1:CLS | 149 |
| Late1:CLS | 150 | 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 | 0.017 | 59 | Yes | 0 |
| Mixed Fire | Early1:ALL | Early1:ALL | 0.02 | 50 | No | 0 |
| Alternative Succession | Mid1:CLS | Mid2:CLS | 0.0125 | 80 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.017 | 59 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:CLS | 0.02 | 50 | No | 0 |
| Insects or Disease | Mid2:CLS | Mid1:CLS | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Mid2:CLS | Early1:ALL | 0.017 | 59 | Yes | 0 |
| Mixed Fire | Mid2:CLS | Mid2:CLS | 0.02 | 50 | No | 0 |
| Replacement Fire | Late1:ALL | Early1:ALL | 0.017 | 59 | Yes | 0 |
| Mixed Fire | Late1:ALL | Late1:ALL | 0.02 | 50 | No | 0 |
| Insects or Disease | Late1:CLS | Late1:ALL | 0.003 | 333 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.017 | 59 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:ALL | 0.02 | 50 | Yes | 0 |

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