10610

Inter-Mountain Basins Aspen-Mixed-Conifer Forest and Woodland

BpS Model/Description Version: Aug. 2020

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

Forest and Woodland

Map Zones

22, 27, 28

Geographic Range

Central and southern Rocky Mountains

Biophysical Site Description

This type typically occurs on flat to steep terrain (<80%) on all aspects of the upper montane and lower subalpine zones. Elevation typically ranges from 2,500-3,400m (8,000-11,000ft) in the southern Rockies.

Vegetation Description

This is a strongly fire-adapted community. Without regular fire, mixed conifers replace the aspen community. The presence of even a single aspen tree in a present-day community indicates that the area may have supported an aspen cover type historically. Areas with as few as five aspen trees per acre may return to an aspen community following disturbance.

Aspen existed in single-story and multi-story stands, depending on disturbance history and local stand dynamics. Conifer species were common stand components, often comprised of subalpine fir and Engelmann spruce, with minor amounts of Douglas-fir and pine species.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| POTR5 | *Populus tremuloides* | Quaking aspen |
| ABLA | *Abies lasiocarpa* | Subalpine fir |
| PIEN | *Picea engelmannii* | Engelmann spruce |
| ABCO | *Abies concolor* | White fir |
| PSME | *Pseudotsuga menziesii* | Douglas-fir |
| PIEN | *Picea engelmannii* | Engelmann spruce |
| PIPU | *Picea pungens* | Blue spruce |
| PICO | *Pinus contorta* | Lodgepole pine |

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

Disturbance Description

The frequency of all fires was between 5yrs and 25yrs, including aboriginal burning. Stand-replacement fires occurred about every 50-100yrs, depending on site and fuel conditions. Mixed-severity fires occurred at higher frequencies at return intervals of 40yrs+. Surface fires occurred at 10-20yrs but were limited in extent. Endemic disease (and insect outbreaks) would kill individual or small groups of aspen in most stands as aspen reached maturity. Ungulate grazing may have adversely impacted suckers during periods of cyclically high populations.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 77 | 37 | 40 | 90 |
| Moderate (Mixed) | 72 | 40 |  |  |
| Low (Surface) | 125 | 23 | 30 | 250 |
| All Fires | 29 | 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

Hundreds to thousands of acres

Adjacency or Identification Concerns

This aspen type is often associated with conifer-dominated types or mountain grassland communities. Aspen communities are characterized by the presence of conifer regeneration and relative lack of suckering.

Issues or Problems

This latent biophysical setting (BpS) is not obvious or frequent enough in distribution to fully characterize. What is known of the community dynamics and current distribution of higher elevation aspen communities suggests that the BpS was readily apparent on historical landscapes, with aspen covering significant portions of the mixed-conifer and subalpine life zones of the Rocky Mountains. B. Wilmore suggests Fire Regime Condition Class IV.

Native Uncharacteristic Conditions

Comments

Map zones 22, 27, and 28 were combined during 2015 BpS Review.

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 | C | C | C | C | B | B | B | B | B | B |
| Tree | 10-25 | C | C | C | C | D | D | D | D | D | D |
| Tree | 25-50 | C | C | C | C | D | D | D | D | D | D |
| Tree | >50 | C | C | C | C | D | D | D | D | D | D |

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 24 Early Development 1 - Open

Upper Layer Lifeform: Tree

Indicator Species

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

Description

Single-story tree communities dominated by aspen, often in dense stands of aspen suckers.

Class B 43 Mid Development 1 - Closed

Upper Layer Lifeform: Tree

Indicator Species

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

Description

Single-story aspen stands developing into two-story stands of seedlings, saplings, and poles. Increased vertical complexity brought on by wildlife browsing, competition, conifer regeneration, and fire. Conifer component is variable.

Class C 6 Late Development 1 - Open

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POTR5 | Populus tremuloides | Quaking aspen | Upper |
| ABLA | Abies lasiocarpa | Subalpine fir | Middle |
| PIEN | Picea engelmannii | Engelmann spruce | Middle |

Description

Two- and three-story aspen-dominated stands. Stands are in more open conditions due to mixed-severity fire, disease mortality, and browsing of understory vegetation. Conifers occur as subordinate and occasionally co-dominant tree components. Conifers increase in proportion with stand age and time-since-disturbance. Conifer composition is variable.

Class D 27 Late Development 1 - Closed

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POTR5 | Populus tremuloides | Quaking aspen | Upper |
| ABLA | Abies lasiocarpa | Subalpine fir | Mid-Upper |
| PIEN | Picea engelmannii | Engelmann spruce | Mid-Upper |

Description

Two- and three-story aspen-dominated stands. Conifers occur as subordinate and occasionally co-dominant tree components, increasing in proportion with stand age and time-since-disturbance.

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Mid1:CLS | 19 |
| Mid1:CLS | 20 | Late1:CLS | 79 |
| Late1:OPN | 80 | Late1:CLS | 99 |
| Late1:CLS | 80 | 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** |
| Surface Fire | Early1:OPN | Early1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Early1:OPN | Early1:OPN | 0.01 | 100 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:OPN | 0.015 | 67 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:CLS | 0.025 | 40 | No | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.004 | 250 | No | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.008 | 125 | No | 0 |
| Mixed Fire | Late1:OPN | Early1:OPN | 0.008 | 125 | Yes | 0 |
| Insects or Disease | Late1:OPN | Late1:OPN | 0.017 | 59 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:OPN | 0.02 | 50 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.004 | 250 | No | 0 |
| Mixed Fire | Late1:CLS | Late1:CLS | 0.007 | 143 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:OPN | 0.01 | 100 | Yes | 0 |
| Insects or Disease | Late1:CLS | Late1:OPN | 0.015 | 67 | Yes | 0 |

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