10330

Mediterranean California Subalpine Woodland

BpS Model/Description Version: Aug. 2020

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| **Modelers** |  | **Reviewers** |  |
| David Swanson | dkswanson@fs.fed.us | one anonymous reviewer | None |
| None | None | None | None |
| None | None | None | None |

Vegetation Type

Forest and Woodland

Map Zone

12

Geographic Range

This woodland type occurs in the Blue Mountains and in parts of the Oregon, Washington, and California Cascades. It may sporadically occur throughout the Great Basin, too.

Biophysical Site Description

This type occurs at elevations >7,500ft in the Blue Mountains and Great Basin and >5,000ft in the Cascades. In the southern Sierra Nevada, it may occur as high as 9,500ft. Communities are typically on ridge crests, shoulders, or upper slopes on relatively dry, stony soils, often on south aspects.

Vegetation Description

Lodgepole pine (*P. contorta* var. *murrayana*) is the dominant tree throughout the range of this type but may be displaced by var. *latifolia* in the Great Basin. Other species may be locally dominant. In the Blue Mountains, *P. albicaulis* can be dominant, while in northern California, *P. balfouriana* may dominate. Other species include *P. flexilis*, *P.moniticola*, *Juniperus occidentalis* var. *australis*, *salix* spp., and *Vaccinium uliginosum* as indicators. However, subalpine larch, Engelmann spruce or subalpine fir may also occur. The stands are usually open with canopy cover of <60%. Due to landscape position and thin soils, these types often occur as krummholz forms with wind-pruned, prostrate, and/or shrublike appearance.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PICO | *Pinus contorta* | Lodgepole pine |
| PIAL | *Pinus albicaulis* | Whitebark pine |
| ABLA | *Abies lasiocarpa* | Subalpine fir |

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

Disturbance Description

The fire regime in this group is highly variable and difficult to document. Lightning strikes are common on the ridges where these communities occur, but discontinuous fuels limit the spread of most fires and produce fires of highly variable severity. Infrequent severe crown fires in fir forests located downslope can spread into forests of this group and cause larger, more uniform stand-replacement fires.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 353 | 18 | 200 | 400 |
| Moderate (Mixed) | 79 | 82 | 35 | 120 |
| Low (Surface) |  |  |  |  |
| All Fires | 65 | 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

Fires in this type can occur in very small patches associated with lightning strikes. Ignitions of this type are probably quite common but typically do not spread beyond 10s to 100s of acres. Much larger fires can occur less frequently when extensive crown fires in subalpine fire forests spread upslope into these pine woodlands.

Adjacency or Identification Concerns

This type usually occurs above subapline fir or lodgpole pine (seral to subalpine fir) forest and may occur among patches of alpine meadow and grasslands.

Issues or Problems

We are uncertain about the fire return intervals (FRIs) and succession rates in the group. Several literature sources indicate FRIs of ~30-90yrs, but the proportion of mixed fires versus stand replacement is unknown.

We lack data for stands of intermediate age (i.e., 50yrs since fire), so we did not try to assign any mid-seral states. Instead, we just assigned prolonged succession (100yrs) from early to late states.

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 | 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 | C | C | C | C | C | B | B | B | B | B |
| Tree | 5-10 | C | C | C | C | C | B | B | B | B | B |
| Tree | 10-25 | C | C | C | C | C | B | B | B | B | B |
| Tree | 25-50 | C | C | C | C | C | B | B | B | B | B |
| Tree | >50 | C | C | C | C | C | B | B | B | B | B |

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 25 Early Development 1 - All Structures

Upper-layer lifeform is not the dominant lifeform. Seedling and sapling trees may be present but will generally be dominated by shrubs.

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| VACCI | Vaccinium | Blueberry | Middle |
| PINUS | Pinus | Pine | Mid-Upper |

Description

Resprouting shrubs and herbs dominate. Tree seedlings and saplings are often present at low cover. Scattered old whitebark pine are sometimes present.

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

Class B 22 Late Development 2 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PINUS | Pinus | Pine | Upper |
| ABLA | Abies lasiocarpa | Subalpine fir | Middle |
| VACCI | Vaccinium | Blueberry | Lower |

Description

Pines and firs are present in the overstory. Some of the pines have ages >100yrs (often much older), while the co-dominant firs are younger, sometimes <100yrs. Understory trees (<30cm DBH) are mostly subalpine fir.

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

Class C 53 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PINUS | Pinus | Pine | Upper |
| ABLA | Abies lasiocarpa | Subalpine fir | Mid-Upper |
| VACCI | Vaccinium | Blueberry | Lower |

Description

Multi-age whitebark pine occurs, with the overstory containing some trees >100yrs old (often much older). Tree seedlings and saplings are subalpine fir and whitebark pine, with the former predominant. Tree seedlings increase with time since fire. The understory is low shrubs and herbs.

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

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Late1:OPN | 99 |
| Late1:OPN | 100 | Late2:CLS | 199 |
| Late2:CLS | 200 | Late2: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 | 0.003 | 333 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Insects or Disease | Late1:OPN | Late1:OPN | 0.005 | 200 | No | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.017 | 59 | No | 0 |
| Insects or Disease | Late2:CLS | Late2:CLS | 0.005 | 200 | No | 0 |
| Replacement Fire | Late2:CLS | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Mixed Fire | Late2:CLS | Late1:OPN | 0.017 | 59 | Yes | 0 |

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