

10460

Northern Rocky Mountain Subalpine Woodland and Parkland

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
David Swanson	dkswanson@fs.fed.us	anonymous	None
None	None	Robin Leshner	rlesher@fs.fed.us
None	None	Jan Henderson	jahenderson@fs.fed.us

Vegetation Type

Forest and Woodland

Map Zones

1, 7, 9

Geographic Range

This woodland type occurs in the Blue Mountains, and in parts of the Oregon and Washington Cascades.

Biophysical Site Description

This biophysical setting (BpS) occurs at elevations above 7,500ft in the Blue Mountains and above 5,000ft in the Cascades. Communities are typically on ridge crests, shoulders, or upper slopes on relatively dry, stony soils, often on southern aspects.

Vegetation Description

Whitebark pine is the dominant tree, but usually in open stands with canopy cover of <60%. In Washington, subalpine fir is a co-dominant. It is frequently present as an understory tree in Oregon. Also occurring are lodgepole pine, subalpine larch, or Engelmann spruce. Fir and lodgepole pine occur occasionally with whitebark pine as co-dominants. Grouse huckleberry (*Vaccinium scoparium*) or other low shrubs (*Ribes*, *Phyllodoce*, *Cassiope*, *Juniperus*, *Arctostaphylos*) are often present, as well as a sparse, low herbaceous layer of sedges, rushes, grasses, and forbs. Some common herbaceous species include *Arenaria aculeata*, *Carex* spp., *Carex rossii*, *Festuca viridula*, *Lupinus* spp., *Luzula* spp., and *Polemonium pulcherrimum*.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
PIAL	<i>Pinus albicaulis</i>	Whitebark pine
ABLA	<i>Abies lasiocarpa</i>	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 produces fires of highly variable severity. Infrequent, severe crown fires in fir forests located downslope can spread into communities of this group and cause larger, more uniform stand-replacement fire.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	349	19	200	400
Moderate (Mixed)	79	81	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 tens to hundreds of acres. Much larger fires can occur less frequently when extensive crown fires in subalpine fir forests spread upslope into whitebark pine woodlands.

Adjacency or Identification Concerns

This type usually occurs above subalpine fir or lodgepole pine (seral to subalpine fir) forest, and may occur among patches of subalpine 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 about 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 from early to late states. We did not deal completely with subalpine larch in this type. Larch can occur in whitebark pine-dominated communities with fire regimes and succession similar to what is described in this model, but it is more common on moister sites, northerly aspects, sites with late-lying snow, etc. These have a fire regime and states not adequately described by this model. Also, there is concern about combining subalpine woodland, which is uncommon in Washington, with dry subalpine parkland; the fire ecology is different enough between the two.

Native Uncharacteristic Conditions

Comments

Map zones 1, 7, and 9 were combined during 2015 BpS Review. The few descriptive differences between the zones are noted in the revised description.

Succession Classes

Mapping Rules

[illegible]

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

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
VASC	Vaccinium scoparium	Grouse whortleberry	Upper
POPU3	Polemonium pulcherrimum	Jacob's ladder	Middle
FEVI	Festuca viridula	Greenleaf fescue	Middle

Description

Resprouting shrubs and herbs dominate (canopy height is usually <1m but may reach up to 2m). Tree seedlings and saplings (<10cm in DBH; whitebark pine, subalpine fire, and lodgepole pine) are often present at low cover. Scattered old whitebark pine (>30cm in DBH) are sometimes present. Scattered, old whitebark trees may overtop the herbs and shrubs that dominate.

Maximum Tree Size Class

Large 21-33" DBH

Class B 22 Late Development 2 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIAL	Pinus albicaulis	Whitebark pine	Upper
VASC	Vaccinium scoparium	Grouse whortleberry	Low-Mid
POPU3	Polemonium pulcherrimum	Jacob's ladder	Lower

Description

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

Maximum Tree Size Class

None

Class C 53 Late Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
PIAL	Pinus albicaulis	Whitebark pine	Upper
ABLA	Abies lasiocarpa	Subalpine fir	Upper
VASC	Vaccinium scoparium	Grouse whortleberry	Middle
POPU3	Polemonium pulcherrimum	Jacob's ladder	Lower

Description

Multi-age whitebark pine occurs with the overstory containing some trees >100yrs old (often much older) and DBH >30cm. Tree seedlings and saplings (<10cm in DBH) 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

Very Large >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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References

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