Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004 and 2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG)

R#SAWD **Subalpine Woodland**

General Information

Contributors *(additional contributors may be listed under "Model Evolution and Comments")*

Modelers

David Swanson dkswanson@fs.fed.us

Reviewers

one anonymous reviewer

Vegetation Type

Woodland

Dominant Species*

PIAL
ABLA

General Model Sources

- [x] Literature
- [x] Local Data
- [x] Expert Estimate

LANDFIRE Mapping Zones

1 8
2 9
7

Rapid AssessmentModel Zones

- [ ] California
- [ ] Great Basin
- [ ] Great Lakes
- [ ] Northeast
- [ ] Northern Plains
- [ ] N-Cent.Rockies
- [x] Pacific Northwest
- [ ] South Central
- [ ] Southeast
- [ ] S. Appalachians
- [ ] Southwest

Geographic Range

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

Biophysical Site Description

This PNVG occurs at elevations above 7500 ft in the Blue Mountains and above 5000 ft in the Cascades. Communities are typically on ridge crests, shoulders, or upper slopes on relatively dry, stoney soils, often on south aspects.

Vegetation Description

Whitebark pine is the dominant tree, but usually in open stands with canopy cover of less than 60%. Subalpine fir is frequently present as an understory tree, occasionally with lodgepole pine, subalpine larch, or Englemann spruce; fir and lodgepole pine also occur occasionally with whitebark pine as co-dominants. Grouse huckleberry (Vaccinium scoparium) or other low shrubs (Ribes, Phyllodoce, Juniperus, Arctostaphylos) are often present, and also a sparse, low herbaceous layer of sedges, rushes, grasses, and forbs. Some common herbaceous species include Arenaria aculeata, Carex geyeri, Carex rossii, Festuca viridula, Lupinus sp., Luzula sp., and Polemonium pulcherrimum.

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.

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 alpine meadow and grasslands.

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.

Scale Description

Sources of Scale Data ☐ Literature ☑ Local Data ☑ Expert Estimate

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 10's to 100's of acres. Much larger fires can occur less frequently when extensive crown fires in subalpine fire forests spread upslope into whitebark pine woodlands.

Issues/Problems

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

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

Model Evolution and Comments

*Succession Classes***

Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

Class A 25 %

Early1 PostRep

Description

Resprouting shrubs and herbs dominate. Tree seedlings and saplings (<10 cm dbh whitebark pine, subalpine fire, and lodgepole pine) are often present at low cover. Scattered old whitebark pine (>30 cm dbh) are sometimes present.

Dominant Species* and Canopy Position

VASC
POPU3
FEVI

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	20 %
Height	no data	no data
Tree Size Class	no data	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class B 20 %

Late2 Closed

Description

Whitebark pine and subalpine fir are present in the overstory with dbh greater than 30 cm. Some of the pines have ages of over 100 years (often much older), while the co-dominant firs are younger, sometimes less than 100 years. Understory trees (<30 cm dbh) are mostly subalpine fir.

Dominant Species* and Canopy Position

PIAL
VASC

POPU3

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	30 %	60 %
Height	no data	no data
Tree Size Class	no data	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.

Class C 55 %

Late1 Open

Description

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

Dominant Species* and Canopy Position

PIAL
ABLA
VASC
POPU3

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	20 %	50 %
Height	no data	no data
Tree Size Class	no data	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class D 0 %

Description

Dominant Species* and Canopy Position

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	%	%
Height	no data	no data
Tree Size Class	no data	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class E 0 %

Description

Dominant Species* and Canopy Position

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	%	%
Height	no data	no data
Tree Size Class	no data	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Disturbances

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.

Disturbances Modeled

- [x] Fire
- [x] Insects/Disease
- [x] Wind/Weather/Stress
- [ ] Native Grazing
- [ ] Competition
- [ ] Other:
- [ ] Other

Historical Fire Size (acres)

Avg: no data
Min: no data
Max: no data

Sources of Fire Regime Data

- [x] Literature
- [ ] Local Data
- [ ] Expert Estimate

Fire Regime Group: **3**

I: 0-35 year frequency, low and mixed severity
II: 0-35 year frequency, replacement severity
III: 35-200 year frequency, low and mixed severity
IV: 35-200 year frequency, replacement severity
V: 200+ year frequency, replacement severity

Fire Intervals (FI)

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	300	200	400	0.00333	21
Mixed	80	35	120	0.0125	79
Surface					
All Fires	63			0.01584	

References

Agee, J.K. 1993. Fire ecology of Pacific Horthwest forests. Island Press, Washington DC, 493 pp.

Arno S.F. 1980. Forest fire history in the northern Rockies. Journal of Forestry 78(8):460-465.

Johnson, C.G. 2004. Alpine and subalpine vegetation of the Wallowa, Seven Devils, and Blue Mountains. USDA Forest Service R6-NR-ECOL-TP-03-04, 612 pp plus appendices.

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Morgan P., Bunting S.C. 1990. Fire effects in whitebark pine forests. Pp. 166-170 in: Schmidt W.C., McDonald K.J. (eds.) Proceedings: Sumposium on whitebark pine ecosystems: Ecology and management of a high-mountain resources. USDA Forest Service Genreal Technical Report INT-270

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