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 2004-2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG):

R#REFI **Red Fir**

General Information

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

Modelers		Reviewers	
Diane White	dewhite01@fs.fed.us	Tom Atzet	jatzet@budget.net
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Vegetation Type

Forested

Dominant Species*

ABMA
PSME
PIMO
ABCO

General Model Sources

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

LANDFIRE Mapping Zones

1 8
2 9
7

Rapid Assessment Model Zones

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

Geographic Range

This forest type occurs in southwest Oregon, up to and just barely over the Cascades Range. It likely can be used in parts of Northern California.

Biophysical Site Description

High elevation (4,000 to 6,900 ft) species in southern Oregon Cascades. Cool moist to cold moist microclimate. 30-50 in precipitation.
Highly variable geology.

Vegetation Description

Red fir in the late seral stage often occurs with white fir at lower elevations and mountain hemlock at higher elevations. Other common associates include Douglas-fir, western white pine, and lodgepole pine (on wet sites).
Red fir occurs on pumice in the high Cascades. Separate red fir community in the Siskiyous.

Disturbance Description

Mixed severity fires are the most common disturbance, but windthrow and dwarf mistletoe can be major disturbance agents, too.

Adjacency or Identification Concerns

Northern variant of California red fir. Relied heavily on the red fir model developed for the FRCC Guidebook by Ayn Shlisky (RFCA).

Replaced by white fir (mixed conifer) at lower elevations and mountain hemlock at higher elevations.

This PNVG may be similar to the PNVGs R1RFWP and R1RFWF for the California Model Zone. Where

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

California Red fir (Abies magnifica var. magnifica) is present, consult these two PNVGs.

Scale Description

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

The mosaic of the forest type is dominated by mixed severity events, each event encompassing 1000s of acres.

Issues/Problems

Two types occur: 1) Cascade type: Pumice soils. Conifers are red fir, mountain hemlock, lodgepole pine and white pine. Occurs between mountain hemlock and white fir zones. Cascade stands are more open. Red fir averages 25-35% cover in late seral stages.
2) Siskiyou type: Granitic soils. Conifers are red fir, white fir, Douglas-fir. Occurs between mountain hemlock and white fir zones. Red fir averages 30-50% cover in late seral stages.

Model Evolution and Comments

Review included one anonymous reviewer.

One reviewer suggested to clearly indicate the differences between California red fir and Shasta red fir models.

Three of four reviewers felt that the frequency of fire was too high. Cope (1993) indicates that Shasta red fir (A. magnifica var. shastensis) has MFRI 70-130 years, and can withstand surface fires, whereas California red fir (A. magnifica var. magnifica) has a return of 10-65 years. In addition, Jim Merzenich had comments on structural inconsistencies in the model. John Foster adjusted the model by using regime parameters derived from the original model, but adjusted to reflect Cope (1993) and research in the Oregon Cascades.

Succession Classes

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

Class A 10 %

Early1 PostRep

Description

Small openings created by fires or insects; large openings created by very infrequent stand replacement fire; largely lodgepole pine, white fir, or red fir seedlings.

Indicator Species* and Canopy Position

PICO
ABMAS
ABCO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	40 %
Height	no data	no data
Tree Size Class	no data	

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

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Class B 20 %

Mid1 Closed

Description

>40% cover lodgepole, white fir or red fir saplings and poles.

Indicator Species* and Canopy Position

PICO
ABMAS

ABCO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	40 %	100 %
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 C 15 %

Mid2 Open

Description

<40% red fir, white fir, and lodgepole pine poles.

Indicator Species* and Canopy Position

ABMAS
ABCO
PICO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	5 %	39 %
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 20 %

Late2 Open

Description

<40% large red fir and white fir; maintained by mortality and low severity fire.

Indicator Species* and Canopy Position

ABMAS
ABCO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	5 %	39 %
Height	no data	no data
Tree Size Class	no data	

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

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Class E **35 %**

Late1 Closed

Description

>40% multi-layered canopy cover dominated by large red fir over clumps of seedlings, saplings, and poles.

Indicator Species* and Canopy Position

ABMAS
ABCO

Structure Data (for upper layer lifeform)

	Min	Max
Cover	40 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☐ Tree

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

Fuel Model no data

Disturbances

Non-Fire Disturbances Modeled

- ☑ Insects/Disease
- ☑ Wind/Weather/Stress
- ☐ Native Grazing
- ☐ Competition
- ☐ Other:
- ☐ Other:

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

Historical Fire Size (acres)

Avg:
Min:
Max:

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 the 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.

Sources of Fire Regime Data

- ☐ Literature
- ☑ Local Data
- ☑ Expert Estimate

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	400	150	400	0.0025	20
Mixed	100	80	130	0.01	80
Surface					
All Fires	80			0.01251	

References

Atzet, T., D.E. White, L.A. McCrimmon, P.A. Martinez, P.R. Fong, and V.D. Randall. 1996. Field Guide to the Forested Plant Associations of Southwestern Oregon. Portland: USDA Forest Service Technical Paper R6-NR-ECOL-TP-17-96.

Burns, R.M., and B.H. Honkala. 1990. Silvics of North America: Vol. 1, conifers. Washington, DC: USDA For. Serv. Ag. Handbook 654, 675 pp.

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