

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)

R1RFWF Red Fir / White Fir

General Information

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

Modelers

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Reviewers

Vegetation Type

Forested

General Model Sources

- Literature
- Local Data
- Expert Estimate

Rapid Assessment Model Zones

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

Dominant Species*

ABMA
ABCO
PIJE
PICO

LANDFIRE Mapping Zones

3 6
4
5

Geographic Range

Occurs from the vicinity of Crater Lake Oregon south through the Cascades and the Sierra Nevada into northern Kern County at Sunday Peak. An arm also extends south through the coast ranges to Snow Mountain in Lake County (Potter, et al. 1992).

Biophysical Site Description

Occurs in the upper montane at high elevation. Elevation ranges from 5900 ft. to 7900 ft. in northern California and 7900 ft. to 9200 ft. in southern California. This type is more dominant in the Southern Cascades of California and the northern Sierra Nevada. Fuels are relatively continuous.

Vegetation Description

Both *Abies magnifica* and *A. concolor* are present in the overstory in significant amounts. *Pinus jeffreyi*, *P. contorta*, and mixed conifer species can also be present in lesser amounts. *P. monticola* is sometimes present but usually contributes <5% of basal area. Tree cover generally exceeds 60%, with shrubs and herbs contributing less than 30% cover each. If shrub cover is higher, the shrubs are short or prostrate.

Disturbance Description

Windthrow causes tree sized gaps that release already established individuals in the understory. Primarily fire regime groups I and III. Most fires occur during the late season during tree dormancy, fire complexity in moderate to high, and fire size averages ~400 acres. It is very difficult to determine the replacement fire return interval in this PNVG. Replacement fire likely varies with slope position (upper slope>mid slope>lower slope), and landscapes with greater topography are likely to experience more stand replacement fires. A considerable range of values has been reported in the literature for mixed and surface fires (Taylor and Solem 2001, Taylor and Halpern 1991, Taylor 1993, Bekker and Taylor 2001)

Adjacency or Identification Concerns

The lower elevation edge of this type mixes with mixed conifer (MCON) especially mixed conifer dominated by *Abies concolor*. The upper elevation mixes with red fir-white pine (R1RFWP).

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

This PNVG may be similar to the PNVG R#REFI for the Pacific Northwest Model Zone. R#REFI describes ecologically distinct Shasta red fir (*Abies magnifica* var. *shastensis*), which includes less surface fire than R1RWF or R1RFP.

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Fire sizes range from 30 to 1800 acres with the average being 405 acres (Bekker and Taylor 2001).

Issues/Problems

Model Evolution and Comments

Severity classes in the literature differ from those used for model development. Shlisky reduced amount of replacement fire and increased amount of mixed fire relative to original draft model as per reviewer comments. Reference percentages of states B and D changed by 5 % as a result. Shlisky added insect/disease and windthrow to closed states as per reviewer comments.

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

Class A 15%

Early1 PostRep

Description

Regeneration of *Abies magnifica* and *A. concolor* perhaps *Pinus jeffreyi* or *P. lambertiana* from seed, following a severe or stand-replacing fire. Shrub cover varies. PICO an important associate in the Cascades and Klamath Matins.

Dominant Species* and Canopy Position

ABMA
PIJE

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

| | Min | Max |
|-----------------|---------|---------|
| Cover | 0 % | 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 B 25%

Mid1 Closed

Description

Mid-mature *Abies magnifica* with various amounts of other species. Shrub cover varies. >40% cover *Abies magnifica*, *A. concolor*, or *Pinus jeffreyi* saplings, poles, and small trees. PICO an important associate in the Cascades and Klamath Matins.

Dominant Species* and Canopy Position

ABMA

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

| | Min | Max |
|-----------------|---------|---------|
| Cover | 40 % | 90 % |
| 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 C 10%

Mid1 Open
Description

Scattered mid-mature Abies magnifica with various amounts of other species. Shrub cover varies. <40% cover Abies magnifica, A. concolor, or Pinus jeffreyi.

Dominant Species* and Canopy Position

ABMA
ABCO
PIJE

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

| | Min | Max |
|-----------------|---------|---------|
| Cover | 10 % | 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:

Class D 20%

Late1 Open
Description

Scattered mature Abies magnifica, Abies concolor, Pinus jeffreyi, and other species. <40% Abies magnifica, A. concolor, or jeffreyi

Dominant Species* and Canopy Position

ABMA
ABCO
PIJE

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

| | Min | Max |
|-----------------|---------|---------|
| Cover | 10 % | 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:

Class E 30%

Late1 Closed
Description

Mature Abies magnifica, A. concolor, Pinus jeffreyi, and other species. >40% canopy cover dominated by large Abies magnifica in pure to mixed stands

Dominant Species* and Canopy Position

ABMA
ABCO
PIJE

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

| | Min | Max |
|-----------------|---------|---------|
| Cover | 40 % | 90 % |
| 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

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Disturbances Modeled

- Fire
- Insects/Disease
- 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

- 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.

| | <i>Avg FI</i> | <i>Min FI</i> | <i>Max FI</i> | <i>Probability</i> | <i>Percent of All Fires</i> |
|--------------------|---------------|---------------|---------------|--------------------|-----------------------------|
| <i>Replacement</i> | 200 | 125 | 500 | 0.005 | 13 |
| <i>Mixed</i> | 70 | | | 0.01429 | 36 |
| <i>Surface</i> | 50 | 15 | 50 | 0.02 | 51 |
| <i>All Fires</i> | 25 | | | 0.03929 | |

References

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