

## 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](http://www.landfire.gov). Please direct questions to [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov).

### Potential Natural Vegetation Group (PNVG):

R0PPDF

Ponderosa Pine - Douglas-Fir

### General Information

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

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#### Vegetation Type

Forested

#### Dominant Species\*

PIPO  
PSEUD7  
SPBE  
CARU

#### General Model Sources

- Literature  
 Local Data  
 Expert Estimate

#### LANDFIRE Mapping Zones

10	21	18
19	22	
20	29	

#### Rapid Assessment Model Zones

- |  |  |
|--|--|
| <input type="checkbox"/> California                | <input type="checkbox"/> Pacific Northwest |
| <input checked="" type="checkbox"/> Great Basin    | <input type="checkbox"/> South Central     |
| <input type="checkbox"/> Great Lakes               | <input type="checkbox"/> Southeast         |
| <input type="checkbox"/> Northeast                 | <input type="checkbox"/> S. Appalachians   |
| <input type="checkbox"/> Northern Plains           | <input type="checkbox"/> Southwest         |
| <input checked="" type="checkbox"/> N-Cent.Rockies |  |

#### Geographic Range

Northern Rocky Mountains in western Montana and northern Idaho, extending south into the Great Basin.

#### Biophysical Site Description

Generally found in the montane zone on steep to gentle slopes and all aspects. Elevation ranges from >4000 feet in the southern area and > 2,500 in the northern extent. This type generally borders grand fir and spruce fir upper elevational range and dry ponderosa pine or shrub types at the lower elevation range. Site can range from nearly flat to steep and at lower elevations is located more on northerly and easterly aspects.

#### Vegetation Description

Ponderosa pine is generally the dominant species on most sites, and southerly aspects support relatively open stands. On mesic sites with longer fire return intervals, Douglas-fir often co-dominates the upper canopy layers. In the absence of fire, Douglas-fir and grand fir dominate stand understories. Western larch, true firs, and lodgepole pine may also be present throughout.

Understory can be dominated by shrubs, such as Ceanothus, ninebark and spiraea, willow, or twin flower, or open grass dominated by carex and pinegrass.

#### Disturbance Description

Primarily Fire Regime Group I with surface and mixed severity fires at varying intervals (MFIs range from 7-65 years). Occasional replacement fires may also occur. Mixed fire increases and surface fires decrease further north.

Insects and disease play an important role, especially in the absence of fire. Bark beetles such as mountain pine beetle, western pine beetle, and Douglas-fir beetle are active in the mid and late structural stage,

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

especially in closed canopies. Weather related disturbances, including drought, tend to affect the late closed structure more than other structural stages.

**Adjacency or Identification Concerns**

This PNVG corresponds to Pfister et al. (1977) warm dry Douglas-fir habitat types. This PNVG generally occupies moderate environmental settings between more xeric ponderosa pine or shrub communities at lower elevations and moist grand fir or Douglas-fir communities at higher elevations.

Because of fire suppression, xeric ponderosa pine types may be disproportionately invaded by Douglas-fir today. It may be especially difficult in fire suppressed areas to distinguish between ponderosa pine and ponderosa pine-Douglas-fir PNVGs.

**Scale Description**

**Sources of Scale Data**  Literature  Local Data  Expert Estimate

Patch sizes were probably highly variable. Surface fires may have been small in area (100s of acres), but replacement fires may have been large (10,000s of acres).

**Issues/Problems**

**Model Evolution and Comments**

This model was originally developed as two types (PPDF1/R0PPDFms and PPDF3/R0PPDF), and were lumped as a result of the peer review process (3/16/05). Suggested edits included having 40-60% in late-development classes (D + E) and approximately 30% in closed canopy classes (B + E).

This model replaces the PNVG R2PPDFcp from the Great Basin model zone, as the two are very similar and only a small portion exists in the Great Basin.

**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**

Openings of grass and forbs that are maintained with replacement fire. Seedlings of ponderosa pine, western larch, Douglas-fir, true firs, and lodgepole pine may be present. Shrubs may include willow, spiraea, and ninebark. Sedge and pine grass are also present.

After 30 years, this class succeeds to C (mid-development open) unless it is maintained by replacement fire.

**Indicator Species\* and Canopy Position**

PIPO  
CEVE  
PSEUD7  
SPBE

**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:

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

**Class B 15%**

Mid1 Closed

**Description**

Sapling or pole sized Douglas-fir and ponderosa pine. Larch will decrease due to shade intolerance. True fir species remain or increase due to shade tolerance.

Replacement fire will return this class to A. Mosaic fire can open the stand and convert this class to class C (mid-development open). Surface fires are rare, but would maintain the class. Pathogens can create gaps and cause a transition to class C (mid-development open).

**Indicator Species\* and Canopy Position**

PIPO  
PSEUD7  
PHMA  
SPBE

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	40 %	100 %
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

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

**Class C 30%**

Mid1 Open

**Description**

Ponderosa pine is the dominate tree species with Douglas-fir making up a small percentage of the species composition. Western larch may also be present. Ceanothus, ninebark, spiraea, and mountain maple are the major shrub species present and carex and pinegrass are also major components of the understory.

Replacement fire, though rare, will cause a transition to class A (early development). Surface fires, mixed fires, and insects will maintain the open condition. If this class escapes fire for 35 years, it will succeed to class B (mid-development closed). If fires do occur, it will succeed at 100 years to class D (late-development open).

**Indicator Species\* and Canopy Position**

PIPO  
CEVE  
PSEUD7  
SPBE

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	0 %	40 %
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

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

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

**Class D 30%**

Late1 Open

**Description**

Ponderosa pine is the dominate tree species, with Douglas-fir comprising a small proportion of the species composition. Western larch and true firs may also be present in small proportions. Structure may be patchy depending on fire severities in previous class. Ceanothus will be decreasing and willow, spiraea, ninebark, carex, and pine grass will still be present.

Replacement fire, though rare, will cause a transition to class A (early development). Surface fires, mixed fires, and insects will maintain the open condition. If this class escapes fire for 35 years, it will succeed to class E (late-development closed).

**Indicator Species\* and Canopy Position**

PIPO  
PDEUD7  
SPBE  
CAGE

**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:

**Class E 15%**

Late1 Closed

**Description**

Large-diameter ponderosa pine with Douglas-fir and true firs. Ninebark, spiraea, and mountain maple will be present, but ceanothus will be absent. Some pinegrass and carex will be present.

Replacement fire will return this class to A. Mosaic fire can open the stand and convert this class to class D (late-development open). Surface fires are rare, but would maintain the class. Pathogens can create gaps and cause a transition to class D (mid-development open).

**Indicator Species\* and Canopy Position**

PIPO  
PSEUD7  
PHMA  
SPBE

**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:

**Disturbances**

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**Non-Fire Disturbances Modeled**

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

**Fire Regime Group: 1**

- 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	250			0.004	10
Mixed	50	50	130	0.02	51
Surface	65			0.01538	39
All Fires	25			0.03938	

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