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#PIPOxe **Ponderosa Pine - Xeric**

General Information

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

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Vegetation Type

Forested

Dominant Species*

PIPO
ARTR
CELE
JUOC

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 PNVG occurs in the forest shrub steppe interface along the east side of the Fremont and Deschutes National Forests and along the southern fringe of the Blue Mountains to the Idaho border.

Biophysical Site Description

This PNVG occurs in precipitation zones between 15-17". This precipitation band reaches from the east side of the Fremont NF north along the east side of the Deschutes NF to the south edge of the Blues, and east along the Ochocos and Malheur NF. This type may occur in Idaho opposite the Snake River.

Vegetation Description

Tree species common in this type are PIPO and JUOC. Minor amounts of PSME may occur. Understory vegetation is dominated by ARTR, ARAR, CELE3, PUTR. Important herbaceous species include FEID, AGSP, SIHY, POSA and various Stipa species.

Disturbance Description

Mixed and Stand Replacement Fires dominate this PNVG. Large wind driven events originating in the shrub steppe or Juniper Woodland vegetation zones heavily influence this PNVG. Fire return intervals in this type are more like adjacent shrub steppe or Juniper Woodland communities than typical low intensity frequent fire PIPO communities.

Adjacency or Identification Concerns

Typically this vegetation type occurs between JUOC/ARTR, JUOC/ARAR, JUOC/ PUTR, ARTR, PUTR and PIPO or Dry Mixed Conifer sites with frequent fire return intervals.

This PNVG is distinct from Ponderosa Pine mesic (R#PIPOm) in that it typically occurs in regions with

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

<45cm/year precipitation.

Scale Description

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

Stand replacement events can be tens of thousands of acres in size.

Issues/Problems

This model attempts to capture the Forest - Shrub Steppe interface areas where lack of fuels continuity increases the fire return intervals and significant dry shrub communities increase the occurrence of stand replacement and mixed fires.

Model Evolution and Comments

Reviewers requested greater clarification between this model and R#PIPOm. Furthermore, it was suggested that the replacement fire may occur too frequently resulting in too much mid-seral (classes B and C). A run with reduced replacement fire (0.003 for open classes C and D; 0.01 for classes A, B and E) moved 15% of the landscape from Class A and C into Class D, and nearly doubled the MFRI of replacement fires.

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

Class A is a Grass/ Forb/Shrub and Seedling Sapling Stage. Initial establishment of grass and herbaceous species (and CHVI if present in the pre-disturbance community) gives way to shrubs at 15-30 years. JUOC and PIPO are often established after the shrub community is in place. Re-establishment of the trees may be delayed by the large disturbance size and removal of nearby seed sources.

Indicator Species* and Canopy Position

ARTR
CHVI
AGSP
SIHY

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	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 B 5 %

Mid1 Closed

Description

Class B represents Pole to Small tree (5-20" dbh) dominated sites with significant competition between trees even though canopy cover does not exceed 70%. Shrub and herbaceous species are often depauperate or declining in this stage due to the competition from the Overstory Trees. This stage is

Indicator Species* and Canopy Position

PIPO
JUOC
FEID
ARTR

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	25 %	70 %
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.

susceptible to mountain pine beetle attack which cycles this stage to Class C.

Class C 25 %

Mid1 Open

Description

Class C represents Pole to Small tree (5-20" dbh) dominated sites with open canopies. Understories are more vigorous than class B and have similar species composition to class A.

Indicator Species* and Canopy Position

PIPO
ARTR
PUTR
AGSP

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	25 %
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 40 %

Late1 Open

Description

Class D represents the Large tree (20"+) open canopy conditions. Often this gives a Savanna-like appearance. Shrub and herbaceous communities are similar to Class A.

Indicator Species* and Canopy Position

PIPO
ARTR
CELE
FEID

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	25 %
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 5 %

Late1 Closed

Description

Class E occurs when class D misses 2-3 fire intervals. This stage is susceptible to western pine beetle events which cycle this stage to Class C.

Indicator Species* and Canopy Position

PIPO
CELE
JUOC
FEID

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	25 %	70 %
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

Non-Fire Disturbances Modeled

- [x] Insects/Disease
- [ ] Wind/Weather/Stress
- [ ] Native Grazing
- [x] 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

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

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	130			0.00769	37
Mixed	100			0.01	48
Surface	300			0.00333	16
All Fires	48			0.02103	

References

Baker, William L., and Douglas J. Shinneman, 2003. Fire and restoration of pinon-juniper woodland in the western United States: a review. Forest Ecology and Management 189 (1-21)

Hall, F.C. 1973. Plant communities of the Blue Mountains in eastern Oregon and southeastern Washington. USDA Forest Service R6 Area Guide 3-1. Pacific Northwest Region, Portland, Oregon. 71 p.

Hopkins, W.E. 1979a. Plant associations of the Fremont National Forest. USDA Forest Service R6 Ecol 79-004. Pacific Northwest Region, Portland Oergon. 106 p., illus.

Hopkins, W.E. 1979b. Plant associations of the south Chiloquin and Klamath Ranger Districts, Winema National Forest. USDA Forest ServiceR6 Ecol 79-005. Pacific Northwest Region, Portland, Oregon. 96 p., illus.

Johnson, C.G., Jr., and R.R. Clausnitzer. 1992. Plant associations of the Blue and Ochoco Mountains. USDA Forest Service R6 ERW-TP-036-92. Pacific Northwest Region, Portland, Oregon. 207 p.

Johnson, C.G., Jr., and S.A. Simon. 1987. Plant associations of the Wallowa-Snake Province. USDA Forest Service R6 Ecol TP 255a-86. Pacific Northwest Region, Portland, Oregon. 472 p.

Johnson, Charles Grier Jr., and David K. Swanson, (review draft Sept 2004) Bunchgrass Plant Communities of the Blue and Ochoco Mountains. A Guide for Managers.

Miller, Richard and Jeffrey Rose, 1999. Fire History and western juniper encroachment in sagebrush steppe. J. Range Manage. 52:550-559.

Volland, L.A. 1985. Plant associations of the central Oregon Pumice zone. USDA Forest Service R6 Ecol 104-1985. Pacific Northwest Region, Portland, Oregon. 138 p.

Volland, Lenny, Ecology Plot Data Unpublished Data Collected Mid 1960's to Mid 1970's.