

LANDFIRE Biophysical Setting Model

Biophysical Setting 0910532

**Northern Rocky Mountain Ponderosa Pine
Woodland and Savanna - Xeric**

☐ This BPS is lumped with:

☒ This BPS is split into multiple models: Suggest splitting into a mesic and xeric. This model is the xeric and more commonly found in MZ09. Represented by longer mfri than mesic in areas with <17in precipitation.

General Information

Contributors (also see the Comments field)

Date 10/4/2005

Modeler 1 Mike Simpson mlsimpson@fs.fed.us

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Modeler 2 Dave Owens deowens@fs.fed.us

Reviewer

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Reviewer

Vegetation Type

Forest and Woodland

Dominant Species

PIPO

ARTR

CELE

JUOC

Map Zone

9

Model Zone

☐ Alaska

☐ Northern Plains

☐ California

☐ N-Cent. Rockies

☐ Great Basin

☒ Pacific Northwest

☐ Great Lakes

☐ South Central

☐ Hawaii

☐ Southeast

☐ Northeast

☐ S. Appalachians

☐ Southwest

General Model Sources

☒ Literature

☒ Local Data

☒ Expert Estimate

Geographic Range

This BpS 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 ID border.

Biophysical Site Description

This BpS occurs in precipitation zones between 15-17in. 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, CELE and PUTR2. Important herbaceous species include FEID, AGSP (now PSSP6), SIHY, POSA and various Stipa species.

Disturbance Description

Mixed and stand replacement fires dominate this type. Large wind driven events originating in the shrub steppe or juniper woodland vegetation zones heavily influence this BpS. 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 or PUTR and PIPO or dry mixed conifer sites with frequent fire return intervals. These communities have higher

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shrub components and longer fire return intervals with more of a mixed severity fire regime.

This type is distinct from ponderosa pine mesic (RA: R#PIPOm; LANDFIRE: 091053mesic) in that it typically occurs in regions with <45cm/year precipitation. This model is designed to address the mappable pockets of PIPO that exist on low productivity, low moisture and high stress sites resulting in lower reproductive rates and slower growth.

Native Uncharacteristic Conditions

Scale Description

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 fuel continuity increases the fire return intervals and significant dry shrub communities increase the occurrence of stand replacement and mixed fires.

Comments

Oct. 4 Update: Amy Waltz (awaltz@tnc.org) and Kori Buford (kbuford@tnc.org) also helped with the model. The RA model (R#PIPOxe) was adapted for Landfire without modification to the model but we enhanced the descriptions and addressed reviewer comments (below) in Adjacency box.

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.

Vegetation Classes

Class A	25 %	<u>Indicator Species and Canopy Position</u>	<u>Structure Data (for upper layer lifeform)</u>												
Early Development 1 All Structure		ARTR	<table><tr><td></td><td><i>Min</i></td><td><i>Max</i></td></tr><tr><td><i>Cover</i></td><td>0 %</td><td>50 %</td></tr><tr><td><i>Height</i></td><td>Tree 0m</td><td>Tree 10m</td></tr><tr><td><i>Tree Size Class</i></td><td colspan="2">Pole 5-9" DBH</td></tr></table>		<i>Min</i>	<i>Max</i>	<i>Cover</i>	0 %	50 %	<i>Height</i>	Tree 0m	Tree 10m	<i>Tree Size Class</i>	Pole 5-9" DBH	
	<i>Min</i>	<i>Max</i>													
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<i>Tree Size Class</i>	Pole 5-9" DBH														
<u>Upper Layer Lifeform</u>		Upper													
☐ Herbaceous		CHVI8													
☐ Shrub		Middle													
☒ Tree	<u>Fuel Model</u>	PSSP6													
		Lower													
		ELEL5													
		Lower													
<u>Description</u>			☐ Upper layer lifeform differs from dominant lifeform.												
Class A is a grass/forb/shrub and seedling sapling and pole stage (age 0-49 yrs). Initial establishment of grass and herbaceous species (and CHVI if present in the pre-disturbance community) gives way to shrubs at 15-30yrs. 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.															

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Class B 5 %

Mid Development 1 Closed

Upper Layer Lifeform☐ Herbaceous☐ Shrub☒ Tree **Fuel Model****Indicator Species and Canopy Position**

PIPO

Upper

JUOC

Mid-Upper

FEID

Lower

ARTR

Middle

Structure Data (for upper layer lifeform)

	Min	Max
Cover	25 %	70 %
Height	Tree 10.1m	Tree 25m
Tree Size Class	Medium 9-21"DBH	

☐ Upper layer lifeform differs from dominant lifeform.**Description**

Class B represents pole to small tree (5-20in DBH, age 50-149, succession to class E) 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 overstory trees. This stage is susceptible to mountain pine beetle attack which cycles this stage to class C.

Class C 25 %

Mid Development 1 Open

Upper Layer Lifeform☐ Herbaceous☐ Shrub☒ Tree **Fuel Model****Indicator Species and Canopy Position**

PIPO

Upper

ARTR

Middle

PUTR2

Middle

PSSP6

Lower

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	25 %
Height	Tree 10.1m	Tree 25m
Tree Size Class	Medium 9-21"DBH	

☐ Upper layer lifeform differs from dominant lifeform.**Description**

Class C represents pole to small tree (5-20in DBH, age 50-149yrs) dominated sites with open canopies. Understories are more vigorous than class B and have similar species composition to class A. If two or three fire cycles are missed this stand would convert to class E.

Class D 40 %

Late Development 1 Open

Upper Layer Lifeform☐ Herbaceous☐ Shrub☒ Tree **Fuel Model****Indicator Species and Canopy Position**

PIPO

Upper

ARTR

Middle

CELE3

Middle

ELEL5

Lower

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	25 %
Height	Tree 25.1m	Tree 50m
Tree Size Class	Very Large >33"DBH	

☐ Upper layer lifeform differs from dominant lifeform.**Description**

Class D represents large trees (20in+, age 150yrs+) and open canopy conditions. Often this gives a savanna-like appearance. Shrub and herbaceous communities are similar to class A. If two or three fire cycles are missed this stand would convert to class E.

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Class E 5 %

Late Development 1 Closed

Upper Layer Lifeform☐ Herbaceous☐ Shrub☒ Tree**Fuel Model****Indicator Species and Canopy Position**

PIPO

Upper

CELE3

Middle

JUOC

Mid-Upper

FEID

Lower

Structure Data (for upper layer lifeform)

	Min	Max
Cover	25 %	70 %
Height	Tree 25.1m	Tree 50m
Tree Size Class	Very Large >33"DBH	

☐ Upper layer lifeform differs from dominant lifeform.**Description**

Class E (age 150yrs+) 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.

Disturbances**Fire Regime Group**:** III**Historical Fire Size (acres)**

Avg

Min

Max

Sources of Fire Regime Data☒ Literature☒ Local Data☒ Expert Estimate**Additional Disturbances Modeled**☒ Insects/Disease☐ Native Grazing☐ Other (optional 1)☐ Wind/Weather/Stress☒ Competition☐ Other (optional 2)**Fire Intervals**

	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	

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.

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