

LANDFIRE Biophysical Setting Model

Biophysical Setting 0911650

**Northern Rocky Mountain Foothill Conifer
Wooded Steppe**

- ☐ This BPS is lumped with:
☐ This BPS is split into multiple models:

General Information

Contributors (also see the Comments field)

Date 11/18/2005

Modeler 1 Jeff Jones jjones@fs.fed.us

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Modeler 2

Reviewer Cathy Stewart cstewart@fs.fed.us

Modeler 3

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Vegetation Type

Forest and Woodland

Dominant Species

PSME

PIPO

PIFL

ARTRV

JUCO

JUSC

PSSP6

FEID

Map Zone

9

Model Zone

☐ Alaska

☐ California

☐ Great Basin

☐ Great Lakes

☐ Hawaii

☐ Northeast

☐ Northern Plains

☐ N-Cent. Rockies

☒ Pacific Northwest

☐ South Central

☐ Southeast

☐ S. Appalachians

☐ Southwest

General Model Sources

☒ Literature

☐ Local Data

☒ Expert Estimate

Geographic Range

Primarily found east of the Continental Divide in northern MT (west of Billings), eastern ID and WY.

Biophysical Site Description

These savannas occur at the lower treeline/ecotone between grassland or shrubland and more mesic coniferous forests typically in warm, dry, exposed sites. Elevations range from <500m in British Columbia to 1600m in mountains in central ID. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridgetops are most common. This ecological system generally occurs on glacial till, glacio-fluvial sand and gravel, dune, basaltic rubble, colluvium, to deep loess or volcanic ash-derived soils, with characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acid pH, an abundance of mineral material, rockiness and periods of drought during the growing season. These savannas in the eastern Cascades, Okanogan and northern Rockies regions receive winter and spring rains, and thus have a greater spring "green-up" than the drier woodlands and savannas in the central Rockies.

Vegetation Description

Generally dominated by Douglas-fir with incidental ponderosa pine and/or limber pine. Understory of bunchgrasses and sparse shrubs. Stands are typically open and dominated by moderate to large diameter Douglas-fir.

Disturbance Description

Fire regime is predominantly (70%) frequent, low severity fires with a MFI of approximately 30yrs. Mixed-severity fires occur with a typical frequency of 30-50yrs primarily in dense stands (classes B and E). Native American burning may have occurred in many of these low-elevation forests.

**Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity.

Limber pine may be affected by blister rust.

Adjacency or Identification Concerns

This BpS corresponds with cool, dry Douglas-fir and limber pine habitat types (Pfister et al. 1977), including PSME/ARUV, PSME/AGSP, PIFL/AGSP, PIFL/FEID/FESC, PIFL/AGSP and PIFL/FEID. Ecotone with mountain grasslands/sagebrush.

Native Uncharacteristic Conditions

Scale Description

Since this type is dominated by surface fires and because this type represents an ecotone, patches tended to be smaller in size. Consequently, fire sizes were also relatively small. Analysis areas of several thousand acres would probably be adequate.

Issues/Problems

Comments

Model for MZ09 was imported unchanged from MZ10, except that the geographic description was adjusted. Additional reviewers were John DiBari (jndibari@yahoo.com), Steve Barrett (sbarrett@mtdig.net) and Lee Clark (lwclark@fs.fed.us).

Based on the Rapid Assessment model ROPSMEdy, by Jeff Jones and reviewed by Cathy Stewart (cstewart@fs.fed.us) and Steve Barrett (sbarrett@mtdig.net).

Rapid Assessment peer review comments incorporated on 3/16/2005, resulting in clarification in description, slightly more surface fires and higher MFI overall.

10/09/07: As a result of final QC for LANDFIRE National by Kori Blankenship the user-defined min and max fire return intervals for mixed severity fire were deleted because they were not consistent with the modeled fire return interval for this fire severity type.

Vegetation Classes

Class A 10 %

Early Development 1 All Structure

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☒ Tree

Fuel Model

Description

Dominated by bunchgrasses, mountain sagebrush and seed/sapling sized Douglas-fir. Limber pine and ponderosa pine may be present in varying amounts.

Indicator Species and Canopy Position

PSME
Upper
FEID
Lower
ARTRV
Lower
PIFL
Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	30 %
Height	Tree 0m	Tree 5m
Tree Size Class	Sapling >4.5ft; <5"DBH	

☐ Upper layer lifeform differs from dominant lifeform.

**Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity.

Class B 2 %

Mid Development 1 Closed

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

PSME

Upper

PIFL

Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	31 %	100 %
Height	Tree 0m	Tree 50m
Tree Size Class	Pole 5-9" DBH	

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

Relatively dense pole and/or large sized Douglas-fir. Limber pine and ponderosa pine may be present in varying amounts. Sagebrush has largely dropped out of the stand. Mixed severity fire may open up the canopy.

Class C 8 %

Mid Development 1 Open

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

PSME

Upper

FEID

Lower

ARTRV

Lower

PIFL

Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	30 %
Height	Tree 5.1m	Tree 10m
Tree Size Class	None	

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

Open poles of Douglas-fir with bunchgrass and sagebrush understory. Limber pine and ponderosa pine may be present in varying amounts. Surface fires maintain the open condition.

Class D 80 %

Late Development 1 Open

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

PSME

Upper

FEID

Lower

ARTRV

Lower

PIFL

Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	30 %
Height	Tree 10.1m	Tree 50m
Tree Size Class	None	

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

Widely spaced, open canopy of medium to large diameter Douglas-fir with bunchgrass and sagebrush understory. Canopy fuels are discontinuous. Limber pine and ponderosa pine may be present in varying amounts. Surface fires maintain the open condition.

**Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity.

Class E 0 %

[Not Used] [Not Used]

**Indicator Species and
Canopy Position**

Structure Data (for upper layer lifeform)

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	%	%
<i>Height</i>		
<i>Tree Size Class</i>		

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model

☐ Upper layer lifeform differs from dominant lifeform.

Description

Disturbances

Fire Regime Group:** I

Historical Fire Size (acres)

Avg 0

Min 0

Max 0

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

	<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	100	300	0.005	10
<i>Mixed</i>	145			0.0069	13
<i>Surface</i>	25	15	40	0.04	77
<i>All Fires</i>	19			0.0519	

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.

References

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**Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity.

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