

LANDFIRE Biophysical Setting Model

Biophysical Setting: 0910110

Rocky Mountain Aspen Forest and Woodland

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

General Information

Contributors (also see the Comments field) **Date** 10/6/2005

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Modeler 3 **Reviewer**

Vegetation Type

Forest and Woodland

Dominant Species

POTR5

Map Zone

9

Model Zone

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

General Model Sources

- Literature
 Local Data
 Expert Estimate

Geographic Range

This model is for LANDFIRE MZ09. Aspen does not occur enough in LANDFIRE MZ08 to warrant a model. In MZ09 aspen occurs in scattered small patches of <10ac, and are somewhat more extensive in riparian zones. Extensive areas of aspen (hundreds of acres) in this zone are rare. Steens Mountain provides an example of an extensive area, as well as does the Unity District of the Wallowa Whitman NF.

Biophysical Site Description

Commonly on moderate, mid-elevation slopes as small, scattered inclusions in the Douglas-fir ponderosa pine BpS. Also in riparian zone at lower elevations. Primarily occurs in the mid-elevation zone (3000-5000ft.)

Vegetation Description

Small, scattered patches of aspen. In the existing vegetation condition Douglas-fir, grand fir and ponderosa pine are common in these stands because of fire exclusion; aspen is often decadent.

Disturbance Description

Historically burned as part of a mixed severity vegetation mosaic with Douglas-fir and ponderosa pine.

Adjacency or Identification Concerns

Native Uncharacteristic Conditions

Scale Description

Primarily at fine scale (<10ac) in this map zone. A few areas in the hundreds of acres. This is a rare map unit in this zone; normally aspen is a fine-scale component mapped as part of other BpS.

Issues/Problems

**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.

Map only where aspen occurs in large enough areas to represent a range of aspen seral stages.

Comments

Dave Powell and Dave Swanson would be good reviewers.

National QC resulted in changing the minimum height of class C from 5.1m to 10.1m to distinguish from class B.

Vegetation Classes

Class A 50 %

Early Development 1 All Structure

Upper Layer Lifeform

Herbaceous
 Shrub
 Tree

Fuel Model

2

Indicator Species and Canopy Position

POTR5
 Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	51 %	100 %
Height	Tree 0m	Tree 5m
Tree Size Class	Seedling <4.5ft	

Upper layer lifeform differs from dominant lifeform.

Description

Aspen suckers and saplings. Grass and forbs present. The mean FRI of replacement fire is 60yrs, causing an ecological setback to the beginning of class A. Mixed severity fire (mean FRI of 50yrs) does not change vegetation dynamics. Succession to class B after 40 yrs.

Class B 25 %

Mid Development 1 Closed

Upper Layer Lifeform

Herbaceous
 Shrub
 Tree

Fuel Model

5

Indicator Species and Canopy Position

POTR5
 Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	41 %	100 %
Height	Tree 5.1m	Tree 10m
Tree Size Class	Sapling >4.5ft; <5"DBH	

Upper layer lifeform differs from dominant lifeform.

Description

Aspen over six feet tall dominate. Canopy cover highly variable. Replacement fire occurs every 60yrs on average (resets to class A). Mixed severity fire (average FRI of 50yrs) does not change the successional age of these stands, although this fire consumes litter and woody debris and may stimulate suckering. With succession, a significant portion of this class eventually moves to class E (deterministic transition after 40yrs), and another significant portion moves to class C (alternate succession = 0.25).

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Class C 5 %
Mid Development 2 Closed

Indicator Species and Canopy Position
POTR5
Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	41 %	100 %
Height	Tree 10.1m	Tree 25m
Tree Size Class	Medium 9-21"DBH	

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model

8

Upper layer lifeform differs from dominant lifeform.

Solid aspen stands, no evergreens.

Description

True stable aspen trees 5-16in DBH. Canopy cover is highly variable. The FRI of mixed severity fire does not change with age (50yrs, maintains in class C). Replacement fire occurs every 60yrs on average (rests to class A). Insect/diseases affecting older trees every 200yrs will cause a transition to class B. Succession keeps vegetation in class C.

Class D 15 %
Late Development 1 All Structures

Indicator Species and Canopy Position
POTR5
Upper
PSME
Mid-Upper
ABLA
Mid-Upper
ABCO
Mid-Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	40 %
Height	Tree 5.1m	Tree 25m
Tree Size Class	Large 21-33"DBH	

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model

10

Upper layer lifeform differs from dominant lifeform.

Conifers present, but not over-topping the aspen.

Description

Aspen 5-16" dominate with conifer understory up to co-dominance: 80% aspen overstory. Conifers (eg, Douglas-fir) are assumed more resistant to fire than aspen and will likely cause the progressive suppression of aspen. Mix severity fire keeps this stand open (class D), kills young conifers, and maintains aspen: every 50yrs on average. Replacement fire is every 60yrs (reset to class A). Succession to class E after 70yrs.

Class E 5 %
Late Development 1 Closed

Indicator Species and Canopy Position
PSME
Upper
ABLA
Upper
ABCO
Upper
POTR5
Middle

Structure Data (for upper layer lifeform)

	Min	Max
Cover	41 %	80 %
Height	Tree 5.1m	Tree 25m
Tree Size Class	Large 21-33"DBH	

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model

10

Upper layer lifeform differs from dominant lifeform.

Aspen is rather closed canopy, and large diameter conifer are dominating the stand.

Description

Conifers dominate at 150yrs+. Aspen over 16in, mixed conifer mixed sizes, main overstory is conifers. Greater than 50% conifer in the overstory. Mean FRI for replacement fire is every 60yrs (rests to class A). Both mixed severity fire (mean FRI of 50yrs) and insects/diseases every 300yrs on average cause a

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transition to class D. Succession maintains conifer dominance in class E.

Disturbances

Fire Regime Group**:	Fire Intervals					
	Avg FI	Min FI	Max FI	Probability	Percent of All Fires	
I	Replacement	59	50	300	0.01695	46
	Mixed	50	20	60	0.02	54
	Surface					
	All Fires	27			0.03696	

Historical Fire Size (acres)

Avg 100
Min 10
Max 1000

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 (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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