

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 and 2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG)

R1ASPN Aspen with Conifer

General Information

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

Modelers

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Reviewers

Vegetation Type

Forested

General Model Sources

- Literature
- Local Data
- Expert Estimate

Rapid Assessment Model Zones

- California
- Great Basin
- Great Lakes
- Northeast
- Northern Plains
- N-Cent. Rockies
- Pacific Northwest
- South Central
- Southeast
- S. Appalachians
- Southwest

Dominant Species*

POTR5
SYOR

LANDFIRE Mapping Zones

3 6
4
5

Geographic Range

Sites that support aspen are common at elevations exceeding about 5000 feet in the Modoc Plateau, Warner Mountains, and Sierra Nevada. Aspen is found in smaller patches in the Klamath Mountains, and is rare in the mountains of southern California.

Biophysical Site Description

At lower elevations throughout its range in California (3500-6500'), the aspen forest type is associated with sites with added moisture, i.e., azonal wet sites. These sites are often close to streams and lakes. Other sites include meadow edges, rock reservoirs, springs and seeps. Terrain can be simple to complex. At these lower elevations, topographic conditions for this type tends toward positions resulting in relatively colder, wetter conditions within the prevailing climate, e.g., ravines, north slopes, wet depressions, etc. At higher elevations, (6500' +) more diverse combinations are possible because of generally wetter, colder climates. At these higher elevations, aspen forest type can occur in the riparian settings mentioned above as well as on sites subject to snowdrift accumulation, slight depressions, and sites appear to be zonal or close to zonal. Aspen sites fall into two distinct categories at the higher elevations: those riparian-associated sites that are not likely to be succeeded by conifers ("meadow aspen"), and those sites where conifers such as JUOC, ABCO, ABMA, PICO1 can succeed aspen and eventually dominate in the absence of fire or logging disturbance ("upland aspen"). Soil temperature regimes are usually frigid to cryic, with mesic soil temperature regimes being much less common. The VDDT model associated with this description models the "upland" aspen type with conifer succession potential.

Vegetation Description

Sites in the "HRV" aspen existing vegetation state, with deep soils: stands are dominated by aspen trees in a range of size classes. Tree canopy cover in reference condition stands can easily exceed 85%.

Understory graminoid and forb vegetation is rich and diverse in deep soil sites because of high water retention and bountiful soil nutrients. Soils on the deep sites usually have mollic epipedons, high root density, and biologically active litter components. At least 500 aspen suckers 5-15' tall will be present in

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HRV conditions. Lack of suckers or stems in the 15-30' tall class is representative of potentially unsustainable conditions for aspen. Another potentially unsustainable condition occurs if sagebrush cover (various species but usually Mountain Big Sagebrush) or conifer cover (JUOC, PIPO, ABCO, ABMA, PICO1 are possibilities) exceeds 10%.

Disturbance Description

Meadow sites supporting the aspen type are maintained by occasional stand replacing fire, and reference conditions are severely impaired by improperly timed grazing. Upland sites supporting the aspen type are maintained by disturbances that allow regeneration from below-ground suckers such as stand replacement fires. Upland aspen clones are impaired or eliminated by conifer ingrowth and overtopping and to a lesser extent by disturbances such as ill-timed grazing. If aboveground aspen on upland sites disappears (site overtaken by conifers) then the site has probably shifted to a conifer PNVG and restoration to an aspen state is not a viable pathway. In a reference condition scenario, a few stands will advance toward conifer dominance, but much fewer than in many current scenarios where fire frequency is reduced from reference conditions.

Adjacency or Identification Concerns

This model considers sites that support the "upland aspen type" as opposed to the "meadow aspen type". The "meadow aspen type" PNVG seems to be covered by the R3ASPN model.

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Patch sizes range in the 10s to 100s of acres.

Issues/Problems

Model Evolution and Comments

Removed -10 year relative age in model state C - it is inconsistent with modeling rules and is unnecessary given a 200 year TSD. Suggested reviewers: Dale Bartos, Wayne Shephard, Robert Campbell - did not respond to requests for review.

Succession Classes**														
<i>Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).</i>														
Class A 10 %	<u>Dominant Species* and Canopy Position</u> POTR5	<u>Structure Data (for upper layer lifeform)</u>												
<u>Description</u> Early1 PostRep Aspen suckers less than 6' tall. Grass and forbs present.	<u>Upper Layer Lifeform</u> <input type="checkbox"/> Herbaceous <input type="checkbox"/> Shrub <input type="checkbox"/> Tree	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><i>Min</i></th> <th style="text-align: center;"><i>Max</i></th> </tr> </thead> <tbody> <tr> <td><i>Cover</i></td> <td style="text-align: center;">50 %</td> <td style="text-align: center;">100 %</td> </tr> <tr> <td><i>Height</i></td> <td style="text-align: center;">no data</td> <td style="text-align: center;">no data</td> </tr> <tr> <td><i>Tree Size Class</i></td> <td colspan="2" style="text-align: center;">no data</td> </tr> </tbody> </table>		<i>Min</i>	<i>Max</i>	<i>Cover</i>	50 %	100 %	<i>Height</i>	no data	no data	<i>Tree Size Class</i>	no data	
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	<u>Fuel Model</u> no data	<input type="checkbox"/> Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:												

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Class B 60 %

Mid1 Closed

Description

Aspen over 6' tall dominate.
Canopy cover highly variable.

Dominant Species* and Canopy Position

POTR5

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:

Class C 25 %

Late1 All Structu

Description

Aspen trees 5 - 16in DBH. Canopy cover is highly variable. Some understory conifers are present

Dominant Species* and Canopy Position

POTR5
ABCO

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:

Class D 5 %

Late1 Closed

Description

Aspen trees predominantly 16" dbh. Conifers are present and overtopping the aspen. White fir is a typical conifer that is successional to aspen, and is depicted here, but other conifers especially lodgepole and red fir are also possible.

Dominant Species* and Canopy Position

ABCO
POTR5

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	80 %	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:

Class E 0 %

Late1 Closed

Description

NA

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	%
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

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

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Disturbances

Disturbances Modeled

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

Historical Fire Size (acres)

Avg: no data
 Min: no data
 Max: no data

Fire Regime Group: 4

- 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

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. 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	155	50	300	0.00645	24
Mixed	240			0.00417	15
Surface	60			0.01667	61
All Fires	37			0.02728	

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