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):

R1ASPN **Aspen with Conifer**

General Information

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

Modelers

Sydney Smith sesmith@fs.fed.us

Reviewers

Vegetation Type

Forested

Dominant Species*

POTR5

SYOR

General Model Sources

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

LANDFIRE Mapping Zones

3 6

4

5

Rapid Assessment Model Zones

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

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

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

density, and biologically active litter components. At least 500 aspen suckers 5-15' tall will be present in 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

Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

Class A 10 %

Early1 PostRep

Description

Aspen suckers less than 6' tall.
Grass and forbs present.

Indicator Species* and Canopy Position

POTR5

Structure Data (for upper layer lifeform)

	Min	Max
Cover	50 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

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

Fuel Model no data

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

Class B 60 %

Mid1 Closed

Description

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

Indicator Species* and Canopy Position

POTR5

Structure Data (for upper layer lifeform)

	Min	Max
Cover	40 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

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

Fuel Model no data

Class C 25 %

Late1 All Structures

Description

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

Indicator Species* and Canopy Position

POTR5
ABCO

Structure Data (for upper layer lifeform)

	Min	Max
Cover	40 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

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

Fuel Model no data

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.

Indicator Species* and Canopy Position

ABCO
POTR5

Structure Data (for upper layer lifeform)

	Min	Max
Cover	80 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

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

Fuel Model no data

Class E 0 %

Late1 Closed

Description

NA

Indicator 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

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

Fuel Model no data

Disturbances

Non-Fire Disturbances Modeled

☑ Insects/Disease
☑ Wind/Weather/Stress
☑ Native Grazing
☑ Competition
☐ Other:
☐ Other:

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

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

☐ 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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