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):

R3ASPN Stable Aspen without Conifers

General Information

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

Modelers
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Reviewers
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Vegetation Type
Forested

Dominant Species*
POTR5
SYOR2

General Model Sources
☑ Literature
☑ Local Data
☑ Expert Estimate

LANDFIRE Mapping Zones
14 24 28
15 25
23 27

Rapid Assessment Model Zones
☐ California ☑ Pacific Northwest
☑ Great Basin ☑ South Central
☑ Great Lakes ☑ Southeast
☐ Northeast ☑ S. Appalachians
☐ Northern Plains ☑ Southwest
☐ N-Cent.Rockies

Geographic Range
Western Colorado, Utah, northern New Mexico, northern Arizona, central Nevada.

Biophysical Site Description
This type occurs on flat to moderately steep terrain (<50%) on all aspects. Elevation typically ranges from 5000 to 11000 ft. Stable aspen typically occurs above P/J. Soils are generally deep, mollic, cool, and moist. As a species, aspen is adapted to a much broader range of environments than most plants found associated with it.

Vegetation Description
Aspen exists in single-storied or more commonly multi-storied stands. Conifers are not generally present in this type.
Understory consists of an abundant herbaceous component, perhaps with snowberry (Symphoricarpos sp.), meadow rue (Thalictrum fendleri) and/or yarrow (Achillea millefolium) present. Aspen suckers 5-15’ tall will be present in all classes at least 500 stems/acre. Lack of suckers is representative of an uncharacteristic class. Another uncharacteristic class is indicated if sagebrush cover is over 10% (in Utah).

Disturbance Description
Fire behavior in aspen stands is often viewed as surface fire, but may in fact result in fire effects that are mixed, as defined for LANDFIRE (i.e., 25-75% top kill). Fires were modeled here as replacement and surface. Replacement fires probably occurred with an approximate rotation of 150 years (Romme et al. 2001). Surface fires (causing <25% top-kill) were relatively rare and are more likely in late-development conditions, though exact frequencies are unknown.

Insects and pathogens may cause stand-replacement disturbances, increasing in likelihood as stands age.

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

If conifers are present, please review R3ASMCc, R3MCONcm and R3MCONwd as options. Stable stands appear to occur more often at lower elevations compared to seral stands. Adjacent forest types such as ponderosa pine or warm/dry mixed conifer with more frequent fire may influence fire frequency in stable aspen to facilitate regeneration.

Aspen may be declining in parts of the southwest, and appears most critical in Utah, Arizona, and New Mexico, but not in Colorado (especially not in southwestern Colorado).

This PNVG is similar to the PNVG R2ASPN for the Great Basin model zone, but fire severities differ.

Scale Description

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

Issues/Problems

Aspen stands tend to remain dense throughout most of the lifespan, hence the open stand descriptions were not used. These are typically self-perpetuating stands, they may not need regular disturbance to regenerate. As aspen is such a wide-ranging species, there are not dominant understory species which assist in identification of this type. Either there aren't conifers (this PNVG) or there are, which would indicate another PNVG. There are surface fires which burn small areas throughout these stands. They do not set succession back.

Model Evolution and Comments

Peer review resulted in eliminating mixed severity fire from this type (originally modeled at 215-year MFI). This caused no change in the percent in each class A-C, but changed the overall MFI of the model from 75 years to 122 years. Quality control also eliminated a rule violation (use of Relative Age for C to C mixed severity fire) with no change to results.

Succession Classes

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

<table>
<thead>
<tr>
<th>Class A</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early1 PostRep</td>
<td></td>
</tr>
</tbody>
</table>

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

| Indicator Species* and Canopy Position |
| --- | --- |
| POTR5 |

| Structure Data (for upper layer lifeform) |
| --- | --- |
| Cover | 50% | 100% |
| Height | no data | no data |
| Tree Size Class | no data |

Upper Layer Lifeform
- [ ] Herbaceous
- [ ] Shrub
- [ ] Tree

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**  55%

Mid1 Closed

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

**Indicator Species* and Canopy Position**
POTR5

**Structure Data (for upper layer lifeform)**

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>40 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Height</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Tree Size Class</td>
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<td>no data</td>
</tr>
</tbody>
</table>

**Upper Layer Lifeform**
- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

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**Class C**  35%

Late1 All Structures

**Description**
Aspen trees 5 - 16in DBH. Canopy cover is highly variable

**Indicator Species* and Canopy Position**
POTR5

**Structure Data (for upper layer lifeform)**

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>40 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Height</td>
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<td>no data</td>
</tr>
<tr>
<td>Tree Size Class</td>
<td>no data</td>
<td>no data</td>
</tr>
</tbody>
</table>

**Upper Layer Lifeform**
- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

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**Class D**  0%

Late1 Open

**Description**

**Indicator Species* and Canopy Position**
POTR5

**Structure Data (for upper layer lifeform)**

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
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<td>%</td>
</tr>
<tr>
<td>Height</td>
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<td>no data</td>
</tr>
<tr>
<td>Tree Size Class</td>
<td>no data</td>
<td>no data</td>
</tr>
</tbody>
</table>

**Upper Layer Lifeform**
- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

---

**Class E**  0%

Late1 Closed

**Description**

**Indicator Species* and Canopy Position**
POTR5

**Structure Data (for upper layer lifeform)**

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>0 %</td>
<td>0 %</td>
</tr>
<tr>
<td>Height</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Tree Size Class</td>
<td>no data</td>
<td>no data</td>
</tr>
</tbody>
</table>

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8/11/2008
## Disturbances

<table>
<thead>
<tr>
<th>Non-Fire Disturbances Modeled</th>
<th>Fire Regime Group: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insects/Disease</td>
<td>I: 0-35 year frequency, low and mixed severity</td>
</tr>
<tr>
<td>Wind/Weather/Stress</td>
<td>II: 0-35 year frequency, replacement severity</td>
</tr>
<tr>
<td>Native Grazing</td>
<td>III: 35-200 year frequency, low and mixed severity</td>
</tr>
<tr>
<td>Competition</td>
<td>IV: 35-200 year frequency, replacement severity</td>
</tr>
<tr>
<td>Other:</td>
<td>V: 200+ year frequency, replacement severity</td>
</tr>
</tbody>
</table>

**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.

### Historical Fire Size (acres)

<table>
<thead>
<tr>
<th>Avg</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
</table>

### Sources of Fire Regime Data

<table>
<thead>
<tr>
<th>Literature</th>
<th>Local Data</th>
<th>Expert Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surface</td>
<td></td>
</tr>
<tr>
<td>Replacement</td>
<td>650</td>
<td>2000</td>
</tr>
<tr>
<td>Mixed</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Probability</td>
<td>0.00154</td>
<td>0.00667</td>
</tr>
<tr>
<td>Percent of All Fires</td>
<td>81</td>
<td>19</td>
</tr>
</tbody>
</table>

## References


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