**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):**

**R0JUNIan**  
Ancient Juniper

### General Information

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

<table>
<thead>
<tr>
<th>Modelers</th>
<th>Reviewers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Cagney</td>
<td>Bill Romme, <a href="mailto:romme@cnr.colostate.edu">romme@cnr.colostate.edu</a></td>
</tr>
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<td></td>
<td>Dennis Knight, <a href="mailto:dhknight@uwyo.edu">dhknight@uwyo.edu</a></td>
</tr>
<tr>
<td></td>
<td>Ken Stinson, <a href="mailto:ken_stinson@blm.gov">ken_stinson@blm.gov</a></td>
</tr>
</tbody>
</table>

**Vegetation Type**

- Woodland

**Dominant Species**

- JUOS
- CERCO
- ACHY

**General Model Sources**

- Literature
- Local Data
- Expert Estimate

**LANDFIRE Mapping Zones**

- California
- Great Basin
- Great Lakes
- Northeast
- S. Appalachians
- Northern Plains
- Southwest
- N-Cent.Rockies

**Rapid Assessment Model Zones**

- Pacific Northwest

### Geographic Range

Found throughout Wyoming on escarpments and foothills. This type is dominated by Utah juniper in western Wyoming, though Rocky Mountain juniper may be more common in eastern Wyoming (Knight 1994). Pinyon tree distribution is limited to a small region on the southern border of Wyoming on the east side of the Flaming Gorge Reservoir.

### Biophysical Site Description

The ancient juniper type is a northern variant of the pinyon juniper type that occurs on the Colorado Plateau. Soils vary but the type features sandstone rimrock. The type occurs on outcrops with 9 to 15 inches of precipitation, at elevations of 5000 to 8000 feet.

### Vegetation Description

Dominant Species include Utah juniper (western Wyoming) or Rocky Mountain juniper (eastern Wyoming) and mountain mahogany. Limber pine may be present in the northern range of this PNVG. Common associates include Indian ricegrass, bluebunch wheatgrass, goldenweed, sagebrush, needle and thread and phlox. Vegetation, in general, is sparse on this type.

### Disturbance Description

Fire regime group V. Nearly all fires are replacement severity, and fire usually occurs in the late-development classes. Ancient Juniper occupies shallow soils where vegetation spacing precludes crown fires in most circumstances. However, when fires do occur they may be large with showy fire behavior. There may be very rare surface or mixed severity fires in early and mid-development stages where ground fuels are relatively continuous (though these were not modeled here because their impact would be minimal).

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

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Juniper is a slow growing plant and may not reestablish for 30-50 years following fire. Junipers growth is controlled by climatic factors and they do not produce reliable annual growth rings.

Utah Juniper stands on south and west aspects are often devoid of fire influence. In many areas, dead and downed trees occur in conjunction with ancient trees (late-development classes). The fire intervals on these sites is unknown, but is much longer than the age span of the trees (Utah juniper may live to be 400 years).

**Adjacency or Identification Concerns**
Adjacent PNVGs usually include Wyoming sagebrush. Slow regeneration and growth of Utah Juniper makes the species uncompetitive in areas where component fuels promote more rapid fire intervals.

Invasion of juniper (often with pinyon pine in the south or limber pine in the north) may invade herbaceous, sagebrush, or ponderosa pine communities, especially where soil is deeper or fire exclusion has changed invaded community structure.

This PNVG may be similar to the PNVG R2PIJU from the Great Basin model zone, but the Great Basin model includes pinyon pine.

**Scale Description**

<table>
<thead>
<tr>
<th>Sources of Scale Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature</td>
</tr>
</tbody>
</table>

**Issues/Problems**

**Model Evolution and Comments**

Workshop code was AJUNI.

In-workshop review provided by William L. Baker (bakerwl@uwyo.edu). Peer review incorporated on 4/11/2005. Additional reviewers included Bill Baker (bakerwl@uwyo.edu), Thor Stephenson (thor_stephenson@blm.gov), Curt Yanish (curt_yanish@blm.gov), Gavin Lovell (gavin_lovell@blm.gov), and Karen Clause (karen.clause@wy.usda.gov). As a result of peer review, drought disturbances were added to all classes, affecting 0.1% of the landscape each year and causing a transition to early seral (class A). The age ranges of classes were also adjusted slightly, to allow for class D beginning at age 400 instead of age 500.

**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</th>
<th>%</th>
<th>Indicator Species* and Canopy Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>SPHAE, ACHY, HECO26</td>
</tr>
</tbody>
</table>

**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>5%</td>
<td>100%</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></td>
</tr>
</tbody>
</table>

**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  20%

Mid1 Open

**Description**
After 50 years Utah Juniper has begun to reestablish, and occurs as a co-dominant with Wyoming sagebrush and various forbs and grasses. Western or thickspike wheatgrass, Indian ricegrass, prairie junegrass, Sandburg bluegrass, Haplopapus, phlox, pensatamon, groundsel, hawksbill, and paintbrush are common associates.

<table>
<thead>
<tr>
<th>Indicator Species* and Canopy Position</th>
<th>Structure Data (for upper layer lifeform)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JUOS</td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Cover</td>
</tr>
<tr>
<td></td>
<td>0 %</td>
</tr>
<tr>
<td></td>
<td>Height</td>
</tr>
<tr>
<td></td>
<td>no data</td>
</tr>
<tr>
<td></td>
<td>Tree Size Class</td>
</tr>
</tbody>
</table>

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

**Fuel Model**
- no data

Class C  35%

Late1 Open

**Description**
At 100 - 200 years following fire Utah Juniper canopies begin to suppress the understory. Sagebrush is no longer a co-dominant. Understory species are similar to class B. Utah Juniper does not form even aged stands. Reproduction continues and infills.

<table>
<thead>
<tr>
<th>Indicator Species* and Canopy Position</th>
<th>Structure Data (for upper layer lifeform)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JUOS</td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Cover</td>
</tr>
<tr>
<td></td>
<td>0 %</td>
</tr>
<tr>
<td></td>
<td>Height</td>
</tr>
<tr>
<td></td>
<td>no data</td>
</tr>
<tr>
<td></td>
<td>Tree Size Class</td>
</tr>
</tbody>
</table>

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

**Fuel Model**
- no data

Class D  35%

Late2 Closed

**Description**
At 400 years dead and down trees that grew and died in place (in the absence of fire) occur in conjunction with the old growth stand. All age classes of juniper are represented. This is the standard appearance for dry south- and west-facing exposures.

<table>
<thead>
<tr>
<th>Indicator Species* and Canopy Position</th>
<th>Structure Data (for upper layer lifeform)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JUOS</td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Cover</td>
</tr>
<tr>
<td></td>
<td>30 %</td>
</tr>
<tr>
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<td></td>
<td>no data</td>
</tr>
<tr>
<td></td>
<td>Tree Size Class</td>
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</tbody>
</table>

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

**Fuel Model**
- no data

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Disturbances

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

Historical Fire Size (acres)
- Avg:
- Min:
- Max:

Sources of Fire Regime Data
- Literature
- Local Data
- Expert Estimate

Fire Regime Group: 5
- 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 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.

<table>
<thead>
<tr>
<th>Replacement</th>
<th>Avg FI</th>
<th>Min FI</th>
<th>Max FI</th>
<th>Probability</th>
<th>Percent of All Fires</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>750</td>
<td>200</td>
<td>1000</td>
<td>0.00133</td>
<td>99</td>
</tr>
</tbody>
</table>

| Mixed | Surface | All Fires | 749 | 0.00135 |

References


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