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)

R0JUNlan Ancient Juniper

General Information

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

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Vegetation Type

Woodland

Dominant Species*

JUOS
CERC
ACHY

General Model Sources

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

LANDFIRE Mapping Zones

10 21
19 22
20 29

Rapid AssessmentModel Zones

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

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 a 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).

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.

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

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

Sources of Scale Data ☐ Literature ☐ Local Data ☑ Expert Estimate

Ancient Juniper stands occur in distinct patches ranging from small patches to thousands of acres.

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).

Class A 10 %

Early1 PostRep

Description

Hot stand replacement fires take the succession all the way to bare ground. These sites are slow to recover, especially on the shallowest soils, and feature a lot of annuals. After about 3 years, there can be a high diversity of native perennial plants, such as globemallow, indian ricegrass, and needle and thread.

Dominant Species* and Canopy Position

SPHAE
ACHY
HECO2

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	5 %	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:

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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, Happlopapus, phlox, pensatamon, groundsel, hawksbill, and paintbrush are common associates.

Dominant Species* and Canopy Position

JUOS

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	30 %
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:

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.

Dominant Species* and Canopy Position

JUOS

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	30 %
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:

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.

Dominant Species* and Canopy Position

JUOS

Structure Data (for upper layer lifeform)

	Min	Max
Cover	30 %	100 %
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:

Class E 0 %

Late1 Closed

Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

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

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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

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

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 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.

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	750	200	1000	0.00133	99
Mixed					
Surface					
All Fires	749			0.00135	

References

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