

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):

R2MSHBwt

Mountain Shrubland with Trees

General Information

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

Modelers

Michele Slaton mslaton@fs.fed.us
Joanne Baggs jbaggs@fs.fed.us
Cheri Howell chowell@fs.fed.us

Reviewers

Clint Williams cwilliams03@fs.fed.us
Crystal Golden kolden@unr.edu
Stanley G. Kitchen skitchens@fs.fed.us

Vegetation Type

Shrubland

Dominant Species*

SYMPH
AMELA
PRUNU
HOLOD

General Model Sources

- Literature
 Local Data
 Expert Estimate

LANDFIRE Mapping Zones

12 17
13 18
16

Rapid Assessment Model Zones

- | | |
|---|--|
| <input type="checkbox"/> California | <input type="checkbox"/> Pacific Northwest |
| <input checked="" type="checkbox"/> Great Basin | <input type="checkbox"/> South Central |
| <input type="checkbox"/> Great Lakes | <input type="checkbox"/> Southeast |
| <input type="checkbox"/> Northeast | <input type="checkbox"/> S. Appalachians |
| <input type="checkbox"/> Northern Plains | <input type="checkbox"/> Southwest |
| <input type="checkbox"/> N-Cent.Rockies | |

Geographic Range

Occurs from southwest Canada to the southern Sierra Nevada, western side of the traverse ranges of southern California, throughout the Great Basin, and in the Rocky Mountains from Montana to Colorado.

Biophysical Site Description

Occurs on mesic sites on gentle to steep slopes. This type may be found on all aspects between elevations of 7,500 to 10,000 ft., although it may occur at lower elevations in the northern parts of its range.

Vegetation Description

Mountain shrub communities vary greatly between the eastern and western Great Basin. Dominant shrubs include Symphoricarpos, Amelanchier, and Prunus on mesic sites, with more Artemisia tridentata var. vaseyana, and Holodiscus on dry sites. In Utah, true mountain mahogany (Cercocarpus montanus) is a resprouting shrub that sometimes dominates this PNVG. Ribes, Acer, mountain ash (Sorbus scopulina), and Chrysothamnus are less common. Grasses and forbs may be abundant and patchy. Trees include pinyon pine, juniper, and limber pine. Douglas fir, white fir, and lodgepole pine may be found on more mesic sites.

Disturbance Description

Fire: This is a fire-dependent system, and is strongly influenced by the fire regime of the surrounding shrublands. Dominant species are resprouters (Anderson 2001, Esser 1995, Howard 1997, Uchytill 1990, Zlatnik 1999). Average FRIs vary between 100-200 yrs with longer intervals for older stands. The average mixed severity FRI varies between 25 yrs for younger stands to 100 yrs for older stands with greater tree encroachment..

Avalanche/rockslide: Sites on steep slopes experience rockslides and avalanches that favor resprouting shrubs.

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

Weather/stress: Severe weather event, such as frost, can cause replacement type mortality every 200 yrs on average.

Adjacency or Identification Concerns

This type occurs in association or complex with mountain big sagebrush, although mountain shrublands are differentiated here by greater diversity.

This PNVG may be similar to the PNVG R3MSHB for the Southwest model zone, but the proportions of mixed versus replacement fire are opposite in the two regions, probably due to differences in weather and lightning patterns. This PNVG may also be similar to the PNVG R0MTSB for the Northern and Central Rockies model zone, but the Great Basin model has much more frequent fire and more mixed severity fire. There is discrepancy among experts about the amount of mixed severity fire in this system.

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Usually, this community occurs on a small scale, on mesic sites near or within the mountain big sagebrush zone. However, it may occur on mesic sites outside this zone.

Issues/Problems

Dwarf aspen, willows, and alder may be present on moist sites. If those species are dominant, an aspen or riparian model would be more appropriate. Fire regime group is II and III, however FRG III is more likely.

Model Evolution and Comments

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

Class A 5%

Early1 PostRep

Description

Grasses and forbs are abundant, as are resprouting shrubs. Shrub seedlings are also present. Replacement fire every 100 yrs and severe weather related mortality will reset the ecological clock to zero. Succession from classes A to B after 5 yrs.

Indicator Species* and Canopy Position

SYMPH
AMELA
PRUNU
HOLOD

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	10 %	40 %
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 B 20%

Mid1 Closed

Description

Shrubs are dominant, and grasses and forbs may be present, especially in gaps between shrubs. Many shrubs are small and immature. Both replacement fire every 100 yrs and severe weather related mortality every 200 yrs will cause a transition to class A. Mixed

Indicator Species* and Canopy Position

SYMPH
AMELA
HOLOD
PRUNU

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	10 %	50 %
Height	no data	no data
Tree Size Class	no data	

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

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

severity fire every 25 yrs will cause a transition from class B to itself, but this transition has no effect on successional dynamics. Succession to C after 15 yrs.

Class C 65%

Late1 Closed

Description

Shrubs are dominant, with little decadence. Grasses and forbs may be present. Small tree seedlings may be present. Shrubs are larger and many are reproducing. Fire and severe weather events return interval are as in class B. Class C is the succession endpoint. However, vegetation will transition to class D in the absence of fire for 60 yrs (three FRIs).

Indicator Species* and Canopy Position

SYMPH
AMELA
PRUNU
HOLOD

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	25 %	60 %
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 10%

Late2 Open

Description

Shrubs are dominant, with more decadence. Trees are over-topping the shrub canopy. Vegetation is considered open because trees do not form a close canopy. FRIs are longer in this class. Replacement fire every 200 yrs and severe weather every 200 yrs will cause transitions to A. Mixed severity fire every 100 yrs simply maintains vegetation in class D, which is the endpoint for succession without stand replacement fire.

Indicator Species* and Canopy Position

JUNIP
PIFL2
ARTR2
HOLOD

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	5 %	15 %
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

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	

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

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: 1

- 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
<i>Replacement</i>	105	100	200	0.00952	22
<i>Mixed</i>	29	25	100	0.03448	78
<i>Surface</i>					
<i>All Fires</i>	23			0.04402	

References

Anderson, M. 2001. *Acer glabrum*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis> [2004, November 18].

Brown, J. K. and J. K. Smith, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p.

Esser, L.L. 1995. *Prunus emarginata*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis> [2004, November 18].

Howard, J. L. 1997. *Amelanchier alnifolia*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis> [2004, November 18].

Howell, C, R. Hudson, B Glover, K Amy. 2004. Resource implementation protocol for rapid assessment matrices. USDA Forest Service, Humboldt-Toiyabe National Forest, Sparks, NV.

Uchytel, R.J. 1990. *Acer grandidentatum*. In: Fire Effects Information System, [Online]. U.S. Department of

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

Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer).
Available: <http://www.fs.fed.us/database/feis> [2004, November 18].

Zlatnik, E. 1999. *Amelanchier utahensis*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer).
Available: <http://www.fs.fed.us/database/feis> [2004, November 18].