

# 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](http://www.landfire.gov). Please direct questions to [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov).

## Potential Natural Vegetation Group (PNVG)

R0SBDW Low Sagebrush Shrubland

### General Information

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

#### Modelers

Diane Abendroth Diane\_Abendroth

#### Reviewers

Bill Baker bakerwl@uwyo.edu  
Don Bedunah bedunah@forestry.umt.edu  
Karen Clause karen.clause@wy.usda.gov

#### Vegetation Type

Shrubland

#### General Model Sources

- Literature  
 Local Data  
 Expert Estimate

#### Rapid Assessment Model Zones

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

#### Dominant Species\*

ARAR  
ARNO  
FEID  
PSSP6

#### LANDFIRE Mapping Zones

10	21	23
19	22	28
20	29	

### Geographic Range

Patchy and discontinuous distribution throughout other sagebrush communities in eastern Montana, Wyoming, the Great Basin, and the Southwest.

### Biophysical Site Description

This type is dominated by low growing sagebrushes found on poor, shallow soils in desert areas, dry mountain valleys, and shallow soils in foothills. Soils are often saturated during part of the year. An impermeable clay or rock layer is often present. Elevations range from 4000 - 7000.

### Vegetation Description

This type includes communities dominated by black Sagebrush (*Artemisia nova*), low sagebrush (also called early sagebrush; *Artemisia arbuscula*). Although these types do not usually grow in combination, they do share similar fire regimes. Low sagebrushes have very sparse fuels with low growing and cushion forbs and widely scattered bunch grasses.

Grasses in areas with higher precipitation include Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and Letterman's needlegrass (*Achnatherum lettermanii*). In areas with less precipitation, common grasses include bottlebrush (*Callistemon* spp.), and rhizomatous wheatgrasses, including bluebunch wheatgrass (*Pseudoroegneria spicata*).

### Disturbance Description

Due to sparse and discontinuous fuels, this type experiences very infrequent fire and exhibits few fire adaptations (Fire Regime Group IV or V). Fire history information is limited for low sagebrush communities. Average fire return intervals reported for little sagebrush (*Artemisia arbuscula*) range from about 40 years (Steinberg 2002) to more than 400 (Baker in press), and is probably strongly related to the fire regimes of surrounding vegetation communities. There was disagreement among reviewers about the frequency of fire for this type (see also the Comments field); the original fire regime of 125 years was

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

retained, but one review suggested using a MFI of 400 years.

Weather events such as drought and high precipitation cycles probably play a role in successional changes, and are modeled here as affecting 0.1% of the landscape each year and cause a transition from the late-development class (B) to the early-development stage (A).

**Adjacency or Identification Concerns**

This type is found in patches within the mountain big sage, Wyoming big sage, and desert shrub vegetation types.

**Scale Description**

**Sources of Scale Data**  Literature  Local Data  Expert Estimate

Little information exists about historical disturbances in this system. Patch sizes were probably less than 500 acres and interspersed in other vegetation communities.

**Issues/Problems**

**Model Evolution and Comments**

Workshop code was DSAG.

This PNVG replaces the PNVG R3SBBL for the Southwest model zone because the two types are very similar.

Peer review was incorporated on 4/29/2005. Additional reviewer was Dennis Knight (dhknight@uwyo.edu). Peer reviewers disagreed about the frequency of fire in this system. The majority agreed with the original 125 year average; one review suggested using a 400 year average. The original MFI of 125 years was retained, but descriptive information was added to the Disturbance Description section. Note that changing the fire frequency from 125 years to 400 years results in just 5% change in the model results for the percent of the landscape in each class (class A would be 10% instead of 15%; B would be 90% instead of 85%.)

<b>Succession Classes**</b>														
<i>Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).</i>														
<p><b>Class A 15 %</b></p> <p>Early1 PostRep</p> <p><b>Description</b></p> <p>Dominated by grasses. Less than 5% cover of shrubs. This class lasts approximately 20 years post disturbance and then succeeds to late-development conditions (class B).</p>	<p><b>Dominant Species* and Canopy Position</b></p> <p>PSSP6 FEID</p> <p><b>Upper Layer Lifeform</b></p> <p><input type="checkbox"/> Herbaceous <input type="checkbox"/> Shrub <input type="checkbox"/> Tree</p> <p><b>Fuel Model</b> no data</p>	<p><b>Structure Data (for upper layer lifeform)</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th></th> <th style="text-align: center;">Min</th> <th style="text-align: center;">Max</th> </tr> </thead> <tbody> <tr> <td>Cover</td> <td style="text-align: center;">0 %</td> <td style="text-align: center;">5 %</td> </tr> <tr> <td>Height</td> <td style="text-align: center;">no data</td> <td style="text-align: center;">no data</td> </tr> <tr> <td>Tree Size Class</td> <td colspan="2" style="text-align: center;">no data</td> </tr> </tbody> </table> <p><input type="checkbox"/> Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:</p>		Min	Max	Cover	0 %	5 %	Height	no data	no data	Tree Size Class	no data	
	Min	Max												
Cover	0 %	5 %												
Height	no data	no data												
Tree Size Class	no data													

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**Class B 85 %**

Late1 Open

**Description**

Dominated by shrub species with >5% cover. Fire or weather events cause a transition to early-development conditions (class A), but otherwise this class persists indefinitely.

**Dominant Species\* and Canopy Position**

ARAR8  
ARNO4  
PSSP6  
FEID

**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:

**Class C 0 %**

Mid1 Open

**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	

**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 0 %**

Late1 Open

**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	

**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 Open

**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	

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

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

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## 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: 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

### 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
<i>Replacement</i>	125	60	150	0.008	100
<i>Mixed</i>					
<i>Surface</i>					
<i>All Fires</i>	125			0.00802	

## References

Baker, W. L. In press. Fire and restoration of sagebrush ecosystems. Wildlife Society Bulletin, in press.

Steinberg, Peter D. 2002. *Artemisia arbuscula*. 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/> [2005, April 29].

Wyoming Interagency Vegetation Committee. 2002. Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management. Wyoming game and Fish Department and Wyoming BLM. Cheyenne, WY. 53 pp.