

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)

R3MASB Mountain Sagebrush (Cool Sage)

General Information

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

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Vegetation Type

Shrubland

General Model Sources

- Literature
- Local Data
- Expert Estimate

Rapid Assessment Model Zones

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

Dominant Species*

ARTR
 SYMP
 STLE4
 PURS

LANDFIRE Mapping Zones

14	24	28
15	25	
23	27	

Geographic Range

Mid elevation of the Central Rockies through Montana, Mountain areas of Utah and North west New Mexico/Northeast Arizona.

Biophysical Site Description

This vegetation type is found on all aspects. Pure stands are found in areas with deeper soils and less topographic relief, but it is also common on slopes with a gradual shift to a mixed mountain shrub community on steeper slopes and in drainages. Elevation ranges from 6,600 feet to 9,000 feet and precipitation from 11-20 inches. Soils are deep, well drained with a pH +/- 7.0. Soil moistures are udic (not dry for as long as 90 cumulative days) and soil temperatures cryic (very cold soils of the Rocky Mountain region).

Vegetation Description

Dominant shrubs include *Artemisia tridentata* ssp. *Vaseyana*, *Purshia tridentata* and *Symphoricarpos oreophilus*. Other common shrubs include *Amelanchier alnifolia*, *Chrysothamnus viscidiflorus*, *Cercocarpus montanus*, *Tetradymia canescens* and *Artemisia novae*. Other shrubs may be locally common. Herbaceous cover is moderate to abundant ranging from 40-85%. Common grasses include: *Festuca idahoensis*, *Elymus elymoides*, *Pascopyrum smithii*, *Elymus trachycaulus*, *Hesperostipa comata*, *Nassella viridula*, *Poa fenderiana*, and *Poa juncifolia* var *ampla*. Indicative forbs include *Eriogonum umbellatum*, *Antennaria rosae*, *Balsamorhiza sagittata*, *Lupinus argenteus*, *Delphinium nuttallianum*, *Phlox multiflora*, *Viola nuttallii*.

Disturbance Description

Mountain sagebrush steppe dominated by mountain sage, western snowberry and bitterbrush with a grass and forb understory is believed to be the major pre-settlement vegetation type for the area, although the exact composition of the community before settlement is unknown. Fire is a major disturbance factor for mountain sage (Blaisdell et al 1984, Johnson 2000). Mountain big sagebrush has the fastest recovery rate of the three subspecies, may be as short as 15 yrs (see FEIS, local data from various monitoring groups - NPS,

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

BLM, TNC, etc). Fire size for this type is larger than other big sagebrush species because of greater fine fuel load but some unburned pockets remain. The fire return intervals reported in the literature for this sage type is 50 years or more (Welch and Criddle 2003). Assuming that recovery rates are correlated with composite fire return intervals, one could posit with some certainty that the fire return interval lies somewhere between 40-75 years. Ranges lie between 30 years near Ponderosa Pine communities and other productive sites (maintaining more early seral types) up to 100 years on north aspects and on rocky slopes (maintaining more late seral types).

Adjacency or Identification Concerns

Differentiation of Mountain Big Sagebrush Steppe from Wyoming Big Sagebrush may be difficult at the ecotone due to physical similarities and hybridization zones (i.e., species concepts become blurred).

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Size of disturbance extent will be limited by the variation of topographical features, age classes of the sage over the landscape, and vegetation types, all typical of mountain terrain. Average patch size 100 to 500 acres with larger sizes during drought.

Issues/Problems

In review Bill Baker questions existence of mixed severity component.

Model Evolution and Comments

This model was adapted from the Rapid Assessment model ROSBMT (from the Northern Central Rockies region) to reflect drier climate and longer fire return intervals observed in Southwest Region.

Quality control resulted in deleting some rule violations (improper use of Time Since Disturbance) with no change to model results.

Succession Classes**														
<i>Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).</i>														
<p>Class A 15%</p> <p>Early1 PostRep</p> <p>Description</p> <p>Sagebrush cover ranges from 0 to 5%. Herbaceous cover is variable, but is typically at least 30%.</p>	<p>Dominant Species* and Canopy Position</p> <p>POAM</p> <p>STLE4</p> <p>PASM</p> <p>LUPIN</p> <p>Upper Layer Lifeform</p> <p><input type="checkbox"/> Herbaceous</p> <p><input type="checkbox"/> Shrub</p> <p><input type="checkbox"/> Tree</p> <p>Fuel Model no data</p>	<p>Structure Data (for upper layer lifeform)</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Cover</td> <td>0 %</td> <td>50 %</td> </tr> <tr> <td>Height</td> <td>no data</td> <td>no data</td> </tr> <tr> <td>Tree Size Class</td> <td colspan="2">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 %	50 %	Height	no data	no data	Tree Size Class	no data	
	Min	Max												
Cover	0 %	50 %												
Height	no data	no data												
Tree Size Class	no data													

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Class B 30 %

Late1 Closed

Description

Sagebrush cover is greater than 30%. Predominant grass/forb species will vary across geographic area.

Dominant Species* and Canopy Position

ARTRV
STLE4
ERIOG
FEID

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	30 %	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 C 20 %

Mid1 Open

Description

Sagebrush cover ranges from 5 to 15%. Predominant grass/forb species will vary across geographic area.

Dominant Species* and Canopy Position

STLE4
ARTRV
FEID
PUTR2

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 D 35 %

Late1 Open

Description

Sagebrush cover ranges from 15-30%. Predominant grass/forb species will vary across geographic area.

Dominant Species* and Canopy Position

STLE4
ARTRV
PUTR2
ERIOG

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	15 %	30 %
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

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	%
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>	100			0.01	75
<i>Mixed</i>	300			0.00333	25
<i>Surface</i>					
<i>All Fires</i>	75			0.01334	

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