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)

R2MGCOws Mountain Meadow---Mesic to Dry

General Information

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

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Vegetation Type

Grassland

Dominant Species*

DECA
CARE
JUNC
ELTR

General Model Sources

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

LANDFIRE Mapping Zones

12 17
13 18
16

Rapid AssessmentModel Zones

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

Geographic Range

Mountainous areas of the Great Basin.

Biophysical Site Description

Elevation: 5200-10,500 feet
Slope: 1-10%
Landform: drainage, floodplain, springs and seeps
Precipitation: 14-25+ inches
Soils: deep to very deep, mostly cryic, well developed mollic horizon, generally loams, somewhat poorly to very poorly drained.

Vegetation Description

This PNVG is very broadly defined. Common grasses include slender wheatgrass (Elymus trachycaulus), Poa secunda juncifolia (Nevada bluegrass), tufted hairgrass (Deschampsia caespitosa), junegrass (Koeleria macrantha), Columbia needlegrass (Achnatherum nelsonii), oatgrass (Danthonia spp.), mountain brome (Bromus carinatus), alpine timothy (Phleum alpinum), streambank wheatgrass (Elymus lanceolatus), Fendlre's bluegrass (Poa fendleri).

Common sedges include Douglas sedge (Carex douglasii), field sedge (Carex praegracilis), Shorthair sedge (Carex exerta), Nebraska sedge (Carex nebrascensis), beaked sedge (Carex athrostachya), and smallwing sedge (Carex microptera). Rushes (Juncus spp.) are common.

Willows (Salix spp.) may occur within these communities.

Disturbance Description

Fire most often occurred in these sites when adjacent shrublands burned. Fires were typically mixed severity (average FRI of 60 yrs) and stand replacement (average FRI of 30 yrs). Fires are less frequent on the more

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mesic sites of this PNVG. Burns in these plant community types result from fire started in adjacent upland communities. The fires tend to be less frequent and less severe than surrounding PNVGs. Most species respond favorably to fire.

These sites were prone to flooding during high precipitation, resulting in erosion of topsoil and some short term loss of vegetative cover. In cases of +500 yr flooding event, the site could downcut, thus lowering the water table, and favored woody species in an altered state.

Infrequent native grazing has occurred, which may have resulted in heavy defoliation, but was confined to small acreage and generally temporary in nature. Native grazing either maintained an open structure during mid-development or resulted in browse (reversal of woody succession) during later development. Drought cycles likely resulted in a reduction in vegetative cover, production and acreage of these sites. Drought negatively affected woody species. Native Americans likely used these sites for camping and some vegetation collection, while hunting and gathering in adjacent wetlands and upland habitats. Human's likely caused heavy impacts to soils and vegetation in small campsites, but overall impact was light and transitory in nature.

Adjacency or Identification Concerns

Found adjacent to wet meadows, wetlands, sagebrush uplands, conifer woodlands, aspen woodlands and broadleaf riparian. Sites adjacent to sagebrush uplands, aspen woodlands and conifer woodlands tended to burn more frequently. This system is similar to the Great basin Grassland (R2MGWAws), but with shorter FRI for replacement fire and more native grazing.

Scale Description

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

These sites are generally small and often moist. Fire in these systems is usually introduced from adjacent shrublands or native burning to improve herbaceous understory.

Issues/Problems

Many of these sites were impacted by introduced grazing animals post-European settlement and have been converted to systems dominated by drought tolerant species. With soil compaction problems these systems move toward an increase in tap-rooted forb species and a decrease in overstory cover. Altered disturbance regimes with livestock grazing, changes in fire frequency, altered water flow and climate change, these sites can move toward brush or tree dominated overstory (sagebrush, mountain brush, conifer).

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

Post fire, flood or drought early development community. Bare ground is 10 to 40%. Total vegetative canopy cover is 20-80%. Relative forb cover is 20-40%. Relative graminoid cover is 20-80%. Shrub cover is minimal or non-existent. Replacement (FRI of 30 yrs) and mixed severity fires (FRI of 60 yrs) are active at this stage. Rare 500-yr flood events

Dominant Species* and Canopy Position

CAREX
JUNCU
POA
ELYM

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	20 %	80 %
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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can cause downcutting during the post-fire stage, thus causing a transition to D. Primary succession to B.

Class B 80 %

Mid1 Open

Description

Mostly stable and resilient system. Bare ground is less than 5%. Total canopy cover is 80-100%. Relative cover of grasses is >75%. Relative cover of forbs is 0-25%. Relative cover of willows and other shrubs is 0-5%. Fire follows the regime described in A. Weather and flooding affect this system in three different ways: 1) Recurring drought with a 100-yr return interval will thin vegetation and keep this state open; 2) The site will be scoured, but not downcut, by 100-yr flood events causing a transition to A; and 3) Rare 1000-yr flooding event will cause a downcut and alteration of the site towards a more permanent woody condition (D). Native grazing on 1% of the area will maintain the open structure of the PNVG. Succession is from class B to B, however the site will transition to class C in the absence of fire for 40 yrs.

Dominant Species* and Canopy Position

CAREX
JUNCU
ELYM
POA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	80 %	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 13 %

Late1 Open

Description

This system differs from mid-open by an increase in the shrub cover component. Bare ground is <5%. Although total canopy cover is 100+%, the class's structure is determined by shrub cover. Relative cover of grasses is >65%. Relative cover of forbs is 0-25% Relative cover of shrubs (most frequently willow, but also currant,

Dominant Species* and Canopy Position

CAREX
JUNCU
GRASS
SALIX

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	5 %	10 %
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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wild rose, chokecherry, conifer, broadleaf trees) is 5-10%. These sites tend toward meadows, but without disturbance will have some increase in woody vegetation. Replacement fire (FRI of 30 yrs) will cause a transition to A whereas mixed severity fire will remove the woody component, thus returning the burn area to class B. Weather and flooding function as in class B, except that drought will selectively kill woody species and cause a transition to class B. Native grazing affects more negatively woody species (browse), thus also resulting in a transition to class B. The site will succeed to itself.

Class D 2 %

Late1 Closed

Description

This class is an altered state, which is a result of prolonged drought (rare event) which dries out the site resulting in a shrub or tree cover type (10-60% relative cover) with a grassland understory. Downcutting of stream channel can also cause a conversion to this type. Therefore, this class is only included here because this PNVG is broad, but the class may be more accurately placed within the basin big sagebrush PNVG if the site's potential is truly changed by downcutting. Replacement fire will return the site to class A (FRI of 30 yrs) and mixed severity fire (FRI of 60 yrs) will open the stand, but not change its woody nature (i.e., transition to class C). The site succeeds to itself without disturbance.

Dominant Species* and Canopy Position

ARTR2
PIMO
POSE
ELTRT

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	10 %	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:

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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

☐ 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: **2**

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	31	15	45	0.03226	66
Mixed	59	30	90	0.01695	34
Surface					
All Fires	20			0.04922	

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