

## 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)

R3PGm

Plains Mesa Grassland

### General Information

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

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**Vegetation Type**

Grassland

**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\***

BOGR  
BOCU  
ACHY  
STIPA

**LANDFIRE Mapping Zones**

14	24	28
15	25	
23	27	

### Geographic Range

Arizona, Colorado, New Mexico, and Utah. This PNV has 2 subtypes; 1 strongly influenced by the Sonoran and Chihuahuan climates that is generally south of 33 degrees latitude and west of 104 degrees longitude; 2 is strongly influenced by the Great Basin and Great Plains climates and is generally north of 33 degrees latitude and west of 104 degrees longitude. Southerly type is characterized by gramma grasses, yuccas and nolina. Northerly type is characterized by Great Basin grasses like Indian Ricegrass and Stipas in addition to the gramma grasses.

### Biophysical Site Description

Usually has mollic grassland soils with relatively high clay content that precludes shrub or tree seedling establishment due to wet/dry cracking during the monsoon growing season. The moisture regime is adequate to allow shrub or tree seedling establishment in the absence of fire, but the soils preclude survival. Elevations ranging from 1250 to 2200 meters on mesas and benches and in valleys. Elevations ranging from 1050 to 2000 meters on northerly aspects. Elevations ranging from 1450 to 2400 meters on southerly aspects. Precipitation ranging from 10 inches to 20 inches, with 50-60% occurring from May through August. Annual growing degree days ranging from 3000 to 5000 growing degree days (least sure about value of this in the rule set). REGAP types = CES302.732; CES302.736; CES303.659; CES304.787; CES303.817; CES303.672. At the coarse scale this PNV was not mapped. It was included in the Desert Grassland (34), Desert Shrub (28), Southwest Shrub Steppe (27), Chaparral (26), Juniper-Pinyon (22) and Warm Sagebrush (70). A rule set based on these PNVs, current cover, precipitation, elevation, aspect, and growing days will be needed to spatially map this type.

### Vegetation Description

Strongly influenced by the flora, climate, and disturbance regimes of the Sonoran desert to the southwest, Great Basin to the northwest, and Great Plains to the east. Current vegetation may have 1/2 shrubs, but would not have trees (juniper, oaks, pine, or pinyon) or shrubs (mesquite).

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

In the south, Great Basin grasses such as Indian Ricegrass and Stipas are not present, while in the north they were major components. To the south, the fire adapted sprouting junipers with yuccas and nolina and lack of Great Basin grasses are good indicators. To the north, the Great Basin and Great Plains non-sprouting junipers and Great Basin grasses are good indicators.

### Disturbance Description

Naturally this system had frequent fire dominated by replacement fires associated with productive grass fuels and cycles of moisture and drought. Patchy fires (causing 25-75% top-kill) were less frequent and were modeled here as mixed severity, although there is some debate about how often this type of patchy fire might actually occur.

Native ungulate grazing plays a small role in replacement where buffalo herds concentrated, but generally maintained systems. Drought and moist cycles play a strong role interacting with both fire and native grazing.

### Adjacency or Identification Concerns

The Plains Mesa Grassland (R3PGm) usually in a mosaic below Ponderosa pine PNV, Oak-Juniper PNVs, or Mountain Shrub PNV, or these cooler/moister PNVs can occur on northerly aspects. Usually occurs above the Desert Grassland PNV and Desert Shrub PNV or on the relatively more moist aspects, and to the east of the true plains grasslands. R3PGm, R3PGmws, and R3PGmwt were not mapped at the coarse-scale. They were included in Desert Grassland (34), Desert Shrub (28), Southwest Shrub Steppe (27), Chaparral (26), Juniper-Pinyon (22) and Warm Sagebrush (70).

### Scale Description

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

Landscape adequate in size to contain natural variation in vegetation and disturbance regime. Topographically complex areas can be relatively small (< 1000 acres). Uniform large mesas should be relatively large (> 10, 000 acres).

### Issues/Problems

Type was not mapped for the coarse-scale or by Kuchler (1964), yet it is an important type identified by Brown 1982, Dick-Pedie 1993, and the NRCS ecological sites. It covers a substantial amount of land in the SW and is much more productive and diverse than the desert grasslands at lower elevation zones or plains grasslands to the east. It would be very valuable to do a very intensive literature search and review on this type as well as associated field recon to assess historic/current photos, local knowledge, soils, fire scars on old trees in protected sites, species adaptations, etc.

### Model Evolution and Comments

Peer review suggested that that all plains grassland types be combined (R3PGm, R3PGmst, R3PGRs, R3PGRsws, R3PGRswt), mixed fire eliminated, and replacement fire interval set at 20 years. Because the workshop participants identified these separate types, they were not lumped together and fire regimes were left as-is, although descriptions were expanded to clarify use of mixed severity fire.

## Succession Classes\*\*

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

### Class A 15 %

Early1 PostRep

**Description**

All sites, post-fire grass regrowth, grass seedlings, and forbs. Blue gramma, aster, scurfpea, mallow, primrose

**Dominant Species\* and Canopy Position**

BOGR2  
ASTER  
NOLIN  
EREM

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	15 %	55 %
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 25 %

Mid1 Closed

**Description**

More productive sites and moist years. Mature development of sideoats gramma, blue gramma, Indian ricegrass and stipas to the north, threeawns, hairy gramma, black gramma, sand sage, yucca, snakeweed, prickly pear

**Dominant Species\* and Canopy Position**

BOCU  
BOGR2  
NOLIN  
ACHY

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	35 %	55 %
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 60 %

Mid1 Open

**Description**

Less productive sites and drought years. Mature development of sideoats gramma, blue gramma, stipas to the north, threeawns, hairy gramma, black gramma, sand sage, yucca, snakeweed, prickly pear

**Dominant Species\* and Canopy Position**

BOGR2  
STIPA  
OPUNT  
YUCCA

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	15 %	35 %
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 0 %

Late1 Open

**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	

\*Dominant 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

**Class E** 0%

Late I 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: Wet Years
- Other

**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.

**Historical Fire Size (acres)**

Avg: no data  
Min: no data  
Max: no data

**Sources of Fire Regime Data**

- Literature
- Local Data
- Expert Estimate

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	20	3	30	0.05	81
Mixed	85	3	150	0.01176	19
Surface					
All Fires	16			0.06177	

**References**

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

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