

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

### Potential Natural Vegetation Group (PNVG):

R5DGRA

Desert Grassland

### General Information

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

**Modelers**

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**Vegetation Type**

Grassland

**Dominant Species\***

PLEUR12 BOER4  
SPCR PROSO  
SPAI EPTO  
ACHY YUCCA

**General Model Sources**

- Literature  
 Local Data  
 Expert Estimate

**LANDFIRE Mapping Zones**

25  
26

**Rapid Assessment Model Zones**

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

**Geographic Range**

Southwest (AZ, NM) and Southern Great Plains (W. TX)

**Biophysical Site Description**

This ecological system occurs across the Chihuahuan Desert and extends into the southern Great Plains where soils tend to have a high sand content. This type typically occurs in the plains or on valley benches below the foothills in mountainous areas.

**Vegetation Description**

The vegetation in this ecological system is grassland dominated by blue grama, tobosa grass, and galleta grass with intermingled forbs and half-shrubs. Shrubs (oak, mahogany, mesquite) are a minor component (less than 5%) of this type, typically occurring on rock outcrops or edges of steep draws and ravines. However, if fire is substantially reduced or excluded shrubs will encroach and substantially increase.

**Disturbance Description**

The mean fire interval is about 7 years with high variation due to drought, which reduces fire frequency and moist periods that increase fire frequency. The majority of fire in this system is stand-replacement fire; however, mixed fires may occur with reduced fuel loads. This ecological system typically burns during the late spring (May, June, early July) and into the fall (late September, October, November) in association with the hot, dry periods that follow the winter and late spring (December through April) rainy season and summer (late July, August, early September) monsoon season.

**Adjacency or Identification Concerns**

**Scale Description**

Sources of Scale Data  Literature  Local Data  Expert Estimate

This ecological system is adequate in size to contain natural variation in vegetation, soils, and disturbance regimes.

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

**Issues/Problems**

Fire and climate are the primary factors influencing this ecological system. Drought and lack of fire tend to increase invasive woody species and reduce the herbaceous component. Impacts of historic grazing by buffalo may not have had a significant impact in this system in Arizona and New Mexico. Invasive species such as burrow weed (*Isocoma tenuisecta*) and broom snakeweed (*Gutierrezia sarothrae*) can take advantage of cool-season precipitation and dominate on disturbed sites; pricklypear and cholla (*Opuntia* spp.) can also dominate on disturbed sites and out compete herbaceous species thereby reducing fuel continuity and reduce the controlling effects of fire.

**Model Evolution and Comments**

Compare information with NRCS ecological site descriptions; ask for review by TX NRCS Plant Materials Specialist as well as the TX NRCS Rangeland Specialist. Contact range professors at Texas A&M and New Mexico State for review also.

**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 All Structures

**Description**

This Class is dominated by resprouts of desert grassland species and post-fire associated forbs and half-shrubs. This Class typically exists where fires have burned relatively hot (replacement fire severity) in Classes B and C. Succession in this Class can quickly progress to either Class B or Class C, depending on soil types.

**Indicator Species\* and Canopy Position**

PLEUR12 Upper  
 SPAI Upper  
 ACHY Upper  
 SPFL Upper

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** 1

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

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	10 %	30 %
<i>Height</i>	Herb Short <0.5m	Herb Medium 0.5-0.9m
<i>Tree Size Class</i>	no data	

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

**Class B 20%**

Mid1 Closed

**Description**

Greater than 40 percent grass and forb cover; generally associated with productive soils on concave gentle slopes and undulating plains. Stand replacing wildfire would revert this type back to Class A. Drought effects may reduce the grass and forb cover in this system and allow shrubs to dominate. Successional progression from Class A to this Class occurs on deep, productive soil types.

**Indicator Species\* and Canopy Position**

ACHY Lower  
 PLEUR12 Lower  
 SPAI Lower  
 PROSO Upper

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** 1

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

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	40 %	60 %
<i>Height</i>	Herb Medium 0.5-0.9m	Herb Tall > 1m
<i>Tree Size Class</i>	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>.

**Class C 65 %**

Mid1 Open

**Description**

Less than 40 percent grass and forb cover generally associated with gentle convex slopes or gravelly and cobbly soils on the plains. Stand replacing wildfire would revert this type back to Class A. Successional progression from Class A to this Class occurs on dry, less productive soil types.

**Indicator Species\* and Canopy Position**

ACHY Lower  
PLEUR12 Lower  
PROSO Upper  
YUCCA Upper

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** 1

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

	Min	Max
Cover	20 %	40 %
Height	Herb Medium 0.5-0.9m	Herb Tall > 1m
Tree Size Class	no data	

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

**Class D 0 %**

Late1 All Structures

**Description**

**Indicator Species\* and Canopy Position**

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

	Min	Max
Cover	0 %	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:

**Class E 0 %**

Late1 All Structures

**Description**

**Indicator 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:

**Disturbances**

**Non-Fire Disturbances Modeled**

- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- 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

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

**Historical Fire Size (acres)**

Avg: 1000  
Min: 25  
Max: 5000

**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
Replacement	8			0.125	82
Mixed	37			0.02703	18
Surface					
All Fires	7			0.15204	

**References**

Brown, James K.; Smith, Jane Kapler, 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.

Kuchler, A. W. 1964. Manual to accompany the map of potential natural vegetation of the conterminous United States. American Geographical Society. Spec. Publ. No. 36. Lib. Congress Cat. Card Num. 64-15417. 156 p.

NatureServe. 2005. International Ecological Classification Standard: Terrestrial Ecological Classifications. Terrestrial ecological systems of the South Central US: DRAFT legend for Landfire project. NatureServe Central Databases. Arlington, VA. Data current as of 13 January 2005.

Schmidt, Kirsten M, Menakis, James P., Hardy, Colin C., Hann, Wendel J., Bunnell, David L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 41 p. + CD.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/>.