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)

R5SHST   **Southwestern Shrub Steppe**

General Information

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

Modelers		**Reviewers**	
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Vegetation Type

Shrubland

Dominant Species*

PROS	YUCC
ACGR	PLMU
OPUN	BOCU
LARR	ARIST

General Model Sources

- ☑ Literature
- ☐ Local Data
- ☑ Expert Estimate

LANDFIRE Mapping Zones

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Rapid AssessmentModel Zones

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

Geographic Range

This PNVG lies in the southwest and southern Great Plains (primarily southeastern Arizona, southern New Mexico, and west Texas).

Biophysical Site Description

This type typically occurs on upland flats, benches, gentle slopes, and in the foothills of the desert mountain ranges. Soils can range from shallow and rocky, to deep loamy, to heavy clay soils.

Vegetation Description

Vegetation in this system can be characterized as an open shrubland with grass dominated by mesquite, catclaw acacia, creosote bush, tarbush, flourensia, opuntia, yucca, black grama, tobosa grass, blue grama, sideoats grama, and various threeawn species, with intermingled forbs. This type correlates with Kuchler's (1964) types 58 and 59.

Disturbance Description

Naturally, this system experiences frequent, stand replacing fire occurrences that are associated with average to above average herbaceous biomass production cycles that are related to average to above average moisture periods. Mixed fires also may occur. A mixed fire will not kill all the shrubs due to reduced fuel loads. The mean fire interval is approximately 10 years with high variation due to year to year deviation in grass production related to drought and moisture cycles. Fire years are typically bimodal occurring in the late spring (May and June) and fall (September and October) correlated with grass production following spring and summer monsoon moisture. Removal of the fine fuels through grazing activities increases the variation of the fire interval.

Adjacency or Identification Concerns

This ecological system is a broadly defined desert grassland, mixed shrub-succulent or xeromorphic tree savanna that is typical of the Borderlands of Arizona, New Mexico, and northern Mexico; it extends west to the Sonoran Desert, north to the Mogollon Rim, and eastward into west Texas throughout much of the

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

Chihuahuan Desert.

This PNVG is similar to the PNVG R3SHST from the Southwest model zone.

Scale Description

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

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 played 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 outcompete 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 NRCS Plant Materials Specialist located at the Tucson Plant Materials Center, 520-292-2999: (Bruce Munda - bruce.munda@az.usda.gov) and NRCS Rangeland Specialist Dan Robinett (dan.robinett@az.usda.gov). Ask for review by U of A professors: George Ruyle and Mitch McClaran. Contact range professors at New Mexico State for review.

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*Succession Classes***

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

Class A   10 %

Early1 All Struct

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.

Dominant Species* and Canopy Position

PLMU3 Mid-Upper
BOCU   Mid-Upper
ARIST Mid-Upper
PROSO Upper

Upper Layer Lifeform
☑ Herbaceous
☐ Shrub
☐ Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	10 %	30 %
Height	Herb Short <0.5m	Shrub Short 0.5-0.9m
Tree Size Class	no data	

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

The dominant lifeform at this successional stage is primarily comprised of various herbaceous grass and forb species (both annual and perennial).

Class B   5 %

Mid1 Closed

Description

Greater than 15 percent shrub cover and 30-50 percent grass and forb cover; generally associated with more productive soils. Effects of cumulative drought can cause a shift from this class to Class C. Successional progression from

Dominant Species* and Canopy Position

PROSO Upper
ACGR   Upper
YUCCA Upper
PLMU3 Lower

Upper Layer Lifeform
☐ Herbaceous
☑ Shrub
☐ Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	15 %	40 %
Height	Shrub Medium 1.0-2.9m	Shrub Tall >3.0 m
Tree Size Class	no data	

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

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

Class A to this Class occurs on deep, productive soil types. Surface fires can maintain this Class. Mixed severity fires can move this system to Class C. Native grazing may have had minimal impact on this landscape.

Class C   **85 %**

Mid1 Open
Description
Less than 15 percent shrub cover and 20 to 40 percent grass and forb cover generally associated with less productive cobbly and gravelly soils. Successional progression from Class A to this Class occurs on dry, less productive soil types.

Dominant Species* and Canopy Position

PROSO	Upper
ACGR	Upper
PLMU3	Lower
BOCU	Lower

Upper Layer Lifeform
- ☐ Herbaceous
- ☑ Shrub
- ☐ Tree

Fuel Model   1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	5 %	15 %
Height	Shrub Medium 1.0-2.9m	Shrub Tall >3.0 m
Tree Size Class	no data	

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

Class D   **0 %**

Late1 All Structu
Description

Dominant Species* and Canopy Position

Upper Layer Lifeform
- ☐ Herbaceous
- ☐ Shrub
- ☐ Tree

Fuel Model   no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	0 %
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 All Structu
Description

Dominant Species* and Canopy Position

Upper Layer Lifeform
- ☐ Herbaceous
- ☐ Shrub
- ☐ Tree

Fuel Model   no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	%	%
Height	no data	no data
Tree Size Class	no data	

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

Disturbances

Disturbances Modeled

☑ Fire
☐ Insects/Disease
☑ Wind/Weather/Stress
☑ Native Grazing
☐ Competition
☐ Other:
☐ Other

Historical Fire Size (acres)

Avg: 1000
Min: 25
Max: 5000

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	12			0.08333	76
Mixed	37			0.02703	24
Surface					
All Fires	9			0.11037	

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