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. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG):

R3MEBO   **Mesquite Bosques**

General Information

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

Modelers		Reviewers
Mike Behrens	Mike_Behrens@blm.gov	
Wendell Hann	whann@fs.fed.us	

Vegetation Type

Woodland

Dominant Species*

PROSO
POFR
SALIX
BACCH

General Model Sources

☑ Literature
☐ Local Data
☑ Expert Estimate

LANDFIRE Mapping Zones

14	24	28
15	25	
23	27	

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 (NM, AZ)

Biophysical Site Description

This type typically occurs in the valleys, with minor extents across the Southwest. It would be found along intermittent streams and major drainages (eg. Colorado, Rio Grande, Gila, San Pedro Rivers) Vegetation is woodland dominated by mesquite, cottonwood, catclaw, other associated shrubs and understory grasses and forbs.

Vegetation Description

Vegetation is a riparian woodland dominated by mesquite, cottonwood, catclaw, other associated shrubs and understory grasses and forbs. When the PNVG is surrounded by R3DESH shrubs like atriplex and arrowweed would be more commonly intermixed within the mesquite bosque. It fits in the Ecological Systems: North American Warm Desert Riparian Systems group (CES302.752).

Disturbance Description

Fire regime group III, infrequent mixed. The mean fire interval is about 45 years with high variation due to complex influences of adjacent fire regime, floods, drought, herbivory, and native anthropogenic ignitions. Fire years are typically correlated with drought. Grazing of the understory green shrubs, grasses, and forbs during the hot season can open the understory and increase or decrease chance of surface fire depending on amount of residual grassy understory fuels. When this PNVG is surrounded by Desert Shrub (R3DESH) flooding would have been the overriding disturbance with fire return intervals much longer on the order of 100 - 500 years.

Adjacency or Identification Concerns

Much of the original mesquite bosque areas are heavily degraded by saltcedar. Mesquite has also

---

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

encroached out into adjacent grasslands to a large extent. Anthropogenic changes in hydrology along many of the major southwestern drainages has also reduced the range of the community especially in the western portion of its range.

Scale Description

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

Fire disturbance could be rather large scale (1,000 to 10,000 acres sizes) for mesquite bosques embedded within grassland systems (eg. NM and SE AZ) where as fire would be more limited (10's to 100's of acres) for mesquite located within desert shrublands. Flood disturbance would create large patch sizes on the order of 1,000's to 10,000's of acres.

Issues/Problems

This type is often adjacent to potentially suitable SWFL habitat.   Where it is found in WUI situations it often currently has a fire regime on the order of every 5 to 10 years.

This model could be broadened and called Warm Desert Riparian Systems to incorporate some of the more mesic riparian systems.

Model Evolution and Comments

This model was based on the original FRCC model MBNM by Wendel Hann.

Quality control of this model resulted in elimination of rule violations and slight changes to the percent in each class.

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 PostRep

Description

Dominated by resprouts and seedlings of shrubs and trees. This type typically occurs where flooding has occurred or fires have burned relatively hot.

Indicator Species* and Canopy Position

PROSO
POFR
SALIX
BACCH

Upper Layer Lifeform
☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	20 %
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   30 %

Mid1 Closed

Description

Greater than 40 percent immature tree and shrub cover; generally associated with more productive soils.

Indicator Species* and Canopy Position

PROSO
POFR
BACCH
SALIX

Upper Layer Lifeform
☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	41 %	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   25 %

Mid1 Open
Description
Less than 40 percent immature tree and shrub cover generally associated with less productive cobbly and gravelly soils.

Indicator Species* and Canopy Position
PROSO

Structure Data (for upper layer lifeform)

	Min	Max
Cover	21 %	40 %
Height	no data	no data
Tree Size Class	no data	

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

Upper Layer Lifeform
☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model   no data

Class D   15 %

Late1 Open
Description
Less than 40 percent mature tree and tall shrub cover generally associated with less productive cobbly and gravelly soils, herbivory, light flooding, or surface and mosaic fires.

Indicator Species* and Canopy Position
PROSO

Structure Data (for upper layer lifeform)

	Min	Max
Cover	21 %	40 %
Height	no data	no data
Tree Size Class	no data	

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

Upper Layer Lifeform
☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model   no data

Class E   20 %

Late1 Closed
Description
Greater than 40 percent mature tree and tall shrub cover generally associated with more productive soils, lack of floods, lack of herbivory, and lack of surface and mosaic fires.

Indicator Species* and Canopy Position
PROSO
POFR
SALIX
BACCH

Structure Data (for upper layer lifeform)

	Min	Max
Cover	41 %	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:

Upper Layer Lifeform
☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model   no data

Disturbances

Non-Fire Disturbances Modeled

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

Fire Regime Group: 3

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

Historical Fire Size (acres)

Avg:

Min:

Max:

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	135			0.00741	32
Mixed	65			0.01538	67
Surface					
All Fires	44			0.02280	

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.

Bucsh, David E. 1993. Effects of fire on southwestern plant community structure. The Southwestern Naturalist:. 40 (3):259-267

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.

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.

Stewart, Omer C.,Henry T. Lewis, M. Kat Anderson, Kat Anderson. 2002. Forgotten Fires, Native Americans and the Transient Wilderness. University of Oklahoma Press. Pgs. 218-224

Uchytil, Ronald J. 1990. Prosopis velutina. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2004, October 29].