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):

R5PRSG **Southern Short/Mixed Grass Prairie**

General Information

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

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Vegetation Type

Grassland

Dominant Species*

BOGR2
BUDA
BOCU
ARPU9

General Model Sources

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

LANDFIRE Mapping Zones

27 31 26
34 32 38
33 35 29

Rapid Assessment Model Zones

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

Geographic Range

Shortgrass Prairie occurs in the High Plains from Southern Wyoming and Nebraska through Eastern Colorado and Western Kansas to Eastern New Mexico and West Texas. This PNVG grades into Mixed Grass Prairie in the Central Plains.

Biophysical Site Description

This PNVG occurs on the High Plains portion of the Great Plains in the eastern foothills of the Rocky Mountain front and associated N-S trending mountain ranges south to the Guadalupes in eastern New Mexico and West Texas where the type transitions into Desert Grasslands.

Vegetation Description

The vegetation is dominated by a matrix system of blue grama (Bouteloua gracilis) throughout most of range, with a variety of graminoid codominants and associates, especially buffalo grass (Buchloe dactyloides), sideoats grama (B. curtipendula) and three-awn (Aristida purpurea and others). Mid-height grasses may be present to a greater or lesser extent, especially on the north slope of hills, breaks, and draws. In the eastern part of the range this system forms deep sods. Further west where the system grades into desert grasslands blue grama tends to become a bunchgrass, with lighter fuel loads and more bare ground.

Disturbance Description

This fire regime is group II, with frequent stand-replacement fires (approx. every eight years). There is no historical documentation on the actual extent or condition of native grasslands or the frequency of fire before 1850. However, the presumed return cycle is 3-5 years. Some authors suggest that Native Americans may have started fires routinely in grassland and oak woodland (e.g. Stewart 1951, Sauer 1944).
Traubaud and LePart (1980) indicated that species diversity peaks two years after a fire in grassland. Because fire has an adverse effect on the dominant exotic grasses, a decline in their percent composition provides competitive release for forbs, both native and exotic (Hervey 1949). The initial burn on a

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

previously unburned plot results in a more pronounced change in species composition than subsequent burns, relative to an unburned control plot, but without subsequent burning, a burned area slowly reverts back to the unburned condition; low in species diversity and dominated by alien annual grasses.

Adjacency or Identification Concerns

This PNVG may be similar to the PNVGs R4PRMGs from the Northern Plains model zone and R5PRSG from the South Central model zone.

Scale Description

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

Landscape is greater than 100,000 acres.

Issues/Problems

Recovery in this system is more a function of climate that years post burn. If it rains shortly after a fire then recovery will be within a year. The longer it remains dry after a fire, the longer the recovery time.

Model Evolution and Comments

Chris Pague (TNC-COFO), Steve Kettler (KS); Tom Bragg, Suzanne Hickey. Site description and issues/problems sections were expanded after review.

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 Structures

Description

Postfire. Char and ash w/ resprouting grasses especially post-rains in August-October. Low likelihood of subsequent replacement fire in the absence of dry fuel build-up.

Indicator Species* and Canopy Position

BOGR2 Upper
BUCHL Upper
BOCU Upper
SCHIZ4

Upper Layer Lifeform

☑ Herbaceous
☐ Shrub
☐ Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	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 B 55 %

Mid1 Closed

Description

Mid-development closed canopy. Highest diversity reached 2-3 years postfire with high contribution of forbs. Little dry fuel makes the system less likely to experience another replacement fire.

Indicator Species* and Canopy Position

BOGR2 Upper
BUCHL Upper
BOCU Upper
SHIZ4 Upper

Upper Layer Lifeform

☑ Herbaceous
☐ Shrub
☐ Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	50 %	75 %
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 C 20 %

Late1 Closed

Description

Late development closed canopy. Lower diversity and lower productivity greater than 3 years post-fire. Fuel build-up in absence of grazing or fire may make the system more susceptible to stand-replacement fire. Mesquite (Prosopis glandulosa) and other woody species may encroach in the absence of fire. With fire suppression, another class would be added to the model.

Indicator Species* and Canopy Position

BOGR2 Upper
BUCHL Upper
BOCU Upper
SHIZ4 Upper

Upper Layer Lifeform

- [x] Herbaceous
- [ ] Shrub
- [ ] Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	75 %	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 D 15 %

Late1 Open

Description

Sparse vegetation on large-scale prairie dog town complexes. Higher forb diversity. Towns may provide fuel-breaks to limit extent of landscape-scale fires. Rare disease events might make the system available to recolonization by grasses, otherwise these town complexes are rather persistent.

Indicator Species* and Canopy Position

Upper Layer Lifeform

- [x] Herbaceous
- [ ] Shrub
- [ ] Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	25 %
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 Structures

Description

Indicator 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

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Non-Fire Disturbances Modeled

- [x] Insects/Disease
- [ ] Wind/Weather/Stress
- [x] Native Grazing
- [ ] Competition
- [x] Other: Prairie Dog Town
- [ ] 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

Historical Fire Size (acres)

Avg: 100000
Min: 1000
Max: 1000000

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.

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	8	1	10	0.125	100
Mixed					
Surface					
All Fires	8			0.12502	

Sources of Fire Regime Data

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

References

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