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):

R3DESH **Desert Shrubland without Grass**

General Information

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

Modelers

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Vegetation Type

Shrubland

Dominant Species*

LATR2
PARKI2
CORA
OPUNT

General Model Sources

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

LANDFIRE Mapping Zones

14	24	28
15	25	
23	27	

Rapid Assessment Model Zones

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

Geographic Range

Occurs in the Southwest, Southern Great Plains, Great Basin, Colorado Plateau and California geographic areas. For the Rapid Assessment, this model applies only to the eastern portion of the Southwest model zone, where creosote bush does not occur (see also the Comments field).

Biophysical Site Description

This type typically occurs on upland flats, benches, gentle slopes or well drained valley and draw bottoms in areas with less than 12 inches precipitation.

Vegetation Description

Vegetation is shrubland dominated by creosote bush, bur sage, opuntia, and palo verde, saguaro, with intermingled forbs. Blackbrush, ephedra, spiny hopsage, and fringed sage would be found in the Colorado Plateau areas. Could be crosswalked with Ecological System CES302.731, CES302.737, CES302.738, CES302.756, CES302.760, CES302.035, CES302.761, CES304.763.

Disturbance Description

Fire regime group III, infrequent mixed. The mean fire interval is generally greater than 75 years with high variation due to year to year variation in drying of shrub foliage, shrub mortality, grass, and forb production related to drought and moisture cycles combined with variation in ignitions and associated fire weather. Fire years are typically correlated with high spring moisture years in geographic areas dominated by cool season moisture and high summer moisture in areas dominated by monsoon season rains. Fire intervals would have been much longer in the dry ends of this PNV with return intervals on the order of 200 + years. Fire size would have been small because of the discontinuous fuels.

Adjacency or Identification Concerns

If native grass components have greater than 10 percent cover, then one should look at the Desert

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

grasslands as being more appropriate. Blackbrush could have 15 percent grass cover in wet years.

Invasion of exotic annual grasses has drastically altered the fire regime in these areas. In essence we now have fire (or do in wet years) where fire would have been very infrequent and a minor player. In fact this PNVG can go from being in CC 1 to CC 3 in the space of a few years (in wet years) because of annual grass invasion.

Scale Description

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

Large areas of this PNVG are represented by the dry end of the Mohave, Sonoran, and Chihuahuan deserts. Smaller areas of cold desert would be located on the Colorado Plateau. The patch sizes created by fire would be small (10's to 100's of acres) because of the discontinuous fuels. Drought stress on the other hand would create large patches (100,000+ acres).

Issues/Problems

It should be remembered the blackbrush community was lumped in with the desert communities and the blackbrush would have the short end of the fire return interval with the desert communities especially the Sonoran having the longer end of the fire return intervals or even practically no fire in many cases.

Model Evolution and Comments

For the Rapid Assessment, this model was used only in the eastern portion of the Southwest model zone. R2CRBU was used in the western portion where creosote bush occurs. Class compositions between the two models were very similar, but fire is more frequent in R2CRBU. R2BLBR was used in the Colorado Plateau portion (section 313A) of the Southwest model zone.

There is more complexity ecologically than the 3 box model represents especially when you break the PNVG down into its component systems (Sonoran, Mohave, Chihuahuan, Colorado Plateau), but it does a decent overall job of representing the fire and drought disturbance. Mark Kaib and Mark Pater would be good peer reviews for this model. It would be good to peer review the R3DESH, R3SDSH, R3SHST, R3SHSTwt, R3DGRA, and R3DGRAst together as a group if possible because of the overlap between these.

Quality control found rule violations in using Time Since Disturbance. These violations were fixed with no change to results.

Succession Classes

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

Class A **5 %**

Early1 PostRep

Description

Dominated by resprouts and seedlings of shrubs and post-fire associated forbs. This type typically occurs where fires burn relatively hot in classes B and C.

Indicator Species* and Canopy Position

LATR2

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	5 %
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

Class B **20 %**

Late1 Closed

Description

Greater than 15 percent shrub cover and 10-20 percent herb cover; generally associated with more productive soils. Effects of cumulative drought can cause a shift from this class to class C.

Indicator Species* and Canopy Position

LATR2
PARKI2

CORA

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	15 %	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 **75 %**

Late2 Open

Description

Less than 15 percent shrub cover and less than 10 percent herb cover generally associated with less productive cobbly and gravelly soils. Effects of cumulative drought can cause a shift from class B to this class.

Indicator Species* and Canopy Position

LATR2
PARKI2
CORA

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	5 %	15 %
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

Indicator Species* and Canopy Position

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	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 Closed

Description

Indicator 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 and Indicator 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

Disturbances

Non-Fire Disturbances Modeled

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

Historical Fire Size (acres)

Avg:
Min:
Max:

Sources of Fire Regime Data

- ☑ Literature
- ☑ Local Data
- ☑ Expert Estimate

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

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	150			0.00667	52
Mixed	165			0.00606	48
Surface					
All Fires	79			0.01274	

References

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