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)

R3MGRA   **Montane and Subalpine Grasslands**

General Information

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

Modelers		**Reviewers**	
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Vegetation Type

Grassland

Dominant Species*

FETH
FEAR2
MUM
DAPA

General Model Sources

☑ Literature
☑ Local Data
☑ Expert Estimate

LANDFIRE Mapping Zones

14	24	28
15	25	
23	27	

Rapid AssessmentModel Zones

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

Geographic Range

Northern Arizona, Southern and Northern New Mexico, Colorado.

Biophysical Site Description

Elevated plains, valleys, hills and mountain side slopes ranging from nearly level to very steep topography. Aspect varies, however the larger patches are on southern exposures and on summit plains. Elevation ranges from 7500 to 11,800 feet. Moderately deep to deep Typic to Pachic Cryoborolls (FETH) and Argiborolls/Haploborolls (FEAR2).

Vegetation Description

Grassland types include Thurber fescue (FETH), Arizona fescue (FEAR2), sheep fescue (FEOV), mountain muhly (MUMO), timber/Parry's oatgrass (DAIN/DAPA, Kentucky bluegrass (POPR), nodding brome (BRAN); tufted hairgrass (DECE), Parry's oatgrass (DAPA2), mountain muhly (MUMO), Idaho fescue (FEID), Agropyron spicatum (AGSP), and Deschampsia cespitosa (DECE). Various sedges (CAREX spp.) will be present in moist (concave) sites.

See TES map units 560, 561, 563, 566, 198, 131, 132, 133 of the Carson NF; map units 640, 595, 594 of the Coconino NF; and 513 and 518 of the Kaibab NF and map units 3164, 3174, and 3094 of the Smokey Bear TES report.

Disturbance Description

Historical fire frequencies for grassland types are difficult to estimate and some disagreement about the frequency of fire in mountain grasslands exists. Experts that contributed to this model suggested MFIs ranging from 10-300 years, but agree that there is little scientific basis to estimate fire frequencies.

For this model, stand replacement fires were modeled with approximately 20 yr MFI based upon historic photographic analysis, personal communication (Barry Johnston-R2) and inference from fire regimes of

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adjacent forest types (PIPO 3-12yr, ABCO/PSMEG 14-46yr, PIEN/ABLAA 60-180+yr). Mixed fires (causing 25-75% top-kill) were modeled with similar frequency to account for spotty grassland fires. Anthropogenic (pre-European, Spanish colonial) fire use ignitions may have been 5-15 years. However, contributors note that estimating return intervals from rephotography or adjacent forests are both incomplete and imperfect methods.

Adjacency or Identification Concerns

Current fire regimes are greater than 60yr in montane and 100yr in subalpine systems.

Scale Description

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

Issues/Problems

Model Evolution and Comments

Peer review disagreed strongly with the current model construct and suggested combining all mountain grassland models (R3MGRA and R3MGRAws) and changing the overall MFI to 100-300 years (for montane and subalpine, respectively) with only replacement fire. The model values were unchanged, but descriptions were modified to incorporate these views.

Succession Classes**

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

Class A   20 %

Early1 PostRep

Description

Low cover and frequency of Thurber fescue (FETH), Arizona fescue (FEAR2), sheep fescue (FEOV), mountain muhly (MUMO), timber/Parry's oatgrass (DAIN/DAPA, Kentucky bluegrass (POPR), nodding brome (BRAN); tufted hairgrass (DECE) and various sedges (CAREX spp.) in moist (concave) sites. BLTR is common.

Dominant Species* and Canopy Position

FETH
FEAR2
ANPA
ERFO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	34 %
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

Thurber fescue (FETH), Arizona fescue (FEAR2), sheep fescue (FEOV), mountain muhly (MUMO), timber/Parry's oatgrass (DAIN/DAPA, Kentucky bluegrass (POPR), nodding brome (BRAN); tufted hairgrass (DECE) and various sedges (CAREX spp.) in moist (concave) sites.

Dominant Species* and Canopy Position

FETH
DAPA
MUMO
FEAR2

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	65 %
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   50 %

Late1 Closed
Description

Thurber fescue (FETH), Arizona fescue (FEAR2), sheep fescue (FEOV), mountain muhly (MUMO), timber/Parry's oatgrass (DAIN/DAPA, Kentucky bluegrass (POPR), nodding brome (BRAN); tufted hairgrass (DECE) and various sedges (CAREX spp.) in moist (concave) sites.

Dominant Species* and Canopy Position

FETH
FEAR2
DAPA
MUMO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	66 %	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   0 %

Late1 Open
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 %	%
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

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 %	%
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: no data
Min: no data
Max: no data

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	18	10	100	0.05556	55
Mixed					
Surface	22			0.04545	45
All Fires	10			0.10102	

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