

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):

R3MGRAs

Montane and Subalpine Grasslands with Shrubs or Trees

General Information

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

Modelers

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Vegetation Type

Grassland

Dominant Species*

FETH

FEAR2

PEFL15

CHNA2

General Model Sources

Literature

Local Data

Expert Estimate

LANDFIRE Mapping Zones

14	24	28
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15	25
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23	27
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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

Northern Arizona, Southern and Northern New Mexico, Southern Colorado

Biophysical Site Description

Elevated plains, terraces along valleys, toeslopes of hills and mountain side slopes ranging from nearly level to very steep topography. Aspect varies, 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). Pachic Udic Argiborolls.

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; currently Pseudoroegneria spicata), and Deschampsia cespitosa (DECE). Various sedges (CAREX spp.) will be present in moist (concave) sites.

Shrubs include shrubby cinquefoil (PEFL15), at higher elevations and rubber rabbitbrush (CHNA2) at the lower elevations in the montane zone.

Trees may include ponderosa pine, white fir, Douglas-fir, Engelmann spruce, blue spruce, and subalpine fir.

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.

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

For this model, stand replacement fires were modeled with approximately 70 yr MFI based upon historic photographic analysis, personal communication (Barry Johnston-R2) and inference from fire regimes of adjacent forest types (PIPO 3-12yr, ABCO/PSMEG 14-46yr, PIEN/ABLAA 60-180+yr). Surface fires (only occurring in the class with >15% woody species) occurs with an average MFI of 30 years. 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

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 R3MGRAs) 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.

Quality control found one rule violation (use of disturbance to accelerate age) and when this was eliminated, the frequency of surface fire was reduced from 10 years to 30 years, but had no effect on the resulting percent in each class.

A Mountain Grassland with tree PNVG (R3MGRAwt) created at the Southwest Rapid Assessment workshop was combined with this type.

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

Pioneer species of pine dropseed (BLTR) and thurber fescue (FETH) and Arizona fescue (FEAR2) associations. Some shrubs (shrubby cinquefoil (PEFL15) or rubber rabbitbrush (CHNA2)) present. Low litter cover and high bare soil (>25%)

Indicator Species* and Canopy Position

- FETH
- FEAR2
- CHNA2
- PEFL15

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:

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Class B 60%

Mid1 Closed

Description

Closed canopy of thurber and Arizona fescue (FETH and FEAR2) with only minor woody component (<15%). Potentilla fruticosa (POFR4) may be well represented. Bare soil less than 20%.

Indicator Species* and Canopy PositionFETH
FEAR2

PEFL15

Upper Layer Lifeform

- Herbaceous
 Shrub
 Tree

Fuel Model no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	35 %	54 %
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 30%

Mid1 Open

Description

Closed canopy of fescue (FETH and FEAR2) with >15% cover of woody species (see species list under vegetation description; many tree species may be present). Bare soil less than 10%. Surface fires can occur in this class, usually eliminating shrubs or tree seedlings and causing a transition to class B.

Indicator Species* and Canopy PositionCHNA2
PEFL15
PIEN
PIPO**Upper Layer Lifeform**

- Herbaceous
 Shrub
 Tree

Fuel Model no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	55 %	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**Indicator Species* and Canopy Position****Structure Data (for upper layer lifeform)**

	Min	Max
Cover	65 %	95 %
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

- Herbaceous
 Shrub
 Tree

Fuel Model 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	

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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:

Fire Regime Group: 1

- 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
<i>Replacement</i>	70	10	100	0.01429	30
<i>Mixed</i>					
<i>Surface</i>	30			0.03333	70
<i>All Fires</i>	21			0.04763	

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