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):

R0MGRA   **Mountain Grassland**

General Information

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

Modelers		**Reviewers**	
Mary Manning	mmanning@fs.fed.us	Eldon Rash	erash@fs.fed.us

Vegetation Type

Grassland

Dominant Species*

AGSP
FEID
FESC
STCO

General Model Sources

☑ Literature
☐ Local Data
☑ Expert Estimate

LANDFIRE Mapping Zones

10	21
19	22
20	29

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 Rockies throughout Montana, northern Idaho, and Wyoming.

Biophysical Site Description

This type occupies moist, productive rolling uplands, ranging from 4000 to 8000 feet. At lower elevations, it occupies north facing, snow loaded slopes with higher soil moisture and deeper, more productive soils relative to the surrounding upland.

Vegetation Description

This type is dominated by bluebunch wheatgrass with Idaho fescue and rough fescue as dominant associates. Mueggler and Stewart (1980) have described these types as: Fredi/Agsp and Fesc/Agsp. Additional species include needle and thread, Sandberg's bluegrass, and a variety of mesic forbs (e.g., showy cinquefoil, sticky geranium, phlox, lupine, and yarrow).

Disturbance Description

This type has frequent mixed and replacement fires (fire regime group I). Most species in this type are fire adapted and respond favorably to these fire types. Grazing by large, concentrated herds of ungulates (bison, elk, pronghorn and deer) maintained healthy, productive and diverse grasslands. (This grazing regime is referred to as "Native Grazing" in the VDDT model.) Such grazing may have resulted in heavy defoliation and/or some soil churning, but was temporally transitory. Temporary impact followed by rest-recovery time is characteristic.

A small portion of the landscape was subjected to repeated or prolonged heavy animal impact, including heavy defoliation and repeated soil churning and/or compaction. Such areas included watering points for herds, bison or elk wallows, and prairie dog towns. (This disturbance is referred to as "Optional1" in the VDDT model.) The slow recovery time after such disturbances are reflected in the successional pathway of

class B to C to D.

Adjacency or Identification Concerns

Since this is a broad type, the dry bluebunch wheatgrass-needle and thread variant will probably have more bareground and a slightly higher MFI. Response to fire may differ slightly also.

Scale Description

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

Thjs type can occupy broad expanses and also narrow bands below the lower montane forest.

Issues/Problems

This is a highly variable type, which includes most of Mueggler and Stewart's habitat types. The literature in FEIS suggests an MFI of between 10-30 years for this type. The Lewis and Clark range type classification needs to be incorporated into this model also.

Model Evolution and Comments

Workshop code was MGRA1.

Review comments from Eldon Rash were incorporated on 03/02/2005. The name of class D was changed to Mid2 (from Late1) to reflect the transitional nature of the class before late-development closed conditions. The pathway from B to C to D reflects heavy animal use and the relatively slow recovery time from such disturbances.

Suggested reviewers were Lois Olsen (lolsen@fs.fed.us), Jeff Dibenedetto (jdibenedetto@fs.fed.us), and Eldon Rash (erash@fs.fed.us), and Steve Cooper from MNHP.

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

Post fire, early seral community dominated by bunchgrasses and forbs. Cover ranges from 0-20%. In the absence of fire or heavy animal impact, this condition succeeds to a late-development closed condition (class E). Age ranges from 0-5 years.

Indicator Species* and Canopy Position

AGSP
KOCR
POSA
STCO

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   5%

Early2 PostRep

Description

Open condition resulting from repeated, prolonged use by native ungulates. Soil displacement and compaction favor ruderale species and limit "natural" succession. Cover ranges from 0 to 5%. Recovery time is slow, and after 30 years without heavy animal impact or replacement fire this condition will succeed to a mid-development open condition (class C). Age ranges from 0 to 30 years.

Indicator Species* and Canopy Position

VETH
ACMI
TRDU
POSA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	5 %
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   1%

Mid1 Open

Description

Mid-open condition which is still recovering from heavy animal use. Ruderales are eventually replaced by mid-seral species. Canopy cover increases and bare ground decreases. This is a minor, transitional type. Cover ranges from 5 to 20%. Without replacement fire or heavy animal use this type succeeds to a later mid-development condition (class D). Age ranges from 30-80 years.

Indicator Species* and Canopy Position

POSA
AGSP
STCO
KOCR

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	5 %	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 D   20%

Mid2 Open

Description

The plant community continues to develop after heavy animal use, with increases in canopy and basal vegetation cover, and decreases in bare ground. Litter also increases. Cover ranges from 20 to 30%. Without replacement fire or heavy animal use, this type will succeed to a late-development closed

Indicator Species* and Canopy Position

AGSP
FEID
FESC
KOCR

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	20 %	30 %
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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condition (class E). Age ranges from 80-90 years.

Class E   54 %

Late1 Closed

Description

The mesic forb component is greatest in this community. There is very little bare ground; litter ground cover is high. Plants are vigorous and well established. Replacement fire is rarely lethal, and the community responds. Quickly to fire. Cover ranges from 30 to 80%. Without fire or heavy animal impact, this condition is self-perpetuating and begins at 5 years after a replacement fire.

Indicator Species* and Canopy Position

FEID
FESC
AGSP
KOCR

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	30 %	80 %
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

Non-Fire Disturbances Modeled

☐ Insects/Disease
☐ Wind/Weather/Stress
☑ Native Grazing
☐ Competition
☑ Other: heavy animal impact
☐ Other:

Historical Fire Size (acres)

Avg:
Min:
Max:

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 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	20	10		0.05	60
Mixed	30			0.03333	40
Surface					
All Fires	12			0.08334	

References

Mueggler, W. F. and W. L. Stewart. 1980. Grassland and Shrubland habitat types of Western Montana. USDA GTR INT-66