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):

R0RIPA **Riparian--Wyoming**

General Information

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

Modelers		Reviewers	
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Vegetation Type

Shrubland

Dominant Species*

ABILD
SALIX
BETUL
POPUL

General Model Sources

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

LANDFIRE Mapping Zones

10 21
19 22
20 29

Rapid Assessment Model Zones

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

Geographic Range

Riparian zones in Wyoming, including plains, intermountain basins, and montane zones. As riparian areas become smaller in width (usually with elevation), the importance of the riparian vegetation in the fire regime will decrease relative to the surrounding PNVGs.

Biophysical Site Description

This model is a summary of dozens of riparian types combined because they are relatively unimportant stringers in the fire management landscape. They do not comprise a large proportion of the landscape, but are included here because of their ecological importance. They may occur on steep to gentle terrain, on all aspects and soils, in plains and in mountains.

Vegetation Description

There are three basic riparian types in Wyoming. 1) Tree types, usually featuring cottonwoods, occur when the hydrologic regime allows for a combination of moist soil, but with opportunities for tree seedling germination on bare ground. This type is common on large rivers where the stream course moves laterally across the floodplain, and along stream courses where flows are highly variable.

2) A sedge meadow type occurs (generally) in low gradient environments where stable - high water tables provide an advantage to herbaceous vegetation.

3)The willow sedge type splits the difference between the meadow herbaceous type and the forest type and is most common in Wyoming. It is the general type modeled here.

Disturbance Description

Fire regimes in the riparian zone will vary considerably, from less than 35 years to more than 300 years, and

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

are often determined by surrounding PNVGs. The moisture associated with riparian areas promotes lower fire frequency compared with adjacent uplands, though riparian areas often have more abundant and continuous fine fuels and can be very flammable in drought or late growing season. Riparian areas generally recover rapidly from fire events. The big river floodplains are most likely to burn. The wet meadow types seldom burn, and when they do the preburn herbaceous plant community is not permanently destroyed, and rapidly regrows. Recovery of preburn conditions is possible within a single growing season. In the willow sedge type, woody vegetation is set back by fire, but preburn conditions return within a short period.

Flooding would have caused replacement of riparian vegetation rarely (modeled here at 100 year intervals as "Wind/Weather/Stress"). More frequent floods (e.g., 10 years) would have had little effect on the vegetation, and are included in this model as maintenance disturbances with minimal affect on model results (modeled as "Optional1").

Grazing by native ungulates and weather stress may affect this type, but are not modeled here.

Adjacency or Identification Concerns

Alteration of these systems today is often related to grazing pressures.

Scale Description

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

These are long narrow stringers in the fire management systems.

Issues/Problems

Combining multiple riparian systems into one model was problematic because it required generalizing fire regimes and vegetation across diverse riparian systems, from narrow, steep mountain streams to broad river valleys. However, this generalization was necessary to meet the constraints of the Rapid Assessment and include riparian types. Due in part to the generality of this model, there was disagreement about the frequency of fire in this system, ranging from less than 35 years to more than 300 years.

Model Evolution and Comments

Workshop code was RIPA.

Additional reviewers included Curt Yanish (curt_yanish@blm.gov) and Gavin Lovell (gavin_lovell@blm.gov).

Peer review incorporated 4/18/05. Peer review had conflicting input about the frequency of fire in these systems, and ranged from <35 years to >300 years. The model was left at its original MFI of 100 years and descriptive information was added to note the widely ranging fire regimes in riparian systems. Flooding was added as a disturbance type at 100- and 10-year intervals. 100-year floods cause replacement of vegetation (to class A) and 10-year floods do not cause a transition between vegetation classes. Adding flooding reduced the amount of class D (from 90% to 78%) and increased the other vegetation classes slightly.

Succession Classes

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

Class A 2 %

Early1 PostRep

Description

Post-replacement disturbance conditions (fire or flooding). Fire in riparian zones is often patchy. These areas are seldom subject to widespread cover changes and recover quickly (usually within one growing season) from disturbance.

Indicator Species* and Canopy Position

ABILD
JUNCU
POA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	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:

Class B 10 %

Mid1 Open

Description

Key vegetation for up to 4 years following the burn might include sedge species, with Juncus, and scirpis. Grass types include bluegrass, and tufted hairgrass.

Indicator Species* and Canopy Position

ABILD
JUNCU

POA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	70 %
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 10 %

Mid2 Open

Description

Within 5 years the woody component of the system has returned. Species include Salix (willows), Betulus (water birch), Ribes (currants), and Alnus (alders).

Indicator Species* and Canopy Position

SALIX
RIBES
BETUL
ALNUS

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	70 %
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 D 78 %

Late1 Open

Description

Woody vegetation structure is reestablished within 10 years. Species include Salix (willows), Betulus (birch), and Populus (cottonwood).

Indicator Species* and Canopy Position

SALIX
BETUL
POPUL

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	90 %
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 E 0 %

Late1 Closed

Description

Indicator Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover	%	%
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

Disturbances

Non-Fire Disturbances Modeled

- ☐ Insects/Disease
- ☑ Wind/Weather/Stress
- ☐ Native Grazing
- ☐ Competition
- ☑ Other: 10-year floods (100-year floods are modeled as Wind/Weather/Stress)
- ☐ Other:

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

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*
Replacement					
Mixed	100	25	500	0.01	100
Surface					
All Fires	100			0.01002	

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