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)

R4WODR **Northern Great Plains Wooded Draws and Ravines**

General Information

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

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Vegetation Type

Woodland

Dominant Species*

FRPE	SYOC
ULAM	CASP7
ACNE	ELYM
PRVI	TORY

General Model Sources

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

LANDFIRE Mapping Zones

30
31

Rapid AssessmentModel Zones

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

Geographic Range

Predominately west of the Missouri River in North Dakota and South Dakota, with minor extensions east of the Missouri River and south into Nebraska.

Biophysical Site Description

This PNVG occurs in major tributaries and upland drainages with extensions onto steep north-facing slope. The vegetation type is best developed in topographic conditions that favor protection from fires in the adjacent grasslands. This PNVG is heavily influenced by topographic situations that produce a combination of deeper soils, supplemental moisture from run-off and snow catchment.

Vegetation Description

Intricate mix of western grassland and shrubland species, with elements of eastern deciduous woodlands. Northern extent occasionally supports quaking aspen, while Southern extent supports Juniper species.

Disturbance Description

The Wooded Draw PNVG forms an intimate association with adjacent mixed grass prairie and shrublands where non-replacement fires are relatively frequent because of productive grass fuels and cycles of moisture and drought. Less frequent stand replacement fires were generally associated with periods of exceptionally high moisture conditions immediately followed by severe dry conditions. Native ungulates play a role in stand regeneration on sites where buffalo, deer, and elk concentrate for food, cover, and shelter. Drought and moist cycles are major factors that interact with both fire and native grazing.

Adjacency or Identification Concerns

Occurs in upland draws and ravines scattered throughout the Northern Mixed Grass prairie.

Scale Description

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

Landscape adequate in size to contain natural variation in vegetation and disturbance regime. Western stands are usually relatively small (<50 acres). Larger areas, 50-100 acres, occur infrequently on the

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

eastern edge of distribution.

Issues/Problems

Long, linear nature of distribution makes them difficult to map. Consequently, they are often listed as a complex in relatively small-scale mapping efforts.

Model Evolution and Comments

Reviewer noted that rocky mountain locust eruptions presumably occurred with severe impacts although the frequency of eruptions is unknown.

*Succession Classes***

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

Class A 8 %

Early1 Open

Description

Grass/shrub mix on all sites that include post-replacement fire regrowth of graminoids and clonal shrubs. Includes recruitment of grass and forb species dependent upon replacement fire. Dominant species include green needle grass, western wheatgrass, western snowberry, chokecherry, and cudweed. Shrub cover is less than 25% with greater than 75% herbaceous cover. Continuity with adjacent grasslands is reestablished with replacement fires that occur in classes B, C, D, and E that kills the majority of woody vegetation and other fire sensitive species, but leaves clonal shrubs and most herbs intact. Grassland continuity is then maintained by frequent (10 years) non-replacement fires that leave belowground vegetative structures undamaged.

Dominant Species* and Canopy Position

PASM	All
NAVI4	All
SYOC	Low-Mid
PRVI	Low-Mid

Upper Layer Lifeform

- ☑ Herbaceous
- ☐ Shrub
- ☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	50 %	80 %
Height	Herb Short <0.5m	Shrub Short 0.5-0.9m
Tree Size Class	no data	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class B 25 %

Early2 All Struct

Description

In the absence of all fires, shrubs become more diverse (additions of juneberry, currents, and rose species) and dominant in both height and density with a complex herbaceous understory. Tree seedlings (green ash, American elm, and boxelder) are included in

Dominant Species* and Canopy Position

PRVI	Mid-Upper
SYOC	Low-Mid
FRPE	Low-Mid
NAVI4	Lower

Upper Layer Lifeform

- ☐ Herbaceous
- ☑ Shrub
- ☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	75 %	100 %
Height	Herb Short <0.5m	Shrub Medium 1.0-2.9m
Tree Size Class	Seedling <4.5ft	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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shrub cover mix. Shrub cover is greater than 25% with herbaceous cover that ranges from 25 to 50%. Cumulative soil moisture increases due to enhanced snow catchment from higher shrub and herb cover compared to post-replacement class. Succesional progression may be slowed by heavy grazing by native ungulates and dry conditions (Option1).

Class C 12%

Mid1 All Structu

Description

Tree species dominated by green ash and American elm begin to overtop the taller shrubs of chokecherry and juneberry, which, in turn, overtop shorter shrubs such as western snowberry. Collectively, this produces vegetation layers consisting of short shrubs and herbs (< 1 m), mid-height shrubs (1-2 m), and tall shrub/tree saplings (> 3 m). Vegetation structure further improves snow catchment while reducing water runoff and increases infiltration. The diverse vegetation structure associated with this class breaks the continuity with adjacent grasslands, which is maintained by the topographic conditions that characterize the vegetation type.

Dominant Species* and Canopy Position

FRPE	Upper
PRVI	Mid-Upper
AMAL2	Middle
SYOC	Lower

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	10 %	30 %
Height	Shrub Medium 1.0-2.9m	Tree Regen <5m
Tree Size Class	Sapling >4.5ft; <5"DBH	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class D 53%

Late1 All Structu

Description

Tree species mature and canopy cover increases and becomes interlocking. Typical western woodland understory vegetation is fully developed with low to moderate foliar cover of herbaceous vegetation. Overall vegetation layers (tree, tall shrub, short shrub, and herbaceous) are

Dominant Species* and Canopy Position

FRPE	Upper
PRVI	Middle
SYOC	Low-Mid
CASP7	Lower

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	30 %	80 %
Height	Tree Short 5-9m	Tree Medium 10-24m
Tree Size Class	Medium 9-21"DBH	

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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maintained. Western snowberry is primarily restricted to the fringes of the class.

Class E 2%

Late2 Closed

Description

In the long-term absence of stand replacement fires, regeneration of deciduous trees and shrubs is severely reduced, which enhances establishment and persistence of juniper (primarily Rocky Mountain Juniper).

Dominant Species* and Canopy Position

JUSC2 Upper
FRPE Mid-Upper
SYOC Lower
ORMI2 Lower

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	80 %	100 %
Height	Shrub Tall >3.0 m	Tree Short 5-9m
Tree Size Class	Pole 5-9" DBH	

☐ 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: grazing and drought together
- ☐ Other:

Historical Fire Size (acres)

Avg: 50
Min: 5
Max: 100

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 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	45	30	100	0.02222	38
Mixed	94			0.01064	18
Surface	40	10	10	0.025	43
All Fires	17			0.05786	

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