LANDFIRE Biophysical Setting Model

Biophysical Setting 3011470 Western Great Plains Foothill and Piedmont Grassland

☐ *This BPS is lumped with:*
☐ *This BPS is split into multiple models:*

General Information

Contributors (also see the Comments field) **Date** 11/1/2006

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Vegetation Type
Upland Grassland/Herbaceous

Dominant Species
BOGR2
SCHIZ4
BUDA
NAVI4
MUMO
PASM
HECO26
SPCR

Map Zone
30

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

General Model Sources
☑ Literature
☐ Local Data
☐ Expert Estimate

Geographic Range

Occurs in the southern Great Plains, in southern CO and eastern NM.
It is questionable whether this occurs in MZs 29 and 30. It could be on the front range with cool season species, but it's aggregated with other grass types. It could occur in the Wolf Mtns - 331Gf, 331Kf - in between these. This is more of a CO-front range type with sandy soils. If it occurs anywhere, it might be in MZ30, 331Fb.

This primarily occurs in MZ33 in SE WY, along the bluffs. It also occurs in the southern portions of MZ29, but isn't going to be common. It could also occur along the western boundary of MZ29 in the Laramie Peak Range.

Biophysical Site Description

This type typically occurs on plains and draws, or on gently rolling uplands of the southern Great Plains. In NM and CO, elevations range from 1600-2200m (5250-7200ft). Precipitation ranges from 12-14in, and occurs predominantly during the summer.

Vegetation Description

Wolf Mtns has Idaho fescue and bluebunch.

This type typically occurs on the rolling uplands of the Great Plains. Vegetation is mid and short grass dominated little bluestem, blue grama, buffalo grass and needle-and-thread, with intermingled forbs and scattered half-shrubs. This type correlates with Kuchler's (1964) types 65, 66, 67 and 68.

**Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity.

VEG FOR MZ29 AND 30??

Disturbance Description

Return interval for fire could be extended by ungulate grazing. Episodic disturbance caused by insect infestation (grasshoppers, range caterpillars, and Mormon crickets) occured. Insects could also extend the fire return interval.

This system was historically grazed by bison, now grazed by cows for the most part.

Periodic drought can also change fire return intervals. First fire return interval decreases as drought occurs then lengthens as drought continues and less biomass is produced.

This type was modeled with an overall MMFRI of 10yrs. There is a question as to whether this interval is too short. Also, there should not be any mixed fire in this type, as it is a grassland model. It should all be replacement fire (Regional lead removed mixed fire).

Question as to whether there are any other disturbances occurring here.

Adjacency or Identification Concerns

Higher elevation sites of this type borders the juniper steppe type. This also borders cottonwood riparian in places and mountain shrublands - mostly sagebrush in others.

If this is adjacent to juniper, then juniper invasion of the grasslands would be an uncharacteristic condition.

Also - cheatgrass occurs.

There would probably be lower canopy cover today from season long, year after year grazing of cows combined with high stocking of deer and elk. Bison grazing was probably more intermittent and likely to vary from year to year.

Native Uncharacteristic Conditions

There would probably be lower canopy cover today from season long, year after year grazing of cows combined with high stocking of deer and elk. Bison grazing was probably more intermittent and likely to vary from year to year.

Scale Description

This would occur in small patches in MZs 29 and 30, if at all.

Along the western border of MZ29, this occurs in patches of 10s-1000s of acres.

Issues/Problems

Comments

This model for MZs 29 and 30 was adopted from the same BpS from MZ28 created by Gale Green and Wayne Robbie and reviewed by Vic Ecklund and Chuck Kostecka. Regional lead, however, made model fixes to abide by mapping rules and new understanding of severity types.

This model is based on the Rapid Assessment (RA) model R3PGRs, which was reviewed by B. Baker

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(bakerwl@wyo.edu). FRCC model PGRA4 was the original model. Review suggests one model for all plains grasslands. Because of species composition differences, and class differences, 1147 and 1149 were not combined.

Final qa/qc of the RA model resulted in the elimination of a VDDT rule violation, and changed the resulting amount in classes B and C by five percent (Pohl, 8/17/2005).

Vegetation Classes

Class A 5 %

Early Development 1 All Structure

Upper Layer Lifeform

- [x] Herbaceous
- [ ] Shrub
- [ ] Tree

Fuel Model

1

Indicator Species and Canopy Position

BOGR2
All
BUDA
All

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	20 %
Height	Herb 0m	Herb 0.5m
Tree Size Class	None	

☐ Upper layer lifeform differs from dominant lifeform.

Description

Dominated by resprouts and seedlings of grasses and post-fire associated forbs. Low to medium height with variable canopy cover. This type typically occurs where fires burn relatively hot in classes B and C.

This class was originally modeled in MZ28 with cover of 0-10%. However, due to mapping rules, it was changed to 0-20% for MZs 29 and 30.

This class succeeds to C after four years. It can also succeed to B as an alternative successional pathway (0.01 probability).

Replacement fire occurs every 15yrs. Mixed fire was originally modeled for MZ28; however, it was removed for MZs 29 and 30, due to a new understanding of lack of mixed fire in grassland systems.

Class B 25 %

Mid Development 1 Closed

Upper Layer Lifeform

- [x] Herbaceous
- [ ] Shrub
- [ ] Tree

Fuel Model

1

Indicator Species and Canopy Position

BOGR2
Upper
BUDA
Upper
SCHIZ4
Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	31 %	70 %
Height	Herb 0m	Herb 0.5m
Tree Size Class	None	

☐ Upper layer lifeform differs from dominant lifeform.

Description

Greater than 35% herb cover. Generally associated with more productive soils, but can be caused by cumulative high moisture seasons increasing the cover and productivity of class C. Low to medium height.

This class can persist.

Mixed fire was originally modeled for MZ28; however, it was removed for MZs 29 and 30, due to a new

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understanding of lack of mixed fire in grassland systems. Replacement fire occurs every 15yrs keeping in this class. Replacement fire also occurs every 100yrs bringing this class back to A, and replacement fire every 100yrs bringing to C.

Wind/weather stress (drought) occurs every 13yrs, or affects 7.5% of this class each year.

Class C **70 %**

Mid Development 1 Open

Upper Layer Lifeform

- [x] Herbaceous
- [ ] Shrub
- [ ] Tree

Fuel Model

1

Indicator Species and Canopy Position

BOGR2
Upper
BUDA
Upper

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	21 %	30 %
Height	Herb 0m	Herb 0.5m
Tree Size Class	None	

- [ ] Upper layer lifeform differs from dominant lifeform.

Description

Less than 35% herb cover. Generally associated with less productive cobbly and gravelly soils, but can also be caused by cumulative drought shifting class B to this class. Low to medium height.

This class was originally modeled in MZ28 with cover of 11-30%. However, due to mapping rules, it was changed to 21-30% for MZs 29 and 30.

Alternate successional pathway without fire for 20yrs, brings this class to B.

Mixed fire was originally modeled for MZ28; however, it was removed for MZs 29 and 30, due to a new understanding of lack of mixed fire in grassland systems. Replacement fire every 100yrs bringing to A. Replacement fire every 12yrs not causing a transition.

Class D **0 %**

[Not Used] [Not Used]

Upper Layer Lifeform

- [ ] Herbaceous
- [ ] Shrub
- [ ] Tree

Fuel Model

Indicator Species and Canopy Position

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	%	%
Height		
Tree Size Class		

- [ ] Upper layer lifeform differs from dominant lifeform.

Description

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Class E **0 %**

[Not Used] [Not Used]

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model

Indicator Species and Canopy Position

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	%	%
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Disturbances

Fire Regime Group:** **II**

Historical Fire Size (acres)

Avg 0
Min 0
Max 0

Sources of Fire Regime Data

☑ Literature
☐ Local Data
☐ Expert Estimate

Fire Intervals	*Avg FI*	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	12	2	35	0.08333	100
Mixed					
Surface					
All Fires	12			0.08335	

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.

Additional Disturbances Modeled

☐ Insects/Disease
☑ Wind/Weather/Stress
☐ Native Grazing
☐ Competition
☐ Other (optional 1)
☐ Other (optional 2)

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