11390

Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland

BpS Model/Description Version: Aug. 2020

Vegetation Type

Herbaceous

Map Zones

22

Geographic Range

In MZ22, this type occurs in the foothills and lower montane regions. On slopes of the Sierra Madre and Medicine Bows ranges, the foothills of desert mountain ranges and around the fringes of the entire zone abutting mountain ranges.

Biophysical Site Description

In MZ22, this type occupies productive uplands below lower treeline, high plains east of the Continental Divide or small pockets where cold air drainage or shallow soils inhibit conifer growth, generally ranging from 5,000-8,000ft. Soils are shallow.

This BpS description for MZ22 does not completely match with NatureServe's broad ecological system description. For MZ22, it is not a "valley" grassland, but rather a foothills grassland that is being described.

In MZ21, there is more grass cover, whereas in MZ22 in WY, there is more rain shadowing and less snow accumulation.

Vegetation Description

In MZ22, this type is dominated by bluebunch wheatgrass, junegrass, *Carex filifolia*, fringed sage, and *Artemisia tridentata*. It can also have *Artemisia frigida*, *Saliginella*, *Antennaria*, *Arenaria*, *Phlox*, *Haplopappys* (*stenotus*), *Hymenoxis*, and *Poa* species. In some areas can have extensive stands of Wyoming threetip sagebrush, *Artemisia nova* (in denser stands, see BpS 1072), and pincushion cactus. Idaho fescue might and geranium and other forbs are commonly associated with mountain big sagebrush in drainages. There might also be scattered Wyoming big sage in this type.

ELTR7 and ACNE9 might not be dominants everywhere.

BpS Dominant and Indicator Species

Species names are from the NRCS PLANTS database. Check species codes at http://plants.usda.gov.

Disturbance Description

In MZ22, fires would likely start in adjacent forests and burn through this type slowly, because fuel loading is generally low. Fires in this system are likely highly influenced by adjacent types. Fires could have ranged in this system from 10-100s of years.

There might be Native American-influenced burning in this system; however, not enough data available. This was not modeled.

For MZ21, fire rotation was roughly estimated at 66yrs, ranging from 50-80yrs. This was estimated by taking an estimate composite frequency of 33yrs and multiplying it by two to arrive at 66yrs (Baker in press). However, that methodology has been questioned by reviewers for MZ21. Please see MZ21 disturbance description for full explanation of probabilities chosen. For MZ22, the same disturbance probabilities were chosen, since the range is thought to be from 10-100yrs; therefore, an interval of 66yrs seemed to be a reasonable median or mean. However, this method was not supported by all reviewers.

These areas could be partially maintained by native ungulates (deer, elk and bighorn sheep) using the area for winter range. Pocket gophers could have localized effects on a small scale.

Drought might lower biomass in this system and reduce likelihood of fire, perhaps in subsequent years.

Fire Frequency

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. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

In MZ22, this type occurs in patches of one to thousands of acres.

Adjacency or Identification Concerns

In MZ22, stringers/linear patches in ephemeral drainages of mountain big sagebrush would occur in this type. Big sagebrush probably does not invade the adjacent grasslands. Cheatgrass could potentially occur in this type but is likely at very low occurrence at this time. Where you pick up shrubs, this system merges into BpS 1072.

This BpS also merges into BpS 1146 as it gets further south in MZ22. BpS 1146 might, however, have more bunchgrass.

In some areas, can have extensive stands of Wyoming threetip sagebrush, *Artemisia nova* (in denser stands, see BpS 1072)

Issues or Problems

Native Uncharacteristic Conditions

Shrub or tree cover >10% is uncharacteristic.

Comments

Other reviewers for MZ22 were Carl Bezanson and Dan Binkley.

Succession Classes

**Mapping Rules**

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

Class A 1 Early Development 1 - All Structures

Indicator Species

Description

Post fire, early seral community dominated by bunchgrasses and forbs. Herbs and forbs will generally have higher cover than pre-burn and may include astragalus, balsamroot, lupines, yarrow and prairie junegrass. Idaho fescue may be present, but will recover more slowly than the bluebunch wheatgrass after fire.

In this environment (and a number of the other grassland, shrub steppe types) forb density and cover are most responsive to climatic conditions. Hence fire response will vary according to precipitation patterns before and immediately after the fire. Grasses are less “ephemeral” and tend to respond to the fire directly. That’s why we elected to not identify specific forb species response.

*Maximum Tree Size Class*  
None

Class B 40 Mid Development 1 - Closed

Indicator Species

Description

Mid-development with moderate canopy closure dominated by bunchgrasses with forb cover generally higher than pre-burn.

*Maximum Tree Size Class*  
None

Class C 59 Late Development 1 - Closed

Indicator Species

Description

Late-development, closed canopy of grasses and forbs. Bunchgrasses dominate with low densities of shrubs (<10%) in some areas, particularly where this BpS transitions to shrub or tree-dominated communities. Shrub species may include *Artemisia tridentada*, *Ceanothus*, bitterbrush, and *Symphorocarpus*. Some Douglas-fir and Rocky Mountain juniper could be present in some areas, but <10%. Other forbs include *Eriogonum* (buckwheats).

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

Probabilistic Transitions

References

Arno, S.F. and G.E. Gruell. 1983. Fire history at the forest-grassland ecotone in southwestern Montana. Journal of Range Management 36: 332-336.

Baker, W.L. (in press). Fire history in ponderosa pine landscapes of Grand Canyon National Park: Is it reliable enough for management and restoration? International Journal of Wildland Fire.

Baker, W.L. in press. Fire and Restoration of Sagebrush Ecosystems. Manuscript submitted to Wildlife Society Bulletin.

Houston, D.B. 1973. Wildfires in northern Yellowstone National Park. Ecology 54(5): 1111-1117.

Johnson, K.A. 2000. Artemisia tridentata spp. vaseyana. In: Fire Effects Information System, [Online]. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2006, March 7].

Miller, R.F., T.J. Svejcar and N.E. West. 1994. Implications of livestock grazing in the Intermountain sagebrush region: Plant composition. Pages 101-146 in: M. Vavra, W.A. Laycock and R.D Pieper, eds. Ecological implications of livestock herbivory in the West. Denver, CO: Society for Range Management.

Miller, R.F. and R.J. Tausch. 2001. The role of fire in juniper and pinyon woodlands: a descriptive analysis. Pages 15-30 in K.E.M. Galley and T.P. Wilson (eds.). 2001. Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Misc. Pub. No. 11. Tall Timbers Research Station, Tallahassee, FL.

Miller, R.F. and J.A. Rose. 1999. Fire history and western juniper encroachment in sagebrush steppe. Journal of Range Management 52: 550-559.

Miller, R.F. and L.L. Eddleman. 2001. Spatial and Temporal Changes of Sage Grouse Habitat in the Sagebrush Biome. Tech. Bulletin 151, Oregon State Univ., Agricultural Experiment Station. Corvallis, OR. 35 pp.

Mueggler, W.F. and W.L. Stewart. 1980. Grassland and shrubland habitat types of western Montana. Gen. Tech. Rep. INT-66. Ogden, UT: USDA Forest Service, Intermountain Forest and Range Experiment Station, 154 pp.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

Sindelar, B.W. 1981. Rate of plant succession on mined land in Montana. US Government Reports 83(23): 5727. 10 pp.

Tart, D.L. 1996. Big sagebrush plant associations of the Pinedale Ranger District. Final Review Draft. August 1996. Bridger-Teton National Forest. 97 pp.

Welch, B.L and C. Criddle. 2003. Countering Misinformation Concerning Big Sagebrush. Research Paper RMRS-RP-40. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station. 28 pp.

Winward, A.H. 1984. Fire in the Sagebrush-Grass Ecosystem: The Ecological Setting. Pages 2-6 in: K. Sanders, J. Durham, and others, ed. 1985. Rangeland Fire Effects: A Symposium. Boise, ID: USDI Bureau of Land Management, Idaho State Office. 124 pp.

Winward, A.H. 1991. Management in the Sagebrush Steppe. Special Report 880, Oregon State Univ., Agricultural Experiment Station. Corvallis, OR. 7 pp.