

11450

Rocky Mountain Subalpine-Montane Mesic Meadow

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
Cheri Howe	chowell02@fs.fed.us	Nathan Williamson	Nathan_Williamson@nps.gov
Julia Richardson	jhrichardson@fs.fed.ud	Vic Ecklund	vecklund@csu.org
None	None	Chuck Kostecka	kostecka@webaccess.net

Reviewer: Kori Blankenship

Vegetation Type

Herbaceous

Map Zones

9, 10, 19

Geographic Range

Found in the Rocky Mountains. Restricted to the sub-alpine zone; typically above 3,000m in the southern part and 1,500m in the north. This type can occur in sub-alpine regions in the Blue and Wallowa mountains of Oregon and Washington.

Biophysical Site Description

Fine-texture soils. Snow deposition; wind-swept, dry conditions limit tree establishment. On gentle to moderate-gradient slopes. Soils seasonally moist in spring, drying out later in the growing season.

Vegetation Description

Vegetation is typically forb-rich, with forbs contributing more to overall herbaceous cover than graminoids. Important taxa include *Agastache urticifolia*, *Chamerion angustifolium*, *Erigeron* spp., *Senecio* spp., *Helianthella* spp., *Mertensia* spp., *Penstemon* spp., *Campanula* spp., *Hackelia* spp., *Lupinus* spp., *Solidago* spp., *Ligusticum* spp., *Osmorhiza* spp., *Thalictrum* spp., *Valeriana* spp., *Veratrum* spp., *Delphinium* spp., *Aconitum* spp., *Balsamorhiza sagittata*, and *Wyethia* spp. Burrowing mammals can increase forb density.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
ERIGE2	<i>Erigeron</i>	Fleabane
MERTE	<i>Mertensia</i>	Bluebells
PENST	<i>Penstemon</i>	Beardtongue
CAMPA	<i>Campanula</i>	Bellflower
LUPIN	<i>Lupinus</i>	Lupine
SOLID	<i>Solidago</i>	Goldenrod
DECA18	<i>Deschampsia caespitosa</i>	Tufted hairgrass
KOELE	<i>Koeleria</i>	Junegrass

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

Disturbance Description

Fires are primarily replacement. Mixed-severity fire occurs in late-development meadows and removes shrubs. The ignition source is generally not in this type and is probably associated with Native American ignitions in the fall and spring, but spreads from adjacent shrub- or tree-dominated sites, such as mountain big sagebrush, ponderosa pine, and aspen.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	40	80		
Moderate (Mixed)	161	20		
Low (Surface)				
All Fires	32	100		

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

Ranges in size from >10-300ac.

Adjacency or Identification Concerns

This Biophysical Setting (BpS) could be confused with low forb/alpine shrub communities. Often adjacent to aspen/tall forb communities, mountain or big sagebrush/tall forb communities, and upper montane/sub-alpine spruce-fir communities. In degraded sites, this community may convert to silver sagebrush/tall forb.

Issues or Problems

With heavy grazing, these sites can convert to undesirable forbs and grasses such as *Cirsium* spp. (thistle, any species), *Galium* spp. (bedstraw), *Rudbeckia occidentalis* (coneflower), *Helenium hoopesii* (orange sneezeweed), *Polygonum* spp. (knotweed), *Rumex* spp. (sorrel or dock), *Taraxacum officinale* (dandelion), *Wyethia amplexicaulis* (mule ears), *Madia glomerata* (mountain tarweed), *Descurainia* spp. (tansymustard), *Nemophila brevifolia* (basin blue eyes), *Poa pratensis* (Kentucky bluegrass), *Agrostis exarata* (bentgrass), *Dactylis glomerata* (orchardgrass), *Bromus inermis* (smooth brome), *Bromus tectorum* (cheatgrass), *Poa bulbosa* (bulbous bluegrass), and *Vulpia octoflora* (six-week fescue). Roads and trails can impact these sites.

There is not much information about this type. We estimated the fire frequency of 40yrs based on adjacent aspen and herbaceous and sagebrush communities. Also, because fire was assumed to occur in the fall and spring, when the summer's green and wet biomass was dead and cured, replacement fire had little effect on annual tall forbs themselves. Fires would affect encroaching shrubs.

Native Uncharacteristic Conditions

Comments

Kori Blankenship reviewed the use of mixed-severity fire in this model during the 2017 BpS review to determine whether its use was consistent with LANDFIRE's definition of the term. LANDFIRE defines a fire that top-kills 25-75% of the upper layer lifeform as mixed severity. In this model, mixed fire is used to transition from Late 1 Open to Mid 1 Open. Although fire would probably kill or top-kill the shrubs in this BpS (according to Fire Effects Information

System species reviews), comments about map zone (MZ) 13 and MZ16 note that fires probably burned in the fall and spring, when the dominant forbs were dead and cured, and therefore not affected by fire. The MZ09/10/19 model variant also mentions the possible presence of trees in the Late 1 Open class. In these circumstances, mixed fire seemed to be appropriate, and Blankenship decided to leave the model unchanged.

MZ09, MZ10, and MZ19 were combined during the BpS review. During the review, it was noted that MZ22 and MZ28 have the same VDDT model as the combined zones, but due to species and s-class rule differences, MZ22 and MZ28 will be combined and maintained as a unique model.

The model was reviewed for MZ10 and MZ19 by Mary Manning (mmanning@fs.fed.us).

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	B	B	B	B	B	B	B	B	B	B
Herb	>1.0	B	B	B	B	B	B	B	B	B	B
Shrub	0-0.5	C	C	C	C	C	C	C	C	C	C
Shrub	0.5-1.0	C	C	C	C	C	C	C	C	C	C
Shrub	1.0-3.0	C	C	C	C	C	C	C	C	C	C
Shrub	>3.0	C	C	C	C	C	C	C	C	C	C
Tree	0-5	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	5-10	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	10-25	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	25-50	C	C	C	C	C	UN	UN	UN	UN	UN
Tree	>50	C	C	C	C	C	UN	UN	UN	UN	UN

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 5 Early Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ERIGE2	Erigeron	Fleabane	Upper
LUPIN	Lupinus	Lupine	Upper
DECA18	Deschampsia caespitosa	Tufted hairgrass	Upper

Description

Seedling <4.5ft

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:OPN	0	Mid1:OPN	2
Mid1:OPN	3	Late1:OPN	22
Late1:OPN	23	Late1:OPN	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Replacement Fire	Early1:OPN	Early1:OPN	0.025	40	Yes	0
Replacement Fire	Mid1:OPN	Early1:OPN	0.025	40	Yes	0
Mixed Fire	Late1:OPN	Mid1:OPN	0.013	77	Yes	0
Replacement Fire	Late1:OPN	Early1:OPN	0.025	40	Yes	0

References

Barrett, S.W. 1984. Fire history of the River of No Return Wilderness: River Breaks Zone. Final Report. Missoula, MT: Systems for Environmental Management. 40 pp. + appendices.

Fischer, W.C. and A.F. Bradley. 1987. Fire ecology of western Montana forest habitat types. Gen. Tech. Rep. INT-223. Ogden, UT: USDA Forest Service, Intermountain Research Station. 95 pp.

Gregory, S. 1983. Subalpine forb community types of the Bridger-Teton National Forest, Wyoming. Final Report. USDA Forest Service Cooperative Education Agreement: Contract OM 40-8555-3-115. Ogden, UT: USDA Forest Service, Intermountain Region. 100 pp.

Lackschewitz, K. 1991. Vascular plants of west-central Montana--identification guidebook. Gen. Tech. Rep. INT-227. Ogden, UT: USDA Forest Service, Intermountain Research Station. 648 pp.

Lotan, J.E., M.E. Alexander, S.F. Arno [and others]. 1981. Effects of fire on flora: A state of-knowledge review. National fire effects workshop; 1978 April 10-14; Denver, CO. Gen. Tech. Rep. WO-16. Washington, DC: USDA Forest Service. 71 pp.

NatureServe. 2005. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.4. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: May 6, 2005).

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

Young, R.P. 1986. Fire ecology and management in plant communities of Malheur National Wildlife Refuge. Portland, OR: Oregon State University. Thesis 169 pp.