11450

Rocky Mountain Subalpine-Montane Mesic Meadow

BpS Model/Description Version: Aug. 2020

Update: 5/18/18

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Vegetation Type

Herbaceous

Map Zones

17

Geographic Range

Found in the Rocky Mountains and Great Basin on high elevation ranges.

Biophysical Site Description

This Rocky Mountain ecological system is restricted to sites in the subalpine zone where finely textured soils, snow deposition or wind-swept dry conditions limit tree establishment. It is typically found above 3,000m (9,800ft) in the southern part of its range, and above 1,500m (5,000ft) in the north. The soils are typically cryic and seasonally moist to saturated in the spring, but will dry out later in the growing season. These upland communities occur on gentle- to moderate-gradient slopes. The sites are not as wet as those found in Rocky Mountain Alpine-Montane Wet Meadow (CES306.812).

Vegetation Description

Biophysical setting (1145) is commonly termed Tall Forbs. 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*, Balsamorhiza sagittata, Wyethia* spp, *Bromus carinatus, Danthonia intermedia, Deschampsia caespitosa, Koeleria macrantha, Elymus tachycaulus, Phleum alpinum*, and *Dasiphora fruticosa*. Burrowing mammals can increase forb diversity.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| LIGUS | *Ligusticum* | Licorice-root |
| SENEC | *Senecio* | Ragwort |
| PENST | *Penstemon* | Beardtongue |
| HACKE | *Hackelia* | Stickseed |
| LUPIN | *Lupinus* | Lupine |
| OSMOR | *Osmorhiza* | Sweetroot |
| THALI | *Thalia* | Alligator-flag |
| ERIGE | *Erigenia* | Erigenia |

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

Disturbance Description

Fires are primarily replacement with high to moderate frequency. Mixed severity fire occurs in late development meadows and removes shrubs. The ignition source in this type is probably associated with native burning in the fall and spring, but fire can spread from adjacent shrub or tree dominated sites, such as mountain big sagebrush, ponderosa pine, or aspen.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 39 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 39 | 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

This type ranges in size from <10-300ac.

Adjacency or Identification Concerns

In map zones 12 and 17 this could be confused with low forb/alpine shrub communities. Often adjacent to aspen/tall forb communities and mountain or subalpine big sagebrush/tall forb communities. In degraded sites, this community may convert to silver sagebrush/tall forb.

With heavy grazing these sites can convert to undesirable forbs and grasses such as *Circium* spp (thistle, any species), *Galium* spp (bedstraw), *Rudbeckia occidentalis* (coneflower), *Helenium hoopesii* (Orange sneezeweed), *Polygonum* spp. (knotweed), *Rumex* spp (sorrel or dock), *Taraxacom officinale* (dandelion), *Veratrum californicum* (false hellebore), *Wyethia amplexicaulis* (mulesears), *Potentilla gracilis* (cinquefoil), *Geum marcophyllum* (avens), *Arnica chamissonis* (arnica), *Collomia linearis* (tiny trumpet), *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.

Issues or Problems

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

Native Uncharacteristic Conditions

Comments

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 | B | B | B | B |
| Herb | 0.5-1.0 | A | A | A | A | A | A | B | B | B | B |
| Herb | >1.0 | A | A | A | A | A | A | 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** |
| ASTER | Aster | Aster | Upper |
| APIAC | <NOT FOUND IN NRCS> | <NOT FOUND IN NRCS> | Upper |
| BORAG | Borago | Borage | Upper |
| SCROP | Scrophularia | Figwort | Upper |

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, *Balsamorhiza sagittata, Wyethia* spp, *Bromus carinatus, Danthonia intermedia, Deschampsia caespitosa, Koeleria macrantha, Elymus tachycaulus, Phleum alpinum,* and *Dasiphora fruticosa*. Replacement fire presumably occurred during the fall and spring.

*Maximum Tree Size Class*  
None

Class B 38 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ASTER | Aster | Aster | Upper |
| APIAC | <NOT FOUND IN NRCS> | <NOT FOUND IN NRCS> | Upper |
| BORAG | Borago | Borage | Upper |
| SCROP | Scrophularia | Figwort | Upper |

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, *Balsamorhiza sagittata, Wyethia spp, Bromus carinatus, Danthonia intermedia, Deschampsia caespitosa, Koeleria macrantha, Elymus tachycaulus, Phleum alpinum,* and *Dasiphora fruticosa*. There is some increase in shrub component, but will occupy <5% cover. Replacement fire removes shrubs.

*Maximum Tree Size Class*  
None

Class C 57 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ASTER | Aster | Aster | Middle |
| APIAC | <NOT FOUND IN NRCS> | <NOT FOUND IN NRCS> | Middle |
| BORAG | Borago | Borage | Middle |
| SCROP | Scrophularia | Figwort | Middle |

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, *Balsamorhiza sagittata, Wyethia* spp, *Bromus carinatus, Danthonia intermedia, Deschampsia caespitosa, Koeleria macrantha, Elymus tachycaulus, Phleum alpinum*, and *Dasiphora fruticosa*.

Five to 10% of cover in this class may be woody species from adjacent plant communities such as Populus tremuloides, Artemisia cana, Artemisia tridentata, Rosa woodsii, Ribes spp and Amelanchier spp. Mixed severity fire removes shrubs from overstory.

*Maximum Tree Size Class*  
Seedling <4.5ft

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Mid1:CLS | 2 |
| Mid1:CLS | 3 | Late1:OPN | 22 |
| Late1:OPN | 23 | Late1:OPN | 522 |

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:CLS | Early1:OPN | 0.025 | 40 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:OPN | 0.025 | 40 | Yes | 0 |

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