16450

Alaska Sub-boreal and Maritime Alpine Mesic Herbaceous Meadow

Model Date: Report Date:

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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|  |  |  |  |

Reviewer: Robin Innes

Vegetation Type

Herbaceous

Map Zones

73, 74, 75, 76, 77, 78, 80

Model Splits or Lumps

Geographic Range

This Biophysical Setting (BpS) occurs in the subalpine to alpine zones of the boreal transition region and from Kodiak Island through southeastern Alaska and adjacent British Columbia

Biophysical Site Description

These are mesic subalpine and alpine herbaceous meadows that occur on mountain sideslopes in the boreal transition and maritime regions of Alaska. The slope position is often above the tall-shrub zone and below alpine dwarf-shrub tundra, and the slope shape is usually straight to concave. The substrate is colluvium, residuum, or glacial till. This system often occurs as a continuous band above or mixed with subalpine and alpine shrublands on moderate to steep slopes underlain by colluvium, talus, or bedrock.

Vegetation Description

Species composition is diverse and species richness is often very high, typically no single species is dominant. Vegetation is dominated by herbaceous species, including *Carex macrochaeta, Geranium erianthum, Sanguisorba canadensis, Valeriana sitchensis, Lupinus nootkatensis, Veratrum viride, Aconitum delphiniifolium, Anemone narcissiflora, Polemonium acutiflorum, Chamerion angustifolium (= Epilobium angustifolium), Chamerion latifolium, Senecio triangularis, Nephrophyllidium crista-galli, Calamagrostis canadensis* (often present but not dominant), *Castilleja unalaschcensis, Artemisia arctica, Fritillaria camschatcensis*, and *Athyrium filix-femina* (DeVelice et al. 1999).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| CAMA11 | *Carex macrochaeta* | Alaska long-awn sedge |
| GEER2 | *Geranium erianthum* | woolly geranium |
| SACA14 | *Sanguisorba canadensis* | white burnet |
| VASI | *Valeriana sitchensis* | Sitka valerian |
| LUNO | *Lupinus nootkatensis* | Nootka lupine |
| VEVI | *Veratrum viride* | corn-lily |
| ACDE2 | *Aconitum delphiniifolium* | Larkspurleaf monkshood |
| ANNA | *Anemone narcissiflora* | narcissus-flowered anemone |

Disturbance Description

The dominant disturbances are snow avalanche, soil creep, and freeze-thaw dynamics. While this system often occurs on steep slopes with high avalanche frequency, it can also occur on shoulder slopes and near summits, where snowslides are rare. Fire is unlikely to be a significant disturbance for this system, due to moist soils, low fuel levels, and adjacent vegetation types that rarely burn. Grazing may be an influence on this system in some areas.

Fire Frequency

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

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

Large patch

Non-Fire Disturbances

Other 1: snow slides

Adjacency or Identification Concerns

Issues or Problems

Native Uncharacteristic Conditions

Comments

In 2021 NatureServe revised the Ecological Systems for AK and Pat Comer updated the description for this BpS accordingly. The model was not changed.

In 2015 an extensive search was done by Fire Effects Information System staff to locate information for a synthesis on fire regimes of Alaskan wet and mesic herbaceous systems (Innes 2015). No published information was found on mesic herbaceous meadows in the subboreal or maritime alpine zones.

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 | A | A | A | A | A | A | A | A | A | A |
| Herb | >1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0-0.5 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 0-5 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | A | A | UN | UN | UN | 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 100 Early Development 1 - All Structures

Structural Information

Tree Size Class: None

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CAMA11 | *Carex macrochaeta* | Longawn sedge | Upper |
| GEER2 | *Geranium erianthum* | Woolly geranium | Upper |
| SACA14 | *Sanguisorba canadensis* | Canadian burnet | Upper |
| VASI | *Valeriana sitchensis* | Sitka valerian | Upper |

Description

This stage is dominated by *Carex macrochaeta* with a variety of forbs.

***Model Parameters***

**Deterministic Transitions**

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Early1:ALL | 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** |
| Optional 1 | Early1:ALL | Early1:ALL | 0.0500 | 20 | No | 0 |

***References***

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