16510

Aleutian Mesic Herbaceous Meadow

BpS Model/Description Version: Nov. 2024

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| --- | --- | --- | --- |
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Reviewer: Hunter Gravely, Robin Innes

Vegetation Type

Herbaceous

Map Zones

72, 76, 80

Geographic Range

This Biophysical Setting (BpS) occurs on the Alaska Peninsula, Aleutian Islands and Kodiak Island (NatureServe 2008).

Biophysical Site Description

This BpS grows on all slopes and aspects with a mesic moisture regime, including windswept coastal headlands, old beach ridges, hillside slopes, and stabilized talus. It is able to form a mosaic with alder patches (NatureServe 2008). Sites are mesic.

Vegetation Description

This BpS includes four predominant vegetation types: (1) The *Athyrium filix-femina* meadow type is dominated by *Athyrium filix-femina* with *Veratrum viride*, *Heracleum maximum, Streptopus amplexifolius, Angelica lucida* and *Calamagrostis canadensis*; (2) The *Chamerion angustifolium* ssp*. angustifolium* meadow type is dominated by *Chamerion angustifolium* ssp*. angustifolium,* usually with ferns, *Calamagrostis canadensis* and often *Heracleum maximum*; (3) The *Calamagrostis canadensis* meadow type is dominated by *Calamagrostis canadensis*, usually with ferns and scattered forbs. It is common on disturbed sites (human or natural) that are in early stages of recovery; and (4) The mixed herbaceous meadow type includes mesic herbaceous meadows not dominated by *Athyrium filix-femina*, *Chamerion angustifolium* ssp*. angustifolium* or *Calamagrostis canadensis*; these species, however, often codominate. Common forbs include *Lupinus nootkatensis, Solidago canadensis var. lepida, Polemonium acutiflorum, Castilleja unalaschcensis, Sanguisorba canadensis, Veratrum viride, Valeriana capitata, Antennaria dioica, Cardamine oligosperma var. kamtschatica, Achillea millefolium var. borealis, Arnica unalaschcensis, Dendranthema arcticum* ssp*. arcticum, Claytonia sibirica, Geum calthifolium, Ranunculus occidentalis, Dryopteris expansa* and *Angelica lucida.* Graminoids include *Carex macrochaeta, Festuca rubra, Agrostis exarata, Agrostis scabra* and *Deschampsia beringensis. Empetrum nigrum* may also be common.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| ATFI | *Athyrium filix-femina* | Common ladyfern |
| CHANA2 | *Chamerion angustifolium ssp. angustifolium* | Fireweed |
| VEVI | *Veratrum viride* | Green false hellebore |
| CACA4 | *Calamagrostis canadensis* | Bluejoint |
| LUNON | *Lupinus nootkatensis var. nootkatensis* | Nootka lupine |
| POAC | *Polemonium acutiflorum* | Tall jacob's-ladder |

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

Disturbance Description

Natural disturbances in this BpS may include flooding, grazing, landslides, and fire. In 2015, an extensive literature 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). The review documented occasional fires in Aleutian mesic bluejoint reedgrass (Innes 2015) and noted that “Near Homer, in the Aleutian mesic herbaceous meadow system [this BpS], bluejoint reedgrass grassland fires were apparently "frequent", as indicated by 2 charred layers in the 0 to 1.5-inch (3.8 cm) soil horizon of one community. In this community, bluejoint reedgrass constituted about 90% cover and there was a 3- to 10-inch (8-25 cm) layer of litter on the surface (Hanson 1951).” Fires in bluejoint reedgrass meadows are likely stand replacing (Innes 2015).

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

Patch size is small to matrix-forming.

Adjacency or Identification Concerns

Issues or Problems

Fire history studies in Alaskan wet and mesic herbaceous systems are scarce, and our knowledge is incomplete (Innes 2015). Surface and ground fires in these systems may be more common than the literature suggests (Innes 2015).

Native Uncharacteristic Conditions

This type is not departed from its “Reference Condition.”

Comments

This model was created by Randy Swaty and Keith Boggs based on the draft Aleutians Ecological Systems description (NatureServe 2008).

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 | A | A | A | A | A | A | A | A |
| 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 Mid Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ATFI | *Athyrium filix-femina* | Common ladyfern | Upper |
| VEVI | *Veratrum viride* | Green false hellebore | Upper |
| CACA4 | *Calamagrostis canadensis* | Bluejoint | Upper |
| LUNON | *Lupinus nootkatensis var. nootkatensis* | Nootka lupine | Upper |

Description

This class contains the four meadow stages described in the vegetation description. These were not separated out as it is thought that the stages are not distinguishable using LANDIFRE’s mapping methods. No disturbances were modeled as there is no credible disturbance information known to this modeler.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Mid1:ALL | 0 | Mid1: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** |

References

Hanson, Herbert C. 1951. Characteristics of some grassland, marsh, and other plant communities in western Alaska. Ecological Monographs. 21(4): 317-378.

Innes, Robin J. 2015. Fire regimes of Alaskan wet and mesic herbaceous systems. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/fire\_regimes/AK\_wet\_herbaceous/all.html [2016, August 2].

Murphy, K.A. and E. Witten. 2006. Mesic Herbaceous Meadow. In Fire Regime Condition Class (FRCC) Interagency Guidebook Reference Conditions. Available at www.frcc.gov.

NatureServe. 2008. International Ecological Classification Standard: Terrestrial Ecological Classifications. Draft Ecological Systems Description for the Alaska Aleutians Region.