17010

Alaska Arctic Coastal Sedge-Dwarf-Shrubland

BpS Model/Description Version: Nov. 2024

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| --- | --- | --- | --- |
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| None | None | None | None |

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Vegetation Type

Shrubland

Map Zones

67, 68, 72

Geographic Range

This Biophysical Setting (BpS) is found along the coastline of arctic AK including along the Beaufort Sea, Chuckchi Sea, and the Bearing Sea. It is a dominant system on the Yukon-Kuskokwim Delta.

Biophysical Site Description

This BpS is only periodically tidally flooded (i.e. floods less frequently than the brackish meadow or tidal marsh) and typically has permafrost.

Vegetation Description

Dominant dwarf-shrubs are *Empetrum nigrum, Salix fuscescens, Salix ovalifolia,* and sometimes *Betula nana*. Diagnostic herbaceous species are *Carex rariflora, Calamagrostis deschampsioides, Deschampsia caespitosa,* and *Puccinellia andersonii*. Additional species include *Dupontia fisheri, Arctagrostis latifolia, Alopecurus alpinus, Tanacetum bipinnatum*, and *Petasites frigidus*.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| EMNI | *Empetrum nigrum* | Black crowberry |
| SAFU | *Salix fuscescens* | Alaska bog willow |
| SAOV | *Salix ovalifolia* | Oval-leaf willow |
| BENA | *Betula nana* | Dwarf birch |
| CARA5 | *Carex rariflora* | Looseflower alpine sedge |
| CADE3 | *Calamagrostis deschampsioides* | Circumpolar reedgrass |
| DECA18 | *Deschampsia caespitosa* | Tufted hairgrass |
| PUAN | *Puccinellia andersonii* | Anderson's alkaligrass |

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

Disturbance Description

Coastal Sedge-Dwarf Shrublands are occasionally inundated by storm surge or extreme high tides, which are the dominant process shaping this system. Successional relationships for this type are unclear.

In June of 2013 an extensive search was done by Fire Effects Information System

staff to locate information for a synthesis on [fire regimes of Alaskan coastal herbaceous communities and active inland dunes](http://www.fs.fed.us/database/feis/fire_regimes/AK_coastal/all.html), with few results (Innes 2013). The synthesis noted that no studies reported contemporary fire records in this BpS and that the lack of such a record suggested that fire was rare in this BpS (Innes 2013).

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

Adjacency or Identification Concerns

This BpS typically occurs immediately above the coastal brackish meadow or tidal marsh systems. Adjacent inland systems, which are not tidally influenced, include the Dwarf-Shrub-Sphagnum Peatland or Permafrost Plateau Dwarf-Shrub Lichen Tundra systems. This BpS is similar to the Coastal Brackish Meadow BpS but has > 25% shrub cover.

Issues or Problems

Native Uncharacteristic Conditions

Comments

During LANDFIRE National this model did not receive review specifically for z76. This model was created by Kori Blankenship and Keith Boggs based on the draft Arctic Ecological Systems description (Boggs et al. 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 | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | >3.0 | A | A | A | A | A | A | A | A | A | A |
| 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** |
| EMNI | *Empetrum nigrum* | Black crowberry | Upper |
| SAFU | *Salix fuscescens* | Alaska bog willow | Upper |
| SAOV | *Salix ovalifolia* | Oval-leaf willow | Upper |
| CARA5 | *Carex rariflora* | Looseflower alpine sedge | Upper |

Description

This class represents the Coastal Sedge-Dwarf-Shrubland system. Refer to the vegetation description for common species.

*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

Boggs et al. 2008. International Ecological Classification Standard: Terrestrial Ecological Classifications. Draft Ecological Systems Description for the Alaska Arctic Region.

Innes, Robin J. 2013. Fire regimes of Alaskan coastal herbaceous communities and active inland dunes. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/fire\_regimes/AK\_coastal/all.html [2016, June 28].

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