16620

Temperate Pacific Freshwater Emergent Marsh

BpS Model/Description Version: Nov. 2024

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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| None | None | None | None |
| None | None | None | None |

Reviewer: Robin Innes

Vegetation Type

Herbaceous Wetland

Map Zones

73, 75, 77, 78

Model Splits or Lumps

Temperate Pacific Freshwater Aquatic Bed (BpS 1664) is lumped with this Biophysical Setting (BpS).

Geographic Range

This BpS occurs from Kodiak Island south through southeast AK.

Biophysical Site Description

This system occurs on the margin of ponds, lakes, and in slow moving water (stream channels or on distal outwash). Standing water is usually persistent throughout the growing season and is generally at least 10 cm above the ground surface. Adjacent deeper water support aquatic beds. Soils are typically muck over mineral.

Vegetation Description

The Freshwater Emergent Marsh BpS typically includes some open water and emergent vegetation dominated by cattails and *Carex rostrata*. Common species include *Carex rostrata, Equisetum fluviatile* (often pure stands), *Carex aquatilis var. dives* (*Carex sitchensis*), *Menyanthes trifoliata, Comarum palustre, Eleocharis palustris, Schoenoplectus tabernaemontani* (*Scirpus validus*; Banner et al. 1986; Shephard et al.1995; Boggs 2000). Floating aquatic vegetation may also be present. Adjacent aquatic beds would support submerged vegetation.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| CARO6 | *Carex rostrata* | Beaked sedge |
| EQFL | *Equisetum fluviatile* | Water horsetail |
| CAAQD | *Carex aquatilis var. dives* | Sitka sedge |
| METR3 | *Menyanthes trifoliata* | Buckbean |
| COPA28 | *Comarum palustre* | Purple marshlocks |
| ELPA3 | *Eleocharis palustris* | Common spikerush |
| SCTA2 | *Schoenoplectus tabernaemontani* | Softstem bulrush |

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

Disturbance Description

Water is the primary driver of this system. Under stable hydrologic conditions (i.e. frequent flooding) this system will maintain itself. A rise in water levels may lead to the development of a Freshwater Aquatic Bed (although this is lumped with the emergent marsh as currently modeled) and a decline in water levels could lead to the development of a Shrub Swamp or Fen and Wet Meadow system. However, the dynamics of the system and the timescale at which it operates are too variable to create a single successional model. For that reason, this type is represented as a 1-box model without succession or disturbance dynamics modeled.

In June of 2013 an extensive search was done by Fire Effects Information Systems 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 found no record of fire in freshwater emergent marshes (Innes 2013). In general, fires in this BpS were likely to be very infrequent due to frequent spray or inundation by water (Drury 1956).

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

Small patch

Adjacency or Identification Concerns

Issues or Problems

Native Uncharacteristic Conditions

Comments

This model was developed based on input from experts who attend the LANDFIRE Juneau Modeling Meeting (Feb. 08) and the draft Maritime Ecological Systems description (NatureServe 2008) and refined by David D'Amore.

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 Mid Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| METR3 | *Menyanthes trifoliata* | Buckbean | Upper |
| COPA28 | *Comarum palustre* | Purple marshlocks | Upper |
| EQFL | *Equisetum fluviatile* | Water horsetail | Upper |
| CARO6 | *Carex rostrata* | Beaked sedge | Upper |

Description

This class represents the stable Freshwater Emergent Marsh community. See the Vegetation Description for a list of common species. This community may or not be stable over time, but it is modeled as a persistent state without disturbance.

*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

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