

LANDFIRE Biophysical Setting Model

Biophysical Setting 7616980

Alaska Arctic Wet Sedge Meadow

☐ This BPS is lumped with:

☐ This BPS is split into multiple models:

General Information

Contributors (also see the Comments field) **Date** 10/9/2008

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Modeler 3 **Reviewer**

Vegetation Type

Wetlands/Riparian

Map Zone

76

Model Zone

- | | |
|--|--|
| ☒ Alaska | ☐ N-Cent.Rockies |
| ☐ California | ☐ Pacific Northwest |
| ☐ Great Basin | ☐ South Central |
| ☐ Great Lakes | ☐ Southeast |
| ☐ Northeast | ☐ S. Appalachians |
| ☐ Northern Plains | ☐ Southwest |

Dominant Species*

CAAQ CARA5
ERAN6 CACH5
CAGL4 ERSC2
CARO7 ERRU2

General Model Sources

- ☐ Literature
☐ Local Data
☒ Expert Estimate

Geographic Range

This BpS occurs throughout arctic AK and in MZ76, from the Bristol Bay lowlands in southwestern AK to the North Slope on the Arctic Ocean. It is common in arctic lowlands and may be found as small patches in alpine areas (Viereck et al. 1992, III.A.3.a). In MZ76 this type is found in Nowacki ecoregions 8, 9 and 10.

Biophysical Site Description

This system occurs on wet sites (typically with 0-19% visible surface water) with >25% cover of sedge species (Boggs et al. 2008). Sites are flat to sloping in valley bottoms, basins, water tracks and adjacent to streams (Boggs et al. 2008). This system also includes patterned wetlands such as ribbed fens. Soils range from acidic to non-acidic, are saturated during the summer and have an organic horizon over silt with permafrost (Boggs et al. 2008).

Vegetation Description

The following information was taken from the draft Arctic Ecological Systems description with slight modifications (Boggs et al. 2008):

This system has >25% cover of sedge species. Species diversity is much higher than in the freshwater marsh systems. Sites are typically dominated by *Carex aquatilis* and *Eriophorum angustifolium*, but may also be dominated or co-dominated by *Carex glareosa*, *C. rotundata*, *C. rariflora*, *C. chordorrhiza*, *C. rostrata*, *C. saxatilis*, *C. utriculata*, *Eriophorum russeolum*, *E. scheuchzeri* and *Dupontia fisheri*. Dwarf shrubs such as *Salix fuscescens*, *S. pulchra*, *Andromeda polifolia*, *Betula nana*, *Empetrum nigrum*, *Ledum palustre* ssp. *decumbens* and *Vaccinium uliginosum* may be common, but make up <25% cover. Moss species include *Drepanocladus* spp. and *Sphagnum* spp.

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

**Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100-year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, replacement severity

Disturbance Description

This system occurs within a variety of successional processes, including thaw lakes, strangmoors, ice-wedge polygons, oriented lakes, water tracks and adjacent to streams (Boggs et al. 2008). The successional processes of this system are likely too slow (i.e. on the scale of 1000s of years) to be captured using the LANDFIRE methodology and the seral stages are unclear (personal communication Arctic modeling meeting April 2008); however, a study by Racine et al. (2004) on the Seward Peninsula found that cover of *Carex aquatilis* recovered to near pre-burn levels within three years after a 1977 fire.

The following information was taken from the draft Arctic Ecological Systems description with minor modifications (Boggs et al. 2008):

This can be an early-seral stage in the thaw pond cycle which starts with the collapse of a permafrost plateau resulting in a wet depression often with open water. This is colonized by marsh species or Sphagnum species or a combination of both. Sedges eventually invade, and the wet sedge-Sphagnum system develops. If organic matter buildup or permafrost uplift the surface, then this system may be seral to the dwarf-shrub-Sphagnum system. This system, in turn, may be seral to the permafrost plateau-dwarf-shrub-lichen system. The seral sequence may not be unidirectional, and the timeframe is unclear, possibly taking hundreds of years.

Adjacency or Identification Concerns

Native Uncharacteristic Conditions

Scale Description

Patch size is small to moderate, and may be linear.

Issues/Problems

Comments

This system was created for the AK Arctic region and did not receive review for other regions in the state.

This model was created by Kori Blankenship and Keith Boggs based input from experts who attended the LANDFIRE Arctic Modeling Meeting (April 2008) and the draft Arctic Ecological Systems description (Boggs et al. 2008).

Vegetation Classes

Class A 100 %

Mid Development 1 All Structures

Upper Layer Lifeform

- ☒ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and Canopy Position

CAAQ Upper
ERAN6 Upper
CAREX Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	Herbaceous	Herbaceous
Height	Herbaceous	Herbaceous
Tree Size Class	None	

☐ Upper layer lifeform differs from dominant lifeform.

Description

Zero plus years

This class represents the Wet Sedge Meadow system. Refer to the vegetation description for common species.

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No disturbances modeled.

Class B 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Class C 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Class D 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Class E 0 %

[Not Used] [Not Used]

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

**Indicator Species* and
Canopy Position**

Structure Data (for upper layer lifeform)

	Min	Max
Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.

Description

Disturbances

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Fire Regime Group:** NA

Historical Fire Size (acres)

Avg 0

Min 0

Max 0

Sources of Fire Regime Data

- ☐ Literature
☐ Local Data
☒ Expert Estimate

Additional Disturbances Modeled

- ☐ Insects/Disease ☐ Native Grazing ☐ Other (optional 1)
☐ Wind/Weather/Stress ☐ Competition ☐ Other (optional 2)

Fire Intervals

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement					
Mixed					
Surface					
All Fires					

Fire Intervals (FI):

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class.

References

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

Racine, C., R. Jandt, C. Meyers and J. Dennis. 2004. Tundra fire and vegetation change along a hillslope on the Seward Peninsula, Alaska, U.S.A. Arctic, Antarctic, and Alpine Research. 36(1): 1-10.

Viereck, L.A., C.T. Dyrness, A.R. Batten and K.J. Wenzlick. 1992. The Alaska vegetation classification. Pacific Northwest Research Station, USDA Forest Service, Portland, OR. Gen. Tech. Rep. PNW-GTR286. 278 p.

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