

LANDFIRE Biophysical Setting Model

Biophysical Setting 6716850

Alaska Arctic Acidic Sparse Tundra

☐ This BPS is lumped with:

☐ This BPS is split into multiple models:

General Information

Contributors (also see the Comments field)

Date 11/21/2008

Modeler 1 Kori Blankenship

kblankenship@tnc.org

Reviewer

Modeler 2 Keith Boggs

ankwb@uaa.alaska.edu

Reviewer

Modeler 3

Reviewer

Vegetation Type

Upland Shrubland

Map Zone

67

Model Zone

☒ Alaska

☐ N-Cent.Rockies

☐ California

☐ Pacific Northwest

☐ Great Basin

☐ South Central

☐ Great Lakes

☐ Southeast

☐ Northeast

☐ S. Appalachians

☐ Northern Plains

☐ Southwest

Dominant Species*

DROC LOPR

EMNI SAPH

VAUL ANAL4

DRIN4 HIAL3

General Model Sources

☐ Literature

☐ Local Data

☒ Expert Estimate

Geographic Range

This BpS occurs throughout arctic AK, from the Bristol Bay lowlands in southwestern AK to the North Slope on the Arctic Ocean.

Biophysical Site Description

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

This is a common system on acidic substrates (pH typically <6) in the hills and mountains of arctic Alaska. Common slope positions include valleys, sideslopes, summits and ridges. Cover is sparse due to extreme exposure, exposed bedrock or unstable substrates. Sites are typically dry to mesic, and the soils are typically thin, stony and well-drained. This system does not occur on flat thaw-lake plains.

Vegetation Description

Total vascular plant cover is 10-25% and lichen cover is <25%. Common dwarf-shrub species include *Dryas octopetala*, *Empetrum nigrum*, *Vaccinium uliginosum*, *Dryas integrifolia*, *Loiseleuria procumbens* and *Salix phlebophylla* (Boggs et al. 2008). Herbaceous species may include *Antennaria alpina*, *Hierochloa alpina* (= *Anthoxanthum monticola*), *Minuartia obtusiloba*, *Carex scirpoidea*, *Carex podocarpa*, *Carex microchaeta* and *Festuca altaica* (Boggs et al. 2008). Lichens include *Cladonia* spp., *Sphaerophorus globosus*, *Nephroma arcticum*, *Flavocetraria* spp. and *Alectoria ochroleuca* (Boggs et al. 2008).

Disturbance Description

This BpS occupies sites characterized by high levels of disturbance such as frost heaving, solifluction and wind. These continual disturbances combined with extremes site conditions (e.g. high elevation, very late melting snow beds, sometimes on bedrock substrate, shallow soils, scree slopes and areas of active soil development) are the dominant factors shaping this BpS.

*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

Adjacency or Identification Concerns

This system is similar to the Alaska Arctic Acidic Dwarf-Shrub Lichen Tundra but the vegetation cover is sparse. It is also similar to the Alaska Arctic Dwarf-Shrubland but that system is not split based on acidic and non-acidic substrates. For mapping, use the bedrock geology map as the mask between acidic and non-acidic types.

Native Uncharacteristic Conditions

Scale Description

Patch size is small to matrix-forming.

Issues/Problems

Comments

This model was created by Kori Blankenship and Keith Boggs based on 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

DROC Upper
EMNI Upper
VAUL Upper
DRIN4 Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	Open Shrub (25-74% shrub cover)	Open Shrub (25-74% shrub cover)
Height	Dwarf Shrub (< 20cm)	Dwarf Shrub (< 20cm)
Tree Size Class	None	

☐ Upper layer lifeform differs from dominant lifeform.

Description

Zero plus years

This class represents the Arctic Acidic Sparse Tundra system. Refer to the vegetation description for common species.

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

*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.

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

Fire Regime Group:** NA

Historical Fire Size (acres)

Avg 0

Min 0

Max 0

Sources of Fire Regime Data

- ☐ Literature
☐ Local Data
☒ Expert Estimate

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.

*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

Additional Disturbances Modeled

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

References

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

*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.