

LANDFIRE Biophysical Setting Model

Biophysical Setting 7516351

**Western North American Boreal Alpine
Ericaceous Dwarf-Shrubland - Complex**

☒ This BPS is lumped with: see below

☐ This BPS is split into multiple models: Western North American Boreal Alpine Dryas Dwarf-Shrubland (BpS 1634)

General Information

Contributors (also see the Comments field)

Date 4/16/2008

Modeler 1 Kori Blankenship

kblankenship@tnc.org

Reviewer

Modeler 2 Tina Boucher

antvb@uaa.alaska.edu

Reviewer

Modeler 3

Reviewer

Vegetation Type

Upland Shrubland

Map Zone

75

Model Zone

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

Dominant Species*

CATE11 ARCTO3
EMNI DRIN4
VAUL DROC
HAST3 LEPAD

General Model Sources

- ☒ Literature
☐ Local Data
☒ Expert Estimate

Geographic Range

This type occurs from subalpine to alpine locations in the boreal and sub-boreal regions of AK.

Biophysical Site Description

This BpS is commonly found in alpine valleys and on sideslopes, low summits and ridges. Sites are well-drained and mesic to somewhat dry and are likely to retain late-lying snow.

Vegetation Description

This type encompasses a wide range of species and plant communities. Ericaceous or dryas (especially *Dryas integrifolia* and/or *Dryas octopetala*) dwarf shrubs typically dominate. Total lichen cover is <25% and may include *Cetraria*, *Cladina*, *Cladonia* and *Stereocaulon*. Common dwarf shrub include *Cassiope tetragona* (more common north of the Alaska Range), *Empetrum nigrum*, *Vaccinium uliginosum*, *Harrimanella stellariana* (more common south of the Alaska Range) and *Arctostaphylos* spp. Other shrubs that may be common include *Betula nana*, *Diapensia lapponica*, *Dryas octopetala*, *Ledum palustre* ssp. *decumbens*, *Vaccinium vitis-idaea*, *Salix reticulata*, *S. phlebophylla*, *S. rotundifolia*, *S. arctica* and *Oxytropis nigrescens*. Common herbaceous species include *Hierochloa alpina*, *Arnica lessingii*, *Carex bigelowii*, *Carex microchaeta*, *Senecio lugens*, *Minuartia arctica*, *Anemone parviflora*, *Ligusticum mutellinoides* ssp. *alpinum*, *Castilleja elegans*, *Poa arctica*, *Trisetum spicatum*, *Silene acaulis*, *Saxifraga* spp., *Campanula lasiocarpa*, *Anemone parviflora*, *Senecio lugens* and *Polygonum bistorta*. Mosses such as *Aulacomnium palustre*, *Hylocomium splendens*, *Pleurozium schreberi* and *Polytrichum* and *Racomitrium* spp. may be common. *Cassiope* and *Harrimanella* tundra sites occur on terrain that is well protected by snow in the winter, and often remains snow covered until the middle of the growing season (Viereck et al. 1992).

*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

Alpine shrub systems likely represent a relatively stable topopedaphic climax, but little is known about their successional dynamics (Viereck et al. 1992). Vegetation in these areas is controlled by the alpine environment and short growing season. It is possible that fires caused by lightning strikes could affect small patches of vegetation but little is known about the frequency, severity or seasonality of fires in this BpS.

Adjacency or Identification Concerns

This BpS is distinguished by <25% cover lichen and >20% cover dryas dwarf shrubs. Adjacent systems include Western North American Boreal Alpine Dwarf-Shrub Summit, Western North American Boreal Alpine Mesic Herbaceous Meadow, Alaska Sub-boreal and Maritime Alpine Mesic Herbaceous Meadow or barren alpine classes (including talus or bedrock).

Native Uncharacteristic Conditions

Scale Description

Large patch

Issues/Problems

This BpS represents two Ecological Systems (Dryas Dwarf-Shrubland and Alpine Ericaceous Dwarf-Shrubland) and would be more appropriately named Alpine Dwarf Shrubland.

Comments

This model was created by Kori Blankenship in consultation with Tina Boucher.

Vegetation Classes

Class A 100 %

Early Development 1 All Structures

Upper Layer Lifeform

- ☐ Herbaceous
☒ Shrub
☐ Tree

Indicator Species* and Canopy Position

CATE11 Upper
EMNI Upper
VAUL Upper
DRIN4 Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	Open Shrub (25-74% shrub cover)	Closed Shrub (> 75% shrub cover)
Height	Dwarf Shrub (< 20 cm)	Low Shrub (20 cm to 1.5 m)
Tree Size Class	None	

☐ Upper layer lifeform differs from dominant lifeform.

Description

Zero years plus

Open or closed dwarf ericaceous or dryas shrubs dominate. Common species are listed in the vegetation description.

This BpS is relatively stable over time. Continual wind disturbance (probability = 1) maintains 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.

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**

*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

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, K., A. Garibaldi, J. Stevens, J. Grunblatt and T. Helt. 2001. Denali National Park and Preserve Landcover mapping project. Volume 2: Landcover classes and plant associations. Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage, 707 A Street, Anchorage, AK. 164 pp.

Boggs, K. and Sturdy, M. 2005. Plant associations and post-fire vegetation succession in Yukon-Charley Rivers National Preserve. Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage. Prepared For: National Park Service, Landcover Mapping Program, National Park Service-Alaska Support Office, Anchorage, AK 99501.

DeVelice, R.L., Hubbard, C.J., Boggs, K. et al. 1999. Plant community types of the Chugach National Forest. Tech. Publ. R10-TP-76. Juneau, AK: USDA Forest Service, Alaska Region. 375 pp.

NatureServe. 2008. International Ecological Classification Standard: Terrestrial Ecological Classifications. Draft Ecological Systems Description for Alaska Boreal and Sub-boreal Regions.

Viereck et al. 1992. The Alaska vegetation classification. Pacific Northwest Research Station, USDA Forest Service, Portland, OR. Gen. Tech. Rep. PNW-GTR286. 278 pp.

*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.