

LANDFIRE Biophysical Setting Model

Biophysical Setting 7016310

**Western North American Boreal Alpine
Dwarf-Shrub Summit**

☒ This BPS is lumped with: see below

☐ This BPS is split into multiple models: This BpS is lumped with: Western North American Boreal Alpine Dwarf-Shrub-Lichen Shrubland

General Information

Contributors (also see the Comments field) **Date** 4/16/2008

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Modeler 2 Tina Boucher antvb@uaa.alaska.edu **Reviewer**

Modeler 3 **Reviewer**

Vegetation Type

Upland Shrubland

Map Zone

70

Model Zone

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

Dominant Species*

DRYAS DILA
VAUL LOPR
EMNI SALIX
VAVI ARRU

General Model Sources

- ☐ Literature
☐ Local Data
☒ Expert Estimate

Geographic Range

This system is found in the alpine and subalpine areas of the boreal and sub-boreal regions in AK. To the southwest, the range includes the Ahklun Mountains and to the west it extends to the Nulato Hills (Ecoregions 9 and 7, Nowacki et al. 2001).

Biophysical Site Description

These systems occur on exposed, windswept summits and ridges on alpine and subalpine sites. Soils are thin, stony, and well drained to excessively well-drained. These sites typically do not accumulate much winter snow (Viereck et al 1992).

Vegetation Description

Canopy cover can be sparse due to extreme exposure. Common shrubs include Dryas spp. (e.g. Dryas integrifolia), Vaccinium uliginosum, Empetrum nigrum, Vaccinium vitis-idaea, Diapensia lapponica, Loiseuria procumbens, dwarf Salix spp. (e.g. Salix arctica, S. rotundifolia and S. reticulata), Arctostaphylos rubra and A. alpina. Exposed rock and lichens can be abundant. Common lichens include Cladina rangiferina, C. stellaris, Cetraria cucullata, Stereocaulon spp., Alectoria nigricans and Thamnolia vermiculata. Herbaceous species include Hierochloa alpina, Polygonum bistorta, Anemone spp., Festuca spp. and Luzula spp. Mosses may be present but do not contribute much cover (Viereck et al 1992).

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 wind

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**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

desiccation and a short growing season. There is little information about fire in this system. It is possible that fires caused by lightning strikes could affect small patches of vegetation but likely would not spread due to the sparse cover of fine fuel and barren areas acting as fire breaks.

Adjacency or Identification Concerns

Adjacent systems include Western North American Boreal Alpine Dwarf-Shrubland or barren alpine classes (including talus and bedrock). Since this BpS is a combination of two systems, the identifying criteria for both systems apply: identifiers for the Alpine Dwarf-Shrub-Lichen Shrubland system are greater than 25% lichen cover and greater than 25% dwarf shrub cover, identifiers for the Alpine Dwarf-Shrub Summit system are less than 25% vascular plant cover and abundant exposed rock.

Native Uncharacteristic Conditions

Scale Description

Vegetation can be found in small or large patches. Fires are typically quite small and their spread is inhibited by lack of fuel continuity.

Issues/Problems

Comments

This model was developed 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

VAUL Upper
 EMNI Upper
 VAVI Upper
 DRYAS 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

Sparse, open or closed dwarf shrubs dominate. Exposed rock and lichens can be abundant. Commons species listed in the vegetation description.

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

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Class B 0 %

[Not Used] [Not Used]

Structure Data (for upper layer lifeform)*Min* *Max***Upper Layer Lifeform**

- ☐ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and Canopy Position

Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.**Description****Class C 0 %**

[Not Used] [Not Used]

Structure Data (for upper layer lifeform)*Min* *Max***Upper Layer Lifeform**

- ☐ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and Canopy Position

Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.**Description****Class D 0 %**

[Not Used] [Not Used]

Structure Data (for upper layer lifeform)*Min* *Max***Upper Layer Lifeform**

- ☐ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and Canopy Position

Cover		
Height		
Tree Size Class		

☐ Upper layer lifeform differs from dominant lifeform.**Description****Class E 0 %**

[Not Used] [Not Used]

Structure Data (for upper layer lifeform)*Min* *Max***Upper Layer Lifeform**

- ☐ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and Canopy Position

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

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

Nowacki, G., P. Spencer, M. Fleming, T. Brock and T. Jorgenson. 2001. Unified ecoregions of Alaska. U.S. Department of the Interior, U.S. Geological Survey. Open file-report 02-297. 2 page map.

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

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