

LANDFIRE Biophysical Setting Model

Biophysical Setting 7816520

Alaskan Pacific Maritime Subalpine Alder-Salmonberry Shrubland

☒ This BPS is lumped with: see below

☐ This BPS is split into multiple models: Alaskan Pacific Maritime Subalpine Copperbush Shrubland (1672).

General Information

Contributors (also see the Comments field)

Date 7/30/2008

Modeler 1 Tom DeMeo

tdemeo@fs.fed.us

Reviewer Paul Hennon

phennon@fs.fed.us

Modeler 2

Reviewer

Modeler 3

Reviewer

Vegetation Type

Upland Shrubland

Map Zone

78

Model Zone

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

Dominant Species*

ALVIS ELPY
RUSP CACA4
SARA2 ATFI
OPHO DREX2

General Model Sources

- ☒ Literature
☐ Local Data
☒ Expert Estimate

Geographic Range

This BpS is found from Prince William Sound through southeast AK.

Biophysical Site Description

This system typically occurs above treeline and below the alpine throughout the region, although the Copperbush Shrubland community lumped with this type can extend into the lower alpine zone. Soils are typically mesic, well-drained, shallow, and stony, and underlain by colluvium, glacial till or residuum (NatureServe 2008).

Vegetation Description

The following information was taken from the draft Maritime Ecological Systems description (NatureServe 2008):

Alnus viridis ssp. *sinuata* is often the dominant species, but *Rubus spectabilis* may be codominant. Other common species include *Sambucus racemosa* and *Oplopanax horridus*. Common understory species include *Athyrium filix-femina*, *Dryopteris expansa*, *Phegopteris connectilis*, *Equisetum arvense* and *Streptopus amplexifolius* (Talbot et al. 2005, DeVelice et al. 1999). Herbaceous patches are dominated by *Calamagrostis canadensis*, *Chamerion angustifolium*, *Veratrum viride*, and *Heracleum maximum*. Rich forb meadows become more common near the elevational limit of tall shrubs and common species include *Lupinus nootkatensis*, *Valeriana sitchensis*, *Geranium erianthum*, *Aconitum delphiniifolium*, *Castilleja unalaschcensis*, *Sanguisorba canadensis* and *Carex machrochaeta*.

Lower alpine and subalpine Alder-Salmonberry Shrubland communities are dominated by *Elliottia pyroliflora* (10 to 80% cover) which ranges in height from 2 to 5 feet. Other species include *Phyllodoce aleutica*, *Nephrophyllidium crista-galli*, *Cornus suecica*, *Luetkea pectinata*, *Athyrium filix-femina*,

*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

Cassiope mertensiana, Dryopteris expansa, Gymnocarpium dryopteris, Viola glabella and Rubus spectabilis. Krumholtz Tsuga mertensiana occurs in some sites (DeVelice et al. 1999, Boggs et al. 2008).

Disturbance Description

This system appears to be relatively stable (Mitchell 1968, Viereck et al. 1992). In this model it is hypothesized that infrequent soil disturbance can lead to a short-lived herbaceous sere. The climate is likely too cold to allow fires to burn in this BpS.

Adjacency or Identification Concerns

The Alder-Salmonberry Shrubland BpS is often found in a mosaic with Alaska Sub-boreal and Maritime Alpine Mesic Herbaceous Meadow (this type was lumped for BpS modeling with the Alaskan Pacific Maritime Alpine Herbaceous Dwarf Shrubland in the AK Maritime region) but site and soil differences make these distinct BpS. The Alder-Salmonberry Shrubland system does include an herbaceous sere that is infrequently expressed as a result of rare soil disturbance.

Alder-Salmonberry Shrubland and Alaskan Pacific Maritime Avalanche Slope Shrubland have similar species composition but have distinct models to reflect the differences in disturbance processes (i.e. snow avalanche and/or mass wasting events) affecting the two types.

Native Uncharacteristic Conditions

There may be an upward trend in the elevation of this system today (NatureServe 2008). Treeline conifers appear to be invading from below in some areas, and the elevational limit of low and tall shrub establishment appears to be rising (NatureServe 2008).

Scale Description

Matrix or small patch

Issues/Problems

Comments

This model was developed by Tom DeMeo for the Maritime region of Alaska. Review comments resulted in minor additions to the description.

Vegetation Classes

Class A 2%

Early Development 1 All Structures

Upper Layer Lifeform

- ☒ Herbaceous
☐ Shrub
☐ Tree

Indicator Species* and

Canopy Position

CACA4 Upper
 CHAN9 Upper
 VEVI Upper
 HEMA80 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

0-9yrs

Post-disturbance herbaceous. Grasses, sedges and/or forbs dominate the site.

Succession to class B. Soil disturbance (probability = 0.002; represented as Option 1 in the model) resets the

*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

age of this class.

Class B 98 %

Late Development 1 All Structures

Upper Layer Lifeform

- ☐ Herbaceous
☒ Shrub
☐ Tree

Indicator Species* and

Canopy Position

ALVIS Upper
RUSP Upper
SARA2 Upper
OPHO Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	Open Shrub (25-74% shrub cover)	Closed Shrub (> 75% shrub cover)
Height	Low Shrub (20 cm to 1.5 m)	Tall Shrub (>1.5 m)

Tree Size Class | None

☐ Upper layer lifeform differs from dominant lifeform.

Description

10yrs+

Mature shrub. Shrubs overtop herbaceous layer and become dominant.

This class persists in the absence of disturbance. Soil disturbance (probability = 0.002; represented as Option 1 in the model) causes a transition to class A.

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

*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 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.

Additional Disturbances Modeled

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

References

Boggs, K., J. Grunblatt, S. C. Klein, G. Streveler and B. Koltun. 2008. Landcover classes, plant associations and ecoregions of Glacier Bay National Park and Preserve (in press). Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage, 707 A Street, Anchorage, AK 99501.

DeVelice, R., C. Hubbard, K. Boggs, S. Boudreau, M. Potkin, T. Boucher, and C. Wertheim. 1999. Plant community types of the Chugach National Forest: Southcentral Alaska. U.S.D.A., Forest Service: Chugach National Forest, Alaska Region, Anchorage, Alaska. Tech. Pub. R10-TP-76. 375 p.

Mitchell, W.W. 1968. On the ecology of Sitka alder in the subalpine zone of south-central Alaska. In: Trappe, J.M., Franklin, J.F., Tarrant, R.F., Hansen, G.M., eds. Biology of Alder: Proceedings of a symposium held at Northwest Scientific Association 40th annual meeting; 1967 April 14-15; Pullman, WA. Portland, OR: USDA Forest Service Pacific Northwest Research Station, pp. 45-56.

NatureServe. 2008. International Ecological Classification Standard: Terrestrial Ecological Classifications. Draft Ecological Systems Description for the Alaska Maritime Region.

Talbot, S.S., Talbot, S.L., Daniels, F.J.A. 2005. Comparative phytosociological investigation of subalpine alder thickets in southwestern Alaska and the North Pacific. Phytocoenologia. 35(4):727-759.

*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

Viereck, L., Dryness, C., Batten A. and K. Wenzlick. 1992. The Alaska vegetation classification. General Technical Report PNW-GTR-286. Portland, Oregon. USDA Forest Service, Pacific Northwest Research Station. 278 p.

*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