LANDFIRE Biophysical Setting Model

***Biophysical Setting* 7816810** **Alaskan Pacific Maritime Poorly Drained Conifer Woodland**

☐ *This BPS is lumped with:*
☐ *This BPS is split into multiple models:*

General Information

Contributors (also see the Comments field **Date** 7/30/2008

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Vegetation Type
Forest and Woodland

Map Zone
78

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

Dominant Species*

TSHE	NECR2
TSME	ELPY
THPL	LYAM3
CHNO	VAOV

General Model Sources
- ☑ Literature
- ☐ Local Data
- ☑ Expert Estimate

Geographic Range
This type is found in the subpolar and perhumid rainforest regions (defined by Alaback 1991, 1995 of the AK maritime regions from Kenai Fjords and Prince William Sound to Yakutat, and south through southeastern AK.

Biophysical Site Description
In the perhumid rainforest region this type is common on rolling terrain, benches, and gentle slopes with restricted drainage. Soils are poorly drained and usually have a thick organic layer. In the subpolar rainforest region this system occurs on low to mid elevations on poorly drained sites. Soils may be shallow to deep and usually have at least some peat development. In some places, stands are often a fine mosaic of peatlands and better-drained inclusions. These are low-productivity sites that are intermediate between shore pine or mountain hemlock peatland sites and productive western hemlock - western Red-cedar sites.

The poorly drained conifer community includes the concept of Western hemlock small tree old-growth (see Caouette and DeGayner 2008). The Western Hemlock BpS represents the western hemlock large tree old-growth found on more productive sites.

Vegetation Description
Open canopy (typically <45% canopy cover) conifer stands tend to dominate these low productivity sites. Trees often show signs of stress such as spike-top or chlorotic foliage (especially spruce) and standing dead trees are common. Average overstory tree height ranges from 18-21m (DeMeo et al. 1992) and dbh averages 25-50cm (Viereck et al. 1992). Overstory trees may include several of the following species:

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Tsuga heterophylla, T. mertensiana, Thuja plicata (found only in the southern most portion of the range of this BpS) and Chamaecyparis nootkatensis (= Cupressus nootkatensis). Picea sitchensis and Pinus contorta may also be present, but are not dominant and are nearly always stunted. T. mertensiana becomes the dominant overstory species in the northern portion of the maritime region (subpolar rainforest) while most other species, except Picea sitchensis, drop out. Common understory species include Nephrophyllidium crista-galli, Elliottia pyroliflorus, Gaultheria shallon (found only in the southern most portion of the range of this BpS), Lysichiton americanus, Vaccinium ovalifolium, (Demeo et al. 1992, Martin et al. 1995, Shephard et al. 1995). Further north where Mt. hemlock dominates common understory species include Vaccinium ovalifolium, Elliottia pyroliflora, Nephrophyllidium crista-galli, Thelypteris quelpaertensis, Phegopteris connectilis, Trichophorum caespitosum, Carex anthoxanthea C. pluriflora, C. stylosa, Eriophorum spp., Lysichiton americanus and Sphagnum spp.

Disturbance Description

According to Viereck et al. (1992) secondary succession in this type is largely unknown because disturbance is rare. However, Paul Hennon offered the following information related to the successional dynamics of this system:
Short term succession occurs from single tree mortality from a variety of causes [Note: this is not included in the VDDT model because these small scale dynamics can not be mapped into seral stages by LANDFIRE; therefore, the model is represented by a single seral stage]. Tree regeneration frequently occurs on raised organic microsites on the remains of previous trees. Tree growth is generally very slow. Longer term succession is probably influenced by climatic patterns that dictate drainage, either favoring poorer drainage, increased tree mortality, and more open canopy; or, improved drainage, greater tree growth, and a more closed canopy. These patterns can also favor individual tree species based on their tolerance or intolerance of wet soils.

There is some anecdotal evidence of anthropogenic fire in southern SE Alaska but it remains largely unstudied. Fire may become a more important factor in this type as climate warms [Note: a reviewer commented that the effects of climate warming are still uncertain and that the assumption of increased fire activity in some areas, particularly Prince William Sound, may not be well founded]. The widespread yellow-cedar decline, which covers 200,000 ha of this type in southeast Alaska, is an example of a climate-induced tree death that has resulted in a composition shift away from yellow-cedar due to this mortality (Hennon et al. 2008).

Adjacency or Identification Concerns

This type is found adjacent to low productivity shore pine peatland and higher productivity western hemlock-western red cedar communities.

This BpS is referred to as mixed conifer in the SE AK plant association guides.

Native Uncharacteristic Conditions

This type is sensitive to changes in climate and hydrology. Neiland (1971) documents the shift between forest and bog noting that climate and surface physical features determine the vegetation on a site at a particular time.

Scale Description

Matrix

Issues/Problems

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Comments

This model was developed by Tom DeMeo for SE AK. Review comments resulted in minor descriptive changes to the general description and expanding the description to include poorly drained Mt. hemlock sites that occur in the northern portion of the maritime region (subpolar rainforest). Comments made by Paul Hennon related to the successional dynamics of this system were added to the Disturbance Description. Patricia Krosse (pkrosse@fs.fed.us) also provided review comments on this model.

Vegetation Classes

Class A 100 %

Mid Development 1 All Structures

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

Indicator Species* and Canopy Position

TSHE	Upper
TSME	Upper
THPL	Upper
CHNO	Upper

Structure Data (for upper layer lifeform)

	Min	Max
Cover	Open (25-59% tree cover)	Open (25-59% tree cover)
Height	Dwarf Tree (< 3 m)	Tree (> 3 m)
Tree Size Class	Med. 9–20" (swd)/11–20" (hwd)	

☐ Upper layer lifeform differs from dominant lifeform.

Description

Zero plus years

This community is characterized by an open canopy and may include several of the following species: Tsuga heterophylla, T. mertensiana, Thuja plicata and Cupressus nootkatensis. Picea sitchensis and Pinus contorta may also be present, but are not dominant.

No disturbances were 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.

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

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