

11780

North Pacific Hypermaritime Western Red-cedar-Western Hemlock Forest

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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Vegetation Type

Forest and Woodland

Map Zones

1, 2, 7

Geographic Range

This type extends from southwestern Washington up into Vancouver Island, usually within 25km of the coast, except for the western slope of the Olympics and front range pockets along the western front of the Northern Cascades from Mt. Rainier to Mt. Baker. Usually inland of the Sitka spruce coastal fog zone and downslope of the mesic silver fir zone.

Biophysical Site Description

This type generally occurs on relatively old, acidic, humic soils. It often occurs on lower slopes and at low elevations where the orographic effect becomes pronounced. Rainfall is relatively high for the region at 100-150in rain annually, rarely as snowfall.

Vegetation Description

These forests are defined by western hemlock and western red cedar with an understory of Alaska huckleberry (*Vaccinium alaskaense* has been confused with *Vaccinium ovalifolium*). This Biophysical Setting (BpS) is noteworthy in being too wet for Douglas-fir, though Douglas-fir may occur downslope of these forests in drier conditions, especially in the front range areas of the Cascades. Pacific silver fir and Alaska yellow cedar can be found but usually at the higher end of this zone closer to the transition to the mesic silver fir BpS. Rusty menziesia (*M. ferruginea*) and salal, especially on sandier soils, are not uncommon. Other shrubs include devils club, red huckleberry (VAPA), and salmonberry (*Rubus spectabilis*). Swordfern, deer fern, lady fern, wood fern, and *Oxalis* or *Maianthemum* complete the common species.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
TSHE	<i>Tsuga heterophylla</i>	Western hemlock
THPL	<i>Thuja plicata</i>	Western red cedar
VAAL3	<i>Vaccinium alaskaense</i>	Alaska blueberry
GASH	<i>Gaultheria shallon</i>	Salal
MEFE	<i>Menziesia ferruginea</i>	Rusty menziesia

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

Fire Frequency

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Wind damage usually occurs in the range of 1-1,000s of hectares, but usually in the 10-100ha.

Above this BpS is either a mesic silver fir type, a foggy coastal Sitka spruce type, or a dry/mesic Douglas-fir-western hemlock type. This hemlock-cedar type has escaped much of the urbanization and agricultural conversion of some of its surrounding types. Recent management has been timber harvest and roading. Douglas-fir has been planted in many places but is often out-competed by western hemlock or silver fir.

There is not a lot of documentation on these disturbances. Individual large patches of windthrow can be enumerated back many decades.

It would be extremely rare for there to be zero canopy closure (a second windblow during a box B closed canopy would leave a very limited amount of regeneration).

Map zones (MZs) 01, 02, and 07 were combined during 2015 BpS Review.

Succession Classes

[illegible]

Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	A	A	A	A	A	A	A	A	A	A
Shrub	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Shrub	1.0-3.0	A	A	A	A	A	A	A	A	A	A
Shrub	>3.0	A	A	A	A	A	A	A	A	A	A
Tree	0-5	A	A	A	A	A	A	A	A	A	A
Tree	5-10	A	A	A	A	A	A	A	A	A	A
Tree	10-25	B	B	B	B	B	B	B	B	B	B
Tree	25-50	B	B	B	B	B	B	B	B	B	B
Tree	>50	C	C	C	C	C	C	C	C	C	C

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leaf form distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Class A 5 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
TSHE	<i>Tsuga heterophylla</i>	Western hemlock	Upper
THPL	<i>Thuja plicata</i>	Western red cedar	Mid-Upper
RUSP	<i>Rubus spectabilis</i>	Salmonberry	Low-Mid
GASH	<i>Gaultheria shallon</i>	Salal	Low-Mid

Description

This is the post wind-disturbance class. Larger trees have been felled but leave a variety of stem diameters and heights still standing, some broken. The understory tree “cohort” shows a wide range of ages and diameters. The understory quickly responds with height and diameter growth. This condition lasts 5-10yrs because of the already substantial advanced regeneration.

Disturbance does not elicit a significant change in species but rather allows greater flowering and fruiting of some of the existing understory species. Elderberry may be more apparent, and salmonberry can respond well and fruit. Most of the response is in tree growth. (Post-disturbance stand age is modeled as 40yrs, due to the existing extensive standing stems. Wind storms occur sporadically.)

Maximum Tree Size Class

None

Class B 48 Mid Development 1 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
TSHE	<i>Tsuga heterophylla</i>	Western hemlock	Upper

THPL	Thuja plicata	Western red cedar	Mid-Upper
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Description

This is a closed canopy stand starting when the canopy trees start to close in. This results in the loss of understory species and a reduction from the growth rate of Class A. This stand condition can take 100-200yrs. Understory is thin, depending on canopy condition. Wind storms (modeled as alternative succession) occur sporadically.

Maximum Tree Size Class

None

Class C 47 Late Development 1 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
TSHE	Tsuga heterophylla	Western hemlock	Upper
THPL	Thuja plicata	Western red cedar	Upper
GASH	Gaultheria shallon	Salal	Low-Mid
MEFE	Menziesia ferruginea	Rusty menziesia	Low-Mid

Description

This is the old-growth condition. Starting when the canopy starts to break and open up, allowing occasional small canopy openings. These stands are likely older than ~200yrs. THPL can increase as the stand ages. Wind storms occur sporadically.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	40	Mid1:CLS	50
Mid1:CLS	51	Mid1:CLS	200
Late1:CLS	201	Late1:CLS	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance
Native Grazing	Early1:ALL	Early1:ALL	0.002	500	No	0
Wind or Weather or Stress	Early1:ALL	Early1:ALL	0.01	100	Yes	0
Alternative Succession	Mid1:CLS	Late1:CLS	0.01	100	Yes	0

Wind or Weather or Stress	Late1:CLS	Early1:ALL	0.01	100	Yes	0
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References

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

Stephen R.W. and R. Sandelin. 2003. Field Guide to the Cascades and Olympics (2nd Ed.). The Mountaineers Books. Seattle, WA.