

Ecological site F002XN906WA

Western hemlock-western redcedar/red huckleberry-salal/western swordfern

Last updated: 11/27/2024

Accessed: 09/20/2026

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Table 1. Dominant plant species

Tree	(1) <i>Tsuga heterophylla</i> (2) <i>Thuja plicata</i>
Shrub	(1) <i>Vaccinium parvifolium</i> (2) <i>Gaultheria shallon</i>
Herbaceous	(1) <i>Polystichum munitum</i>

Physiographic features

This site is on slopes of bedrock hills, glacially modified hills, and glacial terraces.

Table 2. Representative physiographic features

Climatic features

Precipitation data from PRISM Climate Group, Oregon State University. Precipitation data is monthly average, not monthly maximum. Temperature data from Coupeville, WA climate station.

Table 3 Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	
Precipitation total (average)	1,020 mm

Influencing water features

Soil features

Applicable soil series:

Alderwood taxadjunct, Coveland cool, Elwha, Everett taxadjunct, Indianola, Mitchellbay cool, Morancreek cool, Sholander cool, Uselessbay, Utsalady, Zylstra

Table 4. Representative soil features

Surface texture	(1) Gravelly sandy loam (2) Loam (3) Sandy loam
Drainage class	Somewhat poorly drained to somewhat excessively drained
Permeability class	Slow to very rapid
Soil depth	30 cm
Available water capacity (0-101.6cm)	8.89 – 16.76 cm
Soil reaction (1:1 water) (0-101.6cm)	3.5 – 7.3

Ecological dynamics

This ecological site is widespread in Island County and is found on soils ranging from somewhat poorly to somewhat excessively drained. Western hemlock is the dominant tree in community 1.1 with lesser amounts of western redcedar and Douglas-fir. Douglas-fir is not shade tolerant, as compared to western hemlock and western redcedar, but because it is such a long-lived species (800+ years) scattered individuals will remain in community 1.1. Grand fir, bigleaf maple and western white pine may also be present, but only as minority components.

Most of these sites have been harvested for timber (and usually burned afterward) since European settlement although all of the various plant communities may have remnant mature trees. The historic fire regime would have been one of low frequency (150-300+ years) and moderate to high intensity. These fires would, in effect, be stand-replacing although individual trees would survive, providing a seed source. Western hemlock, with its thin bark and shallow root system, is not able to tolerate fire while western redcedar is only somewhat more tolerant. Douglas-fir, however, is well adapted to withstand fire, so even a moderate fire would likely change the species composition.

Red alder is a common early-seral, fast growing species in this area and will often seed in on newly cleared land. This will typically result in a nearly pure stand with scattered Douglas-fir, redcedar and hemlock. Red alder is shade intolerant, however, and cannot reproduce under its own canopy. It is also a relatively short-lived species and the stand will start to deteriorate after 70 years or so. This will release the more shade tolerant species that have seeded in under the alder and the stand will progress toward the HCPC until the next disturbance. If there is no red alder seed source available, the initial stand will be a mix of western hemlock, western redcedar and Douglas-fir. The most common natural disturbances on these sites are pockets of wind-thrown or diseased overstory trees; all three of these species are susceptible to various rots which weaken the roots and/or boles causing breakage. The resulting openings in the canopy allow some sunlight to reach the forest floor, which benefits the often sparse understory. This is especially true in mid-successional (75-150 years) stands, which have very little height differentiation. Western swordfern, red huckleberry, salal, trailing blackberry, Cascade Oregongrape and evergreen huckleberry are common understory species in this ecological site.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 1.4 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 1.5 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 1.6 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Wood products

Site Index data, by species, derived from: *Alnus rubra*: Worthington, Norman P. ,Floyd A. Johnson, George R. Staebler, and William J. Lloyd. 1960. Normal yield tables for red alder. USDA, Forest Service. Pacific Northwest Forest and Range Experiment Station Research Paper No 36. USDA NRCS curve # 100. *Pseudotsuga menziesii*: King, James E. 1966. Site index curves for Douglas-fir in the Pacific Northwest . Weyerhaeuser Company, Forestry Research Center. Forestry Paper 8. USDA NRCS curve # 795. *Thuja plicata*: Kurucz, J.F. 1978. Preliminary, polymorphic site index curves for western redcedar – *Thuja plicata* Donn – in coastal British Columbia. MacMillan Bloedel Forest Research Note No. 3. USDA NRCS curve # 970. *Tsuga heterophylla*: Wiley, Kenneth N. Site index tables for western hemlock in the Pacific Northwest. Weyerhaeuser Company, Western Forestry Research Center Forestry Paper No. 17. USDA NRCS curve # 995.

Table 11. Representative site productivity

Common Name	Symbol	Site Index Low	Site Index High	CMAI Low	CMAI High	Age Of CMAI	Site Index Curve Code	Site Index Curve Basis	Citation
western hemlock	<i>TSHE</i>	75	95	188	222	–	–	–	
Douglas-fir	<i>PSME</i>	90	120	116	175	–	–	–	
red alder	<i>ALRU2</i>	80	120	84	152	–	–	–	
western redcedar	<i>THPL</i>	80	100	0	0	–	–	–	

Contributors

Kathryn E. Smith

Approval

Kirt Walstad, 11/27/2024

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
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Contact for lead author	
Date	09/26/2024
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
