

Ecological site AX001X04X413

Mesic Udic Warm Forest

Last updated: 1/23/2025
Accessed: 09/14/2026

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.

MLRA notes

Major Land Resource Area (MLRA): 001X–Northern Pacific Coast Range, Foothills, and Valleys

This long and narrow resource area stretches along the Pacific Border Province of the Pacific Mountain System in Oregon and Washington. The area is bounded by the Olympic Mountains on the north and the Klamath Mountains on the south. Most of the area consists of hills and low mountains with gentle to steep slopes. The parent materials are composed primarily of young Tertiary sedimentary rocks with some minor volcanic rocks. Glacial till and outwash deposits are found in the northern half of the area within Washington. In the far southern portion of the area, near the Klamath Mountains, the sedimentary rocks are older and some have been metamorphosed. The average annual precipitation ranges from 60 to 200 inches, increasing with elevation. The dominant soil orders in this MLRA are Andisols, Inceptisols, and Ultisols. Soil depth ranges from shallow to very deep. While most soils in the area are well drained and occur on foothills, mountain slopes and ridges, floodplain and depressional soils can range from well drained to very poorly drained. Soil textures are typically medial, loamy, or clayey. The dominant soils in the area have a mesic or frigid soil temperature regime and a udic soil moisture regime; however, soils with an aquic soil moisture regime or cryic soil temperature regime do occur.

LRU notes

The Southern Pacific Coast Range land resource unit (LRU 4) of MLRA 1 is located in central to southern Oregon State. The LRU extends from the Siletz River to the Rogue River and is bounded on the west by MLRA 4a Sitka Spruce Belt and MLRA 2 Willamette and Puget Sound Valleys to the east. Several major rivers carved valleys through the landscape depositing more recent alluvium. These include the Alsea, Coos, Coquille, Green, Yachats, Siletz, Siuslaw, Umpqua, and Rogue Rivers.

Ecological site concept

This ecological site is found on the western Coast Range in the Pacific Northwest from central to southern Oregon. It is located on the eastern extent of the MLRA and has the warmest summer temperatures within this range. Elevations are typically between 300 and 3,500 feet. The most common overstory species are western hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*). Other tree species may include grand fir (*Abies grandis*) and western redcedar (*Thuja plicata*). Bigleaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*) may be found in forest openings. Regeneration of bigleaf maple and red alder is limited by canopy cover and is commonly in gaps where sunlight is most available. Typical understory species include oceanspray (*Holodiscus discolor*), salal (*Gaultheria shallon*), vine maple (*Acer circinatum*), Cascade oregongrape (*Mahonia nervosa*), red huckleberry (*Vaccinium parvifolium*), serviceberry (*Amelanchier alnifolia*), dwarf rose (*Rosa gymnocarpa*), western twinberry (*Linnaea borealis*), western swordfern (*Polystichum munitum*), and western brackenfern (*Pteridium aquilinum*). The presence of oceanspray is often the most indicative species of this site. The most common disturbance on this site is from windthrow of overstory trees, which results in patchy, small pockets of open areas. These areas commonly occur in conjunction with either root-, butt- or stem-rot. Western hemlock is highly susceptible to rot diseases from fungi such as; *Armillaria ostoyae*, *Heterobasidion annosum*, *Phellinus weirii*, and *Echinodontium tinctorium* which may exacerbate the extent and area of disturbance. The resulting openings in the canopy allow sunlight to reach the forest floor, benefiting the understory. Disturbance by fire is infrequent within the western hemlock zone; however, the site has a fire regime between 150-400 years and may experience stand replacing catastrophic wildfires (US Department of Agriculture, 2012).

Associated sites

AX001X04X410	Mesic Udic Forest Mesic Udic Forest is typically found in the same elevation range as Mesic Udic Warm Forest, however Mesic Udic Warm Forest is found on the most eastern extent of the MLRA. The annual temperatures tend to be slightly warmer and annual precipitation is slightly less in Mesic Udic Warm Forest.
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Table 1. Dominant plant species

Tree	(1) <i>Tsuga heterophylla</i> (2) <i>Pseudotsuga menziesii</i>
Shrub	(1) <i>Holodiscus discolor</i> (2) <i>Gaultheria shallon</i>
Herbaceous	(1) <i>Polystichum munitum</i>

Legacy ID

F001XD413OR

Physiographic features

This ecological site is located on the eastern extent of the MLRA and has the warmest summer temperatures within this range. Elevations are typically between 300 and 3,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope
Flooding frequency	None
Ponding frequency	None
Elevation	90 – 1,070 m
Slope	0 – 90 %
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

The climate has hot, moist summers and warm, wet winters. Mean annual precipitation ranges from 60 to 130 inches and occurs mostly as rain, when snow occurs it does not persist. Average annual temperatures range from 45 to 54 degrees F. The mild temperatures, abundant precipitation, and a long growing season result in highly productive forestlands.

Table 3 Representative climatic features

Frost-free period (characteristic range)	140-240 days
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Freeze-free period (characteristic range)	230-310 days
Precipitation total (characteristic range)	1,520-3,300 mm

Climate stations used

- (1) FALLS CITY 2 SSW [USC00352800], Dallas, OR
- (2) CORVALLIS WATER BUREAU [USC00351877], Philomath, OR
- (3) ELKTON 3 SW [USC00352633], Elkton, OR
- (4) FALLS CITY #2 [USC00352805], Dallas, OR

Influencing water features

In general, this ecological site is not influenced by wetland or riparian water features but may be found on stream terraces or adjacent to wetland and riparian areas. This site does not experience flooding or ponding.

Soil features

Soils that support this ecological site are well drained. They have a mesic soil temperature regime and the udic soil moisture regime. They often occurs on warmer, dry aspects of steep slopes.

Table 4. Representative soil features

Parent material	(1) Colluvium – igneous and sedimentary rock (2) Residuum – igneous and sedimentary rock
Surface texture	(1) Silty clay loam (2) Very gravelly loam (3) Paragravelly silty clay loam
Drainage class	Moderately well drained to well drained
Depth to restrictive layer	50 – 150 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Clay content (0-15.2cm)	20 – 40 %
Subsurface fragment volume <=3" (2.5-152.4cm)	0 – 30 %

Subsurface fragment volume >3" (2.5-152.4cm)	0 – 10 %
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Ecological dynamics

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 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 2.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Inventory data references

Other Established Classifications for Ecological Site National Vegetation Classification: A3379 *Tsuga heterophylla* – *Pseudotsuga menziesii* / *Holodiscus discolor* Dry Forest Alliance USDA Forest Service Plant Association and Management Guide of the Northern Oregon Coast Range: Western hemlock/dwarf Oregon grape-salal Dry Northwest Oregon Coast

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Washington Department of Natural Resources, Natural Heritage Program. 2015. Ecological Systems of Washington State. A Guide to Identification.

Contributors

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Approval

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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)	
Contact for lead author	
Date	12/20/2021
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:
