

Ecological site AX001X04X002

Mesic Udic Flood Plain Forest

Last updated: 1/23/2025
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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 found at low elevations in broad and wide riparian corridors on stream terraces and flood plain steps on alluvial soils. These areas are subject to stream overflow. Riparian ecological sites typically differ in topography, vegetation, geomorphology, and microclimate from the surrounding uplands of the forest ecosystem (Dwire, 2003). The most common overstory species are black cottonwood (*Populus balsamifera* spp. *trichocarpa*), red alder (*Alnus rubra*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*) bigleaf maple (*Acer macrophyllum*), and California laurel (*Umbellularia californica*). Red alder may dominate the canopy in some sites, especially where there are forest openings or pockets of disturbance. Regeneration is restricted by canopy cover and often limited to gaps where sunlight is most available. Common understory species include salmonberry (*Rubus spectabilis*), willow species (*Salix* spp.), western swordfern (*Polystichum munitum*), and Oregon oxalis (*Oxalis oregana*). The most common natural disturbance is flooding, with the volume and longevity of the flooding determining the effect on the dynamics of the forest. Although wildfire is uncommon in this ecological site (greater than 450-year return interval) when it does occur, it may be stand replacing (Balian, 2005). Fallen trees with exposed root systems and large woody debris is common. The longer interval between major disturbance, the more diverse the overstory becomes as conifers such as Douglas-fir and western hemlock establish. These sites are also commonly cleared for pasture, which may affect the site hydrology and the flooding regime.

Associated sites

AX001X04X001	Mesic Udic Riparian Forest Mesic Udic Riparian Forest is found in narrower riparian corridors compared to Mesic Udic Flood Plain Forest. Mesic Udic Riparian Forest is often located along the tributaries that lead into Mesic Udic Flood Plain Forest.
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Table 1. Dominant plant species

Tree	(1) <i>Populus balsamifera</i> ssp. <i>trichocarpa</i> (2) <i>Alnus rubra</i>
Shrub	(1) <i>Rubus spectabilis</i>
Herbaceous	(1) <i>Polystichum munitum</i>

Legacy ID

F001XD002OR

Physiographic features

his ecological site is found at low elevations in broad and wide riparian corridors on stream terraces and flood plain steps on alluvial soils.

Table 2. Representative physiographic features

Landforms	(1) River valley > Flood plain (2) River valley > Terrace
Flooding frequency	None to frequent
Ponding frequency	None
Elevation	0 – 240 m
Slope	0 %
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. Mean annual temperatures range from 44 to 54 degrees F (PRISM Climate Group, 2019). 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)	160-240 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	1,520-3,300 mm

Climate stations used

- (1) ELKTON 3 SW [USC00352633], Elkton, OR
- (2) POWERS [USC00356820], Powers, OR

Influencing water features

This ecological site is subject to stream overflow and may experience flooding. Riparian ecological sites typically differ in topography, vegetation, geomorphology, and microclimate from the surrounding uplands of the forest ecosystem

Soil features

Soils that support this ecological site occur in the mesic soil temperature regime and the udic soil moisture regime. They are formed in alluvium on flood plain step and steam terrace positions. These soils are typically subject to flood events from November to April. The smaller, more frequent flood events typically only cause minor scouring in comparison with greater-magnitude 100- to 500-year floods. Soils of this ecological site are weakly developed Inceptisols due to their young age and association with active floodplains.

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Sandy loam (2) Loam
Drainage class	Well drained to somewhat excessively drained
Soil depth	150 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Clay content (0-20.3cm)	10 – 20 %
Subsurface fragment volume <=3" (2.5-152.4cm)	0 – 30 %
Subsurface fragment volume >3" (2.5-152.4cm)	0 – 10 %

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 Group: G254 North Pacific Lowland Riparian Forest and Woodland Group and the A3743 Oregon Ash – Black cottonwood – Alder Riparian Forest Alliance

Other references

- Christy, J., Kagan, J., Wiedemann, A. 1998. Plant Associations of the Oregon Dunes National Recreation Area. United States Department of Agriculture Forest Service, Pacific Northwest Region. Technical Paper R6-NR-ECOL-TP-09-98
- Fonda, R.W. 1974. Forest succession in relation to river terrace development in Olympic National Park, Washington. *Ecology*, 55(5): 927-942.
- Franklin, J.F., and Dyrness C.T. 1973. Natural Vegetation of Oregon and Washington. Oregon State University press, Corvallis, USA.
- Dwire, K. and Kauffman, J. 2003. Fire and Riparian Ecosystems in Landscapes in the Western United States. *Forest Ecology and Management*, Vol. 178 pp 61-74.
- Goheen, E.M. and Willhite, E.A. 2006. Field Guide to Common Diseases and Inspect Pests of Oregon and Washington Conifers. Portland, Oregon: USDA Forest Service, Pacific Northwest Region R6-NR-FID-PR-01-06.
- Naiman, R., Bechtold, S., Beechie, T., Latterell, J., Van Pelt, R. 2009. A Process-Based View of Floodplain Forest Patterns in Coastal River Valleys of the Pacific Northwest. *Ecosystems*, Vol 13 pp 1-31.
- Hemstrom, M., Logan, S. 1986. Plant Association and Management Guide: Siuslaw National Forest. United States Department of Agriculture Forest Service, Pacific Northwest Region. Technical Paper R6-Ecol 220-1986a
- Packee, E.C. 1990. *Tsuga heterophylla*. *Silvics of North American* [Online]. U.S. Department of Agriculture, Forest Service, Northeastern Area.
- Pojar J., and MacKinnon. 1994. Plants of the Pacific Northwest Coast. Lone Pine, Vancouver, British Columbia. 528 pages.
- PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>, visited Feb., 2015.
- Roccio, J., Crawford, R. 2015. Ecological Systems of Washington State. A Guide to Identification. Washington Department of Natural Resources Natural Heritage Report 2015-04.
- Soil Survey Staff. 2014. Keys to Soil Taxonomy, 12th ed. USDA-Natural Resources Conservation Service, Washington, DC.
- Soil Survey Staff. 1999. Soil Taxonomy: A Basic System of Soil classification for Making and Interpreting Soil Surveys. 2nd ed. USDA-Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
- Steinberg, Peter D. 2001. *Populus balsamifera* subsp. *trichocarpa*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory
- Stolnack, S., Naiman, R. 2010. Patterns of Conifer Establishment and Vigor on Montane River Floodplains in Olympic National Park, Washington, USA. *Canadian Journal of Forest Resources*, Vol. 40, pp 410-422.
- United States National Vegetation Classification. 2016. United States National Vegetation Classification Database, V2.0. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC. (accessed 28, November, 2016).
- Van Pelt, R., O'Keefe, T., Latterell, J., Naiman, R., 2006. Riparian forest stand development along the Queets River in Olympic National Park, Washington. *Ecological Monographs*, 76(2) pp. 277-298

Villarin, L., Chapin, D., Jones, J., 2009. Riparian forest structure and succession in second-growth stands of the central Cascade Mountains, Washington, USA. Forest Ecology and Management, Vol 257 pp. 1375-1385
Washington Department of Natural Resources, Natural Heritage Program. 2015. Ecological Systems of Washington State. A Guide to Identification.

Contributors

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Approval

Kirt Walstad, 1/23/2025

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	12/16/2021
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:
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17. Perennial plant reproductive capability:
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