Ecological site AX001X03X001
Mesic Udic Riparian 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 Central Pacific Coast Range land resource unit (LRU 3) of MLRA 1 ranges from the Olympic Peninsula south into northern Oregon. LRU 3 is located south of the Olympic National Forest and extends to the Siletz River in Oregon. LRU 3 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 have headwaters in this LRU or carved valleys through the landscape depositing more recent alluvium. These include the Chehalis, Columbia, Grays, Humptulips, Klaskanine, Nehalem, Satsop, Siletz, Willapa, Wilson, Wynoochee, and Yamhill Rivers.

Ecological site concept

This ecological site is found on the western Coast Range in the Pacific Northwest from southern Washington to northern Oregon. It is found in riparian corridors on stream terraces and flood plain steps on alluvial soils. It is located at low elevations (less than 1,000 ft.) with abundant precipitation. 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 bigleaf maple (Acer macrophyllum), red alder (Alnus rubra), cascara (Frangula purshiana), black cottonwood (Populus balsamifera spp. trichocarpa) and Oregon ash (Fraxinus latifolia). Conifers such as Douglas-fir (Pseudotsuga menziesii), western redcedar (Thuja plicata) and grand fir (Abies grandis) may occur in late seral sites or on terraces. Regeneration is restricted by canopy cover and often limited to gaps where sunlight is most available and mineral soil is exposed from scouring (Pabst, 1999). Understory species diversity is greatest near the streams as a result of erosion and deposition creating openings for opportunistic species as well as the abundance of microsites which create unique environments (Spies, et. al, 2002). Common understory species include Sitka willow (Salix sitchensis), shining willow (Salix lucida), salmonberry (Rubus spectabilis), stink currant (Ribes bracteosum), thimbleberry (Rubus parviflorus), elderberry (Sambucus racemosa), redosier dogwood (Cornus sericea), vine maple (Acer circinatum), 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 the presence of large woody debris is common.

Associated sites

AX001X03X003	**Mesic Aquic Forest** Ecological Site AX001X03X003, Mesic Aquic Forest is typically located adjacent to Ecological Site AX001X03X001, Mesic Udic Riparian Forest. Mesic Aquic Forest is located on alluvial terraces, moraines, and depressions. The site has poorly drained soils and is influenced by ponding. Mesic Udic Riparian Forest is found on flood plains and terraces.

Similar sites

AX001X02X001	**Mesic Udic Riparian Forest** Mesic Udic Riparian Forest ecological sites are similar but occur in different Land Resource Units. LRU 3 has a warmer climate and the presence of Oregon ash (Fraxinus latifolia) is a good indicator for LRU 3.

Table 1. Dominant plant species

Tree	(1) *Acer macrophyllum* (2) *Alnus rubra*
Shrub	(1) *Rubus spectabilis*
Herbaceous	(1) *Polystichum munitum*

Legacy ID

F001XC001OR

Physiographic features

This ecological site is found in riparian corridors on stream terraces and flood plain steps on alluvial soils. It is located at low elevations (less than 1,000 ft.) with abundant precipitation.

Table 2. Representative physiographic features

Landforms	(1) River valley > Flood plain (2) River valley > Terrace
Flooding frequency	Rare to frequent
Ponding frequency	None to frequent
Elevation	0 – 310 m
Slope	0 %
Water table depth	0 – 150 cm

Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

The climate has warm, moist summers and cool, wet winters. Mean annual precipitation ranges from 50 to 100 inches. Snowfall is rare, but when it does occur, is not persistent. Mean annual temperatures range from 48 to 54 degrees F (PRISM Climate Group, 2019).

Table 3 Representative climatic features

Frost-free period (characteristic range)	130-140 days
Freeze-free period (characteristic range)	170-210 days
Precipitation total (characteristic range)	1,270-2,540 mm
Frost-free period (actual range)	120-150 days
Freeze-free period (actual range)	160-220 days
Precipitation total (actual range)	
Frost-free period (average)	130 days
Freeze-free period (average)	190 days
Precipitation total (average)	

- (1) ELMA [USC00452531], Elma, WA
- (2) GRAYS RIVER HATCHERY [USC00453333], Grays River, WA
- (3) CLATSKANIE [USC00351643], Clatskanie, OR
- (4) LAUREL MTN [USC00354776], Falls City, OR

Influencing water features

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.

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 stream terrace positions. Soil moisture is not a limiting factor to forest growth due to the abundance of precipitation. 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.

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silt loam (2) Silty clay loam (3) Sandy loam (4) Loam (5) Gravelly sandy loam
Drainage class	Very poorly drained to somewhat excessively drained
Soil depth	40 – 150 cm
Surface fragment cover <=3"	0 – 20 %
Surface fragment cover >3"	Not specified
Clay content (0-40.6cm)	0 – 40 %
Subsurface fragment volume <=3" (2.5-152.4cm)	0 – 40 %
Subsurface fragment volume >3" (2.5-152.4cm)	Not specified

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 (%)

Table 6. Community 1.2 plant community composition

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

Table 7. Community 1.3 plant community composition

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

Table 8. Community 2.1 plant community composition

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

Table 9. Community 2.2 plant community composition

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

Table 10. Community 2.3 plant community composition

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

Inventory data references

Other Established Classifications for Ecological Site National Vegetation Classification Group: G851 North Central Pacific Lowland Riparian Forest and Woodland Group, A3745 Bigleaf Maple – Red Alder Riparian Forest Alliance, and the A3743 Oregon Ash – Black Cottonwood – Alder Riparian Forest Alliance Washington Department of Natural Resources Ecological Systems of Washington State- North Pacific Lowland Riparian Forest and Shrubland

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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	12/14/2021
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:**

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

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

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

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

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

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

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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:

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

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

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

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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:**
