

Ecological site F003XY706OR

High Cascades Moist

Last updated: 2/04/2025
Accessed: 08/20/2026

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 mertensiana</i>
Shrub	Not specified
Herbaceous	(1) <i>Luzula glabrata</i> var. <i>hitchcockii</i>

Physiographic features

Table 2. Representative physiographic features

Landforms	(1) Stratovolcano (2) Ash flow
Flooding frequency	None
Ponding frequency	None
Elevation	1,370 – 2,290 m
Slope	0 – 90 %
Water table depth	150 cm
Aspect	N

Climatic features

Winters are long, cold, windy and snowy, due to the very high elevations. Summers are short and cool. Effective precipitation comes mostly as snow. Average annual ppt is 67 inches.

Table 3 Representative climatic features

Frost-free period (average)	50 days
Freeze-free period (average)	60 days
Precipitation total (average)	2,540 mm

Influencing water features

Soil features

Table 4. Representative soil features

Surface texture	(1) Paragravelly loamy sand (2) Gravelly loamy sand (3) Ashy loamy sand
Family particle size	(1) Sandy
Drainage class	Well drained to excessively drained
Permeability class	Rapid to very rapid
Soil depth	150 cm
Surface fragment cover <=3"	10 – 40 %
Surface fragment cover >3"	0 – 40 %
Available water capacity (0-101.6cm)	7.37 – 20.32 cm
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified

Soil reaction (1:1 water) (0-101.6cm)	5.6 – 7.3
Subsurface fragment volume <=3" (Depth not specified)	20 – 50 %
Subsurface fragment volume >3" (Depth not specified)	0 – 40 %

Ecological dynamics

Mountain Hemlock plant community is the historic climax plant community. The major disturbance factor is wild fire. The fire return intervals estimated to be approximately 400 or more years. These fires are generally stand replacing fires, meaning that the fires are large and intense.

Small fires can occur that burn smaller acreages. Where small fires occur a seed source is available (mountain hemlock/shasta red fir) and the resiliency of the site allows seedling re-establishment.

Another significant disturbance factor is disease. Old Mountain hemlock are susceptible to disease, with laminated root rot (*Phellinus weiri*) being the top infecting agent. Openings created by disease killed trees allows other tree species (Shasta red fir, Western white pine, and Lodgepole pine) to establish.

The Shasta red fir community occurs as a successional step from the Lodgepole pine towards the Mountain hemlock plant community (HCPC). The SRF community also occurs when a significant disturbance occurs in the mountain hemlock plant community that kills the hemlock and allows the fir to become dominant. Mountain hemlock and Lodgepole composition can vary greatly in the overstory.

Ground cover and specie diversity is generally low. The canopy cover is not as great as the mountain hemlock community, and different plants are found in the understory.

The lodgepole pine plant community occurs after a stand replacement fire occurs and consumes all trees. Lodgepole pine, a pioneer specie, establishes readily. If it does not, then brush/forb/grasses establish. When lodgepole establishes the amount of regeneration is generally heavy. When a dense stand matures it becomes susceptible to the mountain pine beetle. If an outbreak occurs all lodgepole are generally killed. By this time, fir and/or hemlock seedlings are established and released when the pine dies.

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 (%)
-------	-------------	--------	-----------------	----------------------	------------------

Contributors

C Ziegler

Approval

Kirt Walstad, 2/04/2025

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	08/20/2026
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:
