

Ecological site F003XY702OR **High Cascades Dry South Slopes**

Last updated: 2/03/2025
 Accessed: 05/10/2025

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.

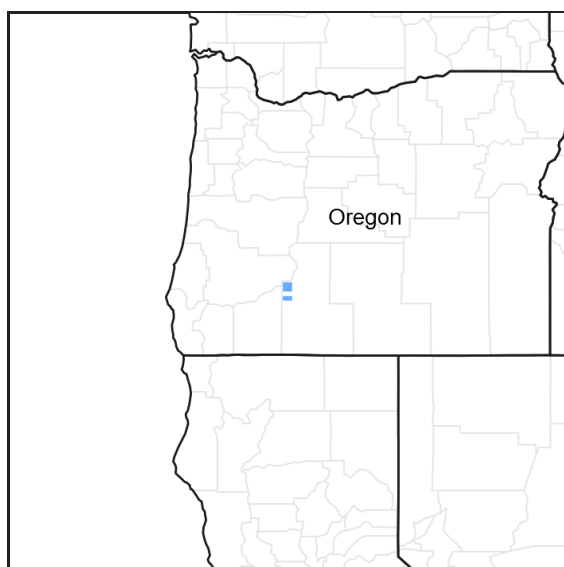


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Table 1. Dominant plant species

Tree	(1) <i>Tsuga mertensiana</i>
Shrub	(1) <i>Arctostaphylos patula</i> (2) <i>Holodiscus discolor</i>
Herbaceous	Not specified

Physiographic features

This site is on moderately deep, steep, south facing, somewhat excessively drained soils on the sides of cindercones.

Table 2. Representative physiographic features

Landforms	(1) Cinder cone
Flooding frequency	None
Ponding frequency	None
Elevation	4,500–6,500 ft
Slope	0–90%

Water table depth	60 in
Aspect	SE, S, SW

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)	45 days
Freeze-free period (average)	90 days
Precipitation total (average)	100 in

Influencing water features

None

Soil features

This site is found on steep, south facing slopes on cinder cones.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Moderate to moderately rapid
Soil depth	20–40 in
Surface fragment cover <=3"	10–35%
Surface fragment cover >3"	0–5%
Available water capacity (0-40in)	2.8–5.1 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	5.6–6
Subsurface fragment volume <=3" (Depth not specified)	20–55%
Subsurface fragment volume >3" (Depth not specified)	0–5%

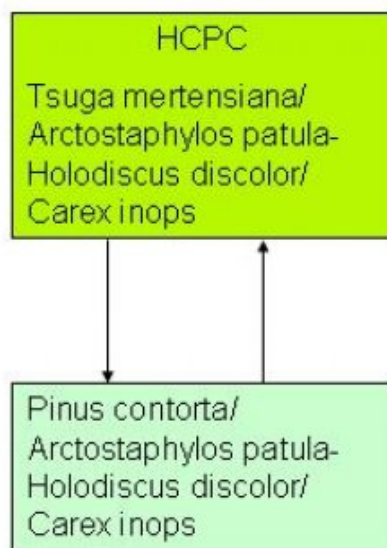
Ecological dynamics

The historic climax plant community is dominated by Mountain hemlock. The site is harsh and droughty. The steep south facing slope receives direct solar radiation. That plus the dry cindery soil affects the type and amount of vegetation.

The tree cover is sparse but the shrub/grass/carex cover is high. Plant species that are drought hardy will survive on this site.

Fire has frequented this site. The cinder cone is a target for lightning strikes.

State and transition model



State 1 Reference

Community 1.1 Mountain Hemlock

The Mountain hemlock plant community is the historic climax plant community. This site is much drier than others, due to the south facing slope. Overstory canopy cover is low. Understory vegetation cover is moderate to high. Drought hardy species prosper.

Forest overstory. The typical forest overstory of the Mountain hemlock plant community.

Forest understory. The typical annual production of the understory species to a height of 4.5 feet (excluding boles of trees) under low, high, and representative canopy covers.

The percentages expressed are percent canopy cover. Those species with "0" percent have a canopy cover of less than 1 percent.

Table 5. Ground cover

Tree foliar cover	20-30%
Shrub/vine/liana foliar cover	40-50%
Grass/grasslike foliar cover	10-15%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	5-10%
Surface fragments >0.25" and <=3"	10-20%
Surface fragments >3"	5-10%
Bedrock	0%
Water	0%
Bare ground	10-20%

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	1-2%
Grass/grasslike basal cover	1-2%
Forb basal cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-15%
Surface fragments >0.25" and <=3"	20-25%
Surface fragments >3"	5-10%
Bedrock	0%
Water	0%
Bare ground	20-30%

Table 7. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	—	1-2%	1-3%	—
>0.5 <= 1	—	5-10%	10-15%	—
>1 <= 2	—	5-10%	—	—
>2 <= 4.5	—	25-30%	—	—
>4.5 <= 13	0-1%	3-6%	—	—
>13 <= 40	30-35%	—	—	—
>40 <= 80	1-5%	—	—	—
>80 <= 120	—	—	—	—
>120	—	—	—	—

Community 1.2

Lodgepole Pine

This plant community occurs quite frequently, due to frequent fires. Lodgepole pine established after a severe fire. At maturity mountain hemlock will move into the stand. White bark pine may be found, mostly at the highest elevation on the cones.

Forest overstory. The typical overstory composition of the Lodgepole pine plant community.

Forest understory. The typical forest understory composition of the Lodgepole pine plant community. Vegetation is described below 4.5 feet.

Table 8. Ground cover

Tree foliar cover	15-20%
Shrub/vine/liana foliar cover	30-40%
Grass/grasslike foliar cover	10-15%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	1-5%
Surface fragments >0.25" and <=3"	25-30%
Surface fragments >3"	10-15%
Bedrock	0%
Water	0%
Bare ground	10-15%

Table 9. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	5-10%
Grass/grasslike basal cover	7-10%
Forb basal cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	1-5%
Surface fragments >0.25" and <=3"	25-30%
Surface fragments >3"	10-15%
Bedrock	0%
Water	0%
Bare ground	20-30%

Table 10. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	—	1-3%	1-2%	—
>0.5 <= 1	—	5-8%	10-15%	—
>1 <= 2	—	10-15%	—	—
>2 <= 4.5	—	20-25%	—	—
>4.5 <= 13	0-1%	0-1%	—	—
>13 <= 40	20-25%	—	—	—
>40 <= 80	0-1%	—	—	—
>80 <= 120	—	—	—	—
>120	—	—	—	—

Pathway 1.1A Community 1.1 to 1.2

Severe fire

Pathway 1.2A Community 1.2 to 1.1

Additional community tables

Contributors

C Ziegler

Approval

Kirt Walstad, 2/03/2025

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	05/10/2025
Approved by	Kirt Walstad
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:**
