

Ecological site F006XY701OR East Crater Lake Pumice Buttes

Accessed: 02/09/2025

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.

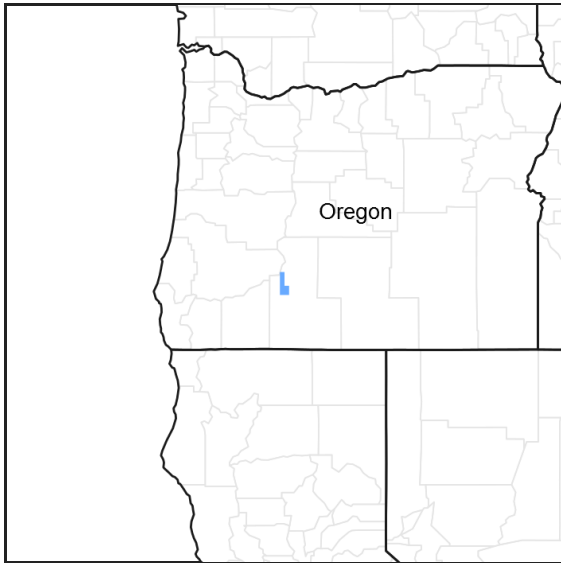


Figure 1. Mapped extent

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>Pinus ponderosa</i>
Shrub	(1) <i>Arctostaphylos patula</i>
Herbaceous	(1) <i>Carex inops</i>

Physiographic features

The site is on moderately sloping to steep south facing slopes of volcanic buttes.

Table 2. Representative physiographic features

Landforms	(1) Ash flow (2) Butte
Flooding frequency	None
Ponding frequency	None
Elevation	4,000–6,500 ft
Slope	0–70%
Water table depth	60 in

Aspect	SE, S
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Climatic features

Precipitation comes as snow from November - March and as rain from April - May. Summers are generally dry, except for thunderstorms that can provide rain. Winters are cold and snowy and summers are warm and dry.

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	107 days
Precipitation total (average)	30 in

Influencing water features

None

Soil features

This site is found on steep south facing slopes of volcanic buttes with soils that formed in volcanic pumice and ash airfall and andesite lava deposits. It is also found on volcanic ash flow deposits on lava table lands.

Table 4. Representative soil features

Surface texture	(1) Paragravelly loamy sand (2) Very gravelly loamy sand (3) Ashy loamy sand
Family particle size	(1) Sandy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Rapid to very rapid
Soil depth	60 in
Surface fragment cover <=3"	10-50%
Surface fragment cover >3"	0-20%
Available water capacity (0-40in)	3.2-7.1 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)	6.1-7.3
Subsurface fragment volume <=3" (Depth not specified)	15-50%
Subsurface fragment volume >3" (Depth not specified)	0-25%

Ecological dynamics

Ponderosa pine is the predominant climax tree species found in the overstory in this ecological site. Lodgepole pine may also be in the overstory.

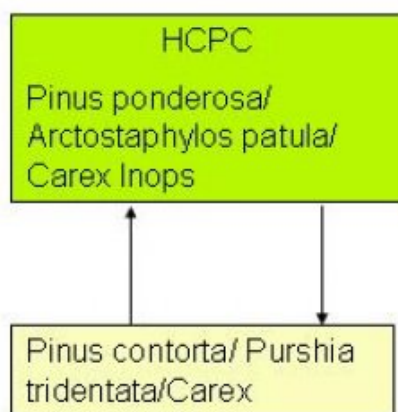
Fire is the major disturbance factor in this site. Fire return intervals ranging from approximately 10 to 40 years has been documented in the general area where this site occurs. This return interval benefits pine by keeping shade tolerant species from getting established and growing.

The more frequent fires areas had a grass dominated understory and where fire returns were longest shrubs were a large component of the understory.

When a large stand replacement fire occurred it consumed all trees. After such a fire Lodgepole pine generally established on the site. Lodgepole's stocking density could vary from light to very heavy. Where stocking was heavy to very heavy the stand would eventually become susceptible to mountain pine beetle infestations or wild fire. A beetle outbreak would practically kill all the pine. By this time if Ponderosa pine seedlings have established they are released to grow.

When fire is excluded shade tolerant species increase. Here, Shasta red fir is the main specie and occasionally white fir. Either of these species were present in the HCPC, but as a very small component. They maintained their existence by growing in rock outcrops where fire burned infrequently or fire intensity was low.

State and transition model



State 1
Ponderosa pine plant community

Community 1.1
Ponderosa pine plant community

The historic climax plant community has Ponderosa pine as the dominant tree specie. Lodgepole pine is occasionally present and S. red fir may be present, but only where fire has not occurred for a significant time frame. The understory vegetation is dominated by greenleaf manzanita, antelope bitterbrush, longstolon sedge, western needlegrass. S. red fir would be found in the overstory at the higher elevations of the site. It would have been found mostly in the rock outcrops where fire burned infrequently or as severe. It would make up a small component of the over all ecological site.

Forest overstory. The typical forest overstory composition of the historic climax 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.

Plant composition is expressed as "percent canopy cover". Species listed as "0" percent are present at less than 1 percent canopy cover.

Table 5. Ground cover

Tree foliar cover	20-30%
Shrub/vine/liana foliar cover	35-40%
Grass/grasslike foliar cover	20-25%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	20-30%
Surface fragments >0.25" and <=3"	0-5%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	5-10%

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	0-3%
Grass/grasslike basal cover	5-8%
Forb basal cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-50%
Surface fragments >0.25" and <=3"	10-15%
Surface fragments >3"	1-3%
Bedrock	0%
Water	0%
Bare ground	5-15%

Table 7. Canopy structure (% cover)

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

State 2

Lodgepole pine community

Community 2.1

Lodgepole pine community

To have this plant community a stand replacement fire has removed the historic climax community. Lodgepole pine is either pure or a small amount of Ponderosa pine is in the stand. Over time ponderosa will re-establish and eventually take over the stand. Lodgepole pine stocking density can be from light to very heavy. Stands that are heavy to very heavy stocking are susceptible to mountain pine beetle outbreaks. This occurs as the trees start to reach their early maturity stage. The trees become stressed and are easily attacked and killed by the beetle.

Forest overstory. The typical forest overstory composition of the lodgepole pine 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.

Plant composition is expressed as "percent canopy cover". Species listed as "0" percent are present at less than 1 percent canopy cover.

Table 8. Ground cover

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

Table 9. Soil surface cover

Tree basal cover	0%
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Shrub/vine/liana basal cover	1-5%
Grass/grasslike basal cover	3-8%
Forb basal cover	0-1%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-50%
Surface fragments >0.25" and <=3"	1-5%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	8-15%

Table 10. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	–	–	–	0-1%
>0.5 <= 1	–	0-1%	15-20%	–
>1 <= 2	–	2-5%	3-8%	–
>2 <= 4.5	–	5-8%	–	–
>4.5 <= 13	0-2%	–	–	–
>13 <= 40	2-5%	–	–	–
>40 <= 80	25-30%	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Additional community tables

Recreational uses

Hiking, Backpacking, bird watching

Wood products

Sawlogs, Post/poles, Firewood

Other products

Mushrooms

Contributors

C Ziegler

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	
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):**
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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:**
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