

Ecological site R022BI208CA

Cryic Pyroclastic Cones

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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): 022B–Southern Cascade Mountains

Site Concept – Slopes: 10 to 80 percent, but are generally 10 to 45. Landform: Shoulders of Nunataks and cinder cones. Soils: Well drained, shallow to moderately deep. Indurated bedrock is encountered between 10 to 40 inches. Skeletal soils with high percentage of cobbles and stones. There is 10 percent rock outcrop. Temp regime: Cryic. MAAT: 41 to 43 degrees F (5 to 6.1 degrees C). MAP: 37 to 81 inches (940 to 2,057 mm). Soil texture: Stony ashy loamy sand Surface fragments: Range from 10 to 30 percent, with 5 percent subangular fine gravel, 1 percent subangular medium gravel, 5 percent subangular cobbles and 5 percent subangular stones. Vegetation: A mixed shrubland with oceanspray (*Holodiscus discolor*), prostrate ceanothus (*Ceanothus prostratus*), rabbit brush (*Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa*) and other forbs and grasses.

Associated sites

F022BI104CA	Cryic Coarse Loamy Colluvial Slopes This is a mountain hemlock forest found above this site.
F022BI111CA	Cryic Gravelly Or Ashy Sandy Loam Gentle Slopes This is a sub-alpine mixed-conifer forest that surrounds this site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Holodiscus discolor</i> (2) <i>Ceanothus prostratus</i>
Herbaceous	(1) <i>Eriogonum umbellatum</i>

Physiographic features

This ecological site is found on the shoulders of pyroclastic cones at 6,960 to 8,330 feet in elevation. Slopes range from 10 to 80 percent, but are generally between 10 to 45 percent.

Table 2. Representative physiographic features

Landforms	(1) Cinder cone (2) Nunatak
Flooding frequency	None
Ponding frequency	None
Elevation	2,120 – 2,540 m
Slope	10 – 80 %
Aspect	E, S, W

Climatic features

This ecological site receives most of its annual precipitation in the form of snow from November to April. The mean annual precipitation ranges from 37 to 81 inches (940 to 2,057 mm). The mean annual temperature ranges from 41 to 43 degrees F (5 to 6.1 degrees C). The frost free (>32 degrees F) season is 50 to 85 days. The freeze free (>28 degrees F) season is 65 to 190 days.

There are no representative climate stations for this site.

Table 3 Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	190 days
Precipitation total (average)	2,060 mm

Influencing water features

This site is not influenced by wetland or riparian water features.

Soil features

This site is associated with the Xeric Vitricryands, bedrock soil component. These soils are well drained, shallow to moderately deep with very low available water capacity (AWC). They formed in tephra over residuum from volcanic rocks. The A1 and A2 horizons have a stony ashy loamy sand texture. Subsurface textures are extremely stony ashy sandy loam and very stony medial very fine sandy loam. Indurated bedrock is encountered between 10 to 40 inches.

This ecological site is associated with the following major soil components within the Lassen Volcanic National Park Soil Survey Area (CA789):

Map Unit Component Comp %
122 Xeric Vitricryands, bedrock 20

Table 4. Representative soil features

Family particle size	(1) Sandy
Drainage class	Well drained
Permeability class	Not specified
Soil depth	30 – 100 cm
Surface fragment cover <=3"	0 – 20 %
Surface fragment cover >3"	10 – 20 %
Available water capacity (0-101.6cm)	1.02 – 5.44 cm
Soil reaction (1:1 water) (0-101.6cm)	6.1 – 7.3
Subsurface fragment volume <=3" (Depth not specified)	10 – 40 %
Subsurface fragment volume >3" (Depth not specified)	10 – 90 %

Ecological dynamics

This ecological site is found on cinder cones and nunataks in the eastern portion of Lassen Volcanic National Park. A colorful combination of shrubs and forbs contrast against dark volcanic outcrops and rocks. Common plants include oceanspray (*Holodiscus discolor*), prostrate ceanothus (*Ceanothus prostratus*), rubber rabbit brush (*Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa*), wavyleaf Indian paintbrush (*Castilleja applegatei* ssp. *pinetorum*), sulphur-flower buckwheat (*Eriogonum umbellatum* var. *nevadense*), and granite prickly phlox (*Linanthus pungens*). There is less than 10 percent cover of the larger montane shrubs such as greenleaf manzanita (*Arctostaphylos patula*), snowbrush ceanothus (*Ceanothus prostratus*), Sierra chinquapin (*Chrysolepis sempervirens*), and bitter cherry (*Prunus emarginata*).

This site is limited by water availability. Soils are 10 to 40 inches deep over indurated bedrock. Above the bedrock is a droughty coarse-textured soil with a moderate amount of cobbles and stones. In addition, this site is often situated on south-facing shoulders and ridges of cinder cones that are exposed to high solar radiation, resulting in water loss to evaporation, evapotranspiration, and natural drainage. Although the cinder cones receive abundant snow in winter, wind re-deposits the snow on the leeward side of the ridges, leaving them exposed early in the spring. Trees in this area seem to be anchored in bedrock outcrops, which likely provide shelter from wind, partial shade for seedling development, and fissures that allow for penetration of roots and water.

Due to the lack of large fuels, a fire would be relatively mild on this site. Lighting is common on the cinder cones, but fuel loads are light, patchy, and interlaced with bedrock outcrops. Fires could spread through patches, but would most likely remain small and be of low to moderate intensity.

State and transition model

Figure 3. Cryic Pyroclastic Cone Model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Shrub/Vine					
1	shrubs			101-1082	
	prostrate ceanothus	CEPR	<i>Ceanothus prostratus</i>	22-325	2-24
	greenleaf manzanita	ARPA6	<i>Arctostaphylos patula</i>	17-247	1-8
	oceanspray	HODI	<i>Holodiscus discolor</i>	17-135	5-25
	snowbrush ceanothus	CEVE	<i>Ceanothus velutinus</i>	0-112	0-2
	rubber rabbitbrush	ERNAN5	<i>Ericameria nauseosa ssp. nauseosa var. nauseosa</i>	22-106	2-8
	bush chinquapin	CHSE11	<i>Chrysopsis sempervirens</i>	22-90	1-4
	bitter cherry	PREM	<i>Prunus emarginata</i>	0-34	0-2
	pinemat manzanita	ARNE	<i>Arctostaphylos nevadensis</i>	0-34	0-2
Grass/Grasslike					
1	grass/ grasslike			11-147	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0-78	0-6
	western needlegrass	ACOC3	<i>Achnatherum occidentale</i>	11-50	1-4
	California brome	BRCA5	<i>Bromus carinatus</i>	0-18	0-2
Forb					
1	forbs			0-83	
	sulphur-flower buckwheat	ERPO16	<i>Eriogonum polyanthum</i>	0-22	0-2
	sulphur-flower buckwheat	ERUMN	<i>Eriogonum umbellatum var. nevadense</i>	0-22	0-2
	naked buckwheat	ERNU3	<i>Eriogonum nudum</i>	0-11	0-2
	silverleaf phacelia	PHHA	<i>Phacelia hastata</i>	0-9	0-2
	turpentine wavewing	PTTET	<i>Pteryxia terebinthina var. terebinthina</i>	0-6	0-2
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0-6	0-2
	wavyleaf Indian paintbrush	CAAPP4	<i>Castilleja applegatei ssp. pinetorum</i>	0-6	0-2
	Lemmon's rockcress	ARLE	<i>Arabis lemmonii</i>	0-1	0-1

Table 6. Community 1.2 plant community composition

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

The shrub dominated plant community on this site provides important browse for wildlife. Oceanspray is a moderately important browse species for mule deer within the park. In addition to browse, species like oceanspray provide cover for large wildlife, and food and nesting habitat for small mammals and birds. Seeds produced by bush chinquapin are an important food source for ground squirrels and chipmunks, as well as birds. Flowers produced by buckwheat species host a variety of butterflies and moths. There are several forb and grass species growing here that are favored grazing species by wildlife.

Recreational uses

This site is situated on upper cinder cones that provide excellent views, but trails need to be designed carefully to prevent erosion.

Inventory data references

The following NRCS vegetation plots were used to describe this ecological site: 789200- site location 789250

Type locality

Location 1: Lassen County, CA	
Township/Range/Section	T30 N R6 E S1
UTM zone	N
UTM northing	4484003
UTM easting	647642
General legal description	The type location is near Red Cinder Cone, about 3.5 miles north-northeast of the new Juniper Lake ranger station.

Other references

Archer, Amy J. 2000. *Holodiscus discolor*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2009, September 19].

Howard, Janet L. 1992. *Chrysolepis sempervirens*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2009, September 19].

Simonin, Kevin A. 2001. *Elymus elymoides*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2009, September 24].

Tollefson, Jennifer E. 2006. *Bromus carinatus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2009, August 26].

Contributors

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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):

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:
