

Ecological site R006XB011OR Meadow Knoll 14-26 PZ

Accessed: 05/08/2024

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.

Associated sites

R006XB012OR	Dry Pumice Meadow 14-26 PZ The site is usually associated with wetter sites in complexes. Adjacent sites may be Dry Pumice Meadow, Wet Pumice Meadow, and Meadow Swale. There may be associations with the Meadow Fan site as well.
R006XB013OR	Wet Pumice Meadow 14-26 PZ
R006XB014OR	Meadow Swale 14-26 PZ

Similar sites

R006XB010OR	Meadow Fan 14-26 PZ The site is similar to the Meadow Fan site (which has an indurated layer that restricts rooting depth) in position and age of the soils.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is characterized by relatively short, hot summers and cold, snowy winter. The site receives approximately 20 inches of precipitation per year, the bulk of which is snowfall. There are frequent thunderstorms in the summer months. There may be ground fogs in the mornings during the growing season which affect stomatal gas exchange and photosynthetic activity.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Terrace
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Rare
Ponding duration	Brief (2 to 7 days)
Ponding frequency	Rare
Elevation	1,219–1,829 m
Slope	0–3%
Ponding depth	3–5 cm

Water table depth	122–152 cm
Aspect	Aspect is not a significant factor

Climatic features

This site is characterized by relatively short, hot summers and cold, snowy winters. The site receives approximately 20 inches of precipitation per year, the bulk of which is snowfall. There are frequent thunderstorms in the summer months. There may be ground fogs in the mornings during the growing season which affect stomatal gas exchange and photosynthetic activity.

Table 3. Representative climatic features

Frost-free period (average)	20 days
Freeze-free period (average)	49 days
Precipitation total (average)	635 mm

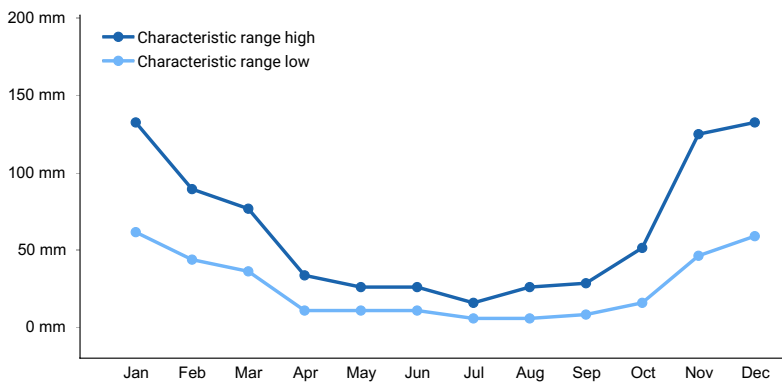


Figure 1. Monthly precipitation range

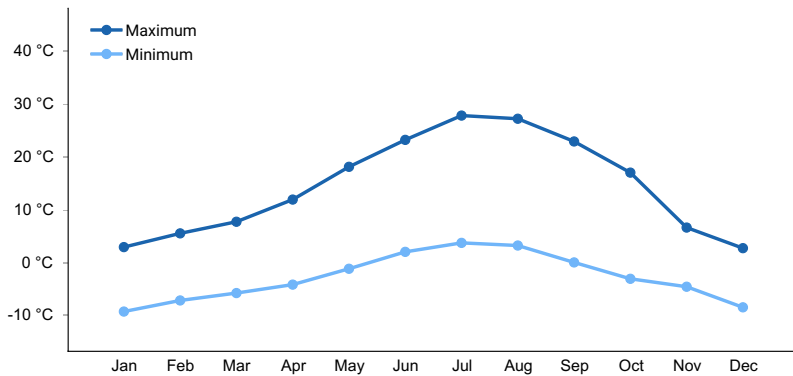


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

Soil features

Soils on this site are Mollisols with predominately loam over clay loam textures. The soil has a well-developed argillic horizon with small amounts of glassy pumice. The soil is relatively old; Mazama pumice is eroded off the surface of the soil; pumice in the soil profile is pre-Mazama. The soils receive additional water from adjacent wetter sites. An apparent water table comes to within 45 inches of the surface early in the season.

Table 4. Representative soil features

Surface texture	(1) Loam (2) Sandy loam
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Family particle size	(1) Loamy
Drainage class	Moderately well drained
Permeability class	Moderately slow
Soil depth	91–127 cm
Surface fragment cover ≤3"	2%
Surface fragment cover >3"	2%
Available water capacity (0-101.6cm)	13.97–16.51 cm
Calcium carbonate equivalent (0-101.6cm)	2%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	1
Soil reaction (1:1 water) (0-101.6cm)	2
Subsurface fragment volume ≤3" (Depth not specified)	2%
Subsurface fragment volume >3" (Depth not specified)	2%

Ecological dynamics

The sites are on remnant terraces and alluvial fans and are adjacent to or are islands within wetland sites. Elevations may differ by only 2 or 3 feet from adjacent wet sites. The sites are particularly dry in the summer, however, there is an apparent seasonal water table that has a marked influence on plant growth early in the growing season. Both states have relatively thick clay layers in the subsoil and small amounts of glassy pumice. The interpretative plant community for this site is the Historic Climax Plant Community (HCPC).

State and transition model

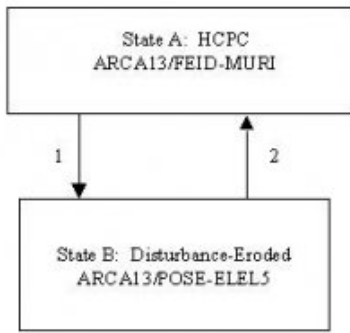


Figure 3. Meadow Knoll State and Transition Model

State 1
HCPC, ARCA13/FEID-MUSQ2

Community 1.1
HCPC, ARCA13/FEID-MUSQ2

HCPC: Dominated by Silver Sagebrush, Idaho Fescue, and Mat Muhly.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	673	1009	1345
Total	673	1009	1345

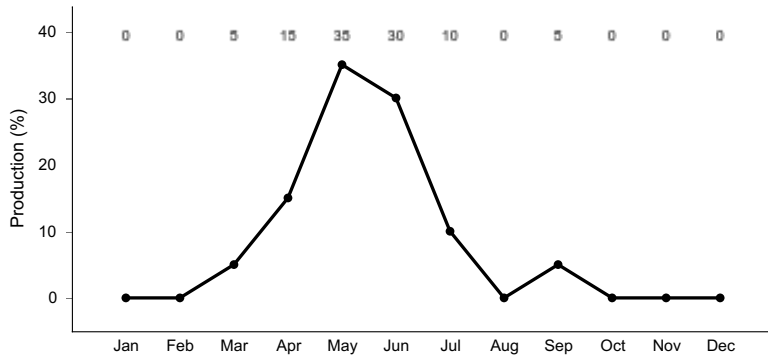


Figure 5. Plant community growth curve (percent production by month). OR1861, B6 Meadow Knoll HCPC. State A: HCPC-ARCA13/FEID-MUSQ2 .

State 2

State B: ARCA13/POSE3-ELEL5

Community 2.1

State B: ARCA13/POSE3-ELEL5

Disturbance/Eroded state (ARCA13/POSE3-ELEL5): Dominated by Silver Sagebrush, Nevada Bluegrass, and Bottlebrush Squirreltail. This state is a lower seral state that has had additional soil erosion. Plants may be pedastalled and there is an increase in the percentage of bare ground.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	560	785	1009
Total	560	785	1009

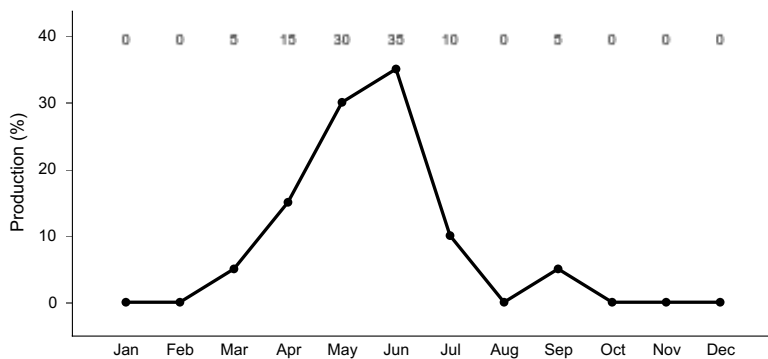


Figure 7. Plant community growth curve (percent production by month). OR1862, B6 Meadow Knoll B. State B: Disturbance/Eroded (ARCA13/POSE3-ELEL5).

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				404–656	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	202–303	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	151–252	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	50–101	–
2				161–252	
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	67–101	–
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	31–50	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	31–50	–
3				94–151	
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	31–50	–
	smallwing sedge	CAMI7	<i>Carex microptera</i>	31–50	–
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	31–50	–
4				31–50	
Forb					
4				31–50	
5				34–67	
	pussytoes	ANTEN	<i>Antennaria</i>	34–67	–
6				6–50	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	1–17	–
	buckwheat	ERIOG	<i>Eriogonum</i>	1–17	–
	old man's whiskers	GETR	<i>Geum triflorum</i>	1–17	–
	Pacific lupine	LULE2	<i>Lupinus lepidus</i>	1–17	–
	cinquefoil	POTEN	<i>Potentilla</i>	1–17	–
Shrub/Vine					
5				56–168	
	silver sagebrush	ARCA13	<i>Artemisia cana</i>	50–151	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	10–20	–
7				56–168	
	silver sagebrush	ARCA13	<i>Artemisia cana</i>	50–151	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	10–20	–

Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				432–628	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	235–314	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	157–235	–
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	39–78	–
2				20–78	
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	20–39	–
	smallwing sedge	CAMI7	<i>Carex microptera</i>	20–39	–
Forb					
3				39–78	
	pussytoes	ANTEN	<i>Antennaria</i>	22–45	–
4				1–39	
	buckwheat	ERIOG	<i>Eriogonum</i>	1–17	–
	old man's whiskers	GETR	<i>Geum triflorum</i>	1–17	–
	false broomweed	HAPLO	<i>Haploesthes</i>	1–17	–
	Pacific lupine	LULE2	<i>Lupinus lepidus</i>	1–17	–
	cinquefoil	POTEN	<i>Potentilla</i>	1–17	–
Shrub/Vine					
5				56–146	
	silver sagebrush	ARCA13	<i>Artemisia cana</i>	39–118	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	17–39	–

Animal community

The site is seasonally utilized by several grazing animals. Mule deer, elk, and antelope use this site for both grazing and resting. Antelope are perhaps the most frequent animals on the site. Mule deer and elk use the site in the late winter and early spring. The position of the site makes it attractive to grazing animals when the adjacent sites are wet; it is often used as a resting and ruminating area. The site is marginal for nesting birds but may be seasonally used by waterfowl which nest in the adjacent meadow and marsh sites.

Hydrological functions

The site has a high potential in low seral condition to produce significant run-off to receiving waters. In some years, the site may be flooded with water backed up in the adjacent wetter sites. There are usually fingers of wetter and lower sites threading throughout the site providing extra ground water that may move laterally through the Meadow Knoll site.

Recreational uses

There is little recreational use on this site other than big game hunting and bird watching.

Wood products

None

Other products

None

Other information

The site is frequently used for grazing by domestic livestock and wildlife (mule deer, elk, and antelope). There are several species that are preferred that are available for most of the growing season. The site can be heavily used because the slightly higher elevation of this site makes it drier than adjacent meadow sites and therefore more attractive for resting, ruminating, and grazing.

Due to the relatively dry nature of this site, there is a possibility that American Indians used this site for temporary, seasonal hunting camps. Survey the area carefully before recommending ground disturbing practices. The aid of an archaeologist may be needed.

Contributors

Jeffrey P. Repp

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:**
