USDA Natural Resources Conservation Service

Ecological site R023XY324OR
SHALLOW SWALE 10-14 PZ

Accessed: 05/13/2025

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.

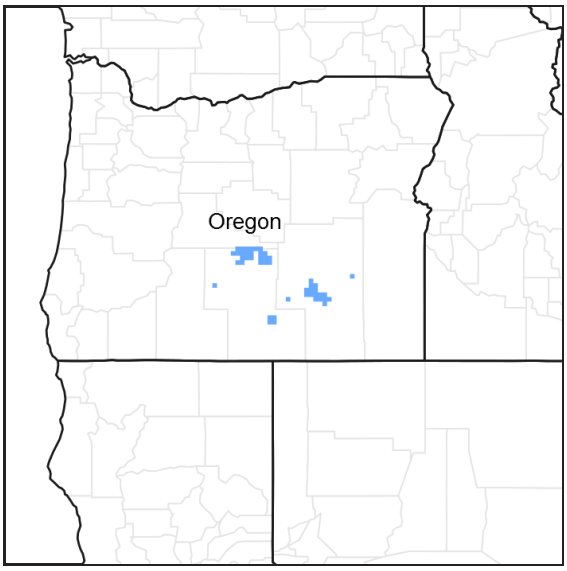


Figure 1. Mapped extent

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.

Associated sites

R023XY202OR	**SWALE 10-14 PZ** Swale 10-14" PZ (no restrictive layer)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia arbuscula*
Herbaceous	(1) *Poa nevadensis* (2) *Poa secunda*

Physiographic features

This site occurs in old lake beds and playas. Elevation ranges from 4400 to 5300 feet. Slopes range from 0 to 2 percent.

Table 2. Representative physiographic features

Landforms	(1) Lakebed (2) Playa

Elevation	1,341–1,615 m
Slope	0–2%
Aspect	Aspect is not a significant factor

Climatic features

Mean annual precipitation ranges from 10 to 14 inches. The majority of the precipitation occurs as snow during December through February. Ephemeral subsurface moisture flow augments this precipitation. The siol temperature regime is frigid. Mean annual air temperatures range from 43 to 45 degrees F. The average frost-free period ranges from 50 to 80 days. The period of primary plant growth is from April through June.

Table 3. Representative climatic features

Frost-free period (average)	80 days
Freeze-free period (average)	0 days
Precipitation total (average)	356 mm

Influencing water features

Soil features

Soils of this site are generally very deep (greater than 60 inches)to bedrock and are somewhat poorly drained. There is a clay layer at 11 inches or less. Ponding on this site is possible between February through May. Surface thickness rnges from 2 to 11 inches. Surface soils are siltloams while subsurface soils are clays, clay loams and slit loams. Soils on this site were formed in alluvium and lacustrine sediments. The available water holdig capacity is about 11 inches. There is a slight potential for wind and water erosion. The shrink-swell potential is high.

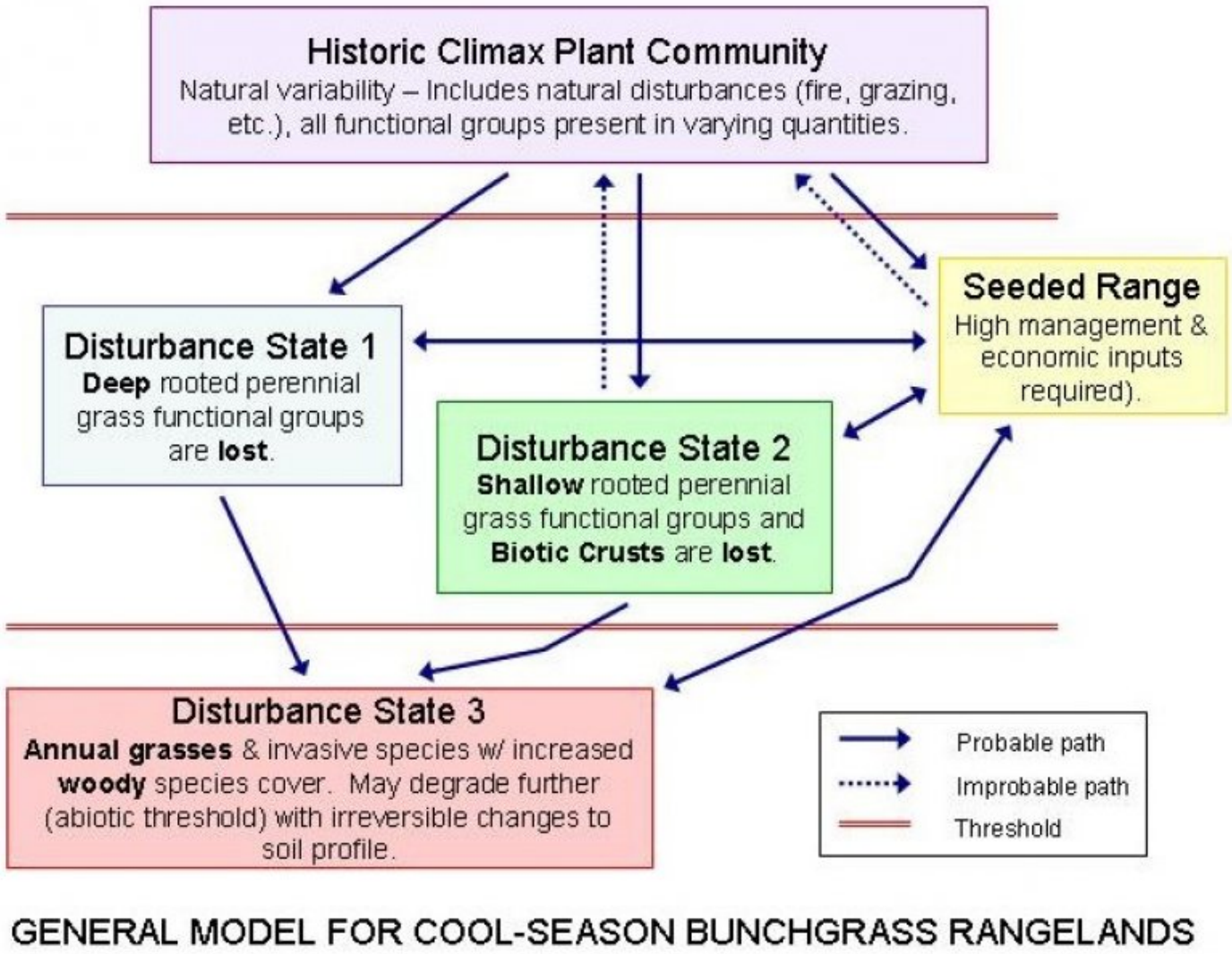
Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Clayey
Drainage class	Somewhat poorly drained
Permeability class	Moderate

Ecological dynamics

Range in Characteristics:
Nevada bluegrass decreases and Sandbergs Bluegrass increases on drier sites.
Response to Disturbance:
As the site deteriorates low sagebrush and Sandberg's bluegrass increases in plant density while Nevada bluegrass decreases. Upon further deterioration Sandberg bluegrass decreases.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Reference State

Community 1.1
Reference Plant Community

The potential native palnt community is dominated by low sagebrush, Nevada and Sandbergs bluegrasses. Vegetative compositionsi about 70 percent grasses, 10 percent forbs and 20 percent shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	392	549	706
Shrub/Vine	112	157	202
Forb	56	78	101
Total	**560**	**784**	**1009**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Perennial, shallow-rooted, bunchgrass**			392–549	
	Sandberg bluegrass	POSE	*Poa secunda*	157–235	–
2	**Perennial, moderately deep-rooted, bunchgrass**			78–235	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	39–118	–
	squirreltail	ELEL5	*Elymus elymoides*	39–118	–
5	**Perennial, other**			39–78	
	Idaho fescue	FEID	*Festuca idahoensis*	0–39	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	0–39	–
	basin wildrye	LECI4	*Leymus cinereus*	0–39	–
	Cusick's bluegrass	POCU3	*Poa cusickii*	0–39	–
Forb					
8	**Perennial, other**			16–78	
	agoseris	AGOSE	*Agoseris*	0–16	–
	onion	ALLIU	*Allium*	0–16	–
	pussytoes	ANTEN	*Antennaria*	0–16	–
	milkvetch	ASTRA	*Astragalus*	0–16	–
	hawksbeard	CREPI	*Crepis*	0–16	–
	fleabane	ERIGE2	*Erigeron*	0–16	–
	lupine	LUPIN	*Lupinus*	0–16	–
Shrub/Vine					
10	**Evergreen**			78–157	
	little sagebrush	ARAR8	*Artemisia arbuscula*	78–157	–
11	**Deciduous**			24–55	
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	16–39	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	8–16	–

Animal community

Livestock Grazing:
This site is suitable for grazing under a planned grazing system. Care should be taken not to graze when the site is wet.
Wildlife:
This site will offer food and cover to a variety of wildlife species. It is an important feeding area for non-game mammals and birds. Raptors will also use this site for feeding.

Hydrological functions

The soils of this site have low infiltration rates and low runoff potential. Soils of the site are in hydrologic group D.

Other information

Suitablity for seeding this site is fair because of depth to claypan.

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)	Jeff Repp
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Date	08/17/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None to very few pedestals

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-35%

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, Slight wind erosion hazard

7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Moderately resistant to erosion: aggregate stability = 3-5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Very deep somewhat poorly drained silt loam soils (2-11 inches thick) with clay layer at 11 inches or less: Moderate OM (2-4%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low to moderate ground cover (35-45%) and gentle slopes (0-2%) moderately limit rainfall impact and overland flow

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

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: Sandberg bluegrass + (Nevada bluegrass) > Low sagebrush > Bottlebrush squirreltail > Thurber needlegrass > other grasses > forbs > other shrubs

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Normal decadence and mortality expected

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):** Favorable: 700, Normal: 500, Unfavorable: 300 lbs/acre/year at high RSI (HCPC)

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:** Perennial brush species will increase with deterioration of plant community. Cheatgrass winvades sites that have lost deep rooted perennial grass functional groups.

17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually