

Ecological site R023XY213OR **SANDY LOAM 10-12 PZ**

Accessed: 05/15/2024

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.

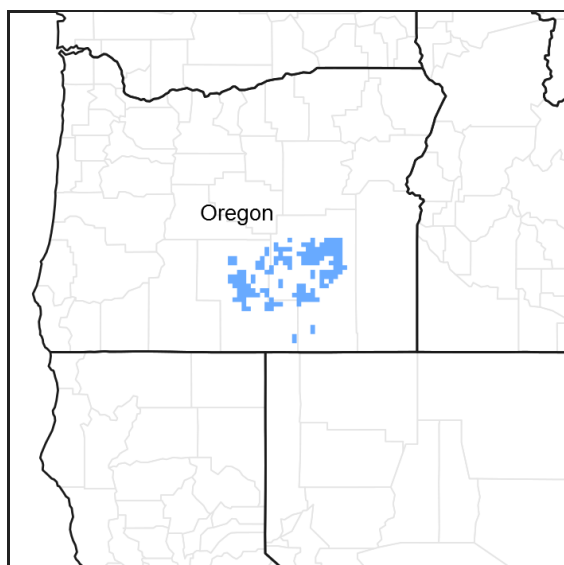


Figure 1. Mapped extent

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

R023XY212OR	LOAMY 10-12 PZ Loamy 10-12" PZ
R023XY300OR	SOUTH SLOPES 10-12 PZ South Slopes 8-12" PZ

Similar sites

R023XY212OR	LOAMY 10-12 PZ Loamy 10-12" PZ (finer surface texture)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> ssp. <i>tridentata</i>
Herbaceous	(1) <i>Hesperostipa comata</i> (2) <i>Achnatherum thurberianum</i>

Physiographic features

This site occurs on plateaus and tablelands. Slopes range from 0 to 15 percent. Elevation varies from 4200 to 5500 feet.

Table 2. Representative physiographic features

Landforms	(1) Plateau
Elevation	1,280–1,676 m
Slope	0–15%
Water table depth	152 cm
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 10 to 12 inches, most of which occurs in the form of snow during the months of December through March. Localized convection storms occasionally occur during the summer. The soil temperature regime is frigid to near frigid with a mean annual air temperature of 47 degrees F. Temperature extremes range from 100 to -30 degrees F. The frost-free period ranges from 50 to 90 days. The optimum growth period for native plants is from mid-April through June.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	0 days
Precipitation total (average)	305 mm

Influencing water features

Soil features

The soils of this site are typically moderately deep to deep over a duripan and/or bedrock. The soils have a loamy sand to sandy loam surface texture 10 to 20 inches thick. The surface is often overblown. The subsoil and/or substratum is typically medium to fine-textured. Permeability is moderate to rapid. The available water holding capacity (AWC) is about 3 to 6 inches for the profile. The potential for wind erosion is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Loamy sand (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to rapid
Available water capacity (0-101.6cm)	7.62–15.24 cm

Ecological dynamics

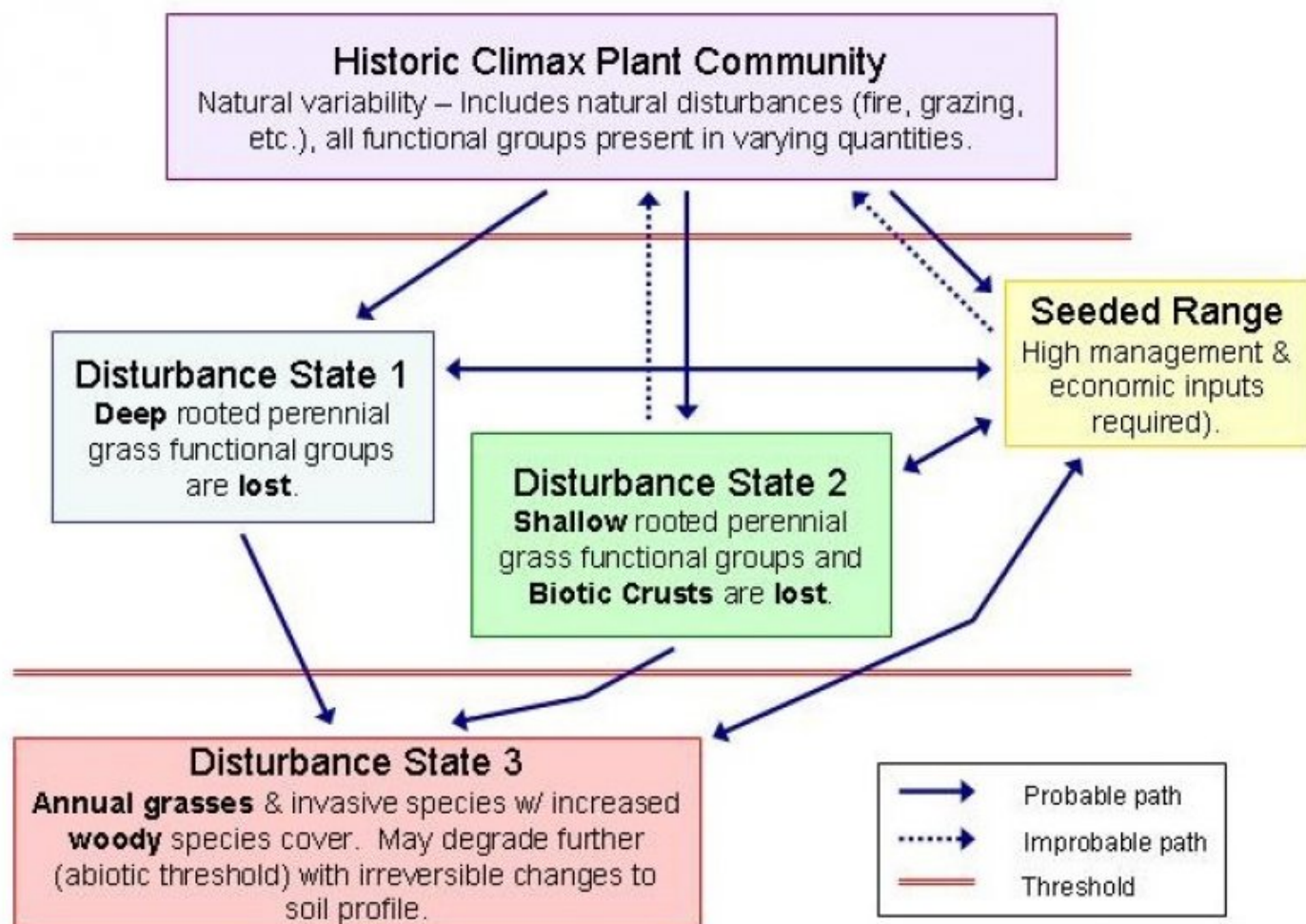
Range in Characteristics:

Variability in plant composition and production results from variation in soil surface texture and depth. Needle-and-thread will increase on a loamy sand surface. Production will increase with soil depth. Thurber needlegrass will increase on shallower soils where the surface texture is finer and the amount of fine gravels in the surface increases. As a fire susceptible site, the amount of basin big sagebrush is dependent on fire frequency.

Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, needle-and-thread, Thurber needlegrass, and Indian ricegrass will decrease while big sagebrush and bottlebrush squirreltail will increase. Annuals will invade. Needlegrasses and Indian ricegrass are the preferred species during all seasons. With further deterioration, bareground will increase and excessive wind erosion in the bare soil interspaces reduces the site productivity.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1

Reference State

Community 1.1

Reference Plant Community

The potential native plant community is dominated by basin big sagebrush and needle-and-thread. Thurber needlegrass and Indian ricegrass are common. The vegetative composition of the community is approximately 80 percent grasses, 5 percent forbs, and 15 percents shrubs. Approximate ground cover is 50-70 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	628	807	986
Shrub/Vine	118	151	185
Forb	39	50	62
Total	785	1008	1233

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, deep-rooted, bunchgrass			566–908	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	404–605	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	151–303	–
2	Perennial, deep-rooted, bunchgrass			71–151	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	50–101	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	20–50	–
3	Perennial, deep rooted, rhizomatous			10–30	
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	10–30	–
5	Other perennial grasses, all			20–61	
	squirreldail	ELEL5	<i>Elymus elymoides</i>	0–20	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–20	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–20	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	0–20	–
Forb					
7	Perennial, nitrogen-fixing			10–30	
	milkvetch	ASTRA	<i>Astragalus</i>	10–30	–
9	Other perennial forbs			10–50	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0–10	–
	hawksbeard	CREPI	<i>Crepis</i>	0–10	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–10	–
	lupine	LUPIN	<i>Lupinus</i>	0–10	–
	phlox	PHLOX	<i>Phlox</i>	0–10	–
Shrub/Vine					
11	Evergreen			101–151	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	101–151	–
15	Other shrubs			10–50	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	10–50	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0–10	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0–10	–

Animal community

Livestock Grazing:

This site is suited to use by cattle, sheep, and horses in the spring, summer, fall, and early winter under a planned grazing system. Use should be postponed until the soils are firm enough to avoid trampling damage and soil compaction.

Native Wildlife Associated with the Potential Climax Community:

Deer
Antelope
Hawks
Songbirds
Rodents

This site will offer food and cover for antelope, mule deer, rodents, and a variety of birds. It is an important wintering area for antelope and mule deer.

Hydrological functions

The soils are in hydrologic group B. The soils of this site have moderately low runoff potential.

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	08/15/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None, Moderate sheet & rill erosion hazard

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

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

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-20%
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5. **Number of gullies and erosion associated with gullies:** None
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6. **Extent of wind scoured, blowouts and/or depositional areas:** None to some, Moderate to severe wind erosion hazard
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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):** Slightly resistant to erosion: aggregate stability = 1-2
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
Moderately deep to deep loamy sand to sandy loam (10-20 inches thick): Low OM (1-2%)
-
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate to significant ground cover (50-70%) and gentle slopes (0-15%) effectively limit rainfall impact and overland flow
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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: Needle and thread grass > Thurber needlegrass > Basin big sagebrush > Indian ricegrass > 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
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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: 900, Normal: 750, Unfavorable: 600 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. Western Juniper readily invades the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.

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