

Ecological site R010XC040OR

SR Very Shallow 16-20 PZ

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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.

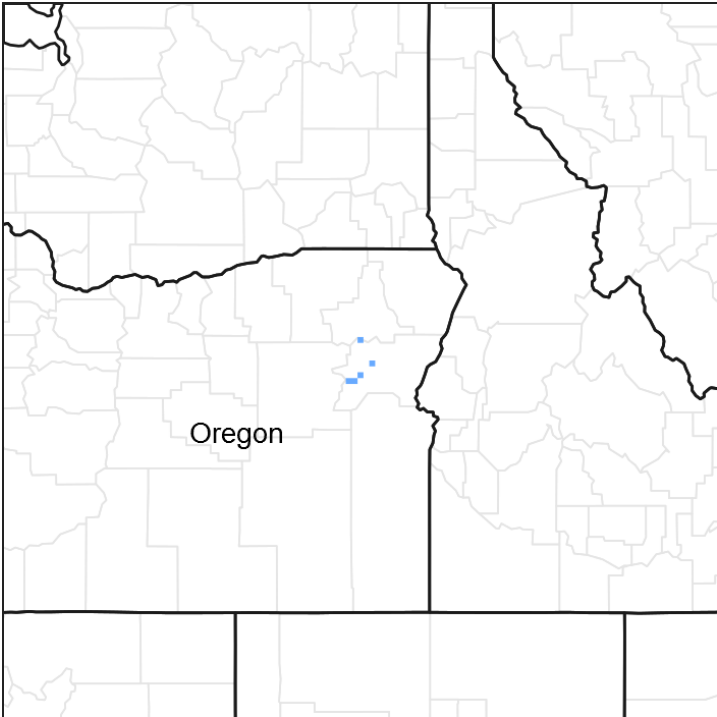


Figure 1. Mapped extent

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

R010XC059OR	SR Mahogany Rockland 12+ PZ SR Mahogany Rockland 12+ PZ
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Similar sites

R010XC039OR	SR Very Shallow 12-16 PZ SR Very Shallow 12-16 PZ (lower elevation, precipitation and production)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia rigida</i>
Herbaceous	(1) <i>Poa secunda</i> (2) <i>Festuca idahoensis</i>

Physiographic features

This site occurs on tablelands and mountain plateaus adjacent to forestland. Slopes typically range from 2 to 12%. Elevations range from 4,500 to 7,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Plateau
Elevation	1,372–2,134 m
Slope	2–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 16 to 20 inches plus, most of which occurs in the form of snow during the months of November through March. Localized, occasionally severe, convectional storms occur during the summer. The soil temperature regime is frigid with a mean annual air temperature of about 43 degrees F. Temperature extremes range from 90 to -30 degrees F. The frost-free period ranges from less than 30 to 70 days. The optimum period for plant growth is from late May through July.

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	
Precipitation total (average)	508 mm

Influencing water features

Soil features

The soils of this site are typically very shallow and well-drained. Typically the surface layer is a very stony clay loam about 6 inches thick. The subsoil is a very stony clay loam to a very cobbly clay 4 to 8 inches thick. Depth to bedrock is less than 10 inches. Permeability is slow. The available water holding capacity is 1 to 2 inches for the profile. The potential for erosion is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Very stony clay loam (2) Very cobbly
Family particle size	(1) Clayey
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Slow to very slow
Soil depth	15–25 cm
Available water capacity (0-101.6cm)	2.54–5.08 cm

Ecological dynamics

The potential native plant community is dominated by stiff sagebrush, Sandberg bluegrass, Idaho fescue and one-spike oatgrass. Lomatium, balsamroot, bighead clover and a variety of other forbs are present. Vegetative composition of the community is approximately 60 percent grasses, 20 percent forbs, and 20 percent shrubs. Approximate ground cover is 50 to 70 percent (basal and crown).

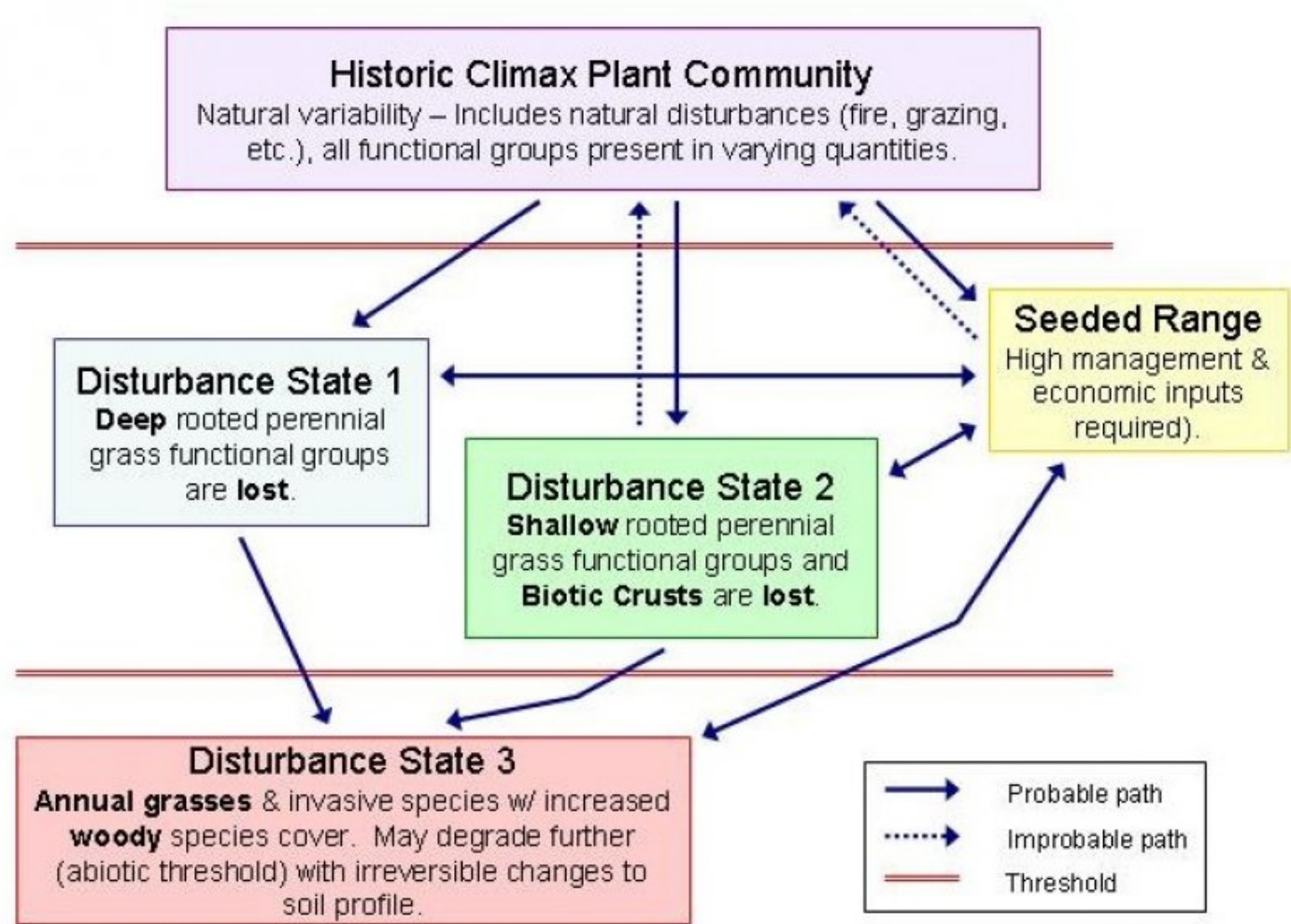
Range in Characteristics:

Plant composition and production is dependent on soil depth and bedrock fracture. Sandberg bluegrass and one-spike oatgrass increase over unfractured bedrock and soils that are 4 to 6 inches deep. One-spike oatgrass increases in relation to Sandberg bluegrass on moist sites. Idaho fescue and stiff sagebrush will increase on deeper soils closer to 10 inches deep and over fractured bedrock. Production will similarly increase with soil depth and precipitation.

Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, Idaho fescue and one-spike oatgrass will decrease. Sandberg bluegrass and stiff sagebrush will increase. Ventenata if present will invade along with medusahead and cheatgrass. Under deteriorated conditions, excessive erosion in the bare soil interspaces markedly reduces the site potential and contributes to downstream sedimentation.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Reference

Community 1.1
Reference Plant Community

The potential native plant community is dominated by stiff sagebrush, Sandberg bluegrass, Idaho fescue and one-spike oatgrass. Lomatium, balsamroot, bighead clover and a variety of other forbs are present. Vegetative composition of the community is approximately 60 percent grasses, 20 percent forbs, and 20 percent shrubs. Approximate ground cover is 50 to 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	224	336	448
Forb	135	202	269
Shrub/Vine	76	114	152
Tree	13	20	27
Total	448	672	896

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	Dominant, perennial shallow-rooted grasses			135–269	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	101–168	–
	onespike danthonia	DAUN	<i>Danthonia unispicata</i>	34–101	–
2	Sub-dominant, perennial deep-rooted bunchgrasses			67–135	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	67–135	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	34–101	–
4	Other perennial grasses			34–101	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	34–101	–
Forb					
7	Dominant, perennial forbs			47–121	
	desertparsley	LOMAT	<i>Lomatium</i>	20–54	–
	largehead clover	TRMA3	<i>Trifolium macrocephalum</i>	13–34	–
	hairy balsamroot	BAHOH	<i>Balsamorhiza hookeri</i> var. <i>hirsuta</i>	13–34	–
8	Sub-dominant, perennial forbs			13–40	
	fleabane	ERIGE2	<i>Erigeron</i>	7–20	–
	phlox	PHLOX	<i>Phlox</i>	7–20	–
9	Other perennial forbs			24–63	
	common varrow	ACMI2	<i>Achillea millefolium</i>	4–9	–

	stonecrop	SEDUM	<i>Sedum</i>	3–9	–
	narrowleaf blue-eyed grass	SIAN3	<i>Sisyrinchium angustifolium</i>	2–6	–
	agoseris	AGOSE	<i>Agoseris</i>	2–6	–
	onion	ALLIU	<i>Allium</i>	2–6	–
	pussytoes	ANTEN	<i>Antennaria</i>	2–6	–
	larkspur	DELPH	<i>Delphinium</i>	2–6	–
	woodland-star	LITHO2	<i>Lithophragma</i>	2–6	–
	bluebells	MERTE	<i>Mertensia</i>	0–6	–
	sagebrush buttercup	RAGL	<i>Ranunculus glaberrimus</i>	2–6	–
Shrub/Vine					
11	Dominant deciduous shrub			135–202	
	scabland sagebrush	ARRI2	<i>Artemisia rigida</i>	135–202	–
12	Perennial, evergreen, sub-dominant			13–34	
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	13–34	–
Tree					
16	Perennial, evergreen, dominant			13–27	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	7–13	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	7–13	–

Animal community

Livestock Grazing:

This site provides limited summer forage to livestock. The very shallow soils have low water holding capacity for extended plant growth. This site is easily damaged by early grazing and trampling when soils are saturated.

Grazing management should be keyed for one-spike oatgrass and Idaho fescue. Deferred grazing or rest is recommended at least once every three years.

Native Wildlife Associated with the Potential Climax Community:

This site offers food and limited cover for mule deer, elk, small mammals, birds and their associated predators. It is an important spring use area for elk, deer and upland birds.

Forbs furnish excellent high quality protein for brood rearing and young wildlife.

Nearby forested areas provide escape, hiding, and thermal cover.

Hydrological functions

The soils of this site are in an upland topographic position. They have high runoff potential and low available water storage potential even when the hydrologic cover is good. Under frozen ground conditions runoff potential is significantly increased. With a reduction in ground cover and an increase in bare ground sediment delivery is considerably increased and site productivity is reduced.

Wood products

The scattered ponderosa pine and old juniper provide little economic benefit but are of importance to wildlife for cover.

Other information

This site is not suited to range seeding or brush control. The major limitation is the very shallow soils. Special designs are needed for fence construction.

Juniper invasion is a risk on this site. Control measures include prescribed burning and/or cutting followed by rest to improve vigor, density and seed production of existing perennial grasses.

When incised channels are present, rehabilitation will markedly improve production, reduce downstream sedimentation, and restore good hydrologic characteristics. On altered sites, the reintroduction of basin wildrye and other perennial grasses may be needed to fully restore the site potential.

Contributors

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Approval

Kirt Walstad, 4/10/2025

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.

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Date	08/07/2012
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

3. **Number and height of erosional pedestals or terracettes:** None to very few (some frost heaving)

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-20%

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):** Moderate to significant resistance to erosion: aggregate stability = 4-6

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Very shallow well drained very stony clay loam (6 inches thick): Low OM (0-2%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low to moderate ground cover (30-50%) and gentle slopes (3-12%) 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: Stiff sagebrush > Sandberg bluegrass > other grasses > forbs

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: 800, Normal: 600, Unfavorable: 400 lbs/acre/year at high RSI (HCPC)
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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:** Western Juniper readily invades the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.
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17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually
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