

Ecological site R010XC044OR

SR South Schist

9-12 PZ

Last updated: 3/31/2025
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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): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. These factors support plant communities with shrub-grass associations with considerable acreage of sagebrush grassland. Big sagebrush, bluebunch wheatgrass, and Idaho fescue are the dominant species. Stiff sagebrush, low sagebrush, and Sandberg bluegrass are often dominant on sites with shallow restrictive layers. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing with areas accessible by irrigation often used for irrigated agriculture.

Classification relationships

U.S. National Vegetation Classification Standard (NVCS) Group: G310. Intermountain Semi-Desert Steppe & Shrubland Alliance: A1032. Glossopetalon spinescens Shrubland Alliance Association: CEGLO01100. Glossopetalon spinescens var. aridum / Pseudoroegneria spicata Shrubland

Ecological site concept

In reference condition, this site supports a plant community dominated by a sparse community of bluebunch wheatgrass (*Pseudoroegneria spicata*) with a scattered layer of spiny greasebrush (*Glossopetalon spinescens*) often present. This site occurs on rocky canyon walls and south-facing side slopes of hills and ravines with annual precipitation ranging from 9 to 12 inches. The soils of this site are typified by moderately deep, extremely channery loam derived from schist with areas of rock outcrop. The soil climate of this site is frigid and aridic. Ecological dynamics of this site were historically driven by climate and fire cycles. As a dry canyon site, this site is vulnerable to invasion by exotic annual bromes (*Bromus* spp.) if the disturbance regime is altered. This is a provisional ecological site whose accelerated development from a draft site was undertaken with little to no field verification and is subject to extensive review and revision before final approval. All data herein was developed using existing information and literature and should be considered provisional and contingent upon field validation prior to use in conservation planning.

Associated sites

R010XC052OR	<p>SR Shallow South Schist 9-12 PZ</p> <p>Adjacent shallow slopes</p>
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Similar sites

R010XC052OR	SR Shallow South Schist 9-12 PZ Shallow soils
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Glossopetalon spinescens</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>

Physiographic features

This site occurs on rocky canyon walls and south-facing side slopes of hills and ravines. Slopes range from 30 to 80 percent. Elevations range from 2,000 to 4,000 feet (600 to 1,200 meters). This site does not experience ponding or flooding and no water table is present within the soil profile.

Table 2. Representative physiographic features

Landforms	(1) Upland > Canyon (2) Upland > Hill (3) Upland > Ravine
Flooding frequency	None
Ponding frequency	None
Elevation	610 – 1,220 m
Slope	30 – 80 %
Aspect	SE, S, SW

Climatic features

The annual precipitation ranges from 9 to 12 inches (225 to 300mm), 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 mesic with a mean annual air temperature of 50° F (10° C). Temperature extremes range from 100 to -20° F (38 to -29° C). The frost-free period ranges from 110 to 140 days. The optimum period for plant growth is from April through June. Climate graphs are based on the nearest available climate stations to representative site locations and are provided to indicate general climate patterns.

Table 3 Representative climatic features

Frost-free period (characteristic range)	110-140 days
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Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	230-310 mm
Frost-free period (average)	130 days
Freeze-free period (average)	
Precipitation total (average)	280 mm

- (1) HUNTINGTON [USC00354098], Huntington, OR

Influencing water features

This site is not influenced by adjacent or on site water features.

Wetland description

Not applicable

Soil features

The soils of this site are typically moderately deep and well-drained with areas of rock outcrop. Typically the surface layer is an extremely channery loam about 7 inches thick. The subsoil is an extremely channery clay loam about 23 inches thick. Depth to bedrock is about 20 to 40 inches. Permeability is moderate. The available water holding capacity is about 4 to 6 inches for the profile. The potential for erosion is severe. These soils are derived from graywacke and schist.

Table 4. Representative soil features

Parent material	(1) Colluvium – graywacke (2) Residuum – graywacke (3) Colluvium – biotite schist (4) Residuum – biotite schist
Surface texture	(1) Extremely channery loam
Family particle size	(1) Loamy-skeletal
Drainage class	Well drained
Permeability class	Moderate
Depth to restrictive layer	50 – 100 cm

Soil depth	50 – 100 cm
Surface fragment cover <=3"	0 – 50 %
Surface fragment cover >3"	0 – 50 %
Available water capacity (0-101.6cm)	10.16 – 15.24 cm
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 7.8
Subsurface fragment volume <=3" (10.2-101.6cm)	50 – 70 %
Subsurface fragment volume >3" (10.2-101.6cm)	10 – 20 %

Ecological dynamics

Fire may have been historically infrequent in this site due to low productivity and fuel loads. When it does occur, fire will remove aboveground biomass from bluebunch wheatgrass but plant mortality is generally low (Robberecht and Defossé 1995) because the buds are underground (Conrad and Poulton 1966) or protected by foliage. Uresk et al. (1976) reported burning increased vegetative and reproductive vigor of bluebunch wheatgrass. Thus, bluebunch wheatgrass is considered to experience slight damage to fire but is more susceptible in drought years (Young 1983). Plant response will vary depending on season, fire severity, fire intensity and post-fire soil moisture availability. Little information is available as to the effects of fire on spiny greasebrush.

This site is most susceptible to erosion by water. Where this has occurred, the underlying parent material may be exposed. Improperly managed grazing may alter plant community composition and promote invasion of non native plant species. Bluebunch wheatgrass decreases while annual bromes such as cheatgrass (*Bromus tectorum*), japanese brome (*Bromus japonicus*), and rattlesnake brome (*Bromus briziformis*) will invade. At high levels of invasion, this site may shift to an alternative state. In this state, bare soil markedly increases and erosion is accelerated.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Perennial, deep-rooted, dominant			549-628	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	549-628	–
2	Perennial, deep-rooted, sub-dominant			16-31	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	8-16	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	8-16	–
4	Perennial, shallow-rooted, sub-dominant			8-16	

	Sandberg bluegrass	POSE	<i>Poa secunda</i>	8-16	-
Forb					
7	Perennial, all, dominant			16-47	
	milkvetch	ASTRA	<i>Astragalus</i>	8-24	-
	desertparsley	LOMAT	<i>Lomatium</i>	8-24	-
8	Perennial, all, sub-dominant			16-31	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	8-16	-
	cliff beardtongue	PERU	<i>Penstemon rupicola</i>	8-16	-
9	Other perennial forbs, all			16-39	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-4	-
	agosaris	AGOSE	<i>Agoseris</i>	0-4	-
	onion	ALLIU	<i>Allium</i>	0-4	-
	larkspur	DELPH	<i>Delphinium</i>	0-4	-
	buckwheat	ERIOG	<i>Eriogonum</i>	0-4	-
	western stoneseed	LIRU4	<i>Lithospermum ruderae</i>	0-4	-
	stoneseed	LITHO3	<i>Lithospermum</i>	0-4	-
	blazingstar	MENTZ	<i>Mentzelia</i>	0-4	-
	beardtongue	PENST	<i>Penstemon</i>	0-4	-
	phacelia	PHACE	<i>Phacelia</i>	0-4	-
Shrub/Vine					
13	Perennial, deciduous, dominant			16-63	
	spiny greasebush	GLSP	<i>Glossopetalon spinescens</i>	16-63	-
14	Perennial, deciduous, sub-dominant			8-16	
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	8-16	-
15	Other perennial shrubs, all			8-24	
	hackberry	CELT1	<i>Celtis</i>	0-8	-
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0-8	-
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0-8	-

Animal community

Livestock Grazing: This site is not suited to use by cattle, sheep, or horses for grazing. The slopes are steep to very steep with unstable soils. Native Wildlife Associated with the Potential Climax Community: Mule deer Elk Rodents Hawks Songbirds This site is critical for mule deer and elk.

Hydrological functions

The soils are in hydrologic group C. The soils of this site have moderately high runoff potential.

Other information

This site is not conducive to mechanical improvement measures due to steepness of slope, coarse and unstable soil conditions, and limited cover.

References

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Contributors

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2020/2021 update Andrew Neary

Approval

Kirt Walstad, 3/31/2025

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.

Author(s)/participant(s)	
Contact for lead author	
Date	08/07/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**
10-25%

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, slight to moderate 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):**
Significantly resistant to erosion: aggregate stability = 4-6

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Moderately deep well drained extremely channery loam (7 inches thick): Moderate OM (2-4%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low ground cover (30-50%) and moderate to steep slopes (3-80%) slightly 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: Bluebunch wheatgrass > forbs > 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: 1200, Normal: 700, 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: 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.
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17. Perennial plant reproductive capability: All species should be capable of reproducing annually
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