

Ecological site R010XC049OR

SR Shrubby Mountain South

16-20 PZ

Last updated: 3/11/2025
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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.

Associated sites

R010XC034OR	SR Shrubby Mountain Loam 16-20 PZ SR Shrubby Mountain Loam 16-20" PZ
R010XC055OR	SR Mountain Shallow South 16-20 PZ SR Mountain Shallow South 16-20" PZ
R010XC067OR	SR Shrubby Mountain North 16-20 PZ SR Shrubby Mountain North 16-20" PZ

Similar sites

R010XC055OR	SR Mountain Shallow South 16-20 PZ SR Mountain Shallow South 16-20" PZ (shallower depth, lower production)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Purshia tridentata</i> (2) <i>Prunus emarginata</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>

Physiographic features

This site occurs adjacent to forestland on south exposure backslopes of tablelands and mountain plateaus. Slopes range from 12 to 60 percent. Elevations range from 3200 to 5700 feet.

Table 2. Representative physiographic features

Landforms	(1) Plateau
Elevation	980 – 1,740 m
Slope	10 – 60 %
Aspect	S

Climatic features

The annual precipitation ranges from 16 to 20 inches, most of which occurs in the form of snow during the months of November through March. Localized, occasionally severe, convection storms occur during the summer. The soil temperature regime is near frigid to frigid with a mean annual air temperature of about 44 degrees F. Temperature extremes range from 90 to -30 degrees F. The frost-free period ranges from 50 to 90 days. The optimum period for plant growth is from April through June.

Table 3 Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	
Precipitation total (average)	510 mm

Influencing water features

Soil features

The soils of this site are typically moderately deep to deep and well-drained. Typically the surface layer is a loam to a gravelly loam 6 to 20 inches thick. The subsoil is an extremely gravelly clay, silty clay, or clay loam about 20 inches thick. Depth to bedrock or an indurated pan may range from 20 to over 40 inches. Permeability is moderately slow. The available water holding capacity is about 6 to 8 inches for the profile. The potential for erosion is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Gravelly loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderately slow
Soil depth	50 – 100 cm

Available water capacity (0-101.6cm)	15.24 – 20.32 cm
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Ecological dynamics

Range in Characteristics:

Bluebunch wheatgrass is highest in composition on due south slopes. Needlegrasses increase with coarse loamy surface. Idaho fescue will increase on more east facing slopes. Shrubs maintain a fairly even mixed stand. As a site influenced by fire, the shrubs/grass composition of the stand may be determined by fire frequency. Root sprouting shrubs are favored with a higher fire frequency.

Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, bluebunch wheatgrass decreases while Sandberg bluegrass, needlegrass, blue wildrye, mountain big sagebrush, antelope bitterbrush, and snowberry increase. With further deterioration, needlegrasses decrease, unpalatable shrubs increase and annuals invade. Areas of bare ground increase and excessive erosion in the bare soil interspaces markedly reduces the site productivity and contributes to downstream sedimentation.

Treatment Response:

South facing aspects lack resiliency and typically respond poorly to Juniper removal due to shallow soils and heat. Repair pathways located between States 1 and 2 indicate that potential for rehabilitation of the juniper controlled plant community exists. The potential for success is less than that of the juniper-sagebrush steppe phase in State 1 due primarily to aspect and soils. Treatment of juniper should incorporate lopping of limbs to provide microsites for seedling establishment along with seeding of desired grasses, forbs, and shrubs. Fire is not a recommended tool of rehabilitation due to the increased risk of cheatgrass invasion. A second repair pathway (RP3) exists between States 1 and 3. Treatment of the Sandberg bluegrass, cheatgrass and rabbitbrush phase would require chemical control of the rabbitbrush and cheatgrass along with seeding. Treatment of the juniper woodland and shallow rooted grasses phase would also require control on the cheatgrass while removing juniper and seeding desirable species. The potential for failure of rehabilitation projects within State 3 is high. Because of this, every effort should be taken to prevent threshold forcing events from occurring.

State and transition model

Figure 1. Group 3, STM

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Perennial, deep-rooted			504-841	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	420-588	–
	needlegrass	ACHNA	<i>Achnatherum</i>	84-252	–
2	Perennial, deep-rooted			50-185	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	34-135	–
	sedge	CAREX	<i>Carex</i>	17-50	–
4	Perennial, shallow-rooted			17-50	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	17-50	–
5	Other Perennial Grasses			34-84	
	mountain brome	BRMA4	<i>Bromus marginatus</i>	0-34	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0-34	–

	blue wildrye	ELGL	<i>Elymus glaucus</i>	0-34	–
Forb					
7	Perennial Forbs, dominant			34-84	
	buckwheat	ERIOG	<i>Eriogonum</i>	34-84	–
8	Perennial Forbs, sub-dominant			34-67	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	17-34	–
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	17-34	–
9	Other Perennial Forbs			17-50	
	onion	ALLIU	<i>Allium</i>	0-17	–
	milkvetch	ASTRA	<i>Astragalus</i>	0-17	–
	brodiaea	BRODI	<i>Brodiaea</i>	0-17	–
	waterleaf	HYDRO4	<i>Hydrophyllum</i>	0-17	–
	western stoneseed	LIRU4	<i>Lithospermum ruderales</i>	0-17	–
	lupine	LUPIN	<i>Lupinus</i>	0-17	–
	beardtongue	PENST	<i>Penstemon</i>	0-17	–
	phacelia	PHACE	<i>Phacelia</i>	0-17	–
	phlox	PHLOX	<i>Phlox</i>	0-17	–
	violet	VIOLA	<i>Viola</i>	0-17	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0-17	–
Shrub/Vine					
11	Evergreen Shrubs			84-168	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	84-168	–
13	Deciduous Shrubs, Dominant			336-813	
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	168-336	–
	bitter cherry	PREM	<i>Prunus emarginata</i>	84-252	–
	wild crab apple	PERA4	<i>Peraphyllum ramosissimum</i>	84-168	–
14	Deciduous Shrubs, sub-dominant			84-235	
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	34-84	–
	chokecherry	PRVI	<i>Prunus virginiana</i>	17-50	–
	wax currant	RICE	<i>Ribes cereum</i>	17-50	–
	common snowberry	SYAL	<i>Symphoricarpos albus</i>	17-50	–
15	Other Shrubs			34-101	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0-34	–
	slender buckwheat	ERMI4	<i>Eriogonum microthecum</i>	0-34	–
	creeping barberry	MARE11	<i>Mahonia repens</i>	0-34	–
Tree					
16	Evergreen			0-67	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	0-34	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	0-34	–

Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 3.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 12. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 13. Community 4.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Livestock Grazing: This site is suited to use by cattle, sheep, and horses in late spring, summer, and fall under a planned grazing system. Use should be postponed until soils are firm enough to avoid trampling damage and soil compaction. Native Wildlife Associated with the Potential Climax Community: Mule deer Elk Hawks Rodents Songbirds This site offers food and cover for mule deer and elk.

Hydrological functions

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

Wood products

This site is susceptible to increase in western juniper. Where this has ocured, the site will yield fence posts, firewood and specialty products.

Other information

The soils in this site have good water holding capacitites providing late season water for plant growth and slow water releases to streams. Increase in western juniper and the subsequent competition for moisture will lead to a reduction of available forage. Overgrazing can easily reduce ground cover and accelerate soil loss. Improving infiltration and permeability, and reducing runoff should be the immediate goal of juniper control. 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 may be needed to fully restore the site potential.

Contributors

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Approval

Kirt Walstad, 3/11/2025

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)	Jeff Repp and Bruce Frannsen
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Contact for lead author	State Rangeland Management Specialist for NRCS in Oregon
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, moderate to severe sheet & rill erosion hazard

2. Presence of water flow patterns: none to some

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):
5-15%

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

6. Extent of wind scoured, blowouts and/or depositional areas: None, 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):
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): Moderately deep to deep well drained loam to gravelly loam (6-20 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: Significant ground cover (60-70%) and gentle to steep slopes (12-60%) moderately to significantly 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 > shrubs > 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: 1800, Normal: 1500, Unfavorable: 1000 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: 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
