USDA Natural Resources Conservation Service

Ecological site R009XY036OR
Cold Shallow South 13+ PZ

Accessed: 05/12/2025

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

R009XY017OR	**Cold Loamy 13-17 PZ** Mountian Loamy 13-17" PZ
R009XY018OR	**Cold Loamy 17-24 PZ** Mountain Loamy 17-24" PZ
R009XY027OR	**Cold Very Shallow 13+ PZ** Mountain Very Shallow 13"+ PZ

Similar sites

R009XY034OR	**Cold South 13-17 PZ** Mountian South 13-17" PZ (deeper, higher production)
R009XY022OR	**Cold Shallow 13+ PZ** Mountain Shallow 13"+ PZ (different composition)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	Not specified

Physiographic features

This site occurs near and within forestland on the backslopes of canyons, tablelands, and mountain plateaus north of the Wallowa Mountains. It is typically on slopes with south and southwest aspects. Slopes range from 15 to 90%. Elevation varies from 2800 to 6000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Flooding frequency	None
Ponding frequency	None
Elevation	2,500–6,200 ft
Slope	5–90%
Ponding depth	0 in
Water table depth	0 in
Aspect	S, SW

Climatic features

The annual precipitation ranges from 13 to 35 inches, most of which occurs in the form of snow during the months of November through March, followed by ample spring rainfall. Localized, occasionally severe, convectional storms occur during the summer. The soil temperature regime is frigid with a mean annual air temperature of 44 degrees F. The frost-free period ranges from 70 to 130 days. The optimum period for plant growth is from late March to mid-June.

Table 3. Representative climatic features

Frost-free period (average)	130 days
Freeze-free period (average)	0 days
Precipitation total (average)	35 in

Influencing water features

Soil features

The soils of this site are shallow over basalt bedrock and are well drained. Areas of rock outcrop and talus are common. Typically the surface layer is a very stony silt loam or loam ranging to an extremely cobbly silt loam. The subsoil varies from an extremely cobbly clay to a very cobbly loam. Permeabilty ranges from slow in the clay subsoils to moderate when in the loam subsoils. The available water holding capacity (AWC) is about 0.5 to 2 inches for the profile. The potential for erosion, particularly on steep slopes, is severe.

Table 4. Representative soil features

Surface texture	(1) Very stony silt loam (2) Very stony loam (3) Extremely cobbly silt loam
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	10–20 in
Surface fragment cover <=3"	10–25%

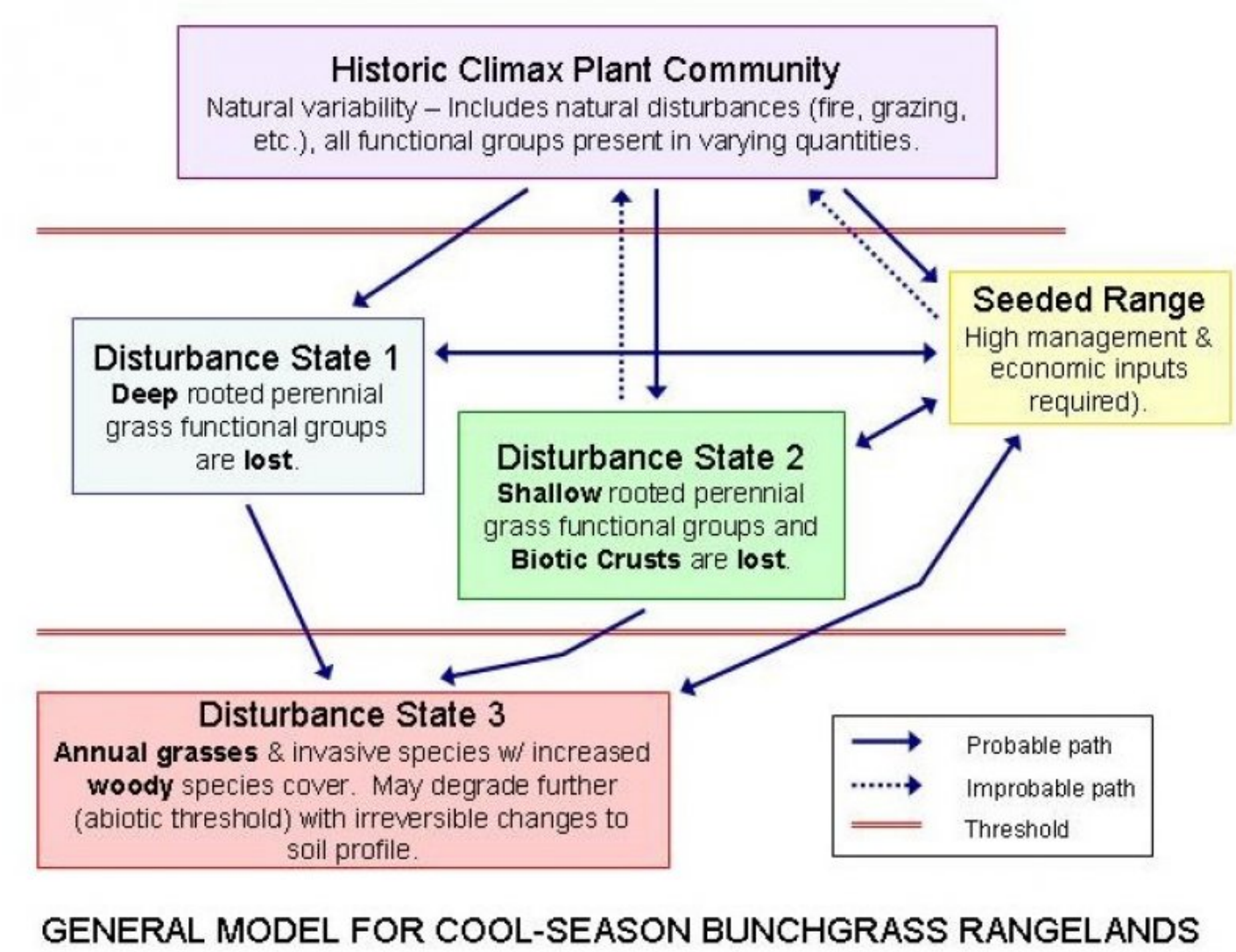
Surface fragment cover >3"	25–43%
Available water capacity (0-40in)	0.6–1.9 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.1–7.3

Ecological dynamics

Range in Characteristics:
Variabilty in precipitation and elevation have little effect on composition and yield. Steep south slopes will have the most bluebunch wheatgrass. Idaho fescue will be highest in composition on moderate southeasterly and westerly slopes. Production is lowest as the soil approaches 10 inches of depth and as coarse fragments increase. Soils close to 20 inches of depth and with few coarse fragments will have the highest production.

Response to Disturbance:
If the condition of the site deteriorates as a result of overgrazing, bluebunch wheatgrass and Idaho fescue decrease. Sandberg bluegrass and unpalatable forbs increase. Bulbous bluegrass, other bluegrasses, and soft chess invade. Severe early spring grazing will decrease ground cover. Under deteriorated conditions, excessive erosion in the bare interspaces markedly reduces the potential of the site and contributes to downslope sedimentation.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The potential native plant community is dominated by bluebunch wheatgrass. Idaho fescue, sandberg's bluegrass, arrowleaf balsamroot, lupine, buckwheat, and a variety of other forbs are prominent in the stand. The vegetative composition of the community is approximately 85 percent grasses and 15 percent forbs.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	365	600	860
Forb	35	100	140
Total	**400**	**700**	**1000**

Figure 5. Plant community growth curve (percent production by month). OR2791, B9 Souths RPC. B9 Souths RPC.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	15	20	25	20	5	0	5	5	0	0

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Perennial Deep-rooted Dominant**			420–560	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	420–560	–
2	**Perennial Deep-rooted Sub-dominant**			70–210	
	Idaho fescue	FEID	*Festuca idahoensis*	70–210	–
4	**Perennial Shallow-rooted Sub-dominant**			35–84	
	Sandberg bluegrass	POSE	*Poa secunda*	21–56	–
	onespike danthonia	DAUN	*Danthonia unispicata*	7–14	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	7–14	–
Forb					
7	**Perennial All Dominant**			14–35	
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	14–35	–
8	**Perennial All Sub-dominant**			14–56	
	buckwheat	ERIOG	*Eriogonum*	7–35	–
	lupine	LUPIN	*Lupinus*	7–21	–
9	**PPFF**			7–49	
	common yarrow	ACMI2	*Achillea millefolium*	2–11	–
	milkvetch	ASTRA	*Astragalus*	2–11	–
	hawksbeard	CREPI	*Crepis*	2–11	–
	fleabane	ERIGE2	*Erigeron*	2–11	–
	western stoneseed	LIRU4	*Lithospermum ruderale*	2–11	–
	desertparsley	LOMAT	*Lomatium*	2–11	–
	beardtongue	PENST	*Penstemon*	2–11	–
	phlox	PHLOX	*Phlox*	2–11	–
	cinquefoil	POTEN	*Potentilla*	2–11	–

Animal community

Livestock Grazing:
This site is suited to use by cattle and sheep in the late spring and fall. This site often occurs on both steep and rocky slopes and these conditions need to be carefully considered in developing alternatives. Care should be taken to avoid trampling damage and soil compaction when soils are wet.

Wildlife:
This site is important as a winter and early spring grazing site for deer and elk. It is often free of snow during the late winter and one of the first areas to warm up. Early green forage is provided on this site. It's value increases when it is adjacent to forested areas where escape, hiding and thermal cover is available. As a critical site for deer and elk, adverse impacts can easily result without careful management.

Native Wildlife Associated With The Potential Climax Community:
Rodents, Songbirds, Red-tailed hawk, Coyote, Rocky Mountain elk, Mule deer, and White-tailed deer.

Hydrological functions

The hydrologic cover condition is good at higher condition classes. The soils are in hydrologic group D.

Recreational uses

North of the Wallowa Mountians this site occurs in complex with other sites on the south side of ridges and steeper canyons. As part of the rolling open grasslands they provide a pleasing visual diversity with the distant mountains.

Other information

This site has a low potential for range seeding because of coarse fragments and/or steepness of slope.

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 and Bruce Franssen
Contact for lead author	State Rangeland Management Specialist for NRCS in Oregon
Date	04/04/2003
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

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

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

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Moderately to significantly resistant to erosion: aggregate stability = 3-6

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Moderate medium and strong fine granular to moderate fine and medium subangular structure, dry color value is 4, 6 - 8 inches thick; 2 - 5 % organic matter content

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse to moderate ground cover (50-60%) and very steep slopes (12-90%) moderately 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

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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: Deep-rooted, cool-season, bunchgrasses (PSSP6 >> FEID > others)

    Sub-dominant: Perennial forbs

    Other:

    Additional:

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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):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 1000, 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: With deterioration of plant community, bulbous bluegrass, annual bromes, and medusahead invade sites that have lost deep rooted perennial grass functional groups. Excessive erosion may occur, deteriorating site potential

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

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