USDA Natural Resources Conservation Service

Ecological site R009XY020OR
Shallow Clayey 14-17 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.

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

R009XY025OR	**Very Shallow 14-18 PZ** Very Shallow 14-18" PZ
R009XY031OR	**Shallow South 14+ PZ** Shallow South 14"+ PZ

Similar sites

R009XY015OR	**Clayey 14-17 PZ** Clayey 14-17" PZ (deeper soil, higher production)
R009XY010OR	**Loamy 14-17 PZ** Loamy 14-17" PZ (medium textured soil, higher production)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs near forestland on terraces, tablelands, and mountain plateaus. It is typically on the northen edge of the Blue Mountains as one of the last extensive grassland sites before the forest. Slopes range from 0 to 12% Elevation varies from 2000 to 3800 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan
Elevation	610–1,158 m
Slope	0–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 14 to 17 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 mesic approaching frigid with a mean annual air temperature of 47 degrees F. The frost-free period ranges from 80 to 120 days. The optimum period for plant growth is from late April to mid July.

Table 3. Representative climatic features

Frost-free period (average)	120 days

Freeze-free period (average)	
Precipitation total (average)	432 mm

Influencing water features

Soil features

The soils of this site are typically shallow over basalt bedrock and are well drained. Areas of rock outcrop may occur. Typically the surface layer is a very stony or very cobbly silt loam or silt clay loam. The subsoil varies from an extremely cobbly clay to a very stony clay. Permeabilty is slow above the duripan or bedrock, and the available water holding capacity (AWC) is about 1 to 3 inches for the profile. The potential for erosionis slight to moderate.

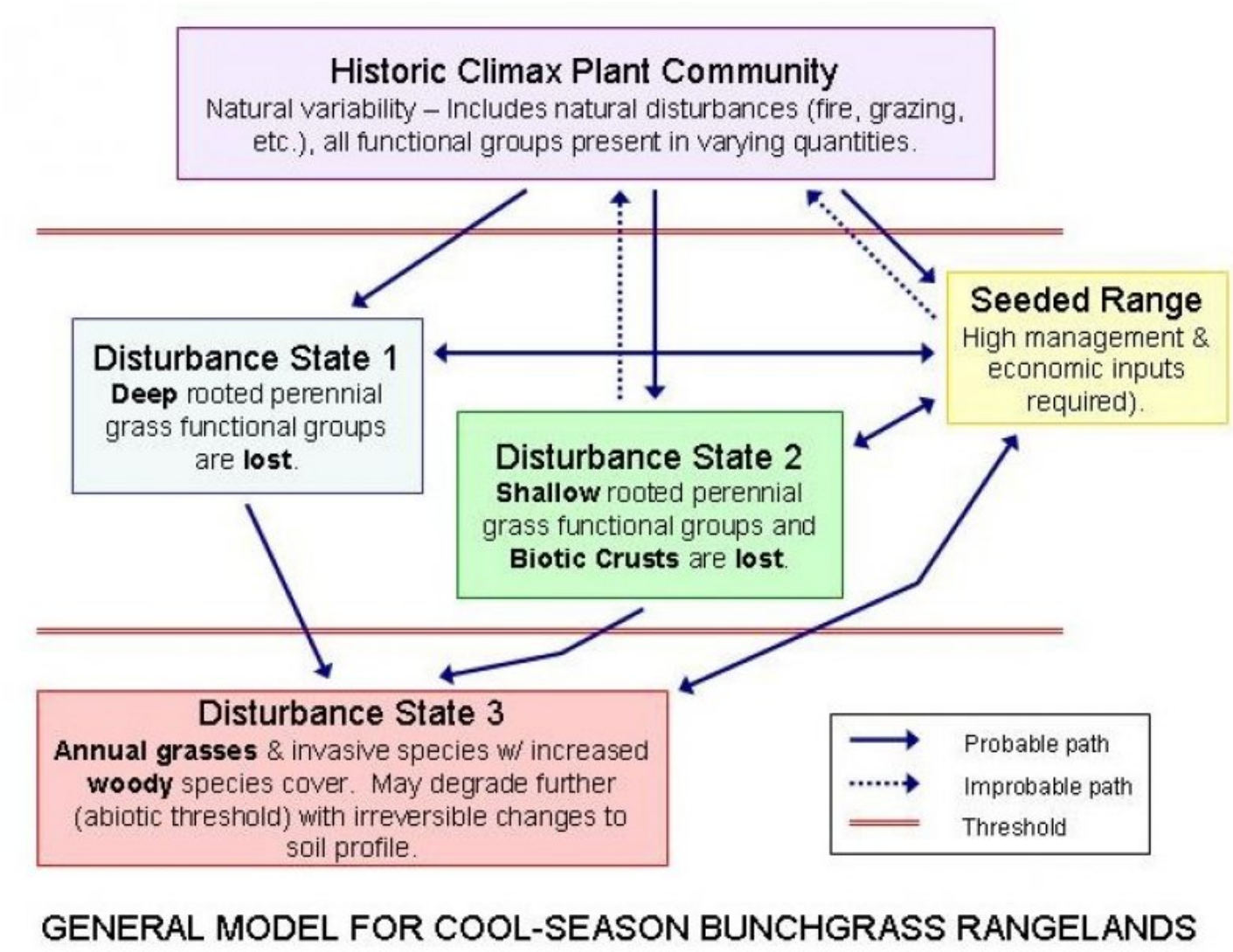
Table 4. Representative soil features

Surface texture	(1) Very cobbly silt loam (2) Very stony silty clay loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow

Ecological dynamics

Range in Characteristics:
Variability in plant composition and yeild sis dependent on aspect, soil depth and coarse fragments rather than on precipitation adn elevation ranges that occur within the site. There tends to be a higher proprotion of bluebunch wheatgrass and lower overall production on south and southwesterly slopes having high amounts of coarse fragments and shallower depths. Conversely, Idaho fescue is in higher proportion with greater overall production on north slopes.
Response to disturbance:
If the condition of the site deteriorates as a result of overgrazing, Idaho fescue decreases while bluebunch wheatgrass and yarrow increase. Idaho fescue decreases while bluebunch wheatgrass and yarrow increase. Idaho fescue is the preferred species during early summer use. With further deterioration, bluebunch wheatgrass decreases and soft chess rapidly invades. Under deteriorated conditions soft chess, Japanese brome, rattail fescue and other annuals and unpalatable forbs dominate. Medusahead may invade. Excessive erosion in the bare interspaces markedly reduces the potential of the site and contributes to downstream sedimentation.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Reference

Community 1.1
Histroric Climax Plant Community

The potential native plant community is dominated by Idaho fescue. Bluebunch wheatgrass, Sandberg's bluegrass, yarrow, milkvetch and a variety of other forbs are prominant in the stand. The vegetative composition of the community is approximately 90 percent grasses and 10 percent forbs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	525	683	841
Forb	40	77	114
Tree	7	10	13
Total	**572**	**770**	**968**

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 Dominant**			504–773	
	Idaho fescue	FEID	*Festuca idahoensis*	370–504	–
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	135–269	–
4	**Perrenial Shalow-rooted Sub-dominant**			7–34	
	Sandberg bluegrass	POSE	*Poa secunda*	7–34	–
5	**PPGG**			13–34	
	onespike danthonia	DAUN	*Danthonia unispicata*	4–11	–
	squirreltail	ELEL5	*Elymus elymoides*	4–11	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	4–11	–
Forb					
7	**Perennial All Dominant**			27–67	
	common yarrow	ACMI2	*Achillea millefolium*	13–34	–
	milkvetch	ASTRA	*Astragalus*	13–34	–
8	**Perennial All Sub-dominant**			7–20	
	agoseris	AGOSE	*Agoseris*	7–20	–
9	**PPFF**			7–27	
	brodiaea	BRODI	*Brodiaea*	1–4	–
	hawksbeard	CREPI	*Crepis*	1–4	–
	fleabane	ERIGE2	*Erigeron*	1–4	–
	buckwheat	ERIOG	*Eriogonum*	1–4	–
	desertparsley	LOMAT	*Lomatium*	1–4	–
	lupine	LUPIN	*Lupinus*	1–4	–
Tree					
16	**Perennial Evergreen Dominant**			7–13	
	western juniper	JUOC	*Juniperus occidentalis*	7–13	–

Animal community

Livestock Grazing:
This site is suuited to use by cattle and sheep in the summer and fall. Limitations are high

clay content, Shallow depth and coarse fragments. As the site is usually interspersed with very shallow sites, the limitations of these shallower sites needs to be considered. Care should be taken to avoid trampling damage and soil compaction when soils are wet.
Wildlife:
This site is important as a late fall, winter and spring grazing site for deer and elk.
Wildlife Associated With The Potential Climax Community:
Rodents, Songbirds, Red-tailed hawk, Coyote, Mule deer, and Rocky Mountian elk.

Hydrological functions

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

Recreational uses

On the northern edge of the Blue Mountains this site occurs on ridgetops as one of the last extensive grassland sites before the forest. It provides a pleasing visual diversity near the forests.

Other information

This site has a low potential for range seeding because of coarse fragments.

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

Contact for lead author	Oregon NRCS State Rangeland Management Specialist
Date	07/30/2012
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

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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, slight wind erosion hazard

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7. **Amount of litter movement (describe size and distance expected to travel):** Fine - 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 resistant to erosion; aggregate stability = 3-5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Shallow, well drained with areas of rock outcrop and with a very stony or very cobbly silty clay loam surface; moderate OM (1-3%)

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 gentle slopes (0-12%) 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: Idaho fescue > Bluebunch wheatgrass > forbs > other grasses > 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):** Favorble: 900, Normal: 500, Unfavorable: 300 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 forb species will increase with deterioration of plant community. Annual bromes, annual fescues, and medusahead invade sites that have lost deep rooted perennial grass functional groups. Excessive erosion may occur, deteriorating site potential.

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