USDA Natural Resources Conservation Service

Ecological site R009XY015OR
Clayey 14-17 PZ

Last updated: 5/05/2025
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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"+ PZ
R009XY031OR	**Shallow South 14+ PZ** Shallow South 14"+ PZ

Similar sites

R009XY010OR	**Loamy 14-17 PZ** Loamy 14-17" PZ (medium textured soil, higher production)
R009XY020OR	**Shallow Clayey 14-17 PZ** Shallow Clayey 14-17" PZ (shallower soil, lower production)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs near forestland on terraces and tablelands and mountain plateaus. It is typically on the northern edge of the Blue Mountains as one of the last extensive grassland sites before the forest. Slopes may range from 0 to 20% but are usually 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	0–20%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 14 to17 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 durring the summer. The soil temperature regime is mesic approaching frigid with a mean anual air temperature of 47 degrees F. Temperature extremes ranges from 110 to -40 dgress F. The frost free period ranges from 80 to 120 days. The optimum period for plant growth is from 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 moderately deep over basalt bedrock or duripan with areas of rock outcrop. The soils are moderately well drained to well drained. Typically the surfacer layer is a silty clay loam to silt loam and may contain greater than 35 % coarse fragments of cobble or stone size. The subsoil dominantly clay but ranges to clay loam. Depth to bedrock or an indurated pan is usually less than 30 inches. Permeabilty ranges from slow to very slow. The available water holding capcity (AWC) is about 3 to7 inches for the profile. The potential for erosion is slight to moderate.

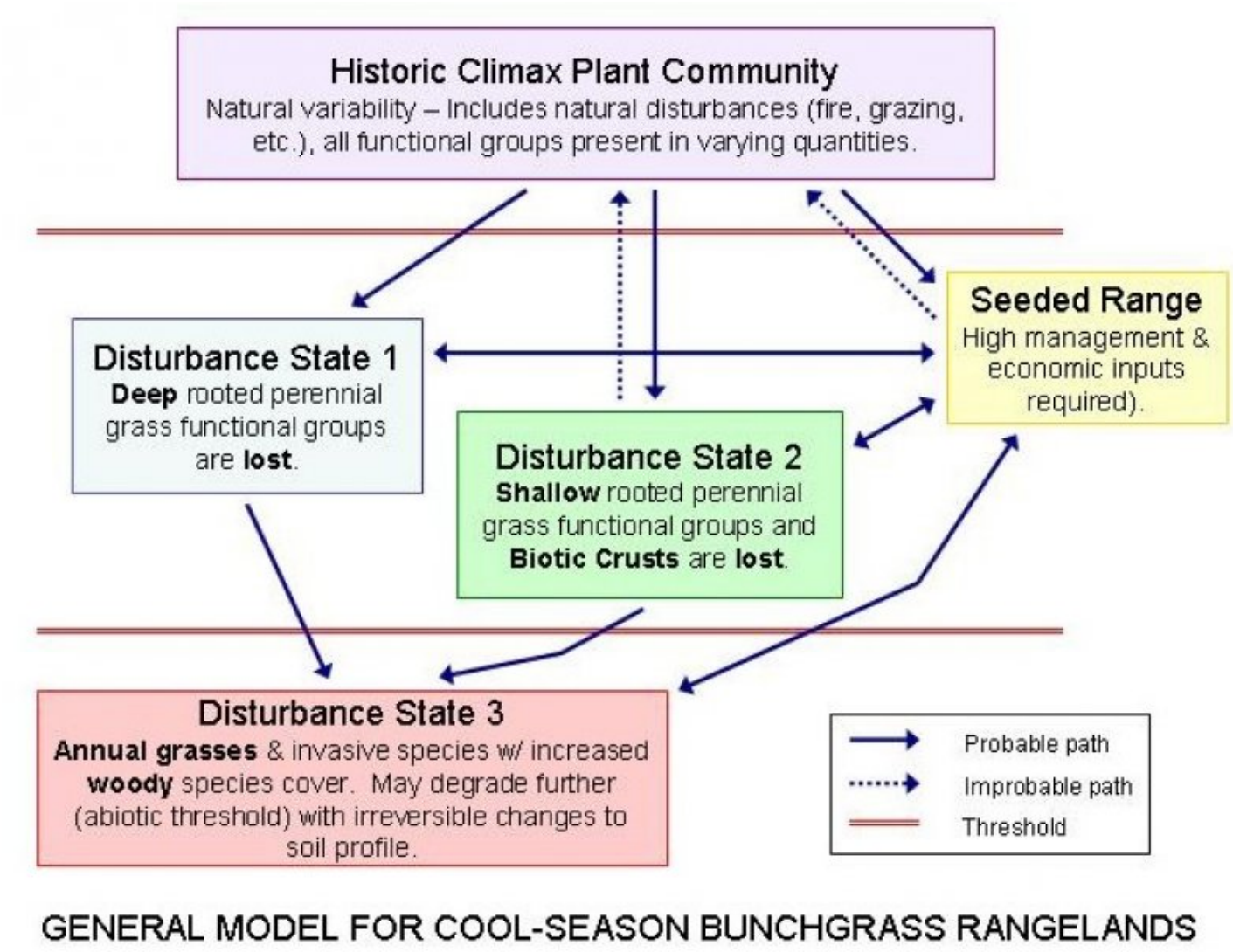
Table 4. Representative soil features

Surface texture	(1) Silty clay loam (2) Silt loam
Family particle size	(1) Clayey
Drainage class	Moderately well drained to well drained
Permeability class	Slow to very slow
Surface fragment cover <=3"	0–35%

Ecological dynamics

Range in Characteristics:
Variability in plant species proportions is dependent on aspect, soil depth, and coarse fragments, rather than on precipitation and elevation ranges that occur within the site. There tends to be a higher proportion of bluebunch wheatgrassand lower overall production on south and southwesterly slopes. conversely, Idaho fescue is in higher proportion with higher 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 is the preferred species during early summer use. With further deterioration, bluebunch wheatgrassdecreasesand soft chess rapidly invades. Under deteriorated conditions soft chess, Japanese brome, rattail fescue and other annual and unpalatble forbs dominante. Medusahead may invade. Excessive erosion in ther bare interspaces markedly reduces the site potential and contributes to downstream sedimentation.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Historical Climax Plant Community

Community 1.1
Historical Climax Plant Community

The potential native plant community is dominanted by Idaho fescue. Bluebunch wheatgrass, Sandberg bluegrass, yarrow, milkvetch and a variety of other forbs are prominent inthe 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	604	695	785
Forb	47	91	133
Tree	8	12	16
Total	**659**	**798**	**934**

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**			510–588	
	Idaho fescue	FEID	*Festuca idahoensis*	510–588	–
2	**Perennial Deep-rooted Subdominant**			78–157	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	78–157	–
5	**PPGG**			16–39	
	onespike danthonia	DAUN	*Danthonia unispicata*	4–10	–
	squirreltail	ELEL5	*Elymus elymoides*	4–10	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	4–10	–
	Sandberg bluegrass	POSE	*Poa secunda*	4–10	–
Forb					
7	**Perennial All Domnant**			16–39	
	common yarrow	ACMI2	*Achillea millefolium*	16–39	–
	milkvetch	ASTRA	*Astragalus*	16–39	–
8	**Perennial All Sub-dominant**			8–24	
	agoseris	AGOSE	*Agoseris*	8–24	–
9	**PPFF**			8–31	
	brodiaea	BRODI	*Brodiaea*	1–6	–
	fleabane	ERIGE2	*Erigeron*	1–6	–
	buckwheat	ERIOG	*Eriogonum*	1–6	–
	desertparsley	LOMAT	*Lomatium*	1–6	–
	lupine	LUPIN	*Lupinus*	1–6	–

Animal community

Livestock Grazing:
This site is suited to use by cattle and sheep in summer and fall. Limitations are climate, high clay content, and when present, coarse fragments. As the site is usually interspersed with shallower sites needs to be consideredin the development of a grazing plan. Care should be taken to avoid trampling damage and soil compaction when soils are wet.
Native Wildlife Associated witht the Potetial Climax Community:
Rodents, songbirds, red-tailed hawk, coyote, mule deer, and rocky mountain elk.

Hydrological functions

The hydrologic cover condition is good at higher condidtion classes. The soils are dominantly in hydrologicgroup C but range to D.

Recreational uses

On the northen 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 medium to low potential for range seeding because it si often interspersed in a pattern with other sites that are shallow to very shallow.

Contributors

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Approval

Kirt Walstad, 5/05/2025

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, slight to moderate sheet & rill erosion hazard

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

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3. **Number and height of erosional pedestals or terracettes:** None to some (<1.0")

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-15%

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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):** 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):** Moderately deep (with areas of rock outcrop), moderately well drained to well drained with silty clay loam to silt loam surfaces with up to 35% cobbles or stones; moderate OM (2-3%)

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (60-70%) and gentle slopes (0-12% may be up to 20%) moderately limits 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: Idaho fescue > Bluebunch wheatgrass > other perennial grasses = dominant forbs > other forbs > Western Juniper

    Sub-dominant:

    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: 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: 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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