USDA Natural Resources Conservation Service

Ecological site R009XY016OR
Clayey 17-22 PZ

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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.

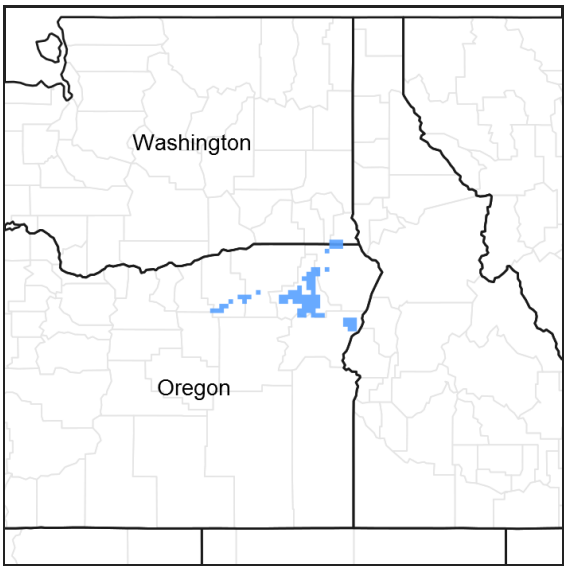


Figure 1. Mapped extent

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

R009XY013OR	**Loamy 17-22 PZ** Loamy 17-22" PZ (medium textured soil, higher production)
R009XY021OR	**Shallow Clayey 17-22 PZ** Shallow Clayey 17-22" PZ (shallower soil, lower production)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs within forestland on tablelands and mountain plateaus. It is typically within the northern portion of the Blue Mountains. Slopes may range from 0 to 20% but are generally from 0 to 12%. Elevation varies from 3000 to 4000 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan
Elevation	914–1,219 m
Slope	0–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 17 to 22 inches, most of which occurs in the form of snow during the months of November through March followed by ample early summmer rain fall. Localized convectional storms occasionally occur during the summer. The soil temperature regime is mesic approaching fridgid with a mean annual air temperature of 47 degrees F. Temperature extremes range from 110 to -40 degrees F. The frost-free period ranges from 80 to 110 days. The optimum period for plant growth is from mid-April to early July.

Table 3. Representative climatic features

Frost-free period (average)	110 days
Freeze-free period (average)	0 days
Precipitation total (average)	559 mm

Influencing water features

Soil features

The soils of this site are moderately deep to deep over basalt bedrock or duripan. The soils are moderately well to well drained with areas of rock outcrop. Typically the surface layer is silty clay loam or silt loam and may contian greater than 35% coarse fragments of cobble and stone size. The subsoil is dominanatly clay but ranges to clay loam and silty clay loam. A very gravely or cobbly subsoil occurs in some soils. Depth to bedrock or an indurated pan is usually less than 30 inches. Permeabilty ranges from slow to very slow. The available water holding capacity (AWC)is about 4 to 9 inches for the profile. The poptential for erosion is slight to moderate.

Table 4. Representative soil features

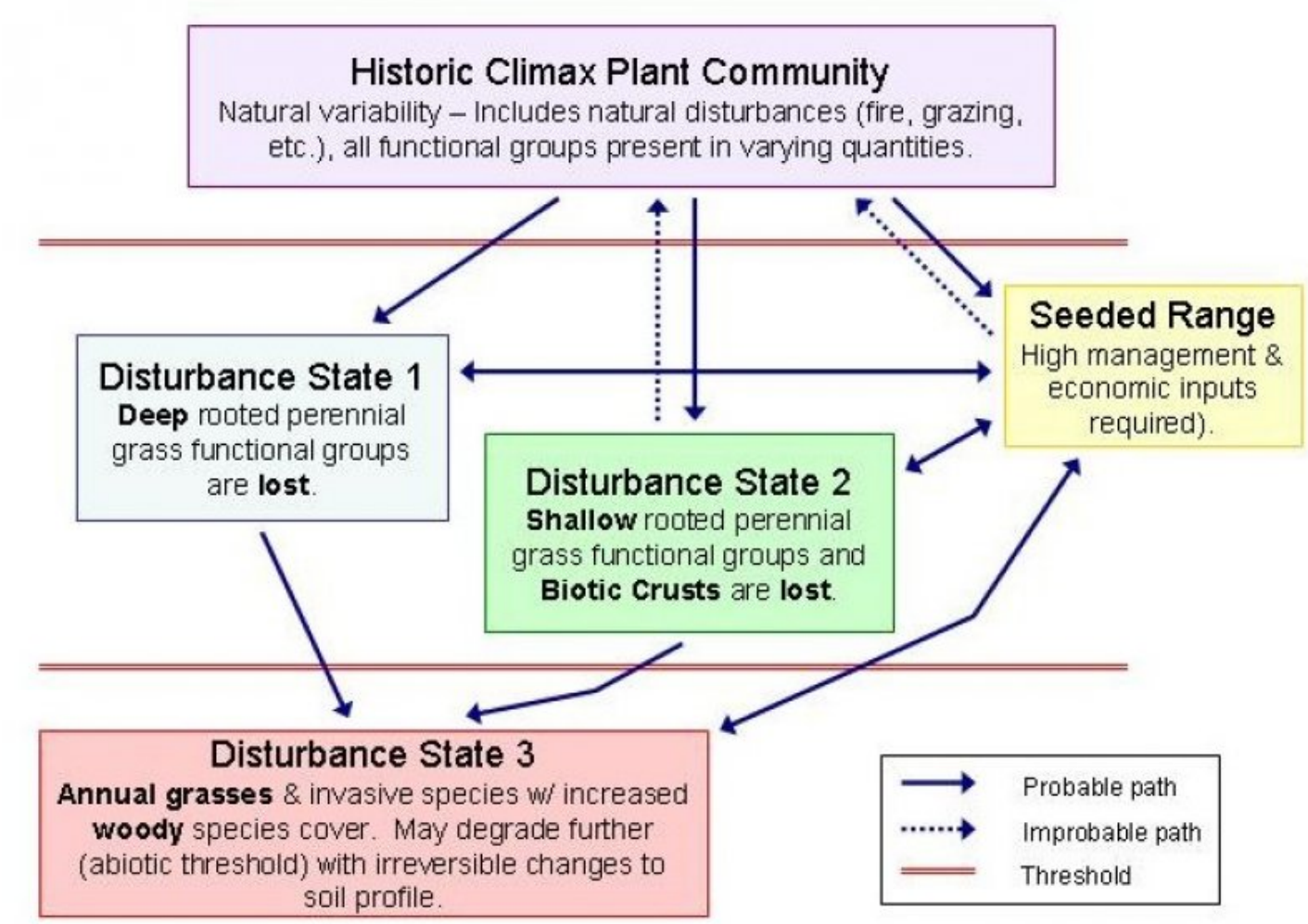
Surface texture	(1) Silty clay loam (2) Silt loam
Family particle size	(1) Clayey
Drainage class	Moderately well drained to well drained
Permeability class	Slow to very slow
Surface fragment cover <=3"	0–35%

Ecological dynamics

Range in Characteristics:
Variability in 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 wheatgrass and 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 and bluebunch wheatgrass increases. Idaho fescue is the prefered species during early summer use. With further deterioration, bluebunch wheatgrass decreases, Sandberg's bluegrass increases, Canada and other bluegrasses invade along with soft chess and other annuals. Unpalatable forbs such as yarrow and mulesear wyethia increase and medusahead may invade. Under deteriorated conditions, annuals and invading blue grasses dominante the site. Excessive erosion in the bare interspaces markedly reduces site potential and contributes to downstream 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 dominanted by Idaho fescue. Bluebunch wheat grass, sandberg bluegrass, and a variety of forbs are prominent 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	1195	1378	1559
Forb	73	139	204
Shrub/Vine	29	44	58
Total	**1297**	**1561**	**1821**

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**			1020–1166	
	Idaho fescue	FEID	*Festuca idahoensis*	1020–1166	–
2	**Perrenial Deep-rooted Sub-dominant**			146–291	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	146–291	–
4	**Perennial Shallow-rooted Sub-dominant**			29–102	
	prairie Junegrass	KOMA	*Koeleria macrantha*	15–58	–
	Sandberg bluegrass	POSE	*Poa secunda*	15–44	–
Forb					
7	**Perennial All Sub-dominant**			58–117	
	common yarrow	ACMI2	*Achillea millefolium*	15–29	–
	buckwheat	ERIOG	*Eriogonum*	15–29	–
	desertparsley	LOMAT	*Lomatium*	15–29	–
	lupine	LUPIN	*Lupinus*	15–29	–
9	**PPFF**			15–87	
	agoseris	AGOSE	*Agoseris*	1–7	–
	milkvetch	ASTRA	*Astragalus*	1–7	–
	brodiaea	BRODI	*Brodiaea*	1–7	–
	Indian paintbrush	CASTI2	*Castilleja*	1–7	–
	hawksbeard	CREPI	*Crepis*	1–7	–
	arrowleaf buckwheat	ERCO12	*Eriogonum compositum*	1–7	–
	fleabane	ERIGE2	*Erigeron*	1–7	–
	Scouler's woollyweed	HISC2	*Hieracium scouleri*	1–7	–
	western stoneseed	LIRU4	*Lithospermum ruderale*	1–7	–
	beardtongue	PENST	*Penstemon*	1–7	–
	phlox	PHLOX	*Phlox*	1–7	–
	cinquefoil	POTEN	*Potentilla*	1–7	–
	plumed clover	TRPL2	*Trifolium plumosum*	1–7	–
	mule-ears	WYAM	*Wyethia amplexicaulis*	1–7	–
Shrub/Vine					
13	**Perennial Deciduous Dominant**			29–58	
	rose	ROSA5	*Rosa*	15–29	–
	common snowberry	SYAL	*Symphoricarpos albus*	15–29	–

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 usually interspersed with shallower sites, the limitations of these shallower sites need to be considered in developing a grazing plan. Care should be taken to avoid trampling damage and soil compaction when soils are wet.
Wildlife:
This site is important as a spring, summer and fall feeding site for deer and elk. The sites are usually adjacent to forested areas which provide hiding and thermal cover.
Native Wildlife Associated With the Potential Climax Community:
Rodents, Songbirds, Red-tailed hawk, Coyote, Rocky Mountain elk, and Mule deer.

Hydrological functions

The hydrologic cover condition is good at higher condition classes. The soils are in hydrologic groups C and D.

Recreational uses

In the Blue Mountians this site occurs on ridgetops interfingering with the forest. It provides a pleasing visual diversity with the forests.

Wood products

Few scattered ponderosa pine may occur on inclusions of deeper soil. These provide little economic benefits in terms of wood products, but are of some value for shade and diversity.

Other information

This site has a medium to low potential for range seeding because it is often stony or associated with sites that are stony or shallow.

Contributors

A. Bahn, J. Anderson
Justin Gredvig

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, Bruce Frannsen
Contact for lead author	
Date	07/10/2007
Approved by	Bob Gillaspy
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

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-10%

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, slight 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 = 3-6

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Fine granular structure; Dry color value = 4; 3-6" thickness; 2-4% OM

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (70-80%) and gentle slopes (0-12%) moderately limits 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

    Sub-dominant: other perennial grasses = dominant forbs

    Other: other forbs > shrubs

    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)

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:** Bluegrasses, annual bromes, 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