USDA Natural Resources
Conservation Service

Ecological site R009XY022OR
Cold Shallow 13+ 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

R009XY027OR	**Cold Very Shallow 13+ PZ** Mountain Very Shallow 13"+ PZ
R009XY034OR	**Cold South 13-17 PZ** Mountain South 13-17" PZ
R009XY035OR	**Cold South 17-24 PZ** Mountain South 17-24" PZ

Similar sites

R009XY017OR	**Cold Loamy 13-17 PZ** Mountain Loamy 13-17" PZ (deeper soil, higher production)
R009XY018OR	**Cold Loamy 17-24 PZ** Mountain Loamy 17-24" PZ (deeper soil, higher production)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	Not specified

Physiographic features

This site occurs as open grasslands near and within forestland on table lands and mountain plateaus north of the Wallowa Mountains. Slopes range from 2 to 15%. Elevation varies from 3400 to 5000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain
Elevation	1,036–1,524 m
Slope	2–15%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 13 to 24 inches, most of which occurs in the form of snow during the months of November through March followed by ample early summer rainfall. Localized convectional storms occasionally occur during the summer. The soil temperature regime is frigid with a mean annual air temperature of 43 degrees F. The frost-free period ranges from 60 to 100 days. The optimum period for plant growth is from late April to early July.

Table 3. Representative climatic features

Frost-free period (average)	100 days
Freeze-free period (average)	0 days
Precipitation total (average)	0 mm

Influencing water features

Soil features

The soils of this site are shallow over basalt bedrock and are well drained. Areas of rock outcrop may occur. Typically the surface layer is a very stony or cobbly clay loam, loam, or silt loam ranging to an extremely stony loam, silt loam, or clay loam. The subsoil varies from a very gravelly silt loam to an extremely cobbly clay. Depth to bedrock averages about 15 inches. Permeability is moderate to low and the available water holding capacity (AWC) is about 1 to 3 inches for the profile. The potential for erosion is moderate.

Table 4. Representative soil features

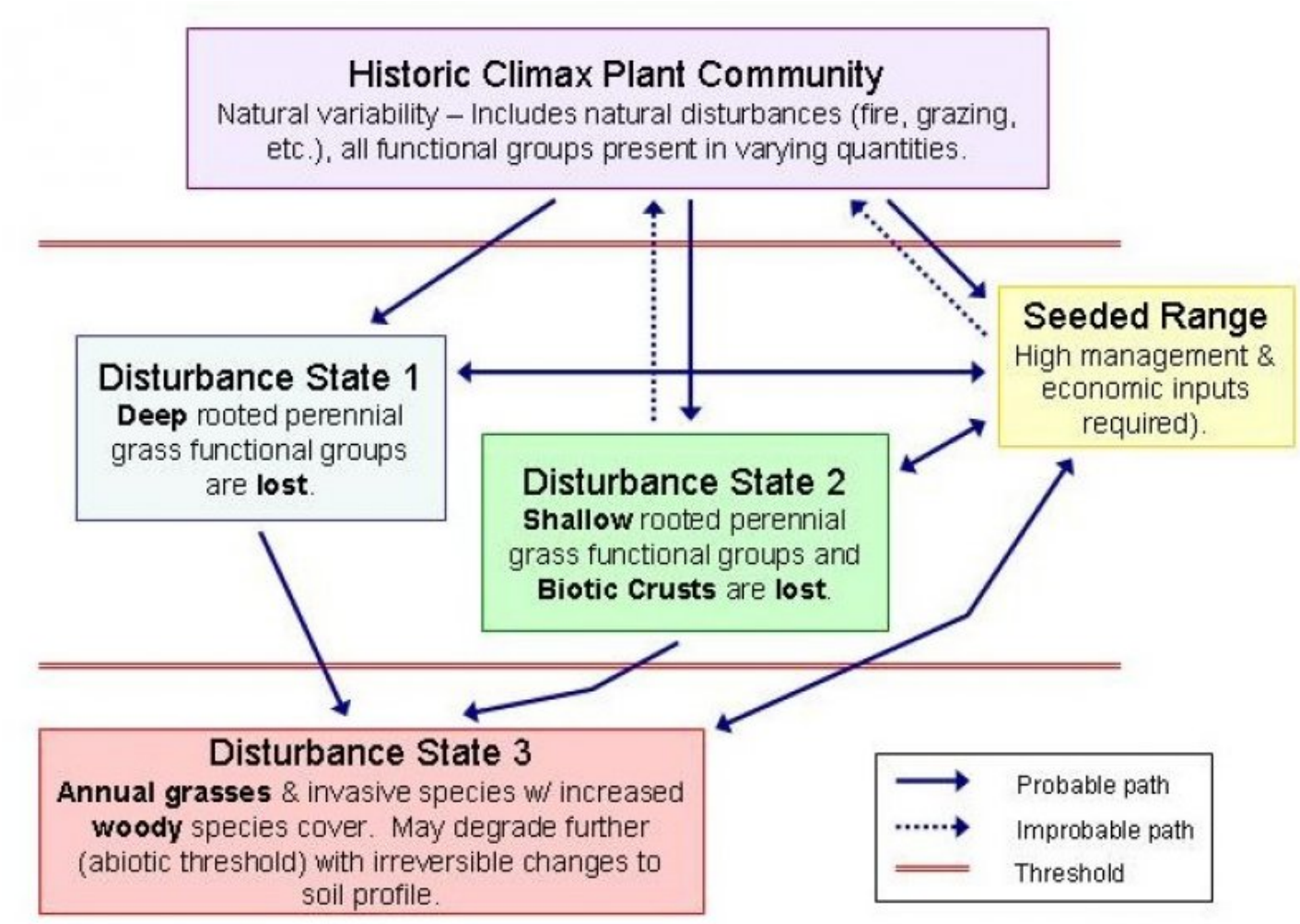
Surface texture	(1) Very cobbly clay loam (2) Very stony loam (3) Very stony silt loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderate to slow

Ecological dynamics

Range in characteristics:
Variabilty in plant composition and yeild 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 total production on south and southwesterly slopes with shallower soils and coarse fragments. Conversely, soils with close to 20 inches of depth and on northerly aspects will have the highest

production and most Idaho fescue.
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 preferred species during early summer use. With further deterioration, bluebunch wheatgrass decreases, Sandberg bluegrass increases and soft chess, bulbous and other bluegrasses invade. Unpalatable forbs such as yarrow, gumweed and lupine increase. Under deteriorated conditions, invading bluegrasses and annuals dominate the site. 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
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The potential native plant community is dominated by Idaho fescue. Bluebunch wheatgrass, is prominent in the stand. Prairie junegrass, sandberg bluegrass, lupine, yarrow and a variety of forbs are present. The vegetative compostion 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	787	989	1190
Forb	40	96	151
Total	**827**	**1085**	**1341**

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**			605–807	
	Idaho fescue	FEID	*Festuca idahoensis*	605–807	–
2	**Perennial Deep-rooted Sub-dominant**			151–303	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	151–303	–
4	**Perennial Shallow-rooted Sub-dominant**			30–81	
	prairie Junegrass	KOMA	*Koeleria macrantha*	10–30	–
	Sandberg bluegrass	POSE	*Poa secunda*	10–30	–
	onespike danthonia	DAUN	*Danthonia unispicata*	10–20	–
9	**PPFF**			10–81	
	agoseris	AGOSE	*Agoseris*	1–8	–
	milkvetch	ASTRA	*Astragalus*	1–8	–
	brodiaea	BRODI	*Brodiaea*	1–8	–
	fleabane	ERIGE2	*Erigeron*	1–8	–
	old man's whiskers	GETR	*Geum triflorum*	1–8	–
	gumweed	GRIND	*Grindelia*	1–8	–
	Scouler's woollyweed	HISC2	*Hieracium scouleri*	1–8	–
	owl's-clover	ORTHO	*Orthocarpus*	1–8	–
	phlox	PHLOX	*Phlox*	1–8	–
	cinquefoil	POTEN	*Potentilla*	1–8	–
	mule-ears	WYAM	*Wyethia amplexicaulis*	1–8	–
Forb					
7	**Perennial All Dominant**			10–30	
	lupine	LUPIN	*Lupinus*	10–30	–
8	**Perennial All Sub-dominant**			20–40	
	common yarrow	ACMI2	*Achillea millefolium*	10–20	–
	buckwheat	ERIOG	*Eriogonum*	10–20	–

Animal community

Livestock Grazing:
This site is suited to use by cattle and sheep in summer and fall. Limitations are shallow depths, and whn present, coarse fragments. As the site is ussually interspersed with a moderately deep and/or a shallow site, the limitations of these other 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 and fall grazing site for deer and elk. In higher precipitation zones the site is

ususally 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, Mule deer, and White-tailed deer.

Hydrological functions

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

Recreational uses

North of the Wallowa Mountains this site occurs on ridgetops in complex with other sites as extensive rolling grasslands. It provides a pleasing visual diversity with teh distant canyons and mountains.

Other information

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

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, Bruce Frannsen
Contact for lead author	
Date	07/11/2007
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to some, 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):** 10-15%

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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):** Moderately resistant to erosion: aggregate stability = 3-5

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Granular to sub-angular blocky structure; Dry color value 4-5; 3-8" thickness; moderate OM (2-5%)

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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 gentle slopes (0-15%) 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: Idaho fescue > bluebunch wheatgrass

    Sub-dominant: forbs > other grasses

    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: 1300, Normal: 900, Unfavorable: 500 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:** Perennial forb species and sandberg bluegrass will increase 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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