USDA Natural Resources
Conservation Service

Ecological site R010XY002OR
Cold Meadow

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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.

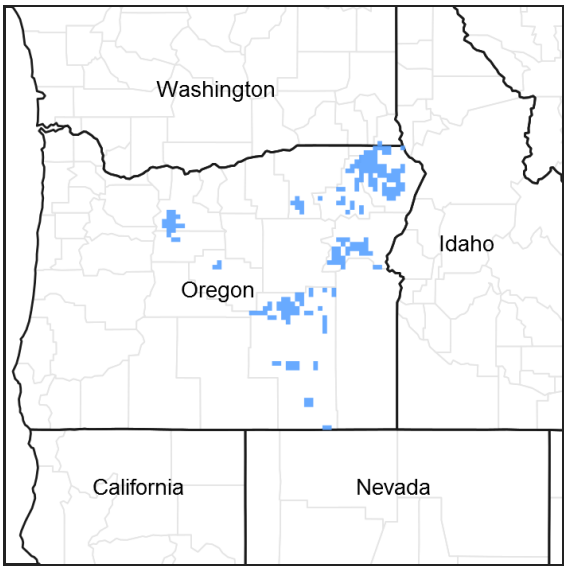


Figure 1. Mapped extent

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

R010XY001OR	**Cold Wet Meadow** Wetter site (shallower depth to seasonal water table).
R010XY006OR	**Mountain Loamy Bottom** Drier site with shrubs.

Similar sites

R010XY001OR	**Cold Wet Meadow** Wetter site (shallower depth to seasonal water table).

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Deschampsia caespitosa* (2) *Carex*

Physiographic features

This site occurs on the floodplains of perennial streams and rivers. It is near chanels occupying primary terraces. Slopes range from 0 to 3 %. Elevations range from 3500 to 5500 feet.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Terrace (3) Channel
Flooding duration	Brief (2 to 7 days)
Flooding frequency	None to occasional
Ponding frequency	None
Elevation	3,500–5,500 ft
Slope	0–3%
Water table depth	12–24 in
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 12 to 25 inches, most of which occurs in the form of snow during the months of November through March. A perennial supply of subsurface moisture augments the precipitation. Localized convection storms occasionally occur during the summer. The soil temperature regime is typically frigid and may extend into cryic with a mean annual air temperature of 43 degrees F. Temperture extremes range from 90 to -30 degrees F. The frost-free period ranges from 30 to 90 days. The optimum growth period for native plants if from May through August.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	0 days
Precipitation total (average)	25 in

Influencing water features

Soil features

The soils of this site are recent, very deep and somewhat poorly drained. Typically the surface layer is a silt loam about 12 inches thick. The subsoil is a loam over 24 inches. Alluvium generally occurs at depths greater than 36 inches. Permeability is moderate. The available water holding capacity is about 5 to 8 inches for the profile. Perennial to near perennial subsurface flows aument the available water. The high wter table fluctuates between 12 and 24 inches from march through June with occasional flooding. The potential for erosion is moderate. See appendix II for soils on which this site occurs.

Table 4. Representative soil features

Parent material	(1) Alluvium–volcanic breccia
Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained to moderately well drained
Permeability class	Slow to moderate
Soil depth	15–60 in
Surface fragment cover <=3"	0%

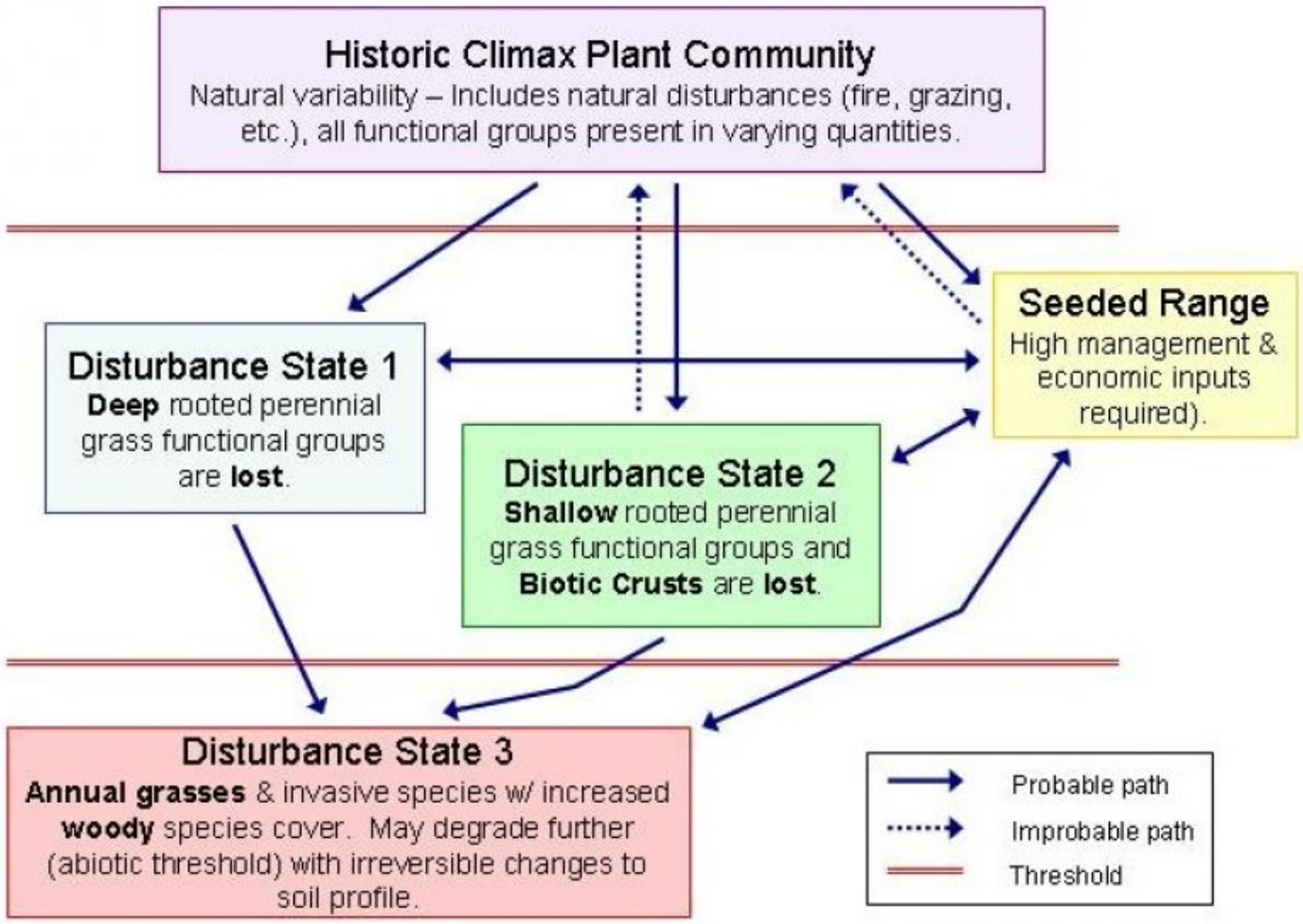
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–8 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	5.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–30%
Subsurface fragment volume >3" (Depth not specified)	0–25%

Ecological dynamics

Range in Characteristics -
Tufted hairgrass is dominant with production dependent on the extent and duration of subsurface water flows. Tufted hairgrass increases where subsurface water flows are shorter durations. Sedges increase with higher water tables and longer duration subsurface flows. Production decreases on the upper end of watersheds where perennial streams change to ephemeral, and in bottomland areas receiving limited subsurface flows.

Response to Disturbance -
If the condition of the site deteriorates as a result of overgrazing, tufted hairgrass decreases while sedges, rushes, and cinquefoil increases. Rhizomatous bluegrasses invade along with redtop and quackgrass. With further deterioration, forbs such as Canadian thistle and annuals invade. Streambanks become unstable from loss of vegetation and channels degrade, becoming deeper and wider in the process. Subsurface flows are affected. The water table drops and storage of water for late season flows is reduced. Plants well adapted to a drier climatic regime continue to invade and production drops.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Reference State

Community 1.1
Reference Plant Community

The potential native plant communiy is dominated by tufted hairgrass. Sedges and rushes are common, vegetative compositionof the community is approximately 98 percent grasses and grasslike plants and 2 percent forbs. The approximate ground cover is 90-100% (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1960	2940	3920
Forb	40	60	80
Total	**2000**	**3000**	**4000**

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**			1800–2250	
2	**Perennial, Deep-rooted, Sub-Dominant**			600–1050	
	sedge	CAREX	*Carex*	450–750	–
	rush	JUNCU	*Juncus*	150–300	–
4	**Perennial, Other (PPGG), All**			90–240	
	bluegrass	POA	*Poa*	90–240	–
Forb					
7	**Perennial, All, Dominant**			30–90	
	camas	CAMAS	*Camassia*	30–90	–
8	**Perennial, All, Sub-dominant**			30–60	
	cinquefoil	POTEN	*Potentilla*	30–60	–
9	**Perennial, All, Others (PPFF)**			30–90	
	common yarrow	ACMI2	*Achillea millefolium*	0–30	–
	aster	EUCEP2	*Eucephalus*	0–30	–
	lupine	LUPIN	*Lupinus*	0–30	–
	buttercup	RANUN	*Ranunculus*	0–30	–
	ragwort	SENEC	*Senecio*	0–30	–

Animal community

Wildlife-
Elk, deer, hawks, songbirds, and rodents occupy this site. It is important fall use area for mule deer and elk.

Livestock grazing-
this site is suited to use by cattle, sheep and horses in the summer and fall. Limitations in the spring are saturated wet soils and unstable banks. Use should be postponed until the soils are firm enought to prevent trampling damage and soil compaction. Improvement and/or maintenance of herbaceous bank protection should be considered during all seasons, particularily in the fall and winter for spring high flow periods.

Hydrological functions

The soils are in hydrologic group D. The soils of this site have high runoff potential.

Other information

The soils on this site hve excelllent water holding capacities providing late season water for plant growth and slow water release to streams. When incised channels are present, rehabilitation will markedly improve production and restore good hydrologic characteristics. On altered sites the reintroduction of desirable plants may be needed to full restore the site potential.

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 - Oregon.
Date	08/07/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

2. **Presence of water flow patterns:** Frequent flooding with seasonal high water table

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0-5%

5. **Number of gullies and erosion associated with gullies:** Very poor resistance to erosion when cover is lacking. Subject to incision and downcutting.

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 to moderately coarse - limited movement

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 with adequate cover: aggregate stability = 3-5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Deep, very deep, somewhat poorly drained with a silt loam surface about 12" thick: Moderate to high OM (2-10%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Significant ground cover (90-100%) and very gentle slopes (0-3%) effectively 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: Tufted hairgrass > sedges > rush > forbs > other grasses > shrubs

    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: 4000, Normal: 3000, Unfavorable: 2000 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 and brush species will increase with deterioration of plant community. Reed canarygrass and meadow foxtail invade sites that have lost deep rooted native perennial grass functional groups.

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

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