

Ecological site R010XY116OR Swale 12-16 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.

Associated sites

R010XY005OR	Loamy Bottom Loamy Bottom, mesic, 5000#/acre normal
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Similar sites

R010XY005OR	Loamy Bottom Loamy Bottom, mesic, 5000#/acre normal
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata ssp. tridentata</i>
Herbaceous	(1) <i>Leymus cinereus</i> (2) <i>Pseudoroegneria spicata ssp. spicata</i>

Physiographic features

This site occurs adjacent to and on the floodplains of ephemeral streams. It is at the upper end of drainages occupying broad to narrow swale areas. Slopes range from 2 to 12%. Elevations range from 2,100 to 4,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Swale
Flooding frequency	None
Ponding frequency	None
Elevation	2,100–4,000 ft
Slope	2–12%
Water table depth	60 in
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 12 to 16 inches, most of which occurs in the form of snow during the months of November through March. Ephemeral subsurface moisture augments the precipitation. Localized convection storms occasionally occur during the summer. The soil temperature regime is mesic to frigid near mesic with a mean annual air temperature of 50 degrees F. Temperature extremes range from 100 to -10 degrees F. The frost-free period ranges from 60 to 130 days. The optimum growth period for native plants is from April through June.

Table 3. Representative climatic features

Frost-free period (average)	130 days
Freeze-free period (average)	0 days
Precipitation total (average)	16 in

Influencing water features

Soil features

The soils of this site are recent, deep to very deep and well drained. Typically the surface layer is a silt loam about 10 inches thick. The subsoil is a silty clay loam over 40 inches thick. The substratum varies from alluvium to bedrock. Gravel content in the profile ranges from 0 to 30 percent. Permeability is moderate. The available water holding capacity (AWC) is about 8 to 10 inches for the profile. Seasonal subsurface flows from adjacent slopes augment the available water. The potential for erosion is moderate.

Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderate
Soil depth	50 in
Surface fragment cover <=3"	0–30%
Available water capacity (0-40in)	8–10 in

Ecological dynamics

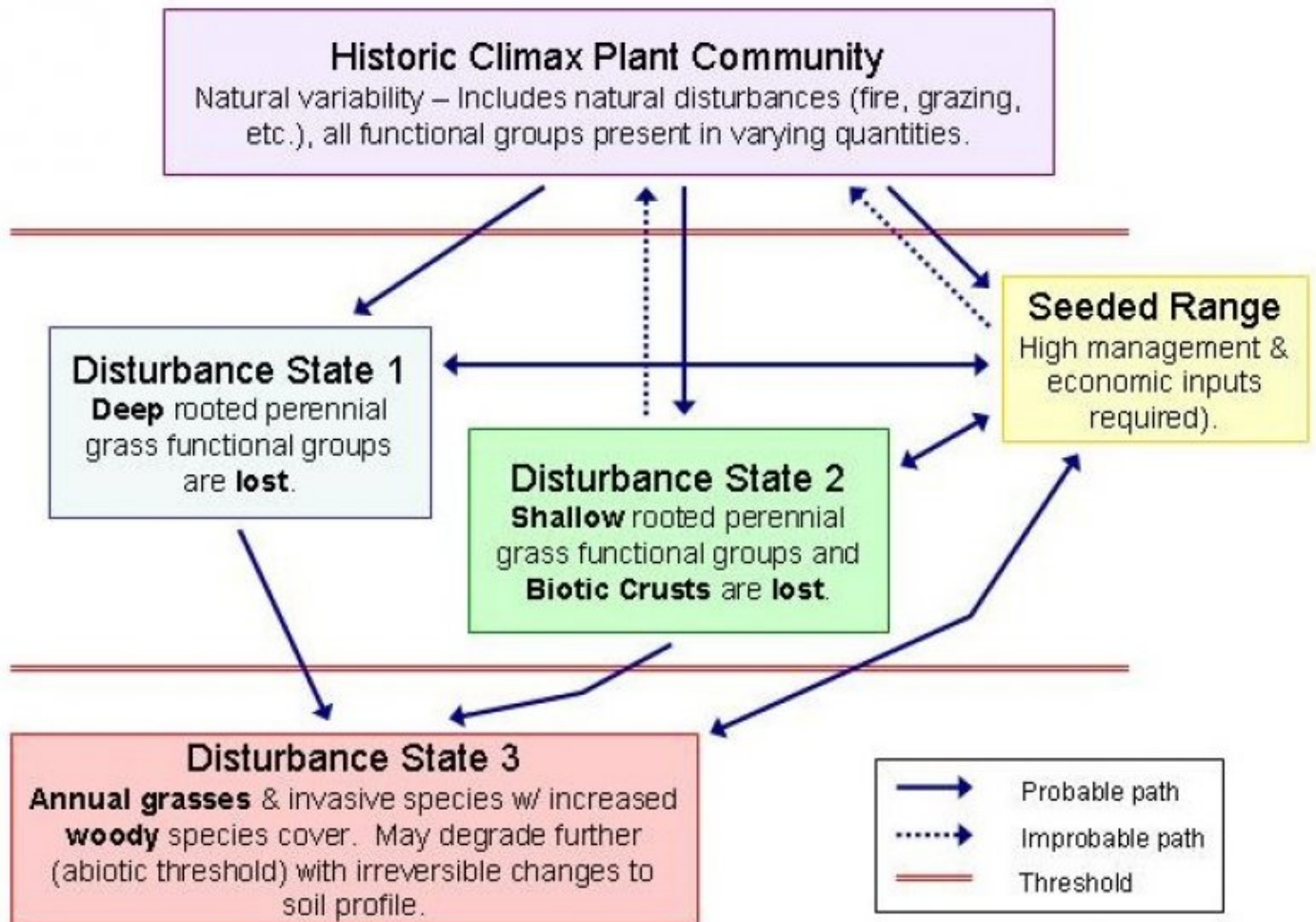
Range In Characteristics:

The amount of basin wildrye in relation to bluebunch wheatgrass is dependent on the extent and duration of lateral subsurface water flows. Basin wildrye increases and bluebunch wheatgrass decreases on swales receiving subsurface flows late into the growing season. This would be on swales with large drainage areas. Conversely, bluebunch wheatgrass would increase on swales with limited drainage areas. This would typically be at the upper ends of watersheds where drainage area is limited. Production follows a similar pattern increasing on swales with large drainage areas. As a fire susceptible site, the amount of basin big sagebrush is influenced by fire frequency.

Response To Disturbance:

If the condition of the site deteriorates as a result of overgrazing, basin wildrye, bluebunch wheatgrass, and Idaho fescue decrease. Bluegrasses invade and basin big sagebrush increases. With further deterioration, annuals invade and useable forage production decreases. Streambanks become unstable from loss of vegetation and channels degrade, becoming deeper and wider in the process. Subsurface flows are affected. Peak discharges increase, the water table drops and storage of water for late season use is reduced. Erosion from concentrated flows reduces the site potential and contributes to downstream sedimentation.

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 community is dominated by basin wildrye and bluebunch wheatgrass. Basin big sagebrush and Idaho fescue are common. Prairie junegrass, Thurber needlegrass, bluegrasses, and a variety of forbs are present. Vegetative composition is approximately 90 percent grasses, 2 percent forbs, and 8 percent shrubs. Approximate ground cover is 70-80 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1800	2250	2700
Shrub/Vine	160	200	240
Forb	40	50	60
Total	2000	2500	3000

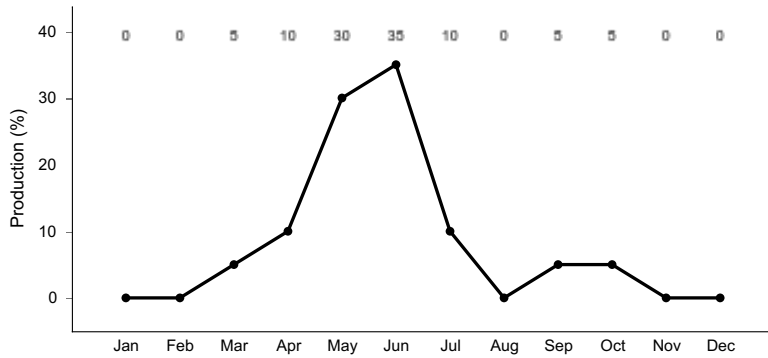


Figure 2. Plant community growth curve (percent production by month). OR4161, B10 JD FAN & SWALE 9-16. B10B FAN, SWALE, Gumbo, & JD Sandy Lm 9-16 RPC Growth Curve.

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			1625–2750	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	1000–1500	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	375–750	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	250–500	–
2	Perennial, deep rooted, sub-dominant			50–125	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	50–125	–
4	Perennial, shallow rooted, sub-dominant			75–200	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	50–125	–
	bluegrass	POA	<i>Poa</i>	25–75	–
5	Other perennial grasses			50–200	
	sedge	CAREX	<i>Carex</i>	0–50	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0–50	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–50	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–50	–
Forb					
7	Perennial, dominant			50–100	
	buckwheat	ERIOG	<i>Eriogonum</i>	25–50	–
	lupine	LUPIN	<i>Lupinus</i>	25–50	–
9	Other perennial forbs			25–100	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0–25	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–25	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–25	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0–25	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–25	–
	western stoneseed	LIRU4	<i>Lithospermum ruderale</i>	0–25	–
	desertparsley	LOMAT	<i>Lomatium</i>	0–25	–
	phlox	PHLOX	<i>Phlox</i>	0–25	–
	ragwort	SENEC	<i>Senecio</i>	0–25	–
	deathwax	ZICAD	<i>Zinnia</i>	0–25	–

	aeatncamas	ZIGAD	Zigaeerius	U-25	-
Shrub/Vine					
11	Perennial, Evergreen, Dominant			50-125	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	50-125	-
12	Perennial, Evergreen, Sub-dominant			25-50	
	green rabbitbrush	ERTE18	<i>Ericameria teretifolia</i>	25-50	-
14	Perennial, Deciduous, Sub-dominant			25-50	
	wax currant	RICE	<i>Ribes cereum</i>	25-50	-
15	Other shrubs			50-200	
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0-50	-
	horsebrush	TETRA3	<i>Tetradymia</i>	0-50	-
Tree					
16	Perennial, Evergreen, Dominant			0-50	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	0-50	-

Animal community

Livestock Grazing:

This site is suited to use by cattle, sheep, and horses in late spring, summer and fall under a planned grazing system. Limitations in the spring are saturated wet soils and unstable banks. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Improvement and/or maintenance of herbaceous bank protection should be considered during all seasons, particularly going into winter for spring runoff protection.

Native Wildlife Associated With The Potential Climax Community:

Deer
Antelope
Elk
Hawks
Songbirds
Rodents

This site will offer food and cover for mule deer, elk, antelope, rodents, and a variety of birds. It is an important wintering area for mule deer, antelope and elk.

Hydrological functions

The soils are in hydrologic group B. The soils of this site have moderately low runoff potential.

Wood products

This site is susceptible to an increase in western juniper. Where this has occurred, the site will yield fence posts, firewood, and specialty products.

Other information

The soils in this site have good water holding capacities providing late season water for plant growth and slow water releases to streams. Increase in western juniper and the subsequent competition for moisture will lead to a reduction of available forage. Overgrazing can easily reduce ground cover and accelerate soil loss. Improving infiltration and permeability, and reducing runoff should be the immediate goal of juniper control. When incised channels are present, rehabilitation will markedly improve production, reduce downstream sedimentation and restore good hydrologic characteristics. On altered site the reintroduction of deep rooted plants may be needed to

fully restore the site potential.

Contributors

Bob Gillaspy
Cici Brooks
J. Thompson, A. Bahn
M. Parks (OSU)

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)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

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

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of**

values):

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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:

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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):**

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:**

17. **Perennial plant reproductive capability:**
