USDA Natural Resources Conservation Service

Ecological site R010XY120OR
Loamy Fan 9-12 PZ

Accessed: 07/27/2024

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

R010XY005OR	**Loamy Bottom** Loamy bottom, mesic, 1500#/acre normal

Similar sites

R010XY005OR	**Loamy Bottom** Loamy bottom, mesic, 1500#/acre normal

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. tridentata*
Herbaceous	(1) *Pseudoroegneria spicata ssp. spicata* (2) *Achnatherum thurberianum*

Physiographic features

This site occurs on fans near and at the outlets of ephemeral streams. Braiding is common. It occurs along major rivers and streams as a series of coalescing fans. Slopes range from 2 to 15%. Elevations range from 1,300 to

3,600 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan
Elevation	1,300–3,600 ft
Slope	2–15%
Water table depth	60 in
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 9 to 12 inches, which occurs in the form of rain and snow during the months of November through March. A seasonal supply of deep subsurface moisture augments the precipitation. Localized convectional storms occasionally occur during the summer. The soil temperature regime is mesic with a mean annual air temperature of 52 degrees F. Temperature extremes range from 100 to -20 degrees F. The frost-free period ranges from 90 to 140 days. The optimum growth period for native plants is from April through July.

Table 3. Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	0 days
Precipitation total (average)	12 in

Influencing water features

Soil features

The soils of this site are recent, deep to very deep, skeletal and well drained. Typically, the surface layer is a gravelly loam about 30 inches thick. The subsoil is a gravelly loam over 20 inches thick. The substratum is alluvium. Permeability is moderate. The available water holding capacity (AWC) is about 6 to 8 inches for the profile. Deep seasonal subsurface flows augment the available water. The potential for erosion is moderate.

Table 4. Representative soil features

Surface texture	(1) Very gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	50 in
Available water capacity (0-40in)	6–8 in

Ecological dynamics

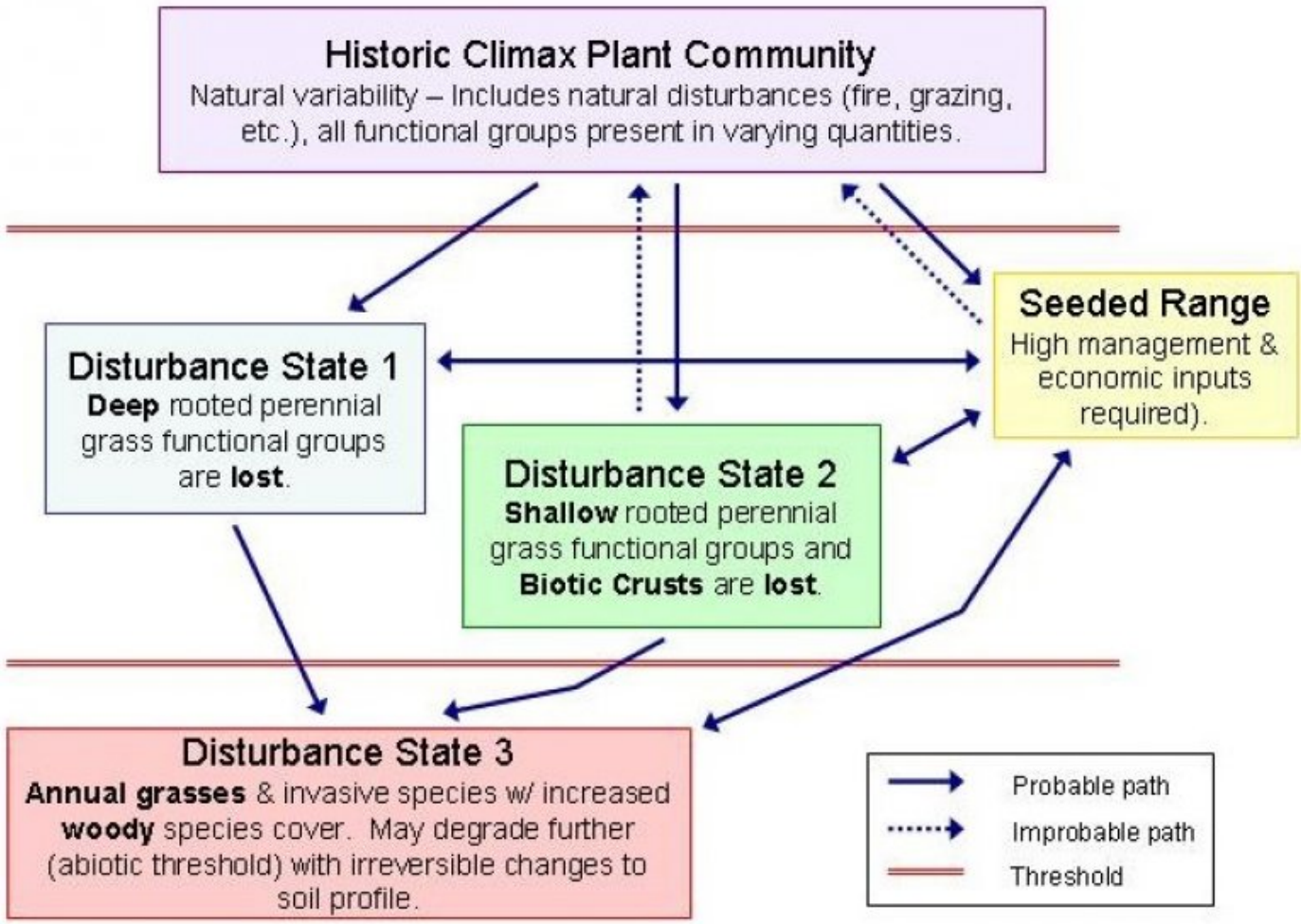
Range in Characteristics:

Basin wildrye depends on the extent and duration of lateral subsurface water flows. Bluebunch wheatgrass and needlegrasses increase on drier areas with limited subsurface flows. Production follows a similar pattern, increasing on fans that receive late subsurface flows from large drainage areas. As a site susceptible to fire, the amount of basin big sagebrush and juniper, when present, is influenced by fire frequency.

Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, basin wildrye decreases. Bluebunch wheatgrass and needle-and-thread increase. With further deterioration, basin big sagebrush, and Sandberg bluegrass increase. Basin big sagebrush effectively replaces basin wildrye in the use of deep moisture. Annuals and juniper, when present, invades and useable forage production decreases. Streambanks become unstable from loss of vegetation and channels degrade, becoming wider in the process. Bare ground increases, filtering capacity is lost and downstream sedimentation increases.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The potential native plant community is dominated by basin wildrye and bluebunch wheatgrass. Basin big sagebrush, antelope bitterbrush, and Thurber needlegrass are common in the stand. Needle-and-thread, big bluegrass, Sandberg bluegrass, and a variety of forbs are present. Vegetative composition of the community is approximately 80 percent grasses, 5 percent forbs, and 15 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	765	1220	1680
Shrub/Vine	60	140	225
Forb	60	105	150
Total	**885**	**1465**	**2055**

Figure 3. 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.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	30	35	10	0	5	5	0	0

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**			450–750	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	450–750	–
2	**Perennial, deep-rooted, sub-dominant**			300–900	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	150–450	–
	basin wildrye	LECI4	*Leymus cinereus*	150–450	–
5	**Other perennial grasses, all**			15–30	
	squirreltail	ELEL5	*Elymus elymoides*	0–10	–
	needle and thread	HECO26	*Hesperostipa comata*	0–10	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–10	–
Forb					
7	**Perennial, all, dominant**			45–90	
	milkvetch	ASTRA	*Astragalus*	15–30	–
	buckwheat	ERIOG	*Eriogonum*	15–30	–
	lupine	LUPIN	*Lupinus*	15–30	–
9	**Other perennial forbs, all**			15–60	
	common yarrow	ACMI2	*Achillea millefolium*	0–5	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–5	–
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	0–5	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	0–5	–
	fleabane	ERIGE2	*Erigeron*	0–5	–
	western stoneseed	LIRU4	*Lithospermum ruderale*	0–5	–
	desertparsley	LOMAT	*Lomatium*	0–5	–
	phacelia	PHACE	*Phacelia*	0–5	–
	phlox	PHLOX	*Phlox*	0–5	–
	gooseberryleaf globemallow	SPGR2	*Sphaeralcea grossulariifolia*	0–5	–
Shrub/Vine					
11	**Perennial, evergreen, dominant**			30–150	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	30–150	–
15	**Other perennial shrubs, all**			30–75	
	rabbitbrush	CHRYS9	*Chrysothamnus*	0–20	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–20	–
	antelope bitterbrush	PUTR2	*Purshia tridentata*	0–20	–
	greasewood	SAVE4	*Sarcobatus vermiculatus*	0–20	–

Animal community

Livestock Grazing:

This site is suited to use by cattle, sheep, and horses in spring, summer, and fall under a planned grazing system. Limitations in the spring are wet soils and unstable banks. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction, yet while soil moisture is adequate to allow the completion of the plant growth cycle. As a sediment deposition area, improvement and/or maintenance of herbeceous cover should

be considered during all seasons, particularly in the fall for winter and spring high flow periods.

Native Wildlife Associated With The Potential Climax Community:

Mule deer
Songbirds
Hawks
Rodents

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

Hydrological functions

The soils are in hydrologic group B. The soils of this site have moderately low runoff potential. This site is potentially subject to three high flow periods: low elevation snowmelt, high elevation snowmelt, and summer cloudburst flow.

Wood products

This site is susceptible to increase in western juniper. Where this has occured, 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 sites, the reintroduction of basin wildrye may be needed to fully 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)	
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:**