

Ecological site R011XY018OR Shallow Loam 8-11 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

R011XY012OR	Silty 8-11 PZ Silty 8-11 PZ
R011XY013OR	Clayey 8-11 PZ Clayey 8-11 PZ
R011XY020OR	South Slopes 8-11 PZ South Slopes 8-11 PZ
R011XY032OR	Silty North Slopes 8-11 PZ Silty North Slopes 8-11 PZ

Similar sites

R011XY012OR	Silty 8-11 PZ Silty 8-11 PZ (deeper soil, greater production)
R011XY013OR	Clayey 8-11 PZ Clayey 8-11 PZ (clayey surface, deeper soil, greater production)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata ssp. wyomingensis</i> (2) <i>Grayia spinosa</i>
Herbaceous	(1) <i>Achnatherum thurberianum</i> (2) <i>Pseudoroegneria spicata ssp. inermis</i>

Physiographic features

This site occurs on low elevation terraces in the Malheur, Owyhee and adjacent Snake River drainage. Slopes typically range from 0 to 12%. Elevations vary from 2,100 to 3,200 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace
Elevation	640–975 m
Slope	0–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 8 to 11 inches, most of which occurs in the form of rain during the months of December through April. The soil temperature regime is mesic with a mean air temperature of 53 degrees F. Temperature extremes range from 110 to -10 degrees F. The frost free period ranges from 150 to 190 days. The optimum growth period for plant growth is late March through June.

Table 3. Representative climatic features

Frost-free period (average)	190 days
Freeze-free period (average)	0 days
Precipitation total (average)	279 mm

Influencing water features

Soil features

The soils of this site are typically shallow and well drained. Typically the surface layer is a silt loam to a very fine sandy loam 4 to 8 inches thick. The subsoil is a silt loam to silty clay loam 8 to 12 inches thick. Depth to bedrock or compacted lacustrine and alluvial sediments ranges from 10 to 20 inches. An indurated pan may be present. Permeability is moderate. The available water holding capacity (AWC) is about 2 to 4 inches for the profile. The erosion potential is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderate to moderately slow
Soil depth	25–51 cm
Available water capacity (0-101.6cm)	5.08–10.16 cm

Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush, spiny hopsage and Thurber's needlegrass. Beardless wheatgrass is prominent to co-dominant with Thurber's needlegrass. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 75 percent grasses, 10 percent forbs and 15 percent shrubs. The approximate ground cover is 60 to 70 percent (basal and crown).

Range in Characteristics:

Wyoming big sagebrush and spiny hopsage are co-dominant with Wyoming big sagebrush increasing at the upper end of the precipitation zone and spiny hopsage on droughtier sites. Thurber's needlegrass increases on very fine sandy loam surfaces, in lower precipitation areas and on droughtier sites. Beardless wheatgrass increases on silty surfaces. Needle and thread is present on coarser surfaces. Sandberg bluegrass occurs in association with a strong microbial crust. Winterfat increases in lower precipitation areas on silts. Production increases at the upper end of the precipitation zone.

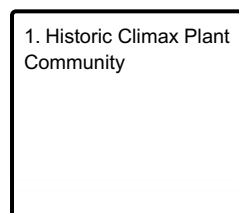
Response to Disturbance:

When the condition of the site deteriorates as a result of over grazing Thurber's needlegrass and beardless wheatgrass rapidly decrease. Wyoming big sagebrush, spiny hopsage, squirreltail and Sandberg bluegrass increase. Cheatgrass, other annuals, biennial weeds and bulbous bluegrass invade. With fire and continued disturbance big sagebrush is severely impacted. Rabbitbrush increases slightly and annuals and noxious biennial forbs strongly invade. Bare ground increases and excessive erosion contributes to downstream sedimentation. The excessive erosion is most pronounced in drainage areas where deep incised gully's form.

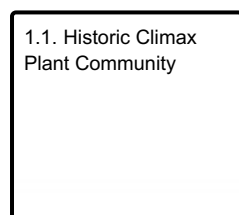
States: ARTRW/POSE-BRTE (degraded without fire); POSE-POBU/biennial forbs and BRTE/biennial forbs (following fire on degraded range)

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

The potential native plant community is dominated by Wyoming big sagebrush, spiny hopsage and Thurber's needlegrass. Beardless wheatgrass is prominent to co-dominant with Thurber's needlegrass. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 75 percent grasses, 10 percent forbs and 15 percent shrubs. The approximate ground cover is 60 to 70 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	252	420	673
Shrub/Vine	50	84	135
Forb	34	56	90
Total	336	560	898

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	Dominant, perennial, deep-rooted bunchgrasses			280–392	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	168–224	–
	beardless wheatgrass	PSSPI	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	112–168	–
4	Sub-dominant, perennial, shallow-rooted grass			17–45	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	17–45	–
5	Other perennial grasses			17–73	
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	11–28	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–11	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	6–11	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	0–11	–
	foxtail wheatgrass	PSSA2	× <i>Pseudelymus saxicola</i>	0–11	–
Forb					
8	Sub-dominant, perennial forbs			34–67	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	6–11	–
	hairy balsamroot	BAHOH	<i>Balsamorhiza hookeri</i> var. <i>hirsuta</i>	6–11	–
	fleabane	ERIGE2	<i>Erigeron</i>	6–11	–
	buckwheat	ERIOG	<i>Eriogonum</i>	6–11	–
	desertparsley	LOMAT	<i>Lomatium</i>	6–11	–
	phlox	PHLOX	<i>Phlox</i>	6–11	–
9	Other perennial forbs			11–62	
	onion	ALLIU	<i>Allium</i>	2–6	–
	pussytoes	ANTEN	<i>Antennaria</i>	2–6	–
	milkvetch	ASTRA	<i>Astragalus</i>	2–6	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	2–6	–
	lupine	LUPIN	<i>Lupinus</i>	2–6	–
	hoary tansyaster	MACA2	<i>Machaeranthera canescens</i>	0–3	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0–3	–
	beardtongue	PENST	<i>Penstemon</i>	0–3	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0–3	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–3	–
	common woolly	ERLA6	<i>Eriophyllum lanatum</i>	0–3	–

	sunflower				
	haplopappus	HAPLO11	<i>Haplopappus</i>	0–3	–
	woodland-star	LITHO2	<i>Lithophragma</i>	0–3	–
	mariposa lily	CALOC	<i>Calochortus</i>	0–3	–
	bastard toadflax	COMAN	<i>Comandra</i>	0–3	–
Shrub/Vine					
11	Dominant shrubs			45–101	
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	17–45	–
15	Other shrubs			11–34	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–7	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	3–6	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	3–6	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0–6	–

Animal community

Livestock Grazing:

This site is suitable for livestock grazing use in the late fall, winter and early spring under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Grazing management should be keyed for Thurber's needlegrass and beardless wheatgrass. Deferred grazing or rest is recommended at least once every three years.

Native Wildlife Associated with the Potential Climax Community:

This site is commonly used by pronghorn antelope, mule deer, rabbits, rodents, upland birds and various predators. It is a preferred site for sage grouse wintering. Antelope and mule deer make excellent use of the site for winter and early spring forage.

Hydrological functions

The soils of this site are typically in an upland topographic position. They have moderate runoff potential and medium infiltration rates when the hydrologic cover is high. Hydrologic cover is high when the Thurber's needlegrass and beardless wheatgrass deep rooted bunchgrass component is greater than 70 percent of 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)	Bob Gillaspy
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Date	11/17/2016
Approved by	Bob Gillaspy
Approval date	

Indicators

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

2. **Presence of water flow patterns:** None, except following high intensity storms when short (less than 1 meter) flow patterns may appear on steeper slopes. Minimal evidence of past or current soil deposition or erosion.

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):** 10-30% bare ground. Typically bare patches are associated with shrubs. Larger bare patches maybe associated with ant mounds, rodent, and/or other natural disturbances.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Wind erosion hazard is slight to moderate.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter size is Small/Fine. Litter movement is limited, minimal, and short, associated with water flow patterns following extremely high intensity storms. Litter also may be moved during intense wind storms.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Site is Moderately resistant to erosion. Stability class (Herrick et al. 2001) anticipated to be 3-6 at surface under perennial vegetation. Stability class at surface in the interspaces is anticipated to be less than or equal to that under perennial vegetation.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface layer structure is weak medium platy. The A horizon has a dry color of 6 and is 8 - 12 inches thick. The Soil Organic Matter (SOM) content is low (0.5 to 2.0%).

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant foliar cover and basal cover with moderate to large gaps between plants should slightly reduce raindrop impact and slow overland flow, providing some increased time for infiltration to occur. Low herbaceous vegetation on this site will retain some water from precipitation. Low ground cover (50-55%) and gentle slopes (0-12%) slightly to moderately limit 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: Deep rooted bunchgrasses

Sub-dominant: Evergreen shrubs

Other: Perennial forbs >= shallow rooted bunchgrasses

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Grasses will nearly always show some mortality and decadence. Normal decadence and mortality expected on other plants.

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):** Low 300 lbs/acre, Representative Value 500 lbs/acre, High 700 lbs/acre

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:** Annuals (Cheatgrass, Medusahead, and forbs) invade sites that have lost deep rooted perennial grass functional groups.

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