

Ecological site R011XY021OR Shallow South Slopes 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.

MLRA notes

Major Land Resource Area (MLRA): 011X–Snake River Plains

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 Precipitation or Climate Zone: 8-11" P.Z.

Ecological site concept

Site does not receive additional moisture

Soils are:

Not saline or saline sodic

Shallow to moderately deep, with >35% coarse fragments (by volume) with a mixture of fragment sizes <3" and >3", skeletal

not strongly or violently effervescent in the surface mineral 10"

Textures range from silt loam to silty clay loam in the surface mineral 4"

Slope is <30%

Clay content is =<35% in surface mineral 4"

Site does not have an argillic horizon with >35% clay

Associated sites

R011XY012OR	Silty 8-11 PZ Silty 8-11 PZ (non-aspect, higher production)
R011XY013OR	Clayey 8-11 PZ Clayey 8-11 PZ (non-aspect, different composition)
R011XY016OR	Sandy 8-11 PZ Sandy 8-11 PZ (non-aspect, different composition)
R011XY018OR	Shallow Loam 8-11 PZ Shallow Loam 8-11 PZ (non-aspect, different composition)
R011XY032OR	Silty North Slopes 8-11 PZ Silty North Slopes 8-11 PZ (north aspect, different composition)
R011XY034OR	Sandy North Slopes 8-11 PZ Sandy North Slopes 8-11 PZ (north aspect, different composition)

Similar sites

R011XY018OR	Shallow Loam 8-11 PZ Shallow Loam 8-11 PZ (non-aspect, higher production, different composition – Thurber's needlegrass dominant)
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Table 1. Dominant plant species

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

Physiographic features

This site occurs on south aspects of low elevation terraces in the Malheur, Owyhee and adjacent Snake River drainage. Slopes typically range from 12 to 60%. Elevations vary from 2,100 to 3,200 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace
Elevation	2,100–3,200 ft
Slope	12–60%
Aspect	SE, S, W

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)	
Precipitation total (average)	11 in

Influencing water features

Soil features

The soils of this site are typically shallow to very shallow and well drained. Typically the surface layer is a silt loam to a very fine sandy loam 2 to 6 inches thick. The subsoil is a silt loam to silty clay loam 6 to 12 inches thick. Depth to lacustrine or alluvial sediments ranges from 8 to 20 inches. An indurated pan is often 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

Parent material	(1) Loess–rhyolite
Surface texture	(1) Silt loam (2) Very fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	6–20 in

Available water capacity (0-40in)	2-4 in
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Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush, spiny hopsage and beardless wheatgrass. Thurber's needlegrass is prominent. 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 50 to 60 percent (basal and crown).

Range in Characteristics:

Wyoming big sagebrush increases at the upper end of the precipitation zone and spiny hopsage at the lower end. Beardless wheatgrass increases on silty surfaces. Thurber's needlegrass increases on a very fine sandy loam surfaces and on droughtier sites. Needle and thread is present on coarser surfaces. Sandberg bluegrass increases on silty surfaces in association with a strong microbiotic crust. Production increases at the upper end of the precipitation zone.

Response to Disturbance:

Disturbances that impact the condition of this site include overgrazing by large ungulates, fire, droughts that impact the hydrologic functions of these low-lying sites, and outside anthropogenic impacts that affect site hydrology which will impact water availability for the reference plants. Any disturbance that continues long enough or is of great enough severity will reduce reference plant vigor and cover rapidly.

When the condition of the site deteriorates as a result of over grazing beardless wheatgrass and Thurber's needlegrass rapidly decreases. Wyoming big sagebrush, spiny hopsage and Sandberg bluegrass increase. Cheatgrass, other annuals and biennial weeds rapidly invade. With fire and continued disturbance Wyoming 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); BRTE/biennial forbs or POSE-POBU/biennial forbs (following fire on degraded range)

**The State-and-Transition Model represents only the Reference Plant Community phase due to limited time, data, and literature support at the time of development. Future work will be needed to describe dynamics, alterative states and land use models.

State and transition model

Ecosystem states

1. Historic Climax Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1 Historic Climax Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by Wyoming big sagebrush, spiny hopsage and beardless wheatgrass. Thurber's needlegrass is prominent. 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 50 to 60 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	150	300	525
Shrub/Vine	30	60	105
Forb	20	40	70
Total	200	400	700

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	Dominant, perennial, moderate rooted bunchgrass			200–240	
	beardless wheatgrass	PSSPI	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	200–240	–
2	Sub-dominant, moderate rooted bunchgrass			80–120	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	80–120	–
3	Other moderate rooted bunchgrasses			20–80	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	12–32	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	8–20	–
	foxtail wheatgrass	PSSA2	× <i>Pseudelymus saxicola</i>	0–12	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–12	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	5–12	–
4	Shallow rooted bunchgrass			8–20	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	8–20	–
Forb					
8	Dominant, perennial forbs			28–52	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	8–12	–
	fleabane	ERIGE2	<i>Erigeron</i>	4–8	–
	buckwheat	ERIOG	<i>Eriogonum</i>	4–8	–
	desertparsley	LOMAT	<i>Lomatium</i>	4–8	–
	phlox	PHLOX	<i>Phlox</i>	4–8	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	4–8	–
9	Other perennial forbs			12–40	
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–4	–
	Douglas' dustymaiden	CHDO	<i>Chaenactis douglasii</i>	0–4	–

	bastard toadflax	COMAN	<i>Comandra</i>	0–4	–
	hawksbeard	CREPI	<i>Crepis</i>	2–4	–
	common woolly sunflower	ERLA6	<i>Eriophyllum lanatum</i>	0–4	–
	haplopappus	HAPLO11	<i>Haplopappus</i>	0–4	–
	povertyweed	IVAX	<i>Iva axillaris</i>	0–4	–
	western stoneseed	LIRU4	<i>Lithospermum ruderae</i>	0–4	–
	woodland-star	LITHO2	<i>Lithophragma</i>	1–4	–
	lupine	LUPIN	<i>Lupinus</i>	0–4	–
	hoary tansyaster	MACA2	<i>Machaeranthera canescens</i>	0–4	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0–4	–
	beardtongue	PENST	<i>Penstemon</i>	0–4	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0–4	–
	milkvetch	ASTRA	<i>Astragalus</i>	2–4	–
	mariposa lily	CALOC	<i>Calochortus</i>	0–2	–
	onion	ALLIU	<i>Allium</i>	1–2	–
	pussytoes	ANTEN	<i>Antennaria</i>	1–2	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–2	–
Shrub/Vine					
11	Dominant, evergreen, non-sprouting shrub			20–60	
12	Sub-dominant, deciduous, non-sprouting shrub			20–40	
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	20–40	–
15	Other shrubs			8–32	
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	5–12	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	0–8	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0–8	–

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 beardless wheatgrass and Thurber's needlegrass. 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 beardless wheatgrass and Thurber's needlegrass deep rooted bunchgrass component is greater than 70 percent of potential.

Contributors

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Approval

Kendra Moseley, 9/23/2020

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	05/11/2025
Approved by	Kendra Moseley
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):**
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**
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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):**
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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:
- Sub-dominant:
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
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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):**
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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:**
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17. **Perennial plant reproductive capability:**
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