

Ecological site R023XY321OR

DEEP LOAMY

12-16 PZ

Accessed: 04/20/2026

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

R023XY216OR	<p>CLAYPAN 12-16 PZ</p> <p>Claypan 12-16" PZ</p>
R023XY302OR	<p>SOUTH SLOPES 12-16 PZ</p> <p>South Slopes 12-16" PZ</p>
R023XY310OR	<p>NORTH SLOPES 12-16 PZ</p> <p>North Slopes 12-16" PZ</p>

Similar sites

R023XY318OR	<p>LOAMY 12-16 PZ</p> <p>Loamy 12-16" PZ (shallower soil)</p>
R023XY310OR	<p>NORTH SLOPES 12-16 PZ</p> <p>North Slopes 12-16" PZ (north aspect)</p>

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site typically occurs in mountainous terrain and on foot-slopes of prominent buttes. Slopes range from 5 to 15%. Elevation ranges from 5500 to 7000 feet.

Table 2. Representative physiographic features

Landforms	(1) Butte
Elevation	1,680 – 2,130 m
Slope	10 – 20 %
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 December through March. Spring rains are common. The soil temperature regime is frigid. Extreme air temperatures range from 90 degrees F. to -30 degrees F. The frost-free period is about 50 to 90 days. The optimum period of plant growth is from mid-May to mid-July.

Table 3 Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	0 days
Precipitation total (average)	410 mm

Influencing water features

Soil features

The soils of this site are moderately deep to bedrock, medium textured, well drained, formed in colluvium and residuum on gentle mountain slopes. The permeability is moderate to moderately slow. The available water holding capacity is about 5 to 10 inches for the profile.

Table 4. Representative soil features

Drainage class	Well drained
Permeability class	Moderate to moderately slow

Ecological dynamics

Range in Characteristics:

The reference native plant community is dominated by Mountain big sagebrush, Bitterbrush, and Idaho fescue. Other important grasses are Bluebunch wheatgrass, Canby bluegrass, and Cusick bluegrass. Vegetative composition is about 60 percent grasses, 15 percent forbs, and 25 percent shrubs.

Variability in plant composition on this site results from the range in precipitation. Bluebunch wheatgrass will increase in amount at the drier end of the precipitation zone.

Five states have been identified for this site: a reference state; a state with the presence of annuals; a state that has Juniper dominating site resources; a state that is Juniper dominant; and a state with annual dominance.

Reference: Plant community phase change is driven by fire. Mountain and basin big sagebrush declines after fire while Idaho fescue, Thurber's needlegrass and other grasses increase. May see a temporary increase in rabbitbrush after fire. Time facilitates the reintroduction of sagebrush. The introduction of invasive annual grasses and forbs transitions into the state 2.

State 2: Compositionally similar to the reference state with a trace of cheatgrass and the annual weeds. Ecological function has not changed, however the resiliency of the state has been reduced by the presence of invasive weeds. Prescribed grazing maintains state dynamics. Mismanagement of grazing favors sagebrush and Sandberg's bluegrass. Cheatgrass increases. Prescribed grazing can reverse the trend. Reduction in fire frequency facilitates juniper encroachment in both poor and good condition communities. Fire reduces or eliminates juniper and with time sagebrush reestablishes. Juniper is out-competing sagebrush and the herbaceous plant community which brings the site to state 3.

State 3: Juniper dominates site resources. Sagebrush is dead or dying and bitterbrush lacks vigor. Sandberg's bluegrass is the dominant species in the interspace and bare ground is significant. The perennial grass component is significantly reduced in both density and productivity. Idaho fescue may be present under the canopy of trees (north slope typically). Spatial and temporal energy capture and nutrient cycling has been truncated. Infiltration may be reduced due to lack of ground cover. Juniper woodland development is complete and soil loss and erosion drive site processes as the site goes into state 4.

State 4: Juniper dominated state. Soil loss is evident and erosion is active. All ecological processes, hydrologic cycle, nutrient cycle and energy capture have been significantly changed preventing the establishment of perennial plants. An abiotic threshold has been crossed. With catastrophic wildfire, state 5 is achieved.

State 5: Cheatgrass dominated plant community with limited to no shrub or perennial grass component. Soil erosion and redistribution along with changes in dynamic soil properties affect the hydrologic cycle and thus the nutrient cycle. Harsh environmental factors increase state resiliency to change.

Response to Disturbance:

If heavy grazing causes site deterioration, mountain big sagebrush and rabbitbrush will increase. Western juniper will invade with lack of fire.

State and transition model

Figure 3. Group 8, STM

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Livestock Grazing: This site is suitable for livestock grazing in late spring, summer and fall. Grazing management should be keyed to Idaho fescue. Deferred grazing is recommended in atleast one in three years under a planned grazing system. Wildlife: Mule deer and pronghorn antelope will use this site during late spring, summer and fall. Native Wildlife Associated With The Potential Climax Community: Mule deer and pronghorn antelope.

Hydrological functions

The soils of this site have medium infiltration rates and medium runoff potential. The hydrologicsoil group is C.

Recreational uses

The diversity of the flowering shrubs and forbs adds variation in color and form to the stand. This diversity also attracts many species of wildlife, giving the recreationist an opportunity to encounter wildlife in their natural habitats.

Wood products

Where western juniper has encroached this stie has the potential for producing fence posts, firewood and other specialty products.

Other information

Because of its deep soils, moderate slopes, and higher precipitation this site has good potential for improvement if the condition has deteriorated.

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
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Date	08/17/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills: None

2. Presence of water flow patterns: None

3. Number and height of erosional pedestals or terracettes: None to very few pedestals

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):
15-35%

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, Moderate wind erosion hazard

7. **Amount of litter movement (describe size and distance expected to travel):** Fine - 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: aggregate stability = 3-5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Moderately deep well drained medium textured soils (loams): Moderate OM (2-4%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low to moderate ground cover (30-50%) and gentle slopes (5-15%) 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: idaho fescue > other grasses > shrubs > forbs

Sub-dominant:

Other:

Additional:

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

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):**
Favorable: 1100, Normal: 850, Unfavorable: 500 lbs/acre/year at high RSI (HCPC)

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 brush species will increase with deterioration of plant community. Western Juniper readily invades the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.

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