

Ecological site R023XY404OR

DEEP NORTH

12-18 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

R023XY216OR	CLAYPAN 12-16 PZ Claypan 12-16" PZ
R023XY218OR	THIN SURFACE CLAYPAN 10-16 PZ Thin Surface Claypan 10-16" PZ
R023XY310OR	NORTH SLOPES 12-16 PZ North Slopes 12-16" PZ
R023XY312OR	SHALLOW NORTH 12-16 PZ Shallow North 12-16" PZ
R023XY318OR	LOAMY 12-16 PZ Loamy 12-16" PZ

Similar sites

R023XY318OR	LOAMY 12-16 PZ Loamy 12-16" PZ (lower production)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on the north exposures of high elevation plateaus and mountain side slopes. Slopes range from 20 to 70%. Elevation ranges from 5000 to 8000 feet.

Table 2. Representative physiographic features

Landforms	(1) Plateau (2) Mountain slope
Elevation	1,520 – 2,440 m
Slope	20 – 70 %
Aspect	N

Climatic features

The annual precipitation ranges from 12 to 18 inches, most of which occurs in the form of snow during the months of December through March. Localized convection storms occasionally occur during the summer. The soil temperature regime is frigid to cryic with a mean annual air temperature of 42 degrees F. Temperature extremes range from 80 to -30 degrees F. The frost-free period ranges from less than 30 to 60 days. The optimum growth period for native plants is from mid-May through July.

Table 3 Representative climatic features

Frost-free period (average)	60 days
Freeze-free period (average)	0 days
Precipitation total (average)	460 mm

Influencing water features

Soil features

The soils of this site are deep and well drained. Typically the surface layer is a silt loam to silty clay loam 10 to 20 inches thick with variable amounts of coarse fragments. The subsoil is typically a stony silty clay loam 20 to 40 inches thick. Permeability is moderate. The available water holding capacity (AWC) is about 6 to 10 inches for the profile. The potential for erosion is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Silty clay loam
Family particle size	(1) Loamy

Drainage class	Well drained
Permeability class	Moderate

Ecological dynamics

Range in Characteristics:
The reference native plant community is dominated by Idaho fescue and Mountain big sagebrush. Mountain snowberry, needlegrasses, Bluebunch wheatgrass, and bluegrasses are prominent. The vegetative composition of the community is approximately 80 percent grasses, 5 percent forbs, and 15 percent shrubs.

Idaho fescue will increase on deeper soils and at the upper end of the precipitation zone. Needlegrasses will increase on coarser textured soils. Snowberry and taller shrubs will increase on deeper soils and over fractured substratums where precipitation is augmented by subsurface flows. Bluebunch wheatgrass will increase as the aspect varies to the east and northwest. As a fire susceptible site the amount of mountain big sagebrush is influenced by fire frequency.

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 the condition of the site deteriorates as a result of overgrazing, Idaho fescue will decrease while mountain big sagebrush, California brome, needlegrasses, bottlebrush squirreltail, bluebunch wheatgrass and Sandberg bluegrass will increase. Idaho fescue is the preferred species during all seasons. With further deterioration, needlegrasses and bluebunch wheatgrass will decrease while mountain brome, squirreltail and big sagebrush will continue to increase. Annuals will invade and bare ground markedly increases. Excessive erosion in the bare soil interspaces reduces the site productivity and contributes to downstream sedimentation.

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 tie is suited to use by cattle, sheep and horses in late spring, summer and fall under a planned grazing system. Use should be potponed until the soils are firm enough to avoid trampling damage and soil compaction. Wildlife: This site will offer food and cover for mule deer, antelope, rodents and a variety of birds. It si an important summer and fall use area for mule deer. Native Wildlife Associated With The Potentail Climax Community: Deer, antelope, hawks, songbirds, and rodents.

Hydrological functions

The soils are in hydrologic group C. The soils of this site have moderately high runoff 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)	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 to some, Moderate to sever sheet & rill erosion hazard

2. Presence of water flow patterns: None to some

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

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):
5-15%

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 = 2-5

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Deep well drained silt
loam to silty clay loam (10-20 inches thick): Moderate OM (2-4%)

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on
infiltration and runoff: Significant ground cover (70-80%) and gentle to steep slopes (20-70%) moderately to significantly 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 > Needlegrasses > Bluebunch wheatgrass = Mountain big sagebrush > other grasses > forbs > other shrubs

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):
Noemal 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: 1600, Normal: 1200, Unfavorable: 800 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, Mountain Brome, & Squirreltail will increase with deterioration of plant community, while Idaho fescue decreases in the stand. Cheatgrass & other annuals invade sites that have lost deep rooted perennial grass functional groups and bare ground will markedly increase.

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