

Ecological site R023XY320OR

JUNIPER SOUTH SLOPES

12-16 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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on hillsides with slopes ranging from 20 to 60%. Elevations range from 5300 to 6600 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill
Elevation	1,620 – 2,010 m
Slope	20 – 60 %
Aspect	S

Climatic features

Mean annual precipitation ranges from 10 to 16 inches. Precipitation occurs mostly in the form of snow during December through March. Spring rains are common. The soil temperature regime is frigid. Mean annual air temperatures range from 40 to 43 degrees F. The frost-free period is from 50 to 80 days. The soil temperature regime is frigid. The period of optimum plant growth is from April through June.

Table 3 Representative climatic features

Frost-free period (average)	80 days
Freeze-free period (average)	0 days

Precipitation total (average)	410 mm
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Influencing water features

Soil features

Soils of the site consist of moderately deep, well drained soils that formed in residuum and colluvium from basalt and welded tuff. There is a calypan layer ranging from 8-12 inches thick. Depths to hard bedrock ranges from 20 to 35 inches. The profile averages 35 to 60 inches percent rock fragments mainly as cobbles, and 35 to 60 percent clay. Permeability is slow. Shrink-swell potential is high. Wind erosion potential is slight and water erosion potential is moderate. The available water holding capacity is about 3 inches.

Table 4. Representative soil features

Surface texture	(1) Very gravelly clay loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow

Ecological dynamics

Range in Characteristics:

The reference native plant community is dominated by Western Juniper, Idaho fescue, Bluebunch wheatgrass, and Mountain big sagebrush. Thurber needlegrass, Prairie junegrass, and various forbs are also common. Vegetative composition is about 50 percent grasses, 10 percent forbs, and 40 percent shrubs and trees.

Thurbers needlegrass increases with gravelly textured soil surfaces. Bluebunch wheatgrass increases at lower elevation and lower precipitation ranges.

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:

As the site deteriorates big sagebrush, Sandbergs bluegrass and bottlebrush squireltail increase in plant density, while Idaho fescue and blueunch wheatgrass decrease.

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: Steep slopes and dense juniper limit the suitability of this site for grazing. Wildlife: This site provides food and cover to a variety of wildlife species. This is an important site for wintering mule deer.

Hydrological functions

The soils of this site have moderate infiltration rates and a medium run-off potential. The hydrologic soil group is C.

Other information

Suitability for seeding this stie is very poor because of steep slopes.

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.

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Approved by	
Approval date	

Composition (Indicators 10 and 12) based on	Annual Production
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Indicators

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

2. **Presence of water flow patterns:** None

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):** 5-10%

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, Slight 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 well drained very stony loams with claypan, high shrink-swell potential and some soil churning: Moderate OM (2-4%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (50-60%) and gentle to steep slopes (20-60%) 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: Bluebunch wheatgrass > Idaho fescue > Thurber needlegrass = Western Juniper > 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: 800, Normal: 600, Unfavorable: 400 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 and Western Juniper will increase with deterioration of plant community. Cheatgrass invades sites that have lost deep rooted perennial grass functional groups.**

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