

Ecological site R008XY004ID South Slope Loamy 12-16 PZ

Last updated: 9/23/2020
 Accessed: 07/27/2024

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.

Ecological site concept

This ecological site meets the NESH 2014 requirements for PROVISIONAL. A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. Following quality control and quality assurance reviews of the ecological site concepts, an identification number and name for the provisional ecological site are entered into ESIS. A provisional ecological site may include literature reviews, land use history information, some soils data, legacy data, ocular estimates for canopy and/or species composition by weight, and even some line-point intercept information. A provisional ecological site does not meet the NESH 2014 standards for an Approved ESD, but does provide the conceptual framework of soil-site correlation for the development of the ESD.

Associated sites

| | |
|-------------|-------------------------------------|
| R008XY003ID | North Slope Loamy 12-16 PZ |
| R008XY005ID | South Slope Stony 12-16 PZ |
| R008XY006ID | Shallow South Slope 12-16 PZ |

Table 1. Dominant plant species

| | |
|------------|--|
| Tree | Not specified |
| Shrub | Not specified |
| Herbaceous | (1) <i>Pseudoroegneria spicata</i> (2) <i>Poa secunda</i> |

Physiographic features

This site occurs on mountain and foothill side slopes. Elevations range from 700 to 2600 feet (215-800 meters). Slopes range from 30 to 80 percent on south and west aspects.

Table 2. Representative physiographic features

| | |
|-------------------|-----------------------------|
| Landforms | (1) Terrace (2) Mountain |
| Elevation | 700–2,600 ft |
| Slope | 30–80% |
| Water table depth | 60 in |
| Aspect | S, W |

Climatic features

The elevation of MLRA 8 ranges from 1300 to 3600 feet above sea level. Average annual precipitation ranges from 12 to 17 inches, with a mean of 15 inches based on 4 long term climate stations located throughout the MLRA. In general precipitation peaks in November, December and January, with a sharp decline in July and August. The average maximum annual temperature is 64 degrees Fahrenheit and the average minimum temperature is 41 degrees F. The frost free period can range from 160 to 186 days while the freeze free period ranges from 200 to 237 days.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 186 days |
| Freeze-free period (average) | 237 days |
| Precipitation total (average) | 17 in |

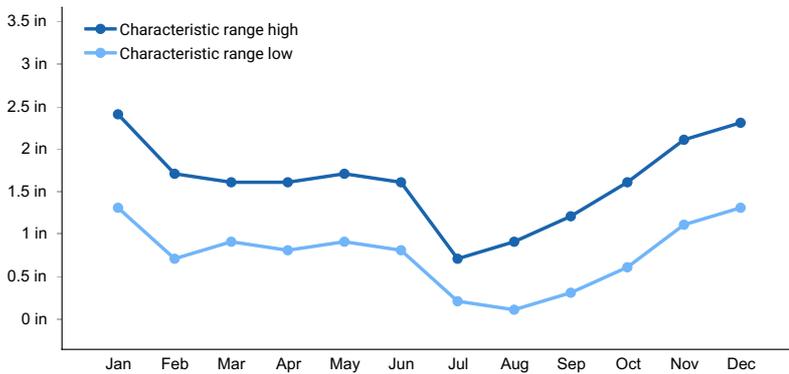


Figure 1. Monthly precipitation range

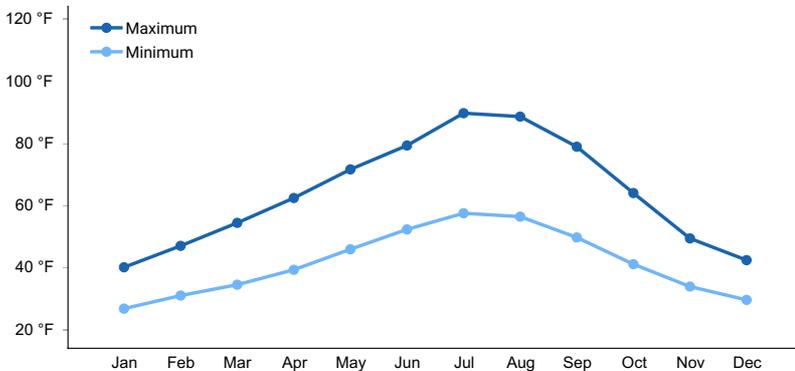


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is not influenced by adjacent wetlands, streams, or run on.

Soil features

These soils were developed in loess and alluvium from outwash materials and basalt. They are moderately deep to deep, well drained and moderately to very permeable. The available water capacity is low to high.

Table 4. Representative soil features

| | |
|-----------------|----------------------------|
| Parent material | (1) Eolian deposits–basalt |
| Surface texture | (1) Gravelly sandy loam |

| | |
|---|------------------------|
| Family particle size | (1) Loamy |
| Drainage class | Well drained |
| Permeability class | Moderate to very rapid |
| Soil depth | 40–60 in |
| Surface fragment cover ≤3" | 0–10% |
| Surface fragment cover >3" | 0–5% |
| Available water capacity (0–40in) | 2.4–3.6 in |
| Calcium carbonate equivalent (0–40in) | 0% |
| Electrical conductivity (0–40in) | 0 mmhos/cm |
| Sodium adsorption ratio (0–40in) | 0 |
| Soil reaction (1:1 water) (0–40in) | 6.6–7.8 |
| Subsurface fragment volume ≤3" (Depth not specified) | 10–45% |
| Subsurface fragment volume >3" (Depth not specified) | 5–25% |

Ecological dynamics

The visual aspect is grassland dominated with bluebunch wheatgrass with a few shrubs. Composition by weight is approximately 60 to 70 percent grasses, 25 to 35 percent forbs, and 5 percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, moist winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, white-tailed deer, Rocky Mountain elk, and lagomorphs.

Fire has historically occurred on the site at intervals of 20-50 years.

The the Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase 1.1. This plant community is dominated by bluebunch wheatgrass with Sandberg bluegrass subdominant. Arrowleaf balsamroot, western yarrow, longleaf phlox, nineleaf biscuitroot, and silky lupine are the dominant forbs in the plant community. There are a variety of other grasses and forbs that occur in minor amounts. A few shrubs may occur in small quantities including basin big sagebrush, rabbitbrush, and wax currant. The plant species composition of Plant Community Phase, 1.1, is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 800 pounds per acre (896 kilograms per hectare) in a normal year. Production in a favorable year is 900 pounds per acre (1008 kilograms per hectare). Production in an unfavorable year is 600 pounds per acre (672 kilograms per hectare). Structurally, cool season deep-rooted perennial bunchgrasses are more dominant than forbs followed by shallow rooted perennial grasses being more dominant than shrubs.

This site is suited for big game in the fall, winter, and spring. Livestock can use the site in the spring, summer, and fall. It has limited value for recreational use but is used for some hiking, horseback riding, hunting, plant study, and photography.

Due to the ease of access by livestock, this site is susceptible to degradation from improper grazing management. The site has slight limitations to implementing accelerating and facilitating practices.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency and ungulate grazing, bluebunch wheatgrass can become decadent. This is apparent by dead centers in the plants.

When fires become more frequent than historic levels (20-50 years), bluebunch wheatgrass can be reduced in the plant community. Sandberg bluegrass will increase in the plant community. With continued short fire frequency, bluebunch wheatgrass can be completely eliminated along with some forbs. These species may be replaced by bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Some rabbitbrush may still be in the plant community. Cheatgrass may invade the site. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, an increase in Sandberg bluegrass will occur and noxious and invasive species will invade.

Continued improper grazing management influences fire frequency by increasing fine fuels. As annuals increase, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency.

Weather influences:

Above normal precipitation in April, May, and June can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Overall plant composition is normally not affected when perennials have good vigor.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. An early, hard freeze can occasionally kill some plants. Prolonged drought can lead to a reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. Grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency. Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals use this site in the fall, winter, and spring. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur with a decrease in perennial bunchgrasses. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long-term effect is a transition to a different state.

Plant Community and Sequence:

Transition pathways between common vegetation states and communities:

State 1.

1.1. Bluebunch wheatgrass-Sandberg bluegrass

Plant Community Phase 1.1 to 1.2 (1.1A). Develops with improper grazing management and no fire.

Plant Community Phase 1.1 to 1.3 (1.1B). Develops with fire.

Plant Community Phase 1.2 to 1.1 (1.2A). Develops with prescribed grazing.

Plant Community Phase 1.3 to 1.1 (1.3A). Develops with prescribed grazing and no fire.

State 1, Plant Community Phase 1.2 to State 2. Develops through frequent fire and improper grazing management (T1A). This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

State 1, Plant Community Phase 1.3 to State 2. Develops through frequent fire and/or continued improper grazing management (T1B). This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

State 2 to State 3, unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire (T2.1B) cause this state to cross a threshold and retrogress to a new site with reduced potential. It is economically impractical to return this plant community to State 1 with accelerating practices.

Practice Limitations:

Slight limitations exist on this site for implementing accelerating and facilitating practices. Slight limitations exist on this site for implementing vegetative management practices.

State and transition model

R008XY004ID –South Slope Loamy 12-16 PSSPS-POSE

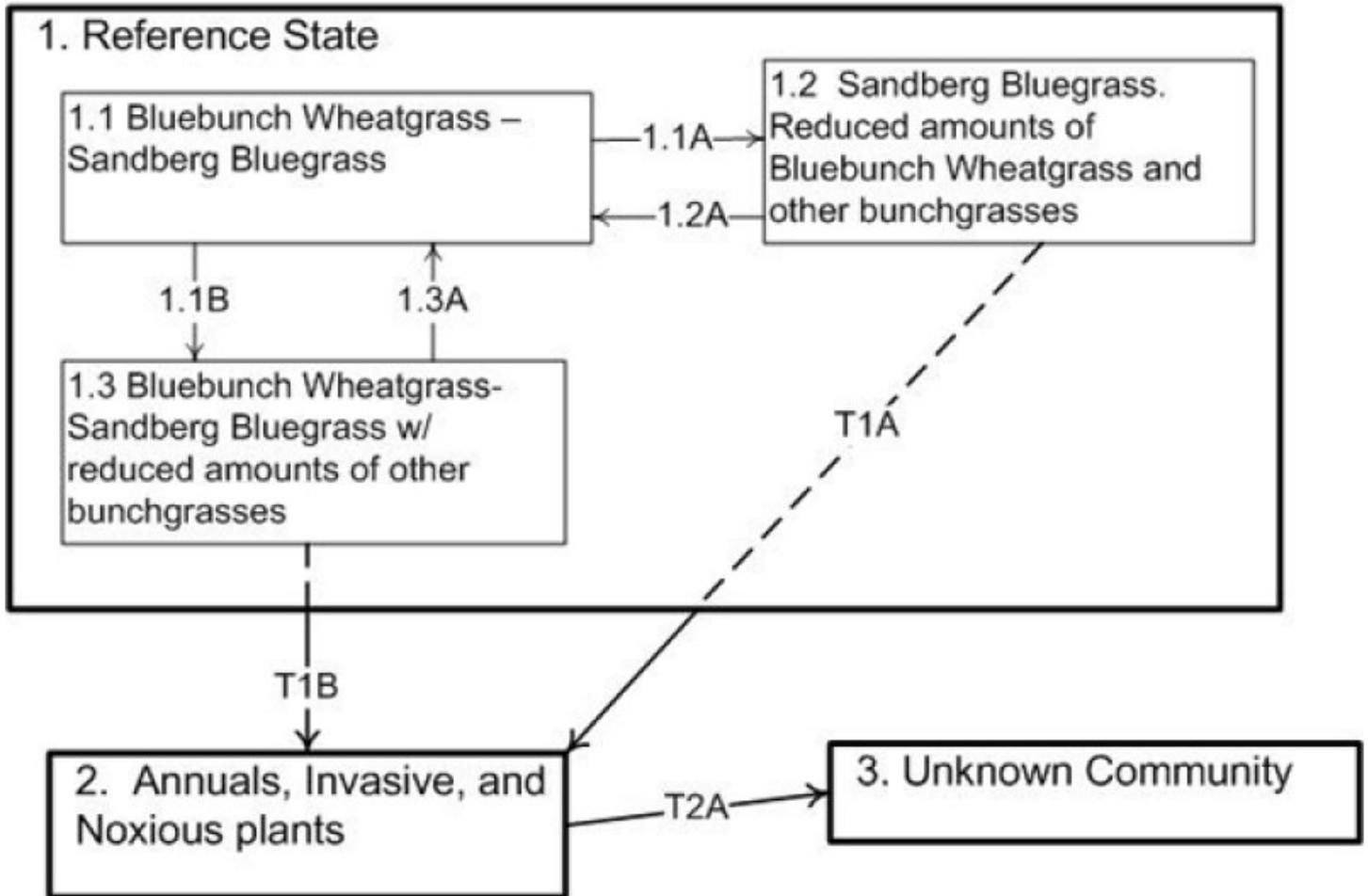


Figure 3. R008XY004ID

State 1 Reference State

Community 1.1 Bluebunch Wheatgrass - Sandberg Bluegrass

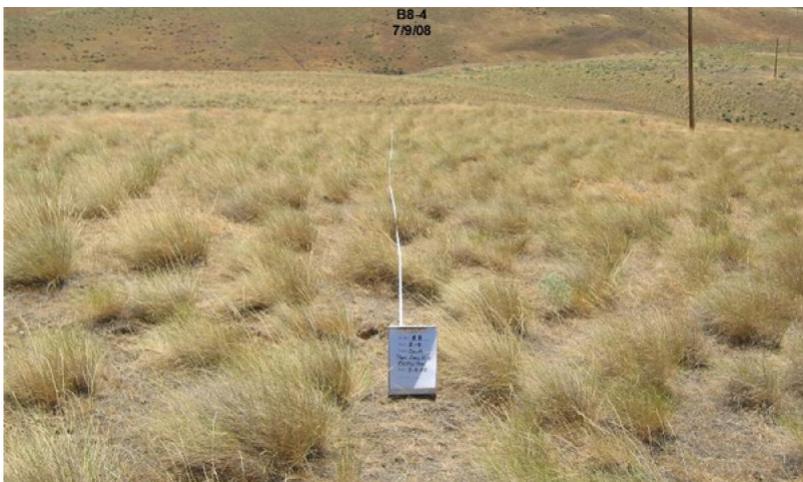


Figure 4. reference state

State 1, Reference State. 1.1 Reference Plant Community Phase. This plant community is dominated by bluebunch wheatgrass with Sandberg bluegrass subdominant. Arrowleaf balsamroot, western yarrow, longleaf phlox, nineleaf biscuitroot, and silky lupine are the dominant forbs in the plant community. There are a variety of other grasses and

forbs that occur in minor amounts. A few shrubs may occur in small quantities including basin big sagebrush, rabbitbrush, and wax currant. Natural fire frequency is 20-50 years.

Table 5. Annual production by plant type

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|---------------|--------------------------------|----------------|
| Grass/Grasslike | 390 | 520 | 585 |
| Forb | 180 | 240 | 270 |
| Shrub/Vine | 30 | 40 | 45 |
| Total | 600 | 800 | 900 |

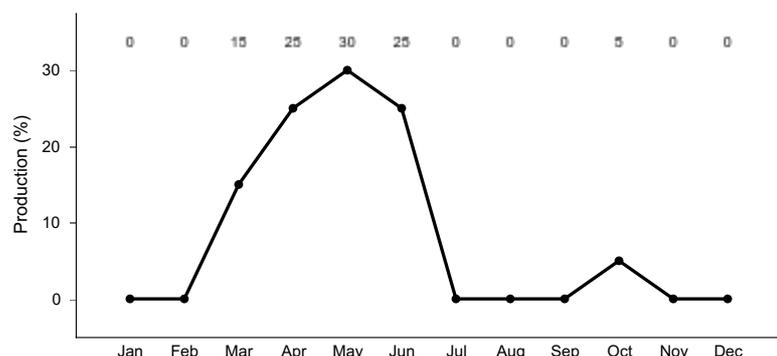


Figure 6. Plant community growth curve (percent production by month). ID1605, PSSPS South Slopes. State 1.

Community 1.2 Reduced Bluebunch Wheatgrass

1.2 Plant Community Phase. This plant community is dominated by Sandberg bluegrass with reduced amounts of bluebunch wheatgrass. Sandberg bluegrass has increased. All deep-rooted bunchgrasses are typically in low vigor. Forbs have increased. Some shrubs such as rabbitbrush may have increased. Some cheatgrass and bulbous bluegrass may have invaded the site. This state has developed due to improper grazing management and no fire (1.1A).

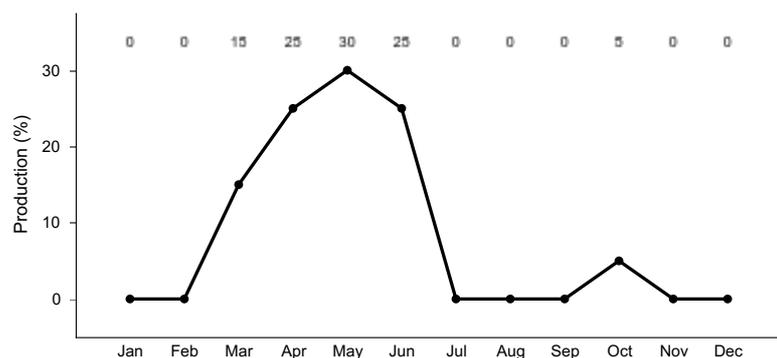


Figure 7. Plant community growth curve (percent production by month). ID1605, PSSPS South Slopes. State 1.

Community 1.3 Reduced mid size bunchgrasses

1.3 Plant Community Phase. This plant community is dominated by bluebunch wheatgrass with a variety of other bunchgrasses in small amounts. Sandberg bluegrass has increased. Forbs remain about in the same proportion as Plant Community 1.1. Some cheatgrass and bulbous bluegrass may have invaded the site. This plant community is the result of wildfire (1.1B).

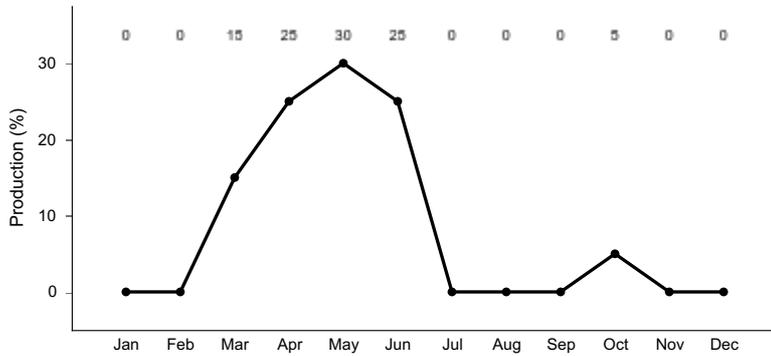


Figure 8. Plant community growth curve (percent production by month). ID1605, PSSPS South Slopes. State 1.

State 2 Annuals

Community 2.1 Annuals

State 2. This plant community is dominated by annual grasses and forbs including invasive and noxious plants. Some soil loss has occurred. This state has developed due to frequent fires and improper grazing management (T1A) from plant community phase 1.2. It also develops with frequent fire and/or improper grazing management (T1B) from plant community phase 1.3, State 1. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

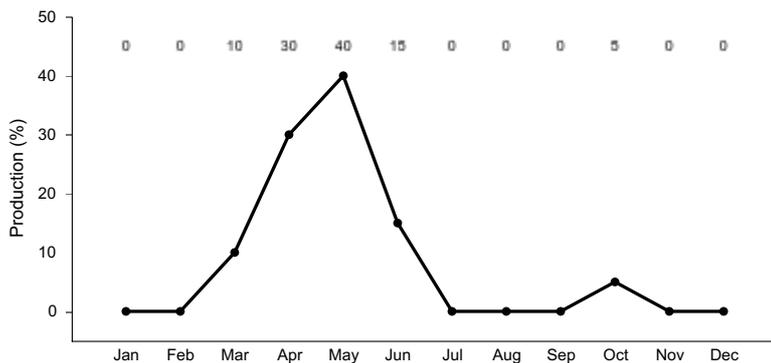


Figure 9. Plant community growth curve (percent production by month). ID1602, B8 BRTE-Annuals. State 2.

State 3 Unknown

Community 3.1 Unknown Community

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 | | | | 390–585 | |
| | bluebunch wheatgrass | PSSP6 | <i>Pseudoroegneria spicata</i> | 300–450 | – |
| | Sandberg bluegrass | POSE | <i>Poa secunda</i> | 100–150 | – |
| Forb | | | | | |
| 2 | | | | 180–270 | |
| | arrowleaf balsamroot | BASA3 | <i>Balsamorhiza sagittata</i> | 60–100 | – |
| | nineleaf biscuitroot | LOTR2 | <i>Lomatium triternatum</i> | 30–50 | – |
| | silky lupine | LUSE4 | <i>Lupinus sericeus</i> | 30–50 | – |
| | longleaf phlox | PHLO2 | <i>Phlox longifolia</i> | 30–50 | – |
| | common yarrow | ACMI2 | <i>Achillea millefolium</i> | 30–50 | – |
| Shrub/Vine | | | | | |
| 3 | Shrubs | | | 30–45 | |
| | basin big sagebrush | ARTRT | <i>Artemisia tridentata ssp. tridentata</i> | 0–10 | – |
| | yellow rabbitbrush | CHVI8 | <i>Chrysothamnus viscidiflorus</i> | 0–10 | – |
| | wax currant | RICE | <i>Ribes cereum</i> | 0–10 | – |

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community is dominated by herbaceous vegetation that provides year-round forage for large herbivores. Important seasonal habitat is provided for resident and migratory animals including western toad, western rattlesnake, shrews, jackrabbits, ground squirrels, mice, coyote, red fox, badger, northern harrier, red-tailed hawk, horned lark, and western meadowlark. Area sensitive species include Woodhouse's toad, ring-necked snake, grasshopper sparrow, and Merriam's shrew. Areas of noxious and invasive plant species (cheatgrass, bulbous bluegrass, yellow-star thistle, and rush skeletonweed) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 - Bluebunch Wheatgrass/ Sandberg Bluegrass Reference Plant Community (RPC): This plant community provides a diversity of grasses and forbs, used by native insect communities that assist in pollination. Flowering forbs and shrubs include yarrow, arrowleaf balsamroot, phlox, biscuitroot, big sagebrush, and rabbitbrush providing spring through fall habitat for pollinators. The reptile and amphibian community is represented by western rattlesnake, northern alligator lizard, ring-necked snake, pygmy short-horned lizard, western toad, Woodhouse's toad, tiger salamander, Columbia spotted frog, and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of this site by amphibians. The plant community supports a variety of migratory and resident avian species that prefer grassland plant communities for food, brood-rearing, and nesting cover. They may include savannah sparrow, lark sparrow, grasshopper sparrow, Say's phoebe, western kingbird, horned lark, and western meadowlark. Wild turkey may frequent the site for brood-rearing in the spring and summer. The plant community provides spring, fall, and winter forage for mule deer and elk. Bluebunch wheatgrass and arrowleaf balsamroot are desirable forage species for elk and mule deer. The grazing management will determine the quality and duration of grazing available for mule deer and elk. A small mammal population including Preble's shrew, mountain cottontail, white-tailed jackrabbit, Merriam's shrew, western jumping mouse, and deer mouse may utilize this site.

State 1 Phase 1.2 - Sandberg Bluegrass Plant Community: This phase has developed due to improper grazing management and no fire. An increase in forbs would continue to support a variety of insects. The reptile and amphibian community is represented by western rattlesnake, gophersnake, terrestrial gartersnake, and western toad. Amphibians are associated with springs adjacent to the site. Spring developments that capture all available water would preclude the use of the area by amphibians. The quality of cover habitat for ground-nesting birds is reduced due to improper grazing, resulting in sparse herbaceous vegetation. The reduced vigor of plants provides a shorter grazing season for mule deer and elk. Quality of winter forage for large herbivores is reduced due to poor grazing management and a decrease or loss of native deep-rooted bunchgrasses. The small mammal community would be similar to the State 1 Phase 1.1 small mammal community.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass Plant Community: This plant community is the result of fire. The forb community would be similar to the State 1 Phase 1.1 forb community. Insect diversity would be similar to the State 1 Phase 1.1 insect community. The reptile community would also be similar to the State 1 Phase 1.1 reptile community. The quality of cover habitat for ground-nesting birds is reduced due to improper grazing, resulting in sparse herbaceous vegetation. Deep-rooted bunchgrasses are reduced in vigor and production, resulting in a shorter grazing season for mule deer and elk. The small mammal community would be similar to the State 1 Phase 1.1 small mammal community. An increase in woody vegetation may increase the quality of cover habitat for small mammals.

State 2 –Annuals/ Invasives/ Noxious Weeds Plant Community: This state has developed due to frequent fires and improper grazing management from State 1 Phase 1.2. It also occurs with frequent fire or improper grazing management from State 1 Phase 1.3. The plant community supports harmful insects, such as grasshoppers due to improved breeding conditions. The plant community would support a very limited population of pollinators supported by noxious weeds. Most reptilian species are not supported with food, water, or cover. Diversity of grassland avian species is reduced due to poor cover and food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large herbivores may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large herbivores would not regularly utilize these areas due to poor forage and cover conditions. The populations of small mammals would be reduced due to poor cover and forage habitat. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for animal species that historically used the site.

Grazing Interpretations.

This site has value for late spring, summer and fall grazing for cattle, sheep, and horses.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference.

Hydrological functions

The soils in this site are in hydrologic group B.

Recreational uses

This site is suitable for hiking, horseback riding, hunting, plant study, and photography. It occurs in areas with varying degrees of contrast and other features which give aesthetic appeal. Attractive flowering plants are found on this site.

Wood products

None.

Other products

None.

Other information

Field Offices
Lewiston, ID
Moscow, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, Range Management Specialist, IASCD

Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho

Bruce Knapp, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Other references

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database/feis.

USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Contributors

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Dave Franzen And Jacy Gibbs

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.

| | |
|---|--|
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| Date | 03/19/2009 |
| Approved by | Kendra Moseley |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

Indicators

1. **Number and extent of rills:** Rills can occur on this site. If rills are present they are likely to occur immediately following wildfire or high intensity convection storms.

2. **Presence of water flow patterns:** Water-flow patterns can occur on this site. When they occur, they are most likely to occur immediately following a wildfire or during high intensity convection storms. They are short and disrupted by cool season grasses and are not extensive.

3. **Number and height of erosional pedestals or terracettes:** Both can occur but neither is extensive. In areas where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes can occur up slope from bunchgrasses.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** On sites in mid-seral status bare ground may range from 5-10 percent.

5. **Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.

6. **Extent of wind scoured, blowouts and/or depositional areas:** These are usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 2 feet following a significant run-off event. Coarse litter generally does not move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Values should range from 3 to 5 .

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A or A1 horizon is typically very dark brown and 0 to 4 inches thick. Structure is moderately fine granular and soil organic matter ranges from 2 to 3 percent.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Perennial grasses produce 70-80 percent of the total production, forbs 15-25 percent, and shrubs 1 to 10 percent.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Is not present.

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: cool season deep-rooted perennial bunchgrasses

Sub-dominant: forbs

Other: shallow rooted-grasses

Additional: tall shrubs

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Bluebunch wheatgrass can become decadent in the absence of normal fire frequency and ungulate grazing. This is most noticeable in dead centers of the bunches.
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14. **Average percent litter cover (%) and depth (in):** Additional litter cover data is needed but is expected to be 15-20 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Is 800 pounds per acre (896 kilograms per hectare) in a year with normal temperatures and precipitation.
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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:** Includes cheatgrass, bulbous bluegrass, rush skeletonweed, musk and scotch thistle, diffuse and spotted knapweed, leafy spurge, yellow star thistle, and Japanese brome.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in most years.
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