

Ecological site R043BY018ID South Slope Stony 22+ PZ PSSP6-FEID

Last updated: 2/03/2020
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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): 043B–Central Rocky Mountains

Major Land Resource Area (MLRA):

43B – Central Rocky Mountains – This MLRA is extensive including Montana, Idaho, Wyoming and a small portion in Utah. MLRA 43B includes the Rocky Mountains. A revision of the MLRA's in 2006 lead to the inclusion of the foothills with the mountains for much of Wyoming. Cartographic standards limited the ability to capture the foothills as a separate MLRA .

Further information regarding MLRAs, refer to: United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.
Available electronically at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_053624#handbook.

Classification relationships

Major Land Resource Area (MLRA): 043B–Central Rocky Mountains
Land Resource Unit: E (Rocky Mountain Range and Forested)

EPA EcoRegion: Level III (Middle Rockies)

Ecological site concept

Site does not receive any additional water.

Soils are:

not saline or saline-sodic.

moderately deep, shallow, with >35% stone (10-25") and boulder (>25") cover. skeletal within 20" of soil surface, fragment percentage increasing with depth

not strongly or violently effervescent in surface mineral 10".

textures usually range from very fine sandy loam to clay loam in 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

R043BY003ID	Loamy 22+ PZ FEID-PSSPS
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R043BY009ID	Loamy 16-22 PZ ARTRV/FEID
R043BY016ID	Shallow Gravelly 16-22 PZ ARAR8/FEID

Similar sites

R043BY004ID	Shallow Fractured Stony Loam 16-22 PZ ARTRV/FEID
R043BY009ID	Loamy 16-22 PZ ARTRV/FEID

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on canyonsides. Slopes range from 30-70 percent and occur on south and west aspects. Elevations range from 2800 to 5300 feet (850-1650 meters).

Table 2. Representative physiographic features

Landforms	(1) Canyon
Elevation	2,800–5,300 ft
Slope	30–70%
Water table depth	60 in
Aspect	S, W

Climatic features

The Central Rocky Mountains range in elevation from 6000 to 10000 feet above sea level with some peaks reaching over 12000 feet. The average annual precipitation, based on 10 long term climate stations located throughout the MLRA , is 21 inches. The annual average minimum is 18 and the annual average maximum recorded is 24 inches. The annual average temperature is 41.7 degrees Fahrenheit. The annual average low is 26.7 and the annual average high is 56.7 degrees F. The frost free period ranges from 58 to 80 days while the freeze free period ranges from 90 to 116 days.

Table 3. Representative climatic features

Frost-free period (average)	80 days
Freeze-free period (average)	116 days
Precipitation total (average)	24 in

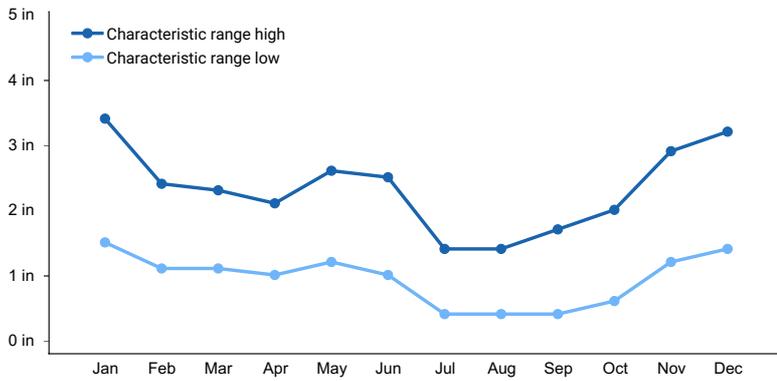


Figure 1. Monthly precipitation range

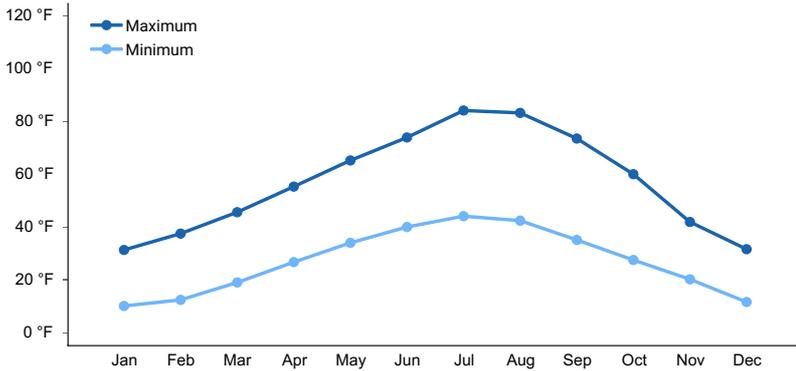


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils on this site are well drained and moderately deep. They have formed in colluvium derived from basalt. Coarse fragment content below ten inches ranges from 40-80 percent. Surface texture is loam. Permeability is moderately slow and available water capacity is low to very low. The surface layers are slightly acid to neutral in reaction and hazard of water erosion is severe. These soils are characterized by xeric moisture and mesic temperature regimes.

Soil Series Correlated to this Ecological Site

Hooverton

Table 4. Representative soil features

Surface texture	(1) Stony loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	20–40 in
Surface fragment cover <=3"	20–40%
Surface fragment cover >3"	5–20%
Available water capacity (0-40in)	2.3–4.1 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)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	35–60%
Subsurface fragment volume >3" (Depth not specified)	15–40%

Ecological dynamics

The dominant visual aspect of the site is a mixed grass-forb-shrub plant community. Composition by weight is approximately 50-60 percent grasses, 15-25 percent forbs, and 20-30 percent shrubs.

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

Fire has historically occurred on the site at intervals of 25-40 years.

The Historic Climax Plant Community (HCPC), 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 A. This plant community is dominated by bluebunch wheatgrass in the understory and snowberry in the overstory. Subdominant species include Idaho fescue, silky lupine, Sandberg bluegrass, longleaf phlox, arrowleaf balsamroot, Woods' rose, mule-ears wyethia, and wormleaf stonecrop. There is a large variety of other forbs and some other shrubs that can occur in minor amounts. The plant species composition of Phase A is listed later under "RPC Plant Species Composition".

Total annual production is 1000 pounds per acre (1111 kilograms per hectare) in a normal year. Production in a favorable year is 1200 pounds per acre (1333 kilograms per hectare). Production in an unfavorable year is 700 pounds per acre (888 kilograms per hectare). Structurally, cool season deep rooted perennial bunchgrasses are dominant followed by tall shrubs being more dominant than perennial forbs.

FUNCTION:

This site is suited for grazing by domestic livestock in late spring, summer, and fall. This site provides fair to good habitat for various upland wildlife especially in the summer and early fall. This site offers minimal recreation value.

Due to the elevation and steep topography on this site, it is susceptible to degradation from erosion. The steeper slopes will limit livestock movement. Excessive trailing of livestock should be avoided to minimize terracette development and erosion on the steeper slopes.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, snowberry and Woods' rose will gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, these shrubs can displace most of the primary understory species.

When fires become more frequent than historic levels (25-40 years), snowberry and Woods' rose are significantly

reduced for a short period of time. Since they are both root-sprouters, they will persist in the plant community. With continued short fire frequency, Idaho fescue can be completely eliminated along with many of the desirable understory species. These species may be replaced by Kentucky bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. 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.

Continued improper grazing management influences fire frequency by increasing fine fuels. The site then becomes susceptible to an invasion of noxious and invasive plants and/or soil erosion.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in snowberry. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Prescribed burns should be carefully planned based on the timing and intensity. Loss of Bluebunch wheatgrass or Idaho fescue on this site would be very detrimental.

Weather influences:

Above normal precipitation in 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.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. An early, hard freeze can occasionally kill some plants.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of insects and disease:

Insect and disease outbreaks can affect vegetation health. Grasshopper outbreaks periodically occur. Since defoliation usually happens once during the growing season, mortality is normally low.

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 late spring, summer, and fall. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur with an increase in snowberry and Woods' rose. Desired understory species can be reduced. 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 phases:

State 1.

Phase A to B. Develops with improper grazing management and no fire.

Phase A to C. Develops with fire.

Phase B to A. Develops with prescribed grazing.

Phase C to A. Develops with prescribed grazing and no fire.

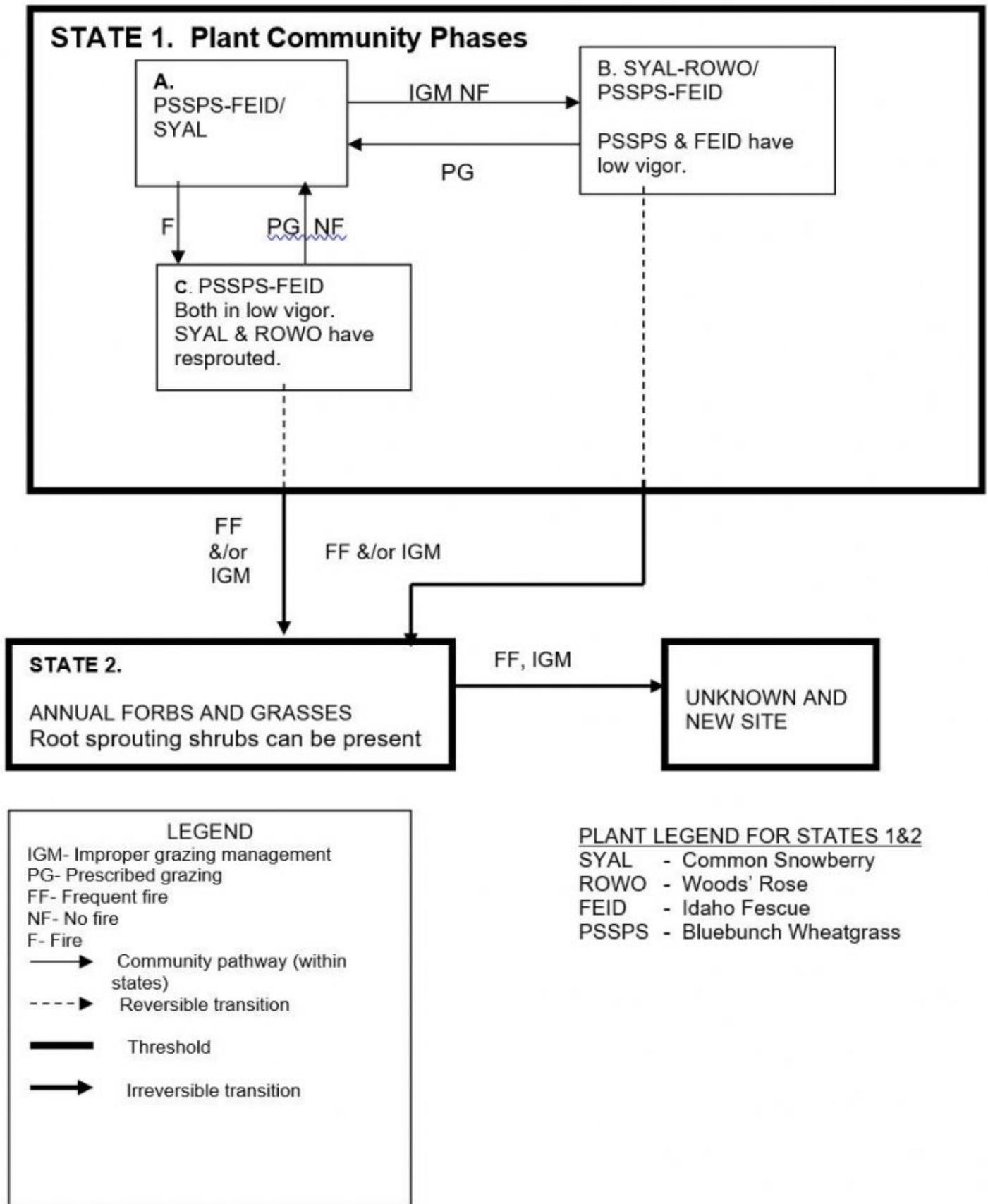
State 1 Phase B or C to State 2. Develops through frequent fire and/or continued improper grazing management. The site crosses the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is not economically feasible to move this state back to State 1 with accelerating practices.

Practice Limitations.

Severe limitations occur for seeding by mechanical methods due to steep slopes. Steepness of slopes limits movement of livestock. Severe limitations exist for brush management by surface methods due to slope. Careful planning is necessary for any application of brush management. Removal of snowberry can result in accelerated soil erosion.

State and transition model



State 1
State 1 Phase A

Community 1.1
State 1 Phase A

Reference Plant Community Phase. This plant community is dominated by bluebunch wheatgrass in the understory

and snowberry in the overstory. Subdominant species include Idaho fescue, silky lupine, Sandberg bluegrass, longleaf phlox, arrowleaf balsamroot, Woods' rose, mule-ears wyethia and wormleaf stonecrop. Natural fire frequency is 25-40 years.

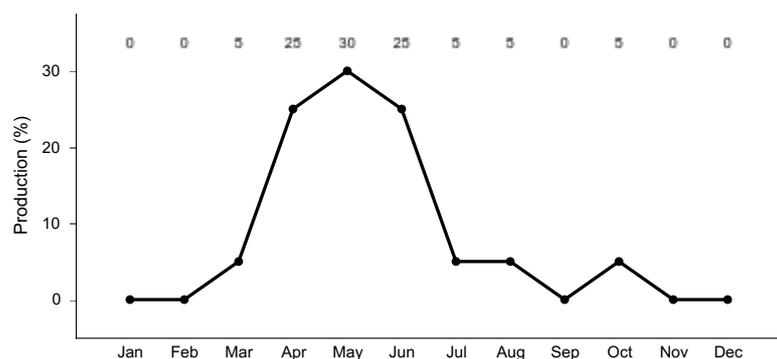


Figure 3. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 2

State 1 Phase B

Community 2.1

State 1 Phase B

This plant community is dominated by snowberry and Woods' rose with reduced amounts of bluebunch wheatgrass and Idaho fescue. All deep-rooted bunchgrasses are typically in low vigor. This phase has developed due to improper grazing management and no fire.

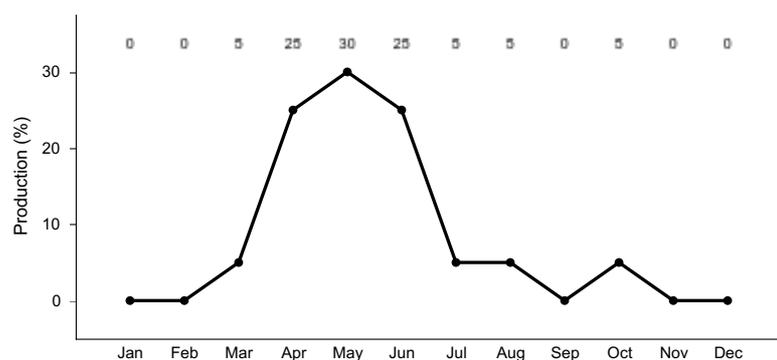


Figure 4. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 3

State 1 Phase C

Community 3.1

State 1 Phase C

This plant community is dominated by bluebunch wheatgrass and Idaho fescue with reduced vigor. Snowberry and Woods' rose have re-sprouted from the crown. Forbs remain about in the same proportion as Phase A. This plant community is the result of wildfire.

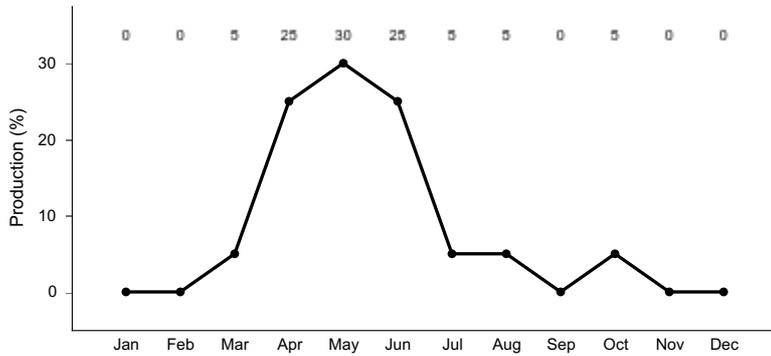


Figure 5. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

**State 4
State 2**

**Community 4.1
State 2**

This plant community is dominated by shallow rooted annual forbs and grasses. Root sprouting shrubs such as snowberry and Woods’ rose can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. This state has developed due to frequent fires and/or improper grazing management from Phase B or Phase C, State 1. The site has crossed the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

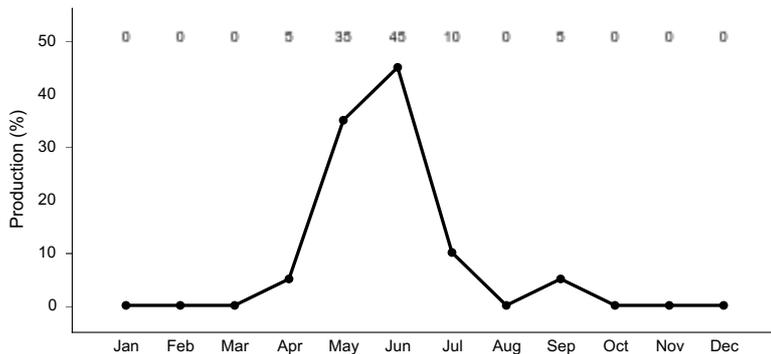


Figure 6. Plant community growth curve (percent production by month). ID1211, ANNUAL FORBS AND GRASSES. State 2.

**State 5
Unknown New Site**

**Community 5.1
Unknown New Site**

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires. It is not economically feasible to move this state back to State 1 with accelerating practices.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides habitat for many native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Mule deer and elk utilize the site throughout the year. The rangeland provides seasonal habitat for resident and migratory animals including western toad, shrews, bats, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, and prairie falcon. Wyoming ground squirrel, Idaho pocket gopher, Greater sage-grouse, sharp-tailed grouse, and Merriam's shrew are area sensitive species that may be associated with this site. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Bluebunch Wheatgrass/ Idaho Fescue/ Common Snowberry Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs, and shrubs used by native insect communities that assist in pollination. An extensive array of forbs is represented throughout the growing season leading to a diverse insect community. Many avian and mammal species utilize this habitat based on the availability of invertebrate prey species. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, western toad, and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude amphibian use on these sites. The plant community provides year-round food and cover for mule deer and elk. Mountain snowberry and Wood's rose are desirable browse for mule deer and elk. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, deer mice, and Great Basin pocket mice may utilize this plant community.

State 1 Phase 1.2- Common Snowberry/ Woods' Rose/ Bluebunch Wheatgrass/ Idaho Fescue Plant Community: This phase has developed due to fire frequency being much longer than normal. An increase in canopy cover of snowberry and sagebrush contributes to a decline in the herbaceous understory. Invertebrate diversity and populations would be similar to those in State 1 Phase 1.1. The reptile community will be similar to the State 1 Phase 1.1 community represented by common sagebrush lizard and western rattlesnake. Sagebrush will provide brood-rearing habitat, winter cover, and winter food for sage-grouse. The plant community provides year-round forage habitat for mule deer and elk. Mountain snowberry, wood's rose, and serviceberry are desirable browse for mule deer, elk, and pronghorn. A diverse small mammal population may include Idaho pocket gopher, golden-mantled ground squirrels, marmots, and chipmunks.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Idaho Fescue Plant Community: This plant community is the result of recent wildfire, prescribed burning, or brush management. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Patches of root sprouting shrubs (snowberry and wood's rose) may be present and provide limited vertical structure for wildlife over time. A native forb plant community similar to the one in State 1 Phase 1.1 would still support select pollinators. Habitat for common sagebrush lizard and western rattlesnake would be limited due to the reduction of the shrub canopy cover. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude the use of amphibians on these sites. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark, savannah sparrow, vesper sparrow, and western meadowlark). Mule deer and elk use would be seasonal in the spring and fall. The populations of small mammals would be dominated by open grassland species.

State 2 – Annual Forbs/ Grasses Plant Community:

This state has developed due to continued improper grazing management and frequent fire. The reduced diversity of forbs and shrubs would support a limited population of pollinators. Habitat value for sagebrush lizard and western rattlesnake would decrease due to the loss of shrubs. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Small mammal habitat quality would decline due to the loss of cover and forage habitat. Predator hunting success may increase due to the loss of cover for prey.

Grazing Interpretations.

This site is suited for grazing by domestic livestock in late spring, summer, and fall. The steeper slopes will limit livestock movement. Excessive trailing of livestock should be avoided to minimize terracette development and erosion on the steeper slopes.

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. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

No data.

Recreational uses

This site offers minimal recreation value.

Wood products

None.

Other products

None.

Other information

Field Offices

Arco, ID
Cascade, ID
Challis, ID
Nezperce, ID
Emmett, ID
Grangeville, ID
Gooding, ID
Lewiston, ID
Mountain Home, ID
Orofino, ID
Salmon, ID
Shoshone, ID
St. Anthony, ID
Weiser, ID

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".
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.
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.

Approval

Scott Woodall, 2/03/2020

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	06/12/2009
Approved by	Scott Woodall
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 they are present they are likely to occur immediately following wildfire or a high intensity convection storm.

2. **Presence of water flow patterns:** water-flow patterns occur on this site. When they occur, they are short and disrupted by cool season grasses, tall shrubs, and surface stones and are not extensive.

3. **Number and height of erosional pedestals or terracettes:** both occur on this site but are not extensive. In areas where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes occur on the site uphill from tall shrub bases and large bunchgrasses. They are not extensive.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. On sites in mid-seral status bare ground may range from 10-15 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:** 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 3 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 4 to 6 but needs to be tested.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Structure ranges from fine to medium granular. Soil organic matter (SOM) ranges from 2 to 5 percent. The A or A1 horizon is typically 5 to 11 inches thick and is very dark grayish brown moist.
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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. Tall shrubs catch blowing snow in the interspaces.
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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):** is not present.
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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: cool season deep rooted perennial bunchgrasses
- Sub-dominant: tall shrubs
- Other: perennial forbs
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** bluebunch wheatgrass and Idaho fescue will become decadent in the absence of normal fire frequency and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.
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14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed but is expected to be 10-20 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 1000 pounds per acre (1111 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 50-60 percent of the total production, forbs 15-25percent and shrubs 20-30 percent.
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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 Kentucky bluegrass, leafy spurge, dandelion, tarweed, mule-ears wyethia, western false-hellebore, coneflower, and diffuse and spotted knapweed.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
