USDA Natural Resources
Conservation Service

Ecological site R043BY019ID
North Slope Loamy 16-22 PZ SYORU/FEID-PSSPS

Last updated: 2/03/2020
Accessed: 05/11/2025

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 receives no additional water.
• Slope is >30%
• Soils are:
o Textures range from very fine sandy loam to clay loam in top 4” (10 cm) of mineral soil surface
o Clay content is or = 35% in top 4” (10 cm) of mineral soil surface
o Each following subsurface horizon has a clay content of <35% by weighted average in the particle size control section
o Moderately deep to very deep (20-78+ in. (50-200+ cm)
o <3% stone and boulder cover and <20% cobble and gravel cover
o Not skeletal (<35% rock fragments) within 20” (51 cm) of mineral soil surface
o None to Slightly effervescent throughout top 20” (51 cm) of mineral soil surface
o Non-saline, sodic, or saline-sodic

Associated sites

R043BY002ID	**Granitic 22+ PZ ARTRV/FEID**
R043BY003ID	**Loamy 22+ PZ FEID-PSSPS**
R043BY004ID	**Shallow Fractured Stony Loam 16-22 PZ ARTRV/FEID**
R043BY009ID	**Loamy 16-22 PZ ARTRV/FEID**
R043BY017ID	**Shallow Stony 22+ PZ ARTRV/FEID**
R043BY018ID	**South Slope Stony 22+ PZ PSSP6-FEID**
R043BY020ID	**South Slope Gravelly 16-22 PZ ARTRV/BRMA4-ELTRT**
R043BY022ID	**Windswept Mountain Ridge 22+ PZ FEID-CAREX**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on mountain sides with moderate to steep northerly and easterly facing slopes. Elevations range from 5500 to 10000 feet (1650-3050 meters). Slopes range from 30 to 70 percent.

Table 2. Representative physiographic features

Landforms	(1) Hill
Elevation	1,676–3,048 m
Slope	30–70%
Aspect	N, E

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)	610 mm

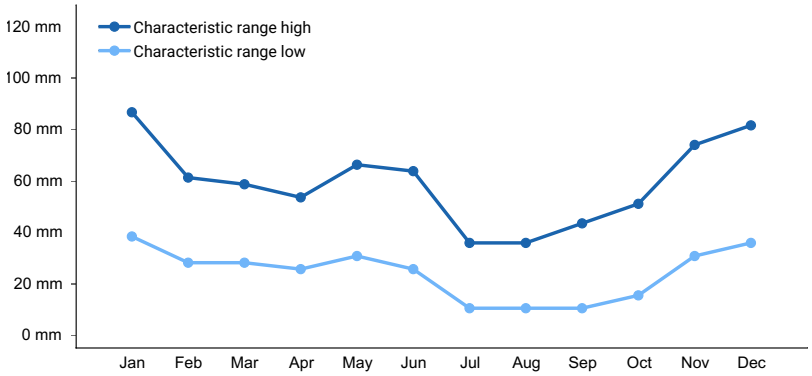


Figure 1. Monthly precipitation range

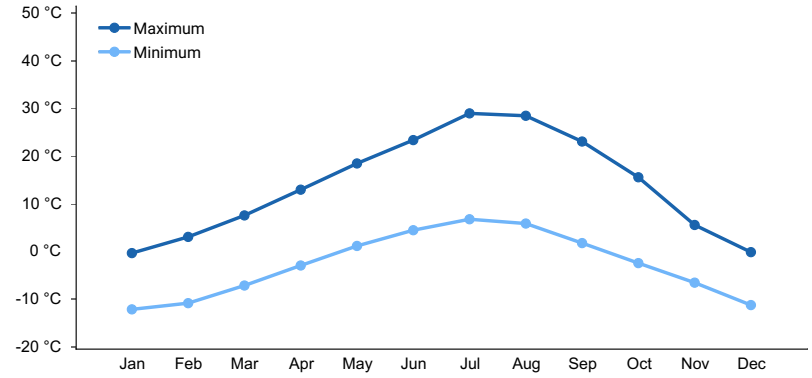


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

Soils are generally deep, well drained silt loams to loams. The available water holding capacity (AWC) is high. Erosion hazard is slight to severe. Subsoils are gravelly to channery or flaggy loams, clay loams, or sandy loams. Soils on this site are in hydrologic group B.

Soil Series Correlated to this Ecological Site

No Data

Ecological dynamics

The dominant visual aspect of this site is Utah snowberry in the overstory with an Idaho fescue understory. Composition by weight is approximately 50 to 60 percent grasses, 20 to 30 percent forbs, and 15 to 25 percent shrubs.

During the last few thousand years, this site has evolved in a cool 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, Rocky Mountain elk, and lagomorphs.

Fire has historically occurred on the site at intervals of 20 - 50 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 Utah snowberry and Idaho fescue. Bluebunch wheatgrass, slender wheatgrass, and mountain big

sagebrush are common in the community. The plant community is very diverse and there are a large variety of other grasses and forbs in minor amounts. The plant species composition of Phase A is listed later under “Reference Plant Community Phase Plant Species Composition”.

Total annual production is 1850 pounds per acre (2072 kilograms per hectare) in a normal year. Production in a favorable year is 2600 pounds per acre (2912 kilograms per hectare). Production in an unfavorable year is 1150 pounds per acre (1288 kilograms per hectare). Structurally, cool season deep-rooted perennial bunchgrasses are more dominant than forbs followed by shrubs.

FUNCTION:

Big game animals use the site in the late spring, summer, and fall. Livestock use is best in the summer and fall. The site has good recreational value for hunting.

Due to the steep slopes on this site, it is susceptible to degradation from erosion. The site has moderate to severe limitation for livestock grazing due to steep slopes. Most degradation occurs on the foot slopes of the site where it is adjacent to the drainage bottom. Runoff, when it does occur can be erosive particularly during high intensity convection storms.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency and ungulate grazing, mountain big sagebrush, Idaho fescue, and bluebunch wheatgrass can become decadent. This is apparent by dead centers in the crowns of grasses and dead and dying branches in the sagebrush. Utah snowberry will usually be maintained in the stand and green rabbitbrush may increase.

When fires become more frequent than historic levels (20-50 years), mountain big sagebrush, Idaho fescue, and bluebunch wheatgrass can be reduced in the plant community. With continued short fire frequency, these species can be completely eliminated along with some forbs. These species may be replaced by a variety of annual and perennial forbs including noxious and invasive species. These fine fuels will cause fires to become more frequent. Kentucky bluegrass may invade the site. Utah snowberry may be maintained in the community due to sprouting from the crown. Green rabbitbrush will usually increase.

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 Utah snowberry, Woods’ rose, mountain big sagebrush, and rabbitbrush will occur and noxious and invasive plants will invade. Kentucky bluegrass may invade the site.

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. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Prescribed burns need to be carefully planned on this site due to the elevation, the species involved, and the wildlife values associated with this site.

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.

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:

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 plants 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 will use this site in the late summer, summer, and fall. 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 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.

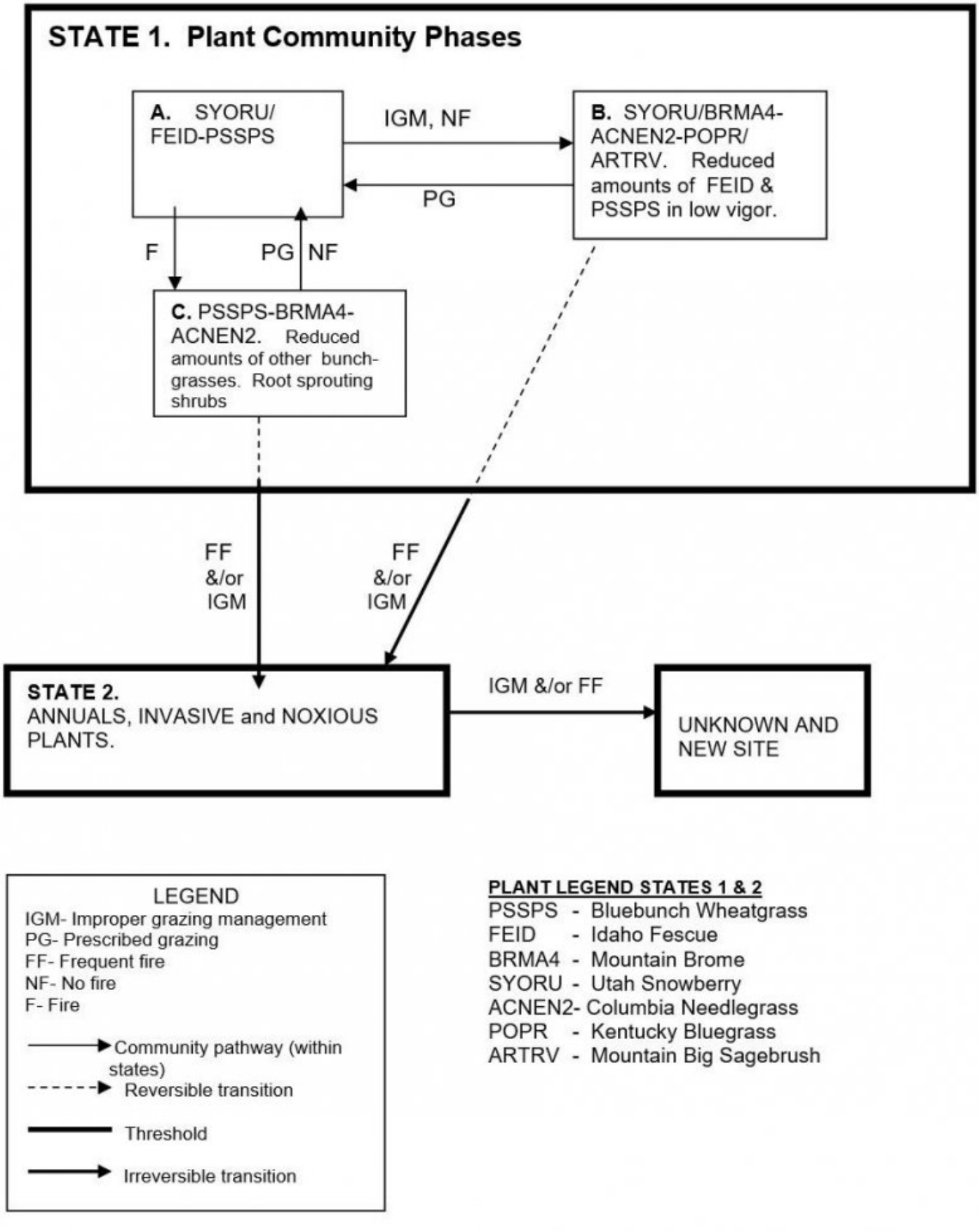
State 1, Phase B or C to State 2. Develops through frequent fire and/or continued improper grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

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 economically impractical to return this plant community to State 1 with accelerating practices.

Practice Limitations:

Severe limitations exist on this site for accelerated and facilitating practices due to steep slopes. Moderate limitations exist on this site for vegetative management practices due to steep slopes.

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 Utah snowberry and Idaho fescue. Bluebunch wheatgrass, slender wheatgrass, and mountain big sagebrush are common in the community. The plant community is very diverse and there are a large variety of other grasses in minor amounts. There are also a large variety of forbs in minor amounts. Natural fire frequency is 20-50 years.

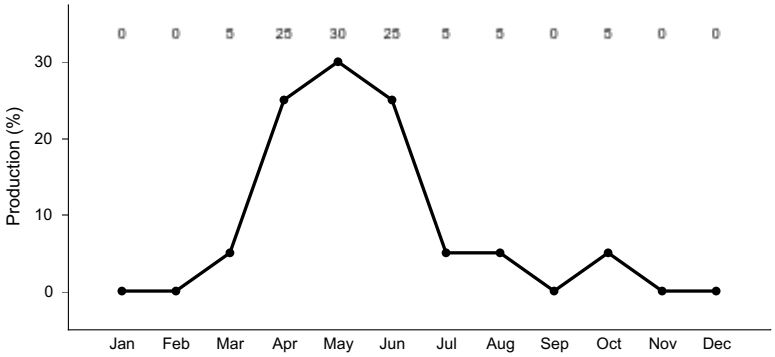


Figure 3. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

This plant community is dominated by Utah snowberry with reduced amounts of Idaho fescue and bluebunch wheatgrass. Mountain brome has increased significantly. Columbia needlegrass, slender wheatgrass, and mountain big sagebrush have also increased. All deep-rooted bunchgrasses are typically in low vigor. Forbs have increased. Other shrubs may have increased slightly. Some Kentucky bluegrass has invaded the site along with some annuals. This state has developed due to improper grazing management and no fire.

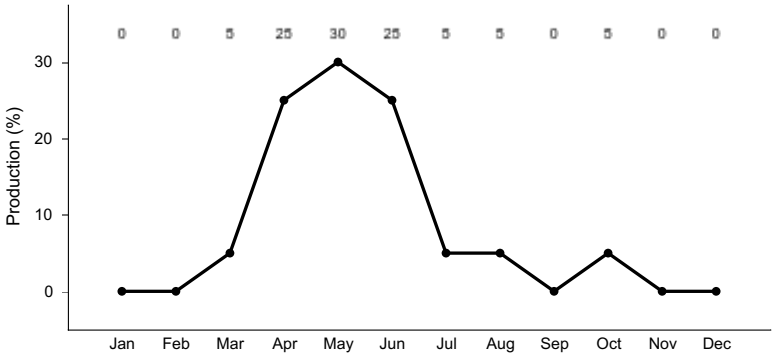


Figure 4. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 3
State 1 Phase C

Community 3.1
State 1 Phase C

This plant community is dominated by bluebunch wheatgrass with increased amounts of mountain brome, Columbia needlegrass, and slender wheatgrass. Most mountain big sagebrush has been killed. Idaho fescue is still in the plant community but in reduced amounts and low vigor. Utah snowberry, rabbitbrush, and Woods' rose are resprouting from the base. Some annuals may have invaded the site. This plant community is the result of wildfire.

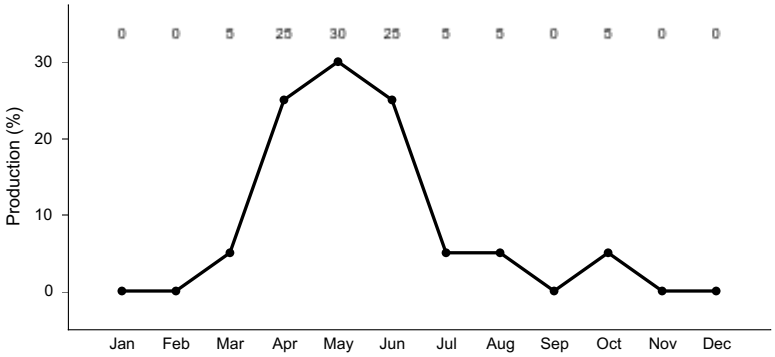


Figure 5. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 4
State 2

Community 4.1
State 2

This plant community is dominated by annual grasses and forbs including invasive and noxious plants. Some sprouting shrubs such as rabbitbrush can still be present in small amounts, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. The annuals are controlling the site. This state has developed due to frequent fires and/or improper grazing management from either Phase B or C, State 1. This site has crossed a vegetative threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

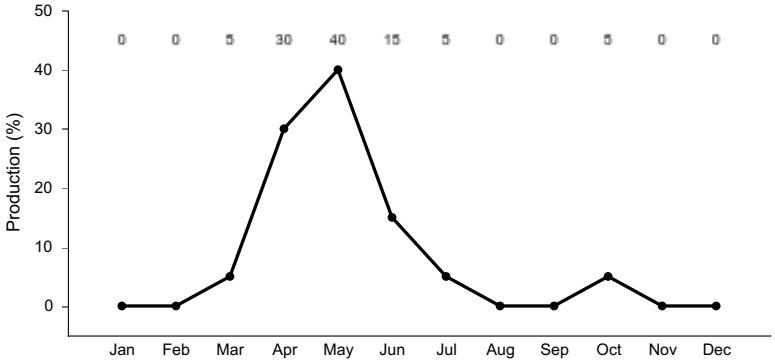


Figure 6. Plant community growth curve (percent production by month). ID1202, ANNUALS. State 2.

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 economically impractical to return this plant community to State 1 with accelerating practices.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides habitat for native wildlife species which can tolerate high elevations and a cold climate. 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 in the spring, summer, and fall. 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 maybe associated with this site. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Utah Snowberry/ Bluebunch Wheatgrass/ Idaho Fescue 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 mixed shrub community provides habitat for sage sparrow, Brewer's sparrow, and sage thrasher. The location of this plant community, typically adjacent to forestland provides seasonal habitat for birds like mountain bluebird, common yellowthroat, and lesser goldfinch. Sage-grouse brood-rearing habitat is provided by this plant community. Limited nesting and winter habitat for sage-grouse may be present when mountain big sagebrush canopy cover reaches 10% or greater. The plant community provides spring, summer, and fall forage and cover for mule deer and elk. Utah 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. Pika may be present at the higher elevations when adjacent to talus slopes.

State 1 Phase 1.2- Utah Snowberry/ Mountain Brome/ Columbia Needlegrass/ Kentucky Bluegrass/ Mountain Big Sagebrush Plant Community: This phase has developed due to improper grazing management and no fire. 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 can provide brood-rearing, winter cover, and winter food habitat 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. Pika may be present at the higher elevations when adjacent to talus slopes.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Mountain Brome/ Columbia Needlegrass 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 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). Sharp-tailed grouse may utilize this site as shrubs begin to establish on the site. 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 – Annuals/ Invasive and Noxious 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 a loss of cover and forage habitat. Predator hunting success may increase due to a loss of cover for prey.

Grazing Interpretations.
This site is suitable for late spring, summer, and fall grazing by livestock.
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

The soils in this site are in hydrologic group B. When the hydrologic conditions of the vegetative cover are good, natural erosion hazard is slight to moderate.

Recreational uses

The site has slight recreational value. Some opportunities exist for hunting, hiking, and photography. Some aesthetic values do exist due to its' topographic setting on steep canyon slopes.

Wood products

None.

Other products

None.

Other information

Field Offices

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

Type locality

Location 1: Clark County, ID	
General legal description	U.S. Sheep Experiment Station, summer range in the central mountains of Idaho.

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.

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.

Author(s)/participant(s)	Dave Franzen and Jacy Gibbs Intermountain Range Consultants 17700 Fargo Rd. Wilder, ID 83676
Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA-NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	06/15/2009
Approved by	Scott Woodall
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills are rare on this site. If rills are present they are likely to occur immediately following wildfire and on soils with surface textures of silt loam and clay loam.

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

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3. **Number and height of erosional pedestals or terracettes:** both are rare on the site and neither is 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. Contour terracettes can form from livestock grazing on steeper slopes.

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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 areas in mid-seral status bare ground may range from 10 to 20 percent.

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

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

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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.

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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):** No data.

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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.

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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: forbs

    Other: tall shrubs

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** mountain big sagebrush, Idaho fescue, and bluebunch wheatgrass can become decadent in the absence

of normal fire frequency and ungulate grazing. This is evident by dead centers in the crowns of the bunchgrasses and dead limbs on the shrubs.

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14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed but is expected to be 20-30 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 1850 pounds per acre (2072 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 50-60 percent of the total production, forbs 20-30 percent, and shrubs 15-25 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 bulbous bluegrass, Kentucky bluegrass, rush skeletonweed, musk and scotch thistle, diffuse and spotted knapweed, leafy spurge, dalmation toadflax, yellow star thistle, tarweed, mule-ears, western false hellebore, and coneflower.

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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
