USDA Natural Resources
Conservation Service

Ecological site R043BY020ID
South Slope Gravelly 16-22 PZ ARTRV/BRMA4-ELTRT

Last updated: 2/03/2020
Accessed: 05/20/2025

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

Artemisia vaseyana/ Festuca idahoensis HT in “Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number “35”.

Ecological site concept

Site does not receive any additional water.

Soils are:
not saline or saline-sodic.
moderately deep, deep, 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**
R043BY009ID	**Loamy 16-22 PZ ARTRV/FEID**
R043BY016ID	**Shallow Gravelly 16-22 PZ ARAR8/FEID**

Similar sites

R043BY009ID	**Loamy 16-22 PZ ARTRV/FEID**
R043BY003ID	**Loamy 22+ PZ FEID-PSSPS**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on steep mountain sideslopes. Slopes range from 30-70 percent and occur on south and west aspects. Elevations range from 6500 to 10000 feet (1850-3050 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountain
Elevation	1,981–3,048 m
Slope	30–70%
Water table depth	152 cm
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)	610 mm

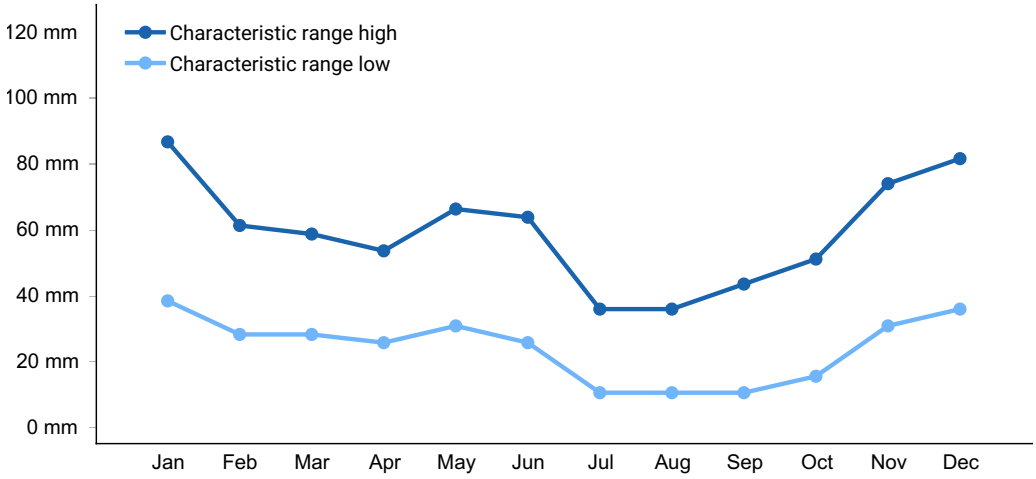


Figure 1. Monthly precipitation range

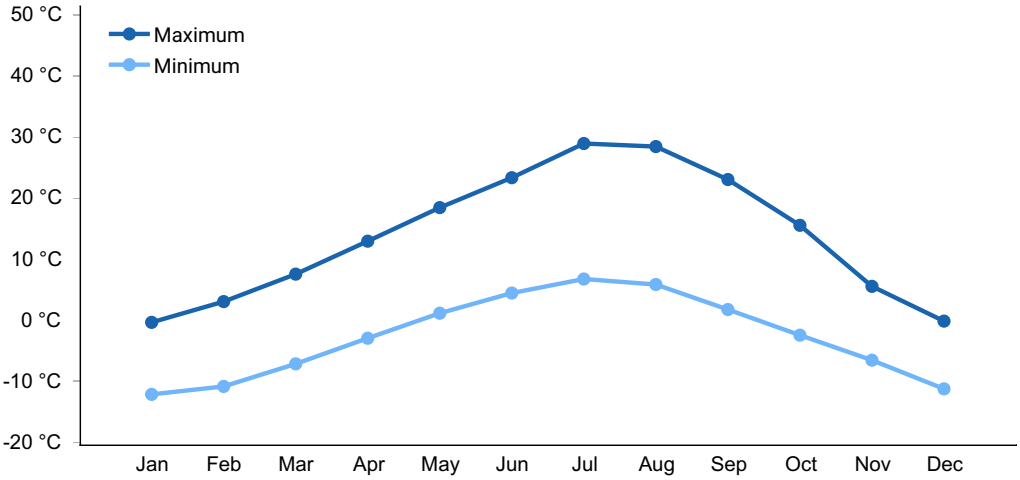


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

These soils on this site are well drained and deep to very deep. They have formed in gravelly residuum and colluvium. Coarse fragment content below ten inches ranges from 35-80 percent and tends to increase with depth. The reaction is slightly acid to neutral and available water capacity is very low to low. These soils are characterized by xeric moisture and frigid temperature regimes.

Soil Series Correlated to this Ecological Site

Lionhead

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Very gravelly
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	102–152 cm
Surface fragment cover <=3"	10–30%
Surface fragment cover >3"	5–15%
Available water capacity (0-101.6cm)	6.6–9.14 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	25–65%
Subsurface fragment volume >3" (Depth not specified)	15–45%

Ecological dynamics

The dominant visual aspect of the site is a mixed grass-forb-shrub community. Composition by weight is approximately 25-35 percent grasses, 30-40 percent forbs, and 30-40 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 co-dominated by slender bearded wheatgrass, mountain brome, and sticky geranium in the understory and mountain big sagebrush in the overstory. Subdominant species include elksedge, bluebunch wheatgrass, Idaho fescue, mountain silver sagebrush, arrowleaf balsamroot, silvery lupine, and mountain snowberry. 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 “Reference Plant Community Phase Plant Species Composition”.

Total annual production is 1050 pounds per acre (1166 kilograms per hectare) in a normal year. Production in a favorable year is1500 pounds per acre (1666 kilograms per hectare). Production in an unfavorable year is 600 pounds per acre (666 kilograms per hectare). Structurally, cool season deep rooted perennial bunchgrasses are about equal to tall shrubs which are about equal to 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, mountain big sagebrush will gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, mountain big sagebrush can displace most of the primary understory species.

When fires become more frequent than historic levels (25-40 years), mountain big sagebrush is reduced significantly. Mountain snowberry, Woods' rose and serviceberry will increase. With continued short fire frequency, mountain big sagebrush can be completely eliminated along with many of the desirable understory species such as slender wheatgrass. These species may be replaced by Kentucky bluegrass along with a variety of annual and perennial forbs including noxious and invasive plant species. 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 mountain big sagebrush. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Careful planning and evaluation needs to be conducted prior to any prescribed burns on 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.

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 occur periodically. 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 mountain big sagebrush. 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.

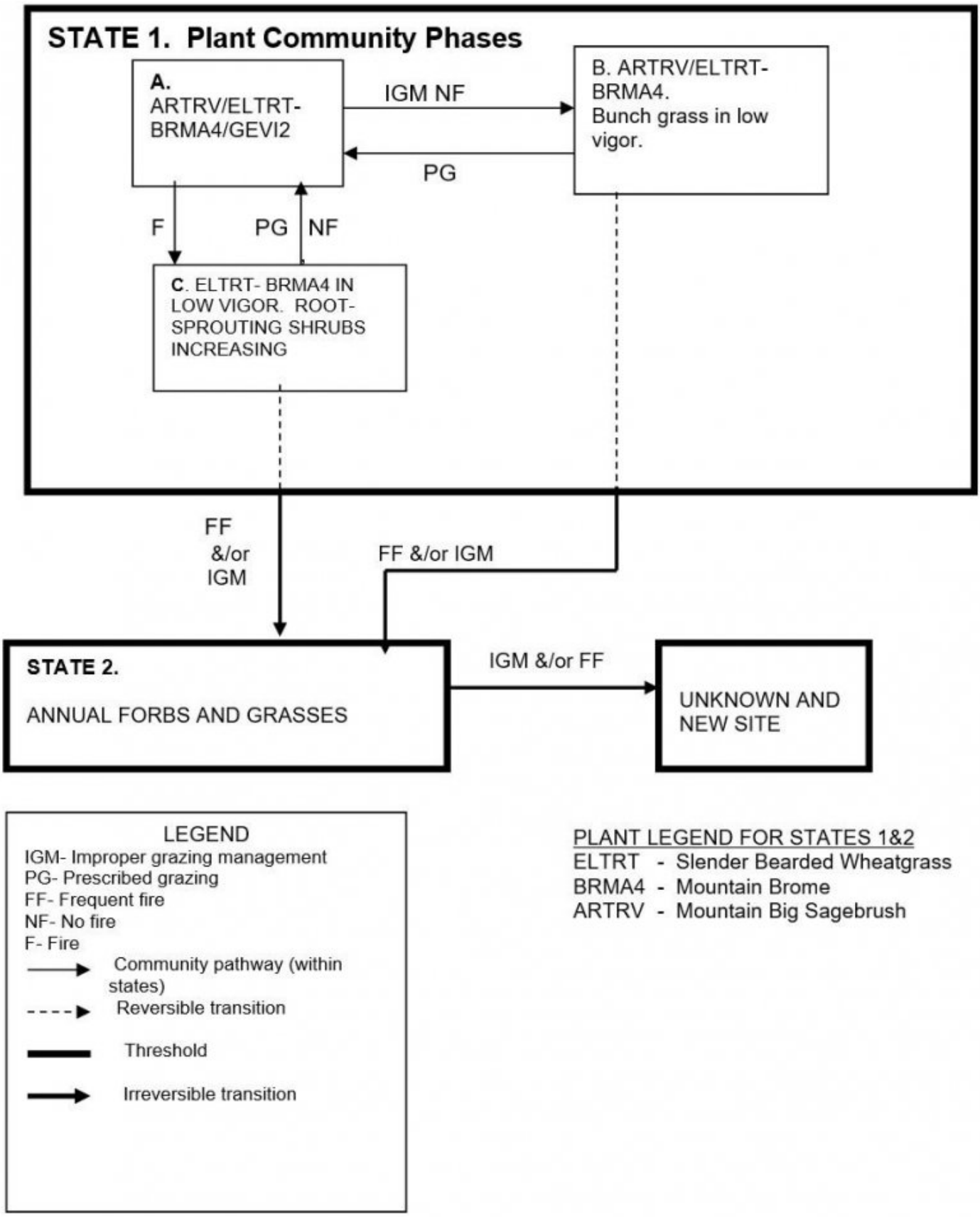
State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is not economically

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 mountain big sagebrush 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 co-dominated by slender bearded wheatgrass, mountain brome, and sticky geranium in the understory and mountain big sagebrush in the overstory. Subdominant species include elk sedge, bluebunch wheatgrass, Idaho fescue, mountain silver sagebrush, arrowleaf balsamroot, silvery lupine, and mountain snowberry. There is a large variety of other forbs and some other shrubs that can occur in minor amounts. Natural fire frequency is 25-40 years.

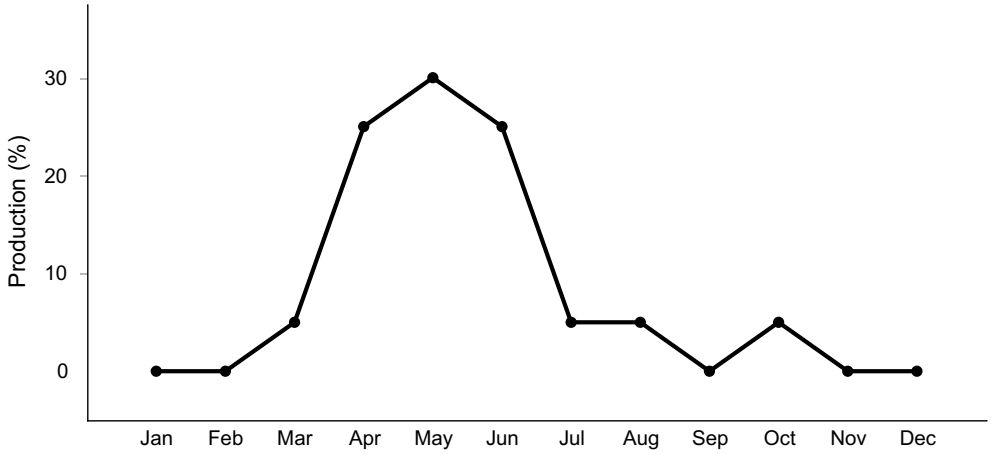


Figure 3. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

This plant community is dominated by mountain big sagebrush with reduced amounts of slender bearded wheatgrass and mountain brome. All deep-rooted bunchgrasses are typically in low vigor. This phase has developed due to improper grazing management and no fire.

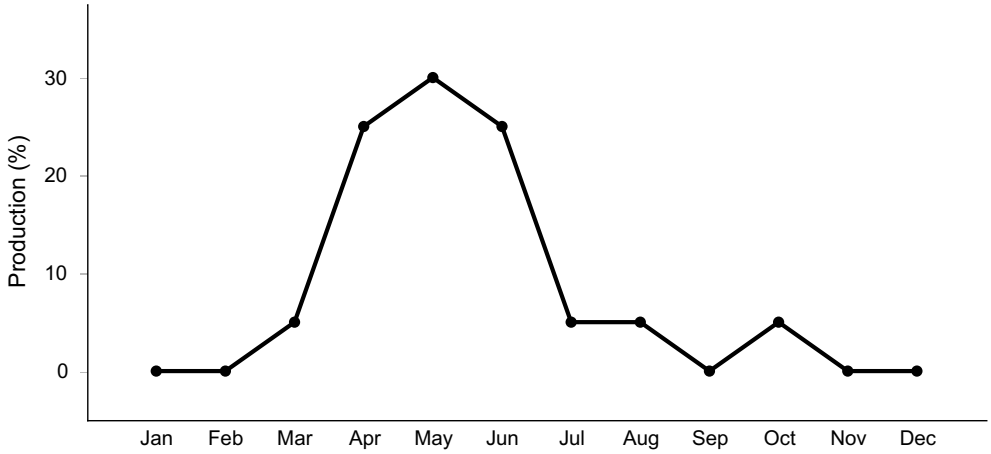


Figure 4. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

State 3
State 1 Phase C

Community 3.1
State 1 Phase C

This plant community is dominated by slender bearded wheatgrass and mountain brome with reduced vigor. Forbs remain about in the same proportion as in Phase A. Root sprouting shrubs are increasing. This plant community is the result of wildfire.

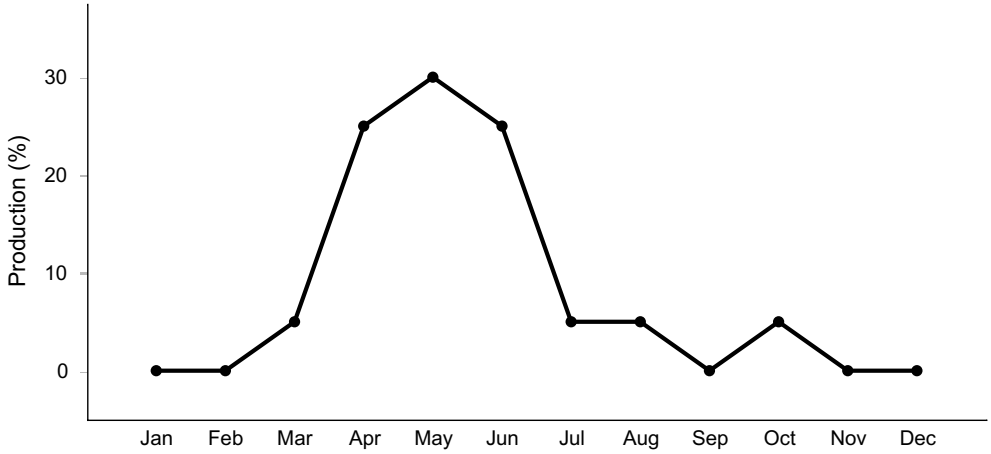


Figure 5. Plant community growth curve (percent production by month). ID1205, FEID-PSSPS. State 1.

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 either Phase B or 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.

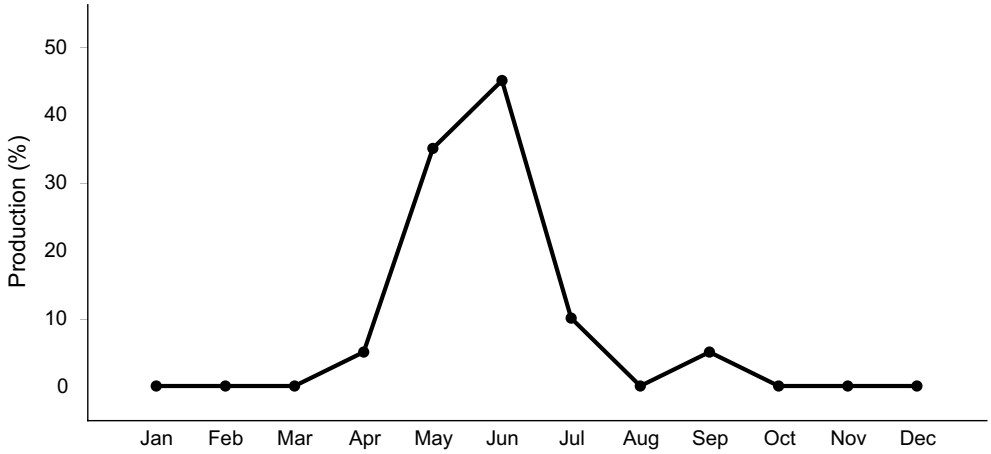


Figure 6. Plant community growth curve (percent production by month). ID1211, ANNUAL FORBS AND GRASSES. State 2.

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 diverse habitat for native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Mule deer, elk, and bighorn sheep are the large herbivores utilizing the site. 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. Area sensitive species include Merriam’s shrew, Brewer’s sparrow, sage thrasher, sage sparrow, sharp-tailed grouse, and Greater sage-grouse. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Mountain Big Sagebrush/ Slender Bearded Wheatgrass/ Mountain

Brome/ Sticky Geranium 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 and plant structural diversity. 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. Native shrub-steppe obligate avian species utilizing the habitat include the Brewer's sparrow, sage sparrow, sage grouse, and sage thrasher. Sage-grouse may utilize this site for nesting, brood rearing, winter cover, and winter food habitat. Sharp-tailed grouse may also utilize this plant community. The plant community provides spring, fall, and winter (south slopes) forage and cover for mule deer, bighorn sheep, and elk. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, Great Basin pocket mice, and deer mice may utilize this plant community. Pika may be present at higher elevations when adjacent to talus slopes.

State 1 Phase 1.2 – Mountain Big Sagebrush/ Slender Bearded Wheatgrass/ Mountain Brome Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy cover of sagebrush contributes to a decline in vigor and production of native deep rooted grasses and forbs. The reduced diversity of the herbaceous understory may reduce the diversity of insects. The reptile community would be similar to the reptile community in State 1 Phase 1.1. Shrub-steppe obligate avian species using the site include Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Quality of habitat (brood-rearing and nesting cover) for sage-grouse is reduced due to poor vigor and less diversisty in the herbaceous plant community. Winter habitat (cover and food) for sage-grouse is provided. The reduced vigor and production of understory vegetation provides a shorter grazing season for mule deer and elk. Young of year cover may be provided for large herbivores. Small mammal diversity and populations would be similar to those in State 1 Phase 1.1.

State 1 Phase 1.3– Slender Bearded Wheatgrass/ Mountain Brome Plant Community: This plant community is a result of recent wildfire, prescribed burning, or brush management. The plant community, dominated by herbaceous vegetation with little or no sagebrush would provide less vertical structure for animals. Patches of root sprouting shrubs (mountain snowberry, Wood's rose, and serviceberry) may be present to provide limited vertical structure for wildlife. Insect diversity would be reduced due to the reduced shrub cover but a native forb plant community similar to that in State 1 Phase 1.1 would still support select pollinators. Habitat quality for reptiles including common sagebrush lizard and western rattlesnake would decline due to the loss of sagebrush. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibians on these sites. The lack of sagebrush canopy cover would limit use of this area as nesting habitat for Brewer's

sparrow, sage sparrow, sage grouse, and sage thrasher. The herbaceous vegetation improves habitat for bird species that favor grassland habitat including horned lark, savannah sparrow, vesper sparrow, and western meadowlark. Sage-grouse may use this site for brood-rearing habitat when sagebrush cover is nearby. Habitat quality for sharp-tailed grouse may increase as patches of shrubs become established. Mule deer and elk use would be seasonal (spring and fall) due to the reduced shrub cover. As mountain snowberry, Wood's rose, and serviceberry begin to establish, the quality of browse for elk and mule deer will increase. The populations of small mammals would be dominated by open grassland species. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for shrub-steppe obligate animal species.

State 2 – Annual Forbs/ Grasses Plant Community: This state has developed due to improper grazing management and/or frequent fire. The reduced native forb and shrub components in the plant community would support a very limited population of pollinators. Season long pollinator habitat is not provided at the same quality level as in State 1 Phase 1.1. Habitat quality would decline for common sagebrush lizard and western rattlesnake due to the loss of sagebrush. The loss of sagebrush would severely reduce the quality of the habitat for sage thrasher, Brewer's sparrow, sage-grouse, and sage sparrow, eliminating nesting and escape cover. Birds of prey including hawks and falcons may range throughout this area looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the vegetation (cheatgrass) is more palatable. The populations of small mammals would be dominated by open grassland species. Hunting success by predators on small mammals would increase. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for shrub-steppe obligate animal species.

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

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

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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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 can occur on this site. If rills are present they are likely to occur immediately following wildfire or a high intensity convection storm.

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2. **Presence of water flow patterns:** water-flow patterns occur on this site. When they do they

are short and disrupted by cool season grasses and tall shrubs and are not extensive.

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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.

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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 sites in mid-seral status bare ground may range from 10-15 percent.

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

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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.

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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):** Structure ranges from moderate fine to very fine granular. Soil organic matter (SOM) ranges from 3 to 5 percent. The A or A1 horizon is typically 3 to 6 inches thick and dark brown when 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 tall shrubs perennial forbs

    Sub-dominant:

    Other:

    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 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 1050 pounds per acre (1166 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 25-35 percent of the total production, forbs 30-40 percent and shrubs 30-40 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.
