

Ecological site R010XY022ID Granitic 16-22 PZ PSSPS-FEID

Last updated: 9/23/2020
 Accessed: 05/06/2024

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.

Classification relationships

No data.

Associated sites

R010XY002ID	Very Shallow 12-20 PZ ARRI2/POSE
R010XY004ID	South Slope Loamy 16-22 PZ ARTRX/PSSPS
R010XY005ID	North Slope Loamy 16-22 PZ ARTRV/FEID
R010XY013ID	North Slope Granitic 16-22 PZ ARTRV/FEID
R010XY018ID	Shallow South Stony 14-18 PZ PSSPS-POSE
R010XY021ID	Stony Loam 16-22 PZ ARTRT/PSSPS

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on gently to moderately sloping foothills and mountain slopes on all aspects. Elevations range from 3000 to 5000 feet (900-1550 meters). Slopes range from 5 to 30 percent.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan (3) Hill
Elevation	914–1,524 m
Slope	5–30%
Water table depth	152 cm

Climatic features

The elevation of MLRA 10 ranges from 1791 feet to 9236 feet, with a mean of 4602 feet. Overall, elevation increases from west to east. However, average annual precipitation decreases from west to east, ranging from 16.59 inches to 22.17 inches, with a mean of 19.56 inches, based on 7 long term climate stations throughout the

MLRA. In general, precipitation peaks in December and January, with a steady decline to a low in July and August, then a steep increase during the autumn months. Most of the winter precipitation falls as snow, and maximum annual snowfalls of up to 82 inches have been recorded.

There is considerable variation in temperature throughout the year. Temperatures as low as -52° Fahrenheit and as high as 117° Fahrenheit are on record. Some areas have recorded the occurrence of more than 50 days with temperatures above 90° Fahrenheit. The average maximum annual temperature is 63 degrees F, while the average minimum temperature is 36.2 degrees F. The frost-free period can range from 128 to 152 days, while the freeze-free period can be from 164 to 189 days.

Both the average morning and average afternoon relative humidity values are lowest in July and August, and are below the national average. The number of clear, sunny days peaks during this same period, and is higher than the national average. During the Spring and Summer months high-intensity convective thunderstorms are not unusual.

Table 3. Representative climatic features

Frost-free period (average)	152 days
Freeze-free period (average)	189 days
Precipitation total (average)	559 mm

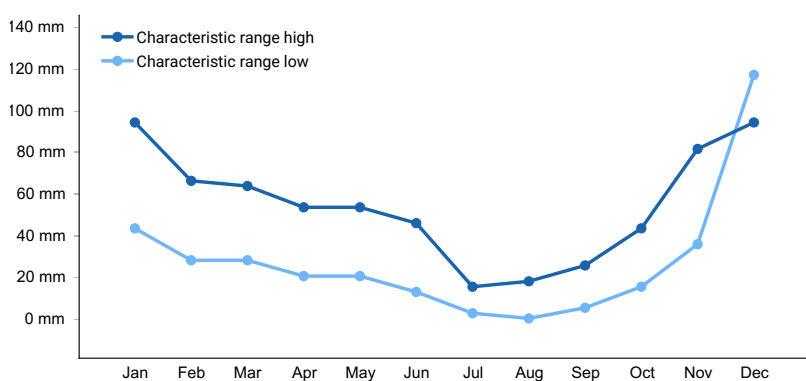


Figure 1. Monthly precipitation range

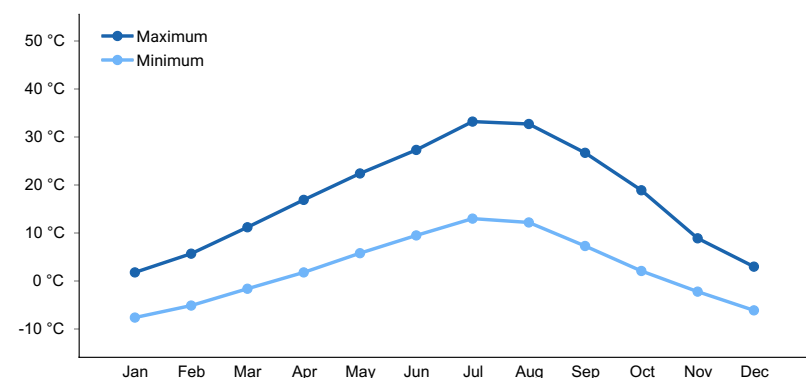


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils are generally moderately deep to deep coarse sandy loams with coarse sandy clay loam subsoils over decomposed granite. They are well drained, with moderate permeability and available water holding capacity is moderate. Runoff is medium to very high. Erosion hazard by wind is moderate, by water is slight to severe. The surface texture is generally loam or sandy loam. These soils are characterized by a xeric moisture regime. Soil temperature regime is mesic.

Soil Series Correlated to this Ecological Site

Brownlee

Table 4. Representative soil features

Surface texture	(1) Sandy loam (2) Loam
Drainage class	Well drained
Permeability class	Moderately slow to moderate
Soil depth	152 cm
Surface fragment cover <=3"	0–15%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	15.24 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)	5.6–7.3
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The dominant visual aspect is grassland with bluebunch wheatgrass dominant and Idaho fescue subdominant. Composition by weight is approximately 75 to 85 percent grasses, 10 to 20 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, Rocky Mountain elk, and lagomorphs.

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

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 with Idaho fescue subdominant. Needlegrasses are prominent and a variety of other grasses occur in minor amounts. Arrowleaf balsamroot is the dominant forb and a variety of other forbs occur in minor amounts. There are few shrubs that may include common snowberry, Woods' rose, and mountain big sagebrush. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 1500 pounds per acre (1680 kilograms per hectare) in a normal year. Production in a favorable year is 1800 pounds per acre (2016 kilograms per hectare). Production in an unfavorable year is 1200 pounds per acre (1344 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.

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 some recreational value for hunting.

The site is easily accessible by livestock and therefore can be degraded by improper grazing management.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, little decadence is expected. Most shrubs will increase slightly in the plant community.

When fires become more frequent than historic levels (20-50 years), Idaho fescue may be reduced in the stand. With continued short fire frequency, bluebunch wheatgrass, Idaho fescue, and other grasses 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. Cheatgrass may invade the site. Root sprouting shrubs will usually be maintained in the community.

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 mountain big sagebrush, mountain snowberry, Woods' rose, and rabbitbrush will occur and noxious and invasive plants will invade. Cheatgrass 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. Burns in areas without suitable stands of perennial grasses can lead to an increase in cheatgrass which will result in a more frequent fires regime.

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 and mormon cricket 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 will use this site in the late spring, summer, and fall. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

As perennial bunchgrasses decrease, forbs become more dominant. This has little impact on the infiltration rate or runoff. This composition change can affect nutrient and water cycles. Increased runoff will only occur from unusual events such as rapid snowmelt or high precipitation on frozen soils. Some soil erosion can occur as the frozen soils thaw with continued precipitation. 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 usually due to dominance by forbs.

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.

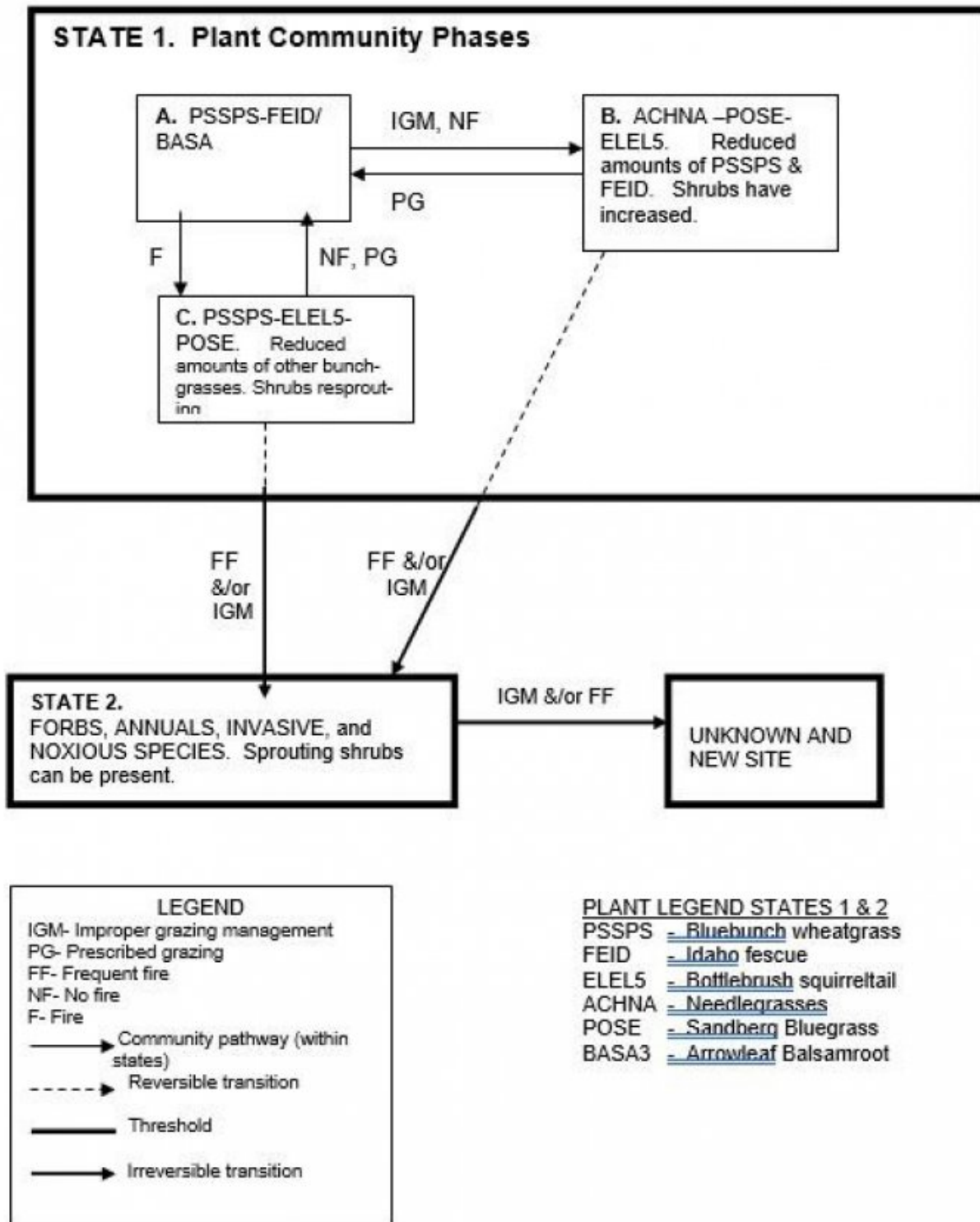
State 1, Phase B or C to State 2. Develops through frequent fire and/or continued improper grazing management. This site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

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:

Moderate to severe limitations exist on this site for rangeland seeding due to coarse soil surface textures. Slight limitations exist for facilitating and vegetative management practices.

State and transition model



State 1
State 1 Phase A

Community 1.1
State 1 Phase A

State 1, Phase A. Reference Plant Community Phase. This plant community is dominated by bluebunch wheatgrass with Idaho fescue subdominant. Needlegrasses are prominent and a variety of other grasses occur in minor amounts. Arrowleaf balsamroot is the dominant forb and a variety of other forbs occur in minor amounts. There are few shrubs that may include common snowberry, Woods' rose, and mountain big sagebrush. Natural fire frequency is 20-50 years.

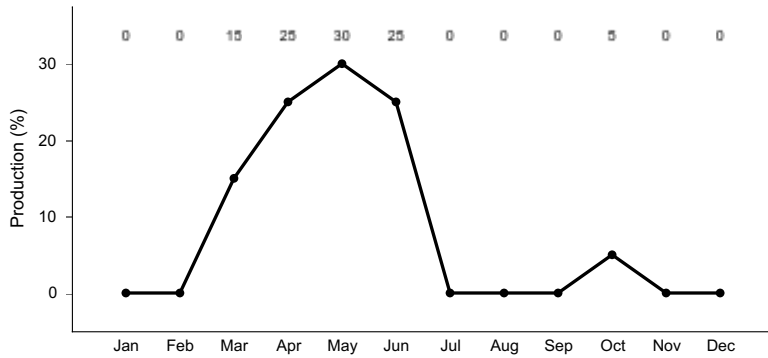


Figure 3. Plant community growth curve (percent production by month). ID0205, D25 ARTRV South. State 1.

**State 2
State 1 Phase B**

**Community 2.1
State 1 Phase B**

State 1, Phase B. This plant community is dominated by needlegrasses, Sandberg bluegrass, and bottlebrush squirreltail. There is a reduced amount of bluebunch wheatgrass and Idaho fescue and they are in low vigor. Shrubs and some forbs have increased. Some annuals may have invaded the site. Kentucky bluegrass may have also invaded the site. This phase has developed due to improper grazing management and no fire.

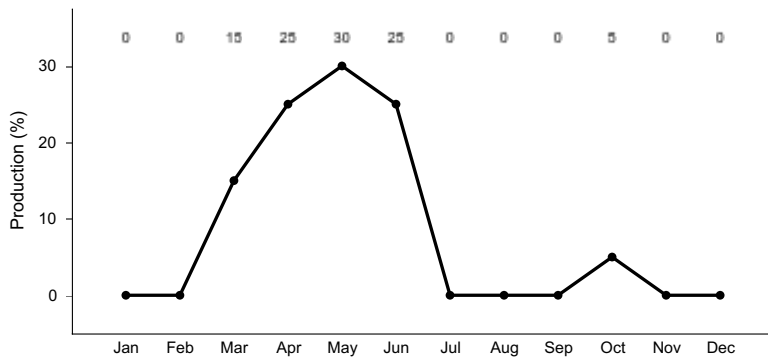


Figure 4. Plant community growth curve (percent production by month). ID0205, D25 ARTRV South. State 1.

**State 3
State 1 Phase C**

**Community 3.1
State 1 Phase C**

State 1, Phase C. This plant community is dominated by bluebunch wheatgrass. Some Idaho fescue may have been killed by fire and is in low vigor. Bottlebrush squirreltail and Sandberg bluegrass have increased. Mountain big sagebrush has been killed. Mountain snowberry, rabbitbrush, and Woods' rose have resprouted from the base. Some forbs may have increased and some annuals may have invaded the site. This plant community is the result of wildfire.

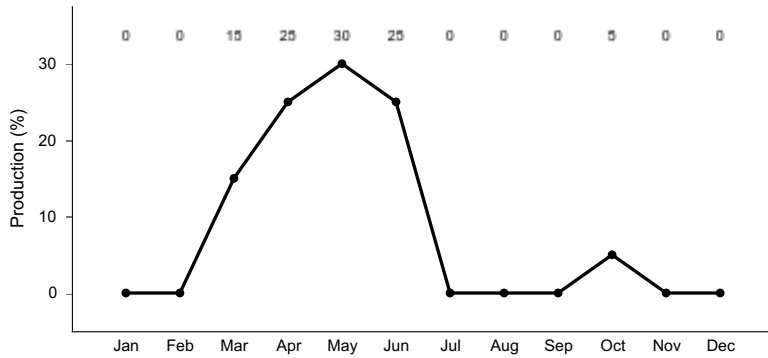


Figure 5. Plant community growth curve (percent production by month). ID0205, D25 ARTRV South. State 1.

**State 4
State 2**

**Community 4.1
State 2**

State 2. This plant community is dominated by forbs and annual grasses including invasive and noxious plants. Some sprouting shrubs such as rabbitbrush can still be present in small amounts. Some soil loss has occurred. The annuals are controlling the site. This state has developed due to frequent fires and/or improper grazing management. This site has crossed a vegetative threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

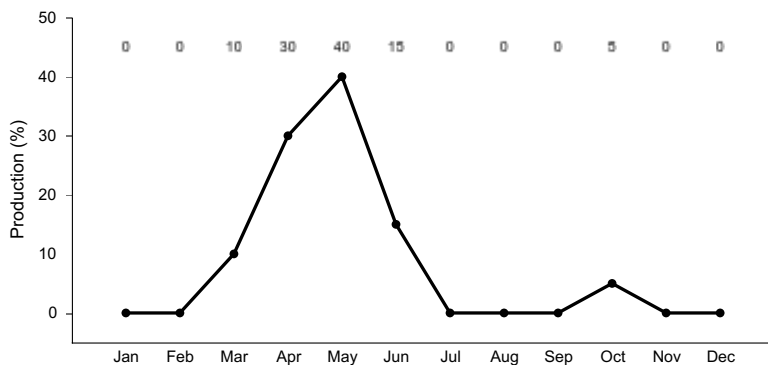


Figure 6. Plant community growth curve (percent production by month). ID0202, B10 PUTR2 Early Seral. State 2.

**State 5
State 3**

**Community 5.1
State 3**

Additional community tables

Animal community

Wildlife Interpretations.
Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community dominated by herbaceous vegetation favors grazers like elk and pronghorn antelope. Important seasonal habitat is provided for resident and migratory animals including western toad, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Changes in the plant community composition can reduce the number and diversity of wildlife

species in the area. Encroachment of noxious and invasive plant species (cheatgrass, medusahead, and knapweed) 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 streams, artificial water catchments and springs.

State 1 Phase 1.1 - Bluebunch Wheatgrass/ Idaho Fescue/ Arrowleaf Balsamroot Reference Plant Community (RPC): This plant community provides a diversity of grasses and forbs, used by native insect communities that assist in pollination. The reptile and amphibian community is represented by leopard lizard, short horned lizard, western skink, western rattlesnake, western toad, boreal chorus 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 specialize in grassland plant communities for food, brood-rearing and nesting cover. They include savannah sparrow, grasshopper sparrow, vesper sparrow, horned lark and western meadowlark. The plant community supports seasonal needs of large mammals (mule deer, antelope, and elk) providing forage and cover on a seasonal basis. Bluebunch wheatgrass and Idaho fescue are preferred forage for elk, antelope and deer. A diverse small mammal population including voles, kangaroo rats, jackrabbits, deer mouse and yellow-bellied marmots would utilize this community.

State 1 Phase 1.2 - Needlegrasses/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This phase has developed due to improper grazing management and no fire. The change in diversity of grasses has reduced structural diversity reducing use of the site by Phase 1.1 wildlife. An increase in shrub cover and some forbs would continue to support a variety of insects suitable as prey species for other wildlife. The reptile community is represented by leopard lizard, short horned lizard, western skink, western rattlesnake, and western toad. Amphibians may include boreal chorus frog and northern leopard frog where springs are present. Spring developments that capture all available water would preclude the use of the area by amphibians. Habitat for shrub-steppe obligate avian species including Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse may increase with the increase of sagebrush cover in the plant community. The reduced vigor of the plant community provides seasonal habitat (forage and cover), for a shorter period of time, for mule deer, antelope, and elk. Small mammal population would be similar to Phase 1.1.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Bottlebrush Squirreltail/ Sandberg Bluegrass Plant Community: This plant community is the result of fire. Insect diversity would be similar to Phase 1.1. An increase in rabbitbrush would add fall pollinator habitat. The reptile community would be similar to Phase 1.1, including short horned lizard, western skink and western rattlesnakes. This plant community provides brood-rearing habitat for sage-grouse when adjacent to suitable sagebrush cover. The change in herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). The reduced vigor and change in plant species would shorten seasonal forage use by elk, antelope and mule deer. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

State 2 – Forbs/ Annual Grasses/ Invasive Plant Community: This state has developed due to frequent fires and/or improper grazing management. The plant community may support harmful insects, such as grasshoppers due to favorable breeding conditions. The plant community would support a very limited population of pollinators. 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 mammals 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 mammals would not regularly utilize these areas due to poor forage and cover conditions. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

Grazing Interpretations.

This site is suitable for summer and fall grazing by livestock. Due to ease of accessibility, this site can easily be degraded by improper grazing management.

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. They have moderately low runoff potential.

Recreational uses

The site has slight recreational value. Some opportunities exist for hunting, hiking, and photography. Some aesthetic value does exist due to topographic setting on ridge tops of steep canyon slopes.

Wood products

None.

Other products

None.

Other information

Field Offices

Payette, ID

Weiser, ID

Emmett, ID

Mountain Home, ID

Meridian, ID

Cascade, 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

Leah Juarros, 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.

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.

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	04/21/2009
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** rills are rare on this site.

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

- 3. Number and height of erosional pedestals or terracettes:** both are rare on the site. Terracettes occur on the site uphill from tall shrub bases and large bunchgrasses and are usually caused from hoof action. 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 areas in mid-seral status bare ground may range from 20 to 30 percent.

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

- 6. Extent of wind scoured, blowouts and/or depositional areas:** none are present.

- 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 2 to 4 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A or A1 horizon is typically 2 to 10 inches thick. Structure ranges from weak fine granular to strong thick platy. Soil organic matter (SOM) needs to be determined.
-
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.
-
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):** little decadence is expected on the site.
-
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.
-
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 1500 pounds per acre (1680 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 75-85 percent of the total production, forbs 10-20 percent, and shrubs 5 percent.
-
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, dalmation toadflax, and yellow star thistle.
-
17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.

