

Ecological site R013XY058ID Silty 8-12 PZ KRLA2/PSSPS

Last updated: 9/23/2020
Accessed: 04/27/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 013X–Eastern Idaho Plateaus

Land Resource Region: B (Northwestern Wheat and Range)
MLRA: 13 (Eastern Idaho Plateaus)

EPA EcoRegion: Level III (Middle Rockies)

LRU notes

013X-Eastern Idaho Plateaus

Precipitation or Climate Zone: 8-12" P.Z.
<https://soils.usda.gov/survey/geography/mlra/index.html>

Classification relationships

No data.

Ecological site concept

Site does not receive any additional water.

Soils are:

not saline or saline-sodic.

Deep to very deep, not skeletal within 20" of soil surface
strongly or violently effervescent throughout the soil profile.

textures usually range from silt loam to silty 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

R013XY001ID	Loamy 12-16 PZ
R013XY003ID	Steep South 16-22 PZ ARTRV/PSSPS
R013XY006ID	Sandy Loam 16-22 PZ ARTRV/PSSPS
R013XY009ID	Ashy Loam 13-16 PZ ARTRV/PSSPS
R013XY013ID	Stony 12-16 PZ ARTRV/FEID

R013XY016ID	Moist Mountain Loam 20+ PZ POTR
R013XY018ID	Loamy 11-13 PZ ARTRW8/PSSPS

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Krascheninnikovia lanata</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i>

Physiographic features

This site occurs in valley bottoms and lower flood plains. Slopes range from 0 to 1 percent and occur on all aspects. Elevation ranges from 5,000 to 6,500 feet (1500 to 2000 meters).

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Valley floor
Elevation	1,524–1,981 m
Slope	0–1%
Aspect	Aspect is not a significant factor

Climatic features

MLRA 13, the Eastern Idaho Plateaus, is part of the Northwestern Wheat and Range Region. Its elevation ranges from 4209 to 9331 feet above sea level, with an average elevation of 5787 feet. The average annual precipitation is 16.41 inches, with a range of 13.56 to 18.75 inches, based on ten long term climate stations located throughout the MLRA. A spike in precipitation amount often occurs in late spring, usually in May.

Temperatures vary widely in the MLRA throughout the year. A maximum temperature of 103° Fahrenheit occurred at the McCammon climate station (# 105716; elevation 4770 feet), while a minimum of -41° was recorded at the Kilgore station (#104908). At all stations temperatures throughout the year are usually below the national average. Kilgore also recorded the greatest annual snowfall amount of 217 inches. The average temperature is 41.4 degrees F. with an average high of 55.3 degrees and an average low of 27.5 degrees.

The frost-free period ranges from 64 to 90 days, while the freeze-free period can be 98 to 123 days.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	123 days
Precipitation total (average)	483 mm

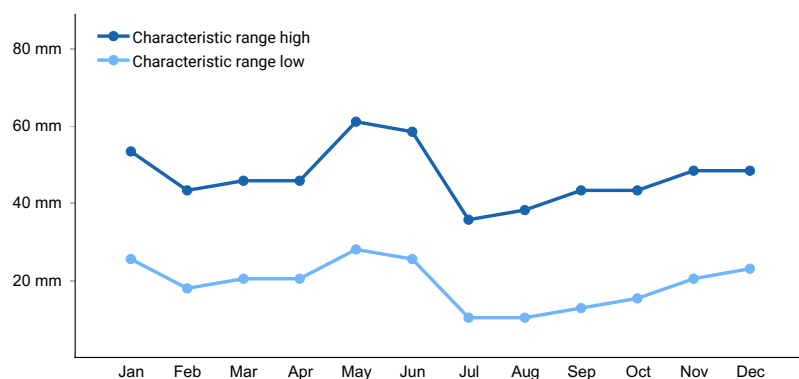


Figure 1. Monthly precipitation range

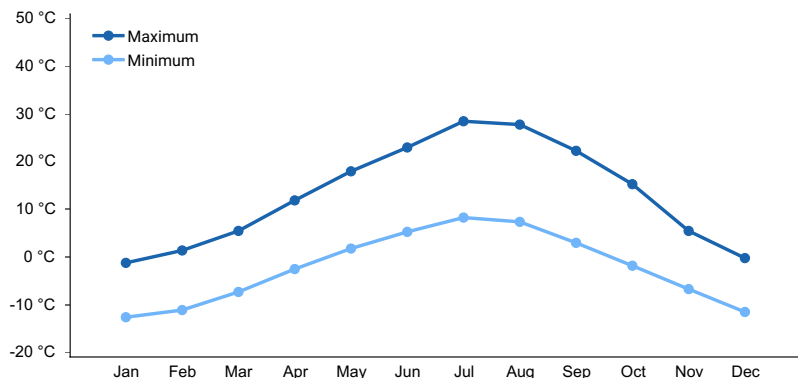


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils are deep, well-drained, silt loam to silty clay loams. The silty surface disperses and puddles easily reducing water intake. Permeability is moderate to slow. Total available water holding capacity (AWC) is 10 to 12 inches in a 5 foot profile. Water supplying capacity is 6 to 9 inches. High concentrations of salt may be found below the 12 to 20 inch depth. Parent materials are mixed alluvial sediments. The surface soil, when moist, has a dark grayish brown color. The soil is calcareous throughout, but there is no strong lime horizon.

Soil Series Correlated to this Ecological Site

No data.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Silty clay loam
Drainage class	Poorly drained to somewhat poorly drained
Permeability class	Slow to moderately slow
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	25.4–30.48 cm
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The dominant visual aspect of this site is winterfat and bluebunch wheatgrass. Composition by weight is approximately 45 to 55 percent grass, 25 to 35 percent forbs, and 15 to 25 percent shrubs.

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

Fire has historically occurred on this site every 50 to 70 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 is Phase A. This site is dominated by bluebunch wheatgrass and winterfat. Subdominant species include Indian ricegrass, Nevada bluegrass, Sandberg bluegrass, western wheatgrass, arrowleaf balsamroot, penstemon, phlox, and Wyoming big sagebrush. There are a variety of other grasses, forbs, and shrubs that occur in the plant community 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 800 pounds per acre (896 Kg/ha) in a normal year. Production in a favorable year is 1000 pounds per acre (1120 Kg/ha). Production in an unfavorable year is 600 pounds per acre (672 Kg/ha).

Structurally, cool season deep rooted perennial bunchgrasses are dominant, followed by medium height shrubs being about equal to perennial forbs while shallow rooted bunchgrasses are subdominant.

FUNCTION:

This site provides yearlong range for pronghorn antelope. Mule deer make slight use in mild winters and moderate to heavy use in severe winters. Raptors hunt the site and it provides nesting for birds such as the horned lark. A few jack rabbits are found and a few other small animals and birds.

It is suited for livestock use in the spring, early summer, fall, and winter. There are limited recreational opportunities.

This site is easily degraded by improper grazing management due to ease of access and low production potential.

Impacts on the Plant Community.

Influence of fire:

This site historically had a low fire frequency, approximately every 50-70 years. Most of the shrubs can be severely damaged or killed when burned. Bluebunch wheatgrass and Indian ricegrass are usually maintained in the community. Sandberg bluegrass, western wheatgrass, bottlebrush squirreltail and broom snakeweed can increase in the community with fire. Winterfat can be killed with severe, high intensity fires but can re-sprout with low intensity fires. Forbs are usually maintained in the plant community. When fires become more frequent than the historic levels (50-70 years), perennial grasses and most shrubs are killed and replaced with annuals or invasive and noxious perennials that can invade the plant community. Rabbitbrush will normally re-sprout and slightly increase. Cheatgrass can be a troublesome invader preventing perennial grass and shrub re-establishment and increasing the fire frequency.

Influence of improper grazing management:

Winterfat, bluebunch wheatgrass, and Indian ricegrass will be reduced in the community by improper grazing management. Relatively low levels of utilization by cattle and sheep are needed to maintain the winterfat component. As these species are reduced in the plant community, Sandberg bluegrass, bottlebrush squirreltail, western and thickspike wheatgrass will increase. Wyoming big sagebrush, pricklypear cactus, rabbitbrush, and broom snakeweed can increase significantly. Forbs usually increase and invasive annual and perennial forbs can increase. Cheatgrass will invade the site.

Proper grazing management that addresses frequency, duration, timing, and intensity of grazing can help maintain the integrity of the plant community.

Weather influences:

Above normal precipitation in April, May, and June can dramatically increase total annual production. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Extended

periods of drought significantly impact this site due to the shallow soil and its' low water holding capacity. Extended drought reduces vigor of the perennial grasses and palatable shrubs. Extreme drought may cause plant mortality. An early, hard frost can occasionally kill some plants.

Influence of insects and disease:

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site. Mormon cricket and 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:

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. Cheatgrass can be very invasive on this site. Once it becomes established the fire frequency increases. As a result, the shrub component can be lost.

Influence of wildlife:

Relatively low numbers of wildlife use this site and have little impact on it. Pronghorn antelope is the dominant large herbivore that uses the site. They use the site yearlong but prefer it in the spring, fall, and early winter. Sage grouse use the site for strutting grounds. Winter and spring use by mule deer occasionally occurs.

Watershed:

Decreased infiltration and increased runoff occur when winterfat and Wyoming big sagebrush are removed with frequent fires, particularly the year of the fire event. The increased runoff also increases sheet and rill erosion. The long-term effect is a transition to a different state. When hydrologic condition of the vegetation cover is good, natural erosion is slight.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

Phase A to B. Develops with fire (approximately every 50-70 years).

Phase A to C. Develops under improper grazing management and no fire.

Phase C to A. Develops under a good prescribed grazing management program and no fire.

Phase B to A. Develops from prescribed grazing and no fire.

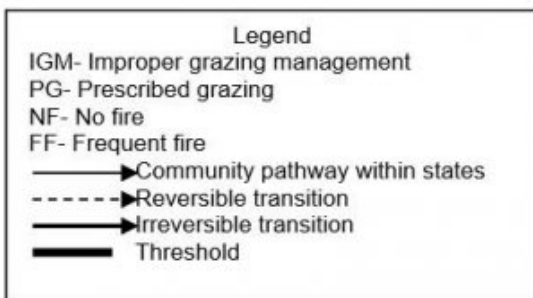
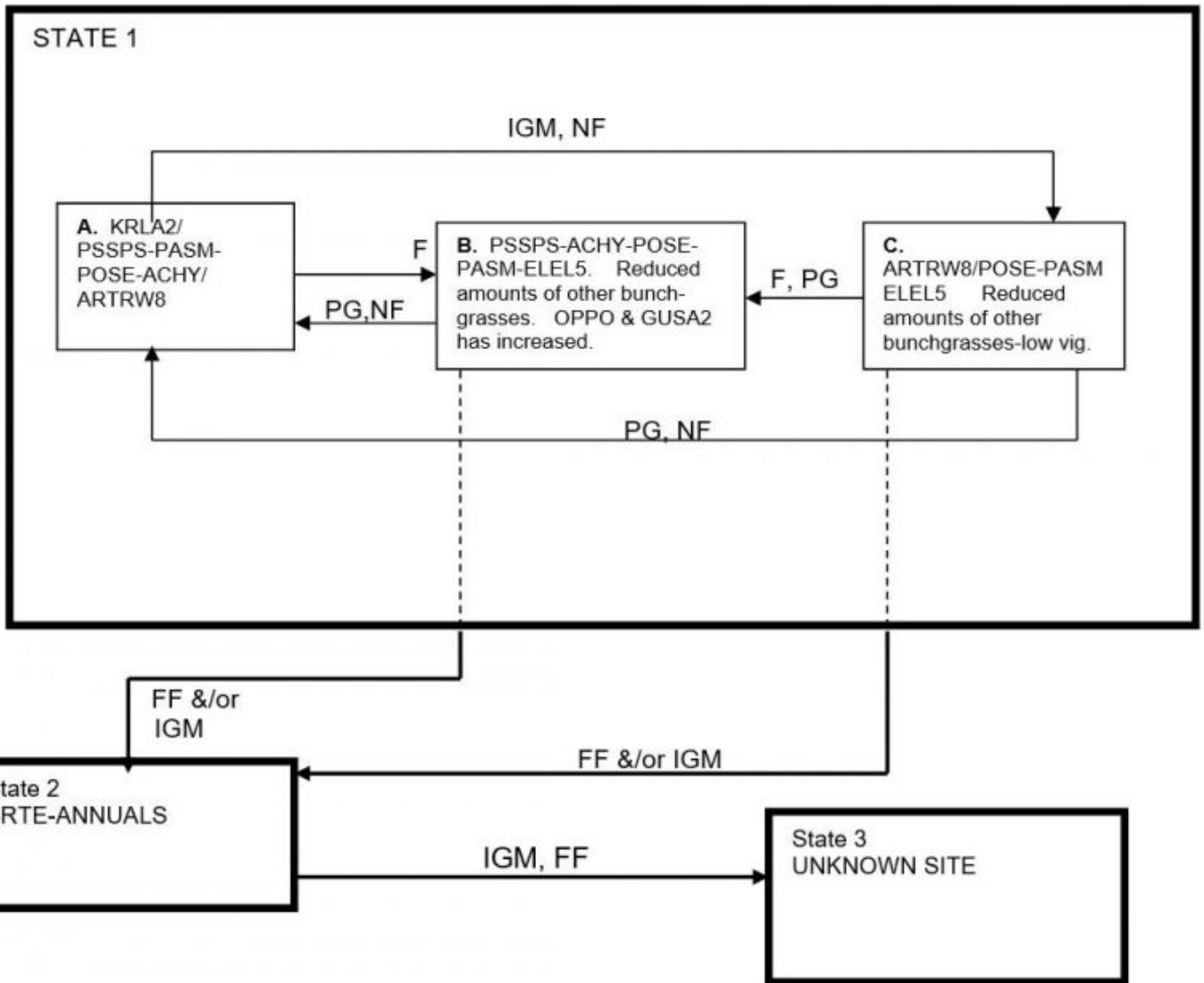
State 1, Phase B or C to State 2. Develops with frequent fire and/or improper grazing management. This site has crossed the threshold. It is not economical to return this plant community to State 1 with accelerating practices.

State 2 Unknown site. Excessive soil loss and changes in the hydrologic cycle caused by improper grazing management or frequent fire cause this state to cross the threshold and regress to a new site with reduced potential. It is not economical to return this plant community to State 1 with accelerating practices.

Practice Limitations:

There are slight limitations on this site for implementing vegetative management and facilitating practices. There are moderate to severe limitations for accelerating practices due to low annual precipitation.

State and transition model



PLANT LEGEND STATES 1 & 2.

- ARTRW8- Wyoming Big Sagebrush
- KRLA2 - Winterfat
- PSSPS - Bluebunch Wheatgrass
- ELEL5 - Bottlebrush Squirreltail.
- ACHY - Indian Ricegrass
- POSE - Sandberg Bluegrass
- BRTE - Cheatgrass
- PASM - Western Wheatgrass
- OPPO - Plains Pricklypear
- GUSA2 - Broom Snakeweed

State 1
State 1 Phase A

Community 1.1
State 1 Phase A

This plant community is dominated by winterfat and bluebunch wheatgrass. Subdominant species include western wheatgrass, Sandberg bluegrass, Indian ricegrass, Nevada bluegrass, arrowleaf balsamroot, penstemon, phlox and Wyoming big sagebrush. There are a variety of other grasses, forbs, and shrubs that occur in the plant community in minor amounts. Natural fire frequency is approximately 50 to 70 years.

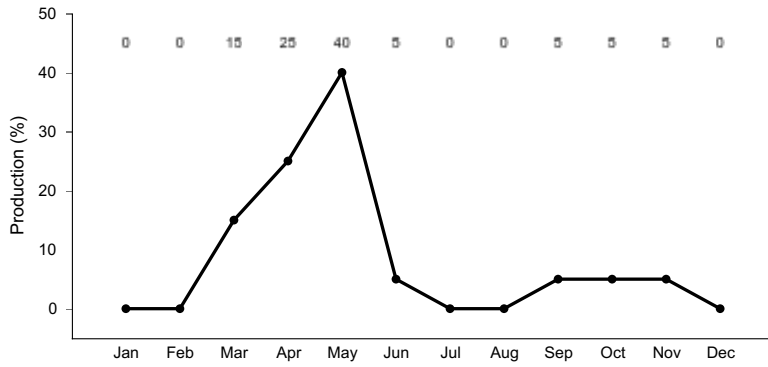


Figure 3. Plant community growth curve (percent production by month). ID0611, POSE/ BRTE/ ANNUALS . State 2.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

This plant community has developed after a fairly recent fire. Fire intolerant shrubs such as Wyoming big sagebrush have been significantly reduced or eliminated. Rabbitbrush may have re-sprouted. A low intensity fire will not kill all of the winterfat. Pricklypear cactus and snakeweed have increased. Bluebunch wheatgrass and Indian ricegrass are maintained in the stand. Other deep-rooted perennial bunchgrasses have been reduced and some have been killed by the fire. Sandberg bluegrass, western wheatgrass, and bottlebrush squirreltail have increased. Some cheatgrass may have invaded.

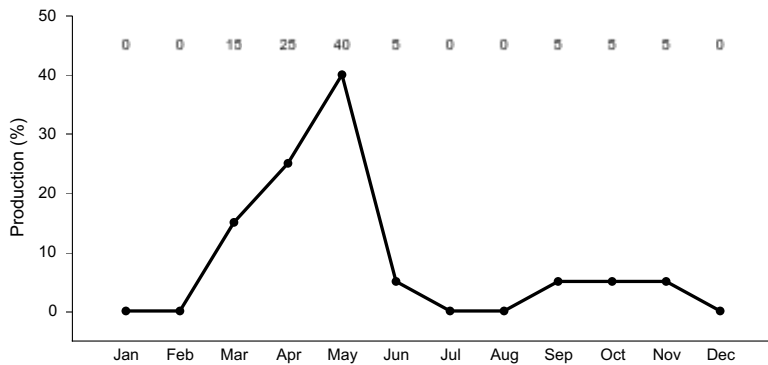


Figure 4. Plant community growth curve (percent production by month). ID0611, POSE/ BRTE/ ANNUALS . State 2.

State 3
State 1 Phase C

Community 3.1
State 1 Phase C

Due to improper grazing management, bluebunch wheatgrass and other deep-rooted perennial bunchgrasses have been significantly reduced in amounts and are in low vigor. Sandberg bluegrass, western wheatgrass, and bottlebrush squirreltail have increased as well as some shrubs. Wyoming big sagebrush has increased. Winterfat has been reduced in the plant community. Most other shrubs have increased including rabbitbrush and broom snakeweed and forbs have increased as well.

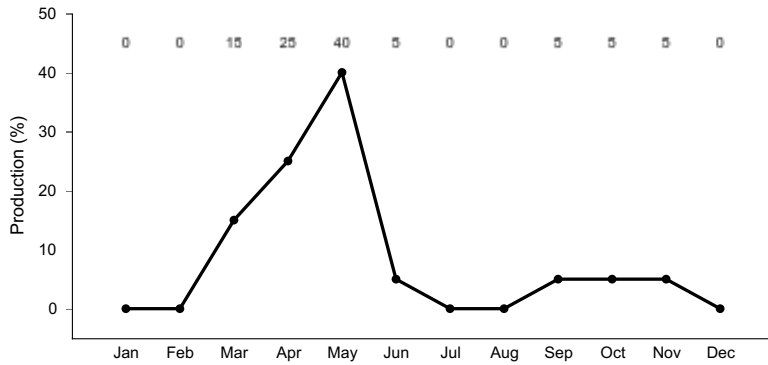


Figure 5. Plant community growth curve (percent production by month). ID0611, POSE/ BRTE/ ANNUALS . State 2.

**State 4
State 2**

**Community 4.1
State 2**

The site has degraded into a plant community dominated by annual grasses and forbs. Fine fuels are adequate to carry a fire in favorable years. Frequent fires and/or improper grazing management have caused the degradation from Phase B or C, State 1. Excessive soil loss has not occurred at this point but the site has crossed the threshold. It is not economical to return this plant community to State 1 with accelerating practices.

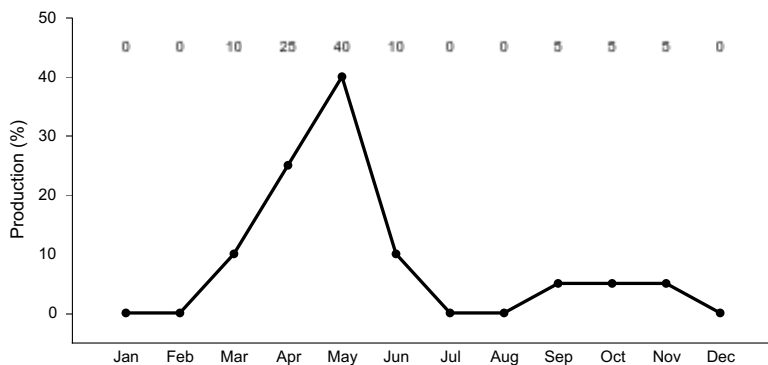


Figure 6. Plant community growth curve (percent production by month). ID0612, ANNUALS/FORBS.

**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 community has developed due to continued improper grazing management and/or fire. It is not economical to return this plant community to State 1 with accelerating practices.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

The rangeland ecological site provides a diverse plant with native grasses, forbs, and shrubs. The plant community developed with large herbivores including mule deer and pronghorn antelope. The site provides seasonal habitat for resident and migratory animals including sagebrush lizard, shrews, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Area sensitive species may include burrowing owl, Great Basin ground squirrel, Townsend pocket gopher, and sage-grouse. Encroachment of noxious and invasive plant species (cheatgrass) in isolated areas can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Winterfat/ Bluebunch Wheatgrass/ Western Wheatgrass/ Indian Ricegrass/ Wyoming Big Sagebrush Reference Plant Community (RPC) This plant community provides a diversity of grasses, forbs, and shrubs, used throughout the growing season by native insect communities that assist in pollination. The reptile community is represented by common sagebrush lizard, and western rattlesnake. Sage-grouse may utilize the site for brood-rearing habitat and if the sagebrush cover exceeds 10% the site may provide nesting cover. The plant community provides forage throughout the year for pronghorn. Winterfat is desirable feed for pronghorn and deer and is eaten readily by elk on the few sites where it occurs at high elevations. It is utilized extensively by rodents, rabbits, and birds. Rodent populations can be high and provide an excellent prey base for raptors.

State 1 Phase 1.2 – Bluebunch Wheatgrass/ Indian Ricegrass/ Sandberg Bluegrass/ Western Wheatgrass/ Bottlebrush Squirreltail/ Plains Pricklypear/ Broom Snakeweed Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Patches of rabbitbrush begin to provide limited vertical structure for wildlife over time. Insect diversity would be reduced but native forbs are still present and will support select pollinators. Quality of habitat for reptiles would be reduced due to the loss of winterfat and sagebrush. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Forage for large mammals (mule deer and pronghorn) would be limited to herbaceous vegetation in the spring and fall. The loss of winterfat and sagebrush would reduce the quality of the winter habitat for mule deer and pronghorn. The diversity and populations of small mammals would be dominated by open grassland species including Idaho pocket gopher.

State 1 Phase 1.3- Wyoming Big Sagebrush/ Western Wheatgrass/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of improper grazing management. Vertical structure for wildlife would be similar to that in Phase 1.1 State 1. The forbs present would be similar to those in State 1 Phase 1.1, as would diversity and populations of insects. The reptile community would be reduced or eliminated due to the loss of sagebrush. Quality of habitat may increase for Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. The loss of winterfat combined with improper grazing management would lower the quality of habitat for mule deer and pronghorn. Indian ricegrass provides excellent early spring feed for mule deer and pronghorn. Small mammal diversity and populations would be similar to the Phase 1.1 State 1 mammal community.

State 2 – Cheatgrass / Annuals Plant Community:

This state has developed due to frequent fires with or without improper grazing management. The reduced forbs and shrub component in the plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water, or cover. This plant community does not provide suitable habitat for sage-grouse. Diversity of grassland avian species is reduced due to poor cover and available 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 food and cover conditions. The populations of small mammals would be dominated by open grassland species.

Grazing Interpretations.

It is suited for livestock use in the spring, early summer, and fall. Natural water supplies can be short or absent, and livestock water may have to be piped, hauled, or otherwise made available.

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 on this site are in hydrologic group B and C. They have high runoff potential.

Recreational uses

This site has very little recreation values. It has a few flowers that bloom annually. In exceptionally good moisture years it has a profusion of annual forbs that bloom. It has slight value for big game or upland game bird hunting. It can provide good rabbit and coyote hunting during the winter. It has very little value for camping, picnicking, and hiking, but some people use it during the winter months. It has poor aesthetic appeal and natural beauty.

Wood products

None.

Other products

None.

Other information

Field Offices

American Falls, ID

Blackfoot, ID

Burley, ID

Driggs, ID

Ft. Hall, ID

Idaho Falls, ID

Malad, ID

Pocatello, ID

Rexburg, ID

Soda Springs, ID

St. Anthony, ID

Preston, 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

Kristen May, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Cassia County, ID	
General legal description	South Raft River Valley.

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/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.

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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	06/25/2009
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.

2. **Presence of water flow patterns:** water-flow patterns are rare.

3. **Number and height of erosional pedestals or terracettes:** both are rare on this site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** may range from 10 to 20 percent but data needs to be collected.

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:** usually not present, but some soil movement may occur immediately following a wildfire.
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7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces typically moves 1 to 2 feet. 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.
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Structure ranges from weak fine and medium granular to weak fine subangular blocky. The surface color is generally dark grayish brown to black when moist. Soil organic matter (SOM) needs to be determined.
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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 runoff 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.
-
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: medium shrubs perennial forbs
- Other: shallow rooted bunchgrasses
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought.
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14. **Average percent litter cover (%) and depth (in):** additional data is needed but is expected to be low and at a shallow depth.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 600 pounds per acre (672 Kg/ha) in a year with normal precipitation and temperatures. Perennial

grasses produce 40-60 percent of the total production, forbs 20-30 percent, and shrubs 20-30 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, clasping pepperweed, beggar ticks, tansymustard, Jim Hill tumbledustard, yellow salsify, and halogeton.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in normal and favorable years.
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