

Ecological site R013XY018ID Loamy 11-13 PZ ARTRW8/PSSPS

Last updated: 9/23/2020
Accessed: 05/18/2024

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

013X-Eastern Idaho Plateaus

Precipitation or Climate Zone: 11-13" P.Z.

<https://soils.usda.gov/survey/geography/mlra/index.html>

Classification relationships

Artemisia wyomingensis / *Agropyron spicatum* HT. Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

Land Resource Unit: B (Northwestern Wheat and Range)

MLRA: 13 (Eastern Idaho Plateaus)

EPA EcoRegion: Level III (Middle Rockies)

Ecological site concept

Site does not receive any additional water.

Soils are:

not saline or saline-sodic.

moderately deep, deep, with < 3% stone (10-25") and boulder (>25") cover. not skeletal within 20" of soil surface.

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 < 15%.

Clay content is = <32% in surface mineral 4".

Site does not have an argillic horizon with > 35% clay.

Associated sites

R013XY008ID	Steep South Slopes 12-16 PZ ARTRV/PSSPS
R013XY013ID	Stony 12-16 PZ ARTRV/FEID
R013XY028ID	Shallow Sand 12-16 PZ ARTRV/PSSPS
R013XY035ID	South Slope Loamy 12-16 PZ ARTRW8/PSSPS
R013XY002ID	Stony Loam 13-16 PZ ARTRV/PSSPS
R013XY004ID	Shallow Gravelly 12-16 PZ ARTRV/PSSPS

Similar sites

R013XY001ID	Loamy 12-16 PZ
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> ssp. <i>wyomingensis</i> (2) <i>Artemisia tripartita</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> (2) <i>Achnatherum thurberianum</i>

Physiographic features

This site occurs on nearly level flats and benchlands to rolling hill slopes on all aspects. Slopes predominantly range from 0 to 20 percent, occasionally reaching 30 percent. Small lava rock outcrop areas may be scattered throughout the site. Elevations range from 3000 to 5600 feet (914 to 1707 meters).

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Hill (3) Terrace
Flooding frequency	None
Elevation	914–1,829 m
Slope	0–30%
Water table depth	152 cm
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

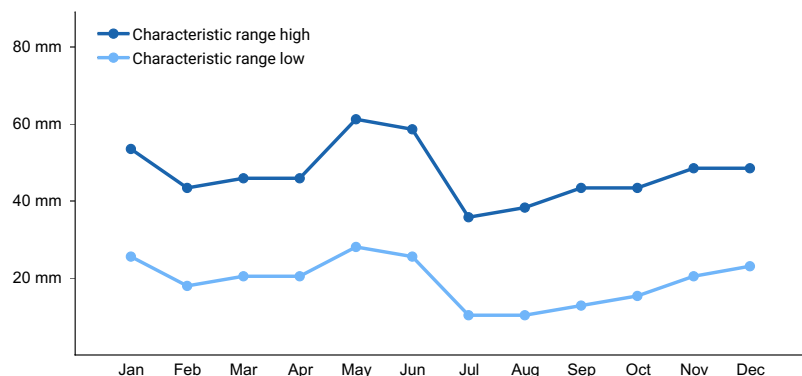


Figure 1. Monthly precipitation range

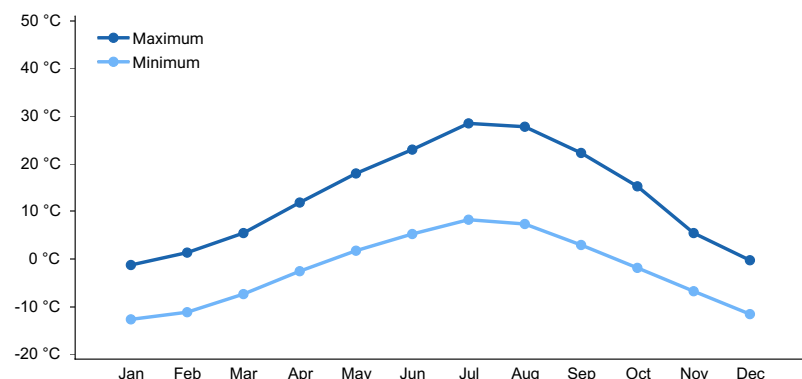


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

Soils on this site are generally silt loams and loams. They may be gravelly or very gravelly but not in sufficient amounts to limit production. The soils are well to somewhat excessively drained and very deep to bedrock. Subsoils are medium textured and have a lime accumulation at depths from 8 to 18 inches. Substratum may be sand, gravel, basalt, or hardpan. The soils have low organic matter content and a moderate permeability moderate. The available water holding capacity (AWC) is low to moderate. Erosion hazard is generally moderate, but can be high when plant cover is scarce or lacking and slopes increase. These soils are characterized by a xeric soil moisture regime. The soils have either a mesic or frigid soil temperature regime.

Soil Series Correlated to this Ecological Site

Downey
Heglar
Pocatello
Sterling

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Silt loam
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate
Soil depth	152 cm

Surface fragment cover <=3"	0–30%
Surface fragment cover >3"	0–5%
Available water capacity (0-101.6cm)	8.89–21.08 cm
Calcium carbonate equivalent (0-101.6cm)	0–25%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–15
Soil reaction (1:1 water) (0-101.6cm)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–70%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

Ecological Dynamics of the Site:

The dominant visual aspect of this site is bluebunch wheatgrass and Wyoming big sagebrush. Composition by weight is approximately 50 to 65 percent grasses, 10 to 20 percent forbs, and 15 to 30 percent shrubs.

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

Fire has historically occurred on the site at intervals of 50-70 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 Phase is Phase A. This plant community is dominated by Wyoming big sagebrush and bluebunch wheatgrass. Subdominant species include Sandberg bluegrass, Thurber's needlegrass, arrowleaf balsamroot, and tapertip hawksbeard. A wide variety of other grasses, forbs and shrubs occur in small amounts. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 850 pounds per acre (952 kilograms per hectare) in a normal year. Production in a favorable year is 1350 pounds per acre (1512 kilograms per hectare). Production in an unfavorable year is 450 pounds per acre (504 kilograms per hectare). Structurally, cool season deep-rooted perennial bunchgrasses are dominant, followed by shrubs that are more dominant than perennial forbs followed by shallow rooted perennial bunchgrasses.

FUNCTION:

This site is suited for livestock in spring, early summer, and fall. It is used by big game in spring, fall, and moderate winters. If water is available, the site is easily grazed by livestock due to gentle slopes.

This site has limited value for recreation.

Due to the low rainfall, low available water holding capacity (AWC), low production, and relatively flat slopes, this site is easily degraded by improper grazing management or frequent fires.

Infiltration can be good with a mixed stand of shrubs and perennial grasses. Runoff is ____ and erosion hazard is moderate. Snow is caught in the shrub interspaces and a mixed stand of shrubs and perennial grasses is necessary to reach the potential of the site.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, Wyoming big sagebrush can gradually increase. Grasses and forbs decrease as shrubs increase.

When fires become more frequent than historic levels (50-70 years), Wyoming big sagebrush is reduced significantly. With continued short fire frequency, Wyoming big sagebrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass, bottlebrush squirreltail, Thurber's needlegrass, and Indian ricegrass. These species may be replaced by cheatgrass along with a variety of annual and perennial forbs including invasive plants. Sandberg bluegrass usually is 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, the plant community becomes susceptible to an increase in Wyoming big sagebrush and noxious and invasive plants.

Continued improper grazing management influences fire frequency with an increase in cheatgrass that accelerates fire frequency.

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

Weather influences:

Above normal precipitation in April, 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;

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather. Two or more consecutive years may cause mortality of some species. The sagebrush defoliator moth (*Aroga websterii*) causes mortality in relatively small patches. It seldom kills the entire stand. 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:

Many of these species add to the fine-fuel component and lead to increased fire frequency. Annual 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 spring, fall, and moderate winters. Their numbers are seldom high enough to adversely affect the plant community. If the site is in a wintering area for big game, high numbers can adversely affect the plant community in the early spring.

Watershed:

Decreased infiltration and increased runoff on slopes greater than 15 percent occur when Wyoming big sagebrush is removed with frequent fires, particularly the year following the fire event. The increased runoff also causes sheet and rill erosion. 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 in the absence of fire.

Phase A to C. Develops with fire.

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

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

State 1 Phase C to State 2. Develops through frequent fire. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices.

State 2 to State 3. Develops through range seeding.

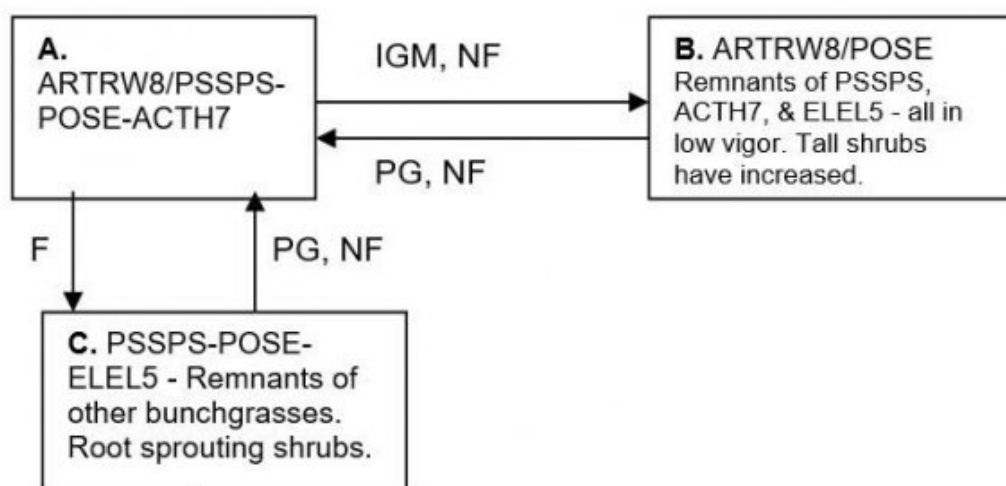
State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross the threshold and retrogress to a new site with reduced potential. It is economically impractical to return this state to State 1 with accelerated practices.

Practice Limitations:

The soils of this site have slight limitations for range seeding. There is a moderate chance of seeding failure during unfavorable moisture years. There are only slight limitations to brush management. Careful planning is needed to evaluate the desired vegetation that will respond to brush management because removal of Wyoming big sagebrush can lead to a significant increase in cheatgrass. The site offers slight limitations to vegetative management practices. Livestock water may be limiting on this site and associated sites.

State and transition model

STATE 1. Plant Community Phases



FF

RS

State 3. Seeding

IGM, &/or FF

UNKNOWN AND
NEW SITE

STATE 2.
POSE-BRTE-POBU-ANNUALS
Root sprouting shrubs can be present.

LEGEND

IGM- Improper grazing management
PG- Prescribed grazing
FF- Frequent fire
NF- No fire
F- Fire
RS- Range Seeding
 —————> Community pathway (within states)
 - - - - -> Reversible transition
 ————— Threshold
 —————> Irreversible transition

PLANT LEGEND STATES 1 & 2

ARTRW8- Wyoming Big Sagebrush
PSSPS - Bluebunch Wheatgrass
POSE - Sandberg Bluegrass
ACTH7 - Thurber's Needlegrass
ELEL5 - Bottlebrush Squirreltail
BRTE - Cheatgrass
POBU - Bulbous Bluegrass

State 1

State 1

Community 1.1

State 1 Phase A

Reference Plant Community Phase. This plant community has Wyoming big sagebrush in the overstory with bluebunch wheatgrass dominating the understory. Sandberg bluegrass and Thurber’s needlegrass are sub-dominant species. Other significant species in the plant community are arrowleaf balsamroot and tapertip hawksbeard. There is a wide variety of other grasses, forbs and shrubs that occur in the plant community in small amounts. Natural fire frequency is 50-70 years.

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	35-55%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

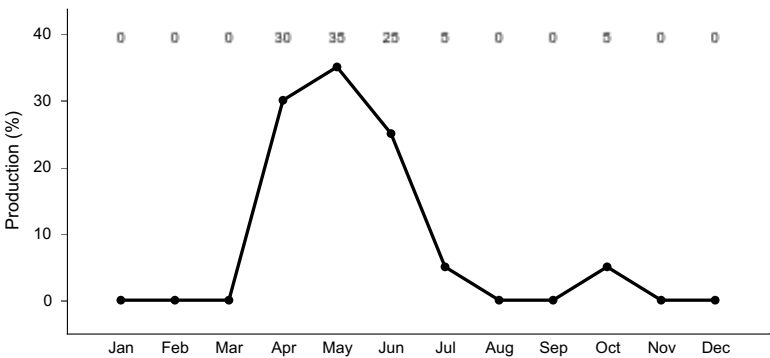


Figure 3. Plant community growth curve (percent production by month). ID0807, ARTRW8/PSSPS.

Community 1.2
State 1, Phase B

This plant community is dominated by Wyoming big sagebrush with Sandberg bluegrass in the understory. This state has developed due to improper grazing management and lack of fire. There is a reduced amount of bluebunch wheatgrass, Thurber’s needlegrass and other bunchgrasses. These deep-rooted bunchgrasses are typically in low vigor. Tall shrubs have increased.

Community 1.3
State 1, Phase C

This plant community is dominated by bluebunch wheatgrass, Sandberg bluegrass and bottlebrush squirreltail. Forbs remain about in the same proportion as Phase A. Small amounts of Wyoming sagebrush are present due to wildfire, but some rabbitbrush, three-tip sagebrush, and gray horsebrush are present due to sprouting and may have increased. This plant community is the result of wildfire.

Pathway A to B

Community 1.1 to 1.2

Develops with improper grazing management and in the absence of fire.

Pathway A to C **Community 1.1 to 1.3**

Develops with fire.

Pathway B to A **Community 1.2 to 1.1**

Develops with prescribed grazing and no fire.

Pathway C to A **Community 1.3 to 1.1**

Develops with prescribed grazing and no fire.

State 2 **State 2**

This plant community is dominated by Sandberg bluegrass, cheatgrass, bulbous bluegrass and annuals. Root sprouting shrubs such as rabbitbrush and horsebrush can be present, dependent upon, how frequent, fire has occurred. This state has developed due to frequent fires. Some soil loss has occurred. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices.

State 3 **State 3**

This plant community is dominated by the seeded species. The seeding can be introduced species or native species that simulate State 1. This community is the result of range seeding.

State 4 **State 4**

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 state to State 1 with accelerated practices.

State 5 **State 3**

Community 5.1 **State 3**

This plant community is dominated by the seeded species. The seeding can be introduced species or native species that simulate State 1. This community is the result of range seeding.

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%

Non-vascular plants	0%
Biological crusts	0%
Litter	35-55%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

State 6

State 4

Community 6.1

State 4

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 state to State 1 with accelerated practices.

Table 7. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	35-55%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Transition T1A

State 1 to 2

State 1 Phase C to State 2. Develops through frequent fire. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices.

Transition T2A

State 2 to 3

State 2 to State 3. Develops through range seeding

Transition T2B

State 2 to 4

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 the threshold and retrogress to a new site with reduced potential. It is economically impractical to return this state to State 1 with accelerated practices.

Additional community tables

Animal community

Animal Community:

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. Large herbivore use of this ecological site is dominated by mule deer and pronghorn antelope. The height of sagebrush will influence the use of the site by pronghorn. Important seasonal habitat is provided for resident and migratory animals including western toad, sagebrush lizard, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Encroachment of noxious and invasive plant species (cheatgrass, bulbous bluegrass, and knapweed) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Area sensitive species include pygmy rabbit, burrowing owl, Brewer's sparrow, sage thrasher, sage sparrow, and sage-grouse. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 - Wyoming Big Sagebrush/ Bluebunch Wheatgrass/ Sandberg Bluegrass/ Thurber's Needlegrass Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs, and shrubs used by native insect communities that assist in pollination. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, Great Basin spadefoot toad, western toad, 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 these sites by amphibians. Native shrub-steppe obligate avian species include the Brewer's sparrow, sage sparrow, sage thrasher, burrowing owl, and sage-grouse. Critical habitat (nesting, brood-rearing, and winter cover) for sage-grouse is provided by this diverse plant community. The plant community supports seasonal needs of mule deer and antelope, providing food and cover. Wyoming big sagebrush is a preferred browse species for wild ungulates. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, deer mice, pygmy rabbits, and Great Basin pocket mice would utilize this plant community.

State 1 Phase 1.2 - Wyoming Big Sagebrush/ Sandberg Bluegrass Plant Community: This plant community is the result of improper grazing management and a lack of fire. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. The reduced herbaceous understory results in lower diversity and numbers of insects. The reptile community will be similar to the State 1 Phase 1.1 reptile community. Reduced herbaceous understory is a key factor in reducing quality of the habitat for bird species. Shrub-steppe obligate bird species using site include Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Quality of habitat (nesting and brood-rearing) for sage grouse is reduced due to a less diverse herbaceous plant community. Sage-grouse may use this area for winter cover and winter food. The plant community supports the seasonal needs of large mammals (mule deer and antelope) providing food and cover. Wyoming big sagebrush is desirable browse for ungulates. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, deer mice, pygmy rabbits, and Great Basin pocket mice may utilize this plant community.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of wildfire. The plant community, dominated by herbaceous vegetation with little or no Wyoming sagebrush provides less vertical structure and limits use by shrub obligate animals. Patches of root sprouting shrubs (three-tip sagebrush and rabbitbrushes) may be present to provide limited vertical structure for wildlife. Insect diversity may be reduced, but a native forb plant community similar to that in State 1 Phase 1.1 would be present supporting select pollinators. Quality of reptile habitat would be poor until remaining root sprouting shrubs begin to provide similar habitat structure as in the State 1 phase 1.1 plant community. The dominance of herbaceous vegetation with little sagebrush canopy cover would reduce or eliminate use of this area for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage- grouse. This plant community provides limited brood-rearing habitat for sage-grouse if sagebrush cover is nearby. The site is not suitable as winter or nesting habitat for

sage grouse. The herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Mule deer and pronghorn forage use would be seasonal (spring through fall) but the site would offer little thermal or young of year cover. Pronghorn may prefer this site over sites with dense tall sagebrush. Small mammal diversity and populations maybe reduced with a decrease in cover and increase in hunting success by predators.

State 2 - Sandberg Bluegrass/ Cheatgrass/ Bulbous Bluegrass/ Annual Plant Community: This plant community is the result of frequent fire. The loss of the native shrub and herbaceous plant community components would not support a diverse insect community. The reduced forb component in the plant community would support a very limited population of pollinators. Most native reptilian species are not supported with food, water, or cover. This plant community does not support the habitat requirements for sage-grouse, sage thrasher, Brewer's sparrow, or sage sparrow. 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 herbivores 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 these 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.

State 3 - Range Seeding Plant Community: The seeding mixture (native or non-native) determines the animal species that utilize this site. A diverse seed mixture of grasses and forbs would provide similar habitat conditions as in the herbaceous plant community described in State 1 phase 1.3. A diverse seed mixture of grasses, forbs, and shrubs would provide similar habitat conditions as described in State 1 phase 1.1 or 1.2. A monoculture of non-native grass species would not support diverse populations of insects, reptiles, avians, mammals, or shrub-steppe obligate species. Grassland animal species including western meadowlark, horned lark, savannah sparrow, deer mouse, pronghorn, mule deer, and kangaroo rat would utilize this site for forage or nesting. Birds of prey including hawks and falcons may range throughout this community looking for prey species.

Grazing Interpretations.

This site is best suited for livestock grazing in the spring, early summer and fall. Natural water supplies may be insufficient or absent and livestock water may have to be piped, hauled, or otherwise made available for livestock using this site.

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 A. When the hydrologic conditions of the vegetative cover are good, the natural erosion hazard is slight.

Recreational uses

This site has very little recreational value. It has some spring blooming flowers which offer slight aesthetic values. It has limited value for hunting pronghorn antelope, coyotes, rabbits, and mule deer. The site has little value for picnicking or camping. It has very little aesthetic appeal or natural beauty except where it is adjacent to lava flows.

Wood products

none.

Other products

none.

Other information

Field Offices

American Falls

Blackfoot

Burley

Driggs

Ft. Hall

Idaho Falls

Malad

Pocatello

Rexburg

Soda Springs

St. Anthony

Revision Notes: “Previously Approved” Provisional

This Provisional ecological site concept has passed Quality Control (QC) and Quality Assurance (QA) to ensure that the site meets the 2014 NESH standards for a Provisional ecological site description. This is an updated “Previously Approved” ESD that represents a first-generation tier of documentation that, prior to the release of the 2014 National Ecological Site Handbook (NESH), met all requirements as an “Approved” ESD as laid out in the 1997 (rev.1, 2003) National Range and Pasture Handbook (NRPH). The document fully described the Reference State and Community Phase in the State-and-Transition model. All other alternative states are at least described in narrative form. The “Previously Approved” ESD has been field-tested for a minimum of five years and is a proven functional document for conservation planning. The “Previously Approved” ESD does not contain all tabular and narrative entries as required in the current “Approved” level of documentation, but it is expected that the “Previously Approved” ESD will continue refinement toward an “Approved” status.

Site Development and Testing Plan:

Future work, as described in a Project Plan, is necessary to validate the information in this Provisional Ecological Site Description. This will include field activities to collect low-, medium-, and high-intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. The final field review, peer review, quality control, and quality assurance reviews of the ESD will be required to produce the final document.

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

Lee Brooks, Range Management Specialist, IASCD

Kristen May, Resource Soil Scientist, NRCS, Idaho

Type locality

Location 1: Cassia County, ID

Other references

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

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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	05/05/2008
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** rarely occur on this site. If rills are present they are likely to occur on slopes over 10 percent and immediately following wildfire. They are most likely to occur on silt loam surface textures.
- Presence of water flow patterns:** rarely occur on this site except on slopes greater than 15 percent. If they occur, they are short and disrupted flows. They are disrupted by cool season grasses and tall shrubs and are not extensive.
- Number and height of erosional pedestals or terracettes:** both are rare on this site. Where flow patterns and/or rills are present, a few pedestals may be expected.

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 50-65 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:** usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils. Where sagebrush has repopulated the site after a fire, remnants of past wind scour may be present.
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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 2 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 weak very fine and fine granular to weak very thin, thin, medium and thick platy to weak very fine, fine and medium subangular blocky. Soil organic matter (SOM) ranges from 0.8 to 4 percent. Surface color ranges from dark brown to very dark brown to very dark grayish brown. The A or A1 horizon is typically 3 to 16 inches thick.
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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 can catch 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):** not present.
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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**
- Dominant: cool season deep -rooted perennial bunchgrasses
- Sub-dominant: tall shrubs
- Other: perennial forbs
- Additional: shallow rooted grasses
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Wyoming big sagebrush will become decadent in the absence of normal fire frequency. Grass and forb

mortality will occur as tall shrubs increase.

14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed but is expected to be 5-20 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 850 pounds per acre (952 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 50-65 percent of the total production, forbs 10-20 percent, and shrubs 15-30 percent.
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** includes cheatgrass, *Vulpia* sp., annual mustards, bulbous bluegrass, and spotted and diffuse knapweed.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
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