

Ecological site R012XY004ID Gravelly Loam 8-12 PZ ARTRW8/PSSPS

Last updated: 9/21/2020
Accessed: 04/20/2024

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): 012X–Lost River Valleys and Mountains

Land Resource Region: B (Northwestern Wheat and Range)
MLRA: 12 (Lost River Valleys and Mountains)

EPA EcoRegion: Level III (Middle Rockies)

LRU notes

012X-Lost River Valleys and Mountains

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

Classification relationships

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

Ecological site concept

Site does not receive additional water.

Soils are:

Not saline or saline-sodic.

Deep to very deep. >35% (by volume) coarse fragments, skeletal within 20" of soil surface.

Not strongly or violently effervescent throughout the soil profile.

textures usually range from sandy loam to 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

| | |
|-------------|---|
| R012XY002ID | Gravelly Loam 12-16 PZ ARAR8/PSSP6-FEID |
| R012XY003ID | Saline Flat <8 PZ ATGA/ACHY |
| R012XY007ID | Shallow Gravelly Loam 8-12 PZ ARAR8/PSSPS-ACHY |
| R012XY017ID | Shallow Fractured South 8-12 PZ ARTRW8/PSSPS-LESAS2 |
| R012XY018ID | Saline Loamy 8-11 PZ SAVE4/LECI4 |

| | |
|-------------|------------------------------------|
| R012XY023ID | Dry Meadow PONE3-PHAL2 |
| R012XY026ID | Dry Loamy 7-10 PZ ATCO-ARFR4/PSSPS |
| R012XY032ID | Loamy 8-12 PZ ARTRW8/PSSPS |
| R012XY036ID | Clayey 7-10 PZ ARTRW8-ATCO/PSSPS |
| R012XY040ID | Cold Gravelly 8-12 PZ ARNO4/HECOC8 |
| R012XY041ID | Gravelly 7-10 PZ ATCO/SPCR |

Similar sites

| | |
|-------------|---|
| R012XY032ID | Loamy 8-12 PZ ARTRW8/PSSPS |
| R012XY017ID | Shallow Fractured South 8-12 PZ ARTRW8/PSSPS-LESAS2 |

Table 1. Dominant plant species

| | |
|------------|---|
| Tree | Not specified |
| Shrub | (1) <i>Artemisia tridentata ssp. wyomingensis</i> |
| Herbaceous | (1) <i>Pseudoroegneria spicata ssp. spicata</i> |

Physiographic features

This site occurs on alluvial fans and terraces with slopes less than 30 percent on all aspects or on mountain slopes greater than 30 percent on south and west exposures. Elevation ranges from 4700 to 7500 feet (1400-2300 meters).

Table 2. Representative physiographic features

| | |
|--------------------|---|
| Landforms | (1) Alluvial fan (2) Terrace (3) Mountain slope |
| Flooding frequency | None |
| Ponding frequency | None |
| Elevation | 4,700–7,500 ft |
| Slope | 1–60% |
| Aspect | S, W |

Climatic features

MLRA 12 is dominated by dramatic changes in elevation which, in turn, influence local weather patterns. The intermontane valleys have elevations as low as 3800 feet, while the adjacent mountains may reach more than 12,600 feet. The average annual precipitation for the entire MLRA, based on 10 long term climate stations located throughout the MLRA, is approximately 9.38 inches. However, the dry valleys may have averages as low as 6 inches, while the upper peaks may have averages that exceed 46 inches per year.

Temperatures vary considerably over the year. The average annual temperature is 42.25 degrees F. The average low is 27.4 degrees while the average high temperature is 57 degrees.

In the summer the sun shines 78% of the time, but drops to 40% in the winter. The prevailing wind is location-dependent, and generally flows parallel to the orientation of the dominant valleys. In the summer localized afternoon upslope winds and evening downslope winds are common. The average windspeed is greatest in the spring and early summer.

The frost free period ranges from 102 to 107 days while the freeze free period ranges from 134 to 139 days across the MLRA.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 107 days |
| Freeze-free period (average) | 139 days |
| Precipitation total (average) | 11 in |

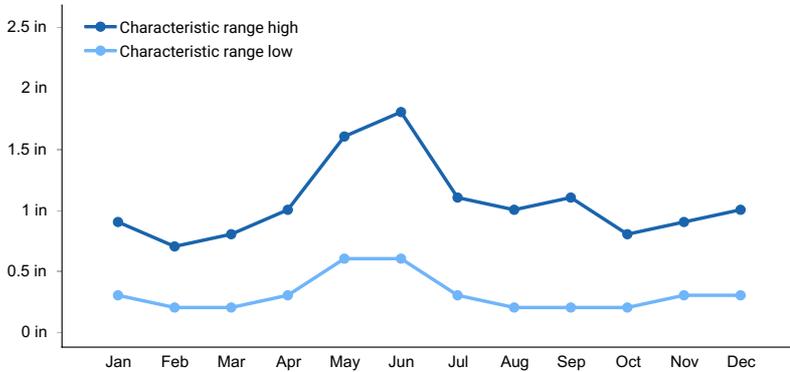


Figure 1. Monthly precipitation range

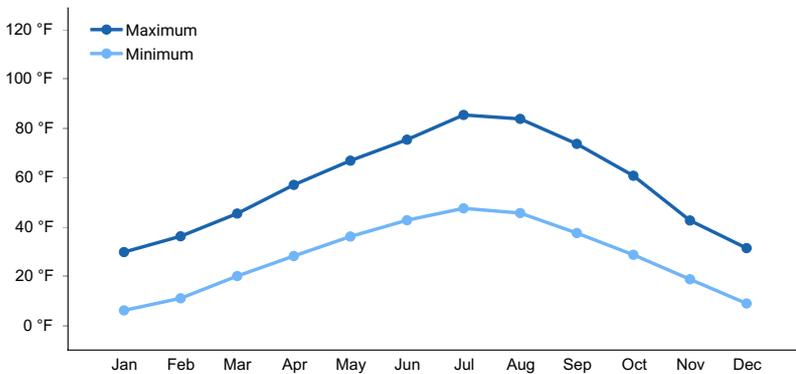


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils of this site are typically deep to very deep and well drained. Surface textures range from gravelly to extremely gravelly loams and gravelly sandy loams. The parent material is alluvium and colluvium from sedimentary and metamorphic rocks. Coarse fragments can exceed 60 percent by volume in the soil profile.

Ecological dynamics

Ecological Dynamics of the Site:

The dominant visual aspect of this site is Wyoming big sagebrush with bluebunch wheatgrass in the understory. Composition by weight is approximately 55 to 70 percent grasses, 5 to 15 percent forbs and 20 to 30 percent shrubs.

During the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, Rocky Mountain elk, bighorn sheep, pronghorn antelope, lagomorphs, and small rodents.

Fire has historically occurred on the site at intervals of 60-80 years.

The Historic Climax Plant Community (HCPC) 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 HCPC is Phase A. This plant community is dominated by bluebunch wheatgrass in the understory and Wyoming big sagebrush in the overstory. Subdominant species include Sandberg bluegrass and Hoods phlox. Salmon wildrye, thickspike wheatgrass, arrowleaf balsamroot, and Indian ricegrass can be important species in some areas. There is a large variety of other grasses, forbs, and shrubs that can occur in minor amounts. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".

Total annual production is 425 pounds per acre (476 kilograms per hectare) in a normal year. Production in a favorable year is 725 pounds per acre (812 kilograms per hectare). Production in an unfavorable year is 275 pounds per acre (308 kilograms per hectare). Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted bunchgrasses are subdominant.

FUNCTION:

This site is suited for livestock grazing in the spring, early summer and fall. There are few limitations to grazing, although steep slopes can limit access in some areas. Natural water supplies may be insufficient or absent. The site provides fair to good habitat for various upland wildlife. The site can be valuable winter habitat for mule deer due to the south exposure aspects. This site is easily degraded by improper grazing management due to low production. The site offers minimal recreational value except limited hunting opportunities. 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 on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, Wyoming big sagebrush can displace most of the primary understory species. Utah juniper can also increase if a seed source is in the proximity. With the continued absence of fire, juniper can displace most of the shrubs and other understory species. See "Influence of juniper invasion" below.

When fires become more frequent than historic levels (60-80 years), Wyoming big sagebrush is reduced significantly. Rabbitbrush can increase slightly. With continued short fire frequency, Wyoming big sagebrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass, Indian ricegrass, and Thurber's needlegrass. These species may be replaced by Sandberg bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Cheatgrass will invade the site at lower elevations. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in Wyoming big sagebrush and noxious and invasive plants. Utah juniper can also invade the site. See "Influence of Juniper" below.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass and/or medusahead increase due to improper grazing management and they become co-dominant with Sandberg bluegrass and other annuals, 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. This can lead to gradual increases in Wyoming big sagebrush and Utah juniper. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation of a prescribed burn. Any brush management should be carefully planned, as a reduction in shrubs without a suitable

understory of perennial grasses can increase cheatgrass which leads to more frequent fire intervals.

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 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. 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. Perennial and 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 in moderate winters. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur with an increase in Wyoming big sagebrush. Desired understory species can be reduced. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long-term effect is a transition to a different state.

Influence of juniper invasion:

The following discussion deals with both western juniper and Utah juniper.

In plant communities that are invaded by juniper, the species has a competitive advantage for the following reasons:

- Juniper is very drought tolerant.
- It has the ability to extract soil moisture from a wide range of soil depths.
- Juniper has high evapo-transpiration rates.
- The species intercepts rain and snow before it reaches the soil surface.
- It has the ability to grow as long as there is soil moisture and the temperature is above freezing.
- Juniper has a relatively rapid growth rate and is long-lived.
- Nutrient cycling is reduced.
- As the canopy closes, juniper gains control of energy capture.

As juniper extracts water, other plants are unable to acquire sufficient water and nutrients to sustain growth and reproduction, thus reducing cover and biomass in the interspaces. After the canopy closes, there is sufficient soil

moisture available for shallow-rooted, shade tolerant species to persist directly under the tree.

The following hydrological impacts occur on sites invaded by juniper:

- Infiltration in the interspaces is reduced.
- Run-off increases resulting in increased sheet and rill erosion with elevated sediment loads.
- Soil temperatures increase in the interspaces which results in accelerated drying of the soil surface.
- Increased bare ground in the interspaces.
- Soil moisture storage is reduced.

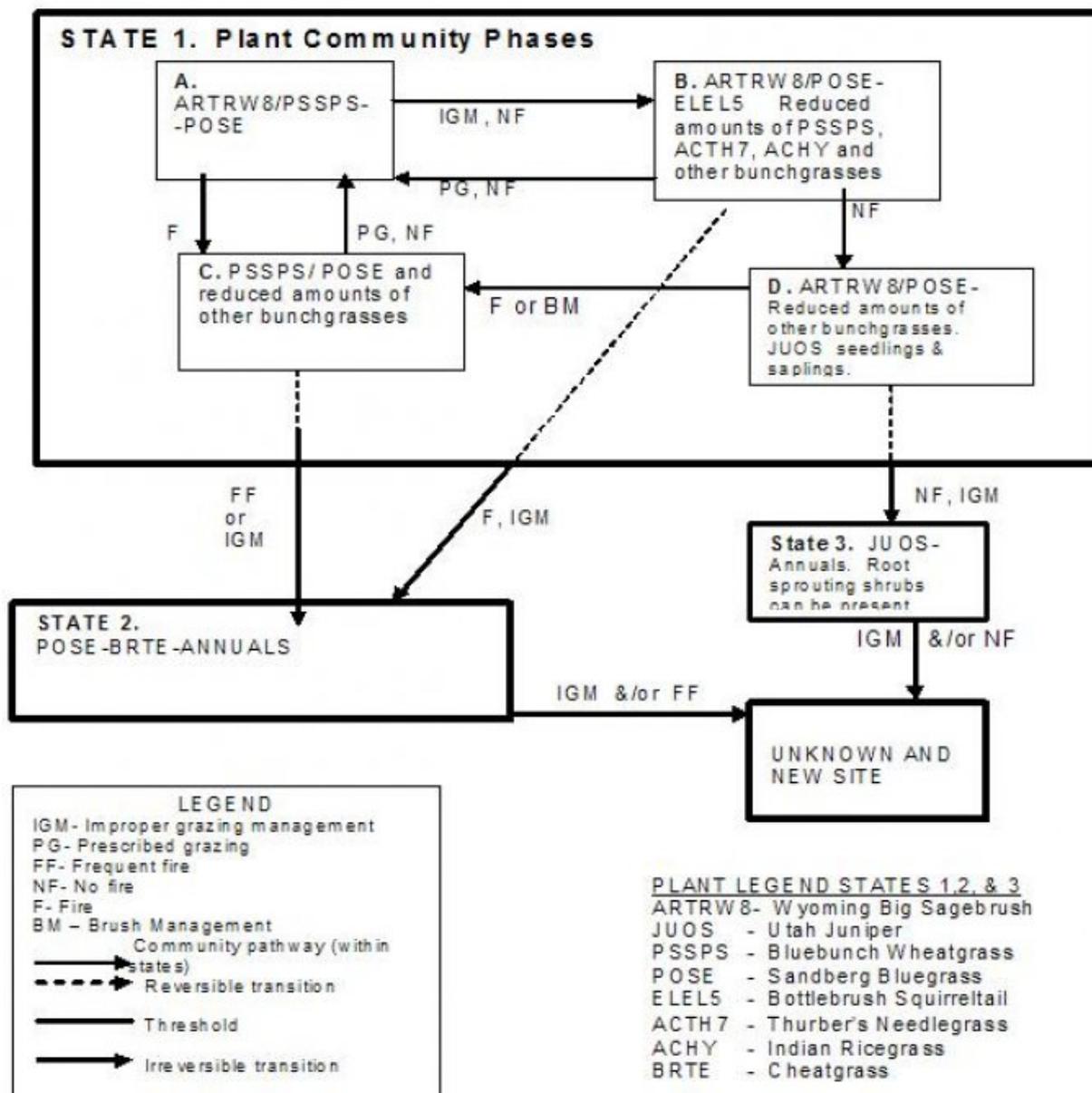
As bare ground and interconnectiveness of bare ground increases, flow rates are accelerated (reduction of flow sinuosity) and run-off out of the area increases.

Degradation of these systems can result in the formation of a feedback cycle in which greater juniper cover and density results in greater plant and soil disturbance between the canopies.

In summary, a closed juniper community takes control of the following ecological processes: hydrology, energy capture and nutrient cycling. The changes are primarily driven by the hydrological processes. The development of a closed juniper canopy always results in a transition across the threshold to a different state. Generally, when juniper canopy cover nears 20%, the plant community is approaching the threshold.

State and transition model

The Reference State (State 1), the Historic Climax Plant Community (HCPC), moves through many phases depending on the natural and man-made forces that impact the community over time. The Reference Plant Community Phase is Phase A, State 1. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".



State 1

State 1, Plant community A. Historic Climax Plant Community (HCPC)

Community 1.1

State 1, Plant community A. Historic Climax Plant Community (HCPC)

The HCPC is dominated by bluebunch wheatgrass in the understory and Wyoming big sagebrush in the overstory. Subdominant species include Sandberg bluegrass and Hoods phlox. Salmon wildrye, thickspike wheatgrass, arrowleaf balsamroot, and Indian ricegrass can be important species in some areas. There is a large variety of other grasses, forbs, and shrubs that can occur in minor amounts. Natural fire frequency is 60-80 years.

Table 4. Annual production by plant type

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|---------------|--------------------------------|----------------|
| Grass/Grasslike | 175 | 265 | 475 |
| Shrub/Vine | 70 | 110 | 180 |
| Forb | 30 | 50 | 70 |
| Total | 275 | 425 | 725 |

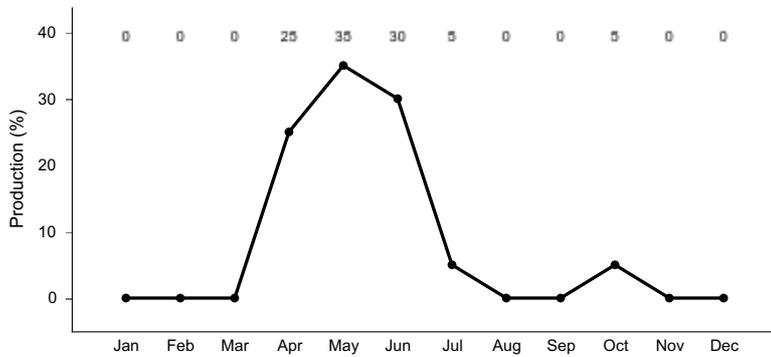


Figure 4. Plant community growth curve (percent production by month). ID0705, ARTRV-PSSPS-FEID. State 1.

State 2

State 1, Plant community B

Community 2.1

State 1, Plant community B

This plant community is dominated by Wyoming big sagebrush with reduced amounts of bluebunch wheatgrass. Sandberg bluegrass and bottlebrush squirreltail has increased in the understory. There is a reduced amount of Indian ricegrass. All deep-rooted bunchgrasses are typically in low vigor. Wyoming big sagebrush has increased. Rabbitbrush has increased. Forbs and thickspike wheatgrass remain about the same as in Plant Community A. This phase has developed due to improper grazing management and no fire. Some cheatgrass may have invaded the site at lower elevations.

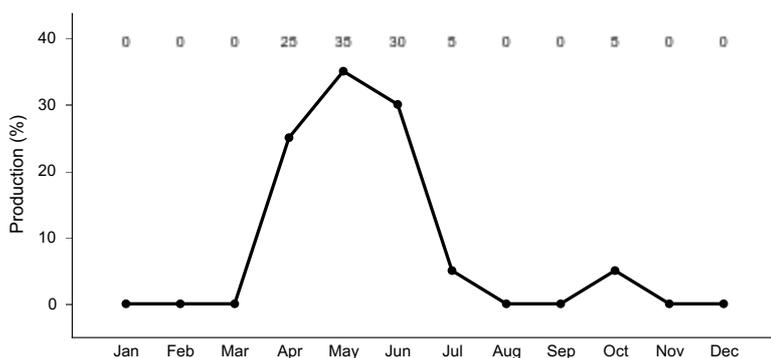


Figure 5. Plant community growth curve (percent production by month). ID0705, ARTRV-PSSPS-FEID. State 1.

State 3

State 1, Plant community C

Community 3.1

State 1, Plant community C

This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Some Thurber's needlegrass may be lost due to fire. Thickspike wheatgrass and bottlebrush squirreltail have also increased. Forbs remain about in the same proportion as Plant Community A. Little Wyoming sagebrush is present due to wildfire,

but some rabbitbrush can be present due to sprouting. Some cheatgrass has invaded the site, particularly at lower elevations. This plant community is the result of wildfire.

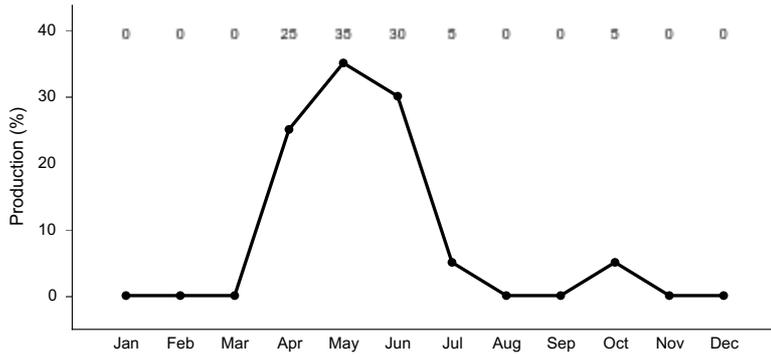


Figure 6. Plant community growth curve (percent production by month). ID0705, ARTRV-PSSPS-FEID. State 1.

State 4
State 1, Plant community D

Community 4.1
State 1, Plant community D

This plant community is dominated by Wyoming big sagebrush with reduced amounts of bluebunch wheatgrass and other deep rooted bunchgrasses. Sandberg bluegrass has increased in the understory. All deep-rooted bunchgrasses are in low vigor. Wyoming big sagebrush has increased. There is a Utah juniper seed source in the vicinity and juniper has invaded the site in the form of seedlings and saplings. This plant community is the result of a continued no fire regime.

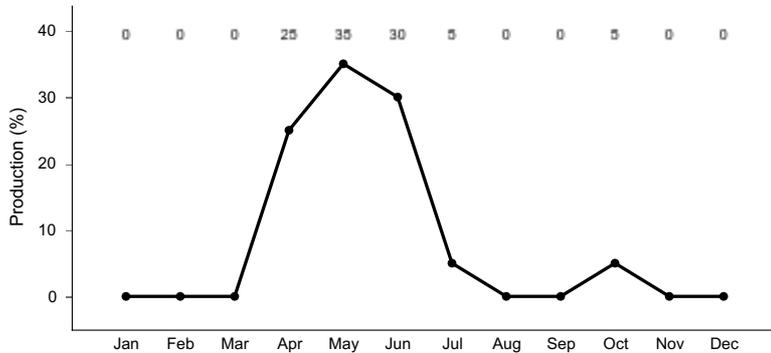


Figure 7. Plant community growth curve (percent production by month). ID0705, ARTRV-PSSPS-FEID. State 1.

State 5
State 2

Community 5.1
State 2

This plant community is dominated by Sandberg bluegrass, cheatgrass (at lower elevations), and other annuals. Root sprouting shrubs such as rabbitbrush can be present. Some soil loss has occurred. This state has developed due to frequent fires or improper grazing management from Phase C State 1 and from fire and improper grazing management from Phase B State 1. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerated practices.

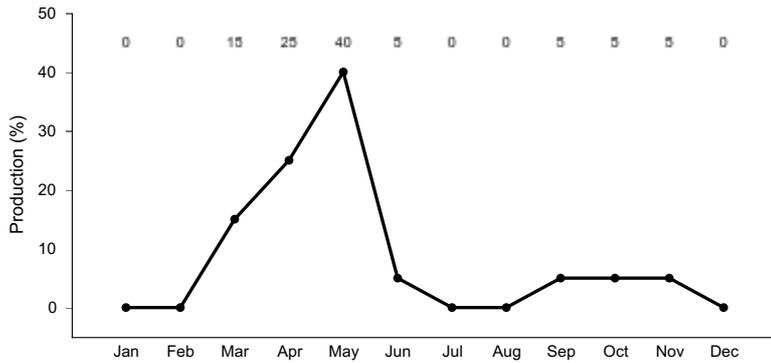


Figure 8. Plant community growth curve (percent production by month). ID0711, POSE/BRTE-ANNUALS. State 2 and 3.

State 6
State 3

Community 6.1
State 3

This plant community is dominated by Utah juniper with an understory of annuals with some Sandberg bluegrass. Root sprouting shrubs can be present. Some soil loss has occurred. This state has developed due to a continued no fire regime and improper grazing management. The site has crossed the threshold. It is generally not economically feasible to move this state back to State 1 with accelerated practices.

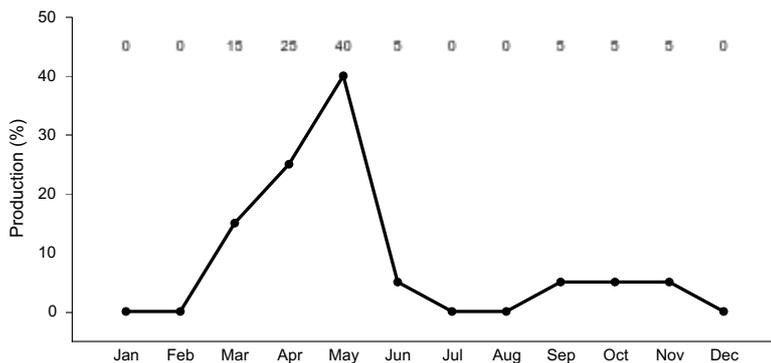


Figure 9. Plant community growth curve (percent production by month). ID0711, POSE/BRTE-ANNUALS. State 2 and 3.

State 7
Unknown new site

Community 7.1
Unknown new site

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires.

Additional community tables

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, pronghorn antelope, and elk. 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. Area sensitive species may include burrowing owl, pygmy rabbit, Great Basin ground squirrel, Idaho pocket gopher, and Merriam's shrew. Changes in the plant community composition can reduce the number and diversity of wildlife species in the area. With reduced shrub cover, shrub obligate avian and mammal species become rare including sage-grouse, brewer's sparrow, sage sparrow, sage thrasher, and pygmy rabbit. Encroachment of noxious and invasive plant species (cheatgrass) can replace native plant species which provide 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 - Wyoming Big Sagebrush/ Bluebunch Wheatgrass/ Sandberg Bluegrass 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 leopard lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake, 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. Shrub-steppe obligate avian species include the Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Critical habitat (brood-rearing, nesting areas, winter cover and food) for sage grouse is provided by this diverse plant community. The plant community supports the seasonal needs of large mammals (mule deer and antelope), providing forage and young of year cover. Wyoming big sagebrush is a preferred browse for large mammals. A diverse small mammal population including jackrabbit, deer mouse, Great Basin kangaroo rat, and golden-mantled ground squirrels may utilize this plant community.

State 1 Phase 1.2 - Wyoming Big Sagebrush/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. Grasses, forbs, and shrubs are used by native insects that assist in pollination, but the reduced herbaceous understory results in lower diversity of insects. The reptile community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, and western rattlesnake. The reduced diversity of insects may reduce reptile diversity and populations. Reduced herbaceous understory is a key factor in limiting the use of this plant community by avian species. Key obligate shrub-steppe avians include Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Critical habitat (brood-rearing and nesting cover) for sage-grouse is limited due to a less diverse herbaceous plant community. The reduced vigor of understory vegetation provides a shorter forage season for mule deer. Wyoming big sagebrush is a preferred browse for wild ungulates. Young of year cover would be provided for deer and antelope. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, and deer mice may utilize this plant community.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass Squirreltail Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush, provides less vertical structure and limits use by shrub obligate animals. Large areas of Phase 1.3 would fragment the reference plant community and would severely reduce the quality of the habitat for shrub obligate animal species. Insect diversity would be reduced due to the loss of brush but a native forb plant community would still support select pollinators. Reptile use, including short horned lizard, sagebrush lizard, and western rattlesnakes would be limited or excluded due to the absence of sagebrush. The dominance of herbaceous vegetation with little sagebrush canopy cover would reduce or prevent use of these areas for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides brood-rearing habitat for sage-grouse when sagebrush cover is nearby. The site does not provide suitable winter habitat for sage grouse. The herbaceous vegetation improves habitat for grassland avian species (horned lark, grasshopper sparrow, vesper sparrow, savannah sparrow, and western meadowlark). Large mammal (mule deer and antelope) use for foraging would be seasonal, but the site would offer little thermal or young of year cover.

State 1 Phase 1.4 - Wyoming Big Sagebrush / Sandberg Bluegrass Plant Community: This plant community is the result of a continued lack of fire. An increase in canopy cover of sagebrush and junipers contributes to a sparse herbaceous understory. A reduced herbaceous understory results in lower diversity and numbers of insects. The reptile community will be similar to State 1 Phase 1.1 community represented by leopard lizard, short horned lizard, sagebrush lizard, and western skink. The reduced diversity of insects and understory cover may reduce the quality of food and cover for reptile populations. As juniper increases, habitat cover for Brewer's sparrow, sage thrasher, and sage sparrow may increase. The remaining sagebrush provides brood-rearing, winter cover, and winter food habitat for sage-grouse, but as juniper encroaches the quality of this habitat is severely reduced or eliminated. The

plant community provides limited seasonal habitat for mule deer, elk, and antelope. As juniper encroaches, the site will provide additional thermal cover for large mammals. A small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots, and pikas may utilize this site.

State 2 - Sandberg Bluegrass/ Cheatgrass and Annual Plant Community: This plant community is the result of continued improper grazing management and/or frequent fire. Large areas of State 2 would fragment the reference plant community and would severely reduce the quality of habitat for shrub obligate animal species. Ants and grasshoppers will likely dominate the insect community. 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 bird species will be 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 food and cover conditions. Small mammal populations and diversity would be dominated by open grassland species like the Columbian ground squirrel. Hunting success by predators would increase with the loss of cover.

State 3 – Utah Juniper/ Annuals/ Sandberg Bluegrass: This site has developed due to improper grazing management and no fire. The loss of native understory vegetation will reduce insect diversity on the site. The lack of flowering plants will reduce use by pollinators like butterflies and moths. Most reptilian species identified in State 1 Phase 1.1 are not supported with food, water, or cover. This plant community does not support life the habitat requirements for sage-grouse. Birds using this site as resident or migratory habitat include Juniper titmouse, western bluebird, and Virginia's warbler. The Juniper titmouse relies heavily on juniper seeds for winter food. Hunting success by raptors may decrease due to a heavy overstory of juniper. The plant community supports limited seasonal habitat for mule deer, elk, and antelope in spring and fall. As juniper encroaches, the site will provide additional thermal cover for large mammals.

Grazing Interpretations.

This site is best suited for livestock use in the spring, early summer and fall. Natural water supplies can be short or absent in areas and water may have to be piped, hauled, or otherwise made available. Steep slopes in some areas may limit livestock access.

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 groups B, C, or D depending mostly on slope. When cover is at or near potential, the erosion hazard is slight to moderate depending on slope.

Recreational uses

This site offers limiting values for hunting, hiking and photography.

Wood products

None

Other products

None

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

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Jim Cornwell, Rangeland Management Specialist, IASCD

Joe May, State Rangeland Management Specialist, NRCS, Idaho

Lee Brooks, Rangeland Management Specialist, IASCD

Type locality

| | |
|------------------------------|--|
| Location 1: Lemhi County, ID | |
| Township/Range/Section | T18 R21 S20 |
| General legal description | NE ¼, Sec. 20. (South slopes along Cabin Creek). Field Offices Salmon Challis Arco Rexburg Rigby |

Other references

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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

Contributors

DLF

Approval

Kendra Moseley, 9/21/2020

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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| Date | 03/27/2007 |

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

Indicators

- 1. Number and extent of rills:** Rills: can occur on this site but are not extensive. They are most likely to occur immediately following a wildfire and on slopes greater than 20 percent. Surface gravels reduce rill formation.

- 2. Presence of water flow patterns:** Water-Flow Patterns: can occur on this site when slopes are greater than 20 percent. When they do occur, they are short, disrupted by cool season perennial grasses and tall shrubs and are not extensive.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals and/or Terracettes: a few pedestals and terracettes can occur on this site on slopes greater than 20 percent and where rills and water flow patterns are present. They are not extensive. Surface gravels reduce the formation of pedestals.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground: bare ground ranges from 50-60 percent but data is needed to verify.

- 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:** Wind-Scoured, Blowouts, and/or Deposition Areas: are rare.

- 7. Amount of litter movement (describe size and distance expected to travel):** Litter Movement: fine litter in the interspaces may move up to 2-3 feet or further following a significant run-off event and on slopes greater than 20 percent. 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):** Soil Surface Resistance to Erosion: values should range from 3 to 5 but needs to be tested.

- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil Surface Loss or Degradation: the A or A1 horizon is typically 2 to 10 inches thick. Structure ranges from weak, moderate very fine or fine granular, to weak, moderate, strong thin or thick platy to weak very fine, fine or medium subangular blocky. Soil organic matter (SOM) ranges from 0.8 to 4 percent.

- 10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant Community Composition and Distribution Relative to Infiltration:

bunchgrasses, especially deep-rooted perennial species, slow run-off and increase infiltration. Shrubs catch snow in the interspaces. Terracettes provide a favorable micro-site for vegetation establishment, which further increases infiltration. Surface gravels help slow surface water movement 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):** Compaction Layer: 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: Functional/Structural Groups: cool season deep-rooted perennial bunchgrasses >>tall shrubs> perennial forbs> shallow rooted grasses.

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant Mortality/ Decadence: Wyoming big sagebrush will become decadent in the absence of fire and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.
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14. **Average percent litter cover (%) and depth (in):** Litter Amount: annual litter cover in the interspaces will be 5-10 percent to a depth of <0.1. Under the mature shrubs litter is greater than 0.5 inches. Fine litter can accumulate on the terracettes.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual Production: is 425 lbs. per acre in a year with normal precipitation and temperatures. Perennial grasses produce 55-70 percent of the total, forbs 5-15 percent and shrubs 20-30 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:** Invasive Plants: includes cheatgrass, rush skeletonweed, scotch thistle, spotted and diffuse knapweed, Russian thistle, mustard. clasping pepperweed, beggar ticks, tansymustard, Jim Hill tumbledustard, yellow salsify, burr buttercup, and halogeton.
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17. **Perennial plant reproductive capability:** Reproductive Capability of Perennial Plants: all functional groups have the potential to reproduce in normal years.
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