USDA Natural Resources
Conservation Service

Ecological site R011XB008ID
Playa 8-12 PZ ARTR4/PSSPS

Last updated: 4/06/2020
Accessed: 05/06/2024

General information

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

MLRA notes

Major Land Resource Area (MLRA): 011X–Snake River Plains

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Precipitation or Climate Zone: 8-12” P.Z.

Classification relationships

Artemisia tripartita/ 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.”

Land Resource Region: B (Northwest Wheat and Range)
MLRA: 11 (Snake River Plains)
EPA Eco Region: Level III (Snake River Plain)

Ecological site concept

Site does not receive additional moisture
Soils are:
Not saline or saline sodic
Deep to very deep, with <35% coarse fragments (by volume), not skeletal
not strongly or violently effervescent in the surface mineral 10”
Surface textures range from silt loam to clay in the surface mineral 4”
Slope is <30%
Clay content is =<35% in surface mineral 4”
Site does have an argillic horizon with >35% clay, with redox features within 20”

Associated sites

R011XA003ID	**Shallow Loam 8-12 PZ ARTRT/PSSPS**
R011XA014ID	**Sandy 8-14 PZ ARTRT/HECOC8-ACHY**
R011XB001ID	**Loamy 8-12 PZ**
R011XB003ID	**Stony Loam 8-12 PZ ARTRW8/PSSPS**
R011XB006ID	**Loamy 8-12 PZ ARTRT/LECI4**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tripartita*

Herbaceous	(1) *Pseudoroegneria spicata*

Physiographic features

This site occurs as run-in areas or nearly closed basins or playas. Slopes are nearly level. Elevation ranges from 4500-5500 ft. (1350-1650 m).

Table 2. Representative physiographic features

Landforms	(1) Basin floor (2) Playa
Elevation	1,372–1,676 m
Slope	0–5%
Aspect	Aspect is not a significant factor

Climatic features

The Upper Snake River Plain, MLRA 11B, is part of the Northwestern Wheat and range Region. It has a mean elevation of 4841 feet above sea level, and varies from 4177 to 4841 feet. In general, it is a geologically young, level to gently sloping lava plateau. In places larger streams have cut deep, steep-walled canyons. The average annual precipitation, based on 10 long term climate stations located throughout the MLRA, is 10.88 inches. The averaged low is 8.74 inches and the maximum average is 12.69. Monthly precipitation usually peaks in May, then drop off rapidly to reach its low in July and August. The climate station at Aberdeen Experiment Station (1000010) has records of zero precipitation in 11 months of the year, and as low as 0.03 inches in December, the lone non-zero month.

Temperatures can be extremely variable across the year. Highs of up to 104° and lows down to -42° Fahrenheit have been recorded. The average annual temperature from ten climate stations is 44.75° F. The frost-free period ranges from 91 to 115 days. The freeze-free period can last from 123 to 146 days.

Both morning and afternoon average relative humidity values reach their low in August, and are far below the national average. Wind speed peaks in the Spring, and is generally somewhat above the national average. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February. The average total snowfall is approximately 29 inches.

Table 3. Representative climatic features

Frost-free period (average)	115 days
Freeze-free period (average)	146 days
Precipitation total (average)	330 mm

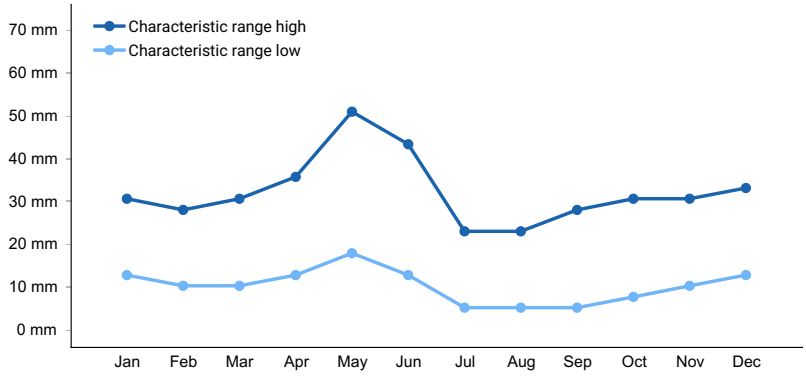


Figure 1. Monthly precipitation range

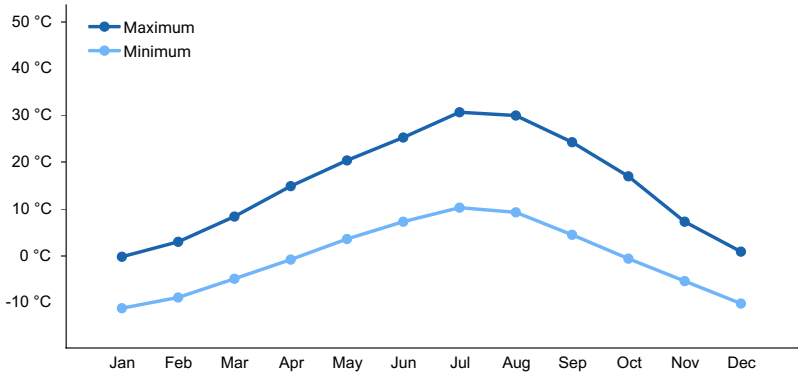


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is influenced by adjacent wetlands, streams or run on.

Soil features

The soils supporting this site are very deep, somewhat poorly to well drained, with very slow permeability. Runoff is low to very low. The erosion hazard is slight by water, and slight to high by wind. The available water holding capacity (AWC) is high to very high. The surface texture is generally silt loam, silty clay loam, or clay with no surface stones. The subsoil is usually moderately well to well developed with clay ranging from approximately 35 to 50 percent. There are redox concentrations within 20 inches of the surface. These soils have an aridic moisture regime bordering on xeric, with a mesic soil temperature regime.

Table 4. Representative soil features

Surface texture	(1) Silty clay loam (2) Clay (3) Very fine sandy loam
Drainage class	Somewhat poorly drained to well drained
Permeability class	Slow to very slow
Available water capacity (0-101.6cm)	22.86–30.48 cm
Soil reaction (1:1 water) (0-101.6cm)	6.6–7.8

Ecological dynamics

Ecological Dynamics of the Site:

The dominant visual aspect of this site is low-growing three-tip sagebrush and grass. Composition by weight is approximately 50 percent grasses, 20 percent forbs and 30 percent shrubs.

During the last few thousand years, this site has evolved in an arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, sage grouse, lagomorphs, and small rodents. Fire has historically occurred on this site every 80-100 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. The HCPC of this site is dominated by three-tip sagebrush, bluebunch wheatgrass, sedges, and slender wheatgrass. Subdominant species include Sandberg bluegrass, western wheatgrass, prairie junegrass, alkali bluegrass, Lemmon’s alkaligrass, and bottlebrush squirreltail. The plant species composition of Phase A is listed later under “HCPC Plant Species Composition”.

Total annual production is 350 pounds per acre (8392 Kg/ha) in a normal year. Production in a favorable year is 600 pounds per acre (672 Kg/ha). Production in an unfavorable year is 275 pounds per acre (308 Kg/ha). Structurally, cool season deep-rooted perennial bunchgrasses are very dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

FUNCTION:

This site is suited for grazing with domestic livestock in late spring, summer, and fall. The site is used by mule deer, pronghorn antelope, lagomorphs, small rodents, and predators. This site has limited recreation use except hunting.

Due to the relatively flat slopes and easy access by animals, this site is easily degraded by improper grazing management or frequent fires. Runoff, when it does occur, is non-erosive except during high intensity convection storms.

Impacts on the Plant Community.

Influence of fire:

Three-tip sagebrush exhibits variable sprouting abilities following fire. The specific response may depend on ecotypic differences, fire severity, soil moisture, or a combination of these factors. Within its range in Idaho, re-sprouting ability varies from weak to strong. When it does re-sprout, three-tip sagebrush sprouts from shallow lateral roots or the root crown. It can also layer. Nearly pure stands in some locations can develop after the site burns.

In the absence of normal fire frequency three-tip sagebrush can gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, these shrubs can displace many of the primary understory species.

When fires become more frequent than historic levels (80-100 years), three-tip sagebrush is reduced significantly. If it has the ability to re-sprout, the reduction will be short-lived, typically 5-10 years. Rabbitbrush and silver sagebrush can increase slightly. With continued short fire frequency many of the desirable understory species such as bluebunch wheatgrass will be reduced or eliminated. These species may be replaced by Sandberg bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Cheatgrass and medusahead will invade the site. These fine fuels will increase the fire frequency.

Influence of improper grazing management:

Season-long grazing and grazing when the soil surface is wet can be very detrimental to this site. Excessive utilization is also detrimental. 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 increase in three-tip sagebrush and noxious and invasive plants. Continued improper grazing management influences fire frequency by reducing fine fuels that carry fires. As cheatgrass and/or medusahead increase and 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. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for 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 and/or medusahead which will lead to more frequent fire intervals.

Weather influences:

Above normal precipitation in March, April, and May 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:

Mormon crickets 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, summer, and 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 three-tip sagebrush. Desired understory species can be reduced. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long-term effect is a transition to a different state

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:
State 1.
Phase A to B. Develops with improper grazing management and 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 or improper grazing management. This site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

State 2 to 3. Results from 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 a threshold and retrogress to a new site with reduced potential. It is not economically practical to return this plant community to State 1 with accelerating practices.

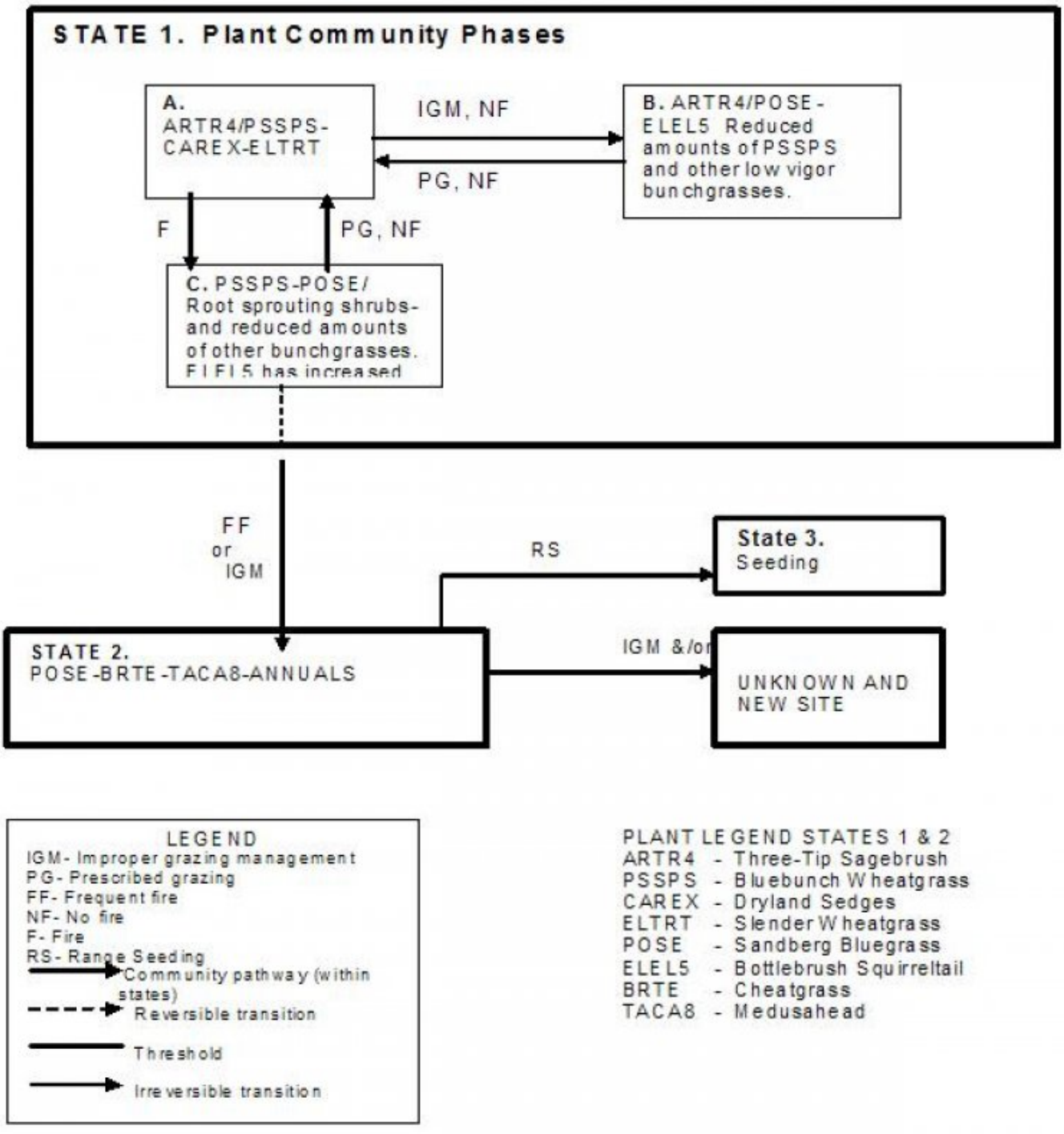
Practice Limitations.

Only slight limitations exist on this site for implementing vegetative management practices. This site has moderate

to severe limitations for seeding due to periods of wetness or run-in. Mechanical, chemical, and fire are satisfactory methods of brush management on this site, however three-tip sagebrush and silver sagebrush may re-sprout if any of these treatments are used. Planning should carefully analyze the stand of perennial grasses and forbs, because removal of three-tip sagebrush can result in a significant increase in cheatgrass and/or medusahead. If the plant community becomes dominated with cheatgrass and/or medusahead, increased fire frequency could irreversibly degrade the community.

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 has three-tip sagebrush in the overstory with bluebunch wheatgrass, sedges, and slender wheatgrass dominating the understory. Sandberg bluegrass, bottlebrush squirreltail, prairie junegrass, tapertip hawksbeard, groundsel, rabbitbrush, and silver sagebrush are common. Natural fire frequency is 80-100 years.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	151	196	336
Shrub/Vine	95	112	202
Forb	62	84	135
Total	**308**	**392**	**673**

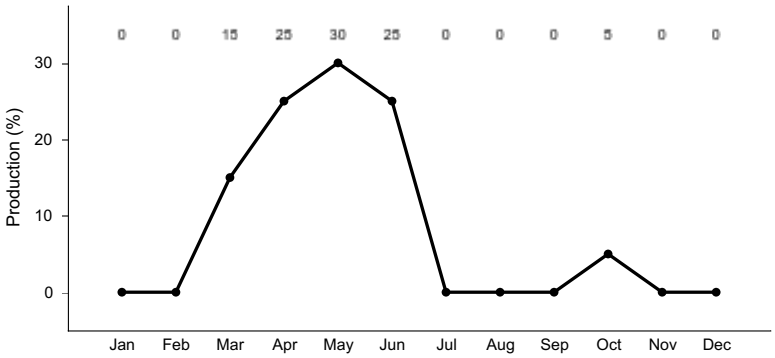


Figure 4. Plant community growth curve (percent production by month). ID0605, ARTRW8 -PSSPS . State 1.

State 2
State 1, Plant community B

Community 2.1
State 1, Plant community B

This plant community is dominated by three-tip sagebrush with reduced amounts of bluebunch wheatgrass and other deep-rooted perennial bunchgrasses. Sandberg bluegrass and bottlebrush squirreltail have increased in the understory. All deep-rooted bunchgrasses are typically in low vigor. Three-tip sagebrush has increased as well as some other medium shrubs. This state has developed due to improper grazing management and lack of fire. Some cheatgrass and medusahead may have invaded the site.

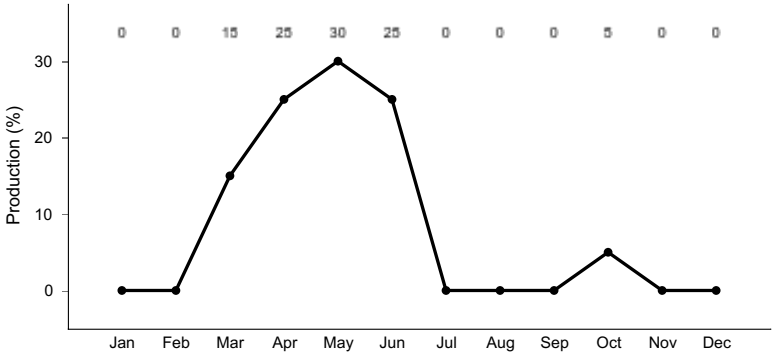


Figure 5. Plant community growth curve (percent production by month). ID0605, ARTRW8 -PSSPS . State 1.

State 3
State 1, Plant community C

Community 3.1
State 1, Plant community C

This plant community is dominated by bluebunch wheatgrass, Sandberg bluegrass and medium root-sprouting shrubs. Bottlebrush squirreltail has increased. Forbs remain about in the same proportion as Plant Community A. Three-tip sagebrush and silver sagebrush have been reduced significantly due to wildfire but will likely re-sprout. Some cheatgrass and/or medusahead may have invaded the site. This plant community is the result of wildfire.

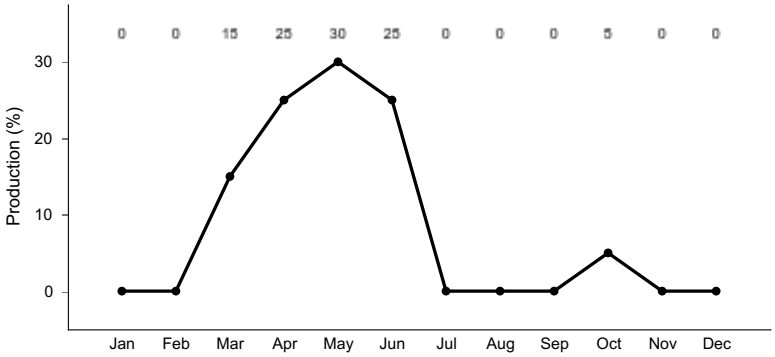


Figure 6. Plant community growth curve (percent production by month). ID0605, ARTRW8 -PSSPS . State 1.

State 4
State 2

Community 4.1
State 2

This plant community is dominated by Sandberg bluegrass, cheatgrass, medusahead, and other annuals. Root sprouting shrubs such as three-tip sagebrush, silver sagebrush, rabbitbrush and horsebrush can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. This state has developed due to frequent fires or improper grazing management. This site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

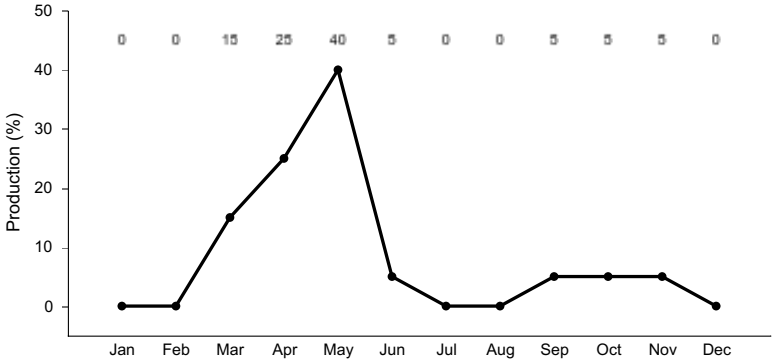


Figure 7. Plant community growth curve (percent production by month). ID0311, POSE/BRTE-ANNUALS . State 2.

State 5
State 3

Community 5.1
State 3

This plant community results from range seeding. The seeding may be introduced species or it may be made up of

native species that attempt to mimic the historic plant community.

State 6
Unknown new site

Community 6.1
Unknown new site

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires. It is not economically practical to return this plant community to State 1 with accelerating practices.

Additional community tables

Animal community

Wildlife Interpretations.
Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. Large herbivore use of this ecological site is dominated by mule deer and elk. Pronghorn antelope occasionally utilize this site depending on shrub height and density. 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. 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 rabbits. An increase in three-tip sagebrush would also decrease wildlife use due to a corresponding decrease in favorable understory vegetation. Also encroachment of noxious and invasive plant species (cheatgrass and medusahead) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water is limited, being provided only by seasonal runoff, artificial water catchments, and spring sites. This rangeland ecological site may be associated with pre-historic lava flows which provide unique cave habitats for several sensitive animal species, including the Blind Cave Leiodid Beetle, Cave Obligate Mite, Bats, and the Cave Obligate Harvestman.

State 1 Phase 1.1 - Three-tip Sagebrush/ Bluebunch Wheatgrass/ Dryland Sedges/ Slender Wheatgrass 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, boreal chorus frog, and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of these sites by amphibians. Area sensitive species reliant on the native shrub-steppe plant community include the Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Habitat (lek sites, nesting areas, winter cover, and food) for sagebrush obligate avian species is provided by this diverse plant community. The plant community provides escape and thermal cover for large mammals (mule deer and elk). The dominant shrub (three-tip sagebrush) provides limited forage value for large mammals. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots, and pygmy rabbits may utilize these areas.

State 1 Phase 1.2 - Three-tip Sagebrush/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community: This plant community is the result of improper grazing management and a lack of fire. The increase in three-tip sagebrush and loss of vigor in the historic herbaceous vegetation has reduced the habitat value for many resident and migratory native animal species. 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 reduction of grasses and forbs in the plant community would reduce the available prey species and cover for these resident reptile species. Development of spring sites that collect all available water would preclude the use of these sites by amphibians. Shrub-steppe obligates including Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse would utilize the site. Habitat (lek sites, nesting areas, winter cover and food) for sage

grouse is limited due to the change in plant community, dominated by three-tip sagebrush and reduced understory of herbaceous vegetation. The plant community provides escape and thermal cover for mule deer, antelope ,and elk. The dominant shrub (three-tip sagebrush) provides limited forage value for large mammals. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots, and pygmy rabbits may utilize these areas.

State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass/ Bottlebrush 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 for animals. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. Habitat for native reptiles would be limited or excluded for the short horned lizard, sagebrush lizard, and western rattlesnakes. The dominance of herbaceous vegetation with little sagebrush canopy cover would prevent use of these areas for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community may provide limited brood-rearing habitat for sage-grouse when adequate shrub cover is nearby, but use as winter habitat or nesting cover is eliminated. The dominance of herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Large mammal (mule deer, antelope, and elk) forage use would be seasonal but the site would offer little thermal or young of year cover. Antelope use may increase with the change to a more open landscape with few tall shrubs. Small mammal diversity would be reduced and the plant community would not provide suitable habitat for pygmy rabbits.

State 2 - Sandberg Bluegrass/ Cheatgrass/ Medusahead and Annual Plant Community: This state has developed due to frequent fires and/or improper grazing management. The plant community does 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 would not be supported by this plant community. 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 conditions. 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 like the Columbian ground squirrel.

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 sagebrush obligate species. Grassland animal species including western meadowlark, horned lark, savannah sparrow, and elk would utilize this site for nesting and/or foraging. Birds of prey including hawks and falcons may range throughout this community looking for prey species.

Grazing Interpretations.

This site is suited for grazing with domestic livestock in late spring, summer, and fall.
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

Soils on this site are in hydrologic group C.

Due to the relatively flat slopes and easy access by animals, this site is easily degraded by improper grazing management or frequent fires. Runoff, when it does occur, is non-erosive except during high intensity convection storms.

Recreational uses

This site has limited recreation use except for hunting.

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
Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC
Jim Cornwell, Range Management Specialist, IASCD
Joe May, State Rangeland Management Specialist, NRCS, Idaho
Leah Juarros, Resource Soil Scientist, NRCS, Idaho

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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Contributors

DLF

Approval

Kendra Moseley, 4/06/2020

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	03/28/2007
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills: rills rarely occur on this site. If rills are present they are most likely to occur immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

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

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3. **Number and height of erosional pedestals or terracettes:** Pedestals and/or Terracettes: are rare on this site. Where flow patterns and/or rills are present, a few pedestals may be expected. Do not misinterpret frost heaving for pedestals.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground: data not available. On sites in mid-seral status, bare ground may range from 30-40 percent but more data is needed.

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

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind-Scoured, Blowouts, and/or Deposition Areas: usually does not occur. Some wind erosion may occur immediately following a wildfire on soils that have fine textured surface soils.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter Movement: fine litter in the interspaces may move up to 1 foot following a significant run-off or ponding 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):** Soil Surface Resistance to Erosion: values should range from 4-6 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):** Soil Surface Loss or Degradation: the surface horizon is typically 3 to 8 inches thick. Structure typically includes weak thin and moderately thick platy and weak fine and moderate granular. Soil organic matter (SOM) ranges from 0.7 to 1 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 perennials, slow run-off and increase infiltration.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Compaction Layer: not present. Do not mistake the heavy textured subsoil for a compaction layer.

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 >>medium 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: grass and forb mortality will occur as tall shrubs increase.

14. **Average percent litter cover (%) and depth (in):** Litter Amount: annual litter cover in the interspaces will be 20-30 percent to a depth of

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual Production: is 350 lbs. per acre in a year with normal precipitation and temperatures. Perennial grasses produce 50 percent of the total, forbs 20 percent, and shrubs 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:** Invasive Plants: includes Cheatgrass, medusahead, Russian knapweed, halogeton, clasping pepperweed, Russian thistle, yellow salsify, and annual mustards.

17. **Perennial plant reproductive capability:** Reproductive Capability of Perennial Plants: all functional groups have the potential to reproduce in most years.