

Ecological site R010XA025ID South Slope Loamy 11-13 PZ ARTRW8/PSSPS

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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): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. These factors support plant communities with shrub-grass associations with considerable acreage of sagebrush grassland. Big sagebrush, bluebunch wheatgrass, and Idaho fescue are the dominant species. Stiff sagebrush, low sagebrush, and Sandberg bluegrass are often dominant on sites with shallow restrictive layers. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing with areas accessible by irrigation often used for irrigated agriculture.

For further information, see "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Ecological site concept

- Site occurs on uplands
- Slopes greater than 30% on southerly aspects
- Occurs in 11-13 inch PZ
- Soils are not volcanic cinders
- Soils greater than 20" to bedrock
- Coarse fragments <35% throughout the soil profile

Associated sites

R010XA009ID	South Slope Gravelly 12-16 PZ Adjacent south slopes with greater coarse fragment content
R010XA021ID	South Slope Fractured 12-16 PZ Adjacent south slopes with soils less than 20" over fractured bedrock
R010XA030ID	South Slope Channery 11-13 PZ ARTRX/PSSPS Adjacent south slopes in association with rock outcrops and talus slopes
R010XA033ID	Loamy 11-13 PZ ARTRX/PSSPS Adjacent low slope areas

R010XA034ID	Claypan 10-12 PZ ARTR4/PSSPS-ACTH7 Adjacent claypan soils
R010XA036ID	North Slope Stony 12-16 PZ ARTRX/PSSPS Adjacent north slopes

Similar sites

R010XA026ID	Loamy 11-13 PZ ARTRW8/PSSPS Slopes less than 30%
R010XA033ID	Loamy 11-13 PZ ARTRX/PSSPS Slopes less than 30%
R010XA004ID	Loamy 12-16 PZ ARTRV/FEID-PSSPS Slopes less than 30%
R010XA009ID	South Slope Gravelly 12-16 PZ Coarse fragments >35% throughout the soil profile
R010XA030ID	South Slope Channery 11-13 PZ ARTRX/PSSPS Site occurs in association with rock outcrops and talus slopes

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 south to west facing steep slopes. Slopes generally exceed 30 percent ranging up to and occasionally exceeding 60 percent. Elevations range from 4500 to 6000 feet (1370 to 1820 meters).

Table 2. Representative physiographic features

Landforms	(1) Foothills > Butte (2) Foothills > Plain (3) Mountains > Mountain
Flooding frequency	None
Ponding frequency	None
Elevation	4,500–6,000 ft
Slope	30–60%
Water table depth	80 in
Aspect	W, S, SW

Climatic features

The Big and Little Wood River Foot slopes and Plains, proposed as MLRA 10X, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. The average annual precipitation, based on 7 long term climate stations located throughout the MLRA, is 15.39 inches, with a range of 12.5 to 18 inches. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a low in July and August, then increases rapidly in the autumn.

Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9°. The frost-free period ranges from 75 to 98 days. The freeze-free period is a bit longer: 106 to 133 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. 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.

Table 3. Representative climatic features

Frost-free period (characteristic range)	75-98 days
Freeze-free period (characteristic range)	106-133 days
Precipitation total (characteristic range)	11-13 in
Frost-free period (actual range)	
Freeze-free period (actual range)	
Precipitation total (actual range)	11-18 in
Frost-free period (average)	86 days
Freeze-free period (average)	120 days
Precipitation total (average)	16 in

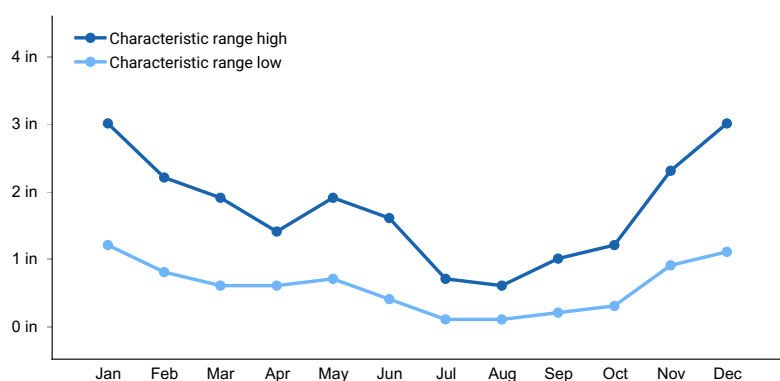


Figure 1. Monthly precipitation range

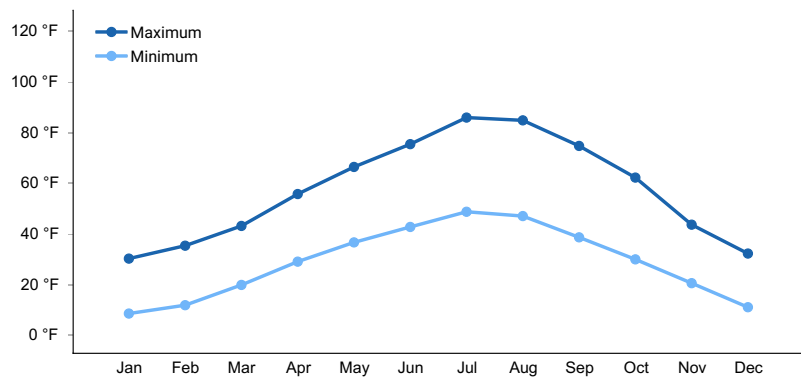


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Wetland description

This site is not influenced by adjacent wetlands.

Soil features

The soils of this site are generally deep, and formed in colluvium from basalt. They are well drained, and impermeable or have slow permeability. The available water holding capacity (AWC) is low. Runoff is high to very high especially from bare soil. The erosion hazard is slight to very severe by water. The surface texture is generally very cobbly loam. These soils are characterized by a xeric moisture regime. Soil temperature regime is mesic or

frigid.

Soil Series Correlated to this Ecological Site.

Adios, cool
Peevywell
Elkskel

Table 4. Representative soil features

Parent material	(1) Alluvium–andesite (2) Colluvium–latite (3) Residuum–basalt
Surface texture	(1) Cobbly loam (2) Very cobbly loam
Family particle size	(1) Fine (2) Clayey-skeletal
Drainage class	Well drained
Permeability class	Slow
Soil depth	20–60 in
Surface fragment cover ≤3"	8–20%
Surface fragment cover >3"	0–30%
Available water capacity (0-40in)	3.4–4.4 in
Soil reaction (1:1 water) (0-40in)	6.6–7.3
Subsurface fragment volume ≤3" (4-60in)	0–50%
Subsurface fragment volume >3" (4-60in)	5–50%

Ecological dynamics

The dominant visual aspect of this site is Wyoming big sagebrush and bluebunch wheatgrass. Sandberg bluegrass and bottlebrush squirreltail are subdominant in the stand along with a variety of forbs and small amounts of other shrubs. Composition by weight is approximately 50 to 60 percent grass, 10 to 20 percent forbs, and 20 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 to 70 years.

The Reference State (State 1), previously referred to as 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.

FUNCTION:

This site is suited for livestock in spring and fall. It is used by mule deer in spring, late fall and winter. If water is available, the site is easily grazed by livestock due to its' gentle slopes.

This site has limited value for recreation.

Overall production is relatively low due to the low rainfall and low available water holding capacity (AWC) making this site easily degradable by improper grazing management or frequent fires.

Infiltration can be good with a mixed stand of shrubs and perennial grasses. Runoff is very rapid from bare soil. The erosion hazard is dependent on cover. 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 and antelope bitterbrush can gradually increase. Grasses and forbs decrease as shrubs increase.

When fires become more frequent than historic levels (50-70 years), Wyoming big sagebrush and bitterbrush are reduced significantly. With continued short fire frequency, Wyoming big sagebrush and bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass, bottlebrush squirreltail, Thurber's needlegrass, and prairie junegrass. 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 which will lead to a more frequent fire regime.

Proper grazing management that addresses frequency, duration, and intensity of grazing over time 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, particularly bitterbrush from western tent caterpillars (*Malacosoma fragilis*). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. 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, late fall, and winter. 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 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.

Practice Limitations:

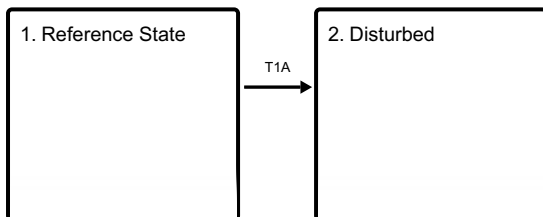
Moderate limitations exist for implementing vegetative management practices due to steep slopes and presence of stones that limit animal movement into and across this site. Prescribed grazing systems should be applied but the primary benefits may be to adjacent sites that are more readily used.

Moderate to severe limitations exist for implementing facilitating practices such as fencing and water developments due to the steep slopes.

Severe limitations exist for implementing accelerating practices due to steep slopes and surface stones. Steep slopes create a greater erosion hazard if brush is removed by chemicals or fire. Steep slopes and stones make use of ground machinery impractical for brush management or seeding.

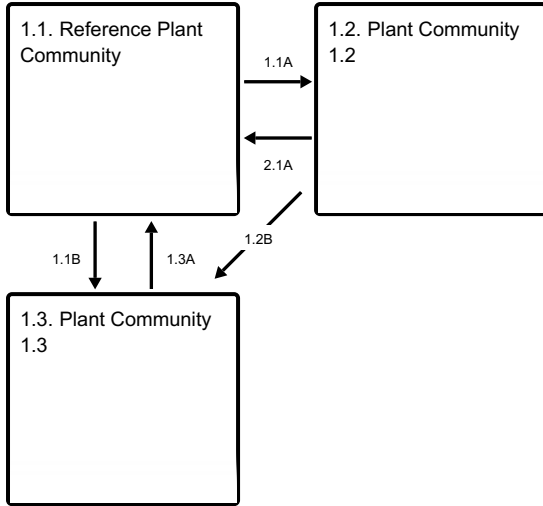
State and transition model

Ecosystem states



T1A - frequent fire, improper grazing management

State 1 submodel, plant communities



1.1A - improper grazing management, absence of fire

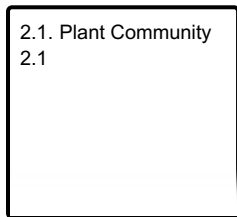
1.1B - fire

2.1A - prescribed grazing and no fire

1.2B - fire

1.3A - prescribed grazing and no fire

State 2 submodel, plant communities



State 1 Reference State

Dominant plant species

- Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*), shrub
- bluebunch wheatgrass (*Pseudoroegneria spicata ssp. spicata*), grass

Community 1.1 Reference Plant Community

1.1 Wyoming Big Sagebrush - Bluebunch Wheatgrass - Sandberg Bluegrass - Antelope Bitterbrush This plant community has Wyoming big sagebrush in the overstory with bluebunch wheatgrass dominating the understory. Antelope bitterbrush, Sandberg bluegrass, streambank wheatgrass, and arrowleaf balsamroot are sub-dominant species. Other significant species in the plant community are bottlebrush squirreltail, prairie junegrass, tapertip hawksbeard, and lupine. There can be a variety of other forbs and shrubs present in small amounts. Natural fire frequency is 50 to 70 years.

Resilience management. The Reference Plant Community Phase is Phase A. This plant community is dominated by Wyoming big sagebrush and bluebunch wheatgrass. Subdominant understory species include Sandberg bluegrass, bottlebrush squirreltail, streambank wheatgrass, prairie junegrass, tapertip hawksbeard, lupine, and arrowleaf balsamroot. Antelope bitterbrush is a sub-dominant species in the overstory. A variety of other 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 700 pounds per acre (784 kilograms per hectare) in a normal year. Production in a favorable year is 1000 pounds per acre (1120 kilograms per hectare). Production in an unfavorable year is 500 pounds per acre (560 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.

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	30-40%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

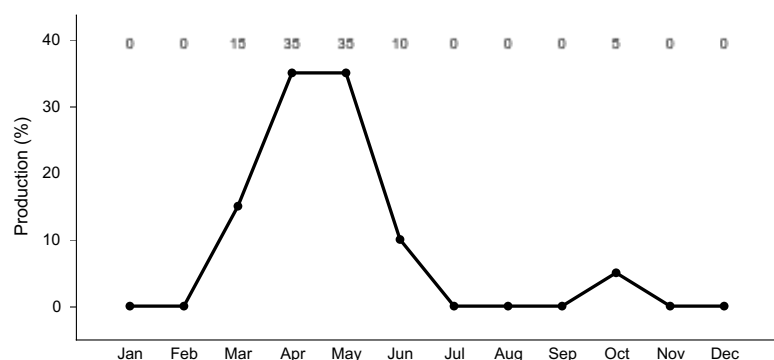


Figure 3. Plant community growth curve (percent production by month). ID0907, ARTRW8/PSSPS LOW PRECIP..

Community 1.2 Plant Community 1.2

1.2 Wyoming Big Sagebrush Sandberg Bluegrass with remnants of other bluegrasses 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, bottlebrush squirreltail, prairie junegrass, and antelope bitterbrush. Bitterbrush may be hedged and in low vigor. The deep-rooted bunchgrasses are typically in low vigor. Other tall shrubs have increased. Some small amounts of cheatgrass or bulbous bluegrass or other annuals may have invaded the site.

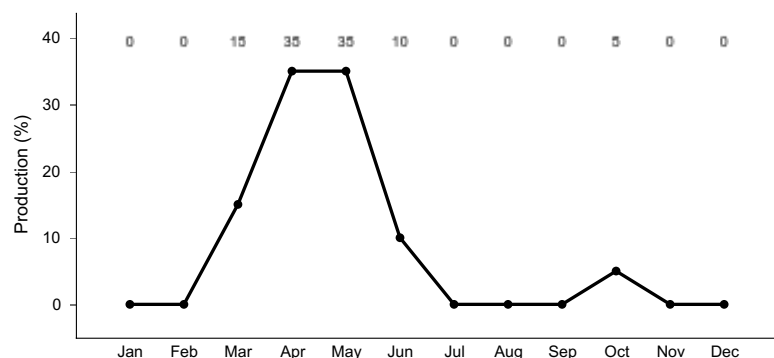


Figure 4. Plant community growth curve (percent production by month). ID0907, ARTRW8/PSSPS LOW PRECIP..

Community 1.3
Plant Community 1.3

1.3 Bluebunch Wheatgrass - Sandberg Bluegrass - Bottlebrush Squirreltail This plant community is dominated by bluebunch wheatgrass, Sandberg bluegrass, and bottlebrush squirreltail. Streambank wheatgrass has increased. Forbs remain about in the same proportion as Phase 1. Small amounts of Wyoming big sagebrush and bitterbrush are present due to wildfire, but some rabbitbrush, three-tip sagebrush and gray horsebrush are present due to sprouting and may have increased. Some small amounts of cheatgrass or bulbous bluegrass or other annuals may have invaded the site. This plant community is the result of wildfire.

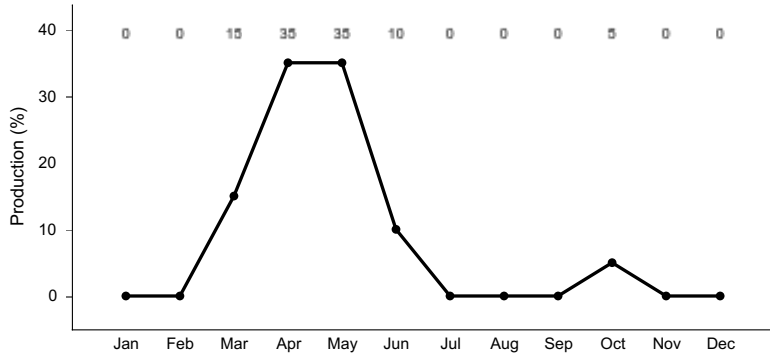


Figure 5. Plant community growth curve (percent production by month). ID0907, ARTRW8/PSSPS LOW PRECIP..

Pathway 1.1A
Community 1.1 to 1.2

Phase 1 to 2. Develops with improper grazing management and in the absence of fire.

Pathway 1.1B
Community 1.1 to 1.3

Phase 1 to 3. Develops with fire.

Pathway 2.1A
Community 1.2 to 1.1

Phase 2 to 1. Develops with prescribed grazing and no fire.

Pathway 1.2B
Community 1.2 to 1.3

Phase 2 to 3. Develops with fire.

Pathway 1.3A
Community 1.3 to 1.1

Phase 3 to 1. Develops with prescribed grazing and no fire.

State 2
Disturbed

Resilience management. 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 regress to a new site with reduced potential. It is economically impractical to return this state to State 1 with accelerated practices.

Dominant plant species

- Sandberg bluegrass (*Poa secunda*), grass
- bulbous bluegrass (*Poa bulbosa*), grass
- cheatgrass (*Bromus tectorum*), grass

Community 2.1

Plant Community 2.1

2.1 Sandberg Bluegrass - Cheatgrass - Annuals 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 and improper grazing management from Phase B, State 1 or with frequent fires and/or improper grazing management from Phase 3, State 1. 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.

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	30-40%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

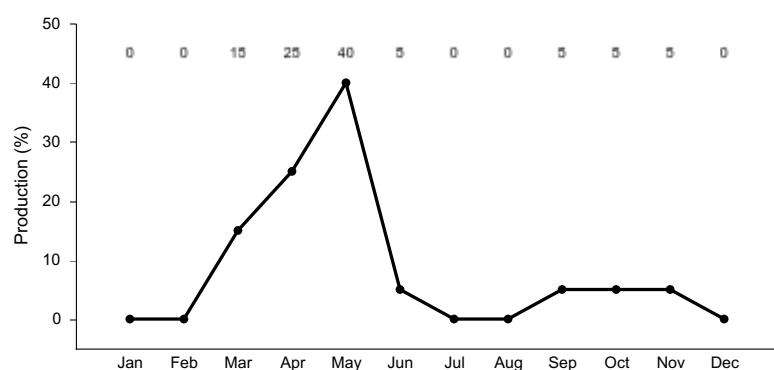


Figure 6. Plant community growth curve (percent production by month). ID0911, D25 POSE/BRTE/ANNUALS.

Transition T1A

State 1 to 2

State 1 Phase 2 to State 2. Develops through frequent fire and improper grazing management. State 1 Phase 3 to State 2. Develops with frequent fire and/or improper grazing management. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated 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, 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. 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 thrasher and pygmy rabbits. 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. The loss of herbaceous (grass and forbs) understory vegetation has a negative impact on ground nesting birds, while the loss of shrub cover negatively affects both ground and shrub nesting avians. Water is limited only being provided by seasonal runoff, artificial water catchments and isolated springs. This rangeland ecological site is commonly 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 cave obligate harvestman.

State 1 Phase 1.1 - Wyoming Big Sagebrush/ Bluebunch Wheatgrass/ Sandberg Bluegrass/ Antelope Bitterbrush 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. Shrub-steppe obligate avian species include the Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Critical habitat (lek sites, nesting areas, winter cover and food) for sage-grouse is provided by this diverse plant community. The plant community supports the needs of large mammals (mule deer, antelope, and elk) providing food and cover on a seasonal basis. Antelope bitterbrush and Wyoming big sagebrush are preferred browse for ungulates. A diverse small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize this community.

State 1 Phase 1.2 - Wyoming Big Sagebrush/ Sandberg Bluegrass 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 less diversity and numbers of insects. 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. Diversity and populations of reptiles and amphibians may be reduced due to reduced prey species and cover. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude the use of amphibians on these sites. Shrub-steppe avian obligates utilizing the site include Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Critical habitat (lek sites, nesting areas, winter cover and food) for sage-grouse is limited due to a less diverse herbaceous plant community. The plant community supports the needs of large mammals (mule deer, antelope, and elk) providing food and cover on a seasonal basis. Available winter habitat for mule deer is reduced due to a reduction of antelope bitterbrush within the stand and increase in Wyoming big sagebrush. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots, and pikas utilize this plant community. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

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 and limits use by shrub obligate animals. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. Cave dwelling insects and mammals from adjacent habitats would be supported by this plant community. 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 eliminate 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. Winter habitat for sage-grouse is eliminated. The

dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Large mammal (mule deer, antelope, and elk) use for food would be seasonal but this community would offer little thermal cover and young of year cover. Small mammal diversity would be reduced and the reduced sagebrush cover would not provide suitable habitat for pygmy rabbits.

State 2 - Sandberg Bluegrass/ Cheatgrass/ Bulbous Bluegrass and Annual Plant Community: This plant community is the result of continued improper grazing management and/or frequent fire. The loss of the native shrub and herbaceous plant community 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 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 reduction of insect populations and diversity would reduce suitability of site for bats. The diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

Grazing Interpretations.

This site is most suitable for livestock use in the spring and late fall. Natural water supplies may be insufficient or absent and water may have to be hauled, piped, or otherwise made available.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference.

Hydrological functions

The soils in this site are in hydrologic group C. They have moderate to rapid runoff potential.

Recreational uses

This site offers minimal recreation or aesthetic value. Occasional use by big game species during winter and spring offers some wildlife viewing and summer blooming forbs offer some aesthetic values.

Wood products

None

Other products

None

Other information

Field Offices

Mountain Home, ID

Gooding, ID

Shoshone, ID

Rupert, ID

Arco, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC
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Jim Cornwell, Range Management Specialist, IASCD
Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho
Leah Juarros, Resource Soil Scientist, NRCS, Idaho
Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Blaine County, ID
Location 2: Blaine County, ID

References

. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136 Vols 1-3. USDA Forest Service, Rocky Mountain Research Station.

Other references

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

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database/feis

USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Contributors

Dave Franzen and Jacy Gibbs

Approval

Kirt Walstad, 12/13/2023

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	03/28/2008
Approved by	Kirt Walstad

Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills can occur on this site due to steep slopes, limited water holding capacity and % bare ground. Gravel and stones on the surface reduces soil erosion. If rills are present they are likely to occur immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

2. **Presence of water flow patterns:** water-flow patterns occur on this site. When they occur, they are short and disrupted by cool season grasses and tall shrubs and are not extensive. Gravelly and stony surface texture interrupts flows.

3. **Number and height of erosional pedestals or terracettes:** both occur on this site but are not extensive. In areas where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes also occur on the site uphill from tall shrub bases and large bunchgrasses.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** On sites in mid-seral status bare ground may range from 35-45 percent.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** are usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move up to 5 feet following a significant run-off event. Coarse litter generally does not move. Gravels and stones on the surface help reduce fine litter movement.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** structure ranges from weak fine granular to weak thin platy. Soil organic matter (SOM) needs to be determined. The A or A1 horizon is typically 3 inches thick. Surface soil color is 10YR very dark grayish brown or very dark brown moist.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** values should range from 4 to 6.

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 catch blowing snow in the interspaces. Terracettes provide a favorable micro-site for vegetative establishment which further increases infiltration.

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 bunchgrasses

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 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):** additional litter cover data is needed but is expected to be 15-20 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 700 pounds per acre (784 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 50-60 percent of the total production, forbs 10-20 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:** includes cheatgrass, bulbous bluegrass, medusahead, rush skeletonweed, musk and scotch thistle, and diffuse and spotted 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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