Ecological site R010XY031ID
South Slope Sandy 12-16 PZ

Last updated: 9/23/2020
Accessed: 05/10/2025

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.

Classification relationships

Artemisia tridentata/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

This ecological site meets the NESH 2014 requirements for PROVISIONAL. A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. Following quality control and quality assurance reviews of the ecological site concepts, an identification number and name for the provisional ecological site are entered into ESIS. A provisional ecological site may include literature reviews, land use history information, some soils data, legacy data, ocular estimates for canopy and/or species composition by weight, and even some line-point intercept information. A provisional ecological site does not meet the NESH 2014 standards for an Approved ESD, but does provide the conceptual framework of soil-site correlation for the development of the ESD.

Associated sites

R010XY001ID	**North Slope Loamy 12-16 PZ FEID-PSSPS**
R010XY007ID	**Loamy 12-16 PZ**
R010XY019ID	**South Slope Loamy 12-16 PZ ARTRX/PSSPS**

Similar sites

R010XY019ID	**South Slope Loamy 12-16 PZ ARTRX/PSSPS**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. tridentata*
Herbaceous	(1) *Pseudoroegneria spicata*

Physiographic features

This site occurs on foothills side slopes with south to west aspects. Slopes range from 30 to 60 percent slopes. Elevations range from 2600 to 3900 feet (775-1200 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountain slope (2) Hill
Elevation	2,600–3,900 ft
Slope	30–60%
Water table depth	60 in
Aspect	S, W

Climatic features

The elevation of MLRA 10 ranges from 1791 feet to 9236 feet, with a mean of 4602 feet. Overall, elevation increases from west to east. However, average annual precipitation decreases from west to east, ranging from 16.59 inches to 22.17 inches, with a mean of 19.56 inches, based on 7 long term climate stations throughout the MLRA. In general, precipitation peaks in December and January, with a steady decline to a low in July and August, then a steep increase during the autumn months. Most of the winter precipitation falls as snow, and maximum annual snowfalls of up to 82 inches have been recorded.

There is considerable variation in temperature throughout the year. Temperatures as low as -52° Fahrenheit and as high as 117° Fahrenheit are on record. Some areas have recorded the occurrence of more than 50 days with temperatures above 90° Fahrenheit. The average maximum annual temperature is 63 degrees F, while the average minimum temperature is 36.2 degrees F.The frost-free period can range from 128 to 152 days, while the freeze-free period can be from 164 to 189 days.

Both the average morning and average afternoon relative humidity values are lowest in July and August, and are below the national average. The number of clear, sunny days peaks during this same period, and is higher then the national average. During the Spring and Summer months high-intensity convective thunderstorms are not unusual.

Table 3. Representative climatic features

Frost-free period (average)	152 days
Freeze-free period (average)	189 days
Precipitation total (average)	22 in

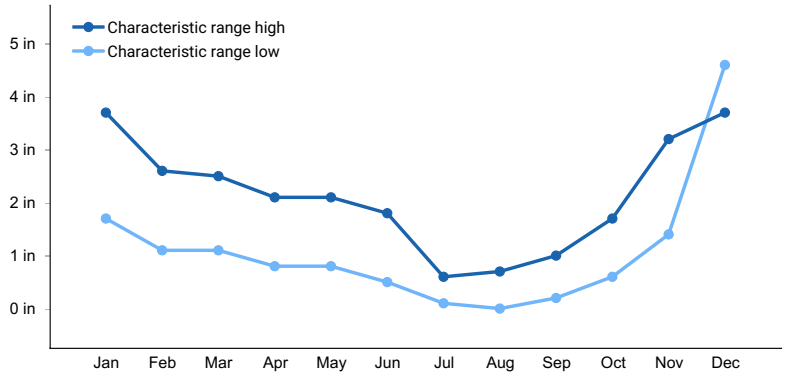


Figure 1. Monthly precipitation range

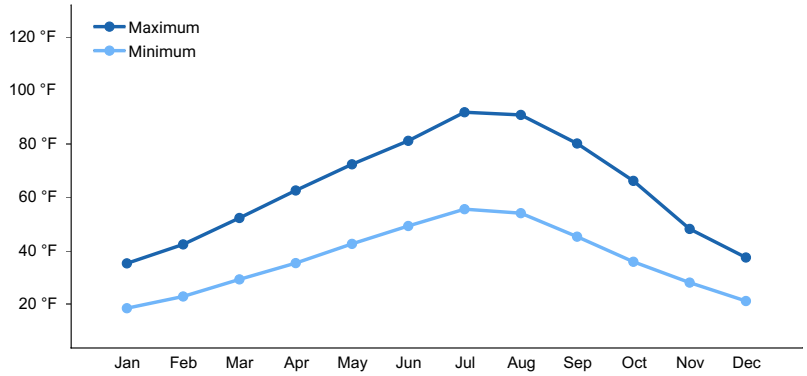


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils on this site are deep to very deep formed from lacustrine deposits. The soils are well drained to excessively drained, with rapid permeability. Runoff is moderate. The erosion hazard is moderate to severe by water. The available water capacity is very low to low. The surface texture is sand to sandy loams. . These soils are characterized by a xeric soil moisture regime. Soil temperature regime is mesic.

Table 4. Representative soil features

Parent material	(1) Alluvium–calcareous siltstone
Surface texture	(1) Coarse sandy loam
Drainage class	Well drained
Permeability class	Moderately slow
Soil depth	60 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	6.1–7.8 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.4–6.8
Subsurface fragment volume <=3" (Depth not specified)	0–25%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The dominant visual aspect is bluebunch wheatgrass and basin big sagebrush. Some antelope bitterbrush is present on the site. Composition by weight is approximately 55-65 percent grass, 5-15 percent forbs, and 25-35

percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, moist winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include Rocky Mountain elk, mule deer, lagomorphs, and small rodents. Fire has historically occurred on the site at intervals of 20-50 years.

The Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is 1.1. The Reference Plant Community Phase of this site is dominated by bluebunch wheatgrass and basin big sagebrush. Subdominant species include Sandberg bluegrass, arrowleaf balsamroot, antelope bitterbrush, and low green rabbitbrush. The plant species composition of Phase 1.1 is listed later under “Reference Plant Community Phase Plant Species Composition”.

Total annual production is 800 pounds per acre (896 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 very dominant, followed by tall shrubs that are more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

This site is best suited for livestock grazing as spring and fall range. Green-up occurs occasionally following fall rain. The site can be used as early spring and winter range for big game in moderate winters. The site has limited value for recreation except for some hunting and hiking.

Due to the rainfall, elevation and steep topography on this site, it is susceptible to degradation from erosion. This is caused by improper grazing management or frequent fire. Infiltration is good where the community is in mid to late seral status. Runoff, when it does occur can be erosive on steeper slopes particularly during high intensity convection storms. 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, basin big sagebrush and antelope bitterbrush can gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, basin big sagebrush can displace most of the primary understory species.

When fires become more frequent than historic levels (20-50 years), basin big sagebrush and bitterbrush are reduced significantly. Rabbitbrush can increase slightly. With continued short fire frequency, basin big sagebrush and bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass, Nevada bluegrass, and Thurber’s needlegrass. These species may be replaced by Fendler threeawn, Sandberg bluegrass, and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive species. Cheatgrass will invade the site. 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 increase in basin big sagebrush and noxious and invasive plants.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass increases

and becomes co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing over time, can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in basin big sagebrush. 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 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 the precipitation received. 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. Bitterbrush can be severely affected by the western tent caterpillar (Malacosoma fragilis). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. 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 to severe winters. Their numbers are seldom high enough to adversely affect the plant community. Herbivory can be detrimental to bitterbrush when livestock grazing and browsing by big game occurs at the same time and season. This will occur when both kinds of animal are using the plant in the late summer or fall. The adverse impact is excessive use of the current year’s leader growth.

The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

Watershed:

Decreased infiltration and increased runoff occur with an increase in basin 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.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.
1.1. Basin big sagebrush/bluebunch wheatgrass-Thurber’s needlegrass/antelope bitterbrush.

Phase 1.1 to 1.2 (1.1A). Develops with improper grazing management and in the absence of fire.
Phase 1.1 to 1.3 (1.1B). Develops with fire.
Phase 1.2 to 1.1 (1.2A). Develops with prescribed grazing and no fire.
Phase 1.3 to 1.1 (1.3A). Develops with prescribed grazing and no fire.

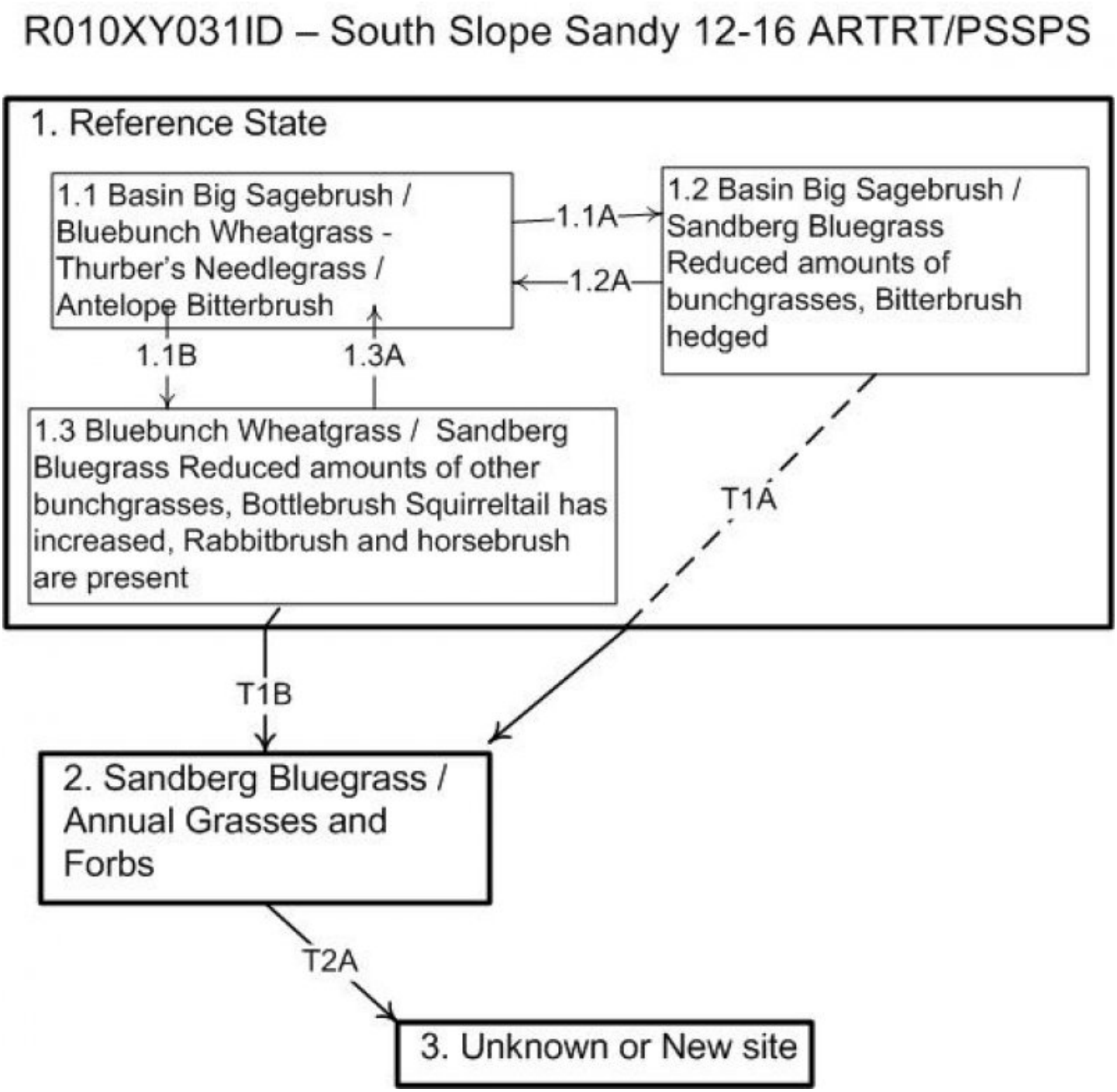
Phase 1.2 and 1.3 to State 2 (T1A and T1B). Develops through frequent fire and improper grazing management. This state has crossed the threshold. It is not economically feasible to move it back towards State 1.

State 2 to State 3, Unknown new site (T2A). Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fires cause this state to cross a threshold and retrogress to a new site with reduced potential. It is not economically feasible to move this state back towards State 1.

Practice Limitations.

Usually this site will not be a key area for livestock management due to slope. Moderate to severe limitations exist on this site for facilitating practices for livestock management. The steep slopes will make construction of fences, pipelines, troughs, and trails difficult. Steep slopes present severe limitations for the use of ground travel equipment for seeding.

State and transition model



State 1
Reference State

Community 1.1
Reference Plant Community

Reference Plant Community Phase. This plant community has basin big sagebrush in the overstory with bluebunch wheatgrass and Thurber's needlegrass dominating the understory. Subdominant species include Sandberg bluegrass, arrowleaf balsamroot, antelope bitterbrush, and low green rabbitbrush. There are minor amounts of other grasses, forbs, and shrubs in minor amounts. Natural fire frequency is 20-50 years.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	300	480	600
Shrub/Vine	150	240	300
Forb	50	80	100
Total	**500**	**800**	**1000**

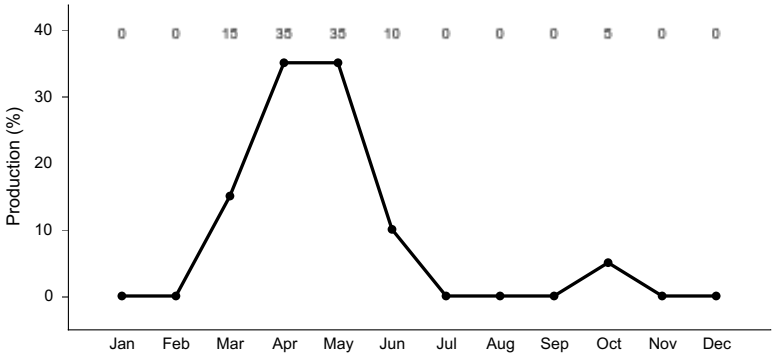


Figure 4. Plant community growth curve (percent production by month). ID0207, ARTRX/PSSPS. State 1.

Community 1.2
Basin Big Sagebrush with reduced bunchgrasses

This plant community is dominated by basin big sagebrush with reduced amounts of bluebunch wheatgrass. Sandberg bluegrass and bottlebrush squirreltail have increased in the understory. There are reduced amounts of Thurber's needlegrass. All deep-rooted perennial bunchgrasses are typically in low vigor. Basin big sagebrush has increased. Antelope bitterbrush is usually hedged. This state has developed due to improper grazing management and lack of fire (1.1A). Some cheatgrass and Fendler threeawn may have invaded the site.

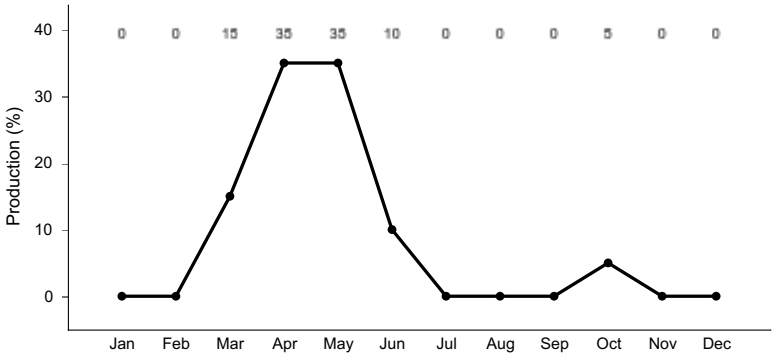


Figure 5. Plant community growth curve (percent production by month). ID0207, ARTRX/PSSPS. State 1.

Community 1.3
Bluebunch Wheatgrass- Sandberg Bluegrass

This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Thurber's needlegrass can be lost due to fire. Bottlebrush squirreltail has increased. Forbs remain about in the same proportion as Phase 1.1. Very little basin sagebrush is present due to wildfire, but some rabbitbrush and horsebrush are present due to sprouting. Some cheatgrass and Fendler threeawn may have invaded the site. This plant community is the result of wildfire (1.1B).

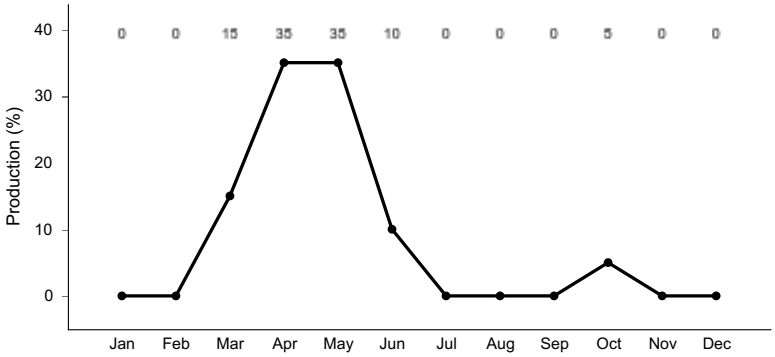


Figure 6. Plant community growth curve (percent production by month). ID0207, ARTRX/PSSPS. State 1.

State 2
Sandberg Bluegrass - Annuals

Community 2.1
Sandberg Bluegrass- Annuals

This plant community is dominated by Sandberg bluegrass, cheatgrass, and other annuals. Root sprouting shrubs such as rabbitbrush and horsebrush can be present, dependent upon, how frequently, fire has occurred. Some soil loss has occurred. This state has developed due to frequent fires and improper grazing management (T1A or T1B). This state has crossed the threshold. It is not economically feasible to move this site back across the threshold with accelerated practices.

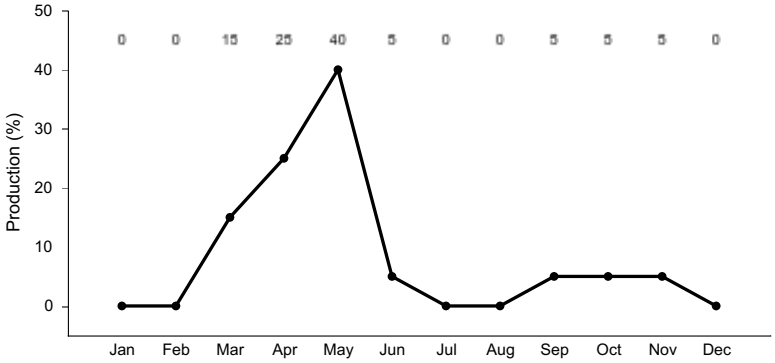


Figure 7. Plant community growth curve (percent production by month). ID0211, POSE/BRTE-ANNUALS. State 2.

State 3
Unknown Site

Community 3.1
Unknown or New

.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Grass/Grasslike**			300–600	
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	200–400	–
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	50–100	–
	squirreltail	ELEL5	*Elymus elymoides*	15–30	–
	Sandberg bluegrass	POSE	*Poa secunda*	15–30	–
Forb					
2	**Forb**			50–100	
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	50–100	–
	buckwheat	ERIOG	*Eriogonum*	0–10	–
	beardtongue	PENST	*Penstemon*	0–10	–
	common yarrow	ACMI2	*Achillea millefolium*	0–10	–
Shrub/Vine					
3	**shrub**			150–300	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	100–200	–
	antelope bitterbrush	PUTR2	*Purshia tridentata*	50–100	–
	littleleaf horsebrush	TEGL	*Tetradymia glabrata*	0–10	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	0–10	–

Animal community

Wildlife Interpretations.
Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Mule deer and elk are the large herbivores using the site. The plant community provides important spring, fall and winter habitat for mule deer and elk. The site provides seasonal habitat for resident and migratory animals including western toad, sagebrush lizard, shrews, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Sagebrush obligate avian species include sage-grouse, Brewer’s sparrow and sage thrasher. Sage-grouse, an area sensitive species, may utilize the sagebrush plant community as nesting, winter and brood-rearing habitat. Encroachment of noxious and invasive plant species (cheatgrass and medusahead) in isolated areas can replace native plant species which provide critical feed, brood-rearing and nesting cover for a variety of native wildlife. Water features are sparse provided by seasonal streams, artificial water catchments and springs.

State 1 Phase 1.1 – Basin Big Sagebrush/ Bluebunch Wheatgrass/ Thurber’s Needlegrass/ Antelope Bitterbrush Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs and shrubs, used throughout the growing season by native insect communities that assist in pollination. Many avian and mammal species utilize this habitat based on the availability of invertebrate prey species. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western toad, boreal chorus frog and northern leopard frog. 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 amphibian use on these sites. Native shrub-steppe obligate avian species utilizing the habitat include the Brewer’s sparrow, sage sparrow, sage thrasher and sage-grouse. Sage-grouse may utilize this plant community for nesting, winter and brood-rearing habitat. The plant community provides forage and cover for large mammals including mule deer and elk. The site can be an important wintering area for mule deer and elk where bitterbrush is present. A diverse small mammal population including golden-mantled ground squirrels, kangaroo rats, chipmunks and yellow-bellied marmots would utilize this community. Habitat for the pygmy rabbit may be present where canopy cover of sagebrush is high and deep soils are present. The deer mouse is beneficial to this site as it is the principal vector for

planting bitterbrush seed.

State 1 Phase 1.2 - Basin 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. The reduced herbaceous understory results in reduced diversity and numbers of insects. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink and western toad. The reduction of grasses and forbs in the plant community would reduce the available prey species and cover for these resident reptile species. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. Key shrub-steppe obligate avian species include Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Winter cover and winter food for sage-grouse is available. Quality of nesting and brood-rearing habitat for sage-grouse would decline due to lower amounts of herbaceous cover. Loss of understory vegetation, increased sagebrush density, and a decline of bitterbrush, reduces forage value for mule deer and elk. A small mammal population including golden-mantled ground squirrels, kangaroo rats, chipmunks, badger and yellow-bellied marmots would utilize these areas. 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/ Rabbitbrush Plant Community: This plant community is the result of fire. The plant community, dominated by herbaceous vegetation with little to no sagebrush or antelope bitterbrush would provide less vertical structure for animals. Patches of root sprouting shrubs including rabbitbrush may be present providing limited vertical structure for wildlife. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. Reptiles including leopard lizard, short horned lizard and sagebrush lizard would be limited or excluded due to the loss of sagebrush and antelope bitterbrush. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude use on this site by amphibians. The loss of sagebrush and antelope bitterbrush canopy cover would reduce the quality of this area as nesting habitat for Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides limited brood-rearing habitat for sage-grouse when adjacent sagebrush cover is present. Winter habitat for sage-grouse is eliminated. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Mule deer and elk forage use would be seasonal (spring and fall) and the site would offer little thermal cover and young of year cover. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

State 2 – Sandberg Bluegrass/ Cheatgrass / Annuals Plant Community:
This plant community is the result of continued improper grazing management and frequent fire. Invasive herbaceous plants and patches of root sprouting shrubs like rabbitbrushes can be present. The reduced forb and shrub component in the plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water or cover. This plant community does not 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 available food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

Grazing Interpretations.

This site is best used as spring and fall range for domestic livestock.
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

No data.

Recreational uses

This site has limited value for recreation except that it does provide some hunting opportunities for upland game birds and hiking.

Wood products

None.

Other products

None.

Other information

Field Offices

Weiser, ID
Emmett, ID
Mountain Home, ID
Meridian, ID
Cascade, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:
Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC
Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC
Brendan Brazee, State Rangeland Management Specialist, NRCS, USDA
Jim Cornwell, Range Management Specialist, IASCD
Leah Juarros, Resource Soil Scientist, NRCS, Idaho
Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Ada County, ID	
General legal description	Foothills of Boise front.

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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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

Kendra Moseley, 9/23/2020

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Date	02/23/2009
Approved by	Brendan Brazee
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills do not usually occur on this site due to surface texture

2. **Presence of water flow patterns:** Water-flow patterns can occur on this site due to moderate to steep slopes. They usually occur during high intensity convection storms. They are disrupted by large bunchgrasses and shrubs. They are not extensive.

3. **Number and height of erosional pedestals or terracettes:** Pedestals do not occur. A few terracettes can occur where water flow patterns are present. They are not extensive

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Ranges from 10-20%

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:** Scouring and blowouts can occur on this site particularly following a wildfire.

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 3 feet or further following a significant run-off event or even further from wind. Terracettes can trap fine litter. 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):** Values should range from 4 to 5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** no data

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 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

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: cool season deep-rooted perennial bunchgrasses>>

    Sub-dominant: tall shrubs>

    Other: perennial forbs>

    Additional: shallow rooted grasses

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Basin big sagebrush and antelope bitterbrush will become decadent in the absence of fire and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase

14. **Average percent litter cover (%) and depth (in):** Annual litter cover in the interspaces will be 5-10 percent to a depth of <0.1 inch. Under the mature shrubs litter is greater than 0.5 inches. Fine litter can accumulate on the terracettes and behind surface stones.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 800 lbs. per acre in a year with normal precipitation and temperatures. Production is normally low due to low infiltration, steep south aspect and moderate water capacity. Perennial grasses produce 55-65 percent of the total, forbs 5-15 percent, and shrubs 25-35 percent.

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that**

become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site: includes cheatgrass, bulbous bluegrass, rush skeletonweed, scotch thistle, and spotted and diffuse knapweed

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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in normal years.
