Ecological site R011XA007ID
Semiwet Saline Meadow SAVE4/DISP

Last updated: 4/06/2020
Accessed: 05/18/2024

General information

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

MLRA notes

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

Major Land Resource Area (MLRA): 011X – Snake River Plains
Precipitation or Climate Zone: Additional moisture

Classification relationships

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 receives additional moisture
Soils are:
Saline or saline sodic
Very deep, with <35% coarse fragments (by volume), not skeletal
Poorly to somewhat poorly drained
not strongly or violently effervescent in the surface mineral 10”
Surface textures range from sandy loam to loam the surface mineral 4”
Slope is <30%

Associated sites

R011XA006ID	**Saline Upland 7-12 PZ SAVE4/LECI4**
R011XY015ID	**Loamy Bottom 8-14 PZ ARTRT/LECI4**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on nearly level to undulating slopes that range from 0 to 5 percent. The site occurs on all aspects and the elevations range from 3500-5600 ft (1050-1700 meters). The Abo Variant soil is flooded occasionally for brief periods of time.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Stream terrace
Flooding frequency	None
Elevation	1,067–1,707 m
Slope	0–5%
Water table depth	30–122 cm
Aspect	Aspect is not a significant factor

Climatic features

The Central Snake River Plain, MLRA 11A, has a mean elevation of 3929 feet above sea level, and varies from a minimum of 2575 feet to a maximum of 8586 feet. The average annual precipitation is 10.03 inches, with a range of 8.30 to 11.46 inches, based on 10 long term climate stations located throughout the MLRA. In general, annual precipitation is below the national average, especially during the summer months. Temperatures show considerable variation during the year. A maximum temperature of 112° Fahrenheit was recorded at the Hagerman climate station (# 103932; elevation 2880 feet), and a minimum of -38° was recorded at the Richfield station. Richfield has also recorded up to 186 days below freezing during the year.
The frost-free period ranges from 116 to 140 days. The freeze-free period can be as short as 144 days to as long as 169 days. Each period is greatest on the west side of the MLRA. In general, morning and afternoon relative humidity is at or far below the national average, especially during the months of May through September.

Table 3. Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	169 days
Precipitation total (average)	279 mm

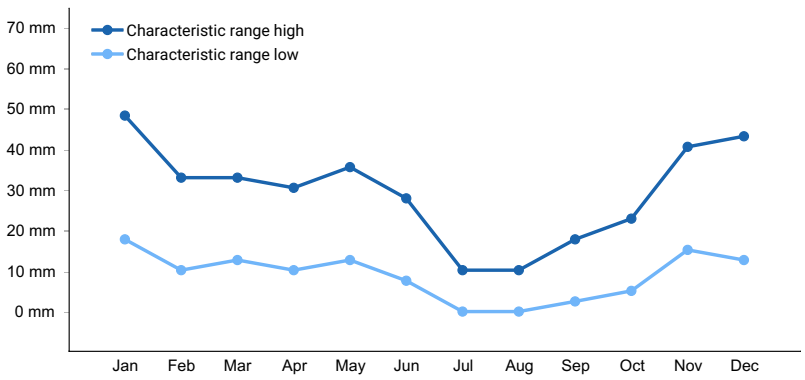

Figure 1. Monthly precipitation range

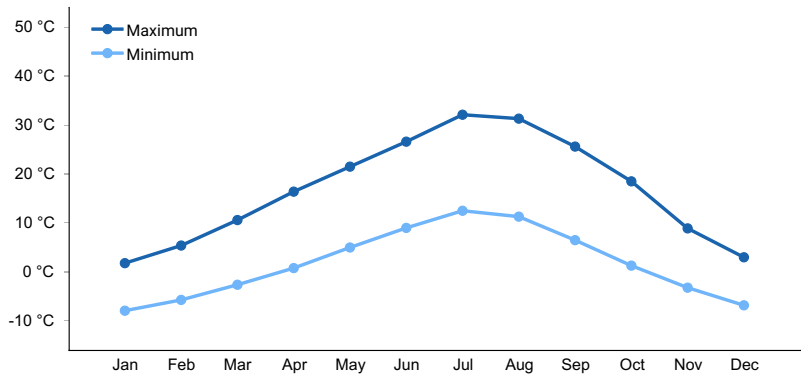

Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils supporting this site are deep to very deep, but are affected by wetness, salts, and alkali. They are poorly to somewhat poorly drained. Jansite and Springcove are moderately well drained. Permeability is moderately slow to moderate while Springcove has slow permeability. Runoff is negligible to moderate. The available water holding capacity (AWC) is low to moderate. The surface is typically loamy texture. Salt and alkali restrict the movement of roots through the profile above the water table. Most of the soils on this site are moderate to very strongly alkaline. These soils typically are characterized by a xeric or aquic soil moisture regime but Anchustequi has an aridic soil moisture regime. Soil temperature regime is mesic.

Soil Series Correlated to this Ecological Site

Abo Variant
Anchustequi
Baldock
Jansite
Letha
Springcove

Table 4. Representative soil features

Surface texture	(1) Loam (2) Sandy loam
Drainage class	Poorly drained to somewhat poorly drained
Permeability class	Moderately slow to moderate
Soil depth	152 cm
Surface fragment cover <=3"	0–9%
Surface fragment cover >3"	0–9%
Available water capacity (0-101.6cm)	8.13–18.29 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–32 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–300
Soil reaction (1:1 water) (0-101.6cm)	7.9–9.6
Subsurface fragment volume <=3" (Depth not specified)	0–9%
Subsurface fragment volume >3" (Depth not specified)	0–6%

Ecological dynamics

The dominant visual aspect of this site is black greasewood and salt and alkali tolerant perennial grasses in the understory. The amount and distribution of the understory grasses is quite variable and is dependent upon the

degree of salinity and alkalinity. Composition by weight is 80 percent grasses, 10 percent forbs, and 10 percent shrubs.

The Historic Climax Plant Community (HCPC), the Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase A. This plant community is dominated by inland saltgrass and black greasewood. Subdominants include alkali bluegrass, alkali sacaton and basin wildrye. The plant species composition of Phase A is listed later under “Reference Plant Community Phase Plant Species Composition”.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores primarily include lagomorphs and small rodents. Infrequent use is made by mule deer and pronghorn antelope. Fire has historically occurred on this site every 25-40 years. Total annual production is 1300 pounds per acre (1444 Kg/ha) in a normal year. Production in a favorable year is 1600 pounds per acre (1777 Kg/ha). Production in an unfavorable year is 1000 pounds per acre (1111 Kg/ha). Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by medium height shrubs being more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

FUNCTION:

This site is suited for grazing by domestic livestock in the late spring, summer, and fall. Grazing in the spring when the soils are wet should be avoided.

Due to the easy access by livestock to this site, degradation can occur if the plant cover is reduced. Herbivores primarily include lagomorphs and small rodents. Infrequent use is made by mule deer and pronghorn antelope.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, black greasewood increases. Grasses and forbs decrease as shrubs increase.

When fires become more frequent than historic levels (25-40 years), the top growth of black greasewood is reduced significantly. The reduction is temporary however, since black greasewood re-sprouts after light to moderate intensity fires. Root-sprouting shrubs such as the rabbitbrushes and horsebrush will increase after fire.

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 black greasewood, inland saltgrass, and noxious and invasive plants.

Continuous spring grazing can significantly reduce the vigor of basin wildrye. Excessive utilization during the spring is even more detrimental. The growing points of basin wildrye are several inches above the soil surface. Utilization during the growing season should allow for a 10-12” stubble height by the end of the grazing period.

Weather influences:

Above normal precipitation in April, May, and June increases total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Abnormally high amounts of winter and/or spring precipitation can cause increased run-on and ponding on the site. This can lead to reduced production and mortality if the ponding persists for an extended period of time.

Likewise, below normal precipitation during these spring months can 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:

An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available. 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.
Many of the annual and perennial invasive species with deep root systems 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 sparingly. Since their use is so light, the influence on the site is minimal. Population explosions of black-tailed jackrabbits occur occasionally. These high populations can affect the plant community. However, the effect is usually temporary since population die-offs normally occur within a year or two.

Watershed:

Decreased infiltration and increased runoff occur with the increase in black greasewood. Desired understory species can be reduced. The increased runoff also causes sheet and rill erosion. This may lead to gully development and a lowering of the watertable. This change can affect nutrient and water cycles. 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 brush management.
Phase C to A. Develops with prescribed grazing and no fire.

State 1 to State 2. Develops through frequent fire and improper grazing management. This site has crossed the threshold. It is generally economically impractical to move this state back across the threshold with accelerating practices.
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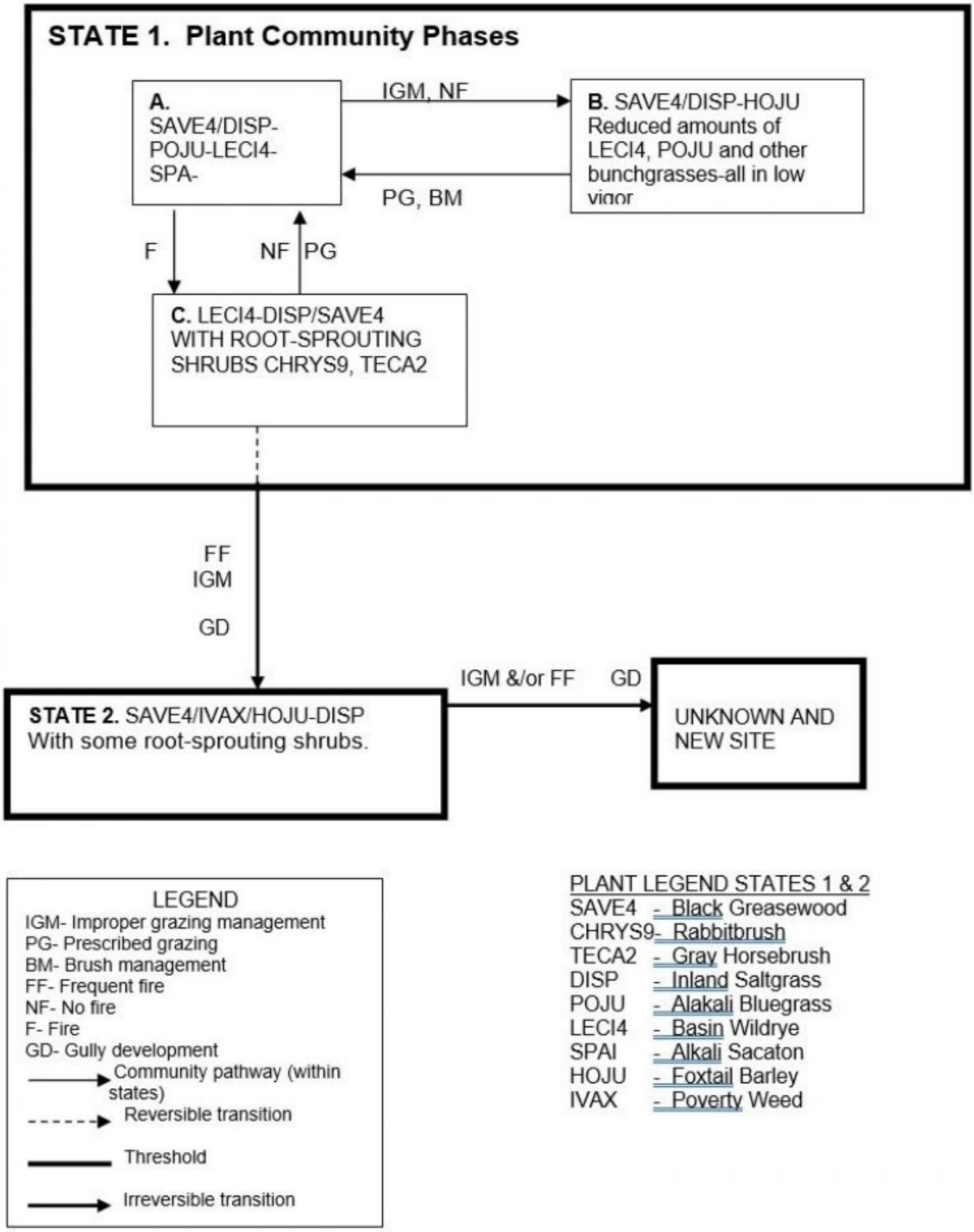
State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is generally economically impractical to move this state back across the threshold with accelerating practices.

Practice Limitations.

Moderate to severe limitations exist on this site for seeding and brush control using ground moving equipment due

to periods of wetness and concentrations of salts and alkalinity.

State and transition model



State 1
State 1 Phase A

Community 1.1
State 1 Phase A

This plant community has black greasewood in the overstory with inland saltgrass dominating the understory. Alkali bluegrass, basin wildrye, and alkali sacaton are sub-dominant in the understory. The amount and distribution of the understory grasses is quite variable and is dependent upon the degree of salinity and alkalinity. Natural fire frequency is 25-40 years.

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	75-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

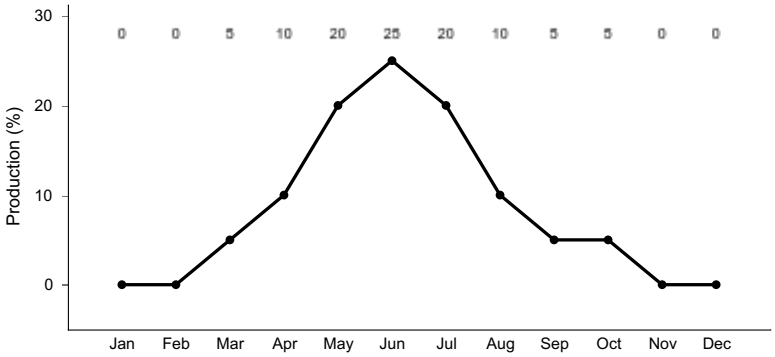


Figure 3. Plant community growth curve (percent production by month). ID0617, BLACK COTTONWOOD. State 1.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

This plant community is dominated by black greasewood with reduced amounts of basin wildrye, alkali bluegrass, and alkali sacaton. Inland saltgrass and foxtail barley have increased in the understory. All deep-rooted bunchgrasses are typically in low vigor. Black greasewood has increased as well as some other tall shrubs. This state has developed due to improper grazing management and lack of fire.

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	75-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

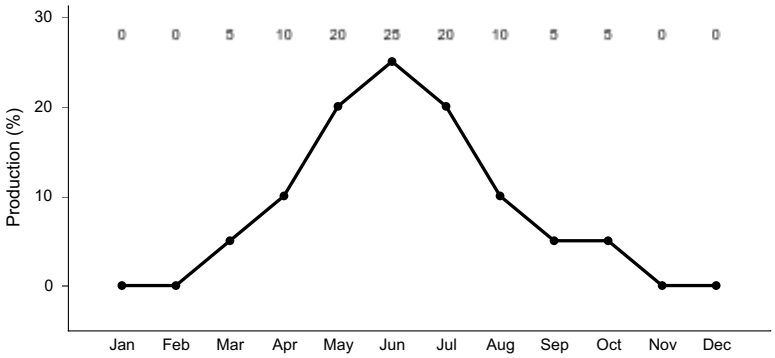


Figure 4. Plant community growth curve (percent production by month). ID0617, BLACK COTTONWOOD. State 1.

State 3
State 1 Phase C

Community 3.1
State 1 Phase C

This plant community is dominated by basin wildrye with some rabbitbrush and gray horsebrush. Inland saltgrass has increased. Forbs remain about in the same proportion as Phase A. Black greasewood has re-sprouted. This plant community is the result of wildfire.

Table 7. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	75-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

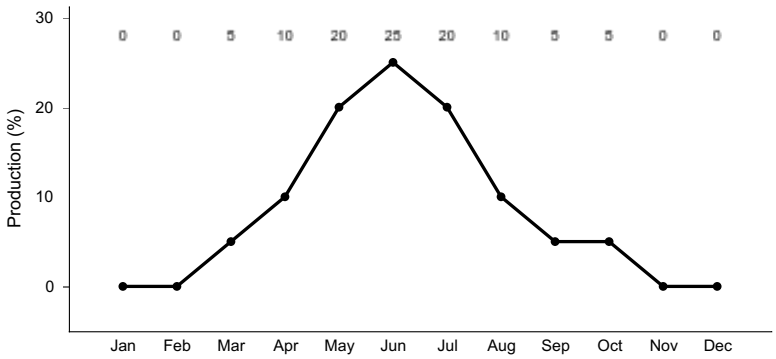


Figure 5. Plant community growth curve (percent production by month). ID0617, BLACK COTTONWOOD. State 1.

State 4
State 2

Community 4.1
State 2

This plant community is dominated by black greasewood, povertyweed, and/or other annuals. Inland saltgrass is still dominant in the understory but is beginning to decline. Root sprouting shrubs such as black greasewood, rabbitbrush, spiny hopsage, and littleleaf horsebrush can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. Gully development has begun due to increased run-on from adjacent sites. This state has developed due to frequent fires and improper grazing management. The site has crossed the threshold. It is economically impractical to return this plant community to State 1 with accelerating practices.

Table 8. 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	75-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

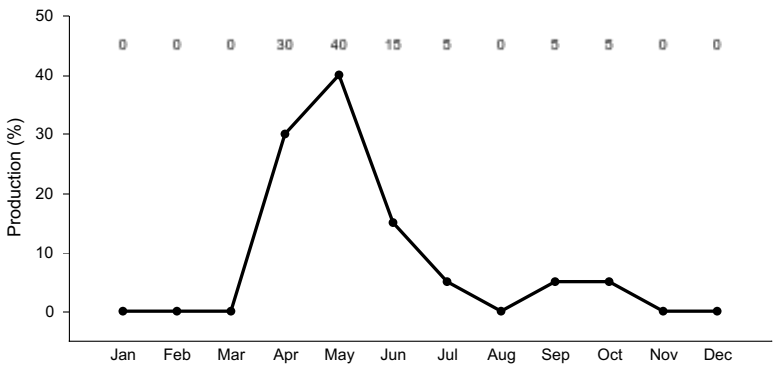


Figure 6. Plant community growth curve (percent production by month).

State 5
State 3

Community 5.1
State 3

Unknown new site. This plant community has gone over the threshold to a new site. Inland saltgrass is declining. Site potential has been reduced. Significant soil loss has occurred. Gully development is extensive due to increased run-on from adjacent sites. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires. It is economically impractical to return this plant community to State 1 with accelerating practices.

Table 9. 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	75-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Additional community tables

Animal community

Wildlife Interpretations.
Animal Community – Wildlife Interpretations

This ecological site provides habitat value for unique wetland and upland wildlife species. The high diversity of plant species and structure and the proximity to areas with water at or near the soil surface favors a large variety of wildlife. Area sensitive species that may utilize the area include Woodhouse's toad, Great Basin collared lizard, long-nosed snake, groundsnake, and Great Basin ground squirrel.

State 1 Phase 1.1 – Black Greasewood/ Inland Saltgrass/ Alkali Bluegrass/ Basin Wildrye/ Alkali Sacaton Reference Plant Community (RPC): The RPC provides a diversity of grasses, forbs and shrubs, used by native insect communities who assist in the pollination process for the plant community. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake and western toad. Greasewood provides suitable thermal and escape cover for mule deer and antelope. When found adjacent to sagebrush dominated sites, this plant community may provide brood rearing/foraging areas for sage grouse. This community provides habitat for a wide array of small mammals such as jackrabbits, cottontail rabbits, mice, and voles so diverse prey populations are available for badgers, fox, coyotes, and raptors such as red-tail and Swainson's hawks. Birds such as horned larks and western meadowlarks utilize this community for nesting and foraging. This site is typically adjacent to seasonal and permanent wetlands and can provide important nesting cover for a variety of waterfowl and shorebirds.

State 1 Phase 1.2 – Black Greasewood/ Inland Saltgrass/ Foxtail Barley Plant Community: This state has

developed due to improper grazing management and lack of fire. The diversity of the invertebrate community represented in Phase 1.1 may decrease due to an increase in woody cover and reduction of understory vegetation, although the numbers of insects may still be large. Birds of prey (northern harrier and Cooper's hawk) may range throughout these areas looking for prey species. When found adjacent to sagebrush dominated sites, this plant community may provide brood rearing/foraging areas for sage grouse. Small mammals utilizing this site would be similar to Phase 1.1 mammals listed above. This plant community may be useful to large grazers like deer and antelope. However, the plant community composition is less diverse, with less palatable herbaceous vegetation and thus is less apt to meet the seasonal needs of these animals.

State 1 Phase 1.3 – Basin Wildrye/ Inland Saltgrass/ Black Greasewood Plant Community: This plant community is the result of wildfire. This plant community exhibits a moderate level of plant species diversity. Invertebrate populations would be similar to Phase 1.1 and 1.2 communities. It provides thermal and escape cover for deer and antelope. Birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles as well as upland game birds. Small mammals including the deer mouse and northern grasshopper mouse may utilize the site. They would provide a prey base for fox, coyote, badgers, and raptors.

State 2 – Black Greasewood/ Poverty Weed/ Foxtail Barley/ Inland Saltgrass Plant Community: This state has developed due to frequent fires and improper grazing management. The site may provide limited thermal and escape cover for deer and antelope if woody canopy cover is at least 20%. However, the plant community composition is less diverse and productive, thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs adjacent to sagebrush cover. Small mammals including deer mice and northern grasshopper mice may occur here. They would provide a prey base for fox, coyote, badgers and raptors.

Grazing Interpretations.

This site is suited for grazing by domestic livestock in the late spring, summer, and fall. Grazing in the spring when the soils are wet should be avoided.
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.

Recreational uses

This site has only slight value for recreation and aesthetics.

Wood products

None

Other products

None

Other information

Field Offices

Mountain Home, ID

Marsing, ID
Gooding, ID
Twin Falls, ID
Jerome, ID
Shoshone, ID
Burley, ID
Rupert, ID
American Falls, ID
Pocatello, ID
Blackfoot, ID
Arco, ID
Rexburg, ID
St. Anthony, ID
Rigby, ID
Fort Hall, ID
Idaho Falls, 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
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: Cassia County, ID	
General legal description	Three miles east of Burley in Snake River bottom

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number “35”.
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USDA, 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.
USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Approval

Kendra Moseley, 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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Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA-NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	03/31/2008
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills rarely occur on this site due to the relatively flat slopes. If rills are present they are likely to occur immediately following wildfire.

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2. **Presence of water flow patterns:** water-flow patterns rarely occur on this site. When they occur they are short and disrupted by cool season grasses and tall shrubs and are not extensive. Water-flow patterns can be expected to occur where run-on from adjacent sites is present.

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3. **Number and height of erosional pedestals or terracettes:** both are rare on this site.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. On sites in mid-seral status bare ground may range from 45-55 percent.

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

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

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7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move up to 2 feet following a significant run-off event. Coarse litter generally does not move.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values should range from 4 to 6 but needs to be tested.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** structure ranges from weak medium granular, moderate fine and medium subangular blocky to moderate thin, medium and thick platy. Soil organic matter (SOM) ranges from 1 to 4 percent. The A or A1 horizon is typically 1 to 10 inches thick.

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 accumulate snow in the interspaces.

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: medium height shrubs

    Other: perennial forbs

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** black greasewood can become decadent in the absence of fire. Very little decadence otherwise occurs on this site. Plant mortality may occur from an abnormally high water table extending over 2-3 years.

14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed but is expected to be 20-25 percent to a depth of 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 1300 pounds per acre (1444 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 80 percent of the total production, forbs 10 percent and shrubs 10 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 perennial pepperweed, whitetop, lambsquarter, and halogeton.

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