

Ecological site R013XY052ID Saline Semiwet Meadow DISP

Last updated: 9/23/2020
Accessed: 04/26/2024

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): 013X–Eastern Idaho Plateaus

Land Resource Region: B (Northwestern Wheat and Range)
MLRA: 13 (Eastern Idaho Plateaus)

EPA EcoRegion: Level III (Middle Rockies)

LRU notes

013X-Eastern Idaho Plateaus

Additional moisture site.
<https://soils.usda.gov/survey/geography/mlra/index.html>

Classification relationships

No Data.

Ecological site concept

Site receives additional water.
Soils are:
slightly saline or saline-sodic.
Deep to very deep, not skeletal within 20" of soil surface.
Season water table between 24-40" with high amounts of organic matter
Not strongly or violently effervescent in surface mineral 10".
Slope is < 30%.
Clay content is = <35% in surface mineral 4".
Site does not have an argillic horizon with > 35% clay.

Associated sites

R013XY053ID	Wet Meadow CAREX-JUNCUS Wet Meadow CAREX-JUNCUS Marsh SCAC3-TYLA
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	Not specified
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Physiographic features

This site occurs on playas, alluvial bottoms, valley floors, terraces, and potholes. Slopes range from 0 to 4 percent and the site occurs on all aspects. The elevations range from 5200 to 7500 feet (1575 to 2300 meters).

Table 2. Representative physiographic features

Landforms	(1) Valley floor (2) Terrace (3) Alluvial fan
Flooding frequency	None
Elevation	5,200–7,500 ft
Slope	0–4%
Water table depth	24–36 in
Aspect	Aspect is not a significant factor

Climatic features

MLRA 13, the Eastern Idaho Plateaus, is part of the Northwestern Wheat and Range Region. Its elevation ranges from 4209 to 9331 feet above sea level, with an average elevation of 5787 feet. The average annual precipitation is 16.41 inches, with a range of 13.56 to 18.75 inches, based on ten long term climate stations located throughout the MLRA. A spike in precipitation amount often occurs in late spring, usually in May.

Temperatures vary widely in the MLRA throughout the year. A maximum temperature of 103° Fahrenheit occurred at the McCammon climate station (# 105716; elevation 4770 feet), while a minimum of -41° was recorded at the Kilgore station (#104908). At all stations temperatures throughout the year are usually below the national average. Kilgore also recorded the greatest annual snowfall amount of 217 inches. The average temperature is 41.4 degrees F. with an average high of 55.3 degrees and an average low of 27.5 degrees.

The frost-free period ranges from 64 to 90 days, while the freeze-free period can be 98 to 123 days.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	123 days
Precipitation total (average)	19 in

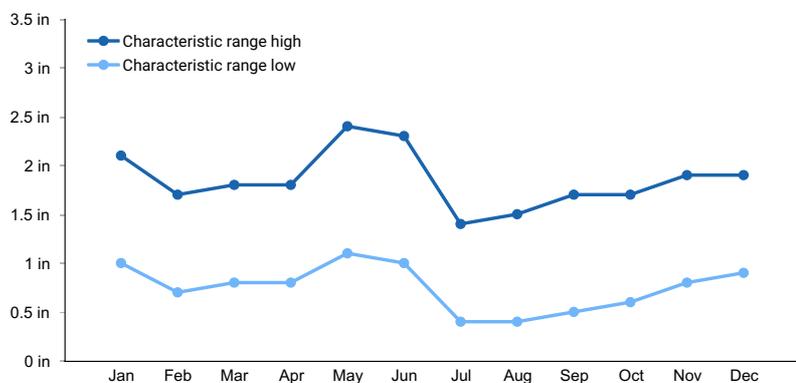


Figure 1. Monthly precipitation range

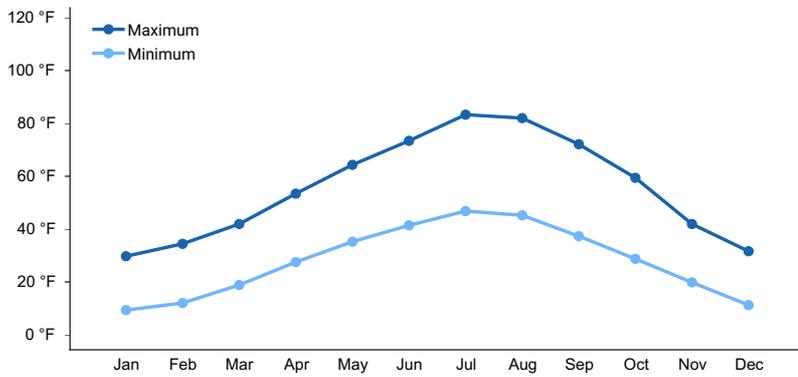


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

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

Soil features

The soils on this site are very deep and somewhat poorly drained silty clay loams. The surface layer is a dark color due to the high organic material. Soils are affected by wetness for at least part of the growing season within 1.5 feet of the soil surface. The soils are saline, with the salinity is at or near the soil surface as a result of the fluctuating water table which drops to 3-5 feet below the surface later in the growing season. Runoff is low, while the permeability is moderately slow. These soils have a moderate available water holding capacity (AWC). Rock fragments are variable throughout the profile, but are less than 35 percent by volume. The soils are characterized by a xeric soil moisture regime and a cryic soil temperature regime.

Soil Series Correlated to this Ecological Site

Zundell

Table 4. Representative soil features

Surface texture	(1) Silty clay loam
Drainage class	Somewhat poorly drained
Permeability class	Moderately slow
Soil depth	60 in
Available water capacity (0-40in)	6.2-7 in
Calcium carbonate equivalent (0-40in)	40-85%
Electrical conductivity (0-40in)	0-4 mmhos/cm
Sodium adsorption ratio (0-40in)	0-5
Soil reaction (1:1 water) (0-40in)	7.9-9
Subsurface fragment volume <=3" (Depth not specified)	0-25%

Ecological dynamics

The dominant visual aspect of this site is salt and alkali tolerant perennial grasses. The amount and distribution of

the vegetation is quite variable and is dependent upon the degree of salinity and alkalinity. Composition by weight is 80-90 percent grasses, 5-10 percent forbs, and 5-10 percent shrubs.

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.

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, alkali bluegrass, and alkali sacaton. Subdominants include Baltic rush, beaked sedge, Nebraska sedge, and American bulrush. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 1400 pounds per acre (1555 Kg/ha) in a normal year. Production in a favorable year is 1850 pounds per acre (2055 Kg/ha). Production in an unfavorable year is 900 pounds per acre (1000 Kg/ha). Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by medium height shrubs being co-dominant with perennial forbs.

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 and sod-forming grasses increase. Bunchgrasses 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 a corresponding increase in saltgrass. With reduced vigor, recruitment of the bunchgrasses declines. As these species decline, the plant community becomes susceptible to an increase in black greasewood, inland saltgrass, and noxious and invasive plants.

Proper grazing management can maintain the integrity of the plant community.

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 and other shrubs. 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 in the absence of fire and improper grazing management.

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 Phase C to State 2. Develops through frequent fire or improper grazing management. Gully development has begun. This site has crossed the threshold. It is generally not economically feasible to move this state back across the threshold with accelerating practices.

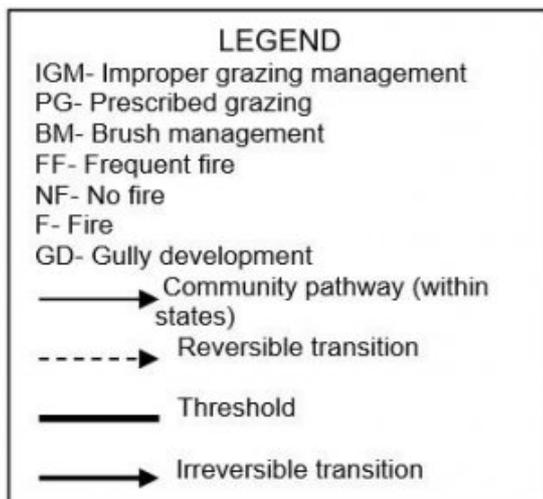
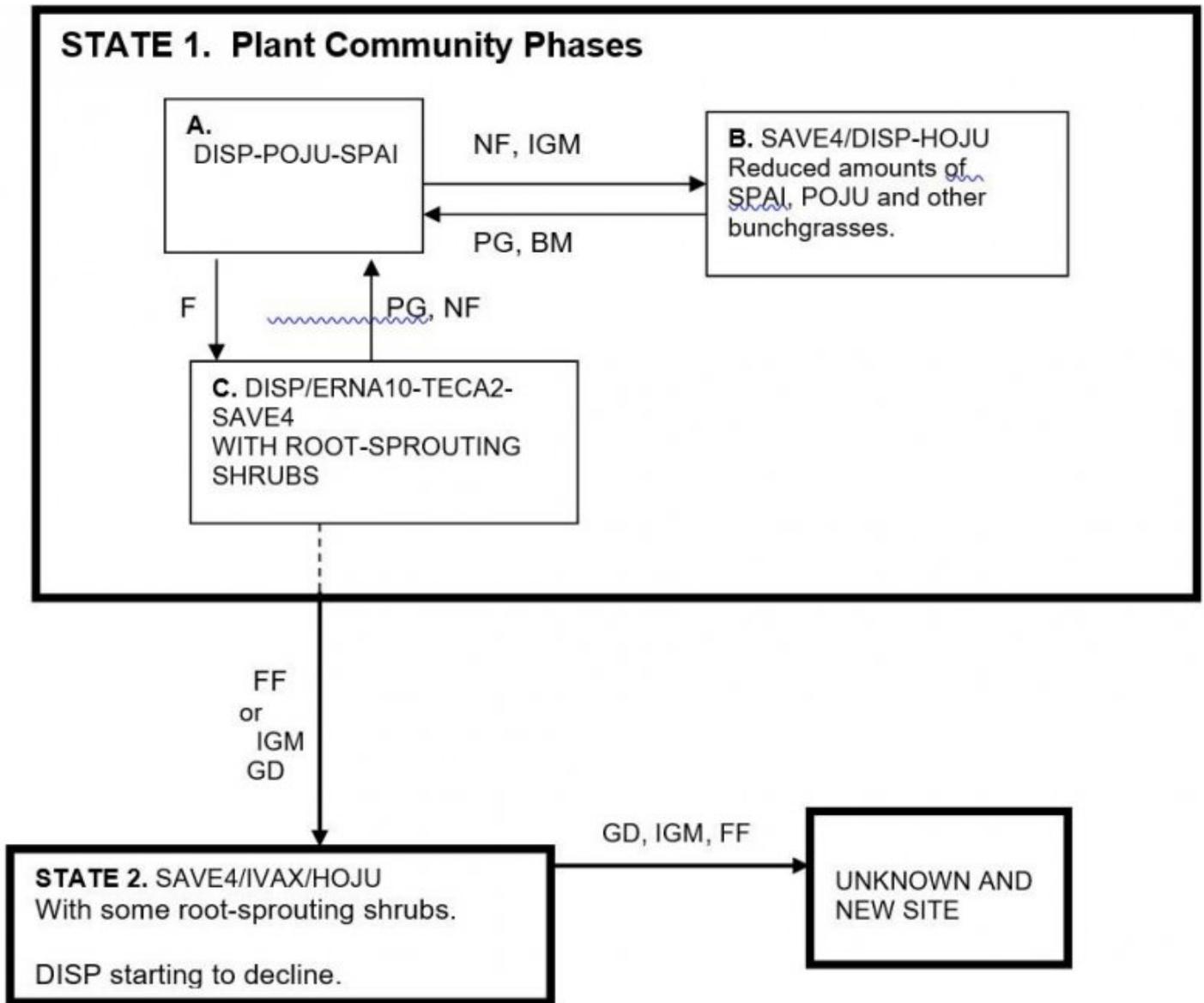
State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by gully development, continued improper grazing management and/or frequent fire cause this state to cross a threshold and retrogress to a new site with reduced potential. It is generally not economically feasible 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 salt and alkalinity.

State and transition model



PLANT LEGEND States 1 & 2

- DISP - Inland Saltgrass
- POJU - Alkali Bluegrass
- SPAI - Alkali Sacaton
- HOJU - Foxtail Barley
- SAVE4 - Black Greasewood
- ERNA10- Rubber Rabbitbrush
- TECA2 - Gray Horsebrush
- IVAX - Povertyweed

State 1 Phase A

Community 1.1 State 1 Phase A

Reference Plant Community Phase. This plant community has inland saltgrass dominating the understory. Alkali bluegrass 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.

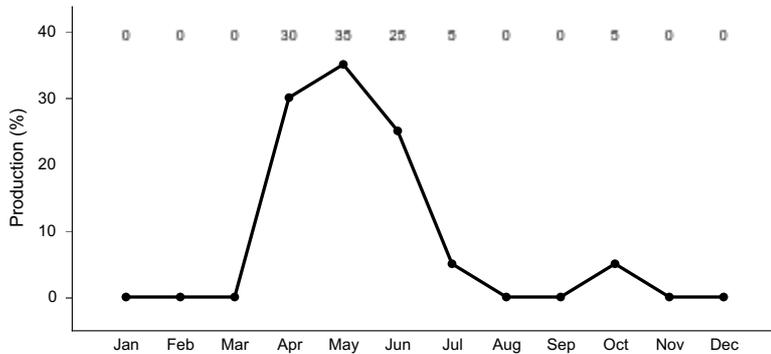


Figure 3. Plant community growth curve (percent production by month). ID0817, ARTRW8/PSSPS.

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 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 the lack of fire and improper grazing management.

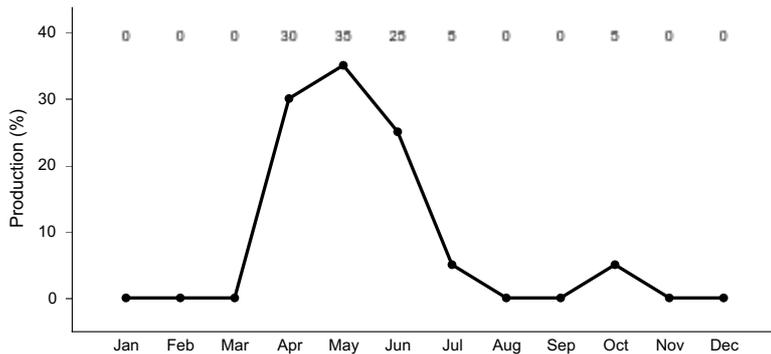


Figure 4. Plant community growth curve (percent production by month). ID0817, ARTRW8/PSSPS.

State 3 State 1 Phase C

Community 3.1 State 1 Phase C

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

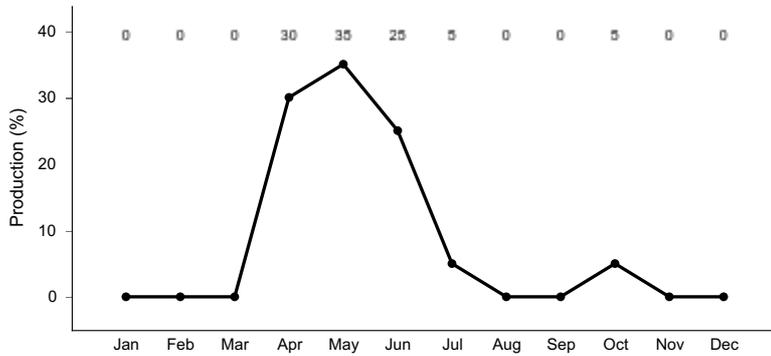


Figure 5. Plant community growth curve (percent production by month). ID0817, ARTRW8/PSSPS.

State 4
State 2

Community 4.1
State 2

This plant community is dominated by black greasewood, povertyweed, foxtail barley, and /or other annuals. Inland saltgrass is still dominant in the understory but is beginning to decline. Root sprouting shrubs such as black greasewood, rubber rabbitbrush, and gray horsebrush can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. Gully development has begun due to reduced vegetative cover and run-on from adjacent sites. This state has developed due to frequent fires or improper grazing management. The site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

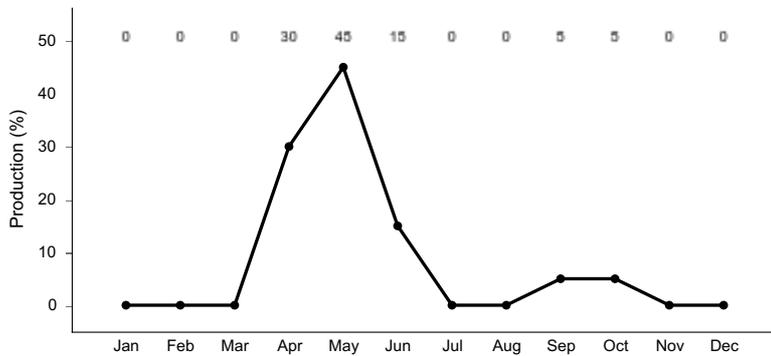


Figure 6. Plant community growth curve (percent production by month). ID0809, ARTRT/ARTRW8/POSE/ANNUALS.

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 and a lack of vegetative cover. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This ecological site provides habitat value for unique wetland and upland wildlife species. The variety of plant species, structural diversity, and proximity to water allow this site to provide habitat for a variety of wildlife. Area sensitive species that may utilize the area include sage-grouse, sharp-tailed grouse, long-billed curlew, sandhill crane, western toad, and Woodhouse's toad.

State 1 Phase 1.1 – Inland Saltgrass/ Alkali Bluegrass/ Alkali Sacaton Reference Plant Community (RPC): The RPC is dominated by grasses and a small percentage of forbs. The dense plant community provides cover for native insect communities that assist in the pollination process. The reptile and amphibian community is represented by sagebrush lizard, western rattlesnake, woodhouse's toad, and western toad. The plant community may provide brood rearing/foraging areas for sage grouse when adjacent to sagebrush cover. This community provides habitat for a wide array of small mammals such as jackrabbits, cottontail rabbits, deer mice, and meadow voles. The diverse prey species support a variety of predators including badgers, fox, coyotes, and raptors such as red-tail and Swainson's hawks. Birds such as horned larks, western meadowlarks, sandhill crane, and long-billed curlew utilize this community for nesting and foraging. Mule deer and pronghorn may utilize the area for forage on a short seasonal (spring) basis. This site is typically adjacent to seasonal and permanent wetlands and can provide important nesting cover for a variety of waterfowl and shorebird species.

State 1 Phase 1.2 – Black Greasewood/ Inland Saltgrass/ Foxtail Barley Plant Community: This phase has developed due to improper grazing management and a lack of fire. The diversity of the invertebrate community will be similar to that in Phase 1.1. 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 those in Phase 1.1 listed above. This plant community may be useful to deer and pronghorn for young of year cover. However, the herbaceous plant community is less diverse, with less palatable vegetation, and thus is less able to meet the seasonal needs of these animals.

State 1 Phase 1.3 –Inland Saltgrass/ Rubber Rabbitbrush/ Gray Horsebrush/ Black Greasewood Plant Community: This plant community is the result of wildfire. This plant community exhibits a moderate level of forb species diversity. Invertebrate populations would be similar to those in the Phase 1.1 and 1.2 communities. Birds such as horned larks, western meadowlarks, sandhill cranes, and long-billed curlew would utilize this community for nesting and foraging. The plant community provides some thermal and escape cover for deer and pronghorn. The shrub species provide limited browse value for mule deer. Small mammals including the deer mouse and northern grasshopper mouse may utilize the site, providing a prey base for fox, coyote, badgers, and raptors.

State 2 – Black Greasewood/ Poverty Weed/ Foxtail Barley Plant Community: This state has developed due to frequent fires and improper grazing management. The site may provide brood rearing opportunities for sage-grouse when it occurs adjacent to sagebrush cover. Limited thermal and escape cover is provided for deer and pronghorn when shrub canopy cover is 20% or higher. The herbaceous plant community is less diverse and experiences reduced production and is thus, less able to meet the seasonal forage needs of deer and pronghorn. Small mammals including deer mice and northern grasshopper mice may utilize the site, providing 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. Due to the easy access by livestock to this site, degradation can occur if the plant cover is reduced.

Recreational uses

This site offers little recreational value.

Wood products

none.

Other products

none.

Other information

Field Offices

American Falls, ID
Blackfoot, ID
Driggs, ID
Fort Hall, ID
Idaho Falls, ID
Malad, ID
Pocatello, ID
Rexburg, ID
Soda Springs, ID
St. Anthony, 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
Kristen May, Resource Soil Scientist, NRCS, Idaho
Lee Brooks, Range Management Specialist, IASCD

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

Author(s)/participant(s)	Dave Franzen and Jacy Gibbs Intermountain Range Consultants 17700 Fargo Rd. Wilder, ID 83676
Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA-NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	05/15/2008
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.

- 2. Presence of water flow patterns:** flow patterns can occur and when they do, they are short and disrupted by cool season grasses and are not extensive. They can be expected to occur where run-on from adjacent sites is present.

- 3. Number and height of erosional pedestals or terracettes:** pedestals are rare on this site. Terracettes do not occur.

- 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 10-20 percent.

- 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:** 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 one foot following a significant run-off event. 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 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 moderate very fine and fine granular to moderate thin platy. Soil organic matter (SOM) ranges from 5 to 15 percent. Surface color is generally gray. The A or A1 horizon is typically 3 to 6 inches thick.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** bunchgrasses and sod-formers slow run-off and increase infiltration.
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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 and sod-formers
- Sub-dominant: medium height shrubs
- Other: perennial forbs
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** very little decadence occurs on this site. Plant mortality may occur from an abnormally high water table extending over 2-3 years.
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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.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 1400 pounds per acre (1555 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 80-90 percent of the total production, forbs 5-10 percent and shrubs 5-10 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 perennial pepperweed, whitetop, lambsquarter, and halogeton.

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