USDA Natural Resources
Conservation Service

# Ecological site R011XB022ID
# Dry Meadow POSE-PHAL2

Last updated: 4/06/2020
Accessed: 05/20/2025

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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): 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
not saline or sodic
deep to very deep, somewhat poorly drained
seasonal water table 60-100 cm (24-40 in)

## Associated sites

| | |
|---|---|
| R010XA016ID | **Quaking Aspen 20+ PZ POTR5** |
| R011XB021ID | **Meadow DECA18-CANE2** |
| R011XB023ID | **Wet Meadow Carex-Juncus** |

## Similar sites

| | |
|---|---|
| R011XY015ID | **Loamy Bottom 8-14 PZ ARTRT/LECI4** |
| R011XB021ID | **Meadow DECA18-CANE2** |

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |
| Shrub | Not specified |
| Herbaceous | Not specified |

## Physiographic features

This site occurs on gently sloping topography in small stream and high mountain valleys. Slopes are generally less than 5 percent. The site is frequently dissected by old stream courses. Elevations range from 4000 to 6000 feet (1200 to 1850 meters).

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Hill |
| Flooding duration | Brief (2 to 7 days) |
| Flooding frequency | Very rare to rare |
| Ponding duration | Very brief (4 to 48 hours) |
| Ponding frequency | Rare |
| Elevation | 1,219–1,829 m |
| Slope | 0–5% |
| Ponding depth | 0–30 cm |
| Water table depth | 0–102 cm |
| Aspect | Aspect is not a significant factor |

## Climatic features

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

zero precipitation in 11 months of the year, and as low as 0.03 inches in December, the lone non-zero month.
Temperatures can be extremely variable across the year. Highs of up to 104° and lows down to -42° Fahrenheit have been recorded. The average annual temperature from ten climate stations is 44.75° F. The frost-free period ranges from 91 to 115 days. The freeze-free period can last from 123 to 146 days.
Both morning and afternoon average relative humidity values reach their low in August, and are far below the national average. Wind speed peaks in the Spring, and is generally somewhat above the national average. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February. The average total snowfall is approximately 29 inches.

**Table 3. Representative climatic features**

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

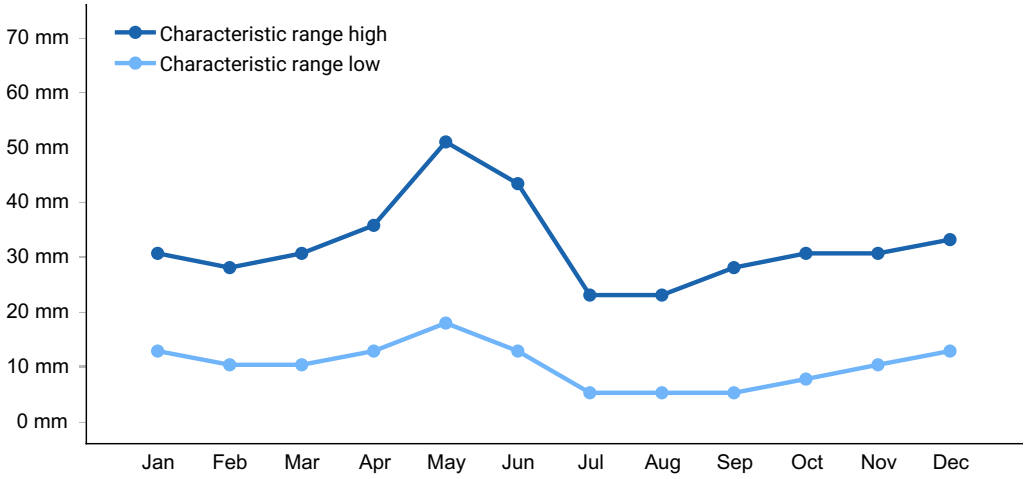



**Figure 1. Monthly precipitation range**

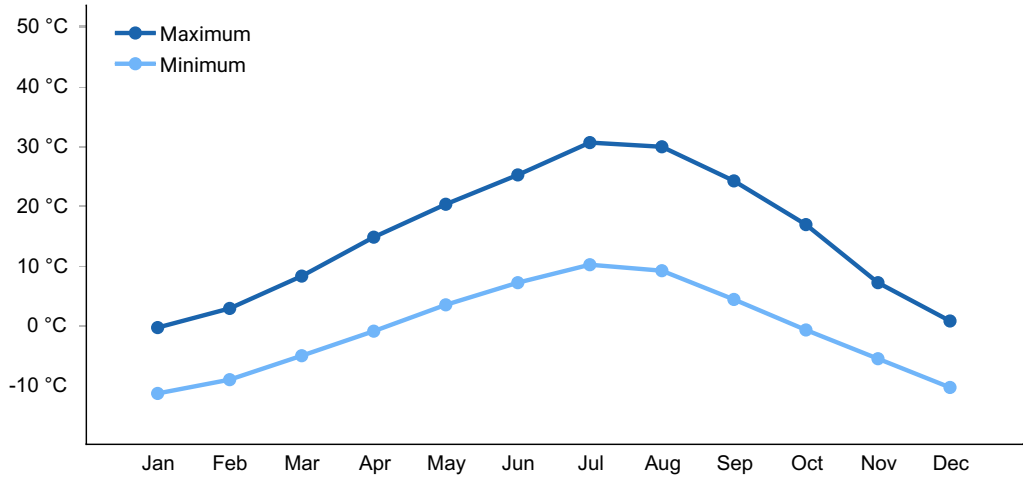



**Figure 2. Monthly average minimum and maximum temperature**

## Influencing water features

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

## Soil features

The soils on this site are moderately well drained and have moderate to moderately slow permeability. The water table fluctuates from the surface down to 40+ inches during the growing season, restricting most deep-rooted shrubs. Run-off is ponded or very slow and depressional areas usually accumulate local sediment instead of eroding. Severe removal of vegetation can cause channel down cutting, which may cause a lowering of the water table. These deep to very deep soils are formed from local alluvium. Reactions range from neutral to moderately alkaline. The available water holding capacity (AWC) ranges from low to high and is supplemented by upward capillary movement of water from the water table. The surface is usually dark and high in organic matter. The surface textures range from fine sandy loams to clay loams.

Soil Series Correlated to this Ecological Site

Fury
Teacup

## Ecological dynamics

The dominant visual aspect of this site is a plant community dominated by Nevada bluegrass, alpine timothy, and meadow barley. Shrubs are normally not present, however several willow species can be found in small amounts. Composition by weight is approximately 80-90 percent grasses and grass-likes and 10-20 percent forbs. The soil surface of the site is typically slightly undulating causing small depressions and high spots with variable soil moisture regimes.

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 Nevada bluegrass, alpine timothy, and meadow barley. The plant species composition of Phase A is listed later under “Reference Plant Community Phase Plant Species Composition”.

Total annual production is 1300 pounds per acre (1444 kilograms per hectare) in a normal year. Production in a favorable year is 2000 pounds per acre (2222 kg/ha). Production in an unfavorable year is 800 pounds per acre (888 kg/ha). Structurally, cool season deep-rooted perennial grasses are very dominant, followed by perennial forbs.

FUNCTION:

This site is suitable for big game and livestock grazing in the late spring, summer, and fall. Wet soils can limit grazing opportunities, particularly early in the year.

This site can be used for hiking, access to fishing, hunting, viewing wildlife and plants, and horseback riding. The wet soils can limit access. Motorized vehicles can be very detrimental to the site especially when soils are saturated to the surface.

Due to the deep soils, fertility, inherent high productivity, and relatively flat slopes, the site is fairly resistant to disturbances that can potentially degrade it. Site degradation is usually the result of a lowering of the water table. This can occur with down cutting of adjacent stream channels or significant run-off following prolonged drought. This can result from on-site improper grazing or off-site conditions in the upper watershed. Once adjacent streams are down-cut, concentrated flows lower the water table.

Impacts on the Plant Community.

Influence of fire:

When this site burns, it usually does not adversely affect the plant community. Most plants including shrubs sprout back with sufficient soil moisture and/or during the next growing season. Fires typically occur from mid-summer into fall.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. The grasses in the plant community will decline in the stand and sedges, rushes, and forbs will increase.

Continued improper grazing management will result in a stand of forbs and Kentucky bluegrass with sedges and rushes. This results in a reduced ability of the community to withstand seasonal flooding. Down cutting of adjacent streams can result. This down cutting will lower the water table and thus reduce the potential of the site

Proper grazing management that addresses frequency, duration, and intensity of grazing can maintain the integrity of the plant community and the water table on which it is dependent.

Weather influences:

Because of the deep soils, the influence of the water table, seasonal flooding, and run-on, the production of this site changes little during wet or dry precipitation years. Ephemeral streams commonly occur on this site. Prolonged drought may adversely affect the

frequency of ephemeral streams and the plant community that relies on them. 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.

Influence of Insects and disease:

Periodic disease and insect outbreaks can affect vegetation health. Mormon crickets and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Annual and perennial invasive species can compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

This site is important for many species of mammals for food and life cycles. The site is primarily used in the late spring, summer, and fall by big game. Many birds use the site for food, nesting, or brood rearing in the late spring, summer, and fall. Sage grouse use the site for brood rearing and forage.
Total numbers are seldom high enough to adversely affect the plant community.

Watershed:

The largest threat to degradation of this site is the lowering of the water table. Off-site conditions can affect the gradient of adjacent stream channels that can affect the water table. If the perennial grass and sedge cover is depleted or the perched watertable is lost, down cutting can be accelerated within the site. High run-off events from the adjacent uplands can severely damage or change the normal stream channel on the site. As the water table is lowered, productive potential is lost. Eventually the water table is below the root zone of the adapted perennial grasses. These are ultimately replaced by perennial forbs and shallow rooted grasses. Extreme down cutting and lowering of the water table can move the site across the threshold to a new, less productive site. Severe down-cutting can result in a plant community that resembles an upland site.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.
Phase A to B. Develops with improper grazing management.

Phase B to A. Results from prescribed grazing.

State 1 Phase A or B to State 2. Develops through permanently lowering the late growing season water table to more than 60 inches. This can occur with continued improper grazing management. It may also occur with proper grazing on the site, but channel erosion may continue if poor off-site conditions cause frequent and/or severe flooding. The site has crossed the threshold. This state cannot be returned to State 1 without raising the water table. This might be done over time using structures or bio-engineering practices, but the plant community may take many years to approach the plant community in State 1.

State 2 to unknown site. Results from continued lowering of the water table through down cutting of the stream channel. The site crosses the threshold and retrogresses to a new site with reduced potential due to significant loss of available soil moisture from the lowered water table. It occurs with continued improper grazing management or repeated significant run-off events. This state cannot be returned to State 1 without raising the water table. This might be done over time using structures or bio-engineering practices, but the plant community may take many years to approach the plant community in State 1.

Practice Limitations.

There are moderate seeding limitations on this site due to difficulty in preparing an adequate seedbed due to the water table. Elimination of existing vegetation prior to planting is difficult in wet seasons and high water table periods. There are moderate to severe limitations for brush management using chemicals due to the proximity to water bodies. Grade stabilization structures may be needed to prevent further down-cutting of the channel. Other options for rehabilitation may include application of fertilizer, prescribed grazing, and off-site livestock water development. Fencing of the site for better livestock control might also be a consideration.

1. Marsh site. Deeper depressions with water at or near the surface or slightly above the surface for the entire growing season. This site is dominated by broadleaf cattail, hardstem bulrush, and common threesquare.

2. Wet Meadow site. Shallow depressions with the water table at or near the surface for the entire growing season. This site is dominated by Carex and Juncus.

3. Meadow site. Slightly higher areas that are drier during the growing season. The water table is down to a depth of 20-40 inches by the end o f the growing season. This site is dominated by tufted hairgrass, and Nebraska sedge.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. Flooding and high water table have also influenced the development of this site. Herbivory has historically occurred on this

site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, Rocky Mountain elk, sage grouse, lagomorphs, and small rodents.

Fire has historically occurred on the site at intervals of 20-40 years. Fire has had little influence on the development of the site. This site normally burns in conjunction with an adjacent upland site.

The soils within any complex of meadow sites are highly variable. Factors that affect the determination of the site include depth to water table at end of growing season, micro-topography, and drainage class. Depth to water table and micro-topography are measurable features. Determination of drainage class requires the use of soil interpretation tables. Other interpretive factors that may be used for site determination are frequency and duration of flooding and depth, frequency, and duration of ponding.

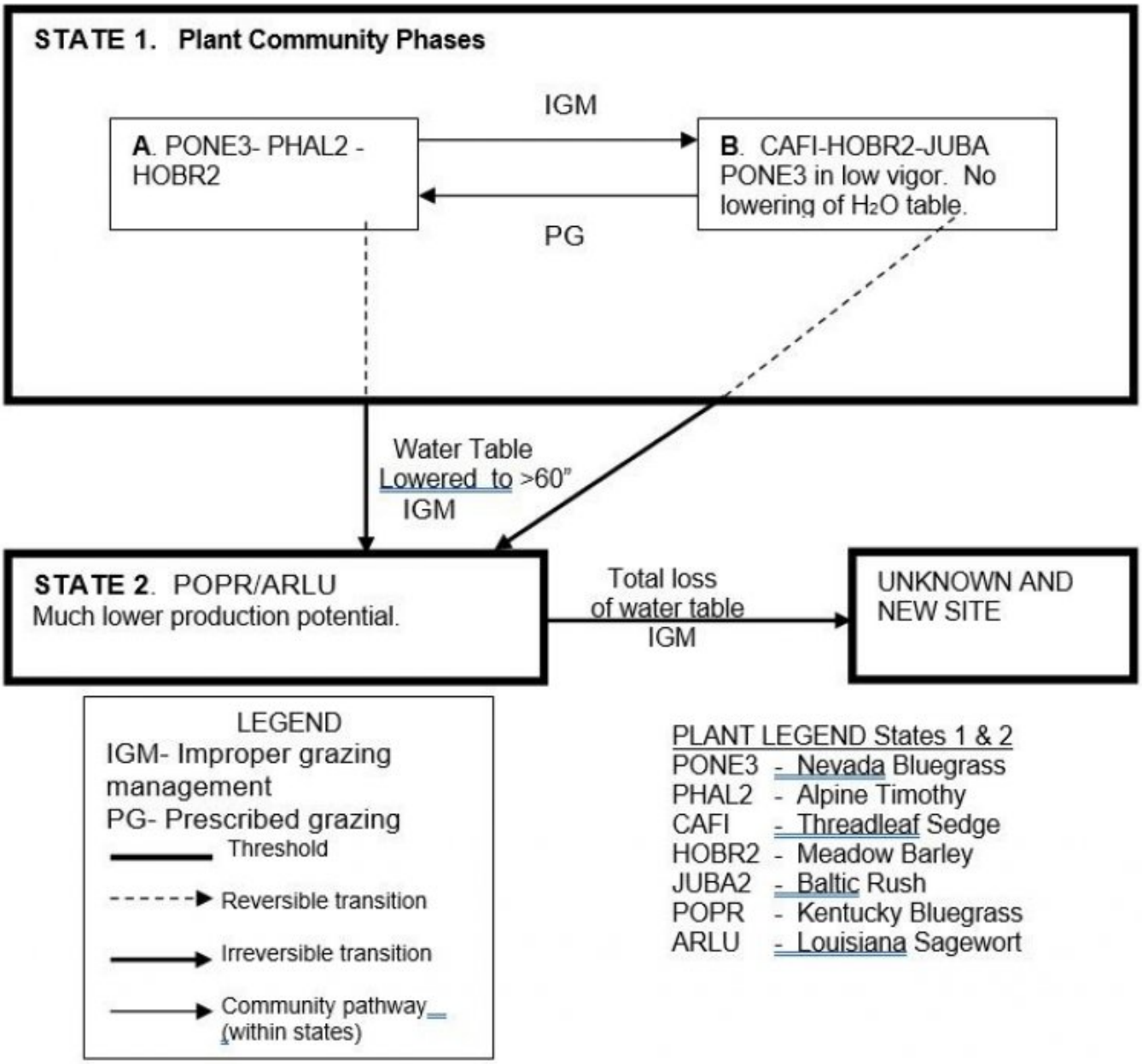
Micro-topography is a feature that has a dramatic effect on depth to water table and the resulting plant communities. A few inches of change in surface elevation changes species composition and/ or production. Slightly undulating topography is common in meadow complexes; therefore, more than one site should be expected.

An infinite number of combinations of factors that influence the ecology of potential plant communities exist. For practical purposes, four plant communities where the depth to the water table drives the vegetative composition have been described. They are:

• Dry meadow Water table at >40” at end of growing season
• Meadow Water table at 20-40” at end of growing season
• Wet meadow Water table at 10-20” at end of growing season
• Marsh Water at surface to <10” at end of growing season

Most wetland species have a wide range of tolerance for variations in soil moisture. Most species occur in more than one site, although most are dominant on just one site.

## State and transition model




## State 1
## State 1 Phase A

## Community 1.1
## State 1 Phase A

This plant community has Nevada bluegrass, alpine timothy, and meadow barley in the herbaceous layer. There is a variety of perennial forbs but none comprise a high percentage of the plant community.

**Table 4. 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 | 80-90% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 0% |

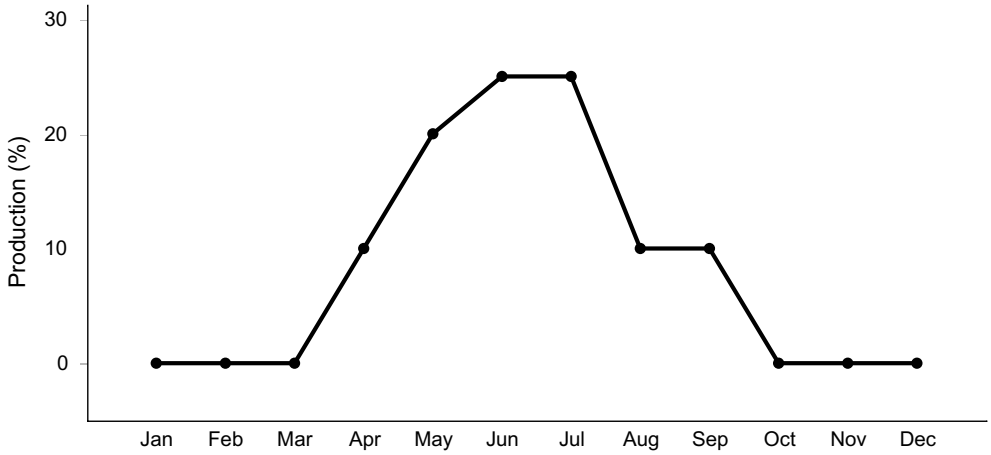



**Figure 3. Plant community growth curve (percent production by month). ID0615, DRY MEADOW. State 2.**

## State 2
## State 1 Phase B

## Community 2.1
## State 1 Phase B

This plant community is dominated by threadleaf sedge, meadow barley, and Baltic rush. Forbs such as Rocky Mountain iris and Louisiana sagewort have increased in the community and Kentucky bluegrass may have invaded. Nevada bluegrass is present but in low vigor. A compaction layer has likely developed. This phase has developed due to improper grazing management. The water table has not been lowered from that of Phase A.

**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 | 80-90% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 0% |

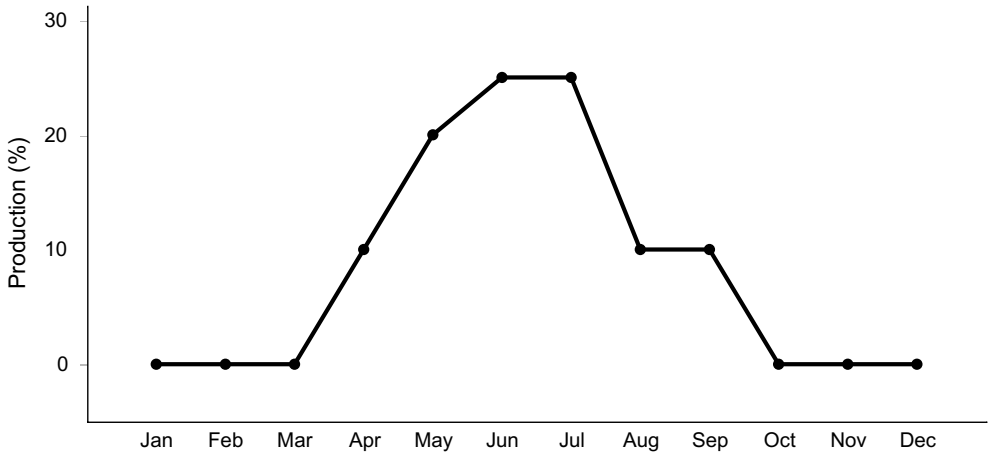



**Figure 4. Plant community growth curve (percent production by month). ID0615, DRY MEADOW. State 2.**

## State 3
## State 2

## Community 3.1
## State 2

This plant community is dominated by Kentucky bluegrass and Louisiana sagewort but the overall production potential of the site is much lower than State 1. There is an increase in forbs and grasses that require less soil moisture. Kentucky bluegrass, foxtail barley, bottlebrush squirreltail, and Sandberg bluegrass may have invaded or increased in the community. This state developed due to continued improper grazing management and a permanent lowering of the water table. The site has crossed the threshold. This state cannot be returned to State 1 without raising the water table. This might be done over time using structures or bio-engineering practices, but the plant community may take many years to approach the plant community in State 1.

**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 | 80-90% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 0% |

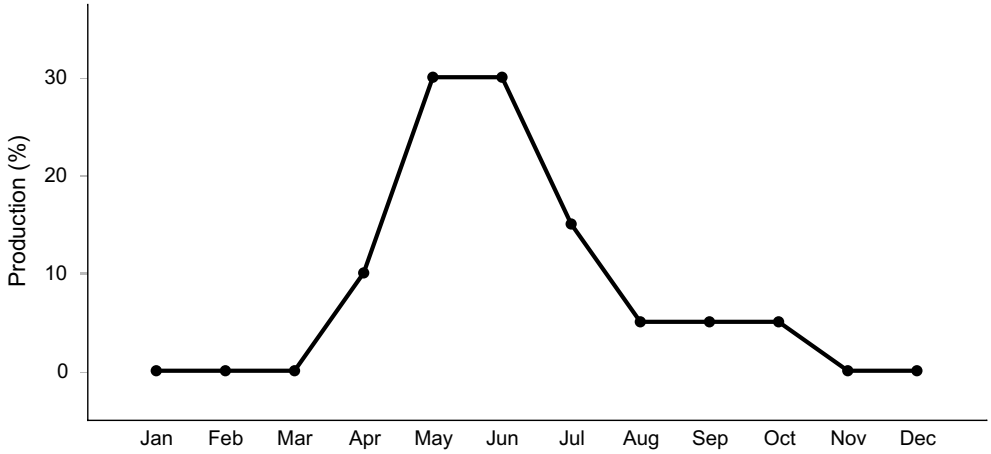



**Figure 5. Plant community growth curve (percent production by month). ID0613, ARTRT/ LECI4. State 1.**

## State 4
## State 3

## Community 4.1
## State 3

Unknown new site: This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant loss of available soil moisture has occurred due to the total loss of the water table. Some soil loss from the surface has occurred. This state has developed due to continued improper grazing management and lowering of the water table. The new site may be similar to upland sites such as Loamy Bottom or other Loamy

sites. This state cannot be returned to State 1 without raising the water table. This might be done over time using structures or bio-engineering practices, but the plant community may take many years to approach the plant community in State 1.

**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 | 80-90% |
| 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 dry meadow ecological site provides diverse habitat for wetland and upland wildlife species. The seasonal hydrology results in abundant forage attracting invertebrate and vertebrate animals to these ecological sites. Seasonal habitat is provided for resident and migratory animals including western toad, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Large herbivore use of the ecological site includes mule deer, pronghorn antelope, and elk. Native reptiles and amphibians are reliant on these dry meadow sites throughout the year. Loss of the site’s hydrology significantly reduces habitat value of the adjacent ecological sites. Open water is seasonal, only being provided by seasonal runoff, ponding, seasonal high water table, and natural springs.

State 1 Phase 1.1 - Nevada Bluegrass/ Alpine Timothy/ Meadow Barley Reference Plant Community (RPC): The RPC provides a diversity of grasses and forbs used by native

insect communities who assist in pollination of the plant community. The insects are food for the many predator species utilizing the site. The reptile and amphibian community is represented by leopard lizard, western skink, rubber boa, western rattlesnake, western toad, boreal chorus frog, and northern leopard frog. A diverse amphibian population is a key indicator of good ecological health on this site. Sage-grouse utilize the meadows as summer and fall brood-rearing habitat. The plant community supports summer and fall forage needs of large mammals (antelope, mule deer, and elk.). Limited thermal cover for ungulates is provided due to the lack of woody vegetation in the plant community. A diverse small mammal population including deer mouse, golden-mantled ground squirrels, chipmunks, and yellow-bellied marmots may utilize the habitat on a seasonal basis.

State 1 Phase 1.2 - Threadleaf Sedge/ Meadow Barley/ Baltic Rush Plant Community: This phase has developed due to improper grazing management. Insect populations would be similar to those in Phase 1.1 plant community. Continued improper grazing management would lower the quality of amphibian habitat due to a more open landscape and short plant structure. The plant community provides summer and fall brood-rearing habitat for sage-grouse when sagebrush cover is nearby. The plant community is desirable forage for ungulates but the improper grazing management would reduce available forage in the summer and fall. Small mammal populations and diversity would be reduced due to reduced vertical structure and increased vulnerability to predators.

State 2 –Kentucky Bluegrass/ Louisiana Sagewort Plant Community: This state developed due to continued improper grazing management and a permanent lowering of the water table. Pollinators would be supported by an increase in forbs that require less moisture than plants in State 1. The loss of historic hydrology will limit or exclude use of the site by amphibians and many reptiles. Suitable habitat for the northern leopard frog, a species of concern, would not be provided. Habitat for grassland bird species would increase if the plant community is managed properly. If the plant community is not managed properly grassland bird use for nesting would be minimal. Birds of prey (northern harrier and Cooper’s hawk) may range throughout these areas looking for prey species. Ungulates will utilize the herbaceous vegetation in summer and fall. If managed properly Kentucky bluegrass is desirable forage for deer and elk. Small mammal populations and diversity would be reduced due to reduced vertical structure and vulnerability to predators.

Grazing Interpretations.

This site is suitable for grazing in late spring after soils have dried sufficiently to prevent trampling and in the summer and fall. Natural water supplies are likely to be limited or absent on the site in late summer and fall.
Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference. Calculations used

to determine estimated initial stocking rate will be based on forage preference ratings.

## Hydrological functions

Soils on this site are in hydrologic groups B,C, and D.

## Recreational uses

This site has some value for aesthetics and natural beauty due to several spring and early summer blooming forbs and shrubs. Some hunting for sage grouse, rabbits, elk, and deer occurs. Hikers and fishermen may traverse the edge of the site where it is adjacent to streams.

## Wood products

None

## Other products

None

## Other information

Field Offices

Burley, ID
Shoshone
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
Chris Hoag, Wetland Plant Ecologist, NRCS, Idaho
Dan Ogle, Plant Materials Specialist, NRCS, Idaho
Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho
Leah Juarros, 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”.
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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 | 04/02/2008 |
| Approved by | Kendra Moseley |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

## Indicators

1. **Number and extent of rills:** rills are not common on this site. If the site is degrading due to gully down-cutting, rills may occur on the side slopes of the gully.

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2. **Presence of water flow patterns:** water-flow patterns are common on this site. When they occur they are long, often running the length of the site and disrupted by cool season grasses. Water flow patterns are also common from run-in from the adjacent uplands.

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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 20-30 percent but more data is needed.

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

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6. **Extent of wind scoured, blowouts and/or depositional areas:** are usually not present.

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7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move more than 6 feet or even off the site following a significant flooding or run-off event.

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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 3-5 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_____ to _____. Soil organic matter (SOM)

needs to be determined. The A or A1 horizon is typically _____ 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:** deep-rooted grasses and grass-likes 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):** is normally not present. A compaction layer can develop if grazing occurs when the soils are wet.

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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 grasses and grass-likes

    Sub-dominant: perennial forbs

    Other: shallow rooted bunchgrasses

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** most of the grasses and grass-likes on this site will become decadent in the absence of fire and ungulate grazing. Decadence or low vigor is a result of litter buildup in the crowns of the plants.

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14. **Average percent litter cover (%) and depth ( in):** additional litter cover data is needed but is expected to be 35 to 50 percent to a depth of 0.2 inches. Under mature shrubs and basin wildrye, 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 1300 pounds per acre (1444 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 80-90 percent of the total production and forbs 10-20 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, leafy spurge, whitetop, perennial pepperweed, rush skeletonweed, Canada, 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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