USDA Natural Resources
Conservation Service

Ecological site R011XB023ID
Wet Meadow Carex-Juncus

Last updated: 4/06/2020
Accessed: 05/11/2025

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.

MLRA notes

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

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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 water.
Soils are:
None to slightly saline or saline-sodic.
Deep to very deep, not skeletal within 20” of soil surface.
Season water table <12” 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

R011XB021ID	**Meadow DECA18-CANE2**
R011XB022ID	**Dry Meadow POSE-PHAL2**
R011XB025ID	**Marsh TYLA-SCAC3**

Similar sites

R011XB021ID	**Meadow DECA18-CANE2**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	(1) *Carex* (2) *Juncus*

Physiographic features

This site generally occurs on gently sloping to nearly level stream valleys, high mountain valleys, and on flood plains with slopes of 0 to 4 percent. It also occurs around localized seeps and springs. This site is frequently dissected by old stream courses, oxbows, and potholes. The surface is not flat, but slightly undulating with small depressions and high spots. Elevations range between 4000 to 6000 feet (120 to 1850 meters).

Table 2. Representative physiographic features

Landforms	(1) Hill
Flooding duration	Brief (2 to 7 days) to long (7 to 30 days)
Flooding frequency	Occasional to frequent
Ponding duration	Brief (2 to 7 days) to long (7 to 30 days)
Ponding frequency	Occasional to frequent
Elevation	4,000–6,000 ft
Slope	0–4%
Ponding depth	2–10 in
Water table depth	0–20 in

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)	13 in

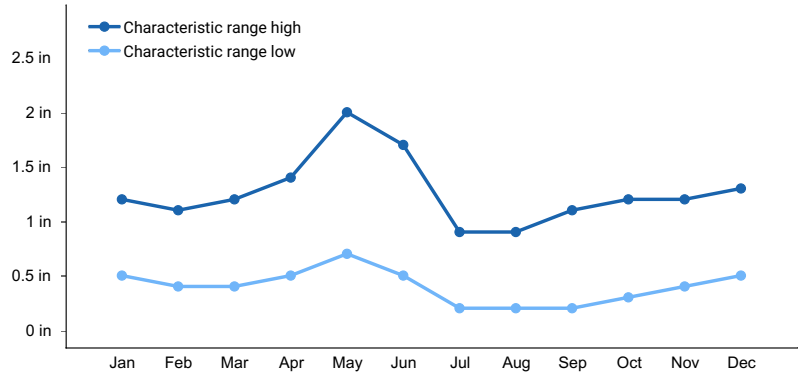


Figure 1. Monthly precipitation range

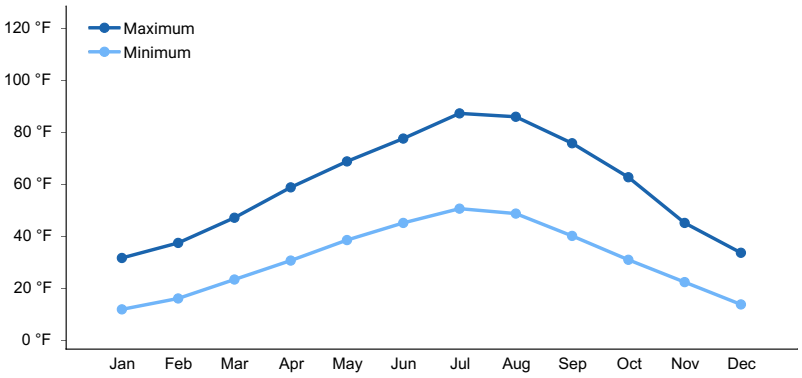


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

Wet Meadow site is influenced by additional water from either adjacent streams through seasonal flooding, water table, seeps or springs or from run-on from adjacent sites. The site may include the following wetlands and stream types.

Soil features

Soils on this site are mainly clays, clay loams, or silty clay loams over 40 inches deep, alluvial in origin and may be somewhat stony or gravelly. The soils range from slightly alkaline to slightly acid in pH. The available water holding capacity (AWC) is moderate to high and is supplemented by upward capillary movement from the shallow water table. The effective rooting depth is limited by the high water table.

Erosion hazard is slight, however, the peaty and high organic soils tend to hummock severely from trampling. These soils are susceptible to gully formation which intercepts normal overflow patterns and results in site degradation. The soils are poorly drained and have a water table at or near the surface at the beginning of the growing season that moves down to a depth of 10 to 20 inches by the end of the growing season. Flooding is occasional to frequent during snowmelt and just after snowmelt. Ponding can occur in small depressional areas during this time period. The plant community is dependent on nearly saturated or saturated soils during a major portion of the growing season. The water table is influenced by seasonal flooding, stream flows, seeps or springs, or from run-on from adjacent sites. Soil characteristics, flooding, and water table can vary within a landscape delineation.

Ecological dynamics

The dominant visual aspect of this site is sedges and rushes with scattered forbs. If shrubs are present, they occur in small amounts. The site usually occurs within a complex of wetland sites. The soil surface of the area where the site is found is typically slightly undulating causing small depressions and high spots with variable soil moisture characteristics. The plant communities found on these areas are sites within the complex. Characteristics of these sites are as follows:

1. Marsh site. Deeper depressions with the water table 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. Meadow site. Slightly higher areas that is drier during the growing season. The water table is down to a depth of 20 to 40 inches by the end of the growing season. The site is dominated by tufted hairgrass and Nebraska sedge.

3. Dry Meadow site. Even higher areas that are even drier during the growing season and the water table is > 40 inches deep by the end of the growing season. The plant community is dominated by Nevada bluegrass and alpine timothy.

Composition by weight is 80-90 sedges and rushes, 5-15 percent forbs, and less than 0-5 percent shrubs. The depression area plant communities are inclusions and may have sedge and rush species making up nearly 100 percent of the community.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. The site has evolved on deep alluvial soils that are saturated to the surface in the beginning of the growing season that moves down to about 10-20 inches of depth by the end of the growing season and seasonal flooding. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, moose, and Rocky Mountain elk.

Fire has had little influence on the development of the site. Rare wildfires can occur following consecutive drought years.

The conditions for the plant community of this site are highly variable due to a wide variation of soils, flooding frequency and duration, water table fluctuations, air and soil temperatures, and competition between mostly rhizomatous plants. These conditions can vary within the site at any given location. At any one point within the site, one species can occupy nearly 100 percent of a small area. Another point nearby, may have another species fully occupying that area. Due to these situations, the plant community in this ESD is written broadly.

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.

The following table shows the amplitude of wetland species that occur on the four sites.

• Ecological Amplitude of Meadow/Marsh Plants.

Grass and Grass-like Species
Scientific name Dry Meadow Meadow Wet Meadow Marsh
Leymus cinereus

Danthonia californica

Carex filifolia

Pascopyron smithii

Poa nevadensis

Juncus dudleyi

Muhlenbergia richardsonis

Hordeum brachyantherum

Phleum alpinum

Juncus balticus

Juncus torreyi

Alopecurus aequalis

Carex athrostachya

Calamagrostis canadensis

Deschampsia caespitosa

Carex nebrascensis

Glyceria striata

Carex lasiocarpa

Carex utriculata

Carex aquatilis

Eleocharis palustris

Carex rostrata

Carex hoodii

Carex exsiccata

Scirpus microcarpus

Juncus effusus

Beckmannia syzigachne

Typha latifolia

Schoenoplectus acutus

Schoenoplectus pungens

Sparganium erectum

Schoenoplectus tabernaemontani

Forb Species
Scientific name Dry Meadow Meadow Wet Meadow Marsh
Arnica fulgens

Pyrrocoma lanceolata

Arenaria congesta

Artemisia ludoviciana

Achillea millefolium

Wyethia amplexicaulis

Pyrrocoma uniflora

Scientific name Dry Meadow Meadow Wet Meadow Marsh
Ranunculus spp.

Trifolium spp.

Potentilla gracilis

Senecio integerrimus

Aster spp.

Cirsium scariosum

Symphyotrichum ascendens

Iris missouriensis

Senecio serra

Helianthus nuttallii

Camassia quamash

Epilobium ciliatum

Montia chamissoi

Plantago major

Alisma triviale

Cicuta douglassii

Argentina anserina

Veronica anagallis-aquatica

Symphyotrichum frondosum

Polygonum bistortoides

Triglochin maritima

Polygonum amphibium

Symphyotrichum foliaceum

Potamogeton natans

Lemna minor

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 Northwest sedge and beaked sedge with a variety of other sedges and rushes occurring in minor amounts. These will occur in variable amounts at any one location due to variations in soil and water conditions as stated above. A variety of forbs also occur in the plant community in minor amounts. The plant species composition of Phase A is listed later under “Reference Plant Community Phase Plant Species Composition”. The Reference State is intentionally written broadly, but these species should occur in the plant community in variable amounts.

The total annual production is 4000 pounds per acre (4480 kilograms per hectare) in a normal year. Production in a favorable year is 5000 pounds per acre (5600 kilograms per hectare). Production in an unfavorable year is 3000 pounds per acre (3360 kilograms per hectare). Structurally, rhizomatous grass and grass-like species are very dominant, followed by perennial forbs being more dominant than shrubs.

FUNCTION:

This site is suitable for big game in the late spring, summer, and fall. The site is suitable to livestock grazing in the summer and fall. Wet soils can limit grazing opportunities, particularly early in the year. Soil damage can result from heavy, continuous, season-long grazing by livestock.

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 due to wet soils.

Due to the deep soils, fertility, inherent high productivity, rhizomatous plants, and relatively flat slopes, the site is fairly resistant to disturbances that can potentially degrade it. Site degradation is usually the result of 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 upper watershed. Once adjacent streams are down-cut, concentrated flows lower the water table.

Impacts on the Plant Community:

Influence of fire:

This site usually does not burn from wildfire. If a fire occurs, 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.

Influence of improper grazing management:

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

Continued improper grazing management will result in a stand of forbs and Kentucky bluegrass with unpalatable sedges and rushes. The reduced ability of the community to withstand seasonal flooding is reduced and down cutting of adjacent streams can result or headcut initiation can occur. 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. The overall plant production can be adversely influenced with prolonged drought. 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 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. An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available.

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. The plants on this site are very competitive against most potentially invasive species.

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 raising 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 sedge and rush cover is depleted, 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 sedges and rushes. 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.

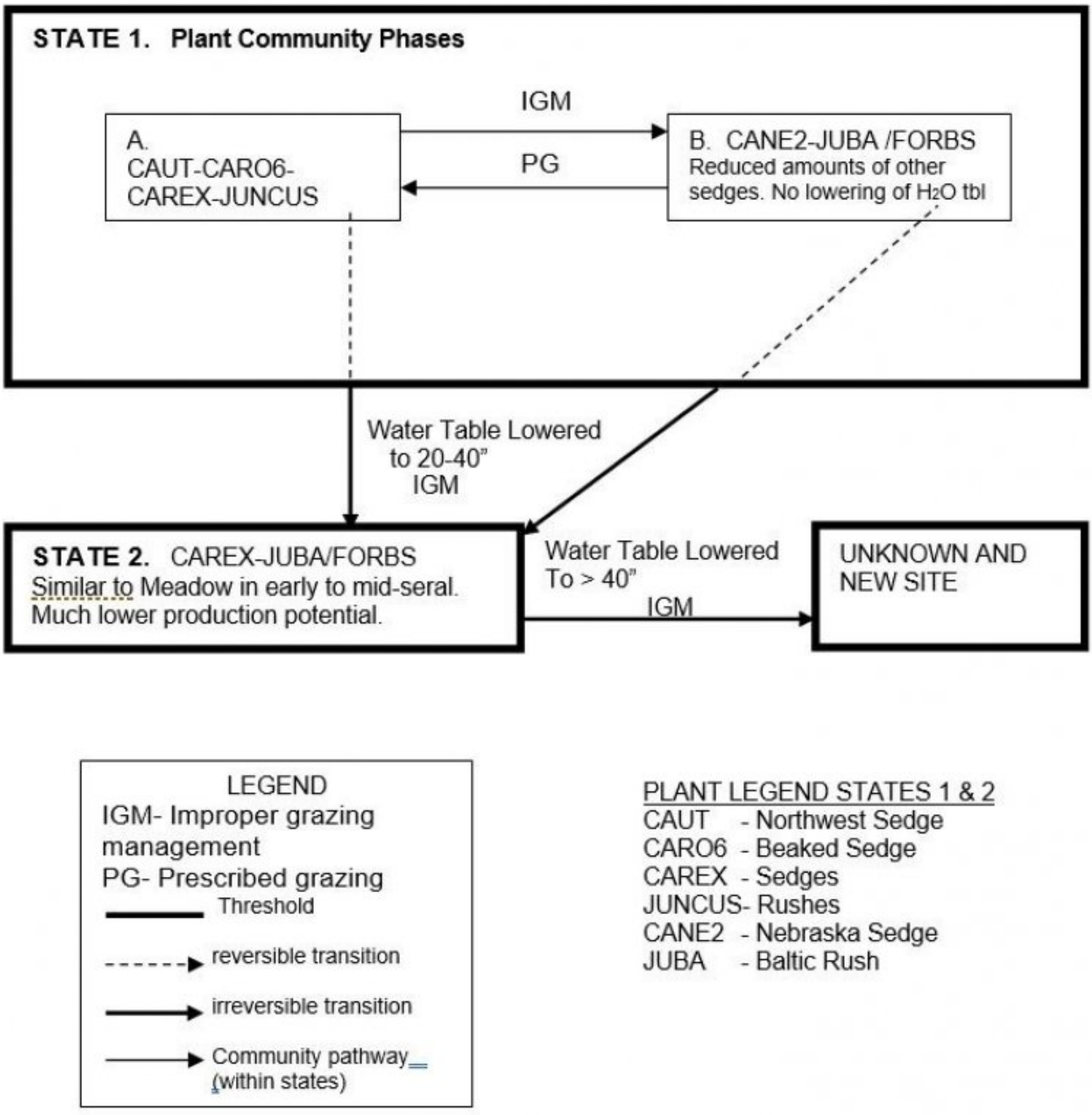
State 1 Phase A or B to State 2. Develops through permanently lowering the late growing season water table to 20-40 inches. This can occur with continued improper grazing management. It may also occur with proper grazing on the site, but channel erosion may continue if poor off-site conditions cause more 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 to greater than 40 inches 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 severe seeding limitations on this site due to wet soils. Hand planting of container plants is an option on degraded sites. Grade stabilization structures may be needed to prevent further down-cutting of the channel. Other options for rehabilitation may include prescribed grazing and off-site livestock water development. Fencing of the site for better livestock control might also be a consideration.

State and transition model



PLANT LEGEND STATES 1 & 2
CAUT - Northwest Sedge
CARO6 - Beaked Sedge
CAREX - Sedges
JUNCUS- Rushes
CANE2 - Nebraska Sedge
JUBA - Baltic Rush

State 1
State 1 Phase A

Community 1.1
State 1 Phase A

State 1, Phase A. Reference Plant Community Phase. This plant community is dominated by Northwest sedge and beaked sedge with a variety of other sedges and rushes occurring in minor amounts. These will occur in variable amounts at any one location due to variations in soil and water conditions as stated above. A variety of forbs also occur in the plant community in minor amounts. Willows and shrubby cinquefoil may occur in small amounts.

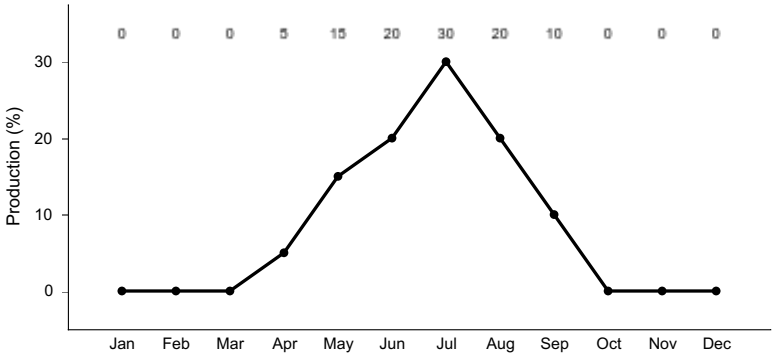


Figure 3. Plant community growth curve (percent production by month). ID0614, MEADOW. State 1.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

State 1, Phase B. This plant community is dominated by Nebraska sedge and Baltic rush. There are several other sedges in the community but in reduced amounts. Forbs have increased in the community and Kentucky bluegrass may have invaded. This phase has developed due to improper grazing management. The water table has not been lowered from that of Phase A.

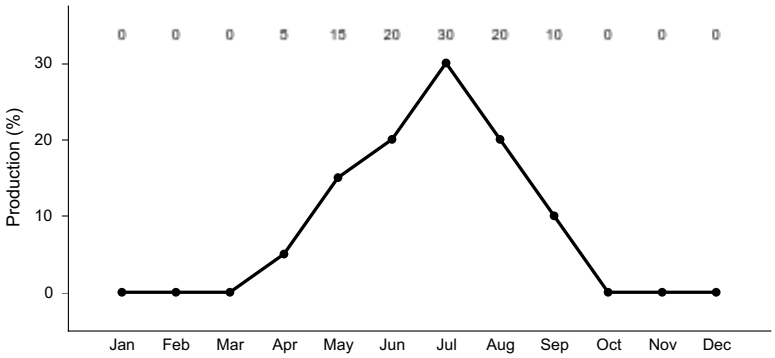


Figure 4. Plant community growth curve (percent production by month). ID0614, MEADOW. State 1.

State 3
State 2

Community 3.1
State 2

State 2. This plant community is dominated by Nebraska sedge and Baltic rush, 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, redtop bentgrass, and meadow foxtail may have invaded the community. This state developed due to continued improper grazing management and a permanent lowering of the water table from 10 - 20 inches to 20-40 inches below the surface. This state can be similar to the Meadow site in early seral status. 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.

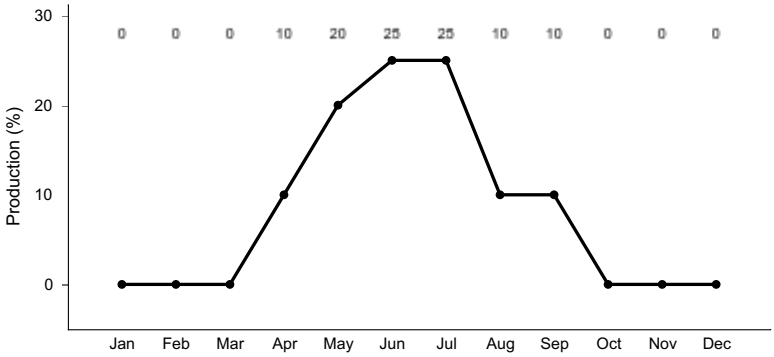


Figure 5. Plant community growth curve (percent production by month). ID0615, DRY MEADOW. State 2.

State 4
Unknown Site

Community 4.1
Unknown Site

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 further lowering 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 to greater than 40 inches. The new site may be similar to Dry Meadow site in early seral status or 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.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This wet meadow ecological site provides diverse habitat for wetland and upland wildlife species. The long duration hydrology results in abundant forage and seasonal water attracting invertebrate and vertebrate animals to the site. Important seasonal habitat is provided for over 80% of adjacent rangeland 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 this ecological site includes mule deer, pronghorn antelope, and elk. Native reptiles and amphibians are reliant on these meadow sites throughout the year. Loss of site hydrology significantly reduces habitat value of the adjacent ecological sites. Open water is seasonal being provided by seasonal runoff, ponding, flooding, seasonal high water table, and natural springs.

State 1 Phase 1.1 –Northwest Sedge/ Beaked Sedge/ Sedges/ Rushes 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. Loss of hydrology will limit or exclude amphibians from this ecological site. Sage-grouse utilize the meadows as summer and fall brood-rearing habitat. Isolated patches of woody vegetation add horizontal and vertical structure for nesting and roosting sites for resident and migratory avian species. Bird species can include warbling vireo, black-capped chickadee, MacGillivray's warbler, fox sparrow, song sparrow, common snipe, and long-billed curlew. The plant community supports limited summer and fall forage needs of large mammals (antelope, mule deer, and elk.). The dominant plant community is not preferred forage for the ungulates utilizing the site. Limited thermal cover for ungulates is provided with isolated patches of woody vegetation within the plant

community. A diverse small mammal population including deer mouse, montane vole, and western jumping mouse would utilize the habitat throughout the year.

State 1 Phase 1.2- Nebraska Sedge/ Baltic Rush/ Forbs Plant Community: The plant community is the result of improper grazing management. With the hydrologic conditions similar to Phase 1.1, amphibian use would still occur and prey species would be abundant. Improper grazing management would reduce the cover value for reptiles and amphibians. The plant community provides summer and fall brood-rearing habitat for sage-grouse when sagebrush cover is nearby. Bird species can include warbling vireo, black-capped chickadee, MacGillivray's warbler, fox sparrow, song sparrow, common snipe, and long-billed curlew. Limited thermal cover for ungulates is provided with isolated patches of woody vegetation. The dominant plant community is preferred forage for deer and elk but with improper grazing management available forage would be reduced in the summer and fall. Small mammal populations would be reduced under an improper grazing management scenario reducing vertical structure and increasing vulnerability to predators.

State 2 – Sedges/ Baltic Rush/ Kentucky Bluegrass/ Forbs Plant Community: This state has developed due to a permanent lowering of the water table and improper grazing management. Loss of historic hydrology has reduced the habitat value for many animals present in State 1. The diversity of forbs would support a very limited diversity and population of pollinators. The loss of historic hydrology will limit or exclude use of the site by amphibians and many reptiles. Suitable habitat cover for the northern leopard frog, a species of concern, would not be provided. With improper grazing management the loss of vertical and horizontal structure would reduce diversity and populations of all species of birds. The site would be more suitable for killdeer, western meadowlark, and horned lark. Birds of prey (northern harrier and Cooper's hawk) may range throughout this area looking for prey species. With improper grazing management forage for ungulates would be available for a shorter duration in the summer and fall. Bat populations and diversity may be reduced by the change in plant community and change in diversity of insects. Small mammal diversity would change to grass seed eating species (deer mouse) due to increased grass species in the plant community.

Grazing Interpretations.

This site is best suited for livestock grazing in the summer and fall. Wet soils can limit grazing opportunities, particularly in the late spring. Avoid heavy, continuous, season-long grazing as this can cause soil damage.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory, past use history and type, condition of vegetation, production, season of use, and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

Soils in this site are generally grouped in hydrologic group D. When the hydrologic condition of the vegetative cover is good, natural erosion hazard is slight.

Recreational uses

This site presents an aesthetically pleasing view of lush vegetation consisting primarily of grass-like plants. When livestock or big game animals are grazing or browsing on the site it presents a pleasant pastoral panorama. Hikers and fisherman often traverse the edges of this site. Picnickers and campers frequent the site in late summer and early fall as sometime adjacent shaded wooded areas become less pleasant on cool days. Vehicular use can be very detrimental to this site with high water table conditions.

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
Dan Ogle, Plant Materials Specialist, NRCS, Idaho
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Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho
Leah Juarros, Resource Soil Scientist, NRCS, Idaho
Lee Brooks, Range Management Specialist, IASCD

Other references

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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

DF

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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Date	04/24/2009
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills do not occur on this site.

2. **Presence of water flow patterns:** none. Water flows over and through the plant community. Rarely are flows detrimental to the plants. The plants have adapted or evolved with this occurrence.

3. **Number and height of erosional pedestals or terracettes:** neither occurs on this site. Some plants may be hummocked due to trampling damage.

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 2-10 percent.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** does not occur.

7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move 6 feet or more due to seasonal flooding. Litter accumulates on the surface. There is little or no coarse litter developed on the site, and it will be removed from the site following seasonal flooding.

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.

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: rhizomatous sedges and rushes slow run-off and increase infiltration. The total vegetation cover should be >60 percent to optimize infiltration. The plant community does not depend on water infiltration alone, but on the water table. The water table controls rooting depth.

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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 not present. Compaction layers can develop under stock trails made by livestock going to and from water or from long-term repetitive heavy grazing.

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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: rhizomatous sedges and rushes

    Sub-dominant: perennial forbs

    Other: shrubs

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** normal mortality of grass and grass-like is slow and occurs as aging plants. This will go unnoticed due to regeneration from roots, seeds, or other new plants filling the spaces.

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14. **Average percent litter cover (%) and depth (in):** Additional litter cover data is needed but is expected to be 45-60 percent to a depth of 0.5-1.5 inches. Litter accumulates on the soil surface.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 4000 pounds per acre (4480 Kg/ha) in a year with normal precipitation and temperatures. Rhizomatous sedges and rushes produce 80-90 percent of the total production, forbs 5-15 percent, and shrubs < 5 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 whitetop, Leafy spurge, Dock, Canadian thistle, and reed canarygrass. Other invasive species may include redtop and Kentucky bluegrass. At low elevations, purple loosestrife may invade.

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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years. Most of the plants reproduce vegetatively.
