

Ecological site R011XB025ID Marsh TYLA-SCAC3

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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

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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:

Not saline or saline-sodic.

Deep to very deep, not skeletal within 20" of soil surface.

Season water table <40" with high amounts of organic matter

Poorly drained, standing water is common until late summer

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
R011XB023ID	Wet Meadow Carex-Juncus
R012XY045ID	Riparian Wet Meadow Salix/Carex

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Typha latifolia</i> (2) <i>Schoenoplectus acutus</i>

Physiographic features

This site generally occurs on nearly level margins of streams, ponds, lakes, springs, and reservoirs, and as stringers paralleling stream and river channels. This site can also occur as parts of old stream courses, oxbows, and potholes. Slopes are less than 2 percent. Elevations range between 4000-6800 feet (1200-2100 meters).

Table 2. Representative physiographic features

Landforms	(1) Hill
Flooding duration	Long (7 to 30 days)
Flooding frequency	Frequent
Ponding duration	Long (7 to 30 days)
Ponding frequency	Frequent
Elevation	2,500–6,800 ft
Slope	0–2%
Ponding depth	2–12 in
Water table depth	0–1 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

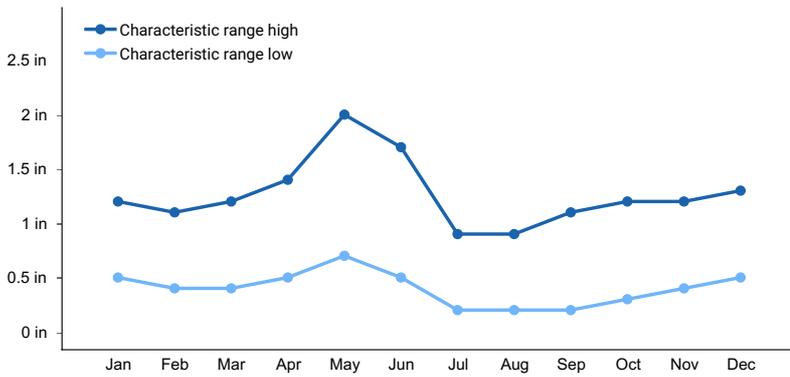


Figure 1. Monthly precipitation range

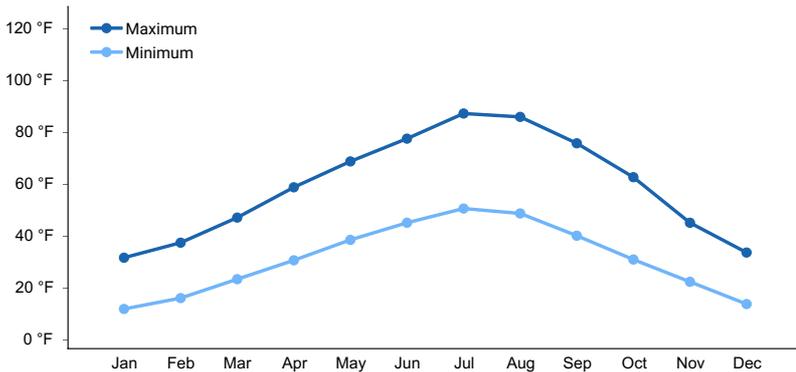


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

The Marsh 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

Typically these soils are erratically stratified with a surface mat of roots 4 or more inches deep over 3 to 6 inches of organic material over clays, clay loams, or silty clay loams over 60 inches deep. These soils are poorly drained and alluvial in origin. The soils usually range from slightly acid to slightly alkaline in pH. Soils are saturated throughout the growing season and usually have standing water at or above the surface into the late summer.

Flooding can be frequent during snowmelt and just after snowmelt. Ponding is normal. The plant community is dependent on saturated soils and standing water during the growing season.

Table 4. Representative soil features

Surface texture	(1) Silty clay loam (2) Silt loam
Drainage class	Poorly drained
Soil depth	60 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	0 in
Calcium carbonate equivalent (0-40in)	0%

Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The dominant visual aspect of this site is broadleaf cattail and/or hardstem bulrush. Hardstem bulrush is more dominant where water is 6 to 8 inches deep or deeper throughout the growing season. Broadleaf cattail is often more dominant where the water is at the soil surface through most of the growing season and may dry out at the surface later in the summer. When the two species occur together, broadleaf cattail is in shallower water or uphill towards the shoreline from hardstem bulrush. This is common on margins of ponds, lakes, and reservoirs.

The site often occurs within a complex of wetland sites when adjacent to streams or rivers. In these situations, 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 regimes. 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. 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 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.
4. 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.

Either hardstem bulrush or broadleaf cattail can form impenetrable monotypic stands. Composition by weight is 95 percent grass or grass-like and 5 percent forbs.

During the last few thousand years, this site has evolved in a semi-arid to montane climate characterized by dry summers and cold, moist or wet winters. The site has evolved on deep alluvial soils that are saturated at the soil surface or standing water throughout most of the growing season. Herbivory has historically occurred on this site at very low levels of utilization. Herbivory by some small mammals such as muskrats does occur.

Fire has had little influence on the development of the site. Rare wildfires can occur following consecutive drought years, particularly broadleaf cattail stands that go dry late in the summer.

The conditions for the plant community of this site are variable due to differences in the duration and depth of standing water. Dominant species are mostly rhizomatous and can form monotypic stands.

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

Scientific name Dry Meadow Meadow Wet Meadow Marsh

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

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

Scientific name Dry Meadow Meadow Wet Meadow Marsh
Plantago major

Alisma triviale

Cicuta douglassii

Argentina anserina

Veronica anagallis-aquatica

Symphyotrichum frondosum

Polygonum bistortoides

Triglochin maritimum

Polygonum amphibium

Symphyotrichum foliaceum

Potamogeton natans

Lemna minor

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 broadleaf cattail and/or hardstem bulrush. There are a few forbs that may occur in minor amounts including water knotweed, leafybract aster, floating pondweed, and common duckweed. There may also be other grass-like species occurring in minor amounts. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition". The Reference Plant Community is intentionally written broadly, but these species should occur in the plant community in variable amounts.

The total annual production is 4500 pounds per acre (5040 kilograms per hectare) in a normal year. Production in a favorable year is 5500 pounds per acre (6160 kilograms per hectare). Production in an unfavorable year is 3500 pounds per acre (3920 kilograms per hectare). Most of this variation occurs from temperature differences, not moisture. Structurally, rhizomatous grass and grass-like species are very dominant, followed by perennial forbs.

FUNCTION:

This site is suitable for waterfowl, some shore birds, and small mammals. Moose graze the site occasionally. The site is not suitable for livestock grazing or big game, although some deer may use the edges for cover. Standing water limits grazing opportunities. In some drought years, some grazing can occur with livestock although wet soils should be avoided.

This site can be used for waterfowl hunting and may be adjacent to open water that offers fishing opportunities.

The site is very resistant to degradation due to standing water, low value forage, and limited grazing opportunities. Site degradation is usually the result of permanently lowering of standing water. This can occur with down cutting of adjacent stream channels. This can result from off-site conditions adjacent to the site or in the upper watershed.

Once adjacent streams down-cut, concentrated flows can lower the water table and eliminate standing water.

Impacts on the Plant Community:

Influence of fire:

This site usually does not burn from wildfire. A rare fire may occur following prolonged drought. If a fire occurs, it usually does not adversely affect the plant community due to rhizomatous species. Most plants sprout back.

Influence of improper grazing management:

Due to standing water and low value forage, grazing during the growing season is rare. Grazing may occur during the dormant period. If dry soil conditions occur into the spring and livestock remove the tops of either broadleaf cattail or hardstem bulrush, the plants can die if water then covers them. Care must be exercised in grazing adjacent sites to avoid downcutting of stream channels that can influence standing water on this site. The potential of the site can be lost.

Weather influences:

Annual precipitation has little direct influence on this site. Prolonged drought can affect amounts and duration of standing water and can change the composition of this site. *Carex* and *Juncus* species can increase and broadleaf cattails and hardstem bulrush can decrease. Lower production can occur with below normal spring temperatures that affect both air and water. An early, hard freeze can occasionally kill some plants.

Insects and disease outbreaks:

Periodic disease and insect outbreaks can affect vegetation health. 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:

Purple loosestrife can become invasive, but most plants on this site are very competitive against most potential invasive species due to monotypic stands with strong rhizomes.

Influence of wildlife:

This site is important for many species of waterfowl. Some small mammals and shore birds also use the site. Moose graze the site periodically. Big game animals use the edges for cover. 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 permanent standing water during the growing season. Off-site conditions can affect the gradient of adjacent stream channels that can affect the water table. If down-cutting of an adjacent stream occurs, this can reduce the depth and duration of the standing water. High run-off events from the adjacent uplands can severely damage or change the normal stream channel on the site. As the standing water is permanently reduced, either in depth or duration, productive potential is lost. Eventually the standing water is no longer the primary factor for the plant community. The site may regress to a meadow or even a low seral upland site.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

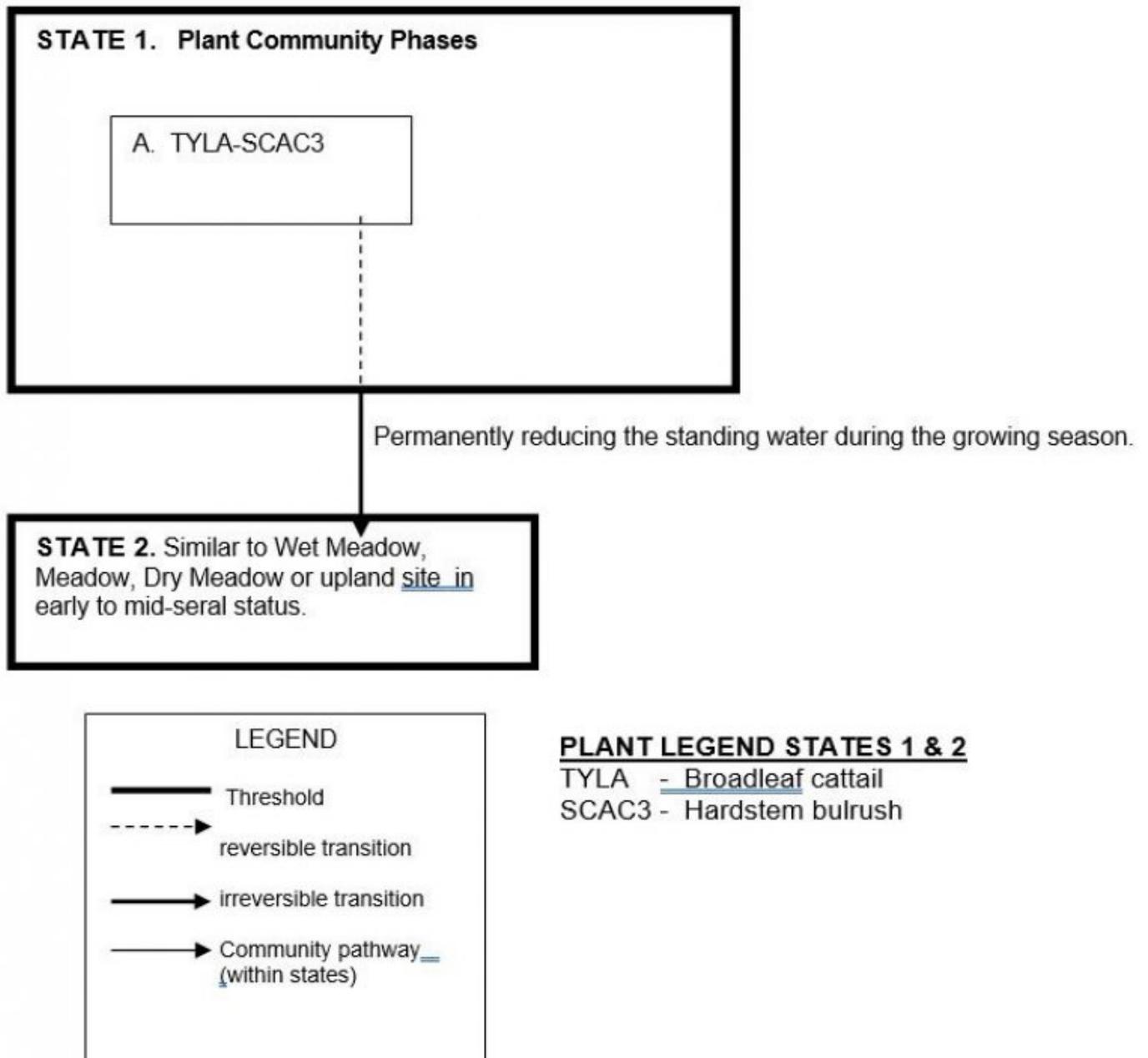
State 1 to State 2. Develops through permanently reducing the standing water during the growing season to the point that dry soil is at the surface during the growing season. This can occur with down-cutting of adjacent stream

channel. The site has crossed the threshold. This state cannot be returned to State 1 without returning the standing water regime to the site.

Practice Limitations:

There are severe limitations to facilitating or accelerated practices due to standing water.

State and transition model



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 broadleaf cattail

and/or hardstem bulrush. There are a few forbs that may occur in minor amounts including water knotweed, leafybract aster, floating pondweed and common duckweed. There may also be other grass-like species occurring in minor amounts.

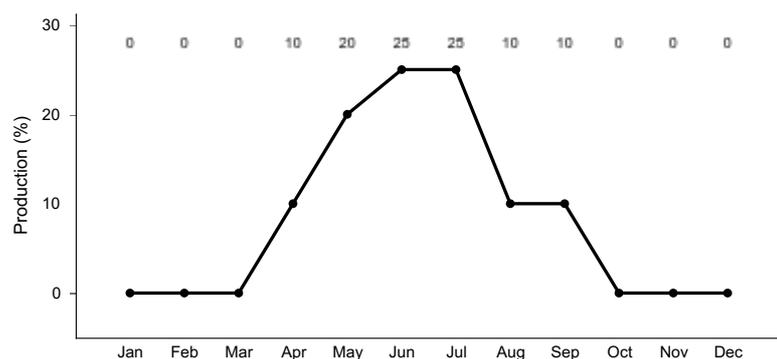


Figure 3. Plant community growth curve (percent production by month). ID0315, DRY MEADOW. State 1.

State 2 State 2

Community 2.1 State 2

State 2. This plant community may be similar to Wet Meadow, Meadow, Dry Meadow or upland sites in low to mid-seral status. Initially, *Carex* and *Juncus* species may increase or become dominant. These species can be lost as degradation continues. Forbs may increase as degradation becomes severe. This state developed due to the permanent reduction of standing water. The site has crossed the threshold. This state cannot be returned to State 1 without returning the standing water regime to the site.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This ecological site provides habitat for unique wetland wildlife species. The duration of hydrology results in abundant herbaceous cover and invertebrate production, which provides food and cover for waterfowl. The insects are low in the food chain and as such, provide an extremely important component to the primary and secondary productivity levels of the ecosystem. Wetland dependant species utilizing the site include marsh wren, great blue heron, ibis, teal, mallard, yellow-head blackbird, red-winged blackbird, northern leopard frog, western toad, muskrat, and beaver. Large herbivore use is limited to moose due to the extreme hydrologic conditions and the low value of the forage. 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 – Broadleaf Cattail/ Hardstem Bulrush Reference Plant Community (RPC): The RPC and associated hydrology exhibit deep ponded water, providing a diverse population of invertebrates (benthic and terrestrial) unique to wetlands and beneficial to water loving birds. Arthropods such as dragonflies, damselflies, midges, backswimmers, scuds, and waterfleas make up a large portion of potential invertebrates in these wetlands. They are a basic food source for many higher trophic level organisms. The reptile and amphibian community is represented by western skink, rubber boa, western rattlesnake, western toad, boreal chorus frog, long-toed salamander, and northern leopard frog. A diverse amphibian population is a key indicator of good ecological health on this site. The RPC provides nesting, rearing, roosting, and forage for bird species such as Canada goose, American wigeon, mallard, pied billed grebe, great blue heron, sora, whimbrel, Wilson's snipe, marsh wren, and long-billed curlew. Moose can utilize the site, foraging through the submerged and emergent vegetation. Small mammal populations are extremely limited due to hydrologic conditions. Deer mouse, montane vole, and western

jumping mouse would utilize the site for water throughout the year or during the winter when water is frozen.

State 2 Carex sp./ Juncus Sp./ Forbs/ Grasses Plant Community: The animal community may be similar to Wet Meadow, Meadow, Dry Meadow, or upland sites in low to mid-seral status depending on the severity of hydrology manipulation of State 1 Phase 1.1. The management of the resulting plant communities will be a major factor in determining the diversity and populations of the animal community. Refer to the above mentioned ecological sites for MLRA 11 for descriptions of the potential wildlife community.

Grazing Interpretations:

Due to standing water and low value forage, grazing during the growing season is rare. Grazing may occur during the dormant period. If dry soil conditions occur into the spring and livestock remove the tops of either broadleaf cattail or hardstem bulrush, the plants can die if water then covers them. Care must be exercised in grazing adjacent sites to avoid downcutting of stream channels that can influence standing water in this site. The potential of the site can be lost.

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

No data.

Recreational uses

None.

Wood products

None.

Other products

None.

Other information

Field Offices

Arco, ID

Rexburg, ID

St. Anthony, ID

Idaho Falls, ID

Blackfoot, ID

Pocatello, ID

American Falls, ID

Burley, ID

Shoshone, 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

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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	04/23/2009
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:** water-flow patterns do not occur.

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3. **Number and height of erosional pedestals or terracettes:** neither occurs 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):** none.
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5. **Number of gullies and erosion associated with gullies:** none.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** blowouts and depositional areas do not occur.
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7. **Amount of litter movement (describe size and distance expected to travel):** litter may move in the standing water.
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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values should range from 4 to 6 but needs to be tested.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** structure ranges from weak and moderate fine and medium granular to weak fine subangular blocky. Soil organic matter (SOM) ranges from 10 to 80 percent. Surface color is usually black to very dark brown to very dark gray. The A or A1 horizon is typically 2 to 11 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:** site has standing water.
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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.
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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 species
- Sub-dominant: perennial forbs
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** little mortality occurs on the site.

14. **Average percent litter cover (%) and depth (in):** not applicable.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 4500 pounds per acre (5040 Kg/ha) in a year with normal amounts of standing water and temperatures. Rhizomatous species produce 90-95 percent of the total production and forbs less than 10 percent.

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** purple loosestrife and common reed.

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