

Ecological site R009XY018ID

Meadow

Last updated: 9/23/2020
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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.

Classification relationships

No data.

Associated sites

R009XY015ID	Dense Stony Clay 22+ PZ DACA3-JUBA
R009XY019ID	Dry Meadow
R009XY032ID	Riparian DECA5-CAREX

Similar sites

R009XY019ID	Dry Meadow
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site generally occurs on gently sloping to nearly level stream valleys and high mountain valleys 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 generally not flat, but slightly undulating with small depressions and high spots. Elevations range between 2500-6000 feet (750-1800 meters).

Table 2. Representative physiographic features

Landforms	(1) Plateau (2) Valley floor
Flooding duration	Brief (2 to 7 days) to very long (more than 30 days)
Flooding frequency	Occasional to frequent
Ponding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Ponding frequency	Occasional to frequent
Elevation	762–1,829 m
Slope	0–4%

Ponding depth	5–15 cm
Water table depth	0–102 cm

Climatic features

The elevation of MLRA 9 ranges from 2000 to 4000 feet with an average elevation of 3000 feet. Elevation along major streams averages only 650 feet above sea level. Average annual precipitation ranges from 20 to 25 inches with an average of 23 based on 9 long term climate stations located throughout the MLRA. Summers are relatively dry while precipitation is evenly distributed between fall, winter, and spring.

The maximum average annual temperature is 58 degrees Fahrenheit while the average minimum temperature is 35 degrees F. The average annual temperature is 46.8 degrees F. The frost free period ranges from 107 to 134 days and the freeze free period ranges from 143 to 173 days.

Table 3. Representative climatic features

Frost-free period (average)	134 days
Freeze-free period (average)	173 days
Precipitation total (average)	660 mm

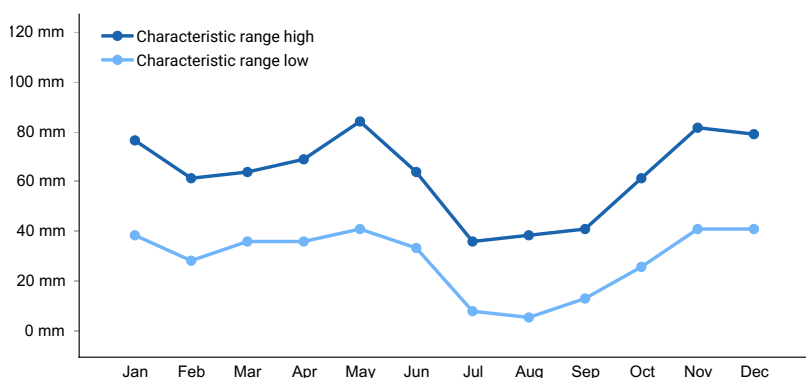


Figure 1. Monthly precipitation range

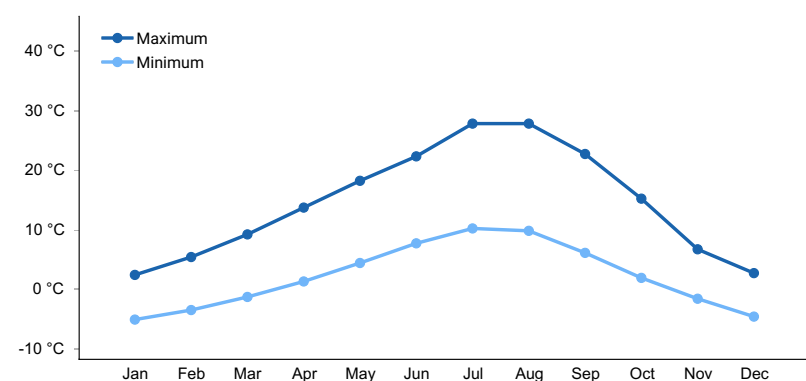


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

The 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.

Wetland Description: System Subsystem Class Sub-class
Palustrine NA Aquatic? Palustrine NA Scrub-Shrub Brd.-leav. Deci.
Riverine intermittent Streambed vegetated
Stream Type: ??

Soil features

Soils on this site typically have ashy silt loam, silty clay loam or loam surface textures, silty clay loam to silty clay sub-soils and stratified silty clay loam to coarse sandy loam parent material of mixed alluvial origin and may be somewhat stony or gravelly. The soils range from very strongly acid to neutral in pH. Available water capacity is low to moderate and is supplemented by upward capillary movement from the shallow water table and the effective rooting depth is limited by the water table. These soils are characterized by an aquic moisture regime and the temperature regime is frigid.

Erosion hazard is slight, however, where peaty and high organic soils occur, they 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 and down to 20-40 inches at the end of the growing season. Flooding occurs occasionally during snowmelt and just after snowmelt. Ponding can occur in small depression areas during this time period. The water table is influenced by seasonal flooding, stream flows, seeps or springs or from run-on from adjacent sites.

Soil Series Correlated to this Ecological Site -

Teneb
Lewhand
Lebaron
Grasshopper

Table 4. Representative soil features

Surface texture	(1) Ashy silt loam (2) Silty clay loam (3) Loam
Family particle size	(1) Loamy
Drainage class	Poorly drained
Permeability class	Moderate to very slow
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	11.94–17.78 cm
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.5–6.9
Subsurface fragment volume <=3" (Depth not specified)	0–6%
Subsurface fragment volume >3" (Depth not specified)	0–6%

Ecological dynamics

The dominant visual aspect of this site is grass and sedges with scattered forbs and shrubs. The dominant plant community has tufted hairgrass, Nebraska sedge, and other *Carex* species as major components. The site usually occurs within a complex of wetland sites. The soil surface of the site 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. The dominant species in these included plant communities 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 to depression areas with the water table at or near the surface for the entire growing season. This site is dominated by *Carex* spp. and *Junus* spp.
3. Dry Meadow Site. Slightly higher areas that are 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 percent grasses and grass-like, 5-15 percent forbs, and 0-10 percent shrubs. The depressional plant communities may have sedge and rush species making up nearly 100 percent of the community and are inclusions.

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 at the beginning of the growing season and move down to about 20 – 40 inches by the end of the growing season. 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 a 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

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 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 tufted hairgrass and Nebraska sedge. There are a wide variety of grasses and grass-like species and forbs that may occur in minor amounts. Some of these species may be dominant in small areas due to soil and water variations as stated above. Willows and shrubby cinquefoil can occur in small amounts. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

The total annual production is 3600 pounds per acre (4032 kilograms per hectare) in a normal year. Production in a favorable year is 4500 pounds per acre (5040 kilograms per hectare). Production in an unfavorable year is 2500 pounds per acre (2800 kilograms per hectare). Structurally, cool season deep-rooted perennial grasses and sedges are very dominant, followed by perennial forbs being more dominant than shrubs.

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, 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 the upper watershed. Once adjacent streams 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 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. The reduced ability of the community to withstand seasonal flooding is reduced and down cutting of adjacent streams can result or initiation of headcuts can occur. This down cutting will lower the water table and thereby 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.

Insects and disease outbreaks:

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 plant community. The plants on this site are very competitive against 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 grass and sedge 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 perennial grasses and grass-like 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.

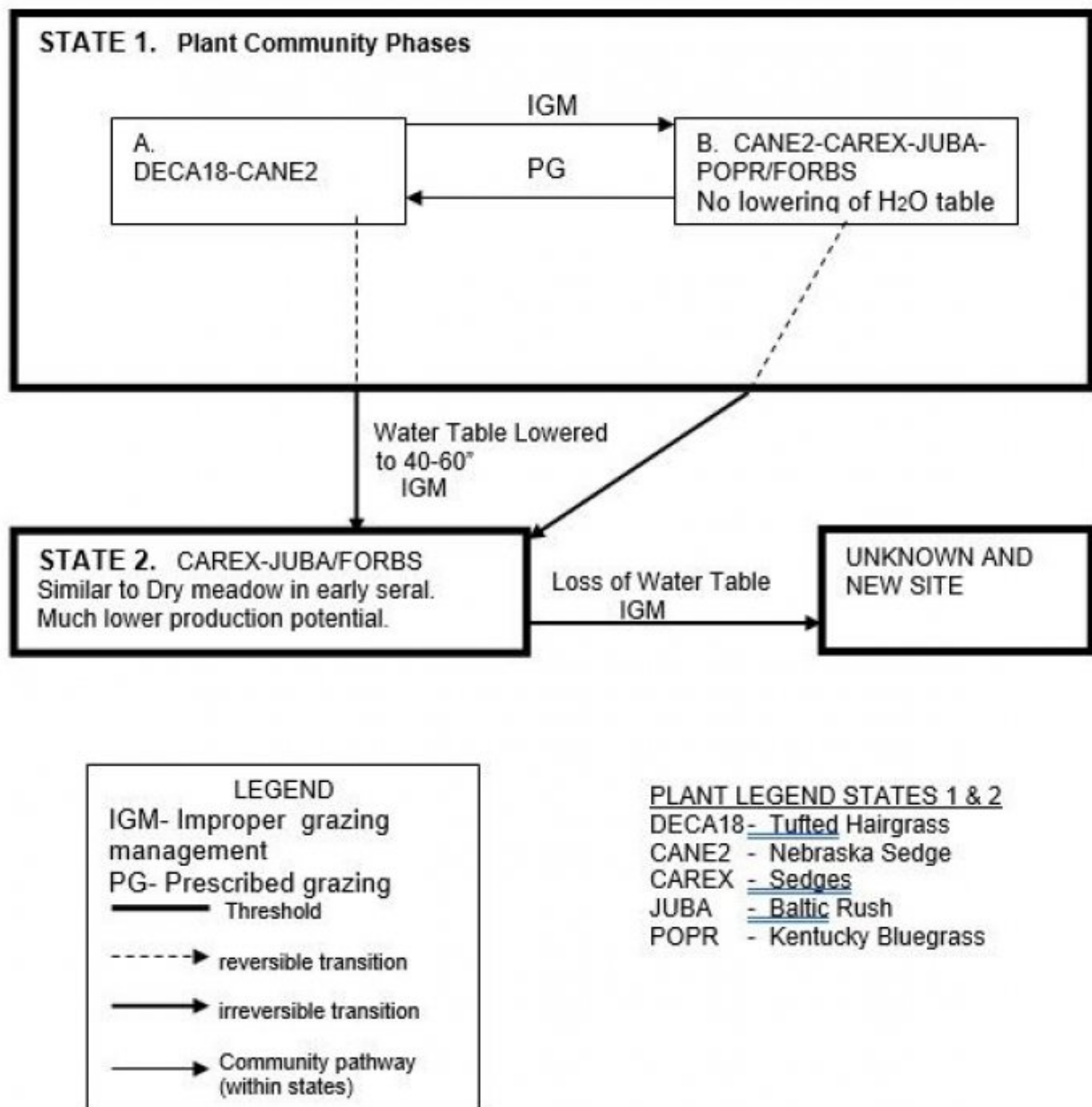
State 1 Phase A or B to State 2. Develops through permanently lowering the late growing season water table down to a depth of 40 to 60 inches. This can occur with continued improper grazing management. It may also occur with proper grazing on the site, but channel erosion may continue if poor off-site 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 permanently losing the water table in the soil profile through down cutting of the stream channel. The site 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. 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.

Practice Limitations:

There are moderate to severe seeding limitations on this site due to difficulty in preparing an adequate seedbed. Elimination of existing vegetation prior to planting is difficult in wet seasons and high water table periods. 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.

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 has tufted hairgrass and Nebraska sedge as co-dominant in the herbaceous layer. There are a wide variety of grasses and grass-like species and forbs that may occur in minor amounts. Some of these species may be dominant in small areas due to soil and water variations as stated above. Willows and shrubby cinquefoil can occur in small amounts.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2382	3335	4287
Forb	280	392	504
Shrub/Vine	140	196	252
Total	2802	3923	5043

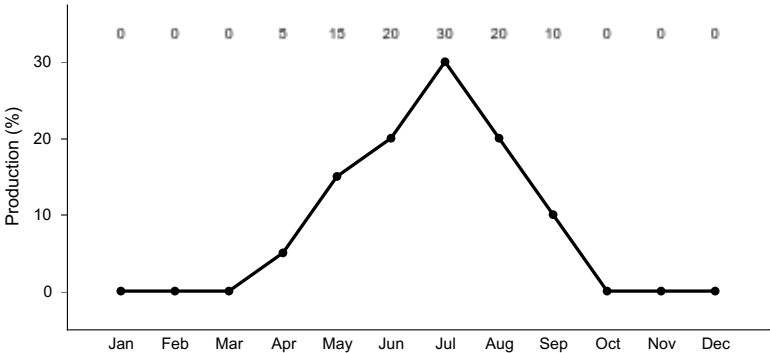


Figure 4. Plant community growth curve (percent production by month). ID0314, Wet Meadow. State 1, Reference Plant Community Phase.

State 2
State 1 Phase B

Community 2.1
State 1 Phase B

State 1, Phase B. The plant community is dominated by Nebraska sedge and other sedges and Baltic rush. 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.

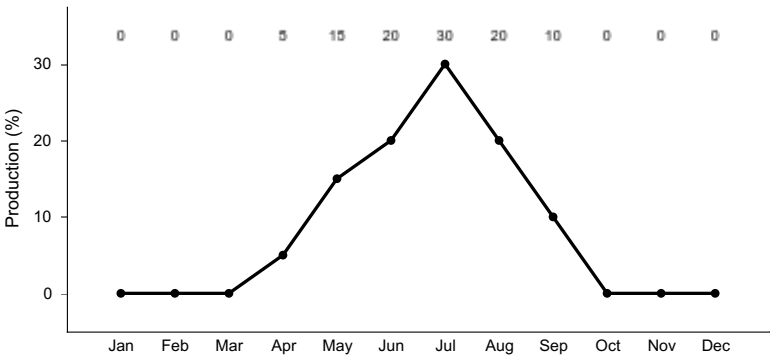


Figure 5. Plant community growth curve (percent production by month). ID0314, Wet Meadow. State 1, Reference Plant Community Phase.

State 3
State 2

Community 3.1
State 2

State 2. This plant community is dominated by Nebraska sedge and other sedges 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, 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 20-40 inches to 40-60 inches below the surface. This state can be similar to Dry Meadow in early seral state. 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.

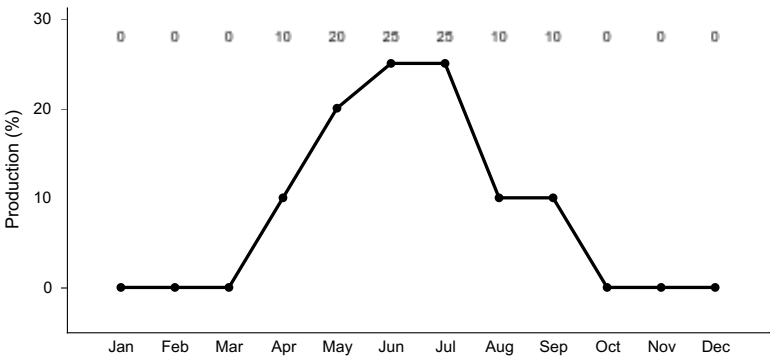


Figure 6. Plant community growth curve (percent production by month). ID0315, DRY MEADOW. State 1.

State 4
State 3

Community 4.1
State 3

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Grass and Grasslike			–	
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	420–757	–
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	420–757	–
	alpine timothy	PHAL2	<i>Phleum alpinum</i>	213–375	–
	mountain rush	JUARL	<i>Juncus arcticus ssp. littoralis</i>	0–252	–
	meadow barley	HOBR2	<i>Hordeum brachyantherum</i>	0–129	–
	slenderbeak sedge	CAAT3	<i>Carex athrostachya</i>	0–129	–
	Torrey's rush	JUTO	<i>Juncus torreyi</i>	0–129	–
	fowl mannagrass	GLST	<i>Glyceria striata</i>	0–129	–
	shortawn foxtail	ALAE	<i>Alopecurus aequalis</i>	0–50	–
	bluejoint	CACA4	<i>Calamagrostis canadensis</i>	0–50	–
Forb					
2	Forbs			–	
	clover	TRIFO	<i>Trifolium</i>	0–50	–
	slender cinquefoil	POGR9	<i>Potentilla gracilis</i>	0–50	–
	lambstongue ragwort	SEIN2	<i>Senecio integerrimus</i>	0–50	–
	aster	ASTER	<i>Aster</i>	0–50	–
	alkali buttercup	RACY	<i>Ranunculus cymbalaria</i>	0–50	–
	Nuttall's sunflower	HENU	<i>Helianthus nuttallii</i>	0–50	–
	water minerslettuce	MOCH	<i>Montia chamissoi</i>	0–50	–
	common plantain	PLMA2	<i>Plantago major</i>	0–50	–
	Rocky Mountain iris	IRMI	<i>Iris missouriensis</i>	0–50	–
	western aster	SYAS3	<i>Symphyotrichum ascendens</i>	0–50	–
	small camas	CAQU2	<i>Camassia quamash</i>	0–50	–
	northern water plantain	ALTR7	<i>Alisma triviale</i>	0–50	–
	tall ragwort	SESE2	<i>Senecio serra</i>	0–50	–
	curly dock	RUCR	<i>Rumex crispus</i>	0–50	–
	meadow thistle	CISC2	<i>Cirsium scariosum</i>	0–28	–
	fringed willowherb	EPCI	<i>Epilobium ciliatum</i>	0–28	–
Shrub/Vine					
3	Shrubs			–	
	willow	SALIX	<i>Salix</i>	0–129	–
	shrubby cinquefoil	DAFR6	<i>Dasiphora fruticosa</i>	0–129	–

Animal community

Wildlife Interpretations.

This site is poor to fair habitat for open land wildlife, fair habitat for woodland wildlife, and fair to good habitat for wetland wildlife. It is good habitat for waterfowl, shorebirds, muskrat, and beaver whenever it is adjacent to stream and ponds. It provides some food for moose, Rocky mountain elk, mule and white-tailed deer, songbirds, and some upland game birds. It also provides brood rearing areas for sagegrouse.

Grazing Interpretations.

This site is best suited for livestock grazing in the late spring, summer, and fall. Wet soils can limit grazing opportunities, particularly in the late spring.

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 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 grasses and grass-like plants. When livestock or big game 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, especially during wet weather and high water table conditions.

Wood products

None.

Other products

None.

Other information

Field Offices

Grangeville, ID
Craigmont, ID
Orofino, ID
Lewiston, ID
Moscow, ID
St. Maries, ID
Coeur d'Alene, 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
Chris Hoag, Wetland Plant Ecologist, NRCS, Idaho
Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho
Bruce Knapp, 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

JC

Approval

Kendra Moseley, 9/23/2020

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Date	04/16/2009
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 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.

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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:** Does not occur.
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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.
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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):** The A or A1 horizon is typically 2 to 8 inches thick. Structure ranges weak fine granular to strong fine subangular blocky. Soil organic matter (SOM) typically ranges from 1 to 9 percent.
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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 perennial grasses and sedges 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: deep rooted perennial grasses and sedges
- Sub-dominant: perennial forbs
- Other: shrubs
- Additional:
-
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 3600 pounds per acre (4032 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses and sedges produce 80-90 percent of the total production, forbs 5-15 percent, and shrubs 0-10 percent.
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Includes whitetop, Leafy spurge, Dock, Canadian thistle, reed canarygrass, foxtail barley, perennial pepperweed and teasel. Other invasive species may include meadow foxtail, bentgrass, and Kentucky bluegrass.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in most years. Many of the plants reproduce vegetatively.
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