

Ecological site R047XA660UT

Subalpine Wet Meadow (sedge)

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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

Modal Soil: Dilman Family Clay 0-3% — fine-loamy/sandy or sandy-skeletal, mixed Typic Cryoborolls

Associated sites

R047XA624UT	Subalpine Semiwet Meadow (tufted hairgrass)
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Similar sites

R047XA624UT	Subalpine Semiwet Meadow (tufted hairgrass)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Carex rostrata</i> (2) <i>Carex aquatilis</i>

Physiographic features

This site occurs on kettles, drainageways and fens at elevations between 9,000 and 10,500 feet. Spring flooding may occur frequently on this site in some cases, and is characterized by long flood duration. Whether the site floods or not, a high water table is usually present in May and June that is within 4 to 15 inches of the soil surface.

Table 2. Representative physiographic features

Landforms	(1) Kettle (2) Drainageway (3) Fen
Flooding duration	Very long (more than 30 days)
Flooding frequency	None to frequent
Ponding frequency	None
Elevation	2,743–3,200 m
Slope	3–8%
Water table depth	10–38 cm

Climatic features

The climate is characterized by cool, moist summers and cold, snowy winters. Approximately 70 percent of the precipitation occurs as snow from October through May. June through August are typically the driest months and September through May are the wettest.

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	0 days
Precipitation total (average)	914 mm

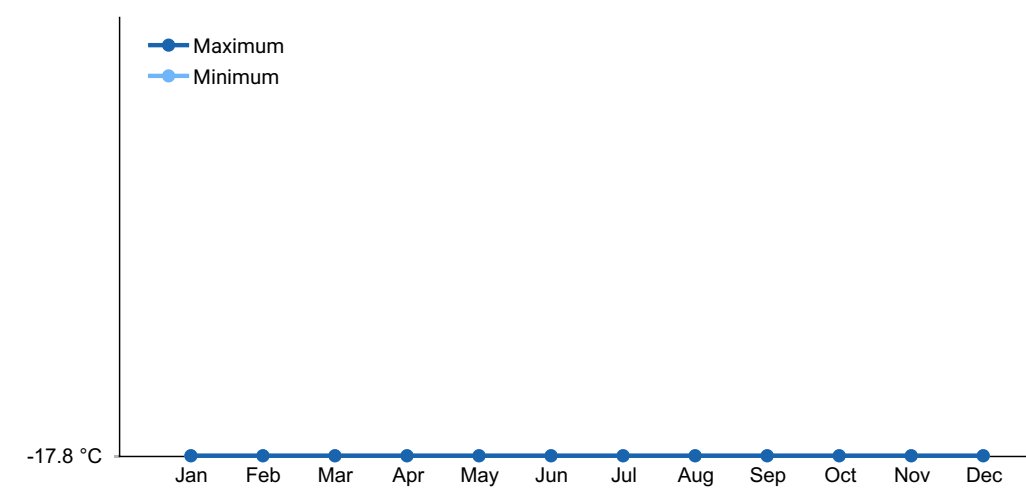


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils of this site are deep and poorly drained. They formed in alluvium derived mainly from sedimentary parent materials. The surface horizon is dark (mollic), has a silty clay texture, and is about 8 to 15 inches thick. The soil surface and profile are virtually devoid of rock fragments. Permeability is slow and available water holding capacity ranges from 5.4 to 7.4 inches of water in the upper 40 inches of soil. These soils are usually acidic with pH between 5.1 and 6.0. The soil moisture regime is aquic and the soil temperature regime is cryic.

This soil has been identified in the Wasatch-Cache National Forest but has not been mapped by Soil Surveys.

Table 4. Representative soil features

Surface texture	(1) Silty clay
Family particle size	(1) Loamy
Drainage class	Poorly drained
Permeability class	Slow
Soil depth	152 cm
Surface fragment cover <=3"	1%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	13.21–19.56 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.1–6
Subsurface fragment volume <=3" (Depth not specified)	3%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

As this site deteriorates due to grazing pressure, perennial grasses decrease while sedges increase.

State and transition model

Ecosystem states

1. Reference State

State 1 submodel, plant communities

1.1. Reference State

State 1 Reference State

Community 1.1 Reference State

The general view of this site is sedge and grass. The composition by air-dry weight is approximately 70 to 100 percent sedge and grass.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2186	3867	4988
Total	2186	3867	4988

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	99-101%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%

Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Table 7. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	—	—	—	—
>0.15 <= 0.3	—	—	—	—
>0.3 <= 0.6	—	—	99-101%	—
>0.6 <= 1.4	—	—	—	—
>1.4 <= 4	—	—	—	—
>4 <= 12	—	—	—	—
>12 <= 24	—	—	—	—
>24 <= 37	—	—	—	—
>37	—	—	—	—

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
0	Dominant Grasses			2354–3531	
	water sedge	CAAQ	<i>Carex aquatilis</i>	392–588	–
	Buxbaum's sedge	CABU6	<i>Carex buxbaumii</i>	392–588	–
	smallwing sedge	CAMI7	<i>Carex microptera</i>	392–588	–
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	392–588	–
	beaked sedge	CARO6	<i>Carex rostrata</i>	392–588	–
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	392–588	–
1	Sub-Dominant Grasses			981–1765	
	Grass, annual	2GA	<i>Grass, annual</i>	196–392	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	196–392	–
	creeping bentgrass	AGST2	<i>Agrostis stolonifera</i>	118–196	–
	bluejoint	CACA4	<i>Calamagrostis canadensis</i>	118–196	–
	fowl mannagrass	GLST	<i>Glyceria striata</i>	118–196	–
	fowl bluegrass	POPA2	<i>Poa palustris</i>	118–196	–

Animal community

This site provides grazing for cattle during the summer and fall.

Water, food, and cover

Wildlife using this site include rabbit, coyote, elk, mule deer, moose, and vole.

Hydrological functions

The soil series is in hydrologic group d. The hydrologic curve number is 80 when the vegetation is in good condition.

Recreational uses

Hiking and hunting

Wood products

None

Contributors

Darryl Trickler, Tim Watson

Rangeland health reference sheet

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

Author(s)/participant(s)	V. Keith Wadman, NRCS Retired.
Contact for lead author	shane.green@ut.usda.gov
Date	10/15/2012
Approved by	Shane A. Green
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** None. A very slight amount of rill development may be observed following large storm events or spring runoff periods, but they should heal within the following growing season. Very slight rill development may also be observed where the site is adjacent to ecological sites that produce large amounts of runoff (i.e. steep sites, slickrock, etc.).

- 2. Presence of water flow patterns:** None to rare. Any flow patterns present should be sinuous and wind around perennial plant bases. They should be short (4 to 8 feet), < 6" wide, and spaced from 10 to 15 feet apart. They should be stable with only minor evidence of deposition. This site is periodically inundated with runoff water from adjacent sites. It also acts as a filter and trap sediment.

3. **Number and height of erosional pedestals or terracettes:** None to rare. A few plants may show very minor pedestalling where they are adjacent to any water flow patterns present, but there will be no exposed roots. Terracettes are not present.
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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0 to 10% bare ground. Any bare ground openings present should be < 1 foot in size and should not be connected.
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5. **Number of gullies and erosion associated with gullies:** None to Very Slight. Some slight gully development may be evident following significant weather events or where they convey runoff from higher elevation sites and/or rocky or naturally eroding areas.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind generated soil movement. Wind scoured (blowouts) and depositional areas are not present.
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7. **Amount of litter movement (describe size and distance expected to travel):** The majority of litter accumulates in place at the base of plant canopies. Slight movement of the finest material (< 1/4 inch) may move 1 to 2 feet downslope when transported by water. Little accumulation is observed behind obstructions.
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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):** This site should have a soil stability rating of 6 under plant canopies and a rating of 5 to 6 in any interspaces present. The average should be 6. Surface textures typically vary from silt loams and silty clay loams to clay loams.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** (Dilman) Soil surface is typically 0 to 3 inches deep. Surface texture is a silty clay loam which may have an organic root-mat 1 to 2 inches deep on the surface, and structure is weak thin platy. The A-horizon color is dark gray, 10YR 4/1). Soils have an Mollic epipedon that extends 7 to 20 inches into the soil profile. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial vegetation breaks raindrop impact and reduces splash erosion. Dense distribution of plants slows runoff by obstructing surface flows, allowing time for increased infiltration. With the physiographic location of this site being in low lying areas, it often acts as a terminal accumulation site for runoff. The amount of sodium in the soil can affect infiltration and facilitate puddling on the surface.
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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):** None. This site will normally have textural changes within its' profile. These should not be mistaken for compaction layers.
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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: Perennial Grasses and grass-likes (Nebraska sedge, leafy tussock sedge, tufted hairgrass) > Perennial Forbs (alpine aster, longstock clover).

Sub-dominant: Shrubs (Geyer willow, woods rose)

Other: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state. Biological soil crust is variable in its' expression where present on this site and is measured as a component of ground cover. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

Additional: Disturbance regimes include insects, infrequent fire, and flooding. Temporal variability can be caused by fires, droughts, insects, etc. Spatial variability can be caused by runoff, soil pH, and topography.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above average precipitation, there should be no mortality or decadence in either perennial grasses or grasslikes. During severe (multi-year) droughts that affect groundwater levels, up to 10% of the perennial plants may die. There may be partial mortality of individual grasses and

grasslikes during less severe droughts.

14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 50 to 60%. Depth should be 1 inch thickness in any interspaces and 2 inches under perennial plant canopies.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production in air-dry herbage should be approximately 3400 to 3500 pounds per acre on an average year. Production could vary from 1900 to 4500 pounds per acre during drought or above-average years.
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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:** Baltic rush, Canada thistle, whitetop, mustard species and other invasive and/or non-native forbs and grasses.
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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years.
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