Ecological site R047XA624UT
Subalpine Semiwet Meadow (tufted hairgrass)

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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.

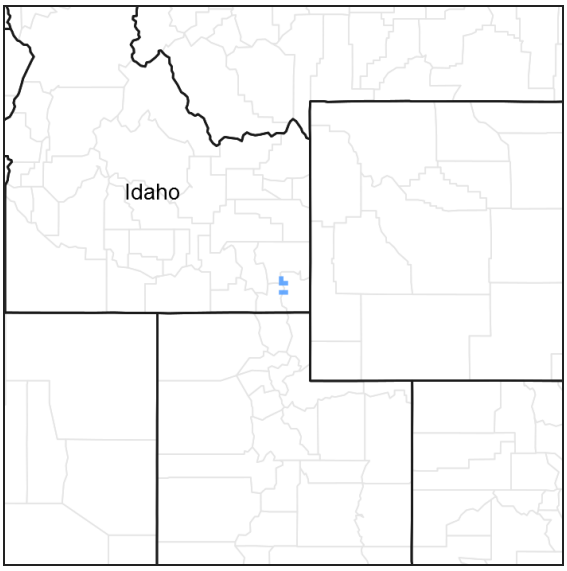

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Classification relationships

Modal Soil: Furniss Family CL 0-3% — fine-loamy, mixed Typic Cryoborolls

Associated sites

R047XA660UT	**Subalpine Wet Meadow (sedge)**

Similar sites

R047XA660UT	**Subalpine Wet Meadow (sedge)**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Deschampsia caespitosa* (2) *Phleum alpinum*

Physiographic features

This site occurs on subalpine stream terraces and flood plains at elevations between 9,000 and 10,500 feet. The water table ranges from 40 t0 60 inches below the soil surface year round. Slopes are gentle and flooding and ponding do not typically occur on this site.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace (2) Flood plain
Flooding frequency	None
Ponding frequency	None
Elevation	2,743–3,200 m
Slope	3–8%
Water table depth	102–152 cm

Climatic features

The climate of this site 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 months.

Table 3. Representative climatic features

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

Influencing water features

Soil features

The soils of this site are deep, moderately well-drained and formed in alluvium derived from sedimentary rock. Surface textures are loams and rock fragments are usually absent on the soil surface and throughout the profile. Permeability is moderate and available water holding capacity ranges from 5.4 to 7.4 inches of water in the upper 40 inches of soil. The soil moisture regime is ustic and the soil temperature regime is cryic.

This site has been identified in the Wasatch-Cache National Forest, but is not yet mapped by soil survey.

Table 4. Representative soil features

Surface texture	(1) Loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained
Permeability class	Moderate
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	13.72–18.8 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)	6.1–7.3
Subsurface fragment volume <=3" (Depth not specified)	0–3%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

As this site deteriorates due to grazing pressure, alpine timothy decreases while yarrow and groundsel increase. Fire will temporarily allow the forbs to increase but the grass will soon regain control of the site.

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 perennial grass and grasslike plants. The composition by air-dry weight is approximately 80 percent perennial grasses and grasslike plants and 20 percent forbs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2197	2645	3094
Forb	549	661	773
Total	**2746**	**3306**	**3867**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	69-71%

Forb foliar cover	9-11%
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	–	–	–	9-11%
>0.3 <= 0.6	–	–	69-71%	–
>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**			1547–2690	
	tufted hairgrass	DECE	*Deschampsia cespitosa*	841–1345	–
	alpine timothy	PHAL2	*Phleum alpinum*	168–336	–
	Columbia needlegrass	ACNE9	*Achnatherum nelsonii*	168–336	–
	smallwing sedge	CAMI7	*Carex microptera*	168–336	–
	slimstem reedgrass	CAST36	*Calamagrostis stricta*	101–168	–
	timber oatgrass	DAIN	*Danthonia intermedia*	101–168	–
1	**Sub-Dominant Grasses**			202–336	
	Grass, annual	2GA	*Grass, annual*	101–168	–
	Grass, perennial	2GP	*Grass, perennial*	101–168	–
Forb					
0	**Dominant Forbs**			269–504	
	Richardson's geranium	GERI	*Geranium richardsonii*	168–336	–
	longstalk clover	TRLO	*Trifolium longipes*	101–168	–
2	**Sub-Dominant Forbs**			67–202	
	Forb, annual	2FA	*Forb, annual*	101–168	–
	Forb, perennial	2FP	*Forb, perennial*	101–168	–
	common yarrow	ACMI2	*Achillea millefolium*	34–101	–
	Rocky Mountain groundsel	PAST10	*Packera streptanthifolia*	34–101	–

Animal community

This site provides grazing for cattle and sheep during the summer and fall.
Water, Food, and Cover
Wildlife using this site include moose, elk, mule deer, vole, rabbit, hawk, eagle, and weasel.

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

Other products

Contributors

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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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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. Slight rill development may also be observed where the site is adjacent to ecological sites that produce large amounts of runoff (i.e. steeper sites, slickrock, etc.).

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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 (5 to 10 feet), < one foot wide, and spaced from 20 to 30 feet apart. They should be stable with only minor evidence of deposition. Flooding and ponding do not normally occur on these high elevation meadows and their seasonal water table is typically 40 to 60 inches below the surface.

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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):** 10 to 20% 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 5 to 6 under plant canopies and a rating of 4 to 5 in any interspaces present. The average should be 5. Surface textures typically vary from sandy loams to loams.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** (Furniss) Soil surface is typically 0 to 8 inches deep. Surface texture is a silty clay loam, and structure is moderate very fine and fine subangular and angular blocky parting to weak fine granular. The A-horizon color is black, (10YR 2/1) and very dark gray (10YR 3/1). Soils have an Mollic epipedon that extends 10 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.

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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 (tufted hairgrass, alpine timothy, smallwing sedge) > Perennial Forbs (white cranesbill).

    Sub-dominant: Shrubs (silver sage, 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.

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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.

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14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 40 to 60%. Depth should be 1 inch

thickness in any interspaces 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 2900 to 3000 pounds per acre on an average year. Production could vary from 2400 to 3500 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:** Black medic, Canada thistle, curlycup gumweed, whitetop and other 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.
