

Ecological site R025XY410UT **Mountain Aspen Thicket**

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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.

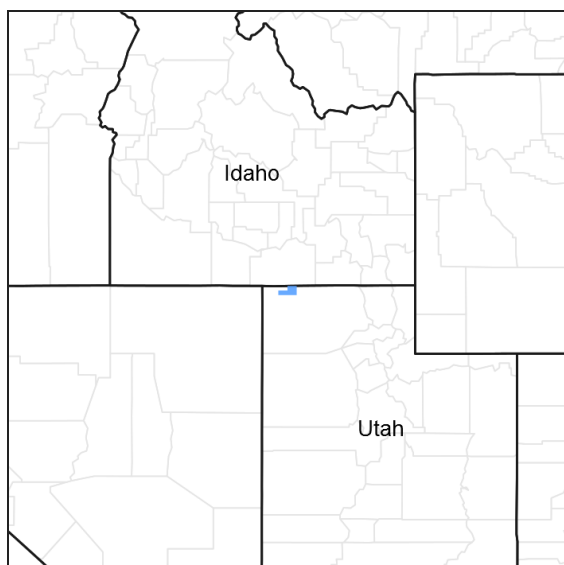


Figure 1. Mapped extent

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.

Associated sites

R025XY412UT	Mountain Gravelly Loam (Mountain Big Sagebrush)
R025XY418UT	Mountain Windswept Ridge (Low Sagebrush)

Similar sites

R025XY412UT	Mountain Gravelly Loam (Mountain Big Sagebrush)
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Table 1. Dominant plant species

Tree	(1) <i>Populus tremuloides</i>
Shrub	Not specified
Herbaceous	(1) <i>Bromus carinatus</i>

Physiographic features

This site is found on hillslopes on slopes between 15 and 40%. The elevation of the site ranges between 6,000 to 7,000 feet. There is no flooding or ponding potential for this site.

Table 2. Representative physiographic features

Landforms	(1) Hill
Flooding frequency	None
Ponding frequency	None
Elevation	1,829–2,134 m
Slope	15–40%
Aspect	N

Climatic features

The soil series is in hydrologic groups c and d. The runoff curve numbers are 74 through 89 depending on the condition of the watershed. Climate is cold and snowy in the winter and fairly mild and warm in the summer. Approximately 70 percent of the precipitation comes as snow from December through February on the average. July, August, and September are the driest months and January, February, and March are the wettest months. During periods of high precipitation this site acts as a catch basin for extensive amounts of snow accumulations that often persist long after adjacent areas of snow accumulation have melted. Moisture is not limiting to plant growth on this site.

Table 3. Representative climatic features

Frost-free period (average)	0 days
Freeze-free period (average)	80 days
Precipitation total (average)	508 mm

Influencing water features

Soil features

The soils on this site were formed in colluvium derived from quartzite and mica schist. The soil is well drained with moderate permeability in the upper 10 inches of soil. The soil does not have bedrock within 20 inches of the soil surface. The soil texture at the surface is gravelly loam. Surface rock fragments over 3 inches is are not present at this site, subsurface rock fragments over 3 inches is 5% by volume. Surface rock fragments between 2 millimeters and 3 inches is 28% by cover and subsurface rock fragments of the same size is 42% by volume. Available water capacity is between 3.2 and 4.1 in the upper 40 inches of soil. The soil pH is between 6.1 and 6.5. The soil temperature regime is frigid.

Soils associated with this site:
UT601 – Parkay (57)

Table 4. Representative soil features

Surface texture	(1) Gravelly loam
Drainage class	Well drained
Permeability class	Moderate
Surface fragment cover <=3"	28%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	8.13–10.41 cm
Calcium carbonate equivalent (0-101.6cm)	0%

Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.1–6.5
Subsurface fragment volume <=3" (Depth not specified)	42%
Subsurface fragment volume >3" (Depth not specified)	5%

Ecological dynamics

As this site deteriorates due to grazing pressure mountain brome, slender wheatgrass, meadowrue, and horsemint decrease while milkvetch, mountain big sagebrush, and snowberry increase. When the potential natural plant community is burned, mountain brome, slender wheatgrass, and mountain big sagebrush decrease while rabbitbrush, and snowberry 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 low-growing quaking aspen. The composition by air-dry weight is approximately 45 percent perennial grasses, 20 percent forbs, and 20 percent shrubs and 15 percent trees.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	732	1110	1488
Shrub/Vine	325	493	661
Forb	325	493	661
Tree	244	370	497
Total	1626	2466	3307

Table 6. Ground cover

Tree foliar cover	69-71%
Shrub/vine/liana foliar cover	14-16%
Grass/grasslike foliar cover	29-31%
Forb foliar cover	19-21%
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	—	—	29-31%	19-21%
>0.6 <= 1.4	—	14-16%	—	—
>1.4 <= 4	—	—	—	—
>4 <= 12	69-71%	—	—	—
>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 (%)
Tree					
0	Dominant Trees			252–379	
	quaking aspen	POTR5	<i>Populus tremuloides</i>	252–379	—
Shrub/Vine					
0	Dominant Shrubs			203–379	
	mountain snowberry	SYOR2	<i>Symphoricarpos oreophilus</i>	127–252	—
	chokecherry	PRVI	<i>Prunus virginiana</i>	76–127	—
3	Sub-Dominant Shrubs			484–1065	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	252–379	—
	Saskatoon serviceberry	AMAL2	<i>Amelanchier alnifolia</i>	26–76	—
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	26–76	—
	snowbrush ceanothus	CEVE	<i>Ceanothus velutinus</i>	26–76	—
	yellow rabbitbrush	CHVIL4	<i>Chrysothamnus viscidiflorus ssp.</i>	26–76	—

			<i>lanceolatus</i>		
	creeping barberry	MARE11	<i>Mahonia repens</i>	26–76	–
	bitter cherry	PREM	<i>Prunus emarginata</i>	26–76	–
	sticky currant	RIVI3	<i>Ribes viscosissimum</i>	26–76	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	26–76	–
	Scouler's willow	SASC	<i>Salix scouleriana</i>	26–76	–
Grass/Grasslike					
0	Dominant Grasses			482–884	
	California brome	BRCA5	<i>Bromus carinatus</i>	127–252	–
	slender wheatgrass	ELTR7	<i>Elymus trachycaulus</i>	127–252	–
	Ross' sedge	CARO5	<i>Carex rossii</i>	76–127	–
	Columbia needlegrass	ACNE9	<i>Achnatherum nelsonii</i>	76–127	–
1	Sub-Dominant Grasses			434–1038	
	Grass, annual	2GA	<i>Grass, annual</i>	127–252	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	127–252	–
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	26–76	–
	western needlegrass	ACOC3	<i>Achnatherum occidentale</i>	26–76	–
	squirrealtail	ELEL5	<i>Elymus elymoides</i>	26–76	–
	blue wildrye	ELGL	<i>Elymus glaucus</i>	26–76	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	26–76	–
	oniongrass	MEBU	<i>Melica bulbosa</i>	26–76	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	26–76	–
Forb					
0	Dominant Forbs			305–507	
	Gray's biscuitroot	LOGR	<i>Lomatium grayi</i>	76–127	–
	stemless dwarf lupine	LUCA3	<i>Lupinus caespitosus</i>	76–127	–
	Fendler's meadow-rue	THFE	<i>Thalictrum fendleri</i>	76–127	–
2	Sub-Dominant Forbs			555–1412	
	Forb, annual	2FA	<i>Forb, annual</i>	127–252	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	127–252	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	26–76	–
	nettleleaf giant hyssop	AGUR	<i>Agastache urticifolia</i>	26–76	–
	heartleaf arnica	ARCO9	<i>Arnica cordifolia</i>	26–76	–
	northwestern Indian paintbrush	CAAN7	<i>Castilleja angustifolia</i>	26–76	–
	twolobe larkspur	DENU2	<i>Delphinium nuttallianum</i>	26–76	–
	shaggy fleabane	ERPU2	<i>Erigeron pumilus</i>	26–76	–
	Richardson's geranium	GERI	<i>Geranium richardsonii</i>	26–76	–
	oblongleaf bluebells	MEOB	<i>Mertensia oblongifolia</i>	26–76	–
	slender cinquefoil	POGR9	<i>Potentilla gracilis</i>	26–76	–
	yellow salsify	TRDU	<i>Tragopogon dubius</i>	26–76	–
	hookedspur violet	VIAD	<i>Viola adunca</i>	26–76	–

Animal community

This site provides proper grazing for cattle and sheep during spring, summer, and fall.
This site provides food and cover for wildlife.
Wildlife using this site include blacktail jackrabbit, coyote, sage grouse, mule deer, and elk.

Recreational uses

Hunting and Hiking

Wood products

Poles and Fire Wood

Contributors

GBB

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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Contact for lead author	shane.green@ut.usda.gov
Date	03/30/2007
Approved by	Shane Green
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** None to very rare. Any rills present should be somewhat short in length (less than 3 feet long) and only occur on areas with increased runoff on the lower parts of steeper slopes and areas below exposed bedrock. An increase in rill formation may be seen after disturbance events such as recent fire or episodic thunderstorms.

- Presence of water flow patterns:** None to few. Flow patterns wind around perennial plant bases and should show very slight evidence of erosion. They are expected to be short, stable, sinuous and not connected. There is usually very minor evidence of deposition. Evidence of flow will increase a little with slope.

- Number and height of erosional pedestals or terracettes:** Plants should show little or no pedestalling. Terracettes should be absent. These areas are small pockets of trees not large enough to have terracettes form when vegetation is stable.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 3 – 10%. The soil surface may have large rocks throughout with 30 to 60 percent rock fragments. Ground cover is measured as first raindrop impact, bare ground is the inverse of cover. Ground cover + bare ground = 100%.
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5. **Number of gullies and erosion associated with gullies:** None to few. If present, gullies may be wide and shallow and armored with rock fragments and dense vegetation.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** None. No evidence of wind generated soil movement is anticipated.
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7. **Amount of litter movement (describe size and distance expected to travel):** Most litter resides in place with little redistribution caused by water movement. Minor litter removal may occur in flow channels with deposition occurring at points of obstruction. The majority of litter accumulates at the base of plants. Some grass leaves and small twigs (grass stems) may accumulate in soil depressions adjacent to plants. Woody stems are not likely to move. However, some litter movement is expected with increases in slope and/or increased runoff resulting from heavy thunderstorms.
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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 or 6 under the plant canopies, and a rating of 4 to 5 in the interspaces. The average should be a 5. Surface texture is a cobbly loam. Vegetation cover, litter and/or surface rock reduce erosion.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface horizon is 8 inches thick. Structure is weak fine granular. Color is very dark grayish brown (10YR3/2). Mollic epipedon is 30 inches thick. 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:** Plants occur in sufficient cover and spatial arrangement to intercept raindrops and reduce raindrop splash erosion. Litter on soil surface and condition of soil surface also protect soil from splash erosion and encourage a high rate of infiltration. Plant spatial distribution should slow runoff allowing additional time for infiltration. Bare spaces are expected to be small and irregular in shape and are usually not connected. The vegetative structure is usually adequate to capture snow and ensure snowmelt occurs in a subdued manner allowing maximum time for infiltration and reduce runoff and erosion in all but the most extreme thunder storm events. When perennial grasses, shrubs and/or trees (aspen) decrease, reducing ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.
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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.
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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: Dominants: Aspen, Mountain snowberry, Mountain brome, Slender wheatgrass,

Sub-dominant: Sub-dominants: Chokecherry, Mountain big sagebrush and other shrubs, perennial grasses and forbs.

Other: 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 regime includes fire, drought, and disease. Assumed fire cycle of 30-50 years.

Dominance is based on average annual production, air dry weight: Perennial bunchgrasses > trees (aspen) > sprouting shrubs > native perennial and annual forbs > non-sprouting shrubs.

Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state (e.g. Smooth brome, intermediate wheatgrass, alfalfa, etc.)

Following a recent disturbance such as fire, drought or disease that remove the woody vegetation, forbs and perennial grasses (herbaceous species) may dominate the community. If a disturbance has not occurred for an extremely extended period of time, woody species may continue to increase crowding out the perennial herbaceous understory species. In either case, these conditions would reflect a functional community phase within the reference state.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All age classes of perennial grasses should be present under average to above average growing conditions with age class expression likely subdued in below average growing conditions, or on sites with high (usually greater than 65%) similarity index (late seral to historic climax). Slight decadence in the principle trees and shrubs could occur near the end of the fire cycle or during periods of extended drought, or insect infestations. In general, a mix of age classes may be expected with some dead and decadent plants present. Trees will normally be a more even aged stand.
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14. **Average percent litter cover (%) and depth (in):** Variability may occur due to growing conditions.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 2150-2250 #/acre on an average year.
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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:** Rabbitbrush, annual grasses and forbs.
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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce in all years, except in extreme drought years and snow drift accumulation areas.
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