

Trend Study 6-5-06

Study site name: Spring Canyon.

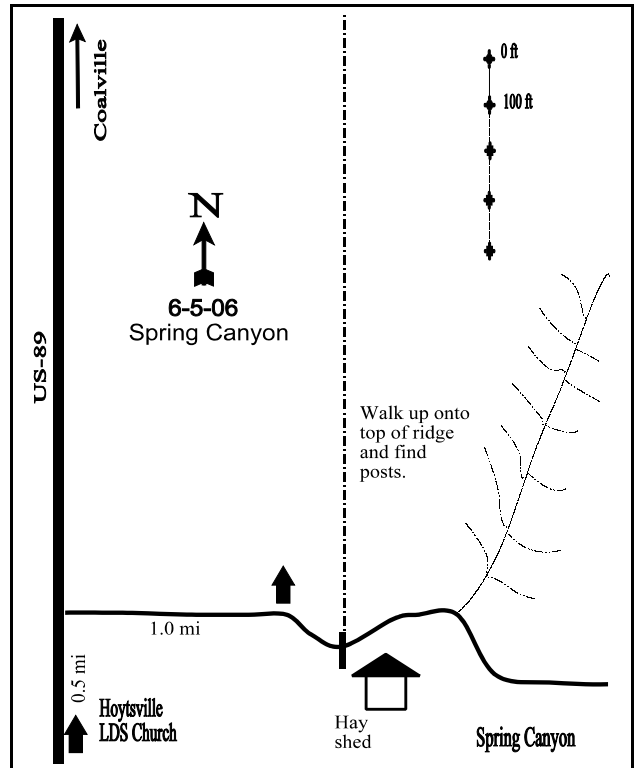
Vegetation type: Juniper.

Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the LDS Church in Hoytsville, travel north 0.5 miles on old U.S. 189. At 0.5 miles note a dirt road to the right with a sign "Echo-Chalk Creek Range Owners Protective Association" and turn right (east). Proceed 1.0 miles to a gate and a sharp bend to the right (south). The site is on the ridge on the left side of the gate as you enter the property. Walk to the north side of the road to a north/south running fence. From here walk north along the fence to the 40th metal fence post. From post #40 walk 35 paces at 73 degrees true to the 400-foot baseline stake. The 0-foot stake is marked with browse tag #7953.



Map Name: Turner Hollow

Diagrammatic Sketch

Township 2N, Range 5E, Section 22

UTM NAD 27, UTM 12T 4526183 N 469139 E

DISCUSSION

Spring Canyon - Trend Study No. 6-5

Study Information

This study is located on a juniper covered ridge immediately east of Hoytsville and north of the mouth of Spring Canyon (elevation: 6,120, slope: 15%, aspect: south). The area is critical deer winter range, primarily used by deer for thermal cover, and is dominated by Utah juniper and little else. The juniper type is very uniform and characterized by a moderately dense stand of even-aged trees. Animal use by sheep, deer, and elk has been heavy. Domestic sheep were present in late August of 1984 when the study was established. Deer pellet groups have been high every year sampled. Nine winter-killed deer were observed in the immediate vicinity in 1984. Browsing has been extremely heavy, to the point of browsing wood on the sparse preferred browse species. The pellet group transect in 2001 estimated 58 deer days use/acre (144 ddu/ha) and less than 1 cow day use/acre (2 cdu/ha). A fawn was spotted approaching the study area in 2006. The 2006 pellet group data estimated 88 deer, 3 elk, and 2 cow days use/acre (218 ddu/ha, 8 edu/ha, and 4 cdu/ha). Most deer and elk pellets were from winter and spring; cattle pats were from the previous summer. Numerous game trails traverse the study and head toward the alfalfa fields below.

Soil

The soil is in the Jana-Richsum-Rock outcrop series complex, which consists of shallow to very deep, well drained, moderately permeable soils that formed in slope alluvium, colluvium, and residuum on mountain slopes, valley sides, low mountains, and high tablelands. They were derived from conglomerate, sandstone, and shale (USDA-NRCS 2006). The soils texture is clay loam and soil reaction is neutral (7.3 pH). The soil surface is rocky and the profile is moderately stony. The effective rooting depth was estimated at just over 12 inches in 1996. The erosion hazard is moderately high because of poor understory cover. In 2001, the level of erosion ranged from slight to moderate. Relative bare ground cover has been around 30% since 1996. The erosion condition class rating was moderate in 2006.

Browse

Other than juniper, shrubs and trees are rare. Browse species consists basically of broom snakeweed, prickly pear cactus, and a few snowberry. Utah juniper is the dominant species, which provides little forage and prevents the growth of other species. Nearly all of the juniper trees have received use over the years, evidenced by highlining. Juniper canopy cover was estimated at 37% in 2001 and 45% in 2006. The point quarter juniper density estimates were 189 trees/acre in 2001 and 155 trees/acre in 2006.

Herbaceous Understory

The herbaceous understory is sparse and provides little ground cover and forage. Native perennial grasses are somewhat abundant in the more open areas, but are infrequent where the juniper overstory is dense. Bluebunch wheatgrass, Indian ricegrass, Sandberg bluegrass, squirreltail, and needle-and-thread have all been sampled. Perennial grasses provided only 5% cover in 2001 and 3% in 2006. Cheatgrass is also present, but provided only 3% cover in 1996 and less than 1% cover in 2001 and 2006. Forbs consist mostly of annual and/or low-growing perennials that provide very little cover or forage. Bur buttercup has increased significantly in nested frequency every year since 1996. Due to the vegetation characteristics, this site is really only useful as thermal cover and as a travel corridor for wildlife.

1990 TREND ASSESSMENT

This juniper range type is representative of a majority of winter range in the area above Hoytsville. There is very little browse forage available. The steeper slopes and west exposures support a variety of browse species, but all occur in low densities, are heavily hedged, and mostly decadent. All juniper trees are highlined. Notably, bluebunch wheatgrass decreased in nested frequency while Indian ricegrass frequency was almost unchanged. These plants show evidence of recent grazing.

browse - stable (0)

grass - up (+2)

forb - stable (0)

1996 TREND ASSESSMENT

The browse trend remains stable, with no preferred browse sampled. The grass trend is stable. The nested frequency of perennial grasses is unchanged. The forb trend is stable. The nested frequency of perennial forbs changed little. The Desirable Components Index score is very poor due to no preferred browse cover, low perennial grass cover, and low perennial forb cover.

winter range condition (DC Index) - very poor (6) Mid-level potential scale
browse - stable (0) grass - stable (0) forb - stable (0)

2001 TREND ASSESSMENT

Trend for browse remains stable. As in previous readings, palatable, preferred browse forage is nearly nonexistent. The grass trend is stable. The nested frequency of perennial grasses is unchanged. Cheatgrass nested frequency decreased significantly. The forb trend is stable. The nested frequency of perennial forbs did not change. The DCI score remained very poor.

winter range condition (DC Index) - very poor (12) Mid-level potential scale
browse - stable (0) grass - stable (0) forb - stable (0)

2006 TREND ASSESSMENT

The browse trend is stable, with no preferred browse species sampled. The grass trend is slightly up. The nested frequency of perennial grasses is unchanged, but the nested frequency of cheatgrass decreased significantly again in 2006. Unfortunately, the nested frequency of needle-and-thread decreased significantly. The forb trend is stable. The nested frequency of perennial forbs is unchanged. The DCI score remained very poor.

winter range condition (DC Index) - very poor (10) Mid-level potential scale
browse - stable (0) grass - slightly up (+1) forb - stable (0)

HERBACEOUS TRENDS --
 Management unit 06 , Study no: 5

T y p e	Species	Nested Frequency					Average Cover %		
		'84	'90	'96	'01	'06	'96	'01	'06
G	Agropyron spicatum	_b 59	_a 32	_{ab} 44	_{ab} 53	_b 60	.59	1.43	.96
G	Bromus tectorum (a)	-	-	_c 129	_b 103	_a 75	2.82	.42	.63
G	Oryzopsis hymenoides	68	66	78	85	91	1.08	1.62	1.40
G	Poa bulbosa	-	-	-	-	3	-	-	.00
G	Poa pratensis	3	-	-	-	-	-	-	-
G	Poa secunda	_a 13	_c 56	_{abc} 47	_{bc} 54	_{ab} 38	.48	.96	.51
G	Sitanion hystrix	_a 1	_c 34	_{bc} 22	_{abc} 23	_{ab} 18	.28	.51	.40
G	Stipa comata	_{bc} 13	_c 27	_{bc} 29	_b 9	_a -	.30	.34	-
Total for Annual Grasses		0	0	129	103	75	2.82	0.42	0.62
Total for Perennial Grasses		157	215	220	224	210	2.75	4.86	3.28
Total for Grasses		157	215	349	327	285	5.58	5.28	3.92

Type	Species	Nested Frequency					Average Cover %		
		'84	'90	'96	'01	'06	'96	'01	'06
F	<i>Agoseris glauca</i>	-	-	-	-	2	-	-	.00
F	<i>Alyssum alyssoides</i> (a)	-	-	239	262	253	1.10	1.05	.74
F	<i>Antennaria rosea</i>	a ⁻	ab ⁶	ab ¹	ab ⁷	b ¹⁰	.00	.04	.02
F	<i>Arabis</i> sp.	-	3	5	-	-	.01	-	-
F	<i>Astragalus convallarius</i>	4	-	-	-	2	-	-	.00
F	<i>Astragalus utahensis</i>	1	-	2	1	-	.03	.03	-
F	<i>Camelina microcarpa</i> (a)	-	-	5	2	4	.01	.00	.03
F	<i>Chaenactis douglasii</i>	2	-	-	-	-	-	-	-
F	<i>Cirsium undulatum</i>	2	-	1	-	-	.03	-	-
F	<i>Collinsia parviflora</i> (a)	-	-	2	3	-	.01	.00	-
F	<i>Cryptantha</i> sp.	30	13	21	16	20	.25	.45	.39
F	<i>Cymopterus longipes</i>	-	2	5	3	2	.02	.01	.03
F	<i>Descurainia pinnata</i> (a)	-	-	-	2	-	-	.00	-
F	<i>Eriogonum umbellatum</i>	7	2	-	-	-	-	-	-
F	<i>Hackelia patens</i>	a ⁻	b ¹¹	ab ⁷	ab ⁶	ab ⁴	.04	.04	.21
F	<i>Hedysarum boreale</i>	b ⁸	a ⁻	a ⁻	a ⁻	a ⁻	-	-	-
F	<i>Holosteum umbellatum</i> (a)	-	-	-	-	3	-	-	.00
F	<i>Machaeranthera grindelioides</i>	-	-	2	1	1	.01	.00	.00
F	<i>Microsteris gracilis</i> (a)	-	-	-	12	8	-	.05	.01
F	<i>Penstemon humilis</i>	1	5	3	5	1	.03	.01	.00
F	<i>Penstemon</i> sp.	b ¹⁷	a ⁻	a ³	a ¹	a ⁻	.03	.00	-
F	<i>Phlox austromontana</i>	27	20	39	37	27	.66	.82	1.08
F	<i>Phlox longifolia</i>	-	-	5	11	6	.01	.02	.01
F	<i>Ranunculus testiculatus</i> (a)	-	-	a ⁸⁶	b ¹⁶⁶	c ²²⁸	.27	.97	1.77
F	<i>Senecio multilobatus</i>	-	-	2	-	-	.00	-	-
F	<i>Sisymbrium altissimum</i> (a)	-	-	1	-	-	.00	-	-
Total for Annual Forbs		0	0	333	447	496	1.39	2.09	2.56
Total for Perennial Forbs		99	62	96	88	75	1.16	1.43	1.78
Total for Forbs		99	62	429	535	571	2.56	3.53	4.35

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 06 , Study no: 5

Type	Species	Strip Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
B	Artemisia tridentata vaseyana	0	1	0	-	-	-
B	Gutierrezia sarothrae	6	7	0	.20	.03	-
B	Juniperus osteosperma	12	12	13	16.73	8.39	7.87
B	Opuntia sp.	8	11	14	.22	.05	.45
B	Symphoricarpos oreophilus	1	0	0	-	-	-
Total for Browse		27	31	27	17.15	8.47	8.32

CANOPY COVER, LINE INTERCEPT --

Management unit 06 , Study no: 5

Species	Percent Cover	
	'01	'06
Juniperus osteosperma	36.79	44.86
Opuntia sp.	-	.23

POINT-QUARTER TREE DATA --

Management unit 06 , Study no: 5

Species	Trees per Acre		Average diameter (in)	
	'01	'06	'01	'06
Juniperus osteosperma	189	155	20.2	9.9

BASIC COVER --

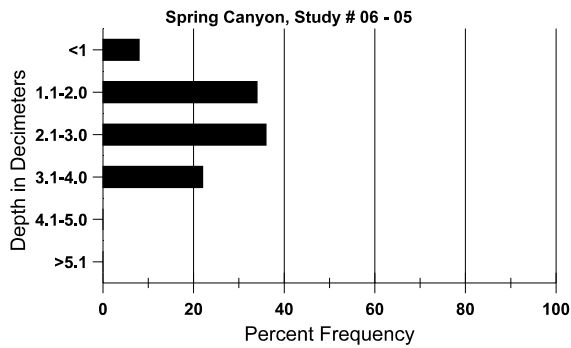
Management unit 06 , Study no: 5

Cover Type	Average Cover %				
	'84	'90	'96	'01	'06
Vegetation	.50	1.00	25.55	18.48	16.60
Rock	1.75	6.25	2.94	2.79	2.20
Pavement	9.25	12.50	3.84	5.47	7.21
Litter	56.25	48.50	40.31	40.42	45.65
Cryptogams	2.75	5.25	3.52	14.18	9.54
Bare Ground	29.50	26.50	28.08	31.93	36.15

SOIL ANALYSIS DATA --
Herd Unit 06, Study no: 05, Spring Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	Clay loam			%OM	PPM P	PPM K	dS/m
			%sand	%silt	%clay				
12.1	70.2 (11.9)	7.3	32.6	30.7	36.7	2.9	3.8	38.4	0.6

Stoniness Index



PELLET GROUP DATA --
Management unit 06 , Study no: 5

Type	Quadrat Frequency		
	'96	'01	'06
Sheep	2	-	-
Rabbit	12	37	51
Elk	1	1	2
Deer	44	22	23
Cattle	-	1	-

Days use per acre (ha)	
'01	'06
-	-
-	-
-	3 (8)
58 (144)	88 (218)
1 (2)	2 (4)

BROWSE CHARACTERISTICS --
Management unit 06 , Study no: 5

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Amelanchier alnifolia												
84	0	-	-	-	-	-	0	0	-	-	0	-/-
90	33	-	33	-	-	-	100	0	-	-	100	-/-
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	62/56

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata vaseyana</i>												
84	0	-	-	-	-	-	0	0	-	-	0	-/-
90	0	-	-	-	-	-	0	0	-	-	0	-/-
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	20	-	20	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
84	66	-	33	-	33	-	50	0	50	-	0	-/-
90	0	-	-	-	-	-	0	0	0	-	0	-/-
96	0	-	-	-	-	-	0	0	0	-	0	-/-
01	0	-	-	-	-	-	0	0	0	-	0	-/-
06	0	-	-	-	-	-	0	0	0	-	0	6/11
<i>Gutierrezia sarothrae</i>												
84	0	-	-	-	-	-	0	0	0	-	0	-/-
90	0	-	-	-	-	-	0	0	0	-	0	-/-
96	240	20	40	200	-	-	0	0	0	-	0	7/8
01	400	-	300	80	20	60	0	0	5	5	5	5/4
06	0	-	-	-	-	-	0	0	0	-	0	6/6
<i>Juniperus osteosperma</i>												
84	366	-	66	300	-	-	36	36	0	-	0	67/157
90	299	-	33	266	-	-	0	33	0	-	0	186/153
96	260	-	40	220	-	20	0	0	0	-	0	-/-
01	280	20	20	220	40	-	0	0	14	14	14	-/-
06	520	20	20	480	20	40	0	31	4	-	0	-/-
<i>Opuntia sp.</i>												
84	66	-	33	33	-	-	0	0	0	-	0	7/14
90	165	-	66	66	33	-	0	0	20	-	20	5/10
96	280	-	20	160	100	40	0	0	36	-	29	5/12
01	260	20	60	180	20	-	0	0	8	-	0	4/10
06	380	-	80	260	40	20	0	0	11	11	11	5/17
<i>Symphoricarpos oreophilus</i>												
84	0	-	-	-	-	-	0	0	-	-	0	-/-
90	0	-	-	-	-	-	0	0	-	-	0	-/-
96	20	-	-	20	-	-	0	0	-	-	0	7/12
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	-/-