

Trend Study 16B-21-04

Study site name: Huntington Canyon.

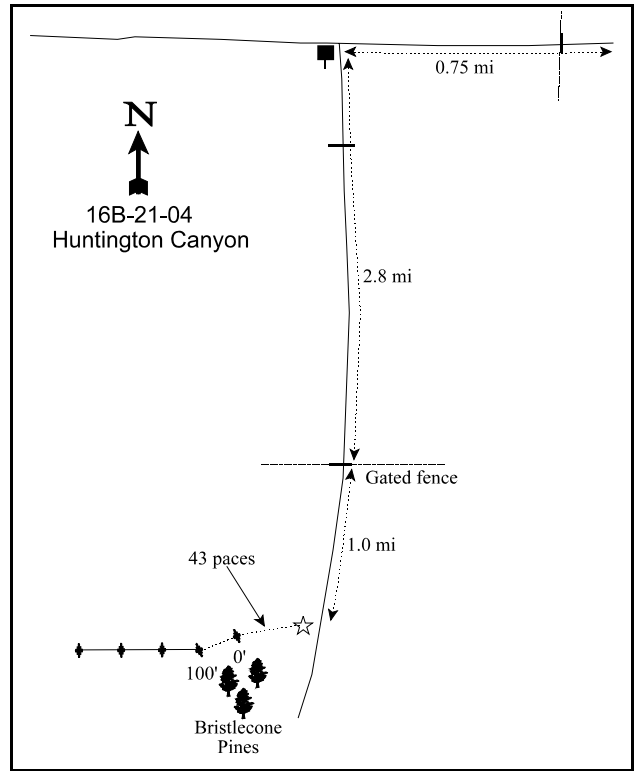
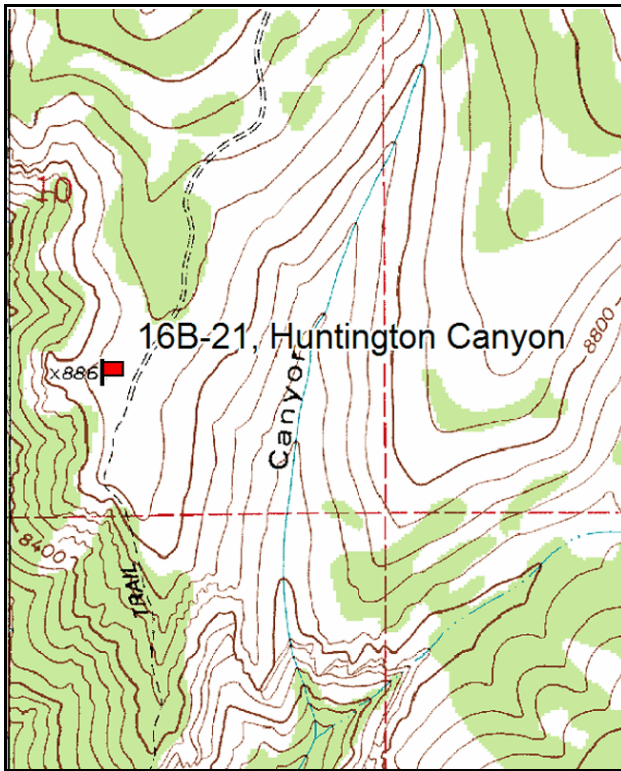
Vegetation type: Perennial Grass.

Compass bearing: frequency baseline Line 1- 235 degrees magnetic, Lines 2-4- 248 degrees magnetic.

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

LOCATION DESCRIPTION

From the ghost town of Mohrland, proceed past the coal loadout and up Cedar Creek. Go 4.5 miles to the top of Gentry Mountain and a three-way junction. Take the middle road (#252) and go 0.1 mile to a fence and cattleguard at the Forest Boundary. Continue 0.65 miles to a fork with a sign, and turn right toward McCadden Hollow. Go 0.7 miles to a cattleguard. Continue 2.1 miles on the main road, passing a few minor forks, to a gated fence. Continue down the road for one mile. There is a witness post on the right. Walk west from the road 43 paces to the edge by a patch of bristlecone pine. The 0' stake is just north of these trees.



Map Name: Hiawatha

Diagrammatic Sketch

Township 16S, Range 7E, Section 10

GPS: NAD 27, UTM 12S 4365595 N, 489477 E

DISCUSSION

Huntington Canyon - Trend Study No. 16B-21

The Huntington Canyon study samples a very steep Salina wildrye slope on the east side of Huntington Canyon. The windswept ridge tops and steep side hills are important winter range for the elk on Gentry Mountain. The slope on the study site is variable from 35% to over 50% in some places. It has a west-southwest aspect and an elevation of 8,800 feet. Adjacent stands of curlleaf mountain mahogany show signs of elk use. Although they provide good thermal cover, much of the forage is unavailable because the mature trees are highlined. The land is managed by the Forest Service. Although cows graze Gentry Mountain during the summer (June 27 to September 30), they use the steep side hills near the study site less frequently. Wildlife use is mostly by elk, with light deer use. Pellet group transect data estimated 53 elk days use/acre (131 edu/ha) and 3 deer days use/acre (7 ddu/ha) on the site in 1999. In 2004, elk use was estimated at 55 elk days use/acre (136 edu/ha) and deer use was 1 deer days use/acre (2 ddu/ha). In 2004, cows were seen on the site when it was read in early August. Cow use was estimated at 9 cow days use/acre (23 cdu/ha).

The soil is very rocky on the surface with rock and pavement fragments loose and easily dislodged downslope. The soil is moderately deep beneath the rock with an estimated effective rooting depth of 16 inches. Soil texture is a clay loam with a slightly alkaline pH (7.5). Both potassium (64 ppm) and phosphorus (2.8 ppm) are low. The steep slope and rocky surface increases runoff, but armor the soil from severe erosion. An erosion class rating in 2004 rated erosion on this site as slight, with signs of erosion from rills and pedestalling. Relative vegetation cover decreased and bare ground increased from 16% to 28%.

There is little browse directly on the study site. Scattered curlleaf mahogany show evidence of heavy browsing. Mountain big sagebrush are also found on the site, but the density was moderately low at 820 plants/acre in 1999 and 680 in 2004. It shows only light to moderate hedging. This species had higher decadency in 2004 and there was no sign of recruitment. The most numerous shrubs are broom snakeweed and fringed sagebrush. Fringed sagebrush has increased with each reading and increased 35% in 2004. If available, the fringed sagebrush can be a nutritious palatable winter forage. Moderate use was sampled on 20% of the population in 1999 and 30% in 2004. Broom snakeweed density increased by 37% in 2004 to about the same density it was in 1994.

Salina wildrye dominates the plant community on the steep upper slopes with a quadrat frequency of over 80% in all sampling years. Its frequency and cover have been stable for all readings. It provides 99% of the grass cover. In 2004, it made up 77% of the herbaceous cover and 56% of the total vegetation cover at the site. There was some evidence of grazing in 2004, but generally the large bunch grass is choked with old growth and a substantial build-up of litter. Other grasses and forbs are relatively uncommon. Timber poison vetch and Pingue hymenoxys were common in 1999, but sum of nested frequency declined significantly in 2004.

1994 TREND ASSESSMENT

Soil trend is currently stable with similar ground cover characteristics in 1994 compared to 1988. The well dispersed bunch grasses combined with the extensive rock and pavement cover adequately protect the soil. Useful browse is lacking on this site but those that do exist display stable trends. Sum of nested frequency for grasses increased while those of forbs declined. Combined nested frequencies of grasses and forbs remained about the same. Trend for herbaceous understory is currently stable. There is no DC (desirable components) index for this site for this index is more appropriate for use on deer winter ranges.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

1999 TREND ASSESSMENT

Trend for soil is slightly up. Relative percent bare ground cover decreased (from 29% to 16%) in 1999, with vegetation cover increasing. Erosion continues to be held in check with abundant rock and pavement cover even with the extremely steep slope. Browse trend is stable. Mountain big sagebrush is the most abundant key species and it increased in density in 1999. However, recruitment is low at the present time. Decadency increased from 7% to 20% in 1999, with 40% of the population displaying moderate use. Fringed sagebrush is the most abundant species in number, increasing to 2,300 plants/acre in 1999. This species can be a palatable browse source if not buried too deep under winter snows, but not critical for a site that is normally too high for deer and mostly utilized by elk. The herbaceous understory is considered stable with perennial sum of nested frequency increasing for forbs, but slightly decreasing for grasses in 1999. Because this is an elk winter range, and forbs are not an essential component, the increase in perennial forbs is not as influential in the trend. Overall, Salina wildrye dominates the site and diversity is lacking.

TREND ASSESSMENT

soil - up slightly (4)

browse - stable (3)

herbaceous understory - stable (3)

2004 TREND ASSESSMENT

Trend for soil is slightly down. Relative percent bare ground cover increased from 16% to 28%. Vegetation cover is down due to loss of forbs. Some slight erosion was noticed in 2004. Trend for browse is slightly down, but is not critical on this site. Mountain big sagebrush density is slightly down and decadency is up. There is currently no recruitment of young. Fringed sagebrush density is up, but can be buried by snow. Broom snakeweed density has also increased. The trend for herbaceous understory is down slightly. Trend for Salina wildrye is stable, but the site lacks diversity and all the other perennial grasses showed declining trends. Salina wildrye is the dominant species. Perennial forbs declined from 1999. Cover of perennial forbs declined from 9% in 1999 to 1% in 2004. Sum of nested frequency for forbs declined by nearly half.

TREND ASSESSMENT

soil - down slightly (2)

browse - down slightly (2)

herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
 Management unit 16B, Study no: 21

Type	Species	Nested Frequency				Average Cover %		
		'88	'94	'99	'04	'94	'99	'04
G	Agropyron intermedium	-	3	-	-	.00	-	-
G	Agropyron spicatum	-	-	-	3	-	-	.00
G	Elymus salina	222	252	237	236	12.20	12.80	12.23
G	Poa fendleriana	a-	ab12	b17	a2	.24	.11	.00
G	Poa secunda	-	1	3	1	.00	.03	.00
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		222	268	257	242	12.45	12.93	12.25
Total for Grasses		222	268	257	242	12.45	12.93	12.25
F	Agoseris spp.	7	-	-	-	-	-	-
F	Antennaria microphylla	4	-	-	-	-	-	-
F	Arenaria fendleri	8	6	-	-	.01	-	-
F	Astragalus convallarius	a-	b9	c97	b19	.12	4.75	.23
F	Astragalus coltoni	b82	a-	a-	a-	-	-	-
F	Astragalus tenellus	ab12	b27	ab9	a2	1.16	.69	.03
F	Chaenactis douglasii	b11	ab2	b12	a-	.00	.06	-
F	Cryptantha spp.	-	-	-	2	-	-	.00
F	Holosteum umbellatum (a)	-	-	-	3	-	-	.00
F	Hymenoxys acaulis	b65	a19	a17	a28	.05	.16	.14
F	Hymenopappus filifolius	a-	a-	a-	b15	-	-	.14
F	Hymenoxys richardsonii	b63	c97	bc91	a34	1.93	1.85	.21
F	Lesquerella spp.	-	-	1	-	-	.00	-
F	Lupinus spp.	-	-	-	-	.00	.06	-
F	Machaeranthera canescens	-	-	-	2	-	-	.00
F	Machaeranthera grindelioides	a14	ab19	b30	ab22	.17	.98	.34
F	Penstemon spp.	-	1	1	-	.01	.00	-
F	Phlox austromontana	a-	a-	ab4	b17	-	.15	.35
F	Streptanthus cordatus	-	-	-	4	-	-	.01
F	Unknown forb-perennial	1	-	-	-	-	-	-
Total for Annual Forbs		0	0	0	3	0	0	0.00
Total for Perennial Forbs		267	180	262	145	3.48	8.75	1.47
Total for Forbs		267	180	262	148	3.48	8.75	1.47

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

BROWSE TRENDS --

Management unit 16B, Study no: 21

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	<i>Artemisia frigida</i>	41	44	53	.56	.94	.63
B	<i>Artemisia tridentata vaseyana</i>	17	23	23	2.44	5.01	3.20
B	<i>Cercocarpus ledifolius</i>	6	2	4	.01	.15	.00
B	<i>Chrysothamnus nauseosus glabratus</i>	34	20	23	.76	.77	1.21
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	0	4	7	-	.15	.24
B	<i>Eriogonum corymbosum</i>	1	1	1	-	-	.00
B	<i>Gutierrezia sarothrae</i>	57	38	53	1.14	.42	1.04
B	<i>Juniperus osteosperma</i>	0	0	0	.15	-	-
B	<i>Juniperus scopulorum</i>	0	0	1	-	.85	.85
B	<i>Pinus edulis</i>	0	1	0	-	-	-
B	<i>Pinus flexilis</i>	0	0	0	.53	1.38	2.07
B	<i>Pseudotsuga menziesii</i>	0	0	0	.15	-	.38
B	<i>Symphoricarpos oreophilus</i>	3	2	3	.15	.45	.45
Total for Browse		159	135	168	5.91	10.15	10.10

CANOPY COVER, LINE INTERCEPT --

Management unit 16B, Study no: 21

Species	Percent Cover	
	'99	'04
<i>Artemisia frigida</i>	-	.88
<i>Artemisia tridentata vaseyana</i>	-	3.93
<i>Cercocarpus ledifolius</i>	5.19	1.89
<i>Chrysothamnus nauseosus glabratus</i>	-	1.13
<i>Gutierrezia sarothrae</i>	-	1.56
<i>Juniperus scopulorum</i>	-	1.00
<i>Pinus flexilis</i>	2.20	5.06
<i>Pseudotsuga menziesii</i>	.60	1.00
<i>Symphoricarpos oreophilus</i>	-	1.10

KEY BROWSE ANNUAL LEADER GROWTH --
 Management unit 16B, Study no: 21

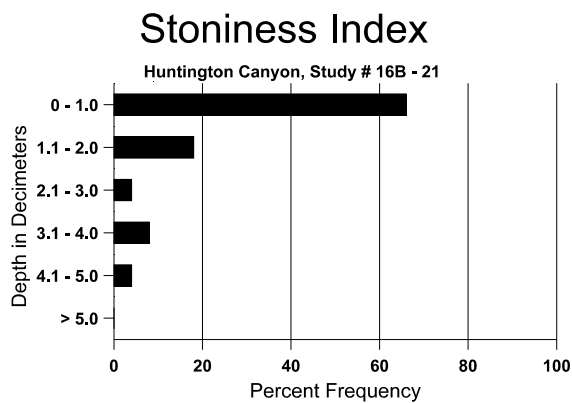
Species	Average leader growth (in)
	'04
Artemisia tridentata vaseyana	2.2
Cercocarpus ledifolius	4.3

BASIC COVER --
 Management unit 16B, Study no: 21

Cover Type	Average Cover %			
	'88	'94	'99	'04
Vegetation	13.25	20.46	34.86	24.12
Rock	21.75	30.95	18.72	21.60
Pavement	16.50	6.52	14.21	14.98
Litter	23.50	22.46	20.60	19.57
Cryptogams	0	.08	.04	.33
Bare Ground	25.00	33.02	17.42	30.67

SOIL ANALYSIS DATA --
 Management unit 16B, Study no: 21, Study Name: Huntington Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
16.0	49.0 (12.1)	7.5	36.0	25.4	38.6	1.6	2.8	64.0	0.6



PELLET GROUP DATA --

Management unit 16B, Study no: 21

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	7	7	5
Elk	29	24	43
Deer	4	3	2
Cattle	-	-	-

Days use per acre (ha)	
'99	'04
-	-
53 (131)	55 (136)
3 (7)	1 (2)
-	9 (23)

BROWSE CHARACTERISTICS --

Management unit 16B, Study no: 21

		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 frigida</i>												
88	1166	166	666	500	-	-	6	0	0	-	0	4/6
94	1720	-	20	1680	20	-	13	0	1	1	14	6/7
99	2300	420	560	1740	-	-	20	0	0	-	0	8/7
04	3520	-	160	3200	160	40	30	12	5	2	2	4/5
<i>Artemisia tridentata vaseyana</i>												
88	465	66	166	266	33	-	0	0	7	-	0	19/28
94	560	-	-	520	40	60	0	0	7	-	0	10/22
99	820	-	40	620	160	80	41	5	20	2	2	18/28
04	680	-	-	380	300	180	65	6	44	32	32	14/30
<i>Cercocarpus ledifolius</i>												
88	433	66	433	-	-	-	31	62	-	-	0	-/-
94	160	-	80	80	-	-	0	0	-	-	0	33/24
99	80	20	60	20	-	-	0	75	-	-	0	149/121
04	120	20	100	20	-	20	0	83	-	-	0	90/93
<i>Chrysothamnus nauseosus glabratus</i>												
88	1166	-	100	866	200	-	17	0	17	-	0	11/13
94	1180	-	-	1180	-	-	0	0	0	-	0	41/34
99	580	-	40	500	40	-	0	0	7	-	0	17/20
04	580	20	20	420	140	-	14	10	24	14	14	15/20
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
88	0	-	-	-	-	-	0	0	0	-	0	-/-
94	0	-	-	-	-	-	0	0	0	-	0	6/16
99	160	-	40	120	-	-	25	0	0	-	0	14/18
04	240	-	-	180	60	-	8	25	25	-	8	9/11

		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>Eriogonum corymbosum</i>												
88	0	-	-	-	-	-	0	0	-	-	0	-/-
94	20	-	-	20	-	-	100	0	-	-	0	3/14
99	40	-	20	20	-	-	0	0	-	-	0	6/15
04	20	-	-	20	-	-	0	100	-	-	0	6/14
<i>Gutierrezia sarothrae</i>												
88	3866	700	2333	1400	133	-	4	.86	3	-	.86	8/7
94	3140	-	320	2600	220	100	0	0	7	4	4	6/7
99	1960	100	160	1720	80	20	7	0	4	1	1	8/8
04	3100	-	20	3020	60	-	2	0	2	2	2	6/7
<i>Juniperus osteosperma</i>												
88	33	-	33	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Juniperus scopulorum</i>												
88	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	20	-	-	20	-	-	0	0	-	-	0	-/-
<i>Pinus edulis</i>												
88	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	20	-	20	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Pinus longaeva</i>												
88	0	33	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Symphoricarpos oreophilus</i>												
88	0	-	-	-	-	-	0	0	-	-	0	-/-
94	80	-	20	60	-	-	0	0	-	-	0	16/48
99	40	40	-	40	-	-	50	0	-	-	0	19/54
04	80	-	-	80	-	-	0	25	-	-	0	15/41