

Trend Study 30-63-08

Study site name: Holt Canyon.

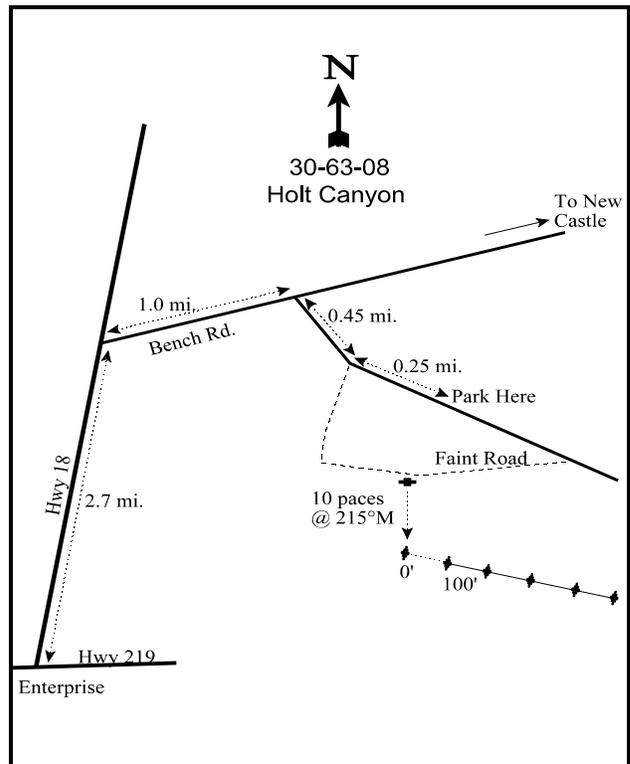
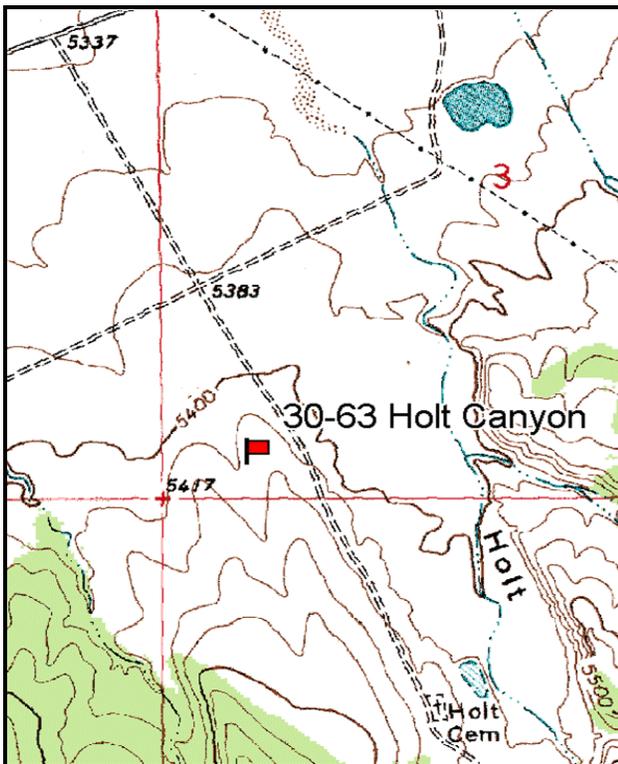
Vegetation type: Wyoming Big Sagebrush.

Compass bearing: frequency baseline 149 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From Enterprise, drive east on Highway 18 for 2.7 miles to Bench Rd. Turn RIGHT and drive approximately 1.0 mile to Holt Canyon Road, there is a sign. Drive on Holt Canyon Rd. for 0.45 miles to an intersection. Continue straight for 0.25 miles and park. Walk up the hill to the west and look for a full high witness post next to a faint road. From the witness post, the 0-foot stake is 10 paces at 215 degrees magnetic. The 0-foot stake is marked by browse tag #142. The study is marked by green steel "T" fence posts approximately 12 to 14 inches in height.



Map Name: Enterprise

Diagrammatic Sketch

Township 37S, Range 16W, Section 3

GPS: NAD 83, UTM 12S 266848 E, 4163765 N

DISCUSSION

Holt Canyon - Trend Study No. 30-63

Study Information

This study is located about seven miles south of the town of Newcastle [elevation: 5,400 feet (1,646 m), slope: 11%-14%, aspect southwest]. The study was established in 2003 in a Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) community type. The site is located on a Wyoming big sagebrush winter range at the mouth of Holt Canyon. This area has received little to no livestock use for many years. It does receive some use by wintering deer and pellet group data taken on the site estimated light deer use in 2003 and 2008 (11 deer days use/acre:26 ddu/ha and 13 ddu/acre:31 ddu/ha, respectively).

Soil

Soil at the site is relatively shallow with an effective rooting depth estimated at 11 inches. The soil surface is gravelly with larger rocks scattered on the surface and throughout the profile. Parent material is basalt. Soil texture is a sandy loam and reactivity is neutral (pH of 7.2). Shrub interspaces are mostly bare of herbaceous vegetation but the soil surface is armored by pavement and the amount of exposed bare ground is low. Relative bare ground cover was only 9%-10% in 2003 and 2008. The erosion condition class was rated as stable in 2003, and slight in 2008 due to flow patterns, pedestalling of plants, and surface litter movement.

Browse

The site supports a fairly dense stand for a Wyoming big sagebrush site with around 3,000 plants/acre in 2003 and 2008, and line-intercept cover estimate of around 20% for the same years. Sagebrush vigor was mostly normal in 2003, but plants displaying poor vigor increased to 30% in 2008. The number of decadent sagebrush plants has been high at 54%-60% in 2003 and 2008. Utilization was mostly light to moderate in both 2003 and 2008. Annual leader growth has been good, averaging 1.7 inches in 2003 and 1.1 inches in 2008. Young recruitment has been marginal to poor with only 100 young plants/acre estimated in 2003, and no young plants sampled in 2008. The only other shrubs encountered on the site included a few cactus (*Opuntia* spp.), spiny polygala (*Polygala subspinosa* ssp. *subspinosa*), and an occasional antelope bitterbrush (*Purshia tridentata*).

Herbaceous Understory

The herbaceous understory is poor with a total grass cover of only 5%-8% over the sample years, and most of that comes from annual species. The dominant species is cheatgrass (*Bromus tectorum*), which accounted for 23% of the total grass cover in 2003, and 79% in 2008. Galleta (*Hilaria jamesii*) accounted for 56% of the total grass cover in 2003, but declined to only 4% in 2008. The perennial grasses purple three-awn (*Aristida purpurea*), Indian ricegrass (*Oryzopsis hymenoides*), and bottlebrush squirreltail (*Sitanion hystrix*), as well as the annual sixweeks fescue (*Vulpia octoflora*), are also found on the site in small numbers. Perennial forbs are rare. Total forb cover averaged around 2% in 2003, and less than 1% in 2008. Annual forbs, Gilia (*Gilia* sp.) and wooly navarretia (*Navarretia intertexta*), are the only common species.

2003 DESIRABLE COMPONENTS INDEX

winter range condition (DCI) - good (48) Low potential scale

2008 TREND ASSESSMENT

Trend for browse is stable, but should be considered at risk due to high decadence in the sagebrush population and the dominance of cheatgrass in the understory. Wyoming big sagebrush is the only common browse species on the site. Sagebrush density has declined slightly from 3080 plants/acre in 2003 to 2880 plants/acre. The proportion of plants displaying poor vigor increased from 16% in 2003 to 30%. Decadence is high and increased slightly from 54% in 2003 to 60%. Recruitment is poor with a decline in the number of young plants from 26% in 2003 to no young plants sampled in 2008. The trend for grasses is down. There was little change in the sum of nested frequency of perennial grasses from 2003, but the sum of nested frequency of annual grasses increased three-fold from 2003. As stated above, cheatgrass dominates the herbaceous understory, and increased significantly in nested frequency from 2003. Cover of cheatgrass increased from 23% of the total grass cover in 2003 to 79%. The annual, sixweeks fescue, also increased significantly in nested frequency. There was a slight change in the composition of the perennial grasses with a significant decrease in the nested frequency of galleta, but a significant increase in the nested frequency of Indian ricegrass. The trend for forbs is slightly up, but forbs are very rare on the site. The sum of nested frequency of perennial forbs nearly doubled from 2003, though cover of perennial forbs is still less than 1%. There was a significant increase in the nested frequency of sego lily (*Calochortus nuttallii*), and the number of perennial species sampled increased from six species in 2003 to ten species. Cover of annual forb species declined from around 2% in 2003 to just 0.25%.

winter range condition (DCI) - poor (18) Low potential scale

browse - stable (0)

grass - down (-2)

forb - slightly up (+1)

HERBACEOUS TRENDS --

Management unit 30 , Study no: 63

T y p e	Species	Nested Frequency		Average Cover %	
		'03	'08	'03	'08
G	Aristida purpurea	22	18	.52	.13
G	Bromus tectorum (a)	_a 128	_b 382	1.05	6.47
G	Hilaria jamesii	_b 86	_a 44	2.54	.35
G	Oryzopsis hymenoides	_a 9	_b 19	.04	.46
G	Poa secunda	-	3	-	.03
G	Sitanion hystrix	30	68	.33	.53
G	Vulpia octoflora (a)	_a 4	_b 27	.00	.20
Total for Annual Grasses		132	409	1.06	6.67
Total for Perennial Grasses		147	152	3.45	1.51
Total for Grasses		279	561	4.51	8.19
F	Alyssum alyssoides (a)	-	2	-	.01
F	Astragalus sp.	-	6	-	.01
F	Castilleja linariaefolia	-	4	-	.01
F	Calochortus nuttallii	_a 8	_b 22	.02	.09

T y p e	Species	Nested Frequency		Average Cover %	
		'03	'08	'03	'08
F	Cryptantha sp.(a)	-	15	-	.03
F	Cymopterus sp.	10	2	.04	.01
F	Epilobium brachycarpum (a)	-	3	-	.00
F	Eriogonum sp.	-	4	-	.00
F	Eriogonum ovalifolium	-	4	-	.01
F	Euphorbia sp.	5	4	.03	.01
F	Gilia sp. (a)	_b 66	_a 9	.68	.02
F	Leucelene ericoides	5	5	.15	.38
F	Navarretia intertexta (a)	88	89	.84	.17
F	Penstemon sp.	1	-	.03	-
F	Phlox longifolia	1	4	.00	.01
F	Sedum lanceolatum	-	3	-	.00
F	Sisymbrium altissimum (a)	-	5	-	.01
Total for Annual Forbs		154	123	1.52	0.25
Total for Perennial Forbs		30	58	0.28	0.55
Total for Forbs		184	181	1.81	0.81

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

BROWSE TRENDS --

Management unit 30 , Study no: 63

T y p e	Species	Strip Frequency		Average Cover %	
		'03	'08	'03	'08
B	Amelanchier utahensis	0	0	.38	-
B	Artemisia tridentata wyomingensis	81	84	22.93	17.67
B	Opuntia sp.	1	0	.38	-
B	Polygala subspinoso subspinoso	5	0	.06	.01
Total for Browse		87	84	23.75	17.68

CANOPY COVER, LINE INTERCEPT --

Management unit 30 , Study no: 63

Species	Percent Cover	
	'03	'08
Artemisia tridentata wyomingensis	18.48	22.64
Opuntia sp.	.61	-

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 30 , Study no: 63

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata wyomingensis	1.7	1.1

BASIC COVER --

Management unit 30 , Study no: 63

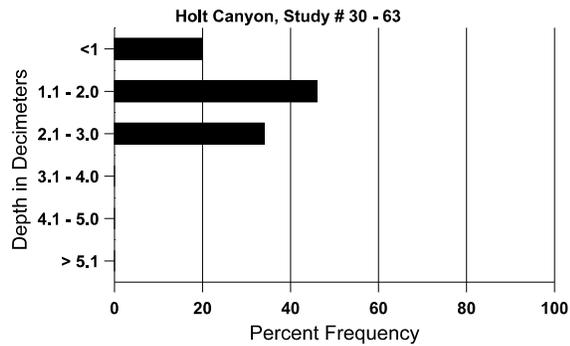
Cover Type	Average Cover %	
	'03	'08
Vegetation	31.81	25.13
Rock	4.84	4.49
Pavement	24.13	21.15
Litter	41.40	54.59
Cryptogams	.18	1.11
Bare Ground	11.53	10.15

SOIL ANALYSIS DATA --

Management unit 30, Study no: 63, Study Name: Holt Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
			% sand	% silt	% clay				
11.0	70.4 (11.2)	7.2	64.6	18.7	16.7	1.2	4.9	451.2	0.5

Stoniness Index



PELLET GROUP DATA --

Management unit 30 , Study no: 63

Type	Quadrat Frequency		Days use per acre (ha)	
	'03	'08	'03	'08
Rabbit	26	87	-	-
Deer	8	11	11 (26)	13 (31)
Cattle	-	-	-	2 (4)

BROWSE CHARACTERISTICS --

Management unit 30 , Study no: 63

		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)
Artemisia tridentata wyomingensis												
03	3080	-	100	1320	1660	980	33	3	54	16	16	28/37
08	2880	20	-	1160	1720	1160	17	8	60	24	30	28/39
Opuntia echinocarpa												
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	20	0	0	-	-	0	-/-
Opuntia sp.												
03	20	-	-	20	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Polygala subspinoso subspinoso												
03	100	-	-	100	-	-	0	0	-	-	0	3/5
08	0	-	-	-	-	-	0	0	-	-	0	5/4
Purshia tridentata												
03	0	-	-	-	-	-	0	0	-	-	0	48/65
08	0	-	-	-	-	-	0	0	-	-	0	36/45