

Trend Study 13A-7-04

Study site name: Round Mountain .

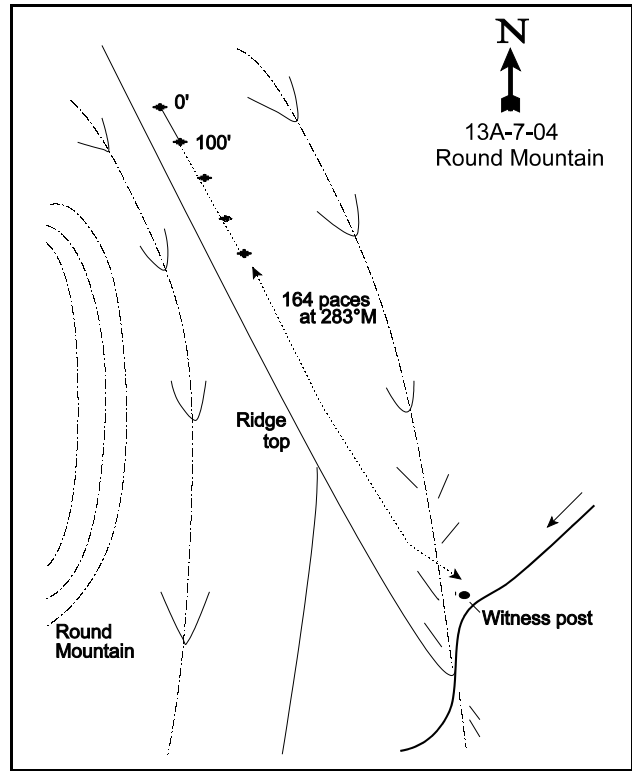
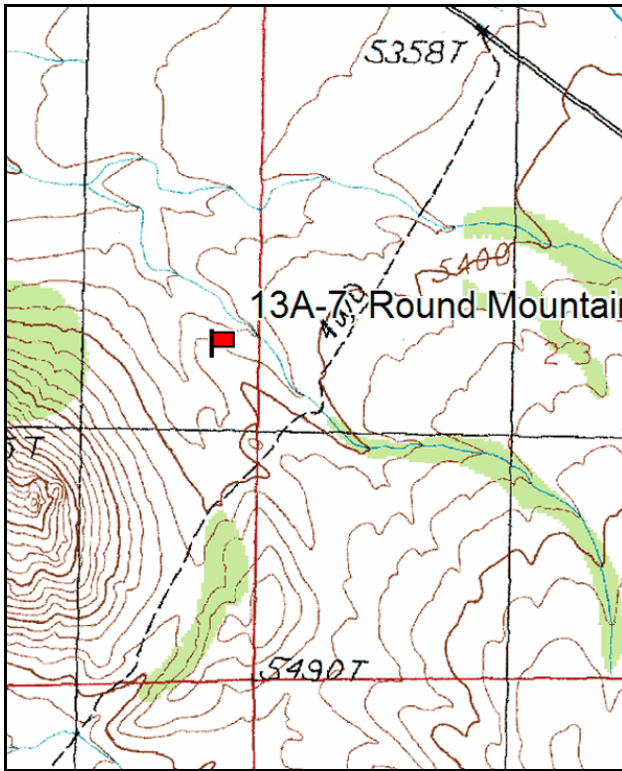
Vegetation type: Blackbrush .

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

Travel 6.8 miles up the Castle Valley Road (LaSal Mountain Loop Road) from SR 128 along the Colorado River. Turn onto a rough dirt road heading south towards Round Mountain. Travel 0.55 miles to just before the road drops into a deep draw. There is a witness post (4' green fencepost) on the right side of the road. From here, walk 164 paces west northwest (approximately 283°M) down and across the draw to the top of a sage-blackbrush ridge. The 0-foot baseline stake is a short fencepost marked with a red browse tag #7837.



Map Name: Warner Lake

Diagrammatic Sketch

Township 25S , Range 23E , Section 22

GPS: NAD 27, UTM 12S 4275166 N, 643304 E

## DISCUSSION

### Round Mountain - Trend Study No. 13A-7

The Round Mountain study samples a blackbrush-sagebrush type near the center of Castle Valley, just east of Round Mountain, a prominent landmark. Castle Valley, on the northeast end of the LaSal Mountain range, is considered critical winter range for deer. Pellet group data from 1999 estimated 2 elk (5 edu/ha) and 78 deer days use/acre (193 ddu/ha). Pellet group data from 2004 estimated 106 deer days use/acre (263 ddu/ha). Much of the land in lower Castle Valley is managed by the Utah Division of State Lands and Forestry which allows winter use by cattle on this key wintering area. The study is located on a small ridge within the rolling foothills below Round Mountain. The elevation is 5,400 feet with a generally western exposure. Drainage of the area is northwest through Castle Valley to the Colorado River.

The soil is very rocky, both on the surface and within the soil. It is a moderately shallow, reddish sandy clay loam soil with an effective rooting depth of about 10 inches. It is mildly to moderately alkaline with a pH of 7.8. The most obvious limiting feature of the site is that the soil temperature at 10 inches is almost 70°F. This temperature would make it advantageous for annuals to dominate the herbaceous understory. Although it appears to be highly erodible, there is little evidence of current erosion. However, erosion has historically been a problem with large amounts of surface rock cover present. Current rock-pavement totals are quite high at almost 50%. Percent bare ground was fairly low, but only because of the high cover value for rock and pavement.

Shrubs provide the only forage available to deer in the winter. The key species, but not the most dominant, is Wyoming big sagebrush. The shallow-soiled ridge tops also support good populations of blackbrush. Wyoming big sagebrush made up 34% of the browse cover in 1994, 13% in 1999, and only contributes 5% of the browse cover in 2004. Density decreased from 1,720 plants/acre in 1999 to 680 plants/acre in 2004. Density plot information on sagebrush in 1987 appeared to indicate a stable population even when the plants showed heavy browsing use (64% of them at that time). In 1994, only 3% showed heavy use, 52% in 1999, and 85% in 2004. Percent decadence has been above 50% since 1994 and has rose to 85% in 2004. Since 1994, about 25% of the population has been classified as dying and this rose to 76% in 2004. This population is not displaying traits of a stable population. Seedlings (reproductive potential) and young (recruitment) were not sampled in 2004. This population is very susceptible to fire because of the amount of understory fine fuels (cheatgrass). All of the sagebrush would be lost if a wildfire occurred on this site because they are sensitive to fire and do not resprout after fire.

The blackbrush, which is more adapted to the high soil temperatures and drought, made up 46% of the browse cover in 1994, 52% in 1999, and 50% in 2004. The blackbrush shows moderate to heavy use. Density of blackbrush rose to a high in 1994 with 4,120 plants/acre. It then declined to 3,500 in 1999 and in 2004 the population was estimated at 3,720 plants/acre. Percent decadence increased from 2% in 1999 to 14% in 2004. Hedging on blackbrush increased from light to moderate use. Junipers are encroaching on this site. Point-center quarter data estimated 44 junipres/acre with an average diameter of 4.8 inches.

Herbaceous vegetation (grasses and forbs) are not an important component of this community; on average they only make up 28% of the total vegetative cover. Over 98% of the grass cover is contributed by annual grasses, mostly cheatgrass. Perennial grasses are few. All perennial species combined only contribute to less than one-tenth of one percent total cover. Mutton bluegrass is found mostly growing in the protection of shrub crowns. Total forb cover in 1999 and 2004 was less than 1%. There were 14 species of forbs found in 1994, 8 in 1999 and only 4 in 2004 of which all were annual species.

## 1994 TREND ASSESSMENT

The trend for soils would be slightly down because of the loss of much of the litter cover down to only 20% and relative percent bare ground has increased to 22%. The browse trend is down for Wyoming big sagebrush which is the primary key species for this site. More than 25% of the population is dead, a ratio of almost one in three plants. Biotic potential (number of seedlings) is zero, and the percentage of young plants (recruitment) has gone from 44% to only 3%. The trend for the herbaceous understory shows increased nested frequency values, but over 90% of the cover is contributed by annual species. Trend is down for the herbaceous understory. The Desirable Components Index rated this site as fair with a score of 31 due to low amount of perennial grasses, high decadent shrubs, and high annual grasses (cheatgrass).

### TREND ASSESSMENT

soil - slightly down (2)

browse - down (1)

herbaceous understory - down (1)

winter range condition (DC Index) - 31 (fair) Wyoming sagebrush type

## 1999 TREND ASSESSMENT

The trend for soils would be slightly down because of a continuing increases in percent cover for rock. The browse trend is down for both Wyoming big sagebrush and blackbrush which are the primary key species for this site. There have been losses in the population for both sagebrush and blackbrush, 26% and 15% respectively. More than one-third of the sagebrush population is dead. Biotic potential (number of seedlings) is zero, and the percentage of young plants (recruitment) is only 1%. The trend for the herbaceous understory shows increased nested frequency values, but over 90% of the cover is contributed by annual species. Trend is also down for the herbaceous understory. The Desirable Components Index rated this site as fair with a score of 29 due to low perennial grasses, high decadent shrubs, and high annual grasses (cheatgrass).

### TREND ASSESSMENT

soil - slightly down (2)

browse - down (1)

herbaceous understory - down (1)

winter range condition (DC Index) - 29 (fair) Wyoming sagebrush type

## 2004 TREND ASSESSMENT

The trend for soil is stable, but very poor condition. Sixty-two percent of the surface is bare soil or rock. Percent bare ground, vegetation, rock, and litter have remained similar to 1999 values. The browse trend for key species, Wyoming big sagebrush and blackbrush, is down. Percent cover for Wyoming big sagebrush has continually decreased to point where it provides less than 5% cover. Density has dramatically decreased from 1,720 plants/acre in 1999 to 680 in 2004. Eighty-five percent are now decadent, with three-fourths of these being classified as dying. Blackbrush is not declining as rapidly as sagebrush, but it too decreased in percent cover and percent decadence also increased as well. The trend for the herbaceous under story continues to be down. The understory is dominated by annuals, 96% is cheatgrass. Nested frequency of cheatgrass did decrease significantly, while cover and frequency are still high. The Desirable Components Index rated this site as poor with a score of 20 due to low abundance of perennial grasses, high decadence in shrubs, and high density of annual grasses (cheatgrass).

**TREND ASSESSMENT**

soil - stable (3) and very poor condition, it can't go down much further

browse - down (1)

herbaceous understory - down (1)

winter range condition (DC Index) - 20 (poor) Wyoming sagebrush type

HERBACEOUS TRENDS --

Management unit 13A, Study no: 7

T y p e	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
G	Bromus tectorum (a)	-	<sub>a</sub> 214	<sub>b</sub> 327	<sub>a</sub> 246	3.00	6.42	7.41
G	Poa secunda	-	3	4	3	.01	.04	.04
G	Sitanion hystrix	-	4	-	-	.04	-	-
G	Vulpia octoflora (a)	-	<sub>b</sub> 145	<sub>a</sub> 75	<sub>a</sub> 51	.32	.22	.16
Total for Annual Grasses		0	359	402	297	3.31	6.65	7.57
Total for Perennial Grasses		0	7	4	3	0.05	0.04	0.03
Total for Grasses		0	366	406	300	3.37	6.69	7.61
F	Arabis spp.	<sub>b</sub> 14	<sub>a</sub> 3	<sub>a</sub> 1	<sub>a</sub> -	.01	.00	-
F	Astragalus moencopensis	-	1	-	-	.00	-	-
F	Astragalus spp.	<sub>ab</sub> 6	<sub>c</sub> 71	<sub>b</sub> 10	<sub>a</sub> -	.17	.03	-
F	Castilleja chromosa	-	2	-	-	.01	-	-
F	Descurainia pinnata (a)	-	<sub>b</sub> 25	<sub>a</sub> -	<sub>a</sub> 3	.05	-	.00
F	Draba reptans (a)	-	<sub>c</sub> 190	<sub>b</sub> 10	<sub>a</sub> -	.42	.02	-
F	Eriogonum cernuum (a)	-	2	-	-	.00	-	-
F	Erigeron pumilus	1	-	-	-	-	-	-
F	Gilia spp. (a)	-	<sub>b</sub> 106	<sub>a</sub> 10	<sub>a</sub> 13	.20	.05	.04
F	Holosteum umbellatum (a)	-	-	11	-	-	.02	-
F	Lappula occidentalis (a)	-	<sub>b</sub> 11	<sub>a</sub> -	<sub>a</sub> 2	.02	-	.00
F	Penstemon pachyphyllus	3	-	-	-	-	-	-
F	Physaria spp.	-	4	-	-	.03	-	-
F	Plantago patagonica (a)	-	20	11	21	.04	.02	.08
F	Senecio multilobatus	<sub>a</sub> -	<sub>b</sub> 20	<sub>b</sub> 8	<sub>a</sub> -	.67	.05	-
F	Sisymbrium altissimum (a)	-	9	3	-	.02	.01	-
F	Streptanthus cordatus	-	15	-	-	.43	-	-
Total for Annual Forbs		0	363	45	39	0.77	0.12	0.12
Total for Perennial Forbs		24	116	19	0	1.34	0.08	0
Total for Forbs		24	479	64	39	2.11	0.21	0.12

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

BROWSE TRENDS --

Management unit 13A, Study no: 7

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	Artemisia tridentata wyomingensis	68	52	25	7.01	3.01	.98
B	Coleogyne ramosissima	64	65	71	9.59	11.75	9.58
B	Ephedra viridis	2	1	1	.03	.15	.15
B	Gutierrezia sarothrae	50	57	25	.95	1.16	.97
B	Juniperus osteosperma	0	3	3	3.08	6.59	7.46
B	Opuntia spp.	0	1	2	-	-	-
B	Pinus edulis	0	0	1	-	-	-
Total for Browse		184	179	128	20.68	22.65	19.16

CANOPY COVER, LINE INTERCEPT --

Management unit 13A, Study no: 7

Species	Percent Cover	
	'99	'04
Artemisia tridentata wyomingensis	-	1.00
Coleogyne ramosissima	-	13.69
Gutierrezia sarothrae	-	1.53
Juniperus osteosperma	4.00	5.34

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 13A, Study no: 7

Species	Average leader growth (in)
	'04
Artemisia tridentata wyomingensis	1.4
Coleogyne ramosissima	2.0

POINT-QUARTER TREE DATA --

Management unit 13A, Study no: 7

Species	Trees per Acre	
	'99	'04
Juniperus osteosperma	46	44
Pinus edulis	23	-

Average diameter (in)	
'99	'04
2.8	4.8
3.3	-

**BASIC COVER --**

Management unit 13A, Study no: 7

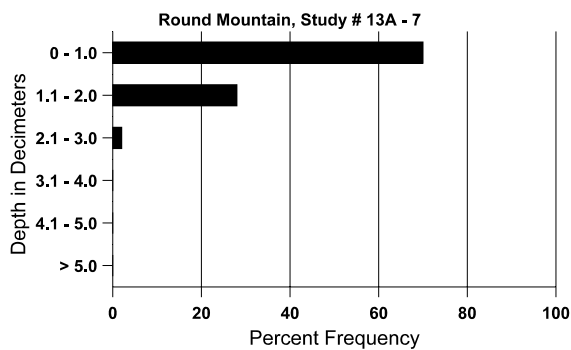
Cover Type	Average Cover %			
	'87	'94	'99	'04
Vegetation	8.25	22.44	29.63	27.61
Rock	32.00	30.60	23.46	24.36
Pavement	16.75	10.05	25.93	27.57
Litter	29.50	20.06	23.24	20.06
Cryptogams	.25	1.23	1.47	1.56
Bare Ground	13.25	24.26	8.07	10.72

**SOIL ANALYSIS DATA --**

Management unit 13A, Study no: 7, Study Name: Round Mountain

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
9.6	76.0 (9.3)	7.8	58.9	19.8	21.3	1.9	60.4	48.0	0.4

**Stoniness Index**



**PELLET GROUP DATA --**

Management unit 13A, Study no: 7

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	8	9	2
Elk	-	3	-
Deer	49	40	33

Days use per acre (ha)	
'99	'04
-	-
2 (5)	-
78 (193)	106 (263)

BROWSE CHARACTERISTICS --  
Management unit 13A, Study no: 7

		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 wyomingensis</i>												
87	<b>4799</b>	266	2133	1600	1066	-	33	64	22	.41	3	16/27
94	<b>2140</b>	-	60	720	1360	800	28	3	64	26	35	18/36
99	<b>1720</b>	-	20	820	880	840	38	52	51	23	23	18/29
04	<b>680</b>	-	-	100	580	1180	12	85	85	76	76	16/27
<i>Atriplex canescens</i>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	27/43
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
<i>Cercocarpus montanus</i>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	20/32
<i>Coleogyne ramosissima</i>												
87	<b>1733</b>	66	733	1000	-	-	19	54	0	-	0	12/16
94	<b>4120</b>	-	20	3600	500	40	20	.48	12	-	10	13/26
99	<b>3500</b>	40	40	3400	60	40	23	7	2	.57	.57	16/30
04	<b>3720</b>	-	20	3180	520	180	53	21	14	4	4	12/26
<i>Ephedra viridis</i>												
87	<b>66</b>	-	-	66	-	-	0	100	-	-	0	4/2
94	<b>40</b>	-	20	20	-	-	50	0	-	-	0	19/22
99	<b>80</b>	-	60	20	-	-	0	25	-	-	0	25/31
04	<b>20</b>	-	-	20	-	-	0	0	-	-	0	23/27
<i>Gutierrezia sarothrae</i>												
87	<b>4799</b>	400	2200	2466	133	-	6	10	3	.83	3	8/6
94	<b>2220</b>	2880	620	1360	240	380	.90	0	11	2	2	9/11
99	<b>3560</b>	160	840	2600	120	340	0	0	3	2	2	7/10
04	<b>1840</b>	-	80	1740	20	200	0	0	1	1	1	8/10
<i>Juniperus osteosperma</i>												
87	<b>66</b>	-	66	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>60</b>	20	40	20	-	-	0	0	-	-	0	-/-
04	<b>60</b>	-	40	20	-	-	0	0	-	-	0	-/-

		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)
<b>Opuntia spp.</b>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>20</b>	-	-	20	-	-	0	0	-	-	0	12/7
04	<b>40</b>	-	20	20	-	-	0	0	-	-	0	10/28
<b>Pinus edulis</b>												
87	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
04	<b>20</b>	-	-	-	20	-	0	0	100	100	100	-/-