

ROUND MOUNTAIN - TREND STUDY NO. 13A-7-09

Vegetation Type: Blackbrush

Range Type: Crucial Deer Winter

NRCS Ecological Site Description: [Semidesert Stony Loam \(Blackbrush\), R035XY243UT](#)

Land Ownership: SITLA

Elevation: 5,400 ft (1,646 m)

Aspect: West

Slope: 4%-7%

Transect bearing: 165 degrees magnetic

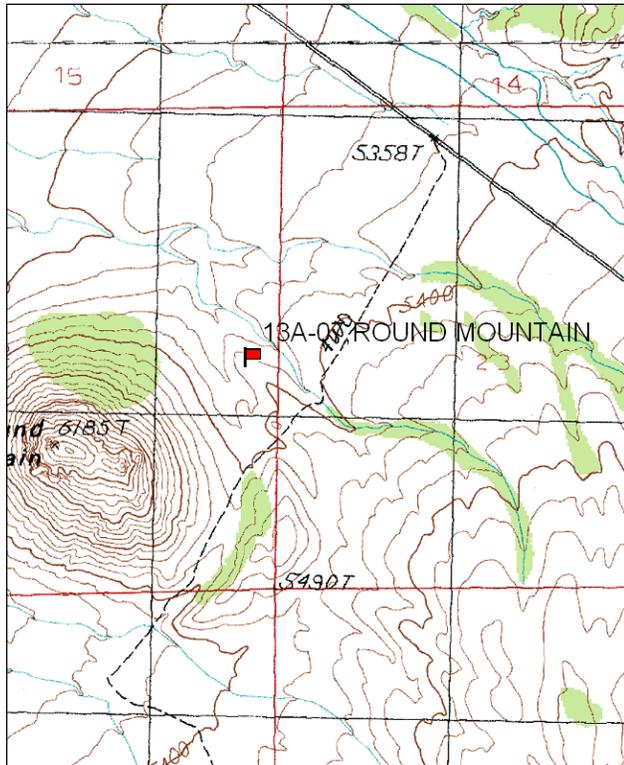
Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft)

Directions:

Travel 6.8 miles up the Castle Valley Road (La Sal 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.

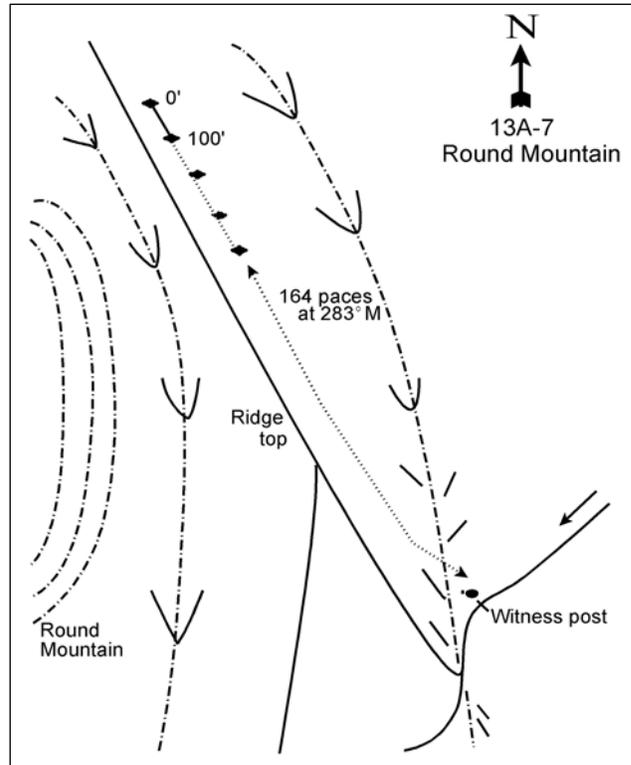
From here, walk 164 paces west northwest (approximately 283°M) down and across the draw to the top of a sage-blackbrush ridge. The 0-foot baseline stake is a short fencepost marked with a red browse tag #7837.

Map Name: Warner Lake



Township: 25S, Range: 23E, Section: 22

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 643242 E 4275370 N

ROUND MOUNTAIN - TREND STUDY NO. 13A-7

Site Information

Site Description: The study samples a blackbrush (*Coleogyne ramosissima*) and Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) community near the center of Castle Valley, just east of Round Mountain. The study is located on a small ridge within the rolling foothills below Round Mountain. The transect runs along the ridge top through a blackbrush community that transitions to a pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) community on the lower belts. Drainage of the area is northwest through Castle Valley to the Colorado River. Much of the land in lower Castle Valley is managed by the Utah Division of State Lands and Forestry. Pellet group data has estimated heavy deer use with some minimal elk use on the site since 1999 (Table - Pellet Group Data). It was noted in 2009 that deer pellet groups were congregated in the blackbrush community and dropped markedly as you entered the pinyon-juniper.

Browse: The dominant browse species on the site is blackbrush, which grows primarily on the shallow-soiled ridge tops of Castle Valley. Blackbrush has had an average cover of 10% and an average density of around 3,800 plant/acre since 1994. Both decadence and vigor have been good in the population, but recruitment of young plants has been low over the course of the study. Utilization of blackbrush has been mostly light to moderate over the sample years (Table - Browse Characteristics).

The key browse species for deer is Wyoming big sagebrush. The cover and density of sagebrush has decreased drastically on the site since 1999. The sagebrush population has displayed poor vigor and high decadence since 1994. Recruitment of young sagebrush plants has been very low since 1994. Browse use of sagebrush has been moderate to very heavy over the sample years (Table - Browse Characteristics). The browse population is very susceptible to fire because of the amount of understory cheatgrass (*Bromus tectorum*) (Table - Herbaceous Trends).

Herbaceous Understory: Herbaceous vegetation (grasses and forbs) are not an important component of this community. The only grass species that contributes notably to cover is the annual grass cheatgrass. There are few perennial grasses on the site. Forbs have provided less than 1% cover since 1999. There was a large decline in perennial forb cover and nested frequency between the 1994 and 1999 sample years. Perennial forbs are now very rare on the site (Table -Herbaceous Trends).

Soil: The soil is very rocky, both on the surface and within the soil profile. The soil is a reddish sandy clay loam with an effective rooting depth of about 10 inches. It is mildly to moderately alkaline with a pH of 7.8 (Table - Soil Data Analysis). Pavement and rock cover are high on the site (Table - Basic Cover). The soil erosion condition classification was rated as stable in 2009.

Trend Assessments

Browse:

- **1987 to 1994 - down (-2):** Differences in density may be related to the larger sample area used in 1994; therefore, other parameters were used to determine trend. Decadence of the key browse species, Wyoming big sagebrush, increased from 22% to 64%. The proportion of sagebrush plants displaying poor vigor increased to 35%. Recruitment of young sagebrush plants fell markedly. Decadence of blackbrush also increased to 12%, but is still considered low.
- **1994 to 1999 - down (-2):** Density of sagebrush decreased by 20%, and cover decreased from 7% to 3%. Vigor, decadence, and recruitment of young plants all remained poor in the sagebrush population.
- **1999 to 2004 - down (-2):** Density of sagebrush decreased by a further 60% and cover decreased to 1%. Decadence increased to 85% and plants displaying poor vigor increased to 76% of the sagebrush population. There was no new recruitment of young sagebrush plants sampled.

- **2004 to 2009 - slightly down (-1):** Density of sagebrush decreased by 29%, but density is now so low at 480 plants/acre that even small changes in density show large percentage change. Decadence, vigor, and recruitment of young sagebrush plants remain poor.

Grass:

- **1987 to 1994 - stable (0):** Perennial grasses were sampled for the first time in 1994, though at very low frequency and cover.
- **1994 to 1999 - slightly down (-1):** Cheatgrass increased significantly in nested frequency and cover increased from 3% to over 6%. There was little change in perennial grasses.
- **1999 to 2004 - stable (0):** Cheatgrass decreased significant in nested frequency, but cover increased slightly. There was little change in perennial grasses
- **2004 to 2009 - slightly down (-1):** Cheatgrass increased significantly in nested frequency and cover increased to 9%. There was little change in perennial grasses.

Forb:

- **1987 to 1994 - up (+2):** There was a large increase in the sum of nested frequency of perennial forbs. The number of perennial species sampled increased from 4 species to 7 species.
- **1994 to 1999 - down (-2):** The sum of nested frequency of perennial forbs decreased to below 1987 levels, and cover decreased to less than 0.1%.
- **1999 to 2004 - stable (0):** There were no perennial forbs sampled and all forbs remain rare on the site.
- **2004 to 2009 - stable (0):** Forbs remain very rare on the site.

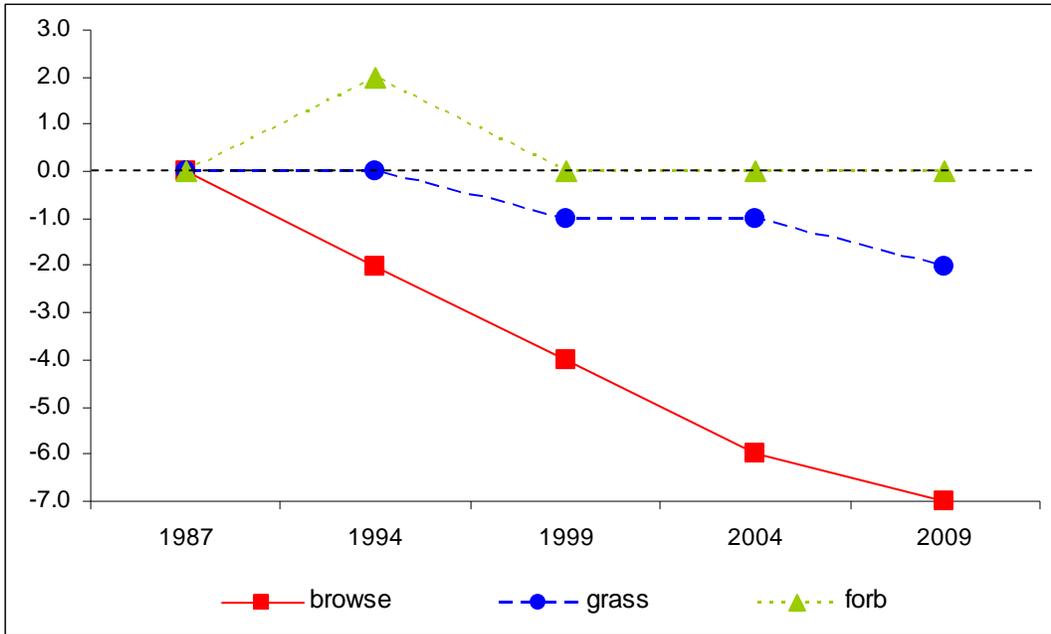
DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

Management unit 13A, study no: 7

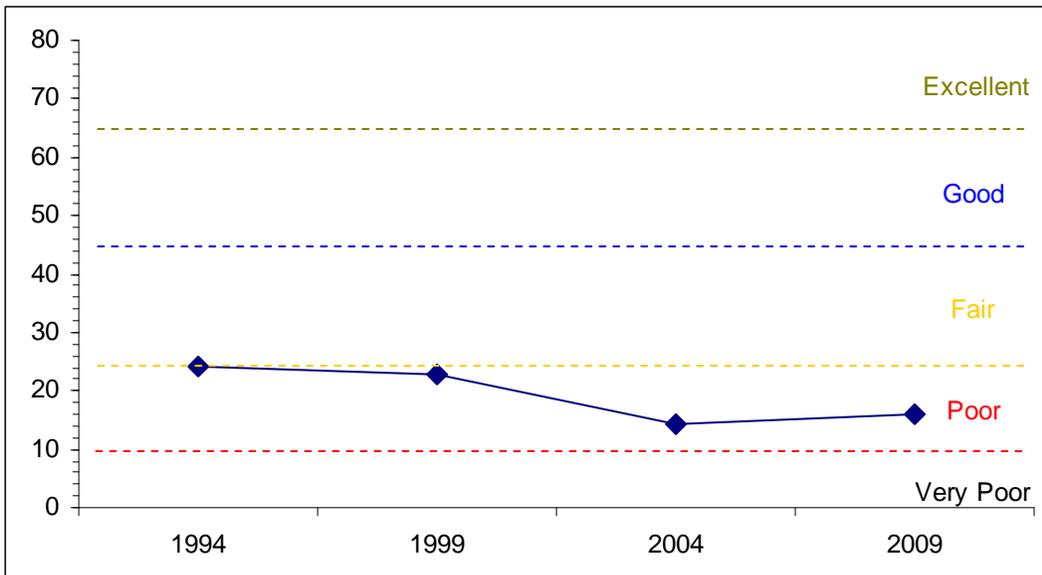
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94	18	5	1	0	-2	3	0	24	Poor-Fair
99	16	11	1	0	-5	0	0	23	Poor
04	11	9	0	0	-6	0	0	14	Poor
09	10	12	1	1	-7	0	0	16	Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 13A, Study no: 7



DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE
Management unit 13A, Study no: 7



HERBACEOUS TRENDS--

Management unit 13A, Study no: 7

Type	Species	Nested Frequency					Average Cover %			
		'87	'94	'99	'04	'09	'94	'99	'04	'09
G	Bromus tectorum (a)	-	a ²¹⁴	c ³²⁷	a ²⁴⁶	b ²⁹⁷	3.00	6.42	7.41	9.14
G	Poa secunda	a ⁻	a ³	a ⁴	a ³	b ¹⁷	.01	.04	.04	.25
G	Sitanion hystrix	-	4	-	-	-	.04	-	-	-
G	Vulpia octoflora (a)	-	c ¹⁴⁵	b ⁷⁵	b ⁵¹	a ²	.32	.22	.16	.15
Total for Annual Grasses		0	359	402	297	299	3.31	6.65	7.57	9.29
Total for Perennial Grasses		0	7	4	3	17	0.05	0.04	0.03	0.25
Total for Grasses		0	366	406	300	316	3.37	6.69	7.61	9.54
F	Arabis sp.	14	3	1	-	-	.01	.00	-	-
F	Astragalus moencopensis	-	1	-	-	-	.00	-	-	-
F	Astragalus sp.	a ⁶	c ⁷¹	b ¹⁰	a ⁻	b ¹⁰	.17	.03	-	.03
F	Castilleja chromosa	-	2	-	-	-	.01	-	-	-
F	Descurainia pinnata (a)	-	b ²⁵	a ⁻	a ³	a ⁴	.05	-	.00	.16
F	Draba reptans (a)	-	c ¹⁹⁰	b ¹⁰	a ⁻	a ⁻	.42	.02	-	-
F	Erigeron pumilus	1	-	-	-	-	-	-	-	-
F	Eriogonum cernuum (a)	-	2	-	-	-	.00	-	-	-
F	Gilia sp. (a)	-	c ¹⁰⁶	b ¹⁰	b ¹³	a ⁻	.20	.05	.04	-
F	Holosteum umbellatum (a)	-	-	11	-	-	-	.02	-	-
F	Lappula occidentalis (a)	-	11	-	2	-	.02	-	.00	-
F	Penstemon pachyphyllus	3	-	-	-	-	-	-	-	-
F	Physaria sp.	-	4	-	-	-	.03	-	-	-
F	Plantago patagonica (a)	-	b ²⁰	b ¹¹	b ²¹	a ⁻	.04	.02	.08	-
F	Polygonum sp.	-	-	-	-	1	-	-	-	.00
F	Senecio multilobatus	a ⁻	b ²⁰	ab ⁸	a ⁻	a ³	.67	.05	-	.00
F	Sisymbrium altissimum (a)	-	9	3	-	-	.02	.01	-	-
F	Streptanthus cordatus	a ⁻	b ¹⁵	a ⁻	a ⁻	a ⁻	.43	-	-	-
Total for Annual Forbs		0	363	45	39	4	0.77	0.12	0.12	0.15
Total for Perennial Forbs		24	116	19	0	14	1.34	0.08	0	0.03
Total for Forbs		24	479	64	39	18	2.11	0.21	0.12	0.19

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	'09	'94	'99	'04	'09
B	Artemisia tridentata wyomingensis	68	52	25	18	7.01	3.01	.98	.81
B	Coleogyne ramosissima	64	65	71	68	9.59	11.75	9.58	9.37
B	Ephedra viridis	2	1	1	3	.03	.15	.15	.63
B	Gutierrezia sarothrae	50	57	25	23	.95	1.16	.97	.57
B	Juniperus osteosperma	0	3	3	3	3.08	6.59	7.46	5.25
B	Opuntia sp.	0	1	2	2	-	.00	.00	.00
B	Pinus edulis	0	0	1	0	-	-	.00	-
Total for Browse		184	179	128	117	20.68	22.65	19.16	16.64

CANOPY COVER, LINE INTERCEPT--

Management unit 13A, Study no: 7

Species	Percent Cover		
	'99	'04	'09
Artemisia tridentata wyomingensis	-	1.00	1.00
Coleogyne ramosissima	-	13.69	14.83
Ephedra viridis	-	-	.50
Gutierrezia sarothrae	-	1.53	.53
Juniperus osteosperma	4.00	5.34	7.46
Opuntia sp.	-	-	.03

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 13A, Study no: 7

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	1.4	0.8
Coleogyne ramosissima	2.0	0.6

POINT-QUARTER TREE DATA--

Management unit 13A, Study no: 7

Species	Trees per Acre			Average diameter (in)		
	'99	'04	'09	'99	'04	'09
Juniperus osteosperma	46	44	47	2.8	4.8	3.4
Pinus edulis	23	-	22	3.3	-	2.8

BASIC COVER--

Management unit 13A, Study no: 7

Cover Type	Average Cover %				
	'87	'94	'99	'04	'09
Vegetation	8.25	22.44	29.63	27.61	26.22
Rock	32.00	30.60	23.46	24.36	22.06
Pavement	16.75	10.05	25.93	27.57	18.59
Litter	29.50	20.06	23.24	20.06	30.78
Cryptogams	.25	1.23	1.47	1.56	.41
Bare Ground	13.25	24.26	8.07	10.72	12.92

SOIL ANALYSIS DATA --

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

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
9.6	7.8	58.9	19.8	21.3	1.9	60.4	48	0.4

PELLET GROUP DATA--

Management unit 13A, Study no: 7

Type	Quadrat Frequency				Days use per acre (ha)		
	'94	'99	'04	'09	'99	'04	'09
Rabbit	8	9	2	6	-	-	-
Elk	-	3	-	-	2 (5)	-	1 (3)
Deer	49	40	33	25	78 (193)	106 (263)	52 (127)

BROWSE CHARACTERISTICS--

Management unit 13A, Study no: 7

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
<i>Artemisia tridentata wyomingensis</i>									
87	4798	44	33	22	266	33	64	3	16/27
94	2140	3	34	64	-	28	3	35	18/36
99	1720	1	48	51	-	38	52	23	18/29
04	680	0	15	85	-	12	85	76	16/27
09	480	4	33	63	-	38	13	63	15/23
<i>Atriplex canescens</i>									
87	0	0	0	-	-	0	0	0	-/-
94	0	0	0	-	-	0	0	0	-/-
99	0	0	0	-	-	0	0	0	27/43
04	0	0	0	-	-	0	0	0	-/-
09	0	0	0	-	-	0	0	0	-/-

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<i>Cercocarpus montanus</i>										
87	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	-/-	
04	0	0	0	-	-	0	0	0	20/32	
09	0	0	0	-	-	0	0	0	-/-	
<i>Coleogyne ramosissima</i>										
87	1732	42	58	0	66	19	54	0	12/16	
94	4120	0	87	12	-	20	.48	10	13/26	
99	3500	1	97	2	40	23	7	.57	16/30	
04	3720	1	85	14	-	53	21	4	12/26	
09	3740	1	92	7	40	34	.53	4	13/27	
<i>Ephedra viridis</i>										
87	66	0	100	-	-	0	100	0	4/2	
94	40	50	50	-	-	50	0	0	19/22	
99	80	75	25	-	-	0	25	0	25/31	
04	20	0	100	-	-	0	0	0	23/27	
09	100	20	80	-	-	0	0	0	25/40	
<i>Gutierrezia sarothrae</i>										
87	4798	46	51	3	399	6	10	3	8/6	
94	2220	28	61	11	2880	.90	0	2	9/11	
99	3560	24	73	3	160	0	0	2	7/10	
04	1840	4	95	1	-	0	0	1	8/10	
09	1320	30	24	45	80	0	0	44	6/9	
<i>Juniperus osteosperma</i>										
87	66	100	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	60	67	33	-	20	0	0	0	-/-	
04	60	67	33	-	-	0	0	0	-/-	
09	80	100	0	-	-	0	0	0	-/-	
<i>Opuntia sp.</i>										
87	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	20	0	100	-	-	0	0	0	12/7	
04	40	50	50	-	-	0	0	0	10/28	
09	40	0	100	-	-	0	0	0	12/29	
<i>Pinus edulis</i>										
87	0	0	0	0	-	0	0	0	-/-	
94	0	0	0	0	-	0	0	0	-/-	
99	0	0	0	0	-	0	0	0	-/-	
04	20	0	0	100	-	0	0	100	-/-	
09	0	0	0	0	-	0	0	0	-/-	