Trend Study 18B-21-97

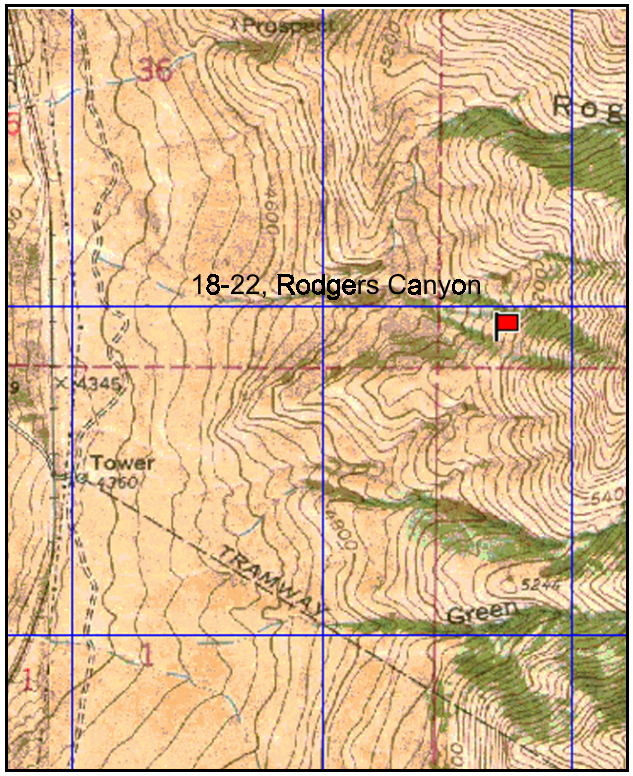
Study site name: Black Rock Canyon . Vegetation type: Seeded .

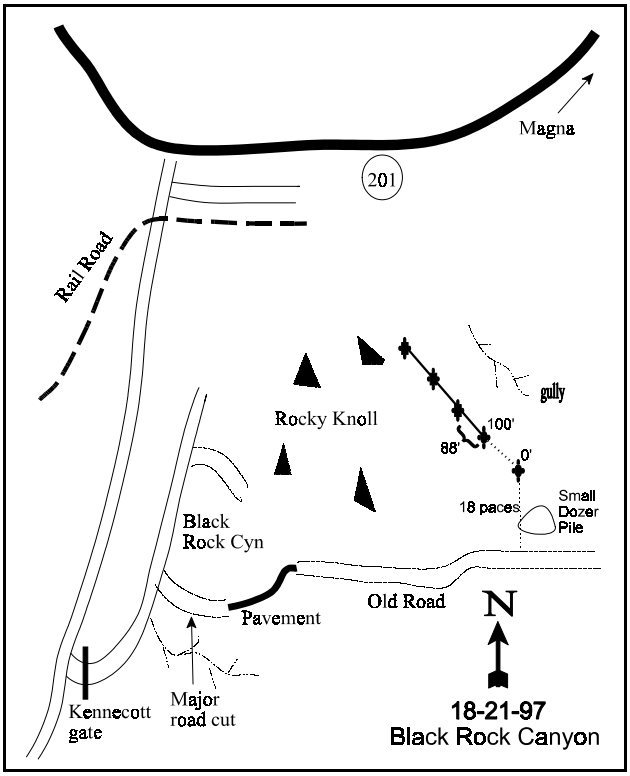
Compass bearing: frequency baseline 304 degrees magnetic.

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

LOCATION DESCRIPTION

From the Kennecott road on the northwest side of the Oquirrh Mountains, drive south between the mountain and the railroad tracks to an intersection with a gated road just past Black Rock Canyon. Drive back up this road to the mouth of the canyon. Walk up into the canyon along an old road cut on the south side of the canyon. Follow the old road approximately 0.5 miles into the valley. The study site is on the north side of the road, in a seeded flat. The study is marked by 2½ foot tall fencepost stakes.





Map Name: Farnsworth Peak

Diagrammatic Sketch

Township 1S , Range 3W , Section 20

GPS: NAD 27, UTM 12S 4507414 N 397329 E

DISCUSSION

Black Rock Canyon - Trend Study No. 18-21

***SUSPENDED - This site was suspended in 2002. Text and tables from the 1997 report have been retained and are found below.

The Black Rock Canyon study is located in the lower portion of Black Rock Canyon. The site is on a 10% slope with a northwest aspect. The elevation of the site is about 4,800 feet. This was one of the first areas to be seeded in the 1970's, then in 1987 it was bulldozed, disked, and seeded with intermediate wheatgrass, Kentucky bluegrass, and sweetclover. Browse are scarce and currently contribute to only 4% of the total vegetative cover. The site is obviously not a deer winter range. The site is used heavily by elk. A pellet group transect read in 1997 indicated 125 elk use days/acre. There were no signs of deer. In addition, a large bachelor group of 27 mature bull elk were seen near the site during the 1997 reading (8/26).

The soils in the canyon are a gravelly-loam. Textural analysis shows it to be a loam with a neutral to slightly acidic pH (6.6). Effective rooting depth (see methods) is relatively shallow at only 7 inches. Soil temperature is quite high at 70°F at about 10 inches in depth. This high a temperature and relatively shallow effective rooting depth would be a limiting factor for perennial species establishment, especially with a winter annual like cheatgrass dominating the site and drying out the surface moisture so early in the spring.

The herbaceous species dominate this site as they contribute over 96% of the total vegetative cover. Shrubs are uncommon and consist of small numbers of rubber rabbitbrush and broom snakeweed. Species composition is similar between years. Alkali muhly, *Muhlenbergia asperifolia*, is the most common perennial native species. It currently contributes 29% of the grass cover. This species usually thrives in areas that are disturbed. Now as the disturbance (treatment) is becoming more distant in time, it is becoming less dominant. This is illustrated best with the inspection of the sum of nested frequency values which have decreased significantly from 167 down to 72. Cheatgrass is currently the most common grass with a cover value of nearly 8%. It accounts for over half (56%) of the grass cover. Annual grasses and forbs were not included in the 1990 reading so no comparisons can be made between years. Intermediate wheatgrass has significantly increased since 1990, yet it is still a minor component of this community as it only makes up 4% of the grass cover. Through time the intermediate wheatgrass should increase. As on the other low elevation sites in this area, undesirable forbs such as ragweed, curlycup gumweed, and dalmatian toadflax are common. In fact, together these forbs contribute to 92% of the forb cover. There is a low density of broom snakeweed and rubber rabbitbrush on the site. However, they only make up 4% of the total plant cover. Undesirable species have not be eliminated, but the seeding effort provides increased desirable forage production.

1990 APPARENT TREND ASSESSMENT

The trend for soil appears stable with good protective cover from herbaceous species even though most of it is from weedy species. The trend for browse appears stable, but at very insignificantly low numbers. Only broom snakeweed was sampled in 1990. The trend for the herbaceous understory should improve in time.

1997 TREND ASSESSMENT

Soil trend is stable with percent bare soil low at 4%. Furthermore, 96% of the vegetative cover is derived from herbaceous species which are more protective from soil losses during high intensity summer storms. The browse component on the site is insignificant, as it only contributes 4% of the total vegetative cover. Trend for browse is stable for white-stemmed rabbitbrush and broom snakeweed, but of no real importance because of its relatively low numbers. The trend for the herbaceous understory is more complicated, because the perennial portion of the grasses shows a decline. Intermediate wheatgrass has increased significantly, but it still only provides 4% of the grass cover. Whereas, alkali muhly has significantly decreased since the treatment. This would be expected because it is most often found on disturbed sites where it can become established and stay at relatively high numbers with continued disturbance. Cheatgrass is still the dominant grass which provides 56% of the grass cover. For the forbs, the overall trend for the perennial forbs is that

they have increased. However, three weedy increaser species, western ragweed, curlycup gumweed, and dalmatian toadflax contribute 92% of the total forb cover. Trend for the herbaceous understory is down because of the composition.

TREND ASSESSMENT
soil - stable (3)
browse - stable, but very low numbers (3)
herbaceous understory - down and poor composition (1)

HERBACEOUS TRENDS --
Herd unit 18 , Study no: 21

Type	Species	Nested Frequency '90	Nested Frequency '97	Quadrat Frequency '90	Quadrat Frequency '97	Average Cover % '97
G	Agropyron intermedium	a3	b28	1	11	.53
G	Aristida purpurea	6	13	3	8	.94
G	Bromus tectorum (a)	-	321	-	94	7.83
G	Leucopoa kingii	-	3	-	1	.03
G	Muhlenbergia asperifolia	b167	a72	55	26	4.03
G	Poa pratensis	16	25	6	9	.55
G	Sporobolus cryptandrus	a10	b-	6	-	-
Total for Annual Grasses		0	321	0	94	7.83
Total for Perennial Grasses		202	141	71	55	6.10
Total for Grasses		202	462	71	149	13.94
F	Ambrosia psilostachya	b217	a147	81	59	6.53
F	Aster spp.	1	-	1	-	-
F	Cardaria draba	a-	b34	-	14	.55
F	Carduus nutans (a)	b11	a-	6	-	-
F	Comandra pallida	a2	b22	1	8	.14
F	Cruciferae	1	-	1	-	-
F	Epilobium brachycarpum (a)	-	39	-	20	.33
F	Grindelia squarrosa	b94	a59	43	30	1.63
F	Helianthus annuus (a)	a14	b2	6	1	.03
F	Lactuca serriola	23	9	12	5	.22
F	Linaria dalmatica	a6	b221	4	82	10.39
F	Melilotus alba	b22	a-	11	-	-
F	Medicago sativa	4	1	2	1	.15
F	Nicotiana attenuata (a)	1	-	1	-	.00
F	Salsola pestifer (a)	3	-	1	-	-
F	Taraxacum officinale	-	3	-	1	.00
F	Tragopogon dubius	b44	a3	23	1	.01
F	Unknown forb-perennial	-	2	-	1	.15

Type	Species	Nested Frequency '90	Nested Frequency '97	Quadrat Frequency '90	Quadrat Frequency '97	Average Cover % '97
Total for Annual Forbs		29	41	14	21	0.37
Total for Perennial Forbs		414	501	179	202	19.79
Total for Forbs		443	542	193	223	20.16

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

BROWSE TRENDS --
Herd unit 18 , Study no: 21

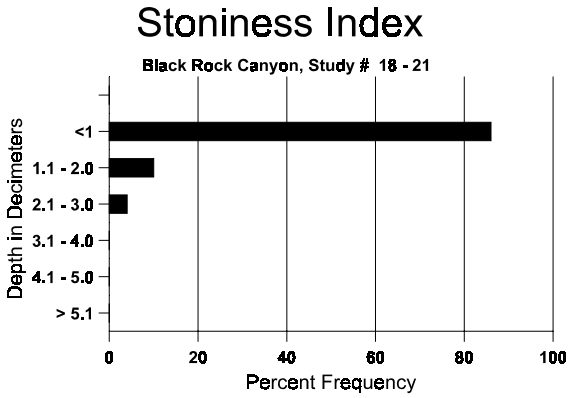
Type	Species	Strip Frequency '97	Average Cover % '97
B	Chrysothamnus nauseosus albicaulis	5	1.06
B	Gutierrezia sarothrae	1	.18
Total for Browse		6	1.24

BASIC COVER --
Herd unit 18 , Study no: 21

Cover Type	Nested Frequency '97	Average Cover % '90	Average Cover % '97
Vegetation	282	5.00	32.95
Rock	152	10.00	5.53
Pavement	112	2.50	2.31
Litter	318	77.25	47.41
Cryptogams	22	0	.24
Bare Ground	83	5.25	3.94

SOIL ANALYSIS DATA --
Herd Unit 18, Study no: 21, Black Rock Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
7.1	69.8 (9.4)	6.6	49.3	31.2	19.6	4.3	53.7	208.0	.8



PELLET GROUP FREQUENCY --
Herd unit 18 , Study no: 21

Type	Quadrat Frequency '97
Rabbit	2
Elk	41

BROWSE CHARACTERISTICS --
Herd unit 18 , Study no: 21

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus albicaulis																		
M	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	5	1	1	-	-	-	-	-	-	7	-	-	-	140	26	42	7
% Plants Showing			Moderate Use		Heavy Use			Poor Vigor							%Change			
	'90		00%		00%			00%										
	'97		14%		14%			00%										
Total Plants/Acre (excluding Dead & Seedlings)													'90		0	Dec:		-
													'97		140			-
Gutierrezia sarothrae																		
Y	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	90	5	-	-	-	-	-	-	-	-	5	-	-	-	166	17	11	5
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
% Plants Showing			Moderate Use		Heavy Use			Poor Vigor							%Change			
	'90		00%		00%			00%							-80%			
	'97		00%		00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)													'90		199	Dec:		-
													'97		40			-