*****Suspended*****

Trend Study 2-14-96

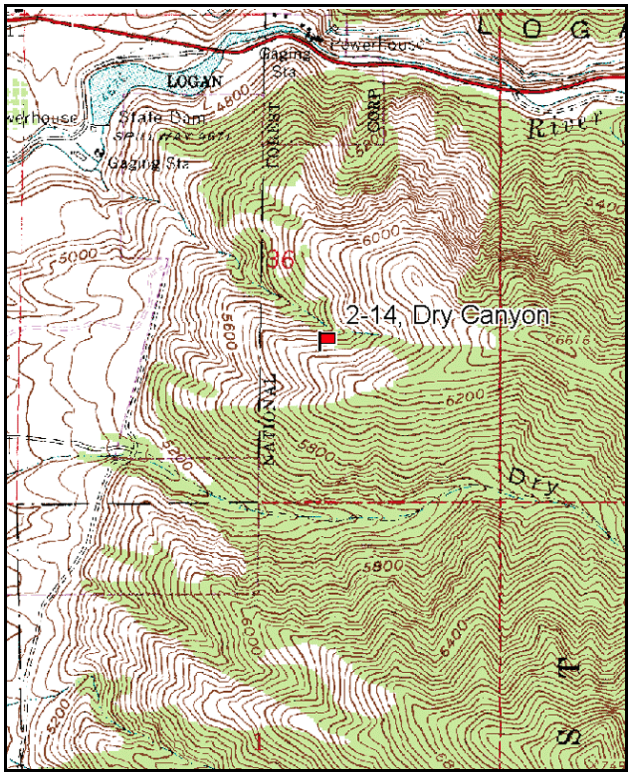
Study site name: Dry Canyon . Vegetation type: Juniper .

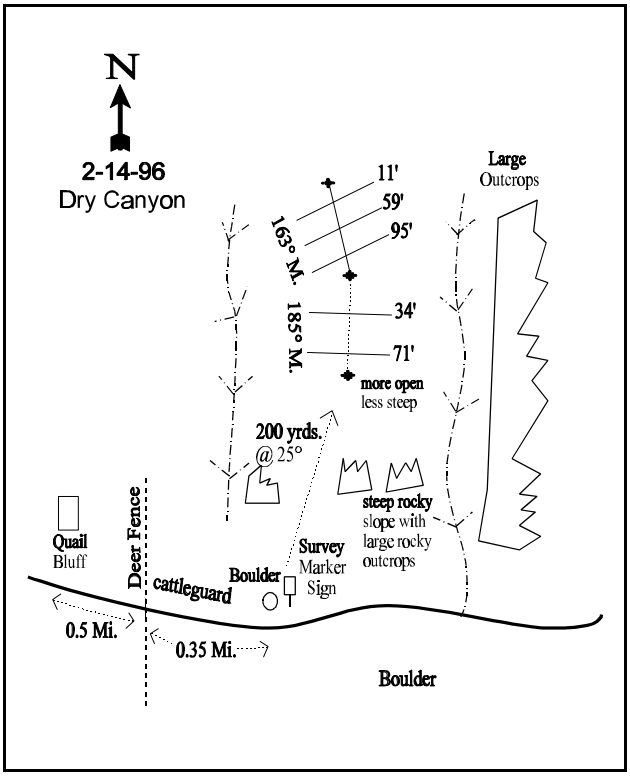
Compass bearing: frequency baseline 146 degrees magnetic.

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

LOCATION DESCRIPTION

Proceed up Mountain Road in Logan past Quail Hollow Housing development to the intersection of 25 North and 1400 East. Begin to note mileage here. Proceed 0.5 miles to a cattleguard and deer fence. Continue up the road for 0.35 miles to a survey post marker sign. Walk approximately 200 yards at a bearing of 25 degrees magnetic from the survey sign to the 200-foot baseline stake. The 0-foot baseline stake is marked by browse tag #7934. Bearing of the baseline is 163 degrees magnetic. Line 2 has a bearing of 185 degrees magnetic.





Map Name: Logan

Diagrammatic Sketch

Township 12N , Range 1E , Section 36

UTM 4620313 N, 434989 E

DISCUSSION

Trend Study No. 2-14

*****SUSPENDED** - This site was suspended in 2001 and will be discontinued. Text and data tables are included from the 1996 Utah Big Game Trend Studies report. This site is considered winter range for big game. It does provide good thermal cover but it supports very little forage.

The Dry Canyon trend study site occurs on a steep (65% to 70%) and rocky south-facing slope located approximately 1/4 mile up Dry Canyon at an elevation of 5,580 feet. The range type is scattered Utah juniper (approximately 70 trees/acre) associated with an equally depleted and sparse understory. Deer use of the area was reported heavy during the 1984 reading. Many pellet groups were found that year and available browse was heavy utilized. Currently, deer use appears light and pellet groups infrequent. Due to a very limited amount of browse forage, this area is likely used primarily for its thermal cover.

Soil is "Richmond Very Stony Loam" similar to that found elsewhere on the Cache "face." This is a shallow and exceptionally rocky soil with a high erosion potential. The site has many variable sized rocks on the surface which easily move down slope. Although not on the study area proper, many nearby sites have small talus slopes and outcrops of exposed bedrock. Parent material is limestone. Effective rooting depth (see methods) was estimated at 12 inches in 1996. Soil temperature is moderately high at 70° F at about 12 inches. The soil has little structure and is easily disturbed. Soil reaction is moderately alkaline (7.9 pH). Both phosphorus and potassium could be limiting at 4.2 and 6.2 ppm respectively as values of 10 and 70 ppm may limit plant growth and development. Due to the abundant rock cover, erosion is not excessive.

Browse production is low. Apart from Utah juniper which has a canopy cover of 18% and accounts for 83% of the browse cover, the only shrub of any significance is black sagebrush. Population density of black sagebrush was estimated between 700 and 900 plants/acre in 1984 and 1990 respectively. Utilization was heavy in 1984 and mostly light in 1990. The greatly enlarged sample size used in 1996 estimated only 120 plants/acre, with the majority (66%) classified as decadent. No seedlings or young were sampled. There are as many dead sagebrush as there are live plants. The number of dead plants still does not account for the loss from about 900 plants/acre in 1990 to 120 plants/acre in 1996. Because of the clumped and discontinuous nature of the black sagebrush population, most of the change in the population must be attributed to the larger sample size which gives greatly improved accuracy for this kind of browse population. This explanation still does not downplay the fundamental importance of such a low population estimate for a critically key browse species on this site.

Broom snakeweed numbers nearly 2,000 plants/acre and has an age class structure characteristic of an expanding population. Other shrubs are sporadic in their occurrence. They include littleleaf mountain mahogany, ocean-spray, Rocky Mountain smooth sumac, and silver rubber rabbitbrush.

The herbaceous understory is depleted and dominated by rattlesnake brome and cheatgrass which account for 86% of the herbaceous cover. Perennial herbaceous plants occur infrequently. Bluebunch wheatgrass is the only fairly abundant perennial grass. A few low value forbs are scattered throughout the area but combine to produce less than 1% total cover and probably account for less than 10 pounds/acre of forage.

1984 APPARENT TREND ASSESSMENT

Soil trend appears to be declining. A rocky and unproductive soil is rapidly being eroded away because of lack of vegetative cover and a very steep slope. Vegetatively, the trend appears relatively stable despite poor condition. Both black sagebrush and Utah juniper appear to have stable populations.

1990 TREND ASSESSMENT

This juniper dominated slope has a very low site potential due to the shallow, rocky and undeveloped soil. The soil is easily disturbed on the steep slope. Rock and pavement together make up 72% of the ground cover. As in 1984, the vegetative trend appears stable, but in poor condition when considering it as a deer winter range. The black sagebrush appears very vigorous and lightly hedged. It has increased some since 1984. Junipers number 84 trees/acre. Most are highlined mature trees. The nested and quadrat frequencies of perennial grasses and forbs are low, and show slight declines.

TREND ASSESSMENT
soil- stable but in poor condition (3)
browse - stable but depleted (3)
herbaceous understory - slightly declining (2)

1996 TREND ASSESSMENT

The soil is poor and undeveloped. However, percent litter cover increased by 42% and percent bare ground has declined from 11% to 3%. Trend is considered up slightly but in poor condition. Browse is depleted on the site. Density estimates from the new, larger sample used in 1996, indicate only 120 plants/acre, 67% of which are decadent. There are not enough dead plants to indicate the reduction was solely a die-off, therefore most of the noted decrease could be attributed to the larger sample size giving a better estimate for this discontinuously distributed browse species. Utilization is lighter, but no reproduction is evident and trend is considered down. Trend for the herbaceous understory is also down. Sum of nested frequency for bluebunch wheatgrass, the only abundant perennial grass, declined significantly. Sum of nested frequency for forbs increased, yet a large part of the increase is the result of the appearance of dyers woad on the site. Combined, forbs produce less than 1% cover.

TREND ASSESSMENT
soil - up slightly but in poor condition (4)
browse - down and depleted (1)
herbaceous understory - down and depleted (1)

HERBACEOUS TRENDS --
Herd unit 02 , Study no: 14

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
G	Agropyron spicatum	$_{b}$138	$_{b}$124	$_{a}$73	63	59	33	2.58
G	Bromus brizaeformis (a)	-	-	266	-	-	90	3.40
G	Bromus tectorum (a)	-	-	343	-	-	97	14.56
G	Oryzopsis hymenoides	9	9	-	4	3	-	-
G	Poa pratensis	$_{a}$-	$_{b}$18	$_{a}$-	-	8	-	-
G	Poa secunda	$_{ab}$15	$_{a}$5	$_{b}$26	6	2	10	.32
Total for Annual Grasses		0	0	609	0	0	187	17.96
Total for Perennial Grasses		162	156	99	73	72	43	2.90
Total for Grasses		162	156	708	73	72	230	20.87

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
F	Alyssum alyssoides (a)	-	-	82	-	-	32	.29
F	Cirsium undulatum	3	6	-	1	2	-	-
F	Cryptantha spp.	5	4	3	3	2	1	.03
F	Isatis tinctoria	-	-	43	-	-	24	.44
F	Oenothera caespitosa	2	-	6	1	-	2	.03
F	Sisymbrium altissimum (a)	-	-	1	-	-	1	.00
F	Tragopogon dubius	$_{b}$38	$_{a}$7	$_{a}$19	22	6	9	.12
F	Unknown forb-perennial	-	2	-	-	1	-	-
Total for Annual Forbs		0	0	83	0	0	33	0.29
Total for Perennial Forbs		48	19	71	27	11	36	0.62
Total for Forbs		48	19	154	27	11	69	0.92

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 02 , Study no: 14

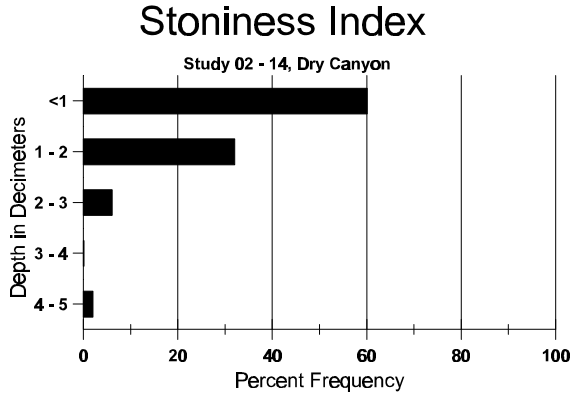
Type	Species	Strip Frequency	Average Cover %
		'96	'96
B	Artemisia nova	5	.53
B	Gutierrezia sarothrae	39	.80
B	Juniperus osteosperma	5	6.50
Total for Browse		49	7.84

BASIC COVER --
Herd unit 02 , Study no: 14

Cover Type	Nested Frequency	Average Cover %		
	'96	'84	'90	'96
Vegetation	357	.25	2.00	30.41
Rock	366	51.00	53.25	49.99
Pavement	58	9.75	19.25	1.37
Litter	367	19.25	14.00	23.96
Cryptogams	105	5.50	.25	1.38
Bare Ground	145	14.25	11.25	3.12

SOIL ANALYSIS DATA --
Herd Unit 02, Study no: 14, Dry Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.0	70.0 (12.1)	7.9	46.7	34.0	19.3	2.2	4.2	6.4	.5



PELLET GROUP FREQUENCY --
Herd unit 02 , Study no: 14

Type	Quadrat Frequency '96
Rabbit	1
Deer	7

BROWSE CHARACTERISTICS --
Herd unit 02 , Study no: 14

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
Artemisia nova																		
S	84	6	-	-	-	-	-	-	-	-	6	-	-	-	200			6
	90	7	-	-	-	-	-	-	-	-	7	-	-	-	233			7
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	3	4	-	-	-	-	-	-	-	7	-	-	-	233			7
	90	11	-	-	-	-	-	-	-	-	11	-	-	-	366			11
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	2	2	-	-	-	-	-	-	4	-	-	-	133	16	33	4
	90	5	-	1	-	-	-	-	-	-	6	-	-	-	200	19	22	6
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	15	33	2
D	84	-	-	11	-	-	-	-	-	-	9	-	2	-	366			11
	90	9	1	-	-	-	-	-	-	-	10	-	-	-	333			10
	96	2	2	-	-	-	-	-	-	-	4	-	-	-	80			4
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	27%	59%	09%	+19%
'90	04%	04%	00%	-87%
'96	33%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	732	Dec:		50%
'90	899			37%
'96	120			67%

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
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	18	-	-	-	-	-	-	-	-	18	-	-	-	360			18
Y	84	6	-	-	-	-	-	-	-	-	6	-	-	-	200			6
	90	12	-	-	-	-	-	-	-	-	12	-	-	-	400			12
	96	39	-	-	-	-	-	-	-	-	39	-	-	-	780			39
M	84	18	-	-	-	-	-	-	-	-	18	-	-	-	600	11	12	18
	90	12	-	-	-	-	-	-	-	-	12	-	-	-	400	7	9	12
	96	59	-	-	-	-	-	-	-	-	59	-	-	-	1180	10	15	59
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+ 4%
'90	00%	00%	00%	+58%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	800	Dec:		0%
'90	833			4%
'96	1960			0%

Juniperus osteosperma																		
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	1	-	-	-	-	-	-	-	1	-	-	-	33	49	36	1
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	157	157	1
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	100	-	-	5
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	50%	00%	00%	+ 0%
'90	00%	00%	00%	+34%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	66	Dec:		-
'90	66			-
'96	100			-