

Trend Study 21B-12-08

Study site name: Dameron Canyon .

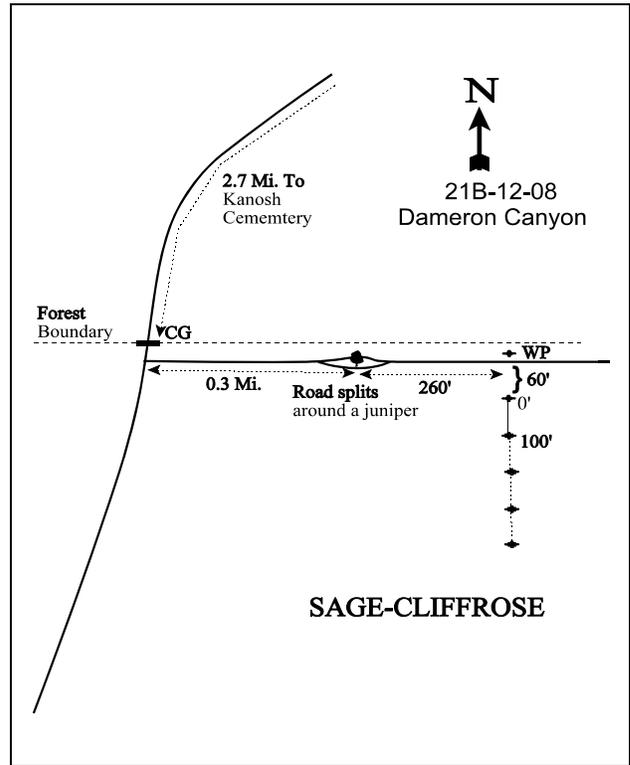
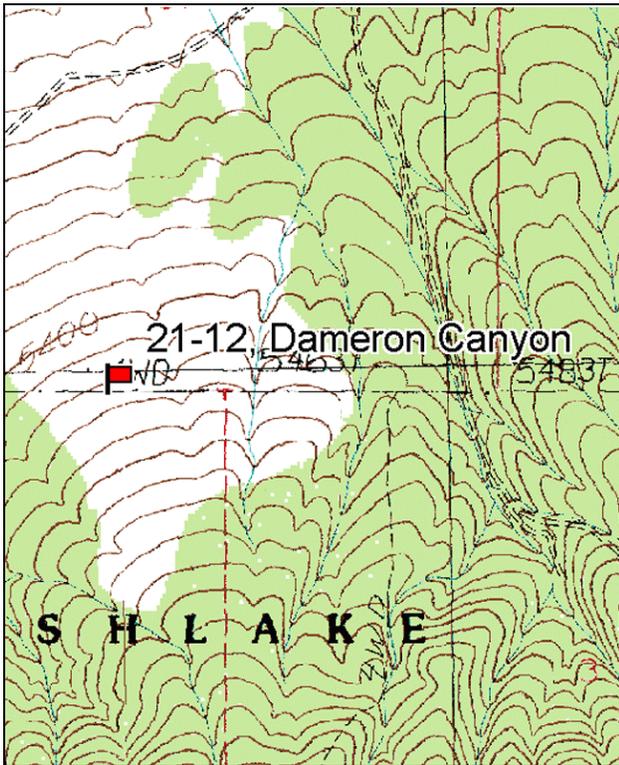
Vegetation type: Bitterbrush-Sagebrush .

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

Go south on the main road from Kanosh. Continue south on a dirt road towards the cemetery when the main road turns west towards the interstate. From the northeast corner of the Kanosh cemetery (1/2 mile south of town), follow the main road south for 2.7 miles to a cattleguard. Just past the cattleguard turn left and go 0.3 miles along the fence to a faint road. Where the road rejoins, go 260 feet to a witness post on the left side of the road by the fence. The witness post is a steel rebar stake 2 1/2 feet tall. From the witness post go 60 feet due south to the start of the frequency baseline. The 0-foot baseline stake is tagged #7109. The 100-foot end of the baseline is marked by a stake that is actually only 98 feet south, so the tape must be adjusted at that end.



Map Name: Fillmore

Diagrammatic Sketch

Township 24S, Range 5W, Section 4

GPS: NAD 83, UTM 12S 373188 E, 4291142 N

DISCUSSION

Dameron Canyon - Trend Study No. 21B-12

Study Information

This study samples a fairly flat area of sagebrush, cliffrose, and juniper habitat south of Kanosh [elevation: 5,460 feet (1,664 m), slope: 3%, aspect: north]. Part of the baseline, including the first frequency belt, was chained following the 1985 sampling, and the entire area surrounding the study burned in the Dry Wash fire just before the 2008 sampling. The baseline lies just inside the US Forest Service boundary, and may be affected by differential grazing pressure because of its proximity to the Forest Service fence. The range is supposedly used for early spring grazing by cattle, but no signs of early season use were found during any reading. In the past, the Forest Service has allowed free-use firewood cutting here to help reduce juniper competition with the more desirable browse species. The DWR Dameron pellet group transect, located approximately one mile (1.6 km) to the west, averaged 26 deer days use/acre (64 ddu/ha) between 1985 and 1990 (Jense et al. 1990). Pellet group data collected on the study estimated deer use at 143 days use/acre (353 ddu/ha) in 1998 and 175 days use/acre (431 ddu/ha) in 2003. Cattle use was estimated at 5 days use/acre (12 ddu/ha) in 2003.

Soil

The soil is a loam with a neutral reaction (pH 6.8). Relative combined vegetation and litter cover was 78%-83% in 1998 and 2003, then decreased to 11% in 2008 following the fire. Relative bare ground cover increased from 7% in 1998 to 13% in 2003 and 42% in 2008. Relative pavement cover was 5% in 1998 and 2003, and increased to 39% in 2008. The soil erosion condition was classified as stable in 2003 and 2008, although the increase in pavement cover in 2008 suggests that some wind erosion may have occurred.

Browse

Before the fire, preferred browse was provided primarily by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), antelope bitterbrush (*Purshia tridentata*), and Stansbury cliffrose (*Cowania mexicana* ssp. *stansburiana*). Wax current (*Ribes cereum* ssp. *cereum*), blue elderberry (*Sambucus cerulea*), and skunkbush sumac (*Rhus trilobata*) were also present in low densities. Scattered Utah juniper (*Juniperus osteosperma*) trees provided 2% canopy cover in 2003. All browse species were eliminated when the study burned in 2008.

Mountain big sagebrush provided 14% quadrat cover in 1998 and 17% in 2003. Density decreased from 2,840 plants/acre in 1998 to 2,560 plants/acre in 2003. Decadence fluctuated between 14% and 24% of the population from 1985 to 2003. Young recruitment steadily decreased from 26% of the population in 1985 to 2% by 2003. Vigor was good on most plants in all sample years, and browse use was light-moderate. Average annual leader growth was 1.6 inches in 2003.

Antelope bitterbrush quadrat cover was 6% in 1998 and 7% in 2003. Density decreased slightly from 400 plants/acre in 1998 to 360 plants/acre in 2003. Decadent plants decreased from 20% of the population in 1985 to 0% in 1991, then increased to 17% by 2003. No young plants have been sampled in any sample year. Twenty percent of the population showed poor vigor in 1985, but vigor was good from 1991 to 2003. Browse use was heavy in 1985 and moderate-heavy from 1991 to 2002. Annual leader growth averaged 3.1 inches (7.9 cm) in 2003.

Herbaceous Understory

Total grass cover was 25% in 1998, 23% in 2003, and less than 1% following the fire in 2008. Cheatgrass (*Bromus tectorum*) and Sandberg bluegrass (*Poa secunda*) were the dominant grasses in 1998 and 2003. Cheatgrass comprised 79% of the grass cover in 1998 and 36% in 2003, while Sandberg bluegrass made up 18% in 1998 and 59% in 2003. Bluebunch wheatgrass (*Agropyron spicatum*) and bottlebrush squirreltail were also fairly common. Bulbous bluegrass (*Poa bulbosa*) was sampled in 2003 but provided little cover. In 2008,

Sandberg bluegrass and cheatgrass were the only grasses sampled, and were present in low frequencies.

Total forb cover was 4% in 1998 and less than 1% in 2003. No forbs were sampled in 2008. The forb component was largely dominated by annual species, and no perennials were sampled in 2003. Some of the more common forbs included holosteum (*Holosteum umbellatum*), pale alyssum (*Alyssum alyssoides*), draba (*Draba* sp.), and bur buttercup (*Ranunculus testiculatus*).

1991 TREND ASSESSMENT

The browse trend is slightly down. Sagebrush density decreased 8%, and decadence increased from 14% of the population to 24%. Young recruitment decreased slightly from 26% of the population to 22%, and plants displaying poor vigor increased from 4% of the population to 13%. Bitterbrush density decreased 40%, and decadence and plants with poor vigor also decreased from 20% of the population to 0%. Cliffrose was sampled at a low density in 1985, but was not sampled in 1991. The trend for grass is stable. The sum of nested frequency for perennial grasses decreased slightly, and bottlebrush squirreltail decreased significantly in nested frequency. The trend for forbs is stable. Few forbs were sampled.

browse - slightly down (-1) grass - stable (0) forb - stable - (0)

1998 TREND ASSESSMENT

The browse trend is stable. Density changes may have been related to the larger sample area in 1998, therefore, the trend was determined using other parameters. Sagebrush decadence decreased slightly from 24% of the population to 18%, and young recruitment also decreased from 22% of the population to 12%. Vigor improved, from 13% of the population showing poor vigor to only 2%. Bitterbrush decadence increased slightly from 0% of the population to 5%, and vigor remained excellent. Cliffrose was sampled for the first time since 1985 at a density of 80 plants/acre, and vigor was good on all sampled plants. The trend for grass is stable. The sum of nested frequency for perennial grasses changed little. The trend for forbs is stable. The sum of nested frequency for perennial forbs changed little. Prickly lettuce (*Lactuca serriola*) decreased significantly in nested frequency. The winter range condition, determined by the Desirable Components Index (DCI), was rated as very poor-poor due to low young recruitment of preferred browse, low perennial herbaceous cover, and high annual grass cover.

winter range condition (DCI) - very poor-poor (36) Mid-level potential scale
browse - stable (0) grass - stable (0) forb - stable (0)

2003 TREND ASSESSMENT

The trend for browse is stable. Sagebrush density decreased 10%, and decadence slightly increased from 18% of the population to 24%. Young recruitment continued to decrease from 12% of the population to 2%, and plants showing poor vigor slightly increased from 2% of the population to 9%. Bitterbrush density also decreased 10%, and decadence increased from 5% of the population to 17%. Plants displaying poor vigor increased slightly from 0% of the population to 6%. Cliffrose density decreased slightly, but the population remained in good vigor. The trend for grass is up. The sum of nested frequency for perennial grasses increased 70%. Sandberg bluegrass and bottlebrush squirreltail increased significantly in nested frequency, while that for cheatgrass decreased significantly. The trend for forbs is down. No perennial forbs were sampled, and pale alyssum, draba, and holosteum decreased significantly in nested frequency. The DCI rating increased to fair due to increases in preferred browse and perennial grass cover, and a decrease in annual grass cover.

winter range condition (DCI) - fair (62) Mid-level potential scale
browse - stable (0) grass - up (+2) forb - down (-2)

2008 TREND ASSESSMENT

The trend for browse is down. The fire eliminated all browse on the study. The trend for grass is down. The only grass species sampled were Sandberg bluegrass and cheatgrass, which were sampled in 18% and 1% of the quadrats, respectively. Total grass cover was less than 1%. The trend for forbs is slightly down. No forbs were sampled, however, in 2003 only annual forbs were sampled, and they were present in low frequencies. The DCI rating declined to very poor due to the loss of vegetation cover caused by the fire.

winter range condition (DCI) - very poor (1) Mid-level potential scale

browse - down (-2)

grass - down (-2)

forb - slightly down (-1)

HERBACEOUS TRENDS --

Management unit 21B, Study no: 12

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
G	Agropyron cristatum	-	-	3	-	-	.03	-	-
G	Agropyron spicatum	a-	a ³	ab ¹¹	c ¹²	b-	.21	.39	-
G	Bromus japonicus (a)	-	-	11	6	-	.21	.07	-
G	Bromus tectorum (a)	-	-	c ³⁴⁹	b ²⁶⁴	a ³	19.84	8.28	.00
G	Poa bulbosa	-	-	-	7	-	-	.18	-
G	Poa secunda	b ¹⁹³	b ¹⁸⁹	b ¹⁶⁸	c ²⁹⁹	a ⁴³	4.42	13.53	.50
G	Secale montanum	-	-	2	-	-	.00	-	-
G	Sitanion hystrix	b ²⁶	a ²	ab ¹⁴	b ²⁶	a-	.29	.58	-
Total for Annual Grasses		0	0	360	270	3	20.04	8.35	0.00
Total for Perennial Grasses		219	194	198	344	43	4.97	14.69	0.50
Total for Grasses		219	194	558	614	46	25.02	23.04	0.50
F	Alyssum alyssoides (a)	-	-	c ⁴⁸	b ²²	a-	.48	.05	-
F	Allium sp.	-	-	1	-	-	.00	-	-
F	Arabis sp.	-	-	7	-	-	.01	-	-
F	Astragalus calycosus	-	-	3	-	-	.00	-	-
F	Calochortus nuttallii	-	-	8	-	-	.02	-	-
F	Collinsia parviflora (a)	-	-	-	4	-	-	.01	-
F	Draba sp. (a)	-	-	b ⁵⁵	a ⁹	a-	.19	.01	-
F	Epilobium brachycarpum (a)	-	-	6	-	-	.01	-	-
F	Erodium cicutarium (a)	-	-	-	8	-	-	.21	-
F	Holosteum umbellatum (a)	-	-	c ²²³	b ³²	a-	2.42	.17	-
F	Lactuca serriola	a-	b ⁵⁵	a ¹	a-	a-	.00	-	-
F	Lomatium sp.	-	-	3	-	-	.03	-	-
F	Machaeranthera canescens	-	-	8	-	-	.01	-	-
F	Microsteris gracilis (a)	-	-	b ¹⁶	ab ⁶	a-	.03	.02	-
F	Phlox longifolia	4	-	5	-	-	.01	-	-

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
F	<i>Polygonum douglasii</i> (a)	-	-	3	-	-	.01	-	-
F	<i>Ranunculus testiculatus</i> (a)	-	-	_b 39	_b 19	_a -	.12	.08	-
F	<i>Tragopogon dubius</i>	_a -	_a -	_b 15	_a -	_a -	.19	-	-
F	Unknown forb-perennial	4	-	-	-	-	-	-	-
F	<i>Zigadenus paniculatus</i>	-	1	-	-	-	-	-	-
Total for Annual Forbs		0	0	390	100	0	3.26	0.56	0
Total for Perennial Forbs		8	56	51	0	0	0.29	0	0
Total for Forbs		8	56	441	100	0	3.56	0.56	0

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

BROWSE TRENDS --

Management unit 21B, Study no: 12

Type	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	<i>Artemisia tridentata vaseyana</i>	74	73	0	13.55	16.64	-
B	<i>Chrysothamnus nauseosus</i>	1	0	0	1.00	-	-
B	<i>Cowania mexicana stansburiana</i>	2	1	0	.33	.15	-
B	<i>Gutierrezia sarothrae</i>	77	31	0	8.80	1.67	-
B	<i>Juniperus osteosperma</i>	1	2	0	1.63	.78	-
B	<i>Purshia tridentata</i>	17	14	0	5.50	6.99	-
B	<i>Ribes cereum cereum</i>	1	0	0	.15	-	-
B	<i>Sambucus cerulea</i>	1	0	0	.00	-	-
Total for Browse		174	121	0	30.98	26.23	0

CANOPY COVER, LINE INTERCEPT --

Management unit 21B, Study no: 12

Species	Percent Cover	
	'03	'08
<i>Artemisia tridentata vaseyana</i>	19.43	-
<i>Gutierrezia sarothrae</i>	1.11	-
<i>Juniperus osteosperma</i>	2.43	-
<i>Purshia tridentata</i>	10.19	-

KEY BROWSE ANNUAL LEADER GROWTH --
 Management unit 21B, Study no: 12

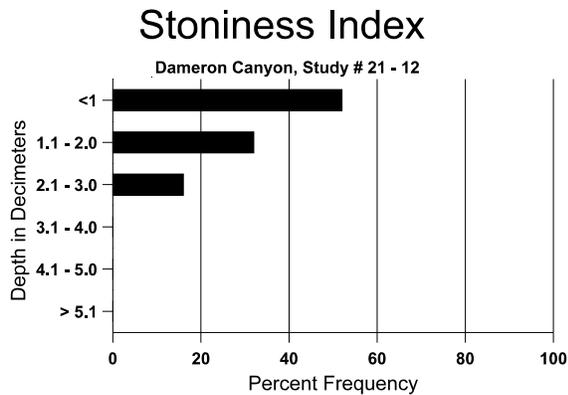
Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata vaseyana	1.6	-
Purshia tridentata	3.1	-

BASIC COVER --
 Management unit 21B, Study no: 12

Cover Type	Average Cover %				
	'85	'91	'98	'03	'08
Vegetation	3.00	3.50	49.84	51.87	.51
Rock	4.50	5.25	5.39	4.44	9.53
Pavement	7.50	12.00	6.49	6.28	42.18
Litter	64.25	52.50	61.09	40.47	10.92
Cryptogams	0	.25	1.30	.00	.00
Bare Ground	20.75	26.50	9.62	15.61	46.14

SOIL ANALYSIS DATA --
 Management unit 21, Study no: 12, Study Name: Dameron Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
9.6	68.0 (13.1)	6.8	44.7	30.7	24.6	3.7	11.9	163.2	0.9



PELLET GROUP DATA --

Management unit 21B, Study no: 12

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	8	1	-
Elk	2	-	-
Deer	50	37	5
Cattle	1	1	-

Days use per acre (ha)		
'98	'03	'08
-	-	-
1 (2)	-	-
143 (353)	175 (431)	-
-	5 (13)	-

BROWSE CHARACTERISTICS --

Management unit 21B, Study no: 12

		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 vaseyana</i>												
85	5199	66	1333	3133	733	-	12	0	14	.38	4	28/29
91	4798	3666	1066	2599	1133	-	43	6	24	3	13	24/26
98	2840	60	340	2000	500	400	17	.70	18	2	2	26/31
03	2560	-	40	1900	620	320	30	9	24	9	9	30/36
08	0	-	-	-	-	-	0	0	0	-	0	-/-
<i>Chrysothamnus nauseosus</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	80	-	60	20	-	-	0	0	-	-	0	34/48
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Cowania mexicana stansburiana</i>												
85	66	-	-	-	66	-	0	100	100	-	0	-/-
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	80	-	20	60	-	20	100	0	0	-	0	78/107
03	20	-	20	-	-	-	0	0	0	-	0	62/82
08	0	-	-	-	-	-	0	0	0	-	0	-/-
<i>Gutierrezia sarothrae</i>												
85	1532	266	533	933	66	-	0	0	4	-	0	9/13
91	7198	599	2066	5066	66	-	0	0	1	-	0	10/9
98	10540	320	940	9520	80	20	0	0	1	.18	.18	9/9
03	1320	80	20	1160	140	140	0	0	11	8	8	9/10
08	0	-	-	-	-	-	0	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)
Juniperus osteosperma												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	20	-	20	-	-	-	0	0	-	-	0	-/-
03	40	-	-	40	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Purshia tridentata												
85	332	-	-	266	66	-	0	100	20	-	20	46/43
91	199	-	-	199	-	-	33	33	0	-	0	43/66
98	400	40	-	380	20	20	50	25	5	-	0	51/67
03	360	-	-	300	60	20	11	67	17	6	6	57/72
08	0	-	-	-	-	-	0	0	0	-	0	-/-
Rhus trilobata												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	72/96
03	0	-	-	-	-	-	0	0	-	-	0	58/60
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Ribes cereum cereum												
85	0	-	-	-	-	-	0	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	20	-	-	-	20	-	0	0	100	-	0	-/-
03	0	-	-	-	-	-	0	0	0	-	0	-/-
08	0	-	-	-	-	-	0	0	0	-	0	-/-
Sambucus cerulea												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	40	-	-	40	-	-	100	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-