

Trend Study 21B-11-08

Study site name: Dog Valley .

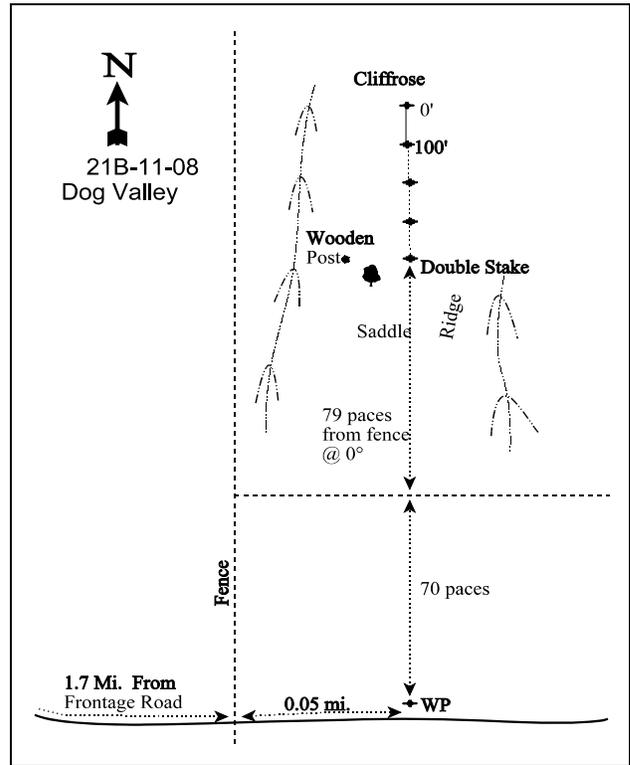
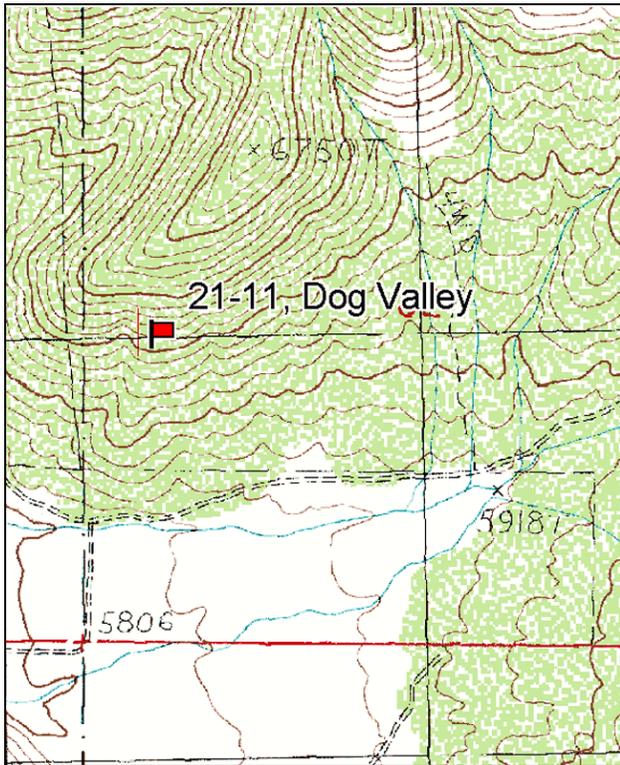
Vegetation type: Burned Cliffrose .

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 3 on 5ft and belt 5 on 2 ft.

LOCATION DESCRIPTION

Head south on I-15 out of Kanosh. Take the first ranch exit south of Kanosh (exit #138). Drive under the freeway to the east side. Turn and drive north on the frontage road parallel to the interstate for 1.2 miles to a cattleguard. Just past the cattleguard turn right and go east 1.7 miles to a fence. From the fence continue 0.05 miles east to a witness post on the north side of the road by a large juniper. The witness post is a steel full high stake approximately 3 feet tall and 8 feet off the road. From the witness post, go 852 feet due north. You should use a tape to measure the 852 feet north to the 400' stake.



Map Name: Cove Fort

Diagrammatic Sketch

Township 24S , Range 6W , Section 32

GPS: NAD 83, UTM 12S 364297 E, 4282178 N

DISCUSSION

Dog Valley - Trend Study No. 21B-11

Study Information

This study samples deer winter range in a Stansbury cliffrose (*Cowania mexicana* ssp. *stansburiana*) community overlooking the sagebrush flats and cultivated fields of Dog Valley [elevation: 6,160 feet (1,878 m), slope: 35%, aspect: south]. The land is administered by the US Forest Service, and was grazed by cattle on a rest-rotation basis every other year for about a 10-year period (1975-1985). The study has been dominated by cheatgrass since 1985. The Dog Valley Peak fire burned the entire area in July of 1996. Before the rest-rotation program, the area had been severely overgrazed. The DWR Dog Valley pellet group transect measured deer use on the same slope that this study samples. Deer use varied between years, but in general, there was moderate-heavy use between 1985 and 1990 at an average of 66 days use/acre (163 ddu/ha) (Jense et al. 1990). Pellet group data collected along the study baseline estimated deer use at 47 days use/acre (116 ddu/ha) in 1998, 116 days use/acre (286 ddu/ha) in 2003, and 95 days use/acre (235 ddu/ha) in 2008. Elk use was estimated at 4 days use/acre (10 edu/ha) in 1998 and 6 days use/acre (15 edu/ha) in 2008. Cattle use was estimated at 6 days use/acre (14 cdu/ha) in 2003. Mormon crickets (*Anabrus simplex*) were very abundant in June 2003 when the study was sampled.

Soil

The soil is a clay loam with a neutral reaction (pH 6.8). Relative combined vegetation and litter cover decreased from 82% in 1998 to 75% in 2008, while relative combined rock and pavement cover increased from 17% to 23%. Relative bare ground cover has been low at 2%-4% since 1998. The soil erosion condition was classified as stable in 2003 and 2008.

Browse

Stansbury cliffrose (*Cowania mexicana* ssp. *stansburiana*) was the dominant browse species before the fire in 1996, and it has provided less than 1% quadrat cover since 1998. Density increased slightly from 533 plants/acre in 1985 to 599 plants/acre in 1991, and decreased to 0 plants/acre in 1998 due to the fire. The population of cliffrose appeared to be reestablishing itself in 2003 with a density of 260 plants/acre, density declined to only 40 plants/acre in 2008. It is unknown what caused this decline. The population has been largely mature, with few young or decadent plants. Vigor was good on all plants every sample year until 2008, when half of the sampled plants showed poor vigor. Average annual leader growth was 4.1 inches (10.4 cm) in 2003.

Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) also provided preferred browse prior to the burn. Density was 399 plants/acre in 1985 and 66 plants/acre in 1991, but no live sagebrush plants have been sampled on the transect since 1998. Decadent plants comprised 17% of the population in 1985, and young plants made up 33%. All of the sampled plants were mature in 1991. Vigor was excellent both years. Browse use was light-moderate in 1985 and heavy in 1991.

Utah juniper (*Juniperus osteosperma*) is also scattered throughout the study, and provided 2%-4% canopy cover since 1998. Other browse species that are present but sparse include true mountain mahogany (*Cercocarpus montanus*), Rocky Mountain smooth sumac (*Rhus glabra* ssp. *cismontana*), blue elderberry (*Sambucus cerulea*), broom snakeweed (*Gutierrezia sarothrae*), and gray horsebrush (*Tetradymia canescens*).

Herbaceous Understory

Total grass cover was 48% in 1998, 9% in 2003, and 21% in 2008. Although annual grasses were not sampled until 1998, cheatgrass (*Bromus tectorum*) was the dominant understory species in 1985 and 1991. It provided 95%-97% of the total grass cover since 1998, and quadrat frequency has ranged from 96% to 100%. Bluebunch wheatgrass (*Agropyron spicatum*), Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail

(*Sitanion hystrix*), purple three-awn (*Aristida purpurea*), and galleta (*Hilaria jamesii*) have also been sampled, but provided little cover.

The forb component is also dominated by annuals. Total forb cover was 9% in 1998 and 2008, and 36% in 2003. Storksbill (*Erodium cicutarium*) has been the most abundant forb, providing 60%-100% of the total forb cover. Pale alyssum (*Alyssum alyssoides*) was also abundant in 1998. Prickly lettuce (*Lactuca serriola*) was the most abundant perennial forb, but provided less than 1% cover in 1998 and 2003 and 1% in 2008. Field bindweed (*Convolvulus arvensis*), a noxious weed, was sampled in 2% of the quadrats in 2003, and 6% in 2008, but provided little cover.

1991 TREND ASSESSMENT

The browse trend is slightly down. Sagebrush density decreased 83%, and decadence decreased from 17% of the population to 0%. Young recruitment also decreased from 33% of the population to 0%. Cliffrose density increased 12%. Both decadence and young recruitment increased slightly. Vigor remained good on all sampled sagebrush and cliffrose plants. The trend for grass is stable. The sum of nested frequency for perennial grasses increased slightly, and Sandberg bluegrass increased significantly in nested frequency. The trend for forbs is stable. Few perennial forbs were sampled in 1985, and none were sampled in 1991.

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

1998 TREND ASSESSMENT

The browse trend is down. The fire in 1996 eliminated nearly all of the preferred browse, and therefore none were sampled. The trend for grass is stable. The sum of nested frequency for perennial grasses decreased slightly, and Sandberg bluegrass decreased significantly in nested frequency. The trend for forbs is up. The sum of nested frequency for perennial forbs increased substantially. The winter range condition, determined by the Desirable Components Index (DCI), was rated as very poor due to the lack of preferred browse, low perennial herbaceous cover, and high cheatgrass cover.

winter range condition (DCI) - very poor (-15) Mid-level potential scale
browse - down (-2) grass - stable (0) forb - up (+2)

2003 TREND ASSESSMENT

The browse trend is up. Cliffrose returned after the fire at a density of 260 plants/acre. The majority of the plants were mature, although young plants comprised 8% of the population. Vigor was good on all sampled plants. Whereas the cliffrose on the study prior to the fire had an average height of almost 7 feet, in 2003 the average cliffrose height was 1.8 feet, making them more available to big game. Sagebrush was not sampled. The trend for grass is stable. The sum of nested frequency for perennial grasses decreased slightly, and cheatgrass decreased significantly in nested frequency. The trend for forbs is down. The sum of nested frequency for perennial forbs decreased substantially. Pale alyssum decreased significantly in nested frequency, while that for storksbill increased significantly. Additionally, field bindweed was sampled in 2 quadrats. The DCI rating remained very poor.

winter range condition (DCI) - very poor (-7) Mid-level potential scale
browse - up (+2) grass - stable (0) forb - down (-2)

2008 TREND ASSESSMENT

The browse trend is down. After what appeared to be a reestablishment of cliffrose in 2003, density decreased 85%. Half of the sampled plants were young, and half were decadent and showed poor vigor. Sagebrush was not sampled. The trend for grass is stable. The sum of nested frequency for perennial grasses changed little, but cheatgrass increased significantly in nested frequency. Quadrat frequency of cheatgrass increased from 96% to 100%. The trend for forbs is stable. The sum of nested frequency for perennial forbs, excluding field

bindweed, increased slightly, but composition remained poor. Prickly lettuce, pale alyssum, and draba (*Draba* sp.) increased significantly in nested frequency, while that for storksbill decreased significantly. The DCI rating remained very poor.

winter range condition (DCI) - very poor (-13) Mid-level potential scale
 browse - down (-2) grass - stable (0) forb - stable (0)

HERBACEOUS TRENDS --
 Management unit 21B, Study no: 11

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
G	<i>Agropyron spicatum</i>	16	16	20	9	9	.42	.22	.18
G	<i>Aristida purpurea</i>	3	5	-	3	7	-	.15	.41
G	<i>Bromus tectorum</i> (a)	-	-	c387	a290	b361	46.88	8.72	20.71
G	<i>Hilaria jamesii</i>	-	-	4	-	-	.85	-	-
G	<i>Poa secunda</i>	a7	b17	a6	a4	a1	.06	.04	.03
G	<i>Sitanion hystrix</i>	-	5	4	2	-	.03	.03	-
Total for Annual Grasses		0	0	387	290	361	46.88	8.72	20.71
Total for Perennial Grasses		26	43	34	18	17	1.36	0.44	0.63
Total for Grasses		26	43	421	308	378	48.25	9.17	21.34
F	<i>Alyssum alyssoides</i> (a)	-	-	c253	a1	b95	2.61	.00	.32
F	<i>Ambrosia psilostachya</i>	-	-	-	2	-	-	.03	-
F	<i>Antennaria rosea</i>	-	-	4	-	-	.03	-	-
F	<i>Astragalus calycosus</i>	-	-	9	-	-	.06	-	-
F	<i>Cirsium</i> sp.	-	-	2	-	-	.24	-	-
F	<i>Convolvulus arvensis</i>	a-	a-	a-	ab5	b14	-	.01	.10
F	<i>Collinsia parviflora</i> (a)	-	-	-	2	-	-	.00	-
F	<i>Draba</i> sp. (a)	-	-	a11	a5	b43	.01	.01	.13
F	<i>Epilobium brachycarpum</i> (a)	-	-	3	-	-	.01	-	-
F	<i>Erodium cicutarium</i> (a)	-	-	a176	c330	b247	5.56	36.07	6.86
F	<i>Lactuca serriola</i>	a-	a-	c74	a7	b25	.49	.02	1.28
F	<i>Machaeranthera canescens</i>	-	-	-	-	7	-	-	.04
F	<i>Phlox longifolia</i>	-	-	-	-	2	-	-	.00
F	<i>Polygonum douglasii</i> (a)	-	-	-	-	1	-	-	.00
F	<i>Solanum</i> sp.	-	-	-	-	8	-	-	.04
F	<i>Tragopogon dubius</i>	-	-	-	-	3	-	-	.03
F	Unknown forb-perennial	a3	b-	c18	a-	a-	.28	-	-
Total for Annual Forbs		0	0	443	338	386	8.20	36.10	7.32
Total for Perennial Forbs		3	0	107	14	59	1.11	0.05	1.51
Total for Forbs		3	0	550	352	445	9.32	36.16	8.84

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

BROWSE TRENDS --

Management unit 21B, Study no: 11

Type	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	<i>Cowania mexicana stansburiana</i>	0	11	2	.01	.53	.00
B	<i>Gutierrezia sarothrae</i>	1	0	0	.00	-	-
B	<i>Juniperus osteosperma</i>	0	0	0	-	3.42	-
B	<i>Tetradymia canescens</i>	4	3	1	.15	.00	.00
Total for Browse		5	14	3	0.16	3.95	0

CANOPY COVER, LINE INTERCEPT --

Management unit 21B, Study no: 11

Species	Percent Cover		
	'98	'03	'08
<i>Cowania mexicana stansburiana</i>	-	.80	-
<i>Juniperus osteosperma</i>	2.79	4.00	2.31

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 21B, Study no: 11

Species	Average leader growth (in)	
	'03	'08
<i>Cowania mexicana stansburiana</i>	4.1	-

BASIC COVER --

Management unit 21B, Study no: 11

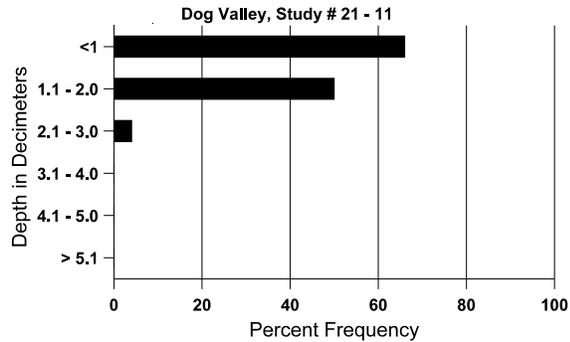
Cover Type	Average Cover %				
	'85	'91	'98	'03	'08
Vegetation	1.25	2.00	54.39	50.29	36.90
Rock	11.50	16.25	18.90	15.23	18.12
Pavement	8.25	9.25	6.03	7.13	6.25
Litter	72.25	63.75	66.49	36.77	44.54
Cryptogams	0	0	.04	0	0
Bare Ground	6.75	8.75	2.25	4.92	1.82

SOIL ANALYSIS DATA --

Management unit 21, Study no: 11, Study Name: Dog Valley

Effective rooting depth (in)	Temp °F (depth)	pH	clay loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
8.2	69.0 (9.1)	6.8	40.7	29.7	29.6	2.6	20.7	121.4	0.8

Stoniness Index



PELLET GROUP DATA --

Management unit 21B, Study no: 11

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	13	2	13
Elk	1	2	14
Deer	35	43	69
Cattle	-	1	-

Days use per acre (ha)		
'98	'03	'08
-	-	-
4 (10)	-	6 (15)
47 (116)	116 (286)	95 (235)
-	6 (14)	-

BROWSE CHARACTERISTICS --
Management unit 21B, Study no: 11

		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	398	-	133	199	66	-	33	0	17	-	0	20/26
91	66	-	-	66	-	-	0	100	0	-	0	12/21
98	0	-	-	-	-	100	0	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	0	-	0	-/-
08	0	-	-	-	-	-	0	0	0	-	0	-/-
<i>Cercocarpus montanus</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	8/19
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Cowania mexicana stansburiana</i>												
85	533	-	-	533	-	-	63	0	0	-	0	69/75
91	598	66	66	399	133	-	44	56	22	-	0	82/70
98	0	40	-	-	-	600	0	0	0	-	0	-/-
03	260	-	20	240	-	20	23	69	0	-	0	21/23
08	40	-	20	-	20	240	0	50	50	50	50	16/22
<i>Gutierrezia sarothrae</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	66	-	-	66	-	-	0	0	-	-	0	6/4
98	20	-	20	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	12/25
08	0	-	-	-	-	-	0	0	-	-	0	9/11
<i>Rhus glabra cismontana</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	33/40

		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)
Sambucus cerulea												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	26/13
03	0	-	-	-	-	-	0	0	-	-	0	18/22
08	0	-	-	-	-	-	0	0	-	-	0	57/83
Sclerocactus sp.												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	6/12
Tetradymia canescens												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	120	-	20	100	-	-	0	0	-	-	0	10/20
03	80	-	20	60	-	-	0	0	-	-	0	10/21
08	40	-	20	20	-	-	0	0	-	-	100	10/22