

Trend Study 22-14-08

Study site name: Antelope Mountain .

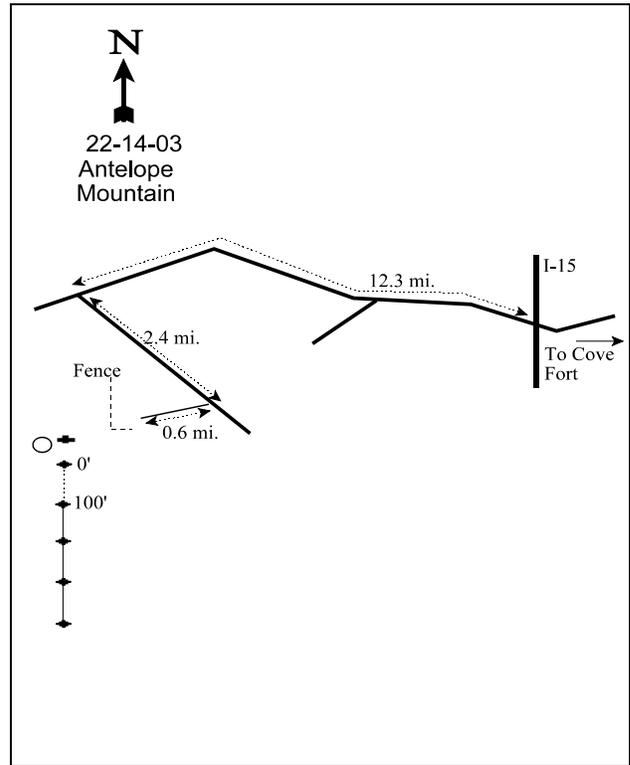
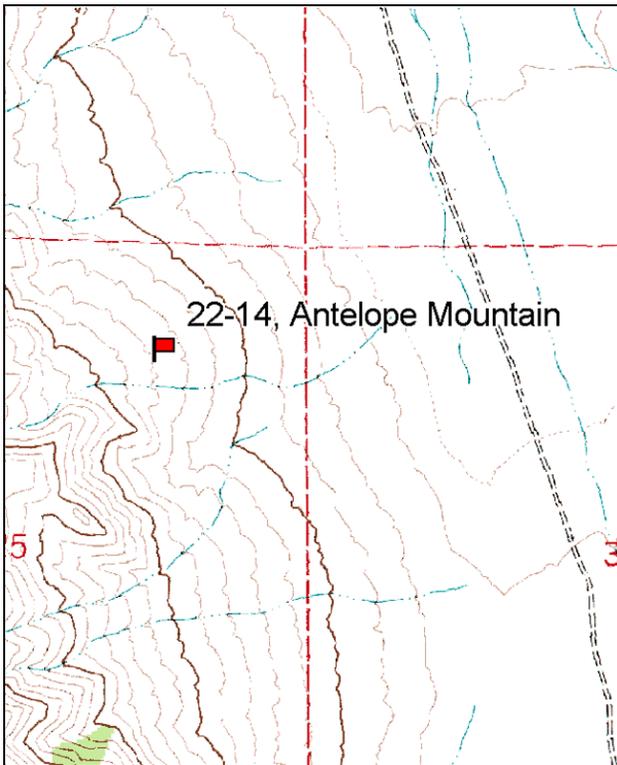
Vegetation type: Burned seeded grass .

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

From the Cove Fort exit on I-15 (a few miles north of the Junction with I-70), proceed 12.3 miles west on a gravel road staying right at one major fork. Turn left at the intersection and continue for 2.4 miles to the southwest corner of a fence. Turn right and go 0.6 miles up this faint road. This road no longer exists. Take a bearing of 233 degrees magnetic from the old fence corner to the site. Then walk or drive off road to a witness post near a large rock. The 0-foot frequency baseline stake is 20 feet east of this rock. The baseline is marked by steel rebar posts.



Map Name: Pinnacle Pass

Diagrammatic Sketch

Township 25S, Range 9W, Section 25

GPS: NAD 83, UTM 12S 342372 E 4275355 N

DISCUSSION

Antelope Mountain - Trend Study No. 22-14

Study Information

This study is located on the northeast end of the Mineral Mountains on a moderately sloping alluvial fan [elevation: 5,700 feet (1,737m), slope: 20-25%, aspect: east]. When the study was established in 1985, the range type was big sagebrush-grass. A fire burned the entire area in 1996 and the site was then seeded and chained. At the time of the 1991 sampling, there was little sign of recent livestock use and winter deer use was light at an estimated 14 days use/acre (35 ddu/ha). Two antler drops from mature bucks were found on the site, but use appeared to be more concentrated a few hundred yards up slope at the head of a large draw. After the fire, a pellet group transect read on site in 1998 estimated 13 deer days use/acre (32 ddu/ha) and 6 cow days use/acre (15 cdu/ha). In 2003, the pellet group transect estimated 39 elk, 5 deer, and 25 cow days use/acre (96 edu/ha, 12 ddu/ha, and 61 cdu/ha). In 2008, the pellet group transect estimated 50 deer and 2 elk days use/acre (124 ddu/ha and 5edu/ha).

Soil

This site is within the Sigurd series (USDA-NRCS 2007) which consists of very deep, somewhat excessively drained soils formed in alluvium, mostly from limestone and sandstone which occur on alluvial fans and flood plains. Soil analysis indicates texture to be a loam, clay loam with a neutral pH (7.1). Soil depth is moderate and pale brown in color. Phosphorous levels in the soil profile are low at 6.0 ppm, providing marginal availability for plant growth and development (Tiedemann and Lopez 2004). This soil type is excessively drained and is further limited by a low water-holding capacity. Permeability is rapid and the hazard of erosion is moderate. An erosion condition class assessment completed in 2003 and 2008 rated soils as stable. After the fire, percent bare ground cover increased to 19% and the combined percent cover from rock and pavement increased to 61%. Since then, average cover for bare ground has varied from 3 to 7%, while average rock-pavement cover has declined as well, varying from 40 to 54%.

Browse

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) was the dominant species until the 1996 fire, since then no sagebrush have been sampled.

Herbaceous Understory

Prior to the fire, Sandberg bluegrass (*Poa secunda*), galleta (*Hilaria jamesii*), and bluebunch wheatgrass (*Agropyron spicatum*) were the most abundant herbaceous species on the site. Following the burn and the associated rehabilitation efforts, the dominant species have been crested wheatgrass (*Agropyron cristatum*) and intermediate wheatgrass (*Agropyron intermedium*). Bluebunch wheatgrass and galleta remained at moderate amounts. In 2003, both crested and intermediate wheatgrass significantly declined in nested frequency, while bluebunch wheatgrass and galleta remained stable. Sandberg bluegrass had the highest nested frequency value in 2003. Cheatgrass (*Bromus tectorum*) was present on the site in 1998, but wasn't a major contributor in the understory. In 2003 however, cheatgrass became the dominant herbaceous species as it provided 40% of the total vegetation cover on the site and was sampled in 98 of the 100 quadrats. Cheatgrass cover decreased from a high of 12% in 2003 to only 1% in 2008. However, it still occurred in 73% of the quadrats. Forbs are quite sparse.

1991 TREND ASSESSMENT

The trend for Wyoming big sagebrush is down due to a lower population density, and an increase in the number of decadent plants. Also, the number of plants that are in poor vigor increased (10% to 29%) and the number of young in the population declined. Trend for perennial grasses is up with significant increases for bluebunch wheatgrass and sandberg bluegrass. Trend for perennial forbs is slightly up due to an increase in sum of nested frequency value. Forbs provide an insignificant source of forage on this site.

browse - down (-2)

grass - up (+2)

forb - slightly up (+1)

1998 TREND ASSESSMENT

The key browse species, Wyoming big sagebrush, was wiped out by the fire. Broom snakeweed is currently the most abundant shrub on the site. The browse trend is down. The perennial grass trend is stable. Although perennial herbaceous understory sum of nested frequency is slightly lower in 1998, it appears to have been well established considering the effect of the fire. Cheatgrass abundance is low and the perennial species should be able to keep it that way. Trend for perennial forbs is considered stable even with the slightly downward nested frequency as cover for alfalfa was at 5%.

Winter Range Condition (DCI) - fair (40) low-level potential scale

browse - down (-2)

grass - stable (0)

forb - stable (0)

2003 TREND ASSESSMENT

The browse component does not have a trend because no key species are present on the site. Overall trend for the perennial herbaceous understory is stable. Perennial grasses increased in sum of nested frequency while perennial forbs declined. Most of the perennial forb loss was the decrease in alfalfa (5% to less than 1%) with the drought. The perennial forb component remains sparse, but the decrease should be noted as slightly downward trend for nested frequency. While the perennial grasses, both exotic and native species, have become the dominant component on this site after the range fire and show a slight increase in nested frequency.

Winter Range Condition (DCI) - poor (17) low-level potential scale

browse - n/a (no key browse)

grass - slightly up (+1)

forb - slightly down (-1)

2008 TREND ASSESSMENT

The browse component does not have a trend because no key species are present on the site since the fire in 1996. Trend for perennial grasses is stable. Perennial forbs showed a very slight increase in sum of nested frequency, but this was not considered enough to warrant a change in trend. Overall, perennial herbaceous species remained stable in sum of nested frequency. The forb component remains sparse, while contributing to less than 1% total cover.

Winter Range Condition (DCI) - fair (31) low-level potential scale

browse - no trend (n/a)

grass - stable (0)

forb - stable (0)

HERBACEOUS TRENDS --
Management unit 22 , Study no: 14

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
G	<i>Agropyron cristatum</i>	a-	a-	c158	b108	b98	6.78	3.00	4.11
G	<i>Agropyron intermedium</i>	a-	a-	c94	b49	bc60	3.18	.83	3.20
G	<i>Agropyron spicatum</i>	a11	c103	b58	b51	b53	3.55	3.21	2.40
G	<i>Aristida purpurea</i>	a-	a-	a2	a-	b41	.01	-	1.00
G	<i>Bromus tectorum</i> (a)	-	-	a47	c333	b189	.37	11.92	.89
G	<i>Hilaria jamesii</i>	b134	b105	a53	a57	ab88	2.12	1.71	5.69
G	<i>Oryzopsis hymenoides</i>	-	1	-	-	-	-	-	-
G	<i>Poa secunda</i>	bc161	c211	a9	cd180	b127	.03	3.19	1.30
G	<i>Vulpia octoflora</i> (a)	-	-	a-	b15	a-	-	.02	-
Total for Annual Grasses		0	0	47	348	189	0.37	11.94	0.88
Total for Perennial Grasses		306	420	374	445	467	15.69	11.95	17.73
Total for Grasses		306	420	421	793	656	16.07	23.90	18.62
F	<i>Alyssum alyssoides</i> (a)	-	-	b37	a1	a10	.08	.00	.02
F	<i>Astragalus utahensis</i>	a-	b35	b26	a-	b20	1.00	.01	.24
F	<i>Calochortus nuttallii</i>	-	-	-	-	2	-	-	.00
F	<i>Comandra pallida</i>	b26	b39	a-	a-	a-	-	-	-
F	<i>Draba sp.</i> (a)	-	-	1	-	3	.00	-	.00
F	<i>Erodium cicutarium</i> (a)	-	-	a23	b152	c201	.95	4.26	6.38
F	<i>Erigeron pumilus</i>	a4	b20	a-	a-	a-	-	-	-
F	<i>Leucelene ericoides</i>	-	-	1	-	-	.00	-	-
F	<i>Medicago sativa</i>	a-	a-	c46	b17	b13	4.86	.60	.46
F	<i>Phlox longifolia</i>	a-	b19	a3	a-	a-	.03	-	-
F	<i>Sanguisorba minor</i>	-	-	5	-	-	.10	-	-
F	<i>Sphaeralcea coccinea</i>	-	-	5	5	4	.18	.12	.01
F	<i>Zigadenus paniculatus</i>	c19	b8	a-	a-	a-	-	-	-
Total for Annual Forbs		0	0	61	153	214	1.03	4.27	6.41
Total for Perennial Forbs		49	121	86	22	39	6.20	0.72	0.72
Total for Forbs		49	121	147	175	253	7.23	5.00	7.13

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

BROWSE TRENDS --

Management unit 22 , Study no: 14

Type	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	Chrysothamnus nauseosus albicaulis	1	2	1	.00	.44	.03
B	Ephedra nevadensis	1	3	2	.00	.00	.03
B	Gutierrezia sarothrae	27	30	0	1.62	.21	.00
B	Opuntia sp.	1	0	0	.00	-	-
B	Pediocactus simpsonii	0	0	1	-	-	.00
B	Tetradymia canescens	1	0	0	.00	-	-
Total for Browse		31	35	4	1.62	0.65	0.06

CANOPY COVER, LINE INTERCEPT --

Management unit 22 , Study no: 14

Species	Percent Cover	
	'03	'08
Chrysothamnus nauseosus albicaulis	.33	-
Ephedra nevadensis	-	.06
Gutierrezia sarothrae	.85	-

BASIC COVER --

Management unit 22 , Study no: 14

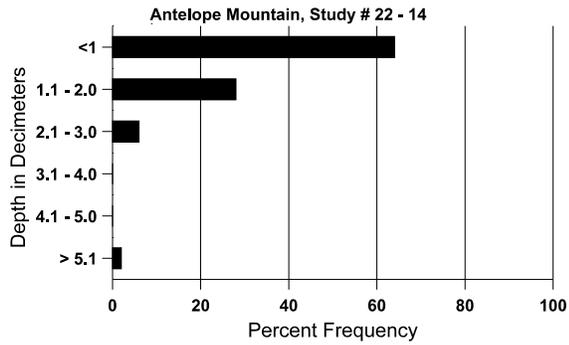
Cover Type	Average Cover %				
	'85	'91	'98	'03	'08
Vegetation	6.25	5.00	25.04	33.26	24.98
Rock	25.50	31.75	21.07	24.05	23.32
Pavement	27.50	22.75	39.57	15.56	30.92
Litter	32.25	36.25	39.48	33.09	20.25
Cryptogams	0	0	.66	.07	.00
Bare Ground	8.50	4.25	19.08	2.73	7.81

SOIL ANALYSIS DATA --

Management unit 22, Study no: 14, Study Name: Antelope Mountain

Effective rooting depth (in)	Temp °F (depth)	pH	loam			%OM	PPM P	PPM K	ds/m
			% sand	% silt	% clay				
12.9	41.0 (13.0)	7.1	36.0	37.4	26.6	2.2	6.0	201.6	0.6

Stoniness Index



PELLET GROUP DATA --

Management unit 22 , Study no: 14

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	4	17	21
Elk	-	12	2
Deer	16	6	18
Cattle	1	3	-

Days use per acre (ha)		
'98	'03	'08
-	-	-
-	39 (96)	2 (5)
13 (32)	5 (12)	50 (124)
6 (15)	25 (61)	-

BROWSE CHARACTERISTICS --

Management unit 22 , Study no: 14

		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)
Artemisia tridentata vaseyana												
85	4131	-	266	2399	1466	-	35	5	35	.48	10	18/18
91	3265	-	133	1199	1933	-	55	37	59	9	29	20/26
98	0	-	-	-	-	140	0	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	0	-	0	-/-
08	0	-	-	-	-	-	0	0	0	-	0	-/-
Chrysothamnus nauseosus albicaulis												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	20	-	-	20	-	-	0	0	-	-	0	17/26
03	40	-	-	40	-	20	0	0	-	-	0	24/40
08	20	-	20	-	-	-	0	100	-	-	100	-/-

		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>Chrysothamnus viscidiflorus stenophyllus</i>												
85	4798	199	1199	2933	666	-	7	0	14	.41	6	6/5
91	266	-	-	133	133	-	0	0	50	15	75	10/10
98	0	-	-	-	-	-	0	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	0	-	0	-/-
08	0	-	-	-	-	-	0	0	0	-	0	-/-
<i>Ephedra nevadensis</i>												
85	66	-	-	66	-	-	100	0	0	-	0	16/12
91	66	-	-	66	-	-	0	0	0	-	0	17/25
98	20	-	-	20	-	-	100	0	0	-	0	18/14
03	60	-	-	60	-	-	0	100	0	-	0	19/26
08	280	-	180	60	40	-	7	7	14	7	14	5/9
<i>Gutierrezia sarothrae</i>												
85	0	-	-	-	-	-	0	0	0	-	0	-/-
91	5731	-	1599	3466	666	-	0	0	12	1	6	7/11
98	1000	-	80	900	20	20	0	0	2	-	0	10/17
03	980	-	20	920	40	80	0	0	4	-	0	7/9
08	0	20	-	-	-	-	0	0	0	-	0	-/-
<i>Juniperus osteosperma</i>												
85	133	-	133	-	-	-	50	0	-	-	0	-/-
91	66	-	66	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	20	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Opuntia sp.</i>												
85	66	-	-	66	-	-	0	0	-	-	0	5/9
91	66	-	-	66	-	-	0	0	-	-	100	6/10
98	20	-	-	20	-	-	0	0	-	-	0	3/8
03	0	-	-	-	-	-	0	0	-	-	0	8/19
08	0	-	-	-	-	-	0	0	-	-	0	6/15
<i>Pediocactus simpsonii</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	20	-	-	20	-	-	0	0	-	-	0	2/2

		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)
Tetradymia canescens												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	20	-	-	20	-	-	0	0	-	-	0	9/12
03	0	-	-	-	-	-	0	0	-	-	0	28/33
08	0	-	-	-	-	-	0	0	-	-	0	-/-