

Trend Study 25C-7-08

Study site name: Cedar Grove.

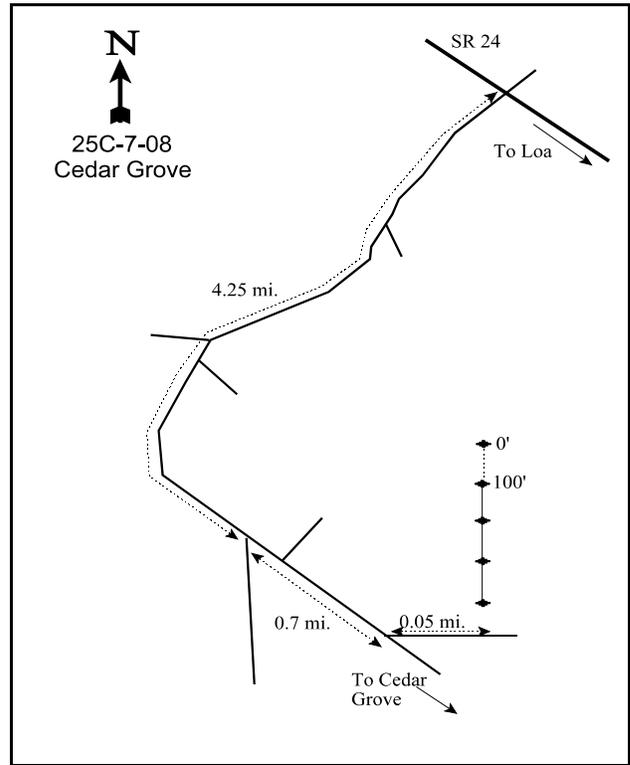
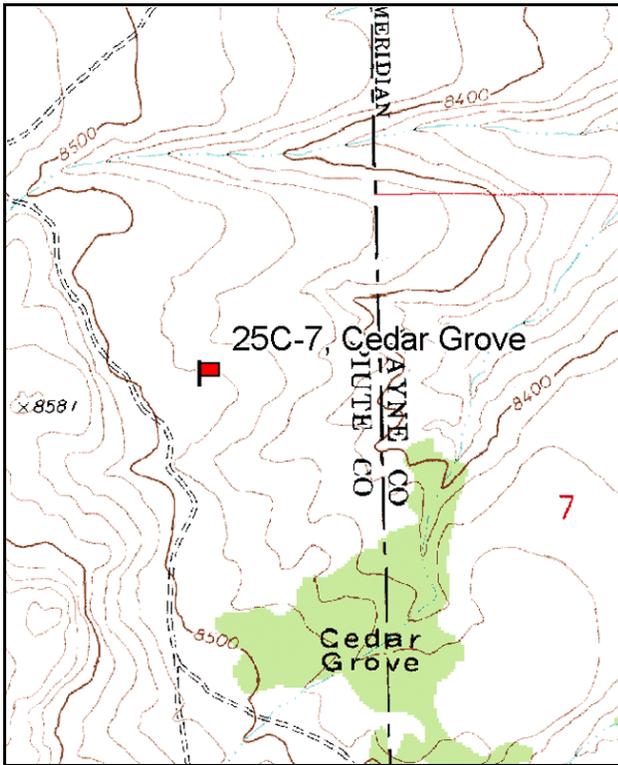
Vegetation type: Big Sagebrush-Grass.

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

Head northwest out of Loa on SR24 for about 11 miles to the summit (marked by a sign, "elevation 8410 ft"). Turn left on a gravel road (Cedar Grove Road) and go 4.25 miles to a fork (West Cedar Grove Road). Turn left and continue 0.75 miles to a faint road to the left. Turn onto this road and go down 0.05 miles (about 55 paces) to a rebar 50 feet to the north of the road. This rebar is tagged #7179 and marks the 400-foot stake. The other stakes are marked by short (1-foot) rebar. The 0-foot baseline stake is 390 feet true north of the 400-foot stake. The 100-foot stake has a red browse tag #7178 attached.



Map Name: Abes Knoll

Diagrammatic Sketch

Township 28S, Range 1W, Section 1

GPS: NAD 83, UTM 12S 425460 E, 4249783 N

DISCUSSION

Cedar Grove - Trend Study No. 25C-7

Study Information

This study is located on good antelope habitat and elk and deer winter habitat on the east side of Parker Mountain [elevation: 8,500 feet (2,591 m), slope: 5%-7%, aspect: southeast]. The range type is sagebrush-grass. There is little thermal or escape cover in the immediate area, but a stand of junipers (*Juniperus osteosperma*) 1/3 mile away provides some cover. The land is managed by State Institutional Trust Lands Administration (SITLA). Cattle were present in 1985 during study site establishment in mid-June and during sampling in September of 1991. Sheep may have grazed through the section during the spring in years past. Deer/antelope use was estimated to be light in 1998, 2003, and 2008 (2 ddu/acre:5 ddu/ha, 8 ddu/acre:20 ddu/ha, and 13 ddu/acre:33 ddu/ha, respectively). Elk use was estimated to be moderate in 1998 and 2003 (25 edu/acre:62 edu/ha both years), and light in 2008 (6 edu/acre:15 edu/ha). Cattle use was estimated to be light in 1998, 2003, and 2008 (4 cdu/acre:10 cdu/ha, 8 cdu/acre:20 cdu/ha, and 2 cdu/acre:5 cdu/ha, respectively).

Soil

The soil is very rocky, both above and below the surface. It is fairly shallow with an estimated effective rooting depth of just 8 inches. There is a hardpan at about 7 to 8 inches in depth. Soil texture is a loam which is slightly acidic in reaction (pH 6.1). Parent material is basalt. Bare soil is exposed in the shrub interspaces as litter is found only under the vegetation. Relative combined vegetation and litter cover decreased from 55% in 1998 to 41% in 2008. Relative combined rock and pavement cover increased from 30% in 1998 to 36% in 2008. Relative bare ground cover increased from 15% in 1998 to 22% in 2008. Erosion is not a problem due to adequate protective ground cover and the gentle terrain. The erosion condition class was rated as stable in 2003 and 2008.

Browse

The key and dominant browse are black sagebrush (*Artemisia nova*) and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) which appear to be hybridizing. The black sagebrush is the most abundant species, numbering around 4,000 plants/acre in 1998 through 2008. Mature plants average 1 foot in height and received moderate to heavy use in 1991 and 1998. Use was mostly light in 2003, but moderate to heavy again in 2008. Mountain big sagebrush is about one-half as abundant with a density averaging around 2,600 plants/acre from 1998 to 2008. It also has shown moderate to heavy hedging during past readings with mostly heavy use in 2008. Both sagebrush species have fairly high numbers of decadent plants with mountain big sagebrush maintaining a higher level of decadence. Over half of the mountain big sagebrush population was classified as decadent in 2003 and 2008. Black sagebrush is also apparently feeling the effects of several years of drought. Over 33% of the black sagebrush population was decadent in 2003 and nearly 50% was decadent in 2008. Other browse species include narrowleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *stenophyllus*), slenderbush eriogonum (*Eriogonum microthecum*), broom snakeweed (*Gutierrezia sarothrae*), bitterbrush (*Purshia tridentata*), snowberry (*Symphoricarpos oreophilus*), and gray horsebrush (*Tretradymia canescens*). These are found in small numbers and do not appear to be increasing.

Herbaceous Understory

Grasses on the site do not produce much forage, but mutton bluegrass (*Poa fendleriana*) is very common with a quadrat frequency of 82% from 1998 to 2008. Bottlebrush squirreltail (*Sitanion hystrix*) and blue grama (*Bouteloua gracilis*) are also fairly common and had been grazed by cattle in the past. Forbs are diverse but low in numbers. None are abundant enough to be an important forage source.

1998 TREND ASSESSMENT

Trend for browse is stable. Black sagebrush appears to have a stable trend. Differences in density may be due to the larger sample area used in 1998; therefore trend was determined using other parameters. Vigor is

improved and decadence is lower at 16%. Mountain big sagebrush decadence is similar to 1991 levels, but vigor is poor on 15% of the population compared to 2% in 1991. Recruitment is poor and not enough to maintain the population. This is probably a marginal site for mountain big sagebrush. Trend for the grasses and forbs is slightly down since the sum of nested frequency of perennial grasses and perennial forbs has declined slightly. Nested frequency of blue grama and bottlebrush squirreltail have decreased significantly while frequency of mutton bluegrass has had little change.

winter range condition (DCI) - fair (57) Mid-level potential scale
browse - stable (0) grass - slightly down (-1) forb - slightly down (-1)

2003 TREND ASSESSMENT

Trend for the key browse species, black and mountain big sagebrush, is down slightly. Densities of both species are similar to 1998 estimates but poor vigor has increased and the number of decadent plants has risen. Just over 1/3 of the black sagebrush were classified as decadent. Recruitment is nonexistent. Mountain big sagebrush has a decadence rate of 53%. Young recruitment is currently poor indicating a possible decline in the future. Trend for both the grasses and forbs is slightly down. Sum of nested frequency of perennial grasses has declined slightly with a significant decline in frequency of sedge. Mutton bluegrass is still dominant and contributes 88% of the total grass cover. It has remained stable in frequency. Sum of nested frequency of perennial forbs has declined with several species declining significantly. Overall forb cover is insignificant. The most abundant forbs are low value species.

winter range condition (DCI) - poor-fair (49) Mid-level potential scale
browse - slightly down (-1) grass - slightly down (-1) forb - slightly down (-1)

2008 TREND ASSESSMENT

The trend for browse is slightly down. Density of black sagebrush increased slightly to 4,440 plants/acre, but decadence increased to 49% and plants with poor vigor increased to 30%. Density of mountain big sagebrush decreased slightly, as did decadence and plants showing poor vigor. There was heavy use of both primary browse species. Recruitment remains low for both species, but is slightly improved over 2003. Trend for grasses is slightly up. The sum of nested frequency of perennial grasses increased as well as the production. The frequency of sedge and bluebunch wheatgrass (*Agropyron spicatum*) increased significantly from 2003. The trend for forbs is slightly up with an increase in the sum of nested frequency of perennial forbs.

winter range condition (DCI) - poor (44) Mid-level potential scale
browse - slightly down (-1) grass - slightly up (+1) forb - slightly up (+1)

HERBACEOUS TRENDS --
Management unit 25C, Study no: 7

T y p e	Species	Nested Frequency				Average Cover %		
		'91	'98	'03	'08	'98	'03	'08
G	<i>Agropyron smithii</i>	-	1	2	2	.03	.00	.01
G	<i>Agropyron spicatum</i>	_{ab} 14	_a 5	_a 4	_b 26	.05	.18	.72
G	<i>Bouteloua gracilis</i>	_b 41	_a 14	_a 15	_a 14	.28	.52	.40
G	<i>Carex</i> sp.	_a -	_b 31	_a 10	_c 45	.18	.01	.29
G	<i>Poa fendleriana</i>	213	225	216	211	9.03	7.77	7.84
G	<i>Sitanion hystrix</i>	_b 139	_a 47	_a 35	_a 24	.44	.32	.34
G	<i>Stipa lettermani</i>	_a -	_a -	_{ab} 3	_b 16	-	.04	.22
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		407	323	285	338	10.02	8.85	9.83
Total for Grasses		407	323	285	338	10.02	8.85	9.83
F	<i>Antennaria rosea</i>	-	2	1	4	.00	.00	.00
F	<i>Androsace septentrionalis</i> (a)	-	_b 57	_a 20	_a 20	.39	.07	.08
F	<i>Arabis demissa</i>	_c 44	_b 11	_a -	_b 10	.03	-	.03
F	<i>Astragalus convallarius</i>	-	-	1	4	-	.03	.04
F	<i>Astragalus</i> sp.	8	15	3	11	.09	.00	.06
F	<i>Calochortus nuttallii</i>	5	-	2	-	-	.00	-
F	<i>Chaenactis douglasii</i>	-	3	-	-	.00	-	-
F	Cruciferae	-	-	7	-	-	.01	-
F	<i>Cryptantha</i> sp.	_b 15	_a 4	_a -	_b 16	.01	-	.11
F	<i>Cymopterus</i> sp.	4	1	-	-	.00	-	-
F	<i>Descurainia pinnata</i> (a)	-	-	3	-	-	.00	-
F	<i>Erigeron eatonii</i>	_c 39	_{bc} 33	_a 1	_{ab} 12	.14	.00	.04
F	<i>Erigeron pumilus</i>	_{ab} 16	_b 28	_a 8	_a 11	.25	.01	.05
F	<i>Holosteum umbellatum</i> (a)	-	-	2	-	-	.00	-
F	<i>Hymenoxys richardsonii</i>	_b 15	_a -	_a -	_a -	-	-	-
F	<i>Lappula occidentalis</i> (a)	-	-	3	-	-	.00	-
F	<i>Lomatium triternatum</i>	_b 60	_a -	_a 9	_a 1	-	.02	.00
F	<i>Lotus utahensis</i>	-	1	-	4	.00	-	.03
F	<i>Lygodesmia spinosa</i>	22	19	19	14	.36	.50	.40
F	<i>Machaeranthera grindelioides</i>	-	-	-	2	-	-	.00
F	<i>Microsteris gracilis</i> (a)	-	-	3	-	-	.03	-
F	<i>Phlox austromontana</i>	_a 2	_b 20	_{ab} 14	_b 28	.42	.23	.22
F	<i>Phlox longifolia</i>	_a 13	_b 50	_a 19	_b 42	.16	.08	.14
F	<i>Polygonum douglasii</i> (a)	-	1	-	-	.00	-	-

Type	Species	Nested Frequency				Average Cover %		
		'91	'98	'03	'08	'98	'03	'08
F	Senecio multilobatus	1	3	-	3	.01	-	.00
F	Trifolium sp.	9	-	3	7	.00	.01	.05
Total for Annual Forbs		0	58	31	20	0.39	0.12	0.08
Total for Perennial Forbs		253	190	87	169	1.50	0.93	1.21
Total for Forbs		253	248	118	189	1.90	1.05	1.29

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

BROWSE TRENDS --

Management unit 25C, Study no: 7

Type	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	Artemisia nova	81	70	79	7.40	11.75	7.88
B	Artemisia tridentata vaseyana	73	71	67	7.71	9.65	8.63
B	Chrysothamnus viscidiflorus stenophyllus	3	10	3	.00	.07	.00
B	Eriogonum microthecum	8	9	6	.01	.01	.01
B	Gutierrezia sarothrae	8	7	11	.04	.00	.18
B	Leptodactylon pungens	0	1	1	-	.00	.00
B	Opuntia sp.	0	0	1	-	-	.00
B	Pediocactus simpsonii	0	3	2	-	.00	.03
B	Tetradymia canescens	1	0	0	.00	-	-
Total for Browse		174	171	170	15.17	21.50	16.73

CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 7

Species	Percent Cover	
	'03	'08
Artemisia nova	13.19	13.36
Artemisia tridentata vaseyana	7.36	9.93
Chrysothamnus viscidiflorus stenophyllus	-	.08
Eriogonum microthecum	.01	.01
Gutierrezia sarothrae	-	.03

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 25C, Study no: 7

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata vaseyana	1.3	1.1

BASIC COVER --

Management unit 25C, Study no: 7

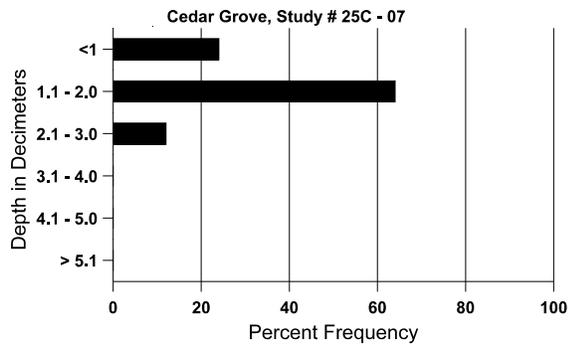
Cover Type	Average Cover %			
	'91	'98	'03	'08
Vegetation	6.25	32.63	28.45	26.40
Rock	19.50	9.01	12.55	9.96
Pavement	24.50	24.20	23.00	32.45
Litter	24.00	27.92	21.27	22.72
Cryptogams	2.00	.39	.93	.67
Bare Ground	23.75	16.36	22.84	25.36

SOIL ANALYSIS DATA --

Management unit 25C, Study no: 7, Study Name: Cedar Grove

Effective rooting depth (in)	Temp °F (depth)	pH	loam			%OM	PPM P	PPM K	ds/m
			% sand	% silt	% clay				
7.9	60.0 (9.8)	6.1	48.0	29.4	22.6	2.4	16.9	195.2	0.4

Stoniness Index



PELLET GROUP DATA --
 Management unit 25C, Study no: 7

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	31	58	74
Elk	9	11	2
Deer/antelope	7	8	6
Cattle	-	1	3

Days use per acre (ha)		
'98	'03	'08
-	-	-
25 (62)	25 (61)	6 (15)
2 (5)	8 (20)	13 (33)
4 (10)	8 (20)	2 (5)

BROWSE CHARACTERISTICS --
 Management unit 25C, Study no: 7

		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 nova</i>												
91	7065	133	1333	3133	2599	-	42	20	37	5	16	12/15
98	4120	80	240	3240	640	240	12	12	16	5	5	12/22
03	4000	-	-	2740	1260	580	6	.50	32	18	18	12/23
08	4440	1460	20	2240	2180	480	14	25	49	20	30	10/23
<i>Artemisia tridentata vaseyana</i>												
91	3065	466	733	866	1466	-	33	17	48	.65	2	18/25
98	2440	40	40	1360	1040	460	37	20	43	11	15	17/26
03	2780	-	40	1260	1480	400	13	4	53	27	27	20/30
08	2600	1180	200	980	1420	560	30	52	55	26	39	18/31
<i>Chrysothamnus viscidiflorus stenophyllus</i>												
91	198	-	66	66	66	-	0	0	33	-	0	4/4
98	60	-	-	60	-	-	0	0	0	-	0	8/9
03	440	20	80	360	-	-	0	0	0	-	0	6/5
08	60	-	-	40	20	-	0	67	33	-	0	7/8
<i>Eriogonum microthecum</i>												
91	133	-	-	133	-	-	100	0	0	-	0	1/3
98	260	-	40	220	-	-	0	0	0	-	0	6/8
03	280	-	-	280	-	-	50	36	0	-	0	5/6
08	240	20	-	200	40	-	25	58	17	17	17	5/6
<i>Gutierrezia sarothrae</i>												
91	133	66	133	-	-	-	0	0	-	-	0	-/-
98	220	-	-	220	-	-	0	0	-	-	0	9/8
03	240	-	60	180	-	-	0	0	-	-	0	4/5
08	540	40	-	540	-	-	7	15	-	-	0	6/6

		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>Leptodactylon pungens</i>												
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	0	-	0	-/-
03	20	-	-	20	-	-	0	0	0	-	0	6/4
08	20	-	-	-	20	-	0	0	100	-	0	8/14
<i>Opuntia sp.</i>												
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	20	-	-	20	-	-	0	0	-	-	0	3/4
<i>Pediocactus simpsonii</i>												
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	60	-	-	60	-	-	0	0	-	-	0	1/1
08	40	-	20	20	-	-	0	0	-	-	0	2/2
<i>Purshia tridentata</i>												
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	30/89
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Symphoricarpos oreophilus</i>												
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	19/49
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Tetradymia canescens</i>												
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	20	-	-	20	-	-	100	0	-	-	0	4/5
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-