

Trend Study 25C-31-08

Study site name: Parker Mtn Aerator .

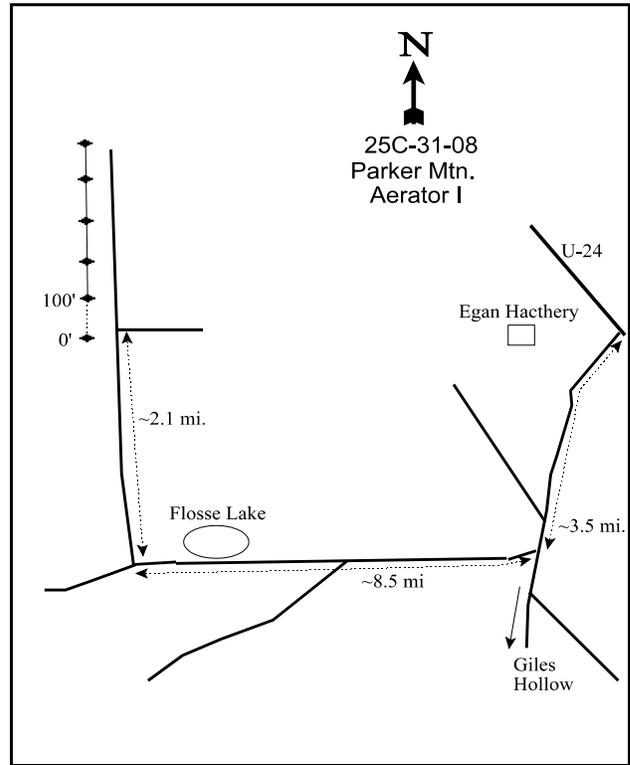
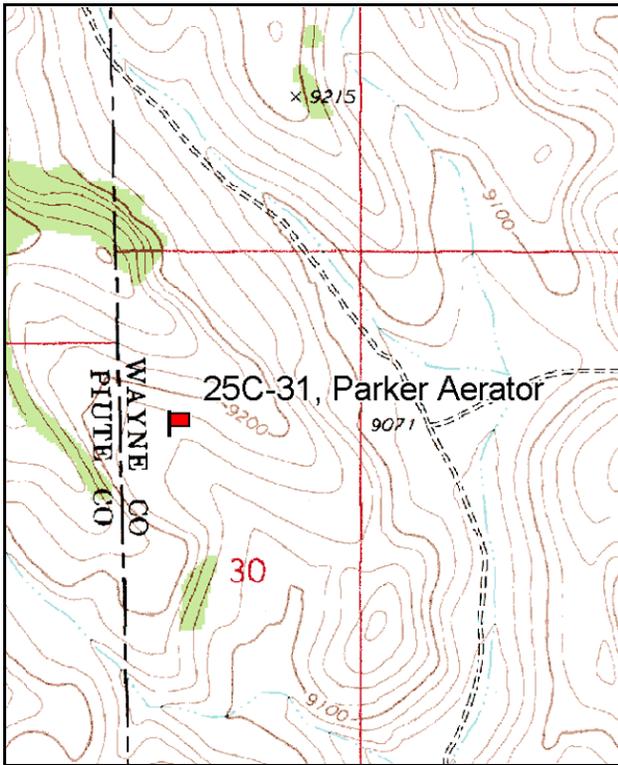
Vegetation type: Mtn. Big Sagebrush .

Compass bearing: frequency baseline 330 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

On U-24 south of Bicknell, turn west on Bicknell Cir. Drive 3.5 miles to a left hand turn (you will pass the Egan Fish Hatchery). Drive for 8.5 miles on the main road to a right turn going north. Drive 2.1 miles to a road going off to the right (east). Park here and walk 64 paces at 200 degrees magnetic to the 0ft stake. The 0ft stake is marked by browse tag # 158.



Map Name: Jakes Knoll

Diagrammatic Sketch

Township 29S, Range 1E, Section 30

GPS: NAD 83, UTM 12S 426889 E, 4235143 N

DISCUSSION

Parker Mountain Aerator - Trend Study No. 25C-31

Study Information

This is a new trend study established on a sagebrush flat on Parker Mountain in 2003 to monitor a mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) thinning treatment to improve sage grouse summer and brooding habitat [elevation: 8,900 feet (2,713 m), slope: 3%, aspect: east]. The flat was treated with a meadow aerator which thinned the sagebrush. This area is used year long by antelope and during the summer by sage grouse. Cattle grazing also occurs during the summer and heavy grazing was evident prior to study site establishment on Sept 10th of 2003. Pellet group data estimated antelope/deer use to be light in 2003 and 2008 (13 ddu/acre:33 ddu/ha and 15 ddu/acre:38 ddu/ha, respectively). There was no elk use noted in 2003, but there was minor elk use in 2008 (4 edu/acre:10 edu/ha). Cattle use was estimated to be light in 2003 (8 cdu/acre:20 cdu/ha) and moderate in 2008 (25 cdu/acre:63 ddu/ha). Eight adult sage grouse were flushed from the site during the first reading in 2003.

Soil

Soil at the site is deep with an effective rooting depth of over 15 inches. Soil texture is a loam which is neutral in reaction (pH 6.7). There is little rock or pavement on the surface or within the profile and relative combined rock and pavement cover was only 2% in 2003 and 2008. Litter cover is high due to the aerator treatment which thinned sagebrush and left litter in place. Relative combined vegetation and litter cover was 82% in 2003, and 88% in 2008. Relative bare ground cover is low at 16% in 2003, and 10% in 2008. The erosion condition assessment class was rated as stable in 2003 and 2008.

Browse

The site supports a thick stand of mountain big sagebrush. The aerator treatment thinned the population, specifically the larger plants. Density of the surviving sagebrush was estimated at 7,100 plants/acre in 2003. Seedlings and young were numerous and mature plants numbered 3,420 plants/acre. These surviving mature sagebrush are short in stature, averaging only 12 inches in height. About 10% of the mature plants sampled had reduced vigor due to the treatment. Decadent plants accounted for 35% of the population with a density of 2,520 plants/acre. Recruitment of young plants appear to be numerous enough to maintain the stand. The area has already begun to return to a sagebrush dominated community. Density of sagebrush increased by 61% in 2008 to 18,320 plants/acre. Much of the sagebrush sampled consisted of young plants, which comprised 63% of the population. Average sagebrush cover was estimated at about 13% in 2003 and about 25% in 2008. The only other shrubs found on the site include rubber rabbitbrush (*Chrysothamnus nauseosus*), Wood's rose (*Rosa woodsii*), and snowberry (*Symphoricarpos oreophilus*).

Herbaceous Understory

The herbaceous understory is diverse but not particularly productive. Ten perennial grasses were found on the site. However 2 species, a sedge (*Carex* sp.) and Letterman needlegrass (*Stipa lettermani*), provided 57% of the total grass cover. Thickspike wheatgrass (*Agropyron dasystachyum*) was also fairly common, but most other species occur sporadically. Most grasses had been heavily utilized which made identification difficult for some species. Total grass cover was estimated at only 8% in 2003, increasing to 13% in 2008. Forbs produce nearly as much cover as the grasses with 6% cover in 2003, and 12% cover in 2008. Twenty forb species were encountered on the site. Silky lupine (*Lupinus argenteus*) comprised 54% of the total forb cover in 2003 and 66% of the forb cover in 2008. Most of the other forbs found on the site are low growing species except for a penstemon (*Penstemon* sp.). The penstemon was heavily utilized where found, but the lupine was untouched in 2003.

2008 TREND ASSESSMENT

The trend for the primary browse species, mountain big sagebrush, is up. The density of sagebrush has increased by 61% to 18,320 plants/acre with young plants comprising 63% of that. The number of plants displaying poor vigor and decadence is low, and use was mostly light. The increase in shrub density is not

desired, however, since the site was treated to decrease sagebrush dominance. The trend for the grasses is up. The sum of nested frequency of perennial grasses increased with a significant increase in the frequency of thickspike wheatgrass and Letterman needlegrass. Production of perennial grasses also increased to 13% cover from 8% cover in 2003. The trend for forbs is up. Sum of nested frequency of perennial forbs increased and sum of nested frequency of annual forbs decreased. Total cover of perennial forbs increased from 6% in 2003 to 12%.

browse - up (+2)

grass - up (+2)

forb - up (+2)

HERBACEOUS TRENDS --
Management unit 25C, Study no: 31

Type	Species	Nested Frequency		Average Cover %	
		'03	'08	'03	'08
G	Agropyron dasystachyum	_a 99	_b 170	.92	2.41
G	Agropyron smithii	-	2	-	.03
G	Carex sp.	231	236	2.66	5.30
G	Festuca ovina	12	17	.12	.28
G	Poa fendleriana	23	28	.22	.64
G	Poa pratensis	32	26	.52	.32
G	Poa secunda	-	1	-	.00
G	Sitanion hystrix	16	41	.31	.31
G	Stipa columbiana	_b 24	_a 23	.95	.27
G	Stipa comata	5	3	.30	.03
G	Stipa lettermani	_a 98	_b 155	1.82	3.52
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		540	702	7.84	13.14
Total for Grasses		540	702	7.84	13.14
F	Antennaria parvifolia	8	3	.18	.15
F	Androsace septentrionalis (a)	_b 58	_a 4	.38	.01
F	Arabis sp.	_a -	_b 13	-	.08
F	Arenaria fendleri	1	4	.00	.00
F	Astragalus convallarius	_a 5	_b 39	.04	.40
F	Astragalus sp.	_a 24	_b 63	.16	1.18
F	Chenopodium leptophyllum(a)	3	4	.01	.01
F	Cirsium sp.	10	17	.24	.25
F	Collinsia parviflora (a)	-	1	-	.00
F	Cryptantha sp.	-	3	-	.00
F	Descurainia pinnata (a)	_b 12	_a -	.03	-
F	Eriogonum sp.	3	-	.00	-
F	Eriogonum racemosum	20	25	.23	.29
F	Gayophytum ramosissimum(a)	_b 50	_a -	.22	-

Type	Species	Nested Frequency		Average Cover %	
		'03	'08	'03	'08
		F	Hymenoxys richardsonii	4	4
F	Lotus utahensis	-	1	-	.00
F	Lupinus argenteus	_a 89	_b 129	3.67	7.73
F	Lychnis drummondii	-	-	-	.00
F	Penstemon sp.	54	53	.93	.74
F	Phlox longifolia	_a 35	_b 49	.08	.32
F	Potentilla concinna	_a 5	_b 18	.04	.39
F	Polygonum douglasii (a)	8	8	.05	.02
F	Potentilla gracilis	_b 22	_a -	.24	-
F	Senecio multilobatus	8	-	.04	-
F	Taraxacum officinale	19	15	.20	.13
Total for Annual Forbs		131	17	0.69	0.04
Total for Perennial Forbs		307	436	6.16	11.75
Total for Forbs		438	453	6.86	11.80

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

BROWSE TRENDS --

Management unit 25C, Study no: 31

Type	Species	Strip Frequency		Average Cover %	
		'03	'08	'03	'08
		B	Artemisia tridentata vaseyana	78	99
B	Rosa woodsii	3	2	.03	.15
B	Symphoricarpos oreophilus	7	5	.06	.03
Total for Browse		88	106	13.08	24.85

CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 31

Species	Percent Cover	
	'03	'08
Artemisia tridentata vaseyana	11.80	34.78
Symphoricarpos oreophilus	-	.13

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 25C, Study no: 31

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata vaseyana	11.8	1.0

BASIC COVER --

Management unit 25C, Study no: 31

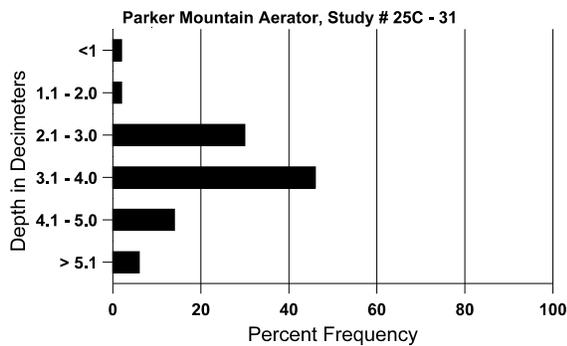
Cover Type	Average Cover %	
	'03	'08
Vegetation	25.99	55.72
Rock	1.41	1.15
Pavement	.74	1.02
Litter	63.22	52.97
Cryptogams	.08	0
Bare Ground	16.86	12.58

SOIL ANALYSIS DATA --

Management unit 25C, Study no: 31, Study Name: Parker Mountain Aerator

Effective rooting depth (in)	Temp °F (depth)	pH	loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
15.5	43.4 (17.1)	6.7	44.6	32.7	22.7	2.3	37.7	838.4	0.4

Stoniness Index



PELLET GROUP DATA --
 Management unit 25C, Study no: 31

Type	Quadrat Frequency		Days use per acre (ha)	
	'03	'08	'03	'08
Rabbit	72	68	-	-
Grouse	5	-	-	-
Elk	1	2	-	4 (10)
Deer/antelope	7	28	13 (33)	15 (38)
Cattle	3	10	8 (20)	25 (63)

BROWSE CHARACTERISTICS --
 Management unit 25C, Study no: 31

		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>												
03	7100	1740	1160	3420	2520	-	.56	0	35	8	37	12/17
08	18320	4320	11540	5620	1160	920	8	0	6	1	5	17/33
<i>Cercocarpus montanus</i>												
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	19/41
<i>Chrysothamnus nauseosus</i>												
03	0	20	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Chrysothamnus viscidiflorus</i>												
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	40	-	-	-	-	0	0	-	-	0	-/-
<i>Rosa woodsii</i>												
03	120	-	-	120	-	-	0	0	-	-	0	6/7
08	100	-	60	40	-	-	60	40	-	-	0	6/6
<i>Symphoricarpos oreophilus</i>												
03	200	-	40	120	40	-	0	20	20	10	10	9/11
08	140	-	-	140	-	-	14	29	0	-	0	10/20