

Trend Study 14-29-04

Study site name: Salt Creek Mesa .

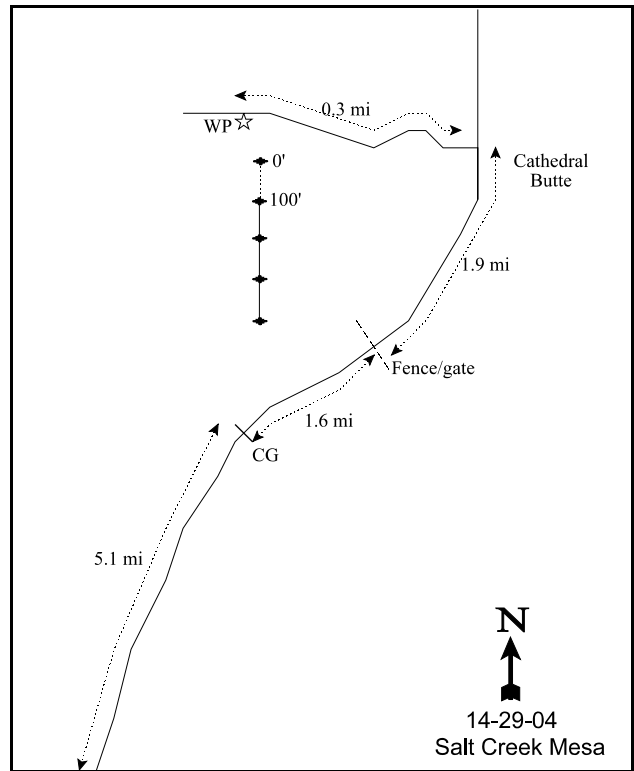
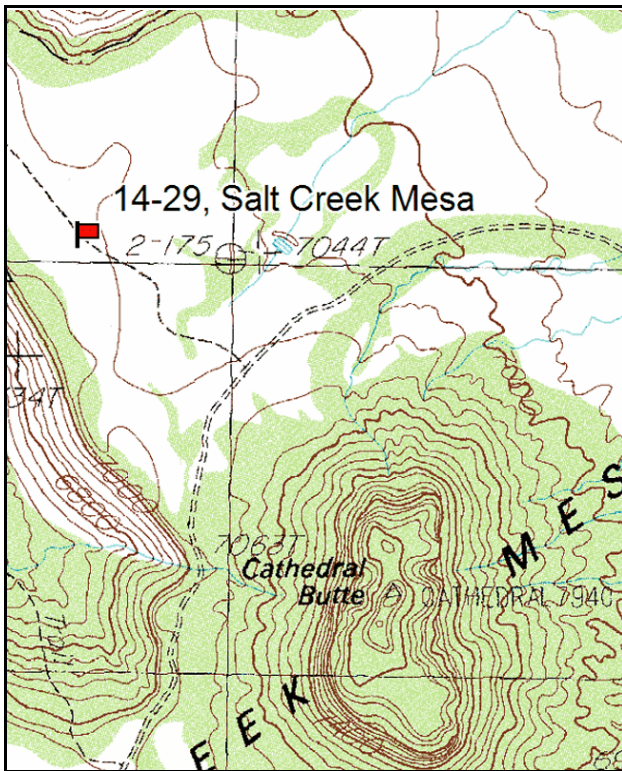
Vegetation type: Chained, Seeded P-J .

Compass bearing: frequency baseline 156 degrees magnetic.

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

LOCATION DESCRIPTION

From the intersection in Sego Flat, go left towards Dugout Ranch 5.9 miles to the Beef Basin turnoff. Continue down Salt Creek Mesa Road for 5.1 miles to a cattleguard at the BLM/USFS boundary. Continue 1.6 miles on the main road to a fence/gate. Continue 1.9 miles to a fork on the west side of Cathedral Butte. Turn left and go 0.3 miles through junipers, into a chaining and to a witness post (full-high fence post) 18 feet off the left side of the road. The 0-foot baseline is 15 paces at a bearing of 220°M from the witness post.



Map Name: Cathedral Butte

Diagrammatic Sketch

Township 32S , Range 20E , Section 27

GPS: NAD 27, UTM 12S 4202031 N, 613621 E

DISCUSSION

Salt Creek Mesa - Trend Study No. 14-29

The Salt Creek Mesa study was established in 1992 on an old chaining that is a wintering area for deer and elk. This site has a northeast aspect and a 3% slope. The treated area appears to have been seeded with crested wheatgrass, intermediate wheatgrass, and alfalfa. Pinyon and juniper trees are scattered across the site that were probably individuals that escaped the chaining because of their small size and now have been released from competition with the removed adult trees. This area was targeted for a prescribed fire sometime between 2001 and 2003. The fire did not carry across the site and only a few trees were burned. This result should have been anticipated by looking over the data and pictures from the range trend report. In 2004, pellet group data estimated light use with 7 deer days use/acre (18 ddu/ha), 3 elk days use/acre (7 edu/ha), and 3 cow days use/acre (7 cdu/ha).

The soil varies in depth from 11 inches to 22 inches due to a layer of soft sandstone which is also found on the surface in some places. The sandy soil is noticeably deeper on the lower portions of the site. Effective rooting depth averages almost 15 inches over the site. Soil texture is a sandy clay loam with a slightly alkaline pH (7.5). Phosphorus is low at 5.3 ppm. It should be noted that values less than 10 ppm may limit normal plant growth and development. There are many wind scoured depressions with large rock scattered throughout the site. Pavement is commonly found in small localized intervals. Litter is comprised mostly of pinyon-juniper debris from the chaining. Even with fairly good cover, there are small scattered bare areas where erosion (both wind and water) may occur. Relative percent bare ground was quite high at 38% in 1999. This increased to 47% by 2004.

This chained site also supports a high density of released pinyon and juniper trees. Density was estimated using the point quarter method. Pinyon density was 59 trees/acre in 1992, 60 trees/acre in 1999, and decreased after the fire to 50 trees/acre in 2004. Average diameter was estimated at 3.5 inches in 1999 and 5.1 inches in 2004. Juniper density was about 33 trees/acre in 1992, increased to 51 trees/acre by 1999, and was down to 42 trees/acre in 2004. Average diameter of juniper was estimated at 2.8 inches in 1999 and 3.7 inches in 2004.

Useful browse is limited on the site. Only a low density of Utah serviceberry, four-wing saltbush, true-mountain mahogany, and green ephedra are found within the chaining. Use of these shrubs varies from light to heavy. Utah serviceberry density and cover increased in 2004, as 83% of the population was classified as young. True mountain mahogany density has decreased slightly with each reading since 1992 and all plants showed signs of heavy use in 2004. Mahogany plants that were burned were resprouting in 2004. Broom snakeweed has been very abundant, but declined dramatically in 2004. In 1999, density was over 23,000 plants/acre with over 6% cover. After many drought years snakeweed declined to only 1,400 plants/acre and less than 1% cover in 2004.

The dominant herbaceous species are intermediate wheatgrass, crested wheatgrass, and Indian ricegrass, each of which had significant declines in nested frequency between 1999 and 2004. Perennial grass cover declined from 10 to 4% in that same period. Cover for perennial grasses was highest in 1992 at 24%. Forbs are lacking with the 2 most dominant species being dusty penstemon (a desirable species) and Fendler euphorbia (an undesirable increaser). Other early seral forbs were found where the fire had burned.

1992 APPARENT TREND ASSESSMENT

The soil trend is considered stable with relative cover for bare ground at 20%. There are small scattered bare areas where erosion is occurring. Because of the low densities for all browse except for broom snakeweed, which demonstrates characteristics of an expanding population, trend for browse appears to be declining. The herbaceous understory is in good condition with the forbs and grasses together making up 79% of the

vegetative cover and grasses alone constituting 66% of the total vegetative cover. Trend, after only being sampled once, should be considered stable until the next sampling date. The Desirable Components Index (see methods) rating is poor at 39. The herbaceous understory is good, but this chaining lacks preferred browse that deer use for winter forage.

winter range condition (DC Index) - 39 (poor) Chaining (rated on mountain big sage scale)

1999 TREND ASSESSMENT

Trend for soil is slightly down due to a decline in relative litter cover from 44% to 32% and an increase in relative percent bare ground from 20% to 38%. Vegetation and litter distribution are variable with bare areas showing signs of wind and water erosion. Trend for browse is slightly down due to mostly declining populations of preferred species combined with a dramatic increase in density of broom snakeweed. Trees are also increasing in density and cover. Trend for the herbaceous understory is slightly down due to a significant decline in the sum of nested frequency for intermediate wheatgrass. It was the dominant grass in 1992. Crested wheatgrass and Indian ricegrass remained stable. Forbs are still rare but nested frequency increased slightly. The DCI score has declined to very poor due to decreases in the herbaceous understory. The preferred browse component is still very poor for deer winter range.

TREND ASSESSMENT

soil - slightly down (2)

browse - slightly down (2)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 29 (very poor) Chaining (rated on mountain big sage scale)

2004 TREND ASSESSMENT

The trend for soil is slightly down. Relative percent bare ground increased from 38% to 47%. Litter remained fairly stable, but vegetation cover decreased since 1999, due to drought and the fire that partially burned the site. The browse trend is slightly up. Pinyon and juniper density is slightly lower due to the prescribed fire. Broom snakeweed density and cover decreased with the dry conditions of the past several years. Utah serviceberry density is slightly higher and many young plants were sampled. True mountain mahogany density is down, but resprouting plants are found in the burn and annual leader growth is very good. The herbaceous understory trend is down. Nested frequency for all 3 common grasses is significantly lower than it was in 1999. Cover is also down from 10 to 4%. Nested frequency for perennial forbs is higher, but still not very abundant. The DCI score is even lower and classified as very poor. Perennial grass cover has continued to decline and preferred browse is lower than desired.

TREND ASSESSMENT

soil - slightly down (2)

browse - slightly up (4)

herbaceous understory - down (1)

winter range condition (DC Index) - 21 (very poor) Chaining (rated on mountain big sage scale)

HERBACEOUS TRENDS --
Management unit 14 , Study no: 29

Type	Species	Nested Frequency			Average Cover %		
		'92	'99	'04	'92	'99	'04
G	Agropyron cristatum	_b 112	_b 106	_a 47	5.34	5.89	2.25
G	Agropyron intermedium	_c 230	_b 169	_a 55	13.05	2.52	1.12
G	Oryzopsis hymenoides	_b 96	_b 80	_a 42	5.10	1.70	.78
G	Sitanion hystrix	-	-	-	-	.00	-
G	Stipa comata	_a -	_a -	_b 6	-	.00	.18
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		438	355	150	23.50	10.13	4.35
Total for Grasses		438	355	150	23.50	10.13	4.35
F	Astragalus utahensis	-	-	2	-	-	.01
F	Chenopodium album (a)	_b 4	_a -	_a -	.01	-	.00
F	Chaenactis douglasii	-	1	3	-	.03	.00
F	Chenopodium fremontii (a)	-	-	7	-	-	.16
F	Cordylanthus spp. (a)	_a -	_a -	_b 17	-	-	.53
F	Cryptantha spp.	-	3	6	-	.03	.04
F	Descurainia pinnata (a)	5	2	10	.02	.00	.23
F	Erigeron spp.	-	-	-	-	-	.00
F	Euphorbia fendleri	_{ab} 44	_a 25	_b 52	2.37	.52	1.35
F	Heterotheca villosa	-	-	5	-	-	.18
F	Hymenoxys acaulis	-	-	1	-	-	.03
F	Lappula occidentalis (a)	-	-	9	-	-	.24
F	Lepidium spp. (a)	-	-	1	-	-	.00
F	Lesquerella spp.	_a 14	_a 25	_b 48	.03	.09	.67
F	Lupinus spp.	-	4	5	-	.04	.21
F	Machaeranthera canescens	2	1	3	.01	.03	.01
F	Medicago sativa	7	-	-	.22	-	-
F	Nicotiana attenuata (a)	-	-	1	-	-	.00
F	Orobanche spp.	2	-	-	.00	-	-
F	Penstemon comarrhenus	_a 43	_b 55	_a 31	.82	1.06	.44
F	Penstemon spp.	_a -	_a -	_b 22	-	-	.33
F	Petradoria pumila	-	-	-	-	-	.00
F	Salsola iberica (a)	-	-	5	-	-	.01
F	Salsola pestifer (a)	10	-	-	.02	-	-
F	Senecio multilobatus	_a -	_b 14	_a 4	-	.30	.04
F	Sphaeralcea coccinea	-	1	3	-	.00	.00
F	Streptanthus cordatus	1	-	-	.00	-	-

Type	Species	Nested Frequency			Average Cover %		
		'92	'99	'04	'92	'99	'04
F	Townsendia spp.	-	3	2	-	.03	.00
F	Tragopogon dubius	3	-	-	.00	-	-
Total for Annual Forbs		19	2	50	0.05	0.00	1.19
Total for Perennial Forbs		116	132	187	3.48	2.16	3.37
Total for Forbs		135	134	237	3.54	2.16	4.57

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

BROWSE TRENDS --

Management unit 14 , Study no: 29

Type	Species	Strip Frequency			Average Cover %		
		'92	'99	'04	'92	'99	'04
B	Amelanchier utahensis	2	2	5	1.36	1.77	3.15
B	Atriplex canescens	3	1	0	.03	-	-
B	Cercocarpus montanus	3	3	1	.03	1.00	-
B	Ephedra viridis	0	1	1	-	-	-
B	Gutierrezia sarothrae	80	87	34	3.77	6.47	.73
B	Juniperus osteosperma	5	6	6	.18	.59	.81
B	Mahonia fremontii	2	0	2	-	-	1.00
B	Mahonia repens	-	-	-	.15	-	-
B	Opuntia spp.	1	0	1	-	-	.03
B	Pinus edulis	6	7	4	3.15	4.44	4.50
B	Pseudotsuga menziesii	0	0	0	.03	-	-
B	Symphoricarpos oreophilus	2	1	2	.06	.38	.41
Total for Browse		104	108	56	8.76	14.65	10.64

CANOPY COVER, LINE INTERCEPT --
 Management unit 14 , Study no: 29

Species	Percent Cover	
	'99	'04
Amelanchier utahensis	1.79	4.05
Gutierrezia sarothrae	-	.96
Juniperus osteosperma	-	2.90
Mahonia fremontii	-	2.71
Opuntia spp.	-	.06
Pinus edulis	4.19	5.80
Symphoricarpos oreophilus	-	1.23

KEY BROWSE ANNUAL LEADER GROWTH --
 Management unit 14 , Study no: 29

Species	Average leader growth (in)
	'04
Amelanchier utahensis	3.4
Atriplex canescens	4.2
Cercocarpus montanus	7.8
Purshia tridentata	2.7

POINT-QUARTER TREE DATA --
 Management unit 14 , Study no: 29

Species	Trees per Acre	
	'99	'04
Juniperus osteosperma	51	42
Pinus edulis	60	50

Average diameter (in)	
'99	'04
2.8	3.7
3.5	5.1

BASIC COVER --
 Management unit 14 , Study no: 29

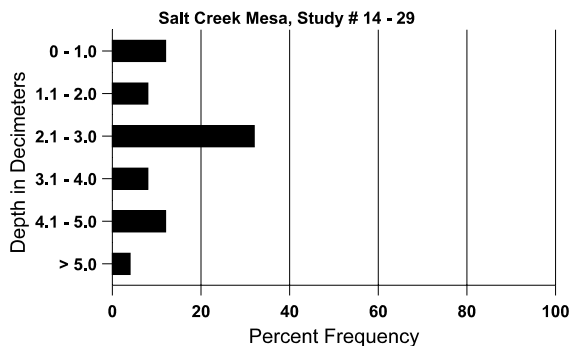
Cover Type	Average Cover %		
	'92	'99	'04
Vegetation	32.15	25.35	19.69
Rock	8.50	2.85	3.11
Pavement	0	4.39	5.96
Litter	50.20	32.48	32.18
Cryptogams	0	0	.03
Bare Ground	22.32	39.33	53.29

SOIL ANALYSIS DATA --

Management unit 14, Study no: 29, Study Name: Salt Creek Mesa

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
14.5	56.3 (11.7)	7.5	56.0	21.4	22.6	2.7	5.3	92.8	0.6

Stoniness Index



PELLET GROUP DATA --

Management unit 14, Study no: 29

Type	Quadrat Frequency		
	'92	'99	'04
Rabbit	39	37	27
Elk	4	21	11
Deer	17	16	3
Cattle	8	10	1

Days use per acre (ha)	
'99	'04
-	-
18 (45)	3 (7)
19 (48)	7 (18)
23 (56)	3 (7)

BROWSE CHARACTERISTICS --

Management unit 14, Study no: 29

		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)
92	40	-	20	20	-	-	0	50	-	-	0	-/-
99	40	-	-	40	-	20	0	0	-	-	0	98/125
04	120	100	100	20	-	20	17	0	-	-	17	94/110
Atriplex canescens												
92	60	-	-	40	20	-	0	100	33	-	0	-/-
99	20	-	-	-	20	-	0	100	100	100	100	23/26
04	0	-	-	-	-	-	0	0	0	-	0	26/33

		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)
Cercocarpus montanus												
92	100	-	60	40	-	-	20	80	-	-	0	-/-
99	60	-	-	60	-	-	33	33	-	-	0	48/55
04	40	-	-	40	-	-	0	100	-	-	0	44/55
Ephedra viridis												
92	0	-	-	-	-	-	0	0	-	-	0	-/-
99	20	-	20	-	-	-	0	0	-	-	0	-/-
04	20	-	-	20	-	-	0	0	-	-	0	16/21
Gutierrezia sarothrae												
92	9960	360	2020	7860	80	-	0	0	1	-	.40	-/-
99	23760	80	3020	20580	160	200	0	0	1	.16	.16	6/9
04	1400	360	740	620	40	300	1	0	3	3	3	6/11
Juniperus osteosperma												
92	100	-	80	20	-	-	20	0	0	-	0	-/-
99	120	-	120	-	-	20	0	0	0	-	0	-/-
04	120	-	20	60	40	-	0	0	33	17	17	-/-
Mahonia fremontii												
92	40	-	-	40	-	-	50	50	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	40	-	-	40	-	-	0	0	-	-	0	67/84
Opuntia spp.												
92	20	-	20	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	20	-	-	20	-	20	0	0	-	-	0	4/10
Pinus edulis												
92	140	-	80	60	-	-	29	0	0	-	0	-/-
99	140	20	40	100	-	-	0	0	0	-	0	-/-
04	80	-	20	40	20	-	0	0	25	-	0	-/-
Purshia tridentata												
92	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	6/15
04	0	-	-	-	-	-	0	0	-	-	0	7/16
Symphoricarpos oreophilus												
92	40	-	-	40	-	-	0	100	-	-	0	-/-
99	20	-	-	20	-	-	0	0	-	-	0	39/82
04	60	-	-	60	-	20	0	0	-	-	67	42/69