

Trend Study 14R-1-04

Study site name: Cathedral Butte .

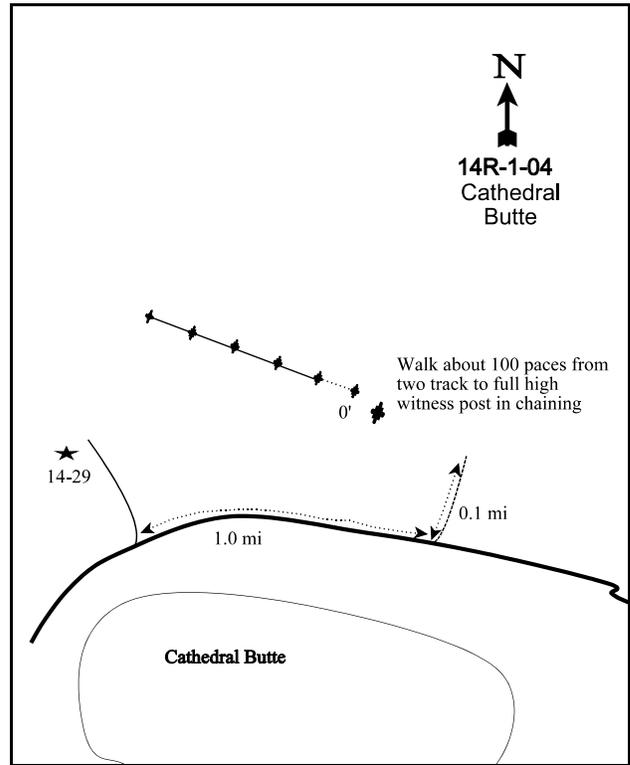
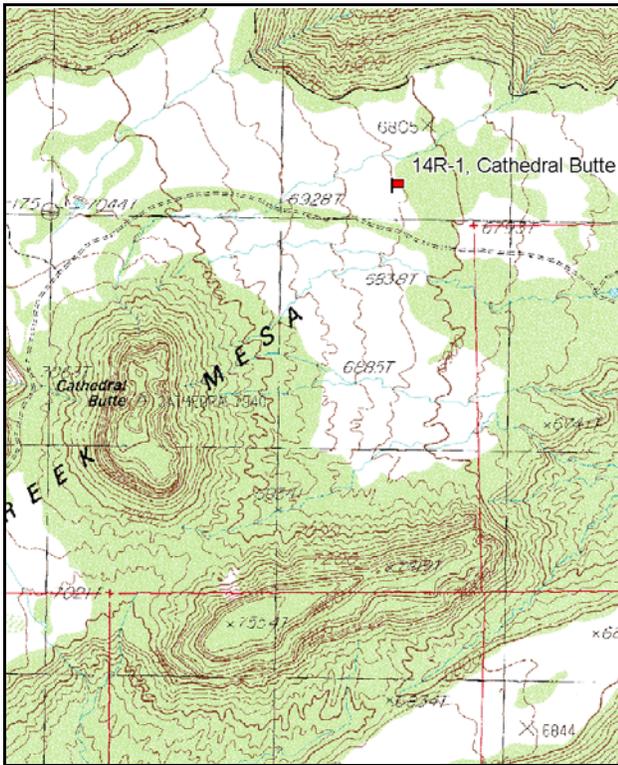
Vegetation type: Chained, Seeded PJ .

Compass bearing: frequency baseline 290 degrees magnetic.

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

LOCATION DESCRIPTION

Travel to the north side of Cathedral Butte. As the road winds around the north side of the butte there is a junction to a small side road on the northwest side of the butte. This is the turnoff to the Salt Creek Mesa trend study (14-29). From this junction travel east on the main road 1.0 mile to another faint two track road heading north. Turn here and go 0.1 mile to a small opening in the trees. From here walk approximately 100 paces to the west into the chaining. There is a full high witness post a few feet from the 0-foot baseline stake. The baseline runs 290 degrees magnetic.



Map name: Cathedral Butte

Diagrammatic Sketch

Township 32S , Range 20E , Section Unsurveyed

GPS: NAD 27, UTM 12S 4202110 N 615488 E

DISCUSSION

Cathedral Butte - Trend Study No. 14R-1

The Cathedral Butte study was established in 2001 to gather pretreatment data for a prescribed burn project on the north side of Elk Ridge that took place in the fall of 2003. The Salt Creek Mesa project includes approximately 1,340 acres of BLM administered public lands and 280 acres of School & Institutional Trust Land Administration Lands (State of Utah). The fire treatment only burned spotty and only burned a few trees. This area is important winter range for big game and important for livestock use. This area has received increased attention in recent years as it lies in close proximity to Beef Basin. Most of the proposed prescribe burn area consists of old pinyon-juniper chainings, including the area where the study was placed and study 14-29 Salt Creek Mesa. The site lies on a gentle, northeast aspect at an elevation of 6,850 feet. A pellet group transect read parallel to the vegetation baseline in 2001 estimated 3 deer days use/acre (8 ddu/ha), 23 elk days use/acre (56 edu/ha), and 33 cow days use/acre (82 cdu/ha). In 2004, use was estimated at 3 deer days use/acre (8 ddu/ha), 15 elk days use/acre (38 edu/ha), and 19 cow days use/acre (47 cdu/ha).

Soils are sandy clay loam in texture with a soil reaction that is slightly alkaline (7.7 pH). Effective rooting depth was estimated at just over 14 inches. A stoniness profile index shows the majority of rock to be in the upper 12 inches of the profile. Phosphorus is low at 7.3 ppm, where values less than 10 ppm may be limiting to normal plant growth and development. Although vegetation and litter cover are moderately high, percent bare ground is also fairly high. An erosion condition class assessment determined soils as slightly eroding in 2001 and stable in 2004. Most evidence of erosion is due to excessive pedestaling around some of the vegetation.

Several important browse species are present in the area, however most occur in very low numbers on the site itself. Burning this site is a poor choice of treatment knowing that nearly all the important browse species on site are not tolerant of fire and the entire browse component had only 4% average cover in 2001 and 2004. Important winter forage species include fourwing saltbush, mountain big sagebrush, green ephedra, and bitterbrush. Fourwing saltbush had the highest cover and had an estimated density of 300 plants/acre in 2001 and increased to 440 in 2004. Twenty-seven percent of the population consisted of young plants in both 2001 and 2004. Between 2001 and 2004 mature plants increased from 120 to 260/acre. Decadence decreased from 33 to 14%. Use on fourwing saltbush was moderate in 2001 and light in 2004. Mountain big sagebrush density increased from 20 to 80 plants/acre. Bitterbrush have densities estimated at only 20 plants/acre. Use is moderate on mountain big sagebrush and heavy on bitterbrush. Ephedra density was estimated at 40 plants/acre in 2001 with use being moderate to heavy. This increased to 60 plants/acre in 2004 with moderate use. In 2001, annual leader growth for fourwing saltbush was estimated at 4.8 inches. In 2004 it was 3.9 inches. In 2001, it was written that a prescribed fire would be detrimental to the usefulness of this site to wildlife, especially big game. Fire would likely eliminate much or all of the palatable browse on the site, but the fire did not carry across the site so the browse was not harmed.

Crested wheatgrass is by far the dominant species on this site. Crested wheatgrass had over 39% average cover and was sampled in 97% of the quadrats in the 2001. This declined significantly in 2004 to 18% cover and 73% of the quadrats. The only other grasses sampled were blue grama and sand dropseed in very low numbers. Forbs were sparse with only 5 species being sampled in 2001, but this was probably because the site was established in September of 2001. In July of 2004, 14 forbs were sampled, 5 of which were annuals. Seventy-one percent of the forb cover came from these annuals. Perennials only contributed to about 1% cover in both years.

2001 APPARENT TREND ASSESSMENT

Soils appear to be stable with only slight erosion occurring. Vegetation and litter are moderately high with most of the bare ground occurring in the interspaces between the individual crested wheatgrass plants. Browse is already limited on the site and would be further reduced following the proposed burn. A prescribed burn

will likely eliminate most or all of the palatable forage on the site, which would decrease the usefulness of this site to big game as a wintering area. Crested wheatgrass dominates the site and will likely continue to do so in the future. The Desirable Components Index (see methods) rating is poor at 35. The herbaceous understory is good, but this chaining lacks preferred browse that deer use for winter forage.

winter range condition (DC Index) - 35 (poor) Chaining (rated on mountain big sage scale)

2004 TREND ASSESSMENT

The soil trend is down. Relative bare ground cover increased from 31 to 50%, while vegetation declined from 39 to 22%. Litter declined slightly. Erosion does not currently appear to be a problem. The browse trend is slightly up, but still lacking in abundance. Fourwing saltbush density and cover is higher and decadence has declined. Mountain big sagebrush and ephedra density is also slightly up. Pinyon and juniper cover decreased after the fire. The herbaceous understory trend is down, due to the decrease in crested wheatgrass. Cover was less than half of what it was in 2001. Nested frequency declined significantly. There is no other significant species found on the site. The DCI rating is poor at 36. The herbaceous understory is good, but preferred browse is lacking for deer winter forage.

TREND ASSESSMENT

soil - down (1)

browse - slightly up, but sparse (4)

herbaceous understory - down and lacking diversity (1)

winter range condition (DC Index) - 36 (poor) Chaining (rated on mountain big sage scale)

HERBACEOUS TRENDS --

Management unit 14R, Study no: 1

Type	Species	Nested Frequency		Average Cover %	
		'01	'04	'01	'04
G	Agropyron cristatum	_b 388	_a 208	39.51	17.92
G	Bouteloua gracilis	10	5	.06	.06
G	Sporobolus cryptandrus	-	5	-	.01
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		398	218	39.57	17.99
Total for Grasses		398	218	39.57	17.99
F	Artemisia dracunculul	-	1	-	.15
F	Astragalus spp.	4	3	.45	.15
F	Astragalus utahensis	-	1	-	.00
F	Chenopodium fremontii (a)	-	9	-	.21
F	Chenopodium leptophyllum(a)	-	5	-	.67
F	Descurainia pinnata (a)	_a -	_b 17	-	1.03
F	Gilia spp. (a)	_a -	_b 17	-	.52
F	Lappula occidentalis (a)	-	1	-	.03
F	Machaeranthera canescens	3	4	.15	.04
F	Medicago sativa	2	4	.07	.18

Type	Species	Nested Frequency		Average Cover %	
		'01	'04	'01	'04
F	<i>Petradoria pumila</i>	3	3	.41	.41
F	<i>Phlox austromontana</i>	4	5	.06	.03
F	<i>Senecio multilobatus</i>	-	2	-	.00
F	<i>Trifolium spp.</i>	-	4	-	.00
Total for Annual Forbs		0	49	0	2.48
Total for Perennial Forbs		16	27	1.14	0.99
Total for Forbs		16	76	1.14	3.47

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

BROWSE TRENDS --

Management unit 14R, Study no: 1

Type	Species	Strip Frequency		Average Cover %	
		'01	'04	'01	'04
B	<i>Artemisia tridentata vaseyana</i>	1	1		
B	<i>Atriplex canescens</i>	15	15	1.56	2.76
B	<i>Chrysothamnus nauseosus consimilis</i>	2	0	-	-
B	<i>Chrysothamnus viscidiflorus</i>	-	-	-	.03
B	<i>Ephedra viridis</i>	2	1	.01	-
B	<i>Gutierrezia sarothrae</i>	25	5	1.14	-
B	<i>Juniperus osteosperma</i>	-	-	-	.38
B	<i>Opuntia spp.</i>	1	1	.01	.03
B	<i>Pinus edulis</i>	1	1	1.25	.38
B	<i>Purshia tridentata</i>	1	0	-	-
Total for Browse		48	24	3.99	3.58

CANOPY COVER, LINE INTERCEPT --

Management unit 14R, Study no: 1

Species	Percent Cover	
	'01	'04
<i>Atriplex canescens</i>	-	2.21
<i>Gutierrezia sarothrae</i>	-	.06
<i>Juniperus osteosperma</i>	-	.70
<i>Pinus edulis</i>	2.40	.40

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 14R, Study no: 1

Species	Average leader growth (in)
	'04
Artemisia tridentata vaseyana	3.8
Atriplex canescens	3.9

POINT-QUARTER TREE DATA --
Management unit 14R, Study no: 1

Species	Tress per Acre	Average diameter (in)
	'04	'04
Juniperus osteosperma	30	4.5
Pinus edulis	28	3.5

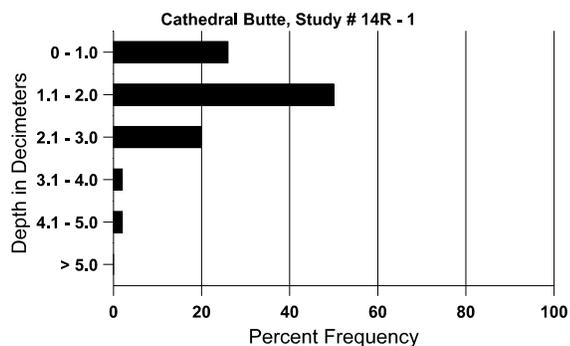
BASIC COVER --
Management unit 14R, Study no: 1

Cover Type	Average Cover %	
	'01	'04
Vegetation	46.50	24.42
Rock	0	.00
Pavement	.05	.01
Litter	34.80	29.75
Cryptogams	.69	1.13
Bare Ground	36.80	54.34

SOIL ANALYSIS DATA --
Management unit 14R, Study no: 01, Study Name: Cathedral Butte

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
14.2	60.3 (15.6)	7.7	57.9	23.4	18.6	2.3	7.3	89.6	0.6

Stoniness Index



PELLET GROUP DATA --
 Management unit 14R, Study no: 1

Type	Quadrat Frequency		Days use per acre (ha)	
	'01	'04	'01	'04
Rabbit	30	17	-	-
Elk	27	18	23 (56)	15 (38)
Deer	12	2	3 (8)	3 (8)
Cattle	19	7	33 (82)	19 (47)

BROWSE CHARACTERISTICS --
 Management unit 14R, Study no: 1

		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>												
01	20	-	-	-	20	-	100	0	100	-	0	25/42
04	80	-	-	80	-	-	0	100	0	-	0	29/42
<i>Atriplex canescens</i>												
01	300	-	80	120	100	20	27	13	33	7	7	27/29
04	440	20	120	260	60	20	9	0	14	-	14	33/42
<i>Chrysothamnus depressus</i>												
01	0	-	-	-	-	-	0	0	-	-	0	4/9
04	0	-	-	-	-	-	0	0	-	-	0	10/16
<i>Chrysothamnus nauseosus consimilis</i>												
01	40	-	-	20	20	-	0	0	50	-	0	45/46
04	0	-	-	-	-	-	0	0	0	-	0	-/-
<i>Ephedra viridis</i>												
01	40	-	20	20	-	-	50	50	-	-	0	18/10
04	60	-	60	-	-	-	100	0	-	-	0	-/-
<i>Gutierrezia sarothrae</i>												
01	1560	-	60	1500	-	-	0	0	-	-	0	8/13
04	100	20	40	60	-	60	0	0	-	-	0	8/13
<i>Mahonia fremontii</i>												
01	0	-	-	-	-	-	0	0	-	-	0	21/33
04	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Opuntia spp.</i>												
01	20	-	-	20	-	20	0	0	-	-	0	1/4
04	40	-	-	40	-	-	0	0	-	-	0	3/6

		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>Pinus edulis</i>												
01	20	-	-	20	-	-	0	0	0	-	0	-/-
04	20	-	-	-	20	20	0	0	100	-	0	-/-
<i>Purshia tridentata</i>												
01	20	-	-	-	20	-	0	100	100	-	0	-/-
04	0	-	-	-	-	-	0	0	0	-	0	20/36