

Trend Study 14-17-99

Study site name: Deer Flat .

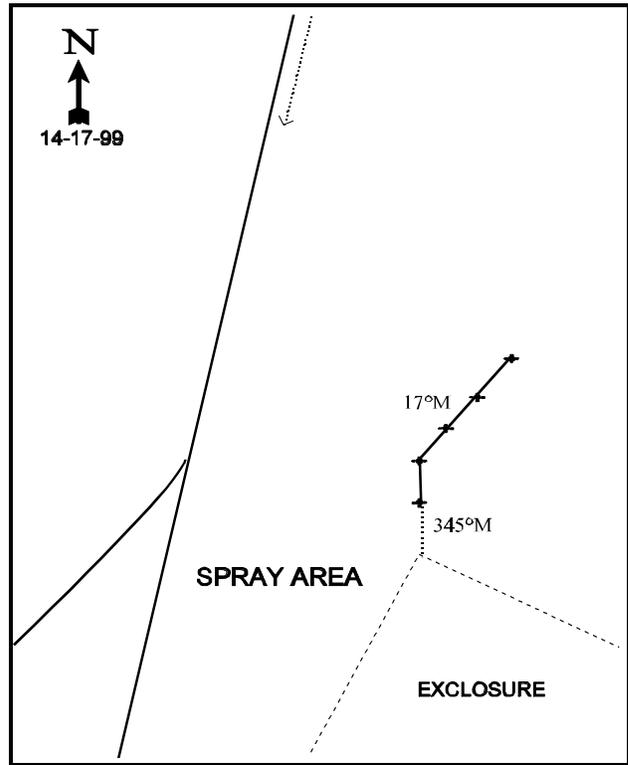
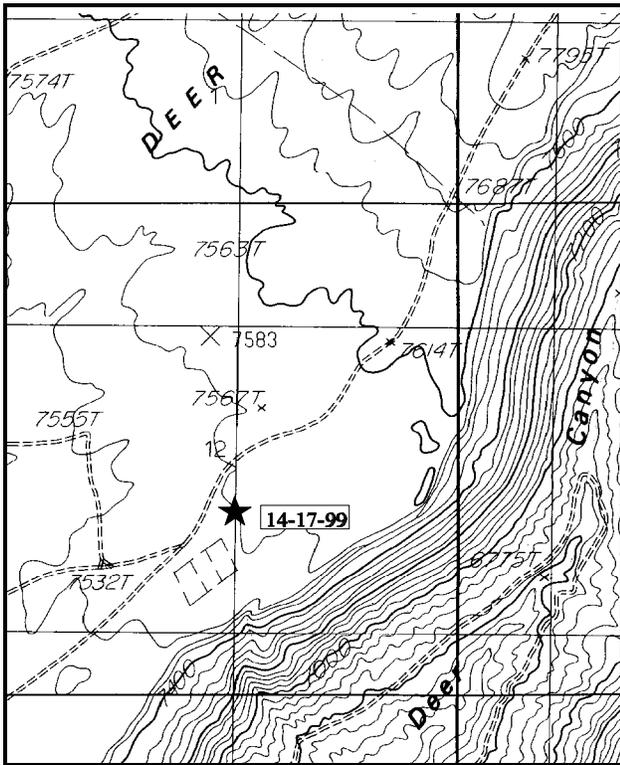
Range type: Sprayed Shrubland .

Compass bearing: frequency baseline 345°M.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11& 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

At the intersection 2.45 miles southwest of the turnoff to Kigalia Guard Station and almost 2 miles northeast of the Bears Ears, turn west and proceed 2.0 miles to a cattleguard near a corral. Continue straight on this road, ignoring the turnoffs near the corral, for 1.75 miles to a fork. Stay left and continue 1.5 miles to a cattleguard at the FS/BLM boundary. After 2.4 more miles stay to the right at a fork under a stock pond. Continue 0.65 miles to another fork. Stay left. Proceed 0.6 more miles and stay left at the fork. Go 1.90 miles to an enclosure on the east side of the road. The 0-foot end of the baseline is 150 feet north of the north corner of the enclosure.



Map Name: Woodenshoe Butte

Diagrammatic Sketch

Township 36S , Range 17E , Section 12

UTM 4169361.081 N, 588951.386 E

DISCUSSION

Trend Study No. 14-17 (36-5)

This study will be discontinued and replaced by 14-32, located on Lower Deer Flat.

The portion of Deer Flat sampled by this Interagency trend study is an open high elevation flat (7,660 ft) on BLM administered land which is the result of several different treatments. It is basically level, with a gentle 2%-4% slope and a south western aspect and above the Lower Lost Park area. The area had been railed, chained, and seeded in the past and in September of 1984, the herbicide tebuthiuron was applied which resulted in a nearly complete kill of mountain big sagebrush and reinvasion of pinyon. The transect is 200 yards east of and runs parallel to the edge of a pinyon-juniper woodland. It is also near the edge of the herbicide treatment area with mountain big sagebrush still persisting there. Deer tracks and pellet groups were common in 1986, and can also be found in the treated area. A nearby pellet group transect indicates a high level of deer use in the area with an average of 78 deer days use/acre (192 ddu/ha) between 1991 and 1997 (DWR 1998). Because of the high elevation, the flat would be utilized mainly during light to moderate winters and as transitional range. During hard winters, use shifts to the lower elevations, like Beef Basin and Lower Lost Park. Pellet group data taken along the trend study site baseline in 1999 estimated only 7 deer days use/acre (17 ddu/ha) indicating a low level of use on the site itself. For this reason, a new site was established in 1994, about 3 miles to the south where winter deer use is more concentrated. This trend study, Deer Flat, will be discontinued.

Cattle also use the area and were on the flat just across the dirt road at the time of study establishment in August of 1986. The grazing program is a two pasture rotation system involving 400 cattle. One pasture is used from June 1 to August 15 one year and then the other pasture is used from August 16 to October 31 the next year. There is a thick, vigorous stand of grasses and abundant forage available as a result of the treatment. Cattle were in the vicinity during the 1999 reading. Pellet group data from the site estimate 67 cow days use/acre (165 cdu/ha), nearly all of which appeared to be from last fall. Cattle are abundant in the area but concentrated on treated areas where more grasses and less sagebrush are found.

The soil is a light orange color and has a loam texture. It appears to be moderately deep and contains few rocks. Effective rooting depth is estimated at just over 12 inches, but soil penetrometer depth measurements were limited by the compact nature of the soil. Because of the vigorous bunch grasses, vegetative cover is good and there was 55% litter cover from grasses and dead sagebrush in 1986. Erosion appears to be minimal, although there appears to be some soil loss due to wind.

The purpose of the herbicide treatment was to eliminate woody vegetation on the range. There were some young sagebrush present, at the time of study establishment in 1986. They appeared vigorous, yet it was unknown if they could survive since the chemical can linger in the soil for several years in arid climates. During the 1992 reading, density of sagebrush was estimated at 1,740 plants/acre. Mature plants accounted for 70% of the population. Use was light to moderate, vigor normal, and percent decadence low at only 3%. Seedlings and young plants were common. By 1999, density of sagebrush has increased nearly 4 fold to 6,600 plants/acre. Most (86%) consist of young plants which would indicate an expanding population. Use is mostly light and vigor normal.

Although dwarfed by the tall and vigorous perennial grasses that have been released by the treatment, there were an estimated 2,166 stickleaf low rabbitbrush plants/acre in 1986. This shrub species was apparently resistant to tebuthiuron for the population has increased in 1992 to 8,060 plants/acre. Seedlings and young were also very abundant. Density of low rabbitbrush increased slightly by 1999 to 8,800 plants/acre. Young plants are still numerous and comprise 52% of the population. Seedlings are also common, although continued increases in density will likely not occur due to competition with sagebrush and perennial grasses.

Perennial grasses dominate the site. The most abundant grasses include, crested wheatgrass, western wheatgrass, blue grama, bottlebrush squirreltail, and needle-and-thread grass. Annual cheatgrass can also be found in very low frequencies. None of the grasses showed much evidence of recent utilization in 1999, although cattle currently have access to the area. Two years after the herbicide treatment in 1986, forbs did not show many effects. Composition and abundance is what one would expect on this type of range site. The herbicide however, appears to have killed the arrowleaf balsamroot. There are several forbs found on the site but, only redroot eriogonum, longleaf phlox, and scarlet globemallow are common. All forbs combined produced only about 6% cover in 1992 and 3% in 1999.

1986 APPARENT TREND ASSESSMENT

The treatment created a dynamic grassland that for the next few years will result in increased forage production of herbaceous species, as long as it is not selectively over grazed by cattle. Token strips of sagebrush were left along the edge of the pinyon-juniper and provide some browse forage for deer. On transitional higher altitude range such as this site, herbaceous plants can make up a significant part of the mule deer diet. The area also may have the potential to be an elk wintering area if they continue to increase. Therefore, the treatment has resulted in an improved condition for big game and livestock, and an upward vegetative trend. A larger buffer strip might have been desirable. With little erosion and increasing vegetative cover, the soil trend is also up.

1992 TREND ASSESSMENT

Trend for soil is stable. Percent bare ground declined from 40% to 34% and there was a substantial increase in nested frequency for perennial grasses. Litter cover has declined from 55% in 1986 to 26% currently. Over 75% of the vegetative cover is composed of herbaceous species, which are much better at protecting the soil resource from the erosive forces of high intensity summer storms. The density for the key browse species, mountain big sagebrush, is still low, but it has increased by 41% since 1986 (now 1,740 plants/acre). Low rabbitbrush has also increased by 73%, which appears to not have been effected by the herbicide treatment, other than allowing for more opportunistic openings in the community to increase it's density. Trend for key browse is up, but still in low densities. The herbaceous understory trend is also up with a large increase in nested frequency for grasses with a slight decrease in the forbs.

TREND ASSESSMENT

soil - stable

browse - up, but still low density for mountain big sagebrush

herbaceous understory - up

1999 TREND ASSESSMENT

Trend for soil is up slightly due to a decline in percent cover of bare ground, an increase in litter cover, and an increase in the sum of nested frequency of perennial grasses. Trend for browse is up. Density of the key species, mountain big sagebrush, has increased nearly 4 fold. The majority of the population are young plants which would indicate an expanding population. Density of low rabbitbrush has remained stable since 1992. Trend for the herbaceous understory is up slightly. Sum of nested frequency of perennial grasses has increased slightly, while frequency of perennial forbs has increased as well. Nested frequency of the dominant grass, crested wheatgrass, has increased significantly with each reading. Since 1992, bottlebrush squirreltail and needle-and-thread grass have declined significantly in frequency.

TREND ASSESSMENT

soil - up slightly

browse - up

herbaceous understory - up slightly

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 17

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'92	'99	'86	'92	'99	'92	'99
G	<i>Agropyron cristatum</i>	a106	b238	c276	47	85	92	14.90	17.39
G	<i>Agropyron smithii</i>	b63	a34	c132	27	14	52	1.16	2.04
G	<i>Bouteloua gracilis</i>	a25	b75	b68	11	31	26	6.90	2.49
G	<i>Bromus tectorum</i> (a)	-	4	-	-	2	-	.01	-
G	<i>Oryzopsis hymenoides</i>	-	3	-	-	1	-	.00	-
G	<i>Poa fendleriana</i>	-	3	2	-	2	1	.16	.00
G	<i>Sitanion hystrix</i>	b90	b74	a27	45	31	14	.51	.24
G	<i>Stipa comata</i>	b107	b109	a73	48	49	34	3.09	.54
Total for Annual Grasses		0	4	0	0	2	0	0.00	0
Total for Perennial Grasses		391	536	578	178	213	219	26.73	22.73
Total for Grasses		391	540	578	178	215	219	26.74	22.73
F	<i>Agoseris glauca</i>	a-	ab4	b5	-	2	3	.01	.01
F	<i>Arabis</i> spp.	-	-	1	-	-	1	-	.00
F	<i>Astragalus convallarius</i>	b28	a11	a3	15	7	1	.37	.00
F	<i>Balsamorhiza sagittata</i>	-	-	1	-	-	1	-	.00
F	<i>Calochortus nuttallii</i>	1	-	3	1	-	2	-	.01
F	<i>Cordylanthus kingii</i> (a)	4	-	-	2	-	-	-	-
F	<i>Comandra pallida</i>	-	-	6	-	-	2	-	.03
F	<i>Epilobium brachycarpum</i> (a)	-	1	-	-	1	-	.00	-
F	<i>Eriogonum leptophyllum</i>	b8	a-	a-	4	-	-	-	-
F	<i>Erigeron pumilus</i>	-	-	1	-	-	1	-	.03
F	<i>Eriogonum racemosum</i>	ab53	a47	b91	28	25	44	.52	1.36
F	<i>Erigeron utahensis</i>	b36	a-	b23	17	-	11	-	.16
F	<i>Lupinus</i> spp.	a-	b6	b8	-	4	3	.02	.09
F	<i>Machaeranthera canescens</i>	-	4	-	-	2	-	.01	-
F	<i>Oenothera pallida</i>	a-	a-	b16	-	-	8	-	.16
F	<i>Penstemon comarrhenus</i>	10	10	2	4	4	2	.04	.01
F	<i>Phlox longifolia</i>	ab123	a99	b155	51	43	64	.96	.87
F	<i>Polygonum douglasii</i> (a)	-	b79	a1	-	31	1	3.45	.00
F	<i>Sphaeralcea coccinea</i>	ab36	a23	b47	17	12	24	.16	.37
F	<i>Tragopogon dubius</i>	1	2	-	1	2	-	.06	-
Total for Annual Forbs		4	80	1	2	32	1	3.46	0.00
Total for Perennial Forbs		296	206	362	138	101	167	2.18	3.13
Total for Forbs		300	286	363	140	133	168	5.64	3.14

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

BROWSE TRENDS --
Herd unit 14 , Study no: 17

Type	Species	Strip Frequency		Average Cover %	
		'02	'09	'02	'09
B	Amelanchier utahensis	2	0	.15	-
B	Artemisia tridentata vaseyana	41	60	1.30	3.31
B	Chrysothamnus viscidiflorus viscidiflorus	82	92	5.73	4.93
B	Eriogonum microthecum	2	3	-	-
B	Opuntia spp.	1	0	-	-
B	Pediocactus simpsonii	0	4	.03	.15
B	Pinus edulis	3	1	1.96	-
B	Unknown browse	4	3	-	-
Total for Browse		135	163	9.15	8.40

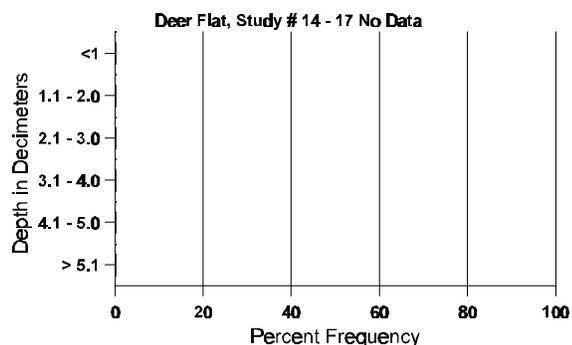
BASIC COVER --
Herd unit 14 , Study no: 17

Cover Type	Nested Frequency		Average Cover %		
	'02	'09	'86	'92	'99
Vegetation	338	342	4.75	37.11	36.50
Rock	-	-	0	.02	0
Pavement	-	3	0	0	.00
Litter	285	380	55.00	26.13	41.03
Cryptogams	-	25	0	0	.21
Bare Ground	281	317	40.25	33.64	32.72

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 17, Study Name: Deer Flat

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
12.4	65.6 (13.1)	6.7	48.0	31.4	20.6	1.4	9.3	121.6	0.5

Stoniness Index



PELLET GROUP DATA --
Herd unit 14 , Study no: 17

Type	Quadrat Frequency		Pellet Transect Days Use/Acre (ha)
	'82	'89	
Rabbit	29	7	N/A
Deer	16	9	7 (17)
Cattle	17	17	67 (165)

BROWSE CHARACTERISTICS --
Herd unit 14 , Study no: 17

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Amelanchier utahensis</i>																		
M	'86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'92	-	-	1	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	'99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	66	56	0
D	'86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	'92	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	'99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'92		00%			100%			00%										
'99		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	0%			
												'92	40		50%			
												'99	0		0%			
<i>Artemisia tridentata vaseyana</i>																		
S	'86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	'92	8	-	-	2	-	-	2	-	-	12	-	-	-	240			12
	'99	33	1	-	-	-	-	3	-	-	37	-	-	-	740			37
Y	'86	8	-	-	-	-	-	-	-	-	8	-	-	-	266			8
	'92	13	8	-	2	-	-	-	-	-	23	-	-	-	460			23
	'99	277	6	-	2	-	-	-	-	-	285	-	-	-	5700			285
M	'86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'92	36	24	-	1	-	-	-	-	-	61	-	-	-	1220	-	-	61
	'99	21	20	3	-	-	-	-	-	-	44	-	-	-	880	20	29	44
D	'86	23	-	-	-	-	-	-	-	-	21	-	1	1	766			23
	'92	2	1	-	-	-	-	-	-	-	3	-	-	-	60			3
	'99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	'86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	'92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	'99	-	-	-	-	-	-	-	-	-	-	-	-	-	1540			77
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			06%			+41%							
'92		38%			00%			00%			+74%							
'99		08%			.90%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	1032	Dec:	74%			
												'92	1740		3%			
												'99	6600		0%			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total							
		1	2	3	4										
<i>Chrysothamnus viscidiflorus viscidiflorus</i>															
S	86	-	-	-	-	-	-	-	0		0				
	92	899	22	-	137	-	-	-	986	-	72	-	21160	1058	
	99	56	-	-	-	-	-	-	56	-	-	-	1120	56	
Y	86	16	-	-	-	-	-	-	15	-	1	-	533	16	
	92	121	49	12	26	4	-	-	205	-	7	-	4240	212	
	99	223	-	-	6	-	-	-	229	-	-	-	4580	229	
M	86	30	-	-	-	-	-	-	28	-	2	-	1000	7 11	30
	92	124	53	-	8	-	-	-	185	-	-	-	3700	- -	185
	99	164	41	-	3	-	-	-	202	6	-	-	4160	9 17	208
D	86	18	1	-	-	-	-	-	16	-	-	3	633		19
	92	1	5	-	-	-	-	-	1	-	2	3	120		6
	99	1	-	1	1	-	-	-	2	-	-	1	60		3
X	86	-	-	-	-	-	-	-	-	-	-	-	0		0
	92	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	-	-	-	-	-	-	-	-	-	-	-	40		2
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>							
'86		02%		00%		09%		+73%							
'92		28%		03%		03%		+ 8%							
'99		09%		.22%		.22%									
Total Plants/Acre (excluding Dead & Seedlings)									'86	2166	Dec:	29%			
									'92	8060		1%			
									'99	8800		1%			
<i>Eriogonum microthecum</i>															
Y	86	-	-	-	-	-	-	-	-	-	-	-	0		0
	92	-	-	-	-	-	-	-	-	-	-	-	0		0
	99	2	-	-	-	-	-	-	2	-	-	-	40		2
M	86	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	92	1	-	-	1	-	-	-	2	-	-	-	40	- -	2
	99	2	-	-	-	-	-	-	2	-	-	-	40	7 8	2
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>							
'86		00%		00%		00%									
'92		00%		00%		00%		+50%							
'99		00%		00%		00%									
Total Plants/Acre (excluding Dead & Seedlings)									'86	0	Dec:	-			
									'92	40		-			
									'99	80		-			
<i>Opuntia spp.</i>															
M	86	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	92	1	-	-	-	-	-	-	1	-	-	-	20	- -	1
	99	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>							
'86		00%		00%		00%									
'92		00%		00%		00%									
'99		00%		00%		00%									
Total Plants/Acre (excluding Dead & Seedlings)									'86	0	Dec:	-			
									'92	20		-			
									'99	0		-			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4			
Pediocactus simpsonii								
M	86	-	-	-	-	-	-	-
	92	-	-	-	-	-	-	-
	99	4	-	-	-	-	-	-
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>
	'86	00%		00%		00%		
	'92	00%		00%		00%		
	'99	00%		00%		00%		
Total Plants/Acre (excluding Dead & Seedlings)						'86	0	Dec: -
						'92	0	-
						'99	80	-
Pinus edulis								
Y	86	-	-	-	-	-	-	-
	92	1	1	-	-	-	-	-
	99	1	-	-	-	-	-	-
M	86	-	-	-	-	-	-	-
	92	1	-	-	-	-	-	-
	99	-	-	-	-	-	-	-
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>
	'86	00%		00%		00%		
	'92	33%		00%		33%		-67%
	'99	00%		00%		00%		
Total Plants/Acre (excluding Dead & Seedlings)						'86	0	Dec: -
						'92	60	-
						'99	20	-
Unknown browse								
Y	86	-	-	-	-	-	-	-
	92	1	-	-	-	5	-	-
	99	1	-	-	-	-	-	-
M	86	-	-	-	-	-	-	-
	92	-	2	-	-	-	-	-
	99	1	-	1	-	-	-	-
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>
	'86	00%		00%		00%		
	'92	88%		00%		00%		-63%
	'99	00%		33%		00%		
Total Plants/Acre (excluding Dead & Seedlings)						'86	0	Dec: -
						'92	160	-
						'99	60	-