

Trend Study 14-16-04

Study site name: Lower Lost Park.

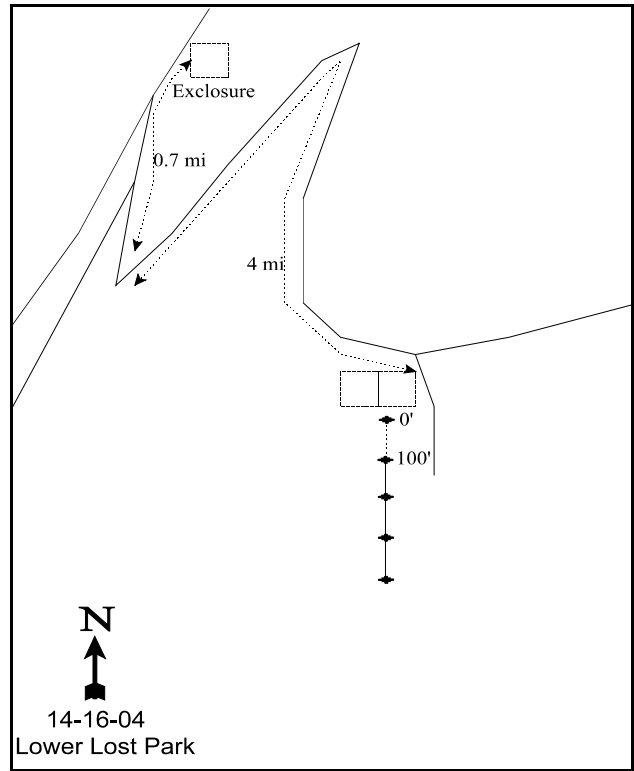
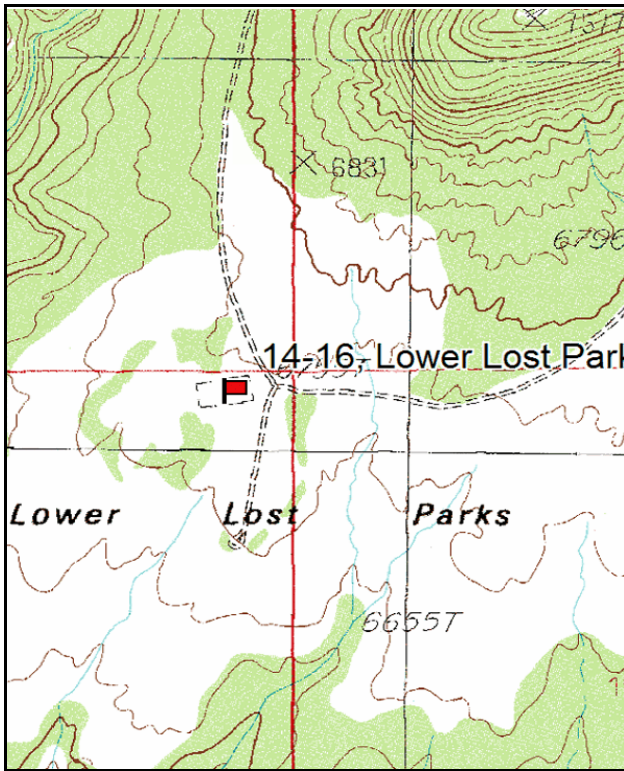
Vegetation type: Wyoming Big Sagebrush.

Compass bearing: frequency baseline 165 degrees magnetic.

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

LOCATION DESCRIPTION

From the turnoff to the Kigalia Guard Station, proceed 2.4 miles southwest towards the Bears Ears. At the intersection, turn right and go west 2.1 miles. Go straight over the cattleguard, past a corral and continue 1.7 miles to a fork. Stay left and continue 1.5 miles to the FS/BLM boundary. Cross the cattleguard and go 2.45 miles to a fork by a stock pond. Stay right and go 0.6 miles. Stay left at this fork and continue 0.6 miles to another fork. Stay left and go 1.85 miles to an enclosure (Deer Flat enclosure and transect). Stay left at the fork by the enclosure and proceed 0.7 miles. Stay left at the forks, then drop off the rim down a tight switchback. Go just under 4 miles to an enclosure. Turn right on the road just east of the enclosure and stop after 100 feet. The transect begins 50 feet south of the center of the enclosure. All transect stakes are green fence posts. The 0-foot baseline post is tagged #7884.



Map Name: Woodenshoe Butte

Diagrammatic Sketch

Township 36S, Range 18E, Section 19

GPS: NAD 27, UTM 12S 4167110 N, 589573 E

DISCUSSION

Lower Lost Park - Trend Study No. 14-16

Lower Lost Park is administered by the BLM. This study site samples deer winter range in a sagebrush and pinyon-juniper flat south of the mouth of Deer Canyon. This area is on the southwest side of Elk Ridge. Topography at the study area is basically level at an elevation of 6,750 feet. The area drains west and south into the deep slickrock of White Canyon. It was originally chained in 1969 and crested wheatgrass and four-wing saltbush were seeded. Livestock is allocated 120 AUMs; 60 cattle from April 1 to May 31. In October 1986, following the establishment of this study, the herbicide tebuthiuron was applied. Edges and drainages were supposedly left untreated for wildlife use. By 1992, it appeared that the herbicide treatment was either ineffective or not done at all, because the sagebrush and juniper showed no effects of being chemically treated. The area does receive a fair amount of deer use during the winter. The pellet group transect on the study site averaged only 11 deer days use/acre (29 ddu/ha) over the 5-year period from 1981-86 (Jense et al. 1986). From 1987-1992, deer days use had risen to 38 ddu/acre (96 ddu/ha) (Jense et al. 1992). Deer use between 1993 and 1997 averaged 44 ddu/acre (109 ddu/ha). Pellet group data taken in 1999 along the trend study site baseline estimated 56 ddu/acre (138 ddu/ha), 1 elk days use/acre (2 edu/ha), and 7 cow days use/acre (17 cdu/ha). In 2004, deer use was lower as 23 ddu/acre (58 ddu/ha) were estimated. Elk use was estimated at 2 edu/acre (5 edu/ha) and cattle use was 8 cdu/acre (20 cdu/ha).

The study is set up just outside an old (1958) cattle and deer enclosure. Animals have apparently been inside the enclosure and except for greater cryptogam development in the enclosure, there were few observable differences.

The light orange soil is moderately deep and loose on top with a light crust. It is more compacted below the surface layer. Soil texture is a loam with an effective rooting depth estimated at almost 15 inches. Depth is likely deeper since soil compaction makes soil penetrometer depth readings difficult. Phosphorus and potassium are low at just 3.3 ppm and 44.8 ppm respectively. No rocks were encountered on the surface or within the profile. Vegetative cover is scattered, leaving large bare interspaces that are very susceptible to erosion. This erosive disturbance could easily be the limiting factor for the establishment of browse and other herbaceous understory species within the bare interspaces.

When the study was established in August of 1986, a moderately dense and mostly decadent stand of Wyoming big sagebrush dominated the site. These plants displayed moderate to heavy hedging, a clubbed appearance, characterized with low growth and little seed production. Ten-foot tall pinyon pine and juniper were well established and appeared to be gaining dominance on the site. Density of sagebrush increased slightly in 1992, but some of the difference is due to the much larger sample used in 1992. Use was still moderate to heavy, vigor poor, and percent decadence high at 69%. By 1999, density had declined to 4,740 plants/acre. It appears that the population of mature plants has remained relatively constant while many of the decadent plants died. Use was still moderate to heavy and vigor was poor on a third of the plants sampled. Percent decadence declined, but it was still high at 47%. Recruitment in the form of seedlings and young were nearly non-existent. In 2004, density declined to 4,560 plants/acre, a 4% decline in the population. Overall, this is a 47% decline since 1992. Percent decadence increased to 80%, while 55% of the population was classified as dying. There were no seedlings or young to replace the decadent and dying plants. Although density has declined since 1992, cover has remained relatively stable only declining from 18% in 1992 to 15% in 2004. There were fewer plants, but, plant size has increased. Average crown width increased from 19 inches in 1992 to 29 inches in 1999 and 28 inches in 2004.

Pinyon and juniper density was estimated in 2004 using the point-quarter method. Pinyon was estimated at 78 trees/acre with an average diameter of 4.4 inches. Utah juniper had a density of 37 trees/acre, with an average diameter of 3.3 inches. With pinyon-juniper cover exceeding 13%, coupled with the drought, this competitive overstory will start to effect the health and vigor of the herbaceous understory (Tausch and West 1994).

The herbicide treatment planned for October 1986 had the objective to kill the Wyoming big sagebrush and pinyon-juniper trees and release the understory grasses. In August 1986, the understory was depleted with grass frequency very low. The planned treatment obviously did not take place. By 1992 and 1999, conditions were similar with perennial grasses providing only about 2% cover. Forbs were also lacking and few species are common. Longleaf phlox was the only common forb. In 2004, the depleted understory had declined even further. Nested frequency for the most common grass, bottlebrush squirreltail, had declined significantly. Cover for perennial grasses was less than 1%. Nested frequency for perennial forbs was also significantly lower.

1986 APPARENT TREND ASSESSMENT

When sampled, the study area appeared to be in poor condition and experiencing a downward trend. The herbicide treatment was planned to benefit livestock, however it had the potential to improve the range condition and trend for big game as well. Management objectives should continue to include wildlife concerns. A grazing deferment for at least one season is necessary to allow grasses to reestablish and avoid causing accelerated soil loss. Cattle grazing after that point could be beneficial to sagebrush reestablishment. If some herbaceous cover and browse forage is maintained as specified in the plan, deer could also take advantage of spring forage on the treated areas. This study will either monitor vegetative changes on a treated area, or if the specific site was not actually treated (unknown at this time), note changes in use on an adjacent area affected by loss of other habitat.

1992 TREND ASSESSMENT

It appears that the treatment was not done or it was totally ineffective on the browse and tree species. The soil trend appears to be stable to slightly improving with increases in litter cover and a slight decrease in percent bare ground. Although, the soil condition is still very poor with a real need for the establishment of more herbaceous understory cover to protect it from high intensity summer storms that will continue to cause severe soil movement and losses. The browse trend is stable, with an increase in density (14%) offset somewhat by an increase in percent decadence, now up to 69%. Seedlings are nearly nonexistent and there are very few plants in the young age class (1%). These sagebrush population parameters should be closely monitored, especially if drought continues. The herbaceous understory trend can be best described as slightly down, with a moderate decrease in nested grass frequency and a slight decline in nested frequency for perennial forbs. Grasses are the most important component of the herbaceous understory and are weighted more heavily in determining trend for this site. The Desirable Components Index (see methods) rating is fair at 34 for a Wyoming big sagebrush community. Decadence and proportion of young plants is poor and perennial grasses are lacking.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 34 (fair) Wyoming big sagebrush type

1999 TREND ASSESSMENT

Trend for soil appears stable, but in poor condition with abundant bare ground exposed and erosion occurring. Trend for browse is down. Density has declined 45% since 1992, use is moderate to heavy, those classified with poor vigor has increased, and recruitment is poor. Percent decadence has declined, however 33% of the decadent plants sampled appear to be dying. There is currently not enough young plants to maintain the population, so a further decline in density is likely. On the positive side, density of mature plants has remained relatively stable since 1986. Without better recruitment however, the population will continue to decline. Trend for the herbaceous understory is stable for perennial grasses and forbs. However, there has been a significant increase in the nested frequency of cheatgrass which was not present in 1992. It now occurs in 45% of the quadrats. Cover of cheatgrass is still low, but can increase rapidly as it has on other sites within the unit. Sixweeks fescue, another annual, has also increased significantly in nested frequency since 1992. It

now accounts for 32% of the grass cover, up from 11% in 1992. With this in mind, trend for the herbaceous understory is considered down slightly. The DCI score remained stable at 33 (fair). Decadence improved, but cheatgrass was greater which negatively impacts the site.

TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 33 (fair) Wyoming big sagebrush type

2004 TREND ASSESSMENT

Trend for soil is slightly down. Bare ground has increased as vegetation cover has decreased. The ratio of bare soil to protective ground cover (vegetation, litter, and cryptogams) declined from 1:2.4 to 1:2.1, which is very poor. Erosion is rated as slight, but is susceptible to high intensity events. A better herbaceous component is needed to protect the soil. The browse trend is down. Since 1992 density has declined, but surviving plants have gotten larger so cover has remained fairly stable. Density has only dropped slightly since 1999, but decadence has increased to 80%, while 55% of the population was classified as dying. There are no young or seedling plants to replace the dying and decadent plants. The herbaceous understory trend is also down. Nested frequency for both perennial grasses and forbs has dramatically declined since 1999. The herbaceous understory makes up only 6% of the total vegetation cover. Cheatgrass has declined significantly since 1999, but competition from perennial grasses is needed to keep cheatgrass from becoming a major factor on this site in the future. The DCI score declined to a poor rating at 17. Decadence of sagebrush is very high and there are no young plants. The herbaceous understory is also very poor.

TREND ASSESSMENT

soil - slightly down (2)

browse - down (1)

herbaceous understory - down (1)

winter range condition (DC Index) - 17 (poor) Wyoming big sagebrush type

HERBACEOUS TRENDS --

Management unit 14 , Study no: 16

Type	Species	Nested Frequency				Average Cover %		
		'86	'92	'99	'04	'92	'99	'04
G	Agropyron cristatum	11	2	10	1	.01	.10	.00
G	Bouteloua gracilis	a-	b16	b18	ab9	.22	.12	.01
G	Bromus tectorum (a)	-	a-	c116	b21	-	.86	.19
G	Oryzopsis hymenoides	ab26	b41	a14	ab28	.35	.09	.52
G	Poa fendleriana	b47	a-	a-	a-	-	-	-
G	Sitanion hystrix	c157	b72	b89	a7	.78	1.28	.06
G	Stipa comata	ab18	ab20	b34	a8	.26	.22	.04
G	Vulpia octoflora (a)	-	a70	b135	a47	.21	1.26	.61
Total for Annual Grasses		0	70	251	68	0.20	2.13	0.80
Total for Perennial Grasses		259	151	165	53	1.64	1.82	0.64

T y p e	Species	Nested Frequency				Average Cover %		
		'86	'92	'99	'04	'92	'99	'04
	Total for Grasses	259	221	416	121	1.85	3.96	1.44
F	Arabis spp.	-	-	4	-	-	.01	-
F	Astragalus convallarius	95	87	75	60	.96	.79	.39
F	Calochortus nuttallii	-	11	-	-	.02	-	-
F	Cordylanthus wrightii (a)	_a 13	_b 157	_a 1	_a 2	6.91	.00	.01
F	Descurainia pinnata (a)	-	-	2	-	-	.00	-
F	Erigeron pumilus	_b 25	_{ab} 19	_c 52	_a 5	.16	.77	.04
F	Eriogonum racemosum	-	-	2	-	-	.00	-
F	Lesquerella spp.	-	2	-	-	.00	-	-
F	Machaeranthera canescens	_b 36	_a 6	_a 3	_a 10	.02	.00	.05
F	Madia glomerata (a)	-	-	1	5	-	.00	.04
F	Microsteris gracilis (a)	-	-	-	3	-	-	.03
F	Penstemon comarrhenus	_c 53	_{bc} 36	_{ab} 19	_a 4	1.29	.12	.01
F	Phlox longifolia	_b 207	_c 259	_c 253	_a 157	2.03	1.49	.79
F	Sphaeralcea coccinea	33	12	19	22	.11	.08	.13
F	Townsendia spp.	-	4	2	-	.01	.00	-
F	Unknown forb-annual (a)	-	2	-	-	.00	-	-
F	Unknown forb-perennial	2	-	-	-	-	-	-
	Total for Annual Forbs	13	159	4	10	6.92	0.01	0.08
	Total for Perennial Forbs	451	436	429	258	4.62	3.28	1.41
	Total for Forbs	464	595	433	268	11.54	3.30	1.50

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

BROWSE TRENDS --

Management unit 14 , Study no: 16

Type	Species	Strip Frequency			Average Cover %		
		'92	'99	'04	'92	'99	'04
B	<i>Artemisia tridentata wyomingensis</i>	95	93	87	17.77	14.76	15.07
B	<i>Chrysothamnus depressus</i>	11	3	3	.04	.30	-
B	<i>Chrysothamnus viscidiflorus</i>	0	3	0	-	-	-
B	<i>Eriogonum microthecum</i>	4	4	1	.18	.03	.00
B	<i>Gutierrezia sarothrae</i>	0	0	2	-	.00	.03
B	<i>Juniperus osteosperma</i>	4	5	5	.56	.33	.74
B	<i>Opuntia spp.</i>	1	3	1	-	-	.01
B	<i>Pinus edulis</i>	10	6	5	6.81	7.19	5.65
Total for Browse		125	117	104	25.37	22.63	21.52

CANOPY COVER, LINE INTERCEPT --

Management unit 14 , Study no: 16

Species	Percent Cover	
	'99	'04
<i>Artemisia tridentata wyomingensis</i>	-	10.78
<i>Chrysothamnus depressus</i>	-	.13
<i>Juniperus osteosperma</i>	-	2.86
<i>Opuntia spp.</i>	-	.11
<i>Pinus edulis</i>	6.00	10.16

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 14 , Study no: 16

Species	Average leader growth (in)
	'04
<i>Artemisia tridentata wyomingensis</i>	1.3

POINT-QUARTER TREE DATA --
Management unit 14 , Study no: 16

Species	Trees per Acre	
	'99	'04
Juniperus osteosperma	36	37
Pinus edulis	80	78

Average diameter (in)	
'99	'04
2.8	3.3
3.0	4.4

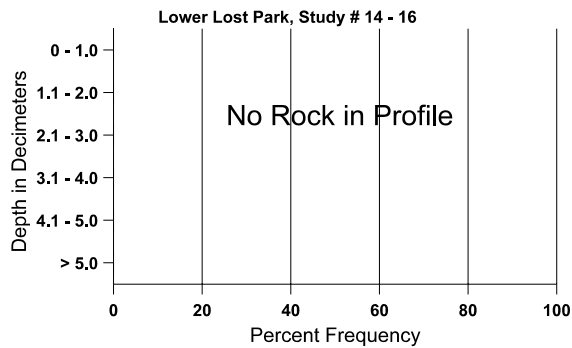
BASIC COVER --
Management unit 14 , Study no: 16

Cover Type	Average Cover %			
	'86	'92	'99	'04
Vegetation	3.25	32.20	27.01	22.48
Rock	0	.01	.00	0
Pavement	0	0	0	.01
Litter	28.25	29.35	31.84	31.78
Cryptogams	2.00	2.19	3.28	3.55
Bare Ground	66.50	46.18	48.67	53.32

SOIL ANALYSIS DATA --
Management unit 14, Study no: 16, Study Name: Lower Lost Park

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
14.5	61.7 (12.1)	6.9	44.0	32.2	23.8	1.0	3.3	44.8	0.5

Stoniness Index



PELLET GROUP DATA --

Management unit 14 , Study no: 16

Type	Quadrat Frequency		
	'92	'99	'04
Rabbit	44	60	34
Elk	-	1	-
Deer	49	39	15
Cattle	3	-	-

Days use per acre (ha)	
'99	'04
-	-
1 (2)	2 (5)
56 (138)	23 (58)
7 (17)	8 (20)

BROWSE CHARACTERISTICS --

Management unit 14 , Study no: 16

		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 wyomingensis</i>												
86	7399	-	-	2733	4666	-	35	49	63	6	24	20/19
92	8600	20	60	2620	5920	-	42	25	69	13	24	-/-
99	4740	-	20	2500	2220	880	38	38	47	16	33	19/29
04	4560	-	-	900	3660	1740	57	2	80	55	57	18/28
<i>Chrysothamnus depressus</i>												
86	266	-	66	200	-	-	0	0	0	-	0	6/6
92	260	-	80	180	-	-	62	8	0	-	0	-/-
99	80	-	-	80	-	-	0	50	0	-	0	8/11
04	60	-	-	20	40	20	33	33	67	33	33	2/7
<i>Chrysothamnus viscidiflorus</i>												
86	0	-	-	-	-	-	0	0	0	-	0	-/-
92	0	-	-	-	-	-	0	0	0	-	0	-/-
99	60	-	-	40	20	-	0	0	33	33	33	13/15
04	0	-	-	-	-	-	0	0	0	-	0	11/8
<i>Eriogonum microthecum</i>												
86	0	-	-	-	-	-	0	0	-	-	0	-/-
92	120	20	80	40	-	-	0	0	-	-	0	-/-
99	80	-	-	80	-	-	25	0	-	-	0	3/7
04	20	-	-	20	-	-	0	100	-	-	0	2/2
<i>Gutierrezia sarothrae</i>												
86	0	-	-	-	-	-	0	0	-	-	0	-/-
92	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	40	-	-	-	-	0	0	-	-	0	-/-
04	80	-	20	60	-	-	0	0	-	-	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)
Juniperus osteosperma												
86	0	-	-	-	-	-	0	0	0	-	0	-/-
92	80	-	40	40	-	-	0	0	0	-	0	-/-
99	100	-	80	20	-	-	0	0	0	-	0	-/-
04	100	-	60	20	20	-	0	0	20	-	0	-/-
Opuntia spp.												
86	66	-	-	66	-	-	0	0	-	-	0	8/12
92	20	-	-	20	-	-	0	0	-	-	0	-/-
99	80	-	20	60	-	-	0	0	-	-	0	9/27
04	20	-	-	20	-	-	0	0	-	-	0	7/33
Pinus edulis												
86	0	-	-	-	-	-	0	0	0	-	0	-/-
92	200	-	100	80	20	-	0	0	10	-	0	-/-
99	120	20	40	80	-	-	0	0	0	-	0	-/-
04	100	20	20	80	-	-	0	0	0	-	0	-/-