

Trend Study 14-8-04

Study site name: Peters Point .

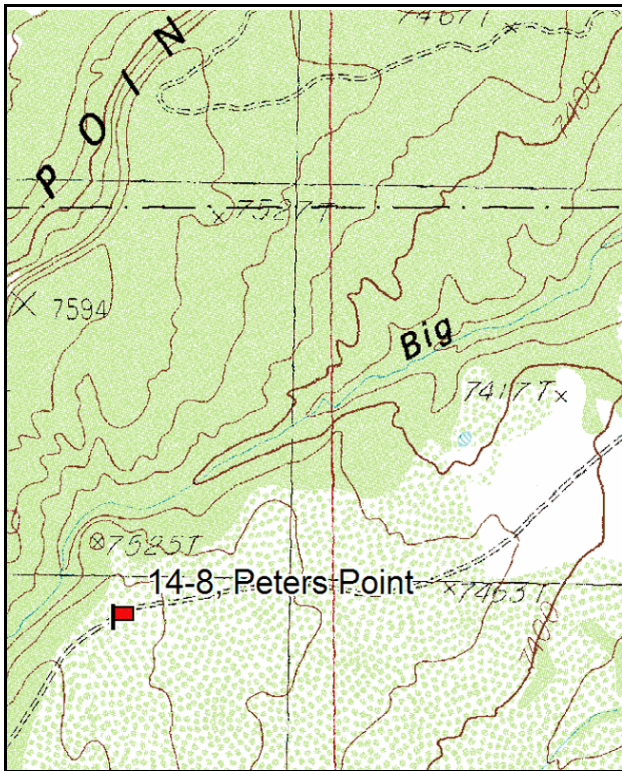
Vegetation type: Chained, Seeded P-J .

Compass bearing: frequency baseline 165 degrees magnetic.

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

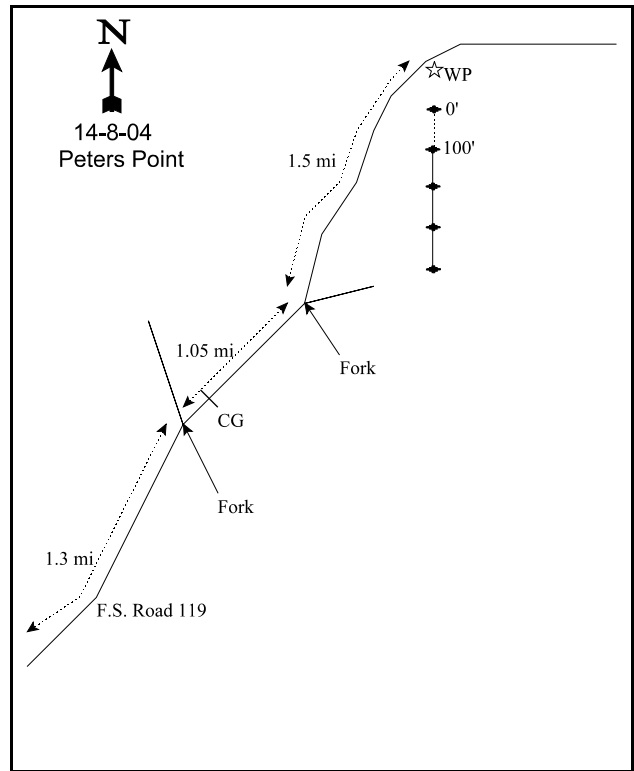
LOCATION DESCRIPTION

From Monticello Lake, take the dirt road (Spring Creek Road) 0.7 miles to a fork. Stay right and continue 2.2 miles to a fork. Turn left (F.S. Road 119) and go north 1.3 miles to a fork. Stay right towards an enclosure and go 0.25 miles to a cattleguard. Continue 0.8 miles to a fork. Stay left and continue 1.5 miles to a witness post on the right side of the road. The 0 foot stake is 100 feet south of the witness post, and has browse tag #1888 attached.



Map Name: Monticello Lake

Township 32S , Range 23E , Section 30



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4202852 N, 637552 E

DISCUSSION

Peter's Point - Trend Study No. 14-8

Fifteen hundred acres of pinyon-juniper woodland on Peters Point Plateau on the northeast side of the Abajo Mountains were chained and seeded in 1962. The Forest Service conducted follow up treatments in 1985 which included burning the perimeter of the old chaining and a Tordon treatment of approximately 200 acres. There are plans to finish burning, chemically treat or roller-chop the chaining in the future. The study site is near the road in the middle of the chaining. Elevation is 7,500 feet with a southeast aspect and on gentle slope. The availability of water is limited, although there are some seasonal sources and small stock ponds. As with the two previous study sites, this area is grazed by cattle in the summer as part of the Harts Draw allotment. It is in the third unit in a rest-rotation grazing system. This area is considered spring-fall range for deer. Peters Point is just above the Harts Draw winter concentration area. This plateau has the potential to become an important elk wintering area. Pellet group data taken on the site in 1999 estimated 13 deer, 1 elk and 7 cow days use/acre (32 ddu/ha, 3 edu/ha, and 17 cdu/ha). Pellet group data from 2004 estimated similar deer use at 15 days use/acre (36 ddu/ha). Elk use was estimated at 11 days use/acre (26 edu/ha) and cattle use estimated at 12 days use/acre (29 cdu/ha). Cattle were in the area when the site was read on June 17, 2004, but use appeared light at that time.

Soil at the site is relatively shallow with an effective rooting depth estimated at just under 12 inches. It is a reddish sandy loam with a neutral pH (7.2). The soil is extremely compacted with a hardpan apparent at about 6 to 7 inches in depth. It appears that this layer is mostly impervious to water. There is little rock on the surface or within the profile. Some pavement is concentrated on the surface in some scattered exposed spots, but this still contributes less than 2% cover. Average cover of bare ground has steadily increased from 19% in 1986 to a relative cover value of 46% in 2004. Much of this increase is due to the inevitable decomposition of chaining litter. However, drought conditions for the past several years have caused a decline in herbaceous cover and an increase in cover of bare ground. Often the bare areas lead into small gullies, where recent soil movement is detectable. Overall the area has good cover, with a high percent of herbaceous cover. There is some erosion occurring but it appears minimal due to the lack of significant slope. A soil erosion condition class assessment rated erosion as slight in 2004.

Encroachment by the juniper into this particular area has been rather slow with point-center quarter data estimated a density of 87 juniper trees/acre in 2004. A few widely spaced pinyon trees are also found on the site at an estimated density of about 22 trees/acre. Average diameter of juniper was estimated at 4.3 inches while that of pinyon averaged 2.4 inches. Approximately one-third of the juniper sampled were in the 8 to 12 foot height range, while another one-third were in the 4 to 8 foot range. Total canopy cover of juniper was estimated at nearly 5% in 2004. Sixteen percent of the juniper sampled were knocked down (tipped over), but still living trees which averaged 7 inches in diameter.

The key browse species on this site is mountain big sagebrush. Although some individuals had different leaf color and growth forms, they were all classified as mountain big sagebrush. Density has remained stable at about 2,700 plants/acre since 1994. Use has been light to moderate with a few individuals displaying heavy hedging. Vigor was rated as poor on 67% of the population in 1994 and 21% of the plants sampled were classified as decadent. Vigor was rated as normal on all but 10% of the population in 2004 with a similar number of decadent plants. Young recruitment has remained good during all readings with 13% of the population consisting of young plants in 1999 and 2004. Seedling sagebrush were abundant in 2004. Total sagebrush canopy cover was estimated at nearly 14% in 2004.

Broom snakeweed is fairly abundant and has increased substantially since 1994. Shrubs not encountered on the density plots include scattered Gambel oak, large and lightly browsed serviceberry, and some true mountain mahogany. The increaser species (broom snakeweed, juniper, pricklypear cactus, and pinyon pine) are not yet numerous enough to really affect production of the more desirable shrub and herbaceous species.

The seeding treatment successfully established a dense stand of crested wheatgrass. The wheatgrass occurs in vigorous, large patches that made up 81% of the total grass cover in 1994, increasing to 95% in 1999 and 2004. This grass, and to a lesser extent the bottlebrush squirreltail and mutton bluegrass, provides abundant spring and fall forage for deer and cattle and it is also valuable to elk in winter.

Forbs are lacking and produced less than 2% cover in 2004. The most numerous species is rock goldenrod. It provided 61% of the forb cover in 1994, increasing to 94% in 1999. Dusty penstemon, a valuable forage species, declined significantly in nested frequency since 1994 and was not sampled in 2004.

1986 APPARENT TREND ASSESSMENT

Currently the old chaining is in good condition. The important forage species, shrubs and grasses, appear vigorous and most appear to be increasing. The age class, form, and vigor of the big sagebrush suggests an improving trend. It appears that the juniper are increasing, which is negative in the long term and management plans already include further treatment to reduce their numbers. A complete elimination of all woody species would be a negative impact to deer habitat needs however. Cover is already limited on the large open chaining. Although there is some gully erosion, the increasing vegetation should improve soil cover and therefore trend. Disturbance of the soil by burning could accelerate erosion temporarily. A roller-chopper treatment would be a much better option to treat the chaining and the litter left in place would protect the soils from high intensity summer storms.

1994 TREND ASSESSMENT

The chaining is still considered in good condition. The soil trend is judged to be slightly down with the large increase in percent bare ground (19% in 1986 to 32% in 1994). Soil trend is considered only slightly down because the herbaceous cover is abundant and makes up 69% of the total vegetative cover. Herbaceous cover is best for protecting the soils from high intensity summer storms. The key browse species, mountain big sagebrush, has shown an increase in its density, but this is primarily because of the much larger sample size now used. More importantly is the percentage of plants expressing poor vigor which have increased from 5 to 67%. Percent decadence has also increased from 7 to 20%. Young recruitment is good and helps offset some of the downward trends in sagebrush. The browse trend would still be judged slightly down. The herbaceous understory is rated as slightly down because the nested frequency values for both grasses and forbs have decreased slightly and frequency of the most abundant grass, crested wheatgrass, declined since the last reading. The Desirable Components Index (see methods) rated this site as good with score of 72 due to a healthy browse population and abundant perennial grasses and forbs.

TREND ASSESSMENT

soil - slightly down (2)

browse - slightly down (2)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 72 (good) Mountain big sagebrush/chaining type

1999 TREND ASSESSMENT

Trend for soil is stable with similar relative percent cover estimates for vegetation, litter, and bare ground. Trend for browse is considered up slightly even though density of the key species, mountain big sagebrush declined slightly. Plants displaying poor vigor declined from 67% of the population to only 6%, while percent decadence declined from 21% to 8%. Seedlings and young are not as abundant, yet adequate to maintain the stand. Trend for the herbaceous understory is considered stable. Nested frequency of crested wheatgrass increased, although sum of nested frequency for all herbaceous species remained at similar levels compared to 1994. The DCI score is rates this site as good. Palatable browse cover has increased and decadence

decreased. Forb cover did decline.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

winter range condition (DC Index) - 74 (good) Mountain big sagebrush/chaining type

2004 TREND ASSESSMENT

Trend for soil is down slightly due to a decline in protective ground cover and a 24% increase in relative bare ground to 39%. Drought conditions have also caused a 40% decline in herbaceous cover. There is some isolated erosion occurring but it is not severe and the erosion condition class was rated as slight. Trend for the key browse species, mountain big sagebrush, is stable. Density has remained similar to 1999, use is light to moderate and vigor normal on most plants. The number of decadent plants increased to 18% but seedlings are abundant and 13% of the population consists of young plants. Mature sagebrush are healthy and producing abundant seed in 2004. The increaser, broom snakeweed, has remained stable since 1999. Trend for the herbaceous understory is slightly down due to a decline in the sum of nested frequency for perennial grasses and forbs. Crested wheatgrass dominates the herbaceous understory by providing 95% of the total grass cover and 79% of the total herbaceous cover. It declined significantly in nested frequency and cover dropped 38%. Rock goldenrod is the only common forb encountered. It also declined significantly in nested frequency and cover. The DCI score declined to fair (58) due to higher decadence and the decline of the herbaceous understory.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 58 (fair) Mountain big sagebrush/chaining type

HERBACEOUS TRENDS --

Management unit 14 , Study no: 8

T y p e	Species	Nested Frequency				Average Cover %		
		'86	'94	'99	'04	'94	'99	'04
G	Agropyron cristatum	_b 324	_a 242	_b 285	_a 216	14.34	14.65	9.14
G	Bromus tectorum (a)	-	8	22	13	.78	.11	.05
G	Koeleria cristata	-	14	3	13	1.54	.00	.08
G	Oryzopsis hymenoides	-	4	5	6	.03	.15	.03
G	Poa fendleriana	_a 3	_b 27	_{ab} 20	_{ab} 20	.52	.56	.27
G	Poa pratensis	-	7	-	-	.38	-	-
G	Sitanion hystrix	_{ab} 9	_a -	_{ab} 3	_b 11	.00	.01	.06
Total for Annual Grasses		0	8	22	13	0.78	0.11	0.05
Total for Perennial Grasses		336	294	316	266	16.82	15.38	9.58
Total for Grasses		336	302	338	279	17.60	15.50	9.64
F	Arabis spp.	1	4	1	-	.01	.00	-

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'99	'04	'94	'99	'04
F	<i>Artemisia ludoviciana</i>	1	-	-	-	-	-	-
F	<i>Cryptantha humilis</i>	-	4	-	4	.63	-	.03
F	<i>Descurainia pinnata</i> (a)	-	-	-	7	-	-	.01
F	<i>Draba</i> spp. (a)	-	-	2	8	-	.00	.01
F	<i>Eriogonum alatum</i>	1	3	-	3	.00	-	.01
F	<i>Erigeron pumilus</i>	_{ab} 4	_a -	_b 12	_a -	-	.08	.00
F	<i>Heterotheca villosa</i>	-	-	1	-	-	.03	-
F	<i>Lappula occidentalis</i> (a)	-	_a -	_a 3	_b 17	-	.00	.10
F	<i>Lesquerella rectipes</i>	_b 10	_a -	_a -	_a -	-	-	-
F	<i>Microsteris gracilis</i> (a)	-	4	3	4	.01	.00	.01
F	<i>Oenothera</i> spp.	-	6	-	-	.02	-	-
F	<i>Pedicularis centranthera</i>	-	-	4	-	-	.06	-
F	<i>Penstemon pachyphyllus</i>	_a 9	_b 20	_a 7	_a -	1.54	.01	-
F	<i>Petrorhiza pumila</i>	_b 118	_a 70	_{ab} 75	_a 48	3.45	3.50	1.68
F	<i>Phlox longifolia</i>	-	-	2	-	-	.01	-
F	<i>Sphaeralcea coccinea</i>	-	2	2	-	.00	.01	-
Total for Annual Forbs		0	4	8	36	0.00	0.01	0.14
Total for Perennial Forbs		144	109	104	55	5.67	3.72	1.73
Total for Forbs		144	113	112	91	5.68	3.73	1.87

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

BROWSE TRENDS --

Management unit 14 , Study no: 8

Type	Species	Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	<i>Artemisia tridentata vaseyana</i>	53	53	55	7.89	11.36	12.91
B	<i>Chrysothamnus nauseosus</i>	3	1	3	.01	-	.03
B	<i>Chrysothamnus viscidiflorus</i>	0	2	0	-	-	-
B	<i>Gutierrezia sarothrae</i>	9	16	21	.01	.04	.29
B	<i>Juniperus osteosperma</i>	0	6	5	2.57	4.34	4.81
B	<i>Opuntia</i> spp.	4	5	5	.00	.03	.00
Total for Browse		69	83	89	10.48	15.78	18.06

CANOPY COVER, LINE INTERCEPT --

Management unit 14 , Study no: 8

Species	Percent Cover	
	'99	'04
Artemisia tridentata vaseyana	-	13.75
Chrysothamnus nauseosus	-	.05
Gutierrezia sarothrae	-	1.06
Juniperus osteosperma	1.79	4.80

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 14 , Study no: 8

Species	Average leader growth (in)
	'04
Artemisia tridentata vaseyana	2.0

POINT-QUARTER TREE DATA --

Management unit 14 , Study no: 8

Species	Trees per Acre		
	'94	'99	'04
Juniperus osteosperma	75	68	87
Pinus edulis	19	21	22

Average diameter (in)		
'94	'99	'04
4.3	4.2	4.4
2.6	2.7	2.4

BASIC COVER --

Management unit 14 , Study no: 8

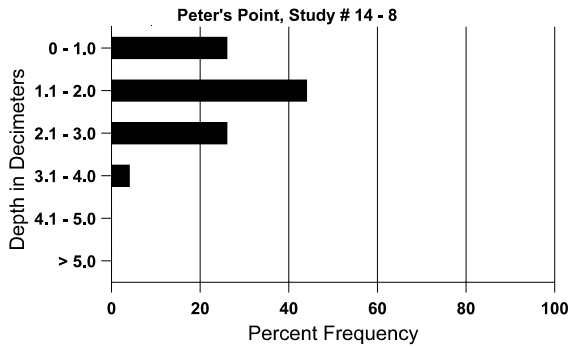
Cover Type	Average Cover %			
	'86	'94	'99	'04
Vegetation	15.25	29.00	35.43	31.02
Rock	1.00	.50	.43	.41
Pavement	1.25	.96	1.86	1.91
Litter	63.25	35.18	42.61	36.85
Cryptogams	0	.16	2.39	1.18
Bare Ground	19.25	32.11	34.52	45.59

SOIL ANALYSIS DATA --

Management unit 14, Study no: 8, Study Name: Peters Point

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
11.8	58.0 (11.0)	7.2	62.9	18.6	18.6	2.3	8.5	86.4	0.6

Stoniness Index



PELLET GROUP DATA --

Management unit 14 , Study no: 8

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	23	39	9
Elk	-	-	4
Deer	6	13	12
Cattle	-	2	4

Days use per acre (ha)	
'99	'04
-	-
1 (2)	11 (26)
13 (32)	15 (36)
7 (17)	12 (29)

BROWSE CHARACTERISTICS --

Management unit 14 , Study no: 8

		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)
Artemisia frigida												
86	100	-	-	100	-	-	0	0	-	-	0	9/7
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-
Artemisia tridentata vaseyana												
86	1832	133	533	1166	133	-	35	13	7	-	5	20/20
94	2780	460	640	1560	580	140	17	5	21	4	67	19/33
99	2300	60	300	1820	180	240	4	6	8	5	6	19/31
04	2720	2200	380	1840	500	180	35	7	18	10	10	18/31
Cercocarpus montanus												
86	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	33/31
99	0	-	-	-	-	-	0	0	-	-	0	64/55
04	0	-	-	-	-	-	0	0	-	-	0	55/44

		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)
Chrysothamnus nauseosus												
86	1432	33	1066	200	166	-	53	5	12	-	19	43/52
94	160	-	-	-	160	-	50	0	100	88	88	15/14
99	20	-	-	20	-	-	100	0	0	-	0	-/-
04	60	-	-	-	60	20	0	0	100	100	100	-/-
Chrysothamnus viscidiflorus												
86	0	-	-	-	-	-	0	0	0	-	0	-/-
94	0	-	-	-	-	-	0	0	0	-	0	-/-
99	40	-	-	20	20	-	0	0	50	50	50	-/-
04	0	-	-	-	-	-	0	0	0	-	0	-/-
Gutierrezia sarothrae												
86	899	33	133	733	33	-	0	0	4	-	4	6/6
94	200	-	-	180	20	40	0	0	10	10	20	6/7
99	1580	260	520	1060	-	-	0	0	0	-	0	4/4
04	1160	-	-	840	320	40	19	0	28	10	10	8/11
Juniperus osteosperma												
86	166	-	133	33	-	-	20	0	-	-	0	88/42
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	140	-	40	100	-	40	0	0	-	-	0	-/-
04	120	-	20	100	-	20	0	0	-	-	0	-/-
Opuntia spp.												
86	299	-	66	233	-	-	0	0	-	-	0	3/8
94	80	-	40	40	-	-	0	0	-	-	0	5/15
99	120	-	-	120	-	-	0	0	-	-	0	3/10
04	100	-	20	80	-	-	0	0	-	-	0	4/11
Pinus edulis												
86	0	33	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	20	0	0	-	-	0	-/-
Purshia tridentata												
86	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	11/21