

Trend Study 1-24-06

Study site name: Sheep Range Spring .

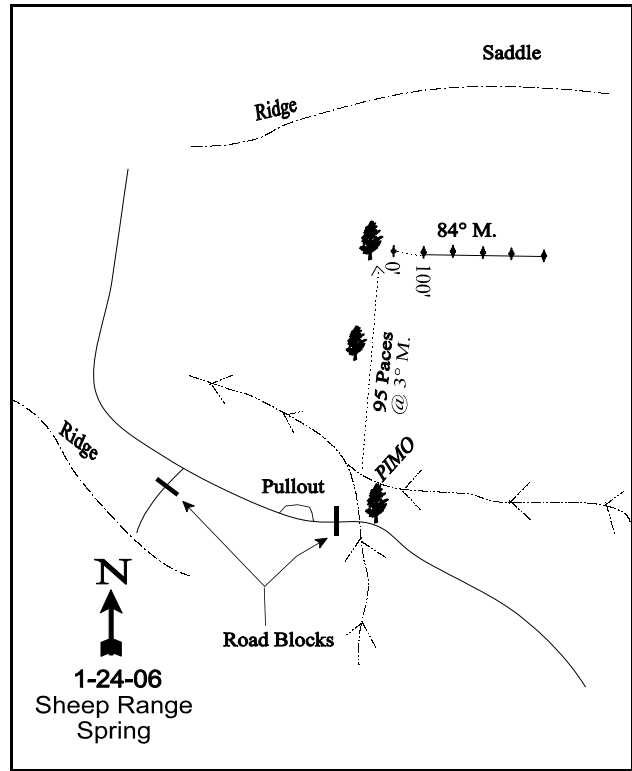
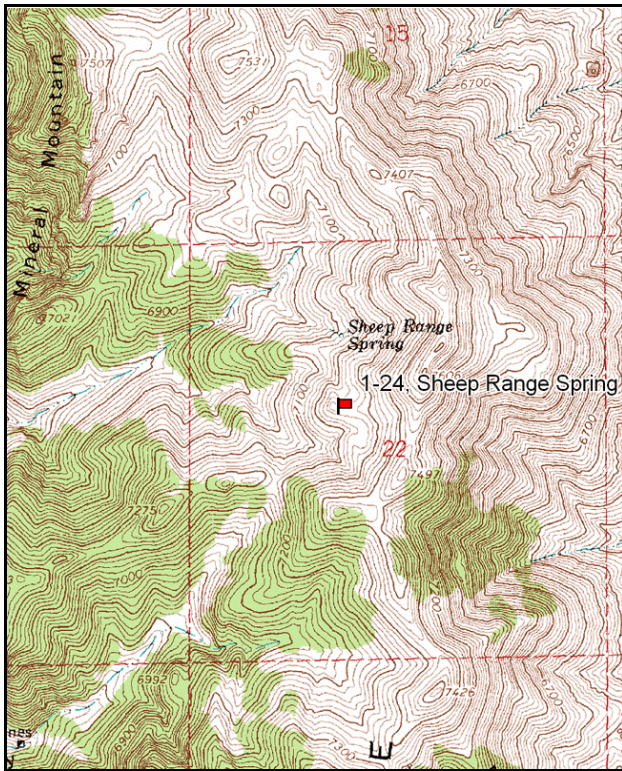
Vegetation type: Big Sagebrush .

Compass bearing: frequency baseline 84 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). Rebar: belt 4 on 21 ft.

LOCATION DESCRIPTION

From Grouse Creek Junction, travel south for 5.4 miles to the railroad tracks. Continue straight for 0.6 miles to the TL Bar Beefmaster Ranch. Take the left fork and travel 5 miles to a fork in the road. Take a right turn and travel 2.1 miles to a four way intersection. Continue straight (stay right) for 2.7 miles to Governors Spring. Take a left at Governors Spring and drive 1.0 mile. Take a right and travel down hill for 1.0 mile. Take the left fork and continue for 1.6 miles to an intersection. From the intersection take the left and continue 1.1 miles where there will be a road going up a steep hill to the right. Stay left and travel 0.1 miles to the end of the road. From the PIMO walk 120 paces at 3 degrees magnetic to the 0-foot baseline stake (near a PIMO). The baseline runs 84 degrees magnetic.



Map Name: Patterson Pass

Diagrammatic Sketch

Township 6N, Range 19W, Section 22

UTM NAD 27, UTM 12T 4567893 N, 247428 E

DISCUSSION

Sheep Range Spring - Trend Study No. 1-24

Study Information

The Sheep Range Spring study (elevation: 7,260 feet, slope: 20-30%, aspect: south) was established in 1996 to monitor preferred habitat used by elk in the Pilot Mountains. The study samples a sagebrush-grass covered east-west running ridge. This area is within the Lucin-Pilot allotment which is assigned for summer cattle use and spring sheep use. Elk pellet groups were abundant in 1996 with some recent groups. Two cow elk were also seen in the area during study establishment. Deer pellet groups were also encountered in small numbers. Two sage grouse were seen in 1996. Deer and elk likely utilize this area during the summer as well as normal winters. A pellet group transect in 2001 estimated 5 deer days use/acre (13 deer days use/ha) and 22 elk days use/acre (56 elk days use/ha). In 2006, 8 deer, 21 elk, 3 cow, and 3 sheep days use/acre (20 ddu/ha, 51 edu/ha, 7 cdu/ha, and 8 sdu/ha) were estimated.

Soil

The Lundy soil series consists of shallow, well drained, moderate to moderately rapidly permeable soils on hillsides, ridges and mountainsides. These soils formed in residuum and colluvium from limestone and shale (USDA-NRCS 2006). The soil is extremely rocky under the first few inches of soil and rock and pavement are abundant on the surface. Effective rooting depth is estimated at about 10 inches along the first 300 feet of the baseline, but is noticeably deeper (22 inches) along the last 200 feet. The average effective rooting depth is almost 15 inches. Soil texture is a loam to clay loam with a neutral soil reaction (7.2 pH). Percent bare ground increased from 7% to 19% in 2006. Litter cover declined from 50% to 31%. Some of this decline may be due to the decrease of cheatgrass. The ratio of protective cover also decreased in 2006. The soil erosion condition class was determined to be slight in both 2001 and 2006. The soil appears to have adequate protective cover of vegetation and litter. There are many mining claims in the area, but most do not appear active.

Browse

The study area is surrounded by ridges dominated by black sagebrush. The baseline was placed on a ridge with deeper soils and more grass and forb cover. The browse component is dominated by mountain big sagebrush and is intermixed with black sagebrush in some of the areas with the more shallow soils. Mountain big sagebrush density (plants/acre) has decreased: 2,200 (1996), 2,080 (2001), and 1,840 (2006). It appears that mountain big sagebrush plants have gotten larger as cover has increased (7% in 1996 to 12% in 2006), but density has decreased. Average height of mature plants increased from 20 inches in 1996 to 24 inches in 2006. Crown width increased from 31 inches to 39 inches during the same period. Density (plants/acre) of black sagebrush has varied: 1,020 (1996), 500 (2001), and 740 (2006). Utilization has been mostly light for each species, vigor good, and decadence low. Young plants were less abundant after 1996. Some of the decadent and dead mountain big sagebrush were found in areas with the more shallow soils where black sagebrush is more prevalent.

The most abundant shrub is the increaser, mountain low rabbitbrush. However, it contributes only about a third of the browse cover. Density has averaged about 3,400 plants/acre. The majority of the population consists of mature plants. These shrubs show no utilization. Other shrubs sampled include rubber rabbitbrush and slenderbush eriogonum.

Herbaceous Understory

The herbaceous understory is abundant. The most common perennial grasses are thickspike wheatgrass, bluebunch wheatgrass, and Sandberg bluegrass. Bluebunch wheatgrass was most abundant in 2001 and cover was highest for perennial grasses in 2001. Cheatgrass was quite common in both 1996 and 2001, but was not sampled in 2006. It is unknown if the disappearance of cheatgrass was caused by a fungus or some other cause. Forbs produce about 1/3 of the vegetation cover. A total of 22 perennial forb species have been

sampled. The dominant perennial species consist of arrowleaf balsamroot, silvery lupine, longleaf phlox, stickseed, and two milkvetch species. Some of the arrowleaf balsamroot was infested with bugs which caused yellow spots on the leaves in 1996.

2001 TREND ASSESSMENT

Mountain big sagebrush continues to be stable. Utilization is light, vigor good, and percent decadence low. The grass trend is up and the forb trend is slightly up. The sum of nested frequency values for both perennial grasses and forbs increased slightly in 2001. Nested frequency of cheatgrass declined significantly since 1996. Forbs are still abundant with several preferred summer forage species for deer and elk.

1996 winter range condition (DC Index) - good (69) Mid-level potential scale
2001 winter range condition (DC Index) - good (69) Mid-level potential scale
browse - stable (0) grass - up (+2) forb - slightly up (+1)

2006 TREND ASSESSMENT

The browse trend is stable. Total sagebrush cover has increased while the combined density of mountain big sagebrush and black sagebrush has remained unchanged. Percent decadence has slightly increased for mountain big sagebrush, but remains fair. The grass trend is slightly up. Perennial grass abundance increased by about 7% and cheatgrass was not sampled. Cheatgrass quadrat frequency was 70% in 2001 and 0% in 2006. The forb trend is down. Eleven perennial forbs had significantly lower nested frequencies. The DCI score was unchanged. Shrub decadence increased, but cheatgrass disappeared.

winter range condition (DC Index) - good (71) Mid-level potential scale
browse - stable (0) grass - slightly up (+1) forb - down (-2)

HERBACEOUS TRENDS --
Management unit 01 , Study no: 24

T y p e	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
G	Agropyron dasystachyum	a122	b42	a165	2.07	.93	2.68
G	Agropyron spicatum	a106	b192	a112	2.09	8.69	5.00
G	Bromus tectorum (a)	c307	b263	a-	5.48	4.08	-
G	Poa fendleriana	1	3	4	.00	.00	.03
G	Poa secunda	195	237	225	7.08	12.14	7.38
G	Stipa lettermani	3	-	-	.03	-	-
Total for Annual Grasses		307	263	0	5.48	4.08	0
Total for Perennial Grasses		427	474	506	11.30	21.78	15.10
Total for Grasses		734	737	506	16.78	25.87	15.10
F	Agoseris glauca	b50	b94	a13	.17	.36	.03
F	Allium sp.	a1	b50	a-	.00	.23	-
F	Arabis sp.	-	-	5	-	.00	.01
F	Astragalus beckwithii	b27	a3	a-	.25	.03	-
F	Astragalus ciliaris	b62	b60	a3	.46	1.21	.15
F	Aster scopulorum	-	-	11	-	-	.09

T y p e	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
		F	Balsamorhiza hookeri	21	16	19	.23
F	Balsamorhiza sagittata	_b 130	_b 114	_a 81	12.23	9.21	9.23
F	Camelina microcarpa (a)	_b 19	_a 1	_a -	.03	.03	-
F	Collomia linearis (a)	_a 3	_b 57	_a -	.01	.14	-
F	Comandra pallida	18	32	40	.10	.45	.78
F	Collinsia parviflora (a)	_b 160	_c 295	_a -	.62	1.75	-
F	Crepis acuminata	_{ab} 9	_b 14	_a 6	.05	.17	.04
F	Erigeron pumilus	_a -	_b 14	_a -	-	.10	-
F	Eriogonum villiflorum	_a -	_b 16	_a -	-	.42	-
F	Haplopappus acaulis	2	-	10	.03	-	.07
F	Hackelia patens	_b 38	_b 14	_a 25	.71	.11	.97
F	Hydrophyllum capitatum	25	49	-	.20	.53	-
F	Lappula occidentalis (a)	6	-	3	.01	-	.03
F	Lithospermum ruderales	1	1	3	.00	.15	.31
F	Lomatium sp.	-	11	-	-	.16	-
F	Lupinus argenteus	_b 33	_b 34	_a 5	.92	.86	.09
F	Machaeranthera grindelioides	2	3	-	.03	.00	-
F	Microsteris gracilis (a)	_a -	_b 217	_a -	-	1.17	-
F	Navarretia intertexta (a)	2	-	-	.00	-	-
F	Phlox longifolia	_b 162	_b 125	_a 73	.82	1.00	.23
F	Polygonum douglasii (a)	3	-	4	.00	-	.01
F	Ranunculus testiculatus (a)	-	1	-	-	.00	-
F	Senecio integerrimus	_a 4	_b 16	_a 3	.03	.17	.06
F	Viola sp.	-	3	8	-	.00	.04
Total for Annual Forbs		193	571	7	0.68	3.10	0.03
Total for Perennial Forbs		585	669	305	16.28	16.23	12.64
Total for Forbs		778	1240	312	16.97	19.34	12.68

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

BROWSE TRENDS --

Management unit 01 , Study no: 24

Type	Species	Strip Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
B	Artemisia nova	24	15	22	2.42	1.89	1.78
B	Artemisia tridentata vaseyana	64	62	58	7.43	11.06	12.13
B	Chrysothamnus nauseosus consimilis	1	1	0	-	-	-
B	Chrysothamnus viscidiflorus lanceolatus	63	62	65	6.23	6.55	4.41
B	Eriogonum microthecum	3	1	2	.03	.00	.06
B	Pediocactus simpsonii	0	0	1	-	-	-
Total for Browse		155	141	148	16.13	19.52	18.39

CANOPY COVER, LINE INTERCEPT --

Management unit 01 , Study no: 24

Species	Percent Cover
	'06
Artemisia nova	3.16
Artemisia tridentata vaseyana	16.71
Chrysothamnus viscidiflorus lanceolatus	6.93

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 01 , Study no: 24

Species	Average leader growth (in)	
Artemisia nova	-	0.9
Artemisia tridentata vaseyana	1.8	1.3

BASIC COVER --

Management unit 01 , Study no: 24

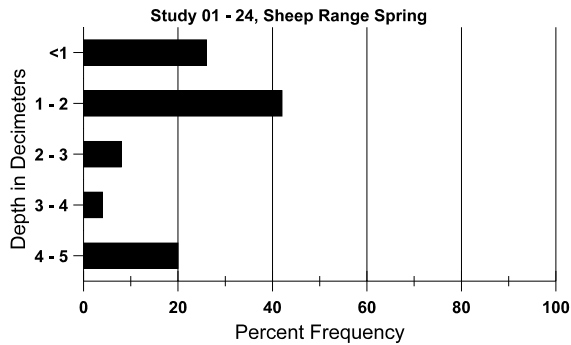
Cover Type	Average Cover %		
	'96	'01	'06
Vegetation	49.35	61.50	43.90
Rock	6.65	4.62	5.19
Pavement	7.63	8.09	14.84
Litter	53.22	50.44	30.63
Cryptogams	.04	.04	0
Bare Ground	6.47	7.08	18.91

SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 24, Sheep Range Spring

Effective rooting depth (in)	Temp °F (depth)	PH	Clay loam			%OM	PPM P	PPM K	dS/m
			%sand	%silt	%clay				
14.8	53.6 (13.3)	7.2	40.4	34.1	27.4	2.9	21.1	425.6	0.8

Stoniness Index



PELLET GROUP DATA --

Management unit 01, Study no: 24

Type	Quadrat Frequency		
	'96	'01	'06
Rabbit	-	-	1
Elk	40	11	16
Deer	9	1	1
Cattle	-	-	1
Sheep	-	-	-

Days use per acre (ha)	
'01	'06
-	-
22 (55)	21 (51)
5 (13)	8 (20)
-	3 (7)
-	3 (8)

BROWSE CHARACTERISTICS --

Management unit 01, Study no: 24

		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 nova												
96	1020	-	80	800	140	60	12	0	14	-	0	10/26
01	500	-	20	420	60	-	0	0	12	4	8	10/25
06	740	340	40	600	100	20	0	3	14	8	11	9/23
Artemisia tridentata vaseyana												
96	2200	20	400	1460	340	840	10	.90	15	5	5	20/31
01	2080	-	100	1640	340	300	3	0	16	5	5	24/37
06	1840	3560	40	1400	400	220	8	0	22	8	9	24/39

		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 consimilis												
96	20	-	20	-	-	-	0	0	-	-	0	26/29
01	20	-	-	20	-	-	0	0	-	-	0	27/58
06	0	-	-	-	-	-	0	0	-	-	0	34/49
Chrysothamnus viscidiflorus lanceolatus												
96	3600	20	700	2620	280	-	.55	0	8	.55	4	15/25
01	3340	40	100	2940	300	20	0	0	9	-	0	13/20
06	3160	-	120	2740	300	40	1	0	9	2	2	10/20
Eriogonum microthecum												
96	180	-	-	160	20	-	11	0	11	-	0	3/10
01	20	-	-	20	-	-	0	0	0	-	0	3/6
06	40	-	-	40	-	-	0	0	0	-	0	3/7
Pediocactus simpsonii												
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	20	-	-	20	-	-	0	0	-	-	0	1/2