

SHEEP RANGE SPRING - TREND STUDY NO. 1-24-11

Vegetation Type: Mountain Big Sagebrush

Range Type: Crucial Deer Summer (Fawning habitat), Crucial Elk Summer

NRCS Ecological Site Description: Not Available

Land Ownership: BLM

Elevation: 7,200 ft. (2,195 m)

Aspect: Southwest

Slope: 16%

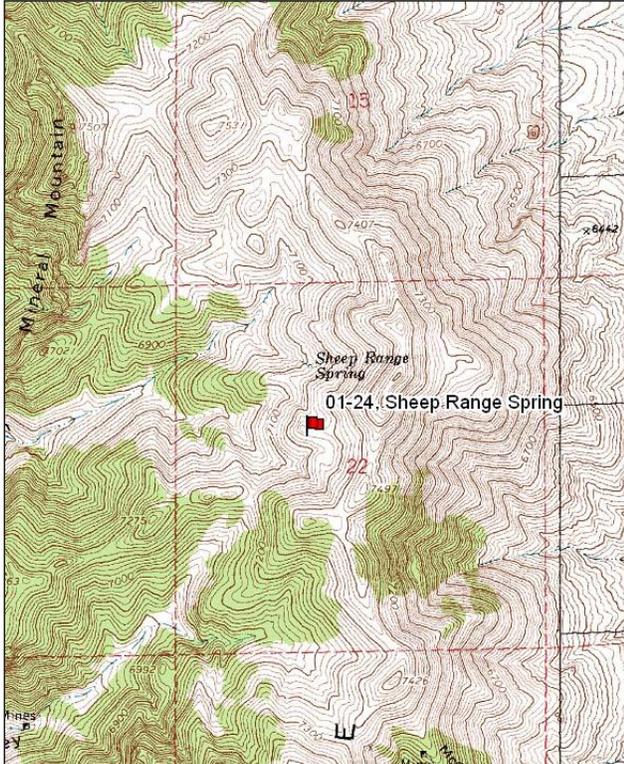
Transect bearing: 84° magnetic

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

Directions:

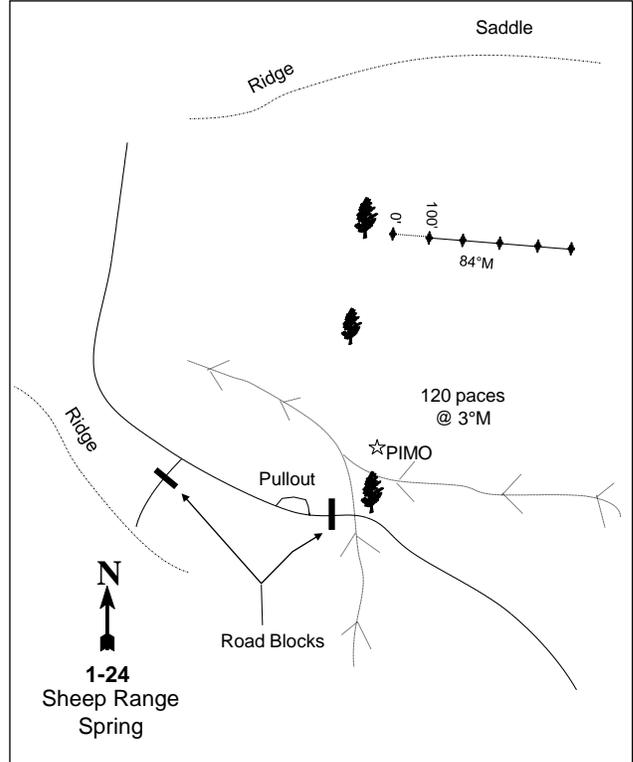
From the U-30 and Pilot Mountain Road junction, travel south on the Pilot Mountain Road for 5.4 miles to the railroad tracks. Continue straight for 0.6 miles to the TL Bar Beefmaster Ranch. Take the left fork and travel 5 miles to a fork in the road. Take a right turn and travel 2.1 miles to a four way 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 downhill 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



Township: 6N Range: 19W Section: 22

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 247361 E 4568102 N

SHEEP RANGE SPRING - TREND STUDY NO. 1-24

Site Information

Site Description: The study was established in 1996 to monitor habitat used by elk in the Pilot Mountains. The study samples a mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and grass covered ridge that runs east-west. The study area is surrounded by ridges dominated by black sagebrush (*A. nova*). The baseline was placed on a ridge with deeper soils and more grass and forb cover. The area is managed by the Bureau of Land Management (BLM) as part of the Lucin-Pilot allotment. There are many mining claims in the area, but most do not appear active. Pellet groups have been sampled in moderate abundance for elk and low abundance for deer since 2001. Two cow elk were also seen in the area during study establishment in 1996. Deer and elk likely occupy this area during the summer as well as normal winters. There has been limited sage-grouse pellets sampled, but two sage-grouse were seen in 1996. Sampled cattle and sheep sign has been low since 2001 (Table - Pellet Group Data).

Browse: The browse component is dominated by mountain big sagebrush, intermixed with black sagebrush in some of the areas within the more shallow soils. Cover of mountain big sagebrush has steadily increased since 1996 (Table - Browse Trends), though density has remained similar. The average size of sagebrush increased steadily from 1996 to 2006. The mountain big sagebrush population is a moderately dense stand of mostly lightly used plants, though use was moderate in 2011. The black sagebrush population is comprised of a low density stand of lightly utilized plants. Decadence and poor vigor have been low in both sagebrush species, though some decadent and dead mountain big sagebrush plants were found in areas with more shallow soils where black sagebrush is more prevalent. The increaser species mountain low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *lanceolatus*) has a dense population, but density has steadily decreased since 1996. Utilization of rabbitbrush is light. Other shrubs sampled include threadleaf rubber rabbitbrush (*C. nauseosus* ssp. *consimilis*) and slenderbush eriogonum (*Eriogonum microthecum*) (Table - Browse Characteristics).

Herbaceous Understory: The herbaceous understory is abundant. The most common perennial grasses are thickspike wheatgrass (*Agropyron dasystachyum*), bluebunch wheatgrass (*A. spicatum*), and Sandberg bluegrass (*Poa secunda*). Cheatgrass was quite common in both 1996 and 2001, but has been rare since 2006. Forbs produce a large proportion of the vegetation cover, and perennial forb species are diverse. The dominant perennial species consist of arrowleaf balsamroot (*Balsamorhiza sagittata*), silvery lupine (*Lupinus argenteus*), longleaf phlox (*Phlox longifolia*), and two milkvetch (*Astragalus spp.*) species. Some of the arrowleaf balsamroot was infested with insects, which caused yellow spots on the leaves in 1996.

Soil: The soil is in the Lundy-Sonlet-Lodar very gravelly loams, which occurs on hillslopes. Parent material consists of colluvium derived from limestone and chert (Soil Survey Staff 2011). The soil texture is a loam to clay loam with a neutral soil reaction (pH 7.2) (Table - Soil Analysis Data). The soil is extremely rocky under the first few inches of soil, and rock and pavement are abundant on the surface. Bare ground increased to moderate levels and litter cover decreased in 2006 (Table - Basic Cover). Some of this decline may be due to the decrease of cheatgrass. The soil erosion condition was classified as slight in 2001 and 2006, but was stable in 2011.

Trend Assessments

Browse:

- **1996 to 2001 - stable (0):** The density of mountain big sagebrush decreased slightly from 2,200 plants/acre to 2,080 plants/acre, but cover increased from 7% to 11%. Recruitment of young plants decreased from 18% to 5% of the population.
- **2001 to 2006 - stable (0):** Mountain big sagebrush density decreased 12% to 1,840 plants/acre, but cover increased to 12%. Decadence increased from 16% to 22%, and poor vigor increased from 5% to

9%. Recruitment of young plants decreased to 2%, but there were numerous seedlings sampled in 2006.

- **2006 to 2011 - up (+2):** There was a 34% increase in the density of mountain big sagebrush to 2,460 plants/acre, and cover increased to 16%. Decadence decreased to 11%, but poor vigor remained similar at 10%. Recruitment of young plants increased to 23% of the population.

Grass:

- **1996 to 2001 - up (+2):** The sum of nested frequency of perennial grasses increased by 11%, and cover increased from 11% to 22%. Cheatgrass decreased significantly in nested frequency, and cover decreased from 6% to 4%.
- **2001 to 2006 - slightly up (+1):** There was little change in the sum of nested frequency of perennial grasses, but cover decreased to 15%. Cheatgrass decreased significantly in nested frequency, and was not sampled on the site.
- **2006 to 2011 - stable (0):** The sum of nested frequency of perennial grasses remained similar, but cover increased to 25%.

Forb:

- **1996 to 2001 - slightly up (+1):** There was a 14% increase in the sum of nested frequency of perennial forbs, though cover remained similar at 16%.
- **2001 to 2006 - down (-2):** The sum of nested frequency of perennial forbs decreased by 54%, and cover decreased to 13%.
- **2006 to 2011 - up (+2):** The perennial forb sum of nested frequency increased over two-fold to above 2001 levels. Cover of perennial forbs increased slightly to 14%.

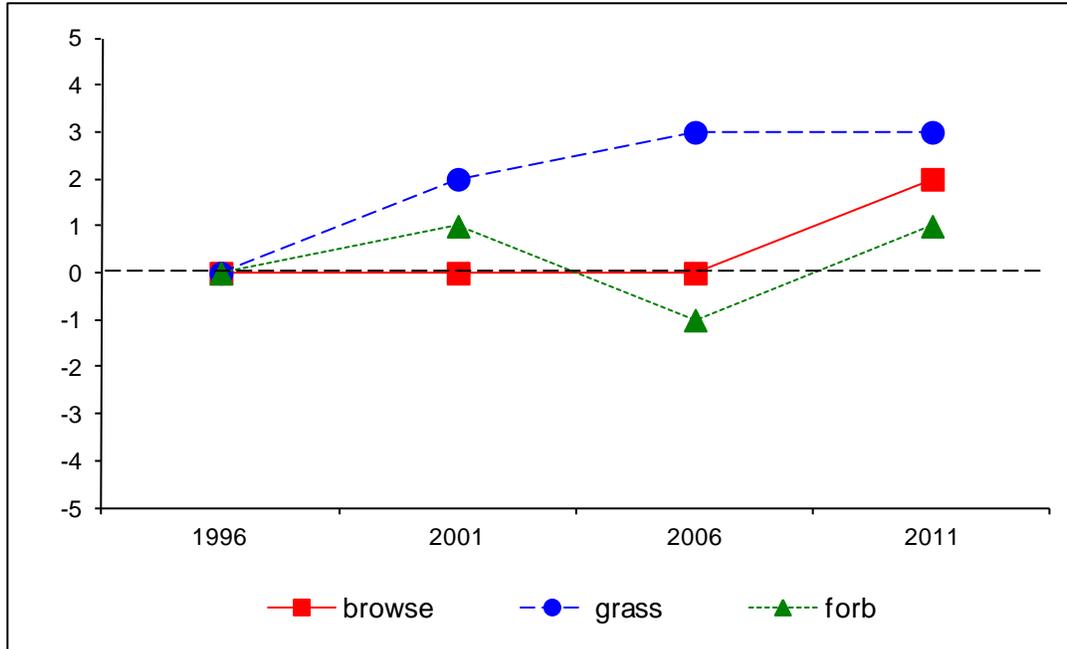
DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

Management unit 1, study no: 24

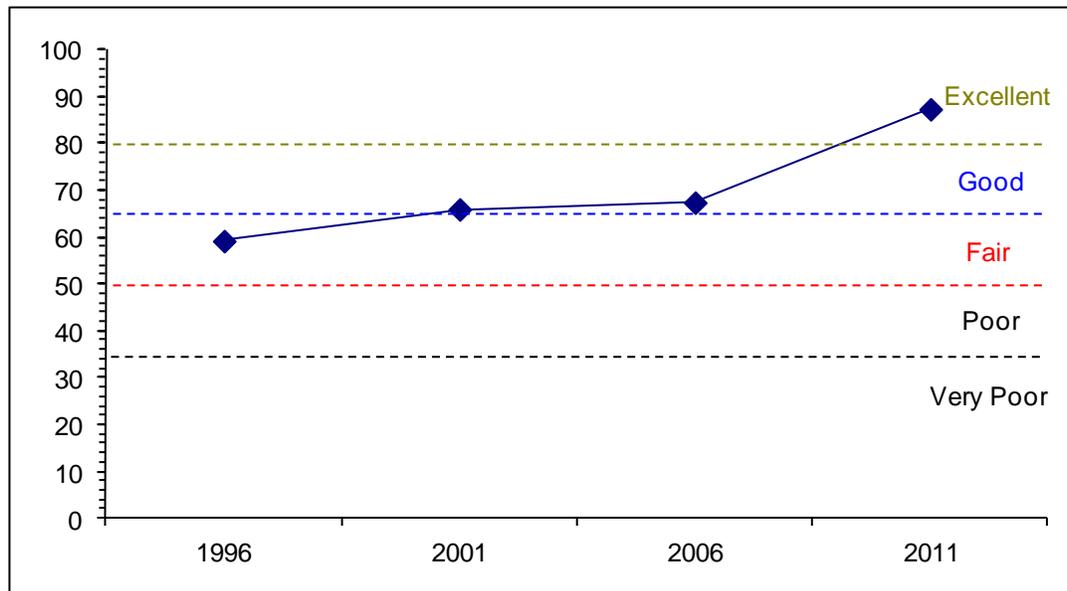
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	12.4	10.6	7.7	22.6	-4.1	10.0	0.0	59.2	Fair
01	16.2	10.4	2.4	30.0	-3.1	10.0	0.0	65.9	Fair-Good
06	17.5	8.7	1.2	30.0	0.0	10.0	0.0	67.4	Good
11	23.4	11.9	12.6	30.0	-0.6	10.0	0.0	87.3	Excellent

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 1 Study no: 24



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 1, Study no: 24



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

Type	Species	Nested Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
G	Agropyron dasystachyum	b122	a42	b165	b149	2.07	.93	2.68	2.19
G	Agropyron spicatum	a106	b192	a112	a87	2.09	8.69	5.00	4.55
G	Bromus tectorum (a)	d307	c263	a-	b37	5.48	4.08	-	.80
G	Poa fendleriana	a1	a3	a4	b23	.00	.00	.03	1.67
G	Poa secunda	a195	ab237	ab225	b258	7.08	12.14	7.38	16.45
G	Stipa lettermani	3	-	-	-	.03	-	-	-
Total for Annual Grasses		307	263	0	37	5.48	4.08	0	0.80
Total for Perennial Grasses		427	474	506	517	11.30	21.78	15.10	24.87
Total for Grasses		734	737	506	554	16.78	25.87	15.10	25.68
F	Agoseris glauca	b50	b94	a13	c155	.17	.36	.03	1.75
F	Allium sp.	a1	b50	a-	c98	.00	.23	-	.50
F	Arabis sp.	-	-	5	-	-	.00	.01	-
F	Aster scopulorum	-	-	11	2	-	-	.09	.03
F	Astragalus beckwithii	b27	a3	a-	b25	.25	.03	-	.75
F	Astragalus cibarius	b62	b60	a3	a8	.46	1.21	.15	.05
F	Balsamorhiza hookeri	21	16	19	14	.23	1.02	.51	.81
F	Balsamorhiza sagittata	b130	b114	a81	a66	12.23	9.21	9.23	3.26
F	Camelina microcarpa (a)	b19	a1	a-	a-	.03	.03	-	-
F	Collinsia parviflora (a)	b160	c295	a-	c321	.62	1.75	-	5.16
F	Collomia linearis (a)	a3	b57	a-	a11	.01	.14	-	.02
F	Comandra pallida	ab18	ab32	b40	a13	.10	.45	.78	.10
F	Crepis acuminata	ab9	b14	a6	a-	.05	.17	.04	-
F	Descurainia pinnata (a)	-	-	-	6	-	-	-	.06
F	Erigeron pumilus	a-	b14	a-	a-	-	.10	-	-
F	Eriogonum villiflorum	a-	b16	a-	a-	-	.42	-	-
F	Hackelia patens	b38	a14	ab25	b42	.71	.11	.97	.67
F	Haplopappus acaulis	2	-	10	4	.03	-	.07	.03
F	Hydrophyllum capitatum	b25	b49	a-	c113	.20	.53	-	3.92
F	Lappula occidentalis (a)	6	-	3	-	.01	-	.03	-
F	Lewisia rediviva	-	-	-	2	-	-	-	.03
F	Lithospermum ruderae	1	1	3	-	.00	.15	.31	-
F	Lomatium sp.	-	11	-	15	-	.16	-	.10
F	Lupinus argenteus	b33	b34	a5	ab18	.92	.86	.09	.39
F	Machaeranthera grindelioides	2	3	-	-	.03	.00	-	-
F	Microsteris gracilis (a)	a-	c217	a-	b66	-	1.17	-	.66
F	Navarretia intertexta (a)	2	-	-	-	.00	-	-	-
F	Phlox hoodii	-	-	-	5	-	-	-	.03
F	Phlox longifolia	b162	b125	a73	a67	.82	1.00	.23	.59
F	Polygonum douglasii (a)	3	-	4	-	.00	-	.01	-
F	Ranunculus testiculatus (a)	-	1	-	-	-	.00	-	-
F	Senecio integerrimus	a4	ab16	a3	b28	.03	.17	.06	.59
F	Viola sp.	a-	a3	a8	b47	-	.00	.04	.30
Total for Annual Forbs		193	571	7	404	0.68	3.10	0.03	5.92

Type	Species	Nested Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
	Total for Perennial Forbs	585	669	305	722	16.28	16.23	12.64	13.95
	Total for Forbs	778	1240	312	1126	16.97	19.34	12.68	19.87

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	'11	'96	'01	'06	'11
B	Artemisia nova	24	15	22	21	2.42	1.89	1.78	2.36
B	Artemisia tridentata vaseyana	64	62	58	63	7.43	11.06	12.13	16.36
B	Chrysothamnus nauseosus consimilis	1	1	0	0	-	-	-	-
B	Chrysothamnus viscidiflorus lanceolatus	63	62	65	56	6.23	6.55	4.41	3.67
B	Eriogonum microthecum	3	1	2	0	.03	.00	.06	-
B	Pediocactus simpsonii	0	0	1	1	-	-	-	-
	Total for Browse	155	141	148	141	16.13	19.52	18.39	22.41

CANOPY COVER, LINE INTERCEPT--

Management unit 01, Study no: 24

Species	Percent Cover	
	'06	'11
Artemisia nova	3.16	3.46
Artemisia tridentata vaseyana	16.71	13.83
Chrysothamnus viscidiflorus lanceolatus	6.93	7.91

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 01, Study no: 24

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia nova	-	0.9	0.7
Artemisia tridentata vaseyana	1.8	1.3	1.4

BASIC COVER--

Management unit 01, Study no: 24

Cover Type	Average Cover %			
	'96	'01	'06	'11
Vegetation	49.35	61.50	43.90	59.74
Rock	6.65	4.62	5.19	4.11
Pavement	7.63	8.09	14.84	6.74
Litter	53.22	50.44	30.63	19.26
Cryptogams	.04	.04	0	.09
Bare Ground	6.47	7.08	18.91	18.76

SOIL ANALYSIS DATA --

Management unit 01, Study no: 24, Study Name: Sheep Range Spring

Effective rooting depth (in)	pH	Clay-Loam			%OM	PPM P	PPM K	ds/m
		% sand	% silt	% clay				
14.8	7.2	40.4	34.1	27.4	2.9	21.1	425.6	0.8

PELLET GROUP DATA--

Management unit 01, Study no: 24

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Rabbit	-	-	1	-	-	-	-
Grouse	-	-	-	1	-	-	-
Elk	40	11	16	14	22 (55)	21 (51)	21 (53)
Deer	9	1	1	3	5 (13)	8 (20)	3 (8)
Cattle	-	-	1	1	-	3 (7)	-
Sheep	-	-	-	-	-	3 (8)	5 (13)

BROWSE CHARACTERISTICS--

Management unit 01, Study no: 24

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Artemisia nova										
96	1020	8	78	14	-	12	0	0	10/26	
01	500	4	84	12	-	0	0	8	10/25	
06	740	5	81	14	340	0	3	11	9/23	
11	860	40	56	5	140	2	0	5	8/24	
Artemisia tridentata vaseyana										
96	2200	18	66	15	20	10	.90	5	20/31	
01	2080	5	79	16	-	3	0	5	24/37	
06	1840	2	76	22	3560	8	0	9	24/39	
11	2460	23	67	11	120	53	0	10	22/39	
Chrysothamnus nauseosus consimilis										
96	20	100	0	-	-	0	0	0	26/29	
01	20	0	100	-	-	0	0	0	27/58	
06	0	0	0	-	-	0	0	0	34/49	
11	0	0	0	-	-	0	0	0	34/66	
Chrysothamnus viscidiflorus lanceolatus										
96	3600	19	73	8	20	.55	0	4	15/25	
01	3340	3	88	9	40	0	0	0	13/20	
06	3160	4	87	9	-	1	0	2	10/20	
11	2500	2	91	6	-	.80	0	6	10/21	
Eriogonum microthecum										
96	180	0	89	11	-	11	0	0	3/10	
01	20	0	100	0	-	0	0	0	3/6	
06	40	0	100	0	-	0	0	0	3/7	
11	0	0	0	0	-	0	0	0	-/-	

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Pediocactus simpsonii										
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	-/-	
06	20	0	100	-	-	0	0	0	1/2	
11	20	0	100	-	-	0	0	0	2/3	