Trend Study 1-23-06

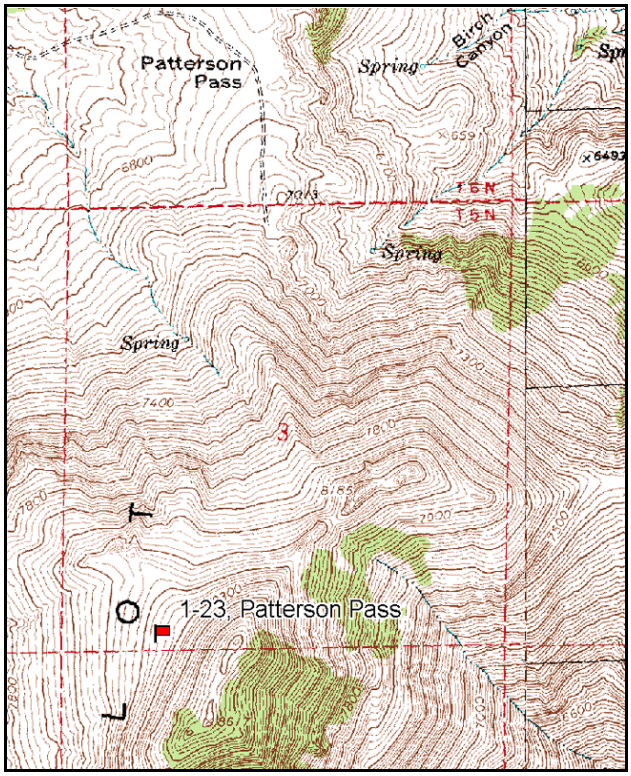
Study site name: Patterson Pass . Vegetation type: Big Sagebrush .

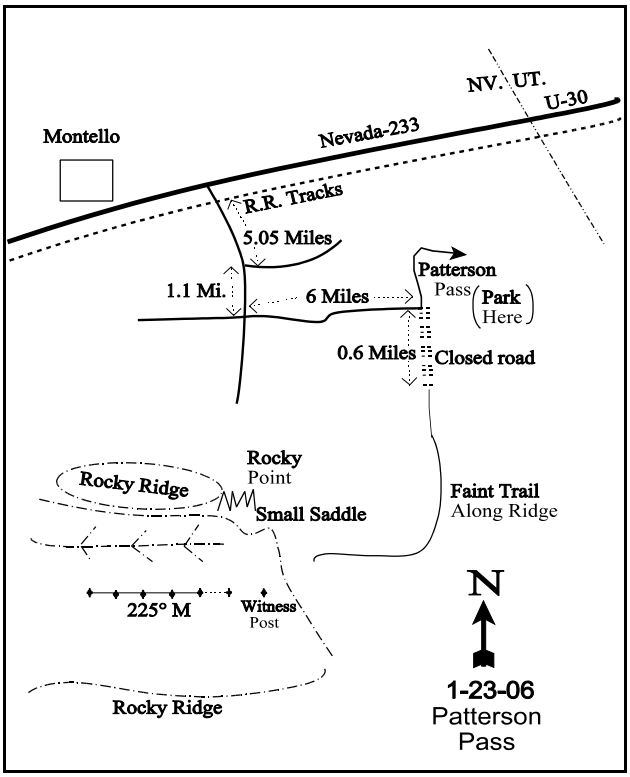
Compass bearing: frequency baseline 225 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). Rebar: belt 1 on 1 ft., belt 2 on 15 ft., belt 3 on 0 ft., belt 4 on 1 ft., belt 5 on 0 ft.

LOCATION DESCRIPTION

Drive 0.5 miles past mile marker 25 on Nevada State Road 233. Turn left and cross tracks and continue straight for 5.05 miles. At this point there will be a road going to the left. Stay right and continue 1.1 miles to a four way intersection. Take a left turn and drive 6 miles to Patterson Pass. Park here. Walk up a closed road for 0.6 miles to a faint trail. From here walk on the trail up the ridge to a saddle. Stay high on the slope. The witness post is in the saddle about 400 ft. from the rocky slope to the east. The 0-foot baseline stake is just a few paces west of the witness post. The baseline runs 225 degrees magnetic.





Map Name: Patterson Pass Diagrammatic Sketch

Township 5N , Range 19W , Section 3 UTM NAD 27, UTM 12T 4562113 N, 246992 E

DISCUSSION

Patterson Pass - Trend Study No. 1-23

Study Information

The Patterson Pass study (elevation: 8,220 feet, slope: 15-25%, aspect: southwest) was established in 1996 to monitor important habitat for elk on the Pilot Mountains along the Utah-Nevada border. The study area is above Patterson Pass and is remote and accessible only by foot. This area receives concentrated use by elk. Small numbers of deer pellet groups have also been sampled. Chuckers were heard on the nearby rocky slopes in 1996. The area is within the Lucin-Pilot allotment which is grazed by cattle and sheep. Livestock do not appear to utilize the steeper slopes where the transect is located. A pellet group transect in 2001 estimated 47 elk days use/acre (116 elk days use/ha). Only 1 deer pellet group was encountered. In 2006, elk use was estimated at 40 days use/acre (99 edu/ha). One deer day use/acre (3 ddu/ha) was also estimated. Two cow elk were seen in the area when the site was read on June 6, 2001 and again in 2006. It was apparent from pellet groups that elk use the area throughout the spring and summer. Bedding areas were also noted and it appeared that some sagebrush plants were used as antler rubs.

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 average effective rooting depth is almost 10 inches. The soil is a clay loam with a neutral soil reaction (6.7 pH). It is extremely rocky with numerous large rocks and boulders on the surface and throughout the profile. Rooting depth is limited in some areas where black sagebrush occurs in isolated pockets, but the deeper rooted mountain big sagebrush, which dominates the site, would indicate a deeper soil. Protective ground cover, in the form of vegetation and litter cover, is abundant and well dispersed. Accelerated erosion is not a problem and the erosion condition class was determined to be stable in 2001 and 2006.

Browse

The site is dominated by mountain big sagebrush. It has accounted for more than half of the browse cover. Mountain big sagebrush cover has averaged about 20% for all readings. Black sagebrush is also abundant. Cover has averaged about 6%. It appears that there is hybridization between these two species. The combined densities of these plants were 7,160 plants/acre (1996), 7,900 (2001), and 7,820 (2006). Decadence of mountain big sagebrush increased slightly in 2006 from 15% to 27%. Utilization has been light at this high elevation. Seedlings and young plants have been adequate to maintain the population. Additional forage is provided by slenderbush eriogonum and a few scattered wax current.

The increaser, mountain low rabbitbrush, is fairly abundant but density has been declining (4,100 plants/acre in 1996, 3,280 in 2001, and 2,760 in 2006). Cover has averaged about 4%.

Herbaceous Understory

The herbaceous understory is abundant and diverse. Twelve different grass species have been sampled. Sheep fescue has been the most abundant species and has averaged about 14% cover. Spike fescue, mutton bluegrass, and Sandberg bluegrass are also common. Bluebunch wheatgrass is less abundant and significantly decreased in nested frequency between 1996 and 2006. Several useful forb species are present including: silvery lupine, bluebell, lambstongue groundsel, and hooker balsamroot. Utilization was noted in 1996 on lambstongue and bluebell.

2001 TREND ASSESSMENT

The key browse species, mountain big sagebrush and black sagebrush, are stable with vigorous populations. Mountain low rabbitbrush has actually decreased in abundance, with a population that continues to be mostly mature. The herbaceous understory is abundant and provides good forage for elk and deer. The trend for

grasses is slightly down as the sum of nested frequency for perennial grasses has decreased about 12%. The forb trend is slightly up. Nested frequency for perennial forbs increased 18%.

1996 winter range condition (DC Index) - excellent (89) Mid-level potential scale
2001 winter range condition (DC Index) - excellent (86) Mid-level potential scale
browse - stable (0) grass - slightly down (-1) forb - slightly up (+1)

2006 TREND ASSESSMENT

The browse trend is stable. The combined density of mountain big sagebrush and black sagebrush changed very little. Percent decadence was slightly higher for mountain big sagebrush, but the population is still vigorous and abundant. Mountain low rabbitbrush density declined by 16%. This species is an undesirable increaser. The grass trend is stable. Bluebunch wheatgrass has decreased, but Sandberg bluegrass has increased. The forb trend is slightly down. Nested frequency for perennial forbs decreased 13%. The biggest decreased came from longleaf phlox. The DCI score declined due to higher shrub decadence.

winter range condition (DC Index) - good-excellent (81) Mid-level potential scale
browse - stable (0) grass - stable (0) forb - slightly down (-1)

HERBACEOUS TRENDS --
Management unit 01 , Study no: 23

Type	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
G	Agropyron spicatum	$_{b}$43	$_{ab}$24	$_{a}$6	.32	.78	.18
G	Elymus cinereus	5	5	5	.63	.85	.63
G	Festuca ovina	292	287	281	12.97	15.92	12.14
G	Koeleria cristata	-	2	-	-	.30	-
G	Leucopoa kingii	110	84	98	2.50	4.80	3.96
G	Melica bulbosa	-	-	1	-	-	.15
G	Poa fendleriana	47	63	49	.77	1.99	1.08
G	Poa pratensis	1	-	-	.03	-	-
G	Poa secunda	$_{c}$95	$_{a}$35	$_{b}$67	1.07	.29	1.22
G	Sitanion hystrix	3	-	-	.00	-	-
G	Stipa columbiana	-	5	-	-	.03	-
G	Stipa lettermani	11	28	14	.08	.63	.39
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		607	533	521	18.40	25.61	19.77
Total for Grasses		607	533	521	18.40	25.61	19.77
F	Agoseris glauca	83	106	69	.60	.93	1.27
F	Arabis sp.	-	7	3	-	.01	.00
F	Astragalus beckwithii	-	2	-	-	.01	-
F	Astragalus utahensis	1	-	-	.00	-	-
F	Balsamorhiza hookeri	5	5	12	.01	.06	.89

Type	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
F	Castilleja linariaefolia	-	-	-	-	.00	-
F	Comandra pallida	7	13	17	.07	.18	.54
F	Collinsia parviflora (a)	$_{b}$198	$_{a}$106	$_{a}$95	.86	.75	.27
F	Crepis acuminata	7	4	-	.02	.06	-
F	Haplopappus acaulis	2	2	-	.15	.03	-
F	Hackelia patens	33	11	19	.44	.39	.75
F	Lithophragma parviflora	$_{a}$-	$_{a}$-	$_{b}$27	-	-	.22
F	Lomatium sp.	-	4	-	-	.03	-
F	Lupinus argenteus	150	153	126	4.57	5.04	5.90
F	Lygodesmia spinosa	2	-	-	.03	-	-
F	Mertensia oblongifolia	71	70	88	.77	.72	1.38
F	Microsteris gracilis (a)	-	1	-	-	.00	-
F	Penstemon sp.	3	-	-	.00	-	-
F	Phlox hoodii	-	-	3	-	-	.00
F	Phlox longifolia	$_{b}$188	$_{b}$155	$_{a}$66	.81	1.10	.33
F	Polygonum douglasii (a)	6	2	6	.04	.00	.01
F	Potentilla pennsylvanica	50	57	48	.61	.90	1.85
F	Ranunculus jovis	$_{a}$-	$_{b}$134	$_{b}$107	-	1.41	.82
F	Senecio integerrimus	$_{a}$77	$_{a}$60	$_{b}$132	1.22	2.09	6.34
F	Senecio multilobatus	$_{a}$-	$_{b}$17	$_{a}$-	-	.76	-
F	Sisymbrium altissimum (a)	4	-	-	.03	-	-
F	Taraxacum officinale	31	34	11	.35	.28	.11
Total for Annual Forbs		208	109	101	0.93	0.76	0.29
Total for Perennial Forbs		710	834	728	9.69	14.07	20.45
Total for Forbs		918	943	829	10.63	14.84	20.74

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

BROWSE TRENDS --
Management unit 01 , Study no: 23

Type	Species	Strip Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
B	Artemisia nova	34	27	33	6.58	3.99	8.43
B	Artemisia tridentata vaseyana	85	87	78	17.79	21.00	20.52
B	Chrysothamnus viscidiflorus lanceolatus	74	64	67	4.60	4.03	3.13
B	Eriogonum microthecum	38	29	36	1.36	.90	1.89
B	Pediocactus simpsonii	3	1	1	-	-	.15
B	Ribes cereum cereum	0	0	1	-	.38	.38
Total for Browse		234	208	216	30.35	30.31	34.51

CANOPY COVER, LINE INTERCEPT --
Management unit 01 , Study no: 23

Species	Percent Cover '06
Artemisia nova	13.10
Artemisia tridentata vaseyana	26.56
Chrysothamnus viscidiflorus lanceolatus	4.21
Eriogonum microthecum	1.48
Ribes cereum cereum	.08

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 01 , Study no: 23

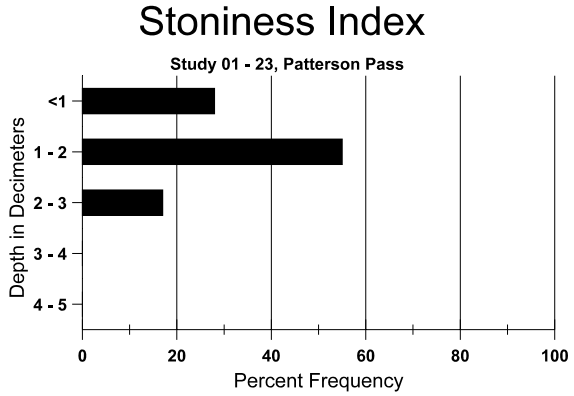
Species	Average leader growth (in)	
Artemisia nova	-	1.1
Artemisia tridentata vaseyana	1.3	1.9

BASIC COVER --
Management unit 01 , Study no: 23

Cover Type	Average Cover %		
	'96	'01	'06
Vegetation	55.85	64.50	65.55
Rock	12.85	9.43	11.84
Pavement	.60	.32	2.00
Litter	61.70	52.75	34.43
Cryptogams	.00	.04	.01
Bare Ground	3.30	2.31	4.65

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 23, Patterson Pass

Effective rooting depth (in)	Temp °F (depth)	PH	Loam			%0M	PPM P	PPM K	dS/m
			%sand	%silt	%clay				
9.8	53.0 (8.8)	6.7	40.6	33.4	26.0	5.4	36.2	444.8	0.5



PELLET GROUP DATA --
Management unit 01 , Study no: 23

Type	Quadrat Frequency		
	'96	'01	'06
Rabbit	-	-	14
Grouse	-	1	-
Elk	58	25	34
Deer	4	1	2

Days use per acre (ha)	
'01	'06
-	-
-	-
47 (116)	40 (99)
1 (2)	1 (3)

BROWSE CHARACTERISTICS --
Management unit 01 , Study no: 23

		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	**2100**	180	260	1660	180	120	39	.95	9	-	0	11/25
01	**1900**	-	60	1760	80	20	0	0	4	1	1	11/20
06	**2980**	8540	280	2580	120	160	0	0	4	.67	.67	11/21
Artemisia tridentata vaseyana												
96	**5060**	340	860	3420	780	400	27	11	15	3	4	19/33
01	**6000**	60	580	4540	880	420	8	0	15	3	9	19/32
06	**4840**	1940	120	3420	1300	460	9	.41	27	12	13	20/33
Chamaebatiaria millefolium												
96	**0**	-	-	-	-	-	0	0	-	-	0	-/-
01	**0**	-	-	-	-	-	0	0	-	-	0	-/-
06	**0**	-	-	-	-	-	0	0	-	-	0	44/81
Chrysothamnus nauseosus												
96	**0**	-	-	-	-	-	0	0	-	-	0	-/-
01	**0**	-	-	-	-	-	0	0	-	-	0	-/-
06	**0**	-	-	-	-	-	0	0	-	-	0	24/17
Chrysothamnus viscidiflorus lanceolatus												
96	**4100**	20	460	3200	440	-	4	0	11	3	7	11/16
01	**3280**	-	300	2500	480	20	.60	0	15	5	5	9/16
06	**2760**	-	160	2460	140	-	0	0	5	-	0	9/15
Eriogonum microthecum												
96	**1320**	-	200	1120	-	-	12	0	0	-	0	6/12
01	**1120**	-	-	1120	-	-	0	0	0	-	0	6/13
06	**1380**	-	20	1320	40	-	4	0	3	-	0	6/14
Pediocactus simpsonii												
96	**80**	-	-	80	-	-	50	0	-	-	0	7/6
01	**20**	-	-	20	-	-	0	0	-	-	0	3/3
06	**20**	-	-	20	-	-	0	0	-	-	0	4/5
Ribes cereum cereum												
96	**0**	-	-	-	-	-	0	0	0	-	0	3/94
01	**0**	-	-	-	-	-	0	0	0	-	0	37/103
06	**20**	-	-	-	20	-	0	0	100	100	100	34/81