

Trend Study 7-4-06

Study site name: Above Samak .

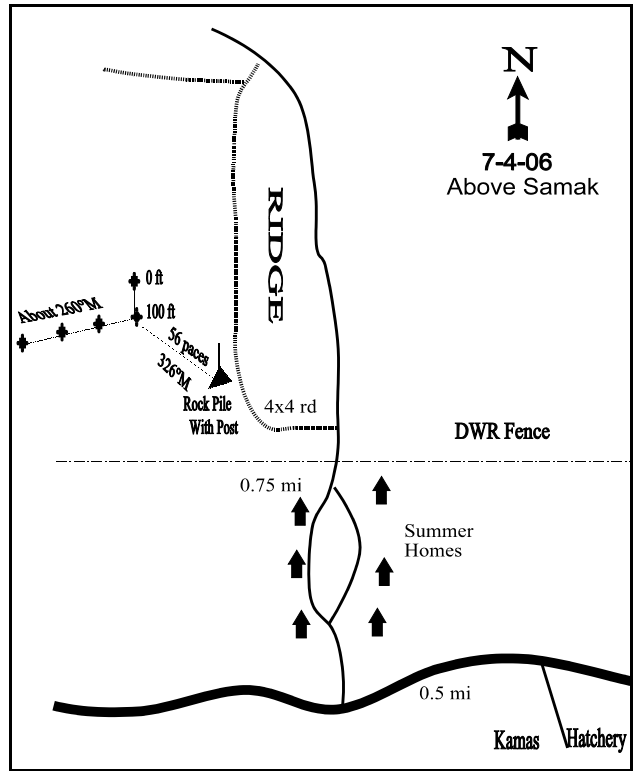
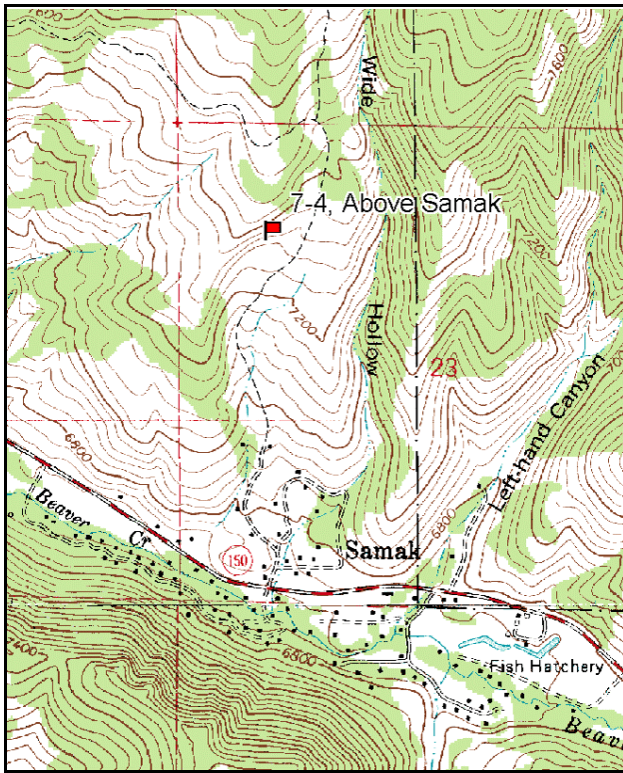
Vegetation type: Mountain Brush .

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

From the Kamas fish hatchery proceed west 0.5 miles. Turn right onto a dirt road and proceed north. The road will split (go left) around the summer houses and reunite in 0.2 miles. After passing the homes, you will come to a DWR fence and gate. Proceed 0.1 miles past the gate and turn left, proceeding up a very steep hill (4X4 recommended). Drive north to a half high witness post in the middle of a rock pile on th left side of the road. The rockpile is 0.50 miles from the highway. From the rockpile, walk 56 paces at 326 degrees magnetic to the 100-foot stake of the baseline. The 0-foot stake is marked by browse tag #7959. The rest of the baseline doglegs at the 100-foot baseline stake and runs 260 degrees magnetic.



Map Name: Hoyt Peak

Diagrammatic Sketch

Township 2S, Range 6E, Section 22

UTM NAD 27, UTM 12T 4498170 N 479900 E

DISCUSSION

Above Samak - Trend Study No. 7-4

Study Information

The Above Samak study is located on the Kamas Wildlife Management Area in Beaver Creek Canyon (elevation: 7,300 feet, slope: 20-25%, aspect: southwest). This area can be classified as deer and elk winter range during more mild winters or transitional spring-fall range during the more harsh winters. The site and surrounding area was burned and seeded in the early-1960's. Domestic livestock also graze the area during the summer. The community was originally dominated by Gambel oak with some mountain brush species and little herbaceous cover. The site is now made up of scattered openings of mountain brush and seeded grasses interspersed with Gambel oak clones. Animal use is quite variable, depending on wintering conditions. There was moderate to heavy use on all browse species during the harsh winter of 1983-84. In 2001, pellet group transect data collected along the study baseline estimated 23 elk days use/acre (56 edu/ha), 31 deer days use/acre (76 ddu/ha), and 9 cow days use/acre (23 cdu/ha). In 2006, animal use was estimated at 11 elk days use/acre (26 edu/ha), 21 deer days use/acre (51 ddu/ha), and 22 cow days use/acre (54 cdu/ha). Cattle had grazed the area during June of 2006.

Soil

The Yeates Hollow series consists of deep, well drained and moderately well drained, slowly permeable soils that formed in alluvium, colluvium and residuum from conglomerate, sandstone and quartzite. These soils are on fan remnants, hills, and mountain slopes (USDA-NRCS 2006). Soils are very rocky. Cover from surface rock and pavement is moderately high at around 21%. Relative percent bare ground was estimated at about 18% in 2001 and 14% in 2006. The ratio of bare ground to protective ground cover (vegetation, litter, and cryptogams) decreased from 1:3.6 in 1996 and 2001 to 1:2.8. Effective rooting depth was estimated at nearly 16 inches. Soil texture was classified as a clay loam with a neutral soil reaction (6.8 pH). With the high amount of rock in the upper soil profile, the moderately steep slope, and the southwest aspect, this site can be rather dry during the summer. Litter and vegetation cover appear adequate to prevent serious erosion. Some "trailing" and trampling damage associated with livestock use is apparent but not extreme. An erosion condition class assessment determined soils to be stable in 2001 and 2006.

Browse

Browse composition consists of a mix of Gambel oak, mountain snowberry, mountain big sagebrush, Saskatoon serviceberry, and several less numerous shrubs. Gambel oak has provided about 3% cover since 1996. The oak population has consisted of a preponderance of young plants in the past. Oak clones vary in height throughout the site, with the larger ones being estimated at 12-15 feet. Due to a late frost in this area in June of 2001, many of the oak showed leaf damage and death when the site was sampled in July of 2001. As a result, 18% of the plants sampled were classified with poor vigor. Poor vigor was only 9% in 2006.

Browse utilization has been heaviest on serviceberry and bitterbrush. Serviceberry density was estimated at just under 300 plants/acre in 1996 and 2001 and was down to 180 plants/acre in 2006. Decadence was steady at around 20% until 2006 with an increase to 56%. Mountain big sagebrush has provided about 6-8% cover. Density of mountain big sagebrush has declined at every reading and was estimated at 900 plants/acre in 2006. Use on sagebrush was moderate to heavy in 1984, but has been more moderate to light since. Decadence increased from 6% to 17% to 24% in 2006. Recruitment from young plants was fairly low, but was better in 2006 at 11% of the population. Mountain snowberry density increased in 2001 and again in 2006. Density was 1,200 plants/acre in 1996 and increased to 2,240 plants/acre in 2006. Young plants were very numerous in 2006 at 29% of the population. Annual leader growth for mountain big sagebrush averaged 1.3 inches in 2001 and 2.0 inches in 2006. Serviceberry annual growth averaged 2.3 inches in 2001 and 2.4 inches in 2006.

Herbaceous Understory

The composition of the herbaceous understory is dominated by seeded species, primarily grasses. Smooth

brome, crested wheatgrass, and intermediate wheatgrass are all very common. These three species dominate the site. Grasses showed evidence of heavy grazing in the past and were grazed to about three inches in stubble height in 2006. Alfalfa, also a seeded species, is the most abundant forb in terms of cover. At this higher elevation, alfalfa has shown no sign of decline like it does on many other lower elevation range seedings. Alfalfa showed heavy grazing in 2006 and has a sprawling growth form.

1990 TREND ASSESSMENT

The data indicates several changes in the mountain big sagebrush population. There has been a significant decline in sagebrush density (from 2,399 plants/acre to 1,665 plants/acre), there are few seedlings and young, and the amount of hedging is somewhat lighter than 1984 levels. The reduced vigor and increased percent decadence is most likely related to moisture stress (drought) and competition. Sagebrush cover averages about 9%. Oakbrush has not expanded, although there are a large number of young sprouts within the clones. Grass abundance is high due to the presence of seeded grasses. Grass species identification was difficult due to heavy utilization before the study was sampled in mid-September. Total sum of nested frequency for grasses was only slightly higher. Frequency and density of alfalfa is unchanged, but other perennial forbs did decline somewhat.

browse - down (-2)

grass - stable (0)

forb - slightly down (-1)

1996 TREND ASSESSMENT

The key browse species (mountain big sagebrush) is now stable at a lower density. These changes in density for this shrub are likely due to the larger sample size used beginning in 1992 which better estimates shrub populations with clumped and/or discontinuous distributions. Vigor has improved and decadence is only 6%. Browse trend is stable. Both grass and forb trends are improved slightly with increased sum of nested frequency values. The Desirable Components Index (see methods) rated this site as fair. A greater amount of cover from preferred browse species would be desired.

winter range condition (DC Index) - fair (66) Higher potential scale

browse - stable (0)

grass - slightly up (+1)

forb - slightly up (+1)

2001 TREND ASSESSMENT

Trend for browse is slightly down. Mountain big sagebrush slightly decreased in density and level of use, while percent decadence increased. The grass trend is stable with very little change in nested frequency. Seeded species dominate on the site, especially smooth brome. Forbs are up as perennial forbs have increased in sum of nested frequency in 2001.

winter range condition (DC Index) - fair (66) Higher potential scale

browse - slightly down (-1)

grass - stable (0)

forb - up (+2)

2006 TREND ASSESSMENT

The browse trend continues to decline. Mountain big sagebrush density declined 24% and decadence increased to 24%. Cover declined from 8% to 6%. Saskatoon serviceberry also declined. Density is lower and decadence increased to 56%. Utilization has also been very heavy. The grass trend remains stable. Smooth brome dominates the site along with other exotic seeded species that provide abundant forage. Annuals are not a problem. The forb trend is down. Sum of nested frequency of perennial forbs declined 41% to levels similar to 1990 and 1996. However, alfalfa has remained unchanged. Aggressive exotic species such as smooth brome may be out competing other herbaceous species.

winter range condition (DC Index) - fair (62) Higher potential scale

browse - down (-2)

grass - stable (0)

forb - down (-2)

HERBACEOUS TRENDS --
Management unit 07 , Study no: 4

T y p e	Species	Nested Frequency					Average Cover %		
		'84	'90	'96	'01	'06	'96	'01	'06
G	Agropyron cristatum	ab 117	a 100	ab 145	ab 124	b 149	5.53	2.86	4.31
G	Agropyron dasystachyum	a -	a -	a -	b 11	a -	-	.27	-
G	Agropyron intermedium	a 55	a 47	b 103	ab 77	ab 78	4.07	1.88	1.88
G	Agropyron spicatum	b 26	b 20	b 16	ab 5	a -	.46	.04	-
G	Bromus inermis	243	267	249	266	260	12.64	10.56	9.60
G	Bromus japonicus (a)	-	-	-	3	-	-	.03	-
G	Poa bulbosa	a -	a -	ab 3	b 9	b 10	.00	.16	.13
G	Poa fendleriana	a -	b 20	a 1	a 5	a 3	.00	.18	.18
G	Poa pratensis	-	4	-	-	-	-	-	-
G	Poa secunda	3	8	7	14	17	.10	.25	.57
G	Stipa lettermani	-	7	-	-	-	-	-	-
Total for Annual Grasses		0	0	0	3	0	0	0.03	0
Total for Perennial Grasses		444	473	524	511	517	22.83	16.22	16.69
Total for Grasses		444	473	524	514	517	22.83	16.25	16.69
F	Achillea millefolium	5	4	1	2	5	.06	.03	.03
F	Agoseris glauca	-	-	-	3	-	-	.00	-
F	Allium acuminatum	10	18	6	27	19	.04	.07	.06
F	Alyssum alyssoides (a)	-	-	-	2	-	-	.00	-
F	Arabis sp.	-	4	4	9	1	.04	.07	.03
F	Astragalus convallarius	3	2	6	-	7	.06	-	.33
F	Aster sp.	-	-	-	-	3	-	-	.03
F	Astragalus sp.	a -	a -	a -	b 15	b 11	-	.34	.13
F	Castilleja chromosa	-	-	-	-	3	-	-	.00
F	Calochortus nuttallii	-	-	-	4	-	-	.01	-
F	Chaenactis douglasii	-	-	1	-	-	.00	-	-
F	Cirsium sp.	1	6	-	-	-	-	-	-
F	Comandra pallida	-	-	-	5	4	-	.07	.04
F	Collinsia parviflora (a)	-	-	a 31	b 86	b 53	.14	.33	.14
F	Crepis acuminata	-	-	-	-	-	-	-	.00
F	Cryptantha sp.	b 20	a -	a -	a -	a -	-	-	-
F	Epilobium brachycarpum (a)	-	-	a -	a 2	b 15	-	.00	.11
F	Erigeron pumilus	b 15	b 10	b 15	a -	a -	.13	-	-
F	Eriogonum racemosum	-	-	-	7	1	-	.09	.03
F	Holosteum umbellatum (a)	-	-	-	-	7	-	-	.02
F	Machaeranthera canescens	b 35	a 6	a 4	a -	a -	.04	-	-

Type	Species	Nested Frequency					Average Cover %		
		'84	'90	'96	'01	'06	'96	'01	'06
F	<i>Medicago sativa</i>	42	40	55	59	44	2.96	4.21	2.58
F	<i>Microsteris gracilis</i> (a)	-	-	a-	c51	b11	-	.22	.02
F	<i>Penstemon humilis</i>	b55	b55	b55	ab29	a8	1.02	.32	.10
F	<i>Petradoria pumila</i>	a-	a-	b25	b38	b29	1.08	2.44	2.45
F	<i>Phlox longifolia</i>	a-	ab8	ab2	b9	ab11	.00	.05	.07
F	<i>Polygonum douglasii</i> (a)	ab-	a-	b21	3	23	.04	.00	.05
F	<i>Ranunculus testiculatus</i> (a)	-	-	a21	b94	b98	.07	1.78	.93
F	<i>Senecio integerrimus</i>	a-	a2	a-	b12	a2	-	.08	.00
F	<i>Veronica biloba</i> (a)	-	-	b117	b116	a57	.46	.50	.30
F	<i>Verbascum thapsus</i>	a-	a-	a-	b28	a-	-	.48	-
F	<i>Zigadenus paniculatus</i>	-	2	4	4	-	.09	.06	-
Total for Annual Forbs		0	0	190	354	264	0.72	2.84	1.58
Total for Perennial Forbs		186	157	178	251	148	5.55	8.38	5.91
Total for Forbs		186	157	368	605	412	6.27	11.23	7.50

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

BROWSE TRENDS --

Management unit 07 , Study no: 4

Type	Species	Strip Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
B	<i>Amelanchier alnifolia</i>	13	12	8	1.27	1.42	1.06
B	<i>Artemisia tridentata vaseyana</i>	39	38	35	6.27	8.01	5.76
B	<i>Cercocarpus depressus</i>	0	1	1	-	-	-
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	3	7	8	.12	.06	.24
B	<i>Mahonia repens</i>	34	35	35	.90	.21	.70
B	<i>Purshia tridentata</i>	1	2	2	.03	.48	.56
B	<i>Quercus gambelii</i>	19	21	16	3.82	2.72	3.00
B	<i>Symphoricarpos oreophilus</i>	29	36	41	3.82	5.22	4.74
Total for Browse		138	152	146	16.25	18.13	16.08

CANOPY COVER, LINE INTERCEPT --
Management unit 07 , Study no: 4

Species	Percent Cover
	'06
Amelanchier alnifolia	.70
Artemisia tridentata vaseyana	6.73
Chrysothamnus viscidiflorus viscidiflorus	.33
Mahonia repens	.40
Purshia tridentata	1.18
Quercus gambelii	6.91
Symphoricarpos oreophilus	6.19

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 07 , Study no: 4

Species	Average leader growth (in)	
	'01	'06
Amelanchier alnifolia	2.3	2.4
Artemisia tridentata vaseyana	1.3	2.0

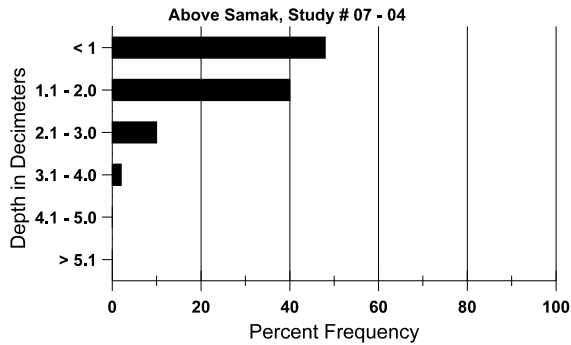
BASIC COVER --
Management unit 07 , Study no: 4

Cover Type	Average Cover %				
	'84	'90	'96	'01	'06
Vegetation	5.00	11.00	44.96	44.24	35.26
Rock	12.50	13.25	16.81	15.30	16.32
Pavement	9.25	15.00	3.97	5.63	6.30
Litter	54.75	40.50	45.09	35.33	39.91
Cryptogams	0	.75	.66	.33	.06
Bare Ground	18.50	19.50	9.90	21.62	15.23

SOIL ANALYSIS DATA --
Herd Unit 07, Study no: 04, Above Samak

Effective rooting depth (in)	Temp °F (depth)	PH				%0M	PPM P	PPM K	dS/m
			% sand	% silt	% clay				
15.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Stoniness Index



PELLET GROUP DATA --

Management unit 07 , Study no: 4

Type	Quadrat Frequency		
	'96	'01	'06
Rabbit	-	1	5
Elk	8	17	11
Deer	12	8	13
Cattle	3	4	6

Days use per acre (ha)	
'01	'06
-	-
23 (56)	11 (26)
31 (76)	21 (51)
9 (23)	22 (54)

BROWSE CHARACTERISTICS --

Management unit 07 , Study no: 4

		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)
84	466	-	66	400	-	-	29	71	0	-	0	40/37
90	332	133	133	133	66	-	20	60	20	-	0	34/30
96	280	20	-	220	60	20	14	71	21	7	7	31/43
01	260	-	-	200	60	40	46	46	23	8	8	29/33
06	180	-	-	80	100	20	22	78	56	22	22	37/41
Artemisia tridentata vaseyana												
84	2399	200	666	1400	333	-	61	39	14	-	0	20/29
90	1665	-	133	1066	466	-	52	8	28	1	12	19/23
96	1320	20	60	1180	80	280	61	6	6	-	0	21/35
01	1180	40	20	960	200	200	41	14	17	3	7	25/34
06	900	100	100	580	220	280	20	9	24	9	9	27/42

		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 depressus												
84	0	-	-	-	-	-	0	0	0	-	0	-/-
90	0	-	-	-	-	-	0	0	0	-	0	-/-
96	0	-	-	-	-	-	0	0	0	-	0	-/-
01	20	-	-	-	20	-	100	0	100	-	0	-/-
06	20	-	-	-	20	-	0	0	100	-	0	2/2
Chrysothamnus viscidiflorus viscidiflorus												
84	0	-	-	-	-	-	0	0	0	-	0	-/-
90	0	-	-	-	-	-	0	0	0	-	0	-/-
96	60	-	-	60	-	-	0	0	0	-	0	12/17
01	180	-	-	180	-	-	0	0	0	-	0	10/12
06	280	-	-	260	20	-	0	0	7	7	7	12/20
Mahonia repens												
84	15800	-	-	15800	-	-	0	0	0	-	0	4/6
90	5000	-	4200	800	-	-	0	0	0	-	0	4/5
96	2880	-	100	2780	-	-	0	0	0	-	0	3/5
01	4880	20	320	4560	-	-	0	0	0	-	0	3/3
06	4940	-	100	4800	40	20	0	0	1	-	0	3/4
Opuntia sp.												
84	0	-	-	-	-	-	0	0	-	-	0	-/-
90	0	-	-	-	-	-	0	0	-	-	0	-/-
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	4/8
06	0	-	-	-	-	-	0	0	-	-	0	6/13
Purshia tridentata												
84	0	-	-	-	-	-	0	0	-	-	0	-/-
90	0	-	-	-	-	-	0	0	-	-	0	-/-
96	20	-	-	20	-	-	0	100	-	-	0	11/41
01	40	-	-	40	-	-	50	0	-	-	0	19/68
06	40	-	-	40	-	-	50	50	-	-	0	13/48
Quercus gambelii												
84	12600	3066	10000	2600	-	-	75	8	0	-	0	47/37
90	10799	4200	8400	866	1533	-	15	0	14	.37	3	58/29
96	1360	220	700	620	40	200	24	0	3	-	0	31/25
01	3340	-	1280	1620	440	420	0	0	13	2	18	51/20
06	1500	820	420	880	200	400	1	0	13	9	9	35/23

		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)
<i>Symphoricarpos oreophilus</i>												
84	1066	-	133	933	-	-	100	0	0	-	0	18/29
90	1999	66	133	1333	533	-	20	7	27	4	33	14/15
96	1200	-	120	920	160	60	38	12	13	7	7	16/31
01	1500	-	140	1320	40	-	0	0	3	-	0	15/28
06	2240	180	640	1560	40	-	2	.89	2	.89	.89	16/29
<i>Tetradymia canescens</i>												
84	0	-	-	-	-	-	0	0	-	-	0	-/-
90	0	-	-	-	-	-	0	0	-	-	0	-/-
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	8/20
06	0	-	-	-	-	-	0	0	-	-	0	-/-