

Trend Study 1-21-01

Study site name: Keg Spring.

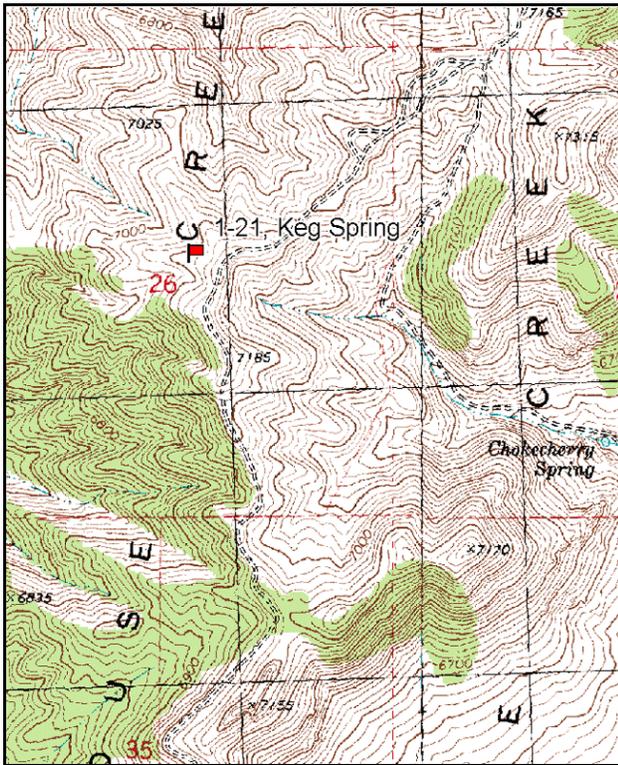
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 241 degrees magnetic.

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

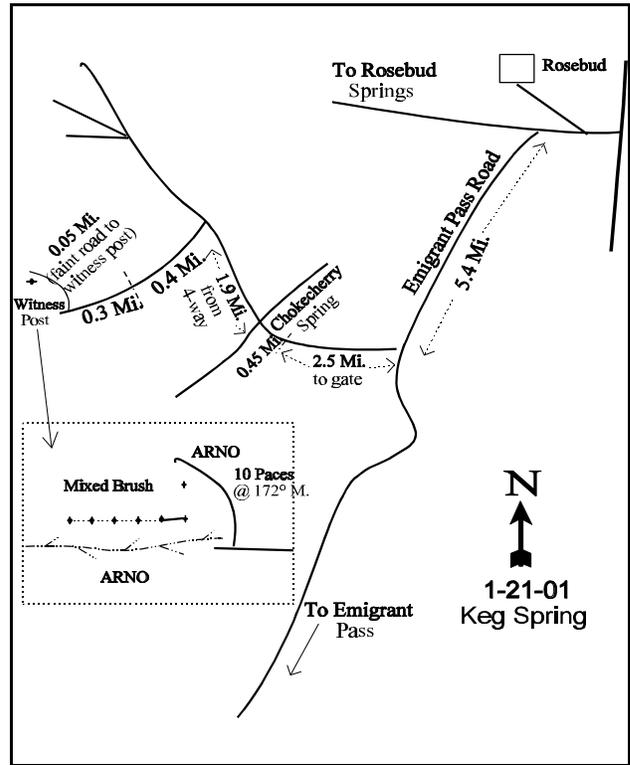
LOCATION DESCRIPTION

From the Rosebud Spring/Emigrant Pass Road intersection, travel up the Emigrant Pass Road for 5.4 miles. Turn right and travel 2.5 miles to a gate. Continue for 0.45 miles to a four way intersection (right goes to Chokecherry Springs). Continue straight through the intersection and drive 1.9 miles. Take a left and go 0.7 miles. Take a right at a faint road traveling down a ridge. Drive 0.05 to a witness post on the left hand side of the road. From the witness post, walk 10 paces at a bearing of 172 degrees magnetic. The baseline runs 241 degrees magnetic.



Map Name: Rocky Pass Peak

Township 10N, Range 17W, Section 26



Diagrammatic Sketch

UTM 4604448 N, 269872 E

DISCUSSION

Trend Study No. 1-21

The Keg Spring study samples critical summer range near the summit of the Grouse Creek Mountains. The vegetative type is mixed mountain brush. The site is on the south facing side of a long ridge which runs west. Slope is 20% to 25% and elevation is approximately 7,100 feet. There is no water nearby except from springs found further down the canyon at Keg and Willow Spring. Deer utilize this area most of the year except when snow forces them to lower elevations. A pellet-group transect read on the site in 2001 estimated a very low level of use at only 1 deer day use/acre (2 deer days use/acre) and 2 cows days use/acre (5 cow days use/ha).

The soil is relatively shallow on the top of the ridge top, but noticeably deeper down slope where the base line occurs. Effective rooting depth is estimated at >21 inches (see methods). The soil has a loam texture with a neutral soil reaction (6.8 pH). Protective cover from vegetation and litter was abundant and well dispersed in the past, leaving little bare soil exposed (<3%). A fire has burned through the site since then, probably about a year before the reading in 2001. Percent bare soil has now increased to 30%. Even with the fire, erosion does not appear to be a problem and the erosion condition class was determined to be stable in 2001.

The dominant browse species before the fire included basin big sagebrush, mountain big sagebrush, and snowberry. Basin big sagebrush, intermixed with the mountain big sagebrush, had a density of 1,560 plants/acre. Mature plants were large and vigorous measuring nearly 3 feet in height with a crown of just over 3½ feet. Utilization was mostly light yet percent decadency was moderately high at 26%. Dead plants numbered an estimated 600 plants/acre, about 28% of the population. No basin big sagebrush was left after the fire.

Mountain big sagebrush had a preburn density of approximately 2,500 plants/acre, 70% of which were classified as mature. Utilization was generally light with moderate use noticed on some plants in 1996. Percent decadency was fairly low at 23%. The number of dead plants was estimated at 280/acre, or about 10% of the population. After the burn, density is down to 320 plants/acre. All are young plants with good vigor.

Snowberry was and still is the most abundant shrub on the site with a density of 3,840 plants/acre before the fire. Now the population has decreased to 2,680 plants/acre. Initially it provided 37% of the browse cover. After the fire, it currently makes up 63% of the browse cover. With it being rhizomatous, the fire did not effected it as much as the other species. No plants appear to be utilized.

The herbaceous understory is diverse and abundant. However, the most abundant and dominant grass is cheatgrass. It accounted for 46% of the grass cover in 1996, increasing to 72% after the fire. Initially the common perennial species included: bluebunch wheatgrass, great basin wildrye, and Sandberg bluegrass. They continue to be the most common perennial grass species, however, since the fire they all have significantly decreased sum of nested frequency values. The forb component contains several useful species including: arrowleaf balsamroot, Indian paintbrush, northern sweetvetch, silvery lupine, and bluebell. Since the fire annuals have increased in their abundance from 53% of the herbaceous cover in 1996, to 88% in 2001.

1996 APPARENT TREND ASSESSMENT

Abundant protective vegetation and litter cover provide excellent soil protection on this site. Percent bare ground is estimated at less than 3% with no serious erosion occurring. The key browse species is mountain big sagebrush followed by basin big sagebrush. Sagebrush shows only light to moderate utilization. It is in good vigor and has adequate seedlings and young to maintain their populations. Trend appears stable. The herbaceous understory is diverse and abundant. The grass component, however, is dominated by annual cheatgrass which contributes 46% of the grass cover.

2001 TREND ASSESSMENT

A fire burned the area since the last reading in 1996. As a result, there is much less protective ground cover and percent bare soil has increased from less than 3% to more than 30%. Trend for soil at this time is down but erosion is not a serious problem at this time. The key browse species is mountain big sagebrush followed by basin big sagebrush. All of the basin big sagebrush has been lost to fire, while mountain big sagebrush has been reduced from 2,500 plant/acre to 320 plants/acre. These are all young plants. Snowberry is almost as abundant as it was before the fire, but it is not a preferred species. Trend for browse is down and it will take many years to recover from the fire. The herbaceous understory continues to be diverse and relatively abundant. The grass component remains dominated by annual cheatgrass which provides 72% of the grass cover. Annual forbs have also increased their dominance they now contribute 49% of the forb cover. Annual grasses and forbs have increased in abundance since the fire. Perennial grass sum of nested frequency values have significantly decreased since 1996. Trend for herbaceous understory is down.

TREND ASSESSMENT

soil - down since the fire (1)

browse - down due to fire (1)

herbaceous understory - down and dominated by annuals (1)

HERBACEOUS TRENDS --

Herd unit 01 , Study no: 21

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
G	Agropyron dasystachyum	10	13	3	5	.06	.16
G	Agropyron spicatum	119	*20	41	6	3.86	.55
G	Agropyron trachycaulum	4	1	2	1	.03	.03
G	Bromus tectorum (a)	225	264	51	76	9.33	13.53
G	Elymus cinereus	80	*34	27	9	4.72	3.18
G	Koeleria cristata	10	3	3	1	.04	.15
G	Melica bulbosa	2	-	1	-	.03	-
G	Poa secunda	67	*50	23	16	1.14	.73
G	Sitanion hystrix	1	-	1	-	.03	-
G	Stipa columbiana	13	16	9	5	.82	.34
Total for Annual Grasses		225	264	51	76	9.33	13.53
Total for Perennial Grasses		306	137	110	43	10.77	5.17
Total for Grasses		531	401	161	119	20.11	18.70
F	Agoseris glauca	48	76	22	35	.13	1.10
F	Agastache urticifolia	13	*-	4	-	.59	.03
F	Allium spp.	15	*58	8	26	.04	.48
F	Arabis spp.	-	2	-	1	-	.06
F	Astragalus beckwithii	42	15	14	8	.49	.41
F	Aster spp.	1	-	1	-	.00	-

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
		F	Balsamorhiza sagittata	18	8	7	3
F	Borago officinalis	55	*-	22	-	.86	-
F	Casella bursa-pastoris	-	6	-	3	-	.33
F	Castilleja linariaefolia	2	17	1	4	.00	.12
F	Chenopodium fremontii (a)	-	*41	-	15	-	.41
F	Collomia linearis (a)	88	77	33	31	.51	1.27
F	Comandra pallida	-	11	-	4	-	.19
F	Collinsia parviflora (a)	284	*218	76	61	2.66	6.38
F	Cordylanthus ramosus (a)	-	1	-	1	-	.01
F	Crepis acuminata	77	69	30	30	1.77	5.50
F	Cryptantha spp.	12	*-	4	-	.04	-
F	Delphinium nuttallianum	11	*62	6	28	.05	.53
F	Descurainia pinnata (a)	16	*173	4	49	.02	6.41
F	Galium aparine (a)	40	*20	12	5	.16	.75
F	Gayophytum ramosissimum (a)	-	*16	-	6	-	.20
F	Gilia spp. (a)	-	1	-	1	-	.03
F	Hackelia patens	35	*4	17	3	.43	.42
F	Hedysarum boreale	10	*-	5	-	.31	-
F	Lappula occidentalis (a)	7	*36	3	13	.01	.53
F	Lactuca serriola	-	2	-	1	-	.00
F	Lithospermum ruderales	27	*8	12	4	1.00	1.02
F	Lomatium spp.	-	1	-	1	-	.01
F	Lomatium triternatum	7	34	4	15	.02	.40
F	Lupinus argenteus	54	74	30	36	2.08	4.96
F	Mertensia oblongifolia	2	-	2	-	.03	-
F	Microsteris gracilis (a)	7	*41	4	15	.02	.44
F	Navarretia intertexta (a)	36	*-	14	-	.14	-
F	Phlox hoodii	-	6	-	2	-	.01
F	Phlox longifolia	55	71	21	27	.20	1.64
F	Polygonum douglasii (a)	62	*4	22	1	.16	.03
F	Ranunculus testiculatus (a)	-	4	-	2	-	.01
F	Sisymbrium altissimum (a)	-	6	-	3	-	.21
F	Unknown forb-perennial	-	2	-	1	-	.03
F	Veronica biloba (a)	21	*74	6	19	.08	1.74
F	Viola adunca	38	53	18	24	.09	.69

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
	Total for Annual Forbs	561	712	174	222	3.77	18.45
	Total for Perennial Forbs	522	579	228	256	9.30	18.93
	Total for Forbs	1083	1291	402	478	13.08	37.39

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 01 , Study no: 21

T y p e	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Amelanchier utahensis	2	1	.18	-
B	Artemisia tridentata tridentata	32	0	3.15	-
B	Artemisia tridentata vaseyana	46	14	7.64	.21
B	Chrysothamnus nauseosus consimilis	28	0	1.54	-
B	Chrysothamnus viscidiflorus viscidiflorus	55	34	5.84	2.61
B	Eriogonum microthecum	1	1	.15	-
B	Juniperus osteosperma	1	0	-	-
B	Symphoricarpos oreophilus	63	44	10.71	4.73
	Total for Browse	228	94	29.23	7.56

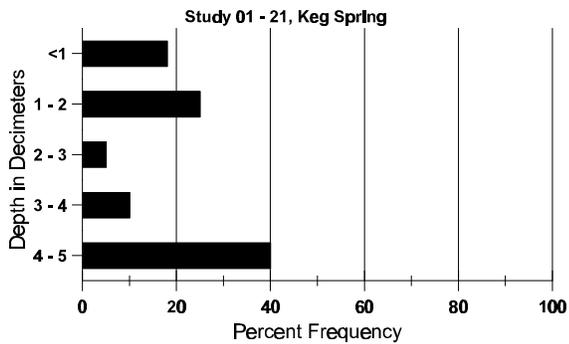
BASIC COVER --
Herd unit 01 , Study no: 21

Cover Type	Nested Frequency		Average Cover %	
	'96	'01	'96	'01
Vegetation	475	454	59.40	55.68
Rock	120	131	1.69	1.76
Pavement	129	373	3.55	11.83
Litter	496	264	68.39	5.63
Cryptogams	13	1	.05	.03
Bare Ground	129	405	2.63	30.22

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 21, Keg Spring

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
21.8	49.5 (19.4)	6.8	29.9	43.4	26.6	4.9	29.5	486.4	.8

Stoniness Index



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 21

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre '01	Days Use per Acre (ha) '01
Rabbit	2	-	-	-
Deer	15	1	9	1 (2)
Cattle	-	3	26	2 (5)

BROWSE CHARACTERISTICS --

Herd unit 01 , Study no: 21

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Amelanchier utahensis																		
Y	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	1	-	-	-	-	-	-	-	-	-	-	-	20		1		
M	96	1	1	-	-	-	-	-	-	-	-	-	-	40	33	42	2	
	01	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		50%			00%			00%			-50%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	40	Dec:	-			
												'01	20		-			
Artemisia tridentata tridentata																		
Y	96	15	-	-	3	-	-	-	-	-	-	-	-	360		18		
	01	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
M	96	31	5	-	4	-	-	-	-	-	-	-	-	800	35	43	40	
	01	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
D	96	12	8	-	-	-	-	-	-	-	-	-	-	400		20		
	01	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
X	96	-	-	-	-	-	-	-	-	-	-	-	-	600		30		
	01	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		17%			00%			01%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	1560	Dec:	26%			
												'01	0		0%			

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Artemisia tridentata vaseyana</i>																		
S	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	96	8	1	-	-	-	-	-	-	-	9	-	-	-	180		9	
	01	16	-	-	-	-	-	-	-	-	16	-	-	-	320		16	
M	96	69	17	-	1	-	-	-	-	-	87	-	-	-	1740	23	28	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
D	96	23	5	-	1	-	-	-	-	-	20	-	1	8	580		29	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	280		14	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		18%			00%			07%			-87%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'96	2500	Dec:	23%				
											'01	320		0%				
<i>Chrysothamnus nauseosus consimilis</i>																		
Y	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	96	42	-	-	6	-	-	-	-	-	48	-	-	-	960	29	34	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
D	96	4	-	-	-	-	-	-	-	-	3	1	-	-	80		4	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'96	1080	Dec:	7%				
											'01	0		0%				
<i>Chrysothamnus viscidiflorus viscidiflorus</i>																		
Y	96	5	-	-	2	-	-	-	-	-	7	-	-	-	140		7	
	01	26	-	-	-	-	-	-	-	-	26	-	-	-	520		26	
M	96	114	-	-	15	-	-	-	-	-	128	-	1	-	2580	15	20	
	01	41	-	-	-	-	-	-	-	-	41	-	-	-	820	9	13	
D	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			01%			-51%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'96	2740	Dec:	1%				
											'01	1340		0%				

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Eriogonum microthecum																		
M	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60	8	12	3
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6	9	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%			-67%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	60	Dec:	-			
												'01	20		-			
Juniperus osteosperma																		
Y	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	20	Dec:	-			
												'01	0		-			
Purshia tridentata																		
M	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	28	57	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	0	Dec:	-			
												'01	0		-			
Symphoricarpos oreophilus																		
S	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	96	35	-	-	26	-	-	-	-	-	46	-	8	7	1220			61
	01	48	-	-	-	-	-	-	-	-	48	-	-	-	960			48
M	96	90	-	-	13	-	-	-	-	-	59	7	37	-	2060	23	42	103
	01	86	-	-	-	-	-	-	-	-	86	-	-	-	1720	14	44	86
D	96	27	-	-	1	-	-	-	-	-	1	-	6	21	560			28
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			41%			-30%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	3840	Dec:	15%			
												'01	2680		0%			