

Trend Study 13A-6-04

Study site name: Bald Mesa .

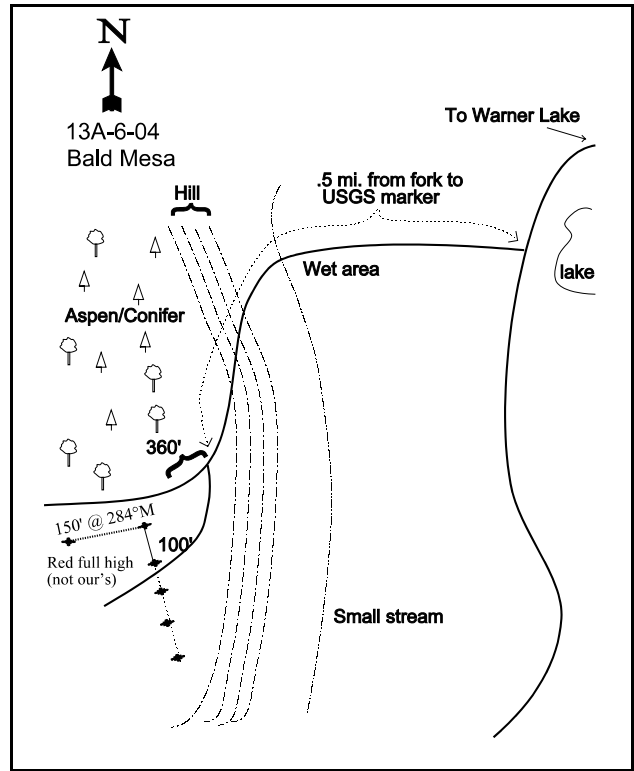
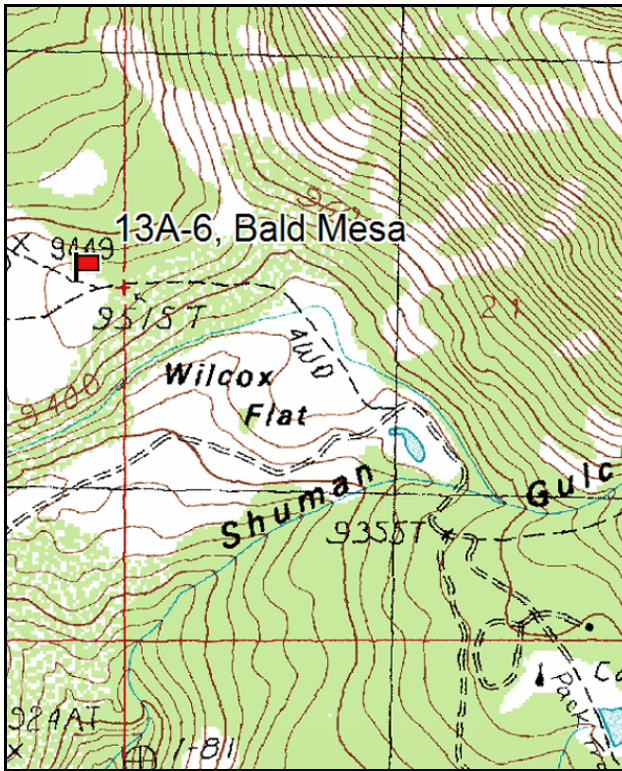
Vegetation type: Mixed Mtn Brush .

Compass bearing: frequency baseline 185 degrees magnetic.

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

LOCATION DESCRIPTION

From the LaSal Mountain Loop Road, take the Warner Lake Campground road 4.8 miles. Turn left onto a minor road which crosses Wilcox Flat, then turns into a rough, rutted road going up the side of the hill to Bald Mesa. Walk or drive 0.5 miles up this road, continuing past the aspen-conifer edge to a fork in the meadow. Follow the right fork 200 feet to the first baseline stake, located 10 feet off the road to the left. The transect is marked by 12" fence posts.



Map Name: Warner Lake

Diagrammatic Sketch

Township 26S , Range 24E , Section 20

GPS: NAD 27, UTM 12S 4265472 N, 649257 E

DISCUSSION

Bald Mesa - Trend Study No. 13A-6

Bald Mesa is just west of the high LaSal peaks. This trend study samples a typical high elevation mesa that supports a mountain brush-forb-grass vegetation type. This type occupies only a small percentage of the high country. Here, it is bounded to the north and east by aspen and conifer forests. This area is part of the Bald Mesa grazing allotment and is used mostly as summer range for cattle with some big game use. Pellet group data from 1999 estimated 9 elk (22 edu/ha) and 84 cow days use/acre (207 cdu/ha). Pellet group data from 2004 estimated 5 elk (13 edu/ha), 1 deer (3 ddu/ha), and 112 cow days use/acre (276 cdu/ha).

The fairly level mesa has a southwest aspect on a gentle 2% slope and an elevation of 9,500 feet. It is a productive site, rich in species and should receive annual precipitation in excess of 20 inches. The clay loam soil is slightly acidic (6.2 pH) and gravelly with scattered rock on the surface. Effective rooting depth is 15 inches. Phosphorus could be a limiting factor on this site at 6.1 ppm. Values below 10 ppm may limit normal plant growth and development. No significant erosion has occurred on the site, although the access roads (which have now been closed) are washed out and severely eroded. The erosion condition class determined soil movement as stable in 2004.

Snowberry forms the dominant shrub cover on this open site which comprised 67% of the shrub cover in 1994, 1999, and 2004. The plants are vigorous with mostly light use, but some showing moderate use. The mountain big sagebrush on the site showed little use and good vigor in 2004. Because of the moderately high elevation, it would not normally be used as a winter range. Consequently, browse is not a critical component for this site. Density for the mountain big sagebrush population for 1994 and 1999 was 620 plants/acre, and 1,540 for 2004. The browse component only makes up approximately 25% of the total vegetative cover. Other browse species found on the site include wax currant, Gooseberry currant, low rabbitbrush, and Wood's rose.

Herbaceous vegetation forms a diverse and dense understory. Forbs are abundant with them providing almost 49% in 1994, 41% in 1999, and 52% of the total vegetative cover in 2004. These species provide valuable summer forage. More than 30 forb species have been encountered on the site in 1994, 1999, and 2004. The most common species include Ballhead sandwort, *Astragalus* spp., Oregon fleabane, Silky lupine, and Silverweed cinquefoil. Grasses are also quite dense providing 23% of the vegetative cover in 1994, 33% in 1999, and 15% in 2004. Kentucky bluegrass makes up the bulk of the grass cover, but was significantly reduced in 2004 from previous readings. The majority of the herbaceous species on this site are classified as increasers with heavy grazing. The dense herbaceous understory accounts for a high amount of the vegetative cover (on average, 67% of the total vegetative cover).

1994 TREND ASSESSMENT

The soil trend is stable with percent bare ground at only 6%. Percent litter cover has decreased somewhat, but this has occurred on all sites with the extended drought conditions and will turn around with more normal precipitation patterns. The browse trend is mixed, for most all species it is stable except for mountain big sagebrush which has some downward population trends, but it only contributes 5% of the browse cover or 1% of the total vegetative cover. Another important consideration is that browse would not be a "key" species for this summer range. Trend for browse would therefore be considered stable and relatively insignificant for this range type. Trend for the herbaceous understory is slightly down with nested frequency values for grasses and forbs falling since 1987. This downward trend has most likely been caused by the long term drought we have been experiencing since 1985, coupled with moderately high use by livestock. The Desirable Components Index is not calculated for this site because it is a summer range.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly down (2)

1999 TREND ASSESSMENT

The soil trend is stable with percent bare ground down to only 5%. Percent litter cover has increased from 40% to 55%. The browse trend is mixed, but on average it only contributes 27% of the total vegetative cover. Another important consideration is that browse would not be a “key” species for this summer range. Trend for browse would therefore be considered stable. Trend for the herbaceous understory is down with lower nested frequency values. They are slightly down for grasses and substantially down for forbs which make up 55% of the herbaceous cover. This downward trend has mostly been caused by the many years of drought we have been experiencing since 1985 and the moderately high livestock use. The Desirable Components Index is not calculated for this site because it is a summer range.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly down (2)

2004 TREND ASSESSMENT

The trend for soil is slightly down. Percent bare ground increased from 4% relative cover to 11%. Litter decreased from 41% relative cover to 27%, although protective cover is still substantial enough to protect against most erosion events. Trend for key browse species (mountain big sagebrush) is up but not of consequence for this summer range. Therefore, trend for browse will be considered stable. Sagebrush density increased from 620 plants/acre in 1999 to 1,540 plants/acre in 2004. With persistent heavy use by livestock, the density of mountain big sagebrush would be expected to continue increasing, especially in association with continuing drought. Snowberry is also abundant, although both browse species are not considered “key” species for this summer range. Trend for herbaceous understory continues to be going down slightly. Recall that livestock use has continued to be high, on average since 1999, cow days use/acre has been 98 cow days use/acre. Nested frequency of forbs and grasses have continually decreased since 1987. Kentucky bluegrass, western yarrow, and common dandelion were the major grasses and forbs that declined. The Desirable Components Index is not calculated for this site because it is a summer range.

TREND ASSESSMENT

soil - slightly down (2)

browse - up (3)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Management unit 13A, Study no: 6

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
G	Agropyron spp.	_b 128	_a -	_a 1	_a -	-	.01	-
G	Bromus anomalus	1	5	-	-	.04	-	-

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
G	Carex spp.	4	-	5	8	-	.03	.53
G	Dactylis glomerata	-	-	5	5	-	.04	.03
G	Koeleria cristata	a-	b35	b27	b25	.36	.21	.25
G	Phleum pratense	-	-	5	-	-	.15	-
G	Poa arida	b136	a28	a17	a3	.54	1.07	.03
G	Poa fendleriana	-	-	3	-	-	.03	-
G	Poa pratensis	b257	c332	c346	a237	12.42	22.36	8.07
G	Sitanion hystrix	a34	b57	ab45	ab40	.80	.72	.74
G	Stipa comata	b99	a49	a32	a28	1.14	.68	.33
G	Stipa lettermani	-	59	48	54	1.08	1.42	.90
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		659	565	534	400	16.42	26.75	10.90
Total for Grasses		659	565	534	400	16.42	26.75	10.90
F	Achillea millefolium	b102	b125	b110	a42	2.53	2.02	.49
F	Agoseris glauca	-	14	19	7	.08	.12	.07
F	Androsace septentrionalis (a)	16	-	-	-	-	-	-
F	Arenaria congesta	a181	b240	a195	b255	8.03	5.33	13.60
F	Arabis drummondii	b38	a-	a-	a-	-	-	-
F	Aster chilensis	a-	c50	a-	b12	.89	-	.24
F	Astragalus miser	d226	c191	b72	a-	7.73	3.42	-
F	Aster spp.	a-	a-	a-	b13	-	-	.15
F	Astragalus spp.	a-	a-	b179	b183	-	7.96	7.79
F	Castilleja linariaefolia	a-	c19	cd15	b3	.26	.30	.01
F	Carduus nutans (a)	-	-	-	-	-	-	.00
F	Calochortus nuttallii	a-	ab3	b13	ab5	.01	.08	.01
F	Chenopodium album (a)	-	-	1	-	-	.00	-
F	Cirsium calcareum	b51	c108	b52	a4	1.19	1.97	.19
F	Clematis hirsutissima	b13	a-	a-	a-	-	-	-
F	Comandra pallida	28	21	31	14	.33	.78	.10
F	Collinsia parviflora (a)	-	-	1	1	-	.00	.00
F	Crepis acuminata	15	18	18	2	.16	.45	.06
F	Delphinium nuttallianum	c75	b8	a-	ab6	.08	-	.02
F	Erigeron flagellaris	88	52	29	55	.33	.21	1.31
F	Eriogonum racemosum	61	65	56	56	1.35	.84	.89
F	Erigeron speciosus	ab39	bc65	a15	c80	1.98	.27	3.97
F	Eriogonum umbellatum	b12	b6	b2	a-	.01	.15	-

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
F	Galium boreale	-	5	4	4	.53	.41	.18
F	Holosteum umbellatum (a)	-	-	5	-	-	.01	-
F	Ipomopsis aggregata	2	3	3	-	.00	.00	-
F	Lathyrus brachycalyx	-	-	-	-	-	.53	-
F	Lomatium dissectum	-	3	1	7	.00	.38	.53
F	Lupinus argenteus	-	8	-	-	.33	-	-
F	Lupinus sericeus	_b 117	_a 49	_a 41	_a 40	2.83	2.66	2.12
F	Lychnis drummondii	-	-	2	-	-	.01	-
F	Mertensia brevistyla	_b 8	_{ab} 3	_a -	_a -	.00	-	-
F	Penstemon crandallii	-	2	6	10	.03	.06	.45
F	Penstemon palmeri	_c 49	_b 4	_b 4	_a -	.15	.03	-
F	Petradoria pumila	_a -	_b 26	_b 31	_b 29	.92	.51	1.46
F	Penstemon strictus	_a -	_c 32	_{bc} 31	_b 9	.52	.61	.09
F	Phlox spp.	-	3	3	-	.15	.03	-
F	Potentilla anersina	64	95	78	84	2.24	1.72	2.71
F	Polygonum douglasii (a)	-	_a 1	_{ab} 15	_b 22	.00	.03	.05
F	Senecio integerrimus	_c 197	_b 84	_a 29	_a 25	1.18	.29	.26
F	Sedum lanceolatum	_c 22	_a 1	_a -	_a 2	.00	-	.03
F	Taraxacum officinale	_c 172	_b 66	_b 65	_a 20	.39	1.35	.35
F	Thalictrum fendleri	-	-	3	-	-	.30	-
F	Trifolium spp.	1	-	3	-	-	.00	-
F	Unknown forb-perennial	_b 34	_a -	_a -	_a -	-	-	-
F	Zigadenus paniculatus	2	-	-	-	-	-	-
Total for Annual Forbs		16	1	22	23	0.00	0.05	0.06
Total for Perennial Forbs		1597	1369	1110	967	34.35	32.89	37.12
Total for Forbs		1613	1370	1132	990	34.36	32.94	37.18

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

BROWSE TRENDS --

Management unit 13A, Study no: 6

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	<i>Artemisia tridentata vaseyana</i>	19	22	23	1.96	1.57	1.22
B	<i>Chrysothamnus viscidiflorus lanceolatus</i>	41	34	37	1.79	2.50	2.75
B	<i>Clematis</i> spp.	-	-	-	-	.15	-
B	<i>Ribes</i> spp.	4	0	0	2.62	-	-
B	<i>Ribes cereum cereum</i>	0	3	3	-	1.33	1.53
B	<i>Ribes montigenum</i>	0	3	2	-	1.26	1.99
B	<i>Rosa woodsii</i>	1	1	1	.15	.00	-
B	<i>Sambucus racemosa</i>	1	3	2	.03	-	-
B	<i>Symphoricarpos oreophilus</i>	46	49	47	13.17	14.17	15.92
Total for Browse		112	115	115	19.72	21.01	23.43

CANOPY COVER, LINE INTERCEPT --

Management unit 13A, Study no: 6

Species	Percent Cover '04
<i>Artemisia tridentata vaseyana</i>	.90
<i>Chrysothamnus viscidiflorus lanceolatus</i>	2.76
<i>Ribes cereum cereum</i>	2.95
<i>Ribes montigenum</i>	.15
<i>Symphoricarpos oreophilus</i>	18.35

BASIC COVER --

Management unit 13A, Study no: 6

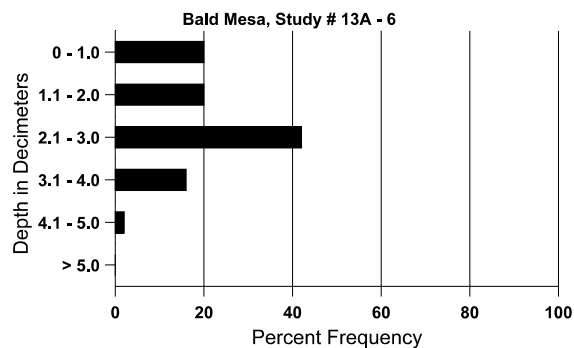
Cover Type	Average Cover %			
	'87	'94	'99	'04
Vegetation	26.00	66.22	70.77	67.34
Rock	2.75	1.59	1.36	1.61
Pavement	0	.20	1.12	1.39
Litter	64.00	39.64	54.87	30.88
Cryptogams	.50	.12	.06	0
Bare Ground	6.75	6.11	5.03	12.82

SOIL ANALYSIS DATA --

Management unit 13A, Study no: 6, Study Name: Bald Mesa

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
15.0	49.6 (16.3)	6.2	40.2	32.6	27.3	5.0	6.1	2620.4	0.4

Stoniness Index



PELLET GROUP DATA --

Management unit 13A, Study no: 6

Type	Quadrat Frequency			Days use per acre (ha)	
	'94	'99	'04	'99	'04
Elk	4	3	1	9 (22)	5 (13)
Deer	-	1	1	-	1 (3)
Cattle	4	17	22	84 (207)	112 (276)

BROWSE CHARACTERISTICS --

Management unit 13A, Study no: 6

		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 tridentata vaseyana												
87	933	-	-	400	533	-	36	29	57	-	29	15/25
94	620	80	60	360	200	260	10	0	32	10	10	16/20
99	620	180	160	300	160	420	58	0	26	-	0	14/21
04	1540	-	680	760	100	40	1	0	6	4	4	13/17
Chrysothamnus viscidiflorus lanceolatus												
87	2999	133	1333	1200	466	-	44	9	16	-	0	13/21
94	1340	-	120	1220	-	-	0	0	0	-	0	14/18
99	1060	-	60	1000	-	20	4	0	0	-	0	14/18
04	1320	-	20	1300	-	-	8	0	0	-	0	13/18

		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)
Ribes spp.												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
94	180	-	-	180	-	-	0	0	-	-	0	49/93
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-
Ribes cereum cereum												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	60	-	-	60	-	-	0	0	-	-	0	65/90
04	60	-	-	60	-	-	0	0	-	-	0	56/62
Ribes montigenum												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	60	-	-	60	-	-	0	0	-	-	0	34/37
04	40	-	-	40	-	-	0	0	-	-	0	26/24
Rosa woodsii												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
94	20	-	-	20	-	-	0	0	-	-	0	12/19
99	20	-	20	-	-	-	0	0	-	-	0	-/-
04	20	-	-	20	-	-	0	0	-	-	0	27/14
Sambucus racemosa												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
94	60	-	-	60	-	-	0	0	-	-	0	29/40
99	60	-	20	40	-	-	0	0	-	-	0	35/39
04	0	-	-	-	-	-	0	0	-	-	0	-/-
Sambucus racemosa melanocarpa												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	40	-	-	40	-	-	0	0	-	-	0	27/22
Symphoricarpos oreophilus												
87	4798	1866	3466	1066	266	-	31	1	6	-	0	25/23
94	2100	-	180	1920	-	-	0	0	0	-	0	22/50
99	1400	80	100	1140	160	20	13	1	11	-	0	25/42
04	1360	-	40	1280	40	-	0	0	3	1	1	21/48