

TAYLOR MOUNTAIN - TREND STUDY NO. 9-2-10

Vegetation Type: Mountain Big Sagebrush

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

NRCS Ecological Site Description: Not Available

Land Ownership: USFS

Elevation: 8400 ft. (2561 m)

Aspect: East

Slope: 3%

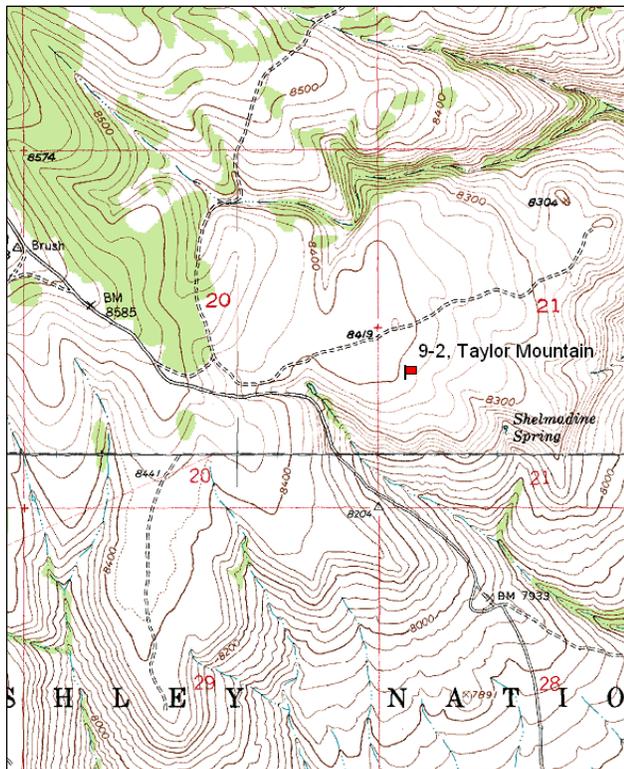
Transect bearing: 0° magnetic

Belt placement: line 1 (14 & 82ft), line 2 (28ft), line 3 (59ft), line 4 (77ft).

Directions:

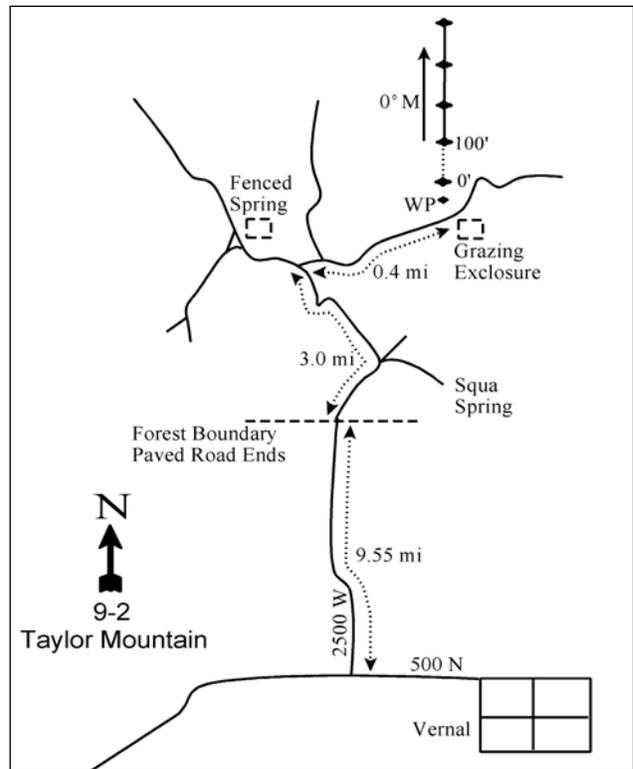
From Vernal, travel west on 500 North Street to 2500 West. Turn right on 2500 West and drive north 9.55 miles to the National Forest boundary. Continue north 3 miles to a fork. Turn right and go 0.4 miles toward the Taylor Mountain Exclosure. From the sign on the west side of the exclosure, walk 54 paces north to the 0-foot end of the baseline. There is also a witness post 4 feet south of the 0-foot stake. The 0-foot stake is marked by an 18 inch tall fencepost with browse tag #7091.

Map Name: Dyer Mountain



Township: 2S Range: 21E Section: 21

Diagrammatic Sketch:



GPS: NAD 83, UTM 12T 620520 E 4498442 N

TAYLOR MOUNTAIN - TREND STUDY NO. 9-2

Site Information

Site Description: The study is adjacent to the Taylor Mountain Exclosure which was built in 1962. The study is within the Taylor Mountain Complex allotment, which is managed by the U.S. Forest Service in a 6-pasture rest-rotation system. The area is on the border of crucial summer range and winter range for both deer and elk, and is likely used during both seasons. Pellet group transect estimated moderate use by deer in 2000 with heavier use in 2005 and 2010. Estimated use by elk has been light since 2000. Estimated cattle use has been light since 2000, but has increased steadily over that period (Table - Pellet Group Data).

Browse: Browse is not as crucial on this site since it is not true winter range, but a dense stand of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and antelope bitterbrush (*Purshia tridentata*) are present and provide nearly all of the browse cover on the site (Table - Browse Trends). Mountain big sagebrush is comprised of a population of large, moderately used plants with low to moderate decadence and fairly good vigor. Recruitment of young mountain big sagebrush has been poor over the course of the study. Antelope bitterbrush has a prostrate growth form that averages about one and a half feet in height. The bitterbrush population is comprised of mostly mature with moderate to heavy use and good vigor. Decadence of bitterbrush was high in 2000, but has been low in all other sample years. Recruitment of young plants has been marginal over the sample years. Other browse species encountered on the site include small populations of mountain low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *lanceolatus*), snowberry (*Symphoricarpos oreophilus*), serviceberry (*Amelanchier utahensis*) and true mountain mahogany (*Cercocarpus montanus*). Both serviceberry and mahogany are heavily utilized, but neither species is very abundant (Table - Browse Characteristics). It was noted in 2010 that most serviceberry plants were small and found growing in the shelter of other browse species. The adjacent livestock exclosure was similar, but had more highlined, tree-like serviceberry plants within it. The adjacent total exclosure had vigorous browse growth with many large tree-like serviceberry plants within it.

Herbaceous Understory: Grasses on the site are diverse, but are only moderately abundant. The dominant grasses are mutton bluegrass (*Poa fendleriana*), Kentucky bluegrass (*P. pratensis*), needle-and-thread (*Stipa comata*), thickspike wheatgrass (*Agropyron dasystachyum*) and bottlebrush squirreltail (*Sitanion hystrix*). Forbs are very diverse and abundant with perennial forbs dominating the herbaceous understory. The most abundant species include sandwort (*Arenaria* sp.), Hooker balsamroot (*Balsamorhiza hookeri*), silvery lupine (*Lupinus argenteus*), hollyleaf clover (*Trifolium gymnocarpon*) and Hoods phlox (*Phlox hoodii*) (Table - Herbaceous Trends).

Soil: Soils are a dark clay loam to loam with a very strongly acidic soil reaction (pH 5.0). Phosphorus may have limited availability for plant growth and development at 4.5 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Bare ground cover is low on the site with abundant protective cover provided by vegetation and litter cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2005 and 2010.

Trend Assessments

Browse:

- **1982 to 1988 - up (+1):** Mountain big sagebrush density increased by 40% and bitterbrush density increased by 10%, and both populations remained healthy with low decadence and good vigor.
- **1988 to 1995 - stable (0):** Differences in density may be related to the larger sample area used in 1995; therefore, trend was determined using other parameters. There was a slight decrease in the decadence of mountain big sagebrush and bitterbrush, but decadence was already low in each species. Recruitment of young plants decreased from 15% to 8% in mountain big sagebrush and from 15% to 11% in bitterbrush.

- **1995 to 2000 - slightly down (-1):** The density of mountain big sagebrush and cover increased slightly, but density of bitterbrush remained similar and cover decreased 15% to 12%. Decadence of mountain big sagebrush increased from 4% to 22% and recruitment of young plants decreased to 4%. Decadence of bitterbrush increased from 3% to 30% and recruitment of young plants decreased to 9%.
- **2000 to 2005 - slightly down (-1):** The mountain big sagebrush density decreased by 16% from 5,120 plants/acre to 4,300 plants/acre, though cover remained similar. Decadence remained high at 27% of the sagebrush population, poor vigor increased from 5% to 10% and recruitment was low at 5%. Density of bitterbrush has decreased slightly since 2000, but has decreased 13% since 1995 from 2,620 plants/acre to 2,320 plants/acre. Cover of bitterbrush remained similar. Decadence has decreased to 8% in the bitterbrush population.
- **2005 to 2010 - slightly down (-1):** The bitterbrush population remained similar, though cover increased from 12% to 14%. Density of mountain big sagebrush decreased by 14% to 3,700 plants/acre, but there was little change in cover. Decadence of sagebrush decreased to 10%, but poor vigor increased slightly to 13%.

Grass:

- **1982 to 1988 - no trend (NT):** Only quadrat frequency data for grasses are available from 1982, so no trend was given.
- **1988 to 1995 - stable (0):** There was little change in the sum of nested frequency of perennial grasses.
- **1995 to 2000 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased slightly from 1995, but decreased 17% since 1988. However, cover of perennial grasses increased from 7% to 13%.
- **2000 to 2005 - down (-2):** The perennial grass sum of nested frequency decreased by 24% and cover decreased to 6%.
- **2005 to 2010 - stable (0):** The sum of nested frequency of perennial grasses remained similar, though cover increased to 10%.

Forb:

- **1982 to 1988 - no trend (NT):** Only quadrat frequency data for forbs are available from 1982, so no trend was given.
- **1988 to 1995 - slightly up (+1):** The sum of nested frequency of perennial forbs increased by 12%.
- **1995 to 2000 - slightly down (-1):** The perennial forb sum of nested frequency decreased by 14%, but cover increased from 12% to 17%.
- **2000 to 2005 - stable (0):** There was little change in the sum of nested frequency of perennial forbs, but cover increased slightly to 20%.
- **2005 to 2010 - down (-2):** The sum of nested frequency of perennial forbs decreased by 31% and cover decreased to 14%.

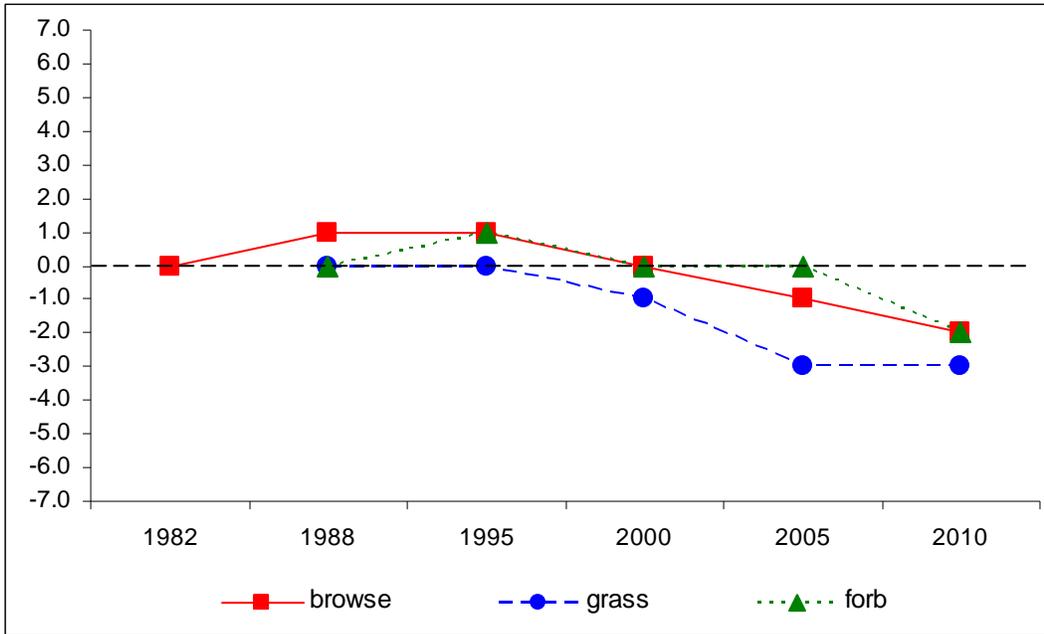
DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

Management unit 9, study no: 2

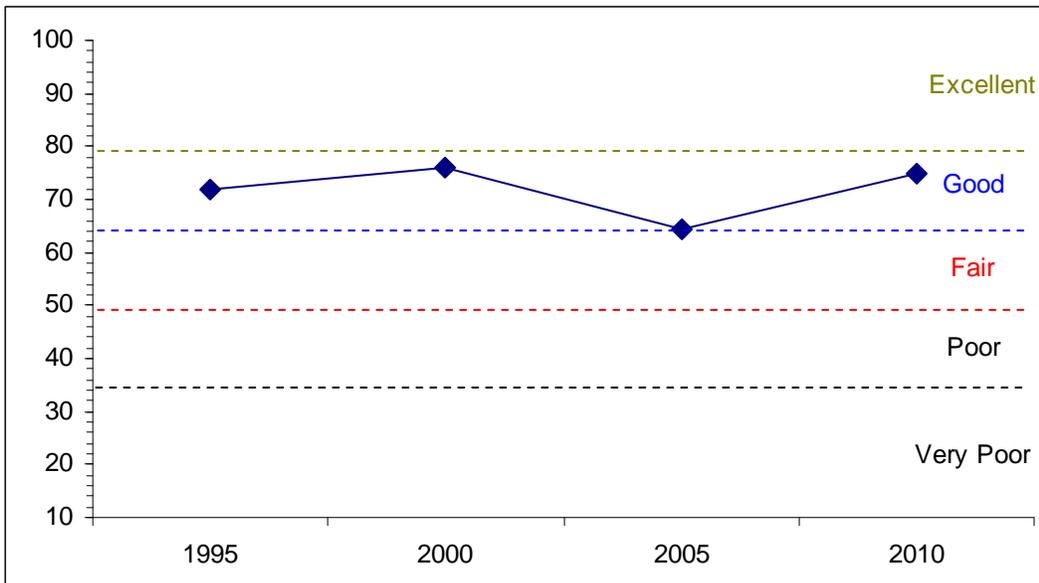
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	30.0	13.9	4.6	13.2	0.0	10.0	0.0	71.7	Good
00	30.0	7.8	2.7	25.5	0.0	10.0	0.0	76.0	Good
05	30.0	8.7	3.1	12.4	0.0	10.0	0.0	64.2	Fair-Good
10	30.0	13.0	2.5	19.5	0.0	10.0	0.0	75.0	Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 9, Study no: 2



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
Management unit 9, Study no: 2



HERBACEOUS TRENDS--

Management unit 09, Study no: 2

T y p e	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
G	Agropyron dasystachyum	a-	c157	c171	b70	b89	1.12	2.01	.39	.93
G	Agropyron spicatum	-	2	7	1	-	.03	.09	.00	.00
G	Bouteloua gracilis	-	3	-	-	1	.00	-	-	.00
G	Bromus anomalus	a-	a-	b15	ab8	b12	-	.52	.22	.10
G	Bromus tectorum (a)	-	3	-	-	-	.00	-	-	-
G	Carex sp.	a-	ab7	ab20	a7	b32	.02	.41	.04	1.07
G	Festuca ovina	3	19	15	5	13	.09	.17	.09	.20
G	Koeleria cristata	b46	a18	a5	a2	a2	.08	.06	.03	.03
G	Poa fendleriana	b173	b154	b206	a86	b180	1.96	7.09	1.47	4.50
G	Poa pratensis	ab22	bc50	a12	d89	c68	.99	.27	1.31	1.88
G	Poa secunda	c77	a1	ab20	b27	b25	.00	.24	.18	.26
G	Sitanion hystrix	c177	b106	a39	a38	a11	1.57	.66	1.00	.12
G	Stipa comata	d90	bc46	ab30	cd61	a8	.30	.62	1.03	.56
G	Stipa lettermani	c76	bc56	ab28	b36	a5	.39	.55	.38	.06
Total for Annual Grasses		0	3	0	0	0	0.00	0	0	0
Total for Perennial Grasses		664	619	568	430	446	6.58	12.74	6.18	9.75
Total for Grasses		664	622	568	430	446	6.59	12.74	6.18	9.75
F	Agoseris glauca	a-	ab4	b9	ab6	ab5	.01	.10	.18	.01
F	Androsace septentrionalis (a)	-	b20	a2	a-	a-	.04	.00	-	-
F	Antennaria rosea	b107	a59	a54	a44	a43	1.67	.99	.82	1.51
F	Arabis sp.	c45	b16	ab9	ab2	a-	.06	.02	.01	-
F	Arenaria sp.	a112	c216	c208	b173	a104	2.62	5.02	4.28	2.05
F	Aster chilensis	a-	b16	ab15	a2	ab8	.04	.10	.00	.02
F	Astragalus convallarius	b15	ab5	ab3	a-	a3	.04	.18	-	.00
F	Astragalus sp.	-	2	5	-	-	.00	.01	-	-
F	Astragalus tenellus	-	6	1	-	-	.06	.03	-	-
F	Balsamorhiza hookeri	ab72	ab72	b87	ab77	a38	.73	1.38	1.67	1.07
F	Castilleja flava	-	2	4	4	-	.00	.01	.01	-
F	Castilleja linariaefolia	b15	ab14	ab5	a1	a-	.03	.06	.01	-
F	Cirsium sp.	-	3	-	-	-	.00	-	-	-
F	Collinsia parviflora (a)	-	b78	a25	c190	a4	.15	.09	1.25	.01
F	Collomia linearis (a)	-	b69	a12	b51	a10	.17	.10	.12	.07
F	Comandra pallida	3	4	9	1	4	.03	.01	.00	.03
F	Crepis acuminata	a-	b17	ab11	a-	a2	1.06	.08	-	.03
F	Cryptantha sp.	-	2	-	-	-	.01	-	-	-
F	Cymopterus sp.	-	-	-	-	2	-	-	-	.01
F	Descurainia pinnata (a)	-	-	-	1	-	-	-	.00	-
F	Draba sp. (a)	-	a1	a4	a1	b21	.00	.01	.00	.08
F	Erigeron eatonii	b100	a42	a50	a26	a23	.13	.22	.17	.08
F	Erigeron flagellaris	-	-	1	2	-	-	.00	.03	-
F	Erigeron pumilus	a-	a-	a5	b19	a-	-	.01	.03	-
F	Eriogonum alatum	-	1	-	1	2	.00	-	.00	.03
F	Eriogonum racemosum	-	-	3	-	-	-	.03	-	-

Type	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
F	<i>Eriogonum umbellatum</i>	58	63	39	39	44	.83	.75	.64	.55
F	<i>Gayophytum ramosissimum</i> (a)	-	3	-	2	-	.00	-	.01	-
F	<i>Hymenoxys acaulis</i>	-	3	-	-	-	.03	-	-	-
F	<i>Ipomopsis aggregata</i>	5	4	-	-	2	.01	-	-	.00
F	<i>Lactuca serriola</i>	a ⁻	a ⁻	a ⁻	a ⁻	b ¹³	-	-	-	.10
F	<i>Lepidium sp. (a)</i>	-	-	-	-	6	-	-	-	.01
F	<i>Lesquerella sp.</i>	-	5	5	3	-	.01	.01	.01	-
F	<i>Lithospermum sp.</i>	a ⁻	a ¹	a ⁻	b ¹⁶	a ³	.00	-	.10	.01
F	<i>Lomatium sp.</i>	a ⁻	bc ¹⁹	b ¹⁷	c ⁴⁰	b ¹²	.09	.09	.25	.05
F	<i>Lupinus argenteus</i>	a ¹⁸	b ⁸⁰	b ⁸²	b ⁸⁴	b ⁶⁸	1.79	2.37	4.55	3.61
F	<i>Lychnis drummondii</i>	a ⁻	a ⁻	a ⁻	b ⁹	ab ⁶	-	-	.03	.04
F	<i>Mertensia sp.</i>	-	8	-	5	1	.02	-	.01	.00
F	<i>Microsteris gracilis (a)</i>	-	-	-	1	-	-	-	.00	-
F	<i>Penstemon humilis</i>	a ⁻	c ⁴⁰	b ¹⁴	b ¹⁴	b ¹⁴	.12	.08	.07	.13
F	<i>Penstemon sp.</i>	c ¹⁰⁰	b ¹⁰	a ⁻	b ¹¹	ab ⁴	.02	-	.07	.01
F	<i>Petrorhiza pumila</i>	c ⁹⁴	bc ⁵⁹	ab ³⁷	a ²⁶	a ¹⁷	1.12	1.08	.72	.53
F	<i>Phlox hoodii</i>	b ⁹³	a ²³	a ⁴⁰	b ¹⁰⁷	b ⁹¹	.10	1.22	2.37	2.07
F	<i>Phlox longifolia</i>	ab ⁵⁰	ab ⁶⁰	b ⁷⁹	a ³⁶	a ⁴⁴	.32	1.31	.11	.46
F	<i>Polygonum douglasii (a)</i>	-	c ¹⁶⁵	a ³	b ⁹⁹	a ⁶	.36	.00	.27	.01
F	<i>Potentilla gracilis</i>	a ¹²	b ²⁸	ab ²³	a ¹⁰	ab ²⁵	.10	.11	.05	.33
F	<i>Sedum lanceolatum</i>	a ⁻	c ⁵¹	b ¹⁷	a ¹	ab ⁴	.25	.11	.00	.02
F	<i>Senecio debilis</i>	c ¹⁰¹	a ³³	a ²⁰	b ⁶³	a ¹³	.08	.21	.80	.25
F	<i>Senecio multilobatus</i>	-	2	4	6	-	.00	.01	.06	-
F	<i>Streptanthus cordatus</i>	-	4	-	-	3	.00	-	-	.00
F	<i>Taraxacum officinale</i>	a ⁻	b ³³	b ¹⁵	b ¹⁶	b ²⁰	.15	.05	.15	.12
F	<i>Trifolium gymnocarpon</i>	14	131	109	136	89	.54	1.13	2.06	.79
F	Unknown forb-annual (a)	-	8	-	-	-	.01	-	-	-
F	Unknown forb-perennial	b ¹¹	a ⁻	a ⁻	c ³⁷	a ⁻	-	-	.22	-
F	<i>Zigadenus elegans</i>	a ⁻	ab ¹⁴	ab ¹¹	b ¹⁷	a ⁴	.05	.19	.17	.06
Total for Annual Forbs		0	344	46	345	47	0.75	0.21	1.67	0.18
Total for Perennial Forbs		1025	1152	991	1034	711	12.23	17.09	19.73	14.07
Total for Forbs		1025	1496	1037	1379	758	12.99	17.31	21.41	14.25

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

BROWSE TRENDS--

Management unit 09, Study no: 2

Type	Species	Strip Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
B	Amelanchier utahensis	1	1	1	1	.00	.15	.38	.63
B	Artemisia tridentata vaseyana	91	94	93	85	22.71	26.12	25.46	24.54
B	Cercocarpus montanus	2	2	2	2	.15	.38	.03	.15
B	Chrysothamnus viscidiflorus lanceolatus	24	18	18	13	.60	1.22	1.08	.57
B	Purshia tridentata	75	70	72	73	14.75	11.55	11.78	14.22
B	Symphoricarpos oreophilus	11	14	12	10	.56	1.50	1.67	1.67
Total for Browse		204	199	198	184	38.78	40.95	40.40	41.78

CANOPY COVER, LINE INTERCEPT--

Management unit 09, Study no: 2

Species	Percent Cover	
	'05	'10
Amelanchier utahensis	.11	.21
Artemisia tridentata vaseyana	29.79	31.39
Cercocarpus montanus	.23	.23
Chrysothamnus viscidiflorus lanceolatus	.66	.98
Purshia tridentata	17.23	19.78
Symphoricarpos oreophilus	1.46	2.04

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 09, Study no: 2

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata vaseyana	1.7	1.5
Purshia tridentate	2.4	2.8

BASIC COVER--

Management unit 09, Study no: 2

Cover Type	Average Cover %					
	'82	'88	'95	'00	'05	'10
Vegetation	11.00	7.25	50.54	61.97	55.36	57.72
Rock	.50	.75	.58	.13	.13	.58
Pavement	4.25	3.25	2.70	1.94	1.63	.93
Litter	63.75	77.25	65.15	71.75	53.91	72.90
Cryptogams	0	0	1.87	1.22	.08	.07
Bare Ground	21.00	11.50	6.45	7.75	7.76	9.60

SOIL ANALYSIS DATA --

Management unit 9, Study no: 2, Study Name: Taylor Mountain

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
9.5	7.2	37.4	36.0	26.6	5.0	4.5	153.6	1.3

PELLET GROUP DATA--

Management unit 09, Study no: 2

Type	Quadrat Frequency			
	'95	'00	'05	'10
Rabbit	2	6	33	7
Grouse	-	-	-	5
Elk	8	3	8	7
Deer	21	20	25	28
Cattle	3	-	10	9

Days use per acre (ha)		
'00	'05	'10
-	-	-
-	-	-
13 (31)	3 (7)	9 (23)
39 (96)	66 (164)	64 (157)
5 (9)	16 (39)	25 (63)

BROWSE CHARACTERISTICS--

Management unit 09, Study no: 2

		Age class distribution			Utilization				
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
<i>Amelanchier utahensis</i>									
82	0	0	0	-	-	0	0	0	-/-
88	0	0	0	-	-	0	0	0	-/-
95	20	0	100	-	-	100	0	0	31/43
00	20	0	100	-	-	0	100	0	30/28
05	20	0	100	-	-	0	0	0	19/31
10	60	33	67	-	-	0	0	0	22/43
<i>Artemisia tridentata vaseyana</i>									
82	4664	26	56	19	266	11	0	0	23/29
88	6531	15	71	13	-	12	1	0	23/26
95	4620	8	87	4	180	72	12	.43	24/39
00	5120	4	74	22	40	10	0	5	27/37
05	4300	5	68	27	-	34	27	10	29/40
10	3700	3	86	10	200	60	10	13	31/47
<i>Cercocarpus montanus</i>									
82	0	0	0	0	-	0	0	0	-/-
88	0	0	0	0	-	0	0	0	-/-
95	40	0	100	0	-	0	100	0	32/41
00	40	0	100	0	-	0	100	0	27/34
05	60	0	0	100	-	33	67	0	29/34
10	60	0	100	0	-	33	67	0	25/42
<i>Chrysothamnus viscidiflorus lanceolatus</i>									
82	1532	39	61	0	-	0	0	0	17/14
88	2599	41	59	0	-	3	0	0	10/11
95	600	0	100	0	-	0	0	0	11/13
00	580	0	100	0	-	0	3	0	15/15
05	500	4	92	4	40	16	0	0	14/16
10	320	0	94	6	-	6	19	13	15/16

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<i>Purshia tridentata</i>										
82	2065	13	84	3	66	45	19	0	13/27	
88	2265	15	71	15	-	68	15	0	16/24	
95	2620	11	85	3	-	57	36	2	16/42	
00	2500	9	61	30	-	23	52	12	16/37	
05	2320	9	83	8	-	12	79	2	17/37	
10	2380	7	92	1	-	46	35	0	19/43	
<i>Symphoricarpos oreophilus</i>										
82	266	0	100	0	-	0	0	0	19/11	
88	532	25	63	12	-	0	0	13	14/16	
95	380	11	89	0	80	0	0	0	14/37	
00	320	6	88	6	20	13	0	0	16/39	
05	360	6	94	0	-	0	0	0	15/29	
10	260	23	77	0	-	0	0	0	19/37	