

## HIDEOUT MESA - TREND STUDY NO. 13A-15-09

Vegetation Type: Sagebrush-Grass Burn

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: [Mountain Loam \(Oak\), R048AY415UT](#)

Land Ownership: US Forest Service

Elevation: 7,100 ft (2,164 m)

Aspect: Southeast

Slope: 3%

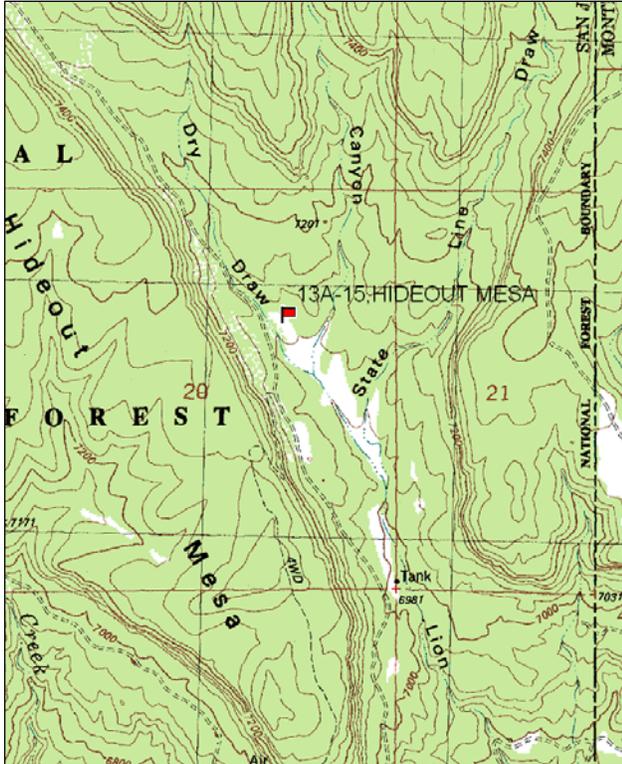
Transect bearing: 155 degrees magnetic

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

### Directions:

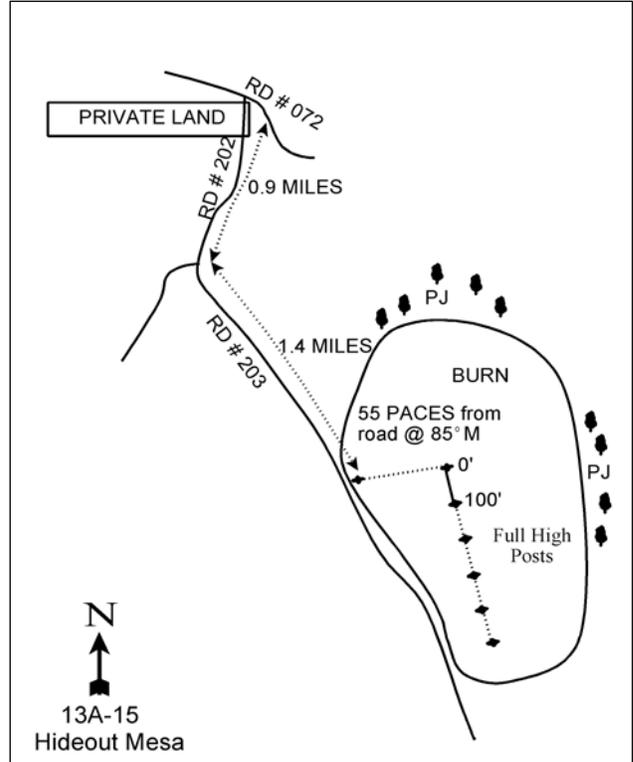
From LaSal Junction take Highway 46 east to mile marker #16. From mile marker #16 travel east 0.10 miles and turn left (north). Proceed 1.2 miles to Forest Service Road #072 and turn right (fork heads toward Buckeye Reservoir). Continue 5.2 miles to a cattle guard. Continue 1.9 miles and turn right (south) on F. S. Road #202. Continue 0.90 miles and take on F. S. Road #203. Proceed 1.4 miles to a burn on the left side of the road. The baseline can be found by walking east several hundred feet out into the burn. The 0 foot stake is marked by browse tag #25.

### Map Name: Ray Mesa



Township: 28S, Range: 26E, Section: 20

### Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 668249 E 4247055 N

## HIDEOUT MESA - TREND STUDY NO. 13A-15

### Site Information

Site Description: The study is located within the southeast lower benches of the La Sal Mountains, just west of the Colorado-Utah state line. The site is in the bottom of one of the many shallow canyons in the area which are surrounded by rugged flat-topped mesas. This study is inside a shallow canyon bottom of sagebrush and grass, within a moderately large opening of thick pinyon-juniper woodland in association with scattered Ponderosa pine. The area burned around 1994 and in 2002 a fire came within one-third of mile to the study site. This area is managed by the Forest Service and is part of the South Paradox grazing allotment. Pellet group data shows decreases in estimated elk use on the site since 1999. Estimated deer use has been light since 1999. Estimated cattle use has been moderate to heavy on the site since 1999. There are two well worn livestock trails that run through the site.

Browse: The key browse species on the site is mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), which has been increasing in cover since 1994 (Table - Browse Trends). Mountain big sagebrush vigor and decadence had been good over the life of the study. Recruitment of young mountain big sagebrush plants has fluctuated over the sample year, but has been mostly good. Utilization of mountain big sagebrush has been mostly light since 1994 (Table Browse Characteristics).

Other common browse species on this site are fringed sagebrush (*Artemisia frigida*), stickleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*), and broom snakeweed (*Gutierrezia sarothrae*). There were several large mats of what appeared to be rhizomatous fringed sagebrush sampled in 2009. It is possible that fringed sagebrush may be hybridizing with Louisiana sagebrush (*Artemisia ludoviciana*) on this site. There are also a few scattered of Utah serviceberry (*Amelanchier utahensis*), fourwing saltbush (*Atriplex canescens*), and rubber rabbitbrush (*Chrysothamnus nauseosus*) on the site.

Herbaceous Understory: The herbaceous understory is diverse, though it has diminished since the outset of the study. There is a medley of perennial grasses on the site, with the dominant perennial species being needle-and-thread (*Stipa comata*). The dominant species on the site is the annual species, cheatgrass (*Bromus tectorum*). Perennial grass species decreased substantially and cheatgrass increased substantially between 1999 and 2004, allowing cheatgrass to gain dominance on the site. Cheatgrass decreased in frequency and cover in 2009, but maintained dominance on the site. The herbaceous understory has many perennial forb species, but only scarlet globemallow (*Sphaeralcea coccinea*) is sampled more than rarely and provides notable cover. Annual forb species on the site have steadily decreased in frequency and cover since 1994 (Table - Herbaceous Trends).

Soil: The shallow and narrow canyon bottom has a sandy clay loam soil with a moderately shallow rooting depth and a neutral pH (Table - Soil Analysis Data). Past erosion problems are evident due to a large gully nearby that has been active historically. The site has a fairly good vegetation and litter cover, with moderate bare ground cover since 1994 (Table - Basic Cover). The soil erosion condition was classified as slight in 2004, due primarily to surface litter movement, pedestaling of plants, flow patterns, and gullies. Much of the erosion was attributed to a high intensity storm a few weeks prior to sampling. The soil erosion condition was classified as stable in 2009.

### Trend Assessments

Browse:

- **1994 to 1999 - up (+2):** Density of the primary browse, mountain big sagebrush, increased 41% to 6,500 plants/acre, mostly due to a large increase in the recruitment of young plants which comprised 54% of the population. Mountain big sagebrush vigor and decadence remained good.

- **1999 to 2004 - slightly down (-1):** Density of mountain big sagebrush decreased by 23% to 5,000 plants/acre, primarily due to a large decrease in young sagebrush plants. Density of mature mountain big sagebrush plants increased. Cover of mountain big sagebrush increased from 10% to 13%.
- **2004 to 2009 - up (+2):** Mountain big sagebrush density increased 49% to 7,460 plants/acre, and cover increased to over 16%. Density of both mature and young mountain big sagebrush plants increased, and decadence and poor vigor remained low in the population. Cover and density of fringed sagebrush also increased markedly, but this species may be hybridizing with the forb species, Louisiana sagebrush.

Grass:

- **1994 to 1999 - stable (0):** There was little change in the sum of nested frequency or cover of perennial grasses. There was a significant increase in the nested frequency of cheatgrass and Sandberg bluegrass (*Poa secunda*). There was a significant decrease in nested frequency of prairie junegrass (*Koeleria cristata*).
- **1999 to 2004 - down (-2):** The sum of nested frequency of perennial grasses decreased by 51% and cover decreased from 13% to 5%. There was a significant decrease in the nested frequency of western wheatgrass (*Agropyron smithii*), prairie junegrass, mutton bluegrass (*Poa fendleriana*), and Sandberg bluegrass. There was a significant increase in the nested frequency of cheatgrass, and cover increased from 3% to 12%.
- **2004 to 2009 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased by a further 15%, though cover increased slightly. There was a significant decrease in the nested frequency of cheatgrass and western wheatgrass. Cover of cheatgrass decreased to 4%.

Forb:

- **1994 to 1999 - down (-2):** The sum of nested frequency of perennial forbs decreased by 48%, and cover decreased from 5% to 4%. There was a significant decrease in nested frequency of bastard toadflax (*Comandra pallida*), low fleabane (*Erigeron pumilus*), hoary aster (*Macaeranthera canescens*), mat penstemon (*Penstemon caespitosus*), and longleaf phlox (*Phlox longifolia*).
- **1999 to 2004 - stable (0):** There was little change in the sum of nested frequency or cover of perennial forbs. There was a significant increase in the nested frequency of mat penstemon.
- **2004 to 2009 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased by 17%, though cover increased to 5%. There was a significant decrease in the nested frequency of low fleabane and mat penstemon.

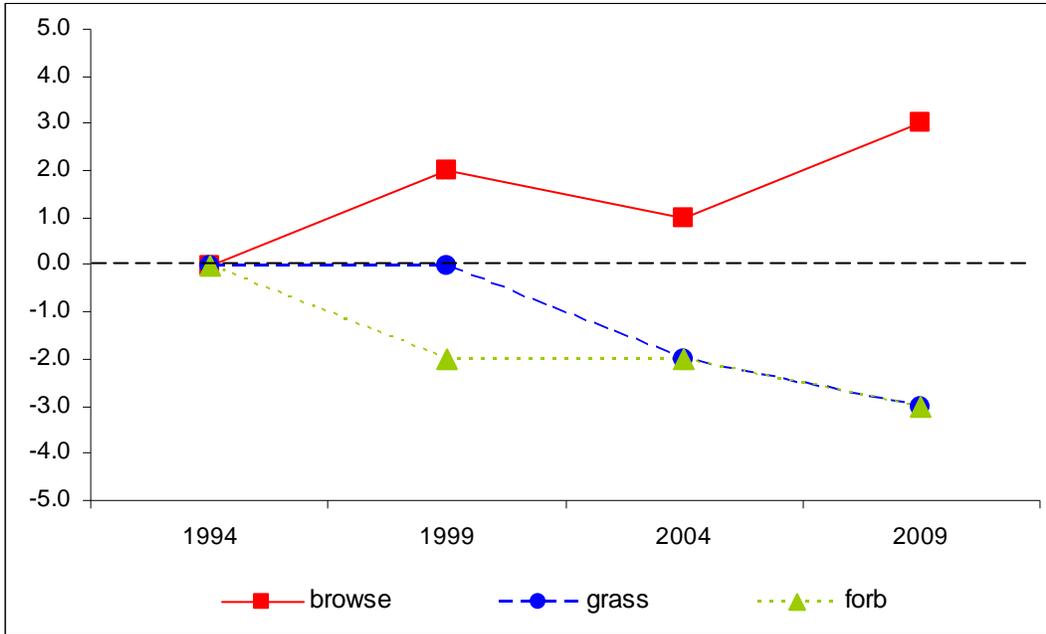
DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

Management unit 13A, study no: 15

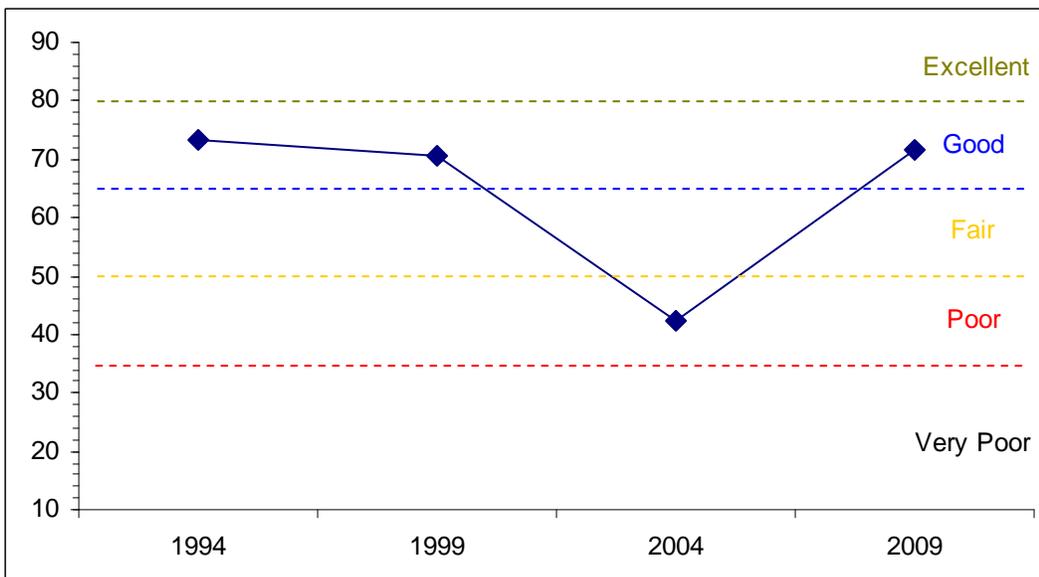
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94	15.1	10.8	12.0	25.4	0.0	10.0	0.0	<b>73.2</b>	Good
99	13.7	11.4	15.0	25.0	-2.1	7.7	0.0	<b>70.7</b>	Good
04	18.7	11.6	4.1	9.2	-9.2	7.9	0.0	<b>42.3</b>	Poor
09	26.8	12.3	13.4	12.2	-3.2	10.0	0.0	<b>71.5</b>	Good

## Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--  
Management unit 13A, Study no: 15



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL  
Management unit 13A, Study no: 15



HERBACEOUS TRENDS--

Management unit 13A, Study no: 15

T y p e	Species	Nested Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
G	Agropyron intermedium	a-	a-	b20	a9	-	-	.10	.03
G	Agropyron smithii	c276	c252	b75	a22	4.98	3.68	.52	.17
G	Bouteloua gracilis	58	50	52	37	1.16	.72	.85	.31
G	Bromus inermis	-	-	-	5	-	-	-	.15
G	Bromus tectorum (a)	a26	b127	c269	b121	.04	2.81	12.30	4.21
G	Carex sp.	1	5	10	4	.00	.02	.05	.03
G	Hilaria jamesii	6	4	5	-	.19	.03	.01	-
G	Koeleria cristata	c216	b169	a35	a24	3.82	4.17	.35	.42
G	Oryzopsis hymenoides	3	9	11	-	.18	.09	.01	-
G	Poa fendleriana	ab29	b45	a3	ab26	.12	.46	.00	.66
G	Poa pratensis	5	-	-	-	.01	-	-	-
G	Poa secunda	a-	c56	b19	b23	-	.59	.31	.23
G	Sitanion hystrix	c54	bc25	ab16	a4	.95	.19	.25	.06
G	Sporobolus cryptandrus	-	9	1	1	-	.04	.00	.03
G	Stipa comata	a51	ab86	b102	b143	1.24	2.47	2.12	3.98
G	Vulpia octoflora (a)	3	4	3	-	.00	.03	.01	-
Total for Annual Grasses		29	131	272	121	0.04	2.85	12.31	4.21
Total for Perennial Grasses		699	710	349	298	12.69	12.50	4.61	6.10
Total for Grasses		728	841	621	419	12.74	15.35	16.92	10.32
F	Agoseris glauca	-	2	1	-	-	.00	.01	-
F	Alyssum alyssoides (a)	4	-	1	-	.01	-	.00	-
F	Androsace septentrionalis (a)	a-	b45	a2	a-	-	.10	.00	-
F	Artemisia ludoviciana	29	23	13	25	.53	.57	.39	1.08
F	Astragalus miser	9	3	-	-	.39	.03	-	-
F	Calochortus nuttallii	-	-	3	1	-	-	.01	.03
F	Castilleja linariaefolia	6	-	-	1	.06	-	-	.15
F	Chenopodium fremontii (a)	a-	a-	b21	a-	-	-	.04	-
F	Chenopodium leptophyllum(a)	-	-	3	-	-	-	.01	-
F	Cirsium undulatum	4	1	1	-	.03	.00	.03	-
F	Collinsia parviflora (a)	b39	a1	a2	a1	.07	.00	.00	.00
F	Comandra pallida	b94	a-	a-	a-	.69	-	-	-
F	Crepis acuminata	-	1	5	1	-	.03	.09	.00
F	Cryptantha sp.	6	-	13	6	.02	-	.07	.06
F	Cymopterus sp.	4	-	-	-	.00	-	.00	-
F	Descurainia pinnata (a)	3	-	1	-	.01	-	.00	-
F	Draba nemorosa (a)	b75	ab11	a7	a-	.16	.03	.01	-
F	Erigeron divergens	-	-	8	7	-	-	.06	.07
F	Erigeron flagellaris	-	-	1	3	-	-	.03	.06
F	Erigeron pumilus	c42	b14	b17	a-	.09	.08	.11	-
F	Erigeron sp.	8	-	-	-	.02	-	-	-
F	Eriogonum racemosum	11	6	2	3	.17	.05	.01	.06
F	Gayophytum ramosissimum(a)	4	-	5	-	.00	-	.01	-
F	Gilia sp. (a)	b148	a1	a5	a-	.32	.00	.01	-

Type	Species	Nested Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
F	<i>Grindelia squarrosa</i>	<sub>b</sub> 41	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	.15	-	-	-
F	<i>Heterotheca villosa</i>	12	11	5	13	.08	.36	.38	.15
F	<i>Ipomopsis aggregata</i>	10	-	-	-	.02	-	-	-
F	<i>Lactuca serriola</i>	-	-	-	1	-	-	-	.03
F	<i>Lappula occidentalis</i> (a)	<sub>a</sub> 13	<sub>a</sub> 12	<sub>b</sub> 61	<sub>a</sub> 10	.04	.03	.32	.20
F	<i>Linum lewisii</i>	4	7	4	11	.01	.06	.03	.10
F	<i>Lupinus</i> sp.	4	1	5	-	.01	.03	.01	-
F	<i>Machaeranthera canescens</i>	<sub>b</sub> 27	<sub>a</sub> 6	<sub>a</sub> 2	<sub>a</sub> 2	.06	.01	.00	.03
F	<i>Microsteris gracilis</i> (a)	<sub>a</sub> 38	<sub>b</sub> 114	<sub>a</sub> 10	<sub>a</sub> 13	.09	.36	.01	.03
F	<i>Oenothera pallida</i>	5	7	1	-	.03	.03	.00	-
F	<i>Orthocarpus</i> sp. (a)	-	4	-	-	-	.00	-	-
F	<i>Penstemon caespitosus</i>	<sub>b</sub> 14	<sub>a</sub> -	<sub>b</sub> 18	<sub>a</sub> 5	.70	-	.60	.00
F	<i>Penstemon comarrhenus</i>	2	5	7	5	.00	.01	.28	.76
F	<i>Penstemon</i> sp.	<sub>b</sub> 20	<sub>b</sub> 29	<sub>a</sub> -	<sub>a</sub> -	.07	1.27	-	-
F	<i>Phlox longifolia</i>	<sub>b</sub> 36	<sub>a</sub> 19	<sub>a</sub> 10	<sub>a</sub> 3	.08	.03	.02	.00
F	<i>Plantago patagonica</i> (a)	<sub>c</sub> 77	<sub>b</sub> 50	<sub>ab</sub> 29	<sub>a</sub> 4	.32	.10	.16	.01
F	<i>Polygonum douglasii</i> (a)	<sub>ab</sub> 28	<sub>b</sub> 38	<sub>a</sub> 3	<sub>a</sub> 6	.05	.09	.01	.01
F	<i>Ranunculus testiculatus</i> (a)	<sub>a</sub> 2	<sub>a</sub> -	<sub>a</sub> 3	<sub>b</sub> 15	.01	-	.00	.03
F	<i>Sphaeralcea coccinea</i>	129	132	125	115	1.72	1.23	1.68	2.36
F	<i>Tragopogon dubius</i>	-	-	3	8	-	-	.04	.07
F	<i>Trifolium</i> sp.	11	2	4	-	.02	.00	.01	-
F	<i>Zigadenus paniculatus</i>	6	8	12	7	.01	.02	.02	.07
Total for Annual Forbs		431	276	153	49	1.09	0.74	0.63	0.29
Total for Perennial Forbs		534	277	260	217	5.02	3.86	3.93	5.12
Total for Forbs		965	553	413	266	6.12	4.60	4.56	5.42

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

BROWSE TRENDS--

Management unit 13A, Study no: 15

Type	Species	Strip Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
B	Amelanchier utahensis	1	1	1	1	.00	.03	.15	.15
B	Artemisia frigida	54	49	49	62	2.47	.89	1.78	5.35
B	Artemisia nova	0	0	0	0	-	-	-	.15
B	Artemisia tridentata tridentata	0	0	0	1	-	-	-	.00
B	Artemisia tridentata vaseyana	62	70	70	78	9.93	10.20	13.13	16.44
B	Atriplex canescens	4	7	5	2	.15	.02	.18	.18
B	Chrysothamnus depressus	0	1	3	3	-	.03	.00	.15
B	Chrysothamnus nauseosus	2	1	2	2	.00	.00	.15	.03
B	Chrysothamnus viscidiflorus viscidiflorus	24	27	33	32	.69	.96	1.93	1.70
B	Coryphantha vivipara arizonica	0	3	2	1	-	.00	.00	.03
B	Eriogonum microthecum	3	5	5	3	.00	.00	.04	.03
B	Gutierrezia sarothrae	14	15	14	10	.59	.25	.37	.51
B	Opuntia sp.	7	7	5	2	.00	.15	.00	.00
B	Pinus edulis	0	1	1	1	-	.00	.00	.15
B	Unknown browse	0	0	0	6	-	-	-	.15
Total for Browse		171	187	190	204	13.87	12.53	17.76	25.04

CANOPY COVER, LINE INTERCEPT--

Management unit 13A, Study no: 15

Species	Percent Cover	
	'04	'09
Amelanchier utahensis	.21	.21
Artemisia frigida	2.34	5.11
Artemisia tridentata tridentata	-	.45
Artemisia tridentata vaseyana	15.91	17.61
Atriplex canescens	.48	.21
Chrysothamnus depressus	.03	.11
Chrysothamnus nauseosus	.13	.23
Chrysothamnus viscidiflorus viscidiflorus	2.23	1.73
Eriogonum microthecum	.05	.23
Gutierrezia sarothrae	.56	.41
Opuntia sp.	.11	.06
Pinus edulis	.46	.70
Unknown browse	-	.16

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 13A, Study no: 15

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata vaseyana	1.7	1.5

**BASIC COVER--**

Management unit 13A, Study no: 15

Cover Type	Average Cover %			
	'94	'99	'04	'09
Vegetation	29.71	35.97	37.65	40.79
Rock	.06	.89	.03	.06
Pavement	.04	.13	.06	0
Litter	43.97	32.96	43.00	47.83
Cryptogams	1.32	9.93	1.82	1.71
Bare Ground	32.34	32.75	33.37	25.22

**SOIL ANALYSIS DATA --**

Management unit 13A, Study no: 15, Study Name: Hideout Mesa

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
10	7.2	50.9	28.6	20.6	2.2	18.6	227.2	0.5

**PELLET GROUP DATA--**

Management unit 13A, Study no: 15

Type	Quadrat Frequency				Days use per acre (ha)		
	'94	'99	'04	'09	'99	'04	'09
Rabbit	42	11	2	16	-	-	-
Elk	17	20	1	5	36 (89)	11 (27)	6 (15)
Deer	6	17	2	-	11 (27)	-	3 (8)
Cattle	-	5	4	14	50 (124)	22 (54)	38 (93)

**BROWSE CHARACTERISTICS--**

Management unit 13A, Study no: 15

		Age class distribution					Utilization			
Y	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<b>Amelanchier utahensis</b>										
94	<b>20</b>	0	100	-	-	0	0	0	20/24	
99	<b>20</b>	0	100	-	-	0	100	0	30/28	
04	<b>20</b>	0	100	-	-	0	100	0	28/26	
09	<b>40</b>	0	100	-	-	0	100	0	33/33	
<b>Artemisia frigida</b>										
94	<b>3660</b>	13	84	3	40	0	0	0	8/11	
99	<b>5040</b>	24	74	2	160	8	.79	1	6/6	
04	<b>3260</b>	4	96	1	1300	5	14	1	12/10	
09	<b>7000</b>	11	87	1	6240	.28	0	3	12/13	
<b>Artemisia tridentata tridentata</b>										
94	<b>0</b>	0	0	-	-	0	0	0	-/-	
99	<b>0</b>	0	0	-	-	0	0	0	-/-	
04	<b>0</b>	0	0	-	-	0	0	0	-/-	
09	<b>20</b>	0	100	-	-	0	0	0	70/76	

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<i>Artemisia tridentata vaseyana</i>									
94	<b>4600</b>	27	55	17	9000	4	0	19	20/24
99	<b>6500</b>	54	34	13	200	16	2	2	24/31
04	<b>5000</b>	9	78	13	13440	17	.40	4	19/26
09	<b>7460</b>	33	55	12	20	15	13	11	20/29
<i>Atriplex canescens</i>									
94	<b>80</b>	0	100	-	-	0	0	0	21/16
99	<b>140</b>	29	71	-	60	29	29	0	22/20
04	<b>100</b>	0	100	-	-	60	40	0	27/24
09	<b>40</b>	0	100	-	-	0	0	0	26/24
<i>Chrysothamnus depressus</i>									
94	<b>0</b>	0	0	-	-	0	0	0	-/-
99	<b>60</b>	0	100	-	-	0	0	0	4/12
04	<b>200</b>	0	100	-	-	0	0	0	4/7
09	<b>60</b>	0	100	-	-	0	0	0	6/10
<i>Chrysothamnus nauseosus</i>									
94	<b>40</b>	0	100	0	-	0	0	0	29/32
99	<b>20</b>	0	100	0	-	0	0	0	27/32
04	<b>60</b>	0	100	0	-	0	0	0	22/25
09	<b>40</b>	0	50	50	-	0	0	0	34/50
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
94	<b>1180</b>	12	88	0	180	0	0	3	7/15
99	<b>1600</b>	14	86	0	-	4	0	0	6/10
04	<b>1920</b>	1	99	0	-	1	0	0	8/11
09	<b>1840</b>	0	96	4	100	0	4	14	8/14
<i>Coryphantha vivipara arizonica</i>									
94	<b>0</b>	0	0	-	-	0	0	0	-/-
99	<b>60</b>	0	100	-	-	0	0	0	3/4
04	<b>40</b>	0	100	-	-	0	0	0	3/4
09	<b>60</b>	0	100	-	20	0	0	0	3/6
<i>Eriogonum microthecum</i>									
94	<b>120</b>	0	100	-	-	0	0	0	9/11
99	<b>300</b>	33	67	-	-	27	0	0	7/6
04	<b>200</b>	0	100	-	-	0	0	0	7/8
09	<b>100</b>	0	100	-	-	0	0	0	12/7
<i>Gutierrezia sarothrae</i>									
94	<b>840</b>	5	86	10	120	0	0	5	7/11
99	<b>720</b>	14	81	6	-	0	0	0	6/6
04	<b>580</b>	7	93	0	-	0	0	0	7/9
09	<b>420</b>	5	95	0	-	0	0	0	9/10

		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>Opuntia</i> sp.										
94	<b>160</b>	38	63	-	-	13	0	0	3/9	
99	<b>140</b>	14	86	-	20	0	0	0	4/10	
04	<b>160</b>	13	88	-	-	0	0	0	4/7	
09	<b>60</b>	0	100	-	-	0	0	67	4/13	
<i>Pinus edulis</i>										
94	<b>0</b>	0	0	-	-	0	0	0	-/-	
99	<b>20</b>	0	100	-	-	0	0	0	-/-	
04	<b>20</b>	0	100	-	-	0	0	0	-/-	
09	<b>20</b>	0	100	-	-	0	0	0	-/-	
<i>Symphoricarpos oreophilus</i>										
94	<b>0</b>	0	0	-	-	0	0	0	-/-	
99	<b>0</b>	0	0	-	-	0	0	0	-/-	
04	<b>0</b>	0	0	-	-	0	0	0	-/-	
09	<b>0</b>	0	0	-	-	0	0	0	30/59	
Unknown browse										
94	<b>0</b>	0	0	-	-	0	0	0	-/-	
99	<b>0</b>	0	0	-	-	0	0	0	-/-	
04	<b>0</b>	0	0	-	-	0	0	0	-/-	
09	<b>120</b>	0	100	-	-	0	0	0	26/21	