

BRAZIER CANYON - TREND STUDY NO. 2-33-11

Vegetation Type: Black Sagebrush

Range Type: Crucial Deer Winter

NRCS Ecological Site Description: [Upland Shallow Loam \(Utah Juniper\), R025XY324UT](#)

Land Ownership: BLM

Elevation: 6,800 ft (2,073 m)

Aspect: West

Slope: 52%

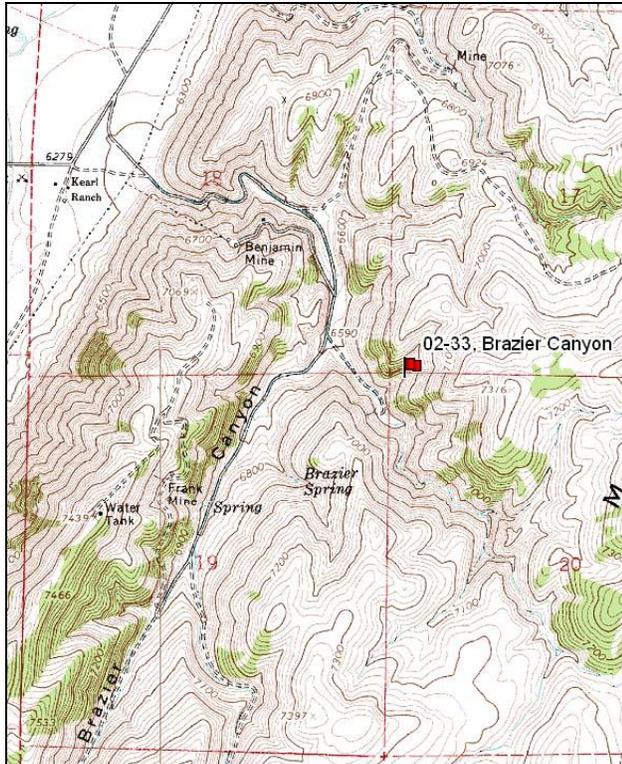
Transect bearing: 162° magnetic

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

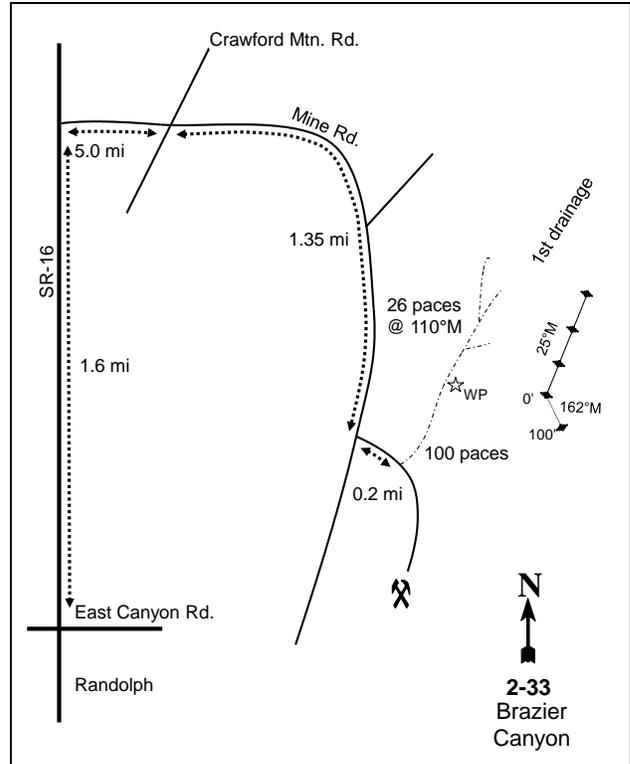
Directions:

From North Main and East Canyon Road (100 North) in Randolph proceed north on U-16 for 1.60 miles, and turn right (east) onto Crawford Mountain Road. Continue east for 5.0 miles to a two way stop. Turn right (i.e. southeast) and proceed 1.35 miles on this road to where there is a small canyon on the left with a road going up it. Turn left (i.e. east) onto this road, and proceed 0.2 miles to the first ravine on the left (i.e., north) side of the road. Walk up ravine 100 paces to a witness post. From the witness post walk 26 paces at a bearing of 110 degrees magnetic to the 0-foot baseline stake. The 0-foot stake is marked by a browse tag, #7978. The rest of the baseline runs off the 0-foot baseline stake at a bearing of 25 degrees magnetic.

Map Name: Rex Peak



Diagrammatic Sketch:



Township: 11N Range: 8E Section: 20

GPS: NAD 83, UTM 12S 494084 E 4615031 N

BRAZIER CANYON - TREND STUDY NO. 2-33

Site Information

Site Description: This study is located on the northeastern side of the Crawford Mountain and is located in a tributary of Brazier Canyon. The area is administered by the Bureau of Land Management (BLM) as part of the Cumberland/Uinta allotment. The vegetation is comprised of a black sagebrush (*Artemisia nova*) and perennial grass community with scattered Utah juniper (*Juniperus osteosperma*) trees. This area is considered crucial winter range for deer. Cattle graze the area in the spring, but typically do not use the steep slopes where the study is located. Deer pellet groups have been sampled in high abundance since 2001. Deer carcasses were found near the study in 1984 and 2011, and two deer antler sheds were found in 1996. Elk and cattle sign has been minimal since 2001 (Table - Pellet Group Data).

Browse: The preferred browse species is black sagebrush, which forms a moderately dense and uniform stand. The black sagebrush population is mostly mature, but was mostly decadent in 1984. Utilization of black sagebrush has been generally light to moderate, except in 1990 when it was mostly moderate. Recruitment of young black sagebrush has been nominal over the sample years, though recruitment was good in 2011. Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is far less abundant and is hybridizing with black sagebrush. The Wyoming big sagebrush population is mostly mature, with moderate decadence throughout the duration of the study. Utilization of Wyoming big sagebrush has been mostly moderate over the sample years. Recruitment of young Wyoming big sagebrush has been minimal throughout the sample years, though recruitment was good in 2011. The sagebrush population decreased substantially between the 2001 and 2006 sample years, likely partially due to drought. Other preferred shrubs include winterfat (*Ceratoides lanata*) and Saskatoon serviceberry (*Amelanchier alnifolia*), which have occurred in relatively small numbers. Winterfat displayed good, vigorous growth in 2011. Serviceberry received moderate to heavy use in 2011 (Table - Browse Characteristics). There is a sparse population of Utah juniper that has remained relatively stable since 1996 (Table - Point-Quarter Tree Data), but cover has steadily increased since 1996 (Table - Browse Trends).

Herbaceous Understory: Perennial grasses are the most abundant herbaceous component. Within that category, bluebunch wheatgrass (*Agropyron spicatum*) and Sandberg bluegrass (*Poa secunda*) are the most productive. Forb composition is moderately diverse, but not very abundant. Hoods phlox (*Phlox hoodii*) is the most abundant perennial forb on the study site (Table - Herbaceous Trends).

Soil: The soil is part of the Rexmount-Rock outcrop complex in the Rexmont component, which occurs on mountainsides. The parent material consists of residuum weathered from limestone (Soil Survey Staff 2011). The soil is a loam texture with a soil reaction that is slightly alkaline (pH 7.7) (Table - Soil Analysis Data). Bare ground cover is low with a high amount of pavement, vegetation, and litter providing protective ground cover (Table - Basic cover). There is some localized soil movement, which is inevitable due to the steep slope. The soil erosion condition was classified to be slight in 2001, but stable in 2006 and 2011.

Trend Assessments

Browse:

- **1984 to 1990 - slightly down (-1):** The density for black sagebrush decreased 17% from 14,131 plants/acre to 11,665 plants/acre. Decadence within the black sagebrush population decreased from 57% to 46%. The black sagebrush population increased in poor vigor from 2% to 4%. Young black sagebrush recruitment increased from 4% to 9%.
- **1990 to 1996 - stable (0):** Differences in density may be related to the larger sample area used in 1996; therefore, trend was determined using other parameters. Decadence within the black sagebrush population decreased to 14%. Poor vigor in the black sagebrush population decreased to 2%.

- **1996 to 2001 - stable (0):** The density for black sagebrush increased 8% from 5,340 plants/acre to 5,760 plants/acre. Decadence within the black sagebrush population decreased to 13%. The black sagebrush population increased in poor vigor to 6%.
- **2001 to 2006 - slightly down (-1):** The density for black sagebrush remained similar at 5,680 plants/acre. Decadence within the black sagebrush population increased to 30%. The black sagebrush population increased in poor vigor to 20%.
- **2006 to 2011 - slightly down (-1):** The density for black sagebrush decreased 15% to 4,840 plants/acre. Decadence within the black sagebrush population decreased to 23%, and poor vigor decreased to 19%. Young black sagebrush recruitment increased from 5% to 15%.

Grass:

- **1984 to 1990 - stable (0):** The sum of nested frequency for perennial grasses remained similar. Sandberg bluegrass increased significantly in nested frequency, and became the dominant perennial grass species. Bluebunch wheatgrass had a significant decrease in nested frequency.
- **1990 to 1996 - slightly up (+1):** The sum of nested frequency for perennial grasses increased 17%. Mutton bluegrass (*Poa fendleriana*) had a significant increase in nested frequency. Sandberg bluegrass maintained dominance within the perennial grass community, and had a cover of 9%.
- **1996 to 2001 - stable (0):** The sum of nested frequency for perennial grasses remained similar. Bluebunch wheatgrass became the most abundant perennial grass species, and increased significantly in nested frequency. Bluebunch wheatgrass increased in cover from 7% to 11%. Sandberg bluegrass had a significant decrease in nested frequency, and decreased in cover to 4%.
- **2001 to 2006 - stable (0):** The sum of nested frequency for perennial grasses remained similar. Bluebunch wheatgrass increased in cover to 12%.
- **2006 to 2011 - stable (0):** The sum of nested frequency for perennial grasses remained similar. Indian ricegrass (*Oryzopsis hymenoides*) was sampled for the first time and provided 1% cover. Bluebunch wheatgrass occurred frequently and increased in cover to 16%. The weedy annual species cheatgrass (*Bromus tectorum*) increased significantly in nested frequency, and increased in cover from 1% to 3%.

Forb:

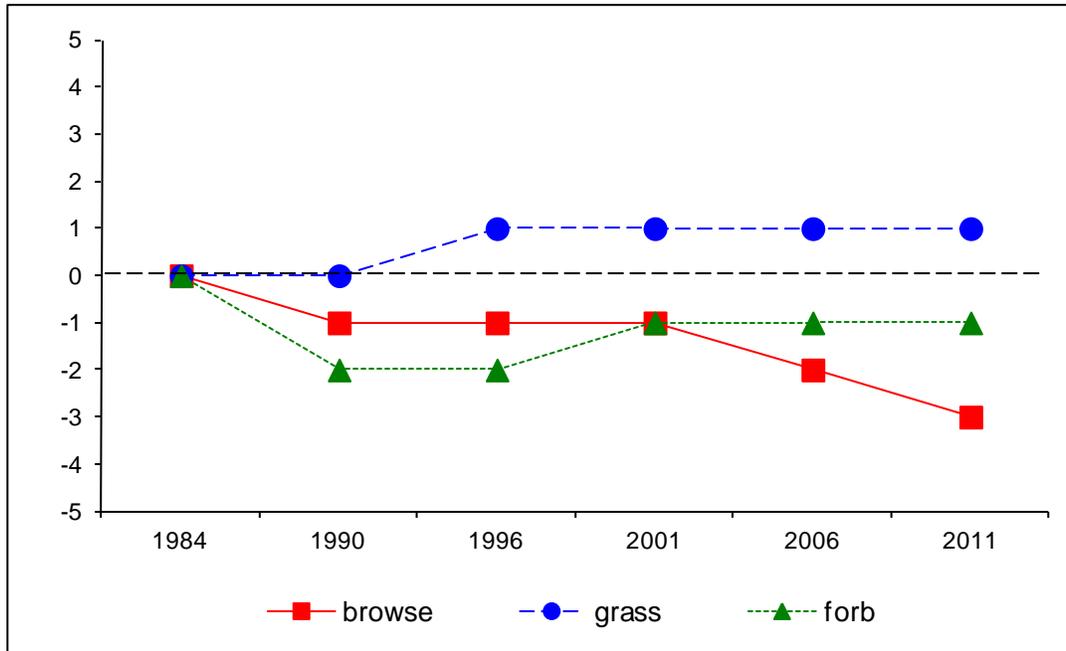
- **1984 to 1990 - down (-2):** The sum of nested frequency for perennial forbs decreased 31%. Longleaf phlox (*Phlox longifolia*), cryptantha (*Cryptantha sp.*), low penstemon (*Penstemon humilis*), timber poisonvetch (*Astragalus convallarius*), and milkvetch (*Astragalus sp.*) decreased significantly in nested frequency.
- **1990 to 1996 - stable (0):** The sum of nested frequency for perennial forbs remained similar. Hoods phlox and timber poisonvetch increased significantly in nested frequency, and had cover of 1% and less than 1%, respectively. Spreading fleabane (*Erigeron divergens*) decreased significantly in nested frequency. Fendler sandwort (*Arenaria fendleri*) had a cover of 2%.
- **1996 to 2001 - slightly up (+1):** The sum of nested frequency for perennial forbs increased 13%. The increase is not due to any one specific species, and is likely due to small, accumulative increases in nested frequency across the perennial forb community. However, Hoods phlox increased in cover to 3%.
- **2001 to 2006 - stable (0):** The sum of nested frequency for perennial forbs remained similar. Milkvetch (*Astragalus sp.*) increased significantly in nested frequency, and increased in cover to near 1%.
- **2006 to 2011 - stable (0):** The sum of nested frequency for perennial forbs remained similar. Longleaf phlox had a significant decrease in nested frequency, and decreased in cover from 1% to less than 1%.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
 Management unit 2, study no: 33

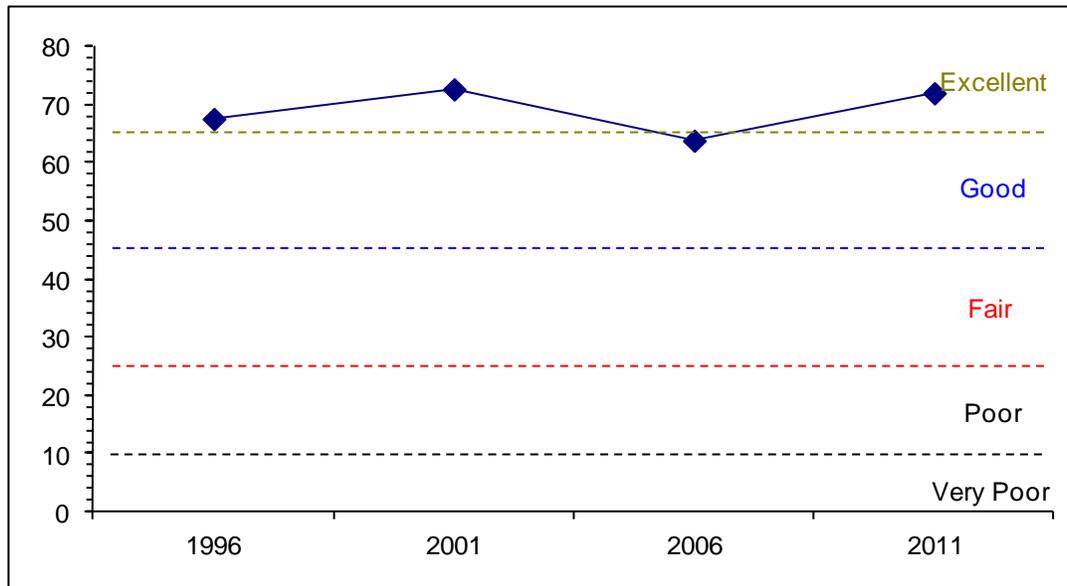
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	16.1	10.4	1.8	30.0	-0.2	9.5	0.0	67.6	Excellent
01	19.2	10.9	3.0	30.0	-0.5	10.0	0.0	72.7	Excellent
06	14.2	7.5	2.6	30.0	-0.4	10.0	0.0	63.8	Good-Excellent
11	17.0	9.2	7.6	30.0	-1.8	10.0	0.0	72.0	Excellent

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 2 Study no: 33



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
 Management unit 2, Study no: 33



HERBACEOUS TRENDS--
 Management unit 02, Study no: 33

Type	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
G	<i>Agropyron spicatum</i>	c208	a119	ab166	c212	bc207	c220	6.76	10.46	12.07	15.75
G	<i>Bromus tectorum</i> (a)	-	-	a19	ab43	b54	c131	.21	.66	.59	2.45
G	<i>Koeleria cristata</i>	b23	ab11	a1	a6	a-	ab12	.00	.09	-	1.25
G	<i>Oryzopsis hymenoides</i>	a-	a-	a-	a-	a-	b10	-	-	-	.51
G	<i>Poa fendleriana</i>	a8	a-	b27	ab14	a3	a4	.28	.27	.03	.09
G	<i>Poa secunda</i>	a190	cd302	d308	b252	bc265	bcd263	8.95	4.30	5.39	8.03
G	<i>Sitanion hystrix</i>	-	-	3	-	-	2	.15	-	-	.01
G	<i>Stipa comata</i>	-	-	-	-	2	-	-	-	.03	-
Total for Annual Grasses		0	0	19	43	54	131	0.21	0.66	0.59	2.45
Total for Perennial Grasses		429	432	505	484	477	511	16.16	15.13	17.54	25.65
Total for Grasses		429	432	524	527	531	642	16.38	15.79	18.13	28.10
F	<i>Agoseris glauca</i>	-	-	-	-	4	6	-	-	.03	.04
F	<i>Alyssum alyssoides</i> (a)	-	-	a-	a-	b14	b18	-	-	.03	.11
F	<i>Antennaria rosea</i>	10	6	5	5	-	2	.06	.06	-	.15
F	<i>Arabis holboellii</i>	a1	a-	b10	ab6	ab3	ab7	.03	.06	.01	.04
F	<i>Arenaria fendleri</i>	b46	ab44	ab35	ab21	ab29	a14	1.61	.37	.61	.19
F	<i>Aster chilensis</i>	-	-	-	-	1	3	-	-	.04	.03
F	<i>Astragalus convallarius</i>	c43	ab4	a25	a43	b18	ab12	.51	.90	.37	.13
F	<i>Astragalus</i> sp.	115	13	8	4	37	24	.09	.01	.48	.59
F	<i>Astragalus utahensis</i>	1	3	-	2	4	8	-	.00	.03	.04
F	<i>Balsamorhiza sagittata</i>	8	5	2	14	7	8	.15	.31	.24	.74
F	<i>Calochortus nuttallii</i>	1	4	-	-	-	6	-	-	-	.01
F	<i>Camelina microcarpa</i> (a)	-	-	-	-	-	-	-	.00	-	-
F	<i>Castilleja linariaefolia</i>	-	-	-	4	-	5	-	.06	-	.02

Type	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
F	Chaenactis douglasii	3	-	-	-	-	-	-	-	-	-
F	Cirsium sp.	-	-	-	-	-	3	-	-	-	.01
F	Collinsia parviflora (a)	-	-	6	-	3	6	.01	-	.00	.01
F	Comandra pallida	a-	a-	a-	a8	ab8	b15	-	.09	.04	.13
F	Cordylanthus ramosus (a)	-	-	ab7	a1	a1	b12	.07	.00	.01	.03
F	Crepis acuminata	a28	a23	a24	ab43	a29	b60	.49	.57	.38	.81
F	Cryptantha sp.	b39	a-	a-	a-	a1	a-	-	-	.00	-
F	Cymopterus sp.	-	-	-	8	3	3	-	.05	.03	.01
F	Descurainia pinnata (a)	-	-	3	4	12	6	.03	.03	.02	.04
F	Draba sp. (a)	-	-	a-	a-	a3	b16	-	-	.00	.03
F	Erigeron divergens	a-	b34	a4	a6	a2	a7	.06	.06	.03	.56
F	Hackelia patens	-	9	-	3	3	4	-	.03	.03	.06
F	Haplopappus acaulis	4	-	14	2	11	6	.21	.03	.33	.04
F	Holosteum umbellatum (a)	-	-	-	-	6	8	-	-	.01	.02
F	Lappula occidentalis (a)	-	-	-	-	-	1	-	-	-	.00
F	Linum lewisii	-	-	-	-	-	4	-	-	-	.06
F	Lupinus sp.	-	-	-	2	-	2	-	.00	-	.01
F	Machaeranthera canescens	-	-	-	2	-	2	-	.00	-	.00
F	Melilotus officinalis	-	-	-	-	1	2	-	-	.00	.00
F	Penstemon humilis	b10	a2	ab3	a1	a-	a1	.01	.00	-	.03
F	Phacelia sp.	6	-	-	-	-	-	-	-	-	-
F	Phlox hoodii	a32	ab34	c74	c80	bc68	c89	.93	2.57	2.37	2.15
F	Phlox longifolia	a29	b83	ab60	a38	b85	a29	.52	.21	.68	.16
F	Physaria sp.	-	-	-	-	5	-	-	-	.01	-
F	Polygonum douglasii (a)	-	-	-	-	4	-	-	-	.01	-
F	Senecio multilobatus	3	-	-	1	-	-	-	.03	-	-
F	Solidago sp.	3	-	-	-	-	-	-	-	-	-
F	Tragopogon dubius (a)	-	-	-	-	-	3	-	-	-	.00
F	Trifolium sp.	-	-	6	13	5	-	.02	.08	.04	-
Total for Annual Forbs		0	0	16	5	43	70	0.11	0.04	0.10	0.26
Total for Perennial Forbs		382	264	270	306	324	322	4.73	5.54	5.78	6.05
Total for Forbs		382	264	286	311	367	392	4.85	5.59	5.88	6.32

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

BROWSE TRENDS--

Management unit 02, Study no: 33

Type	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Amelanchier alnifolia	4	1	0	2	-	.00	-	.03
B	Artemisia nova	82	80	87	80	10.04	13.06	9.27	11.07
B	Artemisia tridentata wyomingensis	42	30	2	10	1.89	.98	.15	.36
B	Ceratoides lanata	15	15	13	15	.07	.30	.51	.51
B	Chrysothamnus viscidiflorus viscidiflorus	29	34	33	38	1.03	3.69	2.57	3.71
B	Eriogonum microthecum	37	36	46	44	.87	1.05	1.46	1.64
B	Juniperus osteosperma	4	7	8	9	.56	1.23	2.14	3.36
B	Leptodactylon pungens	0	0	1	0	-	-	-	-
B	Opuntia sp.	2	2	2	1	-	-	-	-
B	Symphoricarpos oreophilus	5	4	6	2	.38	.21	.06	.09
B	Tetradymia canescens	0	0	1	0	-	.03	-	-
Total for Browse		220	209	199	201	14.85	20.59	16.18	20.80

CANOPY COVER, LINE INTERCEPT--

Management unit 02, Study no: 33

Species	Percent Cover		
	'01	'06	'11
Amelanchier alnifolia	-	-	.41
Artemisia nova	-	10.76	10.60
Artemisia tridentata wyomingensis	-	.21	.28
Ceratoides lanata	-	.45	.55
Chrysothamnus viscidiflorus viscidiflorus	-	3.48	4.48
Eriogonum microthecum	-	2.00	2.09
Juniperus osteosperma	1.00	6.34	4.26
Opuntia sp.	-	.05	.06
Symphoricarpos oreophilus	-	.26	.46

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 02, Study no: 33

Species	Average leader growth (in)		
	'01	'06	'11
Amelanchier alnifolia	-	3.1	5.6
Artemisia nova	0.2	0.5	0.9

POINT-QUARTER TREE DATA--

Management unit 02, Study no: 33

Species	Trees per Acre				Average diameter (in)			
	'96	'01	'06	'11	'96	'01	'06	'11
Juniperus osteosperma	100	121	127	117	1.9	3.7	2.8	2.3

BASIC COVER--

Management unit 02, Study no: 33

Cover Type	Average Cover %					
	'84	'90	'96	'01	'06	'11
Vegetation	3.00	14.75	35.12	42.21	39.31	50.98
Rock	15.50	6.00	13.34	5.89	13.22	6.77
Pavement	16.00	24.50	16.43	13.54	16.69	24.03
Litter	49.25	32.50	26.29	33.81	24.45	24.34
Cryptogams	6.75	4.75	5.01	2.72	2.19	1.45
Bare Ground	9.50	17.50	11.36	19.00	24.33	10.88

SOIL ANALYSIS DATA --

Management unit 02, Study no: 33, Study Name: Brazier Canyon

Effective rooting depth (in)	pH	Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
15.5	7.7	36.7	39.0	24.3	4.0	14.4	105.6	0.7

PELLET GROUP DATA--

Management unit 02, Study no: 33

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Rabbit	7	5	9	4	-	-	-
Elk	-	2	7	1	1 (3)	8 (20)	-
Deer	33	25	27	16	48 (117)	80 (198)	42 (103)
Cattle	1	1	3	1	1 (2)	4 (11)	-

BROWSE CHARACTERISTICS--

Management unit 02, Study no: 33

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Amelanchier alnifolia									
84	66	100	0	0	-	0	0	0	-/-
90	133	100	0	0	-	0	0	0	-/-
96	80	50	0	50	-	0	0	50	14/13
01	20	0	0	100	-	0	100	100	19/20
06	0	0	0	0	-	0	0	0	22/32
11	100	60	40	0	-	0	0	0	22/33
Artemisia nova									
84	14131	4	39	57	333	25	.47	2	7/13
90	11665	9	46	46	199	63	2	4	10/11
96	5340	3	83	14	180	28	.37	2	12/21
01	5760	7	80	13	560	17	1	6	12/20
06	5680	5	66	30	1080	.70	0	20	13/21
11	4840	15	62	23	200	13	2	19	10/19

		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>Artemisia tridentata wyomingensis</i>										
84	865	8	62	31	-	54	15	0	12/12	
90	1532	9	70	22	66	22	26	9	33/26	
96	1460	7	63	30	-	52	5	11	14/24	
01	1060	2	57	42	20	40	17	19	12/21	
06	40	50	0	50	40	50	0	50	-/-	
11	260	31	46	23	40	23	0	31	10/14	
<i>Ceratoides lanata</i>										
84	399	17	83	0	-	67	0	0	6/7	
90	465	57	29	14	-	29	14	0	6/5	
96	580	7	93	0	-	38	10	0	8/10	
01	680	0	100	0	-	6	0	0	8/15	
06	580	0	100	0	-	0	21	0	10/10	
11	460	9	91	0	100	0	0	0	11/13	
<i>Chrysothamnus nauseosus consimilis</i>										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	28/65	
06	0	0	0	-	-	0	0	0	-/-	
11	0	0	0	-	-	0	0	0	-/-	
<i>Chrysothamnus viscidiflorus viscidiflorus</i>										
84	2398	8	53	39	-	0	0	0	15/12	
90	2731	24	59	17	66	0	2	0	13/11	
96	840	2	83	14	-	2	0	0	13/19	
01	1020	0	92	8	-	0	0	0	12/20	
06	1160	3	90	7	-	2	0	10	11/15	
11	1340	15	76	9	-	0	0	0	14/20	
<i>Eriogonum microthecum</i>										
84	1398	29	71	0	399	0	0	0	9/8	
90	1465	55	45	0	66	5	0	0	5/7	
96	1300	2	98	0	-	0	0	0	7/9	
01	1380	0	100	0	-	0	1	0	6/8	
06	1740	3	97	0	20	1	0	0	8/12	
11	1600	15	84	1	-	3	0	1	9/12	
<i>Juniperus osteosperma</i>										
84	66	100	0	-	-	0	0	0	-/-	
90	66	100	0	-	66	0	0	0	-/-	
96	80	25	75	-	20	0	0	0	-/-	
01	140	71	29	-	-	0	0	0	-/-	
06	180	44	56	-	100	0	0	0	49/59	
11	180	78	22	-	60	0	0	0	-/-	

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Leptodactylon pungens										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	0	0	0	0	-	0	0	0	-/-	
01	0	0	0	0	-	0	0	0	-/-	
06	20	0	0	100	-	0	0	100	-/-	
11	0	0	0	0	-	0	0	0	3/6	
Opuntia sp.										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	40	0	100	-	-	0	0	0	3/10	
01	40	0	100	-	-	0	0	0	6/12	
06	80	25	75	-	-	0	0	0	3/3	
11	20	0	100	-	-	0	0	0	8/10	
Rosa woodsii										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	20/41	
11	0	0	0	-	-	0	0	0	-/-	
Symphoricarpos oreophilus										
84	599	44	56	-	-	0	0	0	16/6	
90	1799	4	96	-	-	19	4	15	22/12	
96	140	14	86	-	-	0	0	14	16/32	
01	120	0	100	-	-	0	0	0	18/32	
06	200	10	90	-	-	0	0	0	16/33	
11	80	0	100	-	-	25	0	0	19/35	
Tetradymia canescens										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	12/30	
06	20	100	0	-	-	0	0	0	12/25	
11	0	0	0	-	-	0	0	0	21/25	