

BUCKHORN CANYON - TREND STUDY NO. 9-25-10

Vegetation Type: Wyoming Big Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Semidesert Loam (Wyoming Big Sagebrush), R034XY212UT

Land Ownership: BLM

Elevation: 5970 ft. (1820 m)

Aspect: South

Slope: 3%

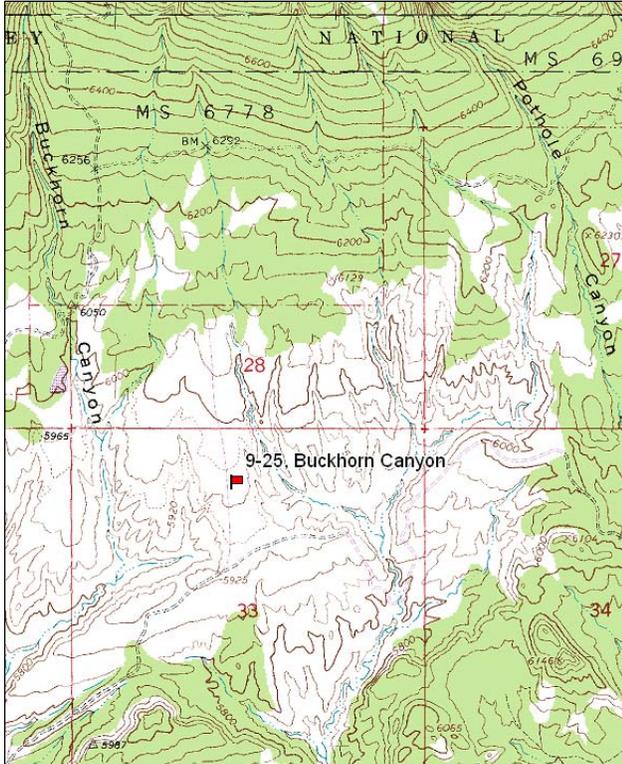
Transect bearing: 158° magnetic

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

Directions:

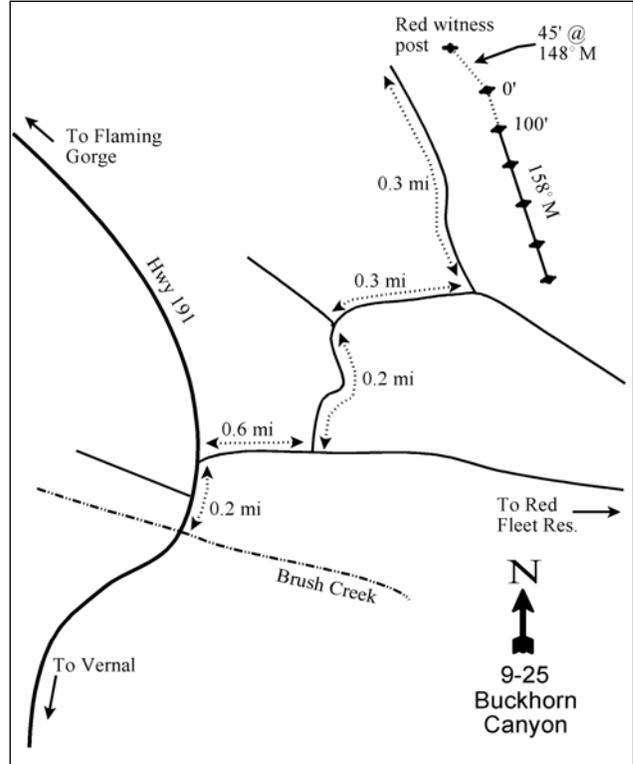
From Vernal proceed north on Highway 191. After Highway 191 crosses brush creek continue 0.2 miles and turn right onto the road that leads to Red Fleet Reservoir. On this road proceed 0.6 miles. Turn left onto a dirt road. Go 0.2 miles to a fork. Turn right and go 0.3 miles to another fork. Turn left and go 0.3 miles. The witness post is a red full high fence post about 50 feet to the east. The 0-foot stake is 45 feet to the south at 148° M, and is marked with browse tag #120.

Map Name: Donkey Flat



Township: 3N Range: 22E Section: 33

Diagrammatic Sketch:



GPS: NAD 83, UTM 12T 630897 E 4496132 N

## BUCKHORN CANYON - TREND STUDY NO. 9-25

### Site Information

Site Description: The study is located approximately 11 miles north of Vernal off Highway 191. Grazing in the area is managed by the Bureau of Land Management (BLM) as part of the Brush Creek allotment. A lop and scatter treatment was done on 1,200 acres in the area in November of 2004, which removed many of the small Utah juniper (*Juniperus osteosperma*) that were scattered throughout the study site. Pellet group transect has indicated moderate to heavy use by deer with very heavy use in 2001. Estimated use by elk was moderate in 2001, but light since 2005. Estimated cattle use has been moderate since 2001 (Table - Pellet Group Data). A lot of the pellet groups sampled had been displaced by runoff and overland flow in multiple sample years.

Browse: Browse was abundant on the site at the outset of the study in 2001, but browse cover decreased substantially in 2005 and is now only fairly abundant. Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is the dominant browse species and provides nearly all of the browse cover on the site (Table - Browse Trends). At the outset of the study the sagebrush was comprised of a dense population of mature and decadent plants with little recruitment of young plants. Since 2005, young plants have comprised a large part of the population. Vigor was poor in the sagebrush population at the outset of the study, but was fairly good in 2010. Utilization of sagebrush has been moderate to heavy, though use was mostly light in 2010. Small populations of pricklypear cactus (*Opuntia* sp.) and Utah juniper are the only other browse on the study (Table - Browse Characteristics).

Herbaceous Understory: Grasses are fairly diverse and abundant for a Wyoming big sagebrush community. Thickspike wheatgrass (*Agropyron dasystachyum*) and needle-and-thread (*Stipa comata*) are the most abundant grasses. Other perennial grasses sampled include Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*) and Indian ricegrass (*Oryzopsis hymenoides*). Needle-and-thread had a patchy distribution, while Sandberg bluegrass was found growing primarily underneath the safety of sagebrush crowns. Cheatgrass (*Bromus tectorum*) increased substantially in 2010, but was less common in other sample years. Perennial forbs are not particularly abundant on the site. Scarlet globemallow (*Sphaeralcea coccinea*) is the main perennial species that increased. Annual forbs were common in 2005, but have been less prevalent in the other sample years (Table - Herbaceous Cover).

Soil: Soils have a clay loam texture and a slightly alkaline soil reaction (pH 7.7). Phosphorus and potassium may have limited availability for plant growth and development at 4.1 ppm and 57.6 ppm, respectively (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). There is a layer of stone found between 8 and 12 inches below the surface. Low amounts of herbaceous vegetation and litter cover with high amounts of bare ground allow significant erosion to occur (Table - Basic Cover). The soil erosion condition was classified as stable in 2010, but was slight in 2005 due to pedestals around sagebrush stems and surface litter translocation during recent thunderstorms.

### Trend Assessments

#### Browse:

- **2001 to 2005 - down (-2):** Density of Wyoming big sagebrush decreased by 16% from 4,900 plants/acre to 4,120 plants/acre and cover decreased from 21% to 6%. Decadence increased from 49% to 57% and poor vigor increased from 22% to 44%. More of the population was young with an increase in recruitment from 2% to 31% of the population.
- **2005 to 2010 - up (+2):** The density of sagebrush increased by 59% to 6,540 plants/acre and cover increased to 9%. Decadence decreased to 21% and poor vigor decreased to 14%. Recruitment of young plants increased to 39% of the population.

Grass:

- **2001 to 2005 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, though cover increased from 5% to 8%.
- **2005 to 2010 - stable (0):** The sum of nested frequency of perennial grasses remained similar, but cover increased to 13%. Cheatgrass increased significantly in nested frequency and cover increased from less than 1% to 2%.

Forb:

- **2001 to 2005 - down (-2):** The perennial forb sum of nested frequency decreased by 23%, but cover increased from 1% to 5%. Annual forbs increased substantially in frequency and cover.
- **2005 to 2010 - stable (0):** The sum of nested frequency of perennial forbs remained similar, but cover decreased to 3%. Annual forbs decreased to below 2001 levels in frequency and cover.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

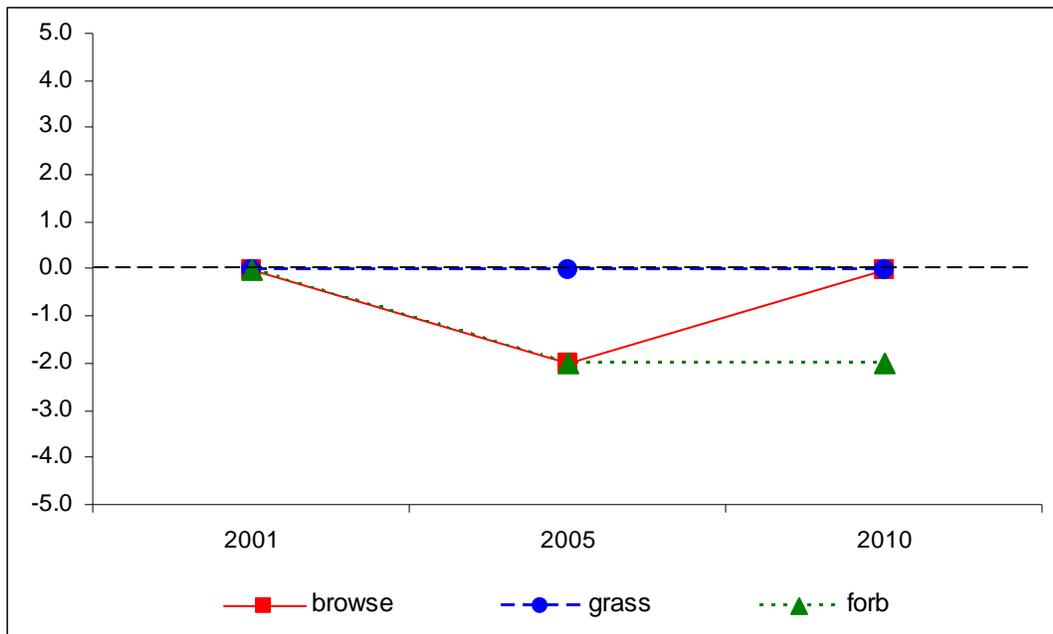
Management unit 9, study no: 25

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
01	26.6	0.3	1.0	10.8	-0.1	2.1	0.0	<b>40.9</b>	Fair
05	7.6	-2.1	15.0	15.3	-0.4	10.0	0.0	<b>45.3</b>	Fair-Good
10	11.5	8.7	15.0	25.8	-1.5	6.5	0.0	<b>66.0</b>	Good-Excellent

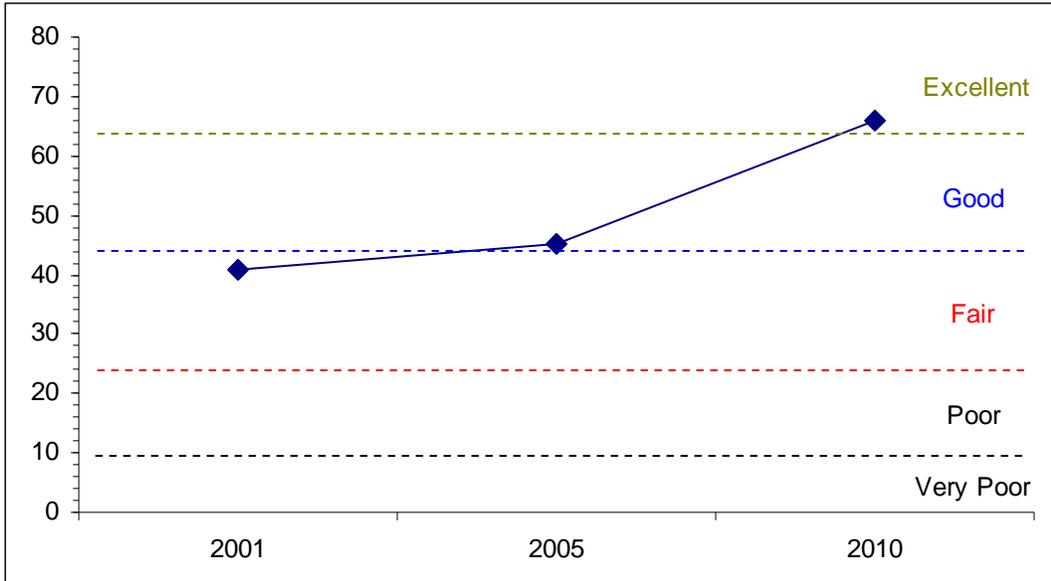
**Trend Summary**

CUMULATIVE RANGE TREND ASSESSMENT--

Management unit 9, Study no: 25



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--  
 Management unit 9, Study no: 25



HERBACEOUS TRENDS--  
 Management unit 09, Study no: 25

Type	Species	Nested Frequency			Average Cover %		
		'01	'05	'10	'01	'05	'10
G	<i>Agropyron dasystachyum</i>	187	186	180	2.12	4.30	6.36
G	<i>Agropyron intermedium</i>	-	4	-	-	.03	-
G	<i>Bromus tectorum</i> (a)	a25	a52	b134	.09	.58	2.00
G	<i>Oryzopsis hymenoides</i>	2	5	14	.03	.05	.24
G	<i>Poa secunda</i>	106	84	77	1.23	.94	.83
G	<i>Sitanion hystrix</i>	b57	ab46	a25	.96	.26	.44
G	<i>Stipa comata</i>	a50	a54	b93	1.07	2.04	5.01
Total for Annual Grasses		25	52	134	0.09	0.58	2.00
Total for Perennial Grasses		402	379	389	5.42	7.64	12.89
Total for Grasses		427	431	523	5.51	8.22	14.90
F	<i>Astragalus convallarius</i>	5	5	2	.19	.28	.03
F	<i>Calochortus nuttallii</i>	11	11	3	.02	.03	.00
F	<i>Chenopodium leptophyllum</i> (a)	-	4	1	-	.01	.00
F	<i>Collinsia parviflora</i> (a)	-	2	-	-	.00	-
F	<i>Cryptantha</i> sp.	-	7	-	-	.07	-
F	<i>Descurainia pinnata</i> (a)	b50	c92	a10	.11	1.21	.07
F	<i>Eriogonum cernuum</i> (a)	-	1	-	-	.00	-
F	<i>Gilia</i> sp. (a)	a-	b15	a3	-	.38	.00
F	<i>Lappula occidentalis</i> (a)	b100	c323	a2	.21	7.25	.00
F	<i>Lomatium</i> sp.	-	2	2	-	.00	.00
F	<i>Machaeranthera canescens</i>	2	4	5	.01	.03	.06
F	<i>Phlox longifolia</i>	b124	a16	a17	.56	.07	.08
F	<i>Ranunculus testiculatus</i> (a)	a9	b37	a-	.02	.39	-
F	<i>Salsola iberica</i> (a)	a-	b68	a5	-	.37	.16

Type	Species	Nested Frequency			Average Cover %		
		'01	'05	'10	'01	'05	'10
F	Schoenocrambe linifolia	-	-	1	-	-	.03
F	Sphaeralcea coccinea	<sub>a</sub> 67	<sub>b</sub> 117	<sub>b</sub> 138	.25	4.64	3.02
F	Townsendia sp.	20	14	5	.03	.22	.02
F	Tragopogon dubius	-	-	4	-	-	.00
Total for Annual Forbs		159	542	21	0.35	9.63	0.25
Total for Perennial Forbs		229	176	177	1.07	5.36	3.26
Total for Forbs		388	718	198	1.43	15.00	3.51

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

#### BROWSE TRENDS--

Management unit 09, Study no: 25

Type	Species	Strip Frequency			Average Cover %		
		'01	'05	'10	'01	'05	'10
B	Artemisia tridentata wyomingensis	73	80	85	21.31	6.06	9.19
B	Juniperus osteosperma	0	1	2	1.00	.18	.53
B	Opuntia sp.	14	16	17	.45	.65	.21
Total for Browse		87	97	104	22.76	6.89	9.94

#### CANOPY COVER, LINE INTERCEPT--

Management unit 09, Study no: 25

Species	Percent Cover	
	'05	'10
Artemisia tridentata wyomingensis	7.40	10.14
Juniperus osteosperma	.20	.51
Opuntia sp.	.48	.51

#### KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 09, Study no: 25

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata wyomingensis	3.5	1.4

#### BASIC COVER--

Management unit 09, Study no: 25

Cover Type	Average Cover %		
	'01	'05	'10
Vegetation	27.13	25.62	31.47
Rock	.04	.04	.00
Pavement	.46	1.01	.36
Litter	31.23	30.46	46.59
Cryptogams	4.40	2.79	1.55
Bare Ground	50.20	50.00	34.18

SOIL ANALYSIS DATA --

Management unit 9, Study no: 25, Study Name: Buckhorn Canyon

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
13.2	7.7	35.6	33.8	30.6	1.4	4.1	57.6	0.4

PELLET GROUP DATA--

Management unit 09, Study no: 25

Type	Quadrat Frequency			Days use per acre (ha)		
	'01	'05	'10	'01	'05	'10
Rabbit	25	66	29	-	-	-
Elk	10	9	4	28 (69)	11 (26)	9 (22)
Deer	62	47	33	175 (431)	37 (91)	57 (141)
Cattle	10	5	8	28 (68)	29 (72)	21 (52)
Horse	-	-	-	-	-	2 (4)

BROWSE CHARACTERISTICS--

Management unit 09, Study no: 25

		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>											
01	<b>4900</b>	2	49	49	-	41	12	22	19/28		
05	<b>4120</b>	31	12	57	14900	24	41	44	19/27		
10	<b>6540</b>	39	40	21	400	11	20	14	16/26		
<i>Atriplex canescens</i>											
01	<b>0</b>	0	0	-	-	0	0	0	-/-		
05	<b>0</b>	0	0	-	-	0	0	0	-/-		
10	<b>0</b>	0	0	-	-	0	0	0	39/56		
<i>Grayia spinosa</i>											
01	<b>0</b>	0	0	-	-	0	0	0	-/-		
05	<b>0</b>	0	0	-	-	0	0	0	24/56		
10	<b>0</b>	0	0	-	-	0	0	0	32/74		
<i>Gutierrezia sarothrae</i>											
01	<b>0</b>	0	0	-	-	0	0	0	-/-		
05	<b>0</b>	0	0	-	-	0	0	0	12/15		
10	<b>0</b>	0	0	-	-	0	0	0	-/-		
<i>Juniperus osteosperma</i>											
01	<b>0</b>	0	0	-	-	0	0	0	-/-		
05	<b>20</b>	100	0	-	-	0	0	0	-/-		
10	<b>120</b>	100	0	-	-	0	0	0	-/-		
<i>Opuntia sp.</i>											
01	<b>420</b>	10	67	24	-	0	0	0	3/11		
05	<b>640</b>	3	84	13	-	0	0	22	4/15		
10	<b>420</b>	0	95	5	-	0	0	0	4/16		