

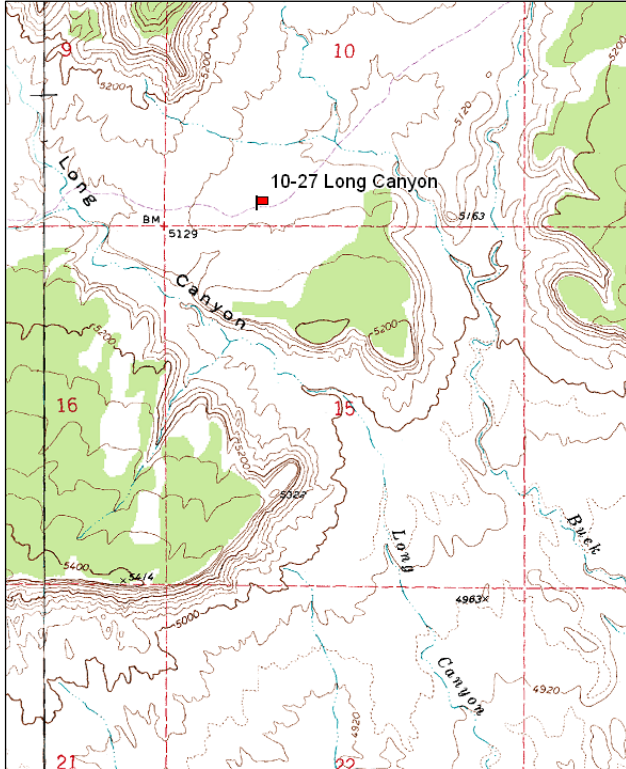
LONG CANYON - TREND STUDY NO. 10-27-10

Vegetation Type: Wyoming Big Sagebrush  
Range Type: Crucial Deer Winter, Substantial Elk Winter  
NRCS Ecological Site Description: Not Available  
Land Ownership: BLM  
Elevation: 5112 ft. (1559 m)  
Aspect: North  
Slope: 3%  
Transect bearing: 163° magnetic  
Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

Directions:

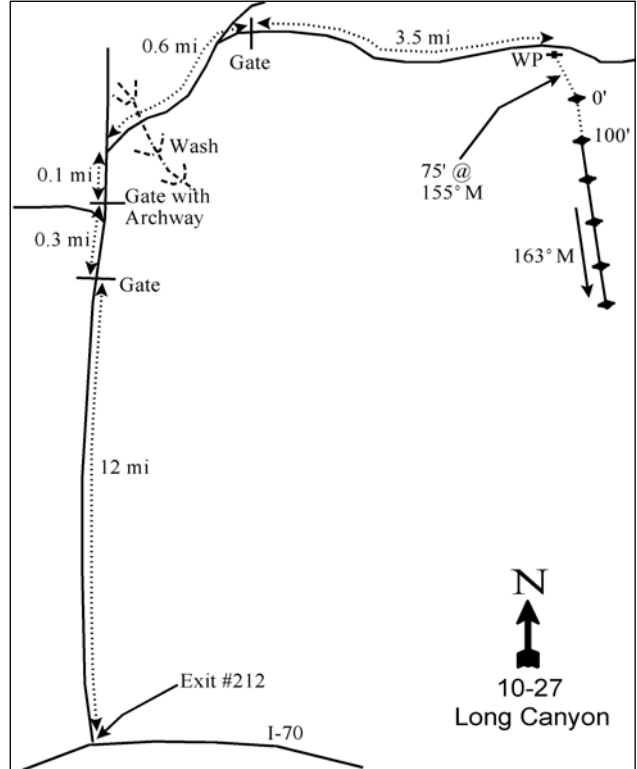
From I-70, take the east Cisco exit (exit #212). From the north side of the overpass travel 12 miles to a gate. Go through the gate and proceed 0.3 miles to a sheep ranch gate with an archway. Go through the gate and continue 0.1 miles to a fork. Turn right and drive 0.6 miles to a road on the right with a gate. Turn right (south) and drive along the bench 3.5 miles to the witness post on the right (south) side of the road. From the witness post walk 75 ft at 155 °M to the 0' stake, which is marked with browse tag #147.

Map Name: Anotone Canyon



Township: 19S Range: 23E Section: 10

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 641287 E 4336038 N

## LONG CANYON - TREND STUDY NO. 10-27

### Site Information

Site Description: The study was established in 2005 and monitors the lowest bench of the Book Cliffs above the Cisco Desert, just above Cottonwood Wash. The bench is dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) surrounded by pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) woodlands. The area is considered an important deer winter range. Grazing is managed by the Bureau of Land Management as part of the San Arroyo allotment. Pellet group transect data has estimated moderate use by deer and light use by elk since 2005. A deer carcass was found on the site in 2005. The west end of the bench near Cottonwood Wash, appeared to be a sheep bedding area and showed signs of heavy use in 2005, but estimated sheep use was light in 2010. Cattle sign was only sampled in 2010 with light use (Table - Pellet Group Data).

Browse: Wyoming big sagebrush is the key browse species at this site and provides nearly all of the browse canopy cover (Table - Canopy Cover). The sagebrush population is mostly mature with moderate amounts of decadence. Recruitment of young sagebrush plants has been good since 2005 and sagebrush vigor at this site was much better than some of the other sites on the south end of the Book Cliffs. Utilization of sagebrush has been mostly heavy since 2005. Other palatable browse species sampled on the site include: fourwing saltbush (*Atriplex canescens*), winterfat (*Ceratoides lanata*) and spiny hopsage (*Grayia spinosa*). Fourwing saltbush has been heavily used (Table - Browse Characteristics). Black greasewood (*Sarcobatus vermiculatus*) was also seen near the transect location.

Herbaceous Understory: Perennial grasses are rare and the herbaceous community is dominated by annual species. Cheatgrass (*Bromus tectorum*) is the most abundant herbaceous species on the site. Cheatgrass cover was very high in 2005, but decreased substantially in 2010. Sixweeks fescue (*Vulpia octoflora*) was also very abundant in 2005, but was rare in 2010. Perennial grasses are infrequent with the most common species being bottlebrush squirreltail (*Sitanion hystrix*). Forbs are limited on the site, and annual forbs are much more abundant than perennial forbs (Table - Herbaceous Trends).

Soil: The soil is a shallow loam with a neutral soil reaction (pH 7.3). Bare ground cover is quite high on the site. Most of the vegetation cover in the shrub interspaces is provided by cheatgrass, which is susceptible to large changes with precipitation patterns (Table - Basic Cover). The soil erosion condition was classified stable in 2005 and 2010.

### Trend Assessments

#### Browse:

- **2005 to 2010 - slightly up (+1):** The density of the key browse species, Wyoming big sagebrush, increased by 15% from 3,700 plants/acre to 4,260 plants/acre, though canopy cover remained similar. Decadence of sagebrush decreased from 30% to 11% and poor vigor decreased from 17% to 4%. Recruitment of young sagebrush plants increased from 6% to 28%, providing much of the increase in total density.

#### Grass:

- **2005 to 2010 - stable (0):** There was a decrease in the sum of nested frequency of perennial grasses, though perennial grasses were already rare on the site. There was a significant decrease in the nested frequency of the two annual species, cheatgrass and sixweeks fescue. Both annual species also decreased substantially in cover.

#### Forb:

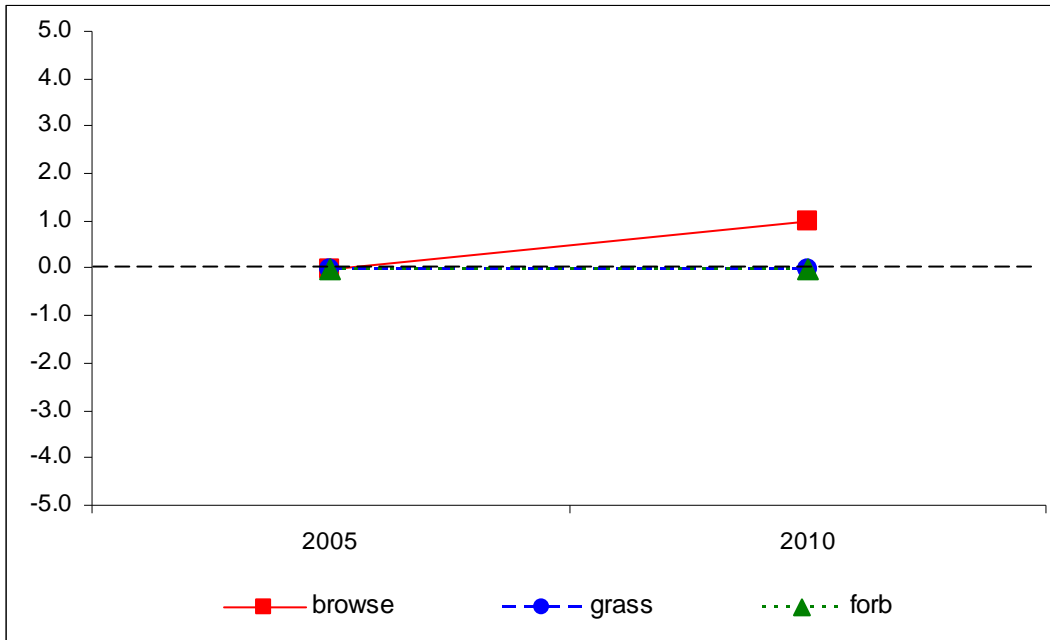
- **2005 to 2010 - stable (0):** Perennial forbs are rare.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --  
 Management unit 10, study no: 27

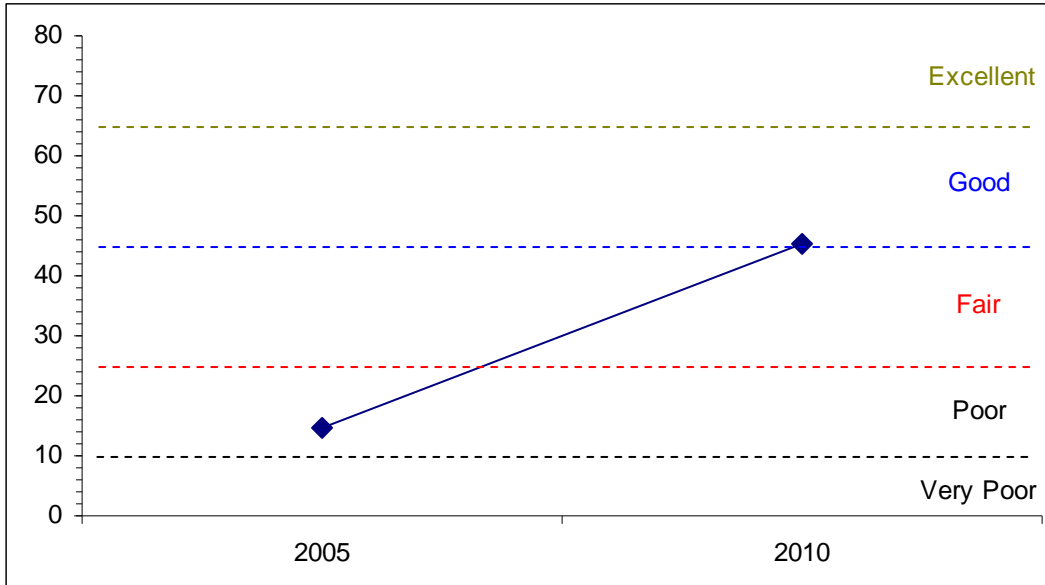
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
05	22.4	6.0	3.0	2.5	-20.0	1.0	0.0	14.8	Poor
10	20.0	11.7	14.0	1.8	-4.1	2.0	0.0	45.2	Fair-Good

**Trend Summary**

CUMULATIVE RANGE TREND ASSESSMENT--  
 Management unit 10, Study no: 27



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--  
 Management unit 10, Study no: 27



HERBACEOUS TRENDS--  
 Management unit 10, Study no: 27

Type	Species	Nested Frequency		Average Cover %	
		'05	'10	'05	'10
G	Bromus tectorum (a)	<sub>b</sub> 395	<sub>a</sub> 311	20.31	5.45
G	Hilaria jamesii	3	-	.15	-
G	Oryzopsis hymenoides	11	4	.34	.19
G	Sitanion hystrix	40	30	.68	.65
G	Sporobolus cryptandrus	5	-	.06	-
G	Stipa comata	-	4	-	.03
G	Vulpia octoflora (a)	<sub>b</sub> 354	<sub>a</sub> 33	8.70	.05
Total for Annual Grasses		749	344	29.02	5.50
Total for Perennial Grasses		59	38	1.23	0.88
Total for Grasses		808	382	30.25	6.38
F	Alyssum alyssoides (a)	<sub>a</sub> 61	<sub>b</sub> 182	.49	2.20
F	Calochortus nuttallii	-	5	-	.01
F	Chenopodium fremontii (a)	-	3	-	.01
F	Cryptantha sp.	8	9	.16	.01
F	Descurainia pinnata (a)	<sub>b</sub> 111	<sub>a</sub> 1	.86	.00
F	Draba sp. (a)	-	1	-	.00
F	Eriogonum cernuum (a)	-	9	-	.01
F	Gilia sp. (a)	<sub>b</sub> 52	<sub>a</sub> 18	.26	.04
F	Lactuca serriola	-	1	-	.00
F	Lappula occidentalis (a)	37	41	.26	.13
F	Lepidium sp. (a)	<sub>a</sub> 5	<sub>b</sub> 24	.18	.31
F	Mentzelia sp.	<sub>a</sub> 1	<sub>b</sub> 18	.00	.09
F	Phlox longifolia	22	33	.08	.68
F	Plantago patagonica (a)	<sub>b</sub> 61	<sub>a</sub> 2	.50	.01

Type	Species	Nested Frequency		Average Cover %	
		'05	'10	'05	'10
F	<i>Sphaeralcea coccinea</i>	<sub>b</sub> 23	<sub>a</sub> 8	.24	.18
F	<i>Townsendia incana</i>	2	-	.00	-
Total for Annual Forbs		327	281	2.57	2.74
Total for Perennial Forbs		56	74	0.49	0.99
Total for Forbs		383	355	3.07	3.73

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

#### BROWSE TRENDS--

Management unit 10, Study no: 27

Type	Species	Strip Frequency		Average Cover %	
		'05	'10	'05	'10
B	<i>Artemisia tridentata wyomingensis</i>	81	66	17.76	15.93
B	<i>Atriplex canescens</i>	5	2	.15	.03
B	<i>Ceratoides lanata</i>	1	0	-	-
B	<i>Chrysothamnus viscidiflorus stenophyllus</i>	4	1	-	.06
B	<i>Echinocactus sp.</i>	0	0	-	-
B	<i>Grayia spinosa</i>	1	1	.15	-
B	<i>Gutierrezia sarothrae</i>	11	9	.18	.03
B	<i>Opuntia sp.</i>	12	6	.91	.53
Total for Browse		115	85	19.15	16.58

#### CANOPY COVER, LINE INTERCEPT--

Management unit 10, Study no: 27

Species	Percent Cover	
	'05	'10
<i>Artemisia tridentata wyomingensis</i>	22.66	23.35
<i>Atriplex canescens</i>	1.14	.26
<i>Grayia spinosa</i>	.10	-
<i>Gutierrezia sarothrae</i>	.56	.03
<i>Opuntia sp.</i>	.91	.60

#### KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 10, Study no: 27

Species	Average leader growth (in)	
	'05	'10
<i>Artemisia tridentata</i>	1.9	2.2

BASIC COVER--

Management unit 10, Study no: 27

Cover Type	Average Cover %	
	'05	'10
Vegetation	42.81	26.45
Rock	.38	.19
Pavement	.56	2.71
Litter	17.82	25.52
Cryptogams	4.11	4.17
Bare Ground	46.40	35.34

SOIL ANALYSIS DATA --

Management unit 10, Study no: 27, Study Name: Long Canyon

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
12.7	7.3	47.7	33.7	18.6	1.0	9.7	182.4	0.6

PELLET GROUP DATA--

Management unit 10, Study no: 27

Type	Quadrat Frequency		Days use per acre (ha)	
	'05	'10	'05	'10
Sheep	3	-	50 (124)	1 (3)
Rabbit	43	25	-	-
Elk	7	-	11 (26)	9 (22)
Deer/Antelope	26	21	33 (81)	20 (50)
Cattle	-	2	-	5 (13)

BROWSE CHARACTERISTICS--

Management unit 10, Study no: 27

		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>									
05	<b>3700</b>	6	64	30	40	43	50	17	26/43
10	<b>4260</b>	28	62	11	26020	19	39	4	22/36
<i>Atriplex canescens</i>									
05	<b>120</b>	0	67	33	-	50	17	17	29/32
10	<b>40</b>	0	50	50	-	0	50	50	20/27
<i>Ceratoides lanata</i>									
05	<b>20</b>	0	100	-	-	0	100	0	18/14
10	<b>0</b>	0	0	-	-	0	0	0	-/-
<i>Chrysothamnus viscidiflorus stenophyllus</i>									
05	<b>80</b>	25	75	-	-	0	0	0	13/15
10	<b>20</b>	0	100	-	-	0	0	0	11/14

		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>Echinocactus</i> sp.										
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	7/12	
<i>Grayia spinosa</i>										
05	40	0	50	50	-	100	0	50	18/27	
10	20	0	0	100	-	0	0	0	19/24	
<i>Gutierrezia sarothrae</i>										
05	280	7	93	-	-	0	0	0	11/11	
10	200	0	100	-	-	0	0	0	7/10	
<i>Opuntia</i> sp.										
05	460	0	70	30	-	0	0	13	7/33	
10	220	0	100	0	-	0	0	0	5/34	
<i>Sclerocactus</i> sp.										
05	0	0	0	-	-	0	0	0	6/9	
10	0	0	0	-	-	0	0	0	-/-	