

RABBIT GULCH - TREND STUDY NO. 17-67-10

Vegetation Type: Wyoming Big Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Not Available

Land Ownership: UDWR

Elevation: 5960 ft. (1817 m)

Aspect: East

Slope: 3%

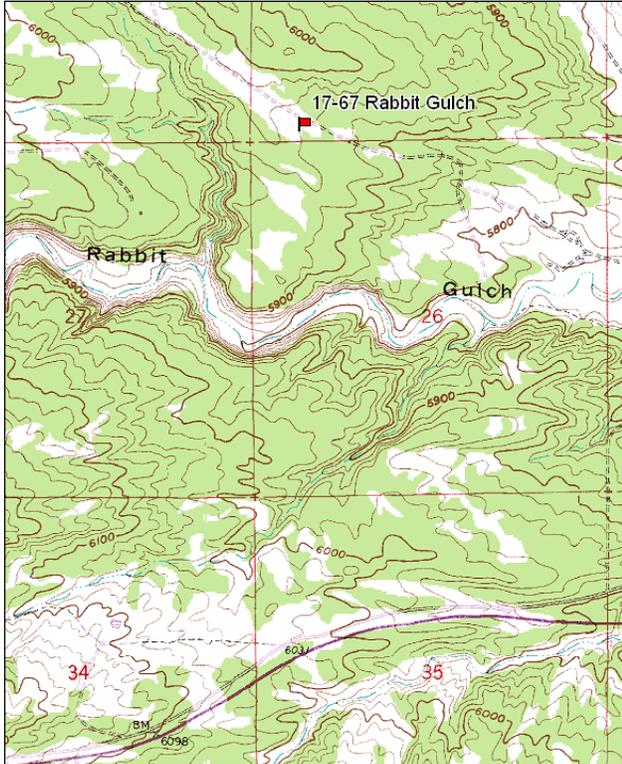
Transect bearing: 275° magnetic

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

Directions:

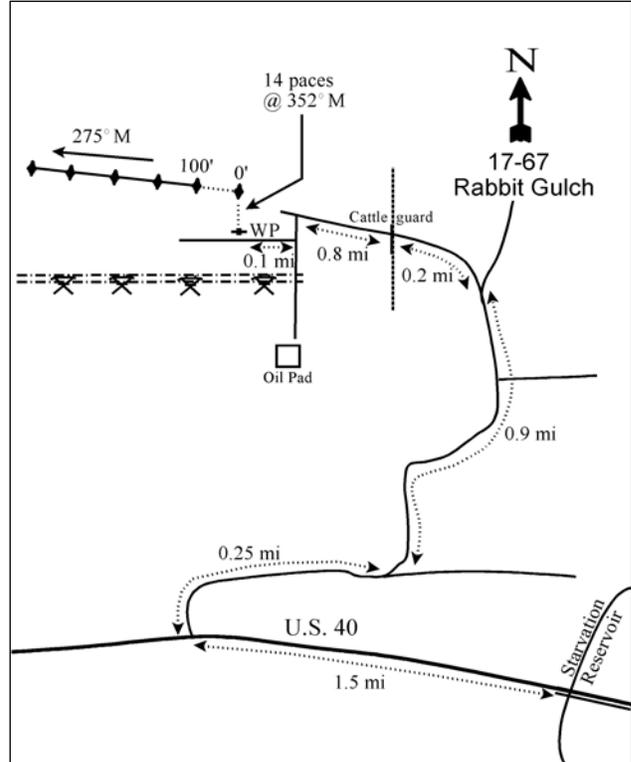
From the Starvation Bridge on U.S. 40, travel west 1.5 miles to a turnoff (28000 West) on the north side of the road. Follow this road 0.25 miles to a fork. Continue left 0.9 miles and staying left. Continue 0.2 miles to a cattleguard and fence. After the cattleguard proceed 0.8 miles to a turn off onto an oil pad. Turn left and immediately turn onto a two-track powerline road. Go 0.1 miles to a witness post on the right side of the road. From the witness post walk 14 paces at 352°M to the 0-foot stake, which is marked by browse tag #94.

Map Name: Rabbit Gulch



Township: 3S Range: 6W Section: 23

Diagrammatic Sketch:



GPS: NAD 83, UTM 12T 539370 E 4449884 N

RABBIT GULCH - TREND STUDY NO. 17-67

Site Information

Site Description: The study is located in an old chaining on the south side of the Uintah Mountains. The land is managed by the Utah Division of Wildlife Resources (UDWR) as part of the Rabbit Gulch Wildlife Management Area (WMA). The area was hand treated as part of a Dedicated Hunter program area to remove pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) trees. Cutting occurred from the fall of 2004 to 2007 over approximately 1,250 acres. Grazing is managed by the UDWR on a Spring (April/May) system to promote browse. Pellet group transect data has estimated very heavy use by deer and moderate use by elk since 2001. Estimated use by cattle has been light over the same period (Table - Pellet Group Data).

Browse: The key browse species consist of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) hybridized with black sagebrush (*A. nova*). Both species were classified as Wyoming big sagebrush due to difficulties in differentiating between the two species. The sagebrush consists of a small population of mostly mature plants with heavy utilization and low recruitment of young plants. In 2005, there was a substantial decrease in the density of sagebrush and a large increase in decadence. Decadence of sagebrush has been low to moderate in all other sample years. Other less abundant browse species include fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), winterfat (*Ceratoides lanata*) and stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*) (Table - Browse Characteristics). Prior to the treatment, pinyon and juniper trees had begun to invade the old chaining at low density (Table - Point-Quarter Tree Data) and cover. Following the treatment, there was no notable cover of either species (Table - Browse Trends).

Herbaceous Understory: The herbaceous component is comprised primarily of perennial grasses. Crested wheatgrass (*Agropyron cristatum*) was seeded sometime in the past and was the most abundant species prior to the tree removal treatment. Following the treatment, needle-and-thread (*Stipa comata*) has provided the most grass cover, though crested wheatgrass is still common. The warm season native grass, blue grama (*Bouteloua gracilis*), is also fairly common. Six weeks fescue (*Vulpia octoflora*) was fairly abundant from 1997 to 2005, but was rare in 2010. Forbs are rare and provide little forage value, especially perennial species (Table - Herbaceous Trends).

Soil: The soils have a sandy loam texture with a moderately alkaline soil reaction (pH 8.0). Phosphorus may have limited availability for plant growth and development at 5.1 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Nearly half of the soil surface is covered by bare ground, while vegetation and litter cover have only moderate values. Cryptogam cover was high in 1997, but has been low in each subsequent reading (Table - Basic Cover). The soil erosion condition was classified stable in 2005, but was slight in 2010 due to the formation of pedestals around shrubs, flow patterns, gullies, and litter and soil movement.

Trend Assessments

Browse:

- **1997 to 2001 - stable (0):** There was little change in the density or cover of Wyoming big sagebrush on the site. Decadence of sagebrush increased from 11% to 27%, but poor vigor decreased from 42% to 20%. Recruitment of young sagebrush plants decreased from 28% to 7% of the population.
- **2001 to 2005 - down (-2):** The density of sagebrush decreased 40% from 3,080 plants/acre to 1,840 plants/acre and cover decreased from 4% to 2%. Decadence of sagebrush increased to 46% and poor vigor increased to 36%.
- **2005 to 2010 - slightly up (+1):** The sagebrush density and cover remained similar, but the population is healthier. Decadence of sagebrush decreased to 18% and poor vigor decreased to 2%.

Grass:

- **1997 to 2001 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, but cover increased from 11% to 26%.

- **2001 to 2005 - stable (0):** The sum of nested frequency of perennial grasses remained similar, but there was a large change in composition. The nested frequency of crested wheatgrass decreased significantly and needle-and-thread increased significantly in nested frequency. Cover of crested wheatgrass decreased from 15% to 3% and cover of needle-and-thread increased from 4% to 17%.
- **2005 to 2010 - stable (0):** The perennial grass sum of nested frequency and cover remained similar, though crested wheatgrass increased in nested frequency and cover and needle-and-thread has decreased. Crested wheatgrass was co-dominant on the site.

Forb:

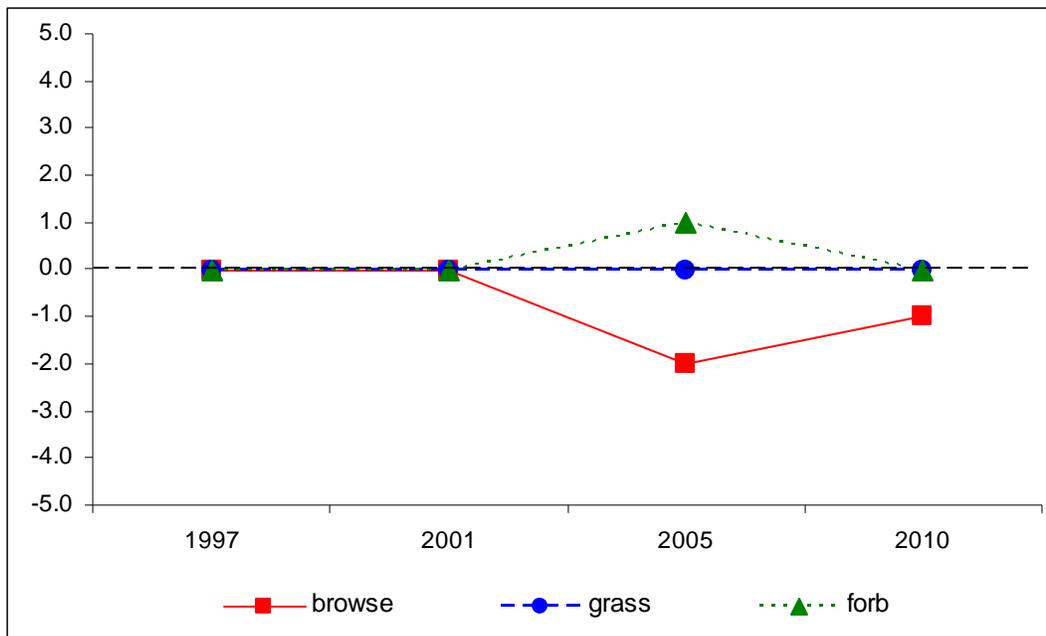
- **1997 to 2001 - stable (0):** Perennial forbs are extremely rare on the site.
- **2001 to 2005 - slightly up (+1):** There was a slight increase in the sum of nested frequency and cover of perennial forbs, but they remain rare and provide less than 1% cover.
- **2005 to 2010 - slightly down (-1):** The perennial forb sum of nested frequency decreased to 2001 levels.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 17, study no: 67

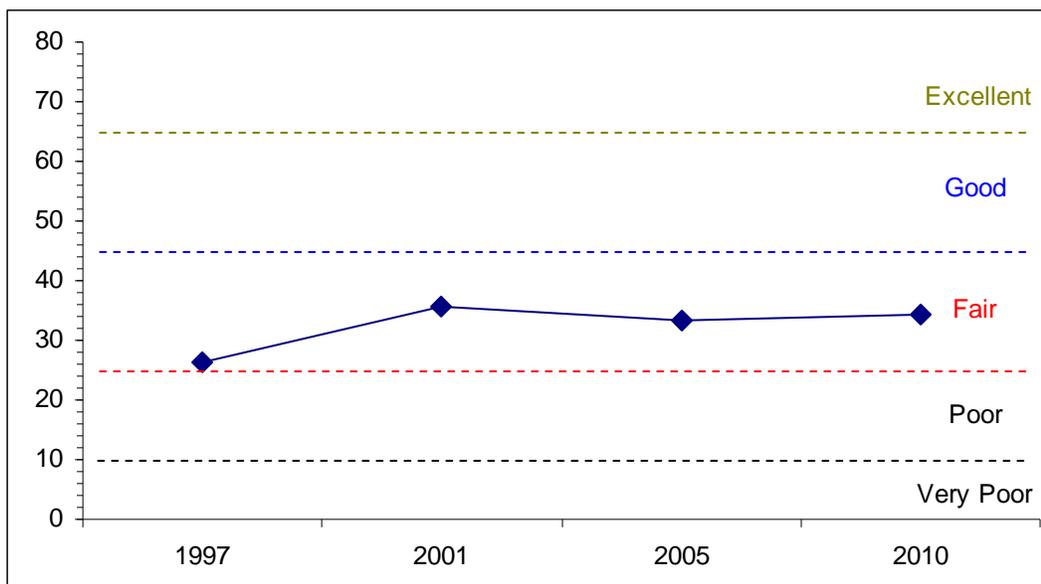
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
97	5.4	0.0	0.0	21.4	-0.5	0.1	0.0	26.5	Poor-Fair
01	5.6	0.0	0.0	30.0	-0.1	0.1	0.0	35.6	Fair
05	3.2	0.0	0.0	30.0	-1.8	1.8	0.0	33.2	Fair
10	3.6	0.0	0.0	30.0	0.0	0.7	0.0	34.3	Fair

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 17, Study no: 67



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
 Management unit 17, Study no: 67



HERBACEOUS TRENDS--
 Management unit 17, Study no: 67

Type	Species	Nested Frequency				Average Cover %			
		'97	'01	'05	'10	'97	'01	'05	'10
G	<i>Agropyron cristatum</i>	c347	c312	a153	b230	8.44	15.27	3.39	8.28
G	<i>Agropyron dasystachyum</i>	b22	a1	a-	a-	.16	.00	-	-
G	<i>Bouteloua gracilis</i>	a71	b141	a58	a54	.85	6.03	1.25	1.58
G	<i>Bromus tectorum</i> (a)	-	-	-	-	.00	-	-	-
G	<i>Elymus junceus</i>	a3	b22	ab10	ab11	.03	.43	.21	.33
G	<i>Hilaria jamesii</i>	-	-	8	8	-	-	.18	.33
G	<i>Oryzopsis hymenoides</i>	13	15	15	13	.17	.25	.26	.33
G	<i>Poa fendleriana</i>	-	-	-	1	-	-	-	.00
G	<i>Poa secunda</i>	-	-	-	3	-	-	-	.00
G	<i>Stipa comata</i>	a76	a75	c295	b229	1.03	3.54	17.02	13.74
G	<i>Vulpia octoflora</i> (a)	c127	b44	d192	a1	.61	.15	2.36	.00
Total for Annual Grasses		127	44	192	1	0.62	0.15	2.36	0.00
Total for Perennial Grasses		532	566	539	549	10.71	25.53	22.32	24.63
Total for Grasses		659	610	731	550	11.33	25.68	24.69	24.63
F	<i>Alyssum alyssoides</i> (a)	4	-	2	-	.00	-	.01	-
F	<i>Chenopodium fremontii</i> (a)	a2	a2	b21	a1	.01	.01	.25	.00
F	<i>Chenopodium leptophyllum</i> (a)	a-	a-	b27	a-	-	-	.22	-
F	<i>Collinsia parviflora</i> (a)	a-	ab6	b12	a1	-	.01	.05	.03
F	<i>Collomia linearis</i> (a)	3	-	-	-	.00	-	-	-
F	<i>Crepis acuminata</i>	-	-	-	2	-	-	-	.03
F	<i>Cryptantha</i> sp.	3	-	-	-	.00	-	-	-
F	<i>Descurainia pinnata</i> (a)	a-	a6	b43	a4	-	.42	.35	.00
F	<i>Draba</i> sp. (a)	-	-	1	-	-	-	.00	-
F	<i>Eriogonum cernuum</i> (a)	5	6	-	1	.01	.04	-	.00

Type	Species	Nested Frequency				Average Cover %			
		'97	'01	'05	'10	'97	'01	'05	'10
F	<i>Gilia</i> sp. (a)	-	-	2	-	-	-	.00	-
F	<i>Hymenoxys richardsonii</i>	-	4	9	-	-	.06	.23	-
F	<i>Lappula occidentalis</i> (a)	a-	b33	c91	a4	-	.51	.91	.06
F	<i>Machaeranthera grindelioides</i>	1	-	1	-	.00	-	.00	-
F	<i>Phlox longifolia</i>	-	6	-	-	-	.01	-	-
F	<i>Plantago patagonica</i> (a)	-	-	3	-	-	-	.03	-
F	<i>Schoenrambe linifolia</i>	-	-	-	1	-	-	-	.03
F	<i>Sphaeralcea coccinea</i>	a4	a6	b23	ab14	.01	.01	.38	.31
F	<i>Townsendia incana</i>	ab6	a-	b14	a1	.01	-	.28	.00
Total for Annual Forbs		14	53	202	11	0.03	1.00	1.84	0.10
Total for Perennial Forbs		14	16	47	18	0.03	0.07	0.90	0.37
Total for Forbs		28	69	249	29	0.07	1.07	2.75	0.48

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

BROWSE TRENDS--

Management unit 17, Study no: 67

Type	Species	Strip Frequency				Average Cover %			
		'97	'01	'05	'10	'97	'01	'05	'10
B	<i>Artemisia tridentata wyomingensis</i>	70	62	50	51	4.35	4.43	2.42	2.60
B	<i>Atriplex canescens</i>	0	0	1	2	-	-	-	.15
B	<i>Atriplex confertifolia</i>	0	1	1	2	-	.03	.15	.15
B	<i>Ceratoides lanata</i>	1	2	0	0	-	-	-	-
B	<i>Chrysothamnus nauseosus consimilis</i>	0	2	0	0	-	.60	-	.15
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	15	12	4	2	.61	.84	.53	.00
B	<i>Eriogonum microthecum</i>	0	1	0	0	-	-	-	-
B	<i>Gutierrezia sarothrae</i>	25	24	30	18	.16	.98	.64	.25
B	<i>Juniperus osteosperma</i>	1	1	0	2	1.03	.76	-	-
B	<i>Opuntia</i> sp.	24	22	28	27	.27	.36	.78	.77
B	<i>Sclerocactus</i> sp.	1	2	1	0	.03	.06	.03	-
Total for Browse		137	129	115	104	6.47	8.07	4.56	4.09

CANOPY COVER, LINE INTERCEPT--

Management unit 17, Study no: 67

Species	Percent Cover		
	'01	'05	'10
Artemisia tridentata wyomingensis	-	2.31	3.68
Atriplex confertifolia	-	.28	.01
Chrysothamnus viscidiflorus viscidiflorus	-	.20	-
Gutierrezia sarothrae	-	.90	.76
Juniperus osteosperma	.20	-	-
Opuntia sp.	-	.25	.63
Sclerocactus sp.	-	.08	-

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 17, Study no: 67

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata wyomingensis	2.8	1.6

POINT-QUARTER TREE DATA--

Management unit 17, Study no: 67

Species	Trees per Acre			
	'97	'01	'05	'10
Juniperus osteosperma	27	68	-	-
Pinus edulis	9	29	-	-

Average diameter (in)			
'97	'01	'05	'10
5.5	2.8	-	-
3.2	2.9	-	-

BASIC COVER--

Management unit 17, Study no: 67

Cover Type	Average Cover %			
	'97	'01	'05	'10
Vegetation	14.82	33.59	29.00	32.35
Rock	.01	0	0	0
Pavement	.08	0	.15	0
Litter	23.74	27.52	24.78	37.34
Cryptogams	5.82	.94	.72	.20
Bare Ground	47.28	48.83	54.71	44.58

SOIL ANALYSIS DATA --

Management unit 17, Study no: 67, Study Name: Rabbit Gulch

Effective rooting depth (in)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
16.3	8.0	78.6	10.8	10.6	0.6	5.1	96.0	0.4

PELLET GROUP DATA--

Management unit 17, Study no: 67

Type	Quadrat Frequency			
	'97	'01	'05	'10
Rabbit	16	31	42	24
Elk	3	22	10	8
Deer	72	85	53	49
Cattle	3	1	5	6

Days use per acre (ha)			
'97	'01	'05	'10
-	-	-	-
15 (38)	26 (65)	17 (43)	42 (104)
121 (298)	171 (423)	94 (231)	64 (157)
12 (29)	2 (5)	12 (31)	4 (11)

BROWSE CHARACTERISTICS--

Management unit 17, Study no: 67

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
<i>Artemisia tridentata wyomingensis</i>									
97	3060	28	61	11	60	63	22	42	19/31
01	3080	7	66	27	-	37	42	20	11/19
05	1840	1	53	46	2980	29	63	36	17/24
10	1800	6	77	18	-	11	47	2	14/24
<i>Atriplex canescens</i>									
97	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	43/62
05	60	100	0	-	-	0	0	0	26/37
10	40	0	100	-	-	0	0	0	34/44
<i>Atriplex confertifolia</i>									
97	0	0	0	0	-	0	0	0	-/-
01	20	0	0	100	-	0	0	0	13/31
05	60	0	100	0	-	0	0	0	21/39
10	80	0	100	0	-	0	0	0	16/41
<i>Ceratoides lanata</i>									
97	20	0	100	-	-	100	0	0	7/7
01	40	100	0	-	-	0	0	0	14/10
05	0	0	0	-	-	0	0	0	23/26
10	0	0	0	-	-	0	0	0	15/19
<i>Chrysothamnus nauseosus consimilis</i>									
97	0	0	0	0	-	0	0	0	-/-
01	40	0	50	50	-	0	0	50	11/10
05	0	0	0	0	-	0	0	0	-/-
10	0	0	0	0	-	0	0	0	11/11
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
97	560	39	61	0	-	11	0	4	15/24
01	400	15	75	10	-	0	0	40	11/20
05	100	0	100	0	-	0	0	0	15/21
10	40	50	50	0	-	0	0	0	11/16

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>Eriogonum microthecum</i>									
97	0	0	0	-	-	0	0	0	-/-
01	40	0	100	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	-/-
<i>Gutierrezia sarothrae</i>									
97	980	12	88	0	80	0	0	0	7/8
01	1280	0	94	6	-	0	0	6	6/8
05	1660	0	100	0	-	0	0	0	9/11
10	740	11	86	3	-	0	0	3	6/10
<i>Juniperus osteosperma</i>									
97	20	100	0	-	-	0	0	0	-/-
01	20	0	100	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	40	100	0	-	-	0	0	0	-/-
<i>Opuntia sp.</i>									
97	560	11	86	4	-	0	0	4	5/12
01	620	13	81	6	40	0	0	0	3/12
05	620	6	87	6	-	0	0	0	6/19
10	860	16	84	0	120	5	0	0	5/19
<i>Sclerocactus sp.</i>									
97	20	0	100	-	-	0	0	0	-/-
01	40	50	50	-	-	0	0	0	-/-
05	20	0	100	-	-	0	0	0	5/4
10	0	0	0	-	-	0	0	0	-/-