

ABOVE TOON RANCH - TREND STUDY NO. 4-17-11

Vegetation Type: Mountain Big Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: [Mountain Loam \(Mountain Big Sagebrush\), R047XA430UT](#)

Land Ownership: Private

Elevation: 5,846 ft (1,782 m)

Aspect: South

Slope: 19%

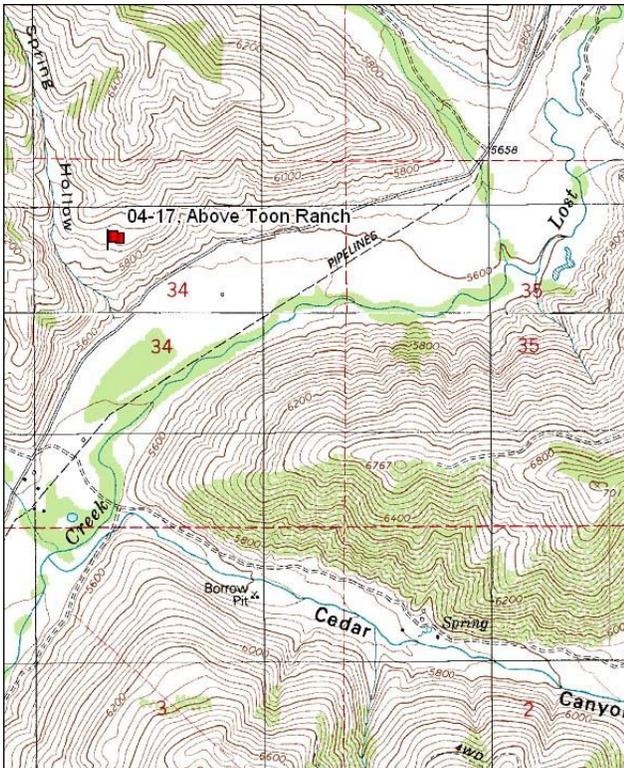
Transect bearing: 6° magnetic

Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95 ft). No rebar on lines 1,2,3, & 4.

Directions:

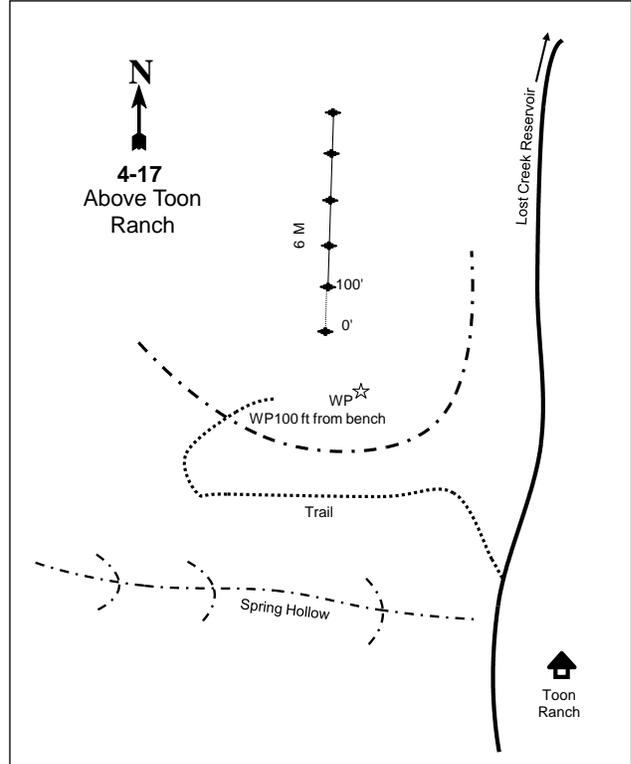
From Croyden drive up the main road towards Lost Creek Reservoir about 4 miles. Stop at Spring Hollow. Walk up the trail (up Spring Hollow) on the west side of the road until you reach the top of the bench. A witness post will be visible about 100 feet from the edge of the bench. From the witness post walk 100 feet to the north to the 0-foot baseline stake with browse tag #136. The baseline runs in a direction of 6 degrees magnetic.

Map Name: Lost Creek Dam



Township: 5N Range: 4E Section: 34

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 459264 E 4553010 N

Site Information

Site Description: This study is located on private land on a gently sloping bench above the Lost Creek Valley, where deer congregate during the winter. Vegetation in the area is comprised of a dense stand of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*). The site is isolated from the road, and some of the sagebrush is tall enough to provide protective cover for deer. Deer pellet groups have been sampled in high abundance since 2001. A deer was seen on the study area in 2006. Elk and sheep pellet groups have been sampled in low abundance since 2001 (Table - Pellet Group Data). The land owner grazes sheep during the fall and winter.

Browse: The area supports a dense stand of mature and vigorous mountain big sagebrush in association with some stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*). Sagebrush individuals appear to be hybrids of basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) and mountain big sagebrush, but all plants were classified as mountain big sagebrush. Individual plants with characteristics more like mountain big sagebrush appear to be more preferred and more heavily utilized. Utilization on the majority of the population has been mostly light, though use was more moderate in 2011. Density of sagebrush has steadily decreased over the course of the study. Decadence of sagebrush has increased from low to high levels since 1996. Poor vigor has also increased steadily since 2001. Recruitment of young sagebrush plants has been fairly poor over the course of the study. Stickyleaf low rabbitbrush has been the only other shrub sampled within density measurements. Density has steadily decreased over the course of the study (Table - Browse Characteristics). The decline in browse on the site is likely due to competition with a robust herbaceous understory.

Herbaceous Understory: Grasses are dominated by cheatgrass, which provides over half of the grass cover. Sandberg bluegrass (*Poa secunda*) and bluebunch wheatgrass (*Agropyron spicatum*) are the only common perennial grass species. Perennial forbs are not particularly diverse, but have increased substantially in cover since 1996. Western yarrow (*Achillea millefolium*) and American vetch (*Vicia americana*) are responsible for the large increase in cover, and these two species now dominate the herbaceous understory. The majority of the other sampled forb species have been annuals (Table - Herbaceous Trends).

Soil: The soil is in the Isbell loam series, which occurs on mountainsides. Parent material consists of slope alluvium and/or colluvium derived from sandstone and shale. These soils are characterized as deep and well drained (Soil Survey Staff 2011). Soil texture is a loam with a slightly acidic soil reaction (pH 6.5) (Table - Soil Analysis Data). There is little bare ground cover, with a high amount of vegetation and litter cover provided by the herbaceous understory (Table - Basic Cover). The soil erosion condition has been classified as stable since 2001.

Trend Assessments

Browse:

- **1996 to 2001 - stable (0):** The density of mountain big sagebrush decreased slightly from 2,880 plants/acre to 2,700 plants/acre, but cover increased from 28% to 33%. Decadence increased from 10% to 21%, but poor vigor decreased from 10% to 2%.
- **2001 to 2006 - slightly down (-1):** Sagebrush density decreased 16% to 2,280 plants/acre, and cover decreased to 27%. Decadence increased to 34%, and poor vigor increased to 10%. Recruitment of young sagebrush plants decreased from 7% to 4%.
- **2006 to 2011 - down (-2):** Density of sagebrush decreased 20% to 1,820 plants/acre, and cover decreased to 19%. Decadence increased to 43%, and poor vigor increased to 32%. There was no new recruitment of young sagebrush plants sampled.

Grass:

- **1996 to 2001 - up (+2):** The sum of nested frequency of perennial grasses increased 62%, and cover increased from 3% to 6%. Cheatgrass decreased significantly in nested frequency, and cover decreased from 32% to 12%.
- **2001 to 2006 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased 10%, but cover increased to 7%. Nested frequency of cheatgrass remained similar, but cover increased to 17%.
- **2006 to 2011 - slightly up (+1):** There was little change in the sum of nested frequency of perennial grasses, though cover decreased slightly to 6%. However, cheatgrass decreased significantly in nested frequency, and cover decreased to 8%.

Forb:

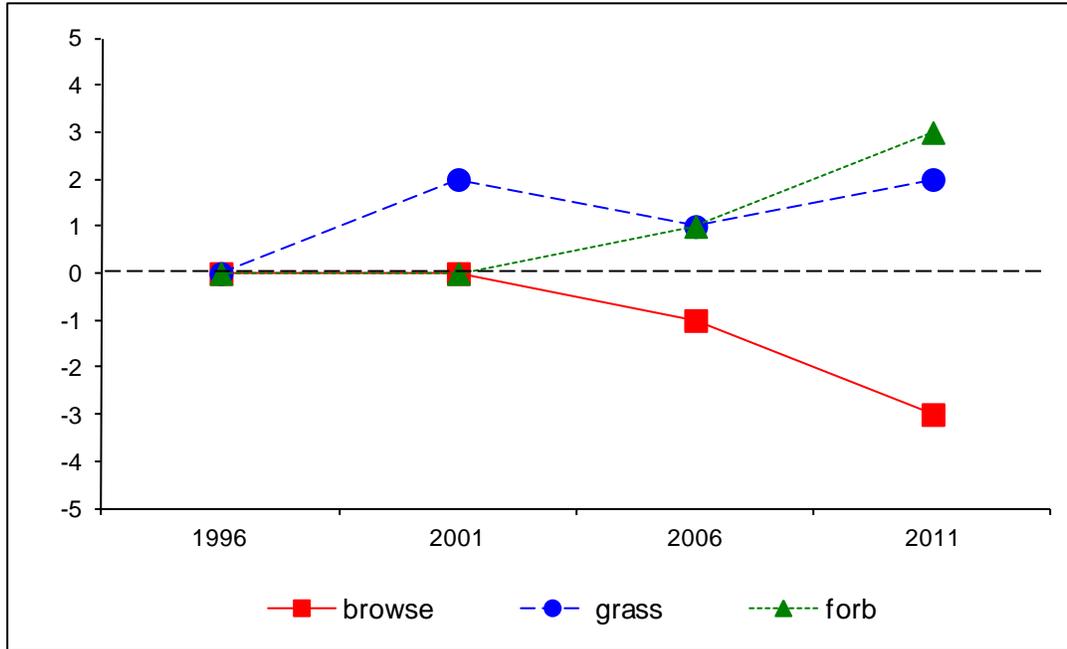
- **1996 to 2001 - stable (0):** There was little change in the sum of nested frequency of perennial forbs, though cover increased from 8% to 14%.
- **2001 to 2006 - slightly up (+1):** The sum of nested frequency of perennial forbs increased only slightly, but cover increased to 22%. There was a significant increase in the nested frequency of American vetch.
- **2006 to 2011 - up (+2):** The sum of nested frequency of perennial forbs increased 22%, and cover increased to 37%. There was a significant increase in the nested frequency of American vetch.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
Management unit 4, study no: 17

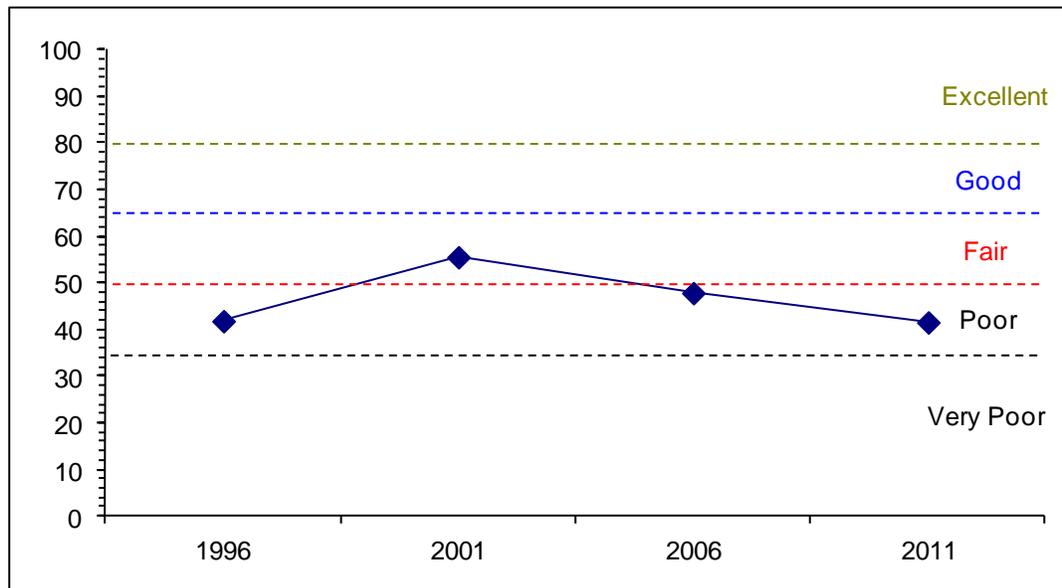
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	30.0	12.0	3.5	6.3	-20.0	10.0	0.0	41.8	Poor
01	30.0	8.7	3.5	12.0	-8.7	10.0	0.0	55.5	Fair
06	30.0	4.8	2.0	14.1	-13.1	10.0	0.0	47.8	Poor
11	23.7	2.1	0.0	11.9	-6.1	10.0	0.0	41.6	Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 4 Study no: 17



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 4, Study no: 17



HERBACEOUS TRENDS--
Management unit 04, Study no: 17

Type	Species	Nested Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
G	Agropyron dasystachyum	-	-	1	4	-	-	.00	.01
G	Agropyron spicatum	33	40	23	38	.87	1.79	1.44	1.99
G	Bromus japonicus (a)	8	3	11	2	.04	.00	.07	.01
G	Bromus tectorum (a)	c452	b369	b389	a296	31.50	11.57	17.39	8.15
G	Elymus cinereus	5	18	13	15	.82	1.60	.89	1.15
G	Melica bulbosa	-	-	5	-	-	-	.15	-
G	Poa pratensis	a-	a-	a2	b20	-	-	.03	.28
G	Poa secunda	a68	b114	ab111	ab83	1.46	2.60	4.55	2.51
Total for Annual Grasses		460	372	400	298	31.54	11.58	17.47	8.16
Total for Perennial Grasses		106	172	155	160	3.16	6.00	7.07	5.96
Total for Grasses		566	544	555	458	34.71	17.58	24.54	14.13
F	Achillea millefolium	a100	ab139	bc159	c182	4.02	6.30	9.32	10.70
F	Agoseris heterophylla (a)	ab22	a7	b28	b34	.09	.01	.39	.52
F	Allium sp.	12	23	13	27	.03	.16	.06	.13
F	Alyssum alyssoides (a)	a131	a106	b204	c270	1.25	.74	1.78	8.53
F	Artemisia ludoviciana	1	6	2	5	.63	.03	.03	.18
F	Aster chilensis	b77	b63	a16	a23	.66	.94	.40	.36
F	Camelina microcarpa (a)	b68	a24	a13	a5	.26	.12	.04	.00
F	Castilleja linariaefolia	-	4	-	-	-	.03	-	-
F	Cirsium undulatum	12	7	-	-	.03	.16	-	-
F	Collinsia parviflora (a)	a24	b90	b129	c281	.06	1.00	.70	2.46
F	Collomia linearis (a)	a12	b54	a23	a14	.02	.26	.11	.06
F	Comandra pallida	-	-	-	3	-	-	-	.00
F	Cryptantha sp.	b14	a-	b14	a-	.07	-	.19	-
F	Cymopterus sp.	-	-	1	-	-	-	.03	-
F	Delphinium nuttallianum	-	-	-	1	-	-	-	.00
F	Descurainia pinnata (a)	6	2	-	2	.02	.01	-	.00
F	Draba sp. (a)	a18	b55	b63	b76	.06	.24	.15	.89
F	Erodium cicutarium (a)	-	-	3	-	-	-	.00	-
F	Galium sp.	5	13	-	-	.01	.09	-	-
F	Gayophytum ramosissimum(a)	a-	a-	b10	a5	-	-	.18	.03
F	Holosteum umbellatum (a)	a61	b195	a79	a88	.33	2.66	.62	1.64
F	Lactuca serriola (a)	1	-	2	3	.00	-	.01	.03
F	Lappula occidentalis (a)	5	7	6	2	.01	.19	.01	.00
F	Lomatium sp.	-	-	-	1	-	-	-	.03
F	Machaeranthera spp	4	-	-	4	.01	-	-	.00
F	Microsteris gracilis (a)	a-	c79	c79	b41	-	.82	.31	.13
F	Polygonum douglasii (a)	9	9	4	-	.01	.01	.00	-
F	Ranunculus testiculatus (a)	a-	a5	a2	b17	-	.03	.00	.60
F	Sisymbrium altissimum (a)	6	6	2	-	.02	.04	.00	-
F	Sphaeralcea grossulariifolia	-	-	-	2	-	-	-	.00
F	Taraxacum officinale	-	-	-	8	-	-	-	.02
F	Tragopogon dubius (a)	a-	ab2	a-	b9	-	.03	.03	.04

Type	Species	Nested Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
F	Veronica biloba (a)	2	3	1	-	.03	.03	.03	-
F	Vicia americana	_{ab} 289	_a 250	_b 324	_c 377	2.44	5.84	11.96	24.53
F	Viola sp.	_a -	_a -	_a 5	_b 20	-	-	.01	.48
Total for Annual Forbs		365	644	648	847	2.19	6.23	4.41	14.98
Total for Perennial Forbs		514	505	534	653	7.92	13.58	22.01	36.46
Total for Forbs		879	1149	1182	1500	10.11	19.82	26.42	51.44

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

BROWSE TRENDS--

Management unit 04, Study no: 17

Type	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Artemisia tridentata vaseyana	86	77	70	65	27.64	33.43	26.70	18.92
B	Chrysothamnus viscidiflorus viscidiflorus	69	53	54	41	3.37	2.83	3.36	1.25
Total for Browse		155	130	124	106	31.01	36.27	30.06	20.18

CANOPY COVER, LINE INTERCEPT--

Management unit 04, Study no: 17

Species	Percent Cover	
	'06	'11
Artemisia tridentata vaseyana	29.01	24.46
Chrysothamnus viscidiflorus viscidiflorus	3.46	1.28

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 04, Study no: 17

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia tridentata vaseyana	2.2	2.7	3.2

BASIC COVER--

Management unit 04, Study no: 17

Cover Type	Average Cover %			
	'96	'01	'06	'11
Vegetation	64.87	66.75	66.01	77.97
Rock	.22	.44	.97	.43
Pavement	.20	.51	.67	.51
Litter	75.83	57.01	47.29	54.57
Cryptogams	.52	.77	.06	.19
Bare Ground	1.00	6.30	5.23	4.91

SOIL ANALYSIS DATA --

Management unit 04, Study no: 17, Study Name: Above Toon Ranch

Effective rooting depth (in)	pH	Clay-Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
11.2	6.5	41.3	32.7	27.0	3.4	30.9	153.6	0.5

PELLET GROUP DATA--

Management unit 04, Study no: 17

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Sheep	3	-	2	-	-	12 (30)	4 (10)
Rabbit	2	6	11	1	-	-	-
Elk	4	-	6	4	1 (2)	11 (26)	3 (8)
Deer	29	22	31	12	70 (174)	52 (127)	50 (122)
Cattle	-	3	-	-	-	-	-

BROWSE CHARACTERISTICS--

Management unit 04, Study no: 17

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Artemisia tridentata vaseyana									
96	2880	7	83	10	40	6	0	10	34/52
01	2700	7	72	21	60	7	0	2	41/53
06	2280	4	62	34	40	18	7	10	36/48
11	1820	0	57	43	200	44	4	32	36/52
Chrysothamnus nauseosus albicaulis									
96	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	24/23
11	0	0	0	-	-	0	0	0	-/-
Chrysothamnus viscidiflorus viscidiflorus									
96	3320	10	88	2	20	0	0	.60	13/21
01	2460	11	85	3	-	0	0	0	10/14
06	2120	9	90	1	-	8	2	.94	13/16
11	1160	19	79	2	-	2	0	2	11/16
Purshia tridentata									
96	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	11/27
11	0	0	0	-	-	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)	
Tetradymia canescens										
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	21/23	
11	0	0	0	-	-	0	0	0	-/-	