

RAILROAD CANYON - TREND STUDY NO. 10R-17-10

Vegetation Type: Burned Mountain Big Sagebrush

Range Type: Crucial Deer Summer (Fawning Habitat), Crucial Elk Summer (Calving Habitat)

NRCS Ecological Site Description: [Mountain Loamy Bottom \(Basin Wildrye\), R048AY410UT](#)

Land Ownership: BLM

Elevation: 7700 ft. (2347 m)

Aspect: West

Slope: 7%

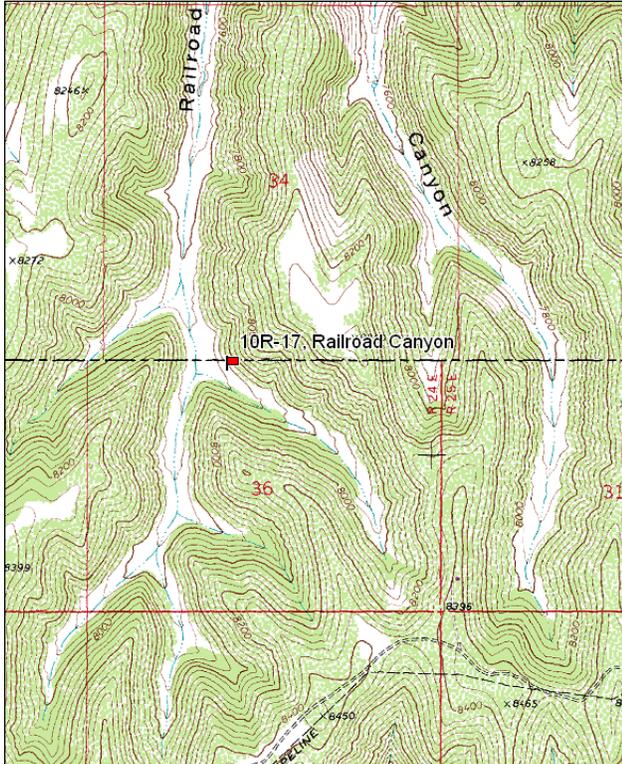
Transect bearing: 104° magnetic

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

Directions:

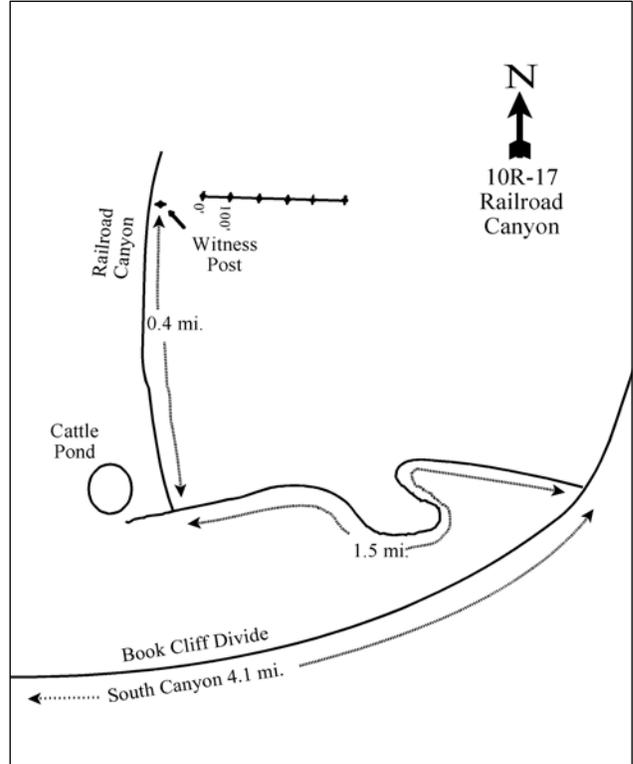
From the intersection of South Canyon Road and Book Cliff Divide Road, follow the Book Cliff Divide Road east for 4.1 miles to an intersection. Turn right and follow the road into Railroad Canyon for 1.5 miles to a faint road before a cattle pond. Turn right onto the faint road and follow it for 0.4 miles to a witness post on the right side of the road. From the witness post the 0-foot stake is 85 paces away at 64°M and is marked by browse tag #103.

Map Name: Tom Patterson



Township: 15 1/2S Range: 24E Section: 36

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 653107 E 4369525 N

RAILROAD CANYON - TREND STUDY NO. 10R-17

Site Information

Site Description: The study samples a small narrow side canyon in Railroad Canyon. There are aspen (*Populus tremuloides*) growing on the steep slope to the south of the site. The site was dominated by large basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) and mountain big sagebrush (*A. tridentata* ssp. *vaseyana*) in the summer of 1998, when the study was established. The canyon was burned by the Bureau of Land Management (BLM) in the fall of 1998, removing much of the browse component. Energy development is common in the area with development to the south of the site. Grazing in the area is managed by the BLM as part of the Sweetwater allotment. The area serves as a travel corridor with two different trails for game and livestock noted in 2010. Pellet group transect data estimated mostly moderate elk use in 1998 and 2000, but light use in 2010. Estimated deer increased from light use in 1998 and 2000 to more moderate use in 2010 (Table - Pellet Group Data).

Browse: The site was dominated by basin and mountain big sagebrush prior to the burn. All of the sagebrush sampled was classified as mountain big sagebrush due to high amounts of hybridization between the two species. Prior to the fire the big sagebrush population was mostly mature with moderate decadence, good recruitment of young plants and light use. Following the fire, most sagebrush was removed from the site, but had begun to reestablish in 2010 with a mixed population of young and mature plants. Other common browse sampled on the site includes rubber rabbitbrush (*Chrysothamnus nauseosus*), snowberry (*Symphoricarpos oreophilus*) and fringed sagebrush (*Artemisia frigida*) (Table - Browse Characteristics).

Herbaceous Understory: The key component of this site due to the elevation and season of use is the herbaceous understory. Grasses are diverse and abundant on the site. Kentucky bluegrass (*Poa pratensis*) was the dominant grass on the site in 1998 and 2000, but decreased significantly in 2010. Needle-and-thread (*Stipa comata*) and intermediate wheatgrass (*Agropyron intermedium*) both increased significantly in 2010 with needle-and-thread becoming the dominant grass species in cover. Cheatgrass (*Bromus tectorum*) was rare in 1998 and 2000, but increased significantly in 2010. Perennial forbs are diverse, but are not overly abundant. There was a large increase in the frequency and cover of perennial forbs in 2000, following the fire, but frequency and cover decreased to 1998 levels in 2010. Annual forbs were abundant in 2010 (Table - Herbaceous Trends).

Soil: The soil texture is sandy loam with a neutral soil reaction (pH 6.7) (Table - Soil Analysis Data). Bare ground cover was high in 2000, following the fire, but has been low in the other sample years. Good protective ground cover is provided by vegetation and litter cover from the herbaceous species on the site (Table - Basic Cover). The soil erosion condition was classified as stable in 2010.

Trend Assessments

Browse:

- **1998 to 2000 - down (-2):** Most of the browse component was removed by the prescribed fire.
- **2000 to 2010 - slightly up (+1):** There was a large increase in the density of big sagebrush with a large amount of recruitment. Big sagebrush has begun to reestablish on the site, but most plants remain small and cover is low at 2%.

Grass:

- **1998 to 2000 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, though cover decreased from 35% to 29%.
- **2000 to 2010 - stable (0):** The sum of nested frequency of perennial grasses increased 9% and cover increased to 33%. There was a change in composition with a significant decrease in the nested frequency of Kentucky bluegrass, and a significant increase in the nested frequency of needle-and-thread and intermediate wheatgrass. Cheatgrass also increased significantly in nested frequency.

Forb:

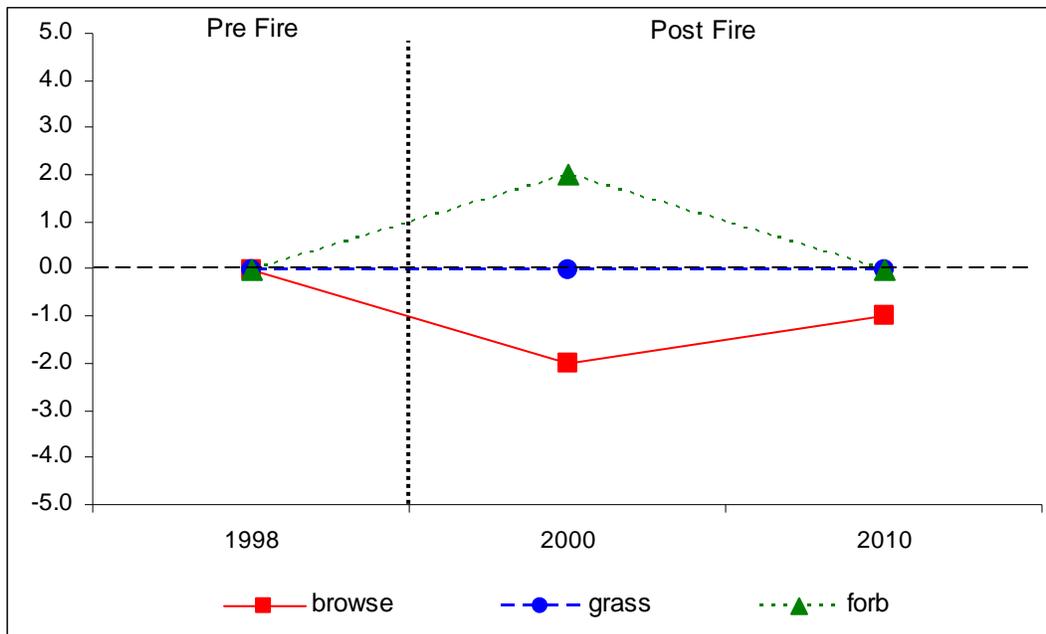
- **1998 to 2000 - up (+2):** The sum of nested frequency of perennial forbs increased by 85% and cover increased from 2% to 4%.
- **2000 to 2010 - down (-2):** The perennial forb sum of nested frequency decreased by 37% and cover decreased to 1%. Annual forbs increased substantially in frequency and cover with a significant increase in the nested frequency of annual stickseed (*Lappula occidentalis*).

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
Management unit 10R, study no: 17

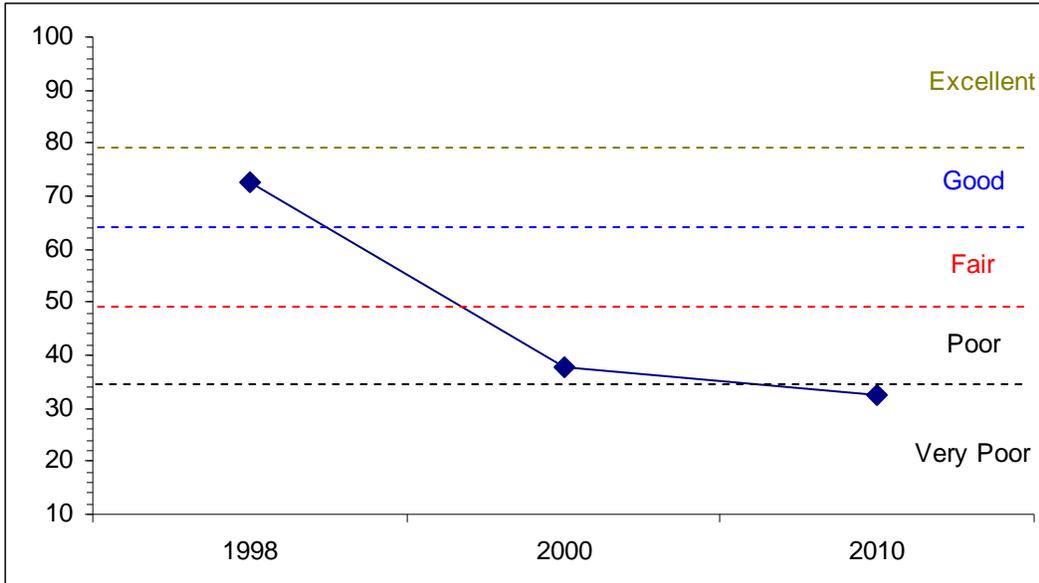
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
98	27.1	7.8	4.0	30.0	0.0	3.8	0.0	72.7	Good
00	0.2	0.0	0.0	30.0	0.0	7.7	0.0	37.9	Poor
10	2.8	0.0	0.0	30.0	-2.8	2.6	0.0	32.5	Very Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 10R, Study no: 17



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 10R, Study no: 17



HERBACEOUS TRENDS--
 Management unit 10R, Study no: 17

Type	Species	Nested Frequency			Average Cover %		
		'98	'00	'10	'98	'00	'10
G	<i>Agropyron intermedium</i>	_a 50	_b 143	_c 215	.59	3.69	7.25
G	<i>Bouteloua gracilis</i>	24	17	15	.66	.08	.40
G	<i>Bromus anomalus</i>	-	-	5	-	-	.15
G	<i>Bromus tectorum</i> (a)	_a 7	_a 1	_b 154	.02	.00	3.79
G	<i>Carex</i> sp.	3	2	13	.15	.06	.54
G	<i>Elymus cinereus</i>	9	8	7	1.00	1.61	.82
G	<i>Oryzopsis hymenoides</i>	11	4	4	.52	.33	.18
G	<i>Poa pratensis</i>	_b 410	_b 394	_a 197	25.38	18.96	7.67
G	<i>Sitanion hystrix</i>	_b 15	_{ab} 6	_a -	.15	.06	-
G	<i>Sporobolus cryptandrus</i>	_a -	_a -	_b 28	-	-	.21
G	<i>Stipa comata</i>	_a 102	_a 84	_b 231	6.92	4.19	15.36
Total for Annual Grasses		7	1	154	0.01	0.00	3.79
Total for Perennial Grasses		624	658	715	35.38	29.00	32.59
Total for Grasses		631	659	869	35.40	29.00	36.38
F	<i>Achillea millefolium</i>	4	10	2	.15	.47	.00
F	<i>Agoseris glauca</i>	-	3	-	-	.00	-
F	<i>Androsace septentrionalis</i> (a)	_b 17	_a 4	_a -	.04	.01	-
F	<i>Aster</i> sp.	-	4	-	-	.00	-
F	<i>Astragalus convallarius</i>	7	6	3	.04	.09	.03
F	<i>Castilleja</i> sp.	2	-	-	.03	-	-
F	<i>Chaenactis douglasii</i>	_b 14	_b 13	_a -	.09	.03	-
F	<i>Chenopodium leptophyllum</i> (a)	-	-	9	-	-	.01
F	<i>Corydalis aurea</i>	-	5	-	-	.03	-
F	<i>Cryptantha</i> sp.	10	3	-	.12	.06	-

T y p e	Species	Nested Frequency			Average Cover %		
		'98	'00	'10	'98	'00	'10
F	Descurainia pinnata (a)	-	3	8	-	.00	.01
F	Eriogonum umbellatum	-	-	3	-	-	.00
F	Lappula occidentalis (a)	a ⁻	a ⁻	b ²⁵³	-	-	3.54
F	Oenothera trichocalyx	a ³	b ⁴⁶	a ⁻	.15	1.02	-
F	Penstemon sp.	19	22	17	.85	.84	.46
F	Phlox longifolia	a ³	b ⁷⁷	b ⁷⁵	.00	.62	.48
F	Senecio multilobatus	b ³⁸	a ¹⁸	ab ¹⁸	.23	.31	.09
F	Sphaeralcea coccinea	2	3	7	.15	.03	.04
F	Streptanthus cordatus	2	-	-	.03	-	-
F	Taraxacum officinale	12	13	21	.03	.33	.16
F	Tragopogon dubius	10	10	2	.03	.01	.00
Total for Annual Forbs		17	7	270	0.04	0.01	3.56
Total for Perennial Forbs		126	233	148	1.91	3.87	1.28
Total for Forbs		143	240	418	1.96	3.88	4.85

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

BROWSE TRENDS--

Management unit 10R, Study no: 17

T y p e	Species	Strip Frequency			Average Cover %		
		'98	'00	'10	'98	'00	'10
B	Artemisia frigida	0	0	51	-	-	.79
B	Artemisia tridentata vaseyana	79	5	15	21.65	.15	1.56
B	Ceratoides lanata	0	2	2	-	-	-
B	Chrysothamnus nauseosus	15	2	8	.93	-	1.44
B	Chrysothamnus viscidiflorus	4	2	6	.06	-	-
B	Gutierrezia sarothrae	0	0	1	-	-	.03
B	Symphoricarpos oreophilus	57	23	37	7.75	1.47	3.95
Total for Browse		155	34	120	30.40	1.63	7.78

CANOPY COVER, LINE INTERCEPT--

Management unit 10R, Study no: 17

Species	Percent Cover '10
Artemisia frigida	.78
Artemisia tridentata vaseyana	2.50
Chrysothamnus nauseosus	1.64
Chrysothamnus viscidiflorus	.40
Symphoricarpos oreophilus	4.16

BASIC COVER--

Management unit 10R, Study no: 17

Cover Type	Average Cover %		
	'98	'00	'10
Vegetation	68.31	37.76	57.20
Rock	.09	1.21	.17
Pavement	2.33	7.20	3.32
Litter	68.18	30.60	52.35
Cryptogams	1.03	.00	.03
Bare Ground	8.18	35.35	18.54

SOIL ANALYSIS DATA --

Management unit 10R, Study no: 17, Study Name: Railroad Canyon

Effective rooting depth (in)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
29.6	6.7	72.7	14.7	12.6	2.4	13.6	92.8	0.9

PELLET GROUP DATA--

Management unit 10R, Study no: 17

Type	Quadrat Frequency			Days use per acre (ha)		
	'98	'00	'10	'98	'00	'10
Sheep	-	-	1	-	-	-
Rabbit	-	1	2	-	-	-
Elk	3	27	9	27 (68)	55 (136)	8 (20)
Deer	-	1	9	1 (2)	12 (30)	26 (65)
Cattle	4	2	15	14 (34)	-	48 (118)

BROWSE CHARACTERISTICS--

Management unit 10R, Study no: 17

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 frigida</i>									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
10	5380	38	62	-	980	0	0	0	4/6
<i>Artemisia tridentata vaseyana</i>									
98	3740	8	68	24	60	16	.53	21	40/45
00	120	50	50	0	-	0	0	0	5/8
10	1180	44	56	0	40	2	0	0	25/42
<i>Ceratoides lanata</i>									
98	0	0	0	-	-	0	0	0	-/-
00	60	33	67	-	-	100	0	0	-/-
10	60	33	67	-	-	0	0	0	6/7

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
Cercocarpus montanus									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	15/22
Chrysothamnus nauseosus									
98	580	14	83	3	-	0	0	0	33/35
00	40	0	100	0	-	0	0	0	21/24
10	200	30	70	0	-	10	10	0	36/56
Chrysothamnus viscidiflorus									
98	80	0	100	-	-	0	0	0	20/16
00	60	100	0	-	-	67	0	0	5/5
10	140	0	100	-	-	0	0	0	11/15
Gutierrezia sarothrae									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
10	40	0	100	-	-	0	0	0	6/8
Peraphyllum ramosissimum									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	7/16
Symphoricarpos oreophilus									
98	2580	31	62	7	40	14	10	7	27/37
00	1360	54	46	0	-	50	28	0	7/16
10	1280	27	73	0	-	13	0	0	16/30
Tetradymia canescens									
98	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	8/13