

DESERET BURN - TREND STUDY NO. 4-19-11

Vegetation Type: Burned and Seeded

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: [Semidesert Stony Loam \(Black Sagebrush\), R047XB252UT](#)

Land Ownership: Private

Elevation: 6,700 ft (2,042 m)

Aspect: East

Slope: 12%

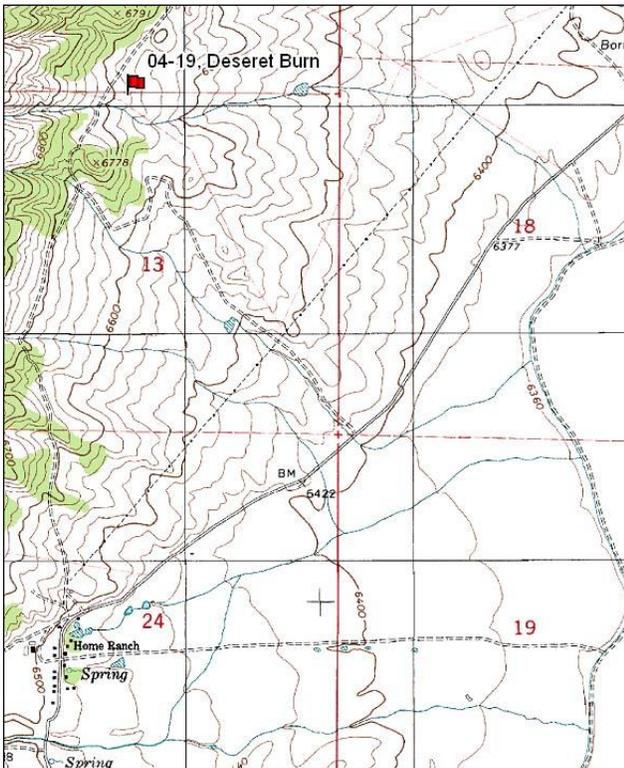
Transect bearing: 320° magnetic

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

Directions:

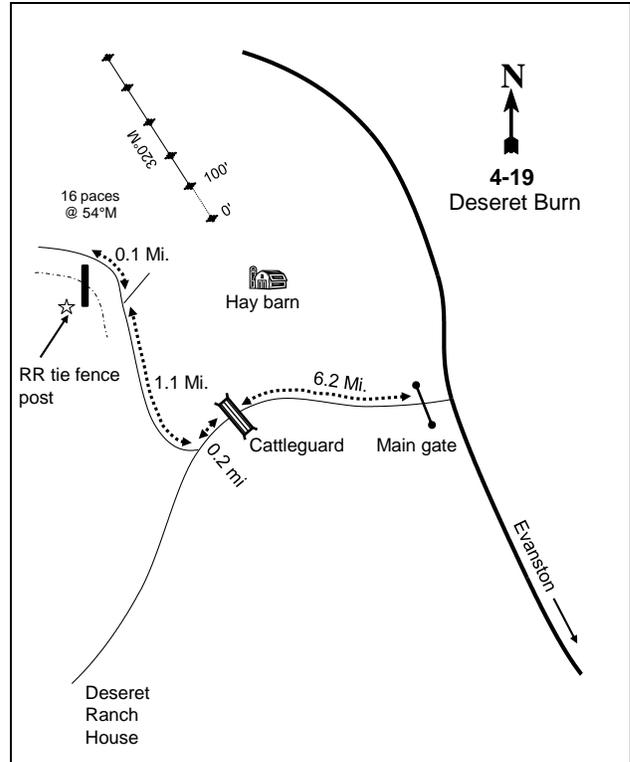
From the Deseret Land & Livestock main gate on highway 16 between Evanston and Woodruff, proceed west towards the Deseret ranch house 6.2 miles to a cattleguard. Continue 0.2 miles and turn right onto a two track. Follow the two track for 1.2 miles staying left. The 0-foot stake is 16 paces at 54 degrees magnetic from a rail road tie in the fence line. The baseline runs at 320 degrees magnetic.

Map Name: Neponset Reservoir NW



Township: 8N Range: 6E Section: 13

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 489699 E 4588882 N

DESERET BURN - TREND STUDY NO. 4-19

Site Information

Site Description: This study is located on Deseret Land and Livestock land, approximately one and a half miles north of the ranch house. The area burned in 1996, and was aerially seeded and chained afterward. Shrubs were seeded either by a dribbler or planted from root stock. The study was established to monitor vegetation recovery following the treatment. There was very little wildlife presence when the study was established in 1997, but has since increased. Elk pellet groups have been sampled in moderate to high abundance since 2001. Deer/pronghorn pellet groups have been sampled in low abundance since 2001. Sampled cattle sign has been moderate to high in abundance since 2001. A heavy rabbit presence was noted in 2011 (Table - Pellet Group Data).

Browse: Even though there was a high effort to establish browse by seeding and planting root stock, browse has remained sparse. The predominant browse species is the increaser species stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*), but it provides little cover (Table - Browse Trends). Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and fourwing saltbush (*Atriplex canescens*) are present in very low densities. Utilization has been mostly light on sagebrush, and mostly moderate on fourwing saltbush (Table - Browse Characteristics).

Herbaceous Understory: Vegetation on the site is dominated by grasses. Crested wheatgrass (*Agropyron cristatum*) and Sandberg bluegrass (*Poa secunda*) have both steadily increased in cover throughout the study, and combined have provided the majority of vegetation cover. Other common perennial grass species include intermediate wheatgrass (*Agropyron intermedium*) and western wheatgrass (*A. smithii*), with less abundant species including needle-and-thread (*Stipa comata*), sedge (*Carex* sp.), and bottlebrush squirreltail (*Sitanion hystrix*). The annual grass cheatgrass (*Bromus tectorum*) was abundant in 2001, but has been rare in other sample years. Perennial forbs are rare on the site, and have steadily decreased since 1997. With the exception of pale alyssum (*Alyssum alyssoides*), annual forbs are infrequent as well (Table - Herbaceous Trends).

Soil: The soil is in the Duckree gravelly loam series, which occurs on valley sides and hillslopes. Parent material consists of colluvium and/or slope alluvium derived from quartzite, sandstone, and chert. These soils are characterized as very deep, well drained, and moderately permeable (Soil Survey Staff 2011). The soil texture is a sandy clay loam with a neutral soil reaction (pH 6.7) (Table - Soil Analysis Data). Vegetation and litter cover were both very low, and bare ground cover was high in 1997. Vegetation cover has increased greatly, and is fairly high. Litter cover has also increased, but is only moderately high. Bare ground cover decreased, but remains moderately high (Table - Basic Cover). The soil erosion condition has been classified as stable since 2001.

Trend Assessments

Browse:

- **1997 to 2001 - slightly down (-1):** Fourwing saltbush density decreased from 360 plants/acre to 100 plants/acre, and cover remained minimal. Most of the young plants sampled in 1997 apparently did not persist.
- **2001 to 2006 - stable (0):** Density of Wyoming big sagebrush and fourwing saltbush remained very low.
- **2006 to 2011 - stable (0):** Density of Wyoming big sagebrush and fourwing saltbush remained very low.

Grass:

- **1997 to 2001 - up (+2):** The sum of nested frequency of perennial grasses increased 27%, and cover increased from 10% to 18%. However, the annual grass cheatgrass also increased significantly in nested frequency, and cover increased from 1% to 6%.
- **2001 to 2006 - up (+2):** The sum of nested frequency of perennial grasses increased 32%, and cover increased to 28%. Crested wheatgrass and Sandberg bluegrass increased significantly in nested frequency and dominate the site. Cheatgrass decreased significantly in nested frequency, and cover decreased to less than 1%.
- **2006 to 2011 - stable (0):** The sum of nested frequency of perennial grasses remained similar, though cover increased to 35%. There was a significant increase in the nested frequency of crested wheatgrass.

Forb:

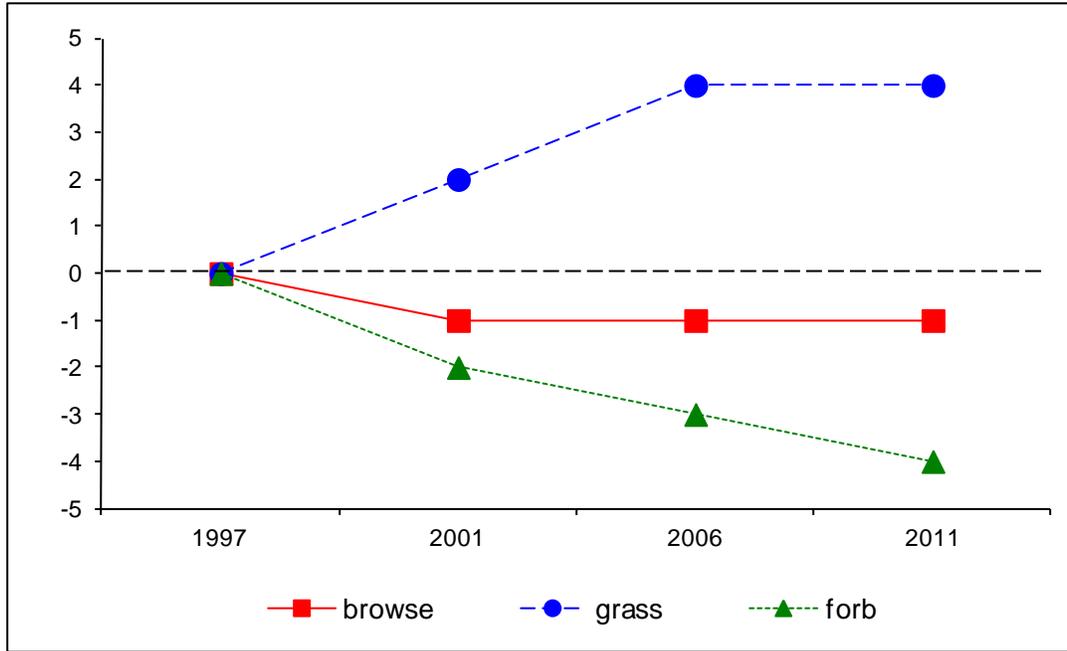
- **1997 to 2001 - down (-2):** Perennial forb sum of nested frequency decreased 65%, and cover decreased from 3% to 2%.
- **2001 to 2006 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased, but were already rare on the site. The number of species sampled had decreased substantially.
- **2006 to 2011 - slightly down (-1):** Almost no perennial forbs were sampled, and cover decreased to near 0%. The forb composition is dominated by the annual species pale alyssum.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 4, study no: 19

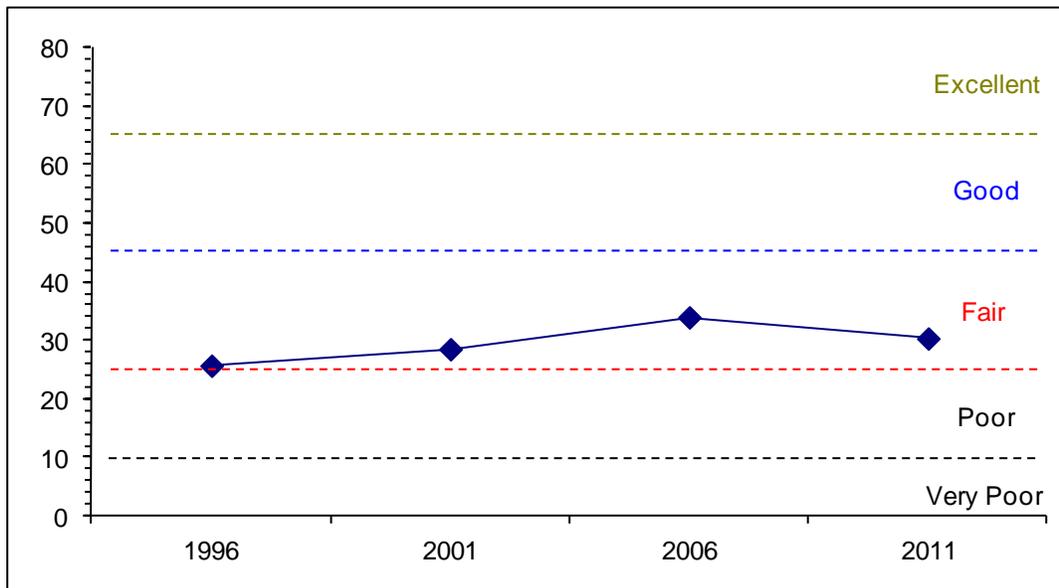
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
97	0.1	0.0	0.0	20.2	-0.5	5.9	0.0	25.7	Poor-Fair
01	0.0	0.0	0.0	30.0	-4.7	3.2	0.0	28.5	Fair
06	0.4	0.0	0.0	30.0	-0.1	3.7	0.0	34.0	Fair
11	0.3	0.0	0.0	30.0	0.0	0.1	0.0	30.3	Fair

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 4 Study no: 19



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
 Management unit 4, Study no: 19



HERBACEOUS TRENDS--
Management unit 04, Study no: 19

Type	Species	Nested Frequency				Average Cover %			
		'97	'01	'06	'11	'97	'01	'06	'11
G	Agropyron cristatum	a153	a148	b216	c259	3.52	5.30	8.50	15.53
G	Agropyron intermedium	a93	b160	ab113	a75	1.70	4.90	4.03	1.94
G	Agropyron smithii	a47	b95	c134	bc100	1.10	2.47	2.14	2.75
G	Agropyron spicatum	b30	a1	a-	a3	.51	.00	-	.01
G	Bromus japonicus (a)	-	2	-	-	-	.00	-	-
G	Bromus tectorum (a)	a56	b295	a25	a27	.65	6.25	.19	.06
G	Carex sp.	22	25	6	13	.72	.51	.03	.07
G	Elymus cinereus	-	1	-	3	-	.03	.03	.18
G	Oryzopsis hymenoides	3	-	1	2	.15	-	.15	.15
G	Poa fendleriana	6	-	-	-	.18	-	-	-
G	Poa secunda	a144	a175	b340	b299	2.12	4.11	11.85	13.11
G	Sitanion hystrix	a-	a1	a3	b9	.00	.00	.00	.03
G	Stipa comata	a7	b34	b31	b48	.06	.31	1.20	.99
Total for Annual Grasses		56	297	25	27	0.64	6.25	0.19	0.06
Total for Perennial Grasses		505	640	844	811	10.09	17.67	27.97	34.79
Total for Grasses		561	937	869	838	10.74	23.93	28.17	34.85
F	Agoseris glauca	-	1	7	-	-	.00	.02	-
F	Allium sp.	b32	a-	a-	a-	.11	-	-	-
F	Alyssum alyssoides (a)	a-	c292	b228	d400	-	1.38	.84	4.48
F	Arabis sp.	3	-	-	1	.00	-	-	.00
F	Astragalus sp.	2	3	-	3	.03	.01	.01	.01
F	Balsamorhiza sagittata	2	1	1	2	.06	.33	.03	.03
F	Chenopodium sp. (a)	-	-	-	-	.41	-	-	-
F	Crepis acuminata	-	2	-	-	-	.03	-	-
F	Cymopterus sp.	-	1	-	-	-	.00	-	-
F	Erigeron sp.	b14	a-	a-	a-	.24	-	-	-
F	Gayophytum ramosissimum(a)	b76	a-	a-	a5	1.69	-	-	.02
F	Gilia sp. (a)	b18	b27	a-	a-	.26	.07	-	-
F	Lactuca serriola (a)	-	-	-	-	.06	-	-	-
F	Lappula occidentalis (a)	a14	b72	a-	a7	.26	.18	-	.01
F	Linum lewisii	b13	a-	a-	a-	.09	-	-	-
F	Medicago sativa	12	17	14	-	.24	.63	1.49	-
F	Phlox longifolia	b54	ab35	a24	a7	.21	.08	.13	.02
F	Ranunculus testiculatus (a)	a-	a-	a2	b12	-	-	.00	.08
F	Sanguisorba minor	b65	a4	a-	a-	1.84	.01	-	-
F	Sphaeralcea coccinea	2	3	4	-	.03	.15	.15	-
F	Tragopogon dubius (a)	-	4	-	-	-	.03	-	-
F	Unknown forb-perennial	3	4	-	-	.03	.31	-	-
Total for Annual Forbs		108	395	230	424	2.69	1.67	0.84	4.59
Total for Perennial Forbs		202	71	50	13	2.91	1.57	1.84	0.06
Total for Forbs		310	466	280	437	5.60	3.25	2.68	4.66

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

BROWSE TRENDS--

Management unit 04, Study no: 19

T y p e	Species	Strip Frequency				Average Cover %			
		'97	'01	'06	'11	'97	'01	'06	'11
B	Artemisia tridentata wyomingensis	0	3	3	5	-	.03	.18	.03
B	Atriplex canescens	14	5	3	4	.04	.00	.15	.18
B	Chrysothamnus viscidiflorus viscidiflorus	33	35	38	39	.83	1.58	2.30	2.67
B	Eriogonum microthecum	0	1	0	0	-	-	-	-
B	Opuntia sp.	2	3	3	3	-	.00	-	-
Total for Browse		49	47	47	51	0.87	1.62	2.63	2.88

CANOPY COVER, LINE INTERCEPT--

Management unit 04, Study no: 19

Species	Percent Cover	
	'06	'11
Artemisia tridentata wyomingensis	.15	.31
Atriplex canescens	.38	-
Chrysothamnus viscidiflorus viscidiflorus	2.61	5.11
Opuntia sp.	.10	.10

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 04, Study no: 19

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia tridentata wyomingensis	-	2.0	3.4
Atriplex canescens	4.0	9.0	15.5

BASIC COVER--

Management unit 04, Study no: 19

Cover Type	Average Cover %			
	'97	'01	'06	'11
Vegetation	16.43	38.72	41.27	44.18
Rock	3.81	1.23	1.19	.37
Pavement	10.35	2.20	2.62	2.19
Litter	5.63	55.69	39.09	27.98
Cryptogams	.48	.30	.33	.42
Bare Ground	51.37	23.37	25.48	32.91

SOIL ANALYSIS DATA --

Management unit 04, Study no: 19, Study Name: Deseret Burn

Effective rooting depth (in)	pH	Sandy-Clay-Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
12.4	6.7	49.6	19.5	30.9	2.7	27.7	249.6	0.8

PELLET GROUP DATA--

Management unit 04, Study no: 19

Type	Quadrat Frequency			Days use per acre (ha)		
	'01	'06	'11	'01	'06	'11
Rabbit	5	29	49	-	-	-
Moose	-	2	-	-	-	-
Elk	14	44	21	36 (88)	64 (157)	19 (46)
Deer/Pronghorn	5	5	11	4 (10)	3 (7)	6 (15)
Cattle	13	30	12	33 (82)	54 (134)	33 (82)

BROWSE CHARACTERISTICS--

Management unit 04, Study no: 19

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>Artemisia tridentata wyomingensis</i>									
97	0	0	0	-	-	0	0	0	-/-
01	60	33	67	-	-	0	0	0	8/9
06	60	0	100	-	-	0	100	0	11/17
11	100	40	60	-	-	20	0	0	17/30
<i>Atriplex canescens</i>									
97	360	50	50	-	20	0	0	0	23/23
01	100	20	80	-	20	60	0	0	19/18
06	60	0	100	-	-	33	0	0	32/41
11	80	0	100	-	-	75	0	0	39/48
<i>Ceratoides lanata</i>									
97	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	9/11
11	0	0	0	-	-	0	0	0	17/22
<i>Chrysothamnus nauseosus</i>									
97	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	-/-
11	0	0	0	-	-	0	0	0	32/17
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
97	1480	1	97	1	-	0	0	1	12/17
01	1600	3	73	25	-	0	0	3	10/18
06	1400	7	84	9	320	16	10	3	11/22
11	1680	20	80	0	-	0	0	0	13/26
<i>Eriogonum microthecum</i>									
97	0	0	0	-	-	0	0	0	-/-
01	20	0	100	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	-/-
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)	
<i>Opuntia</i> sp.										
97	40	0	100	-	-	0	0	0	3/8	
01	100	20	80	-	-	0	0	0	3/6	
06	80	0	100	-	20	0	0	0	4/12	
11	80	0	100	-	-	0	0	0	5/16	
<i>Tetradymia canescens</i>										
97	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	25/22	
06	0	0	0	-	-	0	0	0	-/-	
11	0	0	0	-	-	0	0	0	-/-	