

DESERET MAIN GATE - TREND STUDY NO. 4-18-11

Vegetation Type: Wyoming Big Sagebrush

Range Type: Substantial Deer Year-long, Crucial Elk Winter

NRCS Ecological Site Description: [Semidesert Loam \(Wyoming Big Sagebrush\), R034XY212UT](#)

Land Ownership: Private

Elevation: 6,400 ft (1,951 m)

Aspect: Level (South)

Slope: 0%

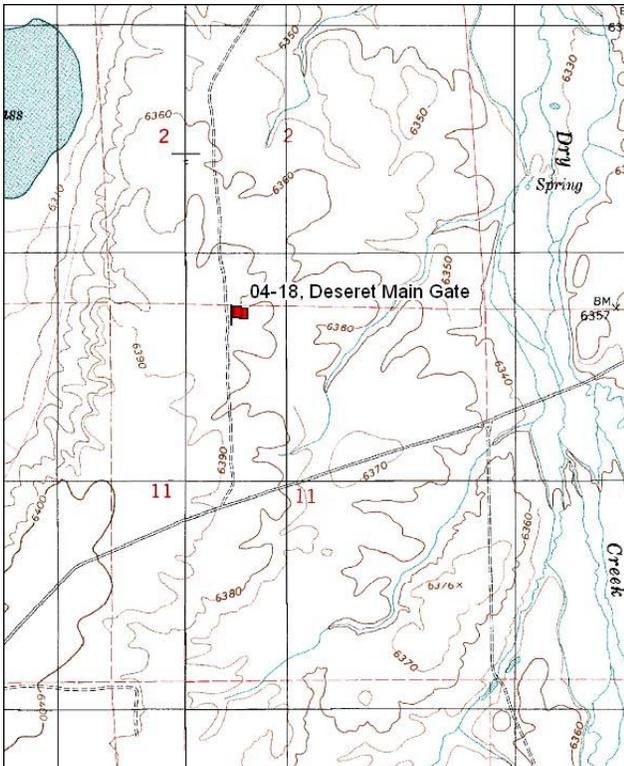
Transect bearing: 12° magnetic

Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95 ft). Rebar: belt 2 on 10ft.

Directions:

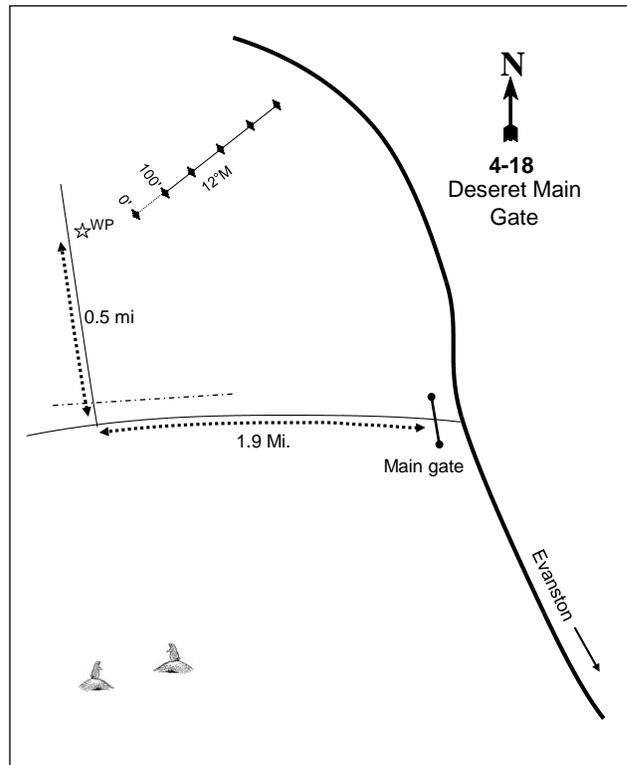
From the Deseret Land & Livestock main gate on highway 16 between Evanston and Woodruff, proceed west towards the Deseret ranch house 1.9 miles. Turn right and go 0.5 miles north to a witness post on the east side of the road. The 0-foot stake is 9 paces at 48 degrees magnetic.

Map Name: Neponset Reservoir NE



Township: 8N Range: 6E Section: 11

Diagrammatic Sketch:



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

DESERET MAIN GATE - TREND STUDY NO. 4-18

Site Information

Site Description: This study is located on the Deseret Land and Livestock ranch, near the east entrance off of Highway 16. The study samples a Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and crested wheatgrass (*Agropyron cristatum*) community. This area is occupied by elk, mule deer, pronghorn, cattle, and sage grouse. Deer/pronghorn pellet groups have been sampled in low abundance since 2001. Elk pellet groups were sampled in low abundance in 2001, but increasing to high abundance in 2006, and more moderate pellet group abundance in 2011. Sampled cattle sign has been high in abundance since 2001. Sage grouse pellets have also been common (Table - Pellet Group Data).

Browse: The key browse species is Wyoming big sagebrush, which provides nearly all of the browse cover on the site (Table - Browse Trends). The population was dense at the outset of the study, but density has steadily decreased since 2001. Utilization of sagebrush has been mostly light to moderate, with some years of heavy use. Decadence and poor vigor are high within the population. The sagebrush defoliator moth (*Aroga websteri*) was identified on 10% of the sampled population in 2006, which likely increased poor vigor in that year. Recruitment of young sagebrush plants has been fair, but the density have young plants has been consistently lower than the density of dead plants sampled (Table - Browse Characteristics). Recruitment may be limited by the robust herbaceous understory.

Herbaceous Understory: Crested wheatgrass is the dominant understory species, and with the decrease in sagebrush has become the dominant species on the site. Some utilization has been noted on crested wheatgrass in multiple sample years. Other grass species occur infrequently. Forbs are sparse and have provided less than 1% cover since 1997 (Table - Herbaceous Trends).

Soil: The soil is in the Woodpass loam series, which occurs on upland slopes and alluvial fans. Parent material consists of alluvium derived from limestone and sandstone. These soils are characterized as very deep and well drained (Soil Survey Staff 2011). The soil has a loam texture and a slightly acidic soil reaction (pH 6.3) (Soil Analysis Data). There is little rock or pavement on the soil surface or within the profile. Bare ground cover is moderately high, with only moderate vegetation and litter cover that is provided primarily from crested wheatgrass and Wyoming big sagebrush (Table - Basic Cover). Erosion is minimal due to the gentle slope, but moderate pedestaling around sagebrush stems and crested wheatgrass clumps provide some evidence of past erosion. The soil erosion condition has been classified as stable since 2001.

Trend Assessments

Browse:

- **1997 to 2001 - stable (0):** Density of Wyoming big sagebrush increased 9% from 5,280 plants/acre to 5,780 plants/acre, but cover remained similar at 12%. Decadence increased from 27% to 43%.
- **2001 to 2006 - down (-2):** Wyoming big sagebrush density decreased 33% to 3,900 plants/acre, and cover decreased to 6%. Decadence remained high at 45%, and poor vigor increased from 11% to 36%.
- **2006 to 2011 - down (-2):** Density of Wyoming big sagebrush decreased 29% to 2,780 plants/acre, and cover decreased slightly to 5%. Decadence and poor vigor decreased, but remained high at 31% and 32%, respectively.

Grass:

- **1997 to 2001 - slightly up (+1):** The sum of nested frequency of perennial grasses increased by 14%, and cover increased from 12% to 19%.
- **2001 to 2006 - slightly up (+1):** The perennial grass sum of nested frequency increased 16%, and cover increased to 38%.

- **2006 to 2011 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, but cover decreased slightly to 32%.

Forb:

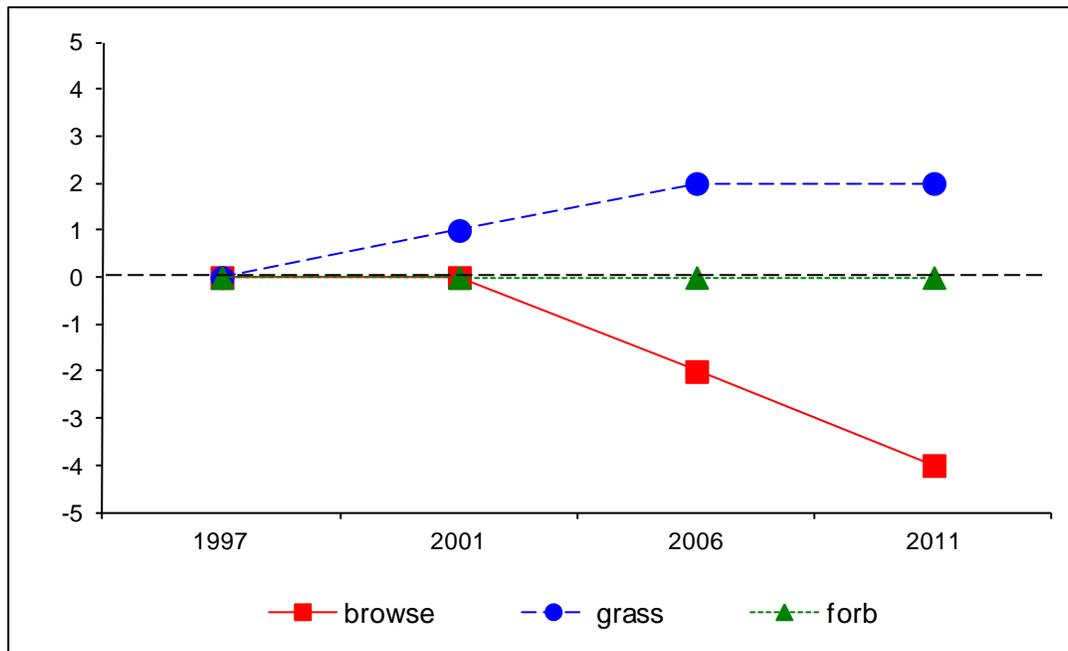
- **1997 to 2001 - stable (0):** Forb species are rare on the site.
- **2001 to 2006 - stable (0):** Forb species are rare on the site.
- **2006 to 2011 - stable (0):** Forb species are rare on the site.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 4, study no: 18

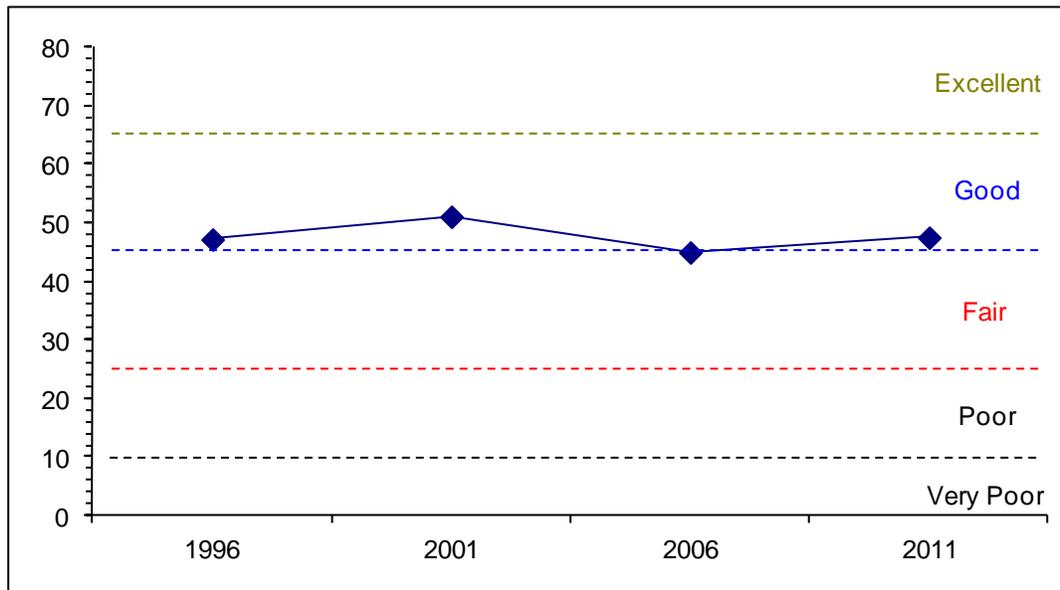
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
97	14.5	6.9	2.0	23.5	0.0	0.3	0.0	47.2	Good
01	14.5	2.1	4.0	30.0	0.0	0.4	0.0	51.1	Good
06	7.4	1.5	5.0	30.0	0.0	1.0	0.0	45.0	Fair-Good
11	6.1	5.7	5.0	30.0	0.0	0.7	0.0	47.5	Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 4 Study no: 18



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
 Management unit 4, Study no: 18



HERBACEOUS TRENDS--
 Management unit 04, Study no: 18

Type	Species	Nested Frequency				Average Cover %			
		'97	'01	'06	'11	'97	'01	'06	'11
G	<i>Agropyron cristatum</i>	_a 373	_{ab} 403	_b 417	_b 423	11.72	18.31	37.15	30.38
G	<i>Agropyron smithii</i>	-	-	-	2	-	-	-	.03
G	<i>Oryzopsis hymenoides</i>	-	3	-	-	-	.03	-	-
G	<i>Poa secunda</i>	_a 6	_a 27	_b 83	_b 110	.03	.26	1.28	1.24
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		379	433	500	535	11.75	18.60	38.43	31.66
Total for Grasses		379	433	500	535	11.75	18.60	38.43	31.66
F	<i>Alyssum alyssoides</i> (a)	-	5	-	8	-	.03	-	.02
F	<i>Antennaria rosea</i>	-	-	4	-	-	-	.06	-
F	<i>Astragalus convallarius</i>	-	11	2	7	-	.07	.01	.01
F	<i>Descurainia pinnata</i> (a)	-	1	1	-	-	.00	.00	-
F	<i>Phlox hoodii</i>	_a 10	_{ab} 22	_b 35	_{ab} 23	.05	.14	.34	.32
F	<i>Phlox longifolia</i>	10	-	19	8	.10	-	.10	.02
F	<i>Trifolium</i> sp.	-	2	1	-	-	.00	.00	-
Total for Annual Forbs		0	6	1	8	0	0.03	0.00	0.01
Total for Perennial Forbs		20	35	61	38	0.15	0.22	0.52	0.34
Total for Forbs		20	41	62	46	0.15	0.26	0.53	0.37

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

BROWSE TRENDS--

Management unit 04, Study no: 18

Type	Species	Strip Frequency				Average Cover %			
		'97	'01	'06	'11	'97	'01	'06	'11
B	Artemisia tridentata wyomingensis	90	95	82	71	11.57	11.61	5.93	4.88
B	Atriplex gardneri falcata	3	9	9	9	.06	.31	.10	.21
B	Ceratoides lanata	0	2	0	0	-	-	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	60	46	26	21	1.27	.57	.30	.39
Total for Browse		153	152	117	101	12.91	12.50	6.33	5.48

CANOPY COVER, LINE INTERCEPT--

Management unit 04, Study no: 18

Species	Percent Cover	
	'06	'11
Artemisia tridentata wyomingensis	4.28	5.25
Atriplex gardneri falcata	.20	.13
Chrysothamnus viscidiflorus viscidiflorus	.10	.25

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 04, Study no: 18

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia tridentata wyomingensis	0.9	1.3	2.3

BASIC COVER--

Management unit 04, Study no: 18

Cover Type	Average Cover %			
	'97	'01	'06	'11
Vegetation	21.86	28.14	47.08	37.16
Rock	.64	.08	.38	.08
Pavement	5.08	1.01	.69	.44
Litter	22.24	47.11	33.21	39.82
Cryptogams	9.64	10.44	3.49	2.48
Bare Ground	33.04	32.00	36.12	29.96

SOIL ANALYSIS DATA --

Management unit 04, Study no: 18, Study Name: Deseret Main Gate

Effective rooting depth (in)	pH	Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
14.6	6.3	48.0	28.1	23.9	1.5	22.1	185.6	0.4

PELLET GROUP DATA--

Management unit 04, Study no: 18

Type	Quadrat Frequency				Days use per acre (ha)		
	'97	'01	'06	'11	'01	'06	'11
Rabbit	1	2	6	15	-	-	-
Grouse	1	-	1	-	17.4 Groups/A cre	52 Groups/ Acre	-
Elk	24	5	57	14	19 (48)	62 (154)	34 (83)
Deer/Pronghorn	22	8	2	4	9 (23)	11 (28)	7 (17)
Cattle	9	15	25	27	53 (131)	44 (109)	70 (172)

BROWSE CHARACTERISTICS--

Management unit 04, Study no: 18

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	5280	4	69	27	40	48	42	10	14/22
01	5780	8	49	43	60	29	10	11	12/20
06	3900	10	45	45	80	42	11	36	13/21
11	2780	10	59	31	-	22	24	32	11/19
<i>Atriplex gardneri falcata</i>									
97	260	15	85	-	-	0	0	0	4/5
01	980	33	67	-	-	0	0	0	3/4
06	880	32	68	-	-	30	11	0	5/9
11	660	24	76	-	-	3	0	0	4/9
<i>Ceratoides lanata</i>									
97	0	0	0	-	-	0	0	0	-/-
01	40	0	100	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	-/-
11	0	0	0	-	-	0	0	0	-/-
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
97	2720	0	100	0	-	0	0	0	6/8
01	1820	10	77	13	-	0	0	0	4/6
06	620	35	52	13	-	13	16	13	5/7
11	520	15	85	0	-	0	0	4	6/10
<i>Opuntia sp.</i>									
97	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	3/5
11	0	0	0	-	-	0	0	0	-/-