

NORTH SLACKPILE - TREND STUDY NO. 16R-6-09

Vegetation Type: Wyoming Big Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Upland Loam (Wyoming Big Sagebrush), R034XY306UT

Land Ownership: DWR

Elevation: 6,600 ft (2,012 m)

Aspect: Southeast

Slope: 5%

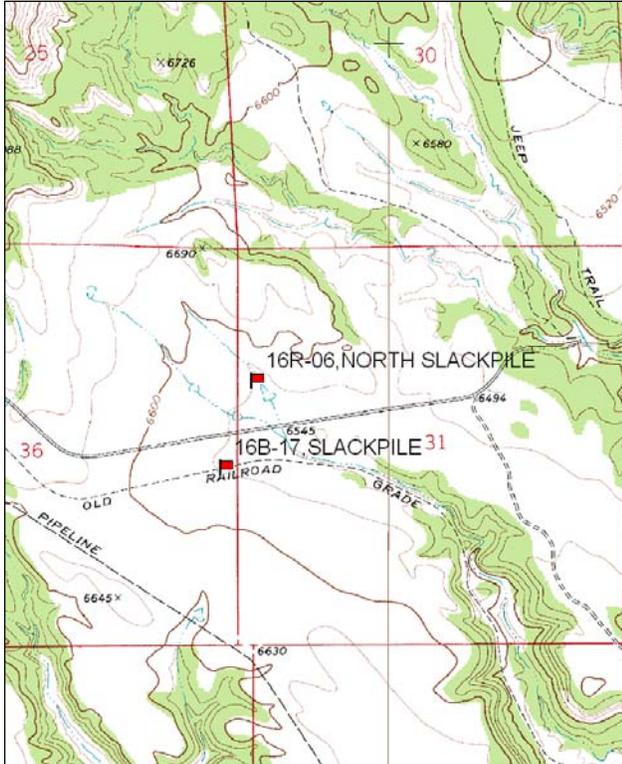
Transect bearing: 283 degrees magnetic

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

Directions:

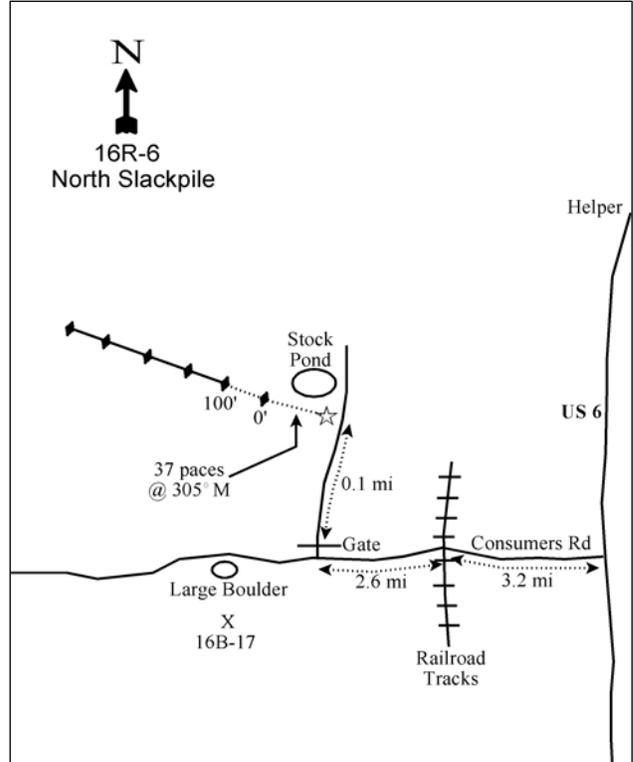
On US 6 south of Helper, turn west on to Consumer Road. Proceed west 3.2 miles to railroad tracks. Cross the tracks and continue 2.6 miles to a road on the right with a gate. Go through the gate and travel 0.1 miles to a witness post before a stock pond on the left. Walk 37 paces at 305°M to the start of the frequency baseline. The first stake is marked with a browse tag #453.

Map name: Standardville



Township: 13S, Range 9E, Section: 31

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 502958 E 4389352 N

NORTH SLACKPILE - TREND STUDY NO. 16R-6

Site Information

Site Description: The study is located about a quarter mile north of the Slackpile (16B-17) trend study. This area is managed by the Utah Division of Wildlife Resources and is usually grazed every other year. The pasture to the south, across the road, is grazed the other year. The regular trend study Slackpile 16B-17 is in the south pasture. A stock pond is located about 150 feet from the 0-foot post of the transect. The site was treated between the 2004 and 2009 sample years, likely as part of the Gordon Creek Roller Chopping Watershed Restoration Initiative project ([project # 513](#)) that was implemented in the fall of 2006. No seed mix was provided, but several introduced species, including crested wheatgrass (*Agropyron cristatum*), Russian wildrye (*Elymus junceus*) and prostrate kochia (*Kochia prostrata*), were sampled for the first time in 2009. Pellet group data indicates a steady decrease in deer use from heavy use in 1998 to moderate use in 2009. Estimated elk and cattle use has been light since 1998 (Table - Pellet Group Data).

Browse: The primary browse species on the site is Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). There was a large die-off of sagebrush between the 1999 and 2004 sample years that is attributed to drought conditions in the years prior to the 2004 sampling. Cover of sagebrush decreased from 14% to 3% between those sample years (Table - Browse Trends). There was also a large decrease in the density of sagebrush with 80% of the population classified as decadent in 2004. The sagebrush population recovered in 2009 with a large increase in density due to a large recruitment of young sagebrush plants. The sagebrush population was mostly young and the average height/crown of sagebrush has steadily decreased since 1998. Utilization of sagebrush has been mostly light to moderate with heavier use in 2004 (Table - Browse Characteristics). Broom snakeweed (*Gutierrezia sarothrae*) and stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*) are both prevalent on the site. The introduced species prostrate kochia was sampled for the first time in 2009.

Herbaceous Understory: Grasses are abundant on the site and provide the majority of the vegetation cover. The warm season grass Blue grama (*Bouteloua gracilis*) is the dominant species on the site. Blue grama provides most of the grass cover on the site. Other common perennial grasses on the site are bluebunch wheatgrass (*Agropyron spicatum*), bottlebrush squirreltail (*Sitanion hystrix*), and needle-and-thread (*Stipa comata*). The seeded species crested wheatgrass and Russian wildrye were sampled for the first time in 2009. Perennial forbs are rare on the site with scarlet globemallow (*Sphaeralcea coccinea*) providing nearly all of the forb cover (Table - Herbaceous Trends).

Soil: Soil texture is a loam with a slightly acidic pH and a moderately deep effective rooting depth (Table - Soil Analysis Data). There is a considerable amount of bare ground cover on the site with most protective cover coming from vegetation and litter cover. Cryptogam cover has steadily decreased since 1998 (Table - Basic Cover). The soil erosion condition was classified as slight in 2004 and 2009 due to signs of rills, gullies, pedestaling of plants, flow patterns, and soil movement.

Trend Assessments

Browse:

- **1998 to 2004 - down (-2):** The density of the primary browse species, Wyoming big sagebrush, decreased 66% from 3,180 plants/acre to 1,080 plants/acre and cover decreased from 14% to 3%. Decadence of sagebrush increased from 19% to 80% and poor vigor increased from 19% to 65%. Recruitment of young sagebrush was low at 6% of population in 2004.
- **2004 to 2009 - up (+2):** There was a marked increase in the density of sagebrush to 18,200 plants/acre due to a large recruitment of young sagebrush plants. Decadence and poor vigor of sagebrush both decreased to 3%. The population is younger, evidenced by a decrease in the average height/crown of mature sagebrush plants.

Grass:

- **1998 to 2004 - down (-2):** The sum of nested frequency of perennial grasses decreased 33%, though cover remained similar. There was a significant decrease in the nested frequency of blue grama.
- **2004 to 2009 - up (+2):** The sum of nested frequency of perennial grasses increased 42% and cover increased from 12% to 24%. There was a significant increase in the nested frequency of blue grama, Indian ricegrass, and bottlebrush squirreltail. Crested wheatgrass and Russian wildrye were sampled for the first time in 2009.

Forb:

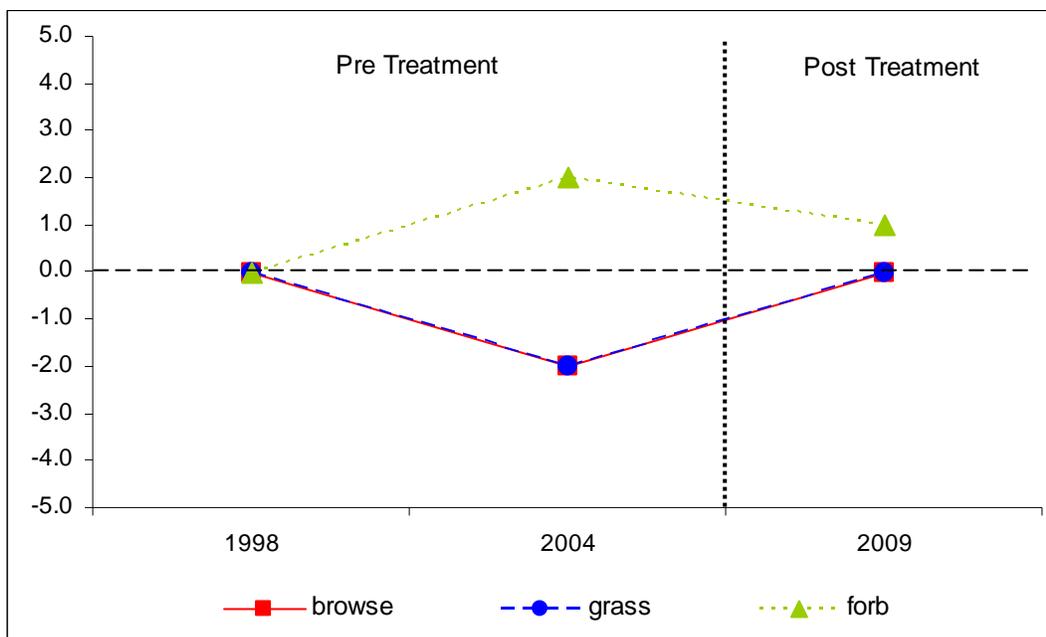
- **1998 to 2004 - up (+2):** Forbs are rare on this site, but sum of nested frequency of perennial forbs increased by 51% and cover increased from less than 1% to 3%.
- **2004 to 2009 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased by 20%, though there was little change in cover. There was a significant increase in the nested frequency of scarlet globemallow.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 16R, study no: 6

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	17.3	9.3	13.0	23.9	0.0	1.3	0.0	64.7	Good-Excellent
04	4.6	0.0	0.0	24.2	0.0	6.0	0.0	34.8	Fair
09	8.2	13.9	15.0	30.0	0.0	5.0	0.0	72.1	Excellent

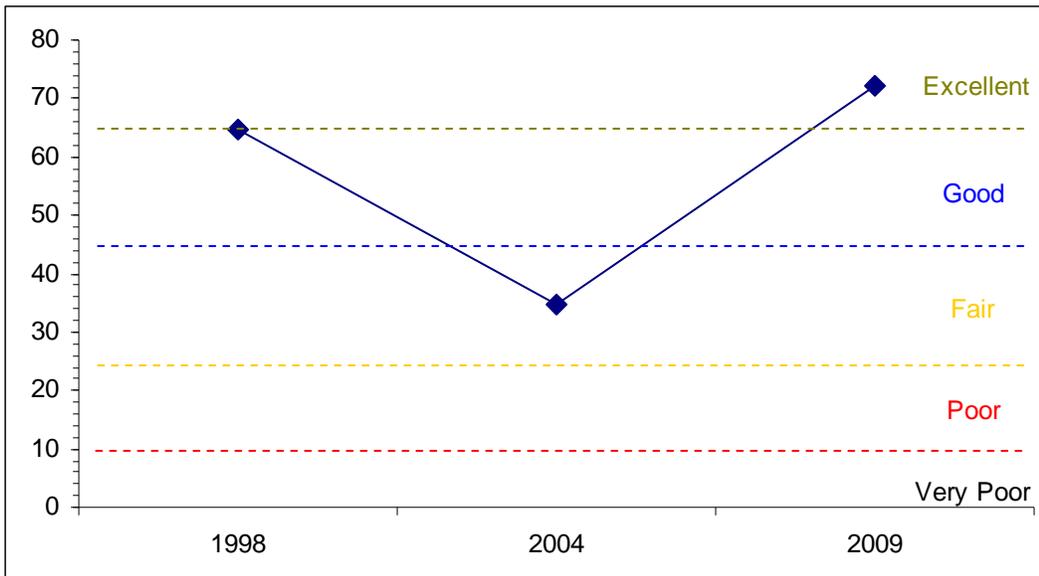
Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 16R Study no: 6



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE

Management unit 16R, Study no: 6



HERBACEOUS TRENDS--

Management unit 16R, Study no: 6

Type	Species	Nested Frequency			Average Cover %		
		'98	'04	'09	'98	'04	'09
G	Agropyron cristatum	a-	a-	b20	-	-	.25
G	Agropyron smithii	b148	a9	a16	1.34	.16	.20
G	Agropyron spicatum	a5	b22	b22	.03	.13	1.33
G	Bouteloua gracilis	b301	a240	b287	10.07	10.48	18.76
G	Bromus tectorum (a)	-	-	2	-	-	.01
G	Elymus junceus	a-	a-	b10	-	-	.10
G	Elymus salina	-	2	-	-	.15	-
G	Oryzopsis hymenoides	a5	a11	b33	.03	.07	.55
G	Sitanion hystrix	a37	a28	b68	.31	.58	1.27
G	Stipa comata	a10	b29	b27	.15	.49	1.14
Total for Annual Grasses		0	0	2	0	0	0.00
Total for Perennial Grasses		506	341	483	11.94	12.09	23.63
Total for Grasses		506	341	485	11.94	12.09	23.64
F	Alyssum alyssoides (a)	-	-	2	-	-	.00
F	Arabis sp.	-	-	-	.00	-	-
F	Calochortus nuttallii	a-	b33	a-	-	.09	-
F	Chenopodium fremontii (a)	-	-	-	-	.03	-
F	Chenopodium leptophyllum(a)	a-	c67	b6	-	.42	.02
F	Descurainia pinnata (a)	-	9	3	-	.07	.00
F	Gayophytum ramosissimum(a)	-	5	-	-	.01	-
F	Lappula occidentalis (a)	-	3	2	-	.01	.00
F	Lomatium sp.	-	2	-	-	.00	-
F	Lygodesmia grandiflora	-	4	-	-	.03	-
F	Phlox longifolia	b40	b48	a8	.09	.20	.04

T y P e	Species	Nested Frequency			Average Cover %		
		'98	'04	'09	'98	'04	'09
F	Plantago patagonica (a)	a ⁻	b ¹²	b ⁹	-	.06	.02
F	Ranunculus testiculatus (a)	a ⁻	b ¹⁹	b ¹⁶	-	.03	.06
F	Salsola iberica (a)	-	-	2	-	-	.03
F	Schoenocrambe linifolia	-	2	-	-	.01	-
F	Sphaeralcea coccinea	a ⁷⁶	a ⁷³	b ¹³⁷	.54	2.54	2.45
F	Tragopogon dubius	-	1	-	-	.00	-
F	Trifolium sp.	a ⁻	b ¹⁹	a ⁻	-	.10	-
Total for Annual Forbs		0	115	40	0	0.64	0.15
Total for Perennial Forbs		116	182	145	0.63	3.00	2.50
Total for Forbs		116	297	185	0.63	3.64	2.65

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

BROWSE TRENDS--

Management unit 16R, Study no: 6

T y P e	Species	Strip Frequency			Average Cover %		
		'98	'04	'09	'98	'04	'09
B	Artemisia tridentata wyomingensis	83	40	90	13.80	3.04	6.16
B	Atriplex canescens	1	2	5	.03	.63	.33
B	Ceratoides lanata	0	0	2	-	-	.03
B	Chrysothamnus nauseosus	2	0	0	.00	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	38	13	13	1.07	.06	.21
B	Gutierrezia sarothrae	86	39	80	3.89	.66	2.51
B	Kochia prostrata	0	0	1	-	-	.00
B	Opuntia sp.	9	10	16	.36	.30	.04
B	Pediocactus simpsonii	0	3	4	-	.03	.00
B	Ribes sp.	1	0	0	.00	-	-
B	Tetradymia canescens	0	1	0	-	.00	-
Total for Browse		220	108	211	19.17	4.73	9.30

CANOPY COVER, LINE INTERCEPT--

Management unit 16R, Study no: 6

Species	Percent Cover	
	'04	'09
Artemisia tridentata wyomingensis	2.08	4.83
Atriplex canescens	.66	.85
Ceratoides lanata	-	.13
Chrysothamnus viscidiflorus viscidiflorus	.05	.11
Gutierrezia sarothrae	.53	3.18
Opuntia sp.	-	.01
Pediocactus simpsonii	.05	-
Tetradymia canescens	.06	-

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 16R, Study no: 6

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	3.2	-
Atriplex canescens	4.2	-

BASIC COVER--

Management unit 16R, Study no: 6

Cover Type	Average Cover %		
	'98	'04	'09
Vegetation	34.43	19.45	38.72
Rock	.39	.41	.07
Pavement	.39	.84	.21
Litter	13.63	23.67	35.43
Cryptogams	5.50	2.01	.39
Bare Ground	50.01	51.99	41.17

SOIL ANALYSIS DATA --

Management unit 16R, Study no: 6, Study Name: North Slackpile

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
14.6	6.4	40.7	34.7	24.6	1.9	9.7	83.2	1

PELLET GROUP DATA--

Management unit 16R, Study no: 6

Type	Quadrat Frequency		
	'98	'04	'09
Rabbit	15	22	17
Elk	3	3	9
Deer	41	35	17
Cattle	4	1	-
Antelope	1	-	-
Horse	-	-	-

Days use per acre (ha)		
'98	'04	'09
-	-	-
7 (17)	2 (5)	2 (5)
86 (213)	42 (104)	27 (68)
17 (41)	3 (7)	3 (7)
-	-	-
-	-	1 (1)

BROWSE CHARACTERISTICS--
Management unit 16R, Study no: 6

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>									
98	3180	26	55	19	280	48	19	19	27/41
04	1080	6	15	80	820	33	35	65	19/25
09	18200	71	26	3	4540	.43	.43	3	11/12
<i>Atriplex canescens</i>									
98	20	0	100	0	-	0	100	0	27/45
04	40	0	0	100	-	100	0	0	24/37
09	140	14	71	14	-	43	0	14	23/41
<i>Atriplex confertifolia</i>									
98	0	0	0	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	20/24
09	0	0	0	-	-	0	0	0	-/-
<i>Ceratoides lanata</i>									
98	0	0	0	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	-/-
09	40	0	100	-	-	0	0	0	7/10
<i>Chrysothamnus nauseosus</i>									
98	60	67	33	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	-/-
09	0	0	0	-	-	0	0	0	-/-
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
98	2360	20	79	1	-	36	52	.84	7/12
04	720	11	81	8	620	0	0	3	6/7
09	700	14	66	20	-	0	0	69	7/13
<i>Gutierrezia sarothrae</i>									
98	15440	2	97	0	-	0	0	.25	10/8
04	1600	10	88	3	300	8	4	1	6/6
09	4740	2	74	24	-	5	0	24	8/8
<i>Kochia prostrata</i>									
98	0	0	0	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	-/-
09	20	0	100	-	-	0	0	0	7/13
<i>Opuntia sp.</i>									
98	220	18	73	9	-	0	0	9	3/5
04	240	17	83	0	-	0	0	0	4/10
09	380	5	95	0	20	0	11	26	3/10
<i>Pediocactus simpsonii</i>									
98	0	0	0	-	-	0	0	0	-/-
04	60	0	100	-	-	0	0	0	1/2
09	80	0	100	-	-	0	0	0	1/2

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Ribes sp.										
98	220	0	100	-	-	0	0	0	-/-	
04	0	0	0	-	-	0	0	0	-/-	
09	0	0	0	-	-	0	0	0	-/-	
Tetradymia canescens										
98	0	0	0	-	-	0	0	0	-/-	
04	20	0	100	-	-	100	0	0	10/10	
09	0	0	0	-	40	0	0	0	-/-	