

Trend Study 25C-8-08

Study site name: South Narrows.

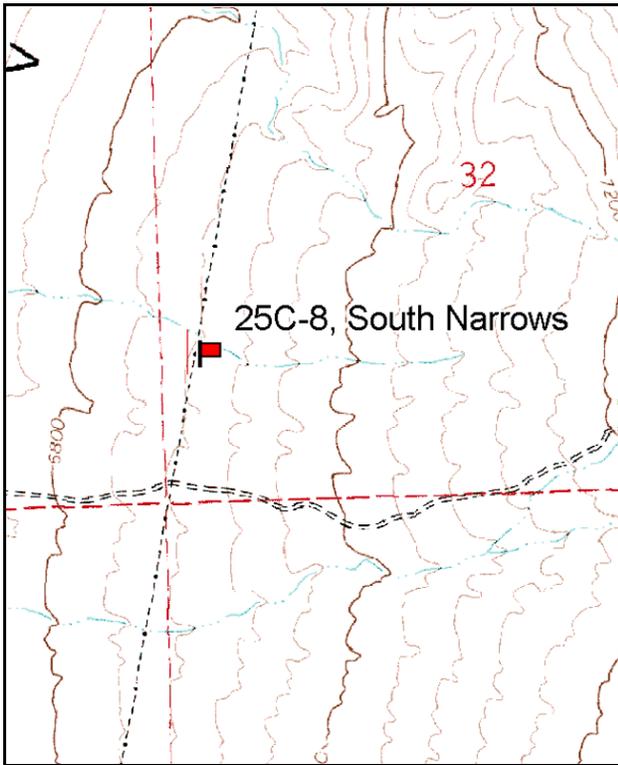
Vegetation type: Big Sagebrush-Grass.

Compass bearing: frequency baseline 180 degrees magnetic.

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

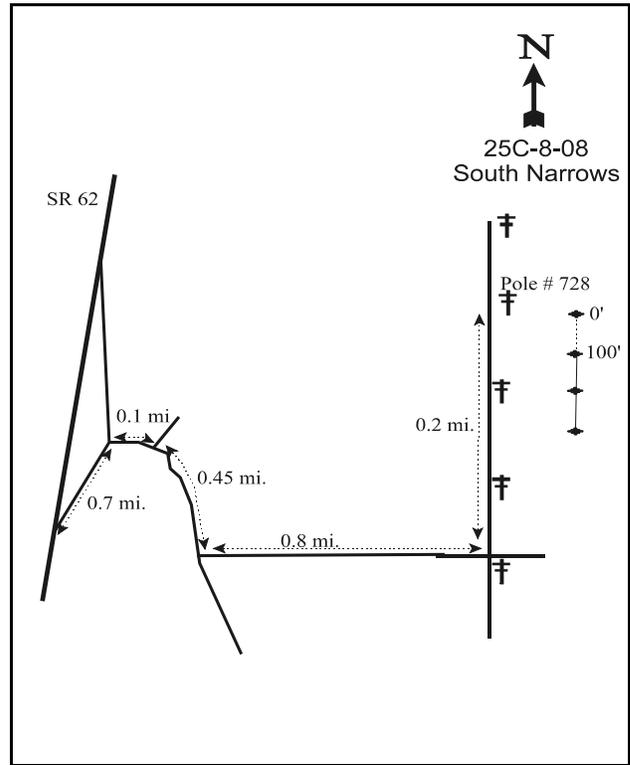
LOCATION DESCRIPTION

Proceed south of Koosharem on SR62. Turn left (east) at mile marker 24. Go northeast 0.7 miles and turn right. Go east 0.1 miles to another fork and turn right. Go 0.45 miles and turn left just across the creek (Otter Creek). Go 0.8 miles east and turn left. Drive parallel to the powerline (north) for 0.2 miles to pole #728. The frequency baseline begins 100 feet east of this powerpole. The 0-foot baseline stake is tagged #7120. All stakes are rebar.



Map Name: Parker Knoll

Township 28S, Range 1W, Section 32



Diagrammatic Sketch

GPS: NAD 83, UTM 12S 418169 E, 4242551 N

DISCUSSION

South Narrows - Trend Study No. 25C-8

Study Information

This trend study is located on mule deer and elk winter range west of Parker Mountain in Grass Valley [elevation: 6,900 feet (2,103 m), slope: 4%, aspect: west]. The foothills slope gently west-southwest toward Otter Creek about a half mile away. The vegetation type is Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*)/grass in association with scattered pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). The level of browsing and number of pellet groups indicate a low level of use with 13 deer and 14 elk days use/acre estimated in 1991 (32 ddu/ha and 35 edu/ha). Deer use was estimated to be moderate in 1998 and 2003 (30 ddu/acre:74 ddu/ha), increasing to heavy use in 2008 (70 ddu/acre:174 ddu/ha). Elk use was light in 1998, 2003, and 2008 averaging 17 days use/acre (41 edu/ha). Security and thermal cover are lacking except for a few pinyon-junipers along the washes. Livestock have grazed here heavily in the past, yet cattle use levels were estimated to be minimal in 1998 (3 cdu/acre:7 cdu/ha), and light in 2003, and 2008 (9 cdu/acre:22 cdu/ha, both years).

Soil

Soil texture is a sandy loam which is slightly acidic in reaction (pH 6.3). Soil is very rocky and relatively shallow with an effective rooting depth estimated at only 9 inches. Parent material is basalt and rocks and pavement are common on the surface providing 41% cover in 1998 and 2003. Rock ranges in size from small gravel to large boulders, and is found throughout the soil profile. Relative combined vegetation and litter cover ranged from 45% to 56% since 1994. Relative combined rock and pavement cover increased from 33% in 1994 to 37% in 2008. Relative bareground cover decreased from 18% in 1994 to 6% in 2008. There is some evidence of soil movement, although erosion is not severe on the site. Two washes run through the transect area which channel water into Otter Creek during heavy runoff events. The erosion condition class was considered stable in 2003 and 2008.

Browse

The key species is Wyoming big sagebrush, which provides nearly all of the browse cover on the site. Density has ranged between a low of 3,665 plants/acre in 1985 and a high of 4,932 plants/acre in 1991. Utilization has been moderate to heavy over the years. Decadence had remained fairly steady in the first few sample years averaging 35% between 1985 and 1998. Drought conditions have caused the number of decadent plants to increase to 56% in 2003 and 66% in 2008. Plants displaying poor vigor has increased from 20% in 1991, 31% in 2003, and 65% in 2008. The population has remained stable due to adequate recruitment, however, recruitment was poor in 2003 and 2008, suggesting that the population may decline in the future. The only other shrubs found on the site include a few broom snakeweed (*Gutierrezia sarothrae*), winterfat (*Ceratoides lanata*), and 2 species of cactus (*Opuntia* spp.).

Herbaceous Understory

As with the browse, species diversity of herbaceous plants is low. The only common perennial grasses found on the site include blue grama (*Bouteloua gracilis*) and needle-and-thread grass (*Stipa comata*). These 2 species provided 97% of the grass cover in 2003. Indian ricegrass (*Oryzopsis hymenoides*) and bottlebrush squirreltail (*Sitanion hystrix*) are found in small numbers. Forbs are lacking. Total forb cover has totaled less than 0.5% since 1994.

1991 TREND ASSESSMENT

There are not many browse species on this site, but the key species, Wyoming big sagebrush, has increased its density by 26% with a slight increase in rate of decadence. This would be expected with the drought. The browse trend is considered slightly up. The trend for grasses and forbs is slightly up. There was a slight increase in the nested frequency of perennial grasses. One problem on this site is that there are no forbs.

browse - slightly up (+1) grass - slightly up (+1) forb - stable (0)

1994 TREND ASSESSMENT

The browse trend is regarded as stable even with the slight decrease in the Wyoming big sagebrush population (12%). Use remains mostly light to moderate and vigor normal on most plants. Young recruitment is marginal. Trend for the grasses is slightly up. Sum of nested frequency of grasses continues to increase including a significant increase in the nested frequency of Indian ricegrass. Trend for forbs is slightly up. Some forbs were encountered this year but they are still lacking with a cover value of less than 1% and are comprised mostly of weedy annual species.

winter range condition (DCI) - good (51) Low potential scale
browse - stable (0) grass - slightly up (+1) forb - slightly up (+1)

1998 TREND ASSESSMENT

Trend for the key browse species, Wyoming big sagebrush, is slightly down with a lower density and decadence still above 30%. Reproduction has improved slightly. Trend for grasses is stable. Sum of nested frequency of perennial grasses has remained relatively constant. Trend for forbs is stable. The sum of nested frequency of perennial forbs has decreased, but so did the frequency of weedy annual forbs, primarily because of the decrease in frequency of stickseed (*Lappula occidentalis*).

winter range condition (DCI) - good (52) Low potential scale
browse - slightly down (-1) grass - stable (0) forb - stable (0)

2003 TREND ASSESSMENT

Trend for the key browse, Wyoming big sagebrush, is slightly down. Even though sagebrush density has remained about the same since 1991, and has actually increased 12% since 1998, the sagebrush on this site is showing the effects of drought. Young recruitment is low, vigor is poor on 1/3 of the population, and decadence has increased to 56%. Trend for grasses is slightly down. Sum of nested frequency of perennial grasses has declined slightly (15%) but the frequency of the dominant grasses, blue grama and needle-and-thread, remained about the same. Nested frequency of bottlebrush squirreltail declined significantly. Total grass cover has remained nearly identical to 1998 estimates at about 13.5%. Trend for forbs is stable, but forbs are still lacking.

winter range condition (DCI) - fair-good (44) Low potential scale
browse - slightly down (-1) grass - slightly down (-1) forb - stable (0)

2008 TREND ASSESSMENT

Trend for the primary browse species, Wyoming big sagebrush, is down. Density of sagebrush decreased slightly, decadence increased to 66%, and plants displaying poor vigor increased dramatically to 65%. Recruitment of young plants remains low. Trend for grasses is slightly up. The sum of nested frequency of perennial grasses increased minimally, though, the frequency of needle-and-thread grass increased significantly. Trend for forbs is slightly down. The sum of nested frequency of perennial forbs continues to decrease and forbs are nearly non-existent.

winter range condition (DCI) - fair (39) Low potential scale
browse - down (-2) grass - slightly up (+1) forb - slightly down (-1)

HERBACEOUS TRENDS --
 Management unit 25C, Study no: 8

T y p e	Species	Nested Frequency						Average Cover %			
		'85	'91	'94	'98	'03	'08	'94	'98	'03	'08
G	<i>Bouteloua gracilis</i>	_{ab} 284	_b 296	_{ab} 289	_{ab} 274	_{ab} 266	_a 255	12.30	9.30	10.01	10.74
G	<i>Bromus tectorum</i> (a)	-	-	_{ab} 1	_b 14	_a -	_a -	.00	.06	-	-
G	<i>Oryzopsis hymenoides</i>	_a 6	_{ab} 16	_c 49	_{bc} 24	_{ab} 8	_{ab} 12	1.80	.36	.21	.32
G	<i>Sitanion hystrix</i>	_{ab} 43	_b 52	_b 58	_b 58	_a 21	_a 18	.88	.36	.12	.25
G	<i>Sporobolus cryptandrus</i>	_a -	_a -	_b 8	_{ab} 3	_{ab} 1	_a -	.10	.03	.03	-
G	<i>Stipa comata</i>	_a 75	_a 95	_a 102	_b 165	_b 165	_c 201	2.96	3.48	3.16	6.58
Total for Annual Grasses		0	0	1	14	0	0	0.00	0.06	0	0
Total for Perennial Grasses		408	459	506	524	461	486	18.05	13.55	13.54	17.90
Total for Grasses		408	459	507	538	461	486	18.05	13.61	13.54	17.90
F	<i>Astragalus</i> sp.	-	-	6	3	-	-	.04	.04	-	-
F	<i>Descurainia pinnata</i> (a)	-	-	_b 20	_a 2	_b 16	_a -	.05	.00	.15	-
F	<i>Draba</i> sp. (a)	-	-	_b 12	_{ab} 8	_a -	_a -	.03	.01	-	-
F	<i>Erigeron pumilus</i>	_a -	_a -	_b 10	_{ab} 9	_a -	_a 1	.07	.06	-	.00
F	<i>Lappula occidentalis</i> (a)	-	-	_c 62	_a 3	_b 27	_a -	.15	.01	.18	-
F	<i>Lepidium</i> sp. (a)	-	-	_b 20	_a -	_a -	_a -	.05	-	-	-
F	<i>Phlox hoodii</i>	-	-	-	-	1	-	-	-	.00	-
F	<i>Phlox longifolia</i>	-	-	3	-	-	-	.00	-	-	-
F	<i>Sphaeralcea coccinea</i>	-	-	-	-	3	-	-	-	.00	-
Total for Annual Forbs		0	0	114	13	43	0	0.28	0.02	0.33	0
Total for Perennial Forbs		0	0	19	12	4	1	0.12	0.10	0.00	0.00
Total for Forbs		0	0	133	25	47	1	0.40	0.13	0.34	0.00

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

BROWSE TRENDS --

Management unit 25C, Study no: 8

Type	Species	Strip Frequency				Average Cover %			
		'94	'98	'03	'08	'94	'98	'03	'08
B	Artemisia tridentata wyomingensis	88	84	91	91	11.14	10.00	14.18	10.44
B	Ceratoides lanata	0	1	1	1	-	.00	.00	.00
B	Chrysothamnus nauseosus	0	1	0	1	-	.00	-	.03
B	Gutierrezia sarothrae	0	0	1	0	-	-	.03	-
B	Juniperus osteosperma	0	1	0	0	.15	.03	-	-
B	Opuntia sp.	3	5	12	6	.00	.00	.36	.24
B	Pediocactus simpsonii	0	6	2	0	-	.07	.01	-
Total for Browse		91	98	107	99	11.30	10.10	14.58	10.71

CANOPY COVER, LINE INTERCEPT --

Management unit 25C, Study no: 8

Species	Percent Cover	
	'03	'08
Artemisia tridentata wyomingensis	12.88	15.83
Chrysothamnus nauseosus	-	.05
Opuntia sp.	.01	.05

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 25C, Study no: 8

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata wyomingensis	1.5	0.7

BASIC COVER --

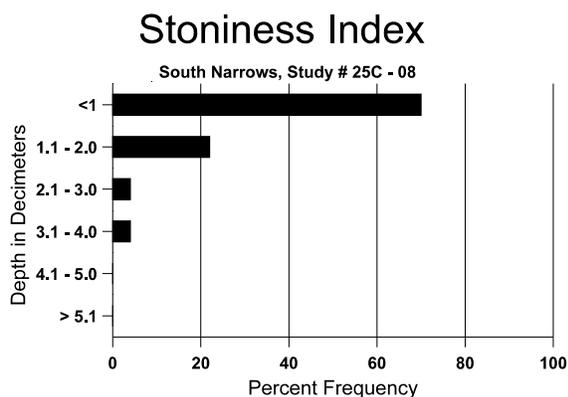
Management unit 25C, Study no: 8

Cover Type	Average Cover %					
	'85	'91	'94	'98	'03	'08
Vegetation	11.00	13.25	27.00	27.67	28.39	32.65
Rock	17.50	25.50	25.76	25.90	25.40	24.92
Pavement	20.75	15.25	3.57	15.20	15.48	17.00
Litter	34.50	22.50	17.28	26.57	20.55	30.34
Cryptogams	2.25	.75	.33	.92	.51	.53
Bare Ground	14.00	22.75	16.27	20.51	17.73	6.91

SOIL ANALYSIS DATA --

Management unit 25C, Study no: 8, Study Name: South Narrows

Effective rooting depth (in)	Temp °F (depth)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
			% sand	% silt	% clay				
8.5	69.6 (9.2)	6.3	54.0	31.4	14.6	1.5	13.5	105.6	0.5



PELLET GROUP DATA --

Management unit 25C, Study no: 8

Type	Quadrat Frequency			
	'94	'98	'03	'08
Rabbit	17	18	23	56
Elk	7	11	5	4
Deer	24	37	23	42
Cattle	3	1	2	4

Days use per acre (ha)		
'98	'03	'08
-	-	-
16 (40)	17 (41)	17 (43)
30 (74)	29 (73)	70 (174)
3 (7)	9 (23)	9 (22)

BROWSE CHARACTERISTICS --

Management unit 25C, Study no: 8

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia tridentata wyomingensis												
85	3665	133	333	2466	866	-	67	20	24	.54	5	12/19
91	4932	-	1133	1866	1933	-	47	9	39	6	20	15/21
94	4340	40	160	2660	1520	880	34	2	35	12	17	17/29
98	3900	20	540	2100	1260	840	38	10	32	14	14	18/30
03	4440	-	40	1920	2480	960	17	0	56	26	31	18/29
08	3980	-	80	1260	2640	740	45	22	66	31	65	16/28

		Age class distribution (plants per acre)					Utilization						
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)	
<i>Ceratoides lanata</i>													
85	0	-	-	-	-	-	0	0	-	-	0	-/-	
91	0	-	-	-	-	-	0	0	-	-	0	-/-	
94	0	-	-	-	-	-	0	0	-	-	0	-/-	
98	20	-	-	20	-	-	0	0	-	-	0	9/6	
03	20	-	-	20	-	-	0	0	-	-	0	6/10	
08	20	-	-	20	-	-	0	0	-	-	0	7/7	
<i>Chrysothamnus nauseosus</i>													
85	0	-	-	-	-	-	0	0	-	-	0	-/-	
91	0	-	-	-	-	-	0	0	-	-	0	-/-	
94	0	-	-	-	-	-	0	0	-	-	0	-/-	
98	20	-	-	20	-	-	100	0	-	-	0	-/-	
03	0	-	-	-	-	-	0	0	-	-	0	-/-	
08	20	-	-	20	-	-	0	0	-	-	0	6/11	
<i>Gutierrezia sarothrae</i>													
85	0	-	-	-	-	-	0	0	0	-	0	-/-	
91	0	-	-	-	-	-	0	0	0	-	0	-/-	
94	0	-	-	-	-	-	0	0	0	-	0	-/-	
98	0	-	-	-	-	-	0	0	0	-	0	7/11	
03	20	-	-	-	20	-	0	0	100	-	0	-/-	
08	0	-	-	-	-	-	0	0	0	-	0	-/-	
<i>Juniperus osteosperma</i>													
85	0	-	-	-	-	-	0	0	-	-	0	-/-	
91	0	-	-	-	-	-	0	0	-	-	0	-/-	
94	0	-	-	-	-	-	0	0	-	-	0	-/-	
98	20	-	-	20	-	-	0	0	-	-	0	-/-	
03	0	-	-	-	-	-	0	0	-	-	0	-/-	
08	0	-	-	-	-	-	0	0	-	-	0	-/-	
<i>Opuntia sp.</i>													
85	199	-	-	199	-	-	0	0	0	-	0	2/2	
91	199	-	133	66	-	-	0	0	0	-	0	2/4	
94	60	20	-	60	-	-	0	0	0	-	0	2/3	
98	100	-	40	60	-	-	0	0	0	-	0	4/6	
03	260	-	-	260	-	-	0	0	0	-	8	4/10	
08	140	20	40	80	20	-	14	0	14	-	14	3/10	

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Pediocactus simpsonii												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
98	140	20	40	100	-	-	0	0	-	-	0	1/2
03	40	-	-	40	-	-	0	0	-	-	0	2/3
08	0	-	-	-	-	20	0	0	-	-	0	2/3
Pinus edulis												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	20	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Tetradymia canescens												
85	533	-	-	533	-	-	0	0	-	-	0	9/4
91	333	-	-	333	-	-	40	20	-	-	0	6/4
94	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-