

Trend Study 22-15-08

Study site name: South Creek .

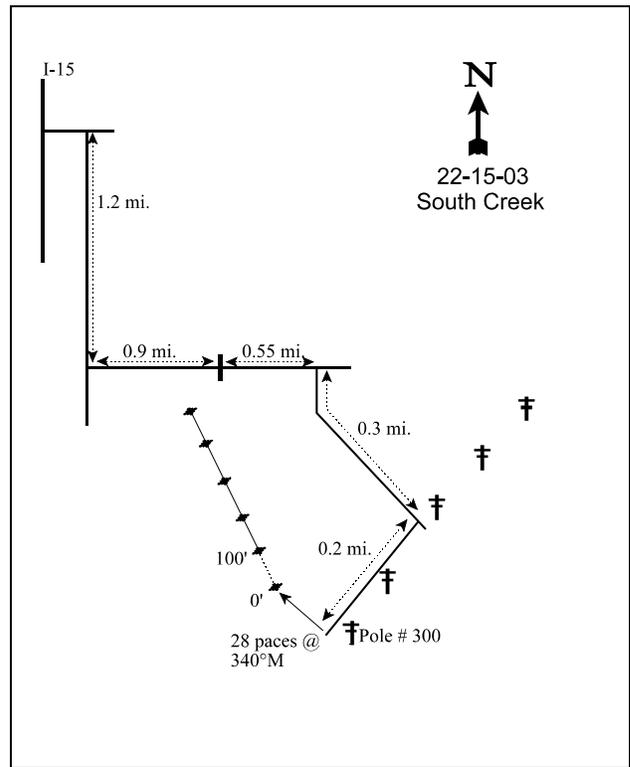
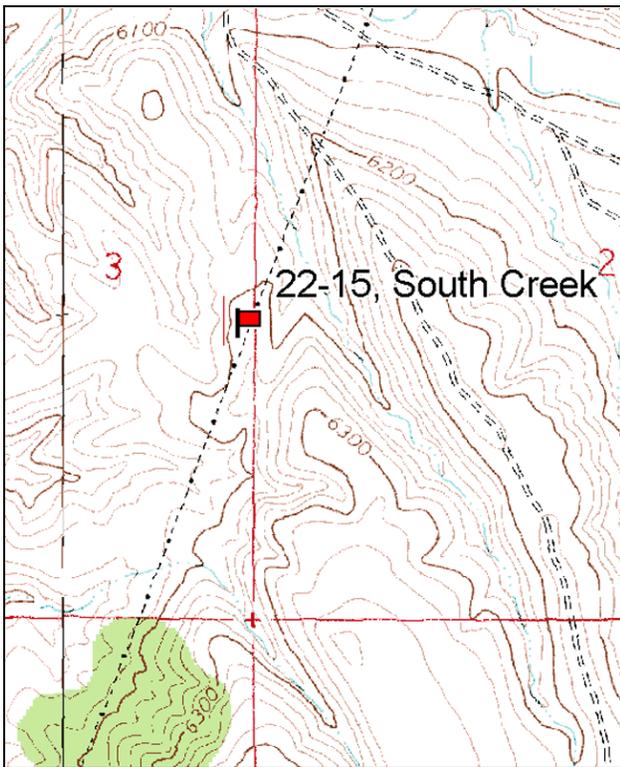
Vegetation type: Wyoming Big Sage/Grass .

Compass bearing: frequency baseline 328 degrees magnetic.

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

LOCATION DESCRIPTION

From I-15 take exit 109 and go past the Texaco station and turn right (south) onto campground road. Go 1.2 miles to where the pavement ends and a road takes off at an angle to the southeast. Take this road and go 0.9 miles to a cattleguard. Go straight another 0.55 miles. Turn right onto a faint road down a draw for 0.3 miles. At this point there is another faint road on the right along the powerlines. Go down the road for 0.2 miles to power pole #300 (the second set of power poles). From power pole #300, the 0' stake is 28 paces at 340 degrees magnetic. The 0-foot stake is marked with browse tag #474.



Map name: Kane Canyon

Diagrammatic sketch

Township 31S, Range 7W, Section 3

GPS: NAD 83, UTM 12S 358097 E 4232159 N

DISCUSSION

South Creek - Trend Study No. 22-15

Study Information

This study is located on winter range south of Beaver and was established in 1998. The area is managed by the DWR and is called the Beaver WMA [elevation: 6,200 feet (1,890 m), slope: 8%, aspect: west]. The general area consists of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and grass with scattered junipers surrounding the site. Limited escape and thermal cover is located in juniper covered draws to the east and west. A pellet group transect read on site estimated 68 deer days use/acre, 1 elk day use/acre, and 41 cow days use/acre (168 ddu/ha, 2 edu/ha, 101 cdu/ha) in 1998. Pellet group transect data collected in 2003 estimated 29 deer and 19 cow days use/acre (71 ddu/ha and 47 cdu/ha). Pellet group transect data from 2008 estimated 99 deer and 9 cow days use/acre (245 ddu/ha and 22 cdu/ha)

Soil

This site is within the Red Butte series (USDA-NRCS 2007) which consists of very deep, well drained, moderately permeable soils formed in alluvium and colluvium derived from sedimentary and igneous rocks. These soils are on alluvial and colluvial slopes and rolling hills. Soil analysis indicates texture to be sandy clay loam with a neutral pH (7.0). Phosphorous levels in the soil profile are low 6.0 ppm, which is marginal for platan growth and development (Tiedemann and Lopez 2004). The slight slope and high proportion of rock and pavement cover on the soil surface combine to keep erosion to a minimum. An erosion condition class assessment rated soils as stable in 2003 and 2008. The deep draws to the east and west show extensive signs of decades of erosion. Rock and pavement on the site appear to be basaltic and igneous material in origin.

Browse

Wyoming big sagebrush is the key browse which provides nearly all of the browse cover on this site. Density was estimated at 3,620 plants/acre in 1998, 3,040 plants/acre in 2003, and 7,000 plants/acre in 2008. The young age class was moderately abundant in 1998 as it made up 14% of the population, but declined to 6% in 2003. In 2008, young plants were very abundant and made up 51% of the population. Decadence was moderately high in 1998 (33%) and 2003 (43%), but declined in 2008 19%. Sagebrush cover has averaged about 12% cover.

Herbaceous Understory

The herbaceous understory was dominated by cheatgrass (*Bromus tectorum*) during the initial reading in 1998. Cheatgrass accounted for 54% of the herbaceous cover and 39% of the total vegetation cover in 1998. It was sampled in every quadrat. With drought conditions in 2003, no cheatgrass was sampled. In 2008, cheatgrass was again abundant and sampled in 95% of the quadrats. The site also supports a good stand of warm and cool season grasses. The most abundant perennial grasses have been galleta (*Hilaria jamesii*), blue grama (*Bouteloua gracilis*), sand dropseed (*Sporobolus cryptandrus*), purple three-awn (*Aristida purpurea*), needle-and-thread grass (*Stipa comata*), Indian ricegrass (*Oryzopsis hymenoides*), and bottlebrush squirreltail (*Sitanion hystrix*). In 2003, 5 of the 7 perennial grass species declined in nested frequency with most of these being the warm season varieties. In 2008, 2 of the 6 perennial grass species declined in nested frequency. The seventh species, sand dropseed, was not sampled. Perennial forbs continue to be a scarce resource on the site with scarlet globemallow (*Sphaeralcea coccinea*) being the most abundant perennial. An annual gilia (*Gilia* sp.) and stickseed (*Lappula occidentalis*) were fairly abundant in 2003 and 2008.

1998 DESIRABLE COMPONENTS INDEX

Winter range condition (DCI) – fair (35) low potential scale

2003 TREND ASSESSMENT

Trend for browse is slightly down. Wyoming big sagebrush density declined 16% since 1998 and most of the key browse parameters show negative trends including decreased density and reproduction, and increased decadence. Young recruitment is marginal. All of these changes are due in large part to drought conditions and will likely not improve until precipitation patterns return to normal or above normal. Trend for the herbaceous understory is slightly down. Sum of nested frequency for perennial grasses declined by 21% in 2003 as 5 of the 7 species showed decreases individually. Total perennial grass cover declined slightly from 11% to about 8%. One positive change is that cheatgrass which was dominant in 1998 was not sampled in 2003. Forbs remain sparse.

Winter Range Condition (DCI) - fair (38) low potential scale
browse - slightly down (-1) grass - slightly down (-1) forb - stable (0)

2008 TREND ASSESSMENT

Trend for browse is up. Wyoming big sagebrush density has increased 130% since 2003. Most of the key browse parameters show positive trends including increased density, recruitment, and decreased decadence. Young recruitment is at a high of 51%. Trend for the perennial herbaceous understory (grasses and forbs) is somewhat stable. Sum of nested frequency for perennial grasses declined by 14% in 2008. Total perennial grass cover declined slightly from 8% to about 5%. In 2008, cheatgrass has come back with better timing of precipitation with cover at almost 4%, but more importantly quadrat frequency was at 95%. This would indicate that under the right conditions it could dominate the understory again. Forbs remain sparse with the exception of the increase in globe mallow. Quadrat frequency was slightly higher with cover nearly doubling. Perennial forbs increased slightly, however this was entirely exhibited by only one species. Total perennial forb cover even now barely exceeds 1%.

Winter Range Condition (DCI) - good (49) low potential scale
browse - up (+2) grass - slightly down (-1) forb - stable (0)

HERBACEOUS TRENDS --
 Management unit 22 , Study no: 15

Type	Species	Nested Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
G	Aristida purpurea	_b 88	_a 20	_a 23	2.01	.37	.47
G	Bouteloua gracilis	_{ab} 61	_{bc} 108	_{ab} 61	1.86	3.06	1.07
G	Bromus tectorum (a)	_c 466	_a -	_b 335	12.83	-	3.63
G	Hilaria jamesii	116	99	123	2.55	1.20	2.78
G	Oryzopsis hymenoides	_{ab} 26	_a 10	_b 43	.25	.51	.38
G	Sitanion hystrix	_a 13	_a 30	_b 49	.20	.22	.38
G	Sporobolus cryptandrus	_c 102	_b 60	_a -	2.83	1.63	-
G	Stipa comata	_c 55	_b 32	_a 8	.79	.54	.04
G	Vulpia octoflora (a)	8	-	6	.01	-	.01
Total for Annual Grasses		474	0	341	12.84	0	3.65
Total for Perennial Grasses		461	359	307	10.51	7.55	5.15
Total for Grasses		935	359	648	23.36	7.55	8.80

T y p e	Species	Nested Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
		F	Alyssum alyssoides (a)	a-	a-	b23	-
F	Astragalus sp.	A6	a-	b22	.01	-	.05
F	Calochortus nuttallii	-	3	2	-	.00	.00
F	Cymopterus sp.	-	-	6	-	-	.01
F	Descurainia pinnata (a)	-	5	-	-	.03	-
F	Gilia sp. (a)	a-	c147	b29	-	5.53	.10
F	Helianthella uniflora	-	-	4	-	-	.00
F	Lappula occidentalis (a)	a1	b44	c171	.00	1.00	.72
F	Lactuca serriola	-	4	-	-	.15	-
F	Lupinus sp. (a)	a-	a-	b12	-	-	.06
F	Microsteris gracilis (a)	1	-	-	.00	-	-
F	Phlox longifolia	-	-	7	-	-	.01
F	Ranunculus testiculatus (a)	a-	a-	b241	-	-	.93
F	Sphaeralcea coccinea	39	33	37	.36	.44	1.01
Total for Annual Forbs		2	196	476	0.00	6.57	1.91
Total for Perennial Forbs		45	40	78	0.37	0.59	1.10
Total for Forbs		47	236	554	0.37	7.17	3.01

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

BROWSE TRENDS --

Management unit 22 , Study no: 15

T y p e	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
		B	Amelanchier utahensis	1	0	0	.00
B	Artemisia tridentata wyomingensis	89	83	92	9.00	13.61	12.31
B	Chrysothamnus viscidiflorus viscidiflorus	0	0	0	.03	-	.00
B	Opuntia sp.	2	0	1	.00	-	.00
B	Pediocactus simpsonii	0	2	3	-	.00	.03
Total for Browse		92	85	96	9.02	13.61	12.35

CANOPY COVER, LINE INTERCEPT --

Management unit 22 , Study no: 15

Species	Percent Cover	
	'03	'08
Artemisia tridentata wyomingensis	10.81	14.51

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 22 , Study no: 15

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata wyomingensis	10.8	2.1

BASIC COVER --

Management unit 22 , Study no: 15

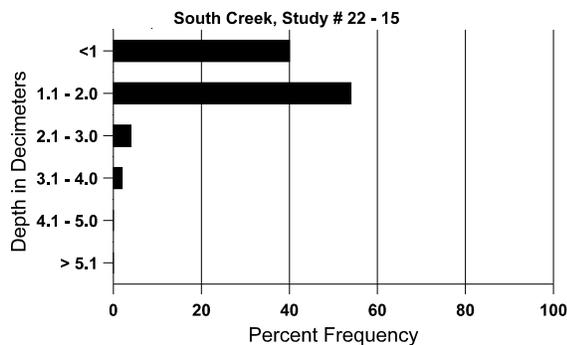
Cover Type	Average Cover %		
	'98	'03	'08
Vegetation	42.79	28.52	23.79
Rock	4.00	5.46	6.23
Pavement	22.86	28.61	23.09
Litter	50.62	29.59	36.67
Cryptogams	.03	.02	.04
Bare Ground	8.14	20.26	21.32

SOIL ANALYSIS DATA --

Management unit 22, Study no: 15, Study Name: South Creek

Effective rooting depth (in)	Temp °F (depth)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
10.2	67.0 (10.7)	7.0	53.4	22.0	24.6	1.8	7.1	134.4	0.6

Stoniness Index



PELLET GROUP DATA --

Management unit 22 , Study no: 15

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	8	3	72
Elk	1	-	-
Deer	47	8	59
Cattle	10	6	12

Days use per acre (ha)		
'98	'03	'08
-	-	-
1 (2)	-	-
68 (168)	29 (71)	99 (245)
41 (101)	19 (47)	9 (22)

BROWSE CHARACTERISTICS --

Management unit 22 , Study no: 15

		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)
Amelanchier utahensis												
98	20	-	20	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Artemisia tridentata wyomingensis												
98	3620	120	500	1940	1180	880	45	25	33	10	10	21/30
03	3040	-	180	1560	1300	540	27	67	43	9	9	19/27
08	7000	4160	3540	2120	1340	340	37	21	19	7	9	19/30
Chrysothamnus viscidiflorus viscidiflorus												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	20	-	-	-	-	0	0	-	-	0	-/-
Gutierrezia sarothrae												
98	0	-	-	-	-	-	0	0	-	-	0	6/7
03	0	-	-	-	-	-	0	0	-	-	0	6/8
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Opuntia sp.												
98	40	-	-	40	-	-	0	0	-	-	0	4/4
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	20	-	-	20	-	-	0	0	-	-	0	6/6
Pediocactus simpsonii												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	40	-	-	40	-	-	0	0	-	-	0	0/2
08	60	-	-	60	-	-	0	0	-	-	0	1/2

		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)
Pinus edulis												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	20	-	-	-	-	0	0	-	-	0	-/-