Trend Study 22-15-03

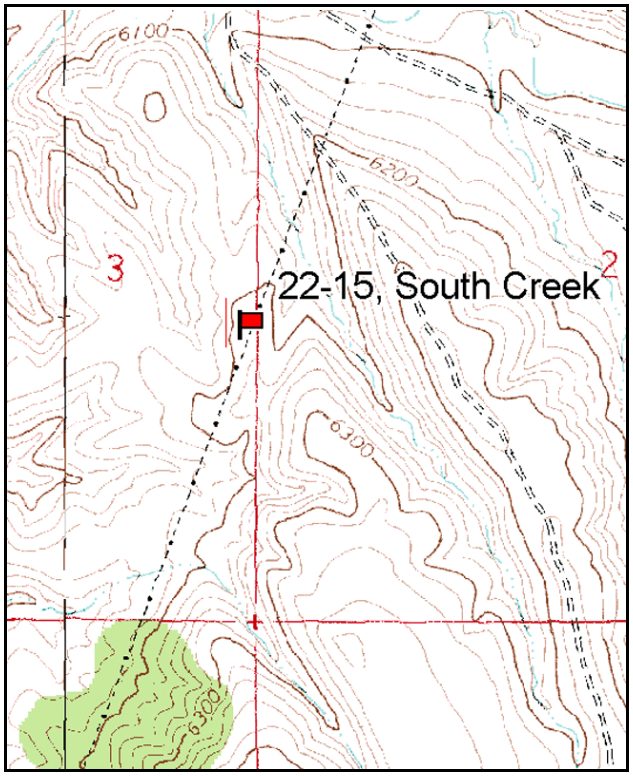
Study site name: South Creek . Vegetation type: Wyoming Big Sage/Grass .

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.

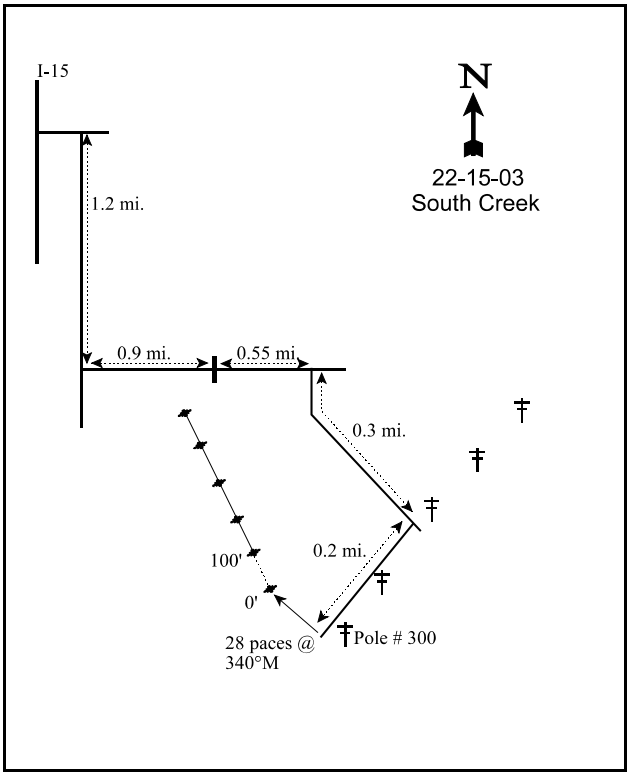
LOCATION DESCRIPTION

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

Township 31S , Range 7W , Section 3



Diagrammatic sketch

GPS: NAD 27, UTM 12S 4231955 N, 358161 E

DISCUSSION

South Creek - Trend Study No. 22-15

This study was formerly known as Fremont Wash, but was renamed in 2003. The transect is located on critical winter range south of Beaver and was established in August of 1998. The area is managed by the BLM. The study slopes to the west at 8% with an elevation of 6,200 feet. The general area consists of Wyoming big sagebrush 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. The pellet groups encountered varied in age from a few months old to possibly approaching a year. Pellet group transect data collected in 2003 estimated 29 deer and 19 cow days use/acre (71 ddu/ha and 47 cdu/ha) on the immediate site. Cattle pats sampled in 2003 were from the previous grazing season while most of the deer pellets were from winter use. An old (~6 years) deer antler shed was found on the site in 1998.

Soil analysis indicates texture to be sandy clay loam with a neutral pH (7.0). Phosphorous levels measured only 7.1 ppm and may be limiting to vegetative growth as10 ppm is thought minimal for normal plant development. The mild 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. 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 granitic in origin. The average effective rooting depth is estimated at 10 inches with an average soil temperature of 67°F in 1998 and 71°F in 2003. The stoniness index indicates that many rocks and pavement are located within the upper 8 inches of the soil profile.

Wyoming big sagebrush is the key browse which provides nearly all of the browse cover on this site. The population consists mostly of mature and decadent plants. Density was estimated at 3,620 plants/acre in 1998, and 3,040 in 2003. The young age class was moderately abundant in 1998 as it made up 14% of the population, but declined to 6% in 2003. Percent decadence was moderately high in 1998 (33%) and 2003 (43%). Increasing decadence and declining reproduction is due in large part to drought conditions. These trends will likely not improve unless precipitation patterns return to normal or above normal conditions. There were very few plants with seed heads in 1998, but seed production was noted as good in 2003. Utilization on sagebrush was moderate to heavy in 1998 but mostly heavy in 2003. Annual sagebrush leaders had averaged 1.5 inches of growth by June of 2003. Other browse species encountered on the site in very low densities include Utah serviceberry, pricklypear cactus, pediocactus, and broom snakeweed.

The herbaceous understory was dominated by cheatgrass during the initial reading in 1998. Cheatgrass accounted for 54% of the herbaceous cover and 39% of the total vegetative cover in 1998. It was sampled in every quadrat. With drought prior to and including the 2003 reading, no cheatgrass was sampled on the site in 2003. The site also supports a good stand of warm and cool season grasses. The most abundant perennial grasses are galleta, blue grama, sand dropseed, purple three-awn, needle-and-thread grass, Indian ricegrass, and bottlebrush squirreltail. In 2003, 5 of the 7 perennial grass species declined in nested frequency with most of these being the warm season varieties. There was no apparent utilization of grasses in 1998 or 2003. Forbs are scarce with scarlet globemallow being the most abundant perennial. An annual *Gilia* and stickseed were fairly abundant in 2003.

1998 APPARENT TREND ASSESSMENT

The soil trend appears stable with little erosion currently occurring. The moderate slope and ample vegetation and litter cover provide protection for the soil. The browse trend appears slightly downward. There are many decadent and dead plants found throughout this population. Currently, 20% of the population is dead and 31% of the decadent plants were classified as dying. Competition from the cheatgrass may not allow

sagebrush seedlings to establish, thereby dying plants are not being replaced. The herbaceous trend appears stable, although cheatgrass needs to be controlled to allow the more desirable perennial species to become established.

2003 TREND ASSESSMENT

Trend for soil is slightly down. Decreases in vegetation and litter cover coupled with an increase in bare ground means less protective cover on the soil surface. However, erosion remains low and soils were given a stable rating from an erosion condition class 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 and heavy use. Young recruitment is marginal and there is currently not enough young plants within the population to replace all of the decadent, dying individuals. 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.

TREND ASSESSMENT
soil - slightly down (2)
browse - slightly down (2)
herbaceous understory - slightly down (2)

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

Type	Species	Nested Frequency		Average Cover %	
		'98	'03	'98	'03
G	Aristida purpurea	b88	a20	2.01	.37
G	Bouteloua gracilis	a61	b108	1.86	3.06
G	Bromus tectorum (a)	b466	a-	12.83	-
G	Hilaria jamesii	b116	a99	2.55	1.20
G	Oryzopsis hymenoides	26	10	.25	.51
G	Sitanion hystrix	13	30	.20	.22
G	Sporobolus cryptandrus	b102	a60	2.83	1.63
G	Stipa comata	b55	a32	.79	.54
G	Vulpia octoflora (a)	8	-	.01	-
Total for Annual Grasses		474	0	12.84	0
Total for Perennial Grasses		461	359	10.51	7.55
Total for Grasses		935	359	23.36	7.55
F	Astragalus spp.	6	-	.01	-
F	Calochortus nuttallii	-	3	-	.00
F	Descurainia pinnata (a)	-	5	-	.03
F	Gilia spp. (a)	a-	b147	-	5.53

Type	Species	Nested Frequency		Average Cover %	
		'98	'03	'98	'03
F	Lappula occidentalis (a)	$_{a}$1	$_{b}$44	.00	1.00
F	Lactuca serriola	-	4	-	.15
F	Microsteris gracilis (a)	1	-	.00	-
F	Sphaeralcea coccinea	39	33	.36	.44
Total for Annual Forbs		2	196	0.00	6.57
Total for Perennial Forbs		45	40	0.37	0.59
Total for Forbs		47	236	0.37	7.17

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

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

Type	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Amelanchier utahensis	1	0	-	-
B	Artemisia tridentata wyomingensis	89	83	9.00	13.61
B	Chrysothamnus viscidiflorus viscidiflorus	0	0	.03	-
B	Opuntia spp.	2	0	-	-
B	Pediocactus simpsonii	0	2	-	.00
Total for Browse		92	85	9.02	13.61

CANOPY COVER, LINE INTERCEPT --
Management unit 22 , Study no: 15

Species	Percent Cover
	'03
Artemisia tridentata wyomingensis	10.81

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 22 , Study no: 15

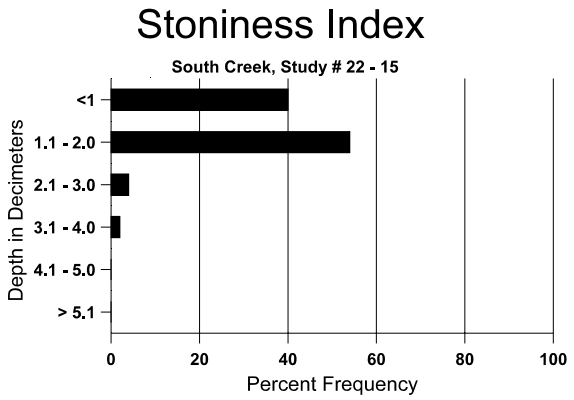
Species	Average leader growth (in)
	'03
Artemisia tridentata wyomingensis	1.5

BASIC COVER --
Management unit 22 , Study no: 15

Cover Type	Average Cover %	
	'98	'03
Vegetation	42.79	28.52
Rock	4.00	5.46
Pavement	22.86	28.61
Litter	50.62	29.59
Cryptogams	.03	.02
Bare Ground	8.14	20.26

SOIL ANALYSIS DATA --
Management unit 22, Study no: 15, Study Name: South Creek

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
10.2	71.7 (11.9)	7.0	53.4	22.0	24.6	1.8	7.1	134.4	0.6



PELLET GROUP DATA --
Management unit 22 , Study no: 15

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

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

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	% poor vigor	Average Height Crown (in)
Amelanchier utahensis											
98	**20**	-	20	-	-	-	0	0	-	0	-/-
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Artemisia tridentata wyomingensis											
98	**3620**	120	500	1940	1180	880	45	25	33	10	21/30
03	**3040**	-	180	1560	1300	540	27	67	43	9	19/27
Gutierrezia sarothrae											
98	**0**	-	-	-	-	-	0	0	-	0	6/7
03	**0**	-	-	-	-	-	0	0	-	0	6/8
Opuntia spp.											
98	**40**	-	-	40	-	-	0	0	-	0	4/4
03	**0**	-	-	-	-	-	0	0	-	0	-/-
Pediocactus simpsonii											
98	**0**	-	-	-	-	-	0	0	-	0	-/-
03	**40**	-	-	40	-	-	0	0	-	0	0/2