

Trend Study 16C-45-07

Study site name: Olsen Canyon .

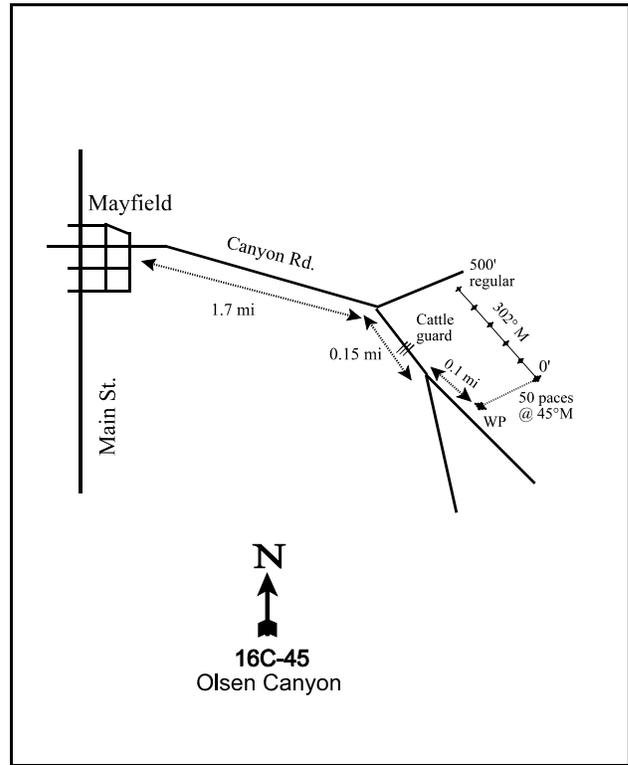
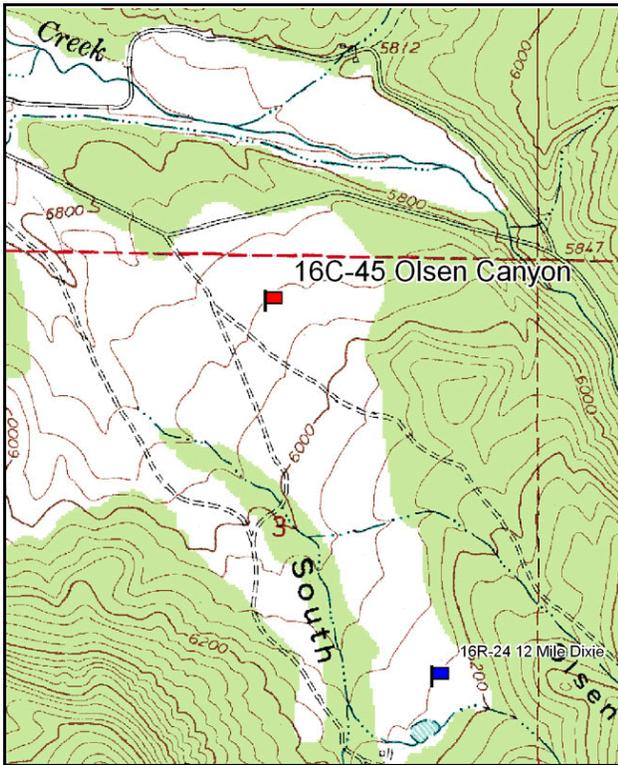
Vegetation type: Wyoming Sagebrush .

Compass bearing: frequency baseline 302 degrees magnetic.

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

LOCATION DESCRIPTION

Traveling south on Main St. in Mayfield, turn left (east) onto Canyon Road. Go for 1.7 miles to a “Y” intersection. Take the right fork (a dirt road) and go for 0.15 mile, crossing a cattle guard along the way, and take the left fork of another “Y” intersection. Go 0.1 mile to a witness post on the left side of the road. From the witness post the 0-foot baseline stake is 50 paces at 45 degrees magnetic and is marked by browse tag #196.



Map Name: Mayfield

Diagrammatic Sketch

Township 20S, Range 2E, Section 4

GPS: NAD 83, UTM 12S 441564 E 4328634 N

DISCUSSION

Olsen Canyon - Trend Study No. 16C-45

Study Information

This study is located on a large, 35-year-old chaining and seeding treatment on Utah Division of Wildlife Resources land to the east of Mayfield [elevation: 5,930 feet (1,807 m), slope: 5%, aspect: west]. It was established in 2007 as part of the 12-mile WMA habitat improvement, to monitor the thinning (lop and scatter) of encroaching juniper (*Juniperus osteosperma*) trees on a Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*) flat. In 2007, from a pellet group transect, deer use was estimated at 252 days use/acre (622 ddu/ha), and was from fall, winter, and spring. Elk use was estimated at 6 days use/acre (15 edu/ha), and was primarily spring use. Cattle use was estimated at 6 days use/acre (14 cdu/ha), and was from spring or summer use.

Soil

The soil is in the Fontreen series, which consists of very deep, well-drained, moderately-rapidly permeable soils that formed in alluvium and colluvium from limestone, sandstone, chert, and shale. Fontreen soils are on alluvial fans, hillslopes, and mountain slopes (USDA-NRCS 2007). The soil has a loam texture and a neutral reactivity (pH of 7.2). It is light brown in color, with rock and pavement scattered about the surface. The combined relative vegetation and litter cover was 62%. The relative bare ground cover was 20%. In 2007, the erosion condition was classified as stable.

Browse

The dominant preferred browse is Wyoming big sagebrush. Canopy cover of Wyoming big sagebrush was 7% in 2007. It had a density of 980 plants/acre (2,420 plants/ha). There were no young, however, seedlings were estimated at 60 plants/acre (148 plants/ha). Decadent plants comprised 20% of the population in 2007, and plants with poor vigor comprised 6%. Browse use was mostly moderate. The leader growth averaged 2.7 inches (7.0 cm). Black sagebrush (*Artemisia nova*) was also present. Canopy cover of black sagebrush was 3% in 2007, and the density was estimated at 420 plants/acre (1,037 plants/ha). There were no decadent or young plants in the population. However, seedlings were estimated at 400 plants/acre (988 plants/ha). Plant vigor was excellent, and browse use was light-moderate. Other preferred browse species sampled in lower densities were white rubber rabbitbrush (*Chrysothamnus nauseosus* spp. *albicalis*) and Nevada ephedra (*Ephedra nevadensis*). The dominant browse species is broom snakeweed (*Gutierrezia sarothrae*). It had a density of 6,000 plants/acre (14,820 plants/ha). There were a few scattered juniper trees. Juniper was not sampled in the line intercept canopy cover, but the point-centered quarter data estimate of juniper was 25 trees/acre (62 trees/ha). The average trunk diameter was 5.7 inches (14.5 cm).

Herbaceous Understory

The understory is dominated by perennial grass, which provided 24% of the total ground cover. The dominant perennial grasses were crested wheatgrass (*Agropyron cristatum*) and Sandberg bluegrass (*Poa secunda*), which provided 10% and 7% cover, respectively. All of the grasses showed some use. There are few forbs in the understory. They provided 2% of the total ground cover. Bur buttercup (*Ranunculus testiculatus*) is the dominant forb, and it provided 75% of the total forb cover. It has allelopathic chemicals that prevent the seed germination of many native species (Buchanan et al. 1978). The dominant perennial forb is timber poisonvetch (*Astragalus convallarius*).

2007 PRE-TREATMENT ASSESSMENT

The winter range condition determined by the Desirable Components Index (DCI) score was good. Browse cover was low-moderate. Wyoming big sagebrush provided 7% canopy cover. Twenty percent of the population was decadent, and no young plants were sampled. Browse use was light-moderate. Black sagebrush provided 3% canopy cover. There were no decadent plants, however, there were no young plants

either. Browse use was light-moderate. The perennial grasses provided 23% average cover, and annual grass cover was 1%. Grasses provided 70 % of the total vegetation cover. Perennial forb cover was poor, providing less than 1% cover.

2007 winter range condition (DCI) - good (48) Low potential scale

HERBACEOUS TRENDS --
Management unit 16C, Study no: 45

T y p e	Species	Nested Frequency	Average Cover %
		'07	'07
G	Agropyron cristatum	252	10.11
G	Agropyron intermedium	92	2.93
G	Agropyron spicatum	46	1.38
G	Bromus tectorum (a)	110	.81
G	Oryzopsis hymenoides	8	.46
G	Poa bulbosa	3	.03
G	Poa secunda	289	6.55
G	Stipa comata	49	1.43
Total for Annual Grasses		110	0.81
Total for Perennial Grasses		739	22.91
Total for Grasses		849	23.72
F	Astragalus convallarius	48	.34
F	Astragalus utahensis	1	.03
F	Collinsia parviflora (a)	3	.00
F	Lesquerella sp.	1	.00
F	Phlox hoodii	17	.11
F	Ranunculus testiculatus (a)	292	1.50
Total for Annual Forbs		295	1.51
Total for Perennial Forbs		67	0.49
Total for Forbs		362	2.00

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

BROWSE TRENDS --

Management unit 16C, Study no: 45

Type	Species	Strip Frequency	Average Cover %
		'07	'07
B	Artemisia nova	13	1.62
B	Artemisia tridentata wyomingensis	32	4.00
B	Chrysothamnus nauseosus albicaulis	2	.15
B	Chrysothamnus viscidiflorus stenophyllus	20	.09
B	Ephedra nevadensis	2	.03
B	Gutierrezia sarothrae	67	2.41
B	Opuntia sp.	1	-
Total for Browse		137	8.31

CANOPY COVER, LINE INTERCEPT --

Management unit 16C, Study no: 45

Species	Percent Cover
	'07
Artemisia nova	2.50
Artemisia tridentata wyomingensis	6.58
Chrysothamnus viscidiflorus stenophyllus	.36
Ephedra nevadensis	.65
Gutierrezia sarothrae	1.45

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 16C, Study no: 45

Species	Average leader growth (in)
	'07
Artemisia tridentata wyomingensis	2.7

POINT-QUARTER TREE DATA --
 Management unit 16C, Study no: 45

Species	Trees per Acre
	'07
Juniperus osteosperma	29

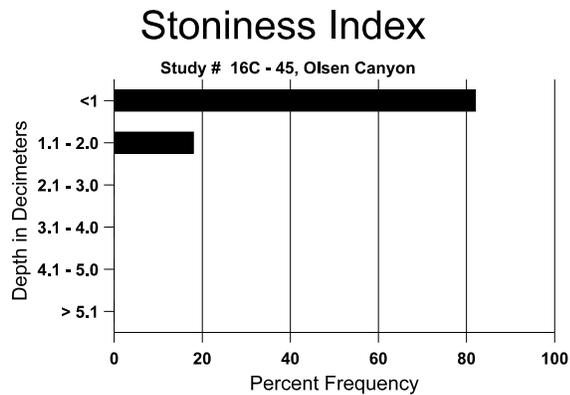
Average diameter (in)
'07
5.7

BASIC COVER --
 Management unit 16C, Study no: 45

Cover Type	Average Cover %
	'07
Vegetation	40.14
Rock	3.48
Pavement	12.90
Litter	27.57
Cryptogams	4.00
Bare Ground	21.63

SOIL ANALYSIS DATA --
 Herd Unit 16C, Study no: 45, Olsen Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	Sandy loam			%OM	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
-	-	7.2	46.2	22.8	31.0	2.8	11.6	188.8	.9



PELLET GROUP DATA --
 Management unit 16C, Study no: 45

Type	Quadrat Frequency	Days use per acre (ha)
	'07	'07
Rabbit	39	-
Elk	4	6 (15)
Deer	68	252 (622)
Cattle	3	6 (14)

BROWSE CHARACTERISTICS --
 Management unit 16C, Study no: 45

		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>Artemisia nova</i>												
07	420	400	-	420	-	-	52	0	-	-	0	18/37
<i>Artemisia tridentata wyomingensis</i>												
07	980	60	-	780	200	80	53	18	20	6	6	25/39
<i>Chrysothamnus nauseosus albicaulis</i>												
07	40	-	-	-	40	-	50	50	100	50	100	33/49
<i>Chrysothamnus viscidiflorus stenophyllus</i>												
07	520	-	20	460	40	20	19	27	8	-	0	10/16
<i>Ephedra nevadensis</i>												
07	80	-	40	-	40	-	50	50	50	-	0	12/17
<i>Gutierrezia sarothrae</i>												
07	6000	-	220	5720	60	60	3	.33	1	.33	.66	8/9
<i>Opuntia sp.</i>												
07	20	-	-	20	-	-	0	0	-	-	0	4/10