Trend Study 16C-38-07

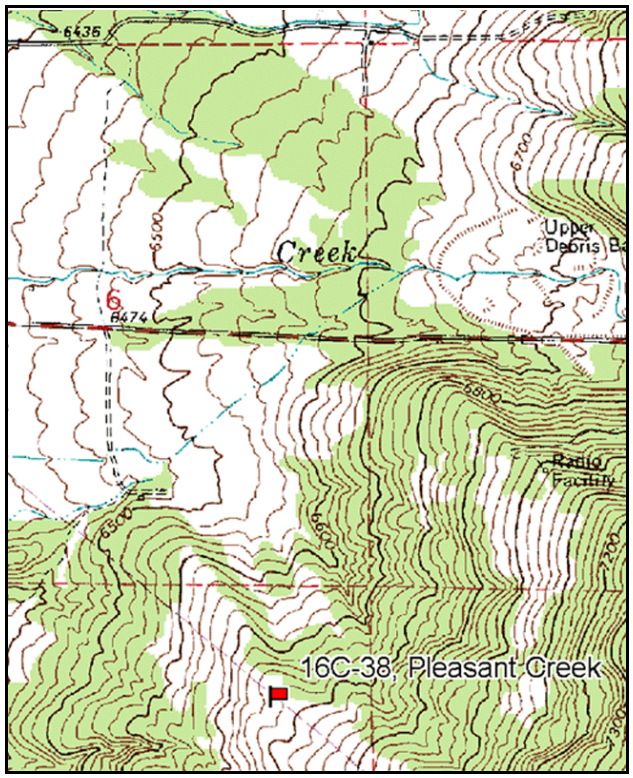
Study site name: Pleasant Creek . Vegetation type: Mountain Brush .

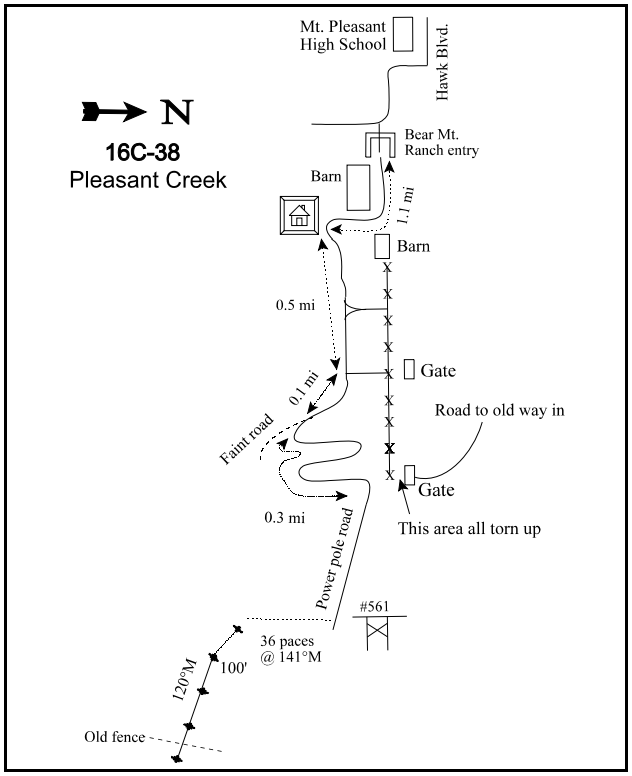
Compass bearing: frequency baseline 133 degrees magnetic.

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

LOCATION DESCRIPTION

From Mt. Pleasant High School (on 700 South 3 blocks east of State St. in Mt. Pleasant) continue east on Hawk Blvd. (same as 700 South), following several turns in the road until an eastbound dirt road jutting off at one of the curves leads the way to Bear Mt. Ranch. Enter the ranch and go 1.1 miles to some barns and house(s). Continue on this road (alongside a fence) and go 0.5 miles to the second intersection, the left side of which leads to a gate. Take the right side and go 0.1 miles to another "Y" intersection of a faint road. Continue on the clearer road (to the left) for 0.3 miles. At 0.3 miles you will see to your left an old intersection where the road is all torn up, behind which is a gate and a road leading to the old way into the site. Continue straight on the road you're on for 0.2 miles; the road will become a power line road. Stop at power pole # 561. The 0-foot baseline stake is 36 paces from the power pole at an azimuth of 141 degrees magnetic.





Map Name: Mt. Pleasant

Diagrammatic Sketch

Township 15S , Range 5E , Section 7

GPS: NAD 83, UTM 12S 465742 E 4375986 N

DISCUSSION

Pleasant Creek - Trend Study No. 16C-38

Study Information

This study samples a mixed mountain brush community located in the foothills above the town of Mt. Pleasant [elevation: 6,760 feet (2,060 m), slope: 7%-11%, aspect: northwest]. It is located beneath the large power transmission lines which cross the mountain. This area is considered important winter range as it supports several preferred browse species. Pellet group quadrat frequencies indicate elk and deer use to be light-moderate, with cattle and sheep use being light. From the pellet group transect, deer use was estimated at 80 days use/acre (197 ddu/ha) in 2002 and 62 days use/acre (154 ddu/ha) in 2007. Elk use was estimated at 27 days use/acre (68 edu/ha) in 2002, and 58 days use/acre (142 edu/ha) in 2007. No cattle pats or sheep pellets were sampled in 2002 and 2007.

Soil

The soil is in the Mower series. Typically, Mower soils have grayish brown, moderately alkaline, clay loam A horizons; light brownish gray, strongly alkaline, silty clay loam B2 horizons; and white, strongly alkaline, shaly silty clay loam Cca horizons over shale at some depth between 20 and 40 inches (51 and 102 cm) (USDA-NRCS 2007). The soil texture is clay, and a neutral reaction (pH of 7.2). Rock is common throughout the upper 16 inches (41 cm) of the profile. Since 1997, the combined relative cover of vegetation and litter has been 73%-84%, providing good protection for the soils. The relative bare ground was stable in 1997 and 2002 at 21%-22%. In 2007, it decreased to 11%. In 2002, it was noted that bare interspaces exhibited slight erosion, with moderate pedestalling around the base of shrubs and bunchgrasses. The erosion condition was classified as stable in 2002 and 2007.

Browse

The most abundant preferred browse species is mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*). Its density was 1,799 plants/acre (4,444 plants/ha) in 1989, 1,780 plants/acre (4,397 plants/ha) in 1997, 2,740 plants/acre (6,768 plants/ha) in 2002, and 1,760 plants/acre (4,347 plants/ha) in 2007. Young plants increased from 19% of the population in 1989 to 27% in 1997, and decreased to 14% by 2007. Decadence decreased from 22% in 1989 to 9% by 2002, and increased to 27% in 2007. Plant vigor has been good, except for 2007 when 17% of the population had poor vigor. Browse use has been light-moderate. The average annual leader growth was 1.7 inches (4.2 cm) in 2002 and 1.6 inches (4 cm) in 2007.

Other palatable browse species sampled include Utah serviceberry (*Amelanchier utahensis*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), and antelope bitterbrush (*Purshia tridentata*). The density of serviceberry has been low at 133 plants/acre (331 plants/ha) or less in all sample years. Young serviceberry were only sampled in 1997 and comprised 50% of the population. Decadence and plant vigor have been excellent, except in 2002 when decadent plants with poor vigor comprised 67% of the population. Browse use was moderate-heavy. Canopy cover of basin big sagebrush increased from 3% in 2002 to 4% in 2007. The density of basin big sagebrush was 400 plants/acre (988 plants/ha) in 1997, 540 plants/acre (1,334 plants/ha) in 2002, and 580 plant/acre (1,433 plants/ha) in 2007. Young plants comprised 40% of the population in 1997 and decreased to 4% in 2002 and 3% in 2007. Decadent plants comprised 25% of the population in 1997, 7% in 2002, and 52% in 2007. Plant vigor was good in 1989 and 2002, but 20% and 31% of the population had poor vigor in 1997 and 2007, respectively. Browse use has been mostly light-moderate. The canopy cover of bitterbrush decreased from 7% in 2002 to 4% in 2007. The density of bitterbrush was 720 plants/acre (1,778 plants/ha) in 1997, 940 plants/acre (2,322 plants/ha) in 2002, and 620 plants/acre (1,531 plants/ha) in 2007. Young plants were only sampled in 2007, accounting for 10% of the population. There were few or no decadent plants, except for 2007 when 26% of the population was decadent. Plant vigor has been good. Browse use was mostly moderate-heavy. The average annual leader growth of antelope bitterbrush was 2.3 inches (5.9 cm) in 2002 and 2.1 inches (5.4 cm) in 2007.

The most numerous browse species is low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*). It comprised 9% of the canopy cover in 2002 and 8% in 2007. The density of low rabbitbrush declined from 18,065 plants/acre (44,638 plants/ha) in 1989 to 7,500 plants/acre (18,532 plants/ha) in 2007. The population is mostly mature plants. In 1989, the population showed signs of significant browsing by domestic sheep earlier in the season. Utah Juniper (*Juniperus osteosperma*) has been measured, and canopy cover was constant at 11% in 2002 and 2007. The point-centered quarter data estimate for juniper density was 70 trees/acre (173 trees/ha) in 1997, 80 trees/acre (198 trees/ha) in 2002, and 101 trees/acre (249 trees/ha) in 2007. The average trunk diameter was 3.8 inches (9.7 cm) in 1997, which increased to 4.7 inches (12.1 cm) in 2002 and 2007. From line intercept data, canopy cover was estimated at 11% since 2002.

Herbaceous Understory

The grass component is diverse. Between seven and 15 grass species have been sampled from 1989 to 2007. Grass provided 16% of the total ground cover in 1997 and 12%-13% in 2002 and 2007. The dominant perennial grasses were Kentucky bluegrass (*Poa pratensis*) and bluebunch wheatgrass (*Agropyron spicatum*). They provided 12% of the total ground cover in 1997, 10% in 2002, and 9% in 2007. Both showed moderate utilization during the 1997 reading. However, neither showed noticeable use during 2002 and 2007. Cheatgrass (*Bromus tectorum*) and Japanese brome (*Bromus japonicus*) are the only annul grasses that have been sampled. They provided 2% of the total ground cover in 1997, 0.04% in 2002, and 3% in 2007. The decreases in the number of species sampled, cover, and nested frequency in 2002 were likely the results of lower than normal annual precipitation conditions (Utah Climate Summaries 2007). These parameters should improve with better precipitation in the future.

The forb diversity was high. Between 17 and 24 perennial species, and six and 11 annual species have been sampled in all sample years. Diversity was highest in 1997. The forbs provided 7%-10% of the total ground cover since 1997. The dominant forb species was low penstemon (*Penstemon humilis*). It provided 3%-4% of the total ground cover in all measurements. Several noxious weeds have been sampled: musk thistle (*Carduus nutans*), field bindweed (*Convolvulus arvensis*), and houndstongue (*Cynoglossum officinale*). These species decreased in abundance or were not sampled in 2007.

1997 TREND ASSESSMENT

The browse trend is stable. The density of mountain big sagebrush remained stable at 1,780 plants/acre (4,398 plants/ha). The recruitment of young increased from 19% of the population to 27%, and decadence decreased from 22% to 12%. Plants classified with poor vigor remained low at 6% of the population, and browse use increased from light to light-moderate. Basin big sagebrush was measured for the first time. It was likely present before 1997, but was not sampled until the transect was extended and the sample area was increased. Forty percent of the population was young, and 25% was decadent. Plants classified with poor vigor comprised 20% of the population, and browse use was light. The density of antelope bitterbrush increased ten-fold. There were no young or decadent plants in the population, and vigor was excellent. Browse use was mostly heavy. The grass trend was slightly up. The sum of nested frequency for perennial grass increased 18%. The nested frequencies of Kentucky bluegrass and bluebunch wheatgrass changed little. However, Sandberg bluegrass (*Poa secunda*) increased significantly in nested frequency. The forb trend is slightly down. The sum of nested frequency for perennial forbs decreased 18%, and musk thistle and field bindweed were sampled for the first time. Six perennial species decreased significantly in nested frequency. However, one of those species was houndstongue. The number of perennial species sampled increased from 19 to 24, and yellow salsify (*Tragopogon dubius*) increased significantly in nested frequency. The Desirable Components Index (DCI) score was good due to good preferred browse cover, little browse decadence, few young browse, excellent perennial grass cover, little annual grass cover, excellent perennial forb cover, and three noxious weeds.

winter range condition (DCI) - good (71) Mid-level potential scale
browse - stable (0) grass - slightly up (+1) forb - slightly down (-1)

2002 TREND ASSESSMENT

The browse trend is up. The density of mountain big sagebrush increased 54%. The recruitment of young decreased to 19% of the population, and decadence decreased to 9%. Plants showing poor vigor changed little, decreasing to 4% of the population. Browse use was mostly light. The density of basin big sagebrush increased 35%. The recruitment of young decreased to 4% of the population, and decadence decreased to 7%. Plants classified with poor vigor decreased to 4% of the population, and browse use increased to light-moderate. The density of antelope bitterbrush increased 31%. No young plants were sampled. Plant vigor was excellent, and heavily browsed plants decreased from 83% of the population to 64%.. The grass trend is stable. The sum of nested frequency for perennial grass decreased 19%, and the nested frequency of Kentucky bluegrass significantly declined. However, the sum of nested frequency for annual grass decreased 91%, and the nested frequency of both cheatgrass and Japanese brome significantly decreased. Annual grass cover decreased from 2% to nearly 0%. The forb trend is down. The sum of nested frequency for perennial forbs decreased 26%. Houndstongue and musk thistle were both sampled, but field bindweed was not. The nested frequency for bur buttercup (*Ranunculus testiculatus*) significantly decreased. It has allopathic chemicals that prevent the seed germination of many native species (Buchanan et al. 1978). Total forb cover decreased from 9% to 7%. The decrease in the sum of nested frequency, and cover of grass and forbs is likely due to drought (Utah Climate Summaries 2007). The DCI score remained good.

winter range condition (DCI) - good (70) Mid-level potential scale
browse - up (+2) grass - stable (0) forb - down (-2)

2007 TREND ASSESSMENT

The browse trend is down. The density of mountain big sagebrush decreased 36%. The recruitment of young decreased to 14% of the population, and decadence increased to 27%. Plants classified with poor vigor increased to 17% of the population, and browse use increased to light-moderate. The density for basin big sagebrush was stable. The recruitment of young remained low at 3% of the population, and decadence increased to 52%. Plants classified with poor vigor increased to 31% of the population, and browse use remained mostly light-moderate. The sagebrush defoliator moth (*Aroga websteri*) had infested 28% of the mountain big sagebrush population and 34% of the basin big sagebrush population. The density of antelope bitterbrush decreased 34%. The recruitment of young increased to 10% of the population, and decadence increased to 26%. Plants classified as having poor vigor increased to 6% of the population, and browse use was moderate-heavy. The grass trend is down. The sum of nested frequency for perennial grass decreased 13%, and the sum of nested frequency of annual grass increased ten-fold. The nested frequency of cheatgrass significantly increased, and its average cover increased from nearly 0% to 3%. The forb trend is slightly down. The sum of nested frequency for perennial forbs was stable. However, the sum of nested frequency for annual forbs increased five-fold, and most of that increase was the result of a significant increase in the nested frequency of bur buttercup. Houndstongue was the only noxious weed that was sampled. The DCI score declined to poor due to decreased browse cover, increased browse decadence, decreased perennial grass cover, and increased annual grass cover.

winter range condition (DCI) - poor (38) Mid-level potential scale
browse - down (-2) grass - down (-2) forb - slightly down (-1)

HERBACEOUS TRENDS --
Management unit 16C, Study no: 38

Type	Species	Nested Frequency				Average Cover %		
		'89	'97	'02	'07	'97	'02	'07
G	Agropyron cristatum	-	$_{a}$6	$_{a}$5	$_{a}$5	.06	.15	.18
G	Agropyron smithii	-	-	-	1	-	-	.00
G	Agropyron spicatum	$_{a}$166	$_{a}$171	$_{a}$196	$_{a}$159	8.60	8.50	7.31
G	Bromus japonicus (a)	-	$_{b}$93	$_{a}$7	$_{a}$25	.99	.02	.07
G	Bromus tectorum (a)	-	$_{b}$73	$_{a}$8	$_{c}$130	.63	.02	3.11
G	Carex sp.	-	-	$_{a}$1	$_{a}$4	-	.03	.15
G	Melica bulbosa	$_{a}$1	$_{a}$2	$_{a}$2	$_{a}$7	.00	.16	.01
G	Oryzopsis hymenoides	-	$_{a}$9	$_{a}$5	$_{a}$1	.08	.16	.03
G	Poa bulbosa	-	-	-	1	-	-	.03
G	Poa fendleriana	$_{a}$8	-	$_{a}$1	$_{a}$8	-	.00	.06
G	Poa pratensis	$_{c}$115	$_{bc}$101	$_{a}$45	$_{ab}$70	3.78	1.49	1.52
G	Poa secunda	$_{a}$10	$_{b}$48	$_{ab}$33	$_{a}$9	.46	.56	.09
G	Sitanion hystrix	$_{ab}$16	$_{b}$29	$_{a}$2	$_{a}$1	.34	.03	.01
G	Stipa columbiana	-	$_{a}$2	$_{b}$18	$_{a}$3	.03	.83	.15
G	Stipa lettermani	$_{ab}$15	$_{b}$24	$_{a}$8	$_{a}$5	.71	.24	.09
Total for Annual Grasses		0	166	15	155	1.62	0.04	3.19
Total for Perennial Grasses		331	392	316	274	14.10	12.17	9.67
Total for Grasses		331	558	331	429	15.73	12.21	12.86
F	Achillea millefolium	-	$_{a}$4	$_{a}$4	$_{a}$4	.38	.15	.15
F	Agoseris glauca	-	$_{a}$3	$_{a}$5	$_{a}$3	.00	.01	.00
F	Alyssum alyssoides (a)	-	$_{a}$7	$_{a}$3	$_{b}$50	.01	.00	.18
F	Allium sp.	$_{a}$3	$_{a}$12	$_{ab}$16	$_{b}$33	.05	.07	.11
F	Arabis sp.	$_{a}$4	$_{a}$2	-	-	.00	-	-
F	Astragalus convallarius	$_{a}$40	$_{a}$45	$_{a}$32	$_{a}$38	.59	.38	.94
F	Aster sp.	$_{a}$79	$_{a}$76	$_{a}$54	$_{a}$47	1.18	.52	.57
F	Astragalus sp.	$_{b}$14	$_{a}$1	$_{a}$2	-	.00	.03	-
F	Astragalus utahensis	-	$_{a}$5	$_{a}$5	$_{a}$7	.01	.01	.07
F	Carduus nutans (a)	-	$_{a}$10	$_{a}$12	-	.21	.10	-
F	Chaenactis douglasii	$_{b}$13	$_{ab}$16	$_{a}$4	$_{a}$1	.06	.01	.00
F	Cirsium sp.	$_{a}$13	$_{a}$15	$_{a}$12	$_{a}$13	.06	.10	.13
F	Convolvulus arvensis	-	3	-	-	.01	-	-
F	Collomia linearis (a)	-	$_{b}$15	-	$_{a}$7	.03	-	.01
F	Collinsia parviflora (a)	-	$_{ab}$58	$_{a}$41	$_{b}$75	.12	.17	.33
F	Cymopterus sp.	-	$_{ab}$2	$_{b}$14	$_{a}$3	.01	.06	.00
F	Cynoglossum officinale	$_{b}$94	$_{a}$21	$_{a}$12	$_{a}$9	.17	.08	.05

Type	Species	Nested Frequency				Average Cover %		
		'89	'97	'02	'07	'97	'02	'07
F	Epilobium brachycarpum (a)	-	$_{a}$3	$_{a}$3	-	.02	.03	-
F	Erigeron eatonii	-	-	1	-	-	.00	-
F	Eriogonum ovalifolium	-	-	3	-	-	.03	-
F	Eriogonum umbellatum	$_{b}$28	$_{a}$-	$_{a}$9	-	.00	.05	-
F	Hackelia patens	$_{b}$97	$_{b}$89	$_{a}$30	$_{a}$25	.77	.45	.41
F	Holosteum umbellatum (a)	-	-	-	2	-	-	.03
F	Lepidium sp. (a)	-	6	-	-	.01	-	-
F	Linum kingii	7	-	-	-	-	-	-
F	Lithospermum ruderale	$_{a}$3	$_{a}$4	$_{a}$6	$_{a}$2	.03	.21	.00
F	Machaeranthera canescens	$_{c}$79	$_{b}$40	$_{a}$3	-	.26	.06	-
F	Microsteris gracilis (a)	-	$_{b}$30	$_{a}$3	$_{a}$3	.08	.00	.03
F	Penstemon humilis	$_{b}$242	$_{a}$190	$_{a}$181	$_{a}$178	3.26	3.89	4.48
F	Phlox longifolia	$_{ab}$123	$_{ab}$114	$_{a}$89	$_{b}$144	.30	.32	1.02
F	Polygonum douglasii (a)	-	8	-	-	.01	-	-
F	Ranunculus testiculatus (a)	-	$_{b}$132	$_{a}$4	$_{c}$192	.45	.01	.91
F	Senecio multilobatus	-	-	3	-	-	.00	-
F	Sphaeralcea coccinea	$_{a}$10	$_{ab}$19	$_{b}$24	$_{ab}$21	.14	.15	.10
F	Taraxacum officinale	$_{a}$1	$_{a}$10	-	-	.02	-	-
F	Tragopogon dubius	$_{a}$4	$_{b}$20	$_{a}$2	-	.04	.01	-
F	Unknown forb-annual (a)	-	2	-	-	.00	-	-
F	Veronica biloba (a)	-	$_{b}$106	-	$_{a}$25	.46	-	.04
F	Vicia americana	-	$_{b}$33	$_{b}$22	$_{a}$1	.27	.10	.03
F	Viguiera multiflora	$_{b}$35	$_{a}$4	$_{a}$6	$_{a}$1	.05	.04	.00
F	Viola sp.	-	3	-	-	.03	-	-
Total for Annual Forbs		0	377	66	354	1.44	0.33	1.55
Total for Perennial Forbs		889	731	539	530	7.77	6.79	8.12
Total for Forbs		889	1108	605	884	9.22	7.13	9.68

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

BROWSE TRENDS --
Management unit 16C, Study no: 38

Type	Species	Strip Frequency			Average Cover %		
		'97	'02	'07	'97	'02	'07
B	Amelanchier utahensis	2	3	1	.03	-	.03
B	Artemisia tridentata tridentata	11	19	20	.90	2.64	2.64
B	Artemisia tridentata vaseyana	49	67	46	7.25	7.91	2.32
B	Chrysothamnus nauseosus albicaulis	2	10	3	.38	.72	.03
B	Chrysothamnus viscidiflorus viscidiflorus	94	93	82	7.21	5.82	6.82
B	Eriogonum heracleoides	0	2	0	-	-	.00
B	Gutierrezia sarothrae	2	5	9	.06	.18	.33
B	Juniperus osteosperma	6	7	8	5.63	7.75	6.18
B	Mahonia repens	0	2	2	-	-	.15
B	Purshia tridentata	24	27	22	5.65	4.80	1.99
B	Rosa woodsii	2	2	0	.30	.03	-
B	Symphoricarpos oreophilus	50	53	50	2.62	2.83	2.34
B	Tetradymia canescens	2	2	2	.15	.03	.03
Total for Browse		244	292	245	30.21	32.73	22.88

CANOPY COVER, LINE INTERCEPT --
Management unit 16C, Study no: 38

Species	Percent Cover	
	'02	'07
Artemisia tridentata tridentata	3.21	4.33
Artemisia tridentata vaseyana	6.61	5.65
Chrysothamnus nauseosus albicaulis	.76	.05
Chrysothamnus viscidiflorus viscidiflorus	9.43	8.10
Eriogonum heracleoides	.01	-
Gutierrezia sarothrae	-	.16
Juniperus osteosperma	10.80	10.76
Mahonia repens	.05	.08
Purshia tridentata	6.65	4.13
Rosa woodsii	.01	-
Symphoricarpos oreophilus	2.71	3.09
Tetradymia canescens	.21	.15

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 16C, Study no: 38

Species	Average leader growth (in)	
	'02	'07
Artemisia tridentata vaseyana	1.7	1.6
Purshia tridentata	2.3	2.1

POINT-QUARTER TREE DATA --
Management unit 16C, Study no: 38

Species	Trees per Acre	
	'02	'07
Juniperus osteosperma	80	101

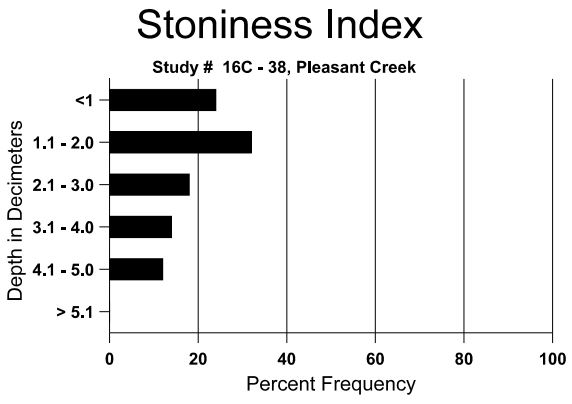
Average diameter (in)	
'02	'07
4.8	4.7

BASIC COVER --
Management unit 16C, Study no: 38

Cover Type	Average Cover %			
	'89	'97	'02	'07
Vegetation	16.50	46.87	51.43	51.87
Rock	1.75	.58	1.11	.73
Pavement	2.75	1.09	1.56	3.40
Litter	54.00	42.92	37.88	40.47
Cryptogams	0	1.62	3.67	1.87
Bare Ground	25.00	24.11	26.76	12.01

SOIL ANALYSIS DATA --
Herd Unit 16C, Study no: 38, Pleasant Creek

Effective rooting depth (in)	Temp °F (depth)	pH	Clay			%0M	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
12.2	53.0 (14.1)	7.2	25.7	29.4	44.8	4.7	10.9	246.4	.5



PELLET GROUP DATA --
Management unit 16C, Study no: 38

Type	Quadrat Frequency			Days use per acre (ha)	
	'97	'02	'07	'02	'07
Sheep	6	-	-	-	-
Rabbit	3	4	7	-	-
Elk	11	11	18	27 (68)	58 (142)
Deer	12	24	29	80 (197)	62 (154)
Cattle	1	-	-	-	-

BROWSE CHARACTERISTICS --
Management unit 16C, Study no: 38

		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												
89	**133**	-	-	133	-	-	50	50	0	-	0	17/15
97	**40**	-	20	20	-	-	0	50	0	-	0	21/27
02	**60**	-	-	20	40	-	0	67	67	67	67	16/19
07	**20**	-	-	20	-	-	0	100	0	-	0	16/19
Artemisia tridentata tridentata												
89	**0**	-	-	-	-	-	0	0	0	-	0	-/-
97	**400**	20	160	140	100	260	0	0	25	20	20	54/53
02	**540**	-	20	480	40	120	41	4	7	4	4	49/52
07	**580**	-	20	260	300	180	41	10	52	14	31	44/48
Artemisia tridentata vaseyana												
89	**1799**	66	333	1066	400	-	15	0	22	-	4	27/34
97	**1780**	300	480	1080	220	620	31	2	12	6	6	29/32
02	**2740**	20	520	1980	240	740	9	3	9	4	4	23/28
07	**1760**	40	240	1040	480	280	28	6	27	13	17	23/30
Chrysothamnus nauseosus albicaulis												
89	**866**	-	200	400	266	-	15	0	31	-	0	35/22
97	**40**	-	-	20	20	-	100	0	50	50	50	30/40
02	**440**	-	-	440	-	20	0	0	0	-	0	13/13
07	**60**	-	20	20	20	20	0	0	33	-	0	19/20
Chrysothamnus viscidiflorus viscidiflorus												
89	**18065**	66	6066	9666	2333	-	21	8	13	-	0	11/12
97	**13140**	380	2320	10620	200	40	3	0	2	.30	.30	9/12
02	**12340**	-	60	11880	400	80	1	0	3	.48	.48	9/12
07	**7500**	-	200	6140	1160	40	2	0	15	2	47	11/14

		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)
Eriogonum heracleoides												
89	**0**	-	-	-	-	-	0	0	-	-	0	-/-
97	**0**	-	-	-	-	-	0	0	-	-	0	-/-
02	**40**	-	-	40	-	-	0	0	-	-	0	4/6
07	**0**	-	-	-	-	-	0	0	-	-	0	-/-
Gutierrezia sarothrae												
89	**0**	-	-	-	-	-	0	0	0	-	0	-/-
97	**180**	-	60	120	-	-	0	0	0	-	0	8/7
02	**240**	-	-	220	20	-	0	0	8	-	0	8/9
07	**400**	-	-	400	-	-	0	0	0	-	0	9/9
Juniperus osteosperma												
89	**66**	-	-	66	-	-	0	0	-	-	0	93/89
97	**120**	-	40	80	-	-	0	0	-	-	0	-/-
02	**160**	60	40	120	-	-	0	0	-	-	0	-/-
07	**160**	40	-	160	-	-	0	0	-	-	0	-/-
Mahonia repens												
89	**0**	-	-	-	-	-	0	0	-	-	0	-/-
97	**0**	-	-	-	-	-	0	0	-	-	0	-/-
02	**360**	-	-	360	-	-	0	0	-	-	0	2/3
07	**1760**	-	-	1760	-	-	0	0	-	-	0	3/3
Purshia tridentata												
89	**66**	-	-	66	-	-	100	0	0	-	0	16/26
97	**720**	-	-	720	-	-	17	83	0	-	0	44/49
02	**940**	-	-	920	20	-	0	64	2	-	0	11/39
07	**620**	40	60	400	160	-	39	52	26	6	6	15/50
Rosa woodsii												
89	**2333**	-	1200	1133	-	-	0	0	-	-	0	14/16
97	**200**	-	40	160	-	-	0	0	-	-	0	10/17
02	**200**	-	-	200	-	-	0	0	-	-	0	6/7
07	**0**	-	-	-	-	-	0	0	-	-	0	9/7
Symphoricarpos oreophilus												
89	**3866**	266	1333	2200	333	-	12	0	9	-	3	17/17
97	**2340**	-	480	1840	20	20	20	.85	1	-	0	11/23
02	**2020**	-	80	1880	60	-	3	.99	3	-	0	13/20
07	**1820**	-	380	1340	100	-	14	2	5	-	11	13/19

		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)
Tetradymia canescens												
89	**0**	-	-	-	-	-	0	0	0	-	0	-/-
97	**440**	40	240	200	-	-	0	0	0	-	0	12/25
02	**560**	-	80	480	-	-	0	0	0	-	0	11/18
07	**160**	-	20	-	140	-	0	0	88	38	38	13/22