

Trend Study 23-6-08

Study site name: Koosharem Canyon.

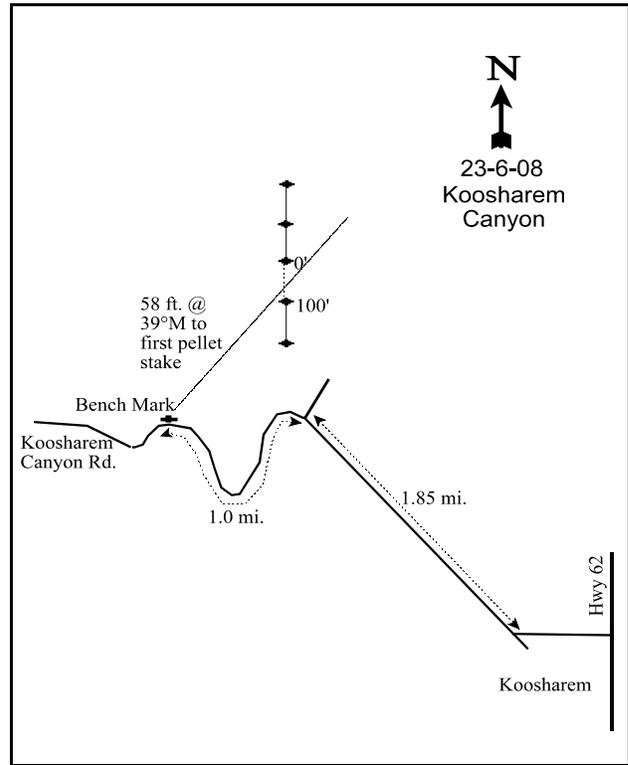
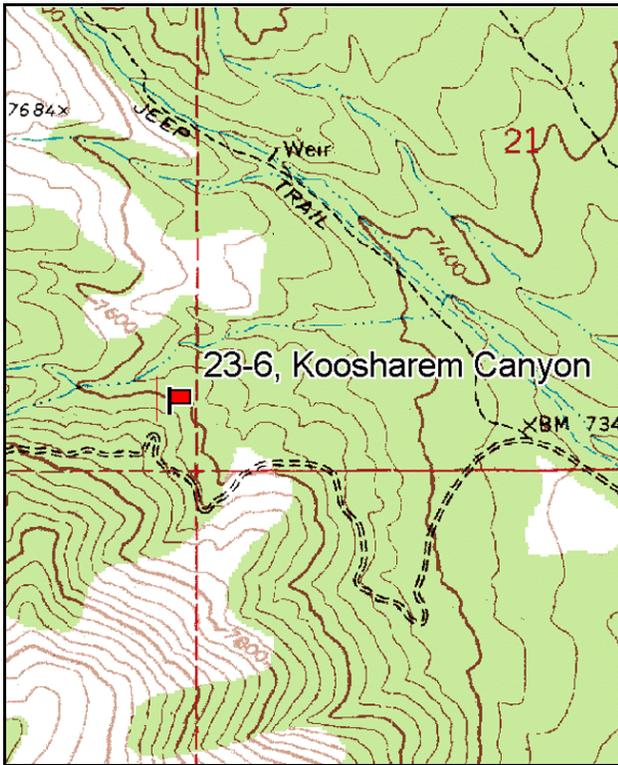
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

From the intersection next to the Koosharem LDS Ward Building go west 0.35 miles up the Koosharem Mountain Road. Bear right and go 0.05 miles to a fork. Take the left fork over a small bridge and proceed 1.85 miles to another fork. Turn left and go just over 1.0 mile to a hairpin turn that curves to the left. Stop at the apex of the curve. There is a benchmark here on the north side of the road. Take a bearing of 39 degrees and go 58 feet from the benchmark to find a short yellow rebar that marks a pellet group transect. From the first stake, the pellet group transect runs northeast (62-67 degrees) with stakes at intervals of about 50-60 feet. Count down 7 stakes, then go due north 50 feet to the baseline starting point. The 0-foot end of the baseline is marked by a steel rebar with browse tag #7042 attached. The baseline runs due south, crossing the pellet group transect.



Map Name: Koosharem

Diagrammatic Sketch

Township 26S, Range 1W, Section 20

GPS: NAD 83, UTM 12S 419491 E, 4264909 N

DISCUSSION

Koosharem Canyon - Trend Study No. 23-6

Study Information

This study samples moderately high-elevation winter range on the east side of the Monroe Mountain wildlife management unit [elevation: 7,830 feet (2,387 m), slope: 26%, aspect: northeast]. The land is administered by the US Forest Service. Wildlife use appears to be year-round. Data collected on the nearby DWR pellet group transect indicated moderate deer use since 1981 (Jense et al. 1985, 1991). Pellet group data collected along the study baseline estimated deer use at 63 days use/acre (156 ddu/ha) in 1998, 113 days use/acre (279 ddu/ha) in 2003, and 163 days use/acre (403 ddu/ha) in 2008. Elk use was estimated at 31 days use/acre (77 edu/ha) in 1998, 2 days use/acre (5 edu/ha) in 2003, and 13 days use/acre (31 edu/ha) in 2008. Cattle use was estimated at 5 days use/acre (12 cdu/ha) in 1998, 1 day use/acre (2 cdu/ha) in 2003, and 4 days use/acre (9 cdu/ha) in 2008.

Soil

The soil is a clay loam with a slightly acidic reaction (pH 6.5). Relative combined vegetation and litter cover has been 64%-67% since 1998, and relative combined rock and pavement cover has been 16%-18%. Relative bare ground cover has been stable at 17%-18% since 1998. The soil erosion condition was classified as stable-slight in 2003 and slight in 2008 due to pedestalling around shrubs, evidence of soil movement, and the formation of rills and flow patterns.

Browse

Preferred browse is diverse and abundant, and has provided 79%-92% of the total browse quadrat cover since 1998. The majority of the preferred browse cover is comprised of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and true mountain mahogany (*Cercocarpus montanus*). Mountain big sagebrush quadrat cover decreased from 17% in 1998 to 13% in 2008. Density increased from 3,420 plants/acre in 1998 to 4,440 plants/acre in 2008. Population decadence has been high in all sample years, and ranged from 21%-65%. Young recruitment was high in 1985 at 40% of the population, but was less than 10% in all other sample years. Vigor was good in 1985, 1998, and 2003, but plants with poor vigor comprised 31% and 48% of the population in 1991 and 2008, respectively. Browse use was mostly light-moderate in all sample years. Annual leader growth averaged 1.3 inches (3.3 cm) in 2003 and 1.0 inch (2.5 cm) in 2008.

True mountain mahogany has provided 6%-8% quadrat cover since 1998. Density increased from 1,360 plants/acre in 1998 to 1,980 plants/acre in 2008. Decadence increased from 0% in 1985 and 1991 to 8%-9% in 1998 and 2003, and 28% in 2008. Young recruitment decreased from 62% of the population in 1985 to 4% by 2003, then increased to 22% in 2008. Plant vigor has declined since 1998, with 8% and 10% of the population showing poor vigor in 2003 and 2008, respectively. Browse use was light-moderate in 1985 and 1998, moderate-heavy in 1991, 2003, and 2008. Average annual leader growth was 2.9 inches (7.3 cm) in 2003 and 3.5 inches (8.8 cm) in 2008.

Utah serviceberry (*Amelanchier utahensis*), antelope bitterbrush (*Purshia tridentata*), dwarf rabbitbrush (*Chrysothamnus depressus*), slenderbush eriogonum (*Eriogonum microthecum*), and Gambel oak (*Quercus gambelii*) are also present, although found in smaller densities. Serviceberry density decreased from 240 plants/acre in 1998 to 40 plants/acre in 2008. The population has been mostly vigorous, except in 2003, when 29% of the population showed poor vigor. Browse use was light-moderate in 1985 and 1998, mostly heavy in 1991 and 2003, and light in 2008.

Antelope bitterbrush was first sampled in 1998. Density has remained stable at approximately 200 plants/acre. Vigor was excellent in 1998 and 2003, but in 2008, 40% of the population displayed poor vigor. Browse use varied from light to heavy in 1998 and was mostly heavy in 2003 and 2008. Annual leader growth averaged

2.4 inches (6.2 cm) in 2003 and 2.1 inches (5.3 cm) in 2008.

Dwarf rabbitbrush density increased from 160 plants/acre in 1998 to 400 plants/acre in 2008. Vigor has been good on most plants in all sample years. Browse use was light in 1985, heavy in 1991, light-moderate in 1998 and 2008, and moderate-heavy in 2003. Slenderbush eriogonum density increased from 780 plants/acre in 1998 to 1,060 plants/acre by 2008. Vigor has been good, and browse use has been mostly light.

Gambel oak has provided 1%-3% quadrat cover since 1998. Density increased from approximately 950 plants/acre in 1998 and 2003 to 1,840 plants/acre in 2008. Decadent plants were sampled for the first time in 1998 at 6% of the population, remained low at 2% in 2003, and increased to 20% in 2008. Young recruitment steadily decreased from 82% of the population in 1985 to 17% in 2008. All plants were vigorous until 2008, when 9% of the population was classified as showing poor vigor. Browse use was light in 1985 and mostly light-moderate since 1991.

Pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) trees are also scattered across the area. Combined pinyon and juniper canopy cover was 3% in 2003 and 4% in 2008. Point-centered quarter data estimated pinyon density at 39 trees/acre in 2003 and 45 trees/acre in 2008. Average trunk diameter was 3.1 inches (7.8 cm) in 2003 and 3.3 inches (8.5 cm) in 2008. Juniper density was 32 trees/acre in 2003 and 45 trees/acre in 2008. Trunk diameter averaged 5.6 inches (14.2 cm) in 2003 and 5.0 inches (12.8 cm) in 2008.

Herbaceous Understory

Total grass cover was 13% in 1998, 7% in 2003, and 9% in 2008, all of which was provided by perennial species. Mutton bluegrass (*Poa fendleriana*) and sedge (*Carex* sp.) were the most abundant species, but other commonly sampled species included bottlebrush squirreltail (*Sitanion hystrix*), bluebunch wheatgrass (*Agropyron spicatum*), Indian ricegrass (*Oryzopsis hymenoides*), and western wheatgrass (*Agropyron smithii*). Cheatgrass (*Bromus tectorum*) was sampled in one quadrat in 2003.

Forbs are diverse, but provide little cover. Some of the more common species include longleaf phlox (*Phlox longifolia*), scarlet globemallow (*Sphaeralcea coccinea*), clover (*Trifolium* sp.), dusty penstemon (*Penstemon comarrhenus*), and sulphur eriogonum (*Eriogonum umbellatum*).

1991 TREND ASSESSMENT

The browse trend is down. Sagebrush density decreased from 7,599 plants/acre to 5,732 plants/acre. Decadence increased from 21% to 65%, and young recruitment decreased from 40% to 9%. Plants with poor vigor increased from 6% to 31%. True mountain mahogany density decreased from 1,066 plants/acre to 666 plants/acre. Decadence was at 0%, and young recruitment remained very high at 50% of the population. Vigor remained excellent. Serviceberry density decreased from 599 plants/acre to 332 plants/acre. Decadence increased from 0% to 20%, although young recruitment remained very high at 80%. Vigor remained good on all sampled plants. The trend for grass is slightly up. The sum of nested frequency for perennial grasses increased 19%. Mutton bluegrass, bluebunch wheatgrass, and bottlebrush squirreltail increased significantly in nested frequency, while that for sedge decreased significantly. The trend for forbs is up. The sum of nested frequency for perennial forbs increased 63%. Longleaf phlox, clover, and sulfur eriogonum increased significantly in nested frequency.

browse - down (-2)

grass - slightly up (+1)

forb - up (+2)

1998 TREND ASSESSMENT

The browse trend is stable. Density changes for browse species may have been related to the larger sample area in 1998, therefore, the trend was determined using other parameters. Sagebrush decadence decreased from 65% of the population to 26%, and young recruitment remained stable at 9%. Plants displaying poor vigor decreased from 31% of the population to 2%. True mountain mahogany decadence increased from 0%

to 9%, and young recruitment decreased from 50% to 13%. The majority of the sampled plants remained vigorous. Serviceberry decadence decreased from 20% of the population to 0%. Young recruitment decreased, but remained favorable at 33% of the population. Plant vigor remained good. The trend for grass is down. The sum of nested frequency for perennial grasses decreased 35%. Sedge, bottlebrush squirreltail, and western wheatgrass decreased significantly in nested frequency. The trend for forbs is down. The sum of nested frequency for perennial forbs decreased 82%. Longleaf phlox, clover, and sulfur eriogonum decreased significantly in nested frequency. The winter range condition, determined by the Desirable Components Index (DCI), was rated as good due to high preferred browse and perennial grass cover, low perennial forb cover, and the absence of annual grasses.

winter range condition (DCI) - good (72) Mid-level potential scale
browse - stable (0) grass - down (-2) forb - down (-2)

2003 TREND ASSESSMENT

The browse trend is stable. Sagebrush density increased 29%, however, decadence also increased from 26% of the population to 33%. Young recruitment decreased from 9% of the population to 3%, and vigor remained good on most plants. True mountain mahogany density increased 12%, and decadence remained relatively stable at 8% of the population. Young recruitment decreased from 13% of the population to 4%. Plants displaying poor vigor increased from 1% of the population to 8%. Serviceberry density decreased 42%, and decadence increased from 0% of the population to 29%. No young plants were sampled, and vigor declined, with 29% of the population showing poor vigor. Bitterbrush density remained relatively stable, and vigor remained excellent. The trend for grass is slightly down. The sum of nested frequency for perennial grasses decreased 24%, and sedge decreased significantly in nested frequency. The trend for forbs is slightly down. The sum of nested frequency for perennial forbs continued to decrease.

winter range condition (DCI) - fair (56) Mid-level potential scale
browse - stable (0) grass - slightly down (-1) forb - slightly down (-1)

2008 TREND ASSESSMENT

The trend for browse is stable. Sagebrush density remained relatively similar at 4,440 plants/acre, but decadence increased from 33% of the population to 54%. Young recruitment increased from 3% of the population to 9%. Plants displaying poor vigor increased from 7% of the population to 48%. True mountain mahogany density increased 30%, but decadence also increased from 8% of the population to 28%. Young recruitment increased from 4% of the population to 22%, and plants exhibiting poor vigor slightly increased from 8% of the population to 10%. Serviceberry density decreased 71%, but all of the sampled plants were young and vigorous. Bitterbrush density remained similar at 200 plants/acre, but decadence increased from 0% of the population to 60%. Plants were classified with poor vigor for the first time, at 40% of the population. The trend for grass is slightly up. The sum of nested frequency for perennial grasses increased 42%, and sedge increased significantly in nested frequency. The trend for forbs is slightly up. The sum of nested frequency for perennial forbs increased slightly.

winter range condition (DCI) - fair (54) Mid-level potential scale
browse - stable (0) grass - slightly up (+1) forb - slightly up (+1)

HERBACEOUS TRENDS --
Management unit 23 , Study no: 6

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
G	<i>Agropyron smithii</i>	a-	b24	a5	a5	ab22	.03	.01	.04
G	<i>Agropyron spicatum</i>	a10	b49	ab32	a21	ab25	.83	.76	.93
G	<i>Bouteloua gracilis</i>	-	-	2	-	-	.00	-	-
G	<i>Bromus tectorum</i> (a)	-	-	-	1	-	-	.00	-
G	<i>Carex</i> sp.	d221	c179	b109	a54	b120	2.02	1.37	1.96
G	<i>Oryzopsis hymenoides</i>	a-	ab8	b18	b14	b10	.70	.22	.78
G	<i>Poa fendleriana</i>	a176	b183	b138	ab138	b146	8.00	3.93	4.04
G	<i>Sitanion hystrix</i>	a58	b110	a56	a32	a50	.98	.33	.77
G	<i>Stipa lettermani</i>	a-	a-	a-	ab8	b13	-	.24	.16
Total for Annual Grasses		0	0	0	1	0	0	0.00	0
Total for Perennial Grasses		465	553	360	272	386	12.58	6.87	8.69
Total for Grasses		465	553	360	273	386	12.58	6.88	8.69
F	<i>Agoseris glauca</i>	-	6	-	-	-	-	-	-
F	<i>Antennaria rosea</i>	1	3	-	6	-	-	.03	-
F	<i>Androsace septentrionalis</i> (a)	-	-	b14	a-	a2	.06	-	.00
F	<i>Arabis</i> sp.	a-	a-	ab3	a-	b10	.00	-	.02
F	<i>Astragalus convallarius</i>	-	-	-	-	5	-	-	.06
F	<i>Astragalus lentiginosus</i>	6	7	5	-	-	.03	-	-
F	<i>Castilleja chromosa</i>	a-	b16	a-	a-	a-	-	-	-
F	<i>Calochortus nuttallii</i>	a-	b17	a-	a-	ab7	-	-	.02
F	<i>Crepis acuminata</i>	ab3	b13	a-	a-	a-	-	-	-
F	<i>Cryptantha humilis</i>	4	5	1	-	-	.03	-	-
F	<i>Descurainia pinnata</i> (a)	-	-	2	3	1	.00	.01	.00
F	<i>Erigeron eatonii</i>	5	3	-	-	-	-	-	-
F	<i>Eriogonum racemosum</i>	-	-	4	-	3	.03	-	.09
F	<i>Eriogonum umbellatum</i>	a5	b16	a3	a-	a2	.03	-	.00
F	<i>Lappula occidentalis</i> (a)	-	-	a-	b10	a-	-	.02	-
F	<i>Lomatium</i> sp.	a-	b12	a-	a-	a-	-	-	-
F	<i>Machaeranthera canescens</i>	5	-	-	-	2	-	-	.00
F	<i>Penstemon comarrhenus</i>	6	2	8	5	10	.04	.06	.22
F	<i>Phlox longifolia</i>	b40	c69	a7	a4	a15	.01	.01	.07
F	<i>Potentilla gracilis</i>	-	-	1	-	1	.03	-	.01
F	<i>Sphaeralcea coccinea</i>	b28	ab17	a5	a-	a1	.04	-	.00
F	<i>Taraxacum officinale</i>	1	-	-	-	-	-	-	-

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
F	Tragopogon dubius	-	-	1	-	-	.00	-	-
F	Trifolium sp.	_b 21	_c 37	_a 2	_a 3	_{ab} 10	.00	.00	.07
F	Unknown forb-perennial	5	-	-	-	-	-	-	
F	Wyethia amplexicaulis	5	-	-	-	-	-	-	
F	Zigadenus paniculatus	2	-	-	-	-	-	-	
Total for Annual Forbs		0	0	16	13	3	0.07	0.03	0.00
Total for Perennial Forbs		137	223	40	18	66	0.27	0.11	0.59
Total for Forbs		137	223	56	31	69	0.34	0.14	0.60

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

BROWSE TRENDS --

Management unit 23 , Study no: 6

Type	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	Amelanchier utahensis	10	6	2	.36	.15	.00
B	Artemisia tridentata vaseyana	91	92	87	17.00	15.68	12.92
B	Cercocarpus ledifolius	1	0	0	.00	-	-
B	Cercocarpus montanus	44	50	61	6.75	8.14	5.97
B	Chrysothamnus depressus	5	6	10	.33	.03	.03
B	Chrysothamnus viscidiflorus viscidiflorus	6	3	8	.03	.18	.04
B	Eriogonum microthecum	15	17	16	.42	.34	.40
B	Juniperus osteosperma	3	5	5	.00	.76	.68
B	Mahonia repens	1	0	1	.00	-	.00
B	Opuntia sp.	21	24	26	.23	.57	1.36
B	Pediocactus simpsonii	2	1	2	.01	.00	.03
B	Pinus edulis	3	3	2	.18	.33	.96
B	Purshia tridentata	8	8	8	.16	.30	.21
B	Quercus gambelii	11	11	10	1.54	2.71	1.04
B	Symphoricarpos oreophilus	31	32	35	1.77	1.74	2.54
Total for Browse		252	258	273	28.80	30.96	26.20

CANOPY COVER, LINE INTERCEPT --
 Management unit 23 , Study no: 6

Species	Percent Cover	
	'03	'08
Amelanchier utahensis	.13	.10
Artemisia tridentata vaseyana	12.36	16.29
Cercocarpus montanus	8.06	12.81
Chrysothamnus viscidiflorus viscidiflorus	.25	.76
Eriogonum microthecum	.31	.26
Juniperus osteosperma	1.68	2.36
Opuntia sp.	.26	1.33
Pinus edulis	1.31	1.53
Purshia tridentata	1.06	1.14
Quercus gambelii	2.79	2.54
Symphoricarpos oreophilus	1.20	2.66

KEY BROWSE ANNUAL LEADER GROWTH --
 Management unit 23 , Study no: 6

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata vaseyana	1.3	1.0
Cercocarpus montanus	2.9	3.5
Purshia tridentata	2.4	2.1

POINT-QUARTER TREE DATA --
 Management unit 23 , Study no: 6

Species	Trees per Acre		
	'98	'03	'08
Juniperus osteosperma	42	39	45
Pinus edulis	30	51	45

Average diameter (in)		
'98	'03	'08
2.5	5.6	5.0
2.8	3.1	3.3

BASIC COVER --

Management unit 23 , Study no: 6

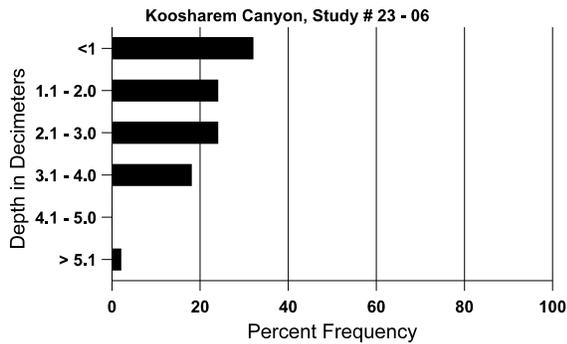
Cover Type	Average Cover %				
	'85	'91	'98	'03	'08
Vegetation	9.25	5.25	37.37	37.10	40.31
Rock	11.25	10.25	9.54	12.19	11.87
Pavement	13.00	7.75	14.62	7.19	6.94
Litter	49.00	47.25	47.14	43.18	39.32
Cryptogams	0	.25	.00	.15	.03
Bare Ground	17.50	29.25	23.75	19.78	21.29

SOIL ANALYSIS DATA --

Management unit 23, Study no: 6, Study Name: Koosharem Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	clay loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
16.2	58.7 (16.5)	6.5	40.0	25.4	34.6	4.2	26.8	243.2	0.6

Stoniness Index



PELLET GROUP DATA --

Management unit 23 , Study no: 6

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	50	34	76
Elk	10	-	11
Deer	45	42	71
Cattle	1	-	-

Days use per acre (ha)		
'98	'03	'08
-	-	-
31 (77)	2 (5)	13 (31)
63 (156)	113 (279)	163 (403)
5 (12)	1 (2)	4 (9)

BROWSE CHARACTERISTICS --
Management unit 23 , Study no: 6

		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												
85	599	266	533	66	-	-	33	0	0	-	0	13/9
91	332	-	266	-	66	-	0	60	20	-	0	-/-
98	240	-	80	160	-	-	25	0	0	-	0	25/21
03	140	-	-	100	40	-	14	71	29	14	29	22/16
08	40	-	40	-	-	-	0	0	0	-	0	14/15
Artemisia tridentata vaseyana												
85	7598	1066	3066	2933	1599	-	37	2	21	-	6	39/33
91	5732	-	533	1466	3733	-	56	6	65	8	31	31/26
98	3420	60	320	2200	900	480	33	6	26	1	2	29/31
03	4400	-	140	2820	1440	1300	32	10	33	7	7	24/27
08	4440	60	380	1680	2380	1040	28	5	54	23	48	22/32
Cercocarpus ledifolius												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	20	-	-	20	-	-	100	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Cercocarpus montanus												
85	1065	66	666	399	-	-	44	0	0	-	0	34/19
91	666	-	333	333	-	-	30	60	0	-	0	49/21
98	1360	-	180	1060	120	40	49	24	9	1	1	33/37
03	1520	-	60	1340	120	-	18	72	8	1	8	33/35
08	1980	-	440	980	560	20	39	27	28	3	10	30/35
Chrysothamnus depressus												
85	1599	-	666	933	-	-	0	0	0	-	0	5/5
91	1398	-	66	133	1199	-	0	100	86	-	0	2/3
98	160	-	-	160	-	-	63	0	0	-	0	3/10
03	260	-	-	260	-	-	38	54	0	-	0	6/9
08	400	-	80	300	20	-	20	15	5	5	5	5/7

		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)
Chrysothamnus viscidiflorus viscidiflorus												
85	266	133	133	133	-	-	0	0	0	-	0	10/7
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	140	-	-	120	20	-	0	0	14	14	14	15/14
03	60	-	-	20	40	-	0	0	67	33	33	14/10
08	200	-	20	100	80	-	10	10	40	-	10	13/16
Eriogonum microthecum												
85	66	66	-	66	-	-	0	0	0	-	0	7/4
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	780	-	160	620	-	-	3	0	0	-	0	10/12
03	860	-	20	780	60	20	0	2	7	5	5	7/7
08	1060	-	160	860	40	-	23	0	4	-	0	7/8
Juniperus osteosperma												
85	465	199	266	133	66	-	14	0	14	-	0	69/157
91	332	66	133	199	-	-	20	0	0	-	0	71/43
98	60	20	20	40	-	-	0	0	0	-	0	-/-
03	100	-	40	60	-	-	0	0	0	-	0	-/-
08	100	-	60	40	-	-	0	0	0	-	0	-/-
Mahonia repens												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	60	-	-	60	-	-	0	0	-	-	0	4/7
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	20	-	-	20	-	-	0	0	-	-	0	2/4
Opuntia sp.												
85	932	-	133	799	-	-	0	0	0	-	0	7/10
91	666	-	-	-	666	-	40	0	100	24	80	-/-
98	620	20	100	520	-	-	0	0	0	-	13	6/14
03	940	-	20	920	-	-	0	0	0	-	0	4/9
08	740	-	20	680	40	-	0	0	5	-	14	6/16
Pediocactus simpsonii												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	40	-	20	20	-	-	0	0	-	-	0	-/-
03	20	-	-	20	-	-	0	0	-	-	0	2/3
08	40	-	-	40	-	-	0	0	-	-	0	-/-

		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												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	66	-	-	-	-	0	0	-	-	0	-/-
98	60	-	20	40	-	-	0	0	-	-	0	-/-
03	60	-	40	20	-	-	0	0	-	-	0	-/-
08	40	20	20	20	-	-	0	0	-	-	0	-/-
Purshia tridentata												
85	0	-	-	-	-	-	0	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	180	-	40	140	-	-	33	22	0	-	0	24/35
03	200	-	-	200	-	-	30	70	0	-	0	17/36
08	200	-	40	40	120	-	20	70	60	-	40	17/32
Quercus gambelii												
85	732	333	599	133	-	-	0	0	0	-	0	42/21
91	665	-	399	266	-	-	50	10	0	-	0	59/18
98	960	80	540	360	60	120	52	8	6	-	0	35/28
03	940	-	420	500	20	80	30	28	2	-	0	43/29
08	1840	-	320	1160	360	60	47	16	20	4	9	43/33
Symphoricarpos oreophilus												
85	1132	199	599	533	-	-	0	0	0	-	0	14/10
91	2465	-	2133	199	133	-	27	3	5	-	0	11/11
98	1540	20	580	940	20	-	17	0	1	-	0	12/19
03	2240	-	160	2040	40	-	0	2	2	.89	2	10/14
08	2320	360	540	1160	620	-	22	.86	27	4	4	10/17