Trend Study 16B-4-02

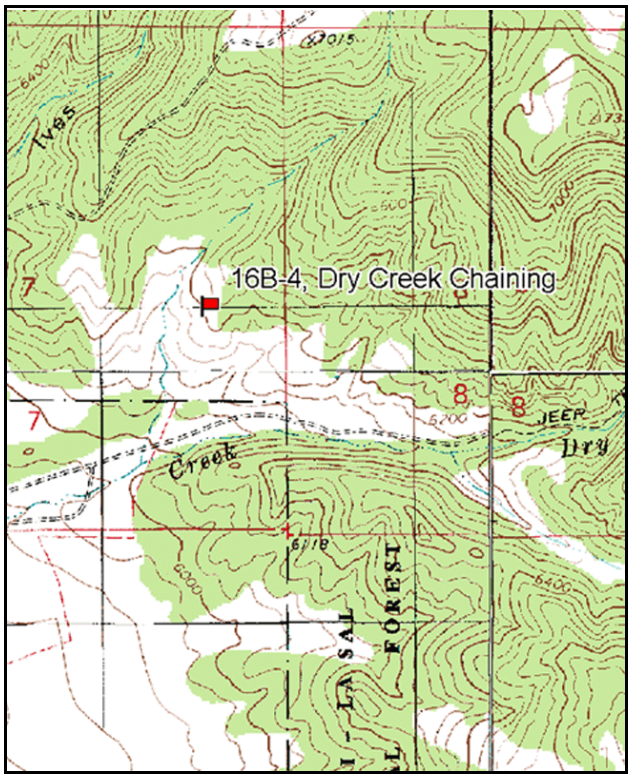
Study site name: Dry Creek Chaining. Vegetation type: Chained, Seeded P-J.

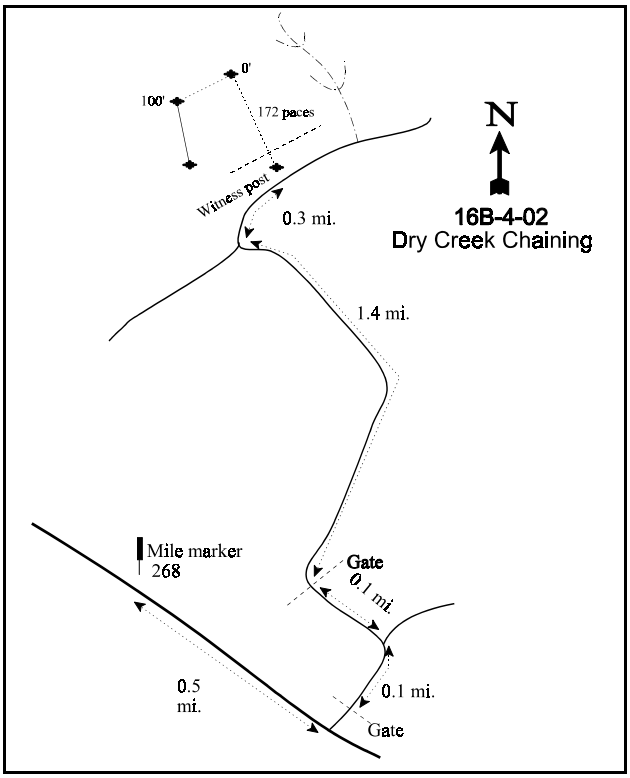
Compass bearing: frequency baseline 229 degrees magnetic (line 2 @ 162°M).

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

LOCATION DESCRIPTION

From mile marker 268 on U.S. 89, go 0.5 miles to a gate on the left. Go through this gate (east) 0.1 miles to a fork. Stay left and go 0.1 miles through another gate and veer right. Go 1.4 miles to a fork and turn right. Go 0.3 miles to a witness post at a gully on the left. From this post, walk 172 paces north going over a fence about 100 feet from the road to the 0-foot baseline stake marked by browse tag # 188.





Map Name: Spencer Canyon

Diagrammatic Sketch

Township 11S, Range 4E, Section 7

GPS: NAD 27, UTM 12S 4413970 N 456330 E

DISCUSSION

Dry Creek Chaining - Trend Study No. 16B-4

The Dry Creek Chaining study was established in 1989 on an old pinyon-juniper chaining on Forest Service lands. This study was established near the site of a 1978 line-intercept transect. The area has an overstory of pinyon, juniper, and Gambel oak. Big game use of the area has been moderately low on this site. Other than a moderately small stand of true mountain mahogany, very little preferred browse exists on the site resulting in limited carrying capacity for wintering big game. Pellet group transect data collected in 2002 estimated 34 elk days use/acre (84 edu/ha) and 11 deer days use/acre (28 ddu/ha). About half of the deer and elk pellet groups appear to be from spring use. Use of the site by rabbits has been more abundant in some years. There is not much livestock use of the site.

The site lies on a southwest facing, 20% slope at an elevation of 6,700 feet. Drainage is southerly towards the wash in Dry Canyon and takes the form of an active gully. Soils are shallow and rocky with an effective rooting depth estimated at just over 11 inches. Texture is a clay loam and soils are neutral in reactivity (pH of 7.3). Percent organic matter is relatively high at 3.2%. Pavement and rock cover are significant, accounting for about 22% of the ground cover during all sampling periods. Litter cover is good but discontinuous. Percent bare soil is moderately high 25% in 2002. There is evidence of some sheet erosion and sedimentation buildup in nearby gullies from past erosion events. However, the erosion condition classification was determined as stable in 2002.

In the openings, grasses dominate and provide good soil protection. Bare areas tend to be found in the more dense browse stands dominated by pinyon pine and Utah juniper. These two species are becoming increasingly abundant following the chaining treatment. Initial point-center quarter estimates in 1989 estimated 99 juniper/acre and 87 pinyon/acre for a total of 186 trees/acre. Most of these trees were in the 4-8 foot height class. Data from 2002 estimated 99 juniper/acre and 120 pinyon/acre. The increase in pinyon comes from an increase in young trees. Average diameter of pinyon was 3.2 inches in 2002, while juniper stems averaged 4.7 inches. Trees are also increasing in size which increases their competitive ability with other species on the site. There is a stand of large, unchained trees directly above the site on the ridge.

The most important browse species on the site is true mountain mahogany. Bitterbrush is also present, but occurs at one-half the density of mahogany. Gambel oak has a higher density than either mahogany or bitterbrush, but is less preferred and has less forage value. Mahogany density was estimated at 400 plants/acre in 2002. Mahogany use was light to moderate in 1989 and 1997, but increased in 2002. Annual leader growth averaged only 1.7 inches in 2002. Due to relatively light use by big game and minimal leader growth in 2002, utilization may have been overestimated. Percent decadence increased from 0% in 1997 to 50% in 2002, and poor vigor increased from 0% to 20%. These changes are due primarily to the drought in 2002 and should improve with better precipitation.

Bitterbrush had an estimated density of 240 plants/acre in 2002, a decrease from 360 plants/acre in 1997. Most of the decline is due to the loss of young plants, estimated at 80 plants/acre in 1997, but not sampled in 2002. Low reproduction often accompanies drought so this decline is not surprising. Gambel oak density was estimated at 4,300 stems/acre in 1989, most of which were classified as young. Oak forage was mostly unavailable on 34% of the trees and the remainder were only lightly used, if at all. During the 1997 and 2002 readings, a much larger, more representative sample was used which estimates oak density to be much lower. Currently ('02), oak density is estimated at 920 stems/acre. Use remains light, reproduction is low, and vigor mostly normal.

Snakeweed and pricklypear cactus were common along the more open areas near the baseline in 1997, although they were not encountered in the old density plots in 1989. In 2002, snakeweed density declined from 2,060 plants/acre to only 120 plants/acre. Snakeweed has been found to decline with extremely dry conditions so this decrease is expected with the drought experienced in 2002.

Perennial grasses are diverse but have steadily declined in frequency since the initial reading in 1989. This decline could be attributed, at least in part, to the increasing pinyon-juniper component in the community. The most common species are seeded types including intermediate and crested wheatgrass. Annual cheatgrass is moderately abundant, remaining stable in 2002 even with drought. Forbs species are diverse, but infrequent and are not a significant component on the site. Rock goldenrod is the most abundant forb contributing nearly half of all the forb cover in 2002.

1989 APPARENT TREND ASSESSMENT

The soil shows some downward indicators, but could improve with increased vegetative cover. Grasses are vigorous. The available browse forage is only lightly utilized. There is evidence that less desirable species are increasing, indicating a slight downward trend making this area a candidate for re-treatment.

1997 TREND ASSESSMENT

Trend for soil is slightly down. Percent bare ground increased from 11% to 15%, while litter cover declined from 58% to 41%. Nested frequency of perennial grasses also declined. Density estimates of many of the browse species have changed due to the much larger sample size used in 1997. The larger sample gives more accurate estimates for browse species that characteristically have distributions that are clumped or discontinuous. Trend for the key species appears stable with light use and low percent decadency. The increasing dominance of pinyon and juniper trees will eventually cause a decline in the understory shrub component. Trend for the herbaceous understory is down due to a 30% decline in the sum of nested frequency of perennial grasses. Frequency of perennial forbs increased slightly.

TREND ASSESSMENT
soil - down slightly (2)
browse - stable (3)
herbaceous understory - down (1)

2002 TREND ASSESSMENT

Trend for soil is slightly down. Percent bare soil increased, and the decline in nested frequency of grasses leaves more opportunity for soil loss in the future. The ratio of protective cover (vegetation , litter, and cover) to bare soil declined as well. Trend for browse is also slightly down. True mountain mahogany and bitterbrush show increases in decadency and poor vigor, and decreased reproduction. The herbaceous understory has a downward trend as perennial species continue to decline in sum of nested frequency. It appears that two factors, drought and the increasing pinyon-juniper, are negatively impacting both the browse component as well as the herbaceous understory. This site needs to be retreated to decrease both the density and size of pinyon and juniper trees.

TREND ASSESSMENT
soil - slightly down (2)
browse - slightly down (2)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 16B, Study no: 4

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	Agropyron cristatum	50	51	59	20	22	22	.43	.90
G	Agropyron intermedium	$_{c}$171	$_{b}$121	$_{a}$66	57	42	28	4.38	1.51
G	Agropyron spicatum	45	21	31	18	10	13	.44	.48
G	Bromus inermis	$_{b}$71	$_{a}$21	$_{a}$19	31	11	9	.47	.21
G	Bromus japonicus (a)	-	-	2	-	-	1	-	.00
G	Bromus tectorum (a)	-	121	117	-	40	39	1.60	1.82
G	Carex spp.	$_{b}$19	$_{ab}$3	$_{a}$-	8	1	-	.15	-
G	Oryzopsis hymenoides	$_{b}$19	$_{b}$17	$_{a}$3	8	8	1	.23	.03
G	Poa fendleriana	$_{b}$11	$_{a}$-	$_{b}$8	6	-	6	-	.13
G	Poa secunda	$_{a}$6	$_{b}$45	$_{b}$25	4	22	15	.34	.15
G	Sitanion hystrix	11	4	-	5	2	-	.03	-
Total for Annual Grasses		0	121	119	0	40	40	1.60	1.83
Total for Perennial Grasses		403	283	211	157	118	94	6.49	3.44
Total for Grasses		403	404	330	157	158	134	8.09	5.27
F	Alyssum alyssoides (a)	-	$_{a}$25	$_{b}$138	-	12	43	.06	1.58
F	Aster spp.	-	-	1	-	-	1	-	.00
F	Balsamorhiza sagittata	2	3	4	1	2	2	.24	.60
F	Camelina microcarpa (a)	-	6	4	-	3	2	.04	.01
F	Calochortus nuttallii	-	6	-	-	3	-	.01	-
F	Chaenactis douglasii	-	3	-	-	1	-	.00	-
F	Cirsium spp.	$_{b}$12	$_{b}$13	$_{a}$-	6	7	-	.18	-
F	Cryptantha spp.	$_{ab}$6	$_{b}$17	$_{a}$-	3	10	-	.10	-
F	Cymopterus longipes	-	-	-	-	-	-	.00	-
F	Descurainia pinnata (a)	-	13	7	-	6	3	.03	.01
F	Draba spp. (a)	-	$_{b}$42	$_{a}$-	-	16	-	.08	-
F	Epilobium brachycarpum (a)	-	1	-	-	1	-	.00	-
F	Erodium cicutarium (a)	-	2	1	-	1	1	.00	.00
F	Eriogonum umbellatum	1	-	5	1	-	3	-	.01
F	Gayophytum ramosissimum (a)	-	$_{b}$15	$_{a}$-	-	6	-	.03	-
F	Holosteum umbellatum (a)	-	2	-	-	1	-	.00	-
F	Lappula occidentalis (a)	-	$_{b}$9	$_{a}$-	-	5	-	.02	-
F	Lactuca serriola	3	-	2	1	-	1	-	.00
F	Medicago sativa	3	-	1	1	-	1	-	.00
F	Microsteris gracilis (a)	-	5	3	-	2	1	.01	.00
F	Penstemon humilis	7	6	2	3	3	1	.18	.03
F	Petradoria pumila	43	55	46	17	22	20	2.95	1.92
F	Phlox longifolia	5	16	8	2	6	3	.22	.01

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
F	Polygonum douglasii (a)	-	3	1	-	1	1	.00	.00
F	Ranunculus testiculatus (a)	-	20	50	-	9	17	.04	.18
F	Streptanthus cordatus	1	-	4	1	-	2	-	.01
F	Unknown forb-annual (a)	-	44	-	-	18	-	.09	-
Total for Annual Forbs		0	187	204	0	81	68	0.42	1.80
Total for Perennial Forbs		83	119	73	36	54	34	3.91	2.61
Total for Forbs		83	306	277	36	135	102	4.34	4.42

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

BROWSE TRENDS --
Herd unit 16B, Study no: 4

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Artemisia tridentata vaseyana	1	1	-	.03
B	Cercocarpus montanus	17	16	5.50	4.05
B	Chrysothamnus nauseosus albicaulis	0	2	-	-
B	Gutierrezia sarothrae	32	3	.98	.00
B	Juniperus osteosperma	6	9	3.23	5.64
B	Opuntia spp.	6	12	.18	.30
B	Pinus edulis	3	6	3.64	5.24
B	Purshia tridentata	11	10	1.85	1.67
B	Quercus gambelii	10	13	2.11	2.78
B	Symphoricarpos oreophilus	5	7	.62	1.31
Total for Browse		91	79	18.13	21.03

CANOPY COVER -- LINE INTERCEPT
Herd unit 16B, Study no: 4

Species	Percent Cover	
	'97	'02
Artemisia tridentata vaseyana	-	.07
Cercocarpus montanus	-	6.17
Juniperus osteosperma	3.4	12.5
Opuntia spp.	-	.05
Pinus edulis	5.4	6.58
Purshia tridentata	-	1.17
Quercus gambelii	3.4	3.58
Symphoricarpos oreophilus	-	2.75

Key Browse Annual Leader Growth
Herd unit 16B , Study no: 4

Species	Average leader growth (in) '02
Cercocarpus montanus	1.8
Purshia tridentata	1.7

Point-Quarter Tree Data
Herd unit 16B , Study no: 4

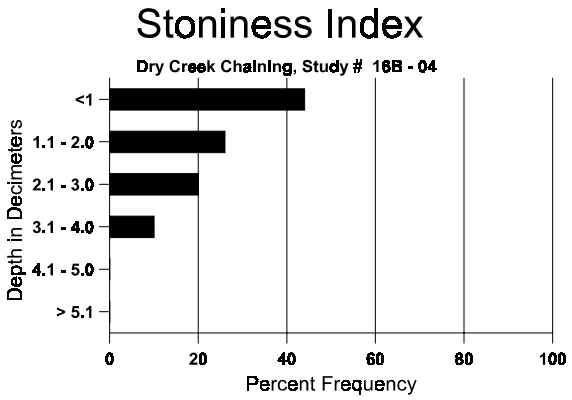
Species	Trees per Acre		Average diameter (in)	
	'97	'02	'97	'02
Juniperus osteosperma	96	99	3.7	4.7
Pinus edulis	65	120	6.5	3.2

BASIC COVER --
Herd unit 16B, Study no: 4

Cover Type	Nested Frequency		Average Cover %		
	'97	'02	'89	'97	'02
Vegetation	283	281	6.75	28.67	28.29
Rock	245	228	12.50	14.30	14.53
Pavement	244	256	10.25	7.50	7.72
Litter	385	370	57.50	41.10	45.35
Cryptogams	117	122	2.25	4.38	3.63
Bare Ground	244	284	10.75	14.62	25.72

SOIL ANALYSIS DATA --
Herd Unit 16B, Study no: 04, Dry Creek Chaining

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.1	53.0 (15.6)	7.3	34.7	30.7	34.6	3.2	9.2	80.0	.6



PELLET GROUP FREQUENCY --
Herd unit 16B, Study no: 4

Type	Quadrat Frequency '97	Quadrat Frequency '02	Pellet Transect: Pellet Groups per Acre '02	Pellet Transect: Days Use per Acre (ha) '02
Rabbit	20	21	-	-
Elk	13	13	444	34 (84)
Deer	9	5	148	11 (28)

BROWSE CHARACTERISTICS --
Herd unit 16B, Study no: 4

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
M	89	-	-	-	-	-	-	1	-	-	1	-	-	-	33	68	23	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	33	Dec:	-
'97	0		-
'02	0		-

Artemisia tridentata vaseyana																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	8	9	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	7	12	0
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	1	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	+ 0%
'02	00%	100%	100%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	0	Dec:	0%
'97	20		0%
'02	20		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
Y	89	-	-	-	-	-	-	2	-	-	2	-	-	-	66			2
	97	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	4	2	-	1	-	-	2	-	-	9	-	-	-	300	54	40	9
	97	7	3	-	6	-	-	-	-	-	16	-	-	-	320	47	49	16
	02	-	-	9	-	-	-	-	-	-	9	-	-	-	180	51	56	9
D	89	2	2	-	1	1	-	2	-	-	6	-	-	2	266			8
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	1	3	2	3	-	-	-	-	6	-	-	4	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	26%	00%	11%	-43%
'97	17%	00%	00%	+10%
'02	20%	60%	20%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	632	Dec:	42%
'97	360		0%
'02	400		50%

Chrysothamnus nauseosus albicaulis																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	13	16	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	0	Dec:	0%
'97	0		0%
'02	40		50%

Chrysothamnus viscidiflorus viscidiflorus																		
D	89	1	-	-	-	-	-	-	-	-	-	-	-	1	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	100%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	33	Dec:	100%
'97	0		0%
'02	0		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	92	-	-	-	-	-	-	-	-	92	-	-	-	1840	9	10	92
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60	5	4	3
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
	02	3	-	-	-	-	-	-	-	-	-	-	-	3	60			3
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	02%	-94%
'02	00%	00%	50%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'89	0	0%
	'97	2060	2%
	'02	120	50%

Juniperus osteosperma																		
Y	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	-	2	-	-	-	-	-	2	-	-	-	66	96	47	2
	97	6	-	-	-	-	-	-	-	-	6	-	-	-	120	72	61	6
	02	8	-	-	2	-	-	-	-	-	9	-	1	-	200	78	47	10
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	- 9%
'97	00%	00%	00%	+40%
'02	00%	00%	10%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'89	132	-
	'97	120	-
	'02	200	-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140	5	10	7
	02	22	-	-	1	-	-	-	-	-	23	-	-	-	460	5	9	23
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
	02	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	
'97	00%	00%	22%	+64%
'02	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'89	0	0%
	'97	180	22%
	'02	500	4%

AGE	YR	1	2	3	4	5	6	7	8	9	1	2	3	4	Plants Per Acre	Ht.	Cr.	Total
Pinus edulis																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
Y	89	-	-	-	1	-	-	1	-	-	2	-	-	-	66			2
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
	02	3	-	-	2	-	-	-	-	-	5	-	-	-	100	-	-	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	- 9%
'97	00%	00%	00%	+57%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'89	66	-
	'97	60	-
	'02	140	-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	19	43	1
	97	3	6	5	-	-	-	-	-	-	14	-	-	-	280	19	39	14
	02	-	4	7	-	-	-	-	-	-	11	-	-	-	220	16	45	11
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	1	-	-	-	-	-	-	-	-	-	-	1	20			1
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	+91%
'97	33%	28%	00%	-33%
'02	42%	58%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	33	Dec:	0%
'97	360		0%
'02	240		8%

Quercus gambelii																		
S	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	89	41	-	-	16	-	-	22	-	-	79	-	-	-	2633			79
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	1	-	-	20	-	-	19	-	-	40	-	-	-	1333	73	30	40
	97	25	-	-	3	-	-	-	-	-	27	1	-	-	560	36	29	28
	02	36	-	-	7	-	-	-	-	-	43	-	-	-	860	37	23	43
D	89	4	1	-	2	-	-	3	-	-	9	-	1	-	333			10
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	3	-	-	-	-	-	-	-	-	1	-	-	2	60			3
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	160			8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	.77%	00%	.77%	-86%
'97	00%	00%	00%	+35%
'02	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	4299	Dec:	8%
'97	600		7%
'02	920		7%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
Y	89	-	-	-	-	-	-	1	-	-	1	-	-	-	33			1
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	5	-	-	5	-	-	-	-	-	10	-	-	-	200	22	28	10
	02	6	-	-	5	-	-	-	-	-	11	-	-	-	220	13	26	11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	+85%
'97	00%	00%	00%	+15%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'89	33	-
	'97	220	-
	'02	260	-