Trend Study 16C-4-02

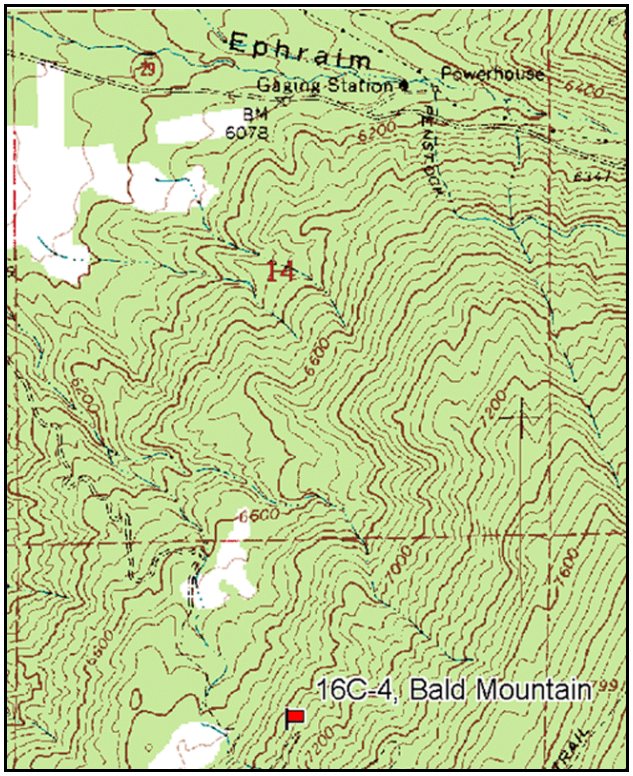
Study site name: Bald Mountain . Vegetation type: Mountain Brush .

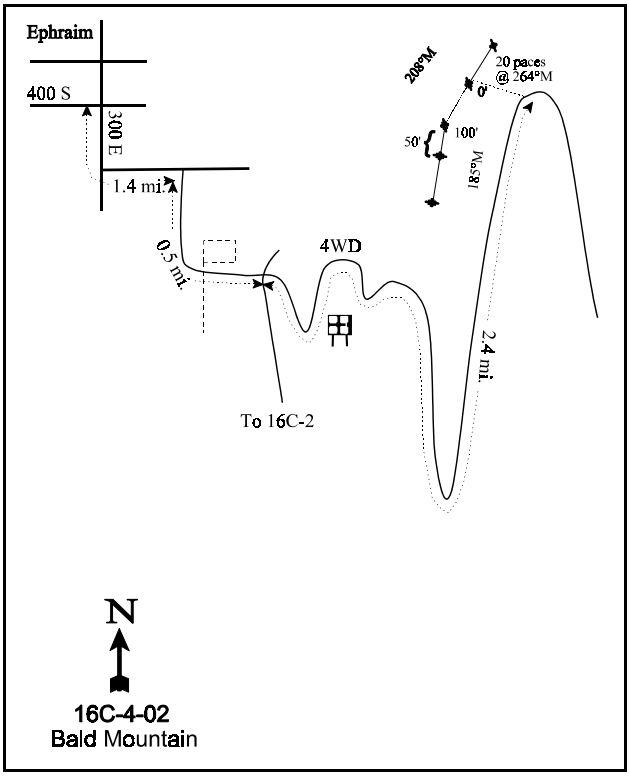
Compass bearing: frequency baseline 208 degrees magnetic (lines 2-3 @ 185°M).

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

LOCATION DESCRIPTION

From the intersection of 400 South and 300 East in Ephraim, go south on 300 East for 0.6 miles to where the road makes a 90° turn to the east. Stay on this main road heading east for another 0.8 miles. Turn south at this point and go 0.5 miles to a 4-way intersection. Go straight through the intersection for 2.4 miles and stop on a large switchback in the road. From the edge of the road, the 0-foot baseline stake is 20 paces away at 264degrees magnetic. The 0-foot baseline stake is marked by browse tag #9075.





Map Name: Ephraim

Diagrammatic Sketch

Township 17S , Range 3 , Section 23

GPS: NAD 27, UTM 12S 4352762 N 452608 E

DISCUSSION

Bald Mountain - Trend Study No. 16C-4

The Bald Mountain trend study is located on a steep (45%), west facing slope at an elevation of 7,050 feet. It samples a higher elevation big game winter range within the mixed mountain brush type. This site is composed mostly of pinyon, juniper, oak, and sagebrush that is located above the Bald Mountain chainings on Division property. Browsing pressure was classified as high during the 1989 sampling period with the majority of the preferred species showing heavy use. Use has since stabilized at a moderate level. Pellet group transect data estimated 77 deer days use/acre (190 ddu/ha) and 3 elk days use/acre (7 edu/ha) in 2002. Several domestic sheep pellets were also sampled in the transect (7 sheep days use/acre, 18 sdu/ha).

Soils have a clay loam texture and are slightly alkaline in reactivity (pH = 7.4). Effective rooting depth was estimated at less than 10 inches in 1997. The surface layer is shallow, but the soil has a deep root zone. Due to the steep slope, erosion hazard is high. An erosion condition class assessment done in 2002 was determined to be slight. Soil pedestalling is moderate around the base of shrubs and bunch grasses. Erosion would likely be higher on the site were it not for a moderate cover of rock and pavement on the surface, which combined for 25% cover in 2002. Although vegetative cover is moderate at 36%, less than 20% of the total comes from herbaceous species. Herbaceous species are more effective at protecting soils from high intensity summer thunderstorms. Bare soil is moderate at around 20% in both 1997 and 2002.

The overstory is dominated by pinyon, juniper, and oakbrush. The oak shows mostly light use and had an estimated density of 3,320 stems/acre in 2002. There are a significant number of young pinyon and juniper in an uneven-aged stand. Point-center quarter data estimate 137 pinyon and 51 juniper trees/acre in 2002. Some of the juniper trees had been highlined.

The most important component of the vegetative community is the browse understory. Several species provide valuable forage for wintering animals including mountain big sagebrush, serviceberry, true mountain mahogany, and squaw-apple. Mountain big sagebrush is the key species providing nearly one-fourth of the browse cover. Density of mountain big sagebrush was estimated at 1,360 plants/acre in 2002. Age class analysis indicates the population was composed of about one-half mature and one-half decadent plants in 1997 and 2002. The decadent age class made up 95% of the total population in 1989, but has since declined to 46% in 1997 and 44% in 2002. Utilization has been moderate to heavy in all sampling periods. Plants displaying poor vigor has been stable during all readings, currently at 18% (‘02). Individuals have noticeably better vigor and growth in open areas where there is less competition from trees. No seedling or young plants were sampled in 2002.

True mountain mahogany has an estimated density of 200 plants/acre, with most plants being heavily used. Reproduction has been stable with about 10% of the population being young in both 1997 and 2002. Squaw-apple density was estimated at just over 1,000 plants/acre in both 1997 and 2002, with most plants showing moderate to heavy use. Decadence is low as is recruitment from the young age class. Vigor has been normal on all but a few plants in all sampling years.

The understory is sparse, especially for a site at this elevation and precipitation zone. Seven perennial grasses were sampled in 1997, and four of these were resampled in 2002. Grasses are sparse and are found mainly under shrubs. Mutton bluegrass is the most common, followed by bluebunch wheatgrass, crested wheatgrass, and other occasional species. Total grass cover is only 6%, but sum of nested frequency remained nearly stable in 2002. Forbs are less abundant than grasses, although diversity has been good. Long-leaf phlox and low penstemon are the most abundant perennial species. In 2002, sum of nested frequency for perennial forbs declined from 133 to 93 with drought.

1989 APPARENT TREND ASSESSMENT

Soil trend appears normal and considering the soil type, trend appears stable. The overstory of pinyon, juniper, and oak appears to be increasing to the detriment of mountain big sagebrush. There are other browse plants available with stable and healthy populations. In the long term, the overall vegetative trend appears to be declining, especially at the present levels of utilization. This site should get some protection in years of heavy snowfall, allowing recruitment of young plants into the populations of palatable browse species.

1997 TREND ASSESSMENT

Soil trend is slightly downward as percent bare soil has increased from 14% to 22%. In addition, protective cover provided by herbaceous species makes up only 19% of the total vegetation cover. The browse trend is stable. Mountain big sagebrush, the most abundant preferred species, has a stable density and showed improvement in percent decadence (95% to 46%). Utilization has improved as heavy use declined from 70% to 21%. Reproduction improved in 1997 as well. All other preferred species show less heavy use and fewer plants classified as decadent. The overall trend for perennial herbaceous species is down, with the sum of nested frequency values declining for both grasses and forbs.

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

2002 TREND ASSESSMENT

Soil trend is stable. Erosion is slight on the site, but not excessive with the steep slope. Ground cover characteristics have changed only slightly since 1997. Trend for browse is stable. Mountain big sagebrush is stable in density, percent decadence, and vigor. The young age class disappeared from the population in 2002, but that is not unexpected with drought. Use increased to a heavier level, but the population does not appear to be negatively effected with the higher use at the present time. Other preferred browse show stable densities and generally healthy populations. Trend for the herbaceous understory is stable. Although sparse, perennial grasses remained stable in sum of nested frequency with perennial forbs slightly declining. The most abundant perennial species, mutton bluegrass, increased in nested frequency in 2002.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

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

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	Agropyron cristatum	$_{a}$-	$_{c}$30	$_{b}$8	-	13	5	.84	.22
G	Agropyron spicatum	$_{b}$69	$_{a}$24	$_{a}$33	30	10	13	.46	.65
G	Bromus inermis	-	2	-	-	1	-	.03	-
G	Oryzopsis hymenoides	-	2	-	-	1	-	.00	-
G	Poa fendleriana	$_{b}$169	$_{a}$110	$_{ab}$138	67	40	57	3.87	4.35
G	Poa secunda	13	22	15	6	9	6	.54	.24
G	Sitanion hystrix	6	11	-	2	4	-	.25	-
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		257	201	194	105	78	81	6.01	5.47
Total for Grasses		257	201	194	105	78	81	6.01	5.47
F	Allium spp.	1	-	-	1	-	-	-	-
F	Arabis spp.	-	1	2	-	1	1	.03	.00
F	Arenaria fendleri	-	8	5	-	3	2	.04	.01
F	Astragalus convallarius	-	2	-	-	1	-	.03	.03
F	Astragalus spp.	-	3	2	-	2	1	.01	.03
F	Carduus nutans (a)	-	3	-	-	1	-	.03	-
F	Calochortus nuttallii	-	1	-	-	1	-	.00	-
F	Chenopodium album (a)	-	2	-	-	1	-	.00	-
F	Chaenactis douglasii	$_{b}$11	$_{ab}$3	$_{a}$-	5	1	-	.00	-
F	Cirsium spp.	11	12	3	5	6	2	.08	.04
F	Collinsia parviflora (a)	-	$_{b}$52	$_{a}$1	-	19	1	.09	.00
F	Crepis acuminata	-	2	-	-	1	-	.00	-
F	Cymopterus spp.	9	13	11	3	5	8	.03	.11
F	Eriogonum umbellatum	$_{a}$-	$_{b}$16	$_{a}$-	-	9	-	.19	-
F	Hackelia patens	-	3	-	-	1	-	.00	-
F	Machaeranthera canescens	$_{b}$35	$_{a}$3	$_{a}$2	19	2	1	.01	.00
F	Penstemon humilis	$_{b}$92	$_{a}$30	$_{a}$42	46	14	19	.80	.73
F	Phlox longifolia	$_{b}$51	$_{ab}$32	$_{a}$24	24	13	11	.14	.13
F	Ranunculus testiculatus (a)	-	$_{b}$31	$_{a}$-	-	11	-	.05	-
F	Streptanthus cordatus	1	-	-	1	-	-	-	-
F	Taraxacum officinale	1	1	-	1	1	-	.00	-
F	Unknown forb-annual (a)	-	1	-	-	1	-	.00	-
F	Veronica biloba (a)	-	6	-	-	2	-	.01	-
F	Viguiera multiflora	-	-	2	-	-	1	-	.00
F	Viola spp.	-	3	-	-	1	-	.00	-
Total for Annual Forbs		0	95	1	0	35	1	0.20	0.00
Total for Perennial Forbs		212	133	93	105	62	46	1.40	1.11
Total for Forbs		212	228	94	105	97	47	1.60	1.11

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

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

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Amelanchier utahensis	5	2	.03	.03
B	Artemisia tridentata vaseyana	42	39	7.05	6.69
B	Cercocarpus montanus	9	10	.86	.33
B	Chrysothamnus nauseosus albicaulis	1	0	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	1	1	.15	.03
B	Ephedra viridis	1	0	.03	-
B	Juniperus osteosperma	3	4	.91	.88
B	Opuntia spp.	0	2	-	.00
B	Peraphyllum ramosissimum	32	32	2.78	3.46
B	Pinus edulis	19	12	8.65	8.19
B	Purshia tridentata	1	0	-	-
B	Quercus gambelii	24	32	7.52	6.30
B	Symphoricarpos oreophilus	37	44	3.75	3.42
Total for Browse		175	178	31.75	29.37

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

Species	Percent Cover '97	Percent Cover '02
Amelanchier utahensis	-	.07
Artemisia tridentata vaseyana	-	4.25
Cercocarpus montanus	-	.25
Juniperus osteosperma	-	4.00
Peraphyllum ramosissimum	-	3.50
Pinus edulis	7.4	10.00
Quercus gambelii	6.6	11.33
Symphoricarpos oreophilus	-	5.67

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

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.4
Cercocarpus montanus	1.7

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

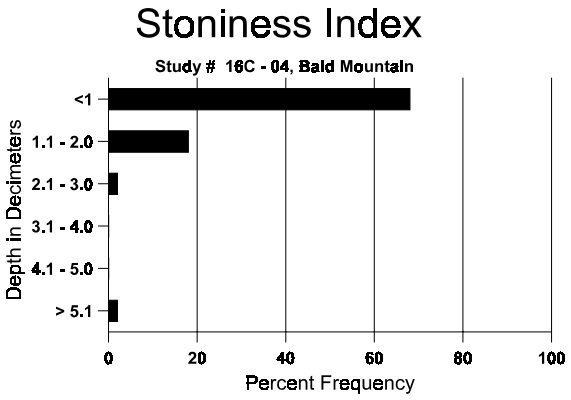
Species	Trees per Acre		Average diameter (in)	
	'97	'02	'97	'02
Juniperus osteosperma	19	51	3.8	3.3
Pinus edulis	164	137	5.1	5.1

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

Cover Type	Nested Frequency		Average Cover %		
	'97	'02	'89	'97	'02
Vegetation	289	245	10.75	35.77	33.74
Rock	249	263	10.25	13.61	18.95
Pavement	234	250	21.00	5.78	6.78
Litter	382	364	43.50	43.58	40.77
Cryptogams	24	41	.75	.13	1.73
Bare Ground	252	238	13.75	22.21	20.37

SOIL ANALYSIS DATA --
Herd Unit 16C, Study no: 04, Bald Mountain

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
9.8	55.6 (13.9)	7.4	28.0	33.4	38.6	5.6	12.9	124.8	.5



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

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre ⁄02	Days Use per Acre (ha) ⁄02
Sheep	4	2	96	7 (18)
Rabbit	6	1	-	-
Elk	7	-	35	3 (7)
Deer	28	27	1001	77 (190)

BROWSE CHARACTERISTICS --
Herd unit 16C, 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 utahensis																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	2	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	2	-	-	1	-	-	-	-	-	3	-	-	-	60	12	13	3
	02	-	-	-	-	-	1	-	-	-	1	-	-	-	20	6	9	1
D	89	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	100%	00%	+34%
'97	00%	00%	00%	-60%
'02	00%	50%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	66	Dec:	100%	
'97	100		0%	
'02	40		0%	

Artemisia tridentata vaseyana																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	89	-	-	1	-	-	-	-	-	-	1	-	-	-	66	20	12	1
	97	8	13	6	2	-	-	1	-	-	30	-	-	-	600	24	33	30
	02	1	8	27	-	2	-	-	-	-	38	-	-	-	760	23	31	38
D	89	1	5	12	-	-	1	-	-	-	16	-	-	3	1266			19
	97	11	9	7	1	-	-	-	-	-	17	-	-	11	560			28
	02	1	9	17	2	1	-	-	-	-	18	-	-	12	600			30
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	760			38
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	700			35

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	25%	70%	15%	- 8%
'97	36%	21%	18%	+10%
'02	29%	65%	18%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	1332	Dec:	95%
'97	1220		46%
'02	1360		44%

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																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
M	89	-	-	1	-	-	-	-	-	-	1	-	-	-	66	22	25	1
	97	-	-	7	-	-	1	-	-	-	8	-	-	-	160	23	31	8
	02	1	-	5	-	-	2	-	-	-	8	-	-	-	160	24	31	8
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	1	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	100%	00%	+63%
'97	00%	89%	00%	+10%
'02	00%	90%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	66	Dec:		0%
'97	180			0%
'02	200			10%

Chrysothamnus nauseosus albicaulis

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
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	1	-	-	-	-	-	-	-	1	-	-	-	20	15	23	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

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

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

Chrysothamnus viscidiflorus viscidiflorus

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
M	89	-	-	-	1	-	-	-	-	-	1	-	-	-	66	12	8	1
	97	-	1	-	-	-	-	-	-	-	1	-	-	-	20	9	18	1
	02	-	1	-	-	-	-	-	-	-	1	-	-	-	20	7	21	1
D	89	-	-	-	-	-	-	1	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	-85%
'97	100%	00%	00%	+ 0%
'02	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	132	Dec:		50%
'97	20			0%
'02	20			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
Ephedra viridis																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20	-	-	1
	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	0	Dec:	-
	'97	20		-
	'02	0		-

Juniperus osteosperma																		
Y	89	-	-	-	-	-	-	1	-	-	1	-	-	-	66			1
	97	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	-	-	-	1	-	-	-	-	-	1	-	-	-	66	85	79	1
	97	-	-	-	-	-	-	1	-	-	1	-	-	-	20	-	-	1
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	-55%
'97	00%	00%	00%	+25%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'89	132	Dec:	-
	'97	60		-
	'02	80		-

Opuntia spp.																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	1	-	-	1	-	-	-	-	-	2	-	-	-	40	3	3	2

% 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:	-
	'97	0		-
	'02	40		-

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
Peraphyllum ramosissimum																		
Y	89	1	-	-	1	-	-	4	-	-	6	-	-	-	400			6
	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	89	-	3	16	1	1	4	1	-	-	26	-	-	-	1733	16	30	26
	97	17	11	9	8	-	-	2	-	-	46	-	-	1	940	17	31	47
	02	2	7	31	-	1	3	2	-	-	46	-	-	-	920	15	28	46
D	89	-	1	4	-	-	-	-	-	1	5	-	-	1	400			6
	97	1	1	-	-	-	-	-	-	-	-	-	-	2	40			2
	02	-	1	1	-	2	1	-	-	-	4	-	-	1	100			5
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	13%	66%	03%	-58%
'97	23%	17%	06%	- 2%
'02	21%	69%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	2533	Dec:		16%
'97	1060			4%
'02	1040			10%

Pinus edulis																		
S	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	3	-	-	1	-	-	4	-	-	-	80			4
	02	3	-	-	3	-	-	-	-	-	6	-	-	-	120			6
Y	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	11	-	-	2	-	-	-	-	-	13	-	-	-	260			13
	02	10	-	-	1	-	-	-	-	-	11	-	-	-	220			11
M	89	1	-	-	2	-	-	-	-	-	3	-	-	-	200	113	89	3
	97	2	-	-	1	-	-	3	-	-	6	-	-	-	120	-	-	6
	02	3	-	-	-	-	-	1	-	-	4	-	-	-	80	-	-	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	00%	00%	00%	+12%
'97	00%	00%	00%	-21%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'89	333	Dec:	-
'97	380		-
'02	300		-

Purshia tridentata																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	1	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

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

Total Plants/Acre (excluding Dead & Seedlings)			
'89	0	Dec:	-
'97	20		-
'02	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
Quercus gambelii																		
S	89	5	-	-	-	-	-	-	-	-	4	-	1	-	333			5
	97	6	-	-	1	-	-	1	-	-	8	-	-	-	160			8
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	89	3	11	-	-	-	-	1	-	-	15	-	-	-	1000			15
	97	53	-	1	23	-	-	-	-	-	77	-	-	-	1540			77
	02	72	1	-	1	-	-	-	-	-	74	-	-	-	1480			74
M	89	4	5	-	1	-	-	-	1	-	11	-	-	-	733	75	30	11
	97	73	-	-	21	-	-	1	-	-	95	-	-	-	1900	32	23	95
	02	41	7	8	5	-	-	-	14	-	75	-	-	-	1500	27	19	75
D	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	4	-	-	1	-	-	-	-	-	4	-	-	-	120			6
	02	15	-	2	-	-	-	-	-	-	17	-	-	-	340			17
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	260			13
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	300			15

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	63%	00%	00%	+49%
'97	00%	.56%	00%	- 7%
'02	05%	06%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	1799	Dec:		4%
'97	3560			3%
'02	3320			10%

Symphoricarpos oreophilus																		
S	89	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	89	9	3	3	-	-	-	2	-	-	17	-	-	-	1133			17
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	89	4	12	1	3	3	-	1	-	-	24	-	-	-	1600	8	11	24
	97	59	-	-	14	-	-	2	-	-	75	-	-	-	1500	15	23	75
	02	83	3	-	3	-	-	1	-	-	90	-	-	-	1800	11	22	90
D	89	-	3	4	-	-	-	-	-	-	6	-	-	1	466			7
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'89	44%	17%	02%	-48%
'97	00%	00%	00%	+14%
'02	03%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'89	3199	Dec:		15%
'97	1660			1%
'02	1920			1%

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
Tetradymia canescens																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	17	0

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

%Change

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