Trend Study 19A-4-02

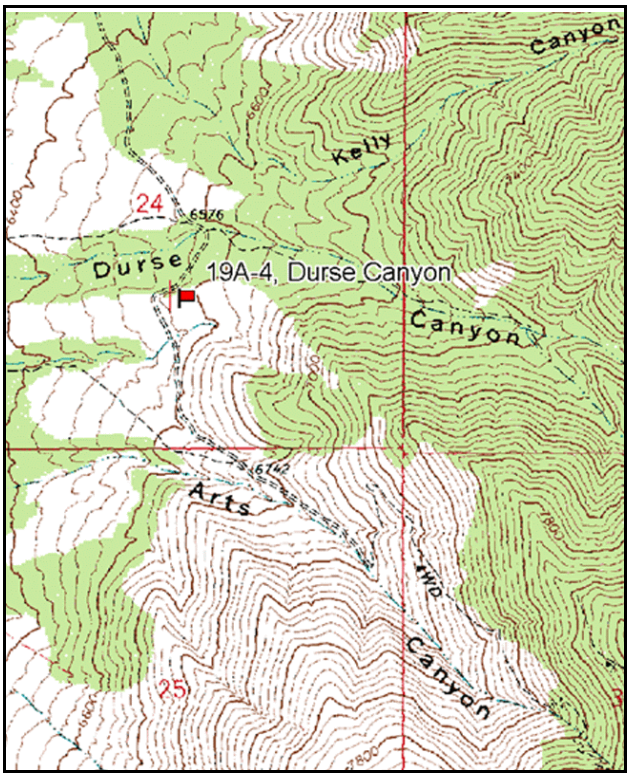
Study site name: Durse Canyon . Vegetation type: Stansbury Cliffrose .

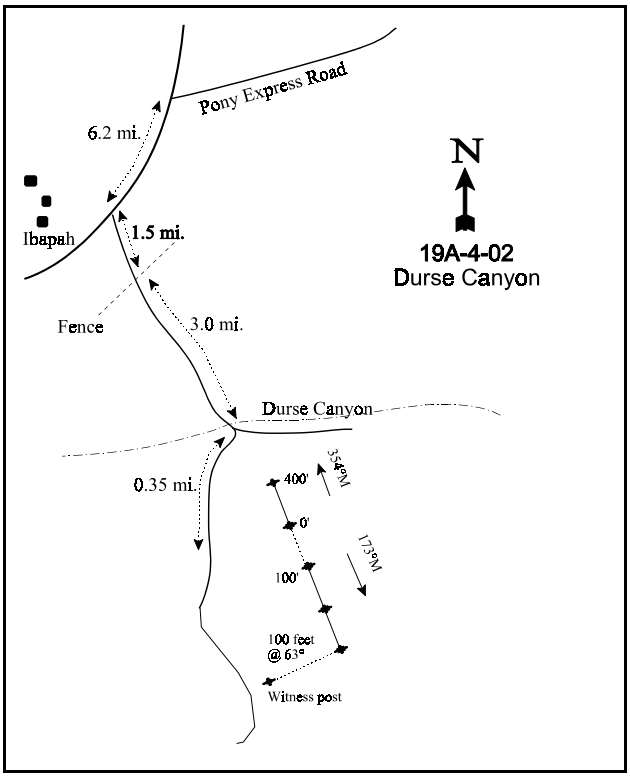
Compass bearing: frequency baseline 173 degrees magnetic.

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

LOCATION DESCRIPTION

From the intersection of the Pony Express Road to Gold Hill, and the oiled road to Ibapah and Goshute, proceed southwest towards Goshute for 6.2 miles to a dirt road to the east. Turn left and proceed southeast for 4.55 miles, crossing numerous forks and side roads (keep going southeast and across Durse Canyon). After 4.55 miles, turn right and go 0.15 miles to another fork. Continue 0.2 miles farther to a red steel "T" fencepost on the left (east) side of the road. From the fencepost, the 0-foot baseline stake is located 100 feet away at an azimuth of 63 degrees true. The study is marked by green steel "T" fenceposts approximately 12 to 18 inches in height. A red browse tag, #3971 is attached to the 0-foot baseline stake.





Map Name: Goshute

Diagrammatic Sketch

Township 10S , Range 19W , Section 24

GPS: NAD 27, UTM 12S 4424939 N 249197 E

DISCUSSION

Durse Canyon - Trend Study No. 19A-4

This study is located on BLM administered land near the mouth of Durse Canyon at an elevation of 6,500 feet. The area is on a gentle (5%), west facing bench occupied by a sparse juniper-pinyon community which contains strong elements of Stansbury cliffrose, mountain big sagebrush, and black sagebrush. It has the appearance of an ecotone between the mature pinyon-juniper type at higher elevations and the more open sagebrush areas to the west. The Durse Canyon browse production-utilization transect is located in this area. Light to moderate densities of deer utilize the site in winter. Pellet group transect data collected on site in 2002 estimated 34 deer days use/acre (84 ddu/ha) and 6 elk days use/acre (15 edu/ha). Rabbit pellets were also somewhat abundant.

Soil is alluvially deposited and gravelly with both angular and rounded rocks present. Soil horizons are not sharply differentiated. Effective rooting depth was estimated at 9 inches, with a soil temperature averaging 58°F at 12 inches in depth in 1997. Textural and chemical analysis indicates soils to be a loam with a neutral reaction (pH 7.2). Erosion on the site has been minimal because of the gentle slope and moderate protective vegetation and litter cover. Soils are shallow and rocky. The erosion condition class was classified as stable in 2002.

Browse composition is visually dominated by a vigorous and productive population of Stansbury cliffrose. Cliffrose accounts for one-third of the total browse cover on the site. Cliffrose density was estimated at just over 800 plants/acre in 1997 and 2002. Age class analysis indicates a stable to slightly increasing population that has moderately high recruitment and low decadence. Vigor has been good throughout the entire population in all years. Use has been mostly light. Cliffrose plants were noted as having good flower production in 2002, but most plants had very few annual leaders and growth was minimal averaging about 1.5 inches. Photographic comparisons also illustrate excellent cliffrose seed production in 1989 and 1997. The mountain big sagebrush and black sagebrush populations were combined in the past and reported as mostly mountain big sagebrush. In 1997 and 2002, the two species were separated by morphological characteristics (plant size, leaf size, and leaf glands). Black sagebrush density was estimated at 2,120 plants/acre in 2002. The population appears healthy overall with good reproduction and light use. Decadence and poor vigor both increased in 2002 with drought conditions, but neither is extreme. The mountain big sagebrush population had an estimated density of 1,100 plants/acre in 1997, increasing to 1,400 plants/acre in 2002. Mountain big sagebrush has displayed high levels of decadence and poor vigor in most sampling years. It does not appear to be doing as well as the black sagebrush population. The shallow, rocky soils found on this site are more conducive for black sagebrush than mountain big sagebrush, so a healthier black sagebrush population is not unexpected. Mountain big sagebrush has had moderate recruitment from the young age class in most years. However, the proportion of decadent plants classified as dying has been high and the number of dead in the population has remained constant since 1997.

Broom snakeweed is a relatively numerous plant but of small stature. Density was estimated at 1,520 plants/acre in 1997. Nearly half of the population was classified as young in 1997. It appeared that the population could expand under the right climatic conditions. With drought in 2002, density declined to 1,180 plants/acre. Very few young were sampled. Broom snakeweed often decreases during dry conditions so the decline was not unexpected. Point-center quarter data determined 442 Utah juniper and 286 single-leaf pinyon trees/acre in 2002. Most of the remaining shrubs are undesirable increasers including stickyleaf low rabbitbrush and prickly pear cactus.

Due to the abundance of the browse component, the herbaceous understory is somewhat limited. Grasses have low diversity. Except for Sandberg bluegrass, perennials occur infrequently. Sandberg bluegrass nested

frequency has slowly increased since 1989, although the increase has not been significant. Other perennials include bluebunch wheatgrass, mutton bluegrass, and bottlebrush squirreltail. Cheatgrass was moderately abundant in 1997 being sampled in 75% of the quadrats. In 2002 with drought, cheatgrass was only sampled in 10% of the quadrats. A significant decrease in nested frequency. Forbs are more diverse than grasses, but provide less cover and have a lower sum of nested frequency value. Perennial forbs showed a large reduction in frequency with the drought conditions in 2002. Longleaf phlox, rock goldenrod, lobeleaf groundsel, and Utah sweetvetch are the most abundant species. Annual forbs have been quite low in all samples with none being sampled in 2002. There was no noticeable utilization on grasses or forbs in 1997 or 2002. This site is a good candidate for a chaining and seeding treatment to decrease the overabundant pinyon-juniper overstory and stimulate the growth of herbaceous species and key browse. Although, special consideration should be addressed to preventing the loss of the cliffrose mixed throughout this community.

1983 APPARENT TREND ASSESSMENT

The soil trend appears stable and will probably remain so unless vegetation cover is depleted. However, if pinyon and juniper become more dominant and crowd out other shrub species, erosion is likely to increase. The observable vegetation trends are contradictory. Tree species are increasing, but at the same time, cliffrose and possibly even black sagebrush are doing likewise. Big sagebrush is declining, while increaser shrubs are either static or slightly increasing. Herbaceous composition and density are stable to declining.

1989 TREND ASSESSMENT

Soil trend is slightly upward with less bare ground and more protective ground cover in 1989 than reported in 1983. The browse trend is stable. The Stansbury cliffrose and sagebrush populations appear stable, although both have increased decadence. Use on the key browse is light at the present time with very high reproduction as one-half of the population consists of young plants. Perennial grass sum of nested frequency has increased while perennial forb sum of nested frequency exhibits a decline. Overall, perennial herbaceous understory sum of nested frequency is slightly increased leading to a slightly upward herbaceous understory trend.

TREND ASSESSMENT
soil - slightly up (4)
browse - stable (3)
herbaceous understory - slightly upward (4)

1997 TREND ASSESSMENT

The soil trend is stable with only minimal amounts of erosion apparent. Much of the vegetation cover is contributed by browse and tree species. The minimal erosion rate is mostly due to the gentle terrain. The browse trend appears to be stable with improvements in cliffrose and black sagebrush making up for the losses in mountain big sagebrush. The Stansbury cliffrose population is vigorous and productive with few decadent or dead plants present. Mountain big sagebrush has a high decadency rate (42%) with 96% of these classified as dying. Dead plants account for 44% of the population, while 40% of the population displays poor vigor. It appears that mountain big sagebrush is declining on the site. The black sagebrush population seems to be up slightly with many young (38%) and only moderate decadence. The herbaceous understory is slightly upward. Sum of nested frequency for perennial species has increased since 1989.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly upward (4)

2002 TREND ASSESSMENT

Trend for soil is stable. Due to drought conditions in 2002, there are several negative aspects with the soil component. However, these are not significant enough to warrant a downward trend. Bare soil increased but not excessively. Vegetation and litter cover remains stable. Herbaceous species declined in frequency and cover overall, but perennial grasses remained stable in both categories. The erosion condition class was assessed as stable in 2002. Trend for browse is stable. The key browse populations have stable to slightly increasing densities. Stansbury cliffrose, black sagebrush, and mountain big sagebrush all show increased decadence, although the increase is within acceptable limits for cliffrose and black sagebrush. The mountain big sagebrush population is 50% decadent, but the proportion of the decadent plants classified as dying has decreased since 1997. This site is marginal for mountain big sagebrush with the shallow, rocky soils, and coupled with the dense pinyon-juniper overstory and drought in 2002. These negative parameters should be expected. The herbaceous understory has a slightly downward trend due to a decline in sum of nested frequency for perennial forbs. Perennial grasses maintained stable frequency and cover levels in 2002. The understory is limited and suppressed due to the dense canopy. This site is a good candidate for a chaining and seeding treatment to decrease the overstory and stimulate the herbaceous and key browse components. However, precautions should be utilized that will prevent the loss of cliffrose that occurs throughout this community.

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

HERBACEOUS TRENDS --
Herd unit 19A, Study no: 4

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	$_{a}$3	$_{ab}$13	$_{b}$25	$_{ab}$15	1	6	10	5	.20	.10
G	Bromus tectorum (a)	-	-	$_{b}$235	$_{a}$27	-	-	75	10	3.73	.24
G	Poa fendleriana	$_{a}$-	$_{b}$17	$_{a}$1	$_{a}$-	-	6	1	-	.03	-
G	Poa pratensis	2	9	-	-	1	3	-	-	-	-
G	Poa secunda	$_{a}$77	$_{b}$188	$_{b}$194	$_{b}$213	31	69	71	78	4.24	5.47
G	Sitanion hystrix	42	46	36	24	21	22	19	12	.91	.21
Total for Annual Grasses		0	0	235	27	0	0	75	10	3.73	0.24
Total for Perennial Grasses		124	273	256	252	54	106	101	95	5.39	5.79
Total for Grasses		124	273	491	279	54	106	176	105	9.13	6.03
F	Alyssum alyssoides (a)	-	-	$_{b}$12	$_{a}$-	-	-	5	-	.05	-
F	Antennaria spp.	-	1	-	-	-	1	-	-	-	-
F	Arabis spp.	$_{B}$19	$_{ab}$6	$_{b}$6	$_{a}$-	10	4	5	-	.40	-
F	Asclepias labriformis	4	-	5	-	2	-	3	-	.09	-
F	Astragalus spp.	-	-	1	-	-	-	1	-	.00	-
F	Astragalus utahensis	$_{a}$13	$_{a}$3	$_{b}$58	$_{a}$9	5	2	28	7	1.55	.03
F	Camelina microcarpa (a)	-	-	$_{b}$15	$_{a}$-	-	-	8	-	.26	-
F	Castilleja spp.	-	-	4	-	-	-	2	-	.03	-
F	Collinsia parviflora (a)	-	-	$_{b}$17	$_{a}$-	-	-	7	-	.06	-
F	Cryptantha spp.	$_{B}$48	$_{b}$37	$_{a}$19	$_{a}$6	23	21	8	3	.06	.01

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Descurainia pinnata (a)	-	1	2	-	-	1	2	-	.01	-
F	Epilobium brachycarpum (a)	-	-	4	-	-	-	2	-	.01	-
F	Ipomopsis aggregata	$_{b}$9	$_{b}$11	$_{ab}$9	$_{a}$-	5	7	4	-	.02	-
F	Lathyrus brachycalyx	-	1	-	6	-	1	-	2	-	.01
F	Linum lewisii	1	1	-	-	1	1	-	-	-	-
F	Lithospermum ruderale	$_{a}$1	$_{b}$13	$_{a}$-	$_{a}$-	1	6	-	-	-	-
F	Lygodesmia spinosa	$_{b}$10	$_{ab}$4	$_{a}$-	$_{ab}$4	6	2	-	2	-	.01
F	Machaeranthera canescens	$_{ab}$6	$_{a}$-	$_{b}$12	$_{a}$2	2	-	5	2	.05	.01
F	Microsteris gracilis (a)	-	-	2	-	-	-	1	-	.00	-
F	Oenothera spp.	-	2	-	-	-	1	-	-	-	-
F	Petradoria pumila	$_{a}$-	$_{a}$1	$_{b}$21	$_{b}$18	-	1	8	7	.72	.73
F	Phlox longifolia	$_{a}$20	$_{a}$14	$_{b}$65	$_{a}$23	12	9	29	11	.24	.08
F	Ranunculus testiculatus (a)	-	-	$_{b}$16	$_{a}$-	-	-	7	-	.06	-
F	Senecio multilobatus	$_{b}$57	$_{a}$2	$_{a}$3	$_{a}$10	23	2	2	4	.01	.02
F	Streptanthus cordatus	$_{a}$-	$_{a}$-	$_{b}$31	$_{a}$-	-	-	15	-	.67	-
F	Unknown forb-perennial	-	8	-	-	-	4	-	-	-	-
F	Zigadenus paniculatus	1	3	-	2	1	2	-	1	.00	.00
Total for Annual Forbs		0	1	68	0	0	1	32	0	0.45	0
Total for Perennial Forbs		189	107	234	80	91	64	110	39	3.89	0.91
Total for Forbs		189	108	302	80	91	65	142	39	4.34	0.91

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

BROWSE TRENDS --
Herd unit 19A, Study no: 4

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Artemisia nova	20	16	1.96	1.50
B	Artemisia tridentata vaseyana	33	39	3.84	6.97
B	Chrysothamnus viscidiflorus viscidiflorus	21	11	.53	.61
B	Cowania mexicana stansburiana	33	32	8.11	12.01
B	Grayia spinosa	15	8	-	.30
B	Gutierrezia sarothrae	23	22	.65	.35
B	Juniperus osteosperma	10	9	6.03	4.03
B	Opuntia spp.	8	8	.09	.15
B	Pinus monophylla	8	13	2.78	8.22
B	Purshia tridentata	0	1	-	-
Total for Browse		171	159	24.03	34.16

CANOPY COVER --
Herd unit 19A, Study no: 4

Species	Percent Cover	
	'97	'02
Artemisia nova	-	2.08
Artemisia tridentata vaseyana	-	3.42
Chrysothamnus viscidiflorus viscidiflorus	-	.05
Cowania mexicana stansburiana	3	12.75
Grayia spinosa	-	.33
Gutierrezia sarothrae	-	1.00
Juniperus osteosperma	3	6.42
Pinus monophylla	4	14.83

Key Browse Annual Leader Growth
Herd unit 19A , Study no: 4

Species	Average leader growth (in)
	'02
Cowania mexicana stansburiana	1.5

Point-Quarter Tree Data
Herd unit 19A , Study no: 4

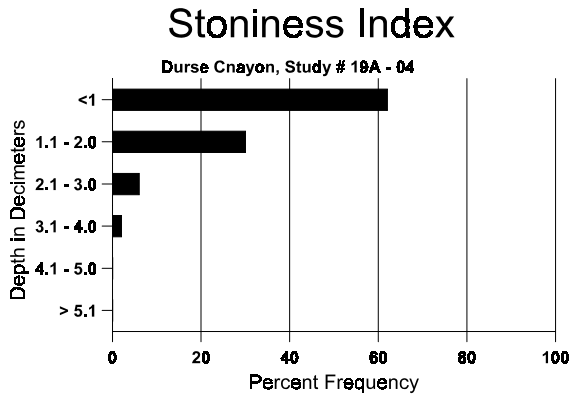
Species	Trees per Acre		Average diameter (in)	
	'97	'02	'97	'02
Juniperus osteosperma	374	442	3.9	2.7
Pinus monophylla	347	286	4.1	2.5

BASIC COVER --
Herd unit 19A, Study no: 4

Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	337	276	1.25	6.00	35.58	38.04
Rock	202	208	5.75	4.50	5.16	7.74
Pavement	290	283	16.50	25.00	19.35	24.56
Litter	378	366	54.00	53.25	39.18	41.39
Cryptogams	135	114	1.50	3.75	1.75	3.37
Bare Ground	195	217	21.00	7.50	8.62	13.97

SOIL ANALYSIS DATA --
Herd Unit 19A, Study no: 4, Durse Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
9.1	58.0 (11.8)	7.2	38.0	37.4	24.6	4.0	15.9	150.4	0.7



PELLET GROUP FREQUENCY --
Herd unit 19A, Study no: 4

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre ⍰02	Days Use per Acre (ha) ⍰02
Rabbit	11	9	-	-
Elk	-	-	78	6 (15)
Deer	10	10	444	34 (84)

BROWSE CHARACTERISTICS --
Herd unit 19A, 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
Artemisia nova																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	21	-	-	-	-	-	-	-	-	21	-	-	-	420			21
	02	28	-	-	-	-	-	-	-	-	28	-	-	-	560			28
M	83	-	3	-	-	-	-	-	-	-	3	-	-	-	100	29	43	3
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	7	12	1
	97	24	1	-	-	-	-	-	-	-	25	-	-	-	500	13	20	25
	02	45	3	-	-	-	-	-	-	-	48	-	-	-	960	11	18	48
D	83	-	1	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	9	-	-	-	-	-	-	-	-	6	-	-	3	180			9
	02	30	-	-	-	-	-	-	-	-	8	-	-	22	600			30
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	380			19
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	360			18

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	100%	00%	00%	-75%
'89	00%	00%	00%	+97%
'97	02%	00%	05%	+48%
'02	03%	00%	21%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	133	25%
	'89	33	0%
	'97	1100	16%
	'02	2120	28%

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
Artemisia tridentata vaseyana																		
S	83	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	2	-	-	2	-	-	-	-	-	4	-	-	-	80			4
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	83	15	-	-	-	-	-	-	-	-	14	1	-	-	500			15
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	266			8
	97	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
	02	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	83	9	28	5	-	-	-	-	-	-	35	3	4	-	1400	25	25	42
	89	25	2	-	-	-	-	-	-	-	20	4	3	-	900	22	25	27
	97	18	2	-	-	-	-	-	-	-	18	2	-	-	400	20	27	20
	02	26	2	-	-	-	-	-	-	-	28	-	-	-	560	17	25	28
D	83	7	10	3	-	-	-	-	-	-	10	3	7	-	666			20
	89	36	4	-	3	-	-	-	-	-	34	3	6	-	1433			43
	97	20	3	-	-	-	-	-	-	-	1	-	-	22	460			23
	02	29	-	-	6	-	-	-	-	-	15	-	2	18	700			35
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	880			44
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	1080			54

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	49%	10%	14%	+ 1%
'89	08%	00%	12%	-58%
'97	09%	00%	40%	+21%
'02	03%	00%	29%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	2566	Dec:	26%
	'89	2599		55%
	'97	1100		42%
	'02	1400		50%

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
Chrysothamnus viscidiflorus viscidiflorus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	4	-	-	-	-	-	-	-	-	4	-	-	-	133			4
	97	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	12	-	-	-	-	-	-	-	-	12	-	-	-	400	12	15	12
	89	7	-	-	-	-	-	-	-	-	7	-	-	-	233	8	14	7
	97	15	-	-	1	-	-	-	-	-	16	-	-	-	320	9	14	16
	02	22	-	-	-	-	-	-	-	-	22	-	-	-	500	8	16	25
D	83	3	-	-	-	-	-	-	-	-	-	-	3	-	100			3
	89	10	-	-	-	-	-	-	-	-	6	-	4	-	333			10
	97	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	02	4	-	-	-	-	-	-	-	-	2	-	-	2	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	20%	+28%
'89	00%	00%	19%	-26%
'97	00%	00%	04%	+10%
'02	00%	00%	07%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	500	Dec:	20%
	'89	699		48%
	'97	520		4%
	'02	580		14%

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
Cowania mexicana stansburiana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	7	-	-	-	-	-	-	-	-	7	-	-	-	233			7
	97	6	-	-	1	-	-	-	-	-	7	-	-	-	160			8
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	15	-	-	-	-	-	-	-	-	15	-	-	-	500			15
	89	19	-	-	-	-	-	-	-	-	19	-	-	-	633			19
	97	14	-	-	-	-	-	-	-	-	14	-	-	-	280			14
	02	4	1	-	1	-	-	-	-	-	6	-	-	-	120			6
M	83	9	1	-	2	-	-	3	-	-	15	-	-	-	500	54	31	15
	89	15	-	-	2	-	-	-	-	-	17	-	-	-	566	79	69	17
	97	23	1	-	3	-	-	-	-	-	27	-	-	-	540	66	56	27
	02	11	4	1	8	2	-	1	1	-	28	-	-	-	560	67	64	28
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	1	-	-	-	-	-	1	20			1
	02	5	-	-	-	-	-	-	2	-	5	-	-	2	140			7
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	03%	00%	00%	+19%
'89	00%	00%	00%	-32%
'97	02%	00%	02%	- 2%
'02	17%	02%	05%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	1000	0%
	'89	1232	3%
	'97	840	2%
	'02	820	17%

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
Grayia spinosa																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	21	-	-	-	-	-	-	-	-	21	-	-	-	420			21
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140	15	33	7
	02	7	-	-	-	-	-	-	-	-	7	-	-	-	140	17	30	7
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	4	-	-	-	-	-	-	-	-	3	-	-	1	80			4
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	-57%
'02	00%	00%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	0%
	'89	0		0%
	'97	560		0%
	'02	240		33%

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	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	4	-	-	1	-	-	-	-	-	5	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	10	-	-	-	-	-	-	-	-	10	-	-	-	333			10
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	36	-	-	-	-	-	-	-	-	36	-	-	-	720			36
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	67	-	-	-	-	-	-	-	-	67	-	-	-	2233	6	7	67
	89	49	-	-	-	-	-	-	-	-	49	-	-	-	1633	7	8	49
	97	39	-	-	-	-	-	-	-	-	39	-	-	-	780	8	10	39
	02	52	-	-	-	-	-	-	-	-	52	-	-	-	1040	6	6	52
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	02	5	-	-	1	-	-	-	-	-	4	-	-	2	120			6
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-36%
'89	00%	00%	00%	- 7%
'97	00%	00%	01%	-22%
'02	00%	00%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	2566	Dec:	0%
	'89	1633		0%
	'97	1520		1%
	'02	1180		10%

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
Juniperus osteosperma																		
S	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	4	-	-	1	-	-	-	-	-	5	-	-	-	100			5
	02	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	4	-	-	1	-	-	-	-	-	5	-	-	-	166			5
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	02	2	-	-	2	-	-	-	-	-	4	-	-	-	80			4
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33	45	18	1
	89	2	-	-	1	-	-	-	-	-	3	-	-	-	100	209	89	3
	97	1	-	-	-	-	-	2	-	-	3	-	-	-	60	-	-	3
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100	-	-	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+75%
'89	00%	00%	00%	-25%
'97	00%	00%	00%	-10%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	66	-
	'89	266	-
	'97	200	-
	'02	180	-

Opuntia spp.																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	4	-	-	-	-	-	-	-	-	4	-	-	-	133	7	12	4
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	8	-	-	1	-	-	-	-	-	9	-	-	-	180	6	13	9
	02	11	-	-	-	-	-	-	-	-	11	-	-	-	220	5	10	11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-80%
'89	00%	00%	00%	+85%
'97	00%	00%	00%	+ 8%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	166	-
	'89	33	-
	'97	220	-
	'02	240	-

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
Pinus monophylla																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
Y	83	4	-	-	-	-	-	-	-	-	4	-	-	-	133			4
	89	7	-	-	-	-	-	-	-	-	7	-	-	-	233			7
	97	5	-	-	-	-	-	1	-	-	6	-	-	-	120			6
	02	5	-	-	1	-	-	-	-	-	4	1	-	1	120			6
M	83	3	-	-	-	-	-	-	-	-	3	-	-	-	100	67	71	3
	89	-	-	-	2	-	-	-	-	-	2	-	-	-	66	138	98	2
	97	2	-	-	-	-	-	1	-	-	3	-	-	-	60	-	-	3
	02	2	-	-	-	-	-	-	5	-	7	-	-	-	140	-	-	7
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+22%
'89	00%	00%	00%	-40%
'97	00%	00%	00%	+36%
'02	00%	00%	14%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	233	0%
	'89	299	0%
	'97	180	0%
	'02	280	7%

Polygala acanthoclada																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33	13	8	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	0	0%
	'89	66	50%
	'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
Purshia tridentata																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	11	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	100%

Total Plants/Acre (excluding Dead & Seedlings)			%Change
'83	0	Dec:	0%
'89	0		0%
'97	0		0%
'02	20		100%

AGE	YR	1	2	3	4	5	6	7	8	9	1	2	3	4	Plants Per Acre	Ht.	Cr.	Total
Tetradymia spinosa																		
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33	10	10	1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

Total Plants/Acre (excluding Dead & Seedlings)			%Change
'83	33	Dec:	-
'89	0		-
'97	0		-
'02	0		-