

Trend Study 28-1-08

Study site name: Three Creeks .

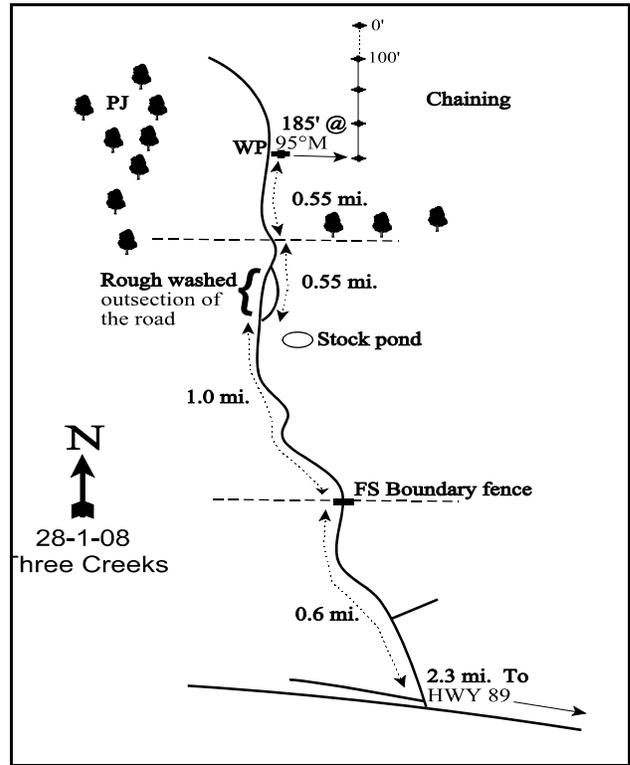
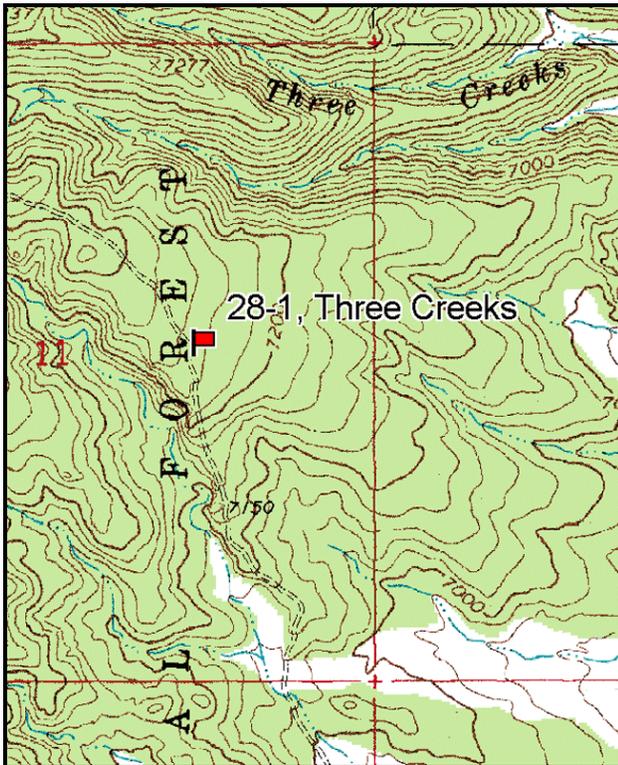
Vegetation type: Burn-Chained, Seeded P-J .

Compass bearing: frequency baseline 167 degrees magnetic.

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

LOCATION DESCRIPTION

From the SR 20-US 89 junction, proceed south on US 89 for 3.1 miles to the Three Creeks road. Travel west on this road (do not take north fork by gate) for 0.5 miles to a fork. Bear right and go 1.85 miles to Three Forks taking the right most one. Travel 0.6 miles to a cattleguard. Continue 1.0 mile to a stockpond. Proceed up the washed out road for 0.55 miles to a fence taking a right fork at 0.3 miles. Continue 0.55 miles up to the chaining and to the witness post which is a short yellow fencepost. From the witness post by the road, walk 185 feet east to the 400-foot stake. The 0-foot baseline stake is 400 feet north, and the short green fencepost is marked by browse tag #7164.



Map Name: Panguitch NW

Diagrammatic Sketch

Township 33S, Range 6W, Section 11

GPS: NAD 83, UTM 12S 368985 E, 4201060 N

DISCUSSION

Three Creeks - Trend Study No. 28-1

Study Information

This study is found on the northeast edge of the Markagunt Plateau and drains easterly into the Sevier River [elevation: 7,200 feet (2,195 m), slope: 8%-10%, aspect: east]. Numerous intermittent streams are nearby with a stock pond one mile to the south. The area is utilized by deer in light winters, by an expanding elk herd, and grazed in the summer by cattle. The study area was chained and seeded in 1967, and converted to a sagebrush-grass type with scattered pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) trees. Due to an increase in the size of pinyon and juniper trees, a follow up treatment on these trees was done with chainsaws between 1987 and 1992. The site was also prescribed burned prior to the 2003 reading. Use of the site by wildlife was relatively low in 2003 at an estimated 15 deer and 9 elk days use/acre (38 ddu/ha and 21 edu/ha). Livestock use was estimated at 29 days use/acre (72 cdu/ha) in 2003. In 2008 pellet data estimated 7 elk days use/acre (18 edu/ha), 16 deer day use/acre (40 ddu/ha), and 10 cow day use/acre (25 cdu/ha).

Soils

The soil is tightly compacted with a high percentage of coarse fragments throughout the soil profile. Soil analysis indicates a sandy loam texture with a neutral pH (7.1). Phosphorus has only marginal availability for plant growth and development at 7.3 ppm, and potassium has low availability for vegetative growth and development at 28.8 ppm (Tiedmann and Lopez 2004). During the 1987 reading, it was observed that the road and washes nearby showed signs of severe gully erosion and signs of minor sheet erosion on the study site. At that time, soil movement was detectable and some grasses were pedestaled. Relative combined vegetation and litter cover was high at 67% in 1998, but decreased to 38% and 48% in 2003 and 2008, respectively. Relative combined rock and pavement cover has been low at 6%-8% since 1998. Relative combined bare ground cover increased from 25% in 1998 to 57% and 44% in 2003 and 2008, respectively. Even with the increase in bare ground and the corresponding decline in protective cover from vegetation and litter, the erosion condition was classified as stable in 2003 and 2008.

Browse

Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) is the dominant shrub species, although hybridization with basin big sagebrush (*A. tridentata* ssp. *tridentata*) is occurring on the site making identification difficult. In 1987, most of the sagebrush was classified as basin big sagebrush while the majority of the sagebrush was determined to be mountain big sagebrush in all other surveys. The mountain big sagebrush population steadily declined from 1,760 plants/acre in 1992 to 700 plants/acre in 2003, then increased more than a two fold again to 1,600 plants/acre (3,952 plants/acre) in 2008. The decline in mountain big sagebrush in 2003 was a result of a large decline in the number of young plants in the population as well as an increase in the number of dead, of which, some of the dead plants had been burned. In 1987 and 1992, utilization was moderate with a few individual plants displaying heavy hedging. Utilization was mostly light from 1998-2008. Vigor has been normal for most of the population in all surveys, however, decadence increased to 26% in 2003. Basin big sagebrush density was estimated at about 100 plants/acre in 1992 and 1998 although none of the sagebrush on the site was classified as basin big sagebrush in 2003. As of 2008 basin big sagebrush density was estimated at 20/acre, all classified as mature.

Another important browse species on the site is bitterbrush (*Purshia tridentata*), although density is very low at around 100 plants/acre. The bitterbrush population has shown moderate to heavy utilization in all readings and low reproduction. Vigor has been good except in 1992 when 67% of the population was classified with poor vigor. Decadence was estimated at 25% in 2003 while no decadent plants were sampled in any other year. Broom snakeweed (*Gutierrezia sarothrae*), a subshrub that is considered an increaser, was very abundant in 1987 and 1992, decreasing in 1998 and 2003, and rebounding again in 2008.

Pinyon and juniper trees are scattered throughout the site. Combined quadrat cover of pinyon and juniper has been low at around 1% from 1992 to 2003, decreasing to 0% in 2008. Point-center quarter data estimated pinyon density to be 53 trees/acre in 1992, 59 trees/acre in 1998, 34 trees/acre in 2003, and 23 trees/acre in 2008. Juniper density was estimated at 43 trees/acre in 1992, 42 trees/acre in 1998, 25 trees/acre in 2003, and 21 trees in 2008. Fifty-five percent of the junipers sampled in 1992 were tipped trees that were still growing. These were taken out during the followup chainsaw treatment.

Herbaceous Understory

The herbaceous understory is dominated by crested wheatgrass (*Agropyron cristatum*), which was seeded onto the site as part of the original chaining treatment. Crested wheatgrass maintained a high nested frequency value during the first 3 readings, but significantly declined in 2003. However, it rebounded to 1992 levels in 2008. Crested wheatgrass was moderately utilized in 1998, but showed no sign of use in 2003. Several other perennial grasses have been sampled on the site including intermediate wheatgrass (*Agropyron intermedium*), western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*), Indian ricegrass (*Oryzopsis hymenoides*), bottlebrush squirreltail (*Sitanion hystrix*), and needle-and-thread grass (*Stipa comata*). These species are important but occur in limited densities. Cheatgrass (*Bromus tectorum*) was encountered in one quadrat in 1998 and six quadrats in 2008, but was not sampled in any other year. Grass cover decreased from 21% in 1998 to 5% in 2003, but has rebounded to 14% in 2008. Forb diversity is high, but most species are rare. Silvery lupine (*Lupinus argenteus*) is the most abundant forb on the site, and it has accounted for the majority of the forb cover in all readings. Other important perennial forbs include lobeleaf groundsel (*Senecio multilobatus*), longleaf phlox (*Phlox longifolia*), and scarlet globemallow (*Sphaeralcea coccinea*).

1992 TREND ASSESSMENT

Browse trend is slightly up. Density changes may have been related to the larger sample area in 1992; therefore the trend was determined using other parameters. The key browse species are basin big sagebrush and mountain big sagebrush. Decadence has increased slightly for both species, but vigor remains good in the population. Recruitment of young has increased markedly for mountain big sagebrush. The trend for the grasses is up. The sum of nested frequency of perennial grass has increased. Intermediate wheatgrass, western wheatgrass, and Indian ricegrass had a significant increase in their nested frequency. The nested frequency of crested wheatgrass declined significantly. Trend for the forbs is stable. There was a slight decline in the sum of nested frequency of perennial forbs.

winter range condition (DCI) - good (70) Mid-level potential scale

browse - slightly up (+1)

grass - up (+2)

forb - stable (0)

1998 TREND ASSESSMENT

The browse trend is stable. The mountain big sagebrush population density has decreased 24% since 1992 from 1,760 plants/acre to 1,340 plants/acre, but decadence declined from 13% in 1992 to just 1%. The age structure has changed very little since 1992 with a mostly mature population and moderate recruitment by the young age class. The bitterbrush population is also stable. Broom snakeweed density has greatly declined since 1992 from 4,300 plants/acre to 900 plants/acre, probably due to annual precipitation patterns. The trend for both grasses and forbs is stable. Crested wheatgrass dominates the site with a significant increase of nested frequency since 1992. Perennial grass sum of nested frequency has changed little since 1992. Perennial forb sum of nested frequency shows a slight increase, but forbs are currently a minor component of the herbaceous understory.

winter range condition (DCI) - good (76) Mid-level potential scale

browse - stable (0)

grass - stable (0)

forb - stable (0)

2003 TREND ASSESSMENT

Trend for browse is down. Some of the sagebrush sampled were burned. No data was found on the fire and not all sagebrush were burned. Mountain big sagebrush density declined from 1,340 plants/acre in 1998 to 700 plants/acre. The proportion of young plants in the population, which was moderately high in both 1992 and 1998, declined to only 6%. Decadence increased from 1% in 1998 to 26%. Bitterbrush density remained stable, but this species is in low abundance on the site. The trend for grasses is down. Perennial grass sum of nested frequency declined 58%. Four of the perennial grass species that were sampled on the site significantly declined in nested frequency, crested wheatgrass, intermediate wheatgrass, sedge (*Carex sp.*), and mutton bluegrass (*Poa fendleriana*). Trend for forbs is stable. There was a slight decrease in the sum of nested frequency of perennial forbs, but perennial forbs remain limited on the site.

winter range condition (DCI) - very poor (20) Mid-level potential scale

browse - down (-2)

grass - down (-2)

forb - stable (0)

2008 TREND ASSESSMENT

Trend for browse is up. The density of the preferred browse species, mountain big sagebrush, has increased 56% from 2003 to 1,600 plants/acre. Decadence has declined from 2003 to 6%, and vigor remains good. Recruitment improved with the proportion of young plants in the population increasing to 35%. Antelope bitterbrush continued to display good vigor, although density is low. Invasive tree species such as juniper and pinyon pine have been recently cut and their density has declined. Trend for the grasses is up. The sum of nested frequency of perennial grasses increased two-fold from 2003. There was a significant increase in the nested frequency of crested wheatgrass, western wheatgrass, sedge, and needle-and-thread grass. Crested wheatgrass is still the dominant grass, accounting for 61% of grasses. The trend for forbs is slightly up. The sum of nested frequency of perennial forbs increased by 58%, but forbs remain a small component of the site.

winter range condition (DCI) - poor (40) Mid-level potential scale

browse - up (+2)

grass - up (+2)

forb - slightly up (+1)

HERBACEOUS TRENDS --

Management unit 28 , Study no: 1

T y p e	Species	Nested Frequency					Average Cover %			
		'87	'92	'98	'03	'08	'92	'98	'03	'08
G	<i>Agropyron cristatum</i>	c288	b216	c281	a107	b235	12.81	17.80	3.30	8.81
G	<i>Agropyron intermedium</i>	b45	c143	b60	a7	a8	4.77	1.26	.02	.18
G	<i>Agropyron smithii</i>	a-	b39	b35	b52	c82	1.27	.66	.84	1.91
G	<i>Agropyron spicatum</i>	-	4	8	-	-	.63	.05	-	-
G	<i>Bouteloua gracilis</i>	ab27	b53	ab51	a28	ab36	2.32	.62	.51	1.95
G	<i>Bromus tectorum</i> (a)	-	-	a2	a-	b13	-	.00	-	.06
G	<i>Carex sp.</i>	a3	ab12	bc22	a-	c36	.27	.31	-	.55
G	<i>Elymus junceus</i>	-	4	-	-	3	.06	-	-	.00
G	<i>Oryzopsis hymenoides</i>	a-	b27	ab12	a3	ab16	.63	.06	.01	.20
G	<i>Poa fendleriana</i>	a-	a4	b13	a1	a1	.03	.06	.00	.15
G	<i>Poa secunda</i>	-	-	4	3	-	-	.01	.00	-
G	<i>Sitanion hystrix</i>	-	6	14	-	-	.33	.10	-	-

Type	Species	Nested Frequency					Average Cover %			
		'87	'92	'98	'03	'08	'92	'98	'03	'08
G	<i>Stipa comata</i>	a ⁹	a ⁷	a ⁶	a ¹³	b ²⁸	.24	.22	.28	.71
	Total for Annual Grasses	0	0	2	0	13	0	0.00	0	0.06
	Total for Perennial Grasses	372	515	506	214	445	23.39	21.17	5.00	14.47
	Total for Grasses	372	515	508	214	458	23.39	21.17	5.00	14.53
F	<i>Alyssum alyssoides</i> (a)	-	-	3	-	-	-	.00	-	-
F	<i>Amaranthus</i> sp.	-	-	-	3	-	-	-	.03	-
F	<i>Arabis</i> sp.	11	-	-	-	-	-	-	-	-
F	<i>Astragalus argophyllus</i>	1	-	-	-	-	-	-	-	-
F	<i>Astragalus convallarius</i>	-	-	2	5	-	-	.03	.06	-
F	<i>Astragalus</i> sp.	2	1	-	-	-	.00	-	-	-
F	<i>Castilleja chromosa</i>	-	3	3	3	3	.03	.03	.03	.15
F	<i>Calochortus nuttallii</i>	-	-	-	1	-	-	-	.00	-
F	<i>Cryptantha fulvocanescens</i>	b ¹⁵	ab ¹³	a ⁵	a ⁻	ab ⁸	.07	.04	.00	.04
F	<i>Cymopterus</i> sp.	-	-	-	-	-	-	-	.00	-
F	<i>Descurainia</i> sp. (a)	-	b ¹⁶	a ⁻	a ⁻	a ³	.23	-	-	.00
F	<i>Draba</i> sp. (a)	-	-	1	-	-	-	.00	-	-
F	<i>Erigeron pumilus</i>	4	-	-	-	-	-	-	-	-
F	<i>Gayophytum ramosissimum</i> (a)	-	-	-	-	3	-	-	-	.01
F	<i>Ipomopsis aggregata</i>	7	3	-	-	1	.00	-	-	.00
F	<i>Lappula occidentalis</i> (a)	-	-	a ³	a ¹	b ²⁵	-	.00	.00	.12
F	<i>Lomatium</i> sp.	-	-	-	2	2	-	-	.03	.00
F	<i>Lupinus argenteus</i>	ab ⁴⁶	b ⁴⁹	b ⁵¹	a ¹⁸	ab ³⁴	2.59	2.61	2.07	1.45
F	<i>Lygodesmia spinosa</i>	-	2	2	5	6	.00	.03	.30	.21
F	<i>Machaeranthera canescens</i>	3	-	4	-	-	-	.01	-	-
F	<i>Microsteris gracilis</i> (a)	-	-	-	-	2	-	-	-	.00
F	<i>Oenothera</i> sp.	-	-	-	-	2	-	-	-	.00
F	<i>Penstemon</i> sp.	11	5	4	-	5	.06	.00	-	.01
F	<i>Phlox longifolia</i>	a ⁸	ab ¹¹	c ³⁹	bc ²⁵	ab ¹⁴	.08	.17	.08	.04
F	<i>Polygonum douglasii</i> (a)	-	-	3	-	7	-	.01	-	.01
F	<i>Senecio integerrimus</i>	-	-	-	1	-	-	-	.00	-
F	<i>Senecio multilobatus</i>	ab ¹³	a ⁴	a ³	b ³⁰	c ⁵⁵	.01	.03	.39	.46
F	<i>Sphaeralcea coccinea</i>	a ⁻	a ⁶	a ⁵	a ⁶	b ²¹	.09	.01	.09	.14
F	<i>Streptanthus cordatus</i>	3	-	-	1	1	-	-	.00	.00
F	<i>Tragopogon dubius</i>	-	-	-	-	6	-	.00	-	.09
F	<i>Trifolium</i> sp.	-	-	1	-	2	-	.00	-	.01
F	Unknown forb-annual (a)	-	2	-	-	-	.03	-	-	-

Type	Species	Nested Frequency					Average Cover %			
		'87	'92	'98	'03	'08	'92	'98	'03	'08
F	Unknown forb-perennial	-	3	6	-	-	.00	.01	-	-
F	Zigadenus paniculatus	-	-	-	1	-	-	-	.00	.01
Total for Annual Forbs		0	18	10	1	40	0.26	0.03	0.00	0.15
Total for Perennial Forbs		124	100	125	101	160	2.96	3.00	3.12	2.64
Total for Forbs		124	118	135	102	200	3.22	3.03	3.12	2.79

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

BROWSE TRENDS --

Management unit 28 , Study no: 1

Type	Species	Strip Frequency				Average Cover %			
		'92	'98	'03	'08	'92	'98	'03	'08
B	Artemisia nova	1	1	0	0	.00	.00	-	-
B	Artemisia tridentata tridentata	5	5	0	1	2.77	1.29	-	.41
B	Artemisia tridentata vaseyana	33	45	23	45	4.02	6.34	2.74	3.77
B	Chrysothamnus nauseosus	0	0	0	1	-	-	-	.00
B	Chrysothamnus viscidiflorus viscidiflorus	1	1	1	0	.00	.00	.00	.38
B	Gutierrezia sarothrae	53	24	44	70	.51	.42	1.18	.96
B	Juniperus osteosperma	6	4	1	0	1.13	.84	.00	-
B	Opuntia sp.	12	5	9	6	.33	.06	.06	.00
B	Pinus edulis	5	6	0	0	.15	.18	1.00	-
B	Purshia tridentata	2	5	4	4	.18	.68	.01	.30
Total for Browse		118	96	82	127	9.11	9.83	4.99	5.83

CANOPY COVER, LINE INTERCEPT --

Management unit 28 , Study no: 1

Species	Percent Cover	
	'03	'08
Artemisia tridentata tridentata	-	1.20
Artemisia tridentata vaseyana	5.01	6.86
Gutierrezia sarothrae	.88	1.20
Pinus edulis	.13	-
Purshia tridentata	-	.05

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 28 , Study no: 1

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata vaseyana	1.3	2.3

POINT-QUARTER TREE DATA --

Management unit 28 , Study no: 1

Species	Trees per Acre		
	'98	'03	'08
Juniperus osteosperma	41	25	21
Pinus edulis	59	34	23

Average diameter (in)		
'98	'03	'08
2.7	3.2	1.4
1.6	1.9	1.3

BASIC COVER --

Management unit 28 , Study no: 1

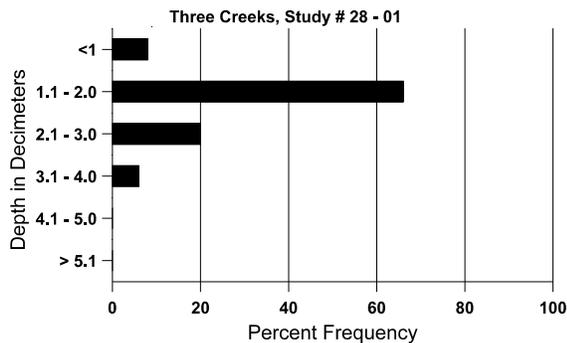
Cover Type	Average Cover %				
	'87	'92	'98	'03	'08
Vegetation	4.75	31.85	35.06	13.53	24.72
Rock	3.25	12.85	3.88	3.44	3.15
Pavement	11.00	0	5.90	2.87	5.46
Litter	54.25	36.66	46.38	27.10	27.34
Cryptogams	.75	.03	.25	.00	.03
Bare Ground	26.00	35.43	30.17	61.03	47.73

SOIL ANALYSIS DATA --

Management unit 28, Study no: 1, Study Name: Three Creeks

Effective rooting depth (in)	Temp °F (depth)	pH	sandy loam			%0M	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
13.7	62.7 (14.6)	7.1	54.2	38.0	7.8	2.2	7.3	28.8	0.5

Stoniness Index



PELLET GROUP DATA --

Management unit 28 , Study no: 1

Type	Quadrat Frequency			
	'92	'98	'03	'08
Rabbit	61	29	31	87
Elk	-	7	15	6
Deer	18	18	15	5
Cattle	5	16	22	12

Days use per acre (ha)		
'98	'03	'08
-	-	-
9 (22)	9 (22)	7 (18)
11 (27)	15 (38)	16 (40)
45 (111)	29 (72)	10 (25)

BROWSE CHARACTERISTICS --

Management unit 28 , Study no: 1

		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)
Artemisia nova												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
92	40	-	-	40	-	-	0	100	-	-	0	-/-
98	20	-	-	20	-	-	0	0	-	-	0	18/30
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Artemisia tridentata tridentata												
87	399	33	133	266	-	-	67	17	0	-	0	31/31
92	100	-	60	20	20	-	20	0	20	-	0	-/-
98	120	-	40	80	-	-	0	0	0	-	0	44/64
03	0	-	-	-	-	-	0	0	0	-	0	-/-
08	20	20	-	20	-	20	0	0	0	-	0	51/69
Artemisia tridentata vaseyana												
87	33	-	-	33	-	-	100	0	0	-	0	9/11
92	1760	20	620	920	220	-	67	8	13	-	2	-/-
98	1340	20	400	920	20	160	10	0	1	-	0	22/30
03	700	-	40	480	180	460	11	6	26	3	6	20/28
08	1600	2180	560	940	100	440	8	0	6	1	1	22/33
Chrysothamnus nauseosus												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
92	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	20	-	-	20	-	-	0	0	-	-	0	9/12

		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												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
92	20	-	-	20	-	-	0	0	-	-	0	-/-
98	20	-	-	20	-	-	0	0	-	-	0	19/42
03	20	-	-	20	-	-	0	0	-	-	0	19/27
08	0	-	-	-	-	-	0	0	-	-	0	13/21
Gutierrezia sarothrae												
87	5131	-	366	4699	66	-	0	0	1	-	0	9/9
92	4300	320	2040	2260	-	-	0	0	0	-	0	-/-
98	900	120	160	720	20	-	0	0	2	-	0	9/7
03	1640	-	60	1280	300	740	0	0	18	5	5	9/9
08	5460	1260	740	4300	420	380	12	3	8	.73	.73	8/8
Juniperus osteosperma												
87	0	-	-	-	-	-	0	0	-	-	0	-/-
92	120	-	80	40	-	-	0	0	-	-	0	-/-
98	80	-	60	20	-	80	0	0	-	-	0	-/-
03	20	-	20	-	-	140	0	0	-	-	0	-/-
08	0	-	-	-	-	40	0	0	-	-	0	-/-
Leptodactylon pungens												
87	333	-	-	333	-	-	0	0	-	-	0	6/7
92	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	-	-	-	-	-	0	0	-	-	0	6/10
03	0	-	-	-	-	-	0	0	-	-	0	7/9
08	0	-	-	-	-	-	0	0	-	-	0	5/6
Opuntia sp.												
87	266	-	33	233	-	-	0	0	0	-	13	4/14
92	400	-	80	240	80	-	0	0	20	20	20	-/-
98	140	-	-	120	20	20	0	0	14	-	0	5/8
03	220	-	-	220	-	-	0	0	0	-	0	6/11
08	120	-	-	120	-	-	0	0	0	-	0	5/11
Pinus edulis												
87	33	-	33	-	-	-	0	0	-	-	0	-/-
92	100	-	80	20	-	-	0	40	-	-	0	-/-
98	120	-	80	40	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	60	0	0	-	-	0	-/-
08	0	-	-	-	-	-	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)
<i>Purshia tridentata</i>												
87	66	-	-	66	-	-	0	100	0	-	0	6/18
92	60	-	-	60	-	-	0	33	0	-	67	-/-
98	100	-	20	80	-	-	60	20	0	-	0	15/27
03	80	-	-	60	20	-	25	75	25	-	0	7/24
08	100	-	-	100	-	-	20	80	0	-	0	18/37