

Trend Study 30-37-98

Study site name: Truman Bench .

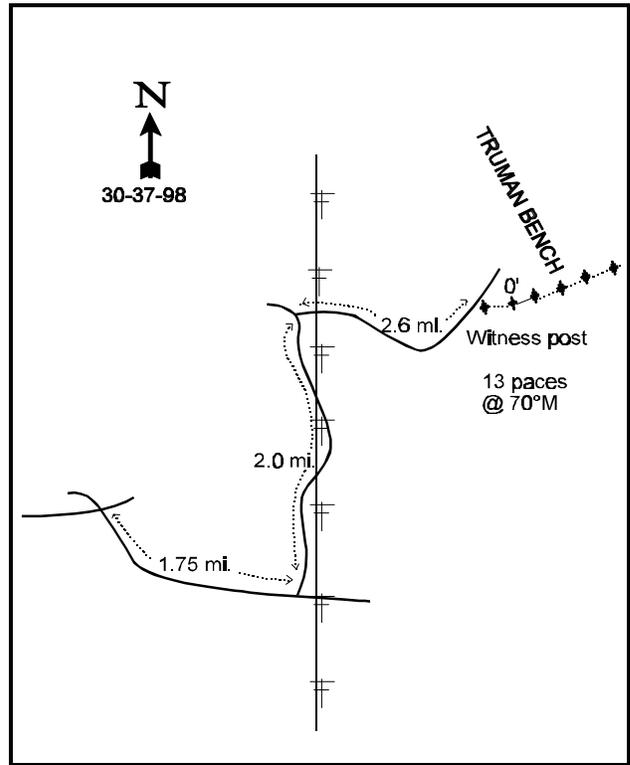
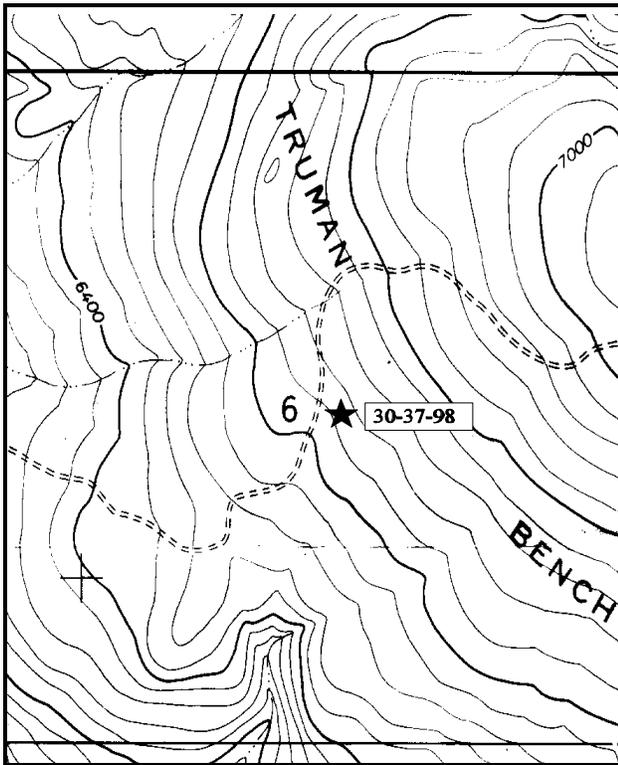
Range type: Sagebrush-Grass .

Compass azimuth: frequency baseline 80 M degrees.

Footmark (first frame placement) 5 feet. Frequency belt placement; line 1 (14 & 86ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the town of Veyo, proceed south 3.8 miles, at which point a road takes off to the east. Proceed east on this road for approximately 2.75 miles to a fork in the road. Take the right fork for an additional 1.75 miles to another fork. Take the left fork which passes under the powerline. Follow the powerline for approximately 2.0 miles. At this point the road comes to 'T'. Go right (east). Proceed on this road for 2.6 miles passing a Forest Service boundary fence and an old sheep pen on the right. Stay on the main road ignoring side roads. There is a witness post on the right side of the road. From the witness post the 0-foot stake is 13 paces at 70°M. The 0 foot baseline is found in a rock monument on the right side of the road and the stake is marked by browse tag #7011.



Map Name: Saddle Mountain

Diagrammatic Sketch

Township 40S , Range 15W , Section 6 .

UTM 4135406.965 N , 271861.498 E

## DISCUSSION

### Trend Study No. 30-37 (50B-14)

The Truman Bench trend study is within deer winter range on Truman Bench. Deer reportedly use the area in early spring, late fall, and during mild winters. The study site is on a 10% west facing slope with an elevation of 6,700 feet. The community type is sagebrush-grass with substantial components of antelope bitterbrush, Stansbury cliffrose, and Utah serviceberry. Utah juniper trees are sparsely scattered throughout the area at an estimated density of 38 trees/acre in 1998 using point quarter data. Average basal diameter is 5.6 inches. There has been no livestock grazing in this area since the 1960's. Deer days use/acre measured at a nearby pellet group transect has averaged 58 between 1982 and 1992, with a high of 79 in 1989-90, and a low of 30 in 1991-92 (Jense et al. 1992). Pellet group data from the site taken in 1998 estimate 38 deer days use/acre.

Soil on Truman Bench is very distinctive. The entire area is an old lava flow that has weathered to produce ground surface that is uniformly covered by fractured basalt rocks ranging from pavement size to as large as two feet in diameter. Soil depth is deep, however the estimated effective rooting depth (see methods) is 21 inches. Texture is a clay loam with a moderately acid pH (6.0). Phosphorus may be limiting at only 3.8 ppm when 10 ppm is thought to be the minimum for normal plant development. Soil drainage is very rapid and there is little evidence of erosion, but pedestaling was reported around some shrubs.

Browse composition is highly favorable with several preferred species present including: Utah serviceberry, mountain big sagebrush, Stansbury cliffrose, and antelope bitterbrush. Mountain big sagebrush is by far the most abundant shrub which currently ('98) provides 50% of the total shrub cover. Density has declined from a high of 6,199 plants/acre estimated in 1982, to 5,866 by 1992, and 3,620 by 1998. Most of the decline between 1992 and 1998 is due to the much larger sample taken in 1998. The dead within the population can only explain 37% of the decrease. The much larger sample gives more accurate estimates for shrubs with discontinuous and/or clumped distributions. Utilization of the sagebrush was moderate to heavy in 1992, but is mostly light to moderate in 1998. Vigor remains normal and percent decadence relatively low at only 14%. Reproduction is good with good numbers of seedlings and young plants counted during each reading. Currently, dead plants number 820 plants/acre.

Cliffrose and bitterbrush have relatively small, but somewhat stable populations which received heavy use in 1992. Current use is more moderate, vigor normal, with no decadent plants sampled in 1998. Serviceberry follows a similar trend. Density has increased 98% since 1992, mostly due to the lengthening of the baseline in 1998 which provides a much better, more representative sample. Some Gambel oak was also picked up in the larger sample.

Herbaceous vegetation is sparse because of the poor surface soil and excessively rapid drainage, combined with high surface temperatures. Mutton bluegrass dominates the herbaceous understory by producing 92% of the grass cover and 74% of the total herbaceous cover. Bottlebrush squirreltail is also fairly common. Forbs are very diverse with 16 perennial species encountered in 1992, and 21 in 1998. All of the forbs found in 1998 combine to produce only 3.4% cover with Hood's phlox providing 50% of that cover. The only other fairly common perennial species include: bull thistle, pale agoseris, and foothill deathcamas.

### 1982 APPARENT TREND ASSESSMENT

Over the short term, soil trend appears fairly stable. The broken rocky surface, more than any other factor, tends to prevent runoff. Over the very long term, soil is in a formation mode. That is to say that, as the parent rock weathers and is broken down by climatic and vegetative action, more "soil" will be created. This, in turn, should provide greater growth opportunities, especially for grasses and forbs. Vegetative trend is currently stable. If cattle grazing is restricted or excluded, a very slow improvement in herbaceous growth can be expected. The character of the soil is a paramount management factor on this site.

## 1992 TREND ASSESSMENT

No soil movement was noted with an improving soil trend on the site. The little soil that is there seems to be adequately covered by vegetation and litter. Most browse species on the site are good for wildlife use in the winter and are stable to slightly increasing. Two species that should be monitored for excessive increases are threadleaf snakeweed and dwarf rabbitbrush.

### TREND ASSESSMENT

soil - up

browse - slightly up

herbaceous understory - up

## 1998 TREND ASSESSMENT

Trend for soil is stable with similar amounts of exposed bare ground compared to 1992. Percent litter cover did decline, while rock and pavement cover combined increased from 42% to 57%. Erosion does not appear to be a problem however. Trend for browse is stable for the preferred species, mountain big sagebrush, serviceberry, cliffrose, and bitterbrush. These shrubs generally show lighter use when compared to 1992. Vigor is good, percent decadence low, with adequate reproduction. Most of the changes in density are due to the larger sample used in 1998 which picked up more serviceberry and Gambel oak. Trend for the herbaceous understory is down slightly, due to a decline in the sum of nested frequency of grasses and forbs. Nested frequency of bottlebrush squirreltail and prairie Junegrass declined significantly since 1992, while the more common mutton bluegrass remained at a similar frequency.

### TREND ASSESSMENT

soil - stable

browse - stable

herbaceous understory - down slightly

## HERBACEOUS TRENDS --

Herd unit 30 , Study no: 37

Type	Species	Nested Frequency		Quadrat Frequency			Average Cover %
		'02	'08	'82	'92	'98	
G	Agropyron smithii	-	3	-	-	1	.00
G	Koeleria cristata	60	*19	3	24	9	.33
G	Poa fendleriana	207	231	50	76	86	12.77
G	Sitanion hystrix	171	*64	54	78	28	.76
G	Stipa comata	-	4	-	-	1	.03
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		438	321	107	178	125	13.91
Total for Grasses		438	321	107	178	125	13.91
F	Agoseris glauca	22	37	-	11	18	.25
F	Allium spp.	-	3	-	-	2	.01
F	Arabis spp.	6	-	2	3	-	-
F	Aster spp.	-	2	-	-	1	.00

Type	Species	Nested Frequency		Quadrat Frequency			Average Cover %
		'02	'08	'82 '98	'92	'08	
F	Astragalus spp.	17	*3	7	10	2	.02
F	Castilleja chromosa	1	3	1	1	3	.02
F	Calochortus nuttallii	2	3	-	1	1	.00
F	Cirsium vulgare	27	17	1	10	8	.26
F	Comandra pallida	-	*10	-	-	5	.07
F	Collinsia parviflora (a)	-	25	-	-	13	.06
F	Cryptantha spp.	-	2	-	-	2	.01
F	Cymopterus spp.	-	1	-	-	1	.03
F	Draba spp. (a)	-	3	-	-	1	.00
F	Erodium cicutarium (a)	-	3	-	-	2	.01
F	Erigeron pumilus	19	*4	2	9	2	.01
F	Eriogonum umbellatum	7	9	3	3	5	.05
F	Ipomopsis aggregata	-	4	-	-	1	.00
F	Lomatium spp.	-	13	-	-	5	.02
F	Lotus utahensis	16	-	4	10	-	-
F	Lupinus argenteus	-	4	-	-	2	.01
F	Machaeranthera canescens	-	3	-	-	1	.00
F	Microsteris gracilis (a)	-	109	-	-	47	.38
F	Penstemon leonardi	78	*-	45	33	-	-
F	Penstemon palmeri	1	1	3	1	1	.15
F	Phlox hoodii	21	*40	10	11	17	1.70
F	Phlox longifolia	-	1	-	-	1	.00
F	Polygonum douglasii (a)	-	2	-	-	1	.00
F	Ranunculus spp.	-	3	-	-	2	.01
F	Senecio multilobatus	2	-	1	1	-	-
F	Trifolium spp.	1	-	-	1	-	-
F	Viguiera multiflora	1	-	-	1	-	-
F	Zigadenus paniculatus	3	*22	-	2	10	.26
Total for Annual Forbs		0	142	0	0	64	0.46
Total for Perennial Forbs		224	185	79	108	90	2.92
Total for Forbs		224	327	79	108	154	3.39

\* Indicates significant difference at % = 0.10 (annuals excluded)

BROWSE TRENDS --  
Herd unit 30 , Study no: 37

Type	Species	Strip Frequency '98	Average Cover % '98
B	Amelanchier utahensis	23	5.11
B	Artemisia tridentata vaseyana	82	14.47
B	Chrysothamnus depressus	46	2.17
B	Chrysothamnus parryi howardi	2	.30
B	Cowania mexicana stansburiana	6	2.75
B	Echinocereus spp.	1	-
B	Gutierrezia microrcephala	20	.04
B	Juniperus osteosperma	1	1.25
B	Opuntia spp.	4	.06
B	Purshia tridentata	14	2.01
B	Quercus gambelii	5	.56
Total for Browse		204	28.77

CANOPY COVER --  
Herd unit 30 , Study no: 37

Species	Percent Cover '98
Juniperus osteosperma	1

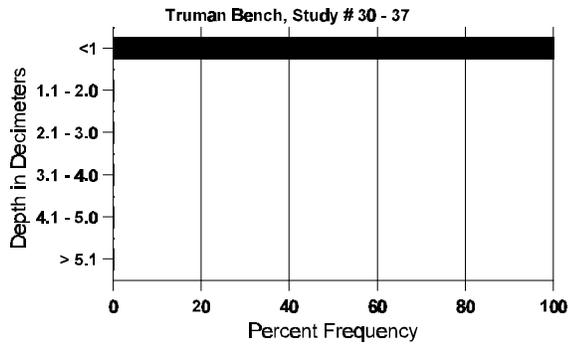
BASIC COVER --  
Herd unit 30 , Study no: 37

Cover Type	Nested Frequency '98	Average Cover %		
		'82	'92	'98
Vegetation	317	6.25	11.25	41.11
Rock	340	31.25	25.00	44.12
Pavement	223	16.75	16.75	12.56
Litter	359	41.75	42.50	29.03
Cryptogams	3	1.00	0	.00
Bare Ground	169	3.00	4.50	4.48

SOIL ANALYSIS DATA --  
Herd Unit 30, Study # 37, Study Name: Truman Bench

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
21.0	40.6 (17.7)	6.0	32.0	36.6	31.4	3.1	3.8	121.6	.5

# Stoniness Index



## PELLET GROUP FREQUENCY --

Herd unit 30 , Study no: 37

Type	Quadrat Frequency '98
Rabbit	1
Elk	1
Deer	23

## BROWSE CHARACTERISTICS --

Herd unit 30 , Study no: 37

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
<b>Amelanchier utahensis</b>																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	15	2	-	-	-	-	-	-	-	17	-	-	-	340			17
M	82	-	4	-	-	-	-	-	-	-	4	-	-	-	266	41	33	4
	92	-	-	1	-	-	-	-	-	-	1	-	-	-	66	55	91	1
	98	114	44	12	3	-	-	-	-	-	173	-	-	-	3460	51	43	173
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	540			27
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		100%			00%			00%			-75%							
'92		00%			100%			00%			+98%							
'98		24%			06%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	266	Dec:	-			
												'92	66		-			
												'98	3800		-			

A Y G R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
	1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Artemisia tridentata vaseyana</i>																	
S	82	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5
	92	8	-	-	-	-	-	-	-	-	8	-	-	-	533		8
	98	114	-	-	-	-	-	-	-	-	114	-	-	-	2280		114
Y	82	6	-	-	-	-	-	-	-	-	6	-	-	-	400		6
	92	3	7	5	1	1	1	3	-	-	21	-	-	-	1400		21
	98	23	2	-	1	-	-	-	-	-	26	-	-	-	520		26
M	82	85	-	-	-	-	-	-	-	-	85	-	-	-	5666	15 23	85
	92	10	16	12	2	4	4	3	-	-	50	1	-	-	3400	17 26	51
	98	68	51	3	5	2	-	-	-	-	125	4	-	-	2580	15 29	129
D	82	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	92	3	2	5	-	2	4	-	-	-	13	-	3	-	1066		16
	98	9	16	1	-	-	-	-	-	-	20	-	-	6	520		26
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	1	-	-	-	820		41
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%			- 5%						
'92		36%			35%			03%			-38%						
'98		39%			02%			03%									
Total Plants/Acre (excluding Dead & Seedlings)											'82	6199	Dec:	2%			
											'92	5866		18%			
											'98	3620		14%			
<i>Chrysothamnus depressus</i>																	
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	66		1
	98	71	-	-	-	-	-	-	-	-	71	-	-	-	1420		71
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	92	6	-	-	3	-	-	9	-	-	18	-	-	-	1200	11 13	18
	98	279	-	-	-	-	-	-	-	-	279	-	-	-	5580	4 7	279
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	92	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%									
'92		00%			00%			00%			+79%						
'98		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)											'82	0	Dec:	0%			
											'92	1466		14%			
											'98	7020		0%			

A Y G R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
	1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Chrysothamnus parryi howardi</i>																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	1	-	-	-	-	-	-	-	-	-	-	20			1
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	-	1	-	-	-	-	-	-	-	-	1	-	20	20	46	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%									
'92		00%			00%			00%									
'98		100%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-		
												'92	0		-		
												'98	40		-		
<i>Cowania mexicana stansburiana</i>																	
S	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	-	-	-	-	-	-	-	-	-	66			1
	98	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	1	-	-	-	-	-	-	-	-	-	-	20			1
M	82	1	-	-	-	-	-	-	-	-	1	-	-	66	41	47	1
	92	-	-	-	-	-	1	-	-	-	1	-	-	66	102	93	1
	98	2	4	1	-	1	-	-	-	-	8	-	-	160	50	52	8
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	1	-	-	-	-	-	-	1	-	-	66			1
	98	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%			+50%						
'92		00%			50%			00%			+27%						
'98		67%			11%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	0%		
												'92	132		50%		
												'98	180		0%		
<i>Echinocereus spp.</i>																	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	1	-	-	-	-	-	-	-	-	-	1	-	20	3	5	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%									
'92		00%			00%			00%									
'98		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-		
												'92	0		-		
												'98	20		-		

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
<b>Gutierrezia microrcephala</b>																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	82	3	-	-	-	-	-	-	-	-	3	-	-	-	200	8 13	3	
	92	7	-	-	-	-	-	3	-	-	10	-	-	-	666	8 9	10	
	98	42	-	-	4	-	-	-	-	-	46	-	-	-	920	4 6	46	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+70%							
'92		00%			00%			00%			+33%							
'98		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	200	Dec:	-			
												'92	666		-			
												'98	1000		-			
<b>Juniperus osteosperma</b>																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	92	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+ 0%							
'92		00%			00%			00%			-70%							
'98		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	66	Dec:	-			
												'92	66		-			
												'98	20		-			
<b>Opuntia spp.</b>																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5 12	4	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	98	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'92		00%			00%			00%										
'98		00%			00%			20%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'92	0		0%			
												'98	100		20%			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total								
		1	2	3	4		1	2									
Purshia tridentata																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	1	-	-	-	-	-	-	1	-	-	-	66		1	
	98	1	1	-	-	-	-	-	-	2	-	-	-	40		2	
M	82	8	-	-	-	-	-	-	-	8	-	-	-	533	35	43	8
	92	-	1	7	-	-	-	-	-	8	-	-	-	533	37	52	8
	98	2	7	5	-	-	1	-	-	15	-	-	-	300	28	54	15
D	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	-	3	-	-	-	-	-	3	-	-	-	200		3	
	98	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%			+33%						
'92		17%			83%			00%			-57%						
'98		47%			35%			00%									
Total Plants/Acre (excluding Dead & Seedlings)										'82	533	Dec:	0%				
										'92	799		25%				
										'98	340		0%				
Quercus gambelii																	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	92	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	98	3	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	42	-	-	-	-	-	-	-	42	-	-	-	840	25	15	42
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'82		00%			00%			00%									
'92		00%			00%			00%									
'98		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)										'82	0	Dec:	-				
										'92	0		-				
										'98	900		-				