

*****Suspended*****

Trend Study 7-1-96

Study site name: Steven's Hollow.

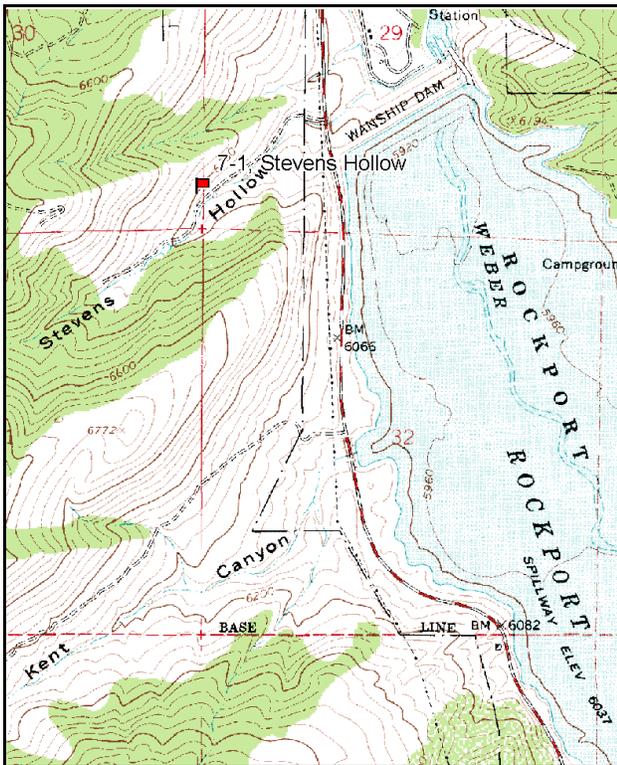
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 167 degrees magnetic.

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

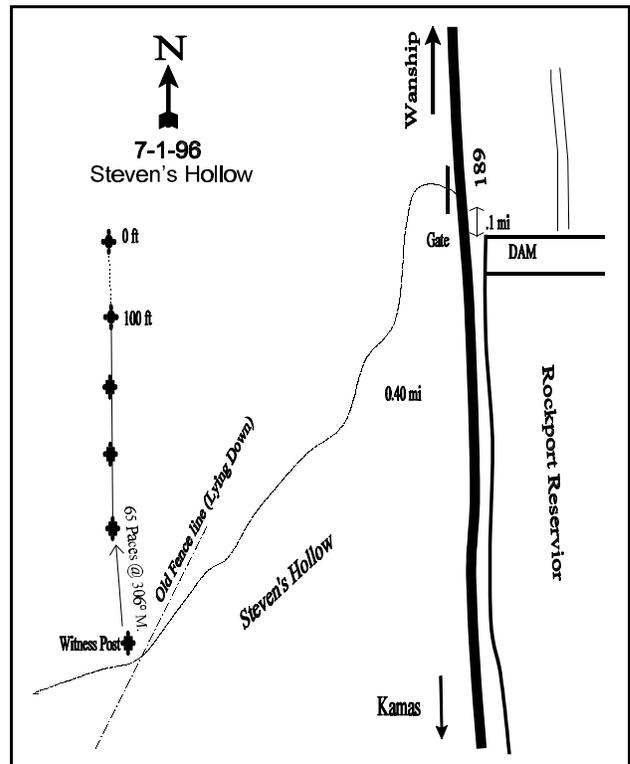
LOCATION DESCRIPTION

From the west side of Wanship dam, travel north 0.1 miles, and turn left to a gated dirt road. Pass through the gate, and continue 0.4 miles to a witness post on the right hand side of the road. From the witness post, walk on a bearing of 306 degrees magnetic for approximately 65 paces up slope to the 400-foot stake of the baseline. The 0-foot baseline stake is 400 feet to the north at a bearing of 347 degrees magnetic. The 0-foot baseline stake is marked by browse tag #7965. The baseline runs 167 degrees magnetic.



Map Name: Wanship

Township 1N, Range 5E, Section 30



Diagrammatic Sketch

UTM 4515161 N 464750 E

DISCUSSION

Trend Study No. 7-1

***This study was discontinued in 2001 by request of the biologist who manages this unit. Development of the area was the primary reason for this. Maps, data tables, and a site narrative are included from the 1996 volume 2 Utah Big Game Range Trend Studies report.

The Stevens Hollow study is located on a moderately steep (30-35%), southeast-facing slope on the north side of Stevens Hollow. Elevation ranges from about 6,240 feet at the beginning of the transect to perhaps 6,500 feet at the upper end. Stevens Hollow is considered an important deer winter range that receives considerable use, although pellet group frequency currently indicates only light to moderate use by deer. The more palatable browse species in the past showed moderate to heavy use. A recent wildfire eliminated all of the sagebrush. The other preferred species, serviceberry and true mountain mahogany, have since begun to sprout vigorously and show good vigor. This site was originally classified as a typical mountain brush community with the dominating species being true mountain mahogany and mountain big sagebrush. Since the fire however, all of the sagebrush was lost. The area is now dominated by serviceberry and true mountain mahogany, with nearby sprouting Gambel oak clones. Land ownership is private with current use limited to livestock grazing. There is a high potential for future summer home or recreational subdivision development. Kent Canyon, a comparable canyon located immediately to the south, has already been developed.

Soils are moderately deep (effective rooting depth of more than 21 inches) with a clay texture and neutral soil reaction (7.3 pH). Percent cover for rock and bare soil is estimated at 7% and 17% respectively. The soil surface shows signs of being lightly eroded in the shrub interspaces where vegetation and litter cover is limited. Soil trend appears to be stable even with the recent wildfire.

This particular area had a diverse shrub and grass composition in the past, dominated by two preferred browse, mountain big sagebrush and true mountain mahogany. Now, total browse cover is less than 5%. In 1996, the preferred browse was made up of serviceberry, true mountain mahogany, and snowberry which together contributed less than 2% of the total cover. Grasses and forbs provided 42% average cover, or nine times more cover than all the browse put together. The most common herbaceous species is cheatgrass. It now makes up 57% of the total grass cover. Three weedy annual forbs make up 83% of the total forb cover. The herbaceous understory is distinctly characteristic of being dominated by annual weeds making the community more susceptible to wildfire again.

Although shrub species such as Oregon hollygrape and stickyleaf low rabbitbrush didn't appear to influence the plant community much in the past, now with the loss of the sagebrush, there are many open niches for them to quickly become established. With the anticipated increase in weedy shrubs, they will have a greater influence on what the community will be composed of in the future. Broom snakeweed and prickly pear cactus will also most likely increase in numbers. The amount of utilization of the sprouting shrubs will determine their growth form in the future. In the past, most of the preferred browse showed moderate to heavy use.

Grasses have responded well following the fire with a fourfold increase in sum of nested frequency. Sum of nested frequency for forbs has more than doubled since the fire. This increase will have a stabilizing effect on soil condition, but may make it difficult for sagebrush to become as abundant as it was before the fire as much of the increase in herbaceous species comes from annuals.

1984 APPARENT TREND ASSESSMENT

Reviewing the 1977 line intercept data and photo points, it appears that soil trend is stable or perhaps even improving. However, vegetative trend may be declining slightly. The most revealing clues are changes in form class structure of the key browse species and some indications that density of mountain big sagebrush and true mountain mahogany may have declined since 1977. While there is some evidence indicating increases in forage production of these species, this is a subjective conclusion. In addition, age structures of almost all the more palatable browse species occurring within the site appeared to be rather heavily utilized, certainly heavier than in 1977.

1990 TREND ASSESSMENT

This trend study samples winter range on property above Rockport Reservoir controlled by the Weber Basin Water Conservancy District. It was noted in the 1984 report that mountain big sagebrush had decreased since the original 1977 line intercept was read. However in 1990, density was higher due to an increase in the number of young sagebrush. Canopy cover is less in 1990 averaging only 6%. The sagebrush were classified as heavily hedged in 1984. Although the shrubs appear in worse shape now, it is due more to the drought and lack of leader growth than continued heavy use. The true mountain mahogany was also heavily hedged. Half of the population was decadent. The only real increase came for broom snakeweed, which increased significantly on the density portions of the study. Grass frequency is similar between years. The most common forb species are undesirable species such as stickseed, thistle, and bastard toadflax. A slight increase in the percentage of bare soil was recorded, however there is still good vegetative and litter cover.

TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - stable (3)

1996 TREND ASSESSMENT

This trend study originally sampled a "critical" winter range, has now been largely altered by a recent wildfire. The soil trend would be considered improving with an increase in herbaceous cover even though it is mostly characterized by weeds. Percent bare ground has decreased from 23% to about 17%. The browse trend would be assessed as down with the loss of all the sagebrush to fire. The other preferred browse which are moderately fire tolerant, are in the preliminary stages of sprouting. Vigor appeared to be good on the sprouting species, but condition and trend for browse will not be know for a few years. The herbaceous understory has a stable trend. Perennial grasses increased in sum of nested frequency, while perennials forbs decreased. The majority of the understory is now characterized as annuals and weedy increasers which could eventually cause a greater frequency of possibly destructive fires.

TREND ASSESSMENT

soil - improving (4)

browse - down with the loss of sagebrush to the wildfire (1)

herbaceous understory - stable (3) but composition is poor

HERBACEOUS TRENDS --

Herd unit 07 , Study no: 1

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
G	<i>Agropyron spicatum</i>	a38	a49	b114	21	22	40	7.90
G	<i>Bromus tectorum</i> (a)	-	-	302	-	-	89	16.48
G	<i>Oryzopsis hymenoides</i>	ab43	a27	b46	19	14	27	2.84
G	<i>Poa fendleriana</i>	2	4	1	1	2	1	.03
G	<i>Poa pratensis</i>	-	-	3	-	-	2	.06
G	<i>Poa secunda</i>	a32	b65	b72	20	27	40	1.41
Total for Annual Grasses		0	0	302	0	0	89	16.48
Total for Perennial Grasses		115	145	236	61	65	110	12.25
Total for Grasses		115	145	538	61	65	199	28.73
F	<i>Agoseris glauca</i>	-	-	2	-	-	1	.00
F	<i>Allium acuminatum</i>	a2	b13	a-	1	8	-	-
F	<i>Alyssum alyssoides</i> (a)	-	-	277	-	-	90	5.80
F	<i>Camelina microcarpa</i> (a)	-	-	25	-	-	16	.38
F	<i>Calochortus nuttallii</i>	-	-	1	-	-	1	.00
F	<i>Chaenactis douglasii</i>	b14	b17	a-	7	7	-	-
F	<i>Cirsium</i> spp.	b67	b71	a19	30	34	14	1.55
F	<i>Comandra pallida</i>	b97	a18	a19	39	12	10	.08
F	<i>Crepis acuminata</i>	-	2	-	-	1	-	-
F	<i>Cryptantha</i> spp.	c72	b20	a-	36	8	-	-
F	<i>Cymopterus</i> spp.	-	1	-	-	1	-	-
F	<i>Descurainia pinnata</i> (a)	-	-	20	-	-	13	.21
F	<i>Gayophytum ramosissimum</i> (a)	-	-	3	-	-	2	.01
F	<i>Hackelia patens</i>	a-	b73	b59	-	36	29	3.34
F	<i>Hedysarum boreale</i>	b7	a-	c24	3	-	12	1.43
F	<i>Lactuca serriola</i>	-	-	3	-	-	2	.01
F	<i>Lithospermum ruderae</i>	3	-	-	2	-	-	-
F	<i>Lomatium</i> spp.	-	-	3	-	-	1	.03
F	<i>Penstemon</i> spp.	b23	b17	a-	11	6	-	-
F	<i>Phlox longifolia</i>	a-	a3	b15	-	2	9	.04
F	<i>Ranunculus testiculatus</i> (a)	-	-	13	-	-	5	.02
F	<i>Schoenrambe linifolia</i>	-	-	3	-	-	2	.01
F	<i>Sisymbrium altissimum</i> (a)	-	-	2	-	-	1	.00
F	<i>Tragopogon dubius</i>	-	-	1	-	-	1	.01
Total for Annual Forbs		0	0	340	0	0	127	6.45
Total for Perennial Forbs		285	235	149	129	115	82	6.54
Total for Forbs		285	235	489	129	115	209	13.00

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 07 , Study no: 1

Type	Species	Strip Frequency	Average Cover %
		'96	'96
B	Amelanchier alnifolia	13	.81
B	Cercocarpus montanus	13	.72
B	Chrysothamnus viscidiflorus viscidiflorus	48	1.67
B	Gutierrezia sarothrae	29	.72
B	Mahonia repens	8	.25
B	Opuntia spp.	10	.06
B	Symphoricarpos oreophilus	4	.15
B	Tetradymia canescens	9	.39
Total for Browse		134	4.80

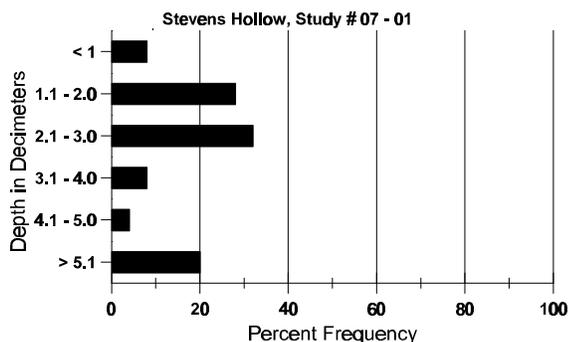
BASIC COVER --
Herd unit 07 , Study no: 1

Cover Type	Nested Frequency	Average Cover %		
		'96	'84	'90
Vegetation	377	4.25	11.50	48.95
Rock	208	11.00	11.00	7.28
Pavement	75	4.50	3.00	.27
Litter	391	62.75	51.00	52.07
Cryptogams	1	0	.25	.00
Bare Ground	248	17.50	23.25	17.20

SOIL ANALYSIS DATA --
Herd Unit 07, Study no: 01, Stevens Hollow

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
21.3	67.2 (45.4)	7.3	29.3	26.4	44.4	2.6	6.9	115.2	.5

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 07 , Study no: 1

Type	Quadrat Frequency '96
Rabbit	5
Deer	17

BROWSE CHARACTERISTICS --

Herd unit 07 , Study no: 1

A G R E	Y R	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			
Amelanchier alnifolia																	
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	96	30	-	-	-	-	-	-	-	-	30	-	-	-	600		30
M	84	-	-	1	-	-	-	-	-	-	-	-	1	-	66	28 24	1
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66	12 6	1
	96	4	-	-	1	-	-	-	-	-	5	-	-	-	100	25 35	5
D	84	-	2	1	-	-	-	-	-	-	1	2	-	-	200		3
	90	-	2	1	-	-	1	-	-	-	3	-	-	1	266		4
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	180		9
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'84		50%			50%			25%			+33%						
'90		33%			33%			17%			+43%						
'96		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'84	266	Dec:	75%		
												'90	398		67%		
												'96	700		0%		

A G R E	Y R	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	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	84	1	4	5	-	-	-	-	-	-	10	-	-	-	666	25 31	10	
	90	2	2	-	-	-	-	-	-	-	4	-	-	-	266	19 32	4	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
D	84	-	-	11	-	-	-	-	-	-	9	-	1	1	733		11	
	90	2	5	6	-	-	1	-	-	-	8	-	-	6	933		14	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		19%			76%			10%			+ 0%							
'90		33%			33%			29%										
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	1399	Dec:	52%			
												'90	1399		67%			
												'96	0		0%			
<i>Cercocarpus montanus</i>																		
Y	84	1	1	2	-	-	-	-	-	-	3	-	1	-	266		4	
	90	1	1	-	-	-	1	-	-	-	3	-	-	-	200		3	
	96	6	2	-	4	-	-	-	-	-	12	-	-	-	240		12	
M	84	-	2	7	-	-	1	-	-	-	3	7	-	-	666	53 43	10	
	90	-	-	3	-	-	-	-	-	-	3	-	-	-	200	35 35	3	
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60	21 26	3	
D	84	-	-	3	-	-	-	-	-	-	1	1	1	-	200		3	
	90	-	-	6	-	-	-	-	-	-	6	-	-	-	400		6	
	96	1	1	-	-	-	-	-	-	-	1	-	1	-	40		2	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	260		13	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		18%			76%			12%			-29%							
'90		08%			83%			00%			-58%							
'96		18%			00%			06%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	1132	Dec:	18%			
												'90	800		50%			
												'96	340		12%			

A G R E	Y R	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				
Chrysothamnus viscidiflorus viscidiflorus																		
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	90	8	-	-	-	-	-	-	-	-	8	-	-	-	533		8	
	96	26	-	-	-	-	-	-	-	-	26	-	-	-	520		26	
M	84	34	2	-	-	-	-	-	-	-	36	-	-	-	2400	14	14	36
	90	33	-	-	-	-	-	-	-	-	33	-	-	-	2200	11	12	33
	96	120	2	-	-	-	-	-	-	-	122	-	-	-	2440	11	15	122
D	84	19	-	-	-	-	-	-	-	-	15	-	4	-	1266		19	
	90	16	-	-	-	-	-	-	-	-	12	-	-	4	1066		16	
	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		04%			00%			07%			+ 2%							
'90		00%			00%			07%			-22%							
'96		01%			00%			.67%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	3732	Dec:	34%			
												'90	3799		28%			
												'96	2980		1%			
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	21	-	-	-	-	-	-	-	-	21	-	-	-	1400		21	
	96	38	-	-	-	-	-	-	-	-	38	-	-	-	760		38	
M	84	5	-	-	-	-	-	-	-	-	5	-	-	-	333	16	17	5
	90	8	-	-	-	-	-	-	-	-	8	-	-	-	533	6	5	8
	96	50	-	-	-	-	-	-	-	-	50	-	-	-	1000	9	10	50
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	-	-	-	1	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			+83%							
'90		00%			00%			03%			-12%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	333	Dec:	0%			
												'90	1999		3%			
												'96	1760		0%			

A G E	Y R	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				
Mahonia repens																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	83	-	-	-	-	-	3	-	-	86	-	-	-	5733		86	
	96	28	-	-	-	-	-	-	-	-	28	-	-	-	560		28	
M	84	381	-	-	-	-	-	-	-	-	381	-	-	-	25400	4 4	381	
	90	104	-	-	-	-	3	-	-	-	107	-	-	-	7133	3 4	107	
	96	34	-	-	4	-	-	-	-	-	38	-	-	-	760	4 8	38	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			-49%							
'90		00%			00%			00%			-90%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	25400	Dec:	-			
												'90	12866		-			
												'96	1320		-			
Opuntia spp.																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	84	5	-	-	-	-	-	-	-	-	5	-	-	-	333	6 13	5	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66	7 10	1	
	96	15	-	-	-	-	-	-	-	-	15	-	-	-	300	5 12	15	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	-	-	-	1	66		1	
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	340		17	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			-20%							
'90		00%			00%			25%			+30%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	333	Dec:	0%			
												'90	265		25%			
												'96	380		11%			

A G R E	Y R	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				
Symphoricarpos oreophilus																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6	
M	84	2	2	1	-	-	-	-	-	-	5	-	-	-	333	23	23	5
	90	1	1	-	4	-	-	-	-	-	6	-	-	-	400	15	9	6
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	12	18	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		40%			20%			00%			+17%							
'90		17%			00%			00%			-65%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	333	Dec:	-			
												'90	400		-			
												'96	140		-			
Tetradymia canescens																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180		9	
M	84	4	-	-	-	-	-	-	-	-	4	-	-	-	266	6	15	4
	90	-	10	-	-	-	-	-	-	-	10	-	-	-	666	12	22	10
	96	15	-	-	-	-	-	-	-	-	15	-	-	-	300	12	19	15
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			+60%							
'90		100%			00%			00%			-28%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	266	Dec:	-			
												'90	666		-			
												'96	480		-			