Trend Study 19B-9-97

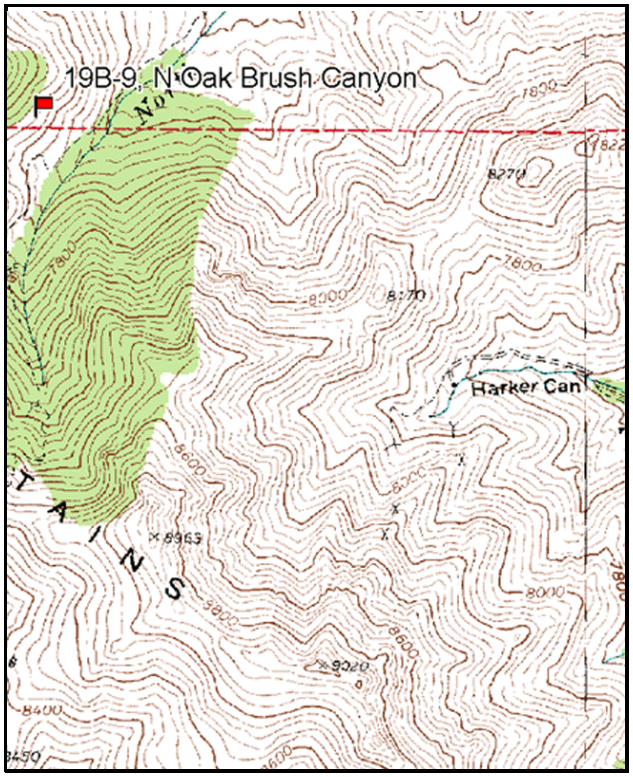
Study site name: North Oak Brush Canyon . Vegetation type: Mixed Oak-Sagebrush .

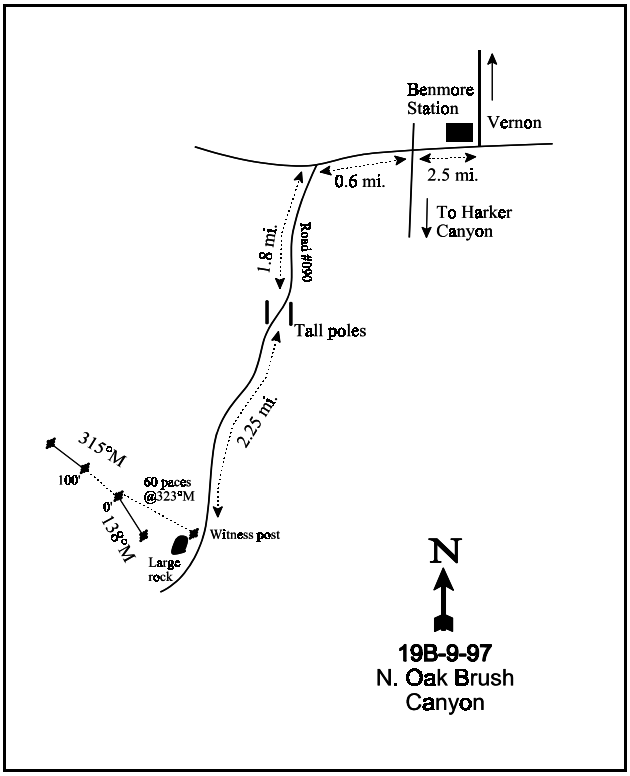
Compass bearing: frequency baseline 315 degrees magnetic (Line 3 @ 138°M).

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

LOCATION DESCRIPTION

From the Forest Service Benmore Work Station, go west 2.5 miles to a fork where the main road bends to the left. Bear left on the main road, Forest Service road #090, and go up North Oak Brush Canyon for 1.8 miles to a gate. Continue up the canyon on the 4WD road 2.25 miles to a large rock with a half-high witness post next to it on the right side of the road. From the rock, walk 60 paces at 323 degrees magnetic up to the 0-foot baseline stake. This stake is marked by browse tag #3980.





Map Name: Erickson Knoll

Diagrammatic Sketch

Township 9S , Range 6W , Section unsurveyed

GPS: NAD 27, UTM 12S 4426799 N 370299 E

DISCUSSION

North Oak Brush Canyon - Trend Study No. 19B-9

***SUSPENDED - This site was suspended in 2002. The narrative and data tables from the 1997 report are included below.

The North Oak Brush Canyon study samples deer summer range near the head of North Oak Brush Canyon. This site has an elevation of 7,700 feet, an easterly aspect, and a moderately steep slope of 53%. Low growing Gambel oakbrush is the most prevalent browse species in this area with a moderate number of mountain big sagebrush plants intermixed. During two visits to the area in 1983, range crew personnel observed in excess of 50 deer, all but one of which were does and fawns. Currently, it does not appear there is much deer use judging from the low number of pellet groups and generally light utilization of browse. A perennial water source is located about 300 yards from the study site.

The soil is moderately deep with an effective rooting depth of 12 inches. The soil temperature averaged 50°F measured at a depth of 13 inches. Soil textural analysis indicates a loam with a slightly acidic pH (6.3). Percent vegetation and litter cover are relatively high, while rocks are a prominent feature on the soil surface and in the soil profile. There are steep rocky outcrops and cliffs above the site. Soil erosion is barely detectable in spite of the steep slope.

The dominant browse species on the site are Gambel oak and mountain big sagebrush. Almost all individuals of the Gambel oak population are low growing averaging just under four feet in height. With the greatly increased sample size used in 1997, the estimated density of Gambel oak was only 10,880 plants/acre. This population is currently a balanced one between young and mature plants. In 1983, it was reported that the vigor was somewhat inhibited by what appeared to be insect damage. Utilization was also reported as moderate at that time. Utilization in 1997 was light and the plants exhibit good vigor. Mountain big sagebrush density has increased slightly from about 1,000 plants/acre in 1983 and 1989 to 1,560 plants/acre in 1997. Utilization was mostly moderate in 1983 and light to moderate in 1989 and 1997. The percentage of the plants classified in poor vigor has slowly increased from none reported in 1983 to 12% in 1997. Percent decadency has also increased from 7% in 1983 and 1989 to 19% in 1997. Other browse species encountered in 1997 in low abundance include Saskatoon serviceberry, slenderbush eriogonum, pricklypear cactus, mountain snowberry, and Wood's rose. It should be noted that by increasing the sample size, and sampling the browse density along the same line that the herbaceous understory data is collected, no mountain lover plants were encountered in 1997. The density data was previously collected about 125 feet to the north in an area with a slightly different topographical characteristics that enable mountain lover to survive in this area. It should be noted that the greatly increased sample size changed many of the browse population estimates. However, most all of the differences were caused by greater accuracy of sampling for browse populations with clumped and/or aggregated distributions.

Perennial grass sum of nested frequency has increased slightly since 1989. Grasses are not especially diverse and account for 15% of the total vegetation cover. Spike fescue and muttongrass currently provide the bulk of the grass cover at 93%. Muttongrass and Sandberg bluegrass have both significantly increased in sum of nested frequency values since 1989. Cheatgrass is present, but in very low numbers.

Considering the dominate browse overstory, forb diversity is quite high, although, perennial forb sum of nested frequency is lower then that reported in 1983 and 1989. Wild onion is the most abundant perennial forb followed by arrowleaf balsamroot, longleaf phlox, desert parsley, and tailcup lupine.

1983 APPARENT REND ASSESSMENT

Soil trend appears stable. The rate of soil formation currently exceeds the rate of loss. The herbaceous understory and browse components also appear stable. Although forage production is currently high and of a diverse nature, a rapidly increasing oak stand may eventually crowd out other desirable plants.

1989 TREND ASSESSMENT

The soil trend is stable as erosion appears to be limited at this time. Percent bare ground decreased and percent vegetation cover increased. The browse trend is stable. The dominant browse populations are relatively stable and exhibit good vigor. The other browse species also appear to have stable to slightly increasing populations. The herbaceous understory trend is stable with a slight increase in herbaceous understory sum of nested frequency.

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

1997 TREND ASSESSMENT

The soil trend is slightly upward with a decrease in percent bare ground and good cover values for vegetation and litter. Soil erosion is not apparent at this time. The Gambel oakbrush population could expand when considering the number of young and seedling plants encountered in 1997. The mountain big sagebrush population is mostly mature with increases in both percent decadency and plants classified with poor vigor. The browse trend is stable for the time being, although the Gambel oakbrush could increase in density resulting in a decrease in herbaceous understory production. The herbaceous understory trend is stable. Perennial herbaceous understory sum of nested frequency declined only slightly since 1989. Grass sum of nested frequency slightly increased, while forb sum of nested frequency slightly decreased.

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

HERBACEOUS TRENDS --
Herd unit 19B, Study no: 9

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'83	'89	'97	'83	'89	'97	'97
G	Bromus tectorum (a)	-	-	11	-	-	4	.02
G	Leucopoa kingii	$_{a}$82	$_{b}$118	$_{ab}$113	40	47	46	4.65
G	Melica bulbosa	$_{b}$19	$_{a}$-	$_{a}$-	8	-	-	-
G	Poa fendleriana	$_{a}$42	$_{b}$80	$_{b}$101	20	33	36	4.19
G	Poa pratensis	-	-	3	-	-	1	.03
G	Poa secunda	-	6	16	-	2	7	.67

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'83	'89	'97	'83	'89	'97	'97
Total for Annual Grasses		0	0	11	0	0	4	0.01
Total for Perennial Grasses		143	204	233	68	82	90	9.55
Total for Grasses		143	204	244	68	82	94	9.57
F	Agoseris glauca	$_{b}$17	$_{a}$5	$_{a}$4	9	2	2	.01
F	Allium spp.	$_{b}$204	$_{a}$135	$_{a}$139	75	57	61	.93
F	Arabis spp.	9	14	4	4	7	2	.01
F	Artemisia ludoviciana	15	20	10	7	6	4	.36
F	Aster chilensis	$_{a}$2	$_{ab}$9	$_{b}$15	1	3	6	.51
F	Astragalus cibarius	3	12	1	2	4	1	.00
F	Balsamorhiza sagittata	$_{a}$-	$_{b}$20	$_{b}$8	-	10	4	.63
F	Calochortus nuttallii	-	3	1	-	1	1	.00
F	Cirsium neomexicanum	1	-	1	1	-	1	.01
F	Collomia linearis (a)	-	-	30	-	-	14	.12
F	Collinsia parviflora (a)	-	-	36	-	-	16	.10
F	Crepis acuminata	$_{a}$10	$_{b}$30	$_{ab}$22	7	17	11	.13
F	Delphinium nuttallianum	-	-	2	-	-	1	.00
F	Fritillaria spp.	2	-	-	1	-	-	-
F	Hydrophyllum capitatum	$_{c}$47	$_{b}$9	$_{a}$-	24	4	-	-
F	Lomatium spp.	$_{b}$91	$_{b}$95	$_{a}$48	48	43	22	.31
F	Lupinus caudatus	$_{a}$21	$_{ab}$34	$_{b}$44	9	18	22	1.81
F	Machaeranthera canescens	5	-	1	3	-	1	.00
F	Microsteris gracilis (a)	-	-	3	-	-	1	.00
F	Phlox longifolia	$_{a}$13	$_{b}$58	$_{b}$49	6	26	26	.38
F	Polygonum douglasii (a)	-	-	82	-	-	32	.41
F	Senecio multilobatus	-	-	2	-	-	1	.00
F	Tragopogon dubius	-	3	-	-	1	-	-
F	Unknown forb-perennial	-	-	3	-	-	1	.00
F	Viola spp.	1	5	-	1	2	-	-
F	Wyethia amplexicaulis	46	49	53	22	24	27	4.66
F	Zigadenus paniculatus	8	6	14	4	2	6	.58
Total for Annual Forbs		0	0	151	0	0	63	0.63
Total for Perennial Forbs		495	507	421	224	227	200	10.39
Total for Forbs		495	507	572	224	227	263	11.03

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

BROWSE TRENDS --
Herd unit 19B, Study no: 9

Type	Species	Strip Frequency '97	Average Cover % '97
B	Amelanchier alnifolia	14	.78
B	Artemisia tridentata vaseyana	57	11.48
B	Cercocarpus ledifolius	3	.00
B	Eriogonum microthecum	3	-
B	Opuntia spp.	1	-
B	Quercus gambelii	92	30.82
B	Rosa woodsii	22	2.04
B	Symphoricarpos oreophilus	3	.03
Total for Browse		195	45.18

CANOPY COVER --
Herd unit 19B, Study no: 9

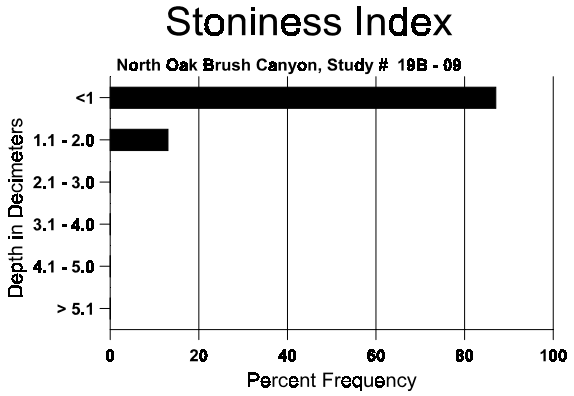
Species	Percent Cover '97
Quercus gambelii	5

BASIC COVER --
Herd unit 19B, Study no: 9

Cover Type	Nested Frequency '97	Average Cover % '83	'89	'97
Vegetation	325	2.25	10.25	58.98
Rock	138	9.50	12.25	5.97
Pavement	138	6.50	5.50	2.76
Litter	388	67.00	61.75	62.47
Cryptogams	3	0	0	.00
Bare Ground	131	14.75	10.25	4.62

SOIL ANALYSIS DATA --
Herd Unit 19B, Study no: 9, North Oak Brush Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.8	50.0 (12.9)	6.3	42.3	33.2	24.6	4.9	16.0	172.8	1.2



PELLET GROUP FREQUENCY --
Herd unit 19B, Study no: 9

Type	Quadrat Frequency '97
Deer	5

BROWSE CHARACTERISTICS --
Herd unit 19B, Study no: 9

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 alnifolia																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	12	9	-	-	-	-	-	-	-	21	-	-	-	1400			21
	97	1	1	-	-	-	-	-	-	-	2	-	-	-	40			2
M	83	-	-	4	-	-	-	-	-	-	-	-	4	-	266	28	8	4
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66	55	21	1
	97	4	3	-	4	1	-	-	-	-	11	1	-	-	240	32	27	12
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	1	1	-	-	-	-	-	-	2	-	-	-	133			2
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	100%	100%	+83%
'89	46%	04%	00%	-81%
'97	33%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	266	Dec:	0%
	'89	1599		8%
	'97	300		7%

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	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
Y	83	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	89	2	1	-	1	-	-	-	-	-	3	-	1	-	266			4
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	4	6	2	-	-	-	-	-	-	9	3	-	-	800	28	33	12
	89	8	2	-	-	-	-	-	-	-	9	1	-	-	666	23	24	10
	97	31	13	5	9	5	-	-	-	-	58	2	3	-	1260	24	34	63
D	83	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	4	7	1	2	1	-	-	-	-	9	-	-	6	300			15
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	180			9

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	47%	13%	00%	- 0%
'89	27%	00%	07%	+36%
'97	33%	08%	12%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	999	Dec:		7%
'89	998			7%
'97	1560			19%

Cercocarpus ledifolius																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	97	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	47	41	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	-70%
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		-
'89	200			-
'97	60			-

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
Ceanothus martinii																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133	17	12	2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	25%	00%	00%	
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	0%
	'89	265		25%
	'97	0		0%

Cercocarpus montanus																		
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66	31	43	1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

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

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	66	Dec:	-
	'89	0		-
	'97	0		-

Eriogonum microthecum																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80	11	11	4

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

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	100		-

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
Opuntia spp.																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	13	1

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

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	20		-

Pachistima myrsinites																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	48	-	-	-	-	-	-	-	-	48	-	-	-	3200			48
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	59	-	-	-	-	-	-	-	-	59	-	-	-	3933			59
	89	27	-	-	20	-	-	-	-	-	47	-	-	-	3133			47
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	38	-	-	-	-	-	-	-	-	38	-	-	-	2533	8	6	38
	89	21	-	-	48	-	-	-	-	-	69	-	-	-	4600	8	14	69
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+16%
'89	00%	00%	00%	
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	6466	Dec:	-
	'89	7733		-
	'97	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	83	7	-	-	-	-	-	-	-	-	7	-	-	-	466			7
	89	65	-	-	-	-	-	-	-	-	65	-	-	-	4333			65
	97	2	-	-	19	-	-	4	-	-	25	-	-	-	500			25
Y	83	62	1	-	-	-	-	-	-	-	62	1	-	-	4200			63
	89	286	1	-	-	-	-	-	-	-	287	-	-	-	19133			287
	97	210	6	-	58	-	-	2	-	-	263	13	-	-	5520			276
M	83	23	89	81	-	-	-	-	-	-	96	80	17	-	12866	30	34	193
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66	39	33	1
	97	200	25	-	21	-	-	-	7	-	246	7	-	-	5060	46	32	253
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	18	6	-	-	-	-	-	-	-	15	-	9	-	1600			24
	97	8	4	-	1	-	-	-	2	-	7	3	-	5	300			15
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	780			39

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	35%	32%	07%	+18%
'89	03%	00%	03%	-48%
'97	06%	00%	.91%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	17066	Dec:		0%
'89	20799			8%
'97	10880			3%

Rosa woodsii																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	26	-	-	26	-	-	2	-	-	52	2	-	-	1080			54
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	14	-	-	17	-	-	3	-	-	34	-	-	-	680	15	29	34

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

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'97	1760		-

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
Symphoricarpos oreophilus																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	83	-	-	2	-	-	-	-	-	-	2	-	-	-	133	20	13	2
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20	27	28	1

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

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'83	133	Dec:		-
'89	0			-
'97	80			-