

CHERRY MESA - TREND STUDY NO. 10-7-10

Vegetation Type: Chained, Seeded Pinyon-Juniper

Range Type: Substantial Deer Summer, Crucial Elk Summer (Calving habitat)

NRCS Ecological Site Description: Upland Loam (Wyoming Big Sagebrush), R034XY306UT

Land Ownership: SITLA

Elevation: 7650 ft. (2332 m)

Aspect: North

Slope: 5%

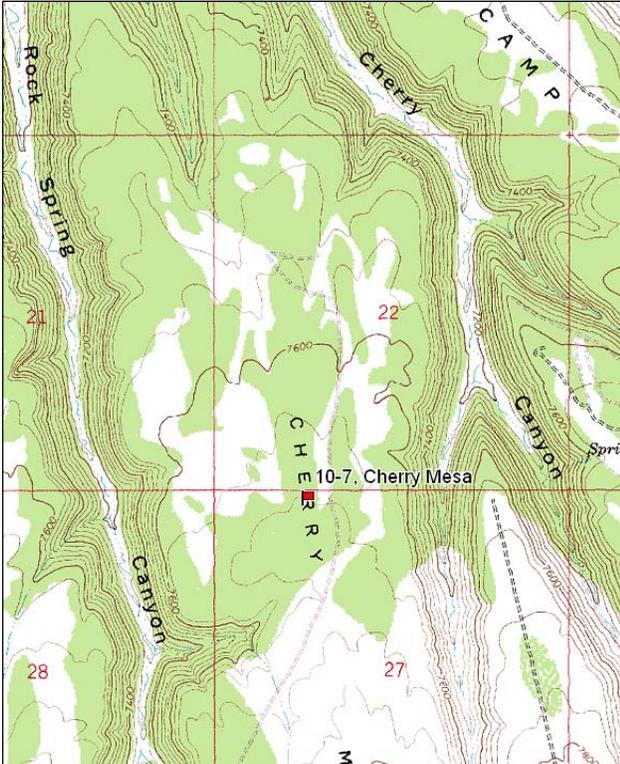
Transect bearing: 165° magnetic

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

Directions:

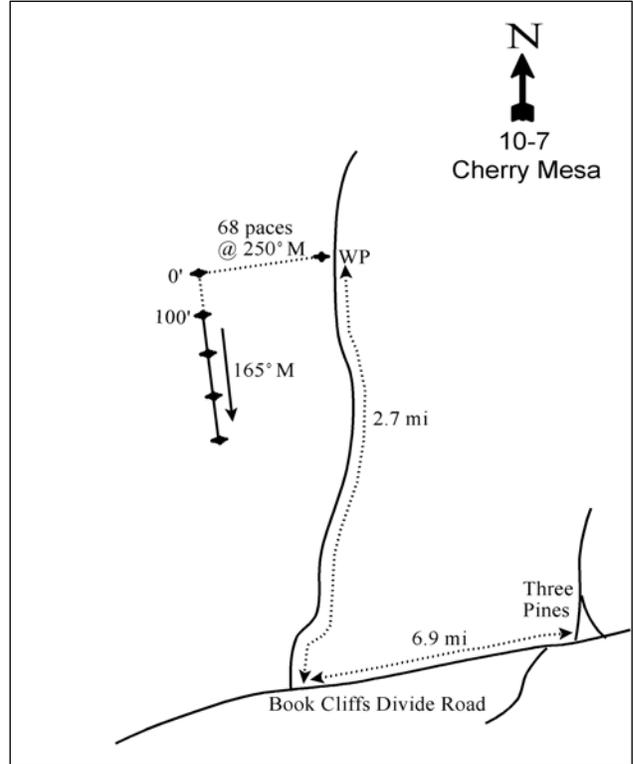
From the major intersection at Three Pines, continue southwest along the Book Cliff Divide for 6.9 miles. Turn right off the main road onto the Cherry Mesa road. Go down through the spraying 2.7 miles to a witness post on the left side of the road. Stop, then walk to the west up the ridge, 68 paces at 250°M to the 0-foot baseline stake, which is marked by browse tag #9174.

Map Name: Cedar Camp Canyon



Township: 16S Range: .22E Section: 22

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 630664 E 4361531 N

## CHERRY MESA - TREND STUDY NO. 10-7

### Site Information

Site Description: The study samples an extensive pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) chaining on a large block of Utah State Institutional Trust Land (SITLA). The area was retreated by a bullhog as part of the Cherry Mesa Bullhog ([WRI Project #1106](#)) in the summer of 2009 to reduce pinyon and juniper that had reestablished following the initial treatment. Grazing in the area is managed as part of the Bureau of Land Management (BLM) McClelland allotment. Water is a limiting factor on this mesa. There was fresh deer sign and also evidence of winter use during the 1988 reading. Elk were also seen in the general area in 1988 and 30-40 elk were seen in June of 2005. Pellet group data has indicated fairly light use by deer, elk and cattle since 2000 (Table - Pellet Group Data).

Browse: Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) is the dominant species on the site and has provided the majority of browse cover since 1995 (Table - Browse Trends). Some of the sagebrush on the site appears to be a hybrid of mountain big sagebrush and basin big sagebrush (*A. tridentata* ssp. *tridentata*), but all sagebrush were classified as mountain big sagebrush in this study. The sagebrush population is mostly mature with low decadence except for 2005 when decadence was high. Recruitment of young sagebrush plants has been good over the course of the study, and utilization of sagebrush has been mostly light to moderate. Preferred species like antelope bitterbrush (*Purshia tridentata*) and true mountain mahogany (*Cercocarpus montanus*) are scattered throughout the site in low numbers. Use of both species is moderate to heavy (Table - Browse Characteristics), and bitterbrush has a “clubbed” appearance on the majority of the population. Prior to the treatment, pinyon and juniper trees were present at relatively moderate densities, but density (Table - Point-Quarter Tree Data) and cover (Table - Browse Trends) of both species decreased markedly in 2010.

Herbaceous Understory: Herbaceous vegetation has not been as abundant as would be desired for a higher elevation chaining in the mountain big sagebrush type. Grass composition is mainly from native perennial species. The most abundant species are thickspike wheatgrass (*Agropyron dasystachyum*), mutton bluegrass (*Poa fendleriana*), sedge (*Carex* sp.) and blue grama (*Bouteloua gracilis*). Forbs have been diverse, but are not very abundant. Perennial forb cover and sum of nested frequency have decreased since 1995.

Soil: The soil is a fine-textured loam with relatively high organic matter (5.2%) and neutral soil reactivity (pH 7.3). Bare ground cover is moderately low with a fair amount of litter associated with the plants and also debris and litter left from the chaining and bullhog (Table - Basic Cover). Many plants are slightly pedestalled and there has been obvious soil movement following high intensity rainstorms in the past. The soil erosion condition was classified as stable in 2005 and 2010.

### Trend Assessments

Browse:

- **1988 to 1995 - stable (0):** Differences in density may be related to the larger sample area used in 1995; therefore, trend was determined using other parameters. There was little change in decadence or vigor of sagebrush. Recruitment of young sagebrush plants has decreased, but remained good at 37%.
- **1995 to 2000 - stable (0):** The density of sagebrush changed little, but cover increased slightly from 10% to 12%. Decadence increased slightly to 10% and poor vigor increased to 17%. Recruitment of young sagebrush plants decreased to 16%, but is still considered good.
- **2000 to 2005 - down (-2):** Sagebrush density decreased by 16% from 4,240 plants/acre to 3,580 plants/acre, though cover remained similar. Decadence of sagebrush increased to high levels at 32% and recruitment of young sagebrush plants decreased to 8% of the population.
- **2005 to 2010 - slightly up (+1):** Density and cover of sagebrush decreased slightly, but decadence returned to 2000 levels of 10%. Recruitment of young plants also increased to 20%.

Grass:

- **1988 to 1995 - down (-2):** The sum of nested frequency of perennial grasses decreased by 33% with a significant decrease in nested frequency of many of the perennial species on the site.
- **1995 to 2000 - stable (0):** There was little change in nested frequency or cover of perennial grasses.
- **2000 to 2005 - stable (0):** The perennial grass sum of nested frequency decreased slightly, but cover increased from 7% to 8%.
- **2005 to 2010 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased by 9% since 2005, but has decreased by 17% since 2000. Cover of perennial grass has decreased to 7%.

Forb:

- **1988 to 1995 - up (+2):** Perennial forb sum of nested frequency increased 55%.
- **1995 to 2000 - down (-2):** The sum of nested frequency of perennial forbs decreased by 41% and cover decreased from 4% to 2%.
- **2000 to 2005 - stable (0):** There was little change in perennial forb sum of nested frequency or cover.
- **2005 to 2010 - down (-2):** The sum of nested frequency of perennial forbs decreased by 30% with a slight decrease in cover.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

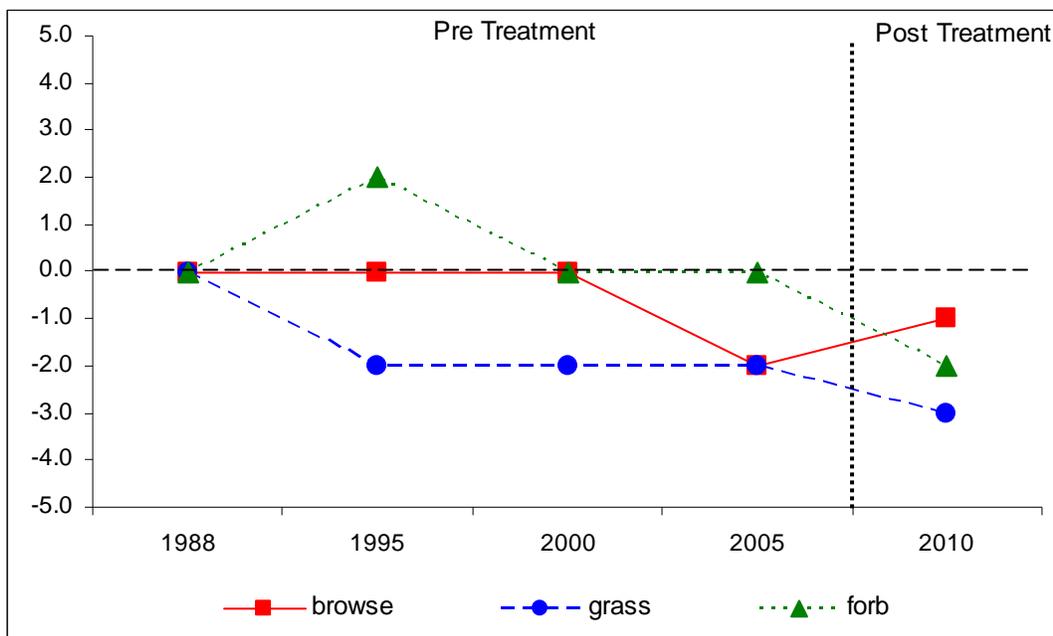
Management unit 10, study no: 7

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	14.0	15.0	15.0	10.7	0.0	8.5	0.0	<b>63.2</b>	Fair-Good
00	16.5	12.1	7.7	13.4	0.0	4.4	0.0	<b>54.0</b>	Fair
05	16.4	6.2	4.1	16.9	0.0	4.8	0.0	<b>48.4</b>	Poor-Fair
10	14.1	11.8	9.5	13.2	0.0	3.6	0.0	<b>52.1</b>	Fair

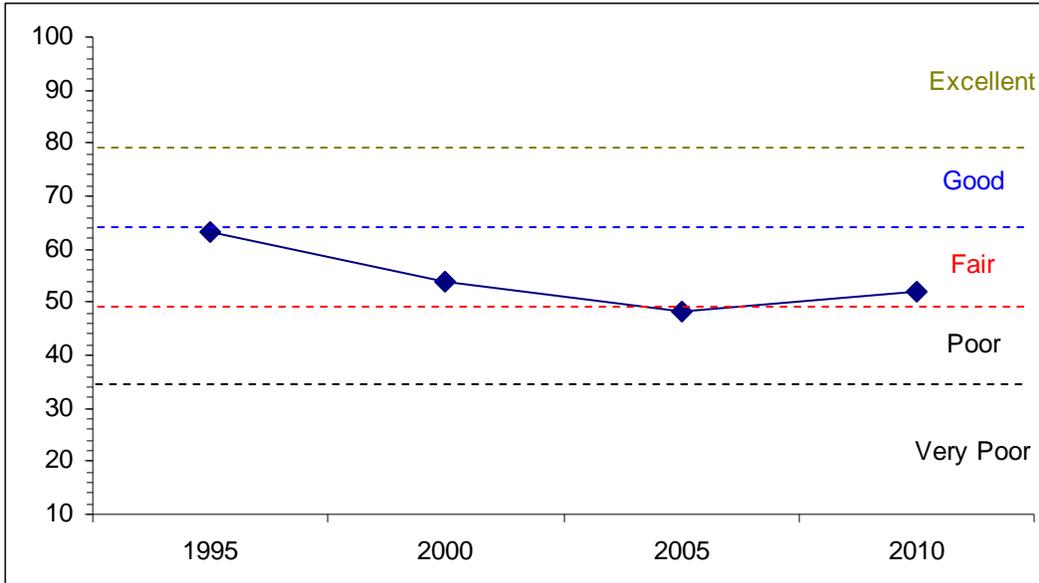
**Trend Summary**

CUMULATIVE RANGE TREND ASSESSMENT--

Management unit 10, Study no: 7



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--  
 Management unit 10, Study no: 7



HERBACEOUS TRENDS--  
 Management unit 10, Study no: 7

Type	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
G	<i>Agropyron dasystachyum</i>	b180	b158	a86	a55	a71	1.16	.52	.77	.72
G	<i>Bouteloua gracilis</i>	74	54	53	52	49	.83	.72	1.36	1.00
G	<i>Bromus tectorum</i> (a)	-	2	-	3	-	.00	-	.03	-
G	<i>Carex</i> sp.	c139	ab83	c148	bc133	a67	.39	2.16	1.57	1.18
G	<i>Koeleria cristata</i>	a-	c80	a3	b42	b39	1.11	.03	.58	.59
G	<i>Oryzopsis hymenoides</i>	b33	a11	a-	a-	a3	.07	-	.00	.00
G	<i>Poa fendleriana</i>	b116	a67	c177	ab119	bc150	1.71	3.17	3.55	2.67
G	<i>Poa secunda</i>	a-	a-	a1	b15	a4	-	.00	.34	.18
G	<i>Sitanion hystrix</i>	b82	a16	a1	a7	a11	.07	.03	.10	.22
G	<i>Stipa comata</i>	b79	a1	a3	a9	a-	.00	.03	.13	-
Total for Annual Grasses		0	2	0	3	0	0.00	0	0.03	0
Total for Perennial Grasses		703	470	472	432	394	5.35	6.68	8.43	6.59
Total for Grasses		703	472	472	435	394	5.36	6.68	8.46	6.59
F	<i>Androsace septentrionalis</i> (a)	-	a-	a6	c29	ab17	-	.04	.14	.03
F	<i>Antennaria rosea</i>	a11	a23	b40	ab27	ab29	.10	.39	.38	.58
F	<i>Arabis</i> sp.	b29	a1	a-	a4	a1	.03	-	.01	.00
F	<i>Arenaria kingii</i>	-	-	-	-	1	-	-	-	.03
F	<i>Aster</i> sp.	12	3	5	-	-	.00	.04	-	-
F	<i>Astragalus argophyllus</i>	a3	b32	a5	a-	a4	.70	.07	-	.18
F	<i>Astragalus</i> sp.	-	-	3	3	-	-	.00	.01	-
F	<i>Calochortus flexuosus</i>	-	-	-	-	-	-	-	-	-
F	<i>Castilleja flava</i>	9	12	4	4	5	.16	.03	.01	.01
F	<i>Chaenactis douglasii</i>	b51	a20	a-	a4	a2	.04	-	.01	.00
F	<i>Chenopodium fremontii</i> (a)	-	-	-	-	4	-	-	-	.03

Type	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
F	<i>Chenopodium leptophyllum</i> (a)	-	a-	a-	b10	a-	-	-	.02	-
F	<i>Comandra pallida</i>	ab36	b53	ab36	a20	a30	.38	.33	.11	.13
F	<i>Crepis acuminata</i>	a-	b53	b35	b30	b23	.30	.22	.18	.15
F	<i>Cryptantha</i> sp.	3	6	1	-	-	.04	.00	-	-
F	<i>Delphinium nuttallianum</i>	-	2	-	-	4	.01	-	-	.01
F	<i>Erigeron eatonii</i>	b47	b38	ab23	ab22	a6	.45	.12	.11	.05
F	<i>Eriogonum alatum</i>	-	-	2	7	6	-	.03	.04	.01
F	<i>Eriogonum umbellatum</i>	a19	a15	b34	ab20	a12	.22	.24	.25	.10
F	<i>Gayophytum ramosissimum</i> (a)	-	b54	a2	b70	b55	.42	.00	.34	.89
F	<i>Gilia</i> sp. (a)	-	b111	a3	a-	a-	.27	.01	-	-
F	<i>Lappula occidentalis</i> (a)	-	8	-	7	3	.02	-	.01	.01
F	<i>Lesquerella</i> sp.	bc50	b41	a18	b58	a15	.19	.10	.48	.12
F	<i>Linum lewisii</i>	2	-	5	-	-	-	.01	-	-
F	<i>Machaeranthera grindelioides</i>	ab15	b17	ab6	ab5	a1	.37	.04	.01	.00
F	<i>Orthocarpus purpureo-albus</i> (a)	3	-	-	-	-	-	-	-	-
F	<i>Pedicularis centranthera</i>	-	-	-	-	-	-	-	-	-
F	<i>Penstemon caespitosus</i>	a3	b26	a1	a4	a-	.59	.00	.04	-
F	<i>Penstemon pachyphyllus</i>	-	1	1	-	1	.00	.00	-	.00
F	<i>Phlox austromontana</i>	a-	b26	b23	b18	b24	.29	.41	.53	.34
F	<i>Phlox longifolia</i>	a12	c104	b37	ab32	ab20	.34	.11	.10	.04
F	<i>Polygonum douglasii</i> (a)	-	c91	a1	ab62	b33	.25	.00	.15	.08
F	<i>Senecio integerrimus</i>	-	-	-	6	-	-	-	.06	-
F	<i>Senecio multilobatus</i>	3	3	-	3	4	.01	-	.03	.01
F	<i>Tragopogon dubius</i>	2	-	-	-	-	-	-	-	-
Total for Annual Forbs		3	264	12	178	112	0.97	0.06	0.67	1.05
Total for Perennial Forbs		307	476	279	267	188	4.27	2.20	2.39	1.81
Total for Forbs		310	740	291	445	300	5.25	2.26	3.07	2.86

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

BROWSE TRENDS--

Management unit 10, Study no: 7

Type	Species	Strip Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
B	Artemisia tridentata vaseyana	77	80	77	73	9.96	11.78	11.56	10.35
B	Cercocarpus montanus	1	3	3	2	.18	.38	.63	-
B	Chrysothamnus depressus	35	39	38	30	1.00	.80	.42	.38
B	Chrysothamnus viscidiflorus viscidiflorus	0	8	7	7	-	.00	.06	.03
B	Gutierrezia sarothrae	7	1	5	5	.18	.00	.00	.00
B	Juniperus osteosperma	0	6	7	1	.93	2.32	2.99	.15
B	Opuntia sp.	2	6	6	4	.00	-	.15	.00
B	Pinus edulis	0	4	3	0	3.03	4.15	5.84	-
B	Purshia tridentata	5	8	10	8	.03	.15	.33	.45
B	Symphoricarpos oreophilus	20	25	26	24	3.01	1.62	1.81	1.65
Total for Browse		147	180	182	154	18.37	21.22	23.81	13.03

CANOPY COVER, LINE INTERCEPT--

Management unit 10, Study no: 7

Species	Percent Cover		
	'00	'05	'10
Artemisia tridentata vaseyana	-	17.54	15.11
Cercocarpus montanus	-	.08	-
Chrysothamnus depressus	-	.33	.45
Chrysothamnus viscidiflorus viscidiflorus	-	.25	.20
Gutierrezia sarothrae	-	.05	-
Juniperus osteosperma	-	3.38	.13
Opuntia sp.	-	.16	.03
Pinus edulis	5.59	9.10	-
Purshia tridentata	-	.36	.20
Symphoricarpos oreophilus	-	2.26	1.95

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 10, Study no: 7

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata vaseyana	1.7	1.5
Cercocarpus montanus	2.0	2.6
Purshia tridentata	1.7	1.4

POINT-QUARTER TREE DATA--

Management unit 10, Study no: 7

Species	Trees per Acre				Average diameter (in)			
	'95	'00	'05	'10	'95	'00	'05	'10
Juniperus osteosperma	87	86	78	25	2.8	5.0	6.5	1.0
Pinus edulis	28	41	33	20	3.3	4.5	5.4	1.0
Pseudotsuga menziesii	-	-	-	20	-	-	-	5.1

BASIC COVER--

Management unit 10, Study no: 7

Cover Type	Average Cover %				
	'88	'95	'00	'05	'10
Vegetation	3.25	31.70	29.38	31.99	23.97
Rock	0	.88	.00	.04	0
Pavement	20.00	18.21	18.42	20.90	14.74
Litter	65.25	41.33	41.26	36.90	52.23
Cryptogams	.25	.20	.42	.30	.07
Bare Ground	11.25	9.14	25.53	27.02	19.30

SOIL ANALYSIS DATA --

Management unit 10, Study no: 7, Study Name: Cherry Mesa

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
11.2	6.8	48.0	30.0	22.0	4.1	9.4	89.6	0.8

PELLET GROUP DATA--

Management unit 10, Study no: 7

Type	Quadrat Frequency				Days use per acre (ha)		
	'95	'00	'05	'10	'00	'05	'10
Rabbit	12	48	58	12	-	-	-
Elk	4	9	13	8	15 (37)	19 (48)	14 (35)
Deer	4	10	22	10	21 (53)	22 (55)	9 (23)
Cattle	1	2	-	-	6 (15)	4 (9)	2 (5)

BROWSE CHARACTERISTICS--

Management unit 10, Study no: 7

		Age class distribution			Utilization				
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata vaseyana</i>									
88	<b>6464</b>	68	29	3	799	18	1	1	21/19
95	<b>4180</b>	37	63	0	760	2	.95	0	26/31
00	<b>4240</b>	16	75	10	60	24	17	17	27/31
05	<b>3580</b>	8	60	32	9640	27	10	9	26/31
10	<b>3360</b>	20	70	10	400	18	0	7	29/36
<i>Cercocarpus montanus</i>									
88	<b>0</b>	0	0	0	-	0	0	0	-/-
95	<b>20</b>	100	0	0	-	0	0	0	35/27
00	<b>60</b>	67	33	0	-	0	33	0	33/38
05	<b>60</b>	67	33	0	-	0	67	0	39/45
10	<b>40</b>	0	50	50	-	50	50	50	25/24

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<b>Chrysothamnus depressus</b>									
88	5265	10	81	9	66	23	0	1	6/8
95	1280	0	95	5	20	2	0	0	6/13
00	1740	14	61	25	20	20	10	14	3/5
05	1220	7	75	12	-	43	20	11	4/7
10	900	13	82	4	20	0	0	0	4/9
<b>Chrysothamnus viscidiflorus viscidiflorus</b>									
88	399	33	33	33	-	0	0	0	7/8
95	0	0	0	0	-	0	0	0	17/25
00	320	13	81	6	-	56	0	6	11/8
05	200	30	50	20	80	30	0	0	10/10
10	200	0	100	0	-	0	0	0	8/10
<b>Gutierrezia sarothrae</b>									
88	266	0	100	-	-	0	0	0	6/7
95	200	0	100	-	-	0	0	0	7/12
00	20	100	0	-	-	0	0	0	-/-
05	120	0	100	-	-	17	0	0	5/6
10	280	43	57	-	40	0	0	0	5/7
<b>Juniperus osteosperma</b>									
88	0	0	0	0	66	0	0	0	-/-
95	0	0	0	0	-	0	0	0	-/-
00	120	0	100	0	-	0	0	17	-/-
05	200	10	80	10	-	0	0	0	-/-
10	20	100	0	0	-	0	0	0	-/-
<b>Opuntia sp.</b>									
88	0	0	0	0	-	0	0	0	-/-
95	40	100	0	0	-	0	0	0	1/6
00	140	14	71	14	-	0	0	14	4/11
05	160	0	100	0	-	0	0	0	3/11
10	100	0	80	20	-	0	0	20	2/7
<b>Pinus edulis</b>									
88	0	0	0	-	-	0	0	0	-/-
95	0	0	0	-	-	0	0	0	-/-
00	100	20	80	-	-	20	0	0	-/-
05	60	0	100	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	-/-
<b>Purshia tridentata</b>									
88	399	0	100	0	-	50	50	0	9/26
95	100	0	100	0	-	0	0	0	13/34
00	240	0	100	0	-	33	25	0	12/33
05	280	7	86	7	-	29	21	0	9/21
10	180	33	67	0	-	22	44	0	12/26

		Age class distribution						Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)		
Symphoricarpos oreophilus											
88	<b>0</b>	0	0	0	-	0	0	0	-/-		
95	<b>500</b>	8	92	0	-	8	0	0	20/34		
00	<b>1040</b>	40	56	4	-	12	2	0	17/27		
05	<b>1260</b>	32	52	16	-	3	3	5	12/20		
10	<b>1720</b>	48	52	0	40	0	0	0	10/15		