

STEER RIDGE - TREND STUDY NO. 11B-16-10

Vegetation Type: Mountain Brush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Mountain Shallow Loam (Black Sagebrush), R047XA438UT

Land Ownership: BLM

Elevation: 7970 ft. (2430 m)

Aspect: East

Slope: 4%

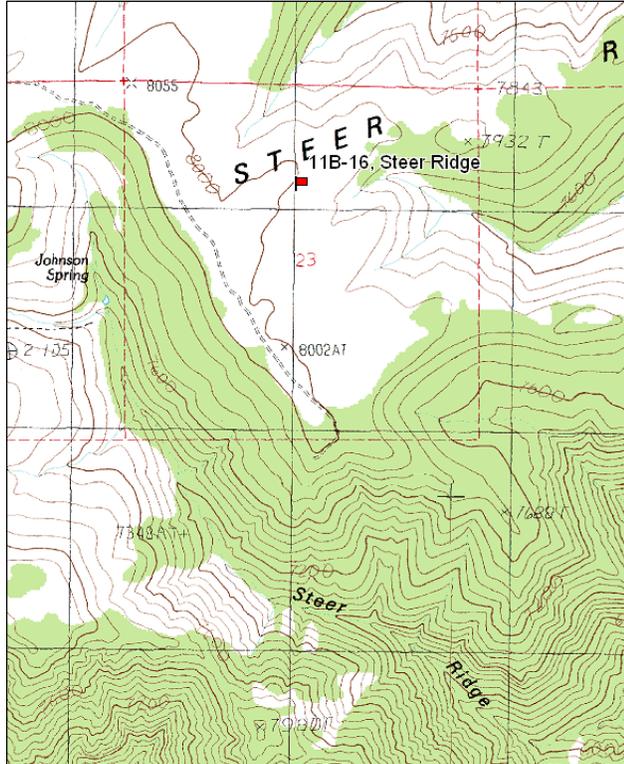
Transect bearing: 234° magnetic

Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

Directions:

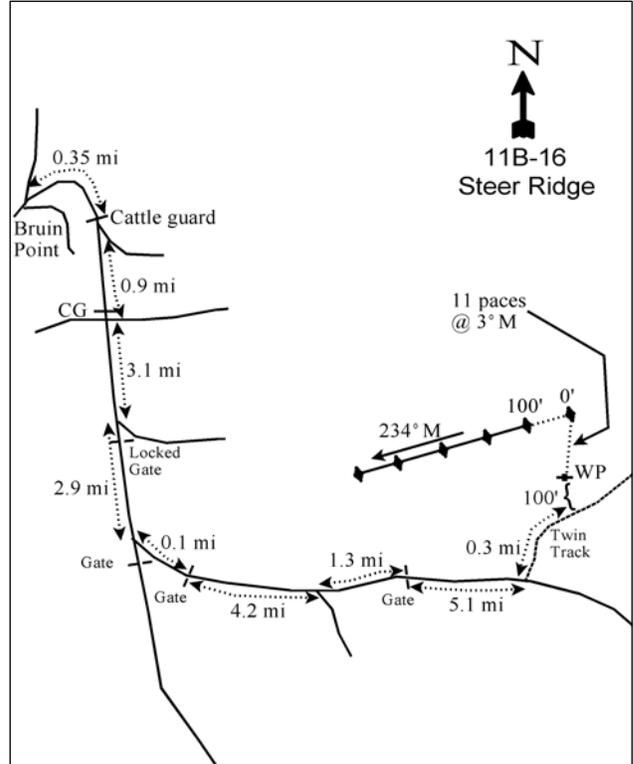
From Sunnyside, go up Water Canyon to the summit (Bruin Point). At the summit take the middle fork and go 0.35 miles. Stay right at the fork just beyond a cattle guard and go 0.9 miles. Go through an intersection beyond another cattle guard and go 3.1 miles to a locked gate just after a fork. Go through the gate and travel another 2.9 miles to a fork and turn left just before a gate. Proceed 0.1 miles to a gate. Continue 4.2 miles to a fork. Stay left and continue an additional 1.3 miles to another gate. Continue 5.1 miles and turn left on a twin track road. Drive north 0.3 miles to a witness post 100 ft off the left side of the road. The 0 ft stake is 11 paces away at 3°M and is marked with browse tag number 32.

Map Name: Steer Ridge Canyon



Township: 14S Range: 16E Section: 15

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 577946 E 4383285 N

STEER RIDGE - TREND STUDY NO. 11B-16

Site Information

Site Description: The study samples a mountain shrub community near the end of Steer Ridge, just before it drops off into the Green River. The mountain brush community type here is noticeably shorter in stature than that of the Twin Hollow (11B-15) study. Grazing in the area is managed by the Bureau of Land Management (BLM) as part of the large Green River allotment. The area is used heavily by wintering elk and deer. Deer are forced to move to lower elevations when snows get deeper, but elk are often seen in the area all winter. Multiple elk antler sheds were found on the site in 2000. Pellet group data has estimated heavy use by elk since 2000. Estimated deer use was light in 2000 and 2005, but was more moderate in 2010. There has been some sign of cattle and horses, but use is very limited (Table - Pellet Group Data).

Browse: Key browse on this site consists of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), antelope bitterbrush (*Purshia tridentata*) and Utah serviceberry (*Amelanchier utahensis*), which provide the majority of the browse cover on the site (Table - Browse Trends). Mountain big sagebrush increased substantially in density in 2010 due to a large recruitment of young plants, but use of big sagebrush is mostly light. Very high abundance of ants, associated with the presence of aphids, also appears to be affecting the vigor of some sagebrush plants. The bitterbrush population consists of mature plants with moderate to heavy use, good vigor and low decadence. The serviceberry is a small population of heavily used plants. Other common shrubs include dwarf rabbitbrush (*Chrysothamnus depressus*) and mountain low rabbitbrush (*C. viscidiflorus* ssp. *lanceolatus*). There are also a few scattered rubber rabbitbrush (*C. nauseosus hololeucus*), true mountain mahogany (*Cercocarpus montanus*), snowberry (*Symphoricarpos oreophilus*) and gray horsebrush (*Tetradymia canescens*) (Table - Browse Characteristics).

Herbaceous Understory: Grasses are diverse and abundant with the dominant grass species being needle-and-thread (*Stipa comata*). Needle-and-thread has steadily increased in frequency and cover since 1994. Other prevalent grasses include bluebunch wheatgrass (*Agropyron spicatum*), thickspike wheatgrass (*A. dasystachyum*), mutton bluegrass (*Poa fendleriana*) and Sandberg bluegrass (*P. secunda*). The abundance of grass species is advantageous for elk winter use. Forbs are diverse, but do not provide very much forage with no one forb species being dominant (Table - Herbaceous Trends).

Soil: The soil texture is a sandy clay loam with a sandstone parent material and a neutral soil reaction (pH 7.2). Phosphorus may have limited availability for plant growth and development at 5.5 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Bare ground cover is low with good vegetation and litter cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2005, but was slight in 2010 due to pedestaling of plants, flow patterns, and surface movement of soil, litter and rock.

Trend Assessments

Browse:

- **1994 to 2000 - slightly down (-1):** The densities of mountain big sagebrush and bitterbrush both decreased, but cover increased for both species. Decadence of mountain big sagebrush increased from 13% to 22%.
- **2000 to 2005 - up (+2):** The density of mountain big sagebrush increased by 70% from 2,160 plants/acre to 3,680 plants/acre, and cover increased from 6% to 7%. Decadence of sagebrush decreased to 8%. There was little change in the density of bitterbrush, but cover increased from 7% to 11%.
- **2005 to 2010 - up (+2):** Mountain big sagebrush and bitterbrush increased substantially in density with the largest increase in sagebrush. Most of the increase in sagebrush density was due to a marked increase in the recruitment of young sagebrush plants. Cover of sagebrush increased to 10%, but bitterbrush cover decreased to 7%.

Grass:

- **1994 to 2000 - stable (0):** The sum of nested frequency of perennial forbs remained similar, though cover increased from 14% to 18%. There was a significant increase in the nested frequency of mutton bluegrass and a significant decrease in the nested frequency of prairie junegrass (*Koeleria cristata*), Indian ricegrass (*Oryzopsis hymenoides*) and Letterman needlegrass (*Stipa lettermani*).
- **2000 to 2005 - slightly down (-1):** The perennial grass sum of nested frequency decreased by 12%, though cover remained similar. The nested frequency of thickspike wheatgrass decreased significantly.
- **2005 to 2010 - stable (0):** There was a 10% increase in the sum of nested frequency, but cover decreased to 16% with a significant decrease in the nested frequency of thickspike wheatgrass.

Forb:

- **1994 to 2000 - down (-2):** The sum of nested frequency of perennial forbs decreased by 25%, though cover changed little.
- **2000 to 2005 - slightly up (+1):** The perennial forb sum of nested frequency increased by 13% and cover increased from 3% to 6%.
- **2005 to 2010 - stable (0):** There was little change in the perennial forb sum of nested frequency, though cover decreased to 3%.

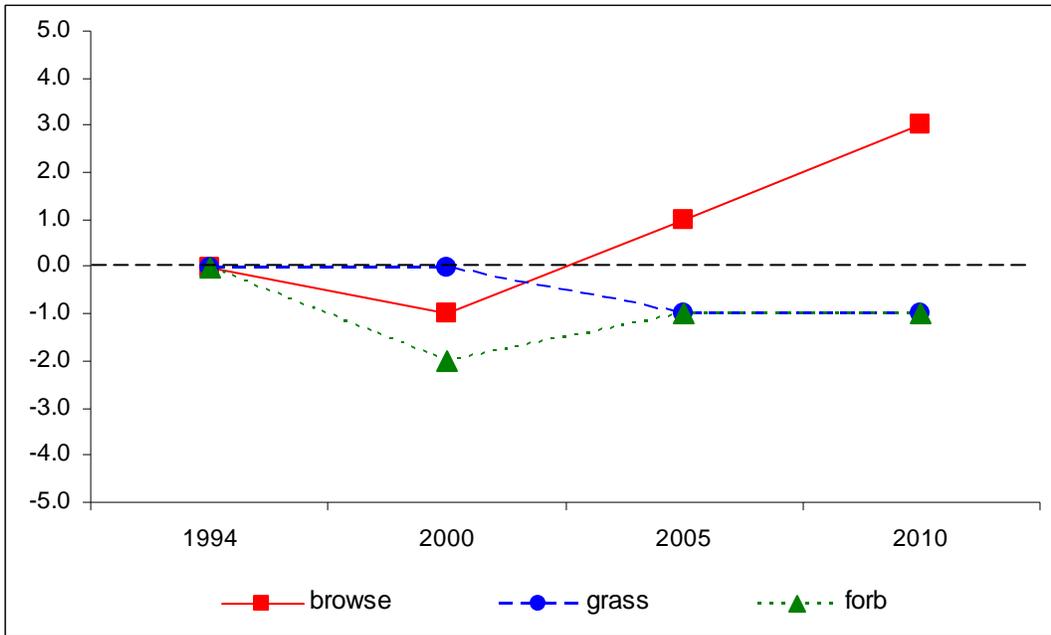
DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

Management unit 11B, study no: 16

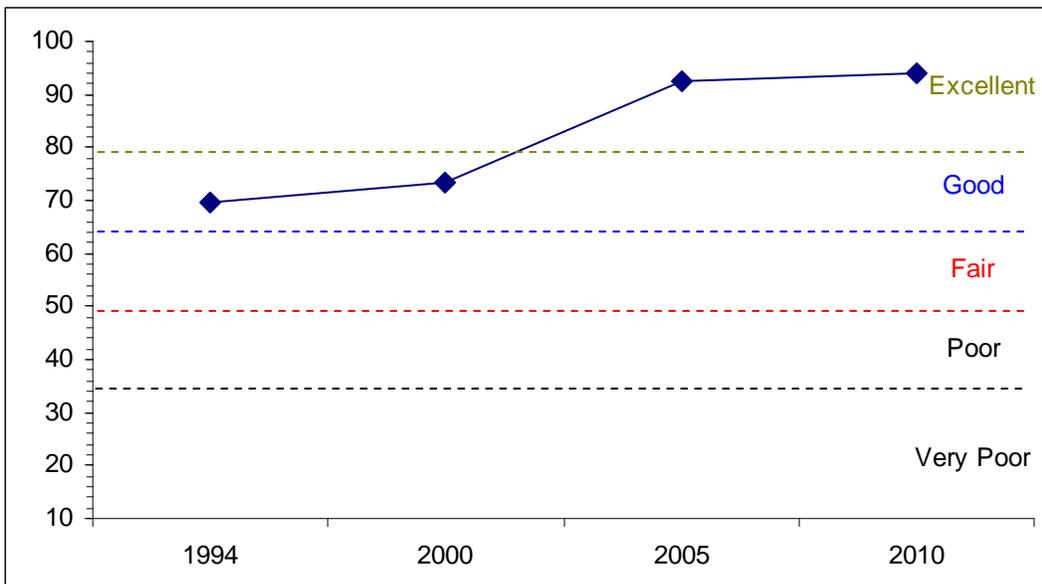
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94	16.3	12.0	5.9	28.5	0.0	7.0	0.0	69.7	Good
00	20.7	10.8	5.2	30.0	0.0	6.6	0.0	73.3	Good
05	29.8	13.5	9.7	30.0	-0.5	10.0	0.0	92.5	Excellent
10	27.7	14.7	15.0	30.0	-0.3	6.7	0.0	93.9	Excellent

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 11B, Study no: 16



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 11B, Study no: 16



HERBACEOUS TRENDS--

Management unit 11B, Study no: 16

T y P e	Species	Nested Frequency				Average Cover %			
		'94	'00	'05	'10	'94	'00	'05	'10
G	Agropyron dasystachyum	bc146	c160	ab108	a71	1.61	3.76	2.34	.72
G	Agropyron spicatum	151	147	131	123	4.19	4.91	3.67	3.22
G	Bouteloua gracilis	-	4	6	4	-	.18	.33	.30
G	Bromus tectorum (a)	a-	a1	c71	b23	-	.00	.62	.37
G	Carex sp.	-	-	2	-	-	-	.00	-
G	Elymus salina	69	25	42	50	2.32	.63	2.34	1.86
G	Koeleria cristata	b86	a5	b41	b49	1.81	.03	.67	.78
G	Oryzopsis hymenoides	b32	a9	ab19	ab11	.28	.19	.60	.54
G	Poa fendleriana	a72	b187	a53	a82	1.15	4.67	.76	1.22
G	Poa secunda	a27	ab39	bc57	c77	.17	.24	1.02	.55
G	Sitanion hystrix	1	1	-	-	.00	.03	-	-
G	Stipa comata	a67	ab78	b111	c170	1.95	3.06	6.06	6.69
G	Stipa lettermani	b27	a-	ab10	a-	.72	.00	.07	-
Total for Annual Grasses		0	1	71	23	0	0.00	0.62	0.37
Total for Perennial Grasses		678	655	580	637	14.25	17.73	17.91	15.89
Total for Grasses		678	656	651	660	14.25	17.73	18.53	16.27
F	Agoseris glauca	12	6	9	4	.06	.05	.04	.01
F	Allium sp.	-	-	3	2	-	-	.01	.00
F	Antennaria rosea	b14	ab8	ab8	a-	.13	.15	.21	-
F	Arabis sp.	3	-	2	2	.00	-	.03	.00
F	Arenaria fendleri	10	-	1	-	.18	-	.00	-
F	Aster sp.	-	5	-	-	-	.01	-	.00
F	Astragalus convallarius	-	3	3	2	-	.00	.00	.03
F	Astragalus sp.	3	7	-	-	.01	.34	-	-
F	Balsamorhiza sagittata	7	3	2	3	.86	.33	1.06	.39
F	Calochortus nuttallii	b17	a-	ab7	b16	.05	-	.02	.06
F	Castilleja flava	a-	a-	ab1	b15	-	-	.00	.20
F	Castilleja linariaefolia	b23	b22	a-	a-	.14	.12	-	-
F	Chenopodium fremontii (a)	1	-	6	3	.00	-	.06	.00
F	Chenopodium leptophyllum(a)	5	-	4	2	.01	-	.01	.00
F	Collinsia parviflora (a)	-	4	-	5	-	.01	-	.01
F	Comandra pallida	4	18	11	22	.03	.32	.36	.10
F	Crepis acuminata	10	9	15	13	.07	.19	.16	.23
F	Delphinium nuttallianum	a-	a-	b16	a2	-	-	.05	.00
F	Erigeron eatonii	18	15	14	27	.16	.28	.16	.15
F	Erigeron flagellaris	-	-	5	-	-	-	.21	-
F	Eriogonum alatum	13	9	7	14	.08	.09	.34	.10
F	Eriogonum umbellatum	23	14	19	25	.29	.08	.14	.44
F	Gayophytum ramosissimum(a)	a2	a4	b25	a4	.00	.01	.05	.01
F	Hedysarum boreale	-	-	4	7	-	-	.45	.09
F	Lappula occidentalis (a)	a-	a-	b58	a7	-	-	.30	.01
F	Linum lewisii	-	7	-	-	-	.02	-	-
F	Lithospermum ruderales	12	5	8	7	.19	.18	.40	.51

Type	Species	Nested Frequency				Average Cover %			
		'94	'00	'05	'10	'94	'00	'05	'10
F	Lomatium sp.	c33	a1	bc20	ab6	.08	.00	.11	.01
F	Machaeranthera canescens	-	-	1	3	-	-	.03	.00
F	Oenothera sp.	-	3	1	1	-	.00	.00	.00
F	Penstemon caespitosus	b10	ab2	a-	ab6	.24	.04	-	.04
F	Penstemon sp.	2	2	1	-	.01	.01	.01	.00
F	Phlox longifolia	ab58	a53	bc70	c87	.11	.32	1.22	.43
F	Polygonum douglasii (a)	b45	a16	d302	c209	.10	.03	2.26	.86
F	Sphaeralcea coccinea	c78	bc62	d43	a33	.77	.67	.62	.45
F	Taraxacum officinale	-	3	-	-	-	.03	-	-
F	Tragopogon dubius	a-	a-	b15	a4	.00	-	.11	.01
F	Trifolium sp.	a-	ab6	b11	b9	-	.01	.05	.02
Total for Annual Forbs		53	24	395	230	0.12	0.05	2.69	0.91
Total for Perennial Forbs		350	263	297	310	3.50	3.29	5.89	3.36
Total for Forbs		403	287	692	540	3.63	3.34	8.59	4.28

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

BROWSE TRENDS--

Management unit 11B, Study no: 16

Type	Species	Strip Frequency				Average Cover %			
		'94	'00	'05	'10	'94	'00	'05	'10
B	Amelanchier utahensis	4	5	4	4	.03	1.19	1.75	2.07
B	Artemisia tridentata vaseyana	78	62	81	97	3.79	6.40	7.29	10.30
B	Cercocarpus montanus	0	0	0	0	-	-	-	-
B	Chrysothamnus depressus	52	33	44	46	1.45	.74	1.27	.84
B	Chrysothamnus viscidiflorus lanceolatus	16	15	12	20	.29	.18	.09	.06
B	Gutierrezia sarothrae	3	1	6	5	.00	-	.00	-
B	Mahonia repens	0	0	0	1	-	-	-	-
B	Opuntia sp.	1	0	2	3	.00	-	.03	-
B	Purshia tridentata	43	41	42	53	6.48	6.65	10.98	7.09
B	Symphoricarpos oreophilus	2	2	1	3	.03	.00	.18	.03
B	Tetradymia canescens	7	4	7	6	.03	.18	.18	.38
Total for Browse		206	163	199	238	12.13	15.35	21.80	20.79

CANOPY COVER, LINE INTERCEPT--

Management unit 11B, Study no: 16

Species	Percent Cover	
	'05	'10
Amelanchier utahensis	.95	1.31
Artemisia tridentata vaseyana	8.78	16.78
Chrysothamnus depressus	.90	.91
Chrysothamnus viscidiflorus lanceolatus	.20	.05
Gutierrezia sarothrae	.06	-
Purshia tridentata	15.19	14.00
Symphoricarpos oreophilus	-	.23
Tetradymia canescens	.25	.21

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 11B, Study no: 16

Species	Average leader growth (in)	
	'05	'10
Amelanchier utahensis	5.2	2.7
Artemisia tridentata vaseyana	3.7	2.5
Purshia tridentata	4.2	2.7

BASIC COVER--

Management unit 11B, Study no: 16

Cover Type	Average Cover %			
	'94	'00	'05	'10
Vegetation	38.01	41.91	43.37	44.50
Rock	6.60	6.08	5.86	5.39
Pavement	2.01	9.07	8.09	6.80
Litter	20.10	46.68	31.25	39.47
Cryptogams	.06	.30	1.00	0
Bare Ground	20.32	18.44	25.35	22.98

SOIL ANALYSIS DATA --

Management unit 11B, Study no: 16, Study Name: Steer Ridge

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
10.8	7.2	52.0	25.4	22.6	3.3	5.5	176.0	0.7

PELLET GROUP DATA--

Management unit 11B, Study no: 16

Type	Quadrat Frequency			
	'94	'00	'05	'10
Rabbit	7	7	9	2
Moose	-	-	3	-
Horse	1	-	-	-
Grouse	-	-	2	-
Elk	44	53	78	27
Deer	37	21	29	45
Cattle	2	-	-	-

Days use per acre (ha)		
'00	'05	'10
-	-	-
-	-	-
-	-	-
-	-	-
82 (202)	76 (187)	63 (155)
20 (48)	13 (31)	44 (107)
-	-	2 (4)

BROWSE CHARACTERISTICS--
Management unit 11B, Study no: 16

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<i>Amelanchier utahensis</i>									
94	100	40	60	-	-	20	0	0	30/42
00	160	13	88	-	-	50	0	25	31/46
05	80	0	100	-	-	0	100	0	41/65
10	80	50	50	-	-	0	50	0	40/55
<i>Artemisia frigida</i>									
94	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	42/55
<i>Artemisia tridentata vaseyana</i>									
94	2740	19	68	13	40	18	4	2	19/26
00	2160	16	62	22	60	26	2	8	17/26
05	3680	53	40	8	71680	15	8	3	23/29
10	16580	72	28	1	460	17	6	.36	18/27
<i>Cercocarpus montanus</i>									
94	0	0	0	-	-	0	0	0	38/38
00	0	0	0	-	-	0	0	0	37/44
05	0	0	0	-	-	0	0	0	43/53
10	0	0	0	-	-	0	0	0	38/50
<i>Chrysothamnus depressus</i>									
94	3440	0	98	2	-	8	0	2	6/9
00	1780	6	82	12	-	1	0	4	4/7
05	2260	5	89	5	380	42	6	6	7/10
10	2320	9	91	0	-	5	6	0	6/9
<i>Chrysothamnus nauseosus hololeucus</i>									
94	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	11/24
05	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	-/-
<i>Chrysothamnus viscidiflorus lanceolatus</i>									
94	500	4	96	0	-	4	0	0	10/12
00	460	0	96	4	-	0	0	0	10/10
05	380	11	84	5	-	53	11	5	12/16
10	600	10	90	0	-	0	0	0	12/16
<i>Gutierrezia sarothrae</i>									
94	60	0	100	0	-	0	0	0	6/8
00	20	0	0	100	-	0	0	0	4/7
05	160	0	100	0	-	0	0	0	8/12
10	140	0	100	0	-	0	0	0	8/10

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Mahonia repens									
94	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	40	0	100	-	-	0	0	0	-/-
Opuntia sp.									
94	20	0	100	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	3/23
05	40	0	100	-	-	0	0	0	5/18
10	60	0	100	-	-	0	0	0	4/21
Purshia tridentata									
94	1400	10	80	10	-	31	3	0	20/51
00	1120	5	86	9	-	43	2	5	26/56
05	1080	2	94	4	-	28	72	0	28/63
10	1640	10	89	1	-	40	34	0	24/52
Symphoricarpos oreophilus									
94	60	0	100	-	-	0	0	0	20/41
00	40	0	100	-	-	0	0	0	15/29
05	20	0	100	-	-	0	0	0	23/48
10	80	0	100	-	-	0	0	0	20/44
Tetradymia canescens									
94	160	13	88	0	-	13	0	0	8/12
00	80	0	75	25	-	25	0	0	8/13
05	140	0	100	0	-	71	0	0	9/16
10	120	17	83	0	-	17	17	0	11/15