

Trend Study 11B-8-05

Study site name: Cedar Corral.

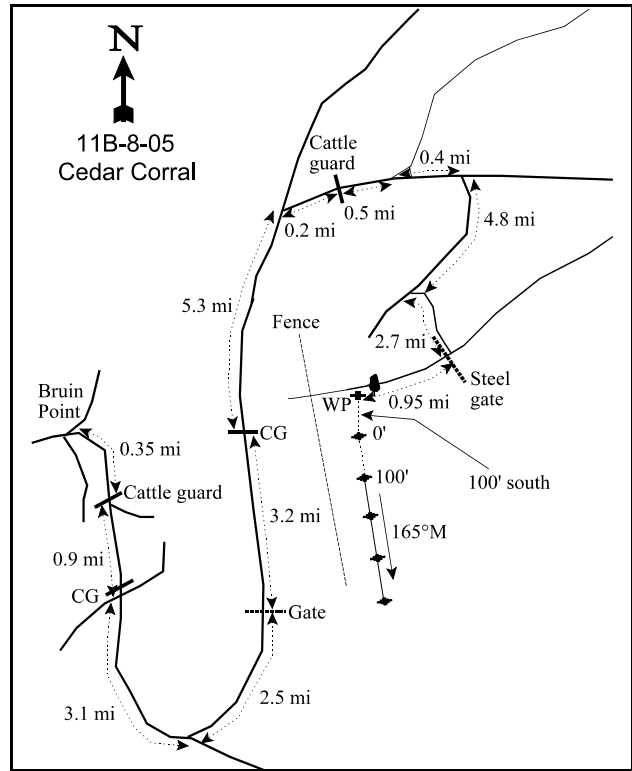
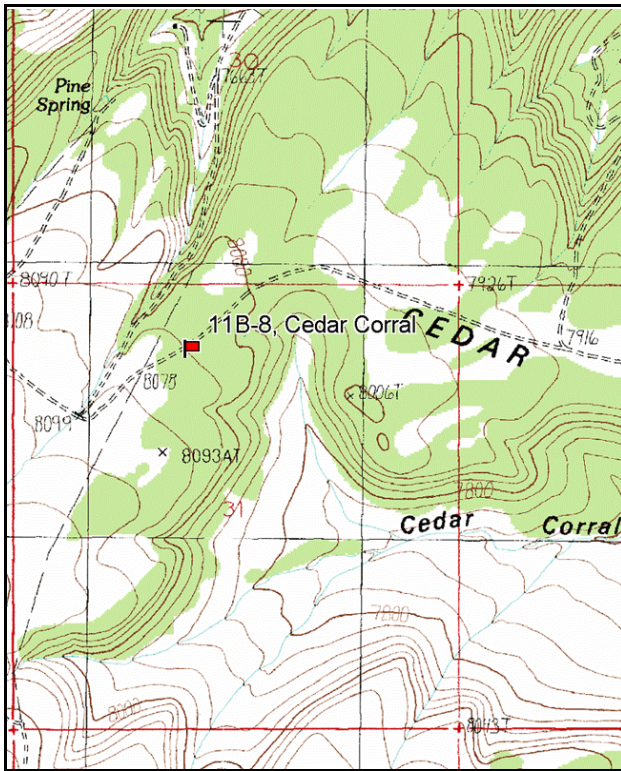
Vegetation type: Pinyon-Juniper.

Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Belt 2 rebar @ 5ft.

LOCATION DESCRIPTION

From Bruin Point take the middle fork and go 0.35 miles. Stay right at the fork just beyond a cattle guard and go 0.9 miles. Proceed past another cattle guard, go straight through an intersection and continue 3.1 miles. Turn left at the fork and continue 2.5 miles to a gate by a cabin. Continue 3.2 miles, cross a cattle guard and go 5.3 miles more on the main road to a fork where you bear right. Go 0.2 miles to a cattle guard. Continue 0.5 miles to a major fork. Stay right and go 0.4 miles (passing 11B-7-00) to a fork. Stay right on the main road and go 4.8 miles to a junction. Turn left and go 2.7 miles to a "T" intersection. Turn right and go through the steel gate (You will need the combo to the lock). Proceed 0.95 miles to a witness post (fence post surrounded by pile of rocks) on the left side of the road, fifteen feet beyond a pinyon. The 0-foot end of the baseline (marked by a fence post tagged #7801) is 100 feet south of the witness post. There is a fence crossing the road approximately 200 yards southwest of the witness post.



Map Name: Twin Hollow

Diagrammatic Sketch

Township 13S, Range 16E, Section 31

GPS: NAD 27, UTM 12S 4389652 N, 571351 E

## DISCUSSION

### Cedar Corral - Trend Study No. 11B-8

The Cedar Corral site is located on winter range at a moderately high elevation (8,100 feet) on the southern part of the West Tavaputs Plateau. This study samples a part of the pinyon-juniper mountain brush-grass type with a northeast aspect on a nearly level slope (1%-2%). The study was originally on state land, but was sold to Nutter Ranch between the readings of 2000 and 2005. Cattle grazed the area in the past as part of the Green River allotment. However, there had been no cattle grazing on this allotment from 1994 until Nutter Ranch purchased the land. The grasses are rather depleted, with better elk forage found in the intermittent openings. The large pinyon provide excellent hiding and thermal cover, but the high elevation of the site would limit its use in some winters. Pellet group observations indicate light deer and elk use. Pellet group data from the 2000 reading was estimated at 8 deer and 10 elk days use/acre (20 ddu/ha and 25 edu/ha). Wild horse use was estimated at 9 days use/acre (22 hdu/ha). In 2005, the estimated pellet group data was 5 elk, 2 deer, 1 cow, and 8 horse days use/acre (12 edu/ha, 5 ddu/ha, 2 cdu/ha, and 19 hdu/ha). The Range Creek unit is used by an estimated 213 wild horses which reside in two groups. One group frequents the Cottonwood and Cold ridge area, while the other group primarily uses the Cedar ridge area. In addition, some sage grouse sign has also been encountered.

The soil is moderately shallow, yet quite variable as evidenced with the presence of black sagebrush and mountain big sagebrush. Effective soil depth is estimated at just over 9 inches. It is very compacted with abundant rocks on the surface and throughout the profile. There are also extensive sandstone rock layers just under the surface in some areas. The soil has a sandy clay loam to sandy loam texture with a marginally neutral soil reaction (6.6 pH). Organic matter is low at 1.9 % and phosphorus is limited at just 4.5 ppm, where values less than 6 ppm may limit normal plant growth and development in wildland soils (Tiedemann and Lopez 2004). There is evidence of erosion and soil movement, but the level terrain keeps water erosion to a minimum. There is a build-up of soil, litter and cryptogams under the scattered shrubs. Soil is deeper under the old pinyon. The erosion condition class determined soil movement as stable in 2005.

Pinyon pine is the dominant overstory tree species with an estimated density of 128 trees/acre in 2000 using point-center quarter data. Overhead canopy cover was estimated at 15%. Utah juniper and Rocky Mountain juniper were less common with an estimated density of 11 and 8 trees/acre respectively. In 2005, the densities were estimated at 104 pinyon pines/acre and 31 juniper/acre with an estimated overhead pinyon canopy cover of 16%. Valuable deer browse species include, true mountain mahogany, mountain big sagebrush, black sagebrush, and serviceberry. These key species made up 16% cover in 1994, 22% in 2000, and only 14% in 2005. Utilization has been mostly light to moderate since 1986. Vigor was generally good and percent decadence low, but percent decadence increased from 10% in 2000 to 34% in 2005 for black sagebrush.

Several desirable forage grasses occur on the site, but overall abundance is erratic with a low cover value of only 4% in 1994, 6% in 2000, and 3% in 2005. Common species include: thickspike and bluebunch wheatgrass, and mutton and Sandberg bluegrass. Utilization of grasses is light. Unfortunately, cheatgrass was identified on the site for the first time during the 2005 reading. A variety of forbs are present, but the majority are small, low-growing varieties and their contribution to forage production is small. Forbs do produce more cover than grasses. The most abundant species is the succulent, lance-leaved sedum or stonecrop. The only other common species include pussy toes, hairy goldaster, and desert phlox.

## 1986 APPARENT TREND ASSESSMENT

As far as browse species are concerned, vegetation trend is considered stable to possibly up because of the current excellent vigor and reproduction of the important browse species. If the management objective stresses the importance of grasses however, they are not fairing quite as well and under continued cattle grazing may decrease further. The soil trend appears stable.

## 1994 TREND ASSESSMENT

The soil trend is considered stable at this time, but with the continuing loss of grasses and forbs. This trend should be closely monitored. Overall trend for the five key browse is slightly up with significant decreases in percent decadence and improved vigor. The herbaceous trend is slightly down due to a decrease in the sum nested frequency of both grasses and forbs. The Desirable Components Index score is fair to good due to good browse cover, low browse decadence, and excellent perennial forb cover.

### TREND ASSESSMENT

soil - stable (0)

browse - slightly up (+1)

herbaceous understory - slightly down (-1)

winter range condition (DC Index) - Fair to Good (63) Mid-level Potential scale

## 2000 TREND ASSESSMENT

Trend for soil is up slightly due to an increase in vegetation and litter cover combined with a decline in percent bare ground. Trend for browse appears stable with similar densities, good vigor and reproduction, low decadence, and mostly light use of the key species. It appears that deer and elk do not use this area very heavily. An important question to the browse trend is whether the pinyon and juniper continue to increase in canopy cover and how quickly. Currently, pinyon provides an overhead canopy cover of 15%. It does not currently appear to be effecting the understory shrubs. However, if it increases in the future, it will come at the expense of the understory shrubs and herbaceous plants. Trend for the herbaceous understory is down slightly due to a decline in the sum of nested frequency of perennial grasses and forbs. Sum of nested frequency of grasses and forbs have steadily declined since 1986 when the site was established. This is likely due to the increase in cover of shrubs and trees. The DCI score increased to good due to increased browse cover, improved browse decadence, and increased perennial grass cover.

### TREND ASSESSMENT

soils - up slightly (+1)

browse - stable (0)

herbaceous understory - slightly down (-1)

winter range condition (DC Index) - Good (72) Moderate Potential scale

## 2005 TREND ASSESSMENT

The trend for soil is stable. The ratio of protective ground cover (vegetation, litter and cryptogams) to bare ground remained nearly identical from 2000 to 2005. The trend for browse is down. From 2000 to 2005, pinyon pine increased from 5% to 10% cover. Pinyon also increased 1% in overhead canopy cover. This pinyon increase has had deleterious effects on the key browse species on the site. The key browse species mountain big sagebrush has historically been the dominant browse species on the site, but declined from 10% cover in 2000 to 4% in 2005. The big sagebrush density decreased 23% from 3,620 plant/acre in 2000 to 2,780 in 2005, most of which was mature individuals. Along with this steep decline in numbers was an increase in decadence from 18% to 26% and 10% to 14% increase in dying individuals. The density of true

mountain mahogany decreased 29% from 2000 to 2005, which was coupled with an increase in heavy use. The population numbers of both Utah serviceberry and black sagebrush remained stable, but in both cases the percentage of decadent individuals increased and that of dying individuals also increased for both species. As well, the increaser species broom snakeweed increased 50%, although the density of this species is still relatively low. The herbaceous understory trend is slightly down. This is due mainly to a 16% decrease in the nested frequency of perennial grasses and an 8% decrease for perennial forbs since 2000 as well as the discovery of cheatgrass on the site. It had a quadrat frequency of 22%. The DCI score decreased to fair due to decreased browse cover, increased browse decadence, and decreased perennial grass cover.

**TREND ASSESSMENT**

soils - stable (0)

browse - down (-2)

herbaceous understory - slightly down (-1)

winter range condition (DC Index) - Fair (58) Moderate Potential scale

**HERBACEOUS TRENDS --**

Management unit 11B, Study no: 8

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'00	'05	'94	'00	'05
G	Agropyron dasystachyum	ab43	ab59	b66	a32	.22	.42	.49
G	Agropyron spicatum	b163	a41	a42	a34	.41	1.81	.90
G	Bromus tectorum (a)	-	a-	a-	b53	-	-	.67
G	Koeleria cristata	c23	ab7	a-	bc12	.16	-	.13
G	Oryzopsis hymenoides	ab13	a2	ab17	b22	.03	.28	.24
G	Poa fendleriana	a18	b79	b65	a33	1.65	1.75	.36
G	Poa secunda	b85	a45	a56	ab70	.50	1.25	.85
G	Sitanion hystrix	a1	b21	a-	a5	.39	-	.01
G	Stipa comata	-	4	10	3	.03	.21	.15
G	Stipa lettermani	a-	b15	a-	ab5	.12	-	.01
<b>Total for Annual Grasses</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>0.67</b>
<b>Total for Perennial Grasses</b>		<b>346</b>	<b>273</b>	<b>256</b>	<b>216</b>	<b>3.54</b>	<b>5.75</b>	<b>3.15</b>
<b>Total for Grasses</b>		<b>346</b>	<b>273</b>	<b>256</b>	<b>269</b>	<b>3.54</b>	<b>5.75</b>	<b>3.83</b>
F	Allium sp.	a-	c26	ab2	bc12	.06	.06	.04
F	Antennaria rosea	57	60	61	50	2.25	2.48	1.68
F	Arabis drummondii	b41	a3	a-	a4	.00	-	.04
F	Arabis perennans	b21	b14	a-	a-	.02	-	-
F	Astragalus argophyllus	8	5	1	-	.03	.00	-
F	Castilleja flava	2	-	-	-	-	-	-
F	Castilleja linariaefolia	-	-	3	-	-	.00	-
F	Calochortus nuttallii	1	2	-	3	.00	-	.00
F	Chenopodium album (a)	-	-	-	3	-	-	.00
F	Chaenactis douglasii	a-	ab5	a-	b14	.01	-	.10

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'00	'05	'94	'00	'05
F	<i>Collinsia parviflora</i> (a)	-	1	-	5	.00	-	.01
F	<i>Crepis acuminata</i>	c21	a-	ab2	bc13	-	.01	.03
F	<i>Cryptantha</i> sp.	-	-	1	-	-	.03	-
F	<i>Eriogonum alatum</i>	b11	a-	a-	a-	-	-	-
F	<i>Erigeron eatonii</i>	b100	a27	a13	a7	.12	.06	.04
F	<i>Erigeron flagellaris</i>	a12	b37	ab21	a11	.13	.18	.22
F	<i>Eriogonum racemosum</i>	a-	b11	a-	a-	.19	-	-
F	<i>Eriogonum umbellatum</i>	b59	a21	ab43	ab31	.20	.27	.27
F	<i>Euphorbia</i> sp.	-	-	-	1	-	-	.03
F	<i>Gayophytum ramosissimum</i> (a)	-	a-	a-	b10	-	-	.02
F	<i>Heterotheca villosa</i>	a7	bc30	c37	ab16	.82	1.79	.60
F	<i>Ipomopsis aggregata</i>	11	10	3	1	.02	.00	.00
F	<i>Lappula occidentalis</i> (a)	-	-	-	3	-	-	.03
F	<i>Linum lewisii</i>	-	4	-	-	.01	-	-
F	<i>Lomatium triternatum</i>	c29	a-	ab3	bc13	-	.01	.04
F	<i>Machaeranthera grindelioides</i>	4	2	-	5	.03	-	.01
F	<i>Penstemon</i> sp.	-	3	4	3	.00	.01	.03
F	<i>Phlox austromontana</i>	ab31	ab15	b28	a10	.43	.91	.25
F	<i>Phlox longifolia</i>	-	-	3	-	-	.01	-
F	<i>Polygonum douglasii</i> (a)	-	b35	a4	c146	.06	.00	.45
F	<i>Sedum lanceolatum</i>	a135	b210	a152	a152	3.44	2.44	2.52
F	<i>Senecio multilobatus</i>	-	1	-	1	.00	-	.01
F	<i>Sphaeralcea coccinea</i>	-	9	-	-	.04	-	-
F	<i>Taraxacum officinale</i>	-	3	-	1	.04	-	.00
F	<i>Trifolium</i> sp.	b32	a-	a-	a-	-	-	-
Total for Annual Forbs		0	36	4	167	0.07	0.00	0.51
Total for Perennial Forbs		582	498	377	348	7.91	8.30	5.97
Total for Forbs		582	534	381	515	7.98	8.31	6.49

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

BROWSE TRENDS --

Management unit 11B, Study no: 8

Type	Species	Strip Frequency			Average Cover %		
		'94	'00	'05	'94	'00	'05
B	Amelanchier utahensis	25	23	26	4.46	6.61	4.22
B	Artemisia frigida	0	0	0	.00	-	-
B	Artemisia nova	49	40	44	3.44	2.45	3.55
B	Artemisia tridentata vaseyana	57	66	52	6.50	9.81	4.00
B	Cercocarpus montanus	12	19	14	1.87	3.09	2.16
B	Chrysothamnus depressus	31	23	28	.25	.25	.34
B	Chrysothamnus nauseosus	0	0	0	-	.63	-
B	Chrysothamnus viscidiflorus viscidiflorus	34	28	19	.50	.13	.51
B	Gutierrezia sarothrae	18	12	15	.03	.04	.36
B	Opuntia sp.	11	7	5	.05	.00	.03
B	Pediocactus simpsonii	0	1	1	-	-	-
B	Pinus edulis	0	7	7	3.29	4.76	10.07
B	Purshia tridentata	0	0	1	-	-	.03
B	Symphoricarpos oreophilus	17	19	17	.18	1.66	1.22
Total for Browse		254	245	229	20.60	29.47	26.54

CANOPY COVER, LINE INTERCEPT --

Management unit 11B, Study no: 8

Species	Percent Cover	
	'00	'05
Amelanchier utahensis	1.39	10.23
Artemisia nova	-	4.30
Artemisia tridentata vaseyana	-	6.15
Cercocarpus montanus	-	5.06
Chrysothamnus depressus	-	.36
Chrysothamnus viscidiflorus viscidiflorus	-	.40
Gutierrezia sarothrae	-	.35
Opuntia sp.	-	.03
Pinus edulis	14.60	16.10
Symphoricarpos oreophilus	-	.70

KEY BROWSE ANNUAL LEADER GROWTH --  
Management unit 11B, Study no: 8

Species	Average leader growth (in)
	'05
Amelanchier utahensis	3.0
Artemisia tridentata vaseyana	2.3
Cercocarpus montanus	4.2

POINT-QUARTER TREE DATA --  
Management unit 11B, Study no: 8

Species	Trees per Acre	
	'00	'05
Juniperus osteosperma	8	31
Pinus edulis	127	104

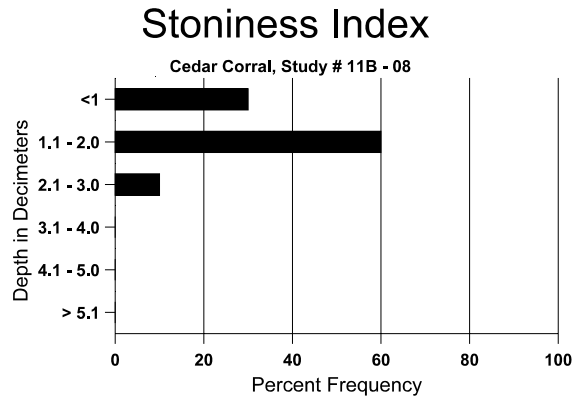
Average diameter (in)	
'00	'05
7.7	3.1
5.0	5.6

BASIC COVER --  
Management unit 11B, Study no: 8

Cover Type	Average Cover %			
	'86	'94	'00	'05
Vegetation	4.50	32.50	37.30	30.22
Rock	8.50	6.57	8.14	7.78
Pavement	1.00	.14	.72	.62
Litter	50.75	40.25	52.41	47.20
Cryptogams	3.50	.38	1.94	2.16
Bare Ground	31.75	29.77	22.95	27.28

SOIL ANALYSIS DATA --  
Herd Unit 11B, Study # 8, Study Name: Cedar Corral

Effective rooting depth (in)	Temp °F (depth)	pH	% sand	% silt	% clay	%OM	ppm P	ppm K	dS/m
9.5	64.2 (9.9)	6.6	54.0	25.4	20.6	1.9	4.5	198.4	0.8



PELLET GROUP DATA --  
Management unit 11B, Study no: 8

Type	Quadrat Frequency		
	'94	'00	'05
Rabbit	29	14	40
Horse	2	4	2
Cattle	-	-	-
Elk	8	8	5
Deer	16	7	2

Days use per acre (ha)	
'00	'05
-	-
-	8 (19)
-	1 (2)
10 (25)	5 (12)
8 (20)	2 (5)

BROWSE CHARACTERISTICS --  
Management unit 11B, Study no: 8

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<b>Amelanchier utahensis</b>												
86	<b>133</b>	-	-	-	133	-	0	0	100	-	0	-/-
94	<b>680</b>	60	80	560	40	20	21	0	6	3	3	47/59
00	<b>700</b>	120	220	400	80	20	34	0	11	3	6	46/56
05	<b>680</b>	40	220	360	100	40	18	38	15	6	6	52/60
<b>Artemisia nova</b>												
86	<b>2399</b>	600	1533	466	400	-	17	0	17	-	0	9/10
94	<b>2540</b>	-	240	2060	240	280	31	8	9	2	2	11/17
00	<b>1780</b>	40	80	1520	180	200	30	2	10	3	3	10/18
05	<b>1920</b>	860	120	1140	660	380	0	0	34	6	6	11/22

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata vaseyana</i>												
86	<b>1399</b>	1733	1066	333	-	-	0	0	0	-	0	13/16
94	<b>3280</b>	120	700	2400	180	340	21	0	5	2	2	21/31
00	<b>3620</b>	120	280	2700	640	360	13	0	18	10	10	17/26
05	<b>2780</b>	520	500	1560	720	580	22	15	26	14	14	18/27
<i>Cercocarpus montanus</i>												
86	<b>666</b>	66	400	200	66	-	30	0	10	-	0	15/15
94	<b>260</b>	-	40	220	-	-	15	8	0	-	0	51/51
00	<b>420</b>	100	140	260	20	-	33	5	5	-	5	56/68
05	<b>300</b>	200	160	140	-	-	27	27	0	-	0	52/58
<i>Chrysothamnus depressus</i>												
86	<b>3332</b>	133	400	2466	466	-	0	0	14	-	0	4/6
94	<b>1420</b>	-	80	1240	100	-	6	0	7	3	3	4/8
00	<b>1000</b>	-	40	860	100	60	16	2	10	8	8	4/6
05	<b>900</b>	80	140	620	140	20	20	18	16	7	7	5/8
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
86	<b>732</b>	-	66	466	200	-	0	0	27	-	0	10/7
94	<b>1160</b>	20	120	1020	20	-	0	0	2	2	2	9/8
00	<b>760</b>	-	120	580	60	-	0	0	8	-	0	10/9
05	<b>520</b>	-	180	280	60	-	23	8	12	4	4	14/16
<i>Gutierrezia sarothrae</i>												
86	<b>533</b>	-	133	400	-	-	0	0	0	-	0	5/6
94	<b>480</b>	20	60	400	20	-	4	0	4	-	0	5/6
00	<b>400</b>	-	40	360	-	-	0	0	0	-	0	5/6
05	<b>800</b>	-	160	620	20	-	0	0	3	3	3	7/10
<i>Opuntia sp.</i>												
86	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
94	<b>320</b>	-	100	120	100	-	25	0	31	6	6	3/7
00	<b>160</b>	-	40	100	20	-	0	0	13	-	0	2/4
05	<b>160</b>	-	40	120	-	-	0	0	0	-	0	2/8
<i>Pediocactus simpsonii</i>												
86	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
00	<b>20</b>	-	-	20	-	-	0	0	-	-	0	3/4
05	<b>40</b>	-	20	20	-	-	0	0	-	-	0	2/6

		Age class distribution (plants per acre)					Utilization						
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)	
<i>Pinus edulis</i>													
86	<b>0</b>	133	-	-	-	-	0	0	-	-	0	-/-	
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-	
00	<b>140</b>	20	40	100	-	-	0	0	-	-	0	-/-	
05	<b>140</b>	-	60	80	-	-	0	0	-	-	0	-/-	
<i>Purshia tridentata</i>													
86	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-	
94	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-	
00	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-	
05	<b>20</b>	-	-	-	20	-	0	0	100	100	100	-/-	
<i>Symphoricarpos oreophilus</i>													
86	<b>200</b>	-	-	200	-	-	33	0	0	-	0	18/25	
94	<b>700</b>	20	60	620	20	-	3	3	3	-	0	15/27	
00	<b>980</b>	-	140	720	120	-	4	0	12	-	0	8/14	
05	<b>880</b>	20	200	680	-	-	0	0	0	-	0	14/20	