

DURFEE HOMESTEAD - TREND STUDY NO. 25A-4-09

Vegetation Type: Chained, Seeded P-J

Range Type: Crucial Deer Winter, Substantial Elk Winter

NRCS Ecological Site Description: Not Available

Land Ownership: SITLA

Elevation: 7,400 ft (2,256 m)

Aspect: West

Slope: 10%

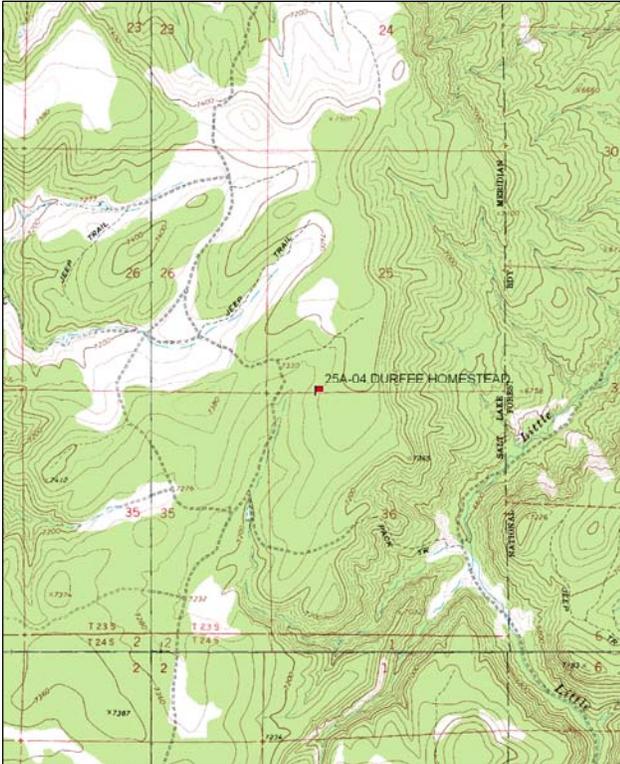
Transect bearing: 180 degrees magnetic

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

Directions:

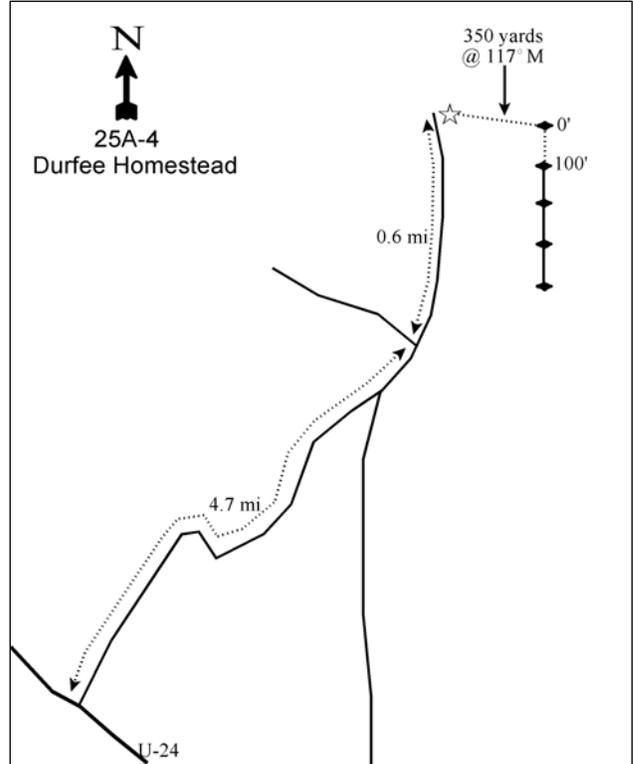
From Sigurd, drive east on U-24 to mile marker 21. Turn left (north) on the Sand Ledge Road and drive northeast for 1.6 miles. Turn left at the intersection and proceed north 3.1 miles to an intersection with a trough and pond. Continue 0.1 miles to a road that goes up the draw bottom. Drive up this road for 0.5 miles. Stop at the witness post (1/2" red rebar 2' tall on east side of road) and walk out 350 yards at a bearing of 117 degrees magnetic. The baseline starts out in the chaining about 100 feet from the edge of the PJ. The 0-foot baseline stake has a red browse tag #7194 attached.

Map Name: Rex Reservoir, Utah



Township: 23S, Range: 1W, Section: 36

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 425009 E 4291073 N

DURFEE HOMESTEAD - TREND STUDY NO. 25A-4

Site Information

Site Description: This study is located on BLM administered land within the Sand Ledge allotment. This area was chained and seeded in 1983 and the transect lies within 100 ft. of untreated pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) woodland. Cattle graze the area in late spring. Deer, elk and cow use have been moderately low since 1999. Sheep sign was noted in 2009 and indicated low use (Table - Pellet Group Data).

Browse: Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*) is the key species, however, preferred browse species are rare on the site. After a high density estimate in 1985 the highest sagebrush density estimate was in 2009 at 140 plants/acre. Decadence has not been of concern, but little to no recruitment has occurred. In recent years, Gambel oak (*Quercus gambelii*) has been sampled, adding some additional browse to the area (Table - Browse Characteristics).

Herbaceous Understory: The perennial grass understory is diverse and productive. Principal species include bluebunch wheatgrass (*Agropyron spicatum*) and smooth brome (*Bromus inermis*). Cheatgrass (*Bromus tectorum*) is also present on the site, but has averaged only 1% cover. The forb community is very diverse. Perennial forbs have been slowly decreasing while annual forbs have increased in frequency and cover (Table - Herbaceous Trends).

Soil: The soil is classified as clay loam that is slightly alkaline (pH 7.5) (Table - Soil Analysis Data). The soil is heavily armored with rock and pavement providing an average of 42% cover. Bare soil is low, averaging 15% (Table - Basic Cover). The soil erosion condition was classified as stable in both 2004 and 2009.

Trend Assessments

Browse:

- **1985 to 1991 - down (-2):** The density of Wyoming big sagebrush decreased 94% from 1,198 plants/acre to 66 plants/acre, but no dead plants were sampled in 1991. Decadence decreased from 72% to 0% and no new recruitment of young plants was sampled.
- **1991 to 1999 - down (-2):** Differences in density may be related to the larger sample area used in 1999; therefore, trend was determined using other parameters. There was no change in Wyoming big sagebrush decadence and recruitment.
- **1999 to 2004 - up (+2):** Sagebrush density increased from 20 plants/acre to 100 plants/acre. Decadence is at 0% and recruitment of young plants increased to 20% of the population.
- **2004 to 2009 - slightly up (+2):** Wyoming big sagebrush density increased to 140 plants/acre. Decadence also increased, but is still low, to 14% and no young plants were sampled.

Grass:

- **1985 to 1991 - down (-2):** The sum of nested frequency of perennial grasses decreased 36%. A good mix of perennial species is present.
- **1991 to 1999 - up (+2):** The sum of nested frequency of perennial grasses increased 85% and cover is at 9%. Bluebunch wheatgrass provided 38% of the grass cover and smooth brome provided 28%. Cheatgrass cover was low at 1%.
- **1999 to 2004 - down (-2):** The sum of nested frequency of perennial grasses decreased 21%, though cover increased to 10%. Bluebunch wheatgrass provided 46% of grass cover while smooth brome provided 20%. Cheatgrass cover increased to 3%.

- **2004 to 2009 - up (+2):** The nested frequency of perennial grasses increased 27% and cover increased to 12%. Bluebunch wheatgrass provided 32% of grass cover and smooth brome provided 34%. Cheatgrass cover decreased to 1%.

Forb:

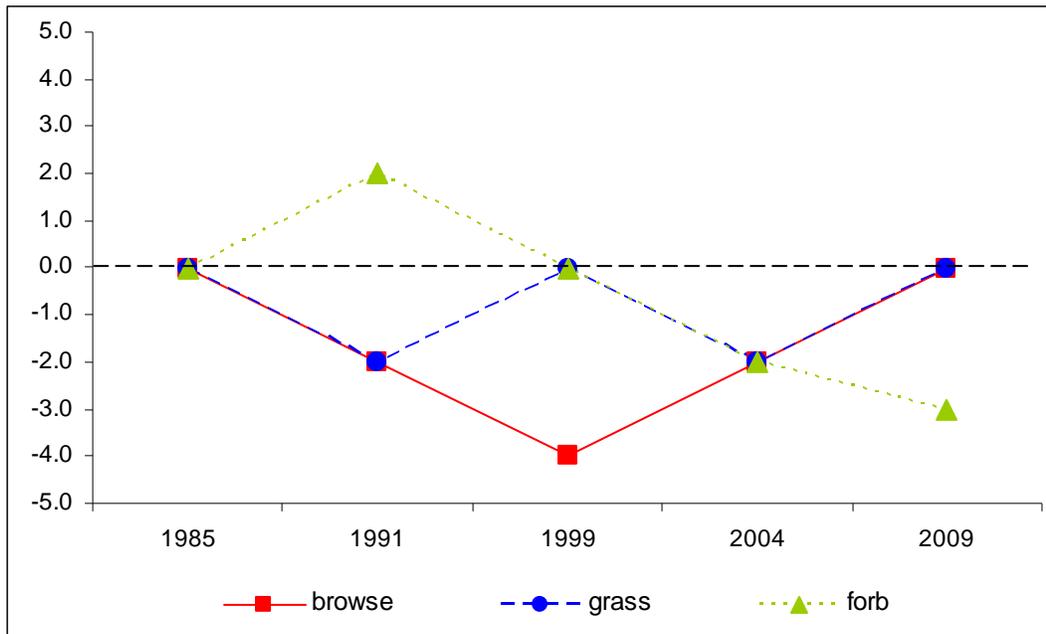
- **1985 to 1991 - up (+2):** The forb community is diverse and dominated by perennial species. The sum of nested frequency of perennial forbs increased more than two-fold.
- **1991 to 1999 - down (-2):** The sum of nested frequency of perennial forbs decreased 34%. Perennial forbs provide 3% cover. Annual forbs have established and are increasing.
- **1999 to 2004 - down (-2):** The sum of nested frequency of perennial forbs decreased 45%. The sum of nested frequency of annual forbs has increased nearly three-fold.
- **2004 to 2009 – slightly down (-1):** The sum of nested frequency of perennial forbs decreased 12%, cover is still at 3%. Annual forb cover increased from 1% to 3%.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 25A, study no: 4

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
99	3.3	0.0	0.0	17.1	-0.7	6.8	0.0	26.5	Poor-Fair
04	4.7	0.0	0.0	19.2	-1.9	5.3	0.0	27.3	Fair
09	6.4	13.7	0.0	23.8	-0.7	5.5	0.0	48.6	Good

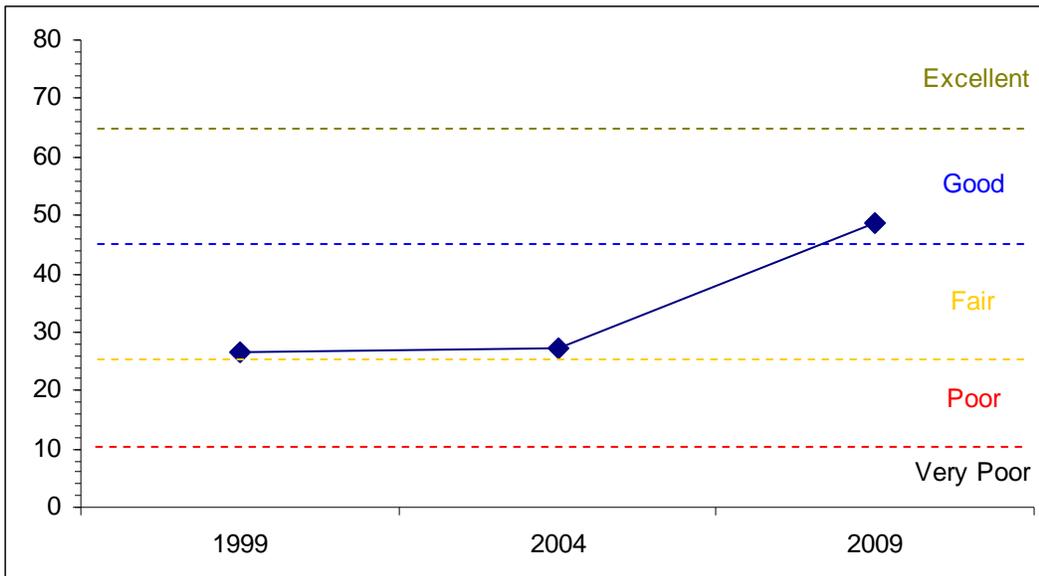
Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 25A Study no: 4



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE

Management unit 25A, Study no: 4



HERBACEOUS TRENDS--

Management unit 25A, Study no: 4

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'99	'04	'09	'99	'04	'09
G	Agropyron cristatum	b22	b20	a3	ab7	ab15	.03	.06	.27
G	Agropyron intermedium	b46	a10	a20	a15	a19	.43	.60	.43
G	Agropyron spicatum	a68	a48	b124	b123	b109	3.56	5.56	4.15
G	Bromus inermis	a18	a12	b80	b83	b106	2.65	2.41	4.36
G	Bromus tectorum (a)	-	-	b110	b92	a56	.90	2.57	.98
G	Carex sp.	b12	a-	ab2	a-	ab4	.03	-	.06
G	Oryzopsis hymenoides	-	-	-	-	-	.00	-	-
G	Poa fendleriana	b58	b46	ab33	a16	ab35	.28	.46	1.66
G	Poa secunda	a9	ab20	c79	b38	c71	1.32	.40	.87
G	Sitanion hystrix	c76	b42	ab25	a9	a10	.20	.09	.07
Total for Annual Grasses		0	0	110	92	56	0.90	2.57	0.98
Total for Perennial Grasses		309	198	366	291	369	8.53	9.61	11.89
Total for Grasses		309	198	476	383	425	9.44	12.18	12.88
F	Agoseris glauca	a7	b29	ab18	a4	a2	.17	.01	.15
F	Allium sp.	4	5	-	-	-	-	-	-
F	Alyssum alyssoides (a)	-	-	a-	a-	b58	-	-	.46
F	Arabis sp.	-	5	3	4	-	.01	.01	-
F	Astragalus beckwithii	6	10	3	3	-	.00	.03	-
F	Chaenactis douglasii	4	1	11	-	-	.03	-	-
F	Cirsium sp.	a-	b21	b40	b37	b22	1.23	1.27	.59
F	Collinsia parviflora (a)	-	-	a9	c190	b73	.01	.52	.36
F	Collomia linearis (a)	-	-	a1	b58	a3	.00	.17	.00
F	Comandra pallida	ab3	b13	a1	a-	a1	.00	-	.00
F	Crepis acuminata	2	4	-	2	13	-	.00	.10

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'99	'04	'09	'99	'04	'09
F	<i>Cymopterus longipes</i>	3	2	-	-	-	-	-	-
F	<i>Draba</i> sp. (a)	-	-	6	3	-	.04	.00	-
F	<i>Epilobium brachycarpum</i> (a)	-	-	b39	a4	a-	.13	.01	-
F	<i>Erigeron eatonii</i>	-	2	6	2	-	.04	.01	-
F	<i>Erigeron pumilus</i>	a8	ab9	b21	a5	a1	.42	.04	.00
F	<i>Eriogonum racemosum</i>	9	15	6	6	7	.04	.23	.11
F	<i>Eriogonum umbellatum</i>	b19	a1	a4	a2	a1	.01	.03	.06
F	<i>Erodium cicutarium</i> (a)	-	3	-	-	-	-	-	-
F	<i>Gayophytum ramosissimum</i> (a)	-	-	b21	b25	a-	.17	.10	-
F	<i>Lactuca serriola</i>	a-	b64	a-	a-	a-	-	-	-
F	<i>Lepidium</i> sp. (a)	-	-	-	7	-	-	.02	-
F	<i>Machaeranthera canescens</i>	b50	b46	a16	a3	a1	.12	.03	.00
F	<i>Medicago sativa</i>	-	-	-	-	-	-	-	.03
F	<i>Microsteris gracilis</i> (a)	-	-	a24	b66	b79	.06	.16	.44
F	<i>Petradoria pumila</i>	a-	a-	b6	b17	b14	.60	.84	1.00
F	<i>Phlox longifolia</i>	a-	b35	a3	b27	b30	.00	.12	.48
F	<i>Polygonum douglasii</i> (a)	-	-	a7	b31	ab24	.02	.09	.21
F	<i>Ranunculus testiculatus</i> (a)	-	-	a8	b63	c178	.01	.16	1.66
F	<i>Sphaeralcea coccinea</i>	-	-	3	-	4	.03	-	.15
F	<i>Tragopogon dubius</i>	ab4	b18	c61	a-	a1	.67	.00	.03
F	<i>Trifolium</i> sp.	a4	b21	a-	a-	a-	-	-	-
F	Unknown forb-perennial	-	3	-	-	-	-	-	-
F	<i>Zigadenus paniculatus</i>	-	-	-	-	2	-	-	.03
Total for Annual Forbs		0	3	115	447	415	0.46	1.25	3.15
Total for Perennial Forbs		123	304	202	112	99	3.40	2.66	2.76
Total for Forbs		123	307	317	559	514	3.87	3.92	5.92

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

BROWSE TRENDS--

Management unit 25A, Study no: 4

T y p e	Species	Strip Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
B	Amelanchier utahensis	0	1	1	-	.03	.00
B	Artemisia tridentata wyomingensis	1	5	5	.15	.38	.30
B	Chrysothamnus depressus	3	4	4	.03	.30	.33
B	Chrysothamnus nauseosus hololeucus	3	1	1	.18	.03	.03
B	Chrysothamnus viscidiflorus viscidiflorus	55	53	61	6.44	5.06	4.53
B	Eriogonum microthecum	2	2	3	.00	.00	.06
B	Gutierrezia sarothrae	33	57	24	1.37	2.36	.12
B	Purshia tridentata	2	1	2	.30	.38	.63
B	Quercus gambelii	1	3	5	2.03	2.24	3.65
B	Sambucus cerulea	1	1	2	.38	.63	.63
B	Tetradymia canescens	4	2	4	.03	.00	.03
Total for Browse		105	130	112	10.92	11.43	10.33

CANOPY COVER, LINE INTERCEPT--

Management unit 25A, Study no: 4

Species	Percent Cover		
	'99	'04	'09
Amelanchier utahensis	-	.08	.10
Artemisia tridentata wyomingensis	-	.91	1.14
Chrysothamnus depressus	-	.28	-
Chrysothamnus nauseosus hololeucus	-	.11	.20
Chrysothamnus viscidiflorus viscidiflorus	-	6.90	7.13
Gutierrezia sarothrae	-	5.84	.16
Juniperus osteosperma	-	1.00	-
Purshia tridentata	-	.60	1.63
Quercus gambelii	1.39	2.48	4.83
Sambucus cerulea	-	.36	.45
Tetradymia canescens	-	-	.06

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 25A, Study no: 4

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	2.3	1.2
Purshia tridentata	5.2	2.9

BASIC COVER--

Management unit 25A, Study no: 4

Cover Type	Average Cover %				
	'85	'91	'99	'04	'09
Vegetation	2.75	6.00	23.77	27.43	32.20
Rock	12.25	38.00	22.90	29.98	22.77
Pavement	3.75	9.00	15.65	29.29	29.79
Litter	72.00	21.00	18.27	14.93	24.03
Cryptogams	.25	0	.01	.00	.39
Bare Ground	9.00	26.00	19.98	8.79	12.98

SOIL ANALYSIS DATA --

Management unit 25A, Study no: 4, Study Name: Durfee Homestead

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
11.9	7.5	34	38.7	27.3	4.3	38.1	214.4	0.7

PELLET GROUP DATA--

Management unit 25A, Study no: 4

Type	Quadrat Frequency			Days use per acre (ha)		
	'99	'04	'09	'99	'04	'09
Rabbit	8	56	13	-	-	-
Elk	9	7	7	33 (82)	7 (17)	9 (22)
Deer	7	11	10	15 (38)	15 (36)	13 (31)
Cattle	9	1	2	16 (40)	4 (9)	11 (27)
Sheep	-	-	-	-	-	1 (2)

BROWSE CHARACTERISTICS--

Management unit 25A, Study no: 4

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Amelanchier utahensis									
85	0	0	0	-	-	0	0	0	-/-
91	0	0	0	-	-	0	0	0	-/-
99	0	0	0	-	20	0	0	0	20/28
04	20	0	100	-	-	0	100	0	14/17
09	20	0	100	-	-	0	0	0	21/25
Artemisia tridentata wyomingensis									
85	1198	6	22	72	133	44	6	28	13/14
91	66	0	100	0	-	0	0	0	11/7
99	20	0	100	0	-	0	0	0	35/53
04	100	20	80	0	-	40	0	0	16/22
09	140	0	86	14	-	0	0	14	19/23

		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>Atriplex canescens</i>										
85	0	0	0	-	-	0	0	0	-/-	
91	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	19/27	
04	0	0	0	-	-	0	0	0	-/-	
09	0	0	0	-	-	0	0	0	-/-	
<i>Chrysothamnus depressus</i>										
85	932	14	71	14	66	0	0	0	5/8	
91	0	0	0	0	-	0	0	0	-/-	
99	140	0	100	0	-	29	0	0	5/7	
04	260	0	77	23	-	31	69	8	5/8	
09	280	0	100	0	-	0	0	0	4/10	
<i>Chrysothamnus nauseosus hololeucus</i>										
85	0	0	0	-	-	0	0	0	-/-	
91	0	0	0	-	-	0	0	0	-/-	
99	60	0	100	-	-	0	0	0	22/32	
04	40	0	100	-	20	0	100	0	21/28	
09	20	0	100	-	-	0	0	0	20/29	
<i>Chrysothamnus viscidiflorus viscidiflorus</i>										
85	865	31	69	0	66	0	0	0	6/7	
91	2333	100	0	0	199	6	9	0	-/-	
99	3660	5	78	17	-	1	0	8	15/22	
04	4660	5	74	21	-	3	4	41	13/24	
09	3640	8	89	3	100	0	0	3	13/21	
<i>Echinocereus triglochidatus</i>										
85	66	100	0	-	-	0	0	0	-/-	
91	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	-/-	
04	0	0	0	-	-	0	0	0	-/-	
09	0	0	0	-	-	0	0	0	-/-	
<i>Eriogonum microthecum</i>										
85	1731	35	62	4	-	8	4	0	7/7	
91	0	0	0	0	-	0	0	0	-/-	
99	60	0	100	0	-	100	0	0	3/13	
04	120	0	100	0	-	0	0	0	7/14	
09	200	0	100	0	-	0	0	0	6/12	
<i>Gutierrezia sarothrae</i>										
85	0	0	0	0	-	0	0	0	-/-	
91	0	0	0	0	-	0	0	0	-/-	
99	1700	6	94	0	20	0	1	0	8/11	
04	10200	3	97	0	20	0	0	.39	9/12	
09	620	3	97	0	-	0	0	0	8/6	

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
Pinus edulis									
85	132	50	0	50	-	0	0	100	-/-
91	0	0	0	0	-	0	0	0	-/-
99	0	0	0	0	-	0	0	0	-/-
04	0	0	0	0	-	0	0	0	-/-
09	0	0	0	0	-	0	0	0	-/-
Purshia tridentata									
85	532	25	63	12	-	50	13	0	15/25
91	0	0	0	0	-	0	0	0	-/-
99	40	0	100	0	-	0	100	0	20/48
04	20	0	100	0	-	0	100	0	21/57
09	40	0	100	0	-	0	0	0	23/77
Quercus gambelii									
85	0	0	0	-	-	0	0	0	-/-
91	0	0	0	-	-	0	0	0	-/-
99	260	0	100	-	-	0	0	0	69/69
04	600	10	90	-	-	0	0	0	51/37
09	100	0	100	-	-	0	0	0	67/68
Sambucus cerulea									
85	0	0	0	-	-	0	0	0	-/-
91	0	0	0	-	-	0	0	0	-/-
99	20	0	100	-	-	0	0	0	43/52
04	20	0	100	-	-	0	100	0	55/57
09	60	33	67	-	-	0	0	0	38/43
Tetradymia canescens									
85	0	0	0	0	-	0	0	0	-/-
91	0	0	0	0	-	0	0	0	-/-
99	100	0	100	0	-	20	0	0	6/14
04	40	0	100	0	-	50	0	0	10/20
09	80	0	50	50	-	25	0	50	10/27