

SAM'S CANYON - TREND STUDY NO. 17-56-10

Vegetation Type: Mountain Brush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Not Available

Land Ownership: Ute Tribe

Elevation: 7940 ft. (2421 m)

Aspect: West

Slope: 30%

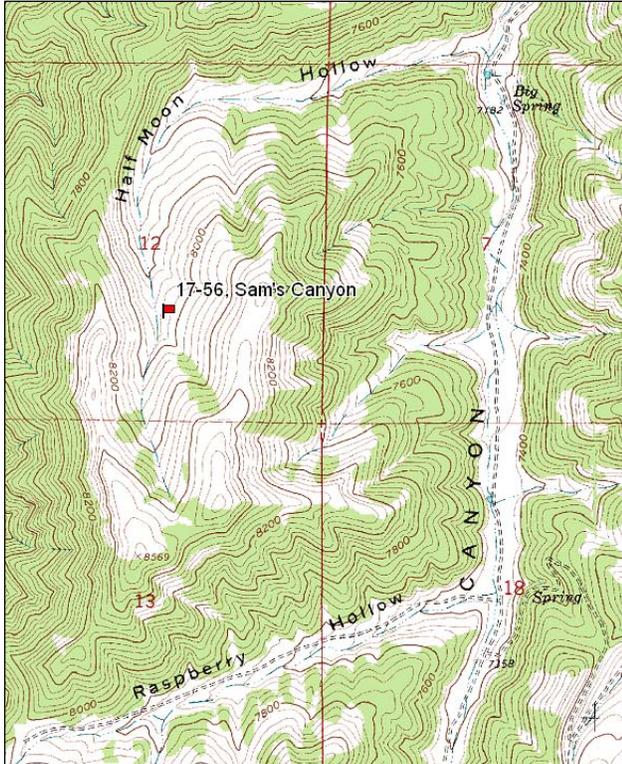
Transect bearing: 0° magnetic

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

Directions:

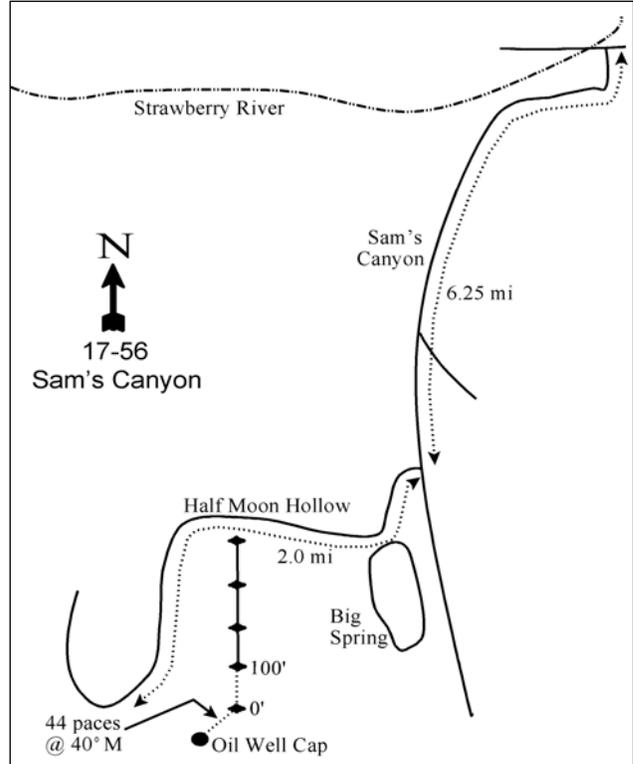
From the intersection of the Strawberry River Road and U.S. 40 near Starvation Reservoir, go west up the Strawberry River for 8.5 miles. Before the bridge, turn left. From the Strawberry River Road, go 6.25 miles up Sam's Canyon. Turn right into Half Moon Hollow (about 0.2 miles before Big Spring). Follow the old, rabbitbrush-covered road (which may be impassable to vehicles due to washouts and tall brush) about 2 miles up the canyon to when the road turns sharply right and goes up a dugway. The old drilling platform there is hardly noticeable, just a brush-covered flat spot in the bottom of the canyon. The well cap is 15" tall. From the capped well, the 0-foot baseline stake (marked with browse tag #7080) is 44 paces at 40°M.

Map Name: Sams Canyon



Township: 5S Range: 8W Section: 12

Diagrammatic Sketch:



GPS: NAD 83, UTM 12T 522860 E 4434220 N

## SAM'S CANYON - TREND STUDY NO. 17-56

### Site Information

Site Description: The study is located at the head of Half Moon Hollow, a tributary of Sam's Canyon, on Ute Reservation lands. This site was not read in 2000 because the access road was washed out. In 1995, deer pellet frequency was higher than in 2005. Elk frequencies were very low in 1995, but appeared to be higher in 2005. Pellet group transect data has estimated moderate use by elk and deer, and light use by cattle since 2005 (Table - Pellet Group Data).

Browse: Several species of browse offer forage for wildlife but true mountain mahogany (*Cercocarpus montanus*) is considered the key browse species on the site. Mahogany is in good condition with respect to age structure and vigor. The average mature shrub measures only 2.5 feet in height and is all available. Utilization has been extremely heavy in the past, with the exception of 1995 and 2010 when the majority of individuals were moderately browsed. Recruitment of young mahogany has been good over the sample years. Secondary browse species include serviceberry (*Amelanchier utahensis*), black sagebrush (*Artemisia nova*) and a small number of mountain big sagebrush (*A. tridentata* ssp. *vaseyana*). Mature serviceberry average about 3 feet in height with all of the plant considered available to wildlife and have exhibited heavy utilization in most sample years. A moderately dense stand of black sagebrush occupies the site, but there was a large decrease in the density of black sagebrush in 2005. Utilization of both sagebrush species has been moderate to heavy over the course of the study (Table - Browse Characteristics)

Herbaceous Understory: Grasses are fairly diverse and abundant, but almost all of the cover is provided by just one species, bluebunch wheatgrass (*Agropyron spicatum*). Other common grass species include sedge (*Carex* sp.), Salina wildrye (*Elymus salina*) and Indian ricegrass (*Oryzopsis hymenoides*). Forb production is sparse, even though diversity is moderately high. Most species are low-growing forms with low to medium forage value. The most common species include cryptantha (*Cryptantha* sp.) and sulfur eriogonum (*Eriogonum umbellatum*) (Table - Herbaceous Trends).

Soil: Soils are limestone derived with a loam texture and a slightly alkaline soil reaction (pH 7.7) (Table - Soil Analysis Data). Bare ground cover is low with a high amount of rock and pavement providing protective ground cover. Vegetation and litter cover are also high (Table - Basic Cover). The soil erosion condition was classified as slight in 2010 because of litter, rock and soil movement, and flow patterns around perennial plants.

### Trend Assessments

#### Browse:

- **1982 to 1988 - stable (0):** There was a slight increase in the density of true mountain mahogany due to a substantial increase in the recruitment of young plants. The density of mature mahogany plants actually decreased substantially. Decadence and poor vigor remained low in the mahogany population.
- **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 the decadence or vigor of the key browse species, true mountain mahogany. Recruitment of young mahogany plants decreased, but remained good at 13% of the population. There was a large decrease in the decadence of black sagebrush from 41% to 12%.
- **1995 to 2005 - slightly down (-1):** There was little change in the true mountain mahogany population, though cover increased from 10% to 14%. Black sagebrush density decreased by 27% from 4,220 plants/acre to 3,060 plants/acre and cover decreased from 11% to 4%. Decadence of black sagebrush increased to 36% and poor vigor increased from 8% to 30%.
- **2005 to 2010 - stable (0):** The density of black sagebrush increased slightly to 3,340 plants/acre, but cover remained low at 3%. Decadence of black sagebrush decreased to 13% and poor vigor decreased

to 17%. There was little change in the true mountain mahogany population, though cover increased to 17%.

Grass:

- **1982 to 1988 - no trend (NT):** Only quadrat frequency data for grasses are available from 1982, so no trend was given.
- **1988 to 1995 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, though there was a significant decrease in the nested frequency of Sandberg's bluegrass (*Poa secunda*).
- **1995 to 2005 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased by 16% and cover decreased from 12% to 8%. There was a significant decrease in the nested frequency of sedge.
- **2005 to 2010 - slightly down (-1):** The perennial grass sum of nested frequency decreased by 10%, but cover increased to 15%. Sedge decreased significantly in nested frequency. The increase in cover was due to a large increase in the cover of bluebunch wheatgrass.

Forb:

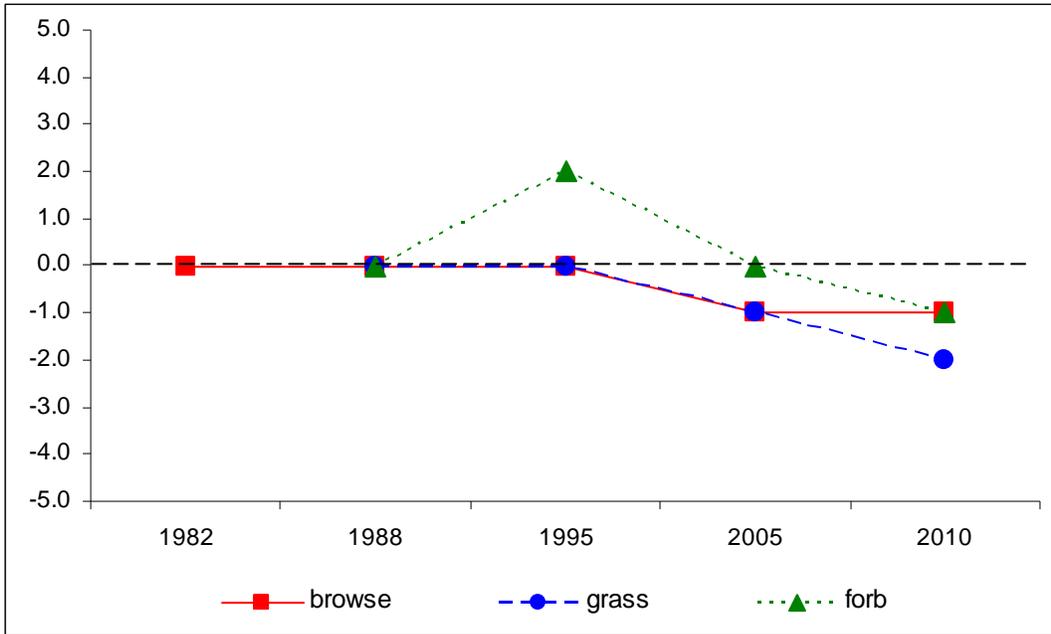
- **1982 to 1988 - no trend (NT):** Only quadrat frequency data for forbs are available from 1982, so no trend was given.
- **1988 to 1995 - up (+2):** The sum of nested frequency of perennial forbs increased by 57%.
- **1995 to 2005 - down (-2):** The perennial forb sum of nested frequency decreased to 1988 levels and cover decreased from 5% to 2%.
- **2005 to 2010 - slightly down (-1):** There was a 19% decrease in the sum of nested frequency, though cover increased to 4%.

DEER DESIRABLE COMPONENTS INDEX - HIGH POTENTIAL SCALE --  
Management unit 17, study no: 56

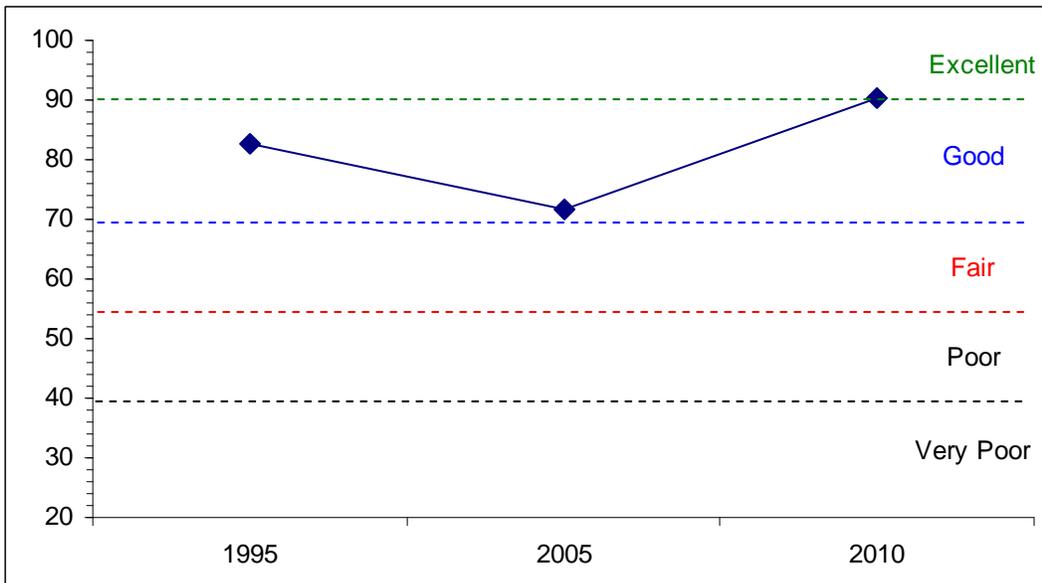
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	30.0	13.1	7.1	23.0	0.0	9.4	0.0	<b>82.6</b>	Good
05	30.0	11.3	10.1	15.7	0.0	4.7	0.0	<b>71.8</b>	Fair-Good
10	30.0	14.4	8.2	30.0	0.0	7.8	0.0	<b>90.4</b>	Good-Excellent

## Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--  
Management unit 17, Study no: 56



DEER DESIRABLE COMPONENTS INDEX TREND, HIGH POTENTIAL--  
Management unit 17, Study no: 56



HERBACEOUS TRENDS--  
Management unit 17, Study no: 56

Type	Species	Nested Frequency				Average Cover %		
		'88	'95	'05	'10	'95	'05	'10
G	Agropyron spicatum	201	205	197	219	6.77	4.80	12.44
G	Carex sp.	bc64	c104	b63	a17	2.45	.92	.91
G	Elymus salina	b74	ab54	a40	a31	1.54	1.04	.99
G	Festuca ovina	1	-	-	-	-	-	-
G	Koeleria cristata	-	4	7	-	.06	.06	-
G	Oryzopsis hymenoides	ab16	b30	ab29	a11	.57	.92	.37
G	Poa fendleriana	18	11	9	19	.10	.05	.33
G	Poa secunda	b38	a6	a3	a15	.01	.03	.33
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		412	414	348	312	11.52	7.85	15.39
Total for Grasses		412	414	348	312	11.52	7.85	15.39
F	Androsace septentrionalis (a)	-	5	7	-	.01	.01	-
F	Antennaria rosea	2	-	5	-	-	.01	-
F	Arabis perennans	ab5	c23	b11	a-	.07	.02	-
F	Arenaria sp.	a-	b13	b16	a2	.06	.04	.03
F	Aster chilensis	-	-	8	5	-	.06	.09
F	Astragalus argophyllus	ab6	b15	a2	a3	.09	.00	.00
F	Astragalus convallarius	a2	ab5	b10	ab4	.01	.06	.06
F	Astragalus tenellus	5	4	3	-	.01	.00	-
F	Balsamorhiza sagittata	1	-	-	-	-	-	-
F	Calochortus nuttallii	-	9	-	-	.04	.00	-
F	Castilleja flava	a7	b54	a2	a8	.71	.03	.04
F	Caulanthus crassicaulis	-	2	-	-	.00	-	-
F	Chaenactis douglasii	-	3	-	-	.00	-	-
F	Chenopodium leptophyllum(a)	-	2	6	2	.00	.01	.00
F	Crepis acuminata	a-	b18	b12	b10	.14	.06	.18
F	Cryptantha sp.	a19	b66	ab37	b45	.94	.51	1.10
F	Cymopterus sp.	-	-	3	-	-	.00	-
F	Descurainia pinnata (a)	-	4	5	1	.01	.04	.00
F	Erigeron flagellaris	-	2	2	-	.03	.03	-
F	Eriogonum alatum	13	23	15	21	.30	.15	.34
F	Eriogonum umbellatum	56	68	54	55	1.33	.55	1.59
F	Hymenoxys acaulis	ab2	b10	a-	ab4	.24	-	.03
F	Lappula occidentalis (a)	-	3	3	-	.00	.00	-
F	Lesquerella sp.	3	-	7	-	-	.04	-
F	Lithospermum multiflorum	7	9	9	2	.18	.27	.00
F	Machaeranthera grindelioides	c24	bc14	ab4	a1	.34	.06	.03
F	Orobanche sp.	-	2	-	-	.00	-	-
F	Penstemon humilis	b92	a33	a29	a15	.10	.32	.12
F	Penstemon sp.	-	-	-	4	-	-	.06
F	Petradoria pumila	-	5	-	-	.01	-	-
F	Phlox austromontana	-	-	2	6	-	.03	.18
F	Schoenocrambe linifolia	-	4	3	-	.01	.03	-

Type	Species	Nested Frequency				Average Cover %		
		'88	'95	'05	'10	'95	'05	'10
F	Senecio multilobatus	-	2	-	4	.03	-	.01
F	Unknown forb-perennial	1	-	-	-	-	-	-
Total for Annual Forbs		0	14	21	3	0.02	0.07	0.00
Total for Perennial Forbs		245	384	234	189	4.71	2.33	3.89
Total for Forbs		245	398	255	192	4.74	2.41	3.90

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

#### BROWSE TRENDS--

Management unit 17, Study no: 56

Type	Species	Strip Frequency			Average Cover %		
		'95	'05	'10	'95	'05	'10
B	Amelanchier utahensis	31	27	28	5.11	5.82	6.08
B	Artemisia nova	76	47	52	10.60	3.90	2.69
B	Artemisia tridentata vaseyana	7	12	7	1.09	.04	.15
B	Cercocarpus montanus	76	80	78	9.68	14.12	17.37
B	Chrysothamnus depressus	44	31	22	.98	1.32	.66
B	Chrysothamnus viscidiflorus viscidiflorus	47	50	49	2.04	1.87	1.23
B	Eriogonum corymbosum	20	11	7	.31	.41	.38
B	Gutierrezia sarothrae	24	11	18	.24	.06	.24
B	Pinus edulis	0	1	2	.18	.15	1.00
B	Pseudotsuga menziesii	0	1	1	-	-	.15
B	Symphoricarpos oreophilus	54	55	60	3.04	6.15	7.14
B	Tetradymia canescens	12	2	2	.03	.03	.38
Total for Browse		391	328	326	33.34	33.90	37.52

#### CANOPY COVER, LINE INTERCEPT--

Management unit 17, Study no: 56

Species	Percent Cover	
	'05	'10
Amelanchier utahensis	7.19	9.30
Artemisia nova	3.23	5.96
Artemisia tridentata vaseyana	1.79	.01
Cercocarpus montanus	17.43	21.68
Chrysothamnus depressus	1.01	.38
Chrysothamnus viscidiflorus viscidiflorus	1.61	1.91
Eriogonum corymbosum	.28	-
Gutierrezia sarothrae	-	.36
Pinus edulis	.28	1.01
Pseudotsuga menziesii	.30	.26
Symphoricarpos oreophilus	5.03	6.08

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 17, Study no: 56

Species	Average leader growth (in)	
	'05	'10
Amelanchier utahensis	5.0	4.1
Cercocarpus montanus	5.4	3.4

BASIC COVER--

Management unit 17, Study no: 56

Cover Type	Average Cover %				
	'82	'88	'95	'05	'10
Vegetation	6.25	6.50	45.45	37.96	48.37
Rock	1.25	1.00	10.33	3.13	1.21
Pavement	43.00	46.00	10.54	24.85	17.95
Litter	43.00	40.25	39.87	41.11	45.59
Cryptogams	0	0	.03	.10	.63
Bare Ground	6.50	6.25	9.88	7.67	11.63

SOIL ANALYSIS DATA --

Management unit 17, Study no: 56, Study Name: Sam's Canyon

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
13.1	7.7	38.1	35.4	26.6	4.5	6.9	163.2	0.7

PELLET GROUP DATA--

Management unit 17, Study no: 56

Type	Quadrat Frequency		Days use per acre (ha)	
	'05	'10	'05	'10
Rabbit	5	-	-	-
Elk	24	7	48 (119)	24 (60)
Deer	12	20	27 (68)	32 (78)
Cattle	3	1	7 (16)	1 (2)

BROWSE CHARACTERISTICS--  
Management unit 17, Study no: 56

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>Amelanchier utahensis</b>									
82	<b>799</b>	8	92	0	533	17	83	8	34/29
88	<b>932</b>	71	29	0	-	36	43	0	40/35
95	<b>820</b>	22	76	2	-	22	0	0	38/50
05	<b>760</b>	34	58	8	-	29	37	3	37/46
10	<b>760</b>	3	97	0	-	47	11	0	35/45
<b>Artemisia nova</b>									
82	<b>3198</b>	25	54	21	199	23	65	21	9/15
88	<b>5798</b>	18	40	41	133	48	1	1	10/15
95	<b>4220</b>	10	77	12	80	67	2	8	12/21
05	<b>3060</b>	15	49	36	680	20	4	30	11/15
10	<b>3340</b>	31	56	13	160	22	5	17	10/14
<b>Artemisia tridentata vaseyana</b>									
82	<b>598</b>	33	44	22	-	78	22	11	19/19
88	<b>598</b>	56	33	11	-	11	11	0	11/17
95	<b>180</b>	33	33	33	-	33	0	11	17/27
05	<b>320</b>	25	13	63	60	31	31	44	18/21
10	<b>260</b>	62	38	0	-	15	15	0	22/21
<b>Cercocarpus montanus</b>									
82	<b>3464</b>	40	58	2	466	19	69	2	23/23
88	<b>4065</b>	82	16	2	66	21	62	0	33/29
95	<b>2920</b>	13	87	0	20	55	16	0	27/31
05	<b>3120</b>	17	75	8	20	9	84	3	31/35
10	<b>3040</b>	18	81	1	200	40	29	0	31/35
<b>Chrysothamnus depressus</b>									
82	<b>599</b>	11	89	0	-	67	22	0	6/8
88	<b>532</b>	75	25	0	-	0	0	0	3/6
95	<b>3080</b>	8	90	1	-	0	0	1	6/9
05	<b>2940</b>	1	92	7	20	70	5	1	5/7
10	<b>1280</b>	27	72	2	20	0	0	2	5/10
<b>Chrysothamnus viscidiflorus viscidiflorus</b>									
82	<b>3598</b>	2	96	2	-	0	4	4	11/9
88	<b>3664</b>	35	60	5	-	0	0	18	12/12
95	<b>2520</b>	5	94	1	-	0	0	0	34/54
05	<b>2520</b>	13	87	1	160	0	0	0	10/11
10	<b>2060</b>	13	87	0	-	0	0	0	12/13

		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>Eriogonum corymbosum</i>										
82	265	0	75	25	-	50	0	25	12/12	
88	265	75	25	0	-	25	0	25	10/8	
95	540	4	96	0	-	0	4	0	10/13	
05	220	0	45	55	-	0	9	9	13/17	
10	140	14	86	0	-	0	0	0	11/13	
<i>Gutierrezia sarothrae</i>										
82	333	0	100	0	-	0	0	0	9/8	
88	599	0	100	0	-	0	0	0	6/3	
95	840	10	90	0	-	0	0	0	8/8	
05	300	13	87	0	20	0	0	0	6/6	
10	900	13	84	2	-	0	0	2	8/8	
<i>Leptodactylon pungens</i>										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
05	0	0	0	-	-	0	0	0	5/6	
10	0	0	0	-	-	0	0	0	-/-	
<i>Pinus edulis</i>										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
05	20	100	0	-	-	0	0	0	-/-	
10	40	50	50	-	-	0	0	0	-/-	
<i>Pseudotsuga menziesii</i>										
82	0	0	0	0	-	0	0	0	-/-	
88	0	0	0	0	-	0	0	0	-/-	
95	0	0	0	0	-	0	0	0	-/-	
05	20	0	0	100	-	0	100	100	-/-	
10	20	100	0	0	-	0	0	0	-/-	
<i>Symphoricarpos oreophilus</i>										
82	3265	39	59	2	-	6	0	0	11/17	
88	4332	82	15	3	399	11	2	14	12/16	
95	2500	25	75	0	40	2	0	0	11/16	
05	2420	12	82	6	40	5	0	.82	13/23	
10	2840	15	85	0	40	0	0	0	12/21	
<i>Tetradymia canescens</i>										
82	0	0	0	0	-	0	0	0	-/-	
88	0	0	0	0	-	0	0	0	-/-	
95	460	4	96	0	-	4	0	0	9/10	
05	40	0	50	50	-	100	0	0	8/11	
10	80	0	100	0	-	0	0	0	9/13	