

PHIL PICO MOUNTAIN - TREND STUDY NO. 8B-8-10

Vegetation Type: True Mountain Mahogany

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: [Upland Stony Loam \(Mountain Big Sagebrush\), R047XB336UT](#)

Land Ownership: SITLA

Elevation: 8896 ft. (2712 m)

Aspect: Southwest

Slope: 65%

Transect bearing: 215° magnetic

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

Directions:

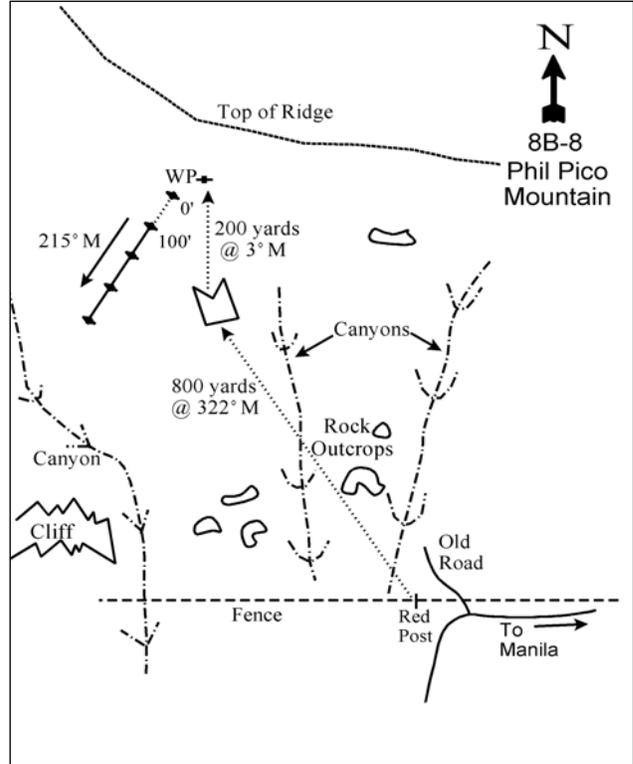
From the Wyoming-Utah state line, drive south on U-43 for 1.9 miles to a road (Rt. 166) on the right (south). Turn right and follow Rt. 166 for 3.6 miles to an intersection. Turn to the right and go 1.6 miles to another fork. Bear right before crossing the creek and go 0.9 miles on a fairly rough road to the Forest Service boundary fence. Continue 0.8 miles west along the fence. Stop where the road turns left away from the fence by a red post in the fence. The study is located on the slope below the ridge to the northwest. From the red witness post along the fence, hike about 1/4 mile at 322° M up across the slope to a large square rock outcrop. Continue hiking about 200 yards directly north to the study site. The 0-foot baseline stake is tagged with browse tag #9080.

Map Name: Hoop Lake



Township: 3N Range: 18E Section: 33

Diagrammatic Sketch:



GPS: NAD 83, UTM 12T 591757 E 4533640 N

PHIL PICO MOUNTAIN - TREND STUDY NO. 8B-8

Site Information

Site Description: The study is located on the south side of Phil Pico Mountain which is steep, rocky and covered mostly with mountain brush. There are scattered clumps of aspen (*Populus tremuloides*) and conifer in the protected drainages. An open sagebrush (*Artemisia spp.*) and grass communities are found on the upper slopes and ridge tops. The site is located just below a narrow windswept ridge. These slopes are used mostly by wintering elk and, to a lesser extent, deer. Cattle grazing in the area is managed by the Utah State Institutional Trust Lands Administration (SITLA), but cattle tend to utilize mainly the valley bottoms and more gentle slopes. Pellet group transect data has estimated moderate use by elk and light use by deer since 2000. Estimated use by cattle has been very light since 2000 (Table - Pellet Group Data).

Browse: True mountain mahogany (*Cercocarpus montanus*) provides the majority of the browse cover and the bulk of the available forage (Table - Browse Trends). The mahogany is a fairly dense population of heavily used mature plants with low decadence and good recruitment of young plants. Most of the mahogany plants are relatively small less than 3 feet in height and remain mostly available to wildlife for browsing. Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) occurs across the slope, which offers additional nutritional winter forage on the site. This small population of sagebrush has had moderate use over the course of the study. Decadence of sagebrush was moderate at the outset of the study in 1988, but has steadily decreased to low levels in 2010. Recruitment of young sagebrush plants has also decreased over the sample years and was poor in 2010. Other browse species include small populations of serviceberry (*Amelanchier utahensis*), fringed sagebrush (*Artemisia frigida*), winterfat (*Ceratoides lanata*), mountain low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *lanceolatus*) and slenderbush eriogonum (*Eriogonum microthecum*) (Table - Browse Characteristics).

Herbaceous Understory: Grasses are abundant and diverse on the site, with the most common species being bluebunch wheatgrass (*Agropyron spicatum*). Other common grasses include Indian ricegrass (*Oryzopsis hymenoides*) and sedge (*Carex sp.*). Cheatgrass (*Bromus tectorum*) was prevalent in 1995, but has not been common in any other sample year. Forbs are diverse but have provided only about 3% to 4% cover since 1995. Forbs are represented by a variety of species which include cryptantha (*Cryptantha sp.*), hoary aster (*Machaeranthera canescens*) and Hoods phlox (*Phlox hoodii*) (Table - Herbaceous Trends).

Soil: Sandstone and limestone rock are very common on the surface, making the slope loose and talus-like in places. Outcrops of old conglomerate rock are scattered across the hillside. The soil texture is sandy loam with a neutral reaction (pH 7.0). Phosphorus may have limited availability for plant growth and development 5.2 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Considering the harshness of the site on the dry, steep, rocky slope, there has been a surprisingly high amount of vegetation cover and very little bare ground cover (Table - Basic Cover). With the steep, talus slope, some erosion is expected and there is definite down slope soil movement, especially along game trails. Soil is also pedestaled on the uphill side of shrubs and bunch grasses, but soil erosion does not appear to be serious. The soil erosion condition was classified as slight in 2005 and 2010 because of small pedestals surrounding shrubs and perennial grasses, moderate soil movement, minor litter and surface rock movement, common 3 to 6 inch deep rills, and minor flow patterns between perennial species.

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. Decadence of the primary browse species, true mountain mahogany, decreased from 18% to 3%, but recruitment of young plants also decreased from 37% to 18%.

- **1995 to 2000 - stable (0):** There was little change in the true mountain mahogany population, though decadence increased to 15% and cover increased slightly from 18% to 20%.
- **2000 to 2005 - slightly up (+1):** The density of true mountain mahogany increased by 18% from 3,120 plants/acre to 3,680 plants/acre, though cover remained similar. Decadence of mahogany decreased to 7%.
- **2005 to 2010 - stable (0):** The true mountain mahogany population remained similar.

Grass:

- **1988 to 1995 - slightly down (-1):** The perennial grass sum of nested frequency decreased by 14%.
- **1995 to 2000 - slightly up (+1):** There was little change in the sum of nested frequency of perennial grass, but cover increased from 14% to 27%. Cheatgrass also decreased significantly in nested frequency and cover decreased from 3% to less than 1%.
- **2000 to 2005 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased by 12% and cover decreased to 17%.
- **2005 to 2010 - stable (0):** The sum of nested frequency and cover of perennial grasses remained similar.

Forb:

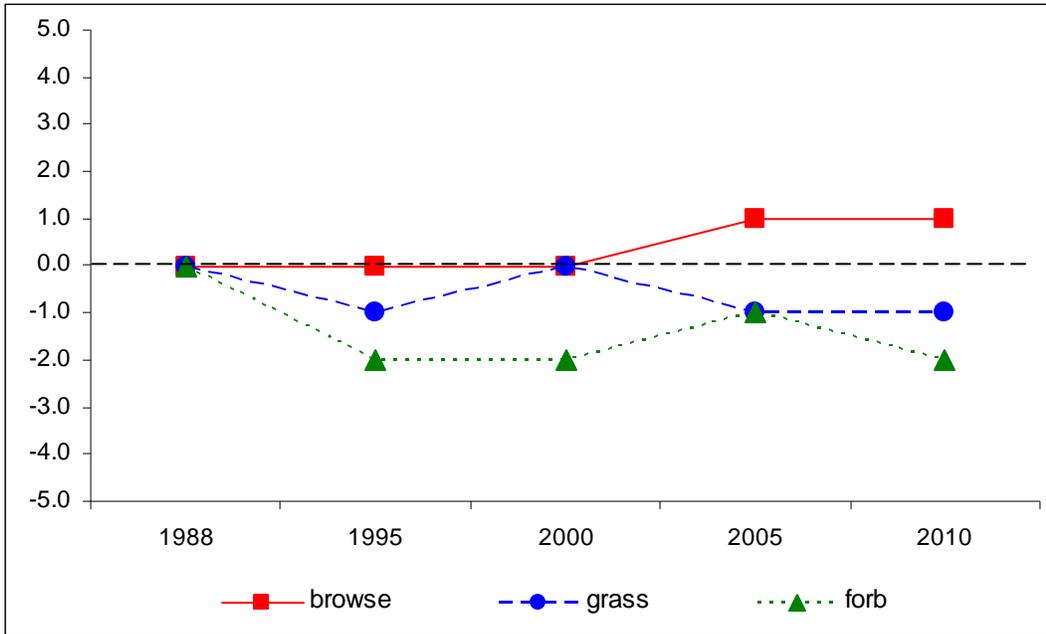
- **1988 to 1995 - down (-2):** The sum of nested frequency of perennial forbs decreased by 42%.
- **1995 to 2000 - stable (0):** There was little change in the sum of nested frequency of perennial forbs and cover remained similar.
- **2000 to 2005 - slightly up (+1):** The perennial forb sum of nested frequency increased by 13% and cover remained similar.
- **2005 to 2010 - slightly down (-1):** There was a 10% decrease in the sum of nested frequency of perennial forbs, though cover remained similar.

DEER DESIRABLE COMPONENTS INDEX - HIGH POTENTIAL SCALE --
Management unit 8B, study no: 8

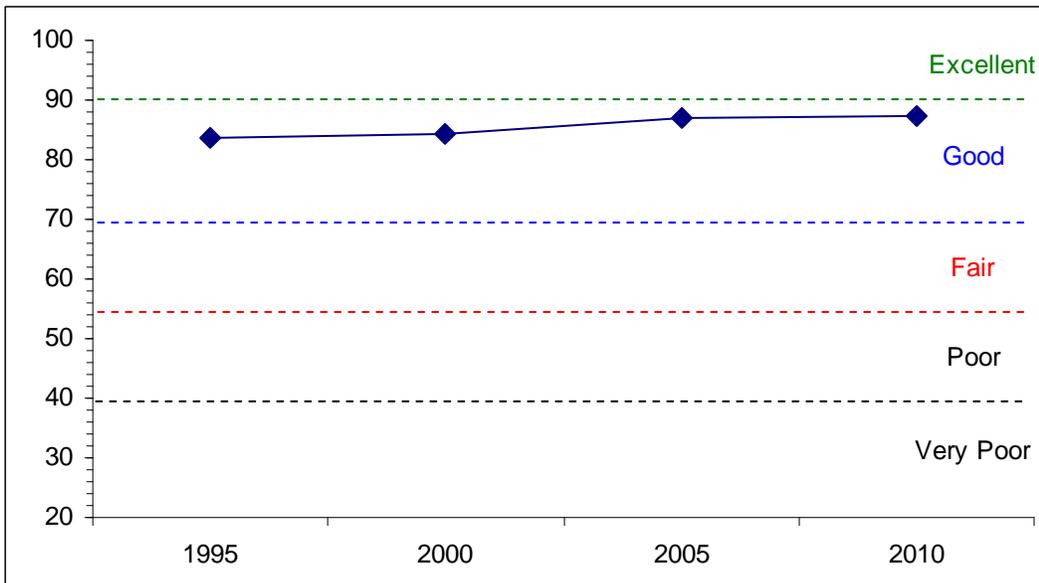
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	30.0	13.8	8.0	27.9	-1.9	5.8	0.0	83.6	Good
00	30.0	10.8	6.1	30.0	-0.1	7.8	0.0	84.5	Good
05	30.0	13.1	7.2	30.0	0.0	6.9	0.0	87.1	Good
10	30.0	14.6	5.5	30.0	-0.1	7.2	0.0	87.2	Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 8B, Study no: 8



DEER DESIRABLE COMPONENTS INDEX TREND, HIGH POTENTIAL--
Management unit 8B, Study no: 8



HERBACEOUS TRENDS--
Management unit 08B, Study no: 8

Type	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
G	Agropyron spicatum	297	287	309	291	282	10.99	19.74	13.44	12.29
G	Bromus tectorum (a)	-	c152	b53	a22	ab30	2.53	.18	.05	.10
G	Carex sp.	b36	ab33	a9	ab12	b47	.50	.39	.34	2.25
G	Koeleria cristata	ab16	ab7	a4	ab17	b18	.08	.03	.36	.32
G	Leucopoa kingii	-	2	4	-	3	.03	.03	-	.00
G	Oryzopsis hymenoides	b115	ab85	ab104	a62	a64	2.16	6.56	2.73	2.27
G	Poa fendleriana	-	-	2	1	-	-	.03	.00	-
G	Poa secunda	ab45	a23	a19	a14	a5	.18	.18	.09	.03
Total for Annual Grasses		0	152	53	22	30	2.53	0.18	0.05	0.10
Total for Perennial Grasses		509	437	451	397	420	13.95	26.98	16.98	17.21
Total for Grasses		509	589	504	419	450	16.49	27.16	17.03	17.31
F	Allium sp.	-	-	-	2	-	-	-	.00	-
F	Arabis sp.	a-	ab7	ab6	b14	a-	.02	.01	.03	-
F	Aster chilensis	b25	a-	a2	a-	a1	-	.00	-	.00
F	Astragalus convallarius	-	7	8	3	10	.21	.21	.20	.07
F	Astragalus sp.	8	4	3	2	2	.06	.15	.03	.06
F	Balsamorhiza hookeri	1	-	-	-	2	-	-	-	.03
F	Camelina microcarpa (a)	a-	a-	b27	b38	a-	-	.10	.13	-
F	Castilleja linariaefolia	b26	a-	a3	a-	a6	-	.04	-	.06
F	Chaenactis douglasii	28	24	19	23	12	.10	.14	.17	.02
F	Chenopodium fremontii (a)	-	-	-	3	-	-	-	.00	-
F	Chenopodium leptophyllum(a)	-	b19	a3	a3	a6	.05	.01	.00	.01
F	Cirsium sp.	12	2	4	10	11	.06	.03	.33	.40
F	Collinsia parviflora (a)	-	a3	a2	b15	a-	.00	.00	.07	-
F	Comandra pallida	6	-	-	3	-	-	-	.00	-
F	Cruciferae	2	-	-	-	-	-	-	-	-
F	Cryptantha sp.	b81	a35	a57	b89	ab61	.48	1.06	1.24	.87
F	Cymopterus sp.	-	-	-	-	1	-	-	-	.00
F	Delphinium nuttallianum	c65	c52	a6	b19	a-	.48	.09	.18	-
F	Descurainia pinnata (a)	a-	c67	ab5	a3	b18	.39	.01	.00	.09
F	Erigeron sp.	-	1	3	-	-	.00	.01	-	-
F	Hymenoxys acaulis	-	2	-	-	7	.03	-	-	.06
F	Ipomopsis aggregata	-	3	-	4	-	.01	-	.04	-
F	Lappula occidentalis (a)	-	b8	a-	ab7	a-	.03	-	.01	-
F	Lepidium sp. (a)	-	3	-	-	3	.03	-	-	.01
F	Lesquerella sp.	b65	b66	a31	a15	a17	.47	.22	.11	.08
F	Leucelele ericoides	10	-	-	1	4	-	-	.00	.03
F	Linum lewisii	ab6	ab5	ab2	a-	b8	.03	.03	.01	.10
F	Lithospermum sp.	1	-	1	1	3	-	.00	.00	.03
F	Lomatium sp.	-	-	3	-	3	-	.03	-	.00
F	Lychnis drummondii	-	2	-	10	1	.00	-	.07	.03
F	Machaeranthera canescens	b48	a15	a20	a10	a35	.07	.49	.11	.39
F	Microsteris gracilis (a)	-	1	-	-	-	.03	-	-	-

T y P e	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
F	Oenothera sp.	-	-	9	-	-	-	.07	-	-
F	Oxytropis sericea	b12	ab2	b14	a-	b9	.19	.26	-	.24
F	Penstemon caespitosus	a-	a-	a-	b13	ab5	-	-	.07	.04
F	Penstemon humilis	b66	a35	a21	a25	a25	.37	.43	.21	.27
F	Petradoria pumila	-	-	-	-	5	-	-	-	.03
F	Phlox hoodii	a-	b24	b41	b38	b35	.22	.43	.42	.59
F	Phlox longifolia	b46	a-	a5	a2	a-	-	.01	.03	-
F	Physaria acutifolia	a-	a-	ab8	b17	ab6	-	.07	.08	.02
F	Senecio multilobatus	-	9	8	5	3	.04	.05	.03	.06
F	Taraxacum officinale	-	-	-	4	8	-	-	.01	.04
Total for Annual Forbs		0	101	37	69	27	0.53	0.12	0.23	0.10
Total for Perennial Forbs		508	295	274	310	280	2.89	3.88	3.43	3.59
Total for Forbs		508	396	311	379	307	3.43	4.01	3.66	3.70

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

BROWSE TRENDS--

Management unit 08B, Study no: 8

T y P e	Species	Strip Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
B	Amelanchier utahensis	2	2	2	2	.01	.03	-	.15
B	Artemisia frigida	63	62	77	83	.91	1.03	2.89	4.76
B	Artemisia tridentata vaseyana	36	36	33	31	1.51	2.73	1.41	1.72
B	Ceratoides lanata	2	0	1	1	-	-	.15	-
B	Cercocarpus montanus	82	84	81	86	18.02	19.50	18.43	19.78
B	Chrysothamnus viscidiflorus lanceolatus	14	14	14	14	.07	.48	.51	.81
B	Eriogonum microthecum	55	40	46	56	1.59	1.51	.86	1.70
B	Symphoricarpos oreophilus	5	6	5	3	.00	.30	.56	.03
B	Tetradymia canescens	1	1	3	6	.06	-	.15	.53
Total for Browse		260	245	262	282	22.21	25.60	24.98	29.50

CANOPY COVER, LINE INTERCEPT--

Management unit 08B, Study no: 8

Species	Percent Cover	
	'05	'10
Amelanchier utahensis	-	.40
Artemisia frigida	3.83	7.08
Artemisia tridentata vaseyana	3.20	3.04
Cercocarpus montanus	22.25	28.70
Chrysothamnus viscidiflorus lanceolatus	.63	.88
Eriogonum microthecum	1.26	2.71
Symphoricarpos oreophilus	.71	.06
Tetradymia canescens	.18	.20

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 08B, Study no: 8

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata vaseyana	1.8	1.8
Cercocarpus montanus	3.4	3.5

BASIC COVER--

Management unit 08B, Study no: 8

Cover Type	Average Cover %				
	'88	'95	'00	'05	'10
Vegetation	11.00	39.45	57.22	43.37	54.54
Rock	19.25	23.53	19.75	18.84	14.18
Pavement	23.25	11.68	30.17	23.23	19.20
Litter	38.00	40.21	36.86	22.23	25.56
Cryptogams	.25	.02	.11	.04	0
Bare Ground	8.25	2.26	4.55	12.37	7.93

SOIL ANALYSIS DATA --

Management unit 8B, Study no: 8, Study Name: Phil Pico Mountain

Effective rooting depth (in)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
12.3	7.0	69.0	20.1	10.9	3.7	5.2	86.4	1.4

PELLET GROUP DATA--

Management unit 08B, Study no: 8

Type	Quadrat Frequency			
	'95	'00	'05	'10
Rabbit	8	-	9	-
Elk	51	26	37	12
Deer	25	7	15	10
Cattle	-	-	-	-

Days use per acre (ha)		
'00	'05	'10
-	-	-
40 (99)	48 (119)	25 (63)
7 (17)	19 (46)	15 (36)
-	2 (5)	-

BROWSE CHARACTERISTICS--
Management unit 08B, Study no: 8

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>									
88	0	0	0	-	-	0	0	0	-/-
95	120	83	17	-	80	0	17	0	16/9
00	340	94	6	-	-	6	0	0	16/12
05	240	92	8	-	-	100	0	0	30/41
10	100	80	20	-	-	0	0	0	15/20
<i>Artemisia frigida</i>									
88	14932	44	56	0	399	3	2	.44	5/4
95	3900	11	89	0	160	0	0	0	9/7
00	3440	8	91	1	-	.58	0	.58	5/7
05	5540	12	88	0	960	4	.72	0	10/11
10	7460	10	90	0	840	38	0	2	5/11
<i>Artemisia tridentata vaseyana</i>									
88	1998	17	60	23	133	20	13	0	11/16
95	1000	10	68	22	20	46	10	12	11/24
00	1100	13	69	18	-	20	5	13	12/22
05	840	7	76	17	120	24	14	17	15/25
10	860	5	86	9	-	35	35	7	12/25
<i>Ceratoides lanata</i>									
88	0	0	0	-	-	0	0	0	-/-
95	40	0	100	-	-	0	0	0	11/13
00	0	0	0	-	-	0	0	0	-/-
05	20	0	100	-	-	0	100	0	7/9
10	40	0	100	-	-	0	0	0	6/9
<i>Cercocarpus montanus</i>									
88	4132	37	45	18	199	16	73	5	27/24
95	3120	18	79	3	160	34	54	6	29/39
00	3120	13	72	15	-	36	40	6	29/40
05	3680	16	78	7	60	9	84	4	29/38
10	3760	12	87	1	20	23	40	.53	33/42
<i>Chrysothamnus viscidiflorus lanceolatus</i>									
88	333	0	100	-	-	0	0	40	9/7
95	400	0	100	-	-	0	0	0	10/14
00	440	0	100	-	-	0	9	0	10/16
05	400	0	100	-	-	10	0	0	10/18
10	400	0	100	-	-	0	0	0	12/16

		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 microthecum</i>										
88	5598	19	79	2	-	11	5	0	5/6	
95	2540	2	98	0	40	0	0	0	6/12	
00	2060	1	97	2	-	0	0	.97	5/8	
05	2100	1	99	0	100	7	.95	0	5/10	
10	2180	2	98	0	-	0	0	.91	6/12	
<i>Gutierrezia sarothrae</i>										
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	6/8	
00	0	0	0	-	-	0	0	0	-/-	
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
<i>Pediocactus simpsonii</i>										
88	132	50	50	-	-	0	0	0	3/4	
95	0	0	0	-	-	0	0	0	-/-	
00	0	0	0	-	-	0	0	0	4/9	
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
<i>Symphoricarpos oreophilus</i>										
88	399	83	17	-	-	0	0	0	9/15	
95	240	42	58	-	40	0	0	0	9/32	
00	300	27	73	-	-	0	0	0	7/19	
05	160	0	100	-	20	0	38	0	12/55	
10	80	0	100	-	-	0	0	0	10/19	
<i>Tetradymia canescens</i>										
88	266	0	100	-	-	0	0	0	6/7	
95	20	0	100	-	-	0	0	0	8/12	
00	40	0	100	-	-	0	0	0	9/12	
05	80	0	100	-	-	0	0	0	7/9	
10	160	13	88	-	-	13	0	0	8/14	