

SPRING CANYON - TREND STUDY NO. 6-5-11

Vegetation Type: Juniper

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: [Upland Loam \(Basin Big Sagebrush\), R047XA305UT](#)

Land Ownership: Private

Elevation: 6,120 ft (1,865 m)

Aspect: South

Slope: 5-8%

Transect bearing: 165° magnetic

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

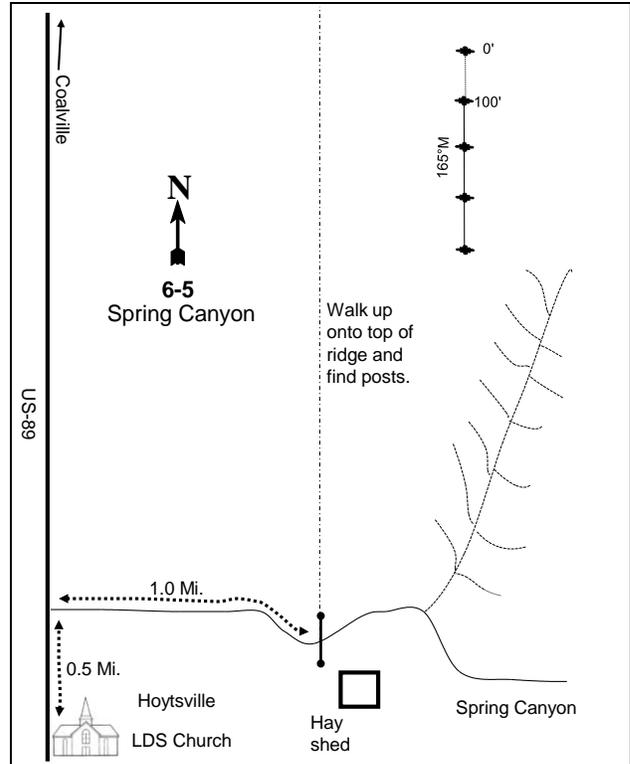
Directions:

From the LDS Church in Hoytsville, travel north 0.5 miles on old U.S. 189. At 0.5 miles note a dirt road to the right with a sign "Echo-Chalk Creek Range Owners Protective Association" and turn right (east). Proceed 1.0 miles to a gate and a sharp bend to the right (south). The site is on the ridge on the left side of the gate as you enter the property. Walk to the north side of the road to a north/south running fence. From here, walk north along the fence to the 40th metal fence post. From post #40, walk 35 paces at 73 degrees true to the 400-foot baseline stake. The 0-foot stake is marked with browse tag #7953.

Map Name: Turner Hollow



Diagrammatic Sketch:



Township: 2N Range: 5E Section: 22

GPS: NAD 83, UTM 12S 469074 E 4526392 N

SPRING CANYON - TREND STUDY NO. 6-5

Site Information

Site Description: This study is located on a Utah juniper (*Juniperus osteosperma*) covered ridge immediately east of Hoytsville, and north of the mouth of Spring Canyon. The area is crucial deer winter range, primarily used by deer for thermal cover. The study is on private land, and is grazed by cattle and sheep. Domestic sheep were present in late August of 1984, when the study was established. The preferred browse species have been browsed heavily by wildlife and domestic livestock to the point of browsing on woody stems and branches. Deer pellet groups have been sampled in high abundance since 2001. Nine winter-killed deer were observed in the immediate vicinity in 1984, and a fawn was spotted approaching the study area in 2006. Elk pellet groups been sampled in minimal abundance in 2001 and 2006, but moderate abundance in 2011. Sampled cattle sign has been minimal since 2001 (Table - Pellet Group Data). Numerous game trails traverse the study and head toward the alfalfa fields below.

Browse: Other than juniper, shrubs and trees are rare. The juniper type is very uniform and characterized by a moderately dense stand of even-aged trees. Juniper density and cover have remained similar since 2001 (Table - Point-Quarter Tree Data and Table - Canopy Cover). The juniper range type is representative of a majority of winter range in the area above Hoytsville. There is very little browse forage available. The steeper slopes, and west exposures, support a variety of browse species, but all occur in low densities, are heavily hedged, and mostly decadent. The only other browse species sampled since 2006 was prickly pear cactus (*Opuntia sp.*) (Table - Browse Characteristics).

Herbaceous Understory: The herbaceous understory is sparse and provides little ground cover or forage. Native perennial grasses are somewhat abundant in the more open areas, but are infrequent where the juniper overstory is dense. Bluebunch wheatgrass (*Agropyron spicatum*), Indian ricegrass (*Oryzopsis hymenoides*), Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*), and needle-and-thread (*Stipa comata*) have all been sampled. Cheatgrass (*Bromus tectorum*) was fairly prevalent when annual species were first sampled in 1996, but has significantly decreased in nested frequency and is not common on the site. Forbs consist mostly of annual and/or low-growing perennials that provide very little cover or forage. Bur buttercup has increased significantly in nested frequency every year since 1996, and was the dominant herbaceous species in cover in 2011 (Table - Herbaceous Trends). Due to the vegetation characteristics, this site is really only useful as thermal cover and as a travel corridor for wildlife.

Soil: The soil is in the Jana-Richsum-Rock outcrop complex, likely as part of the Jana component. These soils occur on mountain slopes, with parent material consisting of colluviums derived from sandstone, conglomerate, and shale (Soil Survey Staff 2011). The soils texture is a clay loam with a neutral soil reaction (pH 7.3) (Table - Soil Analysis Data). Understory cover is low on the site, with a moderately high amount of bare ground cover. Cryptogam cover is high, particularly in the interspaces between juniper trees (Table - Basic Cover). The soil erosion condition was classified as slight to moderate in 2001, moderate in 2006, but was stable in 2011.

Trend Assessments

Browse:

- **1984 to 1990 - stable (0):** Preferred browse species remained rare on the site. All of the juniper trees were highlined.
- **1990 to 1996 - stable (0):** Preferred browse species remained rare on the site.
- **1996 to 2001 - stable (0):** Preferred browse species remained rare on the site.
- **2001 to 2006 - stable (0):** Preferred browse species remained rare on the site.
- **2006 to 2011 - stable (0):** Preferred browse species remained rare on the site.

Grass:

- **1984 to 1990 - up (+2):** The sum of nested frequency of perennial grasses increased by 37%. However, there was a change in composition. There was a significant decrease in the nested frequency of bluebunch wheatgrass, and a significant increase in the nested frequencies of Sandberg bluegrass and bottlebrush squirreltail.
- **1990 to 1996 - stable (0):** The sum of nested frequency of perennial grasses remained similar.
- **1996 to 2001 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, but cover increased from 3% to 5%. Cheatgrass decreased in nested frequency, and cover decreased from 3% to less than 1%.
- **2001 to 2006 - stable (0):** The sum of nested frequency of perennial grasses remained similar, but cover decreased slightly to 4%. The nested frequency of cheatgrass decreased significantly, but cover remained similar.
- **2006 to 2011 - stable (0):** The sum of nested frequency of perennial grasses changed little, though there was a slight increase in cover to 5%.

Forb:

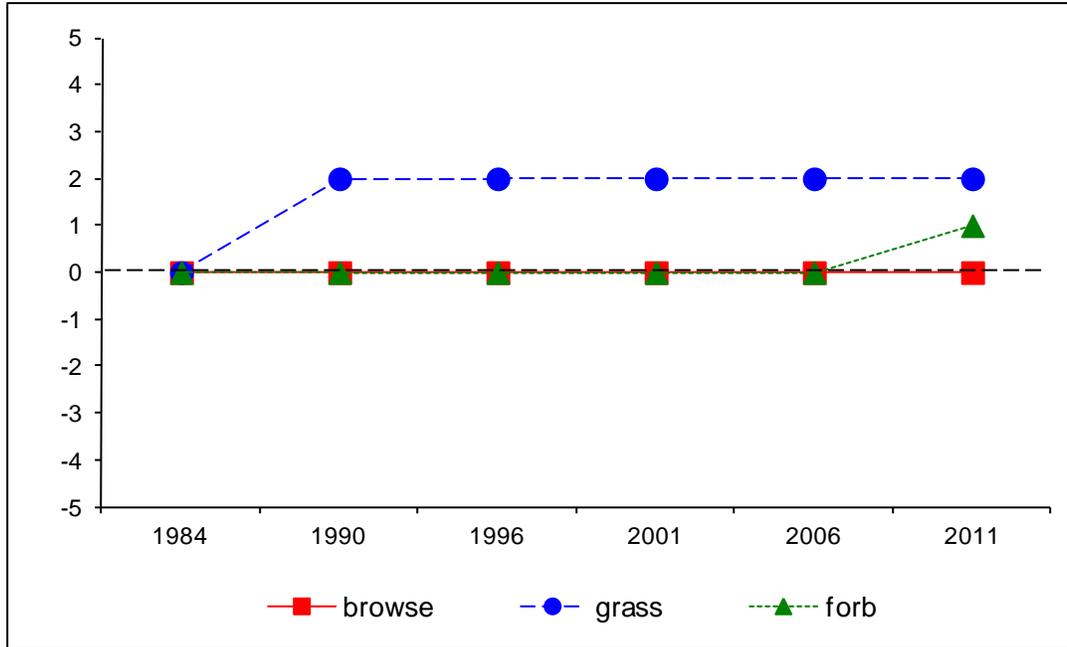
- **1984 to 1990 - stable (0):** The sum of nested frequency of perennial forbs decreased, but perennial forbs were already rare on the site.
- **1990 to 1996 - stable (0):** The sum of nested frequency of perennial forbs returned to 1984 levels.
- **1996 to 2001 - stable (0):** There was little change in the sum of nested frequency or cover of perennial forbs.
- **2001 to 2006 - stable (0):** The sum of nested frequency and cover of perennial forbs remained similar.
- **2006 to 2011 - slightly up (+1):** The sum of nested frequency of perennial forbs increased 88%, and cover increased from 2% to 4%. However, annual forb sum of nested frequency also increased, and cover increased from 3% to 13%. Most of the increase in annual forbs was due to a significant increase in the nested frequency of burr buttercup, with a subsequent increase in cover.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
Management unit 6, study no: 5

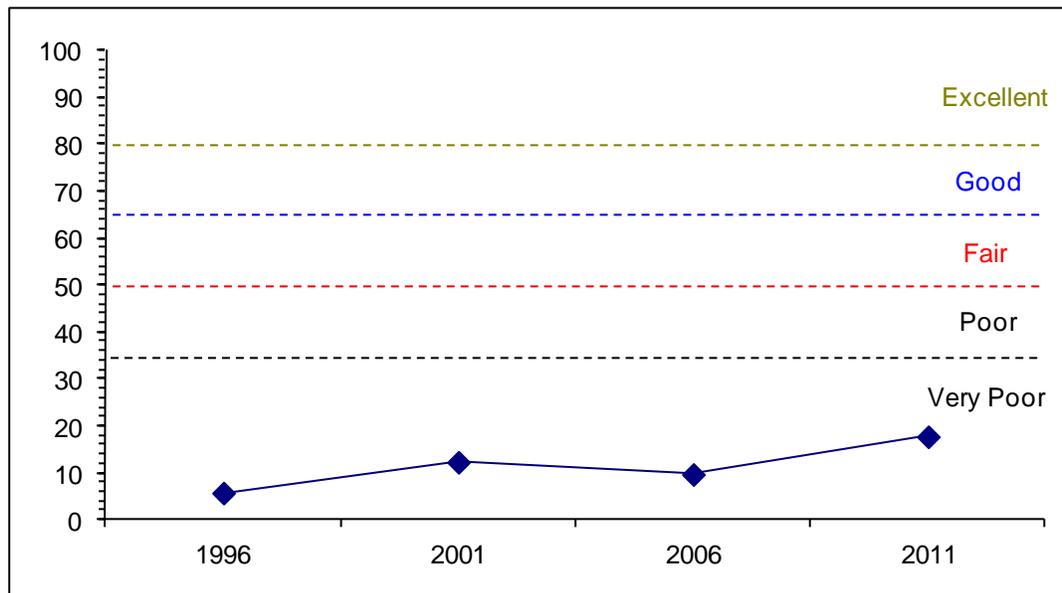
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover (-POBU)	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	0.0	0.0	0.0	5.5	-2.1	2.3	0.0	5.7	Very Poor
01	0.0	0.0	0.0	9.7	-0.3	2.9	0.0	12.3	Very Poor
06	0.0	0.0	0.0	6.6	-0.5	3.6	0.0	9.7	Very Poor
11	0.0	0.0	0.0	10.0	-0.2	7.9	0.0	17.7	Very Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 6 Study no: 5



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 6, Study no: 5



HERBACEOUS TRENDS--
Management unit 06, Study no: 5

Type	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
G	<i>Agropyron spicatum</i>	b ⁵⁹	a ³²	ab ⁴⁴	ab ⁵³	b ⁶⁰	b ⁵⁶	.59	1.43	.96	2.12
G	<i>Bromus tectorum</i> (a)	-	-	c ¹²⁹	bc ¹⁰³	a ⁷⁵	ab ⁷⁷	2.82	.42	.63	.25
G	<i>Oryzopsis hymenoides</i>	ab ⁶⁸	ab ⁶⁶	ab ⁷⁸	b ⁸⁵	b ⁹¹	a ⁴⁴	1.08	1.62	1.40	.58
G	<i>Poa bulbosa</i>	a ⁻	a ⁻	a ⁻	a ⁻	a ³	b ⁸	-	-	.00	.07
G	<i>Poa pratensis</i>	3	-	-	-	-	-	-	-	-	-
G	<i>Poa secunda</i>	a ¹³	bc ⁵⁶	ab ⁴⁷	b ⁵⁴	ab ³⁸	c ⁹³	.48	.96	.51	2.13
G	<i>Sitanion hystrix</i>	a ¹	c ³⁴	bc ²²	abc ²³	ab ¹⁸	a ³	.28	.51	.40	.15
G	<i>Stipa comata</i>	bc ¹³	c ²⁷	bc ²⁹	b ⁹	a ⁻	a ⁻	.30	.34	-	-
Total for Annual Grasses		0	0	129	103	75	77	2.82	0.42	0.62	0.25
Total for Perennial Grasses		157	215	220	224	210	204	2.75	4.86	3.28	5.08
Total for Grasses		157	215	349	327	285	281	5.58	5.28	3.92	5.33
F	<i>Agoseris glauca</i>	a ⁻	a ⁻	a ⁻	a ⁻	a ²	b ⁵	-	-	.00	.18
F	<i>Allium</i> sp.	-	-	-	-	-	8	-	-	-	.02
F	<i>Alyssum alyssoides</i> (a)	-	-	b ²³⁹	b ²⁶²	b ²⁵³	a ¹⁸³	1.10	1.05	.74	2.26
F	<i>Antennaria rosea</i>	-	6	1	7	10	2	.00	.04	.02	.01
F	<i>Arabis</i> sp.	-	3	5	-	-	2	.01	-	-	.03
F	<i>Astragalus convallarius</i>	4	-	-	-	2	1	-	-	.00	.00
F	<i>Astragalus utahensis</i>	1	-	2	1	-	4	.03	.03	-	.03
F	<i>Calochortus nuttallii</i>	-	-	-	-	-	5	-	-	-	.03
F	<i>Camelina microcarpa</i> (a)	-	-	5	2	4	6	.01	.00	.03	.06
F	<i>Chaenactis douglasii</i>	2	-	-	-	-	1	-	-	-	.00
F	<i>Cirsium undulatum</i>	2	-	1	-	-	-	.03	-	-	-
F	<i>Collinsia parviflora</i> (a)	-	-	2	3	-	4	.01	.00	-	.01
F	<i>Cryptantha</i> sp.	30	13	21	16	20	28	.25	.45	.39	.49
F	<i>Cymopterus longipes</i>	a ⁻	a ²	a ⁵	a ³	a ²	b ²⁵	.02	.01	.03	.71
F	<i>Delphinium</i> sp.	-	-	-	-	-	3	-	-	-	.01
F	<i>Descurainia pinnata</i> (a)	-	-	a ⁻	a ²	a ⁻	b ²³	-	.00	-	.53
F	<i>Eriogonum umbellatum</i>	7	2	-	-	-	5	-	-	-	.01
F	<i>Erodium cicutarium</i> (a)	-	-	-	-	-	1	-	-	-	.00
F	<i>Gilia</i> sp. (a)	-	-	-	-	-	9	-	-	-	.01
F	<i>Hackelia patens</i>	-	11	7	6	4	18	.04	.04	.21	.75
F	<i>Hedysarum boreale</i>	8	-	-	-	-	-	-	-	-	-
F	<i>Holosteum umbellatum</i> (a)	-	-	-	-	3	-	-	-	.00	-
F	<i>Lactuca serriola</i> (a)	-	-	-	-	-	3	-	-	-	.00
F	<i>Machaeranthera grindelioides</i>	-	-	2	1	1	1	.01	.00	.00	.00
F	<i>Microsteris gracilis</i> (a)	-	-	-	12	8	17	-	.05	.01	.09
F	<i>Penstemon humilis</i>	1	5	3	5	1	-	.03	.01	.00	-
F	<i>Penstemon</i> sp.	b ¹⁷	a ⁻	a ³	a ¹	a ⁻	a ⁻	.03	.00	-	-
F	<i>Phlox austromontana</i>	27	20	39	37	27	21	.66	.82	1.08	.54
F	<i>Phlox longifolia</i>	-	-	5	11	6	11	.01	.02	.01	1.06
F	<i>Ranunculus testiculatus</i> (a)	-	-	a ⁸⁶	b ¹⁶⁶	c ²²⁸	d ²⁸⁹	.27	.97	1.77	9.69
F	<i>Senecio multilobatus</i>	-	-	2	-	-	1	.00	-	-	.00
F	<i>Sisymbrium altissimum</i> (a)	-	-	1	-	-	5	.00	-	-	.01

Type	Species	Nested Frequency					Average Cover %				
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
F	Veronica biloba (a)	-	-	-	-	-	3	-	-	-	.01
Total for Annual Forbs		0	0	333	447	496	543	1.39	2.09	2.56	12.72
Total for Perennial Forbs		99	62	96	88	75	141	1.16	1.43	1.78	3.93
Total for Forbs		99	62	429	535	571	684	2.56	3.53	4.35	16.65

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

BROWSE TRENDS--

Management unit 06, Study no: 5

Type	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Artemisia tridentata vaseyana	0	1	0	0	-	-	-	-
B	Gutierrezia sarothrae	6	7	0	0	.20	.03	-	-
B	Juniperus osteosperma	12	12	13	11	16.73	8.39	7.87	7.01
B	Opuntia sp.	8	11	14	9	.22	.05	.45	.36
B	Symphoricarpos oreophilus	1	0	0	0	-	-	-	-
Total for Browse		27	31	27	20	17.15	8.47	8.32	7.38

CANOPY COVER, LINE INTERCEPT--

Management unit 06, Study no: 5

Species	Percent Cover		
	'01	'06	'11
Juniperus osteosperma	36.79	44.86	43.33
Opuntia sp.	-	.23	.40

POINT-QUARTER TREE DATA--

Management unit 06, Study no: 5

Species	Trees per Acre			Average diameter (in)		
	'01	'06	'11	'01	'06	'11
Juniperus osteosperma	189	155	173	20.2	9.9	7.6

BASIC COVER--

Management unit 06, Study no: 5

Cover Type	Average Cover %					
	'84	'90	'96	'01	'06	'11
Vegetation	.50	1.00	25.55	18.48	16.60	23.67
Rock	1.75	6.25	2.94	2.79	2.20	2.83
Pavement	9.25	12.50	3.84	5.47	7.21	3.93
Litter	56.25	48.50	40.31	40.42	45.65	36.09
Cryptogams	2.75	5.25	3.52	14.18	9.54	12.90
Bare Ground	29.50	26.50	28.08	31.93	36.15	32.50

SOIL ANALYSIS DATA --

Management unit 06, Study no: 5, Study Name: Spring Canyon

Effective rooting depth (in)	pH	Clay-Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
12.1	7.3	32.6	30.7	36.7	2.9	3.8	38.4	0.6

PELLET GROUP DATA--

Management unit 06, Study no: 5

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Sheep	2	-	-	-	-	-	-
Rabbit	12	37	51	26	-	-	-
Elk	1	1	2	3	-	3 (8)	25 (63)
Deer	44	22	23	19	58 (144)	88 (218)	68 (167)
Cattle	-	1	-	-	1 (2)	2 (4)	-

BROWSE CHARACTERISTICS--

Management unit 06, Study no: 5

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 alnifolia									
84	0	0	0	-	-	0	0	0	-/-
90	33	100	0	-	-	100	0	100	-/-
96	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	62/56
11	0	0	0	-	-	0	0	0	-/-
Artemisia tridentata vaseyana									
84	0	0	0	-	-	0	0	0	-/-
90	0	0	0	-	-	0	0	0	-/-
96	0	0	0	-	-	0	0	0	-/-
01	20	100	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	-/-
11	0	0	0	-	-	0	0	0	-/-
Cercocarpus montanus									
84	0	0	0	-	-	0	0	0	-/-
90	0	0	0	-	-	0	0	0	-/-
96	0	0	0	-	-	0	0	0	-/-
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	-/-
11	0	0	0	-	-	0	0	0	20/27

		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>Chrysothamnus viscidiflorus viscidiflorus</i>										
84	66	50	0	50	-	50	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	0	0	0	0	-	0	0	0	-/-	
01	0	0	0	0	-	0	0	0	-/-	
06	0	0	0	0	-	0	0	0	6/11	
11	0	0	0	0	-	0	0	0	4/19	
<i>Gutierrezia sarothrae</i>										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	240	17	83	0	20	0	0	0	7/8	
01	400	75	20	5	-	0	0	5	5/4	
06	0	0	0	0	-	0	0	0	6/6	
11	0	0	0	0	-	0	0	0	7/9	
<i>Juniperus osteosperma</i>										
84	365	18	82	0	-	36	36	0	67/157	
90	299	11	89	0	-	0	33	0	186/153	
96	260	15	85	0	-	0	0	0	-/-	
01	280	7	79	14	20	0	0	14	-/-	
06	520	4	92	4	20	0	31	0	-/-	
11	220	9	64	27	-	0	0	0	-/-	
<i>Opuntia sp.</i>										
84	66	50	50	0	-	0	0	0	7/14	
90	165	40	40	20	-	0	0	20	5/10	
96	280	7	57	36	-	0	0	29	5/12	
01	260	23	69	8	20	0	0	0	4/10	
06	380	21	68	11	-	0	0	11	5/17	
11	180	0	78	22	-	0	0	22	5/16	
<i>Symphoricarpos oreophilus</i>										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	20	0	100	-	-	0	0	0	7/12	
01	0	0	0	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	-/-	
11	0	0	0	-	-	0	0	0	5/11	