

SALT CREEK MESA - TREND STUDY NO. 14-29-09

Vegetation Type: Chained, Seeded P-J

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Upland Shallow Hardpan (Pinyon-Utah Juniper), R035XY316UT

Land Ownership: BLM

Elevation: 7,100 ft (2,164 m)

Aspect: Northeast

Slope: 2%

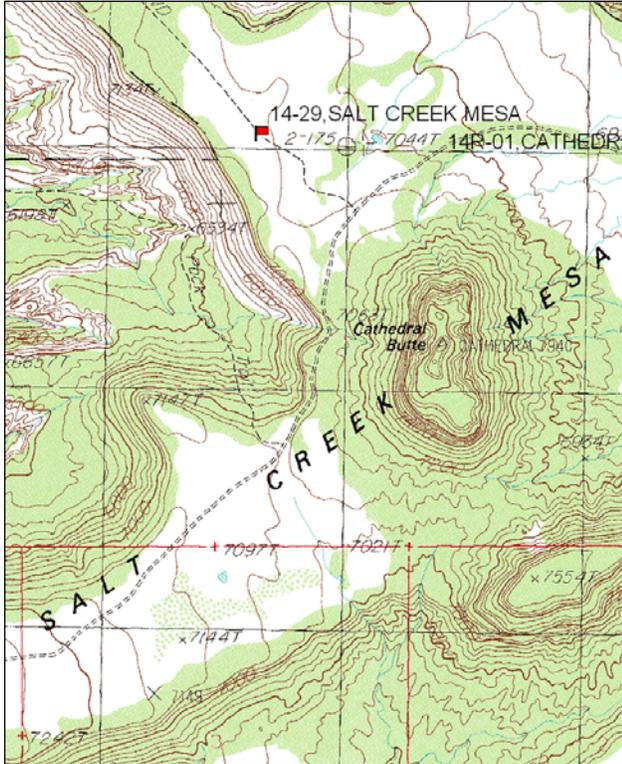
Transect bearing: 156 degrees magnetic

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

Directions:

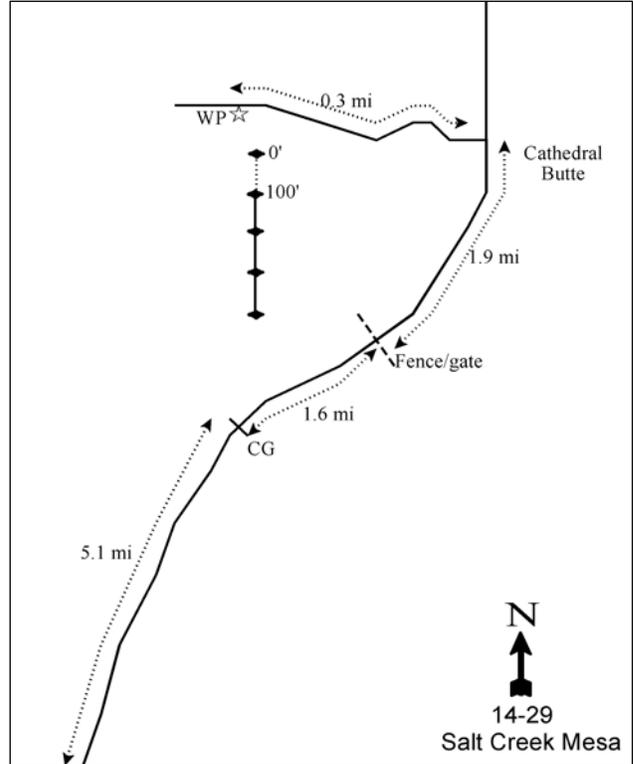
From the intersection in Sego Flat, go left towards Dugout Ranch 5.9 miles to the Beef Basin turnout. Continue down Salt Creek Mesa Road for 5.1 miles to a cattleguard at the BLM/USFS boundary. Continue 1.6 miles on the main road to a fence/gate. Continue 1.9 miles to a fork on the west side of Cathedral Butte. Turn left and go 0.3 miles through junipers, into a chaining and to a witness post (full-high fence post) 18 feet off the left side of the road. The 0-foot baseline is 15 paces at a bearing of 220°M from the witness post.

Map Name: Cathedral Butte



Township: 32S, Range: 20E, Section: 27

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 613558 E 4202235 N

SALT CREEK MESA - TREND STUDY NO. 14-29

Site Information

Site Description: The study located on an old chaining that appears was seeded with crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*A. intermedium*), and alfalfa (*Medicago sativa*). Pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) trees are scattered across the site. This area was targeted to be part of the Salt Creek prescribed fire that burned 130 acres in 2002, but the fire did not carry across the site and only a few trees were burned. Pellet group data has indicated fairly light use by deer since 1999. The estimated elk use was light in 1999 and 2004, but increased to moderately heavy use in 2009. Estimated cattle use has been light to moderate since 1999 (Table - Pellet Group Data).

Browse: Preferred browse is limited on the site. Only a low density of Utah serviceberry (*Amelanchier utahensis*), fourwing saltbush (*Atriplex canescens*), true-mountain mahogany (*Cercocarpus montanus*), and green ephedra (*Ephedra veridis*) were sampled within the chaining. Use of these shrubs varies from light to heavy. The preferred browse species appear to have survived the fire well. Broom snakeweed (*Gutierrezia sarothrae*) has been very abundant on the site over the sample years (Table - Browse Characteristics). This chained site also supports a moderately high density of released pinyon pine and Utah juniper trees. Point-quarter density estimates show a slight decline in juniper trees in 2004, after the fire, with a continued decrease in 2009, though the average diameter has increased since 1999. There has been little change in the density or average diameter of pinyon trees since 1999 (Table - Point-Quarter Tree Data). There has been an increase in the overhead canopy cover of juniper since 2004, and the canopy cover of pinyon has steadily increased on the site since 1999 (Table - Canopy Cover).

Herbaceous Understory: The dominant herbaceous species are intermediate wheatgrass, crested wheatgrass, and Indian ricegrass (*Oryzopsis hymenoides*), and these three species provide almost 100% of the grass cover. Each of the species showed declines from 1992 and 2004, but recovered slightly in 2009. Forbs are lacking with the two most dominant species being dusty penstemon (*Penstemon comarrhenus*) and Fendler euphorbia (*Euphorbia fendleri*). A few early seral annual forbs were found in 2004, after the fire, but were sampled at low frequency and cover.

Soil: The soil is a sandy clay loam with a slightly alkaline pH and a moderately deep effective rooting depth. Phosphorus has limited availability for plant growth and development at 5.3 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). There are many wind scoured depressions with large rock scattered throughout the site. Pavement is commonly found in small localized intervals. Litter is comprised mostly of pinyon and juniper debris remaining from the chaining. Even with fairly good cover, there are large areas of bare ground cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2004 and 2009.

Trend Assessments

Browse:

- **1992 to 1999 - slightly down (-1):** There was a slight decrease in the density of many of the preferred browse species, though cover of true mountain mahogany and serviceberry increased slightly. There was a large increase in the density and cover of broom snakeweed.
- **1999 to 2004 - slightly up (+1):** The density of serviceberry increased with a large increase in the recruitment of young plants. Cover of serviceberry also increased. Density of true mountain mahogany decreased, but it was noted that new sprouts were growing after the fire. No fourwing saltbush plants were sampled in the shrub density strips. There was a large decrease in the density and cover of broom snakeweed.
- **2004 to 2009 - slightly down (-1):** There was a decrease in the density of serviceberry and true mountain mahogany and a decrease in cover of serviceberry. Broom snakeweed increased to very high density and cover again.

Grass:

- **1992 to 1999 - down (-2):** The sum of nested frequency of perennial grasses decreased by 19% and cover decreased from 24% to 10%. There was a significant decrease in the nested frequency of intermediate wheatgrass.
- **1999 to 2004 - down (-2):** There was a 58% decrease in the sum of nested frequency of perennial grasses and cover decreased to 4%. All three of the dominant grass species decreased significantly in nested frequency.
- **2004 to 2009 - up (+1):** The sum of nested frequency of perennial grasses increased 27% with a significant increase in the nested frequency of crested wheatgrass.

Forb:

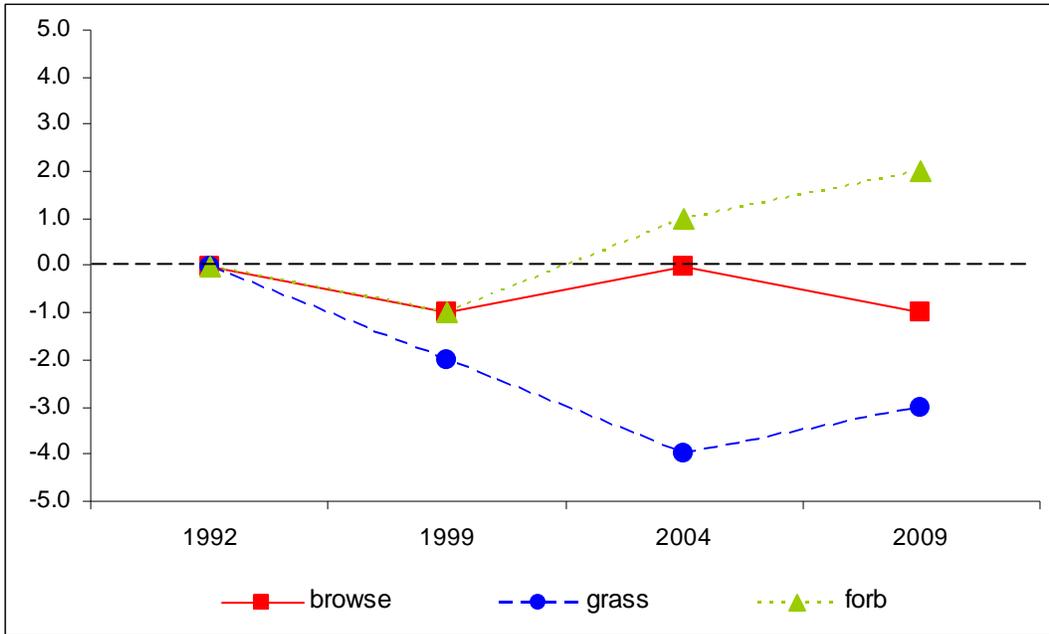
- **1992 to 1999 - slightly down (-1):** There was a 14% decrease in the sum of nested frequency of perennial forbs with a significant decline in the nested frequency of the seeded species alfalfa.
- **1999 to 2004 - up (+2):** The sum of nested frequency of perennial forbs increased 42% and cover increased from 2% to 3%.
- **2004 to 2009 - slightly up (+1):** There was a 26% increase in the sum of nested frequency of perennial forbs and cover increased to 5%. However, much of this increase is due to a significant increase in the nested frequency of the undesirable species Fendler euphorbia.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
Management unit 14, study no: 29

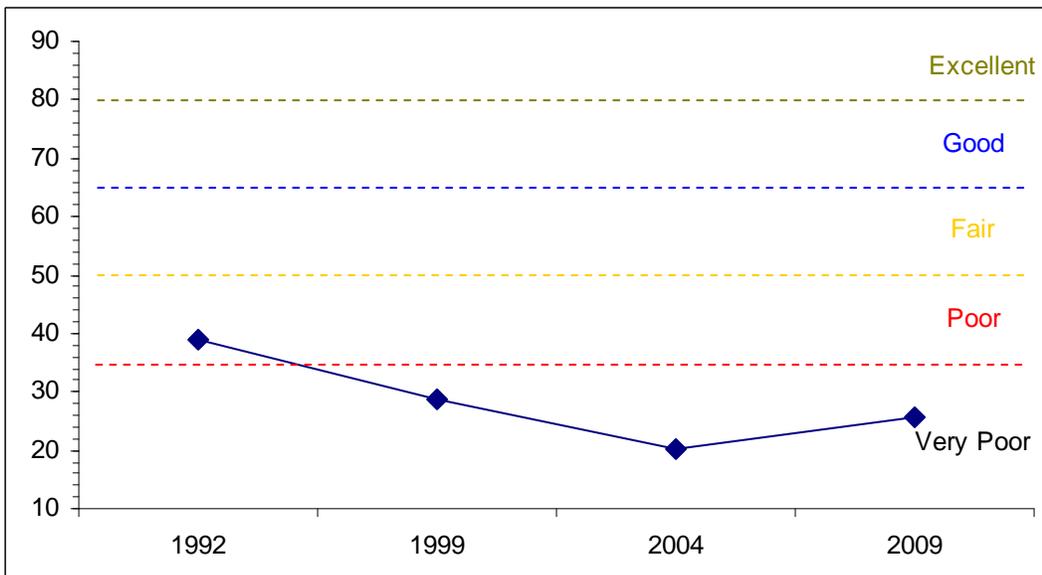
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
92	2.1	0.0	0.0	30.0	0.0	7.0	0.0	39.1	Poor
99	4.2	0.0	0.0	20.3	0.0	4.3	0.0	28.7	Very Poor
04	4.7	0.0	0.0	8.7	0.0	6.7	0.0	20.2	Very Poor
09	4.2	0.0	0.0	11.4	0.0	10.0	0.0	25.5	Very Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 14, Study no: 29



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL
Management unit 14, Study no: 29



HERBACEOUS TRENDS--
Management unit 14, Study no: 29

Type	Species	Nested Frequency				Average Cover %			
		'92	'99	'04	'09	'92	'99	'04	'09
G	Agropyron cristatum	b112	b106	a47	b104	5.34	5.89	2.25	3.90
G	Agropyron intermedium	c230	b169	a55	a63	13.05	2.52	1.12	1.16
G	Oryzopsis hymenoides	b96	b80	a42	a22	5.10	1.70	.78	.61
G	Sitanion hystrix	-	-	-	1	-	.00	-	.00
G	Stipa comata	a-	a-	b6	a-	-	.00	.18	.00
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		438	355	150	190	23.50	10.13	4.35	5.69
Total for Grasses		438	355	150	190	23.50	10.13	4.35	5.69
F	Astragalus sp.	-	-	-	1	-	-	-	.00
F	Astragalus utahensis	-	-	2	1	-	-	.01	.00
F	Chaenactis douglasii	-	1	3	-	-	.03	.00	-
F	Chenopodium album (a)	4	-	-	1	.01	-	.00	.00
F	Chenopodium fremontii (a)	-	-	7	-	-	-	.16	-
F	Cordylanthus sp. (a)	-	a-	b17	a2	-	-	.53	.03
F	Cryptantha sp.	-	3	6	6	-	.03	.04	.03
F	Descurainia pinnata (a)	5	2	10	-	.02	.00	.23	-
F	Erigeron sp.	-	-	-	2	-	-	.00	.00
F	Euphorbia fendleri	a44	a25	a52	b84	2.37	.52	1.35	2.71
F	Heterotheca villosa	-	-	5	-	-	-	.18	-
F	Hymenoxys acaulis	-	-	1	-	-	-	.03	-
F	Lappula occidentalis (a)	-	-	9	-	-	-	.24	-
F	Lepidium sp. (a)	-	-	1	-	-	-	.00	-
F	Lesquerella sp.	a14	a25	b48	ab34	.03	.09	.67	.14
F	Lupinus sp.	-	4	5	7	-	.04	.21	.18
F	Machaeranthera canescens	2	1	3	7	.01	.03	.01	.01
F	Medicago sativa	b7	a-	a-	a-	.22	-	-	-
F	Nicotiana attenuata (a)	-	-	1	-	-	-	.00	-
F	Orobancha sp.	2	-	-	-	.00	-	-	-
F	Penstemon comarrhenus	43	55	53	63	.82	1.06	.77	1.75
F	Petradoria pumila	-	-	-	1	-	-	.00	.15
F	Phlox hoodii	-	-	-	1	-	-	-	.03
F	Salsola iberica (a)	-	-	5	3	-	-	.01	.03
F	Salsola pestifer (a)	10	-	-	-	.02	-	-	-
F	Senecio multilobatus	a-	ab14	a4	b21	-	.30	.04	.27
F	Sphaeralcea coccinea	-	1	3	1	-	.00	.00	.00
F	Streptanthus cordatus	1	-	-	-	.00	-	-	-
F	Townsendia sp.	-	3	2	7	-	.03	.00	.04
F	Tragopogon dubius	3	-	-	-	.00	-	-	-
Total for Annual Forbs		19	2	50	6	0.05	0.00	1.19	0.07
Total for Perennial Forbs		116	132	187	236	3.48	2.16	3.37	5.37
Total for Forbs		135	134	237	242	3.54	2.16	4.57	5.44

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

BROWSE TRENDS--

Management unit 14, Study no: 29

Type	Species	Strip Frequency				Average Cover %			
		'92	'99	'04	'09	'92	'99	'04	'09
B	Amelanchier utahensis	2	2	5	1	1.36	1.77	3.15	1.92
B	Atriplex canescens	3	1	0	0	.03	.00	-	-
B	Cercocarpus montanus	3	3	1	1	.03	1.00	.00	.85
B	Ephedra viridis	0	1	1	1	-	.00	.00	.00
B	Gutierrezia sarothrae	80	87	34	88	3.77	6.47	.73	5.02
B	Juniperus osteosperma	5	6	6	5	.18	.59	.81	2.65
B	Mahonia fremontii	2	0	2	3	.00	-	1.00	3.44
B	Mahonia repens	0	0	0	0	.15	-	-	-
B	Opuntia sp.	1	0	1	1	.00	-	.03	.00
B	Pinus edulis	6	7	4	2	3.15	4.44	4.50	7.02
B	Pseudotsuga menziesii	0	0	0	0	.03	-	-	-
B	Symphoricarpos oreophilus	2	1	2	2	.06	.38	.41	.21
Total for Browse		104	108	56	104	8.76	14.65	10.64	21.12

CANOPY COVER, LINE INTERCEPT--

Management unit 14, Study no: 29

Species	Percent Cover		
	'99	'04	'09
Amelanchier utahensis	1.79	4.05	3.45
Cercocarpus montanus	-	-	.66
Gutierrezia sarothrae	-	.96	3.08
Juniperus osteosperma	-	2.90	5.16
Mahonia fremontii	-	2.71	4.65
Opuntia sp.	-	.06	-
Pinus edulis	4.19	5.80	7.84
Symphoricarpos oreophilus	-	1.23	1.63

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 14, Study no: 29

Species	Average leader growth (in)	
	'04	'09
Amelanchier utahensis	3.4	3.6
Atriplex canescens	4.2	2.2
Cercocarpus montanus	7.8	3.9
Purshia tridentata	2.7	2.0

POINT-QUARTER TREE DATA--

Management unit 14, Study no: 29

Species	Trees per Acre			Average diameter (in)		
	'99	'04	'09	'99	'04	'09
Juniperus osteosperma	51	42	37	2.8	3.7	4.6
Pinus edulis	60	50	57	3.5	5.1	4.8

BASIC COVER--

Management unit 14, Study no: 29

Cover Type	Average Cover %			
	'92	'99	'04	'09
Vegetation	32.15	25.35	19.69	31.72
Rock	8.50	2.85	3.11	3.15
Pavement	0	4.39	5.96	3.08
Litter	50.20	32.48	32.18	46.06
Cryptogams	0	0	.03	0
Bare Ground	22.32	39.33	53.29	41.90

SOIL ANALYSIS DATA --

Management unit 14, Study no: 29, Study Name: Salt Creek Mesa

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
14.5	7.5	56	21.4	22.6	2.7	5.3	92.8	0.6

PELLET GROUP DATA--

Management unit 14, Study no: 29

Type	Quadrat Frequency				Days use per acre (ha)		
	'92	'99	'04	'09	'99	'04	'09
Rabbit	39	37	27	11	-	-	-
Elk	4	21	11	15	18 (45)	3 (7)	38 (94)
Deer	17	16	3	2	19 (48)	7 (18)	2 (5)
Cattle	8	10	1	2	23 (56)	3 (7)	33 (82)

BROWSE CHARACTERISTICS--

Management unit 14, Study no: 29

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Amelanchier utahensis										
92	40	50	50	-	-	0	50	0	-/-	
99	40	0	100	-	-	0	0	0	98/125	
04	120	83	17	-	280	17	0	17	94/110	
09	20	0	100	-	-	0	0	0	114/120	
Atriplex canescens										
92	60	0	67	33	-	0	100	0	-/-	
99	20	0	0	100	-	0	100	100	23/26	
04	0	0	0	0	-	0	0	0	26/33	
09	0	0	0	0	-	0	0	0	29/27	
Cercocarpus montanus										
92	100	60	40	-	-	20	80	0	-/-	
99	60	0	100	-	-	33	33	0	48/55	
04	40	0	100	-	-	0	100	0	44/55	
09	20	0	100	-	-	0	100	0	79/73	

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
Chrysothamnus nauseosus									
92	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	36/24
Ephedra viridis									
92	0	0	0	-	-	0	0	0	-/-
99	20	100	0	-	-	0	0	0	-/-
04	20	0	100	-	-	0	0	0	16/21
09	20	0	100	-	-	0	0	0	-/-
Gutierrezia sarothrae									
92	9960	20	79	1	360	0	0	.40	-/-
99	23760	13	87	1	80	0	0	.16	6/9
04	1400	53	44	3	360	1	0	3	6/11
09	11180	21	73	6	340	0	0	2	6/9
Juniperus osteosperma									
92	100	80	20	0	-	20	0	0	-/-
99	120	100	0	0	-	0	0	0	-/-
04	120	17	50	33	-	0	0	17	-/-
09	100	20	80	0	-	0	0	0	-/-
Mahonia fremontii									
92	40	0	100	-	-	50	50	0	-/-
99	0	0	0	-	-	0	0	0	-/-
04	40	0	100	-	-	0	0	0	67/84
09	60	33	67	-	-	0	0	0	70/90
Opuntia sp.									
92	20	100	0	-	-	0	0	0	-/-
99	0	0	0	-	-	0	0	0	-/-
04	20	0	100	-	-	0	0	0	4/10
09	40	0	100	-	-	0	0	0	4/15
Pinus edulis									
92	140	57	43	0	-	29	0	0	-/-
99	140	29	71	0	20	0	0	0	-/-
04	80	25	50	25	-	0	0	0	-/-
09	40	0	100	0	20	0	0	0	-/-
Purshia tridentata									
92	0	0	0	-	-	0	0	0	-/-
99	0	0	0	-	-	0	0	0	6/15
04	0	0	0	-	-	0	0	0	7/16
09	0	0	0	-	-	0	0	0	6/10

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Symphoricarpos oreophilus										
92	40	0	100	-	-	0	100	0	-/-	
99	20	0	100	-	-	0	0	0	39/82	
04	60	0	100	-	-	0	0	67	42/69	
09	60	0	100	-	-	0	0	0	44/55	
Yucca sp.										
92	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	7/17	