

RAFT RIVER NARROWS - TREND STUDY NO. 1-13-11

Vegetation Type: Wyoming Big Sagebrush

Range Type: Crucial Deer Winter

NRCS Ecological Site Description: Not Available

Land Ownership: BLM

Elevation: 5,700 ft. (1,737 m)

Aspect: Southwest

Slope: 30-35%

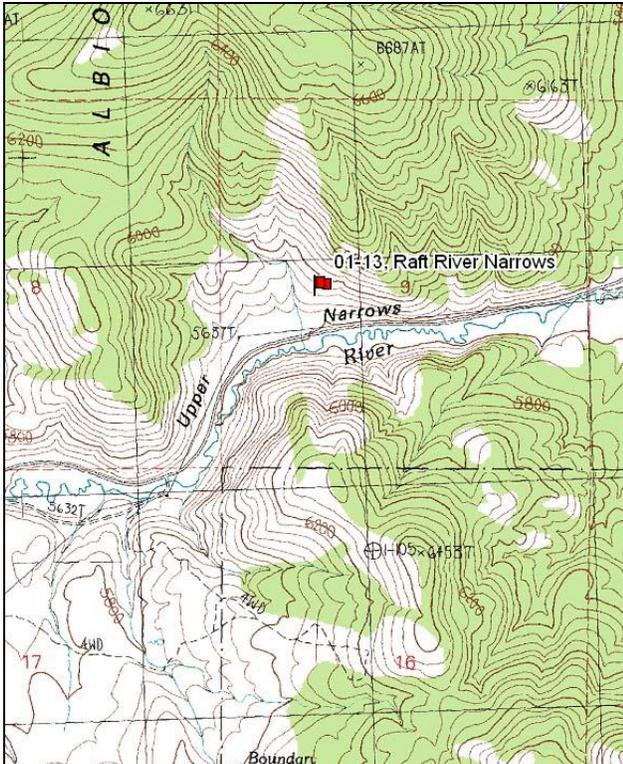
Transect bearing: 160° magnetic

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

Directions:

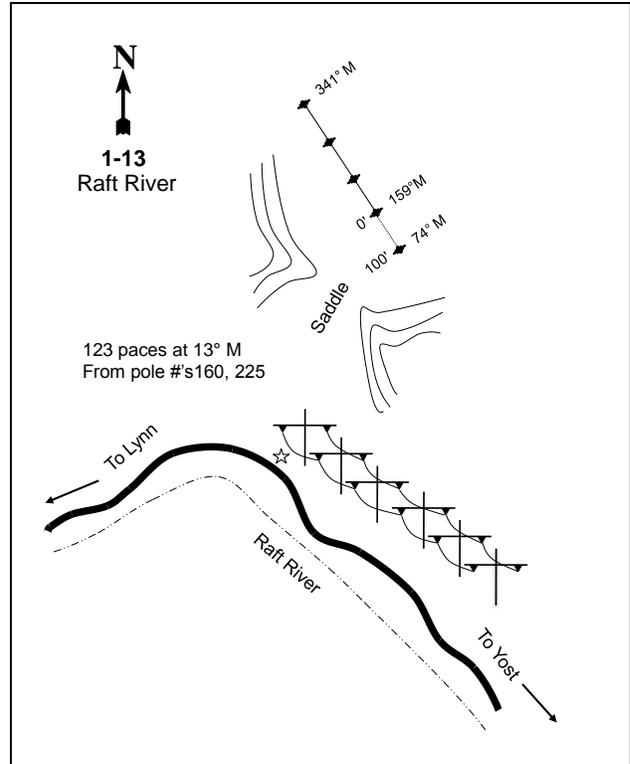
From Lynn proceed to the bridge over the Raft River just before the Upper Narrows. Proceed east 0.95 miles from the bridge to a set of double power poles (#'s 160 and 225). From the northernmost pole, walk 123 paces at 13 degrees magnetic, to the 0-foot stake of the frequency baseline, marked with browse tag #7917. The bearing of the baseline is 160 degrees magnetic. The rest of the baseline runs 341 degrees magnetic from the 0 foot baseline stake.

Map Name: Buck Hollow, Utah-Idaho



Township: 14N Range: 16W Section: 9

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 276739 E 4648042 N

RAFT RIVER NARROWS - TREND STUDY NO. 1-13

Site Information

Site Description: The study is located on important winter range in the Upper Raft River Narrows. Part of the study was burned in 2000 as part of a backfire that was intended to stop a wildfire from crossing Raft River Canyon. As a result, the first 100 feet of the baseline were burned. The area is managed by the Bureau of Land Management (BLM) as part of the Junction Creek allotment. Deer pellet groups have been sampled in low to moderate abundance since 2001. Other wildlife presence appears to be minimal. Sampled cattle sign has been low since 2001 (Table - Pellet Group Data). Cattle were observed grazing along the river bottom when the transect was established in 1984, but no sign of livestock grazing was noted on the steeper slopes.

Browse: Browse composition is dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), which has provided over 80% of the browse cover since 2001 (Table - Browse Trends). In the unburned sections of the study, the sagebrush population is dense, with a good amount of recruitment and low decadence. Utilization of sagebrush has been mostly light, with the exception of 1984 when utilization was heavy. Black greasewood (*Sarcobatus vermiculatus*) is found in low density on the study, but in greater numbers at the bottom of the hill. Narrowleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *stenophyllus*) plants were very numerous early in the study, but density decreased following the wildfire. Other less abundant shrubs include shadscale (*Atriplex confertifolia*), broom snakeweed (*Gutierrezia sarothrae*), and threadleaf rubber rabbitbrush (*C. nauseosus* ssp. *consimilis*) (Table - Browse Characteristics). Basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) dominates the flat areas down slope where the soil is significantly deeper.

Herbaceous Understory: The herbaceous understory is depleted. Cheatgrass (*Bromus tectorum*) is the most abundant species, providing the majority of the herbaceous cover. Perennial grasses are not abundant, but include bluebunch wheatgrass (*Agropyron spicatum*), Indian ricegrass (*Oryzopsis hymenoides*), Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*), and needle-and-thread (*Stipa comata*). Perennial forb species are very sparse, and the forb composition is dominated by annual species (Table - Herbaceous Trends).

Soil: The soil is in the Solak-Rock outcrop association, which occurs on mountain slopes. The parent material consists of colluvium and residuum derived from quartzite, limestone, and schist (Soil Survey Staff 2011). Soil texture is a sandy clay loam, and the soil reaction is moderately alkaline (pH 8.2). Phosphorus may have limited availability for plant growth and development at 3.6 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Soils are rocky on the surface and throughout the profile. The soil is easily disturbed on the 30-35% slope. However, vegetation and litter cover, primarily provided by cheatgrass, is high and appears to be sufficient to control erosion (Table - Basic Cover). The soil erosion condition has been classified as stable since 2001.

Trend Assessments

Browse:

- **1984 to 1990 - stable (0):** There was little change in the density of Wyoming big sagebrush. Decadence remained high at 48%, and poor vigor increased from 9% to 20%.
- **1990 to 1996 - slightly up (+1):** Differences in density may be related to the larger sample area used in 1996; therefore, trend was determined using other parameters. Decadence of sagebrush decreased to 4%, and poor vigor decreased to 1%. Recruitment of young sagebrush plants increased substantially, with young plants comprising 84% of the population.
- **1996 to 2001 - stable (0):** The density of Wyoming big sagebrush decreased 55%, from 15,500 plants/acre to 7,020 plants/acre, but most of this decrease is due to a decrease in the recruitment of young plants which was extremely high in 1996. The density of mature plants increased on the site.

Recruitment of young sagebrush plants remained very good at 47% of the population. Cover of sagebrush decreased from 15% to 10%. Part of the transect was burned in 2000, removing sagebrush from several sample belts.

- **2001 to 2006 - slightly down (-1):** The sagebrush density decreased 30% to 4,920 plants/acre, but cover remained similar at 9%. Again, most of the decrease in density was due to a decrease in the recruitment of young plants to 8% of the population. Decadence increased from 7% to 18%, and poor vigor increased from 3% to 9%.
- **2006 to 2011 - stable (0):** Density of sagebrush decreased by 10% to 4,420 plants/acre, but cover increased to 13%. Recruitment of young sagebrush plants increased to 28% of the population. Decadence decreased to 4%, and poor vigor decreased to 2%.

Grass:

- **1984 to 1990 - slightly up (+1):** There was an increase in the sum of nested frequency of perennial grasses, but perennial grasses remained rare. Sandberg bluegrass increased significantly in nested frequency.
- **1990 to 1996 - slightly up (+1):** The sum of nested frequency of perennial grasses increased, but remained fairly rare on the site. Data for the annual species cheatgrass was included for the first time, and the species dominates the herbaceous understory.
- **1996 to 2001 - slightly down (-1):** The sum of nested frequency of perennial grasses and cover remained similar, but cheatgrass increased significantly in nested frequency. Cover of cheatgrass increased from 3% to 13%.
- **2001 to 2006 - stable (0):** The sum of nested frequency of perennial grasses increased by 23%, and cover increased to 6%. However, cheatgrass increased significantly in nested frequency, and cover increased to 17%.
- **2006 to 2011 - slightly up (+1):** There was little change in the sum of nested frequency, though cover decreased slightly to 4%. Cheatgrass decreased significantly in nested frequency, and cover decreased to 8%.

Forb:

- **1984 to 1990 - stable (0):** Perennial forbs are very rare on the site.
- **1990 to 1996 - stable (0):** Perennial forbs are very rare on the site.
- **1996 to 2001 - stable (0):** Perennial forbs are very rare on the site.
- **2001 to 2006 - stable (0):** Perennial forbs are very rare on the site.
- **2006 to 2011 - stable (0):** Perennial forbs are very rare on the site.

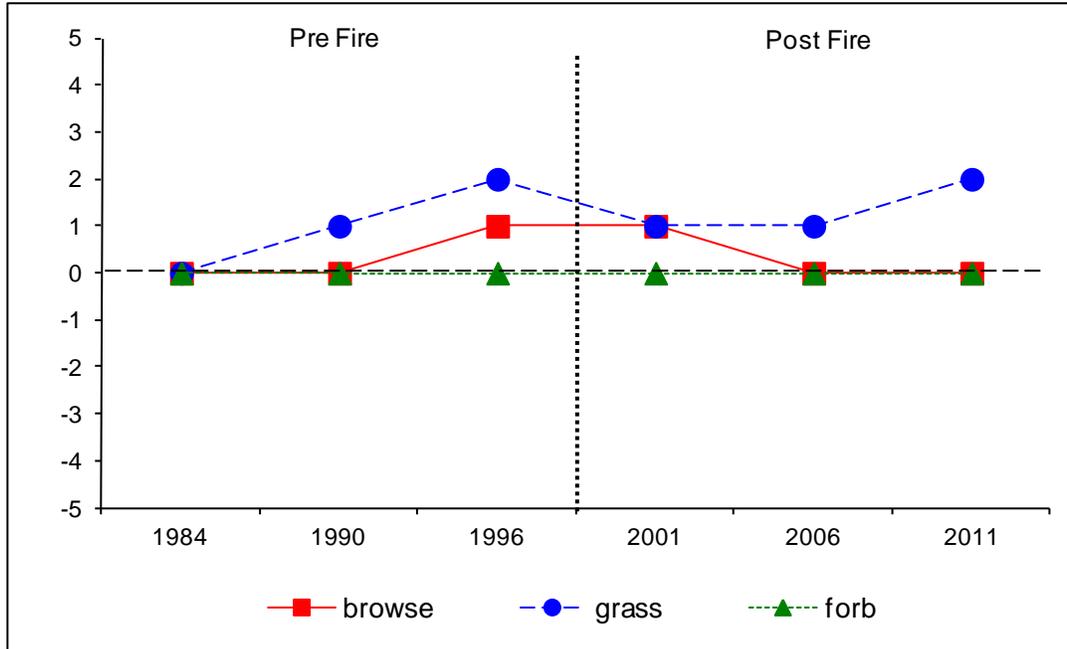
DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

Management unit 1, study no: 13

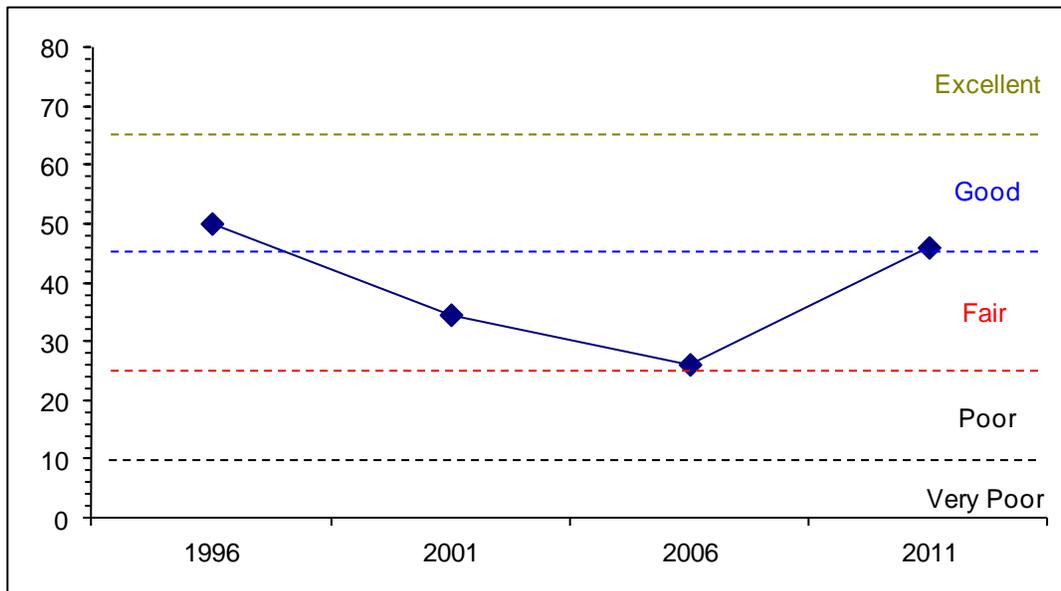
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	18.3	13.8	15.0	3.9	-2.7	1.8	0.0	50.1	Good
01	12.2	12.9	15.0	4.0	-9.8	0.3	0.0	34.6	Fair
06	11.3	9.6	4.0	12.1	-12.5	1.6	0.0	26.2	Poor-Fair
11	16.3	13.8	14.0	7.2	-5.6	0.4	0.0	46.1	Fair-Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 1, Study no: 13



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
 Management unit 1, Study no: 13



HERBACEOUS TRENDS--

Management unit 01, Study no: 13

Type	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
G	Agropyron spicatum	a8	ab10	ab12	ab19	ab25	b23	.31	.28	1.02	.36
G	Bromus tectorum (a)	-	-	a287	b334	c364	ab309	3.48	13.07	16.60	7.48
G	Oryzopsis hymenoides	a5	ab8	ab11	ab9	c16	c31	.07	.45	1.91	1.22
G	Poa secunda	a3	b35	b44	bc55	cd72	d92	.68	.53	2.32	1.81
G	Sitanion hystrix	ab16	ab13	b35	ab14	ab12	a4	.56	.11	.16	.18
G	Stipa comata	a-	a-	b16	b17	b15	a-	.31	.64	.63	-
G	Vulpia octoflora (a)	-	-	11	-	16	6	.07	-	.04	.01
Total for Annual Grasses		0	0	298	334	380	315	3.55	13.07	16.64	7.49
Total for Perennial Grasses		32	66	118	114	140	150	1.94	2.02	6.06	3.58
Total for Grasses		32	66	416	448	520	465	5.50	15.10	22.71	11.08
F	Allium sp.	-	-	-	-	-	3	-	-	-	.03
F	Alyssum alyssoides (a)	-	-	a11	a5	b132	c168	.02	.01	2.73	1.07
F	Arabis sp.	-	3	4	-	-	-	.01	-	-	-
F	Astragalus beckwithii	a6	a4	b19	a3	ab7	ab10	.22	.00	.63	.05
F	Astragalus sp.	-	-	-	-	-	-	-	-	.00	-
F	Castilleja chromosa	-	-	5	1	4	-	.06	.00	.00	-
F	Castilleja linariaefolia	-	-	-	-	3	-	-	-	.00	-
F	Caulanthus crassicaulis	-	-	2	-	-	-	.03	-	-	-
F	Chaenactis douglasii	a1	a16	b36	a4	ab9	ab3	.16	.03	.05	.00
F	Chenopodium leptophyllum(a)	-	-	-	-	-	3	-	-	-	.00
F	Collinsia parviflora (a)	-	-	4	-	6	-	.01	-	.01	-
F	Cryptantha sp.	-	-	9	-	-	3	.04	-	-	.03
F	Delphinium nuttallianum	-	-	-	1	-	3	-	.00	-	.00
F	Descurainia pinnata (a)	-	-	a23	b100	a8	b78	.07	1.49	.03	.16
F	Erigeron pumilus	a1	a-	b11	ab6	ab4	ab6	.10	.03	.03	.03
F	Eriogonum caespitosum	-	3	5	-	-	-	.04	-	-	-
F	Eriogonum ovalifolium	-	-	-	-	2	-	-	-	.06	-
F	Gayophytum ramosissimum(a)	-	-	-	3	-	-	-	.00	-	-
F	Gilia sp. (a)	-	-	a7	b106	a-	c140	.02	.43	-	.50
F	Lactuca serriola (a)	-	-	1	11	-	4	.00	.10	-	.01
F	Lappula occidentalis (a)	-	-	a15	a26	a29	b119	.03	.12	.08	.33
F	Machaeranthera canescens	-	-	3	-	4	6	.00	-	.01	.01
F	Microsteris gracilis (a)	-	-	a-	a-	a4	b12	-	-	.01	.02
F	Oenothera caespitosa	-	-	5	-	-	-	.03	-	-	-
F	Phlox hoodii	5	5	9	6	-	-	.15	.06	-	-
F	Phlox longifolia	-	-	-	-	-	2	-	-	-	.03
F	Ranunculus testiculatus (a)	-	-	-	-	-	6	-	-	-	.01
F	Sisymbrium altissimum (a)	-	-	a-	a-	b78	c167	-	-	.31	2.87
F	Tragopogon dubius (a)	-	-	1	-	-	-	.00	-	.00	-
Total for Annual Forbs		0	0	62	251	257	697	0.16	2.15	3.19	5.01
Total for Perennial Forbs		13	31	108	21	33	36	0.88	0.14	0.81	0.20
Total for Forbs		13	31	170	272	290	733	1.05	2.29	4.00	5.21

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

BROWSE TRENDS--

Management unit 01, Study no: 13

Type	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Artemisia tridentata wyomingensis	96	60	61	56	14.67	9.76	9.03	13.06
B	Atriplex confertifolia	2	3	2	0	-	-	-	-
B	Chrysothamnus viscidiflorus stenophyllus	91	37	42	36	7.21	.36	1.00	1.08
B	Leptodactylon pungens	1	0	0	0	-	-	-	-
B	Opuntia sp.	16	8	8	7	1.12	.41	.00	.06
B	Sarcobatus vermiculatus	2	2	2	4	.15	.63	.63	.38
Total for Browse		208	110	115	103	23.16	11.17	10.68	14.59

CANOPY COVER, LINE INTERCEPT--

Management unit 01, Study no: 13

Species	Percent Cover	
	'06	'11
Artemisia tridentata wyomingensis	9.55	10.88
Chrysothamnus viscidiflorus stenophyllus	1.41	2.34
Opuntia sp.	-	.35
Sarcobatus vermiculatus	1.54	.96

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 01, Study no: 13

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia tridentata wyomingensis	1.3	0.9	1.4

BASIC COVER--

Management unit 01, Study no: 13

Cover Type	Average Cover %					
	'84	'90	'96	'01	'06	'11
Vegetation	2.00	5.50	30.90	29.56	37.43	32.81
Rock	18.25	24.50	26.53	21.75	21.67	25.45
Pavement	10.50	31.00	8.90	19.43	9.73	16.85
Litter	56.50	31.75	29.68	21.09	28.21	18.29
Cryptogams	.50	2.25	2.19	3.12	3.04	.60
Bare Ground	12.25	5.00	12.53	10.47	8.54	10.69

SOIL ANALYSIS DATA --

Management unit 01, Study no: 13, Study Name: Raft River Narrows

Effective rooting depth (in)	pH	Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
8.6	8.2	46.5	23.4	30.0	1.7	3.6	441.6	1.9

PELLET GROUP DATA--

Management unit 01, Study no: 13

Type	Quadrat Frequency			
	'96	'01	'06	'11
Rabbit	4	6	11	9
Elk	-	-	-	-
Deer	15	2	19	6
Cattle	-	-	4	3

Days use per acre (ha)		
'01	'06	'11
-	-	-
-	-	2 (5)
11 (28)	27 (66)	23 (58)
-	1 (2)	8 (20)

BROWSE CHARACTERISTICS--

Management unit 01, Study no: 13

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>Artemisia tridentata wyomingensis</i>									
84	2598	6	42	51	-	8	92	9	26/42
90	2498	7	45	48	66	15	4	20	27/31
96	15500	84	11	4	14200	2	.12	.64	24/37
01	7020	47	46	7	40	.28	0	3	23/27
06	4920	8	74	18	80	35	20	9	22/26
11	4420	28	68	4	20	7	0	2	18/24
<i>Artemisia tripartita tripartita</i>									
84	199	0	83	17	-	0	100	0	13/17
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	-/-
11	0	0	0	0	-	0	0	0	-/-
<i>Atriplex confertifolia</i>									
84	33	0	100	0	-	0	0	0	9/9
90	33	0	0	100	-	0	0	0	-/-
96	40	50	50	0	-	0	0	0	13/21
01	60	0	100	0	-	0	0	0	10/13
06	40	0	100	0	-	0	0	0	12/20
11	0	0	0	0	-	0	0	0	18/38
<i>Chrysothamnus nauseosus consimilis</i>									
84	0	0	0	-	-	0	0	0	-/-
90	0	0	0	-	-	0	0	0	-/-
96	0	0	0	-	-	0	0	0	36/40
01	0	0	0	-	-	0	0	0	25/32
06	0	0	0	-	-	0	0	0	19/26
11	0	0	0	-	-	0	0	0	25/35

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Chrysothamnus viscidiflorus stenophyllus									
84	7331	18	35	47	66	46	12	2	7/9
90	6664	7	62	31	33	0	0	8	8/10
96	6360	22	61	16	640	4	0	4	12/19
01	1120	7	48	45	-	0	0	30	8/11
06	1400	9	80	11	20	3	0	7	11/14
11	1360	28	66	6	-	1	0	1	13/20
Grayia spinosa									
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	53/61
Leptodactylon pungens									
84	598	83	17	-	-	0	0	0	3/2
90	0	0	0	-	-	0	0	0	-/-
96	20	0	100	-	-	0	0	0	9/10
01	0	0	0	-	-	0	0	0	-/-
06	0	0	0	-	-	0	0	0	-/-
11	0	0	0	-	-	0	0	0	-/-
Opuntia sp.									
84	166	0	100	0	-	0	0	0	6/7
90	498	40	60	0	33	0	0	0	5/9
96	340	12	76	12	20	0	0	6	4/14
01	160	13	75	13	-	0	0	0	4/9
06	160	13	75	13	-	0	0	13	4/9
11	140	0	100	0	-	0	0	0	4/11
Sarcobatus vermiculatus									
84	33	0	0	100	-	100	0	0	-/-
90	33	0	100	0	-	0	0	0	35/35
96	40	0	100	0	-	0	0	0	36/62
01	40	50	50	0	-	0	0	0	-/-
06	40	0	100	0	-	0	0	0	39/48
11	80	0	75	25	-	0	0	25	30/41