

Trend Study 00-1-06

Study site name: Tin Lambing Shed .

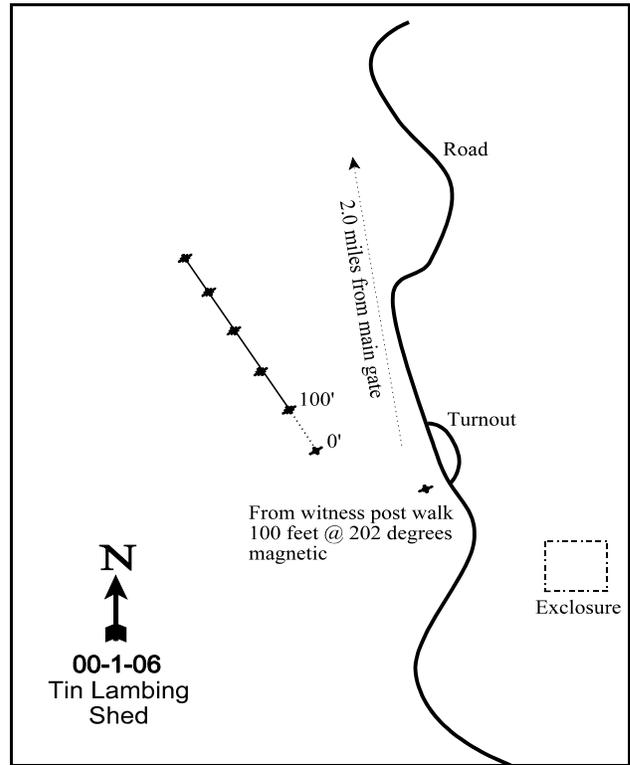
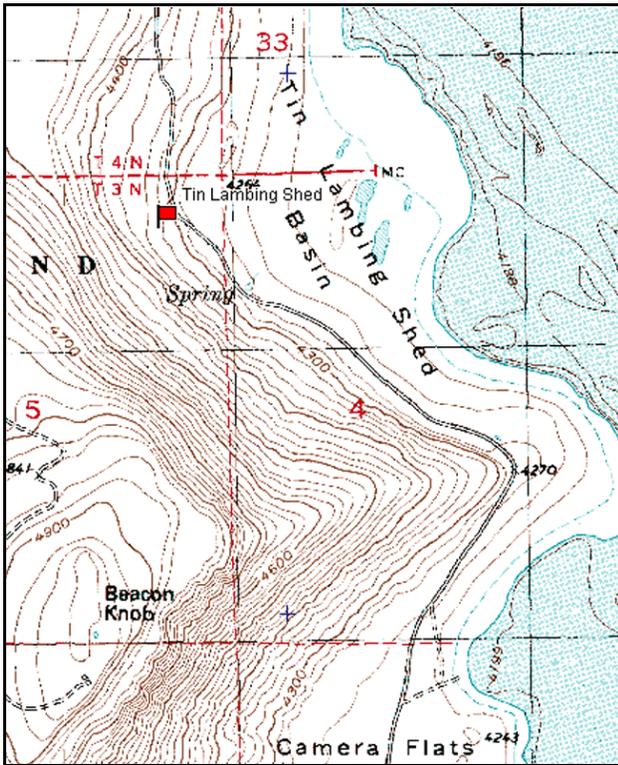
Vegetation type: Annual Grass .

Compass bearing: frequency baseline 307 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From the main gate on Antelope Island, travel south for approximately 2.0 miles to a witness post on the right hand side of the road. From the witness post walk 105 ft. at a bearing of 202 degrees magnetic to the 0-foot baseline stake. The baseline runs in a direction of 307 degrees magnetic.



Map Name: Antelope Island North

Diagrammatic Sketch

Township 3N, Range 3W, Section 5

UTM NAD 27, UTM 12T 4542374 N 398851 E

## DISCUSSION

### Tin Lambing Shed - Trend Study No. 00-1

#### Study Information

This study is located in a small basin on the northeast side of Antelope Island about 1/4 mile from the shoreline and about 200 feet above the main road (elevation: 4,300 feet, slope: 13%, aspect: northeast). The area burned sometime prior to study establishment in 1994 and fire is a continual threat to the area due to the dominance of weeds and annual species. The pellet group transect data estimates in 2001 were 17 bison days use/acre (43 bison days use/ha). The 2006 pellet group estimates were 1 pronghorn and 10 bison days use/acre (2 pdu/ha and 25 bdu/ah). Both the antelope and bison use was not recent.

#### Soil

The soils are in the Kilburn series, which consists of very deep, somewhat excessively drained, moderately rapidly permeable soils. They are formed in alluvium and colluvium derived dominantly from gneiss, schist, and quartzite on fan terraces, lake terraces, stream terraces, and deltas (USDA-NRCS 2006). These are derived specifically from alluvial deposits from Lake Bonneville. The soil texture is a sandy loam with a slightly acidic pH (6.2). The effective rooting depth is nearly 18 inches. Soil phosphorus concentration is marginal at 8 ppm; values less than 6 ppm may limit plant growth and development (Tiedemann and Lopez 2004). Litter cover increased in 1996, but returned in 2001 to levels similar to those in 1994. It did not change in 2006. Bare ground cover has been low every year. Cheatgrass has provided the majority of the vegetation and litter cover every year. The erosion condition class was stable in 2006.

#### Browse

Broom snakeweed and Wyoming big sagebrush are the only shrubs sampled. Broom snakeweed density has decreased from 380 plants/acre in 1994 to zero in 2006. Wyoming big sagebrush was not sampled in the density strips in any year, but a small Wyoming big sagebrush plant was sampled once in the height/crown measurements in 1996.

#### Herbaceous Understory

The herbaceous understory is dominated by one species, cheatgrass. Cheatgrass occurred in every quadrat since 1996. Cheatgrass has provided at least 60% of the total vegetation cover for all years. Other annual grass species (sampled at lower frequencies) include rattail fescue and six weeks fescue. Both warm and cool season perennial grasses also occur. Warm season species, purple three-awn and sand dropseed, remained at stable frequencies from 1994 to 2001, but decreased significantly in 2006. Cool season grasses include salt grass, mutton bluegrass, Sandberg bluegrass, bulbous bluegrass, and needle-and-thread. Sandberg bluegrass declined significantly in nested frequency between 1994 and 1996, and remained at low a frequency since. Mutton bluegrass decreased significantly from 1994 to 2006. Bulbous bluegrass has increased significantly every year since 1996. As a group, sum of nested frequency for perennial grasses declined by 40% in 1996, increased by 24% in 2001, and decreased by 5% in 2006.

Forbs are dominated by weedy species. Storksbill, wooly plantain, prickly lettuce, and yellow salsify are the most abundant species by frequency. Prickly lettuce was abundant and significantly increased between 1994 and 1996, was rarely sampled in 2001, but increased significantly again in 2006. Perennial forb nested frequency decreased by 73% in 2001 due to the extremely dry conditions in the winter and spring of 2000-2001; it had increased some by 2006.

#### 1996 TREND ASSESSMENT

Browse trend is stable with very few broom snakeweed plants sampled. Annual weeds provide competition for browse species and prohibit the population from establishing and expanding. The herbaceous understory is dominated by annual and weedy species, although there are some perennial species still in the community. Even if fire is suppressed, it will be extremely difficult to change the composition of the community. The

grass trend is down. The nested frequency of perennial grasses decreased 40% and the nested frequency of annual grasses increased 24%. The nested frequency of bulbous bluegrass decreased significantly. The forb trend is slightly up. The nested frequency of perennial and annual forbs increased, but the composition is poor. Yellow salsify and prickly lettuce increased significantly. Miller et al. (1981) showed that yellow salsify made up 25% of deer and elk spring and summer diet in northern Oregon and prickly lettuce made up 2%. Unfortunately, storksbill nested frequency also increased significantly. The 1994 Desirable Components Index score was very poor to poor due to the lack of browse, high annual grass cover, and very low perennial forb cover. The 1996 DCI score decreased to very poor due to decreased perennial grass cover.

1994 winter range condition (DC Index) - very poor to poor (10) Lower potential scale  
1996 winter range condition (DC Index) - very poor (2) Lower potential scale  
browse - stable (0)                      grass - down (-2)                      forb - slightly up (+1)

2001 TREND ASSESSMENT

There are no key browse due to the loss of all species to the frequency historic fires. Broom snakeweed is present, but is not very abundant and does not appear to be increasing. The grass trend is stable. The nested frequency of perennial grasses, with the exception of bulbous bluegrass, remained unchanged. The species composition remained poor and bulbous bluegrass increased significantly. Cheatgrass still dominates and increased significantly in nested frequency since 1994. Other annual and/or weedy species are also present. The nested frequency for perennial grasses increased mainly because of significant increases in salt grass and bulbous bluegrass. The forb trend is down. The nested frequency of perennial forbs decreased 73%. Yellow salsify and prickly lettuce both decreased significantly. The DCI score remained very poor.

winter range condition (DC Index) - very poor (5) Lower potential scale  
browse - stable (0)                      grass - stable (0)                      forb - down (-2)

2006 TREND ASSESSMENT

The browse trend is stable. Browse species continue to be sparse and broom snakeweed was not sampled in 2006. The grass trend is down. The nested frequency of perennial grasses, excluding bulbous bluegrass, decreased 35% in 2006. Bulbous bluegrass nested frequency increased significantly and the nested frequency of purple-three-awn and sand dropseed decreased significantly. Mutton bluegrass decreased significantly and was not sampled. The forb trend is stable. The nested frequency of perennial forbs (including yellow salsify) decreased, but the nested frequency of prickly lettuce increased significantly. Storksbill nested frequency decreased significantly and cover decreased from 9 to 3%. The DCI score remained very poor.

winter range condition (DC Index) - very poor (-2) Lower potential scale  
browse - stable (0)                      grass - down (-2)                      forb - slightly up (+1)

HERBACEOUS TRENDS --  
Management unit 00 , Study no: 1

T y p e	Species	Nested Frequency				Average Cover %			
		'94	'96	'01	'06	'94	'96	'01	'06
G	Aristida purpurea	<sub>b</sub> 110	<sub>b</sub> 75	<sub>b</sub> 76	<sub>a</sub> 2	4.31	2.28	4.93	.15
G	Bromus tectorum (a)	<sub>a</sub> 448	<sub>ab</sub> 479	<sub>b</sub> 482	<sub>ab</sub> 466	29.99	44.62	43.94	35.79
G	Distichlis spicata	<sub>a</sub> 92	<sub>b</sub> 138	<sub>c</sub> 175	<sub>c</sub> 187	3.07	1.15	2.88	6.24
G	Festuca myuros (a)	<sub>a</sub> -	<sub>b</sub> 228	<sub>b</sub> 184	<sub>b</sub> 187	-	4.78	3.04	2.84

Type	Species	Nested Frequency				Average Cover %			
		'94	'96	'01	'06	'94	'96	'01	'06
G	<i>Poa bulbosa</i>	<sub>b</sub> 56	<sub>a</sub> 6	<sub>b</sub> 81	<sub>c</sub> 192	.78	.04	3.82	4.43
G	<i>Poa fendleriana</i>	<sub>c</sub> 37	<sub>ab</sub> 4	<sub>bc</sub> 18	<sub>a</sub> -	.44	.01	.09	-
G	<i>Poa secunda</i>	<sub>b</sub> 221	<sub>a</sub> 51	<sub>a</sub> 46	<sub>a</sub> 21	4.47	.33	.51	.05
G	<i>Sporobolus cryptandrus</i>	<sub>b</sub> 56	<sub>b</sub> 59	<sub>b</sub> 38	<sub>a</sub> 9	.97	.91	.72	.11
G	<i>Stipa comata</i>	58	45	35	33	1.93	1.39	1.28	.66
G	<i>Vulpia octoflora</i> (a)	<sub>c</sub> 136	<sub>a</sub> 17	<sub>ab</sub> 49	<sub>b</sub> 81	1.06	.05	.19	.29
Total for Annual Grasses		584	724	715	734	31.06	49.46	47.18	38.93
Total for Perennial Grasses		630	378	469	444	15.99	6.13	14.26	11.65
Total for Grasses		1214	1102	1184	1178	47.05	55.59	61.44	50.59
F	<i>Agoseris heterophylla</i> (a)	5	1	-	-	.03	.00	-	-
F	<i>Calochortus nuttallii</i>	-	1	7	6	-	.00	.02	.01
F	<i>Descurainia pinnata</i> (a)	-	-	-	2	-	-	-	.00
F	<i>Draba nemorosa</i> (a)	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 53	-	-	-	.09
F	<i>Epilobium brachycarpum</i> (a)	<sub>a</sub> 2	<sub>a</sub> -	<sub>a</sub> 11	<sub>b</sub> 40	.00	-	.01	.12
F	<i>Erodium cicutarium</i> (a)	<sub>a</sub> 137	<sub>bc</sub> 284	<sub>c</sub> 316	<sub>b</sub> 220	1.25	4.18	9.41	2.87
F	<i>Erigeron flagellaris</i>	-	-	-	3	-	-	-	.00
F	<i>Eriogonum umbellatum</i>	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 19	-	-	-	.25
F	<i>Helianthus annuus</i> (a)	<sub>b</sub> 26	<sub>a</sub> -	<sub>a</sub> -	<sub>c</sub> 80	.60	-	-	.66
F	<i>Holosteum umbellatum</i> (a)	<sub>b</sub> 14	<sub>a</sub> -	<sub>a</sub> 5	<sub>a</sub> 3	.04	-	.03	.00
F	<i>Lappula occidentalis</i> (a)	-	-	-	2	-	-	-	.00
F	<i>Lactuca serriola</i>	<sub>a</sub> 11	<sub>b</sub> 145	<sub>a</sub> 7	<sub>b</sub> 96	.04	2.07	.01	.86
F	<i>Machaeranthera canescens</i>	<sub>a</sub> -	<sub>b</sub> 89	<sub>a</sub> -	<sub>a</sub> -	-	3.75	-	-
F	<i>Medicago sativa</i>	-	-	-	-	-	.00	-	-
F	<i>Plantago patagonica</i> (a)	<sub>b</sub> 86	<sub>ab</sub> 52	<sub>a</sub> 45	<sub>a</sub> 33	.46	.16	.21	.09
F	<i>Sisymbrium altissimum</i> (a)	<sub>ab</sub> 3	<sub>ab</sub> 6	<sub>a</sub> -	<sub>b</sub> 10	.01	.01	-	.36
F	<i>Sphaeralcea coccinea</i>	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 12	<sub>a</sub> -	-	-	.74	-
F	<i>Tragopogon dubius</i>	<sub>a</sub> -	<sub>c</sub> 93	<sub>b</sub> 63	<sub>a</sub> 2	-	1.67	1.41	.01
F	<i>Verbascum blattaria</i>	<sub>a</sub> -	<sub>bc</sub> 13	<sub>ab</sub> 2	<sub>c</sub> 30	-	.94	.06	.62
Total for Annual Forbs		273	343	377	443	2.42	4.36	9.67	4.22
Total for Perennial Forbs		11	341	91	156	0.04	8.46	2.25	1.77
Total for Forbs		284	684	468	599	2.46	12.82	11.92	5.99

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

BROWSE TRENDS --

Management unit 00 , Study no: 1

Type	Species	Strip Frequency				Average Cover %			
		'94	'96	'01	'06	'94	'96	'01	'06
B	Gutierrezia sarothrae	3	3	2	0	.01	.18	.03	-
Total for Browse		3	3	2	0	0.00	0.17	0.03	0

BASIC COVER --

Management unit 00 , Study no: 1

Cover Type	Average Cover %			
	'94	'96	'01	'06
Vegetation	67.72	63.46	67.59	60.81
Rock	.16	.04	0	.02
Pavement	.58	.74	1.13	.41
Litter	54.37	73.58	50.65	41.40
Cryptogams	2.53	2.34	1.04	.41
Bare Ground	5.24	1.79	6.78	6.05

SOIL ANALYSIS DATA --

Herd Unit 00, Study no: 01, Tin Lambing Shed

Effective rooting depth (in)	Temp °F (depth)	PH	Sandy loam			%0M	PPM P	PPM K	dS/m
			% sand	% silt	% clay				
17.6	61.0 (18.6)	6.2	76.92	9.08	14.0	1.2	8.1	124.8	0.3

PELLET GROUP DATA --

Management unit 00 , Study no: 1

Type	Quadrat Frequency				Days use per acre (ha)	
	'94	'96	'01	'06	'01	'06
Rabbit	2	8	-	7	-	-
Elk	-	1	-	-	-	-
Deer	1	3	-	-	-	1 (2)
Buffalo	1	6	4	6	17 (43)	10 (25)

BROWSE CHARACTERISTICS --  
 Management unit 00 , Study no: 1

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata wyomingensis</i>												
94	0	-	-	-	-	-	0	0	-	-	0	-/-
96	0	-	-	-	-	-	0	0	-	-	0	7/9
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Gutierrezia sarothrae</i>												
94	380	-	120	220	40	-	0	0	11	11	11	7/8
96	280	20	20	260	-	-	0	0	0	-	0	9/9
01	240	-	-	220	20	40	0	0	8	8	8	14/19
06	0	-	-	-	-	-	0	0	0	-	0	13/18
<i>Opuntia sp.</i>												
94	0	-	-	-	-	-	0	0	-	-	0	-/-
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	8/27