

Trend Study 17-15-07

Study site name: Island Boat Camp.

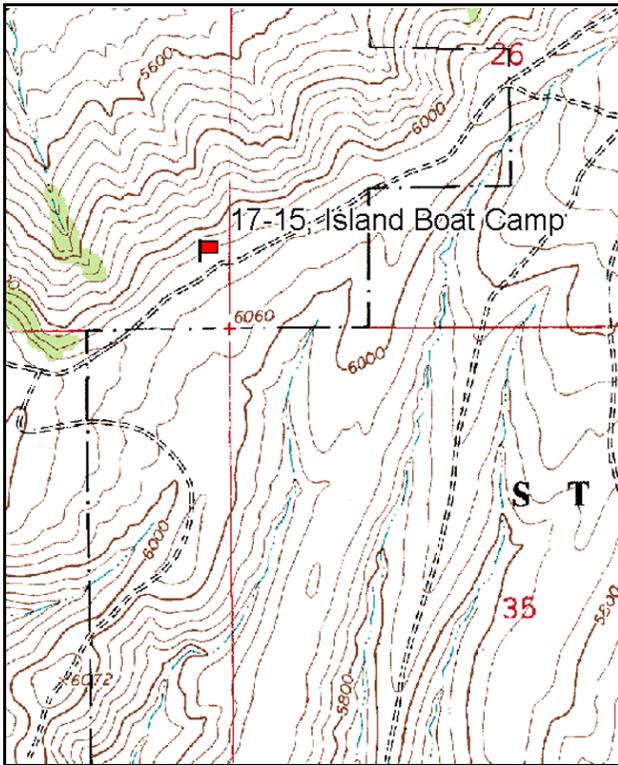
Vegetation type: Mountain Brush.

Compass bearing: line 1 frequency baseline 355 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (71ft), line 3 (34ft), line 4 (59ft). Rebar: belt 1 on 2ft., belt 2 on 1ft., and belt 3 on 1ft.

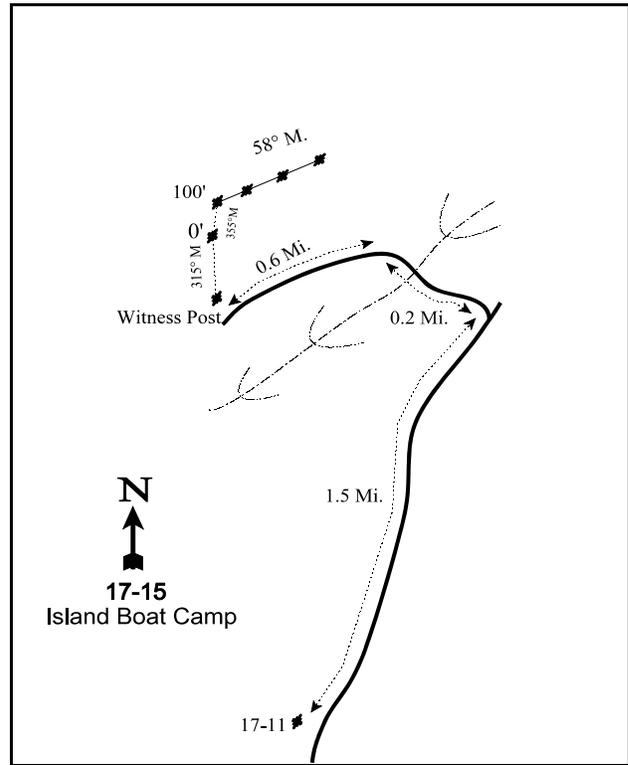
LOCATION DESCRIPTION

Beginning at the intersection of U.S. 189 and the Wallsburg turnoff, proceed 0.50 miles towards Wallsburg to an intersection. Turn left at the intersection and proceed northerly for just over 1 mile passing through two DWR gates to another intersection, and turn right. Proceed 0.05 miles to a small rock pile on the left(i.e., east) side of the road which marks study #17-11, Wallsburg Turn. Continue down the road traveling north passing a left fork for 1.5 miles to a fork. Bear left and go 0.2 miles thru a drainage to another ridge top and bear left. Drive along the ridge 0.6 miles to a witness post on the north side of the road. 0-foot stake marked with a browse tag #415.



Map Name: Charleston

Township 4S, Range 4E, Section 26



Diagrammatic Sketch

GPS: NAD 83. UTM 12T 459901 E 4476255 N

## DISCUSSION

### Island Boat Camp - Trend Study No. 17-15

#### Study Information

This winter range study is located on a ridge overlooking both Wallsburg and the Island Boat Camp [elevation: 6,100 feet (1,860 m), slope: 5%, aspect: northwest]. It is representative of the unburned mountain brush community that existed on better quality sites between Wallsburg and Deer Creek Reservoir. Virtually all of the winter range to the north, east and south of this site was burned in 1976. The nearest source of perennial water is Deer Creek Reservoir, 1.4 miles (2.2 km) to the northwest. Big game use, as evidenced by hedging on the principal browse and frequency of deer and elk pellet groups, is moderately high. From the pellet group transect, there were an estimated 125 deer days use/acre (309 ddu/ha) in 2002 and 66 deer days use/acre (164 ddu/ha) in 2007. Elk use was estimated at 31 days use/acre (78 edu/ha) in 2002 and 9 days use/acre (22 edu/ha) in 2007. Most of the deer and elk pellet groups appear to be from winter use, but about 15% are from spring use. Cattle have used the area in the past, and cattle use was estimated at 19 days use/acre (47 cdu/ha) in 2007. Numerous game/livestock trails cross the study, and cattle had recently grazed through the area in 2007.

#### Soil

The soil is classified as the Watkins Ridge soil series and consists of very deep, well-drained, moderately permeable soils that formed in alluvium and residuum from limestone, sandstone and shale. The taxonomic classification is fine-loamy, mixed, superactive, frigid Typic Calcixerolls (USDA-NRCS 2007). Specifically at the study, the soil texture is a clay loam that is slightly alkaline in reactivity (pH of 7.8). The relative, combined cover of vegetation and litter has averaged 89% of the total ground cover since 1996. Though there are few rocks on the surface, they are abundant in the profile. The soil erosion condition was classified as stable in 2002 and 2007.

#### Browse

Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), serviceberry (*Amelanchier alnifolia*), and antelope bitterbrush (*Purshia tridentata*) are the dominant preferred browse species. Mountain big sagebrush provided 10% canopy cover in 2002, and decreased to 3% in 2007. The sagebrush density has decreased from 3,199 plants/acre (7,918 plants/ha) in 1983 to 520 plants/acre (1,287 plants/ha) by 2007. Few or no seedling plants have been sampled. The young age class decreased from 19% of the population in 1983 to 2% by 1996, then increased to 16% by 2007. Decadent plants have comprised 20% of the population or greater in all sample years, and was highest in 2007 (65%). Dead plants were first sampled in 1996, and since then the density has increased from 560 dead plants/acre (1,400 plants/ha) in 1996 to 1,340 dead plants/acre (3,317 plants/ha) in 2007. The proportion of the plants that exhibit poor vigor has ranged from 0% to 29%, and since 1996 most of those plants were classified as dying. In 2007, 15% of the plants were infested with the sagebrush defoliator moth (*Aroga websteri*). The average annual leader growth was 2.2 inches (5.6 cm) in 2002 and 2.0 inches (5.1 cm) in 2007. Browse use has on sagebrush has been light to light-moderate.

Antelope bitterbrush canopy cover was 8% in 2002 and 4% in 2007. The density has decreased from 999 plants/acre (2,473 plants/ha) in 1989 to 400 plants/acre (990 plants/ha) in 2007. The population is comprised mostly of mature and decadent plants. Seedling and young plants were last sampled in 1989. Decadence has ranged from 13% to 40%, and was highest in 1989. Plants with poor vigor have accounted for 5% to 11% of the population since 1996, and all of those plants were classified as dying. The average leader growth was 2.4 inches (6.1 cm) in 2002 and 3.5 inches (8.8 cm) in 2007. Browse use on bitterbrush has been moderate or heavy.

The canopy cover of serviceberry decreased from 6% in 2002 to 5% in 2007. The serviceberry population density increased from 532 plants/acre (1,317 plants/ha) in 1983 to 1,532 plants/acre (3,792 plants/ha) in 1989,

and decreased to 700 plants/acre (1,733 plants/ha) in 2002. In 2007, the density was estimated at 780 plants/acre (1,931 plants/ha). Young plants comprised 30% of the population in 1989, 33% in 1996, and decreased to 5% in 2007. Decadence has been highly variable between sample years. Decadent plants increased from 50% of the population in 1983 to 57% in 1989, decreased to 7% in 1996, increased 29% in 2002, and decreased to 5% in 2007. Plants with poor vigor accounted for 25% and 48% of the population in 1983 and 1989, respectively. Since 1996, few plants have had poor vigor. Browse use on serviceberry has been light-moderate to moderate-heavy.

The most abundant browse species is stickleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*). The population density has ranged from 4,066 plants/acre (10,064 plants/ha) to 6,060 plants/acre (15,000 plants/ha). Other browse species present include snowberry (*Symphoricarpos oreophilus*), gray horsebrush (*Tetradymia canescens*), and broom snakeweed (*Gutierrezia sarothrae*). Browse use on these species has been light.

#### Herbaceous Understory

The herbaceous understory is abundant and diverse. Perennial grasses comprised 14% cover in 1996, 23% in 2002 and 18% in 2007. Between five and nine perennial grass species have been sampled. Bluebunch wheatgrass (*Agropyron spicatum*), mutton bluegrass (*Poa fendleriana*), and Sandberg bluegrass (*Poa secunda*) are the dominant grasses. Since 1996, these species have comprised a combined average 16% cover. Other grasses sampled include Indian ricegrass (*Oryzopsis hymenoides*), crested wheatgrass (*Agropyron cristatum*), and oniongrass (*Melica bulbosa*). Cheatgrass (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), and bulbous bluegrass (*Poa bulbosa*) are also present. Although bulbous bluegrass is a perennial, it has a phenology similar to annual grasses (Stewart and Hull 1949). Of these three, only cheatgrass has been sampled in more than one quadrat. Quadrat frequency of cheatgrass was 22% in 1996, 4% in 2002, and 60% in 2007. Cheatgrass cover has averaged 1% since 1996.

Perennial forb diversity and abundance are higher at this study when compared to other studies near Deer Creek Reservoir and Wallsburg. Between 19 and 31 perennial species have been sampled. Perennial forb cover has decreased from 16% in 1996 to 12% in 2002, and 9% in 2007. Silky milkvetch (*Astragalus cibaricus*), arrowleaf balsamroot (*Balsamorhiza sagittata*), sulfur eriogonum (*Eriogonum umbellatum*), and silvery lupine (*Lupinus argenteus*) have been the dominant perennial forbs. Annual forbs had a higher sum of nested frequency than perennials in 2007. The dominant annual forbs are pale alyssum (*Alyssum alyssoides*), blue-eyed Mary (*Collinsia parviflora*) and Douglas knotweed (*Polygonum douglasii*). Houndstongue (*Cynoglossum officinale*), a noxious weed, was sampled in 1996 and had a 1% quadrat frequency.

#### 1989 TREND ASSESSMENT

The browse trend is stable. The density of mountain big sagebrush decreased 21%. The young age class decreased from 19% to 8% of the population, and decadence increased from 21% to 42%. The proportion of plants exhibiting poor vigor increased from 0% to 29%. Browse use remained light-moderate. The decrease in sagebrush was countered by a near three-fold increase in the density of serviceberry. Seedling and young serviceberry plants were sampled, and young plants comprised 30% of the population. However, decadence increased from 50% to 57%, and plants with poor vigor increased from 25% to 48% of the population. Browse use on serviceberry switched from moderate to light-moderate. The average height and crown measurements increased 21 and 25 inches (53 cm and 64 cm), respectively. The bitterbrush density remained stable, but decadence increased from 29% to 40%. The grass trend is up. The sum of nested frequency of perennial grasses increased 61%, including significant increases in Indian ricegrass and mutton bluegrass. The forb trend is up. The sum of nested frequency of perennial forbs increased 88%, including a significant increase in wild onion (*Allium* sp.).

browse - stable (0)

grass - up (+2)

forb - up (+2)

### 1996 TREND ASSESSMENT

The browse trend is stable. The density of sagebrush decreased 18%, serviceberry decreased 20%, and bitterbrush decreased 40%. However, the changes were partly due to the larger area sampled in 1996, and trend was determined from other parameters. Fewer young plants were sampled, but sagebrush decadence decreased to 27%. Plants with poor vigor decreased to 10% of the population, and the average crown width increased 13 inches (33 cm). Serviceberry decadence decreased from 57% to 7% of the population. Additionally, there were no plants with poor vigor. The average crown height decreased 16 inches (41 cm), and browse use remained light-moderate. No young or seedling bitterbrush plants were sampled, but decadence decreased to 13% of the population. The majority of the plants were heavily browsed, but despite the browsing, the average crown width increased 24 inches (61 cm). The grass trend is up. The sum of nested frequency of perennial grasses increased 22%, including a significant increase in bluebunch wheatgrass. The forb trend is up. The sum of nested frequency of perennial forbs increased two-fold. There were significant increases in arrowleaf balsamroot, tapertip hawksbeard (*Crepis acuminata*), sulphur eriogonum, and Lewis flax (*Linum lewisii*). The number of sampled perennial forb species increased from 22 to 31. Houndstongue was sampled in one quadrat. The Desirable Components Index (DCI) score was good due to the high browse, perennial grass, and perennial forb cover. High browse decadence, low browse recruitment, and the presence of a noxious weed lowered the DCI score.

winter range condition (DCI) - good (74) High potential scale  
browse - stable (0)                      grass - up (+2)                      forb - up (+2)

### 2002 TREND ASSESSMENT

The browse trend is down. The density of sagebrush decreased 16%, and most all of the decrease occurred in the mature age class. Decadence increased to 38% of the population. The density of dead sagebrush increased from 560 plants/acre (1,387 plants/ha) to 780 plants/acre (1,930 plants/ha). Additionally, the density of serviceberry decreased 43%, and decadence increased to 29% of the population. Browse use on serviceberry shifted from light-moderate to heavy. The density of bitterbrush decreased 7%, and decadence increased to 29% of the population. The grass trend is up. The sum of nested frequency of perennial grasses increased 23%. There was a significant increase in the nested frequency of Sandberg bluegrass and a significant decrease in that of cheatgrass. The grasses had not been grazed when the study was sampled. The forb trend is down. The sum of nested frequency of perennial forbs decreased 40%. There were significant decreases in the nested frequencies of five perennial species. Houndstongue was not sampled. The DCI score remained good since the increase in browse and perennial grass cover offset the increase in browse decadence.

winter range condition (DCI) - good (78) High potential scale  
browse - down (-2)                      grass - up (+2)                      forb - down (-2)

### 2007 TREND ASSESSMENT

The browse trend is down. The density of sagebrush decreased 70%; again, most of the decrease occurred in the mature age class. Sagebrush canopy cover decreased from 10% to 3%. Seedling sagebrush were sampled for the first time at a density of 40 plants/acre (99 plants/ha). The density of young plants decreased slightly, but still comprised 15% of the population. Decadence increased to 65% of the population. The density of dead plants increased to 1,340 plants/acre (3,317 plants/ha); more than twice the density of live plants. Plants with poor vigor increased to 23% of the population, and all of these plants were classified as dying. Additionally, 15% of the plants were infested with the sagebrush defoliator moth. The density of serviceberry increased 11%, and decadent plants decreased to 5% of the population. Although hedged, the serviceberry plants appeared healthy. The bitterbrush density decreased 29%, and decadence increased to 35%. The grass trend is down. The sum of nested frequency of perennial grasses decreased 24%, including a significant decrease in the nested frequency of mutton bluegrass. Both wheatgrasses had been heavily grazed when the study was sampled. There was a significant increase in the nested frequency of cheatgrass. Cheatgrass quadrat frequency increased from 4% to 60%, and cover increased from 0% to 2%. Japanese brome and

bulbous bluegrass were sampled for the first time. The forb trend is down. The sum of nested frequency of perennial forbs decreased 48%, including significant decreases in the nested frequencies of six perennial species. The DCI score decreased to fair due to a decrease in preferred browse cover.

winter range condition (DCI) - fair (57) High potential scale  
 browse - down (-2) grass - down (-2) forb - down (-2)

HERBACEOUS TRENDS --  
 Management unit 17 , Study no: 15

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'96	'02	'07	'96	'02	'07
G	Agropyron cristatum	-	ab8	a8	ab25	b31	.06	1.82	1.73
G	Agropyron spicatum	a104	a119	b178	b205	b198	6.32	10.72	12.36
G	Bromus japonicus (a)	-	-	-	-	1	-	-	.00
G	Bromus tectorum (a)	-	-	b67	a7	c172	.68	.02	2.37
G	Festuca ovina	b15	-	-	-	a2	-	-	.03
G	Melica bulbosa	-	-	ab4	b7	a-	.06	.19	.00
G	Oryzopsis hymenoides	ab19	c46	abc24	bc32	a2	.91	1.35	.03
G	Poa sp.	-	-	-	15	-	-	1.52	-
G	Poa bulbosa	-	-	-	-	1	-	-	.00
G	Poa fendleriana	a103	b172	b198	b172	a46	5.01	4.99	.82
G	Poa pratensis	-	a12	a5	a7	a8	.06	.18	.33
G	Poa secunda	-	a30	a60	b125	b159	1.27	2.52	2.93
G	Sitanion hystrix	-	-	-	-	-	-	.00	-
G	Stipa comata	a3	a5	-	-	-	-	-	-
Total for Annual Grasses		0	0	67	7	173	0.68	0.01	2.38
Total for Perennial Grasses		244	392	477	588	447	13.72	23.32	18.27
Total for Grasses		244	392	544	595	620	14.40	23.34	20.65
F	Agoseris glauca	a5	-	c141	b36	b30	.95	.23	.15
F	Alyssum alyssoides (a)	-	-	b105	a19	c263	.18	.04	3.64
F	Allium sp.	a9	b70	a31	b93	a19	.08	.36	.09
F	Antennaria rosea	-	a21	a40	a32	-	.52	.64	-
F	Arabis sp.	a5	-	-	-	a3	-	-	.00
F	Astragalus cibaricus	-	-	c93	b50	a23	2.68	.66	.12
F	Astragalus convallarius	a13	a9	a3	a11	a15	.01	.05	.31
F	Balsamorhiza sagittata	a18	ab33	c85	bc56	c75	4.46	4.77	5.32
F	Castilleja linariaefolia	-	a3	a2	a4	-	.03	.06	-
F	Calochortus nuttallii	ab7	b15	ab13	a3	ab3	.03	.00	.01
F	Castilleja sp.	-	-	3	-	-	.03	-	-
F	Chaenactis douglasii	-	-	a1	-	a3	.03	-	.03

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'96	'02	'07	'96	'02	'07
F	Cirsium sp.	a2	-	a3	a1	-	.00	.03	-
F	Collomia linearis (a)	-	-	b30	a3	b47	.11	.01	.11
F	Comandra pallida	ab24	b27	ab22	a3	a6	.10	.01	.01
F	Collinsia parviflora (a)	-	-	a198	a216	a191	.70	1.07	.98
F	Crepis acuminata	-	a4	b95	a26	a24	.84	.55	.40
F	Cryptantha sp.	a2	-	-	-	a3	-	-	.00
F	Cymopterus longipes	-	-	c70	b29	a3	.33	.12	.03
F	Cynoglossum officinale	-	-	3	-	-	.00	-	-
F	Delphinium nuttallianum	-	-	b41	a3	-	.11	.03	-
F	Descurainia pinnata (a)	-	-	-	-	22	-	-	.04
F	Erigeron divergens	-	-	-	a10	a6	-	.24	.15
F	Eriogonum ovalifolium	-	-	-	3	-	-	.00	-
F	Erigeron pumilus	-	a6	ab23	ab18	b25	.07	.14	.15
F	Eriogonum racemosum	ab25	b25	b14	b16	a7	.06	.16	.06
F	Eriogonum umbellatum	ab74	ab80	c143	bc107	a51	2.49	2.04	.56
F	Galium sp.	-	-	3	-	-	.01	-	-
F	Hackelia patens	a5	a16	a20	a10	-	.07	.05	-
F	Holosteum umbellatum (a)	-	-	-	-	3	-	-	.01
F	Lactuca serriola	2	-	-	-	-	-	-	-
F	Linum lewisii	a3	a3	b21	ab13	a3	.22	.13	.03
F	Lomatium triternatum	-	a24	a17	-	-	.04	-	-
F	Lupinus argenteus	ab21	ab34	b43	a19	a18	1.00	.43	1.08
F	Machaeranthera canescens	ab11	b22	a3	-	-	.00	-	-
F	Machaeranthera spp	5	-	-	-	-	-	-	-
F	Mertensia sp.	-	-	8	-	-	.05	-	-
F	Microsteris gracilis (a)	-	-	-	a6	a14	-	.01	.03
F	Orthocarpus sp. (a)	-	-	9	-	-	.05	-	-
F	Penstemon humilis	-	3	-	-	-	-	-	-
F	Phlox longifolia	-	ab90	b134	b144	a62	.30	.86	.31
F	Polygonum douglasii (a)	-	-	b19	a3	-	.03	.00	-
F	Ranunculus testiculatus (a)	-	-	a3	-	b10	.00	-	.04
F	Senecio multilobatus	b23	a6	ab9	a8	-	.04	.04	-
F	Sisymbrium altissimum (a)	-	-	-	-	2	-	-	.00
F	Taraxacum officinale	-	-	a1	a4	-	.00	.03	-
F	Tragopogon dubius	ab23	b23	b27	b29	a1	.09	.19	.00
F	Vicia americana	-	6	-	-	-	-	-	-

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'96	'02	'07	'96	'02	'07
F	Viola sp.	-	-	103	-	-	1.35	-	-
Total for Annual Forbs		0	0	364	247	552	1.09	1.13	4.87
Total for Perennial Forbs		277	520	1215	728	380	16.08	11.90	8.87
Total for Forbs		277	520	1579	975	932	17.18	13.04	13.74

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

#### BROWSE TRENDS --

Management unit 17 , Study no: 15

Type	Species	Strip Frequency			Average Cover %		
		'96	'02	'07	'96	'02	'07
B	Amelanchier alnifolia	41	30	33	3.92	4.71	3.04
B	Artemisia tridentata vaseyana	62	56	22	10.25	10.47	.92
B	Chrysothamnus viscidiflorus viscidiflorus	81	81	74	7.44	7.40	9.36
B	Gutierrezia sarothrae	10	6	8	.34	.45	.21
B	Purshia tridentata	27	27	19	5.14	7.72	2.47
B	Symphoricarpos oreophilus	18	19	21	1.90	3.75	3.42
B	Tetradymia canescens	8	7	6	.03	.15	.18
Total for Browse		247	226	183	29.05	34.68	19.63

#### CANOPY COVER, LINE INTERCEPT --

Management unit 17 , Study no: 15

Species	Percent Cover	
	'02	'07
Amelanchier alnifolia	5.58	4.78
Artemisia tridentata vaseyana	10.21	3.04
Chrysothamnus viscidiflorus viscidiflorus	7.30	13.16
Gutierrezia sarothrae	.21	.48
Purshia tridentata	7.88	3.70
Symphoricarpos oreophilus	2.04	3.68
Tetradymia canescens	-	.06

KEY BROWSE ANNUAL LEADER GROWTH --  
Management unit 17 , Study no: 15

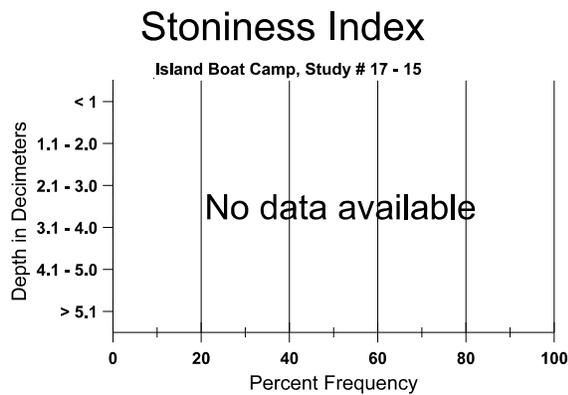
Species	Average leader growth (in)	
	'02	'07
Artemisia tridentata vaseyana	2.2	2.0
Purshia tridentata	2.4	3.5

BASIC COVER --  
Management unit 17 , Study no: 15

Cover Type	Average Cover %				
	'83	'89	'96	'02	'07
Vegetation	.50	12.00	54.79	60.15	61.49
Rock	1.00	1.25	1.50	.68	.66
Pavement	2.75	17.25	2.71	4.29	3.43
Litter	75.75	58.75	61.57	55.50	39.52
Cryptogams	.75	1.25	.64	.98	.44
Bare Ground	19.25	9.50	8.54	7.38	7.30

SOIL ANALYSIS DATA --  
Herd Unit 17, Study no: 15, Island Boat Camp

Effective rooting depth (in)	Temp °F (depth)	pH	Clay loam			%OM	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
17.6	50.2 (18.1)	7.6	32.9	33.1	34.0	4.8	12.8	160.0	07



PELLET GROUP DATA --  
 Management unit 17 , Study no: 15

Type	Quadrat Frequency		
	'96	'02	'07
Rabbit	5	1	2
Elk	19	17	12
Deer	35	52	29
Cattle	1	-	6

Days use per acre (ha)	
'02	'07
-	-
31 (78)	9 (22)
125 (309)	66 (164)
-	19 (47)

BROWSE CHARACTERISTICS --  
 Management unit 17 , Study no: 15

		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>Amelanchier alnifolia</i>												
83	<b>532</b>	-	-	266	266	-	75	13	50	8	25	26/18
89	<b>1532</b>	200	466	200	866	-	48	17	57	4	48	47/43
96	<b>1220</b>	60	400	740	80	20	26	11	7	-	0	31/40
02	<b>700</b>	-	120	380	200	20	26	54	29	6	6	32/36
07	<b>780</b>	-	40	700	40	-	36	10	5	-	0	35/36
<i>Artemisia tridentata vaseyana</i>												
83	<b>3199</b>	-	600	1933	666	-	27	2	21	-	0	24/26
89	<b>2532</b>	-	200	1266	1066	-	37	0	42	.78	29	25/30
96	<b>2080</b>	-	40	1480	560	560	56	12	27	9	10	27/43
02	<b>1740</b>	-	100	980	660	780	34	17	38	11	11	29/35
07	<b>520</b>	40	80	100	340	1340	31	23	65	23	23	34/38
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
83	<b>4066</b>	-	-	4066	-	-	0	0	0	-	0	9/9
89	<b>4466</b>	66	133	3733	600	-	0	0	13	-	9	13/16
96	<b>6060</b>	60	640	5420	-	-	.66	0	0	-	0	12/21
02	<b>4760</b>	-	200	4500	60	-	0	.42	1	-	.42	11/17
07	<b>4140</b>	-	40	3720	380	-	0	0	9	-	.48	14/23
<i>Gutierrezia sarothrae</i>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
96	<b>920</b>	100	260	560	100	60	0	0	11	-	0	8/10
02	<b>580</b>	-	-	540	40	40	0	3	7	7	7	6/6
07	<b>820</b>	-	-	800	20	-	0	0	2	-	0	8/9

		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)
<b>Purshia tridentata</b>												
83	<b>932</b>	-	266	400	266	-	50	14	29	-	0	43/54
89	<b>999</b>	66	266	333	400	-	93	7	40	-	0	38/47
96	<b>600</b>	-	-	520	80	20	20	77	13	10	10	40/71
02	<b>560</b>	-	-	400	160	-	18	79	29	11	11	43/62
07	<b>400</b>	-	-	260	140	100	40	55	35	5	5	40/48
<b>Symphoricarpos oreophilus</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	66	-	-	-	-	0	0	0	-	0	-/-
96	<b>560</b>	20	180	380	-	-	4	0	0	-	0	23/29
02	<b>540</b>	-	-	520	20	20	0	0	4	4	4	27/31
07	<b>520</b>	280	40	480	-	-	0	0	0	-	4	30/42
<b>Tetradymia canescens</b>												
83	<b>466</b>	-	200	200	66	-	0	0	14	-	0	12/12
89	<b>199</b>	-	133	66	-	-	0	0	0	-	0	6/10
96	<b>160</b>	-	100	60	-	-	13	0	0	-	0	8/12
02	<b>160</b>	-	40	120	-	-	13	0	0	-	0	8/16
07	<b>120</b>	-	-	100	20	-	17	0	17	-	0	9/17