

Trend Study 17-42-07

Study site name: Tank Hollow.

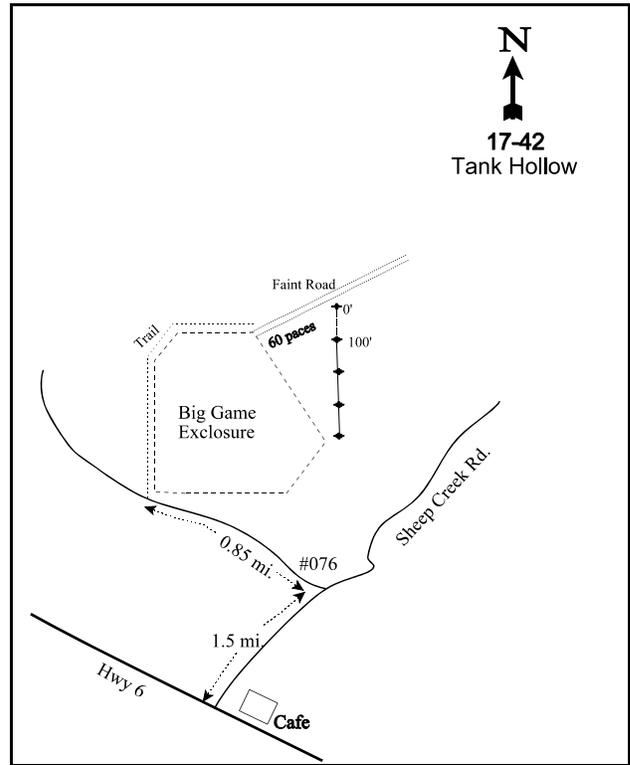
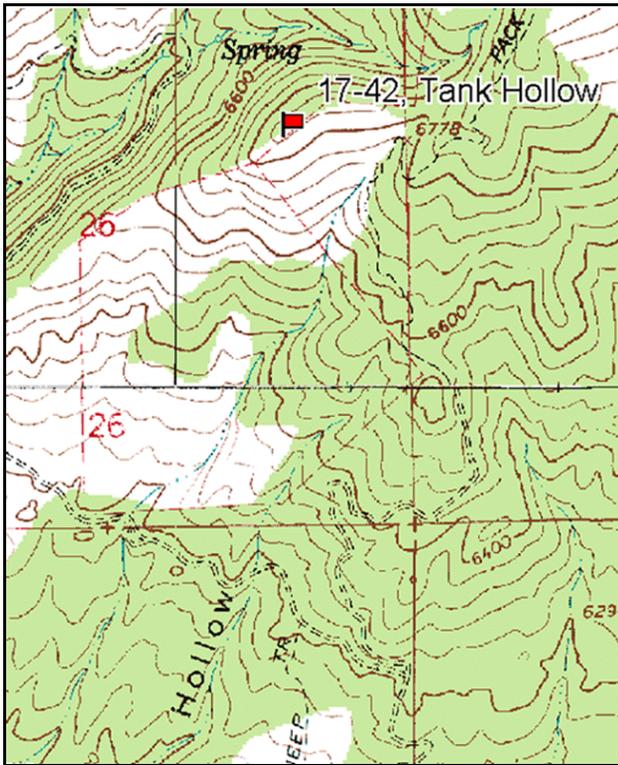
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 191 degrees magnetic.

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

LOCATION DESCRIPTION

Turn north off of Highway US-6 (near mile post 195) onto the new Sheep Creek Road. Go 1.5 miles on the paved road to an intersection with Forest Service road #076. Turn left and go west 0.8 miles to a fence. Continue 0.05 miles on the road to the southwest corner of a large enclosure. Park here, and follow the trail along the outside of the enclosure to the northeast corner. Continue 60 paces northeast along an old road, the 0-foot stake is 3 paces off the right side of the road. The study runs south. The 0-foot stake is marked by browse tag #176.



Map Name: Ray's Valley

Diagrammatic Sketch

Township 9S, Range 5E, Section 26

GPS: NAD 83, UTM 12T 471440 E 4428455 N

## DISCUSSION

### Tank Hollow - Trend Study No. 17-42

#### Study Information

This mountain brush study is located upslope of the Tank Hollow big game enclosure [elevation: 6,800 feet (2,073 m), slope: 20%, aspect: southeast]. The nearest perennial source of water is a spring located 1,000 feet (305 m) to the northwest, on the opposite side of the ridge. Both deer and elk use have been moderate-high in the past, which at this elevation, is indicative of mild winters. From the pellet group transect data, deer use was estimated at 155 days use/acre (384 ddu/ha) in 2002 and 21 days use/acre (53 ddu/ha) in 2007. Elk use was estimated at 49 days use/acre (121 edu/ha) in 2002 and 46 days use/acre (114 edu/ha) in 2007. Most of the deer and elk pellet groups were from winter use. Cattle use was estimated at 5 days use/acre (13 cdu/ha) in 2002 and 2 days use/acre (5 cdu/ha) in 2007. The fence of the nearby enclosure is compromised in several places and big game and livestock have used the area inside the enclosure.

#### Soil

The soil has a clay loam texture and a neutral reactivity (pH 7.1). There is little rock or pavement on the surface. However, there are rocks throughout the profile. The B horizon is located about 30 inches (76 cm) below the surface. The concentration of phosphorous in the soil is 6.8 ppm, and that of potassium is 64 ppm. Both concentrations are near the threshold of low availability (6 ppm for phosphorous and 60 ppm for potassium) that would limit plant growth (Tiedemann and Lopez 2004). The soil appears to be relatively stable. A combination of abundant vegetation and litter cover, along with the moderate slope, helps limit erosion. Some slight soil movement was reported in the past, but the erosion condition was classified as stable in 2002 and 2007.

#### Browse

Serviceberry (*Amelanchier alnifolia*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), true mountain mahogany (*Cercocarpus montanus*), and antelope bitterbrush (*Purshia tridentata*) are the dominant browse species. Mountain big sagebrush canopy cover was 6% in 2002 and 2007. The sagebrush density was estimated at 2,399 plants/acre (5,938 plants/ha) in 1983, which increased to 2,999 plants/acre (7,423 plants/ha) in 1989. The density decreased to 1,720 plants/acre (4,257 plants/ha) in 1997, and some of this decrease resulted from the increased sample area. The density increased to 1,780 plants/acre (4,406 plants/ha) in 2002, and decreased to 1,080 plants/acre (2,673 plants/ha) in 2007. Sagebrush reproduction and recruitment have been low. Decadence has been high, and the decadent proportion of the population has oscillated between increasing and decreasing in alternate sample years. Decadence was lowest in 1983 (28%) and highest in 2002 (65%). In 2007, 50% of the population was decadent. Dead plants were first sampled in 1997, and have increased from 360 plants/acre (891 plants/ha) in 1997 to 980 plants/acre (2,426 plants/ha) in 2007. Plants with poor vigor increased from 0% of the population in 1983 to 44% in 2002, and decreased to 28% in 2007. Since 1997, the majority of the plants with poor vigor were classified as dying. The average annual leader growth was 2.0 inches (5.1 cm) in 2002 and 1.3 inches (3.2 cm) in 2007. Browse use has ranged from moderate to heavy, and was heaviest in 2002.

Bitterbrush canopy cover was 3% in 2002 and 2007. The bitterbrush density was stable at approximately 2,000 plants/acre (4,950 plants/ha) from 1983 to 2002, and decreased to 1,020 plants/acre (2,525 plants/ha) in 2007. Seedling plants were only sampled in 1997. Few young plants were sampled in 1989 and 2002, but young plants have comprised 10%-16% of the population otherwise. Decadence has been highly variable. There were no decadent plants in 1983 or 1997, but decadent plants accounted for 23% of the population in 1989, 85% in 2002, and 18% in 2007. The density of dead plants increased from 100 plants/acre (248 plants/ha) in 2002 to 220 plants/acre (545 plants/ha) in 2007. Vigor has been good, except in 2002 when 48% of the population had poor vigor and was classified as dying. Average annual leader growth was 1.7 inches (4.3 cm) in 2002 and 3.1 inches (7.9 cm) in 2007. Browse use was light in 1983, moderate-heavy in 1989,

1997, and 2007, and heavy in 2002.

True mountain mahogany plants were first sampled in 1997. Canopy cover was 1% in 2002 and 2007. The estimated density increased from 320 plants/acre (792 plants/ha) in 1997 to 380 plants/acre (941 plants/ha) in 2002, and decreased to 180 plants/acre (446 plants/ha) in 2007. Few seedling or young plants have been sampled. There were no decadent plants in 1997, but decadent plants comprised 68% of the population in 2002, and 11% in 2007. Plants with poor vigor and classified as dying accounted for 58% of the population in 2002 and 11% in 2007. The average annual leader growth on mahogany was 2.0 inches (5.1 cm) in 2002 and 2.9 inches (7.4 cm) in 2007. Browse use was heavy in 1997 and 2002, and moderate-heavy in 2007.

Canopy cover of serviceberry was less than 1% in 2002 and 2007. The serviceberry density increased from 66 plants/acre (163 plants/ha) in 1983 to 200 plants/acre (495 plants/ha) in 1997, and decreased to 160 plants/acre (396 plants/ha) by 2007. Few seedlings have been sampled, but young plants have comprised 25%-44% of the population since 1997. There were no decadent plants in 1983 or 1997, but decadent plants accounted for 50% of the population in 1989, 56% in 2002, and 25% in 2007. Browse use has ranged from light-moderate to heavy. Other species that are present include broom snakeweed (*Gutierrezia sarothrae*), stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*), snowberry (*Symphoricarpos oreophilus*), Gambel oak (*Quercus gambelii*), Oregon grape (*Mahonia repens*), and pricklypear cactus (*Opuntia* sp.). Gambel oak was infested with insects in 2007.

Utah juniper (*Juniperus osteosperma*) density has increased from 22 trees/acre (54 trees/ha) in 1997 to 59 trees/acre (146 trees/ha) in 2007. The average diameter increased from 4.8 inches (12.2 cm) in 1997 to 5.6 inches (14.2 cm) in 2002, and decreased to 5.2 inches (13.2 cm) in 2007. Juniper canopy cover increased from 1% in 2002, to 4% in 2007.

#### Herbaceous Understory

The herbaceous understory is dominated by perennial grasses, and between seven and nine perennial species have been sampled. Perennial grass cover increased from 11% in 1997 to 16% in 2007. The dominant perennial species are crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*Agropyron intermedium*), bluebunch wheatgrass (*Agropyron spicatum*), and Sandberg bluegrass (*Poa secunda*). Bulbous bluegrass (*Poa bulbosa*) was first sampled in 2002, but quadrat frequency has been 5% or less. This perennial species is of interest because it has a phenology that is similar to annual grasses (Stewart and Hull 1949). Cheatgrass is scattered throughout the study and quadrat frequency was 27% in 1997, 19% in 2002, and 33% in 2007. Cheatgrass cover has been 1% or less since 1997.

Perennial forb cover decreased from 16% in 1997 to 3% in 2002 and 2007. Between 16 and 24 perennial species have been sampled. Common perennial forbs include western aster (*Aster chilensis*), thistle (*Cirsium* sp.), spotted stickseed (*Hackelia patens*), Lewis flax (*Linum lewisii*), longleaf phlox (*Phlox longifolia*), and American vetch (*Vicia americana*). Annual forb cover decreased from 2% in 1997 to less than 1% in 2002 and 2007. Bur buttercup (*Ranunculus testiculatus*), an allelopathic annual (Buchanan et al. 1978), was first sampled in 2007, and had a quadrat frequency of 4%.

#### 1989 TREND ASSESSMENT

The browse trend is stable. The density of preferred browse plants increased or remained stable, but there were also increases in decadence, poor vigor, and heavy browse use. Specifically, the density of sagebrush increased 25%, but decadence increased from 28% of the population to 56%. Sagebrush plants with poor vigor increased from 0% of the population to 13%, and, heavily browsed plants increased from 36% of the population to 56%. The serviceberry density increased 100%, but decadence increased from 0% of the population to 50%. The bitterbrush density remained stable. However, young bitterbrush plants decreased from 10% of the population to 3%, and decadence increased from 0% to 23%. Heavily browsed plants increased from 13% of the bitterbrush population to 45%. The grass trend is up. The sum of nested frequency

of perennial grasses increased 33%, including a significant increase in the nested frequency of intermediate wheatgrass. The forb trend is stable. The sum of nested frequency of perennial forbs decreased 4%, including significant decreases in the nested frequencies of rockcress (*Arabis* sp.), Douglas chaenactis (*Chaenactis douglasii*), hoary aster (*Machaeranthera canescens*), and yellow salsify (*Tragopogon dubius*). There were significant increases in the nested frequencies of wild onion (*Allium* sp.) and tapertip hawksbeard (*Crepis acuminata*).

browse - stable (0)

grass - up (+2)

forb - stable (0)

### 1997 TREND ASSESSMENT

The browse trend is stable. The density of sagebrush decreased 43%. Most of this decrease was from the decadent age class, and as a result, decadence decreased to 31% of the population. However, changes in densities of all the shrubs may also be the result of the increased sample area. Plants with poor vigor increased to 23% of the population, and all of those plants were classified as dying. Heavily browsed sagebrush decreased to 13% of the population, though 57% had been moderately browsed. The serviceberry population increased 52%. Seedling serviceberry plants were sampled for the first time, and young plants increased from 0% of the population to 40%. No decadent serviceberry were sampled. The bitterbrush density decreased 5%. Seedling bitterbrush were also sampled for the first time, and young plants increased to 14% of the population. No decadent bitterbrush were sampled. The average height and crown measurements of all three species increased. Additionally, true mountain mahogany was sampled for the first time. The mahogany population was vigorous despite heavy browse use. The grass trend is slightly up. The sum of nested frequency of perennial grasses increased 15%. Cheatgrass had a quadrat frequency of 27%. The forb trend is slightly up. The sum of nested frequency of perennial forbs increased 15%, including significant increases in the sum of nested frequencies of Lewis flax and American vetch. The number of perennial species increased from 21 to 24. There were significant decreases in the nested frequencies of wild onion, bastard toadflax (*Comandra pallida*), and longleaf phlox. The Desirable Components Index (DCI) score was good due to high browse cover, low decadence, low annual grass cover, and high perennial grass and forb cover.

winter range condition (DCI) - good (77) Mid-level potential scale

browse - stable (0)

grass - slightly up (+1)

forb - slightly up (+1)

### 2002 TREND ASSESSMENT

The browse trend is down. The density of sagebrush increased 4%. However, recruitment remained low, and decadence increased to 65% of the population. Sagebrush plants with poor vigor increased to 44% of the population, nearly all of which were classified as dying. Heavily browsed sagebrush increased to 81% of the population. The density of serviceberry decreased 10%, and decadence increased to 56% of the population. Serviceberry plants with poor vigor and classified as dying increased from 0% of the population to 22%, and heavily browsed plants increased from 20% to 78%. The density of bitterbrush increased 9%. However, young plants decreased to 1% of the population, and decadence increased to 85%. Approximately half of the bitterbrush plants had poor vigor and were dying. Heavily browsed bitterbrush plants increased from 36% of the population to 89%. Mahogany density increased 19%. Mahogany decadence increased from 0% of the population to 68%. Dying plants increased from 0% of the mahogany population to 58%, and 95% of the plants had been heavily browsed. The average height and crown measurements of all four of these browse species decreased. The increase in decadence and plants with poor vigor is likely the result of drought conditions (Utah Climate Summaries 2007). Browse use at this study may have increased because of mild winter conditions and little snowfall. The grass trend is slightly up. Excluding bulbous bluegrass, the sum of nested frequency of perennial grasses increased 20%. There was a significant increase in the nested frequency of crested wheatgrass. However the grass trend was lowered by the presence of bulbous bluegrass, even though it was sampled at a low abundance. The forb trend is down. The sum of nested frequency of perennial forbs decreased 62%, including significant decreases in thistle and tapertip hawksbeard. Lewis flax, which had a quadrat frequency of 61% in 1997, was not sampled, and the number of perennial species sampled

decreased to 16. The DCI score declined to poor due to decreased browse cover, increased browse decadence, and decreased perennial forb cover.

winter range condition (DCI) - poor (46) Mid-level potential scale  
browse - down (-2)                      grass - slightly up (+1)                      forb - down (-2)

2007 TREND ASSESSMENT

The browse trend is down. The density of all the preferred browse species decreased. Specifically, the density of sagebrush decreased 39%. Seedling sagebrush were sampled for the first time, but young plants continued to comprise 2% of the population. Decadence decreased to 50% of the population, but the density of dead plants increased two-fold to 980 plants/acre (2,426 plants/ha). Sagebrush plants classified as dying decreased to approximately one-fourth of the population. Heavily browsed plants decreased to 46% of the population. The density of serviceberry decreased 11%, but decadence decreased to 25% of the population. Browse use on serviceberry decreased from mostly heavy to light-moderate. The bitterbrush density decreased 52%. Young plants increased to 16% of the population, and decadence decreased to 18%. Dying bitterbrush plants decreased to 6% of the population, and heavily browsed plants decreased to 31% of the population. The density of mahogany decreased 53%. Decadent plants that were classified as dying decreased to 11% of the population. Heavily browsed mahogany plants decreased to 56% of the population. The grass trend is up. Excluding bulbous bluegrass, the sum of nested frequency of perennial grasses increased 60%. The nested frequencies of crested wheatgrass, bluebunch wheatgrass, and Sandberg bluegrass increased significantly. There was also a significant increase in the nested frequency of cheatgrass. The forb trend is down. The sum of nested frequency of perennial forbs decreased 23%, including a significant decrease in the nested frequency of American vetch. Bur buttercup was sampled for the first time and had a quadrat frequency of 4%. Despite the decrease in browse cover, the DCI score increased to fair. The increase was caused by a decline in browse decadence and an increase in perennial grass cover.

winter range condition (DCI) - fair (54) Mid-level potential scale  
browse - down (-2)                      grass - up (+2)                      forb - down (-2)

HERBACEOUS TRENDS --  
Management unit 17 , Study no: 42

T y p e	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
G	Agropyron cristatum	a29	ab62	b80	c126	d200	5.39	7.13	9.66
G	Agropyron intermedium	a37	b52	ab49	ab45	ab36	2.48	1.44	.94
G	Agropyron spicatum	a48	a51	a27	a24	b91	1.02	1.70	2.84
G	Bromus carinatus	a6	a3	a5	a6	a7	.06	.53	.53
G	Bromus tectorum (a)	-	-	ab70	a38	b86	.93	.17	1.49
G	Oryzopsis hymenoides	a6	a5	a6	a9	a3	.06	.21	.06
G	Poa bulbosa	-	-	-	a11	a6	-	.12	.03
G	Poa fendleriana	a14	a13	a3	a10	a14	.01	.06	.08
G	Poa pratensis	-	-	a5	a11	a6	.66	.10	.30
G	Poa secunda	-	a4	ab43	b30	c61	1.38	.63	1.45
G	Sitanion hystrix	3	-	-	-	-	-	-	-

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
	Total for Annual Grasses	0	0	70	38	86	0.93	0.17	1.49
	Total for Perennial Grasses	143	190	218	272	424	11.08	11.94	15.91
	Total for Grasses	143	190	288	310	510	12.02	12.11	17.40
F	<i>Agoseris glauca</i>	-	-	a-	b12	ab2	.01	.02	.00
F	<i>Alyssum alyssoides</i> (a)	-	-	-	a3	b35	-	.01	.09
F	<i>Allium</i> sp.	a10	b83	a19	a18	a3	.06	.07	.03
F	<i>Arabis</i> sp.	b29	a4	a8	a3	-	.04	.00	-
F	<i>Artemisia dracunculus</i>	3	-	-	-	-	-	-	-
F	<i>Astragalus beckwithii</i>	-	-	4	-	-	.21	-	-
F	<i>Aster chilensis</i>	a23	a17	a24	a13	a10	.93	.15	.12
F	<i>Astragalus convallarius</i>	-	-	10	-	-	.04	-	-
F	<i>Astragalus</i> sp.	-	-	2	-	-	.00	-	-
F	<i>Balsamorhiza sagittata</i>	-	-	a1	a3	a3	.15	.15	.15
F	<i>Castilleja linariaefolia</i>	-	-	4	-	-	.03	-	-
F	<i>Camelina microcarpa</i> (a)	-	-	a14	a17	b53	.05	.25	.20
F	<i>Chenopodium album</i> (a)	-	-	2	-	-	.00	-	-
F	<i>Chaenactis douglasii</i>	b62	a7	-	-	-	-	-	-
F	<i>Cirsium</i> sp.	b55	b36	b50	a2	a2	1.75	.01	.38
F	<i>Collomia linearis</i> (a)	-	-	8	-	-	.02	-	-
F	<i>Comandra pallida</i>	ab19	b27	a3	-	-	.02	-	-
F	<i>Collinsia parviflora</i> (a)	-	-	b23	ab11	a1	.04	.02	.00
F	<i>Crepis acuminata</i>	a7	b45	b56	a10	a1	.57	.23	.03
F	<i>Cryptantha</i> sp.	7	-	-	-	-	-	-	-
F	<i>Cymopterus</i> sp.	-	b44	ab33	-	a24	.24	-	.14
F	<i>Descurainia pinnata</i> (a)	-	-	a7	a8	a6	.01	.06	.01
F	<i>Eriogonum brevicaule</i>	a8	a9	-	a3	a4	-	.06	.06
F	<i>Erigeron pumilus</i>	-	-	a1	a-	-	.00	.00	-
F	<i>Hackelia patens</i>	ab58	b69	ab79	ab56	a47	3.04	.76	1.10
F	<i>Lappula occidentalis</i> (a)	-	-	5	-	-	.01	-	-
F	<i>Linum lewisii</i>	b42	ab27	c161	-	a12	6.36	-	.16
F	<i>Lithospermum ruderales</i>	a6	a16	a5	a6	a7	.33	.56	.22
F	<i>Machaeranthera canescens</i>	b75	a3	a7	a1	a1	.06	.03	.00
F	<i>Microsteris gracilis</i> (a)	-	-	a5	b38	a14	.01	.10	.03
F	<i>Penstemon humilis</i>	b19	ab11	ab8	a3	-	.06	.03	-
F	<i>Phlox longifolia</i>	b86	b102	a45	a40	a25	.29	.14	.28
F	<i>Polygonum douglasii</i> (a)	-	-	1	-	-	.00	-	-

T y p e	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
F	Ranunculus testiculatus (a)	-	-	-	-	7	-	-	.02
F	Senecio multilobatus	<sub>a</sub> 3	<sub>a</sub> 4	<sub>a</sub> 7	-	-	.09	-	-
F	Streptanthus cordatus	<sub>a</sub> 6	<sub>a</sub> 4	<sub>a</sub> 9	<sub>a</sub> 8	<sub>a</sub> 2	.16	.04	.01
F	Taraxacum officinale	-	3	-	-	-	-	-	-
F	Tragopogon dubius	<sub>b</sub> 30	<sub>a</sub> 4	<sub>a</sub> 17	-	<sub>a</sub> 12	.06	-	.06
F	Trifolium sp.	-	-	-	2	-	-	.03	-
F	Veronica biloba (a)	-	-	<sub>b</sub> 155	-	<sub>a</sub> 9	1.44	-	.02
F	Vicia americana	<sub>a</sub> 21	<sub>a</sub> 23	<sub>b</sub> 74	<sub>b</sub> 58	<sub>a</sub> 29	1.54	.44	.20
F	Viola sp.	-	-	3	-	-	.00	-	-
F	Zigadenus paniculatus	<sub>a</sub> 2	<sub>a</sub> 9	-	-	-	-	-	-
Total for Annual Forbs		0	0	220	77	125	1.60	0.44	0.38
Total for Perennial Forbs		571	547	630	238	184	16.13	2.74	2.97
Total for Forbs		571	547	850	315	309	17.74	3.19	3.35

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

#### BROWSE TRENDS --

Management unit 17 , Study no: 42

T y p e	Species	Strip Frequency			Average Cover %		
		'97	'02	'07	'97	'02	'07
B	Amelanchier alnifolia	8	9	8	.56	.57	.18
B	Artemisia tridentata vaseyana	63	62	40	13.34	8.41	4.17
B	Cercocarpus montanus	12	12	7	1.14	1.60	.49
B	Chrysothamnus viscidiflorus viscidiflorus	23	25	23	1.96	2.03	1.93
B	Gutierrezia sarothrae	53	56	54	1.99	1.87	2.16
B	Juniperus osteosperma	4	3	2	2.49	2.99	3.63
B	Mahonia repens	1	0	1	.03	-	.03
B	Opuntia sp.	1	2	4	-	.01	.06
B	Purshia tridentata	55	51	31	9.88	4.64	2.72
B	Quercus gambelii	3	4	3	.41	.15	.06
B	Symphoricarpos oreophilus	25	30	22	2.11	1.64	1.13
Total for Browse		248	254	195	33.94	23.95	16.60

CANOPY COVER, LINE INTERCEPT --  
 Management unit 17 , Study no: 42

Species	Percent Cover	
	'02	'07
Amelanchier alnifolia	.18	.11
Artemisia tridentata vaseyana	5.88	5.58
Cercocarpus montanus	.81	1.18
Chrysothamnus viscidiflorus viscidiflorus	1.88	1.95
Gutierrezia sarothrae	.60	1.23
Juniperus osteosperma	.83	3.54
Opuntia sp.	-	.06
Purshia tridentata	2.63	3.16
Quercus gambelii	.20	.20
Symphoricarpos oreophilus	1.85	1.18

KEY BROWSE ANNUAL LEADER GROWTH --  
 Management unit 17 , Study no: 42

Species	Average leader growth (in)	
	'02	'07
Artemisia tridentata vaseyana	2.0	1.3
Cercocarpus montanus	2.0	2.9
Purshia tridentata	1.7	3.1

POINT-QUARTER TREE DATA --  
 Management unit 17 , Study no: 42

Species	Trees per Acre		Average diameter (in)	
	'02	'07	'02	'07
Juniperus osteosperma	33	59	5.6	5.2

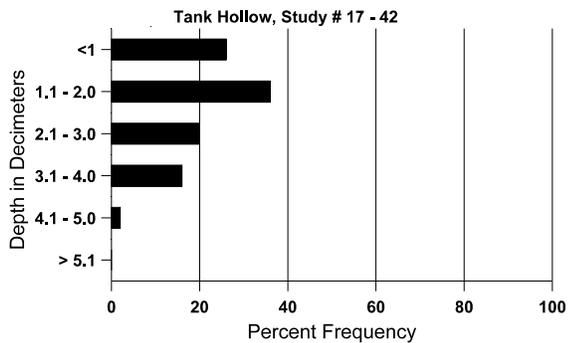
BASIC COVER --  
 Management unit 17 , Study no: 42

Cover Type	Average Cover %				
	'83	'89	'97	'02	'07
Vegetation	1.25	14.00	52.99	38.21	42.77
Rock	4.50	5.75	4.18	3.29	3.54
Pavement	3.25	6.25	1.67	.88	1.62
Litter	61.00	51.25	53.51	50.02	41.36
Cryptogams	0	0	.31	.68	.35
Bare Ground	30.00	22.75	11.94	23.39	24.59

SOIL ANALYSIS DATA --  
Herd Unit 17 Study no: 42, Tank Hollow

Effective rooting depth (in)	Temp °F (depth)	pH	Clay loam			%OM	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
16.5	46.4 (17.3)	7.1	25.4	34.7	39.8	3.4	6.9	64.0	.7

### Stoniness Index



PELLET GROUP DATA --  
Management unit 17 , Study no: 42

Type	Quadrat Frequency		
	'97	'02	'07
Rabbit	1	6	4
Elk	36	20	33
Deer	38	52	31
Cattle	-	4	3

Days use per acre (ha)	
'02	'07
-	-
49 (121)	46 (114)
155 (384)	21 (53)
5 (13)	2 (5)

BROWSE CHARACTERISTICS --  
Management unit 17 , Study no: 42

		Age class distribution (plants per acre)					Utilization					
Y	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Amelanchier alnifolia												
83	<b>66</b>	-	-	66	-	-	100	0	0	-	0	25/17
89	<b>132</b>	-	-	66	66	-	50	0	50	-	0	23/15
97	<b>200</b>	40	80	120	-	-	20	20	0	-	0	32/33
02	<b>180</b>	-	80	-	100	20	11	78	56	22	22	24/21
07	<b>160</b>	-	40	80	40	-	50	0	25	13	13	28/24

		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>Artemisia tridentata vaseyana</b>												
83	<b>2399</b>	-	-	1733	666	-	50	36	28	-	0	31/37
89	<b>2999</b>	-	133	1200	1666	-	27	56	56	11	13	24/43
97	<b>1720</b>	-	80	1100	540	360	57	13	31	23	23	30/46
02	<b>1780</b>	-	40	580	1160	480	16	81	65	43	44	26/33
07	<b>1080</b>	60	20	520	540	980	37	46	50	24	28	28/36
<b>Cercocarpus montanus</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
97	<b>320</b>	-	20	300	-	-	19	75	0	-	0	33/40
02	<b>380</b>	-	40	80	260	-	0	95	68	58	58	33/32
07	<b>180</b>	20	-	160	20	-	44	56	11	11	11	29/27
<b>Chrysothamnus viscidiflorus viscidiflorus</b>												
83	<b>400</b>	-	-	400	-	-	0	0	0	-	0	10/17
89	<b>600</b>	-	-	600	-	-	0	0	0	-	0	11/13
97	<b>1460</b>	20	100	1360	-	-	0	0	0	-	0	12/17
02	<b>1700</b>	-	60	1620	20	-	4	1	1	-	0	9/13
07	<b>1340</b>	-	20	1300	20	-	0	0	1	-	0	9/16
<b>Gutierrezia sarothrae</b>												
83	<b>2400</b>	-	-	2400	-	-	0	0	0	-	0	12/8
89	<b>3733</b>	-	-	3200	533	-	0	0	14	7	7	10/10
97	<b>5420</b>	400	1200	4200	20	-	0	0	0	-	0	10/10
02	<b>3840</b>	20	20	2800	1020	1300	0	0	27	9	9	8/8
07	<b>3460</b>	20	100	3180	180	40	0	0	5	2	2	8/9
<b>Juniperus osteosperma</b>												
83	<b>133</b>	-	-	133	-	-	0	50	-	-	0	67/12
89	<b>66</b>	-	-	66	-	-	0	0	-	-	0	106/79
97	<b>80</b>	-	-	80	-	-	0	0	-	-	0	82/79
02	<b>60</b>	-	-	60	-	-	0	33	-	-	0	-/-
07	<b>40</b>	-	20	20	-	-	0	0	-	-	0	-/-
<b>Mahonia repens</b>												
83	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
97	<b>80</b>	-	20	60	-	-	0	0	-	-	0	3/6
02	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
07	<b>120</b>	-	-	120	-	-	0	0	-	-	0	-/-

		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>Opuntia sp.</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
97	<b>20</b>	-	-	20	-	-	0	0	0	-	0	4/5
02	<b>60</b>	-	20	20	20	-	0	0	33	33	67	3/7
07	<b>100</b>	-	20	80	-	-	0	0	0	-	0	6/9
<b>Purshia tridentata</b>												
83	<b>2066</b>	-	200	1866	-	-	13	13	0	-	0	16/19
89	<b>2065</b>	-	66	1533	466	-	48	45	23	-	0	15/24
97	<b>1960</b>	20	280	1680	-	-	52	36	0	-	0	29/49
02	<b>2140</b>	-	20	300	1820	100	7	89	85	48	48	12/26
07	<b>1020</b>	-	160	680	180	220	41	31	18	6	6	16/33
<b>Quercus gambelii</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
97	<b>140</b>	20	100	40	-	-	0	0	0	-	0	51/35
02	<b>160</b>	-	80	-	80	20	0	38	50	50	50	26/27
07	<b>120</b>	-	40	80	-	-	0	0	0	-	0	90/57
<b>Ribes sp.</b>												
83	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
97	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
02	<b>0</b>	-	-	-	-	-	0	0	-	-	0	19/70
07	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
<b>Symphoricarpos oreophilus</b>												
83	<b>2266</b>	66	466	1800	-	-	0	0	0	-	0	19/14
89	<b>2133</b>	-	200	1933	-	-	22	0	0	-	50	15/14
97	<b>1000</b>	-	100	900	-	-	0	0	0	-	0	18/36
02	<b>960</b>	-	200	620	140	40	21	8	15	2	2	12/24
07	<b>900</b>	-	620	280	-	100	0	0	0	-	7	13/18