

LITTLE HORSE RIDGE - TREND STUDY NO. 17-65-10

Vegetation Type: Mountain Brush

Range Type: Crucial Deer Summer (Fawning habitat), Crucial Elk Year-Long (Calving habitat)

NRCS Ecological Site Description: Not Available

Land Ownership: UDWR

Elevation: 7610 ft. (2320 m)

Aspect: North-Northwest

Slope: 15%

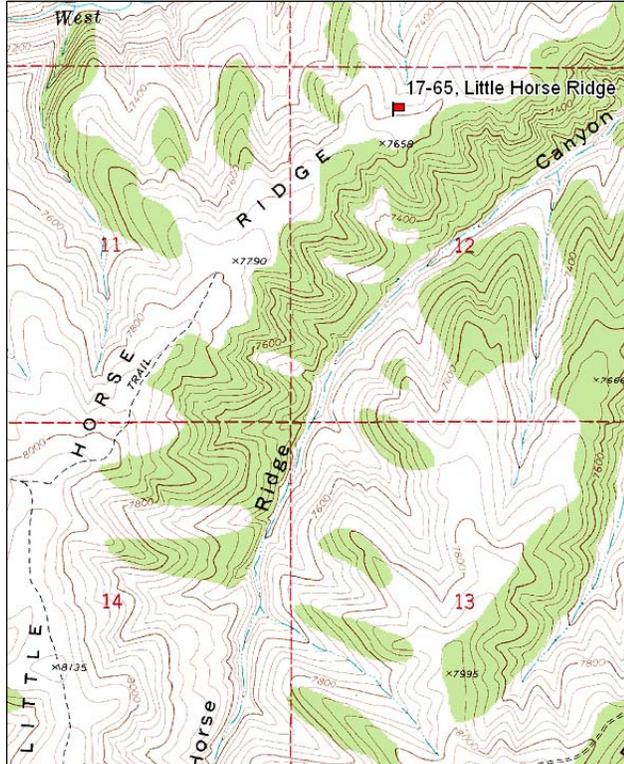
Transect bearing: 60° magnetic

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

Directions:

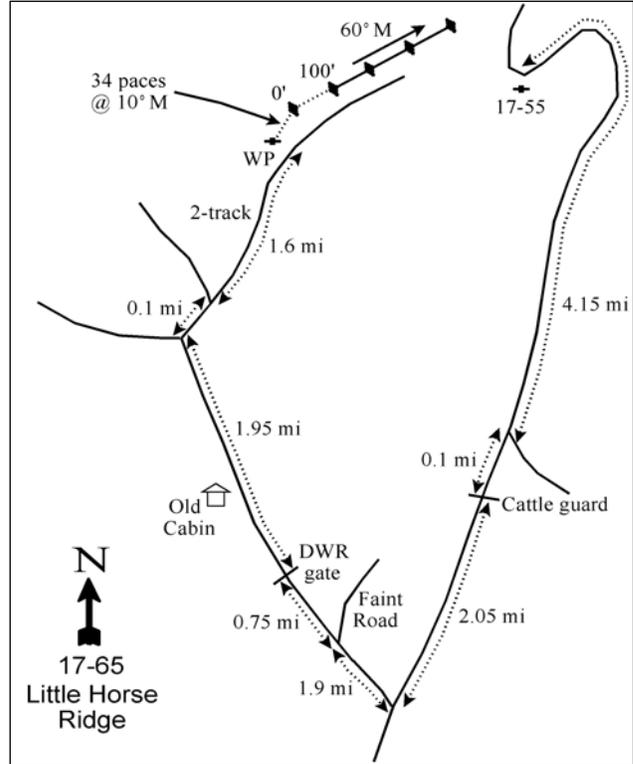
From the Strawberry River Road, proceed south up Avintaquin Canyon 12.7 miles. Turn left onto a road hidden in the trees and cross Avintaquin Creek. Go up Horse Ridge Canyon 0.4 miles to a fence. Continue up the ridge 0.8 miles to a sharp left bend in the road by trend study 17-55. Continue south 4.15 miles to a fork in the road. Stay right and continue 0.1 miles to a cattle guard. After the cattle guard travel 2.05 miles and take a right. Travel 1.9 miles to a faint fork in the road. Stay to the left and continue another 0.75 miles to a DWR gate. Pass through the gate and drive 1.95 miles, passing an old cabin on the left, to a fork in the road. Stay right and travel 0.1 miles to another fork. Take the two-track to the right and follow it for 1.6 miles to a witness post on the left hand side of the road. The 0-foot stake is 34 paces from the witness post at 10°M.

Map Name: Gray Head Peak



Township: 6S Range: 9W Section: 12

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 512912 E 4425446 N

LITTLE HORSE RIDGE - TREND STUDY NO. 17-65

Site Information

Site Description: The study is located on big game winter range near the north end of Horse Ridge. The land is owned and managed by the Utah Division of Wildlife Resources (UDWR) within the Avintaquin Wildlife Management Area (WMA). This area is on the border of crucial summer and crucial winter range for deer. This study was established in 2005 to monitor deer that are staying in the high country during winter, instead of migrating lower. This herd has a high mortality rate for not only fawns, but adults as well. Grazing has not occurred on the WMA for several decades. Pellet group transect data has indicated moderate use by deer and light use by elk since 2005. Moose occasionally use the site as well and some moose pellets may have been misidentified as elk in 2010 (Table - Pellet Group Data).

Browse: Several browse species occupy the site, but the key species consist of true mountain mahogany (*Cercocarpus montanus*) and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*). The true mountain mahogany population is a mixture of healthy young and mature plants that have been moderately or heavily used. The mountain big sagebrush population is a mostly mature population with moderate to high decadence and poor vigor. Utilization has been mostly moderate and recruitment of young plants has been good. There is also a small population of large, moderately used Utah serviceberry (*Amelanchier utahensis*) on the site. Other browse species include several rabbitbrush species (*Chrysothamnus* spp.) and snowberry (*Symphoricarpos oreophilus*) (Table - Browse Characteristics). Pinyon pine (*Pinus edulis*) occurs at moderately high density (Table - Point-Quarter Tree Data) and cover (Table - Canopy Cover).

Herbaceous Understory: The grass component is fairly abundant, but is not overly diverse. Two species, Salina wildrye (*Elymus salina*) and bluebunch wheatgrass (*Agropyron spicatum*), dominate the grass component. Forbs are diverse, but are only moderately abundant. Common species include tapertip hawksbeard (*Crepis acuminata*), gumweed aster (*Machaeranthera grindelioides*) and desert phlox (*Phlox austromontana*) (Table - Herbaceous Trends).

Soil: The soil has a clay loam texture with a slightly alkaline soil reaction (pH 7.4). Phosphorus may have limited availability for plant growth and development at 5.2 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Bare ground cover is low with a high amount of vegetation, litter, rock and pavement cover (Table - Basic Cover). Rock and pavement are concentrated on the surface between bunch grass and shrub interspaces. The soil erosion condition was classified as stable in 2005, but was slight in 2010 due to pedestals around perennial plants, litter, rock and soil movement, and flow patterns.

Trend Assessments

Browse:

- **2005 to 2010 - stable (0):** There was little change in the density or cover of mountain big sagebrush, but decadence decreased from 41% to 26%. There was a 17% decrease in the density of true mountain mahogany from 2,600 plants/acre to 2,160 plants/acre, but cover remained similar. Most of the decrease in density of mahogany was due to a decrease in the recruitment of young plants from 45% to 29%, but recruitment was still considered excellent.

Grass:

- **2005 to 2010 - down (-2):** The sum of nested frequency of perennial grasses decreased by 20% with a significant decrease in the nested frequency of bluebunch wheatgrass. Cover of perennial grasses increased slightly from 16% to 17%.

Forb:

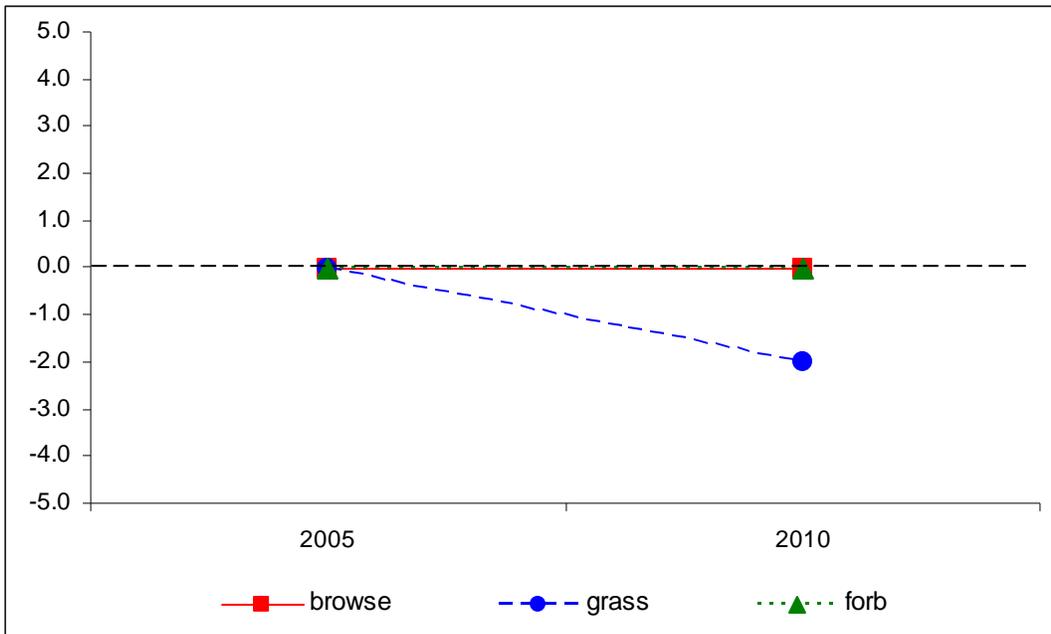
- **2005 to 2010 - stable (0):** There was little change in the sum of nested frequency of perennial forbs and cover increased slightly from 3% to 4%.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
 Management unit 17, study no: 65

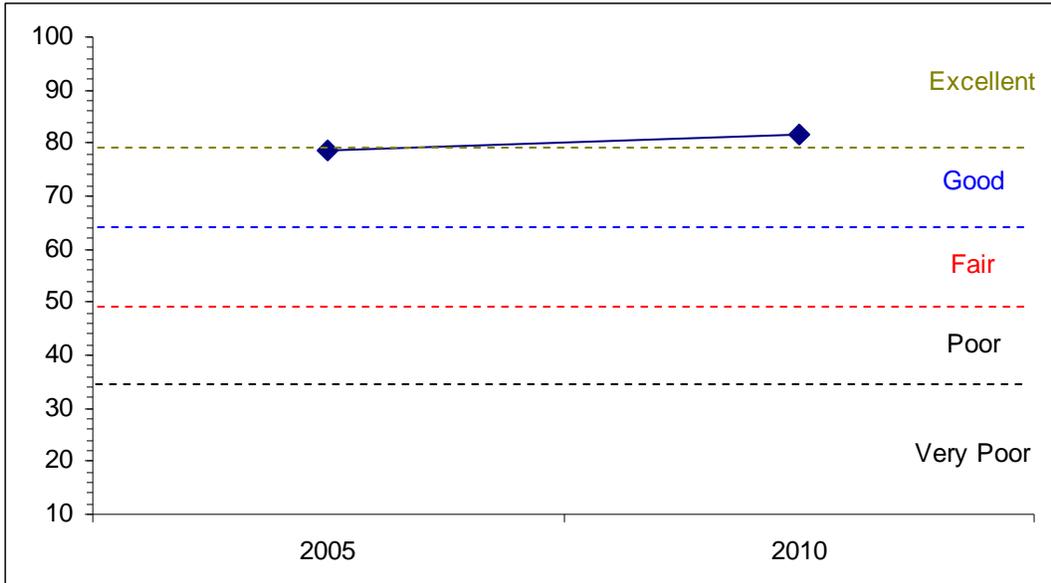
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
05	18.8	9.9	15.0	30.0	0.0	4.9	0.0	78.6	Good-Excellent
10	18.3	12.3	13.2	30.0	0.0	7.6	0.0	81.5	Good-Excellent

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 17, Study no: 65



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 17, Study no: 65



HERBACEOUS TRENDS--
 Management unit 17, Study no: 65

Type	Species	Nested Frequency		Average Cover %	
		'05	'10	'05	'10
G	<i>Agropyron spicatum</i>	_b 168	_a 98	6.82	4.63
G	<i>Elymus salina</i>	247	251	9.00	12.26
G	<i>Oryzopsis hymenoides</i>	_b 10	_a -	.08	.00
G	<i>Poa fendleriana</i>	41	25	.40	.45
G	<i>Poa secunda</i>	6	2	.06	.01
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		472	376	16.36	17.36
Total for Grasses		472	376	16.36	17.36
F	<i>Androsace septentrionalis</i> (a)	_b 15	_a -	.08	-
F	<i>Antennaria rosea</i>	-	1	-	.03
F	<i>Aster chilensis</i>	2	12	.01	.24
F	<i>Astragalus convallarius</i>	_b 10	_a -	.10	-
F	<i>Astragalus</i> sp.	7	-	.07	-
F	<i>Calochortus nuttallii</i>	11	5	.03	.01
F	<i>Castilleja chromosa</i>	_b 13	_a 3	.04	.03
F	<i>Castilleja flava</i>	_a -	_b 19	-	.45
F	<i>Chenopodium leptophyllum</i> (a)	2	-	.00	-
F	<i>Crepis acuminata</i>	72	71	.70	.91
F	<i>Cymopterus</i> sp.	3	9	.01	.02
F	<i>Erigeron</i> sp.	_a -	_b 7	-	.05
F	<i>Eriogonum umbellatum</i>	-	1	-	.03
F	<i>Ipomopsis aggregata</i>	4	-	.01	-
F	<i>Machaeranthera canescens</i>	1	-	.00	-
F	<i>Machaeranthera grindelioides</i>	30	28	.71	.26

Type	Species	Nested Frequency		Average Cover %	
		'05	'10	'05	'10
F	Penstemon caespitosus	8	9	.02	.01
F	Phlox austromontana	59	60	.62	1.56
F	Senecio multilobatus	8	12	.02	.07
F	Taraxacum officinale	9	6	.09	.09
Total for Annual Forbs		17	0	0.09	0
Total for Perennial Forbs		237	243	2.46	3.81
Total for Forbs		254	243	2.54	3.81

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

BROWSE TRENDS--

Management unit 17, Study no: 65

Type	Species	Strip Frequency		Average Cover %	
		'05	'10	'05	'10
B	Amelanchier utahensis	11	14	1.68	1.81
B	Artemisia tridentata vaseyana	50	54	5.24	4.01
B	Cercocarpus montanus	54	52	6.47	6.90
B	Chrysothamnus depressus	2	5	-	.21
B	Chrysothamnus nauseosus hololeucus	1	0	.03	-
B	Chrysothamnus viscidiflorus viscidiflorus	56	52	1.83	1.70
B	Gutierrezia sarothrae	11	11	.21	.36
B	Pediocactus simpsonii	1	1	-	.00
B	Pinus edulis	12	11	5.48	6.18
B	Symphoricarpos oreophilus	21	19	1.03	1.28
B	Tetradymia canescens	28	19	.40	.39
Total for Browse		247	238	22.40	22.88

CANOPY COVER, LINE INTERCEPT--

Management unit 17, Study no: 65

Species	Percent Cover	
	'05	'10
Amelanchier utahensis	2.68	1.71
Artemisia tridentata vaseyana	4.50	3.71
Cercocarpus montanus	10.38	10.75
Chrysothamnus viscidiflorus viscidiflorus	1.58	2.28
Gutierrezia sarothrae	-	.35
Pinus edulis	7.40	13.31
Symphoricarpos oreophilus	1.01	.90
Tetradymia canescens	.25	.35

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 17, Study no: 65

Species	Average leader growth (in)	
	'05	'10
Amelanchier utahensis	3.2	2.1
Cercocarpus montanus	3.6	2.5

POINT-QUARTER TREE DATA--

Management unit 17, Study no: 65

Species	Trees per Acre		Average diameter (in)	
	'05	'10	'05	'10
Pinus edulis	233	193	2.7	3.1

BASIC COVER--

Management unit 17, Study no: 65

Cover Type	Nested Frequency		Average Cover %	
	'05	'10	'05	'10
Vegetation	390	362	39.93	42.47
Rock	169	102	3.64	3.45
Pavement	277	231	16.93	16.52
Litter	432	456	35.96	52.31
Cryptogams	34	2	1.19	.03
Bare Ground	270	192	15.76	13.15

SOIL ANALYSIS DATA --

Management unit 17, Study no: 65, Study Name: Little Horse Ridge

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
16.0	7.4	25.1	41.7	33.2	3.5	5.2	220.8	0.7

PELLET GROUP DATA--

Management unit 17, Study no: 65

Type	Quadrat Frequency		Days use per acre (ha)	
	'05	'10	'05	'10
Rabbit	53	8	-	-
Moose	2	-	1 (2)	-
Horse	3	-	6 (16)	-
Elk	-	7	3 (7)	11 (28)
Deer	17	14	34 (83)	35 (86)
Cattle	-	-	2 (6)	-

BROWSE CHARACTERISTICS--

Management unit 17, Study no: 65

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>Amelanchier utahensis</i>									
05	400	40	60	-	20	25	20	0	50/48
10	400	25	75	-	20	40	5	0	48/51
<i>Artemisia tridentata vaseyana</i>									
05	1460	16	42	41	460	41	10	21	25/32
10	1480	23	51	26	340	26	11	24	23/30
<i>Cercocarpus montanus</i>									
05	2600	45	54	2	1280	17	65	.76	43/41
10	2160	29	70	1	5500	26	29	.92	43/40
<i>Chrysothamnus depressus</i>									
05	140	0	100	0	-	57	0	0	4/5
10	120	17	67	17	-	0	0	17	7/12
<i>Chrysothamnus nauseosus hololeucus</i>									
05	20	0	100	-	-	0	0	0	8/4
10	0	0	0	-	-	0	0	0	-/-
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
05	2400	8	93	-	40	3	0	0	10/11
10	2060	10	90	-	20	0	0	0	12/14
<i>Gutierrezia sarothrae</i>									
05	300	27	73	-	-	0	0	0	6/6
10	900	9	91	-	-	0	0	0	5/7
<i>Juniperus osteosperma</i>									
05	0	0	0	-	40	0	0	0	-/-
10	0	0	0	-	-	0	0	0	-/-
<i>Pediocactus simpsonii</i>									
05	20	0	100	-	-	0	0	0	-/-
10	20	0	100	-	-	0	0	0	0/2
<i>Pinus edulis</i>									
05	240	33	67	-	20	0	0	0	-/-
10	220	27	73	-	20	0	0	18	-/-
<i>Purshia tridentata</i>									
05	0	0	0	-	-	0	0	0	9/11
10	0	0	0	-	-	0	0	0	15/27
<i>Symphoricarpos oreophilus</i>									
05	720	25	72	3	20	3	3	3	15/21
10	680	32	68	0	140	3	0	0	16/26
<i>Tetradymia canescens</i>									
05	720	8	72	19	20	19	6	14	9/9
10	460	17	74	9	80	0	0	9	10/10