

Trend Study 16B-5-07

Study site name: Jackson Unit .

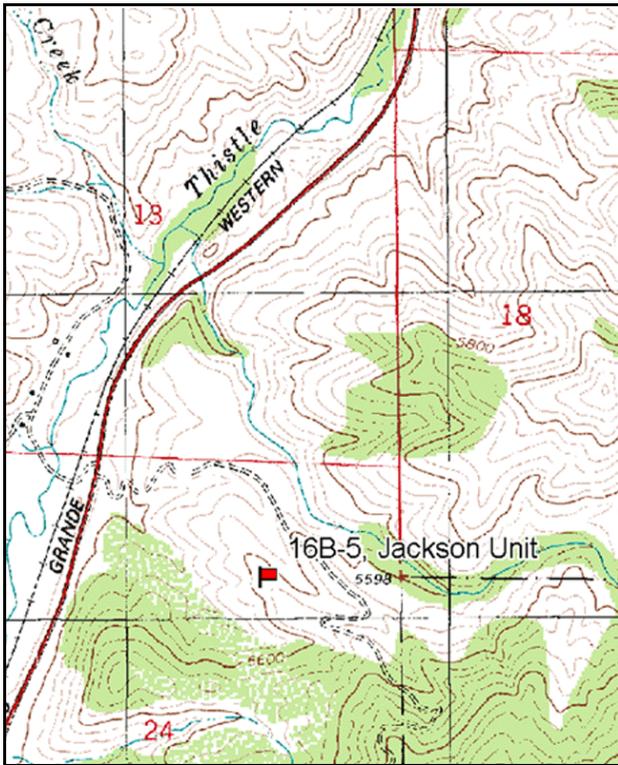
Vegetation type: Chained, Seeded P-J .

Compass bearing: frequency baseline 181 degrees magnetic (lines 2-4 @ 121°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (59ft), line 3 (79ft), line 4 (34ft). Rebar: belt 3 on 1ft.

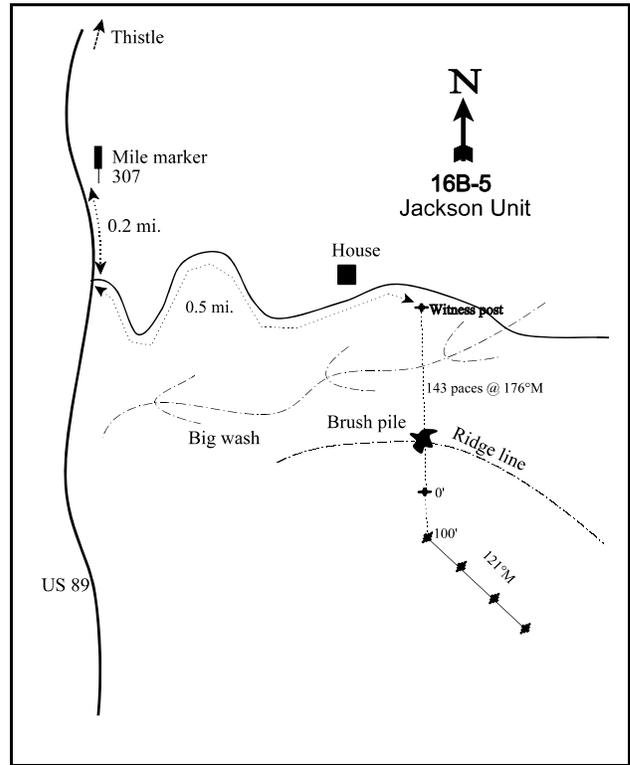
LOCATION DESCRIPTION

From Thistle bridge, proceed south on U.S. 89 until 0.2 miles south of mile marker 307. From here, take a side road east onto a DWR reseeding for 0.5 miles. Stop at a full high witness post. From this post, walk 143 paces at 176 degrees magnetic to the 0-foot baseline stake marked by browse tag #417.



Map Name: Birdseye

Township 10S , Range 3E , Section 24



Diagrammatic Sketch

GPS: NAD 83, UTM 12S 454355 E 4421292 N

DISCUSSION

Jackson Unit - Trend Study No. 16B-5

Study Information

This study monitors a 1972 chaining and seedling north of the town of Birdseye [elevation: 5,600 feet (1,706 m), slope: 28%, aspect: southwest]. An older line-intercept transect is located approximately 360 feet (100 m) to the east. The nearest perennial sources of water are Blind Canyon Creek, which is located 1000 feet (0.3 km) to the northwest, and Thistle Creek, which is located 0.4 miles (0.6 km) to the west. Elk appear to be using the area in moderate numbers in winter and spring. Quadrat frequency of elk pellet groups was moderately high at 36% in 1997, with less sign of deer (quadrat frequency of 14%). The lack of palatable winter browse makes this area less important to deer. From the pellet group transect, deer use was estimated at 10 days use/acre (25 ddu/ha) in 2002 and 8 days use/acre (20 ddu/ha) in 2007. Elk use was estimated at 45 days use/acre (111 edu/ha) in 2002 and 29 days use/acre (71 edu/ha) in 2007. Horse use estimates in 2007 were 41 days use/acre (10 hdu/ha).

Soil

The soil is classified within the Bagard series; a very deep, well-drained, slowly permeable soil on terraces and mountain slopes. Soils in this series formed in colluvium and alluvium from igneous and sedimentary rocks. The surface horizon has a low porosity, and is about 7 inches (17.8 cm) thick, the first two inches (5 cm) being soft and having a granular texture. Below the surface horizon, the soil increases in hardness and becomes more clayey with an angular structure. Rooting depth ranges from 21 inches (53.3 cm) to 50 inches (127 cm) (USDA-NRCS 2007). Specifically on the study, the texture is a sandy clay loam, and the pH is neutral (7.2). Phosphorus is marginally low at only 6.9 ppm, and is slightly above the minimum threshold of 6 ppm that is necessary for normal plant growth and development (Tiedemann and Lopez 2004). Bare ground cover has ranged from 16% to 25%. The erosion condition was assessed as stable in 2002 and decreased to slight in 2007 because of evidence of recent soil movement.

Browse

Utah juniper (*Juniperus osteosperma*) is the dominant overstory vegetation and canopy cover increased from 11% in 2002 to 17% in 2007. Juniper accounts for 81% to 90% of the overstory cover. The density was estimated at 210 trees/acre (520 trees/ha) using the point-centered quarter method in 1997. Most of the trees were in the 4-8 foot (1.2-2.4 m) height class. Juniper density increased slightly to 219 trees/acre (542 trees/ha) in 2002, and trees increased in height. Average diameter was estimated at 5.3 inches (13.5 cm). By 2007, juniper density had decreased to 192 trees/acre (475 trees/ha) and the average diameter increased to 7.3 inches (18.5 cm). The increase in average diameter and line intercept canopy cover indicate that the juniper trees are getting larger and the canopy is closing. This area needs to be treated again to thin the juniper, and increase preferred browse cover. Although the juniper has poor forage value, it does provide good escape and thermal cover for big game.

Very little palatable forage for browsing animals exists here. There are a few basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) plants, and small clumps of young Gambel oak (*Quercus gambelii*) and skunkbush sumac (*Rhus trilobata*) scattered throughout the area. Pricklypear cactus (*Opuntia* sp.) is also common. Reestablishment of shrub populations will be difficult in the future because of intense competition from juniper and seeded perennial grasses.

Herbaceous Understory

Grasses are the prevalent vegetation both on the study and the surrounding hillslope. The understory is composed of a mixture of seeded and native species including crested wheatgrass (*Agropyron cristatum*), intermediate wheatgrass (*Agropyron intermedium*), needle-and-thread grass (*Stipa comata*), Indian ricegrass (*Oryzopsis hymenoides*), and bluebunch wheatgrass (*Agropyron spicatum*). It was noted in past reports that

grasses had increased and the prevalence of cheatgrass (*Bromus tectorum*) had decreased prior to 1989. This is one of the few reports that makes mention of the presence/abundance of cheatgrass in the line-intercept studies, especially since annuals were not included in the range trend studies until 1992. The grasses receive some light grazing pressure from livestock and elk.

Forbs are sparse and the number of species has steadily decreased since 1989. The seeded species Lewis flax (*Linum lewisii*) and alfalfa (*Medicago sativa*) have not been observed since 1997. Pale alyssum (*Alyssum alyssoides*), an annual, is the most abundant forb species.

1997 TREND ASSESSMENT

The browse trend is stable. Although it appears that the live basin big sagebrush population disappeared, those plants were simply not measured due to the change in sample area. The only sagebrush sampled in 1997 was a dead plant. The grass trend is stable. The sum of nested frequency for perennial grasses increased 6% and sheep fescue (*Festuca ovina*) was measured for the first time. The forb trend is also stable. The nested frequency of perennial forbs was constant, and forbs continued to be a small component of the vegetative cover. The Desirable Components Index (DCI) score rated as very poor due to the absence of preferred browse species.

winter range condition (DCI) - very poor (32) Mid-level potential scale
browse - stable (0) grass - stable (0) forb - stable (0)

2002 TREND ASSESSMENT

The browse trend is stable. Preferred browse remained limited and virtually insignificant. The lack of palatable, abundant browse minimizes the usefulness of this study as a critical deer wintering area. The grass trend is down. There was a 20% decrease in the sum of nested frequency for perennial grasses. Intermediate wheatgrass and sheep fescue (*Festuca ovina*) decreased significantly in nested frequency. Cheatgrass nested frequency remained stable. The forb trend is slightly down. The sum of nested frequency of forbs decreased by 38%. Because forbs made up a very small portion of the vegetative cover, and most of this cover was comprised of pale alyssum, the impact of this decrease on overall forb trend was minimal. The number of sampled perennial forb species decreased from 11 to three. The DCI score remained very poor due to the lack of preferred browse species, and the decline in perennial grass and forb cover.

winter range condition (DCI) - very poor (28) Mid-level potential scale
browse - stable (0) grass - down (-2) forb - slightly down (-1)

2007 TREND ASSESSMENT

The browse trend is stable. Preferred browse species continued to be rare, and the few shrubs observed appeared to be in poor health, having few to no flowering stalks. Scattered skunk bush sumac and Gambel oak plants were somewhat hedged and had poor vigor and reproduction. The juniper canopy continued to increase, though it was observed that new growth on some individuals was blackish and very dry. The grass trend is stable. The sum of nested frequency of perennial grasses decreased 4%. Grasses were observed to have little grazing use (wild or domestic). Crested wheatgrass and needle-and-thread grass had good seed production and vigor. The forb trend is stable. Although there was an increase in nested frequency and cover, once again it was mostly attributable to pale alyssum, a small annual with little forage value. The DCI score remained very poor due to the lack of preferred browse species. Retreatment of the juniper component and seeding of preferred browse for big game should be considered in the future.

winter range condition (DCI) - very poor (31) Mid-level potential scale
browse - stable (0) grass - stable (0) forb - stable (0)

HERBACEOUS TRENDS --
 Management unit 16B, Study no: 5

T y p e	Species	Nested Frequency				Average Cover %		
		'89	'97	'02	'07	'97	'02	'07
G	Agropyron cristatum	_a 136	_a 133	_a 126	_a 145	3.98	4.24	7.00
G	Agropyron intermedium	_b 91	_b 97	_a 65	_a 28	1.54	.90	.85
G	Agropyron spicatum	_a 41	_a 57	_a 67	_a 64	2.84	2.57	3.64
G	Bromus inermis	4	-	-	-	-	-	-
G	Bromus tectorum (a)	-	_a 103	_a 113	_a 102	.76	.38	.25
G	Elymus junceus	_a 1	_a 1	-	-	.00	-	-
G	Festuca ovina	-	_b 36	_a 17	_{ab} 32	1.37	.89	1.54
G	Oryzopsis hymenoides	_b 48	_{ab} 44	_{ab} 30	_a 23	.95	1.43	.81
G	Poa secunda	_a 2	_a 11	_a 6	_a 15	.07	.04	.47
G	Sitanion hystrix	_a 3	_a 2	-	-	.06	-	-
G	Stipa comata	_c 123	_{bc} 94	_{ab} 70	_a 58	3.73	4.02	3.17
Total for Annual Grasses		0	103	113	102	0.76	0.38	0.25
Total for Perennial Grasses		449	475	381	365	14.58	14.12	17.51
Total for Grasses		449	578	494	467	15.34	14.51	17.76

T y p e	Species	Nested Frequency				Average Cover %		
		'89	'97	'02	'07	'97	'02	'07
F	<i>Agoseris glauca</i>	-	_a 2	-	_a 3	.00	-	.15
F	<i>Alyssum alyssoides</i> (a)	-	_c 331	_a 227	_b 294	4.27	.78	5.65
F	<i>Allium</i> sp.	_a 1	_a 3	-	-	.15	-	-
F	<i>Astragalus</i> sp.	_a 1	_a 4	-	-	.06	-	-
F	<i>Astragalus utahensis</i>	-	_a 9	_a 4	_a 6	.55	.03	.09
F	<i>Camelina microcarpa</i> (a)	-	2	-	-	.00	-	-
F	<i>Cirsium</i> sp.	_a 1	_a 1	_a 1	-	.15	.00	-
F	<i>Descurainia pinnata</i> (a)	-	_a 1	-	_a 3	.00	-	.00
F	<i>Eriogonum</i> sp.	14	-	-	-	-	-	-
F	<i>Linum lewisii</i>	_a 11	_a 10	-	-	.62	-	-
F	<i>Medicago sativa</i>	3	-	-	-	-	-	-
F	<i>Oxytropis</i> sp.	3	-	-	-	-	-	-
F	<i>Phlox longifolia</i>	-	5	-	-	.01	-	-
F	<i>Ranunculus testiculatus</i> (a)	-	-	_a 5	_a 9	-	.01	.04
F	<i>Streptanthus cordatus</i>	_a 10	_a 4	_a 4	_a 4	.03	.01	.01
F	<i>Tragopogon dubius</i>	_a 3	_a 8	-	-	.07	-	-
F	Unknown forb-perennial	-	3	-	-	.00	-	-
F	<i>Verbascum thapsus</i>	-	1	-	-	.00	-	-
Total for Annual Forbs		0	334	232	306	4.28	0.79	5.70
Total for Perennial Forbs		47	50	9	13	1.67	0.05	0.25
Total for Forbs		47	384	241	319	5.95	0.84	5.96

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

BROWSE TRENDS --

Management unit 16B, Study no: 5

Type	Species	Strip Frequency			Average Cover %		
		'97	'02	'07	'97	'02	'07
B	Artemisia tridentata tridentata	0	0	0	.15	-	.03
B	Chrysothamnus nauseosus albicaulis	1	3	1	-	.18	.38
B	Chrysothamnus viscidiflorus viscidiflorus	1	1	2	-	.15	.41
B	Gutierrezia sarothrae	7	1	1	.03	-	-
B	Juniperus osteosperma	8	15	14	6.07	8.62	11.42
B	Opuntia sp.	41	29	25	1.19	.61	.54
B	Quercus gambelii	1	0	0	-	-	-
B	Symphoricarpos oreophilus	0	0	0	-	-	.15
Total for Browse		59	49	43	7.45	9.56	12.94

CANOPY COVER, LINE INTERCEPT --

Management unit 16B, Study no: 5

Species	Percent Cover	
	'02	'07
Chrysothamnus nauseosus albicaulis	.20	.36
Chrysothamnus viscidiflorus viscidiflorus	.26	.23
Juniperus osteosperma	10.66	17.45
Opuntia sp.	.18	.20

POINT-QUARTER TREE DATA --

Management unit 16B, Study no: 5

Species	Trees per Acre	
	'02	'07
Juniperus osteosperma	219	192

Average diameter (in)	
'02	'07
5.3	7.3

BASIC COVER --

Management unit 16B, Study no: 5

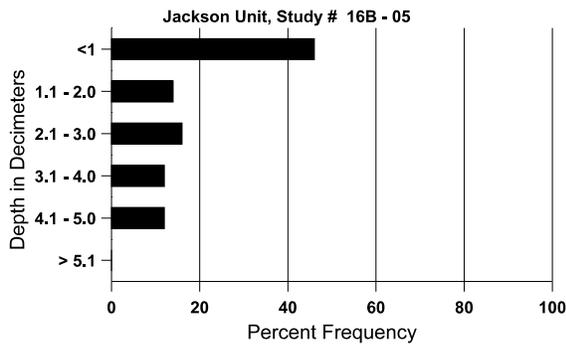
Cover Type	Average Cover %		
	'97	'02	'07
Vegetation	31.12	27.02	35.87
Rock	8.57	12.51	8.22
Pavement	8.26	9.68	12.89
Litter	29.96	37.19	32.29
Cryptogams	4.13	9.30	8.18
Bare Ground	16.14	24.74	17.10

SOIL ANALYSIS DATA --

Herd Unit 16B, Study no: 05, Jackson Unit

Effective rooting depth (in)	Temp °F (depth)	pH	Sandy clay loam			%OM	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
14.6	52.6 (21.7)	7.2	56.7	19.7	23.6	2.5	6.9	128.0	.6

Stoniness Index



PELLET GROUP DATA --

Management unit 16B, Study no: 5

Type	Quadrat Frequency		
	'97	'02	'07
Sheep	-	1	-
Rabbit	20	3	24
Horse	-	1	-
Elk	36	7	8
Deer	14	10	8
Cattle	-	1	-

Days use per acre (ha)	
'02	'07
-	-
-	-
-	4 (10)
45 (111)	29 (71)
10 (25)	8 (20)
1 (4)	-

BROWSE CHARACTERISTICS --
Management unit 16B, Study no: 5

		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 tridentata</i>												
89	99	-	-	33	66	-	33	0	67	-	0	29/21
97	0	-	-	-	-	20	0	0	0	-	0	62/65
02	0	-	-	-	-	20	0	0	0	-	0	61/26
07	0	-	-	-	-	-	0	0	0	-	0	38/30
<i>Chrysothamnus nauseosus albicaulis</i>												
89	0	-	-	-	-	-	0	0	0	-	0	-/-
97	20	-	-	20	-	-	0	0	0	-	0	31/37
02	60	-	-	-	60	-	0	0	100	33	33	28/44
07	20	-	-	-	20	-	100	0	100	100	100	26/22
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
89	0	-	-	-	-	-	0	0	0	-	0	-/-
97	20	-	-	20	-	-	0	0	0	-	0	15/15
02	20	-	-	20	-	-	0	0	0	-	0	16/19
07	40	-	-	20	20	-	0	0	50	-	0	19/23
<i>Gutierrezia sarothrae</i>												
89	0	-	-	-	-	-	0	0	0	-	0	-/-
97	220	-	60	160	-	-	0	0	0	-	0	10/9
02	20	-	-	-	20	40	0	0	100	100	100	8/11
07	20	-	20	-	-	-	0	0	0	-	0	7/10
<i>Juniperus osteosperma</i>												
89	66	-	33	33	-	-	0	0	-	-	0	102/55
97	180	-	20	160	-	20	0	0	-	-	0	-/-
02	340	-	20	320	-	80	0	0	-	-	6	-/-
07	360	-	-	360	-	20	0	6	-	-	0	-/-
<i>Opuntia sp.</i>												
89	866	-	133	700	33	-	0	0	4	-	0	5/5
97	1860	-	20	1680	160	140	0	0	9	9	9	6/11
02	1640	40	260	1260	120	-	0	0	7	-	0	5/10
07	1280	-	180	1060	40	-	0	5	3	3	3	6/13
<i>Quercus gambelii</i>												
89	400	66	400	-	-	-	50	8	-	-	0	-/-
97	40	-	-	40	-	-	100	0	-	-	0	19/24
02	0	-	-	-	-	-	0	0	-	-	0	15/8
07	0	-	-	-	-	-	0	0	-	-	0	31/15