

Trend Study 13A-3-04

Study site name: Buck Hollow .

Vegetation type: Chained, Seeded P-J .

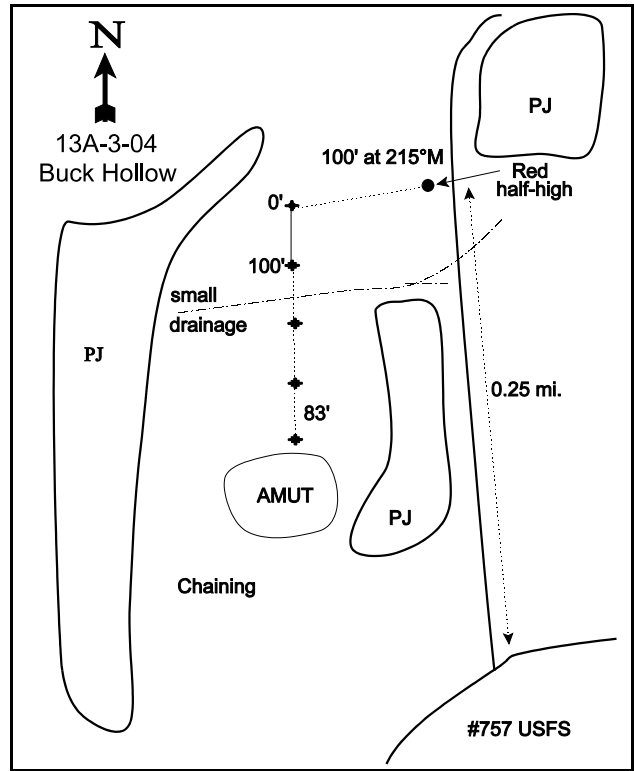
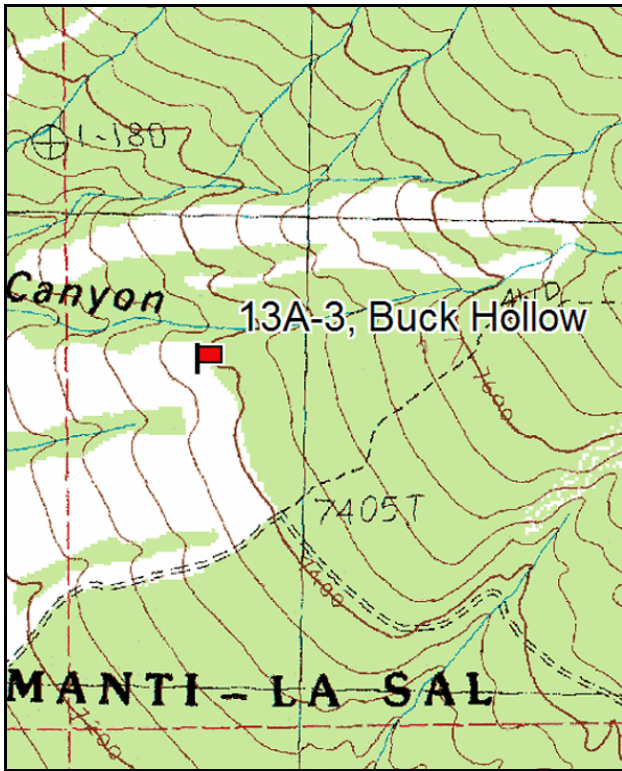
Compass bearing: frequency baseline 165 degrees magnetic.

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

LOCATION DESCRIPTION

From LaSal Junction, proceed east on SR 46 for 0.3 miles past mile marker 5. Turn left onto County Road 130 and travel 2.95 miles to a fork. Bear right on road #166 and go 0.8 miles to another fork. Bear right, and continue 1.3 miles to a cattleguard marking the Forest Service boundary. Continue 1.55 miles to a fork, turn left and go 0.25 miles. A red witness post (1 ½ foot tall fencepost) is located on the left side of the road. The transect starts 100 feet out in the chaining. The study is marked by half high green fenceposts.

\*\*\*An alternate route is to take SR 191 south from Moab. At mile marker 113, continue 0.15 miles south and turn left (east) on county road #166. Continue south on main road for 11.4 miles to a fork, and turn left (east). Go 1.3 miles to the cattleguard and Forest Service boundary listed above. Follow remainder of directions as noted above.



Map Name: LaSal West

Diagrammatic Sketch

Township 28S , Range 24E , Section 17

GPS: NAD 27, UTM 12S 4247659 N, 647773 E

## DISCUSSION

### Buck Hollow - Trend Study No. 13A-3

The Buck Hollow study samples a chaining within the wide-ranging pinyon-juniper type on the south slope of the LaSal Mountains. This area is thought to be particularly important as a principal elk wintering area. In 1999, there was an estimated 66 deer (163 ddu/ha), 15 elk (37 edu/ha), and 20 cow days use/acre (49 cdu/ha) on the site. In 2004, pellet group data estimated 42 deer (104 ddu/ha), 11 elk (28 edu/ha), and 4 cow days use/acre (9 cdu/ha). This study site is part of the La Sal grazing allotment. The 700 acre Buck Hollow chaining and seeding project was completed in 1982. The site is now dominated by seeded grasses which currently contribute 63% of the total vegetative cover. Scattered clumps of unchained, mature pinyon-juniper provide excellent escape cover. This woodland community was an old, very mature stand when it was chained. The elevation of the site is 7,400 feet with a general southwest aspect on a gentle south-facing slope (5-10%).

The moderately deep soil on this rangeland site has an effective rooting depth of almost 13 inches. The soil is a reddish-brown sandy clay loam with stones throughout the upper profile. It is mildly alkaline (7.6 pH) and shows little evidence of erosion within the chained area. Besides the good cover of perennial grasses, litter left in place from the chaining also provides excellent soil protection. There is definite soil movement in the surrounding mature pinyon-juniper woodland type. The erosion condition class determined soil movement as stable in 2004.

Besides scattered clumps of serviceberry and true mountain mahogany, there is little other desirable browse within the chaining. Most of the mature seed-producing plants occur nearby on the edge of the chaining. The browse population on the site is mainly made up of young plants, just getting established. Four-wing saltbush was seeded, but no plants were sampled on the transect. Some nearby plants were measured for height/crown. There are some patches of Gambel oak that are lightly browsed. There were abundant seedlings in 1987, which were all growing around the mature plants. However, no seedlings have been found since. There is some reinvasion and/or releasing of young pinyon and juniper that escaped the chaining. The point-quarter method in 1999 estimated 64 juniper trees/acre and 115 pinyon trees/acre with an average diameter of 3.3 inches for juniper and 3.9 inches for pinyon. In 2004, point-quarter estimated 68 juniper trees/acre and 106 pinyon trees/acre with an average diameter of 2.5 inches for juniper and 3.7 inches for pinyon.

Seeded grasses are the prevalent forage available in this chaining. These large vigorous plants are mainly smooth brome, intermediate wheatgrass, and crested wheatgrass. Combined, they represented 97% of the grass cover and 70% of the total vegetative cover in 1994 with similar values in 1999. In 2004, they contribute 99% of the grass cover and 61% of the total vegetative cover. Several other species are present, including tall wheatgrass, orchardgrass, Indian ricegrass, bottlebrush squirreltail, and Carex. Forbs are not as essential because they only contribute 21% of the total vegetative cover. The most abundant forb is alfalfa, which makes up 48% of the forb cover.

### 1987 APPARENT TREND ASSESSMENT

Excellent ground cover is provided by the dense mixture of bunch and rhizomatous grass species. Herbaceous understory cover is excellent. Litter cover is also quite high at 73%. There is a scattering of rock and pavement cover totaling less than 5%. Percent bare ground is only about 11%.

### 1994 TREND ASSESSMENT

The soil trend should be considered stable at this time as there is still a generous amount of litter cover from the chaining and herbaceous cover is excellent with only about 15% relative bare ground. The browse species

are not a very significant contributor to the productivity of the site for they only make up 15% of the total vegetative cover, with almost all of that coming from small pinyon. Trend for browse is stable but it is an insignificant contributor to the productivity of the site. Within the herbaceous understory, the seeded species make up 80% of the total vegetative cover. The nested frequency values for the grasses have gone down slightly with the nested frequency of forbs going up slightly; trend for the herbaceous understory is stable. The Desirable Components Index rated this site as poor with a score of 36 due to lack of preferred browse cover, although perennial grass and forb cover is abundant.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

winter range condition (DC Index) - 36 (poor) Pinyon-Juniper Chaining type

1999 TREND ASSESSMENT

The soil trend is considered to be improving with improved ratios of protective cover to bare soil. Vegetative cover and litter cover have increased, with a corresponding decrease in percent bare soil. The browse species are still not a very significant contributor to the productivity of the site as they only make up 14% of the total vegetative cover, with almost all of that coming from small pinyon. Trend for browse is stable but it continues to be an insignificant contributor to the productivity of the site. The majority of the herbaceous species cover comes from seeded species which make up 77% of the total vegetative cover. The nested frequency values for the grasses have gone up slightly with the nested frequency for forbs going down slightly. Because grasses almost triple the cover of the forbs, overall trend for the herbaceous understory is stable. The Desirable Components Index rated this site as poor with a score of 40 due to lack of preferred browse cover, although perennial grass and forb cover is abundant.

TREND ASSESSMENT

soil - up (5)

browse - stable (3)

herbaceous understory - stable (3)

winter range condition (DC Index) - 40 (poor) Pinyon-Juniper Chaining type

2004 TREND ASSESSMENT

The trend for soil is slightly down. Bare ground cover increased to almost 20% and the protective cover to bare soil decreased slightly. Drought conditions the last 2 to 3 years has decreased vegetation production, which decreased litter cover and increased bare ground cover. Trend for browse species is stable, but still not a significant contributor to the productivity of the site. Browse species only make up 16% of the total vegetation cover and 77% of that is small pinyon. Trend for herbaceous understory is depressed slightly but not enough to warrant a change in trend. These changes are most due to drought conditions. The majority of vegetation cover still comes from grasses and forbs which account for 84% of the total vegetation cover. The Desirable Components Index rated this site as poor with a score of 41 due to lack of preferred browse cover, although perennial grass and forb cover is abundant.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - stable (3)

winter range condition (DC Index) - 41 (poor) Pinyon-Juniper Chaining type

HERBACEOUS TRENDS --  
Management unit 13A, Study no: 3

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
G	<i>Agropyron cristatum</i>	c119	a58	ab80	bc97	.88	2.45	3.74
G	<i>Agropyron intermedium</i>	c290	b208	b205	a139	6.18	6.94	2.75
G	<i>Bromus inermis</i>	a150	b208	b231	b223	7.42	10.11	8.41
G	<i>Bromus tectorum</i> (a)	-	-	-	13	-	-	.02
G	<i>Carex</i> spp.	9	23	19	13	.46	.44	.16
G	<i>Oryzopsis hymenoides</i>	b5	a-	a-	a-	-	.00	-
G	<i>Poa fendleriana</i>	-	3	8	4	.03	.09	.02
G	<i>Poa secunda</i>	-	-	6	-	-	.06	.00
G	<i>Sitanion hystrix</i>	b34	b21	a3	a-	.13	.03	.00
G	<i>Sporobolus cryptandrus</i>	-	-	-	-	-	-	.03
<b>Total for Annual Grasses</b>		0	0	0	13	0	0	0.01
<b>Total for Perennial Grasses</b>		607	521	552	476	15.12	20.14	15.14
<b>Total for Grasses</b>		607	521	552	489	15.12	20.14	15.16
F	<i>Alyssum</i> spp. (a)	-	-	-	-	.00	-	-
F	<i>Arabis hirsuta</i>	2	-	6	-	-	.01	-
F	<i>Astragalus convallarius</i>	18	21	22	29	.37	1.35	1.49
F	<i>Aster</i> spp.	-	2	-	-	.03	-	-
F	<i>Chaenactis douglasii</i>	3	3	-	-	.01	-	-
F	<i>Collinsia parviflora</i> (a)	-	3	-	-	.00	-	-
F	Cruciferae	4	-	-	-	-	-	-
F	<i>Cryptantha</i> spp.	a-	c17	ab4	ab1	.06	.01	.00
F	<i>Descurainia pinnata</i> (a)	-	7	1	-	.01	.01	-
F	<i>Gilia</i> spp. (a)	-	3	-	-	.00	-	-
F	<i>Lesquerella</i> spp.	b22	a-	a-	a5	-	-	.01
F	<i>Machaeranthera</i> spp	-	1	-	-	.00	-	-
F	<i>Melilotus officinalis</i>	c53	b18	a-	a-	.16	-	-
F	<i>Medicago sativa</i>	a1	b28	b27	b22	1.64	4.81	2.38
F	<i>Penstemon</i> spp.	a-	b24	b21	a6	.13	.17	.04
F	<i>Phacelia</i> spp.	b10	a-	a-	a-	-	-	-
F	<i>Phlox austromontana</i>	a-	b14	a10	a9	.25	.09	.19
F	<i>Physaria chambersii</i>	a-	b14	b16	a-	.03	.20	-
F	<i>Polygonum douglasii</i> (a)	-	b10	a1	b11	.02	.00	.08
F	<i>Sanguisorba minor</i>	3	-	-	-	-	-	-
F	<i>Senecio multilobatus</i>	-	-	2	2	-	.03	.06
F	<i>Sphaeralcea coccinea</i>	a11	a12	ab15	b35	.25	.28	.75

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
F	Tragopogon dubius	3	2	-	-	.03	-	-
F	Trifolium spp.	-	-	2	-	-	.03	-
F	Unknown forb-perennial	4	-	-	-	-	-	-
Total for Annual Forbs		0	23	2	11	0.05	0.01	0.07
Total for Perennial Forbs		134	156	125	109	3.00	7.01	4.94
Total for Forbs		134	179	127	120	3.05	7.02	5.02

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

#### BROWSE TRENDS --

Management unit 13A, Study no: 3

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	Amelanchier utahensis	2	0	1	-	-	-
B	Cercocarpus montanus	4	4	5	-	.15	.53
B	Juniperus osteosperma	0	4	6	-	.15	.38
B	Opuntia spp.	0	1	1	-	-	-
B	Pinus edulis	0	4	6	2.64	3.98	3.06
B	Symphoricarpos oreophilus	1	0	0	-	-	-
Total for Browse		7	13	19	2.64	4.28	3.97

#### CANOPY COVER, LINE INTERCEPT --

Management unit 13A, Study no: 3

Species	Percent Cover	
	'99	'04
Amelanchier utahensis	-	.05
Cercocarpus montanus	-	.80
Juniperus osteosperma	2.00	1.79
Pinus edulis	3.59	7.81

KEY BROWSE ANNUAL LEADER GROWTH --  
Management unit 13A, Study no: 3

Species	Average leader growth (in)
	'04
Amelanchier utahensis	5.8
Cercocarpus montanus	7.3

POINT-QUARTER TREE DATA --  
Management unit 13A, Study no: 3

Species	Trees per Acre	
	'99	'04
Juniperus osteosperma	64	68
Pinus edulis	115	106

Average diameter (in)	
'99	'04
3.3	2.5
3.9	3.7

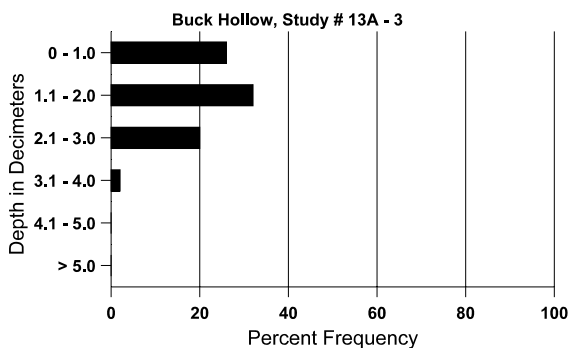
BASIC COVER --  
Management unit 13A, Study no: 3

Cover Type	Average Cover %			
	'87	'94	'99	'04
Vegetation	11.25	24.78	34.29	24.39
Rock	2.50	4.80	5.32	6.10
Pavement	2.25	.96	4.56	5.10
Litter	72.75	53.42	61.43	54.18
Cryptogams	0	0	.12	.21
Bare Ground	11.25	14.31	12.04	20.52

SOIL ANALYSIS DATA --  
Management unit 13A, Study no: 3, Study Name: Buck Hollow

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
12.7	62.3 (12.6)	7.6	52.9	21.8	25.3	4.5	25.0	144.0	0.7

### Stoniness Index



PELLET GROUP DATA --  
 Management unit 13A, Study no: 3

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	10	19	15
Elk	14	12	14
Deer	17	29	42
Cattle	2	6	1

Days use per acre (ha)	
'99	'04
-	-
15 (37)	11 (28)
66 (163)	42 (104)
20 (49)	4 (9)

BROWSE CHARACTERISTICS --  
 Management unit 13A, Study no: 3

		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>Amelanchier utahensis</b>												
87	<b>666</b>	700	566	100	-	-	45	5	-	-	10	59/28
94	<b>40</b>	-	20	20	-	-	0	0	-	-	0	66/75
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	59/73
04	<b>20</b>	200	20	-	-	-	0	0	-	-	0	74/80
<b>Atriplex canescens</b>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	18/14
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	26/20
<b>Cercocarpus montanus</b>												
87	<b>66</b>	-	33	33	-	-	50	50	-	-	0	21/19
94	<b>100</b>	-	-	100	-	-	20	0	-	-	0	33/30
99	<b>100</b>	-	-	100	-	-	80	0	-	-	0	48/38
04	<b>100</b>	20	20	80	-	-	0	100	-	-	0	44/39
<b>Juniperus osteosperma</b>												
87	<b>33</b>	66	-	33	-	-	0	0	-	-	0	51/197
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>100</b>	-	100	-	-	40	0	0	-	-	0	-/-
04	<b>120</b>	-	120	-	-	-	0	0	-	-	0	-/-
<b>Opuntia spp.</b>												
87	<b>33</b>	-	-	33	-	-	0	0	-	-	0	12/6
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	4/19
99	<b>20</b>	-	-	20	-	-	0	0	-	-	0	8/18
04	<b>20</b>	-	-	20	-	-	0	0	-	-	0	5/18

		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>Pinus edulis</b>												
87	<b>133</b>	33	100	33	-	-	0	0	-	-	0	35/24
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>100</b>	-	80	20	-	20	0	0	-	-	0	-/-
04	<b>120</b>	-	40	80	-	-	0	0	-	-	0	-/-
<b>Quercus gambelii</b>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	33/30
<b>Symphoricarpos oreophilus</b>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>20</b>	-	-	20	-	-	0	0	-	-	0	30/55
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	26/52
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	26/46