

Trend Study 14-5-04

Study site name: Jackson Ridge .

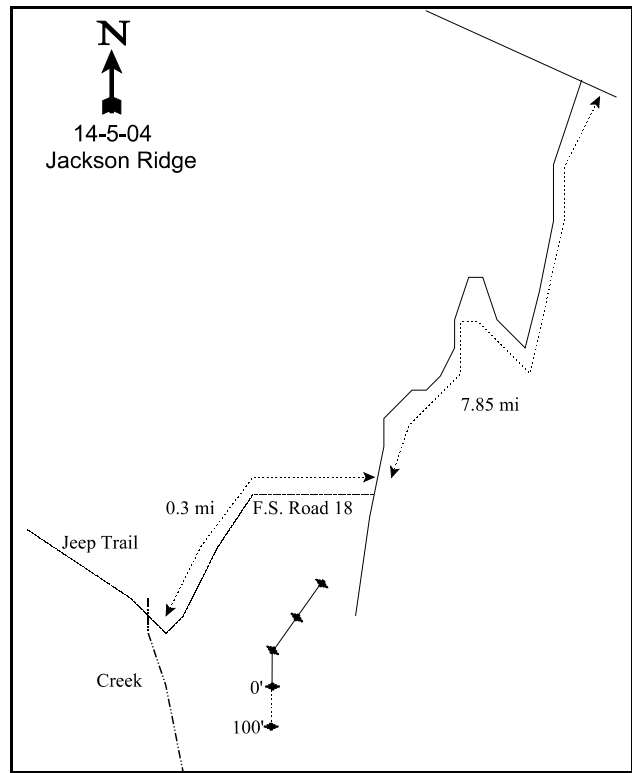
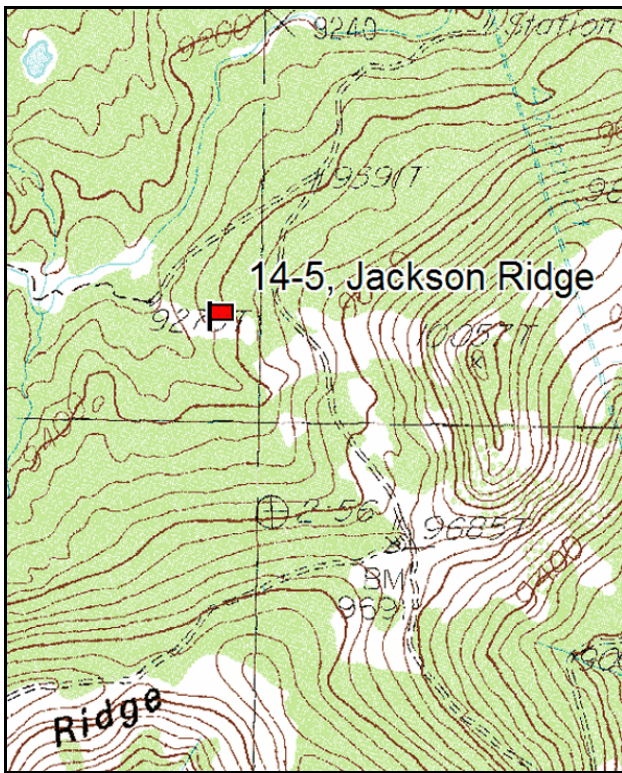
Vegetation type: Aspen .

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

From the junction of the Blue Mountain Road and the North Creek-Indian Creek Road (just west of Dalton Springs campground), go 7.25 miles to Indian Creek. From the crossing, continue 0.55 miles to a fork. Stay left on the main road. Continue 0.05 miles to another small fork to the right. Go down this jeep trail(F.S. Road 18) 0.3 miles to a sharp right bend in the road near a small stream. Stop here and walk southeast (105°M) up the clearing for 490 feet. The 0-foot baseline stake is a 4-foot tall green fence post with browse tag #479 attached.



Map Name: Mt. Linnaeus

Diagrammatic Sketch

Township 34S , Range 22E . , Section 9

GPS: NAD 27, UTM 12S 4188193 N, 630892 E

DISCUSSION

Jackson Ridge - Trend Study No. 14-5

The Jackson Ridge Study samples a moderately steep meadow in an aspen-spruce-fir forest on the headwaters of Indian Creek in the southern part of the Abajo Mountains. This is a summer range at an elevation of 9,400 feet. Water is not a limiting factor and the small perennial stream flowing northwest down the slope towards Indian Creek contains water late in the year. Annual precipitation is at least 20 inches per year. The study site has a western exposure with a 35% slope. Because of an underground aqueduct moving water from this drainage, this area is considered part of the Blanding municipal watershed. Consequently, cattle grazing is not permitted on this part of the Manti-LaSal National Forest. However, fences are in poor repair and allow cattle to trespass from the Camp Jackson allotment. Fresh cow sign was abundant on the study site in August 1986, when the site was first established. Pellet group data from 1999 estimated 2 deer days use/acre (5 deer days use/ha) and 12 elk days use/acre (30 elk days use/ha). All of the pellet groups were found further up the slope where it is more open. In 2004, 6 deer days use/acre (15 ddu/ha), 13 elk days use/acre (33 edu/ha), and 1 cow day use/acre (2 cdu/ha) were estimated.

The soil is a moderately deep clay loam with an estimated effective rooting depth of almost 16 inches. The upper soil horizon is a fine textured, heavy soil with a good amount of organic matter. There is quite a bit of large rock in the profile, concentrated in the top 8 inches of soil. In some areas, rock has been exposed by erosion, which occurred in the past and has led to heavy soil loss and the formation of deep gullies. However, now the soil has good vegetative and litter cover which provides excellent soil protection. The gullies are stabilized and recovering and there is only a small amount of rill erosion on the steeper faces. Mounds of bare soil are the result of rodent activity. Bare ground cover increased from only 4-5% in 1994 and 1999 to 18% in 2004. The ratio of protective ground cover (vegetation, litter, and cryptogams) to bare ground decreased from 1:5.8 to 1:3.7 which is still excellent, but trending lower. Litter cover declined from 67 to 39% in 2004.

Surrounding the small meadow is a thick grove of quaking aspen, Engelmann spruce, white fir, and Douglas fir. The forest provides excellent cover for big game. There are young trees on the edge, with aspens being the most aggressive in moving into the meadow. These young trees showed moderate to heavy use on all available portions of the plants in 1986. Many of the young trees were largely unavailable. The smallest ones often had reduced numbers of yellowish leaves, with many being classified in poor vigor in 1986. Browsing may be heavy enough to limit or slow the spread of aspens into the meadow. All mature aspen in the meadow are unavailable due to height. Aspen was mistakenly not included in the shrub density strips in 1994, so no comparisons can be made with 1986 and 1999 data. Density was slightly higher in 1999 (620 to 532 trees/acre) than 1986 estimates, but some of the change is due to the lengthening of the baseline in 1994. Density was stable in 2004 at 600 trees/acre. Overhead canopy cover of aspen was estimated at 21% in 1999 and 31% in 2004. Utilization appeared light. Snowberry occurs infrequently in the meadow with some showing moderate browsing in 2004.

The bulk of available forage production on this study site comes from the herbaceous component which has provided over 93% of the vegetation cover for each reading. There are several native grasses on the site but the most abundant species is Kentucky bluegrass which accounted for 75% of the total grass cover in 1994, 81% in 1999, and 59% in 2004. Other common grasses include slender wheatgrass, orchard grass, and letterman needlegrass. A large species of *Carex* was found in scattered bunches and increased significantly in 2004. The sum of nested frequency for perennial grasses declined 12% in 2004, but it was still quite high. The abundance of forbs on the site is an especially important component of this summer range. In summer, forbs constitute a large portion of the deer diet (up to 50% and more). Many valuable and palatable species are common, including thistle, peavine, American vetch, mountain dandelion, silvery lupine, sweetroot, and wild strawberry. Forbs made up 66% of total vegetative cover in 1994, 60% in 1999, and 62% in 2004. The sum of nested frequency for perennial forbs declined 34% in 2004, but forb cover was slightly higher.

1986 APPARENT TREND ASSESSMENT

The key species to monitor here are the young increasing aspens and the forbs. The area is healthy, diverse and provides abundant forage. Although cattle grazing is rather concentrated and apparently unregulated, there is plenty of herbaceous forage. The young aspens are heavily utilized where available, but will probably continue to slowly increase. Overall vegetative trend is stable. With increased vegetative and litter cover and organic matter content, the soil is stabilizing and trend is improving.

1994 TREND ASSESSMENT

Soil trend would be considered slightly improving because percent bare ground has gone from 11% down to only 4% and the herbaceous understory makes up 97% of the total vegetative cover. The browse trend is improving with the quaking aspen not showing signs of poor vigor as was the case in 1986. However, browse only contributes to 1% of the total vegetative cover on this site. There was a slight drop in the nested frequency value for the grasses, but this was more than compensated for with significant increases in the forbs which produces almost 70% of the herbaceous understory cover. Trend for the herbaceous understory is slightly up.

TREND ASSESSMENT

soil - slightly up (4)

browse - slightly up (4)

herbaceous understory - slightly up (4)

1999 TREND ASSESSMENT

Trend for soil remains stable with similar ground cover characteristics compared to 1994 estimates. Browse is not very important on this summer range as shrubs and trees are not abundant in this meadow. However, aspen appears to be stable. The increase in density since 1986 is likely due to the much larger sample used in 1994 and 1999. Snowberry also shows a steady increase since 1986 with some moderate use apparent in 1999. However, snowberry provides less than half of 1% cover on the site. Trend for browse is considered stable. Trend for the herbaceous understory is stable with similar sum of nested frequency values for grasses and forbs compared to 1994 estimates. Cover of grasses and forbs are up slightly, but frequency values are basically the same. The increased cover of forbs is likely due to the early reading of the site (6-15) in 1999. Kentucky bluegrass remains the dominant grass by providing 81% of the grass cover. Dominant forbs include: western yarrow, larkspur, thistle, lupine, tuber starwort, and dandelion. These six species account for 85% of the forb cover and 53% of the total herbaceous cover. Of these dominant forbs, only larkspur and thistle have increased significantly in nested frequency since 1994.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory -stable (3)

2004 TREND ASSESSMENT

The soil trend is slightly down, but is still in good condition. Litter cover is down and bare ground is up, but erosion is not a problem as bare ground is still relatively low. The browse trend is stable, but is not a critical component on this summer range. Aspen density appears stable and a large portion of the population is made up of young sprouting trees (57%). Snowberry is also stable. The herbaceous understory trend is slightly down. The sum of nested frequency for perennial grasses and forbs is down 28% from 1999. Cover has decreased only slightly for grasses and increased slightly for forbs.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Management unit 14 , Study no: 5

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'99	'04	'94	'99	'04
G	Agropyron spicatum	b ²²	a ⁻	a ⁻	a ⁻	-	-	-
G	Agropyron trachycaulum	104	68	55	78	.94	.62	1.95
G	Bromus carinatus	b ⁴⁸	a ¹⁹	a ⁸	b ³¹	.27	.21	.53
G	Carex spp.	a ⁵	ab ²¹	a ⁷	b ³⁰	.43	.07	1.08
G	Dactylis glomerata	a ³	ab ⁹	c ²⁸	bc ²⁵	.19	1.12	.73
G	Phleum pratense	1	-	4	-	-	.03	-
G	Poa pratensis	c ³⁶²	b ³⁴¹	ab ³⁵⁷	a ²⁵¹	8.45	13.86	8.68
G	Stipa lettermani	ab ⁴⁸	a ⁴⁵	b ⁷⁶	ab ⁵⁸	.24	1.25	2.01
G	Trisetum spicatum	4	8	-	-	.66	-	-
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		597	511	535	473	11.20	17.17	15.00
Total for Grasses		597	511	535	473	11.20	17.17	15.00
F	Achillea millefolium	ab ²⁸⁰	b ²⁹¹	b ²⁸⁶	a ²⁵⁰	6.55	9.22	7.01
F	Agoseris glauca	b ³⁷	ab ²³	a ¹³	ab ²²	.10	.05	.10
F	Androsace septentrionalis (a)	-	ab ³⁶	b ⁵⁵	a ²²	.08	.21	.74
F	Arabis spp.	-	1	10	5	.00	.07	.01
F	Castilleja spp.	-	-	-	1	-	-	.03
F	Cerastium arvense	a ⁻	b ¹⁰	a ⁻	a ⁻	.02	-	-
F	Chenopodium album (a)	-	2	-	2	.00	-	.00
F	Cirsium wheeleri	a ⁶	ab ¹⁰	b ²⁴	ab ¹⁸	.02	.49	.52
F	Conioselinum scopulorum	-	11	-	-	1.32	-	-
F	Delphinium nuttallianum	a ⁻	b ⁷⁸	c ¹⁹⁰	a ⁵	.21	2.13	.01
F	Erigeron engelmannii	10	10	-	-	.09	-	-
F	Erigeron flagellaris	b ¹⁰²	ab ⁹⁶	ab ⁵²	a ⁵³	.55	.29	.35
F	Erigeron speciosus	ab ¹⁰	b ²⁴	a ²	a ⁻	.52	.06	-
F	Fragaria vesca	39	15	18	25	.24	.55	.37
F	Galium bifolium (a)	-	ab ⁹	b ¹⁶	a ⁻	.01	.21	-
F	Gentiana amarella heterosepala	9	8	-	-	.01	-	-
F	Lathyrus lanszwertii	a ¹⁶	a ⁴⁰	b ⁹²	b ⁹²	1.56	2.41	5.93
F	Lupinus argenteus	a ³²	b ⁹²	b ¹²²	a ⁵⁴	1.64	2.38	4.05

T y p e	Species	Nested Frequency				Average Cover %		
		'86	'94	'99	'04	'94	'99	'04
F	Lupinus spp.	-	-	-	2	-	-	.01
F	Mertensia brevistyla	-	3	-	-	.03	-	-
F	Microsteris gracilis (a)	-	1	-	-	.00	-	-
F	Orthocarpus spp. (a)	-	-	7	-	-	.04	-
F	Osmorhiza occidentalis	37	25	27	19	.53	.28	.45
F	Phacelia hastata	_b 23	_a 4	_a -	_a -	.03	-	-
F	Phlox longifolia	3	-	-	-	-	-	-
F	Polygonum douglasii (a)	-	_b 49	_a 15	_a 22	.11	.13	.03
F	Potentilla gracilis	9	10	-	3	.18	-	.00
F	Ranunculus spp.	_a -	_c 55	_c 47	_b 22	.19	.30	.22
F	Senecio neomexicanus	_a 29	_b 73	_b 95	_a 34	.64	.57	.33
F	Stellaria jamesiana	_a -	_c 227	_c 204	_b 150	2.57	2.82	2.61
F	Taraxacum officinale	_a 168	_b 215	_b 208	_a 154	3.09	5.08	3.71
F	Thermopsis montana	_a -	_b 68	_a -	_a 3	.51	-	.00
F	Thlaspi montanum	_a 22	_b 62	_b 73	_a 21	.18	.35	.11
F	Tragopogon dubius	17	16	7	8	.66	.02	.45
F	Unknown forb-perennial	_b 96	_a -	_a -	_a -	-	-	-
F	Valeriana occidentalis	7	5	-	-	.30	-	-
F	Veronica serpyllifolia	1	-	-	-	-	-	-
F	Vicia americana	_b 145	_b 165	_a 98	_a 90	1.82	.64	2.29
F	Viola canadensis	_a -	_{ab} 4	_{ab} 6	_b 8	.04	.01	.13
Total for Annual Forbs		0	97	93	46	0.21	0.59	0.78
Total for Perennial Forbs		1098	1641	1574	1039	23.70	27.76	28.76
Total for Forbs		1098	1738	1667	1085	23.91	28.36	29.54

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

BROWSE TRENDS --

Management unit 14 , Study no: 5

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
		B	Abies concolor	0	0	2	-
B	Picea engelmannii	0	2	4	.03	.07	2.32
B	Populus tremuloides	0	19	22	.79	1.43	.81
B	Pseudotsuga menziesii	0	0	0	-	.01	.00
B	Ribes spp.	0	0	1	-	-	-
B	Symphoricarpos oreophilus	2	5	3	.53	.42	.33
Total for Browse		2	26	32	1.35	1.94	3.47

CANOPY COVER, LINE INTERCEPT --

Management unit 14 , Study no: 5

Species	Percent Cover	
	'99	'04
Picea engelmannii	-	3.45
Populus tremuloides	21.20	30.64
Symphoricarpos oreophilus	-	.11

BASIC COVER --

Management unit 14 , Study no: 5

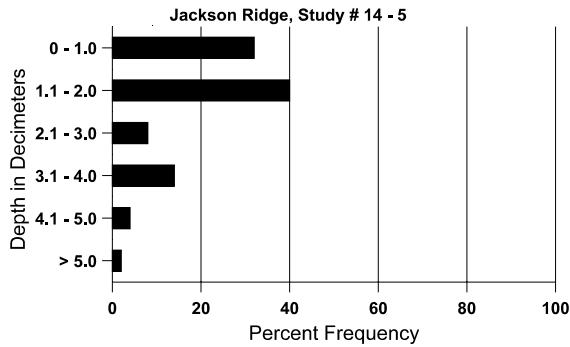
Cover Type	Average Cover %			
	'86	'94	'99	'04
Vegetation	25.50	38.06	49.25	45.20
Rock	6.50	8.04	7.12	6.33
Pavement	1.75	.01	.44	1.03
Litter	55.00	44.68	67.18	38.79
Cryptogams	0	.06	.64	.24
Bare Ground	11.25	3.96	4.85	18.11

SOIL ANALYSIS DATA --

Management unit 14, Study no: 5, Study Name: Jackson Ridge

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
15.5	46.0 (15.9)	6.0	36.9	34.6	28.6	5.3	15.6	390.4	0.3

Stoniness Index



PELLET GROUP DATA --

Management unit 14 , Study no: 5

Type	Quadrat Frequency		
	'94	'99	'04
Moose	5	-	-
Elk	-	7	6
Deer	1	1	1
Cattle	-	-	

Days use per acre (ha)	
'99	'04
-	-
12 (30)	13 (33)
2 (5)	6 (15)
-	1 (2)

BROWSE CHARACTERISTICS --

Management unit 14 , 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)
Abies concolor												
86	0	-	-	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	40	-	40	-	-	-	0	0	-	-	0	-/-
Picea engelmannii												
86	33	-	33	-	-	-	0	0	-	-	0	-/-
94	0	-	-	-	-	-	0	0	-	-	0	-/-
99	40	80	40	-	-	-	0	0	-	-	0	-/-
04	100	20	80	20	-	-	0	0	-	-	0	-/-
Populus tremuloides												
86	532	333	433	33	66	-	25	25	12	-	44	393/300
94	0	-	-	-	-	-	0	0	0	-	0	-/-
99	620	-	140	480	-	80	0	0	0	-	0	-/-
04	600	-	340	260	-	80	0	3	0	-	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)	
Pseudotsuga menziesii													
86	0	-	-	-	-	-	0	0	-	-	0	-/-	
94	0	-	-	-	-	-	0	0	-	-	0	-/-	
99	0	180	-	-	-	-	0	0	-	-	0	-/-	
04	0	180	-	-	-	-	0	0	-	-	0	-/-	
Ribes spp.													
86	0	-	-	-	-	-	0	0	-	-	0	-/-	
94	0	-	-	-	-	-	0	0	-	-	0	-/-	
99	0	-	-	-	-	-	0	0	-	-	0	-/-	
04	20	-	-	20	-	-	0	0	-	-	0	26/11	
Sambucus racemosa													
86	0	-	-	-	-	-	0	0	-	-	0	-/-	
94	0	-	-	-	-	-	0	0	-	-	0	-/-	
99	0	-	-	-	-	-	0	0	-	-	0	-/-	
04	0	-	-	-	-	-	0	0	-	-	0	13/13	
Symphoricarpos oreophilus													
86	33	-	-	33	-	-	100	0	0	-	0	24/2	
94	60	-	-	60	-	-	0	0	0	-	0	23/101	
99	240	-	40	120	80	-	17	0	33	-	17	18/32	
04	360	-	180	160	20	20	56	0	6	-	0	13/28	