

Trend Study 16A-22-07

Study site name: Levan North.

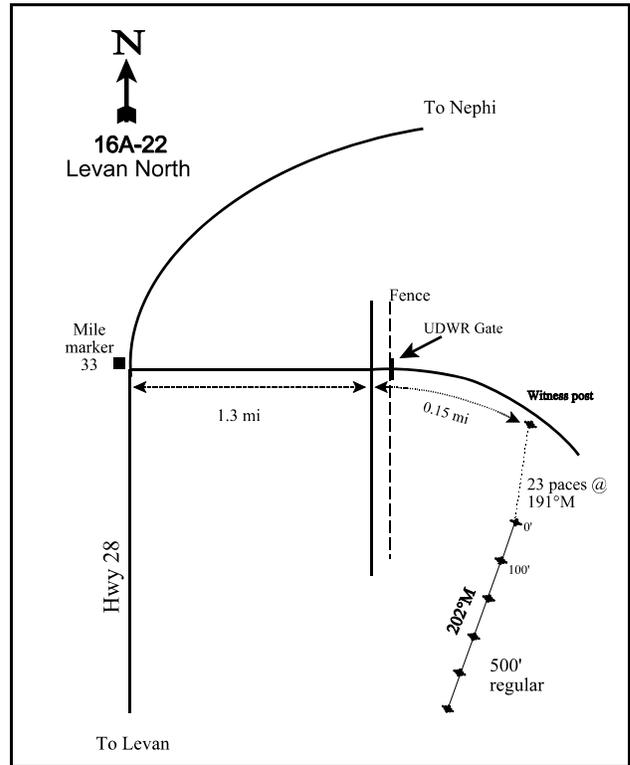
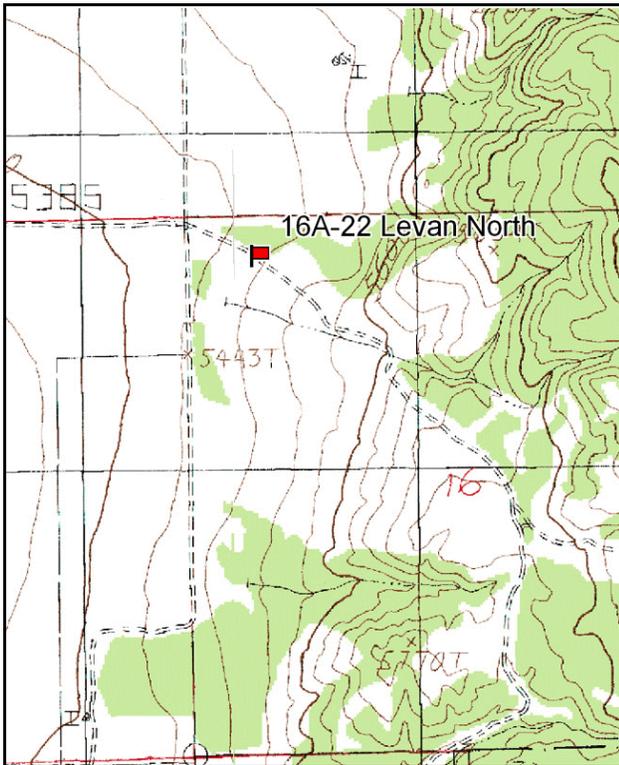
Vegetation type: P-J/Wyoming Big Sagebrush.

Compass bearing: frequency baseline 202 degrees magnetic.

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

LOCATION DESCRIPTION

From Nephi travel south on Highway 28 and turn left at mile marker 33. Travel east for 1.3 miles; cross a road and a UDWR fence that is immediately after the road. Continue east for 0.15 miles to a witness post on the right. From the witness post the 0-foot baseline stake is 23 paces at 191 degrees magnetic. The 0-stake is marked by browse tag #184.



Map Name: Levan

Diagrammatic Sketch

Township 13S, Range 1E, Section 14

GPS: NAD 83, UTM 12S 428445 E 4383802 N

DISCUSSION

Levan North - Trend Study No. 16A-22

Study Information

This study lies 3.4 miles (5.5 km) northeast of Levan within the South Nebo WMA, Levan/Deep Creek Unit. It was established in 2007 to monitor a lop and scatter juniper treatment that took place in the summer of 2007 on an old chaining [elevation: 5,480 feet (1,670 m), slope: 8%, aspect: northwest]. This study was also established to replace the Levan Farm Chaining (16A-16) study. The vegetative composition consists of a mostly decadent stand of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) intermixed with mature Utah juniper (*Juniperus osteosperma*) trees. The area is used by big game as winter range, and grazed by cattle in the summer. Use was estimated at 38 deer days use/acre (93 ddu/ha), 1 elk day use/acre (3 edu/ha), and 12 cattle days use/acre (30 cdu/ha).

Soil

The soil is classified within the Hupp series (USDA-NRCS 2007). The soils in this series are very deep and well-drained, and formed in alluvium from limestone and quartzite. The soil texture is a sandy loam, and the pH is neutral (6.9). Soil phosphorus and potassium are high at 11.9 ppm and 227 ppm, respectively (Tiedemann and Lopez 2004), and soil organic matter is 2.9%. Eighty-three percent of the relative ground cover in 2007 was vegetation and litter, and the soil erosion condition was classified as stable.

Browse

Wyoming big sagebrush provides the majority of the preferred browse. Sagebrush density was 480 plants/acre (1,186 plants/ha), with a canopy cover of only 2%. Eighty-three percent of the sampled plants were decadent, and 75% were classified as dying. The density of dead plants was greater than that of live plants at 1,320 plants/acre (3,262 plants/ha). No young plants were sampled. Almost 80% of the population showed poor vigor, and use was moderate-heavy. Annual leader growth averaged 2.4 inches (6.1 cm).

Antelope bitterbrush (*Purshia tridentata*) and Stansbury cliffrose (*Cowania mexicana* ssp. *stansburiana*) are also present at very low densities. Annual leader growth averaged 3.3 inches (8.3 cm) on bitterbrush and 3 inches (7.6 cm) on cliffrose. Point-centered quarter data estimated juniper density at 38 trees/acre (94 trees/ha). The majority of the sampled trees were over 8 feet (2.4 m) tall, and the average trunk diameter was 8.7 inches (22.1 cm).

Herbaceous Understory

Grasses provided 74% of the total vegetative cover. Total grass cover was 32%. Crested wheatgrass (*Agropyron cristatum*) was the dominant grass and provided 15% cover. Other abundant perennial grasses included bluebunch wheatgrass (*Agropyron spicatum*), Sandberg bluegrass (*Poa secunda*), and bulbous bluegrass (*Poa bulbosa*). Cheatgrass (*Bromus tectorum*) provided almost 30% of the total grass cover.

The forb component of the understory provided little forage, and was dominated by annual species. Total forb cover was 4%. Pale alyssum (*Alyssum alyssoides*) was the most abundant species. Field bindweed (*Convolvulus arvensis*), a noxious weed, was sampled in 9 quadrats and provided 10% of the total forb cover.

2007 PRE-TREATMENT ASSESSMENT

The winter range condition, determined by the Desirable Components Index (DCI), is poor. Preferred browse cover was very low, and the majority of the sagebrush plants were decadent and classified as dying. Reproduction was not evident. There was also a high density of dead plants, and most of the live plants that were sampled displayed poor vigor. Perennial grass cover was high, but annual grasses, particularly cheatgrass, provided over 10% average cover. Perennial forb cover was very low at less than 1%, and it was provided mostly by a noxious weed.

winter range condition (DCI) - poor (22) Low potential scale

HERBACEOUS TRENDS --

Management unit 16A, Study no: 22

Type	Species	Nested Frequency		Average Cover %	
		'07	'07	'07	'07
G	Agropyron cristatum	276		15.13	
G	Agropyron intermedium	14		.25	
G	Agropyron spicatum	80		2.43	
G	Bromus inermis	1		.03	
G	Bromus japonicus (a)	45		.18	
G	Bromus tectorum (a)	352		9.49	
G	Dactylis glomerata	5		.23	
G	Festuca myuros (a)	79		.66	
G	Poa bulbosa	54		1.24	
G	Poa secunda	109		2.59	
Total for Annual Grasses		476		10.34	
Total for Perennial Grasses		539		21.93	
Total for Grasses		1015		32.27	
F	Alyssum alyssoides (a)	302		1.42	
F	Astragalus eurekaensis	7		.01	
F	Camelina microcarpa (a)	4		.00	
F	Convolvulus arvensis	29		.39	
F	Collinsia parviflora (a)	37		.08	
F	Draba sp. (a)	14		.05	
F	Erodium cicutarium (a)	58		.42	
F	Eriogonum racemosum	1		.00	
F	Holosteum umbellatum (a)	140		.83	
F	Lactuca serriola	6		.01	
F	Leucelene ericoides	9		.07	
F	Microsteris gracilis (a)	13		.02	
F	Phlox longifolia	2		.00	
F	Ranunculus testiculatus (a)	64		.22	

Type	Species	Nested Frequency	Average Cover %
		'07	'07
F	Sisymbrium altissimum (a)	1	.00
F	Sphaeralcea coccinea	17	.16
F	Tragopogon dubius	6	.01
Total for Annual Forbs		633	3.06
Total for Perennial Forbs		77	0.67
Total for Forbs		710	3.73

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

BROWSE TRENDS --

Management unit 16A, Study no: 22

Type	Species	Strip Frequency	Average Cover %
		'07	'07
B	Artemisia tridentata wyomingensis	20	1.00
B	Chrysothamnus viscidiflorus viscidiflorus	0	-
B	Cowania mexicana stansburiana	0	-
B	Gutierrezia sarothrae	4	.03
B	Juniperus osteosperma	4	6.55
B	Purshia tridentata	1	-
Total for Browse		29	7.59

CANOPY COVER, LINE INTERCEPT --

Management unit 16A, Study no: 22

Species	Percent Cover
	'07
Artemisia tridentata wyomingensis	1.79
Gutierrezia sarothrae	.16
Juniperus osteosperma	9.66
Purshia tridentata	.15

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 16A, Study no: 22

Species	Average leader growth (in)
	'07
Artemisia tridentata wyomingensis	2.4
Cowania mexicana stansburiana	3
Purshia tridentata	3.2

POINT-QUARTER TREE DATA --
Management unit 16A, Study no: 22

Species	Trees per Acre	Average diameter (in)
	'07	'07
Juniperus osteosperma	38	8.7

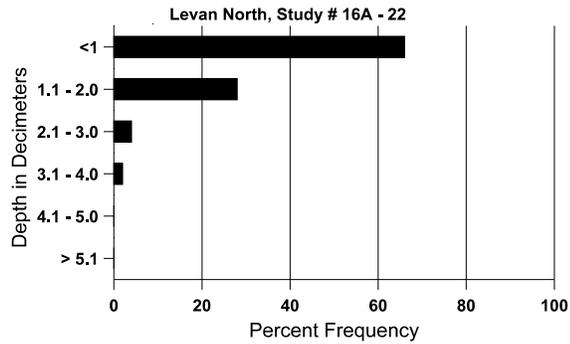
BASIC COVER --
Management unit 16A, Study no: 22

Cover Type	Average Cover %
	'07
Vegetation	45.96
Rock	3.72
Pavement	4.16
Litter	47.31
Cryptogams	2.67
Bare Ground	9.20

SOIL ANALYSIS DATA --
Herd Unit 16A, Study no: 22, Levan North

Effective rooting depth (in)	Temp °F (depth)	pH	Loam			%OM	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
-	-	6.9	67.2	15.5	17.3	2.9	11.9	227.2	.9

Stoniness Index



PELLET GROUP DATA --

Management unit 16A, Study no: 22

Type	Quadrat Frequency	Days use per acre (ha)
	'07	
Rabbit	52	-
Elk	5	1 (3)
Deer	23	38 (93)
Cattle	6	12 (30)

BROWSE CHARACTERISTICS --

Management unit 16A, Study no: 22

		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)
07	480	-	-	80	400	1320	21	54	83	75	79	26/33
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
07	0	-	-	-	-	-	0	0	-	-	0	9/19
<i>Cowania mexicana stansburiana</i>												
07	0	-	-	-	-	-	0	0	-	-	0	63/46
<i>Gutierrezia sarothrae</i>												
07	80	-	40	40	-	-	0	0	-	-	0	8/11
<i>Juniperus osteosperma</i>												
07	80	-	20	60	-	-	0	0	-	-	0	-/-
<i>Purshia tridentata</i>												
07	20	-	-	20	-	-	0	0	-	-	0	27/49