

Trend Study 1-16-06

Study site name: Nut Pine Hills.

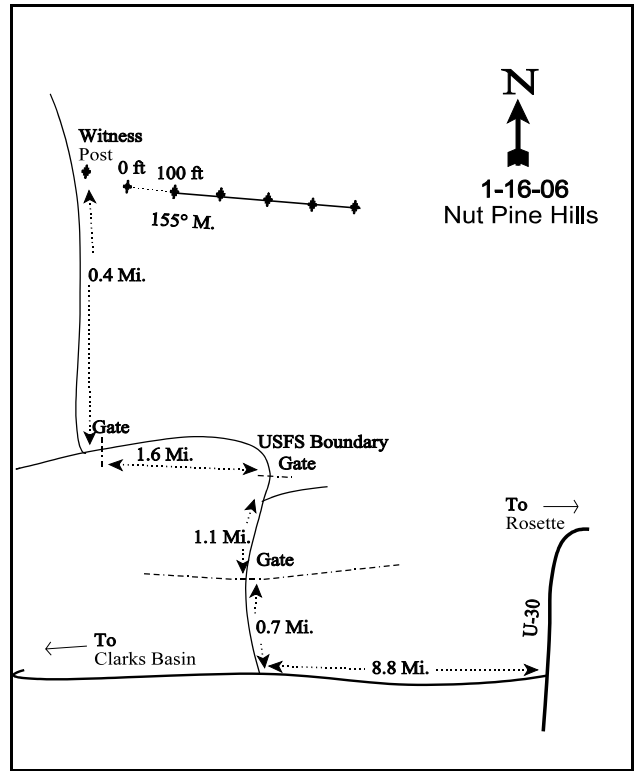
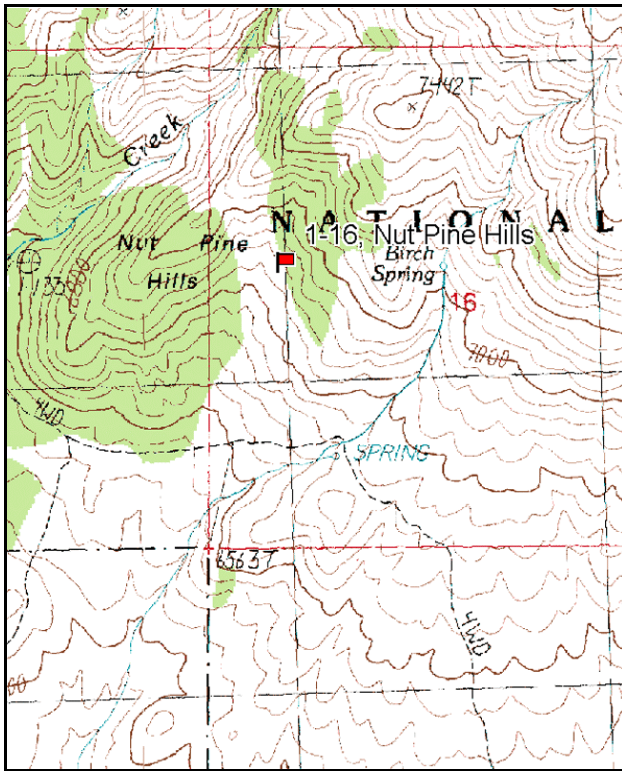
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 155 degrees magnetic.

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

LOCATION DESCRIPTION

From U-30, travel up the road to Clark's Basin for 8.8 miles. Turn right and travel 0.7 miles to a gate. Continue 1.1 miles to a gate marking the forest boundary. Continue 1.6 miles to another gate. Just after the gate turn right and proceed 0.4 miles to a witness post. The zero foot stake is just east of the witness post.



Map Name: Dennis Hill

Diagrammatic Sketch

Township 13N, Range 15W, Section 16

UTM NAD 27, UTM 12T 4636341 N, 285977 E

DISCUSSION

Nut Pine Hills - Trend Study No. 1-16

Study Information

The Nut Pine Hills trend study (elevation: 6,850 feet, slope: 20-23%, aspect: southwest) monitors important deer winter range on the south slope of the Raft River mountains. The area supports a mixed mountain brush community type with scattered pinyon and juniper trees. The area is administered by the Sawtooth National Forest. Deer also use this area in the spring. Deer were flushed from the site when it was being established in 1996. Pellet group frequency of deer was moderately high in 1996. Cattle also use this area as part of the Rosette allotment and Nut Pine Hills pasture. This allotment is grazed by cattle. The pellet group transect in 2001 estimated 38 deer days use/acre and 4 cow days use/acre (94 ddu/ha and 9 cdu/ha). Most of the deer pellet groups were fresh, indicating mostly spring and early summer use. In 2006, 78 deer and 8 cow days use/acre (193 ddu/ha and 20 cdu/ha) were estimated.

Soil

The Fontreen soil series consists of very deep, well drained soils, moderately rapidly permeable soils that formed in alluvium and colluvium from limestone, sandstone, chert, and shale (USDA-NRCS 2006). The soil is moderately deep with a sandy clay loam texture. Reactivity is moderately alkaline (8.1 pH). Phosphorus is marginal (8.5 ppm), which may limit normal plant growth and development (Tiedemann and Lopez 2004). Effective rooting depth was estimated at 19 inches, but depth must be more restricted in some areas where black sagebrush occur. Vegetation and litter cover are abundant which adequately protect the soil from serious erosion. Pavement is concentrated on the surface in isolated open interspaces. Rocks are common throughout the profile. A soil condition class rating classified erosion as slight in 2006.

Browse

The site is dominated by browse species. Sixteen shrub or tree species have been sampled. Key species include: serviceberry, mountain big sagebrush, and antelope bitterbrush. Serviceberry density has averaged about 700 plants/acre and 6% cover since 1996. Vigor has been good and percent decadence moderate. Utilization has been light to moderate. Mountain big sagebrush density has increased from 1,140 plants/acre in 1996 to 1,640 plants/acre in 2006 and cover has increased from 4% to 7%. Utilization has been light and vigor good. Antelope bitterbrush is abundant and accounted for about a third of the shrub cover. Bitterbrush density has changed very little since 1996 with an average of 1,400 plants/acre and 13% cover.. Utilization has been mostly moderate to heavy, yet vigor has been good and percent decadence low.

Snowberry is also very abundant and has provided about a third of the browse cover. Utilization of less preferred shrubs has been light. Other shrubs found include small numbers of black sagebrush, threadleaf rubber rabbitbrush, stickyleaf low rabbitbrush, slenderbush eriogonum, broom snakeweed, chokecherry, wax currant, woods rose and gray horsebrush. A few tree size and high-lined curlleaf mahogany are found in the area, but have not been sampled. Juniper cover was 4% in 2006, estimated with the line intercept method. Juniper density increased from 49 trees/acre in 2001 to 81 trees/acre in 2006.

Herbaceous Understory

Grasses are diverse with nine perennial species sampled. The more abundant species include: thickspike wheatgrass, bluebunch wheatgrass, and Sandberg bluegrass. Annual cheatgrass brome is present but only in very small numbers, producing <1% cover. Forbs are also abundant with 34 perennial and nine annual species sampled. Several useful species are present, including: paintbrush, sulfur eriogonum, lambstongue groundsel, and lobeleaf groundsel. These and other forbs provide useful spring forage for big game.

2001 TREND ASSESSMENT

The browse component continues to dominate the site and provides useful forage for wintering big game. The three key species, serviceberry, mountain big sagebrush, and antelope bitterbrush appear to have stable trends

with good reproductive potentials, relatively low decadence, and good vigor. Utilization of bitterbrush is moderate to heavy but not to the point that it reduces vigor. The herbaceous understory is very diverse with some useful species present. The grass trend is up. The sum of nested frequency for perennial grasses has increased and cheatgrass decreased significantly. The forb trend is down. Perennial forbs decreased. The DCI score increased to excellent with greater grass cover.

1996 winter range condition (DC Index) - good (71) Mid-level potential scale

2001 winter range condition (DC Index) - excellent (86) Mid-level potential scale

browse - stable (0)

grass - up (+2)

forb - down (-2)

2006 TREND ASSESSMENT

The browse trend is slightly up. Serviceberry and bitterbrush have remained stable and healthy. Mountain big sagebrush density has increased 44% since 1996. Sagebrush cover has also increased slightly. Vigor has also been good. The grass trend is stable. There has been no change in perennial grass abundance. Cover was lower in 2006, but this may be due to timing of precipitation. The forb trend is up. Five perennial forb species were significantly more abundant in 2006 than in 2001. Forbs are abundant and robust. The DCI score declined from excellent-good due to lower perennial grass cover.

winter range condition (DC Index) - good (70) Mid-level potential scale

browse - slightly up (+1)

grass - stable (0)

forb - up (+2)

HERBACEOUS TRENDS --

Management unit 01 , Study no: 16

T y p e	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
G	Agropyron dasystachyum	140	186	181	.88	3.29	1.18
G	Agropyron spicatum	141	123	104	2.15	5.65	2.59
G	Bromus tectorum (a)	_b 47	_a 11	_a 2	.16	.19	.00
G	Carex sp.	-	-	2	-	-	.03
G	Elymus cinereus	10	-	3	.04	.15	.03
G	Koeleria cristata	22	10	18	.37	.39	.22
G	Oryzopsis hymenoides	1	6	12	.03	.18	.33
G	Poa fendleriana	_b 97	_a 27	_a 8	1.71	.76	.33
G	Poa pratensis	_a -	_b 43	_b 53	-	.81	.44
G	Poa secunda	_a 21	_b 123	_b 97	.40	3.27	1.62
Total for Annual Grasses		47	11	2	0.15	0.18	0.00
Total for Perennial Grasses		432	518	478	5.61	14.51	6.81
Total for Grasses		479	529	480	5.76	14.70	6.82
F	Achillea millefolium	-	6	-	-	.06	-
F	Agoseris glauca	_b 68	_a 5	_b 46	.15	.02	.34
F	Antennaria rosea	-	-	4	-	-	.01
F	Arabis sp.	5	-	8	.01	-	.02
F	Astragalus beckwithii	4	3	4	.00	.06	.00

Type	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
		F	<i>Astragalus newberryi</i>	6	-	-	.01
F	<i>Aster</i> sp.	_A 17	_b 38	_a 12	.10	.44	.02
F	<i>Astragalus utahensis</i>	3	-	2	.03	-	.00
F	<i>Castilleja linariaefolia</i>	4	-	-	.03	-	-
F	<i>Calochortus nuttallii</i>	3	-	4	.00	-	.00
F	<i>Chaenactis douglasii</i>	_b 22	_a 8	_a 1	.06	.01	.00
F	<i>Cirsium</i> sp.	8	10	13	.06	.22	.19
F	<i>Collomia linearis</i> (a)	_b 16	_b 22	_a -	.03	.03	-
F	<i>Comandra pallida</i>	_b 105	_a 57	_a 58	.49	.61	1.00
F	<i>Collinsia parviflora</i> (a)	_c 131	_b 59	_a 17	.43	.38	.03
F	<i>Crepis acuminata</i>	31	17	24	.12	.53	.56
F	<i>Cryptantha</i> sp.	_B 22	_a 5	_{ab} 9	.22	.01	.02
F	<i>Delphinium nuttallianum</i>	9	2	-	.04	.00	-
F	<i>Descurainia pinnata</i> (a)	_b 16	_a -	_a -	.05	-	-
F	<i>Epilobium brachycarpum</i> (a)	-	-	2	-	-	.00
F	<i>Erysimum asperum</i>	3	-	9	.01	-	.04
F	<i>Eriogonum cernuum</i> (a)	10	-	-	.02	-	-
F	<i>Erigeron pumilus</i>	1	-	-	.00	-	-
F	<i>Eriogonum umbellatum</i>	46	27	37	1.25	.87	1.27
F	<i>Haplopappus acaulis</i>	16	12	17	.37	.18	.14
F	<i>Hackelia patens</i>	_b 69	_a 15	_b 58	.91	.17	2.07
F	<i>Ipomopsis congesta</i>	_b 21	_a -	_b 20	.09	-	.18
F	<i>Lesquerella</i> sp.	5	-	-	.01	-	-
F	<i>Linum lewisii</i>	-	-	3	-	-	.04
F	<i>Lithospermum ruderale</i>	25	20	21	.41	.69	1.04
F	<i>Lomatium</i> sp.	21	16	13	.41	.40	.46
F	<i>Microsteris gracilis</i> (a)	_a -	_b 26	_a -	-	.05	-
F	<i>Penstemon</i> sp.	-	-	4	-	-	.03
F	<i>Phlox austromontana</i>	44	33	33	.30	.61	.36
F	<i>Phlox longifolia</i>	_b 86	_a 31	_a 18	.18	.07	.04
F	<i>Polygonum douglasii</i> (a)	7	2	2	.01	.00	.00
F	<i>Ranunculus testiculatus</i> (a)	-	1	-	-	.00	-
F	<i>Senecio integerrimus</i>	20	8	9	.40	.36	.07
F	<i>Senecio multilobatus</i>	_b 59	_a 19	_b 53	.29	.22	.71
F	<i>Stellaria</i> sp.	-	-	3	-	-	.01
F	<i>Taraxacum officinale</i>	5	4	3	.00	.03	.03

Type	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
F	Unknown forb-annual (a)	_b 8	_a -	_a -	.02	-	-
F	Viola sp.	_{ab} 21	_a 6	_b 29	.07	.02	.19
F	Zigadenus paniculatus	-	2	-	-	.03	-
Total for Annual Forbs		188	110	21	0.56	0.47	0.04
Total for Perennial Forbs		749	344	515	6.09	5.67	8.94
Total for Forbs		937	454	536	6.65	6.14	8.98

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

BROWSE TRENDS --

Management unit 01 , Study no: 16

Type	Species	Strip Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
B	Amelanchier utahensis	32	28	24	3.92	7.59	5.63
B	Artemisia nova	12	6	5	.01	.03	.15
B	Artemisia tridentata vaseyana	41	45	45	4.09	6.84	7.25
B	Chrysothamnus nauseosus consimilis	5	3	4	.00	.38	.41
B	Chrysothamnus viscidiflorus lanceolatus	45	36	39	1.56	1.24	1.77
B	Eriogonum microthecum	23	15	15	.32	.24	.49
B	Gutierrezia sarothrae	11	4	3	.12	.15	-
B	Juniperus osteosperma	4	2	5	.71	.71	1.41
B	Mahonia repens	4	4	5	.04	.04	.18
B	Opuntia sp.	3	1	3	.03	-	-
B	Prunus virginiana	2	0	2	-	-	-
B	Purshia tridentata	48	46	44	11.98	16.20	12.44
B	Ribes cereum cereum	0	0	1	-	-	-
B	Rosa woodsii	2	3	2	-	.30	.33
B	Symphoricarpos oreophilus	72	69	70	13.26	16.46	12.03
B	Tetradymia canescens	34	33	26	.67	.60	.53
Total for Browse		338	295	293	36.76	50.82	42.65

CANOPY COVER, LINE INTERCEPT --
 Management unit 01 , Study no: 16

Species	Percent Cover	
	'01	'06
<i>Amelanchier utahensis</i>	-	6.23
<i>Artemisia nova</i>	-	.03
<i>Artemisia tridentata vaseyana</i>	-	9.19
<i>Chrysothamnus nauseosus consimilis</i>	-	.76
<i>Chrysothamnus viscidiflorus lanceolatus</i>	-	2.46
<i>Juniperus osteosperma</i>	3.40	4.11
<i>Pinus monophylla</i>	.40	.53
<i>Purshia tridentata</i>	-	18.08
<i>Rosa woodsii</i>	-	.05
<i>Symphoricarpos oreophilus</i>	-	18.51
<i>Tetradymia canescens</i>	-	.63

KEY BROWSE ANNUAL LEADER GROWTH --
 Management unit 01 , Study no: 16

Species	Average leader growth (in)	
	'01	'06
<i>Amelanchier utahensis</i>	1.0	1.6
<i>Artemisia tridentata vaseyana</i>	1.5	1.4
<i>Purshia tridentata</i>	1.0	2.9

POINT-QUARTER TREE DATA --
 Management unit 01 , Study no: 16

Species	Trees per Acre	
	'01	'06
<i>Juniperus osteosperma</i>	49	84
<i>Pinus monophylla</i>	78	21

Average diameter (in)	
'01	'06
6.3	10.1
8.5	11.7

BASIC COVER --

Management unit 01 , Study no: 16

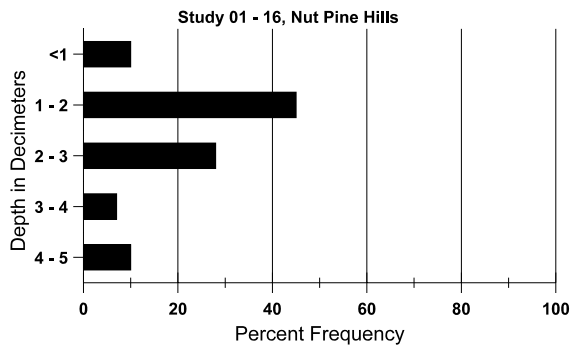
Cover Type	Average Cover %		
	'96	'01	'06
Vegetation	43.29	62.09	53.11
Rock	2.98	1.24	1.80
Pavement	3.84	6.13	13.86
Litter	45.58	47.65	41.45
Cryptogams	.13	.03	.09
Bare Ground	12.81	13.35	12.71

SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 16, Nut Pine Hills

Effective rooting depth (in)	Temp °F (depth)	PH	Sandy clay loam			%OM	PPM P	PPM K	dS/m
			%sand	%silt	%clay				
19.1	51.4 (17.6)	8.1	50.9	25.1	24.0	2.1	8.5	544.0	1.1

Stoniness Index



PELLET GROUP DATA --

Management unit 01 , Study no: 16

Type	Quadrat Frequency		
	'96	'01	'06
Rabbit	2	3	20
Deer	22	9	18
Cattle	6	2	4

Days use per acre (ha)	
'01	'06
-	-
38 (94)	78 (193)
4 (9)	8 (20)

BROWSE CHARACTERISTICS --
Management unit 01 , Study no: 16

		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)
Amelanchier utahensis												
96	860	-	220	560	80	80	40	14	9	-	0	36/42
01	660	20	120	420	120	140	12	24	18	6	6	38/42
06	680	40	180	320	180	140	9	6	26	3	3	44/46
Artemisia nova												
96	320	-	60	120	140	120	38	38	44	13	13	7/13
01	220	-	40	160	20	-	0	0	9	-	0	7/12
06	160	-	-	120	40	-	0	0	25	-	0	5/11
Artemisia tridentata vaseyana												
96	1140	20	140	960	40	280	19	4	4	-	0	19/29
01	1480	20	80	1300	100	140	8	0	7	-	1	24/29
06	1640	20	80	1380	180	100	16	0	11	6	6	23/34
Chrysothamnus nauseosus consimilis												
96	120	-	20	40	60	-	0	0	50	33	33	26/33
01	60	-	-	-	60	-	0	0	100	67	67	29/49
06	120	-	20	60	40	-	0	0	33	33	33	31/37
Chrysothamnus viscidiflorus lanceolatus												
96	1480	80	260	1160	60	-	3	0	4	1	1	16/20
01	1160	-	20	1100	40	-	0	0	3	3	3	14/18
06	1200	-	40	1120	40	20	0	0	3	2	2	14/22
Eriogonum microthecum												
96	660	20	100	560	-	-	0	0	0	-	0	5/8
01	440	-	60	340	40	-	0	0	9	-	0	5/9
06	340	-	-	260	80	-	6	0	24	6	6	6/11
Gutierrezia sarothrae												
96	1180	180	400	760	20	20	0	0	2	-	0	4/4
01	380	-	160	220	-	60	0	0	0	-	0	3/5
06	80	-	-	60	20	-	0	0	25	25	25	6/10
Juniperus osteosperma												
96	140	-	80	60	-	-	0	0	-	-	0	-/-
01	40	20	20	20	-	-	0	0	-	-	0	-/-
06	100	20	40	60	-	-	0	0	-	-	0	-/-

		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)
Mahonia repens												
96	360	-	360	-	-	-	0	0	-	-	0	3/3
01	180	-	80	100	-	-	0	0	-	-	0	2/2
06	260	-	-	260	-	-	0	0	-	-	0	2/4
Opuntia sp.												
96	100	-	-	80	20	-	0	0	20	-	0	5/16
01	20	-	-	20	-	-	0	0	0	-	0	4/10
06	60	-	-	60	-	-	0	0	0	-	0	4/15
Prunus virginiana												
96	40	-	40	-	-	-	0	0	0	-	0	-/-
01	0	-	-	-	-	-	0	0	0	-	0	-/-
06	60	-	-	20	40	-	0	0	67	-	0	-/-
Purshia tridentata												
96	1480	100	120	1320	40	60	39	55	3	1	1	23/49
01	1440	40	100	1260	80	100	21	35	6	3	4	25/48
06	1320	80	80	1120	120	100	44	20	9	6	6	29/58
Ribes cereum cereum												
96	0	-	-	-	-	-	0	0	-	-	0	4/62
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	20	-	-	20	-	-	0	0	-	-	0	55/61
Rosa woodsii												
96	60	20	20	40	-	-	0	100	-	-	0	10/4
01	80	-	20	60	-	-	0	0	-	-	0	17/18
06	80	-	-	80	-	-	0	0	-	-	0	29/10
Symphoricarpos oreophilus												
96	4840	80	1100	3740	-	-	7	0	0	-	0	18/29
01	3980	-	640	3280	60	-	0	0	2	-	0	19/32
06	5700	-	1380	4140	180	-	0	3	3	2	2	19/29
Tetradymia canescens												
96	1040	20	280	700	60	-	0	0	6	-	0	8/11
01	1020	-	80	920	20	20	0	0	2	-	0	9/10
06	720	-	100	340	280	20	0	0	39	11	11	11/16