

Trend Study 1-22-06

Study site name: Dake Pass .

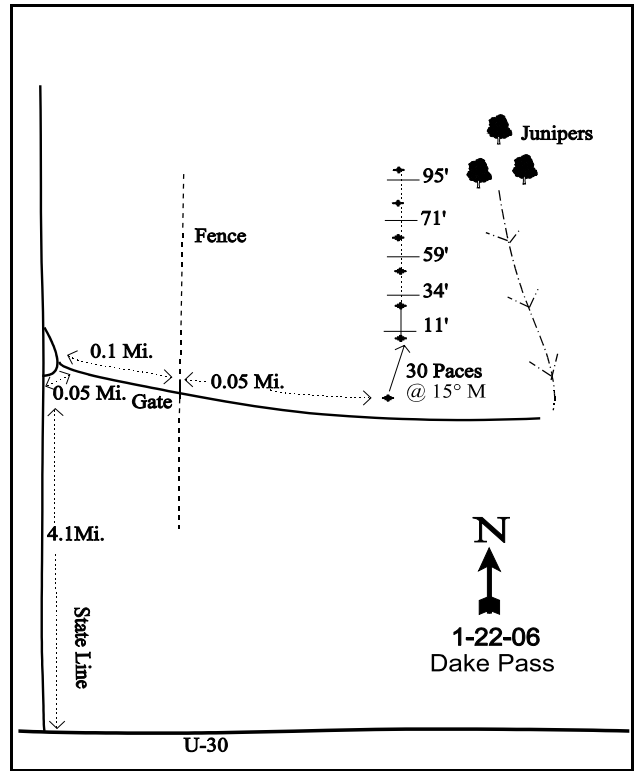
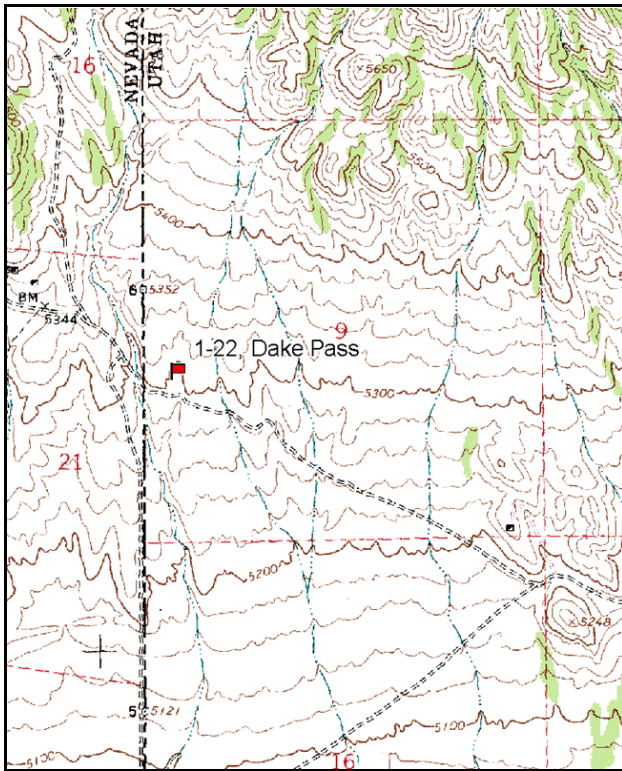
Vegetation type: Black Sagebrush .

Compass bearing: frequency baseline 0 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 at the Utah/Nevada state line, near mile marker 0, turn right and travel 4.1 miles to an intersection. Take a right at the intersection and travel 0.15 to a gate. From the gate drive 0.05 miles to a witness post on the left hand side of the road. From the witness post walk 30 paces at 15 degrees magnetic to the 0-foot baseline stake. The baseline runs 0 degrees magnetic.



Map Name: Jackson Spring

Diagrammatic Sketch

Township 8N, Range 19W, Section 9

UTM NAD 27, UTM 12T 4590307 N, 246104 E

DISCUSSION

Dake Pass - Trend Study No. 1-22

Study Information

The Dake Pass study (elevation: 5,300 feet, slope: 3-5%, aspect: south) samples a salt desert shrub community just west of the Utah-Nevada state line. The site is characterized by gentle low ridges dominated by black sagebrush and shallow drainage depressions with deeper soils. This area is utilized by deer and elk as winter range. It is also an important sage grouse strutting area. A large number of sage grouse droppings were noted on the next ridge to the east in 2001. Deer and elk pellets were encountered when the transect was setup, but more appeared to be outside of the sampled area. This area is within the U & I allotment. It is grazed by cattle from November 1 to March 31. A pellet group transect read in 2001 estimated 19 elk days use/acre (46 edu/ha). In 2006, 12 elk and 9 cow days use/acre (30 edu/ha and 23 cdu/ha) were sampled. An estimate of 26 sage grouse pellet groups/acre were also sampled.

Soil

The Tosser soil series consists of very deep, well drained, moderately rapidly permeable soils formed in mixed alluvium from limestone, rhyolite and chert on dissected fan terraces, bars and beach plains (USDA-NRCS 2006). The effective rooting depth is only 10 inches. The soil is light colored, with considerable surface rock and pavement cover. Soil texture is a clay loam with a moderately alkaline soil reaction (8.2 pH). Phosphorus is marginal at 9.3 ppm, which may limit normal plant growth and development (Tiedemann and Lopez 2004). There are large open areas between individual shrubs, but little bare soil is exposed due to the abundance of pavement-rock cover (~30%). The soil profile is rocky throughout, yet no hardpan was noted. Aside from the gradual movement of soil from the low ridges, there is no accelerated erosion occurring and the erosion condition class was determined as stable in 2001. In 2006, erosion was classified as slight due to some surface litter movement, pedestalling, and a few small rills.

Browse

Black sagebrush is the most abundant species, but there are several other palatable browse species including: bud sagebrush, shadscale, winterfat, Nevada ephedra, and spiny hopsage. All provide additional forage for wintering big game. Black sagebrush cover has been about 13% on average, which is more than half of the total shrub cover. Density has fluctuated slightly with each reading (7,580 plant/acre in 1996, 8,360 in 2001, and 6,920 in 2006), but there have been no major changes. Utilization was mostly moderate in 1996 and mostly light in 2001 and 2006. Decadence has been moderate at 33% in 1996 and 27% in both 2001 and 2006. Recruitment has been fair at each reading. Seedlings were extremely abundant in 2006. The average annual leader growth was poor in 2001 (0.6 inches), but was higher in 2006 (1.1 inches).

Other preferred browse occur at much lower densities. Bud sagebrush density has decreased since the establishment of the study in 1996 (1,080 plants/acre in 1996, 780 in 2001, and 400 in 2006). Shadscale density has also declined from 4,800 plants/acre in 1996 to 3,200 plants/acre in 2006. Utilization has been light. Winterfat density has increased during the same time period (60 plants/acre in 1996 to 1,000 in 2006). Ephedra and spiny hopsage occur infrequently. Other less desirable shrubs include narrowleaf low rabbitbrush and Nuttall horsebrush.

Herbaceous Understory

The herbaceous understory is not particularly abundant. Only three perennial grass species have been sampled: Indian ricegrass, Sandberg bluegrass, and bottlebrush squirreltail. Squirreltail nested frequency significantly declined in 2006. Cheatgrass was sampled in 8% of the quadrats in 1996; this doubled to 16% in 2001. In 2006, quadrat frequency increased to 99% and cheatgrass cover increased from less than 1% to nearly 13%. Cheatgrass nested frequency increased significantly in both 2001 and 2006. This high amount of cheatgrass could lead to a devastating fire or poor reproduction of shrubs. Forbs are diverse, however most have low forage value. Hoods phlox is the most abundant forb.

2001 TREND ASSESSMENT

The key browse is black sagebrush. It appears to have a stable population even with the 9% increase in its population. This is offset by moderately high decadence (27%). There are adequate numbers of young. The other preferred browse species, which are a minor component of the browse population, also appear to have stable populations. The grass trend is stable. Perennial grass frequency was unchanged. Cheatgrass increased, but is still very sparse. The forb trend is down. Nested frequency was significantly lower for four perennial species. The DCI score has remained unchanged.

1996 winter range condition (DC Index) - good (63) Lower potential scale
2001 winter range condition (DC Index) - good (57) Lower potential scale
browse - stable (0) grass - stable (0) forb - down (-2)

2006 TREND ASSESSMENT

The browse trend is slightly down. Black sagebrush density declined 17%, but was only about 6% lower than the 1996 density. Percent decadence is moderate and has not changed. Bud sage, shadscale, and spiny hopsage have all had declines in density. Winterfat is the only preferred species that has been increasing. Drought conditions and competition with cheatgrass may be causes for these declines. The grass trend is down. Nested frequency for perennial grasses declined 15%, while cheatgrass increased significantly. Cheatgrass is now very abundant. The forb trend is up. Nested frequency increased 36% in 2006. The DCI score decreased due to the increase of cheatgrass.

winter range condition (DC Index) - fair-good (46) Lower potential scale
browse - slightly down (-1) grass - down (-2) forb - up (+2)

HERBACEOUS TRENDS --
 Management unit 01 , Study no: 22

T y p e	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
G	Bromus tectorum (a)	_a 27	_b 51	_c 406	.04	.20	12.83
G	Oryzopsis hymenoides	49	63	57	.64	2.33	1.38
G	Poa secunda	136	118	133	2.87	2.54	3.89
G	Sitanion hystrix	_b 129	_b 126	_a 71	2.46	3.64	1.14
Total for Annual Grasses		27	51	406	0.04	0.20	12.83
Total for Perennial Grasses		314	307	261	5.98	8.52	6.42
Total for Grasses		341	358	667	6.02	8.72	19.26
F	Agoseris glauca	3	-	-	.00	-	-
F	Arabis sp.	_b 10	_a -	_a -	.02	-	-
F	Astragalus sp.	-	-	1	-	-	.00
F	Astragalus utahensis	_b 12	_a -	_{ab} 4	.03	-	.06
F	Caulanthus crassicaulis	4	-	1	.38	-	.00
F	Collinsia parviflora (a)	14	-	5	.02	-	.01
F	Cryptantha sp.	_b 33	_a -	_b 27	.42	-	.09
F	Cymopterus sp.	-	1	-	-	.00	-
F	Descurainia pinnata (a)	_a 2	_a 15	_b 33	.00	.04	.08

T y p e	Species	Nested Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
F	Erigeron sp.	-	-	1	-	-	.00
F	Eriogonum ovalifolium	1	-	-	.00	-	-
F	Erigeron pumilus	2	-	-	.00	-	-
F	Gilia sp. (a)	_a 5	_a 3	_b 21	.01	.00	.05
F	Halogeton glomeratus (a)	1	-	-	.00	-	-
F	Lappula occidentalis (a)	15	4	13	.05	.01	.02
F	Mentzelia albicaulis (a)	6	-	1	.03	-	.00
F	Navarretia intertexta (a)	7	-	3	.01	-	.00
F	Phlox hoodii	_b 107	_a 50	_a 49	2.47	.55	.62
F	Phlox longifolia	_a 27	_{ab} 51	_b 57	.15	.22	.34
F	Sphaeralcea grossulariifolia	1	1	-	.03	.00	-
F	Townsendia sp.	3	-	-	.01	-	-
Total for Annual Forbs		50	22	76	0.14	0.05	0.17
Total for Perennial Forbs		203	103	140	3.55	0.78	1.13
Total for Forbs		253	125	216	3.70	0.84	1.31

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

BROWSE TRENDS --

Management unit 01 , Study no: 22

T y p e	Species	Strip Frequency			Average Cover %		
		'96	'01	'06	'96	'01	'06
B	Artemisia nova	87	92	88	14.13	13.55	12.41
B	Artemisia spinescens	19	15	8	.55	.19	.45
B	Atriplex confertifolia	56	53	51	4.50	2.28	2.72
B	Ceratoides lanata	3	13	16	.03	.27	.65
B	Chrysothamnus viscidiflorus stenophyllus	35	39	36	1.76	1.27	2.41
B	Ephedra nevadensis	9	8	10	.21	.64	.63
B	Grayia spinosa	10	9	9	2.70	2.33	2.45
B	Kochia americana	17	0	0	.75	-	-
B	Pediocactus simpsonii	3	2	3	.00	.00	-
B	Tetradymia nuttallii	5	2	1	.30	.06	-
Total for Browse		244	233	222	24.95	20.63	21.74

CANOPY COVER, LINE INTERCEPT --
Management unit 01 , Study no: 22

Species	Percent Cover
	'06
Artemisia nova	12.31
Artemisia spinescens	.06
Atriplex confertifolia	4.03
Ceratoides lanata	.40
Chrysothamnus viscidiflorus stenophyllus	2.18
Ephedra nevadensis	.56
Grayia spinosa	2.18
Tetradymia nuttallii	.30

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 01 , Study no: 22

Species	Average leader growth (in)	
Artemisia nova	0.6	1.1
Ceratoides lanata	-	3.2

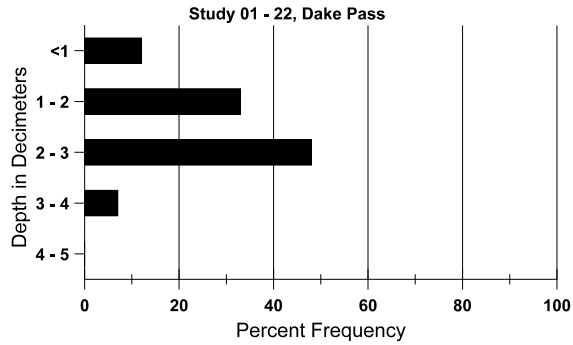
BASIC COVER --
Management unit 01 , Study no: 22

Cover Type	Average Cover %		
	'96	'01	'06
Vegetation	33.97	32.38	38.72
Rock	5.53	2.96	3.77
Pavement	27.12	30.03	27.08
Litter	33.09	17.84	28.57
Cryptogams	2.29	3.89	1.95
Bare Ground	4.20	17.40	13.35

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 22, Dake Pass

Effective rooting depth (in)	Temp °F (depth)	PH	Clay loam			%0M	PPM P	PPM K	dS/m
			%sand	%silt	%clay				
10.2	60.8 (10.6)	8.2	42.7	28.0	29.3	1.8	9.3	380.8	0.8

Stoniness Index



PELLET GROUP DATA --

Management unit 01 , Study no: 22

Type	Quadrat Frequency		
	'96	'01	'06
Rabbit	-	-	13
Elk	1	9	12
Deer	1	-	1
Cattle	-	-	1

Days use per acre (ha)	
'01	'06
-	-
19 (46)	12 (30)
-	-
-	9 (23)

BROWSE CHARACTERISTICS --

Management unit 01 , 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)
Artemisia nova												
96	7580	5660	800	4300	2480	1720	55	21	33	7	7	11/23
01	8360	360	1280	4800	2280	1620	2	.95	27	12	12	9/18
06	6920	113560	520	4520	1880	2520	5	0	27	16	16	10/19
Artemisia spinescens												
96	1080	20	260	540	280	20	11	24	26	19	22	5/13
01	780	-	60	480	240	60	13	18	31	18	18	6/8
06	400	20	-	380	20	20	35	5	5	-	0	5/8
Artemisia tridentata wyomingensis												
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	30/43

		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>Atriplex confertifolia</i>												
96	4800	1660	1400	2840	560	260	7	8	12	2	3	9/15
01	3480	20	800	2100	580	320	0	0	17	5	5	7/12
06	3200	100	460	2500	240	80	1	0	8	3	3	9/16
<i>Ceratoides lanata</i>												
96	60	-	20	40	-	-	0	67	0	-	0	7/12
01	680	20	180	500	-	-	3	0	0	-	0	5/8
06	1000	40	160	800	40	-	30	60	4	-	0	7/10
<i>Chrysothamnus viscidiflorus stenophyllus</i>												
96	1120	400	40	1000	80	20	7	0	7	-	2	10/16
01	1240	40	160	900	180	-	0	0	15	8	8	9/16
06	1440	780	40	1280	120	40	3	3	8	1	1	10/15
<i>Ephedra nevadensis</i>												
96	280	-	60	220	-	-	29	36	0	-	0	18/29
01	160	-	-	120	40	-	50	50	25	-	0	15/25
06	260	-	20	160	80	-	0	69	31	8	31	15/23
<i>Grayia spinosa</i>												
96	260	-	-	200	60	20	15	8	23	8	31	23/34
01	380	-	-	280	100	-	0	0	26	-	0	16/25
06	320	-	-	260	60	20	13	0	19	13	13	20/29
<i>Kochia americana</i>												
96	1360	40	60	1280	20	-	13	0	1	1	1	6/11
01	0	-	-	-	-	-	0	0	0	-	0	-/-
06	0	-	-	-	-	-	0	0	0	-	0	-/-
<i>Leptodactylon pungens</i>												
96	0	-	-	-	-	-	0	0	-	-	0	-/-
01	0	-	-	-	-	-	0	0	-	-	0	-/-
06	0	-	-	-	-	-	0	0	-	-	0	7/14
<i>Opuntia sp.</i>												
96	0	-	-	-	-	-	0	0	-	-	0	4/13
01	0	-	-	-	-	-	0	0	-	-	0	5/10
06	0	-	-	-	-	-	0	0	-	-	0	5/16
<i>Pediocactus simpsonii</i>												
96	60	-	-	60	-	-	0	0	-	-	0	0/2
01	40	-	-	40	-	-	0	0	-	-	0	1/2
06	60	-	40	20	-	20	0	0	-	-	0	1/2

		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>Tetradymia nuttallii</i>												
96	140	-	40	60	40	-	0	0	29	14	14	13/18
01	40	-	-	-	40	60	0	0	100	100	100	11/12
06	20	-	-	20	-	40	0	0	0	-	0	14/20