

Trend Study 25A-8-04

Study site name: Lower Dog Flat .

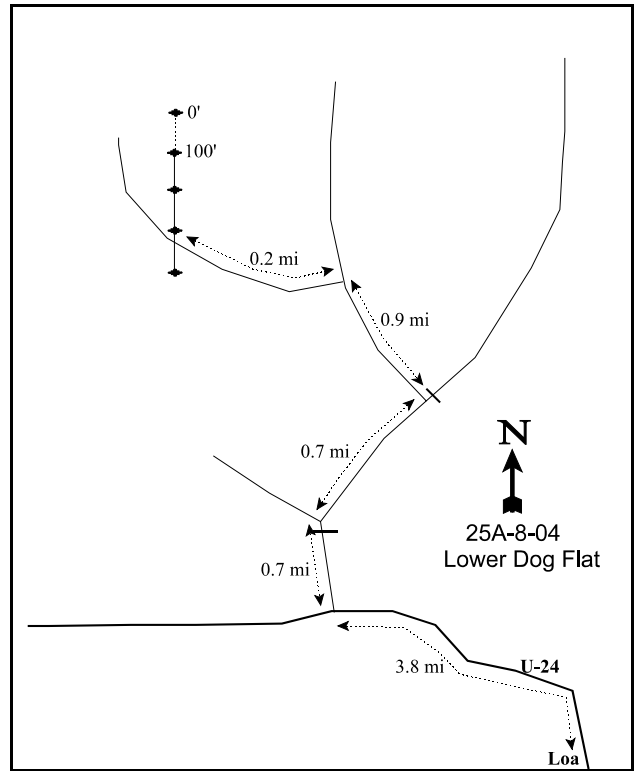
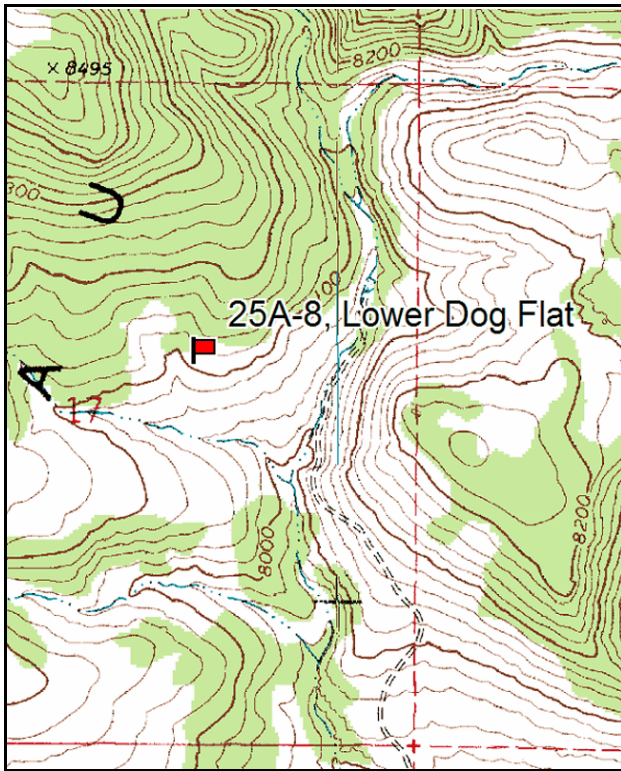
Vegetation type: Chained, Seeded P-J .

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 Loa, go 3.8 miles northwest on U-24 (0.9 miles beyond mile marker 49). Turn right (north) on a gravel road and proceed 0.7 miles. Just beyond the cattle guard turn right and go another 0.7 miles. Turn left just before another cattle guard and go 0.9 miles. At the bottom of the hill, a road forks off to the left, through a wash, up a steep hill and west into the chaining. Take this road 0.2 miles and stop at a 3' rebar post on the right side of the road marking the 300' stake of the baseline. The 0-foot baseline stake is marked by browse tag #7188.



Map Name: Loa, Utah

Diagrammatic Sketch

Township 27S , Range 2E , Section 17

GPS: NAD 27, UTM 12S 4257293 N, 437864 E

## DISCUSSION

### Lower Dog Flat - Trend Study No. 25A-8

The Lower Dog Flat study is located on a 13-15% south facing slope at an elevation of 8,100 feet on the eastern side of the Awapa Plateau. The area was once covered by pinyon pine, but was chained in 1980 effectively eliminating the trees. Most of the mountain big sagebrush survived. Sagebrush and broom snakeweed are now the principal species. Establishment of seeded species was erratic and native species are still the most prominent. The land is managed by the BLM as part of the Seven Mile allotment. Cattle use occurs for approximately 20 days in May under a deferred grazing system. A pellet group transect nearby on Dog Flat indicated 30 deer days use/acre (73 ddu/ha) during the winter of 1984-85. Elk use varies (Jense et al. 1985). Pellet group data from 1999 estimated 17 deer days (43 ddu/ha), 1 elk (3 edu/ha), and 8 cow days use/acre (20 cdu/ha). Pellet group data from 2004 estimated 21 deer (53 ddu/ha), 2 elk (5 edu/ha), and 5 cow days use/acre (13 cdu/ha). Antelope could also use the area. Good thermal and escape cover is provided by thick stands of unchained pinyon about 1/10 mile away.

The soil is a very compact clay loam with a loose surface layer. Soil depth is moderately shallow with an estimated effective rooting depth of almost 11 inches. The soil has a neutral pH (7.3) and is low in phosphorus at 6.7 ppm. Values below 10 ppm may limit normal plant growth and development. A dense hardpan is located at a little more than a foot in depth, which could be limiting for roots of shrubs. Pavement and rock combined provide nearly half of the ground cover. Bare ground was low at 13% in 1999, but increased to 20% in 2004. There is some movement of pavement and soil with pedestaling and puddling apparent, but erosion is not considered serious. The erosion condition class determined soil movement as stable in 2004.

The key browse species is mountain big sagebrush. All of the sagebrush have been classified as mountain big sagebrush, although some of the plants resemble black sagebrush in growth form and foliage color. Density was estimated at 5,332 plants/acre in 1985, 6,266 in 1991, 6,180 in 1999, and 6,100 in 2004. Seedling production and recruitment were very high in 1985, 1991, and 2004, but were at lower levels in 1999. Decadency has been low in the past at 15%, but rose slightly to 23% in 2004. Vigor is mostly good with various use on the sagebrush probably due to different hybrids, but is mostly light to moderate. Broom snakeweed density has varied over the years, usually following precipitation patterns, from 18,466 plants/acre in 1985, to 4,333 in 1991, 20,580 in 1999, and 5,080 in 2004. Other browse species include prickly phlox and pricklypear cactus, which are increasers with moderate to heavy cattle grazing.

Grass composition was initially dominated by smooth brome (highest sum of nested frequency), a valuable seeded species in 1985, but because of a new road that went through the baseline, it was relocated in 1991. This relocation especially affected sum of nested frequency values for crested wheatgrass and smooth brome because of the small size of the sampled area initially. Since then, the sampling design was increased to 500 feet, allowing a much better sampling design for herbaceous species. Blue grama and bottlebrush squirreltail are the dominant species. Blue grama provided 82% of the grass cover in 1999 and 92% in 2004, while bottlebrush squirreltail provided 15% in 1999 and 8% in 2004. Both are increasers that have only fair forage value. Forbs are insignificant and infrequently encountered. Seeded forbs, alfalfa, yellow sweet clover, and small burnet, were infrequent in 1985 and have not been sampled since.

### 1985 APPARENT TREND ASSESSMENT

The soil appears stable with the added litter and the seeded grasses. Reestablishment of the key browse species, mountain big sagebrush, is encouraging but the density of broom snakeweed raises some concerns. This chaining must be protected from heavy grazing for a number of years to insure that this undesirable invader does not further increase in density.

## 1991 TREND ASSESSMENT

The soil appears to still be stable. Percent rock, pavement, and litter have switched around somewhat, but percent bare ground is still about the same. Typically, broom snakeweed dies off in large numbers during a drought, especially an drought. This was no exception on this site with 97% of the population dying off since 1985. The population went from 18,466 to only 4,333 plants/acre. The key species, mountain big sagebrush, increased during this same period by 15%, but much of this could have been because of the relocation of the baseline. The percent of young plants has also improved. It has gone from 27% in 1985 to 40% in 1991. The trend for browse is considered stable. The herbaceous understory is difficult to determine because of the relocation of the baseline which would especially effect nested frequency values for the herbaceous species, but with the examination of the data for the other eight sites, it would still be considered stable.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

## 1999 TREND ASSESSMENT

Trend for soil is stable. Erosion is not serious with the gentle slope and adequate vegetation and litter cover. Trend for browse is stable overall. The key species, mountain big sagebrush, shows a stable trend with the population density, percent decadency and vigor all remaining stable. Use has increased somewhat, but is still mostly light to moderate. Recruitment is moderate at 12%. There was an explosion of broom snakeweed population in 1999. It should be recalled how the population crashed in 1991 with drought. This species was greatly reduced due to the drought in the late 1980's and early 1990's and competition with the sagebrush. However, with improved precipitation in recent years, this species is again increasing. Trend for the herbaceous understory is stable. Perennial grasses are the most abundant group and have increased slightly in sum of nested frequency in 1999. The Desirable Components Index rated this site as fair with a score of 61 due to good shrub cover, moderate perennial grasses, but poor forb cover.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

winter range condition (DC Index) - 61 (fair) Mountain big sagebrush type

## 2004 TREND ASSESSMENT

Trend for soil is stable. Percent bare ground increased slightly, mostly likely due to dry conditions and the decrease of broom snakeweed. Trend for key browse mountain big sagebrush is stable. Density has remained similar to 1999. Percent decadence has increased from 15% in 1999 to 23% in 2004 most likely due to dry conditions. Use has slightly increased from previous years, but still is only moderate and different sagebrush hybrids have different levels of use. Trend for the herbaceous understory is down. Nested frequency and quadrat frequency has decreased on average more than 34%. Blue gramma decreased as well, indicating summer drought. Forbs remain an insignificant source of forage and contribute little to vegetation cover. The Desirable Components Index rated this site as fair with a score of 54 due to good shrub and perennial grass cover, moderate shrub decadency, and poor forb cover.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - down (1)

winter range condition (DC Index) - 54 (fair) Mountain big sagebrush type

HERBACEOUS TRENDS --  
Management unit 25A, Study no: 8

T y p e	Species	Nested Frequency				Average Cover %	
		'85	'91	'99	'04	'99	'04
G	Agropyron cristatum	c43	a-	b14	a-	.07	-
G	Agropyron intermedium	6	-	2	-	.00	-
G	Agropyron spp.	-	7	-	-	-	-
G	Agropyron spicatum	b26	a-	a-	a-	-	-
G	Bouteloua gracilis	a115	b166	c215	bc193	7.15	7.20
G	Bromus inermis	c141	a-	b11	a-	.13	-
G	Koeleria cristata	-	-	4	-	.03	-
G	Oryzopsis hymenoides	-	-	-	4	-	.03
G	Poa fendleriana	2	-	3	-	.00	-
G	Sitanion hystrix	a41	b149	b137	a49	1.27	.61
G	Stipa comata	-	-	3	-	.03	-
G	Stipa pinetorum	b17	ab13	a3	a-	.00	-
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		391	335	392	246	8.71	7.85
Total for Grasses		391	335	392	246	8.71	7.85
F	Antennaria rosea	-	-	-	3	-	.00
F	Androsace septentrionalis (a)	-	-	27	16	.14	.04
F	Arabis demissa	b27	b20	a3	a2	.00	.00
F	Astragalus spp.	3	-	-	4	-	.00
F	Chaenactis douglasii	3	-	-	-	-	-
F	Chenopodium spp. (a)	-	-	-	4	-	.01
F	Cryptantha spp.	b16	b10	a-	ab5	-	.01
F	Descurainia pinnata (a)	-	10	5	6	.01	.01
F	Eriogonum ovalifolium	6	3	3	3	.03	.00
F	Erigeron pumilus	ab16	bc22	c40	a5	.21	.01
F	Machaeranthera canescens	2	-	-	-	-	-
F	Melilotus officinalis	8	-	-	-	-	-
F	Medicago sativa	b16	a-	a-	a-	-	-
F	Penstemon comarrhenus	1	-	-	-	-	-
F	Phlox longifolia	a4	b22	a4	a3	.01	.01

Type	Species	Nested Frequency				Average Cover %	
		'85	'91	'99	'04	'99	'04
F	Sanguisorba minor	3	-	-	-	-	-
F	Salsola pestifer (a)	2	-	-	-	-	-
F	Unknown forb-perennial	11	-	-	-	-	-
Total for Annual Forbs		2	10	32	26	0.15	0.06
Total for Perennial Forbs		116	77	50	25	0.25	0.05
Total for Forbs		118	87	82	51	0.41	0.11

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

#### BROWSE TRENDS --

Management unit 25A, Study no: 8

Type	Species	Strip Frequency		Average Cover %	
		'99	'04	'99	'04
B	Artemisia nova	1	0		
B	Artemisia tridentata vaseyana	93	92	17.72	18.47
B	Gutierrezia sarothrae	84	75	1.20	2.07
B	Leptodactylon pungens	0	0	-	-
B	Opuntia spp.	2	2	-	-
B	Pediocactus simpsonii	0	2	-	.03
B	Pinus edulis	0	0	-	-
Total for Browse		180	171	18.93	20.59

#### CANOPY COVER, LINE INTERCEPT --

Management unit 25A, Study no: 8

Species	Percent Cover
	'04
Artemisia tridentata vaseyana	21.50
Gutierrezia sarothrae	1.70

#### KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 25A, Study no: 8

Species	Average leader growth (in)
	'04
Artemisia tridentata vaseyana	1.7

POINT-QUARTER TREE DATA --  
Management unit 25A, Study no: 8

Species	Trees per Acre	
	'99	'04
Juniperus scopulorum	6	-
Pinus edulis	7	25

Average diameter (in)	
'99	'04
3.3	-
2.5	1.9

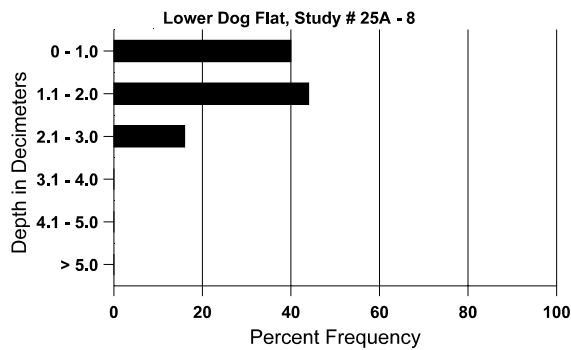
BASIC COVER --  
Management unit 25A, Study no: 8

Cover Type	Average Cover %			
	'85	'91	'99	'04
Vegetation	8.00	7.50	27.16	27.31
Rock	8.00	29.75	24.86	24.52
Pavement	33.00	17.25	24.32	22.38
Litter	37.00	29.75	20.95	22.14
Cryptogams	0	0	.08	.24
Bare Ground	14.00	15.75	13.14	20.08

SOIL ANALYSIS DATA --  
Management unit 25A, Study no: 8, Study Name: Lower Dog Flat

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
10.7	56.3 (10.4)	7.3	43.3	29.4	27.3	2.3	6.7	201.6	0.7

### Stoniness Index



PELLET GROUP DATA --

Management unit 25A, Study no: 8

Type	Quadrat Frequency		Days use per acre (ha)	
	'99	'04	'99	'04
Rabbit	26	43	-	-
Elk	3	1	1 (3)	2 (5)
Deer	10	13	17 (43)	21 (53)
Cattle	4	1	8 (20)	5 (13)

BROWSE CHARACTERISTICS --

Management unit 25A, Study no: 8

		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>Artemisia nova</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
99	20	-	-	20	-	-	100	0	-	-	0	5/9
04	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Artemisia tridentata vaseyana</i>												
85	5332	5333	1466	3066	800	-	1	0	15	-	0	18/17
91	6266	866	2533	2933	800	-	9	0	13	2	5	19/18
99	6180	100	760	4480	940	300	37	17	15	6	6	16/26
04	6100	1840	220	4500	1380	800	49	18	23	8	8	16/28
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
99	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	5/6
<i>Gutierrezia sarothrae</i>												
85	18466	12933	6333	12133	-	-	0	0	0	-	0	9/9
91	4333	12600	1200	2533	600	-	8	0	14	1	5	2/3
99	20580	2800	14080	6420	80	100	0	0	0	.09	.09	6/6
04	5080	640	660	4420	-	60	0	0	0	-	0	6/8
<i>Leptodactylon pungens</i>												
85	133	66	-	133	-	-	0	0	0	-	0	7/7
91	198	-	66	66	66	-	33	0	33	-	0	3/4
99	0	-	-	-	-	-	0	0	0	-	0	-/-
04	0	-	-	-	-	-	0	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)
<b>Opuntia spp.</b>												
85	<b>133</b>	-	133	-	-	-	0	0	-	-	0	-/-
91	<b>66</b>	-	66	-	-	-	0	0	-	-	0	-/-
99	<b>40</b>	-	-	40	-	-	0	0	-	-	0	3/7
04	<b>40</b>	-	-	40	-	-	0	0	-	-	0	3/10
<b>Pediocactus simpsonii</b>												
85	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
04	<b>40</b>	-	20	20	-	-	0	0	-	-	0	-/-
<b>Pinus edulis</b>												
85	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	40	-	-	-	-	0	0	-	-	0	-/-
04	<b>0</b>	20	-	-	-	-	0	0	-	-	0	-/-