

Trend Study 30-57-08

Study site name: Summit Spring.

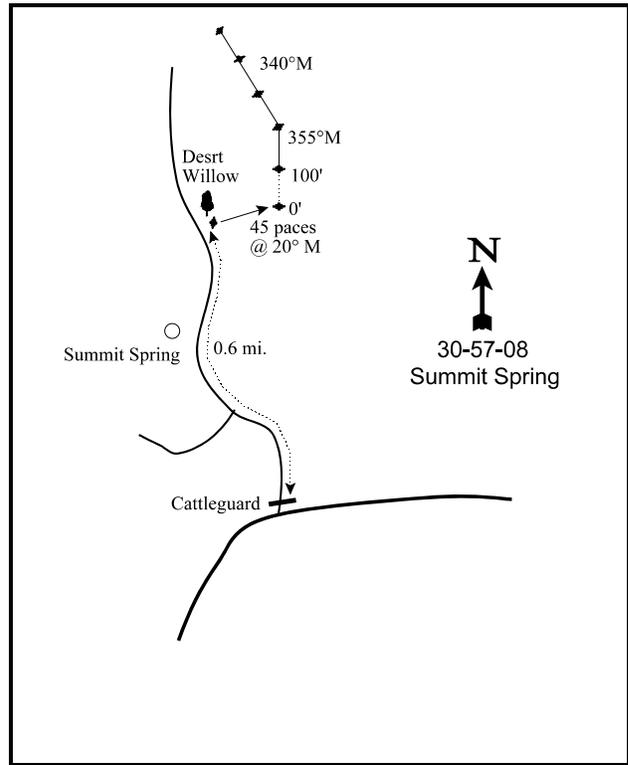
Vegetation type: Black Brush.

Compass bearing: frequency baseline 355 degrees magnetic. (lines 3-5, 340° M).

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

LOCATION DESCRIPTION

From Utah Hill Summit, drive 2.9 miles to the Lytle Ranch turnout, just south of Castle Cliff. Proceed northeast for approximately 1.5 miles to a dirt road on the left (north) that leads to Summit Spring. From the highway, go 0.3 miles to a cattle watering trough and corral. Continue 0.3 miles further to a desert willow on the right (east) side of the road. The 0-foot stake is 45 paces at 20 degrees magnetic from the desert willow. The 0-foot stake has browse tag #494 attached. The study is marked by green steel "T" fence posts approximately 12 to 18 inches in height.



Map Name Jarvis Peak

Diagrammatic Sketch

Township 42S, Range 18W, Section 33

GPS: NAD 83, UTM 12S 244800 E, 4108320 N

DISCUSSION

Summit Spring - Trend Study No. 30-57

Study Information

This trend study was established in 1998, and was placed about one-half mile south of Summit Spring [elevation: 4,300 feet (1,311 m), slope: 25%-35%, aspect: west]. The study samples winter range on the southwest side of the Pine Valley unit, and the transect samples a desert shrub community. This area burned in the 2005 Westside Complex fire and was aerially seeded that winter. This removed quite a bit of browse cover. The area is grazed by cattle, and cattle were present near the site during study site establishment on June 2nd of 1998 and during the 2003 reading on May 20th. A cattle watering trough, which is apparently fed by a pipe from nearby Summit Spring, is found about one-quarter of a mile to the south. Pellet group data estimated a high level of deer use at 61 days use/acre (151 ddu/ha) in 1998 and 76 days use/acre (187 ddu/ha) in 2003. Cow use was estimated at 4 days use/acre (10 cdu/ha) in 1998 and 7 days use/acre (18 cdu/ha) in 2003. Pellet group data from 2008 estimated 44 deer days use/acre (109 ddu/ha) and 1 cow day use/acre (2 cdu/ha). Cattle use is higher on the more level areas and along the ridge top.

Soil

Soil on the site is relatively shallow and very rocky. Effective rooting depth is estimated at nearly 14 inches. Soil texture is a sandy loam which is neutral in reaction (pH 6.9). Relative combined vegetation and litter cover has ranged from 49%-55%, and relative combined rock and pavement cover has ranged from 40%-43% since 1998. Relative bare ground cover has increased from around 5% in 1998 and 2003 to 10% in 2008. Some erosion is apparent due to the steep slope, but is localized and the soil erosion condition was classified as stable in 2003 and 2008.

Browse

The fire in 2004 removed much of the browse component on this site. Prior to the fire, the site supported 12 shrub species, including the preferred browse species Stansbury cliffrose (*Cowania mexicana* ssp. *stansburiana*) and green ephedra (*Ephedra viridis*). Blackbrush (*Coleogyne ramosissima*), slenderbush eriogonum (*Eriogonum microthecum*), and desert peachbush (*Prunus fasciculata*) also provide browse forage. In 2003, cliffrose provided 27% of the browse cover with an estimated density of about 230 plants/acre. Mature plants were large, averaging about 4 feet in height with a crown diameter of over 5 feet. They displayed light to moderate use and good vigor in 1998 with much heavier use in 2003. In 2008, after the fire, cliffrose cover and density had dropped to 1% and 20 plants/acre. Vigor was poor on all plants in 2008 and the entire population was comprised of young plants.

Green ephedra density was estimated at 680 plants/acre in 1998, 500 plants/acre in 2003 and no plants in 2008, after the fire. Blackbrush occurred at a low density of about 200 plants/acre in 2003 but were not found in 2008. They were lightly browsed in 1998 but more heavily utilized in 2003. In 2003 Desert peachbush was found at relatively low densities (180 plants/acre), and contributed 25% of the browse cover. This increased in 2008 to 240 plants/acre and 64% of browse cover. They also displayed light use in 1998, with heavier use in 2003 and 2008. Decadence increased from 0% in 1998 to 33% in 2003 and fell back to 0% in 2008. Recruitment of young plants comprised 25% of the population.

Undesirable shrubs found on the site include threadleaf snakeweed (*Gutierrezia microcephala*), Mojave desertrose or turpentine bush (*Haplopappus laricifolius*), and Datil yucca or banana yucca (*Yucca baccata* ssp. *baccata*). Snakeweed was the most abundant with a density of 1,720 plants/acre in 1998. Drought has caused a 80% drop in density to 340 plants/acre in 2003. After the fire, the density decreased further to 160 plants/acre in 2008. Turpentine bush has remained more stable in density. Narrowleaf goldenweed (*Haplopappus linearifolius*) has also been effected by drought. It declined 74% in density in 2003 from 780 to 200 plants/acre, with no plants sampled in 2008, after the fire.

Herbaceous Understory

The herbaceous understory is very poor and depleted. Cheatgrass (*Bromus tectorum*) totally dominated understory with 99% of the grass cover and 79% of the herbaceous cover in 1998. No perennial grasses were sampled on the site in 1998, however, some Indian ricegrass was observed growing under the protection of shrubs. A few Sandberg bluegrass plants were encountered in 2003. The grass component was even worse in 2008 with grasses providing only 2% of the total vegetation cover. However, cheatgrass nested frequency decreased significantly from 2003 to 2008, and cheatgrass cover decreased from 13% to just over 1%. Perennial grasses are still rare and provide minimal cover. The forb component is also poor with storksbill (*Erodium cicutarium*) providing 97% of the forb cover and 81% of vegetation cover in 2008. Other forbs are rare and only a few perennial species were found. Perennial grass and forb cover combined, provide less than one-half of 1% cover. The only dependable forage source for deer or cattle on this site comes from the shrubs, although cheatgrass and storksbill can be utilized in the spring and fall under the right conditions.

Seed Mix - Westside Complex

Seeded Species	lbs./acre
Pubescent	2.50
Hycrest Wheatgrass	2.50
Indian Ricegrass	0.50
Sideoats Grama	0.50
Galleta	0.25
Thickspike	0.50
Sand Dropseed	0.25
Lewis Flax	0.50
Small Burnet	0.50
Alfalfa	0.50
Yellow	0.50
Bee Plant	0.10
Fourwing Saltbush	0.10
Winterfat	0.25
Blanket Flower	0.10
Forage Kochia	1.00

1998 DESIRABLE COMPONENTS INDEX

winter range condition (DCI) - poor (14) low potential scale

2003 TREND ASSESSMENT

Preferred shrubs, cliffrose, blackbrush, and green ephedra, show heavier use compared to 1998. Vigor has remained good on most plants. The exception is cliffrose where the number of decadent plants has increased but is not of concern for this species as it commonly goes into and out of periods of decadence. Reproduction is poor this year, yet it is not a problem for a long-lived species. The small population of desert peachbush has remained stable in density even though decadence increased from 0% to 33%. One positive aspect of the browse trend is the 80% decline in snakeweed. Trend for the herbaceous understory is stable yet very depleted. The herbaceous understory is still totally dominated by annuals, primarily cheatgrass and storksbill. Cheatgrass has declined significantly in nested frequency and average cover declined from 22% to 13%. However, cheatgrass still accounts for 92% of the grass cover. Storksbill increased significantly in nested frequency and it provides 75% of the total forb cover. There are very few perennial grasses or forbs on the site except for some Sandberg bluegrass (*Poa secunda*) that was encountered in 2003. Due to the lack of perennial herbaceous plants, livestock and wildlife are dependent on shrubs for most of their forage needs.

winter range condition (DCI) - very poor-poor (11) low potential scale

browse - stable (0)

grass - stable (0)

forb - stable (0)

2008 TREND ASSESSMENT

Browse trend is down, due to the fire Cliffrose has decreased in density 92% to 20 plants/acre all of which are young and in poor vigor. Ephedra and blackbrush were not sampled on the site in 2008. Desert peachbush has increased 33% to 240 plants/acre with no decadence.

Herbaceous understory is very poor. Cheatgrass accounts for 73% of grass cover but has decreased greatly in frequency and cover. No other grass species contribute much, but due to the decrease in cheatgrass trend is slightly up. Forbs are dominated by storksbill which accounts for 95% of forbs and 81% of vegetation cover which is great for ground cover but is still an annual species.

winter range condition (DCI) - very poor (0) low potential scale

browse - down (-2)

grass - slightly up (+1)

forb - slightly down (0)

HERBACEOUS TRENDS --

Management unit 30 , Study no: 57

T y p e	Species	Nested Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
G	Aristida purpurea	-	-	2	-	-	.00
G	Bromus rubens (a)	_a -	_c 90	_b 33	-	.73	.26
G	Bromus tectorum (a)	_c 432	_b 375	_a 220	21.97	12.97	1.44
G	Oryzopsis hymenoides	-	-	-	.00	-	-
G	Poa secunda	_a -	_b 17	_a 5	-	.24	.01

Type	Species	Nested Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
		G	Sporobolus cryptandrus	a-	a-	b ¹²	-
G	Stipa lettermani	-	-	4	-	-	.03
G	Vulpia octoflora (a)	a ⁴	b ²⁸	b ³²	.00	.18	.14
Total for Annual Grasses		436	493	285	21.98	13.89	1.84
Total for Perennial Grasses		0	17	23	0.00	0.24	0.12
Total for Grasses		436	510	308	21.98	14.13	1.96
F	Aster sp.	6	-	-	.04	-	-
F	Astragalus sp.	a-	a-	b ¹⁰	-	-	.02
F	Compositae	-	2	-	-	.00	-
F	Cryptantha sp.(a)	-	-	3	-	-	.00
F	Cryptantha sp.	3	-	4	.00	-	.15
F	Descurainia pinnata (a)	a-	b ¹⁴	a ¹	-	.06	.00
F	Draba sp. (a)	8	7	6	.04	.04	.01
F	Erodium cicutarium (a)	a ¹⁶⁴	b ²³⁴	c ⁴³⁰	5.59	5.94	27.18
F	Eriogonum sp.	-	4	2	-	.15	.00
F	Eriophyllum wallacei	-	5	-	-	.03	-
F	Euphorbia sp.	-	-	5	-	-	.15
F	Galium sp.	-	3	-	-	.03	-
F	Gilia sp. (a)	a-	b ⁵⁰	b ³¹	-	.30	.09
F	Lappula occidentalis (a)	a-	b ²⁵	b ³	-	.16	.00
F	Lygodesmia sp.	-	-	3	-	-	.15
F	Microsteris gracilis (a)	2	-	-	.00	-	-
F	Navarretia intertexta (a)	a-	b ⁴¹	b ⁴⁵	-	.52	.18
F	Oenothera sp.	-	1	-	-	.03	-
F	Plantago patagonica (a)	a ¹⁰	b ⁴⁷	b ³²	.05	.16	.13
F	Salvia columbariae	5	-	-	.19	-	-
F	Sedum lanceolatum	a-	b ¹⁷	a-	-	.26	-
F	Unknown forb-annual (a)	a-	b ³³	a-	-	.22	-
Total for Annual Forbs		184	451	551	5.68	7.42	27.61
Total for Perennial Forbs		14	32	24	0.23	0.52	0.48
Total for Forbs		198	483	575	5.92	7.94	28.10

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

BROWSE TRENDS --

Management unit 30 , Study no: 57

T y p e	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	<i>Cowania mexicana stansburiana</i>	8	8	1	5.73	4.96	.03
B	<i>Coleogyne ramosissima</i>	11	8	0	-	2.01	-
B	<i>Echinocereus engelmannii</i>	1	1	1	.03	-	.03
B	<i>Ephedra viridis</i>	17	14	0	.65	1.97	-
B	<i>Eriogonum microthecum</i>	0	0	0	.03	-	-
B	<i>Gutierrezia microrcephala</i>	45	14	6	3.47	.31	.15
B	<i>Haplopappus linearifolius</i>	25	8	0	4.05	.12	-
B	<i>Opuntia sp.</i>	1	1	1	.00	.15	.01
B	<i>Prunus fasciculata</i>	5	9	10	4.85	5.05	2.14
B	<i>Thamnosma montana</i>	21	18	1	.50	1.10	-
B	<i>Yucca baccata baccata</i>	12	15	12	2.24	2.42	1.04
Total for Browse		146	96	32	21.59	18.13	3.41

CANOPY COVER, LINE INTERCEPT --

Management unit 30 , Study no: 57

Species	Percent Cover	
	'03	'08
<i>Cowania mexicana stansburiana</i>	4.58	.20
<i>Coleogyne ramosissima</i>	1.64	-
<i>Ephedra viridis</i>	1.56	-
<i>Gutierrezia microrcephala</i>	.20	.30
<i>Haplopappus linearifolius</i>	1.08	-
<i>Prunus fasciculata</i>	4.88	2.26
<i>Thamnosma montana</i>	2.84	-
<i>Yucca baccata baccata</i>	2.83	.70

BASIC COVER --

Management unit 30 , Study no: 57

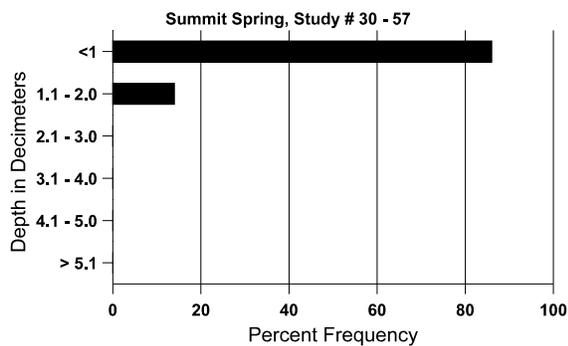
Cover Type	Average Cover %		
	'98	'03	'08
Vegetation	45.40	36.82	31.62
Rock	19.40	18.57	18.63
Pavement	34.65	32.18	25.23
Litter	27.13	24.01	21.71
Cryptogams	0	.06	0
Bare Ground	6.44	6.24	11.21

SOIL ANALYSIS DATA --

Management unit 30, Study no: 57, Study Name: Summit Spring

Effective rooting depth (in)	Temp °F (depth)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
13.9	64.0 (15.9)	6.9	66.0	21.4	12.6	0.7	10.4	83.2	0.5

Stoniness Index



PELLET GROUP DATA --

Management unit 30 , Study no: 57

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	5	3	4
Elk	-	-	2
Deer	28	27	46
Cattle	1	6	1

Days use per acre (ha)		
'98	'03	'08
-	-	-
-	-	-
61 (151)	76 (187)	44 (109)
4 (10)	7 (18)	1 (2)

BROWSE CHARACTERISTICS --
Management unit 30 , Study no: 57

		Age class distribution (plants per acre)					Utilization					
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Cowania mexicana stansburiana</i>												
98	220	-	20	200	-	-	36	0	0	-	0	47/64
03	240	-	-	180	60	-	0	92	25	-	8	55/77
08	20	-	20	-	-	-	0	0	0	-	100	13/24
<i>Coleogyne ramosissima</i>												
98	240	80	-	240	-	20	8	0	-	-	0	27/46
03	180	-	-	180	-	40	89	11	-	-	0	32/49
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Echinocereus engelmannii</i>												
98	20	-	-	20	-	-	0	0	-	-	0	11/9
03	20	-	-	20	-	-	0	0	-	-	0	15/16
08	20	-	-	20	-	-	0	0	-	-	100	6/7
<i>Ephedra viridis</i>												
98	680	-	200	420	60	-	29	0	9	6	6	21/29
03	500	-	20	440	40	-	24	4	8	8	8	19/29
08	0	-	-	-	-	-	0	0	0	-	0	14/15
<i>Eriogonum microthecum</i>												
98	0	-	-	-	-	20	0	0	-	-	0	18/27
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Grayia spinosa</i>												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	20	0	0	-	-	0	18/22
<i>Gutierrezia microrcephala</i>												
98	1740	100	140	1340	260	420	0	0	15	11	11	16/19
03	340	120	20	80	240	1000	0	0	71	53	53	15/15
08	160	-	80	80	-	20	0	0	0	-	0	12/12
<i>Haplopappus linearifolius</i>												
98	780	20	100	460	220	180	0	0	28	5	5	22/31
03	200	40	-	100	100	600	0	0	50	30	40	21/27
08	0	-	-	-	-	-	0	0	0	-	0	9/11

		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)
Opuntia echinocarpa												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	23/15
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Opuntia sp.												
98	20	-	20	-	-	20	0	0	-	-	0	11/12
03	20	-	-	20	-	-	0	0	-	-	0	12/11
08	20	20	-	20	-	-	0	0	-	-	0	6/12
Prunus fasciculata												
98	180	40	-	180	-	20	11	0	0	-	0	45/67
03	180	-	-	120	60	-	11	22	33	11	11	48/70
08	240	-	60	180	-	20	0	33	0	-	8	26/40
Thamnosma montana												
98	480	20	40	420	20	20	13	0	4	-	4	16/34
03	400	-	-	340	60	40	0	0	15	10	15	17/33
08	20	-	-	20	-	-	0	0	0	-	0	11/21
Yucca baccata baccata												
98	740	-	-	640	100	80	0	0	14	8	8	31/39
03	800	-	-	800	-	-	0	0	0	-	0	30/39
08	420	-	-	400	20	40	0	29	5	-	33	23/30