

Trend Study 10R-29-05

Study site name: Massey Junction .

Vegetation Type: Desert Shrub .

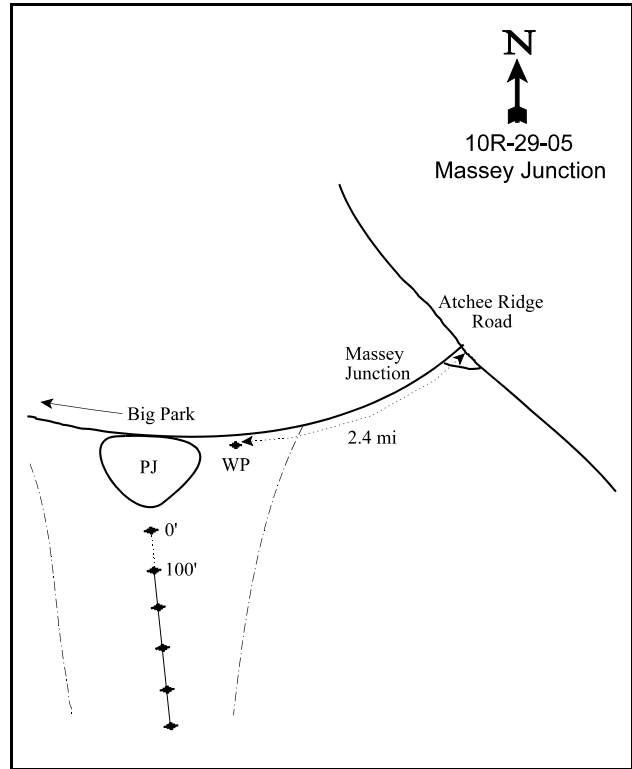
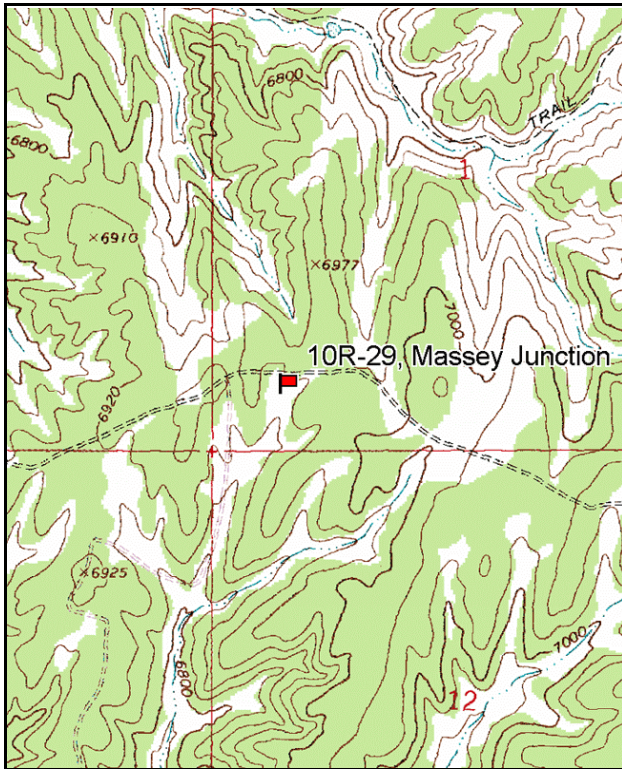
Compass bearing: frequency baseline 175 degrees magnetic.

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

LOCATION DESCRIPTION

From the Seep Ridge Road, about 10 miles north of Pine Spring, turn onto the Bitter Creek Road near McCoy Reservoir. Drive easterly on this road for 10.9 miles to where the road tops out, turn right off the main road. Go 7.65 miles staying on the main road to a fork. Turn right (east) and drive 0.2 miles to a fork, stay left and drive 1.0 miles to the witness post on the right (south) side of the road. From the witness post the 0' post is located down the canyon near the tip of the P-J Island separating the two drainages. The baseline continues down the draw.

Alternate Route: From Massey Junction off Atchee Ridge Road. Follow the road east towards Big Park 2.4 miles to a witness post on the left side of the road. From the witness post the 0' post is located down the canyon near the tip of the P-J Island separating the two drainages. The baseline continues down the draw.



Map name: Burnt Timber Canyon

Diagrammatic Sketch

Township 13S, Range 24E, Section 1 .

GPS: NAD 27, UTM 12S 4396959 N, 655571 E

DISCUSSION

Massey Junction - Trend Study No. 10R-29

The Massey Junction trend study was established in 1999. It samples a narrow draw surrounded by a pinyon-juniper woodland. The draw was burned probably sometime during the 1980's and now supports a salt desert shrub type. The site has a slight slope (3-6%) to the south and an elevation of approximately 6,950 feet. This area is used as winter range for deer and elk and grazed by cattle in the fall and spring. Cattle grazing is part of the Atchee Ridge allotment which permits grazing from April 1 through October 31 on a deferred rest rotation basis. Pellet group data estimated 24 deer and 145 elk days use/acre (59 ddu/ha and 358 edu/ha) in 1999. Cattle use was estimated at 36 days use/acre (89 cdu/ha). In 2005, wildlife and cattle use was lower with an estimated 12 deer, 42 elk, and 16 cow days use/acre (30 ddu/ha, 104 edu/ha, and 39 cdu/ha). Rabbit pellets were very common in 2005.

Soil at the site is moderately deep but compacted. Effective rooting depth is estimated at nearly 17 inches. There is little rock or pavement on the surface or within the soil profile. Soil texture is a clay loam with a soil reaction that is slightly alkaline (pH of 7.5). Organic matter is relatively high at 5.4%. Due to the abundant vegetation and litter cover, erosion is not significant.

The site supports two preferred browse species: fourwing saltbush, and winterfat. In 1999, fourwing saltbush provided 60% of the total browse cover with nearly 9% cover. This declined in 2005 to 2% cover, which was 32% of the total browse cover. The lower amount of cover was due to increased decadence and not decreased density. Density was estimated at 2,100 plants/acre in 1999 and 2,300 plants/acre in 2005. Decadence increased from 22% to 63% in 2005, while 29% of the population was classified as dying. Use has been moderate to heavy and was slightly heavier in 2005 likely because there was less available to browse. Winterfat is the most abundant shrub at a density of 10,780 plants/acre in 1999 and 7,480 plants/acre in 2005. Winterfat cover has averaged 4-5% at both readings. These shrubs are short, averaging only 10 inches in height with a crown of only eight inches. Use was classified as light in 1999, but was heavy in 2005. Most of the plants sampled were mature with a fair amount of young replacement plants. Fringed sagebrush was abundant at 7,000 plants/acre in 1999, but declined to 2,420 plants/acre in 2005. Cover declined from 2% to less than 0.3% in 2005. Drought conditions are likely the cause further declines in fourwing saltbush and fringed sagebrush.

The herbaceous understory was dominated by thickspike wheatgrass in 1999. Cover was very high at 27% and it was sampled in 97% of the quadrats. Thickspike declined significantly in 2005 and was only sampled in 38% of the quadrats. Cover was only slightly higher than 1% in 2005. The only other common grass is cheatgrass. In 1999, it was scattered throughout the site, had 7% cover, and was sampled in 90 % of the quadrats. In 2005, sum of nested frequency increased significantly, cover increased to 29%, and was sampled in 97% of the quadrats. It was the dominant species as it provided 56% of the total vegetation cover. Forbs were rare in 1999 and in 2005 forbs were mostly comprised of annual species.

1999 APPARENT TREND ASSESSMENT

There is little bare ground with abundant vegetation and litter cover to protect the soil. The key browse populations appear stable with good vigor, low percent decadence and adequate reproduction. The herbaceous understory is abundant and dominated by thickspike wheatgrass. There is some cheatgrass on the site. Forbs are rare. The DCI rating was good to excellent with healthy shrub populations and high amounts of perennial grasses.

winter range condition (DC Index) - good to excellent (63) Lower potential scale

2005 TREND ASSESSMENT

The trend for soil is down. Bare ground increased from 13% to 29% in 2005. The ratio of bare ground to protective ground cover (vegetation, litter, and cryptogams) decreased substantially. Erosion has not been a problem in 2005, due to the high amount of vegetation cover. The browse trend is slightly down. Fourwing saltbush decadence increased from 22% to 63%, while 29% of the population was classified as dying. Vigor of fourwing saltbush may be improved with improved precipitation patterns. With the decreased vigor and production (cover went down from 9% to 2%), utilization increased to 57% showing signs of heavy use. Winterfat density declined 31%, but cover remained stable and 9% of the population was classified as young. Fringed sagebrush density and cover also declined substantially. The herbaceous understory trend is down. In six years this site changed from one dominated by perennial grass to one dominated by annual cheatgrass. Cheatgrass sum of nested frequency increased significantly in 2005, while thickspike wheatgrass decreased significantly. Cheatgrass puts this site at risk for fire and also hampers the reproduction of shrubs. The DCI score declined to poor due to high amounts of cheatgrass, less perennial grass cover, less preferred browse cover, and high decadence of fourwing saltbush.

TREND ASSESSMENT

soil - down (-2)

browse - slightly down (-1)

herbaceous understory - down (-2)

winter range condition (DC Index) - poor (15) Lower potential scale

HERBACEOUS TRENDS --

Management unit 10R, Study no: 29

Type	Species	Nested Frequency		Average Cover %	
		'99	'05	'99	'05
G	Agropyron dasystachyum	_b 428	_a 125	26.81	1.51
G	Bouteloua gracilis	15	27	.36	.44
G	Bromus tectorum (a)	_a 335	_b 425	7.25	29.22
G	Poa secunda	_a -	_b 20	-	.41
G	Sitanion hystrix	1	-	.03	-
Total for Annual Grasses		335	425	7.25	29.22
Total for Perennial Grasses		444	172	27.20	2.36
Total for Grasses		779	597	34.46	31.59
F	Camelina microcarpa (a)	-	7	-	.07
F	Chenopodium fremontii (a)	-	3	-	.00
F	Chorispora tenella (a)	-	2	-	.15
F	Descurainia pinnata (a)	_a 12	_b 92	.03	3.16
F	Lappula occidentalis (a)	_a -	_b 263	-	7.08
F	Sisymbrium altissimum (a)	-	3	-	.15
F	Sphaeralcea coccinea	_a 85	_b 133	.97	2.57
F	Taraxacum officinale	-	3	-	.00
F	Tragopogon dubius	-	1	-	.00

Type	Species	Nested Frequency		Average Cover %	
		'99	'05	'99	'05
	Total for Annual Forbs	12	370	0.03	10.62
	Total for Perennial Forbs	85	137	0.97	2.58
	Total for Forbs	97	507	1.00	13.21

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

BROWSE TRENDS --

Management unit 10R, Study no: 29

Type	Species	Strip Frequency		Average Cover %	
		'99	'05	'99	'05
B	Artemisia frigida	50	47	2.03	.28
B	Artemisia tridentata tridentata	1	1	-	-
B	Atriplex canescens	63	67	8.95	2.43
B	Ceratoides lanata	95	93	4.01	4.69
B	Gutierrezia sarothrae	3	3	-	.15
	Total for Browse	212	211	15.00	7.55

CANOPY COVER, LINE INTERCEPT --

Management unit 10R, Study no: 29

Species	Percent Cover
	'05
Artemisia frigida	1.08
Atriplex canescens	3.13
Ceratoides lanata	4.06
Gutierrezia sarothrae	.15

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 10R, Study no: 29

Species	Average leader growth (in)
Atriplex canescens	4.1
Ceratoides lanata	6.5

BASIC COVER --

Management unit 10R, Study no: 29

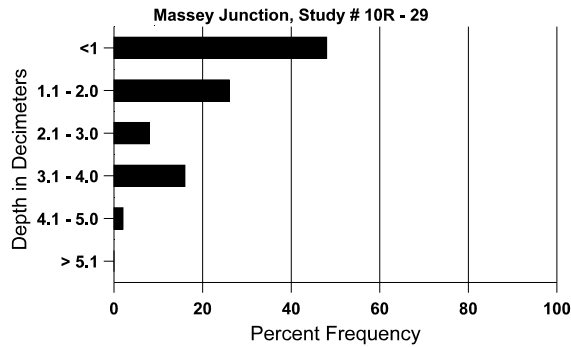
Cover Type	Average Cover %	
	'99	'05
Vegetation	52.90	50.59
Rock	.11	.20
Pavement	3.76	2.99
Litter	49.88	28.83
Cryptogams	.03	.34
Bare Ground	12.93	28.52

SOIL ANALYSIS DATA --

Herd Unit 10R, Study no: 29, Massey Junction

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	ppm P	ppm K	dS/m
16.9	67.8 (18.0)	7.5	28.9	34.6	36.6	5.4	17.1	336.0	0.8

Stoniness Index



PELLET GROUP DATA --

Management unit 10R, Study no: 29

Type	Quadrat Frequency		Days use per acre (ha)	
	'99	'05	'99	'05
Rabbit	16	63	-	-
Elk	25	38	90 (222)	42 (104)
Deer	19	24	16 (40)	12 (30)
Cattle	6	6	26 (64)	16 (39)

BROWSE CHARACTERISTICS --
Management unit 10R, Study no: 29

		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 frigida</i>												
99	7000	20	260	6740	-	-	24	13	-	-	0	7/7
05	2420	140	140	2280	-	-	29	18	-	-	0	7/8
<i>Artemisia tridentata tridentata</i>												
99	20	-	-	20	-	500	0	0	-	-	0	34/31
05	20	-	-	20	-	-	0	100	-	-	0	34/36
<i>Atriplex canescens</i>												
99	2100	-	140	1500	460	140	43	29	22	7	7	33/41
05	2300	40	200	640	1460	180	30	57	63	29	29	27/34
<i>Ceratoides lanata</i>												
99	10780	-	700	10040	40	-	6	3	0	.18	.18	10/8
05	7480	40	900	6560	20	-	7	82	0	-	0	7/8
<i>Chrysothamnus nauseosus</i>												
99	0	-	-	-	-	-	0	0	-	-	0	-/-
05	0	-	-	-	-	-	0	0	-	-	0	12/15
<i>Gutierrezia sarothrae</i>												
99	100	-	20	80	-	-	0	0	-	-	0	6/6
05	100	-	-	100	-	-	0	0	-	-	0	7/8