

Trend Study 13A-10-04

Study site name: Upper Fisher Valley .

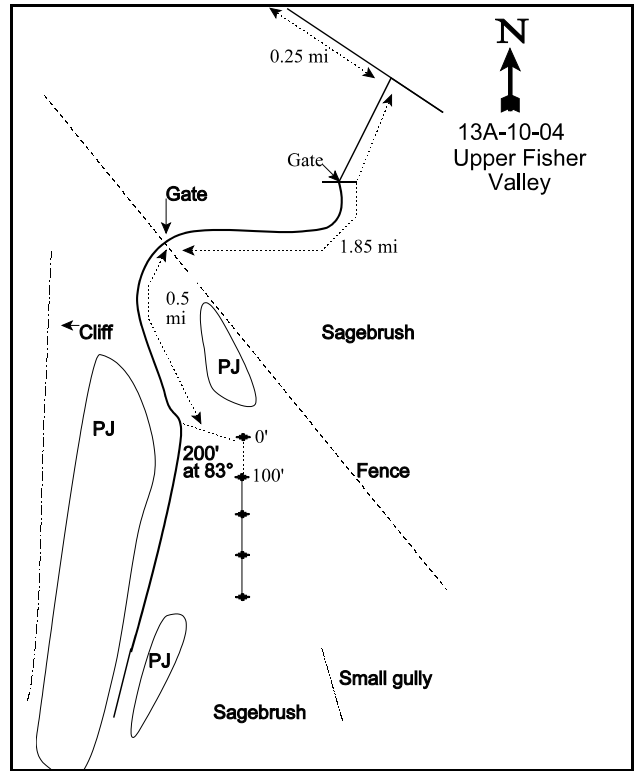
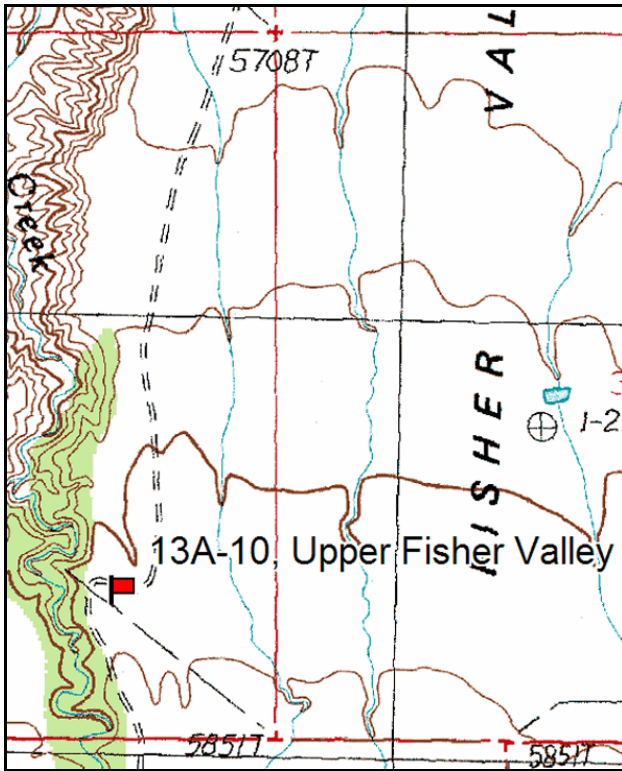
Vegetation type: Wyoming Big Sagebrush .

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

Leaving Moab on Route 128, drive northeast 0.1 miles past mile marker 20 (about 5 miles past the Castle Valley turnoff), and turn right onto the Fisher Valley Road. Go 8.7 miles up Onion Creek to a gate at the edge of the valley. Continue 0.25 miles to a dirt road that forks off to the right. Turn here and go 0.85 miles across an annual grass flat to a gate. Continue 1 mile to another fence. Go through the gate and 0.05 miles. The transect is located on the east side of the road about 200 feet out in the sagebrush. Study markers are 1-foot tall green fence posts. The 0-foot baseline stake is tagged #7861.



Map Name: Fisher Valley

Diagrammatic Sketch

Township 24S , Range 24E , Section 35

GPS: NAD 27, UTM 12S 4281334 N, 653351 E

## DISCUSSION

### Upper Fisher Valley - Trend Study No. 13A-10

Upper Fisher Valley is thought to be a critical wintering area for deer that migrate north and move off the LaSal Mountains. Pellet group surveys read in 1999 estimated 26 cow (64 cdu/ha) and 40 deer days use/acre (99 ddu/ha). Pellet group data from 2004 estimated 7 elk (17 edu/ha), 23 deer (56 ddu/ha), and 26 cow days use/acre (64 cdu/acre). This area is managed by the BLM and is part of the Fisher Valley grazing allotment. Much of the pinyon-juniper woodlands and sagebrush communities in this valley have been historically treated and seeded. The particular area of this study, along the rim of Onion Creek, was two-way chained in 1960 and seeded to crested wheatgrass. Now, 40 years later, there is a moderately dense stand of Wyoming big sagebrush with a fairly good understory of about 8-10% cover with approximately 10% of the understory being composed of cheatgrass.

This broad valley is almost level (4-5% slope) with a slight southerly aspect and an elevation of 5,800 feet. The reddish-brown, sandy clay loam soil appears to be moderately deep (effective rooting depth of almost 14 inches) on this site. Soil pH is neutral (6.8) with a low phosphorous content (7.8 ppm). Values below 10 ppm may limit normal plant growth and development. It is not rocky, but appears to have a carbonate layer at approximately 8-10 inches below the surface. Ground cover is poor with percent bare ground almost at 50%. Litter cover is found mainly under the shrubs and was very low in 1994 at 24%, 17% in 1999, and 19% in 2004. There are two well-defined natural gullies east of the transect which are still active. Due to the levelness of the terrain, erosion is not a serious problem, although there is some pedestaling of the grasses and some soil movement in the large bare interspaces. The erosion condition class determined soil movement as slight in 2004.

Wyoming big sagebrush is the dominant browse species as it made up 90% of the browse cover in 1994, 75% in 1999, and 67% in 2004. Density has continually declined; in 1987 there was 6,333 sagebrush plants/acre, 6,220 in 1994, 5,040 in 1999, and 4,060 in 2004. In 1987, the sagebrush population exhibited characteristics of an apparently increasing population with a majority of the individuals being classified as seedlings or young. In 1999 and 2004, no seedlings were recorded and young recruitment was less than 6% of the population. Percent decadence has increased from 7% in 1999 to 23% in 2004. Hedging is moderate to heavy on most plants and vigor is fairly good.

There are a few 8-10 foot tall junipers established on the flat. In 1999, the point quarter method established juniper density at only 10 trees/acre with an average diameter of 5.5 inches. They appear to be moving very slowly down-slope from the line of mature pinyon-juniper on the west edge of the study area, along the rim of the canyon. Broom snakeweed density has fluctuate between years; in 1987 it was abundant at 13,198 plants/acre, then it fell to 5,720 plants/acre in 1994. It rose again in 1999 to 13,220, then decreased again to 8,220 in 2004. Several of the plants are less than 8 inches high and 9 inches wide.

A fair stand of crested wheatgrass was established, but has diminished over the years. Most plants are found growing near or under sagebrush. Mutton blue grasses is the most dominate and provides the most cover. Other grasses include Galleta, bottlebrush squirreltail, and cheatgrass. Forbs are an insignificant source of forage on this site. There are several small species present, but none of which are very abundant.

### 1994 TREND ASSESSMENT

Soil trend on this site is stable to slightly improving, but still in very poor condition. The type of cover that will best protect this site from erosion comes from herbaceous species which only make up 35% of the total vegetative cover. There has been some improvement of the perennial grasses (crested wheatgrass and Sandberg bluegrass), with some slight loss of forbs. However, forbs collectively only make up about 10% of

the vegetative cover. The trend for the key browse, Wyoming big sagebrush, is up as only 8% of the population exhibited heavy use, while percent decadence is low at only 3%. Vigor is also good for the population. There has been a large increase in the estimated population, but much of this is from the much larger sample size taken in 1994. Yet, the increase is warranted because of the high biotic potential it had in 1987 and high percentage of plants that were classified as young at that time. The weedy increaser, broom snakeweed, has shown a dramatic decline since 1987. The trend for the herbaceous understory is stable with slight increases for two of the perennial grasses, but the forbs are still almost nonexistent on this site with the extended drought. The Desirable Components Index rated this site as good with a score of 57 due to low perennial forbs, moderate young shrubs, and a slight annual grasses problem (cheatgrass).

#### TREND ASSESSMENT

soil - stable (3)

browse - up (5)

herbaceous understory - stable (3)

winter range condition (DC Index) - 57 (good) Wyoming sagebrush type

#### 1999 TREND ASSESSMENT

Soil trend on this site is still considered stable, but still in very poor condition. There was a slight increase in cryptogamic cover, from 1% to 11%, but this is not usually a consistent or permanent change. The type of cover that will best protect this site from erosion comes from herbaceous species which only make up 35% of the total vegetative cover. The trend for browse is down for Wyoming big sagebrush because of the losses in density, decrease in cover, decrease in strip frequency, seedlings decreased 22% to zero, and percent young has fallen from 12% to only 6%. The weedy increaser, broom snakeweed, has shown a dramatic increase since 1994. The trend for the herbaceous understory is slightly down with nested frequency values for annuals and perennials going down. Forbs are almost nonexistent with the extended drought and total cover less than 1%. The Desirable Components Index rated this site as good with a score of 54 due to low perennial forbs, few young shrubs, and a slight annual grasses problem (cheatgrass).

#### TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 54 (good) Wyoming sagebrush type

#### 2004 TREND ASSESSMENT

The trend for soil is stable. Protective cover has remained the same, but bare ground is close to 50% of the total cover. Erosion is minimal due to relatively flat terrain. The trend for the key browse species, Wyoming big sagebrush, is continuing downward. Density has continued to decrease by about a 1,000 plants/acre every five years since 1994, while percent decadence has increased from 7% in 1999 to 23% in 2004. Seedling and young production has been very minimal since 1994 and the dead to live ratio increased from 1:126 in 1999 to 1:7 in 2004. The trend for the herbaceous understory is down slightly. Sandberg bluegrass (dominate grass) sum of nested frequency decreased significantly and most of the crested wheatgrass is growing predominantly under the sagebrush canopy. Forbs remain minimal and provide little protective cover or forage value. The Desirable Components Index rated this site as good with a score of 46 due to low perennial forbs, no young shrubs, and moderate decadence of key browse.

TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - slightly down (2)

winter range condition (DC Index) - 46 (good) Wyoming sagebrush type

HERBACEOUS TRENDS --

Management unit 13A, Study no: 10

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
G	Agropyron cristatum	<sub>a</sub> 63	<sub>b</sub> 105	<sub>a</sub> 72	<sub>ab</sub> 75	2.48	.65	1.85
G	Agropyron intermedium	-	-	7	-	-	.04	-
G	Bouteloua gracilis	<sub>a</sub> -	<sub>a</sub> -	<sub>ab</sub> 7	<sub>b</sub> 17	-	.04	.18
G	Bromus tectorum (a)	-	106	104	94	.88	.38	1.01
G	Hilaria jamesii	94	93	79	75	.96	.80	.98
G	Poa secunda	<sub>ab</sub> 224	<sub>bc</sub> 246	<sub>c</sub> 256	<sub>a</sub> 174	3.77	6.50	4.48
G	Sitanion hystrix	<sub>bc</sub> 24	<sub>a</sub> 6	<sub>ab</sub> 7	<sub>c</sub> 45	.01	.21	1.02
G	Sporobolus cryptandrus	-	-	-	3	-	-	.03
G	Stipa comata	7	-	-	-	-	-	-
G	Vulpia octoflora (a)	-	<sub>b</sub> 76	<sub>b</sub> 61	<sub>a</sub> 8	.16	.55	.04
Total for Annual Grasses		0	182	165	102	1.03	0.94	1.06
Total for Perennial Grasses		412	450	428	389	7.23	8.25	8.55
Total for Grasses		412	632	593	491	8.27	9.19	9.61
F	Astragalus amphioxys	7	4	-	-	.01	-	-
F	Calochortus nuttallii	1	-	-	-	-	-	-
F	Chenopodium fremontii (a)	-	-	-	3	-	-	.00
F	Cruciferae	1	-	-	-	-	-	-
F	Draba reptans (a)	-	<sub>b</sub> 22	<sub>ab</sub> 9	<sub>a</sub> -	.04	.02	.00
F	Erigeron pumilus	6	10	12	1	.02	.05	.03
F	Gilia spp. (a)	-	5	-	-	.01	-	-
F	Leucelene ericoides	-	1	2	1	.00	.03	.03
F	Lesquerella spp.	-	-	1	-	-	.00	-
F	Oenothera albicaulis (a)	1	-	-	-	-	-	-
F	Phlox austromontana	<sub>a</sub> 21	<sub>ab</sub> 21	<sub>b</sub> 31	<sub>ab</sub> 21	.81	.65	.27
F	Phlox longifolia	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 18	-	-	.13
F	Ranunculus testiculatus (a)	-	<sub>b</sub> 14	<sub>a</sub> -	<sub>a</sub> -	.05	-	-
F	Sphaeralcea coccinea	<sub>b</sub> 62	<sub>a</sub> 22	<sub>a</sub> 5	<sub>a</sub> 6	.05	.01	.09
F	Tragopogon dubius	4	-	-	-	-	-	-
F	Unknown forb-perennial	1	-	-	-	-	-	-
Total for Annual Forbs		1	41	9	3	0.10	0.01	0.00

Type	Species	Nested Frequency				Average Cover %		
		'87	'94	'99	'04	'94	'99	'04
	Total for Perennial Forbs	103	58	51	47	0.90	0.75	0.56
	Total for Forbs	104	99	60	50	1.01	0.77	0.57

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

#### BROWSE TRENDS --

Management unit 13A, Study no: 10

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	<i>Artemisia tridentata wyomingensis</i>	85	78	83	15.69	13.69	13.94
B	<i>Atriplex canescens</i>	0	1	0	-	-	-
B	<i>Gutierrezia sarothrae</i>	78	86	95	.85	3.98	4.90
B	<i>Juniperus osteosperma</i>	0	1	2	.88	.66	1.85
B	<i>Opuntia spp.</i>	0	0	4	-	-	-
B	<i>Pinus edulis</i>	0	0	1	.00	-	-
	Total for Browse	163	166	185	17.43	18.34	20.69

#### CANOPY COVER, LINE INTERCEPT --

Management unit 13A, Study no: 10

Species	Percent Cover	
	'99	'04
<i>Artemisia tridentata wyomingensis</i>	-	19.25
<i>Gutierrezia sarothrae</i>	-	5.06
<i>Juniperus osteosperma</i>	.40	1.04

#### KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 13A, Study no: 10

Species	Average leader growth (in)
	'04
<i>Artemisia tridentata wyomingensis</i>	2.3

BASIC COVER --

Management unit 13A, Study no: 10

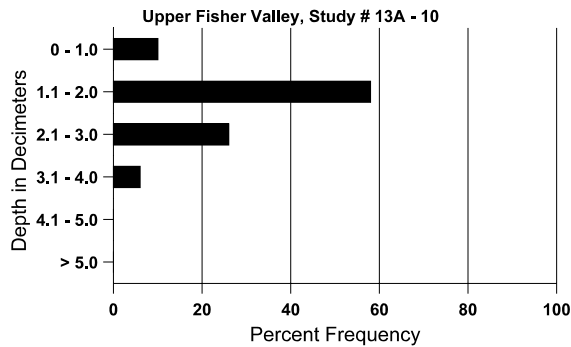
Cover Type	Average Cover %			
	'87	'94	'99	'04
Vegetation	8.00	23.64	25.24	34.15
Rock	0	.00	0	0
Pavement	0	.00	.00	.00
Litter	32.25	24.45	17.47	21.12
Cryptogams	1.00	1.28	10.75	5.93
Bare Ground	58.75	57.47	48.54	49.90

SOIL ANALYSIS DATA --

Management unit 13A, Study no: 10, Study Name: Upper Fisher Valley

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
13.9	65.0 (13.7)	6.8	58.9	15.8	25.3	1.6	7.8	73.6	0.4

Stoniness Index



PELLET GROUP DATA --

Management unit 13A, Study no: 10

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	68	30	18
Deer	53	28	25
Elk	-	-	-
Cattle	1	11	5

Days use per acre (ha)	
'99	'04
-	-
40 (99)	23 (56)
-	7 (17)
26 (64)	26 (64)

BROWSE CHARACTERISTICS --  
 Management unit 13A, Study no: 10

		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 tridentata wyomingensis</i>												
87	<b>6333</b>	3133	3200	2733	400	-	40	1	6	-	2	21/25
94	<b>6220</b>	1360	720	4920	580	40	7	0	9	3	11	17/27
99	<b>5040</b>	-	280	4420	340	40	47	5	7	4	4	22/34
04	<b>4060</b>	-	20	3120	920	560	60	12	23	9	9	19/30
<i>Atriplex canescens</i>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	43/66
99	<b>100</b>	-	-	100	-	-	100	0	-	-	0	-/-
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
<i>Gutierrezia sarothrae</i>												
87	<b>13198</b>	2600	5266	7466	466	-	.50	1	4	.30	2	11/9
94	<b>5720</b>	420	980	4700	40	20	.34	0	1	.34	.69	7/7
99	<b>13220</b>	60	3880	9040	300	400	0	0	2	1	1	10/10
04	<b>8220</b>	40	1440	6740	40	60	0	.48	0	-	.24	8/9
<i>Juniperus osteosperma</i>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>20</b>	20	-	20	-	-	0	0	-	-	0	-/-
04	<b>60</b>	-	40	20	-	-	33	0	-	-	0	-/-
<i>Opuntia spp.</i>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	6/16
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	9/12
04	<b>80</b>	-	40	40	-	-	25	0	-	-	0	7/22
<i>Pinus edulis</i>												
87	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	20	-	-	-	-	0	0	-	-	0	-/-
04	<b>20</b>	-	20	-	-	-	0	0	-	-	0	-/-