

Trend Study 22-2-08

Study site name: Piute Reservoir.

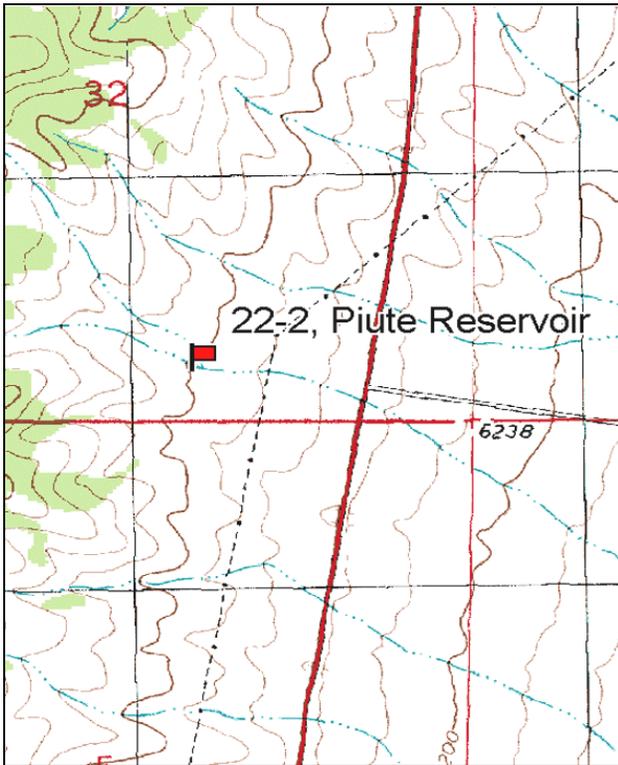
Vegetation type: Wyoming Big Sagebrush.

Compass bearing: frequency baseline 165 degrees magnetic.

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

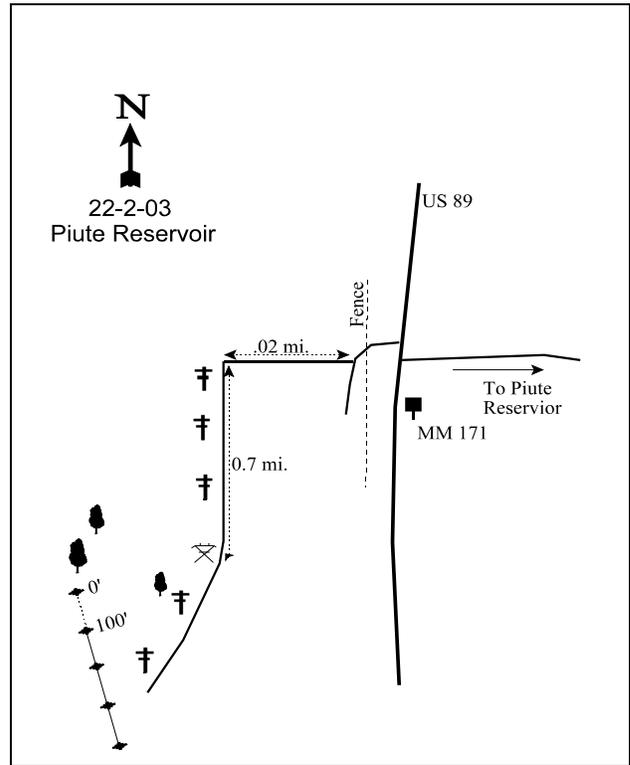
LOCATION DESCRIPTION

From mile marker 171 on Route 89 north of Junction, go 0.3 miles north and turn west (left) on a dirt road. Take an immediate right after going through the fence. Proceed 0.2 miles to a fork, go left for 0.7 miles to a large steel power pole where the powerlines turn. From the steel power pole, go about 600 feet at 225 degrees magnetic between to large juniper trees to another juniper. The 0-foot end of the frequency baseline is 5 yards south of the juniper. The stakes are all rebar and the 0-foot stake has a browse tag #7080 attached.



Map Name: Piute Reservoir

Township 29S, Range 3W, Section 5



Diagrammatic Sketch

GPS: NAD 83, UTM 12S 393071 E, 4242736 N

DISCUSSION

Piute Reservoir - Trend Study No. 22-2

Study Information

The Piute Reservoir transect is located on BLM administered land approximately one and a half miles west of the dam and a quarter mile west of Highway 89. The vegetation type is Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*) on a gentle slope [elevation: 6,400 feet (1,951 m), slope: 2-3%, aspect: southwest]. The study is within the Junction Cattle Allotment with joint Forest Service and BLM grazing seasons from May 1 through June 10 and November 1 through February 15 annually. Deer use occurs mainly during the winter and early spring. In 1991, it was noted that pellet groups were scattered throughout the area and one antler shed was found. In 1998, a pellet group transect on the site indicated 21 deer days use/acre (52 ddu/ha), and 5 shed deer antlers were found in the area. From the pellet group transect, deer use was estimated at 3 days use/acre (8 ddu/ha) in 2003 and 2008 (7 ddu/ha). Elk use was estimated at 5 days use/acre in 2003 (13 edu/ha) and no elk pellets were sampled in 2008.

Soil

Soils are sandy loam in texture with a neutral pH (7.3). The soil is loose and infiltration rates are quite high and conversely, water holding capacity is moderately low. Rock and pavement cover a high proportion of the soil surface ranging from 38% in 2003, 59% in 1985, and 52% in 2008. In 1991, small erosion rills were common on the slopes and active gullies were prominent throughout the area. In 1998, some erosion was apparent, but it did not appear to be excessive or accelerated, but constant depending on intensity of high intensity summer storms. Soils were given a stable rating from an erosion condition class assessment in 2003 and 2008 as erosion was minimal.

Browse

The key browse on the site is Wyoming big sagebrush. Sagebrush density was estimated at 3,560 plants/acre in 1998 increasing to 4,660 plants/acre in 2003. In 2008, density declined to 4,080 plants/acre. Sagebrush cover been about 20% on average. Young plants were abundant in both 1985 and 1991, marginal in 1998, and far below what is considered adequate to maintain the population in 2003 and 2008. The Wyoming big sagebrush population has become mostly mature and decadent since the initial reading in 1985. Decadence has been moderately high since 1991, peaking at 45% in 2008.

Low rabbitbrush (*Chrysothamnus viscidiflorus ssp. stenophyllus*) is also moderately abundant on the site with an estimated density of 3,400 plants/acre in 1998, 3,920 in 2003, and 4,280 in 2008. Even with this continuing increase in density, cover has been steadily decreasing; 8% in 1998, 6% in 2003, and 4% in 2008. Low rabbitbrush showed light to moderate use in 1985, but very little use since. A thick pinyon (*Pinus edulis*) and juniper (*Juniperus osteosperma*) woodland occurs west of this transect with a few trees starting to encroach onto the flat. These trees provide good thermal and escape cover for wintering deer.

Herbaceous Understory

Herbaceous vegetation is sparse on this site with only 3% cover or less for all surveys. Only five species of grasses have been sampled in all years. Perennial species include bottlebrush squirreltail (*Sitanion hystrix*), Indian ricegrass (*Oryzopsis hymenoides*), a sedge (*Carex* sp.), and needle-and-thread grass (*Stipa comata*). All are cool season species and occur in very low frequencies. Cheatgrass (*Bromus tectorum*) is found on the site, yet depending on the year, was only sampled in one, two or four quadrats. Fiddleneck (*Amsinckia* sp.) was the most abundant forb species in 2003 occurring in 39% of the quadrats. An annual gilia (*Gilia* sp.) and tansy mustard (*Descurainia pinnata*) were also fairly abundant in 2003. An annual ragweed (*Ambrosia* sp.) was particularly abundant along washes and the disturbed roadway in 1998. In 2008, forbs were very rare.

1991 TREND ASSESSMENT

Wyoming big sagebrush and low rabbitbrush densities have increased, but decadence has increased for sagebrush (34%). The proportion of the population that is classified as having poor vigor has increased to 31% while recruitment is good at 38%. The browse trend is stable. There are very few forbs or grasses occurring on the site and most have shown declines since 1985. The trend for grasses would be stable and in very poor condition where they barely contribute 1% total cover. The trend for forbs is fairly stable with a slightly downward trend for sum of nested frequency value, however, it is a very minor component of the herbaceous understory.

browse - stable (0)

grass - stable (0)

forb - stable (0)

1998 TREND ASSESSMENT

The browse trend is stable. Differences in sagebrush density are likely due to the change in methods, which has a greater sample size. Plant decadence declined slightly overall, and those displaying poor vigor declined to 15%. The trend for both grasses and forbs is stable, but in very poor condition. Perennial grass sum of nested frequency has slightly increased in 1998 and contributes to only about one-half of 1% cover. Similarly, total perennial herbaceous sum of nested frequency has also increased slightly and contributes only three-tenths of 1% total cover in 1998.

Winter Range Condition (DCI) - fair (40) low potential scale

browse - stable (0)

grass - stable (0)

forb - stable (0)

2003 TREND ASSESSMENT

Trend for browse is stable. The key parameters for Wyoming big sagebrush are mixed. Positive changes include increased density, improved vigor, and lighter use. However, recruitment from young plants declined and decadence increased to 40%. The increaser, low rabbitbrush, increased in density in 2003, although not enough to cause concern at the present time. The trend for grasses and forbs is stable, but they are sparse and in very poor condition. Perennial grass frequency slightly declined while perennial forb frequency increased. The increase for the forbs was primarily because of fiddleback. Herbaceous vegetation is insignificant on this site.

Winter Range Condition (DCI) - fair (35) low potential scale

browse - stable (0)

grass - stable (0)

forb - stable (0)

2008 TREND ASSESSMENT

Trend for browse is slightly down. The key parameters for Wyoming big sagebrush indicate the possibility of continued losses to the sagebrush population in the coming years. Negative changes to the sagebrush population include: decreased density (-12%), increased decadence (45%), and increased numbers of plants classified with poor vigor (17%). The herbaceous understory is slightly, very sparse, and continues to be in poor condition. Both perennial grass and forb frequency are both slightly down, but none are significant. Therefore, they are both considered stable and in very poor condition. Herbaceous vegetation is almost insignificant on this site.

Winter Range Condition (DCI) - fair (30) low potential scale

browse - slightly down (-1)

grass - stable (0)

forb - stable (0)

HERBACEOUS TRENDS --
Management unit 22 , Study no: 2

T y p e	Species	Nested Frequency					Average Cover %		
		'85	'91	'98	'03	'08	'98	'03	'08
G	Bromus tectorum (a)	-	-	3	6	7	.00	.03	.02
G	Carex sp.	-	2	1	-	-	.00	-	-
G	Oryzopsis hymenoides	3	11	11	12	6	.28	.22	.07
G	Sitanion hystrix	22	19	36	16	29	.71	.16	.34
G	Stipa comata	_{ab} 12	_a 1	_b 25	_{ab} 16	_{ab} 6	.65	.07	.07
Total for Annual Grasses		0	0	3	6	7	0.00	0.03	0.01
Total for Perennial Grasses		37	33	73	44	41	1.65	0.46	0.47
Total for Grasses		37	33	76	50	48	1.65	0.50	0.50
F	Alyssum alyssoides (a)	-	-	-	3	3	-	.00	.00
F	Allium sp.	-	-	-	3	-	-	.00	-
F	Ambrosia sp.	2	-	-	-	-	-	-	-
F	Amsinckia sp.	_a -	_a -	_a -	_b 82	_a -	-	1.93	-
F	Astragalus sp.	_b 29	_a 5	_{ab} 15	_a -	_a 3	.23	-	.01
F	Castilleja linariaefolia	-	-	-	3	-	-	.03	-
F	Chaenactis douglasii	-	-	1	3	-	.00	.00	-
F	Collomia linearis (a)	-	-	_a -	_b 15	_a -	-	.04	-
F	Cryptantha sp.	-	-	6	-	-	.06	-	-
F	Descurainia pinnata (a)	-	-	_a -	_b 53	_a -	-	.41	-
F	Draba sp. (a)	-	-	-	1	-	-	.00	-
F	Eriogonum cernuum (a)	_b 35	_a 7	_a 5	_a 1	_a -	.01	.00	-
F	Gilia sp. (a)	-	-	_a -	_c 60	_b 15	-	.21	.03
F	Mentzelia albicaulis (a)	-	-	-	7	-	-	.01	-
F	Orobanche fasciculata	-	-	1	-	-	.00	-	-
F	Phlox longifolia	3	6	3	6	4	.00	.01	.15
F	Sphaeralcea grossulariifolia	-	-	-	1	-	-	.00	-
F	Unknown forb-annual (a)	-	7	-	-	-	-	-	-
F	Unknown forb-perennial	3	3	-	-	-	-	-	-
Total for Annual Forbs		35	14	5	140	18	0.00	0.70	0.03
Total for Perennial Forbs		37	14	26	98	7	0.30	1.99	0.16
Total for Forbs		72	28	31	238	25	0.31	2.69	0.20

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

BROWSE TRENDS --

Management unit 22 , Study no: 2

Type	Species	Strip Frequency			Average Cover %		
		'98	'03	'08	'98	'03	'08
B	Amelanchier utahensis	1	0	0	.00	-	-
B	Artemisia tridentata wyomingensis	84	90	87	18.43	21.65	20.62
B	Chrysothamnus viscidiflorus stenophyllus	63	61	66	7.55	5.90	3.94
B	Juniperus osteosperma	0	1	1	-	.03	.00
B	Leptodactylon pungens	0	0	0	.38	-	-
B	Opuntia sp.	1	1	1	.15	.00	.03
B	Pinus edulis	2	1	2	.18	.41	.81
Total for Browse		151	154	157	26.70	28.00	25.40

CANOPY COVER, LINE INTERCEPT --

Management unit 22 , Study no: 2

Species	Percent Cover	
	'03	'08
Artemisia tridentata wyomingensis	17.56	17.20
Chrysothamnus viscidiflorus stenophyllus	6.26	4.15
Pinus edulis	.88	.80

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 22 , Study no: 2

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata wyomingensis	1.4	1.0

BASIC COVER --

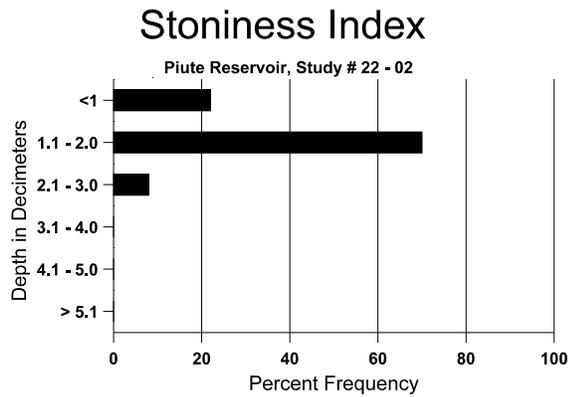
Management unit 22 , Study no: 2

Cover Type	Average Cover %				
	'85	'91	'98	'03	'08
Vegetation	3.00	4.25	29.79	30.15	26.92
Rock	.75	3.25	3.83	6.93	2.88
Pavement	58.50	48.75	43.54	31.50	49.43
Litter	29.25	24.25	26.39	17.25	22.37
Cryptogams	0	.25	.15	.15	.35
Bare Ground	8.50	19.25	21.88	27.26	14.53

SOIL ANALYSIS DATA --

Management unit 22, Study no: 2, Study Name: Piute Reservoir

Effective rooting depth (in)	Temp °F (depth)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
			%sand	%silt	%clay				
14.2	71.6 (14.1)	7.3	68.0	17.4	14.6	3.9	16.2	332.8	0.9



PELLET GROUP DATA --

Management unit 22 , Study no: 2

Type	Quadrat Frequency		
	'98	'03	'08
Rabbit	11	10	74
Elk	-	2	-
Deer	6	1	2

Days use per acre (ha)		
'98	'03	'08
-	-	-
-	5 (13)	-
21 (952)	3 (8)	3 (7)

BROWSE CHARACTERISTICS --
Management unit 22 , Study no: 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)
Amelanchier utahensis												
85	0	-	-	-	-	-	0	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	0	-	0	-/-
98	20	-	-	-	20	-	0	0	100	-	0	-/-
03	0	-	-	-	-	-	0	0	0	-	0	-/-
08	0	-	-	-	-	-	0	0	0	-	0	-/-
Artemisia tridentata wyomingensis												
85	6798	2733	2333	3199	1266	-	49	9	19	-	3	20/24
91	6932	66	2666	1933	2333	-	37	29	34	.57	31	18/25
98	3560	140	500	2040	1020	340	44	4	29	13	15	20/33
03	4660	-	60	2740	1860	540	8	.42	40	5	5	20/29
08	4080	-	140	2120	1820	520	44	24	45	16	17	19/32
Cercocarpus ledifolius												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	66	-	-	66	-	-	100	0	-	-	0	11/5
98	0	-	-	-	-	-	0	0	-	-	0	-/-
03	0	-	-	-	-	-	0	0	-	-	0	-/-
08	0	-	-	-	-	-	0	0	-	-	0	-/-
Chrysothamnus viscidiflorus stenophyllus												
85	2131	10066	799	933	399	-	13	13	19	-	3	13/9
91	2264	-	799	1399	66	-	0	3	3	.88	6	12/8
98	3400	260	240	2660	500	20	0	2	15	5	5	12/13
03	3920	-	60	2420	1440	40	0	0	37	1	1	12/15
08	4280	20	120	2820	1340	-	21	7	31	4	4	8/11
Juniperus osteosperma												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	0	20	-	-	-	-	0	0	-	-	0	-/-
03	20	-	20	-	-	-	0	0	-	-	0	-/-
08	20	-	20	-	-	-	0	0	-	-	100	-/-

		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>Opuntia sp.</i>												
85	66	-	-	66	-	-	0	0	0	-	0	5/9
91	66	-	-	66	-	-	0	0	0	-	0	5/8
98	20	-	-	20	-	-	0	0	0	-	0	-/-
03	20	-	-	20	-	-	0	0	0	-	0	5/5
08	20	-	-	-	20	-	0	0	100	-	0	-/-
<i>Pinus edulis</i>												
85	0	-	-	-	-	-	0	0	-	-	0	-/-
91	0	-	-	-	-	-	0	0	-	-	0	-/-
98	40	-	20	20	-	-	0	0	-	-	0	-/-
03	20	-	-	20	-	-	0	0	-	-	0	-/-
08	40	-	20	20	-	-	0	0	-	-	0	-/-