

CEDARLESS FLAT - TREND STUDY NO. 25A-10-09

Vegetation Type: Wyoming Big Sagebrush
Range Type: Crucial Deer Winter, Substantial Elk Winter
NRCS Ecological Site Description: Not Available
Land Ownership: USFS
Elevation: 8,200 ft (2,499 m)
Aspect: Southeast
Slope: 12%
Transect bearing: 165 degrees magnetic
Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft)

Directions:

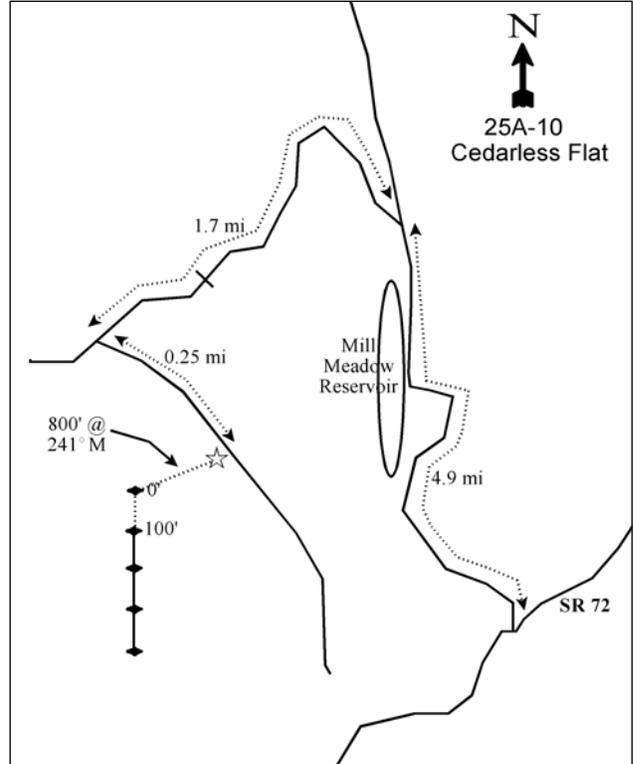
From Fremont, travel northeast on SR72 for 2.25 miles to a major fork (the sign says Mill Meadow Reservoir). Turn left and proceed 4.5 miles past the reservoir to Fremont Creek. Cross the bridge and go 0.4 miles to a fork. Bear left on the Mytoge Road and go 1.1 miles to a cattleguard in Cedarless Flat. From the cattleguard, go 0.6 miles to a fork. Turn left and go exactly 0.25 miles to a witness post on the south side of the road. From the witness post, go 800 feet at 241°M to the 0 ft baseline stake. The baseline stake is marked with a red browse tag number 407.

Map Name: Forsyth Reservoir, Utah



Township: 26S, Range: 3E, Section: 33

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 448784 E 4262764 N

CEDARLESS FLAT - TREND STUDY NO. 25A-10

Site Information

Site Description: This study is located in USFS land on a sagebrush hill near Fremont. As part of the UM Creek allotment this area is grazed for two weeks from June 1 to June 15. The area was chained and seeded in 1987 to reduce sagebrush and increase forbs and cool season grasses. By 1999, treatment boundaries were nearly indistinguishable. Several areas were excluded from chaining to preserve sage grouse habitat. Pellet group data estimated low deer, elk, and cow use in 1999 and 2004. By 2009, deer use was heavy, elk use was low but increasing and cattle use remained low (Table – Pellet Group Data).

Browse: Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is the dominant browse species. Browse density decreased each year from 1985 to 2004 before increasing in 2009. Sagebrush decadence was low until a spike in 2004. A few black sagebrush (*Artemisia nova*) were sampled beginning in 1999, but numbers have remained low. Broom snakeweed (*Gutierrezia sarothrae*) also occurs, but its density has fluctuated greatly (ranging from 0 to 4,240 plants/acre) since 1985 (Table - Browse Characteristics).

Herbaceous Understory: Prior to treatment the herbaceous understory was paltry. Immediately following treatment the herbaceous understory responded well with a large increase in the sum of nested frequency of perennial grasses. Cool season grasses such as crested wheatgrass (*Agropyron cristatum*) and Russian wildrye (*Elymus junceus*) were introduced in the seed mix. Perennial forbs are very rare on the site. The annual forb, slimleaf goosefoot (*Chenopodium leptophyllum*), provided more than 6% cover in 2004, but has been rare in all other sample years (Table - Herbaceous Trends).

Soil: The soil is a clay loam that is slightly alkaline (pH 7.4) (Table - Soil Analysis Data). Erosion is limited by good pavement and rock cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2009.

Trend Assessments

Browse:

- **1985 to 1991 – down (-2):** The area was chained in 1987, so the downward trend for browse was anticipated. After being chained, the sagebrush density decreased 25% from 8,798 to 6,599 plants/acre, but this thinning improved the overall population health with a decrease in decadence from 28% to 14%, and increase in recruitment of young plants from 12% to 20%.
- **1991 to 1999 - slightly up (+1):** Differences in density may be related to the larger sample area used in 1999; therefore, trend was determined using other parameters. Wyoming big sagebrush decadence decreased from 14% to 4% and recruitment of young increased to 31%. Broom snakeweed density was estimated at 4,240 plants/acre.
- **1999 to 2004 – down (-2):** Wyoming big sagebrush density decreased 21% from 5,440 to 4,320 plants/acre primarily due to a decrease in the recruitment of young plants to just 5% of the population. Decadence also increased to 38% and plants displaying poor vigor increased from 3% to 27%. On a positive note, the broom snakeweed density fell 59% to 1,720 plants/acre.
- **2004 to 2009 - up (+2):** Wyoming big sagebrush density increased 21% to 5,240 plants/acre, with a subsequent decrease in decadence to 15% and increase in recruitment to 10%.

Grass:

- **1985 to 1991 - up (+2):** The area was chained in 1987 and there was an anticipated increase in the herbaceous understory. Following the treatment the sum of nested frequency of perennial grasses increased over two-fold. Cool season grasses such as crested wheatgrass and Russian wildrye have established from the treatment.

- **1991 to 1999 – down (-2):** The sum of nested frequency of perennial grasses declined 21% with perennial grass cover at 13%, with blue grama (*Bouteloa gracilis*) accounting for 62% of grass cover. Crested wheatgrass has declined significantly in nested frequency and provides 1% cover. Russian wildrye provide 3% cover. No annual species were sampled
- **1999 to 2004 - down (-2):** The sum of nested frequency of perennial grasses decreased 40% and cover decreased to 4%. Blue grama accounts for 44% of grass cover. Russian wildrye provided 1% cover.
- **2004 to 2009 - stable (0):** The sum of nested frequency of perennial grasses has remained similar to the last sample and cover has increased to 6%. Blue grama accounted for 57% of grass cover. Russian wildrye provided 2% cover. No annual species were sampled.

Forb:

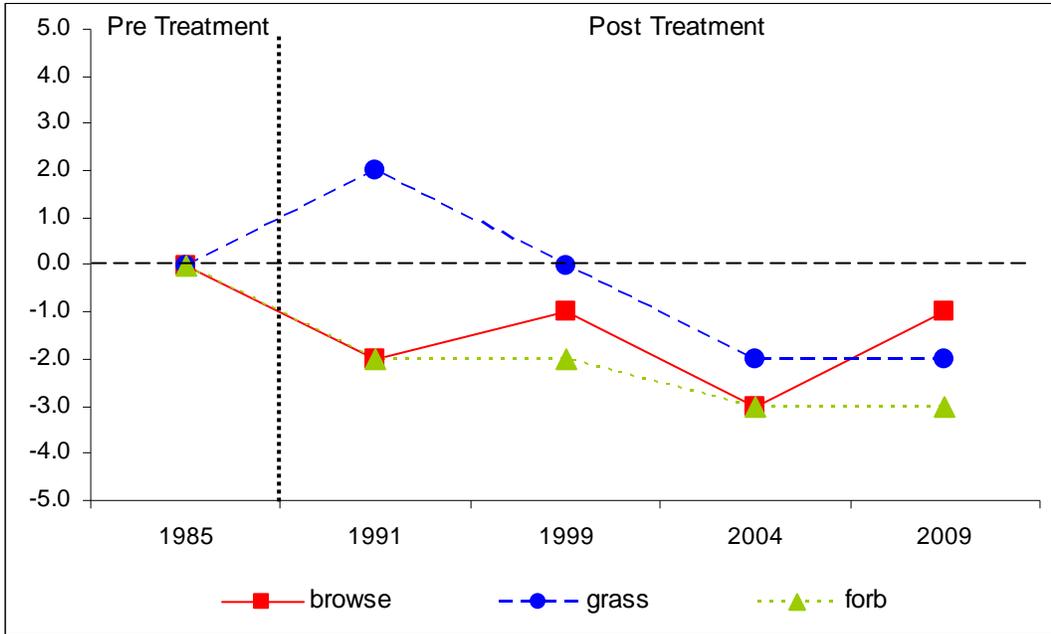
- **1985 to 1991 - down (-2):** The area was chained in 1987 and it was anticipated that there would be an increase in the herbaceous understory. However, perennial forb sum of nested frequency decreased substantially. Perennial forbs remained very rare on the site.
- **1991 to 1999 – stable (0):** The sum of nested frequency of perennial forbs decreased 17% and provided less than 0.1% cover. Forbs were so rare that the change is not substantial.
- **1999 to 2004 - slightly down (-1):** The sum of nested frequency of perennial decreased 70%. Only two perennial species were sampled, each one encountered once. Perennial forbs remained extremely rare. The annual slimleaf goosefoot (*Chenopodium leptophyllum*) was encountered for the first time and produced 7% cover.
- **2004 to 2009 - stable (0):** The sum of nested frequency of perennial forbs decreased 67% and only one perennial species was encountered, once. Even annual species were very rare in this sample as total forb cover was less than 0.1%.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 25A, study no: 10

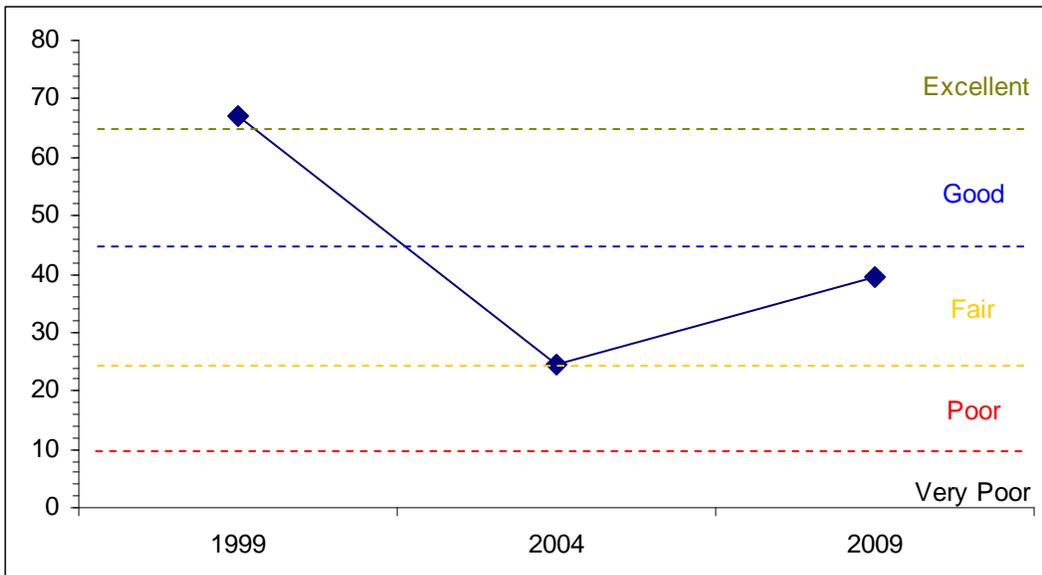
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
99	11.6	13.8	15.0	26.6	0.0	0.1	0.0	67.1	Excellent
04	9.7	3.6	2.5	8.6	0.0	0.0	0.0	24.4	Poor-Fair
09	12.1	10.5	5.0	11.8	0.0	0.0	0.0	39.3	Fair

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 25A Study no: 10



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE
 Management unit 25A, Study no: 10



HERBACEOUS TRENDS--
Management unit 25A, Study no: 10

T y P e	Species	Nested Frequency					Average Cover %		
		'85	'91	'99	'04	'09	'99	'04	'09
G	Agropyron cristatum	a ⁻	c ¹⁵⁵	b ⁴¹	b ²⁷	b ¹⁹	1.14	.69	.28
G	Bouteloua gracilis	a ⁷⁰	b ¹⁰⁴	c ¹⁹³	b ¹⁰⁵	b ¹⁰⁸	8.30	1.89	3.36
G	Bromus inermis	a ⁻	b ⁵⁵	ab ¹²	a ⁻	a ⁻	.22	-	.00
G	Bromus tectorum (a)	-	3	-	-	-	-	-	-
G	Carex sp.	a ⁻	a ⁻	b ¹⁵	b ¹⁴	b ¹⁷	.07	.07	.06
G	Elymus junceus	a ⁻	b ⁸⁴	ab ⁶¹	a ⁵¹	ab ⁶⁴	2.59	1.41	1.88
G	Oryzopsis hymenoides	bc ¹⁵	a ¹⁵	b ³⁶	ab ¹⁸	a ⁹	.72	.08	.04
G	Poa fendleriana	-	-	-	-	3	-	-	.00
G	Sitanion hystrix	b ⁹⁷	b ⁷⁵	a ²⁹	a ¹⁸	a ¹²	.20	.12	.22
G	Stipa lettermani	1	5	4	-	1	.01	-	.00
Total for Annual Grasses		0	3	0	0	0	0	0	0
Total for Perennial Grasses		183	493	391	233	233	13.29	4.28	5.88
Total for Grasses		183	496	391	233	233	13.29	4.28	5.88
F	Androsace septentrionalis (a)	-	-	b ¹¹	a ⁻	a ⁻	.02	-	-
F	Arabis demissa	9	2	3	-	-	.00	-	-
F	Astragalus lentiginosus	4	-	5	1	1	.03	.00	.00
F	Chenopodium fremontii (a)	-	-	a ⁻	b ²⁵	a ¹	-	.27	.00
F	Chenopodium leptophyllum(a)	-	-	a ⁻	c ²³⁶	b ²⁵	-	6.38	.06
F	Cryptantha sp.	5	3	1	-	-	.03	-	-
F	Descurainia pinnata (a)	-	-	-	3	-	-	.00	-
F	Erigeron pumilus	4	1	-	-	-	-	-	-
F	Eriogonum cernuum (a)	-	-	-	3	-	-	.00	-
F	Eriogonum ovalifolium	5	1	-	-	-	-	-	-
F	Phlox longifolia	1	5	1	2	-	.00	.00	-
F	Senecio multilobatus	5	-	-	-	-	-	-	-
Total for Annual Forbs		0	0	11	267	26	0.02	6.66	0.07
Total for Perennial Forbs		33	12	10	3	1	0.07	0.01	0.00
Total for Forbs		33	12	21	270	27	0.10	6.67	0.07

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

BROWSE TRENDS--

Management unit 25A, Study no: 10

Type	Species	Strip Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
B	Artemisia nova	2	4	5	.00	.01	.00
B	Artemisia tridentata wyomingensis	83	83	89	9.25	7.77	9.66
B	Chrysothamnus viscidiflorus viscidiflorus	9	10	9	.15	.15	.15
B	Gutierrezia sarothrae	56	42	7	.38	.26	.04
B	Opuntia sp.	2	5	2	.03	.03	.03
B	Pediocactus simpsonii	3	2	0	.03	.03	-
Total for Browse		155	146	112	9.84	8.27	9.89

CANOPY COVER, LINE INTERCEPT--

Management unit 25A, Study no: 10

Species	Percent Cover	
	'04	'09
Artemisia nova	-	.15
Artemisia tridentata wyomingensis	11.51	14.94
Chrysothamnus viscidiflorus viscidiflorus	-	.10
Gutierrezia sarothrae	.30	.03
Opuntia sp.	.03	.10

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 25A, Study no: 10

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	1.8	0.9

BASIC COVER--

Management unit 25A, Study no: 10

Cover Type	Average Cover %				
	'85	'91	'99	'04	'09
Vegetation	1.50	4.50	23.21	18.60	16.25
Rock	6.00	8.00	9.06	7.65	3.79
Pavement	51.00	46.50	27.46	44.11	46.21
Litter	32.50	22.75	13.73	19.38	18.38
Cryptogams	0	0	.00	0	.01
Bare Ground	9.00	18.25	20.26	23.65	16.10

SOIL ANALYSIS DATA --

Management unit 25A, Study no: 10, Study Name: Cedarless Flat

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
14.1	7.4	43.3	25.4	31.3	2.6	7	112	0.6

PELLET GROUP DATA--

Management unit 25A, Study no: 10

Type	Quadrat Frequency			Days use per acre (ha)		
	'99	'04	'09	'99	'04	'09
Rabbit	9	40	59	-	-	-
Elk	6	2	5	21 (52)	5 (12)	15 (38)
Deer	8	17	14	7 (17)	33 (81)	51 (126)
Cattle	3	1	1	4 (10)	3 (7)	2 (5)
Antelope	-	2	-	-	-	-

BROWSE CHARACTERISTICS--

Management unit 25A, Study no: 10

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<i>Artemisia nova</i>									
85	0	0	0	0	-	0	0	0	-/-
91	0	0	0	0	-	0	0	0	-/-
99	80	0	100	0	-	0	0	0	6/15
04	200	0	100	0	-	10	0	0	10/19
09	120	0	67	33	20	0	0	17	9/14
<i>Artemisia tridentata wyomingensis</i>									
85	8798	12	60	28	533	37	8	2	18/20
91	6599	20	66	14	933	22	4	0	12/15
99	5440	31	65	4	40	52	15	3	13/22
04	4320	5	57	38	320	36	10	27	13/23
09	5240	10	75	15	220	33	11	7	13/23
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
85	0	0	0	0	-	0	0	0	-/-
91	66	100	0	0	-	0	0	0	-/-
99	240	0	92	8	-	17	8	8	7/12
04	240	0	100	0	80	0	0	0	7/13
09	260	8	92	0	20	0	0	0	6/11
<i>Gutierrezia sarothrae</i>									
85	599	22	78	-	-	0	0	0	8/4
91	0	0	0	-	-	0	0	0	-/-
99	4240	52	48	-	100	0	0	0	4/4
04	1720	5	95	-	-	0	0	0	5/7
09	160	13	88	-	-	0	0	0	5/5
<i>Opuntia sp.</i>									
85	66	0	0	100	66	0	0	0	-/-
91	399	33	67	0	-	0	0	0	2/4
99	80	25	75	0	-	0	0	0	3/10
04	100	20	80	0	-	0	0	0	2/9
09	40	50	50	0	-	0	0	100	2/9

		Age class distribution			Utilization				
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
Pediocactus simpsonii									
85	0	0	0	-	-	0	0	0	-/-
91	0	0	0	-	-	0	0	0	-/-
99	60	33	67	-	-	0	0	0	2/4
04	40	0	100	-	-	0	0	0	1/3
09	0	0	0	-	-	0	0	0	-/-