

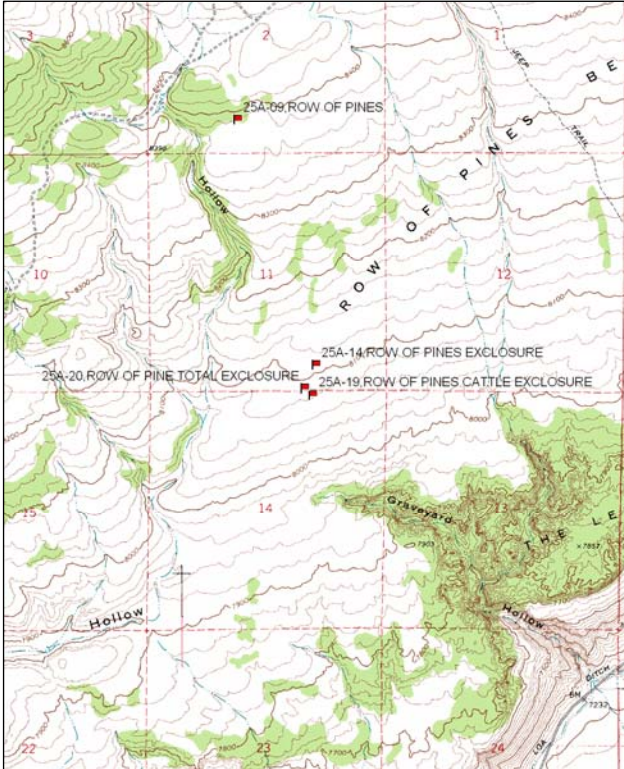
ROW OF PINES ENCLOSURE- TREND STUDY NO. 25A-14-09

Vegetation Type: Wyoming Big Sagebrush
Range Type: Crucial Deer Winter, Substantial Elk Winter
NRCS Ecological Site Description: Not Available
Land Ownership: BLM
Elevation: 8,050 ft (2,454 m)
Aspect: Southeast
Slope: 3%-5%
Transect bearing: 165 degrees magnetic
Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft)

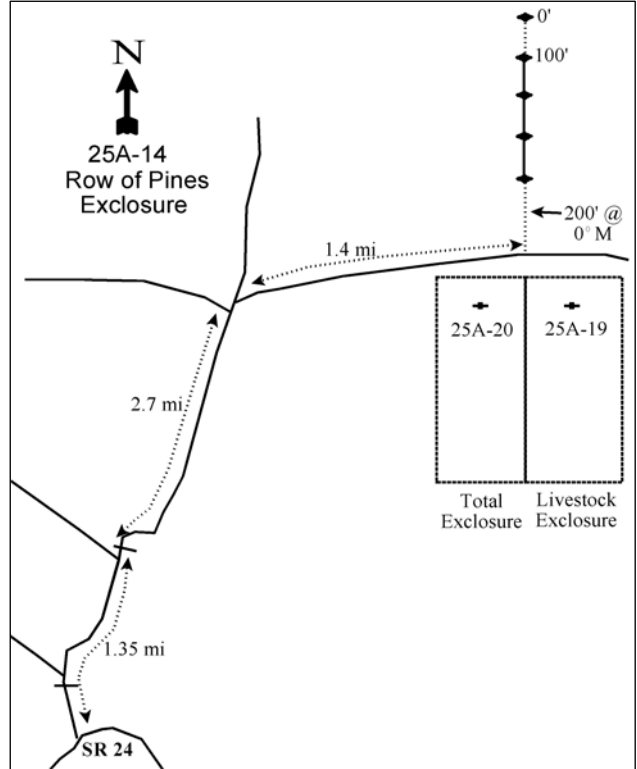
Directions:

From the Chappell Cheese Factory northwest of Loa on SR 24, go west 2.6 miles to a side road on the north where the highway makes a sharp turn (0.95 miles west of mile marker #49). Take this road 0.65 miles and turn right after crossing a cattleguard. After 0.7 more miles, turn right at the fork and cross another cattleguard. Go 2.7 miles to another fork where you will again turn right. After ~60', turn right (east) and go 1.4 miles to an enclosure. Stop at the middle of the enclosure and walk 200 feet at an azimuth of 0°M to the 400' stake. The 0' stake is 400 feet to the north in front of a large rock.

Map Name: Loa, Utah



Diagrammatic Sketch:



Township: 27S, Range: 2E, Section: 14

GPS: NAD 83, UTM 12S 442669 E 4258250 N

ROW OF PINES EXCLOSURE - TREND STUDY NO. 25A-14

Site Information

Site Description: The study is located just outside of the Row of Pines enclosure. The enclosure was built in the late 1980's by the BLM and DWR after the area was chained and seeded. The study samples a sagebrush-grass community within the BLM Seven Mile allotment. The area was retreated with a dixie harrow as part of the Seven Mile WRI project ([Project# 594](#)) in the fall of 2006 to rejuvenate the sagebrush and improve the grass/forb composition with a native/non-native seed mix of grass, forb, and shrubs (Table - Seed Mix). Deer sign and remains were found in 1991 and large amounts of sage grouse droppings were also encountered on the area during study site establishment in 1991. Pellet group data has estimated moderate deer use in 1999 and 2009, with heavier use in 2004. Estimated cattle use has been light since 1999. Estimated elk use was light in 1999 and 2004 with no pellets sampled in 2009 (Table - Pellet Group Data). Escape cover is about a half mile from the study transect.

Browse: The dominant browse species on the site was Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), but in 2009 the cover of sagebrush was reduced and the cover of broom snakeweed (*Gutierrezia sarothrae*) increased to become the co-dominant browse species following the 2006 treatment (Table - Browse Trends). Prior to the treatment, the sagebrush population was mostly mature with high amounts of decadence and poor vigor. In 2009, following the treatment, much of the population was comprised of young plants, and decadence and poor vigor had decreased to normal levels. Utilization of sagebrush was moderate to heavy prior to the treatment, but was light in 2009 after the treatment (Table - Browse Characteristics). Other browse species are fairly limited on the site.

Herbaceous Understory: Seeded grasses, crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), and Russian wildrye (*Elymus junceus*), have become established since the initial chaining treatment, but in low numbers. The dominant grass has been the native species blue grama (*Bouteloua gracilis*) with bottlebrush squirreltail (*Sitanion hystrix*) being common at the outset of the study. Bottlebrush squirreltail and crested wheatgrass nested frequency declined significantly in 2004. Forb composition and abundance is poor with all forbs combined providing less than 1% cover (Table - Herbaceous Trends).

Soil: The soil texture is a sandy clay loam to a loam with a neutral pH (Table - Soil Analysis Data). Soil parent material is basalt. Bare ground cover is moderately high on the site with the majority of protective ground cover provided by a high amount of rock and pavement cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2004 and 2009.

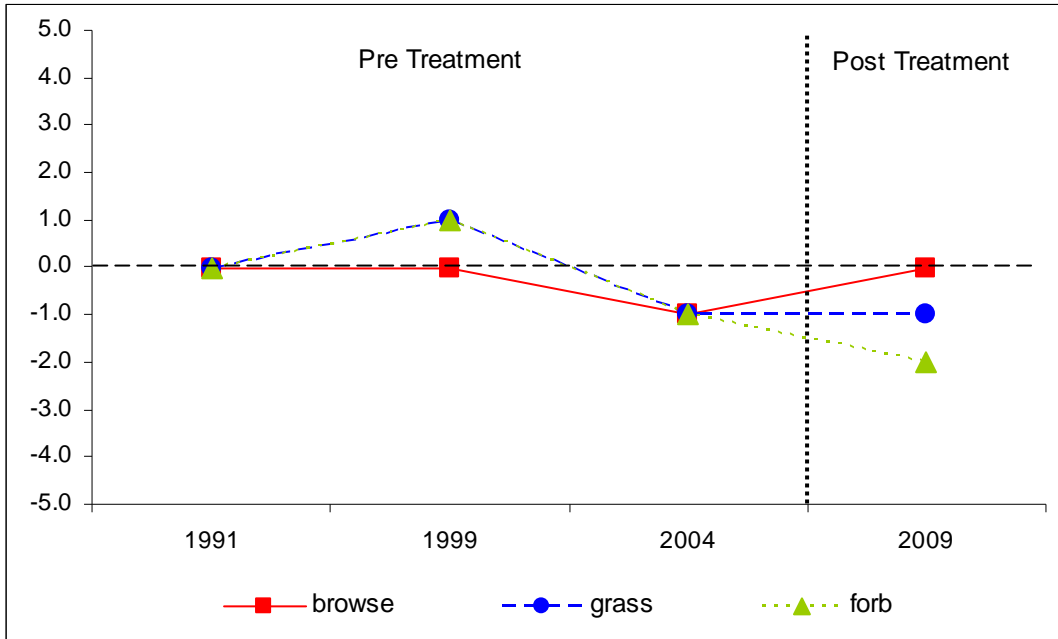
Trend Assessments

Browse:

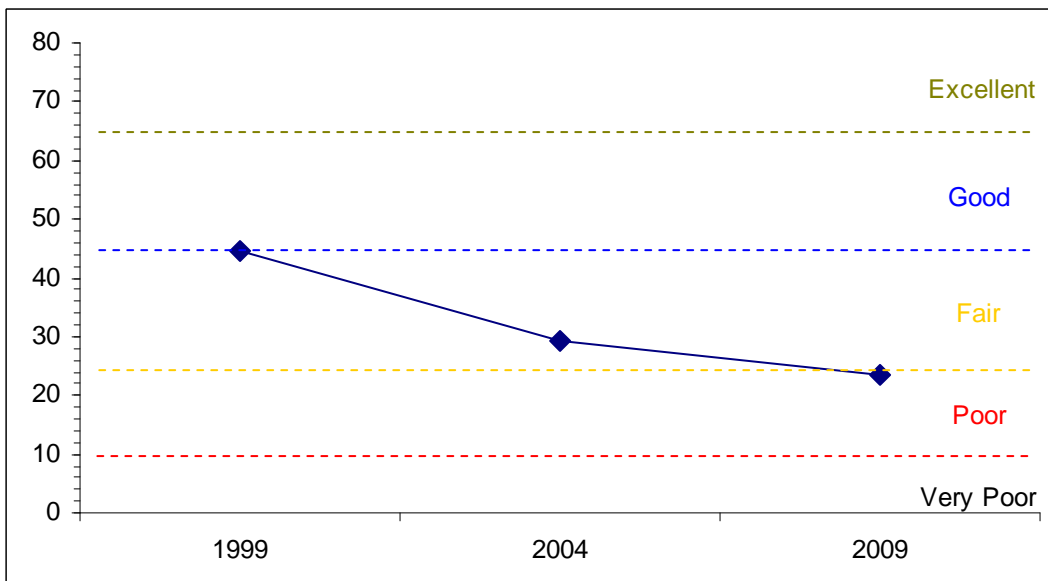
- **1991 to 1999 - stable (0):** Differences in density may be related to the larger sample area used in 1999; therefore, trend was determined using other parameters. Decadence of Wyoming big sagebrush remained similar, though poor vigor increased slightly.
- **1999 to 2004 - slightly down (-1):** The density of Wyoming big sagebrush decreased by 14% from 5,580 plants/acre to 4,780 plants/acre, and cover decreased from 13% to 11%. Decadence of sagebrush increased from 29% to 42% and poor vigor increased from 14% to 19%.
- **2004 to 2009 - slightly up (+1):** Following the treatment, Wyoming big sagebrush density increased by 38% to 6,640 plants/acre. However, the treatment also reduced the cover of sagebrush to just 2%. Recruitment of young sagebrush plants increased from 2% of the population to 38%. Decadence of sagebrush decreased to 6% and poor vigor decreased to 7%. The density of broom snakeweed increased substantially and is now the co-dominant browse species on the site.

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 25A Study no: 14



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE
Management unit 25A, Study no: 14



HERBACEOUS TRENDS--

Management unit 25A, Study no: 14

T y p e	Species	Nested Frequency				Average Cover %		
		'91	'99	'04	'09	'99	'04	'09
G	Agropyron cristatum	b32	b36	a7	a2	.22	.06	.01
G	Bouteloua gracilis	a122	ab149	ab150	b150	6.48	4.82	9.14
G	Bromus inermis	4	9	3	-	.07	.03	-
G	Elymus junceus	a1	b19	ab10	b21	.18	.21	.29
G	Oryzopsis hymenoides	33	18	18	31	.11	.10	.50
G	Sitanion hystrix	b135	b152	a47	a41	1.73	.46	.41
G	Stipa comata	2	1	-	-	.00	-	-
Total for Annual Grasses		0	0	0	0	0	0	0
Total for Perennial Grasses		329	384	235	245	8.83	5.70	10.36
Total for Grasses		329	384	235	245	8.83	5.70	10.36
F	Androsace septentrionalis (a)	-	b12	a-	a-	.02	-	-
F	Arabis demissa	2	-	3	2	-	.15	.00
F	Astragalus lentiginosus	ab4	ab6	b16	a2	.01	.03	.00
F	Chenopodium fremontii (a)	-	-	2	-	-	.15	-
F	Chenopodium leptophyllum(a)	-	-	3	-	-	.03	-
F	Descurainia pinnata (a)	-	4	5	13	.01	.04	.08
F	Erigeron pumilus	a7	b63	a-	a6	.38	-	.02
F	Eriogonum ovalifolium	7	3	-	-	.18	-	-
F	Phlox longifolia	12	5	4	-	.01	.01	-
F	Sphaeralcea coccinea	b13	ab5	a4	a3	.02	.01	.01
Total for Annual Forbs		0	16	10	13	0.03	0.21	0.07
Total for Perennial Forbs		45	82	27	13	0.61	0.21	0.03
Total for Forbs		45	98	37	26	0.64	0.43	0.11

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

BROWSE TRENDS--

Management unit 25A, Study no: 14

T y p e	Species	Strip Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
B	Artemisia frigida	5	3	1	.00	.00	.03
B	Artemisia tridentata wyomingensis	93	89	95	13.11	11.14	2.21
B	Chrysothamnus viscidiflorus stenophyllus	31	31	6	.45	.47	.06
B	Gutierrezia sarothrae	96	45	94	3.20	.27	2.65
B	Opuntia fragilis	14	20	1	.19	.06	.00
B	Pediocactus simpsonii	1	2	0	.00	.00	-
Total for Browse		240	190	197	16.96	11.96	4.97

CANOPY COVER, LINE INTERCEPT--

Management unit 25A, Study no: 14

Species	Percent Cover	
	'04	'09
Artemisia tridentata wyomingensis	9.55	4.28
Chrysothamnus viscidiflorus stenophyllus	.41	.05
Gutierrezia sarothrae	.71	2.59
Opuntia fragilis	.08	-

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 25A, Study no: 14

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	1.4	0.8

BASIC COVER--

Management unit 25A, Study no: 14

Cover Type	Average Cover %			
	'91	'99	'04	'09
Vegetation	4.00	25.65	18.32	17.32
Rock	11.50	13.64	13.11	14.96
Pavement	23.00	29.28	26.68	16.49
Litter	27.00	18.03	21.06	24.18
Cryptogams	0	.24	.13	.01
Bare Ground	34.50	21.60	34.99	31.70

SOIL ANALYSIS DATA --

Management unit 25A, Study no: 14, Study Name: Row of Pines Exclosure

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
11.2	7	47.3	27.4	25.3	1.6	8.5	163.2	0.6

PELLET GROUP DATA--

Management unit 25A, Study no: 14

Type	Quadrat Frequency			Days use per acre (ha)		
	'99	'04	'09	'99	'04	'09
Rabbit	34	45	65	-	-	-
Grouse	-	2	-	-	-	-
Elk	5	3	-	15 (37)	3 (7)	-
Deer	16	29	10	29 (72)	77 (190)	27 (68)
Cattle	3	4	1	15 (37)	4 (11)	5 (13)
Antelope	-	-	1	-	-	-

BROWSE CHARACTERISTICS--
Management unit 25A, Study no: 14

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 frigida</i>									
91	0	0	0	-	-	0	0	0	-/-
99	200	10	90	-	-	20	40	0	4/6
04	60	0	100	-	-	0	67	0	3/3
09	20	0	100	-	-	0	0	0	6/6
<i>Artemisia tridentata wyomingensis</i>									
91	6399	15	58	27	799	40	36	2	7/9
99	5580	6	65	29	60	45	17	14	13/24
04	4780	2	56	42	360	44	22	19	13/25
09	6640	38	56	6	440	7	0	7	8/11
<i>Chrysothamnus viscidiflorus stenophyllus</i>									
91	3265	16	61	22	66	45	31	2	4/6
99	1100	2	75	24	-	7	0	9	4/9
04	1060	6	85	9	60	8	0	6	5/11
09	160	0	100	0	-	25	0	0	5/7
<i>Eriogonum microthecum</i>									
91	0	0	0	-	-	0	0	0	-/-
99	0	0	0	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	4/6
09	0	0	0	-	-	0	0	0	-/-
<i>Gutierrezia sarothrae</i>									
91	6065	26	68	5	266	14	11	1	2/2
99	10000	10	88	2	520	0	0	1	7/8
04	1420	1	99	0	-	0	0	0	5/8
09	8640	8	92	0	40	0	1	.23	6/7
<i>Opuntia fragilis</i>									
91	0	0	0	0	66	0	0	0	-/-
99	540	7	89	4	-	0	0	4	2/8
04	720	6	94	0	-	0	0	0	2/7
09	20	0	100	0	20	0	0	0	2/5
<i>Pediocactus simpsonii</i>									
91	0	0	0	-	-	0	0	0	-/-
99	20	100	0	-	-	0	0	0	-/-
04	40	0	100	-	-	0	0	0	1/2
09	0	0	0	-	-	0	0	0	-/-