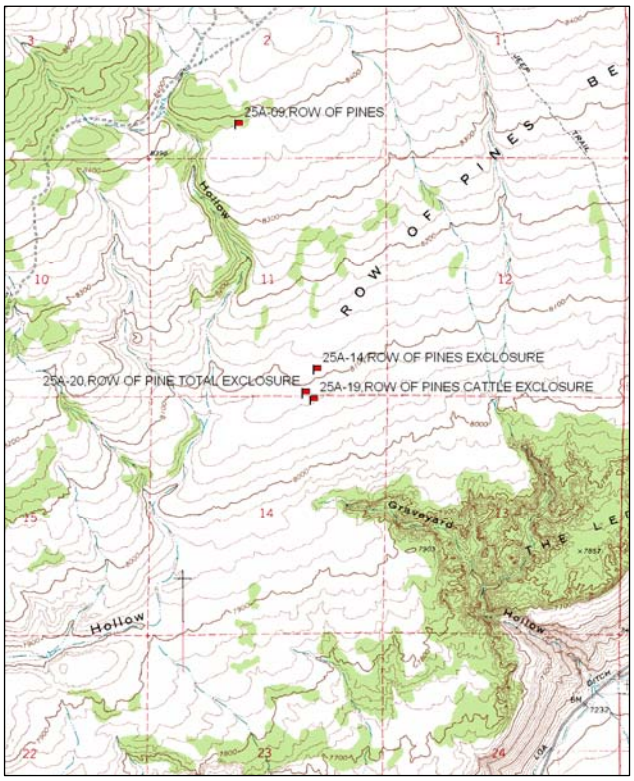
ROW OF PINES LIVESTOCK EXCLOSURE- TREND STUDY NO.25A-19-09

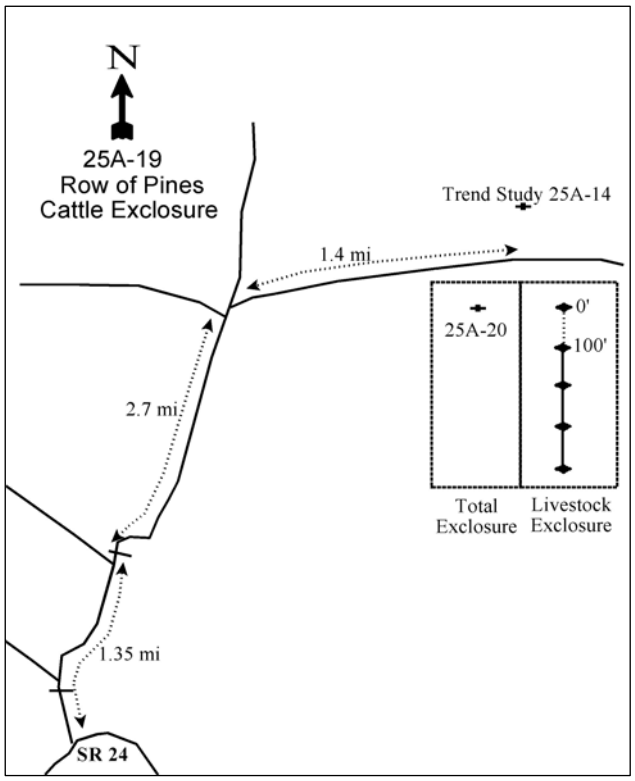
Vegetation Type: Wyoming Big Sagebrush
Range Type: Crucial Deer Winter, Substantial Elk Winter
NRCS Ecological Site Description: Not Available
Land Ownership: BLM
Elevation: 8,050 ft (2,454 m)
Aspect: Southeast
Slope: 3%-5%
Transect bearing: 210 degrees magnetic
Belt placement: line 1 (11 & 95ft), line 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 exclosure. The baseline runs down through the middle of the livestock exclosure (east side), with the 0 ft stake having browse tag #409 attached.

Map name: Loa, Utah



Diagrammatic Sketch:



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

GPS: NAD 83, UTM 12S 442646 E 425051 N

ROW OF PINES LIVESTOCK EXCLOSURE - TREND STUDY NO. 25A-19

Site Information

Site Description: The study was established in 1999 inside the Row of Pines livestock exclosure built in the late 1980's after the area was chained and seeded. Trend study 25A-14 is about 200 feet to the north of the exclosure. The area supports a sagebrush-grass community which is managed by the BLM as part of the Seven Mile allotment. Pellet group data has estimated heavy deer use since 1999, with the heaviest use in 2004. Estimated elk use has steadily decreased from heavy use in 1999 to light use in 2009 (Table - Pellet Group Data).

Browse: The key browse species in this area is Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), but cover (Table - Browse Trends) and density have steadily decreased since 1999. The decadence of sagebrush is moderately high with very high decadence noted in 2004. The percent of sagebrush plants displaying poor vigor increased in 2004 and has remained fairly high. Recruitment of young sagebrush plants has been poor over the study period and the population has displayed moderate to very heavy use since 1999. The only other common shrubs found in the exclosure are increasers, narrowleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *stenophyllus*) and broom snakeweed (*Gutierrezia sarothrae*), though both species decreased substantially in density since 1999 (Table - Browse Characteristics).

Herbaceous Understory: The herbaceous understory is dominated by grasses which are diverse for a Wyoming big sagebrush site. Common species include seeded species such as crested wheatgrass (*Agropyron cristatum*) and Russian wildrye (*Elymus junceus*), and native species like blue grama (*Bouteloua gracilis*) and bottlebrush squirreltail (*Sitanion hystrix*). Crested wheatgrass and bottlebrush squirreltail declined significantly in nested frequency in 2004. Forbs are rare and produce less 1% cover (Table - Herbaceous Trends).

Soil: Soil is a sandy clay loam to a loam with a neutral pH (Table - Soil Analysis Table). Soil parent material is basalt. The soil surface is mostly a combination of pavement and rock cover with a moderate amount of bare ground cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2004 and 2009.

Trend Assessments

Browse:

- **1999 to 2004 - slightly down (-1):** Density of Wyoming big sagebrush decreased by 16% from 5,820 plants/acre to 4,900 plants/acre and cover decreased from 8% to 5%. Decadence of sagebrush increased from 27% to 69% and poor vigor increased from 18% to 35%.
- **2004 to 2009 - slightly down (-1):** The density of Wyoming big sagebrush decreased by 17% to 4,080 plants/acre and cover remained similar. Decadence decreased to 32%, but is still moderately high.

Grass:

- **1999 to 2004 - down (-2):** The sum of nested frequency of perennial grasses decreased by 42% and cover decreased from 10% to 8%. There was a significant decrease in the nested frequency of crested wheatgrass and bottlebrush squirreltail.
- **2004 to 2009 - up (+2):** Perennial grass sum of nested frequency increased by 30% and cover increased to 10%. There was a significant increase in the nested frequency of blue grama and Indian ricegrass (*Oryzopsis hymenoides*).

Forb:

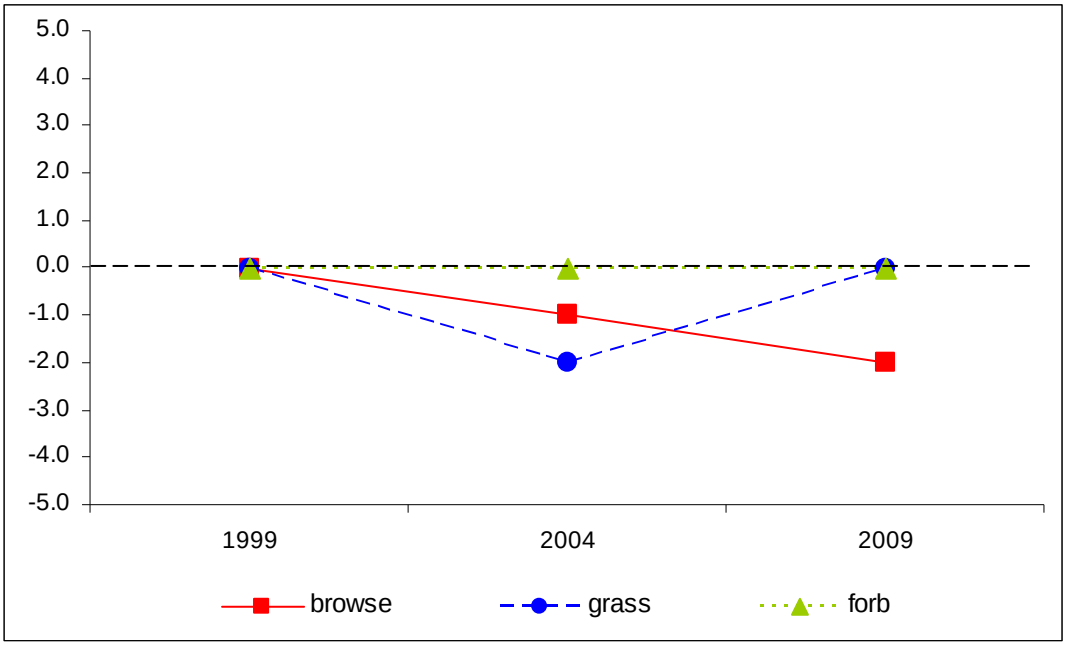
- **1999 to 2009 - stable (0):** Forbs are very rare on the site.
- **2004 to 2009 - stable (0):** Forbs remain very rare on the site.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 25A, study no: 19

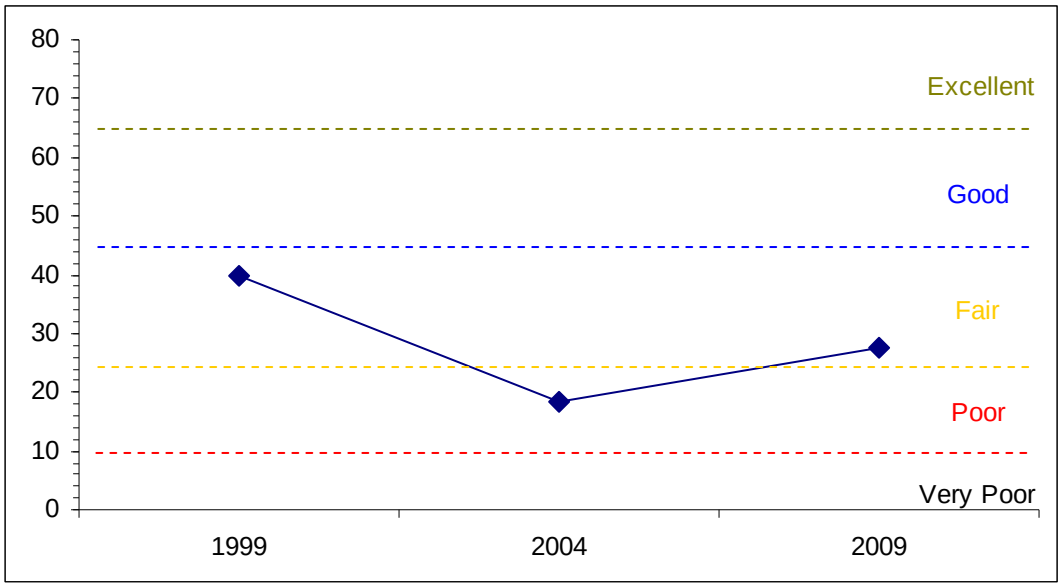
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	**Total Score**	Ranking
99	10.3	6.9	1.5	20.7	0.0	0.6	0.0	**39.9**	Fair
04	6.6	-5.7	1.0	15.9	0.0	0.5	0.0	**18.3**	Poor
09	6.2	0.0	0.0	21.0	0.0	0.2	0.0	**27.4**	Fair

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 25A Study no: 19



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE
Management unit 25A, Study no: 19



HERBACEOUS TRENDS--
Management unit 25A, Study no: 19

Type	Species	Nested Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
G	Agropyron cristatum	$_{b}$130	$_{a}$66	$_{a}$86	2.66	2.07	2.25
G	Agropyron intermedium	1	-	-	.00	-	-
G	Bouteloua gracilis	$_{a}$91	$_{a}$99	$_{b}$121	3.86	2.81	5.09
G	Bromus inermis	10	1	-	.09	.03	-
G	Elymus junceus	40	42	35	1.20	1.77	.89
G	Elymus salina	-	-	-	-	-	.00
G	Oryzopsis hymenoides	$_{a}$10	$_{a}$7	$_{b}$36	.27	.24	1.04
G	Sitanion hystrix	$_{b}$136	$_{a}$25	$_{a}$31	2.01	.80	.91
G	Stipa comata	1	2	7	.06	.03	.30
G	Stipa pinetorum	2	2	-	.15	.15	-
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		421	244	316	10.33	7.94	10.50
Total for Grasses		421	244	316	10.33	7.94	10.50
F	Androsace septentrionalis (a)	2	-	-	.01	-	-
F	Astragalus sp.	3	5	-	.00	.00	-
F	Chenopodium leptophyllum(a)	$_{a}$-	$_{b}$15	$_{a}$-	-	.51	-
F	Cryptantha sp.	3	-	-	.03	-	-
F	Descurainia pinnata (a)	-	3	-	-	.00	-
F	Erigeron pumilus	$_{b}$32	$_{a}$3	$_{b}$24	.15	.00	.09
F	Eriogonum ovalifolium	1	-	3	.03	-	.00
F	Phlox longifolia	-	-	2	-	-	.00
F	Salsola iberica (a)	-	1	-	-	.00	-
F	Sphaeralcea coccinea	$_{ab}$10	$_{b}$14	$_{a}$-	.04	.25	-
F	Unknown forb-perennial	4	-	-	.03	-	-

Type	Species	Nested Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
Total for Annual Forbs		2	19	0	0.00	0.52	0
Total for Perennial Forbs		53	22	29	0.30	0.25	0.10
Total for Forbs		55	41	29	0.31	0.78	0.10

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

BROWSE TRENDS--
Management unit 25A, Study no: 19

Type	Species	Strip Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
B	Artemisia tridentata wyomingensis	91	78	77	8.23	5.31	4.99
B	Chrysothamnus viscidiflorus stenophyllus	28	25	10	.11	.25	.30
B	Gutierrezia sarothrae	67	23	20	1.06	.22	.29
B	Opuntia fragilis	6	11	2	.18	.06	.00
B	Pediocactus simpsonii	0	2	0	-	.00	-
Total for Browse		192	139	109	9.59	5.86	5.59

CANOPY COVER, LINE INTERCEPT--
Management unit 25A, Study no: 19

Species	Percent Cover	
	'04	'09
Artemisia tridentata wyomingensis	6.11	8.78
Chrysothamnus viscidiflorus stenophyllus	.18	.11
Gutierrezia sarothrae	.26	.03
Opuntia fragilis	.06	-

KEY BROWSE ANNUAL LEADER GROWTH--
Management unit 25A, Study no: 19

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	1.1	0.7

BASIC COVER--
Management unit 25A, Study no: 19

Cover Type	Average Cover %		
	'99	'04	'09
Vegetation	21.47	13.96	16.50
Rock	12.68	15.14	12.57
Pavement	22.53	40.84	30.45
Litter	11.73	19.00	19.38
Cryptogams	.00	.03	.02
Bare Ground	22.28	21.76	27.02

SOIL ANALYSIS DATA --
Management unit 25A, Study no: 19, Study Name: Row of Pines Cattle Exclosure

Effective rooting depth (in)	pH	sandy clay loam			%0M	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: 19

Type	Quadrat Frequency		
	'99	'04	'09
Rabbit	1	8	62
Elk	24	11	-
Deer	22	38	31
Cattle	-	1	-

Days use per acre (ha)		
'99	'04	'09
-	-	-
58 (143)	11 (28)	3 (7)
48 (119)	126 (312)	58 (142)
-	-	-

BROWSE CHARACTERISTICS--
Management unit 25A, Study no: 19

		Age class distribution				Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
Artemisia tridentata wyomingensis									
99	**5820**	3	70	27	-	49	46	18	12/23
04	**4900**	2	29	69	-	38	60	35	10/20
09	**4080**	1	67	32	80	29	15	34	12/21
Chrysothamnus viscidiflorus stenophyllus									
99	**880**	2	93	5	-	18	5	5	5/8
04	**800**	5	88	8	20	0	0	5	5/11
09	**260**	0	92	8	-	0	0	0	5/9
Gutierrezia sarothrae									
99	**2380**	3	97	0	20	0	0	0	7/8
04	**540**	7	93	0	-	0	0	0	5/7
09	**740**	16	81	3	20	0	0	0	5/6
Opuntia fragilis									
99	**200**	0	100	-	-	0	0	0	2/5
04	**440**	18	82	-	-	0	0	0	2/8
09	**60**	33	67	-	-	0	0	0	-/-

		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									
99	**0**	0	0	-	-	0	0	0	-/-
04	**40**	0	100	-	-	0	0	0	1/2
09	**0**	0	0	-	-	0	0	0	-/-