

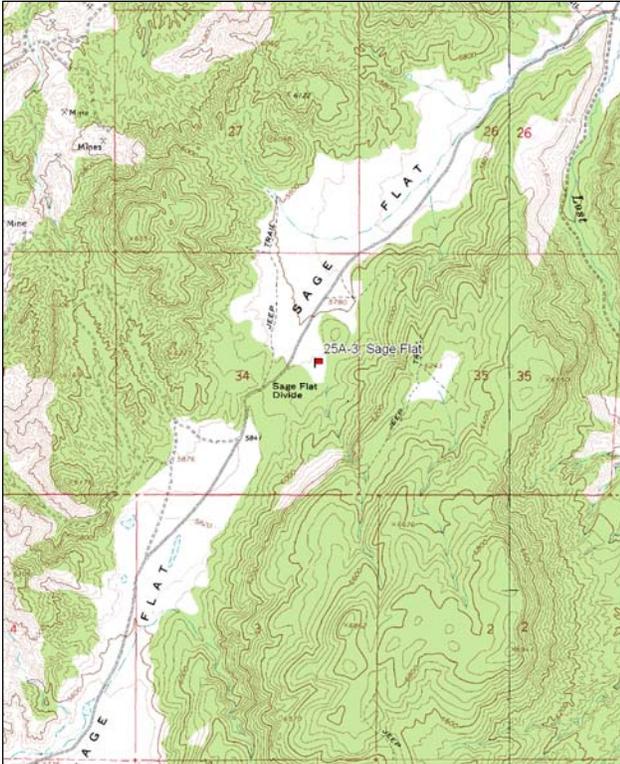
SAGE FLAT - TREND STUDY NO. 25A-3-09

Vegetation Type: Wyoming Big Sagebrush
Range Type: Crucial Deer Winter, Substantial Elk Winter
NRCS Ecological Site Description: Not Available
Land Ownership: BLM
Elevation: 5,800 ft (1,768 m)
Aspect: West
Slope: 5%
Transect bearing: 180 degrees magnetic
Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft)

Directions:

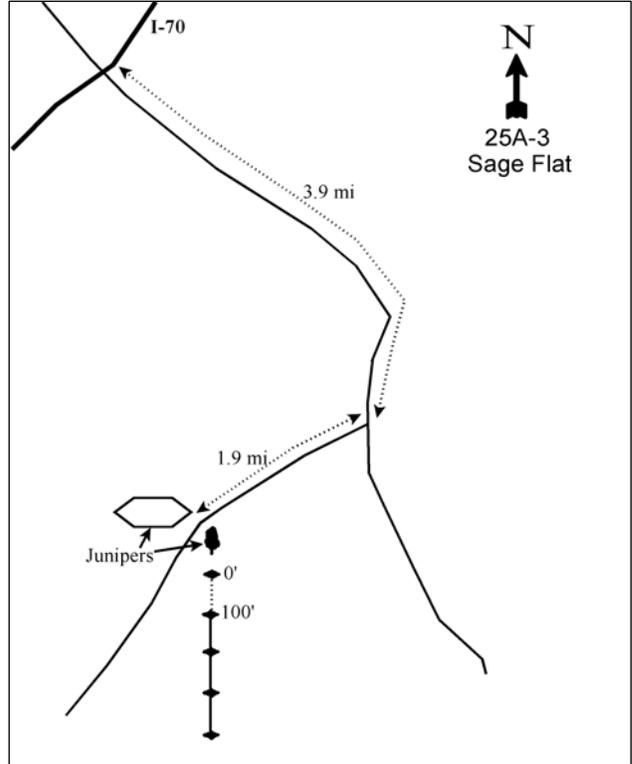
Beginning at the point where the Lost Creek Road passes under I-70 east of Aurora, proceed southeast up the Lost Creek Road 1.2 miles to a truck crossing. Continue past the truck crossing 1.65 miles to a bridge, then 1.05 miles beyond the bridge to a road turning off to the right. Turn right here onto the Sage Flat Road. Drive along this road for 1.9 miles to a slight bend with 5 junipers on the right side. Stop the vehicle 20-30 yards beyond these trees. On the left side of the road is a lone juniper. The baseline begins 15 feet south of this tree.

Map Name: Sigurd, Utah



Township: 22S, Range: 1W, Section 34

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 422656 E 4300339 N

SAGE FLAT - TREND STUDY NO. 25A-3

Site Information

Site Description: This study is located in a Wyoming sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) flat amid a juniper woodland. As part of the Gypsum allotment, sheep graze this area in winter and cattle and sheep use it in spring. A road through the flat is well-used and may lead to some off-road use. Deer use of this area has been very heavy in each sampling from 1999 to 2009. Elk and cattle use has been light in the same period (Tables – Pellet Group Data).

Browse: Wyoming big sagebrush is the dominant browse species and has averaged 99% of total shrub cover since 1999 (Table - Browse Trends). The population has seen increasing decadence rates (at 51% in 2009) each sample year and has seen decreasing recruitment of young since 1991. The population density has decreased steadily since new density estimation methods were first used in 1991.

Herbaceous Understory: The herbaceous understory is weedy and consists almost entirely of cheatgrass (*Bromus tectorum*) and weedy annual forbs such as pale alyssum (*Alyssum alyssoides*), storkbill (*Erodium cicutarium*) and burr buttercup (*Ranunculus testiculatus*). No perennial forbs or grasses were sampled in 2009 (Table - Herbaceous Trends).

Soil: The soils are classified as sandy loam and are slightly alkaline (pH 7.7). Organic matter and phosphorus are low, and phosphorus may limit plant growth and development (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). The amount of bareground has decreased as cheatgrass has proliferated. The soil erosion condition was classified as stale in both 2004 and 2009 although some active gullies are found on the site.

Trend Assessments

Browse:

- **1985 to 1991 - up (+2):** Wyoming big sagebrush density nearly doubled due to a high increase in the recruitment of young sagebrush plants. Decadence is moderate and decreased slightly from 33% to 26%.
- **1991 to 1999 - slightly down (-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 increased slightly to 31%, and recruitment of young plants has fallen to 11% of the population.
- **1999 to 2004 – slightly down (-1):** Wyoming big sagebrush density is similar to the last reading but decadence has increased to 38% and recruitment of young plants has decreased to 3%.
- **2004 to 2009 - down (-2):** Wyoming big sagebrush density decreased 24% to 2,440 plants/acre. Decadence has continued to increase to 51% of the population and no young plants were sampled.

Grass:

- **1985 to 1991 - down (-2):** The sum of nested frequency for perennial grasses decreased 54%. Data was not taken on cheatgrass in this sample.
- **1991 to 1999 - down (-2):** Perennial grasses are almost non-existent on this site. Cheat grass dominates the herbaceous understory at 15% cover and accounts for 86% of herbaceous cover.
- **1999 to 2004 – slightly down (-1):** Cheatgrass cover has more than doubled to 32%. The nested frequency of cheatgrass increased significantly.
- **2004 to 2009 - stable (0):** Cheatgrass accounted for 100% of grass cover and 69% of the total herbaceous cover, and provides 27% cover.

Forb:

- **1985 to 1991 - stable (0):** The forb population is essentially non-existent. Forbs were encountered in only two quadrats.
- **1991 to 1999 - down (-2):** Perennial forbs were not encountered in this sample. Weedy annual forbs have invaded the site, mostly bur buttercup and tumble mustard (*Sisymbrium altissimum*). Annual forb cover is at 2%.
- **1999 to 2004 - down (-2):** Weedy annual species continue to increase. Bur buttercup is the dominant forb species and provides 78% of forb cover. Annual forb cover is at 4%.
- **2004 to 2009 - down (-2):** Bur buttercup has continued to increase and provides 66% of forb cover. Annual forb cover is at 12%.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

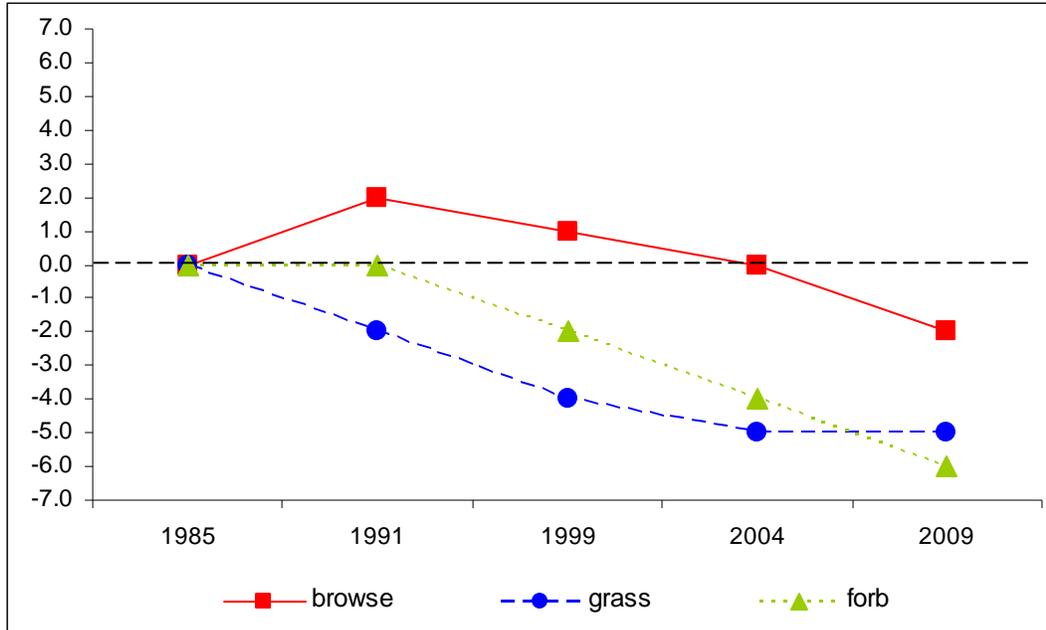
Management unit 25A, study no: 3

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	18.6	5.7	5.5	0.4	-11.3	0.0	0.0	19.0	Poor
04	16.7	3.6	1.5	0.0	-20.0	0.0	0.0	1.9	Very Poor
09	11.1	-0.3	0.0	0.0	-20.0	0.0	0.0	-9.2	Very Poor

Trend Summary

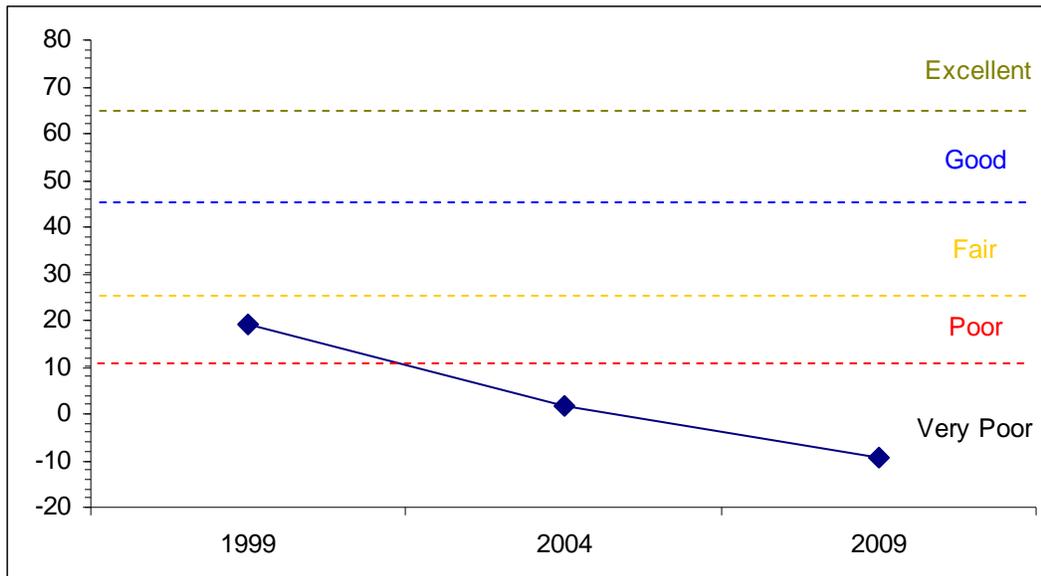
CUMULATIVE RANGE TREND ASSESSMENT--

Management unit 25A Study no: 3



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE

Management unit 25A, Study no: 3



HERBACEOUS TRENDS--

Management unit 25A, Study no: 3

Type	Species	Nested Frequency					Average Cover %		
		'85	'91	'99	'04	'09	'99	'04	'09
G	Bromus tectorum (a)	-	-	a349	b379	a353	15.05	32.11	27.49
G	Poa secunda	3	-	-	-	-	-	-	-
G	Sitanion hystrix	b38	b19	a3	a3	a-	.03	.03	-
G	Sporobolus cryptandrus	-	-	1	-	-	.18	-	-
Total for Annual Grasses		0	0	349	379	353	15.05	32.11	27.49
Total for Perennial Grasses		41	19	4	3	0	0.21	0.02	0
Total for Grasses		41	19	353	382	353	15.26	32.14	27.49
F	Alyssum alyssoides (a)	-	-	a23	a25	b108	.17	.14	1.45
F	Erodium cicutarium (a)	-	-	a-	b36	c68	-	.63	2.19
F	Ranunculus testiculatus (a)	-	-	a143	b267	b288	.88	3.12	8.02
F	Salsola iberica (a)	-	-	-	4	-	-	.00	-
F	Sisymbrium altissimum (a)	-	-	ab18	a8	b30	1.20	.07	.43
F	Tragopogon dubius	-	1	-	-	-	-	-	-
F	Unknown forb-perennial	-	1	-	-	-	-	-	-
Total for Annual Forbs		0	0	184	340	494	2.25	3.99	12.10
Total for Perennial Forbs		0	2	0	0	0	0	0	0
Total for Forbs		0	2	184	340	494	2.25	3.99	12.10

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

BROWSE TRENDS--

Management unit 25A, Study no: 3

Type	Species	Strip Frequency			Average Cover %		
		'99	'04	'09	'99	'04	'09
B	Artemisia tridentata wyomingensis	84	86	84	14.90	13.39	8.88
B	Opuntia sp.	1	1	1	.00	.03	.15
Total for Browse		85	87	85	14.90	13.42	9.02

CANOPY COVER, LINE INTERCEPT--

Management unit 25A, Study no: 3

Species	Percent Cover	
	'04	'09
Artemisia tridentata wyomingensis	19.66	10.69
Opuntia sp.	.10	.13

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 25A, Study no: 3

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata wyomingensis	2.3	1.4

BASIC COVER--

Management unit 25A, Study no: 3

Cover Type	Average Cover %				
	'85	'91	'99	'04	'09
Vegetation	8.50	1.25	30.59	49.87	45.70
Rock	1.50	1.75	1.32	1.52	1.22
Pavement	7.75	19.25	10.25	11.38	4.91
Litter	54.25	55.25	37.05	43.91	42.95
Cryptogams	0	0	.09	.87	.03
Bare Ground	28.00	22.50	20.09	12.67	16.25

SOIL ANALYSIS DATA --

Management unit 25A, Study no: 3, Study Name: Sage Flat

Effective rooting depth (in)	pH	loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
15.2	7.7	52	28.7	19.3	1.3	5.8	147.2	0.6

PELLET GROUP DATA--

Management unit 25A, Study no: 3

Type	Quadrat Frequency			Days use per acre (ha)		
	'99	'04	'09	'99	'04	'09
Rabbit	35	36	60	-	-	-
Elk	-	1	2	4 (9)	1 (2)	-
Deer	53	82	69	125 (308)	246 (608)	191 (473)
Cattle	2	2	1	6 (14)	4 (9)	7 (18)

BROWSE CHARACTERISTICS--
 Management unit 25A, Study no: 3

		Age class distribution				Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata wyomingensis</i>									
85	2398	6	61	33	-	3	0	6	24/26
91	5198	55	19	26	7999	24	0	5	21/19
99	3500	11	58	31	20	26	3	1	26/34
04	3200	3	59	38	-	18	74	26	22/31
09	2440	0	49	51	-	33	4	27	23/28
<i>Opuntia sp.</i>									
85	66	0	100	-	-	0	0	0	6/6
91	66	0	100	-	-	0	0	0	6/13
99	20	0	100	-	-	0	0	0	-/-
04	20	0	100	-	-	0	0	0	4/9
09	20	0	100	-	-	0	0	0	4/16