

KIMBER RANCH - TREND STUDY NO. 1-11-11

Vegetation Type: Black Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Year-long

NRCS Ecological Site Description: [Upland Shallow Loam \(Utah Juniper\), R025XY324UT](#)

Land Ownership: BLM

Elevation: 5,300 ft. (1,615 m)

Aspect: South

Slope: 20-25%

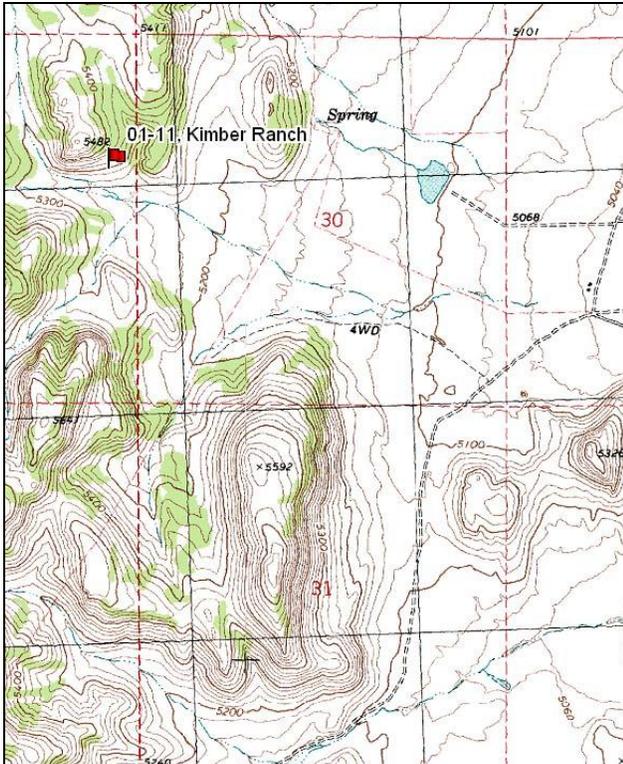
Transect bearing: 165° magnetic

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

Directions:

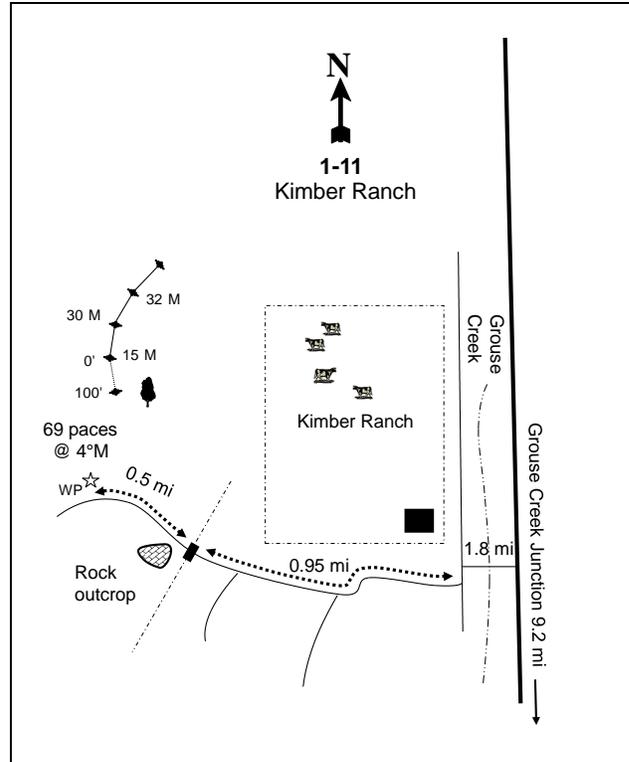
Proceed on U-30 to Grouse Creek junction, turn right and travel north 9.2 miles. Turn left at the ranch complex and proceed 1.8 miles to the Kimber Ranch. At the ranch house stay left for 0.05 miles. Stay left for another 0.25 miles, then turn right going west for 0.6 miles. Turn right for 0.1 miles to a gate. Continue up the road 0.5 miles to a witness post on the right side of the road. From the witness post walk 69 paces at 4 degrees magnetic to the 100-foot post. The 0-foot stake is 100 feet to the north and is marked by browse-tag #7912.

Map Name: Toms Cabin Spring



Township: 10N Range: 19W Section: 25

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 252633 E 4605281 N

KIMBER RANCH - TREND STUDY NO. 1-11

Site Information

Site Description: The study samples a hillside dominated by black sagebrush (*Artemisia nova*) southwest of Grouse Creek. The surrounding area is covered with patches of Utah juniper (*Juniperus osteosperma*), which provide important thermal and hiding cover for wildlife. The area is managed by the Bureau of Land Management (BLM) as part of the Dairy Valley allotment. Deer pellet groups have been sampled in moderate to high abundance since 2001. However, sampled elk and cattle sign has been minimal since 2001 (Table - Pellet Group Data).

Browse: Browse composition is dominated by a low-growing, evenly spaced stand of black sagebrush. The population was noted as heavily hedged in 1984, but utilization has fluctuated between light to moderate use in the other sample years. The density of black sagebrush has steadily decreased since 1996. Decadence has been mostly moderate in the black sagebrush population. Recruitment of young black sagebrush plants was good at the outset of the study, but has been poor since 2006. Cheatgrass (*Bromus tectorum*) is prevalent on the site and may be inhibiting the recruitment of young plants. Other associated shrubs include Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), shadscale (*Atriplex confertifolia*), and green molley summer cypress (*Kochia americana*). However, none of these species are abundant (Table - Browse Characteristics). Utah juniper trees are scattered over the site in moderate, but stable density (Table - Point-Quarter Tree Data). The majority of the juniper trees (80%) were smaller than eight feet tall in 2011.

Herbaceous Understory: The herbaceous understory is composed mainly of grasses. Cheatgrass dominates the herbaceous component, and has provided over 60% of the grass cover since 1996. Perennial grasses are much less abundant, but include bluebunch wheatgrass (*Agropyron spicatum*), Thurber needlegrass (*Stipa thurberiana*), bottlebrush squirreltail (*Sitanion hystrix*), Indian ricegrass (*Oryzopsis hymenoides*), and Sandberg bluegrass (*Poa secunda*). Forbs are very rare on the site, and provide very limited cover (Table - Herbaceous Trends).

Soil: This soil is part of the Rexmont-Shalper-Rock outcrop complex, which occurs on hills. Parent material consists of residuum or colluvium derived from rhyolite or other extrusive igneous rocks (Soil Survey Staff 2011). Soil texture is a clay loam that has a slightly alkaline soil reaction (pH 7.8) (Table - Soil Analysis Data). Vegetation and litter cover is comprised primarily of dead cheatgrass litter and shrub crowns, with large amounts of rock and pavement cover. Bare ground cover has been low to moderate over the sample years (Table - Basic Cover). The soil erosion condition was classified as slight in both 2001 and 2006, but was stable in 2011.

Trend Assessments

Browse:

- **1984 to 1990 - slightly down (-1):** Density of black sagebrush decreased by 9% from 5,665 plants/acre to 5,131 plants/acre. Decadence increased from 34% to 69%, and poor vigor increased from 15% to 29%. Recruitment of young black sagebrush plants decreased from 15% to 8% of the population.
- **1990 to 1996 - slightly up (+1):** Differences in density may be related to the larger sample area used in 1996; therefore, trend was determined using other parameters. Decadence of black sagebrush decreased to 17%, and poor vigor decreased to 3%. Recruitment of young black sagebrush plants increased slightly to 11% of the population.
- **1996 to 2001 - slightly down (-1):** Black sagebrush density decreased by 10% from 7,980 plants/acre to 7,200 plants/acre, though cover remained similar at 15%. Decadence increased slightly to 23%, and poor vigor increased to 8%. Recruitment of young black sagebrush plants increased slightly to 16%.

- **2001 to 2006 - slightly down (-1):** The density of black sagebrush decreased by 16% to 6,040 plants/acre, and cover decreased to 13%. Decadence increased to 33%, and poor vigor increased to 16%. Recruitment of young plants decreased to 8% of the population.
- **2006 to 2011 - stable (0):** There was a slight decrease in the density of black sagebrush to 5,500 plants/acre, and cover decreased slightly to 12%. Decadence decreased to 21%, but poor vigor remained similar at 14%. Recruitment decreased to just 4% of the population, and is considered to be poor.

Grass:

- **1984 to 1990 - stable (0):** There was little change in the sum of nested frequency of perennial grasses.
- **1990 to 1996 - down (-2):** The sum of nested frequency of perennial grasses decreased by 22%. Cheatgrass was included in the sample for the first time in 1996, and was a major component.
- **1996 to 2001 - down (-2):** The sum of nested frequency of perennial grasses decreased by 27%, and cover decreased from 2% to 1%. Cheatgrass increased significantly in nested frequency, and cover increased from 3% to 11%.
- **2001 to 2006 - stable (0):** The sum of nested frequency of perennial grasses remained similar, but cover increased to 4%. Cheatgrass decreased significantly in nested frequency, but cover remained similar at 11%.
- **2006 to 2011 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, but cover decreased slightly to 3%. Cheatgrass decreased significantly in nested frequency, and cover decreased to 5%.

Forb:

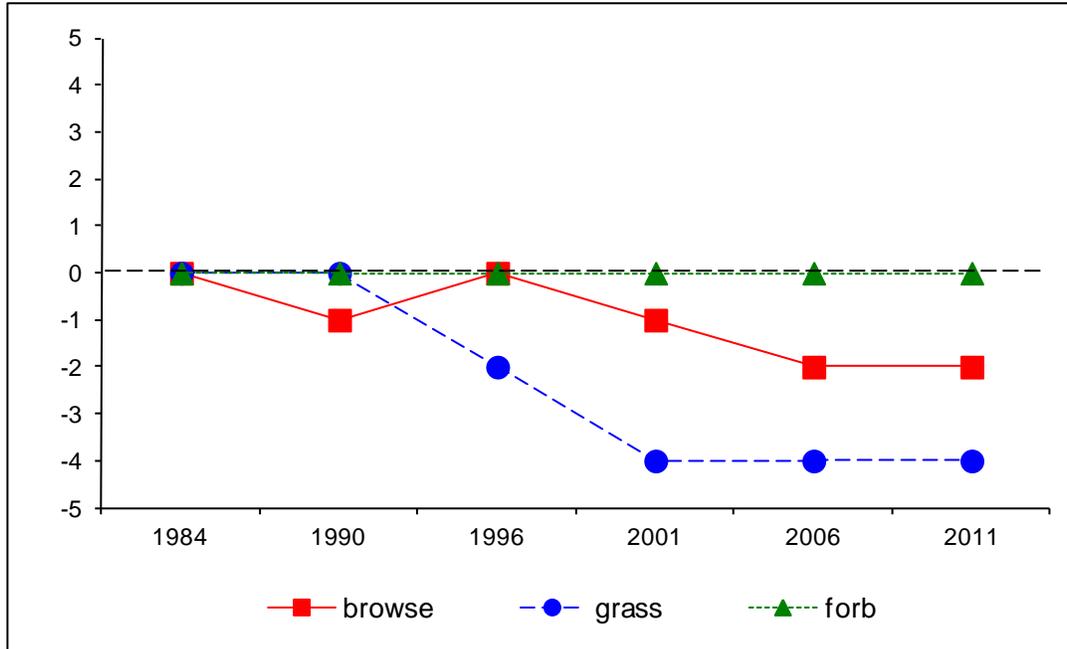
- **1984 to 1990 - stable (0):** Perennial forbs are rare on the site.
- **1990 to 1996 - stable (0):** Perennial forbs are rare on the site.
- **1996 to 2001 - stable (0):** Perennial forbs are rare on the site.
- **2001 to 2006 - stable (0):** Perennial forbs are rare on the site.
- **2006 to 2011 - stable (0):** Perennial forbs are rare on the site.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --
Management unit 1, study no: 11

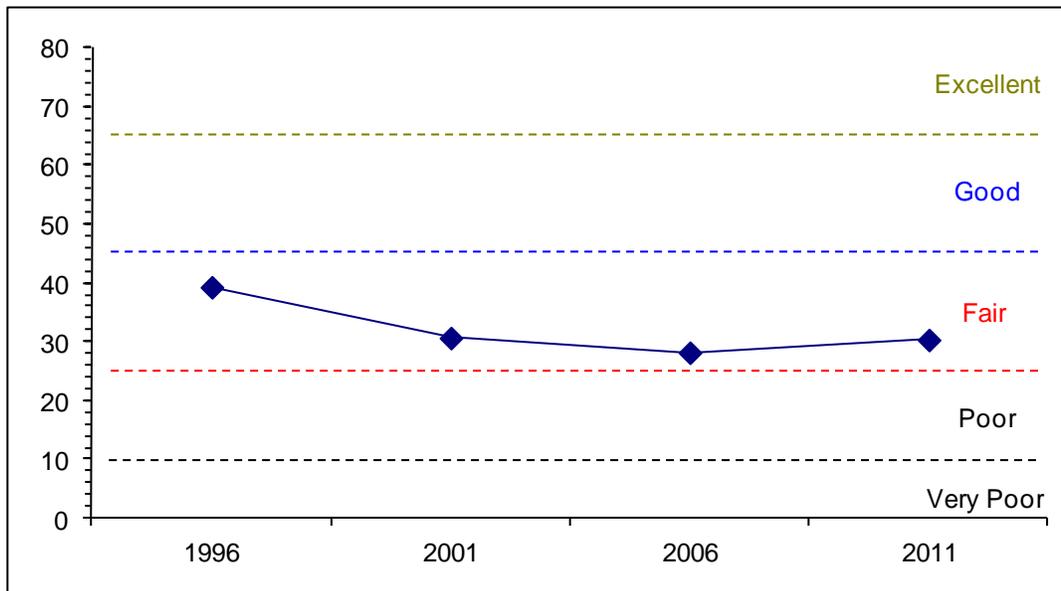
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	20.0	10.3	7.3	3.4	-2.4	0.6	0.0	39.3	Fair
01	20.2	8.0	8.0	2.5	-8.3	0.3	0.0	30.6	Fair
06	18.0	5.8	3.9	8.1	-7.9	0.3	0.0	28.2	Fair
11	17.1	8.9	2.3	5.0	-3.8	0.8	0.0	30.3	Fair

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 1 Study no: 11



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
 Management unit 1, Study no: 11



HERBACEOUS TRENDS--
Management unit 01, Study no: 11

Type	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
G	Agropyron smithii	-	-	-	2	-	-	-	.00	-	-
G	Agropyron spicatum	a-	b9	c62	c61	c50	c73	.73	.74	1.92	1.61
G	Bromus tectorum (a)	-	-	b321	d362	c339	a240	3.11	11.06	10.57	5.00
G	Oryzopsis hymenoides	a4	ab21	b25	a8	b34	b38	.34	.10	1.12	.72
G	Poa secunda	6	8	-	10	-	1	.00	.07	-	.03
G	Sitanion hystrix	d79	cd58	bc43	ab21	abc29	a12	.41	.16	.65	.10
G	Stipa thurberiana	b99	b106	a28	a13	a6	a-	.21	.16	.37	-
G	Vulpia octoflora (a)	-	-	b22	ab21	a-	a3	.04	.06	-	.01
Total for Annual Grasses		0	0	343	383	339	243	3.15	11.13	10.57	5.01
Total for Perennial Grasses		188	202	158	115	119	124	1.70	1.23	4.07	2.48
Total for Grasses		188	202	501	498	458	367	4.86	12.37	14.65	7.49
F	Agoseris glauca	-	-	-	-	-	3	-	-	-	.03
F	Antennaria rosea	-	-	-	2	-	-	-	.03	-	-
F	Astragalus beckwithii	1	-	4	-	-	-	.01	-	-	-
F	Astragalus sp.	-	-	-	-	-	7	-	-	-	.06
F	Astragalus utahensis	ab11	a3	b23	a3	a6	ab11	.14	.03	.06	.03
F	Balsamorhiza hookeri	-	-	-	1	-	1	-	.03	.03	.00
F	Castilleja angustifolia	b28	a-	a6	a-	a1	a1	.02	-	.00	.00
F	Chaenactis douglasii	1	-	-	-	-	-	-	-	-	-
F	Collinsia parviflora (a)	-	-	-	-	-	9	-	-	-	.01
F	Crepis acuminata	a-	a-	a-	a1	a1	b7	-	.03	.00	.21
F	Cryptantha sp.	-	-	3	-	2	-	.01	-	.00	-
F	Descurainia pinnata (a)	-	-	a3	b12	a-	c86	.00	.06	-	.52
F	Erigeron aphanactis	4	-	-	1	-	5	-	.00	-	.01
F	Eriogonum caespitosum	5	2	3	-	-	-	.00	-	-	-
F	Eriogonum ovalifolium	-	-	-	-	3	3	-	-	.03	.01
F	Gilia sp. (a)	-	-	a2	b114	a-	b131	.00	.34	-	1.12
F	Hymenopappus sp.	-	-	8	-	-	-	.06	-	-	-
F	Lappula occidentalis (a)	-	-	a-	b9	a-	b7	-	.03	-	.05
F	Lepidium sp. (a)	-	-	-	-	-	3	-	-	-	.00
F	Lygodesmia sp.	-	-	3	-	-	-	.03	-	-	-
F	Navarretia intertexta (a)	-	-	2	-	-	3	.01	-	-	.00
F	Orobancha fasciculata	-	1	6	2	-	-	.01	.00	-	-
F	Phlox longifolia	b13	ab9	ab6	ab14	a3	ab5	.02	.03	.00	.01
F	Streptanthus cordatus	-	1	-	-	-	-	-	-	-	-
F	Unknown forb-perennial	-	1	-	-	-	-	-	-	-	-
Total for Annual Forbs		0	0	7	135	0	239	0.01	0.43	0	1.73
Total for Perennial Forbs		63	17	62	24	16	43	0.31	0.16	0.15	0.38
Total for Forbs		63	17	69	159	16	282	0.34	0.59	0.15	2.11

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

BROWSE TRENDS--

Management unit 01, Study no: 11

Type	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Artemisia nova	98	93	96	91	14.88	15.18	13.32	11.68
B	Artemisia tridentata wyomingensis	0	3	4	14	-	.53	.71	1.64
B	Atriplex confertifolia	15	10	7	5	1.27	.48	.21	.48
B	Chrysothamnus viscidiflorus stenophyllus	16	20	18	20	.42	.46	.64	.71
B	Gutierrezia sarothrae	8	6	1	1	.00	-	-	.00
B	Juniperus osteosperma	2	3	3	3	1.62	1.63	1.63	2.26
B	Kochia americana	9	9	6	2	.07	.07	.15	.00
B	Opuntia sp.	0	1	0	0	.00	-	-	-
Total for Browse		148	145	135	136	18.29	18.36	16.68	16.80

CANOPY COVER, LINE INTERCEPT--

Management unit 01, Study no: 11

Species	Percent Cover		
	'01	'06	'11
Artemisia nova	-	14.61	11.43
Artemisia tridentata wyomingensis	-	.61	2.81
Atriplex confertifolia	-	.58	.48
Chrysothamnus viscidiflorus stenophyllus	-	1.45	1.20
Juniperus osteosperma	2.20	1.66	3.65

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 01, Study no: 11

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia nova	0.7	0.9	1.2
Artemisia tridentata wyomingensis	-	1.1	1.9

POINT-QUARTER TREE DATA--

Management unit 01, Study no: 11

Species	Trees per Acre			
	'96	'01	'06	'11
Juniperus osteosperma	56	60	54	60

Average diameter (in)			
'96	'01	'06	'11
4.0	5.0	6.5	5.2

BASIC COVER--

Management unit 01, Study no: 11

Cover Type	Average Cover %					
	'84	'90	'96	'01	'06	'11
Vegetation	1.75	9.00	25.21	31.16	31.70	28.75
Rock	19.50	26.50	17.69	19.26	17.98	20.47
Pavement	40.50	43.50	37.90	35.37	21.46	30.79
Litter	35.75	17.75	12.99	16.33	19.96	15.25
Cryptogams	0	0	.08	.01	.42	1.12
Bare Ground	2.50	3.25	6.77	10.06	22.68	16.62

SOIL ANALYSIS DATA --

Management unit 01, Study no: 11, Study Name: Kimber Ranch

Effective rooting depth (in)	pH	Clay-Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
11.9	7.8	42.9	29.1	28.0	1.9	7.0	134.4	0.5

PELLET GROUP DATA--

Management unit 01, Study no: 11

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Rabbit	6	-	15	8	-	-	-
Horse	1	-	-	-	-	-	-
Elk	-	-	2	-	-	-	7 (17)
Deer	17	15	22	21	27 (66)	36 (89)	48 (117)
Cattle	-	7	1	4	4 (11)	2 (4)	12 (29)

BROWSE CHARACTERISTICS--

Management unit 01, Study no: 11

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
Artemisia nova									
84	5665	15	51	34	-	8	88	15	7/17
90	5131	8	23	69	-	21	0	29	9/15
96	7980	11	72	17	340	56	2	3	12/24
01	7200	16	62	23	-	3	2	8	9/20
06	6040	8	59	33	1760	10	4	16	10/23
11	5500	4	75	21	-	40	1	14	8/21
Artemisia tridentata wyomingensis									
84	1531	52	30	17	-	22	52	9	17/21
90	398	17	33	50	-	0	0	17	11/14
96	0	0	0	0	-	0	0	0	-/-
01	60	0	67	33	-	0	0	33	24/23
06	100	0	100	0	-	40	0	0	18/29
11	340	6	82	12	-	47	6	6	15/33

		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>Atriplex confertifolia</i>										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	880	57	43	0	120	16	0	0	9/17	
01	380	32	37	32	-	0	0	21	14/26	
06	380	11	84	5	-	0	0	5	14/23	
11	140	14	57	29	20	29	0	29	12/22	
<i>Chrysothamnus nauseosus hololeucus</i>										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	26/51	
06	0	0	0	-	-	0	0	0	-/-	
11	0	0	0	-	-	0	0	0	17/27	
<i>Chrysothamnus viscidiflorus stenophyllus</i>										
84	1465	5	73	23	-	36	0	5	11/15	
90	998	0	80	20	-	0	0	20	11/16	
96	420	0	100	0	40	0	0	0	11/20	
01	520	12	77	12	-	0	0	4	8/16	
06	480	8	92	0	-	4	0	0	10/15	
11	580	0	97	3	-	3	0	0	9/19	
<i>Grayia spinosa</i>										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	0	0	0	-	-	0	0	0	-/-	
01	0	0	0	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	29/42	
11	0	0	0	-	-	0	0	0	17/30	
<i>Gutierrezia sarothrae</i>										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	360	6	94	0	20	0	0	0	7/9	
01	160	0	50	50	-	0	0	38	4/5	
06	20	100	0	0	-	0	0	0	-/-	
11	20	0	100	0	-	0	0	0	-/-	
<i>Juniperus osteosperma</i>										
84	66	100	0	-	-	0	0	0	-/-	
90	66	0	100	-	-	0	0	0	65/55	
96	40	0	100	-	-	0	0	0	-/-	
01	60	33	67	-	-	0	0	0	-/-	
06	60	67	33	-	-	0	0	0	-/-	
11	60	0	100	-	-	33	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)	
Kochia americana										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	460	30	65	4	20	4	0	0	4/6	
01	340	47	53	0	-	0	0	0	4/4	
06	140	14	86	0	-	0	0	0	5/5	
11	40	50	50	0	-	0	0	0	2/4	
Opuntia sp.										
84	0	0	0	-	-	0	0	0	-/-	
90	66	100	0	-	-	0	0	100	-/-	
96	0	0	0	-	-	0	0	0	-/-	
01	20	0	100	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	4/2	
11	0	0	0	-	-	0	0	0	-/-	