

EAST HORSE PASTURE - TREND STUDY NO. 10-18-10

Vegetation Type: Wyoming Big Sagebrush

Range Type: Crucial Deer Winter

NRCS Ecological Site Description: Not Available

Land Ownership: BLM

Elevation: 5320 ft. (1622 m)

Aspect: Southeast

Slope: 3%

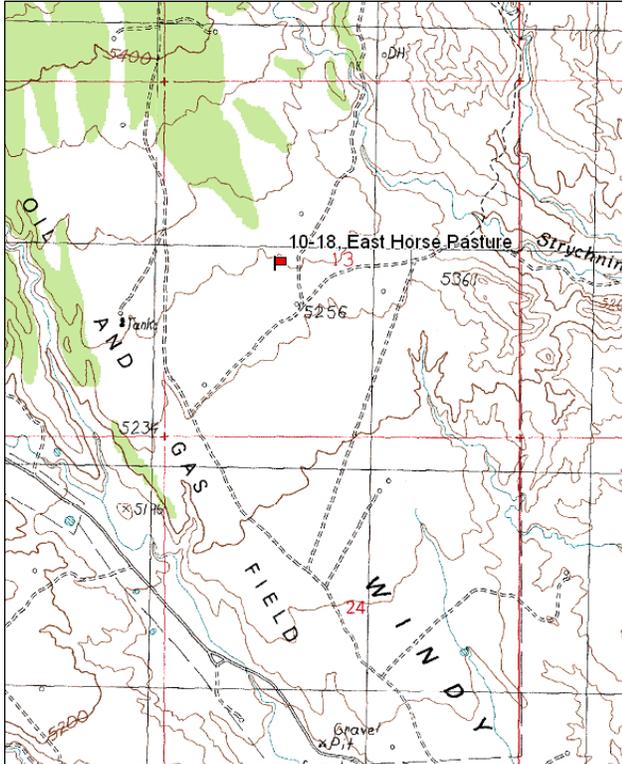
Transect bearing: 165° magnetic

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

Directions:

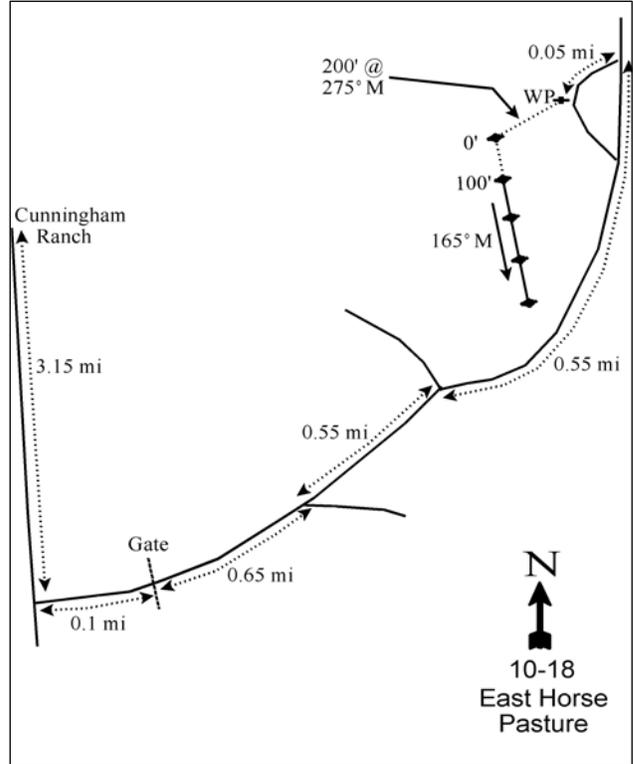
From Cunningham Ranch travel south 3.15 miles to a fork. Turn left and go 0.1 miles to a gate. Continue another 0.65 miles to a fork. Stay left (on main road) and continue 0.55 miles to another fork. Turn right and go 0.55 miles to a faint road turning back to the left. Go 0.05 miles on this faint road to a 2-foot tall rebar witness post on the right. The 0' stake begins 200 feet (67 paces) west of the witness post on a bearing of 275°M, and is marked by browse tag # 9143.

Map Name: Segó Canyon



Township: 20S Range: 21E Section: 13

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 625491 E 4325098 N

EAST HORSE PASTURE - TREND STUDY NO. 10-18

Site Information

Site Description: The study lies in an area of mixed pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*) and Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) flats located to the east of Nash Wash and the Cunningham Ranch. Grazing in the area is managed by the Bureau of Land Management as part of the large Cisco allotment. The transect runs through a low lying depression where water run-off from the bench flows. This extra amount of water is part of the reason for higher amounts of cheatgrass (*Bromus tectorum*) in the draw compared to the rest of the bench. Pellet group transect data estimated fluctuating deer use with lightly moderate use in 2000, moderate use in 2005 and light use in 2010. More pellets were found on the first half of the transect near the cover of junipers. Estimated elk use has been light since 2005, and estimated sheep and cattle use have also been light since 2005 (Table - Pellet Group Data).

Browse: Wyoming big sagebrush is the key browse species on this site, though fourwing saltbush (*Atriplex canescens*) has increased in cover (Table - Browse Trends) and density on the site since 2000. Sagebrush, however, has been decreasing in density (Table - Browse Characteristics) and cover (Table - Browse Trends) over the same period. The sagebrush population is mostly mature with moderate to high amounts of decadence, and little new recruitment of young plants. Utilization of sagebrush has been moderate to heavy, with very heavy hedging noted in 1986. The fourwing saltbush was mostly young in 2000 and 2005, but was mostly mature in 2010. There was heavy use of fourwing saltbush in 2000, but more moderate use in 2010. Broom snakeweed (*Gutierrezia sarothrae*) is common on the site, but has fluctuated in density with precipitation patterns (Table - Browse Characteristics). Juniper trees appear to be encroaching from the north, although there are none within the sampling area. The nearby stand provides fair bedding and thermal cover. The older trees are highlined, with the younger trees appearing to be only lightly utilized.

Herbaceous Understory: Cheatgrass is the dominant species on the site, providing the majority of cover in most sample years. Cheatgrass was so robust in 2005 it completely engulfed some sagebrush plants so they could not be seen. Cheatgrass abundance was much lower in 2000, when conditions were dryer. Perennial grasses are sparse and include: galleta (*Hilaria jamesii*), bottlebrush squirreltail (*Sitanion hystrix*) and sand dropseed (*Sporobolus cryptandrus*). Desirable forbs are rare and annual forbs dominate the forb component. Annual forbs have steadily increased in cover and frequency since 2000 (Table - Herbaceous Trends).

Soil: The soil texture is a fine, sandy clay loam with a slightly alkaline soil reaction (pH 7.4). Phosphorus may have limited availability for plant growth and development at 4.8 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). The soil has a dry crust formed on the surface which is easily broken and disturbed by animal activities. Since vegetation cover is poor, except for Wyoming big sagebrush and cheatgrass, any soil disturbance could leave the soil subject to wind and water erosion. Bare ground cover is abundant in the shrub interspaces on the slightly higher terrain (Table - Basic Cover). There are rills and gullies present with evidence of soil loss, but due to the gentle terrain, erosion does not appear to be excessive. The soil erosion condition was classified as stable in 2005 and 2010.

Trend Assessments

Browse:

- **1986 to 1995 - slightly up (+1):** Differences in density may be related to the larger sample area used in 1995; therefore, trend was determined using other parameters. Sagebrush decadence decreased from 60% to 18%, though recruitment of young plants is minimal.
- **1995 to 2000 - slightly up (+1):** Density of sagebrush increased 11% from 2,660 plants/acre to 2,940 plants/acre, and cover increased from 9% to 12%. Decadence increased slightly to 25% and recruitment of young plants remained very low. Fourwing saltbush was sampled for the first time.
- **2000 to 2005 - down (-2):** There was a 25% decrease in density of sagebrush to 2,200 plants/acre and cover decreased to 7%. Decadence of sagebrush increased to 41% and poor vigor increased from 12%

to 19%. Recruitment of young sagebrush plants remained low. Fourwing saltbush density increased substantially, but cover remained less than 1%.

- **2005 to 2010 - stable (0):** Sagebrush decreased in density by 14% to 1,900 plants/acre, and cover decreased to 6%. However, density of fourwing saltbush increased 41% from 340 plants/acre to 480 plants/acre, and cover increased to 5%.

Grass:

- **1986 to 1995 - up (+2):** The sum of nested frequency of perennial grasses increased substantially due to a significant increase in the nested frequency of galleta and sand dropseed. However, cheatgrass dominated the site with 27% cover and perennial grasses remained relatively rare.
- **1995 to 2000 - up (+2):** There was a 56% increase in the sum of nested frequency of perennial grasses and cover increased from 2% to 4%. Cheatgrass decreased significantly in nested frequency and cover decreased to 7%.
- **2000 to 2005 - down (-2):** The perennial grass sum of nested frequency decreased by 28% and cover decreased to 3%. There was a significant increase in the nested frequency of cheatgrass and cover increased to 34%.
- **2005 to 2010 - stable (0):** There was a slight decrease in the sum of nested frequency of perennial grasses, but cover remained similar and perennial grasses were already rare on the site. Cheatgrass nested frequency decreased significantly, but cheatgrass remained the dominant species on the site providing 27% cover.

Forb:

- **1986 to 1995 - up (+2):** The sum of nested frequency of perennial forbs increased by nearly two-fold, though annual species are more prevalent than perennial species.
- **1995 to 2000 - slightly down (-1):** There was a slight decrease in the sum of nested frequency of perennial forbs, though cover remained similar.
- **2000 to 2005 - slightly up (+1):** The perennial sum of nested frequency increased to 1995 levels and cover increased to 2%. Annual forbs also increased substantially in frequency and cover.
- **2005 to 2010 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased to 2000 levels, though cover remained similar. Annual forbs continued to increase in frequency and cover.

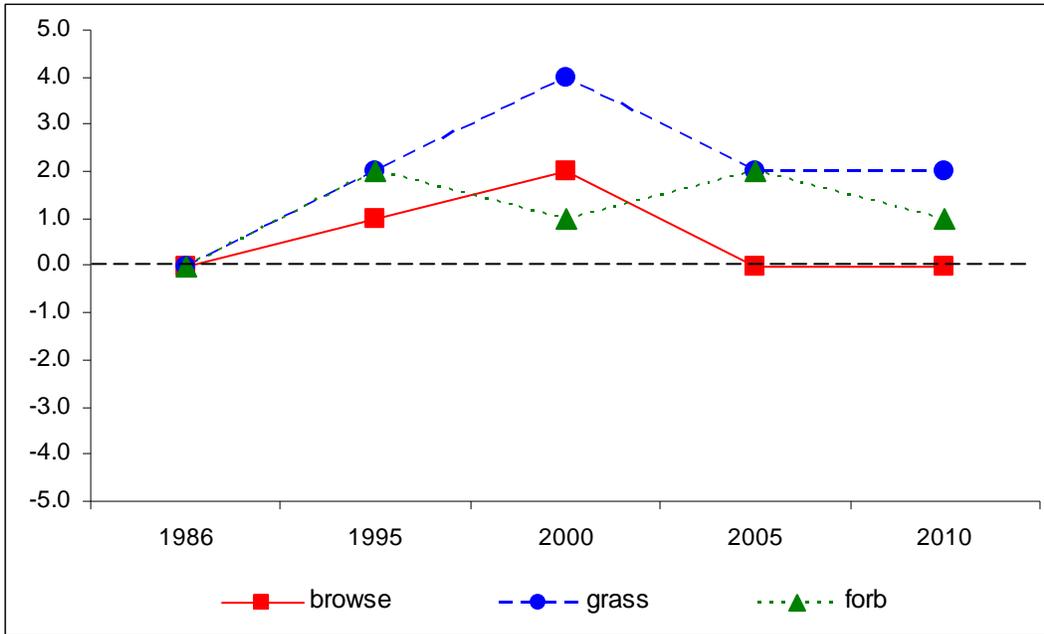
DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

Management unit 10, study no: 18

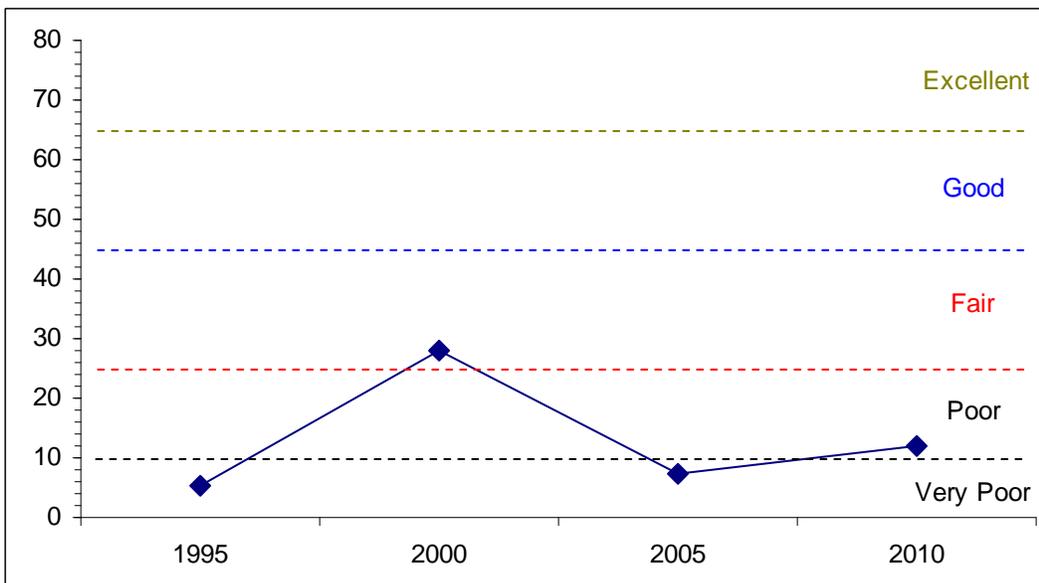
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	10.7	9.6	0.0	3.2	-20.0	1.7	0.0	5.2	Very Poor
00	14.6	7.5	0.5	8.6	-5.3	1.9	0.0	27.9	Fair
05	9.5	3.6	5.1	5.8	-20.0	3.2	0.0	7.2	Very Poor
10	12.4	9.2	0.9	5.9	-20.0	3.5	0.0	12.0	Very Poor-Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 10, Study no: 18



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
Management unit 10, Study no: 18



HERBACEOUS TRENDS--
Management unit 10, Study no: 18

Type	Species	Nested Frequency					Average Cover %			
		'86	'95	'00	'05	'10	'95	'00	'05	'10
G	<i>Bromus tectorum</i> (a)	-	bc352	a176	c348	b323	27.40	7.01	33.48	27.16
G	<i>Hilaria jamesii</i>	a6	b56	b84	b84	b68	1.25	3.27	2.53	2.25
G	<i>Oryzopsis hymenoides</i>	-	2	-	8	1	.00	.01	.21	.53
G	<i>Sitanion hystrix</i>	a4	ab19	b28	ab11	a5	.27	.47	.09	.09
G	<i>Sporobolus cryptandrus</i>	a-	b14	c32	ab3	ab5	.05	.55	.04	.06
G	<i>Stipa comata</i>	-	3	3	-	1	.03	.00	-	.00
G	<i>Vulpia octoflora</i> (a)	-	b28	a-	c77	a-	.06	-	.53	-
Total for Annual Grasses		0	380	176	425	323	27.47	7.01	34.02	27.16
Total for Perennial Grasses		10	94	147	106	80	1.61	4.32	2.88	2.95
Total for Grasses		10	474	323	531	403	29.09	11.33	36.90	30.12
F	<i>Astragalus</i> sp.	-	-	1	-	-	-	.00	-	-
F	<i>Cryptantha</i> sp.	-	-	-	5	2	-	-	.04	.00
F	<i>Descurainia pinnata</i> (a)	-	a7	a3	b83	b73	.02	.00	.71	2.21
F	<i>Draba</i> sp. (a)	-	-	1	-	3	-	.00	-	.15
F	<i>Erigeron utahensis</i>	7	4	-	-	-	.00	-	-	-
F	<i>Erodium cicutarium</i> (a)	-	a-	b11	ab13	b12	-	.21	.48	.10
F	<i>Gilia hutchinifolia</i> (a)	-	-	-	6	3	-	-	.03	.00
F	<i>Lactuca serriola</i>	-	3	-	-	-	.00	-	-	-
F	<i>Lappula occidentalis</i> (a)	-	b30	a-	c90	d143	.08	-	.52	1.37
F	<i>Lepidium montanum</i>	a-	bc31	a3	c45	ab6	.06	.03	.95	.46
F	<i>Leucelele ericoides</i>	a-	ab9	b15	a-	ab8	.06	.15	-	.36
F	<i>Machaeranthera grindelioides</i>	-	2	-	-	7	.00	-	-	.01
F	<i>Orobancha corymbosa</i>	3	-	-	-	-	-	-	-	-
F	<i>Phlox longifolia</i>	6	4	3	4	-	.01	.01	.01	-
F	<i>Plantago patagonica</i> (a)	-	c145	a-	c119	b18	.28	-	1.48	.04
F	<i>Salsola iberica</i> (a)	-	a-	b106	a9	b126	-	1.35	.01	9.42
F	<i>Schoenrambe linifolia</i>	-	2	-	6	-	.00	-	.01	-
F	<i>Sisymbrium altissimum</i> (a)	-	b30	bc51	c39	a-	.18	2.49	3.70	-
F	<i>Sphaeralcea coccinea</i>	15	27	31	32	36	.68	.76	.60	.94
F	Unknown forb-perennial	1	-	-	-	-	-	-	-	-
Total for Annual Forbs		0	212	172	359	378	0.57	4.07	6.95	13.31
Total for Perennial Forbs		32	82	53	92	59	0.84	0.96	1.62	1.77
Total for Forbs		32	294	225	451	437	1.41	5.03	8.58	15.09

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

BROWSE TRENDS--

Management unit 10, Study no: 18

Type	Species	Strip Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
B	Artemisia tridentata wyomingensis	65	67	56	50	8.57	11.68	7.06	5.46
B	Atriplex canescens	0	1	13	17	-	.00	.55	4.47
B	Ceratoides lanata	1	0	0	0	-	-	-	-
B	Grayia spinosa	1	1	1	0	.00	1.01	.00	-
B	Gutierrezia sarothrae	68	29	42	24	2.53	.97	1.66	1.37
B	Opuntia sp.	5	4	7	6	.00	.01	.09	.30
Total for Browse		140	102	119	97	11.12	13.68	9.38	11.61

CANOPY COVER, LINE INTERCEPT--

Management unit 10, Study no: 18

Species	Percent Cover	
	'05	'10
Artemisia tridentata wyomingensis	11.28	7.43
Atriplex canescens	.56	3.09
Grayia spinosa	.06	-
Gutierrezia sarothrae	2.31	.38
Opuntia sp.	.15	.41

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 10, Study no: 18

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata	2.3	1.2

BASIC COVER--

Management unit 10, Study no: 18

Cover Type	Average Cover %				
	'86	'95	'00	'05	'10
Vegetation	8.25	43.52	32.86	51.50	49.77
Rock	0	.15	.04	.01	0
Pavement	.25	.12	.88	.47	.70
Litter	56.50	48.29	36.91	19.11	57.87
Cryptogams	1.75	2.11	1.41	.33	2.07
Bare Ground	33.25	28.83	44.73	36.01	23.15

SOIL ANALYSIS DATA --

Management unit 10, Study no: 18, Study Name: East Horse Pasture

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
17.0	7.4	48.0	24.0	28.0	1.1	4.5	108.8	0.7

PELLET GROUP DATA--

Management unit 10, Study no: 18

Type	Quadrat Frequency			
	'95	'00	'05	'10
Sheep	-	-	2	-
Rabbit	22	23	28	18
Elk	1	-	3	6
Deer/Antelope	17	41	28	43
Cattle	1	-	-	-

Days use per acre (ha)		
'00	'05	'10
-	5 (12)	2 (5)
-	-	-
-	4 (10)	15 (36)
27 (67)	44 (107)	18 (45)
-	4 (9)	-

BROWSE CHARACTERISTICS--

Management unit 10, Study no: 18

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 tridentata wyomingensis</i>									
86	3831	3	37	60	-	7	90	10	21/23
95	2660	0	82	18	-	50	14	8	22/34
00	2940	1	73	25	-	33	18	12	20/32
05	2200	5	55	41	-	45	38	19	24/36
10	1900	0	65	35	-	46	15	19	21/29
<i>Atriplex canescens</i>									
86	0	0	0	-	-	0	0	0	-/-
95	0	0	0	-	-	0	0	0	43/65
00	20	100	0	-	-	0	0	0	32/65
05	340	76	24	-	20	0	35	0	26/33
10	480	4	96	-	20	46	4	0	25/30
<i>Ceratoides lanata</i>									
86	0	0	0	-	-	0	0	0	-/-
95	20	0	100	-	-	0	0	0	11/6
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	-/-
<i>Chrysothamnus nauseosus</i>									
86	0	0	0	-	-	0	0	0	-/-
95	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	31/56
<i>Grayia spinosa</i>									
86	33	0	0	100	-	0	100	0	-/-
95	20	0	0	100	-	0	0	100	11/7
00	20	0	0	100	20	0	0	100	35/75
05	20	0	0	100	-	0	100	100	17/14
10	0	0	0	0	-	0	0	0	16/16

		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>Gutierrezia sarothrae</i>										
86	5065	34	63	3	333	0	0	0	9/6	
95	8860	39	61	0	640	0	0	0	12/12	
00	1220	46	54	0	-	0	0	0	8/9	
05	2640	1	99	0	-	0	0	0	13/12	
10	1180	15	69	15	100	0	0	8	9/11	
<i>Opuntia sp.</i>										
86	198	17	33	50	-	0	0	0	5/4	
95	100	20	80	0	-	0	0	0	5/14	
00	80	0	100	0	20	0	0	0	4/14	
05	160	13	75	13	-	0	0	13	7/20	
10	160	0	100	0	-	0	0	0	6/20	
<i>Sclerocactus sp.</i>										
86	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
00	0	0	0	-	-	0	0	0	-/-	
05	0	0	0	-	-	0	0	0	9/5	
10	0	0	0	-	-	0	0	0	-/-	