

Trend Study 14-10-04

Study site name: Harts Point .

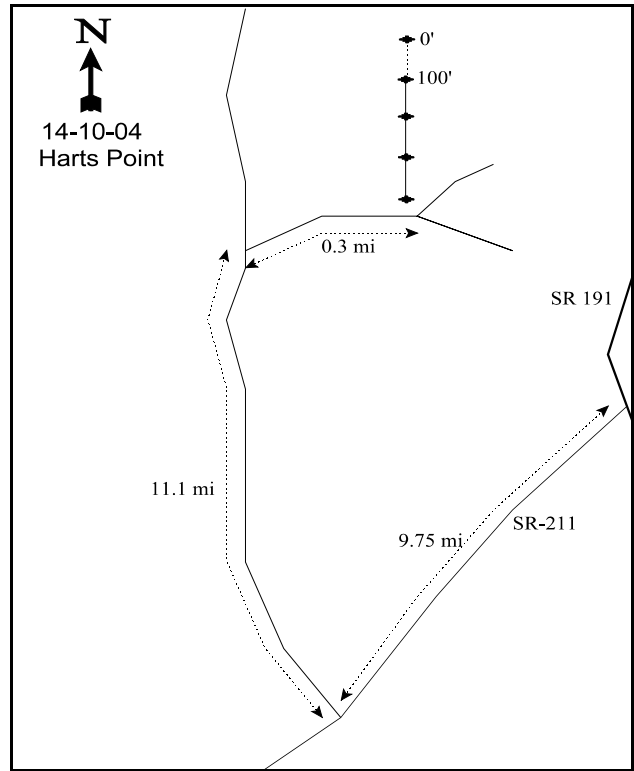
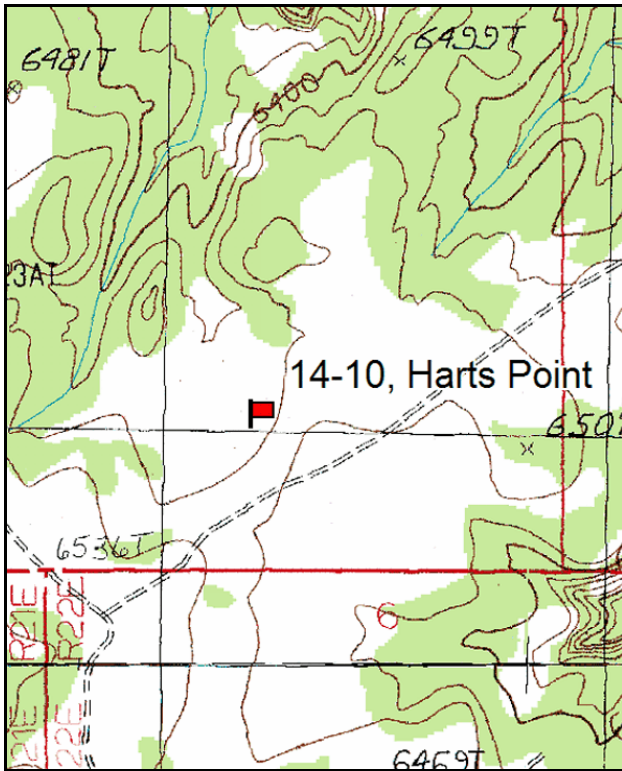
Vegetation type: Wyoming Big Sagebrush .

Compass bearing: frequency baseline 165 degrees magnetic.

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

LOCATION DESCRIPTION

From the turnoff to the Needles District, Canyonlands National Park (onto SR-211 from SR-191), go west and south on the main paved road for 9.75 miles. At this point, just before the road drops down into Indian Creek Canyon, turn right onto the Harts Point Road. Go north on this road 11.1 miles. Turn right onto a small dirt road and go down 0.3 miles to a faint fork. The transect is north and west of these two roads. The last baseline stake is located approximately 30 feet from the fork. The start of the baseline is located 400 feet north and is marked by a fence post with browse tag #7820 attached.



Map Name: Harts Point North

Diagrammatic Sketch

Township 30S , Range 22E , Section 31

GPS: NAD 27, UTM 12S 4221003 N, 627194 E

## DISCUSSION

### Harts Point - Trend Study No. 14-10

The Harts Point transect is located on a sagebrush park surrounded by slickrock domes and Juniper-covered hills. It is an arid site with an elevation of 6,500 feet, a slope of 3-5%, and a western aspect. A stock pond has been constructed in the area where a small drainage flows between two sandstone bluffs. The pond collects seasonal water and could provide water when cattle (250 head) are present in March and April. Grazing pressure appears to be fairly heavy on this BLM administered land and is part of the Harts Point allotment. Pellet group data from 1999 estimate 48 deer days use/acre (119 ddu/ha), 1 elk days use/acre (3 edu/ha), and 22 cow days use/acre (54 cdu/ha). In 2004, use was lower, with 32 deer days use/acre (79 ddu/ha) and 7 cows days use/acre (16 cdu/ha). Another principal use for this area is oil and gas exploration and extraction. A new pipeline was constructed across Harts Point in 1986.

Although there are many raised areas of exposed sandstone, the soil appears to be fairly deep with an estimated effective rooting depth of 22 inches. The dry soil is loose with a sandy loam texture and a slightly alkaline pH (7.5). Phosphorus and potassium occur in low amounts at 4.9 ppm and 38.4 ppm respectively. Phosphorus below 10 ppm and potassium below levels 70 ppm may negatively effect normal plant growth and development. There is no rock on the surface or within the soil profile. The surface was marked by rain and small erosion channels in the past, but current erosion appears minimal. There may be some wind erosion occurring and there is some soil pedestalling around the bunch grasses. When cover is used on a relative scale, bare ground has been stable at between 45 and 50%. It was only slightly higher in 2004 than it was in 1999. The ratio of bare ground to protective ground cover (vegetation, litter, and cryptogams) has remained stable at about 1:2.5.

Wyoming big sagebrush is the key species on this winter range. The sagebrush appears to have some of the characteristics of both mountain big sagebrush and Wyoming big sagebrush and is likely a hybrid between the two subspecies. Use varies greatly between individual plants, indicating some plants have more characteristics of the more palatable mountain big sagebrush. The population has remained at a fairly stable density of about 3,500 plants/acre since 1986, the majority of which are mature. Utilization was heavy in 1986, but more moderate ever since. Percent decadence has been low, but increased to 42% in 2004 after only being 11% in 1999. Vigor was poor in 1994 (a dry year), but improved in 1999. Although percent decadency was high in 2004, only 18% of the population showed signs of poor vigor. The number of seedlings encountered was very high in 1986, but has been very low in every subsequent reading. In 1999, 12% of the population was made up of young plants, but in 2004 only 3% were considered young.

Winterfat is scattered throughout the area at relatively low densities (about 200 plants/acre). It appears that these have been heavily hedged. The few juniper in the area do not appear to show any signs of increasing into the sagebrush flat.

Seven perennial grasses have been sampled on this site. Blue grama has declined slowly since 1986, but is still the most prominent perennial grass. Needle-and-thread has increased significantly since 1999, but it still only contributes to about 1% cover in 2004. Sand dropseed, a warm season grass, increased significantly between 1999 and 2004 and had nearly 2% cover in 2004. Cheatgrass abundance has been reflective of precipitation patterns and 1999 was a very wet year and cheatgrass was very abundant. In 1994 and 2004 which were drier, cheatgrass was much lower in abundance each of those years. Forbs are quite sparse on this site with a total cover value of less than one percent in 1994. Forb cover increased to 2% in 1999 due to a significant increase in frequency of lobeleaf groundsel. In 2004, lobeleaf groundsel significantly increased again to nearly 6% cover and made up 96% of the forb cover. There are also numerous annual species, such as gilia and wooly plantain.

## 1986 APPARENT TREND ASSESSMENT

Vegetative trend, based on form, vigor, and age class structure of the key browse species Wyoming big sagebrush, is basically stable. There is a fair balance between all parameters. Continued heavy grazing could lead to an increase in cheatgrass on the site, although the blue grama is certainly healthy and vigorous. Continued heavy hedging could be detrimental to the sagebrush population in conjunction with the extended drought. The soil trend is stable to slightly down because of the moderate but normal erosion. An increase in vegetation and especially in litter cover would be positive.

## 1994 TREND ASSESSMENT

This site is very similar in most aspects to Harts Draw (14-9); high amounts of bare ground and a significant loss of litter cover, all leading to a slightly downward trend for soil. The Wyoming big sagebrush has shown some improvements in those plants classified as heavily hedged, from 64% down to only 9%. Percent decadence is up slightly and overall vigor of the sagebrush community has declined with 57% now classified as showing poor vigor. Biotic potential has decreased and the percentage of the population that are young have decreased to 6%. This leads to a trend that is slightly downward in association with the continuing drought. The herbaceous understory trend is stable, with the nested frequency value for perennial grasses staying about the same and the nested frequency value for perennial forbs going down, but all the forbs combined make up less than 1% of the vegetative cover. The Desirable Components Index (see methods) rating is good at 49. The amount of young sagebrush plants is low, but decadence is low also. Perennial grasses are abundant, but forbs are lacking.

### TREND ASSESSMENT

soil - down slightly (2)

browse - down slightly (2)

herbaceous understory - stable (3)

winter range condition (DC Index) - 49 (good) Wyoming big sagebrush type

## 1999 TREND ASSESSMENT

Trend for soil appears stable with relative percent cover of litter and bare ground remaining similar to 1994 estimates. Erosion is not currently a problem on this site. Trend for the key species, Wyoming big sagebrush is considered improved. Density of sagebrush has remained stable, but percent decadence has declined from 26% in 1994 to 11% in 1999. Vigor has also improved dramatically. In 1994, 57% of the sagebrush sampled showed poor vigor. Currently only 4% of the population was classified with poor vigor. Utilization is mostly light to moderate. Trend for the herbaceous understory is mixed. Sum of nested frequency of perennial grasses has shown a notable decrease, while frequency of perennial forbs has increased slightly. In addition, cheatgrass has increased significantly in frequency and now provides 33% of the grass cover. Overall, the herbaceous trend is considered slightly down. The DCI score is fair to good at 47, perennial grasses are lower, but forbs increased and decadence and proportion of young shrubs have improved to keep the score about equal to 1994.

### TREND ASSESSMENT

soil - stable (3)

browse - up slightly (4)

herbaceous understory - down slightly (2)

winter range condition (DC Index) - 47 (fair to good) Wyoming big sagebrush type

## 2004 TREND ASSESSMENT

The soil trend is stable as relative percent cover for litter and bare ground has changed very little. The trend for browse is slightly down. Wyoming big sagebrush density has remained stable, but decadency and poor

vigor have increased. Sagebrush is in better condition on this site, than on many of the other Wyoming big sagebrush studies within the region that have seen large amounts of die-off. This site receives less use than other sites that are in worse condition. Harts Draw is at a similar but slightly lower elevation, and has much heavier deer use. These two sites had very similar sagebrush densities in 1999, but Harts Draw has decreased by 37%, while Harts Point only had a 4% decrease. The herbaceous understory trend is slightly up. Cheatgrass abundance has declined significantly, while perennial grasses have remained stable. Lobeleaf groundsel is the only significant forb, but has significantly increased in abundance. The DCI increased to 50, which is rated as good. Sagebrush decadence and the proportion of young plants worsened, but the herbaceous understory increased.

**TREND ASSESSMENT**

soil - stable (3)

browse - down slightly (2)

herbaceous understory - up slightly (4)

winter range condition (DC Index) - 50 (good) Wyoming big sagebrush type

**HERBACEOUS TRENDS --**

Management unit 14 , Study no: 10

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'99	'04	'94	'99	'04
G	<i>Bouteloua gracilis</i>	c234	b168	ab159	a127	8.36	4.55	4.97
G	<i>Bromus tectorum</i> (a)	-	b75	c270	a33	2.93	4.39	.09
G	<i>Hilaria jamesii</i>	ab31	ab45	b45	a17	.70	.42	.26
G	<i>Oryzopsis hymenoides</i>	a7	b27	c64	a9	.09	.53	.18
G	<i>Poa secunda</i>	-	-	1	1	-	.00	.00
G	<i>Sitanion hystrix</i>	b27	b30	ab19	a7	.16	.11	.04
G	<i>Sporobolus cryptandrus</i>	a-	b47	b20	c91	.78	.15	1.73
G	<i>Stipa comata</i>	c110	bc88	a17	b56	1.00	.23	.80
G	<i>Vulpia octoflora</i> (a)	-	b307	b299	a131	.88	3.07	1.07
Total for Annual Grasses		0	382	569	164	3.81	7.46	1.17
Total for Perennial Grasses		409	405	325	308	11.12	6.02	7.99
Total for Grasses		409	787	894	472	14.93	13.48	9.16
F	<i>Calochortus nuttallii</i>	6	-	3	2	-	.00	.00
F	<i>Cryptantha</i> spp.	-	6	-	-	.02	-	-
F	<i>Cymopterus</i> spp.	-	3	-	-	.15	-	-
F	<i>Delphinium nuttallianum</i>	a-	a-	a1	b7	-	.00	.02
F	<i>Draba reptans</i> (a)	-	7	3	-	.02	.01	-
F	<i>Erigeron flagellaris</i>	-	1	3	-	.00	.00	-
F	<i>Erigeron pumilus</i>	b77	a1	a3	a-	.01	.18	-
F	<i>Gilia hutchinifolia</i> (a)	-	ab42	b70	a17	.09	.87	.06
F	<i>Lappula occidentalis</i> (a)	-	1	2	-	.00	.00	-
F	<i>Machaeranthera canescens</i>	1	-	-	-	-	-	-

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'99	'04	'94	'99	'04
F	Oenothera spp.	-	-	-	2	-	-	.00
F	Plantago patagonica (a)	-	<sub>b</sub> 147	<sub>b</sub> 160	<sub>a</sub> 49	.30	1.10	.19
F	Ranunculus testiculatus (a)	-	-	3	-	-	.03	-
F	Senecio multilobatus	<sub>a</sub> 9	<sub>ab</sub> 42	<sub>b</sub> 61	<sub>c</sub> 137	.16	2.25	5.80
Total for Annual Forbs		0	197	238	66	0.42	2.02	0.25
Total for Perennial Forbs		93	53	71	148	0.35	2.45	5.82
Total for Forbs		93	250	309	214	0.77	4.47	6.08

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

#### BROWSE TRENDS --

Management unit 14 , Study no: 10

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	Artemisia tridentata wyomingensis	79	78	76	11.46	11.60	14.13
B	Ceratoides lanata	9	5	3	.04	.06	.15
B	Gutierrezia sarothrae	2	1	0	.00	-	-
B	Opuntia spp.	3	2	1	.06	-	-
Total for Browse		93	86	80	11.58	11.66	14.28

#### CANOPY COVER, LINE INTERCEPT --

Management unit 14 , Study no: 10

Species	Percent Cover
	'04
Artemisia tridentata wyomingensis	21.66
Ceratoides lanata	.15

#### KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 14 , Study no: 10

Species	Average leader growth (in)
	'04
Artemisia tridentata wyomingensis	4.2

BASIC COVER --

Management unit 14 , Study no: 10

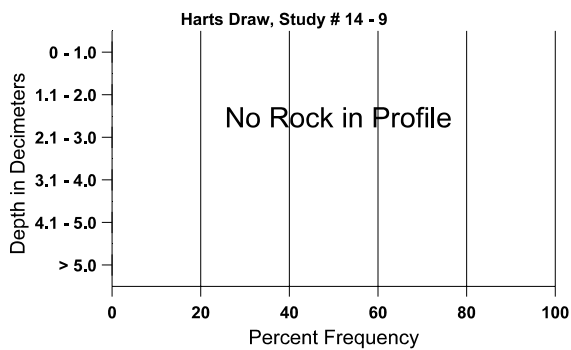
Cover Type	Average Cover %			
	'86	'94	'99	'04
Vegetation	10.75	27.60	27.80	29.40
Rock	0	.00	0	.02
Pavement	0	0	.00	.02
Litter	45.75	19.87	18.33	19.85
Cryptogams	4.50	2.95	6.25	7.65
Bare Ground	39.00	49.35	43.04	54.29

SOIL ANALYSIS DATA --

Management unit 14, Study no: 10, Study Name: Harts Point

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
22.4	61.3 (17.7)	7.5	64.9	18.6	16.6	1.0	4.9	38.4	0.4

Stoniness Index



PELLET GROUP DATA --

Management unit 14 , Study no: 10

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	36	47	15
Elk	-	-	-
Deer	30	21	18
Cattle	6	7	6

Days use per acre (ha)	
'99	'04
-	-
1 (3)	-
48 (119)	32 (79)
22 (54)	7 (16)

BROWSE CHARACTERISTICS --  
Management unit 14 , Study no: 10

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata wyomingensis</i>												
86	<b>3732</b>	1000	733	2133	866	-	18	64	23	2	9	17/22
94	<b>3560</b>	20	220	2400	940	400	13	9	26	10	60	37/49
99	<b>3580</b>	-	420	2760	400	660	30	11	11	4	4	25/36
04	<b>3420</b>	40	100	1900	1420	840	43	0	42	18	18	26/40
<i>Ceratoides lanata</i>												
86	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
94	<b>220</b>	-	-	160	60	-	0	0	27	9	9	7/21
99	<b>180</b>	-	-	180	-	-	0	11	0	-	0	6/8
04	<b>100</b>	-	-	100	-	-	0	100	0	-	0	8/8
<i>Gutierrezia sarothrae</i>												
86	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
94	<b>40</b>	-	-	40	-	-	0	0	-	-	0	8/10
99	<b>20</b>	-	-	20	-	-	0	0	-	-	0	8/8
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
<i>Juniperus osteosperma</i>												
86	<b>66</b>	-	-	66	-	-	0	0	-	-	0	69/70
94	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
99	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
04	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
<i>Opuntia spp.</i>												
86	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
94	<b>60</b>	20	-	40	20	-	0	0	33	33	33	8/9
99	<b>60</b>	-	-	60	-	-	0	0	0	-	0	4/9
04	<b>20</b>	-	-	20	-	-	0	0	0	-	0	6/9