

Trend Study 24-8-08

Study site name: Prospect Seeding .

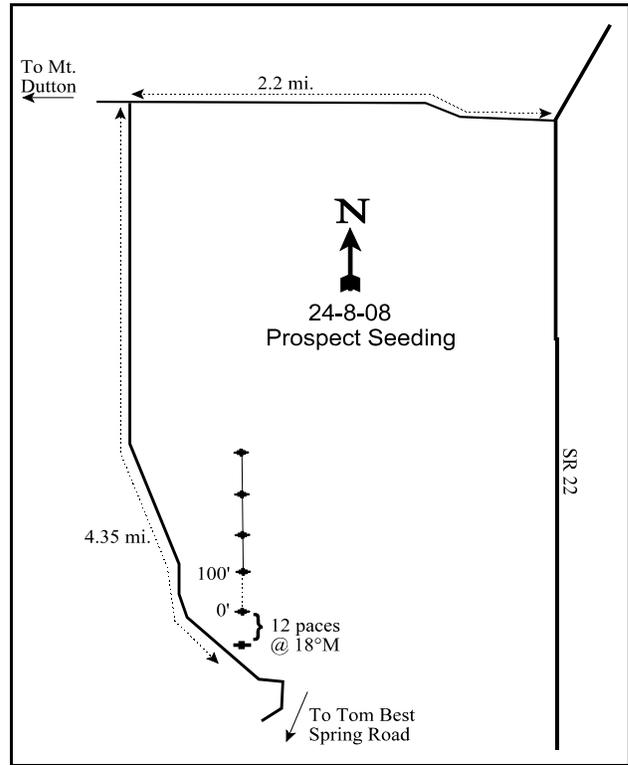
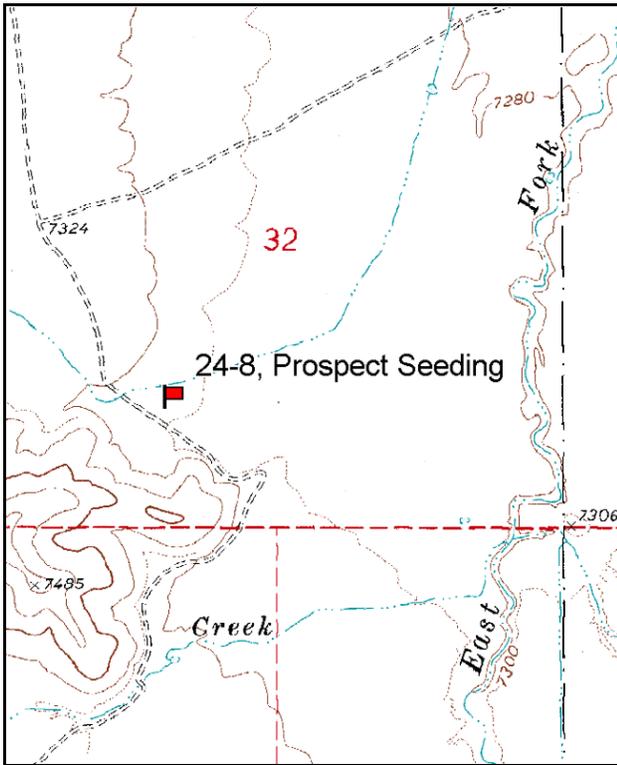
Vegetation type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 0 degrees magnetic.

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

LOCATION DESCRIPTION

From SR22, turn towards Cottonwood Creek (west onto the Mt. Dutton loop road) and travel about 2 miles to a major fork. Turn south towards Tom Best spring (Cottonwood AS is to the right, north) and go 0.3 miles to the U.S. Forest Service boundary fence. Cross the cattleguard and continue on the main road for 4.35 miles. The study area here is marked by a 4 foot green fencepost, and is north of the road in a sage-grass flat. The transect is marked by 1-foot tall fence posts.



Map Name: Cow Creek

Diagrammatic Sketch

Township 33S, Range 2W, Section 32

GPS: NAD 83, UTM 12S409061 E, 4193851 N

DISCUSSION

Prospect Seeding - Trend Study 24-8

Study Information

This study is located approximately one-quarter mile north of Prospect Creek, and three-quarters of a mile west of the East Fork of the Sevier River, which cuts through the middle of John's Valley [elevation: 7,300 feet (2,225 m), slope: 0%-3%, aspect: east]. The area is administered by the BLM, located in the Lower Prospect Pasture of the Widtsoe C & H allotment. The area was disked and seeded in 1968. Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) has become reestablished and crested wheatgrass (*Agropyron cristatum*) provides nearly all the herbaceous forage. This is becoming a key area for elk during the winter and spring months, and antelope use the area during the summer and fall. This is not a critical winter range for mule deer. Deer use has been light with an estimated average 6 days use/acre (16 ddu/ha) since 1997. Elk use was moderate in 1997 (48 edu/acre:119 edu/ha) and light in 2003 and 2008 (13 edu/acre:33 edu/ha and 3edu/acre:7edu/ha, respectively). Cattle use was moderately heavy in 1997 and 2008 (64 cdu/acre:158 cdu/ha and 41 cdu/acre:102 cdu/ha, respectively), and moderately light in 2003 (27 cdu/acre:66 cdu/ha). Some sheep pellet groups were also encountered in 1997. Antelope and deer pellet groups are lumped due to the difficulty in differentiating between the two species. Rabbit pellets were abundant with a quadrat frequency of 52% in 2003 and 98% in 2008.

Soil

The soils are deep with an estimated effective rooting depth of 23 inches. Soil texture is a sandy loam which is neutral in reaction (pH 7.2). There is little rock but some pavement is scattered on the surface. Harvester ant mounds are numerous in the area. Bare ground is abundant and although the site is fairly level, sheet erosion has occurred resulting in pedestalling of sagebrush and grasses to a height of about 2-3 inches in much of the area. The relative combined vegetation and litter cover was 25%-40% from 1997. The relative combined rock and pavement cover was 12%-15% from 1997. The erosion condition rating was classified as stable in 2003 and slight in 2008 due to surface litter movement, pedestaling of plants, and flow patterns..

Browse

This is a Wyoming big sagebrush site with very little diversity in the understory. Sagebrush is a key species for antelope that use the area during the spring, summer, and fall. The stand in 1987 was estimated at 9,066 plants/acre, represented by mostly vigorous, young and mature plants. The population has since steadily declined with each reading to 6,665 plants/acre in 1991, 2,280 plants/acre by 1997, only 480 plants/acre in 2003, and had slightly rebounded to 1,200 plants/acre in 2008. Vigor was normal, in 1987, on most plants and there were few decadent plants. During the drought year of 1991, decadence increased to 79%. The density dropped 66% in 1997, but decadence decreased to 35%. However, young recruitment was marginal with only 180 young plants/acre estimated. The sagebrush density crashed to only 480 plants/acre in 2003. Dead sagebrush plants numbered nearly 3,000 plants/acre. The remaining population was in poor vigor and 92% of the population was decadent. No seedlings were encountered and young plants were rare. The density of sagebrush increased by 60% in 2008. Recruitment was good with more seedlings observed than any past reading and young plants comprising 17% of the population.

Herbaceous Understory

The herbaceous understory is poor and dominated by the seeded species crested wheatgrass (*Agropyron cristatum*). Production of crested wheatgrass was good in 1997 with a cover value of 12%. Drought combined with heavy use likely caused crested wheatgrass to decline significantly in cover, which dropped four-fold by 2003 from 12% to 3%. Crested wheatgrass cover rose to over 12% again in 2008. Russian wildrye (*Elymus junceus*), which occurred only rarely before 2008, had a significant increase in nested frequency and had a cover of 4% in the 2008 sample year. The only other grass species encountered were bottlebrush squirreltail (*Sitanion hystrix*) which occurred rarely. Forbs are very rare and are comprised almost entirely of annual

species.

1991 TREND ASSESSMENT

The key browse, Wyoming big sagebrush, has decreased in numbers by 26%. This decrease could be beneficial later when the extended drought ends. With the lower densities, vigor could be increased, for the density was too high for the site potential. The effect of the drought is still being felt with the rate of decadency increasing from 8% to 79%. Trend for browse is down. The trend for the grasses is stable. There is only one major grass, the seeded species crested wheatgrass, and with the drought conditions it's numbers are decreasing. The trend for forbs is stable. There is only one forb, lambsquarters goosefoot (*Chenopodium album*), a weedy increaser, but it's nested frequency stayed relatively constant.

browse - down (-2)

grass - stable (0)

forb - stable (0)

1997 TREND ASSESSMENT

Trend for browse is stable. Density differences of browse species may be related to the larger sample area used in 1997, therefore, trend for browse was determined using other parameters. Decadence of Wyoming big sagebrush has decreased from 79% in 1991 to 35% currently. Recruitment is still poor and plants displaying poor vigor increased to 22%. Trend for the grasses slightly up due to an increase in the sum of nested frequency of crested wheatgrass. Forbs are stable, but still severely lacking.

winter range condition (DCI) - fair (28) Low potential scale

browse - stable (0)

grass - slightly up (+1)

forb - stable (0)

2003 TREND ASSESSMENT

Trend for Wyoming big sagebrush is down. The density of sagebrush has declined 79% since 1997, and there were only 480 plants/acre estimated on the site. Dead sagebrush is abundant at nearly 3,000 plants/acre. Approximately 88% of the surviving sagebrush exhibit poor vigor and 92% are decadent. No seedlings were encountered in 2003 and young plants were rare at an estimated density of only 20 plants/acre. Trend for the grasses is also down due to a significant decrease in the nested frequency of crested wheatgrass which is the only abundant herbaceous plant. Average cover of crested wheatgrass also declined from 12% in 1997 to 3.5%. The trend for forbs is stable, but forbs are still rare and severely lacking.

winter range condition (DCI) - very poor (8) Low potential scale

browse - down (-2)

grass - down (-2)

forb - stable (0)

2008 TREND ASSESSMENT

The trend for the key browse species, Wyoming big sagebrush, is up. Sagebrush density increased by 60%, though it is still only 13% of the historical high at 1,200 plants/acre. Plants with poor vigor decreased to 18% and decadence decreased to 28%. Recruitment is up with more seedlings observed than in any previous reading and young plants comprising 17% of the population. The trend for grasses was up with a 66% increase in the sum of nested frequency of perennial grasses. Crested wheatgrass cover increased to over 12% again and Russian wildrye had a significant increase in nested frequency and a marked increase in cover. The trend for forbs was stable, but perennial forbs were still rare and the presence of weedy annual species such as Russian thistle (*Salsola iberica*), lambsquarters goosefoot, and tansy mustard (*Descurainia pinnata*) is a concern.

winter range condition (DCI) - fair (32) Low potential scale

browse - up (+2)

grass - up (+2)

forb - stable (0)

HERBACEOUS TRENDS --
Management unit 24 , Study no: 8

Type	Species	Nested Frequency					Average Cover %		
		'87	'91	'97	'03	'08	'97	'03	'08
G	Agropyron cristatum	_{ab} 215	_b 191	_c 258	_a 145	_{ab} 220	12.21	2.74	12.50
G	Bouteloua gracilis	-	-	-	-	9	-	-	.04
G	Elymus junceus	_a -	_a 3	_a -	_b 20	_c 45	-	.74	3.78
G	Sitanion hystrix	3	7	-	-	-	-	-	-
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		218	201	258	165	274	12.21	3.48	16.32
Total for Grasses		218	201	258	165	274	12.21	3.48	16.32
F	Chenopodium album (a)	_a 8	_{ab} 16	_b 36	_a 3	_{ab} 24	.33	.18	.05
F	Cryptantha sp.	-	-	1	-	-	.00	-	-
F	Descurainia pinnata (a)	-	-	-	2	7	-	.01	.02
F	Euphorbia sp.	-	-	-	-	3	-	-	.00
F	Salsola iberica (a)	-	-	_a -	_a -	_b 22	-	-	.29
F	Senecio multilobatus	-	-	-	1	-	-	.00	-
Total for Annual Forbs		8	16	36	5	53	0.33	0.19	0.37
Total for Perennial Forbs		0	0	1	1	3	0.00	0.00	0.00
Total for Forbs		8	16	37	6	56	0.34	0.20	0.37

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

BROWSE TRENDS --
Management unit 24 , Study no: 8

Type	Species	Strip Frequency			Average Cover %		
		'97	'03	'08	'97	'03	'08
B	Artemisia tridentata wyomingensis	63	21	27	2.80	.89	1.67
B	Chrysothamnus nauseosus	1	2	4	0.0	0.0	.30
Total for Browse		64	23	31	2.80	0.88	1.98

CANOPY COVER, LINE INTERCEPT --
Management unit 24 , Study no: 8

Species	Percent Cover	
	'03	'08
Artemisia tridentata wyomingensis	.10	1.76
Chrysothamnus nauseosus	-	.48

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 24 , Study no: 8

Species	Average leader growth (in)	
	'03	'08
Artemisia tridentata wyomingensis	1.8	1.0

BASIC COVER --

Management unit 24 , Study no: 8

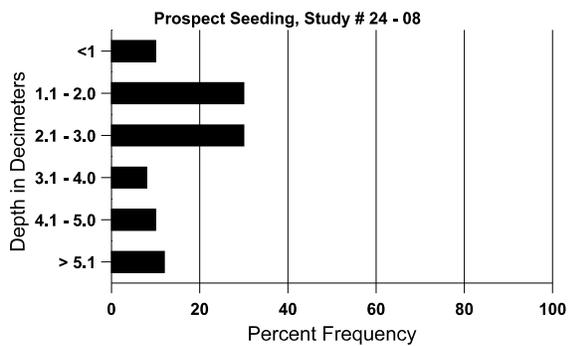
Cover Type	Average Cover %				
	'87	'91	'97	'03	'08
Vegetation	4.50	5.25	15.66	4.46	19.93
Rock	0	0	.11	.08	.11
Pavement	3.50	8.25	11.48	15.22	13.47
Litter	25.00	26.00	13.57	22.26	24.50
Cryptogams	0	0	.46	.01	0
Bare Ground	67.00	60.50	46.99	63.09	51.18

SOIL ANALYSIS DATA --

Management unit 24, Study no: 8, Study Name: Prospect Seeding

Effective rooting depth (in)	Temp °F (depth)	pH	sandy loam			%OM	PPM P	PPM K	dS/m
			%sand	%silt	%clay				
23.1	68.3 (16.0)	7.2	54.4	30.1	15.6	1.8	12.7	921.6	0.6

Stoniness Index



PELLET GROUP DATA --
 Management unit 24 , Study no: 8

Type	Quadrat Frequency		
	'97	'03	'08
Sheep	1	-	-
Rabbit	37	52	98
Elk	21	9	-
Deer	12	3	1
Cattle	8	15	7

Days use per acre (ha)		
'97	'03	'08
8 (20)	-	-
-	-	-
48 (119)	16 (33)	3 (7)
13 (31)	5 (12)	1 (3)
64 (158)	27 (66)	41 (102)

BROWSE CHARACTERISTICS --
 Management unit 24 , Study no: 8

		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>												
87	9065	66	2333	5999	733	-	66	9	8	.22	1	14/12
91	6665	-	533	866	5266	-	34	58	79	4	16	8/9
97	2280	40	180	1300	800	1480	40	4	35	20	22	13/17
03	480	-	20	20	440	2940	50	0	92	88	88	17/24
08	1200	120	200	660	340	1700	7	0	28	12	18	12/16
<i>Chrysothamnus nauseosus</i>												
87	0	-	-	-	-	-	0	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	0	-	0	-/-
97	20	-	-	20	-	-	100	0	0	-	0	-/-
03	40	-	-	20	20	-	50	50	50	-	0	10/10
08	80	-	-	80	-	-	50	0	0	-	0	15/16