

Trend Study 24-8-03

Study site name: Prospect Seeding.

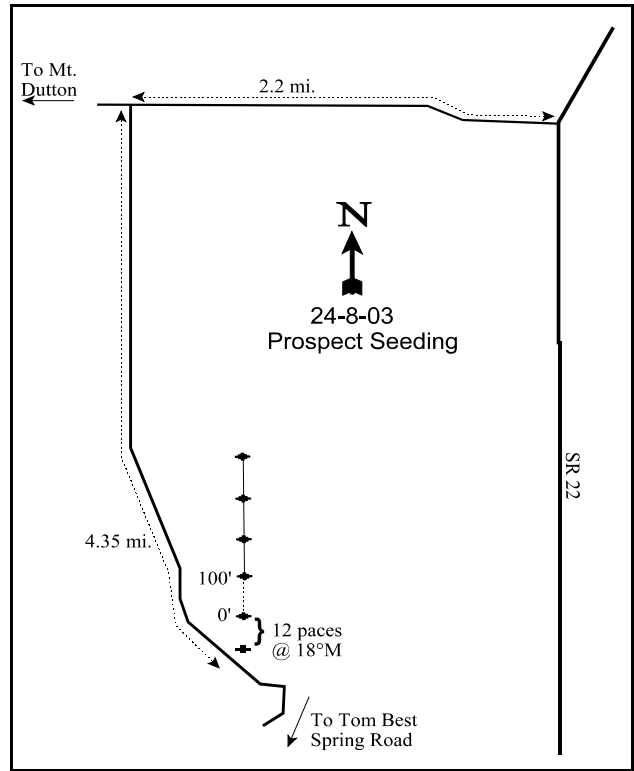
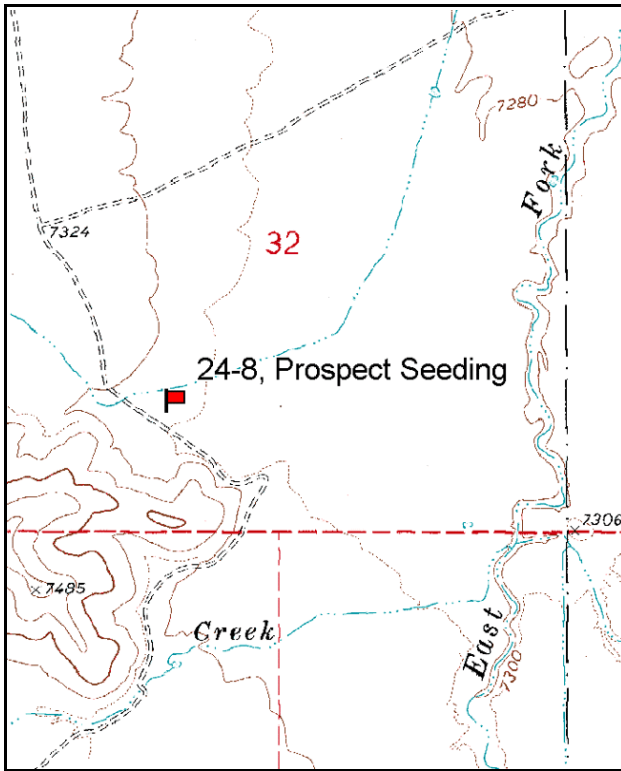
Vegetation type: Big Sagebrush-Grass.

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 27, UTM 12S 4193647 N, 409124 E

DISCUSSION

Prospect Seeding - Trend Study 24-8

The Prospect Seeding study is located approximately 1/4 mile north of Prospect Creek, and 3/4 of a mile west of the East Fork of the Sevier River, which cuts through the middle of John's Valley. The site is located on level ground at an elevation of 7,300 feet. The area is administered by the BLM. This site is located in the Lower Prospect Pasture of the Widtsoe C & H allotment. The area was disked and seeded in 1968. Wyoming big sagebrush has become reestablished and fairway crested wheatgrass 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. Pellet group data from 1997 estimated 48 elk, 13 deer, and 64 cattle days use/acre (119 edu/ha, 32 ddu/ha, and 158 cdu/ha). Some sheep pellet groups were also encountered. Antelope and deer pellet groups are lumped due to the difficulty in differentiating between the two species. Pellet group data from 2003 estimated only 13 elk and 5 deer days use/acre (33 edu/ha and 12 ddu/ha). Cattle use was also lower at 27 days use/acre (66 cdu/ha). Rabbit pellets were abundant with a quadrat frequency of 52%.

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. Soil temperature was high averaging 68°F at a depth of 16 inches in 2003, indicating a dry soil profile. 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.

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 by 1997 and only 480 plants/acre in 2003. Use was moderate in 1987 but vigor was normal on most plants and there were few decadent plants. During the drought year of 1991, percent decadence increased to 79% and approximately 933 plants/acre were classified as dying. The population dropped 66% in 1997 but percent decadence declined to 35%. However, 464 decadent plants/acre were still classified as dying and young recruitment was marginal with only 180 young plants/acre estimated. Drought conditions from 2000 to 2003 have caused the sagebrush population to crash to only 480 plants/acre in 2003. Dead sagebrush plants numbered nearly 3,000 plants/acre. The remaining population is in poor vigor and 92% of the population is decadent. About 95% of the decadent plants sampled were classified as dying. No seedlings were encountered and young plants were rare. It appears that the Wyoming big sagebrush population may die-off completely.

The herbaceous understory is poor and dominated by seeded crested wheatgrass. Production of crested wheatgrass was good in 1997 with a cover value of 12%. Drought combined with heavy use have caused crested wheatgrass to decline significantly in nested frequency and cover dropped 4 fold by 2003, from 12% to 3%. The only other grass species encountered were bottlebrush squirreltail and Russian wildrye which occur rarely. Forbs are very rare.

1991 TREND ASSESSMENT

The soil trend for this site is reasonably stable, but it still has over 60% bare ground and should be considered in very poor condition. 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%. Heavy hedging (extended drought is exacerbating this use)

of the sagebrush has drastically increased from 9% to 58%. Trend for browse would be considered down. As for the herbaceous understory, there is only one forb (a weedy increaser) and one major grass being crested wheatgrass. With the drought, it's numbers are decreasing. The trend would be considered slightly downward.

TREND ASSESSMENT

soil - stable, but poor condition (3)

browse - down (1)

herbaceous understory - slightly downward (2)

1997 TREND ASSESSMENT

Trend for soil is stable (because of the level terrain), but with the abundance of unprotected bare soil, it is in poor condition. Trend for browse slightly down. Population density has declined further by 66%. This reduction comes almost entirely from a die-off of decadent plants resulting in a smaller but healthier population. Percent decadence has declined from 79% in 1991 to 35% currently. However, again the percentage of decadent plants classified as dying has steadily increased since 1987, where it has now at 58%. Currently 40% of the population is dead. Utilization is more moderate. Recruitment is still poor and the population will continue to decline in the future for there are not enough seedlings and young to replace the dead plants. Trend for the herbaceous understory is up slightly due to an increase in the sum of nested frequency of crested wheatgrass. Forbs are still severely lacking.

TREND ASSESSMENT

soil - stable, but poor condition (3)

browse - slightly downward (2)

herbaceous understory - up slightly (4)

2003 TREND ASSESSMENT

Trend for soil is down. Average relative percent cover of vegetation declined 4 fold while litter cover increased slightly due to the addition of dead sagebrush. Cover of bare ground increased to 63%. Some erosion is occurring but it is not severe due to the level terrain. Trend for Wyoming big sagebrush is down and it appears that the population will completely die-off in the near future. The population has declined 79% since 1997 and there are only 480 plants/acre left 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. In addition, 95% of the decadent plants sampled or 420 of the 480 living sagebrush/acre on the site were classified as dying. No seedlings were encountered in 2003 and young plants were rare at an estimated density of only 20 plants/acre. With the loss of sagebrush, this area cannot be considered critical winter range for deer. Trend for the herbaceous understory is also down due to a significant decrease in the nested frequency of crested wheatgrass which is the only abundant herbaceous plant. Average cover also declined from 12% in 1997 to 3.5% in 2003. Forbs are rare. The decline in crested wheatgrass is obviously partly due to drought, but continued livestock and rabbit use have an added effect. Heavy rabbit use has been noted in other areas of the state during this drought period.

TREND ASSESSMENT

soil - down (1)

browse - down (1)

herbaceous understory - down (1)

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

Type	Species	Nested Frequency				Average Cover %	
		'87	'91	'97	'03	'97	'03
G	Agropyron cristatum	_{bc} 215	_b 191	_c 258	_a 145	12.21	2.74
G	Elymus junceus	_a -	_a 3	_a -	_b 20	-	.74
G	Sitanion hystrix	3	7	-	-	-	-
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		218	201	258	165	12.21	3.48
Total for Grasses		218	201	258	165	12.21	3.48
F	Chenopodium album (a)	_a 8	_{ab} 16	_b 36	_a 3	.33	.18
F	Cryptantha spp.	-	-	1	-	.00	-
F	Descurainia pinnata (a)	-	-	-	2	-	.01
F	Senecio multilobatus	-	-	-	1	-	.00
Total for Annual Forbs		8	16	36	5	0.33	0.19
Total for Perennial Forbs		0	0	1	1	0.00	0.00
Total for Forbs		8	16	37	6	0.34	0.20

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	'97	'03
B	Artemisia tridentata wyomingensis	63	21	2.80	.89
B	Chrysothamnus nauseosus	1	2	-	-
Total for Browse		64	23	2.80	0.88

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

Species	Percent Cover
	'03
Artemisia tridentata wyomingensis	.10

KEY BROWSE ANNUAL LEADER GROWTH --
 Management unit 24 , Study no: 8

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

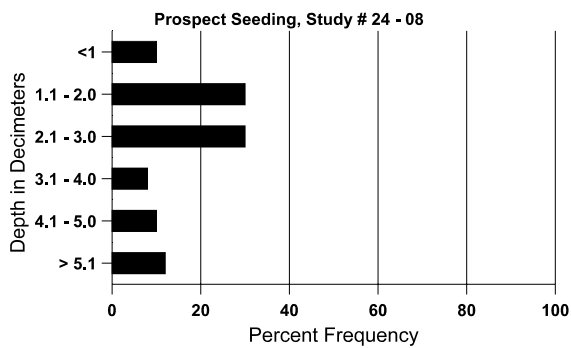
BASIC COVER --
 Management unit 24 , Study no: 8

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

SOIL ANALYSIS DATA --
 Management unit 24, Study no: 8, Study Name: Prospect Seeding

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
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		Days use per acre (ha)	
	'97	'03	'97	'03
Sheep	1	-	8 (20)	-
Rabbit	37	52	-	-
Elk	21	9	48 (119)	13 (33)
Deer	12	3	13 (31)	5 (12)
Cattle	8	15	64 (158)	27 (66)

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	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata wyomingensis</i>											
87	9066	66	2333	6000	733	-	66	9	8	1	14/12
91	6665	-	533	866	5266	-	34	58	79	16	8/9
97	2280	40	180	1300	800	1480	40	4	35	22	13/17
03	480	-	20	20	440	2940	50	0	92	88	17/24
<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