

Trend Study 22-12-03

Study site name: Big Cedar Cove.

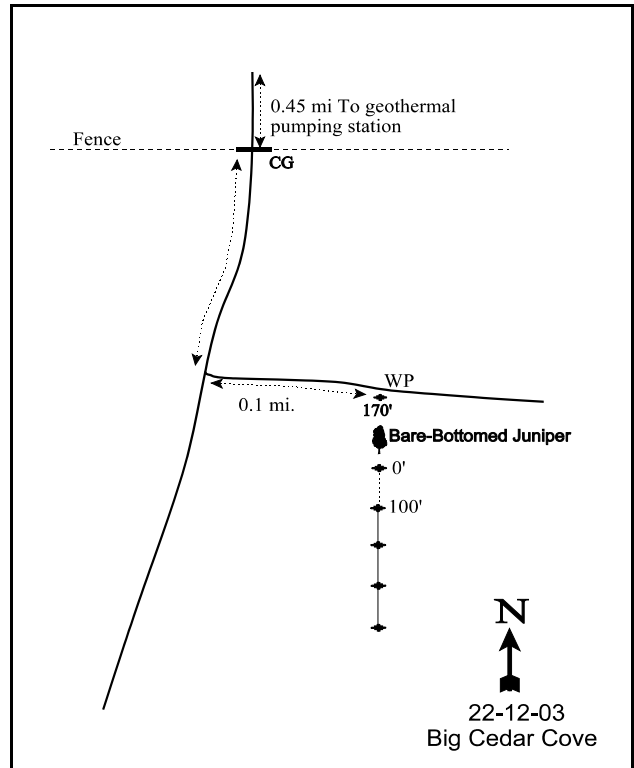
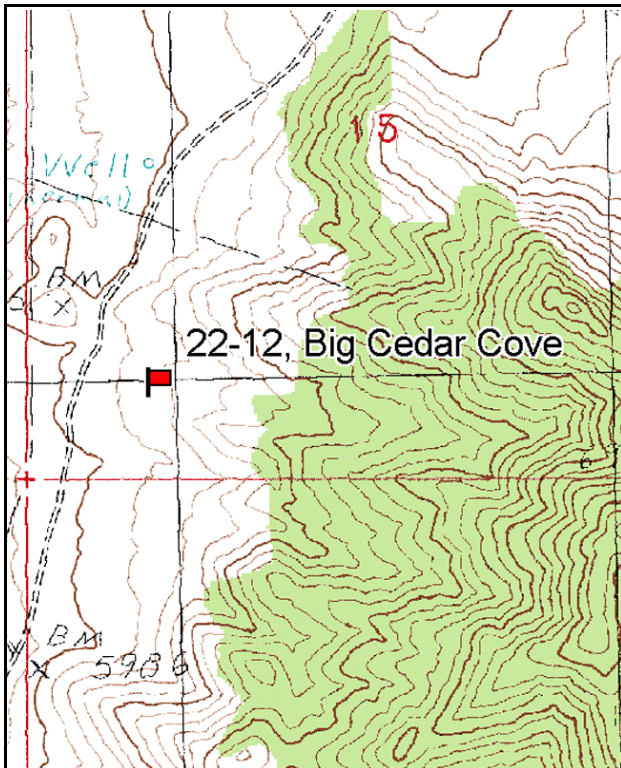
Vegetation type: Big Sagebrush-Grass.

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

From mile marker 4 on SR257 north of Milford, go 0.4 miles north. Turn right at Roosevelt Hot Springs Road (Blundell Geothermal Plant) and drive 2.65 miles to a major fork. Continue straight and go 5.0 miles. Just across the cattleguards turn right and go 1.0 miles to a 4-way fork. Turn right and continue 0.45 miles (past Phillips Oil well-head on the right) to another cattleguard. Go another 0.20 miles to a junction. Turn left and drive 0.1 miles. Stop here. The transect starts 170 feet south of the road beside a highlined juniper tree. The 0-foot baseline stake is a steel rebar three feet tall with a browse tag #7079 attached.



Map Name: Bearskin Mountain

Diagrammatic Sketch

Township 27S, Range 9W, Section 15

GPS: NAD 27, UTM 12S 4257958 N, 337935 E

## DISCUSSION

### Big Cedar Cove - Trend Study No. 22-12

This trend study is located on the sagebrush-grass range that covers the gentle slopes of the foothills on the west side of the Mineral Mountains. The site slopes (9%) to the southwest at an elevation of 6,000 feet. The site, along with most of the land on the Mineral Mountains, is administered by the BLM. The area is grazed by cattle in the spring, but the scarcity of water may limit use. Deer use on the site was light in both 1998 and 2003 at an estimated 12 days use/acre (30 ddu/ha) and 27 days use/acre (66 ddu/ha) respectively. Livestock use was also light in both years at 6 cow days use/acre (15 cdu/ha) in 1998, and 4 cow days use/acre (10 cdu/ha) in 2003. Light use of the site by antelope and wild horses is also likely. A geothermal plant is located nearby and has the potential to impact deer in the area through habitat loss and increased disturbance and human activity.

Soil analysis indicates a sandy loam texture with a neutral pH (6.7). The soil is relatively deep and coarse with nearly half of the soil surface covered with pavement and rocks. Effective rooting depth was estimated at 19 inches in 1998. Average soil temperature was estimated at 45.4°F at 17 inches in depth in 1998, and 62.8°F at 11 inches in depth. Higher soil temperatures in 2003 were mostly the result of less moisture in the soil profile due to drier conditions than in 1998. Vegetative growth may be limited due to relatively low amounts of phosphorous (7.5 ppm). Pedestalling is moderate around the bunchgrasses and shrubs. In 1998, the soil was said to be slightly eroding as it showed signs of sheet erosion. Soils were given a stable rating from an erosion condition class assessment completed on site in 2003.

A dense stand of Wyoming big sagebrush dominates the site. Density was estimated at about 4,000 plants/acre in 1985 and 1991, but slightly lower in 1998 and 2003 at around 3,400 plants/acre. The number of young in the population has declined with each reading, with no young being sampled in 2003. Percent decadence has been moderate to high in all readings ranging from about 35% in 1985 and 1998 to just over 50% in 1991 and 2003. The number of decadent plants classified as dying was high in both 1991 (~1,600 plants/acre) and 2003 (~840 plants/acre). With no young being sampled in 2003, the sagebrush population will likely show some losses by the next reading. Utilization on sagebrush was moderate in 1985 and 1991, but mostly light in 1998 and 2003. Sagebrush vigor was good in 1985 and 1998, but plants displaying poor vigor increased to 39% of the population in 1991 and 25% in 2003. Both of these readings, coincidentally occurred during drought years. Average growth of annual sagebrush leaders was estimated at 1.3 inches in June of 2003. Ephedra occurs on the site but provides only a small portion of the browse cover. Ephedra density was estimated at 320 plants/acre in 1998 and 200 plants/acre in 2003. The difference in density between years was due to the loss of most of the young age class in 2003. Ephedra has been moderate to heavily hedged in all surveys.

The shrub interspaces are occupied by various increasers such as narrowleaf low rabbitbrush, broom snakeweed, prickly phlox, and young pinyon pine. Broom snakeweed density was estimated at 10,080 plants/acre in 1998, but decreased by 50% in 2003. Snakeweed often declines during dry weather cycles as was the case in 2003. Pinyon and juniper are slowly increasing on the site. Point-center quarter data estimated 39 pinyon and 16 Utah juniper trees/acre in 1991, 54 pinyon and 19 Utah juniper trees/acre in 1998, and 68 pinyon and 21 juniper trees/acre in 2003.

Grasses are the dominant component in the understory. Perennial grasses occur mainly under the protection of sagebrush crowns. Sandberg bluegrass has been the most abundant perennial grass in all readings with galleta, bottlebrush squirreltail, purple three-awn, and needle-and-thread grass occurring in lower numbers. Cheatgrass was the most abundant of all the herbaceous species in 1998 and 2003. Even with drought conditions in 2003, cheatgrass maintained nearly stable frequency and cover values. Although abundant, most cheatgrass plants on this site are small statured resulting in only a moderate fire hazard. Cheatgrass

contributed 13% of the total vegetation cover on the site in 1998 and 2003. Forbs are scarce, and provide very little ground cover or forage on the site.

#### 1985 APPARENT TREND ASSESSMENT

All of the soil trend parameters indicate a stable condition. Vegetative trend may be slowly declining as the populations of various undesirable plants, including pinyon pine and cheatgrass seem to be on the increase.

#### 1991 TREND ASSESSMENT

The soil trend is slightly down due to litter cover decreasing by 18% and bare ground increasing by over 50%. The key browse species, Wyoming big sagebrush, shows only a slight increase in population (3%), a decreased reproductive potential, and increased decadence. Plants with poor vigor have increased to 39%. These factors all indicate a slightly downward trend. The trend for grasses and forbs are up due to increased nested frequency values, but it is still in very poor condition, especially for the forbs.

##### TREND ASSESSMENT

soil - slightly down (2)

browse - slightly down (2)

herbaceous understory - up (5)

#### 1998 TREND ASSESSMENT

The soil trend continues to be slightly downward with a slight increase in percent bare ground, rock, and pavement cover. Due to a recent rainstorm in 1998, cryptogams were more easily identified and common, including mosses, lichens, and mushrooms. The browse trend is considered stable. The Wyoming big sagebrush population still exhibits relatively high percent decadence, but appears to be recovering from poor conditions reported in 1991. The decline in young plants is cause for concern. Although the broom snakeweed density has greatly increased, these are small plants and provide very little cover to the site. Broom snakeweed density can fluctuate highly depending on precipitation patterns, and this population will likely show great increases and decreases in the future. The herbaceous understory trend is stable. The perennial herbaceous understory sum of nested frequency has changed very little since 1991.

##### TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - stable (3)

#### 2003 TREND ASSESSMENT

Soil trend is stable. Average cover of litter and bare ground declined in 2003 while vegetation cover remains moderate. Erosion is low. Trend for browse is slightly down. Wyoming big sagebrush has a stable density, but no young were sampled in 2003 and percent decadence and poor vigor increased. Also, almost half of the decadent age class was classified as dying which may result in a lower population by the next reading. Trend for the herbaceous understory is stable. Sum of nested frequency for perennial grasses slightly declined, but perennial forbs increased.

##### TREND ASSESSMENT

soil - stable (3)

browse - slightly down (2)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --  
Management unit 22 , Study no: 12

T y p e	Species	Nested Frequency				Average Cover %	
		'85	'91	'98	'03	'98	'03
G	<i>Aristida purpurea</i>	13	17	19	17	.66	.31
G	<i>Bromus tectorum</i> (a)	-	-	<sub>b</sub> 308	<sub>a</sub> 284	4.59	4.50
G	<i>Hilaria jamesii</i>	56	61	65	42	1.18	.31
G	<i>Oryzopsis hymenoides</i>	-	4	5	3	.19	.06
G	<i>Poa secunda</i>	<sub>a</sub> 68	<sub>b</sub> 116	<sub>b</sub> 137	<sub>b</sub> 140	3.09	2.23
G	<i>Sitanion hystrix</i>	41	75	68	75	1.93	2.40
G	<i>Stipa comata</i>	11	29	14	9	.16	.18
Total for Annual Grasses		0	0	308	284	4.59	4.50
Total for Perennial Grasses		189	302	308	286	7.22	5.52
Total for Grasses		189	302	616	570	11.81	10.02
F	<i>Agoseris glauca</i>	3	7	-	4	-	.01
F	<i>Alyssum alyssoides</i> (a)	-	-	-	6	-	.01
F	<i>Arabis demissa</i>	2	-	2	-	.00	-
F	<i>Astragalus</i> spp.	-	4	7	-	.06	-
F	<i>Castilleja chromosa</i>	-	-	3	-	.03	-
F	<i>Calochortus nuttallii</i>	1	5	1	-	.00	-
F	<i>Crepis</i> spp.	-	4	-	-	-	-
F	<i>Delphinium nuttallianum</i>	-	5	-	-	-	-
F	<i>Draba</i> spp. (a)	-	-	-	11	-	.02
F	<i>Erigeron pumilus</i>	3	5	10	-	.59	-
F	<i>Gilia</i> spp. (a)	-	-	<sub>a</sub> -	<sub>b</sub> 26	-	.09
F	<i>Lomatium</i> spp.	-	1	2	-	.01	-
F	<i>Lupinus argenteus</i>	-	-	1	-	.00	-
F	<i>Microsteris gracilis</i> (a)	-	-	1	-	.00	-
F	<i>Navarretia intertexta</i> (a)	-	-	12	27	.05	.08
F	<i>Phlox longifolia</i>	<sub>a</sub> -	<sub>b</sub> 31	<sub>b</sub> 23	<sub>a</sub> 9	.11	.01
F	<i>Phlox</i> spp.	-	-	<sub>a</sub> -	<sub>b</sub> 87	-	.47
F	<i>Ranunculus testiculatus</i> (a)	-	-	-	3	-	.00
F	<i>Sphaeralcea coccinea</i>	-	-	-	-	.00	-
F	<i>Zigadenus paniculatus</i>	3	-	-	-	-	-
Total for Annual Forbs		0	0	13	73	0.05	0.21
Total for Perennial Forbs		12	62	49	100	0.83	0.49
Total for Forbs		12	62	62	173	0.89	0.71

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

BROWSE TRENDS --

Management unit 22 , Study no: 12

Type	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Amelanchier utahensis	1	0	-	-
B	Artemisia tridentata wyomingensis	87	87	16.49	14.27
B	Chrysothamnus viscidiflorus stenophyllus	36	36	1.00	1.76
B	Ephedra nevadensis	7	8	.74	1.72
B	Gutierrezia sarothrae	61	52	3.37	3.38
B	Juniperus osteosperma	1	0	-	-
B	Leptodactylon pungens	1	6	-	-
B	Opuntia spp.	7	6	-	-
B	Pinus edulis	3	4	.58	1.56
B	Ribes cereum cereum	1	0	-	-
Total for Browse		205	199	22.21	22.70

CANOPY COVER, LINE INTERCEPT --

Management unit 22 , Study no: 12

Species	Percent Cover
	'03
Artemisia tridentata wyomingensis	16.78
Chrysothamnus viscidiflorus stenophyllus	1.14
Ephedra nevadensis	1.25
Gutierrezia sarothrae	4.46
Juniperus osteosperma	.03
Opuntia spp.	.13
Pinus edulis	.73

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 22 , Study no: 12

Species	Average leader growth (in)
	'03
Artemisia tridentata wyomingensis	1.3



PELLET GROUP DATA --  
 Management unit 22 , Study no: 12

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'03	'98	'03
Rabbit	28	21	-	-
Deer	21	9	12 (30)	27 (66)
Cattle	1	2	6 (15)	4 (11)

BROWSE CHARACTERISTICS --  
 Management unit 22 , Study no: 12

		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>Amelanchier utahensis</i>											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
98	20	-	-	20	-	-	0	0	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	-/-
<i>Artemisia tridentata wyomingensis</i>											
85	3999	133	866	1733	1400	-	63	12	35	0	21/26
91	4132	-	666	1266	2200	-	65	15	53	39	17/20
98	3480	100	40	2140	1300	600	30	2	37	11	22/34
03	3420	-	-	1640	1780	440	18	.58	52	25	21/34
<i>Chrysothamnus viscidiflorus stenophyllus</i>											
85	1799	-	133	1000	666	-	37	0	37	15	8/10
91	1466	-	66	600	800	-	23	5	55	50	9/11
98	900	-	-	800	100	20	0	0	11	7	11/18
03	900	-	-	740	160	-	0	0	18	7	11/17
<i>Ephedra nevadensis</i>											
85	266	-	66	200	-	-	100	0	0	0	15/11
91	532	-	266	266	-	-	100	0	0	0	15/14
98	320	40	160	140	20	-	44	25	6	25	20/27
03	200	20	20	160	20	-	50	20	10	10	22/34
<i>Gutierrezia sarothrae</i>											
85	0	-	-	-	-	-	0	0	0	0	-/-
91	533	-	133	200	200	-	0	0	38	63	9/7
98	10080	160	2000	8000	80	80	0	0	1	.39	8/9
03	5040	20	-	4320	720	1040	0	0	14	21	11/16

		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)
<b>Juniperus osteosperma</b>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
98	<b>20</b>	-	20	-	-	-	0	0	-	0	-/-
03	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
<b>Leptodactylon pungens</b>											
85	<b>66</b>	-	-	66	-	-	0	0	-	0	9/5
91	<b>200</b>	-	-	200	-	-	0	0	-	0	7/5
98	<b>20</b>	-	20	-	-	-	0	0	-	0	9/10
03	<b>160</b>	-	-	160	-	-	25	0	-	0	7/5
<b>Mahonia repens</b>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
98	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
03	<b>0</b>	-	-	-	-	-	0	0	-	0	6/11
<b>Opuntia spp.</b>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
98	<b>140</b>	-	-	140	-	-	0	0	-	0	6/10
03	<b>140</b>	-	-	140	-	-	0	0	-	0	6/18
<b>Pinus edulis</b>											
85	<b>66</b>	-	-	66	-	-	0	0	-	0	69/71
91	<b>66</b>	-	-	66	-	-	0	0	-	0	116/75
98	<b>60</b>	-	40	20	-	-	0	0	-	0	-/-
03	<b>80</b>	-	80	-	-	-	0	0	-	0	-/-
<b>Ribes cereum cereum</b>											
85	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
91	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
98	<b>120</b>	-	-	120	-	-	0	0	-	0	-/-
03	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-