

UPPER COTTONWOOD RIDGE - TREND STUDY NO. 11B-6-10

Vegetation Type: Dry Meadow

Range Type: Crucial Deer Summer (Fawning habitat), Crucial Elk Summer

NRCS Ecological Site Description: High Mountain Stony Loam (Engelmann Spruce), R048AY524UT

Land Ownership: BLM

Elevation: 9300 ft. (2835 m)

Aspect: North

Slope: 18%

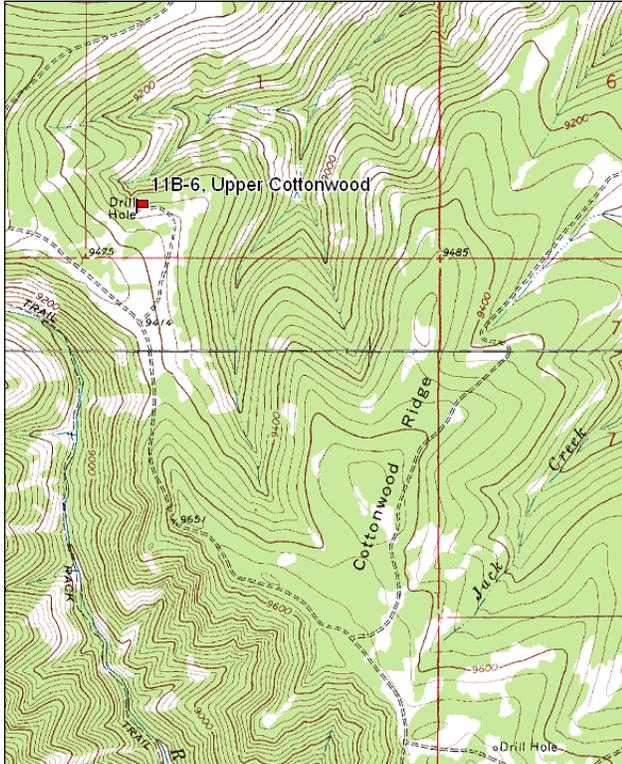
Transect bearing: 165° magnetic

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

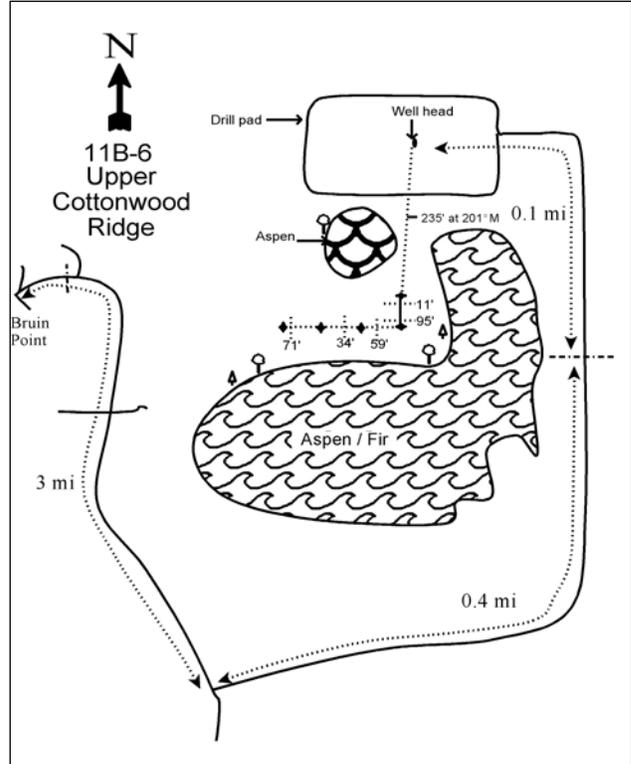
Directions:

From Sunnyside, proceed up Water Canyon to the summit at Bruin Point (approximately 5.6 miles). Take the middle fork and go 0.35 miles to a cattle guard. Stay right just beyond the cattle guard and proceed 0.85 miles to an intersection and a large pipe gateway. Go straight through the gateway and go 1.8 miles to a fork. Turn left and go 0.4 miles to a fence. Walk 0.1 miles to the end of the road, an oil drilling pad. The baseline is located 235 feet south (201°M) of the well head. The 0-foot end of the frequency baseline is marked by a 4-foot tall fence post tagged #7835.

Map Name: Bruin Point



Diagrammatic Sketch:



Township: 14S Range: 14E Section: 1

GPS: NAD 83, UTM 12S 559655 E 4386924 N

UPPER COTTONWOOD RIDGE - TREND STUDY NO. 11B-6

Site Information

Site Description: The study is located in an open meadow surrounded by quaking aspen (*Populus tremuloides*), subalpine fir (*Abies lasiocarpa*) and Douglas fir (*Pseudotsuga menziesii*). The meadow is near the ridge top at the headwaters of Cottonwood Creek. The high, cool, north-facing slope supports an abundant variety of plant life. The lack of a permanent water source nearby limits the use of the area by big game during the summer. Grazing is managed by the Bureau of Land Management (BLM) as part of the large Green River allotment. Oil and gas exploration has been carried out in the area in the past, but there are no signs of any current activity. An extensive road system encourages recreational use by the public throughout the area, but direct access to the site was closed in 2010. Pellet group transect data estimated light use by deer and elk in 2000 and 2010, and estimated cattle use has been light since 2000 (Table - Pellet Group Data).

Browse: Browse is an insignificant component of the vegetation on the site. However, a few seedling and young aspen provide some forage which has had moderate to heavy browsing since 1986. Some gooseberry current (*Ribes montigenum*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and snowberry (*Symphoricarpos oreophilus*) plants occur in scattered patches over the site, but none has had heavy use (Table - Browse Characteristics). The site is surrounded by large mature aspen, subalpine fir and Douglas fir which appear to be slowly moving in from the edges.

Herbaceous Understory: Grasses are abundant and diverse, but are dominated by Kentucky bluegrass (*Poa pratensis*). Other species of grasses, subalpine needlegrass (*Stipa columbiana*), Letterman needlegrass (*S. lettermani*), blue wildrye (*Elymus glaucus* spp. *glaucus*), sedge (*Carex* sp.) and several other perennial grasses, are less abundant, but provide additional forage. Forbs are an important source of forage for deer and elk on the summer range. Forbs on this site are diverse and abundant. Dandelion (*Taraxacum officinale*) has dominated the forb composition, but other, more desirable forbs, are present and provide good forage (Table - Herbaceous Trends).

Soil: The soil texture is a clay loam with a neutral soil reaction (pH 6.7). Organic matter is quite high (5.5%) with abundant plant life. Bare ground cover is low with high amounts of vegetation and litter cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2010.

Trend Assessments

Browse:

- **1986 to 1994 - stable (0):** Differences in density may be related to the larger sample area used in 1994; therefore, trend was determined using other parameters. Browse is limited on the site, but is not considered crucial forage on summer range. There was little change in any of the preferred browse found on the site.
- **1994 to 2000 - stable (0):** There was a slight increase in the cover and density of mountain big sagebrush and gooseberry current. However, cover of subalpine fir also increased and conifers appear to be beginning to encroach on the meadow.
- **2000 to 2010 - slightly up (+1):** The density of mountain big sagebrush increased substantially due to a large increase in the recruitment of young plants, but cover remained low. There was a large increase in the cover of gooseberry current, though density remained similar. Conifer species continued to increase in cover.

Grass:

- **1986 to 1994 - up (+2):** The sum of nested frequency of perennial grasses increased by 20% with a significant increase in the nested frequency of the two needlegrass species and blue wildrye.

- **1994 to 2000 - slightly down (-1):** The perennial grass sum of nested frequency decreased by 11% and cover decreased from 13% to 12%. There was a significant decrease in the nested frequency of the dominant species, Kentucky bluegrass.
- **2000 to 2010 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, though cover increased substantially to 26%.

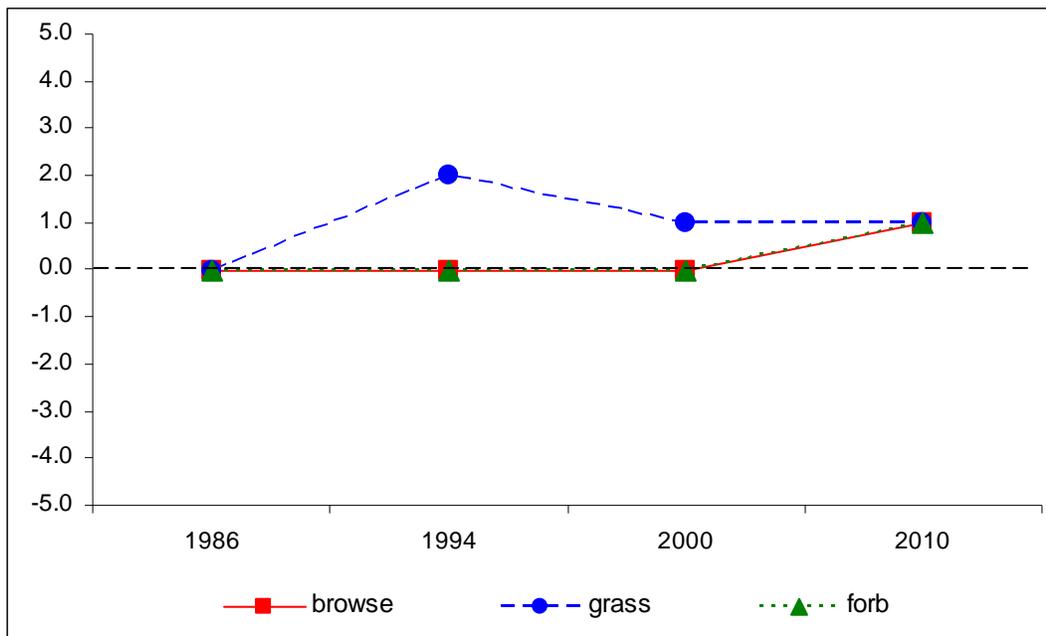
Forb:

- **1986 to 1994 - stable (0):** The sum of nested frequency of perennial forbs changed little.
- **1994 to 2000 - stable (0):** There was little change in the sum of nested frequency of perennial forbs.
- **2000 to 2010 - slightly up (+1):** The perennial forb sum of nested frequency changed little, but there was a positive change in composition. The nested frequency of dandelion decreased significantly and many other desirable forbs increased in abundance.

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--

Management unit 11B, Study no: 6



HERBACEOUS TRENDS--

Management unit 11B, Study no: 6

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'00	'10	'94	'00	'10
G	Agropyron spicatum	ab ³	ab ⁻	a ⁻	b ¹⁰	-	-	.22
G	Bromus carinatus	b ⁷³	a ⁶	a ²⁷	a ⁸	.07	.44	.30
G	Carex sp.	22	39	26	31	.13	.35	.69
G	Elymus glaucus glaucus	a ²	b ⁷⁵	b ⁶⁴	a ⁶	.64	1.11	.30
G	Poa fendleriana	a ⁵	a ⁻	a ³	b ²⁶	-	.03	.82
G	Poa pratensis	b ³⁰⁷	b ²⁸⁹	a ²⁴¹	a ²⁴³	11.51	7.83	19.31
G	Stipa columbiana	a ⁻	b ²³	c ⁶³	bc ⁵²	.33	1.69	2.19
G	Stipa lettermani	a ¹	b ⁵⁵	a ²²	b ⁶³	.33	.17	2.29
G	Trisetum spicatum	ab ⁶	b ¹⁴	a ⁻	b ¹¹	.22	-	.05

Type	Species	Nested Frequency				Average Cover %		
		'86	'94	'00	'10	'94	'00	'10
	Total for Annual Grasses	0	0	0	0	0	0	0
	Total for Perennial Grasses	419	501	446	450	13.25	11.63	26.19
	Total for Grasses	419	501	446	450	13.25	11.63	26.19
F	<i>Achillea millefolium</i>	b160	b144	a91	ab133	1.52	.81	4.00
F	<i>Agoseris aurantiaca</i>	a10	a7	b62	b42	.02	.44	1.21
F	<i>Androsace septentrionalis</i> (a)	-	a-	b39	a1	-	.33	.00
F	<i>Antennaria parvifolia</i>	37	38	41	41	.45	1.33	2.00
F	<i>Aquilegia coerulea</i>	8	-	-	-	-	-	-
F	<i>Arabis drummondii</i>	a1	b17	ab9	a-	.04	.05	-
F	<i>Aster</i> sp.	a-	a41	b89	b104	.36	1.26	4.22
F	<i>Astragalus miser</i>	ab20	a5	b36	a-	.01	.42	-
F	<i>Calochortus gunnisoni</i>	b13	a-	a-	a2	-	-	.06
F	<i>Chaenactis douglasii</i>	-	9	-	4	.01	-	.03
F	<i>Chenopodium fremontii</i> (a)	-	-	2	-	-	.03	-
F	<i>Cirsium calcareum</i>	15	24	9	22	.26	.02	.64
F	<i>Collinsia parviflora</i> (a)	-	a-	ab7	b7	-	.02	.07
F	<i>Comandra pallida</i>	a-	a-	b17	a4	-	.14	.00
F	<i>Descurainia pinnata</i> (a)	-	a-	b32	a-	-	.24	-
F	<i>Erigeron speciosus</i>	ab5	a-	bc17	c32	-	.22	.68
F	<i>Erigeron speciosus</i>	a-	b11	a-	a-	.10	-	-
F	<i>Fragaria vesca</i>	a8	b39	ab21	b41	.70	.41	.99
F	<i>Gayophytum ramosissimum</i> (a)	-	-	4	6	-	.04	.01
F	<i>Gentiana prostrata</i>	a-	a-	b35	a-	-	.63	-
F	<i>Gentiana</i> sp.	a-	a-	a-	b27	-	-	.31
F	<i>Lupinus argenteus</i>	a2	a1	a10	b28	.03	.39	1.53
F	<i>Monardella odoratissima</i>	4	-	-	-	-	-	-
F	<i>Osmorhiza occidentalis</i>	-	5	3	5	.04	.01	.03
F	<i>Phlox longifolia</i>	b22	b10	a-	b20	.02	-	.19
F	<i>Polygonum douglasii</i> (a)	-	c74	a5	b34	.16	.01	.19
F	<i>Potentilla gracilis</i>	-	3	-	4	.01	-	.18
F	<i>Ranunculus alismaefolius</i>	c45	b14	b12	a-	.03	.36	-
F	<i>Sedum lanceolatum</i>	-	-	-	3	-	-	.03
F	<i>Silene menziesii</i>	b30	b35	a2	a-	.15	.00	-
F	<i>Taraxacum officinale</i>	b236	b255	b253	a186	7.49	9.01	7.16
F	<i>Thalictrum fendleri</i>	-	4	7	1	.03	.01	.03
F	Unknown forb-perennial	b58	a-	a-	a-	-	-	-
F	<i>Vicia americana</i>	b12	ab6	a-	a-	.41	-	-
F	<i>Viola adunca</i>	54	53	56	40	.34	.87	.52
	Total for Annual Forbs	0	74	89	48	0.16	0.68	0.29
	Total for Perennial Forbs	740	721	770	739	12.07	16.44	23.86
	Total for Forbs	740	795	859	787	12.23	17.12	24.15

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

BROWSE TRENDS--

Management unit 11B, Study no: 6

T y p e	Species	Strip Frequency			Average Cover %		
		'94	'00	'10	'94	'00	'10
B	Abies lasiocarpa	0	11	12	2.13	4.99	6.95
B	Artemisia tridentata vaseyana	4	5	16	.03	1.13	.81
B	Picea pungens	0	0	1	-	-	.63
B	Populus tremuloides	0	31	31	2.31	1.10	2.40
B	Pseudotsuga menziesii	0	0	0	-	.53	-
B	Purshia tridentata	0	1	0	-	-	-
B	Ribes montigenum	14	17	21	.82	1.83	4.77
B	Rosa woodsii	1	0	2	-	-	.15
B	Symphoricarpos oreophilus	14	15	15	.23	.21	.89
Total for Browse		33	80	98	5.54	9.81	16.62

CANOPY COVER, LINE INTERCEPT--

Management unit 11B, Study no: 6

Species	Percent Cover	
	'00	'10
Abies lasiocarpa	6.19	16.00
Artemisia tridentata vaseyana	-	1.43
Picea pungens	-	.30
Populus tremuloides	4.59	17.29
Ribes montigenum	-	6.93
Symphoricarpos oreophilus	-	1.88

BASIC COVER--

Management unit 11B, Study no: 6

Cover Type	Average Cover %			
	'86	'94	'00	'10
Vegetation	27.75	36.17	45.02	58.81
Rock	.25	.59	.11	1.04
Pavement	.25	.21	.34	.99
Litter	53.50	38.91	62.68	51.82
Cryptogams	0	2.36	.65	.01
Bare Ground	18.25	11.34	17.66	15.39

SOIL ANALYSIS DATA --

Management unit 11B, Study no: 6, Study Name: Upper Cottonwood

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		% sand	% silt	% clay				
17.1	6.7	28.0	34.7	34.6	5.5	17.3	246.4	0.8

PELLET GROUP DATA--

Management unit 11B, Study no: 6

Type	Quadrat Frequency			Days use per acre (ha)	
	'94	'00	'10	'00	'10
Sheep	-	-	1	-	-
Rabbit	4	-	-	-	-
Grouse	-	-	-	-	9/acre
Elk	17	12	1	26 (63)	3 (7)
Deer	2	-	3	8 (20)	-
Cattle	2	-	3	-	4 (9)

BROWSE CHARACTERISTICS--

Management unit 11B, Study no: 6

		Age class distribution						Utilization			
Y	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)		
<i>Abies lasiocarpa</i>											
86	0	0	0	-	-	0	0	0	-/-		
94	0	0	0	-	-	0	0	0	-/-		
00	380	74	26	-	60	0	0	0	-/-		
10	320	63	38	-	260	6	0	0	-/-		
<i>Artemisia tridentata vaseyana</i>											
86	0	0	0	-	-	0	0	0	-/-		
94	100	20	80	-	-	0	0	0	23/20		
00	120	17	83	-	-	0	0	0	20/32		
10	980	76	24	-	300	20	0	2	17/22		
<i>Cercocarpus ledifolius</i>											
86	0	0	0	-	-	0	0	0	-/-		
94	0	0	0	-	20	0	0	0	-/-		
00	0	0	0	-	-	0	0	0	-/-		
10	0	0	0	-	-	0	0	0	-/-		
<i>Juniperus communis</i>											
86	0	0	0	-	-	0	0	0	-/-		
94	0	0	0	-	-	0	0	0	26/120		
00	0	0	0	-	-	0	0	0	-/-		
10	0	0	0	-	-	0	0	0	-/-		
<i>Picea pungens</i>											
86	0	0	0	-	-	0	0	0	-/-		
94	0	0	0	-	-	0	0	0	-/-		
00	0	0	0	-	-	0	0	0	-/-		
10	20	100	0	-	-	0	0	0	-/-		
<i>Populus tremuloides</i>											
86	333	100	0	0	266	60	20	0	-/-		
94	0	0	0	0	-	0	0	0	-/-		
00	1480	78	20	1	-	0	0	0	-/-		
10	1160	88	12	0	280	16	12	3	-/-		

		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>Pseudotsuga menziesii</i>										
86	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
00	0	0	0	-	40	0	0	0	-/-	
10	0	0	0	-	20	0	0	0	-/-	
<i>Purshia tridentata</i>										
86	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
00	20	100	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
<i>Ribes montigenum</i>										
86	2599	51	36	13	133	0	0	8	25/28	
94	460	30	70	0	20	0	0	0	26/62	
00	760	8	92	0	-	0	0	0	20/43	
10	700	17	83	0	20	0	0	0	28/63	
<i>Rosa woodsii</i>										
86	0	0	0	-	-	0	0	0	-/-	
94	20	0	100	-	-	0	0	0	14/12	
00	0	0	0	-	-	0	0	0	-/-	
10	40	50	50	-	-	0	0	0	21/29	
<i>Symphoricarpos oreophilus</i>										
86	732	45	55	0	133	0	0	0	22/24	
94	440	27	68	5	-	9	0	5	17/24	
00	380	16	74	11	-	11	0	5	18/24	
10	420	19	81	0	60	0	0	0	23/39	