

OLSON DRAW SAGE GROUSE - TREND STUDY NO. 16C-43-09

Vegetation Type: Mountain Big Sagebrush-Grass

Range Type: Crucial Deer Winter, Substantial Elk Winter, Crucial Sage Grouse

NRCS Ecological Site Description: Not Available

Land Ownership: USFS

Elevation: 8,400 ft (2,560 m)

Aspect: Northeast

Slope: 3%-10%

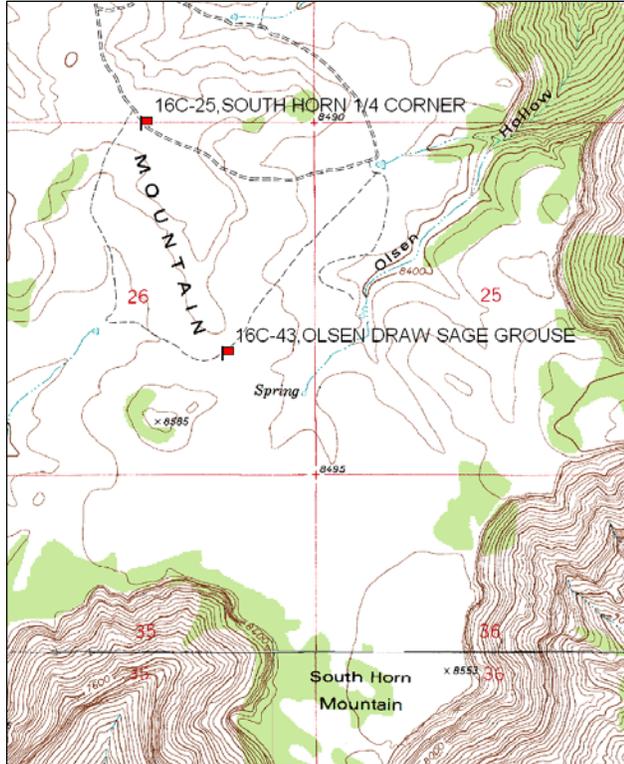
Transect bearing: 200 degrees magnetic

Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft)

Directions:

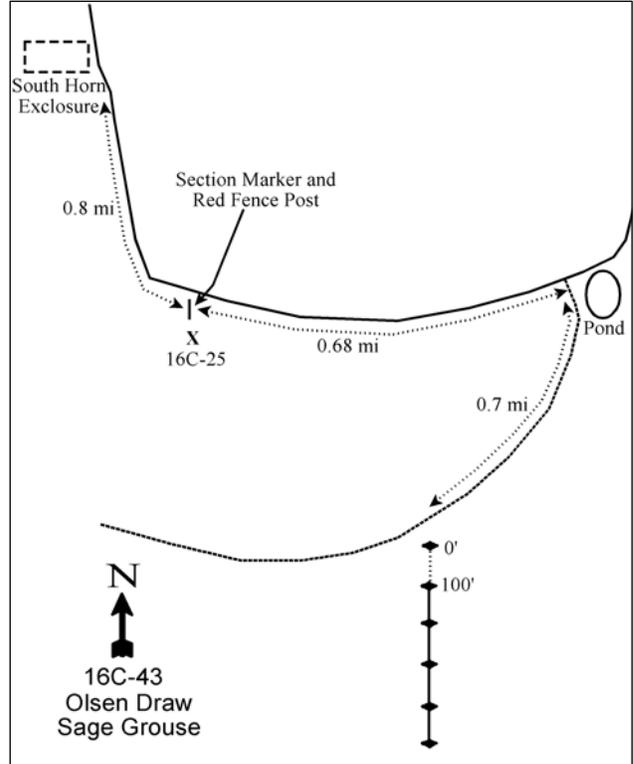
From the South Horn enclosure (by study #16C-24), continue south on the main USGS road for 0.8 miles to a USGS landline marker by a tall red fencepost on the right side of the road. Continue 0.68 miles and turn right before the pond on a two track. There may be a faint road going off to the left, but stay right for 0.7 miles. The site is on the left hand side of the road. Use a GPS unit to get to the beginning of the baseline.

Map Name: The Cap



Township: 19S, Range: 6E, Section: 26

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 481705 E 4331995 N

OLSON DRAW SAGE GROUSE - TREND STUDY NO. 16C-43

Site Information

Site Description: The study was established to monitor sage grouse nesting and brooding habitat that also provides a good area for wintering elk. There is an active lek just southeast of the study site. The study samples a mountain big sagebrush community (*Artemisia tridentata* ssp. *vaseyana*) on South Horn Mountain. This area is part of the Horn Mountain grazing allotment managed by the Forest Service. Pellet group data estimated very heavy elk use in 2004, but more moderate use in 2009. Estimated deer and cattle use has been light since 2004. There has been a moderate number of sage grouse pellet groups encountered on the site since 2004 (Table - Pellet Group Data). Sage grouse pellet groups may have a higher rate of occurrence than pellet group data suggests as many sage grouse pellets occurred in concentrated areas outside of the sample area.

Browse: Mountain big sagebrush is the key browse on this site and provides most of the canopy cover. The only other browse that has any cover of note is stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*) (Table - Canopy Cover). The sagebrush population is mostly mature with high amounts of decadence and poor vigor. Recruitment of young sagebrush plants was poor at the outset of the study in 2004, but was good in 2009. Utilization of mountain big sagebrush has been moderate to heavy since 2004. A few Utah serviceberry (*Amelanchier utahensis*) are also on the site in very low numbers (Table - Browse Characteristics).

Herbaceous Understory: The herbaceous understory has several native perennial grasses creating a fairly dense ground cover between the sagebrush that has averaged 12% since 2004. Salina wildrye (*Elymus salina*) is the dominant grass species providing most of the grass cover with mutton bluegrass (*Poa fendleriana*), western wheatgrass (*Agropyron smithii*), and Indian rice grass (*Oryzopsis hymenoides*) also being common. Forbs are very diverse and fairly abundant accounting for 4% cover since 2004. Several species that are important to sage grouse are located on this site such as Watson's penstemon (*Penstemon watsonii*), hawksbeard (*Crepis acuminata*), clover (*Trifolium sp.*), and milkvetch (*Astragalus spp.*) (Beck and Mitchell 1997) (Table - Herbaceous Trends).

Soil: The soil texture is a sandy clay loam with a neutral pH (Table - Soil Analysis Data). The ground is covered with a moderate amount of litter and vegetation cover, but bare ground cover is also moderately high (Table - Basic Cover). The soil erosion condition was classified as stable in 2004 and 2009.

Trend Assessments

Browse:

- **2004 to 2009 - up (+2):** The density of mountain big sagebrush increased by 27% from 3,480 plants/acre to 4,420 plants/acre, though canopy cover decreased from 17% to 12%. Most of the increase in density was due to a large increase in the recruitment of young plants, though the density of mature plants increased 11% from 1,740 plants/acre to 1,940 plants/acre.

Grass:

- **2004 to 2009 - up (+2):** Perennial grass sum of nested frequency increased by 23% and cover increased from 12% to 14%. There was a significant increase in the nested frequency of the three most prevalent grasses, Salina wildrye, mutton bluegrass, and western wheatgrass.

Forb:

- **2004 to 2009 - down (-2):** Perennial forb sum of nested frequency decreased by 21% and cover decreased from 5% to 3%.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

Management unit 16C, study no: 43

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
04	20.1	0.6	1.0	23.7	0.0	10.0	0.0	55.4	Fair
09	15.3	3.6	9.5	27.6	0.0	5.9	0.0	61.8	Fair

Trend Summary

HERBACEOUS TRENDS--

Management unit 16C, Study no: 43

Type	Species	Nested Frequency		Average Cover %	
		'04	'09	'04	'09
G	Agropyron smithii	a92	b126	1.27	1.45
G	Agropyron spicatum	7	6	.04	.04
G	Elymus salina	a132	b193	5.01	8.11
G	Koeleria cristata	1	-	.03	-
G	Oryzopsis hymenoides	19	12	.79	.81
G	Poa fendleriana	a106	b150	3.51	3.29
G	Sitanion hystrix	b28	a5	.67	.04
G	Stipa comata	5	3	.04	.03
G	Stipa sp.	b12	a-	.45	-
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		402	495	11.84	13.78
Total for Grasses		402	495	11.84	13.78
F	Arabis sp.	b9	a-	.02	-
F	Astragalus convallarius	12	10	.13	.04
F	Astragalus sp.	5	1	.15	.00
F	Astragalus tenellus	b16	a2	.52	.03
F	Chenopodium album (a)	b69	a-	.20	-
F	Chenopodium leptophyllum(a)	a-	b13	-	.02
F	Collinsia parviflora (a)	1	-	.00	-
F	Comandra pallida	4	3	.03	.03
F	Crepis acuminata	43	30	.80	.18
F	Cryptantha sp.	6	-	.01	-
F	Erigeron eatonii	17	17	.27	.08
F	Erigeron pumilus	1	10	.00	.04
F	Eriogonum racemosum	a10	b17	.29	.16
F	Eriogonum umbellatum	a15	b23	.16	.83
F	Gayophytum ramosissimum(a)	2	-	.01	-
F	Lappula occidentalis (a)	3	-	.01	-
F	Machaeranthera canescens	1	3	.03	.01
F	Penstemon caespitosus	b11	a10	.21	.31
F	Penstemon watsonii	24	26	1.24	.35
F	Phlox austromontana	22	26	.21	.40
F	Polygonum douglasii (a)	b27	a-	.10	-

Type	Species	Nested Frequency		Average Cover %	
		'04	'09	'04	'09
F	Potentilla sp.	12	16	.16	.24
F	Schoenocrambe linifolia	36	30	.18	.10
F	Senecio multilobatus	2	-	.01	-
F	Trifolium sp.	_b 62	_a 21	.64	.10
Total for Annual Forbs		102	13	0.33	0.02
Total for Perennial Forbs		308	245	5.11	2.94
Total for Forbs		410	258	5.45	2.96

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

BROWSE TRENDS--

Management unit 16C, Study no: 43

Type	Species	Strip Frequency		Average Cover %	
		'04	'09	'04	'09
B	Amelanchier utahensis	0	1	-	.00
B	Artemisia tridentata vaseyana	88	90	16.10	12.23
B	Chrysothamnus depressus	1	4	.00	.00
B	Chrysothamnus viscidiflorus viscidiflorus	64	80	3.93	3.25
B	Gutierrezia sarothrae	14	1	.09	.00
B	Pediocactus simpsonii	1	1	.00	.00
B	Symphoricarpos oreophilus	1	1	.00	.00
B	Tetradymia canescens	1	1	.00	.00
Total for Browse		170	179	20.12	15.49

CANOPY COVER, LINE INTERCEPT--

Management unit 16C, Study no: 43

Species	Percent Cover	
	'04	'09
Artemisia tridentata vaseyana	16.56	12.39
Chrysothamnus depressus	-	.13
Chrysothamnus viscidiflorus viscidiflorus	5.05	4.15

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 16C, Study no: 43

Species	Average leader growth (in)	
	'04	'09
Artemisia tridentata vaseyana	1.9	0.9

BASIC COVER--

Management unit 16C, Study no: 43

Cover Type	Average Cover %	
	'04	'09
Vegetation	33.25	30.86
Rock	.14	.49
Pavement	1.16	.63
Litter	44.95	46.07
Cryptogams	.22	.46
Bare Ground	35.24	34.84

SOIL ANALYSIS DATA --

Management unit 16C, Study no: 43, Study Name: Olsen Draw Sage Grouse

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
10.4	7.1	61.3	15.2	23.6	2	14.3	249.6	0.8

PELLET GROUP DATA--

Management unit 16C, Study no: 43

Type	Quadrat Frequency		Days use per acre (ha)	
	'04	'09	'04	'09
Rabbit	5	20	-	-
Grouse	-	2	-	44 pellets/acre
Elk	42	59	137 (337)	29 (71)
Deer	4	7	4 (10)	5 (13)
Cattle	1	7	4 (11)	1 (2)

BROWSE CHARACTERISTICS--

Management unit 16C, Study no: 43

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Amelanchier utahensis										
04	0	0	0	-	-	0	0	0	4/11	
09	20	0	100	-	-	0	0	100	23/27	
Artemisia tridentata vaseyana										
04	3480	2	50	48	15700	35	37	24	24/34	
09	4420	19	44	38	1740	31	36	26	20/32	
Chrysothamnus depressus										
04	20	0	100	-	-	0	0	0	5/9	
09	400	0	100	-	-	25	20	15	7/12	
Chrysothamnus viscidiflorus viscidiflorus										
04	3800	1	99	0	80	0	0	0	9/13	
09	5540	10	86	5	20	2	0	8	6/11	

		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>Gutierrezia sarothrae</i>										
04	720	0	100	-	60	0	0	0	6/10	
09	20	0	100	-	-	0	0	0	7/16	
<i>Pediocactus simpsonii</i>										
04	20	0	100	-	-	0	0	0	2/3	
09	20	0	100	-	-	0	0	0	2/3	
<i>Symphoricarpos oreophilus</i>										
04	20	0	100	-	-	0	0	0	-/-	
09	20	0	100	-	-	0	0	0	17/22	
<i>Tetradymia canescens</i>										
04	20	0	100	-	-	0	0	0	5/8	
09	20	0	100	-	-	0	0	0	5/7	