

Trend Study 4-19-01

Study site name: Deseret Burn .

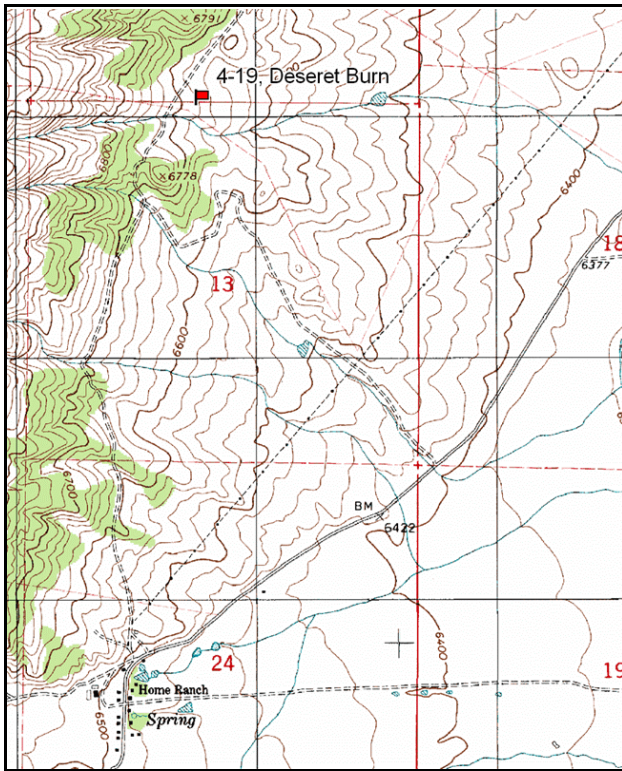
Vegetation type: Burned and Seeded .

Compass bearing: frequency baseline 320 degrees magnetic.

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

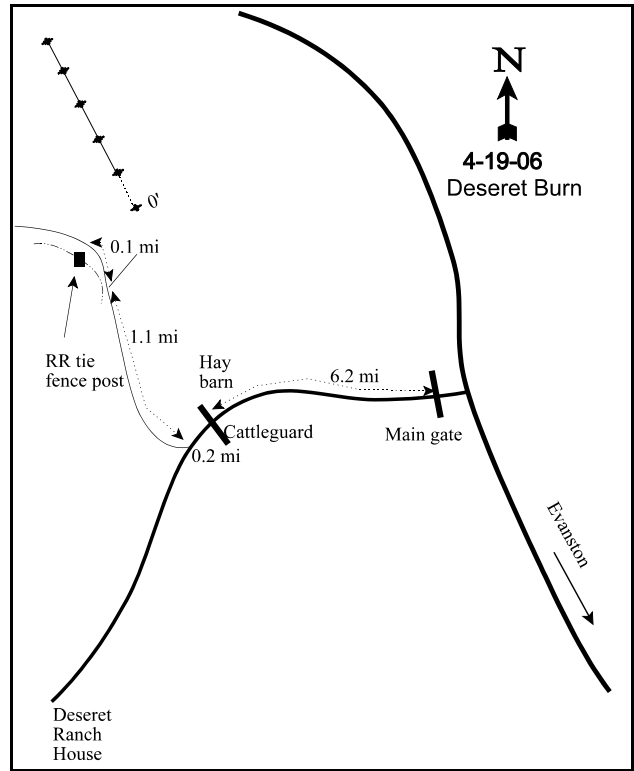
LOCATION DESCRIPTION

From the Deseret Land & Livestock main gate on highway 16 between Evanston and Woodruff, proceed west towards the Deseret ranch house 6.2 miles to a cattleguard. Continue 0.2 miles and turn right onto a two track. Follow the two track for 1.2 miles staying left. The 0-foot stake is 16 paces at 54 degrees magnetic from a rail road tie in the fence line. The baseline runs at 320 degrees magnetic.



Map name: Neponset Reservoir NW

Township 8N, Range 6E, Section 13



Diagrammatic Sketch

UTM NAD 27, UTM 12T 45870412N 481752 E

DISCUSSION

Deseret Burn - Trend Study No. 4-19

Study Information

This study is located approximately 1.5 miles north of the Deseret Land and Livestock ranch house (elevation: 6,700 feet, slope: 12%, aspect: east). The area burned in 1996 and was aerially seeded and chained afterward. Shrubs were seeded either by a dribbler or planted from root stock. The study was established to monitor vegetation recovery following the treatment. There was very little wildlife use when it was established in 1997. Elk, deer, and cattle sign were present when the study was read in 2001. The pellet group transect in 2001 estimated 36 elk days use/acre (88 edu/ha), 4 deer days use/acre (10 ddu/ha), and 33 cow days use/acre (82 cdu/ha). The 2006 pellet group transect estimates were 64 elk, 3 deer, and 54 cow days use/acre (157 edu/ha, 7 ddu/ha, and 134 cdu/ha). Elk pellets were from winter, deer appeared to be from early summer, and cow from early summer. The area had been lightly grazed in 2006.

Soil

The soil is in the Duckree Gravelly Loam series, a category typified by very deep, well drained, moderately permeable soils, formed in alluvium and colluvium from quartzite, chert, and sandstone (USDA-NRCS 2006). The soil texture is sandy clay loam with a neutral soil reaction (6.7 pH). The effective rooting depth was estimated at just over 12 inches. Vegetation and litter cover were both very low in 1997, the first growing season following the seeding. Conversely, relative bare ground cover was high at 58%. In 2001, the vegetation had greatly increased, resulting in much better protective ground cover. Relative bare ground cover was only 19% in 2001 and 23% in 2006. The erosion condition class was stable in 2001 and 2006.

Browse

Even though there was a high effort to establish browse by seeding and planting bare-root stock, browse has remained sparse. Wyoming big sagebrush, fourwing saltbush, and low rabbitbrush have been sampled. Wyoming big sagebrush density was estimated at 60 plants/acre in 2001 and 2006. Fourwing saltbush density was estimated at 360 plants/acre in 1997, 100 plants/acre in 2001, and 60 plants/acre in 2006. Apparently, some of the young saltbush plants sampled in 1997 did not persist and some of the mature also died. Recruitment from young plants was only 20 plants/acre in 2001, but none were sampled in 2006. Low rabbitbrush density was estimated at 1,480 plants/acre in 1997, 1,600 plants/acre in 2001, and 1,400 plants/acre in 2006. This species appears to have a stable population with mostly mature plants.

Herbaceous Understory

The herbaceous understory is dominated by grasses. The most abundant perennial species include Sandberg bluegrass, crested wheatgrass, intermediate wheatgrass, and western wheatgrass. Less abundant species include needle-and-thread, sedge, and bluebunch wheatgrass. Perennial grass cover was 10% in 1997, 18% in 2001, and 28% in 2006. Sum of nested frequency for all perennial grasses increased by 27% in 2001 and again by 32% in 2006. Cheatgrass was the most abundant individual species in 2001, after significantly increasing in nested frequency. In 2006, cheatgrass nested frequency decreased significantly and provided less than 1% cover. Forbs have not been abundant. Seeded perennial forbs such as alfalfa and small burnet are rare. Small burnet, Lewis flax, and wild onion have significantly decreased since 1997 and were not sampled in 2006. With the exception of pale alyssum, annual forbs are infrequent as well. Forb diversity decreased from 14 species in 1997 and 2001 to 7 species in 2006.

2001 TREND ASSESSMENT

Trend for browse is slightly down. Fourwing saltbush density decreased and use increased. Most of the young plants sampled in 1997 apparently did not persist. Wyoming big sagebrush has an estimated density of 60 plants/acre, but recruitment is low. The grass trend is up. The nested frequency of perennial grasses increased 27%. Intermediate wheatgrass, western wheatgrass, and needle-and-thread grass all increased significantly. Unfortunately, cheatgrass also increased significantly. The forb trend is down. The nested

frequency of perennial forbs decreased 63%. Wild onion, Lewis flax, and small burnet all decreased significantly. The Desirable Components Index score in 1997 was poor to fair due to very low browse cover and despite good perennial grass cover and moderate perennial forb cover. The DCI score increased to fair in 2001 due to an increase in perennial grass cover.

1997 winter range condition (DC Index) - poor to fair (26) Lower potential scale

2001 winter range condition (DC Index) - fair (29) Lower potential scale

browse - slightly down (-1) grass - up (+2) forb - down (-2)

2006 TREND ASSESSMENT

The browse trend is stable. The densities of the key browse species, Wyoming big sagebrush and fourwing saltbush, remained very low. The grass trend is up. The nested frequency of perennial grasses increased 32% and the nested frequencies of crested wheatgrass, western wheatgrass, and Sandberg bluegrass increased significantly. Cheatgrass nested frequency decreased significantly. The forb trend is slightly down. The nested frequency of perennial forbs decreased and the forb diversity was half that of 1996 and 2001. The DCI score remained fair.

winter range condition (DC Index) - fair (34) Lower potential scale

browse - stable (0) grass - up (+2) forb - slightly down (-1)

HERBACEOUS TRENDS --

Management unit 04 , Study no: 19

| T y p e | Species | Nested Frequency | | | Average Cover % | | |
|-----------------------------|-----------------------|------------------|------------------|------------------|-----------------|-------|-------|
| | | '97 | '01 | '06 | '97 | '01 | '06 |
| G | Agropyron cristatum | _a 153 | _a 148 | _b 216 | 3.52 | 5.30 | 8.50 |
| G | Agropyron intermedium | _a 93 | _b 160 | _a 113 | 1.70 | 4.90 | 4.03 |
| G | Agropyron smithii | _a 47 | _b 95 | _c 134 | 1.10 | 2.47 | 2.14 |
| G | Agropyron spicatum | _b 30 | _a 1 | _a - | .51 | .00 | - |
| G | Bromus japonicus (a) | - | 2 | - | - | .00 | - |
| G | Bromus tectorum (a) | _a 56 | _b 295 | _a 25 | .65 | 6.25 | .19 |
| G | Carex sp. | 22 | 25 | 6 | .72 | .51 | .03 |
| G | Elymus cinereus | - | 1 | - | - | .03 | .03 |
| G | Oryzopsis hymenoides | 3 | - | 1 | .15 | - | .15 |
| G | Poa fendleriana | 6 | - | - | .18 | - | - |
| G | Poa secunda | _a 144 | _a 175 | _b 340 | 2.12 | 4.11 | 11.85 |
| G | Sitanion hystrix | - | 1 | 3 | .00 | .00 | .00 |
| G | Stipa comata | _a 7 | _b 34 | _b 31 | .06 | .31 | 1.20 |
| Total for Annual Grasses | | 56 | 297 | 25 | 0.64 | 6.25 | 0.19 |
| Total for Perennial Grasses | | 505 | 640 | 844 | 10.09 | 17.67 | 27.97 |
| Total for Grasses | | 561 | 937 | 869 | 10.74 | 23.93 | 28.17 |

| Type | Species | Nested Frequency | | | Average Cover % | | |
|---------------------------|------------------------------------|------------------|------------------|------------------|-----------------|------|------|
| | | '97 | '01 | '06 | '97 | '01 | '06 |
| F | <i>Agoseris glauca</i> | - | 1 | 7 | - | .00 | .02 |
| F | <i>Alyssum alyssoides</i> (a) | _a - | _c 292 | _b 228 | - | 1.38 | .84 |
| F | <i>Allium</i> sp. | _b 32 | _a - | _a - | .11 | - | - |
| F | <i>Arabis</i> sp. | 3 | - | - | .00 | - | - |
| F | <i>Astragalus</i> sp. | 2 | 3 | - | .03 | .01 | .01 |
| F | <i>Balsamorhiza sagittata</i> | 2 | 1 | 1 | .06 | .33 | .03 |
| F | <i>Chenopodium</i> sp. (a) | - | - | - | .41 | - | - |
| F | <i>Crepis acuminata</i> | - | 2 | - | - | .03 | - |
| F | <i>Cymopterus</i> sp. | - | 1 | - | - | .00 | - |
| F | <i>Erigeron</i> sp. | 14 | - | - | .24 | - | - |
| F | <i>Gayophytum ramosissimum</i> (a) | _b 76 | _a - | _a - | 1.69 | - | - |
| F | <i>Gilia</i> sp. (a) | _b 18 | _b 27 | _a - | .26 | .07 | - |
| F | <i>Lappula occidentalis</i> (a) | _b 14 | _c 72 | _a - | .26 | .18 | - |
| F | <i>Lactuca serriola</i> | - | - | - | .06 | - | - |
| F | <i>Linum lewisii</i> | _b 13 | _a - | _a - | .09 | - | - |
| F | <i>Medicago sativa</i> | 12 | 17 | 14 | .24 | .63 | 1.49 |
| F | <i>Phlox longifolia</i> | _b 54 | _{ab} 35 | _a 24 | .21 | .08 | .13 |
| F | <i>Ranunculus testiculatus</i> (a) | - | - | 2 | - | - | .00 |
| F | <i>Sanguisorba minor</i> | _b 65 | _a 4 | _a - | 1.84 | .01 | - |
| F | <i>Sphaeralcea coccinea</i> | 2 | 3 | 4 | .03 | .15 | .15 |
| F | <i>Tragopogon dubius</i> | - | 4 | - | - | .03 | - |
| F | Unknown forb-perennial | 3 | 4 | - | .03 | .31 | - |
| Total for Annual Forbs | | 108 | 391 | 230 | 2.63 | 1.64 | 0.84 |
| Total for Perennial Forbs | | 202 | 75 | 50 | 2.97 | 1.61 | 1.84 |
| Total for Forbs | | 310 | 466 | 280 | 5.60 | 3.25 | 2.68 |

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

BROWSE TRENDS --

Management unit 04 , Study no: 19

| Type | Species | Strip Frequency | | | Average Cover % | | |
|------------------|---|-----------------|-----|-----|-----------------|------|------|
| | | '97 | '01 | '06 | '97 | '01 | '06 |
| B | Artemisia tridentata wyomingensis | 0 | 3 | 3 | - | .03 | .18 |
| B | Atriplex canescens | 14 | 5 | 3 | .04 | .00 | .15 |
| B | Chrysothamnus viscidiflorus viscidiflorus | 33 | 35 | 38 | .83 | 1.58 | 2.30 |
| B | Eriogonum microthecum | 0 | 1 | 0 | - | - | - |
| B | Opuntia sp. | 2 | 3 | 3 | - | .00 | - |
| Total for Browse | | 49 | 47 | 47 | 0.87 | 1.62 | 2.63 |

CANOPY COVER, LINE INTERCEPT --

Management unit 04 , Study no: 19

| Species | Percent Cover |
|---|---------------|
| | '06 |
| Artemisia tridentata wyomingensis | .15 |
| Atriplex canescens | .38 |
| Chrysothamnus viscidiflorus viscidiflorus | 2.61 |
| Opuntia sp. | .10 |

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 04 , Study no: 19

| Species | Average leader growth (in) | |
|-----------------------------------|----------------------------|-----|
| | '01 | '06 |
| Artemisia tridentata wyomingensis | - | 2.0 |
| Atriplex canescens | 4.0 | 9.0 |

BASIC COVER --

Management unit 04 , Study no: 19

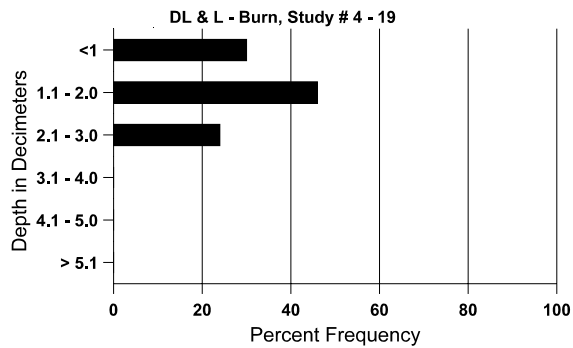
| Cover Type | Average Cover % | | |
|-------------|-----------------|-------|-------|
| | '97 | '01 | '06 |
| Vegetation | 16.43 | 38.72 | 41.27 |
| Rock | 3.81 | 1.23 | 1.19 |
| Pavement | 10.35 | 2.20 | 2.62 |
| Litter | 5.63 | 55.69 | 39.09 |
| Cryptogams | .48 | .30 | .33 |
| Bare Ground | 51.37 | 23.37 | 25.48 |

SOIL ANALYSIS DATA --

Herd Unit 04, Study no: 19, Deseret Burn

| Effective rooting depth (in) | Temp °F (depth) | PH | Sandy clay loam | | | %OM | PPM P | PPM K | dS/m |
|------------------------------|-----------------|-----|-----------------|-------|-------|-----|-------|-------|------|
| | | | %sand | %silt | %clay | | | | |
| 12.4 | 74.8 (12.4) | 6.7 | 49.6 | 19.5 | 30.9 | 2.7 | 27.7 | 249.6 | 0.8 |

Stoniness Index



PELLET GROUP DATA --

Management unit 04 , Study no: 19

| Type | Quadrat Frequency | | |
|--------|-------------------|-----|-----|
| | '97 | '01 | '06 |
| Rabbit | - | 5 | 29 |
| Moose | - | - | 2 |
| Elk | - | 14 | 44 |
| Deer | - | 5 | 5 |
| Cattle | - | 13 | 30 |

| Days use per acre (ha) | |
|------------------------|----------|
| '01 | '06 |
| - | - |
| - | - |
| 36 (88) | 64 (157) |
| 4 (10) | 3 (7) |
| 33 (82) | 54 (134) |

BROWSE CHARACTERISTICS --
Management unit 04 , Study no: 19

| | | 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> | | | | | | | | | | | | |
| 97 | 0 | - | - | - | - | 100 | 0 | 0 | - | - | 0 | -/- |
| 01 | 60 | - | 20 | 40 | - | 180 | 0 | 0 | - | - | 0 | 8/9 |
| 06 | 60 | - | - | 60 | - | - | 0 | 100 | - | - | 0 | 11/17 |
| <i>Atriplex canescens</i> | | | | | | | | | | | | |
| 97 | 360 | 20 | 180 | 180 | - | 40 | 0 | 0 | - | - | 0 | 23/23 |
| 01 | 100 | 20 | 20 | 80 | - | - | 60 | 0 | - | - | 0 | 19/18 |
| 06 | 60 | - | - | 60 | - | 20 | 33 | 0 | - | - | 0 | 32/41 |
| <i>Ceratoides lanata</i> | | | | | | | | | | | | |
| 97 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| 01 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| 06 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | 9/11 |
| <i>Chrysothamnus viscidiflorus viscidiflorus</i> | | | | | | | | | | | | |
| 97 | 1480 | - | 20 | 1440 | 20 | - | 0 | 0 | 1 | 1 | 1 | 12/17 |
| 01 | 1600 | - | 40 | 1160 | 400 | 20 | 0 | 0 | 25 | 3 | 3 | 10/18 |
| 06 | 1400 | 320 | 100 | 1180 | 120 | - | 16 | 10 | 9 | - | 3 | 11/22 |
| <i>Eriogonum microthecum</i> | | | | | | | | | | | | |
| 97 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| 01 | 20 | - | - | 20 | - | - | 0 | 0 | - | - | 0 | -/- |
| 06 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| <i>Opuntia sp.</i> | | | | | | | | | | | | |
| 97 | 40 | - | - | 40 | - | 20 | 0 | 0 | - | - | 0 | 3/8 |
| 01 | 100 | - | 20 | 80 | - | - | 0 | 0 | - | - | 0 | 3/6 |
| 06 | 80 | 20 | - | 80 | - | - | 0 | 0 | - | - | 0 | 4/12 |
| <i>Tetradymia canescens</i> | | | | | | | | | | | | |
| 97 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| 01 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | 25/22 |
| 06 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |