

Trend Study 10R-31-01

Study site name: Hay Canyon Burn.

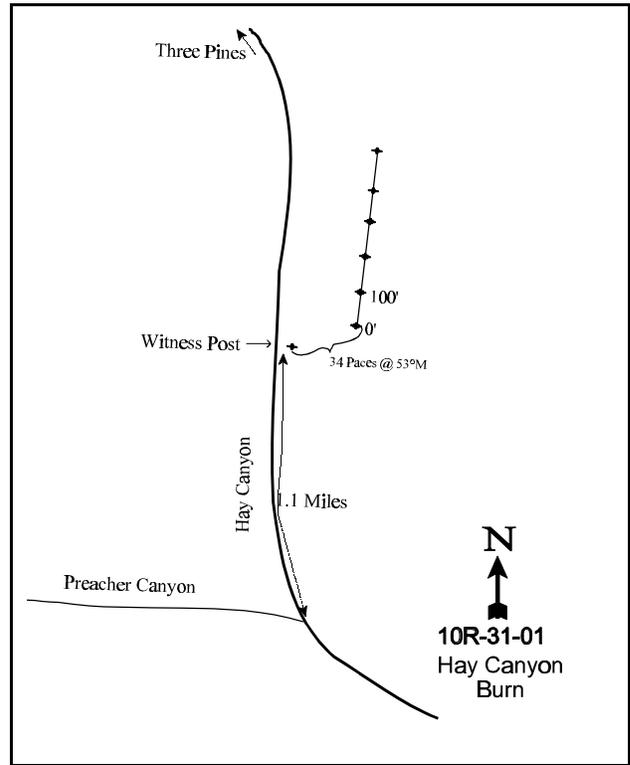
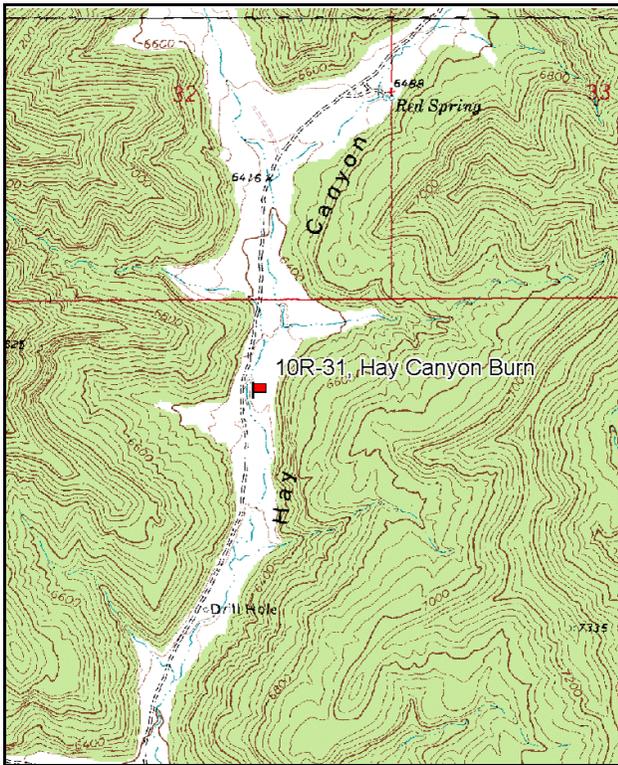
Vegetation type: Burned and Seeded.

Compass bearing: frequency baseline 12 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 junction of Preacher Canyon Road and Hay Canyon Road follow Hay Canyon Road towards Three Pines for 1.1 miles to a witness post on the right side of the road. From the witness post the 0' stake is located 34 paces at 53 degrees magnetic and is marked with browse tag # 405.



Map Name: Preacher Canyon

Diagrammatic Sketch

Township 17S, Range 23E, Section Unsurveyed

UTM 4357934 N 637849 E

DISCUSSION

Trend Study No. 10R-31

The Hay Canyon Burn study is located about 10½ miles south of the Three Pines Junction on the Book Cliff Divide. The study area was prescribed burned by the BLM in 1998. The site was established the following year to monitor the recovery of the vegetative community. The study lies in a floodplain that was dominated by basin big sagebrush prior to the fire. A pellet group transect read along the vegetative baseline in 1999 estimated 1 cow day use/acre (3 cdu/ha). No deer or elk pellets were sampled on the study in 1999. In 2001, pellet group transect data estimated 1 deer day use/acre (3 ddu/ha), 11 elk days use/acre (28 edu/ha), and 32 cow days use/acre (79 cdu/ha).

Soils are sandy loam in texture and deep, with an estimated effective rooting depth of over 21 inches. Soil reaction is moderately alkaline (7.9 pH). The soil is low in phosphorus at 7.5 ppm, where values less than 10 ppm can be limiting to normal plant growth and development. Rock is distributed uniformly throughout the profile with the majority occurring between 10 and 20 inches below the surface. In 1999, the first year following the fire, vegetation and litter were low. In 2001, cover for both vegetation and litter increased as percent cover for bare ground decreased. Erosion appears to be minimal at the present time ('01).

Very little browse is present on the site. Nearly all of the basin big sagebrush was eliminated following the prescribed burn. In 2001, basin big sagebrush had an estimated density of 100 plants/acre, with 80% of the population made up of young plants. Use was light and vigor normal in 2001. Other browse encountered on the site include fringed sagebrush, white-stemmed rubber rabbitbrush, and pricklypear cactus. Fringed sagebrush, which was not sampled in 1999, had an estimated density of 4,700 plants/acre in 2001. It also increased in strip frequency from 0 to 55% between 1999 and 2001. Fringed sagebrush can be important winter feed for deer and usually increases with heavy grazing (Stubbendieck et al. 1989).

The understory is dominated by annual species, primarily cheatgrass brome and pepperweed. In 2001, cheatgrass significantly increased in nested frequency, while its cover nearly tripled. Pepperweed, which was not sampled in 1999, had a quadrat frequency of 53% and contributed over 8% average cover in 2001. Sum of nested frequency for all annual grasses and forbs increased by 52% in 2001. Perennial species are infrequent. The most abundant perennial species is bluebunch wheatgrass which significantly increased in nested frequency in 2001. Other perennial grasses that were sampled include slender wheatgrass, Great Basin wildrye, Indian ricegrass, and bottlebrush squirreltail. Nearly all of the perennial grasses that were seen on the site had been moderately to heavily utilized by livestock in 2001. The most abundant perennial forb was an erigeron.

2001 TREND ASSESSMENT

Trend for soil is slightly up. Vegetation and litter cover increased and bare ground decreased. Trend for browse is slightly up. Basin big sagebrush increased in density due to the increase in young plants. However, density still remains low. White-stemmed rubber rabbitbrush, a species palatable to wildlife, also has a low but increasing population. Fringed sagebrush, a species that can provide important winter forage for deer, has dramatically increased since site establishment. The herbaceous understory has a downward trend. Although perennial grasses and forbs increased in nested frequency, they still remain in very low numbers. Annual species more than doubled in sum of nested frequency, as cheatgrass and pepperweed currently dominate the site. It would have been beneficial to the vegetative community, especially the herbaceous understory, to have rested this site from grazing for a longer period of time. Perennial grasses will have a difficult time increasing on the site due to their initial low abundance, heavy competition from annuals, and recurrent heavy use.

TREND ASSESSMENT

soil - slightly up (4)

browse - slightly up (4)

herbaceous understory - down (1)

HERBACEOUS TRENDS --

Herd unit 10R, Study no: 31

| Type | Species | Nested Frequency | | Quadrat Frequency | | Average Cover % | |
|-----------------------------|--------------------------|------------------|------|-------------------|-----|-----------------|-------|
| | | '99 | '01 | '99 | '01 | '99 | '01 |
| G | Agropyron spicatum | - | *61 | - | 18 | - | 1.37 |
| G | Agropyron trachycaulum | 32 | *4 | 10 | 1 | 2.08 | .03 |
| G | Bromus tectorum (a) | 266 | *399 | 86 | 100 | 8.81 | 26.89 |
| G | Elymus cinereus | 1 | 4 | 1 | 1 | .18 | .15 |
| G | Oryzopsis hymenoides | - | 2 | - | 2 | .03 | .07 |
| G | Sitanion hystrix | 13 | *- | 5 | - | .10 | - |
| Total for Annual Grasses | | 266 | 399 | 86 | 100 | 8.81 | 26.89 |
| Total for Perennial Grasses | | 46 | 71 | 16 | 22 | 2.39 | 1.62 |
| Total for Grasses | | 312 | 470 | 102 | 122 | 11.20 | 28.52 |
| F | Arabis spp. | 2 | - | 2 | - | .18 | - |
| F | Astragalus convallarius | - | 4 | - | 1 | - | .03 |
| F | Chenopodium album (a) | 5 | *113 | 2 | 46 | .06 | 2.50 |
| F | Descurainia pinnata (a) | 4 | *18 | 2 | 7 | .03 | .30 |
| F | Erigeron spp. | - | *81 | - | 26 | - | 1.20 |
| F | Helianthus annuus (a) | 8 | - | 4 | - | .22 | - |
| F | Lappula occidentalis (a) | 13 | *5 | 7 | 2 | .52 | .03 |
| F | Lepidium spp. (a) | - | *100 | - | 53 | - | 8.10 |
| F | Nicotiana attenuata (a) | 8 | - | 4 | - | .21 | - |
| F | Schoenocrambe linifolia | 3 | - | 1 | - | .03 | - |
| F | Sphaeralcea coccinea | - | 3 | - | 1 | - | .00 |
| F | Tragopogon dubius | 2 | 1 | 1 | 1 | .18 | .00 |
| F | Unknown forb-perennial | 3 | - | 2 | - | .01 | - |
| Total for Annual Forbs | | 38 | 236 | 19 | 108 | 1.05 | 10.94 |
| Total for Perennial Forbs | | 10 | 89 | 6 | 29 | 0.40 | 1.23 |
| Total for Forbs | | 48 | 325 | 25 | 137 | 1.46 | 12.18 |

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 10R, Study no: 31

| Type | Species | Strip Frequency | | Average Cover % | |
|------------------|------------------------------------|-----------------|-----|-----------------|------|
| | | '99 | '01 | '99 | '01 |
| B | Artemisia frigida | 0 | 55 | - | 3.53 |
| B | Artemisia tridentata tridentata | 1 | 4 | - | .30 |
| B | Chrysothamnus nauseosus hololeucus | 0 | 2 | .00 | - |
| B | Opuntia spp. | 1 | 3 | - | - |
| Total for Browse | | 2 | 64 | 0.00 | 3.83 |

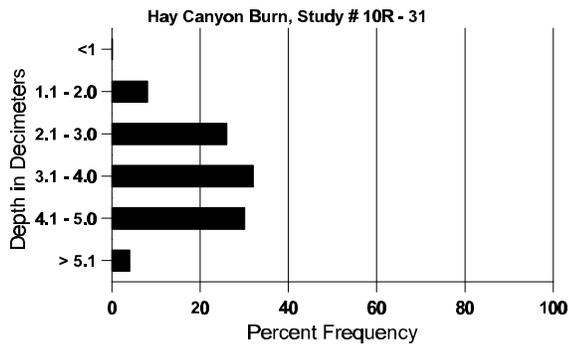
BASIC COVER --
Herd unit 10R, Study no: 31

| Cover Type | Nested Frequency | | Average Cover % | |
|-------------|------------------|-----|-----------------|-------|
| | '99 | '01 | '99 | '01 |
| Vegetation | 317 | 424 | 12.38 | 40.84 |
| Rock | 12 | 9 | .59 | .56 |
| Pavement | 8 | 13 | .06 | .02 |
| Litter | 481 | 486 | 39.49 | 62.20 |
| Cryptogams | 215 | 26 | 10.60 | .10 |
| Bare Ground | 336 | 265 | 18.28 | 15.06 |

SOIL ANALYSIS DATA --
Herd Unit 10R, Study no: 31, Hay Canyon Burn

| Effective rooting depth (in) | Temp °F (depth) | PH | %sand | %silt | %clay | %OM | PPM P | PPM K | dS/m |
|------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
| 21.7 | 64.4 (18.0) | 7.9 | 62.9 | 19.8 | 17.3 | 2.5 | 7.5 | 105.6 | 0.5 |

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 10R, Study no: 31

| Type | Quadrat Frequency | | Pellet Transect | | | |
|--------|-------------------|-----|------------------------|-----|------------------------|---------|
| | | | Pellet Groups per Acre | | Days Use per Acre (ha) | |
| | '99 | '01 | '99 | '01 | '99 | '01 |
| Rabbit | 4 | 4 | 592 | - | N/A | - |
| Elk | - | 11 | - | 148 | - | 11 (28) |
| Deer | - | 12 | 17 | 383 | 1 (3) | 32 (79) |
| Cattle | - | - | - | 9 | - | 1 (2) |

BROWSE CHARACTERISTICS --

Herd unit 10R, Study no: 31

| A Y G R E | Form Class (No. of Plants) | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | Total | | | | | | | | |
|--|----------------------------|---------------------|---|------------------|---|-------------------|--------------------------|----------------|---|-----|------|------|------|-------|-----|--|
| | | 1 | 2 | 3 | 4 | | | | | | | | | | | |
| <i>Artemisia frigida</i> | | | | | | | | | | | | | | | | |
| S | 99 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 01 | 2 | - | - | - | - | - | - | - | 2 | - | - | 40 | - | 2 | |
| Y | 99 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 01 | 8 | - | - | - | - | - | - | - | 8 | - | - | 160 | - | 8 | |
| M | 99 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 01 | 226 | - | - | - | - | - | - | - | 226 | - | - | 4520 | 9 15 | 226 | |
| D | 99 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 01 | 1 | - | - | - | - | - | - | - | 1 | - | - | 20 | - | 1 | |
| X | 99 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | 20 | - | 1 | |
| % Plants Showing | | <u>Moderate Use</u> | | <u>Heavy Use</u> | | <u>Poor Vigor</u> | | <u>%Change</u> | | | | | | | | |
| '99 | | 00% | | 00% | | 00% | | | | | | | | | | |
| '01 | | 00% | | 00% | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | '99 | 0 | Dec: | 0% | | | |
| | | | | | | | | | | '01 | 4700 | | 0% | | | |
| <i>Artemisia tridentata tridentata</i> | | | | | | | | | | | | | | | | |
| Y | 99 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| | 01 | 4 | - | - | - | - | - | - | - | 4 | - | - | 80 | - | 4 | |
| M | 99 | 3 | - | - | - | - | - | - | - | 3 | - | - | 60 | - | 3 | |
| | 01 | 1 | - | - | - | - | - | - | - | 1 | - | - | 20 | 19 13 | 1 | |
| X | 99 | - | - | - | - | - | - | - | - | - | - | - | 7780 | - | 389 | |
| | 01 | - | - | - | - | - | - | - | - | - | - | - | 0 | - | 0 | |
| % Plants Showing | | <u>Moderate Use</u> | | <u>Heavy Use</u> | | <u>Poor Vigor</u> | | <u>%Change</u> | | | | | | | | |
| '99 | | 00% | | 00% | | 00% | | +40% | | | | | | | | |
| '01 | | 00% | | 00% | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | '99 | 60 | Dec: | - | | | |
| | | | | | | | | | | '01 | 100 | | - | | | |

| A G E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|---|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Chrysothamnus nauseosus hololeucus | | | | | | | | | | | | | | | | | | |
| M | 99 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 | |
| | 01 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 40 | 26 | 30 | 2 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '99 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '01 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '99 | 0 | Dec: | - | | | |
| | | | | | | | | | | | | '01 | 40 | | - | | | |
| Opuntia spp. | | | | | | | | | | | | | | | | | | |
| Y | 99 | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | | 0 | |
| | 01 | 1 | - | - | - | - | - | - | - | - | - | - | 1 | 20 | | | 1 | |
| M | 99 | 1 | - | - | - | - | - | - | - | - | - | - | 1 | 20 | - | - | 1 | |
| | 01 | 8 | - | - | - | - | - | - | - | - | - | - | 8 | 160 | 4 | 17 | 8 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '99 | | 00% | | | 00% | | | 00% | | | +89% | | | | | | | |
| '01 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '99 | 20 | Dec: | - | | | |
| | | | | | | | | | | | | '01 | 180 | | - | | | |