

Trend Study 1-19-06

Study site name: Bally Mountain.

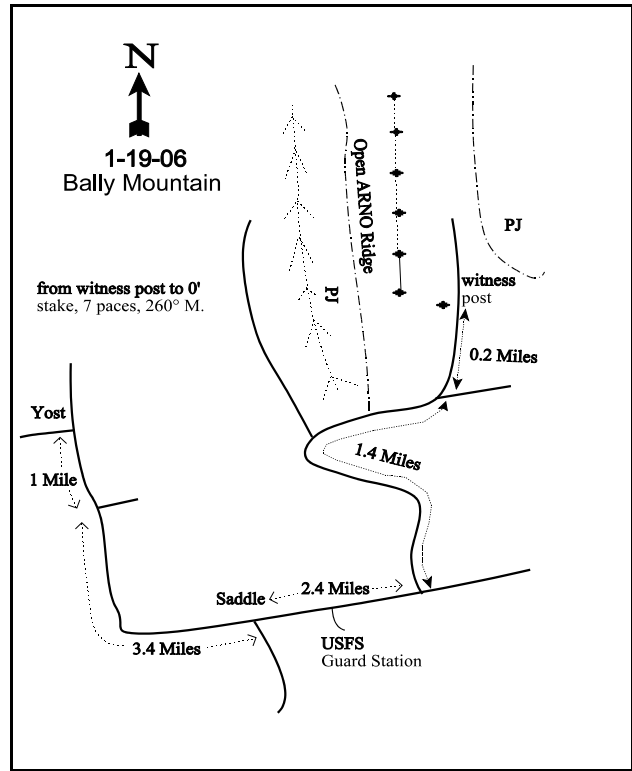
Vegetation type: Black Sagebrush.

Compass bearing: frequency baseline 0 degrees magnetic.

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

LOCATION DESCRIPTION

From the yield sign east of the town of Yost, travel south and then west towards Bally Mountain for 1.0 miles. Stay right and continue for 3.4 miles. Stay left and travel 2.4 miles. Take a left for 1.4 miles then go right for 0.2 miles to the witness post. From the witness post to the 0 foot stake, walk 7 paces at 260 degrees magnetic. The baseline runs 0 degrees magnetic. The 0 foot stake is marked with browse tag #135.



Map Name: Standrod

Diagrammatic Sketch

Township 15N, Range 25E, Section 4

UTM NAD 27, UTM 12T 4649407 N, 296607 E

DISCUSSION

Bally Mountain - Trend Study No. 1-19

Study Information

This trend study samples a open west facing ridge (elevation: 7,040 feet, slope: 19-25%, aspect: west) on Bally Mountain. This area is within the Raft River Division of the Sawtooth National Forest. In the fall of 2003, this area was burned as part of the Bally Mountain Prescribed Fire. The purpose of the burn was to reduce natural fuels build-up of Juniper canopy; improve watershed conditions by reducing juniper encroachment; improve plant vigor and bio-diversity of flora to produce 600 to 800 lbs/acre of forage for ungulates; improve winter range for mule deer; and create greater diversity of flora and fauna (USDA-FS 2005). The open ridge top where the study is located was surrounded by pinyon, juniper, and curlleaf mountain mahogany prior to the fire. The fire burned across the ridge and the surrounding forested areas, but a few patches of trees survived. Cattle also graze the area and a trail runs down the ridge. It is in the Clear Creek allotment and One mile/Bally pasture, which is grazed by cattle. The burned area was rested from grazing from 2004-2006. A pellet group transect in 2001 estimated 6 deer days use/acre (15 deer days use/ha) and 10 cow days use/acre (25 cow days use/ha). In 2006, 5 deer days use/acre (12 ddu/ha) were estimated.

Soil

The Clavicon soil series consists of moderately deep, well drained, moderately permeable soils formed in colluvium and residuum from limestone and dolomite. These soils are on mountainsides (USDA-NRCS 2006). The soil texture is a clay loam with a soil reaction that is slightly alkaline (7.7 pH). Percent organic matter was 5% in 1996. Effective rooting depth was about 13 inches. Phosphorus was low (6.0 ppm), which may limit plant growth and development (Tiedemann and Lopez 2004). The soil profile is rocky throughout with mostly gravel and some cobble size rocks. Due to the abundant vegetation and litter cover, erosion is not a problem. The erosion condition class was determined to be stable in 2001 and 2006.

Browse

This open ridge was dominated by a low growing population of black sagebrush. In 1996 and 2001 black sagebrush density averaged 25,710 plants/acre with 82% classified as mature. The prescribed fire burned quite evenly across the open ridge and reduced black sagebrush density to 2,920 plants/acre. Cover was reduced from about 18% to only 2%. The average size of mature plants has been about six inches in height and 12 inches in width. Utilization was mostly moderate in 1996, but has been light since. Vigor has been good. Black sagebrush abundance will likely increase as it recovers from the fire.

Broom snakeweed was very abundant in 1996 and in 2001 with over 10,000 plants/acre, but in 2006 only 380 plants/acre were sampled. Cover was over 3% in 1996 and only about 0.3% in 2006.

Herbaceous Understory

The herbaceous understory is abundant. Five perennial grasses combined to produce 12% cover in 1996, 23% in 2001, and increased to 40% in 2006 after the fire. Bluebunch wheatgrass, Sandberg bluegrass, and prairie junegrass provide nearly all of the total grass cover. Bluebunch wheatgrass nested frequency significantly increased in 2001. Cover increased from 6% to 16%. After the fire and while the area was rested from livestock grazing, cover was nearly 26% and nested frequency was unchanged. Prairie Junegrass nested frequency significantly increased after the burn. Cover was nearly 8% in 2006. This palatable and preferred species may have also benefitted from the lack of grazing.

Forbs are diverse and abundant. However, most of the common forbs are low value, low growing species which include: Fendler sandwort, Torrey milkvetch, stemless goldenweed, desert phlox, and dandelion. Forb nested frequency was higher after the fire in 2006 than in 2001, but not as high as 1996.

2001 TREND ASSESSMENT

Black sagebrush is abundant with adequate numbers of seedlings and young to maintain the population. Browse trend is stable. The herbaceous understory is diverse and in good condition for this vegetation type. The grass trend is stable since 1996 as the sum of nested frequency value for the grasses has remained almost the same. The forb trend is down. The nested frequency value for forbs has decreased.

1996 winter range condition (DC Index) - good-excellent (80) Mid-level potential scale

2001 winter range condition (DC Index) - excellent (83) Mid-level potential scale

browse - stable (0)

grass - stable (0)

forb - down (-2)

2006 TREND ASSESSMENT

The browse trend is down. The prescribed fire killed most of the black sagebrush, but small patches remain. The grass trend is slightly up. Prairie junegrass nested frequency increased significantly. This may be a response to the fire or to the lack of grazing, or both. The forb trend is slightly up. The nested frequency of perennial forbs increased 17%. Fendler sandwort, Lewis flax, and dandelion all increased significantly. The DCI score is down after the destruction of most browse on the ridge.

winter range condition (DC Index) - poor (43) Mid-level potential scale

browse - down (-2)

grass - slightly up (+1)

forb - slightly up (+1)

HERBACEOUS TRENDS --

Management unit 01 , Study no: 19

| T y p e | Species | Nested Frequency | | | Average Cover % | | |
|-----------------------------|-------------------------|------------------|------------------|------------------|-----------------|-------|-------|
| | | '96 | '01 | '06 | '96 | '01 | '06 |
| G | Agropyron dasystachyum | - | - | 6 | - | - | .18 |
| G | Agropyron spicatum | _a 334 | _b 367 | _b 359 | 6.34 | 16.36 | 25.72 |
| G | Bromus tectorum (a) | 3 | 8 | 3 | .00 | .01 | .00 |
| G | Koeleria cristata | _a 64 | _a 100 | _b 188 | 1.12 | 2.23 | 7.99 |
| G | Oryzopsis hymenoides | _b 14 | _a - | _a 3 | .25 | - | .03 |
| G | Poa secunda | 301 | 259 | 277 | 4.57 | 4.67 | 5.64 |
| G | Sitanion hystrix | 2 | - | - | .00 | - | - |
| Total for Annual Grasses | | 3 | 8 | 3 | 0.00 | 0.00 | 0.00 |
| Total for Perennial Grasses | | 715 | 726 | 833 | 12.30 | 23.27 | 39.57 |
| Total for Grasses | | 718 | 734 | 836 | 12.31 | 23.28 | 39.57 |
| F | Achillea millefolium | 4 | 4 | 7 | .03 | .15 | .06 |
| F | Agoseris glauca | 2 | 8 | 3 | .00 | .04 | .03 |
| F | Alyssum alyssoides (a) | - | - | 1 | - | - | .00 |
| F | Antennaria rosea | 6 | 10 | 12 | .06 | .05 | .28 |
| F | Arabis sp. | 37 | 10 | 10 | .08 | .03 | .06 |
| F | Arenaria fendleri | _b 160 | _a 84 | _b 161 | .97 | .38 | 2.21 |
| F | Astragalus calycosus | _c 117 | _a 51 | _b 84 | 1.52 | .27 | .33 |
| F | Aster sp. | 24 | 6 | 6 | .06 | .15 | .38 |
| F | Castilleja angustifolia | _b 11 | _b 17 | _a 5 | .02 | .33 | .04 |

| Type | Species | Nested Frequency | | | Average Cover % | | |
|---------------------------|-----------------------------|------------------|--------------------------|------------------|-----------------|----------------|-------|
| | | '96 | '01 | '06 | '96 | '01 | '06 |
| | | F | Castilleja linariaefolia | _b 36 | _b 55 | _a - | .17 |
| F | Calochortus nuttallii | - | - | 5 | - | - | .01 |
| F | Chenopodium fremontii (a) | - | 3 | 10 | - | .00 | .04 |
| F | Cirsium sp. | 3 | 4 | 6 | .01 | .01 | .16 |
| F | Comandra pallida | 2 | 6 | 3 | .00 | .01 | .04 |
| F | Collinsia parviflora (a) | _b 275 | _b 293 | _a 117 | 1.78 | 2.56 | .22 |
| F | Cordylanthus ramosus (a) | 7 | - | - | .01 | - | - |
| F | Crepis intermedia | 2 | - | - | .00 | - | - |
| F | Cryptantha sp. | _b 21 | _a - | _a 2 | .13 | - | .01 |
| F | Cymopterus sp. | 4 | - | 7 | .00 | - | .05 |
| F | Descurainia pinnata (a) | - | - | 1 | - | - | .00 |
| F | Draba sp. (a) | - | - | 1 | - | - | .00 |
| F | Erigeron pumilus | _b 54 | _a 24 | _a 14 | .26 | .07 | .26 |
| F | Haplopappus acaulis | _b 88 | _a 50 | _a 33 | 2.61 | .75 | .78 |
| F | Lappula occidentalis (a) | _b 30 | _a 1 | _c 76 | .20 | .00 | .33 |
| F | Lactuca serriola | _a - | _a - | _b 27 | - | - | .05 |
| F | Lesquerella sp. | 4 | 11 | 1 | .00 | .02 | .00 |
| F | Linum lewisii | _b 55 | _a 6 | _b 46 | .26 | .04 | .51 |
| F | Lithospermum ruderales | - | - | 1 | - | - | .00 |
| F | Lomatium sp. | 5 | 7 | - | .03 | .02 | - |
| F | Machaeranthera canescens | 4 | - | 1 | .00 | - | .00 |
| F | Microsteris gracilis (a) | - | 4 | 6 | - | .00 | .01 |
| F | Penstemon sp. | 2 | - | - | .00 | - | - |
| F | Phlox austromontana | _c 238 | _b 183 | _a 149 | 5.08 | 3.70 | 2.54 |
| F | Phlox longifolia | _a - | _{ab} 6 | _b 11 | - | .01 | .07 |
| F | Ranunculus testiculatus (a) | _a 13 | _a 19 | _b 71 | .16 | .19 | .27 |
| F | Senecio multilobatus | _b 48 | _a 25 | _{ab} 38 | .28 | .14 | .45 |
| F | Taraxacum officinale | _{ab} 92 | _a 69 | _b 119 | .50 | .64 | 1.24 |
| F | Tragopogon dubius | _b 18 | _a 6 | _{ab} 3 | .06 | .03 | .03 |
| F | Viola sp. | - | 3 | 3 | - | .00 | .00 |
| Total for Annual Forbs | | 325 | 320 | 283 | 2.16 | 2.77 | 0.91 |
| Total for Perennial Forbs | | 1037 | 645 | 757 | 12.22 | 7.41 | 9.68 |
| Total for Forbs | | 1362 | 965 | 1040 | 14.39 | 10.18 | 10.59 |

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

BROWSE TRENDS --

Management unit 01 , Study no: 19

| Type | Species | Strip Frequency | | | Average Cover % | | |
|------------------|--|-----------------|-----|-----|-----------------|-------|------|
| | | '96 | '01 | '06 | '96 | '01 | '06 |
| B | Artemisia nova | 100 | 100 | 26 | 14.38 | 17.74 | 2.26 |
| B | Artemisia tridentata vaseyana | 1 | 2 | 1 | - | - | - |
| B | Cercocarpus ledifolius | 1 | 1 | 0 | - | - | - |
| B | Chrysothamnus nauseosus consimilis | 24 | 24 | 9 | .82 | 1.19 | .51 |
| B | Chrysothamnus viscidiflorus stenophyllus | 1 | 1 | 2 | - | - | .01 |
| B | Eriogonum microthecum | 15 | 21 | 9 | .01 | .04 | .03 |
| B | Gutierrezia sarothrae | 98 | 86 | 12 | 3.24 | 1.33 | .30 |
| B | Pediocactus simpsonii | 4 | 0 | 2 | .01 | - | - |
| B | Pinus monophylla | 2 | 1 | 1 | - | - | - |
| B | Tetradymia canescens | 1 | 1 | 3 | - | - | - |
| Total for Browse | | 247 | 237 | 65 | 18.48 | 20.31 | 3.13 |

CANOPY COVER, LINE INTERCEPT --

Management unit 01 , Study no: 19

| Species | Percent Cover |
|------------------------------------|---------------|
| | '06 |
| Artemisia nova | 2.18 |
| Artemisia tridentata vaseyana | .40 |
| Chrysothamnus nauseosus consimilis | .50 |
| Eriogonum microthecum | .13 |
| Gutierrezia sarothrae | .06 |

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 01 , Study no: 19

| Species | Average leader growth (in) | |
|----------------|----------------------------|---|
| Artemisia nova | 0.7 | - |

BASIC COVER --

Management unit 01 , Study no: 19

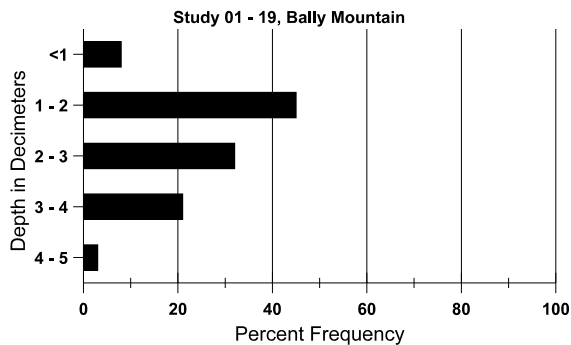
| Cover Type | Average Cover % | | |
|-------------|-----------------|-------|-------|
| | '96 | '01 | '06 |
| Vegetation | 44.50 | 63.04 | 50.23 |
| Rock | 6.55 | 1.45 | 5.07 |
| Pavement | 11.31 | 11.48 | 17.12 |
| Litter | 29.17 | 23.38 | 18.61 |
| Cryptogams | 2.90 | 2.75 | .96 |
| Bare Ground | 5.23 | 9.27 | 19.50 |

SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 19, Bally Mountain

| Effective rooting depth (in) | Temp °F (depth) | PH | Clay loam | | | %0M | PPM P | PPM K | dS/m |
|------------------------------|-----------------|-----|-----------|-------|-------|-----|-------|-------|------|
| | | | %sand | %silt | %clay | | | | |
| 13.4 | 52.6 (14.5) | 7.8 | 26.7 | 42.0 | 31.3 | 5.0 | 6.0 | 297.6 | 0.7 |

Stoniness Index



PELLET GROUP DATA --

Management unit 01 , Study no: 19

| Type | Quadrat Frequency | | |
|--------|-------------------|-----|-----|
| | '96 | '01 | '06 |
| Rabbit | 2 | 1 | 4 |
| Deer | 13 | 2 | 3 |
| Cattle | 3 | 2 | - |

| Days use per acre (ha) | |
|------------------------|--------|
| '01 | '06 |
| - | - |
| 6 (15) | 5 (12) |
| 10 (25) | - |

BROWSE CHARACTERISTICS --
Management unit 01 , 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) |
| Artemisia frigida | | | | | | | | | | | | |
| 96 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| 01 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | 5/10 |
| 06 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| Artemisia nova | | | | | | | | | | | | |
| 96 | 26540 | 380 | 5100 | 20400 | 1040 | 380 | 76 | 3 | 4 | .82 | .82 | 5/15 |
| 01 | 24880 | 180 | 1700 | 21420 | 1760 | 240 | 3 | 0 | 7 | 1 | 1 | 6/12 |
| 06 | 2920 | - | 160 | 2580 | 180 | 520 | 34 | 5 | 6 | 1 | 1 | 5/12 |
| Artemisia tridentata vaseyana | | | | | | | | | | | | |
| 96 | 20 | - | 20 | - | - | - | 0 | 0 | - | - | 0 | 8/19 |
| 01 | 40 | - | - | 40 | - | - | 0 | 0 | - | - | 0 | 9/19 |
| 06 | 20 | - | - | 20 | - | - | 0 | 100 | - | - | 0 | 23/43 |
| Cercocarpus ledifolius | | | | | | | | | | | | |
| 96 | 20 | - | 20 | - | - | - | 0 | 100 | - | - | 0 | -/- |
| 01 | 20 | - | 20 | - | - | - | 100 | 0 | - | - | 0 | -/- |
| 06 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- |
| Chrysothamnus nauseosus consimilis | | | | | | | | | | | | |
| 96 | 620 | - | 140 | 380 | 100 | - | 32 | 13 | 16 | 6 | 6 | 17/24 |
| 01 | 720 | - | 240 | 200 | 280 | 40 | 0 | 0 | 39 | 17 | 19 | 19/23 |
| 06 | 220 | - | 20 | 200 | - | 40 | 18 | 0 | 0 | - | 0 | 14/19 |
| Chrysothamnus viscidiflorus stenophyllus | | | | | | | | | | | | |
| 96 | 20 | - | - | 20 | - | - | 0 | 0 | 0 | - | 0 | 6/10 |
| 01 | 20 | 20 | - | - | 20 | - | 0 | 0 | 100 | - | 0 | -/- |
| 06 | 60 | - | - | 60 | - | - | 0 | 0 | 0 | - | 0 | 8/10 |
| Eriogonum microthecum | | | | | | | | | | | | |
| 96 | 500 | - | 160 | 340 | - | - | 20 | 0 | - | - | 0 | 6/10 |
| 01 | 980 | - | 200 | 780 | - | - | 0 | 0 | - | - | 0 | 6/10 |
| 06 | 240 | - | 60 | 180 | - | - | 0 | 0 | - | - | 0 | 4/7 |
| Gutierrezia sarothrae | | | | | | | | | | | | |
| 96 | 19520 | 1160 | 5540 | 13560 | 420 | 340 | 0 | 0 | 2 | .51 | .51 | 3/4 |
| 01 | 11080 | 340 | 1320 | 9400 | 360 | 20 | 0 | 0 | 3 | 2 | 2 | 3/5 |
| 06 | 380 | 100 | - | 340 | 40 | - | 0 | 0 | 11 | 11 | 11 | 4/7 |

| | | 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) | |
| Pediocactus simpsonii | | | | | | | | | | | | | |
| 96 | 80 | - | - | 80 | - | - | 0 | 0 | - | - | 0 | 1/2 | |
| 01 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- | |
| 06 | 40 | - | - | 40 | - | - | 0 | 0 | - | - | 0 | 1/2 | |
| Pinus monophylla | | | | | | | | | | | | | |
| 96 | 40 | 20 | 40 | - | - | - | 0 | 0 | - | - | 0 | -/- | |
| 01 | 20 | 40 | 20 | - | - | - | 0 | 0 | - | - | 0 | -/- | |
| 06 | 20 | - | 20 | - | - | - | 0 | 0 | - | - | 0 | -/- | |
| Symphoricarpos oreophilus | | | | | | | | | | | | | |
| 96 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- | |
| 01 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | -/- | |
| 06 | 0 | - | - | - | - | - | 0 | 0 | - | - | 0 | 17/33 | |
| Tetradymia canescens | | | | | | | | | | | | | |
| 96 | 20 | - | - | 20 | - | - | 0 | 0 | - | - | 0 | 11/17 | |
| 01 | 20 | - | - | 20 | - | - | 0 | 0 | - | - | 0 | 14/20 | |
| 06 | 60 | - | 40 | 20 | - | - | 0 | 0 | - | - | 0 | 9/10 | |