

Trend Study 21A-23-08

Study site name: Baker Canyon.

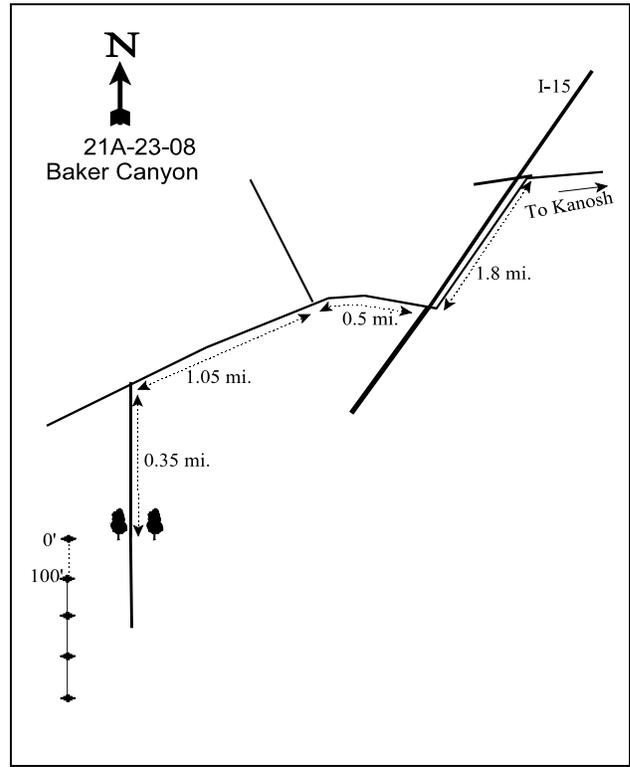
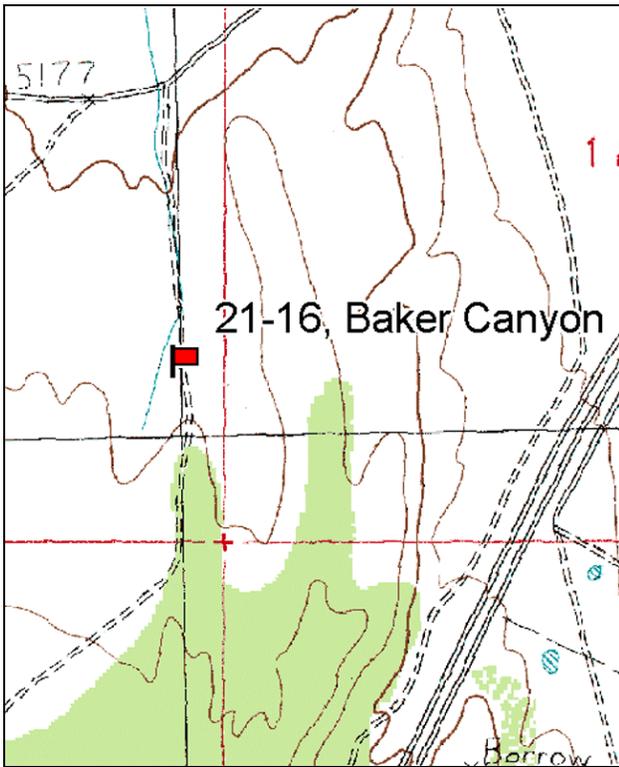
Vegetation type: Sagebrush-Grass.

Compass bearing: frequency baseline 180 degrees magnetic.

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

LOCATION DESCRIPTION

Proceed south from Kanosh on the main road. Turn left just before the I-15 interchange. Travel on the frontage road for 1.8 miles (paralleling the freeway on the east side) to an overpass. Go over the interstate and continue 0.5 miles west to a fork. Take the left fork and go about 1.05 miles. Just beyond the point of a small hill turn left on a 2-tire track road. Go 0.35 miles to the first point where the road squeezes between two junipers. From the south side of the large juniper to the right, go 100 feet due west to the start of the frequency baseline. The 0-foot baseline stake is a rebar, tagged #7071.



Map Name: Cove Fort

Diagrammatic Sketch

Township 24S, Range 7W, Section 11

GPS: NAD 83, UTM 12S 360922 E, 4288321 N

## DISCUSSION

### Baker Canyon - Trend Study No. 21A-23

#### Study Information

This study samples deer winter range just west of Interstate 15 and the White Sage Flat area [elevation: 5,240 feet (1,597 m), slope: 3%, aspect: north]. Some of the surrounding area was plowed and drill seeded with Russian wildrye (*Elymus junceus*) in 1967, but the study itself was not treated. The BLM did a controlled burn of the area to reduce sagebrush cover prior to 1991. The original baseline remained unburned, but the density plots were burned. The baseline was extended in 1998, which included the original baseline and the burned density plots. This area has been used for spring grazing on a three pasture rest-rotation system. Traditionally, deer concentrate in the White Sage Flat area in the winter and spring, but past use was reported as being light. Pellet group transect data estimated deer use at 19 days use/acre (47 ddu/ha) in 1998, 1 day use/acre (2 ddu/ha) in 2003, and 9 days use/acre (23 ddu/ha) in 2008. The minimal deer use is concentrated in the areas of unburned sagebrush. Use is also light due to the deer-proof fence built along I-15, which essentially eliminates historical winter deer migrations to the area. Cattle use was estimated at 7 days use/acre (17 cdu/ha) in 1998 and 12 days use/acre (30 cdu/ha) in 2003 and 2008. Sheep appeared to have used the area in the past, putting heavy pressure on the sagebrush. Rabbit pellets have increased from 7% quadrat frequency in 1998 to 86% in 2008.

#### Soil

The soil is classified within the Mosida series (USDA-NRCS 2008). This series consists of very deep, well-drained soils that formed in alluvium derived from mixed igneous and sedimentary rocks. The soil is a sandy clay loam with a neutral reaction (pH 7.1). Relative combined vegetation and litter cover was 47%-48% in 1998 and 2003, and increased to 58% in 2008. There is very little surface rock, but relative pavement cover increased from 18% in 1998 to 31% in 2003 and 29% in 2008. Relative bare ground cover decreased from 31% in 1998 to 9% by 2008. The soil erosion condition was classified as stable in 2003 and 2008, despite the formation of pedestals around bunchgrasses and sagebrush.

#### Browse

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is the most abundant preferred browse. The majority of the sagebrush on the study is located in areas that did not burn. It provided 3%-5% quadrat cover since 1998, and density decreased from 780 plants/acre in 1998 to approximately 570 plants/acre in 2003 and 2008. Decadence was high in 1985 at 42% of the population, but was reduced to 0% by 1991 due to the burn. Decadent plants have been increasing, from 15% of the population in 1998 to 41% in 2008. Young recruitment increased from 15% of the population in 1985 to 67% in 1991, and has been 0%-5% since 1998. Plants with poor vigor comprised 13% of the population in 1985, 21% in 2003, and 28% in 2008. Annual leader growth averaged 1.3 inches (3.2 cm) in 2003 and 1.7 inches (4.4 cm) in 2008. In the past, the shorter sagebrush plants had a clubbed appearance, which may be the result of past heavy hedging and poor annual growth. In 2008, it was noted that the smaller sagebrush plants had the longest leaders.

Nevada ephedra (*Ephedra nevadensis*) provided 1%-2% quadrat cover since 1998. Density increased from 100 plants/acre in 1998 to 480 plants/acre in 2008. Decadent plants were sampled for the first time in 2003, and comprised 6% and 17% of the population in 2003 and 2008, respectively. Young plants were first sampled in 1998 and have made up 40%-69% of the population. Vigor has been good on most of the population.

Utah juniper (*Juniperus osteosperma*) trees are scattered throughout the study, and canopy cover increased from 2% in 1998 to 7% in 2008. Point-centered quarter data estimated density at 34 trees/acre in 2003 and 45 trees/acre in 2008. Average trunk diameter was 2.8 inches (7.1 cm) in 2003 and 4.1 inches (10.5 cm) in 2008. The majority of the sampled trees were 1-8 feet (0.3-2.4 m) in height in 2003 and 2008.

### Herbaceous Understory

Herbaceous species are most common in the burned areas of the study. Total grass cover decreased from 17% in 1998 to 14% in 2008. Bluebunch wheatgrass was the dominant grass, providing 45%-76% of the total grass cover since 1998. Sandberg bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*), and Indian ricegrass (*Oryzopsis hymenoides*) were also relatively common. Cheatgrass (*Bromus tectorum*) provided 7% cover in 1998, 1% in 2003, and 3% in 2008.

Total forb cover was 11% in 1998, 5% in 2003, and 6% in 2008. Common perennial forbs include Hood's phlox (*Phlox hoodii*), scarlet globemallow (*Sphaeralcea coccinea*), and Torrey milkvetch (*Astragalus calycosus*). Abundant annual forbs include pale alyssum (*Alyssum alyssoides*), storksbill (*Erodium cicutarium*), and bur buttercup (*Ranunculus testiculatus*).

### 1991 TREND ASSESSMENT

The trend for browse is down. The controlled burn reduced sagebrush density from 3,999 plants/acre to 199 plants/acre. Decadence decreased from 42% of the population to 0%, and young recruitment increased from 15% of the population to 67%. Plants displaying poor vigor decreased from 13% of the population to 0%. Ephedra density remained similar to 1985 at 66 plants/acre, and all of the sampled plants were mature. The trend for grass is up. The sum of nested frequency for perennial grasses increased 51%, and Indian ricegrass and bottlebrush squirreltail increased significantly in nested frequency. The trend for forbs is up. The sum of nested frequency for perennial forbs increased two-fold. Hood's phlox increased significantly in nested frequency, while that for hoary aster (*Machaeranthera canescens*) decreased significantly. The number of perennial forb species sampled increased from four to 11.

browse - down (-2)

grass - up (+2)

forb - up (+2)

### 1998 TREND ASSESSMENT

The browse trend is stable. Density changes may have been related to the larger sample area in 1998, including areas that did not burn, therefore, the trend was determined using other parameters. Sagebrush decadence increased from 0% of the population to 15%, and young recruitment decreased from 67% of the population to 5%. There continued to be no decadent ephedra plants sampled, and young recruitment increased from 0% of the population to 40%. Vigor was normal on all sampled ephedra and sagebrush plants. The trend for grass is stable. The sum of nested frequency for perennial grasses decreased 11%. Bottlebrush squirreltail and Indian ricegrass decreased significantly in nested frequency, while that for bluebunch wheatgrass increased significantly. The trend for forbs is stable. The sum of nested frequency for perennial forbs decreased 11%. The winter range condition, determined by the Desirable Components Index (DCI), was rated as fair due to low preferred browse cover, but high perennial herbaceous cover.

winter range condition (DCI) - fair (31) Low potential scale

browse - stable (0)

grass - stable (0)

forb - stable (0)

### 2003 TREND ASSESSMENT

The browse trend is slightly down. Sagebrush density decreased 28%, and decadence increased from 15% of the population to 29%. No young plants were sampled, and plants with poor vigor increased from 0% of the population to 21%. Ephedra density increased substantially. Decadent plants showing poor vigor increased slightly from 0% of the population to 6%. Young recruitment remained very high at 69% of the population. The trend for grass is up. The sum of nested frequency for perennial grasses increased 23%. Sandberg bluegrass increased significantly in nested frequency, and cheatgrass decreased significantly in nested frequency. The trend for forbs is down. The sum of nested frequency for perennial forbs decreased 57%. Torrey milkvetch and pale alyssum decreased significantly in nested frequency. The DCI rating improved to good due to increases in preferred browse and perennial grass cover, as well as a decrease in cheatgrass cover.

winter range condition (DCI) - good (57) Low potential scale  
browse - slightly down (-1)      grass - up (+2)      forb - down (-2)

**2008 TREND ASSESSMENT**

The browse trend is stable. Sagebrush density changed little, and young recruitment remained low at 3% of the population. Decadence continued to increase from 29% of the population to 41%, and plants with poor vigor increased slightly from 21% of the population to 28%. Ephedra density increased 50%. Young recruitment remained high, but decreased slightly from 69% of the population to 50%. Decadence increased from 6% of the population to 17%, and plants with poor vigor remained relatively similar to 2003 at 4% of the population. The trend for grass is slightly down. The sum of nested frequency for perennial grasses decreased 9%. Sandberg bluegrass decreased significantly in nested frequency, while that for bluebunch wheatgrass increased significantly. Cheatgrass also increased significantly in nested frequency. The trend for forbs is stable. The sum of nested frequency for perennial forbs increased slightly. Longleaf phlox (*Phlox longifolia*) and pale alyssum increased significantly in nested frequency. The DCI rating declined to fair due to decreases in preferred browse and perennial grass cover.

winter range condition (DCI) - fair (32) Low potential scale  
browse - stable (0)      grass - slightly down (-1)      forb - stable (0)

**HERBACEOUS TRENDS --**  
Management unit 21A, Study no: 23

| Type                               | Species                | Nested Frequency |                  |                  |                  |                  | Average Cover % |              |              |
|------------------------------------|------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|--------------|--------------|
|                                    |                        | '85              | '91              | '98              | '03              | '08              | '98             | '03          | '08          |
| G                                  | Agropyron spicatum     | <sub>a</sub> 77  | <sub>a</sub> 69  | <sub>b</sub> 132 | <sub>b</sub> 134 | <sub>c</sub> 180 | 7.48            | 9.98         | 10.78        |
| G                                  | Bromus tectorum (a)    | -                | -                | <sub>c</sub> 238 | <sub>a</sub> 100 | <sub>b</sub> 208 | 6.51            | 1.39         | 2.50         |
| G                                  | Elymus junceus         | -                | -                | 1                | -                | -                | .00             | -            | -            |
| G                                  | Oryzopsis hymenoides   | <sub>a</sub> 4   | <sub>b</sub> 23  | <sub>a</sub> 8   | <sub>ab</sub> 14 | <sub>a</sub> 6   | .39             | .38          | .04          |
| G                                  | Poa fendleriana        | 8                | -                | 1                | -                | 2                | .15             | -            | .03          |
| G                                  | Poa secunda            | <sub>a</sub> 53  | <sub>ab</sub> 96 | <sub>a</sub> 62  | <sub>b</sub> 110 | <sub>a</sub> 67  | 1.73            | 2.16         | .79          |
| G                                  | Sitanion hystrix       | <sub>b</sub> 28  | <sub>c</sub> 68  | <sub>b</sub> 24  | <sub>ab</sub> 22 | <sub>a</sub> 1   | .52             | .68          | .03          |
| <b>Total for Annual Grasses</b>    |                        | <b>0</b>         | <b>0</b>         | <b>238</b>       | <b>100</b>       | <b>208</b>       | <b>6.51</b>     | <b>1.39</b>  | <b>2.50</b>  |
| <b>Total for Perennial Grasses</b> |                        | <b>170</b>       | <b>256</b>       | <b>228</b>       | <b>280</b>       | <b>256</b>       | <b>10.27</b>    | <b>13.23</b> | <b>11.68</b> |
| <b>Total for Grasses</b>           |                        | <b>170</b>       | <b>256</b>       | <b>466</b>       | <b>380</b>       | <b>464</b>       | <b>16.79</b>    | <b>14.62</b> | <b>14.18</b> |
| F                                  | Alyssum alyssoides (a) | -                | -                | <sub>c</sub> 304 | <sub>a</sub> 19  | <sub>b</sub> 210 | 3.30            | .05          | .85          |
| F                                  | Antennaria rosea       | -                | 3                | -                | -                | 6                | -               | -            | .01          |
| F                                  | Astragalus calycosus   | <sub>a</sub> -   | <sub>cd</sub> 48 | <sub>d</sub> 62  | <sub>b</sub> 12  | <sub>bc</sub> 23 | .93             | .08          | .28          |
| F                                  | Astragalus marianus    | 17               | 26               | 3                | -                | -                | .04             | -            | -            |
| F                                  | Calochortus nuttallii  | -                | 3                | -                | -                | -                | -               | -            | -            |
| F                                  | Chaenactis douglasii   | <sub>ab</sub> 3  | <sub>b</sub> 12  | <sub>a</sub> -   | <sub>a</sub> -   | <sub>a</sub> -   | -               | -            | -            |
| F                                  | Comandra pallida       | -                | -                | 5                | 6                | 4                | .03             | .18          | .15          |
| F                                  | Crepis acuminata       | -                | 2                | -                | -                | -                | -               | -            | -            |
| F                                  | Draba sp. (a)          | -                | -                | 4                | -                | 3                | .01             | -            | .00          |

| Type                      | Species                            | Nested Frequency |                 |                  |                  |                  | Average Cover % |      |      |
|---------------------------|------------------------------------|------------------|-----------------|------------------|------------------|------------------|-----------------|------|------|
|                           |                                    | '85              | '91             | '98              | '03              | '08              | '98             | '03  | '08  |
| F                         | <i>Erodium cicutarium</i> (a)      | -                | -               | <sub>a</sub> 59  | <sub>ab</sub> 71 | <sub>b</sub> 100 | 1.17            | 2.45 | 2.14 |
| F                         | <i>Gilia</i> sp. (a)               | -                | -               | -                | 2                | -                | -               | .00  | -    |
| F                         | <i>Lactuca serriola</i>            | -                | 4               | 1                | -                | -                | .00             | -    | -    |
| F                         | <i>Machaeranthera canescens</i>    | <sub>c</sub> 33  | <sub>b</sub> 8  | <sub>bc</sub> 15 | <sub>a</sub> -   | <sub>a</sub> -   | .23             | -    | -    |
| F                         | <i>Phlox hoodii</i>                | <sub>a</sub> 25  | <sub>b</sub> 56 | <sub>b</sub> 64  | <sub>a</sub> 29  | <sub>a</sub> 22  | 2.58            | 1.12 | .38  |
| F                         | <i>Phlox longifolia</i>            | <sub>a</sub> -   | <sub>b</sub> 18 | <sub>a</sub> -   | <sub>a</sub> 3   | <sub>b</sub> 18  | -               | .00  | .43  |
| F                         | <i>Ranunculus testiculatus</i> (a) | -                | -               | <sub>b</sub> 138 | <sub>a</sub> -   | <sub>b</sub> 122 | 1.04            | -    | .69  |
| F                         | <i>Salsola iberica</i> (a)         | -                | 58              | -                | -                | -                | -               | -    | -    |
| F                         | <i>Sphaeralcea coccinea</i>        | 14               | 25              | 33               | 28               | 27               | 1.40            | 1.28 | .95  |
| F                         | <i>Thlaspi alpestre</i>            | <sub>b</sub> 11  | <sub>a</sub> -  | <sub>a</sub> -   | <sub>a</sub> -   | <sub>a</sub> -   | -               | -    | -    |
| Total for Annual Forbs    |                                    | 0                | 58              | 505              | 92               | 435              | 5.53            | 2.50 | 3.69 |
| Total for Perennial Forbs |                                    | 103              | 205             | 183              | 78               | 100              | 5.23            | 2.68 | 2.20 |
| Total for Forbs           |                                    | 103              | 263             | 688              | 170              | 535              | 10.77           | 5.18 | 5.90 |

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

#### BROWSE TRENDS --

Management unit 21A, Study no: 23

| Type             | Species                                                   | Strip Frequency |     |     | Average Cover % |       |      |
|------------------|-----------------------------------------------------------|-----------------|-----|-----|-----------------|-------|------|
|                  |                                                           | '98             | '03 | '08 | '98             | '03   | '08  |
| B                | <i>Artemisia tridentata</i><br><i>wyomingensis</i>        | 23              | 19  | 22  | 3.15            | 4.82  | 3.67 |
| B                | <i>Chrysothamnus nauseosus</i><br><i>hololeucus</i>       | 1               | 2   | 1   | 1.00            | .71   | .03  |
| B                | <i>Chrysothamnus viscidiflorus</i><br><i>stenophyllus</i> | 10              | 12  | 11  | .99             | 1.22  | 1.22 |
| B                | <i>Ephedra nevadensis</i>                                 | 4               | 6   | 5   | 1.23            | 1.91  | 1.16 |
| B                | <i>Juniperus osteosperma</i>                              | 2               | 2   | 3   | 2.90            | 3.12  | .06  |
| B                | <i>Tetradymia canescens</i>                               | 0               | 0   | 2   | -               | -     | .03  |
| Total for Browse |                                                           | 40              | 41  | 44  | 9.29            | 11.78 | 6.18 |

CANOPY COVER, LINE INTERCEPT --

Management unit 21A, Study no: 23

| Species                                         | Percent Cover |      |      |
|-------------------------------------------------|---------------|------|------|
|                                                 | '98           | '03  | '08  |
| <i>Artemisia tridentata wyomingensis</i>        | -             | 3.20 | 2.68 |
| <i>Chrysothamnus nauseosus hololeucus</i>       | -             | .85  | .35  |
| <i>Chrysothamnus viscidiflorus stenophyllus</i> | -             | .46  | .05  |
| <i>Ephedra nevadensis</i>                       | -             | .95  | .95  |
| <i>Juniperus osteosperma</i>                    | 1.79          | 6.40 | 6.86 |
| <i>Tetradymia canescens</i>                     | -             | -    | .75  |

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 21A, Study no: 23

| Species                                  | Average leader growth (in) |     |
|------------------------------------------|----------------------------|-----|
|                                          | '03                        | '08 |
| <i>Artemisia tridentata wyomingensis</i> | 1.3                        | 1.7 |

POINT-QUARTER TREE DATA --

Management unit 21A, Study no: 23

| Species                      | Trees per Acre |     | Average diameter (in) |     |
|------------------------------|----------------|-----|-----------------------|-----|
|                              | '03            | '08 | '03                   | '08 |
| <i>Juniperus osteosperma</i> | 34             | 45  | 2.8                   | 4.1 |

BASIC COVER --

Management unit 21A, Study no: 23

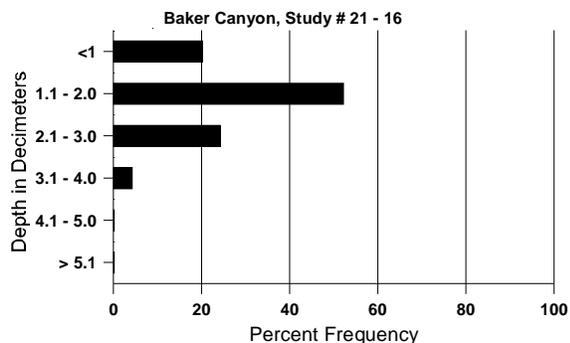
| Cover Type  | Average Cover % |       |       |       |       |
|-------------|-----------------|-------|-------|-------|-------|
|             | '85             | '91   | '98   | '03   | '08   |
| Vegetation  | 2.50            | 4.50  | 33.32 | 29.96 | 28.10 |
| Rock        | 2.00            | 2.75  | 4.11  | 2.98  | 2.16  |
| Pavement    | 26.00           | 22.75 | 23.60 | 34.47 | 31.07 |
| Litter      | 40.25           | 42.75 | 28.61 | 23.34 | 34.54 |
| Cryptogams  | 4.50            | 3.75  | 1.54  | 1.45  | 3.01  |
| Bare Ground | 24.75           | 23.50 | 40.77 | 19.85 | 9.27  |

SOIL ANALYSIS DATA --

Management unit 21, Study no: 16, Study Name: Baker Canyon

| Effective rooting depth (in) | Temp °F (depth) | pH  | sandy clay loam |       |       | %OM | PPM P | PPM K | ds/m |
|------------------------------|-----------------|-----|-----------------|-------|-------|-----|-------|-------|------|
|                              |                 |     | %sand           | %silt | %clay |     |       |       |      |
| 11.1                         | 69.4 (12.0)     | 7.1 | 48.0            | 27.4  | 24.6  | 1.0 | 16.8  | 140.8 | 0.6  |

Stoniness Index



PELLET GROUP DATA --

Management unit 21A, Study no: 23

| Type   | Quadrat Frequency |     |     |
|--------|-------------------|-----|-----|
|        | '98               | '03 | '08 |
| Rabbit | 7                 | 32  | 86  |
| Deer   | 13                | 9   | 15  |
| Cattle | 4                 | -   | -   |

| Days use per acre (ha) |         |         |
|------------------------|---------|---------|
| '98                    | '03     | '08     |
| -                      | -       | -       |
| 19 (47)                | 1 (2)   | 9 (23)  |
| 7 (17)                 | 12 (30) | 12 (30) |

BROWSE CHARACTERISTICS --

Management unit 21A, Study no: 23

|                                   |                                       | 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 tridentata wyomingensis |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                | <b>3998</b>                           | 599                                      | 599   | 1733   | 1666     | -    | 65          | 7       | 42         | 4       | 13           | 26/22                     |
| 91                                | <b>199</b>                            | -                                        | 133   | 66     | -        | -    | 67          | 0       | 0          | -       | 0            | 8/8                       |
| 98                                | <b>780</b>                            | -                                        | 40    | 620    | 120      | 480  | 51          | 3       | 15         | -       | 0            | 21/27                     |
| 03                                | <b>560</b>                            | -                                        | -     | 400    | 160      | 460  | 7           | 0       | 29         | 21      | 21           | 23/34                     |
| 08                                | <b>580</b>                            | 20                                       | 20    | 320    | 240      | 480  | 31          | 31      | 41         | 28      | 28           | 28/38                     |

|                                                 |                                       | 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) |
| <b>Chrysothamnus nauseosus hololeucus</b>       |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 91                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 98                                              | 20                                    | -                                        | -     | 20     | -        | -    | 0           | 0       | -          | -       | 0            | 43/80                     |
| 03                                              | 40                                    | -                                        | 40    | -      | -        | -    | 0           | 0       | -          | -       | 0            | 27/44                     |
| 08                                              | 20                                    | -                                        | -     | 20     | -        | -    | 0           | 0       | -          | -       | 0            | 29/41                     |
| <b>Chrysothamnus viscidiflorus stenophyllus</b> |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |
| 91                                              | 66                                    | -                                        | -     | 66     | -        | -    | 100         | 0       | 0          | -       | 0            | 10/4                      |
| 98                                              | 260                                   | -                                        | -     | 260    | -        | 20   | 0           | 0       | 0          | -       | 0            | 10/13                     |
| 03                                              | 360                                   | -                                        | -     | 320    | 40       | -    | 0           | 0       | 11         | -       | 0            | 11/20                     |
| 08                                              | 420                                   | 20                                       | 20    | 340    | 60       | -    | 5           | 0       | 14         | 10      | 10           | 13/21                     |
| <b>Ephedra nevadensis</b>                       |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                              | 66                                    | -                                        | -     | 66     | -        | -    | 100         | 0       | 0          | -       | 0            | 19/21                     |
| 91                                              | 66                                    | -                                        | -     | 66     | -        | -    | 0           | 0       | 0          | -       | 0            | 30/43                     |
| 98                                              | 100                                   | -                                        | 40    | 60     | -        | -    | 20          | 20      | 0          | -       | 0            | 26/49                     |
| 03                                              | 320                                   | -                                        | 220   | 80     | 20       | -    | 6           | 13      | 6          | -       | 6            | 24/44                     |
| 08                                              | 480                                   | -                                        | 240   | 160    | 80       | -    | 25          | 17      | 17         | 4       | 4            | 25/51                     |
| <b>Gutierrezia sarothrae</b>                    |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 91                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 98                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 14/19                     |
| 03                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 08                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| <b>Juniperus osteosperma</b>                    |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                              | 266                                   | 133                                      | 266   | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 91                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 98                                              | 40                                    | -                                        | 20    | 20     | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 03                                              | 40                                    | -                                        | 20    | 20     | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 08                                              | 60                                    | 20                                       | 20    | 40     | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| <b>Opuntia sp.</b>                              |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 91                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 98                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 03                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 11/25                     |
| 08                                              | 0                                     | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 2/8                       |

|                      |                                       | 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) |
| Tetradymia canescens |                                       |                                          |       |        |          |      |             |         |            |         |              |                           |
| 85                   | <b>0</b>                              | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 91                   | <b>0</b>                              | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 98                   | <b>0</b>                              | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 03                   | <b>0</b>                              | -                                        | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 08                   | <b>40</b>                             | -                                        | -     | 40     | -        | -    | 0           | 0       | -          | -       | 0            | 25/34                     |