

Trend Study 15-11-99

Study site name: Above Coyote Bench .

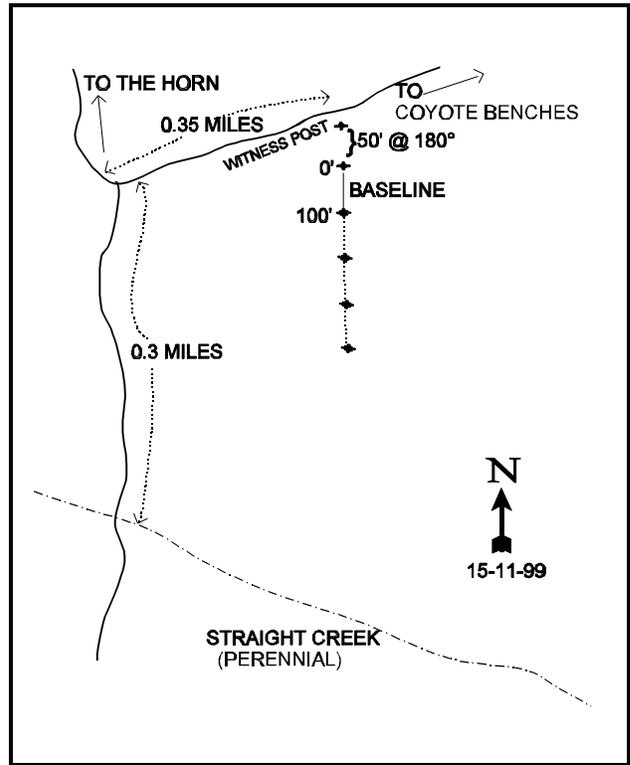
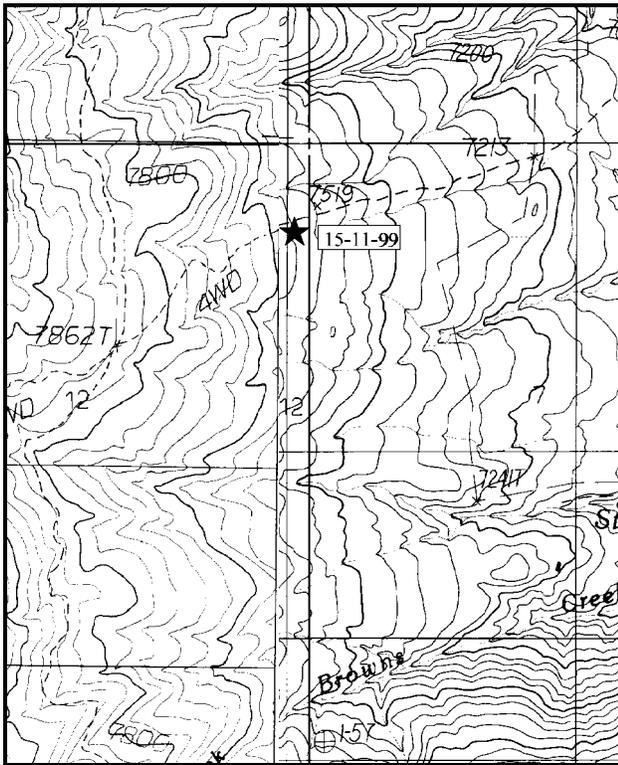
Range type: Mixed Mountain Brush .

Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From Pennellen Pass, go east around The Horn towards Dark Canyon. It is 3.5 miles from Pennellen Pass to a cattleguard at Dark Canyon. Continue 1.85 miles to Willow Spring. Continue on the main road 3.3 miles to Straight Creek Junction. Turn left and go 0.35 miles down towards Coyote Bench. A witness post on the right side of the road marks the study location. This green fence post has a browse tag #7130 attached. The 0-foot baseline stake is 50 feet south.



Map Name: Mount Pennell

Diagrammatic Sketch

Township 33S , Range 10E , Section 12

UTM 4200656.196 N, 521836.285 E

## DISCUSSION

### Trend Study No. 15-11 (38-11)

The "Above" Coyote Bench study is located about two miles east of Mt. Pennell on the upper reaches of Coyote Bench at an elevation of 7,560 feet. The slope is 8% with an aspect toward the northeast. Pinyon are scattered throughout the slope with the predominant range type being mountain brush. The area is considered a key summer and fall use area for mule deer. It is within the Pennell Cattle Allotment, yet there is very little use by cattle and buffalo. Pellet transect data from 1999 show light use by deer and livestock with 8 deer and 7 cow days use/acre (20 ddu/ha and 17 cdu/ha) being estimated. A few rabbit pellets were also counted. Water is available most of the year in Straight Creek, less than one mile from the site. Human use of this area would be expected to be minimal during the summer with few buffalo in the area. Much more use would be expected during the fall deer hunt. An unimproved dirt road runs the length of Coyote Bench.

The soil is a coarse-textured, sandy clay loam with an abundance of various sized rock on the surface and throughout the profile. The soil has a slightly acidic pH (6.2), and the phosphorus levels are slightly lower than the 10 ppm thought necessary for normal plant development. The estimated effective rooting depth is just over 15 inches, however the presence of both black sagebrush and mountain big sagebrush would indicate that soil depth is variable throughout the area and that various portions of the soil are moderately shallow. Litter primarily accumulates beneath shrubs with areas of bare soil between shrubs. Cover estimates for litter were relatively high in 1987 at 64%, with this estimate decreasing to 41% relative cover in 1994 (drier year), and 45% in 1999. There is some evidence of active erosion with rills and small rocky gullies common on the site. Pedestaling around shrubs was noted in 1999 as well. Herbaceous species account for only 13% of the total vegetative cover with shrubs and trees combining for 87%. This lack of herbaceous understory cover and the low nested frequency for total vegetation (281 in 1994, 297 in 1999), indicates poor distribution of protective ground cover which increases erosion potential on the site from high intensity summer storms.

The key browse species on the site are black sagebrush, mountain big sagebrush, Utah serviceberry, and true mountain mahogany. These species have shown evidence of moderate to heavy utilization in the past, especially the mahogany. However, use was mostly light for the key browse in 1999, with the exception of mahogany showing mostly moderate use on 38% of the plants sampled. Black sagebrush has declined in density over all years, although the increased sample size after the 1987 may account for some of this. The population was estimated at 4,532 plants/acre in 1987, 2,880 plants/acre in 1994 and 1,800 plants/acre in 1999. Percent decadency has decreased over all years. However, the proportion of decadent plants classified as dying remains relatively high (62% in 1999). Those plants showing poor vigor decreased from 35% in 1994 to 9% in 1999. Currently, biotic potential and recruitment are low for this species with an estimated 40 seedlings/acre and 200 young plants/acre. Mountain big sagebrush density has stayed stable over all sampling years. The current population estimate is 2,300 plants/acre. As with black sagebrush, percent decadency has decreased with each reading. Although, the proportion of decadent plants classified as dying is high at 63% in both 1994 and 1999. The ratio of dead to live plants is currently high for mountain big sagebrush at 1:3. Biotic potential (17%) and recruitment are good with young plants comprising 25% of the total population. Utah serviceberry is comprised mostly of mature plants that are nearly 6 feet tall by 5 feet wide. Percent decadency is low at only 1%, and biotic potential is high at 57% (1,040 seedlings/acre). True mountain mahogany has a relatively stable population with 780 plants/acre in 1999. Recruitment is very high with 44% of the population coming from young plants. No decadent or dead plants have been sampled in any year.

Gambel oak provides excellent warm season cover at the site with 6,040 plants/acre being estimated in 1999. Tree species were not counted in the shrub strips in 1994, thus comparisons for this species over the last five years cannot be made. Point quarter data estimated 108 pinyon and 18 juniper trees/acre in 1994, and 107 pinyon and 18 juniper trees/acre in 1999. The line intercept method estimated 12% canopy cover for pinyon and juniper combined in 1999.

There are a large number of herbaceous species on the site, but only a few are abundant. Squirreltail and mutton bluegrass are the only perennial grasses that had quadrat frequencies >10% in 1994. Mutton bluegrass increased in both nested and quadrat frequencies in 1999, while squirreltail decreased in both. Another perennial native grass, needle and thread, has greatly decreased in nested and quadrat frequency since 1987. Cheatgrass significantly increased in nested frequency between 1994 and 1999, and is now the most abundant grass making up 73% of the grass cover. Forbs are diverse with a total of 20 perennial species being sampled in 1994, and 21 in 1999. However, only Erigeron eatonii was abundant with a quadrat frequency of 41% in 1994 and 30% in 1999. There are several good forage species on the site, yet none are common. Perennial species have decreased significantly at the expense of shrubs and trees which are increasing at the site.

#### 1994 TREND ASSESSMENT

Percent bare ground has increased since 1987. Erosion is not a big problem on the site, nevertheless some is occurring. As shrubs continue to increase at the expense of understory plants, erosion could become more of a problem. Trend for soil is slightly down. Browse are diverse and healthy. The key species show reduced heavy browsing, lower decadency rates with stable population densities. Trend for browse is stable. Sum of nested frequencies for perennial grasses have declined since 1987, while those of perennial forbs have also decreased slightly. Trend for herbaceous understory is slightly down.

##### TREND ASSESSMENT

soil - down slightly

browse - stable

herbaceous understory - slightly down with the perennial grass and forb loss

#### 1999 TREND ASSESSMENT

Soil trend is stable with relative herbaceous cover slightly improved, the ratio of protective cover to bare soil also improved, and litter cover increasing from 45% to 64%. Some erosion was evident in 1999 with the formation of rills and small gullies after heavy periods of rain. Trend for the key browse is stable. Light use in recent years has resulted in the key species showing good vigor. Percent decadency of the key species is either low or has decreased since 1994. The main negative indicator of changes in browse at this site is the continued decrease in black sagebrush density and the high proportion of decadent plants classified as dying. However, black sagebrush's contribution to browse cover has only changed from 6% (1994) to 5% currently. Trend for the herbaceous understory is slightly down. Sum of nested frequency for perennial forbs decreased significantly in 1999, and nested frequency for cheatgrass nearly doubled.

##### TREND ASSESSMENT

soil- stable

browse- stable

herbaceous understory- slightly down

HERBACEOUS TRENDS --  
Herd unit 15 , Study no: 11

| Type                        | Species                     | Nested Frequency |       |      | Quadrat Frequency |     |     | Average Cover % |      |
|-----------------------------|-----------------------------|------------------|-------|------|-------------------|-----|-----|-----------------|------|
|                             |                             | '87              | '94   | '99  | '87               | '94 | '99 | '94             | '99  |
| G                           | Agropyron cristatum         | 3                | -     | 3    | 1                 | -   | 1   | -               | .00  |
| G                           | Agropyron spicatum          | a-               | a-    | 6    | -                 | -   | 3   | -               | .06  |
| G                           | Bromus tectorum (a)         | -                | a130  | b230 | -                 | 48  | 74  | .46             | 3.12 |
| G                           | Oryzopsis hymenoides        | 10               | 9     | 10   | 5                 | 4   | 5   | .02             | .05  |
| G                           | Poa fendleriana             | a12              | ab35  | b55  | 9                 | 15  | 22  | .20             | .88  |
| G                           | Sitanion hystrix            | b67              | b30   | a8   | 30                | 13  | 4   | 1.01            | .07  |
| G                           | Stipa comata                | b57              | a3    | a9   | 24                | 2   | 4   | .06             | .07  |
| G                           | Stipa lettermani            | b4               | a-    | a-   | 3                 | -   | -   | -               | -    |
| G                           | Unknown grass - perennial   | -                | 5     | -    | -                 | 3   | -   | .01             | -    |
| Total for Annual Grasses    |                             | 0                | 130   | 230  | 0                 | 48  | 74  | 0.46            | 3.12 |
| Total for Perennial Grasses |                             | 153              | 82    | 91   | 72                | 37  | 39  | 1.31            | 1.15 |
| Total for Grasses           |                             | 153              | 212   | 321  | 72                | 85  | 113 | 1.78            | 4.27 |
| F                           | Agoseris glauca             | a-               | b13   | b20  | -                 | 6   | 8   | .15             | .09  |
| F                           | Agropyron spicatum          | -                | 1     | -    | -                 | 1   | -   | .00             | -    |
| F                           | Arabis spp.                 | 4                | -     | 3    | 2                 | -   | 1   | -               | .00  |
| F                           | Artemisia ludoviciana       | -                | -     | 4    | -                 | -   | 2   | -               | .03  |
| F                           | Aster spp.                  | a-               | b12   | a-   | -                 | 5   | -   | .03             | -    |
| F                           | Astragalus spp.             | a-               | b4    | ab3  | -                 | 2   | 3   | .03             | .04  |
| F                           | Balsamorhiza sagittata      | 5                | -     | 3    | 2                 | -   | 1   | .09             | .09  |
| F                           | Castilleja chromosa         | 6                | 14    | 3    | 3                 | 6   | 1   | .08             | .03  |
| F                           | Castilleja linariaefolia    | b41              | a12   | a6   | 24                | 6   | 3   | .25             | .02  |
| F                           | Calochortus nuttallii       | 4                | 1     | 6    | 2                 | 1   | 3   | .00             | .01  |
| F                           | Collomia spp. (a)           | b17              | b17   | a-   | 7                 | 7   | -   | .06             | -    |
| F                           | Comandra pallida            | -                | -     | 7    | -                 | -   | 3   | -               | .04  |
| F                           | Collinsia parviflora (a)    | -                | b9    | a-   | -                 | 3   | -   | .21             | -    |
| F                           | Crepis acuminata            | 17               | 4     | 12   | 7                 | 2   | 4   | .01             | .10  |
| F                           | Cymopterus spp.             | a-               | b8    | ab1  | -                 | 4   | 1   | .02             | .00  |
| F                           | Erigeron eatonii            | b118             | ab100 | a63  | 50                | 41  | 30  | .71             | .65  |
| F                           | Eriogonum racemosum         | b35              | a14   | ab25 | 18                | 6   | 10  | .03             | .15  |
| F                           | Gayophytum ramosissimum (a) | -                | b62   | a16  | -                 | 25  | 7   | .15             | .03  |
| F                           | Helianthella microcephala   | b33              | a-    | a-   | 16                | -   | -   | -               | -    |
| F                           | Helianthella uniflora       | -                | 2     | -    | -                 | 1   | -   | .03             | -    |
| F                           | Hymenoxys acaulis           | -                | 2     | -    | -                 | 1   | -   | .03             | -    |
| F                           | Lappula occidentalis (a)    | -                | 3     | -    | -                 | 1   | -   | .00             | -    |
| F                           | Lesquerella kingii          | a12              | b44   | a22  | 6                 | 20  | 10  | .73             | .10  |
| F                           | Linum lewisii               | ab38             | b49   | a31  | 16                | 22  | 12  | .11             | .36  |
| F                           | Penstemon spp.              | 10               | 15    | 8    | 5                 | 9   | 4   | .07             | .04  |
| F                           | Petradoria pumila           | -                | 4     | -    | -                 | 2   | -   | .15             | -    |

| Type                      | Species                 | Nested Frequency |                 |                 | Quadrat Frequency |     |     | Average Cover % |      |
|---------------------------|-------------------------|------------------|-----------------|-----------------|-------------------|-----|-----|-----------------|------|
|                           |                         | '87              | '94             | '99             | '87               | '94 | '99 | '04             | '09  |
| F                         | Phlox longifolia        | <sub>c</sub> 114 | <sub>b</sub> 66 | <sub>a</sub> 27 | 49                | 28  | 12  | .16             | .11  |
| F                         | Polygonum douglasii (a) | -                | <sub>b</sub> 77 | <sub>a</sub> 39 | -                 | 30  | 15  | .15             | .10  |
| F                         | Senecio multilobatus    | 8                | 3               | 3               | 4                 | 1   | 2   | .00             | .01  |
| F                         | Taraxacum officinale    | 5                | 8               | 5               | 3                 | 3   | 3   | .33             | .06  |
| F                         | Tragopogon dubius       | 6                | -               | 2               | 2                 | -   | 1   | -               | .00  |
| F                         | Unknown forb-perennial  | 4                | -               | -               | 2                 | -   | -   | -               | -    |
| F                         | Zigadenus paniculatus   | <sub>a</sub> 11  | <sub>b</sub> 38 | <sub>b</sub> 58 | 8                 | 19  | 28  | .14             | .55  |
| Total for Annual Forbs    |                         | 17               | 168             | 55              | 7                 | 66  | 22  | 0.57            | 0.13 |
| Total for Perennial Forbs |                         | 471              | 414             | 312             | 219               | 186 | 142 | 3.20            | 2.53 |
| Total for Forbs           |                         | 488              | 582             | 367             | 226               | 252 | 164 | 3.77            | 2.67 |

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

#### BROWSE TRENDS --

Herd unit 15 , Study no: 11

| Type             | Species                       | Strip Frequency |     | Average Cover % |       |
|------------------|-------------------------------|-----------------|-----|-----------------|-------|
|                  |                               | '04             | '09 | '04             | '09   |
| B                | Amelanchier utahensis         | 33              | 35  | 9.80            | 13.51 |
| B                | Artemisia nova                | 54              | 35  | 2.28            | 2.16  |
| B                | Artemisia tridentata vaseyana | 50              | 53  | 5.22            | 5.02  |
| B                | Cercocarpus montanus          | 20              | 25  | 1.76            | 5.06  |
| B                | Chrysothamnus depressus       | 1               | 1   | .15             | -     |
| B                | Chrysothamnus nauseosus       | 0               | 0   | -               | -     |
| B                | Chrysothamnus viscidiflorus   | 10              | 2   | .15             | -     |
| B                | Eriogonum microthecum         | 8               | 8   | .03             | .18   |
| B                | Gutierrezia sarothrae         | 5               | 9   | .01             | .04   |
| B                | Juniperus osteosperma         | 0               | 1   | -               | .85   |
| B                | Opuntia spp.                  | 0               | 0   | -               | -     |
| B                | Peraphyllum ramosissimum      | 1               | 1   | .38             | .38   |
| B                | Pinus edulis                  | 0               | 8   | 6.11            | 8.87  |
| B                | Quercus gambelii              | 0               | 27  | 9.88            | 8.67  |
| B                | Sclerocactus                  | 0               | 1   | -               | -     |
| B                | Tetradymia canescens          | -               | -   | .00             | -     |
| Total for Browse |                               | 182             | 206 | 35.81           | 44.76 |

#### CANOPY COVER --

Herd unit 15 , Study no: 11

| Species               | Percent Cover '09 |
|-----------------------|-------------------|
| Juniperus osteosperma | 2                 |
| Pinus edulis          | 10                |

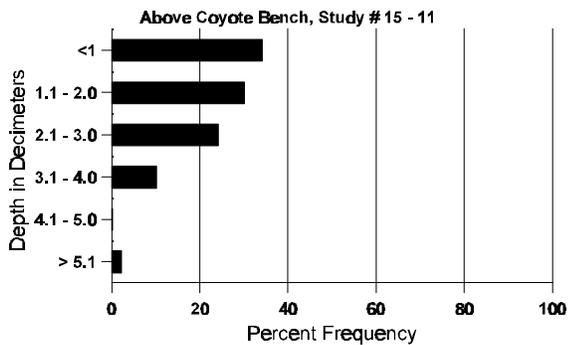
BASIC COVER --  
Herd unit 15 , Study no: 11

| Cover Type  | Nested Frequency |     | Average Cover % |       |       |
|-------------|------------------|-----|-----------------|-------|-------|
|             | '04              | '09 | '87             | '94   | '99   |
| Vegetation  | 281              | 297 | 7.50            | 37.68 | 48.25 |
| Rock        | 242              | 192 | 7.75            | 13.72 | 10.86 |
| Pavement    | 219              | 167 | 14.25           | 2.86  | 6.46  |
| Litter      | 383              | 385 | 64.25           | 45.00 | 63.49 |
| Cryptogams  | 3                | 1   | 0               | .00   | .00   |
| Bare Ground | 220              | 190 | 6.25            | 10.61 | 12.56 |

SOIL ANALYSIS DATA --  
Herd Unit 15, Study # 11, Study Name: Above Coyote Bench

| Effective rooting depth (inches) | Temp °F (depth) | pH  | %sand | %silt | %clay | %OM | PPM P | PPM K | dS/m |
|----------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
| 15.1                             | 51.4 (14.1)     | 6.2 | 53.3  | 22.2  | 24.6  | 2.5 | 7.0   | 86.4  | 0.6  |

### Stoniness Index



PELLET GROUP DATA --  
Herd unit 15 , Study no: 11

| Type    | Quadrat Frequency |     |
|---------|-------------------|-----|
|         | '04               | '09 |
| Rabbit  | 11                | 13  |
| Deer    | 17                | 12  |
| Cattle  | -                 | 4   |
| Buffalo | 1                 | -   |

| Pellet Transect Days Use/Acre (ha) |
|------------------------------------|
| '09                                |
| N/A                                |
| 8 (20)                             |
| 7 (17)                             |
| 0                                  |

BROWSE CHARACTERISTICS --

Herd unit 15 , Study no: 11

| A<br>G<br>R<br>E                               | Y  | Form Class (No. of Plants) |    |   |                  |   |   |                   |   |   | Vigor Class    |      |      |     | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|----|----------------------------|----|---|------------------|---|---|-------------------|---|---|----------------|------|------|-----|--------------------|--------------------------------|----|-------|
|  |    | 1                          | 2  | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2    | 3    | 4   |                    |                                |    |       |
| Amelanchier utahensis                          |    |                            |    |   |                  |   |   |                   |   |   |                |      |      |     |                    |                                |    |       |
| S  | 87 | 6                          | -  | - | -                | - | - | -                 | - | - | 6              | -    | -    | -   | 400                |                                | 6  |       |
|  | 94 | 16                         | -  | - | 3                | - | - | -                 | - | - | 19             | -    | -    | -   | 380                |                                | 19 |       |
|  | 99 | 11                         | -  | - | 16               | - | - | 25                | - | - | 52             | -    | -    | -   | 1040               |                                | 52 |       |
| Y  | 87 | 15                         | 1  | - | -                | - | - | -                 | - | - | 16             | -    | -    | -   | 1066               |                                | 16 |       |
|  | 94 | 5                          | -  | - | 13               | - | - | 3                 | - | - | 21             | -    | -    | -   | 420                |                                | 21 |       |
|  | 99 | 7                          | 1  | - | 6                | - | - | 1                 | - | - | 15             | -    | -    | -   | 300                |                                | 15 |       |
| M  | 87 | 1                          | 5  | 2 | -                | - | - | -                 | - | - | 8              | -    | -    | -   | 533                | 59 47                          | 8  |       |
|  | 94 | 22                         | 1  | - | 12               | - | - | -                 | - | - | 35             | -    | -    | -   | 700                | 86 98                          | 35 |       |
|  | 99 | 30                         | 3  | 2 | 15               | 2 | - | 20                | 3 | - | 75             | -    | -    | -   | 1500               | 68 55                          | 75 |       |
| D  | 87 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | -   | 0                  |                                | 0  |       |
|  | 94 | 1                          | -  | - | -                | - | - | -                 | - | - | -              | -    | 1    | 20  |                    | 1                              |    |       |
|  | 99 | 1                          | -  | - | -                | - | - | -                 | - | - | 1              | -    | -    | 20  |                    | 1                              |    |       |
| X  | 87 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | 0   |                    | 0                              |    |       |
|  | 94 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | 0   |                    | 0                              |    |       |
|  | 99 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | 380 |                    | 19                             |    |       |
| % Plants Showing                               |    | <u>Moderate Use</u>        |    |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |      |      |     |                    |                                |    |       |
| '87  |    | 25%                        |    |   | 08%              |   |   | 00%               |   |   | -29%           |      |      |     |                    |                                |    |       |
| '94  |    | 02%                        |    |   | 00%              |   |   | 02%               |   |   | +37%           |      |      |     |                    |                                |    |       |
| '99  |    | 07%                        |    |   | 02%              |   |   | 00%               |   |   |                |      |      |     |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |    |                            |    |   |                  |   |   |                   |   |   | '87            | 1599 | Dec: | 0%  |                    |                                |    |       |
|  |    |                            |    |   |                  |   |   |                   |   |   | '94            | 1140 |      | 2%  |                    |                                |    |       |
|  |    |                            |    |   |                  |   |   |                   |   |   | '99            | 1820 |      | 1%  |                    |                                |    |       |
| Artemisia nova                                 |    |                            |    |   |                  |   |   |                   |   |   |                |      |      |     |                    |                                |    |       |
| S  | 87 | 1                          | -  | - | -                | - | - | -                 | - | - | 1              | -    | -    | -   | 66                 |                                | 1  |       |
|  | 94 | 14                         | -  | - | 2                | - | - | -                 | - | - | 16             | -    | -    | -   | 320                |                                | 16 |       |
|  | 99 | 2                          | -  | - | -                | - | - | -                 | - | - | 2              | -    | -    | -   | 40                 |                                | 2  |       |
| Y  | 87 | 4                          | 3  | - | -                | - | - | -                 | - | - | 7              | -    | -    | -   | 466                |                                | 7  |       |
|  | 94 | 36                         | -  | - | 6                | - | - | -                 | - | - | 41             | -    | 1    | -   | 840                |                                | 42 |       |
|  | 99 | 10                         | -  | - | -                | - | - | -                 | - | - | 10             | -    | -    | -   | 200                |                                | 10 |       |
| M  | 87 | 12                         | 17 | 4 | -                | - | - | -                 | - | - | 29             | 3    | 1    | -   | 2200               | 9 18                           | 33 |       |
|  | 94 | 60                         | -  | 2 | 2                | - | - | -                 | - | - | 43             | -    | 21   | -   | 1280               | 11 19                          | 64 |       |
|  | 99 | 63                         | 1  | - | 3                | - | - | -                 | - | - | 67             | -    | -    | -   | 1340               | 11 26                          | 67 |       |
| D  | 87 | 12                         | 11 | 5 | -                | - | - | -                 | - | - | 13             | -    | 2    | 13  | 1866               |                                | 28 |       |
|  | 94 | 37                         | -  | - | 1                | - | - | -                 | - | - | 9              | -    | 15   | 14  | 760                |                                | 38 |       |
|  | 99 | 11                         | 1  | - | 1                | - | - | -                 | - | - | 5              | -    | -    | 8   | 260                |                                | 13 |       |
| X  | 87 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | -   | 0                  |                                | 0  |       |
|  | 94 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | -   | 0                  |                                | 0  |       |
|  | 99 | -                          | -  | - | -                | - | - | -                 | - | - | -              | -    | -    | 420 |                    | 21                             |    |       |
| % Plants Showing                               |    | <u>Moderate Use</u>        |    |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |      |      |     |                    |                                |    |       |
| '87  |    | 46%                        |    |   | 13%              |   |   | 24%               |   |   | -36%           |      |      |     |                    |                                |    |       |
| '94  |    | 00%                        |    |   | 01%              |   |   | 35%               |   |   | -38%           |      |      |     |                    |                                |    |       |
| '99  |    | 02%                        |    |   | 00%              |   |   | 09%               |   |   |                |      |      |     |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |    |                            |    |   |                  |   |   |                   |   |   | '87            | 4532 | Dec: | 41% |                    |                                |    |       |
|  |    |                            |    |   |                  |   |   |                   |   |   | '94            | 2880 |      | 26% |                    |                                |    |       |
|  |    |                            |    |   |                  |   |   |                   |   |   | '99            | 1800 |      | 14% |                    |                                |    |       |

| A<br>Y<br>G<br>R<br>E                          | Form Class (No. of Plants) | Vigor Class         |    |                  |    | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. | Total          |   |     |      |      |     |      |       |    |
|--|----------------------------|---------------------|----|------------------|----|--------------------|--------------------------------|----------------|---|-----|------|------|-----|------|-------|----|
|  |                            | 1                   | 2  | 3                | 4  |                    |                                |                |   |     |      |      |     |      |       |    |
| <i>Artemisia tridentata vaseyana</i>           |                            |                     |    |                  |    |                    |                                |                |   |     |      |      |     |      |       |    |
| S  | 87                         | 2                   | -  | -                | -  | -                  | -                              | -              | 2 | -   | -    | -    | 133 |      | 2     |    |
|  | 94                         | 57                  | -  | -                | 22 | -                  | -                              | -              | - | 79  | -    | -    | -   | 1580 | 79    |    |
|  | 99                         | 15                  | 1  | -                | 3  | -                  | -                              | -              | - | 19  | -    | -    | -   | 380  | 19    |    |
| Y  | 87                         | 6                   | -  | -                | -  | -                  | -                              | -              | - | 6   | -    | -    | -   | 400  | 6     |    |
|  | 94                         | 16                  | -  | -                | 9  | -                  | -                              | -              | - | 24  | -    | 1    | -   | 500  | 25    |    |
|  | 99                         | 27                  | -  | -                | 2  | -                  | -                              | -              | - | 29  | -    | -    | -   | 580  | 29    |    |
| M  | 87                         | 14                  | 5  | -                | -  | -                  | -                              | -              | - | 19  | -    | -    | -   | 1266 | 16 22 | 19 |
|  | 94                         | 34                  | -  | -                | 19 | -                  | -                              | 2              | - | 53  | -    | 2    | -   | 1100 | 21 27 | 55 |
|  | 99                         | 68                  | 1  | -                | 1  | -                  | -                              | -              | - | 70  | -    | -    | -   | 1400 | 19 30 | 70 |
| D  | 87                         | 6                   | 4  | 1                | -  | -                  | -                              | -              | - | 9   | -    | -    | 2   | 733  |       | 11 |
|  | 94                         | 16                  | 1  | -                | 6  | -                  | -                              | 1              | - | 5   | -    | 4    | 15  | 480  |       | 24 |
|  | 99                         | 14                  | 2  | -                | -  | -                  | -                              | -              | - | 6   | -    | -    | 10  | 320  |       | 16 |
| X  | 87                         | -                   | -  | -                | -  | -                  | -                              | -              | - | -   | -    | -    | -   | 0    |       | 0  |
|  | 94                         | -                   | -  | -                | -  | -                  | -                              | -              | - | -   | -    | -    | -   | 0    |       | 0  |
|  | 99                         | -                   | -  | -                | -  | -                  | -                              | -              | - | -   | -    | -    | -   | 780  |       | 39 |
| % Plants Showing                               |                            | <u>Moderate Use</u> |    | <u>Heavy Use</u> |    | <u>Poor Vigor</u>  |                                | <u>%Change</u> |   |     |      |      |     |      |       |    |
| '87  |                            | 25%                 |    | 03%              |    | 06%                |                                | -13%           |   |     |      |      |     |      |       |    |
| '94  |                            | .96%                |    | 00%              |    | 21%                |                                | +10%           |   |     |      |      |     |      |       |    |
| '99  |                            | 03%                 |    | 00%              |    | 09%                |                                |                |   |     |      |      |     |      |       |    |
| Total Plants/Acre (excluding Dead & Seedlings) |                            |                     |    |                  |    |                    |                                |                |   | '87 | 2399 | Dec: | 31% |      |       |    |
|  |                            |                     |    |                  |    |                    |                                |                |   | '94 | 2080 |      | 23% |      |       |    |
|  |                            |                     |    |                  |    |                    |                                |                |   | '99 | 2300 |      | 14% |      |       |    |
| <i>Cercocarpus montanus</i>                    |                            |                     |    |                  |    |                    |                                |                |   |     |      |      |     |      |       |    |
| S  | 87                         | -                   | -  | -                | -  | -                  | -                              | -              | - | -   | -    | -    | -   | 0    |       | 0  |
|  | 94                         | 23                  | -  | -                | 1  | -                  | -                              | -              | - | 24  | -    | -    | -   | 480  |       | 24 |
|  | 99                         | 1                   | -  | -                | -  | -                  | -                              | -              | - | 1   | -    | -    | -   | 20   |       | 1  |
| Y  | 87                         | -                   | 2  | 4                | -  | -                  | -                              | -              | - | 6   | -    | -    | -   | 400  |       | 6  |
|  | 94                         | 3                   | -  | -                | 2  | -                  | -                              | -              | - | 5   | -    | -    | -   | 100  |       | 5  |
|  | 99                         | 16                  | -  | -                | -  | 1                  | -                              | -              | - | 17  | -    | -    | -   | 340  |       | 17 |
| M  | 87                         | -                   | -  | 5                | -  | -                  | -                              | -              | - | 5   | -    | -    | -   | 333  | 23 30 | 5  |
|  | 94                         | 14                  | 1  | -                | 3  | -                  | -                              | 3              | - | 21  | -    | -    | -   | 420  | 35 39 | 21 |
|  | 99                         | 6                   | 12 | -                | -  | 2                  | 2                              | -              | - | 22  | -    | -    | -   | 440  | 40 47 | 22 |
| % Plants Showing                               |                            | <u>Moderate Use</u> |    | <u>Heavy Use</u> |    | <u>Poor Vigor</u>  |                                | <u>%Change</u> |   |     |      |      |     |      |       |    |
| '87  |                            | 18%                 |    | 82%              |    | 00%                |                                | -29%           |   |     |      |      |     |      |       |    |
| '94  |                            | 04%                 |    | 00%              |    | 00%                |                                | +33%           |   |     |      |      |     |      |       |    |
| '99  |                            | 38%                 |    | 05%              |    | 00%                |                                |                |   |     |      |      |     |      |       |    |
| Total Plants/Acre (excluding Dead & Seedlings) |                            |                     |    |                  |    |                    |                                |                |   | '87 | 733  | Dec: | -   |      |       |    |
|  |                            |                     |    |                  |    |                    |                                |                |   | '94 | 520  |      | -   |      |       |    |
|  |                            |                     |    |                  |    |                    |                                |                |   | '99 | 780  |      | -   |      |       |    |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |     |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |   | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|---|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3   | 4    |                    |                                |   |       |
| <b>Chrysothamnus depressus</b>                 |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |   |       |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | - | 0     |
|  | 94     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 | -                              | - | 1     |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 | -                              | - | 1     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |   |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | + 0%           |     |     |      |                    |                                |   |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '87 | 0   | Dec: | -                  |                                |   |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '94 | 20  |      | -                  |                                |   |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '99 | 20  |      | -                  |                                |   |       |
| <b>Chrysothamnus nauseosus</b>                 |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |   |       |
| Y  | 87     | 1                          | 1 | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 133                |                                |   | 2     |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |   | 0     |
|  | 99     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |   | 0     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |   |       |
| '87  |        | 50%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '87 | 133 | Dec: | -                  |                                |   |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '94 | 0   |      | -                  |                                |   |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '99 | 0   |      | -                  |                                |   |       |
| <b>Chrysothamnus viscidiflorus</b>             |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |   |       |
| S  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |   | 0     |
|  | 94     | 4                          | - | - | -                | - | - | -                 | - | - | 4              | -   | -   | -    | 80                 |                                |   | 4     |
|  | 99     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |   | 0     |
| Y  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                |   | 0     |
|  | 94     | 1                          | - | - | 2                | - | - | -                 | - | - | 3              | -   | -   | -    | 60                 |                                |   | 3     |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                |   | 1     |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | - | 0     |
|  | 94     | 14                         | - | - | 1                | - | - | -                 | - | - | 15             | -   | -   | -    | 300                | 5                              | 8 | 15    |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 | 5                              | 7 | 1     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |   |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | -89%           |     |     |      |                    |                                |   |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |   |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '87 | 0   | Dec: | -                  |                                |   |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '94 | 360 |      | -                  |                                |   |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '99 | 40  |      | -                  |                                |   |       |

| A<br>G<br>R<br>E                               | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |     |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3   | 4    |                    |                                |    |       |
| <b>Eriogonum microthecum</b>                   |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| Y  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 94     | -                          | - | - | 1                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                | 1  |       |
|  | 99     | 2                          | - | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 40                 |                                | 2  |       |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  |       |
|  | 94     | 21                         | - | - | -                | - | - | -                 | - | - | 21             | -   | -   | -    | 420                | 13                             | 18 |       |
|  | 99     | 12                         | 2 | 1 | -                | - | - | -                 | - | - | 15             | -   | -   | -    | 300                | 4                              | 6  |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | -23%           |     |     |      |                    |                                |    |       |
| '99  |        | 12%                        |   |   | 06%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '87 | 0   | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '94 | 440 |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '99 | 340 |      | -                  |                                |    |       |
| <b>Gutierrezia sarothrae</b>                   |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| S  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 94     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                | 1  |       |
|  | 99     | 2                          | - | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 40                 |                                | 2  |       |
| Y  | 87     | 6                          | - | - | -                | - | - | -                 | - | - | 6              | -   | -   | -    | 400                |                                | 6  |       |
|  | 94     | 3                          | - | - | -                | - | - | -                 | - | - | 3              | -   | -   | -    | 60                 |                                | 3  |       |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                | 1  |       |
| M  | 87     | 2                          | - | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 133                | 9                              | 6  |       |
|  | 94     | 3                          | - | - | -                | - | - | -                 | - | - | 3              | -   | -   | -    | 60                 | 5                              | 5  |       |
|  | 99     | 14                         | - | - | -                | - | - | -                 | - | - | 14             | -   | -   | -    | 280                | 5                              | 6  |       |
| D  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                | 1  |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | -77%           |     |     |      |                    |                                |    |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | +63%           |     |     |      |                    |                                |    |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '87 | 533 | Dec: | 0%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '94 | 120 |      | 0%                 |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '99 | 320 |      | 6%                 |                                |    |       |
| <b>Juniperus osteosperma</b>                   |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| S  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 99     | -                          | - | - | 1                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                | 1  |       |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  | -                              | -  |       |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 | -                              | -  |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '87 | 0   | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '94 | 0   |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '99 | 20  |      | -                  |                                |    |       |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |      |   | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|------|---|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3    | 4 |                    |                                |    |       |
| Opuntia spp.                                   |        |                            |   |   |                  |   |   |                   |   |   |                |     |      |   |                    |                                |    |       |
| M  | 87     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -    | - | 66                 | 8                              | 17 | 1     |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  | -                              | -  | 0     |
|  | 99     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  | -                              | -  | 0     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |   |                    |                                |    |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   | '87            | 66  | Dec: | - |                    |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   | '94            | 0   |      | - |                    |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   | '99            | 0   |      | - |                    |                                |    |       |
| Peraphyllum ramosissimum                       |        |                            |   |   |                  |   |   |                   |   |   |                |     |      |   |                    |                                |    |       |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  | -                              | -  | 0     |
|  | 94     | -                          | - | - | 1                | - | - | -                 | - | - | 1              | -   | -    | - | 20                 | 5                              | 74 | 1     |
|  | 99     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -    | - | 20                 | 44                             | 72 | 1     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |   |                    |                                |    |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | + 0%           |     |      |   |                    |                                |    |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   | '87            | 0   | Dec: | - |                    |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   | '94            | 20  |      | - |                    |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   | '99            | 20  |      | - |                    |                                |    |       |
| Pinus edulis                                   |        |                            |   |   |                  |   |   |                   |   |   |                |     |      |   |                    |                                |    |       |
| S  | 87     | 3                          | - | - | -                | - | - | -                 | - | - | 3              | -   | -    | - | 200                |                                |    | 3     |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  |                                |    | 0     |
|  | 99     | 3                          | - | - | -                | - | - | 2                 | - | - | 5              | -   | -    | - | 100                |                                |    | 5     |
| Y  | 87     | 4                          | - | - | -                | - | - | -                 | - | - | 4              | -   | -    | - | 266                |                                |    | 4     |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  |                                |    | 0     |
|  | 99     | 3                          | - | - | -                | - | - | -                 | 1 | - | 4              | -   | -    | - | 80                 |                                |    | 4     |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  | -                              | -  | 0     |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -    | - | 0                  | -                              | -  | 0     |
|  | 99     | 2                          | - | - | -                | - | - | -                 | 2 | - | 4              | -   | -    | - | 80                 | -                              | -  | 4     |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |   |                    |                                |    |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |      |   |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   | '87            | 266 | Dec: | - |                    |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   | '94            | 0   |      | - |                    |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   | '99            | 160 |      | - |                    |                                |    |       |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |     | Vigor Class    |      |      |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |     | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|-----|----------------|------|------|------|--------------------|--------------------------------|-----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9   | 1              | 2    | 3    | 4    |                    |                                |     |       |
| Quercus gambelii                               |        |                            |   |   |                  |   |   |                   |   |     |                |      |      |      |                    |                                |     |       |
| S  | 87     | 17                         | - | - | -                | - | - | -                 | - | -   | 17             | -    | -    | -    | 1133               |                                | 17  |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  |                                | 0   |       |
|  | 99     | 10                         | - | - | -                | - | - | -                 | - | -   | 10             | -    | -    | -    | 200                |                                | 10  |       |
| Y  | 87     | 16                         | - | - | -                | - | - | -                 | - | -   | 10             | 6    | -    | -    | 1066               |                                | 16  |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  |                                | 0   |       |
|  | 99     | 116                        | - | - | 2                | - | - | 11                | - | -   | 129            | -    | -    | -    | 2580               |                                | 129 |       |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  | -                              | 0   |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  | -                              | 0   |       |
|  | 99     | 164                        | - | - | -                | - | 5 | -                 | - | 169 | -              | -    | -    | 3380 | 42 36              | 169                            |     |       |
| D  | 87     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  |                                | 0   |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  |                                | 0   |       |
|  | 99     | 4                          | - | - | -                | - | - | -                 | - | 3   | -              | -    | 1    | 80   |                    | 4                              |     |       |
| X  | 87     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  |                                | 0   |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  |                                | 0   |       |
|  | 99     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | 300  |                    | 15                             |     |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |     | <u>%Change</u> |      |      |      |                    |                                |     |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |     |                |      |      |      |                    |                                |     |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |     |                |      |      |      |                    |                                |     |       |
| '99  |        | 00%                        |   |   | 02%              |   |   | .33%              |   |     |                |      |      |      |                    |                                |     |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |     | '87            | 1066 | Dec: | 0%   |                    |                                |     |       |
|  |        |                            |   |   |                  |   |   |                   |   |     | '94            | 0    |      | 0%   |                    |                                |     |       |
|  |        |                            |   |   |                  |   |   |                   |   |     | '99            | 6040 |      | 1%   |                    |                                |     |       |
| Sclerocactus                                   |        |                            |   |   |                  |   |   |                   |   |     |                |      |      |      |                    |                                |     |       |
| M  | 87     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  | -                              | 0   |       |
|  | 94     | -                          | - | - | -                | - | - | -                 | - | -   | -              | -    | -    | -    | 0                  | -                              | 0   |       |
|  | 99     | 3                          | - | - | -                | - | - | -                 | - | -   | 3              | -    | -    | -    | 60                 | 4 4                            | 3   |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |     | <u>%Change</u> |      |      |      |                    |                                |     |       |
| '87  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |     |                |      |      |      |                    |                                |     |       |
| '94  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |     |                |      |      |      |                    |                                |     |       |
| '99  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |     |                |      |      |      |                    |                                |     |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |     | '87            | 0    | Dec: | -    |                    |                                |     |       |
|  |        |                            |   |   |                  |   |   |                   |   |     | '94            | 0    |      | -    |                    |                                |     |       |
|  |        |                            |   |   |                  |   |   |                   |   |     | '99            | 60   |      | -    |                    |                                |     |       |