

Trend Study 17-22-97

Study site name: Schoolhouse Springs.

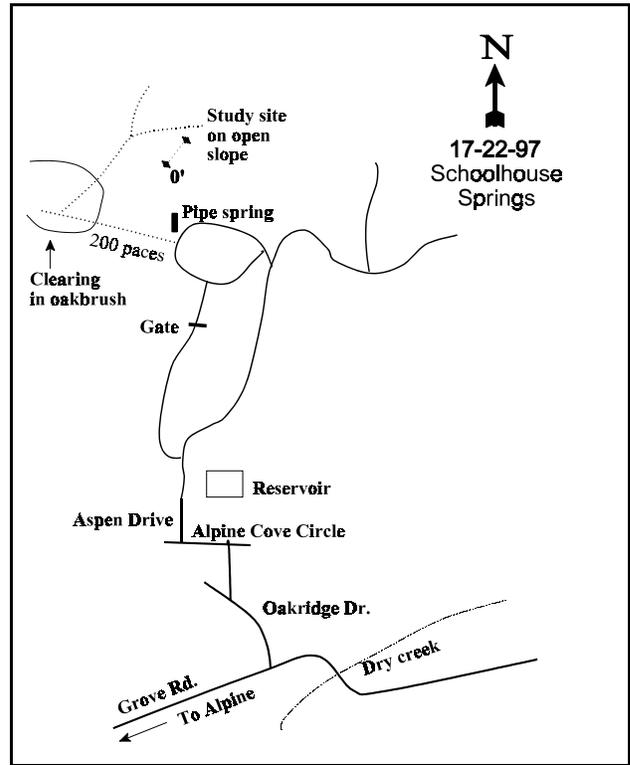
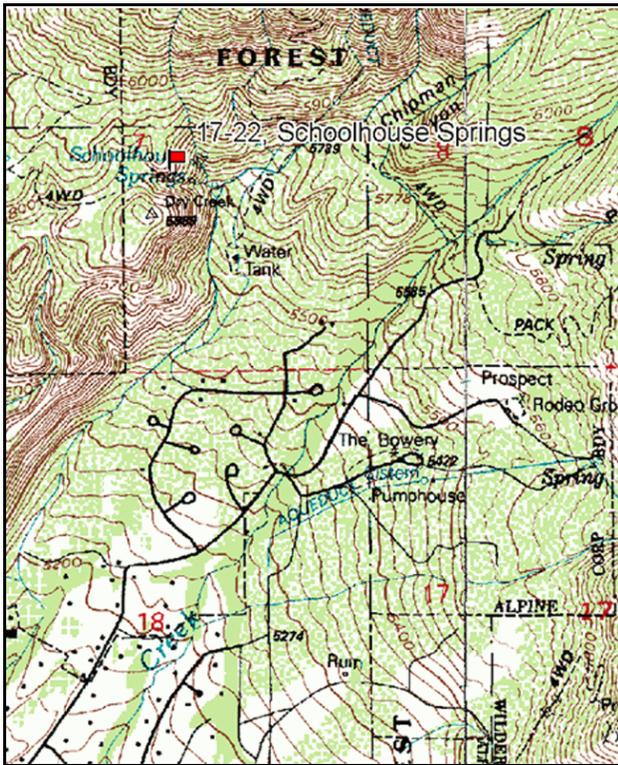
Vegetation type: Bitterbrush.

Compass bearing: frequency baseline 30 degrees magnetic.

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

LOCATION DESCRIPTION

Access to this study site may change due to continued road and housing development. In 1989, the easiest way to access Schoolhouse Springs was from the end of the pavement on Aspen Drive (13560 North 4300 West). Continue northerly on a dirt road for approximately 0.5 miles to the springs and the trail to the study site. Walk west up the trail approximately 200 paces until you enter a sagebrush-grass clearing. To the right, near the edge of the clearing, a deer trail runs to the northeast along the hillside. Walk 55 paces along the trail, then turn and walk 9 paces south down to the 0-foot baseline stake. It is marked by a red browse tag #3908.



Map Name: Lehi

Diagrammatic Sketch

Township 45, Range 2E, Section 7

GPS: NAD 27, UTM 12S 4481701 N 435465 E

DISCUSSION

Schoolhouse Springs - Trend Study No. 17-22

***SUSPENDED - This site was suspended in 2002. The study area is very small with only a 100 foot baseline and does not represent critical winter range.

This study is located on deer winter range near the top of a small ridge west of Schoolhouse Springs. Slope varies from 20% near the top of the slope to 70% on the main portion of the slope. Aspect is south. The range type is mixed mountain brush varying from relatively open big sagebrush-bitterbrush areas to rather dense and tall growing Gambel oak and Rocky Mountain maple. Although few deer pellet groups were observed, browse utilization appeared to be moderate to heavy. Grazing of domestic cattle during summer has occurred in the past, but there are no signs that this still occurs.

Soil is a well drained stony or cobbly loam derived from granite and quartzite. The pH is 6.6 which is neutral with a soil temperature of 54°F at a depth of 17 inches. The soil is rapidly permeable and has poor water retention capabilities. Erosion potential is high when disturbed (USDA-SCS, 1972). Badly eroded horse and ORV trails in the immediate area are ample proof of erosion potential. The immediate study area is relatively intact with adequate vegetative and litter cover to keep erosion to a minimum, considering the steepness of the slope.

Available browse forage comes principally from Gambel oakbrush and antelope bitterbrush. Both species are considered important. However, bitterbrush is probably a better key species. In the more open areas it is the most abundant and most preferred shrub available. The bitterbrush population is composed of mature plants with a semi-prostrate growth habit. No seedling and few young plants were encountered in any year. Vigor is good even though plants are heavily hedged and have a 'clubbed' appearance. Height of the plants has stayed relatively the same over the years at about one foot. Mountain big sagebrush is also present in the openings and is irregularly distributed and less abundant than bitterbrush. Plants are light to moderately hedged. There are nearly as many dead plants present as there are young and mature plants combined. Most plants encountered in 1997 were classified as young with all exhibiting good vigor. Gambel oakbrush averaged over 4 feet tall in 1997 with forage utilization of the available portions variable. In 1983 it was suggested that it would be desirable to knock down or burn some of the over mature oak thickets to increase availability and understory production, which was then poor. This is still the case in 1997, although, many annual grasses and forbs are present making seeding after treatment with perennial species necessary.

Perennial grasses occur only occasionally with an overall decrease in abundance since 1983. In the more open areas, cheatgrass, rattlesnake brome, and Japanese brome comprise the bulk of herbaceous growth. These species are thick enough to provide severe competition with perennial seedlings and also constitute a fire hazard. Relatively few grasses or forbs grow within oak thickets.

Forbs are more diverse and numerous than perennial grasses. However, many are annuals, biennials, or poor value perennials. Production and watershed protection are fair, but forage quality is poor. Arrowleaf balsamroot is probably the best quality forb available.

1983 APPARENT TREND ASSESSMENT

Soil is stable with adequate protective ground cover to prevent erosion. However, soil protection is overly dependant on annuals for soil retention. The bulk of litter and live vegetation cover in the open areas comes from annual grasses and forbs. Within oak thickets, a thick layer of oak leaves prevails. Shrub trend is difficult predict but probably is at least temporarily stable. Over a long period, we can expect some expansion of Gambel oak. Antelope bitterbrush seems dependant on stem layering for stand maintenance. Whether layering will be adequate remains to be seen. The heavy use of bitterbrush depresses seed production and the dense annual grass cover offers stiff competition to developing seedlings. The herbaceous understory is diverse and relatively abundant. However, annual grasses and annual forbs provide most of the herbaceous cover.

1989 TREND ASSESSMENT

The data shows a reduction in litter and significantly more erosion pavement exposed. Total rock and pavement cover have increased since 1983. Still, soil movement is less than expected, especially considering the steep slope and lack of effective perennial ground cover. Sum of nested frequency of grasses and forbs has also declined. The soil trend is down slightly. There are no seedlings and few young of either sagebrush or bitterbrush. Forage production is low on these key browse species, and the openings where they occur are limited. The bitterbrush continues to spread by layering and most of the new growth is close to the ground. Trend for browse is considered stable. Species composition of the forb component is similar between years, but lower numbers were encountered due to the late season and dry conditions. There are numerous annual species present. Trend for the herbaceous understory is down slightly due to a significant decline in bluebunch wheatgrass, the most abundant perennial grass on the site. Sum of nested frequency of forbs has also declined substantially.

TREND ASSESSMENT

soil - down slightly (2)

browse - stable (3)

herbaceous understory - slightly down (2)

1997 TREND ASSESSMENT

The soil trend is stable at this time. There are no signs of accelerated erosion, but the soil stability depends greatly on the annual grasses and forbs that are present. Establishment of perennial species to protect the watershed should be encouraged. Densities for browse species have remained relatively stable over all years. Hedging intensity has decreased on bitterbrush and Gambel oak. These two species can tolerate heavy utilization for long periods of time which keeps the densities stable on this site. Browse trend is stable. The herbaceous understory has changed very little over time. Many of the species encountered are annual species which provide little forage. Sum of nested frequency for perennial grasses has declined slightly. However, the abundance of bluebunch wheatgrass has remained relatively stable. Sum of nested frequency for perennial forbs has increased. This leads to a stable trend for the herbaceous understory.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 17 , Study no: 22

| T y p e | Species | Nested Frequency | | | Quadrat Frequency | | | Average Cover % |
|------------------|-------------------------|------------------|------------------|------------------|-------------------|-----|-----|--------------------|
| | | '83 | '89 | '97 | '83 | '89 | '97 | |
| G | Agropyron spicatum | _b 162 | _a 138 | _a 123 | 65 | 55 | 43 | 3.93 |
| G | Bromus brizaeformis (a) | - | - | 189 | - | - | 68 | 1.77 |
| G | Bromus japonicus (a) | - | - | 53 | - | - | 19 | .90 |
| G | Bromus tectorum (a) | - | - | 283 | - | - | 87 | 5.86 |
| G | Melica bulbosa | - | 1 | - | - | 1 | - | - |
| G | Poa bulbosa | - | - | 2 | - | - | 1 | .15 |
| G | Poa fendleriana | 2 | - | - | 1 | - | - | - |
| G | Poa pratensis | 5 | 6 | - | 2 | 2 | - | - |
| G | Poa secunda | 23 | 19 | 15 | 12 | 9 | 5 | .26 |

| Type | Species | Nested Frequency | | | Quadrat Frequency | | | Average Cover % |
|------|-----------------------------------|------------------|-----------------|-----------------|-------------------|-----|-----|-----------------|
| | | '83 | '89 | '97 | '83 | '89 | '97 | '97 |
| | Total for Annual Grasses | 0 | 0 | 525 | 0 | 0 | 174 | 8.54 |
| | Total for Perennial Grasses | 192 | 164 | 140 | 80 | 67 | 49 | 4.35 |
| | Total for Grasses | 192 | 164 | 665 | 80 | 67 | 223 | 12.89 |
| F | <i>Agoseris glauca</i> | 2 | - | 6 | 1 | - | 3 | .06 |
| F | <i>Agoseris grandiflora</i> | 7 | - | - | 3 | - | - | - |
| F | <i>Alyssum alyssoides</i> (a) | - | - | 189 | - | - | 63 | 1.27 |
| F | <i>Allium</i> spp. | 77 | 71 | 64 | 30 | 26 | 28 | .53 |
| F | <i>Ambrosia psilostachya</i> | - | - | 3 | - | - | 2 | .01 |
| F | <i>Artemisia ludoviciana</i> | _b 41 | _a 14 | _a 15 | 15 | 9 | 6 | .27 |
| F | <i>Balsamorhiza sagittata</i> | - | 3 | - | - | 1 | - | .15 |
| F | <i>Camelina microcarpa</i> (a) | - | - | 6 | - | - | 3 | .01 |
| F | <i>Calochortus nuttallii</i> | 4 | - | 2 | 2 | - | 1 | .00 |
| F | <i>Collomia linearis</i> (a) | - | 13 | 4 | - | 7 | 2 | .03 |
| F | <i>Collinsia parviflora</i> (a) | - | - | 3 | - | - | 1 | .00 |
| F | <i>Crepis acuminata</i> | 3 | - | - | 2 | - | - | - |
| F | <i>Cynoglossum officinale</i> | - | - | 3 | - | - | 1 | .03 |
| F | <i>Epilobium brachycarpum</i> (a) | - | - | 96 | - | - | 39 | .66 |
| F | <i>Erodium cicutarium</i> (a) | - | - | 192 | - | - | 68 | 2.66 |
| F | <i>Erigeron</i> spp. | _b 59 | _a - | _a - | 23 | - | - | - |
| F | <i>Erigeron pumilus</i> | - | _a 9 | _b 94 | - | 6 | 39 | 2.25 |
| F | <i>Galium aparine</i> (a) | - | - | 121 | - | - | 46 | 1.55 |
| F | <i>Hackelia patens</i> | 4 | 1 | - | 2 | 1 | - | - |
| F | <i>Haplopappus</i> spp. | _B 6 | _a - | _a - | 5 | - | - | - |
| F | <i>Holosteum umbellatum</i> (a) | - | - | 74 | - | - | 32 | .16 |
| F | <i>Hydrophyllum capitatum</i> | 3 | - | 4 | 3 | - | 2 | .21 |
| F | <i>Lactuca serriola</i> | _a - | _b 41 | _b 63 | - | 19 | 30 | .30 |
| F | <i>Lithophragma parviflora</i> | _b 7 | _{ab} 1 | _a - | 4 | 1 | - | - |
| F | <i>Lithospermum ruderales</i> | 3 | - | 1 | 1 | - | 1 | .18 |
| F | <i>Medicago sativa</i> | - | - | 3 | - | - | 2 | .01 |
| F | <i>Microsteris gracilis</i> (a) | - | - | 17 | - | - | 9 | .07 |
| F | <i>Montia perfoliata</i> (a) | 28 | - | - | 13 | - | - | - |
| F | <i>Petradoria pumila</i> | 13 | 13 | 4 | 4 | 6 | 2 | .18 |
| F | <i>Polygonum douglasii</i> (a) | - | - | 18 | - | - | 6 | .43 |
| F | <i>Sisymbrium altissimum</i> (a) | - | - | 22 | - | - | 11 | .18 |
| F | <i>Solidago</i> spp. | 1 | - | - | 1 | - | - | - |
| F | <i>Taraxacum officinale</i> | - | 1 | 3 | - | 1 | 1 | .00 |
| F | <i>Tragopogon dubius</i> | _{ab} 53 | _a 34 | _b 53 | 21 | 15 | 27 | .78 |
| F | Unknown forb-annual (a) | - | - | 5 | - | - | 3 | .01 |

| T y p e | Species | Nested Frequency | | | Quadrat Frequency | | | Average Cover % |
|---------------------------|------------------------|------------------|----------------|-----------------|-------------------|-----|-----|--------------------|
| | | '83 | '89 | '97 | '83 | '89 | '97 | '97 |
| F | Unknown forb-perennial | _b 116 | _a 4 | _a - | 46 | 2 | - | - |
| F | Vicia americana | - | 1 | 2 | - | 1 | 1 | .00 |
| F | Zigadenus paniculatus | _a - | _b 5 | _{ab} 4 | - | 4 | 2 | .06 |
| Total for Annual Forbs | | 28 | 13 | 747 | 13 | 7 | 283 | 7.06 |
| Total for Perennial Forbs | | 399 | 198 | 324 | 163 | 92 | 148 | 5.07 |
| Total for Forbs | | 427 | 211 | 1071 | 176 | 99 | 431 | 12.14 |

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 17 , Study no: 22

| T y p e | Species | Strip Frequency | Average Cover % |
|------------------|-------------------------------|--------------------|--------------------|
| | | '97 | '97 |
| B | Acer grandidentatum | 2 | 1.36 |
| B | Artemisia tridentata vaseyana | 13 | .21 |
| B | Gutierrezia sarothrae | 25 | 2.50 |
| B | Purshia tridentata | 49 | 8.45 |
| B | Quercus gambelii | 14 | 6.51 |
| Total for Browse | | 103 | 19.05 |

BASIC COVER --

Herd unit 17 , Study no: 22

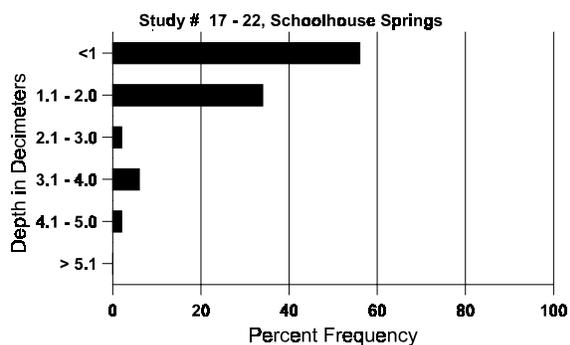
| Cover Type | Nested Frequency | Average Cover % | | |
|-------------|---------------------|-----------------|-------|-------|
| | | '83 | '89 | '97 |
| Vegetation | 370 | 4.00 | 4.00 | 49.07 |
| Rock | 165 | 4.00 | 6.25 | 4.73 |
| Pavement | 237 | .50 | 22.75 | 5.50 |
| Litter | 395 | 75.50 | 58.00 | 50.18 |
| Cryptogams | 4 | .50 | 0 | .04 |
| Bare Ground | 182 | 15.50 | 9.00 | 6.58 |

SOIL ANALYSIS DATA --

Herd Unit 17, Study no: 22, Schoolhouse Springs

| Effective rooting depth (in) | Temp °F (depth) | pH | %sand | %silt | %clay | %OM | PPM P | PPM K | dS/m |
|------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
| 15.0 | 54.0 (42.7) | 6.6 | 48.0 | 29.4 | 22.6 | 3.3 | 20.6 | 131.2 | .6 |

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 22

| Type | Quadrat Frequency '97 |
|--------|-----------------------|
| Rabbit | 1 |
| Elk | 3 |
| Deer | 5 |

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 22

| A G R E | Y | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) | | Total |
|--|----|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|-----------------|------------------|-----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | Ht. | Cr. | |
| Acer grandidentatum | | | | | | | | | | | | | | | | | | |
| Y | 83 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | - | 133 | | 2 | |
| | 89 | 2 | - | - | - | - | - | - | - | 2 | - | - | - | 133 | | 2 | | |
| | 97 | - | - | - | 1 | - | - | - | - | 1 | - | - | - | 20 | | 1 | | |
| M | 83 | 1 | - | - | - | - | - | - | - | 1 | - | - | - | 66 | 67 | 59 | 1 | |
| | 89 | - | - | - | - | - | - | 1 | - | 1 | - | - | - | 66 | 256 | 185 | 1 | |
| | 97 | 1 | - | - | - | - | - | - | - | 1 | - | - | - | 20 | - | - | 1 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '83 | | 00% | | | 00% | | | 00% | | | + 0% | | | | | | | |
| '89 | | 00% | | | 00% | | | 00% | | | -80% | | | | | | | |
| '97 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '83 | 199 | Dec: | - | | | |
| | | | | | | | | | | | | '89 | 199 | | - | | | |
| | | | | | | | | | | | | '97 | 40 | | - | | | |

| A Y G R E | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total | |
|--|----------------------------|---------------------|---|---|------------------|---|---|-------------------|---|-------------|----------------|------|------|--------------------|--------------------------------|----|-------|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | | |
| <i>Artemisia tridentata vaseyana</i> | | | | | | | | | | | | | | | | | | |
| Y | 83 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 89 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 97 | 10 | - | 1 | - | - | - | - | - | - | 11 | - | - | - | 220 | | 11 | |
| M | 83 | 1 | 1 | - | - | - | - | - | - | - | 2 | - | - | - | 133 | 26 | 28 | 2 |
| | 89 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | 15 | 6 | 1 |
| | 97 | 1 | 2 | - | - | - | - | - | - | - | 3 | - | - | - | 60 | 13 | 15 | 3 |
| D | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| X | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 260 | | 13 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '83 | | 33% | | | 00% | | | 00% | | | - 1% | | | | | | | |
| '89 | | 00% | | | 00% | | | 00% | | | +29% | | | | | | | |
| '97 | | 14% | | | 07% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | '83 | 199 | Dec: | 0% | | | | |
| | | | | | | | | | | | '89 | 198 | | 33% | | | | |
| | | | | | | | | | | | '97 | 280 | | 0% | | | | |
| <i>Chrysothamnus viscidiflorus viscidiflorus</i> | | | | | | | | | | | | | | | | | | |
| M | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 89 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | 9 | 8 | 0 |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '83 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '89 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '97 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | '83 | 0 | Dec: | - | | | | |
| | | | | | | | | | | | '89 | 0 | | - | | | | |
| | | | | | | | | | | | '97 | 0 | | - | | | | |
| <i>Gutierrezia sarothrae</i> | | | | | | | | | | | | | | | | | | |
| Y | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 97 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | - | 40 | | 2 | |
| M | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | - | - | 0 |
| | 89 | 29 | - | - | - | - | - | - | - | - | 29 | - | - | - | 1933 | 12 | 11 | 29 |
| | 97 | 82 | - | - | - | - | - | - | - | - | 82 | - | - | - | 1640 | 13 | 15 | 82 |
| D | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | - | 133 | | 2 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '83 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| '89 | | 00% | | | 00% | | | 00% | | | -19% | | | | | | | |
| '97 | | 00% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | '83 | 0 | Dec: | 0% | | | | |
| | | | | | | | | | | | '89 | 2066 | | 6% | | | | |
| | | | | | | | | | | | '97 | 1680 | | 0% | | | | |

| A G R E | Y R | Form Class (No. of Plants) | | | | | | | | | Vigor Class | | | | Plants Per Acre | Average (inches) Ht. Cr. | | Total |
|--|--------|----------------------------|----|----|------------------|---|---|-------------------|----|---|----------------|-----|------|------|--------------------|--------------------------------|----|-------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | | | | |
| Purshia tridentata | | | | | | | | | | | | | | | | | | |
| Y | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | - | - | 4 | - | - | - | - | - | - | 4 | - | - | - | 266 | | 4 | |
| | 97 | 3 | 4 | - | - | - | - | - | - | - | 7 | - | - | - | 140 | | 7 | |
| M | 83 | - | - | 23 | - | - | - | - | - | - | 23 | - | - | - | 1533 | 17 25 | 23 | |
| | 89 | - | 8 | 22 | - | - | 1 | - | - | - | 29 | - | 2 | - | 2066 | 13 21 | 31 | |
| | 97 | - | 21 | 58 | - | 8 | 6 | - | - | - | 93 | - | - | - | 1860 | 13 32 | 93 | |
| D | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | - | 1 | 5 | - | - | - | - | - | - | 5 | - | 1 | - | 400 | | 6 | |
| | 97 | - | - | 8 | - | 2 | 4 | - | - | - | 8 | - | - | 6 | 280 | | 14 | |
| X | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 140 | | 7 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '83 | | 00% | | | 100% | | | 00% | | | +44% | | | | | | | |
| '89 | | 22% | | | 78% | | | 07% | | | -17% | | | | | | | |
| '97 | | 31% | | | 67% | | | 05% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '83 | 1533 | Dec: | 0% | | | |
| | | | | | | | | | | | | '89 | 2732 | | 15% | | | |
| | | | | | | | | | | | | '97 | 2280 | | 12% | | | |
| Quercus gambelii | | | | | | | | | | | | | | | | | | |
| S | 83 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - | 66 | | 1 | |
| | 89 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| Y | 83 | 21 | - | - | - | - | - | - | - | - | 21 | - | - | - | 1400 | | 21 | |
| | 89 | 31 | - | 12 | 14 | - | - | - | - | - | 57 | - | - | - | 3800 | | 57 | |
| | 97 | 8 | - | - | 4 | - | - | - | - | - | 12 | - | - | - | 240 | | 12 | |
| M | 83 | - | - | 11 | - | - | - | 20 | - | - | 31 | - | - | - | 2066 | 47 31 | 31 | |
| | 89 | 5 | - | - | 1 | - | - | - | 10 | - | 16 | - | - | - | 1066 | 236 118 | 16 | |
| | 97 | 43 | 9 | - | 3 | - | - | - | - | - | 55 | - | - | - | 1100 | 55 70 | 55 | |
| D | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | 2 | 1 | - | - | - | - | - | 2 | - | 5 | - | - | - | 333 | | 5 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| X | 83 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 89 | - | - | - | - | - | - | - | - | - | - | - | - | - | 0 | | 0 | |
| | 97 | - | - | - | - | - | - | - | - | - | - | - | - | - | 60 | | 3 | |
| % Plants Showing | | <u>Moderate Use</u> | | | <u>Heavy Use</u> | | | <u>Poor Vigor</u> | | | <u>%Change</u> | | | | | | | |
| '83 | | 00% | | | 21% | | | 00% | | | +33% | | | | | | | |
| '89 | | 01% | | | 15% | | | 00% | | | -74% | | | | | | | |
| '97 | | 13% | | | 00% | | | 00% | | | | | | | | | | |
| Total Plants/Acre (excluding Dead & Seedlings) | | | | | | | | | | | | '83 | 3466 | Dec: | 0% | | | |
| | | | | | | | | | | | | '89 | 5199 | | 6% | | | |
| | | | | | | | | | | | | '97 | 1340 | | 0% | | | |