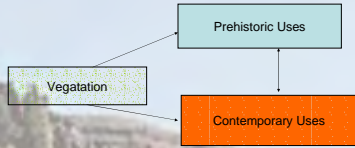


An Analysis of Plant Species and Usages in the Absaroka Mountains: Park County, Wyoming.

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For thousands of years, the headwaters of the Greybull River, located in northwestern Wyoming in the Absaroka Mountains, has provided a subsistence base for hunter-gatherer groups. In 2002, a systematic analysis was conducted on various plant communities and archaeological site locations. This coupled dataset provides a clearer picture of the overall vegetative landscape, a monitor the specific uses for the plants known for prehistoric use and a monitor of the resources in the area. Plant ecologists from CSU noted in 2002 that during the 20 day field school they did not find a single invasive plant. A Modified-Whittaker sample frame was used to collect both percent coverage and total speciation counts for a series of subplots located within the 50 by 20 meter sampling frame. The Modified-Whittaker was shown by Stohlgren and others (1995:1998) to capture more data on rare and exotic rangeland plant species, independent frequency data and more accurate species area curves. Sites varied from river level willow covered areas to sage grasslands to areas of high elevation. A basic model for potential floral availability variation and use (both in terms of direct human use and a forage for game animals), adds to the potential for interpreting the types of activities hunter-gatherer groups would have performed in the area.

To see specific human usages and other information about these plants please visit us on the web at: www.Greybull.org



The plant species were taken using the Modified-Whittaker sampling design. The Modified Whittaker is a 20x50 m unit, used in ecological studies of plant diversity (Stohlgren et. al 1995). This sampling design is also used by archaeologists for survey of artifacts and other cultural material (Burger 2002). The Modified-Whittaker contains a K unit which is 20m by 50m around the perimeter. From within the K there are two 2 m by 5 m plots (A and B located in opposite corners); a 5 m by 20 meter plot (C located in the center of the K); and ten 50 cm by 200 cm subplots, six that are spaced around the interior of the C plot and four that are spaced around the C plot exterior.

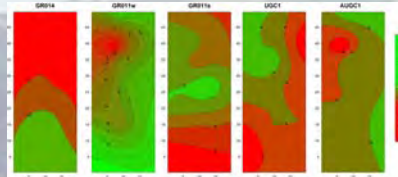
- View the topographic landscape of bare ground, species
- Understanding the visibility of artifacts on specific ground surfaces
- Comparable data analysis with ecologists in the research design
- Researching the modern and ethnographic usages of the flora
- Record faunal usages in the area through scat counts
- Monitor rare and exotic plant species
- Resurveying can evaluate change



Original Modified-Whittaker sampling design (based on Stohlgren et al 1995 and 1998)



Shannon, the botanist, surveying the Modified-Whittaker



| RPC2 | OBWillow | OBSage | AUGC1 | UGC1 |
|----------------------|-------------|------------------------|----------------------|--------------------|
| DR 1 | Acia | Ant | Anemone | Ant |
| Allium cernuum | Ant | Artr | Ant | Artemisia frigida |
| Ant | Aquilegia | Buam | Artr | Artr |
| Artr | Artr | Carex | Bupleurum americanum | Carex |
| Artr | Aster | Cela | Carex | Cela |
| Buam | Aster 2 | Coum | Comandra umbellata | Comandra umbellata |
| Campanula rounifolia | Carex | DR 1 | DR 1 | DR 1 |
| Carex | Chive | DR 3 | DR 2 | DR 2 |
| Cedum lanceolatum | Clic | Elm | Elm | Elm |
| DF | Eltr | Elsp | Eltr | Erov |
| Elsp | Epan | Elr | Erpu | Erpu |
| Epan | Erpu | Eri | Erpu | Erpu |
| Erov | Feov | Erpu | Erpu | Erpu |
| Erpu | Feov | Erpu | Erpu | Erpu |
| Feov | Gepr | Erpu | Gepr | Gepr |
| Gepr | Gepr | Feov | Gepr | Gepr |
| Leuki | Hobr | Getr | Juncus | Lianthus pungens |
| Luar | Juncus | Juncus 2 | Juncus 2 | Pabr |
| Pabr | Lupine | Leuki | Leuki | Pea 1 |
| Pea 1 | Mast | Lup | Lup | penatifid |
| Pea 2 | Muli | Lupine | Pabr | Phiox |
| Phiox | Muri | Pea 2 | Pea 2 | Poa 1 |
| Poa 1 | Pea 3 | Pea 2 | Pea 4 | Potentilla |
| Potentilla | Pedicularis | Pea 4 | Pea 5 | Scenecio s. |
| Sci | Pepr | Pea 5 | Pea 6 | UP |
| UF 2 | Picea | Penstemon richardsonii | Pedicularis sp | URD 2 |
| UF 3 | Poa | Phiox | Phiox | |
| UR 1 | Pofr | Poa 1 | Pinus | |
| UR 2 | Potentilla | Poa 1 | Poa 1 | |
| Ribes | Ses | Pofr | Pofr | |
| Salix | Scat | Potentilla | Potentilla | |
| UG3 | UG3 | Sci | Sci | |
| WEED | E | Sella | Sella | |
| CDE | Scat | Stipa sp | Stipa sp | |
| H | H | UR 4 | UR 4 | |
| HE | H | UYF | UYF | |
| H | H | Scat | Scat | |
| | | DE | DE | |
| | | E | E | |
| | | ED | ED | |

| Initials | Scientific Name |
|-------------|----------------------------|
| Acia | Achillea lanulosa |
| Alice | Allium cernuum |
| Chive | Allium subserotopsum |
| Anemone | Anemone sp |
| Ant | Antennaria sp |
| Aquilegia | Aquilegia sp |
| Artr | Artemisia frigida |
| Artr | Artemisia tridentata |
| Pea1 | Astragalus sp. |
| Pea2 | Astragalus sp. |
| Buam | Bupleurum americanum |
| | Campanula rounifolia |
| Carex | Carex sp. |
| Pabr | Castilleja sp. |
| WEED | Chenopodium altissimum |
| Clic | Cirsium scariosum |
| Coum | Comandra umbellata |
| Elam | Elymus tenuis |
| Elsp | Elymus spicatum |
| Elr | Elymus trachycaulus |
| Epan | Epilobium angustifolium |
| Erpu | Eriogonum punctatum |
| Erov | Eriogonum umbellatum |
| Erpu | Eriogonum umbellatum |
| Feov | Festuca ovina |
| Frve | Fragaria vesca |
| Gepr | Gentiana prostrata |
| Getr | Gentiana sp. |
| Hobr | Hesperidium brachyanthemum |
| Juncus | Juncus balticus |
| Juncus 2 | Juncus canadensis |
| Leuki | Leucopoa kingii |
| Lup | Lupinus prostratus |
| UF2 | Linum lewisii |
| Lupine | Lupinus angustifolius |
| Aster | Machoparteneria canadensis |
| Mast | Manisurisium canadense |
| Muli | Muhlenbergia filiformis |
| Muri | Muhlenbergia richardsonis |
| Pea2 | Oxytropis sp. |
| Pedicularis | Pedicularis sp. |
| Erov | Pedicularis sp. |
| Phiox | Pedicularis sp. |
| Pepr | Penstemon procerus |
| Phiox | Penstemon richardsonii |
| Picea | Pinus strobus |
| Pous | Pinus sp. |
| Poa 1 | Poa sp. |
| Pofr | Potentilla fruticosa |
| Potentilla | Potentilla gracilis |
| Ribes | Ribes sp. |
| Salix | Salix sp. |
| Cela | Sedum lanceolatum |
| Sci | Senecio sphaerocephalus |
| Stipa | Stipa sp. |
| Asor2 | Unknown |
| DF | Unknown |
| DR1 | Unknown |
| UG3 | Unknown |
| Flu1 | Unknown |
| Pea3 | Unknown |
| Pea4 | Unknown |
| Pea5 | Unknown |
| UG3 | Unknown |
| UR1 | Unknown |
| UR2 | Unknown |



The picture site is a similar setting to OBWillow and OB sage.



The picture of this site is similar to RPC2.

The Greybull survey has relieved its pristine natural state. No exotic species were documented during the 2002 survey. The Modified-Whittaker frame work provides specific cluster to study. There are many entities to consider while studying these cluster samples when looking at the involvement of humans of the landscape with a mixture of interests. Within the species of plants there are factors that will affect their availability and longevity. For example, there are certain species like the parasitic *Pedicularis* that are toxic to ingest when the host is a *Senecio* or *Lupinus*, but is benign of toxins when it is attached to a Rose. Plants have certain behavior characteristics such as the *Pedicularis* that diminishes with the loss of species diversity. The *Artemisia tridentata* is a social shrub that preempts vast acres and drives out every other similar growth.

Certain species thrive in certain soil types like the *Muhlenbergia richardsonis* that grows in sandy soils, the *Juncus castaneus* that grows in bogs and run-off streams and the *Sedum lanceolatum* that grows on dry rocky slopes. Some exist in rarity in high elevations like the *Penstemon* sp.

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