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**Preference:** Poster Session

**Theme:** Native Plant Conservation

**Status:** Professional

**Sagebrush decline on the Colorado Plateau: A look at sagebrush and soils**

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**Abstract:** Sagebrush (*Artemisia tridentata*) ecosystems are important habitat for mule deer, greater sage grouse, and many other charismatic fauna. They are also important rangeland for the western livestock industry, and considered by many to be vital recreation areas. However, these ecosystems are also in decline. Growing concern for this problem has led to a great many studies on the dynamics of sagebrush ecosystems, particularly in the Great Basin, but very little is known about how sagebrush responds on the Colorado Plateau which has drier and monsoonal climatic conditions as well as different soils and vegetation. This is problematic because there is little to suggest that restoration successes in well studied areas will be successful on the Colorado Plateau. In Beef Basin, an area of southern Utah known for recreation, cattle grazing, and deer hunting, sagebrush habitat has degraded to such an extent that it is more accurately described as grassland. Sampling sites were randomly selected across two neighboring basins based on the three dominant soil types and four vegetation classes. These classes were assigned based on September NDVI values. Line-point-intercept, shrub density, and soils data are used to determine which soil characteristics influence the presence of sagebrush on the landscape. Non-ephemeral sagebrush leaves provide nitrogen content and hydration measures which are used to explain the variation of sagebrush health. Our findings allow land managers to direct conservation efforts by predicting which areas can be successfully restored as well as those which may face further loss of sagebrush and sagebrush ecosystems.

**Poster Guidelines**

* Posters should be no larger than 36"(H) x 48"(W).
* The presentation must cover the material indicated in the accepted abstract.
* Place the title of your paper at the top of the poster to allow viewers to identify your paper. Indicate the abstract's title and authors' names.
* Highlight the authors' names, e-mails, and address information in case the viewer is interested in contacting you for more information.
* Prepare all diagrams or charts neatly and legibly beforehand in a size sufficient to be read at a distance of 6 feet. Paragraph and figure caption text should be AT LEAST 24-point font and headers AT LEAST 36 point font (1.2 cm height).
* Use different colors and textures/symbols for each line or bar contained in your graph or chart.
* A serif font (e.g., Times) is often easier for reading main text and a non-serif font (e.g., Arial or Helvetica) for headers and figure labels.
* Organize the paper so it is self-explanatory. You have complete freedom in displaying your information in figures, tables, text, and photographs.
* Include the background of your research followed by results and conclusions.

Sagebrush ecosystems once covered approximately 150 million acres. Now overgrazing, fire suppression, invasive species, fragmentation, and a variety of other threats degrade this iconic ecosystem and regionally imperil over 350 species of associated plants and animals.

Growing concern has led to studies on the dynamics of sagebrush ecosystems and their obligate species. Much of this restoration attention is focused in the Great Basin, but very little is known about how sagebrush responds on the Colorado Plateau which has drier and monsoonal climatic conditions as well as different soils and vegetation.

In the late 1980’s sagebrush (Artemisia *tridentata*) in and around Beef Basin, Utah began declining rapidly, with areas seeing between 70% and 100% die off. Much of the area previously covered in shrubs has converted to grasslands.

Determine which soil characteristics are associated with the presence of sagebrush on the landscape in order to ascertain where restoration efforts will potentially succeed.

This study was conducted in Beef Basin, Utah which is located in San Juan County and is just south of Canyonlands National Park and north of the Manti-La-Sal National Forest.

Sites were randomly selected from two of the BLM’s proposed treatment polygons (North Plain and South Plain) based on the normalized difference vegetation index (NDVI) values split into 4 quartiles, and within one of the three dominant soil types (Begay, Ignacio/Leanto, and Mido) for a total of 12 plot types (NDVI by soil) with 6 to 10 sites sampled at each plot totaling 99 plots. See table below.

At each plot 5 transects 30m long were set up 7m apart. Data collected included Line Point Intercept (collected on all 5 transects), Shrub Density (collected on transects 1, 3, and 5), and Soil (2m auger, sampled 2m down from line 3)

The logit transformed relative cover of both live and dead sagebrush were used in a two stage preliminary analysis with soils variables.

The first stage looks at presence/absence of live sagebrush and of dead sagebrush, and identifies significant soil variables.

The second stage takes only the presence occurrences and looks at how the magnitude of relative cover depends on the predictor soils variables.