Analysis of Gambel's Oak Growth and Influence within Gunnison's Sage-grouse Habitat, Poncha Pass, Colorado

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My research project focused on the potential spread and influence of Gambel’s oak within Gunnison’s Sage-grouse habitat near their nesting and lekking areas within the Poncha Pass satellite population. This is a concern since grouse are large ground-dwelling, visual animals that frequently rely on unobstructed horizontal vision. I aged nearly 150 oak trees, then I created a metric of circumference to age that allowed me to age patches without the need of coring/cutting the plants. I then took careful measurements of distance and compass heading from a benchmark I established and measured the circumference of trees within four oak patches. I then derived the position and calculated age of these trees using ArcGIS. I also analyzed historic grouse pellet data from 1999 in relation to oak and sage patches using “NEAR” analysis on ArcGIS. I calculated the percent coverage of each type of vegetation in my study area, with Mountain Big Sage being the greatest, followed by Black sage, Gambel’s Oak, and Mountain Big sage/Gambel’s Oak mix. I also modeled the possible future spread of the four patches based on their yearly directional spread. I noticed a pattern of increased rates of spread in southerly directions in three out of four patches. I found that all pellet types were most closely associated with Mountain Big Sage, followed by Gambel’s Oak, then Mountain Big Sage/Gambel’s Oak Mix, and finally Black Sage. Overall, my data indicates a slow-but-certain spread of oak, which may overtake the sage habitat and negatively affect this population.

Awards Won: