

COMMUNITY-BASED RANGELAND RESTORATION IN SOUTHWESTERN COLORADO

LARIMER COUNTY

Neve Beatty

Dr. Carrie Havrilla
Dryland Ecology and Management Lab PI
Retta Bruegger
CSU Extension Regional Extension Specialist
Emily Lockard
CSU Extension Agriculture Agent

PROJECT INTRODUCTION

For this project, I worked with the CSU Dryland Ecology and Management Lab and RestoreNet to collect, analyze, and communicate results about innovative and locally sourced techniques for dryland restoration.

Drylands are Earth's largest terrestrial biome and support a third of the global population. Therefore, dryland restoration is an increasingly important area of research. However, little information is available to inform dryland manager's decisions. RestoreNet is a dryland restoration network testing revegetation techniques across environments to help land managers effectively re-establish native perennial vegetation within drylands.

For this project, we examined the effectiveness of treatments recommended by local land managers, including polymer beads, biochar, compost, and tamarisk mulch. I entered and analyzed data collected at two RestoreNet sites, one in Dolores CO, and one on Ute Mountain Ute land.

INTERNSHIP GOALS

- Collect and analyze data from RestoreNet field sites
- Monitor the impacts of treatments on seeded and outplanted onsite vegetation
- Help inform land managers decisions and assist researchers understanding of drylands.
- Effectively communicate results to broader land manager community

EDUCATIONAL APPLICATIONS

- An understanding of dryland restoration challenges is important when studying restoration ecology
- Feeling confident doing field work and data analysis opens-up many opportunities
- I learned how to collect soil samples and do DNA extraction while working with other student projects in the lab

WHAT YOU DID

- Communicate via the Dryland Ecology and Management Slack group
- Collect field data
- Enter and organize field data in Excel
- Work with researchers in the lab to analyze data and generate figures
- Assist other lab members with greenhouse and field data collection
- Created a bookmark to communicate findings of RestoreNet project
- Completed a literature search for research regarding locally sourced dryland treatments



RESULTS

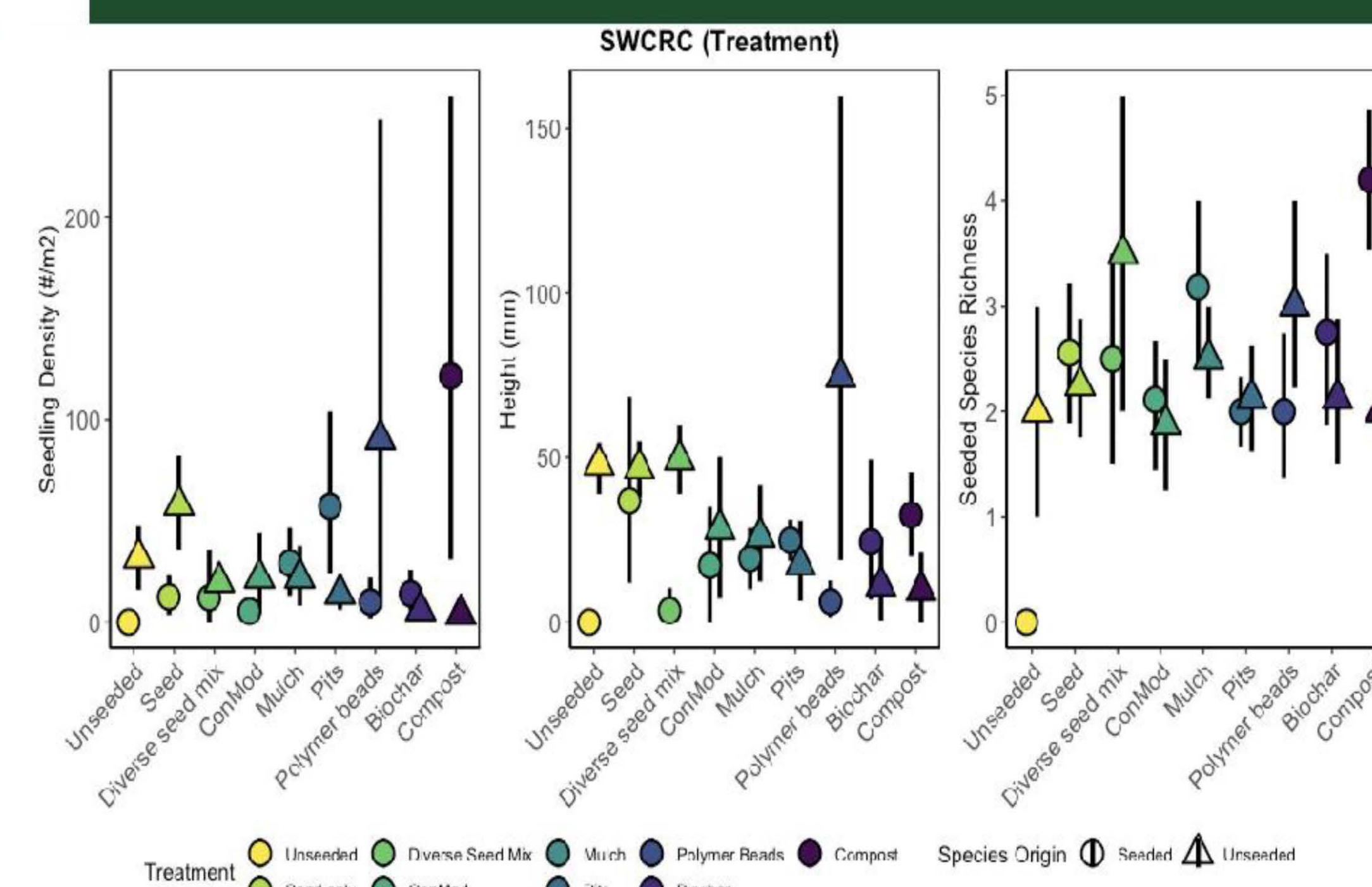


Figure 1. Results from first year of RestoreNet research in Dolores CO. Generated using code provided by Dr. Havrilla.

WHAT YOU LEARNED

Skills

- How data is collected
- Lab experience
- Field experience
- R experience
- Graphic design experience
- Hydrometer experience
- Collecting soil samples
- DNA extraction from soil samples

Scientific Knowledge

- The challenges of dryland restoration are evident through precipitation dependent data
- The importance of long term research
- Various native and invasive plants which establish in drylands
- Current strategies for improving desirable plant cover in drylands
- Considerations for communicating with diverse stakeholder groups

NEXT STEPS

- Follow up with RestoreNet findings later this semester with the Dryland Ecology and Management Lab (DEML)
- Use bookmarks at conferences to continue result communication through time
- Further scientific communication skills through managing social media and website for DEML
- Further scientific knowledge, hard, and soft skills through assisting with research in the lab

REFERENCES

Havrilla, CA, Munson, SM, McCormick, ML, Laushman, KM, Balazs, KR, Butterfield, BJ. RestoreNet: An emerging restoration network reveals controls on seeding success across dryland ecosystems. *J Appl Ecol.* 2020; 57: 2191- 2202. <https://doi.org/10.1111/1365-2664.13715>