

## Project Year-End Summary Report

Title of Project: Quantifying the Distance Decay of Plant Soil Feedbacks in Two New Mexico Desert Species

*Begin answering in the shaded box right beside or below each question and it will expand to accommodate as you type. Use up to a total of two and a half pages for questions 1-8. More detailed presentations, a final report, articles or posters are welcome separately\* (See final instructions at the end of this form.)*

1. Organization name or Individual who received the grant: Melanie Merritt

2. Amount of Grant: \$ 3,000

4. Was additional outside funding obtained? (check box that applies) Yes  No   
Other funding source(s) if you checked "yes."

5. Briefly, how was the grant money from the Carter Conservation Fund used?  
The money will be used for sequencing soil microbial DNA from the spatial PSF experiment.

6. Write an abstract or summary of the activities performed and the progress that was made this year on your project. (Save any conclusions, lessons learned, and benefits achieved for the final sections, 7&8.)

The spatial Plant Soil Feedback experiment was set up in Fall 2021 and ran through Spring 2022. In Summer 2022, plants were harvested and rhizosphere soil was collected from plant roots and stored in sterile WhirlPak bags at -80 C for sequencing. This spring I will finish DNA extractions from the rhizosphere soil samples and send them as PCR products to our sequencing center at the Georgia Genomics and Bioinformatics Center (GGBC) at UGA. The funding from this grant will cover most of the costs of sequencing these samples.

7. How does your project further a Native Plant Society mission area, namely: *plant or ecological education; conservation/restoration of native plants and/or their habitats; adds to botanical research; promotes appropriate use of native plants to conserve water, land and/or wildlife.*

My project will expand our knowledge of the mechanisms that drive Plant Soil Feedbacks (PSF) and the spatial extent to which these feedbacks influence plant community dynamics and structure. More specifically, we hope to better understand the PSF of *Larrea tridentata* (creosote) and *Bouteloua eriopoda* (black grama) in the grass-shrub ecotone at the Sevilleta National Wildlife Refuge in the Chihuahuan Desert in New Mexico. While shrub encroachment is not actively occurring, over the past 10 years shrub cover has increased while grass cover has decreased and there are no biotic factors inhibiting shrub encroachment from occurring in the future. Additionally, we already know that there are distinct soil fungal communities across the grassland to shrubland transition. Distinguishing the microbial communities of creosote and black grama, the role they play in plant performance, and the spatial extent of their influence will allow us to better predict the ways in which plants succeed or fail in expanding their species range limits (e.g., shrub encroachment into grasslands).

8. Any other conclusions., lessons learned, benefits to you, the community or the environment hopefully result from your work as assisted by this grant.

-----  
**Final Instructions**

**Please send your completed form in MS Word (not converted to pdf) as an email attachment to [cartergrantapps@gmail.com](mailto:cartergrantapps@gmail.com) by December 1.**

*\* To remain in good standing for any future funding from the Native Plant Society of New Mexico, we ask that you educate our membership more fully in some way. This could be an article (500-1000 words, illustrations welcome) for our newsletter, **or** a paper or electronic copy or link to a published article connected with the past year's work, **or** by making an educational and visual presentation to one of our chapters. Contact information for our 7 area chapters is found on our website at [www.npsnm.org](http://www.npsnm.org) under the Chapters tab.*

*What are your intentions in this regard?* I will write an article for the newsletter.

This year end report is submitted by (name) Melanie Merritt

eMail address [Melanie.merritt@uga.edu](mailto:Melanie.merritt@uga.edu)

Date 12/6/22

*Please contact us again at [cartergrantapps@gmail.com](mailto:cartergrantapps@gmail.com) if you have any questions or alternate suggestions.*